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408	APR 22/08	01
409	DEC 22/05	01
410	APR 22/99	02
411	APR 22/99	01
412	DEC 22/01	01
413	AUG 22/08	02
414	DEC 22/01	01
32-12-01		
601	AUG 10/90	01
602	APR 22/99	02
603	APR 22/99	02
604	APR 22/99	02
605	APR 22/99	02
606	APR 22/99	01
32-12-02		
401	AUG 22/01	01
402	NOV 10/92	01
403	NOV 10/92	02
404	DEC 22/07	02
405	AUG 22/04	02
406	AUG 22/06	03
407	AUG 22/06	03
408	DEC 22/07	05
409	NOV 10/95	02
410	AUG 22/01	02
411	MAY 10/92	01
412	BLANK	

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PAGE	DATE	CODE
32-12-06		
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402	APR 22/03	04
403	APR 22/03	04
404	APR 22/03	04
405	APR 22/03	06
406	APR 22/05	01
407	APR 22/05	02
408	APR 22/03	06
409	APR 22/03	04
410	DEC 22/07	01
411	APR 22/03	02
412	APR 22/05	01
413	APR 22/03	01
414	APR 22/05	01
415	APR 22/03	01
416	BLANK	
32-12-06		
601	AUG 10/90	01
602	APR 22/00	04
603	MAY 10/92	27
604	AUG 10/90	02
32-12-08		
401	AUG 22/06	02
402	MAY 10/90	01
403	DEC 22/07	03
404	AUG 22/06	02
32-12-08		
601	DEC 10/98	01
602	MAY 10/90	01
603	MAY 10/90	02
604	FEB 10/92	01
32-12-11		
401	AUG 22/01	01
402	APR 10/98	01
403	AUG 22/08	01
404	DEC 22/07	01
405	AUG 22/01	01
406	APR 22/06	02
32-12-11		
601	AUG 10/90	01
602	AUG 10/98	01
603	AUG 10/90	01
604	AUG 10/98	01
605	AUG 10/98	01
606	AUG 10/98	01
32-12-13		
401	AUG 22/07	01
402	MAY 10/90	01
403	DEC 22/01	01
404	DEC 22/07	01
405	DEC 22/01	01
406	DEC 22/01	01

PAGE	DATE	CODE
32-12-13		
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32-20-00		
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2	BLANK	
32-20-00		
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102	MAY 10/94	01
103	MAY 10/94	01
104	BLANK	
32-20-01		
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202	APR 22/05	01
203	APR 22/05	01
204	APR 22/05	01
205	APR 22/05	01
206	BLANK	
32-21-00		
1	NOV 10/92	01
2	FEB 01/84	01
3	FEB 01/83	01
4	BLANK	
32-21-01		
401	APR 22/05	01
402	AUG 22/03	17
403	APR 22/99	05
404	MAY 10/97	08
405	DEC 22/01	05
406	DEC 22/05	01
407	DEC 22/05	01
408	APR 22/08	01
409	APR 22/08	01
410	DEC 22/04	01
411	APR 22/08	05
412	APR 22/08	04
413	APR 22/08	03
414	APR 22/08	04
415	APR 22/08	05
416	APR 22/08	08
417	APR 22/08	04
418	APR 22/08	03
419	APR 22/08	02
420	APR 22/08	02
421	APR 22/08	01
422	APR 22/08	10
423	APR 22/08	04
424	BLANK	
32-21-01		
601	AUG 10/91	01
602	MAY 10/97	01
603	MAY 10/97	01
604	AUG 10/91	01

PAGE	DATE	CODE
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402	MAY 10/92	01
403	APR 22/09	01
404	BLANK	
32-21-03		
401	FEB 10/97	01
402	AUG 22/00	01
403	DEC 22/07	01
404	APR 22/01	01
405	APR 22/01	01
406	DEC 22/07	01
407	DEC 22/07	01
408	AUG 22/00	01
409	AUG 10/90	01
410	BLANK	
32-21-04		
401	AUG 10/90	01
402	APR 22/00	01
403	AUG 22/06	01
404	DEC 22/07	01
405	AUG 10/93	01
406	AUG 10/93	01
32-21-04		
601	AUG 10/90	01
602	APR 22/00	01
603	AUG 10/90	01
604	BLANK	
32-21-05		
401	APR 22/00	01
402	AUG 10/98	01
403	DEC 22/07	01
404	AUG 10/90	01
405	DEC 22/07	02
406	DEC 22/07	01
407	APR 22/00	01
408	DEC 22/07	02
409	APR 22/00	01
410	BLANK	
32-21-05		
601	AUG 10/90	01
602	MAY 10/95	01
603	AUG 10/90	01
604	BLANK	
32-21-06		
401	NOV 10/92	01
402	AUG 22/00	01
403	DEC 22/05	01
404	NOV 10/95	03
405	NOV 10/93	01
406	NOV 10/92	01
407	DEC 22/07	01
408	APR 22/06	01

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PAGE	DATE	CODE
32-21-06		CONT.
409	DEC 10/98	01
410	NOV 10/95	01
32-21-06		
601	AUG 10/90	01
602	DEC 22/05	01
603	AUG 10/90	01
604	AUG 10/90	01
32-21-09		
R 401	AUG 22/09	02.1
402	MAY 01/82	01
R 403	AUG 22/09	02.1
404	NOV 10/93	01
32-21-11		
201	MAY 10/95	02
202	AUG 10/90	06
203	DEC 22/07	17
204	BLANK	
32-21-11		
401	NOV 10/97	02
402	AUG 10/90	08
403	AUG 10/90	05
404	NOV 10/97	02
405	NOV 10/97	02
406	AUG 22/01	20
407	DEC 10/98	23
408	DEC 22/00	02
409	DEC 22/99	12
410	AUG 22/04	09
411	AUG 22/04	02
412	AUG 22/04	17
32-21-11		
601	MAY 10/91	01
602	MAY 10/91	02
603	AUG 10/92	02
604	AUG 10/92	02
32-21-12		
401	AUG 10/90	01
402	AUG 10/97	01
403	DEC 22/07	05
404	AUG 10/90	01
32-21-12		
601	AUG 10/90	01
602	AUG 10/90	01
603	AUG 10/90	01
604	BLANK	
32-21-25		
201	DEC 22/08	02
202	AUG 10/90	01
203	APR 22/01	19
204	MAY 10/91	01

PAGE	DATE	CODE
32-21-25		CONT.
205	DEC 22/05	02
206	DEC 22/08	02
207	DEC 22/05	02
208	DEC 22/05	02
209	DEC 22/05	03
210	DEC 22/05	04
211	DEC 22/05	04
212	DEC 22/05	04
213	DEC 22/08	04
214	DEC 22/05	06
215	DEC 22/05	06
216	DEC 22/05	06
217	DEC 22/05	06
218	DEC 22/05	06
219	DEC 22/05	06
220	DEC 22/05	05
221	DEC 22/05	05
222	DEC 22/05	03
223	DEC 22/05	03
224	DEC 22/05	04
225	DEC 22/05	04
226	DEC 22/05	03
227	DEC 22/05	03
228	DEC 22/02	03
32-21-26		
R 401	AUG 22/09	02.1
402	AUG 22/05	01
403	DEC 22/99	01
404	AUG 22/01	01
405	AUG 22/05	01
R 406	AUG 22/05	02.101
407	DEC 22/99	01
R 408	AUG 22/09	02.1
R 409	AUG 22/09	02.101
R 410	AUG 22/09	02.101
R 411	AUG 22/09	02.101
412	BLANK	
32-22-00		
1	MAY 10/96	01
2	FEB 01/83	01
32-22-01		
401	AUG 22/03	01
402	DEC 22/08	02
403	AUG 10/96	01
404	APR 22/03	01
405	AUG 22/01	01
406	FEB 10/93	03
407	APR 22/08	03
408	AUG 22/01	01
409	AUG 22/00	01
410	APR 22/03	01
411	APR 22/03	01
412	APR 22/03	01

PAGE	DATE	CODE
32-22-02		
501	AUG 22/00	01
502	NOV 10/96	01
503	NOV 10/96	01
504	DEC 22/08	02
505	AUG 22/03	01
506	AUG 22/00	01
507	APR 22/08	01
508	AUG 22/01	01
509	APR 22/08	01
510	AUG 22/04	01
511	DEC 22/07	01
512	AUG 22/04	01
513	AUG 22/04	01
514	BLANK	
32-22-02		
601	AUG 10/90	01
602	MAY 10/95	01
603	AUG 10/90	01
604	APR 22/99	01
605	DEC 22/07	01
606	BLANK	
32-22-04		
401	AUG 22/03	01
402	DEC 22/07	01
403	AUG 10/90	01
404	AUG 22/06	01
405	AUG 22/06	02
406	AUG 22/06	02
407	AUG 22/06	01
408	AUG 22/06	04
409	AUG 22/06	04
410	AUG 22/06	04
411	AUG 22/06	02
412	BLANK	
32-30-00		
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32-30-00		
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102	DEC 22/04	01
103	DEC 22/04	01
104	DEC 22/04	03
105	DEC 22/04	01
106	DEC 22/04	01
107	DEC 22/04	01
108	DEC 22/04	01
109	DEC 22/04	01
110	DEC 22/04	01
111	DEC 22/01	15
112	DEC 22/04	01
113	DEC 22/04	01
114	BLANK	

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PAGE	DATE	CODE
32-31-00		
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2	AUG 01/83	01
3	DEC 22/01	01
4	DEC 22/01	01
32-31-00		
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502	DEC 22/01	03
503	FEB 10/95	01
504	FEB 10/95	01
505	FEB 10/95	01
506	AUG 22/01	01
507	APR 22/01	01
508	AUG 10/98	01
32-31-01		
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402	MAY 10/91	01
403	DEC 22/03	02
R 404	AUG 22/09	02.1
R 405	AUG 22/09	03.101
R 406	AUG 22/09	03.101
R 407	AUG 22/09	01.1
R 408	BLANK	
32-31-02		
401	DEC 10/98	01
402	MAY 10/91	01
403	AUG 22/01	01
404	APR 22/01	01
405	APR 22/01	01
406	BLANK	
32-31-03		
401	DEC 10/98	01
402	FEB 10/90	01
403	DEC 10/98	01
404	AUG 22/00	01
32-32-00		
1	AUG 10/97	01
2	NOV 01/84	01
3	NOV 01/84	01
4	NOV 10/87	02
5	NOV 10/87	02
6	NOV 10/87	02
7	NOV 10/87	02
8	NOV 10/87	02
9	NOV 10/87	02
10	AUG 10/88	01
11	DEC 22/01	01
12	DEC 22/01	01
13	FEB 10/95	01
14	BLANK	

PAGE	DATE	CODE
32-32-00		
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502	FEB 10/90	01
503	APR 22/03	01
504	DEC 22/06	03
505	APR 22/03	02
506	APR 22/03	03
507	APR 22/03	02
508	APR 22/03	02
509	APR 22/00	01
510	BLANK	
32-32-01		
401	DEC 22/07	02
402	DEC 22/01	01
403	AUG 01/85	01
404	MAY 10/93	02
405	AUG 22/03	01
R 406	AUG 22/09	02.1
407	DEC 22/07	07
408	AUG 22/02	03
409	DEC 22/00	03
410	APR 22/06	03
411	APR 22/06	04
412	APR 22/06	03
32-32-01		
601	DEC 22/00	01
602	AUG 10/87	01
603	AUG 10/87	01
604	BLANK	
32-32-02		
401	DEC 10/98	02
402	NOV 10/93	01
403	DEC 22/07	01
404	APR 22/00	01
405	APR 22/01	01
406	APR 22/01	01
32-32-02		
601	DEC 22/00	01
602	AUG 10/87	01
603	FEB 10/90	01
604	BLANK	
32-32-03		
401	AUG 22/01	01
402	AUG 22/99	01
403	DEC 22/07	02
404	AUG 22/99	01
32-32-05		
R 401	AUG 22/09	02.1
402	APR 22/05	02
403	APR 22/05	01
R 404	AUG 22/09	03.1
405	AUG 22/06	02
406	BLANK	

PAGE	DATE	CODE
32-32-06		
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402	AUG 01/84	05
403	DEC 10/98	02
404	AUG 22/07	01
405	DEC 10/98	01
406	BLANK	
32-32-08		
401	DEC 10/98	02
402	FEB 10/90	01
403	MAY 10/91	01
404	DEC 22/00	01
405	DEC 22/07	01
406	DEC 22/00	01
407	DEC 22/00	01
408	APR 22/04	01
409	DEC 22/00	01
410	APR 22/01	01
411	APR 22/04	01
412	DEC 22/00	01
32-32-09		
401	DEC 10/98	02
402	FEB 10/90	01
403	APR 22/08	01
404	DEC 10/98	02
405	DEC 10/98	02
406	BLANK	
32-32-09		
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603	MAY 10/89	01
604	MAY 10/89	01
32-32-10		
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402	AUG 22/00	01
403	DEC 22/08	02
404	DEC 22/08	02
405	APR 22/04	01
406	BLANK	
32-32-12		
401	DEC 10/98	02
402	APR 22/08	05
403	NOV 01/83	01
404	MAY 10/91	01
405	AUG 22/01	01
406	APR 22/04	01
407	DEC 10/98	02
408	BLANK	
32-32-12		
601	DEC 22/00	01
602	NOV 10/87	01
603	NOV 10/87	01
604	NOV 10/87	01

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PAGE	DATE	CODE
32-32-13		
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402	NOV 10/95	01
403	AUG 22/01	01
404	APR 22/04	01
405	AUG 22/01	01
406	APR 22/04	01
32-32-14		
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402	APR 22/04	01
403	AUG 22/01	01
404	DEC 22/07	02
405	DEC 10/98	02
406	BLANK	
32-32-14		
601	DEC 22/00	01
602	NOV 10/87	01
32-32-18		
401	AUG 22/01	01
402	DEC 22/07	02
403	AUG 10/90	01
404	MAY 10/95	01
405	MAY 10/95	01
406	APR 22/05	01
407	APR 22/07	01
408	AUG 22/01	01
32-32-18		
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602	AUG 10/87	01
603	MAY 10/91	01
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32-32-19		
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402	DEC 10/98	02
403	AUG 22/00	02
404	DEC 10/98	03
32-32-19		
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502	DEC 10/98	01
503	APR 22/04	01
504	APR 22/04	01
505	APR 22/04	02
506	AUG 22/00	02
32-32-20		
601	DEC 22/00	01
602	NOV 10/87	01
603	APR 22/04	01
604	NOV 10/87	01
605	FEB 10/90	01
606	NOV 10/87	01

PAGE	DATE	CODE
32-34-00		
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2	AUG 10/98	01
3	NOV 10/87	02
4	NOV 10/87	02
5	FEB 01/86	02
6	APR 22/00	01
32-34-00		
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502	APR 22/03	01
503	AUG 22/99	03
504	AUG 22/99	05
505	APR 22/06	05
506	APR 22/03	05
507	AUG 22/04	06
508	AUG 22/99	07
509	APR 22/04	04
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32-34-01		
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402	DEC 22/00	01
403	MAY 10/90	01
404	APR 22/06	01
405	DEC 22/07	01
406	DEC 10/98	01
407	APR 22/04	01
408	DEC 22/05	02
32-34-01		
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602	APR 22/06	01
603	MAY 10/90	01
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32-34-02		
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402	APR 22/08	01
403	APR 22/08	01
404	APR 22/08	03
R 405	AUG 22/09	03.101
R 406	AUG 22/09	03.1
R 407	AUG 22/09	03.101
R 408	AUG 22/09	01.101
32-34-04		
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402	MAY 10/90	01
403	DEC 10/98	01
404	AUG 22/01	01
32-34-05		
401	APR 22/04	01
402	APR 22/03	01
403	APR 22/03	01
404	APR 22/03	01
405	DEC 22/07	01
406	APR 22/03	01

PAGE	DATE	CODE
32-34-05		CONT.
407	APR 22/04	01
408	APR 22/03	01
32-34-05		
601	DEC 22/00	01
602	AUG 22/04	01
603	MAY 10/90	01
604	BLANK	
32-34-06		
401	DEC 10/98	01
402	FEB 01/83	01
403	APR 22/04	01
404	BLANK	
32-34-07		
401	APR 22/00	01
402	APR 22/00	01
403	AUG 22/01	01
404	APR 22/01	01
32-35-00		
1	NOV 01/83	01
2	APR 22/02	02
3	NOV 10/89	02
4	NOV 10/89	02
5	NOV 10/89	02
6	NOV 10/89	02
7	NOV 10/89	03
8	NOV 10/89	02
9	DEC 22/01	02
10	DEC 22/01	01
32-35-00		
501	DEC 22/00	01
502	APR 22/07	03
503	DEC 22/05	01
504	APR 22/08	05
505	APR 22/07	02
506	APR 22/07	02
507	AUG 22/01	02
508	AUG 22/01	02
509	AUG 22/01	01
510	AUG 22/01	04
511	MAY 10/92	01
512	AUG 22/01	04
R 513	AUG 22/09	03.1
R 514	AUG 22/09	01.1
R 515	AUG 22/09	02.1
516	AUG 22/08	03
517	MAY 10/91	01
518	DEC 22/05	02
519	AUG 22/01	01
520	AUG 22/01	01
521	MAY 10/91	01
522	APR 22/99	02
523	DEC 22/00	01
524	DEC 22/01	02

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PAGE	DATE	CODE
32-35-00		CONT.
525	DEC 22/00	02
526	DEC 22/00	02
527	DEC 22/00	02
528	DEC 22/05	12
529	DEC 22/05	11
530	DEC 22/05	08
531	DEC 22/05	10
532	DEC 22/05	04
533	DEC 22/01	01
534	BLANK	
32-35-03		
401	AUG 22/01	01
402	MAY 10/90	01
403	AUG 22/99	01
404	APR 22/08	02
405	AUG 22/01	01
406	BLANK	
32-35-03		
601	DEC 22/00	01
602	AUG 22/04	01
603	MAY 10/90	01
604	BLANK	
32-35-05		
401	AUG 22/01	01
402	AUG 01/83	01
403	DEC 10/98	01
404	AUG 22/01	01
405	AUG 22/01	01
406	DEC 10/98	01
407	AUG 22/01	01
408	BLANK	
32-35-07		
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402	AUG 10/97	01
403	MAY 10/90	01
404	APR 10/98	01
405	AUG 10/97	01
406	BLANK	
32-35-10		
401	AUG 22/00	01
402	MAY 10/90	01
403	MAY 10/90	01
404	DEC 10/98	01
405	DEC 10/98	01
406	APR 22/08	03
407	AUG 22/01	01
408	BLANK	
32-35-11		
401	AUG 22/01	01
402	AUG 10/90	01
403	DEC 10/98	01
404	AUG 22/01	01

PAGE	DATE	CODE
32-35-11		CONT.
405	AUG 22/01	01
406	MAY 10/92	01
32-35-12		
401	APR 22/08	02
402	DEC 10/98	01
403	AUG 22/00	01
404	BLANK	
32-35-13		
401	AUG 22/00	03
402	MAY 10/90	09
403	MAY 10/90	09
404	APR 22/08	07
405	AUG 22/03	01
406	BLANK	
32-35-14		
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402	MAY 10/90	01
403	DEC 10/98	01
404	APR 22/08	02
32-35-15		
401	DEC 22/07	02
402	MAY 10/90	01
403	DEC 22/07	02
404	BLANK	
32-40-00		
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32-40-01		
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203	APR 22/05	01
204	BLANK	
32-41-00		
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2	AUG 22/01	02A
3	DEC 22/01	02A
4	AUG 22/05	01A
5	MAY 10/90	02A
6	NOV 10/87	01A
7	AUG 22/01	03A
8	DEC 22/05	03A
9	DEC 22/05	05A
10	DEC 22/99	03A
11	APR 22/04	02A
12	DEC 22/99	02A
13	DEC 22/01	02A
14	DEC 22/01	02A
15	DEC 22/01	02A
16	DEC 22/01	01A
17	DEC 22/99	02A
18	BLANK	

PAGE	DATE	CODE
32-41-00		
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102	AUG 10/87	06
103	AUG 01/83	01
104	NOV 01/84	02
32-41-00		
201	AUG 22/01	01
202	DEC 22/01	01
203	AUG 22/00	01
204	AUG 22/01	01
205	DEC 22/01	01
206	DEC 22/01	01
207	AUG 10/92	01
208	DEC 22/05	02
209	DEC 22/05	02
210	BLANK	
32-41-00		
501	AUG 22/01	01A
502	NOV 10/87	02A
503	DEC 22/01	03A
504	APR 22/03	03A
505	FEB 01/87	01A
R 506	AUG 22/09	03A.1
507	APR 22/03	02A
508	FEB 01/87	01A
509	NOV 10/87	01A
510	FEB 01/87	01A
511	FEB 01/87	01A
512	APR 22/03	02A
513	APR 22/03	02A
514	DEC 22/01	02A
515	DEC 22/01	01A
516	DEC 22/01	02A
517	DEC 22/01	02A
518	AUG 22/00	02A
519	AUG 22/04	01A
520	DEC 22/05	01A
521	APR 22/05	01A
522	DEC 22/01	01A
523	APR 22/04	01A
524	APR 22/03	01A
525	APR 22/03	01A
526	DEC 22/01	01A
527	AUG 22/01	01A
528	AUG 22/01	01A
529	DEC 22/01	01A
530	BLANK	
32-41-01		
401	AUG 22/01	01
402	MAY 10/90	13
403	MAY 10/90	13
404	APR 22/03	09
405	DEC 22/07	17
406	AUG 22/01	14
407	AUG 22/01	13
408	BLANK	

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PAGE	DATE	CODE
32-41-01		
601	AUG 10/95	01
602	NOV 10/88	13
603	NOV 10/88	13
604	APR 22/05	04
32-41-02		
401	DEC 22/01	01A
402	NOV 10/96	01A
403	NOV 10/92	01A
404	AUG 22/01	01A
405	APR 22/06	01A
406	MAY 10/90	01A
407	APR 22/04	01A
408	BLANK	
32-41-03		
401	DEC 22/01	01A
402	NOV 10/96	01A
403	NOV 10/92	01A
404	AUG 22/01	01A
405	APR 22/06	01A
406	AUG 22/01	01A
407	DEC 22/00	01A
408	DEC 22/01	01A
32-41-04		
401	DEC 22/01	01
402	AUG 10/88	01
403	APR 22/99	01
404	DEC 22/08	02
405	AUG 22/02	01
406	AUG 22/02	01
407	AUG 22/02	01
408	BLANK	
32-41-05		
401	DEC 22/01	02
402	DEC 10/98	01
403	AUG 22/01	02
404	DEC 22/01	02
32-41-06		
401	DEC 22/01	02B
402	AUG 22/99	01B
403	MAY 10/95	01B
404	AUG 22/03	01B
405	APR 22/04	01B
406	APR 22/04	01B
407	AUG 22/03	01B
408	BLANK	
32-41-08 CONFIG 2		
401	APR 22/06	15
402	DEC 22/05	14
403	DEC 22/05	14
404	APR 22/00	17
405	AUG 22/05	15
406	DEC 22/05	15

PAGE	DATE	CODE
32-41-08 CONFIG 2		CONT.
407	AUG 22/00	15
408	APR 22/06	23
409	DEC 22/05	13
410	DEC 22/05	13
411	AUG 22/06	14
412	AUG 22/06	14
413	AUG 22/06	15
414	DEC 22/05	14
32-41-08 CONFIG 3		
401	APR 22/06	10
402	DEC 22/05	09
403	DEC 22/05	09
404	APR 22/00	11
405	AUG 22/05	06
406	DEC 22/05	03
407	DEC 22/05	09
408	DEC 22/08	03
409	DEC 22/08	08
410	AUG 22/06	08
411	AUG 22/05	09
412	AUG 22/06	09
413	AUG 22/06	10
414	AUG 22/06	09
32-41-08 CONFIG 1		
601	DEC 22/05	02
602	DEC 22/05	05
603	DEC 22/05	03
604	DEC 22/05	06
605	APR 22/06	06
606	APR 22/06	08
607	APR 22/09	04
608	APR 22/09	06
609	APR 22/09	07
610	APR 22/09	04
611	APR 22/09	04
612	APR 22/09	03
613	APR 22/09	04
614	APR 22/09	03
615	APR 22/09	02
616	BLANK	
32-41-08 CONFIG 3		
601	AUG 22/03	01
R 602	AUG 22/09	03.1
603	AUG 22/01	03
604	APR 22/09	02
605	APR 22/09	01
606	APR 22/09	02
607	APR 22/09	02
R 608	AUG 22/09	01.1
609	APR 22/09	01
610	APR 22/09	01
611	APR 22/09	01
612	APR 22/09	01

PAGE	DATE	CODE
32-41-11		
401	AUG 22/01	01
402	NOV 01/84	05
403	APR 22/05	01
404	AUG 22/01	01
405	DEC 22/01	01
406	BLANK	
32-41-12		
401	DEC 22/01	01
402	NOV 01/84	05
403	AUG 22/01	01
404	DEC 22/01	01
32-41-14		
401	DEC 22/01	01
402	AUG 10/96	01
403	AUG 10/96	01
404	APR 22/06	01
405	DEC 22/01	01
406	BLANK	
32-41-15		
401	AUG 22/04	01
402	AUG 22/99	01
403	APR 22/06	02
404	BLANK	
32-41-16		
401	AUG 10/98	01
402	AUG 10/98	01
403	AUG 10/98	01
404	APR 22/04	01
405	APR 10/98	01
406	APR 10/98	01
32-42-00		
1	APR 22/01	02
2	NOV 01/83	02
3	NOV 01/83	04
4	DEC 22/07	04
5	AUG 10/98	12
6	AUG 22/00	11
7	NOV 10/87	08
8	AUG 10/98	09
9	AUG 10/88	06
10	AUG 10/98	13
11	NOV 10/87	07
12	NOV 10/87	05
13	FEB 10/92	10
14	APR 22/01	08
15	MAY 01/87	03
16	NOV 10/89	06
17	NOV 10/89	06
18	APR 22/01	09
19	NOV 10/89	09
20	DEC 22/07	17
21	DEC 22/07	09
22	DEC 22/01	08

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PAGE	DATE	CODE
32-42-00		CONT.
23	AUG 10/95	02
24	AUG 10/95	02
25	DEC 22/01	11
26	DEC 22/01	05
27	DEC 22/01	01
28	DEC 22/01	11
29	DEC 22/07	13
30	DEC 22/01	12
31	DEC 22/07	08
R 32	AUG 22/09	20.1
33	AUG 22/07	22
34	DEC 22/01	17
35	APR 22/01	13
36	DEC 22/07	14
37	DEC 22/07	10
38	AUG 10/95	07
39	AUG 10/97	08
40	AUG 10/95	07
41	DEC 22/01	07
42	DEC 22/01	08
43	DEC 22/01	11
44	DEC 22/01	06
45	AUG 10/97	02
46	AUG 10/97	07
32-42-00		
101	APR 22/05	11
102	APR 22/05	02
103	APR 22/05	01
104	FEB 01/87	03
105	NOV 10/96	14
106	NOV 10/96	02
107	NOV 10/96	02
108	NOV 10/96	01
109	NOV 10/96	03
110	NOV 10/96	02
111	NOV 10/96	03
112	NOV 10/96	04
113	NOV 10/96	02
114	NOV 10/96	03
32-42-00		
501	APR 22/05	01
502	MAY 01/83	06
503	NOV 01/82	02
504	DEC 22/99	01
505	APR 22/07	09
506	AUG 22/04	01
507	AUG 22/04	05
508	APR 22/05	01
509	AUG 22/04	06
510	APR 22/05	06
511	APR 22/05	06
512	APR 22/05	10
513	DEC 22/00	09
514	DEC 22/00	09
515	AUG 22/04	07
516	AUG 22/04	05

PAGE	DATE	CODE
32-42-00		CONT.
517	DEC 22/00	07
518	AUG 22/04	09
519	DEC 22/00	08
520	DEC 22/00	12
521	DEC 22/00	12
522	APR 22/05	12
523	APR 22/05	11
524	APR 22/05	11
525	DEC 22/00	12
526	DEC 22/00	17
527	DEC 22/00	17
528	DEC 22/00	14
529	DEC 22/00	14
530	DEC 22/05	15
R 531	AUG 22/09	13.1
532	AUG 22/04	16
533	DEC 22/05	19
534	DEC 22/00	14
535	AUG 22/01	12
536	APR 22/05	14
537	AUG 22/03	10
538	AUG 22/03	09
32-42-00		
601	APR 22/05	01
602	MAY 01/85	03
603	MAY 01/85	01
604	APR 22/03	06
605	APR 22/05	04
606	AUG 22/01	05
607	NOV 10/96	03
608	AUG 22/01	03
32-42-01		
401	APR 22/05	01
402	FEB 10/91	01
403	APR 22/05	01
404	APR 22/05	01
405	DEC 22/01	04
406	AUG 22/00	03
407	AUG 22/04	03
408	DEC 22/01	05
409	DEC 22/01	05
410	DEC 22/01	03
32-42-02		
401	DEC 22/01	01
402	AUG 22/99	01
403	AUG 22/99	01
404	DEC 22/01	01
405	APR 22/06	03
406	APR 22/06	02
407	APR 22/06	02
408	DEC 22/01	01

PAGE	DATE	CODE
32-42-03		
401	APR 22/05	01
402	AUG 22/99	01
403	AUG 22/99	01
404	AUG 22/99	08
405	APR 22/01	01
406	APR 22/01	01
R 407	AUG 22/09	04.1
R 408	AUG 22/09	03.1
409	APR 22/01	01
410	APR 22/01	01
R 411	AUG 22/09	03.1
412	APR 22/01	08
413	DEC 22/06	09
R 414	AUG 22/09	08.1
415	APR 22/01	04
416	APR 22/05	07
R 417	AUG 22/09	07.1
418	APR 22/01	04
32-42-04		
401	DEC 22/01	04
402	APR 22/99	04
403	APR 22/99	04
404	AUG 22/99	06
405	APR 22/99	02
406	APR 22/99	01
407	DEC 22/01	03
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32-42-06 CONFIG 1		
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402	FEB 10/93	01
403	FEB 10/93	01
404	APR 10/98	01
405	AUG 22/01	01
406	APR 22/01	01
407	APR 10/98	01
408	AUG 22/01	01
32-42-06 CONFIG 2		
401	AUG 22/01	01
402	FEB 10/93	01
403	FEB 10/93	01
404	FEB 10/93	01
405	FEB 10/93	01
406	APR 10/98	01
407	AUG 22/01	01
408	NOV 10/95	01
409	FEB 10/93	01
410	APR 22/01	01
411	AUG 22/01	01
412	BLANK	
32-42-07 CONFIG 1		
401	AUG 22/02	01
402	AUG 22/02	01
403	AUG 22/02	01
404	APR 22/06	02

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PAGE	DATE	CODE
32-42-07	CONFIG 1	CONT.
405	DEC 22/07	02
406	DEC 22/07	02
407	DEC 22/07	02
408	DEC 22/07	02
409	DEC 22/07	02
410	BLANK	
32-42-07	CONFIG 2	
401	AUG 22/02	01
402	AUG 22/02	01
403	APR 22/03	01
404	APR 22/06	02
405	DEC 22/07	02
406	DEC 22/07	02
407	DEC 22/07	02
408	DEC 22/07	02
409	APR 22/03	01
410	BLANK	
32-42-08		
401	APR 22/05	01
402	APR 22/05	01
403	AUG 22/04	01
404	APR 22/03	01
405	AUG 22/04	01
406	APR 22/03	02
32-42-09		
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402	AUG 22/99	01
403	AUG 22/99	01
404	DEC 22/01	01
405	APR 22/05	01
406	DEC 22/01	01
407	APR 22/05	01
408	FEB 10/91	01
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410	FEB 10/91	01
411	FEB 10/91	01
412	DEC 22/01	01
413	DEC 22/01	01
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32-42-10		
401	APR 22/05	01
402	AUG 01/85	01
403	AUG 01/85	01
404	DEC 22/01	01
405	APR 22/05	01
406	APR 22/05	01
407	FEB 10/91	01
408	APR 22/05	01
409	APR 22/05	01
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PAGE	DATE	CODE
32-44-00		
1	AUG 01/86	06
2	DEC 22/00	15
3	NOV 01/83	01
4	AUG 01/86	01
5	DEC 22/01	12
6	DEC 22/01	01
7	APR 22/00	02
8	DEC 22/01	01
32-44-00		
101	FEB 10/91	01
102	FEB 10/91	15
103	FEB 10/91	01
104	FEB 10/91	04
32-44-00		
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502	AUG 10/90	14
503	AUG 10/90	01
504	APR 22/02	01
R 505	AUG 22/09	14.1
R 506	AUG 22/09	03.1
R 507	AUG 22/09	02.101
R 508	AUG 22/09	02.101
R 509	AUG 22/09	02.101
R 510	AUG 22/09	01.1
R 511	AUG 22/09	01.1
R 512	AUG 22/09	01.1
32-44-01		
401	AUG 22/02	06
402	AUG 10/90	01
403	AUG 10/90	02
404	AUG 22/04	06
405	APR 22/01	06
406	AUG 22/99	02
32-44-02		
401	APR 22/01	01
402	AUG 10/90	01
403	AUG 10/90	01
404	AUG 22/99	01
405	AUG 22/00	01
406	AUG 22/99	01
32-44-04		
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402	AUG 10/90	01
403	AUG 10/90	01
404	DEC 22/01	01
405	AUG 10/90	01
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32-44-06		
401	APR 22/04	01
402	DEC 22/99	01
403	DEC 22/07	01
404	DEC 22/99	01

PAGE	DATE	CODE
32-44-06		CONT.
405	DEC 22/99	01
406	DEC 22/01	01
32-44-07		
401	APR 22/04	01
402	DEC 22/99	01
403	APR 22/06	01
404	DEC 22/01	01
32-44-08		
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202	MAY 10/94	14
203	MAY 10/94	01
204	AUG 22/99	01
205	APR 22/02	01
206	APR 22/02	01
207	AUG 22/99	01
208	BLANK	
32-45-00		
1	APR 22/99	09
2	AUG 22/03	06
3	AUG 22/03	01
4	AUG 22/03	01
5	AUG 22/03	01
6	APR 22/03	04
7	APR 22/03	01
8	APR 22/03	01
9	APR 22/03	01
10	APR 22/03	01
11	APR 22/03	01
12	APR 22/03	01
13	APR 22/03	01
14	APR 22/03	01
32-45-00		
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102	AUG 10/97	01
103	FEB 10/93	02
104	FEB 10/93	02
32-45-00		
501	FEB 10/93	01
502	FEB 10/93	01
503	FEB 10/93	01
504	FEB 10/93	01
505	NOV 10/95	01
506	FEB 10/93	01
507	FEB 10/93	01
508	AUG 22/00	01
509	NOV 10/96	01
510	AUG 22/00	01
511	NOV 10/96	01
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PAGE	DATE	CODE
32-45-01	CONFIG 1	
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402	FEB 10/93	01
403	DEC 22/00	01
404	DEC 22/00	01
405	DEC 22/00	01
406	AUG 22/06	01
407	DEC 22/02	01
408	APR 22/09	01
409	APR 22/09	01
410	AUG 22/08	01
411	AUG 22/08	01
412	BLANK	
32-45-01	CONFIG 2	
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402	FEB 10/93	01
403	DEC 22/05	01
404	DEC 22/00	01
405	DEC 22/07	01
406	DEC 22/07	01
407	DEC 22/07	01
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409	DEC 22/05	01
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413	APR 22/09	01
414	APR 22/09	01
32-45-02	CONFIG 1	
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404	DEC 22/00	01
405	AUG 22/06	01
406	AUG 22/06	01
407	AUG 22/08	01
408	AUG 22/08	01
32-45-02	CONFIG 2	
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402	FEB 10/93	01
403	APR 22/05	01
404	DEC 22/00	01
405	DEC 22/00	01
406	APR 22/02	01
407	AUG 22/06	01
408	AUG 22/06	01
409	AUG 22/08	01
410	AUG 22/08	01
411	AUG 22/08	01
412	AUG 22/08	01
32-45-03		
601	FEB 10/96	01
602	FEB 10/91	03
603	APR 22/05	03
604	AUG 10/98	01

PAGE	DATE	CODE
32-45-03		CONT.
605	APR 22/05	06
606	APR 22/05	06
32-45-04		
601	APR 22/05	01
602	AUG 22/06	02
603	NOV 10/95	01
604	DEC 22/99	01
605	DEC 22/99	02
606	DEC 22/99	02
607	DEC 22/99	02
608	DEC 22/99	01
609	AUG 22/04	01
610	DEC 22/07	01
611	DEC 22/99	01
612	AUG 22/06	02
613	AUG 22/06	01
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32-45-05		
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203	AUG 22/00	01
204	DEC 22/05	02
205	DEC 22/05	03
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32-45-08		
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402	FEB 10/91	03
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405	MAY 10/94	02
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32-45-10		
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402	AUG 22/99	01
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32-45-11		
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402	AUG 22/99	01
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404	MAY 10/94	03
405	APR 22/05	01
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32-45-12		
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403	MAY 10/94	03
404	MAY 10/94	03
405	APR 22/05	01
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PAGE	DATE	CODE
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403	FEB 10/93	01
404	FEB 10/94	01
405	FEB 10/93	01
406	NOV 10/96	01
407	NOV 10/96	01
408	AUG 10/97	01
409	AUG 10/97	01
410	AUG 10/97	01
32-45-14		
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402	FEB 10/93	02
403	FEB 10/94	01
404	FEB 10/93	01
405	DEC 22/03	01
406	NOV 10/96	01
407	NOV 10/96	01
408	BLANK	
32-46-00		
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2	DEC 22/01	01
3	DEC 22/01	01
4	DEC 22/01	01
5	APR 22/03	08
6	DEC 22/01	01
7	DEC 22/01	08
8	DEC 22/01	06
9	DEC 22/01	06
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32-46-00		
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103	APR 22/02	01
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32-46-00		
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505	APR 22/02	01
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32-46-01		
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402	APR 22/02	01
403	APR 22/02	02
404	APR 22/02	02
405	APR 22/02	02
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PAGE	DATE	CODE
32-46-03		
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402	APR 22/02	01
403	APR 22/02	01
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32-51-00		
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2	APR 22/99	03
3	APR 22/99	09
4	AUG 22/00	09
5	APR 22/99	15
6	APR 22/99	07
7	APR 22/99	13
8	APR 22/99	14
9	AUG 10/98	08
10	NOV 10/89	04
11	DEC 22/01	05
12	DEC 22/01	03
13	APR 22/99	04
14	APR 22/99	04
15	APR 22/99	01
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32-51-00		
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102	DEC 10/98	02
103	AUG 22/04	02
104	AUG 22/04	05
105	APR 22/99	02
106	BLANK	
32-51-00		
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502	APR 22/99	04
503	APR 22/99	01
504	APR 10/98	02
505	APR 22/08	04
506	NOV 10/90	01
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521	DEC 22/99	04
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523	DEC 22/99	04
524	DEC 22/01	04
525	MAY 10/97	02
526	DEC 22/99	03

PAGE	DATE	CODE
32-51-00		CONT.
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32-51-01		
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402	AUG 22/07	03
403	AUG 22/07	04
404	APR 22/08	04
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407	APR 22/08	05
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412	DEC 10/98	07
413	APR 22/99	10
414	APR 22/08	08
415	APR 22/99	04
416	BLANK	
32-51-01		
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602	APR 22/99	04
603	NOV 10/87	02
604	DEC 22/05	02
605	NOV 10/87	01
606	BLANK	
32-51-02		
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402	APR 22/06	01
403	MAY 01/84	02
404	APR 22/06	01
405	AUG 22/01	01
406	APR 22/06	01
407	AUG 22/01	01
408	BLANK	
32-51-02		
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404	AUG 22/01	09

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LANDING GEAR - DESCRIPTION AND OPERATION

1. General
   A. The landing gear system consists of two main gears and doors, nose gear and doors, a gear extension and retraction system, wheels and brakes, a steering system, and a gear and door indicating and warning system.
2. Component Details
   A. Main Landing Gear and Doors (AMM 32-10-00).
      (1) The main gear absorbs impact and supports most of the airplane weight on the ground.
      (2) The main gear doors close over the wheel well when the gear is retracted to provide aerodynamic smoothness.
   B. Nose Landing Gear and Doors (AMM 32-20-00).
      (1) The nose gear provides directional control of the airplane while on the ground. The gear also absorbs impacts and supports the forward end of the airplane while on the ground.
      (2) The nose gear doors close over the wheel well to provide aerodynamic smoothness when the gear is retracted.
   C. Landing Gear Extension and Retraction (AMM 32-30-00)
      (1) Extension and retraction of the main gear, nose gear, and landing gear doors is mechanically controlled and hydraulically powered. An alternate extend system allows the gears to be extended in case of a hydraulic failure.
   D. Wheels and Brakes (AMM 32-40-00)
      (1) Each main gear wheel is equipped with a brake unit which stops the airplane during taxiing. An antiskid system automatically controls brake pressure.
   E. Steering (AMM 32-51-00)
      (1) The steering system provides directional control of the airplane while on the ground.
   F. Position and Warning (AMM 32-61-00)
      (1) The landing gear position and warning system indicates gear positions and gear door positions.

LANDING GEAR – DDG MAINTENANCE PROCEDURES

1. General
   A. This procedure has the maintenance tasks that prepare the airplane for flight with certain systems/components deactivated.
   B. It also has the tasks that put the airplane back to its usual condition.
   C. These are the tasks for the components in ice and rain protection:
      (1) DDG 32-30-1 Preparation – Landing Gear Retracting System Inoperative
      (2) DDG 32-30-1 Restoration – Landing Gear Retracting System Inoperative
      (3) DDG 32-31-1 Preparation – Landing Gear Latch Solenoid Inoperative
      (4) DDG 32-31-1 Restoration – Landing Gear Latch Solenoid Inoperative
      (5) DDG 32-41-1 Preparation – Wheel Brakes, One Brake Inoperative
      (6) DDG 32-41-1 Restoration – Wheel Brakes, One Brake Inoperative
      (7) DDG 32-41-2 Preparation – Brake Source Light Inoperative
      (8) DDG 32-41-2 Restoration – Brake Source Light Inoperative
      (9) DDG 32-42-1 Preparation – Antiskid System Inoperative
      (10) DDG 32-42-1 Restoration – Antiskid System Inoperative
      (11) DDG 32-42-2 Preparation – Alternate Antiskid Valves Inoperative
      (12) DDG 32-42-2 Restoration – Alternate Antiskid Valves Inoperative
      (13) DDG 32-42-3 Preparation – Antiskid Light Inoperative
      (14) DDG 32-42-3 Restoration – Antiskid Light Inoperative
      (15) DDG 32-42-4 Preparation – Autobrake System Inoperative
      (16) DDG 32-42-4 Restoration – Autobrake System Inoperative
      (17) DDG 32-44-2 Preparation – Parking Brake Valve Inoperative
      (18) DDG 32-44-2 Restoration – Parking Brake Valve Inoperative
      (19) DDG 32-44-3 Preparation – Park Brake Light Inoperative
      (20) DDG 32-44-3 Restoration – Park Brake Light Inoperative
      (21) DDG 32-44-5 Preparation – BRAKE PRESS Gage (Flight Deck) Inoperative
      (22) DDG 32-44-5 Restoration – BRAKE PRESS Gage (Flight Deck) Inoperative
      (23) DDG 32-45-2 Preparation – Nose Wheel Snubbers Damaged/Missing
      (24) DDG 32-45-2 Restoration – Nose Wheel Snubbers Damaged/Missing
      (25) DDG 32-51-1 Preparation – Rudder Pedal Nose Wheel Steering Inoperative
      (26) DDG 32-51-1 Restoration – Rudder Pedal Nose Wheel Steering Inoperative
      (27) DDG 32-61-1 Preparation – Landing Gear Doors Light System Inoperative
      (28) DDG 32-61-1 Restoration – Landing Gear Doors Light System Inoperative
      (29) DDG 32-61-2 Preparation – Landing Gear Door Latch Proximity Sensor Inoperative
      (30) DDG 32-61-2 Restoration – Landing Gear Door Latch Proximity Sensor Inoperative
      (31) DDG 32-71-1 Preparation – Tail Skid (767-300) Inoperative
      (32) DDG 32-71-1 Restoration – Tail Skid (767-300) Inoperative
      (33) DDG 32-71-2 Preparation – Tail Skid Indication System Inoperative (767-300)

(34) DDG 32-71-2 Restoration - Tail Skid Indication System Inoperative (767-300)

TASK 32-00-00-049-292

2. DDG 32-30-1 Preparation - Landing Gear Retracting System Inoperative

A. General

(1) This tasks gives the maintenance steps which prepare the airplane for flight with the Landing Gear Retracting System Inoperative.

B. References

(1) AMM 32-00-20/201, Landing Gear Downlocks

(2) Location Zones

211/212	Control Cabin
731/741	Landing Gear

C. Procedure

S 429-345

(1) Install the landing gear downlock pins in the main and nose gear as follows:

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Put the landing gear control lever in the DN position.

(b) Install the down lock pin in the main gear drag brace downlock hole.

1) Use NAS 6610D120 bolt, MS21083N10 lock nut, two AN 960-1016L washers and Rein-Leitzke No. 25-05 safety pins for each drag brace.

(c) Install the down lock pin in the main gear side brace downlock hole.

1) Use NAS 6610D90 bolt, MS21083N10 lock nut, two AN 960-1016L washers and Medalist-ReinLeitzke No. 25-05 safety pins for each side brace.

2) If unable to install the downlock pins, adjust the main-gear side-brace lock-link-overcenter dimension (AMM 32-00-20/201).

(d) Install the down lock pin in the nose gear lock link downlock hole.

1) Use NAS 6608D41 bolt, MS21083N8 lock nut, two AN 960-816L washers and Medalist-ReinLeitzke No. 25-05 safety pins.

2) If unable to install the downlock pin in the lock link, adjust the nose-gear lock-link-overcenter dimension (AMM 32-00-20/201).

S 049-349

(2) Open and collar the Landing Gear Lever Lock circuit breaker prior to flight to prevent inadvertent gear lever movement to the up position.

S 829-347

(3) Select the up (Alternate Vmo/Mmo) position on the ALT Vmo/Mmo switch to the Air Data Computer.

NOTE: This provides gear down Vmo/Mmo data for display on airspeed indicators and causes the aural warning, red warning lights on the glareshield and the RED OVSPD warning light on the captain's panel to come on when the gear down Vmo/Mmo is exceeded.

TASK 32-00-00-449-291

3. DDG 32-30-1 Restoration - Landing Gear Retracting System Inoperative

A. General

(1) This task contains steps to put the airplane back to its usual condition after operating with a landing gear retracting system inoperative.

B. References

(1) AMM 32-00-20/201, Landing Gear Downlocks

C. Access

(1) Location Zones

211/212	Control Cabin
731/741	Landing Gear

D. Procedure

S 439-360

(1) Remove the landing gear downlock pins before the next airplane dispatch (AMM 32-00-20/201).

S 869-361

(2) Remove the collar from the Landing Gear Lever Lock circuit breaker and close the circuit breaker.

TASK 32-00-00-049-293

4. DDG 32-31-1 Preparation - Landing Gear Latch Solenoid Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Landing Gear Latch Solenoid Inoperative.

(2) Put a placard 'LATCH SOLENOID INOP' near the landing gear lever.

B. References

(1) AMM 24-22-00/201, Electrical Power - Control

(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

(3) AMM 32-00-20/201, Landing Gear Downlocks

C. Procedure

S 719-350

(1) Do the steps that follow to make sure the override mechanism operates correctly:

(a) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:

1) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
2) 11U20, LANDING GEAR LEVER LOCK
3) 11U24, LANDING GEAR POSITION AIR/GND SYS 2

(b) Do the steps that follow to make sure the LOCK OVRD switch, for the landing gear lever, operates correctly:

1) Supply electrical power (AMM 24-22-00/201).
2) Pressurize the center hydraulic system (AMM 29-11-00/201).

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

3) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

WARNING: MAKE SURE THE AREA AROUND THE TAIL SKID (IF APPLICABLE) IS CLEAR OF PERSONS AND EQUIPMENT WHEN IT OPERATES. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

4) Make sure the landing gear lever cannot be put to the UP position unless the LOCK OVRD switch is pushed.
   a) Push the LOCK OVRD switch and make sure the landing gear lever will go to the UP position.
5) Put the landing gear lever to the DN position.
   a) Make sure the green NOSE, LEFT, and RIGHT lights on the First Officer's instrument panel, P3, come on.
6) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).
7) Remove the electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-00-00-449-294

5. DDG 32-31-1 Restoration - Landing Gear Latch Solenoid Inoperative

A. General

(1) This task gives the steps to put the airplane back to its usual condition after operation with the landing gear lever latch solenoid inoperative.

B. References

(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-20/201, Landing Gear Downlocks

C. Access
(1) Location Zones
212 Control Cabin (Right)

D. Procedure

S 969-362
(1) Replace and test the landing gear control module (AMM 32-31-01/401).

S 089-363
(2) Remove the placard near the landing gear control lever solenoid which says "LEVER LATCH SOLENOID INOP".

TASK 32-00-00-209-256
6. DDG 32-41-1 Preparation - Wheel Brakes, One Brake Inoperative
(Fig. 901, 901A, 901B)
A. General
(1) This task gives the maintenance steps which prepare the airplane for flight with operate the airplane with One Brake Inoperative.
(2) There are two different methods to prepare the airplane to operate with one brake inoperative:
(a) The first method is the method with the brake disconnect tool installed.
(b) The second method is the method with the brake hydraulic line disconnected. This method is referred to in the DDG as the brake line line capped method.
B. References
(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(5) AMM 32-00-15/201, Landing Gear Door Locks
(6) AMM 32-00-20/201, Landing Gear Downlocks
C. Access
(1) Location Zones
550/650 Wing Trailing Edge
211/212 Control Cabin
731/741 Landing Gear
120 Main Equipment Center

(2) Access Panels
551TB LH Wing Trailing Edge Access Panel
651TB RH Wing Trailing Edge Access Panel
119AL Main Equipment Center

D. Procedure

S 049-257

(1) Notify Dispatch of the procedure you will use to deactivate the brakes.

NOTE: These procedures to deactivate a brake will decrease the takeoff and landing weight of the airplane.

S 049-255

(2) Procedure to deactivate the brakes with the brake dispatch assembly is as follows (Fig. 901, 901A):

(a) Do these steps to install the brake dispatch assembly:

NOTE: Part number A32001-1 can be used with the shuttle valves S274T120-4, -6, and -8. Part number A32080-1 can be used on all S274T120 shuttle valves.

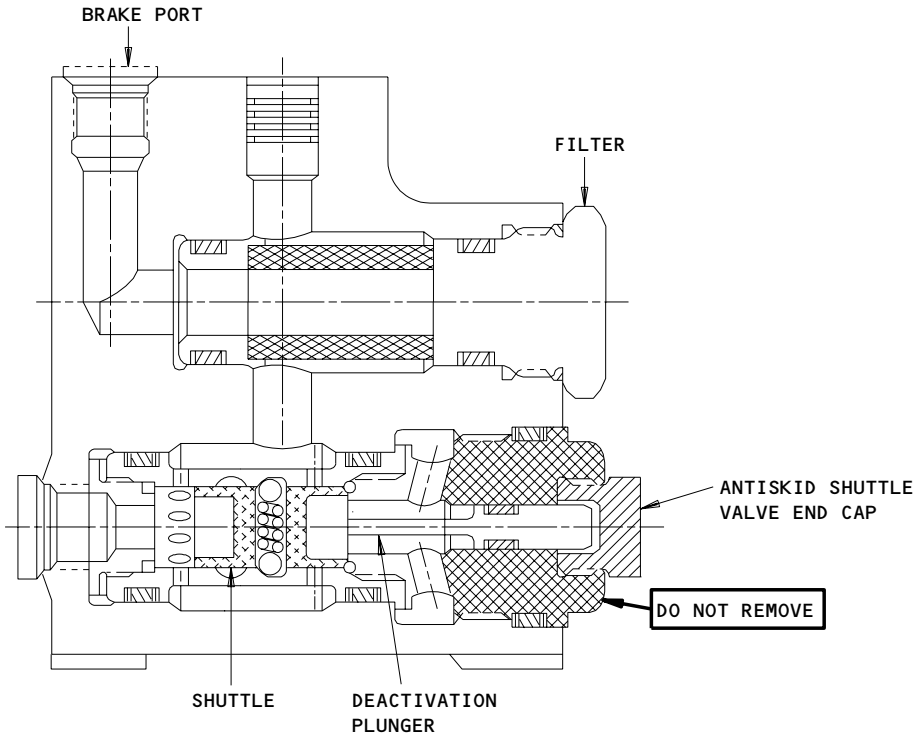
1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).
2) Put chocks at the landing gear wheels.
3) Remove the pressure from the right and center hydraulic systems (AMM 29-11-00/201).
4) Deactivate the alternate power source to the flaps and slats as follows:
   a) Open this circuit breaker on the main power distribution panel, P6, and attach a DO-NOT-CLOSE tag:

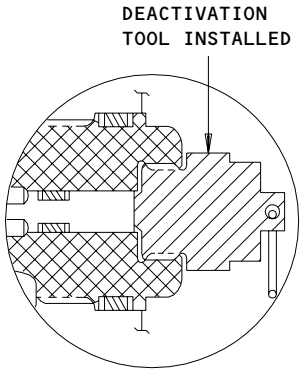
      06D24, ALTN PLAP PWR

5) Supply electrical power (AMM 24-22-00/201).
6) Fully push the two brake pedals and then release them to release the parking brake.

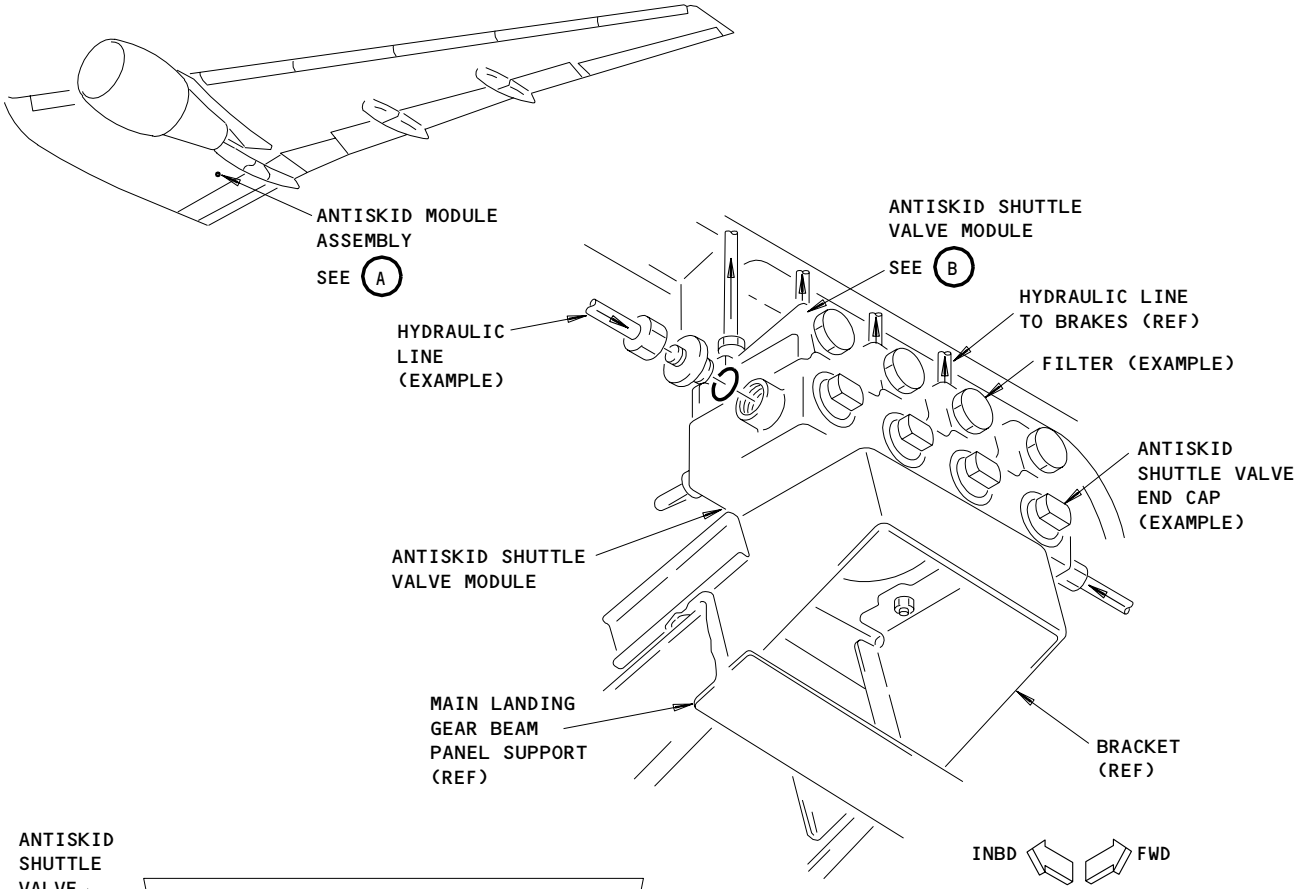
NOTE: You can use the Captain's or the First Officer's brake pedals to release the parking brake.

7) Make sure that the PARK BRAKE light on the quadrant stand, P10, is off.



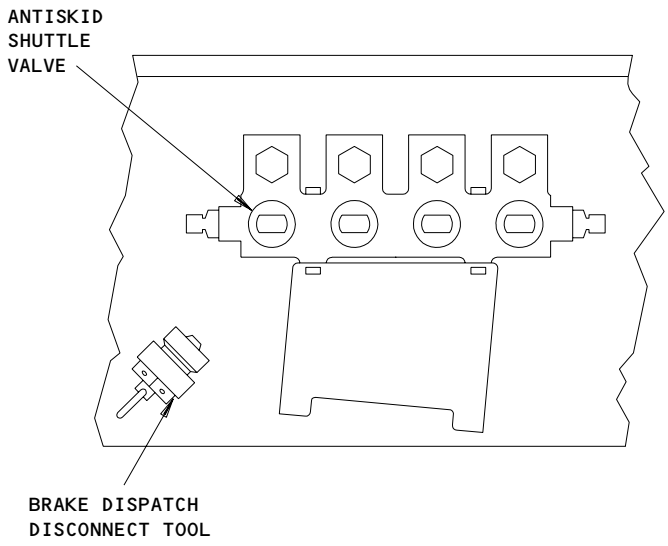


Antiskid Shuttle Valve
Figure 901



ANTISKID MODULE ASSEMBLY

A



ANTISKID SHUTTLE VALVE MODULE

B

NOTE: THE INSTALLATION OF THE ANTISKID SHUTTLE VALVE MODULE ON THE LEFT WING IS SHOWN, THE INSTALLATION FOR THE RIGHT WING IS EQUIVALENT.

Antiskid Shuttle Valve Module
Figure 901A

(b) To remove the hydraulic pressure from the parking brake accumulator, fully push and release the two brake pedals.

NOTE: You can use the Captain's or the First Officer's brake pedals.

1) Do the push and release cycle a minimum of 7 times.

NOTE: When the pressure is out of the brake accumulator, the brake pressure gage will stop its down movement.

2) Open these access panels to get access to the antiskid shuttle valve module (AMM 06-44-00/201):
a) 551TB, Left Hand Lower Wing Structure
b) 651TB, Right Hand Lower Wing Structure

CAUTION: DO NOT REMOVE MORE THAN THE END CAP OF THE SHUTTLE VALVE. IF YOU REMOVE MORE THAN THE END CAP OF THE SHUTTLE VALVE, YOU CAN CAUSE THE END VALVE TO EJECT.

3) Remove the slide plug from the applicable antiskid shuttle valve module (Table 901 and Fig. 901 and 901A).

NOTE: Table 901 identifies which shuttle valve slide plug should be removed to deactivate the applicable brake.

Table 901	
LEFT ANTISKID SHUTTLE VALVE MODULE	LEFT GEAR WHEEL BRAKE
*[1] VALVE "BRK A"	No.1 (FWD OUTBD)
*[1] VALVE "BRK B"	No.2 (FWD INBD)
*[1] VALVE "BRK C"	No.5 (AFT OUTBD)
*[1] VALVE "BRK D"	No.6 (AFT INBD)
RIGHT ANTISKID SHUTTLE VALVE MODULE	RIGHT GEAR WHEEL BRAKE
VALVE "BRK A"	No.7 (AFT INBD)
VALVE "BRK B"	No.8 (AFT OUTBD)
VALVE "BRK C"	No.3 (FWD INBD)
VALVE "BRK D"	No.4 (FWD OUTBD)

*[1] IDENTIFICATION IS MARKED ON MODULE

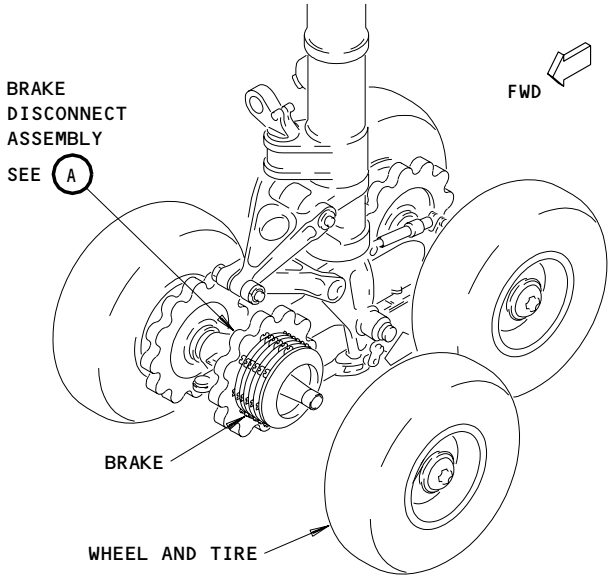
4) Install the brake dispatch assembly at the location for the shuttle valve end cap that you removed.
   a) Tighten the brake dispatch assembly to 50 pound-inches.
   b) Safety the brake dispatch assembly with lockwire.
5) Get access to the antiskid/autobrake control unit, located at E1-1 in the left miscellaneous electrical equipment center, P36.
   a) Put the brake test disable selector to the position for the brake which is deactivated.
6) Do these steps to make sure the brake is deactivated.
   a) Supply pressure to the right hydraulic system.
   b) Push and release the Captain's or the First Officer's brake pedals.
   c) Make sure the brake wear indicator pins for the deactivated brake (or pistons and adjustors) do not move or change position.

      NOTE: The brake wear indicator pins for the brakes that are not deactivated will move.

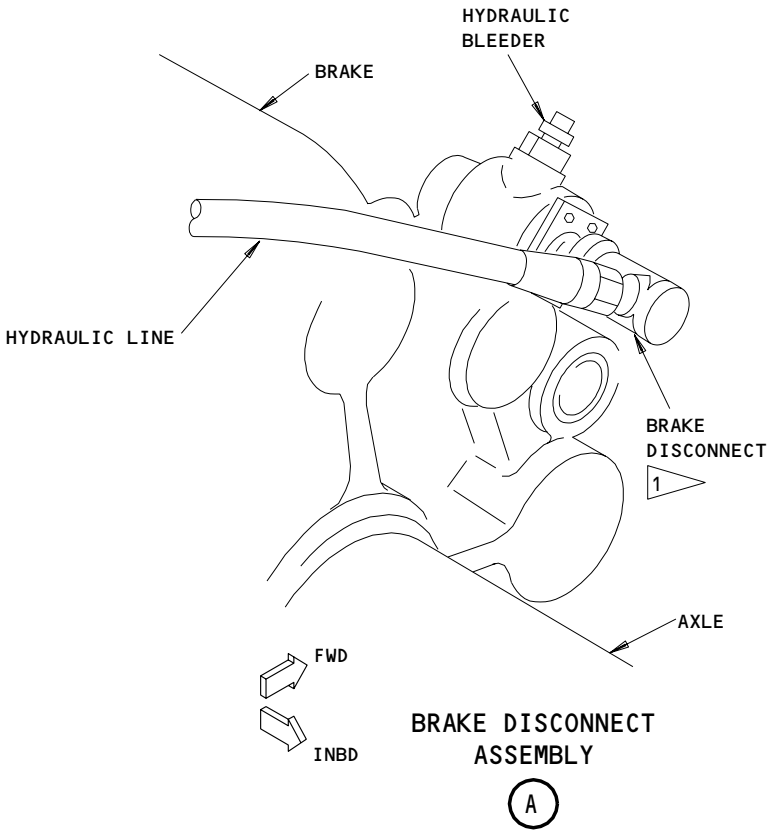
7) Put the airplane back to its usual condition.

S 049-258

(3) Procedure to deactivate the brake with the brake line disconnection is as follows (Fig. 901B):



MAIN LANDING GEAR



BRAKE DISCONNECT
ASSEMBLY
A

1 THERE ARE THREE DIFFERENT BRAKE DISCONNECT CONFIGURATIONS ON ANA AIRPLANES. THESE CONFIGURATIONS ARE SHOWN IN AMM 32-41-06/401.

Main Landing Gear Brake Disconnect Installation
Figure 901B

(a) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).
(b) Put chocks at the landing gear wheels.
(c) Supply electrical power (AMM 24-22-00/201).
(d) Fully push the two brake pedals and then release them to release the parking brakes.

NOTE: You can use the Captain's or the First Officer's brake pedals to release the parking brake.

1) Make sure the PARK BRAKE light on the quadrant stand, P10, is OFF.

(e) To remove the hydraulic pressure from the parking brake accumulator, fully push and release the two brake pedals.

NOTE: You can use the Captain's or the First Officer's brake pedals.

1) Do the push and release cycle a minimum of 7 times.

NOTE: When the pressure is out of the brake accumulator, the brake pressure gage will stop its down movement.

(f) Disconnect brake hydraulic line at the brake disconnect connection at the brake.
(g) Turn the brake bleed fitting approximately 1-1/2 turns.
1) Safety the brake bleed fitting in this position with lockwire to keep it in the open position.

NOTE: If the brake bleed fitting is open, it will prevent brake drag because of thermal effect.

(h) Get access to the antiskid/autobrake control unit, located at E1-1 in the left miscellaneous electrical equipment center, P36.
1) Put the brake test disable selector to the position for the brake which is deactivated.
(i) Supply pressure to the right hydraulic system.
1) Push the brake pedal to apply brake pressure.
2) Do a check for leaks.

TASK 32-00-00-449-261

7. DDG 32-41-1 Restoration - Wheel Brakes, One Brake Inoperative
(Fig. 901, 901A, 901B)

A. General
(1) This task contains steps to put the airplane back to its usual condition after operation with one brake inoperative.

B. References
(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels

(2) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(5) AMM 32-00-15/201, Landing Gear Door Locks
(6) AMM 32-00-20/201, Landing Gear Downlocks

C. Access

(1) Location Zones

550/650	Wing Trailing Edge
211/212	Control Cabin
731/741	Landing Gear
120	Main Equipment Center

(2) Access Panels

551TB	LH Wing Trailing Edge Access Panel
651TB	RH Wing Trailing Edge Access Panel
119AL	Main Equipment Center

D. Procedure

S 409-259

(1) Procedure to reactivate a brake that has been deactivated with the brake dispatch assembly as follows (Fig. 901, 901A):
   (a) Make sure the downlocks are installed on the main and nose gear (AMM 32-00-20/201).
   (b) Make sure the pressure is removed from the right and center hydraulic system (AMM 29-11-00/201).
   (c) Do the steps that follow to activate the brake:
      1) Remove the brake dispatch assembly from the applicable shuttle valve.
      2) Put the brake dispatch assembly in the stowed position.
      3) Install the slide plug on the shuttle valve. Tighten to 50 pound-inches (5.6 Newton-meters) torque.
      4) Safety the slide plug to the sleeve plug and to the filter with lockwire.

5) Gain access to the anitskid/autobrake control unit on self E1-1(-200/-300)or E1-5 (-400ER) of the main electronic/electrical equipment center.
a) Positon brake test disable selector to the normal position.

S 449-262

(2) Procedure to reactivate a brake that has been deactivated at the brake disconnect fitting (Fig. 901B):
(a) Make sure the downlocks are installed on the main and nose gear (AMM 32-00-20/201).
(b) Make sure the pressure is removed from the right and center hydraulic system (AMM 29-11-00/201).
(c) Make sure the tires have chocks intalled around them.
(d) Release the parking brake.
(e) Fully push the captain's brake pedaal twelve times to remove the pressure from the brake accumulator.
(f) Do the steps that follow to activate the brake:
1) Clean the brake coupling halves on the brake hose and on the brake.
2) Connect the hose half of the brake disconnect to the brake half of the disconnect (AMM 32-41-06/401).

NOTE: There are three different configurations of brake disconnects in service. See AMM 32-41-06/401 for information about the brake disconnect configurations.

(g) Do these steps to do a leak check of the brake disconnect:
1) Supply hydraulic power (AMM 29-11-00/201).
2) Fully push the brake pedals and hold for two minutes.

NOTE: You can set the parking brake to hold the brake pedals.

3) Make sure there are no leaks around the brake disconnect.
4) Release the brakes.
5) Gain access to the anitskid/autobrake control unit on self E1-1(-200/-300)or E1-5 (-400ER) of the main electronic/electrical equipment center.
a) Positon brake test disable selector to the normal position.

TASK 32-00-00-049-296

8. DDG 32-41-2 Preparation - Brake Source Light Inoperative
A. General
(1) This task gives the maintenance steps which prepare the airplane for flight with the Light on Brake Source Inoperative.
(2) Put a placard 'LIGHT INOP' on the BRAKE SOURCE indicator light on the Captain's instrument panel, P1.

B. References
(1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(2) AMM 32-00-20/201, Landing Gear Downlocks

C. Procedure

S 869-318

(1) Flight dispatch can cause the BRAKE SOURCE indicator light to not operate if these items are done:
(a) Make sure the normal and the alternate hydraulic brake systems and brake accumulators operate.
1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).
2) Do the steps that follow to release the parking brakes:
a) Push the Captain's or the First Officer's brake pedals to the stops.
b) Release the brake pedals.
3) Use one electric pump to pressurize the center hydraulic system (AMM 29-11-00/201).
a) Make sure the R SYS PRESS light does not come on.
4) Use one electric pump to pressurize the center hydraulic system (AMM 29-11-00/201).
a) Make sure the C SYS PRESS light does not come on.
5) Push and release the Captain's or the First Officer's brake pedals.

NOTE: You must push and release the two brake pedals for the Captain or the two brake pedals for the First Officer at the same time.

When you push the brakes, you must let a minimum of 5 seconds go by before you push the brakes again.

a) The BRAKE PRESS gage, on the First Officer's instrument panel, P3, will momentarily go to 2000-2500 psig when you push the brake pedals.
6) Make sure the BRAKE PRESS gage, on the First Officer's instrument panel, P3, shows 2850-3500 psig.
7) Remove the pressure from the right hydraulic system.

NOTE: Do not push the brake pedals to remove the pressure.

a) Make sure the R SYS PRESS light comes on.
8) Push and release the Captain's or the First Officer's brake pedals.
a) Make sure the BRAKE PRESS gage, on the First Officer's instrument panel, P3, does not go down when you push the brakes.
b) Make sure the center system pressure (shown on the EICAS ELEC/HYD page) momentarily goes to 2000-2500 psig each time you push the brakes.

9) Make sure the BRAKE PRESS gage, on the First Officer's instrument panel, P3, shows 2850-3500 psig.
10) Remove the pressure from the center hydraulic system.

NOTE: Do not push the brake pedals to remove the pressure.

11) Push and release the Captain's or the First Officer's brake pedals a minimum of 7 times.
a) Make sure the BRAKE PRESS gage, on the First Officer's instrument panel, P3, showes a lower value each time you push the brake pedals.
b) The last time you push the brake pedals the BRAKE PRESS gage must show 850-1200 psig.

NOTE: If these items are true, the brake accumulator is serviced correctly.

TASK 32-00-00-449-295

9. DDG 32-41-2 Restoration - Brake Source Light Inoperative

A. General
(1) This task contains steps to put the airplane back to its usual condition after operation with the brake source light inoperative.

B. References
(1) AMM 32-00-20/201, Landing Gear Downlocks

C. Access
(1) Location Zones
211/212 Control Cabin

D. Procedure

S 969-364
(1) Replace the inoperative "BRAKE SOURCE"indicator light.

S 089-365
(2) Remove the "LIGHT INOP" placard from from the "BRAKE SOURCE" indicator light.

TASK 32-00-00-049-297

10. DDG 32-42-1 Preparation - Antiskid System Inoperative

A. General
(1) This task gives the maintenance steps which prepare the airplane for flight with the Antiskid System Inoperative.
(2) Put the applicable placard 'ANTISKID INOP' or 'ONE BRAKE INOP' on the ANTISKID switch or the ANTISKID light (the switch or the light is on the Pilots' overhead panel, P5).
(3) Put the placard 'AUTOBRAKE INOP' on the Captains instrument panel, P1, if you remove electrical power from the antiskid system with one of the steps that follow:
(a) AIRPLANES WITH ANTISKID SWITCH;
Use the antiskid switch to put the ANTISKID to OFF.

(b) Use the four circuit breakers (ANTISKID 1-5, ANTISKID 2-4, ANTISKID 3-7, ANTISKID 4-8) to put the ANTISKID to OFF.

NOTE: The status message ALTN ANTISKID can come on to show part of the alternate brake system does not operate. This is ok if you have alternate brakes on at least 6 of the wheels.

B. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

C. Procedure

S 049-320

(1) Do the steps that follow if one brake is deactivated:
(a) Use the procedure in DDG 32-41-1 to deactivate the brake.
(b) If the status message ALTN ANTISKID is shown, do the steps that follow to make sure the alternate manual brakes operate:
1) Supply electrical power (AMM 24-22-00/201).
2) Put chocks at the landing gear wheels.
3) Release the parking brake.
4) Remove the pressure from the right hydraulic system (AMM 29-11-00/201).
5) Supply pressure to the center hydraulic system (AMM 29-11-00/201).
6) Push the brake pedals to release the brakes.

NOTE: IF you put a cap on the brake lines to deactivate the brakes, it is not necessary to manually operate the brakes.

7) If the brakes do not operate when you push the brake pedals, it is not necessary to deactivate the applicable alternate antiskid valve (Ref MEL, item 32-42-2).

TASK 32-00-00-449-298

11. DDG 32-42-1 Restoration - Antiskid System Inoperative

A. General
(1) This task contains the steps to put the airplane back to its usual condition after operation with the antiskid system or one brake inoperative.

B. References
(1) FIM 32-Fault Code Index (Antiskid/Autobrake System)

C. Access
(1) Location Zones

211/212	Control Cabin
731/741	Landing Gear
120	Main Equipment Center

D. Procedure

S 819-366

(1) Do the fault isolation of the antiskid system for the reported faults (FIM 32-Fault Code Index).

S 089-367

(2) Remove the applicable placard "ANTISKID INOP" or "ONE BRAKE INOP" and, if applicable, the placard "AUTOBRAKE INOP".

TASK 32-00-00-049-299

12. DDG 32-42-2 Preparation - Alternate Antiskid Valves Inoperative (Fig. 902)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Alternate Antiskid Valves Inoperative.

(2) Put a placard 'ALT ANTISKID VALVE INOP' on the ANTISKID light.

B. References

(1) AMM 24-22-00/201, Electrical Power - Control

C. Procedure

S 719-351

(1) Do the steps that follow to make sure the wheels have manual brakes:

(a) Supply electrical power (AMM 24-22-00/201).

(b) Put chocks at the landing gear wheels.

(c) Remove the pressure from the right hydraulic system (AMM 29-11-00/201).

(d) Supply hydraulic power to the center hydraulic system (AMM 24-22-00/201).

(e) Push and release the brake pedals.

1) Look at the wear indicator pins for the brake units to make sure all of the brakes are applied and released.

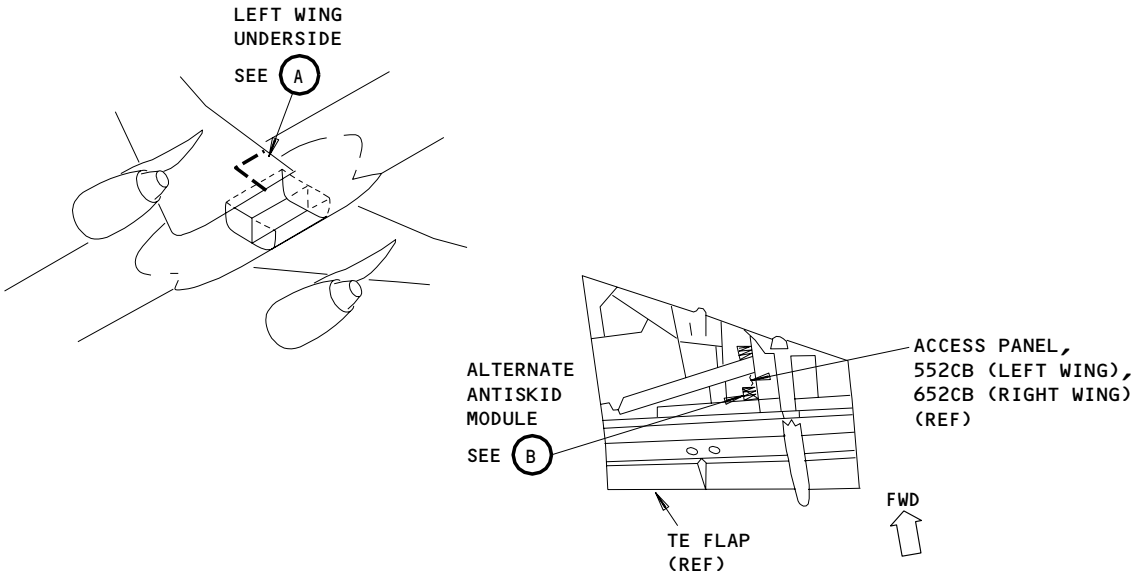
S 869-323

(2) If there is no manual braking, do these steps to deactivate the alternate antiskid for the applicable brakes:

(a) Disconnect the electrical connector for the applicable alternate antiskid valve (Fig. 902).

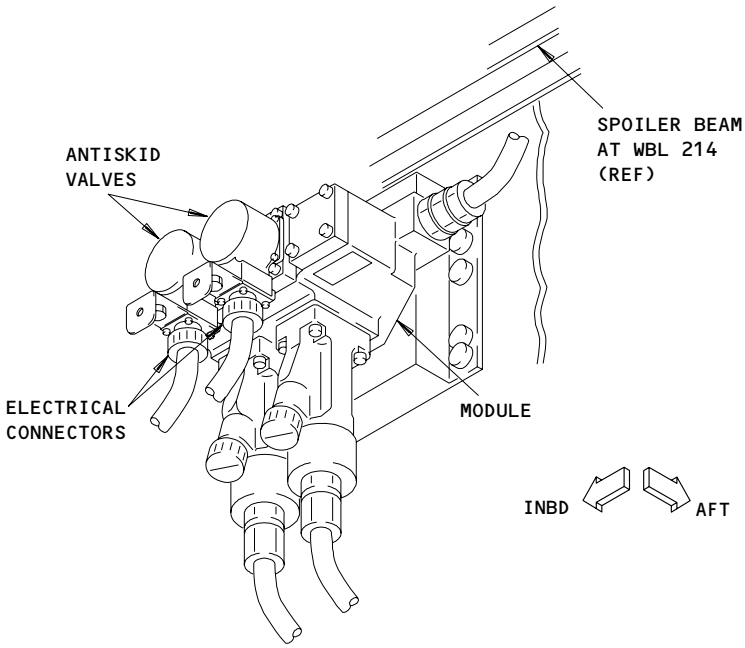
WHEELS	VALVE NO.	VALVE LOCATION
1 & 2	V37	L WING, OUTBOARD
3 & 4	V39	R WING, OUTBOARD
5 & 6	V38	L WING, INBOARD
7 & 8	V40	R WING, INBOARD

1) Put the electrical connector in a safe location.



LEFT WING UNDERSIDE

A



ALTERNATE ANTISKID MODULE

B

Alternate Antiskid Valves
Figure 902

(b) Push and release the brake pedals.
1) Look at the wear indicator pins for the brake units to make sure all of the brakes are applied and released.

TASK 32-00-00-449-300

13. DDG 32-42-2 Restoration - Alternate Antiskid Valves Inoperative (Fig. 902)

A. General
(1) This task contains steps to put the airplane back to its usual condition after operating with an alternate antiskid valve inoperative.

B. References
(1) FIM 32-Fault Code Index (Antiskid/Autobrake System)

C. Access
(1) Location Zones
211/212 Control Cabin
731/741 Landing Gear
120 Main Equipment Center

D. Procedure

S 919-368
(1) Do the fault isolation of the antiskid system for the reported faults (FIM 32-Fault Code Index).

S 089-369
(2) Remove the placard "ALT ANTISKID VALVE INOP" from the antiskid light.

TASK 32-00-00-049-301

14. DDG 32-42-3 Preparation - Antiskid Light Inoperative

A. General
(1) This task gives the maintenance steps which prepare the airplane for dispatch with the Antiskid Light Inoperative.
(2) Put a placard 'LITE INOP' on the antiskid light on the pilots' overhead panel, P5.

B. References
(1) AMM 24-22-00/201, Electrical Power - Control

C. Access
(1) Location Zones
211/212 Control Cabin
731/741 Landing Gear

D. Procedure

S 719-325
(1) If the ANTISKID light on the pilots' overhead panel, P5, does not operate, do these step to make sure the antiskid system operates:
(a) Supply electrical power (AMM 24-22-00/201).
(b) Put the chocks at the landing gear wheels.
(c) Release the parking brake.

(d) Do these steps on the antiskid/autobrake control unit:

NOTE: You will find the antiskid/autobrake control unit on the E1-1 shelf in the electrical equipment center. You can get access the electrical equipment center through the access door, 119AL.

1) Push the BIT switch until the control unit shows TEST END, to get all of the faults.
   a) Make sure there is no PARK BRAKE message shown.

      NOTE: If a PARK BRAKE message is shown, the parking brake control/valve does not agree.

   b) Push the RESET switch to erase the memory.
   c) To make sure no other faults are shown, push the BIT switch until TEST END is shown.

TASK 32-00-00-449-302

15. DDG 32-42-3 Restoration - Antiskid Light Inoperative

A. General
   (1) This task contains the steps to put the airplane back to its usual conditon after operation with the antiskid light inoperative.

B. References
   (1) FIM 32-Fault Code Index (Antiskid/Autobrake System)

C. Access
   (1) Location Zones

211/212	Control Cabin
731/741	Landing Gear
120	Main Equipment Center

D. Procedure

S 819-370
   (1) Do the fault isolation of the antiskid system for the reported faults (FIM 32-Fault Code Index).

S 089-371
   (2) Remove the "LITE INOP" placard from the antiskid light on the pilots overhead panel, P5.

TASK 32-00-00-049-303

16. DDG 32-42-4 Preparation - Autobrake System Inoperative (Fig. 903)

A. General
   (1) This task gives the maintenance steps which prepare the airplane for flight with the Autobrake System Inoperative.
   (2) Put a placard 'INOP' on the autobrake system.

B. References
   (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
   (2) AMM 32-00-15/201, Landing Gear Door Locks
   (3) AMM 32-00-20/201, Landing Gear Downlocks

C. Procedure (Fig. 903)

S 869-327

(1) Do these steps if the AUTOBRAKE light comes on when you put the AUTOBRAKE system switch to the OFF position:
  (a) Put the right hydraulic system to the OFF position.
  (b) Put the center hydraulic system to the ON position.
  (c) Apply the brakes.

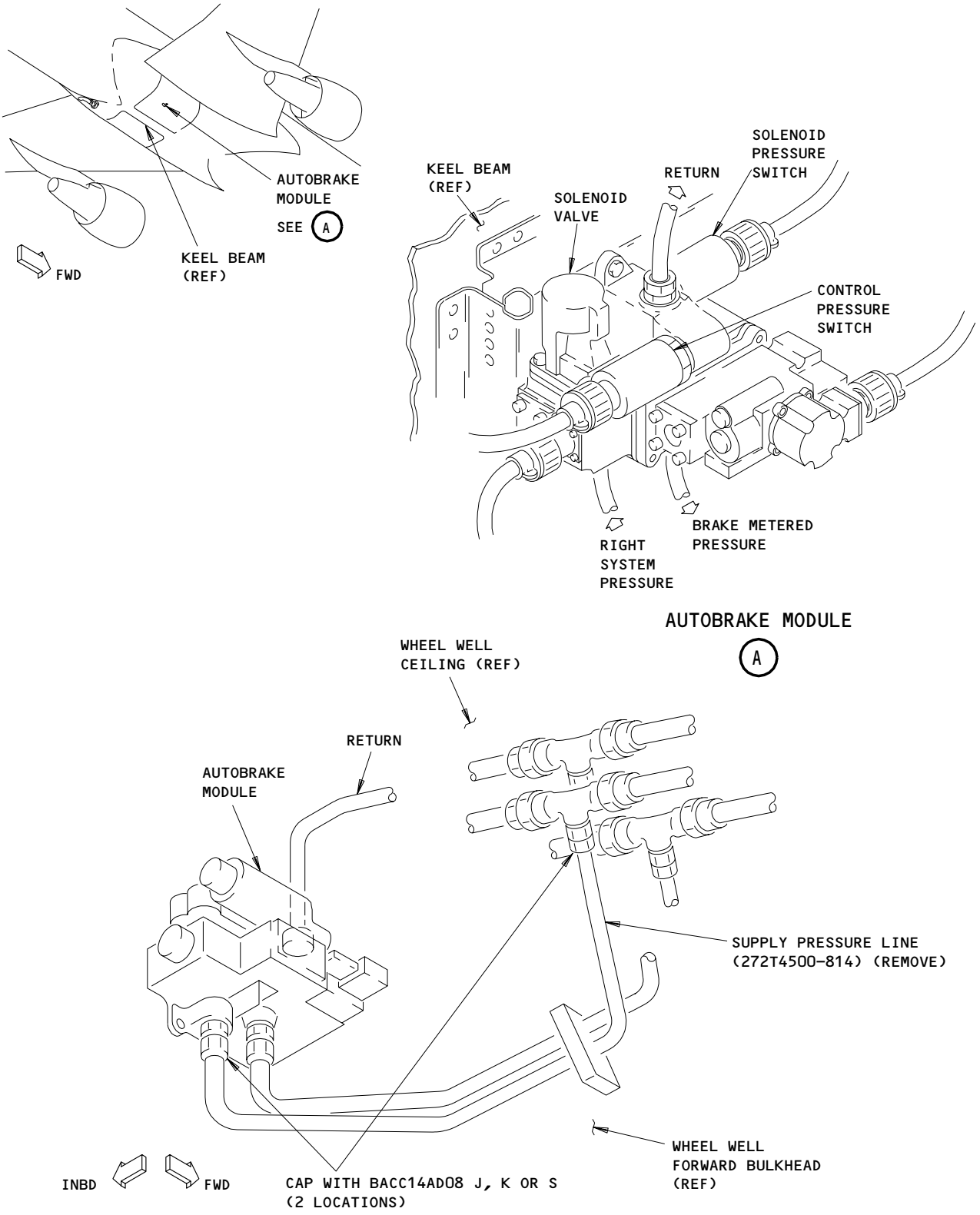
    NOTE: The brake pressure will not change when you apply the brakes.

  (d) If the AUTOBRAKES light (on the Captains instrument panel, P1) stayed on, the solenoid valve is closed.
    1) Put a placard 'INOP' on the autobrake system
  (e) If the AUTOBRAKES light (on the Captains instrument panel, P1) goes out, the solenoid valve is open.
    1) Do these steps to hydraulically deactivate the autobrake system:
      a) Remove the pressure from the right hydraulic system (AMM 29-11-00/201).
      b) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

        WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

      c) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).
      d) Get access to the autobrake module through the wheel well for the right main landing gear.

        NOTE: The autobrake module is found on the web support bracket for the keel beam, near the forward bulkhead.



Autobrake Module
Figure 903

G99010

e) Disconnect the supply pressure line (272T4500-814) at the first tee on the autobrake module.
f) Remove the supply pressure line.
g) Install 2 caps on the openings at the autobrake module and at the tee (Use BACC14AD08J, K or S caps).
h) Pressurize the right hydraulic system (AMM 29-11-00/201).
i) Examine the hydraulic system for leaks.

TASK 32-00-00-449-304

17. DDG 32-42-4 Restoration - Autobrake System Inoperative (Fig. 903)

A. General

(1) This task gives the maintenance steps which puts the airplane back to its usual condition after operation with the autobrake system inoperative

B. References

(1) FIM 32-Fault Code Index (Antiskid/autobrake System).
(2) AMM 29-11-00/201, Pressurize/Depreesurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Doorlocks
(4) AMM 32-00-20/201 Landing Gear Downlocks

C. Access

(1) Location Zone
144 Right Main Landing Gear Wheel Well

D. Procedure

S 919-372

(1) If the autobrake system was hydraulically deactivated at the autobrake module, do these steps to activate the autobrake system.
(a) Remove the pressure from the right hydraulic system (AMM 29-11-00/201).
(b) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(c) Open the doors for the landing gear ands install the door locks (AMM 32-00-15/201).
(d) Get access to the autobrake module through the wheel well for the right main landing gear.

NOTE: The autobrake module is found on the web support bracket for the keel beam, near the forward bulkhead.

(e) Remove the cap from the system PRESSURE hydraulic line (272T4500-814) at the hydraulic module (AMM 32-42-09/401).
(f) Remove the plug from the autobrake module PRESSURE port.
(g) Connect the hydraulic line (272T4500-814) to the PRESSURE port on the valve module.

S 819-373

(2) Do the fault isolation for the reported autobrake system faults (32-FIM Fault Code Index).

S 089-374

(3) Remove the "INOP" placard from the autobrake selector switch.

TASK 32-00-00-049-305

18. DDG 32-44-2 Preparation - Parking Brake Valve Inoperative (Fig. 904)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Parking Brake Valve Inoperative.
(2) Put a placard 'PARK BRK VLVE CLOSED' near the parking brake.
(3) Put a placard 'INOP' on the parking brake light on the aisle stand.
(4) Tell the flight crew that the antiskid system does not operate when the parking brake valve is in the closed position.

B. References

(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-00-20/201, Landing Gear Downlocks

C. Access

(1) Location Zone
144 Right Main Landing Gear Wheel Well

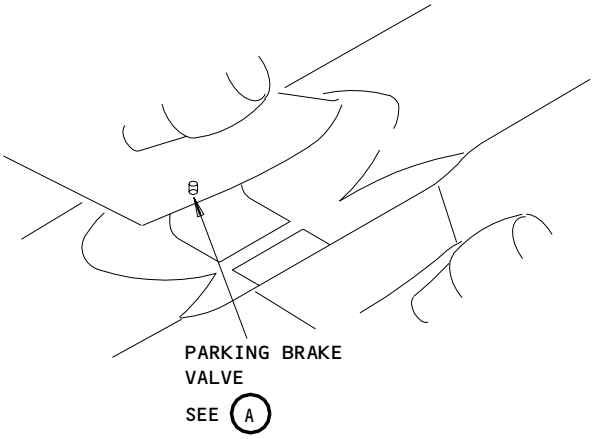
D. Procedure

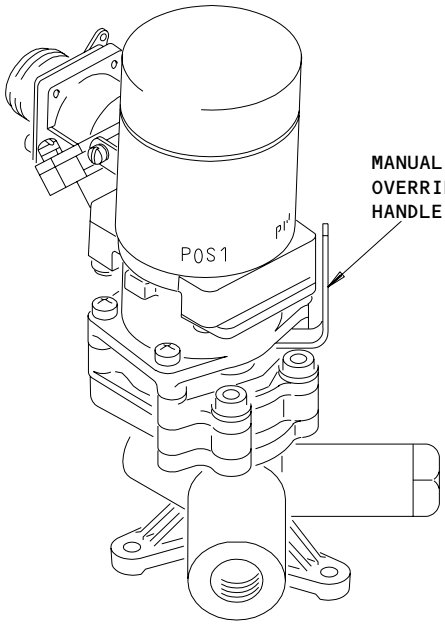
S 719-352

(1) Do the steps that follow to make sure the parking brake valve is in the fully closed position:
(a) Supply electrical power to the airplane (AMM 24-22-00/201).
(b) Put chocks at the landing gear wheels.
(c) Release the parking brake.
(d) Open this circuit breaker on the main power distribution panel, P6, and attach a DO-NOT-CLOSE tag:
1) 6F04, PARKING BRAKE VLV

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(e) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).
(f) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).
(g) Get access to the parking brake valve through the wheel well for the right main landing gear (Fig. 904).
(h) Manually put the position indicator for the parking brake valve to the fully closed position (POS 2).





PARKING BRAKE VALVE
A

Parking Brake Valve
Figure 904

S 869-330
(2) With the parking brake released, do the steps that follow:
(a) Make sure the antiskid light is on.
(b) Make sure the EICAS message, ANTISKID OFF, is on.

S 869-331
(3) Put the airplane back to its usual condition.

S 869-332
(4) Tell dispatch the antiskid system does not operate.

TASK 32-00-00-449-306

19. DDG 32-44-2 Restoration - Parking Brake Valve Inoperative (Fig. 904)
A. General
(1) This task contains steps to put the airplane back to its usual condition after operating with the Parking Brake Valve Inoperative.
B. References
(1) FIM 32-44-00/101, Parking Brake System
C. Access
(1) Location Zone
211/212 Control Cabin

D. Procedure

S 819-375
(1) Do the fault isolation of the Parking Brake System (FIM 32-44-00/101).

S 089-376
(2) Remove the placard 'INOP' on the parking brake light on the aisle stand.

S 089-377
(3) Remove the placard 'PARK BRK VLVE CLOSED' near the parking brake.

TASK 32-00-00-049-307

20. DDG 32-44-3 Preparation - Park Brake Light Inoperative
A. General
(1) This task gives the maintenance steps which prepare the airplane for flight with the Parking Brake Light Inoperative.
(2) Put a placard 'LIGHT INOP" on the PARK BRAKE indicator light on the quadrant stand panel, P10.
B. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

C. Access
(1) Location Zone
211/212 Control Cabin

D. Procedure

S 869-348
(1) You can fly the airplane when the PARK BRAKE indicator does not operate if you make sure the parking brake valve operates normally as follow:
(a) If it is installed, put the antiskid switch to ON.
(b) Make sure the ANTISKID indicator light monitors the operation of the parking brake valve as follows:
1) Supply electrical power to the brake system and the parking brake system (AMM 24-22-00/201).
2) Supply pressure to the right hydraulic system (AMM 29-11-00/201).
3) Close this circuit breaker on the main power distribution panel, P6:
4) 6F04, PARKING BRAKE VLV
5) Close this circuit breaker on the overhead circuit breaker panel, P11:
a) 11A35, IND LIGHTS 3
6) Do the steps that follow at the same time to set the parking brake:
a) Pull the PARK BRAKE handle, on the quadrant control stand, P10.
b) Push the Captain's 2 brake pedals fully and then release them.
7) Make sure the ANTISKID indicator light, on the Pilots' overhead panel, P5, is not on.
8) Open the circuit breaker 6F04, PARKING BRAKE VLV.
a) After approximately 3 seconds, make sure the ANTISKID indicator light comes on.
9) Close the circuit breaker 6F04, PARKING BRAKE VLV.
a) Make sure the ANTISKID indicator light goes off.
10) Push and hold the configuration test switch on the right side panel, P61, in the T/O position.

NOTE: The warning indications (siren, master warning, CONFIG light) will come on when you push the configuration test switch.

11) Make sure the takeoff warning message for the PARKING BRAKE comes on.
12) Release the parking brakes.
13) Make sure the takeoff warning message for the PARKING BRAKE goes off.
14) Make sure the ANTISKID light is not on.

15) Open the circuit breaker, 6FO4, PARKING BRAKE.
a) After approximately 3 seconds, make sure the ANTISKID light does not come on.

TASK 32-00-00-449-308

21. DDG 32-44-3 Restoration - Park Brake Light Inoperative

A. General
(1) This task contains steps to put the airplane back to its usual condition after operating with the Parking Brake Light Inoperative.

B. References
(1) FIM 32-44-00/101, Parking Brake System

C. Access
(1) Location Zone
211/212 Control Cabin

D. Procedure

S 819-378
(1) Do the fault isolation of the Parking Brake System (FIM 32-44-00/101).

S 089-379
(2) Remove the placard 'LIGHT INOP' on the PARK BRAKE indicator light on the quadrand stand panel, P10.

TASK 32-00-00-049-309

22. DDG 32-44-5 Preparation - BRAKE PRESS Gage (Flight Deck) Inoperative
(Fig. 905)

A. General
(1) This task gives the maintenance steps which prepare the airplane for flight with the BRAKE PRESS Gauge Inoperative.
(2) Put a placard 'GAGE INOP" on the BRAKE PRESS pressure gage on the First Officers' instrument panel, P3.

B. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks

C. Access
(1) Location Zone
144 Right Main Landing Gear Wheel Well

D. Procedure

S 719-353
(1) You can fly the airplane when the BRAKE PRESS pressure gage does not operate, if you verify that the Brake Accumulator is normal once each flight day and the right low system PRESS light operates normally.
(a) Make sure the brake system and the brake accumulator operate correctly.

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).
2) Make sure chocks are at the landing gear wheels.
3) Remove the pressure from the right and center hydraulic systems (AMM 29-11-00/201).
   a) Make sure the R SYS PRESS indicator light on the Pilot's overhead panel, P5, is on.
4) Supply electrical power to the brake system (AMM 24-22-00/201).
5) Pressurize the right hydraulic system.
   a) Make sure the R SYS PRESS indicator light on the Pilot's overhead panel, P5 is off.
6) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).
7) Get access to the accumulator on the aft inboard side of the wheel well for the right main landing gear (Fig. 905).
8) Make sure the pressure gage shows 3000 to 3500 psig.

   NOTE: The pressure gage is located forward of the accumulator.

9) Put the hydraulic pump to the OFF position.
10) Do these steps to remove the pressure from the parking brake accumulator:

    NOTE: You can use the 2 Captain's or the 2 First Officer's brake pedals.

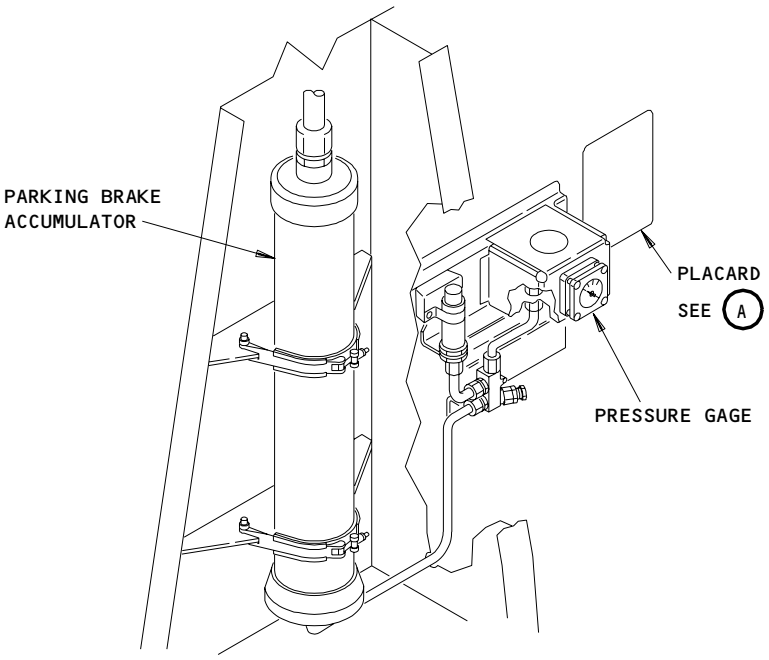
    a) Fully push and release the Captain's or the First Officer's brake pedals a minimum of 10 times.

       NOTE: There must be a minimum of 5 seconds between each brake application.

    b) Make sure the R SYS PRESS indicator light on the Pilot's overhead panel, P5 comes on.
11) Make sure the accumulator pressure is 850 to 1200 psig.

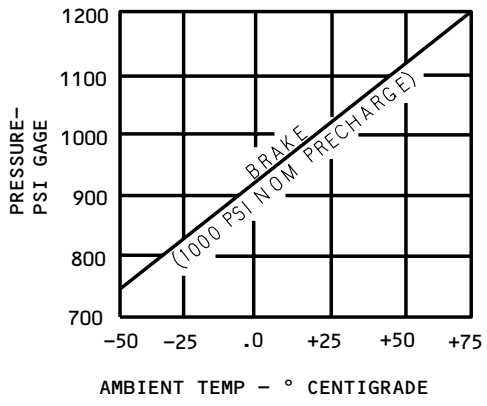
    NOTE: On a day when the temperature is less than 68°F (20°C), the correct accumulator pressure is less than 1000 psi. The correct pressure changes with the ambient temerature. The pressure is shown on a placard near the accumulator.

12) Put the airplane back to its usual condition.



CHARGING INSTRUCTIONS–
HYDRAULIC ACCUMULATOR.

WITH SYSTEM DEPRESSURIZED,
CHARGE WITH DRY NITROGEN
TO APPLICABLE PRESSURE PER
CHART BELOW ±100 PSI



PLACARD
(A)

Brake Press Gage
Figure 905

TASK 32-00-00-449-354

23. DDG 32-44-5 Restoration - BRAKE PRESS Gage (Flight Deck) Inoperative
(Fig. 905)

A. General

(1) This task contains steps to put the airplane back to its usual condition after operating with a BRAKE PRESS pressure gage (Flight Deck) inoperative.

B. Procedure

S 969-380

(1) Do the Hydraulic Brake Pressure Indication - Removal/Installation (AMM 32-41-15/401).

S 089-381

(2) Remove the placard 'GAGE INOP' on the BRAKE PRESS pressure gage on the First Officer's instrument panel, P3.

TASK 32-00-00-049-311

24. DDG 32-45-2 Preparation - Nose Wheel Snubbers Damaged/Missing

A. General

(1) Another name for Nose Wheel Snubbers is Nose Wheel Spin Brake.

(2) Put a placard in Aircraft Flight Log - 'NOSE WHEEL SNUBBERS DAMAGED OR MISSING'.

B. Access

(1) Location Zone

115/116 Nose Landing Gear Wheel Well

C. Procedure

S 219-355

(1) Make sure there are no exposed bolts or metal pieces which could cut the tire.

(a) If part of the brake shoe pad is missing, remove any exposed bolts/rivets as necessary.

(b) If the spring arm is broken, remove the bolts and remaining pieces.

TASK 32-00-00-449-356

25. DDG 32-45-2 Restoration - Nose Wheel Snubbers Damaged/Missing

A. General

(1) This task contains steps to put the airplane back to its usual condition after operating with a missing or damaged nose wheel snubber (spin brake).

B. References
(1) AMM 32-45-05/201, Nose Wheel Spin Brake
C. Access
(1) Location Zone
115/116 Nose Landing Gear Wheel Well

D. Procedure

S 409-382
(1) Do the Installation of the Spin Brake (AMM 32-45-05/201).

S 089-383
(2) Remove the placard 'NOSE WHEEL SNUBBERS DAMAGED OR MISSING' in the Aircraft Flight Log.

TASK 32-00-00-049-313
26. DDG 32-51-1 Preparation - Rudder Pedal Nose Wheel Steering Inoperative
A. General
(1) This task gives the maintenance steps which prepare the airplane for flight with the Rudder Pedal Nose Wheel Steering Inoperative.
(2) Put a placard 'RUDDER PEDAL NWS INOP' near the Pilot's and the First Officer's airspead indicators.
B. References
(1) AMM 32-00-20/201, Landing Gear Downlocks
C. Access
(1) Location Zone
119 Main Equipment Center (Left)
211 Control Cabin (Left)
212 Control Cabin (Right)

D. Procedure

S 289-338
(1) Examine the rudder pedal interconnect mechanism which is below the floor of the flight compartment.
(a) Make sure the failure of the interconnect mechanism will not touch the other system controls.

S 719-339
(2) To do the test for the tiller steering system, do these steps:
(a) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).
(b) Put the towing lever, located on the steering metering valve module, to the TOW POSITION.
1) Install the lockpin for the towing lever.
(c) Do the steps that follow to make sure the tiller steering system operates correctly with the Captain's tiller:
1) Turn the Captains's tiller handle from the center position to the left until the adjustable stop bolt on the trunnion drum touches the stationary stop.
2) Hold the tiller handle in this position.

3) Make sure the angular displacement of the steering collar is 65 +/-1 degrees.
4) Release the Captain's tiller handle, and allow it, manually unassisted, to return to the neutral (center position).
5) Make sure the Captain's tiller handle goes to the neutral in 4 seconds or less.
6) Make sure that the steering collar return to neutral within -1.5 to +1.5 degrees.
7) Turn the Captain's tiller handle to the right and do the steps again.

(d) Put the airplane back to its usual condition.

TASK 32-00-00-449-357

27. DDG 32-51-1 Restoration - Rudder Pedal Nose Wheel Steering Inoperative

A. General

(1) This task contains steps to put the airplane back to its usual condition after operating with the Rudder Pedal Nose Wheel Steering Inoperative.

B. References

(1) AMM 32-00-20/201, Landing Gear Downlocks
(2) AMM 32-51-02/401, Centering and Rudder Interconnect Mechanism

C. Access

(1) Location Zone

119 Main Equipment Center (Left)
211 Control Cabin (Left)
212 Control Cabin (Right)

D. Procedure

S 089-384

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 969-385

(2) Replace the rudder pedal steering interconnect mechanism (AMM 32-51-02/401).

S 089-386

(3) Remove the placard 'RUDDER PEDAL NWS INOP' near the Pilot's and the First Officer's airspead indicators.

TASK 32-00-00-049-281

28. DDG 32-61-1 Preparation - Landing Gear Doors Light System Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the landing gear DOORS light inoperative.

(2) Put a placard 'LITE INOP' on the landing gear doors light.

B. References

(1) AMM 32-00-15/201, Landing gear Door Locks

(2) AMM 32-00-20/201, Landing Gear Downlocks

C. Access

(1) Location Zones

115 Nose Landing Gear Wheel Well
143 Main Landing Gear Wheel Well (Left)
144 Main Landing Gear Wheel Well (Right)
212 Control Cabin (Right)

D. Procedure

S 499-268

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 499-269

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

(a) After 35 seconds, make sure the advisor level message, GEAR DOORS, is shown.

S 099-270

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

TASK 32-00-00-449-290

29. DDG 32-61-1 Restoration - Landing Gear Doors Light System Inoperative

A. General

(1) This task contains steps to put the airplane back to its usual condition after operation with the landing gear door indication system inoperative.

B. References

(1) FIM 33-Fault Code Index (Lighting System)
(2) WDM 32-61-14

C. Procedure

S 819-343

(1) Do the fault isolation for the indicator lights (FIM 33-Fault Code Index).

NOTE: Look at the fault codes that begin with 33-13 and 33-16 and find the applicable problem.

S 819-344

(2) If the problem continues, examine and repair the circuit associated with the indicator light (WDM 32-61-14).

S 449-341

(3) Remove the placard 'LITE INOP' from the DOORS light (P3 panel).

TASK 32-00-00-049-286

30. DDG 32-61-2 Preparation - Landing Gear Door Latch Proximity Sensor Inoperative

A. General

(1) This task gives the maintenance steps to operate the airplane with a landing gear door latch sensor inoperative.
(2) If one of the eight door latch sensors is inoperative, an EICAS status message "LDG GEAR MONITOR" will usually be shown.

(3) Put a placard '(NO. 1) (NO. 2) (L) (R) MLG DR SENSOR INOP' or '(NO. 1)(NO. 2) (L) (R) NG DR SENSOR INOP' near the applicable EICAS screen.

B. References

(1) AMM 24-22-00/201, Electrical Power - Control

C. Access

(1) Location Zones

120 Main Equipment Center

(2) Access Panels

119AL Main Equipment Center

D. Procedure

S 749-284

(1) Do these steps to make sure that only one door latch sensor is inoperative:

(a) Supply electrical power (AMM 24-22-00/201).

(b) Find the Proximity Switch Electronics Unit (PSEU) in the main E/E equipment center.

(c) Do the PSEU BITE test.

NOTE: The sensor that does not operate will be shown on the PSEU instruction placard as 'L LATCH LOCKED', 'R LATCH LOCKED', 'L NOSE DOOR CLOSED', OR 'R NOSE DOOR CLOSED'.

1) Make sure that only one sensor is inoperative.

TASK 32-00-00-449-358

31. DDG 32-61-2 Restoration - Landing Gear Door Latch Proximity Sensor Inoperative

A. General

(1) This task contains steps to put the airplane back to its usual condition after operation with a door latch proximity sensor inoperative.

B. References

(1) FIM 32-61-00/101, Landing Gear Position Indication and Warning System

C. Procedure

S 819-288

(1) Do the fault isolation for the door latch proximity sensor (FIM 32-61-00/101).

S 449-289

(2) Remove the placard '(NO. 1) (NO. 2) (L) (R) MLG DR SENSOR INOP' or '(NO. 1)(NO. 2) (L) (R) NG DR SENSOR INOP' near the EICAS screen.

TASK 32-00-00-049-263

32. DDG 32-71-1 Preparation - Tail Skid (767-300) Inoperative (Fig. 906)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the tail skid is secured in the extended position. Dispatch is not recommended if there is evidence of hydraulic leakage from the skid actuation system.

B. References

(1) AMM 06-42-00/201, Empennage (Major Zones 300) Access Doors and Panels

(2) AMM 24-22-00/201, Electrical Power - Control

(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

C. Access

(1) Location Zones

212 Control Cabin (Right)
311 Area Aft of the Pressure Bulkhead (Left)
312 Area Aft of the Pressure Bulkhead (Right)

(2) Access Panels

312AR Door - Stabilizer/Trim Jackscrew Compartment

D. Procedure (Fig. 906)

S 869-266

(1) If the tail skid is fully extended, do these steps:

(a) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
1) 11U26, TAIL SKID CONT

(b) Make sure the landing gear lever on the First Officer's instrument panel, P3, is in the DN detent.

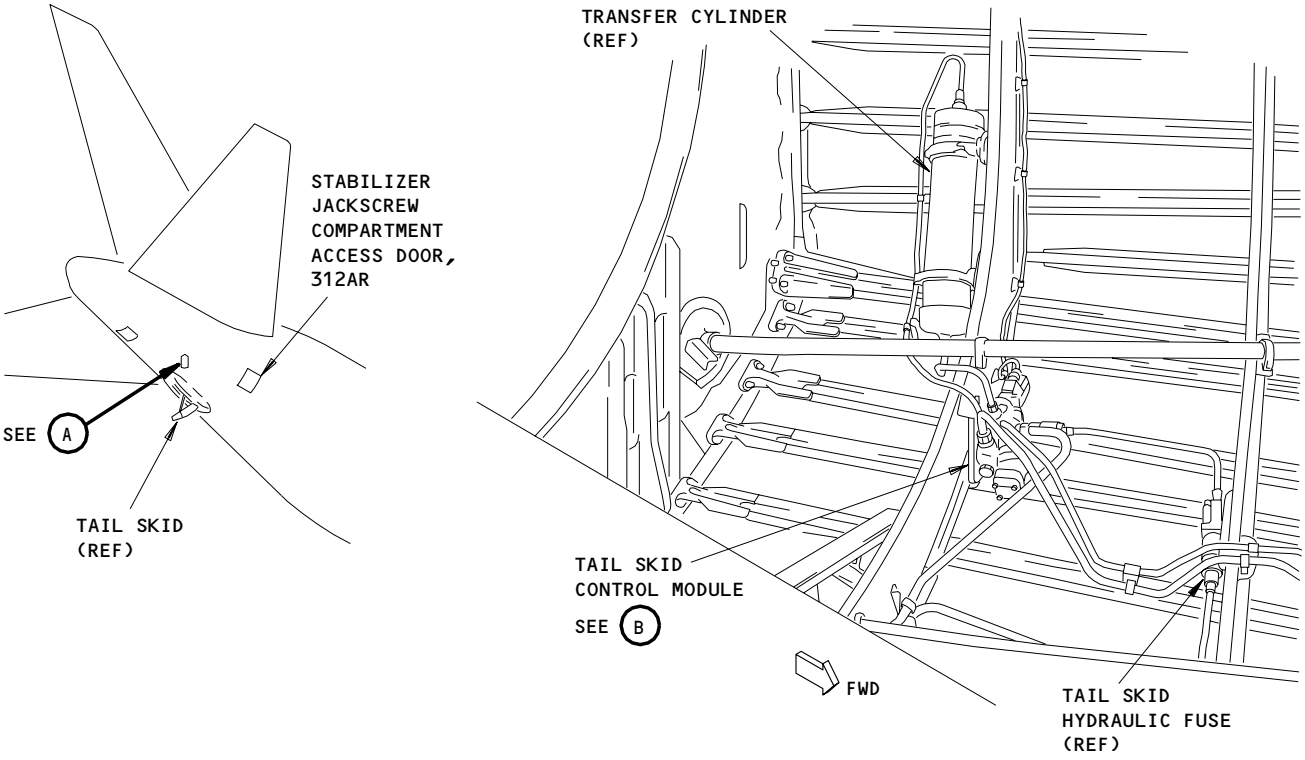
(c) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 869-264

(2) If the tail skid is not fully extended, do these steps:

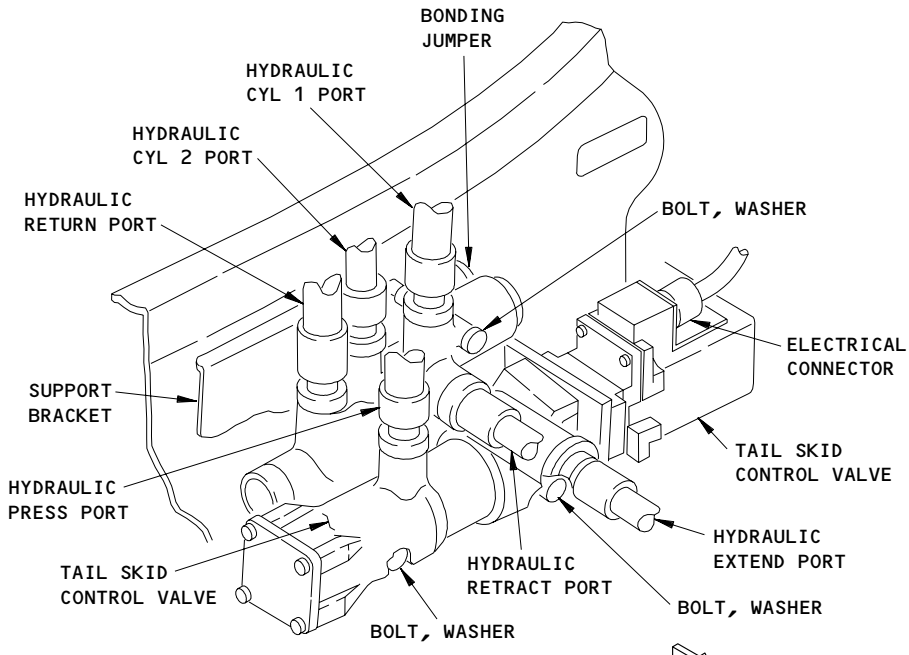
NOTE: The TAIL SKID light illuminates and EICAS message, TAIL SKID, shows with landing gear lever in the DN position indicates the tail skid is not fully extended.

(a) Open the access door, 312AR, for the Stabilizer/Trim Jackscrew compartment.



STABILIZER/TRIM JACKSCREW COMPARTMENT

A



TAIL SKID CONTROL MODULE

B

Tail Skid Control Module
Figure 906

G97299

SAS
SAS WARNING: MAKE SURE ALL PERSONS ARE CLEAR OF THE AREA AROUND THE
SAS TAIL SKID AND IN THE STABILIZER/TRIM JACKSCREW
SAS COMPARTMENT. TAIL SKID MOVEMENT CAN CAUSE INJURIES TO
SAS PERSONS OR DAMAGE TO EQUIPMENT.
SAS
SAS (b) Put the manual override lever on the tail skid control module
SAS to the POSITION 2 (extended).
1) Make sure the tail skid is fully extended.
(c) Make sure the TAIL SKID light goes off and the EICAS message, TAIL SKID, does not show on the top display within 40 seconds.
(d) Do a check for leak of the tail skid components and the hydraulic lines.

NOTE: You must examine the tail skid shock strut/actuator for leaks from out of the airplanes.

(e) Close the access door, 312AR, for the Stabilizer/Trim Jackscrew comparment.

(f) Close the applicable shutoff valves for galley, lavatory sink, and drinking fountain, if they are installed.
(g) Put a placard 'TAIL SKID INOP EXTENDED' on the TAIL SKID light.
(h) Put a placard 'INOPERATIVE' on the applicable drains and sinks.

TASK 32-00-00-449-265

33. DDG 32-71-1 Restoration - Tail Skid (767-300) Inoperative (Fig. 906)

A. General
(1) This task contains steps to put the airplane back to its usual condition after operation with the tail skid is secured in the extended position.

B. References
(1) FIM 32-71-00/101, Tail Skid System - Fault Isolation

C. Access
(1) Location Zones
212 Control Cabin (Right)
311 Area Aft of the Pressure Bulkhead (Left)
312 Area Aft of the Pressure Bulkhead (Right)
(2) Access Panels
312AR Door - Stabilizer/Trim Jackscrew Compartment

D. Procedure

S 819-389
(1) Do the fault isolation for the tail skid system (FIM 32-71-00/101) .

S 089-387
(2) Remove the placard 'TAIL SKID INOP EXTENDED' on the TAIL SKID light.

S 089-388
(3) Remove the placard 'INOPERATIVE' on the applicable drains and sinks.

TASK 32-00-00-049-280

34. DDG 32-71-2 Preparation - Tail Skid Indication System Inoperative (767-300) (Fig. 906)

A. General
(1) This task gives the maintenance steps which prepare the airplane for flight with the tail skid indication system inoperative.
(2) For the first part of the MMEL (EICAS message operates correctly), put a placard, 'TAILSKID LIGHT INOP' on the TAILSKID light.
(3) For the second part of the MMEL (tail skid locked in the extended position), refer to DDG 32-71-1 for the procedure and the applicable placards.
(4) For a problem with the proximity sensors for the tail skid, continue with the procedure.

B. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-20/201, Landing Gear Downlocks

C. Access
(1) Location Zones
212 Control Cabin (Right)
311 Area Aft of the Pressure Bulkhead (Left)
312 Area Aft of the Pressure Bulkhead (Right)
(2) Access Panels
312AR Door - Stabilizer/Trim Jackscrew Compartment

D. Procedure for Proximity Switch Inoperative

NOTE: The tail skid extension and retraction can be checked in two ways.

S 719-279
(1) Do these steps if you will do a check of the tail skid operation with the tail skid control module:
(a) Supply electrical power (AMM 24-22-00/201).
(b) Pressurize the center hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

WARNING: STAY OFF OF THE ACCESS DOOR 312AR. THE WEIGHT OF A PERSON OR PERSONS COULD CAUSE RELEASE OF THE SPRING-LOADED LATCHES. THIS CAN CAUSE INJURY TO PERSONS WHEN THEY FALL THROUGH THE OPEN DOOR.

(c) Open the access door, 312AR for the Stabilizer/Trim Jackscrew Compartment.

WARNING: MAKE SURE ALL PERSONS ARE CLEAR OF THE AREA AROUND THE TAIL SKID AND IN THE STABILIZER/TRIM JACKSCREW COMPARTMENT. TAIL SKID MOVEMENT CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(d) Put the manual override lever on the tail skid control module to the RETRACT position.
1) Make sure the tail skid retracts.
2) Make sure the TAIL SKID light is off (P3 panel) and the TAIL SKID EICAS message is not shown.

NOTE: No performance penalty is necessary for this condition.

If the light and message are on, the performance penalty is necessary.

(e) Put the manual override lever on the tail skid control module to the EXTEND position.
1) Make sure the tail skid extends.
(f) Close the access door, 312AR for the Stabilizer/Trim Jackscrew Compartment.

S 719-278
(2) Do these steps if you will do a check of the tail skid operation from the flight compartment:
(a) Supply electrical power (AMM 24-22-00/201).
(b) Pressurize the center hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

WARNING: MAKE SURE THAT THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER. WITHOUT THE DOWNLOCKS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(c) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

WARNING: MAKE SURE ALL PERSONS ARE CLEAR OF THE AREA AROUND THE TAIL SKID AND IN THE STABILIZER/TRIM JACKSCREW COMPARTMENT. TAIL SKID MOVEMENT CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(d) Pull the landing gear control lever out.

NOTE: A microswitch on the control lever sends a signal to retract the tail skid. It is NOT necessary to move the control lever to the UP position for the tail skid to retract.

1) Make sure the tail skid retracts.
2) Make sure the TAIL SKID light is off (P3 panel) and the TAIL SKID EICAS message is not shown.

NOTE: No performance penalty is necessary for this condition.

If the light and message are on, the performance penalty is necessary.

(e) Move the landing control lever to the DN position.
1) Make sure the tail skid extends.

TASK 32-00-00-449-359

35. DDG 32-71-2 Restoration - Tail Skid Indication System Inoperative (767-300) (Fig. 906)

A. General
(1) This task contains steps to put the airplane back to its usual condition after operation with the tail skid indication system inoperative.

B. References
(1) FIM 33-Fault Code Index (Lighting System)
(2) FIM 32-61-00/101, Landing Gear Position Indication and Warning System
(3) WDM 32-71-11

C. Procedure

S 819-276
(1) If a tail skid proximity sensor was inoperative, do the fault isolation for the tail skid indication system (FIM 32-61-00/101).

S 819-342

(2) If the tail skid light was inoperative, do the fault isolation for the indicator lights (FIM 33-Fault Code Index).

NOTE: Look at the fault codes that begin with 33-13 and 33-16 and find the applicable problem.

(a) If the problem continues, examine and repair the circuit associated with the indicator light (WDM 32-71-11).

(b) Remove the placard 'TAILSKID LIGHT INOP' from the TAIL SKID light (P3 panel).

LANDING GEAR INNER CLYINDER CHROME - INSPECTION/CHECK

1. General
   A. This procedure provides instructions to examine the chrome surface of the landing gear inner cylinder.
   B. This procedure is applicable to the nose landing gear and the main landing gear.

TASK 32-00-10-216-001

2. Landing Gear Inner Cylinder Chrome Inspection
   A. References
      (1) AMM 12-15-01/301, Main Landing Gear Shock Strut Servicing
      (2) AMM 32-00-10/701, Landing Gear Inner Cylinder Chrome Cleaning
      (3) AMM 32-00-10/801, Landing Gear Inner Cylinder Chrome Plate Repair
      (4) AMM 32-00-15/201, Landing Gear Door Locks
      (5) AMM 32-00-20/201, Landing Gear Downlocks
   B. Equipment
      (1) Dental Explorer
      (2) Plastic Scraper
   C. Consumable Materials
      (1) B00316 Solvent - TT-N-95
      (2) A00964 Primer - BMS 10-11
      (3) G00216 Wiper - BMS 15-5, Class A
      (4) D00509 Fluid - Hydraulic, Petroleum Base, MIL-H-6083
   D. Prepare for the Procedure

S 416-003

WARNING: YOU MUST CAREFULLY INSTALL THE DOWNLOCKS IN ALL LANDING GEAR. AN ACCIDENTAL RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed in all the landing gear (AMM 32-00-20/201).

S 416-004

WARNING: YOU MUST CAREFULLY DO THE STEPS WHEN YOU INSTALL THE DOOR LOCKS ON THE LANDING GEAR DOORS. THE DOORS CAN CLOSE QUICKLY IF YOU DO NOT INSTALL THE DOOR LOCKS CORRECTLY. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Do this task: "Installation of the Door Locks" (AMM 32-00-15/201). Install the locks on both of the main doors.

S 826-016

(3) Lift the airplane on jacks until the inner cylinder is fully extended (AMM 07-11-01/201).

NOTE: You can temporarily overinflate the shock strut if you do not have jacks to lift the airplane.

S 216-002

(4) Inspect the scraper ring and shock strut seals for damage.

(a) Visually examine the chrome surface of the inner cylinder before you clean it.

NOTE: If you can find vertical streaks of fluid or accumulated debris on the chrome surface, it is an indication that part of the scraper ring may be defective.

(b) Make sure the scraper ring is in the installed position. Normal operation can force the scraper ring down the inner cylinder.

NOTE: A mirror and flashlight can help you to examine the scraper ring. Put the mirror below the outer cylinder and against the inner cylinder to see the condition and position of the scraper ring.

(c) If one of the two inspections finds a fault with the scraper ring, do the steps that follow:

1) Examine the shock strut for seal leakage.
2) Deflate the strut and drain the oil.
3) Disconnect the gland nut from the outer cylinder, then lower the gland nut to examine the scraper ring.
4) If the scraper ring is damaged then replace the scraper ring with a new production scraper ring.

NOTE: This task requires the removal of the inner cylinder from the outer cylinder.

5) Examine the shock strut for seal leakage.

S 616-005

(5) Do this task: Landing Gear Inner Cylinder Chrome Cleaning (AMM 32-00-10/701).

E. Procedure

S 216-006

(1) Examine the chrome surface on the outer diameter of the shock strut inner cylinder.

NOTE: Chrome plating on large diameter parts will show very small and narrow lines that look like cracks. These lines (chicken-wire cracks) naturally occur when the chrome plate is initially applied on the base metal. When you look at these parts in dim light or with a light source angled to the surface for the inspection, you will see these lines.

(a) Shine light at an angle to the chrome surface of the inner cylinder.

NOTE: You can use a flashlight for this check.

(b) Look at the surface from different directions to make sure you see all of the cracks or scratches.

NOTE: Do not use a magnifying glass to do this inspection. A scratch on the chrome will have sharp edges along its length and can be seen without the aid of a magnifying glass or plastic scraper. A wide crack on the chrome surface has a gradual contour to its edges which makes it difficult to see and requires the use of the plastic scraper to identify.

(c) Move the sharp edge of a new hard plastic scraper perpendicular over all the exposed chrome plated surface with a smooth movement and light hand pressure.

NOTE: You will feel a "grab" or a "catch" when you go over a wide crack or scratch with this method. Make sure the plastic scraper is new, as used scrapers will not satisfactorily find the wide cracks.

(d) If you see any possible area of corrosion, chipping, lifting of the chrome plate, or if you felt a wide crack with the plastic scraper, reinspect the area with a metal dental explorer. Move the sharp point of the explorer with medium hand pressure to go over the area of suspected damage. Go over the area with the dental explorer from multiple directions. If the chrome is lifting and/or loose try to pick it off with the metal explorer.

NOTE: If you feel a sudden high resistance when you go over the area, but do not see signs of possible corrosion, then this is a site with a wide crack. It is an area that must have more protection and be closely monitored. Repair this area with the crack repair procedure. If you are able to remove or lift small pieces of chrome plate from the base metal, if there are bubbles in the chrome, or if the crack extends to the base metal the inner cylinder is not serviceable.

S 216-011

(2) If you find scratches or wide cracks, do the steps that follow:

(a) Look for one or more of the conditions that follow; if any of the conditions are present then the inner cylinder is not serviceable:

1) Corrosion exists in the damaged area of the chrome.

NOTE: You must use a 4x (minimum) magnifier to examine the area of damage.

2) Poor chrome bonds with the base metal.
3) Bubbles in the chrome plating.
4) An area of chrome plate that moves above the smooth surface of the adjacent chrome plate when you move the dental explorer across it.
5) Chrome plate that comes off in flakes when you move the dental explorer over the chrome plate.

(b) Make sure the scratches or wide cracks have not penetrated to the base metal of the strut.

(c) If the base metal is exposed you must measure the depth of the damage.

(d) If the measured depth of damage to the base metal exceeds 0.0005 inches, excluding chrome thickness, or the area of damage exceeds 1 sq. inch then you must replace or overhaul the inner cylinder.

(e) If the base metal is exposed by a scratch then the scratch will then be considered a gouge and be repaired as a crack.

(f) Measure the size of the area that has the cracks, and make a sketch of the location and shape of each area, and mark the dimensions on the sketch. Make sure you keep this data so it can be used for the next inspection.

(g) Repair the scratches on the chrome surface, if identified. (AMM 32-00-10/801)

(h) Repair the cracks on the chrome surface, if identified (AMM 32-00-10/801).

(i) If you repaired the chrome surface then you must do this inspection task again in four months or 400 cycles (whichever comes first), and then again until the shock strut is removed and replaced. Once chrome is damaged, there is no permanent repair, and the damage can continue to spread. The only permanent repair is to strip and replate the chrome.

F. Put the Airplane back to its Usual Condition

S 016-017

WARNING: YOU MUST CAREFULLY DO THE STEPS WHEN YOU REMOVE THE DOOR LOCKS FROM THE LANDING GEAR DOORS. THE DOORS CAN CLOSE QUICKLY IF YOU DO NOT REMOVE THE DOOR LOCKS CORRECTLY. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Do this task: "Removal of the Door Locks from all Landing Gear Doors " (AMM 32-00-20/201).

LANDING GEAR INNER CYLINDER CHROME - CLEANING/PAINTING

1. General
   A. This procedure provides instruction to clean the dirt and grit from the chrome surfaces of the landing gear inner cylinders. Cleaning these chrome surfaces will make it easier to determine if any seals leak and it will also prolong the life of the seals.
   B. This procedure is applicable to the nose landing gear and the main landing gear.

TASK 32-00-10-107-001

2. Landing Gear Inner Cylinder Chrome Cleaning
   A. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 12-15-01-3, Shock Strut Servicing
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   B. Consumable Materials
      (1) D00467 Fluid - Landing Gear Shock Strut
   C. Access
      (1) Location Zones
          710 Nose Landing Gear
          731/741 Main Landing Gear
   D. Prepare to Clean the Shock Strut

S 417-002

WARNING: YOU MUST CAREFULLY INSTALL THE DOWNLOCKS IN ALL LANDING GEAR. AN ACCIDENTAL RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed in all the landing gear (AMM 32-00-20/201).

S 417-003

WARNING: YOU MUST CAREFULLY DO THE STEPS WHEN YOU INSTALL THE DOOR LOCKS ON THE LANDING GEAR DOORS. THE DOORS CAN CLOSE QUICKLY IF YOU DO NOT INSTALL THE DOOR LOCKS CORRECTLY. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Do this task: "Installation of the Door Locks" (AMM 32-00-15/201).

S 107-007

(3) To clean as much of the chrome surface possible, do one of these steps:

(a) Use airplane jacks to lift the airplane until the tires do not touch the ground (AMM 07-11-01/201).

(b) Over-inflate the shock strut with dry air or nitrogen.

(c) Clean the chrome before you fill the airplane with fuel.

E. Procedure

S 107-004

CAUTION: DO NOT RUB THE SMEAR MARKS TO TRY TO REMOVE THEM. THIS COULD CAUSE DAMAGE TO THE CHROME SURFACE.

(1) On the shock strut inner cylinder chrome, you may find dark smear marks that have a small amount of texture and are difficult to remove. These smear marks are created by oxidation of the self lubricating material that is deposited on the chrome by the shock strut bearings. These smear marks are considered acceptable.

S 107-005

(2) Clean the dirt, oil and other unwanted materials from the chrome surface of the inner cylinders with a clean cloth that is soaked in shock strut fluid, D00467.

NOTE: To clean the maximum exposed chrome surface of the inner cylinder, do this task before you fill the airplane with fuel.

LANDING GEAR SHOCK STRUT INNER CYLINDER - REPAIR

1. General
   A. This procedure provides instructions to repair cracks and minor scratches to the chrome surface of the landing gear inner cylinder.
   B. This procedure is applicable to the nose landing gear and the main landing gear.

   TASK 32-00-10-308-001
2. Landing Gear Inner Cylinder Chrome Repair
   A. References
      (1) AMM 32-00-10/601, Landing Gear Inner Cylinder Chrome Inspection
      (2) AMM 32-00-10/701, Landing Gear Inner Cylinder Chrome Cleaning
      (3) AMM 32-00-15/201, Landing Gear Door locks
      (4) AMM 32-00-20/201, Landing Gear DownLocks
   B. Consumable Materials
      (1) C00259 Primer - Chemical and Solvent Resistant Finish, Epoxy Resin - BMS 10-11 type 1
      (2) D00467 Fluid - Landing Gear Shock Strut - BMS 3-32, Type 2
      (3) G00034 Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze) - BMS 15-5
      (4) G01601 Abrasive - Aluminum Oxide Coated Cloth, 400 to 600 Grit
      (5) G50220 Abrasive - Pad - Scotch-Brite 7447
      (6) G50338 Abrasive Paper - Aluminum Oxide, 800 Grit
   C. Access
      (1) Location Zones
          710 Nose Landing Gear
          731/741 Main Landing Gear
   D. Prepare for the procedure

      S 418-002

      WARNING: YOU MUST CAREFULLY INSTALL THE DOWNLOCKS IN ALL LANDING GEAR. AN ACCIDENTAL RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

      (1) Make sure the downlocks are installed in all the landing gear (AMM 32-00-20/201).

S 418-003

WARNING: YOU MUST CAREFULLY DO THE STEPS WHEN YOU INSTALL THE DOOR LOCKS ON THE LANDING GEAR DOORS. THE DOORS CAN CLOSE QUICKLY IF YOU DO NOT INSTALL THE DOOR LOCKS CORRECTLY. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Do this task: "Installation of the Door Locks" (AMM 32-00-15/201).

S 618-005

(3) Make sure these tasks are accomplished before you do the repair:
  (a) Landing Gear Inner Cylinder Chrome Cleaning, AMM 32-00-10/701.
  (b) Landing Gear Inner Cylinder Chrome Inspection, AMM 32-00-10/601.

E. Procedure

S 358-006

CAUTION: DO NOT USE POWER TOOLS TO DO THIS TASK. YOU MUST USE HAND TOOLS. IF YOU USE POWER TOOLS, YOU CAN CAUSE MORE DAMAGE TO COMPONENTS.

(1) To repair cracks to the chrome surface, do these steps:
  (a) Use 400 to 600 grit abrasive cloth, G01601, that is soaked in fluid, D00467, to hand blend the exposed base metal and remove any corrosion and sharp edges to the chrome.

    NOTE: Ensure reworked edges can not be caught with the sharp point of the dental explorer.

  (b) Use a cotton wiper, G00034 to apply a thick layer of primer, C00259 to the exposed base metal with adequate overlap on the chrome surface.
  (c) Before the primer dries, remove the excess primer with a clean, dry cloth.

    NOTE: Make sure no primer gets on the seals or scraper, as they can be damaged by the primer and may start to leak.

  (d) Let the primer cure for at least 4 hours., then apply a second layer of primer and allow to dry an additional 4 hours.
  (e) Use abrasive pad - Scotch-Brite 7447, G50220, that is soaked in fluid, D00467, to blend and smooth out the primer surface to achieve a similar contour as the chrome surface.

(f) Use abrasive paper, G50338, that is soaked in fluid, D00467, to polish the chrome surface.

S 358-007

CAUTION: DO NOT USE POWER TOOLS TO DO THIS TASK. YOU MUST USE HAND TOOLS. IF YOU USE POWER TOOLS, YOU CAN CAUSE MORE DAMAGE TO COMPONENTS.

(2) To repair minor scratches to the chrome surface, do these steps:
(a) Use 400 to 600 grit abrasive cloth, G01601, that is soaked in fluid, D00467, to smooth out the chrome surface until you can not see evidence of a scratch.
(b) Use abrasive paper, G50338, that is soaked in fluid, D00467, to polish the chrome surface.

S 618-008
(3) Do this task: Landing Gear Inner Cylinder Chrome Cleaning, AMM 32-00-10/701.

CORROSION PREVENTION IN THE LANDING GEAR-MAINTENANCE PRACTICES

TASK 32-00-11-602-001

1. Corrosion Problems

A. Procedure

S 612-002

(1) Use this table to find the applicable data for corrosion problems:

Specific Corrosion Problems - Navigation
Table 1

AREA	PROBLEM	INDEX	TERMINATING ACTION (IF ANY)
Main Landing Gear	Corrosion of MLG components	32-10-01/201	
	Stress corrosion cracks on H-11 bolts	32-10-01/201	SL 51-8
Nose Landing Gear	Corrosion of NLG components	32-20-01/201	SB 32-0022
	Corrosion of the bearings in the housing of the nose wheel steering drum and lockout assembly	32-20-01/201	SB 32-0067
	Corrosion of bearings in nose wheel steering system	32-20-01/201	
Hydraulic Brake	Corrosion of bearings in brake metering valve module linkage	32-40-01/201	

LANDING GEAR DOOR LOCKS - MAINTENANCE PRACTICES

1. General
   A. The door locks for the main landing gear must be installed before you do work in or near the wheel well.
   B. It is not necessary to install door locks on the doors of the nose landing gear. These doors are controlled by the nose landing gear.
   C. This procedure contains these tasks:
      (1) A task to remove the door locks from the main landing gear.
      (2) A task to install the door locks for the main landing gear.

TASK 32-00-15-002-001

2. Remove the Door Locks (Fig. 201)
   A. Equipment
      (1) Main Landing Gear Door Lock - A32030-6 or -12 or -18 or -21.
   B. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones

143/144	Wheel Well of the Main Landing Gear
731/741	Main Landing Gear

      (2) Access Panels

197 BL	Ground Control Handle for the Main landing Gear Door
198 BR	Ground Control Handle for the Main Landing Gear Door

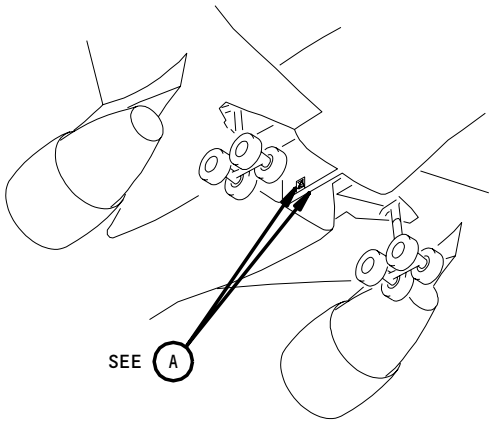
   D. Prepare to Remove the Door Locks.

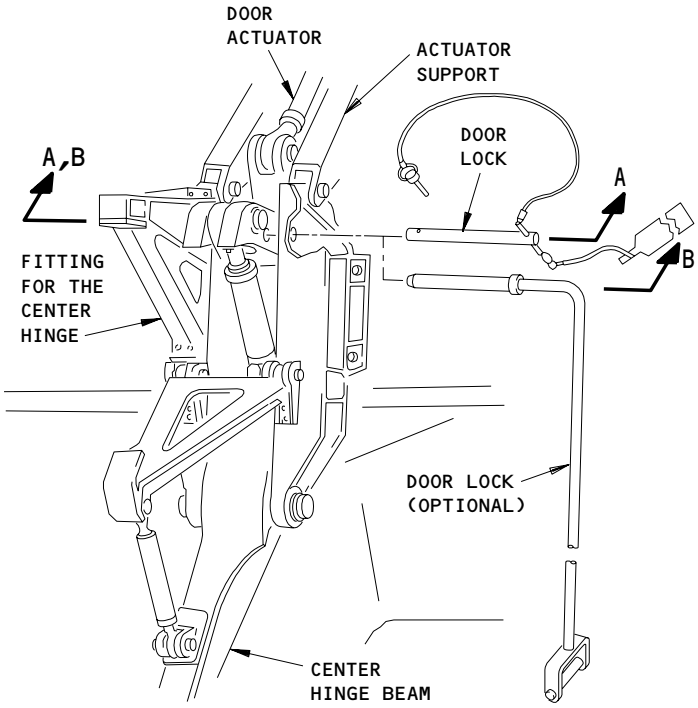
      S 492-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).
   E. Remove the Door Locks

      S 022-003

      WARNING: MAKE SURE THE GROUND RELEASE LEVER FOR THE DOORS OF THE MAIN LANDING GEAR, IS IN THE OPEN POSITION BEFORE YOU GO INTO THE WHEEL WELL AREA. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

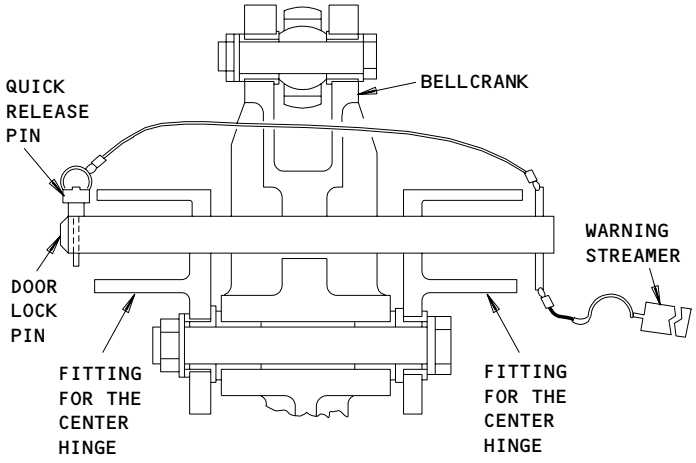
      (1) Remove the door locks.



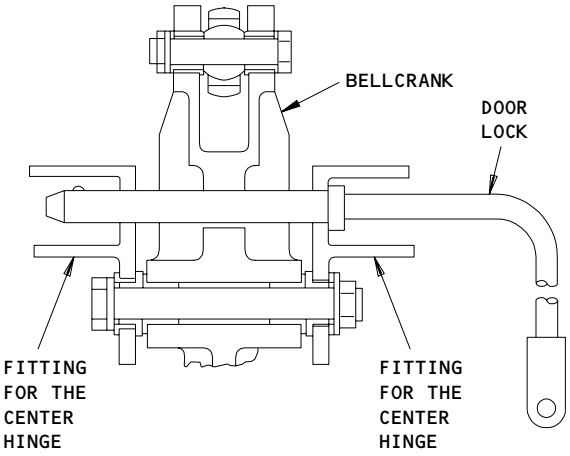


(THE LEFT SIDE IS SHOWN)

A

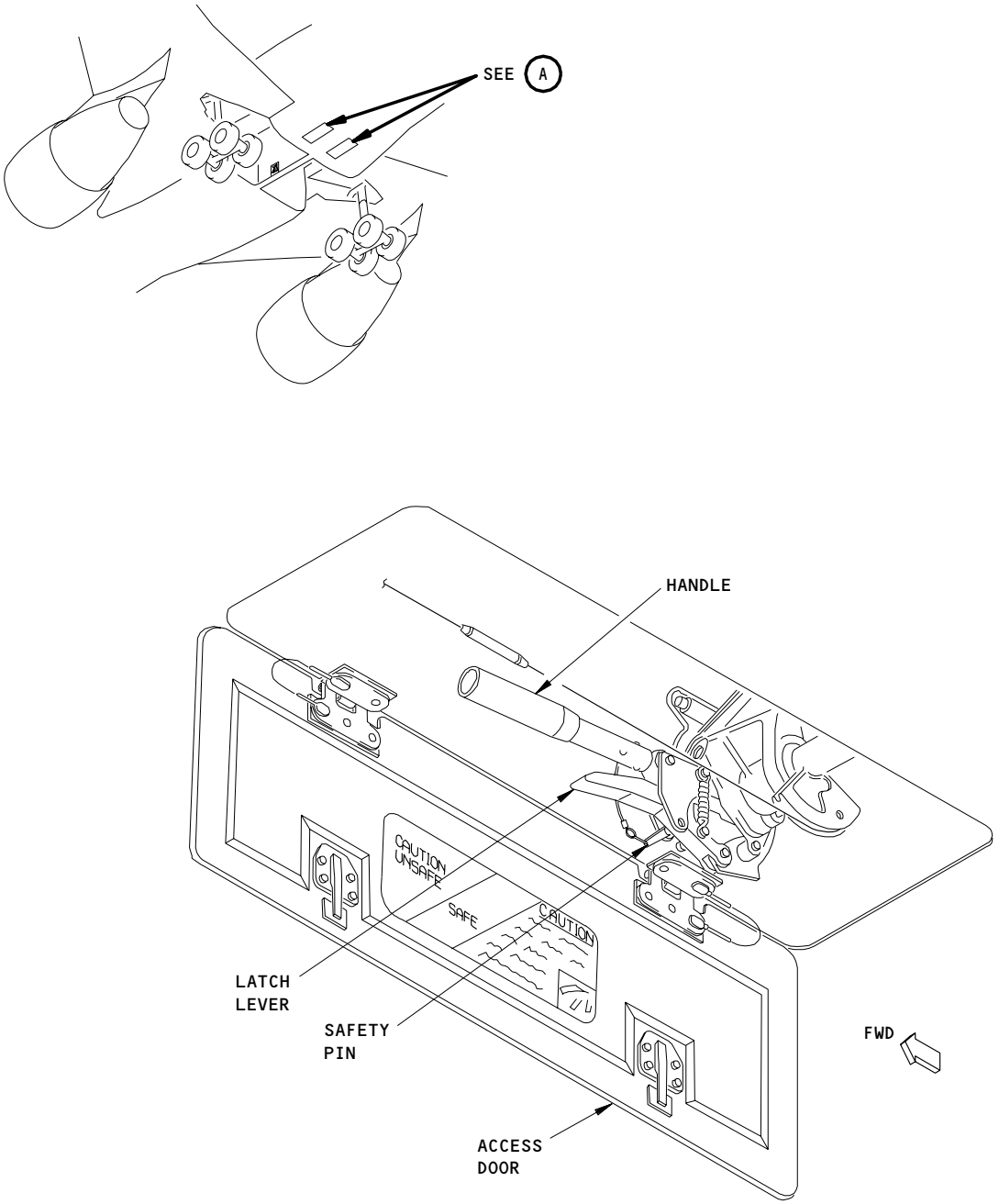


(EXAMPLE)
A-A



(EXAMPLE)
B-B

Door Lock Installation for the Main Landing Gear
Figure 201



Main Gear Door Ground Release Lever
Figure 201A

S 862-004
(2) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 412-005

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT IN THE WHEEL WELL AREA BEFORE YOU MOVE THE GROUND RELEASE LEVER FOR THE DOOR. THE DOORS MOVE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) To close the doors of the main landing gear, do the steps that follow (Fig. 201A):
(a) Remove the safety pin from the ground release lever.
(b) Push the trigger and move the handle to the STOWED position, to close the doors.
1) If the lever cannot be put in the STOWED position, make sure the lever for the landing gear is in the DN position.
(c) Release the trigger to engage the detent.
(d) Install the safety pin.

NOTE: If you cannot install the safety pin, the ground release lever is not in a safe position.

1) Put the ground release lever in a safe position.

F. Put the Airplane Back to Its Usual Condition.

S 512-006
(1) Close the access panel 197BL or 198BR, if it is necessary (AMM 06-41-00/201).

S 862-007
(2) Remove the hydraulic power, if it is not necessary (AMM 29-11-00/201).

TASK 32-00-15-402-008

3. Install the Door Locks for the Main Landing Gear (Fig. 201)
A. Equipment
(1) Main Landing Gear Door Lock - A32030-6 or -12 or -18 or -21 (optional)
B. References
(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-20/201, Landing Gear Downlocks
C. Access
(1) Location Zones
143/144 Wheel Well of the Main Landing Gear
731/741 Main Landing Gear

(2) Access Panels

197 BL	Ground Control Handle for the Main landing Gear Door
198 BR	Ground Control Handle for the Main Landing Gear Door

D. Prepare to Install the Door Locks

S 492-009

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

E. Install the Door Locks

S 012-010

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT IN THE WHEEL WELL AREA BEFORE YOU MOVE THE GROUND RELEASE LEVER FOR THE DOOR. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) To open the doors of the main landing gear, do the steps that follow (Fig. 201A):
   (a) Open the access panel 197BL or 198BR to get access to the ground release lever for the door (AMM 06-41-00/201).
   (b) Use the ground release lever to open the doors of the main landing gear.

NOTE: Do not use the alternate extension switch or the control lever for the landing gear to open the doors.

1) Remove the safety pin from the lever.
2) Push the trigger and pull the handle to the OPEN position.
3) Release the trigger to engage the detent.
4) Install the safety pin.

NOTE: If you cannot install the safety pin, the ground release lever is not in a safe position.

a) Put the ground release lever to a safe position.

S 422-011

WARNING: MAKE SURE YOU INSTALL THE DOOR LOCKS CORRECTLY. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Install the door lock.
   (a) Put the door lock or the lockpin for the door through the holes in the bellcrank and the center hinge fitting.
   (b) If you use the quick release pin, put it through the hole in the lockpin.
   (c) Make sure the warning streamer can be seen from the ground.

LANDING GEAR DOWNLOCKS - MAINTENANCE PRACTICES

1. General
   A. This procedure contains four tasks. The first task removes the downlocks from the landing gear. The second task installs the downlocks on the landing gear. The third task adjusts the overcenter dimension of the lock link on the side brace of the main landing gear. The fourth task adjusts the overcenter dimension of the lock link on the nose landing gear.

TASK 32-00-20-002-001

2. Remove the Downlocks from the Landing Gear (Figs. 201 and 202)
   A. General
      (1) The downlocks must be installed in the main and nose landing gear when you do the operations that follow:
         (a) The airplane is towed.
         (b) The airplane is parked.
         (c) Maintenance is done to the airplane.
      (2) The downlocks are in a container adjacent to the access door of the main equipment center.
   B. Equipment
      (1) Main Gear Downlocks - A32014-1
      (2) Nose Gear Downlock - A32014-2
      (3) Main and Nose Landing Gear Downlock Installation/Removal Tool - A32015-9
   C. Access
      (1) Location Zones

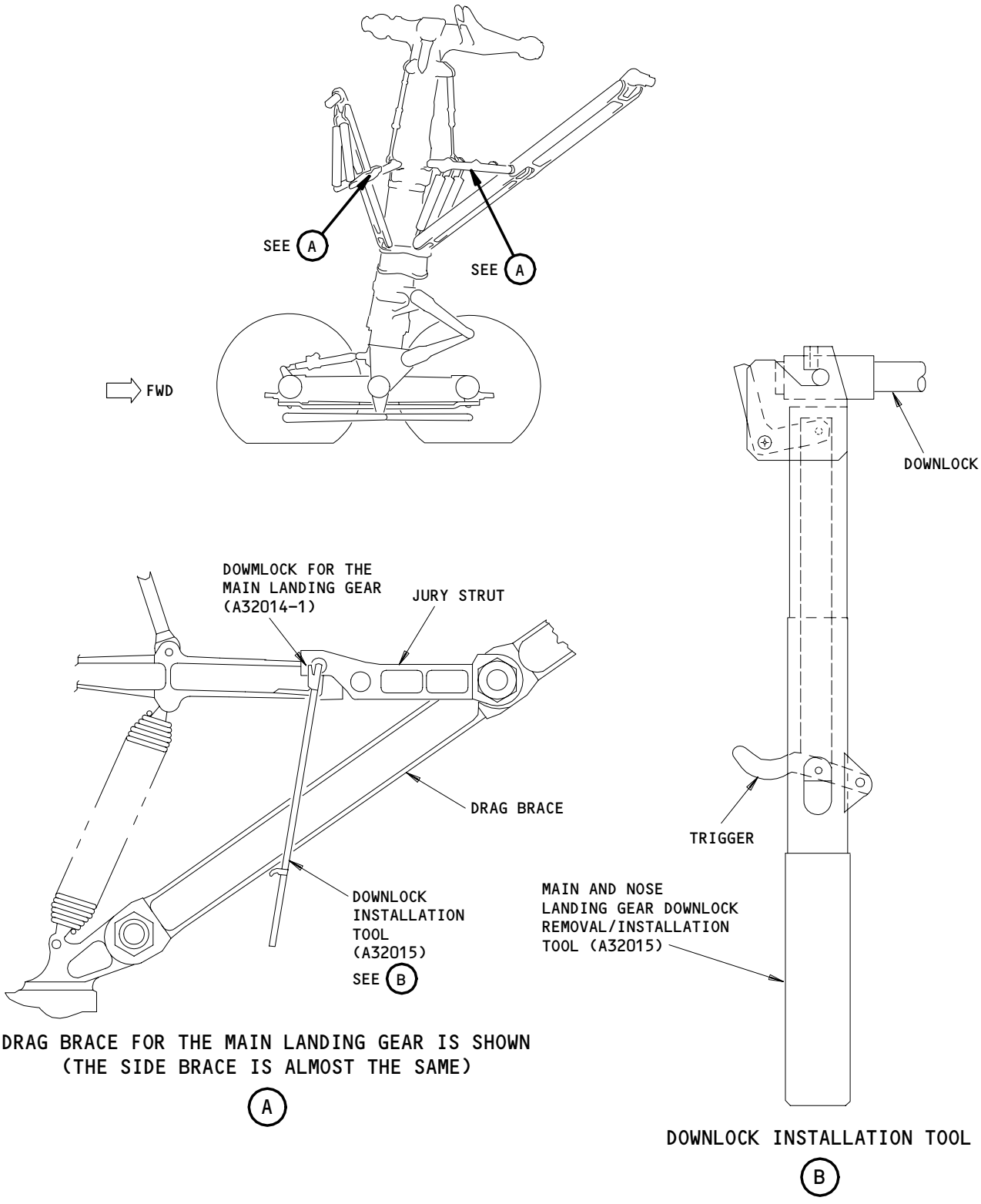
119/120	Main Equipment Center
211/212	Control Cabin
711	Nose Landing Gear
731/741	Main Landing Gear

   D. Prepare to Remove the Downlocks

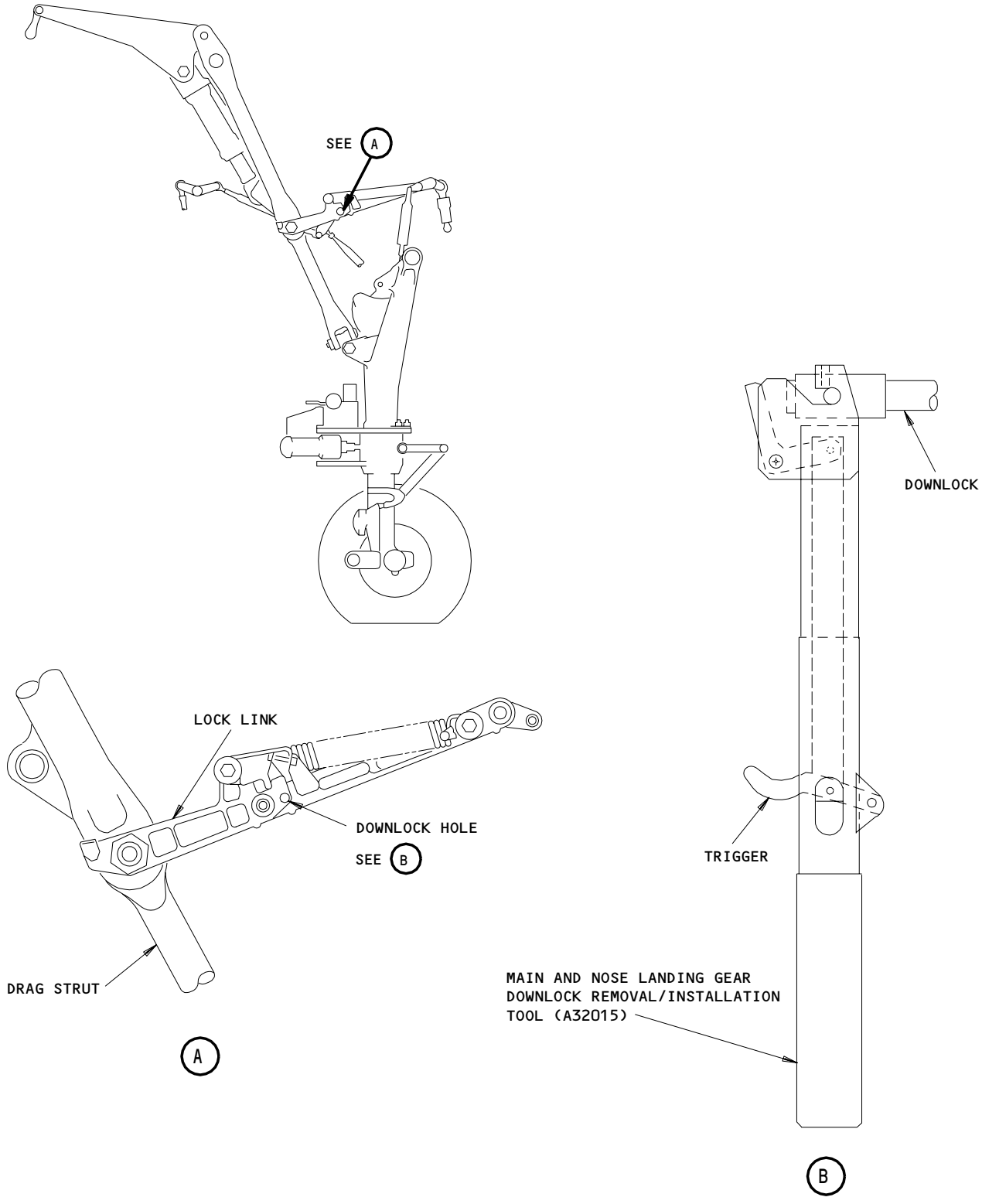
S 862-002

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

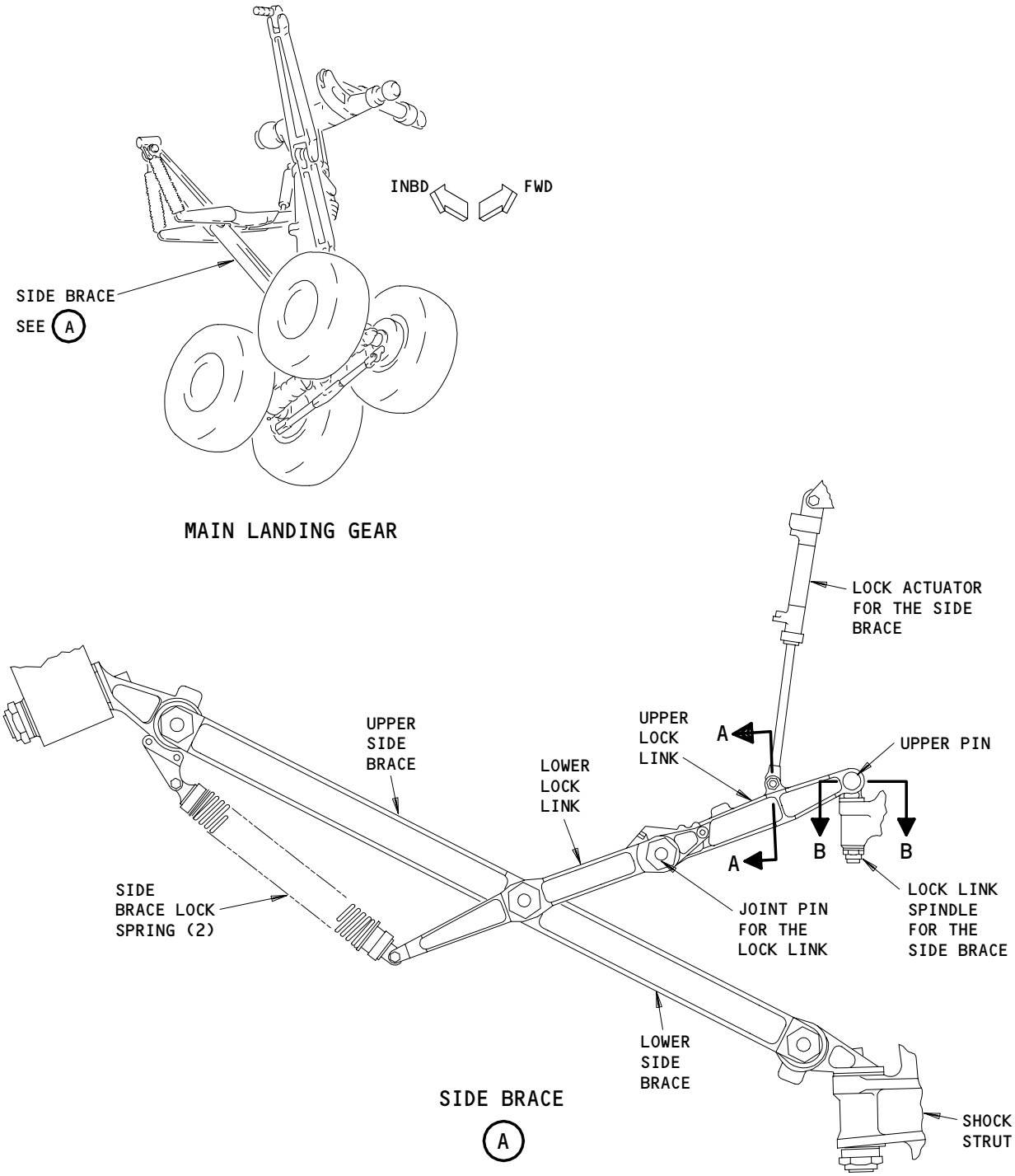
(1) Put the control lever for the landing gear in the DN position.



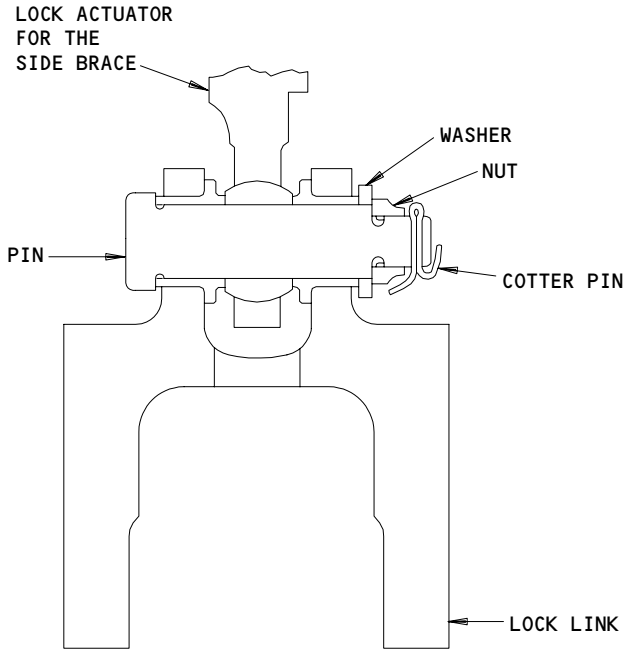
Downlock Installation for the Main Landing Gear
Figure 201



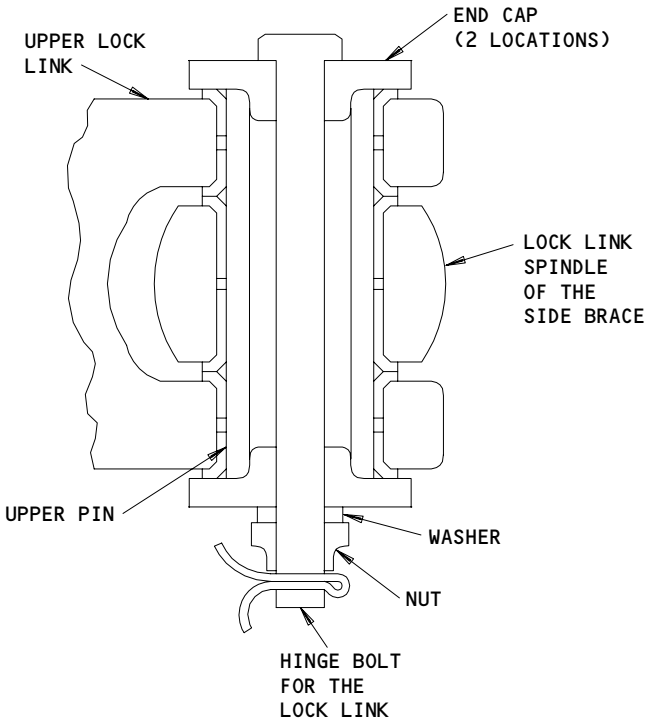
Downlock Installation for the Nose Landing Gear
Figure 202



Adjustment of the Overcenter Dimension of the Lock Link for the Side Brace of the Main Landing Gear
Figure 203 (Sheet 1)

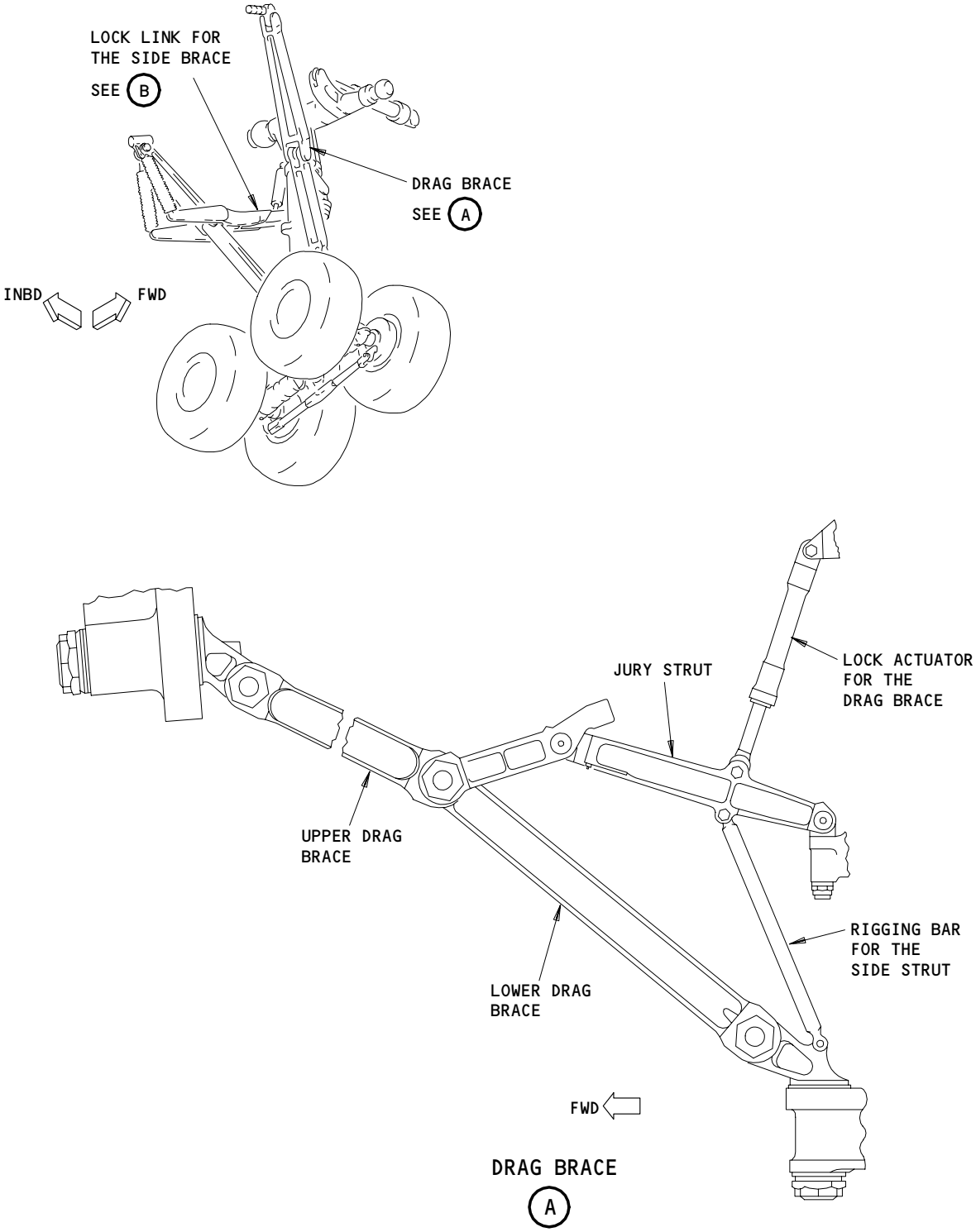


A–A

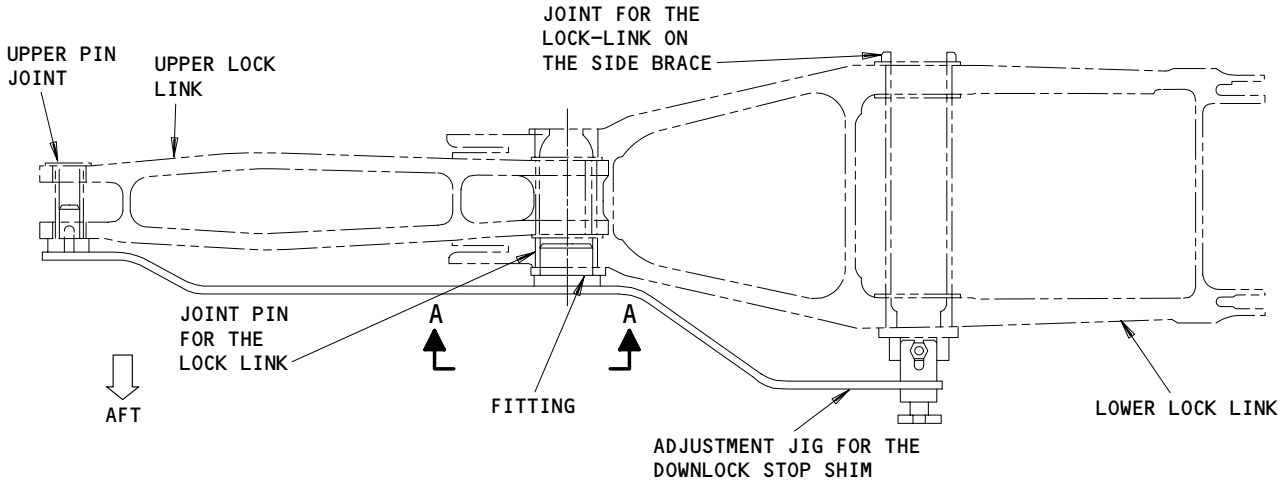


B–B

Adjustment of the Overcenter Dimension of the Lock Link for the Side Brace of the Main Landing Gear
Figure 203 (Sheet 2)

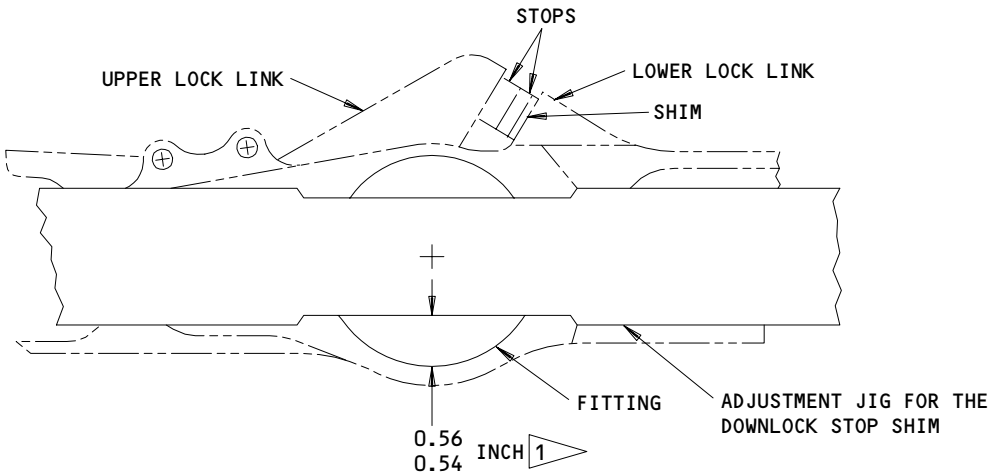


Tools for the Overcenter Dimension of the Lock Link for the Side Brace of the Main Landing Gear
Figure 204 (Sheet 1)

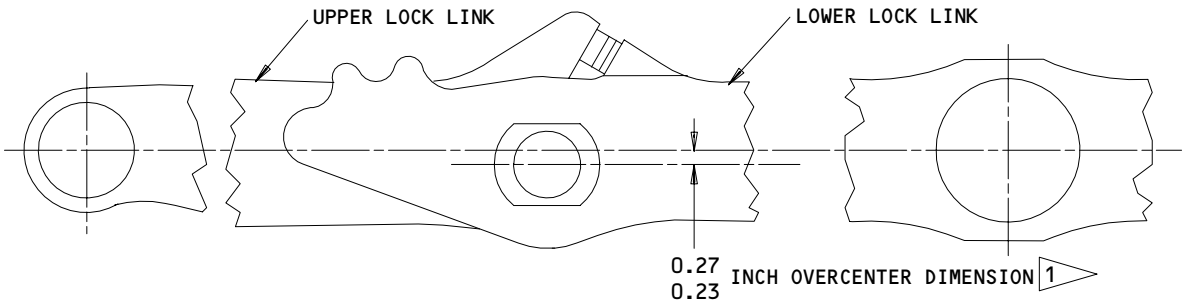


SIDE BRACE LOCK LINK

(B)



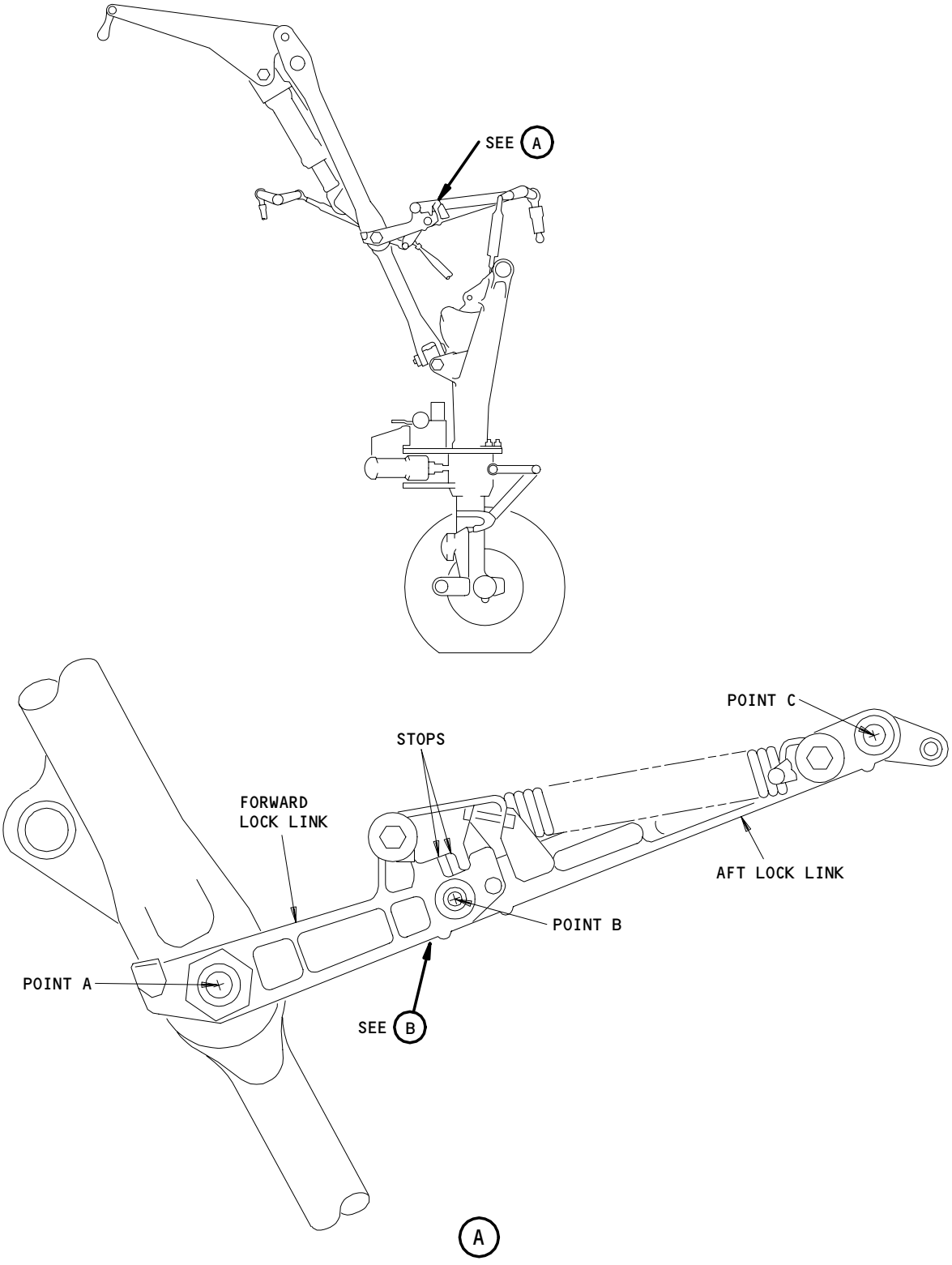
A-A



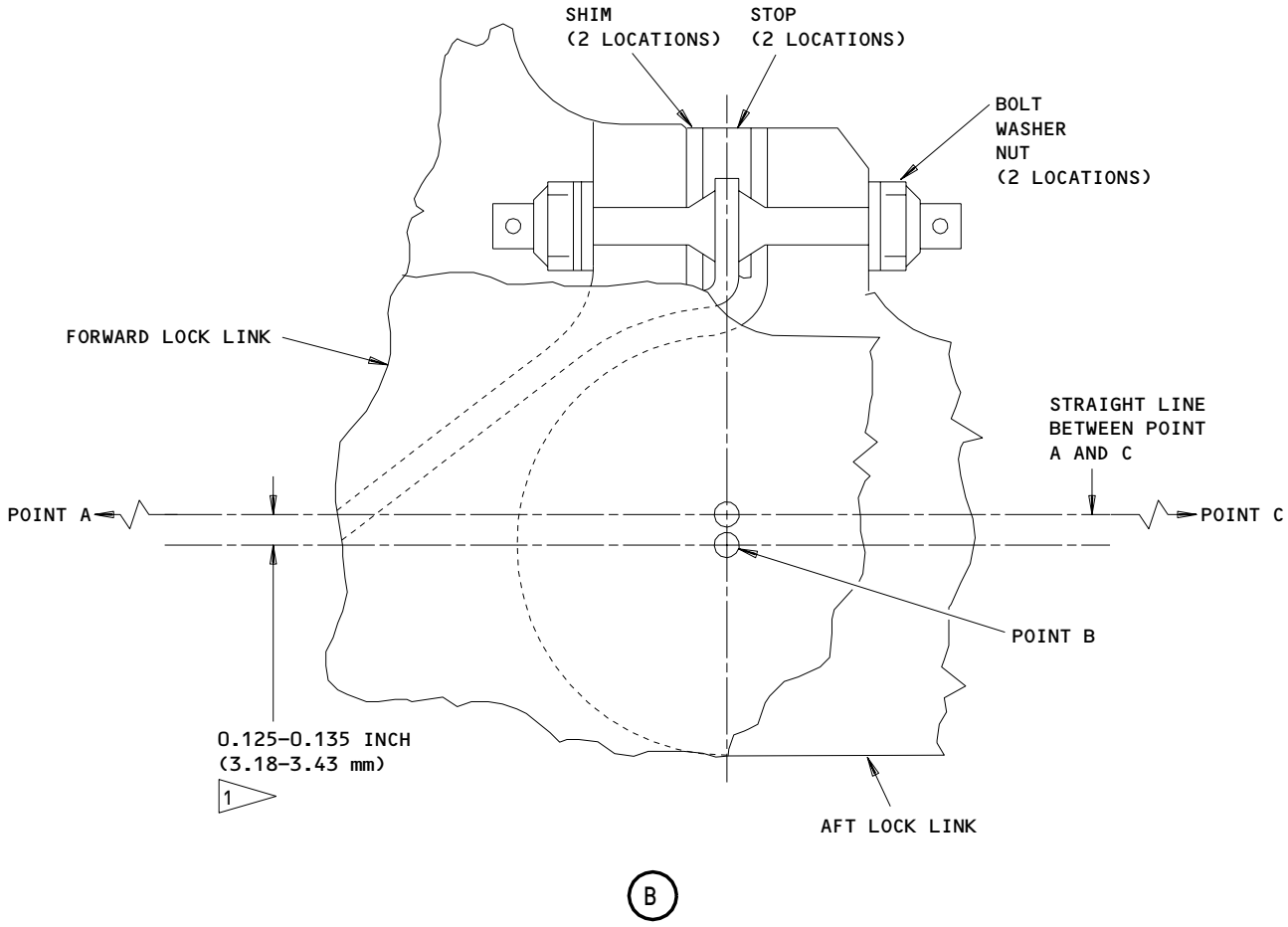
LOCK LINK AFTER THE SHIM ADJUSTMENT

1 THE STOPS MUST FULLY TOUCH WHEN YOU MEASURE THIS DIMENSION

Tools for the Overcenter Dimension of the Lock Link for the Side Brace of the Main Landing Gear
Figure 204 (Sheet 2)



Adjustment of the Overcenter Dimension on the Lock Link for the Nose Landing Gear
Figure 205 (Sheet 1)



1 THIS IS THE OVERCENTER DIMENSION WHEN THE STOPS FULLY TOUCH

Adjustment of the Overcenter Dimension on the Lock Link for the Nose Landing Gear
Figure 205 (Sheet 2)

E. Remove the Downlocks

S 022-003

(1) Remove the downlocks from the main and nose landing gear. Use the downlock installation tool.

S 862-004

(2) Put the downlocks in the container in the main equipment center.

TASK 32-00-20-402-006

3. Install the Downlocks on the Landing Gear

A. Equipment

(1) Main Gear Downlocks - A32014-1
(2) Nose Gear Downlock - A32014-2
(3) Main and Nose Landing Gear Downlock Installation/Removal Tool - A32015-9

B. Access

(1) Location Zones

119/120	Main Equipment Center
211/212	Control Cabin
711	Nose Landing Gear
731/741	Main Landing Gear

C. Install the Downlocks

S 862-007

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Put the control lever for the landing gear in the DN position.

S 862-008

(2) Get the downlocks from the container in the main equipment center.

S 422-010

(3) Use the downlock installation tool (Detail B), to install the downlocks (at four locations) in the main landing gear (Detail A, Fig. 201).
   (a) If you cannot install the downlocks, do the steps to adjust the overcenter dimension of the lock link on the main landing gear.

S 422-011

(4) Use the downlock installation tool (Detail B), to install the downlock in the nose landing gear (Detail A, Fig. 202).
   (a) If you cannot install the downlock , do the steps to adjust the overcenter dimension of the lock link on the nose landing gear.

S 862-012

(5) Make sure you can see the red warning streamers.

TASK 32-00-20-822-013

4. Adjust the Overcenter Dimension of the Lock Link for the Main Landing Gear

A. Equipment
   (1) Main Gear Downlocks - A32014-1
   (2) Nose Gear Downlock - A32014-2
   (3) Downlock Stop Shim Adjustment Jig - A32086-1
   (4) Side Strut Rigging Bar, MLG - A32073-1
   (5) Main and Nose Landing Gear Downlock Installation/Removal Tool - A32015-9

B. Consumable Materials
   (1) A00247 Sealant - BMS 5-95, Chromate
   (2) D00633 Grease - BMS 3-33 (Preferred)
   (3) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

C. References
   (1) 07-11-01/201, Jacking Airplane
   (2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
   (3) 32-00-15/201, Landing Gear Door Locks
   (4) 32-32-03/401, Main Gear Side Brace Lock Spring
   (5) 32-32-05/401, Jury Strut Springs

D. Access
(1) Location Zones
731/741 Main Landing Gear

E. Prepare to Adjust the Overcenter Dimension

S 492-014
(1) Install the downlocks in the other main landing gear.

S 492-015

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (Ref 32-00-15).

S 862-016
(3) Remove the pressure from the center hydraulic system (Ref 29-11-00).

S 582-017
(4) Lift the airplane with jacks, until the wheels are above the ground (Ref 07-11-01).

F. Adjust the Overcenter Dimension

S 012-018
(1) Remove the lock springs for the side brace (Ref 32-32-03).

S 012-019
(2) Disconnect the lower end of the lock actuator for the side brace, from the lock link (Fig. 203, View A-A).

S 012-050
(3) Disconnect the lower end of the lock actuator for the drag brace, from the jury strut.

S 012-020
(4) Remove the jury strut springs (Ref 32-32-05).

S 862-021

WARNING: BE CAREFUL WHEN YOU PUSH ON THE JURY STRUT. WHEN YOU MOVE THE JURY STRUT FROM THE OVERCENTER POSITION THE STRUT CAN MOVE QUICKLY, AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Push up on the jury strut to release it from the overcenter position.

S 492-022
(6) Install the rigging bar for the side strut, between the attach points on one of the jury strut springs (Fig. 204, Detail A).

NOTE: The rigging bar for the side strut, removes the load from the side brace and puts the load on the drag brace.

S 032-023
(7) Remove the bolts that hold the downlock stop and shims to the lock link.

S 032-024
(8) Remove the hinge bolt for the lock link that goes through the upper pin (Fig. 203, View B-B).

S 862-025
(9) Put the fitting from the adjustment jig of the downlock stop shim, in the head of the joint pin (Fig. 204, View A-A).

S 492-026
(10) Install the bar from the adjustment jig, between the joint of the upper pin and the joint for the lock link (Fig. 204, Detail B).

S 222-027
(11) Measure the distance from the bar to the fitting as shown on Fig. 204, View A-A.

NOTE: This distance is not the overcenter dimension. When this distance is in tolerance, the overcenter dimension is in tolerance.

(a) If the distance is too small, remove the laminations from the shim until the distance is in tolerance.
(b) If the distance is too large, do the steps that follow:
1) Install a shim.
2) Remove the laminations until the distance is in tolerance.

S 432-028
(12) Temporarily install the shims and the stop with the bolts.

S 862-029
(13) Make sure you can install and remove the downlock easily.

S 032-030
(14) Remove the bolts from the stops.

S 622-031
(15) Apply the sealant to the mating surfaces of the shim and stops.

S 432-032
(16) Use the bolts and nuts to install the shim and stops.

S 622-033
(17) Apply the sealant to the nut.

S 092-034
(18) Remove the adjustment jig from the downlock stop shim.

S 032-035
(19) Remove the fitting.

S 412-036
(20) Do the steps that follow, to install the lock link (Fig. 203):
(a) Install the bolt in the upper pin (View B-B).
1) Install the end caps on the upper pin.
2) Put the bolt through the upper pin.
3) Install the washer and nut.
4) Install the cotter pin.
(b) Connect the lower end of the lock actuator of the side brace, to the upper lock link (View A-A).
(c) Install the lock springs of the side brace (Ref 32-32-03).

S 412-037
(21) Install the downlock in the lock link.

S 092-038
(22) Remove the rigging bar of the side strut, from the drag brace.

S 862-039
(23) Put the jury strut in the locked position.

S 412-040
(24) Install the other downlock.

S 412-041
(25) Connect the lock actuator of the drag strut, to the jury strut.

S 412-042
(26) Install the jury strut springs (Ref 32-32-05).

S 582-043
(27) Lower the airplane and remove the jacks (Ref 07-11-01).

TASK 32-00-20-822-044

5. Adjust the Overcenter Dimension of the Lock Link for the Nose Landing Gear (Fig. 205)

A. Consumable Materials
(1) Primer - BMS 10-11, Type I

B. References
(1) 32-21-06/401, Nose Gear Lock Link Assembly

C. Access
(1) Location Zones
711 Nose Landing Gear

D. Prepare to Adjust the Overcenter Dimension

S 492-045
(1) Install the downlocks on the main landing gear.

S 032-053
(2) Remove the lock link from the nose landing gear (Ref 32-21-06).

E. Adjust the Overcenter Dimension

NOTE: You cannot measure or adjust the overcenter dimension with the lock link installed.

S 222-046
(1) Measure the overcenter dimension.

NOTE: The overcenter dimension is the distance from Point B to the line between Points A and C (Details A and B).

S 222-047
(2) If the overcenter dimension is not in tolerance, do the steps that follow:
(a) Do the steps that follow to adjust the overcenter dimension (Detail B):
1) Remove the nuts and screws that hold the stops on the forward and the aft lock link.
2) If the overcenter dimension is too small, remove the laminations from the shims.
3) If the overcenter dimension is too large, do the steps that follow:
a) Install a shim below each stop.
b) Remove the laminations until the overcenter dimension is in tolerance.
4) Temporarily install the nuts and screws.
5) Make sure the overcenter dimension is in tolerance.
6) Make sure that you can install and remove the downlock easily.
(b) Tighten the nuts to 25-35 pound-inches (Detail B).
(c) Apply the primer to the shims and the stops.

S 412-048
(3) Install the lock link on the nose landing gear (Ref 32-21-06).

S 422-049
(4) Install the downlock on the nose landing gear.

LANDING GEAR CONTROL CABLES - MAINTENANCE PRACTICES

1. General
   A. This procedure gives the data for the location and the instructions to make all the control cables for the landing gear.
   B. The control cables are put into five groups. These groups are:
      (1) Extension and retraction cables
      (2) Alternate extension cables
      (3) Door ground release cables
      (4) Brake cables
      (5) Steering cables.
   C. There are no procedures for the removal, installation, or for the adjustment of the cables. Refer to 20-10-03/401 - Control Cables for procedures to do the removal or installation tasks. For the adjustment procedure, refer to the adjustment test procedure for the applicable system.

TASK 32-00-25-212-001

2. Control Cables for the Landing Gear
   A. Parts
      (1) Extension and retraction control cables for the landing gear.

NOTE: You can mix zinc-only and tin-zinc coated cables but opposite cable segments in the same cable loop must be of the same type (For example, in Fig. 201, cables LGVA-1 and LGVB-1 must be replaced together with both new cables either zinc-only or tin-zinc.) This will prevent asymmetric cable stretch that can make cable rigging bad.

(a) 767-200 AIRPLANES;
Refer to the table that follows:

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
201	1	Cable	32-31-01	05	100
	2	Cable			50
	3	Cable			75
	4	Cable			125
	5	Turnbuckle and Clip			40
	5	Turnbuckle and Clip			45

(b) 767-300 AIRPLANES;
Refer to the table that follows:

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
201	1	Cable	32-31-01	06	60
	2	Cable			65
	3	Cable			70
	4	Cable			75
	5	Turnbuckle and Clip			50
	5	Turnbuckle and Clip			55

(2) Control cables for the alternate extension and the door ground release of the landing gear.

NOTE: You can mix zinc-only and tin-zinc coated cables but opposite cable segments in the same cable loop must be of the same type (For example, in Fig. 202, cables AGE1A-1 and AGE1B-1 must be replaced together with both new cables either zinc-only or tin-zinc.) This will prevent asymmetric cable stretch that can make cable rigging bad.

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
202	1	Cable	32-35-65	02	120
	2	Load Limiter			35
	3	Cable			130
	4	Cable			140
	5	Turnbuckle and Clip			5
	5	Turnbuckle and Clip			15
	6	Cable			150
	7	Cable			160
	8	Cable			145
	9	Cable			155
	10	Cable			135
	11	Cable			125
	12	Cable			115
203	1	Cable			195
	2	Cable			200
	3	Cable			205
	4	Cable			205
	5	Cable			205
	6	Cable			205
	7	Cable			195
	8	Cable			200
	9	Turnbuckle and Clip			10
	9	Turnbuckle and Clip			15

(3) Control cables for the brakes and the nose wheel steering for the landing gear.

NOTE: You can mix zinc-only and tin-zinc coated cables but opposite cable segments in the same cable loop must be of the same type (For example, in Fig. 204, cables LGB2A-1 and LGB2B-1 must be replaced together with both new cables either zinc-only or tin-zinc.) This will prevent asymmetric cable stretch that can make cable rigging bad.

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
204	1	Cable	32-41-02	06	36
	2	Cable *[1]			30
	2	Cable *[2]			31
	3	Cable			115
	4	Cable			110
	5	Turnbuckle and Clip			5
	5	Turnbuckle and Clip			10
	6	Cable *[1]			30
	6	Cable *[2]			31
	7	Cable			35
	8	Cable			95
	9	Cable			100
	10	Cable			65
	11	Cable			65
	12	Cable			65
	13	Cable			65

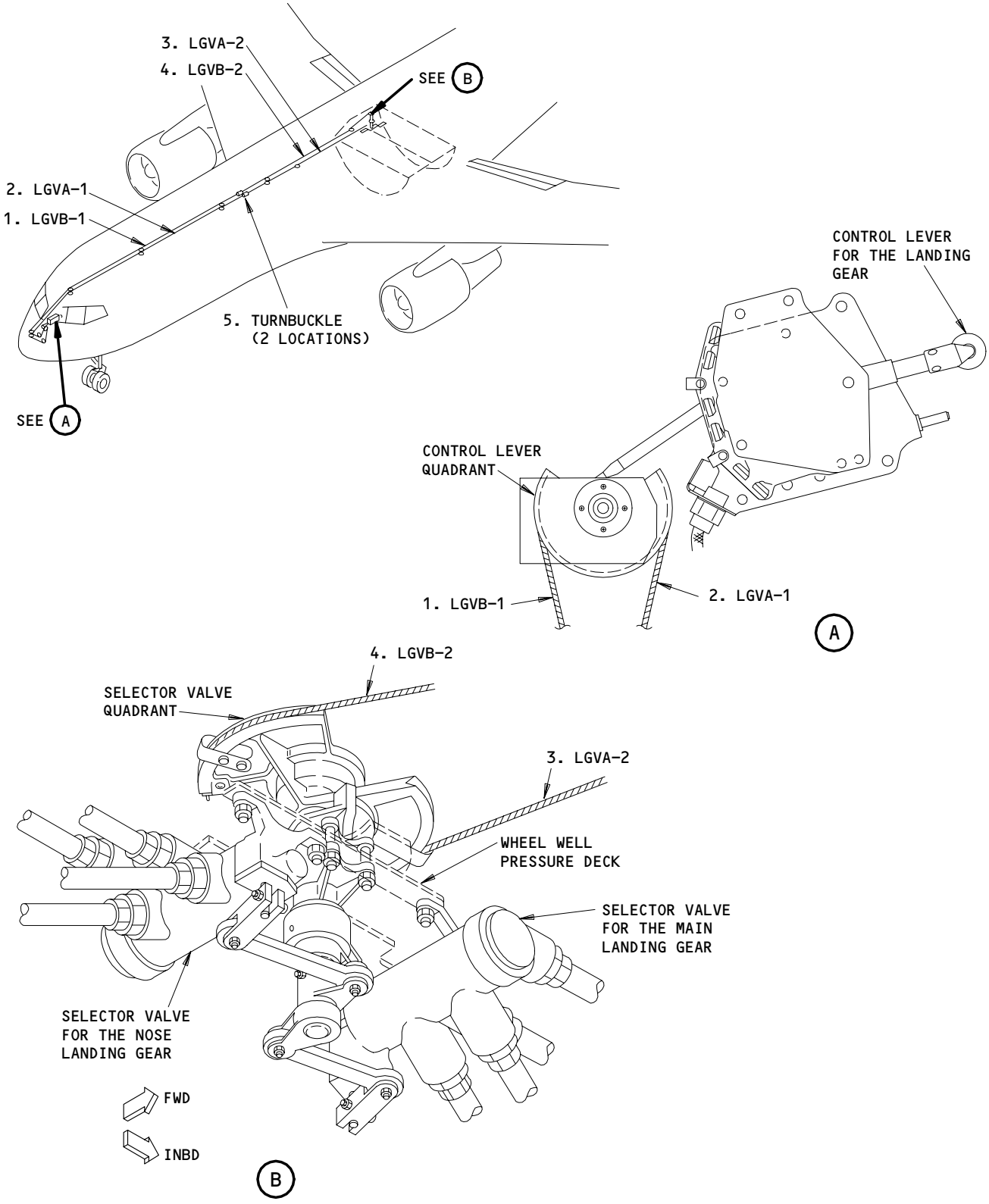
*[1] 767-200 AIRPLANES
*[2] 767-300 AIRPLANES

(a) AIRPLANES WITH CAPTAINS NOSE WHEEL STEERING USE;
Refer to the table that follow:

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
205	1	Cable	32-51-60	01	25
	2	Cable			20
	3	Turnbuckle and Clip			5
	3	Turnbuckle and Clip			10
	4	Cable			15
	5	Cable	32-51-04	01	300
	6	Cable			300
	7	Turnbuckle and Clip			280
	7	Turnbuckle and Clip			285
	8	Cable			290
	9	Cable	32-51-60	01	40
	10	Cable			35
	11	Cable			30

(b) AIRPLANES WITH FIRST OFFICER NOSE WHEEL STEERING;
Refer to the table that follows:

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
206	1	Cable	32-51-60	01	27
	2	Turnbuckle and Clip			7
	2	Turnbuckle and Clip			11
	3	Cable			28
	4	Cable			20
	5	Turnbuckle and Clip			5
	5	Turnbuckle and Clip			10
	6	Cable			15
	7	Cable	32-51-04	01	300
	8	Cable			300
	9	Turnbuckle and Clip			280
	9	Turnbuckle and Clip			285
	10	Cable			290
	11	Cable	32-51-60	01	40
	12	Cable			35
	13	Cable			30
	14	Cable			26



Control Cables for the Extension and Retraction of the Landing Gear
Figure 201 (Sheet 1)

767-200 [1]				
CABLE REFERENCE	QTY	LENGTH (INCHES)	TERMINALS	
			1	2
LGVA-1	1	630.9	BACT14A3	MS21260L3LH
LGVA-2	1	308.2	BACT14A3	MS21260L3RH
LGVB-1	1	607.8	BACT14A3	MS21260L3LH
LGVB-2	1	329.5	BACT14A3	MS21260L3RH

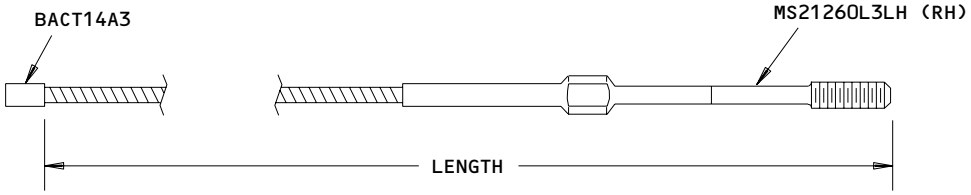
CABLE MATERIAL - CARBON STEEL PER BMS 7-265, TYPE I, COMPOSITION A
CABLE SIZE AND CONSTRUCTION - 3/32 7 x 19

767-200 [2] [3]				
CABLE REFERENCE	QTY	LENGTH (INCHES)	TERMINALS	
			1	2
LGVA-1	1	630.7	BACT14A3	MS21260L3LH
LGVA-2	1	308.2	BACT14A3	MS21260L3RH
LGVB-1	1	607.7	BACT14A3	MS21260L3LH
LGVB-2	1	329.5	BACT14A3	MS21260L3RH

CABLE MATERIAL - CARBON STEEL PER BMS 7-265, TYPE I, COMPOSITION A(TZ)
CABLE SIZE AND CONSTRUCTION - 3/32 7 x 7

NOTE: DO NOT MIX TIN-ZINC (TZ) COVERED CABLES WITH OTHER TYPE CABLES ON THE SAME AIRPLANE, BECAUSE TZ CABLES HAVE A DIFFERENT STRETCH RATE THAN OTHER CABLES.

LGVA-1, LGVA-2, LGVB-1, LGVB-2



[1] ZINC-ONLY COATED CONTROL CABLES
[2] TIN-OVER-ZINC COATED CONTROL CABLES
[3] SERVICE LETTER 20-006-A RECOMMENDS TIN-OVER-ZINC COATED CONTROL CABLES TO MINIMIZE STRETCH.

Control Cables for the Extension and Retraction of the Landing Gear
Figure 201 (Sheet 2)

K19971

767-300 [1]				
CABLE REFERENCE	QTY	LENGTH (INCHES)	TERMINALS	
			1	2
LGVA-1	1	751.5	BACT14A3	MS21260L3LH
LGVA-2	1	308.2	BACT14A3	MS21260L3RH
LGVB-1	1	728.0	BACT14A3	MS21260L3LH
LGVB-2	1	329.5	BACT14A3	MS21260L3RH

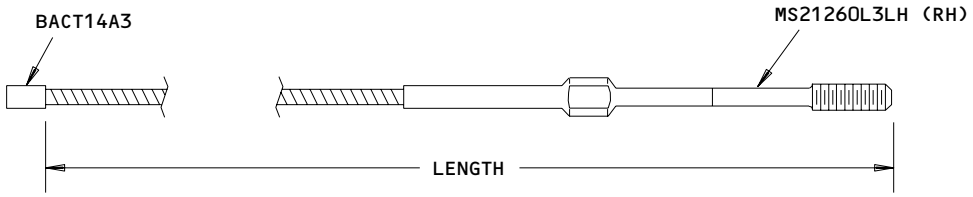
CABLE MATERIAL - CARBON STEEL PER BMS 7-265, TYPE I, COMPOSITION A
CABLE SIZE AND CONSTRUCTION - 3/32 7 x 19

767-300 [2] [3]				
CABLE REFERENCE	QTY	LENGTH (INCHES)	TERMINALS	
			1	2
LGVA-1	1	752.3	BACT14A3	MS21260L3LH
LGVA-2	1	308.2	BACT14A3	MS21260L3RH
LGVB-1	1	728.9	BACT14A3	MS21260L3LH
LGVB-2	1	329.4	BACT14A3	MS21260L3RH

CABLE MATERIAL - CARBON STEEL PER BMS 7-265, TYPE I, COMPOSITION A (TZ)
CABLE SIZE AND CONSTRUCTION - 3/32 7 x 7

NOTE: DO NOT MIX TIN-ZINC (TZ) COVERED CABLES WITH OTHER TYPE CABLES ON THE SAME AIRPLANE, BECAUSE TZ CABLES HAVE A DIFFERENT STRETCH RATE THAN OTHER CABLES.

LGVA-1, LGVA-2, LGVB-1, LGVB-2

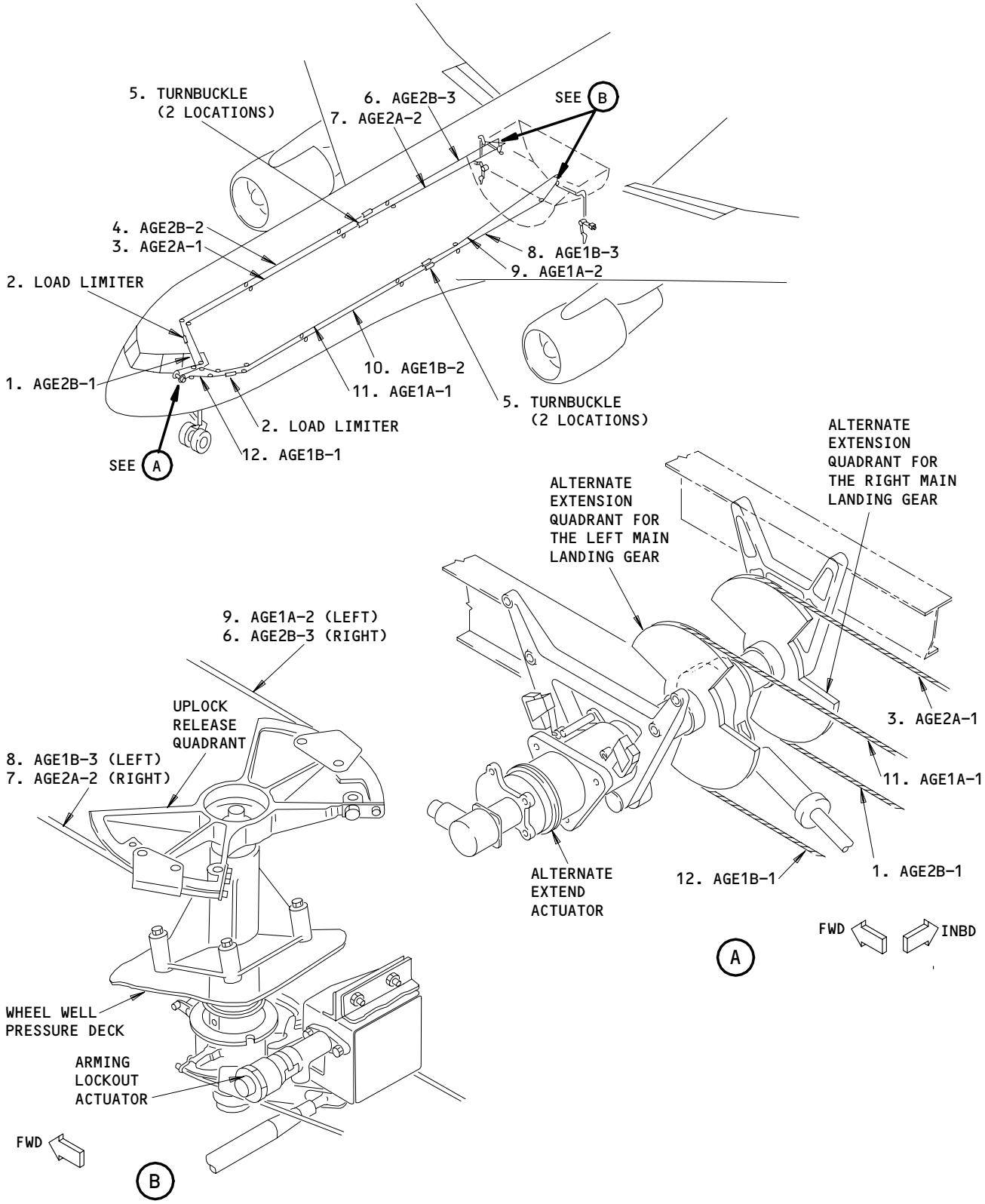


[1] ZINC-ONLY COATED CONTROL CABLES

[2] TIN-OVER-ZINC COATED CONTROL CABLES

[3] SERVICE LETTER 20-006-A RECOMMENDS TIN-OVER-ZINC COATED CONTROL CABLES TO MINIMIZE STRETCH.

Control Cables for the Extension and Retraction of the Landing Gear
Figure 201 (Sheet 3)

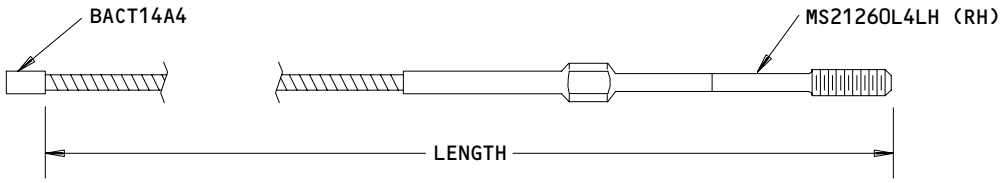


Control Cables for the Alternate Extension of the Main Landing Gear
Figure 202 (Sheet 1)

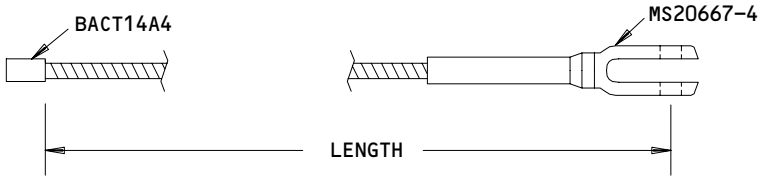
CABLE REFERENCE	QTY	LENGTH (INCHES)	TERMINALS	
			1	2
AGE1A-1	1	476.2	BACT14A4	MS21260L4LH
AGE1A-2	1	306.1	BACT14A4	MS21260L4RH
AGE1B-1	1	77.9	BACT14A4	MS20667-4
AGE1B-2	1	408.0	BACT14A4	MS21260L4LH
AGE1B-3	1	287.4	BACT14A4	MS21260L4RH
AGE2A-1	1	499.6	BACT14A4	MS21260L4LH
AGE2A-2	1	305.6	BACT14A4	MS21260L4RH
AGE2B-1	1	59.1	BACT14A4	MS20667-4
AGE2B-2	1	450.5	BACT14A4	MS21260L4LH
AGE2B-3	1	288.6	BACT14A4	MS21260L4RH

CABLE MATERIAL - CARBON STEEL PER BMS 7-265, TYPE I, COMPOSITION A (TZ)
CABLE SIZE AND CONSTRUCTION - 1/8 7 x 19

AGE1A-1, AGE1A-2, AGE1B-2, AGE1B-3, AGE2A-1, AGE2A-2, AGE2B-2, AGE2B-3



AGE1B-1, AGE2B-1

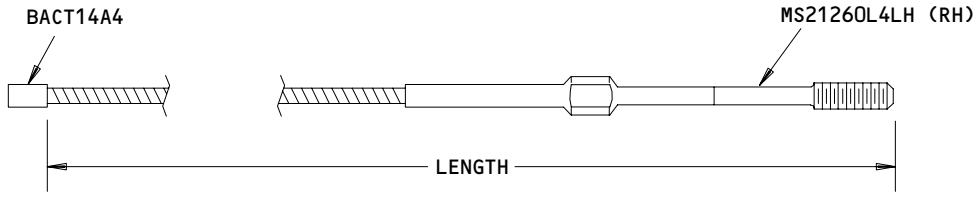


Control Cables for the Alternate Extension of the Main Landing Gear
Figure 202 (Sheet 2)

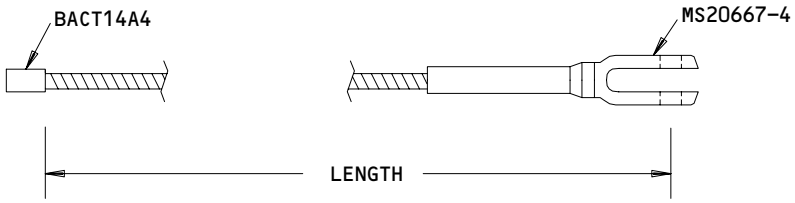
CABLE REFERENCE	QTY	LENGTH (INCHES)	TERMINALS	
			1	2
AGE1A-1	1	597.2 [1] 598.9 [2]	BACT14A4	MS21260L4LH
AGE1A-2	1	306.1	BACT14A4	MS21260L4RH
AGE1B-1	1	77.9 [1] 77.7 [2]	BACT14A4	MS20667-4
AGE1B-2	1	528.2 [1] 528.0 [2]	BACT14A4	MS21260L4LH
AGE1B-3	1	287.9	BACT14A4	MS21260L4RH
AGE2A-1	1	620.4 [1] 620.8 [2]	BACT14A4	MS21260L4LH
AGE2A-2	1	305.6	BACT14A4	MS21260L4RH
AGE2B-1	1	59.1 [1] 58.4 [2]	BACT14A4	MS20667-4
AGE2B-2	1	570.5 [1] 571.8 [2]	BACT14A4	MS21260L4LH
AGE2B-3	1	288.6	BACT14A4	MS21260L4RH

CABLE MATERIAL - CARBON STEEL PER BMS 7-265, TYPE I, COMPOSITION A (TZ)
CABLE SIZE AND CONSTRUCTION - 1/8 7 x 19

AGE1A-1, AGE1A-2, AGE1B-2, AGE1B-3, AGE2A-1, AGE2A-2, AGE2B-2, AGE2B-3



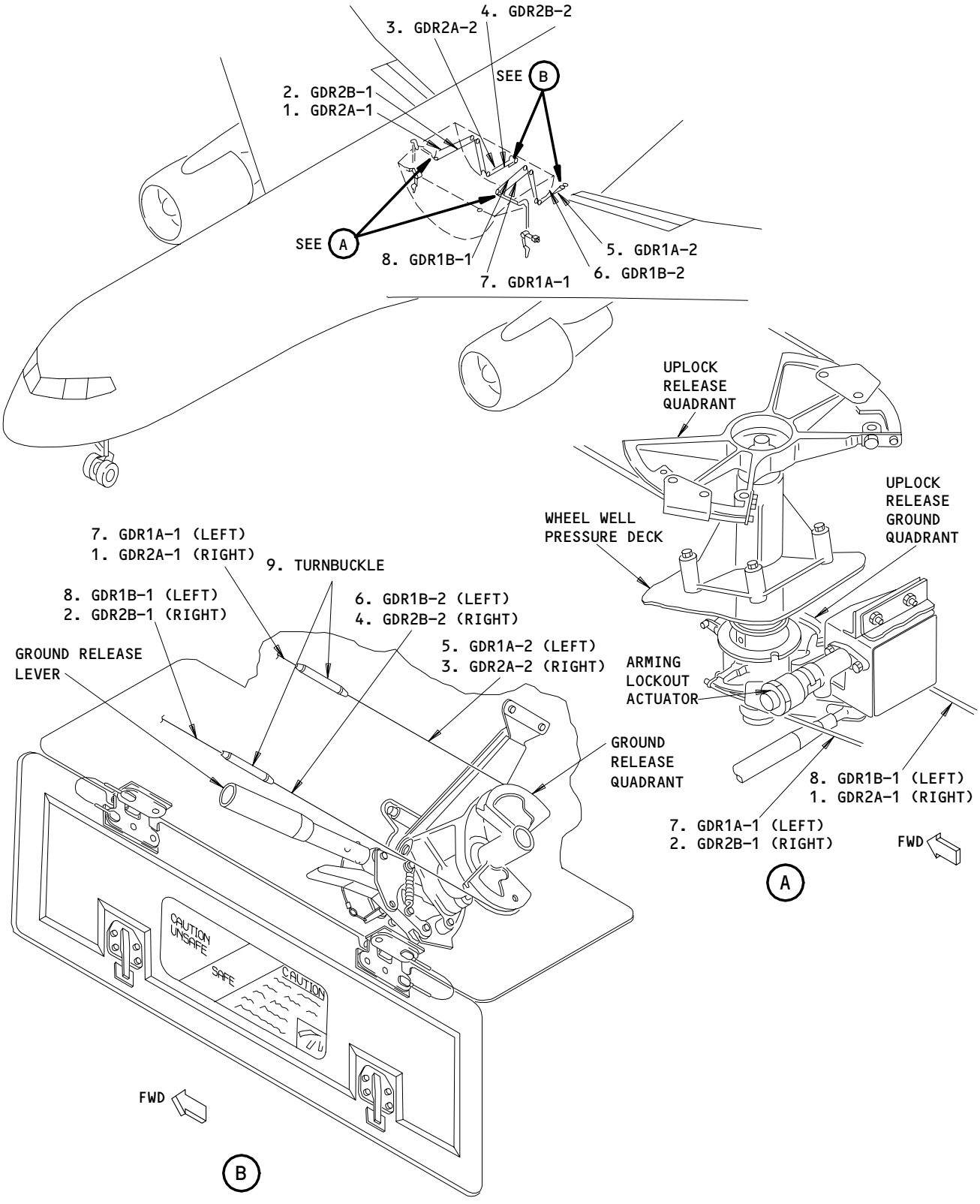
AGE1B-1, AGE2B-1



[1] SAS 150-154,275
[2] SAS 050,051,155-167,276-999

Control Cables for the Alternate Extension of the Main Landing Gear
Figure 202 (Sheet 3)

703868

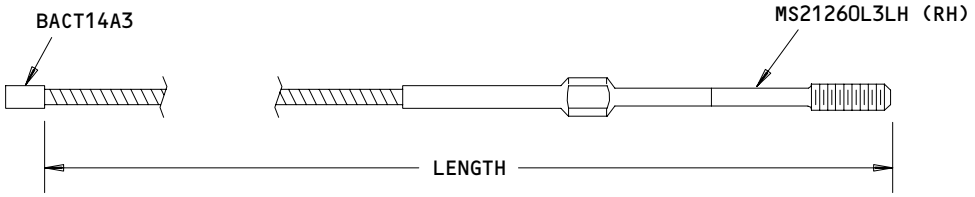


Control Cables for the Door Ground Release of the Main Landing Gear
Figure 203 (Sheet 1)

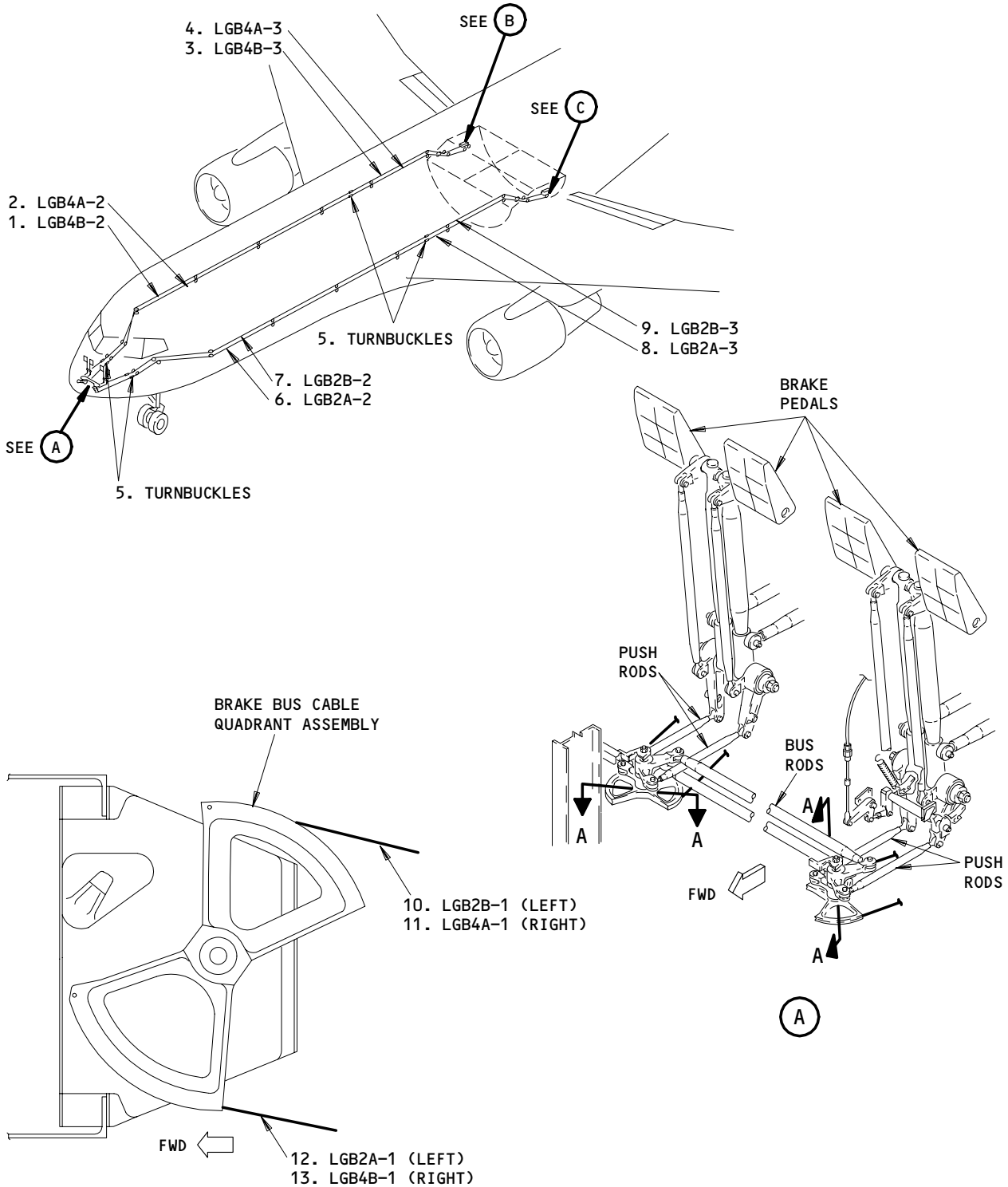
CABLE REFERENCE	QTY	LENGTH (INCHES)	TERMINALS	
			1	2
GDR1A-1	1	186.1	BACT14A3	MS21260L3LH
GDR1A-2	1	12.7	BACT14A3	MS21260L3LH
GDR1B-1	1	187.2	BACT14A3	MS21260L3LH
GDR1B-2	1	12.7	BACT14A3	MS21260L3LH
GDR2A-1	1	186.1	BACT14A3	MS21260L3LH
GDR2A-2	1	12.7	BACT14A3	MS21260L3LH
GDR2B-1	1	187.2	BACT14A3	MS21260L3LH
GDR2B-2	1	12.7	BACT14A3	MS21260L3LH

CABLE MATERIAL - CARBON STEEL PER BMS 7-265, TYPE I, COMPOSITION A (TZ)
CABLE SIZE AND CONSTRUCTION - 3/32 7 x 7

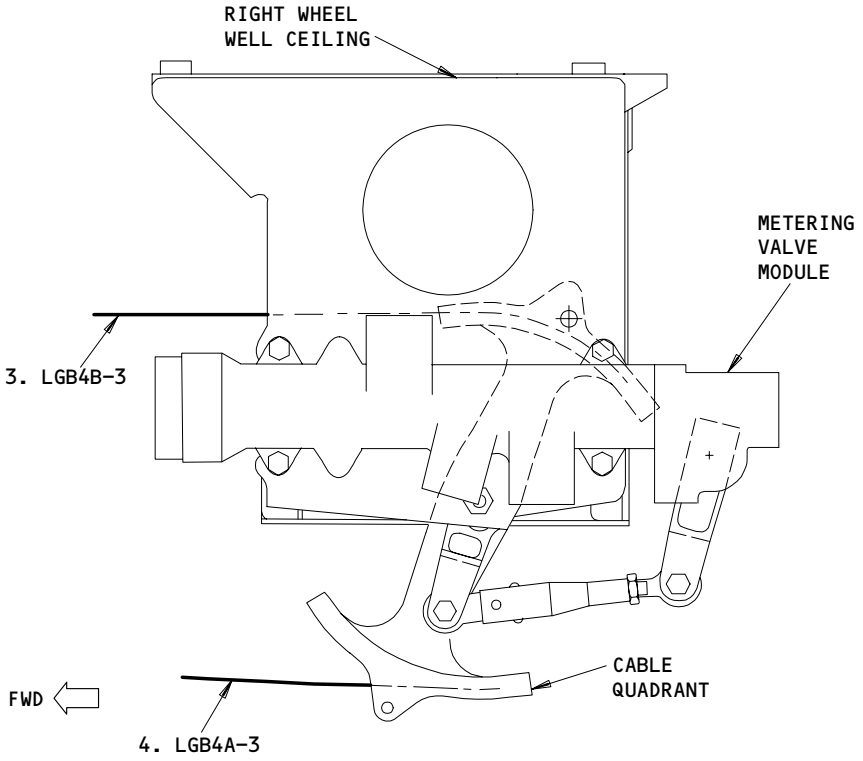
GDR1A-1, GDR1A-2, GDR1B-1, GDR1B-2, GDR2A-1, GDR2A-2, GDR2B-1, GDR2B-2



Ground Release Control Cables for the Door of the Main Landing Gear
Figure 203 (Sheet 2)

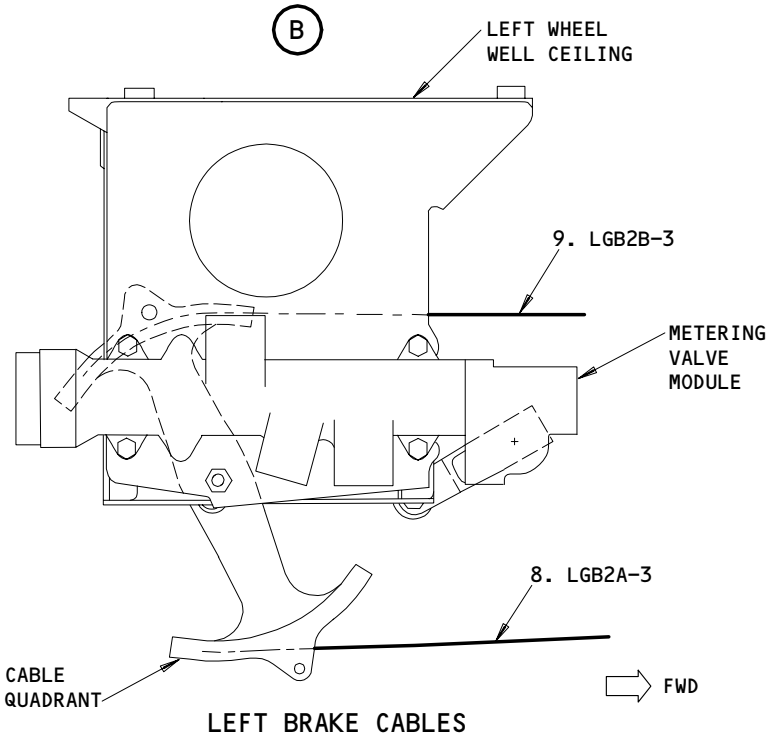


Brake Control Cables for the Landing Gear
Figure 204 (Sheet 1)



RIGHT BRAKE CABLES

B



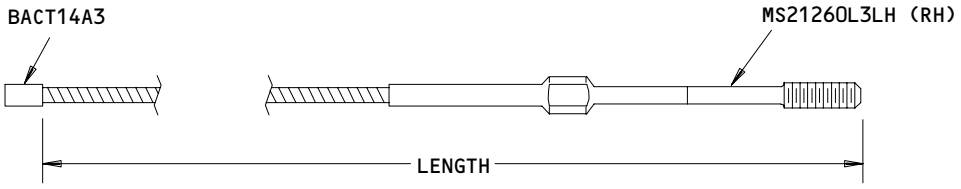
LEFT BRAKE CABLES

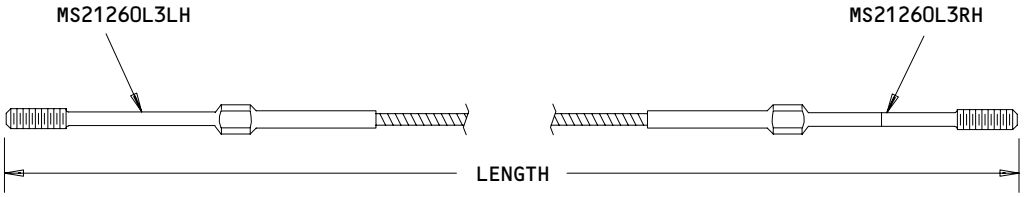
C

Brake Control Cables for the Landing Gear
Figure 204 (Sheet 2)

CABLE REFERENCE	QTY	LENGTH (INCHES)	TERMINALS	
			1	2
LGB2A-1	1	14.3	BACT14A3	MS21260L3LH
LGB2A-2	1	566.8	MS21260L3RH	MS21260L3LH
LGB2A-3	1	329.4	BACT14A3	MS21260L3RH
LGB2B-1	1	14.3	BACT14A3	MS21260L3LH
LGB2B-2	1	549.0	MS21260L3RH	MS21260L3LH
LGB2B-3	1	349.1	BACT14A3	MS21260L3RH
LGB4A-1	1	14.3	BACT14A3	MS21260L3LH
LGB4A-2	1	566.3	MS21260L3RH	MS21260L3LH
LGB4A-3	1	333.4	BACT14A3	MS21260L3RH
LGB4B-1	1	14.3	BACT14A3	MS21260L3LH
LGB4B-2	1	549.2	MS21260L3RH	MS21260L3LH
LGB4B-3	1	349.1	BACT14A3	MS21260L3RH

CABLE MATERIAL - CARBON STEEL PER BMS 7-265, TYPE I, COMPOSITION A (TZ)
CABLE SIZE AND CONSTRUCTION - 3/32 7 x 7

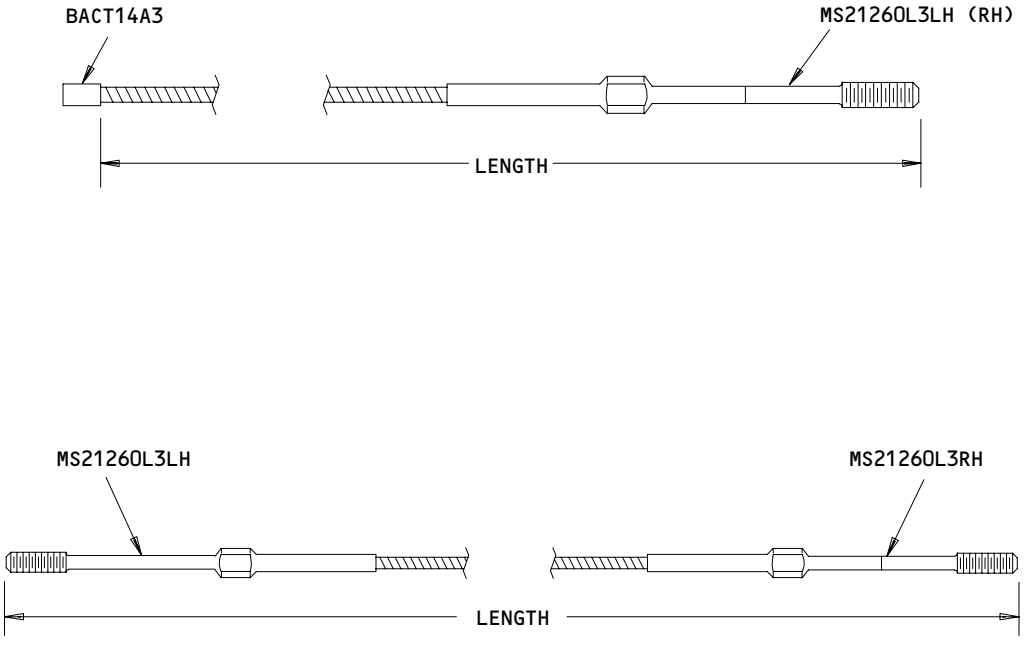




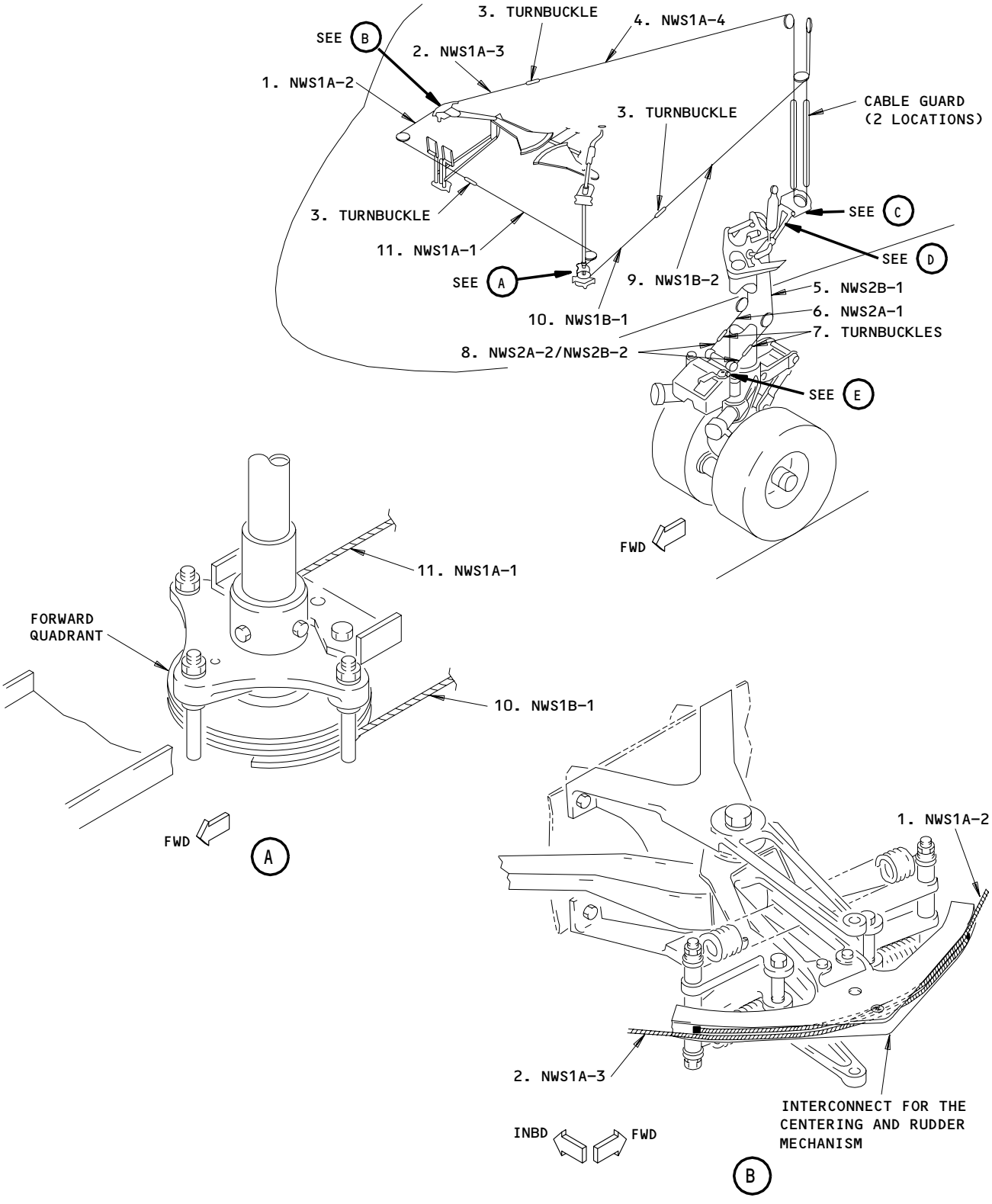
Brake Control Cables for the Landing Gear
Figure 204 (Sheet 3)

LANDING GEAR BRAKE CONTROL CABLES				
CABLE REFERENCE	QTY	LENGTH (INCHES)	TERMINALS	
			1	2
LGB2A-1	1	14.3	BACT14A3	MS21260L3LH
LGB2A-2	1	687.5	MS21260L3RH	MS21260L3LH
LGB2A-3	1	329.4	BACT14A3	MS21260L3RH
LGB2B-1	1	14.3	BACT14A3	MS21260L3LH
LGB2B-2	1	670.1	MS21260L3RH	MS21260L3LH
LGB2B-3	1	349.1	BACT14A3	MS21260L3RH
LGB4A-1	1	14.3	BACT14A3	MS21260L3LH
LGB4A-2	1	687.2	MS21260L3RH	MS21260L3LH
LGB4A-3	1	333.4	BACT14A3	MS21260L3RH
LGB4B-1	1	14.3	BACT14A3	MS21260L3LH
LGB4B-2	1	670.3	MS21260L3RH	MS21260L3LH
LGB4B-3	1	349.1	BACT14A3	MS21260L3RH

CABLE MATERIAL - CARBON STEEL PER BMS 7-265, TYPE I, COMPOSITION A (TZ)
CABLE SIZE AND CONSTRUCTION - 3/32 7 x 7



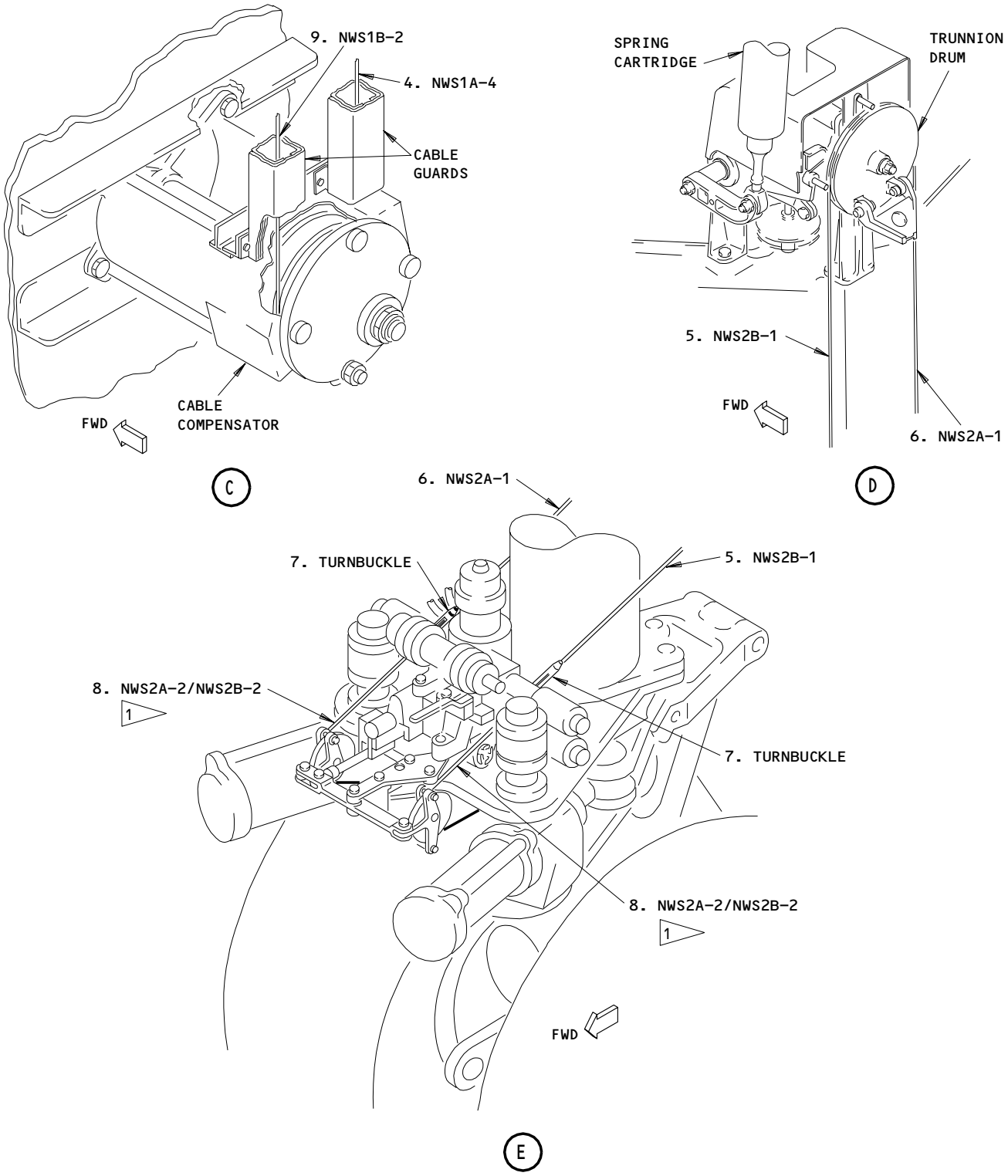
Brake Control Cables for the Landing Gear
Figure 204 (Sheet 4)



Control Cables for the Nose Wheel Steering
Figure 205 (Sheet 1)

EFFECTIVITY
AIRPLANES WITH CAPTAINS NOSE WHEEL STEERING TILLER ONLY:

K19568



1 CABLE NWS2A-2/NWS2B-2 IS A SINGLE CABLE WITH A BACT14B BALL SWAGED IN THE MIDDLE.

Control Cables for the Nose Wheel Steering
Figure 205 (Sheet 2)

EFFECTIVITY
AIRPLANES WITH CAPTAINS NOSE WHEEL STEERING TILLER ONLY:

K19576

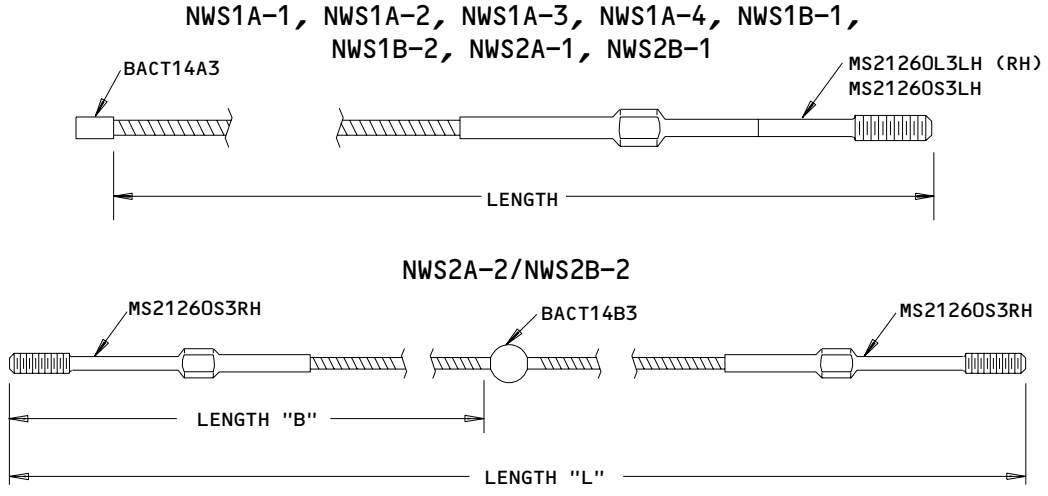
ZINC-ONLY COATED CONTROL CABLES					
CABLE REFERENCE	QTY	LENGTH (INCHES)	TERMINALS		
			1	2	3
NWS1A-1	1	65.0	BACT14A3	MS21260L3LH	
NWS1A-2	1	53.6	BACT14A3	MS21260L3RH	
NWS1A-3	1	27.5	BACT14A3	MS21260L3LH	
NWS1A-4	1	151.6	BACT14A3	MS21260L3RH	
NWS1B-1	1	41.9	BACT14A3	MS21260L3LH	
NWS1B-2	1	167.6	BACT14A3	MS21260L3RH	
NWS2A-1	1	50.9	BACT14A3	MS21260S3LH	
NWS2B-1	1	50.9	BACT14A3	MS21260S3LH	
NWS2A-2/NWS2B-2 1	1	L=94.6 B=47.3	MS21260S3RH	BACT14B3	MS21260S3RH

CABLE MATERIAL - CARBON STEEL PER BMS 7-265, TYPE I, COMPOSITION A
CABLE SIZE AND CONSTRUCTION - 3/32 7 x 19

TIN-OVER-ZINC COATED CONTROL CABLES 2					
CABLE REFERENCE	QTY	LENGTH (INCHES)	TERMINALS		
			1	2	3
NWS1A-1	1	65.0	BACT14A3	MS21260L3LH	
NWS1A-2	1	53.6	BACT14A3	MS21260L3RH	
NWS1A-3	1	27.5	BACT14A3	MS21260L3LH	
NWS1A-4	1	151.5	BACT14A3	MS21260L3RH	
NWS1B-1	1	41.9	BACT14A3	MS21260L3LH	
NWS1B-2	1	168.9	BACT14A3	MS21260L3RH	
NWS2A-1	1	50.9	BACT14A3	MS21260S3LH	
NWS2B-1	1	50.9	BACT14A3	MS21260S3LH	
NWS2A-2/NWS2B-2 1	1	L=94.6 B=47.3	MS21260S3RH	BACT14B3	MS21260S3RH

CABLE MATERIAL - CARBON STEEL PER BMS 7-265, TYPE I, COMPOSITION A (TZ) 3
CABLE SIZE AND CONSTRUCTION - 3/32 7 x 7

NOTE: DO NOT MIX TIN-ZINC (TZ) COVERED CABLES WITH OTHER TYPE CABLES ON THE SAME AIRPLANE, BECAUSE TZ CABLES HAVE A DIFFERENT STRETCH RATE THAN OTHER CABLES.

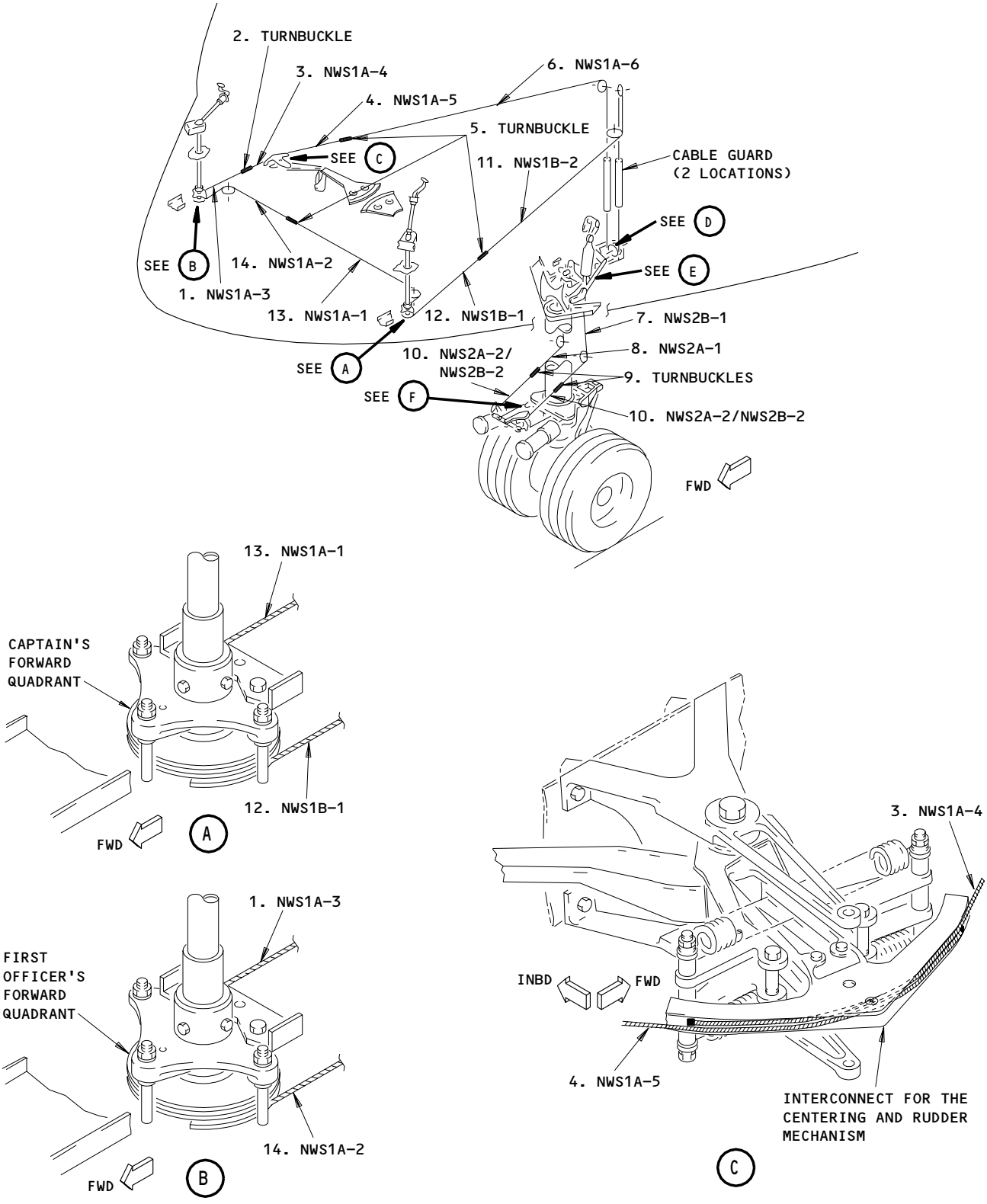


1 CABLE NWS2A-2/NWS2B-2 IS A SINGLE CABLE WITH A BACT14B3 BALL SWAGED IN THE MIDDLE
2 SERVICE LETTER 20-006-A RECOMMENDS TIN-OVER-ZINC COATED CONTROL CABLES TO MINIMIZE STRETCH.

Control Cables for the Nose Wheel Steering
Figure 205 (Sheet 3)

EFFECTIVITY
AIRPLANES WITH CAPTAINS NOSE WHEEL STEERING TILLER ONLY:

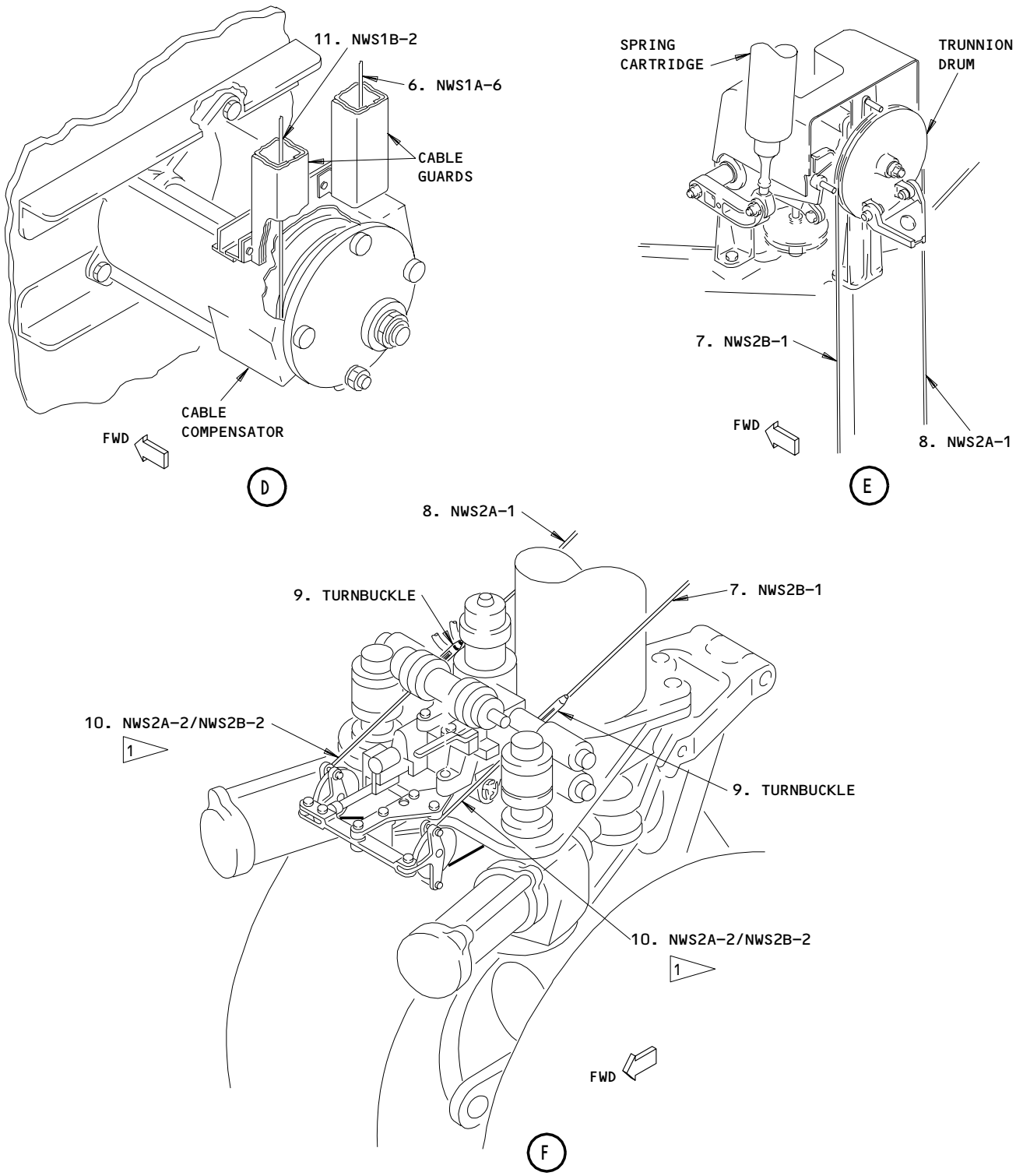
K20237



Control Cables for the Nose Wheel Steering
Figure 206 (Sheet 1)

EFFECTIVITY
AIRPLANES WITH CAPTAINS AND FIRST OFFICERS NOSE WHEEL STEERING TILLER.

K19590



1 CABLE NWS2A-2/NWS2B-2 IS A SINGLE CABLE WITH A BACT14B BALL SWAGED IN THE MIDDLE

Control Cables for the Nose Wheel Steering
Figure 206 (Sheet 2)

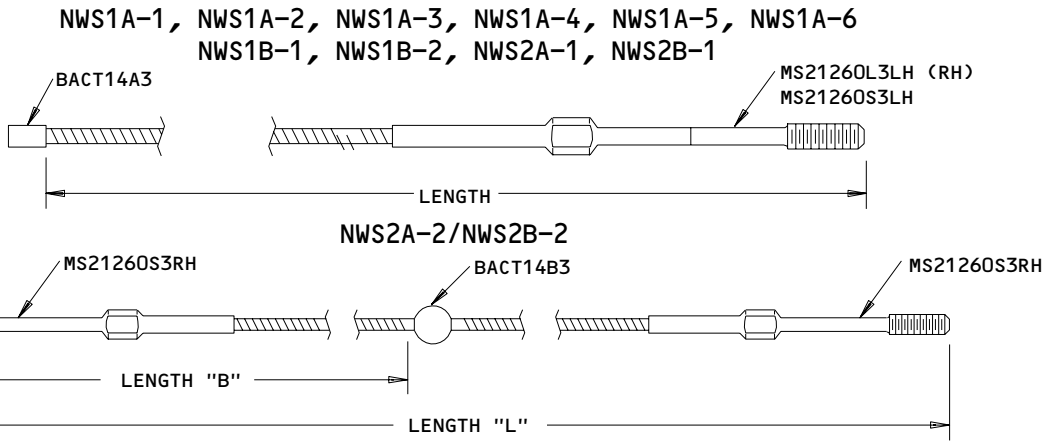
ZINC-ONLY COATED CONTROL CABLES					
CABLE REFERENCE	QTY	LENGTH (INCHES)	TERMINALS		
			1	2	3
NWS1A-1	1	65.0	BACT14A3	MS21260L3LH	
NWS1A-2	1	42.4	BACT14A3	MS21260L3RH	
NWS1A-3	1	23.7	BACT14A3	MS21260L3LH	
NWS1A-4	1	15.2	BACT14A3	MS21260L3RH	
NWS1A-5	1	27.5	BACT14A3	MS21260L3LH	
NWS1A-6	1	151.6	BACT14A3	MS21260L3RH	
NWS1B-1	1	41.9	BACT14A3	MS21260L3LH	
NWS1B-2	1	167.6	BACT14A3	MS21260L3RH	
NWS2A-1	1	50.9	BACT14A3	MS21260S3LH	
NWS2B-1	1	50.9	BACT14A3	MS21260S3LH	
NWS2A-2/NWS2B-2 (1)	1	L=94.6 B=47.3	MS21260S3RH	BACT14B3	MS21260S3RH

CABLE MATERIAL - CARBON STEEL PER BMS 7-265, TYPE I, COMPOSITION A
CABLE SIZE AND CONSTRUCTION - 3/32 7 x 19

TIN-OVER-ZINC COATED CONTROL CABLES (2)					
CABLE REFERENCE	QTY	LENGTH (INCHES)	TERMINALS		
			1	2	3
NWS1A-1	1	65.0	BACT14A3	MS21260L3LH	
NWS1A-2	1	42.4	BACT14A3	MS21260L3RH	
NWS1A-3	1	23.7	BACT14A3	MS21260L3LH	
NWS1A-4	1	15.2	BACT14A3	MS21260L3RH	
NWS1A-5	1	27.5	BACT14A3	MS21260L3LH	
NWS1A-6	1	151.5	BACT14A3	MS21260L3RH	
NWS1B-1	1	41.9	BACT14A3	MS21260L3LH	
NWS1B-2	1	168.9	BACT14A3	MS21260L3RH	
NWS2A-1	1	50.9	BACT14A3	MS21260S3LH	
NWS2B-1	1	50.9	BACT14A3	MS21260S3LH	
NWS2A-2/NWS2B-2 (1)	1	L=94.6 B=47.3	MS21260S3RH	BACT14B3	MS21260S3RH

CABLE MATERIAL - CARBON STEEL PER BMS 7-265, TYPE I, COMPOSITION A (TZ)
CABLE SIZE AND CONSTRUCTION - 3/32 7 x 7

NOTE: DO NOT MIX TIN-ZINC (TZ) COVERED CABLES WITH OTHER TYPE CABLES ON THE SAME AIRPLANE, BECAUSE TZ CABLES HAVE A DIFFERENT STRETCH RATE THAN OTHER CABLES.



(1) CABLE NWS2A-2/NWS2B-2 IS A SINGLE CABLE WITH A BACT14B3 BALL SWAGED IN THE MIDDLE
(2) SERVICE LETTER 20-006-A RECOMMENDS TIN-OVER-ZINC COATED CONTROL CABLES TO MINIMIZE STRETCH.

Control Cables for the Nose Wheel Steering
Figure 206 (Sheet 3)

EFFECTIVITY
AIRPLANES WITH CAPTAINS AND FIRST OFFICERS NOSE WHEEL STEERING TILLER.

K20232

MAIN GEAR SKID BARS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the skid bars from the main gear wheel well. The second task installs the skid bars in the main gear wheel well.

TASK 32-00-28-004-001

2. Remove the Skid Bars from the Main Gear Wheel Well (Fig. 401)
   A. References
      (1) AMM 32-00-15/201, Landing Gear Door Locks
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          731/741 Main Landing Gear (MLG)
          732/742 MLG Body Doors

   C. Prepare for the Removal of the Skid Bars

      S 484-002

      WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

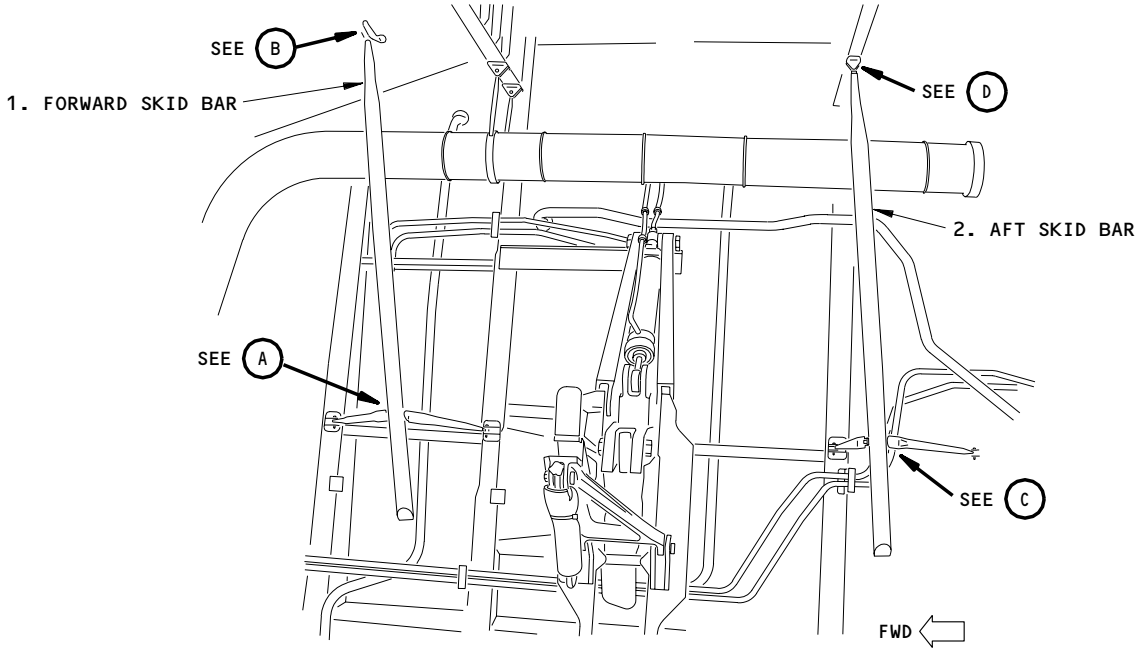
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 484-003

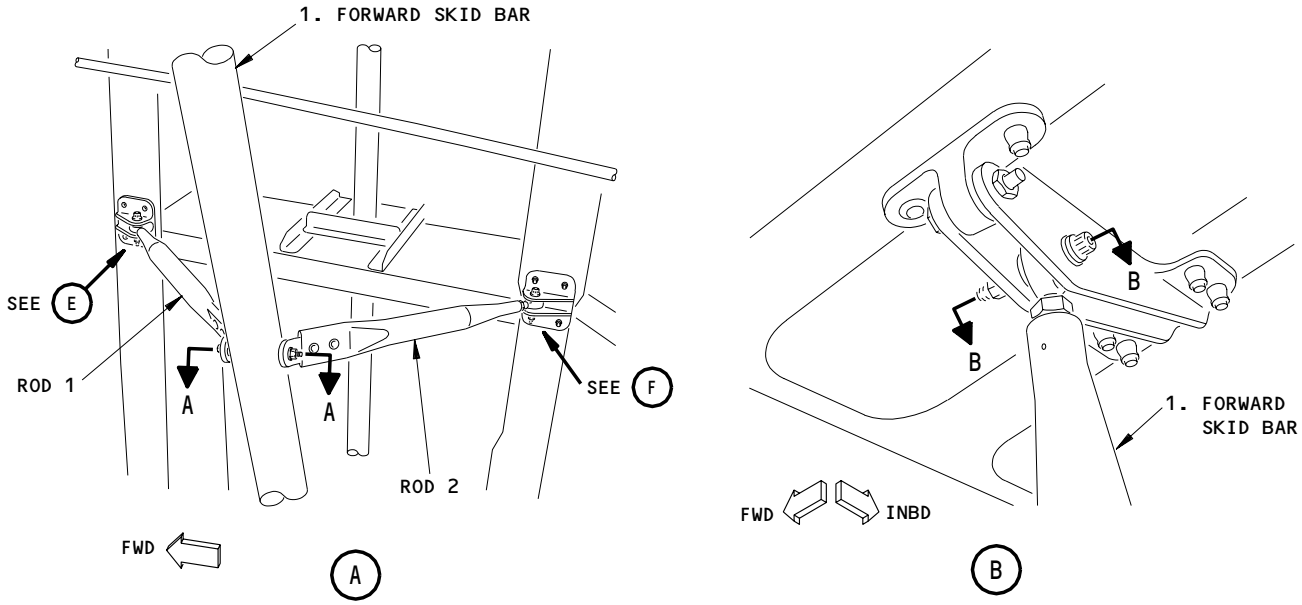
      WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).
   D. Remove the Skid Bars.

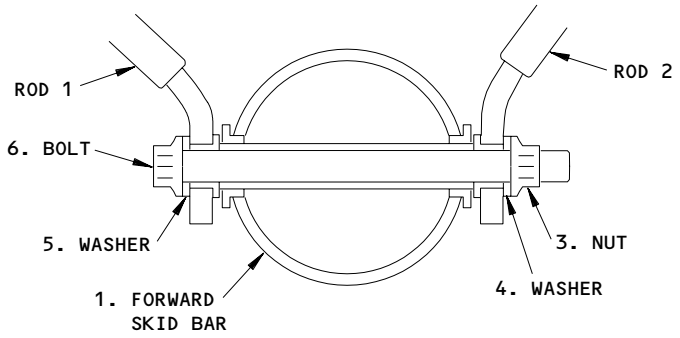
      S 024-008
      (1) To remove the forward skid bar, do these steps (View A & B):
          (a) Remove the bolt, washers and nut from the lower end of the skid bar (View A-A).
          (b) If you need to remove the stabilizer rods (1,2), do these steps (View A):
              1) Remove the bolt, washers and nut to disconnect the forward stabilizer rod from the structure (View E).



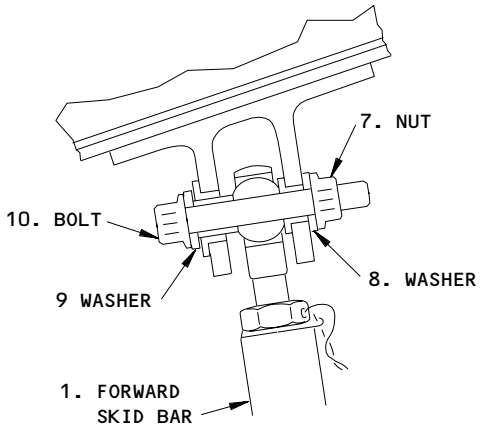
LEFT MAIN GEAR WHEEL WELL
(EXAMPLE)



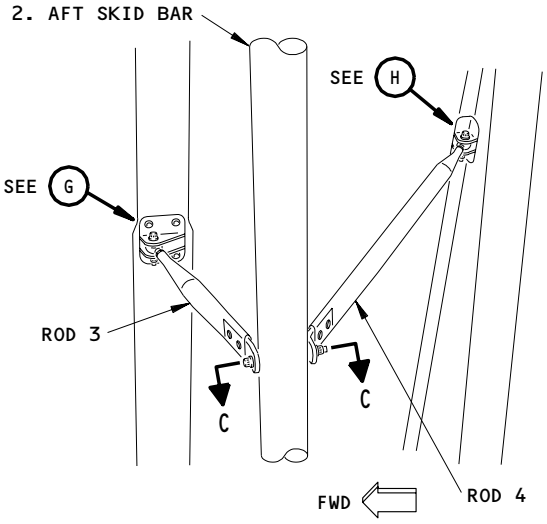
Main Landing Gear Skid Bar Installation
Figure 401 (Sheet 1)



A–A



B–B



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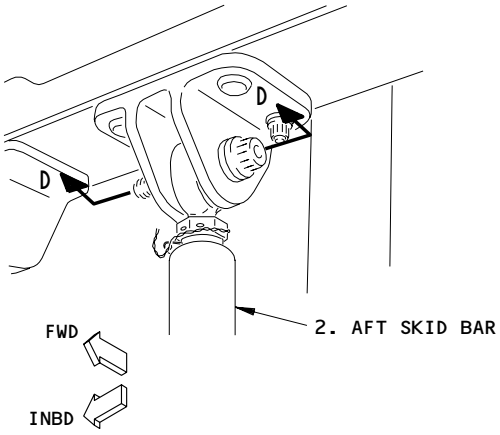
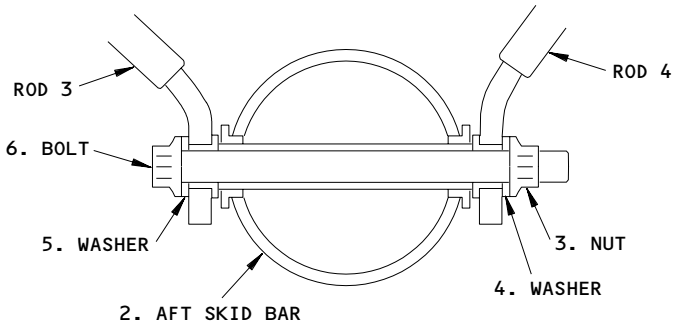
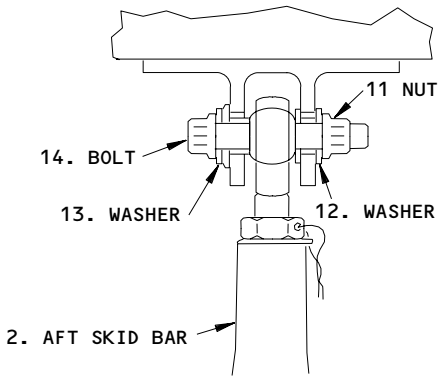


D

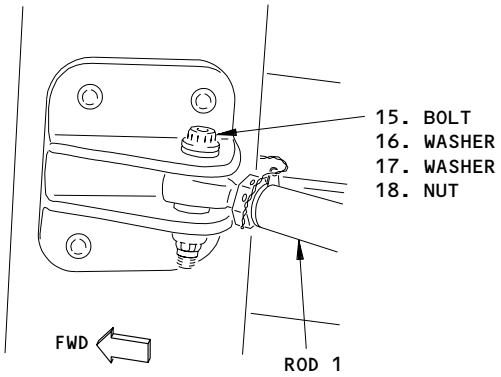
Main Landing Gear Skid Bar Installation
Figure 401 (Sheet 2)



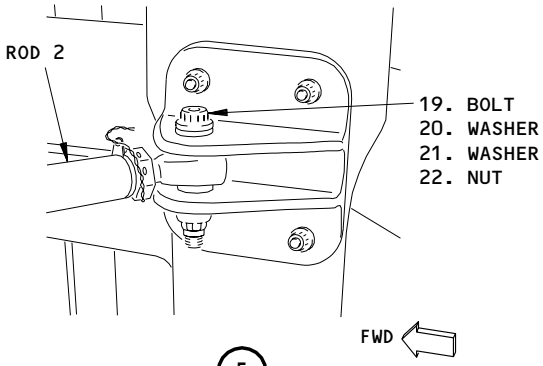
C–C



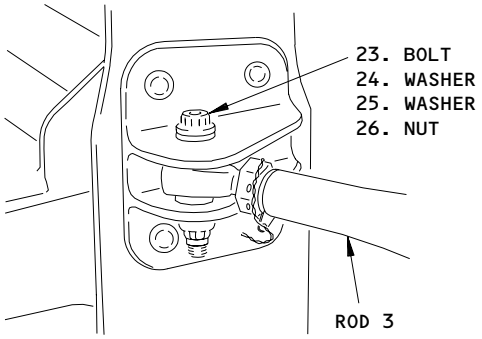
D–D



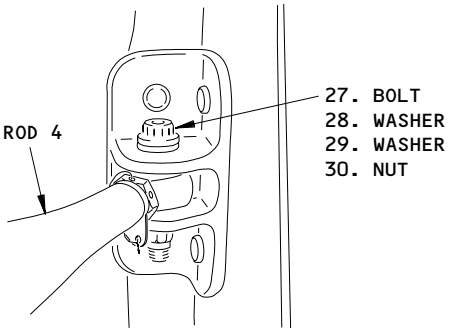
E



F



G



H

Main Landing Gear Skid Bar Installation
Figure 401 (Sheet 3)

2) Remove the bolt, washers and nut to disconnect the aft stabilizer rod from the structure (View F).
3) If you need to replace the rods, measure and record the length of the rods, so that you can set the new rods to the same length.

(c) Remove the bolt, washers and nut from the upper end of the skid bar (View B-B).

S 024-036

(2) To remove the aft skid bar, do these steps (View C & D):
(a) Remove the bolt, washers and nut from the lower end of the skid bar (View C-C).
(b) If you need to remove the stabilizer rods (3,4), do these steps (View G & H):
1) Remove the bolt, washers and nut to disconnect the forward stabilizer rod from the structure (View G).
2) Remove the bolt, washers and nut to disconnect the aft stabilizer rod from the structure (View H).
3) If you need to replace the rods, measure and record the length of the rods, so that you can set the new rods to the same length.
(c) Remove the bolt, washers and nut from the upper end of the skid bar (View D-D).

TASK 32-00-28-404-016

3. Install the Skid Bars in the Main Gear Wheel Well (Fig. 401)

A. Consumable Materials
(1) D00633 Grease, Corrosion Preventive - BMS 3-33 (Preferred)
(2) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)

B. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	-	MLG Wheel Well Skid Bars	53-53-57	-	--

C. References
(1) AMM 32-00-15/201, Landing Gear Door Locks
(2) AMM 32-00-20/201, Landing Gear Downlocks

D. Access
(1) Location Zones
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors

E. Install the Skid Bars

S 414-037

(1) To install the forward skid bar (1), do these steps (Detail A & B):
  (a) Apply a thin layer of grease to the washers, bolts and nuts (Detail A-A & B-B).
  (b) Hold the upper end of the skid bar in the installed position, do these steps (Detail B):
    1) Install the bolt, washers and nut (Detail B-B).
    2) Thighten the nut 50-80 pound-inches.
  (c) If you removed rod 1 or 2, do these steps:
    1) Apply a thin layer of grease to the washers, bolts and nuts (Detail E or F).
    2) Make sure the rod is the same length as the recorded length of the rod when it was removed.

      NOTE: If you adjust the rod make sure that the threads are visible when you look into the inspection hole.

    3) Hold the rod (1 or 2) in the installed position, do these steps (Detail E or F):
      a) Install the bolt, washers and nut.
      b) Tighten the nut 50-80 pound-inches.
  (d) Hold the lower end of the skid bar (1) and rod 1 & 2 in the installed position, do these steps (Detail A):
    1) Install the bolt, washers and nut (Detail A-A).
    2) Thighten the nut 50-80 pound-inches.

S 414-038

(2) To install the aft skid bar (2), do these steps (Detail C & D):
  (a) Apply a thin layer of grease to the washers, bolts and nuts (Detail C-C & D-D).
  (b) Hold the upper end of the skid bar in the installed position, do these steps (Detail C):
    1) Install the bolt, washers and nut (Detail C-C).
    2) Tighten the nut 50-80 pound-inches.
  (c) If you removed rod 3 or 4, do these steps:
    1) Apply a thin layer of grease to the washers, bolts and nuts (Detail G & H).
    2) Make sure the rod is the same length as the recorded length of the rod when it was removed.

      NOTE: If you adjust the rod make sure that the threads are visible when you look into the inspection hole.

    3) Hold the rod (3 or 4) in the installed position, do these steps (Detail G or H):
      a) Install the bolt, washers and nut.
      b) Tighten the nut 50-80 pound-inches.

(d) Hold the lower end of the skid bar (2) and rod 3 & 4 in the installed position, do these steps (Detail C):
1) Install the bolts, washers and nuts to connect rod 3 & 4 to the skid bar (2) (Detail C-C).
2) Thighten the nut 50-80 pound-inches.

F. Put the Airplane Back to Its Usual Condition

S 084-034

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Remove the door locks and close the doors (AMM 32-00-15/201).

NOSE LANDING GEAR INSPECTION - MAINTENANCE PRACTICES

TASK 32-05-03-212-801

1. Nose Landing Gear
   A. General
      (1) This procedure is a scheduled maintenance task.
   B. Inspection

      S 212-001
      (1) Do the inspection.

TASK 32-05-03-212-802

2. Nose Landing Gear Assembly
   A. General
      (1) This procedure is a scheduled maintenance task.
   B. Inspection

      S 212-002
      (1) Do the inspection.

TASK 32-05-03-212-803

3. Nose Landing Gear Assembly
   A. General
      (1) This procedure is a scheduled maintenance task.
   B. Inspection

      S 212-003
      (1) Do the inspection.

TASK 32-05-03-212-804

4. Nose Landing Gear Door Assembly
   A. General
      (1) This procedure is a scheduled maintenance task.
   B. Inspection

      S 212-004
      (1) Do the inspection.

TASK 32-05-03-212-805

5. Nose Landing Gear Forward and Aft Door Assembly
   A. General
      (1) This procedure is a scheduled maintenance task.

B. Inspection

S 212-005
(1) Do the inspection.

TASK 32-05-03-212-806

6. Left Main Landing Gear and Components
   A. General
      (1) This procedure is a scheduled maintenance task.
   B. Inspection

S 212-006
(1) Do the inspection.

TASK 32-05-03-212-807

7. Left Main Landing Gear Assembly
   A. General
      (1) This procedure is a scheduled maintenance task.
   B. Inspection

S 212-007
(1) Do the inspection.

TASK 32-05-03-212-808

8. Left Main Landing Gear Assembly
   A. General
      (1) This procedure is a scheduled maintenance task.
   B. Inspection

S 212-008
(1) Do the inspection.

TASK 32-05-03-212-810

9. Left Main Landing Gear Body Door
   A. General
      (1) This procedure is a scheduled maintenance task.
   B. Inspection

S 212-010
(1) Do the inspection.

TASK 32-05-03-212-811

10. Left Main Landing Gear Door
   A. General
      (1) This procedure is a scheduled maintenance task.

B. Inspection

S 212-011
(1) Do the inspection.

TASK 32-05-03-212-812
11. Left Main Gear Door Center Hinge Beam
A. General
(1) This procedure is a scheduled maintenance task.
B. Inspection

S 212-012
(1) Do the inspection.

TASK 32-05-03-212-813
12. Right Main Landing Gear Assembly
A. General
(1) This procedure is a scheduled maintenance task.
B. Inspection

S 212-013
(1) Do the inspection.

TASK 32-05-03-212-814
13. Right Main Landing Gear Assembly
A. General
(1) This procedure is a scheduled maintenance task.
B. Inspection

S 212-014
(1) Do the inspection.

TASK 32-05-03-212-815
14. Right Main Landing Gear Assembly
A. General
(1) This procedure is a scheduled maintenance task.
B. Inspection

S 212-015
(1) Do the inspection.

TASK 32-05-03-212-817
15. Right Main Landing Gear Body Door
A. General
(1) This procedure is a scheduled maintenance task.

B. Inspection

S 212-017
(1) Do the inspection.

TASK 32-05-03-212-818

16. Right Main Landing Gear Door Assembly
A. General
(1) This procedure is a scheduled maintenance task.
B. Inspection

S 212-018
(1) Do the inspection.

TASK 32-05-03-212-819

17. Right Main Gear Door Center Hinge Beam
A. General
(1) This procedure is a scheduled maintenance task.
B. Inspection

S 212-019
(1) Do the inspection.

LANDING GEAR MULTIPLE USE SYSTEM/COMPONENTS - DESCRIPTION AND OPERATION

1. General
   A. The landing gear multiple use system consists of the following:
      (1) Air/Ground Relay System (AMM 32-09-02)
      (2) Proximity Switch System (AMM 32-09-03)
   B. The air/ground relay system provides switching and control functions for various airplane systems. The relays, located in misc relay panels P33, P36 and P37, energize or de-energize to provide air or ground mode operating condition. Relays are either energized in air or on ground. Air/ground sensing is provided by nose gear not compressed sensors and main gear tilt sensors in the proximity switch system.
   C. The system consists a proximity switch electronics unit (PSEU) located on the E1-2 shelf in the main equipment center.
   D. The proximity switch system provides position sensing for these systems:
      (1) Landing gear
      (2) Doors
      (3) Leading edge slats
      (4) Thrust reversers
   E. The sensors sense the proximity of targets installed and provide position signals to the PSEU. The PSEU converts these inputs into output signals for operation of relays, lamps and other electronics.

LANDING GEAR MULTIPLE USE SYSTEMS/COMPONENTS

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
CIRCUIT BREAKER –				
AIR/GND SYS 1, C1182	1		FLIGHT COMPARTMENT, P11	
POSITION AIR/GND SYS 1, C1175		1	11U15	
POSITION AIR/GND SYS 2, C1170		1	11C30	
POSITION AIR/GND SYS 2 ALTN, C1575		1	11U23 OR 11U24	
COMPUTER – (FIM 31-41-00/101)		1	11C29	
LEFT EICAS, M10181				
RIGHT EICAS, M10182				
MODULE – (FIM 31-01-36/101)				
TIME DELAY, AIR/GROUND RELAY SYSTEM 1, M1161,M1162				
MODULE – (FIM 31-01-37/101)				
TIME DELAY, AIR/GROUND RELAY SYSTEM 2, M1163,M1164				
MODULE – (FIM 32-09-03/101)				
PROXIMITY SWITCH ELECTRONICS UNIT (PSEU)				
RELAY –	3	3	119AL, MAIN EQUIPMENT CENTER, P33 PANEL	*
LEFT PROBE HEAT TEST, K643				
RIGHT PROBE HEAT TEST, K645				
SYSTEM 1 AIR/GROUND, K514				
SYSTEM 1 AIR/GROUND, K515				
SYSTEM 1 AIR/GROUND, K516				
SYSTEM 1 AIR/GROUND, K552				
SYSTEM 2 AIR/GROUND, K517				
SYSTEM 2 AIR/GROUND, K518				
SYSTEM 2 AIR/GROUND, K520				
SYSTEM 2 AIR/GROUND, K522				
SYSTEM 2 AIR/GROUND, K528				
RELAY –	4		119AL, MAIN EQUIPMENT CENTER, P36 PANEL	*
SYSTEM 1 AIR/GROUND, K124				
SYSTEM 1 AIR/GROUND, K135				
SYSTEM 1 AIR/GROUND, K140				
SYSTEM 1 AIR/GROUND, K141				
SYSTEM 1 AIR/GROUND, K142				
SYSTEM 1 AIR/GROUND, K143				
SYSTEM 1 AIR/GROUND, K144				
SYSTEM 1 AIR/GROUND, K145				
SYSTEM 1 AIR/GROUND, K146				
SYSTEM 1 AIR/GROUND, K147				
SYSTEM 1 AIR/GROUND, K148				
SYSTEM 1 AIR/GROUND, K149				
SYSTEM 1 AIR/GROUND, K167				
SYSTEM 1 AIR/GROUND, K170				
SYSTEM 1 AIR/GROUND, K177				
SYSTEM 1 AIR/GROUND, K178				
SYSTEM 1 AIR/GROUND, K199				
SYSTEM 1 AIR/GROUND, K529				
SYSTEM 1 AIR/GROUND, K716				
SYSTEM 1 AIR/GROUND, K895				
SYSTEM 1 AIR/GROUND, K896				

* SEE THE WDM EQUIPMENT LIST

Landing Gear Multiple Use Systems/Components – Component Index
Figure 101 (Sheet 1)

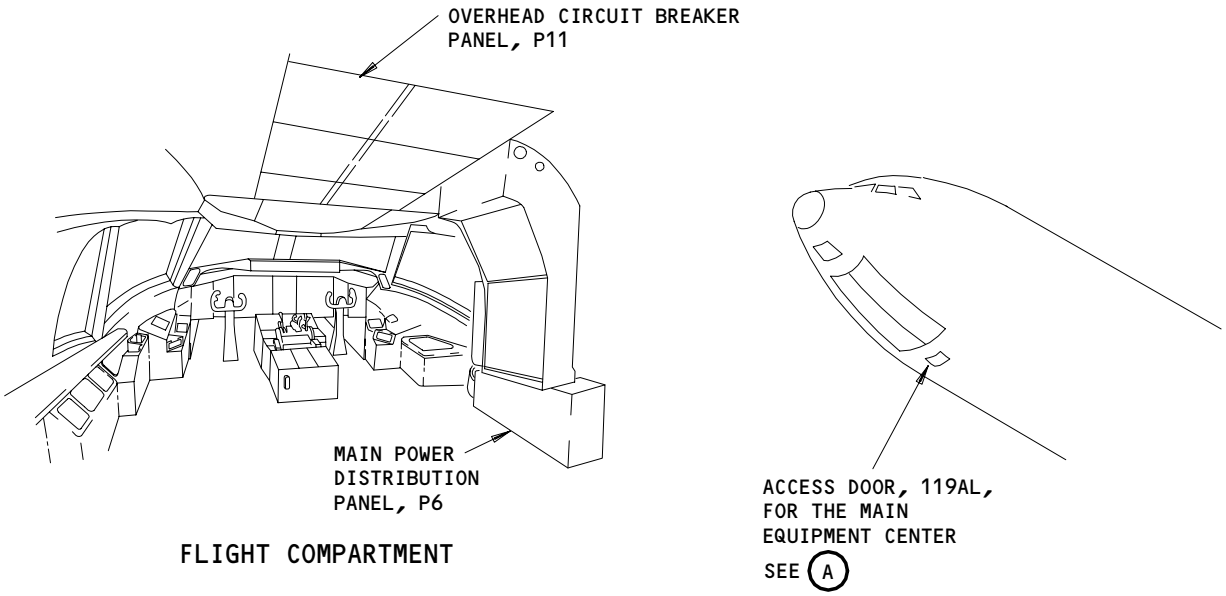
COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
RELAY – SYSTEM 1 AIR/GROUND, K1043 SYSTEM 1 AIR/GROUND, K1142 SYSTEM 1 AIR/GROUND, K1219 SYSTEM 1 AIR/GROUND, K2154 SYSTEM 1 AIR/GROUND, K2155 SYSTEM 1 AIR/GROUND, K2156 SYSTEM 1 AIR/GROUND, K2168 SYSTEM 1 AIR/GROUND, K2175				
RELAY – SYSTEM 2 AIR/GROUND, K200 SYSTEM 2 AIR/GROUND, K201 SYSTEM 2 AIR/GROUND, K202 SYSTEM 2 AIR/GROUND, K203 SYSTEM 2 AIR/GROUND, K204 SYSTEM 2 AIR/GROUND, K205 SYSTEM 2 AIR/GROUND, K206 SYSTEM 2 AIR/GROUND, K207 SYSTEM 2 AIR/GROUND, K209 SYSTEM 2 AIR/GROUND, K210 SYSTEM 2 AIR/GROUND, K211 SYSTEM 2 AIR/GROUND, K213 SYSTEM 2 AIR/GROUND, K214 SYSTEM 2 AIR/GROUND, K215 SYSTEM 2 AIR/GROUND, K219 SYSTEM 2 AIR/GROUND, K293 SYSTEM 2 AIR/GROUND, K721 SYSTEM 2 AIR/GROUND, K1064 SYSTEM 2 AIR/GROUND, K1220 SYSTEM 2 AIR/GROUND, K2157 SYSTEM 2 AIR/GROUND, K2170	5		119AL, MAIN EQUIPMENT CENTER, P37 PANEL	*
SENSOR – RIGHT MAIN GEAR TRUCK AUTO-SPEEDBRAKE, S10598 1				
SENSOR – SYSTEM 1 LEFT GEAR TILT, S245	2	1	LEFT MAIN GEAR TRUCK BEAM	32-09-07
SENSOR – SYSTEM 1 NOSE GEAR NOT COMPRESSED, S244	2	1	NOSE GEAR STRUT, LEFT SIDE	32-09-08
SENSOR – SYSTEM 1 RIGHT GEAR TILT, S246	2	1	RIGHT MAIN GEAR TRUCK BEAM	32-09-07
SENSOR – SYSTEM 2 LEFT GEAR TILT, S267	2	1	LEFT MAIN GEAR TRUCK BEAM	32-09-07
SENSOR – SYSTEM 2 NOSE GEAR NOT COMPRESSED, S266	2	1	NOSE GEAR STRUT, RIGHT SIDE	32-09-08
SENSOR – SYSTEM 2 RIGHT GEAR TILT, S268	2	1	RIGHT MAIN GEAR TRUCK BEAM	32-09-07

* SEE THE WDM EQUIPMENT LIST

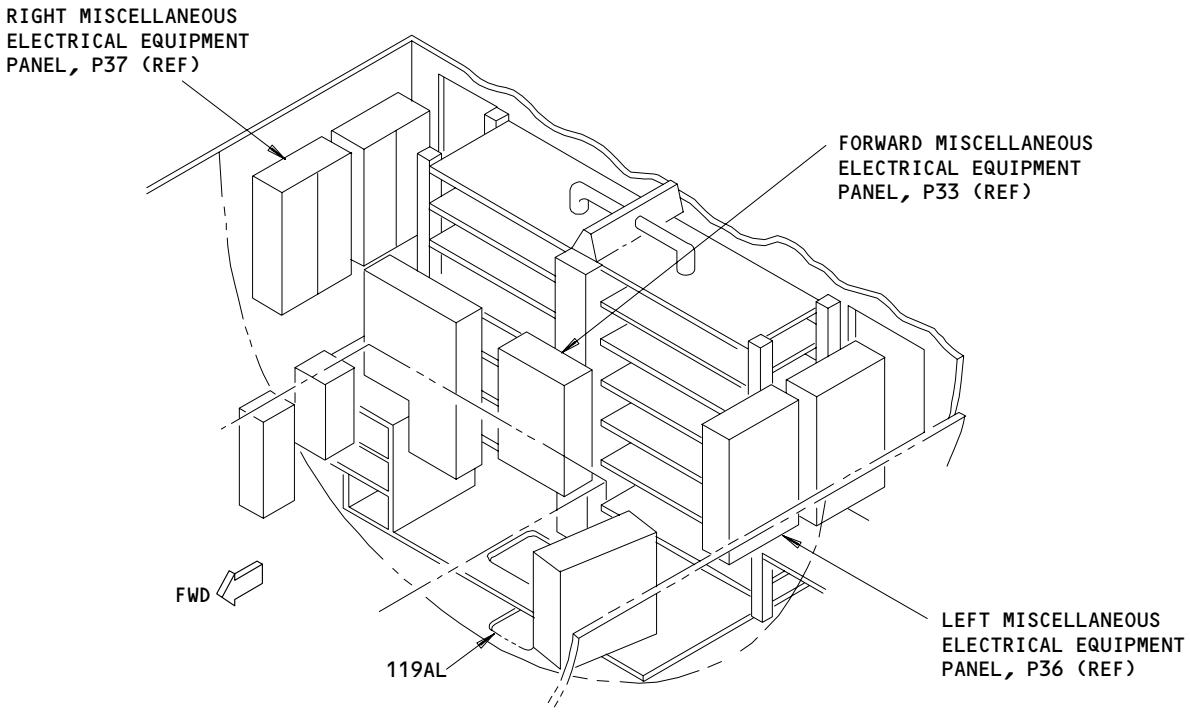
1 AIRPLANES WITH AUTO SPEED BRAKE TRUCK TILT SENSOR (POST-SB 27A0160 OR PRR 12900-086)

Landing Gear Multiple Use Systems/Components – Component Location
Figure 101 (Sheet 2)

F96467



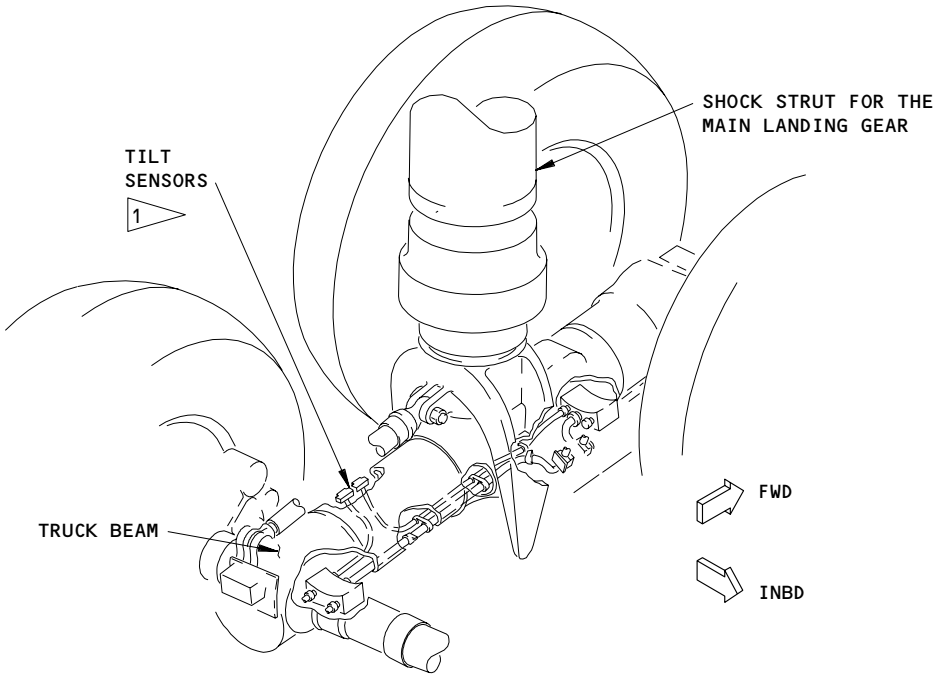
FLIGHT COMPARTMENT



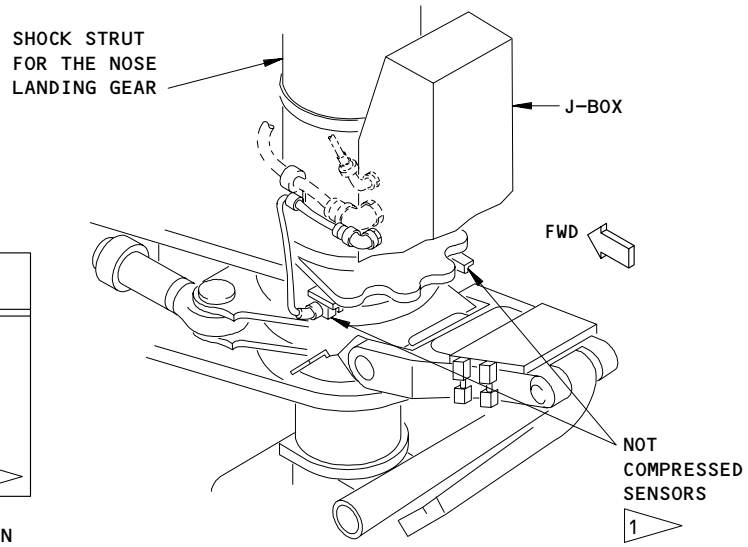
MAIN EQUIPMENT CENTER

A

Landing Gear Multiple Use Systems/Components - Component Location
Figure 102 (Sheet 1)



TILT SENSORS FOR THE MAIN LANDING GEAR
(LEFT MAIN LANDING GEAR IS SHOWN)



NOT COMPRESSED SENSORS FOR THE
NOSE LANDING GEAR

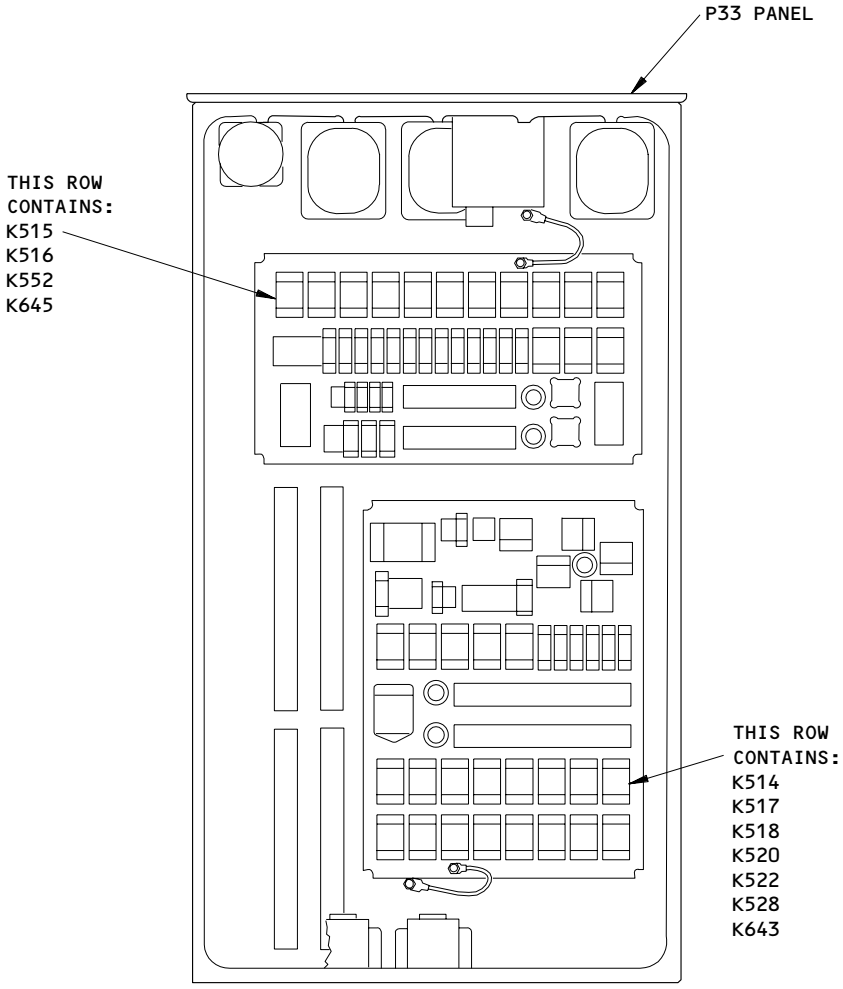
1

SENSOR NUMBER	SYSTEM	GEAR	LOCATION
S244	1	NOSE	LEFT
S266	2	NOSE	RIGHT
S245	1	L	FWD
S246	1	R	FWD
S267	2	L	AFT
S268	2	R	AFT
S10598	N/A	R	UPR 2 3

2 SENSOR AND ASSOCIATED PARTS INSTALLED ON RIGHT GEAR ONLY

3 AIRPLANES WITH AUTO SPEED BRAKE TRUCK TILT SENSOR (POST-SB 27A0160 OR PRR 12900-086)

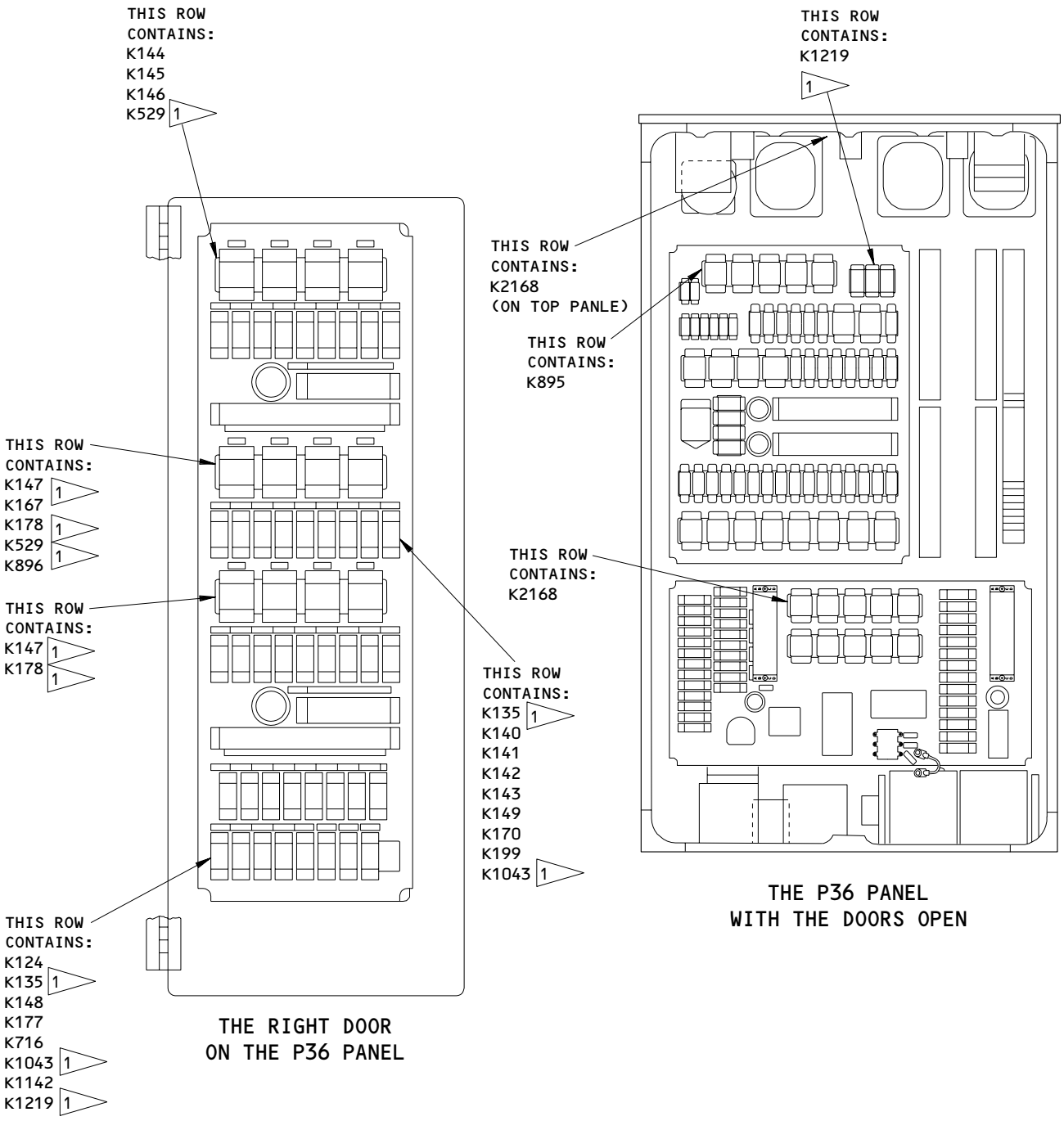
Landing Gear Multiple Use Systems/Components - Component Location
Figure 102 (Sheet 2)



FRONT VIEW OF THE P33 PANEL WITH
THE DOOR OPEN

NOTE: THIS IS AN EXAMPLE INSTALLATION. RELAYS MAY
BE SHOWN THAT ARE NOT IN ALL AIRPLANES.

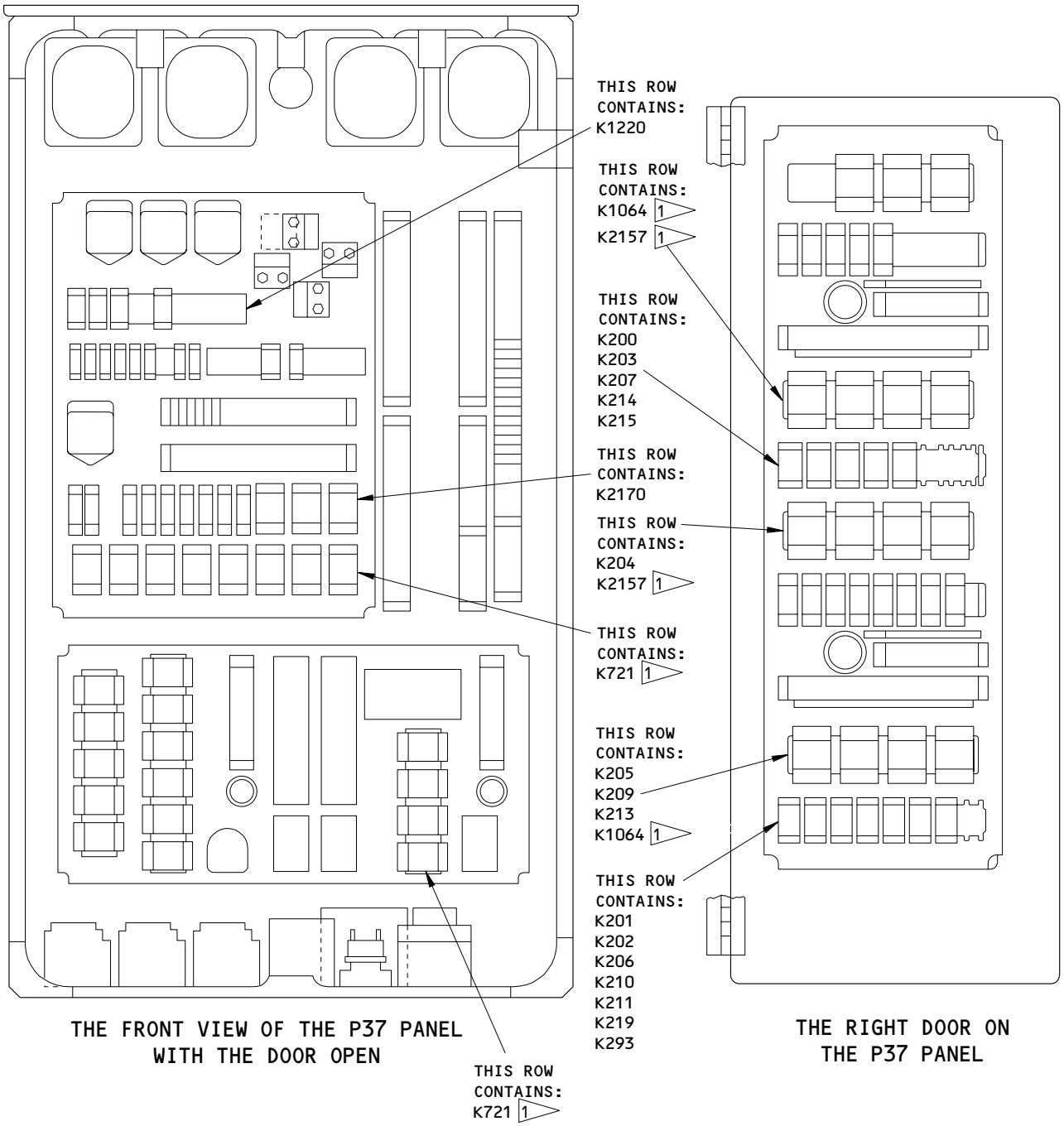
Landing Gear Multiple Use Systems/Components - Component Location
Figure 102 (Sheet 3)



NOTE: THIS IS AN EXAMPLE INSTALLATION. RELAYS MAY BE SHOWN THAT ARE NOT IN ALL AIRPLANES.

1 THIS RELAY CAN BE LOCATED IN A DIFFERENT PART OF THE P36 PANEL

Landing Gear Multiple Use Systems/Components - Component Location
Figure 102 (Sheet 4)



NOTE: THIS IS AN EXAMPLE INSTALLATION. RELAYS MAY BE SHOWN THAT ARE NOT IN ALL AIRPLANES.

1 THIS RELAY CAN BE LOCATED IN A DIFFERENT PART OF THE P36 PANEL

Landing Gear Multiple Use Systems/Components - Component Location
Figure 102 (Sheet 5)

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RELAY NO.	RELAY STATUS 1		CONN NO.	CONTINUITY BETWEEN THESE PINS:	
	GND	AIR		GROUND	AIR
K1219	E	D	D13396	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K1220	E	D	D13398	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K2154	E	D	D20090	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K2155	E	D	D20092	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K2156	D	E	D20138	1-13,5-3,7-14,11-9	1-2,5-4,7-8,11-10
K2157	E	D	D20100	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K2168	D	E	D20144	A2-A3,B2-B3,C2-C3,D2-D3	A2-A1,B2-B1,C2-C1,D2-D1
K2170	E	D	D20150	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K2175	E	D	D20166	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3

AIR/GROUND RELAY
TABLE 101

NOTE: REFERENCE WDM 32-09-11,-12,-13
(SEE TABLE 103)

Air/Ground Relay Problem, No AIR/GND DISAGREE or NOSE A/G DISAGREE
EICAS Message Display
Figure 103 (Sheet 6)

F96517

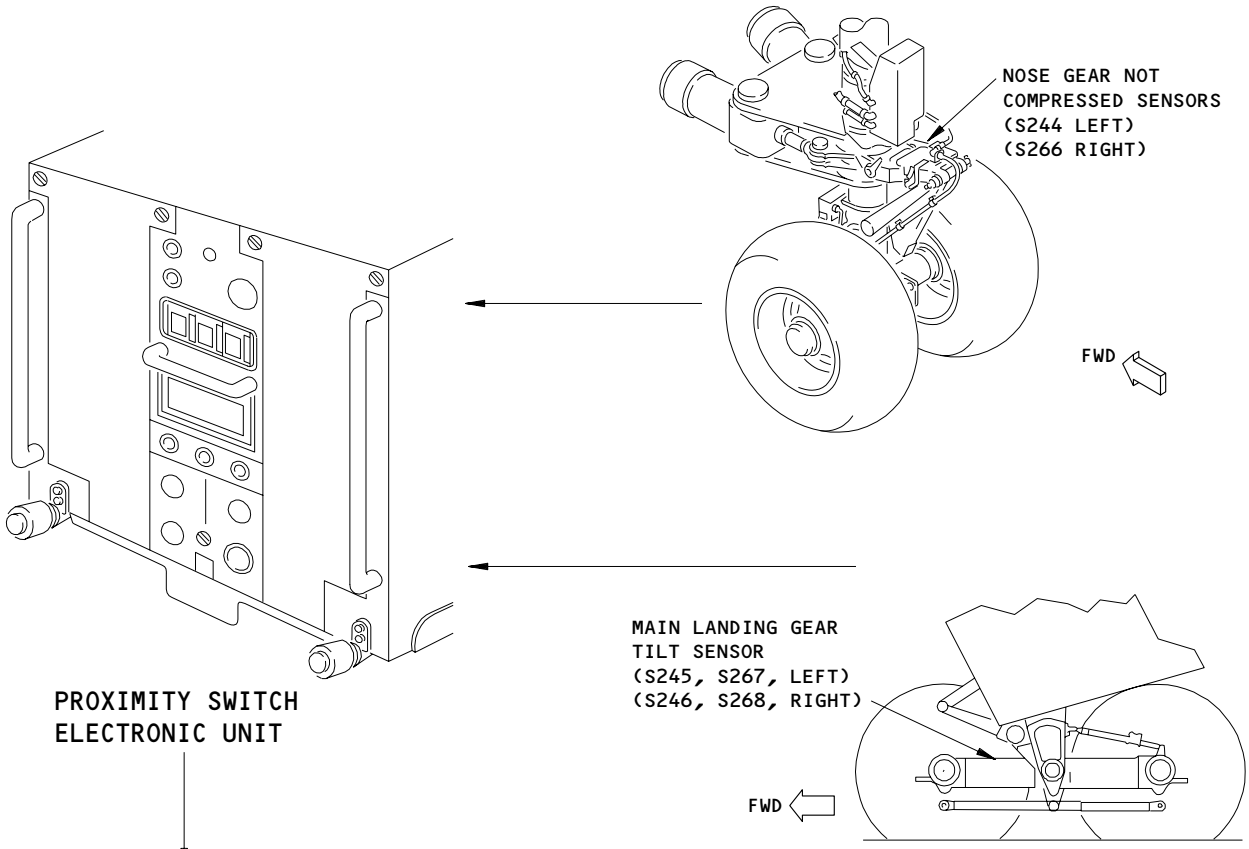
AIR/GROUND RELAY NO.	MASTER RELAY NO.	EXAMINE FOR 28V DC		WDM REFERENCES
		MASTER RELAY CONNECTOR NO.	PIN NO.	
K124 K213 K141 K215 K144 K219 K145 K293 K147 K518 K148 K520 K167 K529 K170 K552 K199 K895 K201 K896 K202 K1043 K203 K1142 K204 K2156 K205 K2168 K209 K2175	NONE	----	----	32-09-11 32-09-12 32-09-13
K135 K177 K140 K178 K142 K716 K143 K2154 K146 K2155 K149	K144	D1736	6 OR X1 TO GROUND	32-09-11
K200 K214 K206 K721 K207 K2157 K210 K2170 K211	K204	D3728	6 OR X1 TO GROUND	32-09-12
K514 K515 K516	K552	D1268	X1 TO GROUND	32-09-13
K517 K522 K528	K518	D630	X1 TO GROUND	32-09-13

CONTROL RELAY VOLTAGE CHECK
TABLE 103

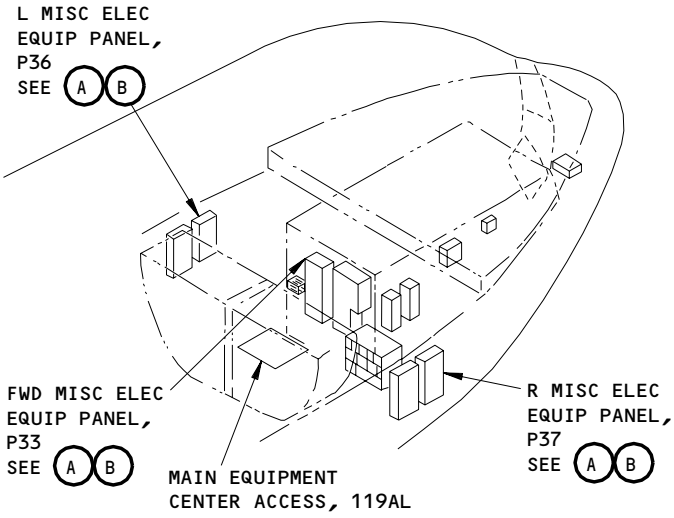
Air/Ground Relay Problem, No AIR/GND DISAGREE or NOSE A/G DISAGREE
EICAS Message Display
Figure 103 (Sheet 7)

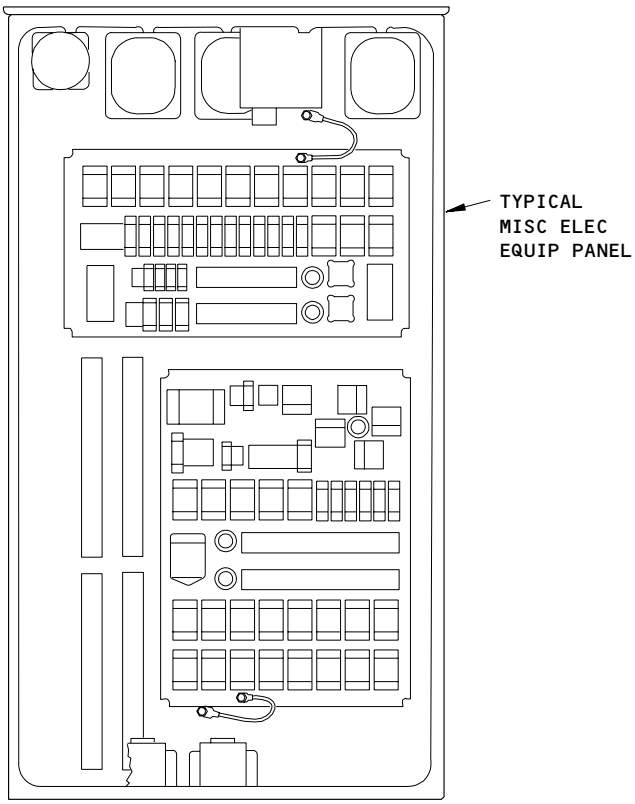
AIR/GROUND RELAY SYSTEM - DESCRIPTION AND OPERATION

1. General (Fig. 1)
   A. The air/ground relays provide various airplane systems control in two independent air ground sensing systems (system 1 and system 2) . The relays energize or de-energize to provide equipment functions in ground or air mode. On most functions, either system 1 or 2 is used. However, critical function may use both systems for air/ground sensing.
   B. When the airplane is on the ground (main gear trucks not tilted, nose gear shock strut compressed) or in the air (main gear trucks tilted, nose gear shock strut extended), the proximity sensors provide air/ground signal to a proximity switch electronics unit (PSEU). The PSEU converts sensor input into a signal output to the relay. The relay energizes or de-energizes to provide ground or air mode condition.
   C. Main gear truck tilt sensors are actuated (provide air mode signal) when the trucks are tilted, forward wheels down, at approximately 15° from horizontal. The required truck tilt occurs at lift off.
   D. Nose gear not compressed sensors are actuated (provide air mode signal) when the nose gear shock strut is fully extended.
   E. Air/ground sensing system 1 or air/ground sensing system 2 each consists of master relays, control relays, nose gear not compressed sensor, and left and right main gear tilt sensors. All relays are 4-pole, double-throw, rated at 2 or 10 amperes, and are located in P33, P36 and P37 relay panels in the main equipment center.
2. Component Details (Fig. 2)
   A. Air/Ground Master Relays
      (1) System 1 and system 2 each consists two master relays. The relays are 4-pole, double-throw, 2 or 10-amp rated, hermetically seal relays with pin-type terminals for electrical plug connections. The relays control a number of air/ground relays to provide ground or air mode conditions.
   B. Air/Ground Control Relays
      (1) All system 1 and system 2 air/ground control relays are 4-pole, double-throw, 2 or 10 amp-rated, hermetically seal relays with pin-type terminals for electrical plug connections. The relays energize or de-energize to provide a ground or air mode condition to the airplane. A number of relays are slaved to the master relay of its respective system and will energize when its master relay is energized.



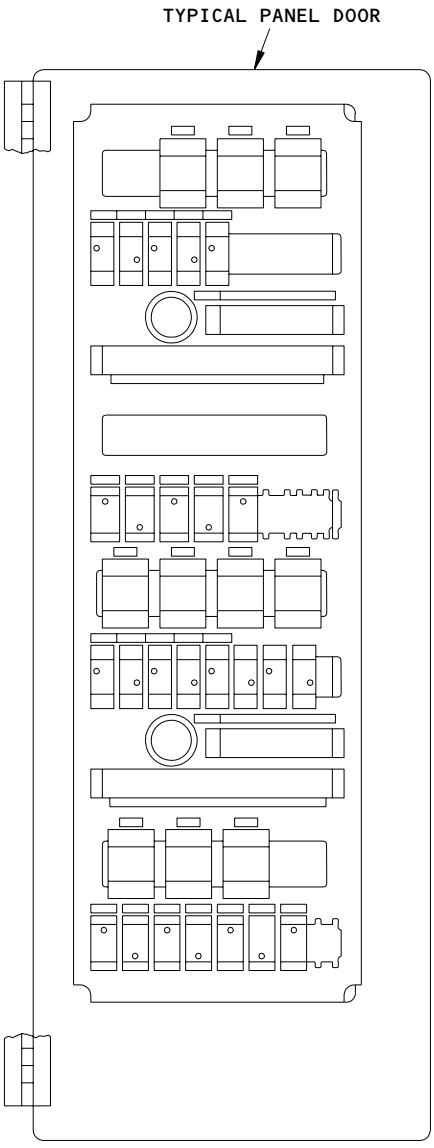
Air/Ground Sensing
Figure 1





FRONT VIEW OF TYPICAL PANEL WITH DOOR OPEN

A



RIGHT DOOR ON TYPICAL PANEL

B

NOTE:

RELAYS ARE IDENTIFIED BY EQUIPMENT NUMBER IN PANEL. THESE ARE EXAMPLE INSTALLATIONS.

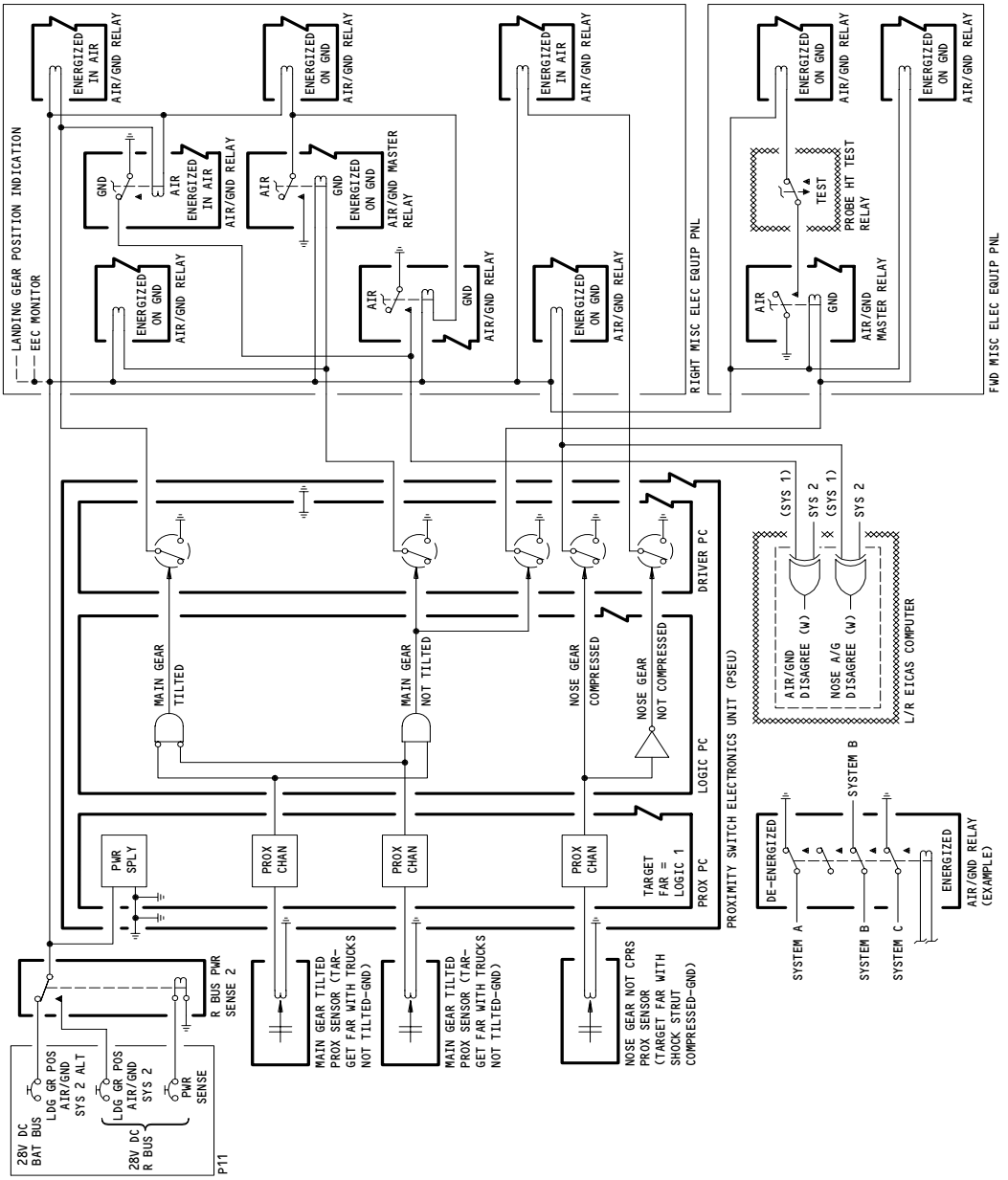
Air/Ground Relays Location
Figure 2

H93013

C. Nose Gear Not Compressed Sensors (Fig. 1)
(1) A proximity sensor S244 for system 1 and a proximity sensor S266 for system 2 are located on the left and right side respectively of the nose wheel steering collar, on a mounting plate. The sensors provide air/ground signal to the PSEU. The PSEU converts the signal for energizing or de-energizing the relays. The same signal also goes to the left and right EICAS computers for air/ground output comparison. If the nose gear compressed or not compressed signal outputs from systems 1 and 2 do not agree, the computers provide a NOSE A/G DISAGREE message on the EICAS status/maintenance display.
(2) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS INSTALLED;
If either of the nose gear not compressed sensors fail in the air mode while on the ground, then the message NOSE A/G SYS will show on the EICAS status/maintenance display.

D. Main Gear Tilt Sensors (Fig. 1)
(1) Two proximity sensors (S245 LH, S246 RH) for system 1, and two proximity sensors (S267 LH, S268 RH) for system 2, are located on the left side of each truck beam, aft of the main gear shock strut. The sensors provide air/ground signal to the PSEU. The PSEU converts the signal for energizing or de-energizing the relays. The same signal also goes to the left and right EICAS computers for air/ground output comparison. If the main gear tilt signal outputs from systems 1 and 2 do not agree, the computers will provide an AIR/GND DISAGREE message on the EICAS status/maintenance display.
(2) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS INSTALLED;
If any of the main gear tilt sensors fail in the air mode while on the ground, then the message AIR/GND SYS will show on the EICAS status/maintenance display.

3. Operation (Fig. 3)
A. Functional Description
(1) Power
(a) All air/ground relays operate on 28-volt dc thru the respective landing gear POSITION AIR/GND SYS 1, AIR/GND SYS 1, or POSITION AIR/GND SYS 2, or POSITION AIR/GND SYS 2 ALTN, circuit breakers on overhead circuit breaker P11 panel.
(b) All relays energize either with the airplane in air or ground mode. The relays energize when the PSEU converts the landing gear proximity sensor input signals into ground output signals to the relays. Some relays energize via the air/ground master relay when the master relay energizes.
(2) Logic
(a) When the target of the sensor is in proximity, a logic 0 is at the PSEU prox card output. When the target of the sensor is away from proximity, a logic 1 is at the prox card output. The output of prox card is applied to the PSEU logic card which, thru its logic circuits, provide a logic 1 or logic 0 to the drivers of the PSEU driver card. All drivers require a logic 1 input to provide a ground output signal to the relays.



Air/Ground Relays Schematic
Figure 3

668751

(3) EICAS

(a) The NOSE A/G DISAGREE, AIR/GND DISAGREE, NOSE A/G SYS, or AIR/GND SYS message on the EICAS display indicates system 1 and system 2 air/ground signal outputs disagreement. The disagreement may be caused by malfunction of sensor, PSEU or associated wiring in the system.

(b) The AIR/GND DISAGREE message may be also displayed as a result of a faulty air/ground relay. EICAS computer receives a ground signal from one or more air/ground relays rather than the PSEU. Air/ground relay position is controlled by a signal from the PSEU. The NOSE A/G DISAGREE message will not be displayed if an air/ground relay itself is faulty since EICAS inputs for this message come directly from the PSEU.

(c) The EICAS "AIR/GND DISAGREE" message indication will occur if any single main landing gear system 1 or system 2 sensor indicates ground mode while in the air.

B. Control

(1) The air/ground relay operates automatically whenever it is energized; it has no operating controls or adjustments.

AIR/GROUND RELAY SYSTEM - MAINTENANCE PRACTICES

1. General
   A. This procedure contains the data necessary to do these tasks:
      (1) Prepare the safety-sensitive systems for air mode simulation.

          NOTE: This task can also be referred to as the "Flight Mode Simulation Deactivation" procedure.

      (2) Put the air/ground relay system in the air mode.
      (3) Put the air/ground relay system in the ground mode.
      (4) Put the safety-sensitive systems back to their initial conditions.
      (5) The removal of the air/ground relays.
      (6) The installation of the air/ground relays.
      (7) Do the test for the air/ground relays.
   B. Tasks 1 thru 4 are used to put the airplane in the air mode (for systems that get an air mode signal from the air/ground relay system).
      (1) The first task (Prepare safety-sensitive systems for air mode simulation) is done to prevent the operation of some systems. You can cause damage to these systems or cause injury when an air mode signal is supplied to these systems.
      (2) The second task (Put the air/ground relay system in the air mode) is done to supply an air mode signal to the systems on the airplane.
      (3) The third task (Put the air/ground relay system to the ground mode) removes the air mode signal from the systems on the airplane.
      (4) The fourth task (Put the safety-sensitive systems back to their initial conditions) puts the systems that were deactivated in the first task in an operational condition.
   C. The fifth and sixth tasks remove and install an air/ground relay.
   D. The last task does a test of a specified air/ground relay to make sure that it operates correctly.

TASK 32-09-02-042-001

2. Prepare the Safety-Sensitive Systems for Air Mode Simulation

   NOTE: This task can also be referred to as the "Flight Mode Simulation Deactivation" procedure.

   A. General
      (1) This task gives the instructions necessary to deactivate safety-sensitive systems that use the air mode signal from the air/ground relay system.

(2) You must do this task before you put the air/ground relay system in the air mode.

B. References

(1) AMM 21-00-00/201, Air Conditioning - General

(2) AMM 27-61-00/201, Spoiler/Speedbrake Control System

C. Access

(1) Location Zones

119	Main Equipment Center (Left and Right)
211/212	Control Cabin

(2) Access Panel

119AL	Main Equipment Center

D. Procedure

S 042-002

WARNING: MAKE SURE YOU DO THE STEPS TO PREPARE THE SYSTEMS FOR AIR MODE CORRECTLY. IF YOU DO NOT FOLLOW THESE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do the steps that follow to deactivate the safety-sensitive systems:

S 862-052

(2) Open these circuit breakers on the main power distribution panel, P6, and attach a DO-NOT-CLOSE tag:

(a) 6C1, RAM AIR TURB MAN
(b) 6C2, RAM AIR TURB AUTO
(c) 6J8, RAM AIR TURBINE PWR
(d) 6K14, PITOT HEAT CAPT ϕ A
(e) 6K15, PITOT HEAT CAPT ϕ B
(f) 6K16, PITOT HEAT R AUX ϕ B
(g) 6K17, PITOT HEAT R AUX ϕ C
(h) 6K20, PITOT HEAT L AUX ϕ C
(i) 6K21, PITOT HEAT L AUX ϕ B
(j) 6K22, PITOT HEAT F/O ϕ B
(k) 6K23, PITOT HEAT F/O ϕ A
(l) 6K24, PROBE HEAT R AOA
(m) 6K25, PROBE HEAT R ENG *[1]
(n) 6L17, PROBE HEAT L AOA
(o) 6L18, PROBE HEAT L TAT
(p) 6L19, PROBE HEAT L ENG *[1]

(q) *[1] All Airplanes with PW and RR Engines Only.

S 862-062

(3) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
(a) 11A17, AUTO FLIGHT WARN
(b) 11D34, FUEL DC PUMP PWR
(c) 11E16, MODE CONT PNL L
(d) 11E17, FLT CONT CMPTR PWR L
(e) 11E18, FLT CONT CMPTR SERVO L
(f) 11E20, FLT CONT CMPTR PWR C
(g) 11E21, FLT CONT CMPTR SERVO C
(h) 11E34, MODE CONT PNL R
(i) 11E35, FLT CONT CMPTR PWR R
(j) 11E36, FLT CONT CMPTR SERVO R
(k) 11F14, TMC AC
(l) 11F15, TMC DC
(m) 11J7, FLIGHT RECORDER AC
(n) 11J8, FLIGHT RECORDER DC
(o) 11J13, FLAP LOAD RELIEF
(p) 11K10, STICK NUDGER
(q) 11P15, CABIN ALTITUDE CONTROL AUTO 1
(r) 11P23, CABIN ALTITUDE CONTROL AUTO 2
(s) 11T36, PROX SW TEST

S 862-079

WARNING: KEEP PERSONS AWAY FROM THE RAM INLET AND OUTLET DOORS. IF THE SELECTOR IS PUT IN THE OFF POSITION, THE DOORS WILL CLOSE.

(4) If the airplane will be in the flight mode for less than 10 minutes, make sure the EQUIP COOLING mode selector, on the pilots overhead panel, P5, is in the AUTO position.

S 862-078

(5) If the airplane will be in the flight mode for 10 minutes or more, do the applicable steps that follow:
(a) If the outside ambient temperature is less than 45°F (7°C), make sure the EQUIP COOLING mode selector is in the AUTO position.

(b) If the outside ambient temperature is greater than 45°F (7°C), make sure the EQUIP COOLING mode selector is in the AUTO position.
1) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tag:
a) 11B8, STANDBY EQUIP COOLING
b) 11P13, EQUIP COOLING OUTBD VLV
2) Put the EQUIP COOLING mode selector in the STBY position.
(c) If the outside ambient temperature is more than 110°F (43°C), operate the two packs or supply equal ground cooling (AMM 21-00-00/201).

S 042-077

WARNING: DO THE DEACTIVATION PROCEDURE FOR THE SPOILERS OR MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE SPOILERS. THE SPOILERS CAN RETRACT QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(6) Do the deactivation procedure for the spoilers (AMM 27-61-00/201) or move all persons and equipment away from the spoilers.
(a) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
1) 11G11, AUTO SPEED BRAKE

S 862-064
(7) Open this circuit breaker on the forward miscellaneous electrical equipment panel P33, and attach a DO-NOT-CLOSE tag:

(a) 33A2, DRAIN MAST HTG FLT

S 862-059
(8) Open these circuit breakers on the left miscellaneous electrical equipment panel P36, and attach a DO-NOT-CLOSE tag:

(a) 36D7 or 36H1 , AIR CONDITIONING CAPT AUX HIGH

(b) 36K7 or 36L7, AIR SUPPLY BITE

S 862-061

(9) Open this circuit breaker on the right miscellaneous electrical equipment panel P37, and attach a DO-NOT-CLOSE tag:
(a) 37D5 or 37H1, AIR CONDITIONING F/O AUX HEATERS HIGH

S 862-003

WARNING: STAY AWAY FROM THE AREA AROUND THE RAM AIR TURBINE WHEN THE FLIGHT MODE IS SIMULATED. THE RAT COULD DEPLOY WHEN THE FLIGHT MODE IS SIMULATED AND COULD CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(10) Make sure the area around the RAT (ram air turbine) is clear when you simulate the flight mode.

TASK 32-09-02-862-004

3. Put the Air/Ground Relay System in the Air Mode

A. General

(1) This procedure gives the data necessary to simulate the air mode with the air/ground relays.
(a) Before you simulate the air mode, you must do the procedure to prepare the safety-sensitive systems for air mode simulation. This will prevent injury to persons or damage to equipment.
(b) You can simulate the air mode for each system 1 or system 2 or for the two systems together.
(c) You can simulate the air mode with one of the procedures that follows:
1) Lift the airplane with jacks.
2) Put actuators on the tilt sensors of the main gear and on the not compressed sensors of the nose gear.
3) If any of the landing gear or tilt sensors are removed, then you will have to connect tilt sensors to the airplane wiring. You will also have to attach actuators to the tilt sensors.

(2) When the airplane takes off, the air/ground relays change some of the systems from the ground mode to the air mode. The opposite procedure occurs when the airplane makes a landing. The change between the air mode and the ground mode occurs through the inputs of these sensors and their electronics:
(a) The truck tilt sensors of the main landing gear.

(b) The not compressed sensors of the nose landing gear.

(3) The PSEU (Proximity Switch Electronic Unit) can put incorrect faults in its memory when the airplane is in the air mode. After the airplane is put back to the ground mode it will be necessary to erase the PSEU memory.

B. Equipment

(1) Proximity Sensor Actuator/Deactuator Set - A27092-106 (3 Rectangular Sensor actuators are necessary for each system).

NOTE: The actuators are not necessary if you lift the airplane to simulate the air mode.

(2) If a landing gear or tilt sensor is removed, then you will need proximity sensors for that gear.

C. References

(1) AMM 07-11-01/201, Jacking Airplane

(2) AMM 24-22-00/201, Electrical Power - Control

(3) AMM 32-00-20/201, Landing Gear Downlocks

D. Access

(1) Location Zones

119	Main Equipment Center (Left and Right)
211/212	Control Cabin
711	Nose Landing Gear
731/741	Main Landing Gear

(2) Access Panel

119AL	Main Equipment Center

E. Prepare to Simulate the Air Mode

S 862-005

(1) Supply electrical power (AMM 24-22-00/201).

S 862-006

(2) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:

(a) 11C30, POSITION AIR/GND SYS 1

(b) 11U15, AIR/GND SYS 1

(c) 11U23 or 11U24, POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

(d) 11M30, R BUS PWR SENSE

S 042-007

WARNING: DO THE PROCEDURE TO PREPARE THE SAFETY-SENSITIVE SYSTEMS FOR AIR MODE SIMULATION. IF YOU DO NOT DO THE PROCEDURE BEFORE YOU SIMULATE AIR MODE, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Do the task to Prepare the Safety-Sensitive Systems for Air Mode Simulation before you simulate the air mode.

S 862-008

(4) Put the air/ground relay system in the air mode (Option 1).

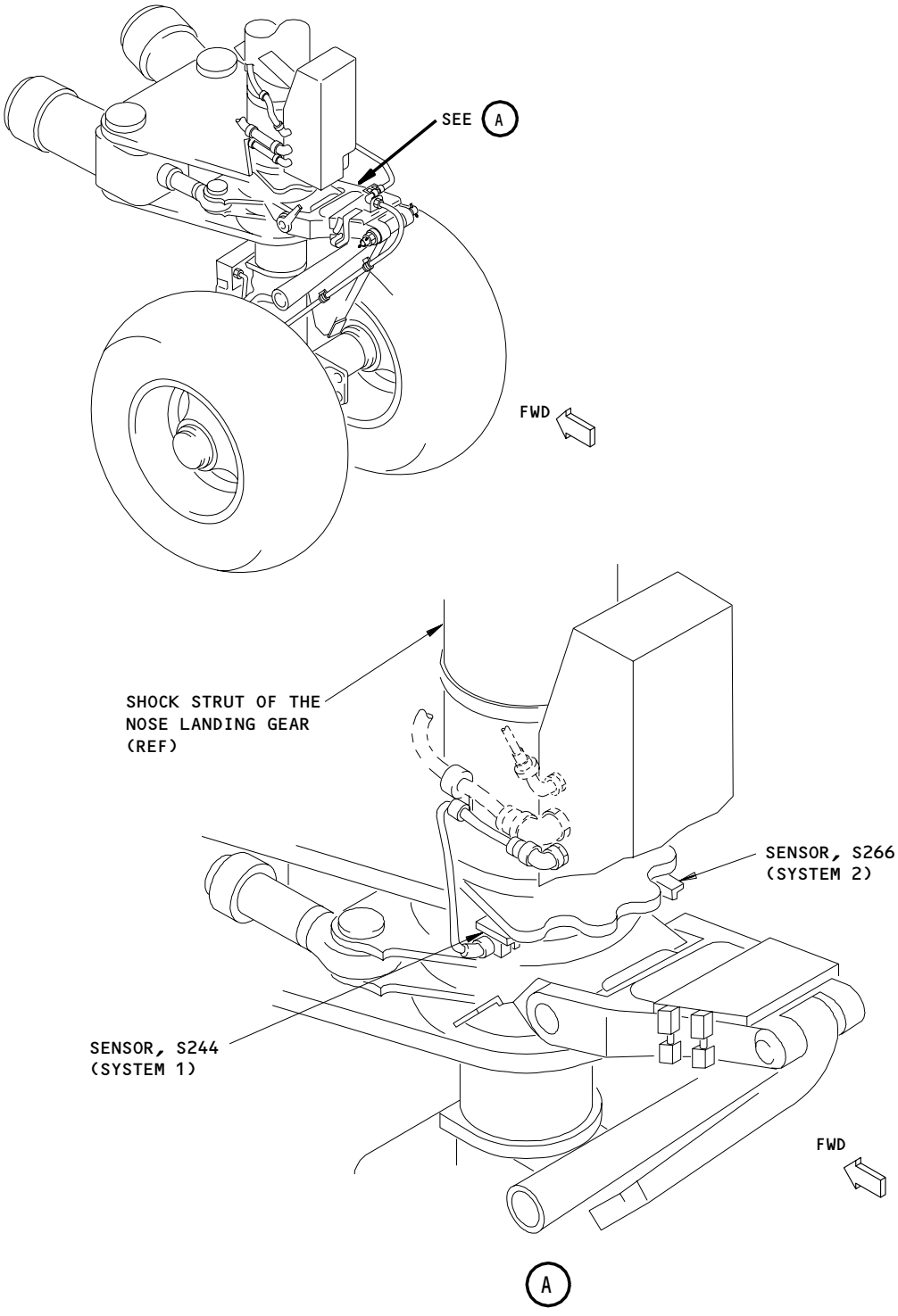
NOTE: If you do not want to lift the airplane with jacks, do the steps in Option 2. However, you will need proximity sensor actuators if you use Option 2. If a landing gear or tilt sensors have been removed, then do the steps which follow Option 2 to install tilt sensors on the affected gear.

(a) Lift the airplane with jacks (AMM 07-11-01/201).

S 862-035

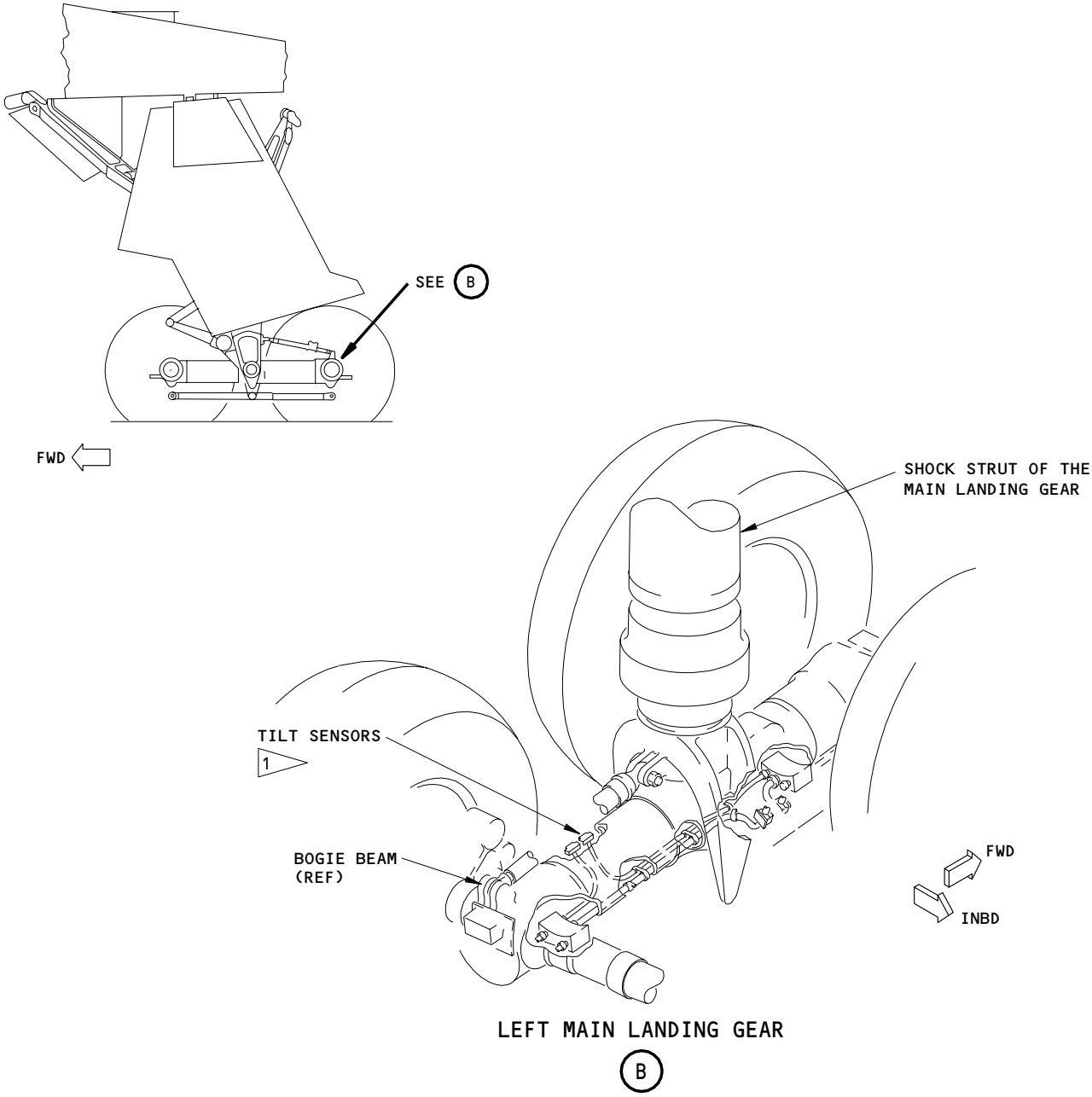
(5) Put the air/ground relay system in the air mode (Option 2).
   (a) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).
   (b) Put the chocks below the wheels.
   (c) Put the actuators against the proximity sensors of the landing gear to simulate the air mode (Fig. 201):
      1) The system 1 and the system 2 sensors are as follows:

System 1
S245 Left main gear tilt sensor
S246 Right main gear tilt sensor
S244 Nose gear not compressed sensor
System 2
S267 Left main gear tilt sensor
S268 Right main gear tilt sensor
S266 Nose gear not compressed sensor



LOCATION OF THE NOT COMPRESSED SENSORS ON THE NOSE LANDING GEAR

Location of the Sensors for the Air/Ground Relay System
Figure 201 (Sheet 1)



LEFT MAIN LANDING GEAR

B

1

SENSOR NUMBER	SYSTEM	GEAR	LOCATION
S245	1	L	FWD
S246	1	R	FWD
S267	2	L	AFT
S268	2	R	AFT

LOCATION OF THE TILT SENSORS ON THE MAIN LANDING GEAR

Location of the Sensors for the Air/Ground Relay System
Figure 201 (Sheet 2)

S 862-081
(6) If a landing gear or tilt sensor has been removed, then do these steps:
(a) To connect a main landing gear sensor, do the applicable steps in this procedure: AMM 32-09-07/201.
(b) To connect a nose landing gear sensor, do the applicable steps in this procedure: AMM 32-09-08/201.
(c) Put an actuator on the proximity sensors.

S 862-085
(7) If you want to make sure that the airplane is in the air mode, then you can do these steps:
(a) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the overhead circuit breaker panel, P11.
1) 11T36, PROX SW TEST
(b) Locate the PSEU in the main equipment center on the E-1 rack and push the VERIFY switch.
(c) If the PSEU display shows "AAA", then you are in the air mode.
(d) To prevent activation of the PSEU automatic BITE, Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
1) 11T36, PROX SW TEST

TASK 32-09-02-442-009

4. Put the Air/Ground Relay System to the Ground Mode

A. References
(1) AMM 07-11-01/201, Jacking the Airplane

B. Access
(1) Location Zones
731/741 Main Landing Gear

C. Put the Airplane to the Ground Mode

S 082-084
(1) If actuators were installed, then remove the actuators from the nose and main landing gear sensors.

S 582-011
(2) If the airplane is on jacks, lower the airplane and remove the jacks (AMM 07-11-01/201).

S 082-082
(3) If a tilt sensor was temporarily attached to the airplane and air mode simulation is no longer required, then remove the sensor.

S 822-086

(4) If the airplane is on jacks with the landing gear removed do these steps:
   (a) Temporarily install truck tilt sensors for each main gear that is removed.
   (b) Install an actuator on each main gear tilt sensor.
   (c) Nose gear sensors default to the ground position when disconnected.
   (d) If the gear handle is NOT down and no left hydraulic system pressure, jumper pins 4 and 5 of the main gear tilt pressure switches.

S 862-043

(5) On the PSEU (in the main equipment center, E-1 rack), push the RESET switch to erase the PSEU memory.

NOTE: Code "EEE" will be shown on the PSEU display during the erase procedure.

You can do this step when you close the circuit breakers in the P33, P36, and P37 panels.

S 862-047

(6) On the PIMU (Propulsion Interface Monitor Unit), push the RESET switches to erase the memory.

NOTE: There are two units in the main equipment center, E1-2 and E2-4 racks.

S 442-042

(7) Do the task to put the safety-sensitive systems back to their initial conditions.

TASK 32-09-02-442-036

5. Put the Safety-Sensitive Systems Back to Their Initial Conditions

A. References
   (1) AMM 24-22-00/201, Electrical Power Control
   (2) AMM 27-61-00/201, Spoiler/Speedbrake Control System

B. Access
   (1) Location Zones

119	Main Equipment Center (Left and Right)
211/212	Control Cabin
711	Control Cabin

   (2) Access Panel

119AL	Main Equipment Center

C. Procedure

S 862-041
(1) Close all the circuit breakers that were opened in the "Prepare for Air Mode - Instructions" steps in the task to Prepare the Safety-Sensitive Systems for Air Mode Simulation (first task).

NOTE: The circuit breakers were on the P6, P11, P33, P36, and P37 panels.

S 442-037
(2) Do the activation procedure for the spoilers if you did the deactivation procedure (AMM 27-61-00/201).

S 862-038
(3) Put the EQUIP COOLING mode selector, on the P5 panel, to the AUTO position.

S 862-013
(4) Remove the electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-09-02-002-014

6. Remove the Air/Ground Relays

A. General

(1) All of the air/ground relays for the system 1 and the system 2 are hermatically sealed relays. They have pin-type terminals for the electrical plug connection. The relays are installed on the bracket with the socket mounting screws. The air/ground relays can be found on the panels that follow:

(a) The forward miscellaneous electrical equipment panel, P33.
(b) The left miscellaneous electrical equipment panel, P36.
(c) The right miscellaneous electrical equipment panel, P37.

B. References

(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 24-22-00/201, Electrical Power - Control

C. Access

(1) Location Zones
119 Main Equipment Center (Left and Right)

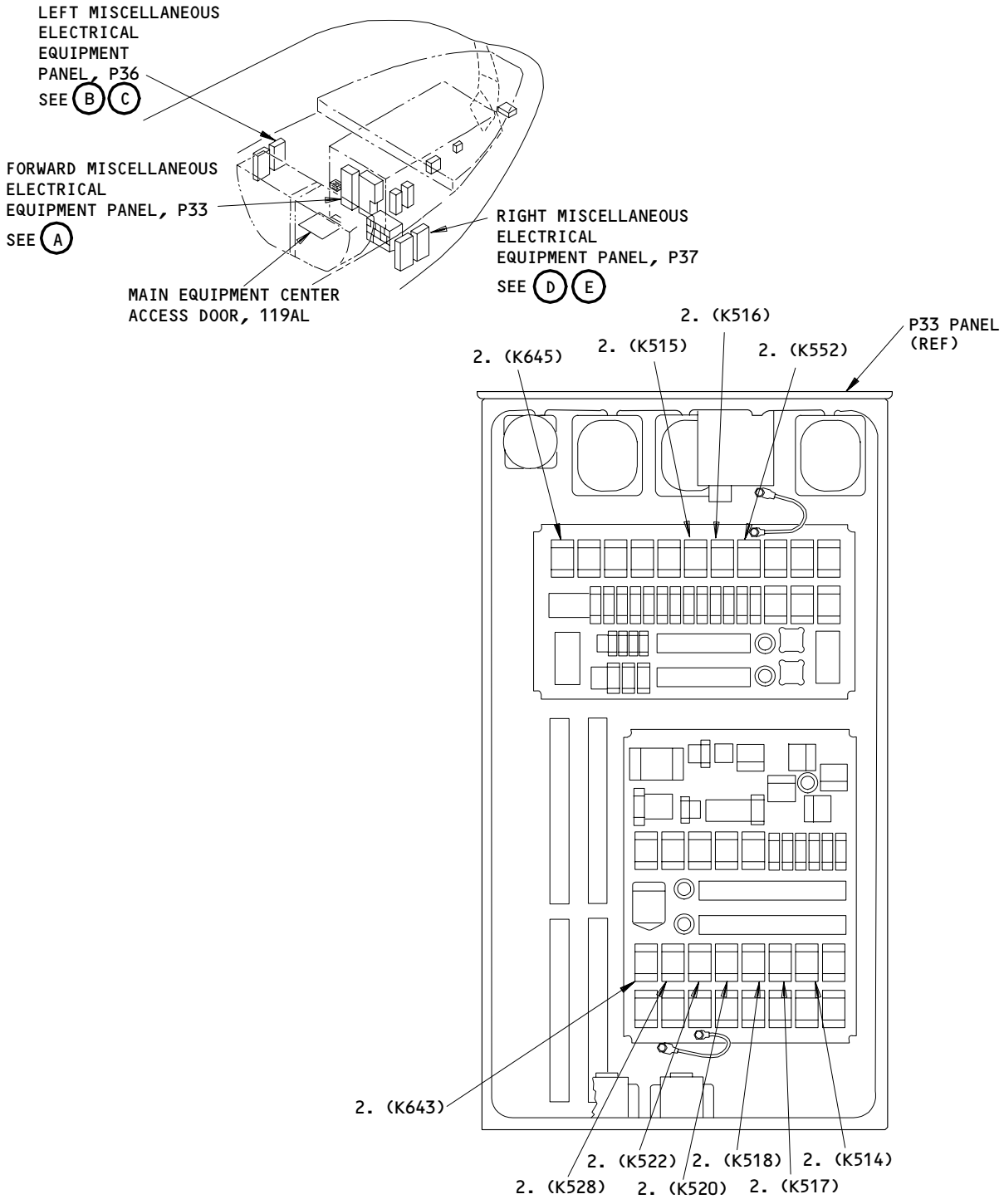
(2) Access Panel
119AL Main Equipment Center

D. Prepare to Remove the Air/Ground Relays

S 862-015
(1) Remove the electrical power if it has not been removed from the airplane (AMM 24-22-00/201).

S 412-016
(2) Open the access door, 119AL, for the main equipment center to get access to the panels for the air/ground relays.

S 032-017
(3) Remove the attach screws for the air/ground relay.

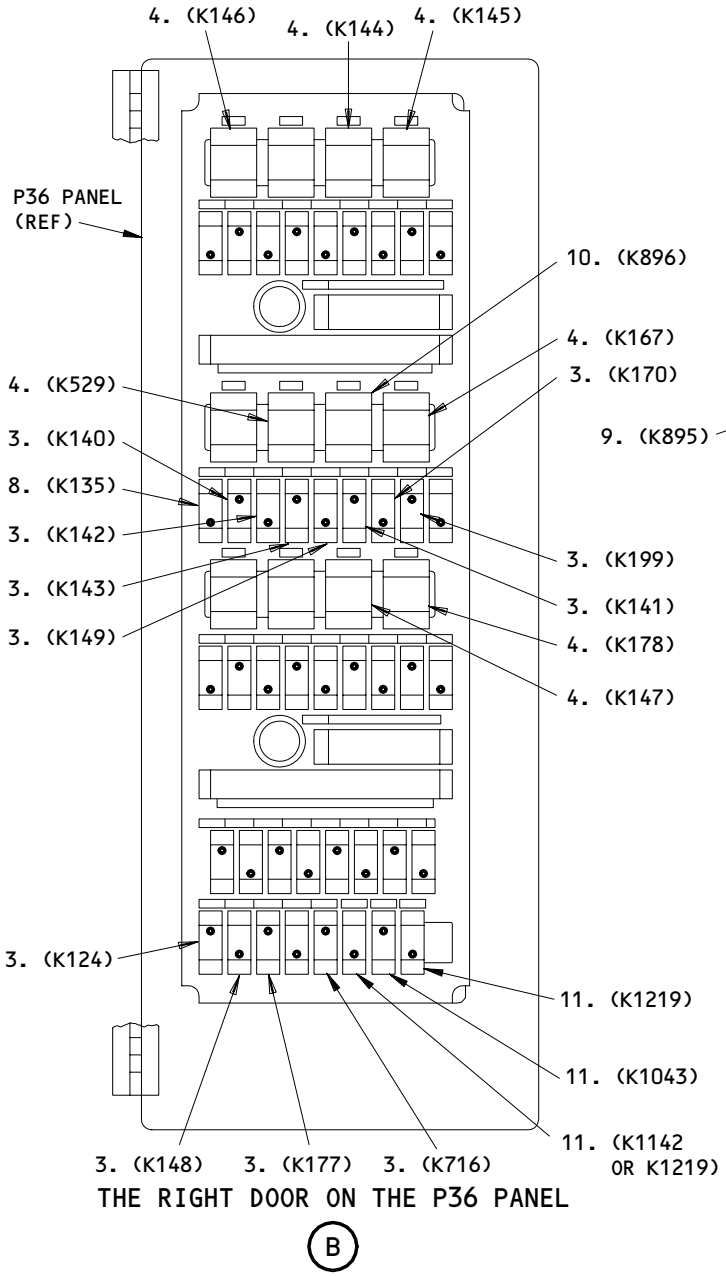


FRONT VIEW OF THE P33 PANEL WITH THE DOOR OPEN

A

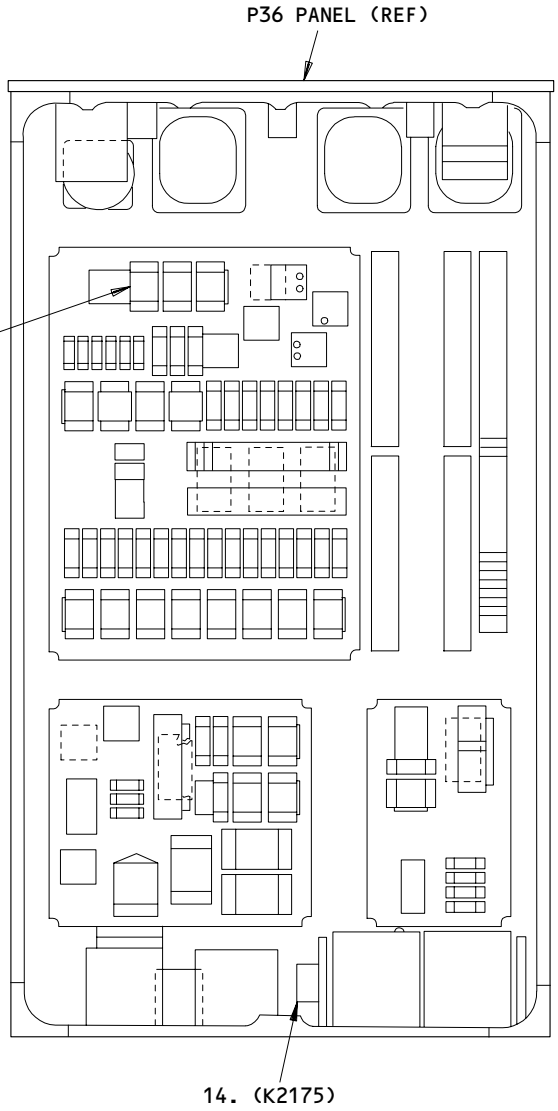
NOTE: THIS IS AN EXAMPLE INSTALLATION. RELAYS MAY BE SHOWN THAT ARE NOT IN ALL AIRPLANES.

Installation of the Air/Ground Relays
Figure 202 (Sheet 1)



THE RIGHT DOOR ON THE P36 PANEL

B

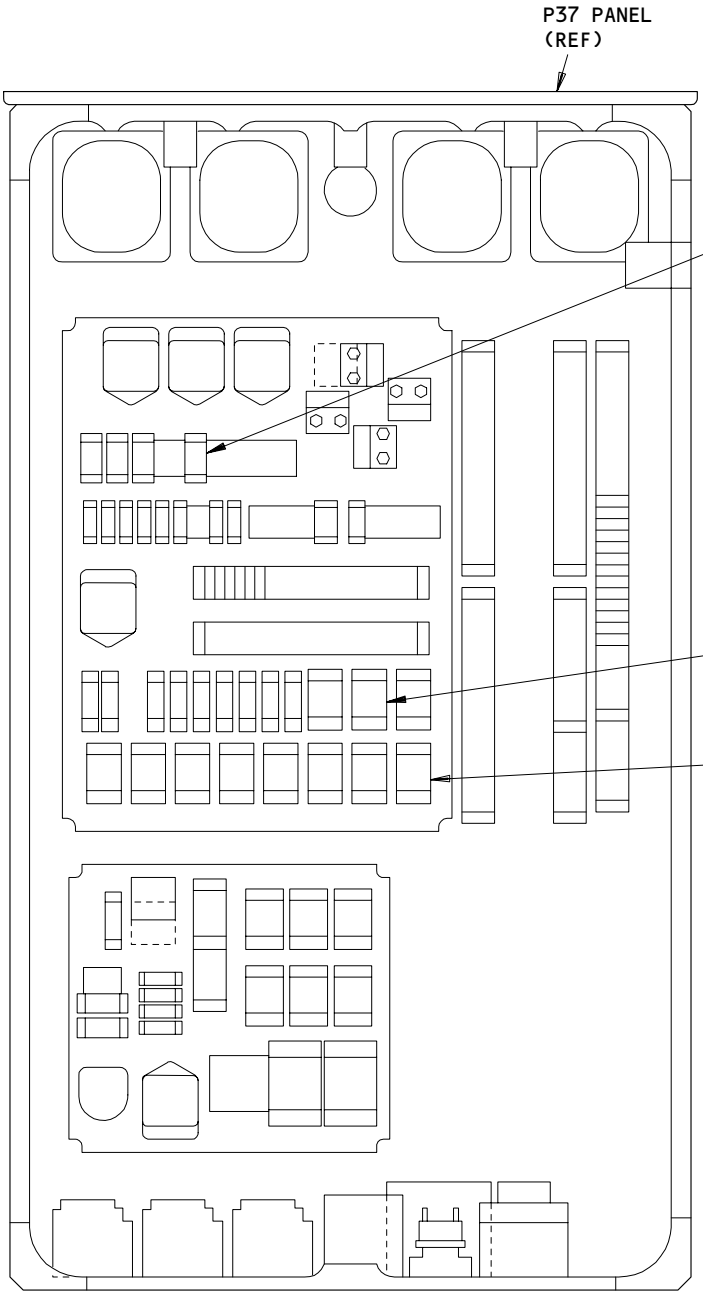


THE P36 PANEL WITH THE DOORS OPEN

C

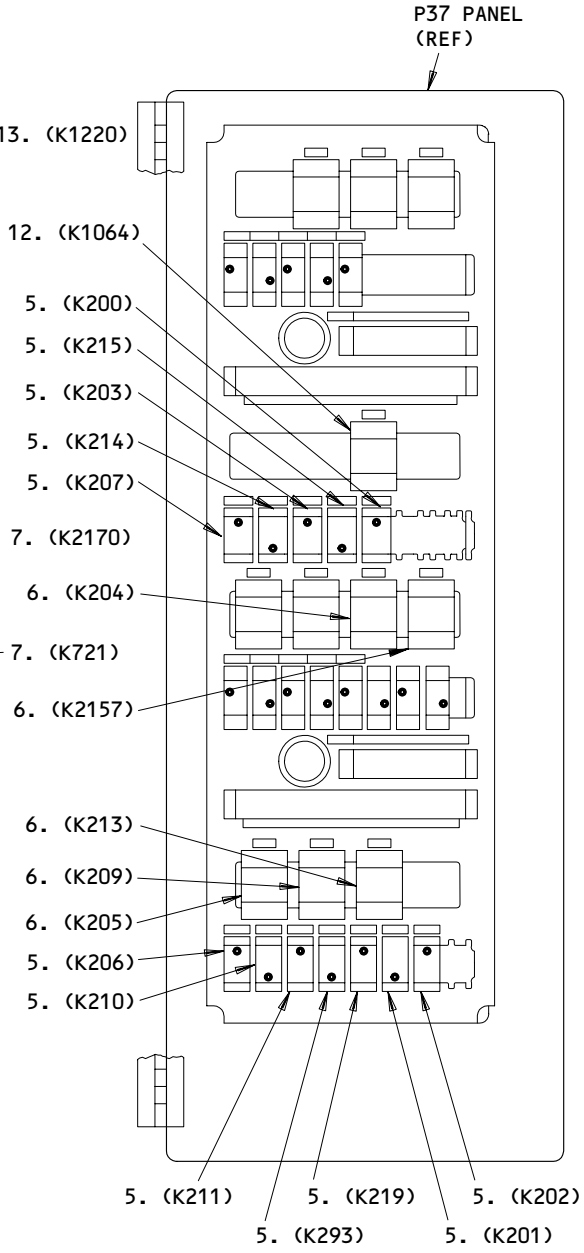
NOTE: THIS IS AN EXAMPLE INSTALLATION. RELAYS MAY BE SHOWN THAT ARE NOT IN ALL AIRPLANES.

Installation of the Air/Ground Relays
Figure 202 (Sheet 2)



THE FRONT VIEW OF THE P37 PANEL
WITH THE DOOR OPEN

D



THE RIGHT DOOR ON THE P37 PANEL

E

NOTE: THIS IS AN EXAMPLE INSTALLATION. RELAYS MAY BE SHOWN THAT ARE NOT IN ALL AIRPLANES.

Installation of the Air/Ground Relays
Figure 202 (Sheet 3)

S 022-018
(4) Remove the air/ground relays.

TASK 32-09-02-402-019

7. Install the Air/Ground Relays

A. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
202	2	Relay	32-09-52	02	50
	3	Relay	32-09-51	02	135
	4	Relay			145
	5	Relay	32-09-51	06	115
	6	Relay			105
	7	Relay			110
	8	Relay	32-09-51	02	160
	9	Relay			140
	11	Relay			180
	12	Relay	32-09-51	06	120
	14	Relay	32-09-51	02	143

B. References

(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels

(2) AMM 24-22-00/201, Electrical Power - Control

C. Access

(1) Location Zones

119 Main Equipment Center (Left and Right)

(2) Access Panel

119AL Main Equipment Center

D. Install the Air/Ground Relays

S 862-020

(1) Remove the electrical power if it has not been removed from the airplane (AMM 24-22-00/201).

S 712-022

(2) Do the test for the air/ground relay to make sure it operates correctly.

NOTE: The test is in the task that follows.

S 422-021
(3) Use the screws to install the air/ground relay on the panel.

TASK 32-09-02-712-023

8. Do the Test for the Air/Ground Relays

A. General
(1) This procedure gives a test to make sure each air/ground relay operates correctly.
(2) This test does a check of the continuity and the voltage of the relay terminals. This is done for the airplane in the ground mode and in the flight mode. To make the test easier, a breakout box is used. Figure 203 shows the energized or de-energized condition of each air/ground relay.
(3) There is one more test for the K142 and the K201 air/ground relays to make sure they interface with the autoflight system.

B. Equipment
(1) Relay Breakout Box - A32074-1

C. References
(1) AMM 22-41-00/501, Maintenance Monitor
(2) AMM 24-22-00/201, Electrical Power - Control

D. Prepare to Do the Test for the Air/Ground Relays

S 862-024
(1) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:

(a) 11C30, POSITION AIR/GND SYS 1
(b) 11U15, AIR/GND SYS 1
(c) 11U23 or 11U24, POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

(d) 11M30, R BUS PWR SENSE

S 862-083
(2) Supply electrical power (AMM 24-22-00/201).

E. Do a Test of the Relay in the Ground Mode

S 762-026
(1) Do the continuity tests on the air/ground relays with the relay breakout box.

NOTE: Refer to figure 203 for the condition of the relay (energized or de-energized). When you do the continuity check, make sure the electrical power is removed from the system connected to the relay.

RELAY NO.	RELAY STATUS 1		CONTINUITY BETWEEN THESE PINS	
	GROUND	AIR	GROUND	AIR
K124	D	E	1-13,5-3,7-14,11-9	1-2,5-4,7-8,11-10
K135	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K140	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K141	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K142	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K143	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K144	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K145	D	E	A2-A3,B2-B3,C2-C3,D2-D3	A2-A1,B2-B1,C2-C1,D2-D1
K146	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K147	D	E	A2-A3,B2-B3,C2-C3,D2-D3	A2-A1,B2-B1,C2-C1,D2-D1
K148	D	E	1-13,5-3,7-14,11-9	1-2,5-4,7-8,11-10
K149	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K167	D	E	A2-A3,B2-B3,C2-C3,D2-D3	A2-A1,B2-B1,C2-C1,D2-D1
K170	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K177	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K178	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K199	D	E	1-13,5-3,7-14,11-9	1-2,5-4,7-8,11-10
K200	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K201	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K202	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K203	D	E	1-13,5-3,7-14,11-9	1-2,5-4,7-8,11-10
K204	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K205	D	E	A2-A3,B2-B3,C2-C3,D2-D3	A2-A1,B2-B1,C2-C1,D2-D1
K206	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K207	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K209	D	E	A2-A3,B2-B3,C2-C3,D2-D3	A2-A1,B2-B1,C2-C1,D2-D1
K210	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K211	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K213	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K214	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K215	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K219	D	E	1-13,5-3,7-14,11-9	1-2,5-4,7-8,11-10
K293	D	E	1-13,5-3,7-14,11-9	1-2,5-4,7-8,11-10
K514	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K515	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K516	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K517	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K518	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K520	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K522	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K528	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K529	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K552	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K716	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K721	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K895	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K896	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3

NOTE: BEFORE YOU DO THE AIR/GROUND RELAY CONTINUITY TEST FOR A RELAY, MAKE SURE THE POWER IS REMOVED FROM THE USER SYSTEMS CONNECTED TO THE RELAY. THE RELAY BREAKOUT BOX IS NECESSARY TO THE CONTINUITY TEST.

1 E = ENERGIZED
D = DE-ENERGIZED

Air/Ground Relay Continuity Test
Figure 203 (Sheet 1)

RELAY NO.	RELAY STATUS 1		CONTINUITY BETWEEN THESE PINS	
	GROUND	AIR	GROUND	AIR
K1043	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K1064	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K1142	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K1219	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K1220	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K2154	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K2155	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K2156	D	E	1-13,5-3,7-14,11-9	1-2,5-4,7-8,11-10
K2157	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K2168	D	E	A2-A3,B2-B3,C2-C3,D2-D3	A2-A1,B2-B1,C2-C1,D2-D1
K2170	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K2175	E	D	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K10429	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K10445	E	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K10452	E 2	D	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9

2 THIS RELAY IS CONTROLLED BY THE RADIO ALTIMETER THROUGH THE YAW DAMPER STABILIZATION MODULE. IF THE ALTITUDE IS LESS THAN 10 FEET, THIS STATUS IS GROUND.

Air/Ground Relay Continuity Test
Figure 203 (Sheet 2)

F. Do a Test of the Relay in the Air Mode

S 862-028
(1) Supply electrical power (AMM 24-22-00/201).

S 042-040

WARNING: DO THE PROCEDURE TO PREPARE THE SAFETY-SENSITIVE SYSTEMS FOR AIR MODE SIMULATION. IF YOU DO NOT DO THE PROCEDURE BEFORE YOU SIMULATE AIR MODE, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Do the task to Prepare the Safety-Sensitive Systems for Air Mode Simulation before you simulate the air mode.

S 482-030
(3) Put the actuators on the proximity sensors of the landing gear to simulate the air mode.

NOTE: See the task to Put the Air/Ground Relay System in the Air Mode.

S 762-031
(4) Do the continuity tests on the air/ground relays with the relay breakout box.

NOTE: Refer to figure 203 for the condition of the relay (energized or de-energized). When you do the continuity check, make sure the electrical power is removed from the system connected to the relay.

(a) Make sure there is 28v dc at the pin (A1 for K144 or K204, D2 for K518 or K552) to the ground for the energized relay.
(b) Do the step that follows for the relays K142 and K201:
1) Do the MCDP test(s) 51 AIR/GND RLY to make sure the Autopilot/Flight Director and the Thrust Management System interface (AMM 22-41-00/501).

G. Put the Airplane Back to Its Usual Condition

S 862-033
(1) Do the task to put the air/ground relay system in the ground mode.

S 442-039
(2) Do the task to put the safety-sensitive systems back to their initial conditions.

S 862-034
(3) Remove the electrical power if it is not necessary (AMM 24-22-00/201).

AIR/GROUND RELAY SYSTEM - ADJUSTMENT/TEST

1. General
   A. This procedure does a test for the sensors in the air/ground relay system. The engine indicating and crew alerting system (EICAS) messages are shown to make sure the system operates correctly.

TASK 32-09-02-735-001

2. The System Test for the Air/Ground Relay System
   A. General
      (1) Two procedures are given to simulate the air mode.
         (a) The first procedure is the recommended procedure. It lifts the airplane with jacks. This permits you to do a check of the sensor-to-target interfaces which gives a full system test.

            NOTE: The on-ground BITE is used to do the test for the sensors and the targets. The BITE does not operate in the air mode. If the system 1 or 2 sensors find the trucks tilted or the nose gear not compressed the on-ground BITE cannot operate. If you stop the operation of the sensors, the PSEU can not sense the air mode. The PSEU will show the code AAA when it senses the air mode.

         (b) The second procedure uses sensor actuators to simulate the air mode. This procedure does not do a check of the sensor-to-target interfaces.
   B. Equipment
      (1) Proximity Sensor Actuator/Deactuator Set - A27092-106.
      (Rectangular Sensor actuator and 2 rectangular sensor deactuators required)
   C. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 07-11-01/201, Airplane Jacking
      (3) AMM 24-22-00/201, Electrical Power - Control
      (4) AMM 32-09-02/201, Air/Ground Relays

D. Access

(1) Location Zones

119	Main Equipment Center (Left and Right)
211/212	Control Cabin
711	Nose Landing Gear
731/741	Main Landing Gear

(2) Access Panel

119AL	Main Equipment Center

E. Prepare to Do the Test

S 045-002

WARNING: PREPARE THE SAFETY-SENSITIVE SYSTEMS FOR THE AIR MODE BEFORE YOU LIFT THE AIRPLANES ON JACKS OR INSTALL THE ACTUATORS ON THE PROXIMITY SENSORS. IN THE AIR MODE, MANY OF THE AIRPLANE SYSTEMS CAN OPERATE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Prepare the safety-sensitive systems for air mode simulation (AMM 32-09-02/201).

S 865-003

(2) Make sure these circuit breakers on the overhead circuit breaker panel, P11 are closed:

(a) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(b) 11T36, PROX SW TEST
(c) 11U15, AIR/GND SYS 1
(d) 11U23 or 11U24, POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

F. Do the Test of the Sensors in the Ground Mode (Fig. 501, 502)

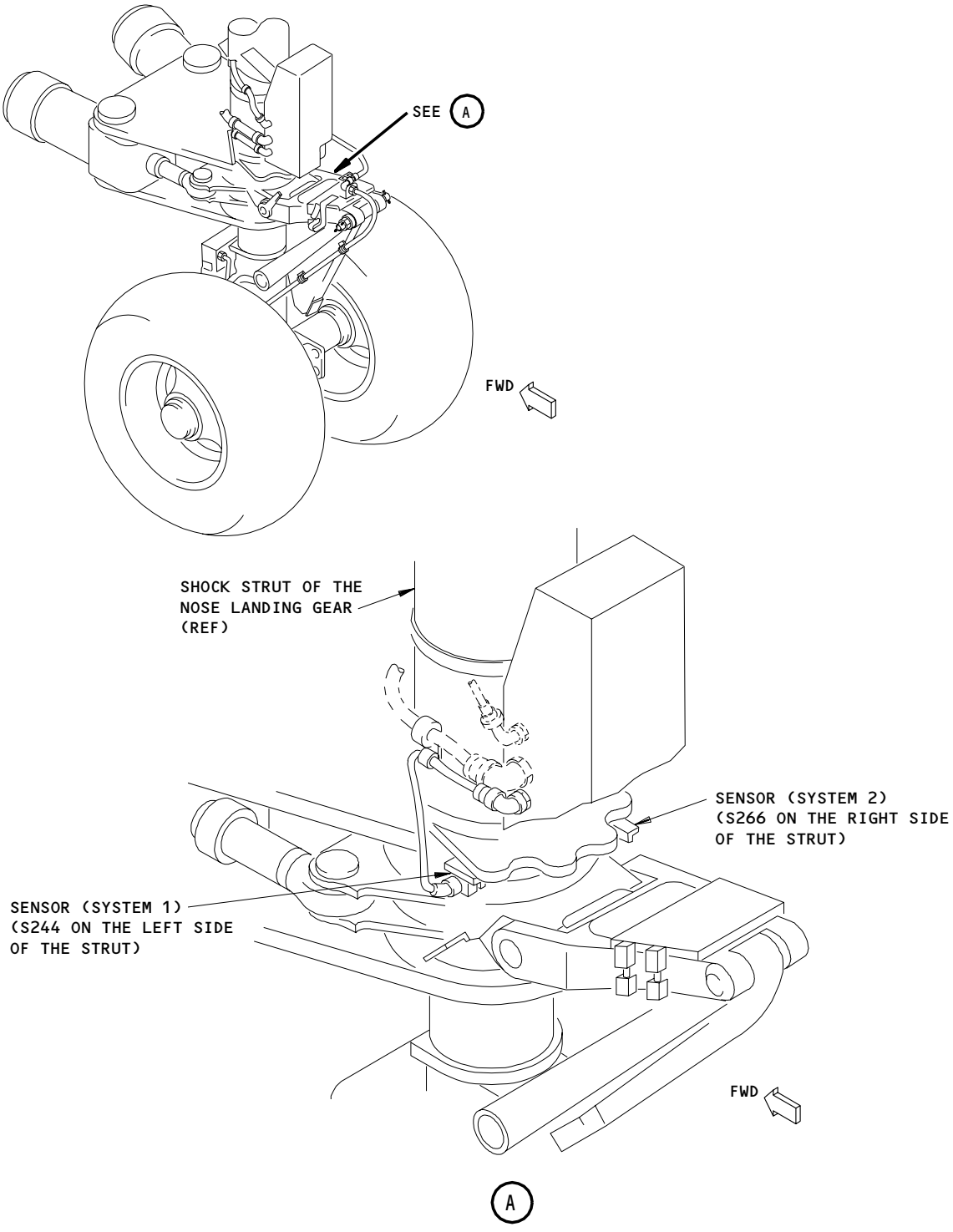
S 015-004

(1) Open the access door, 119AL, to get access to the PSEU (AMM 06-41-00/201).

S 865-005

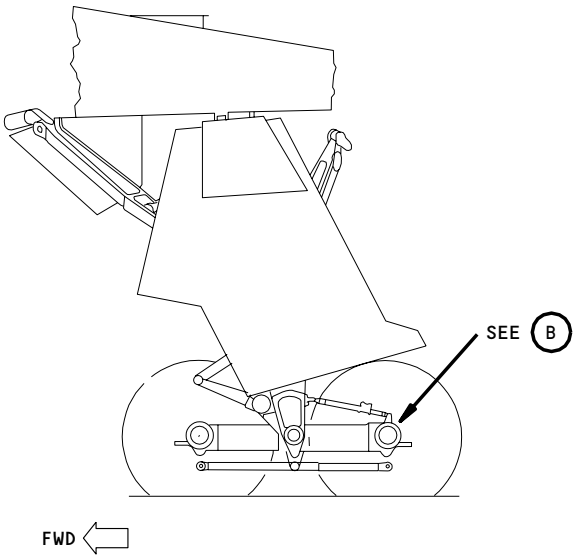
(2) Push the PRESS/TEST switch on the BITE controls of the PSEU.

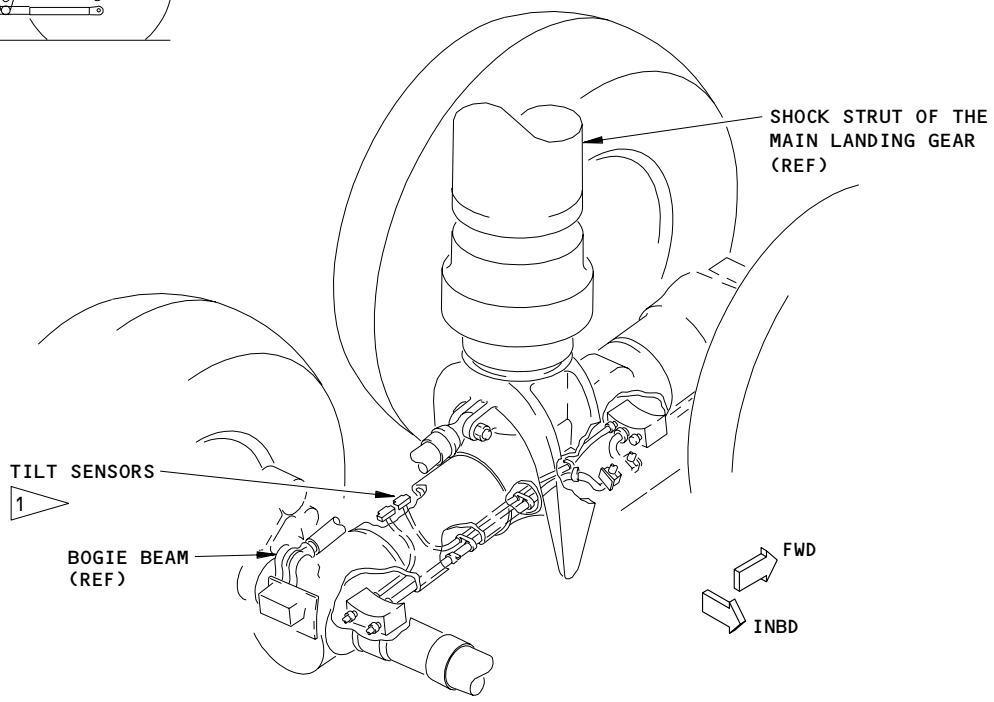
NOTE: The code 888 will be shown on the LED display. All of the lights will be on until the PRESS/TEST switch is released.



LOCATION OF THE NOT COMPRESSED SENSORS ON THE NOSE LANDING GEAR

Location of the Sensors for the Air/Ground Relay System
Figure 501 (Sheet 1)





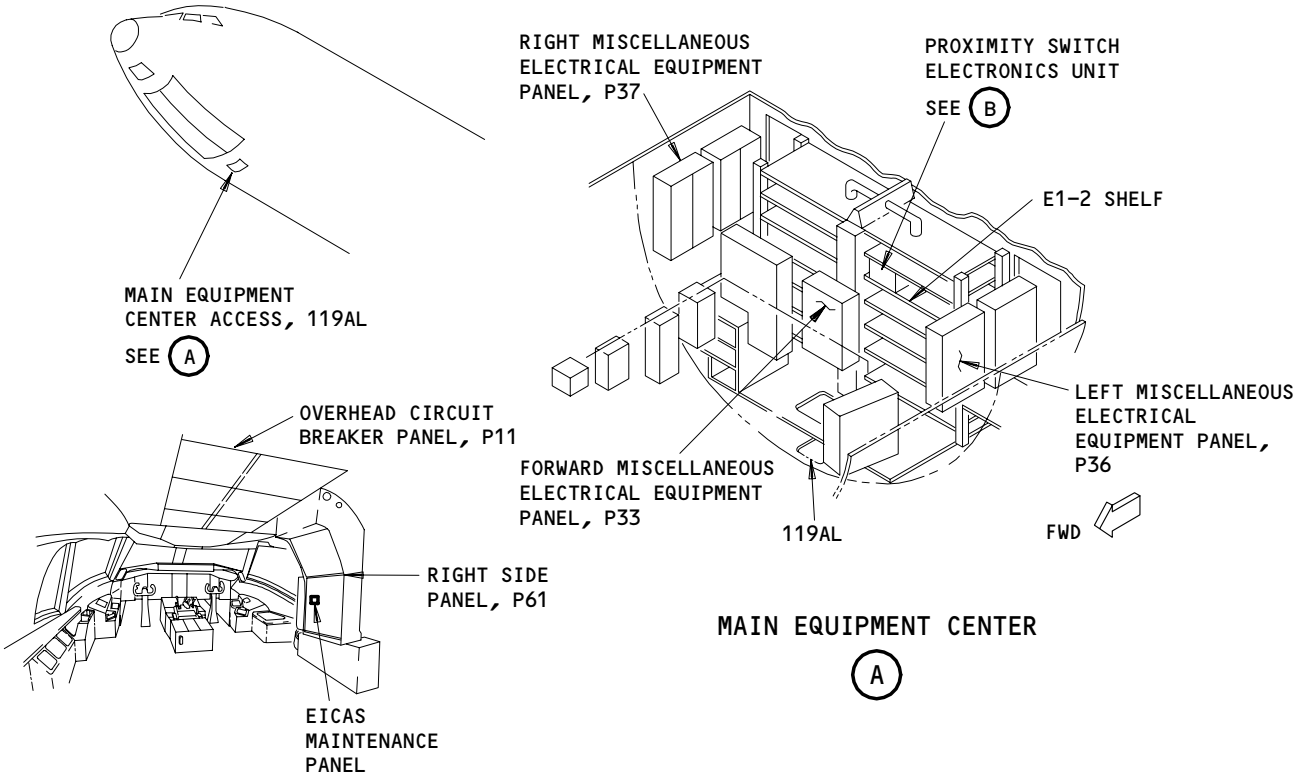
LEFT MAIN LANDING GEAR
B

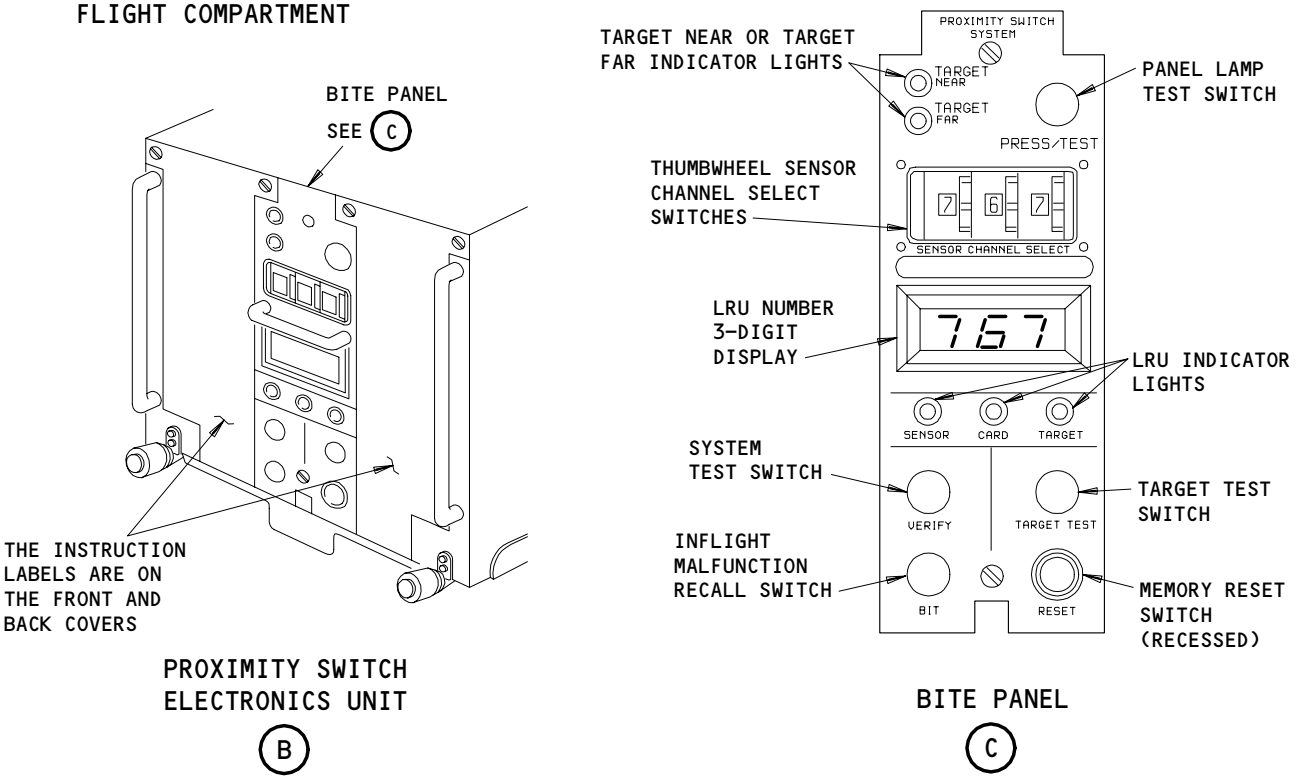
1

SENSOR NUMBER	SYSTEM	GEAR	LOCATION
S245	1	L	FWD
S246	1	R	FWD
S267	2	L	AFT
S268	2	R	AFT

LOCATION OF THE TILT SENSORS ON THE MAIN LANDING GEAR

Location of the Sensors for the Air/Ground Relay System
Figure 501 (Sheet 2)





Proximity Switch Electronic Unit (PSEU)
Figure 502

S 715-006

(3) Do the test of the sensors and targets in the ground mode.

(a) Do the steps that follow for each sensor shown in Table 1.

1) Use the SENSOR CHANNEL SELECT dials to put the sensor number into the PSEU (Table 501).

Table 501

SENSOR NUMBER	SENSOR
S244	Nose Gear Not Compressed, System 1
S245	Left Gear Tilted, System 1
S246	Right Gear Tilted, System 1
S266	Nose Gear Not Compressed, System 2
S267	Left Gear Tilted, System 2
S268	Right Gear Tilted, System 2

2) Push the TARGET TEST switch and hold it for one second.

3) Make sure the correct sensor number is shown on the display and that the TARGET FAR light comes on after 4 seconds.

G. Do the Test for the Sensors in the Air Mode - Procedure 1

NOTE: This is the recommended procedure.

S 725-007

(1) Do the test for the sensors and targets in the air mode:

(a) Lift the airplane with jacks to permit the nose landing gear to extend fully and the main landing gear trucks to tilt fully (AMM 07-11-01/201).

(b) Put the deactuators on the system 1 and the system 2 not compressed sensors of the nose landing gear (S244 and S266).

(c) Do the steps that follow for each tilt sensor of the main landing gear (Table 501):

1) Put the sensor number of the sensor on which you will do the test in the PSEU (Table 501). Use the SENSOR CHANNEL SELECT dials.

2) Push the TARGET TEST switch and hold it for one second.

3) Make sure the correct sensor number is shown on the display and that the TARGET NEAR light comes on after 4 seconds.

4) Remove the deactuators from the not compressed sensors of the nose landing gear.

(d) Put the deactuators on the system 1 and the system 2 tilt sensors (S245 and S267) of the left main landing gear.

(e) Do the steps that follow for each not compressed sensor of the nose landing gear:

1) Put the sensor number of the sensor on which you will do the test in the PSEU (Table 501). Use the SENSOR CHANNEL SELECT dial.

2) Push the TARGET TEST switch and hold it for one second.
3) Make sure the correct sensor number is shown on the display and that the TARGET NEAR light comes on after 4 seconds.
4) Remove the deactuators from the tilt sensors on the left main landing gear.

(f) Lower the airplane and remove the jacks (AMM 07-11-01/201).

H. Do the Test for the Sensors in the Air Mode - Procedure 2

NOTE: This is the alternative procedure. Do not do this test if you did procedure 1.

S 725-008

(1) Do the test for the sensors in the air mode:
(a) Do the steps that follow for each sensor in Table 1.
1) Put the actuator on the face of the sensor.
2) Push the TARGET TEST switch and hold it for one second.
3) Make sure the correct sensor number is shown on the display and that the TARGET NEAR light comes on after 4 seconds.
4) Remove the actuator from the sensor.

I. Do the Test for the EICAS Messages

S 865-009

(1) Do these steps to erase the EICAS memory:
(a) Push the ECS/MSG switch on the EICAS maintenance panel on P61 (Fig. 502).
(b) Do these steps until no more EICAS maintenance messages show:
1) Push the EVENT AUTO READ switch to display the EICAS maintenance messages.
2) Write down all the EICAS messages shown.
3) Push and hold the ERASE switch for 2 seconds.

S 745-132

(2) Do these steps to make sure there are no air/ground faults:
(a) Put the EICAS computer select switch to the L position.
(b) Make sure these EICAS messages do not show:
1) AIR/GND DISAGREE
2) NOSE A/G DISAGREE
3) AIR/GND SYS
4) NOSE A/G SYS
(c) Put the EICAS computer select switch to the R position.
(d) Make sure these EICAS messages do not show:
1) AIR/GND DISAGREE
2) NOSE A/G DISAGREE
3) AIR/GND SYS
4) NOSE A/G SYS

S 715-133

(3) Do this test of the main gear air/ground system 1:
(a) Install the actuators on the face of the system 1 tilt sensors (S245 and S246) for the main landing gear.

(b) Make sure the AIR/GND DISAGREE message shows on the EICAS screen.

NOTE: The message will come into view in approximately 12 seconds.

(c) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS;
Make sure the AIR/GND SYS message shows on the EICAS display.
(d) Put the EICAS computer select switch to the L position.
(e) Make sure the message shows.
(f) Remove the actuators from the sensors S245 and S246.

S 865-134
(4) Push these switches to erase the EICAS messages:
(a) EVENT AUTO READ
(b) ERASE (hold for two seconds)
(c) EVENT AUTO READ

S 715-135
(5) Do this test of the main gear air/ground system 2:
(a) Install the actuators on the face of the system 2 tilt sensors (S267 and S268) for the main landing gear.
(b) Make sure the AIR/GND DISAGREE message shows on the EICAS display in 12 seconds.
(c) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS;
Make sure the AIR/GND SYS message shows on the EICAS display.
(d) Remove the actuators from the sensors S267 and S268.

S 865-089
(6) Push these switches to erase the EICAS messages:
(a) EVENT AUTO READ
(b) ERASE (hold for two seconds)
(c) EVENT AUTO READ

S 715-136
(7) Do this test of the main landing gear air/ground system in the air mode:
(a) Install the actuators to the face of each tilt sensor (S245, S246, S267, and S268) for the main landing gear.
(b) Make sure the AIR/GND DISAGREE message does not show on the EICAS display.

(c) Remove the actuator from the sensor S245.
(d) Make sure the AIR/GND DISAGREE message shows on the EICAS display in 12 seconds.
(e) Put the EICAS computer select switch to the R position.
(f) Make sure the AIR/GND DISAGREE message shows on the EICAS display.
(g) Remove the actuator from the sensors S246, S267, and S268.
(h) Push these switches to erase the EICAS message:
1) EVENT AUTO READ
2) ERASE (hold for two seconds)
3) EVENT AUTO READ
(i) Make sure the AIR/GND DISAGREE message does not show on the EICAS display.
(j) Install the actuator on the sensors S245, S246 and S267.
(k) Make sure the AIR/GND DISAGREE message shows on the EICAS display in 12 seconds.
(l) Put the EICAS computer switch to the L position.
(m) Make sure the AIR/GND DISAGREE message shows on the EICAS display.
(n) Remove the actuator from the sensors S245, S246 and S267.
(o) Push these switches to erase the EICAS messages:
1) EVENT AUTO READ
2) ERASE (hold for two seconds)
3) EVENT AUTO READ

S 715-137
(8) Do this test of the nose gear air/ground system 1:
(a) Install the actuator on the face of the system 1 not compressed sensor (244) for the nose landing gear.
(b) Make sure the NOSE A/G DISAGREE message shows on the EICAS display in 12 seconds.
(c) Remove the actuator from the sensor S244.

S 865-112
(9) Push these switches to erase the EICAS message:
(a) EVENT AUTO READ

(b) ERASE (hold for two seconds)
(c) EVENT AUTO READ

S 715-138
(10) Do this test of the nose gear air/ground system 2:
(a) Install the actuator on the face of the system 2 not compressed sensor (266) for the nose landing gear.
(b) Make sure the NOSE A/G DISAGREE message shows on the EICAS display in 12 seconds.
(c) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS;
Make sure the NOSE A/G SYS message shows on the EICAS display.
(d) Remove the actuator from the sensor S266.

S 865-115
(11) Push these switches to erase the EICAS messages:
(a) EVENT AUTO READ
(b) ERASE (hold for two seconds)
(c) EVENT AUTO READ

J. Put the Airplane Back to Its Usual Condition

S 865-116
(1) Make sure the actuators and deactuators are removed from the sensors.

S 865-117
(2) Push the RESET switch on the PSEU to erase the entries in the in-flight BITE memory.

S 445-126
(3) Put the safety-sensitive systems back to their initial conditions (AMM 32-09-02/201).

S 415-119
(4) Close the access panel, 119AL.

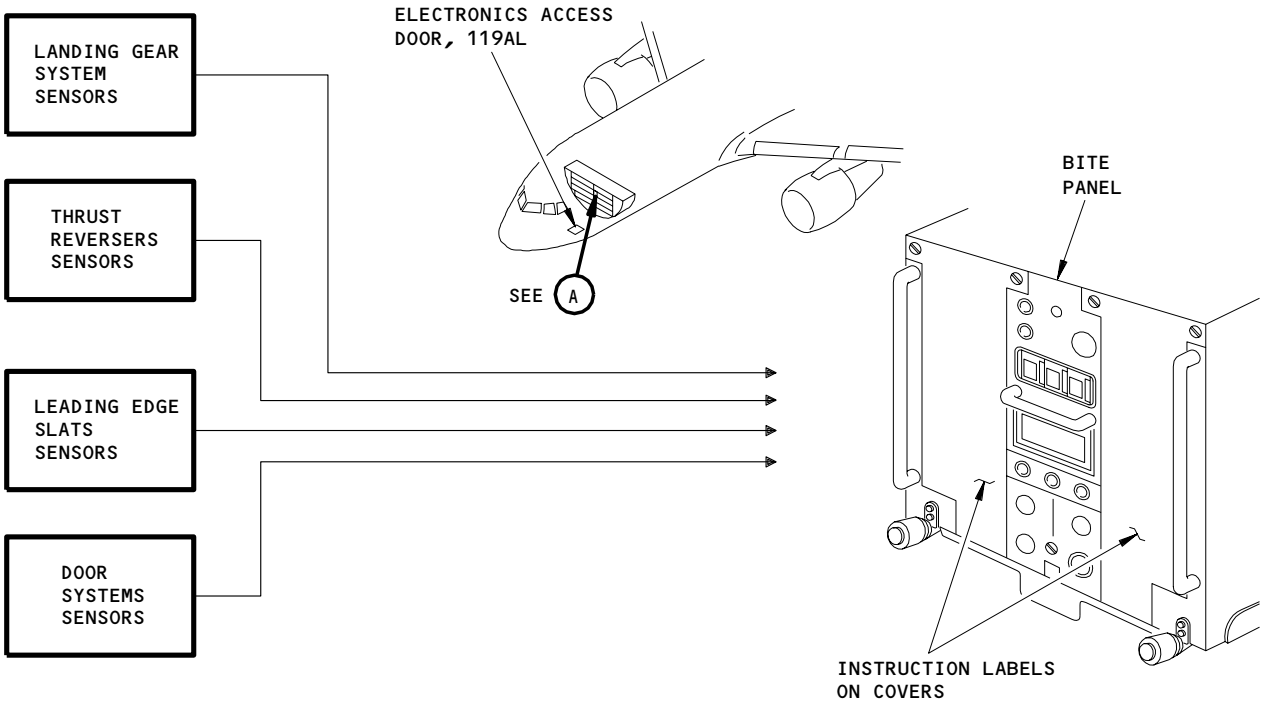
S 865-120
(5) Remove electrical power if it is not necessary (AMM 24-22-00/201).

PROXIMITY SWITCH SYSTEM - DESCRIPTION AND OPERATION

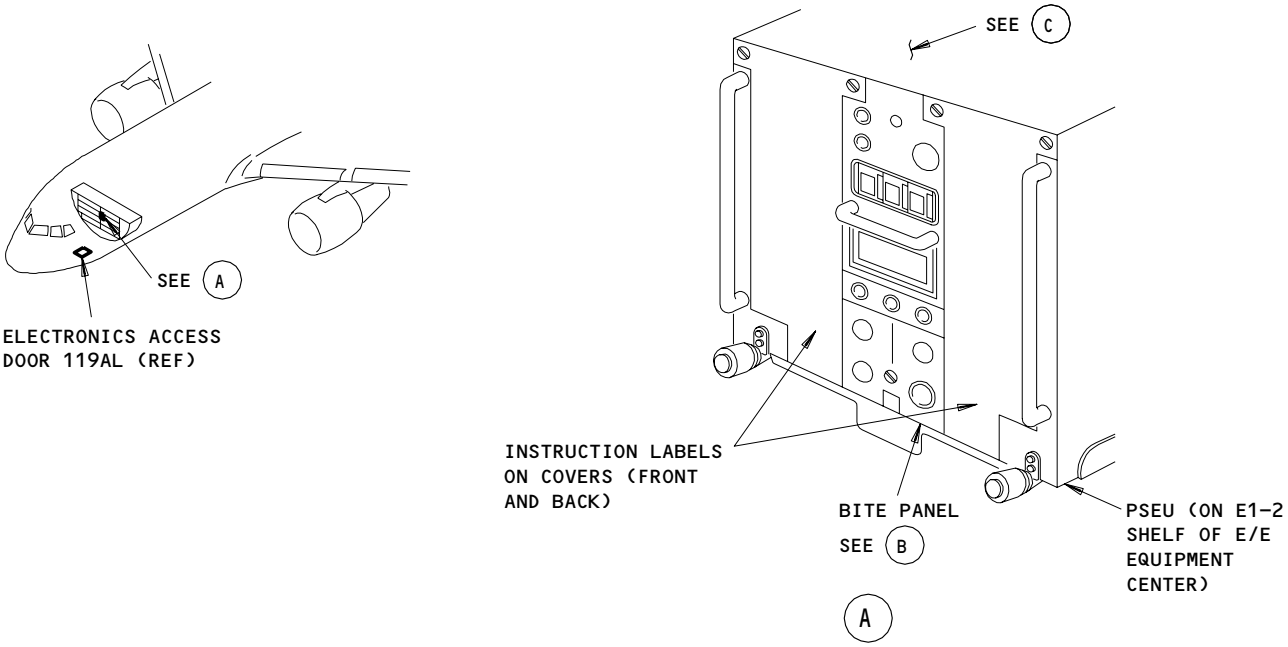
1. General (Fig. 1)
   A. The proximity switch system consists of a proximity switch electronics unit (PSEU) and numerous proximity sensors mounted throughout the airplane. The sensors provide position sensing for landing gear, doors, leading edge slats, and thrust reversers, and involve these subsystems:
      - Landing gear systems (systems 1 and 2) (AMM 32-61-00/001)
      - Thrust reverser indication (left and right) (AMM 78-36-00/001)
      - Thrust reverser auto restow (left and right) (AMM 78-34-00/001)
      - Forward Entry door control (AMM 52-11-00/001)
      - Cargo door control (AMM 52-35-00/001)
      - Door warning system (AMM 52-71-00/001)
      - Leading edge slats (AMM 27-88-00/001)
      - Tail skid (AMM 32-71-00/001) *[3]

      *[1] Not used
      *[2] Not used
      *[3] 767-300 AIRPLANES

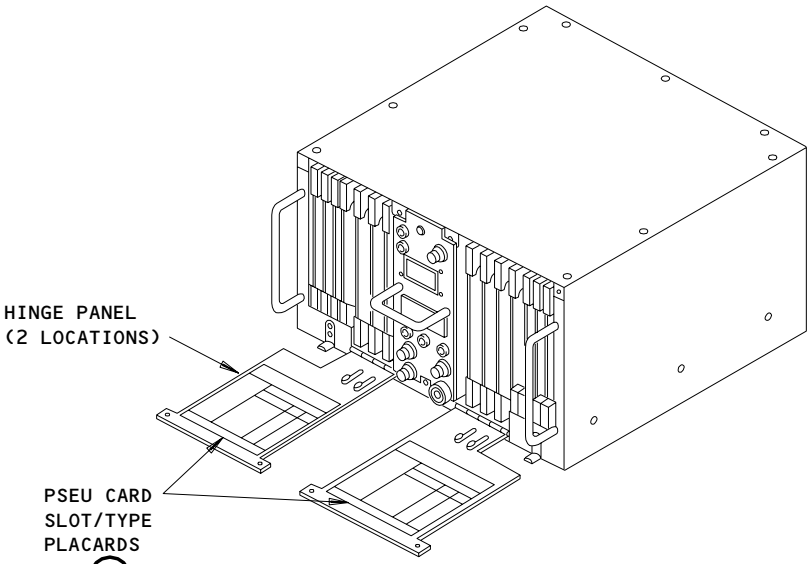
      (1) Card fault codes correspond to card slot position in the PSEU.
      (2) Power supply fault codes are numbered from 400 to 409.
      (3) The discrete input failure codes are numbered from 421 to 428.
      (4) All fault code numbers are listed on the PSEU front panel placard. Additional placards on the inside of the PSEU front panels provide card information.
2. Component Details
   A. Proximity Switch Electronics Unit (PSEU) (Fig. 2, 2A)
      (1) The PSEU chassis accommodates 15 active cards and a BITE module.
         (a) One auxiliary driver card (18 separate output drivers).
         (b) A BITE module composed of two unique BITE cards and a control panel.
      (2) All PSEU cards are line replacable units (LRU's) and are accessed through hinged panels on the front of the PSEU (Fig. 2A). It is not necessary to remove the PSEU from its shelf to access the cards.
         (a) A placard on the inside of each hinged front panel provides card type and slot locations. The placards show specific sensor and prox, logic, and driver card relationships (as defined by their card slot locations) for each of the systems monitored by the PSEU.



Proximity Switch System
Figure 1



Proximity Switch Electronic Unit (PSEU)
Figure 2



PROXIMITY SWITCH ELECTRONICS UNIT (PSEU)

CARD SLOT LOCATIONS FOR PROX, LOGIC AND DRIVER CARDS FOR THE GIVEN SUBSYSTEM

CARD TYPE CODE (SEE BOTTOM OF PLACARD FOR DEFINITIONS)

PSEU CARD SLOT IDENTIFICATION (PHYSICAL LOCATION IN PSEU CHASSIS)

SENSORS WHICH INPUT TO THE PROX CARD

A2 009		A5 010		A1 011	A6 012	A4 013	A4 014	A4 015	A4 016
CARD TYPE AND SLOT NO. (009–016)									

SUBSYSTEM	CARD SLOT NO.		
	PROXIMITY	LOGIC	DRIVER
SUBSYSTEM 1	1 (SXXX–SYYY)	2	3

CARD TYPE CODES

A1	LOGIC #1	A4	PROXIMITY
A2	LOGIC #2	A5	DRIVER
A3	LOGIC #3	A6	AUXILIARY DRIVER

PLACARD INFORMATION

A

PSEU Card Slot/Type Information Placards
Figure 2A

(3) Each subsystem operates from its own 28V dc power supply. These supplies are at the card interface to provide power for the appropriate logic section. Thus loss of power to any subsystem will not affect the others. To prevent single failure mode affecting the two landing gear and the two thrust reverser subsystems, its components are mounted on different cards.

B. Prox Card

(1) Each prox card can monitor the relative sensor target positions of up to 16 sensors.

(2) The prox card supplies a periodic pulse to drive sensors and monitors the return voltage from the sensor. Since sensor inductance varies with target proximity, the prox card determines target near or far condition by measuring return voltage.

(3) The prox card interprets a high voltage (13 volts), for target far, as logic 1 and a low voltage (0.3 volts), for target near, as logic 0 and sends these signals to the associated logic card.

C. Logic Card

(1) The logic card combines input signals from the prox card such that output signals are provided according to specified combinations of input signals.

(2) Three non-interchangable logic cards contain logic for all the systems monitored by the PSEU. The systems are distributed to the cards as follows:

(a) Logic #1 - cargo door control system, left engine thrust reverser system, and landing gear system #1

(b) Logic #2 - leading edge slats system

(c) Logic #3 - door system, right engine thrust reverser system, and landing gear system #2

D. Driver Card

(1) Three interchangable driver cards and one non-interchangable auxiliary driver card supply the appropriate open or ground signals to drive airplane indicating and control systems tied to the PSEU.

(2) Each of the three interchangable driver cards contain 38 driver channels. Thirty five of the driver channels are Type 1 drivers and three of the channels are Type 2 drivers.

(a) Type 1 drivers supply a ground when powered and will fail to open with loss of power.

(b) Type 2 drivers provide an open or a ground when powered, depending on which contacts are wired to the user system. These drivers are relay type drivers and fail to corresponding inactive state with loss of power.

(3) The non-interchangable auxiliary driver card contains 16 driver channels, all of which are Type 1 drivers.

E. BITE Module

(1) The BITE module is a microprocessor based system that executes performance and diagnostic tests. The module consists of two unique BITE cards and a BITE control panel.

(2) The BITE module reads test commands from panel controls and writes out data to panel displays and indicators. The microprocessor reads programs and test data from programmable-read-only-memory (PROM) and random-access-memory (RAM) and executes test programs to perform input/output operations with test data. During inflight testing faults are stored in RAM and can be recalled on the ground.

F. Proximity Sensors (Fig. 3)

(1) Reluctance type sensors provide position sensing inputs to the PSEU.

(2) The sensor, a two-wire device connected to the PSEU prox card, is a magnetic field-producing coil-core combination. The sensor is contained in a non-magnetic stainless steel case. When a steel (magnetic) target is brought near or moved away from the sensor face, the sensor inductance increases or decreases respectively.

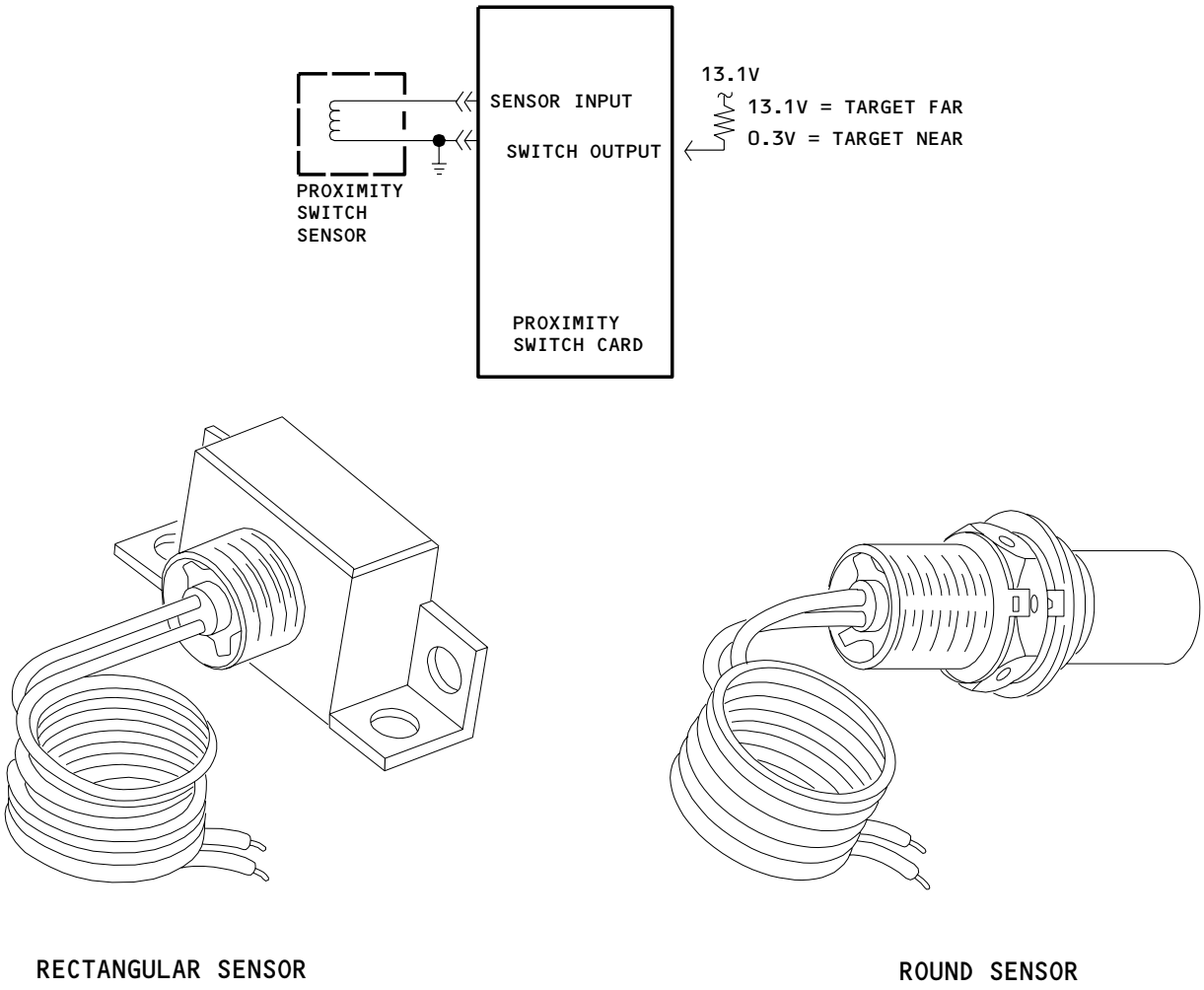
(3) Two types of sensor are used, round or rectangular. The round sensor is used for applications that do not allow the installation of the rectangular sensors due to physical constraints. Both sensors sense the proximity or distance of a steel (magnetic) target to its sensitive surface. Actuation gap varies with sensor type and installation. Regardless of gap differences, both sensors provide same function and output to the prox card in the PSEU.

(4) For sensor details and locations, refer to section of airplane subsystems listed in 1.A.

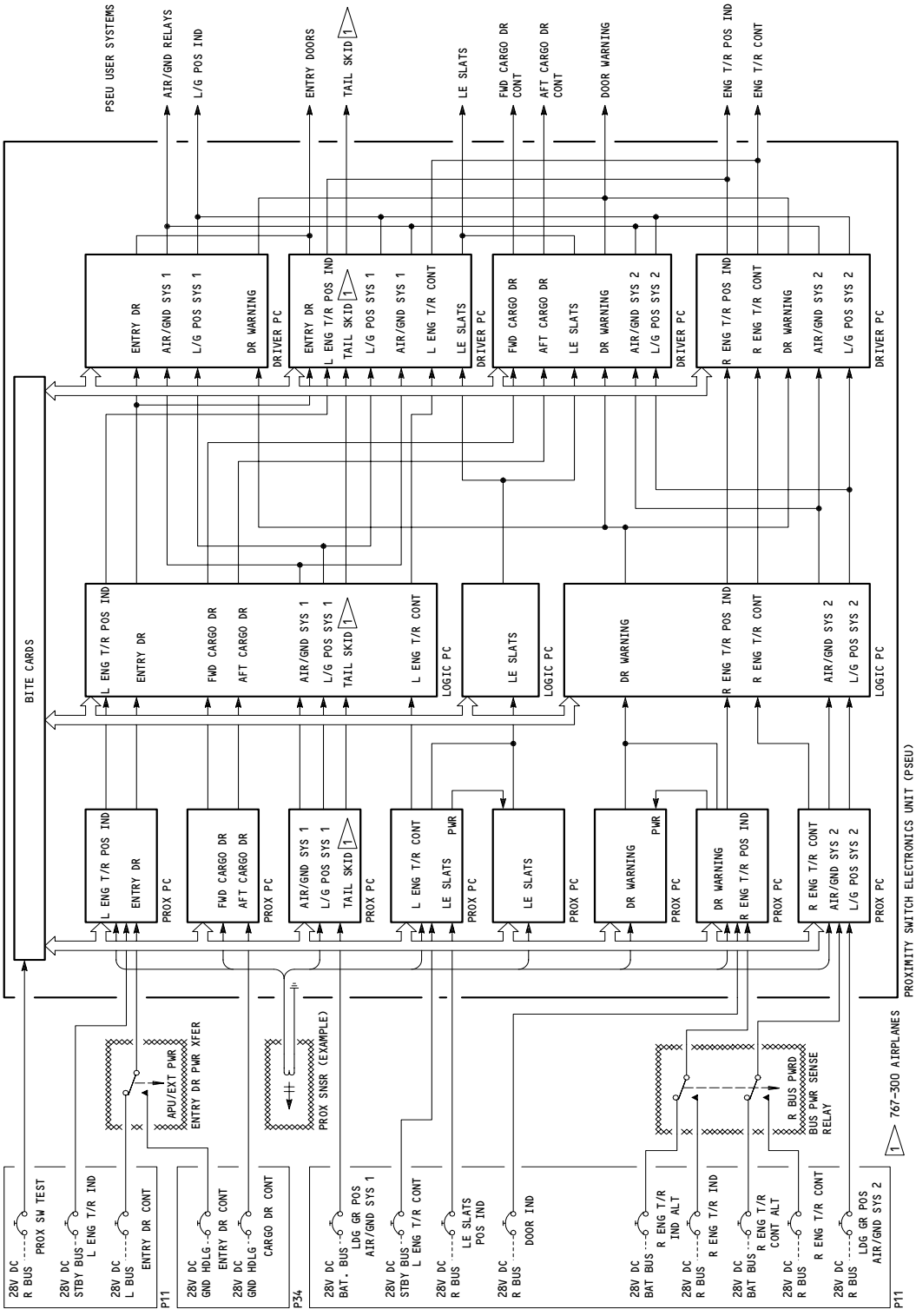
3. Operation

A. Functional Description (Fig. 4, 4A)

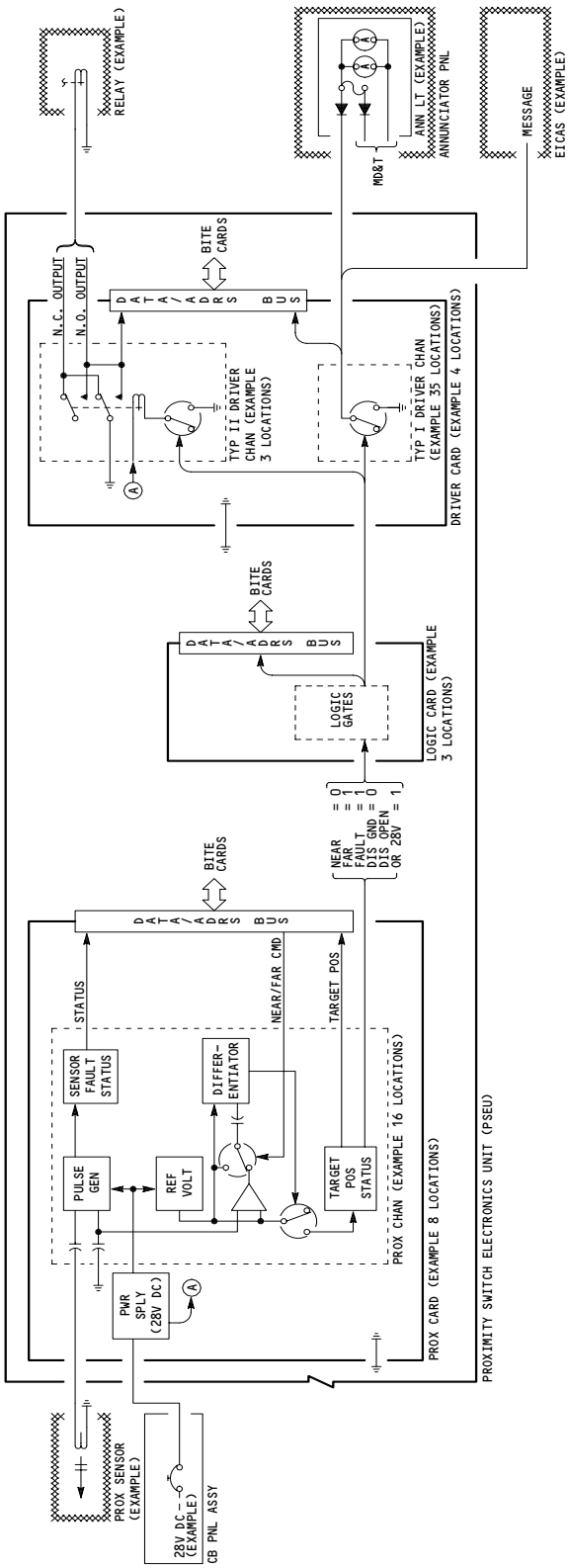
(1) When the PSEU is powered by 28V dc, the sensor is driven by a periodic pulse generated in the PSEU prox card. This periodic pulse measures the inductance of the sensor. The sensor inductance increases as a steel (magnetic) target is brought near the face of the sensor. The sensor inductance decreases as the target is moved away from the sensor. When a specific inductance is measured, the output of the prox card changes state. This output is nominally 0.3V (logic 0) with a target near condition and approximately 13.1V (logic 1) with a target far condition.



Proximity System Sensors
Figure 3



Proximity Switch System Schematic
Figure 4



Proximity Switch System Schematic (Example Circuit)
Figure 4A

(2) The discrete mechanical switch outputs to the PSEU is a logic 0 with switch closure to ground, and a logic 1 with switch open or 28V dc. Table 1 lists the discrete inputs to the PSEU.

Table 1
Discrete Inputs to the PSEU

PSEU Code	Input
421	Landing gear lever down 1
422	Landing gear lever down 2
423	Slat command to retract 1 *[1]
424	Slat command to retract 2 *[1]
425	Slat command to take-off 1 *[1]
426	Slat command to take-off 2 *[1]
427	Slat command to landing 1 *[1]
428	Slat command to landing 2 *[1]

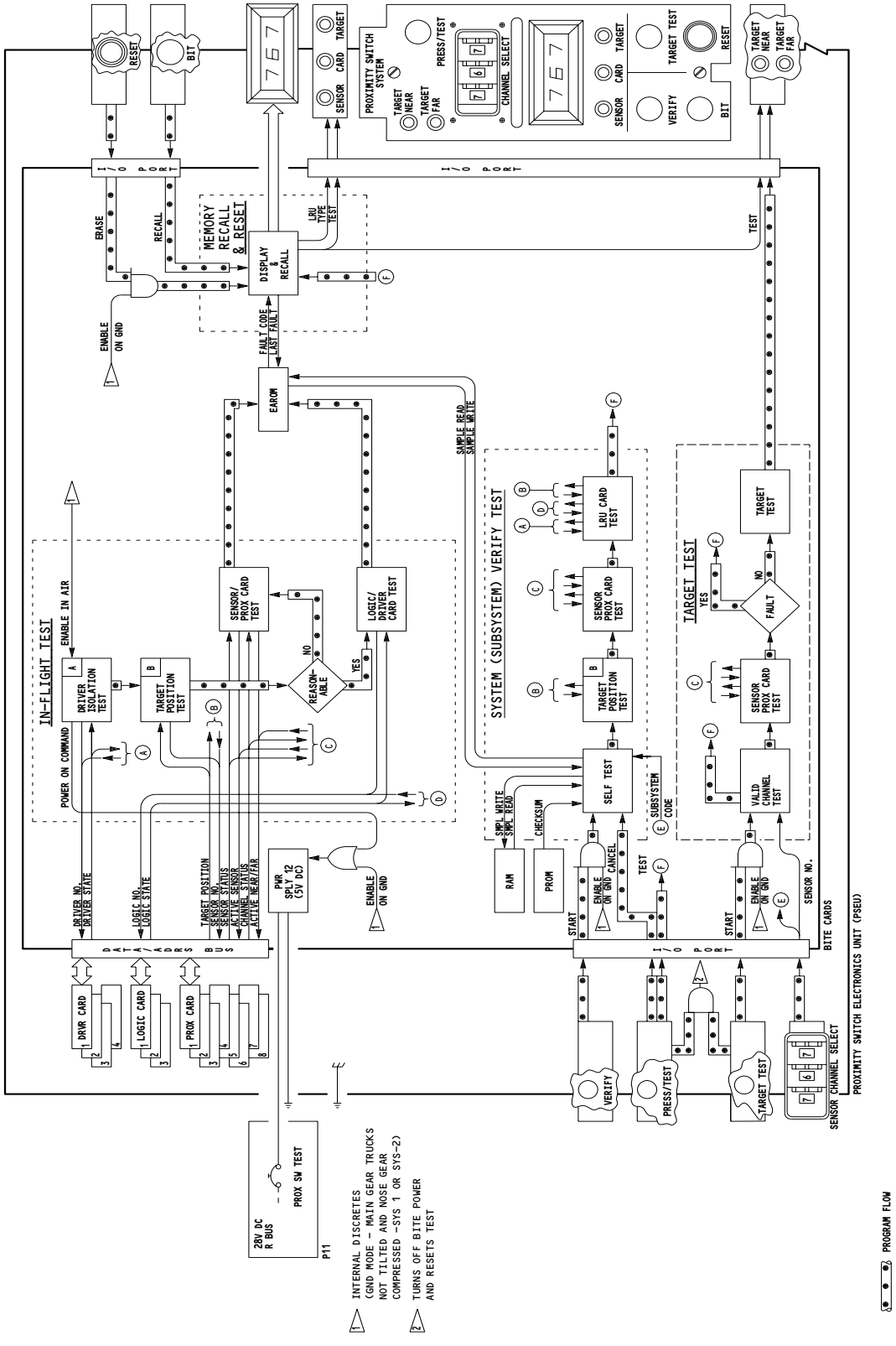
*[1] From Flap/Slat Electronic Unit (FSEU)

(3) Both prox card output signals and the discrete switches output (flap handle and gear lever position) signals apply directly to the logic card. The logic card circuit converts these inputs singly and in groups into output signals to the driver card. When the input signal to the driver card is a logic 1, the driver card provides a ground signal for operation of relays, lamps and other electronics. For description of sensor locations and logic circuit, refer to individual airplane subsystems section listed in 1.A.

B. PSEU Built-In-Test Equipment (BITE) (Fig. 5)

(1) The PSEU BITE section is a microprocessor based system used to locate system faults. The BITE provides ground test and automatic in-flight test.

(2) The ground test mode contains three separate modes which provide a complete system check-out, a shortened subsystem check-out, or indication of sensor target near or far status.



Proximity Switch System BITE Schematic
Figure 5

270040

(3) On-ground BITE testing can only be activated when both main landing gear are not tilted or nose gear is compressed (gear on ground).
(4) Attempting to perform an on-ground BITE test with the airplane in the air mode will cause "AAA" to be displayed on the PSEU display and the test will not be performed.
(5) The in-flight mode automatically monitors flight-critical outputs shown in Table 2 when both main landing gear are tilted (gear up). The BITE is normally off in flight. If one of the output in Table 2 changes to an incorrect state for a period longer than that specified (delay period), the in-flight BITE is activated. A test is then conducted on associated flight-critical circuit and sensors listed in Table 3. Any faults are stored in memory. The in-flight BITE remains active as long as the flight-critical output is incorrect. If no faults are detected (output correct) the in-flight BITE is turned off.
(6) If all the airplane doors and hatches are closed, then the PSEU automatically monitors and isolates faults in the leading edge slat position indication system. This will occur with the airplane on the ground or in the air.
(7) The BITE section consists of a BITE module and interface elements on each card in the PSEU. Operating controls are located on the front panel of the BITE module. The panel consists of following:
    (a) One 3-digit, 7-segment numeric display - provides digital readout and automatically identifies faulted channel by fault codes listed on the PSEU front panel placard.
    (b) One 3-digit, thumbwheel sensor channel selector - allows manual channel selection of sensor to be tested.
    (c) Five indicator lights labeled as TARGET NEAR, TARGET FAR, SENSOR, CARD, and TARGET.
        1) TARGET NEAR and TARGET FAR indicator lights - display position of target with respect to sensor when TARGET TEST switch is pressed and sensor channel has been selected.
        2) SENSOR indicator light - shows faulty sensor or wires.
        3) CARD indicator light - shows faulty card
        4) TARGET indicator light - shows faulty target state (as determined by target reasonableness test during in-flight BITE or on-ground system verify test).

(d) Five momentary pushbutton switches labeled as PRESS/TEST, VERIFY, TARGET TEST, BIT and RESET. The RESET button is recessed in the panel.
1) PRESS/TEST switch - performs lamp test (code 888 in channel readout) and clears BIT test if in progress.
2) VERIFY switch - initiates the on-ground system test. Display flashes code CCC during test and code 999 at end of test.
3) TARGET TEST switch - activates target position test
4) BIT switch - initiates memory recall of stored faults. Code 000 displayed if no faults exist or all faults recalled.
5) RESET switch - clears memory of stored fault information. Display indicates EEE during clearing of faults.

(8) The PSEU provides BITE circuits for all components in two different BITE cards. The BITE cards are located behind the BITE panel. Other printed circuit cards are located behind the hinged panels. All cards are mounted in plug-in connection and can be accessed by opening the hinged panels or by removing the BITE module. PSEU removal for card replacement is not required.

(9) A separate power source provides power for the two BITE cards, the display, and five lights. The thumbwheel sensor channel selector is not lighted.

(10) A microcomputer in one of the BITE card provides control for all BITE functions.

(11) The BITE can be used for both in-flight proximity switch testing and on-ground system trouble shooting. Three levels of BITE are provided. These are automatic in-flight test, on-ground system test, and sensor target position test.

(12) Automatic in-flight test
(a) The in-flight test is automatically activated whenever specific outputs listed in Table 2 are incorrect. Normally during flight, the BITE section is turned off. However, if any flight-critical output changes to an incorrect state, BITE power is turned on and a timer activated. If the output is incorrect for a period greater than the delay specified in Table 2, sensors and wiring are checked for open and short circuits. Input discrepancies are checked by iniating a target position reasonableness test for those groups of sensors listed with "In-Flt BITE" in Table 3. Fault codes are entered and stored indefinately in memory.

(b) Recall of fault codes and fault type indication is accomplished by repeatedly pressing the BIT switch. Fault recalls are on a last-in/first-out basis. Code 000 is displayed when no fault codes are present or all entries have been recalled. All panel indicators are turned off 2 minutes after turn on. Erasure of memory contents is provided by pressing the RESET switch. Code EEE is displayed during erasure.

Table 2
Flight-Critical Outputs

Flight Outputs	Delay Period (Seconds)	Condition
1. L thrust reverser in transit	5	--
2. R thrust reverser in transit	5	--
3. L thrust reverser auto restow	0.2	--
4. R thrust reverser auto restow	0.2	--
5. Any door/hatch unsafe	0.2	--
6. Any gear/door not in selected position (LG system 1 or 2)	25	--
7. Either gear not tilted (LG system 1 or 2)	5	--
8. Inboard slat asymmetry	4	Alternate slats not armed
	10	Alternate slats armed
9. Outboard slat asymmetry	4	Alternate slats not armed
	10	Alternate slats armed
10. Nose gear compressed (LG system 1 or 2)	5	--
11. Tail skid in disagreement *[1]	0.2	--

*[1] 767-300 AIRPLANES

(13) On-ground system test

(a) On the ground, BITE can be used to perform a complete system test or be used to perform individual subsystem tests. Both the complete system test and subsystem tests will verify BITE circuit functions, sensors and sensor wiring, logic and drivers. They also perform a target position reasonableness test on sensors listed for "Ground BITE" in Table 3.

(b) The subsystem test will shorten BITE testing by approximately 2 minutes. However, only the selected subsystem is tested and test of the non-volatile RAM section is omitted.

(c) To select the on-ground system or subsystem test, on the PSEU, enter appropriate CHANNEL SELECT code listed below:

NOTE: Select any code other than 500-507 for complete system test.

CHANNEL SELECT	SUBSYSTEM
500	Cargo Door Control System
501	All Thrust Reverser Systems
502	Entry Door Control System
503	Door System
504	Landing Gear System No. 1 (Includes Tail Skid)
505	Landing Gear System No. 2
506	Leading Edge Slat System
507	All Systems

(d) Pressing the VERIFY switch on the BITE panel will start testing. Test will be inhibited when airplane is in the air mode. Tests can be cancelled at any time by pressing the PRESS/TEST switch.

(e) The readout display flashes code CCC to indicate test in progress. Testing takes approximately 4 minutes. Completion of a successful system test is indicated by code 999. If a fault is detected, a three digit code representing the faulty element is displayed. A faulty sensor or card is indicated by illumination of the SENSOR or CARD light. Incorrect target position is indicated by the TARGET light. Fault codes are listed on the front panel. Additional fault codes following the first can be obtained by repeatedly pressing the VERIFY switch until code 999 is displayed. All panel indicators are automatically turned off 60 seconds after turn on.

(f) During an on-ground system test, all circuits in the PSEU are functionally tested. This includes switching each output driver at least once to the on and off states. This may cause flickering lights, nuisance EICAS messages in the flight deck, the "air" simulation of the air ground system, and possible electrical power bus switching. This is normal.

(14) Target position reasonableness test

(a) The target position reasonableness test is performed as part of the in-flight BITE or on-ground system verify test. Target discrepancies are checked by comparing groups of sensors for reasonableness of position. Groups of sensors that should be in comparable target mode (target near or target far) are given in Table 3. During "In-Flight BITE" faults are stored in memory. During "Ground BITE" (system verify test), a fault will cause the TARGET light to illuminate.

Table 3
Target Position Reasonableness Test

Subsystem	Mode	INPUTS		BITE Test	
		Sensor Target Near/Discrete Input Low *[1]	Sensor Target Far/Discrete Input High *[1]	In-Flt	Ground
Thrust Rev L Eng	Stowed	S1607 (164), S1608 (165)	S1609 (166), S1610 (167)	Yes	Yes
Thrust Rev R Eng	Stowed	S1607 (170), S1608 (171)	S1609 (172), S1610 (173)	Yes	Yes
Thrust Rev Auto Restow L Eng	Stowed	S1604 (176), S1605 (177)		Yes	No
Thrust Rev Auto Restow R Eng	Stowed	S1604 (180), S1605 (181)		Yes	No
Landing Gear Sys No. 1	Extended A	S232, S233, S236-S238, S240-S242, 421	----	Yes	Yes
	Extended B	S232, S233,S236, S237, S240, S241	S238, S242	Yes	Yes
	Retracted	S233-S235, S238, S242	S232, S236, S237, S240, S241, 421	Yes	No
Landing Gear Sys No. 2	Extended A	S254, S255, S258-S260, S262-S264, 422	----	Yes	Yes
	Extended B	S254, S255, S258, S259, S262, S263	S260, S264	Yes	Yes
	Retracted	S255-S257, S260 S264	S254, S258, S259, S262, S263, 422	Yes	No

Table 3
Target Position Reasonableness Test

Subsystem	Mode	INPUTS		BITE Test	
		Sensor Target Near/Discrete Input Low *[1]	Sensor Target Far/Discrete Input High *[1]	In-Flt	Ground
Landing Gear Tilt Sensors	Air	S245, S246, S267, S268	----	Yes	No
	Ground	----	S245, S246, S267, S268	No	Yes
Nose Gear Compressed Sys No. 1	Air	S244	----	Yes	No
Nose Gear Compressed Sys No. 2	Air	S266	----	Yes	No
Tail Skid *[5]	Retracted	S233-S235, S238, S242, S248	S323, S236, S237, S240, S241, S247	Yes	No
	Extended	S232, S233, S236, S237, S240, S241, S247	S248	Yes	Yes
Leading Edge Slats	Retracted A	S276-S287, S294-S305	----	Yes	No
	Partially Extended A	S282-S287, S300-S305	S276-S281, S294-S299	Yes	No
	Fully Extended A	S276-S281, S294-S299	S282-S287, S300-S305, 423-426	Yes	No

Table 3
Target Position Reasonableness Test

Subsystem	Mode	INPUTS		BITE Test	
		Sensor Target Near/Discrete Input Low *[1]	Sensor Target Far/Discrete Input High *[1]	In-Flt	Ground
Leading Edge Slats	Retracted B	S276-S287, S294-S305, 423, 424	425-428	No	Yes
	Partially Extended B	S282-S287, S300-S305, 425, 426	S276-S281, S294-S299, 423, 424, 427, 428	No	Yes
	Fully Extended B	S276-S281, S294-S299, 427, 428	S282-S287, S300-S305, 423-426	No	Yes
Doors *[9]	Doors Closed	S184-S187, S192-S209, S211-S219	----	Yes	No

NOTE: PSEU sensor codes are the last three digits of the sensor number except where noted in parentheses.

*[1] See Table 1 for a list of the discrete inputs.

*[2] Not used.
*[3] Not used.
*[5] 767-300 AIRPLANES.
*[6] Not used.
*[7] Not used.
*[8] Not used.
*[9] All door sensors are not installed on all the airplanes.

(15) Sensor target position test (manual)

(a) The sensor target test is used to indicate sensor target near or far status. It is activated by selecting the desired sensor number using the SENSOR CHANNEL SELECT switches and then pressing the TARGET TEST switch. Target status is shown by TARGET NEAR/TARGET FAR indicators. If a fault is detected during this test, the appropriate fault code is displayed and the type of fault is shown by the SENSOR or CARD indicator. No target position indication will occur if a failed sensor or card is detected.

(16) Non-volatile memory

(a) The non-volatile memory, contained in BITE for in-flight failure data storage, can recall a minimum of 50 LRU failures. Failure data will store for 240 hours after electrical power has been removed from the PSEU.

(17) BITE system operation (Fig. 5)

(a) The BITE interconnects all circuit cards, the display panel and all interfaces required for BITE function. A microcomputer in one of the BITE card provides programming and control for all BITE functions, data signal flow between cards, and self test.

(b) When a sensor code has been selected and the TARGET TEST switch is pressed, the following is performed:

1) A check that the digits entered on the SENSOR CHANNEL SELECT switches are valid. No test occurs if an incorrect entry exists.
2) A sensor status test to test for open/shorted sensor conditions.
3) An active BIT test conducted on the selected proximity channel to artificially simulate target near and far to verify output switching of the proximity card.
4) If no fault exists, the sensor code is displayed and after approximately 5 second delay, target near/far indication is displayed.
5) If a fault is detected, the appropriate fault code is displayed and the type of fault shown by the SENSOR or CARD indicator. No target near/far indication will be displayed.

(c) When the VERIFY switch is pressed, the BITE starts an on-ground system test which includes the following:

1) Determine target descrepancies by comparing groups of sensors for reasonableness of position.
2) Check sensor and sensor wiring for open and short circuits.
3) Functionally test all logic and output driver circuits and all sensor circuits for target near and target far modes.
4) Failed LRU will be shown on three-digit display by number, and by sensors, card, or target light illumination at end of test.
5) Start continuation of test whenever the VERIFY test switch is again pressed.
6) Provide BITE self test.

7) Inhibit test when airplane is in air mode or the PRESS/TEST switch is pressed.
8) Provide flashing code CCC on the three-digit display while test is in progress.
9) Provide code 999 on the three-digit display for test completion.

(d) The system components are monitored by the BITE at all time. Any components not functioning in flight causes the PSEU to start an automatic in-flight test.

(e) All five indicator lights on the BITE panel come on and the 3-digit display shows code 888 when the PRESS/TEST (panel lamp test) switch is pressed.

(f) Memory contents may be recalled and displayed on the 3-digit display and the LRU identification lights by momentarily pressing the BIT switch on the BITE panel. Successive BIT switch pressing recalls the memory contents on a last in - first out basis.

(g) The 3-digit display shows the code 000 when the BIT switch is pressed and the memory contains no LRU entries, or all entries have been recalled.

(h) If the BIT switch has been pressed and the BITE panel shows LRU fault, the display goes off 2 minutes ±10 seconds after the last BIT switch actuation. Repeated operation again starts the latest recorded fault.

(i) A memory RESET switch clears all memory contents when pressed.

C. Control

(1) Primary 28V dc operating power for the system is supplied by circuit breakers on overhead circuit breaker panel P11 and APU external power panel P34 (Fig. 4).

(2) The system is in operation when circuit breakers shown in Fig. 4 are closed.

(3) The front of the PSEU (Fig. 5) provides switches and indicator lights for checking out sensors, targets, cards and on-ground system trouble shooting. No adjustment is required at either the sensor or the PSEU.

PROXIMITY SWITCH SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
CARDS - PSEU PRINTED CIRCUIT A			119AL, MAIN EQUIPMENT CENTER, E1-2, PSEU M162	32-09-06
BITE CARD MODULE, YCRM008	2	1		
DRIVER CARD, YCRM006,YCRM007,YCRM010	2	3		
DRIVER CARD AUX, YCRM012	2	1		
LOGIC CARD 1, YCRM011	2	1		
LOGIC CARD 2, YCRM009	2	1		
LOGIC CARD 3, YCRM005	2	1		
PROX CARD, YCRM001-YCRM004, YCRM013-YCRM016	2	8		
CIRCUIT BREAKER -	1		FLIGHT COMPARTMENT, P11	
DOOR IND, C1406		1		*
DOORS L FWD ENTRY CONT, C1402		1		*
FLIGHT CONTROLS SLAT POS IND, C1001		1		*
LANDING GEAR POSITION AIR/GND SYS 1, C1175		1		*
LANDING GEAR POSITION AIR/GND SYS 2, C1170		1		*
LANDING GEAR POSITION AIR/GND SYS 2 ALTN, C1575		1		*
LEFT ENGINE T/R CONT, C1482		1		*
LEFT ENGINE T/R IND, C1480		1		*
PROX SW TEST, C1178		1		*
RIGHT ENGINE T/R CONT, C1483		1		*
RIGHT ENGINE T/R IND ALT, C1479				
RIGHT ENGINE T/R IND, C1481		1		*
RIGHT ENGINE T/R IND ALT, C1478				
CIRCUIT BREAKER -	1		119AL, MAIN EQUIPMENT CENTER, P34	
CONT DOOR CARGO, C1403		1		*
CONT DOOR FWD ENTRY, C1408		1		*
MODULE - PROXIMITY SWITCH ELECTRONICS UNIT (PSEU), M162	1	1	119AL, MAIN EQUIPMENT CENTER, E1-2	32-09-04

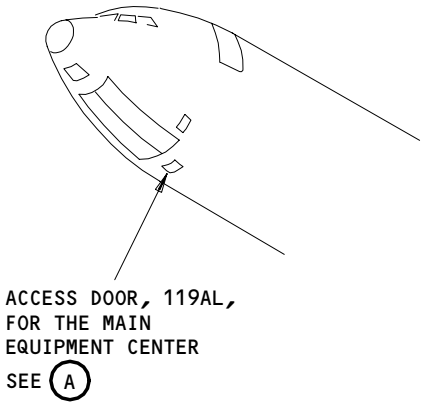
* SEE THE WDM EQUIPMENT LIST

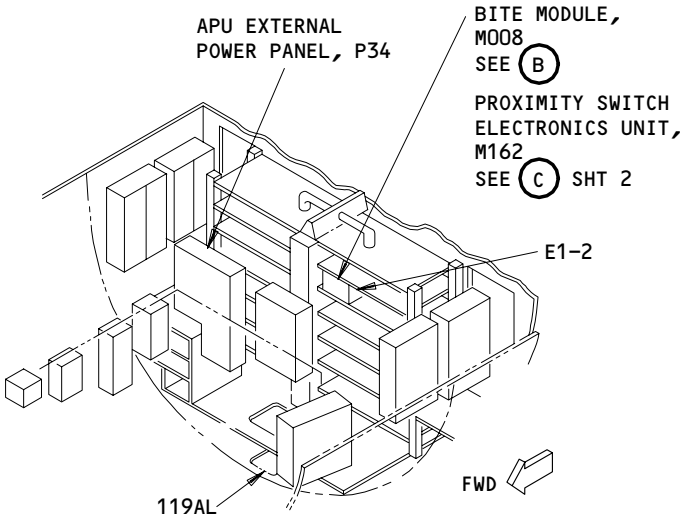
A THE DRIVER CARDS ARE INTERCHANGEABLE.
THE LOGIC CARDS ARE NOT INTERCHANGEABLE.
THE PROX CARDS ARE INTERCHANGEABLE.

Proximity Switch System - Component Index
Figure 101 (Sheet 1)

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
SENSOR - CARGO DOOR CONTROL SYSTEM PROXIMITY (FIM 52-34-00/101) S150-S161 SENSOR - DOOR SYSTEM PROXIMITY (FIM 52-71-00/101) S192-S219 S221-S230 SENSOR - ENTRY DOOR SYSTEM PROXIMITY (FIM 52-11-00/101) S184-S191,S220 SENSOR - LANDING GEAR SYSTEM PROXIMITY (FIM 32-09-00/101) S244-S246 S266-S268 SENSOR - LANDING GEAR SYSTEM PROXIMITY (FIM 32-61-00/101) S232-S242 S247-S264 SENSOR - LEADING EDGE SLAT SYSTEM PROXIMITY (FIM 27-88-00/101) S276-S305 SENSOR - THRUST REVERSER SYSTEM PROXIMITY (FIM 78-34-00/101) S176-S177 S1604-S1605 SENSOR - THRUST REVERSER SYSTEM PROXIMITY (FIM 78-36-00/101) S164-S167 S1607-S1610				

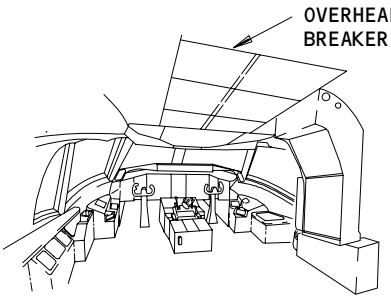
Proximity Switch System - Component Index
Figure 101 (Sheet 2)



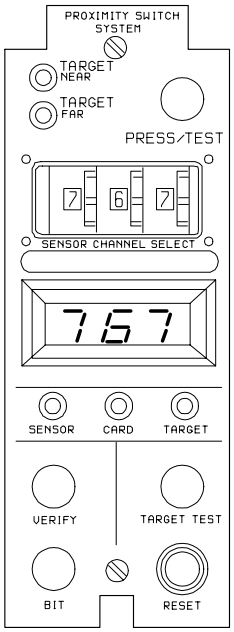


MAIN EQUIPMENT CENTER

A



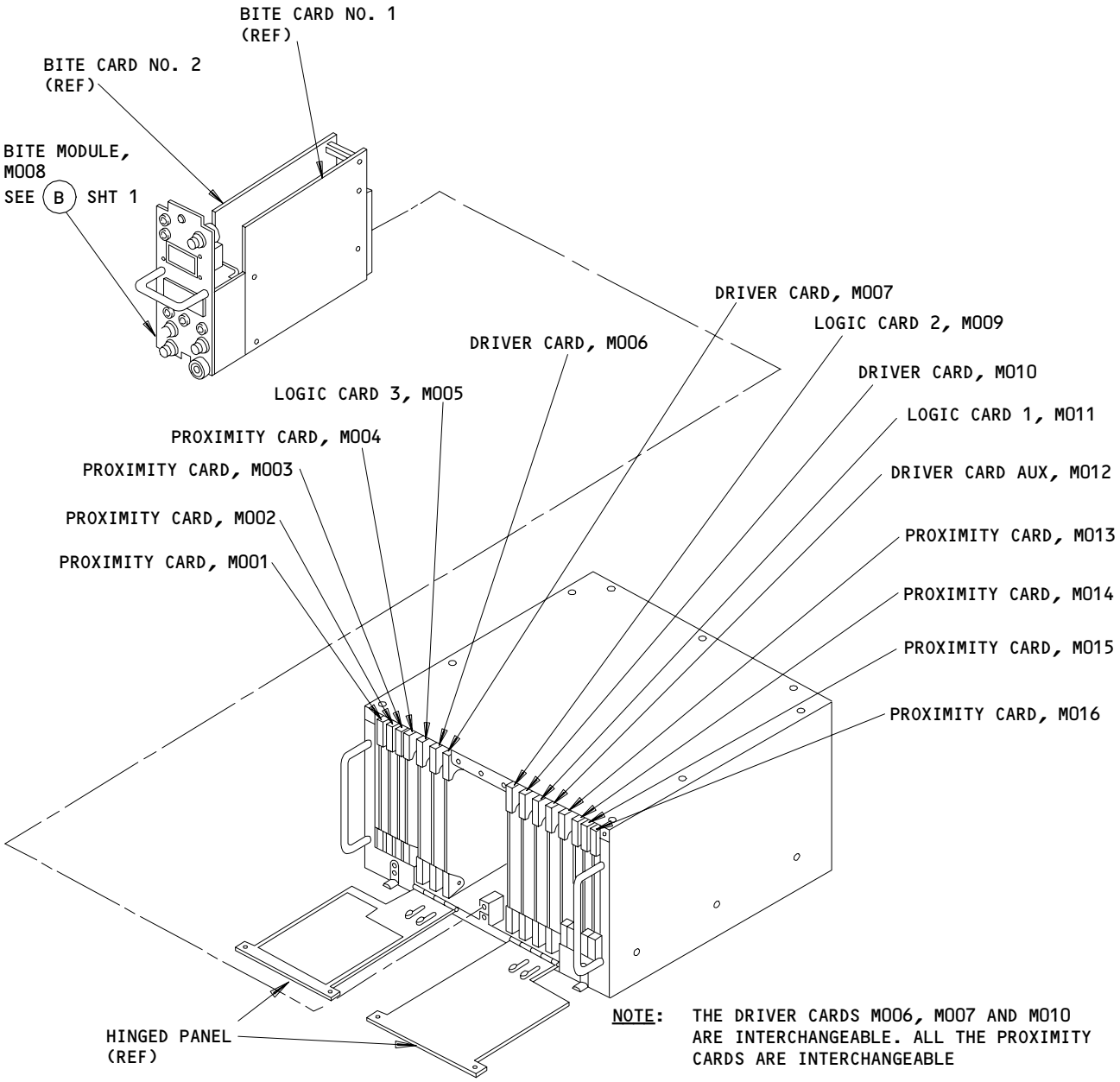
FLIGHT COMPARTMENT



BITE MODULE, M008

B

Proximity Switch System - Component Location
Figure 102 (Sheet 1)



PROXIMITY SWITCH ELECTRONICS UNIT, M162

(C)

Proximity Switch System - Component Location (Detail from Sht 1)
Figure 102 (Sheet 2)

PROXIMITY SWITCH ELECTRONICS UNIT - REMOVAL/INSTALLATION

1. General
   A. This procedure contains three tasks. The first task removes the proximity switch electronics unit (PSEU). The second task installs the PSEU. The third task does a test on the PSEU.
   B. The M162 PSEU is installed on the E1-2 shelf in the main equipment center of the airplane. It is held in position with a self-locking mechanism.

TASK 32-09-04-004-001

2. Remove the Proximity Switch Electronics Unit (Fig. 401)
   A. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 20-10-01/401, E/E Rack-Mounted Components
      (3) AMM 20-41-01/201, Electro Static Sensitive Devices
      (4) AMM 24-22-00/201, Electrical Power - Control
      (5) AMM 32-09-02/201, Air/Ground Relays
   B. Access
      (1) Location Zones
          119 Main Equipment Center (Left and Right)
          211/212 Control Cabin

      (2) Access Panel
          119AL Main Equipment Center

   C. Prepare to Remove the PSEU

      S 844-003
      (1) If electrical power is not necessary on the airplane, remove the electrical power (AMM 24-22-00/201).
          (a) If the electrical power is removed, go directly to the step which opens the access door for the main equipment center.

      S 044-020
      (2) If electrical power is supplied to the airplane, do the steps that follow:

          WARNING: PREPARE THE SAFETY-SENSITIVE SYSTEMS FOR THE AIR MODE BEFORE YOU OPEN THE AIR/GROUND CIRCUIT BREAKERS. IN THE AIR MODE, MANY OF THE AIRPLANE SYSTEMS CAN OPERATE AND CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

          (a) Prepare the safety-sensitive systems for air mode simulation (AMM 32-09-02/201).

(b) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
1) 11C10, FLIGHT CONTROLS SLAT POS IND
2) 11C29, POSITION AIR/GND SYS 2 ALTN
3) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
4) 11D13, LEFT ENGINE T/R IND
5) 11D14, LEFT ENGINE T/R CONT
6) 11D32, RIGHT ENGINE T/R IND ALT
7) 11D33, RIGHT ENGINE T/R CONT ALT
8) 11L32, RIGHT ENGINE T/R IND
9) 11L33, RIGHT ENGINE T/R CONT
10) 11T6, DOORS L FWD ENTRY CONT
11) 11T33, DOOR IND
12) 11T36, PROX SW TEST
13) 11U15, AIR/GND SYS 1
14) 11U23 or 11U24, LANDING GEAR POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

(c) Open these circuit breakers on the APU external power panel, P34, and attach DO-NOT-CLOSE tags:
1) 34J4, CONT DOOR CARGO
2) 34J5, CONT DOOR FWD ENTRY

D. Remove the PSEU

S 014-005
(1) Open the access door, 119AL, to get access to the main equipment center (AMM 06-41-00).

S 864-008

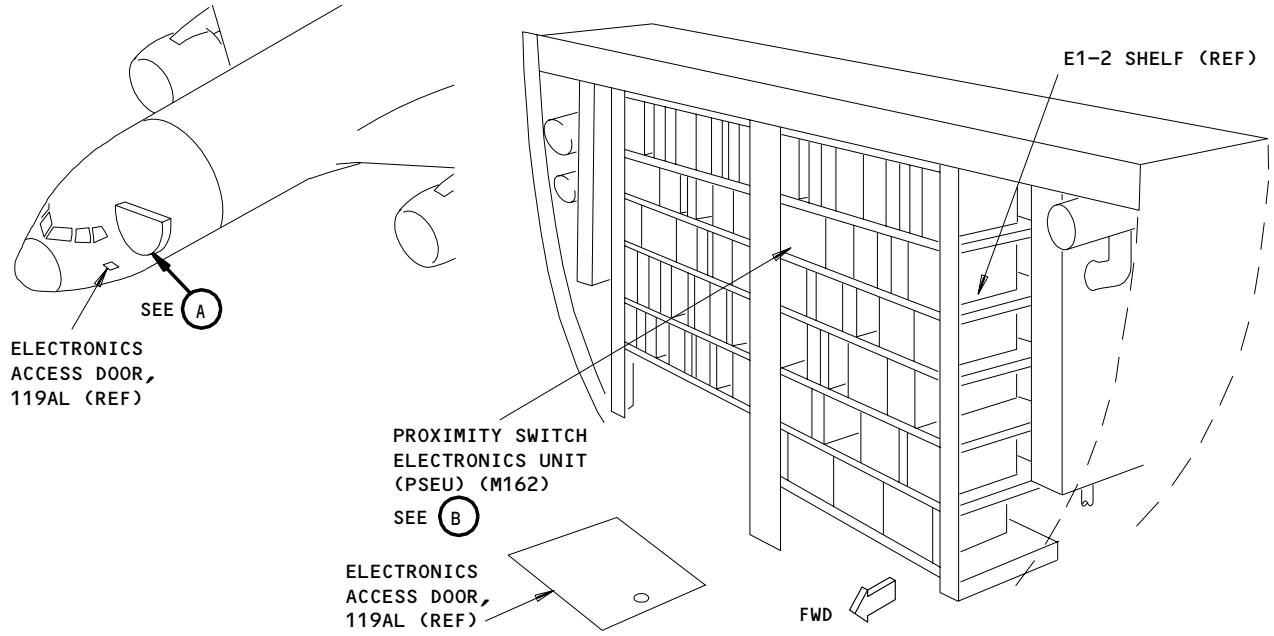
CAUTION: DO NOT TOUCH THE PSEU BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE PSEU.

(2) Do the procedure for devices that are sensitive to electrostatic discharge (AMM 20-41-01/201).

S 024-006
(3) Remove the PSEU (AMM 20-10-01/401).

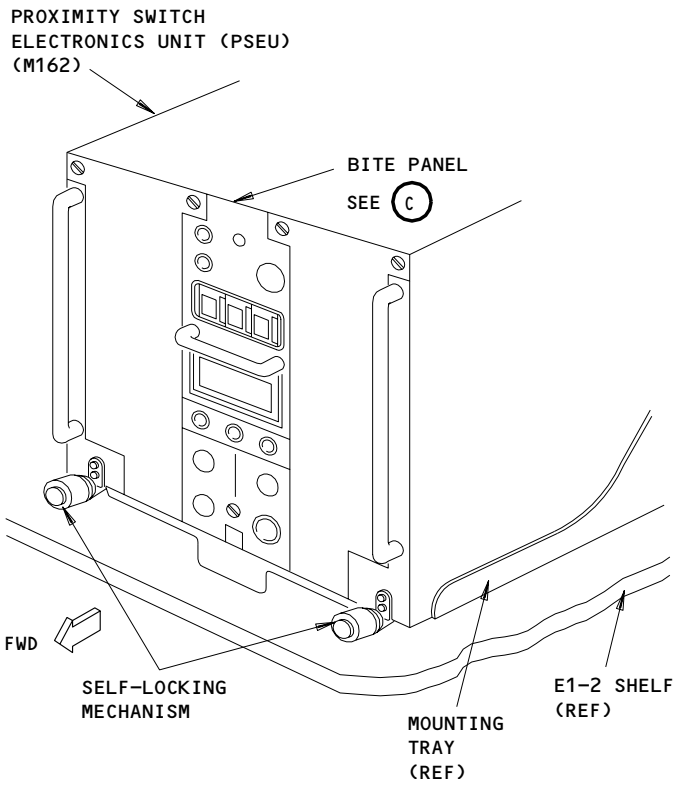
TASK 32-09-04-404-007

3. Install the Proximity Switch Electronics Unit (Fig. 401)
A. References
(1) AMM 20-41-01/201, Electro Static Sensitive Devices

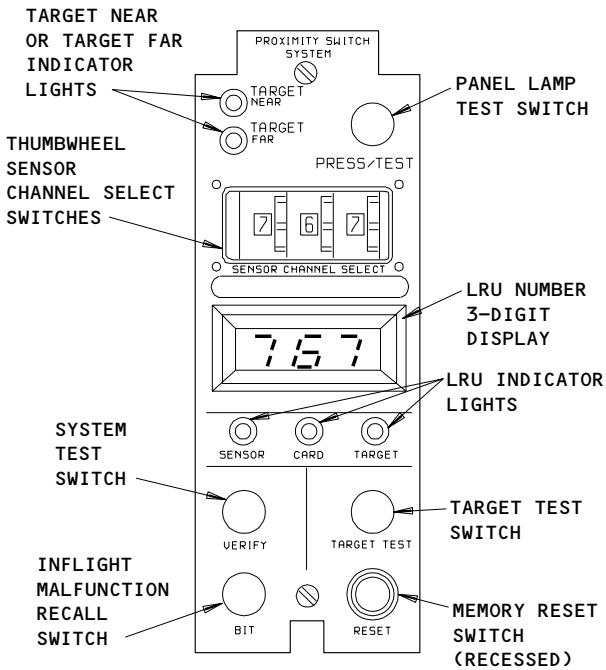


MAIN ELECTRONIC/ELECTRICAL EQUIPMENT CENTER

A



B



BITE PANEL

C

Proximity Switch Electronics Unit Installation
Figure 401

(2) AMM 32-09-02/201, Air/Ground Relays

B. Access

(1) Location Zones

119	Main Equipment Center (Left and Right)
211/212	Control Cabin

(2) Access Panel

119AL	Main Equipment Center

C. Install the PSEU

S 864-009

CAUTION: DO NOT TOUCH THE PSEU BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE PSEU.

(1) Do the procedure for devices that are sensitive to electrostatic discharge (AMM 20-41-01/201).

S 424-010

(2) Install the PSEU on the E1-2 shelf.

S 864-011

(3) Do the steps that follow if circuit breakers were opened:

(a) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:

1) 11C10, FLIGHT CONTROLS SLAT POS IND
2) 11C29, POSITION AIR/GND SYS 2 ALTN
3) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
4) 11D13, LEFT ENGINE T/R IND
5) 11D14, LEFT ENGINE T/R CONT
6) 11D32, RIGHT ENGINE T/R IND ALT
7) 11D33, RIGHT ENGINE T/R CONT ALT
8) 11L32, RIGHT ENGINE T/R IND
9) 11L33, RIGHT ENGINE T/R CONT

10) 11T6, DOORS L FWD ENTRY CONT
11) 11T33, DOOR IND
12) 11T36, PROX SW TEST
13) 11U15, AIR/GND SYS 1
14) 11U23 or 11U24, LANDING GEAR POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

(b) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P34 panel:
1) 34J4, CONT DOOR CARGO
2) 34J5, CONT DOOR FWD ENTRY

S 844-012

(4) Put the safety-sensitive systems back to their initial conditions (AMM 32-09-02/201), if it is necessary.

TASK 32-09-04-704-013

4. Do the Test for the PSEU

A. References
(1) AMM 20-41-01/201, Electro Static Sensitive Devices
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 27-61-00/201, Spoiler Speedbrake Control System
(4) AMM 27-51-00/201, Trailing Edge Slat System
(5) AMM 27-81-00/201, Leading Edge Slat System

B. Access
(1) Location Zones
119 Main Equipment Center (Left and Right)
211/212 Control Cabin

(2) Access Panel
119AL Main Equipment Center

C. Prepare to do the Test

S 864-014

(1) Supply electrical power (AMM 24-22-00/201).

S 864-022

(2) Make sure that the trailing edge flaps and the leading edge slats are fully retracted (AMM 27-51-00/201 and AMM 27-81-00/201).

D. Do the Test

S 714-015

(1) Do the steps that follow to do the test:

(a) Push the PRESS/TEST switch on the front panel of the PSEU to do a lamp test.

(b) Make sure the five indicator lights come on.

(c) Make sure the display shows the code 888.

1) If no indicator light comes on or no code 888 shows, push the PRESS/TEST and TARGET TEST switches together.

NOTE: When the PRESS/TEST and TARGET TEST switches are pushed together, the internal circuit breaker of the PSEU will set the BITE.

(d) Make sure the SENSOR CHANNEL SELECT switch of the PSEU is not on the codes 500 thru 507.

WARNING: DO THE DEACTIVATION PROCEDURE FOR THE SPOILERS OR MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE SPOILERS. THE SPOILERS CAN RETRACT QUICKLY AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(e) Do the deactivation procedure for the spoilers (AMM 27-61-00/201) or move all persons and equipment away from the spoilers.

(f) Push the RESET switch to erase the memory of the PSEU.

NOTE: While you erase the PSEU memory the display will flash the code EEE.

CAUTION: DO NOT OPERATE THE THRUST REVERSER, ELECTRICALLY OPERATE CARGO DOORS OR ENTRY DOORS WHILE RUNNING THE PSEU BITE TEST.

(g) Push the VERIFY switch to do a test of the on-ground system.

NOTE: The display will flash CCC during the test. The test for the on-ground systems will be approximately 4 minutes.

(h) Make sure the display shows the code 999 when the test is completed.

NOTE: When the test is completed, the display will show the code 999. The indicator lights on the panel will go off after 60 seconds.

The air/ground relays go to the air mode then to the ground mode. This will cause nuisance EICAS messages, the flight compartment lights will flash, and the electrical power bus can switch. This is usual.

(i) Do the steps that follow to get the maintenance data from the EICAS memory:
1) Push the ECS/MSG switch on the right side panel, P61.
2) Push the EVENT AUTO READ switch to show the maintenance data in the EICAS memory.
3) Write down the data shown.
4) Push the ERASE switch.
5) Continue to do these steps until no more maintenance data is shown when the EVENT AUTO READ switch is pushed.

E. Put the Airplane Back to Its Usual Condition

S 444-019
(1) Do the activation procedure for the spoilers if you did the deactivation procedure (AMM 27-61-00/201).

S 414-018
(2) Close the access door, 119AL, for the main equipment center.

S 864-016
(3) Remove the electrical power if it is not necessary (AMM 24-22-00/201).

PROXIMITY SWITCH ELECTRONICS UNIT CIRCUIT CARD - REMOVAL/INSTALLATION

1. General
   A. This procedure contains three tasks. The first task removes the circuit cards from the proximity switch electronics unit. The second task installs the circuit cards in the proximity switch electronics unit. The third task does a test for the proximity switch electronics unit.
   B. It is not necessary to remove the proximity switch electronics unit (PSEU) from the shelf to remove the circuit cards. The code which identifies the circuit card is the same as the number of the card slot of the PSEU (Fig. 401).

TASK 32-09-06-004-001

2. Remove the Circuit Card from the Proximity Switch Electronics Unit
   A. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 20-41-01/201, Electro Static Sensitive Devices
      (3) AMM 24-22-00/201, Electrical Power - Control
      (4) AMM 32-09-02/201, Air/Ground Relays
   B. Access
      (1) Location Zones
          119 Main Equipment Center (Left and Right)
          211/212 Control Cabin

      (2) Access Panels
          119AL Main Equipment Center

   C. Prepare to Remove the Circuit Cards

      S 864-007
      (1) Remove the electrical power from the airplane if it is not necessary (AMM 24-22-00/201). Continue to the steps which remove the circuit cards.

      S 044-020
      (2) If electrical power is necessary on the airplane, do the steps that follow:

          WARNING: PREPARE THE SAFETY-SENSITIVE SYSTEMS FOR THE AIR MODE BEFORE YOU OPEN THE AIR/GROUND CIRCUIT BREAKERS. IN THE AIR MODE, MANY OF THE AIRPLANE SYSTEMS CAN OPERATE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

          (a) Prepare the safety-sensitive systems for air mode simulation (AMM 32-09-02/201).

(b) Open these circuit breakers on the overhead circuit breaker panel, P11, and and attach DO-NOT-CLOSE tags:
1) 11C10, FLIGHT CONTROLS SLAT POS IND
2) 11C29, POSITION AIR/GND SYS 2 ALTN
3) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
4) 11D13, LEFT ENGINE T/R IND
5) 11D14, LEFT ENGINE T/R CONT
6) 11D32, RIGHT ENGINE T/R IND ALT
7) 11D33, RIGHT ENGINE T/R CONT ALT
8) 11L32, RIGHT ENGINE T/R IND
9) 11L33, RIGHT ENGINE T/R CONT
10) 11T6, DOORS L FWD ENTRY CONT
11) 11T33, DOOR IND
12) 11T36, PROX SW TEST
13) 11U15, AIR/GND SYS 1
14) 11U23 or 11U24, LANDING GEAR POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

(c) Open the access door 119AL, to get access to the APU external power panel, P34, and the PSEU (AMM 06-41-00).
(d) Open these circuit breakers on the APU external power panel, P34, and attach DO-NOT-CLOSE tags:
1) 34J4, CONT DOOR CARGO
2) 34J5, CONT DOOR FWD ENTRY

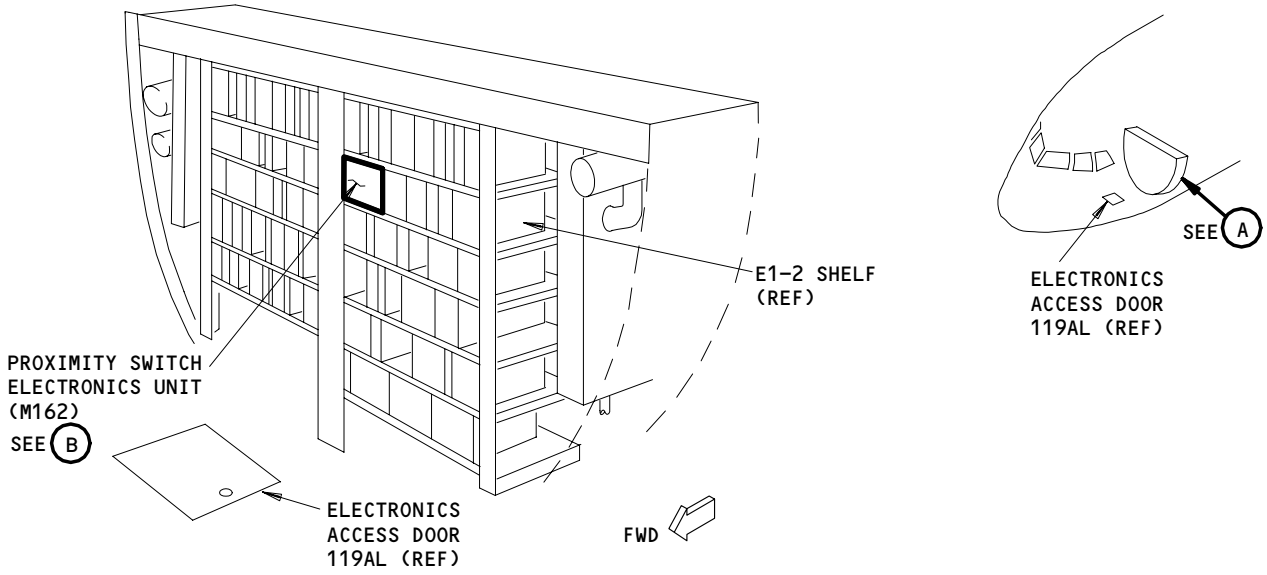
D. Remove the Circuit Cards (Fig. 401)

S 914-016

CAUTION: DO NOT TOUCH THE CIRCUIT CARD BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE PSEU.

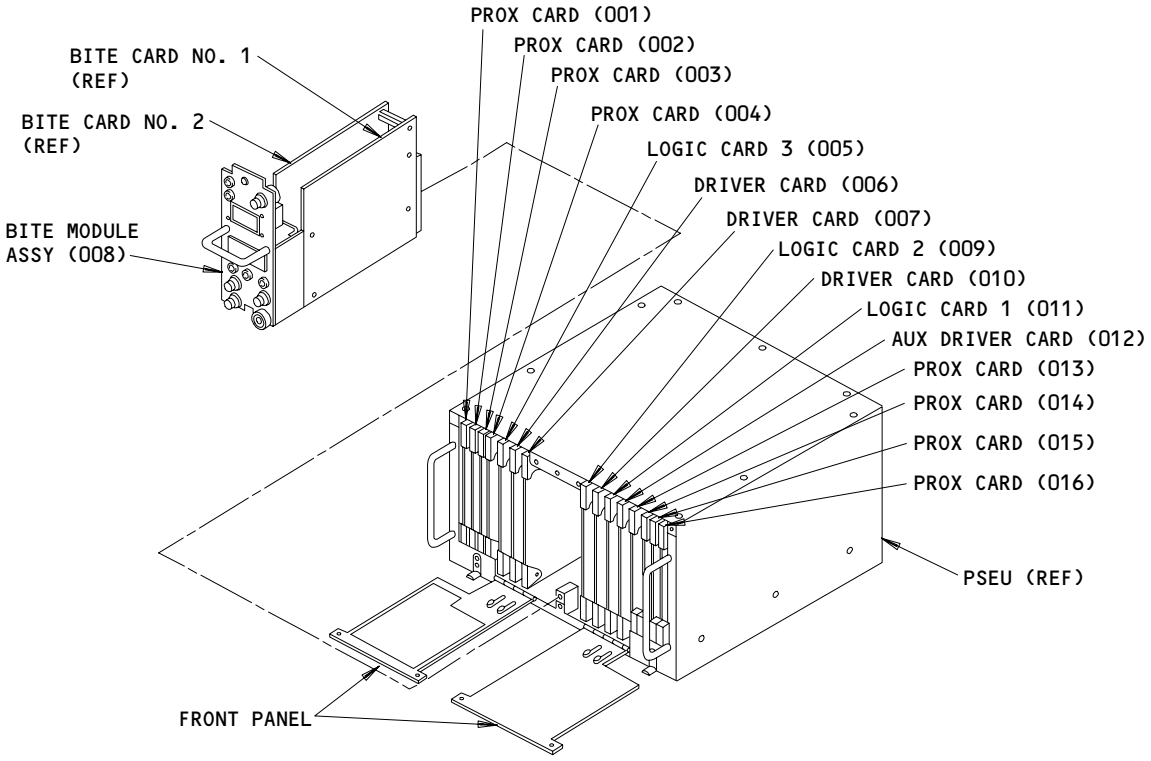
(1) Do the procedure for devices that are sensitive to electrostatic discharge (AMM 20-41-01/201).

S 024-003
(2) Do the steps that follow to remove the circuit cards:
(a) ON ALL THE CIRCUIT CARDS EXCEPT THE TWO BITE CARDS; Do the steps that follow:
1) Open the left or right front panel of the PSEU.



MAIN ELECTRONIC/ELECTRICAL EQUIPMENT CENTER

A



B

Proximity Switch Electronics Unit Circuit Card Installation
Figure 401

2) Write down the card number and location for each circuit card.
3) Operate the card extractors and pull the circuit cards out of the chassis.

(b) ON THE BITE CARDS;
Do the steps that follow:
1) Loosen the captive fasteners for the BITE module assembly.
2) Remove the BITE module assembly from the chassis.

TASK 32-09-06-404-009

3. Install the Circuit Cards in the Proximity Switch Electronics Unit (Fig. 401)

A. References
(1) AMM 20-41-01/201, Electro Static Sensitive Devices
(2) AMM 32-09-02/201, Air/Ground Relays

B. Access
(1) Location Zones

119	Main Equipment Center (Left and Right)
211/212	Control Cabin

(2) Access Panels

119AL	Main Equipment Center

C. Install the Circuit Cards

S 914-017

CAUTION: DO NOT TOUCH THE CIRCUIT CARD BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE PSEU.

(1) Do the procedure for the devices that are sensitive to electrostatic discharge (AMM 20-41-01/201).

S 424-005
(2) Do the steps that follow to install the circuit cards:
(a) ON ALL THE CIRCUIT CARDS EXCEPT THE BITE CARDS;
Do the steps that follow:
1) Put the circuit cards in the correct location.
2) Align the guide pins for the connector.
3) Carefully push the circuit cards until it is fully engaged in the connector.
4) Close the front panel.
(b) ON THE BITE CARDS;
Do the steps that follow:
1) Put the new BITE module assembly in its location.
2) Align the guide pins for the connector.

3) Carefully push the BITE module assembly until it is fully engaged in the chassis.
4) Tighten the captive fasteners.

S 864-010
(3) If the circuit breakers were opened and the deactivation procedure was done, do the steps that follow:
(a) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
1) 11C10, FLIGHT CONTROLS SLAT POS IND
2) 11C29, POSITION AIR/GND SYS 2 ALTN
3) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
4) 11D13, LEFT ENGINE T/R IND
5) 11D14, LEFT ENGINE T/R CONT
6) 11D32, RIGHT ENGINE T/R IND ALT
7) 11D33, RIGHT ENGINE T/R CONT ALT
8) 11L32, RIGHT ENGINE T/R IND
9) 11L33, RIGHT ENGINE T/R CONT
10) 11T6, DOORS L FWD ENTRY CONT
11) 11T33, DOOR IND
12) 11T36, PROX SW TEST
13) 11U15, AIR/GND SYS 1
14) 11U23 or 11U24, LANDING GEAR POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

(b) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P34 panel:
1) 34J4, CONT DOOR CARGO
2) 34J5, CONT DOOR FWD ENTRY
(c) Put the safety-sensitive systems back to their initial conditions (AMM 32-09-02/201).

TASK 32-09-06-704-011
4. Do the Test for the Proximity Switch Electronics Unit
A. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 27-61-00/201, Spoiler/Speedbrake Control System
B. Access
(1) Location Zones
119 Main Equipment Center (Left and Right)
211/212 Control Cabin

(2) Access Panels
119AL Main Equipment Center

C. Prepare to Do the Test

S 864-012
(1) Supply electrical power (AMM 24-22-00/201).

D. Do the Test

S 714-013

(1) To do the test, do the steps that follow:

(a) Push the PRESS/TEST switch on the front panel of the PSEU to do a lamp test.

(b) Make sure the five indicator lights come on.

(c) Make sure the display shows the code 888.

1) If no indicator light comes on or no code 888 shows, push the RESET/TEST and TARGET TEST switches together.

NOTE: When the PRESS/TEST and TARGET TEST switches are pushed at the same time, the internal circuit breaker of the PSEU will set the BITE.

(d) Make sure the SENSOR CHANNEL SELECT of the switch of the PSEU is not on the codes 500 thru 507.

WARNING: DO THE DEACTIVATION PROCEDURE FOR THE SPOILERS OR MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE SPOILERS. THE SPOILERS CAN RETRACT QUICKLY AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(e) Do the deactivation procedure for the spoilers (AMM 27-61-00/201) or move all persons and equipment away from the spoilers.

(f) Push the RESET switch to erase the memory of the PSEU.

NOTE: While you erase the PSEU memory, the display will flash the code EEE.

(g) Push the VERIFY switch to do a test of the on ground system.

NOTE: The display will flash CCC during the test. The test for the on ground systems will be approximately 4 minutes.

(h) Make sure the display shows the code 999 when the test is completed.

NOTE: When the test is completed, the display will show the code 999. The indicator lights on the panel will go off after 60 seconds.

The air/ground relays go to the air mode then to the ground mode. This will cause nuisance EICAS messages, the flight compartment lights will flash, and the electrical power bus can switch. This is usual.

(i) Do the steps that follow to get the maintenance data from the EICAS memory:
1) Push the ECS/MSG switch on the right side panel P61.
2) Push the EVENT AUTO READ switch to show the EICAS maintenance data in the EICAS memory.
3) Write down the data when it is shown.
4) Push the ERASE switch.
5) Continue to do these steps until no more maintenance data is shown when the EVENT AUTO READ switch is pushed.

E. Put the Airplane Back to Its Usual Condition

S 444-019
(1) Do the activation procedure for the spoilers if you did the deactivation procedure (AMM 27-61-00/201).

S 414-015
(2) Close the access door, 119AL, for the main equipment center.

S 864-014
(3) Remove electrical power if it is not necessary (AMM 24-22-00/201).

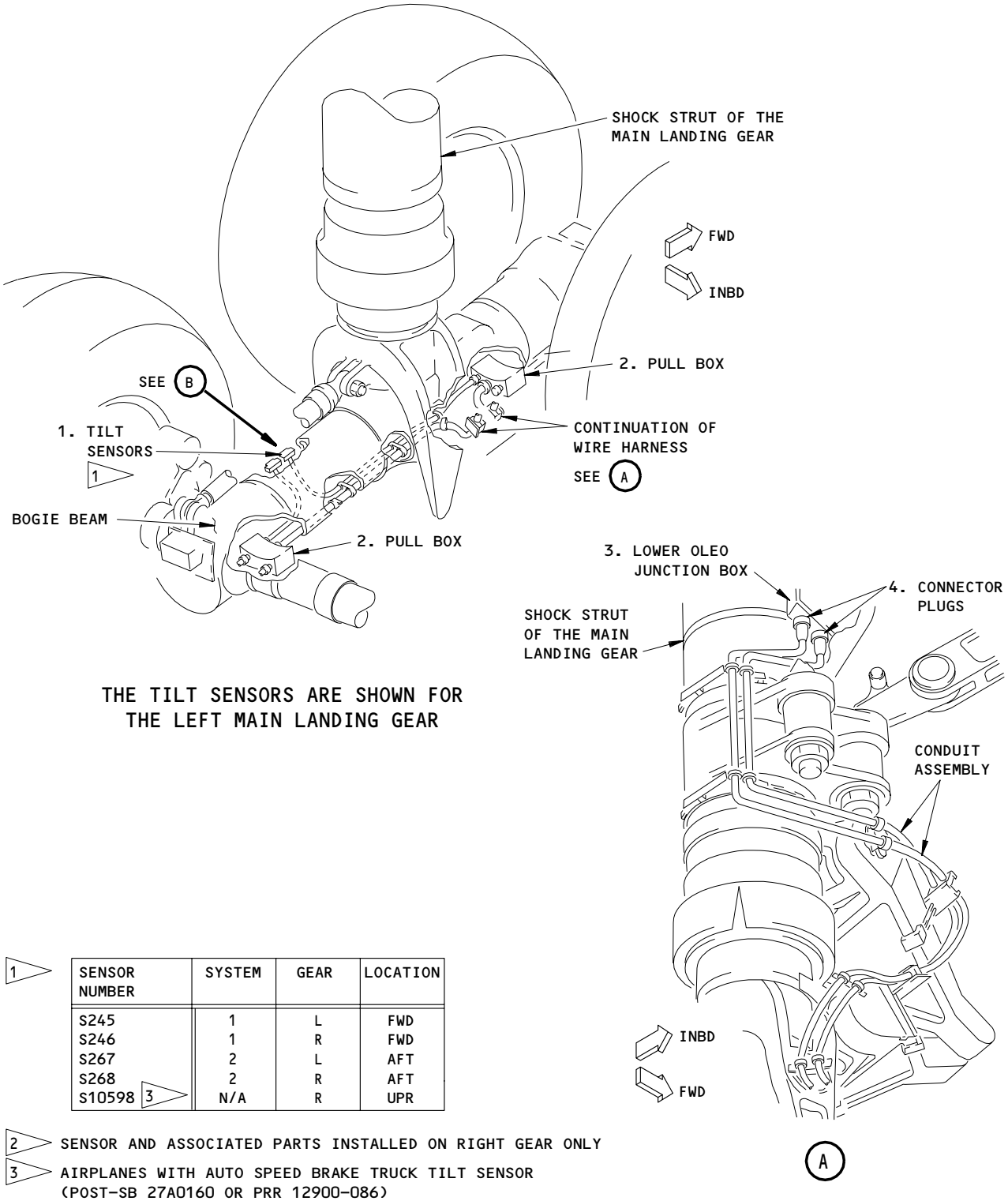
MAIN GEAR TILT SENSORS - MAINTENANCE PRACTICES

1. General
   A. This procedure has these tasks:
      (1) A task to remove a tilt sensor from the main landing gear.
      (2) A task to install a tilt sensor on the main landing gear.
      (3) A test of the tilt sensors for the main landing gear.
      (4) A task which measures the clearance between the sensor and the target and does an adjustment of the clearance. Two methods are given to measure the clearance:
         (a) The first method uses jacks to lift the airplane until the main gear trucks can tilt to the full tilt position.
         (b) The second method uses equipment to simulate the position of the target at the sensor face. The tool will show the clearance between target and the sensor face. You do not have to lift the airplane or tilt the truck for this method.
   B. For maintenance on the main gear tilt sensors, it is important that the torsional loads (side load pressures) were released when the airplane was parked. The clearance between the sensor and its target can be incorrect if you have torsional loads on the main gear. You can remove the torsional loads if the airplane is moved a minimum of 12 feet in a straight line before it is parked (AMM 09-11-00/201, AMM 09-21-00/201, AMM 10-11-01/201).

TASK 32-09-07-002-001

2. Remove the Tilt Sensors from the Main Landing Gear
   A. References
      (1) AMM 24-22-00/201, Electrical Power - Control
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
      (4) AMM 32-45-01/401, Main Gear Wheel and Tire
      (5) Chapter 20, Standard Wiring Practices Manual (SWPM)
   B. Access
      (1) Location Zones
         731/741 Main Landing Gear

   C. Prepare to Remove the Tilt Sensors



THE TILT SENSORS ARE SHOWN FOR THE LEFT MAIN LANDING GEAR

1

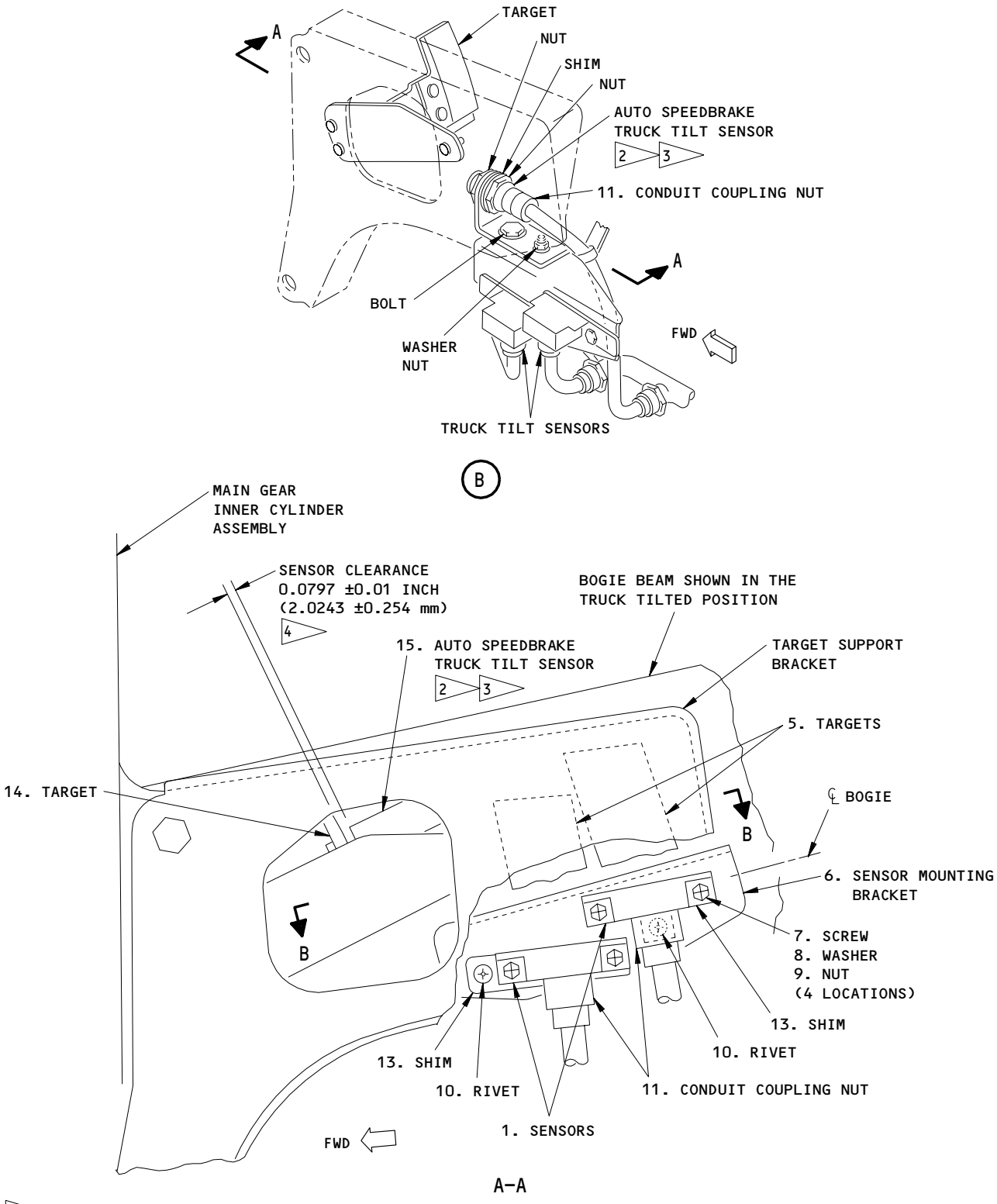
SENSOR NUMBER	SYSTEM	GEAR	LOCATION
S245	1	L	FWD
S246	1	R	FWD
S267	2	L	AFT
S268	2	R	AFT
S10598 3	N/A	R	UPR

2 SENSOR AND ASSOCIATED PARTS INSTALLED ON RIGHT GEAR ONLY

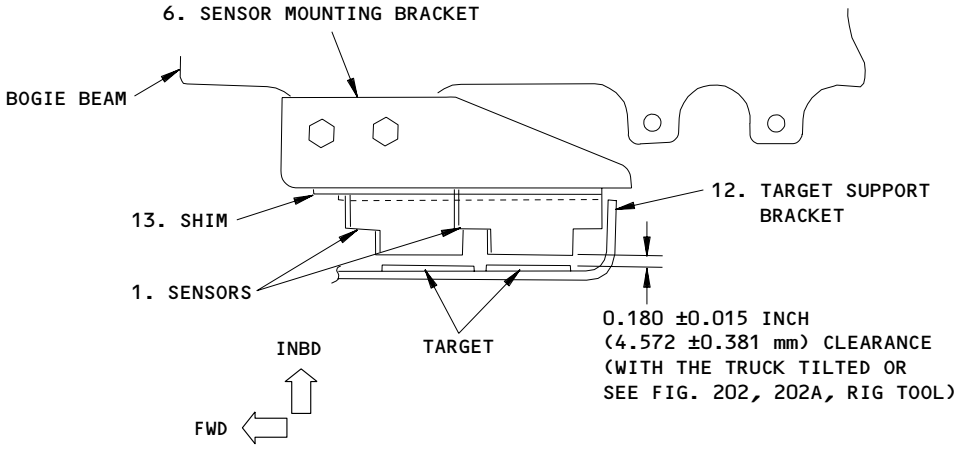
3 AIRPLANES WITH AUTO SPEED BRAKE TRUCK TILT SENSOR (POST-SB 27A0160 OR PRR 12900-086)

Installation of the Tilt Sensor for the Main Landing Gear
Figure 201 (Sheet 1)

H89644



Installation of the Tilt Sensor for the Main Landing Gear
Figure 201 (Sheet 2)



B–B

Installation of the Tilt Sensor for the Main Landing Gear
Figure 201 (Sheet 3)

S 862-067

WARNING: DO THE PROCEDURE TO PREPARE THE SAFETY-SENSITIVE SYSTEMS FOR AIR MODE SIMULATION. IF YOU DO NOT DO THE PROCEDURE BEFORE YOU SIMULATE AIR MODE, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do the task to Prepare the Safety-Sensitive Systems for Air Mode Simulation (AMM 32-09-02/201).

S 492-003

(2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 482-080

(3) Make sure the wheels are chocked.

S 492-005

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 012-038

(5) Do these steps, if it is necessary, to get access to the sensor:
   (a) Remove the applicable wheel and tire for the main gear (AMM 32-45-01/401).
   (b) Remove the shield that is below the main gear truck.

D. Remove the Tilt Sensors (Fig. 201)

S 032-006

(1) Remove the electrical connector plug (4) for the applicable sensor (1,15) from the lower oleo junction box (3).

S 862-007

CAUTION: WRITE DOWN THE COLOR CODE AND THE PIN LOCATION OF THE SENSOR WIRES BEFORE YOU DISCONNECT THE WIRES. THIS WILL MAKE AN EASIER INSTALLATION FOR THE WIRES AND WILL PREVENT THE MALFUNCTION OF THE AIR/GROUND RELAY SYSTEMS.

(2) Use a pin extraction tool, to remove the connector pin from the connector plug (4) (Chapter 20, SWPM).

S 862-008

(3) Put a line on the sensor wires to make an easier installation.

S 032-009
(4) Disconnect the conduit coupling nut (11) from the sensor (1,15).

S 032-065
(5) For the rectangular sensors, remove the sensor mounting screws (7).

S 022-081
(6) AIRPLANES WITH AN AUTO SPEEDBRAKE TRUCK TILT SENSOR, S10598 (POST SB 767-27A0160 OR PRR12900-086);
Do these steps to remove the sensor (Fig. 201):
(a) Remove the jam nut and washer.
(b) Remove the sensor (15) from the bracket.
(c) Remove the shims from the sensor.

NOTE: Keep the shims. You will use them on the replacement sensor.

S 032-011
(7) Remove the sensor (1,15) and pull the electrical wires from the conduit. Do not pull the wires fully out.

NOTE: You can open the pull box (2) on the axle to make it easier to pull the sensor wires.

TASK 32-09-07-402-012
3. Install the Tilt Sensors for the Main Landing Gear

A. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
201	1	Sensor	32-61-02	01	10,15
	7	Screw		1A	40
	8	Washer			45
	9	Nuts			50
	10	Rivet			300
	13	Shim		2B	90

B. References
(1) AMM 32-45-01/401, Main Gear Wheel and Tire
(2) Chapter 20, Standard Wiring Practices Manual (SWPM)

C. Access
(1) Location Zones
731/741 Main Landing Gear

D. Install the Tilt Sensor for the Main Landing Gear (Fig. 201)

S 432-056

CAUTION: DO NOT DROP OR HIT THE SENSORS. YOU CAN CAUSE DAMAGE TO THE INTERNAL COMPONENTS OF THE SENSORS AND CAUSE A FAILURE OF THE AIR/GROUND RELAY SYSTEM.

(1) Twist the sensor wires together.
(a) Put a line on the sensor wires.
(b) Put the sensor wires through the conduit.

S 422-014
(2) For the rectangular sensors, use the screws (7), the washers (8) and the nuts (9) to install the sensor (1).

S 422-068
(3) For an auto speedbrake truck tilt sensor, (POST SB 767-27A0160 OR PRR12900-086) do these steps:
(a) Put the shims on the sensor.
(b) Install the sensor in the bracket with the washer and locknut.
(c) With your hand, tighten the conduit coupling nut (11) to the sensor.

S 412-070
(4) Install a lockwire.

S 862-015
(5) Crimp the pins on the sensor wires.

S 432-016
(6) Use a pin insertion-retraction tool to install the pins in the connector plug (4) (Chapter 20, SWPM).

S 432-017
(7) Install the electrical connector plug (4) to the lower oleo junction box (3).

S 412-018
(8) Install the pull box (2) cover if it was removed.

S 722-019
(9) Do the task which does a test for the tilt sensor.

S 222-050
(10) Do the measurement of the clearance between the sensor and the target.

NOTE: The steps to measure the clearance is in the "Adjust the Tilt sensor of the Main Landing Gear" task, which is the last task in this procedure.

S 412-039
(11) Install the shield below the main gear truck, if it was removed.

S 412-040
(12) Install the wheel and tire for the main gear, if it was removed (AMM 32-45-01/401).

TASK 32-09-07-702-020

4. Do the Test for the Tilt Sensor of the Main Landing Gear

A. General

(1) To do the test on the sensor, the airplane is on the landing gear. The test for the target position is done with the proximity switch electronics unit (PSEU). A proximity switch actuator tool is used to simulate the target near position.

NOTE: If a test of the auto-speedbrake sensor is required, do the Gear Tilt Sensor Failure Test of the Auto-Speedbrake System (AMM 27-62-00/501).

B. Equipment

(1) Proximity Sensor Actuator Test Set
A27092-106 (Recommended)
A32102-25 (Alternative)
A32102-1 (Alternative)
or
KHT 8-758-01, Proximity Sensor Actuator Test Set
KHT 8-750-01 - Go Gauge
ELDEC Corporation Aircraft Systems Division, PO Box 3002, Bothell WA, 98042-3002 (alternative)

NOTE: These tools make sure that the sensor operates to its specified limits.

C. References

(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks

D. Access

(1) Location Zones

119	Main Equipment Center (Left and Right)
211/212	Control Cabin
731/741	Main Landing Gear

(2) Access Panel

119AL	Main Equipment Center

E. Prepare to Do the Test

S 492-021

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 492-022

(2) Make sure the wheels are chocked.

S 492-023

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Make sure the door locks are installed on the nose and main landing gear (AMM 32-00-15/201).

S 862-024

(4) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:

(a) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(b) 11U23 or 11U24, POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

S 862-025

(5) Supply electrical power (AMM 24-22-00/201).

F. Do the Test for the Tilt Sensor

S 012-026

(1) Open the access panel, 119AL, to get access to the PSEU (AMM 06-41-00/201).

S 722-027

(2) Do a target position test to make sure the sensor operates correctly.

(a) Set the sensor channel with the PSEU SENSOR CHANNEL SELECT dials.

NOTE: Set the dials to the sensor number that you want to test.

SENSOR NO.	SENSOR DESCRIPTION
245	Left gear, forward sensor
246	Right gear, forward sensor
267	Left gear, aft sensor
268	Right gear, aft sensor

(b) Push the TARGET TEST switch and make sure the TARGET FAR light comes on.

(c) Put the actuator on the sensor.

(d) Push the TARGET TEST switch and make sure the TARGET NEAR light comes on.

(e) Remove the actuator from the sensor.

G. Put the Airplane Back to Its Usual Condition

S 092-028

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the door locks from the landing gear and close the doors (AMM 32-00-15/201).

S 862-029

(2) Remove the electrical power if it is not necessary (AMM 24-22-00/201).

S 412-030

(3) Close the access panel, 119AL.

TASK 32-09-07-822-057

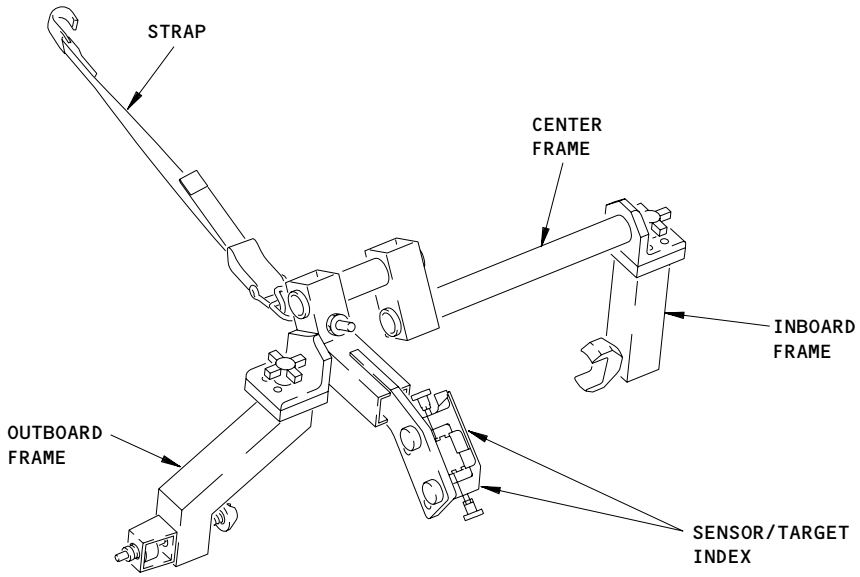
5. Adjust the Tilt Sensors of the Main Landing Gear

A. General

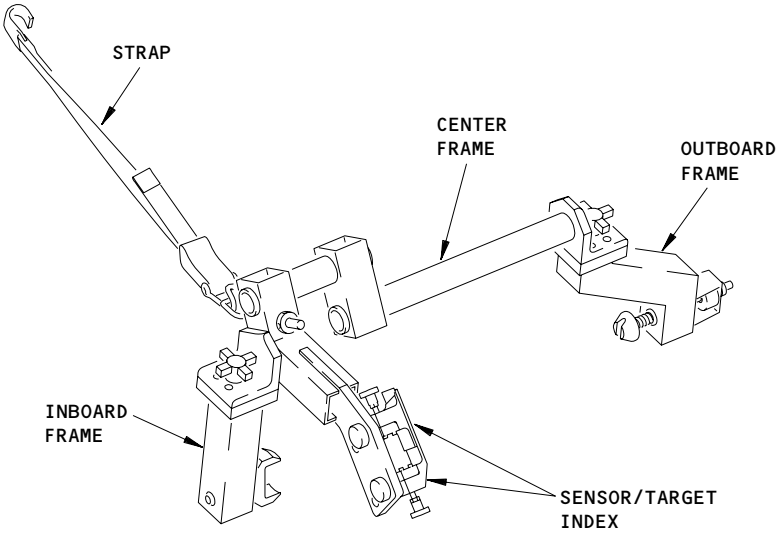
(1) You must do a check of the clearance between the sensor and the target if you have any of the conditions that follow:

(a) You install a new sensor.

THIS TOOL PERMITS YOU TO SIMULATE A "TARGET NEAR" CONDITION WITH THE MAIN GEAR TRUCK NOT TILTED. YOU USE THE TOOL TO FIND THE CLEARANCE BETWEEN THE SENSOR AND THE TARGET.

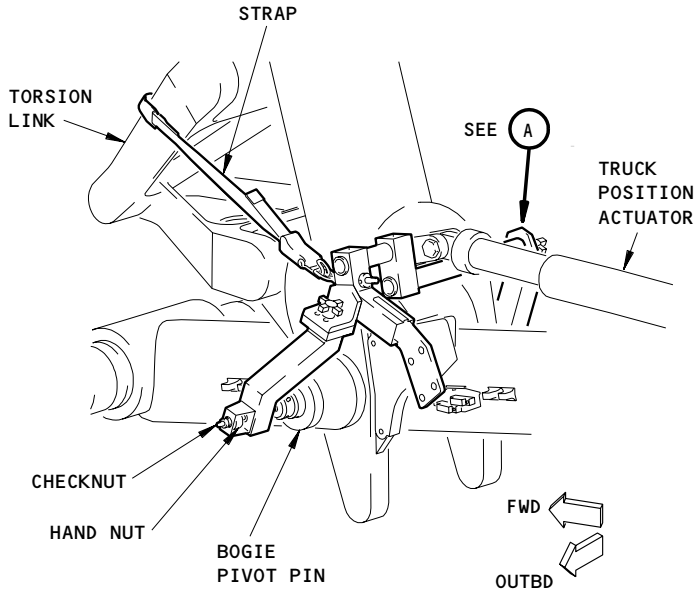


RIG TOOL ASSEMBLED FOR THE LEFT MAIN GEAR

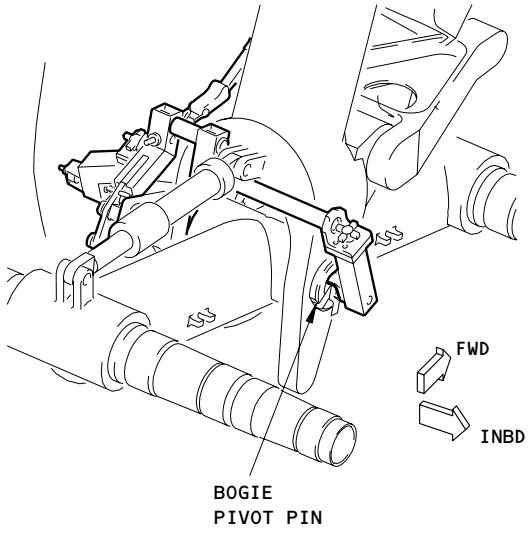


RIG TOOL ASSEMBLED FOR THE RIGHT MAIN GEAR

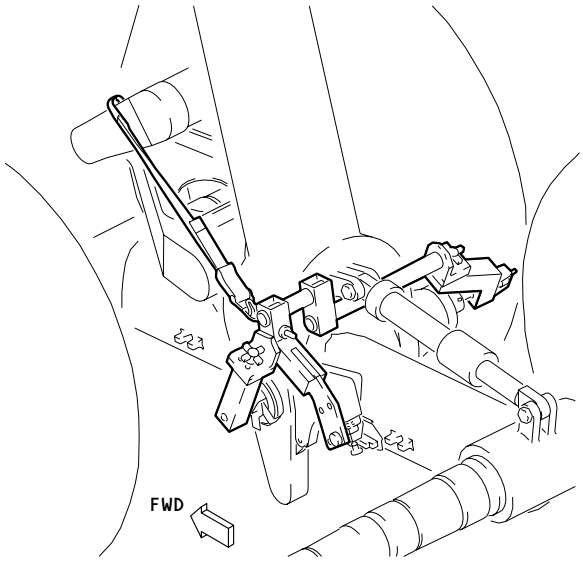
Rig Tool for Tilt Sensors S245, S246, S267, S268
Figure 202 (Sheet 1)



RIG TOOL SHOWN INSTALLED
ON THE LEFT MAIN GEAR



LEFT MAIN GEAR
A

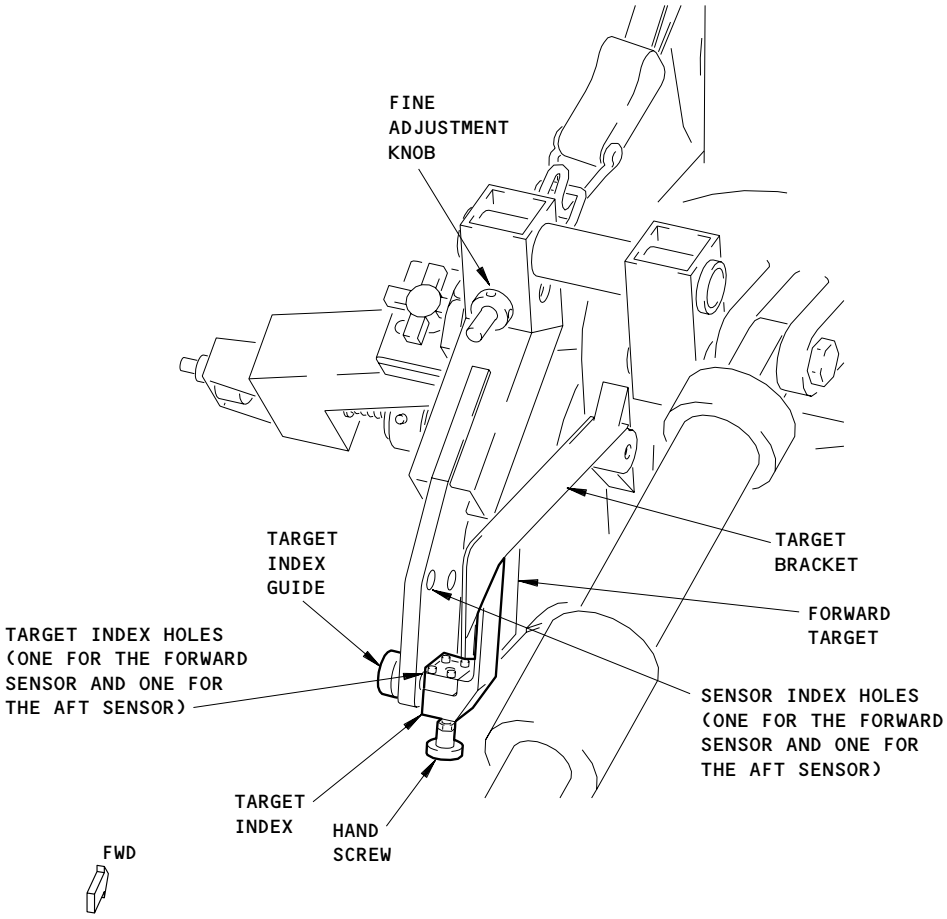


RIG TOOL SHOWN INSTALLED
ON THE RIGHT MAIN GEAR

Rig Tool for Tilt Sensors S245, S246, S267, S268
Figure 202 (Sheet 2)

TO MEASURE THE CLEARANCE BETWEEN THE SENSOR AND THE TARGET DO THESE THREE STEPS:

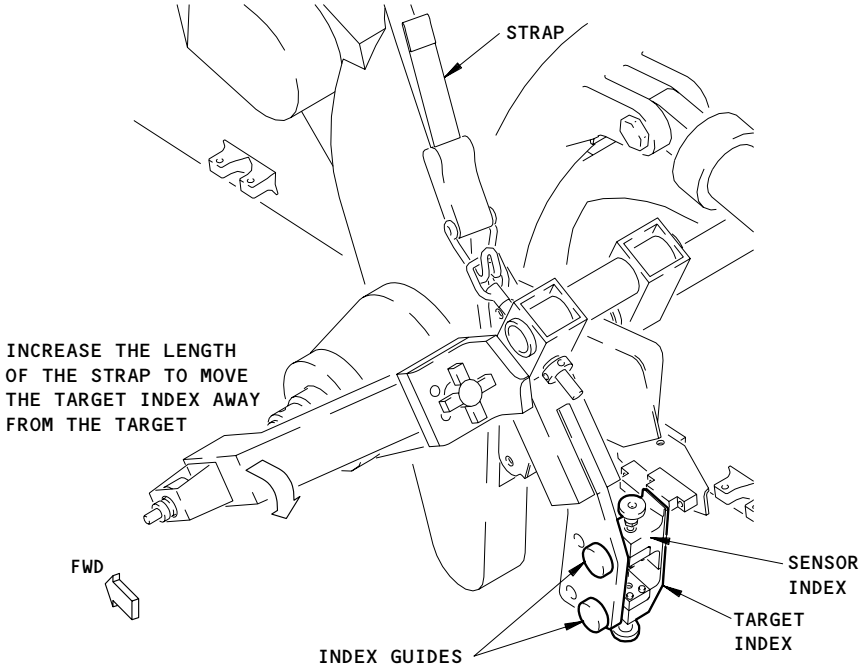
1. ALIGN THE TARGET INDEX WITH THE TARGET – SEE (A)
2. ALIGN THE SENSOR INDEX WITH THE TARGET INDEX – SEE (B)
3. MEASURE THE CLEARANCE BETWEEN THE SENSOR INDEX AND THE SENSOR FACE – SEE (C)



ALIGN THE TARGET INDEX WITH THE TARGET
(LEFT MAIN GEAR SHOWN)

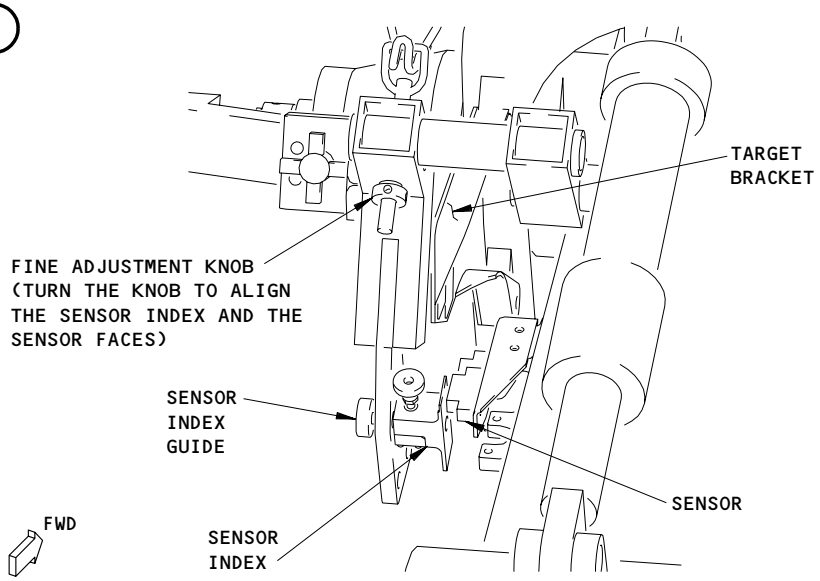
(A)

Rig Tool for Tilt Sensors S245, S246, S267, S268 – Use
Figure 202A (Sheet 1)



ALIGN THE SENSOR INDEX WITH THE TARGET INDEX
(LEFT MAIN GEAR SHOWN)

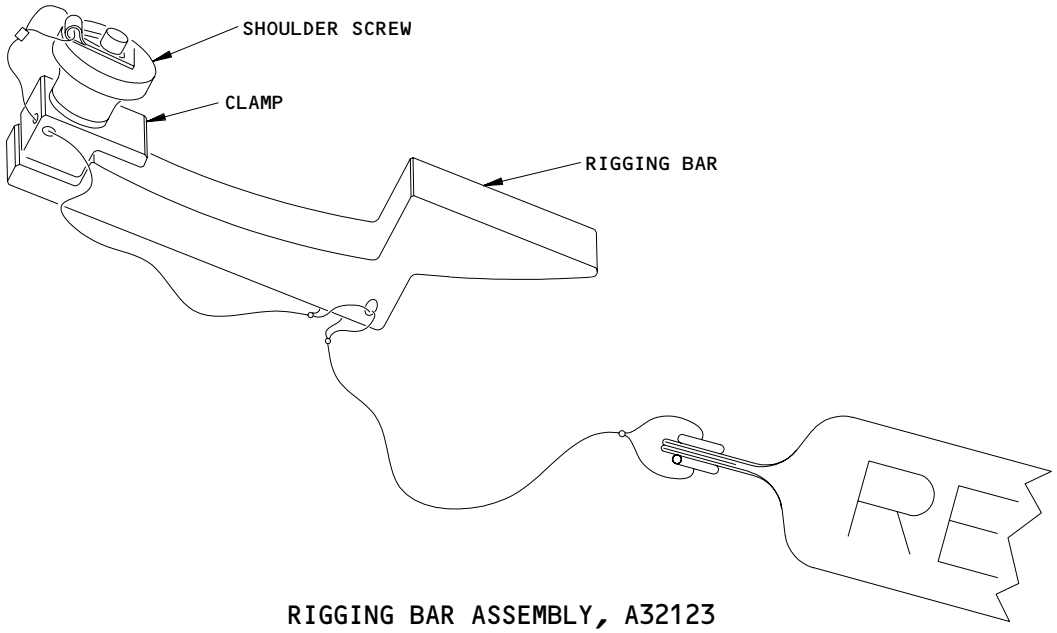
B



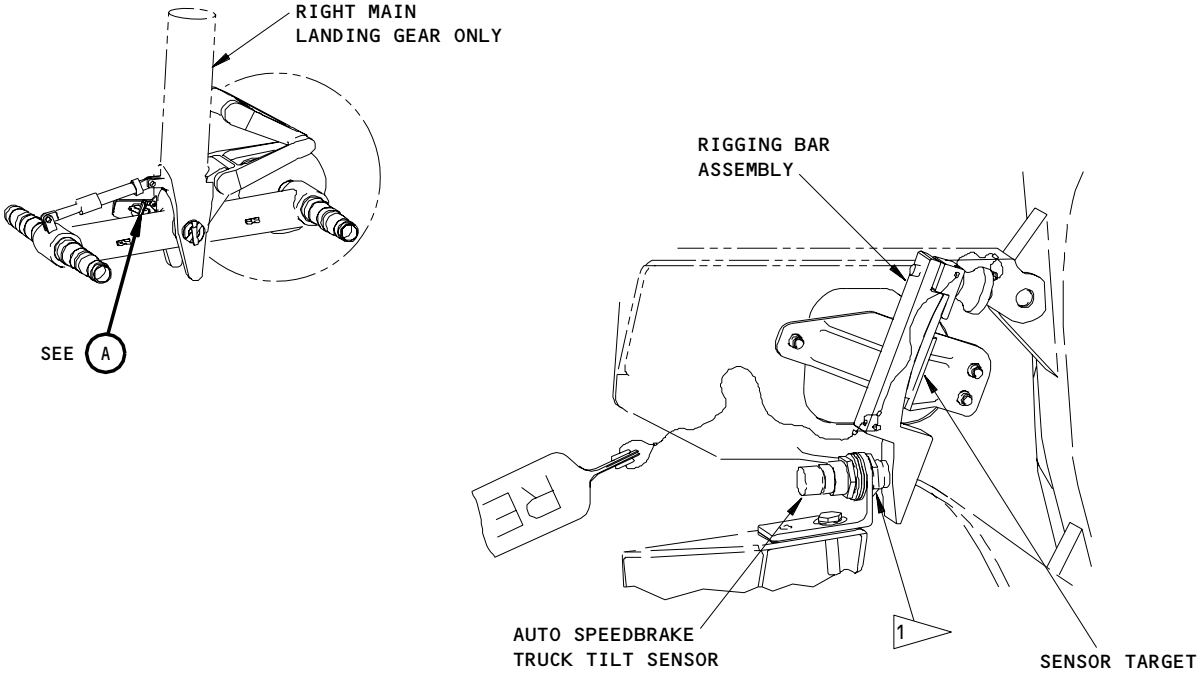
MEASURE THE CLEARANCE BETWEEN THE SENSOR INDEX
(SIMULATED TARGET) AND THE SENSOR
(LEFT MAIN GEAR SHOWN)

C

Rig Tool for Tilt Sensors S245, S246, S267, S268 - Use
Figure 202A (Sheet 2)



RIGGING BAR ASSEMBLY, A32123



RIGGING BAR ASSEMBLY INSTALLATION

A

1 WHEN THE SENSOR TOUCHES THE RIGGING TOOL, THIS WILL GIVE THE CORRECT SENSOR CLEARANCE WITH THE TRUCK TILTED (FIG. 201).

Rig Tool for Tilt Sensor, S10598
Figure 203

(b) The sensor mounting bracket was moved or damaged.
(c) The target support bracket was moved or damaged.
(d) The sensor or the target are damaged.
(e) You installed a new landing gear.

(2) Two methods are given to measure the clearance:
(a) One method uses jacks to lift the airplane until the main gear trucks move to the full tilt position.
(b) The other method uses equipment (tools) to let you simulate the location of the target without movement of the main gear truck.

(3) For maintenance on the main gear tilt sensors, it is important that the torsional loads (side load pressures) were released when the airplane was parked. The clearance between the sensor and its target can be incorrect if you have torsional loads on the main gear. You can remove the torsional loads if the airplane is moved a minimum of 12 feet in a straight line before it is parked (AMM 09-11-00/201, AMM 09-21-00/201, AMM 10-11-01/201).

B. Equipment

(1) A32096-70 - Rigging Equipment - Landing Gear, Air/Ground Sensors : S245, S246, S267, S268.

NOTE: If you do not have this equipment, you must lift the airplane with jacks to measure the clearance between the sensor and the target.

(2) A32123-1 - Rigging Equipment - Landing Gear, Air/Ground Sensor S10598, Right Side MLG.

NOTE: If you do not have this equipment, you must lift the airplane with jacks to measure the clearance between the sensor and the target.

C. Consumable Materials

(1) A00250 Adhesive - BMS 5-26 Class B-1/2
(2) C00272 Protective Finish - BMS 3-11-Resistant

D. References

(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 07-11-01/201, Jacking Airplane
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 32-45-01/401, Main Gear Wheel and Tire

E. Access

(1) Location Zones

119	Main Equipment Center (Left and Right)
211/212	Control Cabin
731/741	Main Landing Gear

(2) Access Panel

119AL	Main Equipment Center

F. Prepare to Measure the Clearance or Adjust the Tilt Sensors

S 492-031

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 862-044

(2) Do one of the procedures that follows:

(a) Lift the airplane with jacks to permit the main landing gear to tilt fully (AMM 07-11-01/201).

NOTE: This puts the targets in the correct position above the sensors.

(b) TRUCK TILT SENSORS S245, S246, S267, AND S268;
Install the rigging equipment A32096-70:

1) Assemble the rigging equipment as shown on Fig. 202.

NOTE: The equipment is assembled differently for the left and the right gear. You cannot use this rigging equipment to adjust the round sensors.

a) Do not install the sensor and target indexes or guides at this time.

2) Install the rigging equipment on the landing gear as shown on Fig. 202.

a) At the inboard side of the bogie pivot pin, remove the bolt the attaches the conduit clamps to the bracket on the pivot pin.

b) Move the two conduits away from the end of the pivot pin.

c) Make sure the ends of the pivot pin are free of dirt and grease.

d) Turn the hand nut on the outboard frame to fully loosen the fitting.

e) Install the rigging tool frame from the left side of the landing gear, below the truck position actuator.

f) Attach the fitting on the inboard frame to the pivot pin first.

g) Pull the checknut on the outboard frame until the fitting can be moved into the end of the pivot pin.

h) Install the strap hook on the upper torsion link and adjust the length of the strap to hold the tool.

i) Tighten the fitting on the outboard frame to the pivot pin with the hand nut.

j) Tighten the checknut to hold the hand nut in its position.

(c) Do these steps, if it is necessary, to get access to the sensor:

1) Remove the applicable wheel and tire for the main gear (AMM 32-45-01/401).

2) Remove the shield that is below the main gear truck.

(d) AUTO SPEEDBRAKE TRUCK TILT SENSOR, S10598;

1) Install rigging equipment A32123-1 on the landing gear as shown on Fig. 203.

a) Loosen the shoulder screw on the rigging bar assembly.

b) Put the rigging bar assembly on the sensor target and tighten the shoulder screw so that the clamp holds the rigging bar on the sensor target.

G. Measure the Clearance Between the Sensor and the Target

S 212-033

(1) Examine the target support bracket and the sensor mounting bracket for damage.

(a) Repair the brackets if it is necessary.

S 222-034

(2) Make sure the clearance between the sensor and its target is the same as the distance shown on Fig. 201.

(a) AUTO SPEEDBRAKE TRUCK TILT SENSOR S10598 (POST SB 767-27A0160 OR PRR12900-086);

If you use the rigging equipment, make sure that the rigging bar assembly contacts the sensor.

If you do not use the rigging equipment it will be necessary to jack the airplane to tilt the trucks. Then set the gap to the distance shown on Fig. 201.

(b) TRUCK TILT SENSORS S245, S246, S267, AND S268;

If you use the rigging equipment, do the steps that follow to measure the clearance (Fig. 202A):

1) Install the target index and guide in the correct hole on the rigging equipment.

NOTE: Use the correct hole on the tool. The higher holes are for the sensor index. The lower holes are for the target index. There is a forward and aft set of holes for the forward and aft sensor.

a) Tighten the hand screw to hold the target index in its position.

2) Adjust the strap and the fine adjustment knob until the target and the target index are adjacent.

NOTE: Adjust the target index if it is necessary to prevent interference between the index and the target.

3) Loosen the hand screw and adjust the position of the target index until it is flat against the face of the target.

a) Tighten the hand screw to hold the target index in this position.

4) Carefully increase the length of the strap to move the target index away from the target.

5) Install the sensor index and guide in the hole above the target index on the rigging equipment.
6) Carefully align the face of the sensor index with the face of the target index.
   a) Tighten the hand screw to hold the sensor index in its position.
7) Loosen the hand screw on the target index and remove the index and its index guide.
8) Measure the clearance between the sensor index and the sensor face at three locations of the sensor index.

   NOTE: Turn the fine adjustment knob to change the position of the sensor index.

   a) Measure the clearance between the top, the center, and the bottom of the sensor index and the sensor face.
   b) You can use the Go No-Go gage for the main gear to do a check of the clearance.

H. Adjust the Clearance for the Tilt Sensors

S 862-035

(1) RECTANGULAR SENSORS, S245, S246, S267, S268;
If the clearance is not correct, then do these steps:
(a) Remove the screws (7) to remove the sensor (1) from the mounting bracket (6).
(b) Remove the rivet (10) to remove the shims (13).

NOTE: The shims are bonded to the mounting bracket.

(c) Clean the mounting support where the shims (13) were attached.
(d) Use the screws (7), the washers (8) and the nuts (9) to install the new shims (13) and the sensor (1) to the mounting bracket (6).
(e) Do not bond or use rivets to attach the shim at this time.
(f) Remove layers of the lamination from the shims (13) to adjust the distance (Fig. 201).

NOTE: Each layer of the lamination on the shims (13) is 0.003 inches thick.

(g) When you get the correct distance, remove the sensor (1) and bond the shim (13) to the mounting support (6) with the adhesive.
(h) Make sure the mounting holes are aligned.
(i) Use the rivet (10) to attach the shims (13) to the mounting support (6).
(j) Apply the protective finish to the edge of the shims.
(k) Use the screws (7), the washers (8) and the nuts (9) to install the sensor (1).

S 822-073
(2) AUTO SPEEDBRAKE TRUCK TILT SENSOR, S10598 (POST SB 767-27A0160 OR PRR12900-086);
If the clearance is not correct, then do these steps:
(a) Remove the locknut and washer from the sensor (15).
(b) Remove the sensor and shims from the sensor bracket.
(c) Install new shims or remove layers of the lamination from the shims to adjust the distance (Fig. 201).

NOTE: Each layer of the lamination on the shims is 0.003 inches thick.

(d) Install the sensor in the sensor bracket with the locknut and washer.
(e) Apply the protective finish to the edge of the shims.

S 862-075
(3) Supply electrical power (AMM 24-22-00/201).

S 012-076
(4) Open the access panel, 119AL, to get access to the PSEU (AMM 06-41-00/201).

S 822-077
(5) TRUCK TILT SENSORS S245, S246, S267, AND S268;
Do this test for each of the sensors:
(a) Lift the airplane with jacks to permit the nose landing gear to extend fully and the main landing gear trucks to tilt fully (AMM 07-11-01/201).
(b) Put the deactuators on the system 1 and the system 2 not compressed sensors of the nose landing gear (S244 and S266).
(c) Do the steps that follow for each tilt sensor of the main landing gear.
1) Put the sensor number of the sensor on which you will do the test in the PSEU. Use the SENSOR CHANNEL SELECT dials.

2) Push the TARGET TEST switch and hold it for one second.
3) Make sure the correct sensor number is shown on the display and that the TARGET NEAR light comes on after 4 seconds.
4) Remove the deactuators from the not compressed sensors of the nose landing gear.

(d) Put the deactuators on the system 1 and the system 2 tilt sensors (S245 and S267) of the left main landing gear.

(e) Do the steps that follow for each not compressed sensor of the nose landing gear:
1) Put the sensor number of the sensor on which you will do the test in the PSEU. Use the SENSOR CHANNEL SELECT dial.
2) Push the TARGET TEST switch and hold it for one second.
3) Make sure the correct sensor number is shown on the display and that the TARGET NEAR light comes on after 4 seconds.
4) Remove the deactuators from the tilt sensors on the left main landing gear.

(f) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 822-082

(6) AUTO SPEEDBRAKE TRUCK TILT SENSOR, S10598;
Do this test:
(a) Perform the Gear Tilt Sensor Failure Test for the Auto-Speedbrake System (AMM 27-62-00/501).

I. Put the Airplane Back to Its Usual Condition

S 412-042

(1) Install the shield below the main gear truck, if it was removed.

S 412-043

(2) Install the wheel and tire for the main gear, if it was removed (AMM 32-45-01/401).

S 582-037

(3) Lower the airplane and remove the jacks (AMM 07-11-01/201), if the airplane was lifted on jacks.

S 082-045

(4) If you used the rigging equipment, do the steps that follow:
(a) Remove the sensor and target indexes from the tool.
(b) Remove the index guides from the tool.
(c) Loosen the checknut and the hand nut on the outboard frame and remove the tool from the landing gear.

NOTE: Remove the tool from the left side of the landing gear.

(d) Install the conduit clamps on the inboard side of the bogie pivot pin.

S 412-036

(5) Close the access door, 119AL, for the main equipment center.

S 862-046

(6) Remove electrical power if it is not necessary (AMM 24-22-00/201).

NOSE GEAR NOT COMPRESSED SENSORS - MAINTENANCE PRACTICES

1. General
   A. This procedure contains these tasks:
      (1) A task to remove the not compressed sensor from the nose landing gear.
      (2) A task to install the sensor.
      (3) A test of the sensor.
      (4) A task which measures the clearance between the sensor and the target and does an adjustment of the clearance. Two methods are given to measure the clearance:
         (a) The first method uses a jack to lift the nose of the airplane to extend the shock strut.
         (b) The second method uses equipment to put the upper torsion link in the nose gear extended position. You do not have to lift the airplane nose for this method.

TASK 32-09-08-002-001

2. Remove the Not Compressed Sensor of the Nose Landing Gear
   A. References
      (1) AMM 24-22-00/201, Electrical Power - Control
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zone
          711 Nose Landing Gear
   C. Prepare to Remove the Sensor

      S 492-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

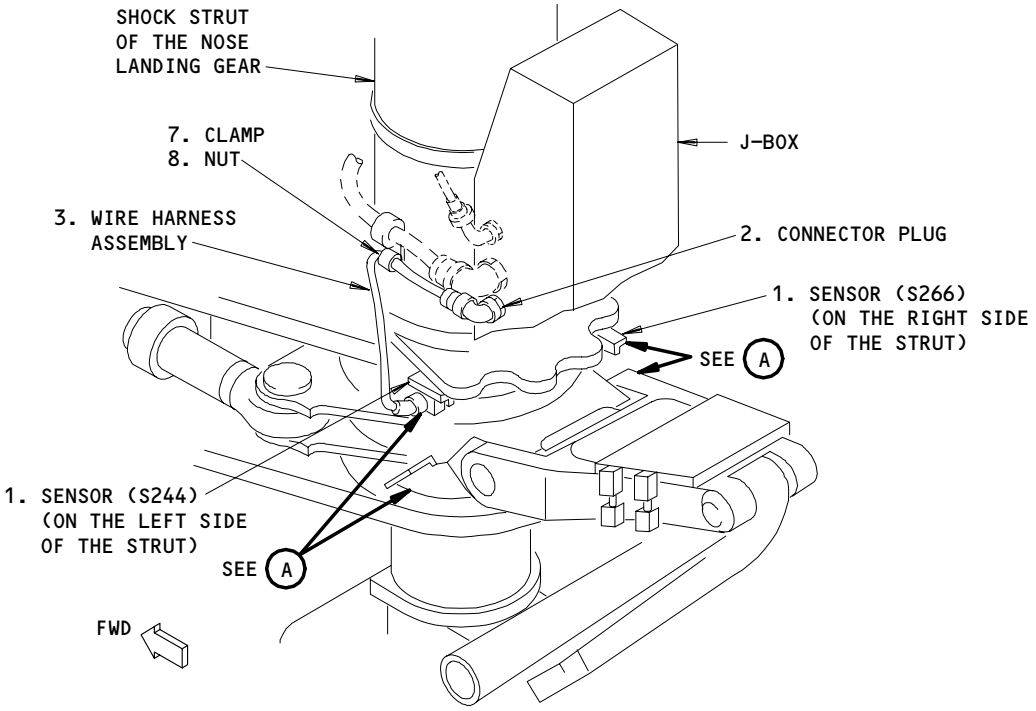
      S 492-003
      (2) Make sure the chocks are below the wheels.

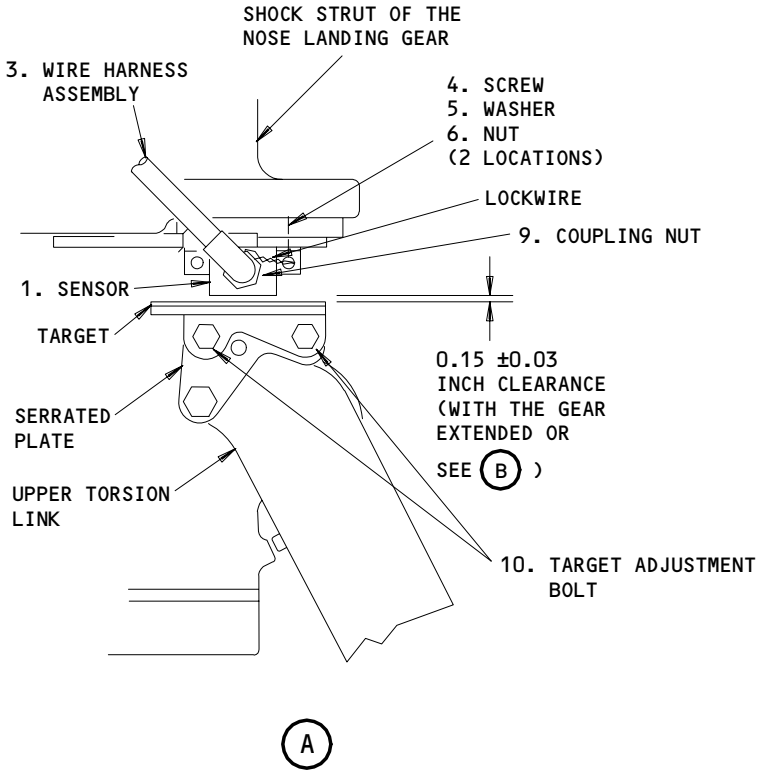
      S 862-004
      (3) Remove the electrical power (AMM 24-22-00/201).
   D. Remove the Sensor (Fig. 201)

      S 032-005
      (1) Remove the screws (4) to remove the sensor (1) from the mounting support.

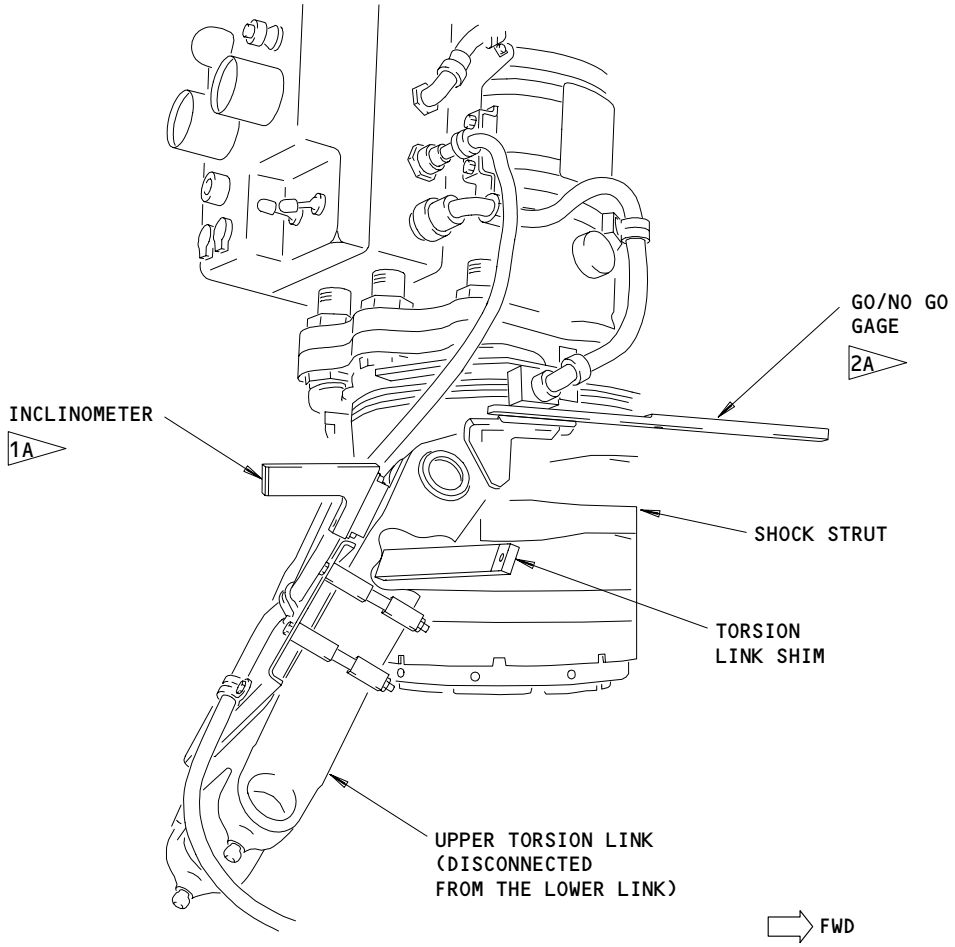
      S 032-006
      (2) Disconnect the electrical connector plug (2) at the J-Box.

      S 012-007
      (3) Remove the wire harness assembly (3) (with the sensor attached) from the mounting clamp (7).





Installation of the Not Compressed Sensor for the Nose Landing Gear
Figure 201 (Sheet 1)



NOSE GEAR
B

1A ADJUST THE POSITION OF THE TORSON LINK WITH THE TORSION LINK SHIM (HOLDS THE WEIGHT OF THE TORSION LINK) UNTIL THE INCLINOMETER GIVES A LEVEL INDICATION

2A USE THE "ADJUSTABLE SENSOR GAGE" (.030 AND .050 THICKNESSES FOR AN INSTALLATION USING SHIMS UNDER THE SENSOR FOR GAP ADJUSTMENT TO A FIXED TARGET.

USE THE "ADJUSTABLE TARGET GAGE" (.120 AND .180 THICKNESSES) FOR AN INSTALLATION HAVING SERRATIONS IN THE TARGET MOUNT FOR GAP ADJUSTMENT

EACH GO/NO GO GAGE HAS A THICK END AND A THIN END. YOU HAVE THE CORRECT CLEARANCE IF THE THIN END ON THE GAGE FITS, BUT THE THICK END DOES NOT

Installation of the Not Compressed Sensor for the Nose Landing Gear
Figure 201 (Sheet 2)

A01578

TASK 32-09-08-402-037

3. Install the Not Compressed Sensor of the Nose Landing Gear

A. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
201	1	Sensor	32-61-61	01	340,355
	3	Wire harness assembly			335,350
	4	Screw			330
	5	Washer			331
	6	Nut			332
	7	Clamp			125,130
	8	Nut			107,111
					114

B. Access
(1) Location Zone
711 Nose Landing Gear

C. Install the Sensor (Fig. 201)

S 432-052

CAUTION: DO NOT DROP OR HIT THE SENSORS. YOU CAN CAUSE DAMAGE TO THE INTERNAL COMPONENTS OF THE SENSORS AND CAUSE A FAILURE OF THE AIR/GROUND RELAY SYSTEM.

(1) Install the wire harness assembly (3) to the mounting clamp (7).

S 432-009

(2) Use the screws (4), the washers (5) and the nuts (6) to install the sensor on the mounting support.

S 432-010

(3) Tighten, with your hand, the conduit coupling nut (7) to the sensor (1).

S 432-011

(4) Install the lockwire.

S 412-012

(5) Install the electrical connector plug (2) at the J-Box.

S 722-013
(6) Do the test for the sensor.

S 222-051
(7) Measure the clearance between the sensor and the target.

NOTE: The steps to measure the clearance are in the "Clearance Adjustment of the Not Compressed Sensor for the Nose Landing Gear."

TASK 32-09-08-702-014

4. The Test for the Not Compressed Sensor of the Nose Landing Gear

A. General

(1) Do the test for the sensor with the airplane on the landing gear. Use the proximity switch electronics unit (PSEU) to do the target position test to make sure the sensor operates correctly.

B. Equipment

(1) A32102-1, Proximity Sensor Actuator Test Set
A32102-25 (Recommended)
A32102-1 (Alternative)
or
KHT 8-758-01, Proximity Sensor Actuator Test Set
(Rectangular sensor actuator necessary) or
KHT 8-750-01 - Go Gauge (Rectangular Actuator)
ELDEC Corporation Aircraft Systems Division, PO Box 3002, Bothell WA, 98041-3002 (alternative)

NOTE: These tools make sure that the sensor operates to its specified limits.

C. References

(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 32-00-20/201, Landing Gear Downlocks

D. Access

(1) Location Zones

119	Main Equipment Center (Left and Right)
211/212	Control Cabin
711	Nose Landing Gear

(2) Access Panel

119AL	Main Equipment Center

E. Prepare to Do the Test

S 492-015
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 482-054
(2) Make sure the wheels are chocked.

S 862-017
(3) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:

(a) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(b) 11U23 or 11U24, POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

S 862-018
(4) Supply electrical power (AMM 24-22-00/201).

F. Do the Test for the Sensor

S 012-019
(1) Open the access door, 119AL, for the main equipment center to get access to the PSEU (AMM 06-41-00/201).

NOTE: The PSEU is located on the E1 rack.

S 862-020
(2) Make sure the sensor operates correctly.
(a) Set the sensor channel with the SENSOR CHANNEL SELECT dials on the PSEU.

NOTE: Set the dials to the sensor number that you want to test.

Sensor No.	Sensor Description
244	Left side of the strut
266	Right side of the strut

(b) Push the TARGET TEST switch.
1) Make sure the TARGET FAR light comes on.
(c) Put the actuator on the sensor.
(d) Push the TARGET TEST switch.
1) Make sure the TARGET NEAR light comes on.
(e) Remove the actuator from the sensor.

S 412-021
(3) Close the door for the nose landing gear if it is open.

S 412-022
(4) Close the access door, 119AL, for the main equipment center.

S 862-023

(5) Remove the electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-09-08-822-024

5. Clearance Adjustment of the Not Compressed Sensor for the Nose Landing Gear

A. General

(1) You must do a check of the clearance between the sensor and the target if you have any of the conditions that follow:

(a) You install a new sensor.

(b) The sensor mounting bracket was moved or damaged.

(c) The target support bracket was moved or damaged.

(d) The sensor or the target are damaged.

(2) Two methods are given to measure the clearance:

(a) One method uses a jack to lift the nose of the airplane to extend the shock strut.

(b) The other method uses equipment (tools) to put the upper torsion link in the nose gear extended position.

B. Equipment

(1) Towing Lever Lockpin - A09003-1

(2) A32096-70 - Rigging Equipment - Landing Gear, Air/Ground Sensors

NOTE: If you do not have this equipment, you must lift the nose of the airplane with a jack.

(a) Inclinometer

(b) Torsion Link Shim

(c) Go No-Go gage

C. Consumable Materials

(1) A00250 Sealant - BMS 5-26 Type II Class B1/2

(2) G00508 Corrosion Preventive Compound - MIL-C-11796B Class III

D. References

(1) AMM 07-11-02/201, Jacking Airplane Nose

(2) AMM 24-22-00/201, Electrical Power - Control

(3) AMM 32-00-20/201, Landing Gear Downlocks

(4) AMM 32-21-11/201, Nose Gear Torsion Links

E. Access

(1) Location Zones

119	Main Equipment Center (Left and Right)
211/212	Control Cabin
711	Nose Landing Gear

(2) Access Panel

119AL	Main Equipment Center

F. Prepare to Measure the Clearance or Do the Adjustment of the Sensor

S 492-025
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 482-055
(2) Make sure the wheels are chocked.

S 862-028
(3) Make sure the steering for the nose landing gear is in the center.

S 862-042
(4) Move the towing lever on the metering valve module (for nose wheel steering) to the TOWING position.

NOTE: When you hold the tow lever in the TOWING position with the lockpin, the nose gear steering will not operate. This is when the hydraulic system is pressurized.

(a) Install the towing lever lockpin to keep the lever in the TOWING position.

S 862-038
(5) Do one of the procedures that follows:
(a) Lift the nose of the airplane (AMM 07-11-02/201) - procedure 1.
(b) Install the rigging equipment - procedure 2:
1) Disconnect the upper torsion link from the lower torsion link at the apex (AMM 32-21-11/201).
2) Install the inclinometer on the upper torsion link as shown on Fig. 201.

NOTE: The inclinometer is attached to the torsion link with a magnet that is part of the tool.

3) Make sure the inclinometer is parallel to the outside edge of the upper lug of the torsion link.
4) Move the torsion link until you get a level indication on the inclinometer.
5) Put the torsion link shim between the torsion link and the shock strut to hold the torsion link in its position (Fig. 201).

NOTE: The shim holds the weight of the torsion link. Install the shim between the torsion link and the stop on the shock strut.

G. Measure the Clearance Between the Sensor and the Target

S 222-049

(1) Make sure the distance is as shown in Fig. 201.
  (a) If you have the rigging equipment, use the "ADJUSTABLE TARGET GAGE."
    1) The gage has a thick end and a thin end. You have the correct clearance if the thin end of the gage fits between the sensor and the target and the thick end does not.

S 822-044

(2) Do the adjustment steps if you do not have the correct clearance.

H. Adjust the Clearance Between the Sensor and the Target

S 822-031

(1) Adjust the clearance as follows:
  (a) Remove the target adjustment bolts (10) to remove the target.
  (b) Clean the serrations on the target and the mounting plate.
  (c) Apply the corrosion preventive compound to the serrations.
  (d) Adjust the distance as shown on Fig. 201 and install the target.

I. Put the Airplane Back to Its Usual Condition

S 412-035

(1) Close the access door, 119AL, for the main equipment center.

S 582-036

(2) Lower the nose of the airplane and remove the jacks (AMM 07-11-02/201), if it is necessary.

S 432-040

(3) If you used the rigging tool, do these steps:
  (a) Remove the torsion link shim and the inclinometer from the airplane.

(b) Connect the upper and lower torsion links (AMM 32-21-11/201).

S 862-043

(4) Make sure the wheels of the nose landing gear are in the centered position, and remove the towing lever lockpin.

S 862-041

(5) Remove electrical power if it is not necessary (AMM 24-22-00/201).

MAIN GEAR TILT SENSOR TARGET SUPPORT BRACKET - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the target support bracket for the tilt sensor of the main landing gear. The second task installs the target support bracket for the tilt sensor of the main landing gear.

TASK 32-09-09-004-020

2. Remove the Target Support Bracket for the Tilt Sensor on the Main Landing Gear (Fig. 401)
   A. References
      (1) AMM 32-00-15/201, Landing Gear Door Locks
      (2) AMM 32-00-20/201, Landing Gear Down Locks
   B. Access
      (1) Location Zones
          731/741 Main Landing Gear

   C. Prepare to Remove the Target Support Bracket

      S 484-028
      (1) Make sure the wheels are chocked.

      S 494-002
      (2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-010

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

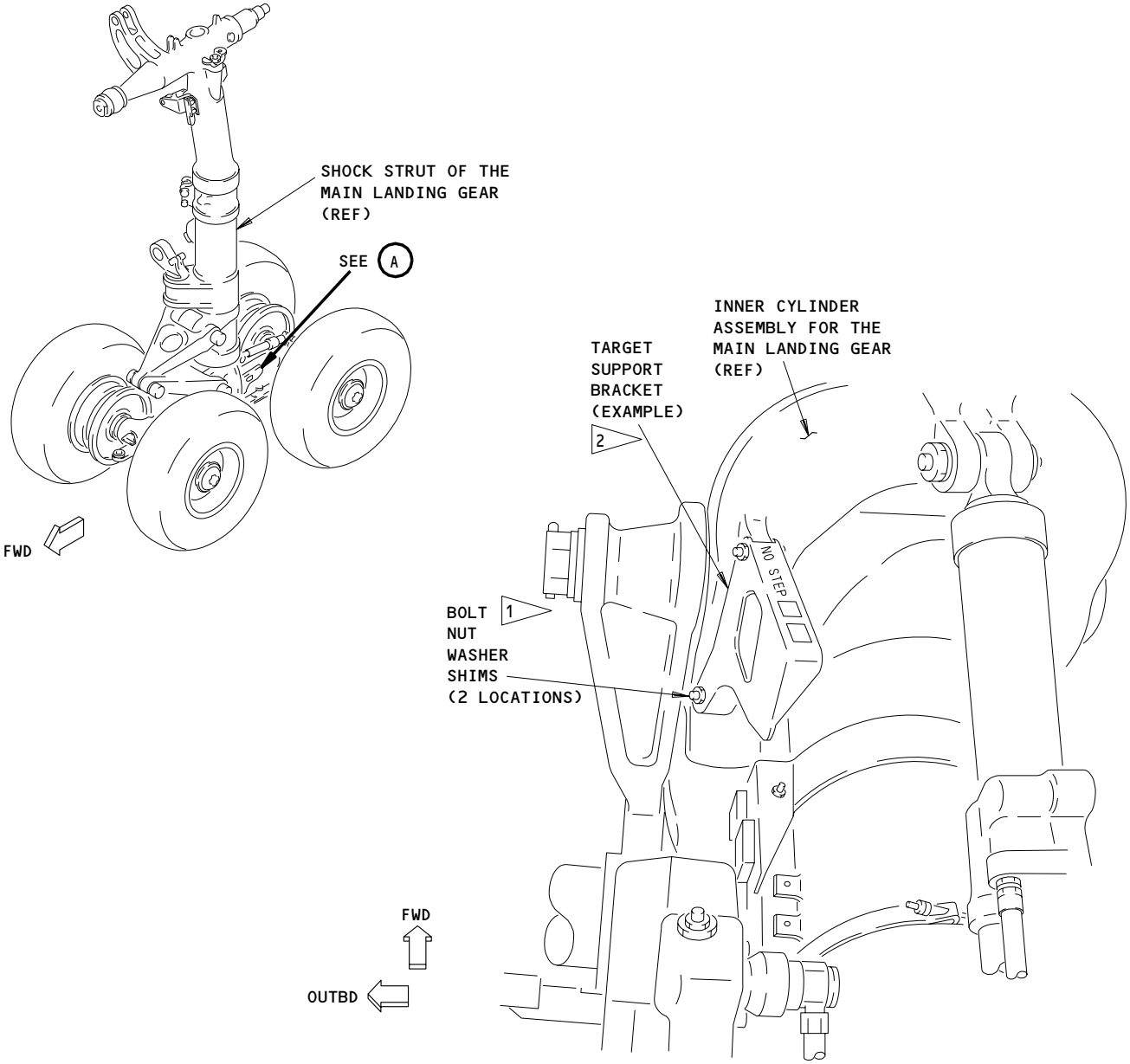
      (3) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).
   D. Remove the Target Support Bracket

      S 034-004
      (1) Remove the nuts, bolts, washers, and shims which hold the target support bracket on the inner cylinder assembly of the main landing gear.

      S 024-005
      (2) Remove the target support bracket.

TASK 32-09-09-404-006

3. Install the Target Support Bracket for the Tilt Sensor on the Main Landing Gear (Fig. 401)
   A. References
      (1) AMM 32-00-15/201, Landing Gear Door Locks



THE TARGET SUPPORT BRACKET FOR THE TILT SENSOR OF THE LEFT MAIN LANDING GEAR IS SHOWN, THE RIGHT MAIN LANDING GEAR IS EQUIVALENT

A

1 MAKE SURE THE BOLTS ARE INSTALLED WITH THE BOLT HEADS INBOARD.

2 THE BRACKET MAY LOOK DIFFERENT ON SOME AIRPLANES. THE DIFFERENCE DOES NOT CHANGE THE REMOVAL OR INSTALLATION.

Target Support Bracket for the Tilt Sensor of the Main Landing Gear
Figure 401

(2) AMM 32-09-07/201, Main Gear Tilt Sensors

B. Access

(1) Location Zones

731/741 Main Landing Gear

C. Install the Target Support Bracket

S 424-011

(1) Install the target support bracket with the bolts, nuts, washers and shims.

S 224-012

CAUTION: MAKE SURE THE DISTANCE BETWEEN THE SENSOR AND THE TARGET IS CORRECT. IF THE DISTANCE IS NOT IN THE TOLERANCE SHOWN IN AMM 32-09-07/201, THEN THE AIR/GROUND RELAY SYSTEM WILL NOT OPERATE CORRECTLY.

(2) Make sure the distance between the sensor and the target is correct (AMM 32-09-07/201).

S 824-008

(3) Use the procedure in AMM 32-09-07/201 to adjust the target distance, if it is necessary.

D. Put the Airplane Back to Its Usual Condition

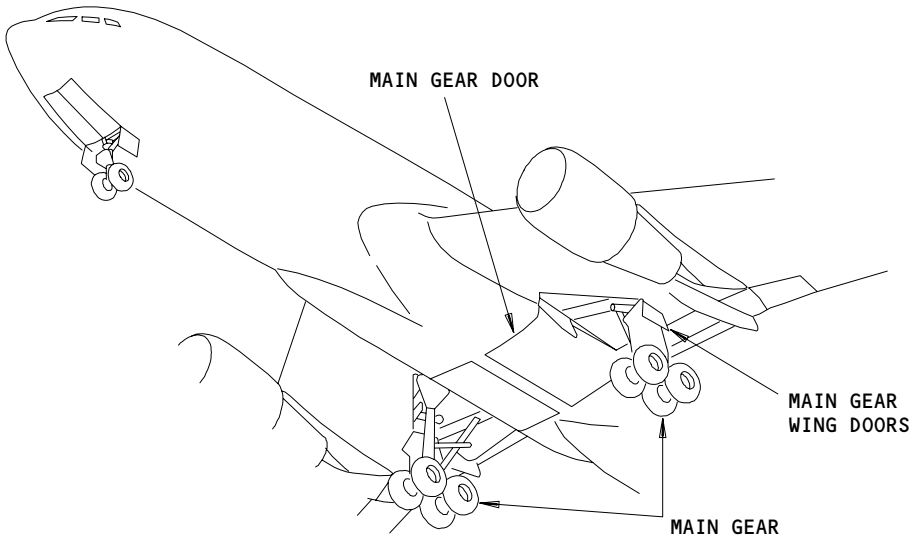
S 094-013

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

MAIN LANDING GEAR AND DOORS - DESCRIPTION AND OPERATION

1. General (Fig. 1)
   A. The main gear consists of two gears which support the airplane. The gears are mounted to the wing and hydraulically retract inboard. Doors close over the wheel well area to provide aerodynamic smoothness.
2. Component Details
   A. Main Gear (AMM 32-11-00)
      (1) The main gear consists of a shock strut, drag brace, side brace, and truck. The drag and side braces carry lateral loads, the shock strut carries vertical loads. The truck provides a mount for wheels and brakes.
   B. Main Gear Doors (AMM 32-12-00)
      (1) The main gear doors consist of the shock strut door, trunnion door, drag brace door, pop-up door, and main gear door. The shock strut, trunnion, and drag brace doors are mechanically linked to the shock strut. The pop-up door is opened by the landing gear retract actuator pushing against it. The main gear door operates hydraulically. The main and pop-up doors are closed when the gear is extended, all doors are closed when the gear is retracted.

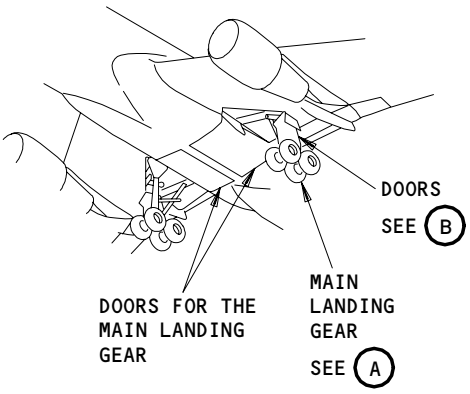


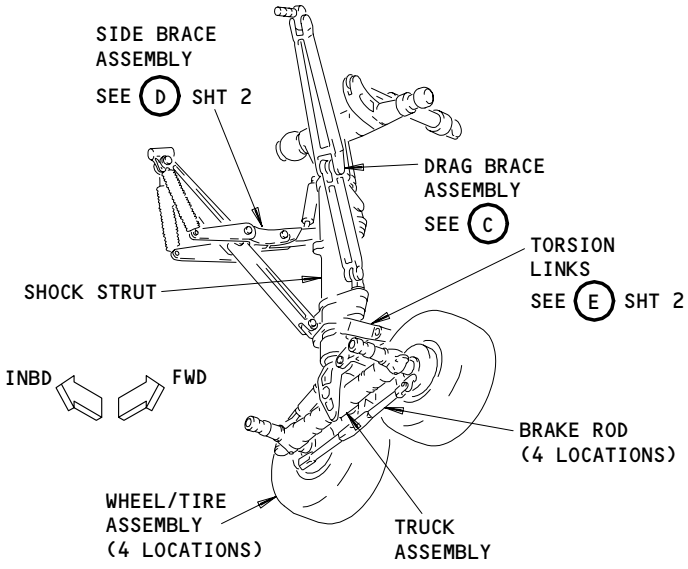
Main Gear and Doors
Figure 1

MAIN LANDING GEAR AND DOORS

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
BRACE - LOWER DRAG	1	2	MAIN WHEEL WELL (L,R), DRAG BRACE ASSEMBLY	32-11-12
BRACE - LOWER SIDE	2	2	MAIN WHEEL WELL (L,R), SIDE BRACE ASSEMBLY	32-11-05
BRACE - UPPER DRAG	1	2	MAIN WHEEL WELL (L,R), DRAG BRACE ASSEMBLY	32-11-11
BRACE - UPPER SIDE	2	2	MAIN WHEEL WELL (L,R), SIDE BRACE ASSEMBLY	32-11-04
BRACE ASSEMBLY - DRAG	1	2	MAIN WHEEL WELL (L,R)	32-11-10
BRACE ASSEMBLY - SIDE	2	2	MAIN WHEEL WELL (L,R)	32-11-03
DOOR - DRAG BRACE	1	2	MAIN WHEEL WELL (L,R)	32-12-08
DOOR - MAIN LANDING GEAR	1	2	732,742, MAIN WHEEL WELL (L,R)	32-12-01
DOOR - POP-UP	1	2	551ET, 651ET, TOP OF WING (L,R)	32-12-13
DOOR - SHOCK STRUT	1	2	734,744, MAIN WHEEL WELL (L,R)	32-12-06
DOOR - TRUNNION	1	2	735,745, MAIN WHEEL WELL (L,R)	32-12-11
LINK - LOWER TORSION	2	2	MAIN GEAR (L,R)	32-11-22
LINK - SIDE BRACE LOCK	2	2	MAIN WHEEL WELL (L,R), SIDE BRACE ASSEMBLY	32-11-08
LINK - UPPER TORSION	2	2	MAIN GEAR (L,R)	32-11-22
ROD - BRAKE	1	8	MAIN GEAR (L,R)	32-11-20
SEALS - SHOCK STRUT	2	12	MAIN GEAR SHOCK STRUT (L,R)	32-11-25
SPINDLE - DRAG BRACE LOWER	1	2	MAIN WHEEL WELL (L,R) DRAG BRACE ASSEMBLY	32-11-13
SPINDLE - DRAG BRACE UPPER	1	2	MAIN WHEEL WELL (L,R) DRAG BRACE ASSEMBLY	32-11-13
SPINDLE - JURY STRUT	1	2	MAIN WHEEL WELL (L,R) DRAG BRACE ASSEMBLY	32-11-16
SPINDLE - SIDE BRACE LOCK LINK	2	2	MAIN WHEEL WELL (L,R), SIDE BRACE ASSEMBLY	32-11-09
SPINDLE - SIDE BRACE LOWER	2	2	MAIN WHEEL WELL (L,R), SIDE BRACE ASSEMBLY	32-11-06
SPINDLE - SIDE BRACE UPPER	2	2	MAIN WHEEL WELL (L,R), SIDE BRACE ASSEMBLY	32-11-06
SPRING - JURY STRUT	1	6	MAIN WHEEL WELL (L,R), DRAG BRACE ASSEMBLY	32-32-05
SPRING - SIDE BRACE LOCK	2	4	MAIN WHEEL WELL (L,R), SIDE BRACE ASSEMBLY	32-32-03
STRUT - SHOCK	1	2	MAIN GEAR (L,R)	32-11-02
STRUT ASSEMBLY - JURY	1	2	MAIN WHEEL WELL (L,R). DRAG BRACE ASSEMBLY	32-11-15
TRUCK ASSEMBLY	1	2	MAIN GEAR (L,R)	32-11-18
WHEEL/TIRE ASSEMBLY	1	8	MAIN GEAR (L,R)	32-45-01

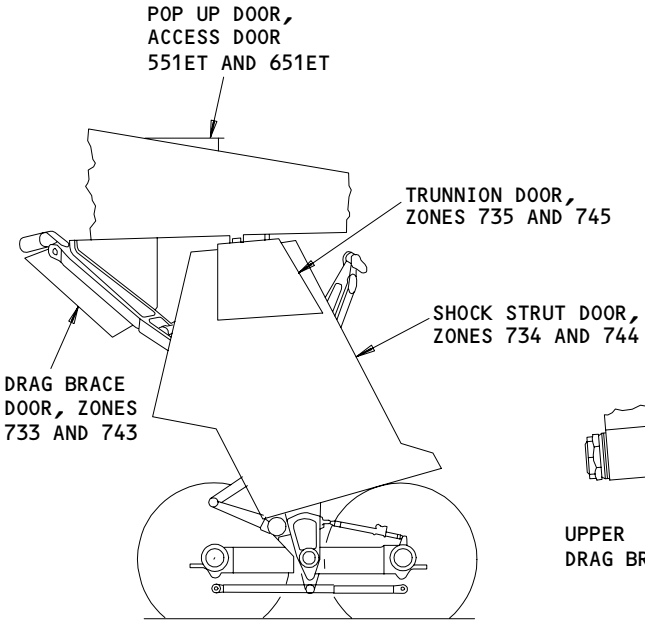
Main Landing Gear and Doors - Component Index
Figure 101





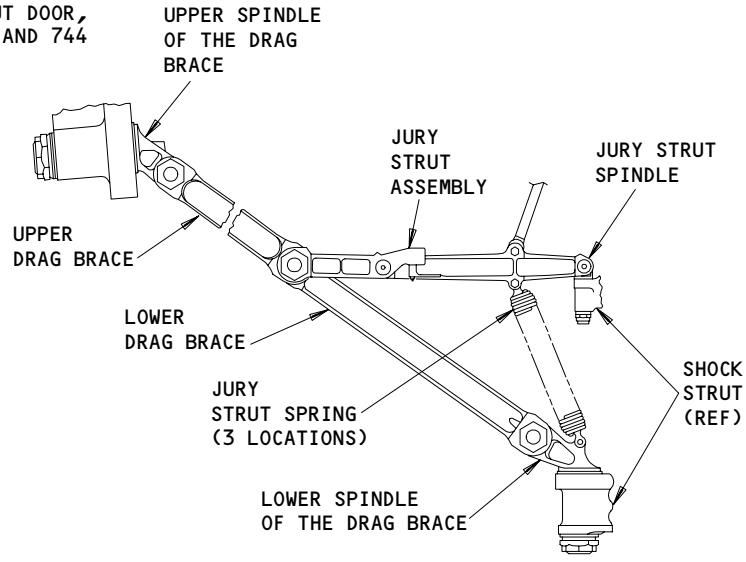
MAIN LANDING GEAR

A



DOORS

B

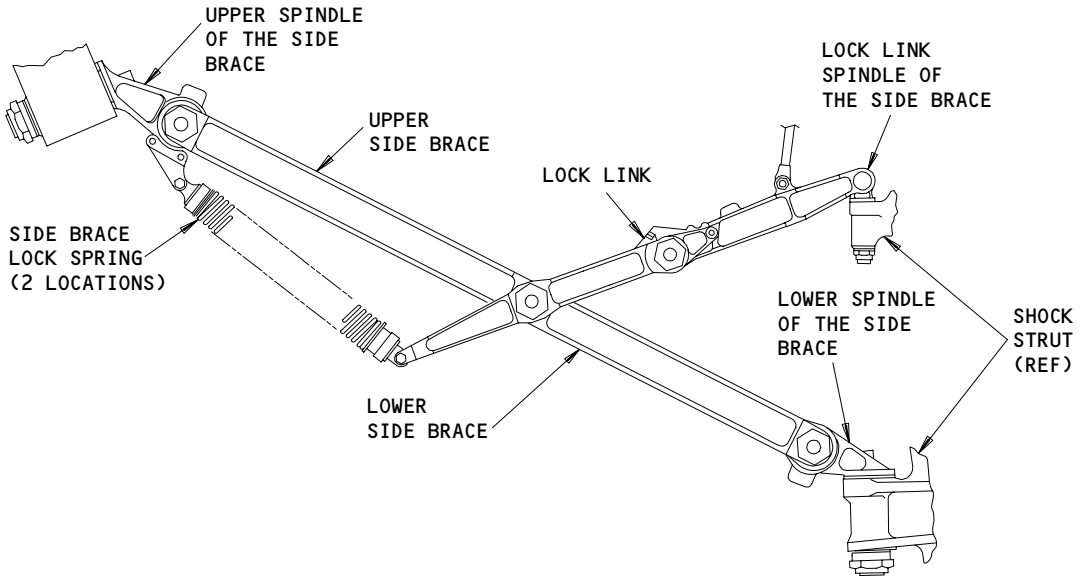


DRAG BRACE ASSEMBLY

C

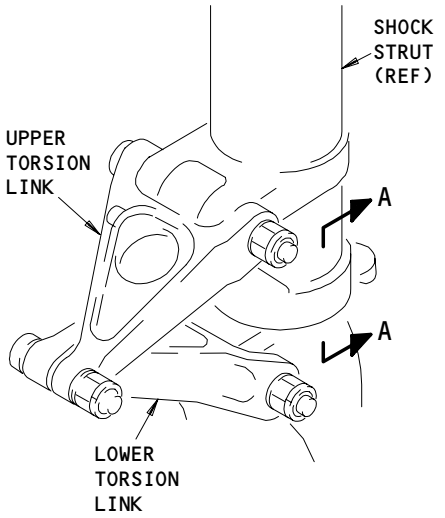
Main Landing Gear and Doors - Component Location
Figure 102 (Sheet 1)

94735



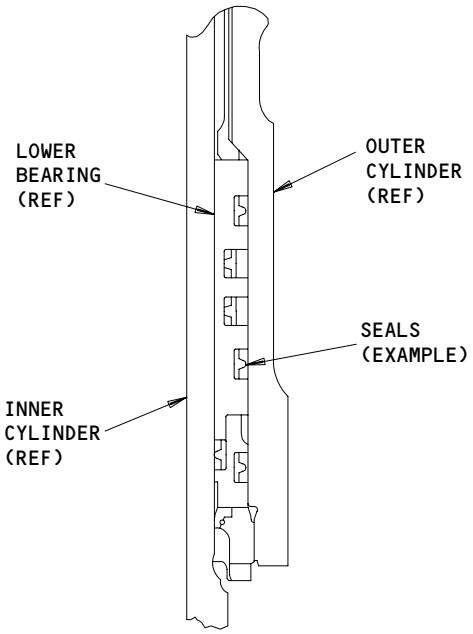
SIDE BRACE ASSEMBLY

D



TORSION LINK

E



SHOCK STRUT SEALS

A–A

Main Landing Gear and Doors – Component Location
Figure 102 (Sheet 2)

CORROSION PREVENTION IN MAIN GEAR AND DOORS-MAINTENANCES PRACTICES

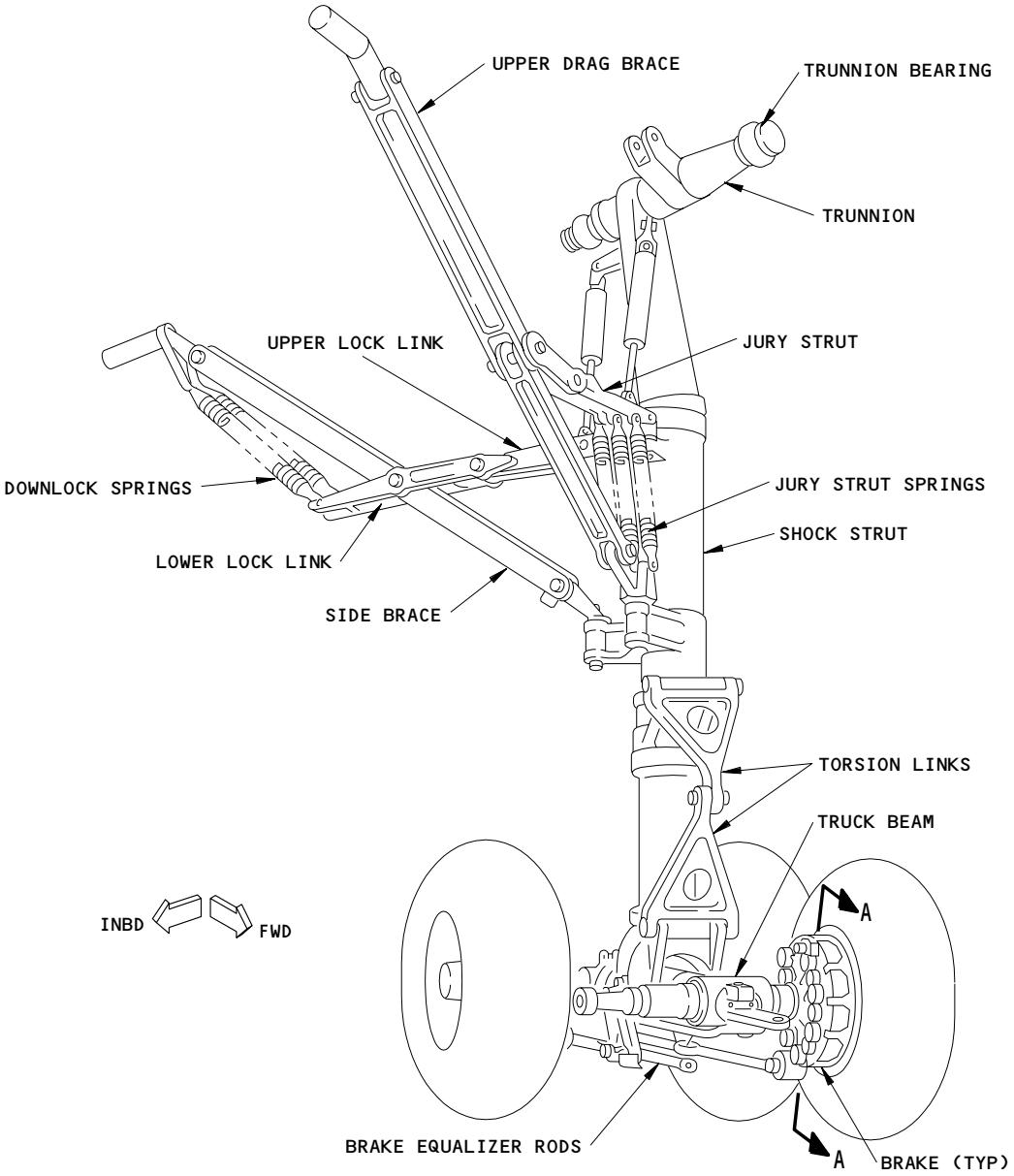
1. General
   A. The main gear provides the major support for the aircraft while on the ground. This includes shock struts, bogie axles, drag struts, doors, linkages, attach bolts, etc. The main landing gear is exposed to air contaminants and runway splash which can cause corrosion.
   B. H-11 bolts can get stress-corrosion cracks. When you remove H-11 bolts, replace them with Inconel 718 bolts, which do not get stress-corrosion cracks. Refer to SL 51-8 for further information.
   C. Corrosion can occur on the end faces of the forward trunnion.
   D. Corrosion can occur in the stainless steel reinforcement braid of hydraulic hoses, possibly because of chlorine and sulfur in the environment.

TASK 32-10-01-602-001

2. Corrosion Prevention
   A. References
      (1) AMM 51-24-09/701, Corrosion Inhibiting Compound-Cleaning/Painting
   B. Access
      (1) Location Zones

143/144	Main Landing Gear Wheel Well
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunion Doors

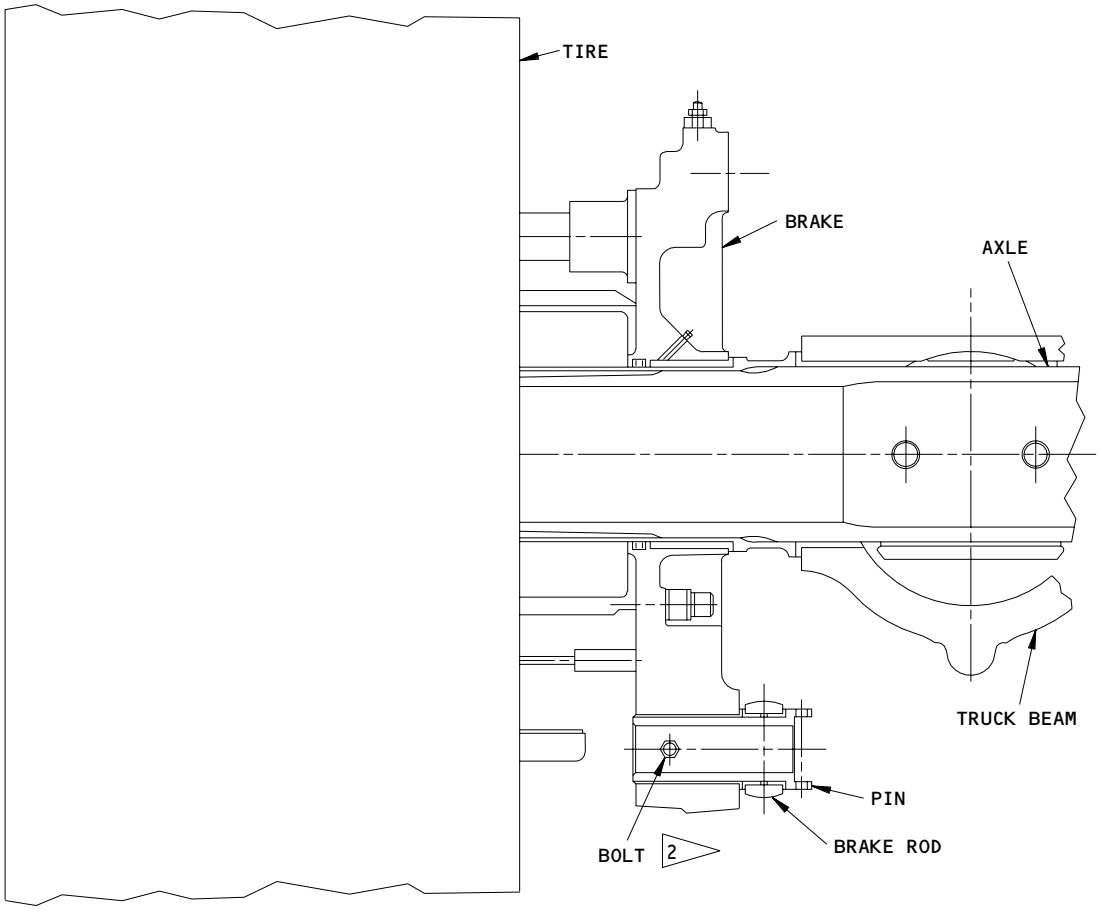
   C. General
      (1) Make periodic inspections to ensure that the protective finishes provided during manufacture remain intact. The preferred treatment for broken finishes is to replace the finish with the same protective system as used originally. Since in some cases it is impractical or impossible to use this approach between overhaul cycles, the treatment described in the following paragraphs is recommended.
      (2) Where corrosion has already started, refer to Structural Repair Manual for details of corrosion removal.
      (3) Apply BMS 3-23 water displacing corrosion inhibiting compound to damaged finish on exposed surfaces. Refer to AMM 51-24-09/701 for details of application of BMS 3-23.
      (4) After application of BMS 3-23, all grease fittings in the treated areas must be regreased.



MAIN LANDING GEAR 1

1 APPLY BMS 3-23 TO UNPAINTED HYDRAULIC TUBING AND DAMAGED FINISH. REAPPLY AFTER CLEANING WITH STEAM OR HIGH PRESSURE WATER AND DETERGENT. DO NOT APPLY BMS 3-23 TO GREASE FITTINGS, LUBRICATED SURFACES OR JOINTS, ELECTRICAL CONNECTIONS AND CONTACTS OR TEFLON BEARINGS.

Main Gear
Figure 201 (Sheet 1)



A-A

2 CRES BOLT PREFERRED SPARE TO STEEL BOLT
ON AIRPLANES PRIOR TO LINE 220

Main Gear
Figure 201 (Sheet 2)

(5) Improved Corrosion Protection
  (a) On airplanes line number 220 and on, bolts of corrosion-resistant steel replace the steel bolts between the brakes and the brake rods.
  (b) On airplanes line number 334 and on, More Chrome plating is added to the forward trunnion.

D. Precautions for Use of Corrosion Inhibiting Compound.

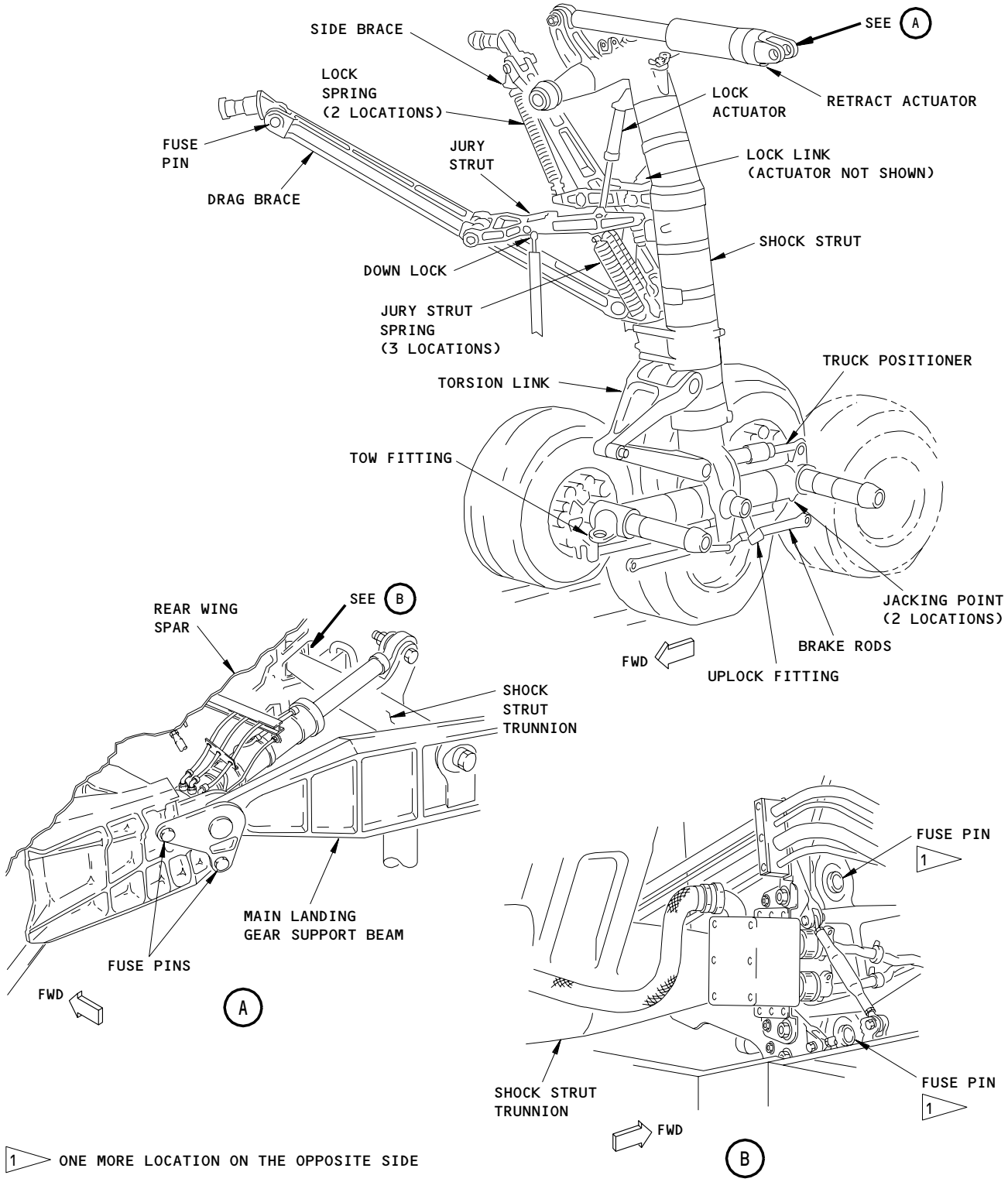
S 622-004

CAUTION: DO NOT APPLY BMS 3-23 TO AREAS WHICH WILL BE SUBSEQUENTLY PAINTED OR SEALED. OBSERVE PRECAUTIONS OF AMM 51-24-09/701 ABOUT SPRAYING CONTROL CABLES WITH BMS 3-23.

(1) Obey these precautions when using corrosion inhibiting compound.
  (a) Apply BMS 3-23 to unpainted hydraulic tubing in the area.
  (b) Shield or protect pulleys, wire bundles, etc., in some manner to prevent direct application of BMS 3-23.
  (c) Mask off electrical connectors to avoid application to any electrical contacts.
  (d) Protect oxygen systems, including fittings, from contamination in accordance with Chapter 35 of the Maintenance Manual.
  (e) Do not apply corrosion inhibiting compounds on grease joints or sealed bearings. These compounds dissolve grease and other Lubricants. They are penetrating compounds and can get around the seals and into the bearings.

MAIN GEAR - DESCRIPTION AND OPERATION

1. General
   A. The main gear shock strut absorbs impact loads, while the drag brace and side brace carry lateral loads and stabilize the gear. Each main gear has a four-wheeled truck with hydraulic brakes at each wheel. On the forward side of the gear, torsion links connect the shock strut inner and outer cylinders. Downlocks are inserted in the apex of the jury strut and lock link to lock the gear for servicing.
2. Component Details (Fig. 1)
   A. Truck
      (1) The main gear truck consists of axles, tow fittings, wheels, brakes, brake rods, and a truck positioner. Each truck has two axles and two tow fittings, mounted forward and aft of the truck beam. A jacking point is located beneath the center of each axle. Brakes are bearing mounted inside the wheels. Brake rods attach the brakes to the lower shock strut to prevent rotation. The truck positioner hydraulically tilts the truck during retraction to fit the truck into the wheel well. The up-lock fitting rests on the main gear door linkage when the gear is retracted.
   B. Shock Strut
      (1) The shock strut consists of an upper outer cylinder and lower inner cylinder. A trunnion arm extends across the top of the outer cylinder to mount the main gear between the wing rear spar and landing gear support beam. Attachment fittings on the trunnion mount the retract actuator piston end. The truck pivots about the inner cylinder lower end.
      (2) The inner cylinder slides within the outer cylinder around an air-oil mixture. Two active seals, one static and one dynamic, keep the mixture within the cylinders. Two sets of spare seals are stored in the shock strut to aid active seal replacement.
      (3) A tapered metering pin, attached to the top of the inner cylinder, divides the shock strut into an upper and lower chamber. During compression the metering pin adjusts the flow of oil from the lower chamber to the upper chamber. During extension a recoil valve restricts the flow of oil to the lower chamber and thus limits rebound of the shock strut.



Main Gear
Figure 1

C. Torsion Links
   (1) Torsion links are located on the forward side of the shock strut. Torsion links connect the inner and outer cylinders and prevent the cylinders from rotating within each other. An apex bolt connects the links to allow for vertical extension and compression of the shock strut during load absorption.

D. Drag Brace
   (1) The drag brace provides forward and aft support for the main gear. The drag brace consists of an upper and lower drag brace, upper and lower jury strut, jury strut springs, and drag brace lock actuator. The upper spindle attaches the upper drag brace to the airplane body. The lower spindle attaches the lower drag brace to to the shock strut outer cylinder. The upper jury strut is attached to the shock strut with a spindle. An apex bolt connects the upper and lower drag braces to the lower jury strut.
   (2) The main gear jury strut locks the main gear drag brace when the main gear is extended. Springs, extending from the underside of the jury strut to the lower shock strut, pull the jury strut into position as the gear is lowered. A downlock is inserted in the jury strut to secure the gear for servicing.

E. Side Brace
   (1) The side brace provides lateral support for the main gear. The side brace consists of an upper and lower side brace, upper and lower lock link, lock springs, and side brace lock actuator. The upper spindle attaches the upper side brace to the airplane body. The lower spindle attaches the lower side brace to the shock strut outer cylinder. The upper lock link is attached to the shock strut with a spindle. A pin connects the upper and lower side braces to the lower lock link.
   (2) The main gear lock link locks the main gear side brace when the gear is extended. Two springs extend from the upper end of the upper side brace to the outer end of the lower lock link. A lock actuator is positioned between the upper lock link and the shock strut outer cylinder. A downlock is inserted in the lock link apex to secure the gear for servicing.

F. Fuse Pins
   (1) The main gear and gear support beam are attached to the airplane wing structure at critical points by fuse pins. These fuse pins shear under extreme loads and provide a release of the gear to prevent major damage to wing structure and prevent rupturing of the fuel tanks.

(2) Five fuse pins attach the main gear to the rear wing spar. Four of these attach the shock strut trunnion into the forward trunnion bearing housing. The other attaches the upper end of the drag strut to a fitting on the rear spar. Two more fuse pins attach the outboard end of the main landing gear support beam to wing structure.

MAIN GEAR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the main landing gear. The second task installs the main landing gear. The left main landing gear is shown for each task. The tasks for the right main landing gear are equivalent.

TASK 32-11-01-004-001

2. Remove the Main Landing Gear
   A. General
      (1) There are two different procedures given to remove the main landing gear. One procedure uses jacks for the removal of the main landing gear. The other procedure uses an overhead sling to remove the main landing gear.
   B. Equipment
      (1) A32006-77 MLG Retract Actuator Sling
      (2) A32017-1 MLG Forward Trunnion Support Fuse Bolt Puller
      (3) A32026-60 MLG Trunnion Pin Removal/Installation Equipment
      (4) A32027-53 Retraction/Extension Landing Gear Actuator Pump
      (5) A32028-6 Shock Strut Retention Strap (2 straps are necessary)
      (6) A32031-5 MLG Truck Positioner Turnbuckle (Recommended)
      (7) A32031-4 MLG Truck Positioner Turnbuckle (Alternative) Make from A32031-1
      (8) A32032-65 MLG Removal/Installation Sling (A32032-39 Alternative)
      (9) A32032-64 MLG Jacking Equipment (Upgraded -52 kit that includes a new -68 tiny collar for IGW A/Ps)
      (10) A32095-1 Forward Trunnion Bearing Bolt Wrench
      (11) Fishpole Hoist (Commercially available)
      (12) Automotive type axle jacks (2 to 4 ton capacity) - commercially available
   C. References
      (1) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
      (2) AMM 07-11-01/201, Jacking Airplane
      (3) AMM 27-51-00/201, Trailing Edge Flap System
      (4) AMM 27-81-00/201, Leading Edge Slat System
      (5) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (6) AMM 32-00-15/201, Landing Gear Door Locks

(7) AMM 32-00-20/201, Landing Gear Downlocks
(8) AMM 32-11-01/601, Main Gear
(9) AMM 32-11-03/401, Main Gear Side Brace
(10) AMM 32-11-10/401, Main Gear Drag Brace
(11) AMM 32-12-06/401, Shock Strut Door and Linkage
(12) AMM 32-12-08/401, Drag Brace Door and Linkage
(13) AMM 32-12-11/401, Trunnion Door and Linkage
(14) AMM 32-32-02/401, Main Gear Lock Actuators
(15) AMM 32-32-05/401, Main Gear Jury Strut Spring
(16) AMM 32-32-18/401, Main Gear Truck Positioner

D. Access

(1) Location Zones

119	Main Equipment Center (Left and Right)
143/144	Main Landing Gear Wheel Well
211/212	Control Cabin
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo doors
735/745	MLG Trunnion Doors

(2) Access Panels

551FT/651FT	Landing Gear
551LT/651LT	Landing Gear Support Beam
551MT/651MT	Landing Gear Trunnion
551QB/651QB	Lower Wing Structure
551PT/651PT	Lower Wing Structure
551SB/651SB	Lower Wing Structure
551TB/651TB	Lower Wing Structure

E. Prepare to Remove the Main Landing Gear

S 484-140

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 484-141

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 864-004
(3) Extend the trailing edge flaps to 20 units. Set the trailing edge flap system to off (AMM 27-51-00/201).

S 864-005
(4) Set the leading edge slat system to off (AMM 27-81-00/201).

S 864-006
(5) Remove the pressure from the right and the center hydraulic systems and reservoirs (AMM 29-11-00/201).

S 864-007
(6) Make sure that this circuit breaker on the main power distribution panel, P6, is closed:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV

S 864-008
(7) Push the brake pedals a minimum of seven times to remove the pressure from the brake lines.

S 864-009
(8) Remove power from the cooling packs, open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
(a) 11N19, RIGHT PACK AUTO PWR
(b) 11N20, RIGHT PACK AUTO CONT
(c) 11N10, LEFT PACK AUTO PWR
(d) 11N11, LEFT PACK AUTO CONT
(e) 11R21, CARGO HEAT OVERRIDE FWD
(f) 11R22, CARGO HEAT OVERRIDE AFT

S 864-010
(9) Open these circuit breakers and attach DO-NOT-CLOSE tags for the removal of the left or right main landing gear:
(a) AIRPLANES WITH THE "LANDING GEAR POSITION AIR/GND SYS 2 ALT" CIRCUIT BREAKER INSTALLED AT PANEL GRID LOCATION 11C29; 11C29, LANDING GEAR POSITION AIR/GND SYS 2 ALT
(b) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(c) 11C31, LANDING GEAR ANTISKID 2-6
(d) 11C32, LANDING GEAR ANTISKID 3-7
(e) 11H15, FLT CONT SHUTOFF WING LEFT
(f) 11H16, FLT CONT SHUTOFF WING CTR
(g) 11H26, FLT CONT SHUTOFF WING RIGHT
(h) 11R30, RIGHT IND LTS 3

(i) 11U12, AUTOBRKS ANTISKID TEST/IND 1
(j) 11U15, AIR/GND SYS 1
(k) 11U16, BRAKE TEMP
(l) SAS 050-149, 155-999;
11U17, TIRE PRESS IND 1
(m) 11U18, ANTISKID 1-5
(n) 11U20, LANDING GEAR LEVER LOCK
(o) 11U21, AUTOBRKS ANTISKID TEST/IND 2
(p) 767-200 AIRPLANES;
11U23, POSITION AIR/GND SYS 2
(q) 767-300 AIRPLANES;
11U24, POSITION AIR/GND SYS 2
(r) 11U27, ANTISKID 4-8
(s) Open this circuit breaker on the main power distribution panel, P6, and attach a DO-NOT-CLOSE tag:
1) 6J21, F/O SEAT

S 864-011

(10) MTH 275-276 WITH SB 32-85 AND MTH 277-999, SAS 050-149, 155-999;
Open this circuit breaker on the APU external power panel, P34, and install a DO-NOT-CLOSE tag:
(a) 34M11, TIRE PRESS IND 2

S 864-015

WARNING: CLEAR THE AREA BELOW THE WING BEFORE YOU DEFLATE THE SHOCK STRUT. IF YOU DEFLATE ONE SHOCK STRUT THE WING TIP CAN MOVE DOWN AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(11) Deflate the shock strut of the main landing gear.
(a) Remove the cap for the air valve (14) from the top of the shock strut (21).

WARNING: LOOSEN THE OUTER NUT A MAXIMUM OF TWO TURNS. AIR PRESSURE CAN BLOW THE VALVE OUT AND CAUSE INJURY TO PERSONS.

(b) Loosen the outer nut (16) a maximum of two turns.

S 024-155
(12) Remove the bolts (30) to disconnect the upper junction box (6) from the brackets.

S 034-016
(13) Disconnect the two electrical connectors (26) from the forward side of the upper junction box (6).

S 024-160
(14) AIRPLANES WITH GROUND STRAP;
Disconnect the ground strap (27) at the junction box (6).

S 434-017
(15) Attach the wire harness (31) for the upper junction box to the trunnion (Fig. 402).

S 034-018
(16) Disconnect the 6 hydraulic lines from the outboard side of the upper shock strut.
(a) Put a cap on the hydraulic ports.
(b) Put a plug on the lines.
(c) Put a tag on the lines to make installation easier.
(d) Hold the lines out of the work area.

S 014-019
(17) Remove the truck positioner (AMM 32-32-18/401).

S 494-020
(18) Install the turnbuckle (118) for the truck positioner (Fig. 404).
(a) Put one of the rod ends of the turnbuckle (118) into a bracket for the truck positioner (121).
(b) Install the retaining pin (119) for the turnbuckle.
(c) Adjust the turnbuckle (118) until the other rod end attaches into the other bracket for the truck positioner (121).
(d) Install the other retaining pin for the turnbuckle (119).

S 034-021
(19) Disconnect the drag brace door (5) from the drag brace (AMM 32-12-08/401).

S 844-022
(20) Hold the door (5) out of the work area (Fig. 401).

S 014-023
(21) Remove the shock strut door (4) and the linkage (AMM 32-12-06/401).

S 014-024
(22) Remove the trunnion door (3) and the linkage from the shock strut (21) (AMM 32-12-11/401).

S 024-144
(23) Remove the applicable access panels (Table 401) (AMM 06-44-00/201):

TABLE 401

WHEN YOU REMOVE THE LEFT GEAR	WHEN YOU REMOVE THE RIGHT GEAR
551FT	651FT
551LT	651LT
551MT	651MT
551QB	651QB
551PT	651PT
551SB	651SB
551TB	651TB

S 034-027
(24) Remove the bolts (8, 12, and 22) to disconnect the chord (24).

S 034-028
(25) Remove the screws (17) to disconnect the seal (20).

S 034-029
(26) Remove the seal (20).

S 844-030
(27) If you use the jack assembly (131) do the steps that follow (Fig. 404):

NOTE: The jack assembly is part of the main landing gear removal/installation equipment.

WARNING: MAKE SURE THE STRUT IS FULLY DEPRESSURIZED BEFORE JACKING. FAILURE TO DO THIS CAN LET THE STRUT MOVE UNDER PRESSURE AND CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Install the jack equipment and lift the airplane until the wheels are above the ground 6.0 inches (AMM 07-11-01/201).
(b) Install the axle jacks under the truck assembly (120) for the main landing gear.
(c) Lift the truck assembly (120) until you can put the cart assembly under the truck wheels.
(d) Put the cart assembly under the truck wheels and remove the jacks.
(e) Install the jack assembly (131) on the torsion link for the shock strut (128) (Fig. 404).
(f) Disconnect and remove the bolt which holds the upper torsion link to the shock strut.
    1) Align the holes in the upper scissor of the jack assembly (131) and the outer cylinder of the shock strut (21).
    2) Install the upper retention bolt (129).
    3) Disconnect and remove the bolt which hold the lower torsion link to the shock strut.
    4) Align the holes in the lower scissor of the jack assembly (131) and the inner cylinder of the shock strut (130).
    5) Install the lower retention bolt (132).
(g) Lift the airplane 20 inches more.
(h) Use the jack assembly (131) to keep the wheels on the cart assembly.
(i) Do not let the shock strut fully extend.
(j) Lift the outer cylinder (21) with the jack assembly to remove the weight from the forward and aft trunnion bearings (1, 2).

S 844-031
(28) If you use the sling (138), do the steps that follow:

NOTE: The sling is part of the main landing gear removal/installation equipment.

(a) Install the two retention straps (116) on the torsion link of the shock strut (128) (Fig. 404).
    1) Make a loop with the retention straps (116) through the upper and lower hinges of the torsion link (128). Use one strap on each side of the torsion link.
    2) Move the end of each strap (116) through the slot in the buckle shaft (117).

3) Operate the buckle until the strap (116) is tight.

NOTE: Make sure each strap has a minimum of two loops around the shaft of the buckle before you apply a load.

(b) Lift the airplane until the wheels are 24 inches above the cart assembly (AMM 07-11-01/201).
(c) Make sure the retention straps (116) do not move.
(d) Install the sling (138) (Fig. 405).
1) Put the sling (138) around the outer cylinder (21).
a) Put the sling around the upper inboard area of the strut.
b) Move the two ends of the sling outboard of the trunnion to the hoist point.
2) Install the bolt to hold both ends of the sling (138) to the hoist point.
3) Attach the sling (138) and the hoist point to the overhead hoist.

S 014-032
(29) Disconnect the retract actuator (97) from the trunnion arm of the main landing gear (96) (Fig. 401, View A-A).
(a) Install the sling equipment for the retract actuator on the retract actuator (97) (Fig. 405, Detail A).
1) Put the support structure (139) on the wing structure.
2) Put the actuator clamp (134) on the retract actuator (97).
(b) Tighten the clamp nut (136) until the actuator clamp (134) is tight against the retract actuator (97).
1) Connect the cable of the fishpole hoist (137) to the support structure (139) and the clamp arm (133).
2) Tighten the cable (137).
(c) Do the steps that follow to disconnect the rod end of the retract actuator (97) from the trunnion arm (96).
1) Remove the antirotation bolt (93).
2) Remove the nut (94) and the spline washer (95).
3) Remove the bolt (98).
4) Use the sling equipment for the retract actuator to lift the retract actuator (97) away from the trunnion arm (96).

S 014-033
(30) Remove the lock actuators for the drag brace and the side brace (AMM 32-32-02/401).

S 014-034
(31) Remove the lock springs for the side brace (AMM 32-32-03/401).

S 014-035
(32) Remove the jury strut springs (AMM 32-32-05/401).

S 864-036

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE JURY STRUT. THE JURY STRUT WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(33) Push up on the jury strut to release it from the overcenter position.

S 034-037

(34) Disconnect the side brace and the lock link from the shock strut (AMM 32-11-03/401).

S 034-038

(35) Disconnect the drag brace and the jury strut from the shock strut (AMM 32-11-10/401).

S 034-039

(36) Remove the bolts (30) to disconnect the upper junction box (6) from the support bracket for the upper junction box (45) (Fig. 402).

S 034-040

(37) Remove the bolts (34 and 40) to disconnect the support bracket for the upper junction box (45) from the lower strap (33) (Fig. 402).

S 034-041

(38) Remove the bolts (51, 56, 61) to disconnect the lower strap (33) (Fig. 402, Detail A).

F. Remove the Main Landing Gear

S 864-042

(1) Lift the main landing gear until there is no weight on the forward and aft trunnion bearings (1, 2).

S 014-043

(2) Remove the lockbolts (86) from the clamp nut (84) (Fig. 403, Detail A).

S 014-044

(3) Remove the clamp nut (84), the splined washer (83), the lock ring (88), and the adjusting collar (87).

S 014-045

(4) Remove the crossbolt (75) from the aft trunnion (90).

S 014-046
(5) Do the steps that follow to remove the trunnion pin (85).
(a) Install the removal and installation equipment for the trunnion pin on the trunnion pin (85).

NOTE: If you do not install the stop assembly for the trunnion pin, the pin can go too far into the trunnion.

(b) Install the slide hammer on the puller assembly.
(c) Use the slide hammer to move the trunnion pin (85) out of the trunnion bearing (2) and into the trunnion (90). The end of the trunnion pin (85) must be aligned with the aft trunnion (90).
(d) Disconnect the slide hammer and the puller assembly from the trunnion pin (85).

S 844-047
(6) Move the aft end of the trunnion (90) approximately 15 degrees inboard.

S 014-048
(7) Remove the 2 retaining pins (107) from each of the 4 fuse pins (110).

S 494-049
(8) Use the bearing-fuse-bolt (pin) puller (123) to remove the fuse pins (110) from the housing assembly (66) and the supports (114, 115).
(a) Recommended procedure
1) Put the puller assembly (123) over the outer end of the fuse pin (110). The bolt will come out through the fuse pin (110).
2) Install the stop on the bolt of the puller assembly (123).
3) Install the spring pin into the stop to lock the stop into position on the bolt.
4) Put the wrench on the nut of the puller assembly.
5) Turn the nut on the fuse bolt until the bolt (110) is removed.
(b) Optional procedure.
1) Use this procedure if the hydraulic lines cause a problem with the installation of the puller assembly.
2) Put the wrenching surface of the jack screw (127) thru the fuse bolt (110) last.
3) Turn the plug (125) on the jack screw (127) until there is sufficient clearance to install the pad (126) on the jack screw.
4) Install the pad (126).
5) Use a wrench at the wrenching surface to turn the jack screw (127) counterclockwise. This will push the fuse bolt (110) out of the bearing housing.

6) Remove the jack screw assembly.

S 844-050

(9) Do these steps if you use jack equipment:
(a) Lower the shock strut until the shock strut is fully compressed.
(b) The housing assembly (66) and the plates (111, 113) will move out of the rear spar supports as the shock strut is lowered.

NOTE: Keep the shims (112) to make the new main landing gear installation easier.

(c) Remove the axle jacks and the adapters.
(d) Remove the jacking equipment (131) from the shock strut (21, 130).
(e) Install the retention straps (116) on the shock strut (21).
1) Make a loop with the retention straps (116) through the upper and lower hinges of the torsion link (128). Use one strap on each side of the torsion link.
2) Move the end of each strap through the slot in the buckle shaft (117).
3) Operate the buckle until the strap (116) is tight.

NOTE: Make sure each strap has a minimum of two loops around the shaft of the buckle before you apply a load.

S 844-051

(10) If you use the sling (138), do the steps that follow:
(a) Lower the shock strut (21) with the sling (138) on the wheel carts. The housing assembly (66) and the plates (111, 113) will move out of the rear spar supports when the main landing gear is lowered.

NOTE: Keep the shims (112) to make the main landing gear installation easier.

(b) Remove the sling (138).

S 014-052

(11) Remove the assembly for the forward trunnion bearing (1) from the main landing gear (Fig. 402, View B-B).
(a) Remove the bolts (72).
(b) Remove the retaining bolt (73).
(c) Move the assembly for the forward trunnion bearing (1) off of the forward trunnion (32).
(d) Examine the forward trunnion bearing (AMM 32-11-01/601).
(e) If you replace the forward trunnion bearings, do the steps that follow:
1) Remove the nut (67).

2) Remove the inner and outer races (69, 70) with the housing (68) from the housing assembly (66).
3) Move the bearings (69, 70) out of the housing (68).
4) Keep these parts for installation on the new main landing gear.

S 224-053
(12) Examine the aft trunnion bearings (AMM 32-11-01/601).

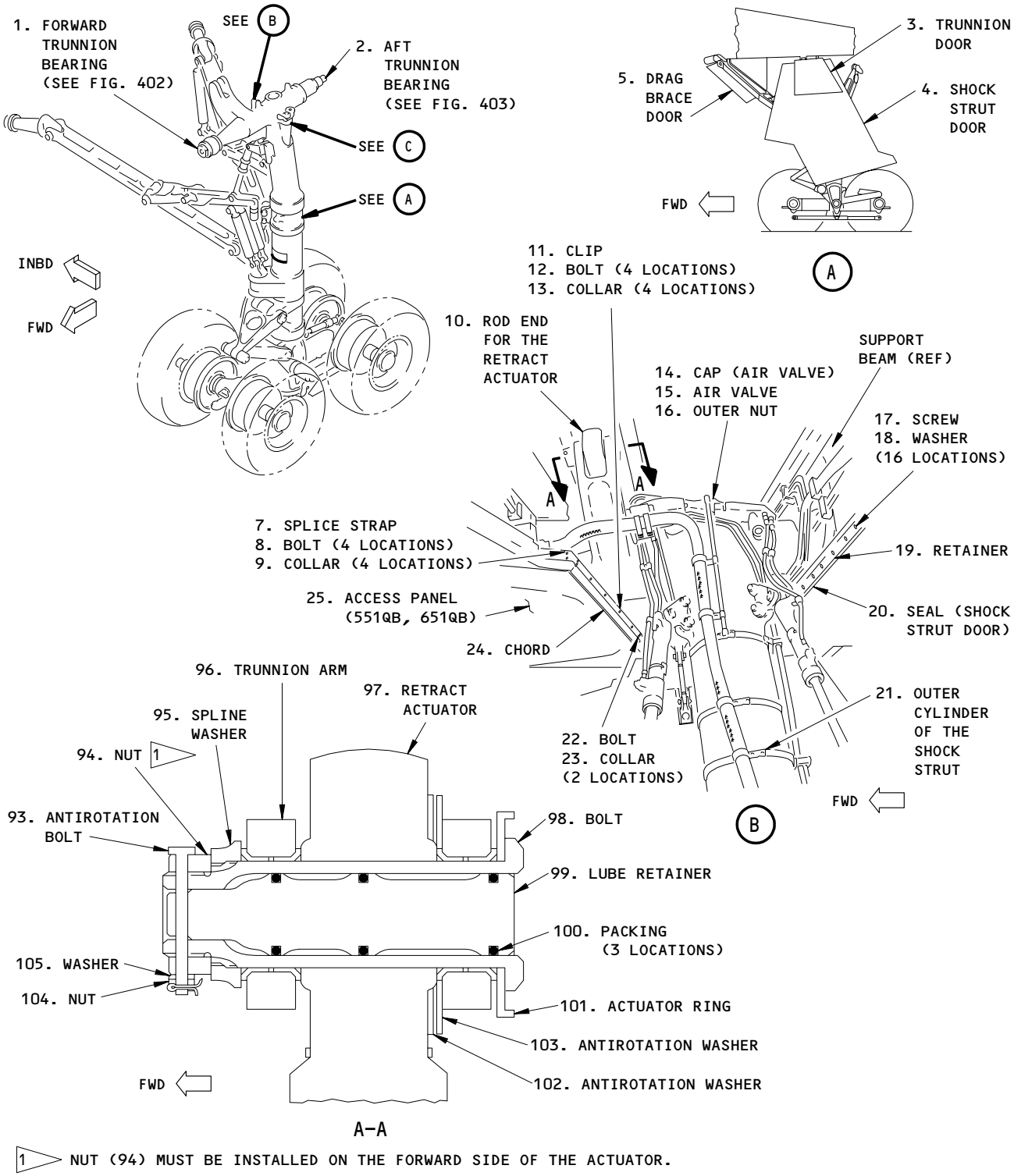
S 034-054
(13) If you replace the aft trunnion bearings (2), do the steps that follow (Fig. 403, View A-A):
(a) Remove the bolts (81) to disconnect the lock tab (80) from the lockplate (79).
(b) Remove the nut (89) from the housing for the aft bearing.
(c) Move the bearing inner and outer races (77, 78) forward, out of the support structure.

S 024-055
(14) Put the main landing gear on wheel carts and move away from the work area.

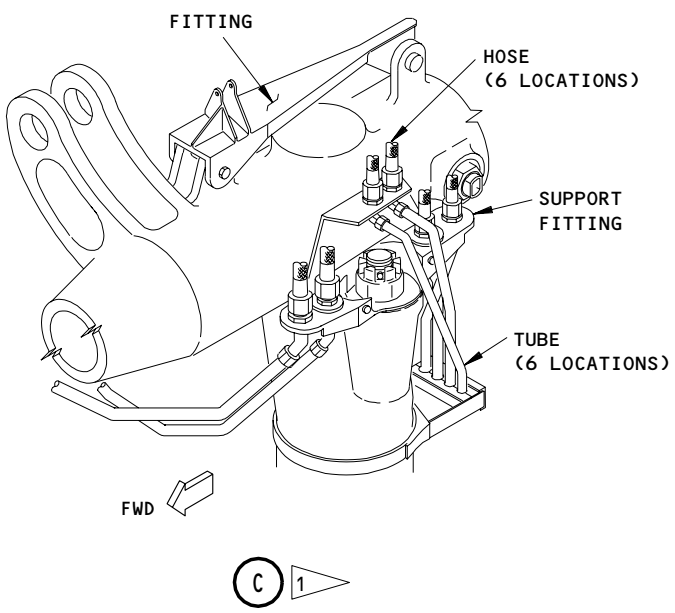
TASK 32-11-01-404-056
3. Install the Main Landing Gear (Fig. 401, Fig. 402, Fig. 403)

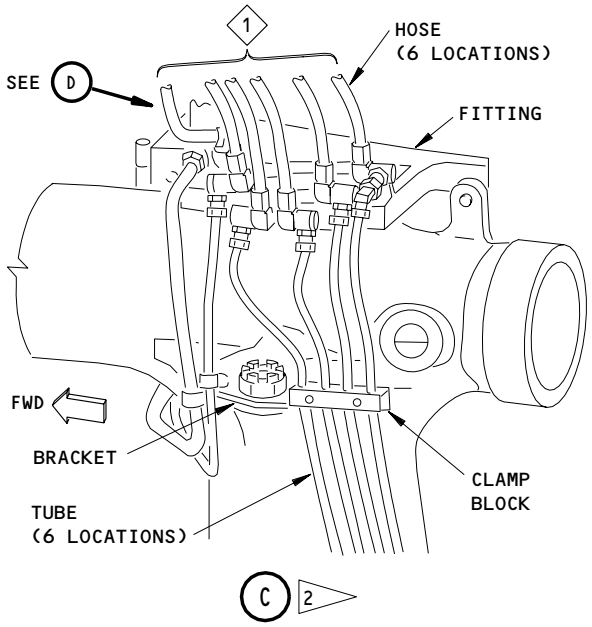
NOTE: Wear Limits for the main landing gear trunnions are supplied in AMM 32-11-01/601.

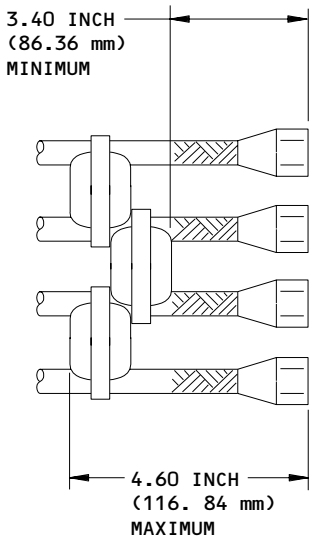
A. General
(1) There are two different procedures given to install the main landing gear. One procedure uses jacks to install the main landing gear. The other procedure uses an overhead sling to install the main landing gear.
B. Equipment
(1) A32006-77 MLG Retract Actuator Sling
(2) A32026-60 MLG Trunnion Pin Removal/Installation Equipment
(3) A32027-53 MLG Retraction/Extension Actuator Pump
(4) A32028-6 Shock Strut Retention Strap (2 straps are necessary)
(5) A32031-5 MLG Truck Positioner Turnbuckle (Recommended)
(6) A32031-4 MLG Truck Positioner Turnbuckle (Alternative) Make from A32031-1
(7) A32032-65 MLG Removal/Installation Sling (A32032-39 Alternative)
(8) A32032-64 MLG Jacking Equipment (Upgraded -52 kit that includes a new -68 tiny collar for IGW A/Ps)
(9) A32045-12, -34 Spanner Wrench

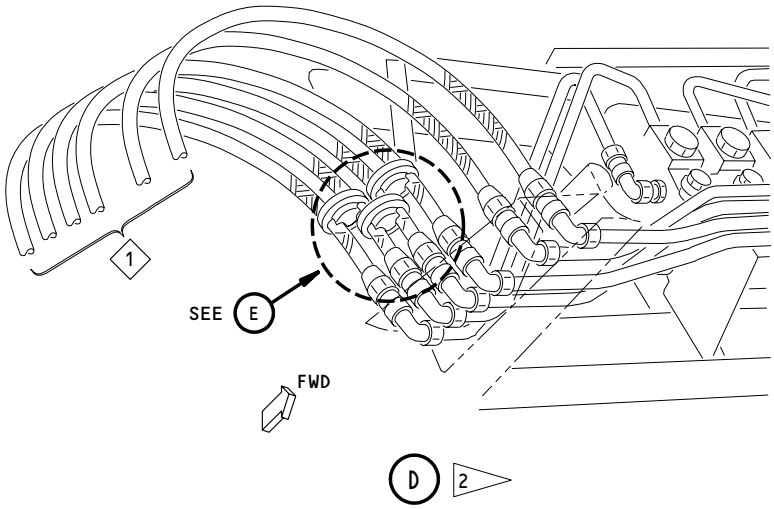


Main Gear Installation
Figure 401 (Sheet 1)



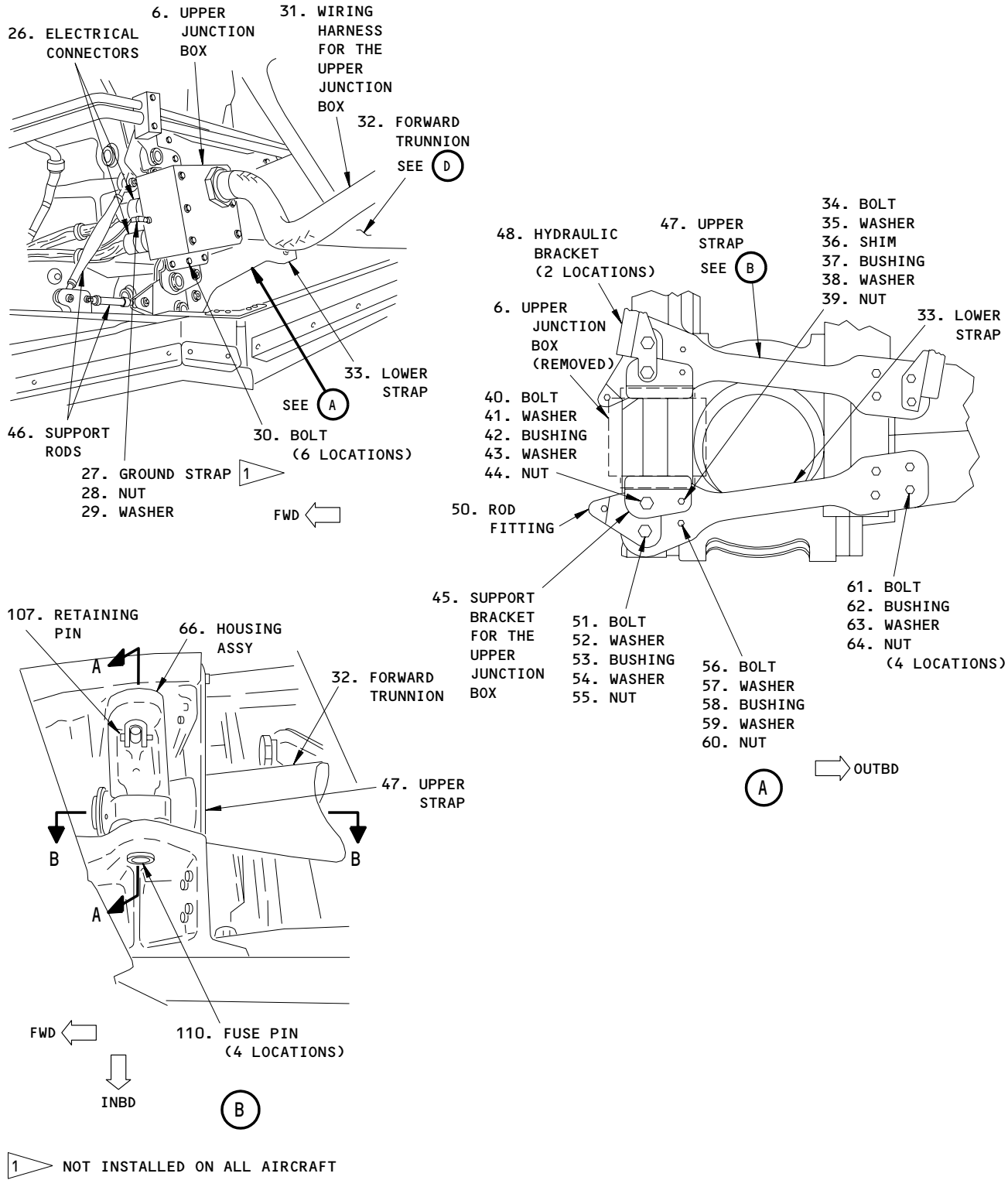




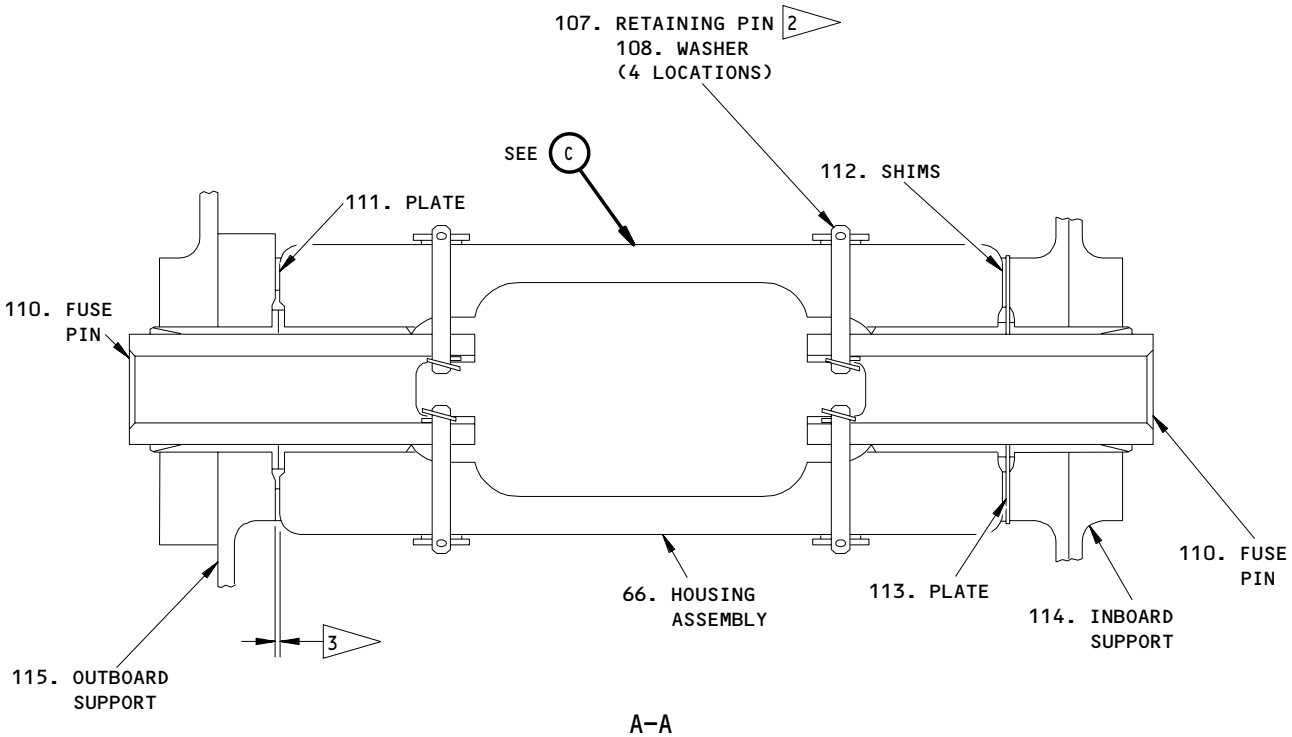


1 SHOCK STRUT WITHOUT HYDRAULIC HOSE SWIVEL CONNECTORS.
2 SHOCK STRUT WITH HYDRAULIC HOSE SWIVEL CONNECTORS.

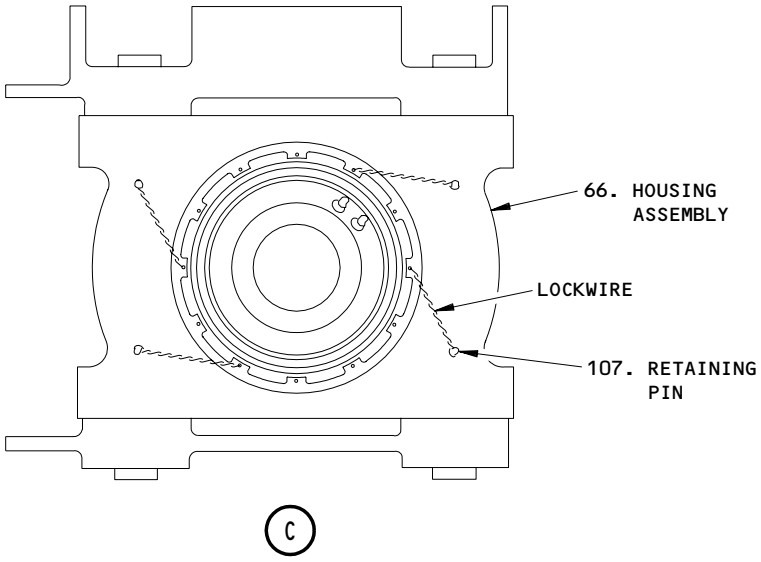
Main Gear Installation
Figure 401 (Sheet 2)



Installation of the Forward Trunnion Bearing
Figure 402 (Sheet 1)



A-A

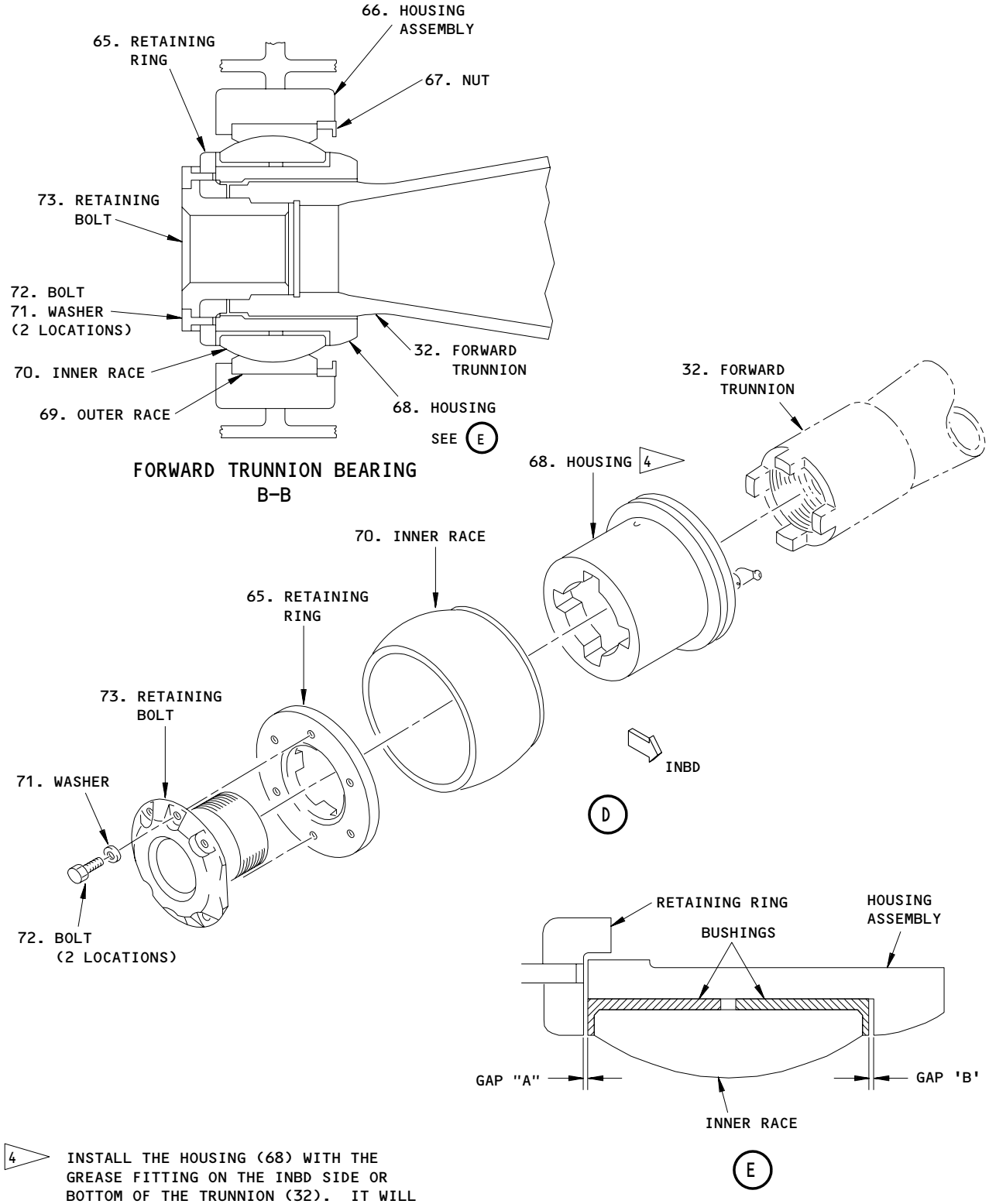


C

2 INSTALL THE LOCKWIRE

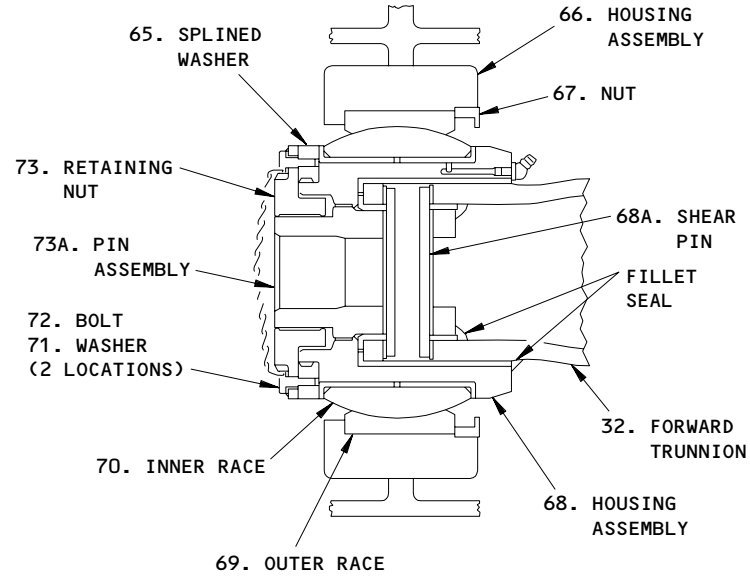
3 ADD OR REMOVE THE SHIMS (112) AT THE INBOARD SUPPORT. GET A MAXIMUM CLEARANCE OF 0.010 INCH BETWEEN THE PLATE (111) AND THE HOUSING ASSY OR THE OUTBOARD SUPPORT

Installation of the Forward Trunnion Bearing
Figure 402 (Sheet 2)

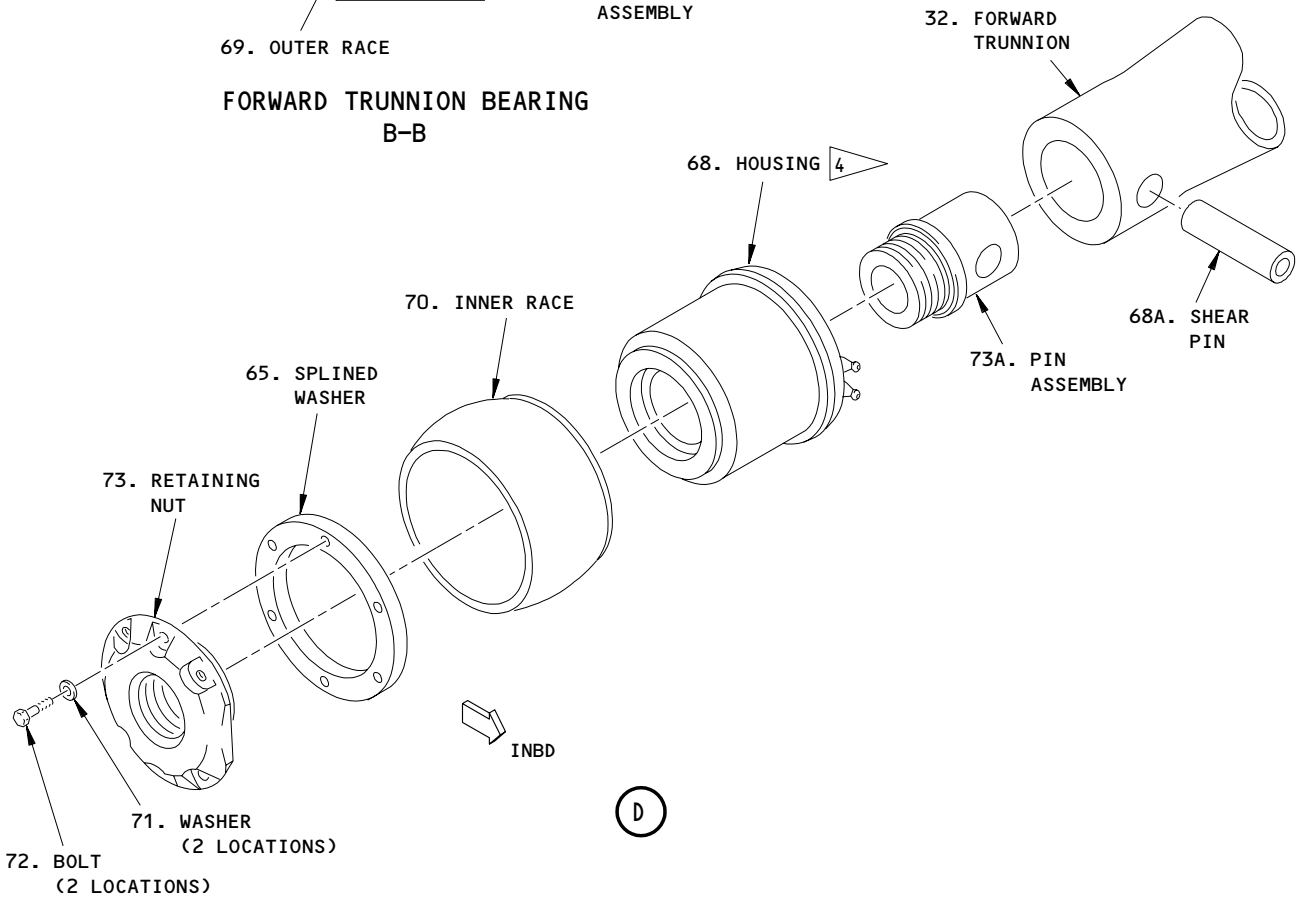


4 INSTALL THE HOUSING (68) WITH THE GREASE FITTING ON THE INBD SIDE OR BOTTOM OF THE TRUNNION (32). IT WILL MAKE THE LUBRICATION ACCESS EASIER.

Installation for the Forward Trunnion Bearing
Figure 402 (Sheet 3)

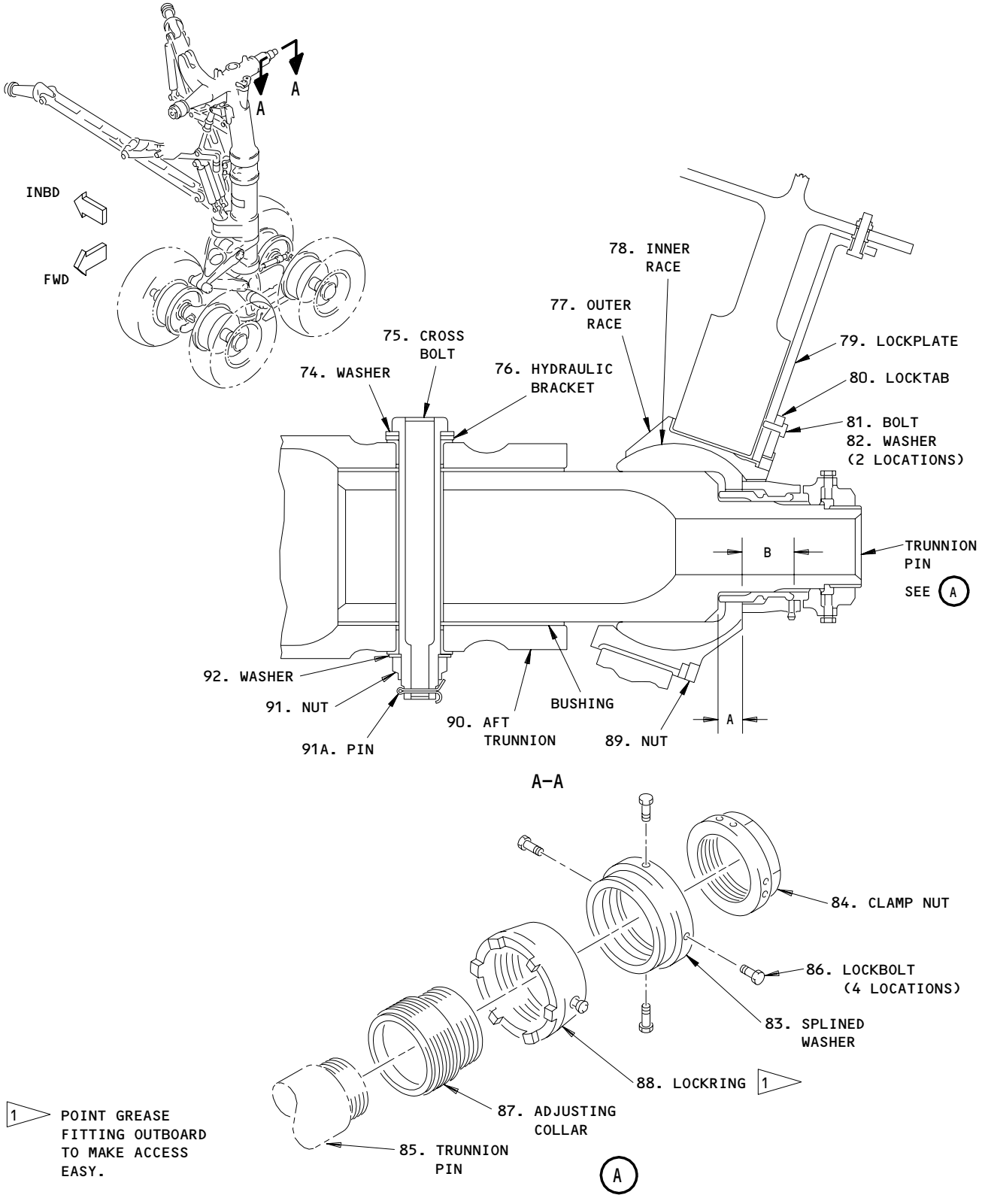


FORWARD TRUNNION BEARING
B-B

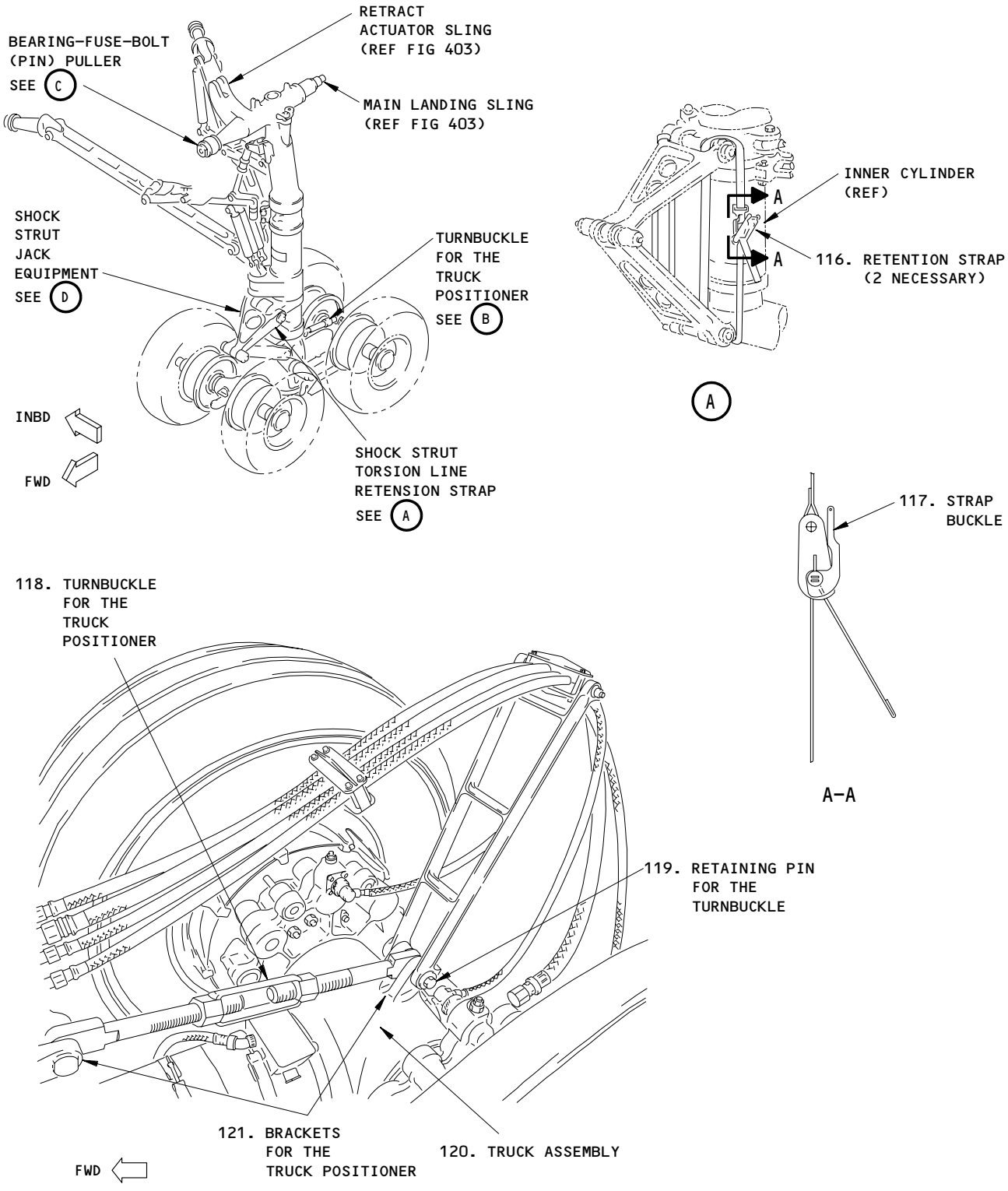


4 INSTALL THE HOUSING (68) WITH THE GREASE FITTING ON THE INBD SIDE OR BOTTOM OF THE TRUNNION (32). IT WILL MAKE THE LUBRICATION ACCESS EASIER.

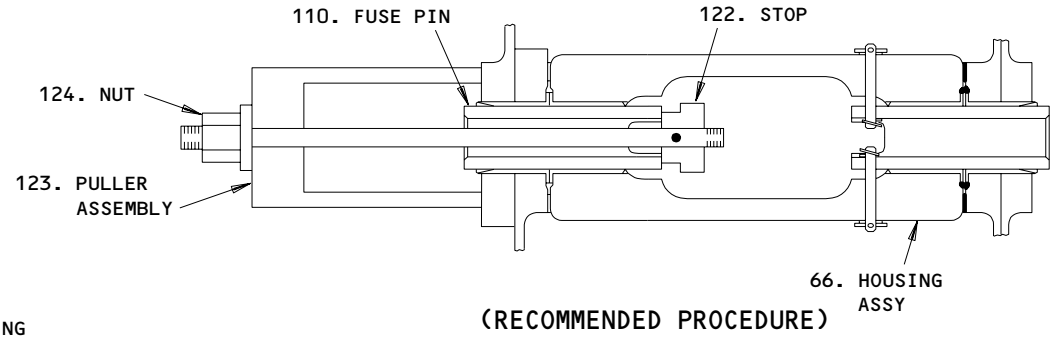
Installation for the Forward Trunnion Bearing
Figure 402 (Sheet 4)



Installation for the Aft Trunnion Bearing
Figure 403

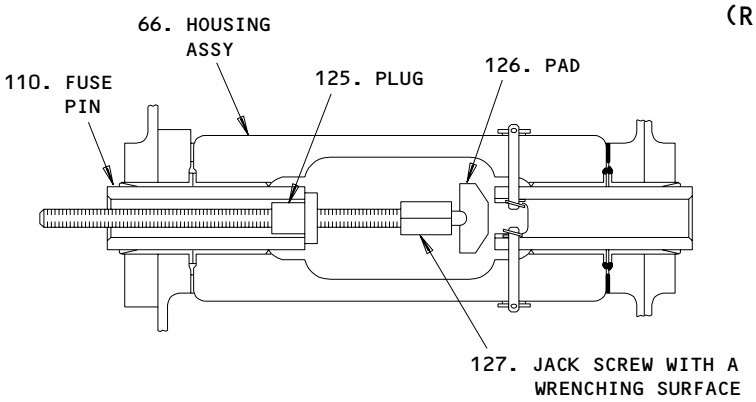


Special Tools for the Main Landing Gear Installation
Figure 404 (Sheet 1)



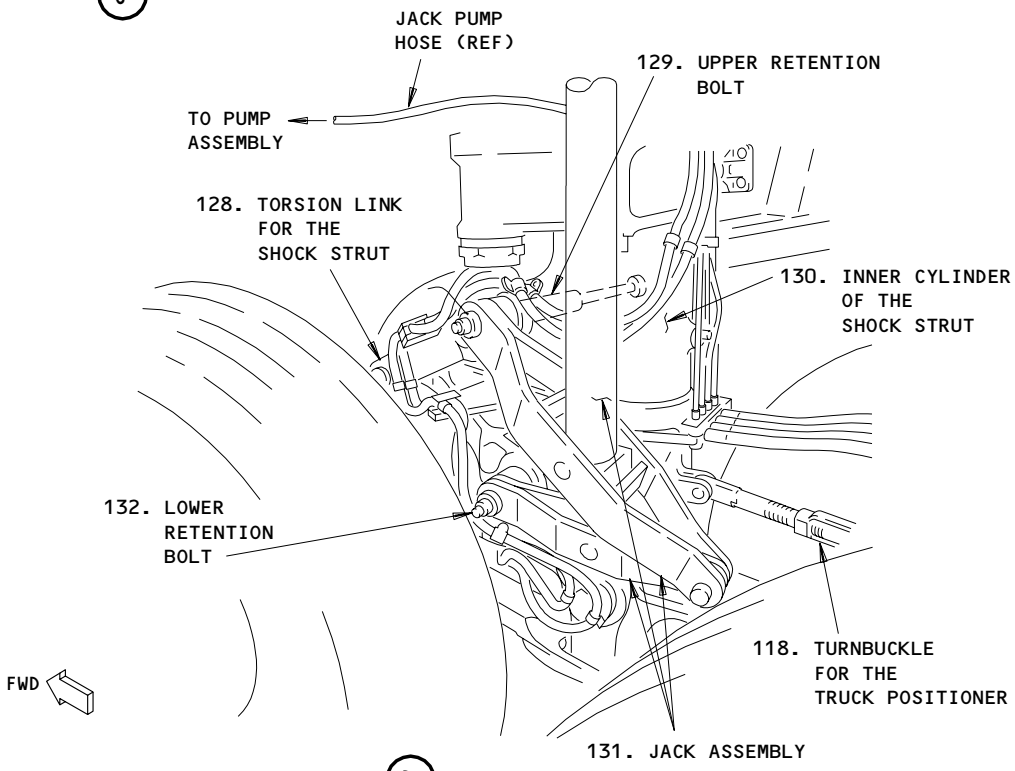
(RECOMMENDED PROCEDURE)

C



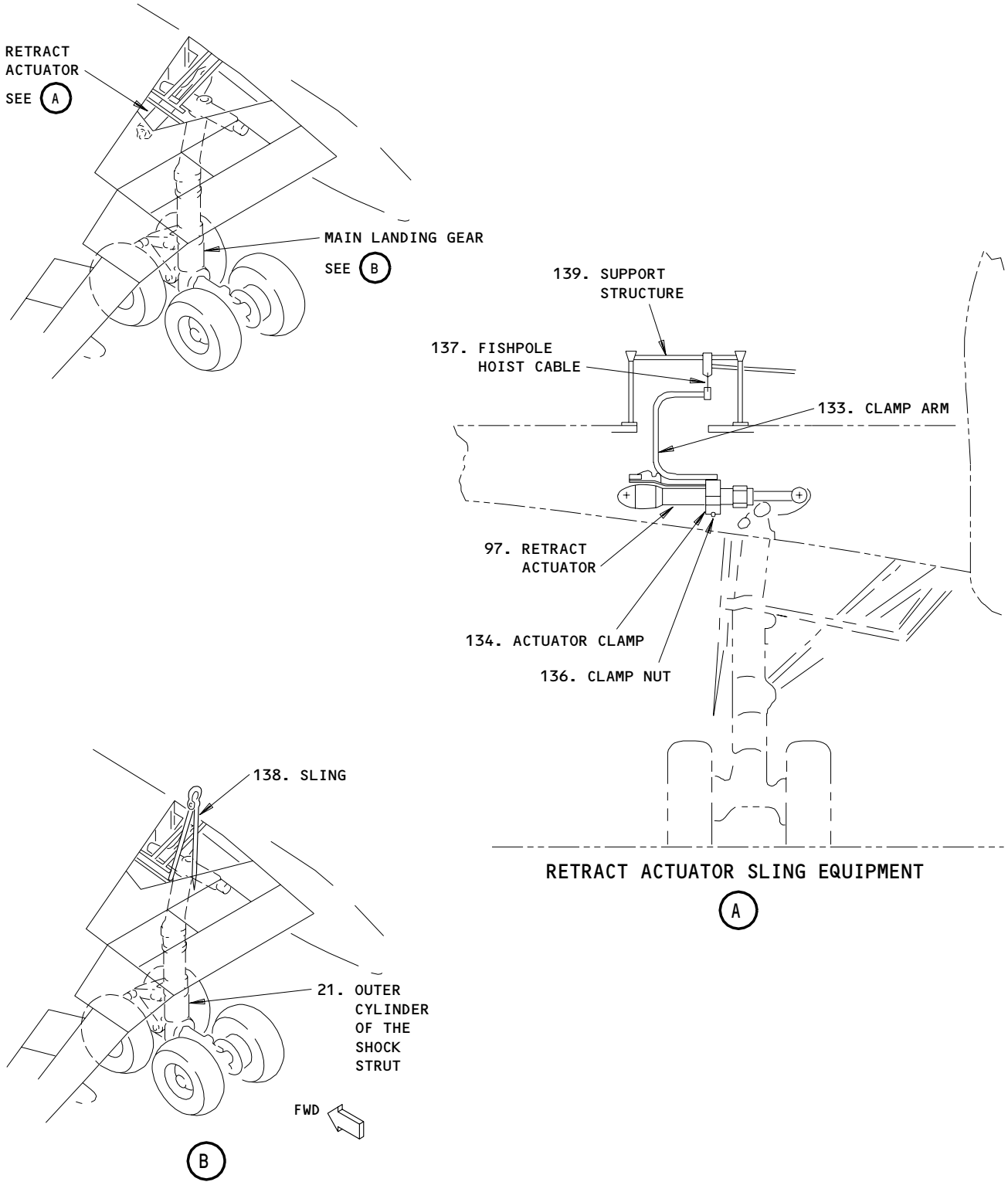
(OPTIONAL PROCEDURE)

C



D

Special Tools for the Main Landing Gear Installation
Figure 404 (Sheet 2)



Support Equipment for the Main Landing Gear Installation
Figure 405

(10) A32095-1 Forward Trunnion Bearing Bolt Wrench
(11) Fishpole Hoist (Commercially available)
(12) Automotive type axle jacks (2 to 4 ton capacity) - commercially available

C. Consumable Materials
(1) A00247 Sealant, Chromate - BMS 5-95
(2) D00633 Grease - BMS 3-33 (Recommended)
(3) D00013 Grease - MIL-G-23827 (Alternative)
(4) G50136 Corrosion Inhibiting Compound - BMS 3-38

D. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401 Thru 403	1A 2A	Main Landing Gear Wing Structure	32-00-00 57-00-00	01 01	1 1

E. References
(1) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
(2) AMM 07-11-01/201, Jacking Airplane
(3) AMM 12-15-01/301, Main Gear Shock Strut
(4) AMM 12-21-14/301, Main Gear and Actuating Mechanisms
(5) AMM 20-10-23/401, Standard Practices, Lockwire
(6) AMM 27-51-00/201, Trailing Edge Flap System
(7) AMM 27-62-00/501, Auto-Speedbrake Control System
(8) AMM 27-81-00/201, Leading Edge Slat System
(9) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(10) AMM 32-00-15/201, Landing Gear Door Locks
(11) AMM 32-00-20/201, Landing Gear Downlocks
(12) AMM 32-09-07/201, Main Gear Tilt Sensors
(13) AMM 32-11-01/601, Main Gear
(14) AMM 32-11-03/401, Main Gear Side Brace
(15) AMM 32-12-00/501, Main Landing Gear Doors
(16) AMM 32-12-06/401, Shock Strut Door and Linkage
(17) AMM 32-12-08/401, Drag Brace Door and Linkage
(18) AMM 32-12-11/401, Trunnion Door and Linkage
(19) AMM 32-32-00/501, Main Gear Extension and Retraction
(20) AMM 32-32-02/401, Main Gear Lock Actuators
(21) AMM 32-32-03/401, Main Gear Side Brace Lock Spring
(22) AMM 32-32-18/401, Main Gear Truck Positioner
(23) AMM 32-41-00/201, Hydraulic Brake System

(24) AMM 32-42-00/501, Antiskid/Autobrake System
(25) MTH 275-276 WITH SB 32-85 AND MTH 277-999, SAS 050-149, 155-999; AMM 32-45-00/501, Wheels and Tires
(26) AMM 32-46-00/501, Brake Temperature Monitoring System
(27) AMM 32-61-02/201, Main Gear Proximity Sensor

F. Access

(1) Location Zones

119	Main Equipment Center (Left and Right)
143/144	Main Landing Gear Wheel Well
211/212	Control Cabin
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo doors
735/745	MLG Trunnion Doors

(2) Access Panels

551FT/651FT	Landing Gear
551LT/651LT	Landing Gear Support Beam
551MT/651MT	Landing Gear Trunnion
551QB/651QB	Lower Wing Structure
551PT/651PT	Lower Wing Structure
551SB/651SB	Lower Wing Structure
551TB/651TB	Lower Wing Structure

G. Install the Main Landing Gear

S 494-057
(1) Make sure the turnbuckle (118) for the truck positioner is installed on the replacement main landing gear (Fig. 404).

S 414-058
(2) Install the forward trunnion bearing (1) on the new main landing gear (Fig. 402, View B-B).
(a) Apply grease to the outer race (69). Butter lubricate the bushing faces and the inside diameter of the inner race (70) with grease. Apply a thin layer of corrosion inhibiting compound to the full length of the inside diameter of the housing (68). Make sure you fill all gaps and fillet radius on the housing. Apply a thin layer of compound on the retaining bolt (73) to cover the threads and the outside diameter below the flange, to include the adjacent fillet radius and the flange face. Fill all gaps and fillet radius. Wipe off excess grease and compound after installation of the parts.
(b) If you install new inner and outer races (69, 70) do the steps that follow:
1) Move the inner and outer races (69, 70) into the housing (68).

2) Put the inner (70) and outer races (69, 70) with the housing (68) into the housing assembly (66).

NOTE: The grease fittings on the housing (68) must be on the inboard side of the trunnion (32).

3) Use the spanner wrench to install the nut (67).
a) Tighten the nut (67) to 95-120 pound-feet.
4) Install a lockwire on the nut.

S 424-143
(3) FORWARD TRUNNION WITHOUT SHEAR PIN;
To install the housing assembly (66) on the forward trunnion (32), Do the steps that follow (Fig. 402, View B-B):
(a) Apply a thin layer of compound on the inside diameter and the end part of the outside diameter of the trunnion (32). Make sure you apply it to the threads and thread reliefs.
(b) Put the forward trunnion bearing (1) on the forward trunnion. Use a grease pencil to put a mark on the forward trunnion (32) at the flange of the housing (68), to show if the bearing moves off the trunnion during installation.
(c) Apply a thin layer of compound to all the surfaces of the retaining ring (65). Include the four notches and the inside diameter of the six bolt holes.

CAUTION: MAKE SURE THE RETAINING RING TEETH ENGAGE WITH THE SLOTS OF THE HOUSING ASSEMBLY. IF THE RETAINING RING (65) IS NOT ENGAGED WITH THE HOUSING THE RETAINING BOLT WILL TURN AND BACK OUT OF THE FORWARD TRUNNION THREADS.

(d) Install the retaining ring (65).
(e) Install the retaining bolt (73).

CAUTION: MAKE SURE THE FORWARD BEARING HAS NOT MOVED OFF THE TRUNNION DURING INSTALLATION. IF THE BEARING HOUSING HAS MOVED DURING INSTALLATION, THIS CAN CAUSE DAMAGE TO THE HOUSING AND STRUCTURE WHEN THE LANDING GEAR IS RETRACTED.

(f) Use the bolt wrench for the forward trunnion bearing to tighten the retaining bolt (73) to 15-20 pound-feet. Loosen to align the lockbolts.
(g) Measure inner race/housing bushing gaps "A" and "B".
(h) If the sum of gap "A" and gap "B" is greater then 0.250 inch, then do the steps to install the retaining ring again.

NOTE: The retaining ring is not fully seated with the housing if the gap is greater then 0.250 inch.

(i) Apply a thin layer of compound to the bolts (72) and the washers (71).

(j) Install the bolts (72) and washers (71). Wipe off the excess compound after installation.
(k) Safety wire the bolts (72).

S 424-146
(4) FORWARD TRUNNION WITH SHEAR PIN;
To install the housing assembly (66) on the forward trunnion (32), Do the steps that follow (Fig. 402, View B-B):
(a) Apply a thin layer of compound (BMS 3-38) to the threads, thread reliefs, bushing surfaces and fay surfaces of the pin assembly (73A), splined washer (65), retaining nut (73), washer (71) bolt (72) and the bushing of the housing (68).

NOTE: Make sure that you apply sufficient compound to fill the gaps between the assembled parts.

(b) Apply a layer of compound (MIL-C-11796 Class3) on the last 0.50 inch of the inner circumference of the forward trunnion bushing.

NOTE: Make sure that you apply sufficient compound so that the compound forms a fillet seal when the pin assembly (73A) is installed.

(c) Put the pin assembly (73A) in the forward trunnion (32).
(d) Apply a thin layer of compound (BMS 3-38) to all surfaces of the shear pin (68A).
(e) Install the shear pin (68A) in the forward trunnion (32) and pin assembly (73A).
(f) Fill the inner diameter of the shear pin (68A) with compound (BMS 3-38) until the compound is faired to the outer surface of the forward trunnion (32).
(g) Install the splined washer (65) on the housing (68).
(h) Tighten the splined washer (65) to 10-20 pound-feet.
(i) Move the housing assembly (66) and housing (68) into position on the forward trunnion (32) on the inboard or bottom side of the trunnion.
(j) Install the retaining nut (73).
(k) Tighten the retaining nut (73) to 10-20 pound-feet.

NOTE: Loosen the nut, if necessary, to align with the holes of the splined washer (65).

(l) Install the washers (71) and bolts (72).
(m) Safety wire the bolts (72).
(n) Remove the excess compound around the circumference of the aft end of the housing (68).
(o) Apply a continuous bead of sealant (BMS 5-95) to make a fillet seal between the aft end of the housing (68) and the forward trunnion (32).

S 414-059

(5) To install the new aft trunnion bearings (2), do the steps that follow (Fig. 403, View A-A):
  (a) Put the inner and outer races (77, 78) into the support structure.
  (b) If it is not installed, install the lockplate (79) with the bolts, bushings, nuts, and washers.
  (c) Use the spanner wrench to tighten the nut (89) to 100-130 pound-feet.
  (d) Loosen the nut (89) to install the lock tab (80).
  (e) Install the bolts (81) and the washers (82) to connect the lock tab (80) to the lockplate (79).
  (f) Install a lockwire.

S 424-060

(6) Move the main landing gear into the wheel well and put in the approximate position.

S 424-061

(7) If you use the jack assembly (131) (Fig. 404), do the steps that follow:
  (a) Remove the retention straps (116) from the shock strut.
  (b) Install the jack assembly (131) on the torsion link (128).
    1) Remove the bolt that holds the torsion link (128) to the shock strut.
    2) Align the bolt hole of the scissor for the jack assembly (131) with the bolt hole for the shock strut (21).
    3) Install the bolt (129).
    4) Tighten the bolt.
    5) Disconnect and remove the bolt which holds the lower torsion link (128) to the shock strut (130).
    6) Align the bolt hole for the lower jack scissor assembly (131) with the bolt hole for the shock strut (130).
    7) Install the bolt (132).
    8) Tighten the bolt.
  (c) Put two automotive type jacks with adapters under the truck axles.
  (d) Lift the truck until the wheels are above the ground.
  (e) Put the wheel carts under the wheels.
  (f) Lower the truck and remove the axle jacks and adapters.

S 494-062

(8) If you use the overhead sling (138), make sure the shock strut retention straps (116) are installed.
  (a) Put the sling (138) around the shock strut (21) from the outboard side.
  (b) Connect both ends of the sling to the overhead hoist (Fig. 405).

(c) Install the bolt to hold both ends of the sling (138) to the hoist point.
(d) Attach the sling (138) hoist point to the overhead hoist.

S 864-063
(9) Turn the aft end of the trunnion 15 degrees inboard to permit clearance for the main landing gear from the airplane structure.

S 644-064
(10) Apply sealant between the bearing plates (111 and 113) and the supports (114, 115).

S 644-065
(11) Apply grease between the shims (112) and the inboard support (114) (Fig. 402, View A-A).

NOTE: You can use the shims from the removed main landing gear to make it easier to get the correct clearance (View A-A).

S 864-066
(12) Lift the outer cylinder (21) while you put the housing assembly (66), the plates (111 and 113), and the shims (112) into the support for the rear spar (Fig. 402, View A-A).

S 644-067

WARNING: INSTALL THE CORRECT FUSE PINS ONLY. MAKE SURE THAT YOU INSTALL THE SAME TYPE OF FUSE PIN THAT YOU REMOVED. THE INCORRECT FUSE PIN CAN CAUSE DANGEROUS CONDITIONS.

(13) Apply grease to the fuse pins (110).

S 434-068
(14) Install these parts to connect the housing assembly (66) to the inboard and outboard supports (114, 115) (Fig. 402, View A-A):
(a) Fuse pins (110).
(b) Retaining pins (107).
(c) Washers (108)

S 414-069
(15) Install the lockwire to the retaining pins (107) (Fig. 402).

NOTE: Lockwire installtion can be found: AMM 20-10-23/401.

S 864-070
(16) Turn the aft end of the trunnion outboard to align the trunnion with the aft bearing (2).

S 624-071
(17) Apply a thin layer of BMS 3-38 Corrosion Inhibiting Compound to the outside diameter of the trunnion pin (85). Make sure it covers approximately 8.5 inches from the large (forward) end of the pin.

NOTE: If the compound makes it difficult for you to install the trunnion pin, you can apply a thin layer of grease (BMS 3-33) on the trunnion pin. After installation you will then need to lubricate the pin with compound.

S 864-072
(18) Use the trunnion pin equipment to pull the trunnion pin (85) from trunnion (90) through the aft bearing (2) (Fig. 403).

S 624-073
(19) Apply a thin layer of BMS 3-38 Corrosion Inhibiting Compound to the shank, threads and thread relief of the cross bolt (75), and to the bushing faces and faces of the washers (74 and 92).

S 414-074
(20) Install the crossbolt (75) for the trunnion pin, the washers (74 and 92), and the nut (91). Torque the nut (91) to 90-120 pound-feet.

S 414-075
(21) Install the cotter pin (91A).

S 644-147
(22) If you used grease on the trunnion pin (85) then lubricate the aft trunnion pin with compound (BMS 3-38) at the lube fitting (AMM 12-21-14/301).

S 034-076
(23) Remove the excess Corrosion Inhibiting Compound from the aft trunnion area.

S 824-077
(24) Adjust the aft bearing.
(a) Measure the dimension A between the shoulder (85) of the trunnion pin and the face of the bearing (78). Write down the dimension for later use.
(b) Turn the adjusting collar (87) on the trunnion pin (85) until the collar (87) touches the shoulder (85) of the trunnion pin.

NOTE: You can use a strap wrench if necessary.

(c) Measure the dimension B between the bearing face and the end of the adjusting collar. If the dimension A plus the dimension B is greater than 2.75 inches, the adjusting collar (87) is not correctly installed. Repeat the step above to install the adjusting collar (87).
1) If you cannot install the adjusting collar (87) correctly, remove the dry lubricant and use the procedure in SB 32-38.

(d) Move the lock ring (88) over the splines on the adjusting collar (87). Make sure the lugs in the lock ring (88) engage the slots in the bearing (78).

NOTE: It is recommended that the grease fitting on the lock ring (88) point outboard to permit the easiest access for lubrication.

(e) Install the washer (83) and the clamp nut (84).
(f) Tighten the nut (84) to 10-20 pound-feet. Loosen the nut to align the locking holes. Get a clearance of 0.003-0.010 inches.
(g) Fill all holes with grease.

NOTE: The clearance between the washer (83) and the lockring (88) is for the adjustment (Fig. 403, View A-A). After the main landing gear is operated and/or the jacks are removed a clearance of 0.00-0.05 inches is permitted.

(h) Install the lockbolts (86).
(i) Install the lockwires on the the lockbolts (86).

S 434-078

(25) Install these parts to connect the outboard end of the lower strap (33) to the housing assembly (Fig. 402, Detail A):
(a) Bolts (61)
(b) Bushings (62)
(c) Washers (63)
(d) Nuts (64)

S 414-079

(26) Install these parts to connect the rod fitting, the lower strap (33) and the support bracket (45) to the housing assembly (66):
(a) Bolts (34, 40)
(b) Washers (35, 38, 41, 43)
(c) Bushings (37, 42)
(d) Nuts (39, 44)

S 414-080
(27) Do these steps to connect the upper junction box (6) to the brackets:
(a) Clean the faying surfaces.
(b) Install the bolts (30) to connect the upper junction box (6) to the brackets.
(c) Bond, and apply a fillet seal between the junction box (6) and the brackets (SWPM 20-20-00).
(d) Measure the resistance to make sure that the resistance across the interface is a maximum of 0.010 ohms.

S 424-158
(28) AIRPLANES WITH GROUND STRAP;
Do these steps to connect the ground strap (27) to the junction box (6):
(a) Connect the ground strap to the grounding stud on the junction box (6) (SWPM 20-20-00).
(b) Measure the resistance to make sure that the maximum resistance between ground studs is 0.005 ohm.

S 434-081
(29) Connect the electrical connectors to the upper junction box (6).

S 434-082
(30) Connect the six hydraulic lines to the upper shock strut on the outboard side of the shock strut.

S 414-083
(31) Install these parts to connect the door seal (20) and the retainer (19) of the shock strut to the support beam (Fig. 401):
(a) Screws (17)
(b) Washers (18)

S 414-084
(32) Install the parts to connect the chord (24) to the outboard structure (Fig. 401, Detail B):
(a) Bolts (22)
(b) Nuts (23)

S 414-085
(33) Install these parts to connect the chord (24) to the inboard bracket:
(a) Clip (11)
(b) Splice Strap (7)
(c) Bolts (8, 12)
(d) Collars (9, 13)

S 844-086
(34) If you use the jack equipment, do these steps:
(a) Lower the truck until the wheels touch the ground.

(b) Remove the automotive type jacks and the adapters from below the truck axles.

S 864-087

(35) Use the jack equipment (131) to lower the outer cylinder (21).

S 094-088

(36) Remove the jacking equipment (131) from the shock strut (21, 130) (Fig. 404).
(a) Remove the bolts (129, 132) which hold the jack assembly (131) to the shock strut (21, 130).
(b) Install the bolts to hold the torsion link (128) to the shock strut (21, 130) and tighten.

S 844-089

(37) If you use the overhead sling (138), do these steps:
(a) Remove the overhead sling (138).

(b) Remove the shock strut retention straps (116).

H. Put the Airplane Back to Its Usual Condition (Fig. 401)

S 614-163

(1) Do the servicing of the shock strut for the main landing gear (AMM 12-15-01/301).

S 584-090

(2) Lift the airplane to extend the shock strut fully (AMM 07-11-01/201).

S 414-092

(3) Connect the drag brace and the jury strut to the shock strut (AMM 32-11-10/401).

S 414-093

(4) Connect the side brace and the lock link to the shock strut (AMM 32-11-03/401).

S 414-094

(5) Install the jury strut springs (AMM 32-32-05/401) and the side brace springs (AMM 32-32-03/401).

S 414-095

(6) Connect the rod end of the retract actuator to the main landing gear trunnion (Fig. 401, View A-A).

(a) Install the actuator sling equipment for the retract actuator on the retract actuator (97) (Fig. 405, Detail A).
1) Put the support structure (139) on the wing structure.
2) Put the actuator clamp (134) on the retract actuator (97).

(b) Tighten the clamp nut (136) until the actuator clamp (134) is tight against the retract actuator (97).
1) Connect the cable of the fishpole hoist (137) to the support structure (139) and the clamp arm (133).
2) Tighten the cable (137).

(c) Apply grease to the bolt (98), the nut (94), and the antirotation bolt (93) before installation.

(d) Install the new packings (100) on the lube retainer (99).

(e) Use the actuator sling equipment to lower the actuator to align the rod end with the lugs on the trunnion.

NOTE: Put the rod end of the actuator in position so the lube fittings are above the center line of the actuator. This will make sure you can get access to the fittings easily.

(f) Install the bolt (98) and the lube retainer (99) through these components in the sequnce below:
1) The actuator ring (101)
2) The antirotation washers (102, 103)
3) The retract actuator (97)
4) The spline washer (95)
5) And the nut (94).

(g) Tighten the nut (94) to 70-90 pound-feet. Loosen the nut to the subsequent lock position (Fig 401, View A-A).

(h) Install the antirotation bolt (93), the washer (105), the nut (104), and the cotter pin.

(i) Remove the tool (133, 134) and the support frame (139) from the area (Fig. 405).

S 414-096

(7) Install the lock actuators for the drag and side brace (AMM 32-32-02/401).

S 494-097

(8) Make sure the pressure is removed from the hydraulic systems (AMM 29-11-00/201).

S 434-098

(9) Connect the hydraulic lines to the actuators.

S 414-099
(10) Connect the door for the drag brace (5) to the drag brace (AMM 32-12-08/401).

S 414-100
(11) Install the door (4) and linkage for the shock strut (AMM 32-12-06/401).

S 414-101
(12) Install the door (3) and linkage for the trunnion (AMM 32-12-11/401).

S 094-102
(13) Remove the turnbuckle (118) for the truck positioner.

S 414-103
(14) Install the truck positioner (AMM 32-32-18/401).

S 864-104
(15) Close these circuit breakers on the overhead circuit breaker panel P11:
(a) AIRPLANES WITH THE "LANDING GEAR POSITION AIR/GND SYS 2 ALT" CIRCUIT BREAKER INSTALLED AT PANEL GRID LOCATION 11C29;
11C29, LANDING GEAR POSITION AIR/GND SYS 2 ALT
(b) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(c) 11C31, LANDING GEAR ANTISKID 2-6
(d) 11C32, LANDING GEAR ANTISKID 3-7
(e) 11H15, FLT CONT SHUTOFF WING LEFT
(f) 11H16, FLT CONT SHUTOFF WING CTR
(g) 11H26, FLT CONT SHUTOFF WING RIGHT
(h) 11R30, RIGHT IND LTS 3
(i) 11U12, AUTOBRKS ANTISKID TEST/IND 1
(j) 11U15, AIR/GND SYS 1
(k) 11U16, BRAKE TEMP
(l) SAS 275-276 POST SB 32-85;
SAS 277-281, 050-149, 155-167;
11U17, TIRE PRESS IND 1
(m) 11U18, ANTISKID 1-5
(n) 11U20, LANDING GEAR LEVER LOCK
(o) 11U21, AUTOBRKS ANTISKID TEST/IND 2
(p) 767-200 AIRPLANES;
11U23, POSITION AIR/GND SYS 2
(q) 767-300 AIRPLANES;
11U24, POSITION AIR/GND SYS 2
(r) 11U27, ANTISKID 4-8

S 864-107
(16) SAS 281;
Close this circuit breaker on the main power distribution panel, P6:

(a) 6J21, F/O SEAT

S 864-111
(17) SAS 275-276 WITH SB 32-85 AND SAS 277-281, SAS 050-149, 155-167; Remove the DO-NOT-CLOSE identifier and close this circuit breaker on the APU external power panel, P34:
(a) 34M11, TIRE PRESS IND 2

S 864-115
(18) Put the WING FLIGHT CONTROL SHUTOFF switches L, C, and R on the P61 panel to OFF position.

S 644-116
(19) Lubricate the gear at the grease fittings (AMM 12-21-14/301).

S 824-117
(20) Do an adjustment check of the main landing gear doors (AMM 32-12-00/501).

S 824-119
(21) Do an adjustment check of the clearance for the main landing gear tilt sensors (AMM 32-09-07/201).

S 714-118
(22) Do a test of the tilt sensors for the main landing gear truck (AMM 32-09-07/201).

S 734-159
(23) For the right main landing gear only, do the gear truck tilt sensor failure test for the auto-speedbrake system (AMM 27-62-00/501).

S 714-120
(24) SAS 275-276 WITH SB 32-85 AND SAS 277-281, SAS 050-149, 155-167; Do a test of the tire pressure indicating system (AMM 32-45-00/501).

S 714-124
(25) Do a test of the brake temperature monitoring system (AMM 32-46-00/501).

S 714-130
(26) Do the extension and retraction test for the main landing gear (AMM 32-32-00/501).

S 424-145
(27) Install the applicable access panels (Table 402) (AMM 06-44-00/201):

TABLE 402

WHEN YOU INSTALL THE LEFT GEAR	WHEN YOU INSTALL THE RIGHT GEAR
551FT	651FT
551LT	651LT
551MT	651MT
551QB	651QB
551PT	651PT
551SB	651SB
551TB	651TB

S 844-133
(28) Put the trailing edge flap system back to its usual condition (AMM 27-51-00/201).

S 864-134
(29) Put the leading edge slat system back to its usual condition (AMM 27-81-00/201).

S 584-135
(30) Lower the airplane (AMM 07-11-01/201).

S 714-136
(31) Do the procedure to bleed the brakes (AMM 32-41-00/201).

S 714-137
(32) Do a test of the proximity sensors for the main landing gear (AMM 32-61-02/201).

S 714-138
(33) Do the steps in the Antiskid System Test - Brake Release (AMM 32-42-00/501).

S 084-142

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(34) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR - INSPECTION/CHECK

1. General
   A. This procedure only has an illustration and wear limit table which shows the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Landing Gear - Removal/Installation for procedures to do these tasks.

TASK 32-11-01-206-001

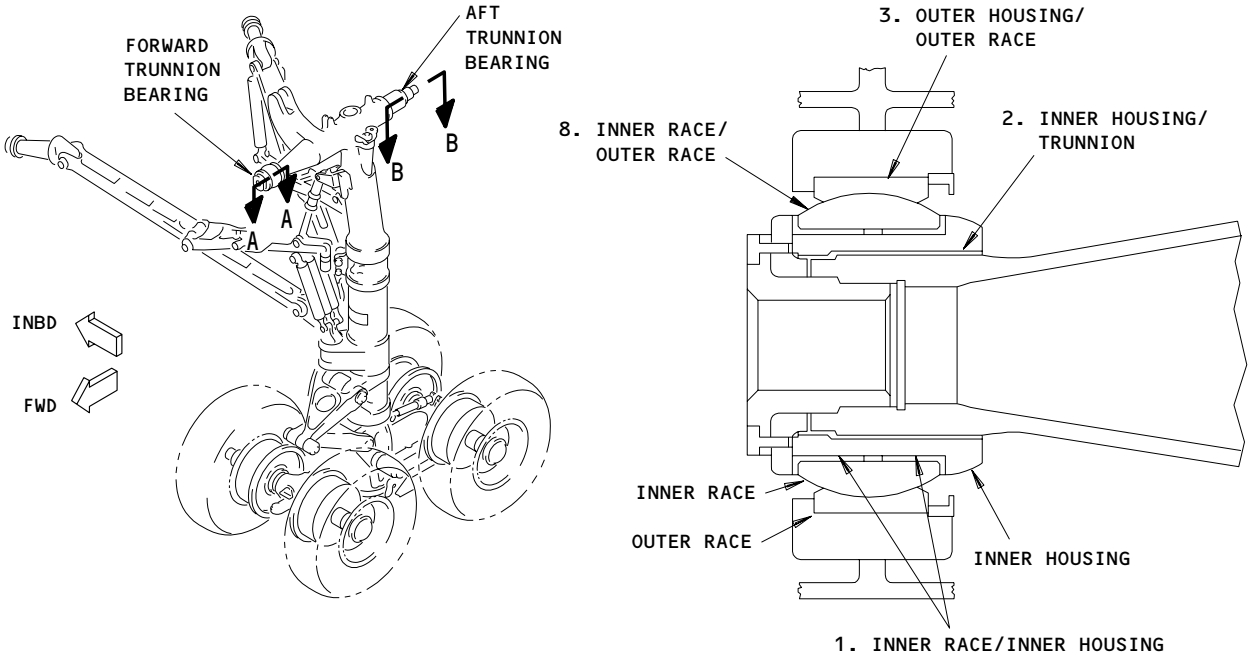
2. Wear Limits for the Trunnion of the Main Landing Gear (Fig. 601)

   NOTE: Wear limits for components connected to the main landing gear can be found in the Maintenance Manual subject for the component.

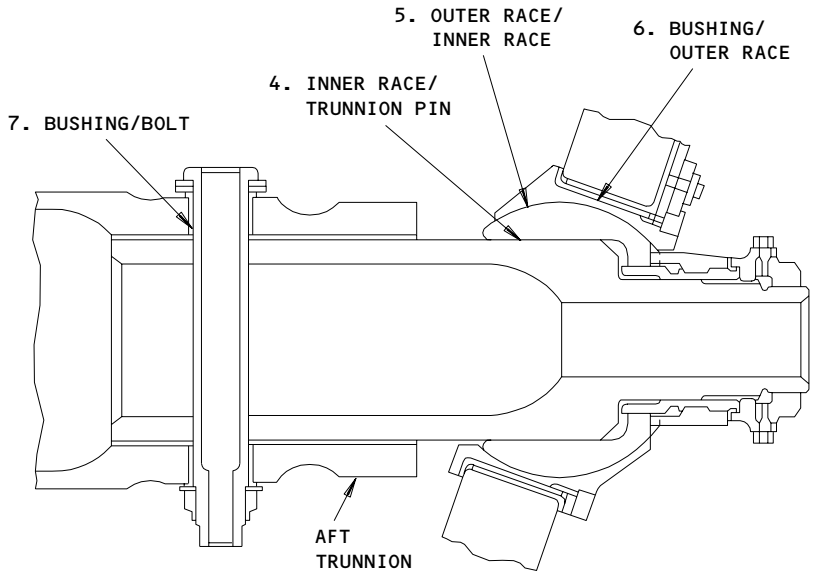
   A. Wear Limits for the Trunnion

      S 226-002

      (1) Refer to Fig. 601 for the inspection points and the wear limits table.



FORWARD TRUNNION BEARING
A–A



AFT TRUNNION BEARING
B–B

Wear Limits for the Trunnion of the Main Landing Gear
Figure 601 (Sheet 1)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
			DIAMETER		PERMITTED WEAR DIMENSION INCHES (mm)	MAXIMUM DIAMETER CLEARANCE INCHES (mm)			
			MINIMUM INCHES (mm)	MAXIMUM INCHES (mm)					
1	INNER RACE	ID	5.2500 (133.35)	5.2515 (133.38)	5.2580 (133.55)	0.0090 (0.2286)	X		
	INNER HOUSING	OD	5.2470 (133.27)	5.2490 (133.32)	5.2425 (133.15)			X	1
2	INNER HOUSING	ID	4.2330 (107.51)	4.2345 (107.55)	4.2406 (107.71)	0.0086 (0.2184)		X	1
	TRUNNION	OD	4.2300 (107.44)	4.2320 (107.49)	4.2259 (107.33)			X	1
3	OUTER HOUSING	ID	7.8982 (200.61)	7.9000 (200.66)	7.9066 (200.82)	0.0096 (0.2438)		X	1
	OUTER RACE	OD	7.8960 (200.55)	7.8970 (200.58)	7.8904 (200.41)		X		
4	INNER RACE	ID	5.5000 (139.70)	5.5015 (139.73)	5.5072 (139.88)	0.0082 (0.2083)	X		
	TRUNNION PIN	OD	5.4980 (139.64)	5.4990 (139.67)	5.4933 (139.52)			X	1
5	OUTER RACE	ID	7.2515 (184.18)	7.2530 (184.22)	7.2599 (184.40)	0.0099 (0.2515)	X		
	INNER RACE	OD	7.2485 (184.11)	7.2500 (184.15)	7.2431 (183.97)		X		
6	BUSHING	ID	7.7500 (196.85)	7.7515 (196.88)	7.7581 (197.05)	0.0091 (0.2311)	X		
	OUTER RACE	OD	7.7480 (196.79)	7.7490 (196.82)	7.7424 (196.65)		X		
7	BUSHING	ID	1.5007 (38.117)	1.5022 (38.155)	1.5056 (38.242)	0.0166 (0.4216)	X		
	BOLT	OD	1.4880 (37.795)	1.4890 (37.820)	1.4856 (37.734)		X		
8	OUTER RACE	ID	7.0000 (177.80)	7.0010 (177.82)	7.0030 (177.87)	0.0050 (0.1270)	X		
	INNER RACE	OD	6.9970 (177.72)	6.9980 (177.74)	6.9970 (177.72)			X	1

1 THIS PART CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS.

Wear Limits for the Trunnion of the Main Landing Gear
Figure 601 (Sheet 2)

MAIN GEAR SHOCK STRUT - MAINTENANCE PRACTICES

1. General
   A. This procedure contains three tasks:
      (1) An inspection of the scraper ring.
      (2) A procedure to install an optional split scraper ring.
      (3) An inspection for seal leaks.

TASK 32-11-02-202-009

2. Scraper Ring Inspection
   A. General
      (1) In several instances, scraper ring damage was found during the installation of the spare seals. In some instances, the scraper rings came through the gland nut. This procedure has two quick checks to examine the installed scraper ring while the landing gear is on the airplane.
   B. Consumable Materials
      (1) Recommended (Pre-Mixed) Shock Strut Fluids
         (a) D00467 Hydraulic Fluid
            1) BMS 3-32, Type I - This is MIL-H-6083 fluid pre-mixed with 1.5 percent by volume of Lubrizol 1395 and 1 percent by volume of methyl oleate.
            2) BMS 3-32, Type II - This is MIL-H-5606 fluid pre-mixed with 1.5 percent by volume of Lubrizol 1395 and 1 percent by volume of methyl oleate.

               NOTE: Type I is the recommended fluid to use when refilling a strut after an overhaul.

      (2) Alternative (Not Pre-Mixed) Shock Strut Fluids
         (a) D00509 Hydraulic Fluid
            1) MIL-H-6083 fluid plus 2.4 percent by volume of Lubrizol 1395 - This mixture can be made from any approved source for MIL-H-6083 and mixed with 2.4 percent by volume of Lubrizol 1395 (41:1 ratio).

               NOTE: Operators can choose to add 1.5 percent by volume of Lubrizol 1395 and 1 percent by volume of methyl oleate instead of 2.4 percent by volume of Lubrizol 1395.

(b) D00508 Hydraulic Fluid

1) MIL-H-5606 fluid plus 2.4 percent by volume of Lubrizol 1395 - This mixture can be made from any approved source for MIL-H-5606 and mixed with 2.4 percent by volume of Lubrizol 1395 (41:1 ratio).

NOTE: Operators can choose to add 1.5 percent by volume of Lubrizol 1395 and 1 percent by volume of methyl oleate instead of 2.4 percent by volume of Lubrizol 1395.

C. References

(1) AMM 32-00-20/201, Landing Gear Downlocks

D. Access

(1) Location Zones

731/741 Main Landing Gear

E. Prepare for the Inspect Procedure.

S 862-010

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

F. Inspect Procedure

S 212-008

(1) Visually examine the chrome surface of the inner cylinder before you clean it.

NOTE: If you find vertical streaks of fluid or accumulated debris on the chrome surface, it means that part of the scraper ring is defective.

S 212-007

(2) Make sure the scraper ring is in the installed position . Normal operation can force the scraper ring down the inner cylinder. Sometimes you can see the scraper ring below the gland nut (Figure 201).

NOTE: A mirror and flashlight can help you to examine the scraper ring. Put the mirror below the outer cylinder and against the inner cylinder to see the condition and position of the scraper ring.

S 362-006

(3) If one of the two inspections finds a fault with the scraper ring, replace the damaged scraper ring by one of the following methods:

(a) Replace the scraper ring with a new production scraper ring. Replace the scraper ring per the "Active and Spare Seal Replacement - Preferred Procedure" task (AMM 32-11-25/201).

NOTE: This task requires the removal of the inner cylinder from the outer cylinder.

(b) If disassembly of the gear is not possible, do the Installation of Optional Scraper Ring task.

NOTE: This is a temporary replacement. The split scraper ring must be replaced with a production scraper ring when you disassemble the gear. (AMM 32-11-25/201).

(c) You may defer, a maximum of 7 days, replacement of the scraper ring if the following conditions exist:

1) The scraper ring is rolled out and in contact with the inner cylinder, not torn, mutilated or destroyed.

NOTE: You can move the rolled out portions of the scraper ring back into position under the gland nut.

2) No strut leakage or damage to the strut seal is found.
3) The scraper ring inspection task is accomplished prior to each subsequent take off.

S 162-011

(4) Wipe the chrome surface that is visible on the inner cylinder with a rag that is soaked with shock strut fluid. Do this to remove any abrasive material that is collected on the inner cylinder. Remove the debris in a downward motion. This will make sure you do not push debris into the shock strut when you wipe the inner cylinder.

TASK 32-11-02-402-045

3. Installation of Optional Scraper Ring

A. General

(1) In several instances, scraper ring damage was found during the installation of the spare seals. In some instances, the scraper rings came through the gland nut. To correct this problem, some operators removed the landing gear from the airplane and disassembled the gear to install new seals and a new scraper ring. This task introduces an optional split scraper ring which can be installed without disassembly of the gear.

(2) The split scraper ring is only a temporary replacement. The split scraper ring must be replaced with the production scraper ring when you disassemble the gear (AMM 32-11-25/201).

B. Equipment
   (1) A32066-1 MLG/NLG Shock Strut Drain Equipment
   (2) A32004-1 MLG Gland Nut Wrench Adapter
C. Consumable Materials
   (1) D00633 Grease - BMS 3-33 (Preferred)
   (2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
   (3) G50136 Compound - BMS 3-38 Corrosion Inhibiting
   (4) A00226 Compound - BMS 8-45 Sealing
D. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
201	1	Split Scraper Ring Assembly	32-11-02	--	--

E. References
   (1) AMM 07-11-01/201, Jacking Airplane
   (2) AMM 12-15-01/301, Main Gear Shock Strut
   (3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
   (4) AMM 32-00-10/601, Landing Gear Shock Strut Inner Cylinder - Inspection for Chrome Plate Corrosion
   (5) AMM 32-00-15/201, Landing Gear Door Locks
   (6) AMM 32-00-20/201, Landing Gear Downlocks
F. Access
   (1) Location Zones
       731/741 Main Landing Gear

G. Prepare to Install the Split Scraper Ring

S 482-050

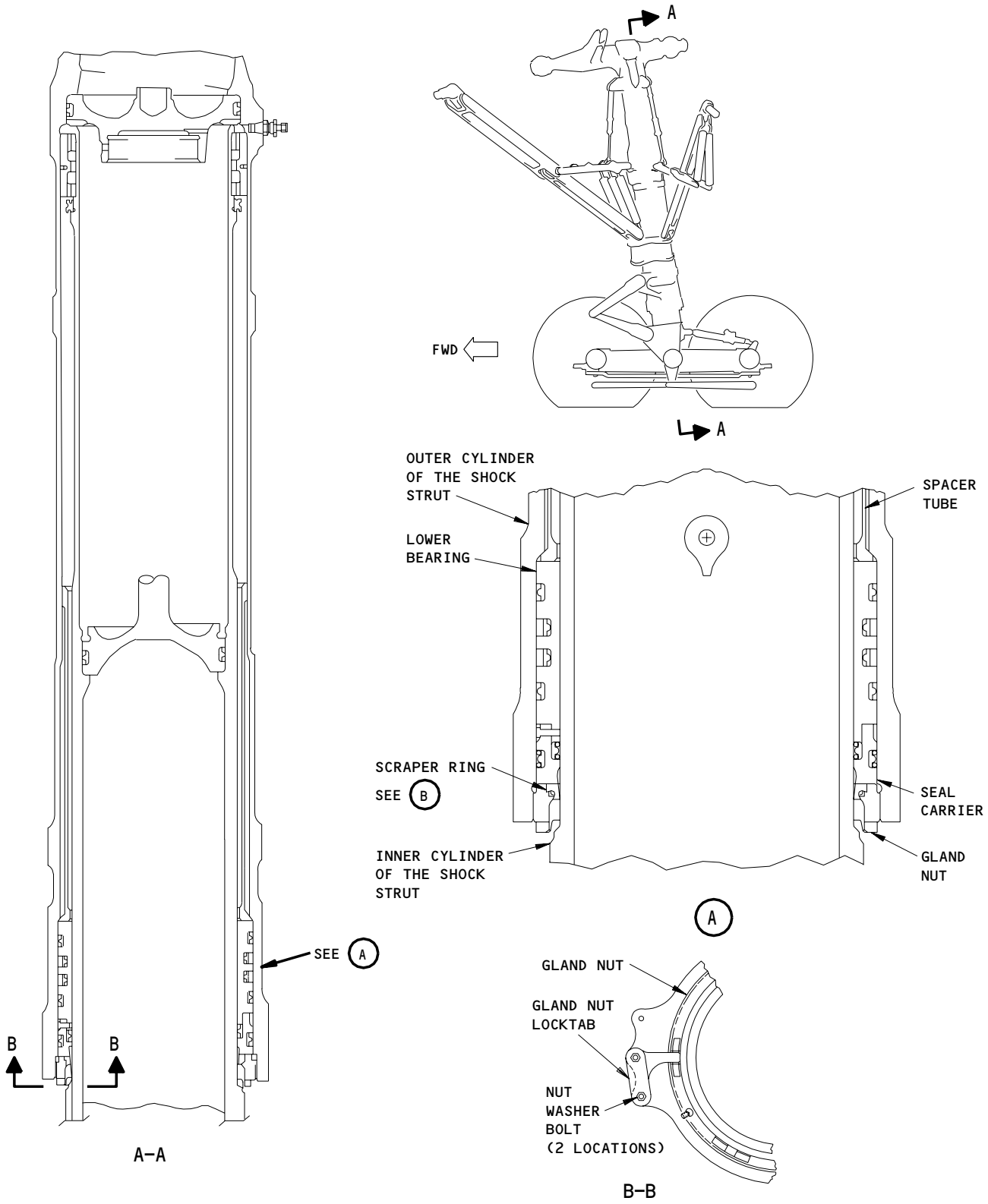
WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

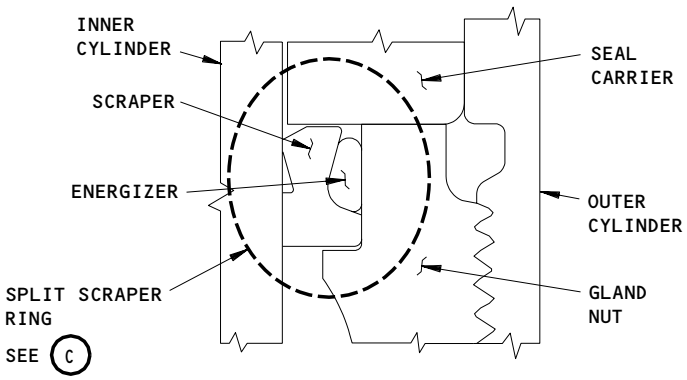
S 482-051

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

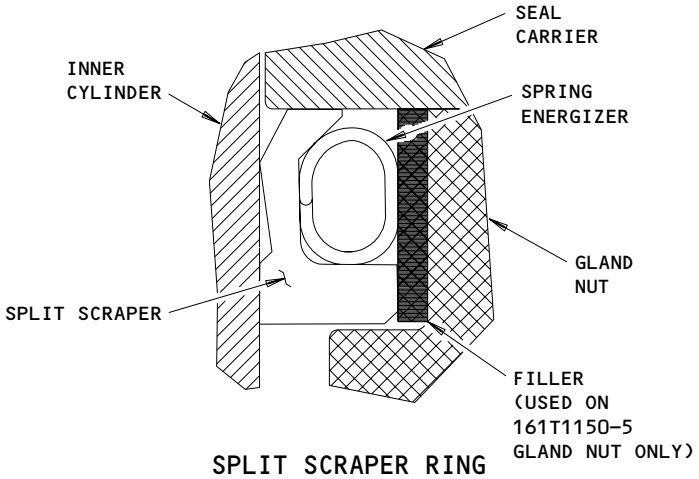


Scraper Ring on the Shock Strut of the Main Landing Gear
Figure 201 (Sheet 1)



SPLIT SCRAPER RING INSTALLATION

B



SPLIT SCRAPER RING

C

Scraper Ring on the Shock Strut of the Main Landing Gear
Figure 201 (Sheet 2)

S 862-021
(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 162-058
(4) Wipe the chrome surface that is visible on the inner cylinder with a rag that is soaked with shock strut fluid. Do this to remove any abrasive material that is collected on the inner cylinder. Remove the debris in a downward motion. This will make sure you do not push debris into the shock strut when you wipe the inner cylinder.

S 862-022

WARNING: CLEAR THE AREA BELOW THE WING BEFORE YOU DEFLATE THE SHOCK STRUT. IF YOU DEFLATE ONE SHOCK STRUT, THE WING TIP CAN MOVE DOWN AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Deflate the shock strut.
(a) Remove the cap for the air valve.

WARNING: LOOSEN THE AIR VALVE NUT A MAXIMUM OF TWO TURNS. AIR PRESSURE CAN BLOW THE VALVE OFF AND CAN CAUSE INJURY TO PERSONS.

(b) Loosen the swivel nut for the air valve, two turns.
(c) Let the shock strut deflate fully.
(d) Loosen the air valve nut fully and leave it open.

S 492-023

CAUTION: CLEAN ALL THE FLUID FROM THE TIRES IMMEDIATELY. THE HYDRAULIC FLUID CAN CAUSE DAMAGE TO THE TIRES.

(6) Install the drain equipment on the oil charging valve.

S 092-024
(7) Remove the drain equipment when all the oil has drained from the shock strut.

S 212-059
(8) Examine the chrome surface of the inner cylinder for damage (AMM 32-00-10/601).

S 582-025
(9) Lift the airplane until you see approximately 12 inches of chrome on the inner cylinder (AMM 07-11-01/201).

S 862-026
(10) Wind a cloth around the inner cylinder. This will prevent damage to the surface of the inner cylinder when you move the gland nut down.

S 032-027
(11) Remove the locktab from the gland nut.

S 032-028

CAUTION: CLEAN ALL THE LEAKED HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY. THE FLUID CAN CAUSE DAMAGE TO THE TIRES.

(12) Use the gland nut wrench adapter to loosen the gland nut.

S 862-029
(13) Move the gland nut to the bottom of the inner cylinder.

S 862-030
(14) Move the scraper ring and energizer down the inner cylinder.

S 032-031
(15) Cut the damaged scraper ring and energizer to remove them from the inner cylinder.

NOTE: Do not scratch the surface of the inner cylinder.

H. Install the Optional Split Scraper Ring

S 432-032
(1) Install the split scraper ring and garter spring energizer (Fig. 201)

S 862-033
(2) Move the scraper ring up the inner cylinder to the seal carrier.

S 642-034
(3) GLAND NUT WITH LUBE FITTING;
Apply grease to the threads of the gland nut.

S 622-035
(4) GLAND NUT WITHOUT LUBE FITTING;
Do the following steps:
(a) Remove the grease from the threads on the gland nut and the mating threads on the outer cylinder.
(b) Apply a thin layer of corrosion preventative compound to the threads on the gland nut.
(c) Apply a thin layer of corrosion preventative compound to the threads on the outer cylinder that will mate with the gland nut threads.

S 862-039
(5) Move the gland nut up the inner cylinder into the correct position.

S 432-040

(6) Tighten the gland nut, with the gland nut wrench adapter, to 175-200 pound-feet.

(a) Loosen the gland nut a small quantity until the bolt holes align, if it is necessary.

S 432-041

(7) Apply grease to, then install, the bolts, nuts, and washers to connect the locktab to the outer cylinder. This will lock the gland nut in the correct position (View B-B).

S 392-047

(8) Apply a layer of tamper-proof sealing compound on the fasteners and locktab.

I. Put the Airplane Back to Its Usual Condition.

S 582-042

(1) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 612-043

(2) Do the servicing of the shock strut for the main landing gear (AMM 12-15-01/301).

S 082-052

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Remove the door lock and close the doors (AMM 32-00-15/201).

TASK 32-11-02-202-012

4. Shock Strut Seal Leak Inspection

A. General

(1) This task gives the instructions to make sure a shock strut is serviceable when you find fluid leakage on the inner cylinder.

NOTE: During the initial landing cycles of a new landing gear, thin dark olive-green streaks on the shock strut frequently occur. This condition is okay. The petrolatum and grease that we use during shock strut assembly cause these streaks. These streaks will stop after more landing cyles occur. These streaks are different from the red or yellow (straw) colored streaks that are the indication of strut fluid leakage.

B. References
(1) AMM 05-51-01/201, Hard Landing or High Drag/Side Load Landing
(2) AMM 12-15-01/301, Main Gear Shock Strut
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 32-11-02/401, Landing Gear Shock Strut

C. Access
(1) Location Zones
143/144 Main Landing Gear Wheel Well
731/741 Main Landing Gear

D. Leak Check Procedure

S 492-013
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 212-014
(2) Inspect the shock struts for leakage.

S 792-015
(3) If you find leakage of the shock strut fluid on the inner cylinder, do the steps that follow to make sure the shock strut is serviceable:
(a) Do this 5 MINUTE LEAK CHECK as follows:
1) Wipe the surface of the inner cylinder with a clean cloth to remove all of the fluid from the leak.
2) Monitor the inner cylinder where it meets the outer cylinder for 5 minutes.
3) Make sure the extension of the inner cylinder does not change during this time.
4) Make a record of the number of drops which come from the seals during the 5 minutes.
5) Make a record of the location of the leak.
(b) If this is the first time you see leakage from a new or replacement seal, do the steps that follow:
1) Tow the airplane to cause movement between the inner cylinder and the outer cylinder (AMM 09-11-00/201).

NOTE: The minimum distance the airplane must be moved is two airplane lengths.

2) Do the 5 minute leak check steps again.

3) Calculate the average of the number of drops which came from the seals during both of the 5 minute measurements.

(c) As recorded, do one of the leak check results that follow.

(d) LEAK CHECK RESULT #1

If the leakage stopped, do the steps that follow:

CAUTION: A DEFLATED OR FLAT STRUT CAN CAUSE DAMAGE DURING LANDING. IF THE AIRPLANE LANDED WITH A DEFLATED OR FLAT STRUT, DO A HARD LANDING INSPECTION PER AMM 05-51-01/201 TO MAKE SURE THERE IS NO DAMAGE.

1) Do the 5 minute leak check steps after each subsequent landing (towing and second check not required).

NOTE: Do leak check action #2, 3, 4 or 5, as applicable.

2) If you do not find leakage on subsequent landings, after a minimum of 5 days or 15 flight cyles, do the steps that follow:
   a) Fully service the strut (AMM 12-15-01/301).
   b) No further action is required.

(e) LEAK CHECK RESULT #2

If the leakage was between 1 and 25 drops during the 5 minute period, do the steps that follow:

NOTE: 20 drops are equal to 1.0 cc.

CAUTION: A DEFLATED OR FLAT STRUT CAN CAUSE DAMAGE DURING LANDING. IF THE AIRPLANE LANDED WITH A DEFLATED OR FLAT STRUT, DO A HARD LANDING INSPECTION PER AMM 05-51-01/201 TO MAKE SURE THERE IS NO DAMAGE.

1) Service the strut with dry air/nitrogen after 6 days or 20 flight cycles.
2) Fully service the strut (AMM 12-15-01/301), after 10 days or 30 flight cycles.

3) Do the 5 minute leak check steps after each subsequent landing until the seals can be replaced (towing and second check not required).

NOTE: Do leak check action #1, 3, 4 or 5, as applicable.

(f) LEAK CHECK RESULT #3
If the leakage was between 26 and 50 drops during the 5 minute period, do the steps that follow:

NOTE: 20 drops are equal to 1.0 cc.

CAUTION: A DEFLATED OR FLAT STRUT CAN CAUSE DAMAGE DURING LANDING. IF THE AIRPLANE LANDED WITH A DEFLATED OR FLAT STRUT, DO A HARD LANDING INSPECTION PER AMM 05-51-01/201 TO MAKE SURE THERE IS NO DAMAGE.

1) Service the strut with dry air/nitrogen after 3 days or 10 flight cycles.
2) Fully service the strut (AMM 12-15-01/301), after 5 days or 15 flight cycles.
3) Do the 5 minute leak check steps after each subsequent landing until the seals can be replaced (towing and second check not required).

NOTE: Do leak check action #1, 2, 4 or 5, as applicable.

(g) LEAK CHECK RESULT #4
If the leakage was more than 50 drops, do the steps that follow:

NOTE: 20 drops are equal to 1.0 cc.

CAUTION: A DEFLATED OR FLAT STRUT CAN CAUSE DAMAGE DURING LANDING. IF THE AIRPLANE LANDED WITH A DEFLATED OR FLAT STRUT, DO A HARD LANDING INSPECTION PER AMM 05-51-01/201 TO MAKE SURE THERE IS NO DAMAGE.

1) Fully service the strut (AMM 12-15-01/301), service again after each landing.
2) Do the 5 minute leak check steps after each subsequent landing until the seals can be replaced (towing and second check not required).

NOTE: Do leak check action #1, 2, 3 or 5, as applicable.

(h) LEAK CHECK RESULT #5
If the fluid leaked in a continuous trickle or flow during the 5 minute leak check, the shock strut is not serviceable, you must replace the seals (AMM 32-11-25/201).

MAIN GEAR SHOCK STRUT - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the shock strut for the main landing gear. The second task installs the shock strut for the main landing gear.

TASK 32-11-02-004-035

2. Remove the Shock Strut for the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) A32028-6 Shock Strut Retention Strap
          (2 required)
      (2) A32031-5 MLG Truck Positioner Turnbuckle
          (Recommended)
      (3) A32031-4 Truck Positioner Turnbuckle
          (Alternative) Make from A32031-1
      (4) A32033-17 MLG Sling
      (5) A32039-1 Bogie Pivot Pin Removal Tool
      (6) Overhead Lifting Equipment
          (Commercially available)
   B. References
      (1) AMM 32-11-01/401, Main Gear
   C. Access
      (1) Location Zones
          143/144 Main Landing Gear Wheel Well
          731/741 Main Landing Gear

   D. Prepare for the Removal of the Shock Strut.

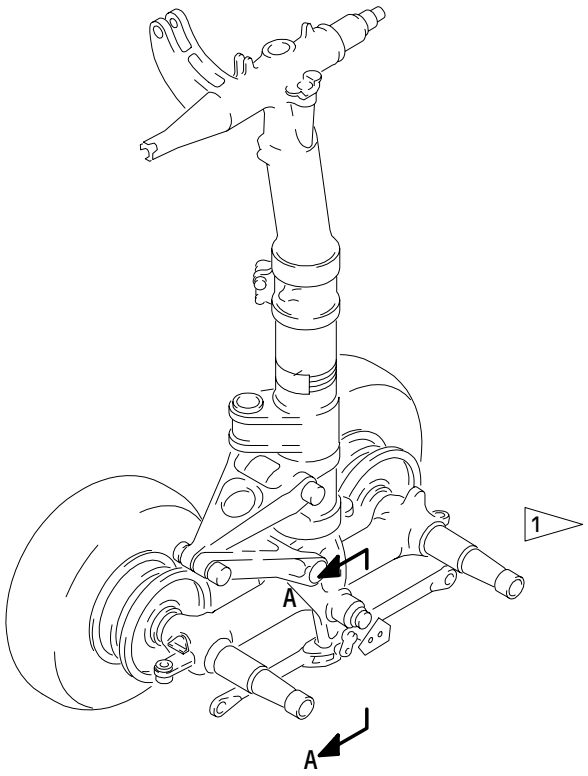
      S 014-002
      (1) Remove the main landing gear from the airplane (AMM 32-11-01/401).

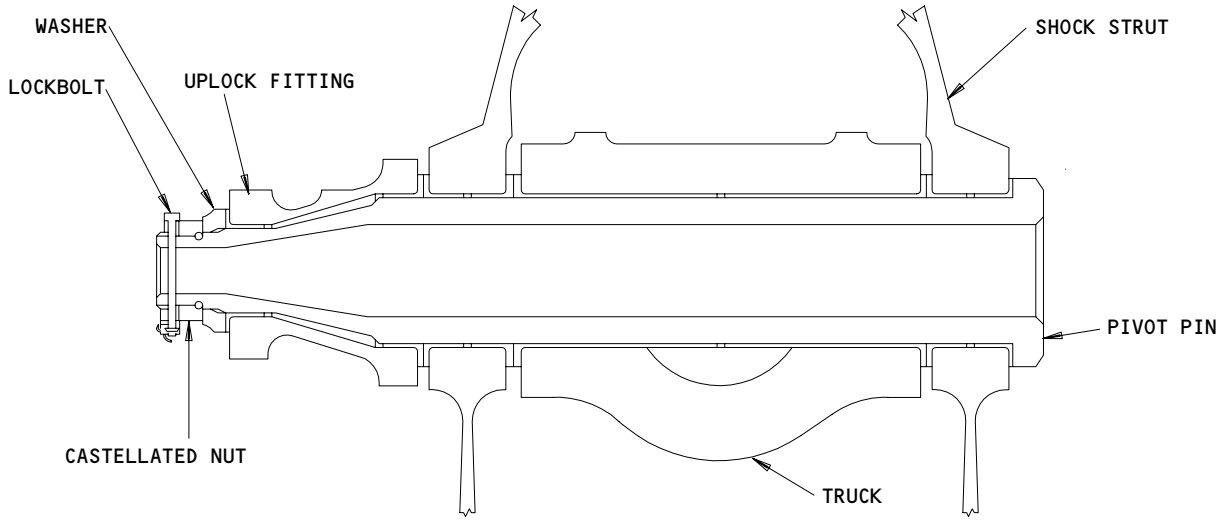
      S 494-003
      (2) Make sure the truck positioner turnbuckle and the retention straps for the shock strut are installed on the main landing gear.

      S 864-004
      (3) Move the main landing gear from the wheel well area.

      S 034-005
      (4) Disconnect the electrical connections from the lower junction box of the shock strut.

      S 014-006
      (5) Remove the electrical fasteners, if necessary, to disconnect the hydraulic lines at the self-sealing disconnects for the brakes.





A–A

1 WHEELS REMOVED FOR CLARITY

Shock Strut Installation for the Main Landing Gear
Figure 401

S 864-007
(6) Hold the wire harness and the hydraulic lines as necessary.

S 014-008
(7) Remove the rod bolt for the brake. Lower the brake rods.

NOTE: Disconnect the stabilizer before you remove the rod bolt on the outboard brake rod.

S 494-009
(8) Install the sling for the main landing gear on the shock strut trunnion. Use the instructions supplied with the sling.

S 494-010
(9) Attach the sling to the overhead lifting equipment.

S 094-011
(10) Remove the truck positioner turnbuckle.

NOTE: Measure the length of turnbuckle and write down the length before you remove the turnbuckle. This will make the installation of the replacement shock strut easier.

E. Remove the Shock Strut

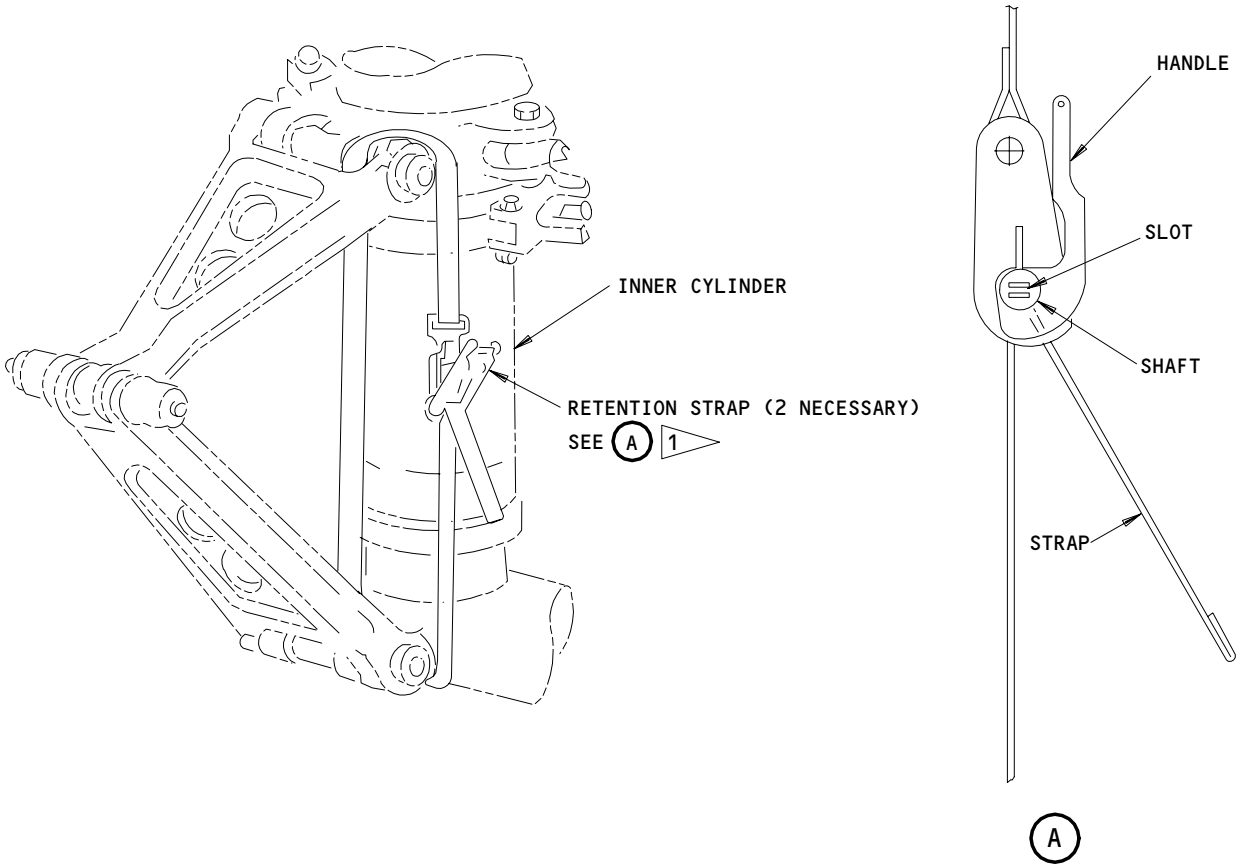
S 014-012
(1) Remove the pin to disconnect the lower shock strut from the truck and the uplock fitting. Use the pin removal tool. The instructions are supplied with the tool (View A-A).

S 024-013
(2) Lift the shock strut from the truck with the sling and the overhead lifting equipment.

TASK 32-11-02-404-014

3. Install the Shock Strut for the Main Landing Gear (Fig. 401)

A. Equipment
(1) A32028-6 Shock Strut Retention Strap
(2 required)



1 PUT THE STRAP THROUGH THE SLOT IN THE SHAFT BEFORE YOU APPLY A LOAD. USE THE HANDLE, TO WIND THE STRAP AROUND THE SHAFT TWO TIMES.

Retention Strap Use for the Inner Cylinder of the Shock Strut
Figure 402

(2) A32031-5 MLG Truck Positioner Turnbuckle (Recommended)
(3) A32031-4 MLG Truck Positioner Turnbuckle (Alternative) Make from A32031-1
(4) A32033-17 MLG Sling
(5) A32082-1 MLG Pivot Pin Guide
(6) Overhead Lifting Equipment (Commercially available)

B. Consumable Materials
(1) D00528 ROYCO 11-MS Grease

C. References
(1) AMM 32-11-01/401, Main Gear
(2) AMM 32-11-20/401, Main Gear Brake Rods

D. Access
(1) Location Zones
143/144 Main Landing Gear Wheel Well
731/741 Main Landing Gear

E. Install the Shock Strut.

S 494-015
(1) Install the retention straps (2 straps are necessary) on the replacement shock strut. Use the instructions supplied with the tool.

S 494-016
(2) Install the sling on the shock strut trunnion.

S 494-017
(3) Attach the sling to the overhead lifting equipment.

S 584-036
(4) Lift the shock strut into position on the truck.

S 644-018
(5) Apply grease to the pivot pin, the washer, the nut and the lockbolt.

S 434-019
(6) Install the guide for the pivot pin over the end of the pivot pin.

S 434-020
(7) Install the pivot pin through the fitting (View A-A).

S 034-021
(8) Remove the guide.

S 434-022
(9) Install the castellated nut. Tighten the nut to 90-100 pound-feet. (Fig. 401).

S 434-023
(10) Install the lockbolt.

S 494-024
(11) Install the truck positioner turnbuckle. Use the instructions supplied with the tool.

S 094-025
(12) Remove the sling from the trunnion.

S 644-026
(13) Apply grease to the bolts for the brake rod, the tang washers, the nuts,and the lockbolts.

F. Put the Airplane Back to Its Usual Condition.

S 434-027
(1) Install the bolts to connect the forward and the aft brake rods (AMM 32-11-20/401).

S 434-028
(2) Tighten the nut.

S 434-030
(3) Install the lockbolts and the cotter pins.

NOTE: Install the two bolts for the brake rod bolts from the inner side of the truck.

S 414-031
(4) Connect the stabilizer.

S 414-032
(5) Connect the electrical connections and the hydraulic lines.

S 864-033
(6) Move the main landing gear into the wheel well area.

S 414-034
(7) Install the main landing gear (AMM 32-11-01/401).

MAIN GEAR SIDE BRACE ASSEMBLY - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the side brace assembly from the main landing gear. The second task installs the side brace assembly on the main landing gear.

TASK 32-11-03-004-034

2. Remove Side Brace Assembly from the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) A20001-79 Floor Mounted Boom Hoist
          (A20001-1 Optional)
      (2) A32008-53 MLG Components Sling Equipment
      (3) A32073-1 MLG Side Strut Rigging Bar
      (4) F70312-47 Crowfoot Wrench
   B. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-32-03/401, Main Gear Side Brace Lock Spring
      (6) AMM 32-32-05/401, Main Gear Jury Strut Spring
   C. Access
      (1) Location Zones

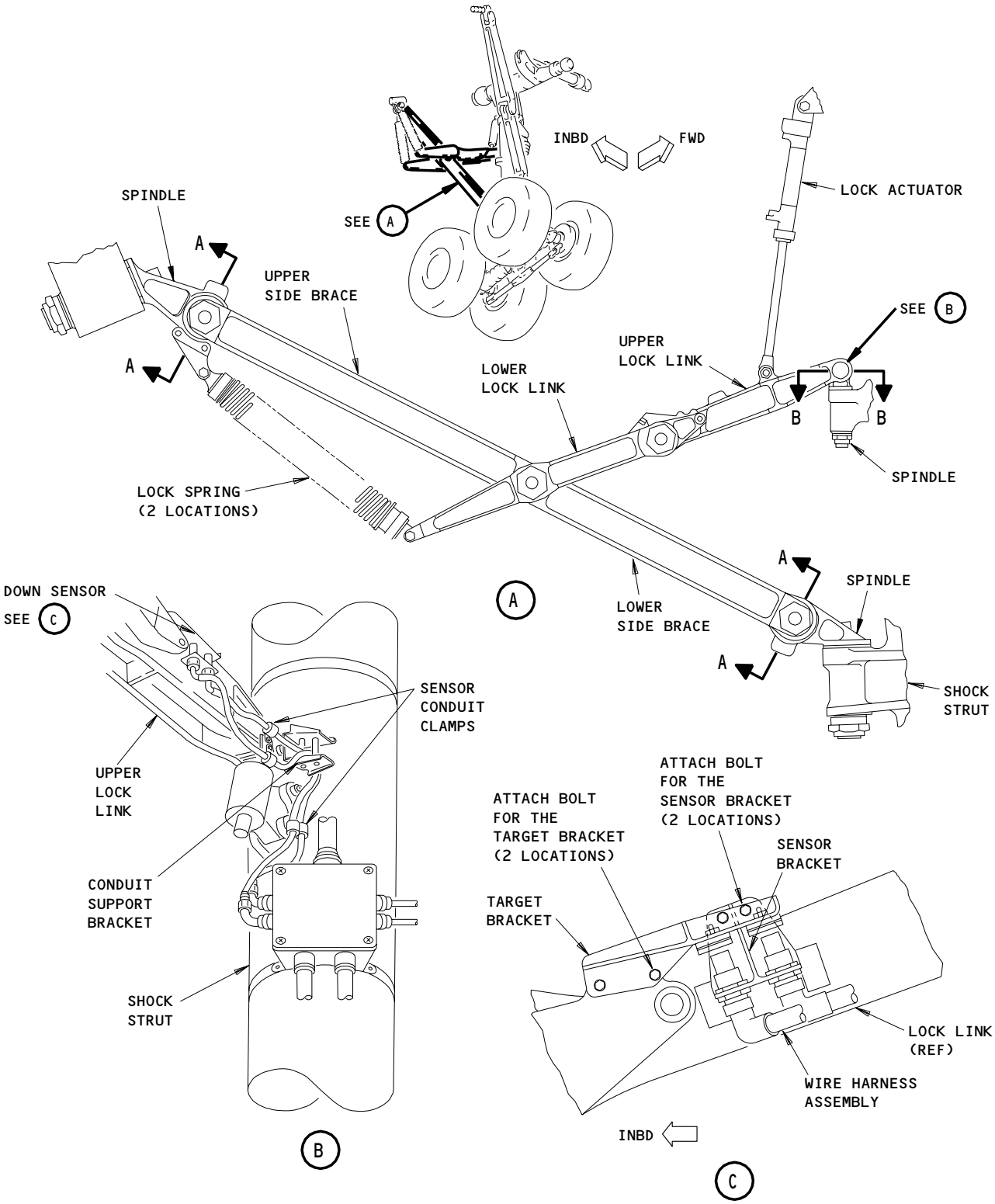
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

   D. Prepare for the Removal of the Side Brace Assembly

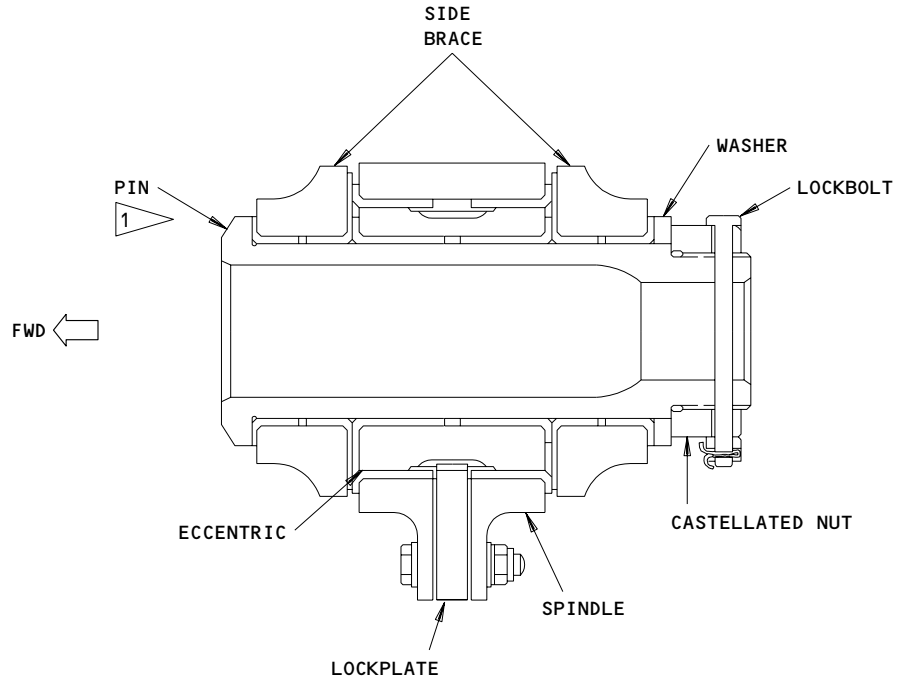
S 484-037

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

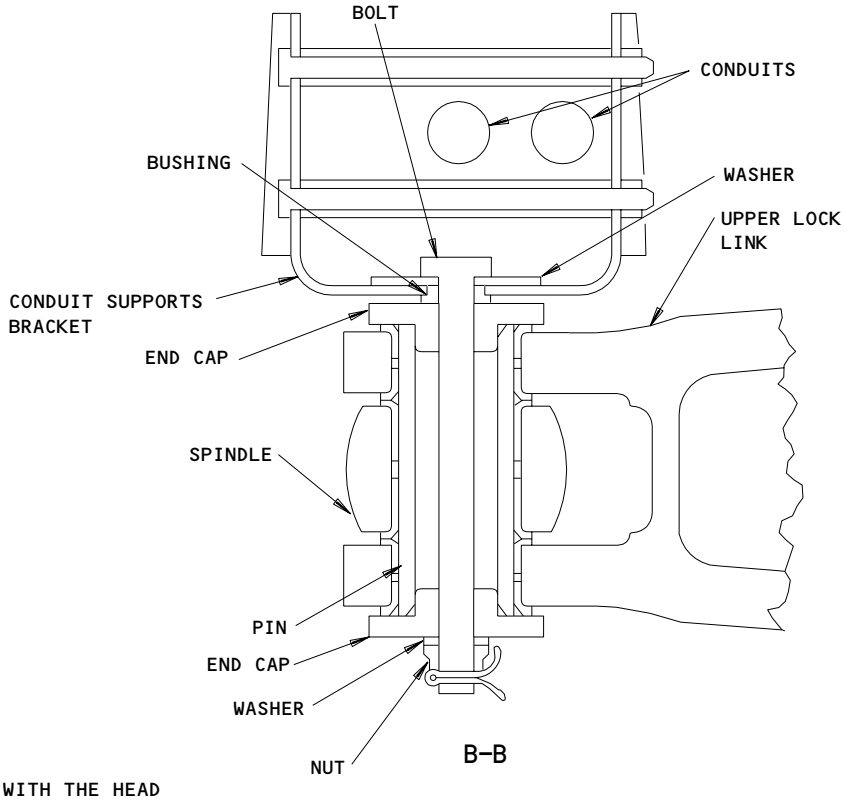
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).



Side Brace Installation for the Main Landing Gear
Figure 401 (Sheet 1)



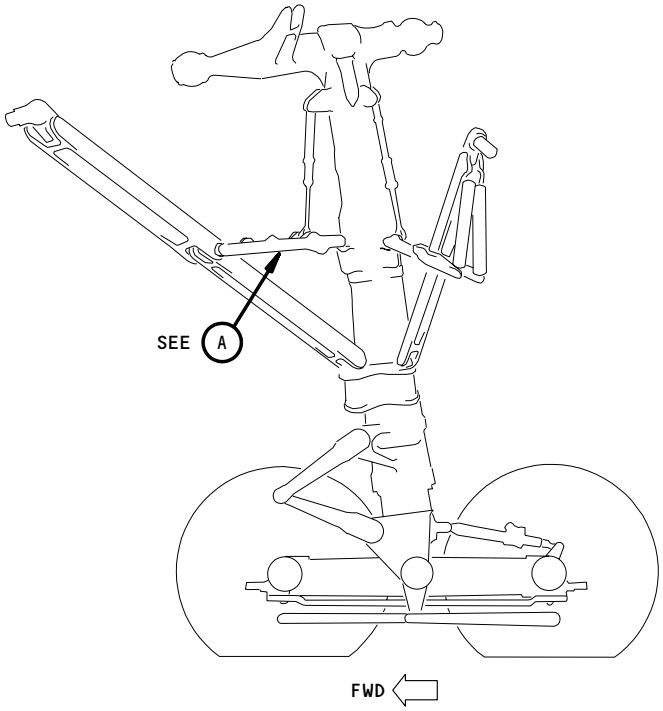
A–A

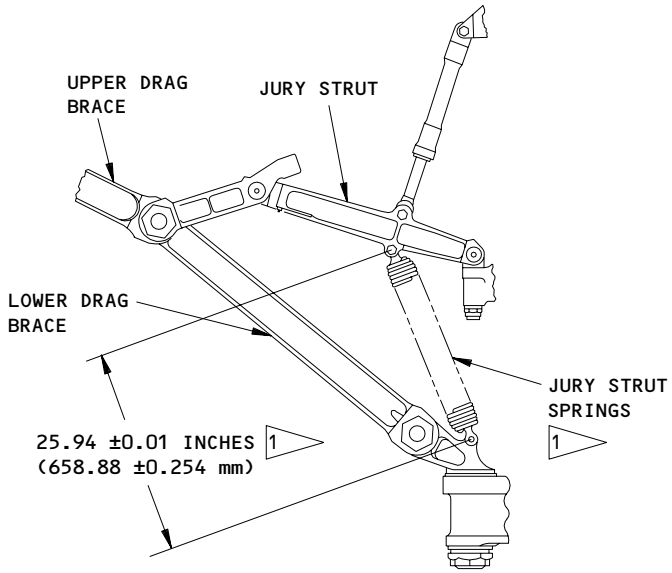


B–B

1 INSTALL WITH THE HEAD OF THE PIN FORWARD

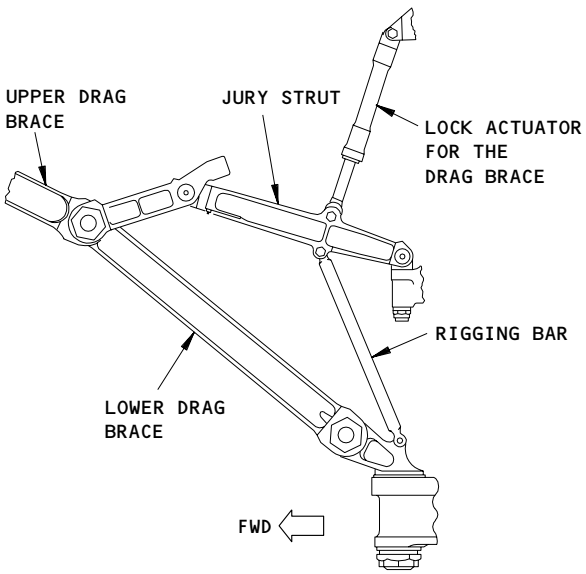
Side Brace Assembly Installation for the Main Landing Gear
Figure 401 (Sheet 2)





DRAG BRACE WITH JURY STRUT SPRINGS INSTALLED

A



DRAG BRACE WITH RIGGING BAR INSTALLED

A

1 REMOVE JURY STRUT SPRINGS FOR MEASUREMENT

Drag Brace Assembly Adjustment for the Main Landing Gear
Figure 402

S 484-036

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 864-004

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 584-005

(4) Lift the airplane until the wheels are above the ground (AMM 07-11-01/201).

S 024-060

(5) Remove the jury strut springs (AMM 32-32-05/401)

S 084-048

(6) Remove the downlock pin from the jury strut (AMM 32-00-20/201).

S 864-039

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE JURY STRUT. THE LANDING GEAR WILL MOVE SLIGHTLY INBOARD AND THE JURY STRUT WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(7) Push up on the jury strut to release it from the overcenter position.

S 484-050

(8) Install the side brace rigging bar (Fig. 402, Detail A).

S 014-006

(9) Remove the lock springs for the side brace (AMM 32-32-03/401).

E. Remove the Side Brace Assembly

S 014-007

(1) Remove the bolt, end caps, pin, washer and nut to disconnect the rod end of the lock actuator from the upper lock link (Detail A).

S 844-008

(2) Hold the actuator out of the area.

S 014-009
(3) Remove the down-sensor target and the bracket (Detail B).
(a) Remove the attach bolts for the sensor target.

NOTE: Keep the down-sensor target and the attach bolts for installation on the new side brace assembly.

(b) Disconnect the conduit clamps from the upper lock link.
(c) Remove the down-sensor bracket which holds the down sensors for the side brace.
(d) Temporarily attach the down-sensor bracket and the conduits to the shock strut.

S 494-010
(4) Install the side brace sling and hoist. Use the instructions supplied with the tools.

S 034-012
(5) Remove the lockbolts, washers, nuts, castellated nut, washer and pin to disconnect the lower side brace from the spindle (View A-A).

S 034-014
(6) Remove the lockbolts, washers, nuts, castellated nut, washer and pin to disconnect the upper side brace from the spindle (View A-A).

S 034-045
(7) Remove the bolt, washers, bushing, bracket, end caps, nut and pin to disconnect the upper lock link from the spindle (View B-B).

S 024-016
(8) Move the side brace assembly away from the work area.

S 094-017
(9) Remove the sling and the downlock.

TASK 32-11-03-404-018
3. Install the Side Brace Assembly for the Main Landing Gear (Fig. 401)

NOTE: Wear Limits for the components that follow are supplied in 32-11-03/601.

A. Equipment
(1) A20001-79 Floor Mounted Boom Hoist
(2) A32008-53 MLG Components Sling Equipment
(3) A32073-1 MLG Side Strut Rigging Bar
(4) F70312-47 Crowfoot Wrench
(5) Scale (0 to 30 inches) (commercially available)
B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

(3) G50136 Compound, BMS 3-38 Corrosion Preventive
(4) A00247 Sealant, BMS 5-95 Chromate

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 12-21-14/301, Main Landing Gear and Actuation Mechanisms
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 32-11-03/601, Main Gear Side Brace Assembly
(6) AMM 32-32-00/501, Main Gear Extension and Retraction
(7) AMM 32-32-03/401, Main Gear Side Brace Lock Spring
(8) AMM 32-32-05/401, Main Gear Jury Strut Spring
(9) AMM 32-61-02/201, Main Gear Proximity Sensors

D. Access
(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

E. Install the Side Brace Assembly

NOTE: Make sure the drag brace is installed (AMM 32-11-10/401) prior to side brace installation.

S 284-068
(1) Make sure the upper and lower spindles are installed on the gear prior to side brace installation (AMM 32-11-06/401).

S 164-044
(2) Make sure the fay surfaces of all disassembled joints are clean when assembled.

S 164-043
(3) Make sure all pins, bolts, washers and nuts are clean when installed.

S 494-019
(4) Install the sling on the replacement assembly for the side brace.

S 844-020
(5) Lift the assembly into position on the main landing gear.

S 424-041
(6) To connect the upper side brace to the spindle, do the steps that follow (View A-A):
(a) Apply grease to the chrome plated surface of the pin and the inner diameter of the eccentric

(b) Install the eccentric in the spindle.

NOTE: Position the thin side of the eccentric inboard.

(c) Temporarily install the lockplate to hold the eccentric in position.
(d) Position the upper side brace on the spindle.

WARNING: MAKE SURE YOU INSTALL THE PIN WITH THE HEAD OF THE PIN ON THE FORWARD SIDE OF THE SIDE BRACE. IMPROPER INSTALLATION OF THE PIN CAN CAUSE DAMAGE TO EQUIPMENT.

(e) Put the pin in the upper side brace attach point.
(f) Apply a thin layer of compound to the threads of the pin.
(g) Apply a thin layer of compound to the washer and the threads of the castellated nut.
(h) Install the washer and castellated nut on the pin.
(i) Use the crowfoot wrench to tighten the nut to 110-120 pound-feet.
(j) Apply a thin layer of compound to the lockbolts, washers, and threads of the nuts.
(k) Install the lockbolts, washers and nuts.

NOTE: If it is necessary, loosen the castellated nut to the nearest lock position to install the lockbolts.

1) Remove the excess compound.

S 424-042

(7) To connect the upper lock link to the spindle, do the steps that follow (View B-B):
(a) Apply grease to the pin and the bolt shank.
(b) Apply compound to the bolt threads, washer and nut.
(c) Position the upper lock link on the spindle.
(d) Install the pin, end caps, bushing, conduit support bracket, bolt, washer and nut.
(e) Tighten the nut to 150-200 pound-inches.
(f) Remove the excess compound.
(g) Install the cotter pin.

S 984-059

(8) Push down on the lock link assembly to position the lock link in the locked position.

S 434-058

(9) Install the downlock pin in the lock link (AMM 32-00-20/201).

S 424-056

(10) To connect the lower side brace to the lower spindle, do the steps that follow (View A-A):

(a) Apply grease to the chrome plated surface of the pin, and the inner diameter of the eccentric.

(b) Put the eccentric in the lower spindle.

(c) Turn the eccentric until the thin side of the eccentric is up.

(d) Position the lower side brace on the spindle.

(e) Turn the lower end of the eccentric to permit you to install the pin easily.

NOTE: If the eccentric and the side brace do not align, move the lower eccentric to the best hole alignment. Remove the lockplate at the upper attach point and turn the upper eccentric until the pin for the lower attach point can be installed.

WARNING: MAKE SURE YOU INSTALL THE PIN WITH THE HEAD OF THE PIN ON THE FORWARD SIDE OF THE SIDE BRACE. IMPROPER INSTALLATION OF THE PIN CAN CAUSE DAMAGE TO EQUIPMENT.

(f) Put the pin in the lower side brace attach point.

(g) Apply a thin layer of compound to the threads of the pin.

(h) Apply a thin layer of compound to the washer and the threads of the castellated nut.

(i) Install the washer and castellated nut on the pin.

(j) Use the crowfoot wrench to tighten the nut to 110-120 pound-feet.

(k) Apply a thin layer of compound to the lockbolts, washers, and threads of the nuts.

(l) Install the lockbolts, washers and nuts.

NOTE: If it is necessary, loosen the castellated nut to the nearest lock position to install the lockbolts.

(m) Remove the excess compound.

(n) Install the lockplate to lock the eccentric in position.

S 084-067

(11) Remove the side brace rigging bar from the drag brace.

S 424-066

(12) Install the jury strut springs (AMM 32-32-05/401).

S 414-026

(13) Install the lock springs for the side brace (AMM 32-32-03/401).

S 424-040

(14) To connect the rod end of the lock actuator to the upper lock link, do the steps that follow (Detail A):
(a) Apply grease to the chrome plated surface of the pin.
(b) Apply a thin layer of compound to the pin threads, washer and nut threads.
(c) Position the rod end of the lock actuator on the lock link.
(d) Install the pin, washer and nut.
(e) Tighten the nut to 520-640 pound-inches.
(f) Remove the excess compound.
(g) Install the cotter pin.

S 414-028

(15) Install the down-sensor target and the bracket (Detail B).
(a) Install the down-sensor bracket on the upper lock link. Use the two attach bolts for the sensor bracket.
(b) Install the conduit clamps on the upper lock link.

CAUTION: MAKE SURE THE CONDUITS ARE NOT TWISTED. RETRACTION OF THE MAIN LANDING GEAR CAN CAUSE DAMAGE TO THE CONDUITS IF THEY ARE TWISTED.

(c) Make sure that the installation has the properties that follow:
(d) The conduits are not twisted.
1) The upper conduit is vertically above the lower conduit between the clamps on the lock link and the shock strut.
2) The location marker on the conduit is at the center of each clamp.

(e) If the installation is incorrect, do the steps that follow:
1) Loosen the clamps on the upper lock link and the shock strut.
2) Loosen the connectors on the J-box.
3) Adjust the conduits until the installation is correct.
(f) Tighten all the clamps and connectors.
(g) Install the down-sensor target with the two attach bolts for the sensor target.
(h) Apply sealant to the clamp bolts.
(i) Adjust the down sensor for the side brace (AMM 32-61-02/201).

F. Put the Airplane Back to Its Usual Condition

S 484-051
(1) Install the downlock pin on the jury strut (AMM 32-00-20/201).

S 714-029
(2) Do the extension and retraction test for the main landing gear (AMM 32-32-00/501).

S 584-030
(3) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 644-031
(4) Lubricate the attachment joints at the grease fittings (AMM 12-21-14/301).

S 084-038

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR SIDE BRACE ASSEMBLY - ADJUSTMENT/TEST

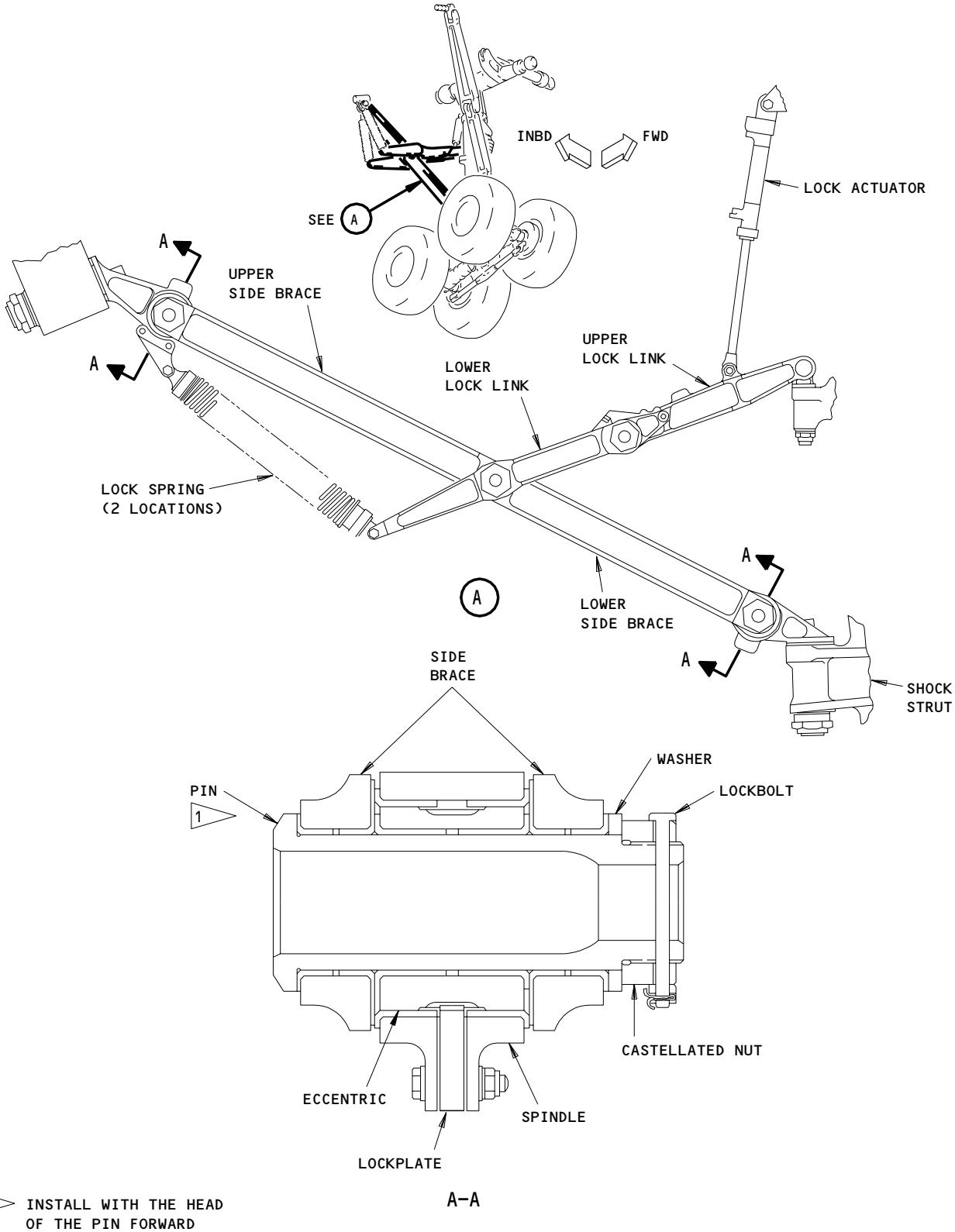
1. General
   A. This procedure adjusts the side brace assembly when the side brace pins can not be rotated freely.

   TASK 32-11-03-825-037

2. Adjustment of the Side Brace Assembly
   A. Equipment
      (1) Strap - Utility with S Hooks (1" x 15') 400 lb working load limit. Kinadyne Corp. Part No. 751587 (or equivalent) (Commercially Available)
      (2) F70312-47 Crowfoot Wrench
   B. Consumable Materials
      (1) D00633 Grease - BMS 3-33 (Preferred)
      (2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
      (3) G50136 Compound, BMS 3-38 Corrosion Preventive
   C. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-11-03/401, Main Gear Side Brace
      (6) AMM 32-32-00/501, Main Gear Extension and Retraction
      (7) AMM 32-32-03/401, Main Gear Side Brace Lock Spring
      (8) AMM 32-32-05/401, Main Gear Jury Strut Spring
   D. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Strut Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

   E. Prepare for the Adjustment of the Side Brace Assembly



Main Landing Gear Side Brace – Adjustment/Test
Figure 501

S 485-038

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 485-039

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 865-040

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 585-041

(4) Lift the airplane until the wheels are above the ground (AMM 07-11-01/201).

S 025-042

(5) Remove the jury strut springs (AMM 32-32-05/401).

S 085-043

(6) Remove the downlock pin from the jury strut (AMM 32-00-20/201).

S 865-044

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE JURY STRUT. THE LANDING GEAR WILL MOVE SLIGHTLY INBOARD AND THE JURY STRUT WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(7) Push up on the jury strut to release it from the overcenter position.

S 485-045

(8) Install the side brace rigging bar between the jury strut and the drag brace lower spindle attach points (AMM 32-11-03/401).

S 025-046
(9) Disconnect the upper attach points of the lock springs for the side brace (AMM 32-32-03/401).

F. Adjust the Side Brace Assembly

S 085-087

CAUTION: DO NOT HOLD THE MAIN LANDING GEAR WHEN YOU ADJUST THE SIDE BRACE. IF YOU HOLD THE MLG, YOU CAN CAUSE DAMAGE TO THE GEAR.

(1) Remove the downlock pin from the lock link.

S 865-049

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE LOCK LINK. THE LANDING GEAR WILL MOVE SLIGHTLY INBOARD AND THE LOCK LINK WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Push up on the lock link to release it from the overcenter position.

S 485-050
(3) Hook and loop the strap around the upper side brace, as close as possible to the spindle, then attach and tighten the strap to a suitable structural part of the wheel well ceiling.

NOTE: This will hold the brace in position when you remove the pin.

S 025-051
(4) Remove the lockbolts, washers, nuts, castellated nut, washer and pin to disconnect the upper side brace from the spindle.

S 025-052
(5) Move the side brace away from the spindle and tighten the strap.

S 025-053
(6) Remove the lockplate from the spindle.

S 825-054
(7) Position the thin side of the eccentric inboard.

S 425-057
(8) Temporarily install the lockplate to hold the eccentric in position.

S 985-058
(9) Position the side brace on the upper spindle.

S 645-059
(10) Apply grease to the chrome plated surface of the pin and the inner diameter of the eccentric.

S 425-060

WARNING: MAKE SURE YOU INSTALL THE PIN WITH THE HEAD OF THE PIN ON THE FORWARD SIDE OF THE SIDE BRACE. IMPROPER INSTALLATION OF THE PIN CAN CAUSE DAMAGE TO EQUIPMENT.

(11) Put the pin in the upper side brace attach point.

S 625-061
(12) Apply a thin layer of compound to the threads of the pin.

S 625-062
(13) Apply a thin layer of compound to the washer and the threads of the castellated nut.

S 425-063
(14) Install the washer and castellated nut on the pin.

S 425-064
(15) Tighten the castellated nut finger tight.

S 025-065
(16) Remove the lockbolts, washers, nuts, castellated nut, washer and pin to disconnect the lower side brace from the spindle.

S 985-066
(17) Push down on the lock link to put it in the locked position.

S 485-067
(18) Install the downlock pin in the lock link.

S 985-068
(19) Position the lower end of the side brace above the lower spindle attach point.

S 825-069
(20) Turn the lower end of the eccentric to permit you to install the pin easily.

NOTE: If the eccentric and the side brace do not align, move the lower eccentric to the best hole alignment. Remove the lockplate at the upper attach point and turn the upper eccentric until the lower attach point can be installed.

S 985-070
(21) Position the side brace on the lower spindle attach point.

S 645-071
(22) Apply grease to the chrome plated surface of the pin and the inner diameter of the eccentric.

S 425-072

WARNING: MAKE SURE YOU INSTALL THE PIN WITH THE HEAD OF THE PIN ON THE FORWARD SIDE OF THE SIDE BRACE. IMPROPER INSTALLATION OF THE PIN CAN CAUSE DAMAGE TO EQUIPMENT.

(23) Put the pin in the upper side brace attach point.

S 625-073
(24) Apply a thin layer of compound to the threads of the pin.

S 625-074
(25) Apply a thin layer of compound to the washer and the threads of the castellated nut.

S 425-075
(26) Install the washer and castellated nut on the pin.

S 425-076
(27) To complete the upper and lower pin installation, do the steps that follow:
(a) Use the crowfoot wrench to tighten the castellated nut to 110-120 pound-feet.
(b) Apply a thin layer of compound to the lockbolts, washers, and the threads of the nuts.

(c) Install the lockbolts, washers and nuts on the pin.

NOTE: If it is necessary, loosen the castellated nut to the nearest lock position to install the lockbolts.

(d) Remove the excess compound.

S 425-077

(28) Lock the eccentrics with the lockplates.

G. Put the Airplane Back to Its Usual Condition

S 085-078

(1) Remove the rigging tool from the drag brace.

S 985-079

(2) Put the joint for the jury strut in the locked position.

S 485-080

(3) Install the downlock pin on the jury strut (AMM 32-00-20/201).

S 425-081

(4) Install the jury strut springs (AMM 32-32-05/401).

S 425-083

(5) Install the lock springs for the side brace (AMM 32-32-03/401).

S 585-084

(6) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 085-085

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(7) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR SIDE BRACE ASSEMBLY - INSPECTION/CHECK

1. General
   A. This procedure only has illustrations and wear limit tables which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Side Brace Assembly - Removal/Installation for procedures to do these tasks.
   B. On side brace assemblies without bushing fillet seals (bushings with orange identification marks) the rotation or migration of the bushing is a normal condition (AMM 12-21-14/301).

TASK 32-11-03-206-002

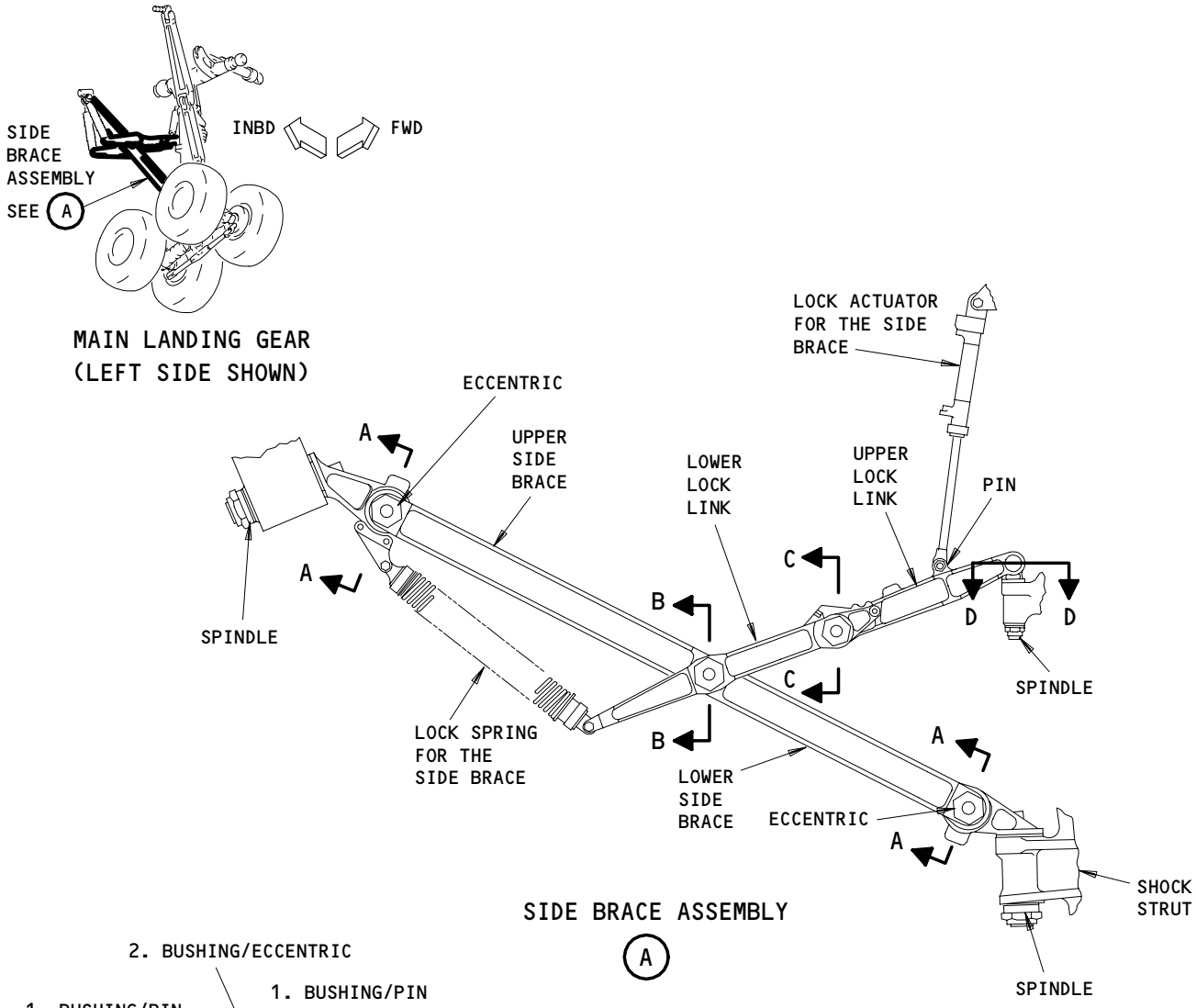
2. Wear Limits for the Side Brace Assembly of the Main Landing Gear (Fig. 601)

NOTE: Wear limits for components connected to the side brace assembly can be found in the Maintenance Manual subject for the component.

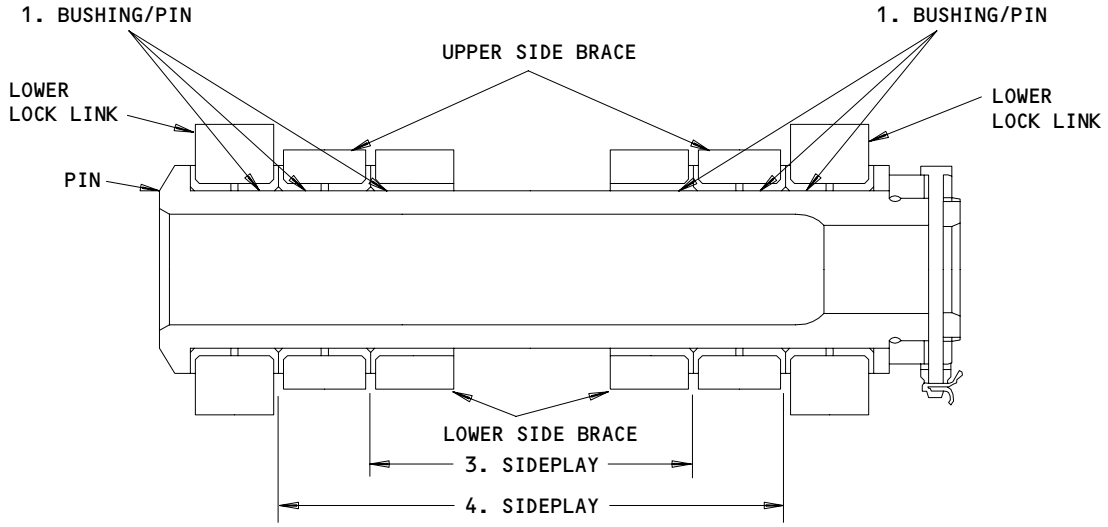
A. Wear Limits for the Side Brace Assembly

S 226-001

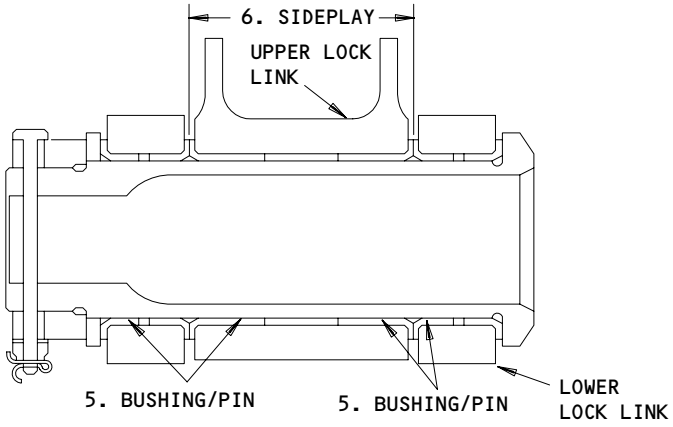
(1) Refer to Fig. 601 for the inspection points and the wear limits table.



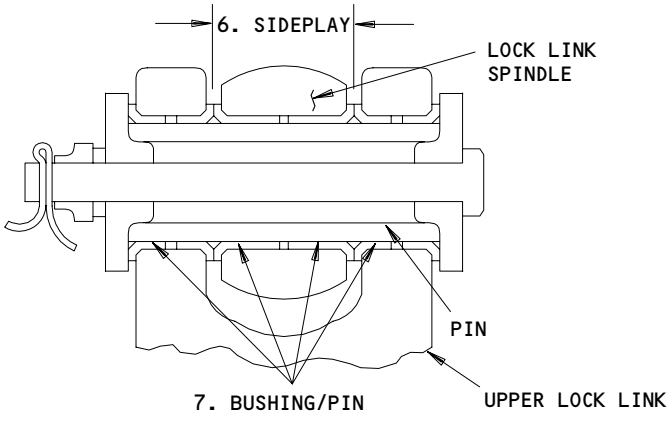
Wear Limits for the Side Brace Assembly of the Main Landing Gear
Figure 601 (Sheet 1)



B–B



C–C



D–D

Wear Limits for the Side Brace Assembly of the Main Landing Gear
Figure 601 (Sheet 2)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
			DIAMETER		PERMITTED WEAR DIMENSION INCHES (mm)	MAXIMUM DIAMETER CLEARANCE INCHES (mm)			
			MINIMUM INCHES (mm)	MAXIMUM INCHES (mm)					
1	BUSHING	ID	2.5000 (63.500)	2.5015 (63.538)	2.5067 (63.670)	0.0077 (0.1956)	X		
	PIN	OD	2.4970 (63.424)	2.4990 (63.475)	2.4938 (63.343)			X	1
2	BUSHING	ID	3.7500 (95.250)	3.7515 (95.288)	3.7574 (95.438)	0.0084 (0.2134)	X		
	ECCENTRIC	OD	3.7470 (95.174)	3.7490 (95.225)	3.7431 (95.075)		X		
3	LOWER SIDE BRACE		———	———	———	0.0340 (0.8636) 2	3		
4	UPPER SIDE BRACE		———	———	———	0.0320 (0.8128) 2	3		
5	BUSHING	ID	2.2500 (57.150)	2.2515 (57.188)	2.2565 (57.315)	0.0075 (0.1905)	X		
	PIN	OD	2.2470 (57.074)	2.2490 (57.125)	2.2440 (56.998)			X	1
6	UPPER LOCK LINK		———	———	———	0.0320 (0.8128) 2	3		
7	BUSHING	ID	1.2500 (31.750)	1.2515 (31.788)	1.2557 (31.895)	0.0067 (0.1702)	X		
	PIN	OD	1.2470 (31.674)	1.2490 (31.725)	1.2448 (31.618)			X	1

1 THIS PART CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS

2 MAXIMUM SIDEPLAY PERMITTED

3 REPLACE THE WORN BUSHINGS

Wear Limits for the Side Brace Assembly of the Main Landing Gear
Figure 601 (Sheet 3)

MAIN GEAR UPPER SIDE BRACE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the upper side brace for the main landing gear. The second task installs the upper side brace for the main landing gear.

TASK 32-11-04-004-001

2. Remove the Upper Side Brace for the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) A20001-79 Boom Hoist (A20001-1 Optional)
      (2) Strap - Utility with S Hooks (1" x 15') 400 lb working load limit. Kinadyne Corp. Part No. 751587 (or equivalent) (Commercially Available)
      (3) A32008-53 MLG Components Sling Equipment
      (4) F70312-47 Crowfoot Wrench
   B. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-32-03/401, Main Gear Side Brace Lock Spring
      (6) AMM 32-32-05/401, Main Gear Jury Strut Spring
   C. Access
      (1) Location Zones

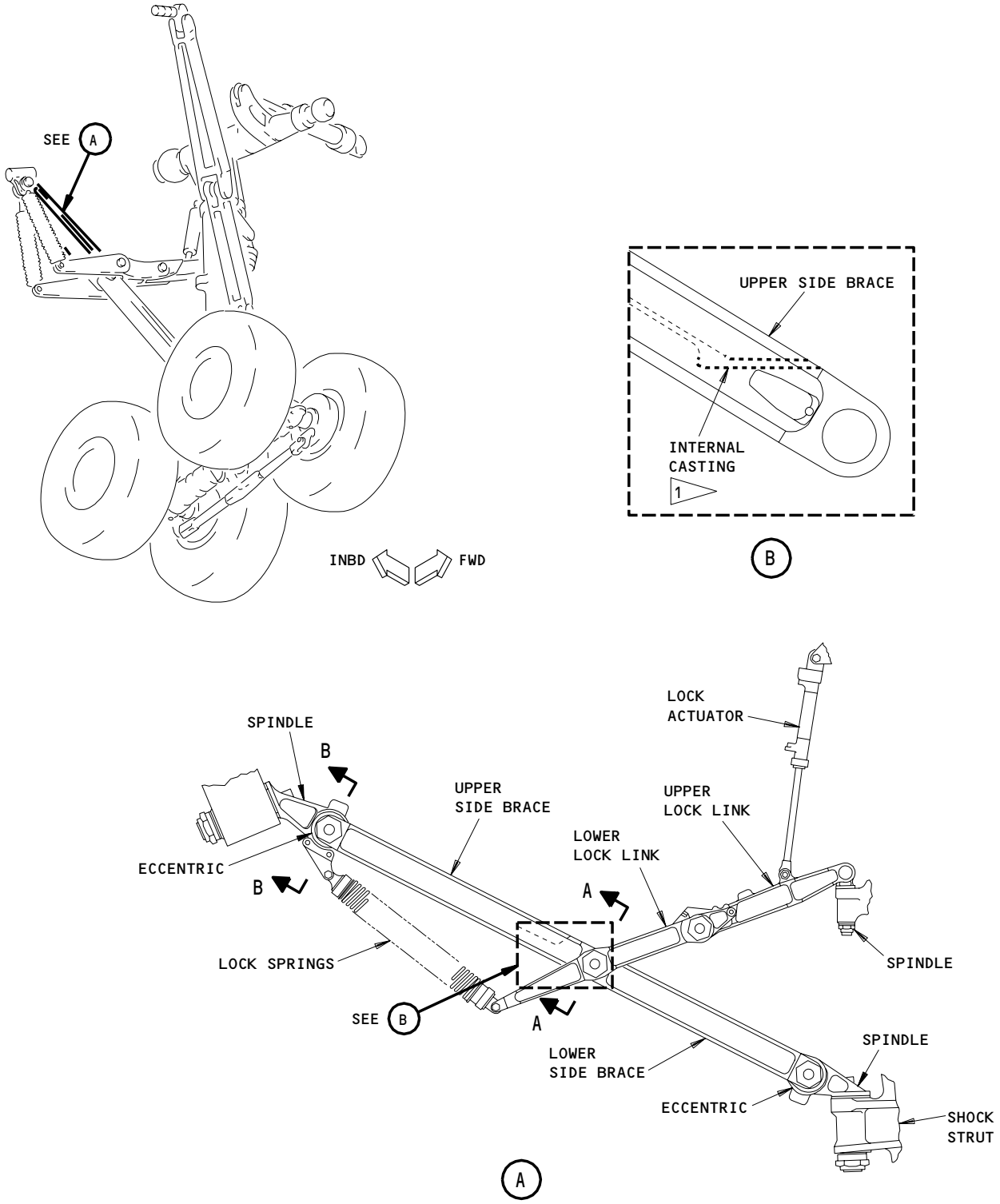
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG DEO Doors
735/745	MLG Trunnion Doors

   D. Prepare for the Removal of the Upper Side Brace

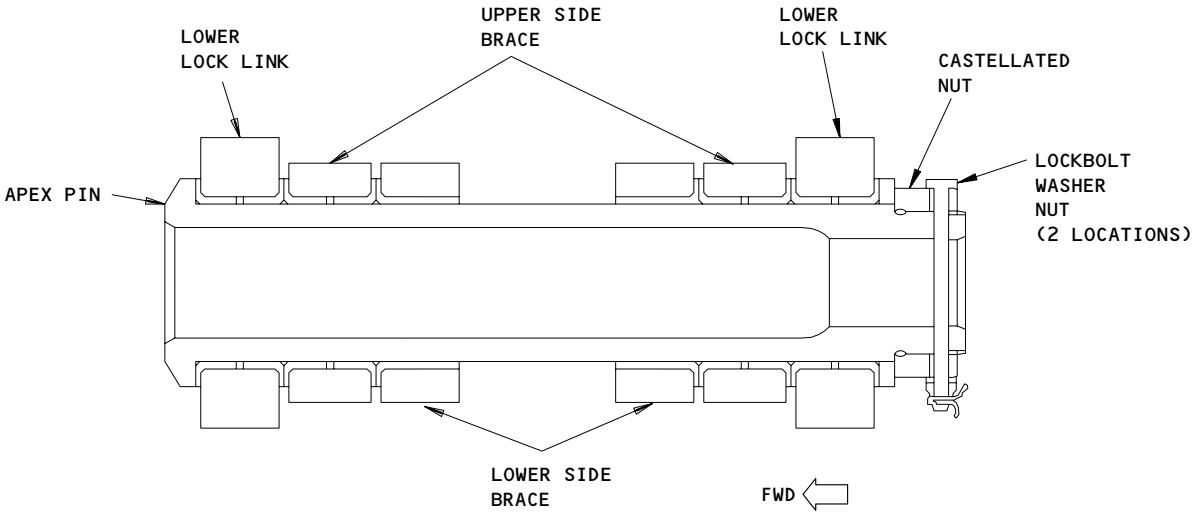
S 484-033

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

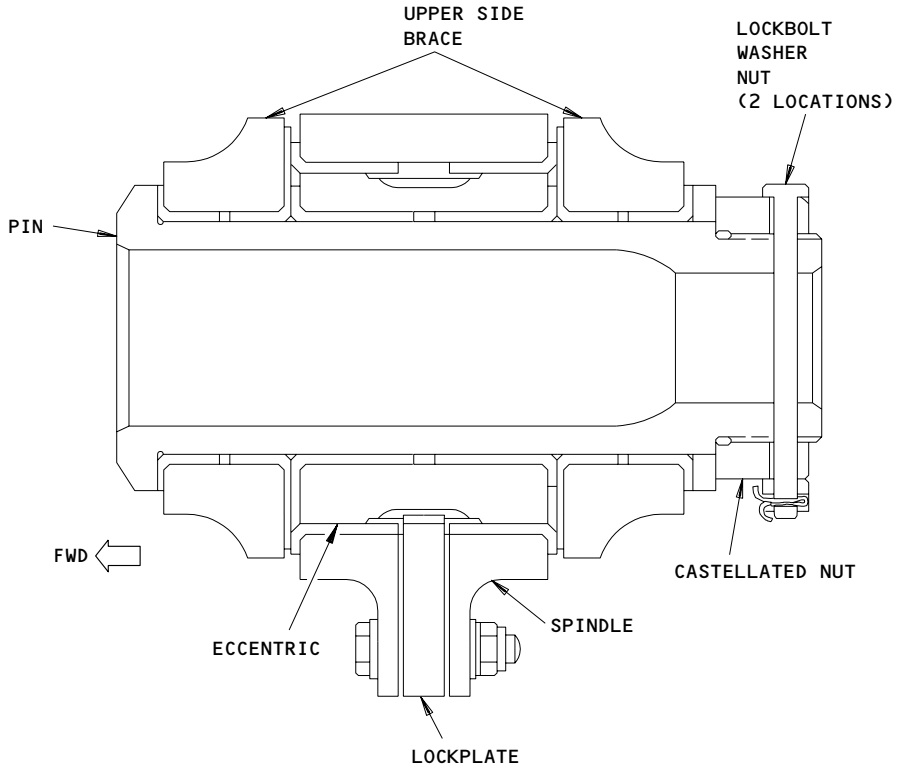
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).



Installation of the Upper Side Brace for the Main landing Gear
Figure 401 (Sheet 1)



A–A



B–B

Installation of the Upper Side Brace for the Main Landing Gear
Figure 401 (Sheet 2)

S 484-034

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 864-004

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 584-005

(4) Lift the airplane until the wheels are above the ground (AMM 07-11-01/201).

S 024-047

(5) Remove the jury strut springs (AMM 32-32-05/401).

S 084-048

(6) Remove the downlock pin from the jury strut.

S 984-049

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE JURY STRUT. THE LANDING WILL MOVE SLIGHTLY INBOARD AND THE JURY STRUT WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(7) Push up on the jury strut to release it from the overcenter position.

S 484-050

(8) Install the side brace rigging bar between the upper jury strut and the lower drag brace spindle (AMM 32-11-03/401).

S 014-006

(9) Remove the lock springs for the side brace (AMM 32-32-03/401).

E. Remove the Upper Side Brace

S 484-036

(1) Install the side brace sling on the upper side brace. Use the instructions supplied with the tools.

NOTE: Do not install the sling on the lock link when you remove the upper side brace.

S 084-040
(2) Remove the downlock pin from the lock link.

S 984-038

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE LOCK LINK. THE LANDING GEAR WILL MOVE SLIGHTLY INBOARD AND THE LOCK LINK WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Push up on the lock link to release it from the overcenter position.

S 024-039
(4) To disconnect the upper side brace from the lower side brace and the lock link, do the steps that follow (View A-A):
(a) Hook and loop the strap around the lower side brace, as close as possible to the apex pin, then attach the strap to a suitable structural part of the wheel well ceiling.

NOTE: This will hold the lower side brace and lock link in position when you remove the apex pin.
(b) Remove the lockbolts, washers and nuts from the apex pin.
(c) Remove the castellated nut, washer and apex pin.

S 434-045
(5) Install the apex pin to hold the lower side brace and the lock link in position.

S 024-041
(6) Remove the lockbolts, washers, nuts, castellated nut, washer and pin to disconnect the upper side brace from the spindle (View B-B).

S 984-042
(7) Move the upper side brace away from the work area.

S 084-043
(8) Remove the sling from the upper side brace.

TASK 32-11-04-404-014
3. Install the Upper Side Brace for the Main Landing Gear (Fig. 401)

NOTE: Wear Limits for the components that follow are supplied in 32-11-03/601.

A. Equipment
(1) A20001-79 Boom Hoist (A20001-1 Optional)
(2) A32008-53 MLG Components Sling Equipment
(3) F70312-47 Crowfoot Wrench

B. Consumable Materials
   (1) D00633 Grease - BMS 3-33 (Preferred)
   (2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
   (3) G50136 Compound, BMS 3-38 Corrosion Preventive

C. References
   (1) AMM 07-11-01/201, Jacking Airplane
   (2) AMM 32-00-15/201, Landing Gear Door Locks
   (3) AMM 32-11-03/401, Main Gear Side Brace
   (4) AMM 32-11-03/601, Main Gear Side Brace Assembly
   (5) AMM 32-11-08/401, Main Gear Side Brace Lock Link
   (6) AMM 32-11-15/401, Main Gear Jury Strut Assembly
   (7) AMM 32-32-00/501, Main Gear Extension and Retraction

D. Access
   (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG DEO Doors
735/745	MLG Trunnion Doors

E. Install the Upper Side Brace

S 944-015

CAUTION: INSTALL THE UPPER SIDE BRACE IN THE POSITION SHOWN ON FIG. 401. INCORRECT INSTALLATION CAN CAUSE DAMAGE TO THE UPPER SIDE BRACE WHEN THE MAIN LANDING GEAR IS RETRACTED.

(1) Install the sling on the upper side brace.

S 584-031

(2) Lift the upper side brace into position on the main landing gear.

S 034-046

(3) Remove the apex pin which holds the lower side brace and the lock link in position.

S 424-021

(4) To connect the upper side brace to the lower side brace and lock link, do the steps that follow (View A-A):
   (a) Apply grease to the chrome plated surface of the apex pin.
   (b) Position the upper side brace on the lower side brace and lock link.

       CAUTION: POINT THE HEAD OF THE APEX PIN IN THE CORRECT DIRECTION. IF THE PIN IS NOT INSTALLED CORRECTLY, DAMAGE TO EQUIPMENT CAN OCCUR.

   (c) To install the apex pin, do the steps that follow:
      1) Point the head of the apex pin forward when you install it.
      2) Put the apex pin in the upper and lower side brace attach point.
      3) Apply a thin layer of compound to the threads of the apex pin, washer and the threads of the castellated nut.
      4) Install the washer and castellated nut on the apex pin.
      5) Use the crowfoot wrench to tighten the castellated nut to 110-120 pound-feet.
      6) Apply a thin layer of compound to the lockbolts, washers and the threads of the nuts.
      7) Install the lockbolts, washers and nuts on the apex pin.

         NOTE: If it is necessary, loosen the castellated nut to the nearest position to install the lockbolts.

      8) Remove the excess compound.
   (d) Remove the strap.

S 984-055

(5) Push down on the lock link assembly to position the lock link in the locked position.

S 484-056

(6) Install the downlock pin in the lock link.

S 434-017

(7) To connect the upper side brace to the spindle, do the steps that follow (View B-B):
   (a) Apply grease to the chrome plated surface of the pin and the inner diameter of the eccentric.
   (b) Put the eccentric in the upper spindle.
   (c) Turn the eccentric until the thin side of the eccentric is inboard.

(d) Position the upper side brace above the spindle attach point.
(e) Turn the lower end of the eccentric to permit you to install the pin easily.

NOTE: If the eccentric and the side brace do not align, move the eccentric to the best hole alignment. Remove the lockplate at the lower spindle attach point and turn the lower eccentric until the upper attach point can be installed.

WARNING: MAKE SURE YOU INSTALL THE PIN WITH THE HEAD OF THE PIN ON THE FORWARD SIDE OF THE SIDE BRACE. IMPROPER INSTALLATION OF THE PIN CAN CAUSE DAMAGE TO EQUIPMENT.

(f) Put the pin in the upper side brace attach point.
(g) Apply a thin layer of compound to the threads of the pin.
(h) Apply a thin layer of compound to the washer and the threads of the castellated nut.
(i) Install the washer and castellated nut on the pin
(j) Use the crowfoot wrench to tighten the castellated nut to 110-120 pound-feet.
(k) Apply a thin layer of compound to the lockbolts, washers, and the threads of the nuts.
(l) Install the lockbolts, washers and nuts on the pin.

NOTE: If it is necessary, loosen the castellated nut to the nearest lock position to install the lockbolts.

1) Remove the excess compound.

S 084-044
(8) Remove the sling.

S 424-054
(9) Install the lockplates to lock the eccentrics in position.

S 414-026
(10) Install the lock springs for the side brace (AMM 32-11-08/401).

F. Put the Airplane Back to Its Usual Condition

S 084-051
(1) Remove the side brace rigging bar from the drag brace.

S 984-057
(2) Push down on the jury strut assembly to position the jury strut in the locked position.

S 484-052
(3) Install the downlock pin on the jury strut (AMM 32-00-20/201).

S 424-053
(4) Install the jury strut springs (AMM 32-32-05/401).

S 714-027
(5) Do the extension and retraction test for the main landing gear (AMM 32-32-00/501).

S 584-028
(6) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 644-029
(7) Lubricate the upper side brace at the grease fittings.

S 084-035

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(8) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR LOWER SIDE BRACE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the lower side brace for the main landing gear. The second task installs the lower side brace for the main landing gear.

TASK 32-11-05-004-026

2. Remove the Lower Side Brace of the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Boom Hoist - A20001-79
          (A20001-1 Optional)
      (2) Strap - Utility with S Hooks (1" x 15') 400 lb working load limit.
          Kinadyne Corp. Part No. 751587 (or equivalent)
          (Commercially Available)
      (3) A32008-53 MLG Components Sling Equipment
      (4) Crowfoot Wrench - F70312-47
   B. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-32-03/401, Main Gear Side Brace Lock Spring
   C. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

   D. Prepare for the Removal of the Lower Side Brace.

S 484-030

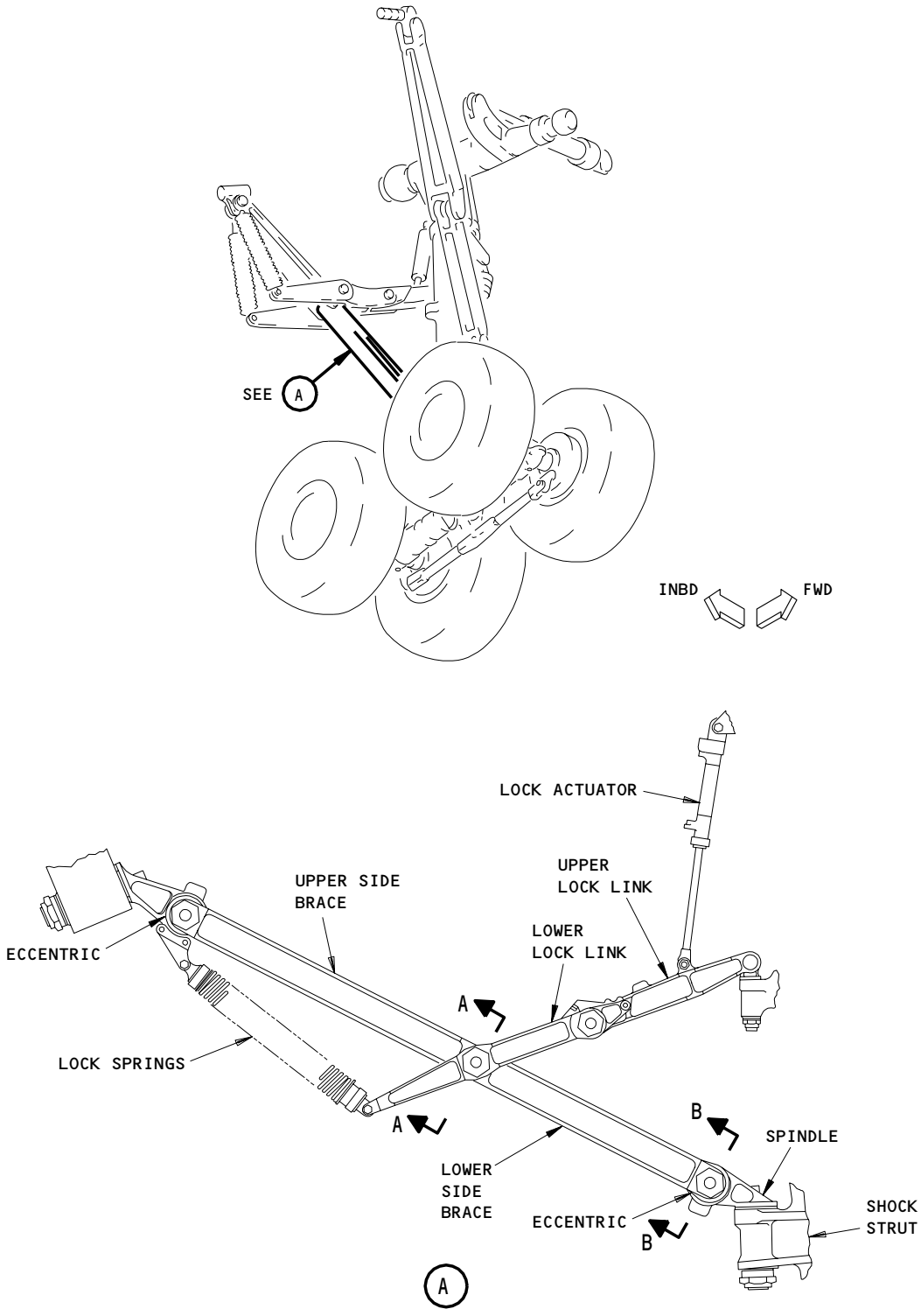
WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

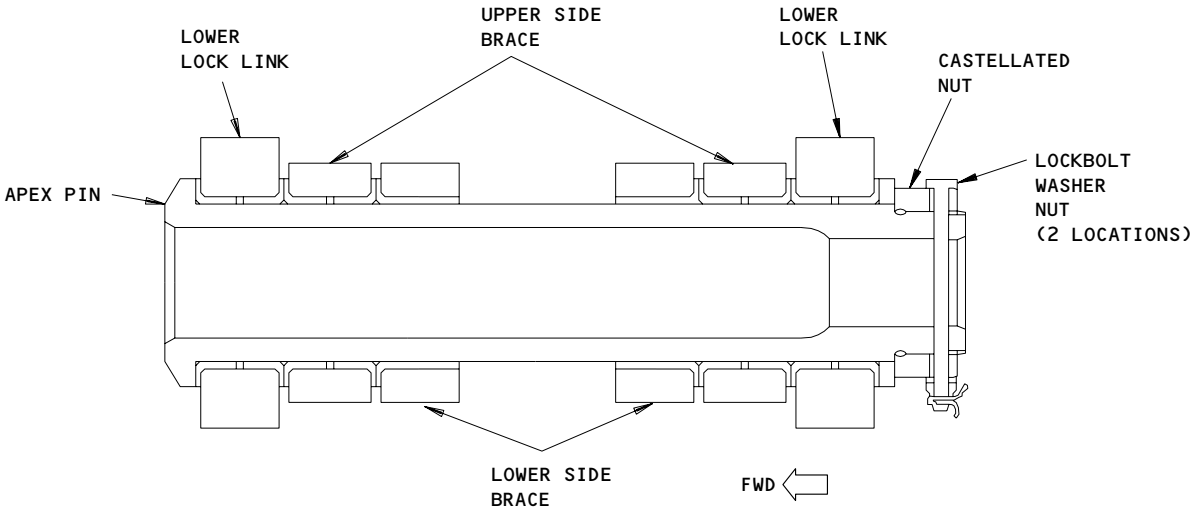
S 484-031

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

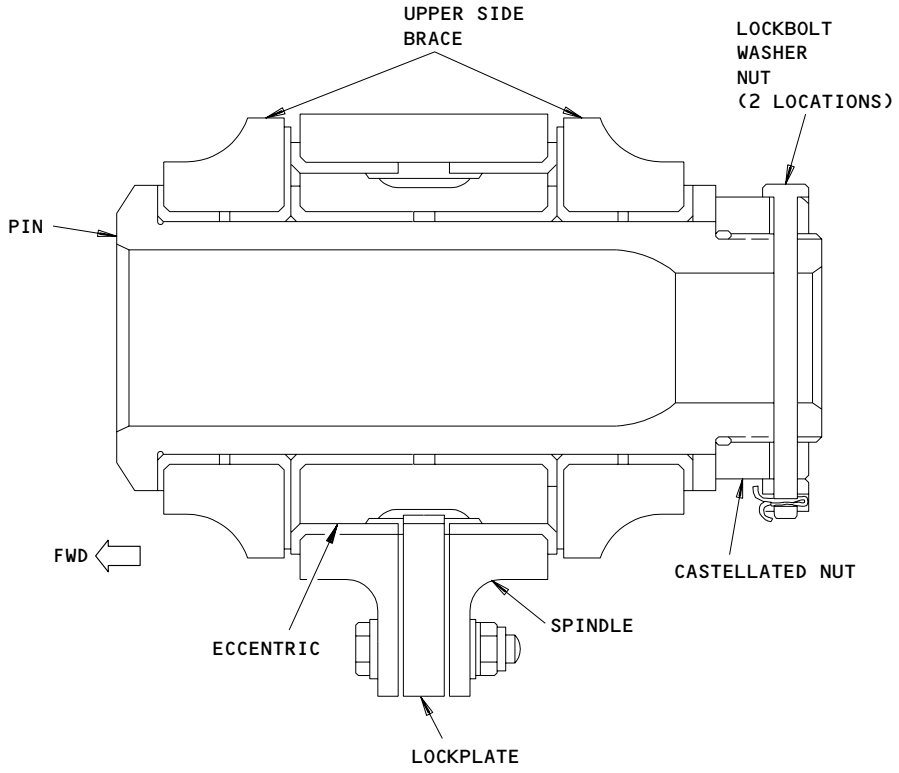
(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).



Lower Side Brace Installation for the Main Landing Gear
Figure 401 (Sheet 1)



A–A



B–B

Lower Side Brace Installation for the Main Landing Gear
Figure 401 (Sheet 2)

S 864-004
(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 584-005
(4) Lift the airplane until the wheels are above the ground (AMM 07-11-01/201).

S 024-042
(5) Remove the jury strut springs (AMM 32-32-05/401).

S 084-043
(6) Remove the downlock pin from the jury strut.

S 984-044

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE JURY STRUT. THE LANDING WILL MOVE SLIGHTLY INBOARD AND THE JURY STRUT WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(7) Push up on the jury strut to release it from the overcenter position.

S 484-045
(8) Install the side brace rigging bar between the upper jury strut and the lower drag brace spindle (AMM 32-11-03/401).

S 014-006
(9) Remove the lock springs for the side brace (AMM 32-32-03/401).

E. Remove the Lower Side Brace.

S 484-039
(1) Install the side brace sling on the lower side brace. Use the instructions supplied with the tools.

NOTE: Do not install the sling on the lock link when you remove the lower side brace.

S 084-033
(2) Remove the downlock pin from the lock link.

S 984-034

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE LOCK LINK. THE LANDING GEAR WILL MOVE SLIGHTLY INBOARD AND THE LOCK LINK WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Push up on the lock link to release it from the overcenter position.

S 034-007

(4) To disconnect the lower side brace from the upper side brace and the lock links, do the steps that follow (View A-A):
   (a) Hook and loop the strap around the lower lock link, as close as possible to the apex pin, then loop the strap around the upper side brace and attach the strap to a suitable structural part of the wheel well ceiling.

   NOTE: This will hold the upper side brace and lock link in position when you remove the apex pin.
   (b) Remove the lockbolts, washers and nuts from the apex pin.
   (c) Remove the castellated nut, washer and apex pin.

S 424-035

(5) Install the apex pin to hold the upper side brace and the lock link in position.

S 034-009

(6) Remove the lockbolts, washers, nuts, castellated nut, washer and pin to disconnect the lower side brace from the spindle (View B-B).

S 984-037

(7) Move the lower side brace away from the work area.

S 084-038

(8) Remove the sling from the lower side brace.

TASK 32-11-05-404-011

3. Install the Lower Side Brace of the Main Landing Gear (Fig. 401)

NOTE: Wear Limits for the components that follows are shown in 32-11-03/601.

A. Equipment
   (1) Crowfoot Wrench - F70312-47
B. Consumable Materials
   (1) D00633 Grease - BMS 3-33 (Preferred)
   (2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

(3) G50136 Compound, Corrosion Preventive - BMS 3-38

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-11-03/401, Main Gear Side Brace
(4) AMM 32-11-03/601, Main Gear Side Brace Assembly
(5) AMM 32-32-00/501, Main Gear Extension and Retraction
(6) AMM 32-32-03/401, Main Gear Side Brace Lock Spring

D. Access
(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

E. Install the Lower Side Brace.

S 484-040
(1) Install the sling on the lower side brace.

S 984-041
(2) Lift the lower side brace into position on the main landing gear.

S 034-036
(3) Remove the apex pin which holds the upper side brace and the lock link in position.

S 424-017
(4) To connect the lower side brace to the upper side brace and the lock link, do the steps that follow (View A-A):
(a) Apply grease to the chrome plated surface of the apex pin.
(b) Position the lower side brace on the upper side brace and lock link.

CAUTION: POINT THE HEAD OF THE APEX PIN IN THE CORRECT DIRECTION. IF THE PIN IS NOT INSTALLED CORRECTLY, DAMAGE TO EQUIPMENT CAN OCCUR.

(c) To install the apex pin, do the steps that follow:
1) Point the head of the apex pin forward when you install it.
2) Put the apex pin in the upper and lower side brace attach point.
3) Apply a thin layer of compound to the threads of the apex pin, washer and the threads of the castellated nut.
4) Install the washer and castellated nut on the apex pin.
5) Use the crowfoot wrench to tighten the castellated nut to 110-120 pound-feet.

6) Apply a thin layer of compound to the lockbolts, washers and the threads of the nuts.
7) Install the lockbolts, washers and nuts on the apex pin.

NOTE: If it is necessary, loosen the castellated nut to the nearest position to install the lockbolts.

8) Remove the excess compound.

(d) Remove the strap.

S 984-049

(5) Push down on the lock link assembly to position the lock link in the locked position.

S 484-050

(6) Install the downlock pin in the lock link.

S 434-014

(7) To connect the lower side brace to the spindle, do the steps that follow (View B-B):
(a) Apply grease to the chrome plated surface of the pin and the inner diameter of the eccentric.
(b) Put the eccentric in the lower spindle.
(c) Turn the eccentric until the thin side of the eccentric is up.
(d) Position the lower side brace above the spindle attach point.
(e) Turn the lower end of the eccentric to permit you to install the pin easily.

NOTE: If the eccentric and the side brace do not align, move the eccentric to the best hole alignment. Remove the lockplate at the upper spindle attach point and turn the upper eccentric until the lower attach point can be installed.

(f) Position the lower side brace on the spindle.

WARNING: MAKE SURE YOU INSTALL THE PIN WITH THE HEAD OF THE PIN ON THE FORWARD SIDE OF THE SIDE BRACE. IMPROPER INSTALLATION OF THE PIN CAN CAUSE DAMAGE TO EQUIPMENT.

(g) Put the pin in the lower side brace attach point.
(h) Apply a thin layer of compound to the threads of the pin.
(i) Apply a thin layer of compound to the washer and the threads of the castellated nut.
(j) Install the washer, and castellated nut on the pin.
(k) Use the crowfoot wrench to tighten the castellated nut to 110-120 pound-feet.
(l) Apply a thin layer of compound to the lockbolts, washers, and the threads of the nuts.
(m) Install the lockbolts, washers and nuts on the pin.

NOTE: If it is necessary, loosen the castellated nut to the nearest lock position to install the lockbolts.

(n) Remove the excess compound.

S 414-021
(8) Install the lock springs for the side brace (AMM 32-32-03/401).

F. Put the Airplane Back to Its Usual Condition.

S 084-046
(1) Remove the side brace rigging bar from the drag brace.

S 984-047
(2) Push down on the jury strut assembly to position the jury strut in the locked position.

S 484-048
(3) Install the downlock pin on the jury strut (AMM 32-00-20/201).

S 714-022
(4) Do the extension and retraction test for the main landing gear (AMM 32-32-00/501).

S 584-023
(5) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 644-024
(6) Lubricate the lower side brace at the grease fittings.

S 084-032

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(7) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR SIDE BRACE UPPER AND LOWER SPINDLES - REMOVAL/INSTALLATION

1. General
   A. This procedure contains four tasks. The first task removes the upper spindle for the side brace on the main landing gear. The second task installs the upper spindle. The third task removes the lower spindle for the side brace on the main landing gear. The fourth task installs the lower spindle.

TASK 32-11-06-004-001

2. Remove the Upper Spindle for the Side Brace on the Main Landing Gear
   A. Equipment
      (1) Strap - Utility with S Hooks (1" x 15') 400 lb working load limit
          Kinadyne Corp. Part No. 751587 (or equivalent)
          (Commercially Available)
      (2) F70312-32, -47 Crowfoot Wrenches
   B. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-32-03/401, Main Gear Side Brace Lock Spring
   C. Access
      (1) Location Zones

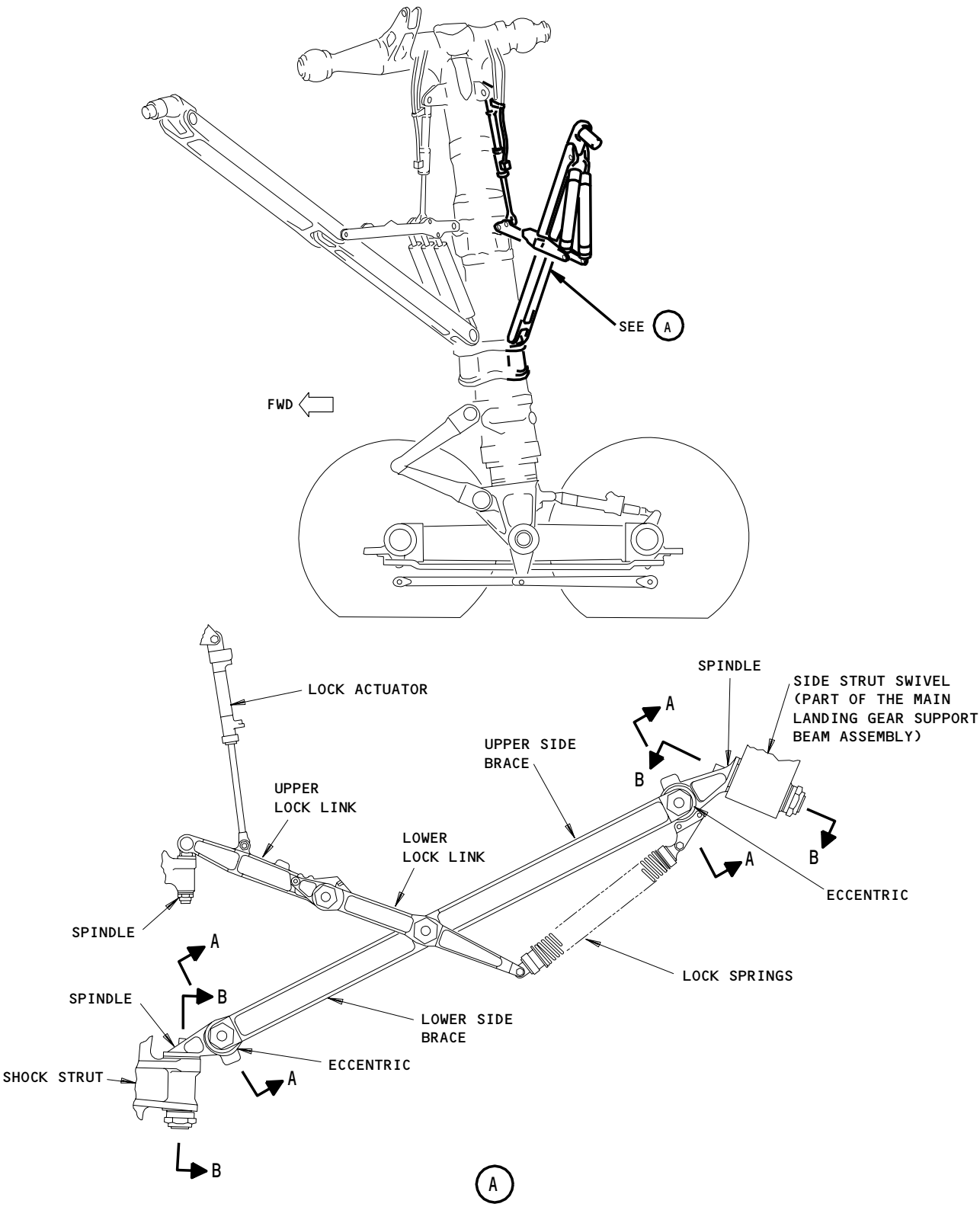
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

   D. Prepare for the Removal of the Upper Spindle

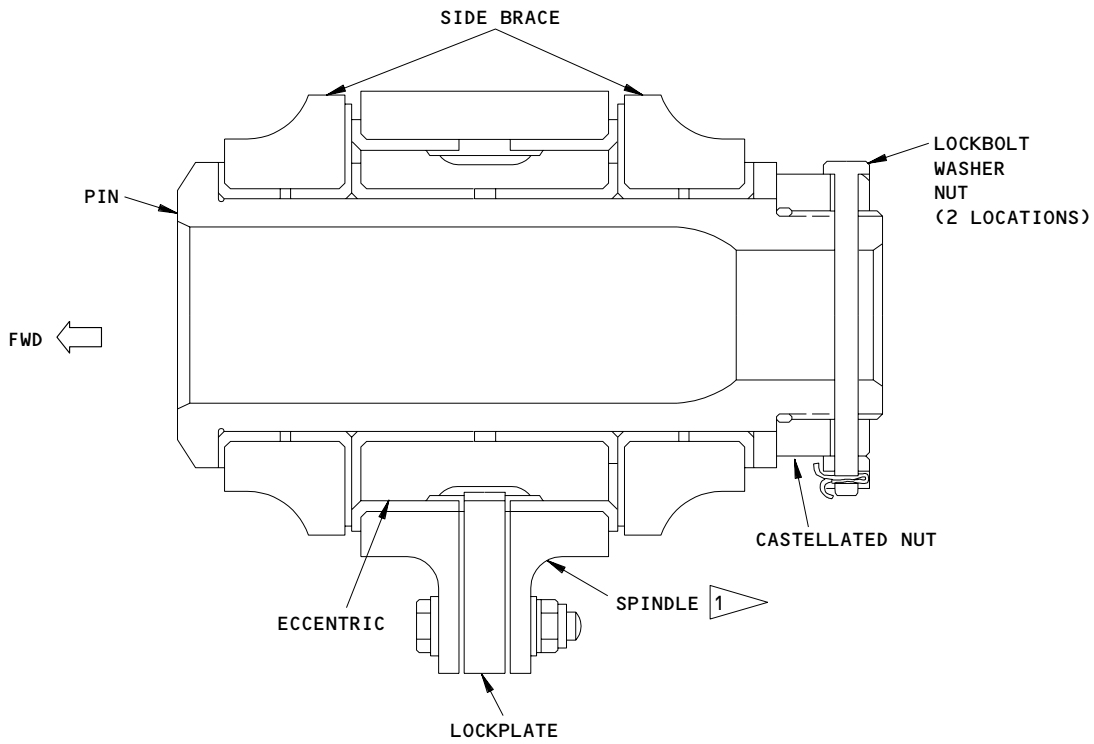
S 484-048

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

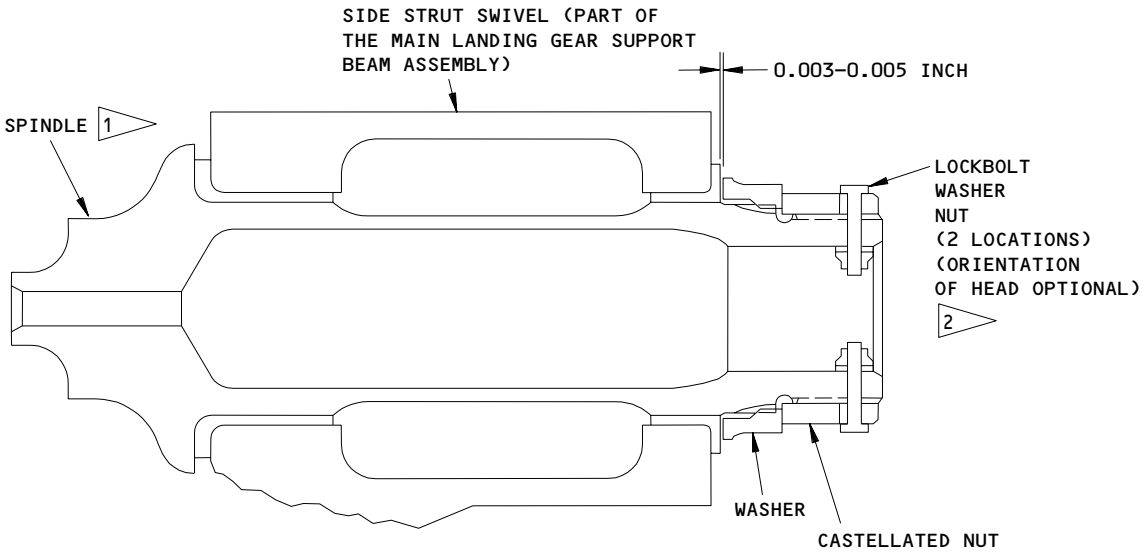
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).



Upper and Lower Spindles Installation for the Side Brace on the Main Landing Gear
Figure 401 (Sheet 1)



A–A



B–B

1 UPPER SPINDLE AND LOWER SPINDLE ARE EQUIVALENT

2 FOR ADDITIONAL CLEARANCE, INSTALL AS SHOWN

Upper and Lower Spindles Installation for the Side Brace on the Main Landing Gear
Figure 401 (Sheet 2)

S 484-049

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 864-004

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 584-005

(4) Lift the airplane until the wheels are above the ground (AMM 07-11-01/201).

S 024-060

(5) Remove the jury strut springs (AMM 32-32-05/401).

S 084-061

(6) Remove the downlock pin from the jury strut.

S 984-062

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE JURY STRUT. THE LANDING WILL MOVE SLIGHTLY INBOARD AND THE JURY STRUT WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(7) Push up on the jury strut to release it from the overcenter position.

S 484-063

(8) Install the side brace rigging bar between the upper jury strut and the lower drag brace spindle (AMM 32-11-03/401).

E. Remove the Upper Spindle (Fig. 401)

S 014-006

(1) Disconnect the top end of the side brace lock springs (AMM 32-32-03/401).

S 084-055

(2) Remove the downlock pin from the lock link.

S 984-056

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE LOCK LINK. THE LANDING GEAR WILL MOVE SLIGHTLY INBOARD AND THE LOCK LINK WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Push up on the lock link to release it from the overcenter position.

S 484-064

(4) Hook and loop the strap around the upper side brace, as close as possible to the spindle, then attach and tighten the strap to a suitable structural part of the wheel well ceiling.

NOTE: This will hold the brace in position when you remove the pin.

S 034-008

(5) Remove the lockbolts, washers, nuts, castellated nut, washer and pin to disconnect the upper side brace from the spindle (View A-A).

S 984-057

(6) Move the side brace away from the spindle and tighten the strap.

S 014-011

(7) Remove the lockplate and the eccentric from the spindle.

S 034-058

(8) Remove the lockbolts, washers, nuts, castellated nut and washer to disconnect the spindle from the support beam fitting (View B-B).

TASK 32-11-06-404-039

3. Install the Upper Spindle for the Side Brace on the Main Landing Gear

A. Equipment

(1) F70312-32, 47 Crowfoot Wrenches

B. Consumable Materials

(1) D00633 Grease - BMS 3-33 (Preferred)

(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

(3) G50136 Compound, Corrosion Preventive - BMS 3-38

C. References

(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-11-03/401, Main Gear Side Brace
(4) AMM 32-11-06/601, Main Gear Side Brace Upper and Lower Spindles
(5) AMM 32-32-00/501, Main Gear Extension and Retraction
(6) AMM 32-32-03/401, Main Gear Side Brace Lock Spring

D. Access

(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

E. Install the Upper Spindle (Fig. 401)

NOTE: Wear Limits for the components that follow are shown in 32-11-06/601.

S 424-059

(1) To install the upper spindle in the side strut swivel of the support beam, do the steps that follow (View B-B):
(a) Apply grease to the chrome plated surface of the upper spindle.
(b) Put the spindle in the side strut swivel of the support beam.
(c) Apply a thin layer of compound to the threads of the spindle.
(d) Apply a thin layer of compound to the washer and the threads of the castellated nut.
(e) Install the washer and castellated nut on the spindle.
(f) Use the crowfoot wrench to tighten the castellated nut to 250-300 pound-feet.
(g) Loosen the castellated nut to get clearance between the washer and bushing.
(h) Put a 0.003-0.005-inch gage between the washer and bushing.
(i) Tighten the castellated nut to 5-10 pound-feet.
(j) Remove the gage.
(k) Apply a thin layer of compound to the threads of the lockbolts, the washers and the threads of the nuts.
(l) Install the lockbolts, washers and nuts.

NOTE: If it is necessary loosen the castellated nut to the nearest lock position to install the lockbolts.

(m) Remove the excess compound.

S 984-089

(2) Push down on the lock link assembly to position the lock link in the locked position.

S 484-088

(3) Install the downlock pin in the lock link.

S 414-014

(4) To connect the upper side brace to the spindle, do the steps that follow (View A-A):
   (a) Apply grease to the chrome plated surface of the pin and the inner diameter of the eccentric
   (b) Put the eccentric in the spindle.
   (c) Turn the eccentric until the thin side of the eccentric is inboard.
   (d) Remove the strap.
   (e) Position the upper side brace above the spindle attach point.
   (f) Turn the lower end of the eccentric to permit you to install the pin easily.

      NOTE: If the eccentric and the side brace do not align, move the eccentric to the best hole alignment. Remove the lockplate at the lower spindle attach point and turn the lower eccentric until the upper attach point can be installed.

   (g) Position the upper side brace on the spindle.

   WARNING: MAKE SURE YOU INSTALL THE PIN WITH THE HEAD OF THE PIN ON THE FORWARD SIDE OF THE SIDE BRACE. IMPROPER INSTALLATION OF THE PIN CAN CAUSE DAMAGE TO EQUIPMENT.

   (h) Put the pin in the upper side brace attach point.
   (i) Apply a thin layer of compound to the threads of the pin.
   (j) Apply a thin layer of compound to the washer and the threads of the castellated nut.
   (k) Install the washer and castellated nut on the pin.
   (l) Use the crowfoot wrench to tighten the nut to 110-120 pound-feet.
   (m) Apply a thin layer of compound on the lockbolts, washers, and the threads of the nuts.
   (n) Install the lockbolts, washers and nuts.

      NOTE: If it is necessary loosen the castellated nut to the nearest lock position to install the lockbolts.
   (o) Remove the excess compound.
   (p) Install the lockplates to hold the eccentrics in position.

S 414-019
(5) Install the side brace springs (AMM 32-32-03/401).

F. Put the Airplane Back to Its Usual Condition

S 084-067
(1) Remove the side brace rigging bar from the drag brace.

S 484-068
(2) Install the downlock pin on the jury strut (AMM 32-00-20/201).

S 424-069
(3) Install the jury strut springs (AMM 32-32-05/401).

S 714-020
(4) Do the extension and retraction test for the main landing gear (AMM 32-32-00/501).

S 584-021
(5) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 644-022
(6) Lubricate the spindle at the grease fittings.

S 084-052

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(7) Remove the door locks and close the doors (AMM 32-00-15/201).

TASK 32-11-06-004-024

4. Remove the Lower Spindle for the Side Brace on the Main Landing Gear

A. Equipment
(1) Strap - Utility with S Hooks (1" x 15') 400 lb working load limit
Kinadyne Corp. Part No. 751587 (or equivalent)
(Commercially Available)
(2) F70312-32, 47 Crowfoot Wrenches

B. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 32-32-03/401, Main Gear Side Brace Lock Spring

C. Access

(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

D. Prepare for the Removal of the Lower Spindle

S 484-050

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 484-051

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 864-027

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 584-028

(4) Lift the airplane until the wheels are above the ground (AMM 07-11-01/201).

S 024-070

(5) Remove the jury strut springs (AMM 32-32-05/401).

S 084-071

(6) Remove the downlock pin from the jury strut.

S 984-072

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE JURY STRUT. THE LANDING WILL MOVE SLIGHTLY INBOARD AND THE JURY STRUT WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(7) Push up on the jury strut to release it from the overcenter position.

S 484-073
(8) Install the side brace rigging bar between the upper jury strut and the lower drag brace spindle (AMM 32-11-03/401).

E. Remove the Lower Spindle (Fig. 401)

S 084-074
(1) Remove the downlock pin from the lock link.

S 984-075

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE LOCK LINK. THE LANDING GEAR WILL MOVE SLIGHTLY INBOARD AND THE LOCK LINK WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Push up on the lock link to release it from the overcenter position.

S 024-076
(3) Remove the lockbolts, washers, nuts, castellated nut, washer and pin to disconnect the lower side brace from the spindle (View A-A).

S 984-077
(4) Use the strap to hold the lower side brace away from the spindle.

S 024-078
(5) Remove the lockplate and the eccentric from the spindle.

S 024-079
(6) Remove the lockbolts, washers, nuts, castellated nut and washer to disconnect the spindle from the shock strut fitting (View B-B).

TASK 32-11-06-404-040

5. Install the Lower Spindle for the Side Brace on the Main Landing Gear

A. Equipment
(1) F70312-32, 47 Crowfoot Wrenches

B. Consumable Materials
   (1) D00633 Grease - BMS 3-33 (Preferred)
   (2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
   (3) G50136 Compound, Corrosion Preventive - BMS 3-38

C. References
   (1) AMM 07-11-01/201, Jacking Airplane
   (2) AMM 32-00-15/201, Landing Gear Door Locks
   (3) AMM 32-11-03/401, Main Gear Side Brace
   (4) AMM 32-11-06/601, Main Gear Side Brace Upper and Lower Spindles
   (5) AMM 32-32-00/501, Main Gear Extension and Retraction

D. Access
   (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

E. Install the Lower Spindle (Fig. 401)

NOTE: Wear Limits for the components that follow are shown in 32-11-06/601.

S 424-080

(1) To install the lower spindle in the shock strut fitting, do the steps that follow (View B-B):
   (a) Apply grease to the chrome plated surface of the lower spindle.
   (b) Put the lower spindle in the shock strut fitting.
   (c) Apply a thin layer of compound to the threads of the spindle.
   (d) Apply a thin layer of compound to the washer and the threads of the castellated nut.
   (e) Install the washer and castellated nut on the spindle.
   (f) Use the crowfoot wrench to tighten the castellated nut to 250-300 pound-feet.

(g) Loosen the castellated nut to get clearance between the washer and bushing.
(h) Put a 0.003-0.005-inch gage between the washer and bushing.
(i) Tighten the castellated nut to 5-10 pound-feet.
(j) Remove the gage.
(k) Apply a thin layer of compound to the threads of the lockbolts, the washers and the threads of the nuts.
(l) Install the lockbolts, washers and nuts.

NOTE: If it is necessary loosen the castellated nut to the nearest lock position to install the lockbolts.

(m) Remove the excess compound.

S 984-090

(2) Push down on the lock link assembly to position the lock link in the locked position.

S 484-091

(3) Install the downlock pin in the lock link.

S 424-081

(4) To connect the lower side brace to the spindle, do the steps that follow (View A-A):
(a) Apply grease to the chrome plated surface of the pin and the inner diameter of the eccentric
(b) Put the eccentric in the spindle.
(c) Turn the eccentric until the thin side of the eccentric is up.
(d) Remove the strap.
(e) Position the lower side brace above the spindle attach point.
(f) Turn the lower end of the eccentric to permit you to install the pin easily.

NOTE: If the eccentric and the side brace do not align, move the eccentric to the best hole alignment. Remove the lockplate at the upper spindle attach point and turn the upper eccentric until the lower attach point can be installed.

(g) Position the lower side brace on the spindle.

WARNING: MAKE SURE YOU INSTALL THE PIN WITH THE HEAD OF THE PIN ON THE FORWARD SIDE OF THE SIDE BRACE. IMPROPER INSTALLATION OF THE PIN CAN CAUSE DAMAGE TO EQUIPMENT.

(h) Put the pin in the lower side brace attach point.

(i) Apply a thin layer of compound to the threads of the pin.
(j) Apply a thin layer of compound to the washer and the threads of the castellated nut.
(k) Install the washer and castellated nut on the pin.
(l) Use the crowfoot wrench to tighten the nut to 110-120 pound-feet.
(m) Apply a thin layer of compound on the lockbolts, washers, and the threads of the nuts.
(n) Install the lockbolts, washers and nuts.

NOTE: If it is necessary loosen the castellated nut to the nearest lock position to install the lockbolts.

(o) Remove the excess compound.
(p) Install the lockplates to hold the eccentrics in position.

S 424-084
(5) Install the side brace springs (AMM 32-32-03/401).

F. Put the Airplane Back to Its Usual Condition

S 094-085
(1) Remove the side brace rigging bar from the drag brace.

S 434-086
(2) Install the downlock pin on the jury strut (AMM 32-00-20/201).

S 424-087
(3) Install the jury strut springs (AMM 32-32-05/401).

S 714-036
(4) Do the extension and retraction test for the main landing gear (AMM 32-32-00/501).

S 584-037
(5) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 644-042
(6) Lubricate the spindle at the grease fittings.

S 084-053

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(7) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR SIDE BRACE UPPER AND LOWER SPINDLES - INSPECTION/CHECK

1. General
   A. This procedure only has an illustration and a wear limits table which shows the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Gear Side Brace Upper and Lower Spindles - Removal/Installation for procedures to do these tasks.
   B. On side brace assemblies without bushing fillet seals (bushings with an orange identification mark) the rotation or migration of the bushing is a normal condition (AMM 12-21-14/301).

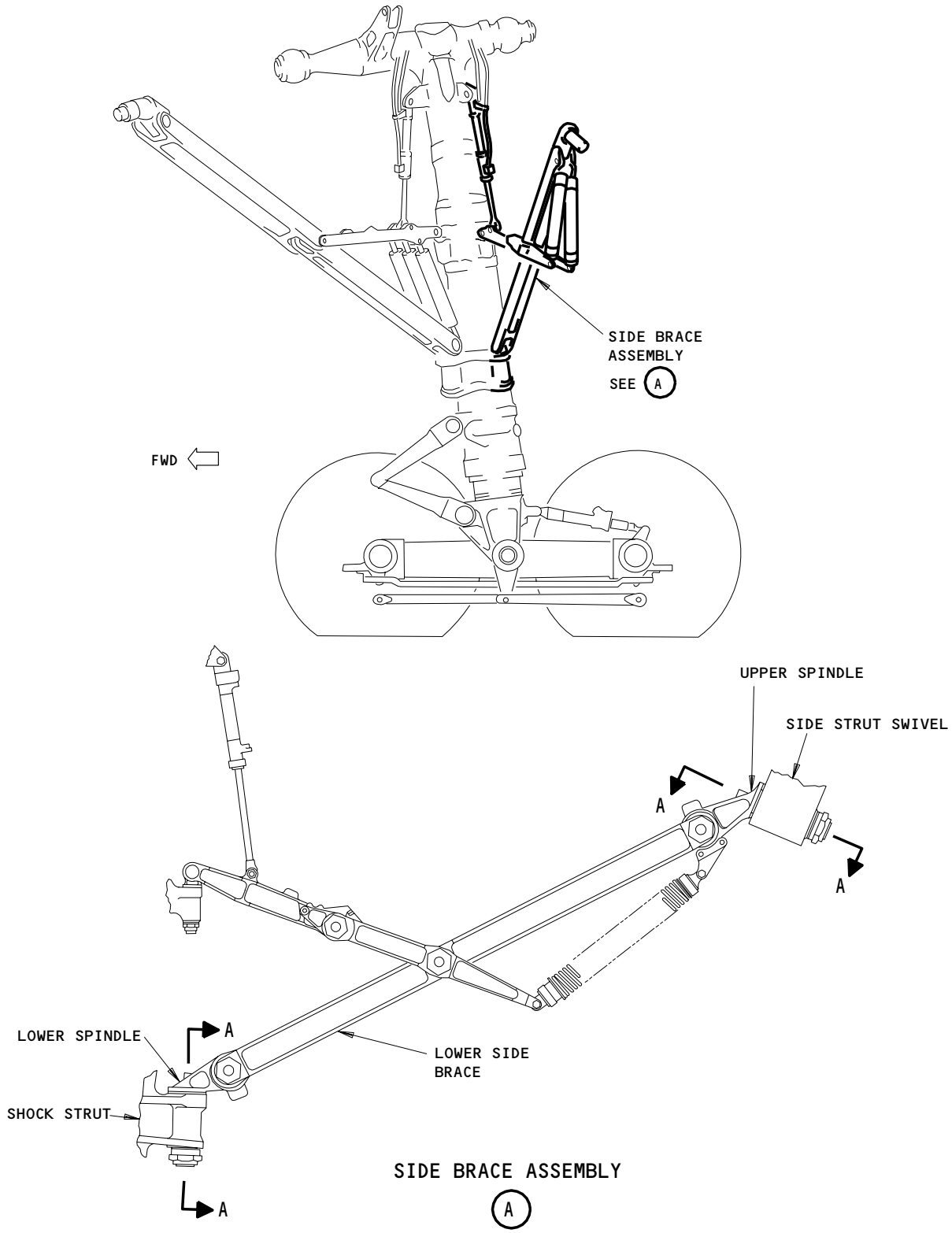
TASK 32-11-06-206-002

2. Wear Limits for the Upper and Lower Spindles of the Side Brace for the Main Landing Gear (Fig. 601)

   NOTE: Wear limits for components connected to the upper and lower spindles can be found in the Maintenance Manual subject for the component.

   A. Wear Limits for the Upper and Lower Spindles

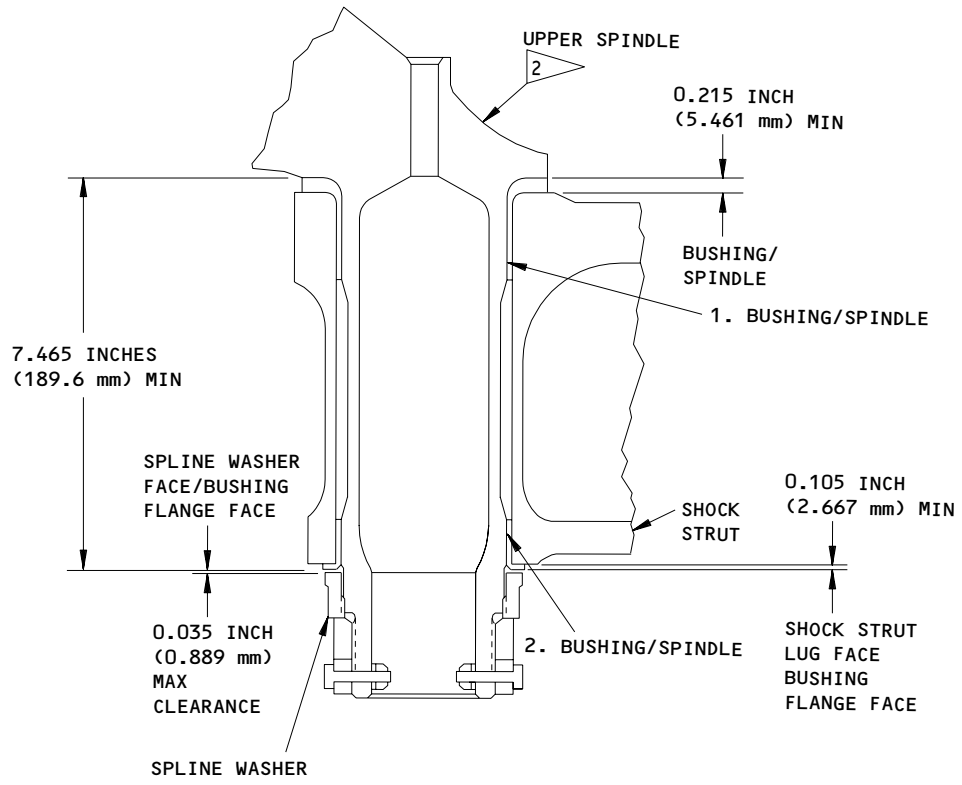
      S 226-001
      (1) Refer to Fig. 601 for the inspection points and the wear limits table.



SIDE BRACE ASSEMBLY

(A)

Wear Limits for the Upper and Lower Spindles of the Side Brace for the Main Landing Gear
Figure 601 (Sheet 1)



A-A

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
			DIAMETER		PERMITTED WEAR DIMENSION INCHES (mm)	MAXIMUM DIAMETER CLEARANCE INCHES (mm)			
			MINIMUM INCHES (mm)	MAXIMUM INCHES (mm)					
1	BUSHING	ID	3.2500 (82.550)	3.2515 (82.588)	3.2581 (82.756)	0.0091 (0.2311)	X		
	SPINDLE	OD	3.2460 (82.448)	3.2490 (82.525)	3.2424 (82.357)			X	1
2	BUSHING	ID	3.1890 (81.001)	3.1900 (81.026)	3.1961 (81.181)	0.0101 (0.2565)	X		
	SPINDLE	OD	3.1830 (80.848)	3.1860 (80.924)	3.1794 (80.757)			X	1

1 THIS PART CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS

2 THE UPPER SPINDLE IS SHOWN. THE LOWER SPINDLE IS ALMOST THE SAME

Wear Limits for the Upper and Lower Spindles of the
Side Brace for the Main Landing Gear
Figure 601 (Sheet 2)

MAIN GEAR SIDE BRACE DOWNLOCK FITTING - REMOVAL/INSTALLATION

1. General
   A. This procedure provides instructions to do these tasks:
      (1) The removal of the side brace downlock fitting on the outer cylinder of the main landing gear.
      (2) The installation of the side brace downlock fitting on the outer cylinder of the main landing gear.

TASK 32-11-07-024-001

2. Remove the Downlock Fitting for the Main Gear Side Brace (Fig. 401)
   A. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-11-09/401, Main Gear Side Brace Lock Link Spindle
      (6) AMM 32-32-03/401, Main Gear Side Brace Lock Link Spring
   B. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Door
734/744	MLG Oleo Door
735/745	MLG Trunnion Door

   C. Prepare for the Removal of the Downlock Fitting

      S 484-019

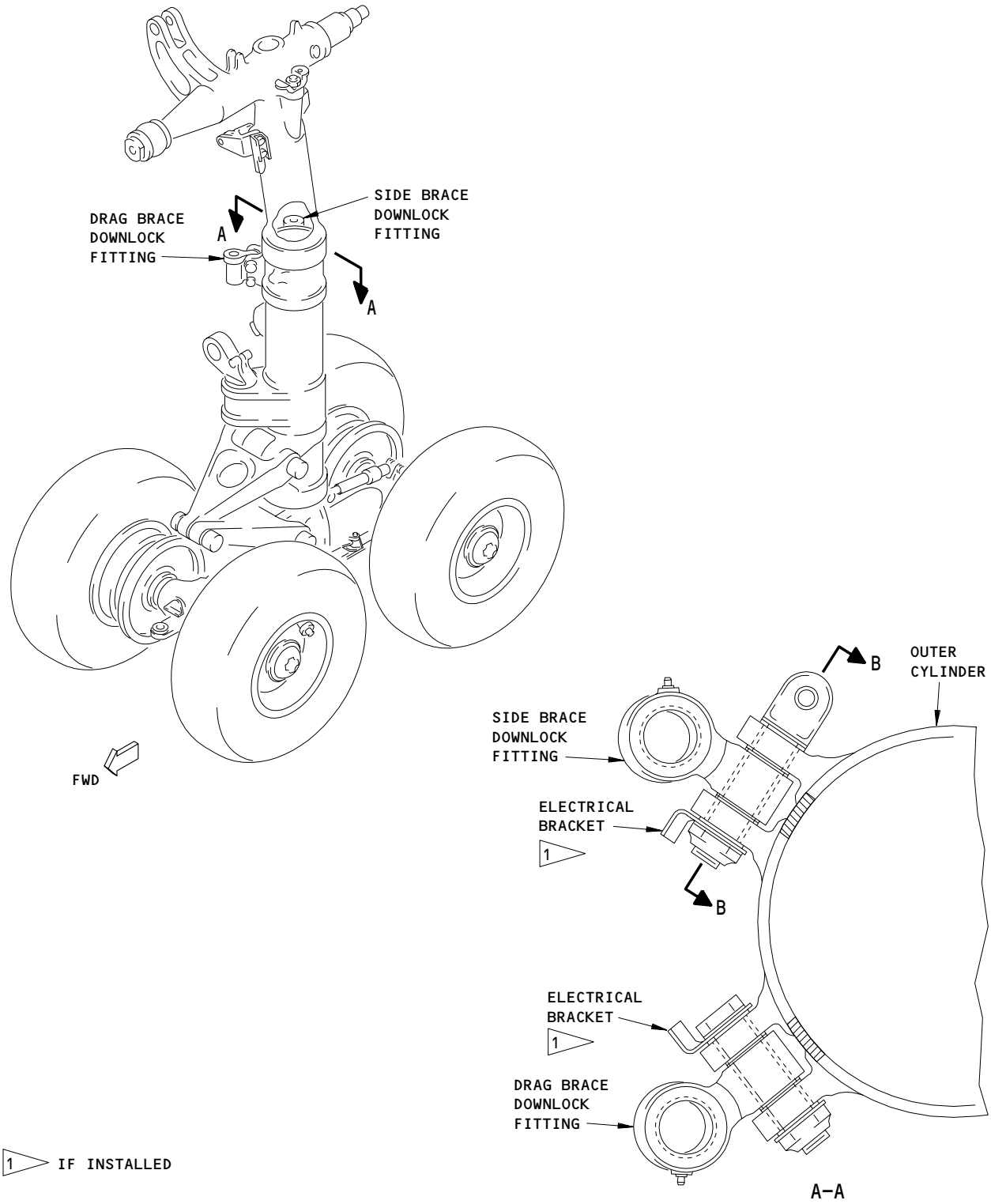
      WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

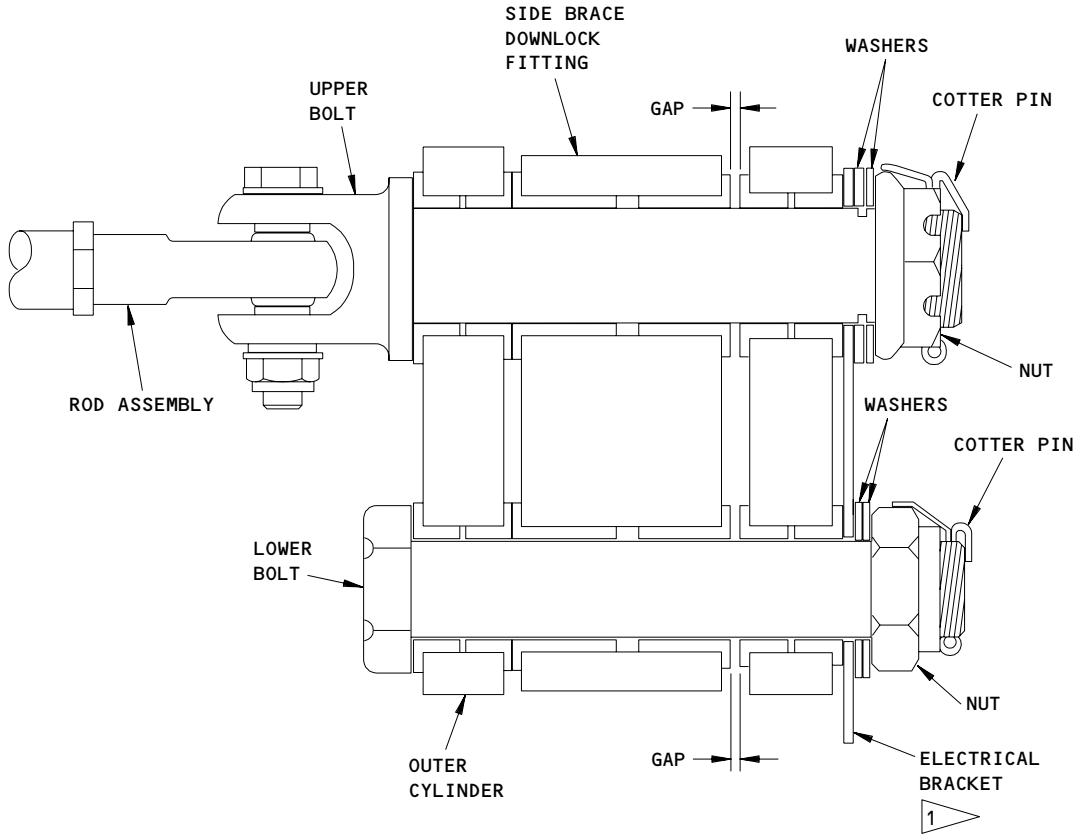
      S 484-003

      WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).



Side Brace Downlock Fitting Installation
Figure 401 (Sheet 1)



SIDE BRACE
B-B

1 IF INSTALLED

Side Brace Downlock Fitting Installation
Figure 401 (Sheet 2)

S 864-005
(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 584-006
(4) Lift the airplane until the wheels are above the ground (AMM 07-11-01/201).

S 024-007
(5) Remove the lock springs from the side brace (AMM 32-32-03/401).

S 024-008
(6) Disconnect the lock link spindle from the downlock fitting (AMM 32-11-09/401).

NOTE: Do not remove the spindle from the lock link.

D. Remove the Downlock Fitting

S 024-009
(1) Remove the cotter pins and loosen the nuts, on the upper and lower bolts, until the fay surface of the nuts do not touch the washers.

S 214-010
(2) Measure and record, for the upper and lower bolts, the gap between the bushings (View B-B).

NOTE: Make sure that on the other side of the downlock fitting the bushings are free of gaps when you do the measurement.

S 024-011
(3) Remove the nuts, washers, bolts and bracket (if installed) to disconnect the downlock fitting from the outer cylinder.

TASK 32-11-07-414-012

3. Install the Downlock Fitting for the Main Gear Side Brace (Fig. 401)

A. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Recommended)

(2) G50136 Compound, BMS 3-38 Corrosion Preventive

B. References

(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 32-11-09/401, Main Gear Side Brace Lock Link Spindle
(5) AMM 32-32-03/401, Main Gear Side Brace Lock Link Spring

C. Access

(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Door
734/744	MLG Oleo Door
735/745	MLG Trunnion Door

D. Install the Downlock Fitting

S 414-013

(1) To connect the downlock fitting to the outer cylinder, do the steps that follow (View B-B):
   (a) Apply a thin layer of grease to the chrome surface of the upper and lower bolts.
   (b) Position the downlock fitting on the outer cylinder and install the upper and lower bolts.
   (c) Apply a thin layer of compound to the fay surfaces of the washers and electrical bracket (if installed) and to the threads of the bolts and the nuts.
   (d) Put the electrical bracket, washers and nuts on the upper and lower bolts, then finger tighten the nuts.
   (e) Position a shim or feeler gage between the bushings for the upper and the lower bolt.

   NOTE: Make sure the thickness of the shim or feeler gage is equal to the recorded gap.

   (f) Tighten the nut, on the upper bolt, 65-70 pound-feet (88-95 newton-meters).
   (g) Tighten the nut, on the lower bolt, 50-55 pound-feet (68-75 newton-meters).

(h) Remove the shim or feeler gage.

NOTE: If joint is too tight to remove the temporary shim or feeler gage, mark the location of the nut, then slowly loosen the nut until the shim or feeler gage can be removed. Return the nut to the marked location.

(i) Install the cotter pins.

NOTE: If it is necessary, loosen the castellated nut to the nearest position to install the cotter pin.

S 414-014

(2) Connect the Lock Link Spindle to the downlock fitting (AMM 32-11-09/401).

E. Put the Airplane Back to Its Usual Condition

S 714-015

(1) Do the extension and retraction test for the main landing gear (AMM 32-32-00/501).

S 484-016

(2) Install the downlock pin in the lock link (AMM 32-00-20/201).

S 584-017

(3) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 084-018

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR SIDE BRACE LOCK LINK - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the lock link from the side brace for the main landing gear. The second task installs the lock link on the side brace for the main landing gear.

TASK 32-11-08-004-001

2. Remove the Lock Link from the Side Brace of the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Crowfoot Wrench - F70312-47
   B. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-32-03/401, Main Gear Side Brace Lock Spring
   C. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Door
734/744	MLG Oleo Door
735/745	MLG Trunnion Door

   D. Prepare for the Removal of the Lock Link

S 484-042

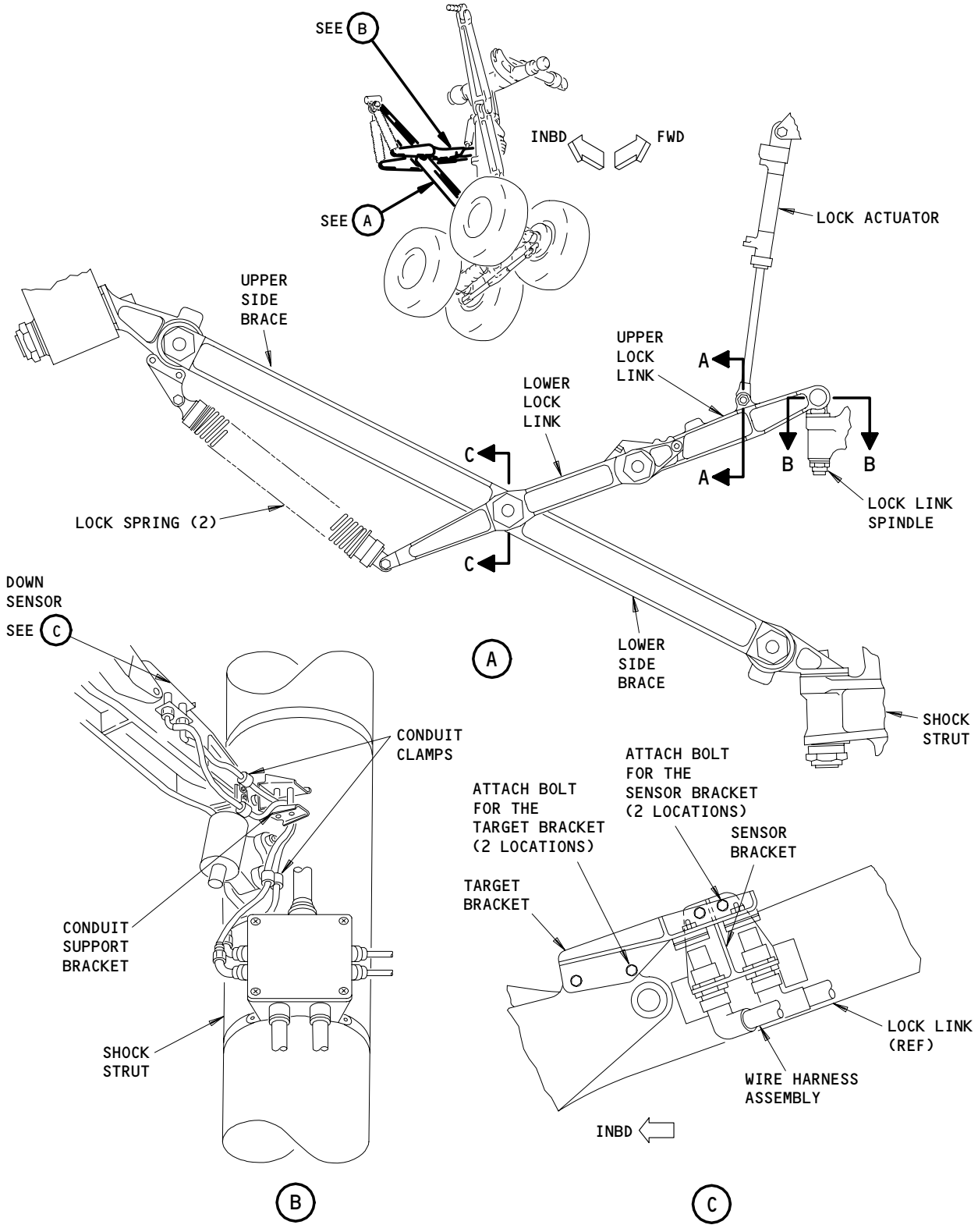
WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

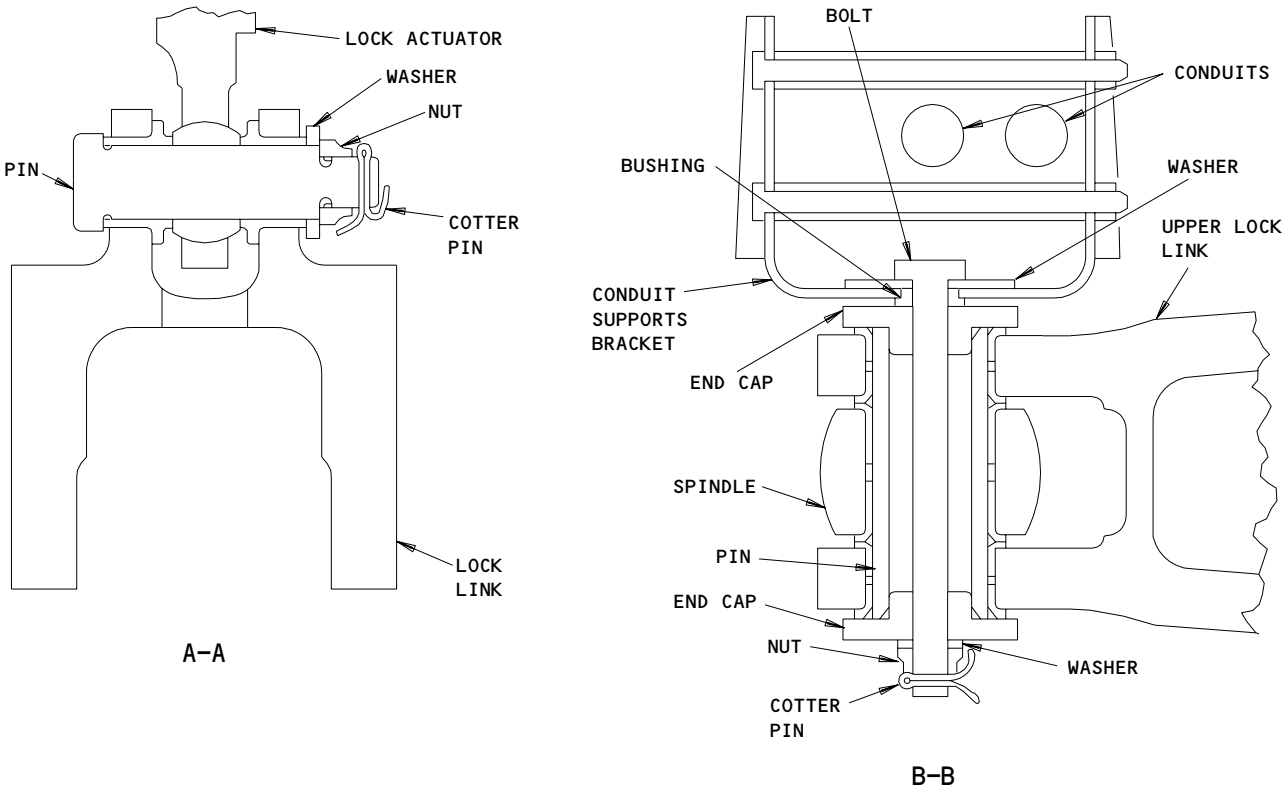
S 484-043

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).



Lock Link Installation for the Side Brace of the Main Landing Gear
Figure 401 (Sheet 1)



Lock Link Installation for the Side Brace of the Main Landing Gear
Figure 401 (Sheet 2)

S 864-004
(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 584-005
(4) Lift the airplane until the wheels are above the ground (AMM 07-11-01/201).

S 014-006
(5) Remove the lock springs from the side brace (AMM 32-32-03/401).

E. Remove the Lock Link

S 034-007
(1) Remove the bolt, end caps, pin, washer and nut to disconnect the rod end of the lock actuator from the upper lock link (View A-A).

S 984-057
(2) Hold the lock actuator away from the area.

S 014-008
(3) To disconnect the down sensor and target from the upper lock link, do the steps that follow:
(a) Remove the attach bolts for the sensor target.

NOTE: Keep the down-sensor target and the attach bolts for installation on the new lock link assembly.

(b) Disconnect the conduit clamps from the upper lock link.
(c) Disconnect the sensor bracket from the upper lock link.

S 424-069
(4) Temporarily attach the conduits to the shock strut.

S 094-012
(5) Remove the downlock pin from the lock link (AMM 32-00-20/201).

S 984-047

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE LOCK LINK. THE LANDING GEAR WILL MOVE SLIGHTLY INBOARD AND THE LOCK LINK WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(6) Push up on the lock link to release it from the overcenter position.

S 024-044

(7) Remove the bolt, washers, bushing, bracket, end caps, nut and pin to disconnect the upper lock link from the spindle (View B-B).

S 024-048

(8) To disconnect the lower lock link from the upper and lower side brace, do the steps that follow (View C-C):

(a) Hook and loop a strap around the upper side brace and another strap around the lower side brace. Both straps should be attached as close as possible to the apex pin. Then attach both straps, slack free, to a suitable structural part of the wheel well ceiling.

NOTE: This will hold the upper and lower side brace in position when you remove the apex pin.

(b) Remove the lockbolts, washers and nuts from the apex pin.

(c) Remove the castellated nut, washer and apex pin.

S 424-049

(9) Temporarily install the apex pin to hold the upper and lower side brace in position.

S 984-050

(10) Move the lock link away from the work area.

TASK 32-11-08-404-018

3. Install the Lock Link on the Side Brace for the Main Landing Gear (Fig. 401)

NOTE: Wear limits for the components that follow are supplied in 32-11-03/601.

A. Equipment

(1) Crowfoot Wrench - F70312-47

B. Consumable Materials

(1) D00633 Grease - BMS 3-33 (Preferred)

(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

(3) G50136 Compound, BMS 3-38 Corrosion Preventive
(4) A00247 Sealant, BMS 5-95 Chromate

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 32-11-03/601, Main Gear Side Brace Assembly
(5) AMM 32-32-00/501, Main Gear Extension and Retraction
(6) AMM 32-32-03/401, Main Gear Side Brace Lock Spring
(7) AMM 32-61-02/201, Main Gear Proximity Sensors

D. Access
(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Door
734/744	MLG Oleo Door
735/745	MLG Trunnion Door

E. Install the Lock Link

S 034-020
(1) Remove the apex pin which holds the upper and lower side brace in position.

S 984-051
(2) To connect the lower lock link to the upper and lower side brace attach point, do the steps that follow (View C-C):
(a) Apply grease to the chrome plated surface of the apex pin.
(b) Position the lower lock link on the upper and lower side brace attach point.

CAUTION: POINT THE HEAD OF THE APEX PIN IN THE CORRECT DIRECTION. IF THE PIN IS NOT INSTALLED CORRECTLY, DAMAGE TO EQUIPMENT CAN OCCUR.

(c) To install the apex pin, do the steps that follow:
1) Point the head of the apex pin forward when you install it.
2) Put the apex pin in the upper and lower side brace attach point.
3) Apply a thin layer of compound to the threads of the apex pin, washer and the threads of the castellated nut.
4) Install the washer and castellated nut on the apex pin.
5) Use the crowfoot wrench to tighten the castellated nut to 110-120 pound-feet.

6) Apply a thin layer of compound to the lockbolts, washers and the threads of the nuts.
7) Install the lockbolts, washers and nuts on the apex pin.

NOTE: If it is necessary, loosen the castellated nut to the nearest position to install the lockbolts.

8) Remove the excess compound.

S 424-053
(3) To connect the upper lock link to the spindle, do the steps that follow (View B-B):
(a) Apply grease to the pin and the bolt shank.
(b) Apply compound to the bolt threads, washer and nut.
(c) Position the upper lock link on the spindle.
(d) Install the pin, end caps, bushing, conduit support bracket, bolt, washer and nut.
(e) Tighten the nut to 150-200 pound-inches.
(f) Remove the excess compound.
(g) Install the cotter pin.
(h) Remove the straps.

S 984-054
(4) Push down on the lock link assembly to position the lock link in the locked position.

S 484-055
(5) Install the downlock pin in the lock link (AMM 32-00-20/201).

S 424-059
(6) Install the sensor bracket on the upper lock link.

S 944-026

CAUTION: MAKE SURE THE CONDUITS ARE NOT TWISTED. RETRACTION OF THE MAIN LANDING GEAR CAN CAUSE DAMAGE TO THE CONDUITS IF THEY ARE TWISTED.

(7) Make sure the installation has the three properties that follow:
(a) The conduits are not twisted.
(b) The conduits stay near the upper lock link.
(c) The location marker on the conduit is at the center of each clamp.

S 864-027
(8) If the installation is incorrect do the steps that follow:
(a) Loosen the clamps on the upper lock link and the clamps on the shock strut.
(b) Loosen the connectors on the J-box.
(c) Adjust the conduits until the installation is correct.

S 424-064
(9) Tighten all the clamps and connectors.

S 644-028
(10) Apply sealant to the clamp bolts.

S 434-029
(11) Install the sensor target on the upper lock link with the two attach bolts for the sensor target.

S 824-030
(12) Adjust the down sensor for the side brace (AMM 32-61-02/201).

S 424-056
(13) To connect the rod end of the lock actuator to the upper lock link, do the steps that follow (View A-A):
(a) Apply grease to the chrome plated surface of the pin.
(b) Apply a thin layer of compound to the pin threads, washer and the threads of the nut.
(c) Position the rod end of the lock actuator on the upper lock link attach point.
(d) Install the pin, washer and nut.
(e) Tighten the nut to 520-640 pound-inches.
(f) Remove the excess compound.
(g) Install the cotter pin.

S 414-032
(14) Install the lock springs for the side brace (AMM 32-32-03/401).

F. Put the Airplane Back to Its Usual Condition

S 714-033
(1) Do the extension and retraction test for the main landing gear (AMM 32-32-00/501).

S 494-034
(2) Install the downlock pin in the lock link (AMM 32-00-20/201).

S 584-035
(3) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 644-036
(4) Lubricate the lock link at the grease fittings.

S 084-041

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR SIDE BRACE LOCK LINK SPINDLE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the lock link spindle from the side brace for the main landing gear. The second task installs the lock link spindle to the side brace for the main landing gear.

TASK 32-11-09-004-001

2. Remove the Lock Link Spindle for the Side Brace From the Main Landing Gear (Fig. 401)
   A. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-32-03/401, Main Gear Side Brace Lock Spring
   B. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

   C. Prepare for the Removal of the Spindle.

S 484-042

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 484-043

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

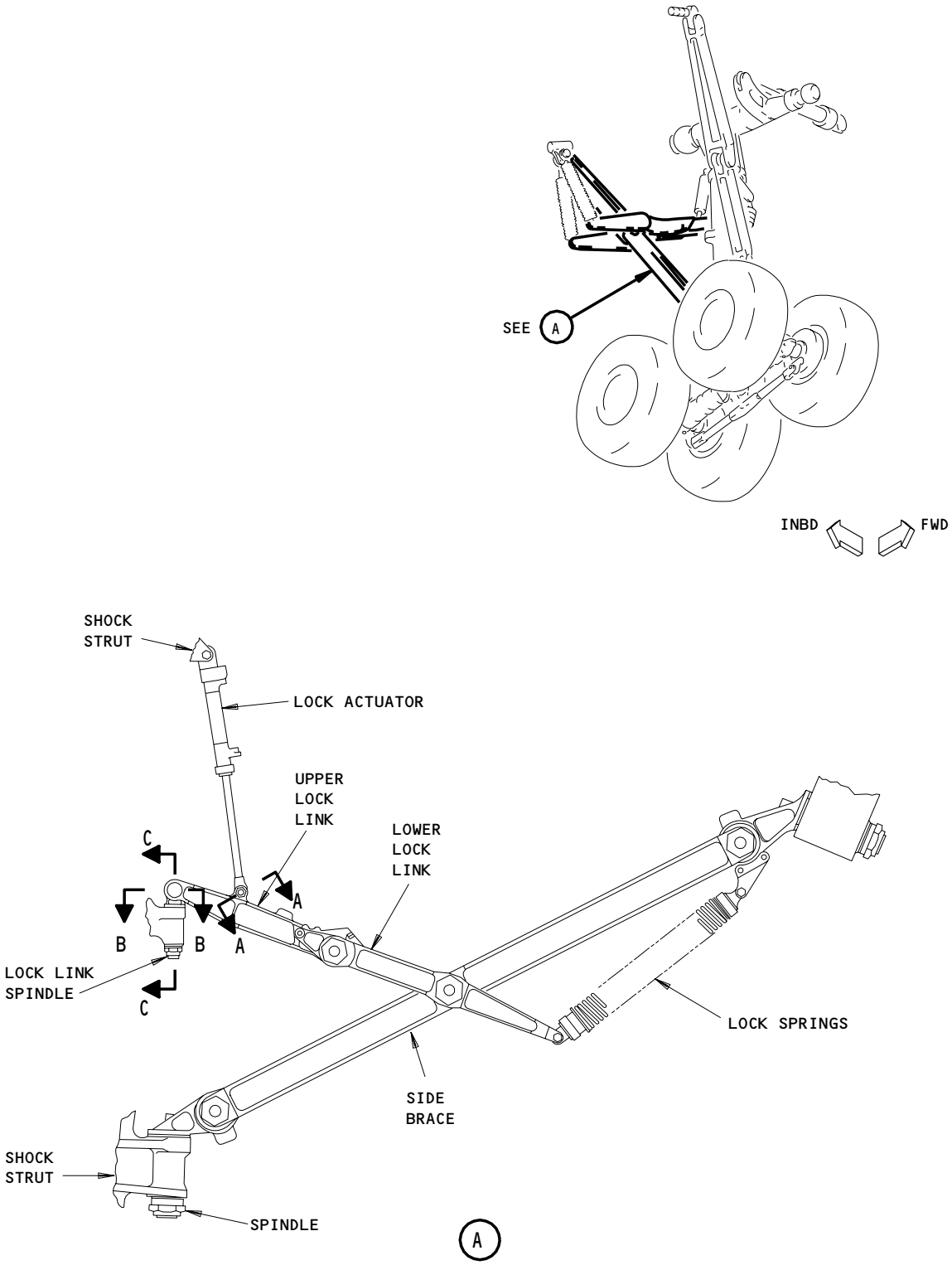
(2) Open the doors for the landing gear and install the door locks (32-00-15).

S 864-004

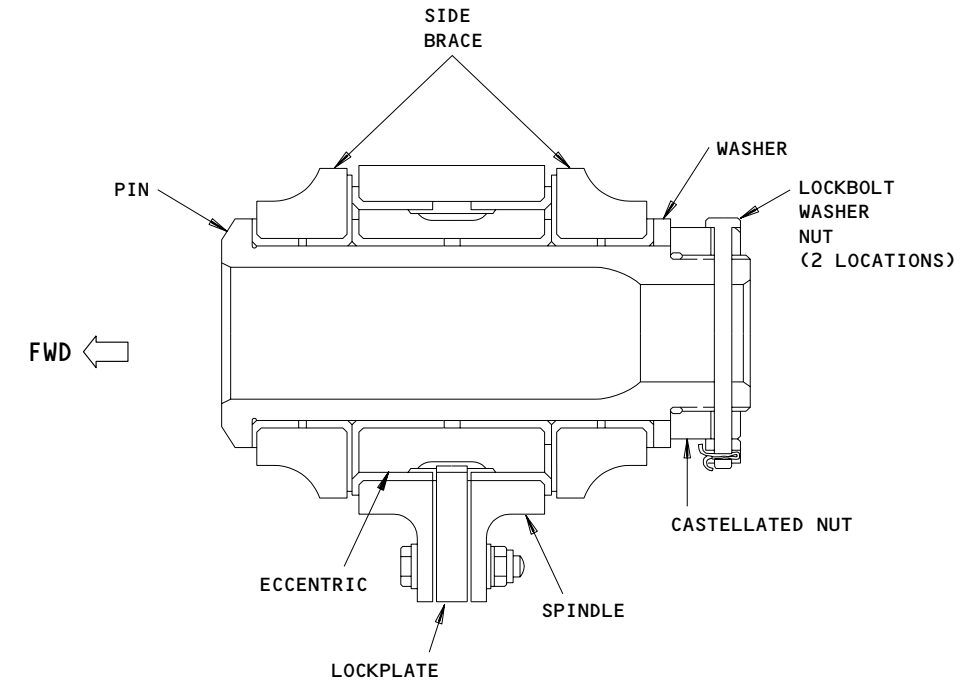
(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 584-005

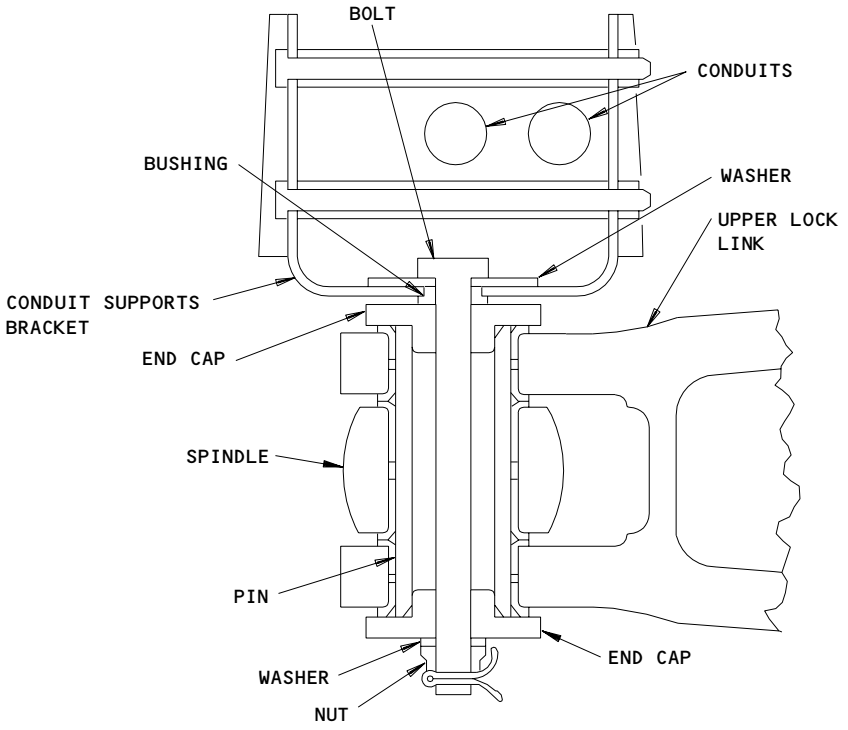
(4) Lift the airplane until the wheels are above the ground (AMM 07-11-01/201).



Side Brace Assembly Installation for the Main Landing Gear
Figure 401 (Sheet 1)

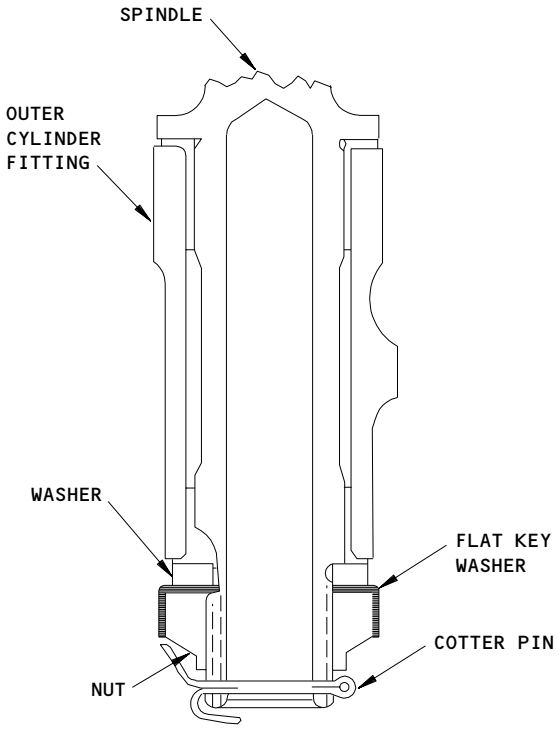


A–A



B–B

Side Brace Assembly Installation for the Main Landing Gear
Figure 401 (Sheet 2)



C–C

Side Brace Assembly Installation for the Main Landing Gear
Figure 401 (Sheet 3)

S 014-006
(5) Remove the lock springs from the side brace (AMM 32-32-03/401).

D. Remove the Spindle.

S 034-007
(1) Remove the bolt, end caps, pin, washer and nut to disconnect the rod end of the lock actuator from the upper lock link (View A-A).

S 084-045
(2) Remove the downlock pin from the lock link (AMM 32-00-20/201).

S 984-046

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE LOCK LINK. THE LANDING GEAR WILL MOVE SLIGHTLY INBOARD AND THE LOCK LINK WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Push up on the lock link to release it from the overcenter position.

S 024-047
(4) Remove the bolt, washers, bushing, bracket, end caps, nut and pin to disconnect the upper lock link from the spindle (View B-B).

S 984-050
(5) Move the lock link away from the spindle.

S 024-051
(6) Remove the lockbolts, washers, nuts, castellated nut and washer to disconnect the spindle from the shock strut fitting (View C-C).

TASK 32-11-09-404-011

3. Install the Lock Link Spindle for the Side Brace from the Main Landing Gear (Fig. 401)

NOTE: Wear Limits for the components that follow are supplied in 32-11-09/601.

A. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

(3) G50136 Compound, Corrosion Preventive - BMS 3-38

B. References

(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-11-09/601, Main Gear Side Brace Lock Link Spindle
(4) AMM 32-32-03/401, Main Gear Side Brace Lock Spring

C. Access

(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

D. Install the Spindle

S 644-038

CAUTION: IF A BACN10JC SELF-LOCKING NUT IS USED, THE NUT SHOULD NOT BE USED AGAIN AFTER REMOVAL FROM A BOLT THAT HAS A HOLE FOR A COTTER PIN. THE EDGES OF THE HOLE WILL MAKE THE SELF-LOCKING FEATURE OF THE NUT UNSERVICEABLE.

(1) Apply grease to the spindle, the washer and the nut.

S 414-013

(2) Install the spindle on the shock strut (View C-C).
  (a) Install the washer.
  (b) Install a BACW10CR22 flat key washer and then the nut. Tighten the nut to 1220-1340 pound-inches. Bend the exposed washer tabs against the side of the nut.
  (c) Install the cotter pin.

S 424-035

(3) To connect the upper lock link to the spindle, do the steps that follow (View B-B):
  (a) Apply grease to the pin and the bolt shank.
  (b) Apply compound to the bolt threads, washer and the nut threads.
  (c) Position the upper lock link on the spindle.
  (d) Install the pin, end caps, bushing, conduit support bracket, bolt, washer and nut.

(e) Tighten the nut to 150-200 pound-inches.
(f) Remove the excess compound.
(g) Install the cotter pin.

S 984-053
(4) Push down on the lock link assembly to position the lock link in the locked position.

S 484-054
(5) Install the downlock pin in the lock link (AMM 32-00-20/201).

S 424-052
(6) To connect the rod end of the lock actuator to the upper lock link, do the steps that follow (View A-A):
(a) Apply grease to the chrome plated surface of the pin.
(b) Apply a thin layer of compound to the pin threads, washer and the threads of the nut.
(c) Position the rod end of the lock actuator on the upper lock link attach point.
(d) Install the pin, washer and nut.
(e) Tighten the nut to 520-640 pound-inches.
(f) Remove the excess compound.
(g) Install the cotter pin.

S 424-055
(7) Install the lock springs for the side brace (AMM 32-32-03/401).

E. Put the Airplane Back to Its Usual Condition.

S 584-031
(1) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 644-032
(2) Lubricate the spindle at the grease fittings.

S 084-044

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR SIDE BRACE LOCK LINK SPINDLE - INSPECTION/CHECK

1. General
   A. This procedure only has an illustration and a wear limits table which shows the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Gear Side Brace Lock Link Spindle - Removal/Installation for procedures to do these tasks.

   TASK 32-11-09-206-002

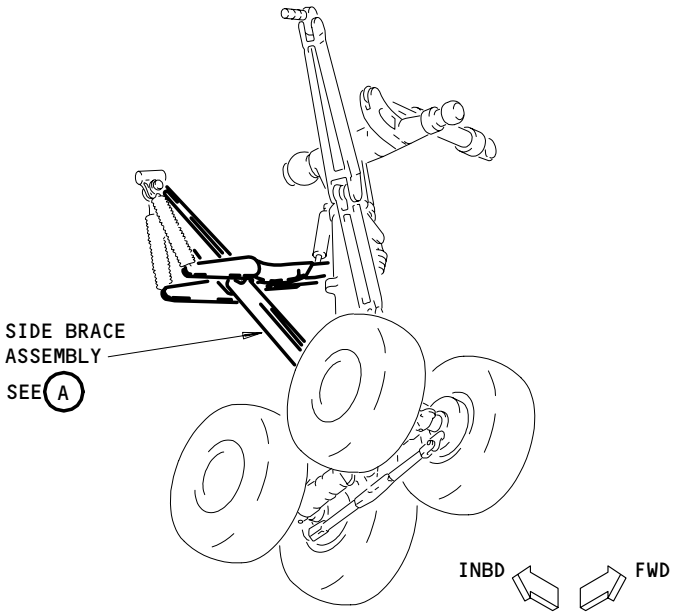
2. Wear Limits for the Side Brace Lock Link Spindle (Fig. 601)

   NOTE: Wear Limits for components connected to the lock link spindle can be found in the Maintenance Manual subject for the component.

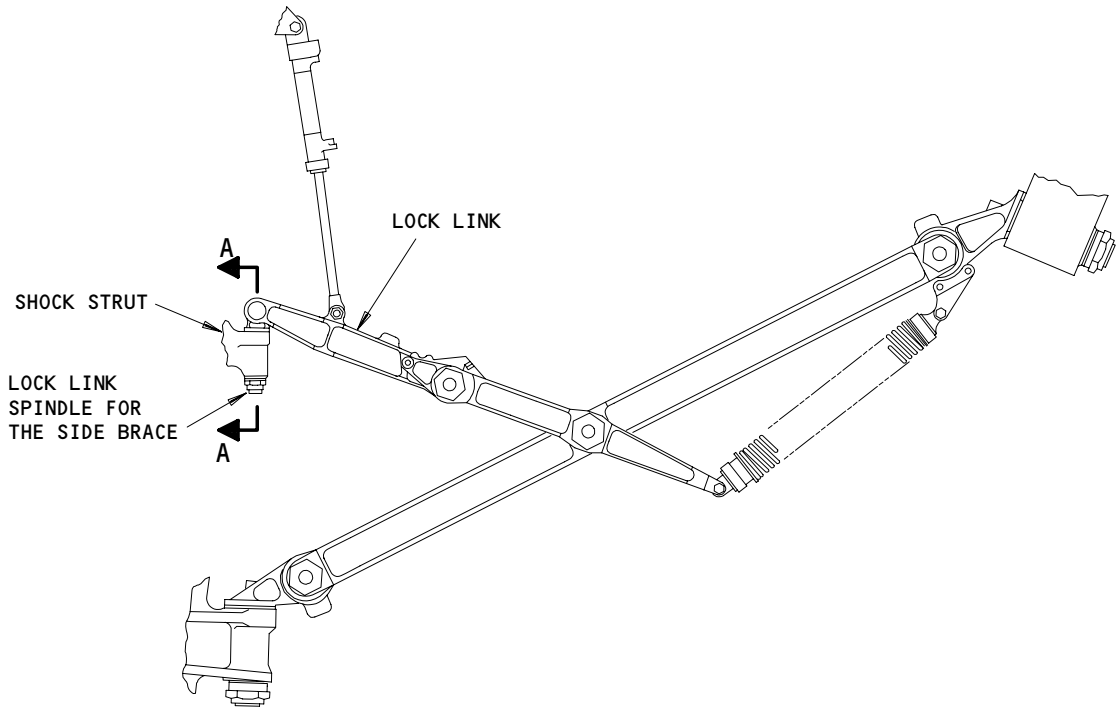
   A. Wear Limits for the Lock Link Spindle

      S 226-001

      (1) Refer to Fig. 601 for the inspection points and the wear limits table.



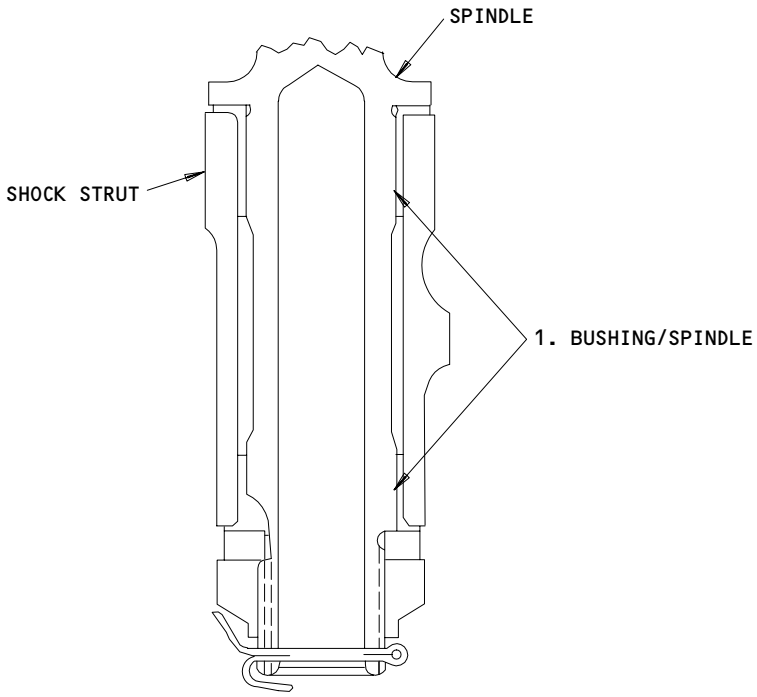
MAIN LANDING GEAR
(LEFT SIDE SHOWN)



SIDE BRACE ASSEMBLY

A

Wear Limits for the Lock Link Spindle of the Main Landing Gear
Figure 601 (Sheet 1)



A–A

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
			DIAMETER		PER-MITTED WEAR DIM.	MAX DIA CLEAR-ANCE			
			MIN	MAX					
1	BUSHING	ID	1.5625	1.5655	1.5690	0.0065	X		
	SPINDLE	OD	1.5615	1.5625	1.5590			X	1

1 THIS PART CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS

Wear Limits for the Lock Link Spindle of the Side Brace of the Main Landing Gear
Figure 601 (Sheet 2)

MAIN GEAR DRAG BRACE ASSEMBLY- REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the drag brace assembly from the main landing gear. The second task installs the drag brace assembly on the main landing gear.

TASK 32-11-10-004-001

2. Remove the Drag Brace from the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) A20001-79 Floor Mounted Boom Hoist
          (A20001-1 Alternative)
      (2) A32008-53 MLG Sling Equipment
      (3) F70312-27, -32 Crowfoot Wrenches
   B. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-12-00/501, Main Gear Doors
      (6) AMM 32-12-08/401, Drag Brace Door and Linkage
      (7) AMM 32-32-05/401, Main Gear Jury Strut Spring
      (8) AMM 32-61-02/201, Main Gear Proximity Sensors
   C. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

   D. Prepare for the Removal of the Drag Brace Assembly

S 484-063

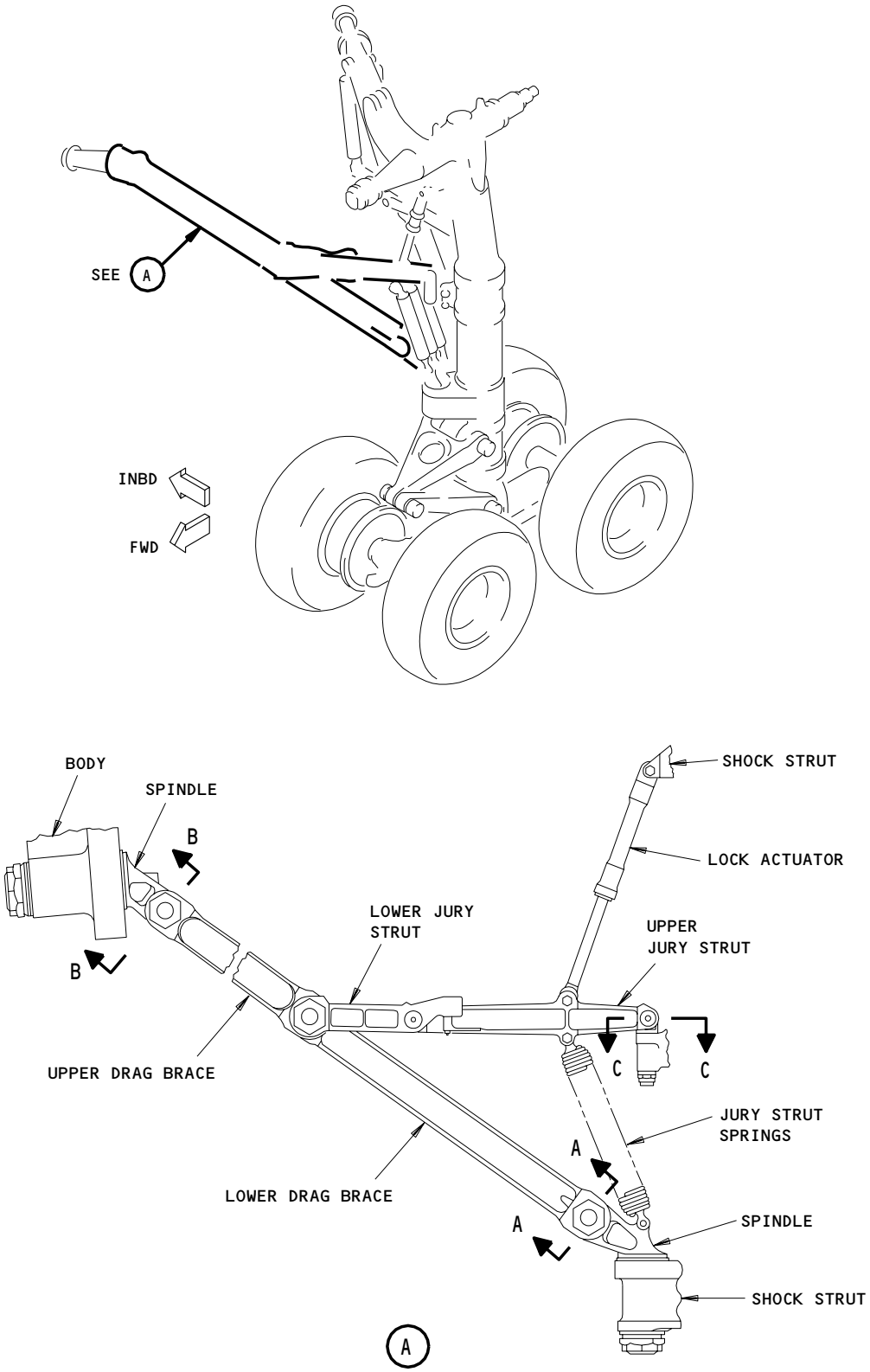
WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

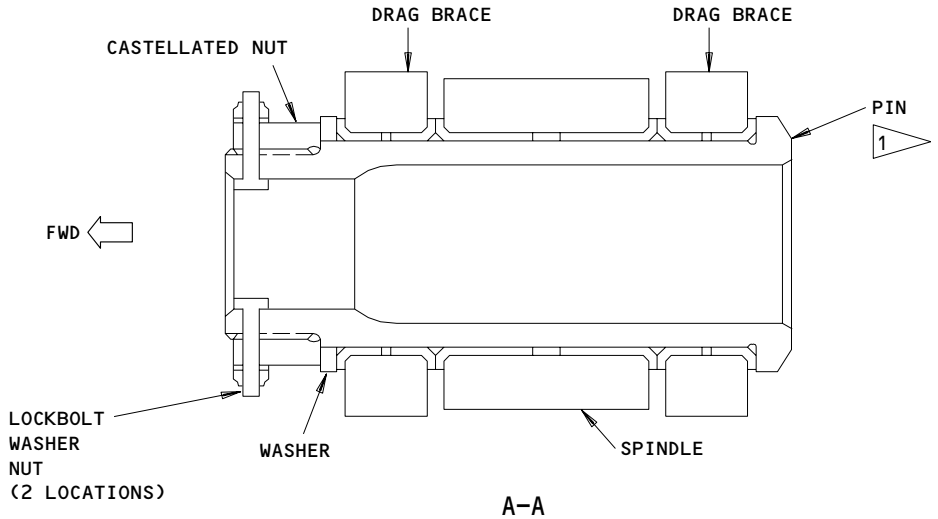
S 484-064

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

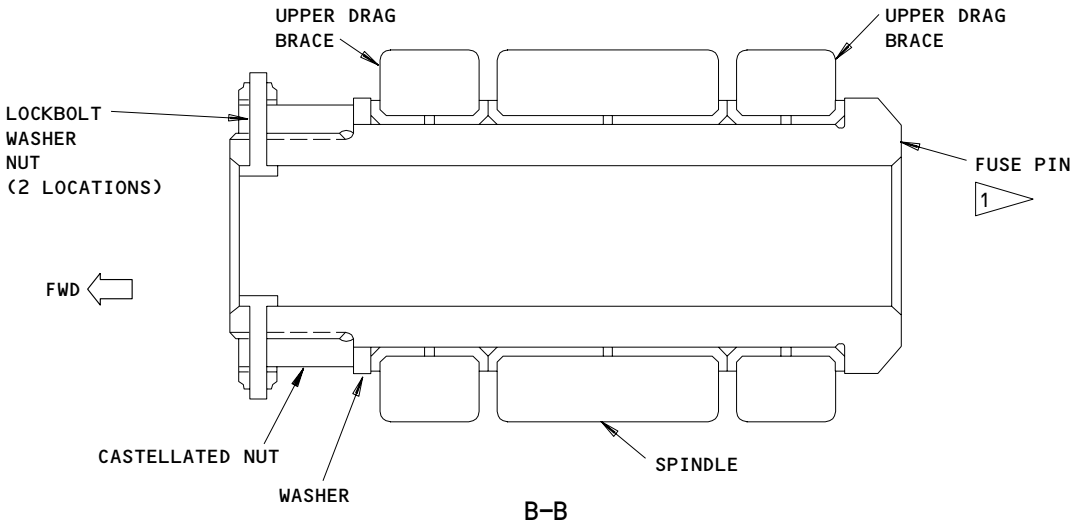
(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).



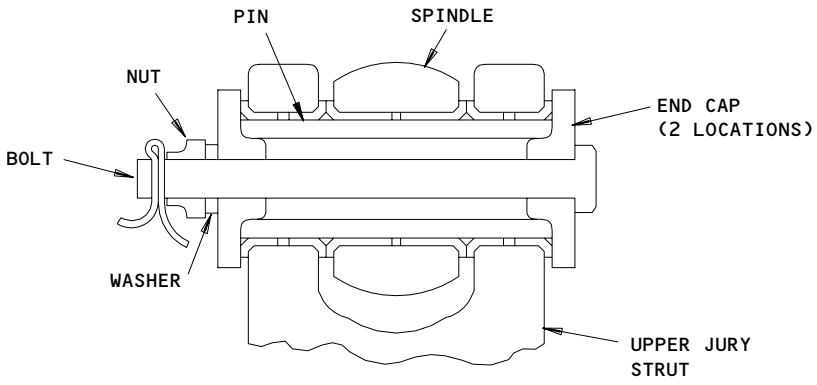
Drag Brace Assembly Installation for the Main Landing Gear
Figure 401 (Sheet 1)



A-A



B-B



C-C

1 INSTALL WITH THE HEAD OF THE PIN AFT

Drag Brace Assembly Installation for the Main Landing Gear
Figure 401 (Sheet 2)

S 864-004
(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 584-005
(4) Lift the airplane until the wheels are above the ground (AMM 07-11-01/201).

S 014-006
(5) Remove the drag brace down sensor (AMM 32-61-02/201).

S 034-007
(6) Remove the pin, washer and nut to disconnect the rod end of the lock actuator from the upper jury strut.

S 014-008
(7) Do the task "Remove the Main Gear Jury Strut Spring" (AMM 32-32-05/401).

S 014-009
(8) Do the task "Remove the Main Gear Drag Brace Door" (AMM 32-12-08/401).

E. Remove the Drag Brace Assembly

S 494-010
(1) Install the sling equipment on the drag brace.

NOTE: Use the instructions supplied with the tools.

S 024-060
(2) Remove the downlock pin from the jury strut.

S 864-061

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE JURY STRUT. THE LANDING WILL MOVE SLIGHTLY INBOARD AND THE JURY STRUT WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Push up on the jury strut to release it from the overcenter position.

S 014-013
(4) Remove the nut, washer, end caps, bolt and pin to disconnect the upper jury strut from the spindle (View C-C).

S 024-067

(5) To disconnect the upper drag brace from the spindle, do the steps that follow (View B-B):
   (a) Remove the lockbolts, washers and nuts from the fuse pin.
   (b) Remove the castellated nut, washer and fuse pin.

S 034-012

(6) To disconnect the lower drag brace from the spindle, do the steps that follow (View B-B):
   (a) Remove the lockbolts, washers and nuts from the pin.
   (b) Remove the castellated nut, washer and pin.

S 984-066

(7) Move the drag brace assembly away from the work area.

S 094-015

(8) Remove the sling equipment from the drag brace.

TASK 32-11-10-404-016

3. Install the Drag Brace on the Main Landing Gear (Fig. 401)

NOTE: Wear Limits for the following components that follow are supplied in 32-11-10/601.

A. Equipment
   (1) A20001-79 Floor Mounted Boom Hoist
   (A20001-1 Alternative)
   (2) A32008-53 MLG Sling Equipment
   (3) A32073-1 MLG Side Brace Rigging Bar
   (4) F70312-27, -32 Crowfoot Wrenches

B. Consumable Materials
   (1) D00633 Grease - BMS 3-33 (Preferred)
   (2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
   (3) G50136 Compound, Corrosion Preventive - BMS 3-38

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 32-11-03/401, Main Gear Side Brace Assembly
(5) AMM 32-11-10/601, Main Gear Drag Brace Assembly
(6) AMM 32-12-00/501, Main Gear Doors
(7) AMM 32-12-08/401, Drag Brace Door and Linkage
(8) AMM 32-32-00/501, Main Gear Extension and Retraction
(9) AMM 32-32-05/401, Main Gear Jury Strut Spring
(10) AMM 32-61-02/201, Main Gear Proximity Sensors

D. Access
(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLC Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

E. Install the Drag Brace Assembly

S 284-082
(1) Make sure that the upper and lower spindles are installed on the gear prior to drag brace installation (AMM 32-11-13/401).

S 494-017
(2) Install the sling equipment on the drag brace assembly.

NOTE: Use the instructions supplied with the tools.

S 844-018
(3) Lift the drag brace into position on the main landing gear.

S 644-051
(4) Apply grease to the chrome plated surfaces of the pins and the fay surfaces of the spindles.

S 414-078
(5) To connect the upper drag brace to the upper spindle, do the steps that follow (View B-B):

NOTE: Do these steps before you connect the lower drag brace to the lower spindle. This will make it easier to install the castellated nut on the fuse pin.

WARNING: MAKE SURE YOU INSTALL THE PIN WITH THE HEAD OF THE PIN ON THE AFT SIDE OF THE DRAG STRUT. IMPROPER INSTALLATION OF THE PIN CAN CAUSE DAMAGE TO EQUIPMENT.

(a) Put the fuse pin through the upper drag brace and spindle.
(b) Apply a thin layer of compound to the washer and the threads of the fuse pin and castellated nut.
(c) Install the washer and castellated nut on the fuse pin.
(d) Use the crowfoot wrench to tighten the castellated nut to 110-120 pound-feet.

S 424-079

(6) To connect the lower drag brace to the lower spindle, do the steps that follow (View A-A):

WARNING: MAKE SURE YOU INSTALL THE PIN WITH THE HEAD OF THE PIN ON THE AFT SIDE OF THE DRAG STRUT. IMPROPER INSTALLATION OF THE PIN CAN CAUSE DAMAGE TO EQUIPMENT.

(a) Put the pin through the lower drag brace and spindle.
(b) Apply a thin layer of compound to the washer and the threads of the pin and castellated nut.
(c) Install the washer and castellated nut on the pin.
(d) Use the crowfoot wrench to tighten the castellated nut to 110-120 pound-feet.

S 424-055

(7) To install the lockbolts to the upper and lower drag brace pins, do the steps that follow (View A-A, View B-B):
(a) Apply a thin layer of compound to the washers and the threads of the lockbolts and nuts.
(b) Install the lockbolts, washers and nuts on the pins.

NOTE: If it is necessary, loosen the castellated nut to the nearest lock position to install the lockbolts.

(c) Remove the excess compound.

S 094-024

(8) Remove the sling equipment from the drag brace.

S 434-039

(9) To connect the upper jury strut to the spindle, do the steps that follow (View C-C):
(a) Apply grease to the pin and the bolt shank.
(b) Apply compound to the washer and the threads of the bolt and nut.
(c) Position the upper jury strut on the spindle.
(d) Install the pin, end caps, bolt, washer and nut.
(e) Tighten the nut to 150-200 pound-inches.

(f) Remove the excess compound.
(g) Install the cotter pin.

S 414-028
(10) To connect the lock actuator to the upper jury strut, do the steps that follow:
(a) Apply grease to the chrome plated surface of the pin.
(b) Apply a thin layer of compound to the washer and the threads of the pin and nut.
(c) Position the lock actuator on the upper jury strut.
(d) Install the pin, washer and nut.
(e) Tighten the nut to 520-640 pound-inches.
(f) Remove the excess compound.
(g) Install the cotter pin.

S 414-056
(11) Install the side brace rigging bar between the upper jury strut and the lower drag brace spindle (AMM 32-11-03/401).

S 214-057
(12) Check to see if the lower side brace pin can be rotated by hand. You may loosen the nut to eliminate clamp-up of the assembly.

S 824-058
(13) If you can not rotate the pin then you must adjust the side brace (AMM 32-11-03/501).

S 024-059
(14) Remove the side brace rigging bar.

S 824-077
(15) Push down on the jury strut until the jury strut is in the down and locked position.

S 024-062
(16) Install the downlock pin on the jury strut (AMM 32-00-20/201).

F. Put the Airplane Back to Its Usual Condition

S 414-030
(1) Do the task "Install the Drag Brace Door on the Main Landing Gear" (AMM 32-12-08/401).

S 414-032
(2) Do the task "Install the Main Gear Jury Strut Spring" (AMM 32-32-05/401).

S 414-033
(3) Install the drag brace down sensor (AMM 32-61-02/201).

S 824-034
(4) Adjust the drag brace door (AMM 32-12-00/501).

S 714-035

(5) Do the extension and retraction test for the main landing gear (AMM 32-32-00/501).

S 584-036

(6) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 644-037

(7) Lubricate the drag brace at the grease fittings (AMM 12-21-14/301).

S 084-065

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(8) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR DRAG BRACE ASSEMBLY - INSPECTION/CHECK

1. General
   A. This procedure only has illustrations and a wear limits table which shows the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Gear Drag Brace Assembly - Removal/Installation for procedures to do these tasks.
   B. On drag brace assemblies without bushing fillet seals (bushings with orange identification marks) the rotation or migration of the bushing is a normal condition (AMM 12-21-14/301).

TASK 32-11-10-206-001

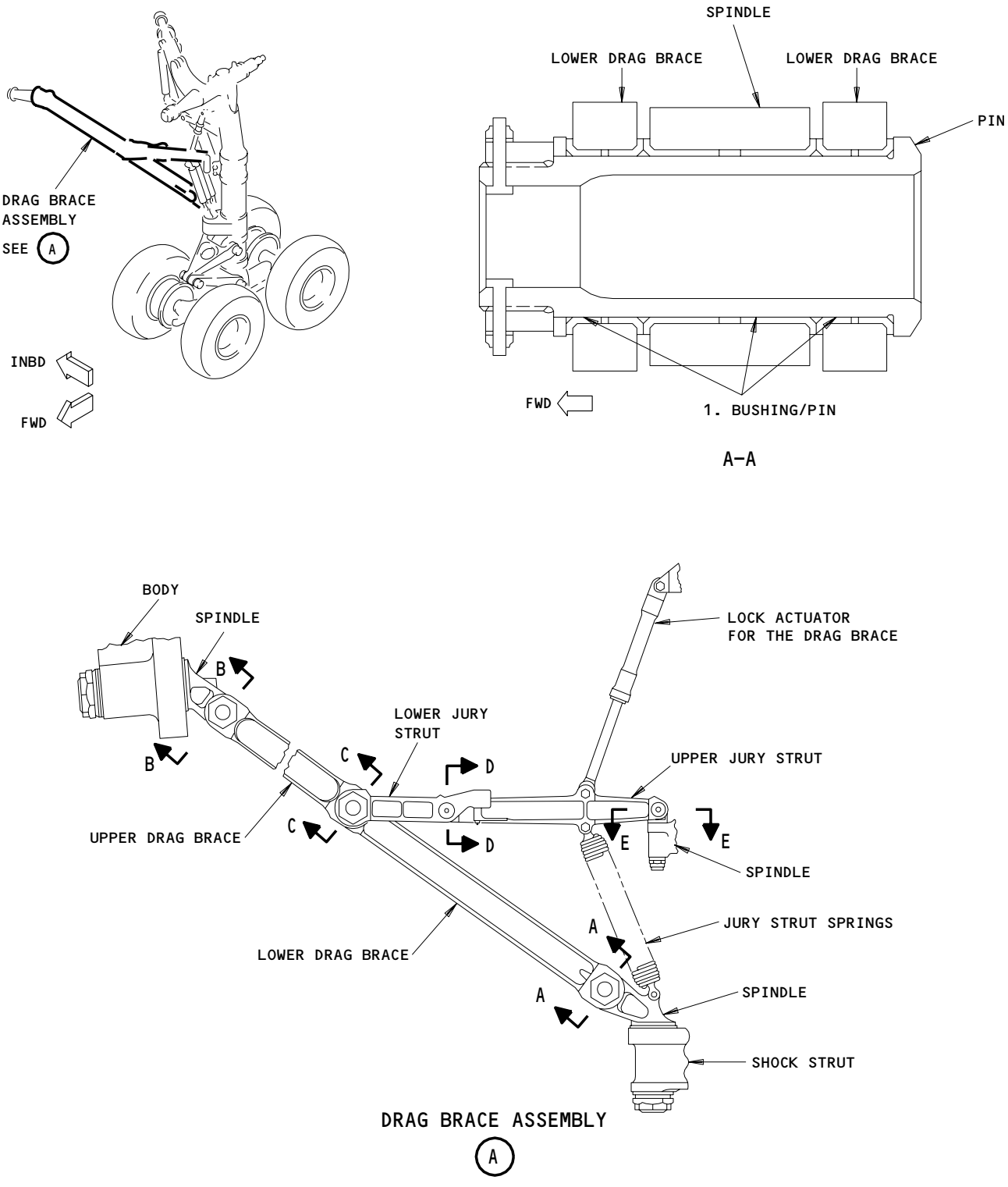
2. Wear Limits for the Drag Brace Assembly of the Main Landing Gear (Fig. 601)

   NOTE: Wear limits for components connected to the drag brace assembly can be found in the Maintenance Manual subject for the component.

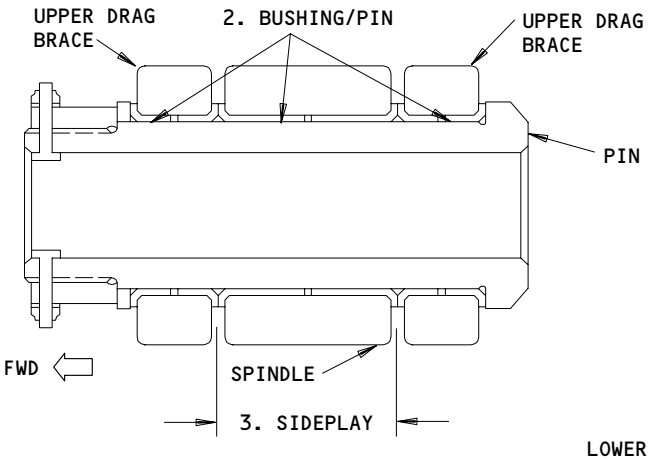
   A. Wear Limits for the Drag Brace Assembly

      S 226-002

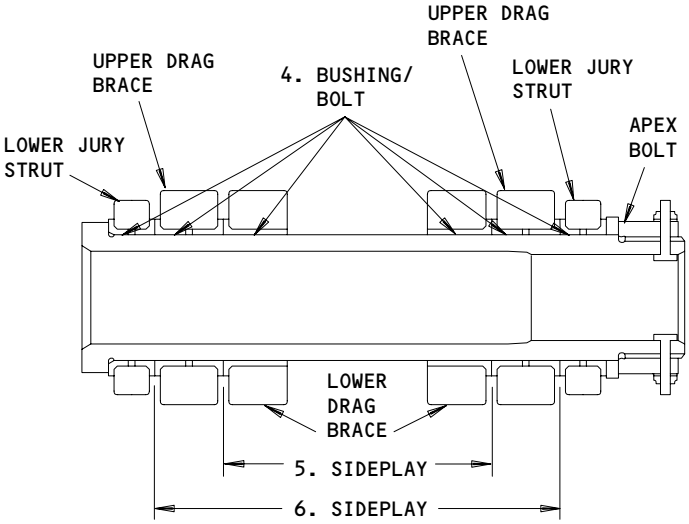
      (1) Refer to Fig. 601 for the inspection points and the wear limits table.



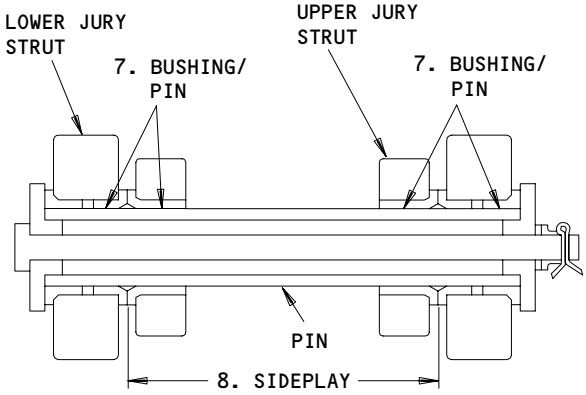
Wear Limits for the Drag Brace Assembly of the Main Landing Gear
Figure 601 (Sheet 1)



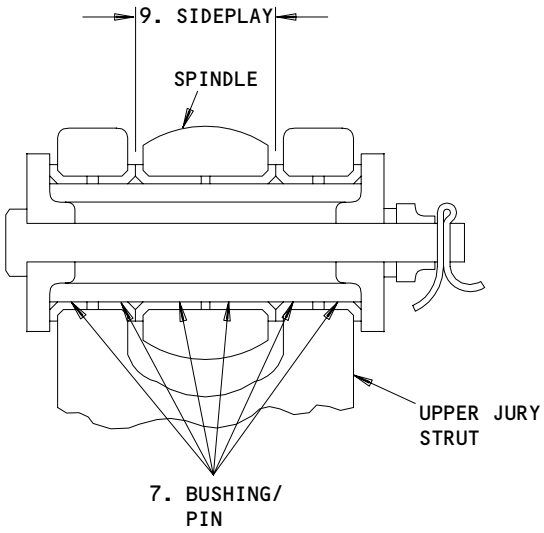
B–B



C–C



D–D



E–E

Wear Limits for the Drag Brace Assembly of the Main Landing Gear
Figure 601 (Sheet 2)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	3.0000	3.0015	3.0070	0.0080	X		
	PIN	OD	2.9970	2.9990	2.9935			X	1
2	BUSHING	ID	2.7500	2.7515	2.7568	0.0078	X		
	PIN	OD	2.7470	2.7490	2.7437			X	1
3	UPPER SPINDLE		----	----	----	0.0336 2	3		
4	BUSHING	ID	3.0000	3.0010	3.0060	0.0070	X		
	BOLT	OD	2.9980	2.9990	2.9945			X	1
5	LOWER DRAG BRACE		----	----	----	0.0336 2	3		
6	UPPER DRAG BRACE		----	----	----	0.0328 2	3		
7	BUSHING	ID	1.2500	1.2515	1.2557	0.0067	X		
	PIN	OD	1.2470	1.2490	1.2448			X	
8	UPPER JURY STRUT		----	----	----	0.0280 2	3		
9	JURY STRUT SPINDLE		----	----	----	0.0328 2	3		

1 THIS PART CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS
2 MAXIMUM SIDEPLAY PERMITTED
3 REPLACE THE WORN BUSHINGS

Wear Limits for the Drag Brace Assembly for the Main Landing Gear
Figure 601 (Sheet 3)

MAIN GEAR UPPER DRAG BRACE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the upper drag brace from the main landing gear. The second task installs the upper drag brace on the main landing gear.

TASK 32-11-11-004-001

2. Remove the Upper Drag Brace from the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) A20001-79 Floor Mounted Boom Hoist
          (A20001-1 Alternative)
      (2) A32008-53 MLG Sling Equipment
      (3) F70312-27, -32 Crowfoot Wrenches
      (4) Strap - Utility with S Hooks (1" x 15') 400 lb working load limit
          Kinadyne Corp. Part No. 751587 (or equivalent)
          (Commercially Available)
   B. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-12-08/401, Drag Brace Door and Linkage
      (6) AMM 32-32-05/401, Main Gear Jury Strut Springs
   C. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

   D. Prepare for the Removal of the Upper Drag Brace

S 484-061

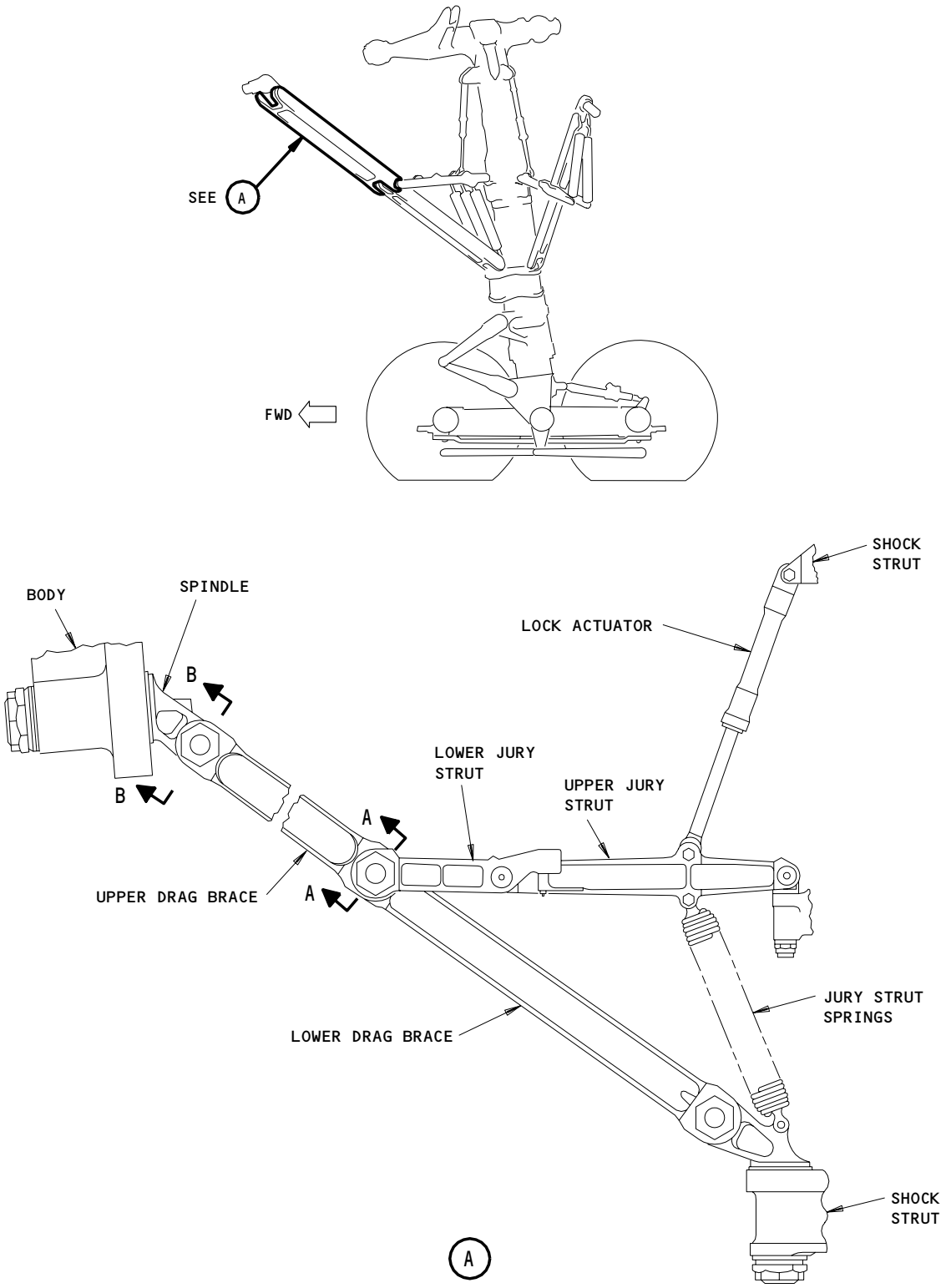
WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

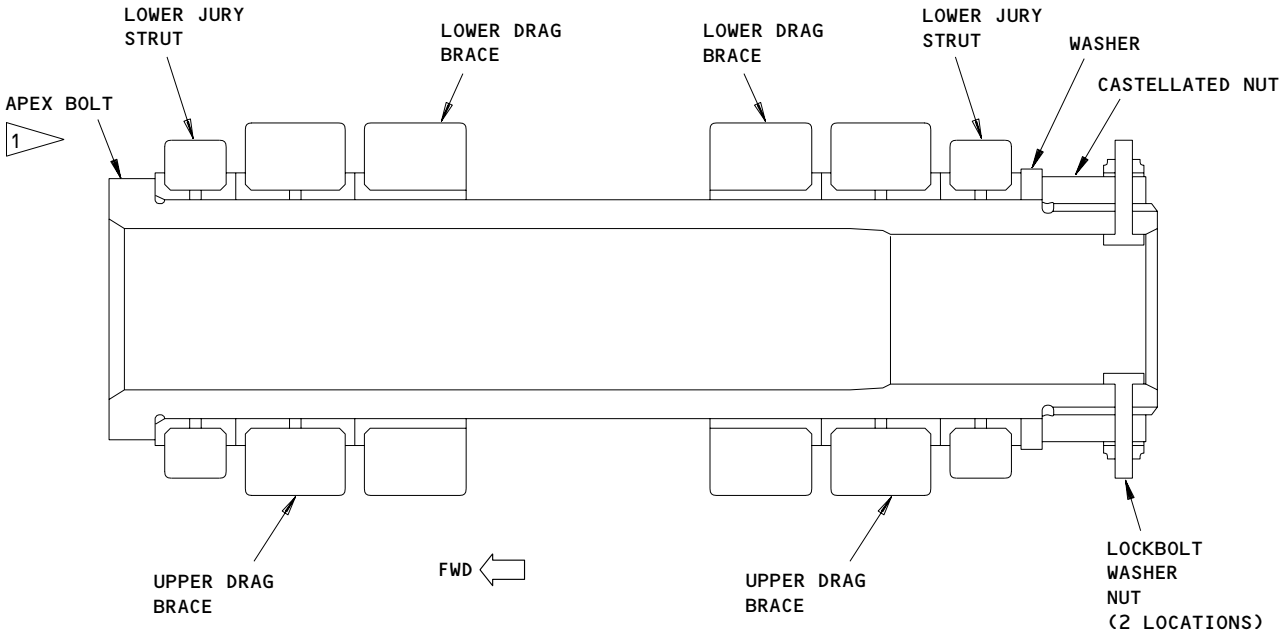
S 484-062

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

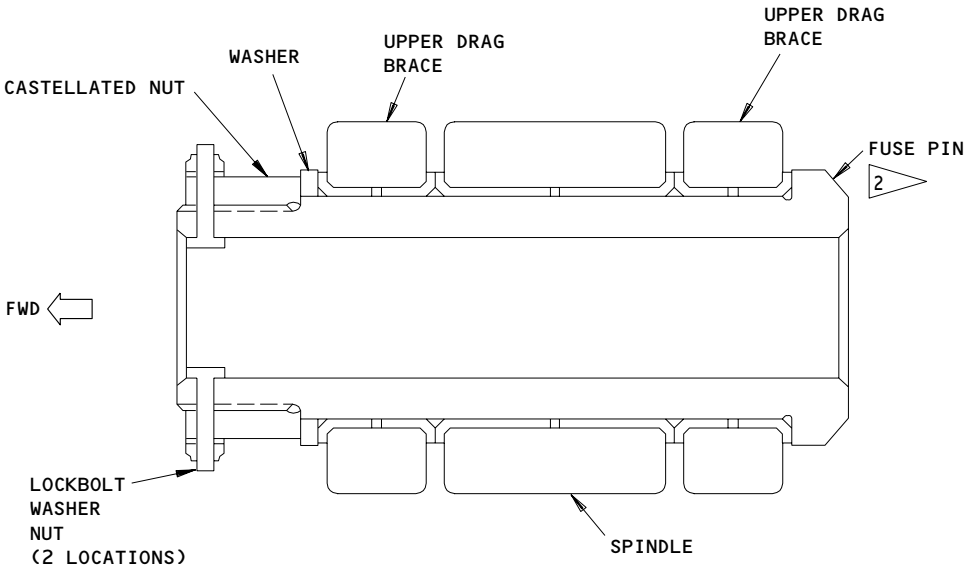
(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).



Upper Drag Brace Installation for the Main Landing Gear
Figure 401 (Sheet 1)



A–A



B–B

1 THE HEAD OF THE APEX BOLT MUST POINT FORWARD

2 THE HEAD OF THE FUSE PIN MUST POINT AFT

Upper Drag Brace Installation for the Main Landing Gear
Figure 401 (Sheet 2)

S 864-004
(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 584-006
(4) Lift the airplane until the wheels are above the ground (AMM 07-11-01/201).

S 014-009
(5) Do the task "Remove the Main Gear Jury Strut Spring" (AMM 32-32-05/401).

S 034-005
(6) Do the task "Remove the Main Gear Drag Brace Door" (AMM 32-12-08/401).

E. Remove the Upper Drag Brace

S 024-040
(1) Remove the downlock pin from the jury strut.

S 984-064

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE JURY STRUT. THE LANDING WILL MOVE SLIGHTLY INBOARD AND THE JURY STRUT WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Push up on the jury strut to release it from the overcenter position.

S 494-007
(3) Install the sling equipment on the upper drag brace. Use the instructions supplied with the tools.

NOTE: Do not install the sling on the jury strut when you remove the upper drag brace.

S 014-010
(4) To disconnect the upper drag brace from the lower drag brace and the jury strut, do the steps that follow (View A-A):
(a) Hook and loop the strap around the lower drag brace, as close as possible to the apex bolt, then attach the strap to a suitable structural part of the wheel well ceiling.

NOTE: This will hold the brace in position when you remove the apex bolt.

(b) Remove the lockbolts, washers and nuts from the apex bolt.

(c) Remove the castellated nut, washer and apex bolt.

S 434-011

(5) Install the apex bolt to hold the lower drag brace and the jury strut in position.

S 034-012

(6) To disconnect the upper drag brace from the spindle , do the steps that follow (View B-B):
(a) Remove the lockbolts, washers and nuts from the fuse pin.
(b) Remove the castellated nut, washer and fuse pin.

S 024-013

(7) Use the hoist to move the upper drag brace away from the work area.

S 094-014

(8) Remove the sling equipment from the upper drag brace.

TASK 32-11-11-404-015

3. Install the Upper Drag Brace on the Main Landing Gear (Fig. 401)

NOTE: Wear Limits for the components that follow are supplied in 32-11-10/601.

A. Equipment
(1) A20001-79 Floor Mounted Boom Hoist
(A20001-1 Alternative)
(2) A32008-53 MLG Sling Equipment
(3) A32073-1 MLG Side Brace Rigging Bar
(4) F70312-27, -32 Crowfoot Wrenches
B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(3) G50136 Compound, Corrosion Preventive - BMS 3-38
C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 32-11-03/401, Main Gear Side Brace Assembly
(5) AMM 32-11-10/601, Main Gear Drag Brace Assembly
(6) AMM 32-12-00/501, Main Gear Doors
(7) AMM 32-12-08/401, Drag Brace Door and Linkage
(8) AMM 32-32-05/401, Main Gear Jury Strut Springs

D. Access
(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

E. Install the Upper Drag Brace

S 494-016
(1) Install the sling equipment on the upper drag brace.

NOTE: Use the instructions supplied with the tools.

S 844-017
(2) Use the hoist to position the upper drag brace on the upper spindle.

S 424-060
(3) To connect the upper drag brace to the upper spindle, do the steps that follow (View B-B):

NOTE: Do these steps before you connect the upper drag brace to the lower drag brace. This will make it easier to install the castellated nut on the fuse pin.

(a) Apply grease to the chrome plated surface of the fuse pin and the fay surfaces of the spindle.

WARNING: MAKE SURE YOU INSTALL THE FUSE PIN WITH THE HEAD OF THE PIN ON THE AFT SIDE OF THE DRAG STRUT. IMPROPER INSTALLATION OF THE PIN CAN CAUSE DAMAGE TO EQUIPMENT.

(b) Put the fuse pin through the upper drag brace and spindle.
(c) Apply a thin layer of compound to the washer and the threads of the fuse pin and castellated nut.
(d) Install the washer and castellated nut on the fuse pin.
(e) Use the crowfoot wrench to tighten the castellated nut to 110-120 pound-feet.
(f) Apply a thin layer of compound to the washers and the threads of the lockbolts and nuts.
(g) Install the lockbolts, washers and nuts on the fuse pin.

NOTE: If it is necessary, loosen the castellated nut to the nearest lock position to install the lockbolts.

(h) Remove the excess compound.

S 424-044

(4) To connect the upper drag brace to the lower drag brace and jury strut, do the steps that follow (View A-A):
   (a) Remove the apex bolt which holds the lower drag brace and the jury strut in position.
   (b) Apply grease to the chrome plated surface of the apex bolt.
   (c) Position the upper drag brace on the lower drag brace and jury strut.

WARNING: MAKE SURE YOU INSTALL THE APEX BOLT WITH THE HEAD OF THE BOLT ON THE FORWARD SIDE OF THE DRAG STRUT. IMPROPER INSTALLATION OF THE BOLT CAN CAUSE DAMAGE TO EQUIPMENT.

   (d) Put the apex bolt through the upper/lower drag brace and jury strut.
   (e) Apply a thin layer of compound to the washer and the threads of the apex bolt and castellated nut.
   (f) Install the washer and castellated nut on the apex bolt.
   (g) Use the crowfoot wrench to tighten the castellated nut to 110-120 pound-feet.
   (h) Apply a thin layer of compound to the washers and the threads of the lockbolts and nuts.
   (i) Install the lockbolts, washers and nuts on the apex bolt.

NOTE: If it is necessary, loosen the castellated nut to the nearest lock position to install the lockbolts.

   (j) Remove the excess compound.

S 084-071

(5) Remove the strap that holds the lower drag brace in position.

S 094-023

(6) Remove the sling equipment.

S 414-045

(7) Install the side brace rigging bar between the upper jury strut and the lower drag brace spindle (AMM 32-11-03/401).

S 214-046

(8) Check to see if the lower side brace pin can be rotated by hand.

NOTE: You may loosen the nut to eliminate clamp-up of the assembly.

S 824-047
(9) If you can not rotate the pin then you must adjust the side brace (AMM 32-11-03/501).

S 024-048
(10) Remove the side brace rigging bar.

S 824-072
(11) Push down on the jury strut until the jury strut is in the down and locked position.

S 494-050
(12) Install the downlock pin on the jury strut (AMM 32-00-20/201).

F. Put the Airplane Back to Its Usual Condition

S 414-031
(1) Do the task "Install the Main Gear Jury Strut Spring" (AMM 32-32-05/401).

S 414-034
(2) Do the task "Install the Main Gear Drag Brace Door" (AMM 32-12-08/401).

S 824-035
(3) Adjust the drag brace door (AMM 32-12-00/501).

S 584-033
(4) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 644-036
(5) Lubricate the upper drag brace at the grease fittings (AMM 12-21-14/301).

S 084-063

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR LOWER DRAG BRACE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the lower drag brace from the main landing gear. The second task installs the lower drag brace on the main landing gear.

TASK 32-11-12-004-001

2. Remove the Lower Drag Brace from the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) A20001-79 Floor Mounted Boom Hoist
          (A20001-1 Alternative)
      (2) A32008-53 MLG Sling Equipment
      (3) F70312-27, -32 Crowfoot Wrenches
      (4) Strap - Utility with S Hooks (1" x 15') 400 lb working load limit
          Kinadyne Corp. Part No. 751587 (or equivalent)
          (Commercially Available)
   B. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-32-05/401, Main Gear Jury Strut Springs
   C. Access
      (1) Location Zones

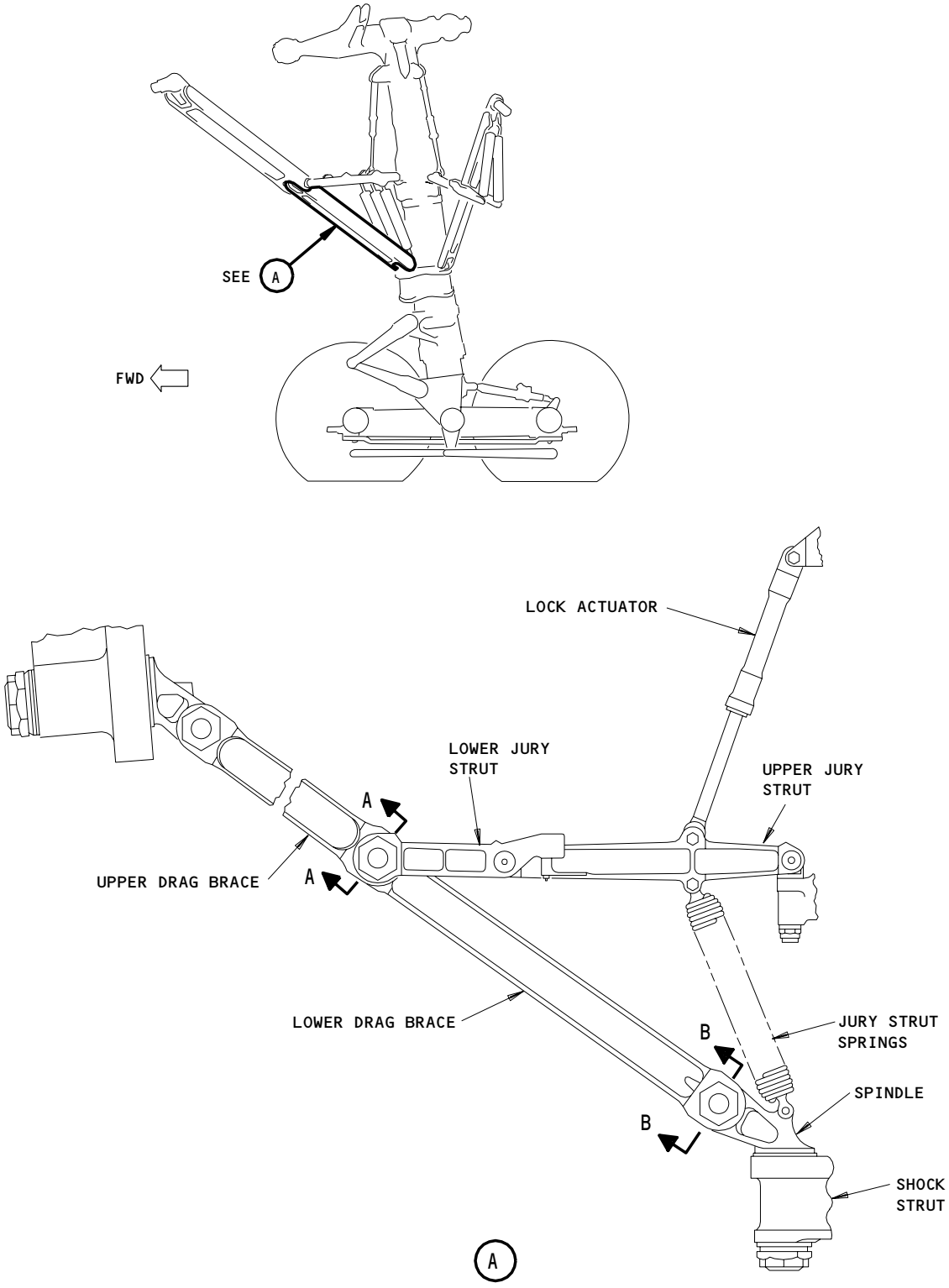
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

   D. Prepare for the Removal of the Lower Drag Brace

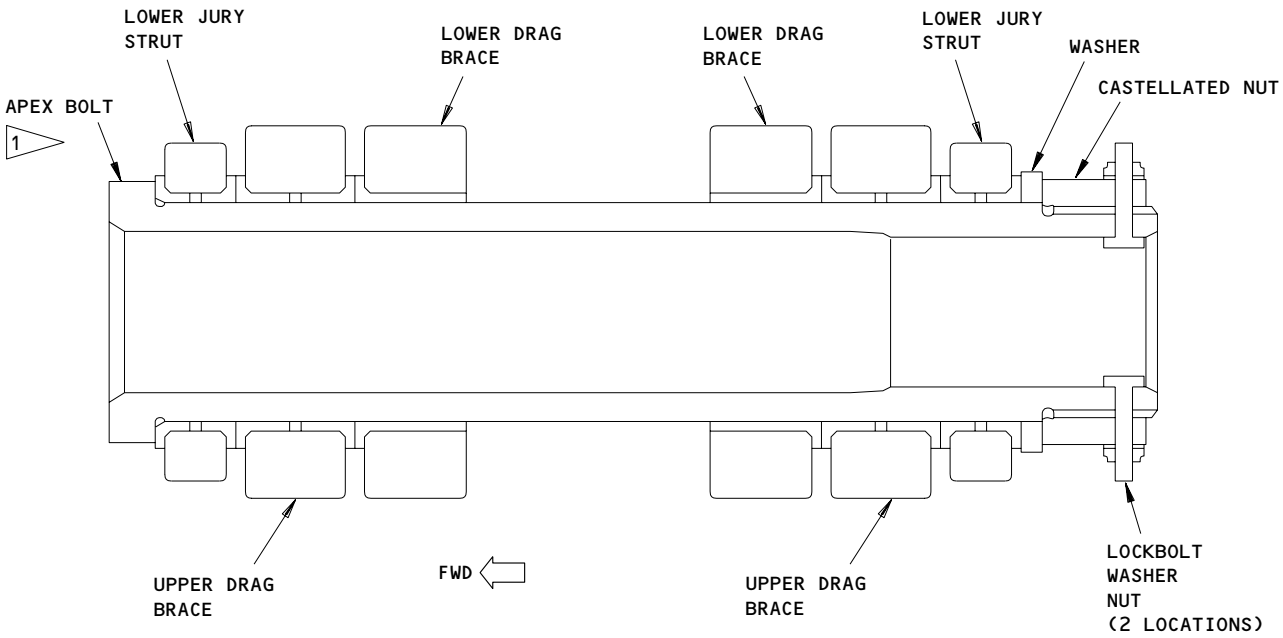
S 484-060

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

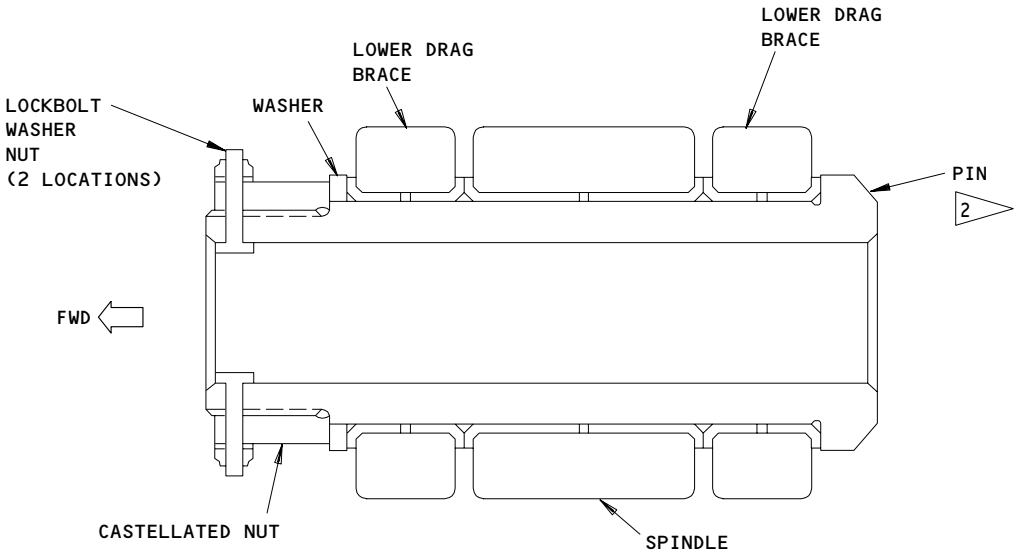
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).



Lower Drag Brace Installation for the Main Landing Gear
Figure 401 (Sheet 1)



A–A



B–B

1 THE HEAD OF THE APEX BOLT MUST POINT FORWARD

2 THE HEAD OF THE PIN MUST POINT AFT

Lower Drag Brace Installation for the Main Landing Gear
Figure 401 (Sheet 2)

S 484-061

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 864-004

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 584-005

(4) Lift the airplane until the wheels are above the ground (AMM 07-11-01/201).

S 014-006

(5) Do the task "Remove the Main Gear Jury Strut Spring" (AMM 32-32-05/401).

E. Remove the Lower Drag Brace

S 024-035

(1) Remove the downlock pin from the jury strut.

S 984-036

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE JURY STRUT. THE LANDING WILL MOVE SLIGHTLY INBOARD AND THE JURY STRUT WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Push up on the jury strut to release it from the overcenter position.

S 484-034
(3) Install the sling equipment on the lower drag brace. Use the instructions supplied with the tools.

NOTE: Do not install the sling equipment on the jury strut when you remove the lower drag brace.

S 024-038
(4) To disconnect the lower drag brace from the upper drag brace and the jury strut, do the steps that follow (View A-A):
(a) Hook and loop the strap around the upper drag brace , as close as possible to the apex bolt, then attach the strap to a suitable structural part of the wheel well ceiling.

NOTE: The strap will hold the brace in position when you remove the apex bolt.

(b) Remove the lockbolts, washers and nuts from the apex bolt.
(c) Remove the castellated nut, washer and apex bolt.

S 434-009
(5) Install the apex bolt to hold the upper drag brace and jury strut in position.

S 024-039
(6) To disconnect the lower drag brace from the spindle, do the steps that follow (View B-B):
(a) Remove the lockbolts, washers and nuts from the pin.
(b) Remove the castellated nut, washer and pin.

S 984-063
(7) Use the hoist to move the lower drag brace away from the work area.

S 484-048
(8) Remove the sling equipment from the lower drag brace.

TASK 32-11-12-404-012
3. Install the Lower Drag Brace on the Main Landing Gear (Fig. 401)

NOTE: Wear Limits for the components that follow are supplied in 32-11-10/601.

A. Equipment
(1) A20001-79 Floor Mounted Boom Hoist
(A20001-1 Alternative)

(2) A32008-53 MLG Sling Equipment
(3) A32073-1 MLG Side Brace Rigging Bar
(4) F70312-27, -32 Crowfoot Wrenches

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(3) G50136 Compound, Corrosion Preventive - BMS 3-38

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 32-11-03/401, Main Gear Side Brace Assembly
(5) AMM 32-11-10/601, Main Gear Drag Brace Assembly
(6) AMM 32-32-05/401, Main Gear Jury Strut Springs

D. Access
(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

E. Install the Lower Drag Brace

S 494-040
(1) Install the sling equipment on the lower drag brace.

S 844-013
(2) Lift the lower drag brace into position on the main landing gear.

S 424-041
(3) To connect the lower drag brace to the upper drag brace and jury strut, do the steps that follow (View A-A):
(a) Remove the apex bolt which holds the upper drag brace and the jury strut in position.
(b) Apply grease to the chrome plated surface of the apex bolt.
(c) Apply a thin layer of compound to the washer and the threads of the apex bolt and castellated nut.
(d) Position the lower drag brace on the upper drag brace and jury strut.

WARNING: MAKE SURE YOU INSTALL THE APEX BOLT WITH THE HEAD OF THE BOLT ON THE FORWARD SIDE OF THE DRAG STRUT. IMPROPER INSTALLATION OF THE BOLT CAN CAUSE DAMAGE TO EQUIPMENT.

(e) Install the castellated nut, washer and apex bolt.

(f) Use the crowfoot wrench to tighten the castellated nut to 110-120 pound-feet.
(g) Apply a thin layer of compound to the washers and the threads of the lockbolts and nuts.
(h) Install the lockbolts, washers and nuts on the apex bolt.

NOTE: If it is necassary, loosen the castellated nut to the nearest lock position to install the lockbolts.

(i) Remove the excess compound.

S 424-058
(4) To connect the lower drag brace to the lower spindle, do the steps that follow (View B-B):
(a) Apply grease to the chrome plated surface of the pin and the fay surfaces of the spindle.
(b) Apply a thin layer of compound to the washer and the threads of the pin and castellated nut.
(c) Position the lower drag brace on the spindle.

WARNING: MAKE SURE YOU INSTALL THE PIN WITH THE HEAD OF THE PIN ON THE AFT SIDE OF THE DRAG STRUT. IMPROPER INSTALLATION OF THE PINS CAN CAUSE DAMAGE TO EQUIPMENT.

(d) Install the pin, washer, and castellated nut on the lower drag brace.
(e) Use the crowfoot wrench to tighten the castellated nut to 110-120 pound-feet.
(f) Apply a thin layer of compound to the washers, and the threads of the lockbolts and nuts.
(g) Install the lockbolts, washers and nuts on the pin.

NOTE: If it is necassary, loosen the castellated nut to the nearest lock position to install the lockbolts.

(h) Remove the excess compound.

S 084-064
(5) Remove the strap that holds the upper drag brace in position.

S 414-042
(6) Install the side brace rigging bar between the upper jury strut and the lower drag brace spindle (AMM 32-11-03/401).

S 214-043
(7) Check to see if the lower side brace pin can be rotated by hand. You may loosen the nut to eliminate clamp-up of the assembly.

S 024-045
(8) Remove the side brace rigging bar.

S 984-065
(9) Push down on the lock link until the lock link is in the down and locked position.

S 024-046
(10) Install the downlock pin on the jury strut (AMM 32-00-20/201).

F. Put the Airplane Back to Its Usual Condition

S 414-025
(1) Do the task "Install the Main Gear Jury Strut Spring" (AMM 32-32-05/401).

S 584-026
(2) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 644-027
(3) Lubricate the lower drag brace at the grease fittings (AMM 12-21-14/301).

S 084-062

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR DRAG BRACE UPPER AND LOWER SPINDLES - REMOVAL/INSTALLATION

1. General
   A. This procedure contains four tasks. Task one removes the drag brace upper spindle on the main landing gear. Task two installs the drag brace upper spindle on the main landing gear. Task three removes the drag brace lower spindle on the main landing gear. Task four installs the drag brace lower spindle on the main landing gear.

TASK 32-11-13-004-003

2. Remove the Drag Brace Upper Spindle on the Main Landing Gear
   A. Equipment
      (1) A32008-53 MLG Sling Equipment
      (2) F70312-27, -29, -32, -34 Crowfoot Wrenches
   B. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones

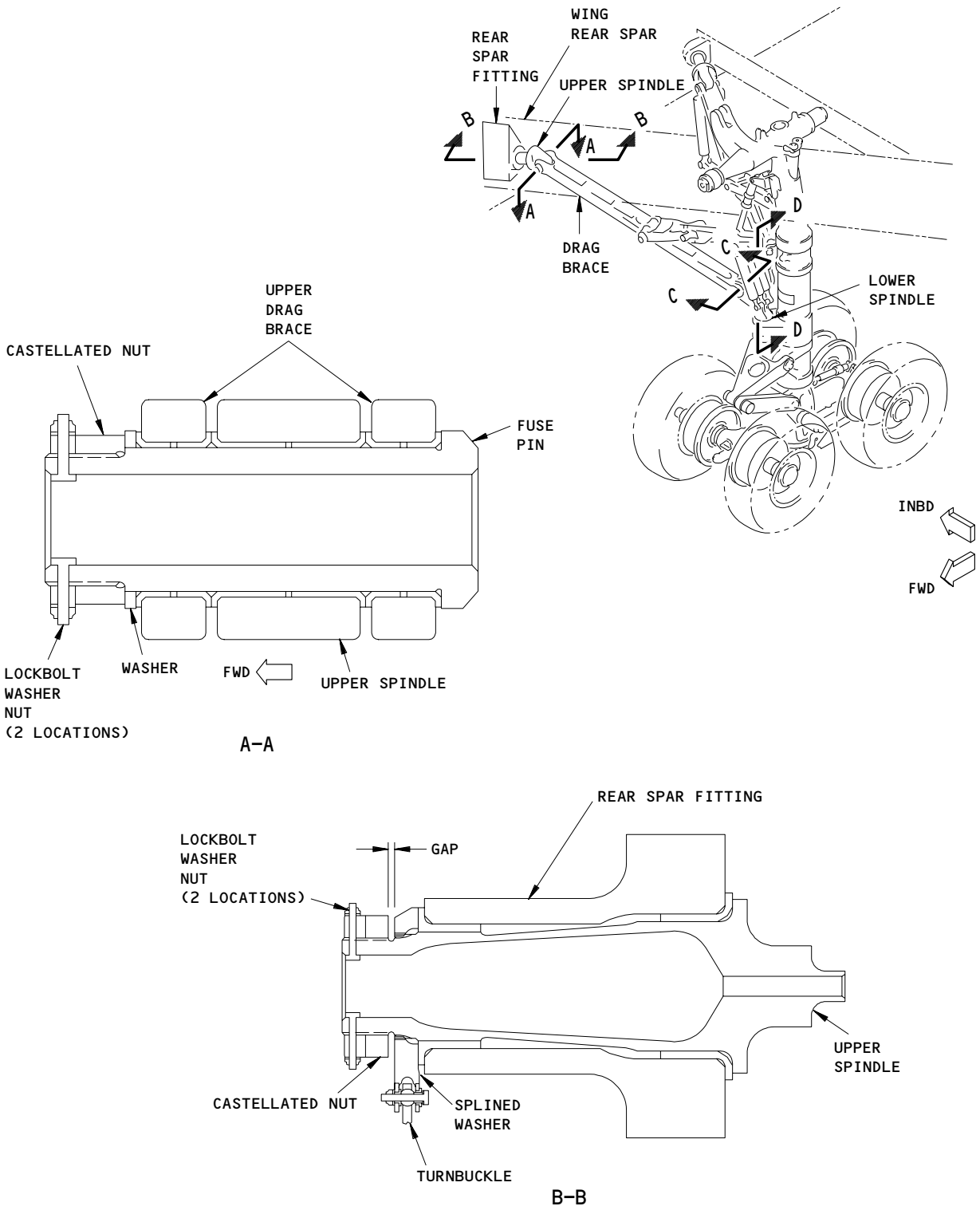
731/741	Main Landing Gear
732/742	MLG Body Doors
733/743	MLG Drag Brace Door
734/744	MLG Oleo Door
735/745	MLG Trunnion Door

   D. Prepare for the Removal of the Upper Spindle (Fig. 401)

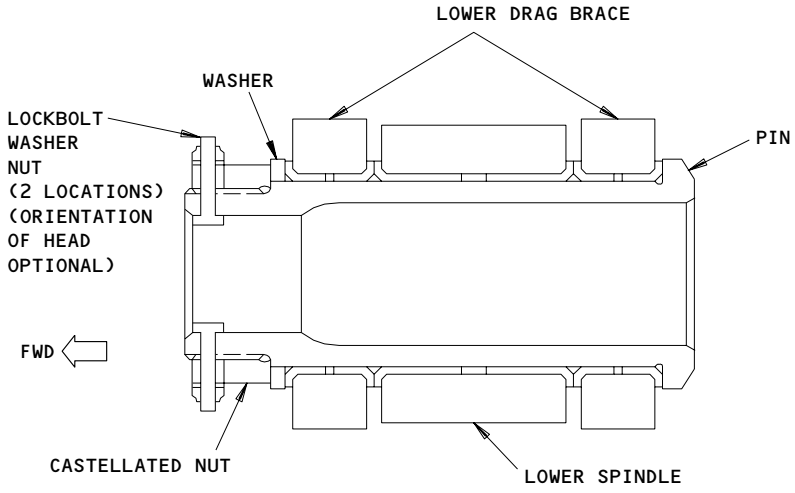
S 484-069

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

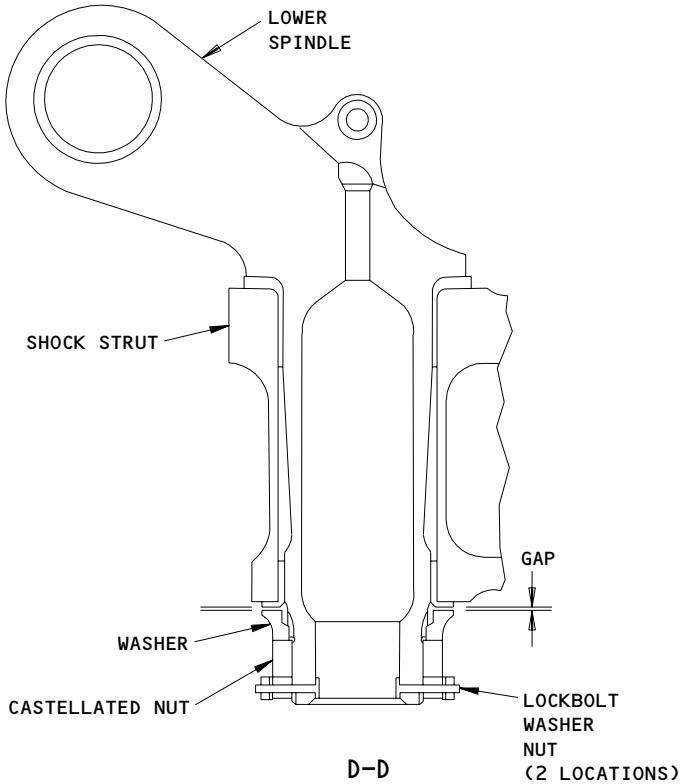
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).



Main Gear Drag Brace Upper and Lower Spindles Installation
Figure 401 (Sheet 1)



C–C



D–D

Main Gear Drag Brace Upper and Lower Spindles Installation
Figure 401 (Sheet 2)

S 484-070

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 024-046

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 984-047

(4) Lift the airplane until the wheels are above the ground (AMM 07-11-01/201).

S 024-048

(5) Do the task "Remove the Main Gear Jury Strut Spring" (AMM 32-32-05/401).

S 024-049

(6) Disconnect the drag brace door linkage from the upper drag brace (AMM 32-12-08/401).

E. Remove the Upper Spindle.

S 024-037

(1) Remove the downlock pin from the jury strut.

S 984-039

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE JURY STRUT. THE LANDING WILL MOVE SLIGHTLY INBOARD AND THE JURY STRUT WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Push up on the jury strut to release it from the overcenter position.

S 494-011
(3) Install the sling equipment on the upper drag brace.

NOTE: Use the instructions supplied with the tool.

S 024-040
(4) To disconnect the upper drag brace from the spindle, do the steps that follow (View B-B):
(a) Remove the lockbolts, washers and nuts from the fuse pin.
(b) Remove the castellated nut, washer and fuse pin.

S 984-041
(5) Move the upper drag brace away from the spindle.

S 024-042
(6) To remove the upper spindle from the rear spar, do the steps that follow (View B-B).
(a) Disconnect the turnbuckle from the splined washer on the inboard side of the upper spindle.
(b) Remove the lockbolts, washers and nuts from the castellated nut.
(c) Remove the castellated nut, washer and upper spindle.

TASK 32-11-13-404-001

3. Install the Drag Brace Upper Spindle on the Main Landing Gear

A. Equipment
(1) Crowfoot Wrench - F70312-27, 29, 32, 34.

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(3) G50136 Compound, Corrosion Preventive - BMS 3-38

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-11-13/601, Main Gear Drag Brace Upper and Lower Spindles
(4) AMM 32-32-00/501, Main Gear Extension and Retraction

D. Access
(1) Location Zones

731/741	Main Landing Gear
732/742	MLG Body Doors
733/743	MLG Drag Brace Door
734/744	MLG Oleo Door
735/745	MLG Trunnion Door

E. Install the Upper Spindle (Fig. 401)

NOTE: Wear Limits for the components that follow are supplied in AMM 32-11-13/601.

S 424-011

(1) To install the upper spindle in the rear spar fitting , do the steps that follow (Section B-B):
   (a) Apply grease to the chrome plated surface of the upper spindle.
   (b) Apply a thin layer of compound to the splined washer surfaces and the threads of the upper spindle and castellated nut.
   (c) Install the upper spindle, washer and castellated nut.

      NOTE: Tighten the nut finger tight.

   (d) Install the turnbuckle on the splined washer.
   (e) Use the crowfoot wrench to tighten the castellated nut to 250-300 pound-feet.
   (f) Loosen the nut and put a 0.003-0.005 inch feeler-gage between the nut and the splined washer.
   (g) Tighten the nut to 5-10 pound-feet (Section B-B).
   (h) Apply compound to the threads of the washers and the threads of the lockbolts and nuts.
   (i) Install the lockbolts, washers and nuts.

      NOTE: If it is necessary, loosen the castellated nut to the nearest lock position to install the lockbolts.

   (j) Remove the excess compound.

S 424-050

(2) To connect the upper drag brace to the upper spindle, do the steps that follow (View A-A):
   (a) Apply grease to the chrome plated surface of the fuse pin and the fay surfaces of the spindle.
   (b) Apply a thin layer of compound to the washer and the threads of the fuse pin and castellated nut.
   (c) Position the upper drag brace on the spindle.

WARNING: MAKE SURE YOU INSTALL THE FUSE PIN WITH THE HEAD OF THE PIN ON THE AFT SIDE OF THE DRAG STRUT. IMPROPER INSTALLATION OF THE PIN CAN CAUSE DAMAGE TO EQUIPMENT.

   (d) Install the fuse pin, washer, and castellated nut on the upper drag brace.
   (e) Use the crowfoot wrench to tighten the castellated nut to 110-120 pound-feet.

(f) Apply a thin layer of compound to the washers and the threads of the lockbolts and nuts.
(g) Install the lockbolts, washers and nuts on the fuse pin.

NOTE: If it is necessary, loosen the castellated nut to the nearest lock position to install the lockbolts.

(h) Remove the excess compound.

S 084-015
(3) Remove the sling equipment from the drag brace.

S 824-075
(4) Push down on the jury strut until the jury strut is in the down and locked position.

S 724-016
(5) Do a check of the gear-operated sequence valve adjustment.
(a) Install the sequence valve adjustment tool and rig pin LGE 3.

NOTE: Use the instructions supplied with the tool.

(b) Adjust the turnbuckle if needed.
(c) Remove the tool and the rig pin.

S 424-053
(6) Connect the drag brace door linkage to the upper drag brace (AMM 32-12-08/401).

S 424-055
(7) Do the task "Install the Main Gear Jury Strut Spring" (AMM 32-32-05/401).

S 714-017
(8) Do the main gear extension and retraction test (AMM 32-32-00/501).

F. Put the Airplane Back to Its Usual Condition.

S 424-059
(1) Install the downlock pin on the jury strut (AMM 32-00-20/201).

S 584-018
(2) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 644-019
(3) Lubricate the spindle at the grease fittings (AMM 12-21-14/301).

S 084-071

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Remove the door locks and close the doors (AMM 32-00-15/201).

TASK 32-11-13-004-020

4. Remove the Drag Brace Lower Spindle on the Main Landing Gear

A. Equipment

(1) Crowfoot Wrench - F70312-27, 29, 32, 34.

B. References

(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 32-32-05/401, Main Gear Jury Strut Spring

C. Access

(1) Location Zones

731/741	Main Landing Gear
732/742	MLG Body Doors
733/743	MLG Drag Brace Door
734/744	MLG Oleo Door
735/745	MLG Trunnion Door

D. Prepare for Removal of the Lower Spindle (Fig. 401).

S 484-072

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 484-073

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors and install the door locks (AMM 32-00-15/201).

S 864-023

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 584-024
(4) Lift the airplane with jacks until the wheels are above the ground (AMM 07-11-01/201).

S 034-025
(5) Do the task "Remove the Main Gear Jury Strut Spring" (AMM 32-32-05/401).

E. Remove the Lower Spindle

S 024-060
(1) Remove the downlock pin from the jury strut.

S 984-061

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE JURY STRUT. THE LANDING WILL MOVE SLIGHTLY INBOARD AND THE JURY STRUT WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Push up on the jury strut to release it from the overcenter position.

S 024-062
(3) To disconnect the lower drag brace from the spindle, do the steps that follow (View C-C):
(a) Remove the lockbolts, washers and nuts from the pin.
(b) Remove the castellated nut, washer and pin.

S 984-063
(4) Move the lower drag brace away from the spindle.

S 024-064
(5) To remove the lower spindle from the shock strut, do the steps that follow (View D-D).
(a) Remove the lockbolts, washers and nuts from the castellated nut.
(b) Remove the castellated nut, washer and lower spindle.

TASK 32-11-13-404-002

5. Install the Drag Brace Lower Spindle on the Main Landing Gear

A. Equipment
(1) Crowfoot Wrench - F70312-27, 29, 32, 34.

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

(3) G50136 Compound, Corrosion Preventive - BMS 3-38

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-11-13/601, Main Gear Drag Brace Upper and Lower Spindles
(4) AMM 32-32-00/501, Main Gear Extension and Retraction
(5) AMM 32-32-05/401, Main Gear Jury Strut Spring

D. Access
(1) Location Zones

731/741	Main Landing Gear
732/742	MLG Body Doors
733/743	MLG Drag Brace Door
734/744	MLG Oleo Door
735/745	MLG Trunnion Door

E. Install the Lower Spindle (Fig. 401)

NOTE: Wear Limits for the components that follow are supplied in AMM 32-11-13/601.

S 424-065
(1) To install the lower spindle in the shock strut, do the steps that follow (Section D-D):
(a) Apply grease to the chrome plated surface of the lower spindle.
(b) Apply a thin layer of compound to the washer and the threads of the lower spindle and castellated nut.
(c) Install the lower spindle, washer and castellated nut.
(d) Use the crowfoot wrench to tighten the castellated nut to 250-300 pound-feet.
(e) Loosen the nut and put a 0.003-0.005 inch feeler-gage between the nut and the washer.
(f) Tighten the nut to 5-10 pound-feet.
(g) Apply compound to the threads of the washers and the threads of the lockbolts and nuts.
(h) Install the lockbolts, washers and nuts.

NOTE: If it is necessary loosen the nut to nearest lock position to install the lockbolts.

(i) Remove the excess compound.

S 424-066

(2) To connect the lower drag brace to the lower spindle, do the steps that follow (View C-C):
(a) Apply grease to the chrome plated surface of the pin and the fay surfaces of the spindle.
(b) Apply a thin layer of compound to the washer and the threads of the pin and castellated nut.
(c) Position the lower drag brace on the spindle.

WARNING: MAKE SURE YOU INSTALL THE PIN WITH THE HEAD OF THE PIN ON THE AFT SIDE OF THE DRAG STRUT. IMPROPER INSTALLATION OF THE PIN CAN CAUSE DAMAGE TO EQUIPMENT.

(d) Install the pin, washer, and castellated nut on the lower drag brace.
(e) Use the crowfoot wrench to tighten the castellated nut to 110-120 pound-feet.
(f) Apply a thin layer of compound to the washers and the threads of the lockbolts and nuts.
(g) Install the lockbolts, washers and nuts on the pin.

NOTE: If it is necessary, loosen the castellated nut to the nearest lock position to install the lockbolts.

(h) Remove the excess compound.

S 824-076

(3) Push down on the jury strut until the jury strut is in the down and locked position.

S 434-031

(4) Do the task "Install the Main Gear Jury Strut Spring" (AMM 32-32-05/401).

S 714-032

(5) Do the main gear extension and retraction test (AMM 32-32-00/501).

F. Put the Airplane Back to Its Usual Condition.

S 424-067

(1) Install the downlock pin on the jury strut (AMM 32-00-20/201).

S 584-033

(2) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 644-034

(3) Lubricate the lower spindle at the grease fittings.

S 084-074

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR DRAG BRACE UPPER AND LOWER SPINDLES - INSPECTION/CHECK

1. General
   A. This procedure only has illustrations and a wear limits table which shows the data for wear limits. There are no procedures for access removal or installation of the parts. Refer to the Main Gear Drag Brace Upper and Lower Spindles - Removal/Installation for the procedures to do these tasks.
   B. On drag brace assemblies without bushing fillet seals (bushings with orange identification marks) the rotation or migration of the bushing is a normal condition (AMM 12-21-14/301).

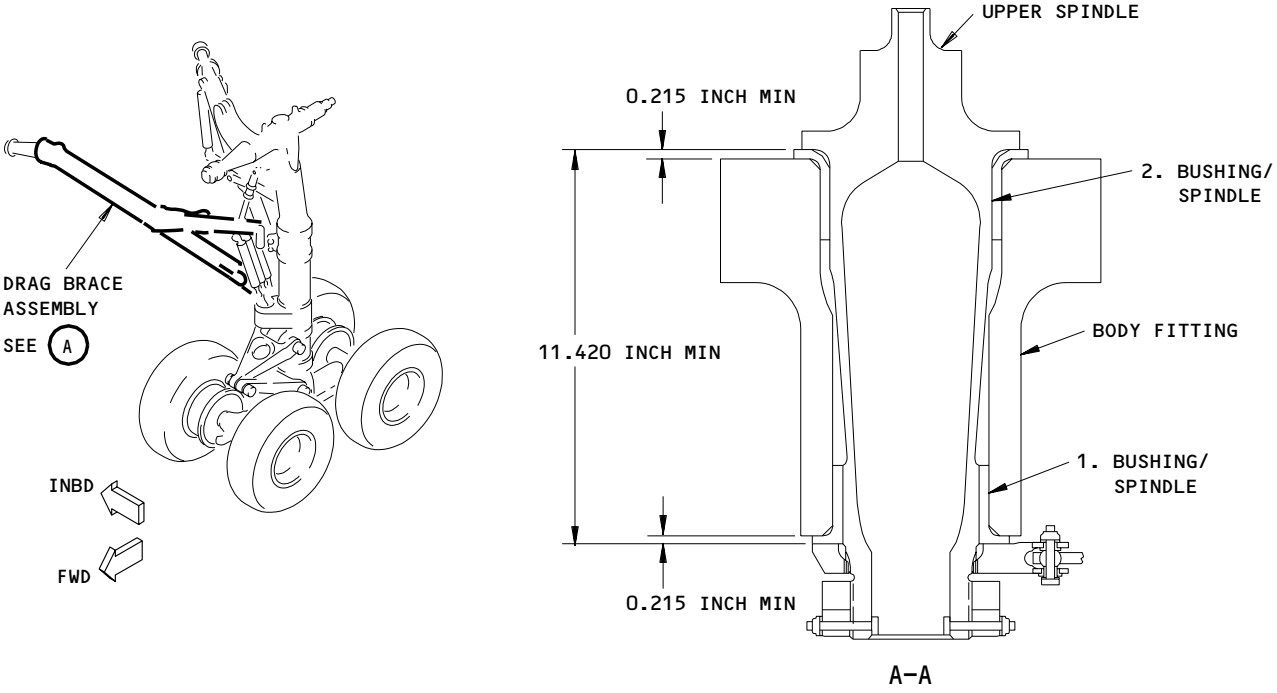
TASK 32-11-13-206-001

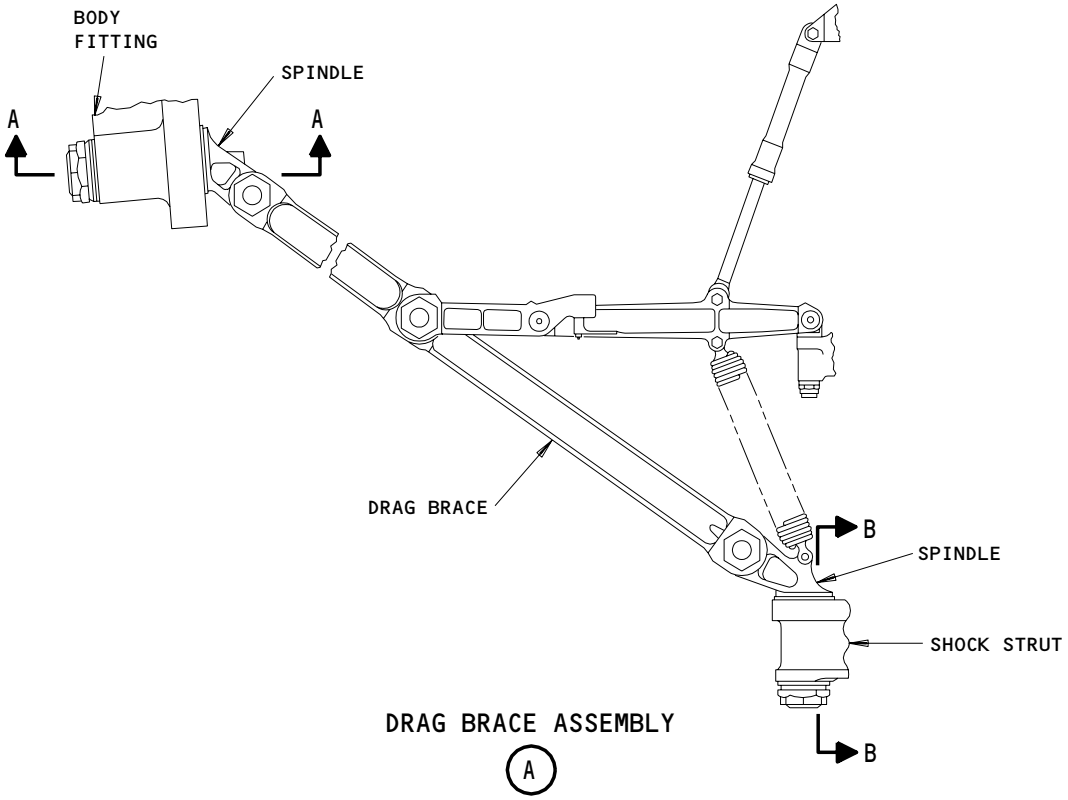
2. Wear Limits for the Upper and Lower Spindles of the Drag Brace for the Main Landing Gear (Fig. 601)

   NOTE: Wear limits for components connected to the upper and lower spindles of the drag brace, can be found in the Maintenance Manual subject for the component.

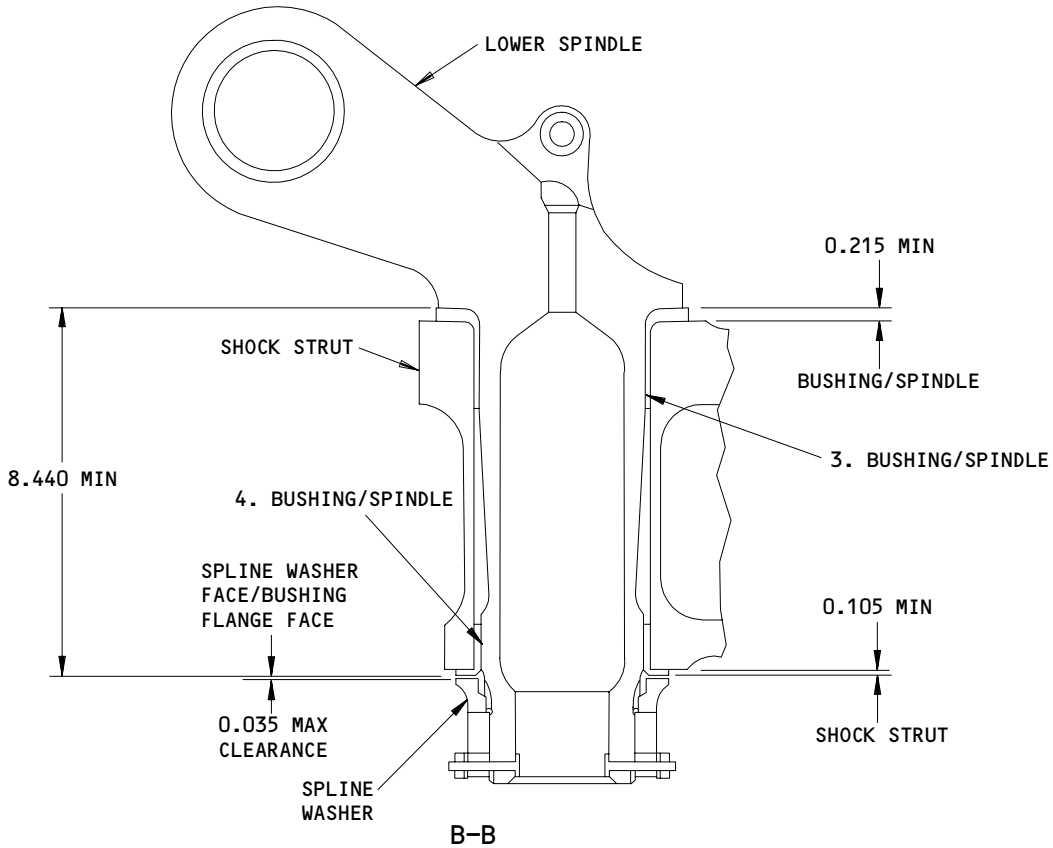
   A. Wear Limits for the Upper and Lower Spindles of the Drag Brace

      S 226-002
      (1) Refer to Fig. 601 for the inspection points and the wear limits table.





Wear Limits for the Upper and Lower Spindles of the
Drag Brace for the Main Landing Gear
Figure 601 (Sheet 1)



INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
			DIAMETER		PER-MITTED WEAR DIM.	MAX DIA CLEAR-ANCE			
			MIN	MAX					
1	BUSHING	ID	4.0030	4.0040	4.0100	0.0110	X		
	SPINDLE	OD	3.9970	3.9990	3.9930			X	1
2	BUSHING	ID	4.7520	4.7530	4.7594	0.0104	X		
	SPINDLE	OD	4.7470	4.7490	4.7426			X	1
3	BUSHING	ID	4.0000	4.0015	4.0075	0.0085	X		
	SPINDLE	OD	3.9970	3.9990	3.9930			X	1
4	BUSHING	ID	3.8750	3.8765	3.8785	0.0084	X		
	SPINDLE	OD	3.8720	3.8740	3.8720			X	1

1 THIS PART CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS

Wear Limits for the Upper and Lower Spindles of the
Drag Brace for the Main Landing Gear
Figure 601 (Sheet 2)

MAIN GEAR DRAG BRACE DOWNLOCK FITTING - REMOVAL/INSTALLATION

1. General
   A. This procedure provides instructions to do these tasks:
      (1) The removal of the drag brace downlock fitting on the outer cylinder of the main landing gear.
      (2) The installation of the drag brace downlock fitting on the outer cylinder of the main landing gear.

TASK 32-11-14-024-001

2. Remove the Downlock Fitting for the Main Gear Drag Brace (Fig. 401)
   A. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-11-16/401, Main Gear Jury Strut Spindle
      (6) AMM 32-32-05/401, Main Gear Jury Strut Spring
   B. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Door
734/744	MLG Oleo Door
735/745	MLG Trunnion Door

   C. Prepare for the Removal of the Downlock Fitting

      S 484-018

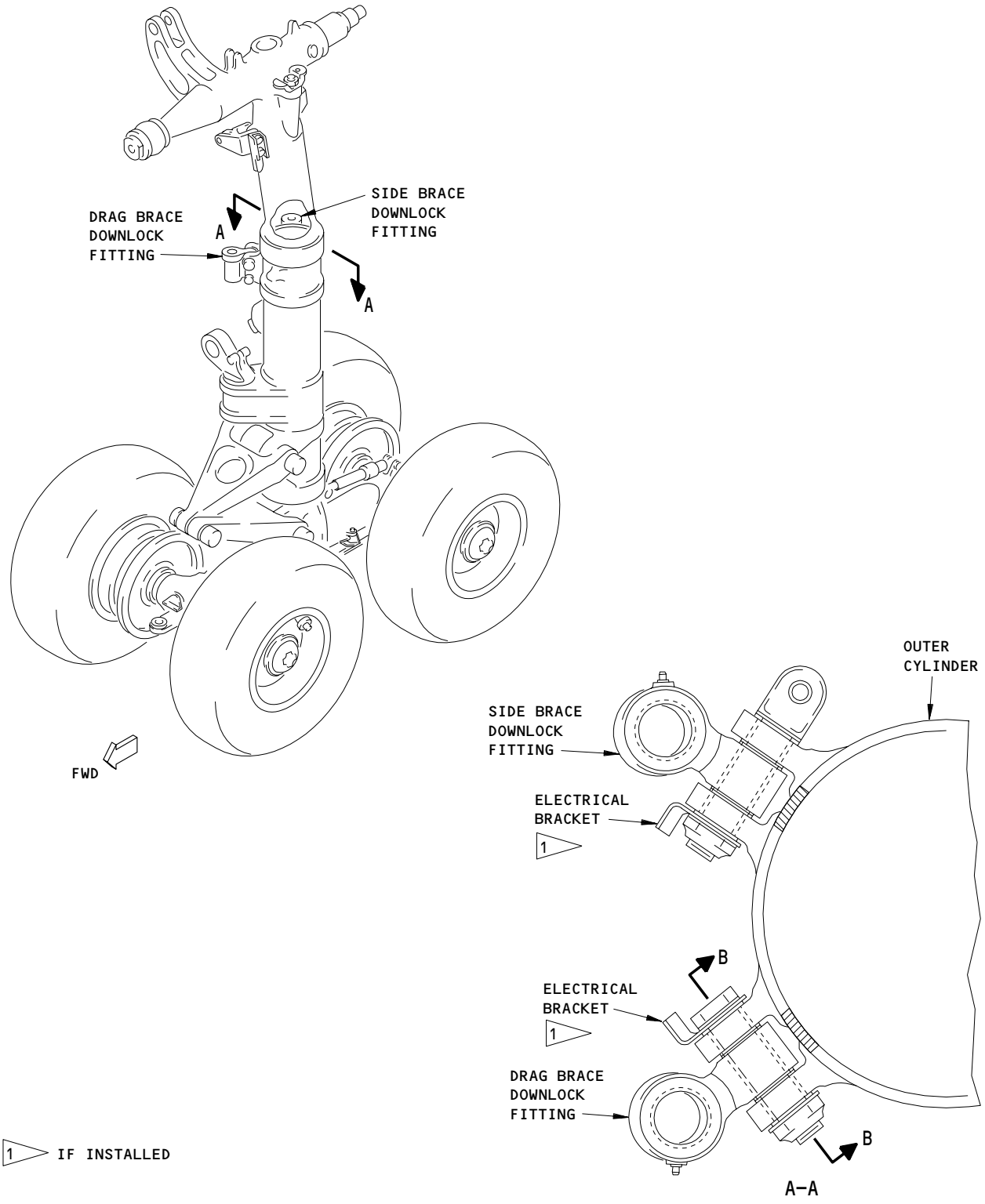
      WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

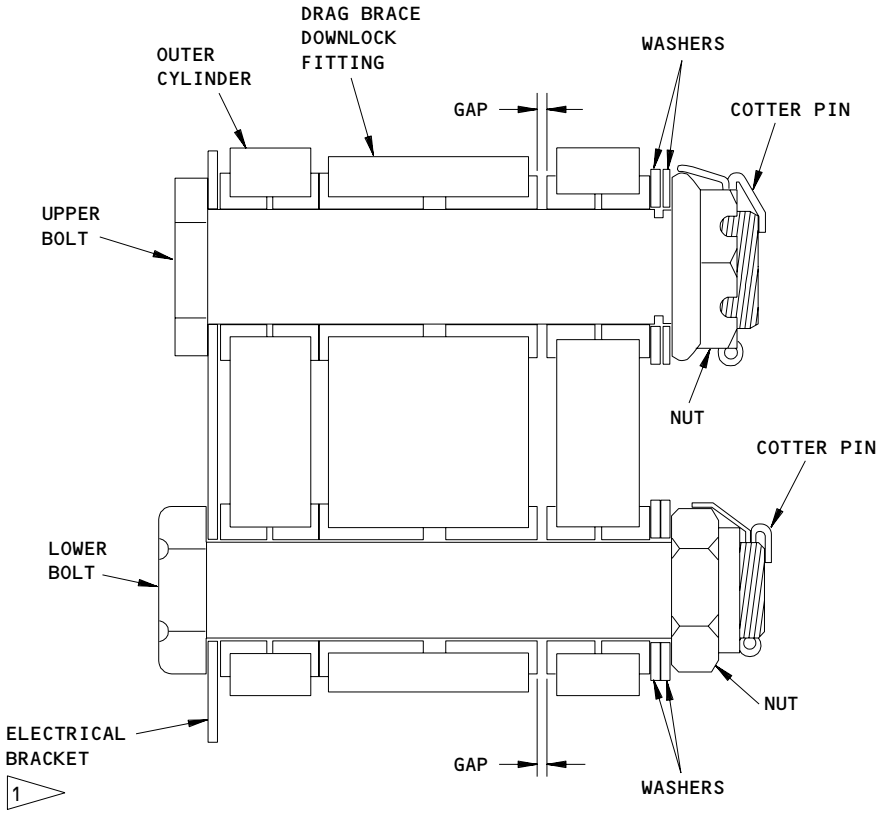
      S 484-003

      WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).



Drag Brace Downlock Fitting Installation
Figure 401 (Sheet 1)



DRAG BRACE
B-B

1 IF INSTALLED

Drag Brace Downlock Fitting Installation
Figure 401 (Sheet 2)

S 864-004
(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 584-005
(4) Lift the airplane until the wheels are above the ground (AMM 07-11-01/201).

S 024-006
(5) Remove the springs from the jurt strut (AMM 32-32-05/401).

S 024-007
(6) Disconnect the jury strut spindle from the downlock fitting (AMM 32-11-16/401).

NOTE: Do not remove the spindle from the jury strut.

D. Remove the Downlock Fitting

S 024-008
(1) Remove the cotter pins and loosen the nuts, on the upper and lower bolts, until the fay surface of the nuts do not touch the washers.

S 214-009
(2) Measure and record, for the upper and lower bolts, the gap between the bushings (View B-B).

NOTE: Make sure that on the other side of the downlock fitting the bushings are free of gaps when you do the measurement.

S 024-010
(3) Remove the nuts, washers, bolts and bracket (if installed) to disconnect the downlock fitting from the outer cylinder.

TASK 32-11-14-414-011

3. Install the Downlock Fitting for the Main Gear Drag Brace (Fig. 401)

A. Consumable Materials
(1) D00633 Grease - BMS 3-33

(2) G50136 Compound, BMS 3-38 Corrosion Preventive

B. References

(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 32-11-16/401, Main Gear Jury Strut Spindle
(5) AMM 32-32-05/401, Main Gear Jury Strut Spring

C. Access

(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Door
734/744	MLG Oleo Door
735/745	MLG Trunnion Door

D. Install the Downlock Fitting

S 414-012

(1) To connect the downlock fitting to the outer cylinder, do the steps that follow (View B-B):
   (a) Apply a thin layer of grease to the chrome surface of the upper and lower bolts.
   (b) Position the downlock fitting on the outer cylinder and install the upper and lower bolts.
   (c) Apply a thin layer of compound to the fay surfaces of the washers and electrical bracket (if installed) and to the threads of the bolts and the nuts.
   (d) Put the electrical bracket, washers and nuts on the upper and lower bolts, then finger tighten the nuts.
   (e) Position a shim or feeler gage between the bushings for the upper and the lower bolt.

   NOTE: Make sure the thickness of the shim or feeler gage is equal to the recorded gap.

   (f) Tighten the nut, on the upper bolt, 65-70 pound-feet (88-95 newton-meters).
   (g) Tighten the nut, on the lower bolt, 50-55 pound-feet (68-75 newton-meters).

(h) Remove the shim or feeler gage.

NOTE: If the joint is too tight to remove the temporary shim or feeler gage, mark the location of the nut, then slowly loosen the nut until the shim or feeler gage can be removed. Return the nut to the marked ocation.

(i) Install the cotter pins.

NOTE: If it is necessary, loosen the castellated nut to the nearest position to install the cotter pin.

S 414-013

(2) Connect the jury strut spindle to the downlock fitting (AMM 32-11-16/401).

E. Put the Airplane Back to Its Usual Condition

S 714-014

(1) Do the extension and retraction test for the main landing gear (AMM 32-32-00/501).

S 484-015

(2) Install the downlock pin in the jurt strut (AMM 32-00-20/201).

S 584-016

(3) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 084-017

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR JURY STRUT ASSEMBLY - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the jury strut assembly of the main landing gear. The second task installs the jury strut assembly of the main landing gear.

TASK 32-11-15-004-001

2. Remove the Main Gear Jury Strut Assembly (Fig. 401)
   A. Equipment
      (1) F70312-32 Crowfoot Wrench
      (2) Strap - Utility with S Hooks (1" x 15') 400 lb working load limit
          Kinadyne Corp. Part No. 751587 (or equivalent)
          (Commercially Available)
   B. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-32-05/401, Main Gear Jury Strut Spring
      (6) AMM 32-61-02/201, Main Gear Proximity Sensors
   C. Access
      (1) Location Zones

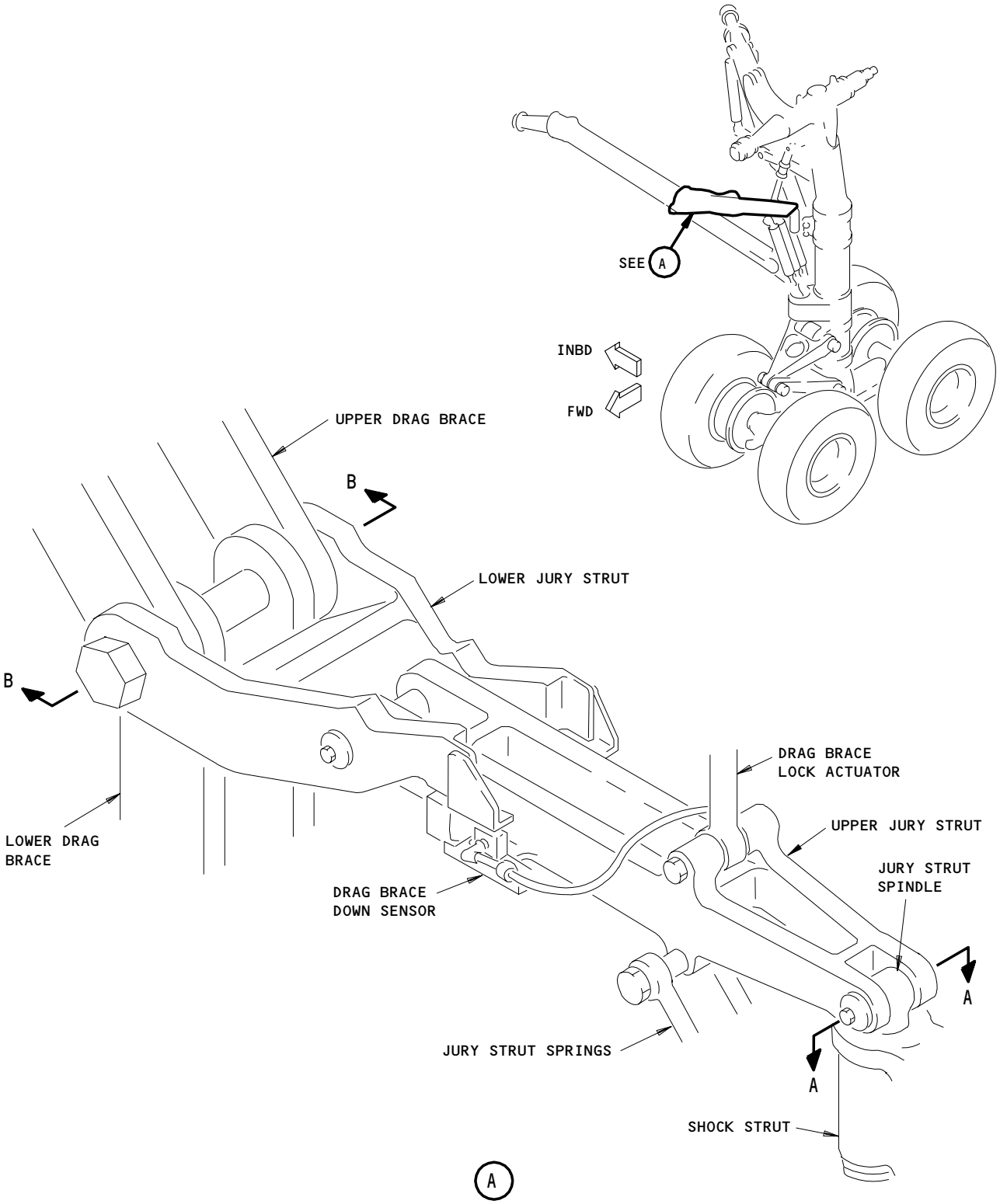
731/741	Main Landing Gear (MLG)
732/742	MLG Body Door
733/743	MLG Drag Brace Door
734/744	MLG Oleo Door
735/745	MLG Trunnion Door

   D. Prepare for Removal of the Jury Strut Assembly.

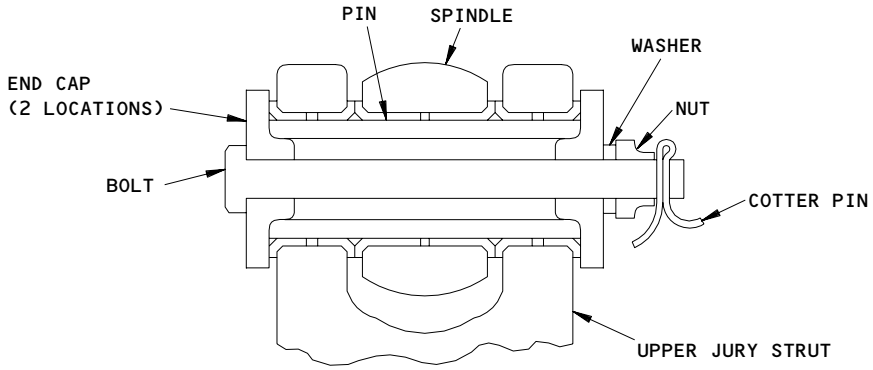
S 484-035

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

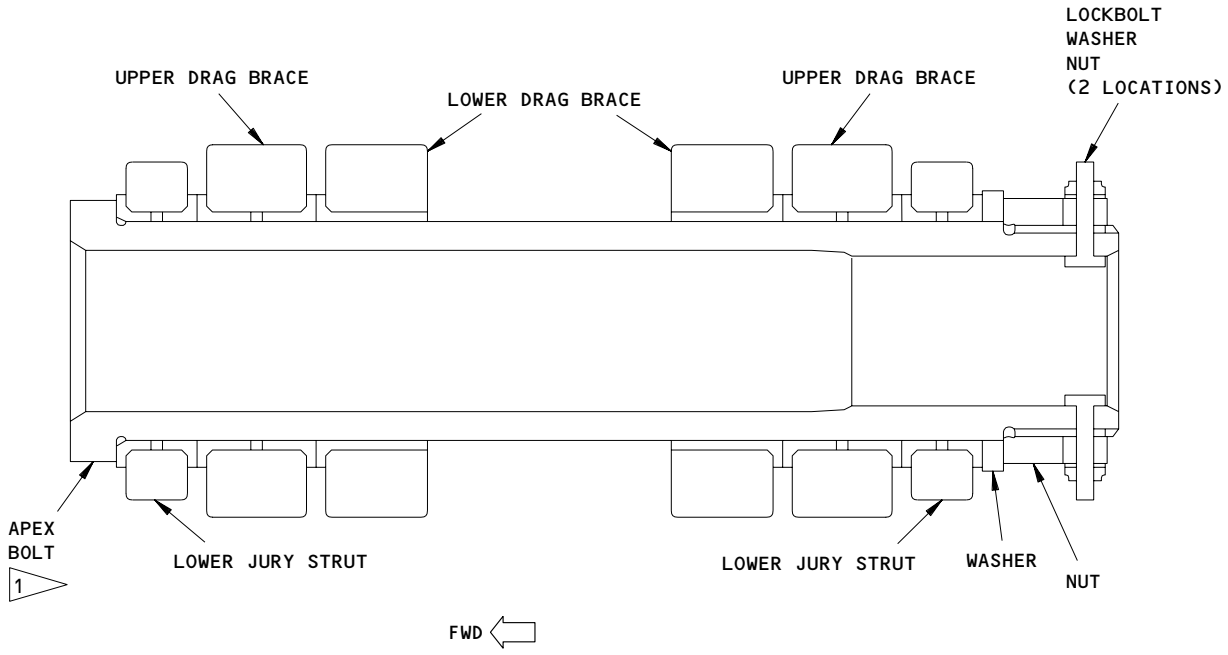
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).



Main Gear Jury Strut Installation
Figure 401 (Sheet 1)



A-A



B-B

1 THE HEAD OF THE APEX BOLT MUST POINT FORWARD

Main Landing Gear Jury Strut Installation
Figure 401 (Sheet 2)

S 484-036

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 864-003

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 584-004

(4) Lift the airplane with jacks until the wheels are above the ground (AMM 07-11-01/201).

S 034-005

(5) Do the task "Remove the Main Gear Jury Strut Spring" (AMM 32-32-05/401).

S 034-021

(6) Remove the pin, washer and nut to disconnect the rod end of the lock actuator from the jury strut.

S 034-006

(7) Remove the drag brace down sensor (AMM 32-61-02/201).

S 984-040

(8) Move the down sensor away from the work area.

E. Remove the Jury Strut

S 024-026

(1) Remove the downlock pin from the jury strut.

S 984-038

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE JURY STRUT. THE LANDING WILL MOVE SLIGHTLY INBOARD AND THE JURY STRUT WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Push up on the jury strut to release it from the overcenter position.

S 024-024

(3) To disconnect the lower jury strut from the drag brace, do the steps that follow (View B-B):

(a) Attach a strap to the lower drag strut, as near as possible to the apex bolt. Attach another strap to the upper drag strut, as close as possible to the apex bolt. Then attach the straps, slack free, to a suitable structural part of the wheel well ceiling.

NOTE: This will hold the drag strut in position when you remove the apex bolt.

(b) Remove the lockbolts, washers and nuts from the apex bolt.

(c) Remove the castellated nut, washer and apex bolt.

S 984-028

(4) Install the apex bolt to hold the drag brace in position.

S 024-023

(5) Remove the nut, washer, end caps, bolt and pin to disconnect the upper jury strut from the spindle (View A-A).

S 984-041

(6) Move the jury strut assembly away from the work area.

TASK 32-11-15-404-010

3. Install the Main Gear Jury Strut Assembly (Fig. 401)

NOTE: Wear Limits for components that follow are supplied in 32-11-10/601.

A. Equipment
(1) F70312-32 Crowfoot Wrench

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

(3) G50136 Compound, Corrosion Preventive - BMS 3-38

C. References

(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 32-11-10/601, Main Gear Drag Brace Assembly
(5) AMM 32-32-00/501, Main Gear Extension and Retraction
(6) AMM 32-32-05/401, Main Gear Jury Strut Spring
(7) AMM 32-61-02/201, Main Gear Proximity Sensors

D. Install the Jury Strut Assembly.

S 424-032

(1) To connect the upper jury strut to the spindle, Do the steps that follow (View A-A):
    (a) Apply grease to the pin and the bolt shank.
    (b) Apply compound to the washer and the threads of the bolt and nut.
    (c) Position the upper jury strut on the spindle.
    (d) Install the pin, end caps, bolt, washer and nut.
    (e) Tighten the nut to 150-200 pound-inches.
    (f) Remove the excess compound.
    (g) Install the cotter pin.

S 424-031

(2) To connect the jury strut to the upper/lower drag brace, do the steps that follow (View B-B):
    (a) Remove the apex bolt.
    (b) Apply grease to the chrome plated surface of the apex bolt.
    (c) Position the lower jury strut on the drag brace.

WARNING: MAKE SURE YOU INSTALL THE APEX BOLT WITH THE HEAD OF THE BOLT ON THE FORWARD SIDE OF THE DRAG STRUT. IMPROPER INSTALLATION OF THE BOLT CAN CAUSE DAMAGE TO EQUIPMENT.

    (d) Put the apex bolt through the upper/lower drag brace and jury strut.
    (e) Apply a thin layer of compound to the washer and the threads of the apex bolt and castellated nut.
    (f) Install the washer and castellated nut on the apex bolt.
    (g) Use the crowfoot wrench to tighten the castellated nut to 110-120 pound-feet.
    (h) Apply a thin layer of compound to the washers and the threads of the lockbolts and nuts.
    (i) Install the lockbolts washers and nuts on the apex bolt.

        NOTE: If it is necessary, loosen the castellated nut to the nearest lock position to install the lockbolts.

    (j) Remove the excess compound.
    (k) Remove the straps from the drag brace.

S 434-013
(3) Install the drag brace down sensor (AMM 32-61-02/201).

S 424-033
(4) To connect the lock actuator to the upper jury strut, do the steps that follow:
(a) Apply grease to the chrome plated surface of the pin.
(b) Apply a thin layer of compound to the washer and the threads of the pin and nut.
(c) Position the lock actuator on the upper jury strut.
(d) Install the pin, washer and nut.
(e) Tighten the nut to 520-640 pound-inches.
(f) Remove the excess compound.
(g) Install the cotter pin.

S 434-015
(5) Do the task "Install the Main Gear Jury Strut Spring" (AMM 32-32-05/401).

S 714-016
(6) Do the main gear extension and retraction test (AMM 32-32-00/501).

S 434-017
(7) Install the downlock pin on the jury strut (AMM 32-00-20/201).

E. Put the Airplane Back to Its Usual Condition.

S 584-018
(1) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 644-019
(2) Lubricate the jury strut at the grease fittings.

S 084-037

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR JURY STRUT SPINDLE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the jury strut spindle of the main landing gear. The second task installs the jury strut spindle of the main landing gear.

TASK 32-11-16-004-001

2. Remove the Jury Strut Spindle (Fig. 401)
   A. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 12-21-14/301, Main Gear and Actuating Mechanisms
      (3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (4) AMM 32-00-15/201, Landing Gear Door Locks
      (5) AMM 32-00-20/201, Landing Gear Downlocks
      (6) AMM 32-32-05/401, Main Gear Jury Strut Spring
   B. Access
      (1) Location Zones

731/741	Main Landing Gear
732/742	Main Landing Gear Body Doors
733/743	Main Landing Gear Drag Brace Doors
734/744	Main Landing Gear Oleo Doors
735/745	Main Landing Gear Trunnion Doors

   C. Prepare for Removal of the Jury Strut Spindle

S 484-032

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 484-033

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

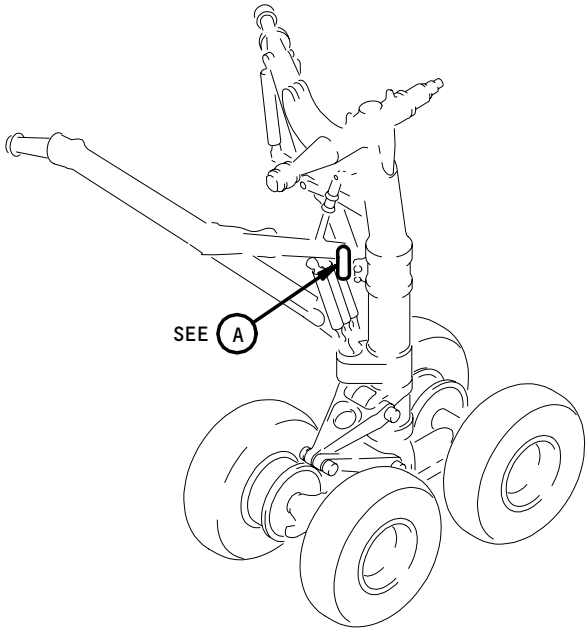
(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

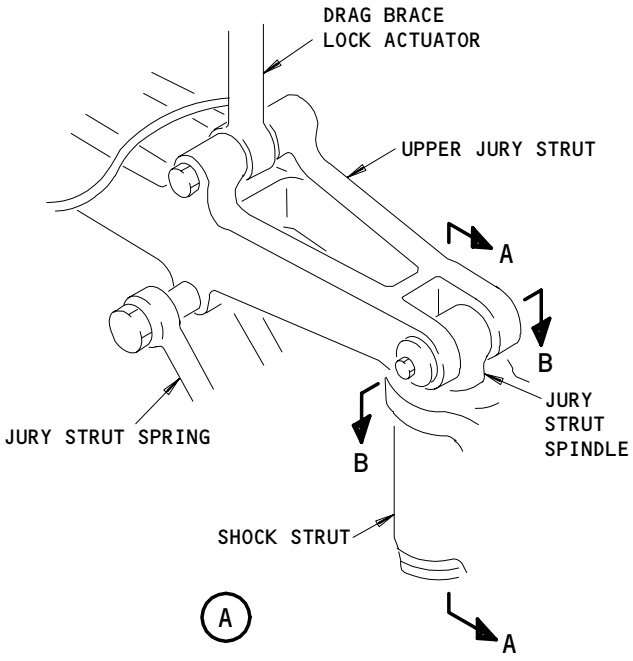
S 864-004

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

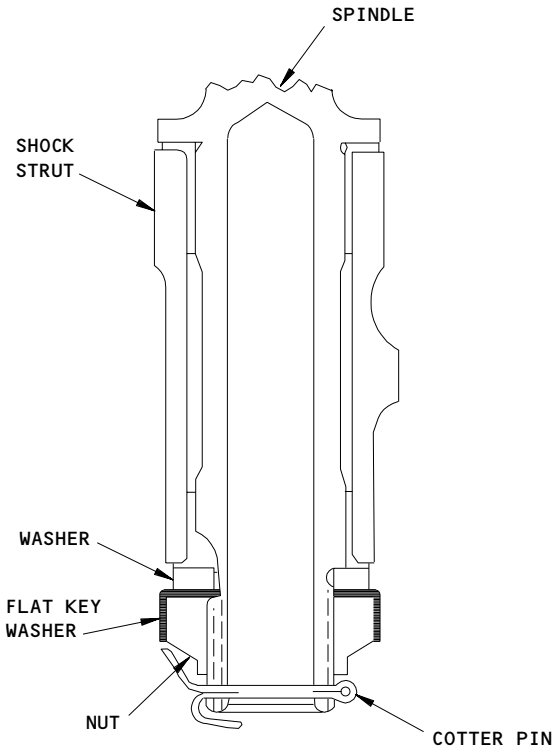
S 584-005

(4) Lift the airplane with jacks until the wheels are above the ground (AMM 07-11-01/201).

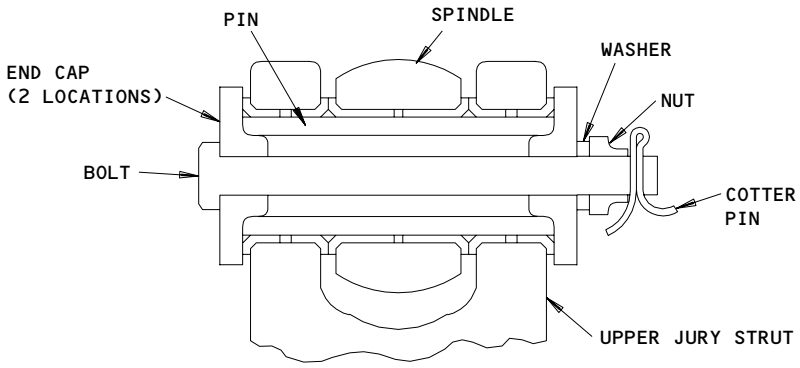




Main Gear Jury Strut Spindle Installation
Figure 401 (Sheet 1)



A–A



B–B

Main Gear Jury Strut Spindle Installation
Figure 401 (Sheet 2)

S 034-006
(5) Do the task "Remove the Main Gear Jury Strut Spring" (AMM 32-32-05/401).

S 034-007
(6) Remove the pin, washer and nut to disconnect the rod end of the lock actuator from the jury strut.

S 824-038
(7) Move the down sensor away from the work area.

D. Remove the Jury Strut Spindle

S 024-025
(1) Remove the downlock pin from the jury strut.

S 984-026

WARNING: BE CAREFUL WHEN YOU PUSH UP ON THE JURY STRUT. THE LANDING WILL MOVE SLIGHTLY INBOARD AND THE JURY STRUT WILL MOVE SUDDENLY WHEN RELEASED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Push up on the jury strut to release it from the overcenter position.

S 024-027
(3) Remove the nut, washer, end caps, bolt and pin to disconnect the upper jury strut from the spindle (View B-B).

S 984-036
(4) Move the jury strut away from the jury strut spindle.

S 024-028
(5) To remove the jury strut spindle from the shock strut, do the steps that follow (View A-A):
(a) Remove the lockbolts, washers and nuts from the castellated nut.
(b) Remove the castellated nut, washer and spindle.

TASK 32-11-16-404-010

3. Install the Jury Strut Spindle (Fig. 401)

NOTE: Wear Limits for the components that follow are supplied in 32-11-16/601.

A. Equipment
(1) Main Gear Door Locks (AMM 32-00-15/201).

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

(3) G50136 Compound, Corrosion Preventive - BMS 3-38

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-11-16/601, Main Gear Jury Strut Spindle
(4) AMM 32-32-05/401, Main Gear Jury Strut Spring

D. Install the Jury Strut Spindle

S 424-037

CAUTION: IF A BACN10JC SELF-LOCKING NUT IS USED, THE NUT SHOULD NOT BE USED AGAIN AFTER REMOVAL FROM A BOLT THAT HAS A HOLE FOR A COTTER PIN. THE EDGES OF THE HOLE WILL MAKE THE SELF-LOCKING FEATURE OF THE NUT UNSERVICEABLE.

(1) To install the jury strut spindle on the shock strut, do the steps that follow (View A-A):
(a) Apply grease to the chrome plated surface of the spindle.
(b) Apply a thin layer of compound to the washer and the threads of the spindle and castellated nut.
(c) Install the spindle, washer, flat key washer (BACW10CR22) and the castellated nut.
(d) Tighten the castellated nut to 1220-1340 pound-inches.
(e) Install the cotter pin.
(f) If you can see an exposed washer tab, then bend the tab against the side of the castellated nut.

S 434-035

(2) To connect the upper jury strut to the spindle, do the steps that follow (View B-B):
(a) Apply grease to the pin and the bolt shank.
(b) Apply compound to the washer and the threads of the bolt and nut.
(c) Position the upper jury strut on the spindle.
(d) Install the pin, end caps, bolt, washer and nut.
(e) Tighten the nut to 150-200 pound-inches.
(f) Remove the excess compound.
(g) Install the cotter pin.

S 434-030

(3) Install the drag brace down sensor (AMM 32-61-02/201).

S 424-031

(4) To connect the lock actuator to the upper jury strut, do the steps that follow:
(a) Apply grease to the chrome plated surface of the pin.
(b) Apply a thin layer of compound to the washer and the threads of the pin and nut.
(c) Position the lock actuator on the upper jury strut.
(d) Install the pin, washer and nut.
(e) Tighten the nut to 520-640 pound-inches.

(f) Remove the excess compound.
(g) Install the cotter pin.

S 434-015
(5) Do the task "Install the Main Gear Jury Strut Spring" (AMM 32-32-05/401).

E. Put the Airplane Back to Its Usual Condition

S 584-016
(1) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 644-017
(2) Lubricate the jury strut spindle at the grease fittings.

S 084-034

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR JURY STRUT SPINDLE - INSPECTION/CHECK

1. General
   A. This procedure only has illustrations and a wear limits table which shows the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Gear Jury Strut Spindle - Removal/Installation for procedures to do these tasks.

TASK 32-11-16-206-001

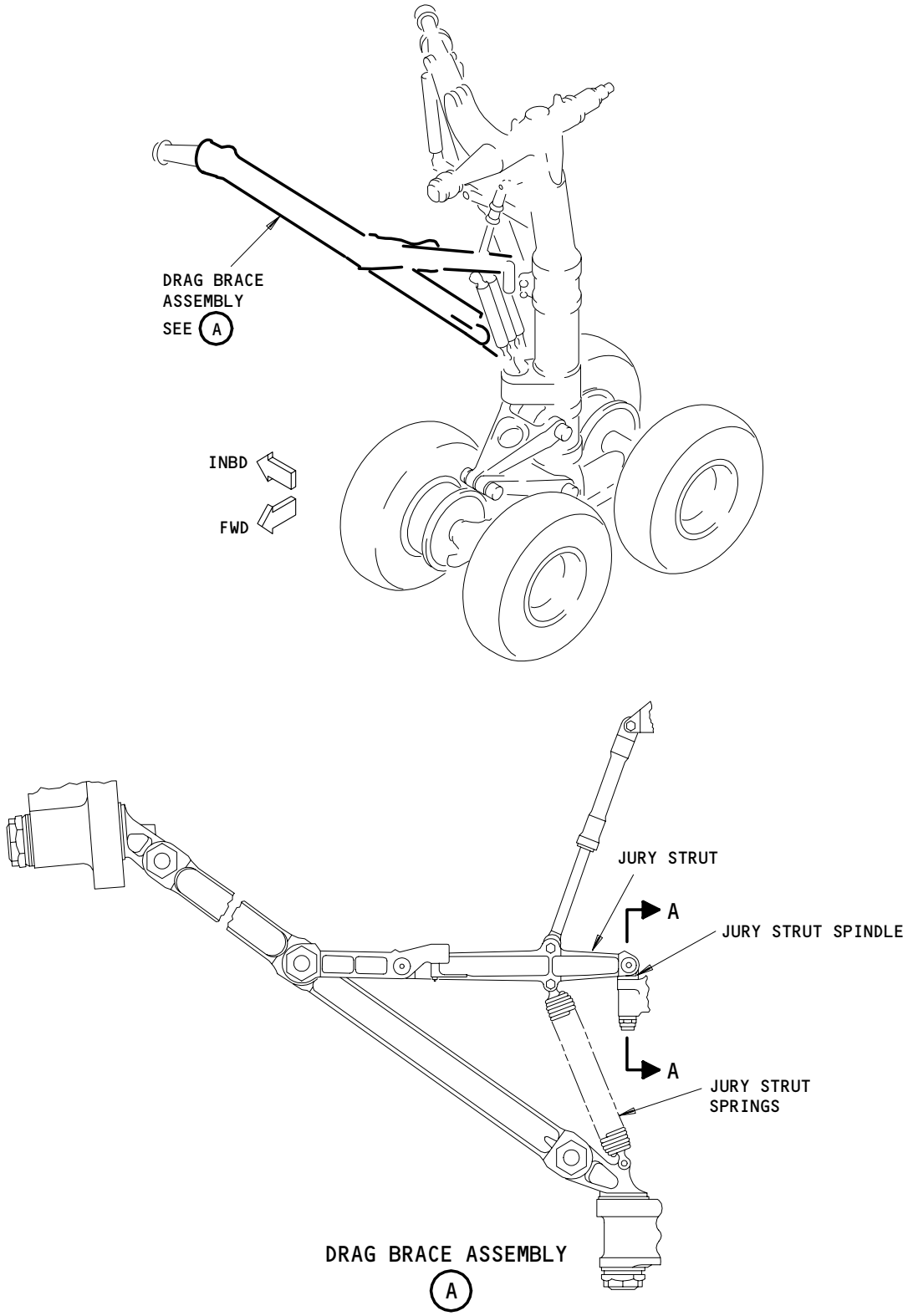
2. Wear Limits for the Jury Spindle of the Main Landing Gear (Fig. 601)

   NOTE: Wear limits for components connected to the jury strut spindle can be found in the Maintenance Manual subject for the component.

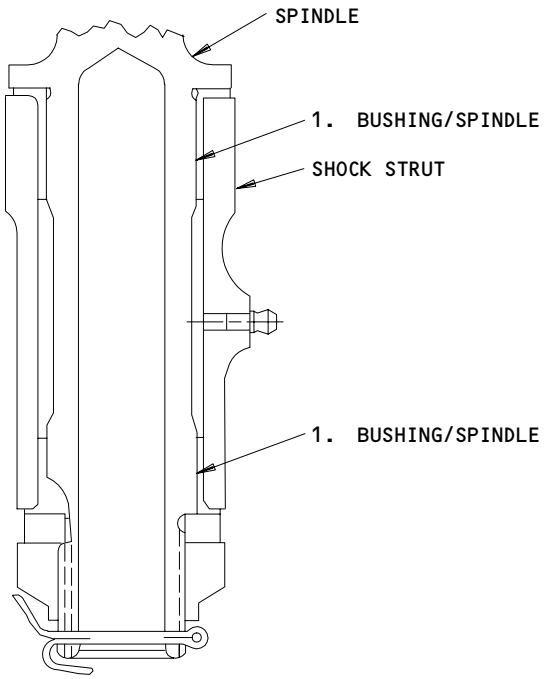
   A. Wear Limits for the Jury Strut Spindles

      S 226-002

      (1) Refer to Fig. 601 for the inspection points and the wear lmits table.



Wear Limits for the Jury Strut Spindle of the Main Landing Gear
Figure 601 (Sheet 1)



A-A

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	1.6283	1.6298	1.6334	0.0094	X		
	SPINDLE	OD	1.6230	1.6240	1.6204			X	1

1 THIS PART CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS

Wear Limits for the Jury Strut Spindle of the Main Landing Gear
Figure 601 (Sheet 2)

MAIN GEAR SHOCK STRUT INNER CYLINDER - REMOVAL/INSTALLATION

1. General

NOTE: To do this procedure it will be necessary to lift the airplane to a height that will allow the inner cylinder to be removed from the outer cylinder. The minimum jack extension height that is necessary to do this procedure is 160 inches for the main body jacks and 210 inches for the tail jack. The extension height is the roll-under height plus 60 inches (AMM 07-11-01/201).

NOTE: This task is not applicable to the "Active and Spare Seal Replacement - Preferred Method" (AMM 32-11-25/201).

A. This procedure has two tasks. The first task removes the main landing gear shock strut inner cylinder. Task two installs the main landing gear shock strut inner cylinder.

B. We recommend that you do this procedure in a sheltered and clean environment. This will prevent contamination of the seals which can cause seal leakage.

NOTE: During the initial landing cycles of a new landing gear, thin dark olive-green streaks on the shock strut frequently occurs. This condition is okay. The petrolatum and grease that we use during shock strut assembly cause these streaks. These streaks will stop after more landing cycles occur. These streaks are different from the red color streaks that are the indication of strut fluid leakage.

TASK 32-11-17-044-001

2. MLG Inner Cylinder Removal

A. Equipment

(1) Main Gear Door Locks (AMM 32-00-15/201)
(2) Gland Nut Wrench Adapter, MLG - A32004-1
(3) Lower Bearing Seal Replacement Equipment, MLG - A32005-54
(4) Shock Strut Drain Equipment, MLG /NLG - A32066-1
(5) O-Ring Inserter, Commercially Available - Cleveland Pneumatics P/N T92321

B. References

(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 12-15-01/301, Main Gear Shock Strut
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 32-11-02/201, Main Gear Shock Strut
(6) AMM 32-11-18/401, Main Gear Truck Assembly
(7) AMM 32-11-22/401, Main Gear Torsion Links
(8) AMM 32-21-25/201, Main Gear Shock Strut Seals
(9) AMM 32-32-00/501, Main Gear Extension and Retraction

(10) AMM 32-32-18/401, Main Gear Truck Positioner
(11) AMM 32-41-08/401, Main Gear Wheel Brakes
(12) AMM 32-42-00/501, Antiskid/Autobrake System

C. Access
(1) Location Zones
731/741 Main Landing Gear

D. Prepare for the Removal of the Inner Cylinder

S 214-003

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 014-004

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY, AND THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 044-005
(3) Remove pressure from the center hydraulic system (AMM 29-11-00/201).

S 584-006
(4) Lift the airplane to a height that will support the airplane weight on jacks (AMM 07-11-01/201).

NOTE: To help keep the inner cylinder aligned with the outer cylinder during this procedure, you can use two sheets of heavy Mylar under each of the four tires. With silicone spray lubricant between the Mylar sheets the truck assembly can be moved side-to-side for alignment. Some operators use sheets of plywood and grease to get the same result.

S 234-068
(5) Measure and record the distance that the lower surface of the gland nut extends below the lower surface of the outer cylinder.

NOTE: The recorded measurement will be used to compare to the 2nd measurement made when the shock strut is assembled.

S 684-007
(6) Do the steps that follow to deflate the shock strut:
(a) Remove the air valve cap.

WARNING: LOOSEN THE NUT FOR THE AIR VALVE A MAXIMUM OF TWO TURNS. AIR PRESSURE CAN BLOW THE VALVE OFF AND CAUSE INJURY TO PERSONS.

(b) Loosen the nut for the air valve, two turns.
(c) Let the shock deflate fully.
(d) Remove the air valve nut.

S 684-059
(7) Use a drip tray to catch the hydraulic fluid when you open the oil-charging valve.

S 684-008

CAUTION: CLEAN ALL THE LEAKED HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY. THE FLUID CAN CAUSE DAMAGE TO THE TIRES.

(8) Install the drain equipment on the oil-charging valve and drain the shock strut.

S 024-009
(9) Remove the drain equipment when all the oil has drained from the shock strut.

E. Remove the Inner Cylinder

S 024-010
(1) Disconnect the two forward brake hydraulic lines at the outer cylinder. Install caps and plugs in the hydraulic lines.

S 024-011
(2) Disconnect the two aft brake lines at the brake disconnect (AMM 32-41-08/401).

S 024-012
(3) Remove the truck positioner actuator. Do not disconnect the hydraulic lines from the actuator (AMM 32-32-18/401).

S 584-013
(4) Carefully lift and temporarily attach the truck positioner actuator to the lower side and drag braces. Make sure the hydraulic lines are clear of the landing gear.

S 024-014
(5) Disconnect the electrical connections at the lower J-box.

S 024-015
(6) Remove the support brackets from the outer cylinder.

S 024-016
(7) Disconnect the upper torsion link from the outer cylinder. Put a pad between the upper and lower torsion links to prevent damage (AMM 32-11-22/401).

S 484-017
(8) Install the turnbuckle for the truck positioner actuator.

S 584-018
(9) Lift the airplane on jacks until approximately 12 inches of chrome is showing on the inner cylinder (AMM 07-11-01/201).

S 584-019
(10) Wind a cloth pad around the inner cylinder. This will prevent damage to the surface of the inner cylinder if the gland nut moves down.

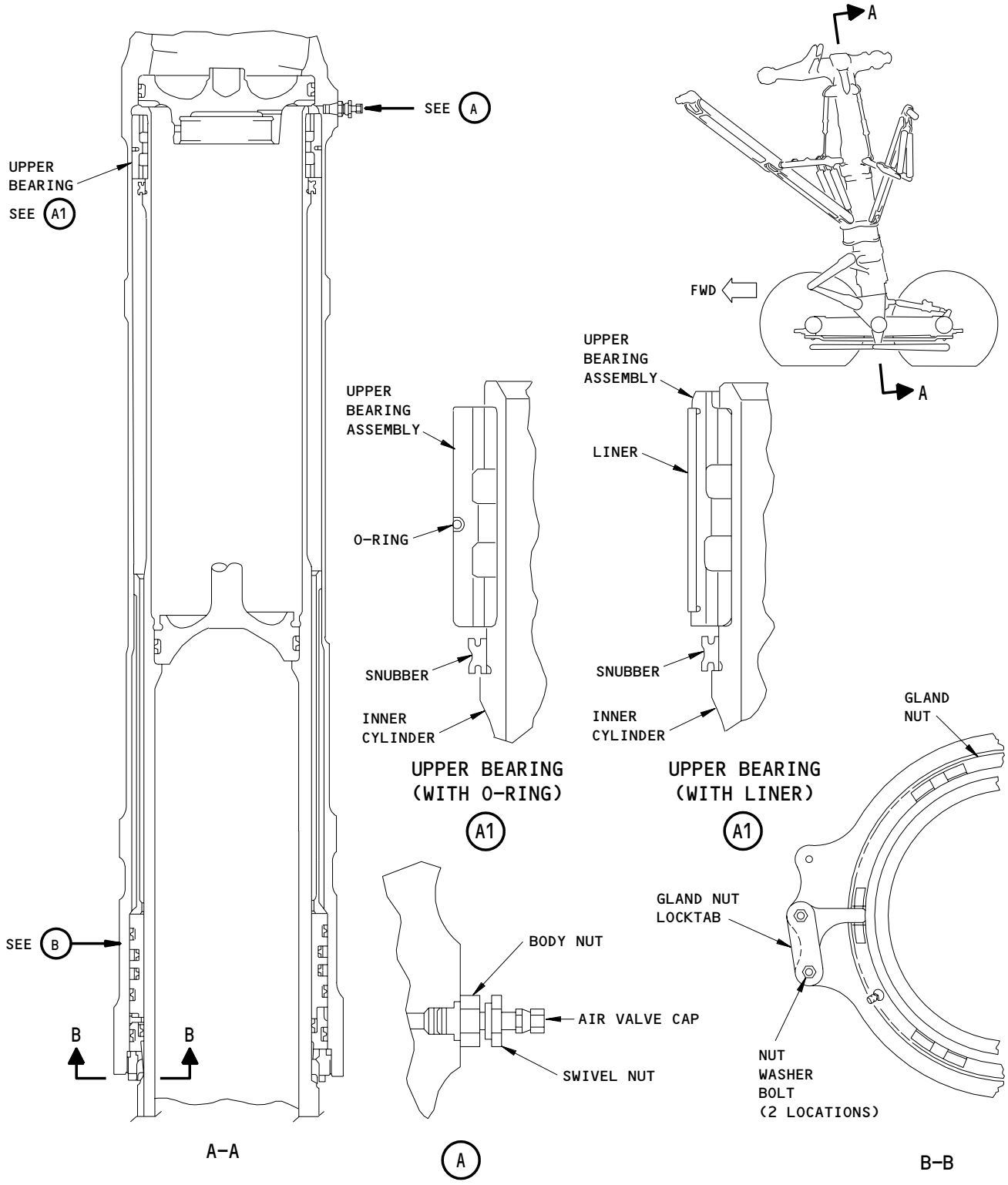
S 024-020
(11) Remove the locktab from the gland nut (Fig. 401, View B-B).

S 024-021
(12) Use the gland nut wrench adapter to loosen the gland nut.

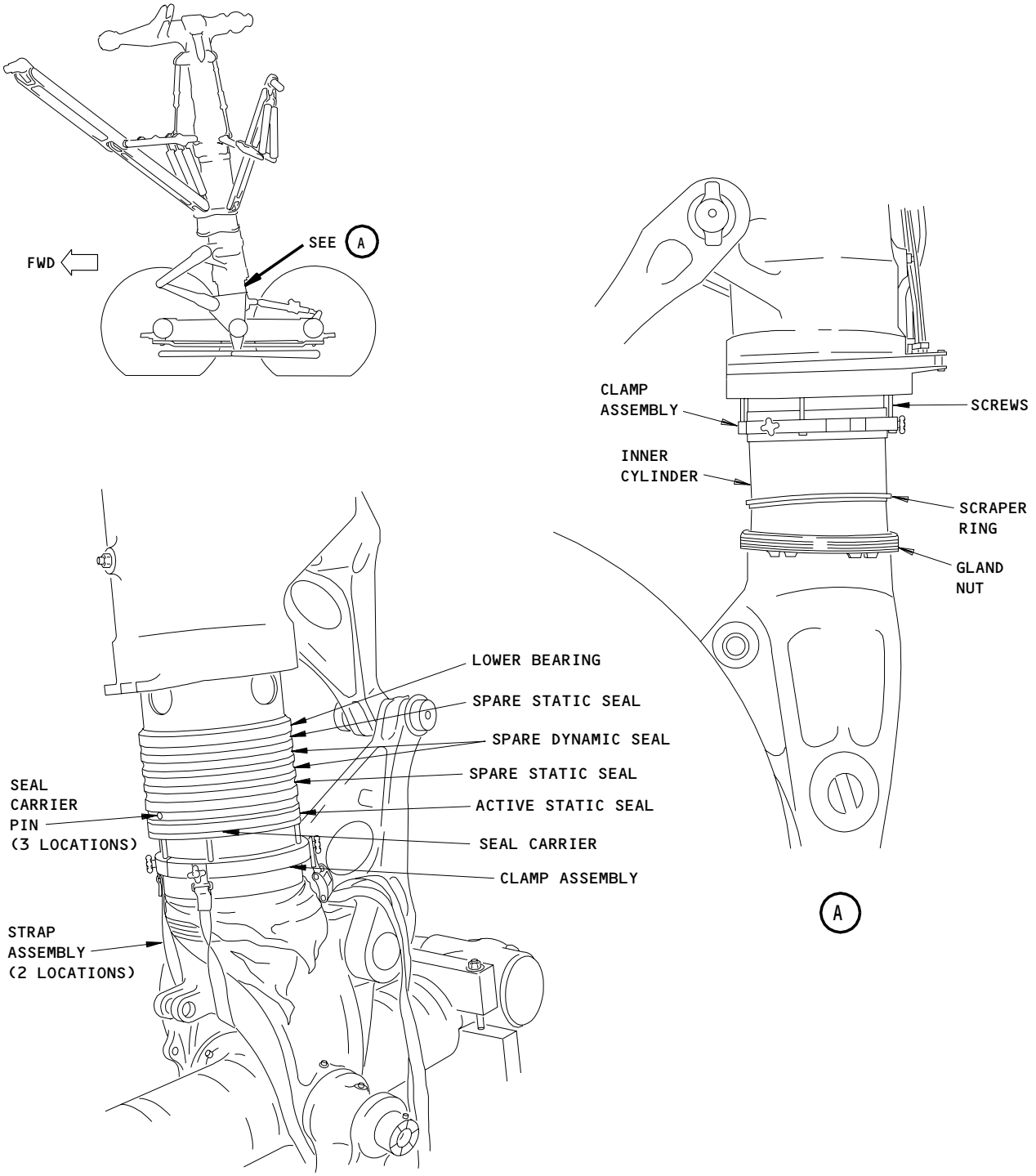
S 844-022
(13) Move the gland nut to the bottom of the inner cylinder (Fig. 402, Detail A).

S 844-023
(14) Move the scraper ring down the inner cylinder to the gland nut.

S 484-024
(15) Install the clamp assembly on the inner cylinder. This will prevent damage to the gland nut from the lower bearing when the airplane is lifted.

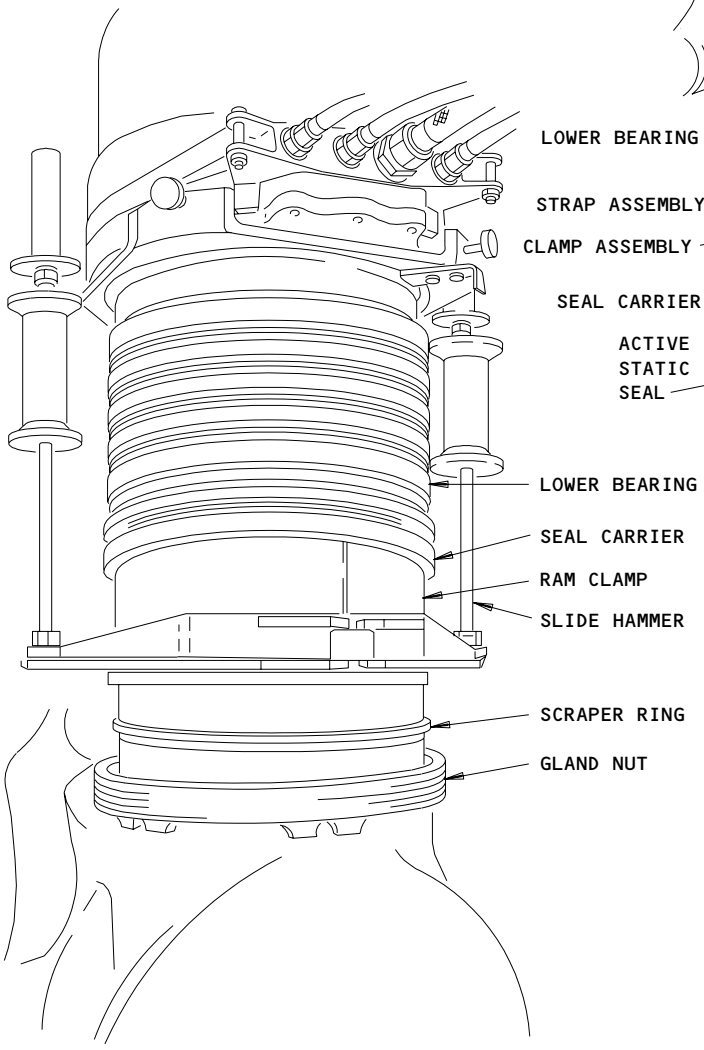


MLG Shock Strut Inner Cylinder - Remove/Installation
Figure 401

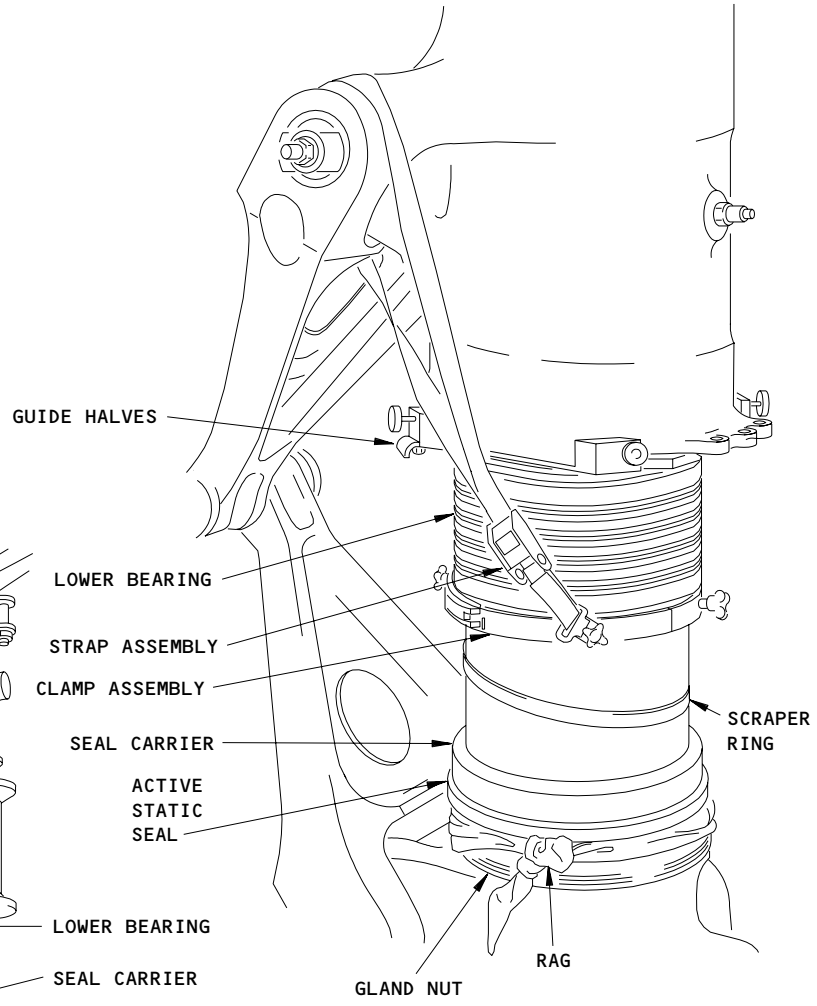


SEAL CARRIER AND LOWER BEARING

MLG Shock Strut Inner Cylinder - Removal/Installation
Figure 402 (Sheet 1)

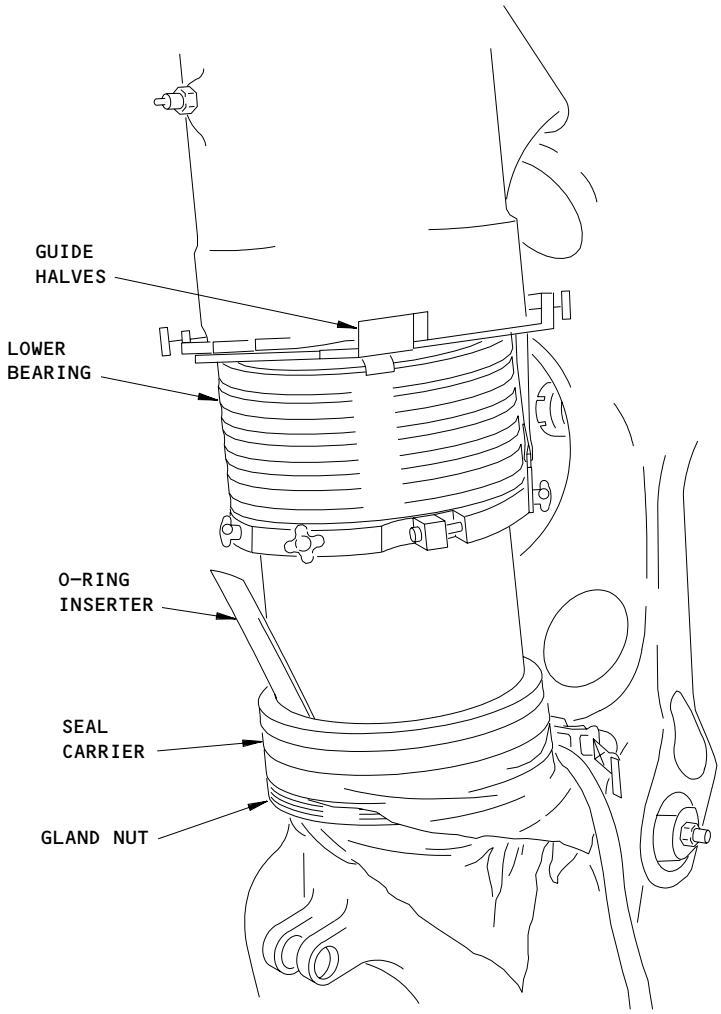


RAM CLAMP INSTALLED



SEPARATION OF THE LOWER BEARING AND THE SEAL CARRIER

MLG Shock Strut Inner Cylinder – Removal/Installation
Figure 402 (Sheet 2)



ACTIVE DYNAMIC SEAL INSTALLATION
WITH O-RING INSERTER

MLG Shock Strut Inner Cylinder - Removal/Installation
Figure 402 (Sheet 3)

S 584-025

CAUTION: MAKE SURE THE AIRPLANE STAYS LEVEL WHILE YOU LIFT IT ON JACKS. IF THE AIRPLANE DOES NOT STAY LEVEL, YOU CAN CAUSE DAMAGE TO THE INTERNAL COMPONENTS OF THE STRUT. TO MAKE SURE THE AIRPLANE IS LIFTED EVENLY, MONITOR THE CLEARANCE BETWEEN THE INNER CYLINDER AND THE OUTER CYLINDER AFTER THE LOWER BEARING IS OUT OF THE PACKING BORE.

(16) Continue to lift the airplane until the inner cylinder is completely out and clear of the outer cylinder. Roll the truck assembly forward and aft as necessary to keep the innercylinder in the center of the outer cylinder as the airplane is lifted.

S 024-026

(17) When the inner cylinder is clear, roll the truck and inner cylinder out from the wheel well area.

S 024-027

(18) Disconnect the brake rods from the inner cylinder (AMM 32-11-20/401).

S 024-028

(19) Provide support for the inner cylinder. Disconnect the shock strut positioner link from the inner cylinder.

S 584-029

(20) Install a strap around the top of the inner cylinder. Lift the inner cylinder to release the pressure on the pivot pin for the truck.

S 024-030

(21) Remove the pin to disconnect the truck assembly from the inner cylinder (AMM 32-11-18/401).

S 584-031

(22) Lift the inner cylinder until it is clear.

TASK 32-11-17-424-002

3. MLG Inner Cylinder Installation

NOTE: Wear Limits for the components that follow are shown in AMM 32-11-18/601, except for the axles which are shown in AMM 32-11-26/601.

A. Equipment
(1) Gland Nut Wrench Adapter, MLG - A32004-1
(2) Lower Bearing Seal Replacement Equipment, MLG - A32005-54
(3) Shock Strut Drain Equipment, MLG/NLG - A32066-1

(4) O-Ring Inserter, Commercially Available - Cleveland Pneumatics P/N T92321
(5) Servicing Cart, Landing Gear Shock Strut - PF55451-23
(6) Inflator, Landing Gear Shock Strut - F70200-14

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(3) D00212 Hydraulic Fluid - MIL-H-5606 or MIL-H-6083
(4) G50136 Compound, Corrosion Inhibiting - BMS 3-38
(5) D00128 Lubricant, Petrolatum - VV-P-236
(6) A00226 Compound, Sealing - BMS 8-45

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 12-15-01/301, Main Gear Shock Strut
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 32-11-02/201, Main Gear Shock Strut
(6) AMM 32-11-18/401, Main Gear Truck Assembly
(7) AMM 32-11-22/401, Main Gear Torsion Links
(8) AMM 32-11-25/201, Main Gear Shock Strut Seals
(9) AMM 32-32-00/501, Main Gear Extension and Retraction
(10) AMM 32-32-18/401, Main Gear Truck Positioner
(11) AMM 32-41-08/401, Main Gear Wheel Brakes
(12) AMM 32-42-00/501, Antiskid/Autobrake System

D. Access
(1) Location Zones
731/741 Main Landing Gear

E. Install the MLG Inner Cylinder

S 844-032
(1) Put the inner cylinder in position on the truck assembly.

S 424-033
(2) Install the pin to attach the inner cylinder to the truck assembly (AMM 32-11-18/401).

S 424-034
(3) Connect the brake rods to the inner cylinder (AMM 32-11-20/401).

S 424-035
(4) If the lower bearing and new seals are not installed on the inner cylinder. Install lower bearing and new seals (AMM 32-11-25/201).

S 484-036
(5) Install thread protectors onto the outer cylinder.

S 844-037

(6) Move the inner cylinder and truck assembly into position under the outer cylinder.

S 824-038

(7) Align the inner cylinder and outer cylinder.

S 584-039

CAUTION: MAKE SURE THE INNER AND OUTER CYLINDERS STAY ALIGNED WHILE YOU LOWER THE AIRPLANE ON THE JACKS. IF THE INNER AND OUTER CYLINDERS ARE NOT ALIGNED, YOU CAN CAUSE DAMAGE TO THE INTERNAL COMPONENTS OF THE STRUT. TO MAKE SURE THE AIRPLANE IS LOWERED EVENLY, MONITOR THE CLEARANCE BETWEEN THE INNER CYLINDER AND THE OUTER CYLINDER. NOTICE THAT THE OUTER CYLINDER CAN HAVE A SLIGHT INBOARD CAMBER WHEN THE AIRPLANE IS ON JACKS.

(8) Carefully lower the airplane. Make sure the fore-and-aft and the inboard-outboard axes stay aligned as the airplane is lowered.

NOTE: To help keep the inner cylinder aligned with the outer cylinder you can use two sheets of heavy Mylar under each of the four tires. With silicone spray lubricant between the Mylar sheets the truck assembly can be moved side-to-side for alignment. Some operators use sheets of plywood and grease to get the same results.

S 084-040

(9) When the upper bearing is well seated into the outer cylinder, remove the turnbuckle.

S 584-041

(10) Continue to lower the airplane until approximately 20 to 23 inches of chrome shows below the outer cylinder.

S 484-042

(11) Attach the ram clamp assembly below the lower bearing/seal carrier assembly.

S 424-043

CAUTION: MAKE SURE THE INNER CYLINDER IS IN THE CENTER OF THE OUTER CYLINDER BEFORE YOU PUSH THE LOWER BEARING INTO THE PACKING BORE. IF THE INNER CYLINDER IS NOT IN THE CENTER, YOU CAN CAUSE DAMAGE TO THE LOWER BEARING AND SEALS.

(12) Use the ram clamp to push the lower bearing into the outer cylinder packing bore.

S 644-044

(13) FOR GLAND NUT WITH A LUBE FITTING INSTALLED;
Apply grease to the threads of the gland nut.
(a) Remove the grease from the threads on the gland nut and the mating threads on the outer cylinder.
(b) Apply a thin layer of corrosion preventative compound to the threads on the gland nut.
(c) Apply a thin layer of corrosion preventative compound to the threads on the outer cylinder that will mate with the gland nut threads.

S 424-046

(14) Install the scraper ring assembly into the gland nut. Install the gland nut into the outer cylinder.

S 424-047

(15) Tighten the gland nut to 175-200 pound-feet.

S 434-065

(16) Loosen the gland nut if it is necessary, to align the holes.

S 234-066

(17) Measure the distance that the lower surface of the gland nut extends below the lower surface of the outer cylinder.

NOTE: The distance measured must be equal to the distance recorded prior to gland nut removal, within +0.02 inch.

S 434-064
(18) Install the locktab to lock the gland nut into position.

S 424-048
(19) Connect the torsion link to the inner cylinder (AMM 32-11-22/401).

S 424-049
(20) Install the truck positioner (AMM 32-32-18/401).

S 424-050
(21) Connect the electrical connections at the lower J-box.

S 424-051
(22) Remove the caps and plugs from the hydraulic lines and connect the two forward brake hydraulic lines at the outer cylinder.

S 424-063
(23) Connect the two aft brake lines at the brake disconnect (AMM 32-41-08/401).

S 584-052
(24) Lower the airplane but leave the jacks in place (AMM 07-11-01/201).

S 614-053
(25) Do the servicing of the shock strut (AMM 12-15-01/301).

S 644-062

CAUTION: DO NOT OVER LUBRICATE THE GLAND NUT. USE MINIMUM PRESSURE ON THE HANDPUMP TO APPLY THE GREASE. APPLY THE EQUIVALENT OF 3-5 PUMPS OF A MEDIUM SIZE GREASE GUN. OVER LUBRICATION OR EXCESSIVE LUBE PRESSURE CAN CAUSE DAMAGE TO THE SCRAPER RING AND/OR SEALS.

(26) Lubricate the grease fittings on the gland nut.

S 724-055
(27) Do an Antiskid Transducer Spin Up Test (AMM 32-42-00/501).

NOTE: This test will check the electrical and hydraulic connections to the truck.

S 024-056

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(28) Remove the door locks and close the gear doors (AMM 32-00-15/201).

S 714-057

(29) Do an operational test of the MLG Extension and Retraction (AMM 32-32-00/501).

S 284-058

(30) Do the task "Shock Strut Seal Leak Inspection" (AMM 32-11-02/201).

MAIN GEAR TRUCK ASSEMBLY - REMOVAL/INSTALLATION

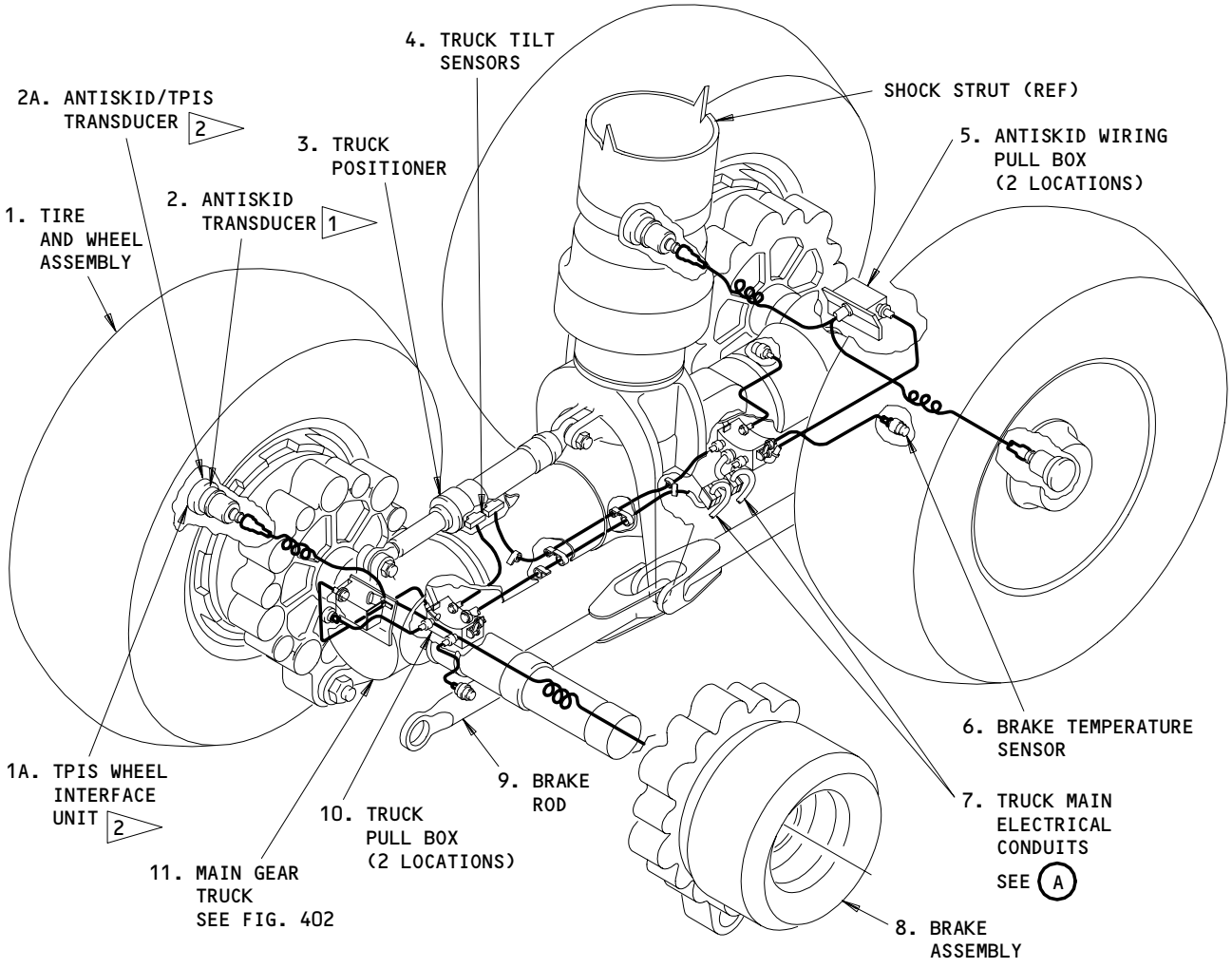
1. General
   A. This procedure contains two tasks. The first task removes the truck assembly of the main landing gear. The second task installs the truck assembly of the main landing gear.

TASK 32-11-18-004-001

2. Remove the Truck Assembly for the Main Landing Gear (Fig. 401, 402, 403)
   A. Equipment
      (1) Shock Strut Retention Strap - A32028-6
          (2 required)
      (2) Bogie Pivot Pin Removal Tool - A32039-1
   B. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 07-11-03/201, Jacking Airplane Axles
      (3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (4) AMM 32-09-09/401, Main Gear Tilt Sensor Target Bracket
      (5) AMM 32-00-15/201, Landing Gear Door Locks
      (6) AMM 32-00-20/201, Landing Gear Downlocks
      (7) AMM 32-11-18/401, Main Gear Truck Assembly
      (8) AMM 32-11-20/401, Main Gear Brake Rods
      (9) AMM 32-32-18/401, Main Gear Truck Positioner
      (10) AMM 32-41-08/401, Main Gear Wheel Brakes
      (11) AMM 32-42-06/401, Antiskid Transducer
      (12) AMM 32-45-01/401, Wheels and Tires
      (13) AMM 32-46-00/501, Brake Temperature Monitoring System
   C. Access
      (1) Location Zones

730/740	Main Landing Gear and Doors
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

   D. Prepare for Removal

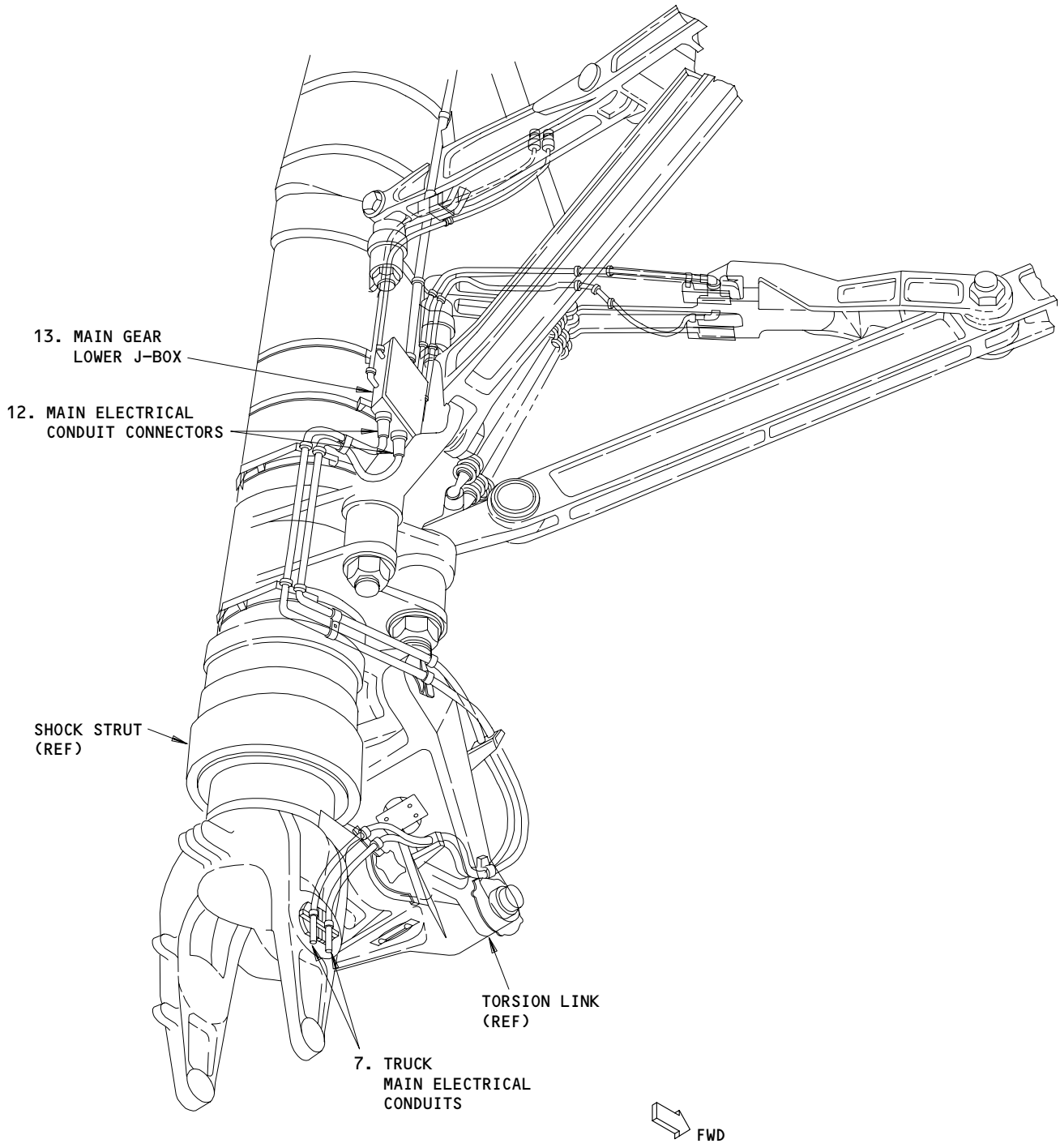


LEFT MAIN GEAR
(RIGHT OPPOSITE)

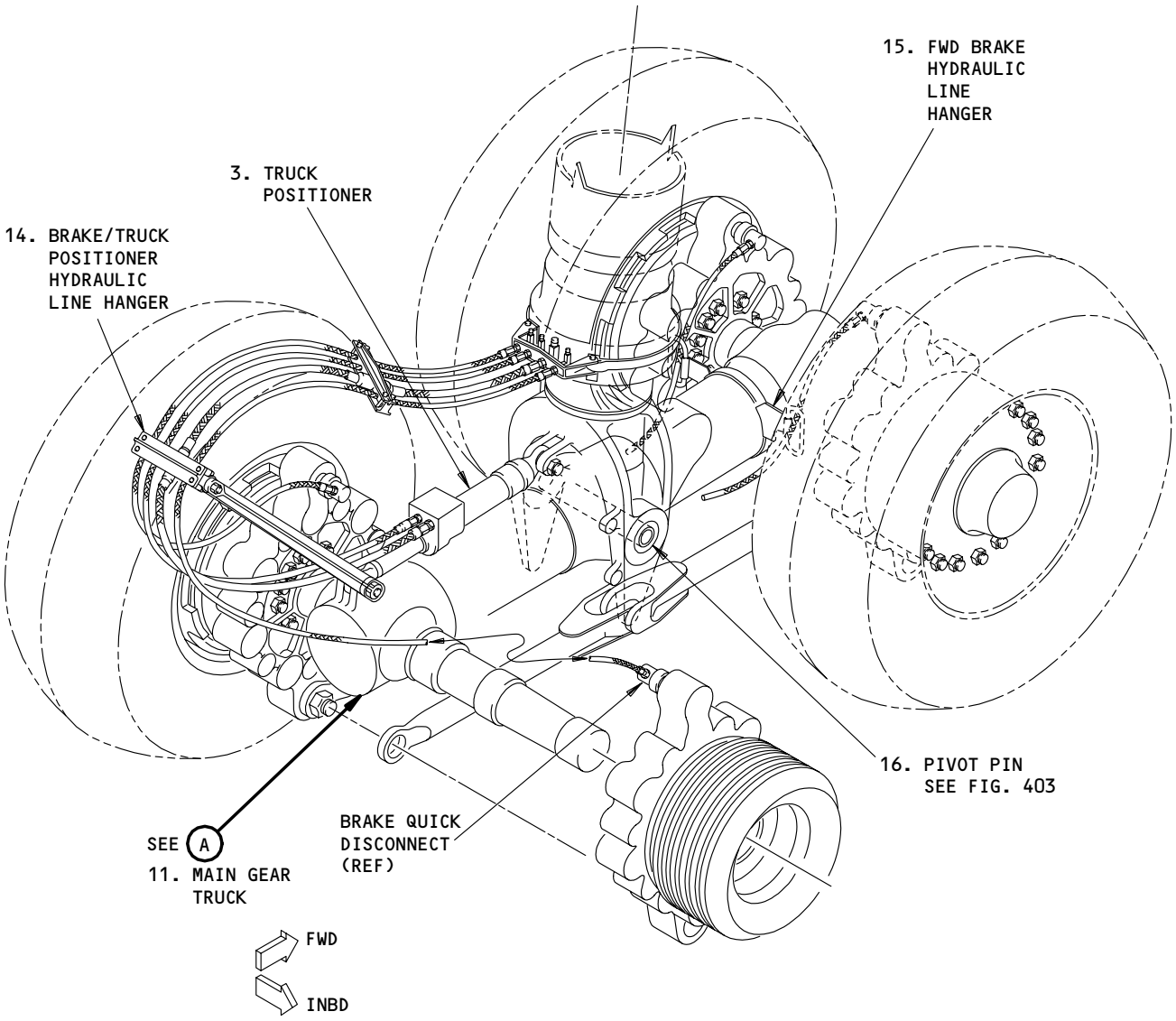
1 ON ALL EXCEPT MTH 275-276 WITH SB 32-85 AND MTH 277-999

2 ON MTH 275-276 WITH SB 32-85

Main Gear Truck Electrical Wiring Installation
Figure 401 (Sheet 1)

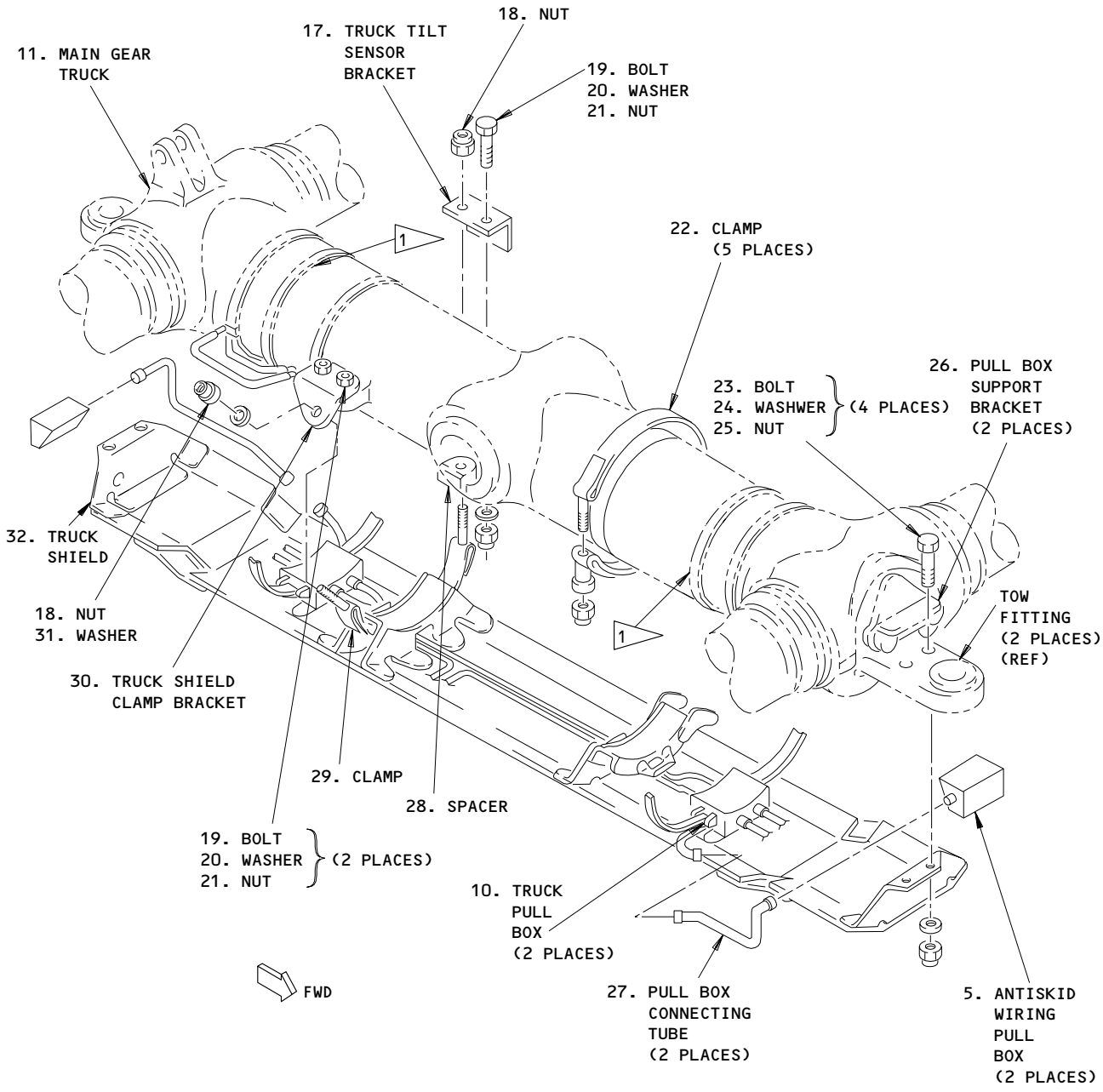


Main Gear Truck Electrical Wiring Installation
Figure 401 (Sheet 2)



LEFT MAIN GEAR
(RIGHT SIMILAR)

Main Gear Truck Assembly Installation
Figure 402 (Sheet 1)



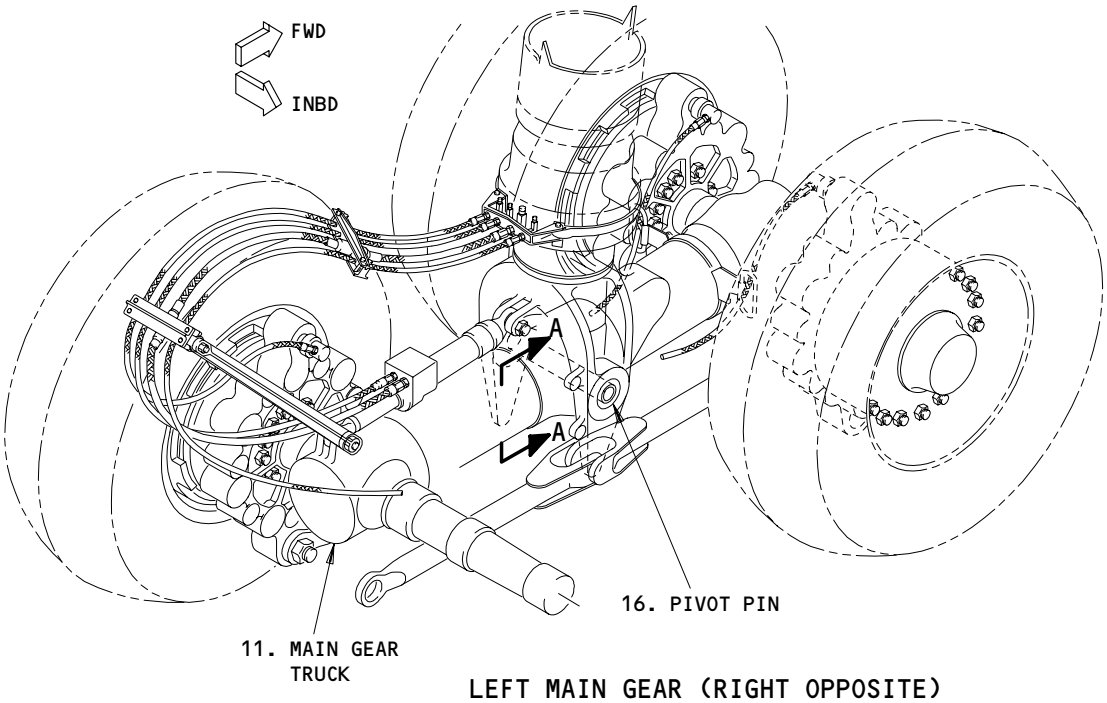
MAIN GEAR TRUCK AND TRUCK SHIELD

(A)

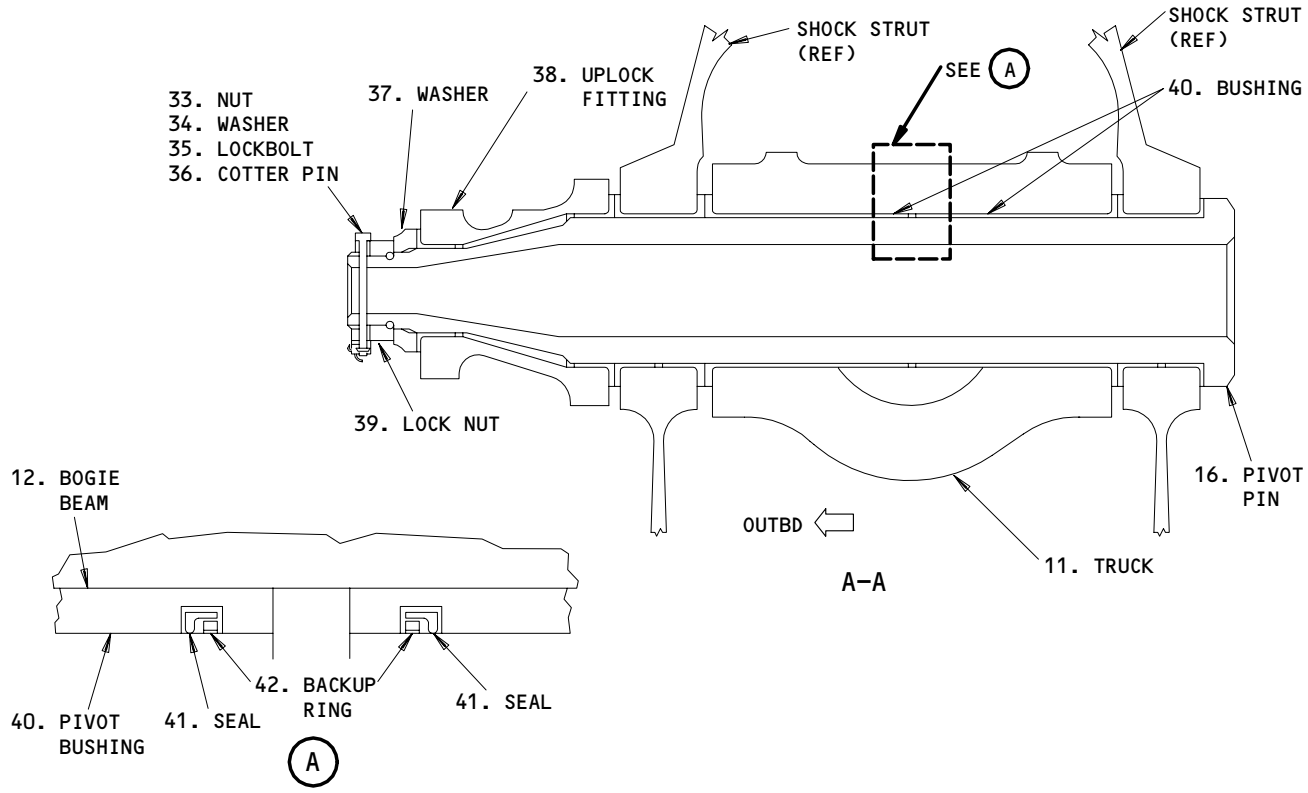
1 CLAMP ATTACHED TO TRUCK PULL BOX

NOTE: CLAMPS SHOWN ATTACHED TO TRUCK SHOULD BE REMOVED WITH TRUCK SHIELD.

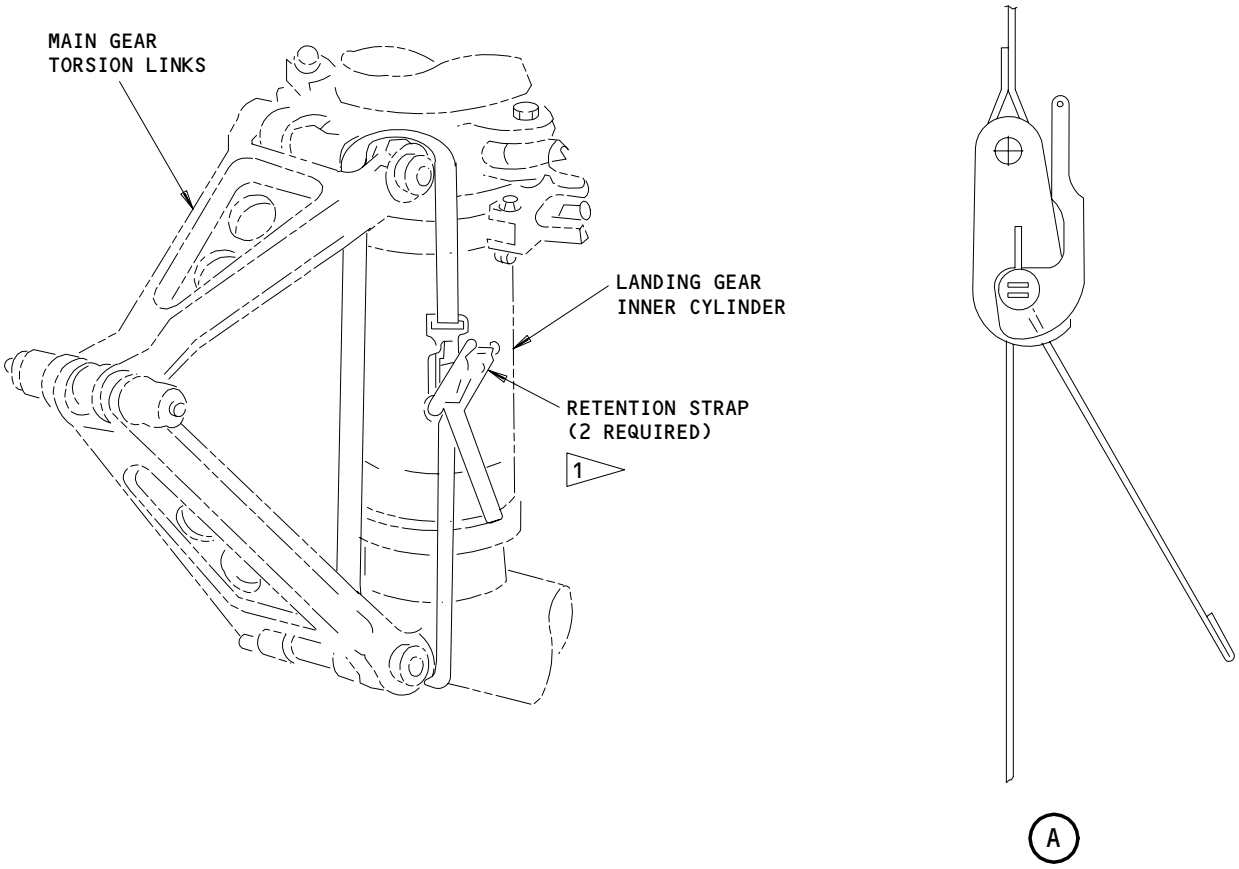
Main Gear Truck Assembly Installation
Figure 402 (Sheet 2)



LEFT MAIN GEAR (RIGHT OPPOSITE)



Main Gear Truck Pivot Pin Installation
Figure 403



1 BEFORE APPLYING LOAD, ENSURE THAT AT LEAST TWO LOOPS OF STRAP ARE WRAPPED AROUND SHAFT OF BUCKLE

Shock Strut Inner Cylinder Retention Strap Use
Figure 404

S 484-088

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 484-086

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 864-004

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 864-016

WARNING: CLEAR THE AREA BELOW THE WING BEFORE YOU DEFLATE THE SHOCK STRUT. IF YOU DEFLATE ONE SHOCK STRUT THE WING TIP CAN MOVE DOWN AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Deflate the shock strut of the main landing gear.
   (a) Remove the air valve cap from the air valve on the outer cylinder of the upper shock strut.

   WARNING: LOOSEN THE OUTER NUT A MAXIMUM OF TWO TURNS. AIR PRESSURE CAN BLOW THE VALVE OFF AND CAUSE INJURY TO PERSONS.

   (b) Loosen the outer nut a maximum of two turns.
   (c) Let the shock strut compress.
   (d) Loosen the outer nut fully to open the valve.

S 494-017

CAUTION: DO NOT USE THE SHOCK STRUT RETENTION STRAP ON A SHOCK STRUT THAT IS PRESSURIZED. THE STRAP CAN BREAK AND CAUSE DAMAGE TO THE MAIN LANDING GEAR.

(5) Install the shock strut retention (SSR) straps. Two SSR straps are required (Fig. 404).
   (a) Loop the SSR straps through the upper and lower hinges of the main landing gear torsion link. Use one SSR strap on each side of the torsion link.

(b) Move the end of each SSR strap through the slot in the buckle shaft. Operate the buckle until the SSR strap is tight.

NOTE: Make sure each SSR strap has a minimum of two loops around the shaft of the buckle before you apply a load.

S 584-008

(6) Lift the airplane with jacks until the wheels are above the ground (AMM 07-11-01/201).

S 844-008

(7) Make sure the SSR straps do not move.

E. Remove the Truck Assembly of the Main Landing Gear

S 014-009

(1) Remove all four tire and wheel assemblies (1) (AMM 32-45-01/401).

S 014-069

(2) MTH 275-276 POST-SB 32-85;
MTH 277-999;
Remove all four of the tire pressure indication system (TPIS) wheel interface units (1A) (AMM 32-45-13/401).

S 014-054

(3) MTH 275-276 POST-SB 32-85;
MTH 277-999;
Remove all four of the antiskid/tire pressure indication system (TPIS) transducers (2A) (AMM 32-42-06/401).

S 014-065

(4) MTH 275-276 PRE-SB 32-85;
Remove all four of the antiskid transducers (2) (AMM 32-42-06/401).

S 034-014

(5) Put a cap on the transducer and the electrical connectors that are on the transducer wiring.

S 014-016

(6) Remove the brake rods on the main landing gear (9) (AMM 32-11-20/401).

S 034-017

(7) Disconnect the electrical connectors on the brake temperature sensor (6).

S 014-018

(8) Remove all four of the brake assemblies (80 (AMM 32-41-08/401).

S 014-019

(9) Remove the truck shield (32) and the electrical wiring harnesses from the main landing gear truck.

NOTE: The truck shield, the electrical wiring and the pull-boxes are removed from the main landing gear truck as a unit. This is to make the installation easier.

(a) Disconnect the main electrical conduit connectors (12) from the truck at the lower J-box (13) on the main landing gear.

(b) Remove the clamps along the shock strut and the torsion link to remove the main electrical conduits (7) from the shock strut.

(c) MTH 275-276 POST-SB 32-85;
MTH 277-999;
Remove the antiskid/TPIS transducer wiring from the truck axles as follows:

NOTE: The wiring is removed through the two ends of the truck. The procedure to remove the wiring is the same for each end.

CAUTION: PUT A TAG ON THE ANTISKID/TPIS WIRING TO MAKE SURE IT IS INSTALLED AT THE CORRECT WHEEL LOCATIONS. INCORRECT INSTALLATION OF THE WIRING CAN CAUSE THE ANTISKID/TPIS SYSTEM TO MALFUNCTION.

1) Put a tag, with the wheel location on it, on the electrical connectors of the antiskid/TPIS wiring.
2) Remove the nuts and bolts which attach the pull-box (5) to the support bracket (26).

CAUTION: DO NOT BEND OR EXTEND THE ANTISKID/TPIS WIRES. YOU CAN CAUSE DAMAGE TO THE WIRES.

3) Disconnect the tube (27) which connects the pull-box (5) at the end of the truck to the pull-box (10) on the truck.
4) Remove the pull-box for the antiskid/TPIS wiring (5) from the end of the truck.
5) Carefully pull the antiskid/TPIS transducer wiring out of the axle. Pull the wires out one at a time through the hole where the pull-box (5) was installed.

(d) MTH 275-276 PRE-SB 32-85;
Remove the antiskid transducer wiring from the truck axles as follows:

NOTE: The wiring is removed through the two ends of the truck The procedure to remove the antiskid wiring is the same is the same for each end.

CAUTION: PUT A TAG ON THE ANTISKID WIRING TO MAKE SURE IT IS INSTALLED AT THE CORRECT WHEEL LOCATIONS. INCORRECT INSTALLATION OF THE WIRING CAN CAUSE THE ANTISKID SYSTEM TO MALFUNCTION.

1) Put a tag, with the wheel location on it, on the electrical connectors of the antiskid wiring.
2) Remove the nuts and bolts which attach the pull-box (5) to the support bracket (26).

CAUTION: DO NOT BEND OR EXTEND THE ANTISKID WIRES. YOU CAN CAUSE DAMAGE TO THE WIRES.

3) Disconnect the tube (27) which connects the pull-box (5) at the end of the truck to the pull-box (10) on the truck.
4) Remove the pull-box for the antiskid wiring (5) from the end of the truck.
5) Carefully pull the antiskid transducer wiring out of the axle. Pull the wires out one at a time through the hole where the pull-box (5) was installed.

(e) Remove the truck tilt sensor bracket (AMM 32-09-09/401).
(f) Remove the mounting bracket (17) for the truck tilt sensors from the truck. The sensors (4) stay attached.
1) Remove the clamp nut (18).
2) Remove the attach bolt (19) for the truck tilt bracket.
(g) Disconnect the clamps (22, 29) which attach the electrical conduits, the pull-boxes, and the truck shield to the truck.

NOTE: Do not remove the clamps now.

(h) Remove the hangers (15) for the forward brake line from the truck.
(i) Use rope to attach the forward brake lines and the brake line hangers (15) to the structure of the upper main landing gear.
(j) Support the truck shield (32) at the two ends.
(k) Remove the attach bolts (23) for the truck shield at the forward and aft tow fittings of the truck.
(l) Lower the truck shield with the clamps, the conduits, and the pull-boxes attached.
(m) Remove the truck shield so it is not below the main gear truck.

S 494-020
(10) Put jacks under each end of the truck.

S 584-049
(11) Extend the jacks until the beam is tight against the jacks (AMM 07-11-03/201).

S 014-021
(12) Disconnect the aft end of the truck positioner (3) from the truck (AMM 32-32-18/401).

S 864-022
(13) With rope, attach the truck positioner (3) and the hydraulic line hanger (14) to the structure of the upper main landing gear.

S 034-067
(14) Remove the pivot pin (16) (Fig. 403).
(a) Remove the lockbolt (35) from the locknut for the pivot pin.
(b) Remove the locknut (39), the washer (37), and the uplock fitting (38).

WARNING: MAKE SURE THE MAIN LANDING GEAR TRUCK IS SUFFICIENTLY HELD BY EQUIPMENT BEFORE YOU REMOVE THE PIVOT PIN (16). THE MAIN LANDING GEAR TRUCK WEIGHS APPROXIMATELY 560 POUNDS AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(c) Remove the pivot pin (16) using the removal tool for the pivot pin.

NOTE: Move the jacks to make the removal of the pivot bolt (16) easier.

1) Put the removal tool at the threaded end of the pivot pin (16). Hit out with a lead hammer.

NOTE: Use a lead hammer only.

S 584-051
(15) Move the truck from the jacks to a transport dolly.

S 584-052
(16) Move the transport dolly so the truck is not below the airplane.

TASK 32-11-18-404-024

3. Install the Truck Assembly for the Main Landing Gear (Fig. 401, 402, 403)

NOTE: Wear Limits for the axles of the main land gear are supplied in 32-11-26. Wear Limits for the pivot pin and the bushings of the main landing gear truck are supplied in 32-11-18/601.

A. Equipment
   (1) Shock Strut Retention Strap - A32028-6
       (2 required)
   (2) Main Landing Gear Pivot Pin Guide - A32082-1
   (3) Crowfoot Wrench - F70312-28

B. Consumable Materials
   (1) D00528 Grease - ROYCO 11-MS
   (2) B00316 Solvent - Aliphatic Naphtha, TT-N-95, Type I
   (3) G00199 Tape - Mystic No. 7355 Mylar

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
402	11	Truck Assembly	32-11-02	05	105
	16	Pivot Pin			90
	18	Nut (part of clamp - item 29)	32-11-01	05	--
	19	Bolt			465
	20	Washer			470
	21	Nut			475
	22	Clamp			434
	23	Bolt			420
	24	Washer			425
	25	Nut			429
	28	Spacer			449
	29	Clamp			439
	30	Bracket			460
	31	Washer			444
	32	Truck Shield			535
403	33	Nut	32-11-02	05	82
	34	Washer			80
	35	Lockbolt			75
	36	Cotter Pin			73
	37	Washer			95
	38	Uplock Fitting			125, 130
	39	Lock Nut			100
	40	Bushing			96, 97
	41	Seal			99
	42	Backup Ring			98

D. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 07-11-03/201, Jacking Airplane Axles
(3) AMM 12-15-01/301, Main Gear Shock Strut
(4) AMM 12-21-14/301, Main Gear and Actuating Mechanisms
(5) AMM 32-00-15/201, Landing Gear Door Locks
(6) AMM 32-09-07/201, Main Gear Tilt Sensors
(7) AMM 32-09-09/401, Main Gear Tilt Sensor Target Bracket
(8) AMM 32-11-18/401, Main Gear Truck Assembly
(9) AMM 32-11-20/401, Main Gear Brake Rods
(10) AMM 32-11-26/601, Main Gear Axle
(11) AMM 32-32-18/401, Main Gear Truck Positioner
(12) AMM 32-41-08/401, Main Gear Wheel Brakes
(13) AMM 32-42-00/501, Antiskid/Autobrake System
(14) AMM 32-42-06/401, Antiskid Transducer
(15) AMM 32-45-01/401, Main Gear Wheel and Tire
(16) AMM 32-45-13/401, TPIS Wheel Interface Unit
(17) AMM 32-46-00/501, Brake Temperature Monitoring System

E. Access
(1) Location Zones

730/740	Main Landing Gear and Doors
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

F. Prepare for the Installation of the Truck Assembly for the Main Landing Gear

S 844-009
(1) Examine the pivot pin bushing of the truck assembly, do these steps:
(a) Clean the inner diameter, lubrication grooves, and flange face of the pivot pin bushings (40).
(b) Inspect the bushings (40) for damage, replace as needed.
(c) Check the bushings (40) for wear (AMM 32-11-18/601), replace as needed.

(d) Apply grease thru the lubrication fittings for the bushing (40), if you do not see grease flow thru to the inner diameter of the bushing then do these steps:
1) Remove and clean the bushing (SOPM 20-50-03).
2) Apply grease thru the lubrication fittings, if you can not see grease flow thru the lubrication path then replace the fitting and clean the lubrication path (AMM 20-10-29).
3) Install the bushing (SOPM 20-50-03).

(e) Examine the seals (41) and the back-up rings (42) for damage, replace as needed (AMM 32-11-18/601).

(f) Make sure the seals (41) and the back-up rings (42) are positioned correctly in the groove of the bushing (40).

G. Install the Truck Assembly for the Main Landing Gear

S 494-026

(1) Put the truck assembly below the shock strut. Use the jacks to hold the truck assembly.

S 644-027

(2) Apply grease to the pivot pin (16) and install the pivot pin guide over the end of the pivot pin.

S 414-028

(3) Install the pivot pin (16) through the shock strut and the truck.

NOTE: Move the jacks to make installation of the pivot pin (16) easier.

S 034-029

(4) Remove the pivot pin guide.

S 644-030

(5) Grease the uplock fitting (38), the washer (37), and the locknut (39).

S 434-031

(6) Install the uplock fitting (38), the washer (37), and the locknut (39). Tighten the locknut to 90-100 pound-feet. If necessary, loosen the locknut to the nearest lockbolt hole.

NOTE: Use the crowfoot wrench to install the locknut (39).

S 434-032

(7) Install the lockbolt (35), the washer (34), the nut (33), and the cotter pin (36).

S 414-033

(8) Install the aft end of the truck positioner (3) and the hanger (14) for the hydraulic line on the truck (AMM 32-32-18/401).

S 094-034
(9) Remove the jacks (AMM 07-11-03/201).

S 414-035
(10) Install the truck shield (32) for the main landing gear.

S 414-010
(11) Install the electrical wiring harnesses.
(a) Move the truck shield so it is below the truck. Mark the locations on the truck where the clamps for the truck shield will attach.
(b) Clean, with solvent, the areas of truck where the clamps will be located.
(c) Install two layers of Mylar tape on the channels on the truck surface.
(d) Lift the truck shield and align the clamps around the truck. Install the attach bolts (23), the washers (24), and the nuts (25) for the truck shield at the ends of the truck.

NOTE: Do not tighten the clamps.

(e) Install the forward brake hangers (15) below the clamp (the clamp attaches to the forward pull box (10) on the bottom of the truck).
(f) Tighten the clamp.
(g) Tighten the remaining clamps (22) along the length of the truck.
(h) Put the main electrical conduits (7) from the truck to the lower J-box (13).
(i) Install the clamps along the shock strut and the torsion link.
(j) Make sure the electrical conduits (7) are not twisted or bent.
(k) Install the connectors of the main electrical conduit (7) on the J-box (13).
(l) Lockwire the connectors.
(m) Tighten the clamps for the electrical conduit along the shock strut and the torsion link.
(n) MTH 275-276 POST-SB 32-85;
MTH 277-999;
Install the wiring for the antiskid/TPIS transducer.

NOTE: Installation of the wiring for the forward and aft transducer is the same.

(o) MTH 275-276 PRE-SB 32-85;
Install the wiring for the the antiskid transducer.

NOTE: Installation of the wiring for the forward and aft transducer is the same.

CAUTION: MAKE SURE THE CORRECT TRANSDUCER WIRING IS PUT TO EACH WHEEL. INCORRECT INSTALLATION OF TRANSDUCER WIRING CAN CAUSE THE ANTISKID SYSTEM TO MALFUNCTION.

1) Attach a pull wire to the end of the transducer wiring. Put the pull wire through the hole at the pull box support bracket (26). Put the pull wire through the axle.
2) Carefully pull the transducer wiring through the axle.
3) Do the steps to install the wiring for each wheel.
4) MTH 275-276 POST-SB 32-85;
MTH 277-999;
Do the steps that follow:
   a) Install the antiskid/TPIS wiring pull-box (5). Use the nuts and bolts.
   b) Connect the tube (27) between the antiskid/TPIS wiring pull-box (5) and the truck pull-box (10).
   c) Lockwire the connections.
5) MTH 275-276 PRE-SB 32-85;
Do the steps that follow:
   a) Install the antiskid wiring pull-box (5). Use the nuts and bolts.
   b) Connect the tube (27) between the antiskid wiring pull box (5) and the truck pull-box (10).
   c) Lockwire the connections.

S 414-011

(12) Install the bracket (17) for the truck tilt sensors.
   (a) Install the sensors on the truck. Use the bolt (19), the washer (20), and the nut (21).
   (b) Do a check of the truck tilt sensor gap (AMM 32-09-07/201).
   (c) Install the clamp (29) with the washer (30) and the nuts (18).

S 424-089

(13) Install the truck tilt sensor bracket (AMM 32-09-09/401).

H. Install the brake assemblies (8) (AMM 32-41-08/401).

S 424-036

(1) Install the brake rods (9) (AMM 32-11-20/401).

S 424-037

(2) Install the electrical connectors (6) for the brake temperature sensor.

S 424-057
(3) MTH 275-276 POST-SB 32-85;
MTH 277-999;
Install the antiskid/TPIS transducers (2A) (AMM 32-42-06/401).

NOTE: Do not install the bolts through the transducer support and the axle now. You must install the wheel before you install these bolts.

S 424-060
(4) MTH 275-276 POST-SB 32-85;
MTH 277-999;
Install the four TPIS wheel interface units (1A) (AMM 32-45-13/401).

S 424-019
(5) MTH 275-276 PRE-SB 32-85;
Install the antiskid transducers (2) (AMM 32-42-06/401).

NOTE: Do not install the bolts through the transducer support and the axle now. You must install the wheel before you install these bolts.

S 424-041
(6) Install the wheels and the tires (1) (AMM 32-45-01/401).

S 714-033
(7) Do the operational test of the antiskid system (AMM 32-42-00/501).

S 714-042
(8) Do the brake temperature monitor unit BITE (AMM 32-46-00/501).

S 714-022
(9) MTH 275-276 POST-SB 32-85;
MTH 277-999;
Do the test of the TPIS system (AMM 32-45-00/501).

I. Put the Airplane Back to its Usual Condition

S 584-044
(1) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 094-045
(2) Remove the shock strut retention straps.

S 614-046
(3) Do the shock strut servicing procedure (AMM 12-15-01/301).

S 644-047

(4) Lubricate the truck assembly at the grease fitting (AMM 12-21-14/301).

S 084-087

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR TRUCK ASSEMBLY - INSPECTION/CHECK

1. General
   A. This procedure only has illustrations and wear limit tables which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Gear Truck Assembly - Removal/Installation for procedures to do these tasks.
   B. Instructions to make sure the bushing seals are not damaged are given in this procedure.

TASK 32-11-18-206-013

2. Examine the Bushing Seals for the Truck Pivot Pin of the Main Landing Gear (Fig. 601)
   A. Prepare to Examine the Bushing Seals

      S 026-007
      (1) Remove the truck bushing.
   B. Examine the Bushing Seals

      S 216-008
      (1) Rub a finger along the seal.

      S 216-009
      (2) Make sure the seal is installed and that it is smooth and not cut.

      S 216-010
      (3) Look at the seal and backup ring.

      S 216-011
      (4) Make sure the ring does not have a crack or is not broken.

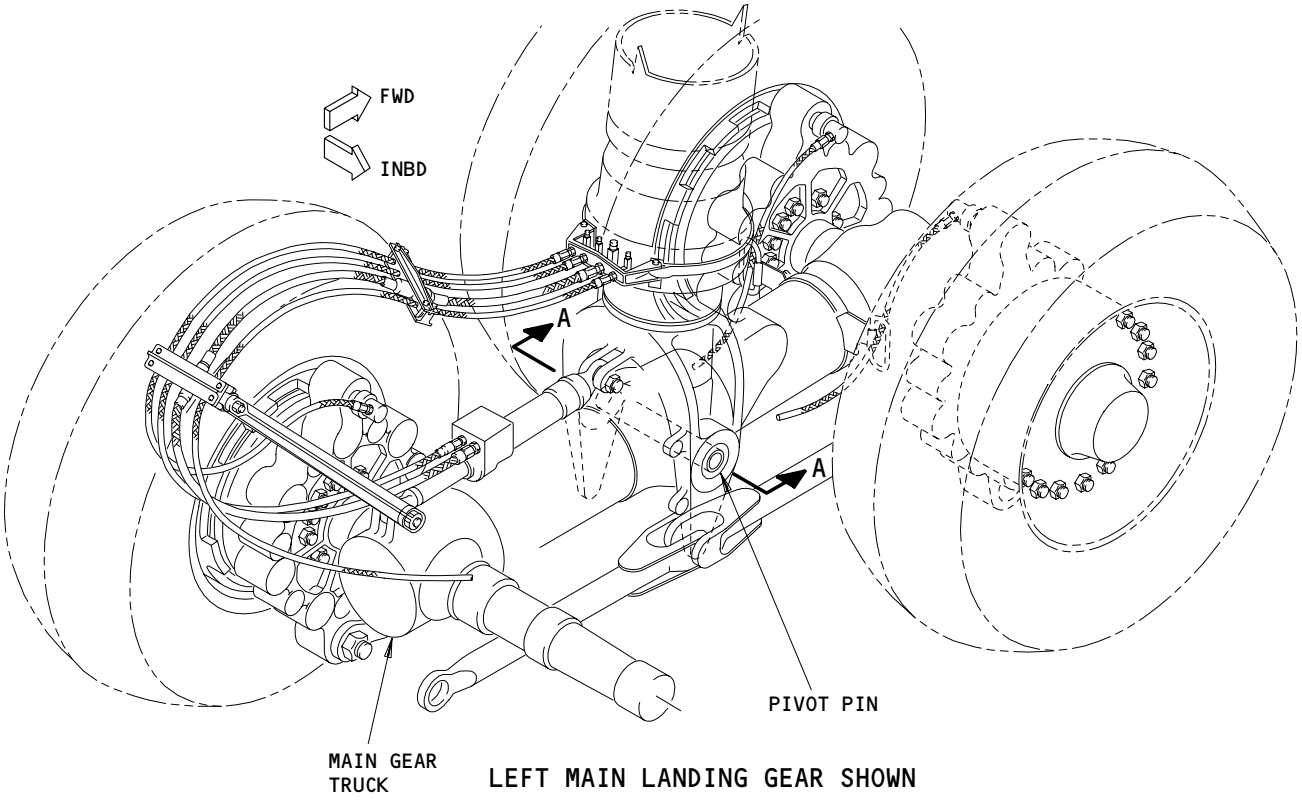
TASK 32-11-18-206-012

3. Wear Limits for the Truck Pivot Pin of the Main Landing Gear (Fig. 601)

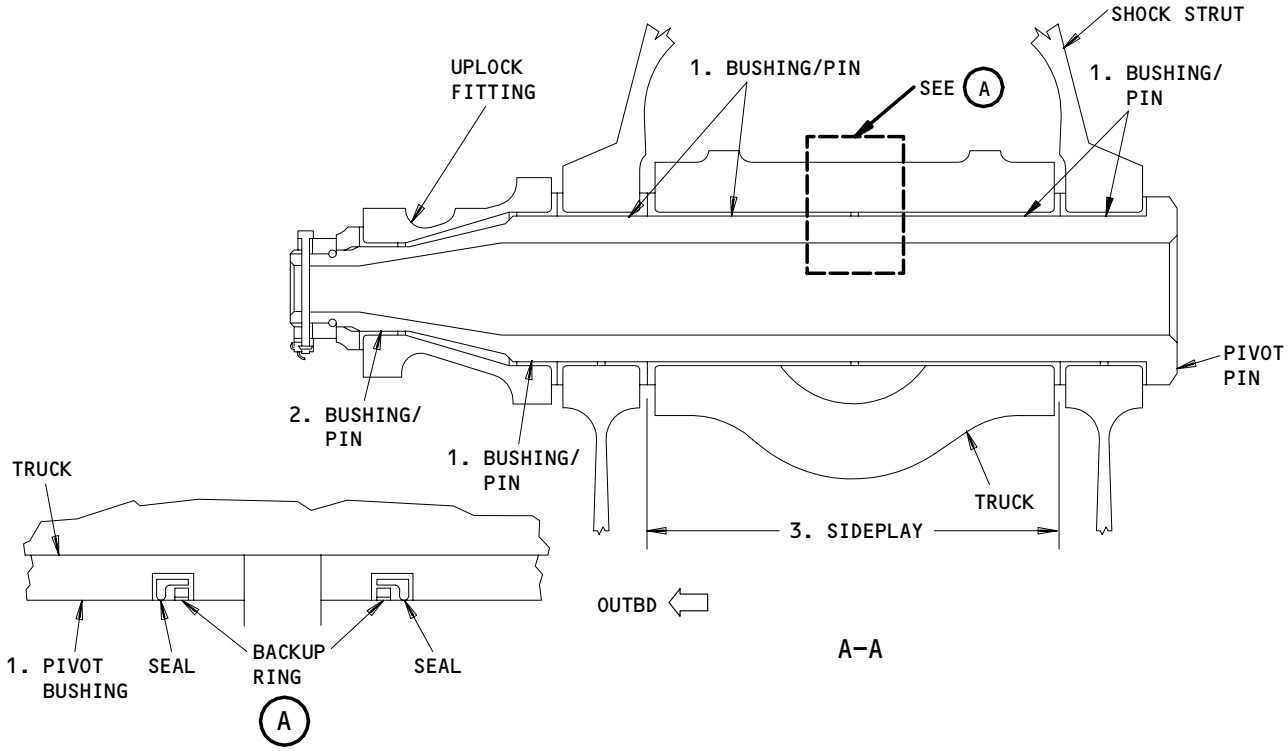
   NOTE: Wear limits for components connected to the truck can be found in the Maintenance Manual subject for the component.

   A. Wear Limits for the Truck Pivot Pin

      S 226-001
      (1) Refer to Fig. 601 for the inspection points and the wear limits table.



LEFT MAIN LANDING GEAR SHOWN



Wear Limits for the Truck Pivot Pin of the Main Landing Gear
Figure 601 (Sheet 1)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
			DIAMETER		PERMITTED WEAR DIMENSION INCHES (mm)	MAXIMUM DIAMETER CLEARANCE INCHES (mm)			
			MINIMUM INCHES (mm)	MAXIMUM INCHES (mm)					
1	BUSHING	ID	4.0040 (101.701)	4.0060 (101.752)	4.0110 (101.879)	0.0120 (0.304)	X		
	PIN	OD	3.9980 (101.549)	3.9990 (101.574)	3.9940 (101.447)			X	1
2	BUSHING	ID	2.3750 (60.325)	2.3765 (60.363)	2.3786 (60.416)	0.0066 (0.167)	X		
	PIN	OD	2.3710 (60.223)	2.3720 (60.248)	2.3699 (60.195)			X	1
3	TRUCK ASSEMBLY		--	--	--	0.0400 (1.016) 2	3		

1 THIS CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS

2 MAXIMUM SIDEPLAY PERMITTED

3 REPLACE THE WORN BUSHINGS

Wear Limits for the Truck Pivot Pin of the Main Landing Gear
Figure 601 (Sheet 2)

MAIN GEAR TRUCK UPLOCK FITTING - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the truck uplock fitting of the main landing gear. The second task installs the truck uplock fitting of the main landing gear.

TASK 32-11-19-004-001

2. Remove the Truck Uplock Fitting for the Main Landing Gear (Fig. 401)
   A. References
      (1) AMM 32-00-15/201, Landing Gear Door Locks
      (2) AMM 32-00-20/201, Landing Gear Down Locks
      (3) AMM 32-11-18/601, Main Gear Truck Assembly
      (4) AMM 08-21-00/201, Leveling
   B. Access
      (1) Location Zones
          731/741 Main Landing Gear (MLG)

   C. Prepare for Removal

      S 584-139
      (1) Make sure the airplane has been moved straight ahead approximately twice the airplane length to remove any turning load on the main gear.

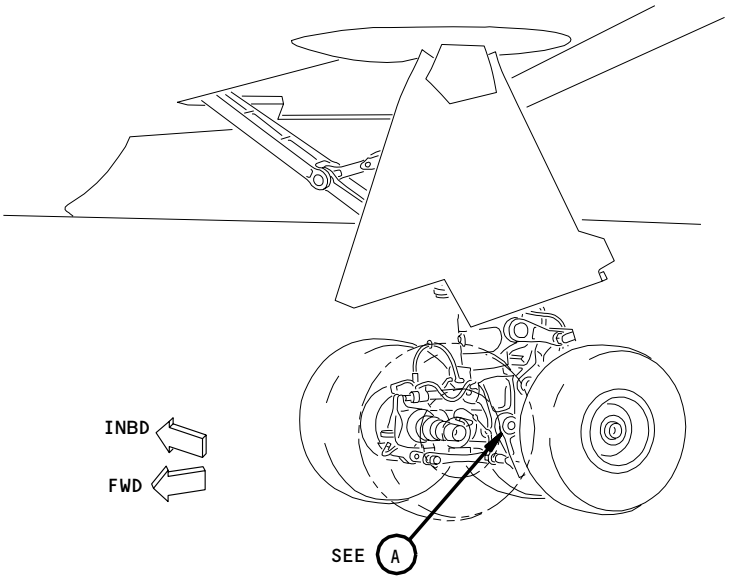
      S 584-140
      (2) Make sure the airplane is level (AMM 08-21-00/201).

      S 484-136
      (3) Install the downlocks on the nose and main landing gear (AMM 32-00-20/201).

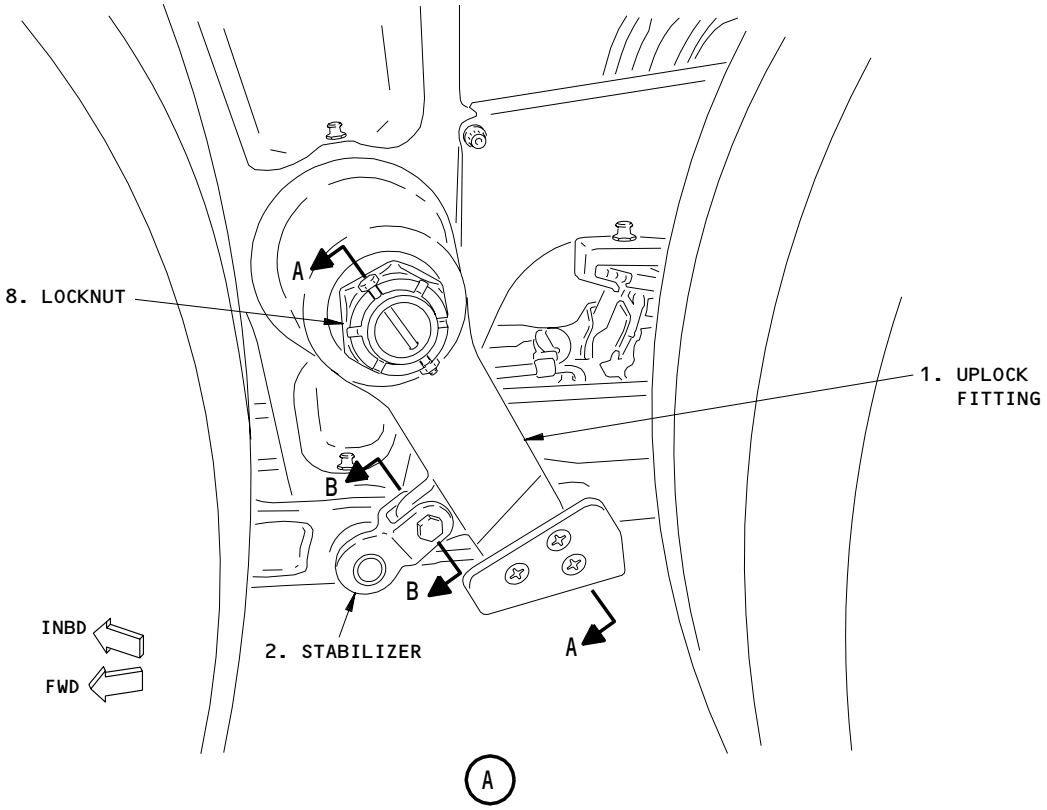
      S 484-137

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

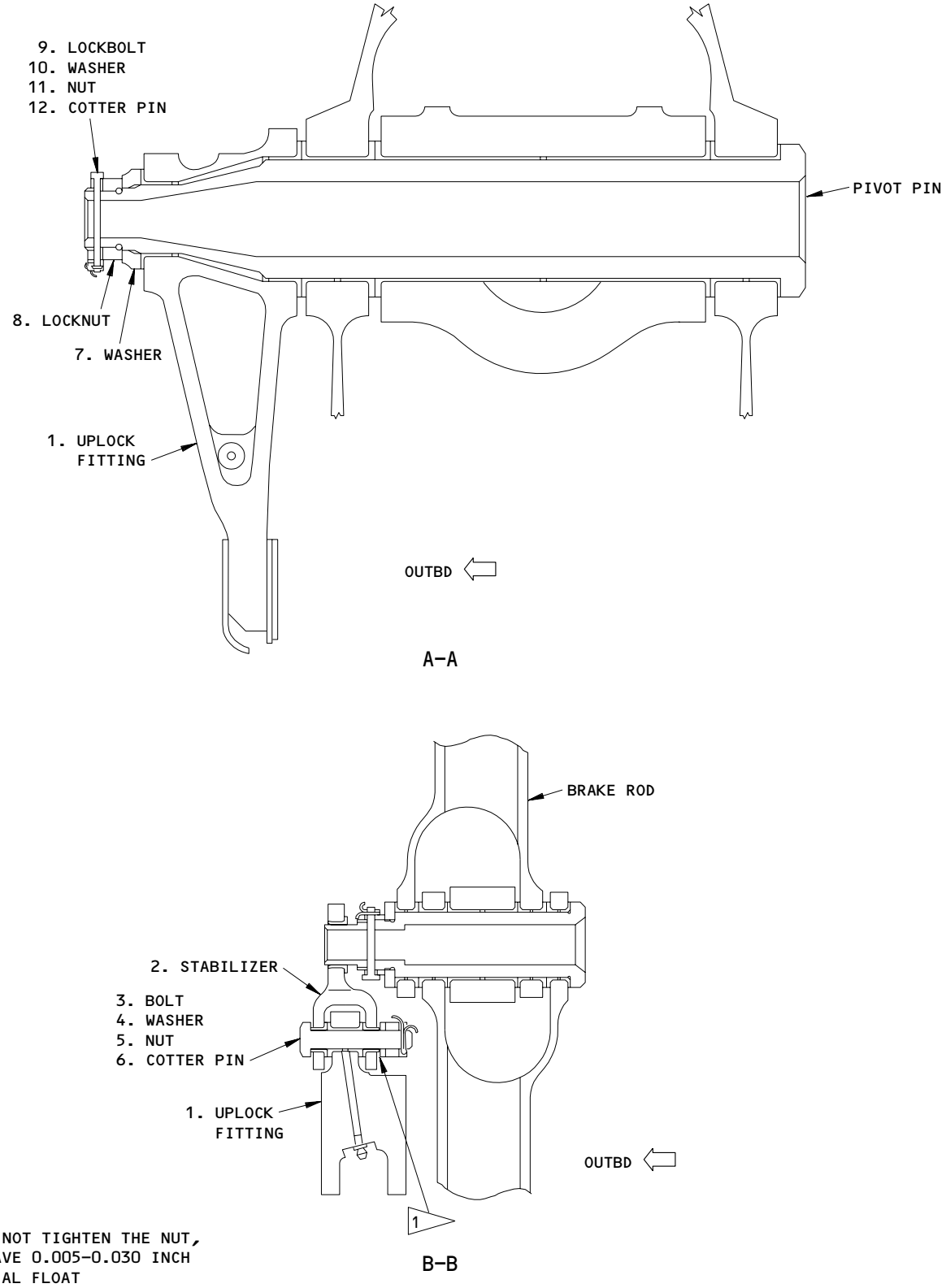
      (4) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).



LEFT MAIN LANDING GEAR
(RIGHT MAIN LANDING GEAR IS OPPOSITE)



Main Gear Truck Uplock Fitting Installation
Figure 401 (Sheet 1)



Main Gear Truck Uplock Fitting Installation
Figure 401 (Sheet 2)

D. Remove the Truck Uplock Fitting of the Main Landing Gear

S 024-125

(1) Remove the bolt (3) to disconnect the uplock fitting (1) from the stabilizer (2).

NOTE: The wheel and tire assemblies can be removed for easier access (AMM 32-45-01/401).

S 024-126

(2) Remove the lockbolt (9) from the locknut (8) for the pivot pin.

S 024-127

(3) Remove the locknut (8) and washer (7) from the pivot pin.

S 024-128

(4) Remove the uplock fitting (1) from the pivot pin.

NOTE: The uplock fitting should remove easily. If the uplock fitting is difficult to remove lift the airplane with jacks to remove the weight of the airplane from the pin (AMM 07-11-01/201).

TASK 32-11-19-404-046

3. Install the Truck Uplock Fitting for the Main Landing Gear (Fig. 401)

A. Equipment

(1) Crowfoot Wrench - F70312-28

B. Consumable Materials

(1) D00528 Grease - ROYCO 11-MS

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Uplock Fitting	32-11-02	05	125, 130

D. References
(1) AMM 32-00-15/201, Landing Gear Door Locks
(2) AMM 32-00-20/201, Landing Gear Down Locks
(3) AMM 32-11-18/601, Main Gear Truck Assembly

E. Access
(1) Location Zones
731/741 Main Landing Gear (MLG)

F. Install the Truck Uplock Fitting for the Main Landing Gear

S 644-053
(1) Apply grease to the uplock fitting (1), the washer (7), and the locknut (8).

S 424-129
(2) Install the uplock fitting (1) on the pivot pin.

NOTE: The uplock fitting must install on the pivot pin easily with no binding or excess force. If the uplock fitting will not install without force lift the airplane with jacks to remove the weight of the airplane from the pin (AMM 07-11-01/201).

S 644-117
(3) Apply grease to the bolt (3) and the washer (4).

S 424-130
(4) Put the uplock fitting (1) in its location with the stabilizer (2) such that you can install the bolt (3).

S 424-141
(5) Install the bolt (3), washer (4), nut (5), and the cotter pin (6) to connect the stabilizer (2) to the uplock fitting (1).

NOTE: Do not tighten down the nut, leave an axial gap of 0.005-0.030 inch (0.127-0.762 mm). The gap will provide an exit path for the grease when you lubricate the joint.

S 424-131
(6) Install the washer (7) and locknut (8) on the pivot pin.

S 424-132
(7) Use the crowfoot wrench to tighten the locknut to 90-100 pound-feet.

S 644-133
(8) Apply grease to the lockbolt (9) and the washer (10).

S 424-134
(9) Install the lockbolt (9), the washer (10), the nut (11), and the cotter pin (12).

NOTE: If necessary loosen the locknut to the nearest lockbolt hole.

S 644-106
(10) Lubricate the truck assembly at the grease fittings (AMM 12-21-14/301).

G. Put the Airplane Back to its Usual Condition

S 084-135

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the door locks from the main landing gear doors and close the doors (AMM 32-00-15/201).

S 084-138
(2) Remove the downlocks on the nose and main landing gear (AMM 32-00-20/201).

MAIN GEAR BRAKE RODS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the brake rods for the main landing gear. The second task installs the brake rod for the main landing gear.

   TASK 32-11-20-004-001-002

2. Remove the Brake Rods from the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Pin Puller - Brake Rod, MLG - A32016-17
   B. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-20/201, Landing Gear Downlocks
      (3) AMM 32-11-20/601, Main Gear Brake Rods
   C. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735 745	MLG Trunnion Doors

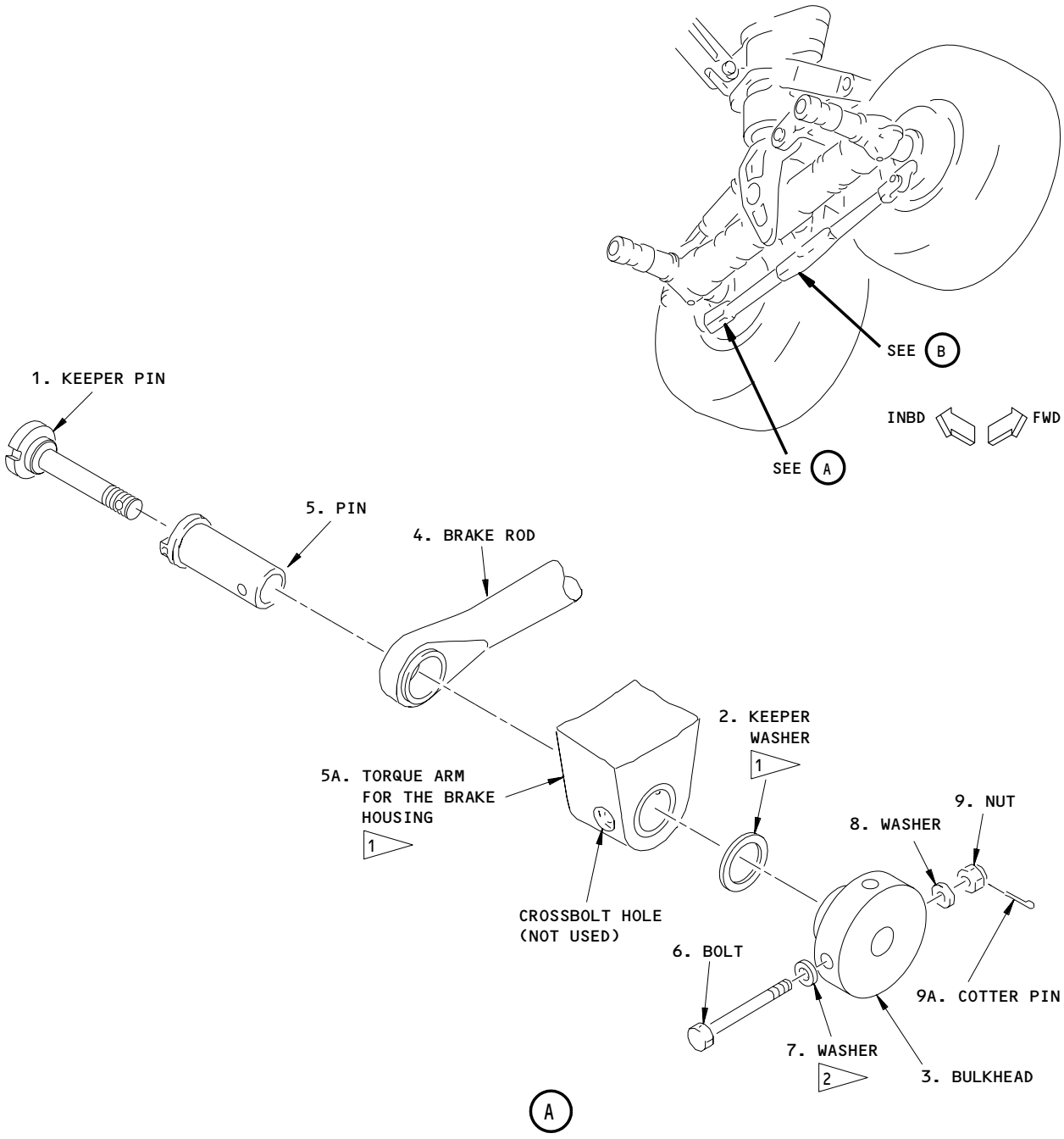
   D. Prepare for the Removal of the Brake Rod

      S 494-002-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-003-002
      (2) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).
   E. Remove the Brake Rod

      S 014-004-002
      (1) Do the steps that follow to remove the keeper pin (1) and the attach pin (5) from the brake rod:
         (a) Remove the bolt (6).
         (b) Remove the bulkhead (3).
         (c) Remove the keeper pin (1) and the keeper washer (2), if installed.

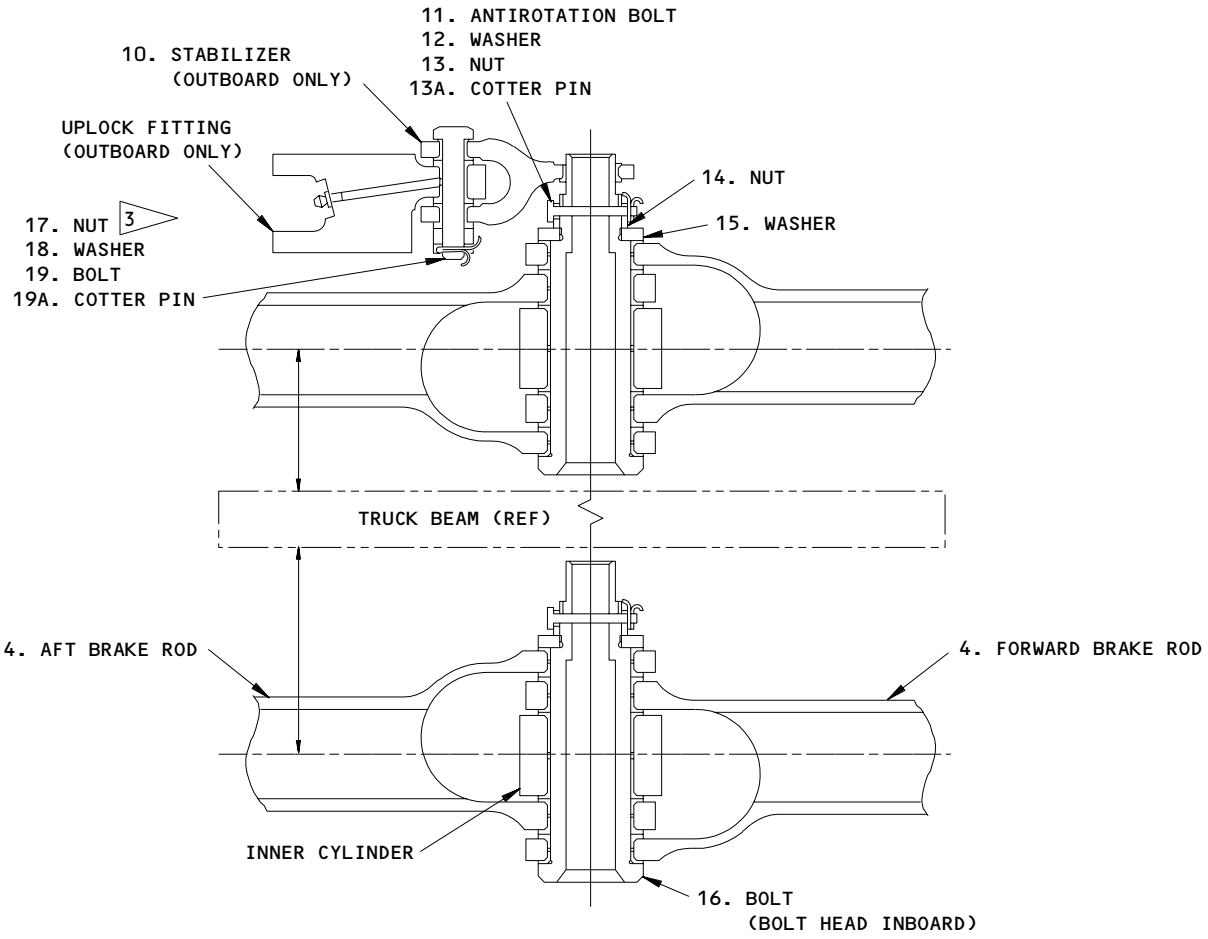
            NOTE: The keeper washer (2) is not installed on airplanes with Boeing Service Bulletin 767-32-0153 incorporated. This service bulletin replaces the brakes with brakes that have a two piece bushing that gives a bushing flange on both sides of the torque arm and eliminates the need for the keeper washer.



1 ON AIRPLANES WITH SB 32-153 THE BRAKES HAVE A SPLIT BUSHING WITH A FLANGE ON BOTH SIDES OF THE TORQUE ARM (5A). ON THESE AIRPLANES, THE KEEPER WASHER (2) IS NOT USED.

2 INSTALL WASHER (7) WITH CHAMFER SIDE TOWARD HEAD OF BOLT.

Brake Rods Installation for the Main Landing Gear
Figure 401 (Sheet 1)



3 DO NOT TIGHTEN DOWN THE NUT, LEAVE AN AXIAL GAP OF 0.005–0.030 INCH (0.127–0.762 mm).

Brake Rods Installation for the Main Landing Gear
Figure 401 (Sheet 2)

(d) Remove the pin (5). If the pin (5) cannot move, use the brake rod pin puller to remove the pin.
NOTE: If the pin cannot turn in the torque arm, you must remove it with the puller tool before you lift the wheel with the jack. If the wheel is raised with a jack, you will not have clearance to install the puller tool.

S 014-005-002
(2) If you remove the outboard brake rod, remove the bolt (19) to disconnect the stabilizer (10) from the uplock fitting (Detail B).

S 014-006-002
(3) Remove the stabilizer (10).

S 844-007-002
(4) Keep the stabilizer for the installation.

S 014-008-002
(5) Remove the bolt (16) to disconnect the brake rod from the inner cylinder of the shock strut (Detail B).

S 024-009-002
(6) Remove the brake rod (4).

S 214-010-002
(7) Look at the chrome plating on the bolt (16).
(a) If the plating material is damaged or worn, do a wear limit check (Ref 32-11-20/601).

TASK 32-11-20-404-011-002

3. Install the Brake Rods on the Main Landing Gear (Fig. 401)
A. Equipment
(1) Crowfoot Wrench - F70312-35
B. Consumable Materials
(1) G00009 Corrosion Inhibiting Compound - BMS 3-23
(2) A00359 Sealant - BMS 5-95
(3) D00633 Grease - BMS 3-33 (Preferred)

(4) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(5) D00528 Grease - Royco 11-MS
(6) G50136 Corrosion Inhibiting Compound - BMS 3-38

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	4	Brake Rod	32-11-02	05	535

D. References
(1) AMM 12-21-14/301, Main Gear and Actuating Mechanisms
(2) AMM 32-11-20/601, Main Gear Brake Rods

E. Access
(1) Location Zones
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Drag Brace Doors
734/744 MLG Oleo Doors
735 745 MLG Trunnion Doors

F. Install the Brake Rod

S 414-020-002

CAUTION: MAKE SURE YOU CORRECTLY INSTALL THE BRAKE RODS. INCORRECT BRAKE ROD INSTALLATION CAN PRELOAD THE LANDING GEAR COMPONENTS AND CAUSE DAMAGE TO THE LANDING GEAR STRUCTURE.

(1) To connect the brake rod (4) to the torque arm on the brake housing (5A), do the steps that follow:
(a) Use sealant (BMS5-95) to fill the crossbolt holes (not used) in the brake housing torque arm (Figure 401, Detail A). Do not allow the sealant to protude into the hole for the brake rod pin (5).

NOTE: Make sure the sealant is flush, within 0.00-0.10 inches, with the outside surface of the brake housing.

(b) Apply a layer of Royco 11-MS grease to the pin (5).
(c) Apply a layer of Royco 11-MS grease to bushing surfaces in the brake rod (4) and the torque arm (5A).

(d) Put the brake rod (4) in its correct location on the brake torque arm (5A) such that the following occurs:
1) The flat end of the forward brake rod is toward the truck center line where it connects to the shock strut.
2) The flat end of the aft brake rod is away from the truck center line where it connects to the shock strut.
(e) Install the pin (5).
(f) Push the pin (5) in until these steps occur:
1) The flange of the pin (5) is against the rod end bearing of the brake rod (4).
2) The rod end bearing is against the bearing in the torque arm (5A).
(g) Apply a thin layer of BMS 3-23 corrosion preventative compound to the keeper pin (1).
(h) Install the keeper pin (1) in the pin (5).
(i) Apply a thin layer of BMS 3-23 corrosion preventative compound to the washer (2).
(j) Install the keeper washer (2), if installed, on the end of the pin (5).
(k) Apply a thin layer of BMS 3-23 corrosion preventative compound to the threads and flange faces of the bulkhead (3).
(l) Install the bulkhead (3). Tighten by hand until it touches the washer (2), if installed, or the flange of the bushing in the brake housing torque arm (5A), if brake with two flanged bushings in torque arm (5A) is installed, and then loosen until the holes align with the keeper pin (1).
(m) Apply a thin layer of BMS 3-23 corrosion preventative compound to the bolt (6), washers (7, 8), nut (9) and cotter pin (9A).
(n) Install the bolt (6) with washer (7) under the bolt head.
(o) Install the washer (8) under the nut (9).
(p) Tighten the nut (9) to 60-95 inch-pounds. Loosen as necessary to install the cotter pin (9A).

S 414-013-002

(2) Do the steps that follow to connect the forward and the aft brake rods (4) to the lugs on the shock strut:
(a) Apply Royco 11-MS grease to the bolt (16) and washer (15).

(b) Align the forward and aft brake rods to the shock strut so that one lug on the aft brake rod is closer to the truck centerline then the forward brake rod lugs.
(c) Put the bolt (16) through the forward and aft brake rods (4).
(d) Apply a thin layer of compound (BMS 3-38) to the threads of the bolt (16) and nut (14).
(e) Install the washer (15) and nut (14).
(f) Use the crowfoot wrench to tighten the nut (14) to 40-60 pound-feet. Loosen the nut to the nearest hole for the antirotation bolt (Detail B).
(g) Remove the excess compound.

S 414-014-002

(3) Do the steps that follow to install the antirotation bolt (11):
(a) Apply Royco 11-MS grease to the antirotation bolt (11), washer (12), nut (13) and cotter pin (13A).
(b) Put the antirotation bolt (11) through the bolt (16).
(c) Install the washer (12) and the nut (13).
(d) Install the cotter pin (13A).

S 414-015-002

(4) If you install the outboard brake rod, move the stabilizer (10) on the end of bolt (16).
(a) Apply Royco 11-MS grease to the bolt (19), washer (18) and nut (17).
(b) Install the bolt (19), washer (18), nut (17), and the cotter pin (19A) to connect the stabilizer (10) to the uplock fitting.

NOTE: Do not tighten down the nut, leave an axial gap of 0.005-0.030 inch (0.127-0.762 mm). The gap will provide an exit path for the grease when you lubricate the joint.

G. Put the Airplane Back to Its Usual Condition

S 644-016-002

(1) Lubricate the brake rods at the grease fittings (AMM 12-21-14/301).

MAIN GEAR BRAKE RODS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the brake rods for the main landing gear. The second task installs the brake rod for the main landing gear.

TASK 32-11-20-004-001-003

2. Remove the Brake Rods from the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Pin Puller - Brake Rod, MLG - A32016-17
   B. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-20/201, Landing Gear Downlocks
      (3) AMM 32-11-20/601, Main Gear Brake Rods
   C. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735 745	MLG Trunnion Doors

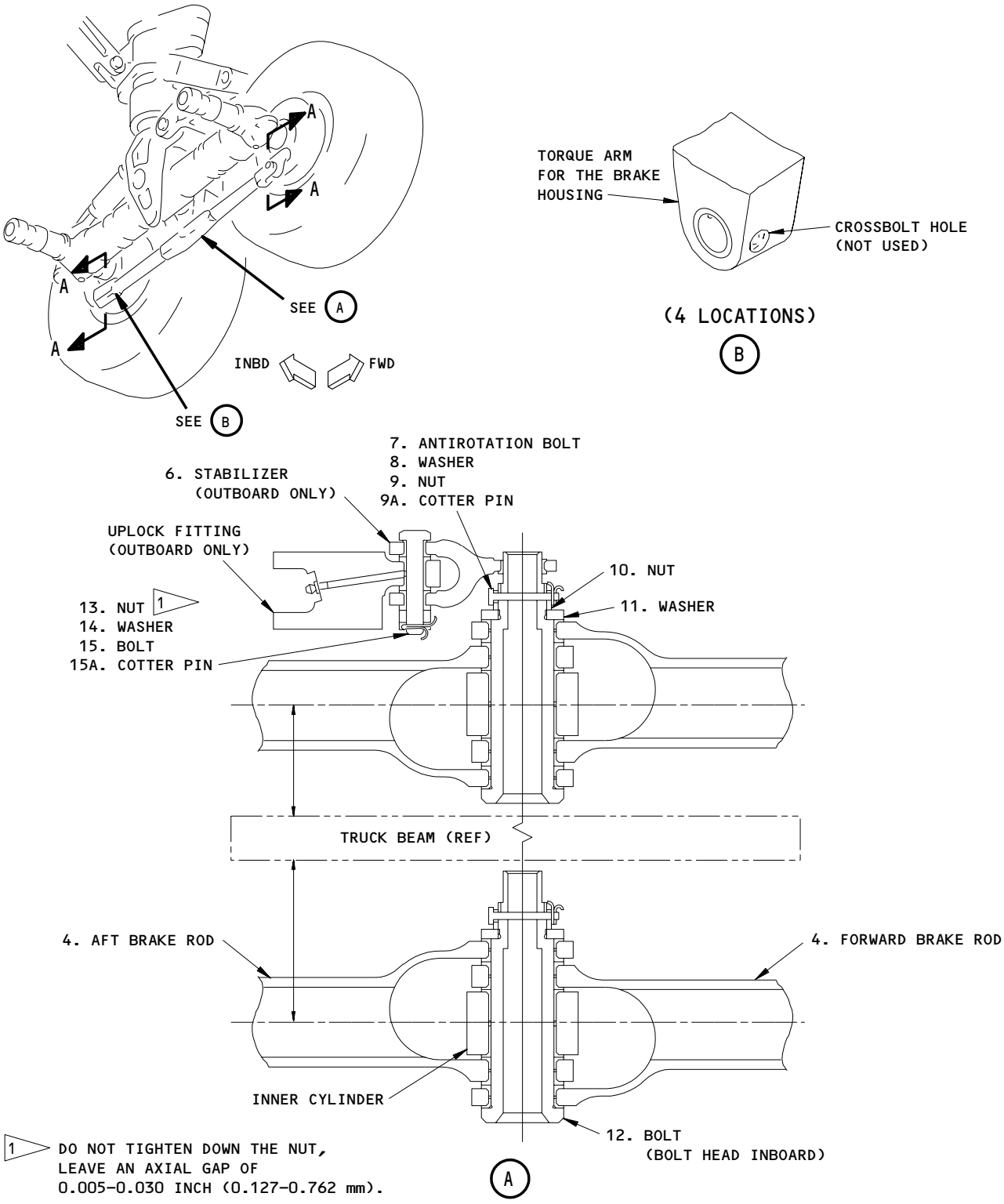
   D. Prepare for the Removal of the Brake Rod

      S 494-002-003
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

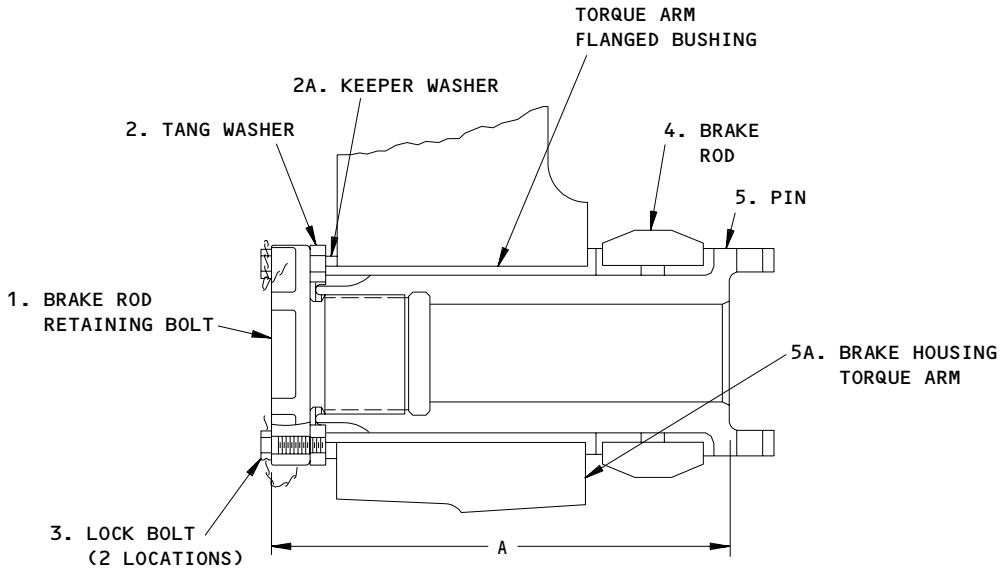
      S 864-003-003
      (2) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).
   E. Remove the Brake Rod

      S 224-023-003
      (1) BRAKES THAT HAVE ONE FLANGED BUSHING IN THE TORQUE ARM; Measure and record dimension "A" (Fig. 401, Detail A-A).

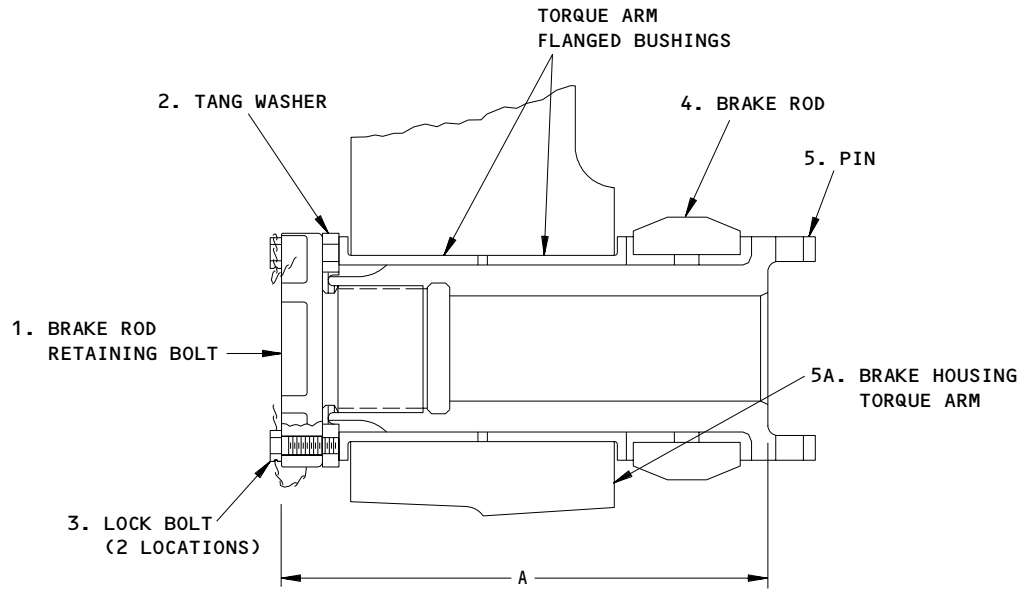
      S 014-004-003
      (2) Do the steps that follow to remove the brake rod retaining bolt (1) and the attach pin (5) from the brake rod:
         (a) Remove the lock bolts (3).
         (b) Remove the brake rod retaining bolt (1).
         (c) Remove the tang washer (2).
         (d) Remove the keeper washer (2A), if installed (See Fig. 401, Detail A-A for effectivity).



Brake Rods Installation for the Main Landing Gear
Figure 401 (Sheet 1)



AIRPLANES WITH BRAKES THAT HAVE
ONE FLANGED BUSHING IN TORQUE ARM
A-A



AIRPLANES WITH BRAKES THAT HAVE
TWO FLANGED BUSHINGS IN TORQUE ARM
A-A

Brake Rods Installation for the Main Landing Gear
Figure 401 (Sheet 2)

(e) Remove the pin (5). If you cannot move the pin (5), use the brake rod pin puller to remove the pin.

NOTE: If the pin cannot turn in the torque arm, you must remove it with the puller tool before you lift the wheel with the jack. If the wheel is raised with a jack, you will not have clearance to install the puller tool.

S 014-005-003

(3) If you remove the outboard brake rod, remove the bolt (15) to disconnect the stabilizer (6) from the uplock fitting (Detail A).

S 014-006-003

(4) Remove the stabilizer (6).

S 844-007-003

(5) Keep the stabilizer for the installation.

S 014-008-003

(6) Remove the bolt (12) to disconnect the brake rod from the inner cylinder of the shock strut (Detail A).

S 024-009-003

(7) Remove the brake rod (4).

S 214-010-003

(8) Look at the chrome plating on the bolt (12).
(a) If the plating material is damaged or worn, do a wear limit check (AMM 32-11-20/601).

TASK 32-11-20-404-011-003

3. Install the Brake Rods on the Main Landing Gear (Fig. 401)

A. Equipment
(1) Crowfoot Wrench - F70312-35

B. Consumable Materials
(1) G00009 Corrosion Preventative Compound - BMS 3-23
(2) G50136 Corrosion Inhibiting Compound - BMS 3-38
(3) A00359 Sealant - BMS 5-95
(4) D00633 Grease - BMS 3-33 (Preferred)

(5) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(6) D00528 Grease - Royco 11-MS
(7) G00508 Corrosion Preventative Compound - MIL-C-11796, Class 3

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	4	Brake Rod	32-11-02	05	535
	2A	Keeper Washer *[1]	32-41-06	01	120

*[1] Used if brake has one flanged bushing in torque arm (See Fig. 401).

D. References
(1) AMM 12-21-14/301, Main Gear and Actuating Mechanisms
(2) AMM 32-11-20/601, Main Gear Brake Rods

E. Access
(1) Location Zones
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Drag Brace Doors
734/744 MLG Oleo Doors
735 745 MLG Trunnion Doors

F. Install the Brake Rod

S 414-022-003

WARNING: USE THE SPECIFIED PROCEDURES FROM THE MANUFACTURER OR FROM THE APPLICABLE SAFETY ORGANIZATIONS WHEN YOU USE BMS 3-38 (CORROSION INHIBITING MATERIAL). IMMEDIATELY REMOVE THIS MATERIAL WITH WATER IF IT GETS ON YOUR SKIN. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER AND GET MEDICAL AID. THIS MATERIAL CONTAINS VERY POISONOUS AND FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONS.

CAUTION: MAKE SURE YOU CORRECTLY INSTALL THE BRAKE RODS. INCORRECT BRAKE ROD INSTALLATION CAN PRELOAD THE LANDING GEAR COMPONENTS AND CAUSE DAMAGE TO THE LANDING GEAR STRUCTURE.

(1) To connect the brake rod (4) to the torque arm on the brake housing (5A), do the steps that follow:
   (a) Use sealant (BMS5-95) to fill the crossbolt holes (not used) in the brake housing torque arm (Figure 401, Detail B). Do not allow the sealant to protude into the hole for the brake rod pin (5).

      NOTE: Make sure the sealant is flush, within 0.00-0.10 inches, with the outside surface of the brake housing.

   (b) Apply a layer of Royco 11-MS grease to the outside diameter and under the flange fillet radius of the pin (5), and on the bushings in the brake rod (4) and the torque arm (5A). Make sure you do not let grease touch the internal threads on the pin (5).
   (c) Put the brake rod (4) in its correct location on the brake torque arm (5A) such that the following occurs:
      1) The flat end of the forward brake rod is toward the truck center line where it connects to the shock strut.
      2) The flat end of the aft brake rod is away from the truck center line where it connects to the shock strut.
   (d) Install the pin (5).
   (e) Push the pin (5) in until these steps occur:
      1) The flange of the pin (5) is against the rod end bearing of the brake rod (4).
      2) The rod end bearing is against the flanged bushing in the torque arm (5A).
   (f) BRAKES THAT HAVE ONE FLANGED BUSHING IN THE TORQUE ARM; Do these steps:
      1) Apply a thin layer of MIL-C-11796 Class 3 corrosion preventative compound to the keeper washer (2A).
      2) Install the keeper washer (2A).

CAUTION: MAKE SURE THE TANG WASHER (2) ENGAGES WITH THE KEYWAY ON THE PIN (5). INCORRECT INSTALLATION OF THE TANG WASHER CAN RESULT IN LOSS OF THE PIN WHICH WILL CAUSE DAMAGE TO EQUIPMENT.

(g) Install the tang washer (2).

NOTE: Make sure the tang washer (2) engages with the keyway on the pin (5).

(h) BRAKES THAT HAVE ONE FLANGED BUSHING IN THE TORQUE ARM; Make sure that there is no clearance between the mating surfaces of the tang washer (2), keeper washer (2A) and the torque arm (5A).
(i) BRAKES THAT HAVE TWO FLANGED BUSHINGS IN THE TORQUE ARM; Make sure that there is no clearance between the mating surfaces of the tang washer (2) and the flanged bushing of the torque arm (5A).
(j) Apply a thin layer of BMS 3-38 corrosion preventative compound to the threads and the outside diameter below the flange on the retaining bolt (1).
(k) Install the retaining bolt (1), finger tight, in the pin (5).

NOTE: Make sure you hold the pin (5) against the brake rod, this will keep the tang washer (2) engaged in the keyway of the pin (5).

(l) Tighten the retaining bolt (1) to 40-50 foot-pounds (54-68 Nm).
(m) Make sure that there is no clearance between the mating surfaces of the assembled parts (1-5A).
(n) Loosen the retaining bolt (1) to remove the clamp-up on the assembled joint.

NOTE: Do not loosen the bolt more then 1/2 of a turn.

(o) Tighten the retaining bolt (1) to 5-7 foot-pounds (6.8-9.5 Nm).
(p) Loosen the retaining bolt (1) to align the lock bolt holes, of the bolt (1), with the nearest hole in the tang washer (2).
(q) Apply a thin layer of BMS 3-38 corrosion preventative compound to the threads and the outside diameter below the flange on the lock bolts (3).
(r) Install the lock bolts (3). Tighten to 23-28 inch-pounds.
(s) Measure the distance for dimension "A" (Fig. 401, Detail A-A).

(t) BRAKES THAT HAVE ONE FLANGED BUSHING IN THE TORQUE ARM;
If the measured dimension is more than 0.020 inches (0.50 mm) larger than the recorded dimension "A" (measured prior to disassembly) then you must disassemble the joint, examine all parts for proper dimensions, and install the parts again.

NOTE: This step makes sure the tang washer is installed correctly.

(u) BRAKES THAT HAVE TWO FLANGED BUSHINGS IN THE TORQUE ARM;
If the measured dimension is more than 5.90 inches (149.9 mm) then you must disassemble the joint, examine all parts for proper dimensions, and install the parts again.

NOTE: This step makes sure the tang washer is installed correctly.

(v) Install lockwire on the lock bolts (3).

S 414-013-003

(2) Do the steps that follow to connect the forward and the aft brake rods (4) to the lugs on the shock strut:
(a) Apply a layer of Royco 11-MS grease to the shank of the bolt (12) and the face of washer (11).
(b) Align the forward and aft brake rods to the shock strut so that one lug on the aft brake rod is closer to the truck centerline then the forward brake rod lugs.
(c) Put the bolt (12) through the forward and aft brake rods (4).
(d) Apply a thin layer of BMS 3-38 corrosion inhibiting compound to the threads and thread relief radius of the bolt (12).
(e) Install the washer (11) and nut (10).
(f) Use the crowfoot wrench to tighten the nut (10) to 40-60 pound-feet. Loosen the nut to the nearest hole for the antirotation bolt (Detail A).
(g) Remove the excess compound.

S 414-014-003

(3) Do the steps that follow to install the antirotation bolt (7):
(a) Apply Royco 11-MS grease to the antirotation bolt (7), washer (8), nut (9) and cotter pin (9A).
(b) Put the antirotation bolt (7) through the bolt (12).
(c) Install the washer (8) and the nut (9).
(d) Install the cotter pin (9A).

S 414-015-003

(4) If you install the outboard brake rod, move the stabilizer (6) on the end of bolt (12).
(a) Apply Royco 11-MS grease to the bolt (15), washer (14) and the nut (13).

(b) Install the bolt (15), washer (14), nut (13), and the cotter pin (15A) to connect the stabilizer (6) to the uplock fitting.

NOTE: Do not tighten down the nut, leave an axial gap of 0.005-0.030 inch (0.127-0.762 mm). The gap will provide an exit path for the grease when you lubricate the joint.

G. Put the Airplane Back to Its Usual Condition

S 644-016-003

(1) Lubricate the brake rods at the grease fittings (AMM 12-21-14/301).

MAIN GEAR BRAKE RODS - INSPECTION/CHECK

1. General
   A. This procedure only has an illustration and a wear limits table which shows the data for wear limits. There are no procedures for access removal or installation of the parts. Refer to the Main Gear Brake Rods - Removal/Installation for procedures to do these tasks.

TASK 32-11-20-206-001-002

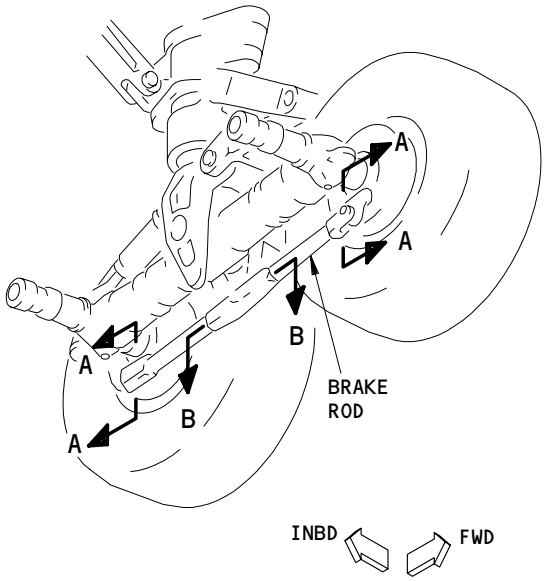
2. Wear Limits for the Brake Rods of the Main Landing Gear (Fig. 601)

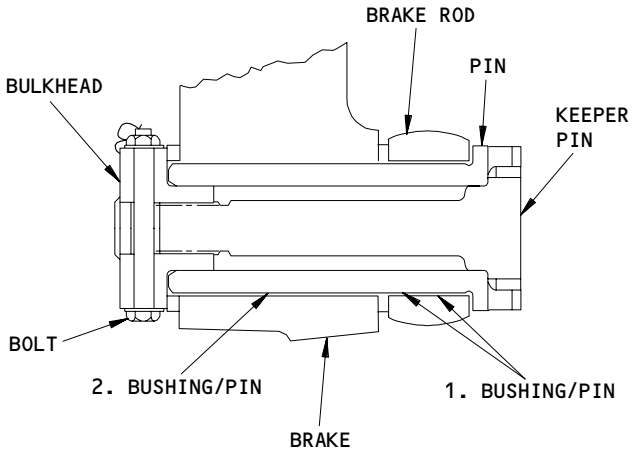
NOTE: Wear limits for components connected to the brake rods can be found in the Maintenance Manual subject for the component.

A. Wear Limits for the Brake Rods

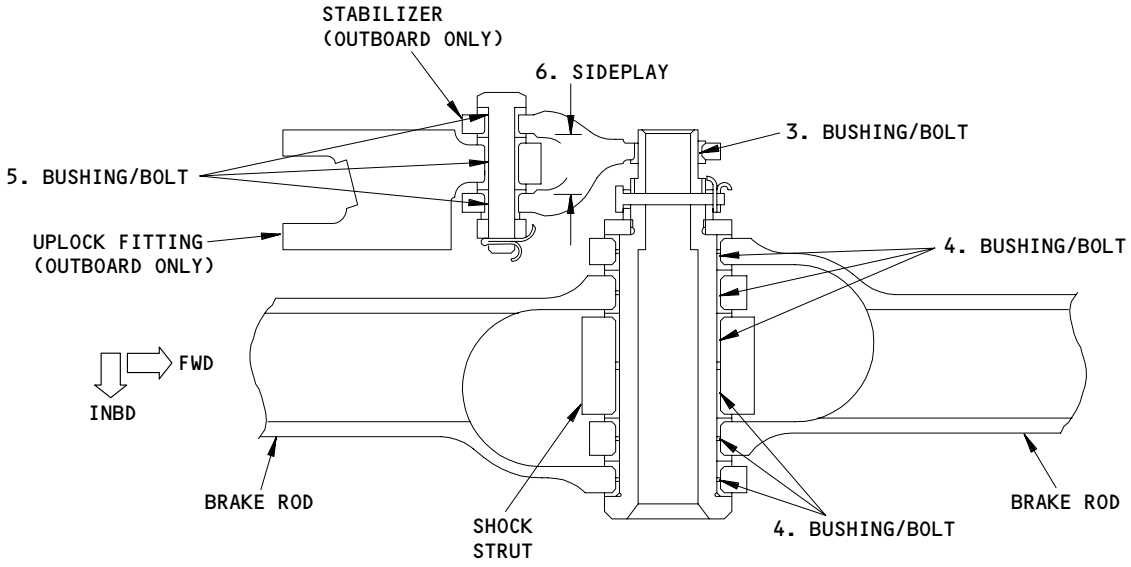
S 226-002-002

(1) Refer to Fig. 601 for the inspection points and the wear limits table.





A–A



B–B

Wear Limits for the Brake Rods of the Main Landing Gear
Figure 601 (Sheet 1)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	2.0000	2.0015	2.018	0.019	X		
	PIN	OD	1.9970	1.9990	1.9942			X	1
2	BUSHING	ID	2.0000	2.0100	2.0068	0.0110	X		
	PIN	OD	1.9970	1.9990	1.9942			X	1
3	BUSHING	ID	1.0100	1.0115	1.0155	0.0065	X		
	BOLT	OD	1.0070	1.0090	1.0050			X	1
4	BUSHING	ID	1.7500	1.7515	1.761	0.0120	X		
	BOLT	OD	1.7480	1.7490	1.7454			X	1
5	BUSHING	ID	0.5000	0.5015	0.5039	0.0044	X		
	BOLT	OD	0.4985	0.4995	0.4971		X		
6	UPLOCK FITTING		----	----	----	0.0328 2	3		

1 THIS PART CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS

2 MAXIMUM SIDEPLAY PERMITTED

3 REPLACE THE WORN BUSHINGS

Wear Limits for the Brake Rods of the Main Landing Gear
Figure 601 (Sheet 2)

MAIN GEAR BRAKE RODS - INSPECTION/CHECK

1. General
   A. This procedure only has an illustration and a wear limits table which shows the data for wear limits. There are no procedures for access removal or installation of the parts. Refer to the Main Gear Brake Rods - Removal/Installation for procedures to do these tasks.

   TASK 32-11-20-206-001-003

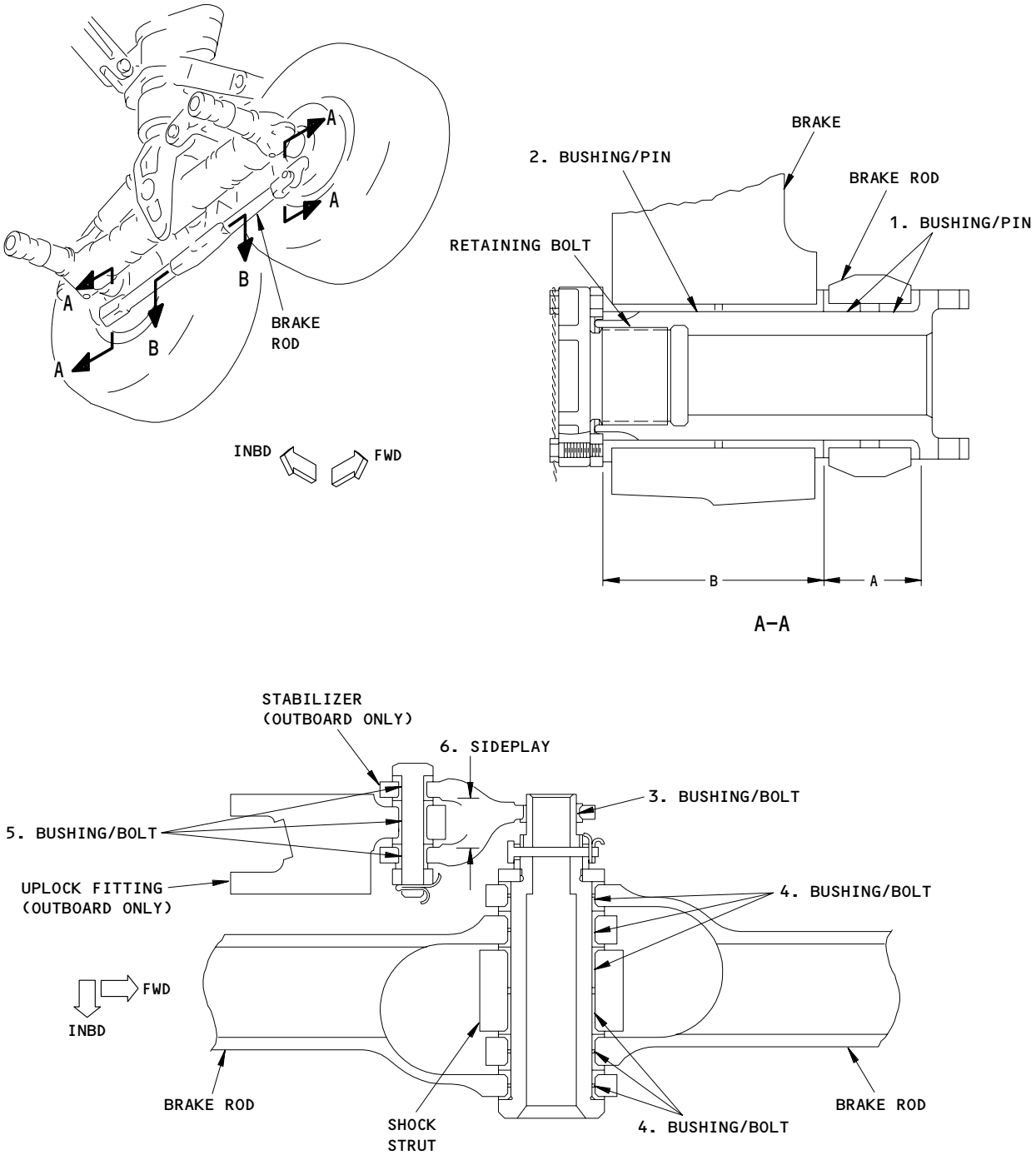
2. Wear Limits for the Brake Rods of the Main Landing Gear (Fig. 601)

   NOTE: Wear limits for components connected to the brake rods can be found in the Maintenance Manual subject for the component.

   A. Wear Limits for the Brake Rods

      S 226-002-003

      (1) Refer to Fig. 601 for the inspection points and the wear limits table.



Wear Limits for the Brake Rods of the Main Landing Gear
Figure 601 (Sheet 1)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
			DIAMETER		PERMITTED WEAR DIMENSION INCHES (mm)	MAXIMUM DIAMETER CLEARANCE INCHES (mm)			
			MINIMUM INCHES (mm)	MAXIMUM INCHES (mm)					
1	BUSHING	ID	2.0000 (50.800)	2.0015 (50.838)	2.018 (51.257)	0.019 (0.483)	X		
	PIN	OD	1.9970 (50.724)	1.9990 (50.775)	1.9942 (50.653)			X	1
2	BUSHING	ID	2.0000 (50.800)	2.0100 (51.054)	2.0068 (50.973)	0.0110 (0.279)	X		
	PIN	OD	1.9970 (50.724)	1.9990 (50.775)	1.9942 (50.653)			X	1
3	BUSHING	ID	1.0100 (25.654)	1.0115 (25.692)	1.0155 (25.794)	0.0065 (0.165)	X		
	BOLT	OD	1.0070 (25.579)	1.0090 (25.629)	1.0050 (25.527)			X	1
4	BUSHING	ID	1.7500 (44.450)	1.7515 (44.488)	1.761 (44.729)	0.0120 (0.305)	X		
	BOLT	OD	1.7480 (44.399)	1.7490 (44.425)	1.7454 (44.333)			X	1
5	BUSHING	ID	0.5000 (12.700)	0.5015 (12.738)	0.5039 (12.799)	0.0044 (0.112)	X		
	BOLT	OD	0.4985 (12.662)	0.4995 (12.687)	0.4971 (12.626)		X		
6	UPLOCK FITTING		----	----	----	0.0328 (0.833) 2	3		
A	BRAKE ROD		----	----	1.380 (35.05)	----	3		
B	TORQUE ARM		----	----	3.450 (87.63)	----	3		

1 THIS PART CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS

2 MAXIMUM SIDEPLAY PERMITTED

3 REPLACE THE WORN BUSHINGS

Wear Limits for the Brake Rods of the Main Landing Gear
Figure 601 (Sheet 2)

MAIN GEAR TORSION LINKS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the torsion links from the main landing gear. The second task installs the torsion links on the main landing gear.

TASK 32-11-22-004-001

2. Remove the Torsion Links for the Main Landing Gear (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-45-01/401, Main Gear Wheel and Tire
   B. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

   C. Prepare to Remove the Torsion Links

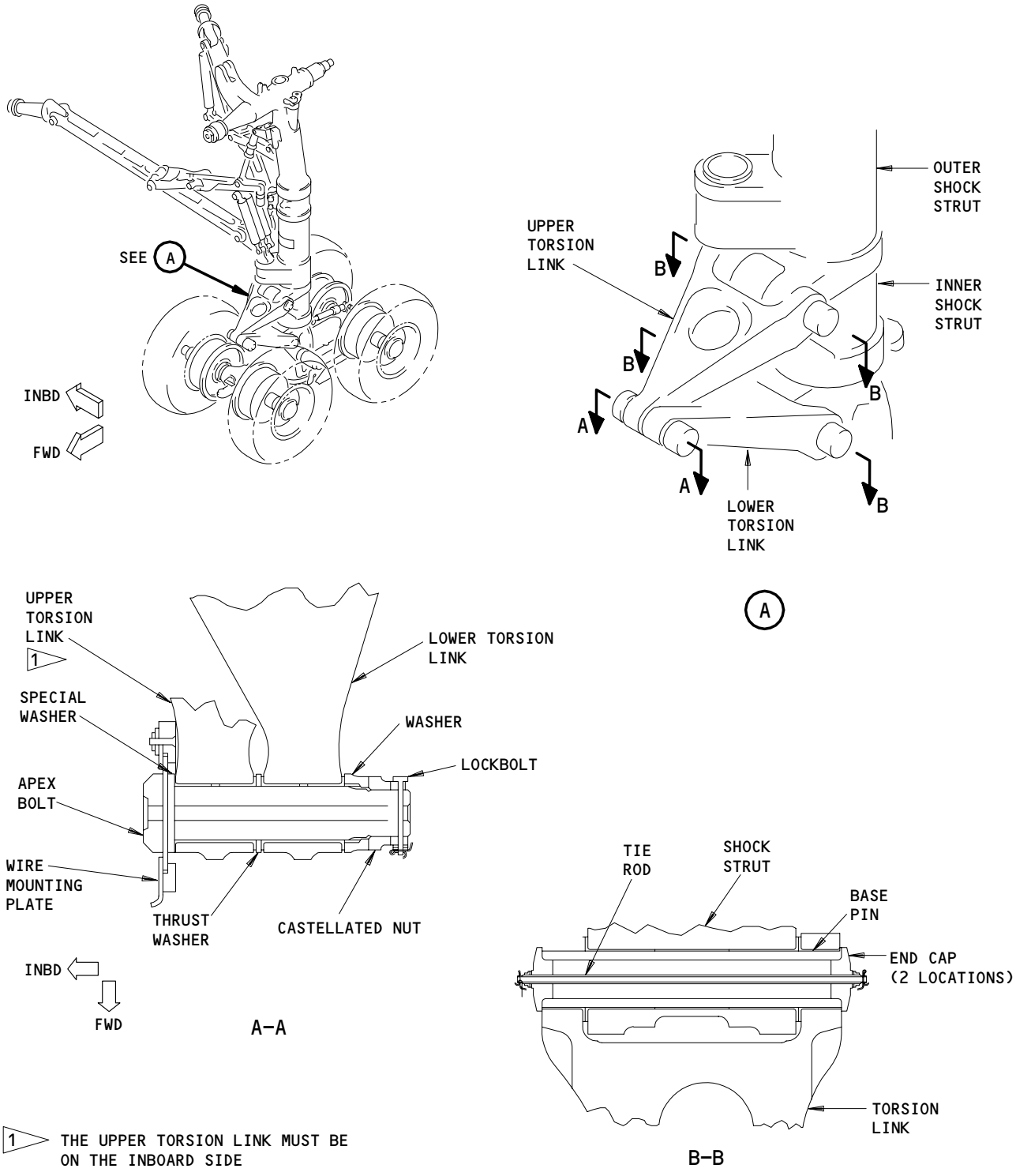
S 494-002
      (1) Make sure the downlocks are installed on the nose and Main Landing Gear (AMM 32-00-20/201).

S 864-003
      (2) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 014-004
      (3) Remove the wire harness, the hydraulic lines, and the support brackets from the torsion links.

S 844-005
      (4) Hold these parts out of the work area.

S 014-006
      (5) Remove the forward inboard wheel and tire (AMM 32-45-01/401).



Main Landing Gear Torsion Links Installation
Figure 401

D. Remove the Torsion Links

S 944-026

WARNING: BE CAREFUL WHEN YOU REMOVE THE APEX BOLT WHICH HOLDS THE TORSION LINK. EACH TORSION LINK WEIGHS APPROXIMATELY 70 POUNDS AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the apex bolt to disconnect the upper torsion link from the lower torsion link (View A-A).

S 014-008

(2) Remove the base pin to disconnect the upper torsion link from the outer cylinder of the shock strut (View B-B).

S 014-009

(3) Remove the base pin to disconnect the lower torsion link from the inner cylinder of the shock strut (View B-B).

TASK 32-11-22-404-010

3. Install the Torsion Links on the Main Landing Gear (Fig. 401)

NOTE: Wear limits for the components that follow are supplied in 32-11-22/601.

A. Equipment
   (1) Crowfoot Wrench - F70312-45
B. Consumable Materials
   (1) D00633 Grease - BMS 3-33 (Preferred)
   (2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
   (3) G00119 Tape - Mystik 7355 Mylar
C. References
   (1) AMM 32-11-22/601, Main Gear Torsion Links
   (2) AMM 32-45-01/401, Main Gear Wheel and Tire
D. Access
   (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

E. Install the Torsion Links

S 644-011

(1) Apply grease to the base pin, the tie rod, the end caps, the washers, and the nut.

S 424-012
(2) Install the pin to connect the upper torsion link to the outer cylinder of the shock strut (View B-B).

S 434-013
(3) Install the cotter pins.

S 644-014
(4) Apply grease to the base pin, the tie rod, the end caps, the washers, and the nut.

S 424-015
(5) Install the pin to connect the lower torsion link to the inner cylinder of the shock strut (View B-B).

S 434-016
(6) Install the cotter pins.

S 644-017
(7) Apply grease to the thrust washer, the apex bolt, the washers, the wire mounting plate, the nut, and the lockbolt.

S 424-018
(8) Put the lower torsion link in position and install the apex bolt.

S 434-020
(9) Use the crowfoot wrench to tighten the nut to 180-200 pound-feet.

S 434-021
(10) Loosen the nut to the nearest castellation which aligns with the lockbolt hole.
   (a) When you get the specified torque, if the lockbolt hole and the castellation are aligned, loosen to the slot before (View A-A).

S 434-019
(11) Install the lockbolt and the cotter pin.

NOTE: The upper torsion link must be on the inboard side of the lower torsion link.

S 414-022
(12) Install the forward inboard wheel and tire (AMM 32-45-01/401).

S 414-023
(13) Install the wire harness, the hydraulic lines, and the support brackets on the torsion links.

S 864-024
(14) Install two layers of mylar tape under the clamps and between the mounting blocks.

S 584-025
(15) Lubricate the torsion links at the grease fittings.

MAIN GEAR TORSION LINKS - INSPECTION/CHECK

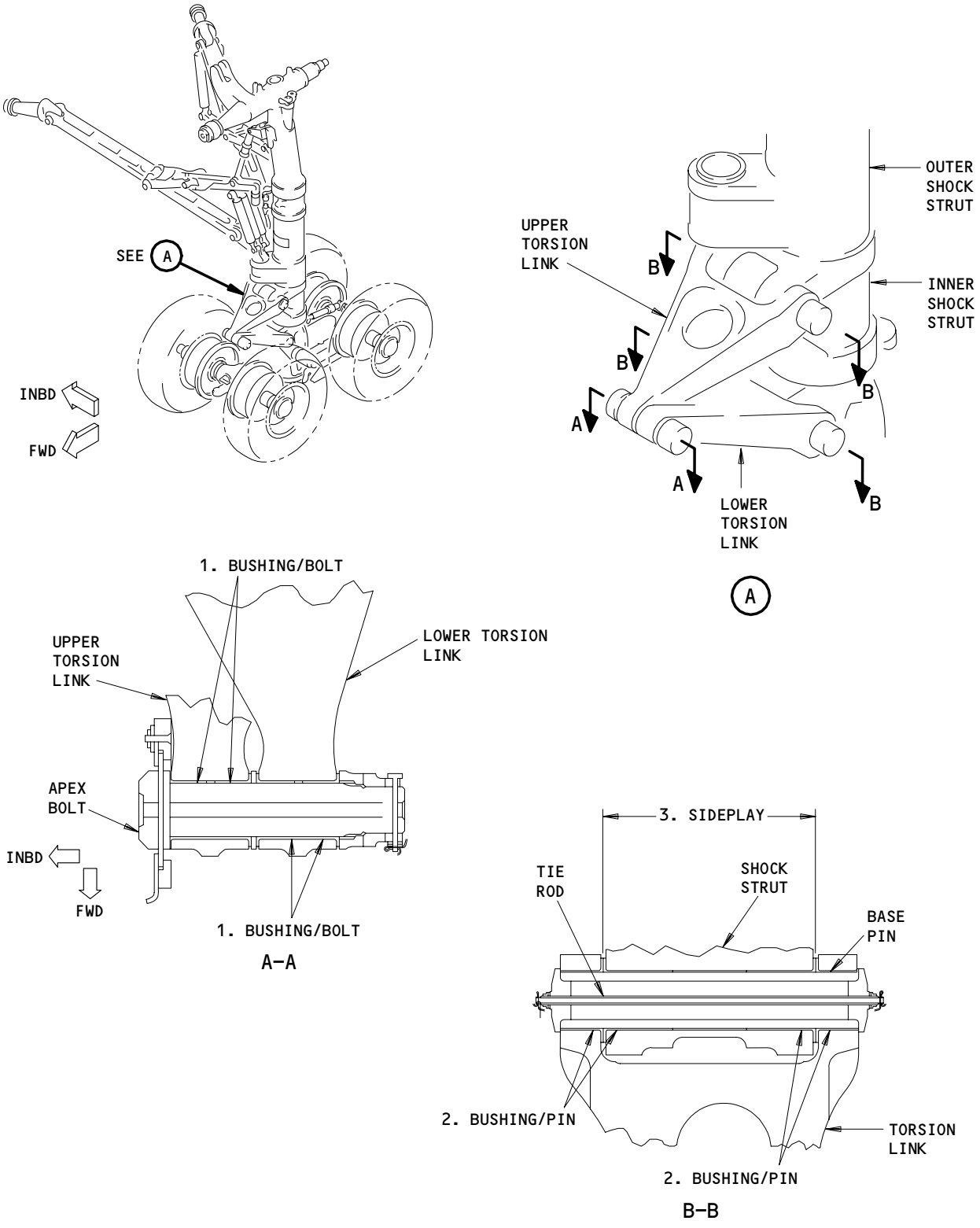
1. General
   A. This procedure only has illustrations and wear limit tables which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Gear Torsion Links - Removal/Installation for procedures to do these tasks.

TASK 32-11-22-206-002

2. Wear Limits for the Torsion Links of the Main Landing Gear (Fig. 601)
   A. Wear Limits for the Torsion Links

S 226-001

(1) Refer to Fig. 601 for the inspection points and the wear limits table.



Wear Limits for the Torsion Links of the Main Landing Gear
Figure 601 (Sheet 1)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	2.0000	2.0020	2.0058	0.0068	X		
1 ▷1◁	BOLT	OD	1.9980	1.9990	1.9952			X	▷3◁
1	BUSHING	ID	2.3750	2.3765	2.3801	0.0061	X		
1 ▷2◁	BOLT	OD	2.3735	2.3740	2.3704			X	▷3◁
2	BUSHING	ID	3.0000	3.0015	3.0060	0.0070	X		
2	PIN	OD	2.9980	2.9990	2.9945			X	▷3◁
3	SHOCK STRUT		----	----	----	0.0320 ▷4◁	▷5◁		

▷1◁ ON ALL EXCEPT THE EXTENDED RANGE AIRPLANES
▷2◁ ON EXTENDED RANGE AIRPLANES ONLY
▷3◁ THE PART CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS
▷4◁ MAXIMUM SIDEPLAY PERMITTED
▷5◁ REPLACE THE WORN BUSHINGS

Wear Limits for the Torsion Links of the Main Landing Gear
Figure 601 (Sheet 2)

SHOCK STRUT OUTER CYLINDER - REMOVAL/INSTALLATION

1. General

NOTE: This procedure exists to support Airworthiness Directive No. 95-20-51 to inspect for aft trunnion corrosion on all Boeing Model 767 airplanes. It is to be used to facilitate the replacement of main gear outer cylinders which have been found to contain corrosion of the aft trunnion. For normal separation of the inner and outer cylinder of the main landing gear use the procedures in the Component Maintenance Manual.

A. This procedure contains two tasks. The first task removes the outer cylinder from the strut on the main landing gear. The second task installs the outer cylinder on the shock strut for the main landing gear.

TASK 32-11-24-004-001

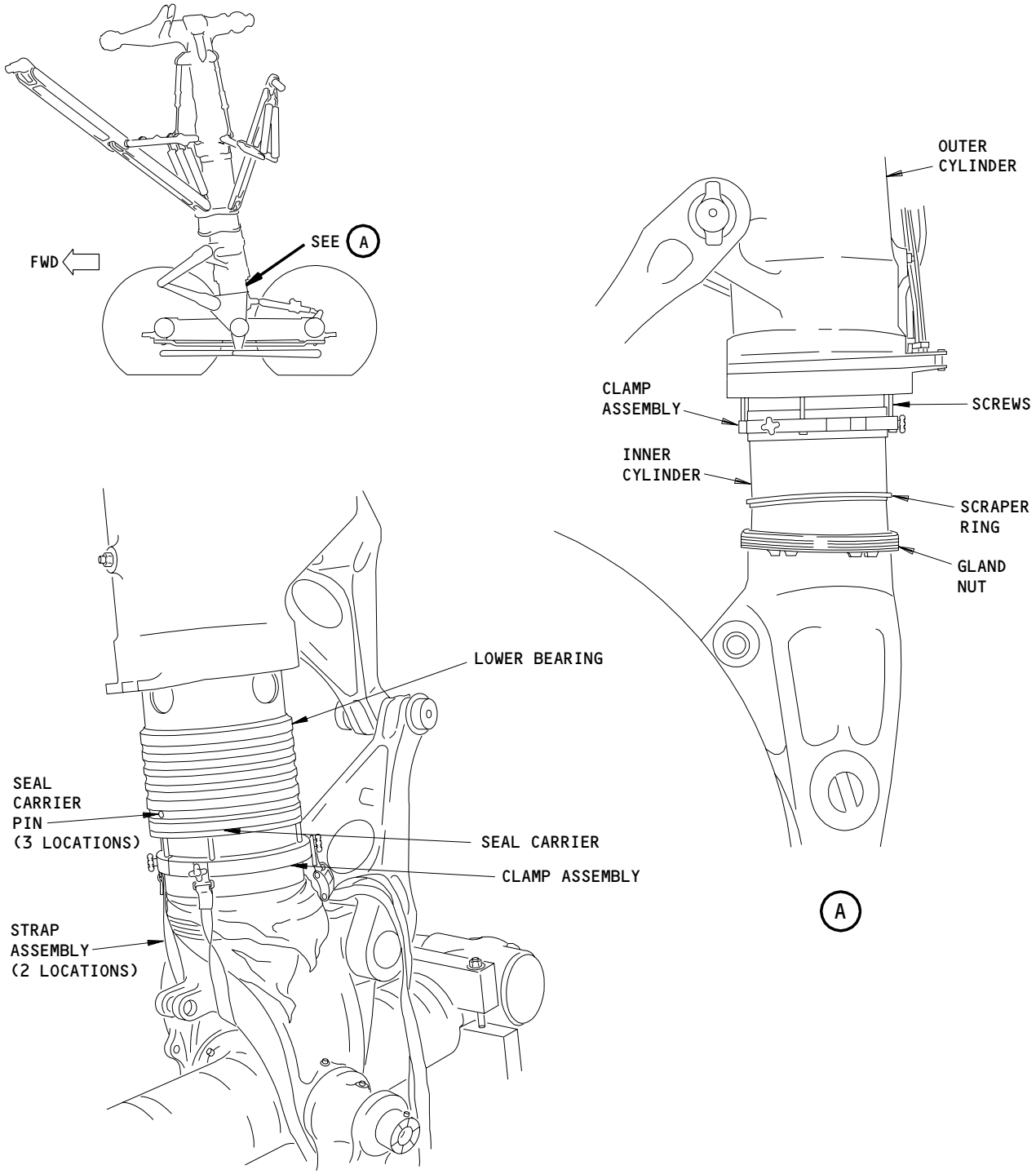
2. Remove the Outer Cylinder from the Shock Strut (Fig. 401, 402)

A. Equipment

(1) A32004-1 MLG Gland Nut Wrench Adapter
(2) A32005-54 MLG Lower Bearing Seal Replacement Equipment
(3) A32028-6 Shock Strut Retention Strap (2 Required)
(4) A32031-5 MLG Truck Positioner Turnbuckle (Recommended)
(5) A32031-4 MLG Truck Positioner Turnbuckle (Alternative) Make from A32031-1
(6) A32033-17 MLG Sling
(7) A32066-1 MLG/NLG Shock Strut Drain Equipment
(8) Overhead Lifting Equipment (Commercially available)

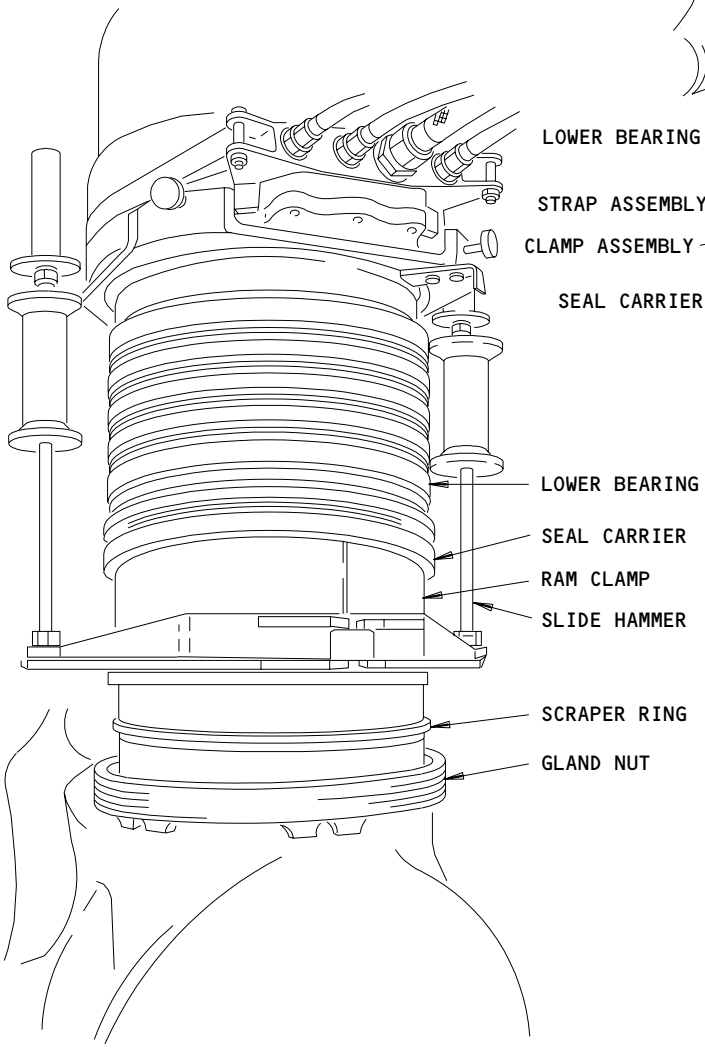
B. References

(1) AMM 32-11-01/401, Main Gear
(2) AMM 32-11-06/401, Main Gear Side Brace Upper and Lower Spindles

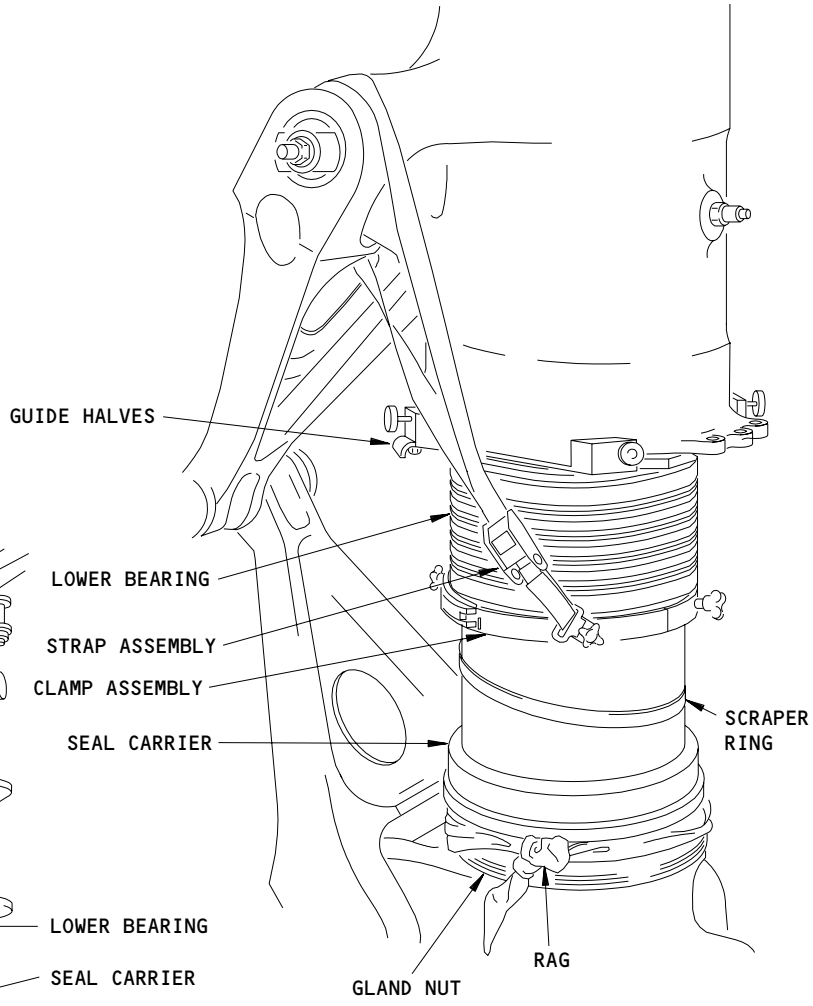


SEAL CARRIER AND LOWER BEARING

Outer Cylinder Installation for the Main Landing Gear
Figure 401 (Sheet 1)



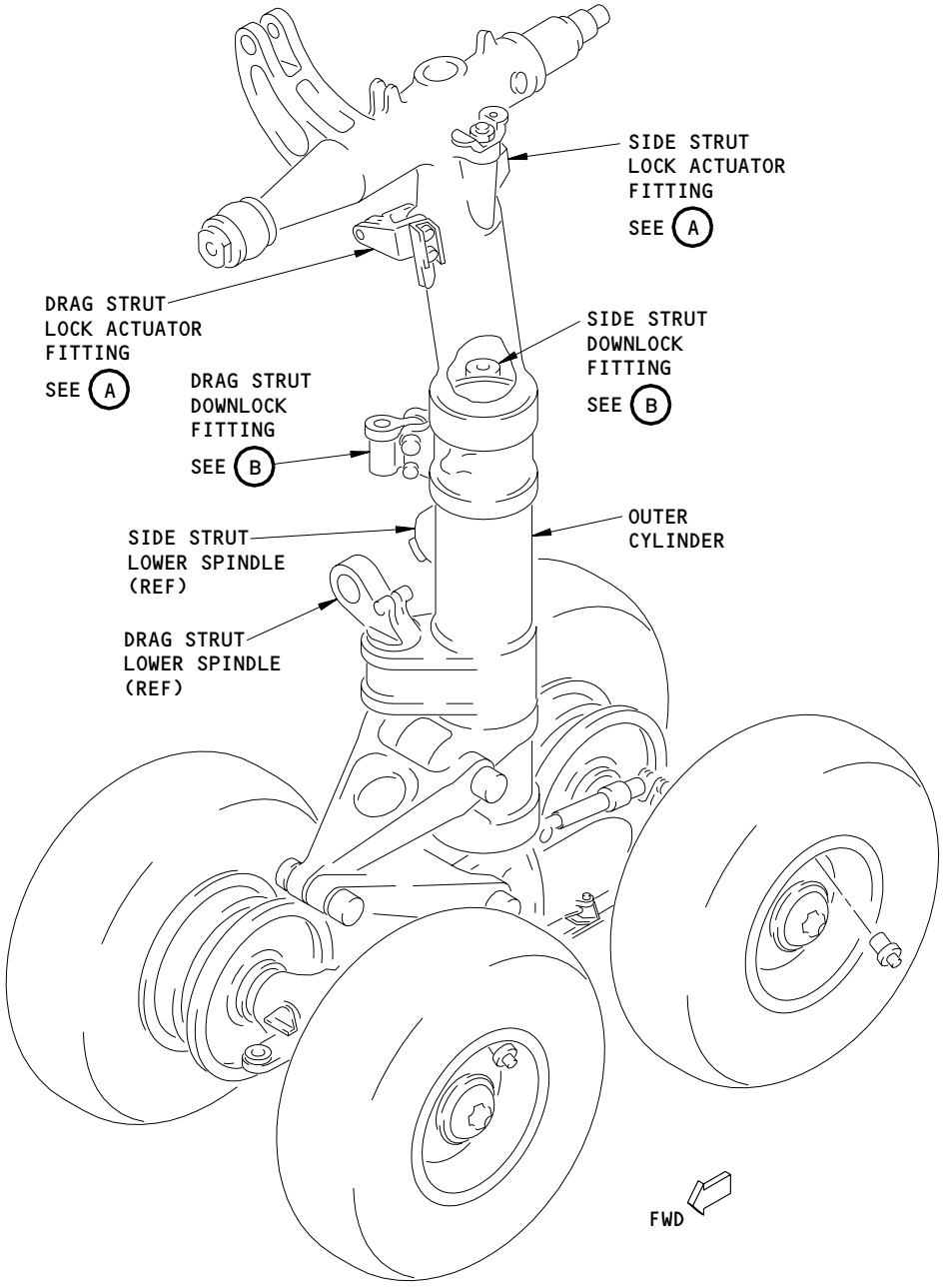
RAM CLAMP INSTALLED



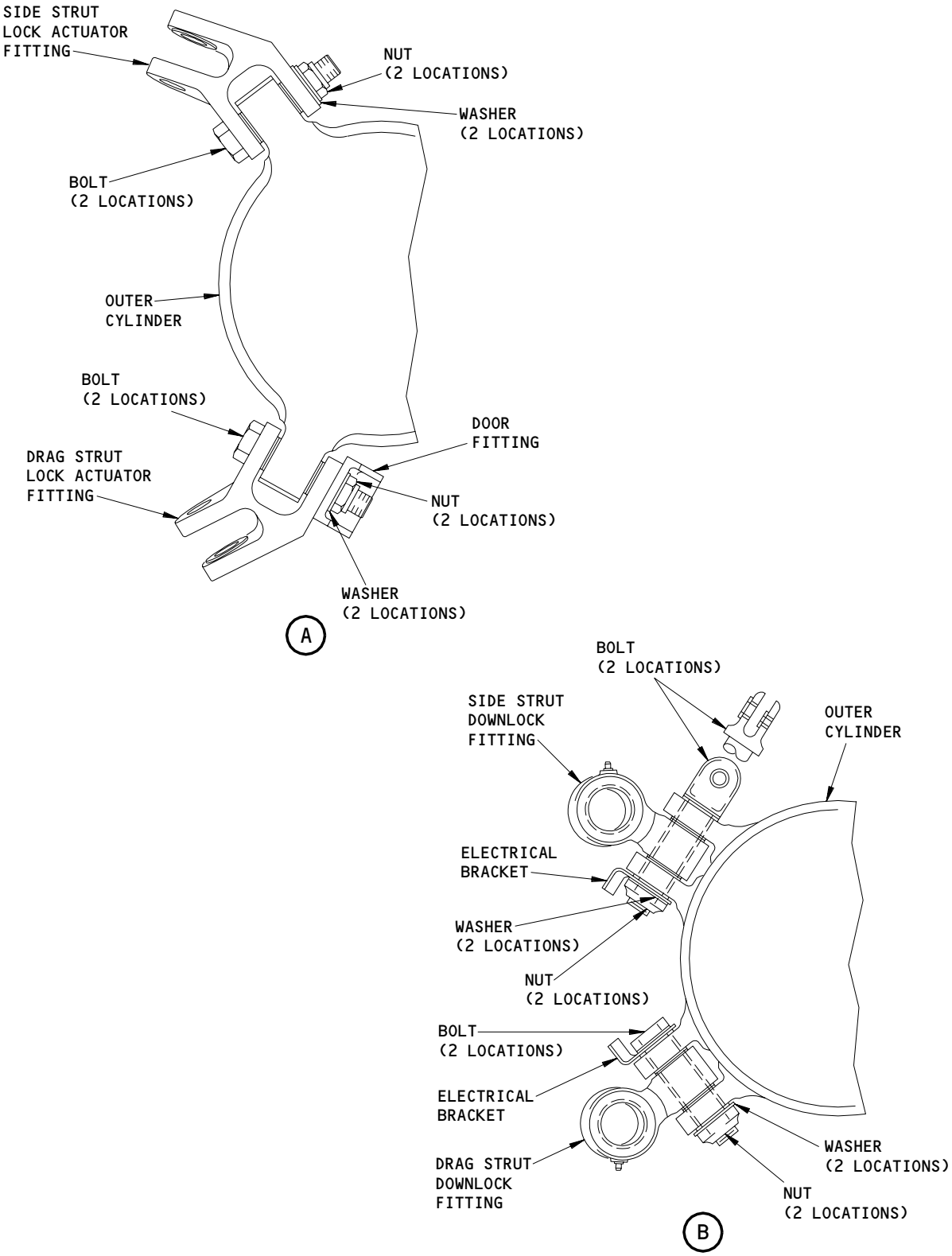
SEPARATION OF THE LOWER BEARING AND THE SEAL CARRIER

Outer Cylinder Installation for the Main Landing Gear
Figure 401 (Sheet 2)

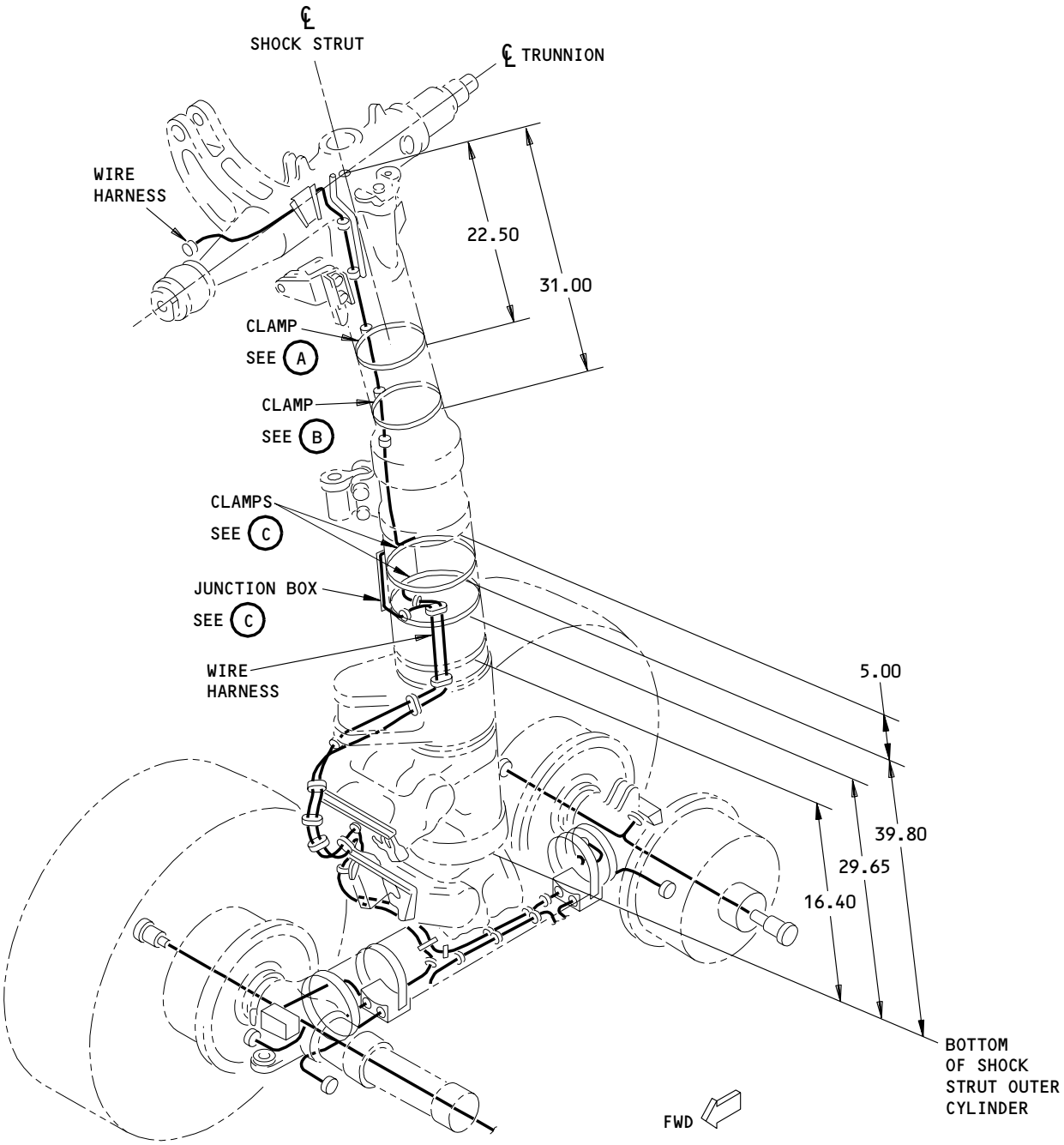
F55434



Main landing Gear Outer Cylinder
Figure 402 (Sheet 1)

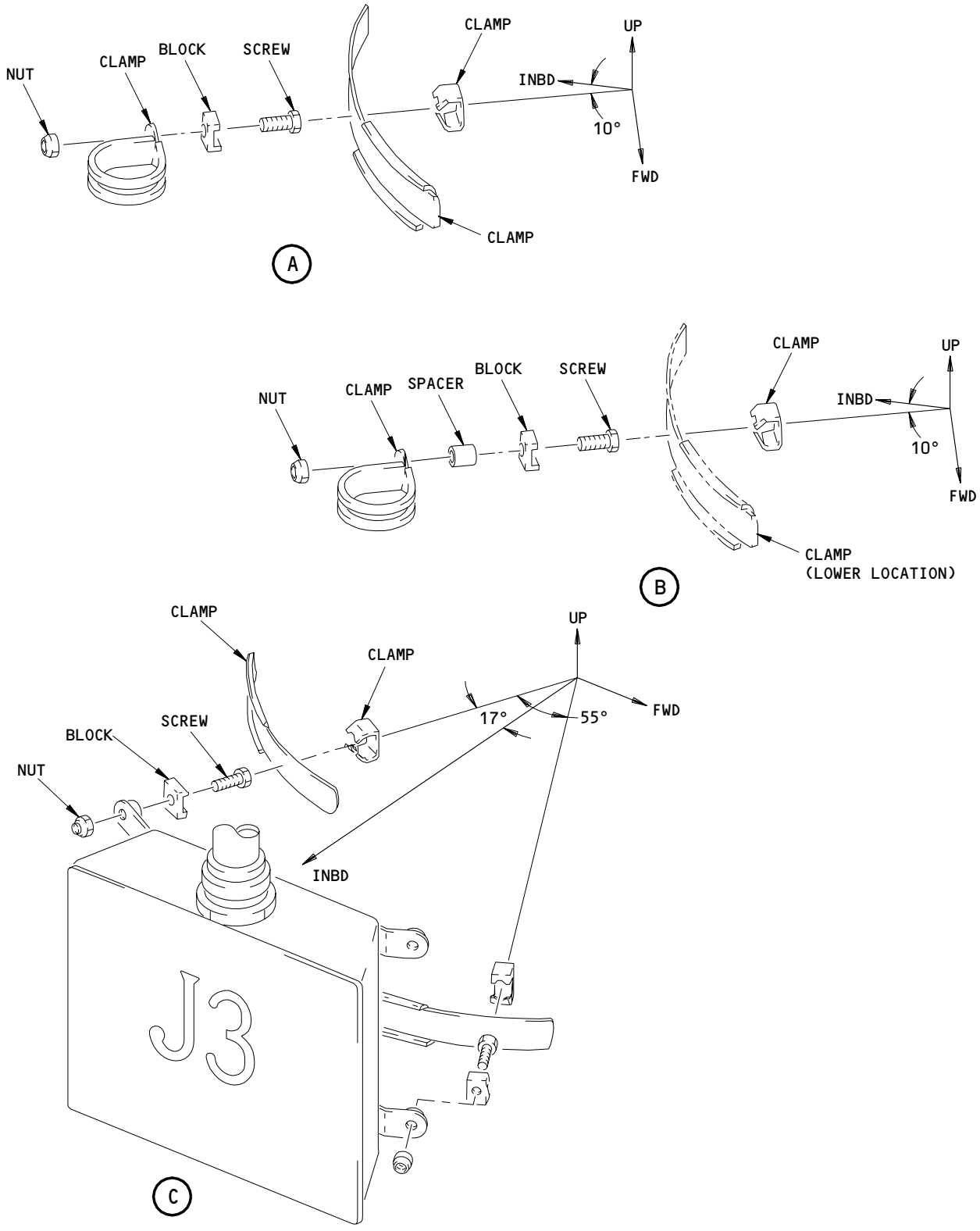


Main landing Gear Outer Cylinder
Figure 402 (Sheet 2)

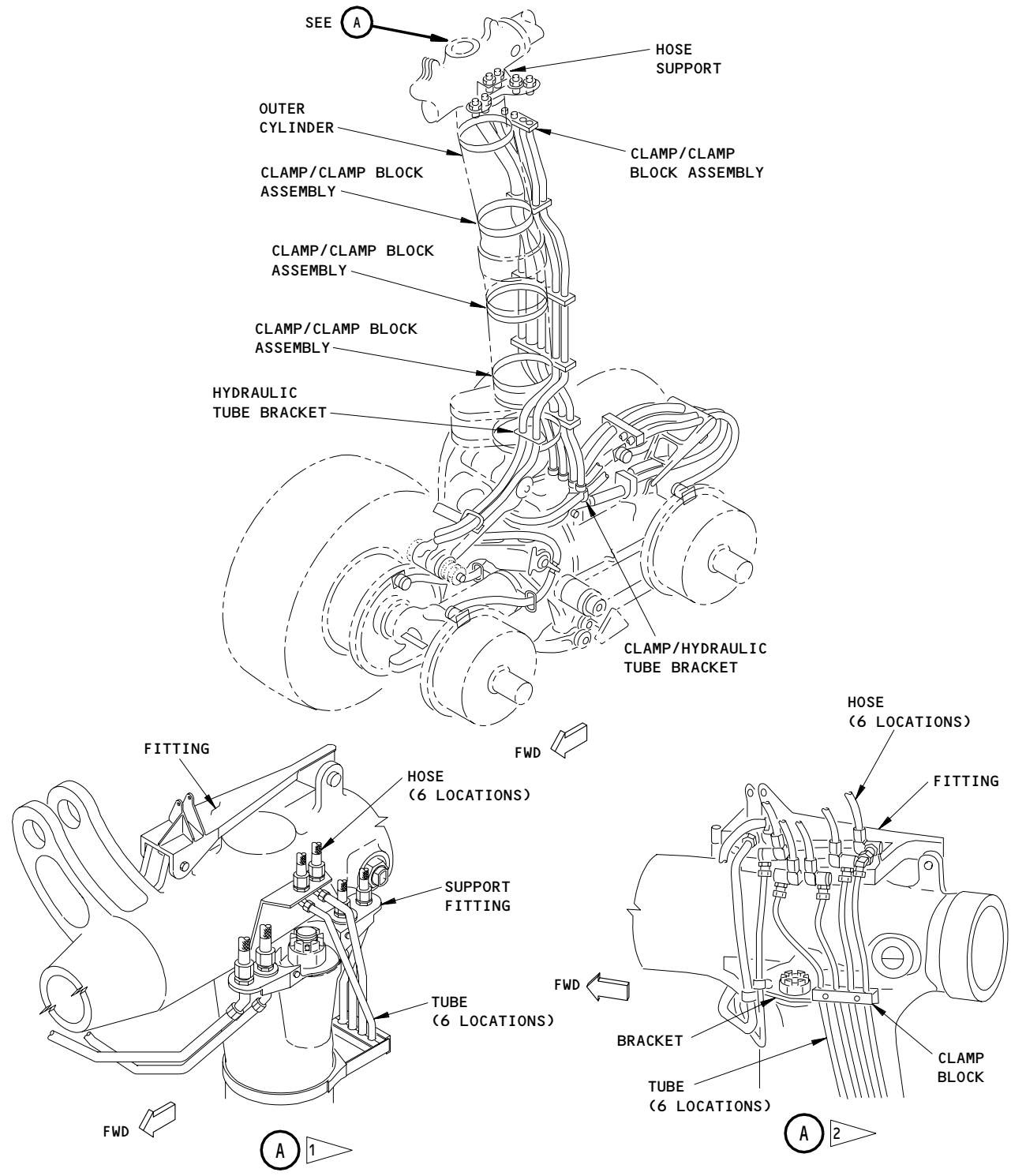


NOTE: ALL DIMENSIONS ARE IN INCHES.

Installation of Electrical Wiring on Outer Cylinder
Figure 403 (Sheet 1)



Installation of Electrical Wiring on Outer Cylinder
Figure 403 (Sheet 2)



1 SHOCK STRUT WITHOUT HYDRAULIC HOSE SWIVEL CONNECTORS.
2 SHOCK STRUT WITH HYDRAULIC HOSE SWIVEL CONNECTORS.

Hydraulic Installation on the Outer Cylinder
Figure 404

(3) AMM 32-11-07/401, Main Gear Side Brace Downlock Fitting
(4) AMM 32-11-13/401, Main Gear Drag Brace Upper and Lower Spindles
(5) AMM 32-11-14/401, Main Gear Drag Brace Downlock Fitting
(6) AMM 32-11-18/401, Main Gear Truck Assembly
(7) AMM 32-11-22/401, Main Gear Torsion Links
(8) AMM 32-41-08/401, Main Gear Wheel Brakes

C. Access

(1) Location Zones

143/144 Main Landing Gear Wheel Well
731/741 Main Landing Gear

D. Prepare for the Removal of the Outer Cylinder

S 014-002

(1) Remove the main landing gear from the airplane (AMM 32-11-01/401).

S 494-003

(2) Make sure the truck positioner turnbuckle and the retention straps for the shock strut are installed on the main landing gear.

S 864-004

(3) Move the main landing gear from the wheel well area.

E. Remove the Outer Cylinder

S 494-005

(1) Install the main gear sling on the trunnion and use the lifting equipment to support the main gear.

S 034-006

CAUTION: CLEAN ALL THE LEAKED HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY. THE FLUID CAN CAUSE DAMAGE TO THE TIRES.

(2) Disconnect the two forward brake hydraulic lines at the outer cylinder. Install caps and plugs in the hydraulic lines.

S 034-007

(3) Disconnect the two aft brake lines at the brake disconnect (AMM 32-41-08/401).

S 034-008

(4) Disconnect the electrical connections at the lower J-box (AMM 32-11-18/401).

S 034-009

(5) Disconnect the upper torsion link from the outer cylinder (AMM 32-11-22/401). Put a pad between the upper and lower torsion links to prevent damage.

S 494-010
(6) Install the drain equipment on the oil charging valve and drain the shock strut.

S 094-011
(7) Remove the drain equipment when all the oil has drained from the shock strut.

S 864-012
(8) Lift the outer cylinder with the lifting equipment until approximately 12 inches of chrome is showing on the inner cylinder.

S 494-013
(9) Wind a cloth pad around the inner cylinder. This will prevent damage to the surface of the inner cylinder if the gland nut moves down (Fig. 401).

S 034-014
(10) Remove the locktab from the gland nut (Fig. 401).

S 034-015
(11) Use the gland nut wrench adapter to loosen the gland nut (Fig. 401).

S 864-016
(12) Move the gland nut to the bottom of the inner cylinder (Fig. 401).

S 864-017
(13) Move the scraper ring down the inner cylinder to the gland nut (Fig. 401).

S 494-018
(14) Install the clamp assembly on the inner cylinder. This will prevent damage to the gland nut from the lower bearing when the outer cylinder is lifted (Fig. 401).

S 984-019

CAUTION: MAKE SURE YOU KEEP THE INNER CYLINDER IN THE CENTER OF THE OUTER CYLINDER AS THE OUTER CYLINDER IS LIFTED. MONITOR THE CLEARANCE BETWEEN THE INNER CYLINDER AND THE OUTER CYLINDER TO MAKE SURE YOU DO NOT CAUSE DAMAGE TO THE INTERNAL COMPONENTS OF THE STRUT.

(15) Continue to lift the outer cylinder until the inner cylinder is completely clear of the outer cylinder. Roll the truck assembly forward and aft as necessary to keep the inner cylinder in the center of the outer cylinder as the outer cylinder is lifted.

S 034-020

(16) Do the steps that follow to remove the fittings for the side strut and drag strut lock actuators from the outer cylinder (Fig. 402, Detail A):
(a) Remove the nuts, washers, and bolts that hold the fittings on the lugs on the outer cylinder
(b) Remove the fittings from the lugs.

S 034-021

(17) Remove the downlock fittings for the side strut (AMM 32-11-07/401).

S 034-054

(18) Remove the downlock fittings for the drag strut (AMM 32-11-14/401).

S 034-022

(19) Remove the side strut lower spindle from the outer cylinder (AMM 32-11-06/401).

S 034-023

(20) Remove the drag strut lower spindle from the outer cylinder (AMM 32-11-13/401).

TASK 32-11-24-404-024

3. Install the Outer Cylinder on the Shock Strut (Fig. 401, Fig. 402, Fig. 403, Fig. 404)

A. Equipment
(1) A32004-1 MLG Gland Nut Wrench Adapter
(2) A32005-54 MLG Lower Bearing Seal Replacement Equipment
(3) A32031-5 MLG Truck Positioner Turnbuckle (Recommended)
(4) A32031-4 MLG Truck Positioner Turnbuckle (Alternative) Make from A32031-1
(5) A32033-17 MLG Sling
(6) Overhead Lifting Equipment (Commercially available)

B. Consumable Materials
(1) G50136 Corrosion Preventative Compound - BMS 3-38

(2) Mylar Tape - Mystik No. 7355
(3) A00247 Sealant, Chromate - BMS 5-95
(4) D00633 Grease - BMS 3-33 (Preferred)
(5) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

C. References
(1) AMM 32-11-01/401, Main Gear
(2) AMM 32-11-06/401, Main Gear Side Brace Upper and Lower Spindles
(3) AMM 32-11-07/401, Main Gear Side Brace Downlock Fitting
(4) AMM 32-11-13/401, Main Gear Drag Brace Upper and Lower Spindles
(5) AMM 32-11-14/401, Main Gear Drag Brace Downlock Fitting
(6) AMM 32-11-18/401, Main Gear Truck Assembly
(7) AMM 32-11-22/401, Main Gear Torsion Links
(8) AMM 32-41-08/401, Main Gear Wheel Brakes

D. Access
(1) Location Zones
143/144 Main Landing Gear Wheel Well
731/741 Main Landing Gear

E. Install the Outer Cylinder

S 494-025
(1) Install the sling on the shock strut trunnion.

S 494-026
(2) Attach the sling to the overhead lifting equipment.

S 494-027
(3) Install thread protectors onto the outer cylinder.

S 584-028
(4) Lift the outer cylinder into position over the inner cylinder.

S 984-029
(5) Align the inner and outer cylinder.

S 984-030

CAUTION: MAKE SURE YOU KEEP THE INNER CYLINDER IN THE CENTER OF THE OUTER CYLINDER AS THE OUTER CYLINDER IS LOWERED. MONITOR THE CLEARANCE BETWEEN THE INNER CYLINDER AND THE OUTER CYLINDER TO MAKE SURE YOU DO NOT CAUSE DAMAGE TO THE INTERNAL COMPONENTS OF THE STRUT.

(6) Carefully lower the outer cylinder. Make sure the fore-and-aft and the inboard-outboard axes stay aligned as the outer cylinder is lowered. Roll the truck assembly forward and aft as necessary to keep the inner cylinder in the center of the outer cylinder as the outer cylinder is lowered.

S 094-031
(7) When the upper bearing is well seated into the outer cylinder, remove the turnbuckle.

S 984-032
(8) Continue to lower the outer cylinder until approximately 20 to 23 inches of chrome shows below the outer cylinder.

S 494-033
(9) Attach the ram clamp assembly below the lower bearing/seal carrier assembly (Fig. 401).

S 984-034

CAUTION: MAKE SURE THE INNER CYLINDER IS IN THE CENTER OF THE OUTER CYLINDER BEFORE YOU PUSH THE LOWER BEARING INTO THE PACKING BORE. IF THE INNER CYLINDER IS NOT IN THE CENTER YOU CAN CAUSE DAMAGE TO THE LOWER BEARING AND SEALS.

(10) Use the ram clamp to push the lower bearing into the outer cylinder packing bore (Fig. 401).

S 624-035
(11) Remove the grease from the threads on the gland nut and the mating threads on the outer cylinder.

S 624-036
(12) Apply a thin layer of BMS 3-38 corrosion preventative compound to the threads on the gland nut.

S 624-037
(13) Apply a thin layer of BMS 3-38 corrosion preventative compound to the threads on the outer cylinder that will mate with the gland nut threads.

S 434-038
(14) Install the scraper ring assembly into the gland nut. Install the gland nut into the outer cylinder (Fig. 401).

S 434-039
(15) Tighten the gland nut to 175-200 pound-feet.
(a) Loosen the gland nut, if it is necessary, to align the holes.
(b) Install the locktab to lock the gland nut in position.

S 414-040
(16) Connect the upper torsion link to the outer cylinder (AMM 32-11-22/401).

S 434-041
(17) Do the steps that follow to install the fittings for the side strut and drag strut lock actuators on the outer cylinder (Fig. 402, Detail A):
(a) Install the fittings on the outer cylinder
(b) Install the bolts with wet sealant BMS 5-95, washers, and nuts on the fitting for the side strut lock actuator
(c) Install the bolts with wet sealant BMS 5-95 on the fitting for the drag strut lock actuator. Apply sealant BMS 5-95 to the faying surfaces of the lock actuator fitting and the door fitting, then install on the bolts. Install the washers and nuts.

S 434-042
(18) Install the downlock fittings for the side strut (AMM 32-11-07/401).

S 434-055
(19) Install the downlock fittings for the drag strut (AMM 32-11-14/401).

S 434-043
(20) Install the drag strut lower spindle on the outer cylinder (AMM 32-11-13/401).

S 434-044
(21) Install the side strut lower spindle on the outer cylinder (AMM 32-11-06/401).

S 034-045
(22) Do the steps that follow to remove the electrical harness from the outer cylinder that was removed from the landing gear (Fig. 403):
(a) Remove the clamps and blocks from the harness
(b) Remove the nuts and washers that fasten the junction box to the cylinder
(c) Remove the brackets and supports from the outer cylinder
(d) Remove the harness from the outer cylinder.

S 434-046

(23) Do the steps that follow to install the electrical harness on the outer cylinder you will install on the landing gear (Fig. 403):

NOTE: Install 2 layers of Mystik No. 7355 Mylar tape under clamps and between mounting blocks, channels, and landing gear substrate surfaces. Clean the surfaces with solvent BMS 3-2, Type I, before you apply the tape.

NOTE: Make sure there are no twists in the flexible conduit when you install it. You can loosen clamps and coupling as necessary, and then tighten them after adjustment.

(a) Install the brackets and clamps that you removed from the old outer cylinder onto the new outer cylinder.
(b) Install the clamps and brackets for the junction box on the new outer cylinder.
(c) Install the junction box that was removed from the old outer cylinder onto the new outer cylinder.
(d) Install the end of the harness on the clamp at the junction box.
(e) Route the harness up the outer cylinder from the junction box and install the clamps and blocks.
(f) Temporarily attach the upper end of the harness to protect it from damage.

S 034-047

(24) Do the steps that follow to remove the hydraulic lines from the outer cylinder that was removed from the landing gear (Fig. 404):
(a) Remove all of the clamps and fasteners from the hydraulic hoses and tubing
(b) Remove the clamps from the shock strut.

S 434-048

(25) Do the steps that follow to install the hydraulic lines from the old outer cylinder onto the new outer cylinder (Fig. 404):
(a) Install the hose support at the top of the outer cylinder.
(b) Install the clamps and the clamp block assemblies that you removed from the old outer cylinder onto the new outer cylinder.
(c) Install the clamp and hydraulic tube bracket that you removed from the old outer cylinder onto the bottom of the new outer cylinder.

CAUTION: USE THE INDEX LINE ON THE SIDE OF THE HOSE TO FIND OUT IF THE HOSE IS TWISTED. IF THE HOSE IS TWISTED, A HOSE CAN FAIL OR A HOSE COUPLING CAN LEAK.

(d) Install the hydraulic lines in the clamp block assemblies on the outer cylinder. Adjust the lines in the clamp blocks to eliminate twists and too much looseness or strain. Then tighten the clamp block hardware.
(e) Connect the hydraulic lines to the hydraulic tube bracket at the bottom of the new outer cylinder.
(f) Install the tube bracket at the lug above the top torsion link on the forward side of the outer cylinder.

S 414-049
(26) Connect the electrical connections at the lower J-box (AMM 32-11-18/401).

S 414-050
(27) Remove the caps and plugs from the hydraulic lines and connect the two forward lines at the bracket on the outer cylinder (AMM 32-41-08/401).

F. Put the Airplane Back to Its Usual Condition.

S 864-051
(1) Move the main landing gear into the wheel well area.

S 414-052
(2) Install the main landing gear (AMM 32-11-01/401).

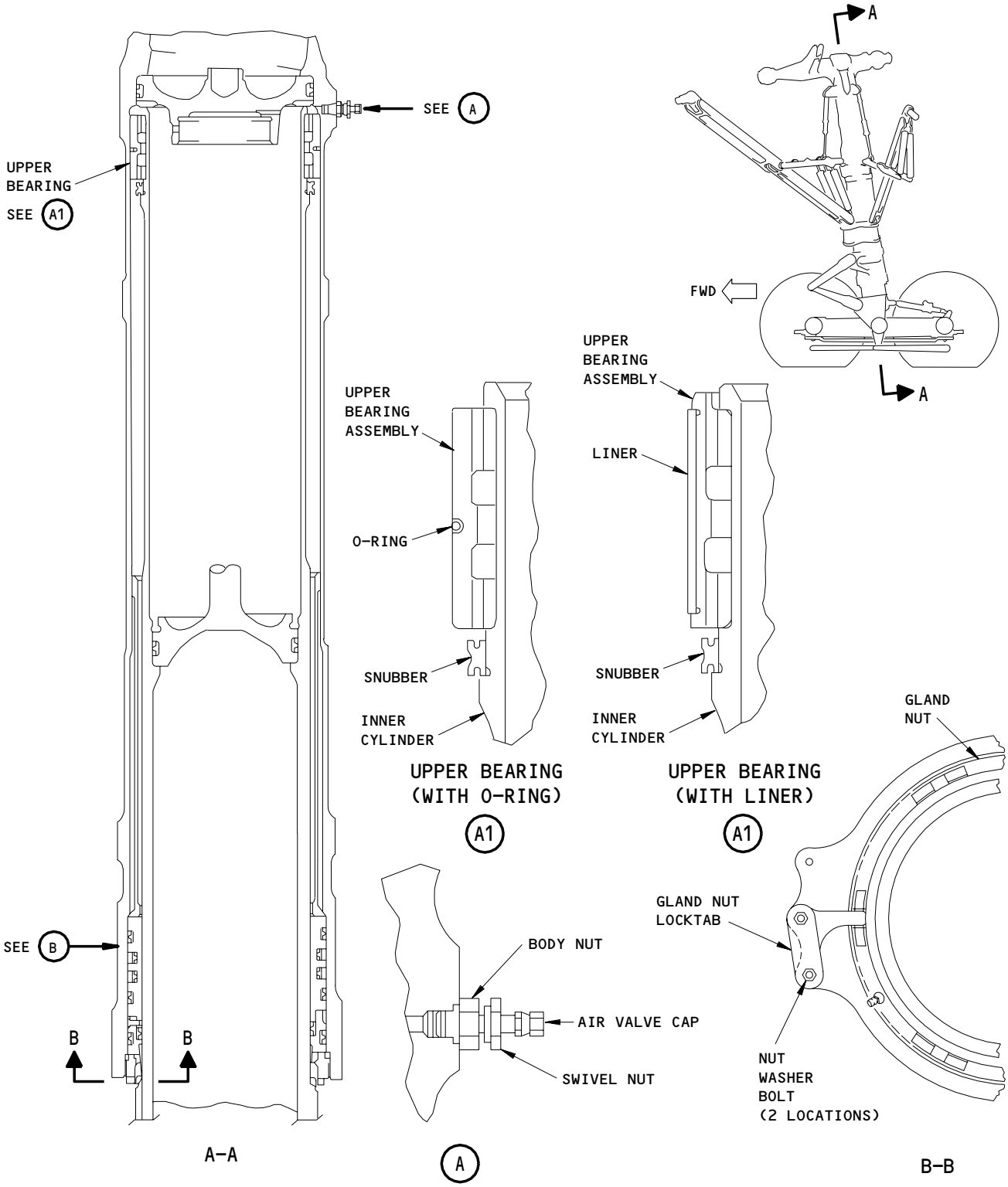
MAIN GEAR SHOCK STRUT SEALS - MAINTENANCE PRACTICES

1. General
   A. This procedure contains these three tasks to replace the seals on the shock strut of the main landing gear:
      (1) A procedure to replace the active static and dynamic seals with the spare seals that are carried in the shock strut. The spare seals are in the grooves of the lower bearing assembly.
      (2) A procedure to replace active and spare seals over the fork at the bottom of the inner cylinder. This procedure is used when the spare seals have been used.
      (3) A procedure to replace the active and spare seals over the top of the inner cylinder. This procedure is preferred but requires equipment with the capability to lift the airplane on jacks to a height necessary to remove the inner cylinder.
   B. The Lower Bearing Assembly, which holds the seals, for the MLG Shock Strut contains the parts that follow:
      (1) SHOCK STRUTS WITH TWO SETS OF SPARE SEALS (1/4-INCH THICK SEAL); The lower bearing assembly has a lower bearing and a seal carrier that are joined with three pins. The active seals are located in the grooves of the seal carrier. The spare seals are located in the grooves of the lower bearing.
   C. We recommend that you do these procedures in a sheltered and clean environment. This will prevent contamination of the seals which can cause seal leakage.

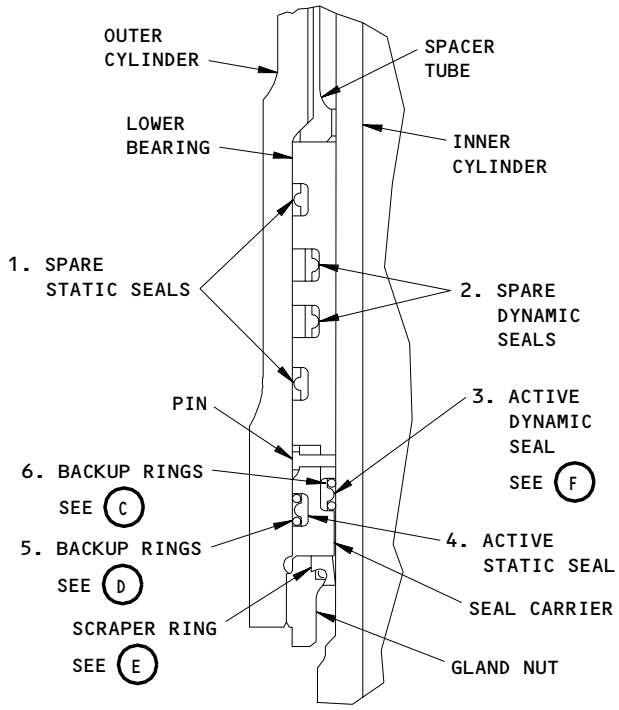
      NOTE: During the initial landing cycles of a new landing gear, thin dark olive-green streaks on the shock strut frequently occur. This condition is okay. The petrolatum and grease that we use during shock strut assembly cause these streaks. These streaks will stop after more landing cycles occur. These streaks are different from the red color streaks that are the indication of strut fluid leakage.

TASK 32-11-25-962-001

2. Active Seal Replacement With the Spare Seals (Fig. 201, Fig. 202)



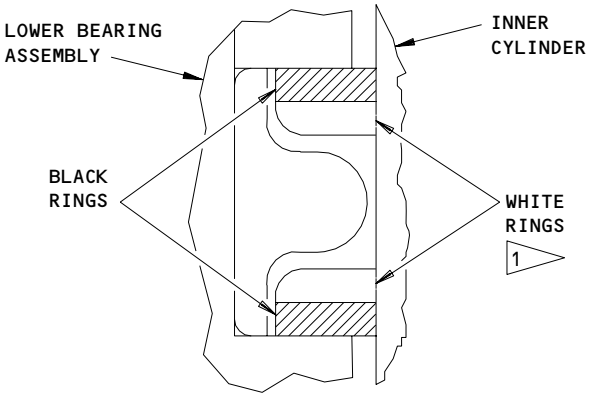
Seal Installation for the Shock Strut of the Main Landing Gear
Figure 201 (Sheet 1)



LOWER BEARING ASSEMBLY WITH
2 SETS OF 1/4-INCH SPARE SEALS

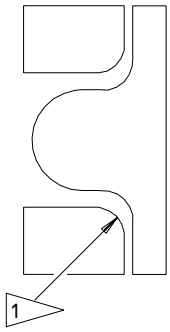
B

Seal Installation for the Shock Strut of the Main Landing Gear
Figure 201 (Sheet 2)



BACKUP RINGS
(ACTIVE DYNAMIC SEAL)

C

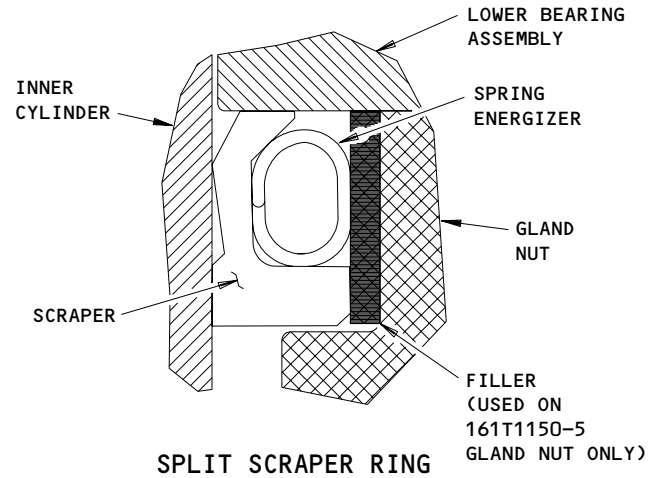


BACKUP RINGS
(ACTIVE STATIC SEAL)

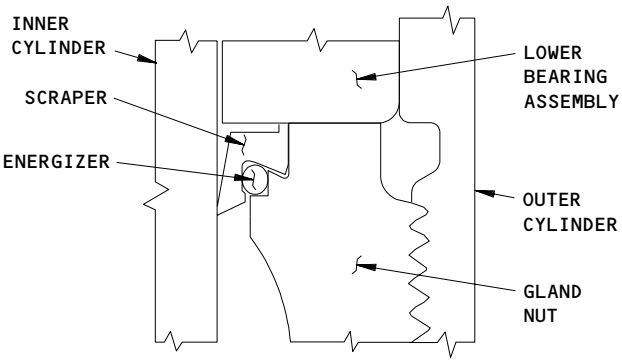
D

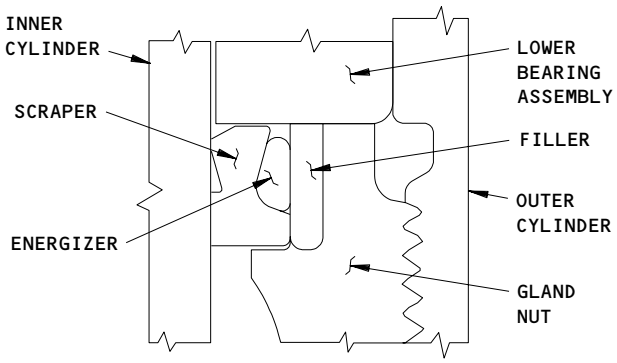
1 INSTALL RADIUS TOWARD THE SEAL

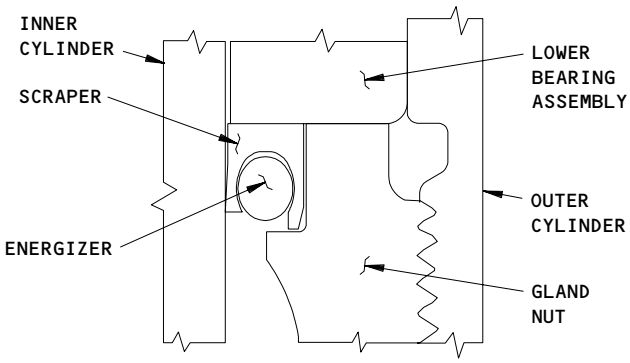
Seal Installation for the Shock Strut of the Main Landing Gear
Figure 201 (Sheet 3)

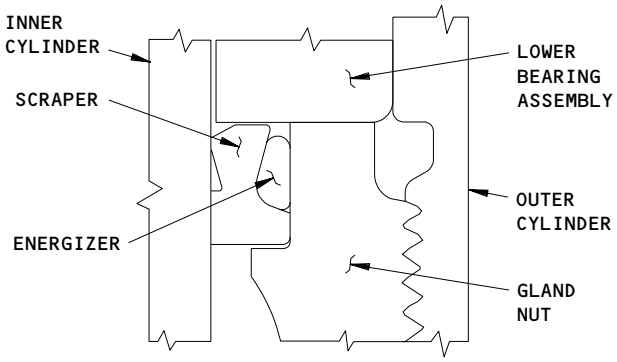


SPLIT SCRAPER RING (EXAMPLE)

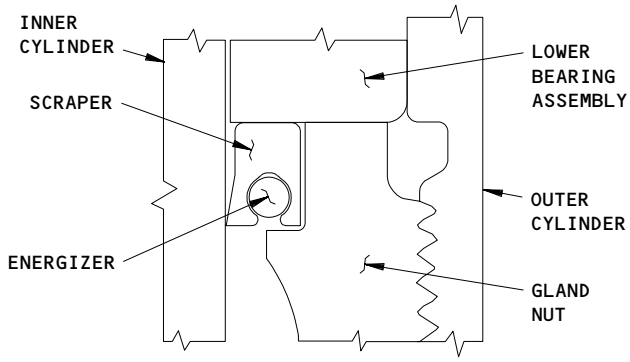








SHAMBAN SCRAPER RINGS

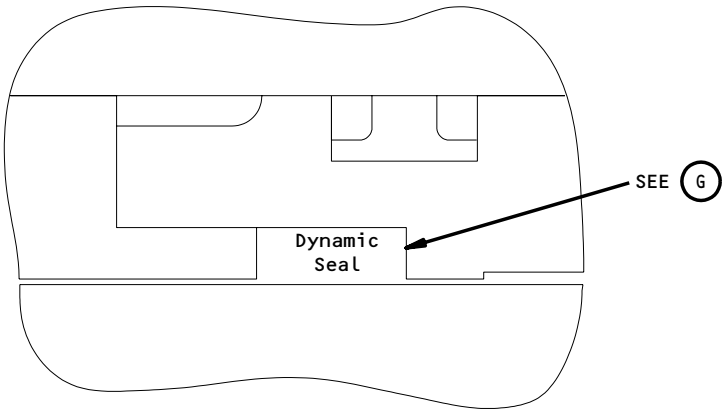


GREENE TWEED SCRAPER RINGS

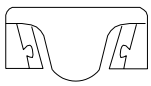
SCRAPER RING INSTALLATION

(E)

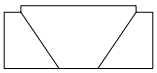
Seal Installation for the Shock Strut of the Main Landing Gear
Figure 201 (Sheet 4)



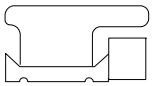
ALTERNATE DYNAMIC
SEAL CONFIGURATIONS
F



ACT RING
G 1



WEDG PAK
G 1

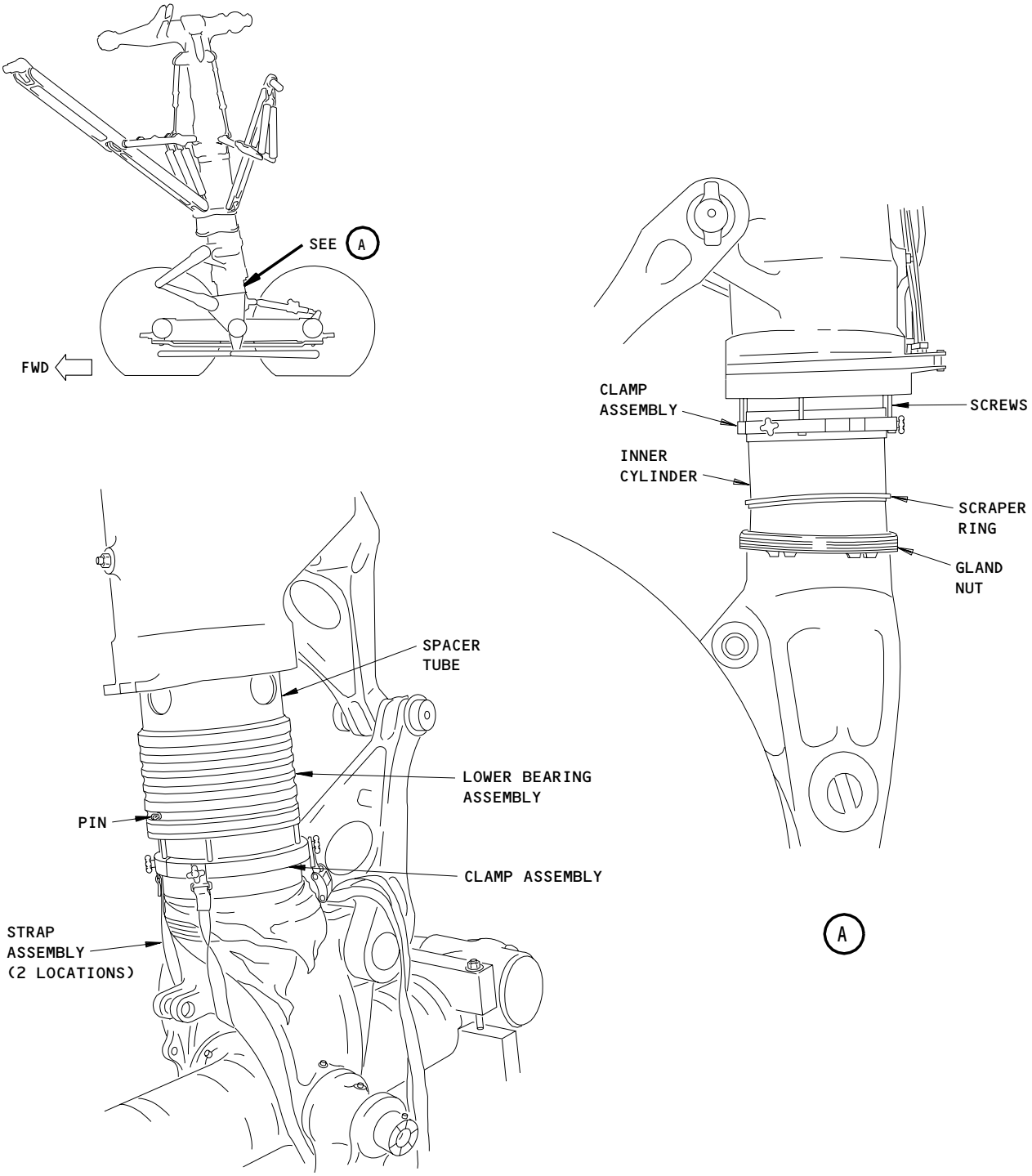


ACGTL RING
G 2

1 CAN BE USED IN ACTIVE OR SPARE POSITION

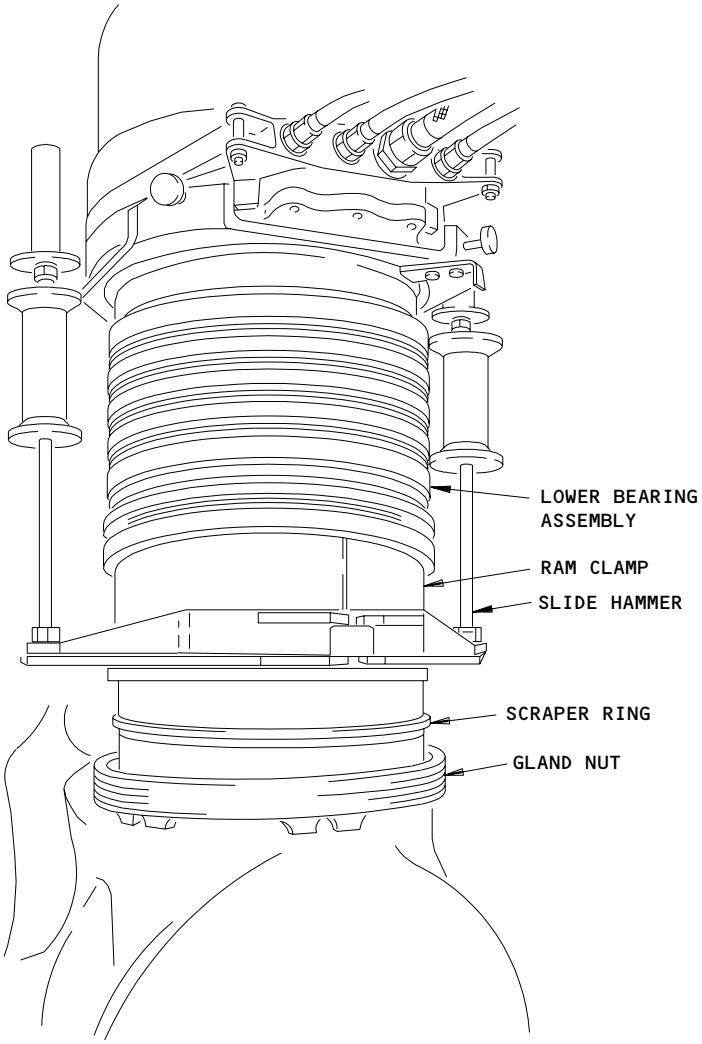
2 TO INSTALL THIS SEAL, AN INSTALLATION SLEEVE IS RECOMMENDED

Seal Installation for the Shock Strut of the Main Landing Gear
Figure 201 (Sheet 5)



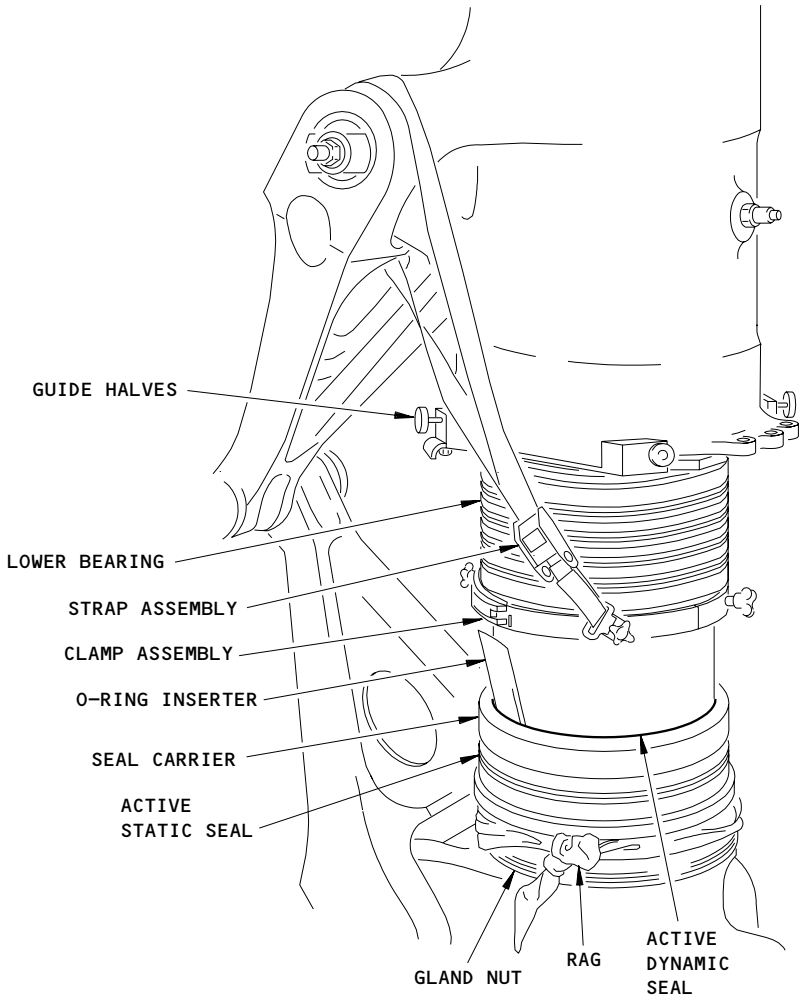
LOWER BEARING ASSEMBLY
AND CLAMP ASSEMBLY

Equipment for the Seal Installation on the Shock Strut for the Main Landing Gear
Figure 202 (Sheet 1)



RAM CLAMP INSTALLED

Equipment for the Seal Installation on the Shock Strut for the Main Landing Gear
Figure 202 (Sheet 2)



SEPARATION OF THE LOWER BEARING
ASSEMBLY AND O-RING INSERTER

Equipment for the Seal Installation on the Shock Strut for the Main Landing Gear
Figure 202 (Sheet 3)

NOTE: The inner cylinder of the shock strut does not need to be removed to do this task.

A. Equipment
   (1) A32004-1 MLG Gland Nut Wrench Adapter
   (2) A32005-54 MLG Lower Bearing Seal
       Replacement Equipment
   (3) A32066-1 MLG/NLG Shock Strut Drain Equipment
   (4) O-Ring Inserter (Commercially Available)
       Cleveland Pneumatics P/N T92321
   (5) PF55451-23 MLG/NLG Shock Strut Servicing Cart
   (6) F70200-14 MLG/NLG Shock Strut Inflator

B. Consumable Materials
   (1) D00633 Grease - BMS 3-33 (Preferred)
   (2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
   (3) D00467 Hydraulic Fluid - BMS 3-32 Type II (Recommended)
   (4) D00510 Lubrizol 1395
   (5) D00508 Hydraulic Fluid MIL-H-5606 plus Lubrizol (ratio 41:1) (Alternative)
   (6) D00509 Hydraulic Fluid MIL-H-6083 plus Lubrizol (ratio 41:1) (Alternative)
   (7) G50136 Compound, Corrosion Inhibiting - BMS 3-38
   (8) D00589 Lubricant, Hydraulic Assembly - AFS-682 (Recommended)
   (9) D00128 Lubricant, Petrolatum - VV-P-236 (Alternative)
   (10) A00226 Compound, Sealing - BMS 8-45

C. References
   (1) AMM 07-11-01/201, Jacking Airplane
   (2) AMM 07-11-03/201, Jacking Airplane Axles
   (3) AMM 12-15-01/301, Main Gear Shock Strut
   (4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
   (5) AMM 32-00-15/201, Landing Gear Door Locks
   (6) AMM 32-00-20/201, Landing Gear Downlocks
   (7) AMM 32-11-02/201, Main Gear Shock Strut

D. Access
   (1) Location Zones
       731/741 Main Landing Gear

E. Prepare to Replace the Seals

S 482-227

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 482-228

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 862-004

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 162-354

(4) Wipe the chrome surface that is visible on the inner cylinder with a rag that is soaked with shock strut fluid. Do this to remove any abrasive material that is collected on the inner cylinder. Remove the debris in a downward motion. This will make sure you do not push debris into the shock strut when you wipe the inner cylinder.

S 862-005

WARNING: CLEAR THE AREA BELOW THE WING BEFORE YOU DEFLATE THE SHOCK STRUT. IF YOU DEFLATE ONE SHOCK STRUT, THE WING TIP CAN MOVE DOWN AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Deflate the shock strut (Fig. 201, View A).
   (a) Remove the cap for the air valve.

   WARNING: LOOSEN THE AIR VALVE NUT A MAXIMUM OF TWO TURNS. AIR PRESSURE CAN BLOW THE VALVE OFF AND CAN CAUSE INJURY TO PERSONS.

   (b) Loosen the swivel nut for the air valve, two turns.
   (c) Let the shock strut deflate fully.
   (d) Loosen the air valve nut fully and leave it open.

S 492-006

CAUTION: CLEAN ALL THE FLUID FROM THE TIRES IMMEDIATELY. THE HYDRAULIC FLUID CAN CAUSE DAMAGE TO THE TIRES.

(6) Install the drain equipment on the oil charging valve.

S 092-007

(7) Remove the drain equipment when all the oil has drained from the shock strut.

S 212-355
(8) Examine the chrome surface of the inner cylinder for damage (AMM 32-00-03/601).

S 582-008
(9) Lift the airplane until you see approximately 12 inches of chrome on the inner cylinder (AMM 07-11-01/201).

S 862-009
(10) Wind a cloth around the inner cylinder. This will prevent damage to the surface of the inner cylinder when you move the gland nut down.

S 032-010
(11) Remove the locktab from the gland nut (View B-B).

S 032-011

CAUTION: CLEAN ALL THE LEAKED HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY. THE FLUID CAN CAUSE DAMAGE TO THE TIRES.

(12) Use the gland nut wrench adapter to loosen the gland nut (Detail B).

S 862-012
(13) Move the gland nut to the bottom of the inner cylinder.

S 862-013
(14) Move the scraper ring down the inner cylinder into the gland nut.

S 862-251
(15) Wind a cloth around the gland nut and the scraper ring to prevent damage to them.

S 492-014
(16) Install the guide halves on the outer cylinder. Make sure the spacer retainers on the guide halves are pulled out.

S 492-015
(17) Put the clamp assembly around the inner cylinder, loosely.

NOTE: The clamp assembly must be loose to let the inner cylinder move freely when you lift the axle with the jacks.

S 432-245
(18) Install the screws to attach the clamp assembly to the bottom of the lower bearing assembly.

S 492-016
(19) Put the axle jacks below the two ends of the truck beam.

S 862-017
(20) Use the axle jacks to lift the landing gear truck/inner cylinder until there is approximately 1.5 inches between the gland nut and the bottom of the screws (AMM 07-11-03/201).

S 432-127
(21) Do the steps that follow to install the two strap assemblies on the clamp and under the fork of the inner cylinder:
(a) Put the two strap assemblies below the fork of the inner cylinder and the lower torsion link.
(b) Cross the straps under the fork of the inner cylinder
(c) Put the buckles on the aft side of the clamp assembly.

S 432-018
(22) Tighten the clamp assembly around the inner cylinder.

S 942-200
(23) Cover the tires and brake assemblies before you lower the axle jacks. This will protect the tires and brakes from hydraulic fluid.

S 862-019
(24) Lower the axle jacks (AMM 07-11-03/201).

NOTE: As you lower the jacks, the clamp assembly will pull the lower bearing assembly out of the outer cylinder.

S 012-020
(25) Pull the lower bearing assembly out of the outer cylinder.

NOTE: When the lower bearing assembly comes out, some hydraulic fluid that did not drain will come out of the outer cylinder.

S 162-201
(26) Clean up the hydraulic fluid that was spilled.

S 492-202
(27) Move the spacer tube, that is above the lower bearing assembly, up into the outer cylinder and lock it in place with the retainers on the guide halves.

S 092-203
(28) Remove the straps from the clamp assembly.

S 092-204
(29) Remove the screws that hold the clamp assembly on the lower bearing assembly.

S 092-021
(30) Remove the axle jacks.

F. Replace the Active Static Seal (Fig. 201)

S 012-022
(1) Remove the two backup rings from the groove for the active static seal.

S 212-249
(2) Examine the backup rings, replace if necessary.

S 032-024

CAUTION: BE CAREFUL NOT TO CAUSE DAMAGE TO THE INNER CYLINDER. DAMAGE ON THE SURFACE OF THE CYLINDER CAN CAUSE DAMAGE TO THE SEALS.

(3) Cut and remove the active static seal.

NOTE: Use a plastic tool and a backup strip to prevent damage to the groove.

S 862-025
(4) Move the spare static seal out of the spare seal groove.

S 642-026
(5) Apply a thin layer of hydraulic fluid and petrolatum to the seal and the backup rings.

S 862-027
(6) Move the spare static seal into the outer groove for the active static seal (View B).

NOTE: Do not extend the seal more than necessary for the installation.

S 432-205
(7) Install the backup rings (5) (View D).

NOTE: Make sure the backup ring to seal radius is correct.

S 822-246
(8) Make sure that the scarf cuts on the backup rings for the active static seal are approximately 180 degrees from each other.

G. Replace the Active Dynamic Seal (Fig. 201)

S 032-028
(1) Remove the pins from the lower bearing assembly.

S 862-029
(2) Move the lower bearing up and hold it with the stop on the guide assembly.

S 862-031
(3) Move the seal carrier up and down until you see the active dynamic seal.

S 022-317
(4) Remove the two upper backup rings for the active dynamic seal.

S 032-034

CAUTION: BE CAREFUL NOT TO CAUSE DAMAGE TO THE INNER CYLINDER. DAMAGE ON THE SURFACE OF THE INNER CYLINDER CAN CAUSE DAMAGE TO THE SEALS.

(5) Cut and remove the active dynamic seal.

NOTE: Use a plastic tool and a backup strip to prevent damage to the surface of the inner cylinder.

S 022-318
(6) Remove the two lower backup rings for the dynamic seal.

S 212-250
(7) Examine the backup rings, replace if necessary.

S 862-035
(8) Move the spare dynamic seal out of the spare seal groove.

S 642-037
(9) Apply a thin layer of hydraulic fluid and petrolatum to the seal and the backup rings.

S 432-207
(10) Install the lower black backup ring for the dynamic seal (View C).

S 432-208
(11) Install the lower white backup ring for the dynamic seal (View C). Position the scarf cut on the white backup ring approximately 180 degrees from the scarf cut on the black backup ring.

NOTE: Make sure the backup ring to seal radius is correct.

S 862-036
(12) Position the spare dynamic seal on top of the white backup ring (View C). Work on opposite sides of the shock strut when you push the dynamic seal into position. Use the o-ring inserter and work around the strut to get the seal correctly installed.

NOTE: Do not extend the seal more than necessary for the installation.

S 432-209
(13) Install the upper white backup ring for the dynamic seal (View C).

NOTE: Make sure the backup ring to seal radius is correct.

S 432-210
(14) Install the upper black backup ring for the dynamic seal (View C). Position the scarf cut on the upper black backup ring approximately 180 degrees from the scarf cut on the upper white backup ring.

S 492-039
(15) Install the ram clamp and the slide hammer assembly on the inner cylinder and position them above the upper backup rings for the active dynamic seal.

S 862-040
(16) Use the ram clamp assembly to push the active dynamic seal down into the correct position.

S 092-041
(17) Remove the ram clamp assembly.

S 092-044
(18) Remove the clamp assembly from the inner cylinder.

S 862-042
(19) Position the lower bearing on the seal carrier and align the holes for the pins.

S 422-320
(20) Apply a layer of petrolatum to the pins of the lower bearing assembly.

NOTE: This will hold the pins in the assembly.

S 422-321
(21) Install the pins in the lower bearing assembly.

H. Put the Airplane Back to Its Usual Condition.

S 492-045
(1) Put the ram clamp assembly around the inner cylinder, below the lower bearing assembly.

S 862-046
(2) Use the ram clamp assembly to push the lower bearing assembly into the outer cylinder.

S 092-211
(3) Remove the tape just before the lower bearing assembly enters the outer cylinder.

S 092-047
(4) Remove the ram clamp assembly.

S 092-212
(5) Remove the guide halves from the outer cylinder.

S 862-048
(6) Move the scraper ring up the inner cylinder to the lower bearing assembly (Fig. 201, View E).

NOTE: Make sure the orientation of the scraper ring is correct. The illustration shows all of the possible configurations that can be installed on the main landing gear.

S 642-197
(7) GLAND NUT WITH A LUBE FITTING INSTALLED;
Apply grease to the threads of the gland nut.

S 622-194
(8) GLAND NUT WITHOUT A LUBE FITTING;
Do these steps:
(a) Remove the grease from the threads on the gland nut and the mating threads on the outer cylinder.
(b) Apply a thin layer of corrosion preventative compound to the threads on the gland nut.
(c) Apply a thin layer of corrosion preventative compound to the threads on the outer cylinder that will mate with the gland nut threads.

S 862-050
(9) Move the gland nut up the inner cylinder into the correct position.

S 432-051
(10) Tighten the gland nut, with the gland nut wrench adapter, to 175-200 pound-feet.

S 432-304

(11) To install the locktab for the gland nut do the steps that follow (View B-B):

(a) Apply a layer of grease to the bolts, nuts, and washers.

(b) Align the locktab with the holes on the outer cylinder and a slot on the gland nut.

NOTE: Loosen the gland nut, if it is necessary, a small quantity until the locktab is aligned correctly.

(c) Install the bolts, nuts, and washers to connect the locktab to the outer cylinder. This will lock the gland nut in the correct position.

(d) Apply a layer of the sealing compound.

S 582-053

(12) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 612-054

(13) Do the servicing of the shock strut for the main landing gear (AMM 12-15-01/301).

S 642-352

CAUTION: DO NOT OVER LUBRICATE THE GLAND NUT. USE MINIMUM PRESSURE ON THE HANDPUMP TO APPLY THE GREASE. APPLY THE EQUIVALENT OF 3-5 PUMPS OF A MEDIUM SIZE GREASE GUN. OVER LUBRICATION OR EXCESSIVE LUBE PRESSURE CAN CAUSE DAMAGE TO THE SCRAPER RING AND/OR SEALS.

(14) Lubricate the grease fittings, if installed, on the gland nut.

S 082-229

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(15) Remove the door locks and close the doors (AMM 32-00-15/201).

S 792-237

(16) Do a Shock Strut Seal Leak Inspection (AMM 32-11-02/201).

TASK 32-11-25-962-056

3. Active and Spare Seal Replacement (Fig. 201, Fig. 202)

NOTE: Use this procedure if you do not have the jacks to lift the airplane high enough to replace seals over the top of the inner cylinder. When you use this procedure it is necessary to stretch the replacement seals over the fork on the inner cylinder. The seals can be damaged when you do this. It will also cause a permanent deformation of the seals that will make them difficult to install.

A. Equipment
   (1) A32032-64 MLG Jacking Equipment
   (Upgraded -52 kit that includes a new -68 tiny collar for IGW A/Ps)

   NOTE: To use this equipment, two 4 ton jacks will be necessary. These jacks are not included in this equipment set.

   (2) A32066-1 MLG/NLG Shock Strut Drain Equipment

B. Consumable Materials
   (1) G50136 Compound, Corrosion Inhibiting - BMS 3-38
   (2) D00633 Grease - BMS 3-33 (Preferred)
   (3) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
   (4) D00467 Hydraulic Fluid - BMS 3-32 Type II (Recommended)
   (5) D00510 Lubrizol 1395
   (6) D00508 Hydraulic Fluid MIL-H-5606 plus Lubrizol (ratio 41:1) (Alternative)
   (7) D00509 Hydraulic Fluid MIL-H-6083 plus Lubrizol (ratio 41:1) (Alternative)
   (8) D00589 Lubricant, Hydraulic Assembly - AFS-682 (Recommended)
   (9) D00128 Lubricant, Petrolatum - VV-P-236 (Alternative)
   (10) A00226 Compound, Sealing - BMS 8-45

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
201	1	Spare Static Seal	32-11-02	03W	415
	2	Spare Dynamic Seal			420
					428
					445
	3	Active Dynamic Seal			420
					428
					445
	4	Active Static Seal			415
	5	Backup Ring			425
					448
	6	Backup Ring			475

D. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 07-11-03/201, Jacking Airplane Axles
(3) AMM 12-15-01/301, Main Gear Shock Strut
(4) AMM 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-00-20/201, Landing Gear Downlocks
(6) AMM 32-09-09/401, Main Gear Truck Tilt Sensor Target
(7) AMM 32-11-02/201, Main Gear Shock Strut
(8) AMM 32-11-18/401, Main Gear Truck Assembly
(9) AMM 32-11-20/401, Main Gear Brake Rods
(10) AMM 32-11-22/401, Main Gear Torsion Links
(11) AMM 32-32-00/501, Main Gear Extension and Retraction
(12) AMM 32-32-18/401, Main Gear Truck Positioner

E. Access
(1) Location Zones
731/741 Main Landing Gear

F. Prepare for the Seal Replacement

S 482-230

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 482-231

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 862-059

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 162-356

(4) Wipe the chrome surface that is visible on the inner cylinder with a rag that is soaked with shock strut fluid. Do this to remove any abrasive material that is collected on the inner cylinder. Remove the debris in a downward motion. This will make sure you do not push debris into the shock strut when you wipe the inner cylinder.

S 862-060

WARNING: CLEAR THE AREA BELOW THE WING BEFORE YOU DEFLATE ONE SHOCK STRUT. IF YOU DEFLATE ONE SHOCK STRUT, THE WING TIP CAN MOVE DOWN AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Deflate the shock strut (Detail A).
   (a) Remove the cap for the air valve.

   WARNING: LOOSEN THE NUT FOR THE AIR VALVE A MAXIMUM OF TWO TURNS. AIR PRESSURE CAN BLOW THE VALVE OFF AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

   (b) Loosen the nut for the air valve two turns.
   (c) Let the shock strut deflate fully.
   (d) Loosen the air valve nut fully.

S 492-061

WARNING: CLEAN ALL THE LEAKED HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY. THE FLUID CAN CAUSE DAMAGE TO THE TIRES.

(6) Install the drain equipment on the oil charging valve.

S 092-062

(7) Remove the drain equipment when all the oil has drained from the shock strut.

S 212-357
(8) Examine the chrome surface of the inner cylinder for damage (AMM 32-00-03/601).

S 032-063
(9) Disconnect the truck positioner from the inner cylinder, do not disconnect the hydraulic hoses (AMM 32-32-18/401).
(a) Use a rope to hold the truck out of the work area.

S 032-064
(10) Remove the target for the truck tilt sensor of the main landing gear, from the shock strut (AMM 32-09-09/401).

S 032-065
(11) Disconnect the brake rods from the inner cylinder (AMM 32-11-20/401).

S 582-066
(12) Lift the airplane until you see approximately 12 inches of chrome on the inner cylinder (AMM 07-11-01/201).

S 492-067
(13) Install the jacking equipment for the main landing gear. Use the instructions supplied with the tool.

S 032-068
(14) Disconnect the truck assembly from the inner cylinder (AMM 32-11-18/401).

S 862-069
(15) Lift the fork of the inner cylinder, to get the clearance necessary to install the seals. Use the jacking equipment.

S 642-070
(16) Apply a thin layer of hydraulic fluid to the seals.

S 862-071

CAUTION: BE CAREFUL WITH THE SEALS WHEN YOU INSTALL THEM. IF YOU EXTEND THEM TOO FAR OR TOUCH THEM TO SHARP EDGES, YOU CAN CAUSE DAMAGE TO THE SEALS.

(17) In the sequence that follows, extend the new seals around the fork of the inner cylinder:
(a) The active dynamic seal (3)
(b) The active static seal (4)
(c) The spare static and dynamic seals (1, 2).

S 862-072
(18) Move the seals above the attach hole for the truck assembly.

S 862-073
(19) Use the jacking equipment, to lower the inner cylinder.

S 432-074
(20) Install the pivot pin for the truck, to connect the truck assembly to the inner cylinder (AMM 32-11-18/401).

S 092-075
(21) Remove the jacking equipment for the main landing gear.

S 012-076
(22) Disconnect the lower torsion link from the shock strut (AMM 32-11-22/401).

S 862-077
(23) Keep the torsion links away from the work area. They could cause damage to the surface of the inner cylinder.

S 862-078
(24) Wind a cloth pad around the inner cylinder. This will prevent damage to the surface of the inner cylinder if the gland nut moves down.

S 032-079
(25) Remove the locktab of the gland nut (View B-B).

S 032-080

CAUTION: CLEAN ALL THE FLUID FROM THE TIRES IMMEDIATELY. THE HYDRAULIC FLUID CAN CAUSE DAMAGE TO THE TIRES.

(26) Use the gland nut wrench adapter to loosen the gland nut.

S 862-081
(27) Move the gland nut to the bottom of the inner cylinder (Detail B).

S 862-082
(28) Move the scraper ring down the inner cylinder into the gland nut.

S 862-083
(29) Wind a cloth around the gland nut and the scraper ring to prevent damage to them.

S 492-084
(30) Install the guide halves on the outer cylinder. Make sure the spacer retainers on the guide halves are pulled out.

S 492-085
(31) Put the clamp assembly around the inner cylinder, loosely.

NOTE: The clamp assembly must be loose to let the inner cylinder move freely when you lift the airplane with the jacks.

S 432-252
(32) Install the screws to attach the clamp assembly to the bottom of the lower bearing assembly.

S 492-086
(33) Put the axle jacks below the two ends of the truck beam.

S 862-087
(34) Use the axle jacks to lift the landing gear truck/inner cylinder until there is approximately 1.5 inches between the gland nut and the bottom of the screws (AMM 07-11-03/201).

S 432-253
(35) Do the steps that follow to install the two strap assemblies on the clamp and under the fork of the inner cylinder:
(a) Put the two strap assemblies below the fork of the inner cylinder and the lower torsion link.
(b) Cross the straps under the fork of the inner cylinder
(c) Put the buckles on the aft side of the clamp assembly.

S 432-088
(36) Tighten the clamp assembly around the inner cylinder.

S 942-254
(37) Cover the tires and brake assemblies before you lower the axle jacks. This will protect the tires and brakes from hydraulic fluid.

S 862-089
(38) Lower the axle jacks (AMM 07-11-03/201).

NOTE: As you lower the jacks, the clamp assembly will pull the lower bearing assembly out of the outer cylinder.

S 862-090
(39) Pull the lower bearing assembly out of the outer cylinder.

NOTE: When the lower bearing assembly comes out, some hydraulic fluid that did not drain will come out of the outer cylinder.

S 162-323
(40) Clean up the hydraulic fluid that was spilled.

S 982-324
(41) Move the spacer tube, that is above the lower bearing assembly, up into the outer cylinder and lock it in place with the retainers on the guide halves.

S 082-325
(42) Remove the straps from the clamp assembly.

S 082-326
(43) Remove the screws that hold the clamp assembly on the lower bearing assembly.

S 082-327
(44) Remove the axle jacks.

G. Replace the Active and Spare Seals

S 022-328
(1) Remove the pins from the lower bearing assembly.

S 862-093
(2) Move the lower bearing up and hold it with the stop on the guide assembly.

S 862-095
(3) Move the seal carrier up and then down to see the active dynamic seal.

S 862-096
(4) Remove the two upper backup rings from the active dynamic seal.

S 032-098

CAUTION: BE CAREFUL NOT TO CAUSE DAMAGE TO THE INNER CYLINDER. DAMAGE ON THE SURFACE OF THE INNER CYLINDER CAN CAUSE DAMAGE TO THE SEALS.

(5) Cut and remove the active dynamic seal.

NOTE: Use a plastic tool and a backup strip to prevent damage to the surface of the inner cylinder cylinder.

S 032-255
(6) Remove the two lower backup rings for the active dynamic seal.

S 212-256
(7) Examine the backup rings, replace if necessary.

S 642-257
(8) Apply a thin layer of hydraulic fluid and petrolatum to the new dynamic seal and the backup rings.

S 432-258
(9) Install the lower black backup ring for the dynamic seal (View C).

S 432-259
(10) Install the lower white backup ring for the dynamic seal (View C). Position the scarf cut on the white backup ring approximately 180 degrees from the scarf cut on the black backup ring.

NOTE: Make sure the backup ring to seal radius is correct.

S 862-261
(11) Position the new dynamic seal on top of the white backup ring (View C). Work on opposite sides of the shock strut when you push the dynamic seal into position. Use the o-ring inserter and work around the strut to get the seal correctly installed.

NOTE: Do not extend the seal more than necessary for the installation.

S 432-262
(12) Install the upper white backup ring for the dynamic seal (View C).

NOTE: Make sure the backup ring to seal radius is correct.

S 432-263
(13) Install the upper black backup ring for the dynamic seal (View C). Position the scarf cut on the upper black backup ring approximately 180 degrees from the scarf cut on the upper white backup ring.

S 432-265
(14) Install the ram clamp and the slide hammer assembly on the inner cylinder and position them above the upper backup rings for the active dynamic seal.

S 862-266
(15) Use the ram clamp assembly to push the active dynamic seal down into the correct position.

S 092-103
(16) Remove the ram clamp assembly.

S 862-104
(17) Position the lower bearing on the seal carrier and align the holes for the pins.

S 432-299
(18) Apply a layer of petrolatum to the pins of the lower bearing assembly.

NOTE: This will hold the pins in the assembly.

S 432-105
(19) Install the pins in the lower bearing assembly (View B).

S 032-268
(20) Remove the two backup rings from the groove for the active static seal.

S 212-269
(21) Examine the backup rings, replace if necessary.

S 862-106
(22) Cut and remove the active static seal.

NOTE: Use a plastic tool and a backup strip to prevent damage to the groove in the lower bearing assembly.

S 642-267
(23) Apply a thin layer of hydraulic fluid and petrolatum to the new static seal and the backup rings.

S 862-107
(24) Move the new active static seal (4) into the outer groove on the lower bearing assembly (View B).

NOTE: Do not extend the seal more than necessary for the installation.

S 432-270
(25) Install the backup rings (5) (VIEW D).

NOTE: Make sure the backup ring to seal radius is correct.

S 822-271
(26) Make sure that the scarf cuts on the backup rings for the active static seal are approximately 180 degrees from each other.

S 162-312
(27) Make sure the new spare seals (1, 2) and the grooves on the lower bearing assembly are clean and dry.

S 862-108
(28) Install the new spare seals (1, 2) into the correct grooves on the lower bearing assembly (View B).

NOTE: PRIOR TO INSTALLATION, MAKE SURE THE SEALS AND GROOVES ARE CLEAN AND DRY.

H. Put the Airplane Back to Its Usual Condition.

S 092-109
(1) Remove the clamp assembly from the inner cylinder.

S 492-110
(2) Put the ram clamp assembly around the inner cylinder, below the lower bearing assembly.

S 862-111
(3) Use the ram clamp assembly to push the lower bearing assembly into the outer cylinder.

S 092-112
(4) Remove the ram clamp assembly.

S 862-113
(5) Move the scraper ring up the inner cylinder to the lower bearing assembly (Fig. 201, View E).

NOTE: Make sure the orientation of the scraper ring is correct. The illustration shows all of the possible configurations that can be installed on the main landing gear.

S 642-199
(6) GLAND NUT WITH A LUBE FITTING INSTALLED;
Apply grease to the threads of the gland nut.

S 622-198
(7) GLAND NUT WITHOUT A LUBE FITTING;
Do these steps:
(a) Remove the grease from the threads on the gland nut and the mating threads on the outer cylinder.
(b) Apply a thin layer of corrosion preventative compound to the threads on the gland nut.
(c) Apply a thin layer of corrosion preventative compound to the threads on the outer cylinder that will mate with the gland nut threads.

S 862-115
(8) Move the gland nut up the inner cylinder into the correct position.

S 432-116
(9) Tighten the gland nut, with the gland nut wrench adapter, to 175-200 pound-feet.

S 432-305
(10) To install the locktab for the gland nut do the steps that follow (View B-B):
(a) Apply a layer of grease to the bolts, nuts, and washers.
(b) Align the locktab with the holes on the outer cylinder and a slot on the gland nut.

NOTE: Loosen the gland nut, if it is necessary, a small quantity until the locktab is aligned correctly.

(c) Install the bolts, nuts, and washers to connect the locktab to the outer cylinder. This will lock the gland nut in the correct position.
(d) Apply a layer of the sealing compound.

S 412-119
(11) Connect the lower torsion link to the inner cylinder (AMM 32-11-22/401).

S 582-120
(12) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 412-121
(13) Connect the head end of the truck positioner to the inner cylinder (AMM 32-32-18/401).

S 432-122
(14) Install the target for the truck tilt sensor of the main landing gear (AMM 32-09-09/401).

S 432-123
(15) Connect the brake rods to the inner cylinder (AMM 32-11-20/401).

S 612-124
(16) Do the servicing of the shock strut (AMM 12-15-01/301).

S 642-353

CAUTION: DO NOT OVER LUBRICATE THE GLAND NUT. USE MINIMUM PRESSURE ON THE HANDPUMP TO APPLY THE GREASE. APPLY THE EQUIVALENT OF 3-5 PUMPS OF A MEDIUM SIZE GREASE GUN. OVER LUBRICATION OR EXCESSIVE LUBE PRESSURE CAN CAUSE DAMAGE TO THE SCRAPER RING AND/OR SEALS.

(17) Lubricate the grease fittings, if installed, on the gland nut.

S 722-330

(18) Do an Antiskid Transducer Spin Up Test (AMM 32-42-00/501).

NOTE: This test will check the electrical and hydraulic connections to the truck.

S 082-232

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(19) Remove the door locks and close the doors (AMM 32-00-15/201).

S 792-239

(20) Do a Shock Strut Seal Leak Inspection (AMM 32-11-02/201).

TASK 32-11-25-962-217

4. Active and Spare Seal Replacement - Preferred Procedure (Fig. 201, Fig. 202)

NOTE: To do this procedure it will be necessary to lift the airplane on jacks to a height that will allow installation of new seals over the top of the inner cylinder. The minimum jack extension height that is necessary to do this procedure is 160 inches for the main body jacks and 210 inches for the tail jack. The extension height is the roll-under height (AMM 07-11-01/201) plus 60 inches.

A. Equipment

(1) A32032-64 MLG Jacking Equipment
(Upgraded -52 kit that includes a new -68 tiny collar for IGW A/Ps)

NOTE: To use this equipment, two 4 ton jacks will be necessary. These jacks are not included in this equipment set.

(2) A32031-5 MLG Truck Positioner Turnbuckle (Recommended)

(3) A32031-4 MLG Truck Positioner Turnbuckle (Alternative) Make from A32031-1

(4) A32066-1 MLG/NLG Shock Strut Drain Equipment

B. Consumable Materials
(1) G50136 Compound, Corrosion Inhibiting - BMS 3-38
(2) D00633 Grease - BMS 3-33 (Preferred)
(3) D00467 Hydraulic Fluid - BMS 3-32 Type II (Recommended)
(4) D00510 Lubrizol 1395
(5) D00508 Hydraulic Fluid MIL-H-5606 plus Lubrizol (ratio 41:1) (Alternative)
(6) D00509 Hydraulic Fluid MIL-H-6083 plus Lubrizol (ratio 41:1) (Alternative)
(7) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(8) D00589 Lubricant, Hydraulic Assembly - AFS-682 (Recommended)
(9) D00128 Lubricant, Petrolatum - VV-P-236 (Alternative)
(10) A00226 Compound, Sealing - BMS 8-45

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
201	1	Spare Static Seal	32-11-02	05	454
	2	Spare Dynamic Seal			462
	3	Active Dynamic Seal			462
	4	Active Static Seal			454
	5	Backup Ring			450
	6	Backup Ring			466

D. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 12-15-01/301, Main Gear Shock Strut
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 32-11-02/201, Main Gear Shock Strut
(6) AMM 32-11-18/401, Main Gear Truck Assembly
(7) AMM 32-11-22/401, Main Gear Torsion Links
(8) AMM 32-32-00/501, Main Gear Extension and Retraction
(9) AMM 32-32-18/401, Main Gear Truck Positioner
(10) AMM 32-41-08/401, Main Gear Wheel Brakes
(11) AMM 32-42-00/501, Antiskid/Autobrake System

E. Access
(1) Location Zones
731/741 Main Landing Gear

F. Prepare for the Seal Replacement

S 482-233

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 482-234

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 862-131

(3) Remove the pressure from the right and center hydraulic systems and the hydraulic reservoirs (AMM 29-11-00/201).

S 872-308

(4) Push the brake pedals fully seven times to let the pressure out of the brake accumulator.

NOTE: Make sure there is a minimum of 5 seconds between each time you apply the brake.

S 862-132

(5) Lift the airplane to a height that will support the airplane weight on the jacks (AMM 07-11-01/201).

NOTE: To help keep the inner cylinder aligned with the outer cylinder during this procedure, you can use two sheets of heavy mylar under each of the four tires. With Silicone spray lubricant between the mylar sheets the truck assembly can be moved side-to-side for alignment. Some operators use sheets of plywood and grease to get the same result.

S 162-358

(6) Wipe the chrome surface that is visible on the inner cylinder with a rag that is soaked with shock strut fluid. Do this to remove any abrasive material that is collected on the inner cylinder. Remove the debris in a downward motion. This will make sure you do not push debris into the shock strut when you wipe the inner cylinder.

S 862-133
(7) Deflate the shock strut (Detail A).
(a) Remove the cap for the air valve.

WARNING: LOOSEN THE NUT FOR THE AIR VALVE A MAXIMUM OF TWO TURNS. AIR PRESSURE CAN BLOW THE VALVE OFF AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(b) Loosen the nut for the air valve two turns.
(c) Let the shock strut deflate fully.
(d) Loosen the air valve nut fully.
(e) Remove the air valve assembly from the outer cylinder.

S 032-135

CAUTION: CLEAN ALL THE LEAKED HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY. THE FLUID CAN CAUSE DAMAGE TO THE TIRES.

(8) Disconnect the two forward brake hydraulic lines at the outer cylinder.

S 032-136
(9) Disconnect the two aft brake lines at the brake disconnect (AMM 32-41-08/401).

S 022-309
(10) Install caps and plugs in the hydraulic lines.

S 032-137
(11) Remove the truck positioner actuator (AMM 32-32-18/401). Do not disconnect the hydraulic lines from the actuator.

S 982-138
(12) Carefully lift and temporarily attach the truck positioner actuator to the lower side and drag braces. Make sure the hydraulic lines are clear of the landing gear.

S 032-139
(13) Disconnect the electrical connections at the lower J-box (AMM 32-11-18/401).

S 032-140
(14) Remove the support brackets from the outer cylinder.

S 032-141
(15) Disconnect the upper torsion link from the outer cylinder (AMM 32-11-22/401). Put a pad between the upper and lower torsion links to prevent damage.

S 492-142
(16) Install the turnbuckle for the truck positioner actuator.

S 492-143
(17) Install the drain equipment on the oil charging valve and drain the shock strut.

S 092-144
(18) Remove the drain equipment when all the oil has drained from the shock strut.

S 862-146

CAUTION: MAKE SURE THE AIRPLANE STAYS LEVEL WHILE YOU LIFT IT ON JACKS. IF THE AIRPLANE DOES NOT STAY LEVEL YOU CAN CAUSE DAMAGE TO THE INTERNAL COMPONENTS OF THE STRUT.

(19) Lift the airplane on jacks until approximately 12 inches of chrome is showing on the inner cylinder (AMM 07-11-01/201).

S 232-398
(20) Measure and record the distance that the lower surface of the gland nut extends below the lower surface of the outer cylinder.

NOTE: The recorded measurement will be used to compare to the 2nd measurement made when the shock strut is assembled.

S 942-218
(21) Wind a cloth pad around the inner cylinder. This will prevent damage to the surface of the inner cylinder if the gland nut moves down.

S 032-147
(22) Remove the locktab from the gland nut (Fig. 201, View B-B).

S 032-148
(23) Use the gland nut wrench adapter to loosen the gland nut.

S 862-149
(24) Move the gland nut to the bottom of the inner cylinder (Fig. 201, Detail B).

S 862-150
(25) Move the scraper ring down the inner cylinder to the gland nut.

S 492-151
(26) Install the clamp assembly on the inner cylinder.

NOTE: This will prevent damage to the gland nut from the lower bearing assembly when the inner cylinder moves out of the outer cylinder.

S 982-153

CAUTION: MAKE SURE THE AIRPLANE STAYS LEVEL WHILE YOU LIFT IT ON JACKS. IF THE AIRPLANE DOES NOT STAY LEVEL YOU CAN CAUSE DAMAGE TO THE INTERNAL COMPONENTS OF THE STRUT. TO MAKE SURE THE AIRPLANE IS LIFTED EVENLY, MONITOR THE CLEARANCE BETWEEN THE INNER CYLINDER AND THE OUTER CYLINDER AFTER THE LOWER BEARING ASSEMBLY IS OUT OF THE PACKING BORE.

CAUTION: MAKE SURE YOU CAN SEE THE UPPER BEARING ASSEMBLY WHEN IT CLEARS THE OUTER CYLINDER. IF THE UPPER BEARING ASSEMBLY IS DAMAGED IT CAN SEPERATE AND FALL, WHICH MAY CAUSE DAMAGE TO EQUIPMENT OR INJURY TO PERSONS.

(27) Continue to lift the airplane until the inner cylinder is completely out and clear of the outer cylinder. Roll the truck assembly forward and aft as necessary to keep the inner cylinder in the center of the outer cylinder as the airplane is lifted.

NOTE: To help keep the inner cylinder aligned with the outer cylinder you can use two sheets of heavy mylar under each of the four tires. With Silicone spray lubricant between the mylar sheets the truck assembly can be moved side-to-side for alignment. Some operators use sheets of plywood and grease to get the same result.

S 032-154
(28) When the inner cylinder is clear, roll the truck and inner cylinder out from under the outer cylinder.

S 032-155
(29) Remove the upper bearing assembly (View A1).

S 032-156
(30) Remove the snubber, spacer tube and the lower bearing assembly from the inner cylinder.

S 082-303
(31) Remove the clamp assembly from the inner cylinder.

S 212-359
(32) Examine the chrome surface of the inner cylinder for damage (AMM 32-00-10/601).

S 212-272
(33) Remove and examine the scraper ring, if damaged or worn then replace with a new production scraper ring (Fig. 201, View E).

S 022-157
(34) Remove the active and spare seals from the lower bearing assembly.

NOTE: When you need to cut a seal, use a plastic tool and backup strip to prevent damage to the grooves.

S 162-158
(35) Carefully clean the bearings, snubber, spacer tube, inner cylinder chrome surface, and the outer cylinder packing bore and threads.

S 622-159
(36) Put a thin layer of petrolatum on the inner cylinder chrome surface and the outer cylinder packing bore.

S 422-160
(37) Carefully install new active static seal (4) and spare seals (1, 2) on the lower bearing assembly.

S 412-334
(38) Install the backup rings (5) (View D).

NOTE: Make sure the backup ring to seal radius is correct.

S 212-335
(39) Make sure that the scarf cuts on the backup rings for the active static seal are approximately 180 degrees from each other.

S 422-158
(40) Install the scraper ring and energizer onto the inner cylinder.

S 432-159

CAUTION: MAKE SURE THE RADIUS OF THE WHITE TEFLON BACKUP RING IS AGAINST THE SEAL RADIUS. IF THE BACKUP RINGS ARE NOT INSTALLED CORRECTLY DAMAGE CAN OCCUR.

(41) Use a small amount of petrolatum to assemble the dynamic seal and backup rings together. For each set of backup rings, upper/lower, position the scarf cut on the white backup ring approximately 180 degrees from the scarf cut on the black backup ring.

S 492-160
(42) Install the clamp assembly below the transition radius on the chrome surface at the upper end of the inner cylinder.

S 432-161
(43) Install the seal carrier onto the inner cylinder on top of the clamp assembly.

S 422-162
(44) Install the dynamic seal and backup ring assembly over the inner cylinder into the groove for the active dynamic seal (3).

S 432-163
(45) Position the lower bearing on the seal carrier and align the holes for the pins.

S 432-301
(46) Apply a layer of petrolatum to the pins of the lower bearing assembly.

NOTE: This will hold the pins in the assembly.

S 432-292
(47) Install the pins in the lower bearing assembly (View B).

S 982-164
(48) Remove the clamp assembly and move it to a position where approximately 12 inches of chrome shows on the lower half of the inner cylinder.

S 432-165
(49) Carefully push the bearing assembly down onto the chrome surface.

S 432-166
(50) Install the spacer tube, snubber, and upper bearing assembly (View A1).

NOTE: Make sure the orientation of the upper bearing halves is the same as shown in View A1.

S 432-345
(51) TWO PIECE SPLIT-HALVE UPPER BEARINGS;
Install the o-ring around the upper bearing assembly (View A1).

S 492-168
(52) Install thread protectors onto the outer cylinder.

S 212-337

CAUTION: MAKE SURE THE INNER AND OUTER CYLINDERS STAY ALIGNED WHILE YOU LOWER THE AIRPLANE ON THE JACKS. IF THE INNER AND OUTER CYLINDERS ARE NOT ALIGNED YOU CAN CAUSE DAMAGE TO THE INTERNAL COMPONENTS OF THE STRUT.

(53) Adjust the jacks to align the inner and outer cylinder.

S 582-338

CAUTION: MAKE SURE THE AIRPLANE IS LOWERED EVENLY, MONITOR THE CLEARANCE BETWEEN THE INNER CYLINDER AND THE OUTER CYLINDER. NOTICE THAT THE OUTER CYLINDER CAN HAVE A SLIGHT INBOARD CAMBER WHEN THE AIRPLANE IS ON JACKS.

(54) Carefully lower the airplane. Make sure the fore-and-aft and the inboard-outboard axes stay aligned as the airplane is lowered.

NOTE: To help keep the inner cylinder aligned with the outer cylinder you can use two sheets of heavy mylar under each of the four tires. With Silicone spray lubricant between the mylar sheets the truck assembly can be moved side-to-side for alignment. Some operators use sheets of plywood and grease to get the same results.

S 092-171
(55) When the upper bearing is well seated into the outer cylinder, remove the turnbuckle.

S 982-172
(56) Continue to lower the airplane until approximately 20 to 23 inches of chrome shows below the outer cylinder.

S 492-173
(57) Attach the ram clamp assembly below the lower bearing assembly.

S 982-175

CAUTION: MAKE SURE THE INNER CYLINDER IS IN THE CENTER OF THE OUTER CYLINDER BEFORE YOU PUSH THE LOWER BEARING ASSEMBLY INTO THE PACKING BORE. IF THE INNER CYLINDER IS NOT IN THE CENTER YOU CAN CAUSE DAMAGE TO THE LOWER BEARING ASSEMBLY AND SEALS.

(58) Use the ram clamp to push the lower bearing assembly into the outer cylinder packing bore.

S 642-196
(59) GLAND NUT WITH A LUBE FITTING INSTALLED;
Apply grease to the threads of the gland nut.

S 622-195
(60) GLAND NUT WITHOUT A LUBE FITTING;
Do these steps:
(a) Remove the grease from the threads on the gland nut and the mating threads on the outer cylinder.
(b) Apply a thin layer of corrosion preventative compound to the threads on the gland nut.
(c) Apply a thin layer of corrosion preventative compound to the threads on the outer cylinder that will mate with the gland nut threads.

S 432-177
(61) Install the scraper ring assembly into the gland nut. Install the gland nut into the outer cylinder.

S 432-178
(62) Tighten the gland nut to 175-200 pound-feet.

S 232-399
(63) Measure the distance that the lower surface of the gland nut extends below the lower surface of the outer cylinder.

NOTE: The distance measured must be equal to the distance recorded prior to gland nut removal, within +0.02 inch.

S 432-306
(64) To install the locktab for the gland nut do the steps that follow (View B-B):
(a) Apply a layer of grease to the bolts, nuts, and washers.
(b) Align the locktab with the holes on the outer cylinder and a slot on the gland nut.

NOTE: Loosen the gland nut, if it is necessary, a small quantity until the locktab is aligned correctly.

(c) Install the bolts, nuts, and washers to connect the locktab to the outer cylinder. This will lock the gland nut in the correct position.
(d) Apply a layer of the sealing compound.

S 412-179
(65) Connect the torsion link to the inner cylinder (AMM 32-11-22/401).

S 412-180
(66) Install the truck positioner (AMM 32-32-18/401).

S 412-181
(67) Connect the electrical connections at the lower J-box (AMM 32-11-18/401).

S 412-310
(68) Connect the two aft brake lines at the brake disconnect (AMM 32-41-08/401).

S 412-182
(69) Remove the caps and plugs from the hydraulic lines and connect the two forward brake hydraulic lines at the outer cylinder (AMM 32-41-08/401).

S 582-313
(70) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 612-184
(71) Do the servicing of the shock strut (AMM 12-15-01/301).

S 642-351

CAUTION: DO NOT OVER LUBRICATE THE GLAND NUT. USE MINIMUM PRESSURE ON THE HANDPUMP TO APPLY THE GREASE. APPLY THE EQUIVALENT OF 3-5 PUMPS OF A MEDIUM SIZE GREASE GUN. OVER LUBRICATION OR EXCESSIVE LUBE PRESSURE CAN CAUSE DAMAGE TO THE SCRAPER RING AND/OR SEALS.

(72) Lubricate the grease fittings, if installed, on the gland nut.

S 242-396
(73) Do the test for the Tilt Sensors (AMM 32-09-07/201).

S 242-397
(74) Do the operational test for the Brake Temperature Sensors (AMM 32-46-01/401).

S 722-240
(75) Do an Antiskid Transducer Spin Up Test (AMM 32-42-00/501).

NOTE: This test will check the electrical and hydraulic connections to the truck.

S 082-235

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(76) Remove the door locks and close the doors (AMM 32-00-15/201).

S 792-242
(77) Do a Shock Strut Seal Leak Inspection (AMM 32-11-02/201).

MAIN GEAR BRAKE SLEEVE - REMOVAL/INSTALLTION

1. General
   A. This procedure contains steps to remove and install the brake sleeves on the main gear.
   B. It is not necessary to remove the landing gear truck to do this task.

   TASK 32-11-26-024-001
2. Remove the Brake Sleeve on the Main Gear
   A. Equipment
      (1) Puller Equipment, Main Landing Gear Brake Sleeve - A32079-1
      (2) Heat Blanket, Electrical (300°F maximum) - Commercially Available
      (3) Thermometer, Surface Measurement (0°-350°F) - Commercially Available
      (4) Plastic Sheet - Commercially Available
   B. Consumable Materials
      (1) G00829 Dry Ice (Commercial Grade)
   C. References
      (1) AMM 32-00-15/201, Landing Gear Door Locks
      (2) AMM 32-00-20/201, Landing Gear Downlocks
      (3) AMM 32-11-18/401, Main Gear Truck Assembly
      (4) AMM 32-41-08/401, Main Gear Wheel Brakes
      (5) AMM 32-42-06/401, Antiskid Transducer
      (6) AMM 32-45-01/401, Main Gear Wheel and Tire
   D. Access
      (1) Location Zones
          731/741 Main Landing Gear

   E. Prepare for Removal

      S 484-051

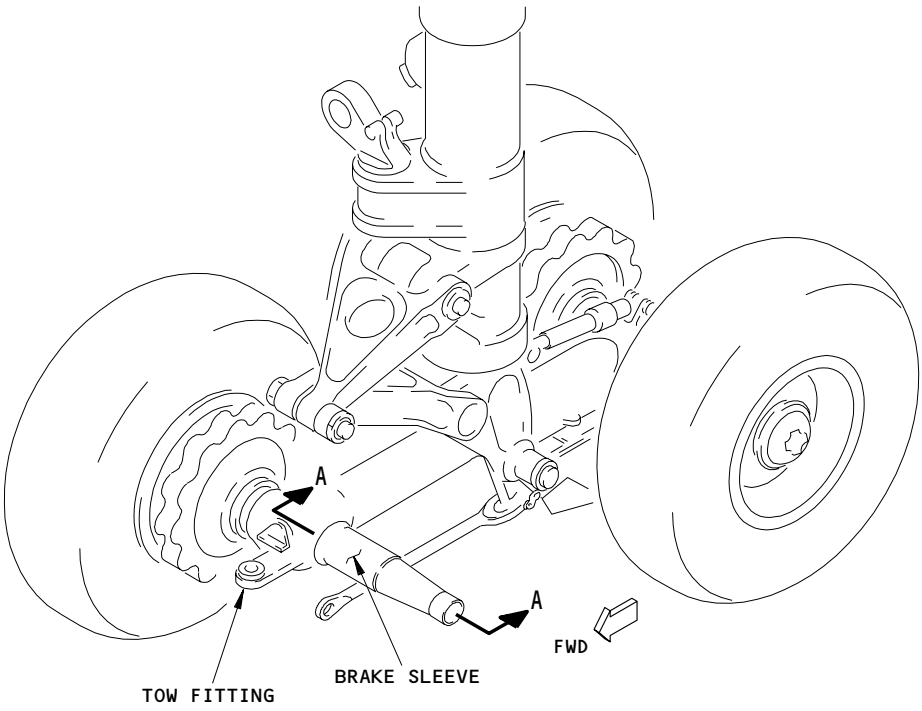
      WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

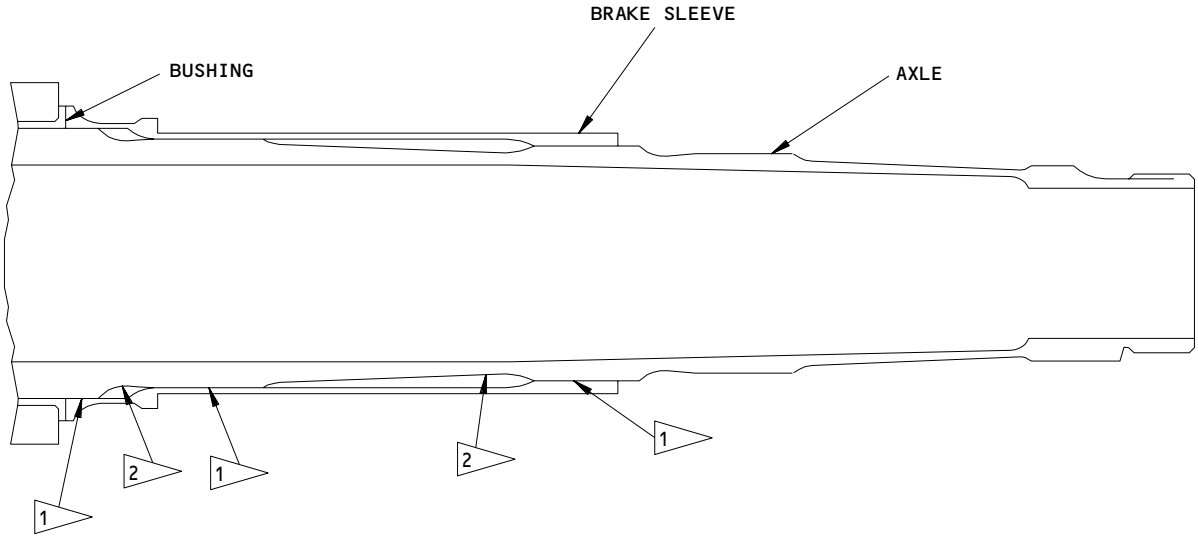
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 484-052

      WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).





1 APPLY GREASE TO THESE SURFACES OF THE AXLE
2 APPLY COMPOUND TO THESE SURFACES OF THE AXLE

Brake Sleeve Installation
Figure 401

S 034-004
(3) Remove the wheel/tire assembly (AMM 32-45-01/401).

S 034-033
(4) Remove the antiskid/TPIS transducer assembly (AMM 32-42-06/401).

S 034-006
(5) Remove the brake assembly (AMM 32-41-08/401).

S 034-034
(6) Remove the antiskid/TPIS transducer wiring from the axles (AMM 32-11-18/401).

F. Remove the brake sleeve (Fig. 401)

S 494-039
(1) Do the steps that follow to cool the axle:

NOTE: It is not necessary to cool the axle to remove the axle sleeve but it will make removal of the axle sleeve easier.

(a) Line the inside of the axle with a plastic sheet.

WARNING: DO NOT GET DRY ICE ON YOUR SKIN. THE DRY ICE IS FROZEN CARBON DIOXIDE AT A TEMPERATURE OF APPROXIMATELY -120°F. THE COLD TEMPERATURE OF THE CARBON DIOXIDE CAN CAUSE INJURY TO PERSONS.

(b) Fill the inner diameter of the axle with the dry ice.

NOTE: The cold temperature will decrease the axle diameter and loosen the fit between the brake sleeve and the axle.

S 494-009
(2) Install the brake sleeve puller on the brake sleeve.

S 024-013
(3) Remove the brake sleeve with the puller.

TASK 32-11-26-424-014

3. Install the Brake Sleeve for the Main Gear

A. Equipment

(1) Heat Blanket, Electrical (300°F maximum) - Commercially Available
(2) Thermometer, Surface Measurement (0°-350°F) - Commercially Available
(3) Seater, Brake Sleeve - A32100-1

B. Consumable Materials

(1) D00633 Grease, Corrosion Preventive - BMS 3-33 (Preferred)
(2) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)
(3) G50136 Compound, Corrosion Inhibiting - BMS 3-38
(4) G00829 Dry Ice (Commercial Grade)

C. References

(1) AMM 32-00-15/201, Landing Gear Door Locks
(2) AMM 32-11-18/401, Main Gear Truck Assembly
(3) AMM 32-41-08/401, Main Gear Wheel Brakes
(4) AMM 32-42-06/401, Antiskid Transducer
(5) AMM 32-45-01/401, Main Gear Wheel and Tire

D. Access

(1) Location Zones
731/741 Main Landing Gear

E. Install the Brake Sleeve (Fig. 401)

S 164-015
(1) Remove the grease, compound and dirt from the axle and brake sleeve.

S 424-050
(2) Apply a layer of compound on the axle surfaces as shown (Figure 501, Detail A).

S 424-016
(3) Do the steps that follow to decrease the temperature of the axle:
(a) Make sure the inner diameter of the axle is lined with a plastic sheet.
(b) Use a stick to tightly pack dry ice in the axle.
(c) Seal the end of the axle with plastic and poke holes in the plastic to release the gases.
(d) Do regular checks to make sure that the axle is packed with ice.
1) If it is necessary, put more ice in the axle.

S 424-017
(4) Do the steps that follow to increase the temperature of the brake sleeve:
(a) Put the heat blanket around the brake sleeve.

CAUTION: DO NOT PERMIT THE TEMPERATURE OF THE AXLE COMPONENTS TO BECOME 300°F FOR MORE THAN 180 MINUTES. THE MATERIALS FOR THE AXLE COMPONENTS CAN BECOME WEAK IF THE THERMAL LOADS ARE TOO LARGE. WEAK AXLE COMPONENTS CAN HAVE A FAILURE DURING OPERATION.

(b) Permit the temperature of the brake sleeve to become approximately 250°F.

S 284-018

(5) Continue this task when the conditions that follow are correct:
(a) The temperature of the axle is -80°F.
(b) The temperature of the brake sleeve is 250°F.

S 164-019

(6) Remove the frost from the axle.

S 644-020

(7) Apply a layer of grease on the axle surfaces as shown (Figure 501, Detail A).

S 094-021

(8) Remove the heater blanket from the brake sleeve.

S 094-022

(9) Remove the plastic sheet and dry ice from the inside of the axle.

S 424-023

(10) Slide the brake sleeve on the axle.

S 424-024

(11) Hold the brake sleeve in its correct position until the sleeve will not rotate.

S 424-025

(12) When the axle and the brake sleeve are at ambient temperature, use the seater for the brake sleeve to move the sleeve until it is against the bushing.
(a) At a minimum, the bushing and the brake sleeve must contact at one point around the circumferance.

S 434-026

(13) Install the brake (AMM 32-41-08/401).

S 434-038

(14) Install the antiskid/TPIS transducer wiring through the axle to their correct position (AMM 32-11-18/401).

S 434-036

(15) Install the antiskid/TPIS transducer assembly (AMM 32-42-06/401).

S 434-029

(16) Install the wheel/tire assembly (AMM 32-45-01/401).

F. Put the Airplane Back to Its Usual Condition

S 084-053

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Remove the door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR AXLE - INSPECTION/CHECK

1. General
   A. This procedure only has illustrations and wear limit tables which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Gear Axle - Removal/Installation for procedures to do these tasks.

TASK 32-11-26-206-001

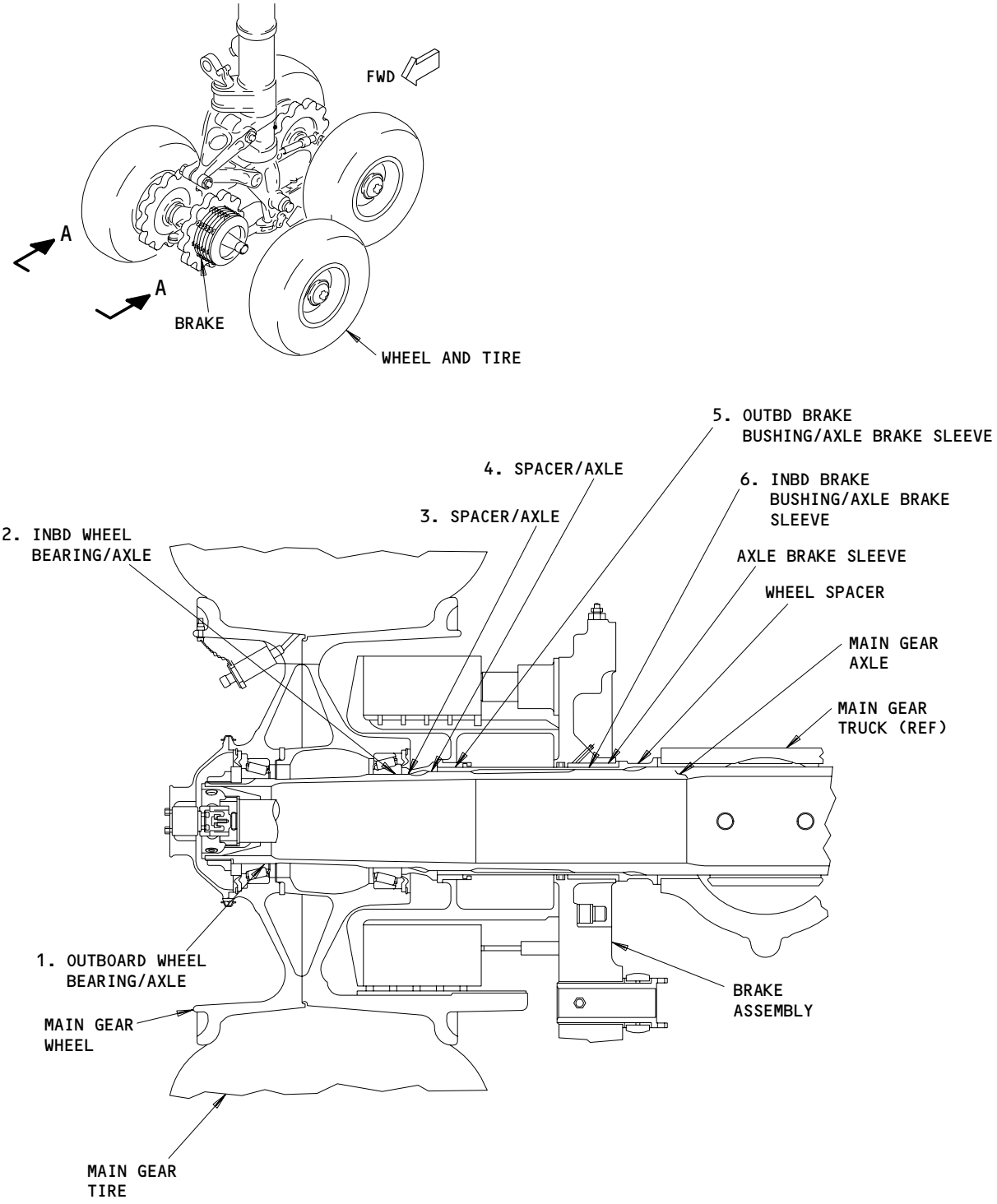
2. Wear Limits for the Axle of the Main Landing Gear (Fig. 601)
   A. References
      (1) 32-00-20/201, Landing Gear Downlocks
      (2) 32-11-18/401, Main Gear Truck Assembly
      (3) 32-41-08/401, Main Gear Wheel Brakes
      (4) 32-45-01/401, Main Gear Wheel and Tire
   B. Prepare for the Inspection/Check

      S 496-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

      S 016-003
      (2) Remove the wheel and tire for the main landing gear (Ref 32-45-01).

      S 016-004
      (3) Remove the wheel brake for the main landing gear, (Ref 32-41-08) if the brake sleeve area of the axle is to be examined.
   C. Wear Limits for the Axle

      S 226-005
      (1) Refer to Fig. 601 for the inspection points and for the wear limit table.



A-A

Main Landing Gear Axle Wear Limits
Figure 601 (Sheet 1)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
			DIAMETER		PER-MITTED WEAR DIM.	MAX DIA CLEAR-ANCE			
			MIN	MAX					
1	BEARING	ID	4.3320	4.3330	4.3387	0.0055	X		1
	AXLE	OD	4.3275	4.3290	4.3233			X	2
2	BEARING	ID	4.7500	4.7510	4.7569	0.0035	X		1
	AXLE	OD	4.7475	4.7490	4.7431			X	2
3	SPACER	ID	4.7500	4.7515	4.7574	0.0040	X		
	AXLE	OD	4.7475	4.7490	4.7431			X	2
4	SPACER	ID	5.0030	5.0050	5.0115	0.0080	X		
	AXLE	OD	4.9970	4.9990	4.9925			X	2
5	BUSHING	ID	5.5060	5.5080	5.5230	0.0100	X		1
	AXLE BRAKE SLEEVE	OD	5.4980	5.5010	5.4933			X	2
6	BUSHING	ID	5.5060	5.5080	5.5230	0.0100	X		1
	AXLE BRAKE SLEEVE	OD	5.4985	5.5010	5.4933			X	2

DIMENSIONS IN INCHES

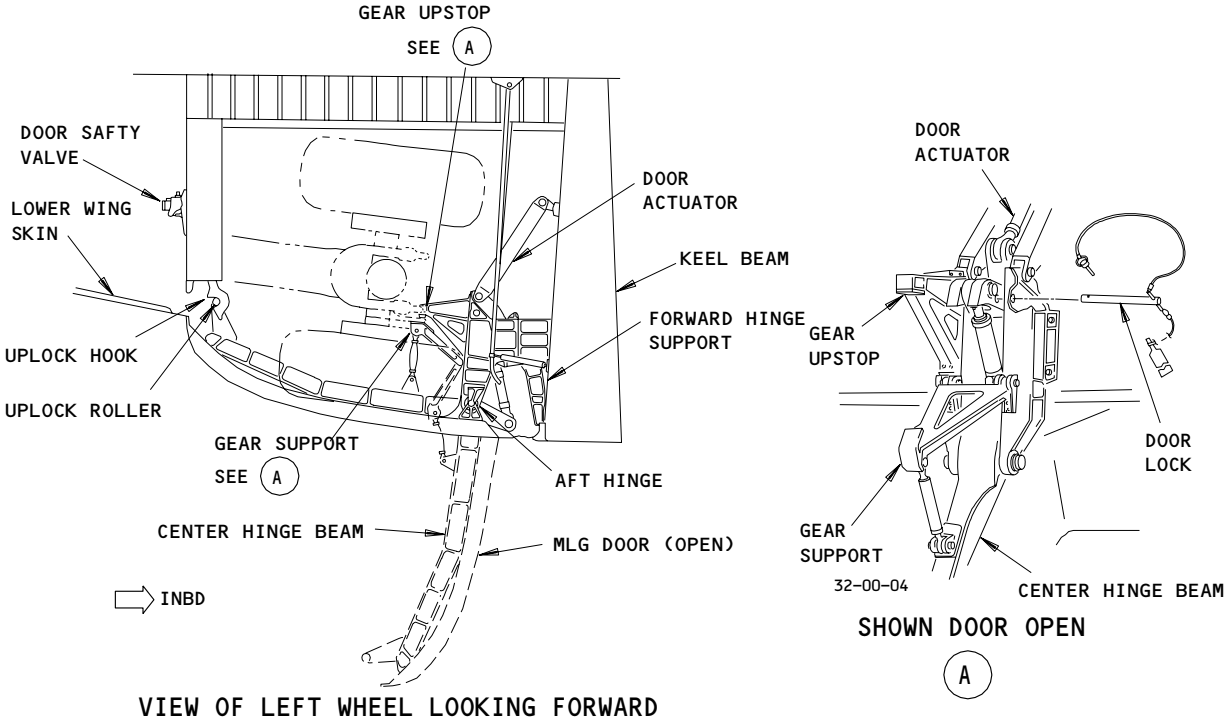
1 PROCURE REPLACEMENT PART

2 WORN PART (OR ASSEMBLY) IS REPAIRABLE. REPLACE MAIN GEAR TRUCK (AMM 32-11-26/401).

Main Landing Gear Axle Wear Limits
Figure 601 (Sheet 2)

MAIN GEAR DOORS - DESCRIPTION AND OPERATION

1. General
   A. The main gear doors consist of the main landing gear door, shock strut door, drag brace door, trunnion door, and pop-up door.
2. Component Details
   A. Main Gear Door (Fig. 1)
      (1) The main gear door closes over the fuselage portion of the main gear wheel well. The door hangs from forward and center hinges mounted on the keel beam, and an aft hinge mounted on the wheel well aft wall. When closed the outboard edges of the door rest against forward and aft door stops. A hydraulic door actuator, linked to the center hinge, opens and closes the door for main landing gear extension and retraction.



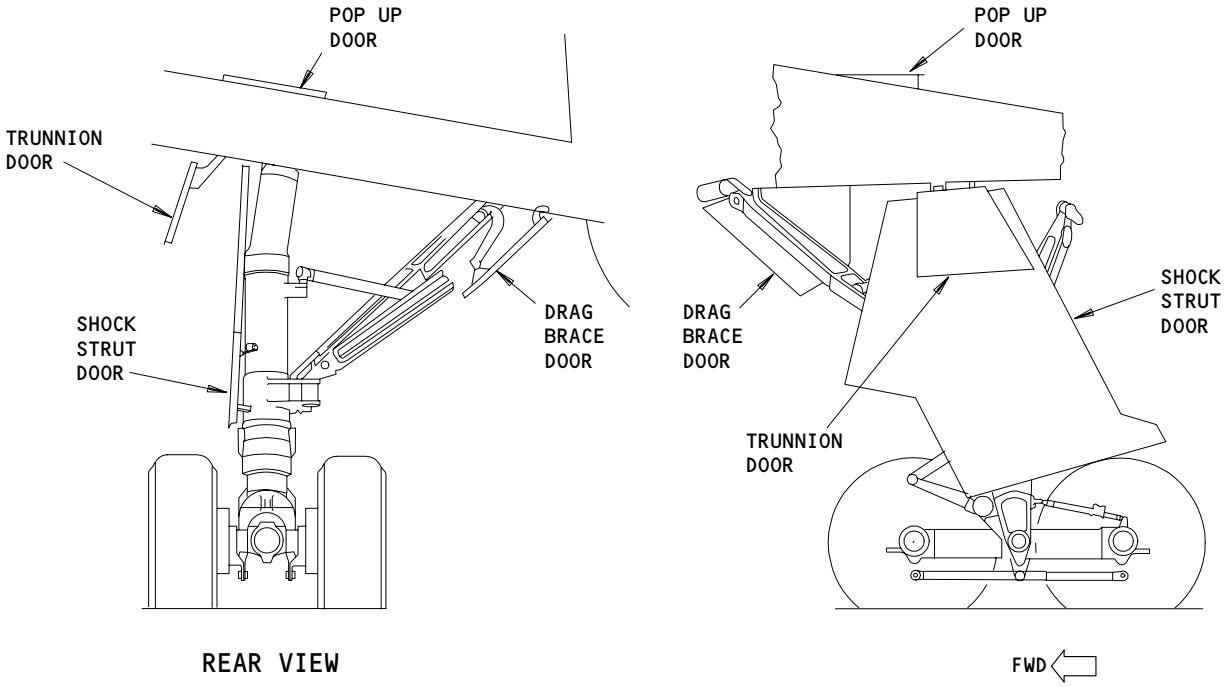
Main Gear Door
Figure 1

(2) The door is a composite structure strengthened with a center hinge beam. The beam extends from the center hinge to the door outboard edge. During flight, the beam supports the full weight of the retracted gear. The alternate extension system uses landing gear weight to push the door open for gear extension in the event of hydraulic failure.

(3) The main gear door is closed during flight and after the gear is extended. The uplock roller slides into the uplock hook to lock the door shut. A ground release lever, located in an access panel aft of each wheel well, opens the door for servicing. A door lock is inserted through the center hinge and door actuator support for safety.

B. Main Gear Wing Doors (Fig. 2)

(1) The main gear wing doors seal the wheel well wing cavity when the gear is retracted. Each door is mechanically slaved to gear movement. Links attach the shock strut door directly to the shock strut. The trunnion door is hinged to the wing and linked to the trunnion. The drag brace door is hinged to the wing and linked to the drag brace.



Main Gear Wing Doors
Figure 2

(2) The main gear pop-up door is hinged to the upper wing trailing edge surface. The pop-up door enables the main gear trunnion actuator arm to pass outside the wing upper surface as the gear extends and retracts. The actuator arm pushes against a rub strip on the door to force the door open. A spring-loaded torque tube returns the pop-up door to the normal, closed position.

MAIN GEAR DOORS - ADJUSTMENT/TEST

1. General
   A. This procedure contains four tasks. Each task is an adjustment procedure for one of the doors of the main landing gear. The first task is for the main landing gear door. The second task is for the shock strut door. The third task is for the trunnion door. The fourth task is for the drag brace door.

TASK 32-12-00-825-002

2. Adjustment for the Main Landing Gear Door (Fig. 501, 501A)
   A. Equipment
      (1) Rigging Blocks
         (a) 0.110 ± 0.005 inch (2 necessary)
         (b) 0.424 ± 0.001 inch (necessary only if you install a new door or uplock hook)
         (c) 1.00 ± 0.01 inch thick x 1 inch x 1 inch
   B. Consumable Materials
      (1) A00247 BMS 5-95 Sealant, Chromate
      (2) C00064 MIL-C-5541, Type II, (Alodine 1200) Coating
      (3) C00421 BMS 10-11, Type I Primer
   C. References
      (1) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
      (4) AMM 32-12-02/401, Main Gear Door Stops
   D. Access
      (1) Location Zones

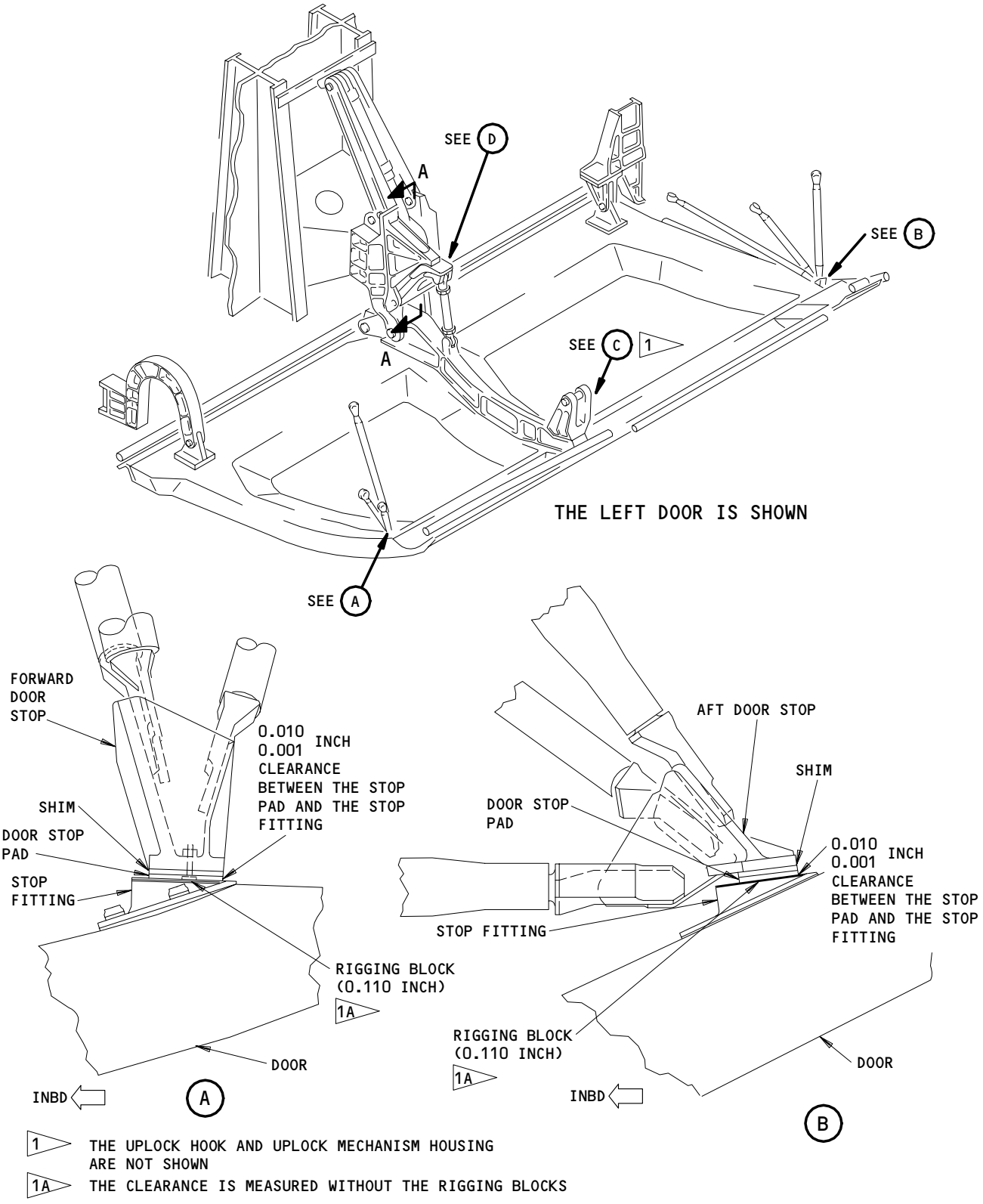
211/212	Control Cabin
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors

   E. Prepare to Adjust the Main Landing Gear Door

      S 495-003
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 495-004

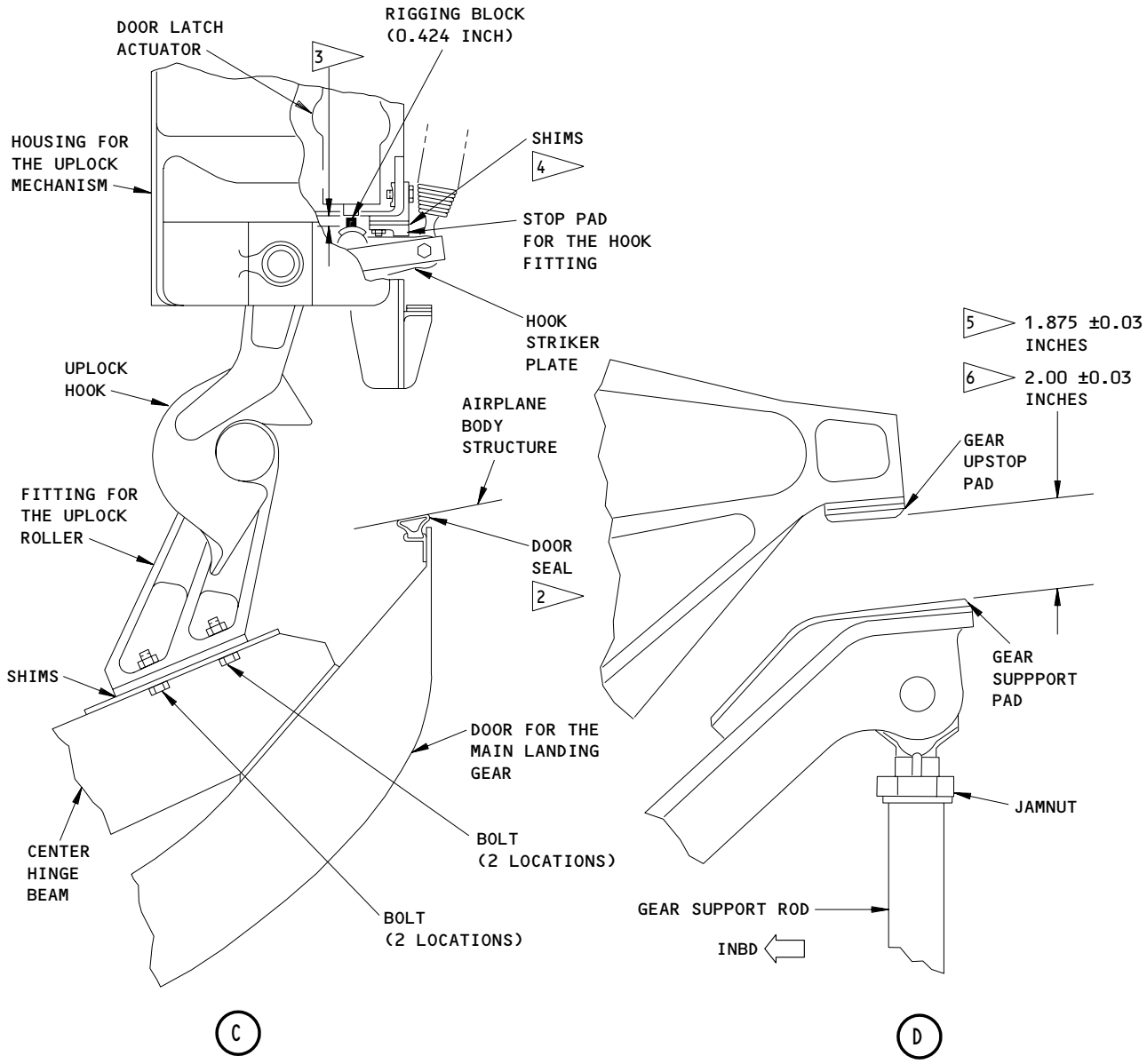
      WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.
      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).



1 THE UPLOCK HOOK AND UPLOCK MECHANISM HOUSING ARE NOT SHOWN

1A THE CLEARANCE IS MEASURED WITHOUT THE RIGGING BLOCKS

Adjustment for the Main Landing Gear Door
Figure 501 (Sheet 1)



2 0.35–0.40 INCH SEAL DEFLECTION

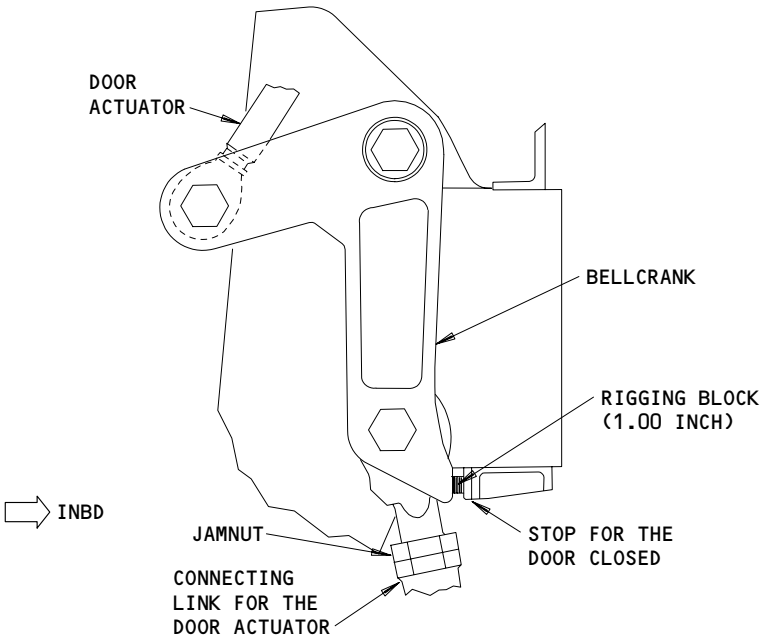
3 0.424 ±0.001 INCH CLEARANCE MEASURED WITH THE RIGGING BLOCK

4 ADJUST THE SHIMS TO GET A 0.14–0.16 INCH CLEARANCE BETWEEN THE HOOK FITTING STOP PAD AND THE HOOK STRIKER PLATE

5 767-300ER AIRPLANES

6 ALL EXCEPT 767-300ER AIRPLANES

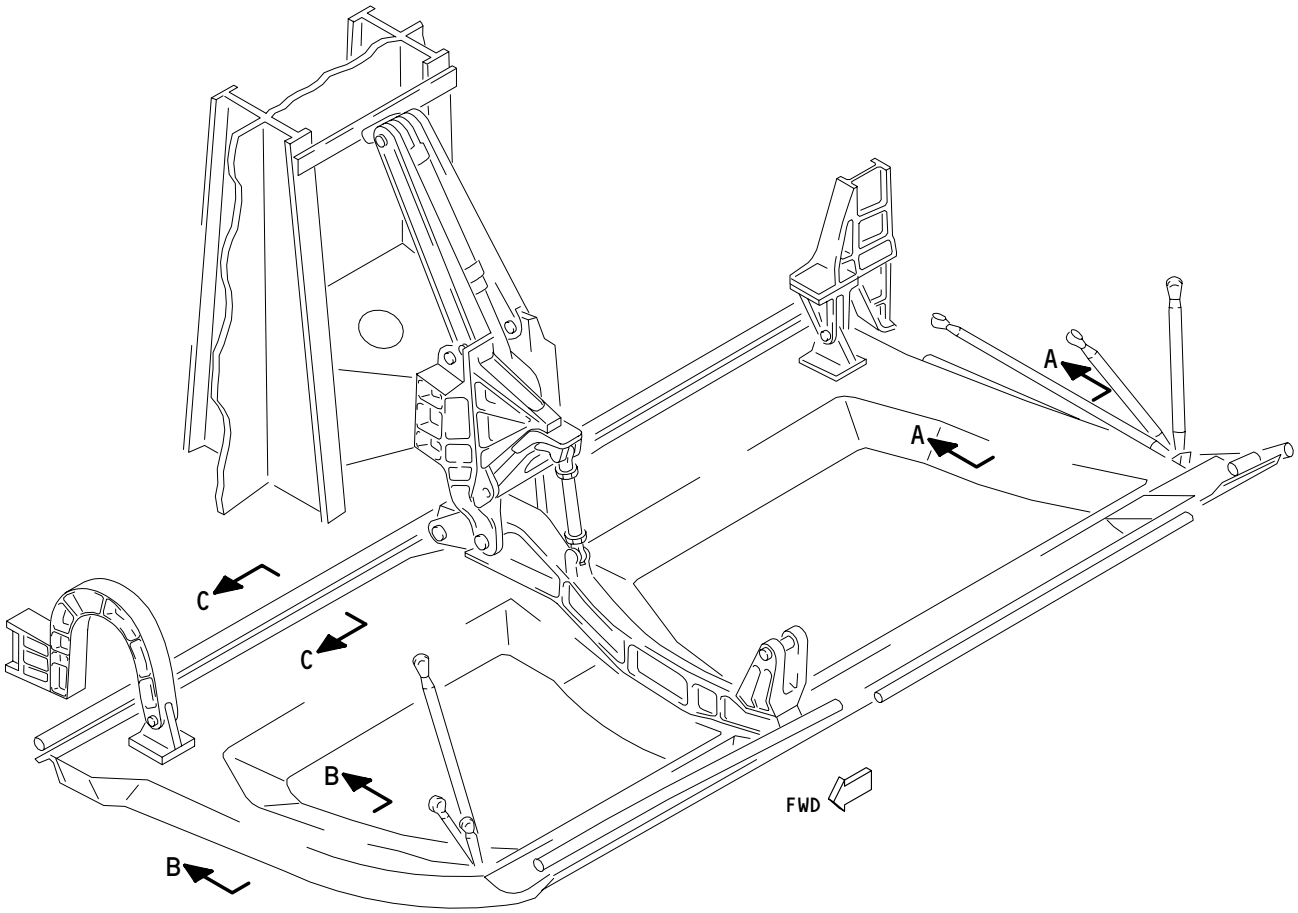
Adjustment for the Main Landing Gear Door
Figure 501 (Sheet 2)



DOOR IN THE CLOSED POSITION

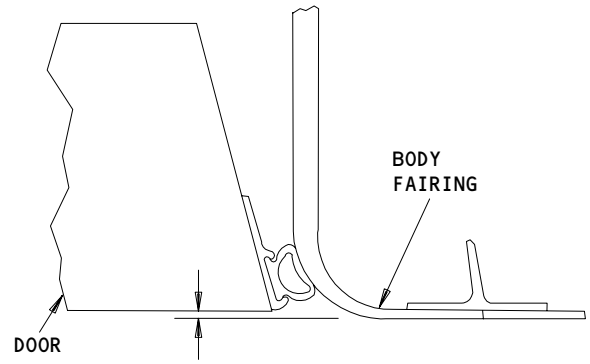
A-A

Adjustment for the Main Landing Gear Door
Figure 501 (Sheet 3)



THE LEFT DOOR IS SHOWN

Adjustment for the Main Landing Gear Door
Figure 501A (Sheet 1)

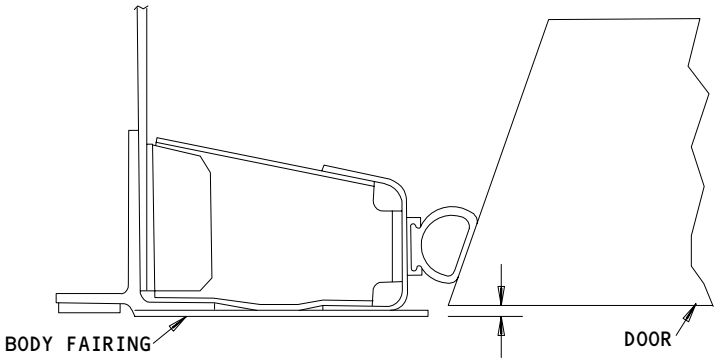


+0.10 TO −0.07 INCH WITH +0.15 TO −0.20 INCH MAXIMUM ALLOWED FOR UP TO 20 PERCENT OF THE DOOR EDGE LENGTH

1

FWD

(AFT DOOR EDGE)
A–A

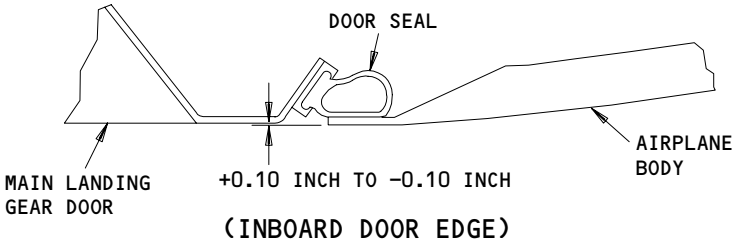


+0.07 TO −0.10 INCH WITH +0.15 TO −0.25 INCH MAXIMUM ALLOWED FOR UP TO 20 PERCENT OF THE DOOR EDGE LENGTH

2

FWD

(FORWARD DOOR EDGE)
B–B



(INBOARD DOOR EDGE)
C–C

NOTE: IF YOU CANNOT ADJUST THE DOOR TO THE DIMENSIONS SHOWN, YOU CAN CHANGE THE TOLERANCES AS FOLLOWS:

1 SAS 280 RIGHT DOOR ONLY;
+0.12/−0.07 INCH WITH +0.15/−0.25 INCH MAXIMUM ALLOWED FOR UP TO 20% OF EDGE OF DOOR.

2 SAS 280 RIGHT DOOR ONLY;
+0.15/−0.30 INCH MAXIMUM ALLOWED FOR UP TO 20% OF EDGE OF DOOR.

Adjustment for the Main Landing Gear Door
Figure 501A (Sheet 2)

F. Adjust the Main Landing Gear Door

S 865-005

(1) Do the steps that follow only if a new door or an uplock hook is installed (if you did not install a new door or uplock hook go to step (2)):
   (a) Pressurize the center hydraulic system (AMM 29-11-00/201).
   (b) Put the ground release lever in the stowed position.
   (c) Make sure the uplock hook moves to the latched position.

      WARNING: MAKE SURE THE AREA AROUND THE TAIL SKID (IF APPLICABLE) IS CLEAR OF PERSONS AND EQUIPMENT WHEN IT OPERATES. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

   (d) Move the control lever for the landing gear to the OFF position.
   (e) Attach a DO-NOT-OPERATE tag to the control lever for the landing gear.
   (f) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).
   (g) Install a 0.424 inch rigging block between the door latch actuator, which is pushed in fully, and the hook striker plate (Fig. 501, Detail C).

      NOTE: There are two procedures that can be used to install the rigging block. One procedure attaches it with tape. The other procedure puts it on a rod and installs it through the bottom of the uplock mechanism.

   (h) Remove the door lock from the main landing gear door which is to be adjusted (AMM 32-00-15/201).
   (i) Remove the bolts to disconnect the uplock roller fitting from the center hinge beam of the door.
   (j) Put the roller in position in the uplock hook until the roller touches the inboard edges of the hook.

      NOTE: Do not move the rigging block.

   (k) Manually, push the door closed.
   (l) Manually hold the door closed to get the tolerances between the door and the structure (Fig. 501A, Views A-A, B-B, C-C).
   (m) With the door in the closed position, do the steps that follow:
      1) Add or remove shims from the uplock roller fitting to get a tight fit between the roller fitting and the center hinge beam.

2) Put a location mark on the serrated plates of the roller fitting. This will make it easier in the installation to get the correct position of the roller in the hook.

(n) Open the main landing gear door.

(o) Apply sealant to, and install the bolts, washers, and nuts to connect the uplock roller fitting to the center hinge beam (Fig. 501, Detail C).

(p) Tighten the nuts:
1) Tighten the inboard nut to 370-690 pound-inches.
2) Tighten the outboard nut to 220-410 pound-inches.

(q) Make sure the control lever for the landing gear is in the OFF position.

(r) Pressurize the center hydraulic system (AMM 29-11-00/201).

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(s) Move the control lever for the landing gear to the DN position to close the door.

(t) Make sure the uplock roller has a tight fit against the inboard edge of the uplock hook.

(u) Make sure the uplock hook is not turned.

NOTE: If the uplock hook is not turned, the rigging block will be tight against the striker plate and the latch actuator.

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(v) Use the ground release lever for the door to open the main landing gear door.

(w) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).
(x) Remove the rigging block from between the door latch actuator and the hook striker plate.

S 495-006
(2) Install a 1.00 inch thick x 1 inch x 1 inch rigging block between the bellcrank and the door closed stop (Fig. 501, View A-A).
(a) Use tape to hold the rigging block in position.

S 095-007
(3) Remove the door locks from the main landing gear doors (AMM 32-00-15/201).

S 865-008
(4) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 865-009

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Put the ground release lever for the door to the stow position to close the door.

S 865-010
(6) Make sure the uplock roller is fully engaged in the uplock hook.

S 865-011
(7) Make sure the crank arm touches the rigging block.

S 865-012
(8) If the uplock roller is not fully engaged, do the steps that follow:

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Use the ground release lever to open the main landing gear door.
(b) Loosen the jamnuts for the connecting link.
    1) Adjust the length of the connecting link if it is necessary.
    2) Tighten the jamnuts by hand.

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(c) Put the ground release lever to stow, to close the main landing gear door.
(d) Do a check on the position of the uplock roller.
    1) Do the adjustment of the connecting link again, if it is necessary.
(e) Tighten the jamnuts to 2000-2500 pound-inches (Fig. 501, View A-A).
(f) Install the lockwire.

S 015-013

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE MAIN LANDING GEAR. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(9) Use the ground release lever to open the main landing gear door.

S 095-014

(10) Remove the rigging block from between the bellcrank and the door closed stop.

S 865-015

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE MAIN LANDING GEAR. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(11) Put the ground release for the door to stow, to close the main landing gear door.

S 865-016

(12) Make sure the uplock hook latches the roller fitting.

S 865-017

(13) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 825-018

(14) Do the steps that follow to adjust the forward and aft door stops:

NOTE: To adjust the forward door stop, go into the wheel well through the opening between the wing and the door. Use only the center hinge beam to hold your weight. If you put your weight on other parts of the door, the clearance dimension can be incorrect.

(a) If the edges of the stop fitting and the stop pad are not aligned, do the door stop adjustment steps (AMM 32-12-02/401).
(b) If the clearance between the stop fitting and the stop pad is not the same across their surfaces, do the door stop adjustment (AMM 32-12-02/401).
(c) Measure the clearance between the stop pad and the stop fitting.
(d) If the clearance is not the same as it is specified (Fig. 501, Details A and B), do the steps that follow:

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE MAIN LANDING GEAR. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

1) Use the ground release lever for the door to open the main landing gear door.
2) Remove the bolts which hold the stop pad on the bottom of the stop.
3) Add or remove shims, if it is necessary.

NOTE: If you remove layers of the lamination from the shim, you can decrease the thickness of the shim. Each layer of the lamination is 0.003 inches thick.

4) Use the bolts to install the stop pad on the bottom of the stop.
5) Apply the coating to the outer surface of the pad.
6) Apply the primer to the bolt heads.

S 015-019

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE MAIN LANDING GEAR. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(15) Use the ground release lever for the door to open the main landing gear door, if it is not open.

S 495-020

(16) Put 0.110 inch thick rigging blocks on the lower surfaces of the forward and the aft door stop pads (Fig. 501, Details A and B). Use tape to hold the rigging blocks in position.

S 865-021

(17) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 865-022

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE MAIN LANDING GEAR. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(18) Put the ground release lever for the door to STOW to close the main landing gear door.

S 865-023
(19) Make sure the door closes and latches.

S 865-024
(20) Make sure the uplock mechanism operates smoothly.

S 865-025
(21) Make sure the uplock fitting fully engages the uplock hook.

S 015-026

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE MAIN LANDING GEAR. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(22) Use the ground release lever for the door to open the main landing gear door.

S 865-027
(23) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 095-028
(24) Remove the rigging blocks from the door stop pads.

S 865-079
(25) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 415-034

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE MAIN LANDING GEAR. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(26) Put the ground release lever for the door to stow, to close the main landing gear door.

S 865-035
(27) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 825-036
(28) Adjust the length of the support rod to get the correct clearance between the support pad and the upstop pad (Fig. 501, Detail D).

S 435-037
(29) Tighten the jamnuts to 500-600 pound-inches (Fig. 501, Detail D).

S 225-038
(30) Make sure the movement of the outboard edge seal on the door is in tolerance.
(a) Adjust the outboard edge seal, if it is necessary.

S 825-039
(31) If the hook fitting stop is installed, do the step that follows:
(a) Adjust the shims to get the correct clearance between the stop pad and the hook striker plate (Fig. 501, Detail C).

S 215-080
(32) Do this task; "Measure/Adjust the Clearance for the Latch Locked Sensor" (AMM 32-61-02/201).

TASK 32-12-00-825-040

3. Adjustment of the Shock Strut Door for the Main Landing Gear (Fig. 502)

A. References
(1) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
(2) AMM 07-11-01/201, Jacking Airplane
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(4) AMM 32-00-20/201, Landing Gear Downlocks

B. Access
(1) Location Zones

21/22	Control Cabin
733/743	MLG Drag Brace Door
734/744	MLG Oleo Door
735/745	MLG Trunnion Door

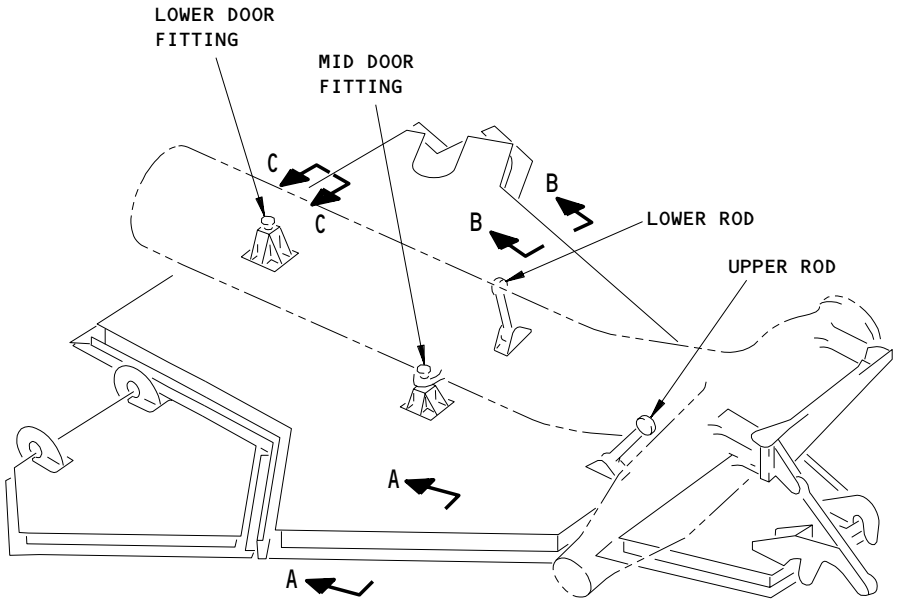
C. Prepare to Adjust the Shock Strut Door

S 495-041
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 585-042
(2) Lift the airplane until you can retract the landing gear (AMM 07-11-01/201).

S 865-043
(3) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 865-044
(4) Make sure the control lever for the landing gear is in the DN position.



Adjustment for the Shock Strut Door
Figure 502 (Sheet 1)

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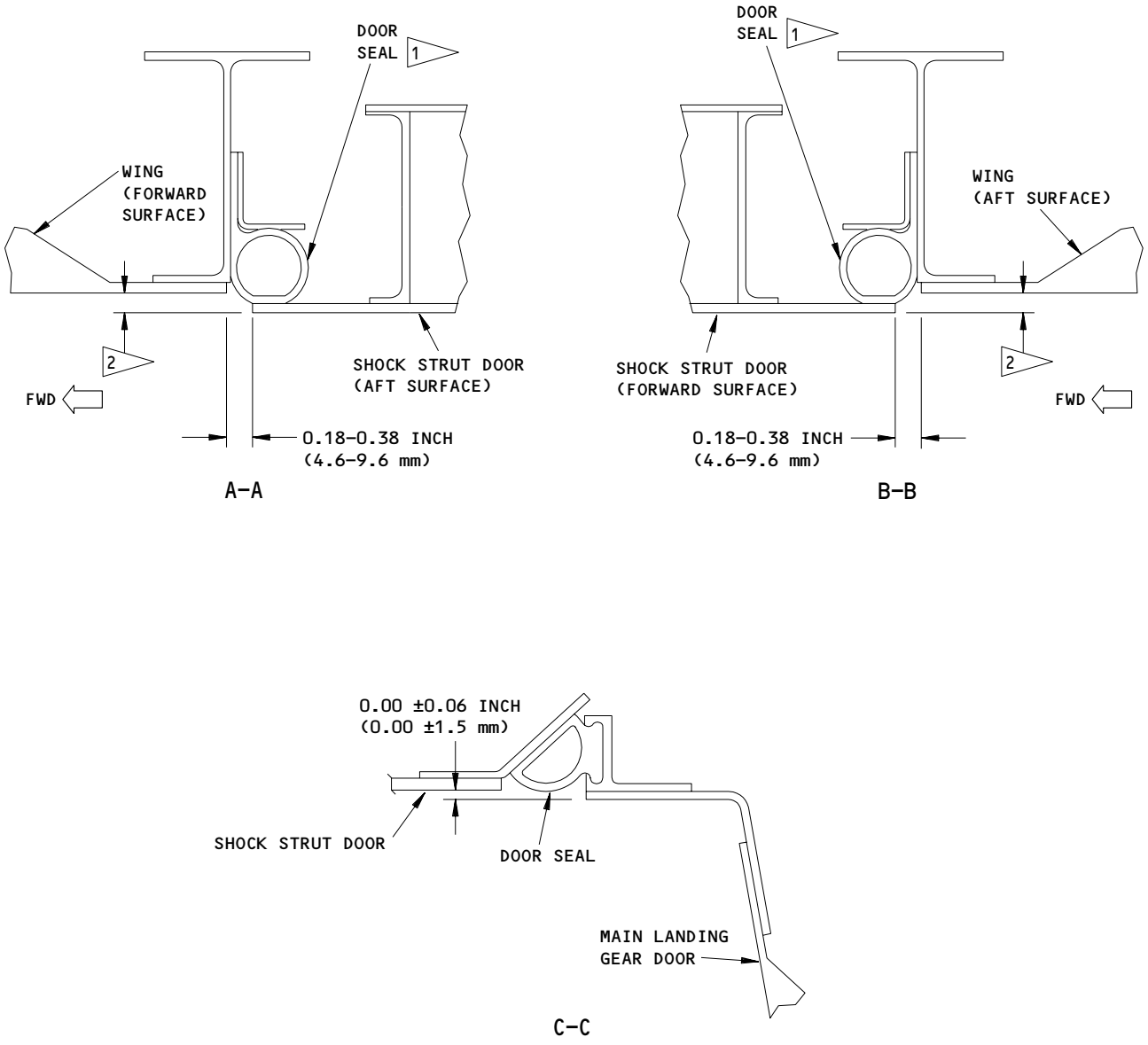


1 ADJUST THE DOOR SEAL UNTIL IT IS COMPRESSED 0.15–0.20 INCH (3.8–5.1 mm) WITH THE DOOR CLOSED

2 THE FORWARD SURFACE CAN BE 0.03 INCH (0.8 mm) HIGHER OR 0.06 INCH (1.5 mm) LOWER THAN THE AFT SURFACE

Adjustment for the Shock Strut Door
Figure 502 (Sheet 2)

S 095-045

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON ALL THE LANDING GEARS BUT THE ONE TO BE ADJUSTED. WHEN YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR, THE LANDING GEAR CAN RETRACT AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Remove the downlock from the main landing gear which is to be adjusted (AMM 32-00-20/201).

S 865-046

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Put the control lever for the landing gear to the UP position to retract the main landing gear.

S 865-047

(7) Put the control lever for the landing gear to the OFF position, attach a DO-NOT-CLOSE tag.

S 225-081

(8) Do a check of the fit/fair of the shock strut door (Fig. 502).

S 225-082

(9) If the shock strut door is not in tolerance, do one of these tasks "Adjust the Shock Strut Door (Door Removed from Shock Strut)" or "Adjust the Shock Strut Door (Door on Shock Strut)".

NOTE: If both shock strut door fittings need to be adjusted, it is easier to do the adjustments with the door removed from the shock strut.

S 225-083

(10) If the shock strut door is within tolerance, do the task "Put the Airplane Back to Its Usual Condition".

D. Adjust the Shock Strut Door (Door Removed from Shock Strut)

S 985-084

(1) Put the control lever for the landing gear to the DN position to extend the main landing gear.

S 485-085

(2) Install the downlock on the main landing gear (AMM 32-00-20/201).

S 015-086
(3) Remove the shock strut door (AMM 32-12-06/401).

S 825-087
(4) Add or remove washers, to get the necessary fit/fair, at each strut door fitting.

S 825-088
(5) Adjust each rod to get the necessary fit/fair, as needed.

S 415-089
(6) Install the shock strut door (AMM 32-12-06/401).

S 085-090
(7) Remove the downlock from the main landing gear (AMM 32-00-20/201).

S 985-091
(8) Put the control lever for the landing gear to the UP position to retract the landing gear.

S 985-092
(9) Put the control lever for the landing gear to the OFF position, attach a DO-NOT-CLOSE tag.

S 225-093
(10) Do a check of the fit/fair of the shock strut door (Fig. 502).

S 825-094
(11) Adjust the shock strut door again, if needed.

S 225-095
(12) If the shock strut door is within tolerance, do the task "Put the Airplane Back to Its Usual Condition".

E. Adjust the Shock Strut Door (Door on Shock Strut)

S 985-096
(1) Put the control lever for the landing gear to the DN position to extend the main landing gear.

S 485-097
(2) Install the downlock on the main landing gear (AMM 32-00-20/201).

S 825-098
(3) If you need to adjust the lower door fitting, do these steps:

NOTE: Use the instructions in AMM 32-12-06/401 to accomplish the steps that follow.

(a) Disconnect the lower rod from the shock strut.
(b) Disconnect the lower door fitting from the shock strut lug.
(c) Add or remove washers to get the necessary fit/fair.
(d) Connect the lower door fitting to the shock strut lug.
(e) Adjust the lower rod to get the necessary fit/fair, if needed.
(f) Attach the lower rod to the shock strut.

S 825-099
(4) If you need to adjust the mid-door fitting, do these steps:

NOTE: Use the instructions in AMM 32-12-06/401 to accomplish the steps that follow.

(a) Disconnect the upper rod from the shock strut.
(b) Disconnect the mid-door fitting from the shock strut lug.
(c) Add or remove washers to get the necessary fit/fair.
(d) Connect the mid-door fitting to the shock strut lug.
(e) Adjust the upper rod to get the necessary fit/fair, if needed.
(f) Attach the upper rod to the shock strut.

S 825-100
(5) Adjust each of the rods to get the necessary fit/fair, as needed.

S 985-101
(6) Put the control lever for the landing gear to the UP position to retract the landing gear.

S 985-102

(7) Put the control lever for the landing gear to the OFF position, attach a DO-NOT-CLOSE tag.

S 225-103

(8) Do a check of the fit/fair of the shock strut door (Fig. 502).

S 825-104

(9) Adjust the shock strut door again, if needed.

S 225-105

(10) If the shock strut door is within tolerance, do the task "Put the Airplane Back to Its Usual Condition".

F. Put the Airplane Back to Its Usual Condition

S 865-051

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Put the control lever for the landing gear to the DN position to extend the landing gear.

S 495-052

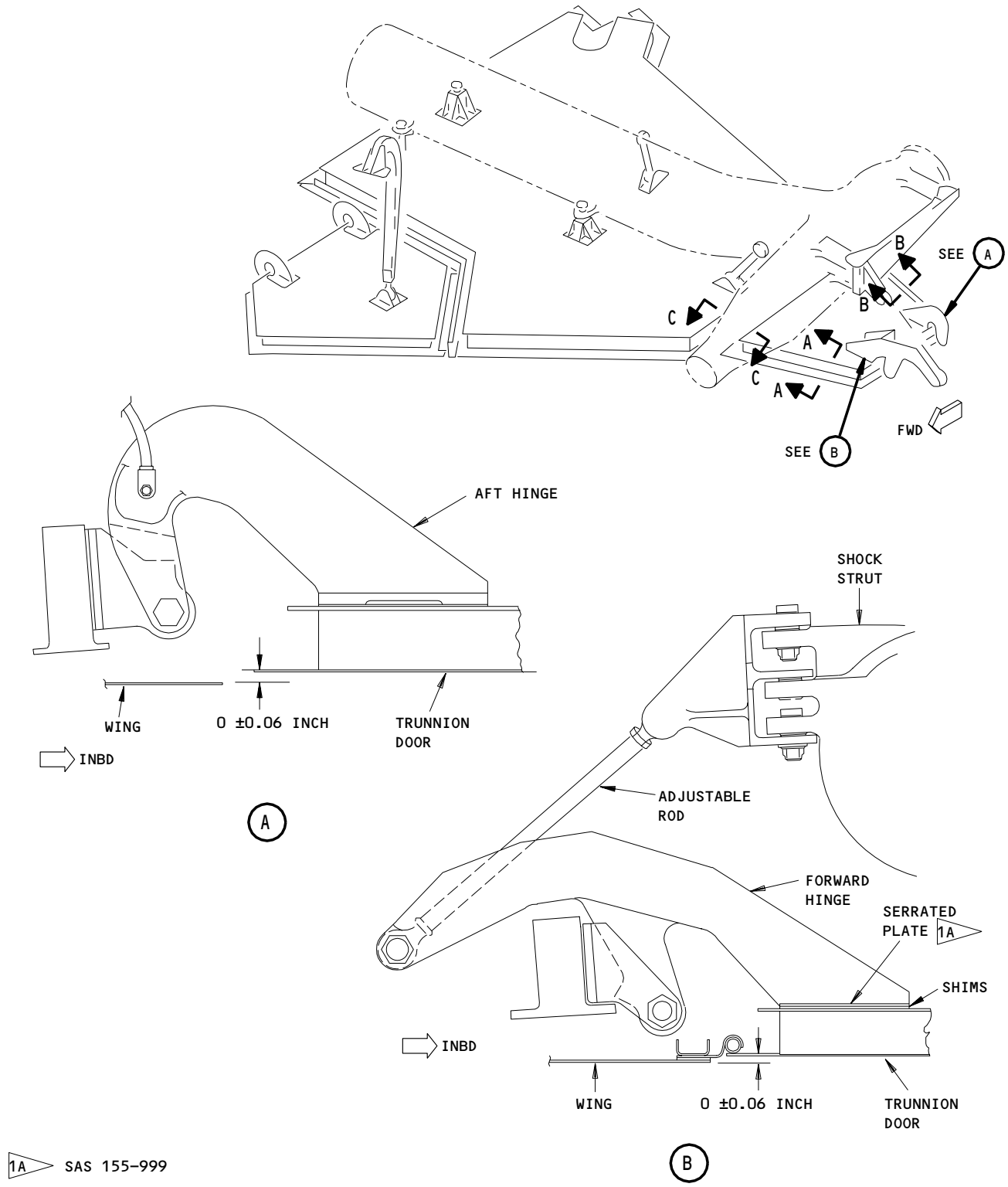
(2) Install the downlocks on the main landing gear (AMM 32-00-20/201).

S 585-053

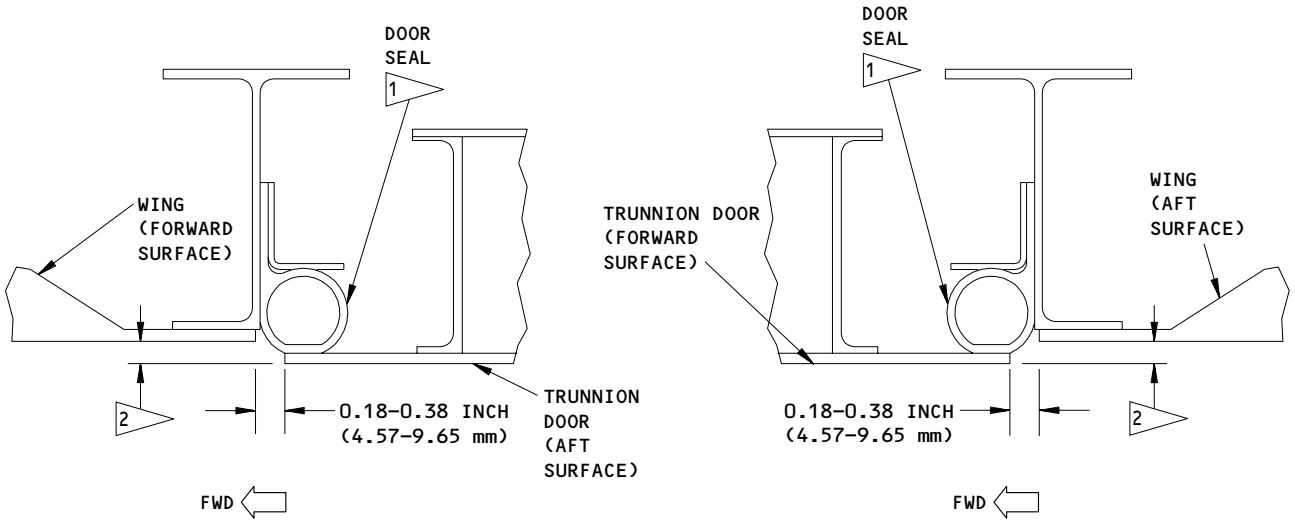
(3) Lower the airplane and remove the jacks (AMM 07-11-01/201).

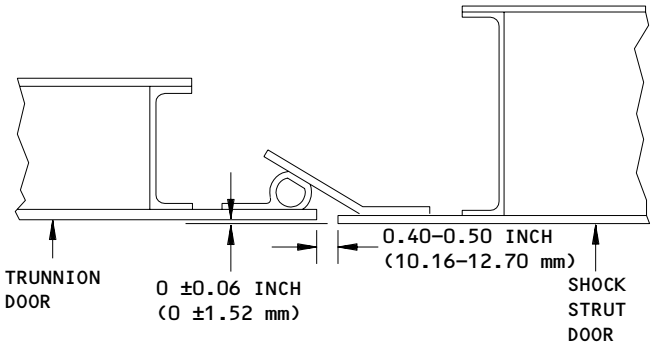
TASK 32-12-00-825-054

4. Adjustment of the Trunnion Door for the Main Landing Gear (Fig. 503)



Adjustment of the Trunnion Door
Figure 503 (Sheet 1)





1 ADJUST THE DOOR SEAL UNTIL IT IS COMPRESSED 0.15–0.20 INCH WITH THE DOOR CLOSED

2 THE FORWARD SURFACE CAN BE 0.03 INCH HIGHER OR 0.06 INCH LOWER THAN THE AFT SURFACE

Adjustment of the Trunnion Door
Figure 503 (Sheet 2)

A. References
(1) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
(2) AMM 07-11-01/201, Jacking Airplane
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(4) AMM 32-00-20/201, Landing Gear Downlocks

B. Access
(1) Location Zones
211/212 Control Cabin
731/741 Main Landing Gear (MLG)
735/745 MLG Trunnion Door

C. Prepare to Adjust the Trunnion Door

S 495-055
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 585-056
(2) Lift the airplane until you can retract the landing gear (AMM 07-11-01/201).

S 865-057
(3) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 095-058

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON ALL THE LANDING GEARS BUT THE ONE TO BE ADJUSTED. WHEN YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR, THE LANDING GEAR CAN RETRACT AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Remove the downlock from the main landing to be adjusted (AMM 32-00-20/201).

S 865-059

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Put the control lever for the landing gear to the UP position to retract the main landing gear.

S 865-060

(6) Put the control lever for the landing gear to the OFF position and attach a DO-NOT-OPERATE tag.

D. Adjust the Trunnion Door

S 225-061

(1) Do a check of the fair of the trunnion door (Fig. 503).

S 825-062

(2) If the trunnion is not in tolerance, do the steps that follow:
   (a) Put the control lever for the landing gear to the DN position to extend the landing gear.
   (b) Install the downlock on the main landing gear (AMM 32-00-20/201).
   (c) Adjust the length of the rod, to adjust the trunnion door until it is in tolerance (Fig. 503, Detail B).
   (d) Remove the downlock from the main landing gear (AMM 32-00-20/201).
   (e) Put the control lever for the landing gear in the UP position to retract the main landing gear.

   NOTE: The retraction test is not necessary if the new rod is of the same length as the used one.

   (f) Do a check of the clearances of the trunnion door.
   (g) Adjust the trunnion door again, if it is necessary.

E. Put the Airplane Back to Its Usual Condition

S 865-063

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Put the control lever for the landing gear to the DN position to extend the main landing gear.

S 495-064

(2) Install the downlocks on the main landing gear (AMM 32-00-20/201).

S 585-065

(3) Lower the airplane and remove the jacks (AMM 07-11-01/201).

TASK 32-12-00-825-066

5. Adjustment of the Drag Brace Door on the Main Landing Gear (Fig. 504)

A. References

(1) AMM 07-11-01/201, Jacking Airplane

(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

(3) AMM 32-00-20/201, Landing Gear Downlocks

B. Access

(1) Location Zones

211/212	Control Cabin
731/741	Main Landing Gear (MLG)
733/743	MLG Drag Brace Door

C. Prepare to Adjust the Drag Brace Door

S 495-067

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 585-068

(2) Lift the airplane until you can retract the landing gear (AMM 07-11-01/201).

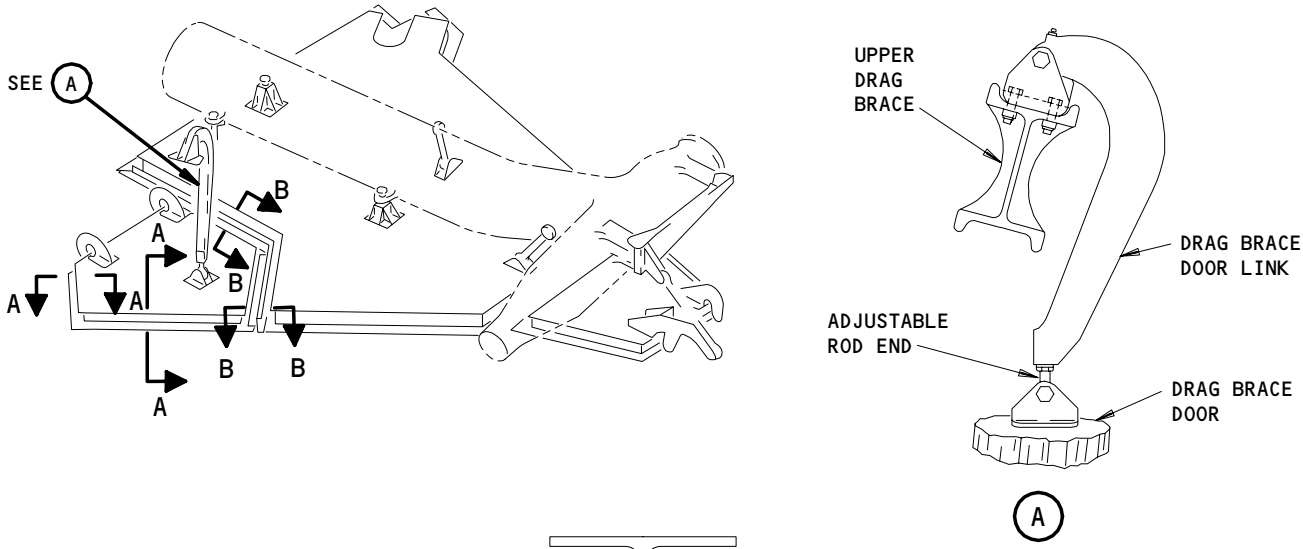
S 865-069

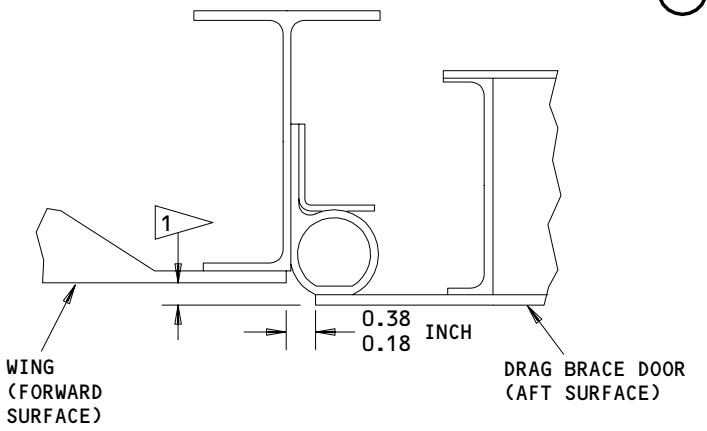
(3) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 095-070

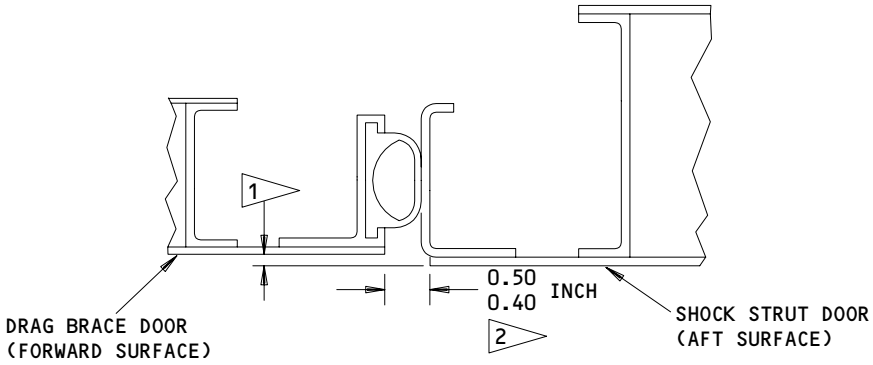
WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON ALL THE LANDING GEARS BUT THE ONE TO BE ADJUSTED. WHEN YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR, THE LANDING GEAR CAN RETRACT AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Remove the downlocks from the main landing gear to be adjusted (AMM 32-00-20/201).





A–A



B–B

1 THE FORWARD SURFACE CAN BE 0.03 INCH HIGHER OR 0.06 INCH LOWER THAN THE AFT SURFACE

2 IF YOU CANNOT ADJUST THE DOOR TO THE DIMENSIONS SHOWN, YOU CAN CHANGE THE TOLERANCE TO 0.40–0.60 INCH

Adjustment of the Drag Brace Door
Figure 504

S 865-071

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Put the control lever for the landing gear to the UP position to retract the main landing gear.

S 865-072

(6) Put the control lever for the landing gear to the OFF position and attach a DO-NOT-CLOSE tag.

D. Adjust the Drag Brace Door

S 225-073

(1) Do a check of the fit/fair of the drag brace door (Fig. 504).

S 825-074

(2) If the shock strut door is not in tolerance, do the steps that follow:
   (a) Put the control lever for the landing gear to the DN position to extend the main landing gear.
   (b) Install the downlocks on the main landing gear (AMM 32-00-20/201).
   (c) Adjust the rod end of the door link to adjust the drag brace door until it is in tolerance (Fig. 504).
   (d) Remove the downlock from the main landing gear (AMM 32-00-20/201).
   (e) Put the control lever for the landing gear to the UP position to retract the main landing gear.
   (f) Do a check of the fit/fair of the drag brace door.
   (g) Adjust the drag brace door, if it is necessary.

E. Put the Airplane Back to Its Usual Condition

S 865-075

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Put the control lever for the landing gear to the DN position to extend the main landing gear.

S 495-076

(2) Install the downlocks on the main landing gear (AMM 32-00-20/201).

S 585-077

(3) Lower the airplane and remove the jacks (AMM 07-11-01/201).

MAIN GEAR DOOR - REMOVAL AND INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the main landing gear door. The task is equivalent for the left and the right main landing gear. The second task installs the main landing gear door. This task is equivalent for the left and the right main landing gear.

TASK 32-12-01-004-001

2. Remove the Main Landing Gear Door (Fig. 401)
   A. Equipment
      (1) MLG Door Sling - A32046-17
      (2) Fishpole hoist - commercially available
   B. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

   D. Prepare for the Removal of the Main Landing Gear Doors

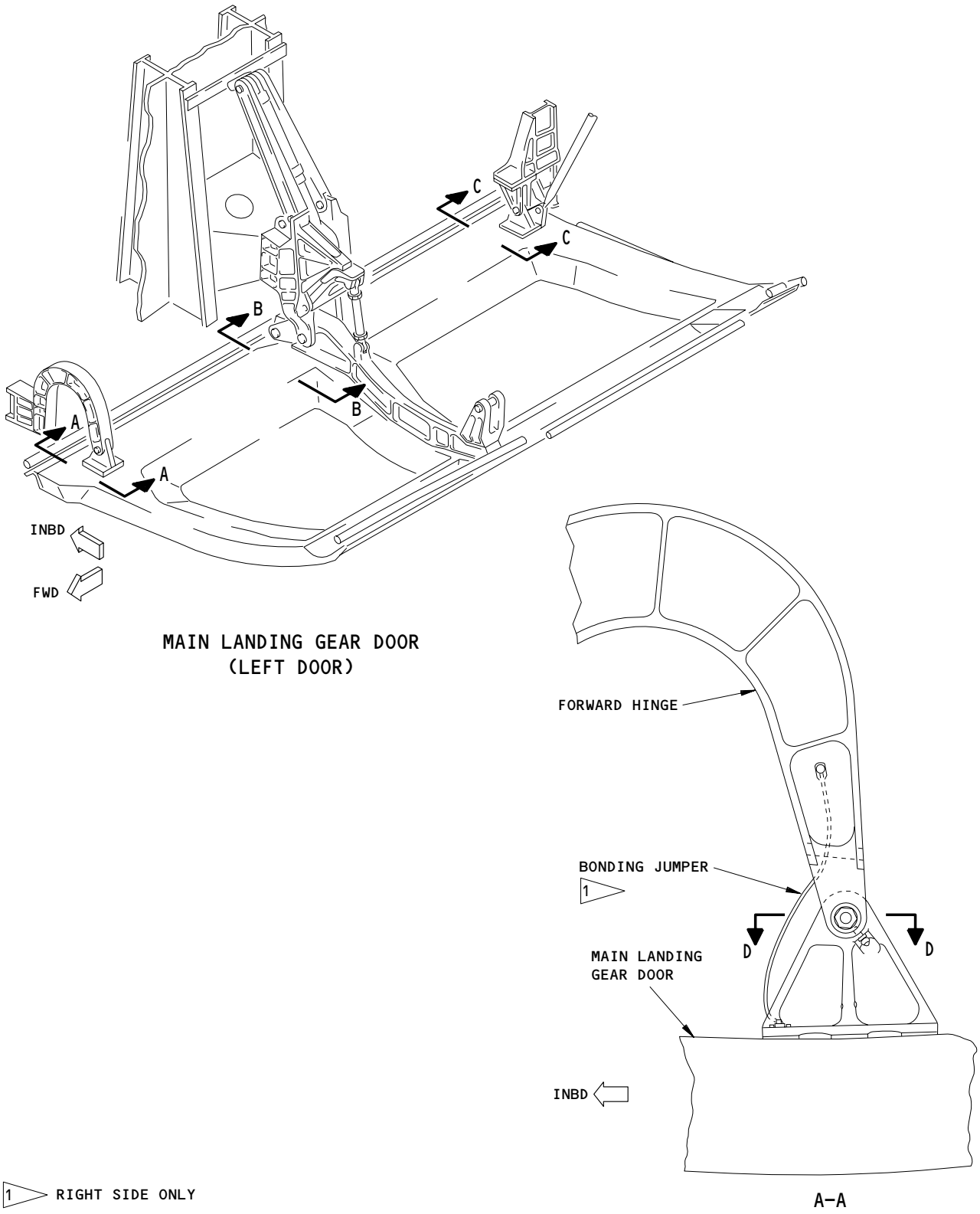
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 944-003

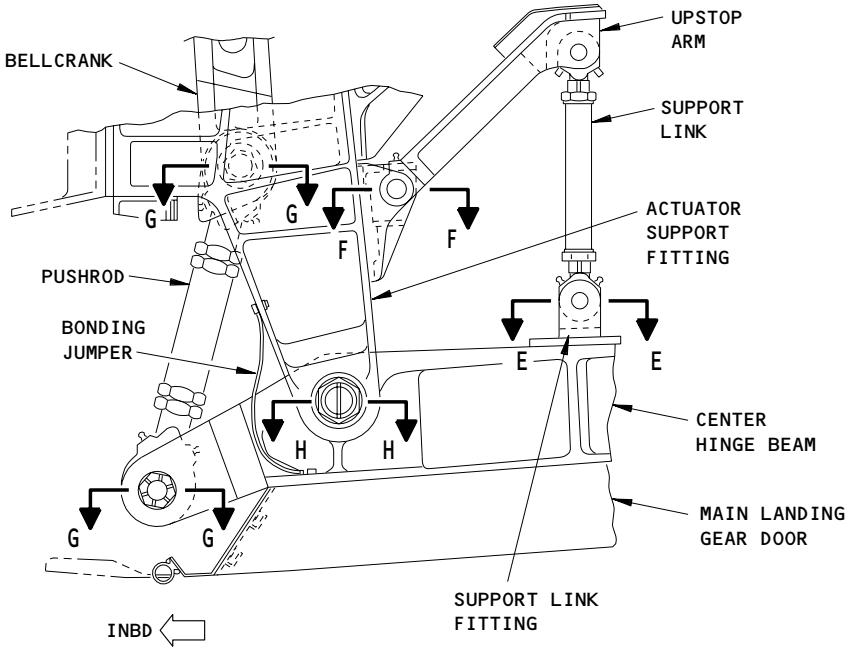
      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

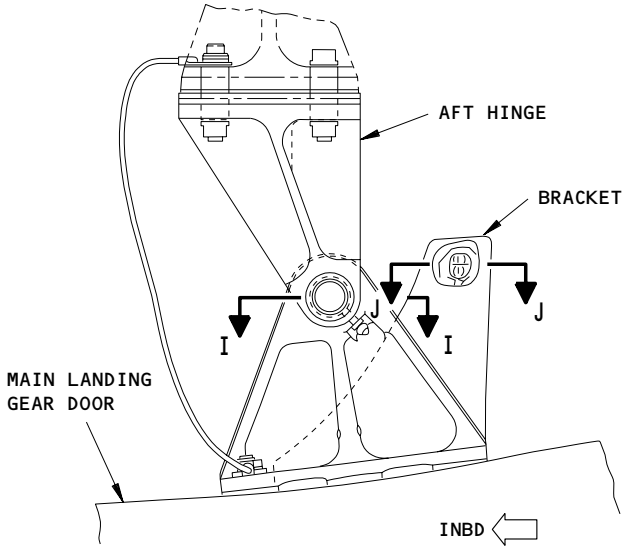
      S 864-004
      (3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).



Main Landing Gear Door Installation
Figure 401 (Sheet 1)

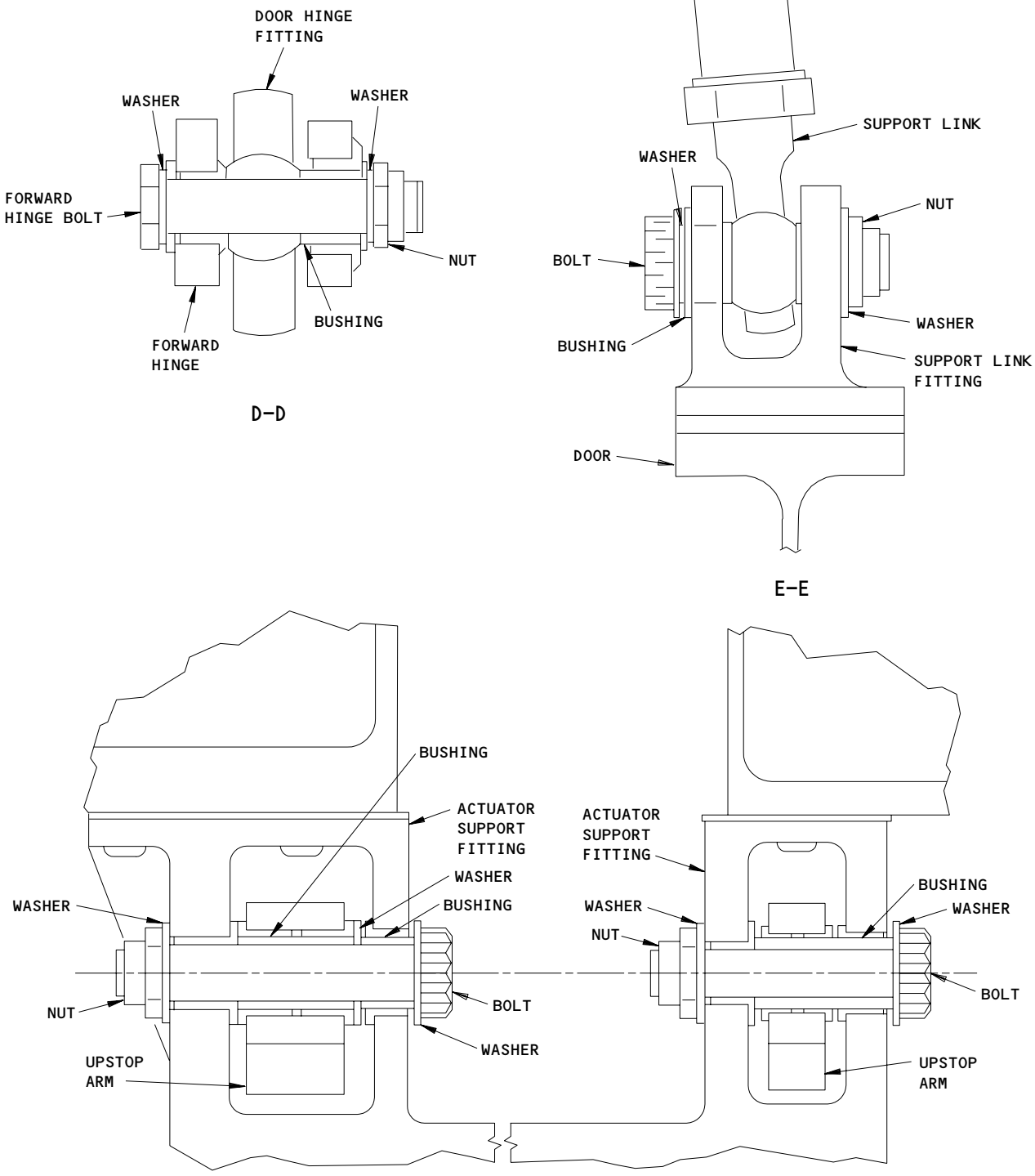


B–B

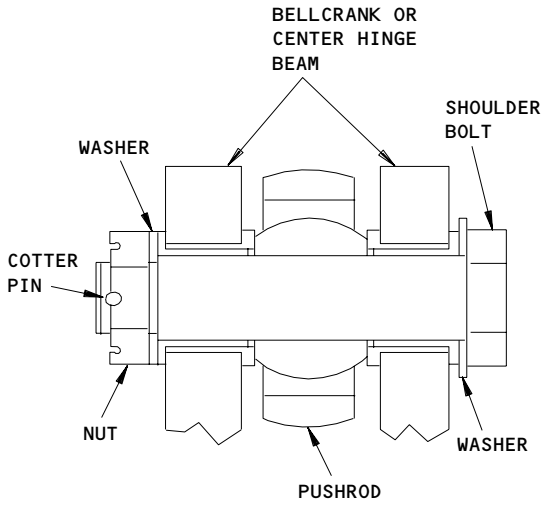


C–C

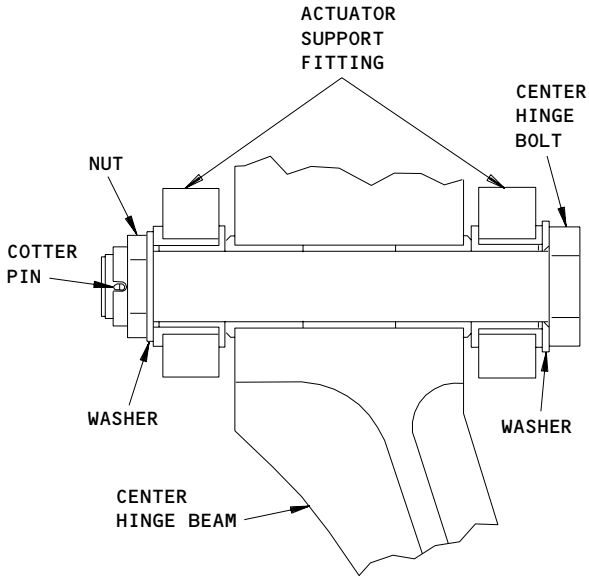
Main Landing Gear Door Installation
Figure 401 (Sheet 2)



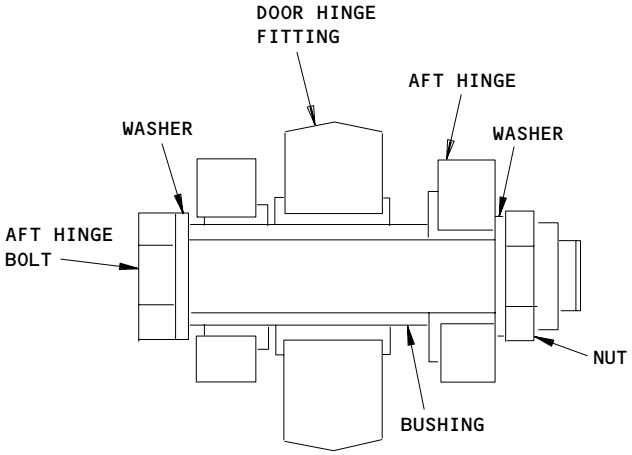
Main Landing Gear Door Installation
Figure 401 (Sheet 3)



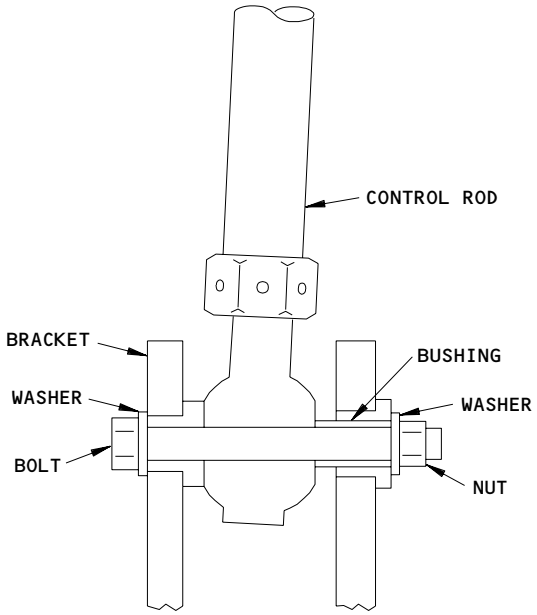
G–G



H–H

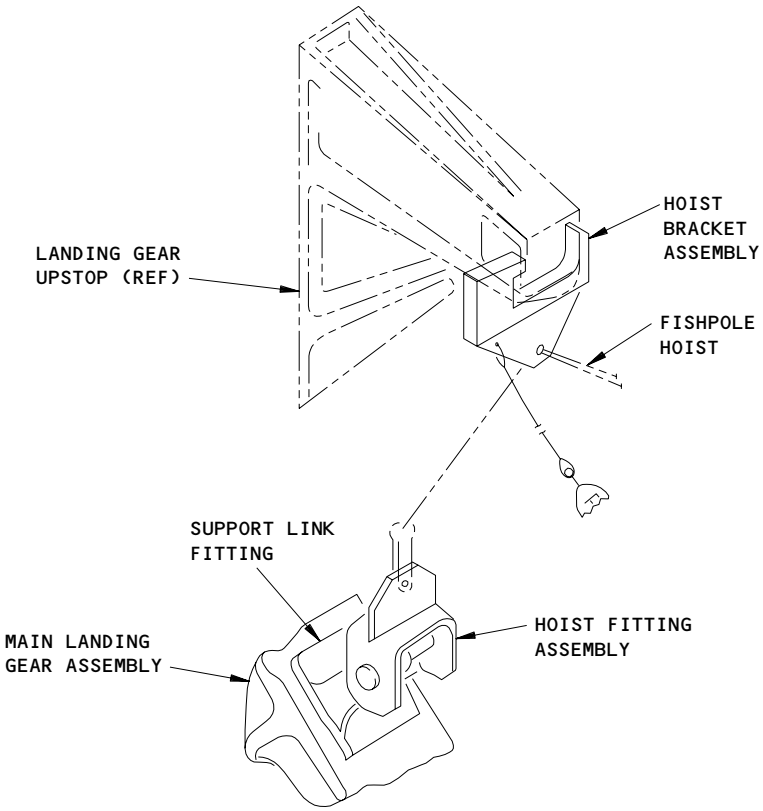


I–I



J–J

Main Landing Gear Door Installation
Figure 401 (Sheet 4)



Main Landing Gear Door Sling Attachment
Figure 402

E. Remove the Main Landing Gear Doors

S 034-005
(1) Remove the bolts to disconnect the control rod from the bracket at the aft hinge (View J-J).

S 034-006
(2) Disconnect the bonding jumpers from the forward and aft hinges (Views A-A and C-C).

S 034-007
(3) Remove the forward and aft hinge bolts to disconnect the main landing gear door from the forward and aft hinges (Views D-D and I-I).

S 034-008
(4) Remove the bolt which connects the support link fitting for the door to the support link (View E-E).

S 034-009
(5) Remove the bolt which connects the support link to the upstop arm.

S 014-010
(6) Remove the support link.

S 944-011

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(7) Remove the door lock from the main landing gear door which you will remove (AMM 32-00-15/201).

S 494-012
(8) Install the MLG Door Sling (Fig. 402).
  (a) Put the hoist plate assembly over the upstop for the main landing gear.
  (b) Install the hoist fitting assembly on the support link fitting for the door.
  (c) Install the retainer pin and the lock pin.
  (d) Install the fishpole hoist to the hoist plate assembly.
  (e) Connect the cable of the fishpole hoist to the hoist fitting assembly.
  (f) Hold the door.

S 034-013
(9) Remove the shoulder bolt which connects the pushrod to the bellcrank (Fig. 401 View G-G).

S 864-014
(10) Lift the door until the shoulder bolt, which connects the main landing door to the push rod, can be removed.

S 844-015
(11) Hold the door and remove the shoulder bolt.

S 014-016
(12) Remove the push rod.

S 864-017
(13) Lower the door until it is balanced and its weight is held by the MLG door sling.

S 034-018
(14) Remove the bolt for the center hinge which connects the door to the actuator support fitting (View H-H).

S 864-019
(15) Use the fishpole hoist to lower the door.

S 094-020
(16) Disconnect the hoist fitting assembly from the door.

S 024-021
(17) Remove the door from the work area.

TASK 32-12-01-404-022

3. Install the Main Landing Gear Door (Fig. 401)
   A. Equipment
      (1) Fishpole Hoist Attach Bracket - MLG Door A32046-17
      (2) Fishpole hoist - commercially available
   B. Consumable Materials
      (1) D00633 Grease, Corrosion Preventative - BMS 3-33 (Preferred)
      (2) D00015 Grease, Corrosion Preventative - BMS3-24 (Alternate)

C. References
(1) AMM 12-21-15/301, Main Gear Doors and Actuating Mechanisms
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 32-12-00/501, Main Gear Doors

D. Access
(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

E. Install the Main Landing Gear Door

S 584-023
(1) Apply grease to the bolts, the washers, the bushings, and the nuts before installation.

S 864-024
(2) Position the door in the work area to align the hinge fittings.

S 494-025
(3) Install the hoist fitting assembly to the main landing gear door (Fig. 402).

S 434-026
(4) Install the retainer pin and the lock pin.

S 864-027
(5) Use the fishpole hoist to lift the door to align the center hinge with the actuator support fitting.

S 434-028
(6) Install the bolt for the center hinge through the parts that follow:
(a) Actuator support fitting
(b) Center hinge fitting
(c) Actuator support fitting

NOTE: Tap the bolt with a plastic tip mallet, if necessary, for the installation. Do not hit the bolt with more than 50 pounds of force.

S 434-029
(7) Install the washer and the nut.

S 434-030
(8) Tighten the nut to 180-240 pound-inches (Fig. 401).

S 434-060
(9) Install the cotter pin (View H-H).

S 434-031
(10) Install the forward hinge bolt through the parts that follow:
(a) washer
(b) bushing
(c) forward hinge
(d) door hinge fitting
(e) and forward hinge.

NOTE: Tap the bolt with a plastic tip mallet, if necessary, for the installation. Do not hit the bolt with more than 30 pounds of force.

S 434-032
(11) Install the washer and the nut (View D-D).
(a) If the forward hinge bolt cannot be installed, do the steps that follow:
1) Loosen the bolts which attach the hinge fitting to the door.
2) Adjust the hinge fitting for the forward door with serrated plates. Use only the quantity necessary to align the fitting with the forward hinge.
3) Tighten the bolts which attach the fitting to the door.
4) Install the forward hinge bolt.

S 434-033
(12) Install the aft hinge bolt through the parts that follow:
(a) Washer
(b) Bushing
(c) Aft hinge
(d) Door hinge fitting

(e) Aft hinge.

S 434-034
(13) Install the washer and the nut (View I-I)
(a) If the aft hinge bolt cannot be installed do the steps that follow:
1) Loosen the bolts which attach the hinge fitting to the door.
2) Adjust the hinge fitting of the aft door with serrated plates to align the fitting with the aft hinge. Add or remove the shims under the serrated plates if necessary.
3) Install the aft hinge bolt.
4) Tighten the bolts which attach the hinge fitting to the door.

S 864-035
(14) Raise (close) the door until the shoulder bolt can be installed inboard of the center hinge support for the door.

S 864-036
(15) Hold the door.

S 434-037
(16) Install the shoulder bolt through the parts that follow:
(a) Washer
(b) Door fitting
(c) Pushrod
(d) Door fitting

S 434-061
(17) Install the washer and the nut (View G-G).

S 434-038
(18) Tighten the nut to 180-240 pound-inches. Loosen to the nearest slot.

S 434-064
(19) Install the cotter pin (View G-G).

S 864-039
(20) Lower (open) the door until the pushrod aligns with the bellcrank.

S 434-040
(21) Install the shoulder bolt through the parts that follow:
(a) Washer
(b) Bellcrank
(c) Pushrod
(d) Bellcrank

S 434-041
(22) Install the washer and the nut.

S 434-042
(23) Tighten the nut to 180-240 pound-inches. Loosen to the nearest slot (Fig. 401).

S 434-059
(24) Install cotter pin (View G-G).

S 434-043
(25) Lower (open) the door until the MLG door sling is loose.

S 094-044
(26) Remove the hoist fitting from the fishpole hoist and the main landing gear door.

S 094-045
(27) Remove the fishpole hoist and the hoist plate assembly.

S 944-046

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(28) Install the door lock on the door which was installed (AMM 32-00-15/201).

S 864-047
(29) Position the support link in the upstop arm.

S 434-048
(30) Install the bolt through the parts that follow:
(a) Washer
(b) Bushing
(c) Upstop arm
(d) Support link
(e) Upstop arm
(f) Bushing.

S 434-049
(31) Install the washer and the nut.

S 824-050
(32) Align the support link with the support link fitting for the door.

S 434-051
(33) Install the bolt through the parts that follow:
(a) Washer
(b) Bushing
(c) Support link
(d) Support link fitting
(e) Bushing.

S 434-062
(34) Install the washer and the nut (View E-E).

S 414-052
(35) Connect the bonding jumpers to the forward and aft hinges (Views A-A and C-C).

NOTE: The bonding jumper on the forward hinge is installed on the right side only.

S 414-053
(36) Connect the control rod to the bracket at the aft hinge (View J-J).

S 434-055

(37) Install the bolt through the parts that follow:
(a) Washer
(b) Bushing
(c) Bracket
(d) Control rod
(e) Bracket
(f) Bushing

S 434-054

(38) Install the washer and the nut.

S 824-056

(39) Adjust the main landing gear door (AMM 32-12-00/501).

S 644-057

(40) Lubricate the door at the grease fittings (AMM 12-21-15/301).

S 944-058

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(41) Remove the door locks from the landing gear and close the doors (AMM 32-00-15/201).

MAIN GEAR DOOR - INSPECTION/CHECK

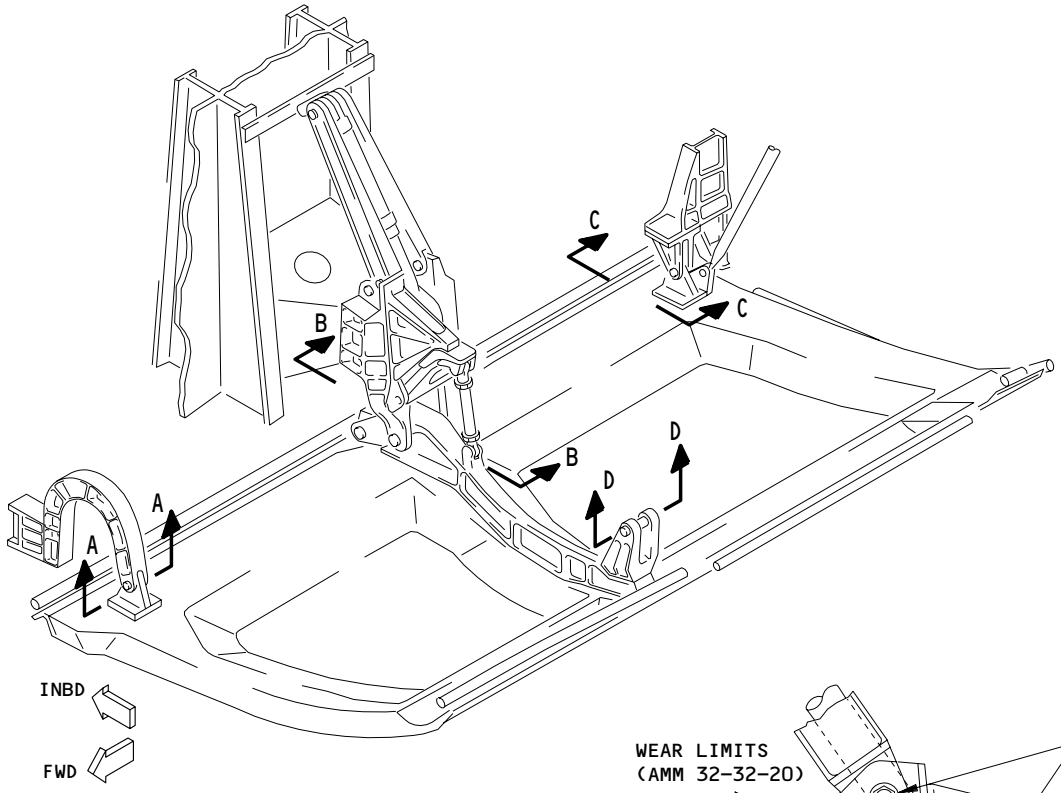
1. General
   A. This procedure only has illustrations and wear limit tables which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Gear Door - Removal/Installation for the procedures to do these tasks.

TASK 32-12-01-206-001

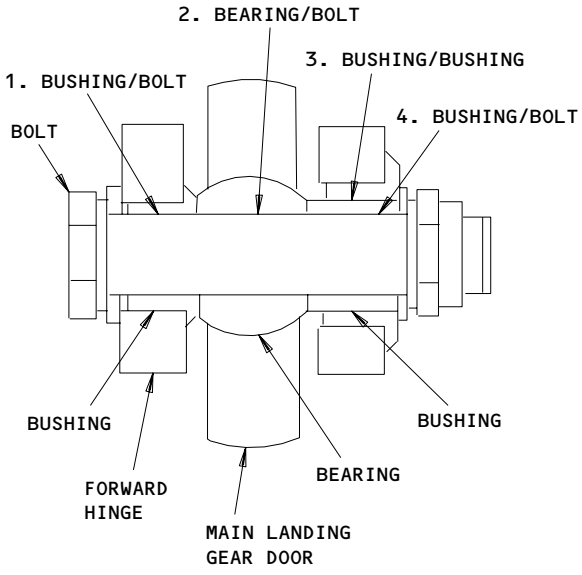
2. Wear Limits for the Door of the Main Landing Gear
   A. Wear Limits for the Door

S 226-002

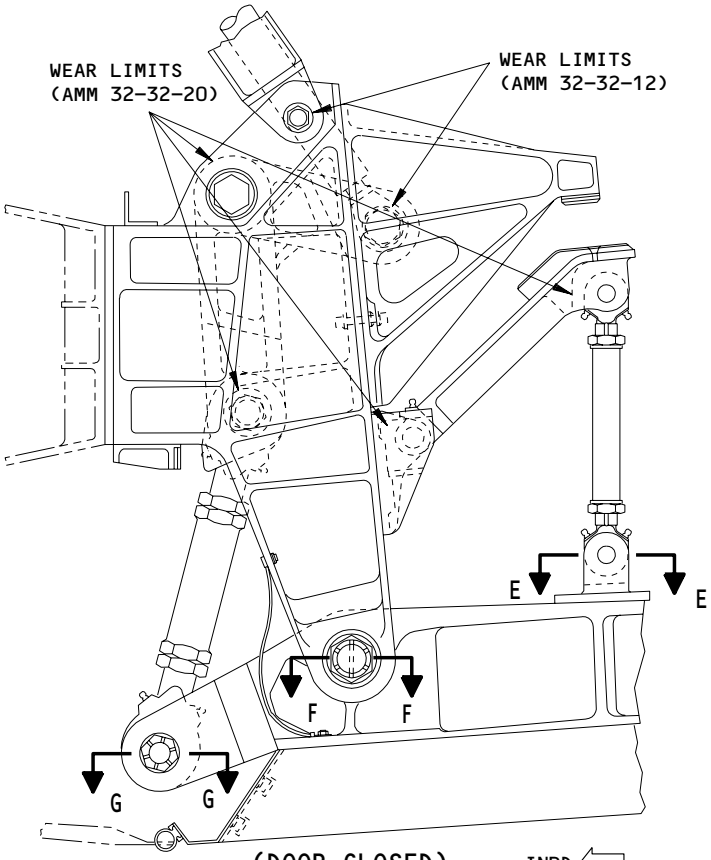
(1) Refer to Fig. 601 for the inspection points and Fig. 602 for the wear limit table.



MAIN LANDING GEAR DOOR
(LEFT DOOR)



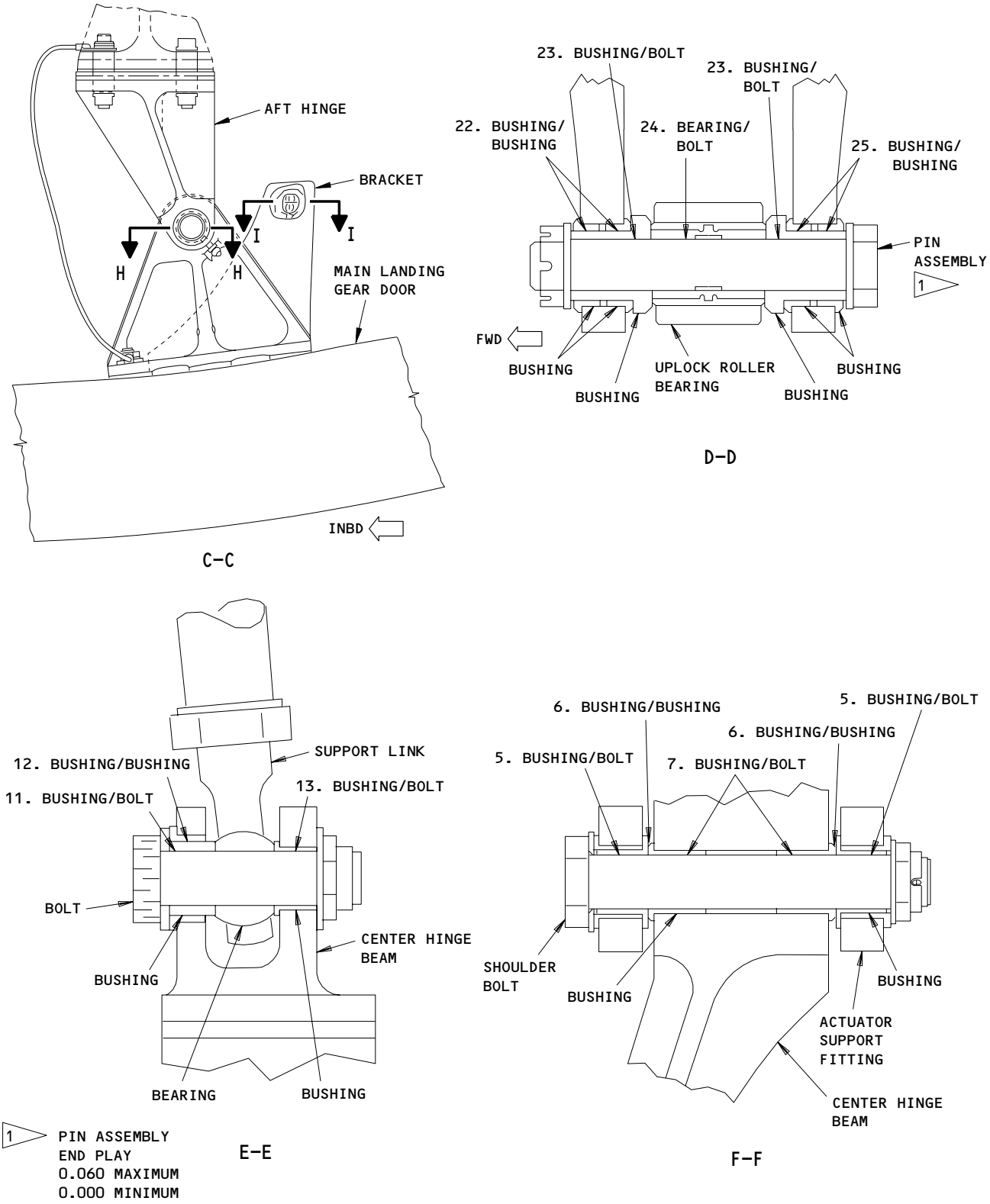
A-A



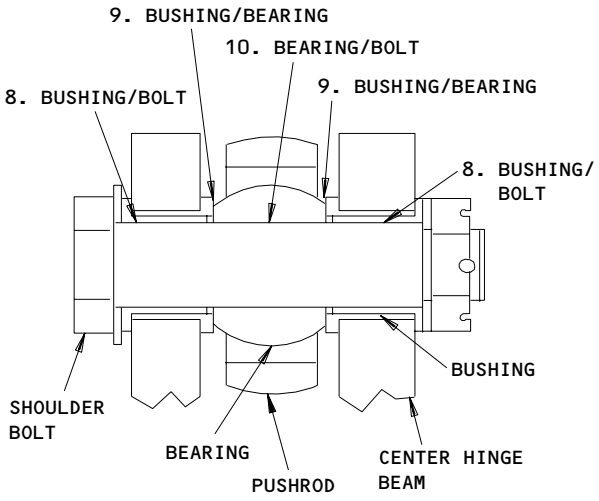
(DOOR CLOSED)
B-B

INBD

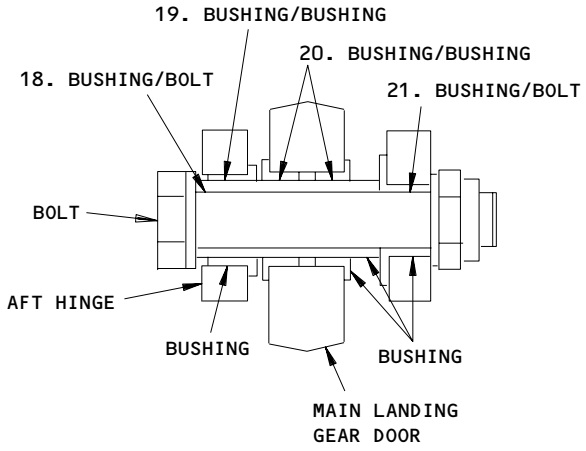
Wear Limits for the Main Landing Gear Door
Figure 601 (Sheet 1)



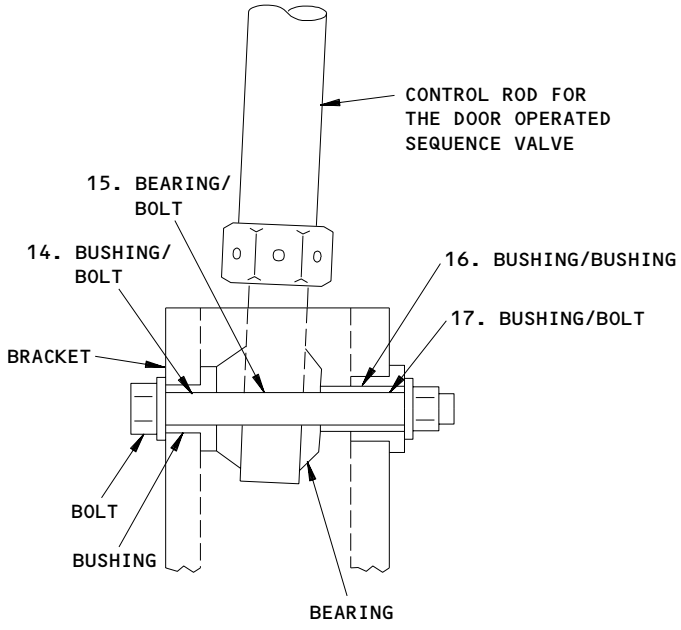
Wear Limits for the Main Landing Gear Door
Figure 601 (Sheet 2)



G–G



H–H



I–I

Wear Limits for the Main Landing Gear Door
Figure 601 (Sheet 3)

FIG. 601 INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	0.5000	0.5005	0.5045	0.0050	X		
	BOLT	OD	0.4985	0.4995	0.4950		X		
2	BEARING	ID	0.5000	0.5005	0.5045	0.0050	X		
	BOLT	OD	0.4985	0.4995	0.4950		X		
3	BUSHING	ID	0.6875	0.6890	0.6915	0.0050	X		
	BUSHING	OD	0.6860	0.6865	0.6825		X		
4	BUSHING	ID	0.5000	0.5005	0.5045	0.0050	X		
	BOLT	OD	0.4985	0.4995	0.4950		X		
5	BUSHING	ID	1.5005	1.5020	1.5053	0.0063	X		
	BOLT	OD	1.4975	1.4990	1.4942		X		
6	BUSHING					0.13 (1)	X		
	BUSHING						X		
7	BUSHING	ID	1.4995	1.5010	1.5052	0.0062	X		
	BOLT	OD	1.4975	1.4990	1.4933		X		
8	BUSHING	ID	1.1250	1.1255	1.1292	0.0052	X		
	BOLT	OD	1.1225	1.1240	1.1198		X		
9	BUSHING					0.048 (2)	X		
	BEARING						X		
10	BEARING	ID	1.1250	1.1255	1.1292	0.0052	X		
	BOLT	OD	1.1225	1.1240	1.1198		X		
11	BUSHING	ID	0.7495	0.7500	0.7542	0.0052	X		
	BOLT	OD	0.7480	0.7490	0.7442		X		
12	BUSHING	ID	1.0615	1.0635	1.0679	0.0064	X		
	BUSHING	OD	1.0605	1.0615	1.0551		X		
13	BUSHING	ID	0.7500	0.7515	0.7542	0.0052	X		
	BOLT	OD	0.7480	0.7490	0.7448		X		

(1) THE MAXIMUM TOTAL CLEARANCE BETWEEN THE CENTER BEAM AND THE SUPPORT HALVES

(2) THE END PLAY OF THE BEARING BETWEEN THE BELLCRANK BUSHINGS

Wear Table for the Main Landing Gear Door
Figure 602 (Sheet 1)

FIG. 601 INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
14	BUSHING	ID	0.2500	0.2515	0.2535	0.0040	X		
	BOLT	OD	0.2485	0.2495	0.2475		X		
15	BEARING	ID	0.2497	0.2500	0.2530	0.0025	X		
	BOLT	OD	0.2485	0.2495	0.2475		X		
16	BUSHING	ID	0.3750	0.3765	0.3782	0.0021	X		
	BUSHING	OD	0.3756	0.3761	0.3744		X		
17	BUSHING	ID	0.2500	0.2515	0.2535	0.0040	X		
	BOLT	OD	0.2485	0.2495	0.2475		X		
18	BUSHING	ID	0.5000	0.5005	0.5045	0.0050	X		
	BOLT	OD	0.4985	0.4995	0.4950		X		
19	BUSHING	ID	0.6875	0.6890	0.6915	0.0050	X		
	BUSHING	OD	0.6860	0.6865	0.6825		X		
20	BUSHING	ID	0.6875	0.6890	0.6915	0.0050	X		
	BUSHING	OD	0.6860	0.6865	0.6825		X		
21	BUSHING	ID	0.4995	0.5005	0.5045	0.0050	X		
	BOLT	OD	0.4985	0.4995	0.4945		X		
22	BUSHING	ID	1.1870	1.1885	1.1914	0.0054	X		
	BUSHING	OD	1.1855	1.1860	1.1816		X		
23	BUSHING	ID	0.8755	0.8765	0.8792	0.0050	X		
	BOLT	OD	0.8736	0.8742	0.8705		X		
24	BEARING	ID	0.8743	0.8750	0.8792	0.0050	X		
	BOLT	OD	0.8736	0.8742	0.8693		X		
25	BUSHING	ID	1.2495	1.2510	1.2540	0.0050	X		
	BUSHING	OD	1.2475	1.2485	1.2440		X		

Wear Limits for the Main Landing Gear Door
Figure 602 (Sheet 2)

MAIN GEAR DOOR STOPS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains four tasks. The first task removes the forward doorstop on the main landing gear doors. The second task installs the forward doorstops. The third task removes the aft doorstop for the main landing gear doors. The fourth task installs the aft doorstops.

   TASK 32-12-02-004-001

2. Remove the Forward Door Stop on the Main Landing Gear Doors
   A. References
      (1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) 32-00-15/201, Landing Gear Door Lock
      (3) 32-00-20/201, Landing Gear Downlock
   B. Access
      (1) Location Zones

143/144	Main Landing Gear (MLG) Wheel Wells
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

   C. Prepare to Remove the Forward Door Stop (Fig. 401)

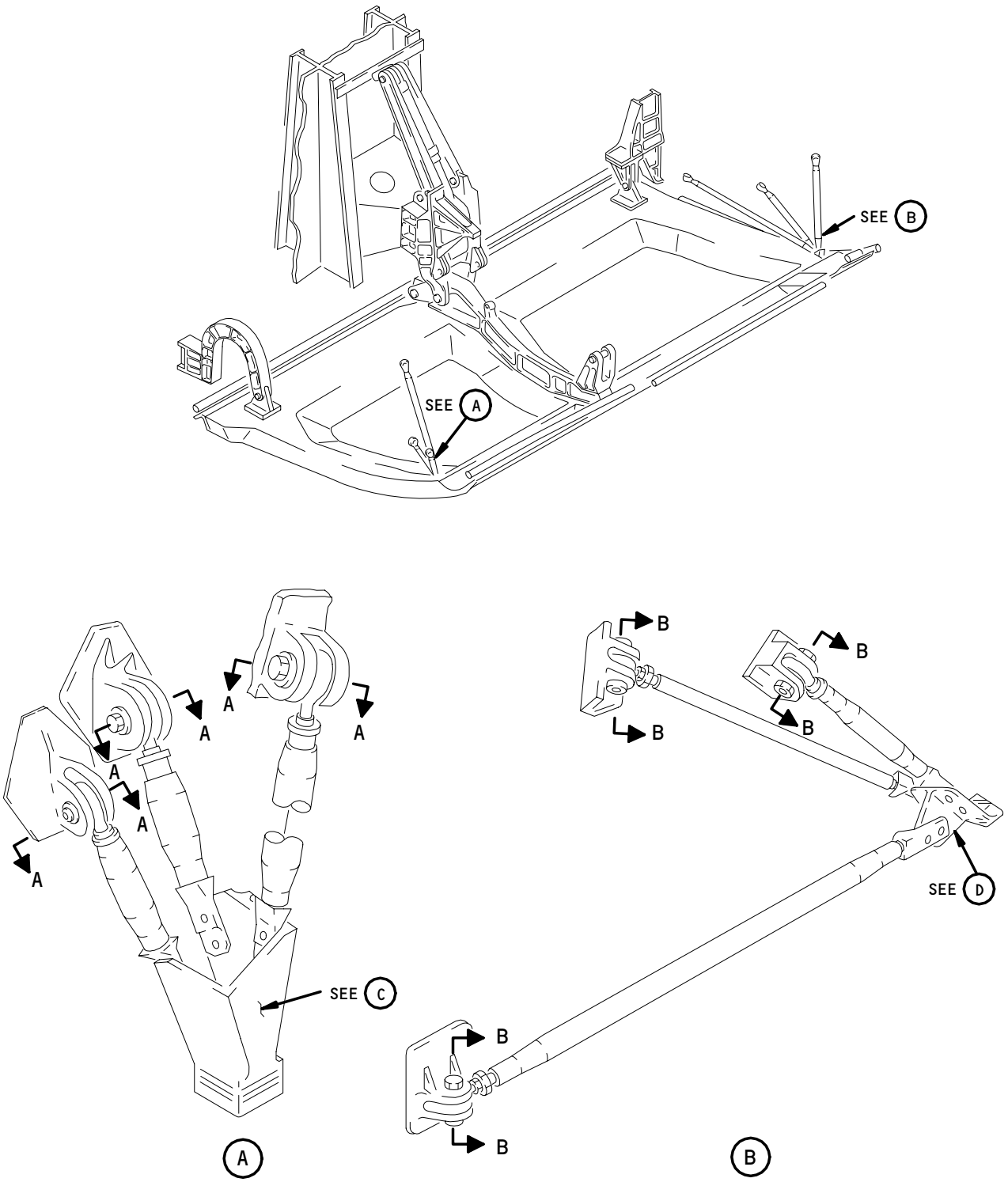
      S 494-003
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20/201).

      S 494-032

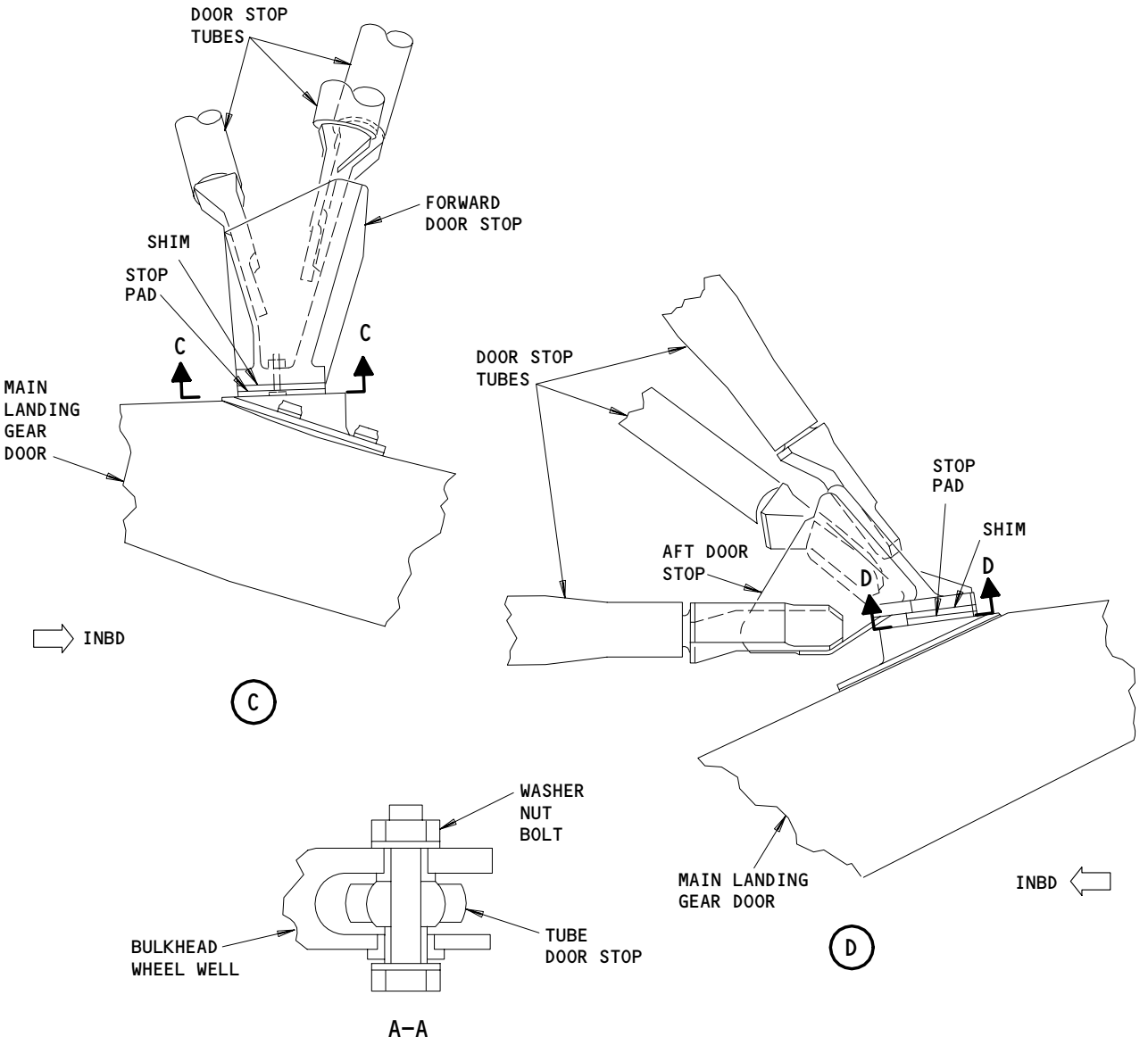
      WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open the doors for the landing gear and install the door locks (Ref 32-00-15/201).

      S 864-005
      (3) Remove the pressure from the center hydraulic system (Ref 29-11-00/201).



Door Stop Installation for the Main Landing Gear Door
Figure 401 (Sheet 1)



Door Stops Installation for the Main Landing Gear Door
Figure 401 (Sheet 2)

D. Remove the Forward Door Stops

S 024-006

(1) Remove the bolts to disconnect the forward door stop tubes from the forward bulkhead fittings (3 locations). The fittings are in the wheel well of the main landing gear.

TASK 32-12-02-404-031

3. Install the Forward Door Stop on the Main Landing Gear Doors

A. Consumable Materials

(1) A00247 Sealant - BMS 5-95
(2) C00064 Coating - MIL-C-5541, Type II, (Alodine 1200)
(3) C00259 Primer - BMS 10-11, Type I
(4) D00633 Grease - BMS 3-33 (Preferred)
(5) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

B. References

(1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(2) 32-00-15/201, Landing Gear Door Lock
(3) 32-00-20/201, Landing Gear Downlock
(4) 51-21-04/701, Alodizing

C. Access

(1) Location Zones

143/144	Main Landing Gear (MLG) Wheel Wells
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

D. Install the Forward Door Stop (Fig. 401).

S 094-034

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCK. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the door locks for the landing gear and close the doors (Ref 32-00-15/201).

S 864-009

(2) Remove the pressure from the center hydraulic system (Ref 29-11-00/201).

S 864-035

WARNING: MAKE SURE THE LANDING GEAR CONTROL LEVER IS IN THE DOWN POSITION. IF THE DOORS OPEN WHEN YOU DO THIS PROCEDURE THEY CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Place the landing gear control lever in the DOWN position and attach a DO-NOT-OPERATE tag.

S 844-011

(4) Position the forward door stop tubes in the forward bulkhead fittings.
   (a) The pad on the door stop must fully touch the stop pad on the main landing gear door (Detail C).
   (b) The edges of the pads must be aligned.

S 824-012

(5) If the forward door stop does not fit, do the steps that follow to adjust the door stop:
   (a) Cut the lockwire on the jamnuts.
   (b) Tighten or loosen the rod end bearings to adjust the length of the tubes.
   (c) Move the forward door stop tubes in the fittings.
      1) When the stop fits, make sure you can see the rod end bearing through the inspection holes. If you cannot see the bearing through the inspection hole, tighten the bearing until you can see it.
      2) Lockwire the jam nut.
   (d) Make sure there is a 0.001-0.01-inch clearance between the stop pad and the door (Detail C).
      1) Remove the pad from the bottom stop if the clearance between the pad and the door is incorrect.

2) Add or remove shims to get the correct clearance.
3) Install the pad.

(e) Put a layer of coating on the exposed surfaces (Ref 51-21-04/701).

(f) Put a layer of primer on the heads of the fasteners.

S 494-036

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(6) Open the doors for the landing gear and install the door locks (Ref 32-00-15/201).

S 424-014

(7) Install the bushings and the bolts to connect the forward door stop tubes to the fittings for the forward bulkhead (View A-A).

S 434-015

(8) Install the cotter pins and/or the lockwire.

S 864-044

(9) Remove the DO-NOT-OPERATE tag and make sure the control lever for the landing gear is in the DN position.

S 844-016

(10) Do the steps that follow to do a check of the forward door stops to make sure the installation is correct.

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Remove the main gear door locks and close the doors (Ref 32-00-15/201).

(b) Remove the pressure from the center hydraulic system (Ref 29-11-00/201).

WARNING: MAKE SURE THE LANDING GEAR CONTROL LEVER IS IN THE OFF POSITION. IF THE DOORS COME OPEN THEY CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(c) Move the landing gear control lever to OFF and attach a DO-NOT-OPERATE tag.

(d) Measure the clearance again between the stop pad and the door.
(e) Put the Airplane Back to Its Usual Condition

TASK 32-12-02-004-017

4. Remove the Aft Door Stop on the Main Landing Gear Doors

A. References
(1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(2) 32-00-15/201, Landing Gear Door Lock
(3) 32-00-20/201, Landing Gear Downlock

B. Access
(1) Location Zones

143/144	Main Landing Gear (MLG) Wheel Wells
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

C. Prepare to Remove the Aft Door Stop (Fig. 401).

S 494-018
(1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20/201).

S 494-037

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (Ref 32-00-15/201).

S 864-020
(3) Remove the pressure from the center hydraulic system (Ref 29-11-00/201).

D. Remove the Aft Door Stop

S 024-021
(1) Remove the bolts to disconnect the aft door stop tubes from the aft bulkhead (3 locations). The bulkhead is in the wheel well of the main landing gear.

TASK 32-12-02-404-002

5. Install the Aft Door Stop on the Main Landing Gear Doors

A. Consumable Materials

(1) A00247 Sealant - BMS 5-95
(2) C00064 Coating - MIL-C-5541, Type II, (Alodine 1200)
(3) C00259 Primer - BMS 10-11, Type I
(4) D00633 Grease - BMS 3-33 (Preferred)
(5) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

B. References

(1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(2) 32-00-15/201, Landing Gear Door Lock
(3) 32-00-20/201, Landing Gear Downlock
(4) 51-21-04/701, Alodizing

C. Access

(1) Location Zones

143/144	Main Landing Gear (MLG) Wheel Wells
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

D. Install the Aft Door Stop (Fig. 401)

S 094-038

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the door locks for the landing gear and close the doors (Ref 32-00-15/201).

S 864-023

(2) Remove the pressure from the center hydraulic system (Ref 29-11-00/201).

S 864-039

WARNING: MAKE SURE THE LANDING GEAR CONTROL LEVER IS IN THE OFF POSITION. IF THE DOORS OPEN THEY CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Move the landing gear control lever to OFF and attach a DO-NOT-OPERATE tag.

S 844-025

(4) Position the aft door stop tubes in the aft bulkhead fittings.
   (a) The pad on the door stop must fully touch the stop pad on the main landing gear door (Detail D).
   (b) The edges of the pads must be aligned.

S 824-026

(5) If the aft door stop does not fit, do the steps that follow to adjust the door stop:
   (a) Cut the lockwire on the jam nuts.
   (b) Tighten or loosen the rod end bearings to adjust the length of the tubes.
   (c) Move the aft door stop tubes in the fittings.
   (d) When the stop fits, make sure you can see the rod end bearing through the inspection holes. If you cannot see the bearing through the inspection hole, tighten the bearing until you can see it.
   (e) Make sure there is a 0.001-0.01-inch clearance between the stop pad and the door (Detail D).
      1) Remove the pad from the bottom stop if the clearance between the pad and the door is incorrect.
      2) Add or remove shims to get the correct clearance.
      3) Install the pad.
   (f) Put a layer of coating on the exposed surfaces (Ref 51-21-04/701).
   (g) Put a layer of primer on the heads of the fasteners.

S 494-040

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(6) Open the doors for the landing gear and install the door locks (Ref 32-00-15/201).

S 424-028

(7) Install the bushings and the bolts to connect the aft door stop tubes to the aft bulkhead fittings (View B-B).

S 434-029

(8) Install the cotter pins and/or the lockwire.

E. Put the Airplane Back to Its Usual Condition

S 844-030

(1) Do the steps that follow to do a check of the aft door stops to make sure the installation is correct.

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Remove the door locks from the landing gear and close the doors (Ref 32-00-15/201).

(b) Remove the pressure from the center hydraulic system (Ref 29-11-00/201).

WARNING: MAKE SURE THE LANDING GEAR CONTROL LEVER IS IN THE OFF POSITION. IF THE DOORS OPEN, THEY CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(c) Move the landing gear control lever to OFF and attach a DO-NOT-OPERATE tag.

(d) Measure the clearance again between the stop pad and the door (Detail D).

S 864-041

(2) Remove the DO-NOT-OPERATE tag and put the control lever for the landing gear to the DN position.

MAIN GEAR SHOCK STRUT DOOR AND LINKAGE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the shock strut door from the main landing gear. The second task installs the shock strut door on the main landing gear.

TASK 32-12-06-004-001

2. Remove the Shock Strut Door for the Main Landing Gear
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones

143/144	Main Landing Gear Wheel Well
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

   C. Prepare to Remove the Shock Strut Door

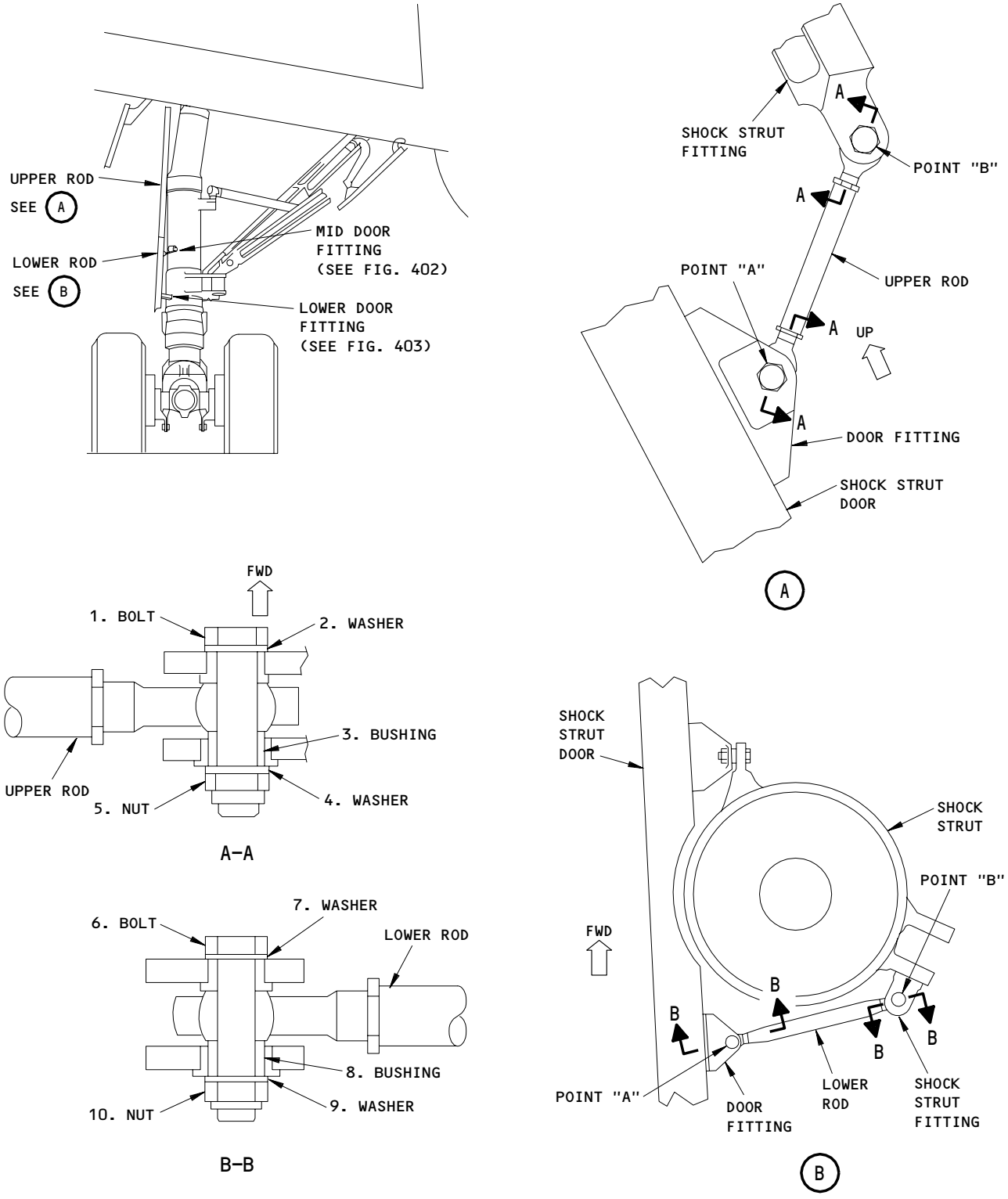
S 494-002

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

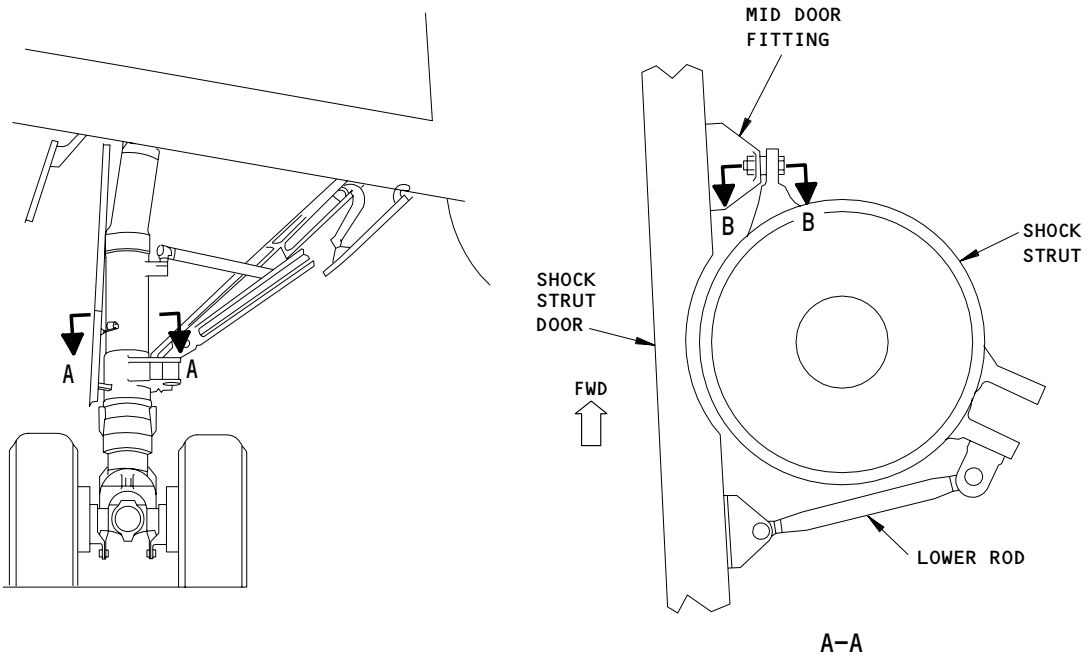
S 494-035

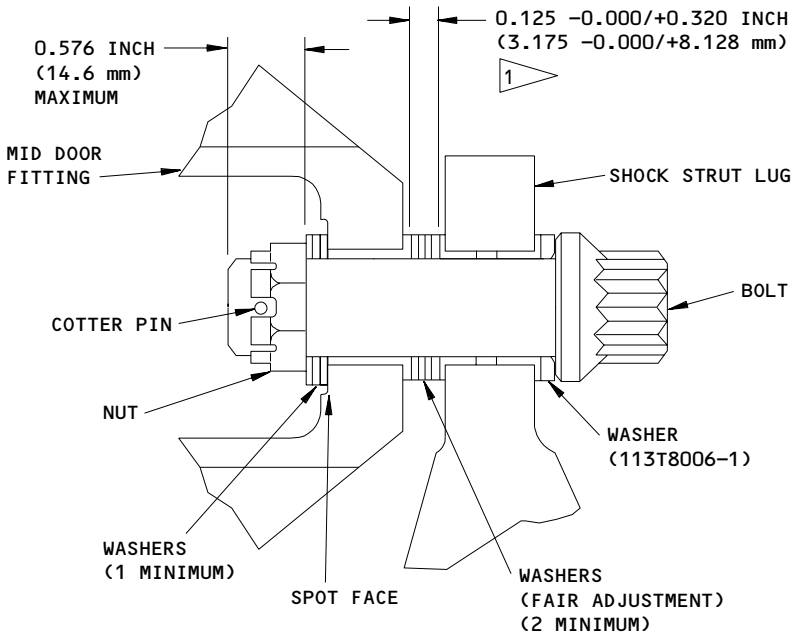
WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Open the main gear doors for the landing gear and install the door locks (AMM 32-00-15/201).



Shock Strut Door and Linkage Installation for the Main Landing Gear
Figure 401

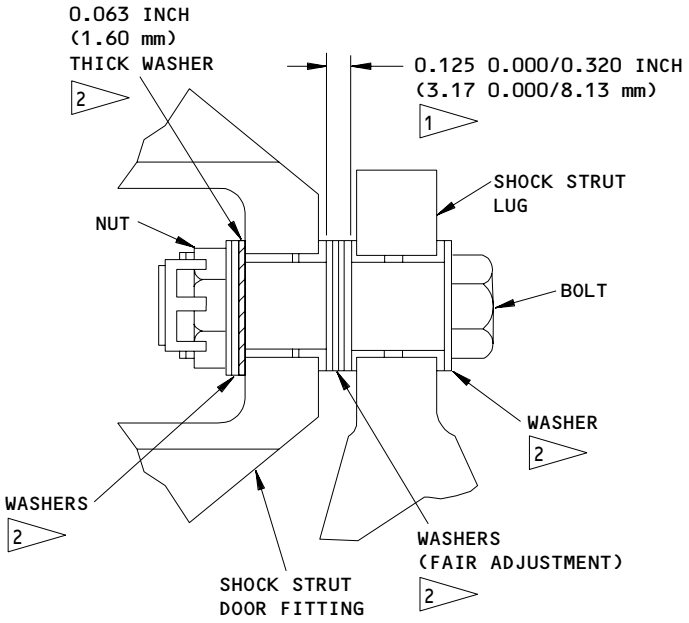




ROD-END BEARING WITH 113T8006-2 NUT
(0.57 INCH (14.5 mm) HIGH)
B-B

1 ADD/REMOVE WASHERS TO ADJUST THE DOOR CLEARANCE (FAIR).

Main Landing Gear Shock Strut Door (Mid) Fitting Installation
Figure 402 (Sheet 1)



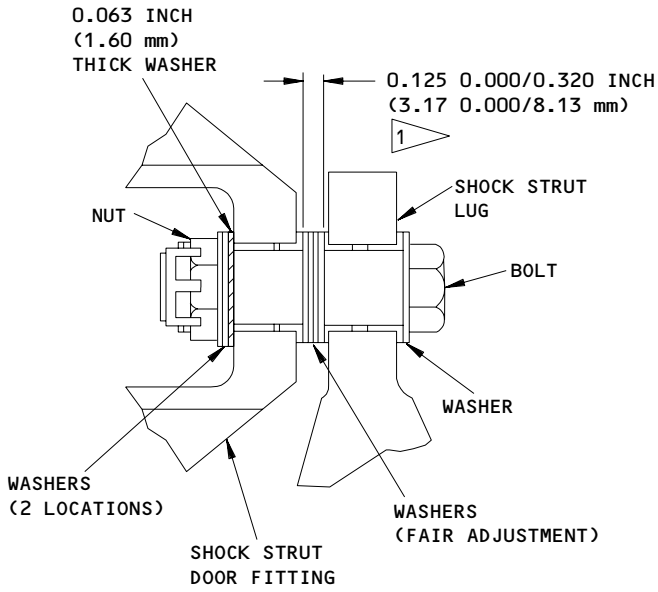
MACHINED FITTING WITHOUT 12 POINT BOLTHEAD AND SPOT FACE
B-B

1 ADD/REMOVE WASHERS TO ADJUST THE DOOR CLEARANCE (FAIR).

2 0.31 INCH (7.87 mm) MINIMUM STACK OF ALL WASHERS.

Main Landing Gear Shock Strut Door (Mid) Fitting Installation
Figure 402 (Sheet 2)

W16483

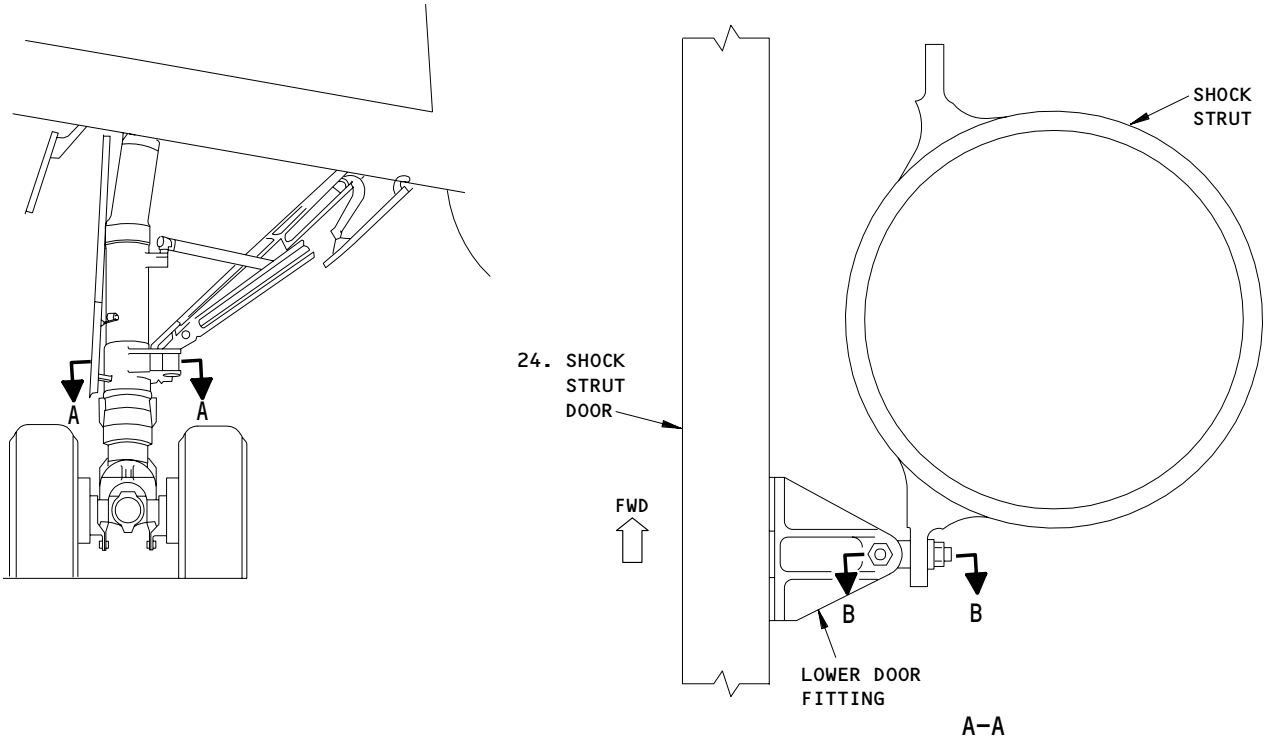


CASTED FITTING
B-B

1 ADD/REMOVE WASHERS TO ADJUST THE DOOR CLEARANCE (FAIR).

Main Landing Gear Shock Strut Door (Mid) Fitting Installation
Figure 402 (Sheet 3)

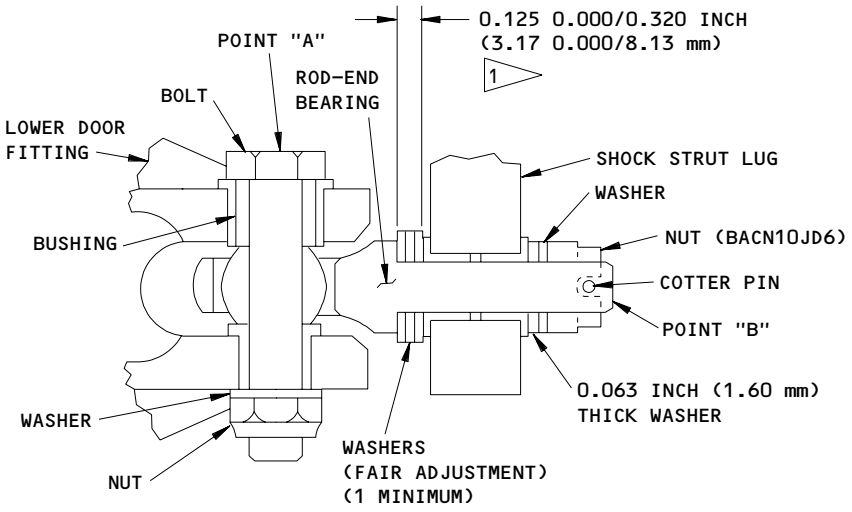
W16245



ROD-END BEARING WITH 113T8006-2 NUT
(0.57 INCH (14.5 mm) HIGH)
B-B

1 ADD/REMOVE WASHERS TO ADJUST THE DOOR CLEARANCE (FAIR).

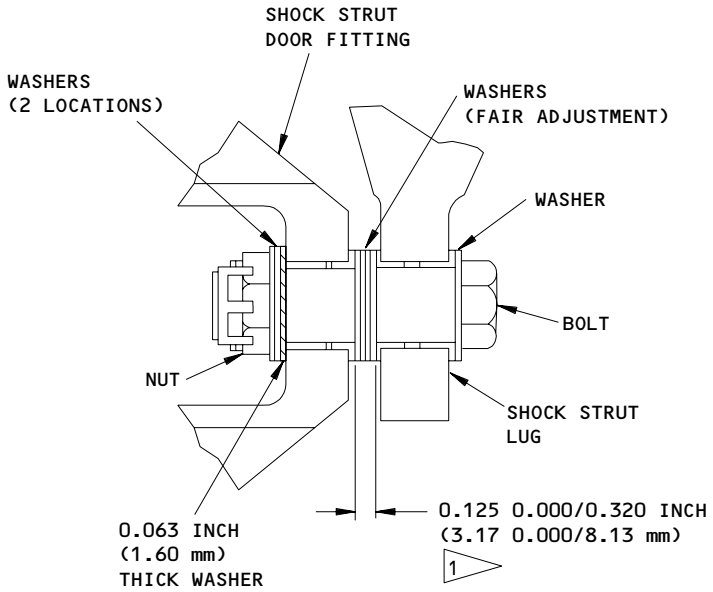
Main Landing Gear Shock Strut Door (Lower) Fitting Installation
Figure 403 (Sheet 1)



ROD-END BEARING WITH BACN10JD6 NUT
(0.4 INCH (10.16 mm) HIGH)
B-B

1 ADD/REMOVE WASHERS TO ADJUST THE DOOR CLEARANCE (FAIR).

Main Landing Gear Shock Strut Door (Lower) Fitting Installation
Figure 403 (Sheet 2)



CASTED FITTING
B-B

1 ADD/REMOVE WASHERS TO ADJUST THE DOOR CLEARANCE (FAIR).

Main Landing Gear Shock Strut Door (Lower) Fitting Installation
Figure 403 (Sheet 3)

S 864-004
(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

D. Remove the Shock Strut Door

NOTE: This task provides instructions to remove the shock strut door for the two situations that follow:

To accomplish the task "Main Landing Gear Removal" (AMM 32-11-01/401), you will disconnect the door at each point "B" location given.

To remove the shock strut door only, for repair or replacement, you will disconnect the door at each point "A" location given.

S 844-164
(1) Record the location and number of washers that are used at the mid and lower door fitting locations (Fig. 402, 403).

NOTE: This will make the installation of the door easier.

S 034-165
(2) To disconnect the upper rod and lower rod, do this step (Fig. 401):
(a) Remove the bolt, washers and nut at Point "A" or at Point "B" (View A & B).

S 864-166
(3) Hold the door in position.

S 034-167
(4) SHOCK STRUT DOOR WITH CASTED (LOWER) FITTING (PRE-SB 32-101 AND PRE-SB 32-194);
Remove the cotter pin, nut and washers, to disconnect the shock strut door at the lower door fitting location (Fig. 403):

S 034-168

(5) SHOCK STRUT DOOR (LOWER) FITTING WITH ROD-END BEARING (POST-SB 32-101 OR POST-SB 32-194);
To disconnect the shock strut door at the lower door fitting location, do the step for Point "A" or the step for Point "B" (Fig. 403):
(a) At Point "B", remove the cotter pin, nut and washers.
(b) At Point "A", remove the nut, washer and bolt.

NOTE: Do not remove the rod end bearing from the shock strut lug. This will make the adjustment of the door easier when it is installed.

S 034-170

(6) Remove the cotter pin, nut, washers and bolt to disconnect the shock strut door at the mid door fitting location (Fig. 402).

S 864-171

(7) Move the shock strut door away from the area.

TASK 32-12-06-404-011

3. Install the Shock Strut Door for the Main Landing Gear

A. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

B. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	-	Shock Strut Door	32-12-01	-	-

C. References
(1) AMM 32-00-15/201, Landing Gear Door Locks
(2) AMM 32-12-00/501, Main Gear Doors

D. Access
(1) Location Zones

143/144	Main Landing Gear Wheel Well
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

E. Install the Shock Strut Door

NOTE: This task provides instructions to install the shock strut door for the two situations that follow:

To accomplish the task "Main Landing Gear Installation" (AMM 32-11-01/401), you will connect the door at each point "B" location given.

To install the shock strut door only, after repair or replacement, you will connect the door at each point "A" location given.

NOTE: Do not tighten the nuts fully or install the cotter pins until the door adjustment has been checked.

S 644-172
(1) Apply a thin layer of grease to all the nuts, washers and bolts needed to install the door.

S 864-173
(2) Hold the shock strut door in position on the shock strut.

S 434-174

(3) Do these steps to connect the shock strut door at the mid door fitting location (Fig. 402):
   (a) Align the door (mid) fitting with the upper shock strut lug.
   (b) Install the bolt and washers (View B-B).

      NOTE: Install the quantity of washers in each position as recorded prior to removal of the shock strut door. You can add or remove washers (fair adjustment) to get the needed dimension when you adjust the shock strut door (AMM 32-12-00/501).

   (c) DOOR WITH A MACHINED (MID) FITTING AND WITHOUT A 12 POINT BOLTHEAD (POST-SB 32-146 AND PRE-SB 32-194);
   Make sure the total thickness of all washers installed is not less than 0.31 inches (7.8 mm).

   CAUTION: MAKE SURE THE NUT IS NOT TIGHTENED ONTO THE SHANK OF THE BOLT. THIS CAN CAUSE THE SHOCK STRUT DOOR TO COME LOOSE FROM THE ATTACH FITTING. TO PREVENT THIS YOU CAN INSTALL ADDITIONAL WASHERS UNDER THE NUT.

   (d) Do these steps to install the nut:
      1) Make sure at least one 0.063 inch thick washer is installed next to the shock strut door fitting under the nut.
      2) Install the nut on the bolt.
      3) DOOR WITH A MACHINED (MID) FITTING AND A 12 POINT BOLTHEAD (POST-SB 32-194);
      Do these steps:
         a) Tighten the bolt to 200 pound-inches.
         b) Continue to tighten the bolt until the hole in the shank is aligned with the next nut castellation. If the torque exceeds 300 pound-inches then remove the nut, install another washer under the nut, and do the steps to install the nut again.
         c) Measure the distance from the bottom of the nut to the threaded end of the bolt. If the dimension measured exceeds 0.576 inches then remove the nut, add another washer under the nut, and do the steps to install the nut again.
      4) DOOR WITH A MACHINED (MID) FITTING AND WITHOUT A 12 POINT BOLTHEAD (POST-SB 32-146 AND PRE-SB 32-194);
      Do these steps:
         a) Tighten the bolt to 350 pound-inches.

b) Continue to tighten the bolt until the hole in the shank is aligned with the next nut castellation. If the torque exceeds 450 pound-inches then remove the nut, install another washer under the nut, and do the steps to install the nut again.

5) DOOR WITH A CASTED (MID) FITTING
(PRE-SB 32-146 AND PRE-SB 32-194);
Do these steps:
a) Tighten the bolt to 350 pound-inches.
b) Continue to tighten the bolt until the hole in the shank is aligned with the next nut castellation. If the torque exceeds 450 pound-inches then remove the nut, install another washer under the nut, and do the steps to install the nut again.

6) Install the cotter pin.

S 434-175

(4) DOOR (LOWER) FITTING WITH ROD-END BEARING
(POST-SB 32-101 OR POST-SB 32-194);
To connect the shock strut door at the lower door fitting location, do the steps for Point "A" or the steps for Point "B" (Fig. 403):
(a) At Point "B", do these steps:
1) Apply a thin layer of grease to the shank and threads of the rod-end bearing.
2) Position the washers (fair adjustment) on the rod-end bearing.

NOTE: Install the quantity of washers in each position as recorded prior to removal of the shock strut door. You can add or remove washers (fair adjustment) to get the needed dimension when you adjust the shock strut door (AMM 32-12-00/501).

3) Position the rod-end bearing in the lower shock strut lug.
4) Install the washers, for under the nut, on the rod-end bearing.

NOTE: Install the quantity of washers as recorded prior to removal of the shock strut door.

CAUTION: MAKE SURE THE NUT IS NOT TIGHTENED ONTO THE SHANK OF THE ROD-END BEARING . THIS CAN CAUSE THE SHOCK STRUT DOOR TO COME LOOSE FROM THE ATTACH FITTING. TO PREVENT THIS YOU CAN INSTALL ADDITIONAL WASHERS UNDER THE NUT.

5) ROD-END BEARING WITH 113T8006-2 NUT
(POST-SB 32-194);
Do these steps to install the nut:
a) Install the nut on the rod-end bearing.

b) Tighten the nut to 200 pound-inches.
c) Continue to tighten the nut until the hole in the rod-end bearing is aligned with the next nut castellation. If the torque exceeds 300 pound-inches then remove the nut, install another washer under the nut, and do the steps to install the nut again.
d) Measure the distance from the bottom of the nut to the threaded end of the rod-end bearing. If the dimension measured exceeds 0.760 inches then remove the nut, add another washer under the nut, and do the steps to install the nut again.
e) Install the cotter pin.

6) ROD-END BEARING WITH BACN10JD6 NUT
(POST-SB 32-101 AND PRE-SB 32-194);
Do these steps to install the nut:
a) Install the nut on the rod-end bearing.
b) Tighten the nut to 350 pound-inches.
c) Continue to tighten the nut until the hole in the rod-end bearing is aligned with the next nut castellation. If the torque exceeds 450 pound-inches then remove the nut, install another washer under the nut, and do the steps to install the nut again.
d) Install the cotter pin.

(b) Do these steps (Point "A"):
1) Position the rod-end bearing in the lower door fitting.
2) Make sure the run-on torque of the nut is 18-80 pound-inches.
3) Install the bushing, bolt, washer, and nut.
4) Tighten the nut to 160-240 pound-inches.

S 434-176

(5) DOOR WITH CASTED (LOWER) FITTING
(PRE-SB 32-101 AND PRE-SB 32-194);
To connect the shock strut door at the lower door fitting location, do these steps (Fig. 403):
(a) Align the lower door fitting with the lower shock strut lug.
(b) Install the bolt and washers (View B-B).

NOTE: Install the quantity of washers in each position as recorded prior to removal of the shock strut door. You can add or remove washers (fair adjustment) to get the needed dimension when you adjust the shock strut door (AMM 32-12-00/501).

(c) Do these steps to install the nut:
1) Make sure at least one 0.063 inch thick washer is installed next to the door fitting under the nut.
2) Tighten the bolt to 350 pound-inches.

3) Continue to tighten the bolt until the hole in the shank is aligned with the next nut castellation. If the torque exceeds 450 pound-inches then remove the nut, install another washer under the nut, and do the steps to install the nut again.
4) Install the cotter pin.

S 434-177

(6) To connect the upper and lower rods, do the steps for Point "A" or the steps for Point "B" (Fig. 401):
(a) At Point "B", do these steps:
1) Make sure the run-on torque of the nut is 18-80 pound-inches.
2) Position the upper rod in the shock strut fitting and install the bolt, washers, bushing and nut (View A-A).
3) Position the lower rod in the shock strut fitting and install the bolt, washers, bushing and nut (View B-B).
4) Tighten the nuts to 150-200 pound-inches.
(b) At Point "A", do these steps:
1) Make sure the run-on torque of the nut is 18-80 pound-inches.
2) Position the upper rod in the door fitting and install the bolt, washers, bushing and nut (View A-A).
3) Position the lower rod in the door fitting and install the bolt, washers, bushing and nut (View B-B).
4) Tighten the nuts to 150-200 pound-inches.

F. Put the Airplane Back to Its Usual Condition

S 824-031

(1) Adjust the shock strut door (4) (AMM 32-12-00/501).

S 094-036

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

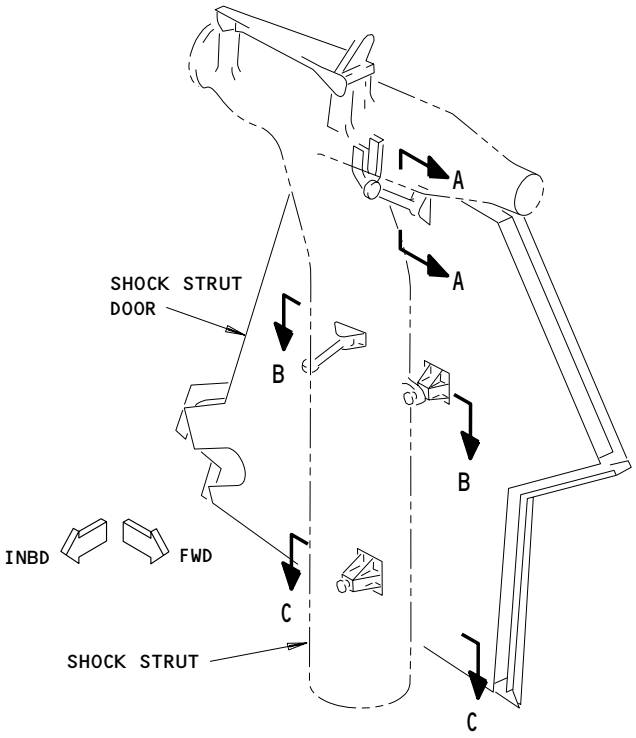
MAIN GEAR SHOCK STRUT DOOR - INSPECTION/CHECK

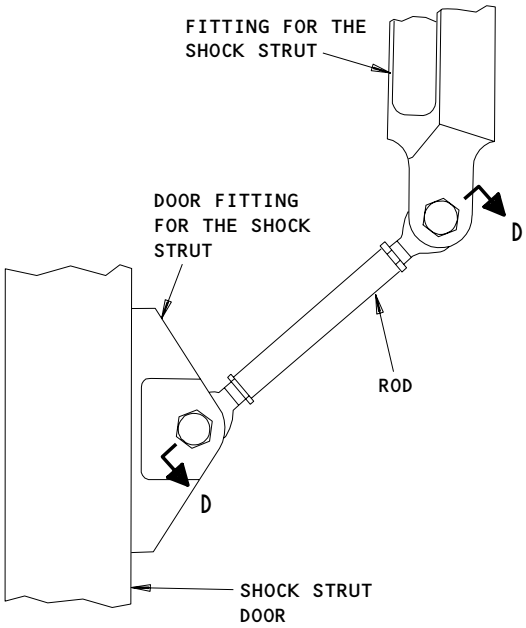
1. General
   A. This procedure only has illustrations and wear limit tables which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Gear Shock Strut - Removal/Installation for procedures to do these tasks.

TASK 32-12-06-206-002

2. Wear Limits for the Shock Strut Door of the Main Landing Gear
   A. Wear Limits for the Shock Strut.

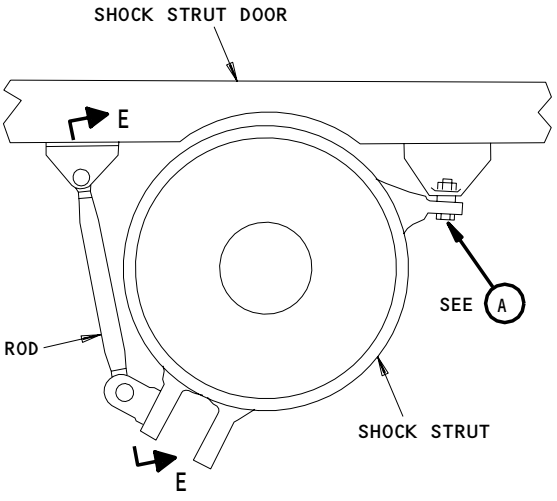
      S 226-001
      (1) Refer to Fig. 601 for the inspection points and Fig. 602 for the wear limit table.



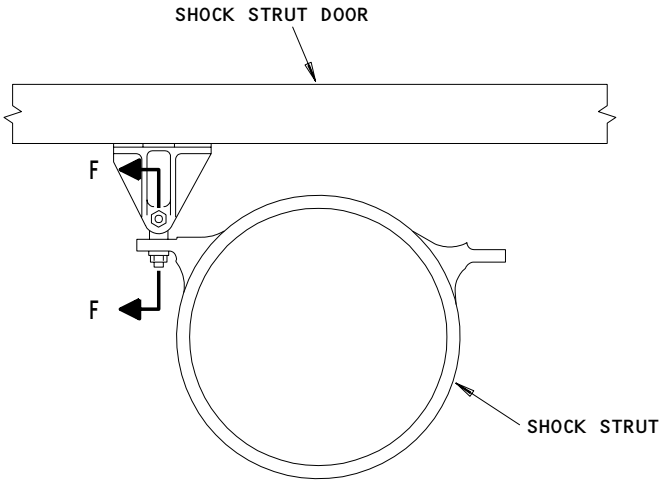


A–A

LEFT MAIN LANDING GEAR

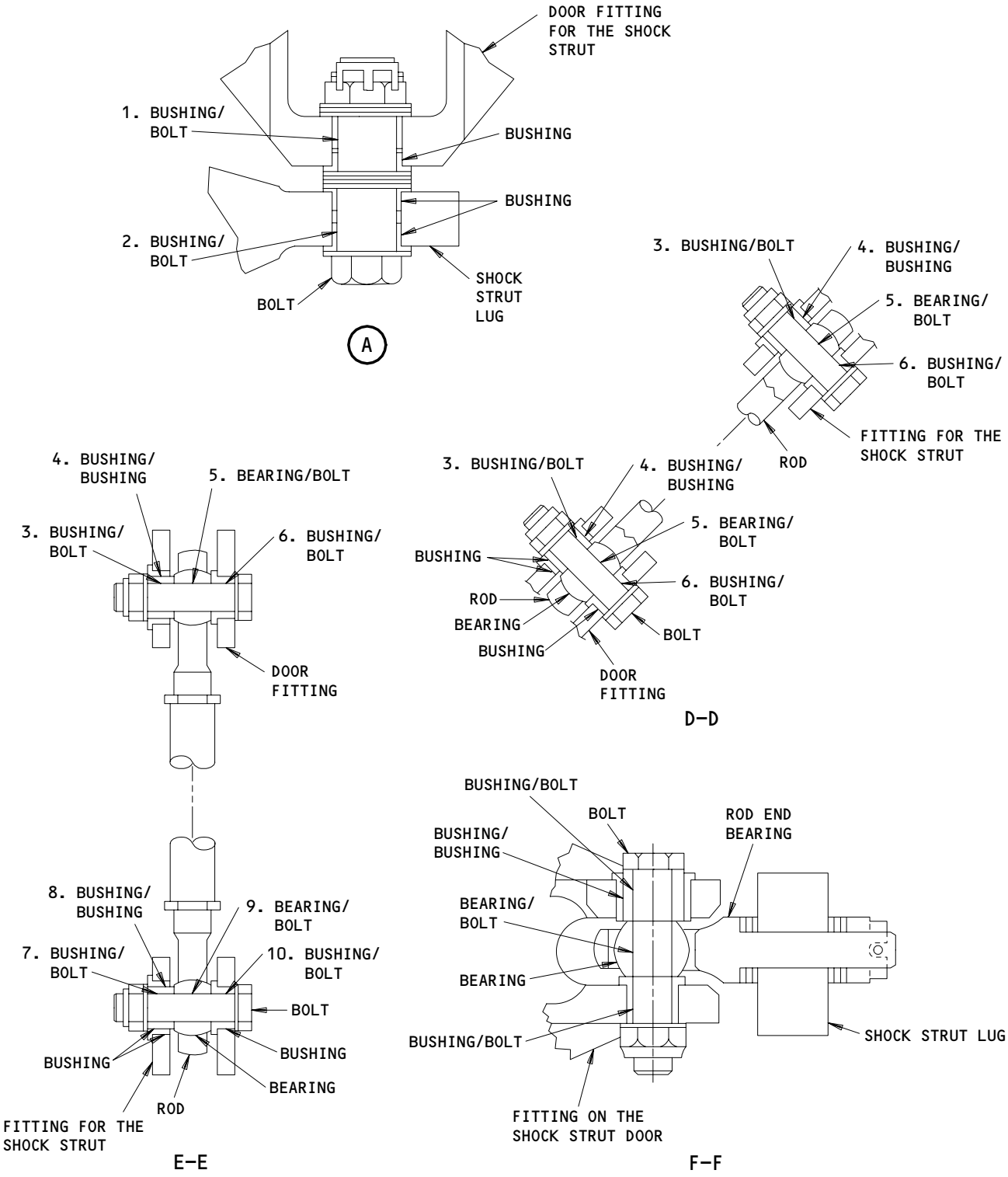


B–B



C–C

Inspection of the Shock Strut Door for the Main Landing Gear
Figure 601 (Sheet 1)



Inspection of the Shock Strut Door for the Main Landing Gear
Figure 601 (Sheet 2)

A38066

FIG. 601 INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	0.3850	0.3910	0.3995	0.0250	X		
	BOLT	OD	0.3740	0.3745	0.3660		X		
2	BUSHING	ID	0.3859	0.3874	0.3995	0.0250	X		
	BOLT	OD	0.3740	0.3745	0.3624		X		
3	BUSHING	ID	0.3750	0.3755	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3700		X		
4	BUSHING	ID	0.5620	0.5627	0.5665	0.0050	X		
	BUSHING	OD	0.5610	0.5615	0.5577		X		
5	BEARING	ID	0.3750	0.3754	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3699		X		
6	BUSHING	ID	0.3750	0.3756	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3701		X		
7	BUSHING	ID	0.3750	0.3755	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3700		X		
8	BUSHING	ID	0.5625	0.5640	0.5665	0.0050	X		
	BUSHING	OD	0.5610	0.5615	0.5590		X		
9	BEARING	ID	0.3750	0.3754	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3700		X		
10	BUSHING	ID	0.3750	0.3765	0.3795	0.0050	X		
	BOLT	OD	0.3740	0.3745	0.3715		X		

Wear Limit Table for the Shock Strut Door of the Main Landing Gear
Figure 602

MAIN GEAR DRAG BRACE DOOR AND LINKAGE - REMOVAL AND INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the drag brace door for the main landing gear. The second task installs the drag brace door for the main landing gear.

TASK 32-12-08-004-001

2. Remove the Drag Brace Door on the Main Landing Gear (Fig. 401)

   A. References
      (1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) 32-00-15/201, Landing Gear Doorlocks
      (3) 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones

143/144	Main Landing Gear Wheel Wells
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

   C. Prepare to Remove the Drag Brace Doors

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

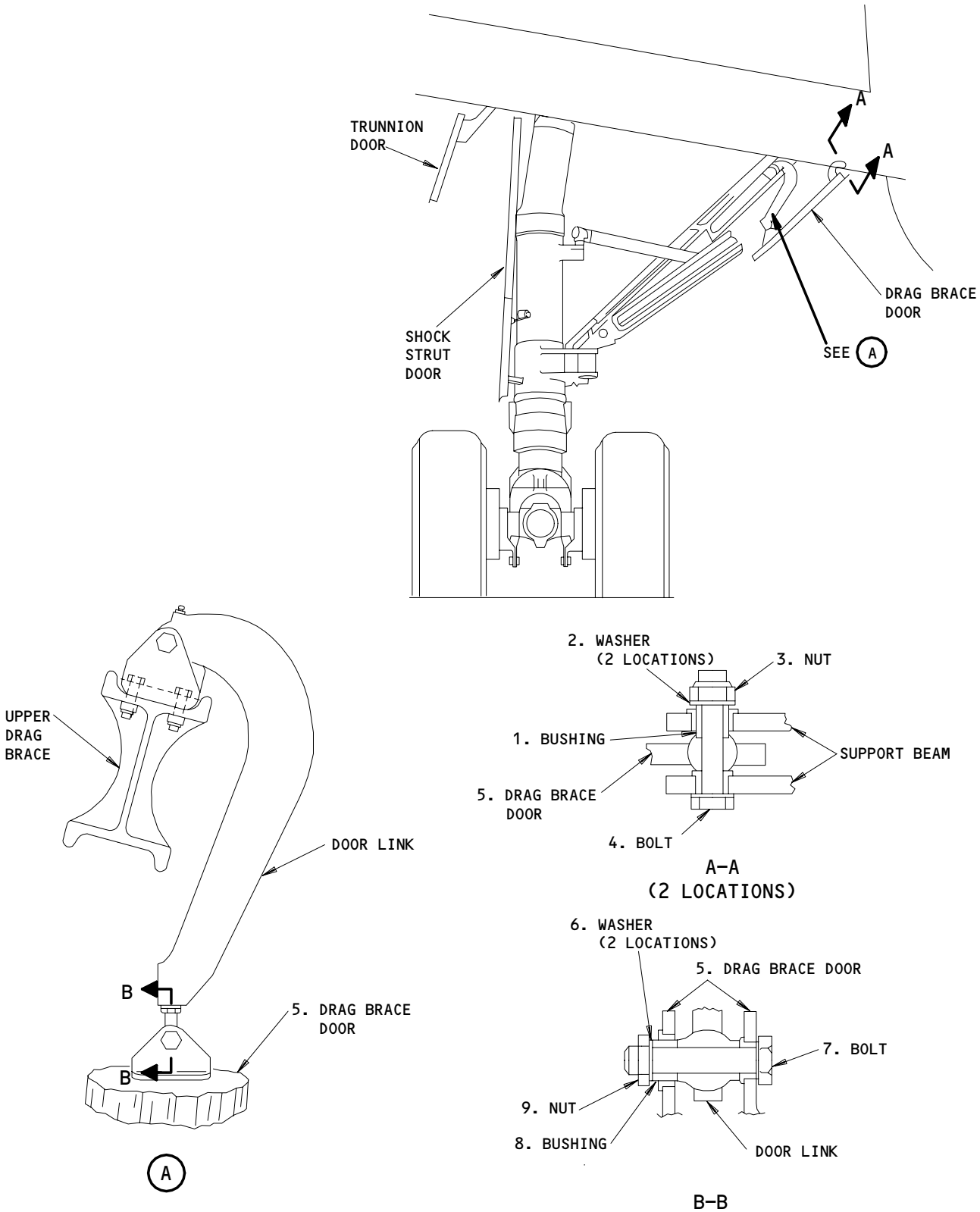
      S 944-003

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open the doors for the landing gear and install the door locks (Ref 32-00-15).

      S 864-004
      (3) Remove the pressure from the center hydraulic system (Ref 29-11-00).

      S 034-005
      (4) Disconnect the bonding jumpers.



Drag Brace Door and Linkage Installation for the Main Landing Gear
Figure 401

D. Remove the Drag Brace Doors

S 024-006

(1) Remove the bolts (4, 7) to disconnect the door (5) from its support beam and the linkage of the upper drag brace.

TASK 32-12-08-404-007

3. Install the Drag Brace Door on the Main Landing Gear (Fig. 401)

A. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

B. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Bushing	32-12-01	05	478
	2	Washer			160
	3	Nut			175
	4	Bolt			440
	5	Door			485,490
	6	Washer			20, 22
	7	Bolt			445
	8	Bushing			475
	9	Nut			25, 27, 28

C. References
(1) 32-00-15/201, Landing Gear Doorlocks
(2) 32-00-20/201, Landing Gear Downlocks
(3) 32-12-00/501, Main Gear Doors

D. Access
(1) Location Zones
143/144 Main Landing Gear Wheel Wells
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Drag Brace Doors
734/744 MLG Oleo Doors
735/745 MLG Trunnion Doors

E. Install the Drag Brace Door

S 644-008

(1) Apply grease to the bolts (4), the nuts (3), the washers (2), and the bushings (1).

S 424-009

(2) Install the bolts (4) to connect the drag brace door (5) to the support beam at two locations (View A-A).

S 644-010

(3) Apply grease to the bolt (7), the nut (9), the washers (6), and the bushing (8).

F. Put the Airplane Back to Its Usual Condition

S 424-011

(1) Install the bolt (7) to connect the drag brace door (5) to the linkage of the upper drag brace (Detail A and View B-B).

S 824-012

(2) Adjust the drag brace door (5) (Ref 32-12-00).

S 434-013

(3) Connect the bonding jumper.

S 644-014

(4) Lubricate the door hinges at the grease fittings.

S 944-015

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Remove the door locks from the landing gear doors and close the door (Ref 32-00-15).

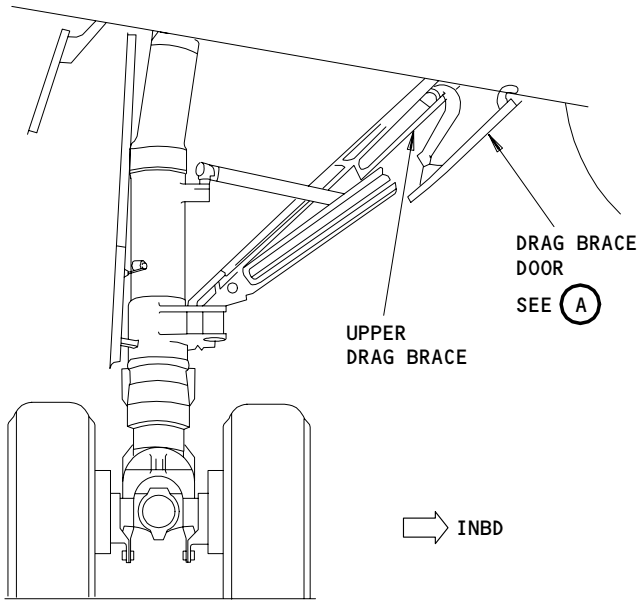
MAIN GEAR DRAG BRACE DOOR - INSPECTION/CHECK

1. General
   A. This procedure only has illustrations and wear limit tables which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Gear Drag Brace Door and Linkage - Removal/Installation for procedures to do these tasks.

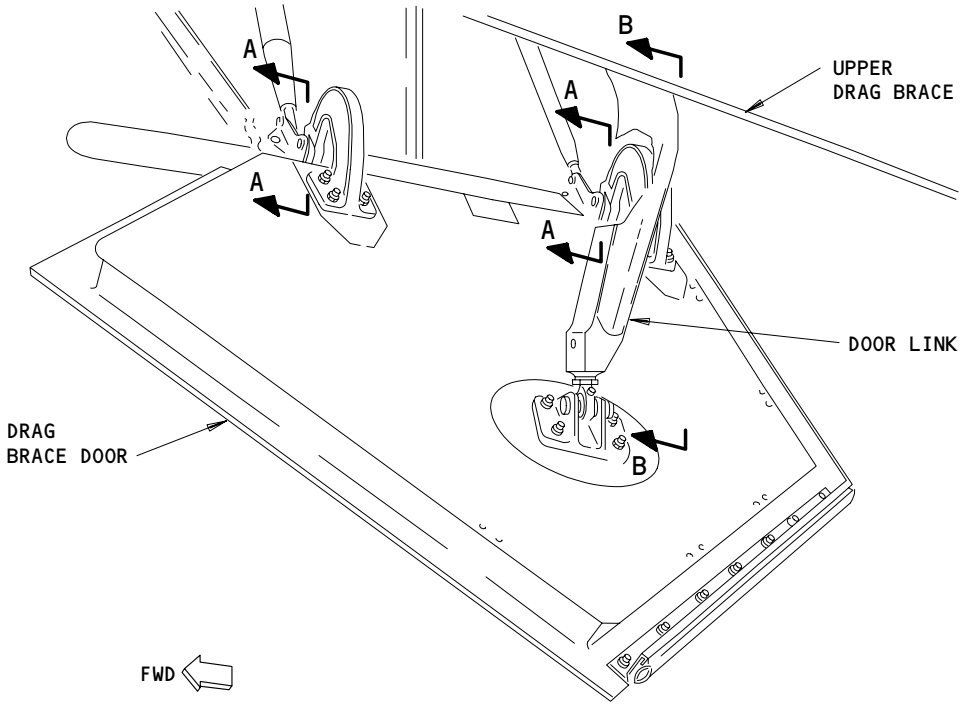
TASK 32-12-08-206-001

2. Main Gear Drag Brace Door Wear Limits
   A. References
      (1) 32-12-08/401 Main Gear Drag Brace Door and Linkage - Removal/Installation
   B. Wear Limits for the Drag Brace Door of the Main Landing Gear.

      S 226-002
      (1) Refer to Fig. 601 for the inspection points and Fig. 602 for the wear limit table.



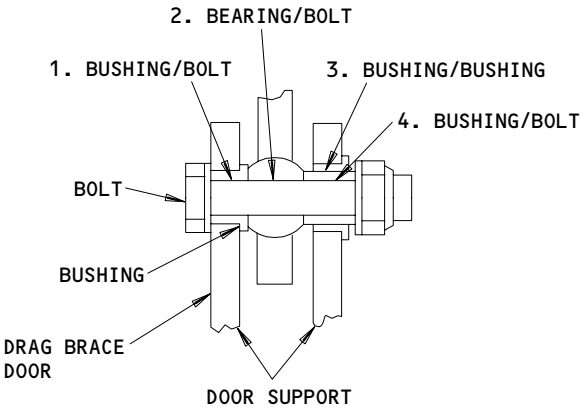
LEFT MAIN LANDING GEAR
(RIGHT MAIN LANDING GEAR IS EQUIVALENT)



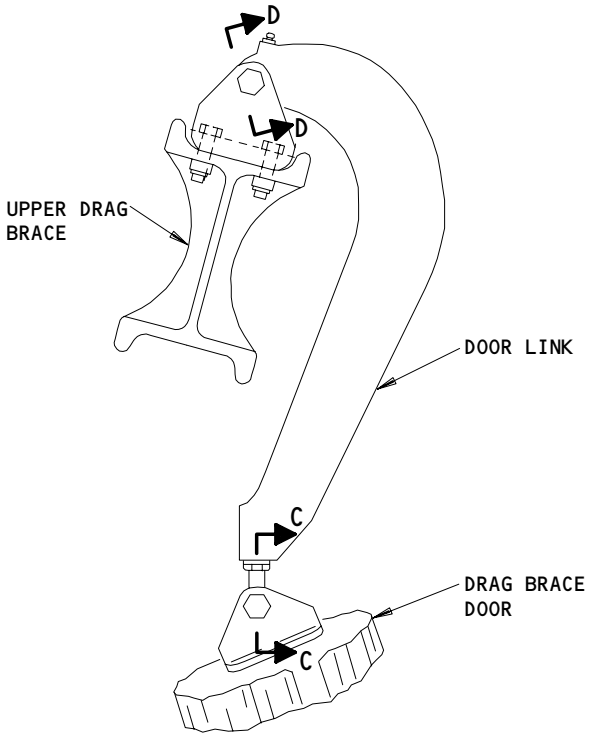
DRAG BRACE DOOR AND LINKAGE

A

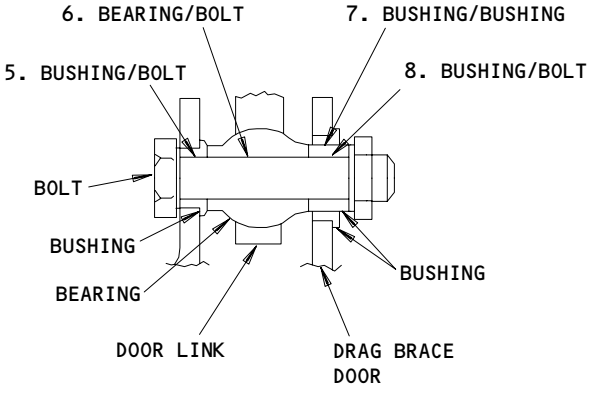
Drag Brace Door and Linkage Inspection for the Main Landing Gear
Figure 601 (Sheet 1)



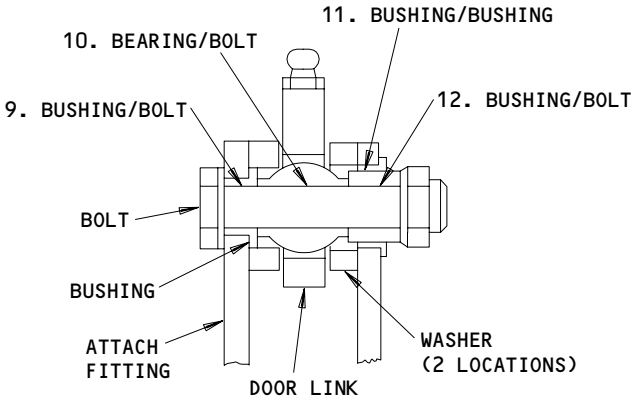
A–A



B–B



C–C



D–D

Drag Brace Door and Linkage Inspection for the Main Landing Gear
Figure 601 (Sheet 2)

FIG. 601 INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIAM CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	0.3125	0.3131	0.3172	0.0055	X		
	BOLT	OD	0.3115	0.3120	0.3079		X		
2	BEARING	ID	0.3125	0.3129	0.3172	0.0055	X		
	BOLT	OD	0.3115	0.3120	0.3077		X		
3	BUSHING	ID	0.4375	0.4382	0.4420	0.0050	X		
	BUSHING	OD	0.4365	0.4370	0.4332		X		
4	BUSHING	ID	0.3125	0.3130	0.3172	0.0055	X		
	BOLT	OD	0.3115	0.3120	0.3078		X		
5	BUSHING	ID	0.3750	0.3756	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3701		X		
6	BEARING	ID	0.3745	0.3750	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3695		X		
7	BUSHING	ID	0.5620	0.5627	0.5665	0.0050	X		
	BUSHING	OD	0.5610	0.5615	0.5577		X		
8	BUSHING	ID	0.3750	0.3755	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3700		X		
9	BUSHING	ID	0.3750	0.3756	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3701		X		
10	BEARING	ID	0.3745	0.3750	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3695		X		
11	BUSHING	ID	0.5620	0.5627	0.5665	0.0050	X		
	BUSHING	OD	0.5610	0.5615	0.5577		X		
12	BUSHING	ID	0.3750	0.3755	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3700		X		

Drag Brace Door and Linkage Wear Table for the Main Landing Gear
Figure 602

MAIN GEAR TRUNNION DOOR AND LINKAGE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the trunnion door of the main landing gear. The second task installs the trunnion door for the main landing gear.

TASK 32-12-11-004-001

2. Remove the Trunnion Door for the Main Landing Gear (Fig. 401)
   A. References
      (1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) 32-00-15/201, Landing Gear Door Locks
      (3) 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones

143/144	Main Landing Gear Wheel Wells
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

   C. Prepare to Remove the Trunnion Doors

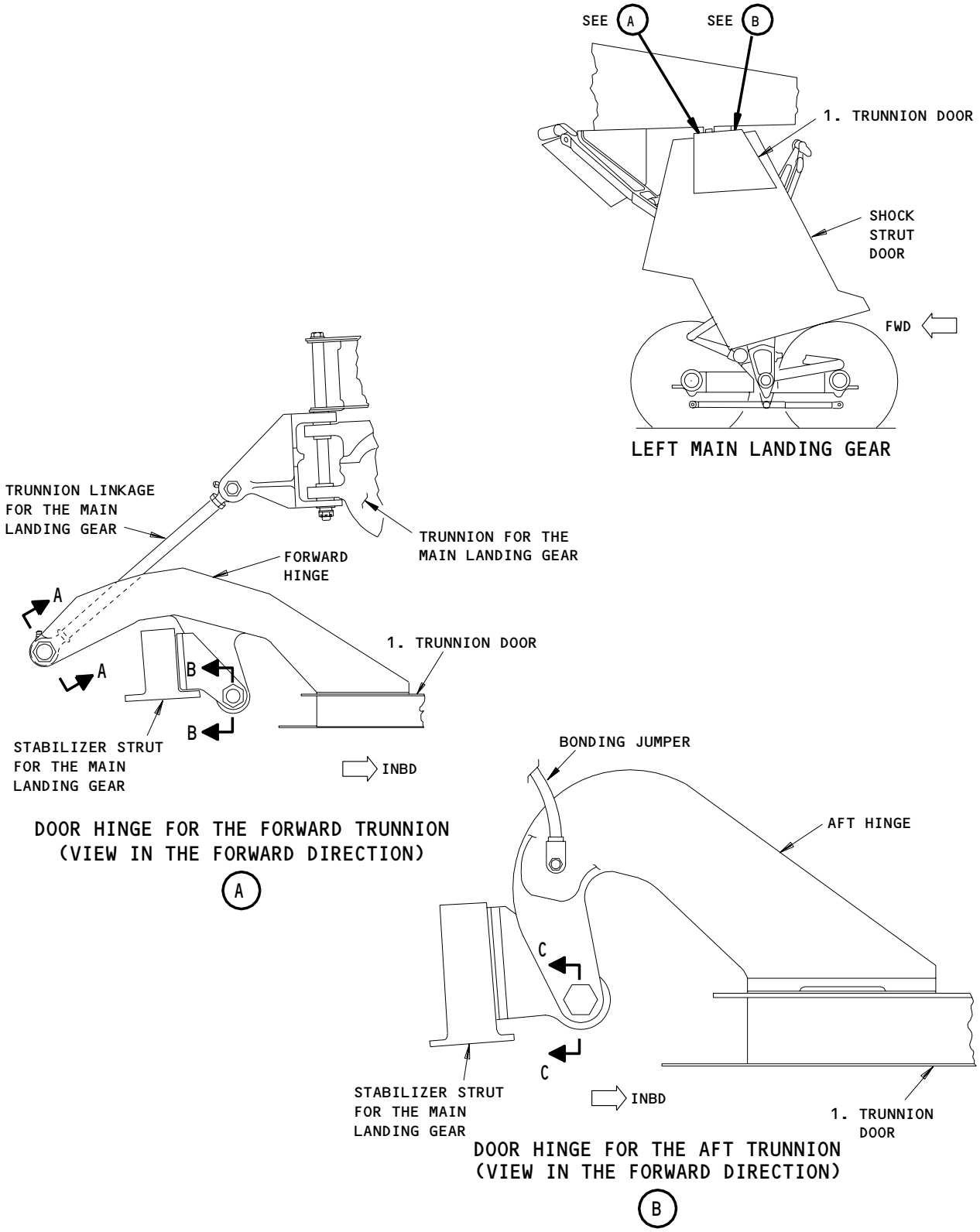
S 494-002

(1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

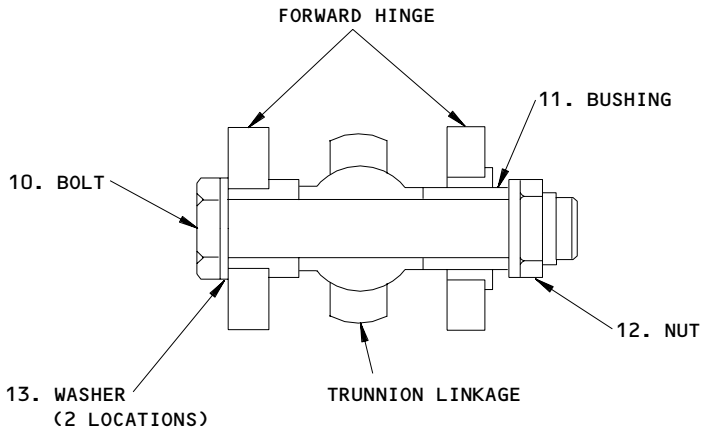
S 494-021

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

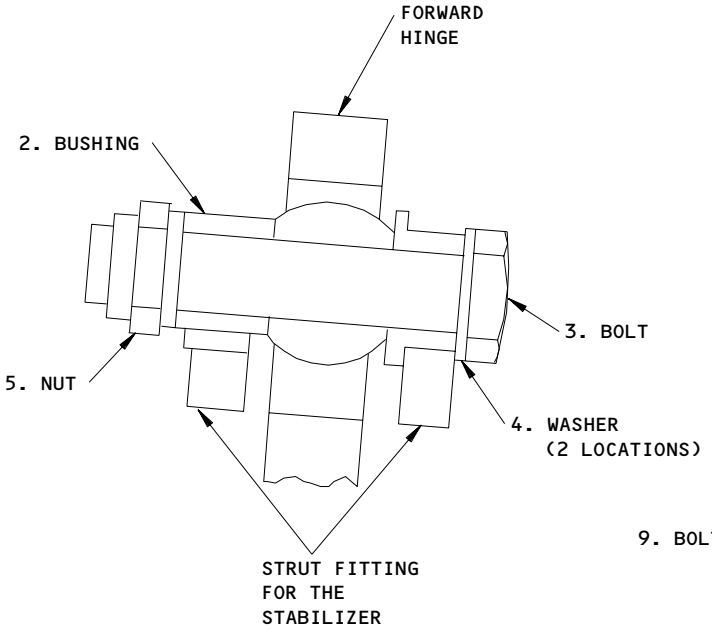
(2) Open the doors for the landing gear and install the door lock (Ref 32-00-15).



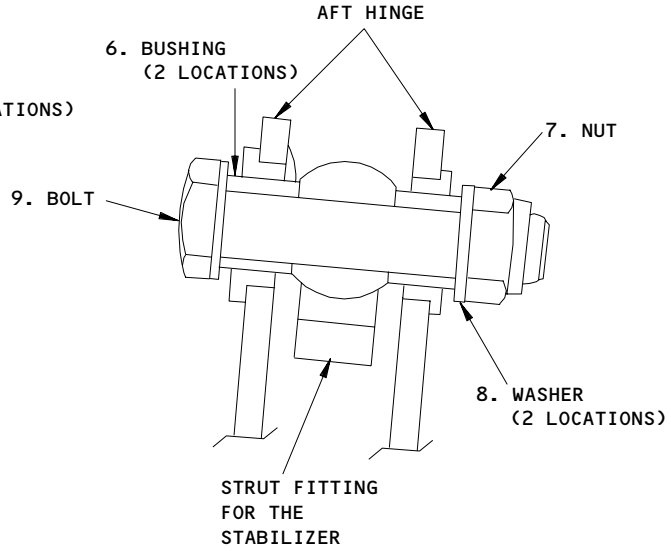
Trunnion Door and Linkage Installation for the Main Landing Gear
Figure 401 (Sheet 1)



A–A



B–B



C–C

Trunnion Door and Linkage Installation for the Main Landing Gear
Figure 401 (Sheet 2)

S 864-004
(3) Remove the pressure from the center hydraulic system (Ref 29-11-00).

S 014-005
(4) Remove the bonding jumper.

D. Remove the Trunnion Doors.

S 024-006
(1) Remove the bolts (3, 9, 10) to disconnect the trunnion door (1) from the trunnion linkage and the stabilizer strut.

TASK 32-12-11-404-007

3. Install the Trunnion Door for the Main Landing Gear (Fig. 401)

A. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

B. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Trunnion Door	32-12-01	05	190,195

C. References
(1) 32-00-15/201, Landing Gear Door Locks
(2) 32-00-20/201, Landing Gear Downlocks
(3) 32-12-00/501, Main Gear Doors

D. Access
(1) Location Zones
143/144 Main Landing Gear Wheel Wells
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Drag Brace Doors
734/744 MLG Oleo Doors
735/745 MLG Trunnion Doors

E. Install the Trunnion Doors.

S 644-009
(1) Apply grease to the bolt (3), the nut (5), the washers (4), and the bushing (2).

S 414-008
(2) Install the bolt (3) to connect the forward hinge of the trunnion door to the stabilizer strut (Detail A, View B-B).

S 434-017
(3) Make sure the run-on torque is not less than 50 pound-inches. The last torque is 200 ±40 pound-inches.

S 644-010
(4) Apply grease to the bolt (9), the nut (7), the washers (8), and the bushings (6).

S 414-011
(5) Install the bolt (9) to connect the aft hinge of the trunnion door to the stabilizer strut (Detail B, View C-C).

S 434-018
(6) Make sure the run-on torque is not less than 50 pound-inches. The last torque is 125 ±25 pound-inches.

S 644-019
(7) Apply grease to the bolt (10), the nut (12), the washers (13), and the bushing (11).

S 414-012
(8) Install the bolt to (10) to connect the trunnion door (1) to the trunnion linkage (Detail A, View A-A).

S 434-020
(9) Make sure the run-on torque is not less than 50 pound-inches. The last torque is 200 ±40 pound-inches.

F. Put the Airplane Back to Its Usual Condition.

S 824-013

(1) Adjust the trunnion door (1) (AMM 32-12-00/501).

NOTE: Airplane lift and door adjustment are not necessary if the hinge fittings stay in the original position and the rod length is the same as the old rod length when the trunnion door assembly is removed. Make sure there is no sign of misfair (erosion, delamanation) on the door and associated linkages. The door fit/fair inspection can be deferred until the next Landing Gear replacement.

S 644-014

(2) Lubricate the hinges for the trunnion door at the grease fittings.

S 414-015

(3) Install the bonding jumper.

S 094-022

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Remove the door locks from the landing gear and close the doors (Ref 32-00-15).

MAIN GEAR TRUNNION DOOR - INSPECTION/CHECK

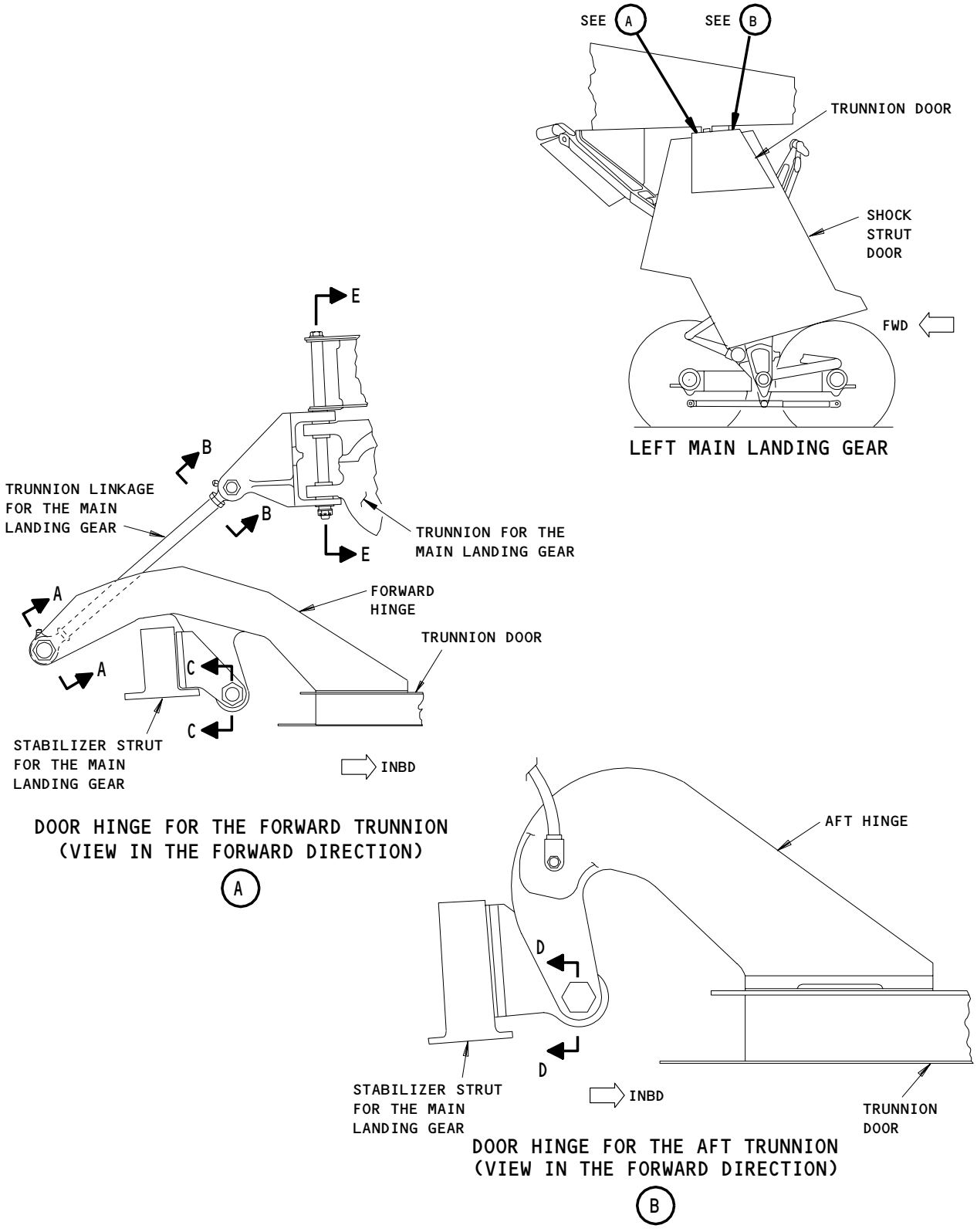
1. General
   A. This procedure only has illustrations and wear limit tables which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Gear Trunnion Door - Removal/Installation for procedures to do these tasks.

TASK 32-12-11-206-001

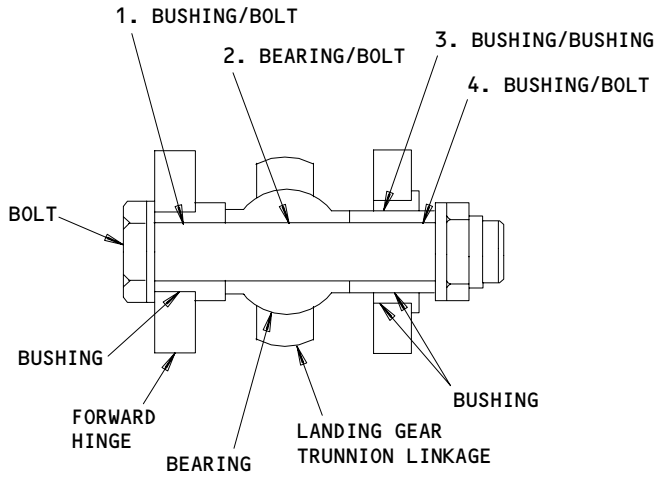
2. Wear Limits for the Trunnion Door of the Main Landing Gear
   A. Wear Limits for the Trunnion Door

S 226-002

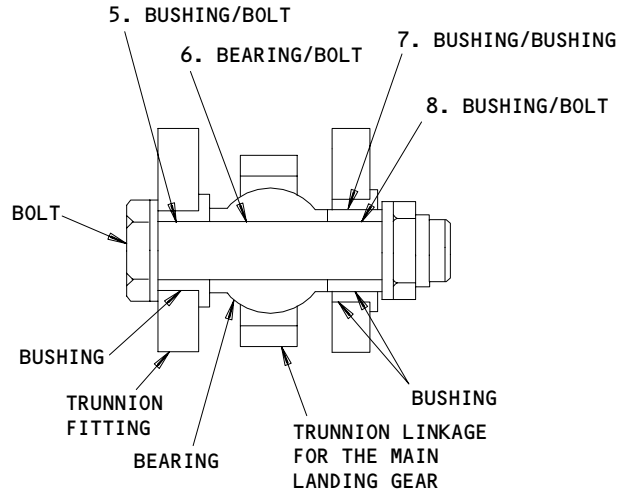
(1) Refer to Fig. 601 for the inspection points and Fig. 602 for the wear limit table.



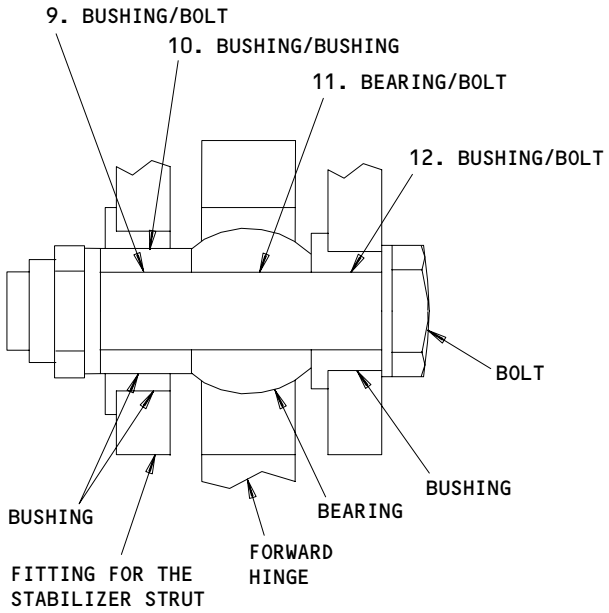
Inspection for the Trunnion Door and Linkage of the Main Landing Gear
Figure 601 (Sheet 1)



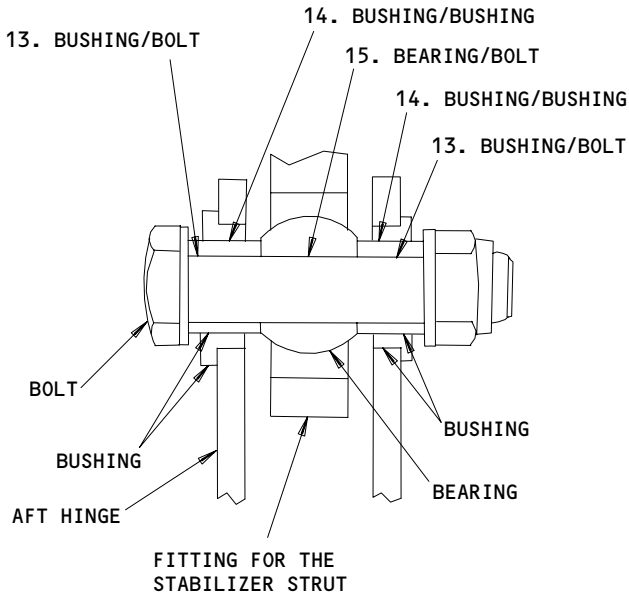
A–A



B–B

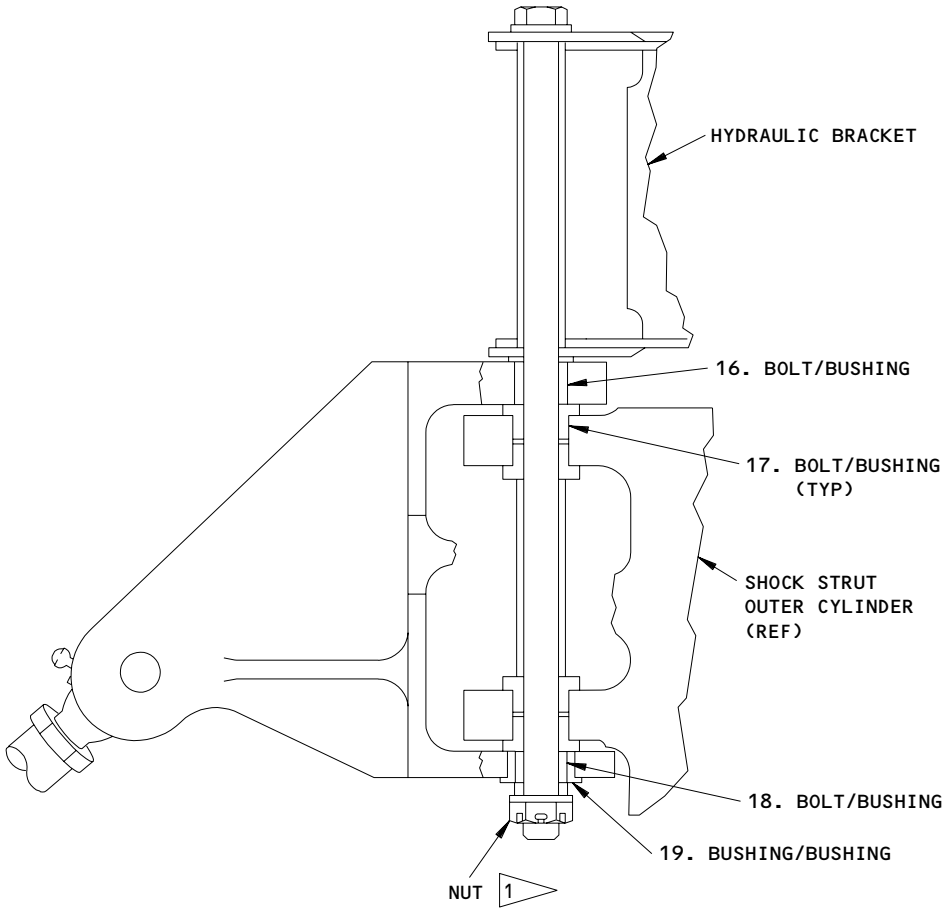


C–C



D–D

Inspection for the Trunnion Door and linkage of the Main Landing Gear
Figure 601 (Sheet 2)



E-E

1 TORQUE NUT FINGER TIGHT THEN BACKOFF TO NEAREST CASTELLATION

Inspection for the Trunnion Door and Linkage of the Main Landing Gear
Figure 601 (Sheet 3)

FIG. 601 INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	0.3750	0.3756	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3701		X		
2	BEARING	ID	0.3745	0.3750	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3695		X		
3	BUSHING	ID	0.5620	0.5627	0.5665	0.0050	X		
	BUSHING	OD	0.5610	0.5615	0.5577		X		
4	BUSHING	ID	0.3750	0.3755	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3700		X		
5	BUSHING	ID	0.3750	0.3756	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3701		X		
6	BEARING	ID	0.3745	0.3750	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3695		X		
7	BUSHING	ID	0.5620	0.5627	0.5665	0.0050	X		
	BUSHING	OD	0.5610	0.5615	0.5577		X		
8	BUSHING	ID	0.3750	0.3755	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3700		X		
9	BUSHING	ID	0.3750	0.3755	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3700		X		
10	BUSHING	ID	0.5620	0.5627	0.5665	0.0050	X		
	BUSHING	OD	0.5610	0.5615	0.5577		X		
11	BEARING	ID	0.3750	0.3754	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3699		X		
12	BUSHING	ID	0.3750	0.3756	0.3800	0.0055	X		
	BOLT	OD	0.3740	0.3745	0.3701		X		

Wear Limit Table for the Trunnion Door and Linkage of the Main Landing Gear
Figure 602 (Sheet 1)

FIG. 601 INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
			DIAMETER		PER-MITTED WEAR DIM.	MAX DIA CLEAR-ANCE			
			MIN	MAX					
13	BUSHING	ID	0.3125	0.3130	0.3172	0.0055	X		
	BOLT	OD	0.3115	0.3120	0.3078		X		
14	BUSHING	ID	0.4375	0.4382	0.4420	0.0055	X		
	BUSHING	OD	0.4365	0.4370	0.4332		X		
15	BEARING	ID	0.3125	0.3129	0.3172	0.0055	X		
	BOLT	OD	0.3115	0.3120	0.3077		X		
16	BOLT	ID	0.3750	0.3790	0.3860	0.0105	X		
	BUSHING	OD	0.3735	0.3745	0.3685		X		
17	BOLT	ID	0.3869	0.3874	0.3930	0.0185	X		
	BUSHING	OD	0.3735	0.3745	0.3689		X		
18	BOLT	ID	0.3750	0.3755	0.3800	0.0055	X		
	BUSHING	OD	0.3735	0.3745	0.3700		X		
19	BUSHING	ID	0.5620	0.5627	0.5671	0.0056	X		
	BUSHING	OD	0.5610	0.5615	0.5671		X		

Wear Limit Table for the Trunnion Door and Linkage of the Main Landing Gear
Figure 602 (Sheet 2)

MAIN GEAR POP-UP DOOR - REMOVAL/INSTALLATION

1. General
   A. This procedure has these tasks:
      (1) Rub Strip Check
      (2) Pop-Up Door Removal
      (3) Pop-Up Door Installation

   TASK 32-12-13-214-071
2. Check the Rub Strip on the Pop-Up Door
   A. References
      (1) AMM 32-12-13/801, Pop-Up Door for the Main Landing Gear
   B. Examine the rub strip on the pop-up door.

      S 034-069
      (1) If the rub strip is worn through or damaged then remove the pop-up door and repair (AMM 32-12-13/801).

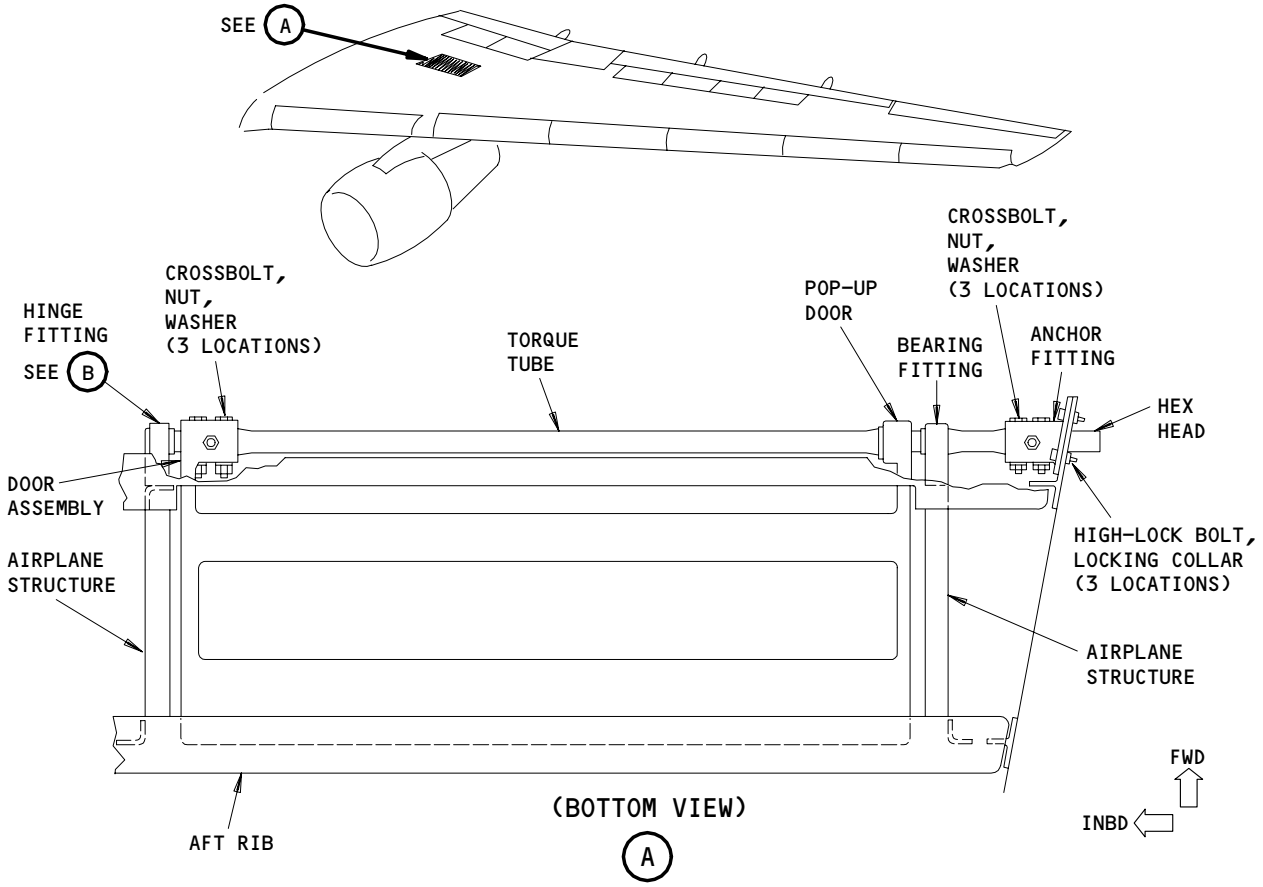
      S 354-072
      (2) If the rub strip will be worn through prior to any airline interval maintenance inspections (AMM 32-12-13/801).

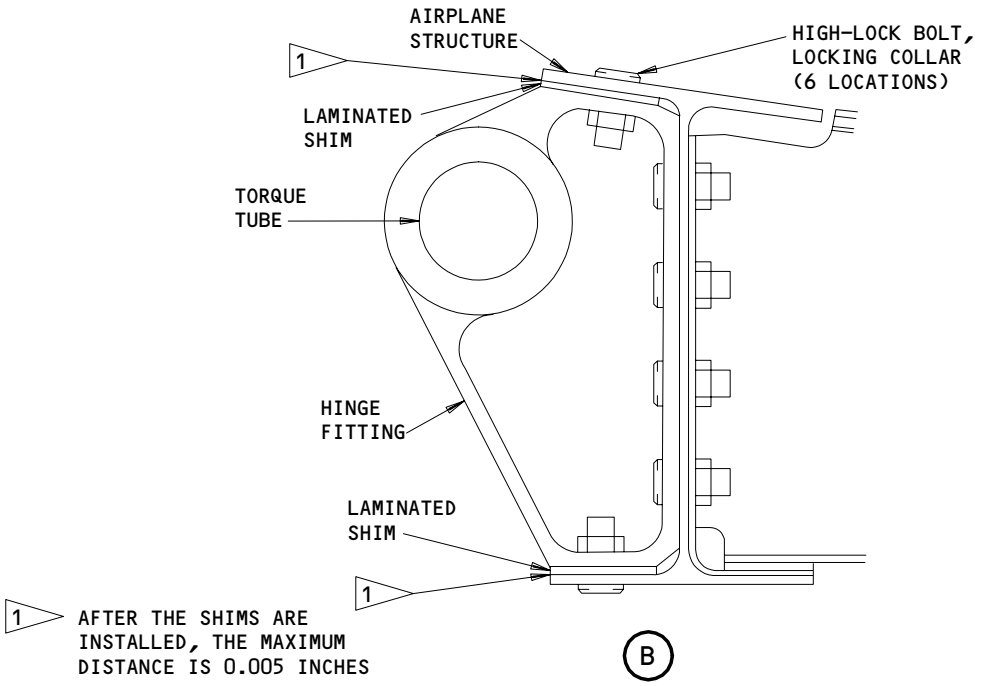
   TASK 32-12-13-004-032
3. Remove the Pop-Up Door for the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) High-Lock Locking Collar Removal Tool
   B. References
      (1) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones

143/144	Main Landing Gear Wheel Well
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

      (2) Access Panels

551FT/651FT	Landing Gear
551MT/651MT	Landing Gear Trunnion
551PT/651PT	Lower Wing Structure
551CB/651CB	Wing T. E. Structure
551QB/651QB	Lower Wing Structure
551SB/651SB	Lower Wing Structure
551TB/651TB	Lower Wing Structure





Pop-Up Door Installation for the Main Landing Gear
Figure 401

D. Prepare to Remove the Pop-Up Doors

S 494-002

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 494-030

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 864-004

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 014-033

(4) When you will remove the left pop-up door, remove the access panels that follow (AMM 06-44-00/201):
(a) 551FT
(b) 551MT
(c) 551PT
(d) 551CB
(e) 551QB
(f) 551SB
(g) 551TB

S 014-034

(5) When you will remove the right pop-up door, remove the access panels that follow (AMM 06-44-00/201):
(a) 651FT
(b) 651MT
(c) 651PT
(d) 651CB
(e) 651QB
(f) 651SB
(g) 651TB

E. Remove the Pop-Up Doors

S 434-005

(1) Apply a torque of approximately 180 pound-feet to the outboard hex-head end of the torque tube. This torque will release the load on the crossbolts. On the left-hand door, apply the torque in the clockwise direction. On the right-hand door, apply the torque in the counterclockwise direction.

NOTE: The torque is applied in the direction to close the doors.

S 034-006
(2) Remove the high-lock bolts from the anchor fitting. Use the high-lock locking collar removal tool.

S 034-007
(3) Slowly release the torque on the torque tube.

S 014-008
(4) Remove the crossbolts from the door assembly at the inboard end of the torque tube.

S 864-009
(5) Move the torque tube in the inboard direction until the crossbolts at the anchor fitting are clear of the airplane structure.

S 034-010
(6) Remove the crossbolts.

S 014-011
(7) Remove the hinge fitting from the structural support.

S 014-012
(8) To remove the torque tube, pull it inboard through the access hole in the wing rib.

S 014-035
(9) Do the steps that follow to remove the two door stops from the pop-up door:
(a) Remove the rivet from each door stop.
(b) Remove the two high-lock bolts from each door stop.

S 024-013
(10) Remove the pop-up door.

TASK 32-12-13-404-014

4. Install the Pop-Up Door for the Main Landing Gear (Fig. 401)

A. Equipment
(1) High-lock installation tool

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(3) A00247 Sealant - BMS 5-95, Chromate

C. References
(1) AMM 32-00-15/201, Landing Gear Door Locks
(2) AMM 32-00-20/201, Landing Gear Downlocks

D. Access

(1) Location Zones

143/144	Main Landing Gear Wheel Well
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Drag Brace Doors
734/744	MLG Oleo Doors
735/745	MLG Trunnion Doors

E. Install the Pop-Up Doors

S 864-015

(1) Put the pop-up door in position on the trailing edge of the wing.

S 824-029

(2) Align the hinges and the fittings.

S 624-016

(3) Apply sealant to the surface of the torque tube which fits inside the inboard hinge of the door.

S 864-017

(4) Put the torque tube through the hinges and the anchor fitting. The hex-head end of the torque tube will be in the outboard direction.

S 414-018

(5) Install the hinge fitting on the structural support.

S 644-019

(6) Apply grease to the crossbolts, the washers, and the nuts.

S 434-020

(7) Install the crossbolts, the washers, and the nuts to connect the anchor fitting on the outboard side to the torque tube.

S 624-021

(8) Apply sealant around the bolts.

S 864-022

(9) Move the torque tube in the outboard direction until the anchor fitting touches the airplane structure.

(a) Install the laminated shims, the high-lock bolts, and the locking collars.

S 644-023

(10) Apply grease to the bolts, the washers, and the nuts.

S 434-024

(11) Install the bolts to connect the torque tube to the inboard door assembly (Detail A).

S 434-025

(12) Apply a torque of 175-185 pound-feet to the outboard hex-head end of the torque tube. This torque will align the crossbolt holes in the torque tube to the anchor fitting. On the left-hand door, apply the torque in the clockwise direction. On the right-hand door, apply the torque in the counterclockwise direction.

NOTE: The torque is applied in the direction to close the doors.

S 824-026

(13) Align the holes in the anchor fitting with the holes in the airplane structure.

S 434-066

(14) Install the high-lock bolts to connect the anchor fitting with the holes in the airplane structure.

F. Put the Airplane Back to Its Usual Condition

S 094-031

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

MAIN GEAR POP-UP DOOR RUB STRIP - REPAIR

1. General
   A. This procedure contains steps to replace the worn or damaged rub strip on the pop-up door for the main gear.

TASK 32-12-13-358-001

2. Repair the Pop-Up Door Rub Strip for the Main Landing Gear
   A. Consumable Materials
      (1) Rub Strip - Nylon 616 (0.10 inch thick)
      (2) A00028 Adhesive - Type 70 (SOPM 20-50-12)
      (3) A50004 Adhesive - Type 117 (SOPM 20-50-12)
   B. References
      (1) SOPM 20-50-12 Application of Adhesives
   C. Access
      (1) Location Zones
          731/741 Main Landing Gear

   D. Repair the Pop-Up Door Rub Strip

      S 018-007
      (1) Remove the old rub strip.

      S 968-008
      (2) If the rub strip mating panel's thickness is less then 0.06 inches, then replace the panel.

      S 848-006
      (3) Abrasive clean the mating surface of the panel with 180 grit or finer aluminum oxide paper.

      S 848-005
      (4) Drill drain holes in the replacement rub strip to agree with the holes in the panel.

      S 428-003
      (5) Install the rub strip with adhesive.

NOSE LANDING GEAR AND DOORS - DESCRIPTION AND OPERATION

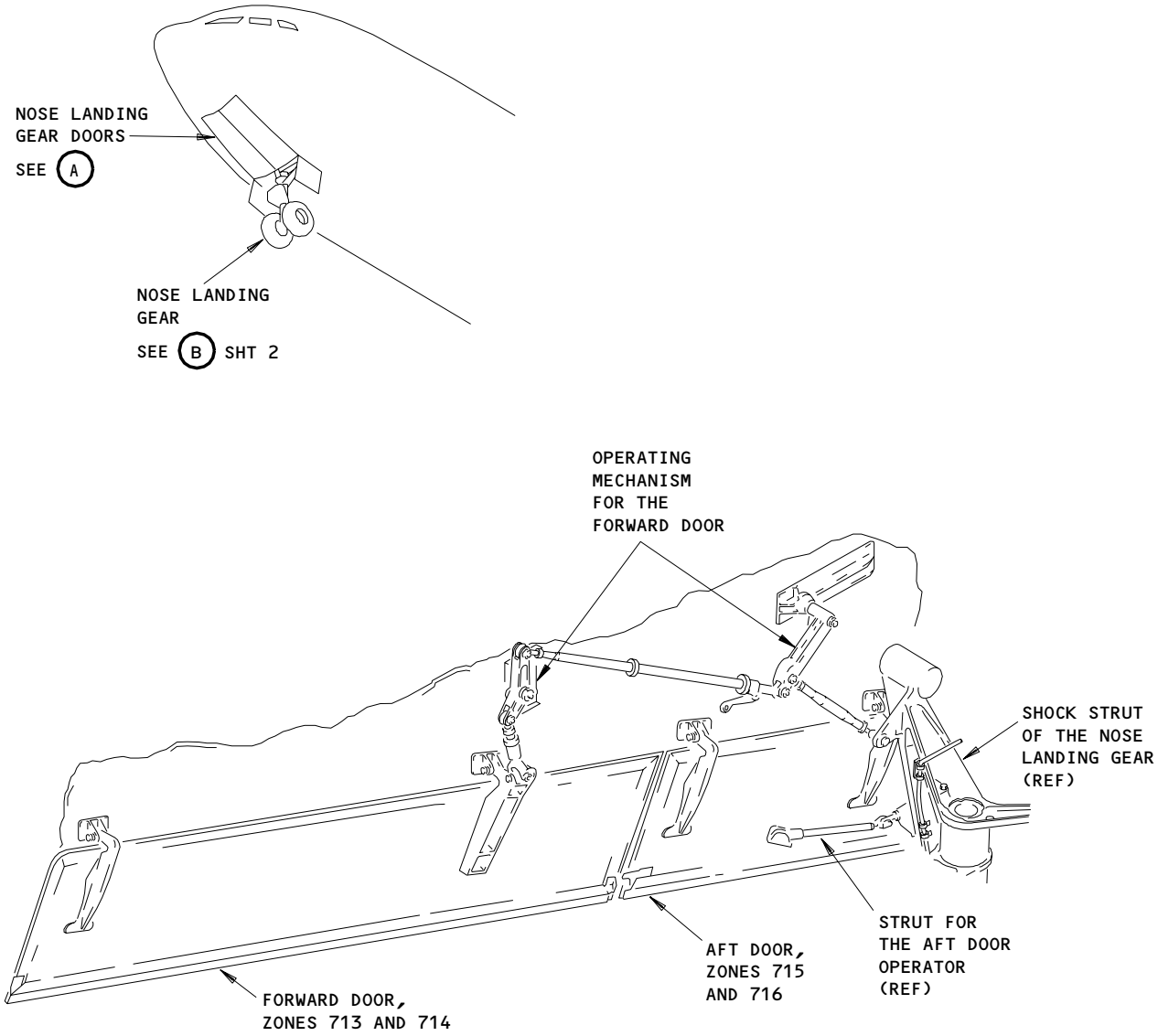
1. General
   A. The nose landing gear has one nose gear located near the forward end of the airplane fuselage. The nose gear holds the weight of the forward end of the airplane and absorbs landing, taxiing, and take-off impact loads. It also provides directional control while the airplane is on the ground. During flight, the nose gear retracts forward into the fuselage and is covered by four doors. When the doors are closed, they are aligned with the contour of the airplane to reduce aerodynamic drag.

NOSE LANDING GEAR AND DOORS

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
BEAM – ACTUATOR SUPPORT	2	1	NOSE WHEEL WELL	32-21-04
DOOR – AFT	1	2	715,716, NOSE WHEEL WELL	32-22-04
DOOR – FORWARD	1	2	713,714, NOSE WHEEL WELL	32-22-01
FITTING – AFT TOW	2	1	NOSE GEAR	32-21-12
FITTING – FORWARD TOW	2	1	NOSE GEAR	32-21-12
LINK – AFT LOCK	2	1	NOSE WHEEL WELL	32-21-07
LINK – FORWARD LOCK	2	1	NOSE WHEEL WELL	32-21-07
LINK – LOWER TORSION	2	1	NOSE GEAR	32-21-11
LINK – SUPPORT	2	1	NOSE WHEEL WELL	32-21-00
LINK – UPPER TORSION	2	1	NOSE GEAR	32-21-11
MECHANISM – FORWARD DOOR OPERATING	1	2	NOSE WHEEL WELL	32-22-02
SEAL – SHOCK STRUT	2	6	NOSE GEAR SHOCK STRUT	32-21-25
SPRING – LOCK	2	2	NOSE WHEEL WELL	32-21-09
STRUT – LOWER DRAG	2	1	NOSE WHEEL WELL	32-21-05
STRUT – SHOCK	2	1	NOSE WHEEL WELL	32-21-00
STRUT – UPPER DRAG	2	1	NOSE WHEEL WELL	32-21-05
WHEEL/TIRE ASSEMBLY	2	2	NOSE GEAR	32-45-02

Nose Landing Gear and Doors – Component Index
Figure 101

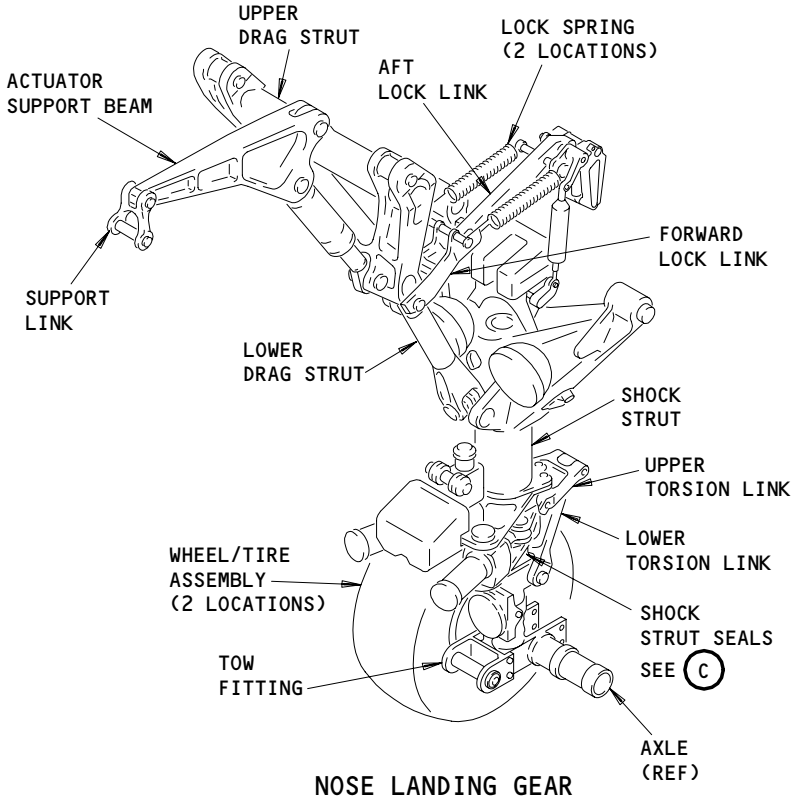
E14483



NOSE LANDING GEAR DOORS

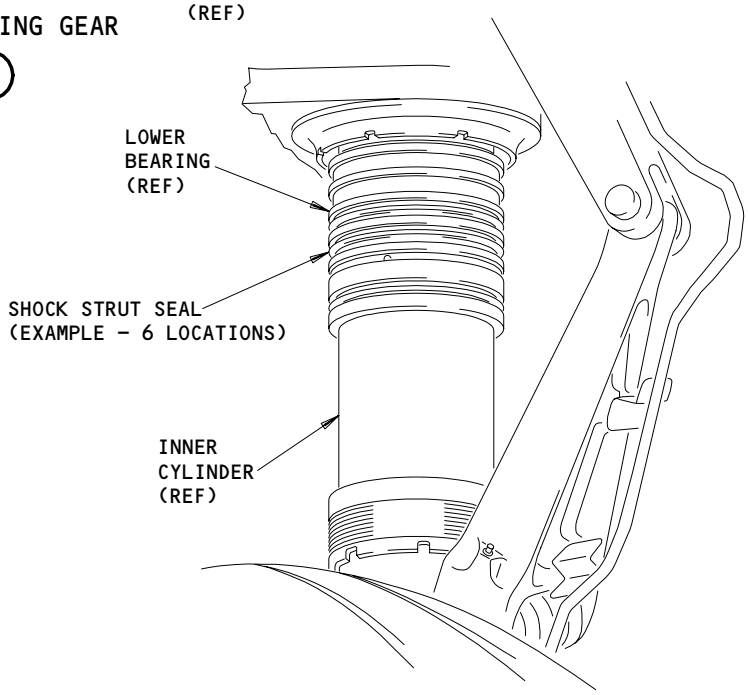
A

Nose Landing Gear and Doors - Component Location
Figure 102 (Sheet 1)



NOSE LANDING GEAR

B



SHOCK STRUT SEALS

C

Nose Landing Gear and Doors – Component Location
Figure 102 (Sheet 2)

CORROSION PREVENTION IN NOSE LANDING GEAR - MAINTENANCE PRACTICES

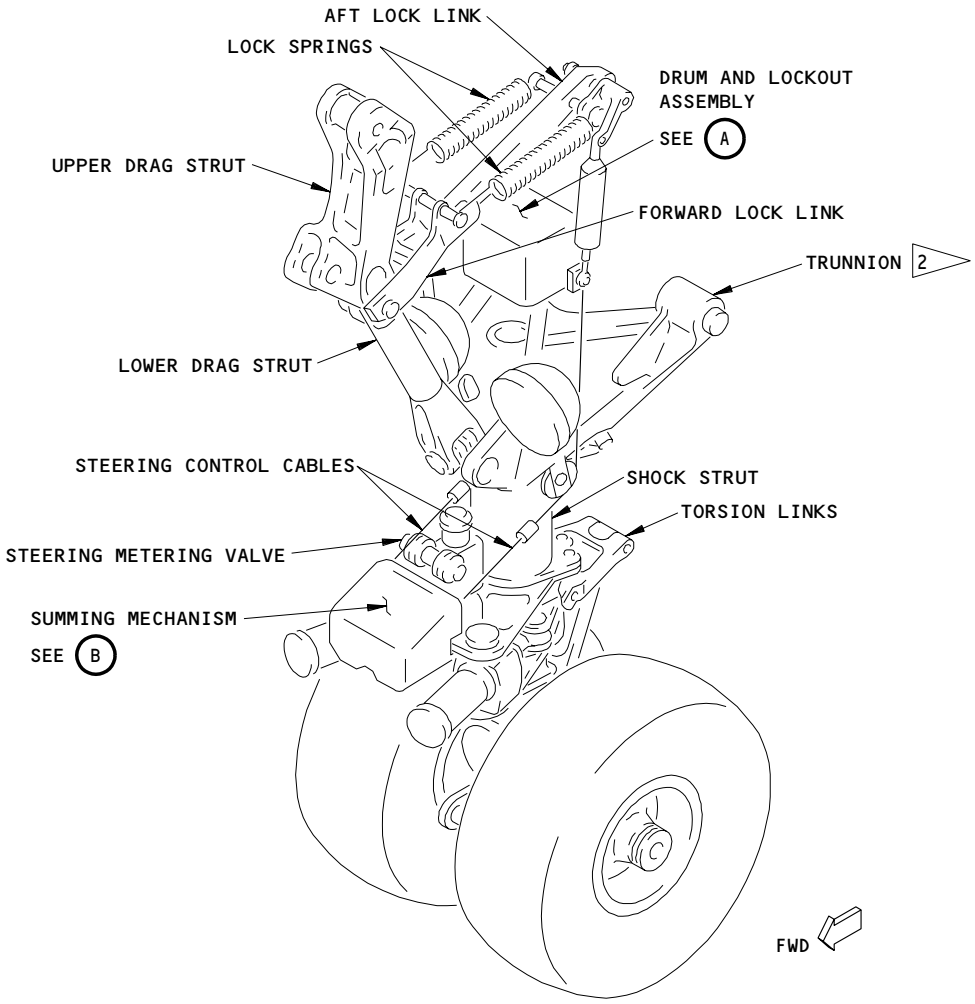
1. General
   A. The nose gear supports the nose of the aircraft while the aircraft is on the ground. This includes the shock strut, drag strut, doors, linkages, and attach bolts. The nose landing gear and its components are exposed to air contaminants and runway splash which can cause corrosion.
   B. Water intrusion and subsequent corrosion has been reported in the trunnion drum bearing.
   C. Corrosion can occur in the steering shutoff valve of the steering metering valve module.
   D. Corrosion can occur in the park brake indicator light assembly.
   E. Corrosion can occur on bearings in the nose wheel steering system. These are in the drum and lockout assembly, its housing, and in the summing lever. Water can get into these bearings if the bearings do not contain sufficient grease.
   F. Corrosion can occur in the extendable door operating strut. The corrosion occurs on the inner tube and on the end fitting. This strut is volume of the nose gear forward door mechanism installation.

TASK 32-20-01-602-001

2. Corrosion Prevention
   A. References
      (1) AMM 51-24-09/701, Corrosion Inhibiting Compound-Cleaning/Painting
   B. Access
      (1) Location Zones

115/116	Nose Landing Gear Wheel Well
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door

   C. General
      (1) Make periodic inspections to ensure that the protective finishes provided during manufacture remain intact. The preferred treatment for broken finishes is to replace the finish with the same protective system as used originally. Since in some cases it is impractical or impossible to use this approach between overhaul cycles, the treatment described in the following paragraphs is recommended.
      (2) Where corrosion has already started, refer to Structural Repair Manual for details of corrosion removal.
      (3) Apply BMS 3-23 water displacing corrosion inhibiting compound to damaged finish on exposed surfaces. Refer to AMM 51-24-09/701 for details of application of BMS 3-23.
      (4) After application of BMS 3-23, all grease fittings in the treated area must be regreased.

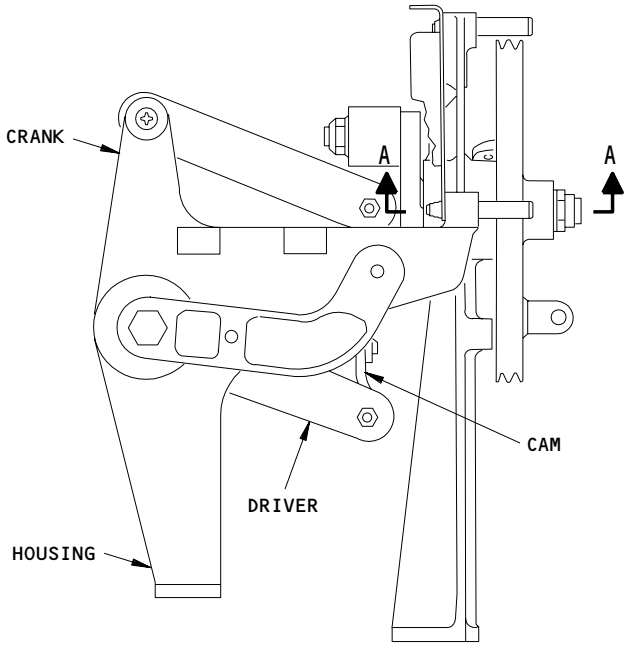


NOSE LANDING GEAR 1

1 APPLY BMS 3-23 TO DAMAGED FINISH ON EXPOSED AREAS. REAPPLY AFTER CLEANING WITH STEAM OR HIGH PRESSURE WATER AND DETERGENT. DO NOT APPLY BMS 3-23 TO GREASE FITTINGS, LUBRICATED SURFACES OR JOINTS, ELECTRICAL CONNECTIONS AND CONTACTS, TEFLON BEARINGS OR PULLIES AND CONTROL CABLES.

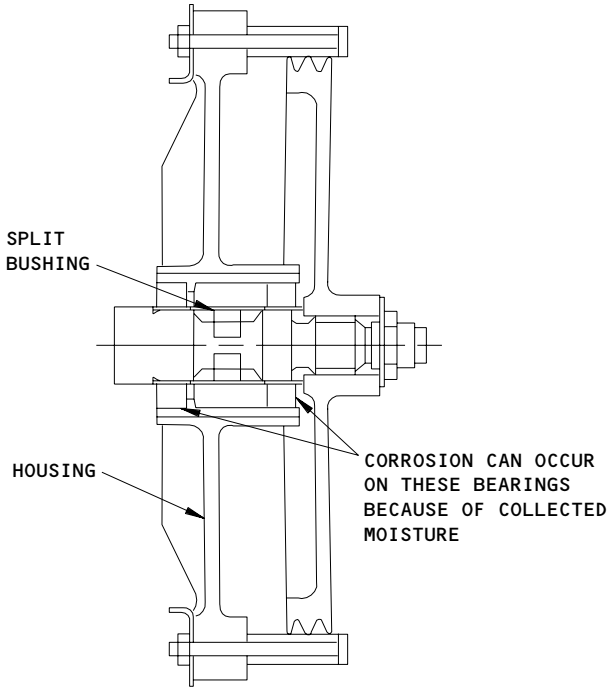
2 LUBRICATE REGULARLY TO PREVENT WATER INTRUSION

Nose Gear
Figure 201 (Sheet 1)



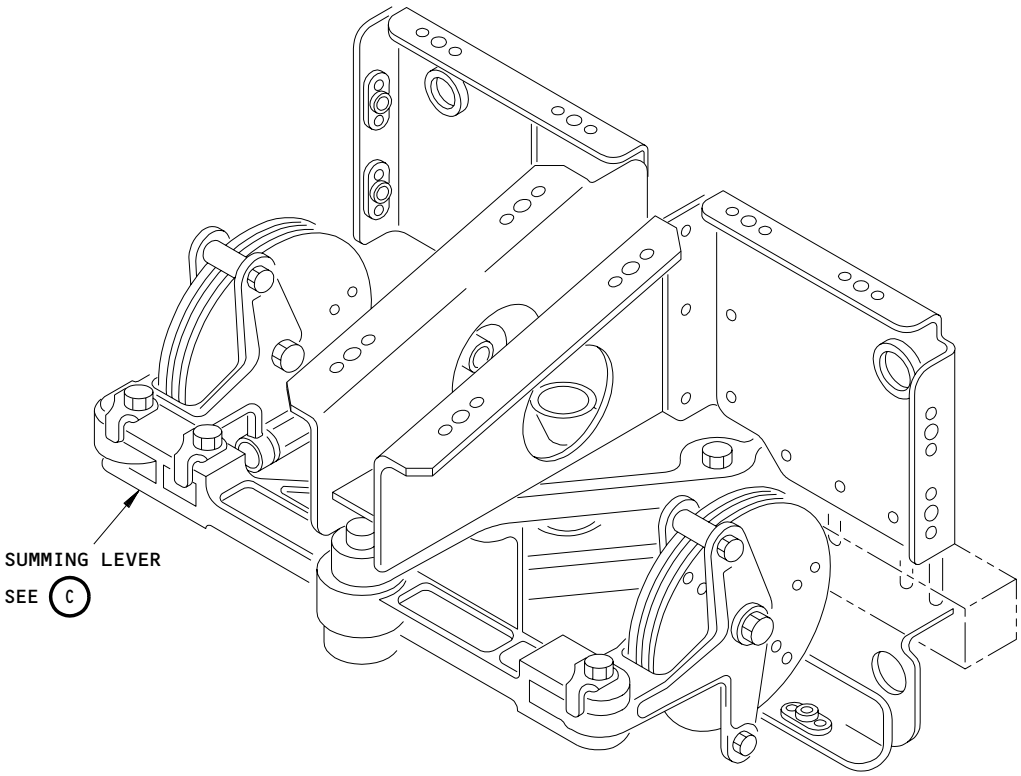
DRUM AND LOCKOUT ASSEMBLY
(COVER, SHAFT, AND DRUM ASSEMBLIES REMOVED)

A



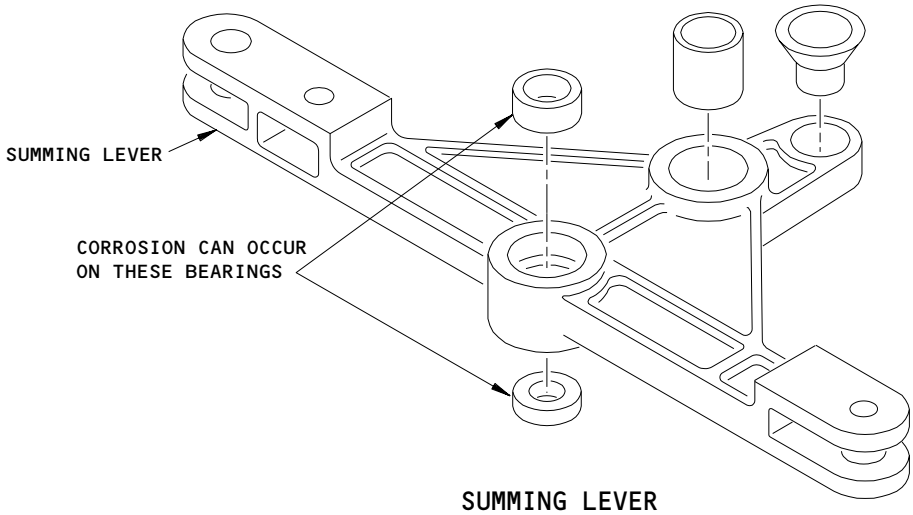
A-A

Nose Gear
Figure 201 (Sheet 2)



STEERING SUMMING MECHANISM
(COVER REMOVED)

B



SUMMING LEVER

C

Nose Gear
Figure 201 (Sheet 3)

(5) In the nose wheel steering drum and lockout assembly, be sure to regularly lubricate the bearings in the housing. These bearings have tube fittings, but the access is not easy.

(6) Improved Corrosion Protection

(a) Steering metering valve module: Airplanes line number 248, 249, 254, and on have a new module, with changes in the shutoff valve. The valve has a chrome plated plunger and a CRES retainer. The cavity behind the retainer has a vent hole. The slide and sleeve are 440C CRES. These changes can be incorporated on other airplanes per SB 32-0067.

(b) Park brake light indicator light and shield: Some airplanes line number 314 and on have new waterproof light assemblies, with soldered terminals, instead of screw terminals.

(c) Nose wheel steering system:

1) At line number 86, PRR B11106 added tube fittings and changed bearings in the housing of the nose wheel steering drum and lockout assembly. This change can be added to earlier airplanes with SB 32-0022, but you must regularly lubricate the bearings or the corrosion could come back.

2) At line number 334, PRR B11857 changed to 440C CRES the material of the bearings in the drum and lockout assembly, its housing, and in the summing lever.

D. Precautions for use of Corrosion Inhibiting Compound.

S 622-003

CAUTION: DO NOT APPLY BMS 3-23 TO AREAS WHICH WILL BE SUBSEQUENTLY PAINTED OR SEALED. OBSERVE PRECAUTIONS OF AMM 51-24-09/701 FOR SPRAYING CONTROL CABLES WITH BMS 3-23.

(1) Obey these precautions when using corrosion inhibiting compound:

(a) Apply BMS 3-23 to unpainted hydraulic tubing in the area.

(b) Shield or protect pulleys, wire bundles, etc., in some manner to prevent direct application of BMS 3-23.

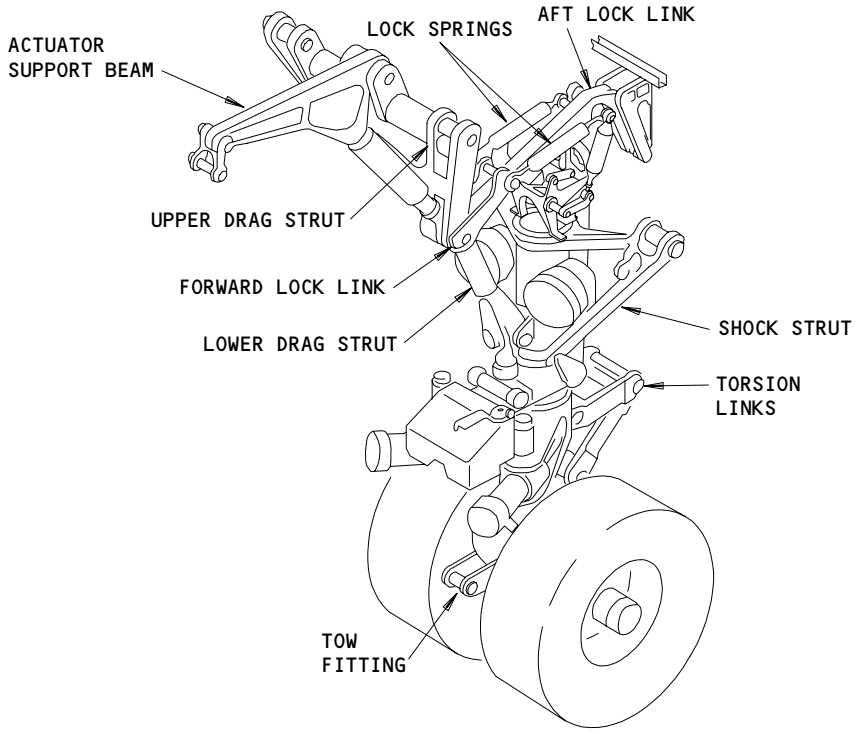
(c) Mask off electrical connectors to avoid application to any electrical contacts.

(d) Protect oxygen systems, including fittings, from contamination in accordance with chapter 35 of the Maintenance Manual.

(e) Do not apply corrosion inhibiting compounds on grease joints or sealed bearings. These compounds dissolve grease and other lubricants. They are penetrating compounds and can get around the seals and into the bearings.

NOSE GEAR - DESCRIPTION AND OPERATION

1. General
   A. The nose landing gear includes a shock strut, drag strut assembly, torsion links, and an actuator support beam. These links and struts are assembled together to make a structure to hold up the airplane nose.
2. Component Details (Fig. 1)
   A. Shock Strut
      (1) The shock strut is the primary supporting member of the gear. The strut includes an inner and an outer cylinder which are charged with an air-oil mixture to absorb loads during landing, taxiing, and take-off. The shock strut is trunnion-mounted in the aft end of the nose wheel well. The trunnions are mounted into bearings on the side walls which allow the gear to turn during extension and retraction.



Nose Gear
Figure 1

(2) Upper and lower bearings inside the outer cylinder provide sliding surfaces between the two cylinders. Two active seals, one static and one dynamic, seal the air-oil mixture between the cylinders. Two sets of spare seals are stored in annular grooves in the lower bearing. These spare seals are provided to replace the active seals without removing the inner cylinder.

(3) Shocks are absorbed by the flow of hydraulic fluid through the annular space between a metering pin and an orifice plate. The metering pin is tapered to progressively adjust the rate of flow of hydraulic fluid. This provides uniform control of the loads on airplane structure. A rebound snubber, located just below the upper bearing, acts as a one-way restrictor. During compression, the snubber allows free flow of hydraulic fluid. During extension, the snubber restricts the flow and thus controls rebound of the shock strut.

(4) The shock strut is charged with oil through a valve on the left side of the outer cylinder just above the upper torsion link attachment. The air or nitrogen is supplied through a valve on the top of the outer cylinder.

(5) The outer cylinder provides attachments for the lower drag strut, upper torsion link, and steering actuators. The inner cylinder incorporates an integral axle and provides attachments for the lower torsion link, and the tow fitting. There is a tow fitting on the front to provide forward towing of the airplane.

B. Drag Strut Assembly

(1) The drag strut assembly provides forward and aft support for the gear and also locks the gear into the retracted and extended positions. The assembly consists of a drag strut and a lock link assembly. Both are two-member braces which fold during extension and retraction.

(2) The drag strut consists of an upper and a lower strut hinged in the center. The upper strut is trunnion-mounted to the side walls in the forward end of the nose wheel well. The lower strut attaches to a universal link attached to the front of the shock strut. Attachments for the retract actuator and actuator support beam are located on the upper strut.

(3) The lock link assembly consists of forward and aft links and lock springs. These links are also hinged in the center. The forward end attaches to the drag strut at its hinge point. The aft end attaches to the rear wall of the nose wheel well. The lock springs assist the lock actuator to lock the gear and to keep it locked. A downlock pin is inserted through the two links to lock the gear for safety during ground operations.

C. Torsion Links
   (1) The torsion links prevent rotation between the shock strut inner and outer cylinders except during steering. During steering, the torsion links transmit rotational forces from the steering collar to the inner cylinder which turn the nose wheels to steer the airplane. At all times, however, the torsion links do not affect the normal shock absorbing action of the shock strut.
   (2) The two links are hinged in the center and attach to the aft side of the shock strut. The upper link attaches to the steering collar on the outer cylinder. The lower link attaches to the inner cylinder.

D. Actuator Support Beam
   (1) The actuator support beam provides mounting for the retract actuator. During gear operation, the forces from the retract actuator acting on the gear are transmitted through the actuator support beam to airplane structure. The support beam is located in the forward end of the nose wheel well. The beam attaches to the middle of the upper drag strut trunnion and to a support link connected to the front wall of the nose wheel well.

NOSE GEAR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the nose landing gear. The second task installs the nose landing gear.

   TASK 32-21-01-004-072

2. Remove the Nose Landing Gear
   A. Equipment
      (1) Trunnion Pin Puller, NLG - A32011-1
      (2) Inner Cylinder Retention Strap, NLG - A32028-6
      (3) Hoist Equipment, NLG - A32036-57
      (4) Sling - EE2-201-95 inch or Equivalent
          (1 inch wide 2 Ply nylon Web rated for
          Work Load Limit (WLL) at 8000.0 Lbs @
          V-basket hitch)
          Lift-All Company, Inc.
          Landisville, PA.
      (5) Transportation Dolly, NLG - A32038-1
   B. References
      (1) 07-11-02/201, Jacking Airplane Nose
      (2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones

115/116	Nose Landing Gear Wheel Well
119	Main Equipment Center (Left and Right)
211/212	Control Cabin
710	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door

      (2) Access Panel

119BL	Main Equipment Center

   D. Prepare to Remove the Nose Landing Gear

      S 494-001
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

      S 864-002
      (2) Remove the pressure from the center hydraulic system and reservoir (Ref 29-11-00).

S 864-003

(3) Open this circuit breaker on the main power distribution panel, P6, and attach a DO-NOT-CLOSE tag:
(a) 6G1, FIRE EXT APU 1

S 864-005

(4) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
(a) 11B6, LIGHTS EMER CHARGER PORTABLE
(b) 11B34, APU REMOTE FIRE IND
(c) 11B35, APU ALTN CONT
(d) 11C23, INTERPHONE CABIN SERVICE
(e) 11C25, INTERPHONE DUAL PWR CAPT OBS FLT AMPL
(f) AIRPLANES WITH THE "LANDING GEAR POSITION AIR/GND SYS 2 ALT" CIRCUIT BREAKER INSTALLED AT PANEL GRID LOCATION 11C29;
11C29, LANDING GEAR POSITION AIR/GND SYS 2 ALT
(g) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(h) 11G29, INTERPHONE DUAL PWR CAPT OBS FLT AMPL
(i) 11G30, INTERPHONE DUAL PWR F/O SEC OBS
(j) 11H32, GND CALL
(k) 11N1, LIGHTING NOSE GEAR CONT
(l) 11N3, LIGHTING LANDING NOSE GEAR L
(m) 11N4, LIGHTING LANDING NOSE GEAR R
(n) 11N8, LIGHTING TAXI
(o) 11P35, EMER CHGR OFF WING ESC L
(p) 11P36, EMER CHGR OFF WING ESC R
(q) 11U15, AIR/GND SYS 1
(r) MTH 275-276 POST-SB 32-85;
MTH 277-999;
SAS 050-149, 155-999;
11U17, TIRE PRESS IND 1
(s) 11U23 or 11U24, POSITION AIR/GND SYS 2

S 864-006

(5) Open this circuit breaker on the forward miscellaneous electrical equipment panel, P33, and attach a DO-NOT-CLOSE tag:
(a) 33J4, LIGHTS NLG/WW SVCE

S 864-007
(6) MTH 275-276 POST-SB 32-85;
MTH 277-999;
SAS 050-149, 155-999;
Open this circuit breaker on the APU external power panel, and attach a DO-NOT-CLOSE tag:
(a) 34M11, TIRE PRESS IND 2

S 844-009
(7) To open the forward door of the nose landing gear, release the lock on ROD 2 of the operating mechanisms.

S 034-010
(8) Remove the bolts (1) to disconnect the operating mechanisms for the forward door from the shock strut of the nose landing gear (Fig. 401).

S 034-011
(9) Remove the bolts (4) to disconnect the operator struts for the aft door from the shock strut for the nose landing gear.

NOTE: Do not change the length of the operating rods when you remove the nose landing gear.

S 864-082
(10) Use a rope to hold the doors out of the work area.

S 034-013
(11) Remove the bolts (8) to disconnect the pivot links for the nose wheel steering from the trunnion drum (View A-A, Fig. 402).

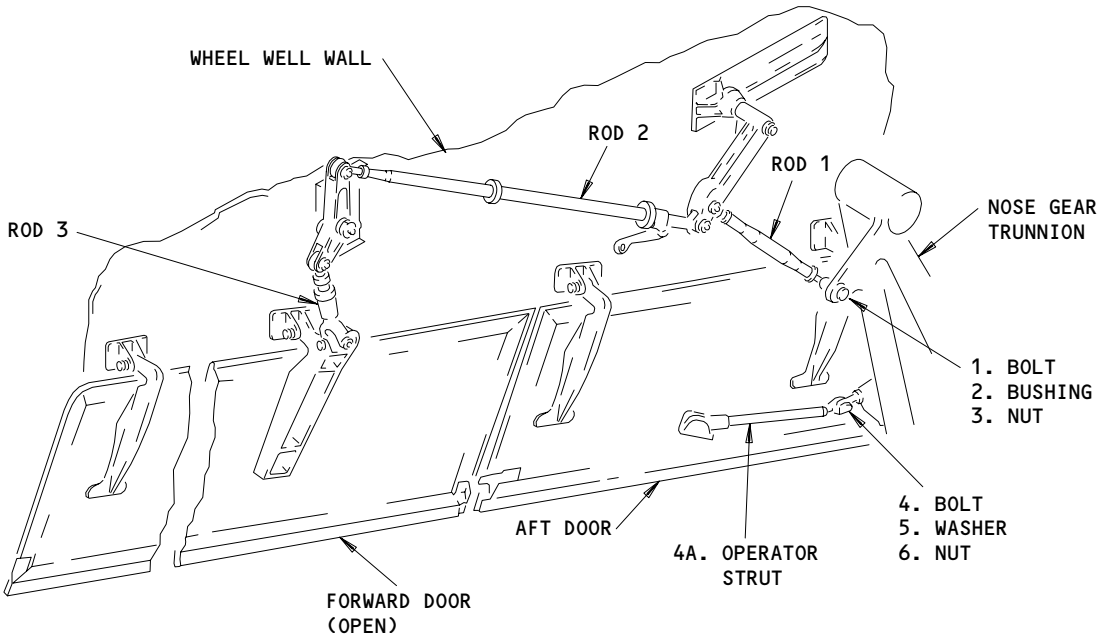
S 864-083
(12) Use a rope to hold the pivot links clear of the structure.

S 034-015
(13) Disconnect the electrical connectors from the junction box in the wheel well for the nose landing gear (Detail B, Fig. 403).

S 034-016
(14) Put a cap on the connectors.

S 034-017
(15) Remove the screws (38) to disconnect the electrical adapter box from the bulkhead.

S 434-084
(16) Attach the electrical conduit to the top of the shock strut trunnion.



Nose Landing Gear Forward and Aft Door Operator Rod Locations
Figure 401

S 034-019
(17) Disconnect the hydraulic lines on the left swivel bracket of the trunnion.

S 034-020
(18) Put a plug on the hydraulic fittings.

E. Remove the Nose Landing Gear

S 864-021
(1) Remove the pressure from the shock strut.

S 864-131

WARNING: MAKE SURE THE STRUT IS FULLY DEPRESSURIZED BEFORE JACKING. FAILURE TO DO THIS CAN LET THE STRUT MOVE UNDER PRESSURE AND CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Install the shock strut retention strap to lock the shock strut in the compressed position.

S 864-086
(3) Lift the nose of the airplane (Ref 07-11-02).

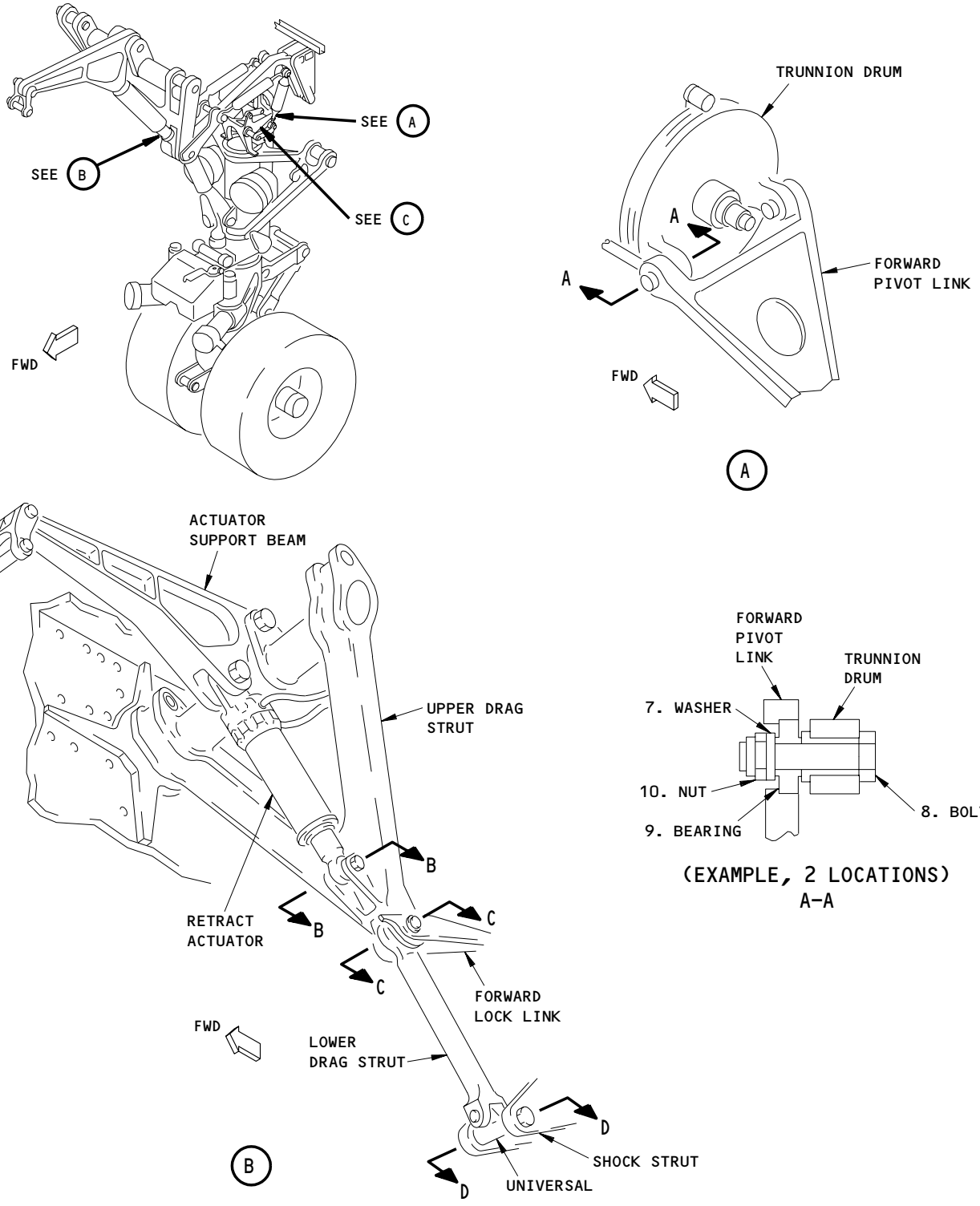
S 034-023
(4) Remove the lower pin (13) to disconnect the rod end of the retract actuator from the drag strut (View B-B, Fig. 402).

S 864-087
(5) Move the retract actuator forward and use a rope to hold it out of the work area.

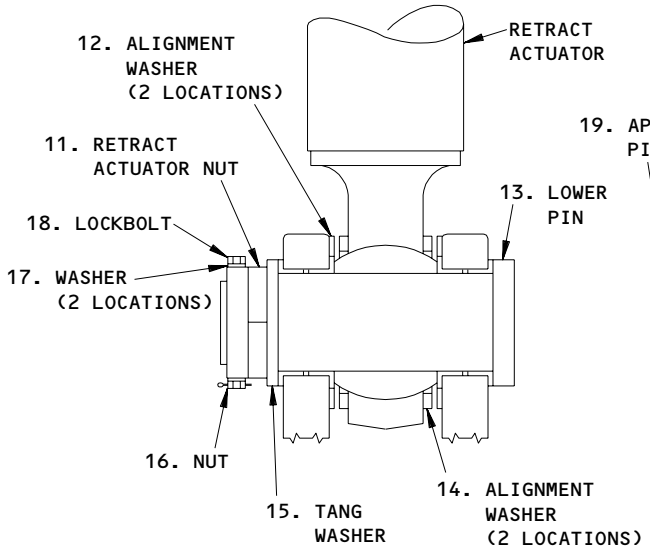
S 864-088
(6) Hold the lock link assembly.

S 864-089
(7) Hold the upper drag strut.

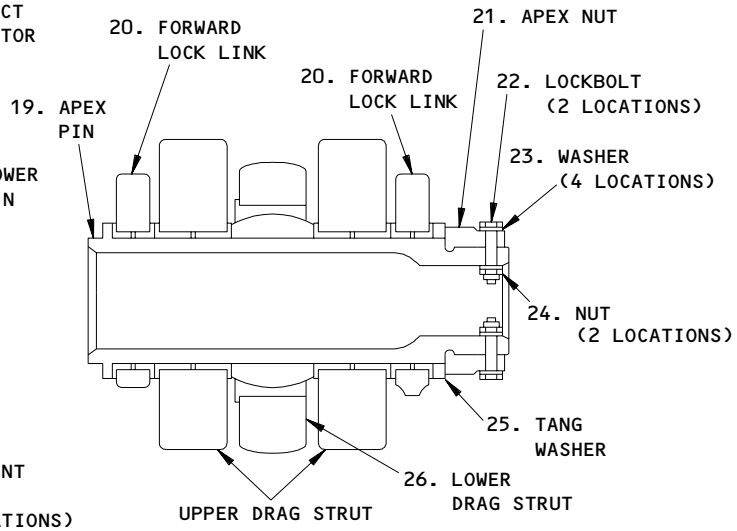
S 024-128
(8) Remove the bolt (35) to disconnect the piston end of the steering spring cartridge from the drive crank (Detail C, Fig. 402).



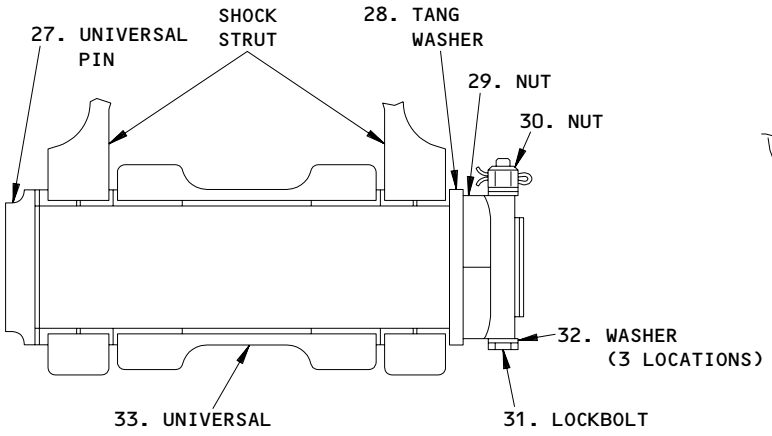
Nose Landing Gear Installation
Figure 402 (Sheet 1)



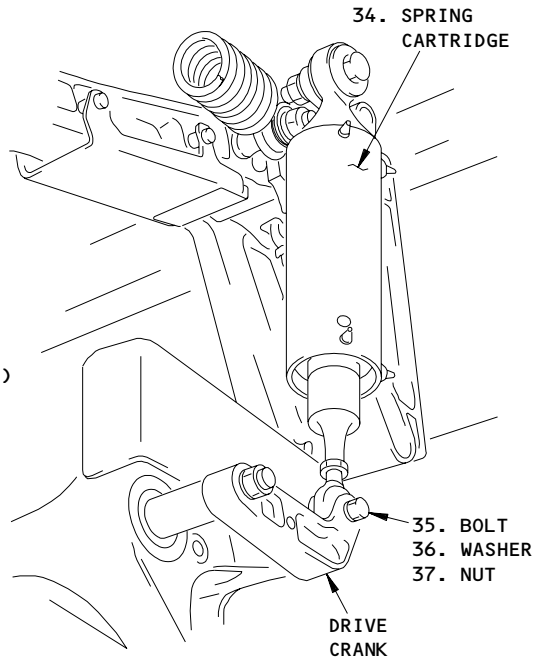
(VIEW IN THE AFT DIRECTION)
B-B



(VIEW IN THE AFT DIRECTION)
C-C

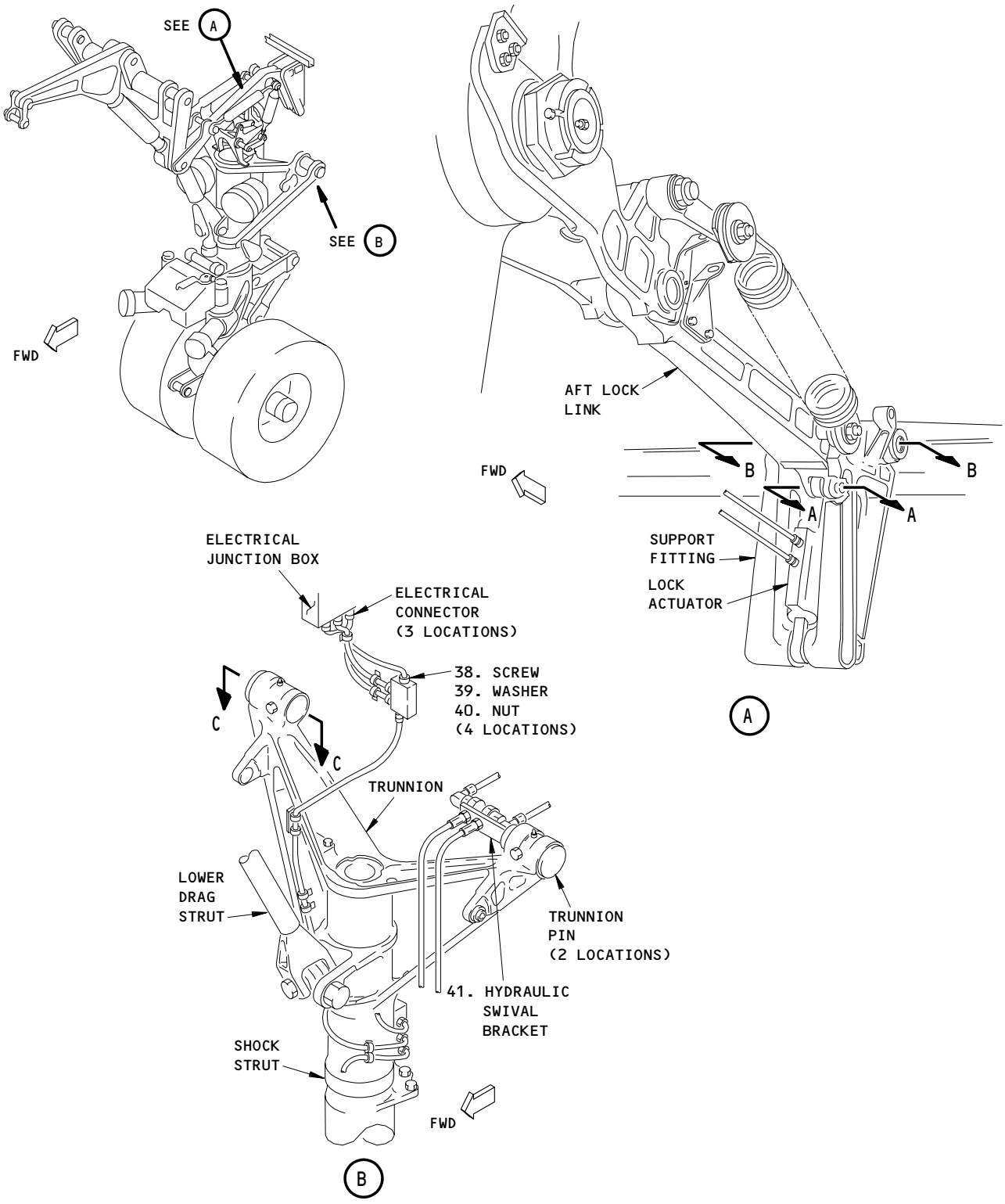


(VIEW IN THE AFT DIRECTION)
D-D

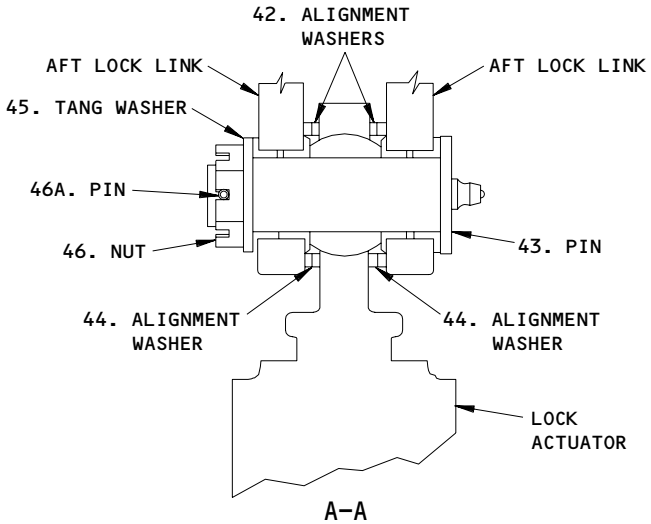


C

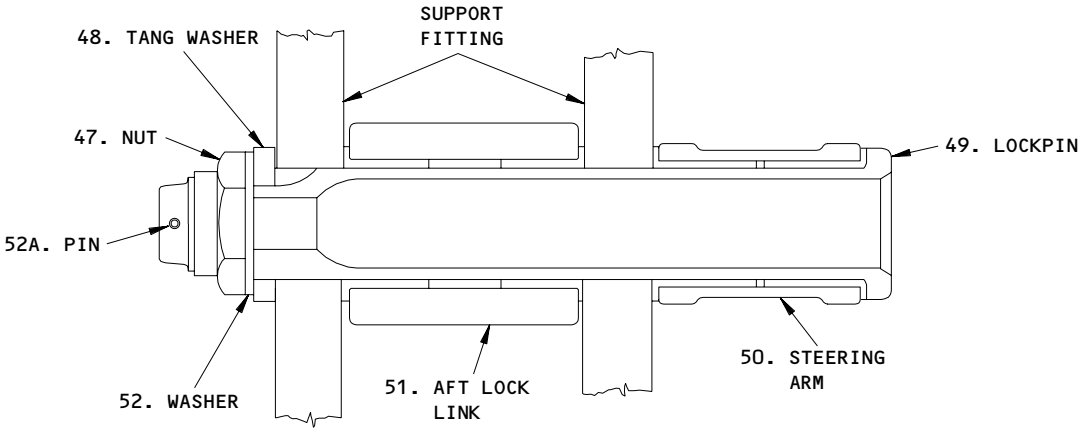
Nose Landing Gear Installation
Figure 402 (Sheet 2)



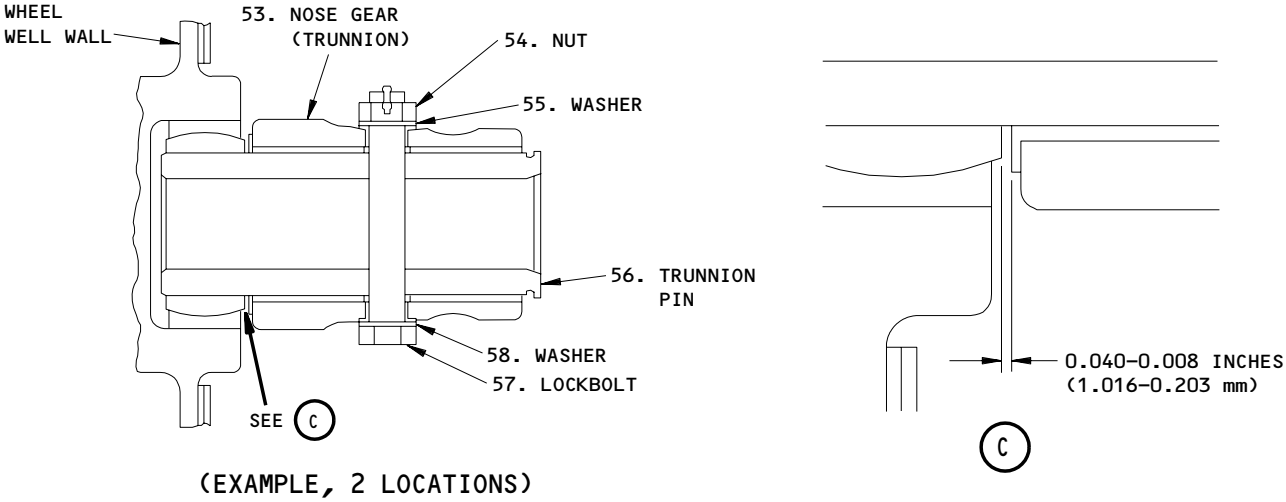
Nose Landing Gear Installation
Figure 403 (Sheet 1)



A-A

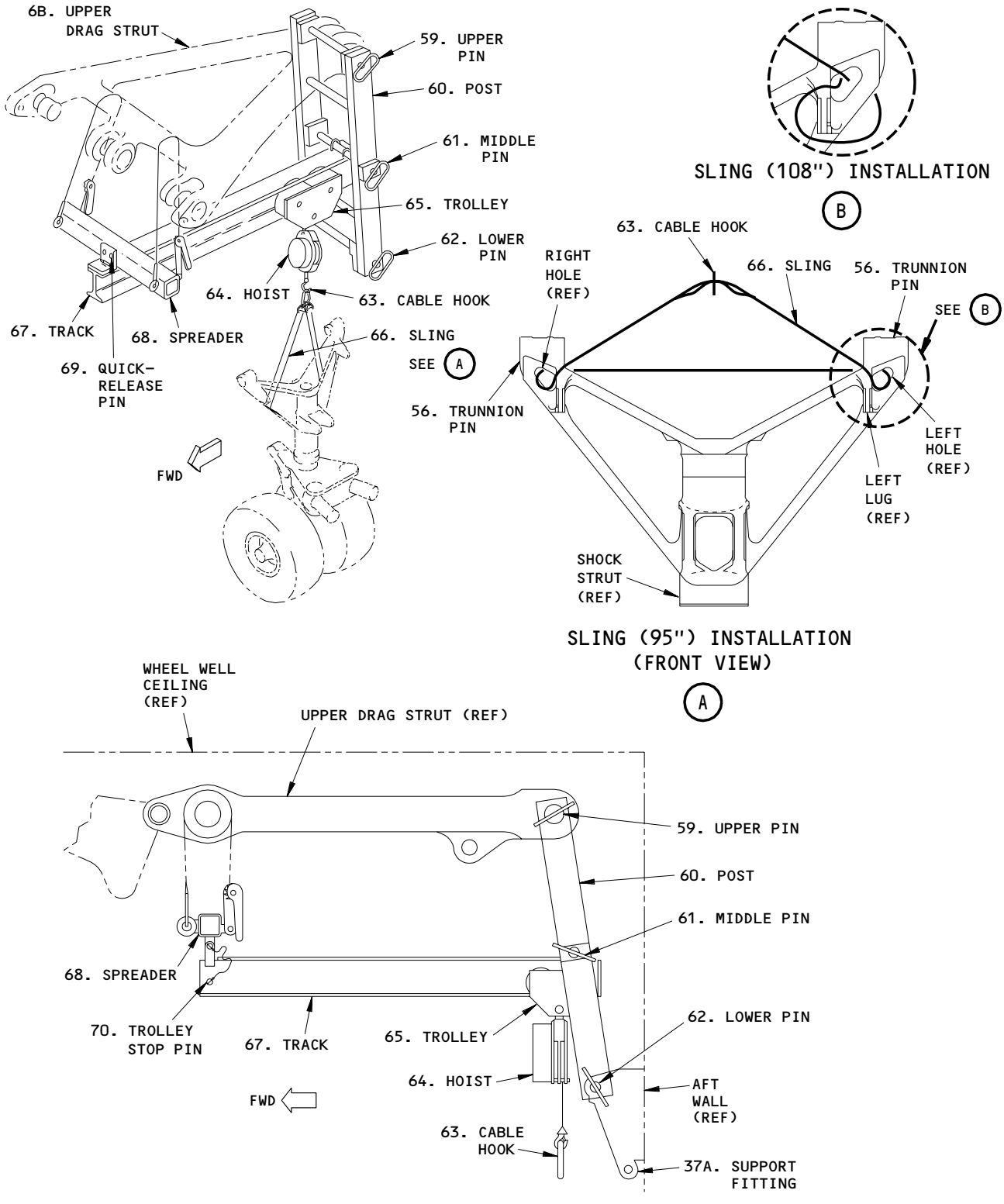


B-B



(EXAMPLE, 2 LOCATIONS)
C-C

Nose Landing Gear Installation
Figure 403 (Sheet 2)



Hoist Equipment for the Removal/Installation of the Nose Landing Gear
Figure 404

S 034-090

CAUTION: APPLY A FORWARD FORCE TO THE AFT SIDE OF THE SHOCK STRUT. IF THE SHOCK STRUT MOVES AFT, IT CAN CAUSE DAMAGE TO THE PROXIMITY SENSORS.

(9) Remove the apex pin (19) to disconnect the lower drag strut from the forward lock link and the upper drag strut (View C-C, Fig. 402).

S 034-027

(10) Remove the universal pin (27) to disconnect the universal from the shock strut (View D-D, Fig. 402).

S 034-028

(11) Remove the lower drag strut (26) and the universal (33).

S 034-029

(12) Remove the lock link assembly and the steering spring cartridge.
  (a) Disconnect the electrical line connectors for the proximity sensor from the junction box.
  (b) Remove the pin (43) to disconnect the rod end of the lock actuator from the aft lock link (View A-A, Fig. 403).
  (c) Use a rope to hold the lock actuator out of the work area.
  (d) Remove the lock pin (49) to disconnect the aft lock link from the support fitting (View B-B, Fig. 403).
  (e) Remove the forward lock link (20).
  (f) Remove the aft lock link (51).
  (g) Remove the steering spring cartridge (34).

S 494-126

WARNING: FOLLOW THE SLING INSTALLATION EXACTLY AS SHOWN IN FIGURE 404. OTHERWISE THE STRAP WILL BE TOO SHORT. THIS CAN RESULT IN POSSIBLE OVERLOAD, FAILURE OF THE SLING, AND/OR INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(13) Install the hoist equipment on the nose landing gear (Fig. 404)
  (a) Use the upper pin (59) to attach the post (60) to the upper drag strut.

    NOTE: The upper pin (59) is approximately 2.75 inches in diameter. The upper pin (59) goes through the hole in the upper drag strut that held the lower drag strut.

  (b) Lift the upper drag strut until you can use the lower pin (62) to attach the post (60) to the support fitting (37A).

    NOTE: The lower pin (62) is approximately 1.5 inches in diameter.

(c) Attach the spreader (68) to the upper drag strut.
(d) Use the middle pin (61) to attach the track (67) to the post (60).

NOTE: The middle pin (61) is approximately 1 inch in diameter.

(e) Align the hole in the bracket on the end of the track (67) with the hole in the middle of the spreader (68).
(f) Install the quick release pin (69) through the holes.
(g) Put the trolley (65) on the track (67).
(h) Install the trolley stop pin (70).

CAUTION: MAKE SURE THAT THE TENSION IN THE STRAP IS EQUAL ON BOTH SIDES OF THE SLING. IF THE WEIGHT OF THE GEAR IS NOT DISTRIBUTED EVENLY ON THE SLING, DAMAGE TO EQUIPMENT MAY OCCUR.

(i) Install the sling (66) on the shock strut (Detail A, Fig. 404).

NOTE: If you use the 108-inch strap then make sure that you loop the strap around the lug on the left side of the trunnion (Detail B, Fig. 404).

(j) Lift the nose landing gear with the hoist (64) until there is no weight from the landing gear on the trunnion pins (56).

S 034-032
(14) Do these steps to remove the trunnion pins (56) and disconnect the nose landing gear (53) from the wheel well side walls (View C-C, Fig. 403). Use the trunnion pin puller if necessary to remove the pins.
(a) Remove the lockbolt (57), washers (55 and 58) and nut (54) from the trunnion pin (56), (View C-C, Fig. 403).
(b) Remove the hydraulic swivel bracket (41) from the left trunnion pin (Detail B, Fig. 403).

(c) Remove the trunnion pins (56).

S 864-092

(15) Move the nose landing gear forward in the wheel well.

S 864-093

(16) Turn the nose landing gear approximately 90 degrees to be clear of the supports.

S 864-094

(17) Lower the nose landing gear on the transportation dolly.

S 494-033

(18) Attach the dolly restraints. Use the instructions supplied with the tool.

S 094-034

(19) Remove the sling.

S 024-035

(20) Remove the nose landing gear.

TASK 32-21-01-404-036

3. Install the Nose Landing Gear

NOTE: The wear limits for this component are supplied in 32-21-01/601.

A. Equipment
   (1) Strut Inflation Tool - F70200-14
   (2) Inner Cylinder Retention Strap, NLG - A32028-6
   (3) Dry Air or Nitrogen Bottle, Charged to 2000 psi - Commercially Available
   (4) Hoist Equipment, NLG - A32036-57
   (5) Sling - EE2-201-95 inch or Equivalent
       (1 inch wide 2 Ply nylon Web rated for
       Work Load Limit (WLL) at 8000.0 Lbs @
       V-basket hitch)
       Lift-All Company, Inc.
       Landisville, PA.
   (6) Transportation Dolly, NLG - A32038-1

B. Consumable Materials
   (1) D00633 Grease - BMS 3-33 (Recommended)
   (2) D00013 Grease - MIL-G-23827 (Alternative)
   (3) D00106 Fluid - MIL-H-6083, Hydraulic

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Bolt	32-22-02	01	350
	2	Bushing			360
	3	Nut			355
	4	Bolt	32-21-01	01	260
	5	Washer			275
	6	Nut			280

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
402	7	Washer	32-51-54	01	15
	8	Bolt			5
	9	Bearing			25
	10	Nut			20
	11	Retract Actuator Nut	32-21-01	01	115
	12	Alignment Washer			100
	13	Lower Pin			90
	14	Alignment Washer			95
	15	Tang Washer			110
	16	Nut			80
	17	Washer			75
	18	Lockbolt			70
	19	Apex Pin	32-21-03	01	165
	20	Forward Lock Link			355
	21	Apex Nut			175
	22	Antirotation Bolt			150
	23	Washer			155
	24	Nut			160
	25	Tang Washer			170
	26	Lower Drag Strut			185
	27	Universal Pin			65
	28	Tang Washer			70
	29	Nut			75
	30	Nut			60
	31	Lockbolt			50
	32	Washer			55
	33	Universal			115
	34	Spring Cartridge	32-34-06	01	40
	35	Bolt			10
	36	Washer			25
	37	Nut			35

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
403	38	Screw	32-61-61	01	890
	39	Washer			895
	40	Nut			900
	41	Bracket	32-34-52	01	35
	42	Alignment Washer	32-21-01	01	220
	43	Pin			200
	44	Alignment Washer			215
	45	Tang Washer			225
	46	Nut			230
	47	Nut	32-21-03	01	197
	48	Tang Washer			135
	49	Lock Pin			130
	50	Steering Arm			255
	51	Aft Lock Link			445
	52	Washer			198
	53	Gear Assy.	32-21-01	01	285
	54	Nut	32-21-02	01	475
	55	Washer			470
	56	Trunnion Pin			480
	57	Lockbolt			460
	58	Washer			465

D. References

(1) 07-11-02/201, Jacking Airplane Nose
(2) 12-12-01/301, Hydraulic Systems
(3) 12-15-02/301, Nose Gear Shock Strut
(4) 12-21-12/301, Nose Gear and Actuating Mechanisms
(5) 26-15-00/501, APU Fire Detection
(6) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(7) 32-00-20/201, Landing Gear Downlocks
(8) 32-09-08/201, Nose Gear Not Compressed Sensor
(9) 32-21-01/601, Nose Gear
(10) 32-21-09/401, Nose Gear Lock Spring
(11) 32-34-00/501, Nose Gear Extension and Retraction
(12) MTH 275-276 POST-SB 32-85;
SAS 050-149, 155-999;
AMM 32-45-00/501, Wheels and Tires
(13) 32-51-00/501, Nose Gear Steering System
(14) 33-31-00/201, Service Lights
(15) 33-42-00/501, Landing, Runway Turnoff and Taxi Lights

E. Access

(1) Location Zones

115/116	Nose Landing Gear Wheel Well
119	Main Equipment Center (Left and Right)
211/212	Control Cabin
710	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door

(2) Access Panel

119BL	Main Equipment Center

F. Prepare to Install the Nose Landing Gear

S 214-124

(1) Make sure the inner cylinder retention strap is installed.

G. Install the Nose Landing Gear

S 864-095

(1) Move the transportation dolly with the nose landing attached below the forward end of the hoist track.

S 494-038

(2) Install the sling.

S 864-096

(3) Tighten the hoist cable.

S 094-040

(4) Remove the restraints from the transportation dolly.

S 864-097

(5) Lift the nose landing gear into the wheel well.

NOTE: The trunnion must be aligned forward and aft to move up into the wheel well.

S 094-042

(6) Remove the transportation dolly from the work area.

S 864-098

(7) Turn the nose landing gear such that it is pointed forwards, and move it aft until the trunnion is above the wheel well trunnion fittings.

S 824-044

(8) Adjust the hoist to align the holes of the trunnion pin.

S 434-099

CAUTION: APPLY A FORWARD FORCE TO THE AFT SIDE OF THE SHOCK STRUT. IF THE SHOCK STRUT MOVES AFT, IT CAN CAUSE DAMAGE TO THE PROXIMITY SENSORS.

(9) Apply grease to and install these parts to connect the nose landing gear (53) to the wheel well (View C-C, Fig. 403).

NOTE: Install the hydraulic swivel bracket (41) on the left trunnion pin (Detail B, Fig. 403).

(a) Trunnion pins (56)
(b) Lock bolts (57)
(c) Washers (55 and 58)
(d) Nuts (54)

S 824-121
(10) Measure total axial gap (Detail C, Fig. 403).

NOTE: If the axial gap is not in the limits, this will not cause any damage to the landing gear structure, but there may be a loud noise during landing gear extension/retraction.

S 824-122
(11) If the total axial gap is not in the limits of 0.008 to 0.040 inch then do these steps:
(a) Remove the trunnion pins, lock bolts, washers and nuts.
(b) Install a thrust ring (P/N 141T9946-(X)) or a combination of thrust rings to obtain the proper axial gap.
(c) Install the trunnion pins, lock bolts, washers and nuts.
(d) Make sure the total axial gap is in limit.

S 094-045
(12) Lower the hoist.

S 094-048
(13) Remove the sling.

S 094-047
(14) Remove the hoist equipment.

S 864-100
(15) Let the upper drag strut move down.

S 434-049

(16) To install the lock link assembly, do the steps that follow:

NOTE: The steering spring cartridge is connected to the steering arm (50).

(a) Apply grease to and install these parts to connect the aft lock link (51) to the steering arm (50) (View B-B, Fig. 403):

CAUTION: INSTALL LOCK PIN (49) WITH HEAD ORIENTED AS SHOWN (FIG. 403, VIEW B-B). IMPROPER ORIENTATION OF THE PIN WILL CAUSE DAMAGE TO THE SPRING CARTRIDGE DURING GEAR RETRACTION.

1) Lock pin (49)
2) Washers (48 and 52)
3) Nut (47)
4) Cotter pin (52A)

(b) Apply grease to and install these parts to connect the rod end of the lock actuator to the aft lock link (View A-A, Fig. 403):
1) Pin (43)
2) Washers (42, 44 and 45)
3) Nut (46)
4) Cotter pin (46A)

S 434-135

CAUTION: WHEN YOU INSTALL THE LOWER DRAG STRUT, MAKE SURE THAT THE HEAD OF THE DRAG BRACE-TO-UNIVERSAL CONNECTING PIN IS FACING UP. IF THE PIN IS NOT INSTALLED CORRECTLY, DAMAGE CAN OCCUR TO THE OUTER CYLINDER OF THE SHOCK STRUT WHEN THE NOSE LANDING GEAR RETRACTS.

(17) Apply grease to and install these parts to connect the universal (33) to the shock strut (View D-D, Fig. 402):
(a) Pin (27)
(b) Washers (28 and 32)
(c) Nuts (29 and 30)
1) Tighten the nut to 60-80 pound-feet. Loosen to the nearest lock position to install the lockbolt.
(d) Lockbolt (31)
(e) Cotter pin

S 434-074

(18) Apply grease to and install these parts to connect the lower drag strut (26) to the forward lock link and the upper drag strut (View C-C, Fig. 402):
(a) Apex pin (19)
(b) Washers (23 and 25)

(c) Apex nut (21)
1) Tighten to a maximum of 100 pound-feet. Loosen to the nearest lock position to install the lockbolts.
(d) Nut (24)
(e) Lockbolts

S 424-129
(19) Install these parts to connect the piston end of the spring cartridge to the drive crank (Detail C, Fig. 402):
(a) Bolt (35)
(b) Washer (36)
(c) Nut (37)

S 434-075
(20) Apply grease to and install these parts to connect the rod end of the retract actuator to the upper drag strut (View B-B, Fig. 402):
(a) Lower pin (13)
(b) Washers (12, 14, 15, and 17)
(c) Lockbolt (18)
(d) Retract actuator nut (11)
1) Tighten to 60-80 pound-feet. Loosen to the nearest lock position to install the lockbolt.
(e) Nut (16)
(f) Cotter pin

S 434-076
(21) Apply grease to and install these parts to connect the steering pivot links to the trunnion drum (View A-A, Fig. 402):

NOTE: The movement of the bearing in the trunnion fitting after the installation is normal and acceptable.

(a) Bolts (8)
(b) Bearings (9)
(c) Washers (7)
(d) Nuts (10)

S 434-078
(22) Install these parts to connect the electrical adapter box to the bulkhead (Detail B, Fig. 403).
(a) Screws (38)
(b) Washers (39)
(c) Nuts (40)

S 864-050
(23) Connect the electrical connectors to the junction box in the wheel well for the nose landing gear (Detail B, Fig. 403).

S 864-051
(24) Connect the hydraulic lines to the hydraulic swivel bracket on the left trunnion pin.

S 644-052
(25) Lubricate the nose landing gear at the grease fittings (Ref 12-21-12).

S 434-079
(26) Install these parts to connect the operator struts for the aft door to the nose landing gear (Fig. 401):
(a) Bolts (4)
(b) Washers (5)
(c) Nuts (6)
(d) Cotter pins
(e) Bolts (1)
(f) Bushing (2)
(g) Nuts (3)
1) Tighten the nut to 50-80 pound-feet.
(h) Cotter pins

S 094-053
(27) Remove the shock strut retention strap.

S 864-101
(28) Let the shock strut extend.

NOTE: Make sure the shock strut is fully extended and the wheels do not touch the ground.

S 824-077
(29) Do this task "Adjustment of the Nose Wheel Steering System" (AMM 32-51-00/501).

S 714-127
(30) Do this task "System Test for the Nose Wheel Steering System" (AMM 32-51-00/501).

H. Put the Airplane Back to Its Usual Condition

S 614-055
(1) Do the servicing for the hydraulic reservoir if it is necessary (Ref 12-12-01).

S 494-056
(2) Connect the strut inflation tool to the air valve.

S 614-057
(3) Inflate the shock strut with dry air or nitrogen to 200 psig.

S 014-058
(4) Manually close the forward doors for the nose landing gear.

S 864-059
(5) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the main power distribution panel, P6:
(a) 6G1, FIRE EXT APU 1

S 864-061
(6) Remove the DO-NOT CLOSE tags and close these circuit breakers on the overhead circuit breaker panel, P11:
(a) 11B6, LIGHTS EMER CHARGER PORTABLE
(b) 11B34, APU REMOTE FIRE IND
(c) 11B35, APU ALTN CONT
(d) 11C23, INTERPHONE CABIN SERVICE
(e) 11C25, INTERPHONE DUAL PWR CAPT OBS FLT AMPL
(f) AIRPLANES WITH THE "LANDING GEAR POSITION AIR/GND SYS 2 ALT" CIRCUIT BREAKER INSTALLED AT PANEL GRID LOCATION 11C29;
11C29, LANDING GEAR POSITION AIR/GND SYS 2 ALT
(g) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(h) 11G29, INTERPHONE DUAL PWR CAPT OBS FLT AMPL
(i) 11G30, INTERPHONE DUAL PWR F/O SEC OBS
(j) 11H32, GND CALL
(k) 11N1, LIGHTING NOSE GEAR CONT
(l) 11N3, LIGHTING LANDING NOSE GEAR L
(m) 11N4, LIGHTING LANDING NOSE GEAR R
(n) 11N8, LIGHTING TAXI
(o) 11P35, EMER CHGR OFF WING ESC L
(p) 11P36, EMER CHGR OFF WING ESC R
(q) 11U15, AIR/GND SYS 1
(r) MTH 275-276 POST-SB 32-85;
MTH 277-999;
SAS 050-149, 155-999;
11U17, TIRE PRESS IND 1
(s) 11U23 or 11U24, POSITION AIR/GND SYS 2

S 864-111
(7) MTH 275-276 POST-SB 32-85;
SAS 050-149, 155-999;
Remove the DO-NOT-CLOSE tag and close this circuit breaker on the APU external power panel, P34:
(a) 34M11, TIRE PRESS IND 2

S 864-063
(8) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the forward miscellaneous electrical equipment panel, P33:
(a) 33J4, LIGHTS NLG/WW SVCE

S 714-105
(9) Do the operational test of APU fire detection system (Ref 26-15-00/501).

S 714-106
(10) Do the test for the not compressed sensor of the nose landing gear (Ref 32-09-08/201).

S 714-107
(11) Do the operational test of the nose gear wheel well lights (Ref 33-31-00/201).

S 714-108
(12) Do the operational test of the landing lights and taxi lights (AMM 33-42-00/501).

NOTE: If you removed the landing light assembly when you overhauled the landing gear or you installed a new landing gear, then do this task: Nose Gear Landing Light/Light Beam Adjustment (AMM 33-42-01/201).

S 094-064
(13) Remove the downlocks on the nose and main landing gear (Ref 32-00-20).

S 864-065
(14) Pressurize the center hydraulic system (Ref 29-11-00).

S 714-102

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA WHERE THE NOSE AND MAIN LANDING GEAR AND DOORS OPERATE. THE LANDING GEAR MOVES AND THE DOOR OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(15) Do a test for the operation of the nose landing gear (Ref 32-34-00).

S 864-103
(16) Lower the nose of the airplane and remove the jacks (Ref 07-11-02).

S 734-068
(17) MTH 275, 276 POST-SB 32-85;
MTH 277-999;
SAS 050-149, 155-999;
Do a test of the tire pressure indicating system (Ref 32-45-00).

S 614-070
(18) Do the servicing of the shock strut for the nose landing gear (AMM 12-15-02).

S 864-071
(19) Remove the hydraulic power if it is not necessary (Ref 29-11-00).

NOSE GEAR - INSPECTION/CHECK

1. General
   A. This procedure only has an illustration and wear limit table which show the data for the wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Nose Gear - Removal/Installation for procedures to do these tasks.

TASK 32-21-01-206-001

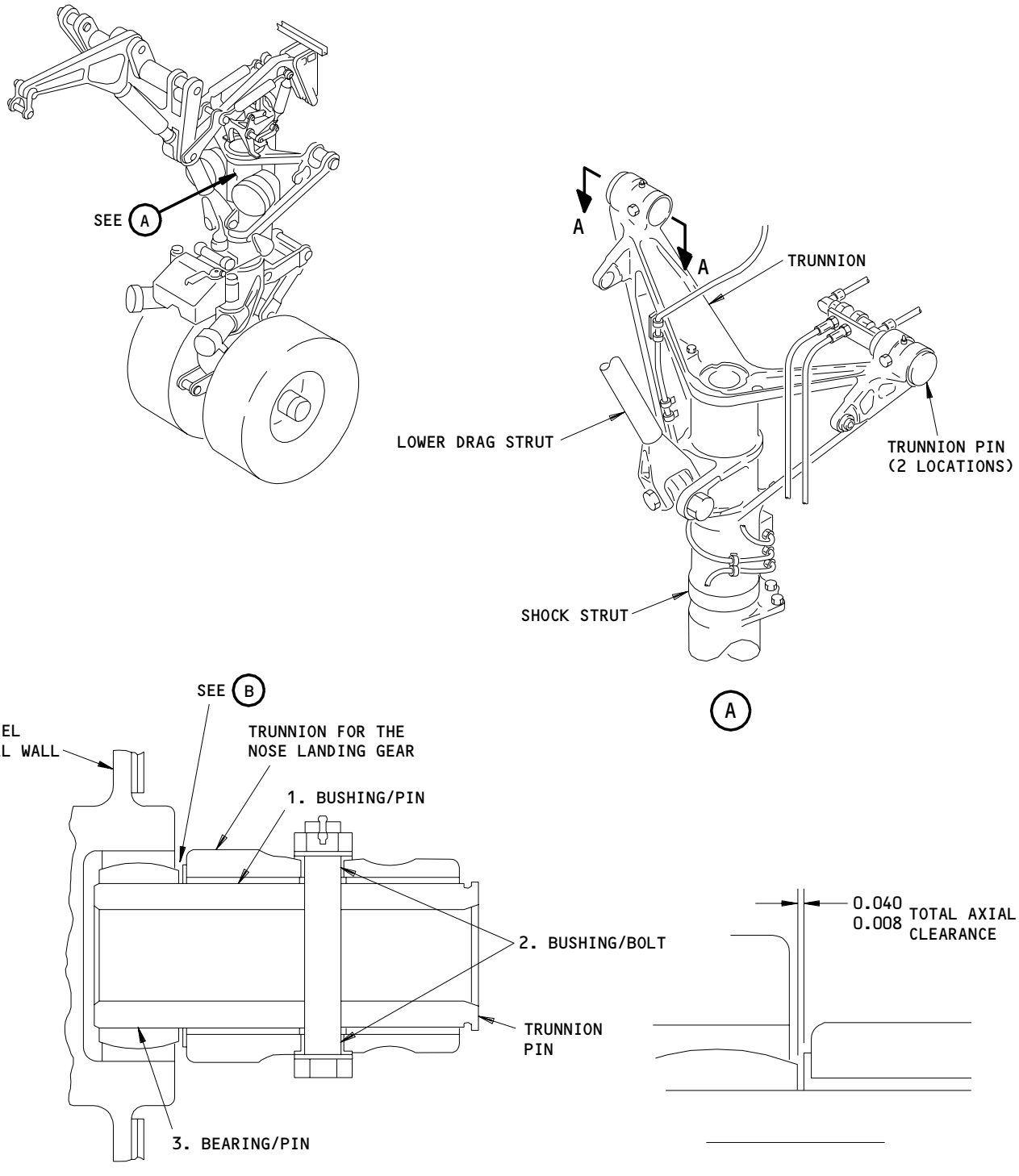
2. Wear Limits for the Nose Landing Gear
   A. Wear Limits for the Nose Landing Gear

S 226-002

(1) Refer to Fig. 601 for the inspection points and the wear limit table for the trunnion of the nose landing gear.

S 226-003

(2) Refer to Fig. 602 for the wear limits for the swivel pin on the door operator strut for the nose landing gear.



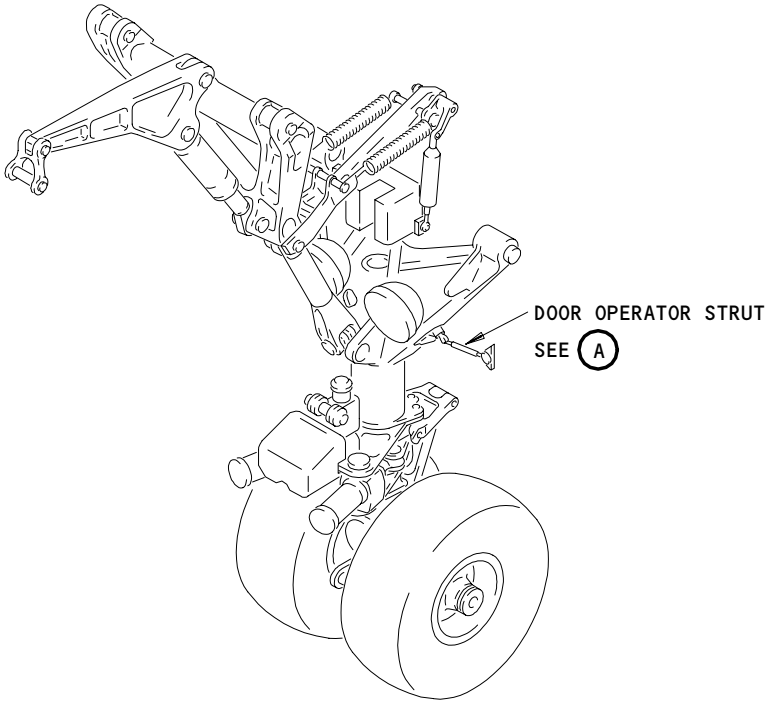
(EXAMPLE, 2 LOCATIONS)
A-A

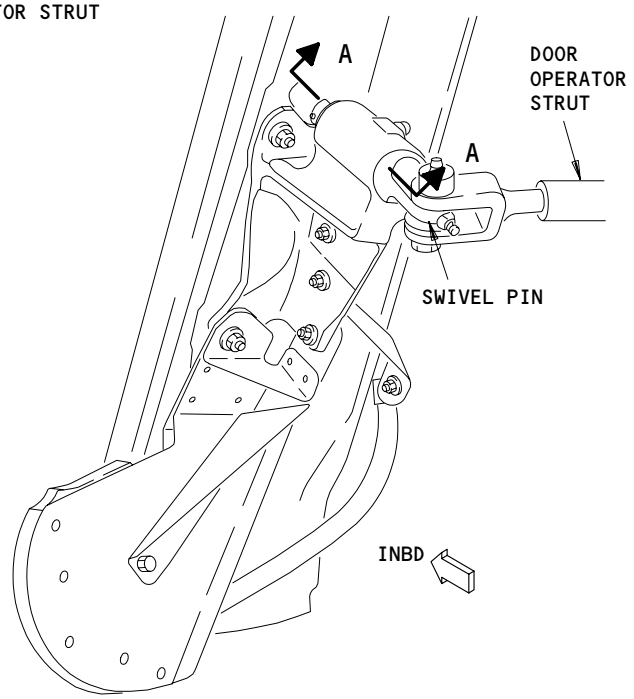
Wear Limits for the Trunnion of the Nose Landing Gear
Figure 601 (Sheet 1)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	3.0000	3.0015	3.0059	0.0070	X		
	PIN	OD	2.9980	2.9990	2.9940			X	1
2	BUSHING	ID	0.7500	0.7515	0.7537	0.0047	X		
	BOLT	OD	0.7485	0.7490	0.7460		X		
3	BEARING	ID	2.9995	3.0000	3.0045	0.0055	X		
	PIN	OD	2.9980	2.9990	2.9945			X	1

1 THIS PART PART (CAN BE REPAIRED). REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THIS INFORMATION.

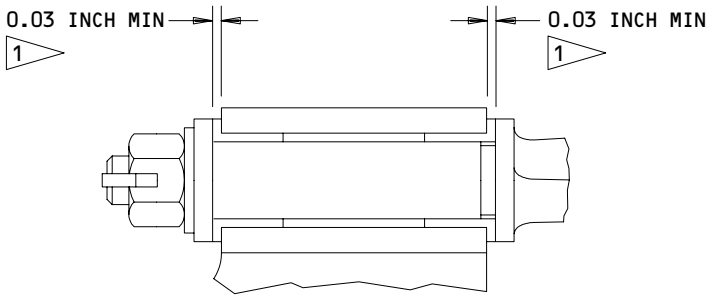
Wear Limits for the Trunnion of the Nose Landing
Figure 601 (Sheet 2)





DOOR OPERATOR STRUT

(A)



A–A

1 THE PERMITTED LONGITUDINAL FREEPLAY (UNWANTED MOVEMENT) IN THE SWIVEL PIN IS 0.08 INCH

Wear Limits for the Swivel Pin on the Door Operator Strut for the Nose Landing Gear
Figure 602

NOSE GEAR DRAG STRUT BEARING - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the drag strut bearings for the nose landing gear. The second task installs the drag strut bearings for the nose landing gear.

TASK 32-21-02-004-001

2. Remove the Drag Strut Bearing for the Nose Landing Gear (Fig. 401)
   A. Equipment
      (1) Face Type Spanner Wrench - ST2580-381/381A
   B. References
      (1) 32-21-03/401, Nose Gear Drag Strut Assembly
   C. Access
      (1) Location Zones,
          115/116 Nose Landing Gear Wheel Well
          119 Main Equipment Center (Left and Right)

      (2) Access Panel,
          119AL Main Equipment Center

   D. Prepare to Remove the Drag Strut Bearing

      S 024-021
      (1) Remove the drag strut assembly for the nose gear (Ref 32-21-03/401).
   E. Remove the Drag Strut Bearing

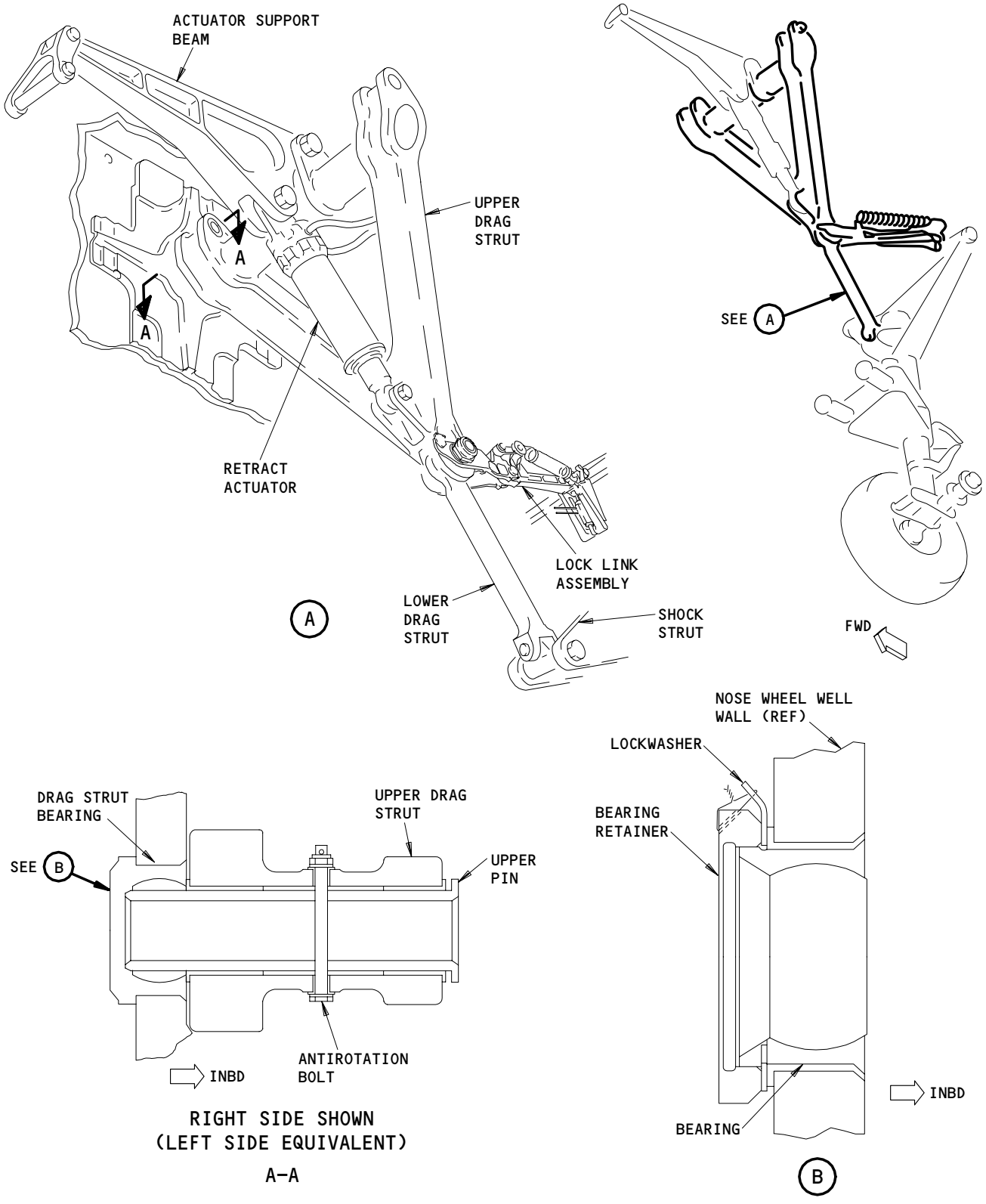
      S 014-046
      (1) Get access to the bearings through the Main Equipment Center.

      S 034-047
      (2) Remove the lockwire from the bearing retainer cap and the lock washer.

      S 034-048
      (3) Use the spanner wrench to remove the bearing retainer cap.

      S 034-049
      (4) Remove the lock washer.

      S 024-050
      (5) Remove the drag strut bearing out the wheel well side of the wheel well wall.



Nose Landing Gear Drag Strut Bearing Installation
Figure 401

TASK 32-21-02-404-022

3. Install the Drag Strut Bearing for the Nose Landing Gear (Fig. 401)

A. Equipment

(1) Face Type Spanner Wrench - ST2580-381/381A

B. Consumable Materials

(1) D00633 Grease - BMS 3-33 (Preferred)

(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

(3) D00006 Compound - Never-Seez NSBT-8N, MIL-PRF-907F

C. References

(1) 32-21-03/401, Nose Gear Drag Strut Assembly

D. Access

(1) Location Zones,

115/116 Nose Landing Gear Wheel Well
119 Main Equipment Center (Left and Right)

(2) Access Panel,

119AL Main Equipment Center

E. Install the Drag Strut Bearing

S 644-051

(1) Apply grease to the outer race of the bearing.

S 424-053

CAUTION: YOU CAN USE A RUBBER MALLET TO LIGHTLY HIT THE OUTER RACE OF THE BEARING TO MAKE SURE IT IS FULLY SEATED IN THE HOLE IN THE WHEEL WELL WALL. BE CAREFUL TO PREVENT DAMAGE TO THE RACE.

(2) Install the bearing in the wheel well wall.

S 434-054

(3) Install the lock washer.

S 434-055

(4) Apply compound, D00006, to and install the bearing retainer cap. Tighten the cap to 200-250 foot pounds.

S 434-056

(5) Install the lockwire.

F. Put the Airplane Back to Its Usual Condition

S 424-022

(1) Install the drag strut assembly for the nose landing gear (Ref 32-21-03/401).

NOSE GEAR DRAG STRUT ASSEMBLY - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the drag strut assembly for the nose landing gear. The second task installs the drag strut assembly for the nose landing gear.

TASK 32-21-03-004-046

2. Remove the Drag Strut Assembly for the Nose Landing Gear (Fig. 401)
   A. Equipment
      (1) Boom Hoist - A20001-79
      (2) Upper Drag Strut Pin Puller, NLG - A32013-1
      (3) Drag Strut Hoist Adapter, NLG - A32020-1
   B. References
      (1) 07-11-02/201, Jacking Airplane Nose
      (2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) 32-00-20/201, Landing Gear Downlocks
      (4) 32-61-03/201, Nose Gear Proximity Sensors
   C. Access
      (1) Location Zones,

115/116	Nose Landing Gear Wheel Well
710	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors

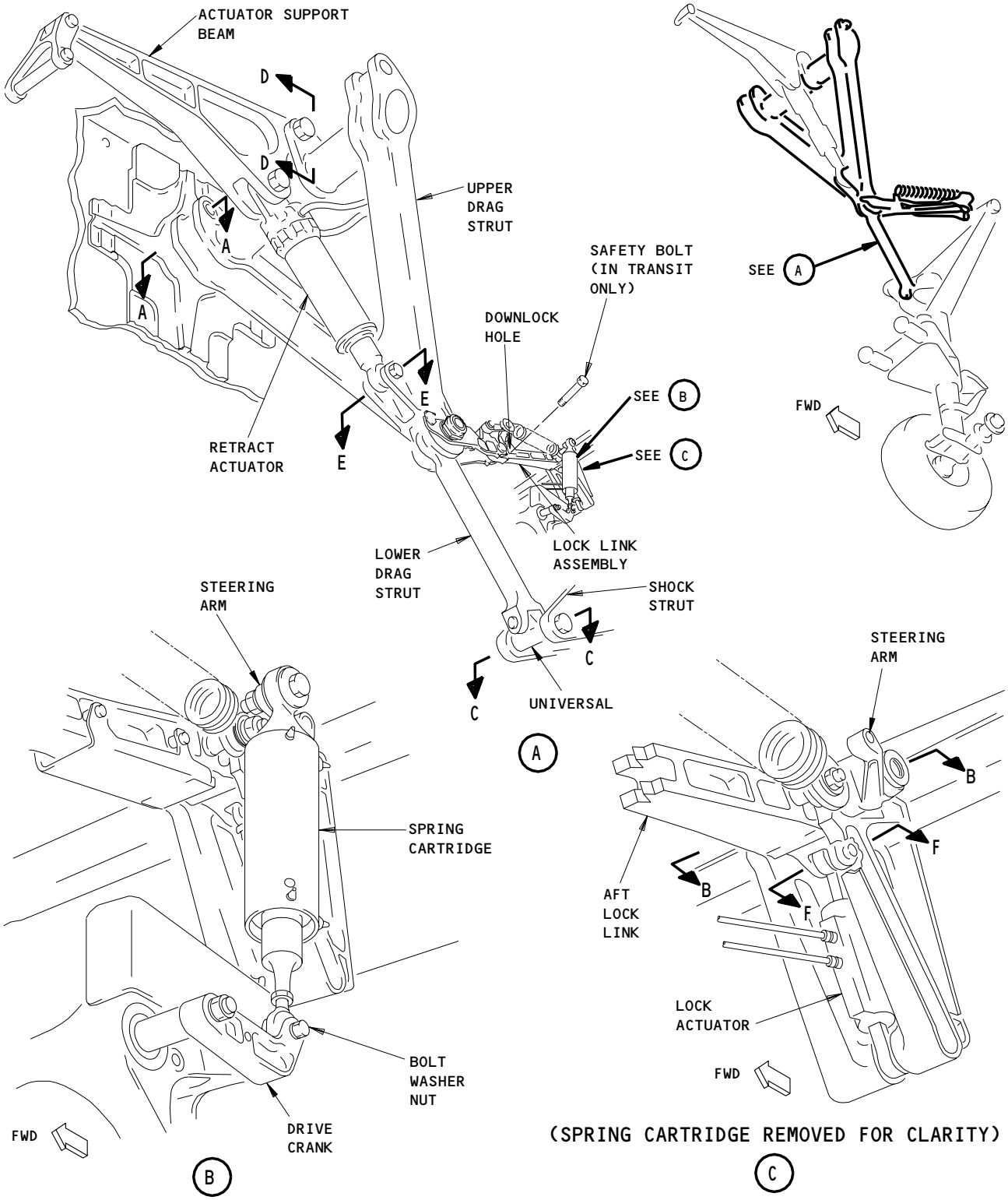
   D. Prepare to Remove the Drag Strut Assembly

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

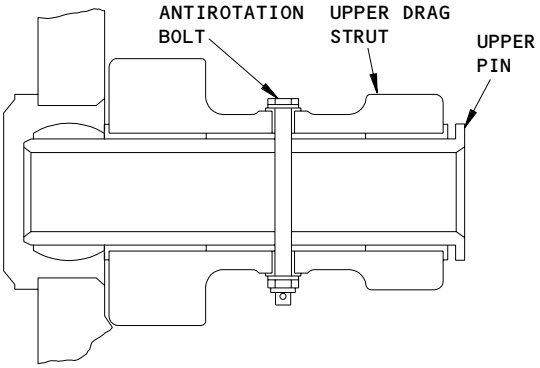
      S 864-003
      (2) Remove the pressure from the center hydraulic system (Ref 29-11-00).

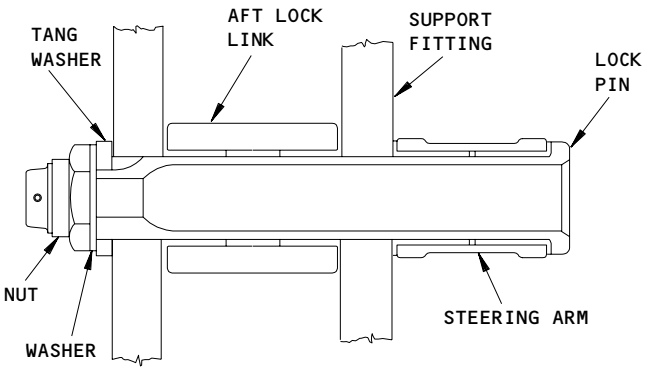
      S 414-004
      (3) To open the forward door of the nose landing gear, release the lock on ROD 2 of the operating mechanisms.

      S 584-005
      (4) Lift the nose of the airplane (Ref 07-11-02).



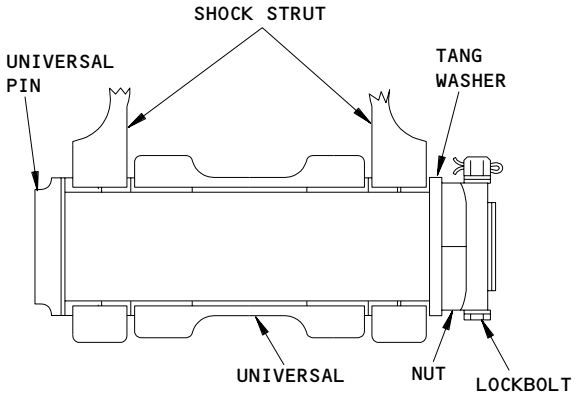
Nose Landing Gear Drag Strut Assembly Installation
Figure 401 (Sheet 1)



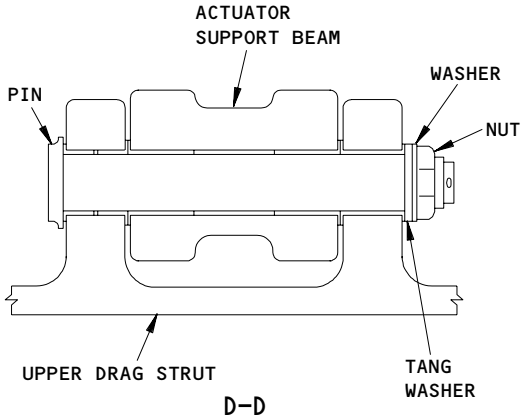


B–B

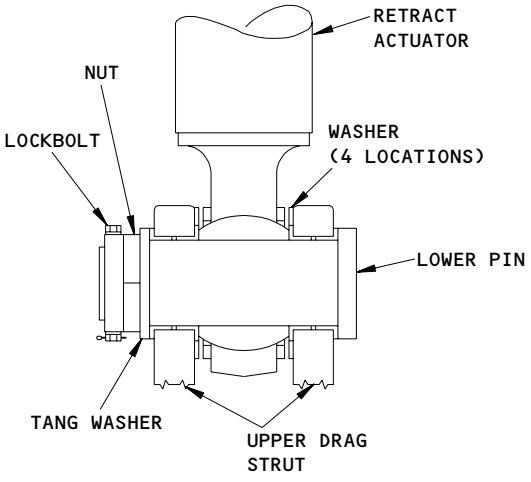
RIGHT SIDE UPPER DRAG STRUT IS SHOWN
(LEFT SIDE UPPER DRAG STRUT IS EQUIVALENT)
A–A



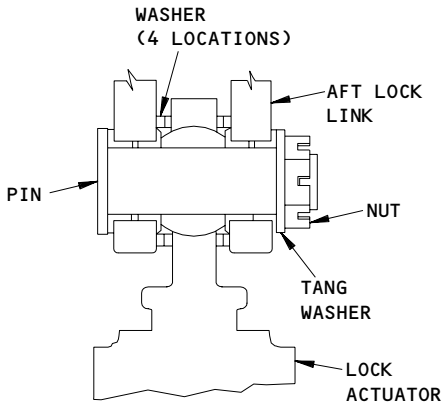
C–C



D–D



E–E



F–F

Nose Landing Gear Drag Strut Assembly Installation
Figure 401 (Sheet 2)

E. Remove the Drag Strut Assembly

S 034-006
(1) Remove the lower pin to disconnect the rod end of the retract actuator from the upper drag strut (View E-E).

S 024-050
(2) Remove the bolt, washer and nut to disconnect the piston end of the steering spring cartridge from the drive crank (Detail B).

S 844-007
(3) Use a rope to hold the actuator out of the area.

S 844-008
(4) Use a rope to hold the actuator support beam to the ceiling of the wheel well for the nose landing gear.

S 034-009
(5) Remove the pin to disconnect the actuator support beam from the upper drag strut (View D-D).

S 494-010
(6) Install the boom hoist and the hoist adapter. Use the instructions supplied with the tools.

S 844-045
(7) Use a rope to hold the lower drag strut and the lock link assembly.

NOTE: The links will fold around the apex joint. Do not let the links touch each other and cause damage to the parts.

S 034-011
(8) Remove the pin to disconnect the universal from the outer cylinder of the shock strut (View C-C).

S 094-012
(9) Remove the downlocks for the nose landing gear (Ref 32-00-20).

S 494-013
(10) Install a safety bolt through the holes for the downlocks.

NOTE: A bolt with the correct diameter and a length of 3 1/2 inches or longer can be used as a safety bolt.

S 034-014
(11) Remove the lock sensors for the nose landing gear (Ref 32-61-03).

S 034-015
(12) Remove the wiring bracket for the lock sensor from the lock link assembly.

S 034-016
(13) Remove the pin to disconnect the rod end of the lock actuator from the aft lock link (View F-F).

S 844-017
(14) Use a rope to hold the lock actuator out of the area.

S 034-018
(15) Remove the lock pin to disconnect the aft lock link from the support fitting (View B-B).

NOTE: The steering arm and the spring cartridge will be disconnected as a unit when the pin is removed. Move the spring cartridge and steering arm away from the work area.

S 034-019
(16) Remove the upper pins to disconnect the upper drag strut from the side walls of the wheel well.

NOTE: Use the pin puller for the upper drag strut if the pins are hard to remove.

S 024-047
(17) Turn and remove the drag strut assembly.

TASK 32-21-03-404-021

3. Install the Drag Strut Assembly for the Nose Landing Gear (Fig. 401)
   A. Equipment
      (1) Boom Hoist - A20001-79

(2) Upper Drag Strut Pin Puller, NLG - A32013-1
(3) Drag Strut Hoist Adapter, NLG - A32020-1

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

C. References
(1) 07-11-02/201, Jacking Airplane Nose
(2) 32-00-20/201, Landing Gear Downlocks
(3) 32-34-00/501, Nose Gear Extension and Retraction
(4) 32-34-06/401, Nose Wheel Steering Spring Cartridge
(5) 32-61-03/201, Nose Gear Proximity Sensors

D. Access
(1) Location Zones,

115/116	Nose Landing Gear Wheel Well
710	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors

E. Install the Drag Strut Assembly

S 494-022
(1) Install a safety bolt through the holes for the downlock.

NOTE: A bolt with the correct diameter and a length of 3 1/2 inches or longer can be used as a safety bolt.

S 494-023
(2) Install the boom hoist and the hoist adapter on the upper drag strut. Use the instructions supplied with the tool.

S 844-024
(3) Turn and lift the drag strut assembly into position in the wheel well.

S 824-025
(4) Adjust the hoist to align the pin holes.

S 434-026

(5) Apply grease to and install these parts to connect the upper drag strut to the side walls of the wheel well (View A-A):
   (a) Antirotation bolts (Install bolt from aft side of drag strut.)
   (b) Washers
   (c) Nuts

S 844-027

(6) Put the steering arm and the spring cartridge into position.

S 434-028

(7) Apply grease to, and install these parts to connect the aft lock link to the support fitting (View B-B):
   (a) Lockpin
   (b) Washers
   (c) Nut
   (d) Cotter pin

S 434-029

(8) Apply grease to, and install these parts to connect the rod end of the lock actuator to the lock link (View F-F):
   (a) Pin
   (b) Washer
   (c) Nut
   (d) Cotter pin

S 434-030

(9) Apply grease to, and install the parts to connect the universal to the shock strut (View C-C):
   (a) Pin
   (b) Washers
   (c) Nuts
   (d) Lockbolt
   (e) Cotter pin
      1) Tighten the nut to 60-80 pound-feet. Loosen to the nearest lock position to install the lockbolt.

S 424-049
(10) To connect the spring cartridge to the drive link, do the steps that follow (Detail B):
(a) Apply grease to the bolt, washer and nut.
(b) Position the spring cartridge on the drive link.
(c) Install the bolt, washer and nut.

S 844-031
(11) Make sure the rig pin, NS-5, can be installed through the holes in the drive crank and lockout cam.

S 824-032
(12) Adjust the spring cartridge, if it is necessary (Ref 32-34-06).

S 434-033
(13) Install the lock sensors for the nose landing gear (Ref 32-61-03).

S 434-034
(14) Install the wiring bracket for the lock sensors on the lock link assembly.

S 094-035
(15) Remove the boom hoist and the hoist adapter.

S 434-036
(16) Apply grease to, and install these parts to connect actuator support beam to upper drag strut (View D-D).
(a) Pin
(b) Washers
(c) Nut
(d) Cotter pin
1) Tighten the nut to 85-110 pound-feet. Loosen to the nearest lock position to install the lockbolt.

S 434-037
(17) Apply grease to, and install these parts to connect the rod end of the retract actuator to the upper drag strut (View E-E).
(a) Pin
(b) Washers
(c) Nuts
(d) Lockbolt
(e) Cotter pin
1) Tighten the nut to 60-80 pound-feet. Loosen to the nearest lock position to install the lockbolt.

F. Put the Airplane Back to Its Usual Condition

S 644-038
(1) Lubricate the drag strut at the grease fittings.

S 094-039
(2) Remove the safety bolt at the apex of the lock link.

S 494-040
(3) Install the downlocks on the nose landing gear (Ref 32-00-20).

S 714-041
(4) Do the test for the Nose Gear Extension and Retraction (Ref 32-34-00).

S 844-042
(5) Manually close the forward doors for the nose landing gear.

S 714-043
(6) Do the test for the Nose Gear Extension/Retraction (Ref 32-34-00).

S 584-044
(7) Lower the nose of the airplane and remove the jack (Ref 07-11-02).

NOSE GEAR ACTUATOR SUPPORT BEAM - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the actuator support beam for the nose landing gear. The second task installs the actuator support beam for the nose landing gear.

TASK 32-21-04-004-001

2. Remove the Actuator Support Beam for the Nose Landing Gear (Fig. 401)
   A. References
      (1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones

115/116	Nose Landing Gear Wheel Well
710	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors

   C. Prepare to Remove the Actuator Support Beam

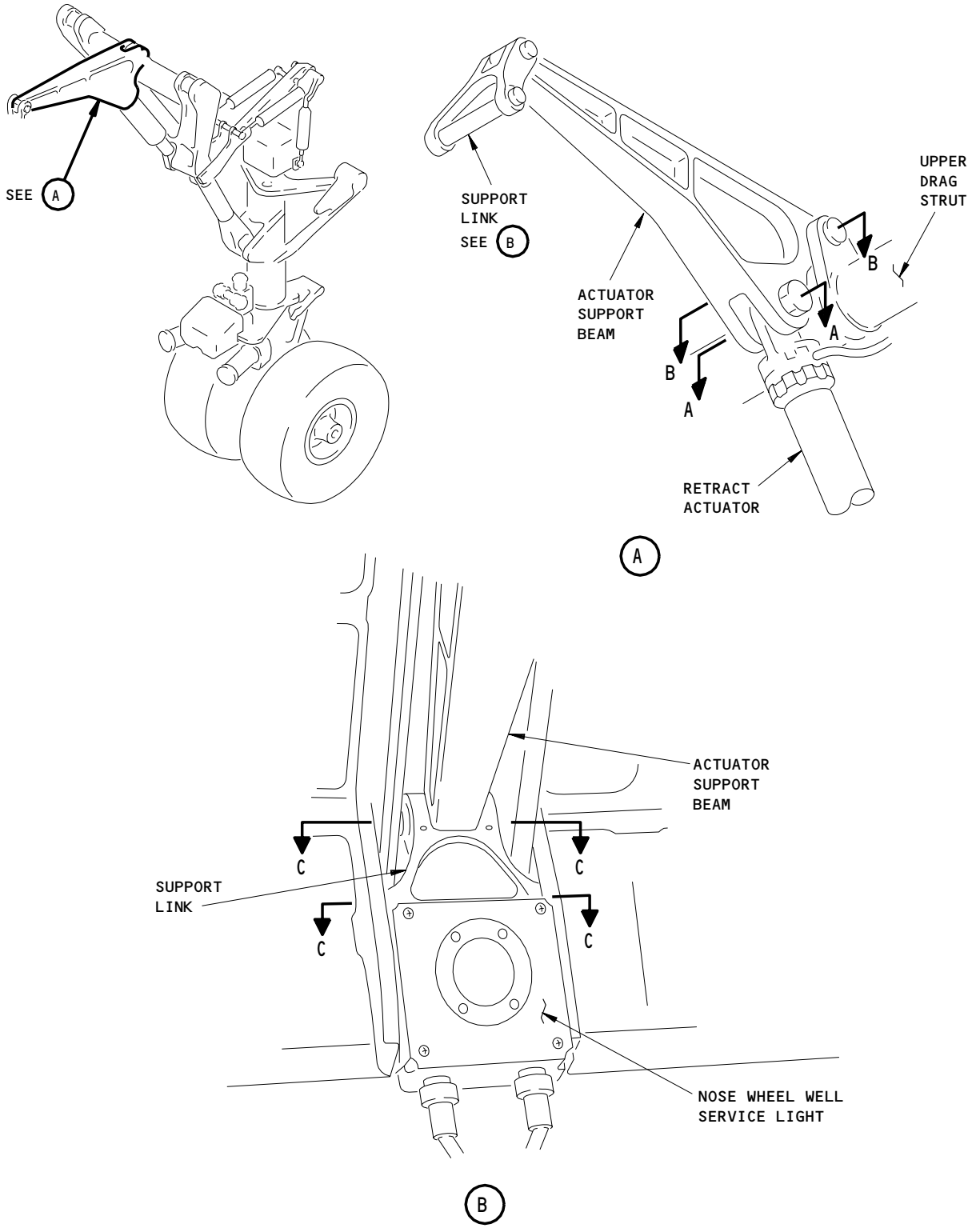
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

      S 864-003
      (2) Remove the pressure from the center hydraulic system (Ref 29-11-00).
   D. Remove the Actuator Support Beam

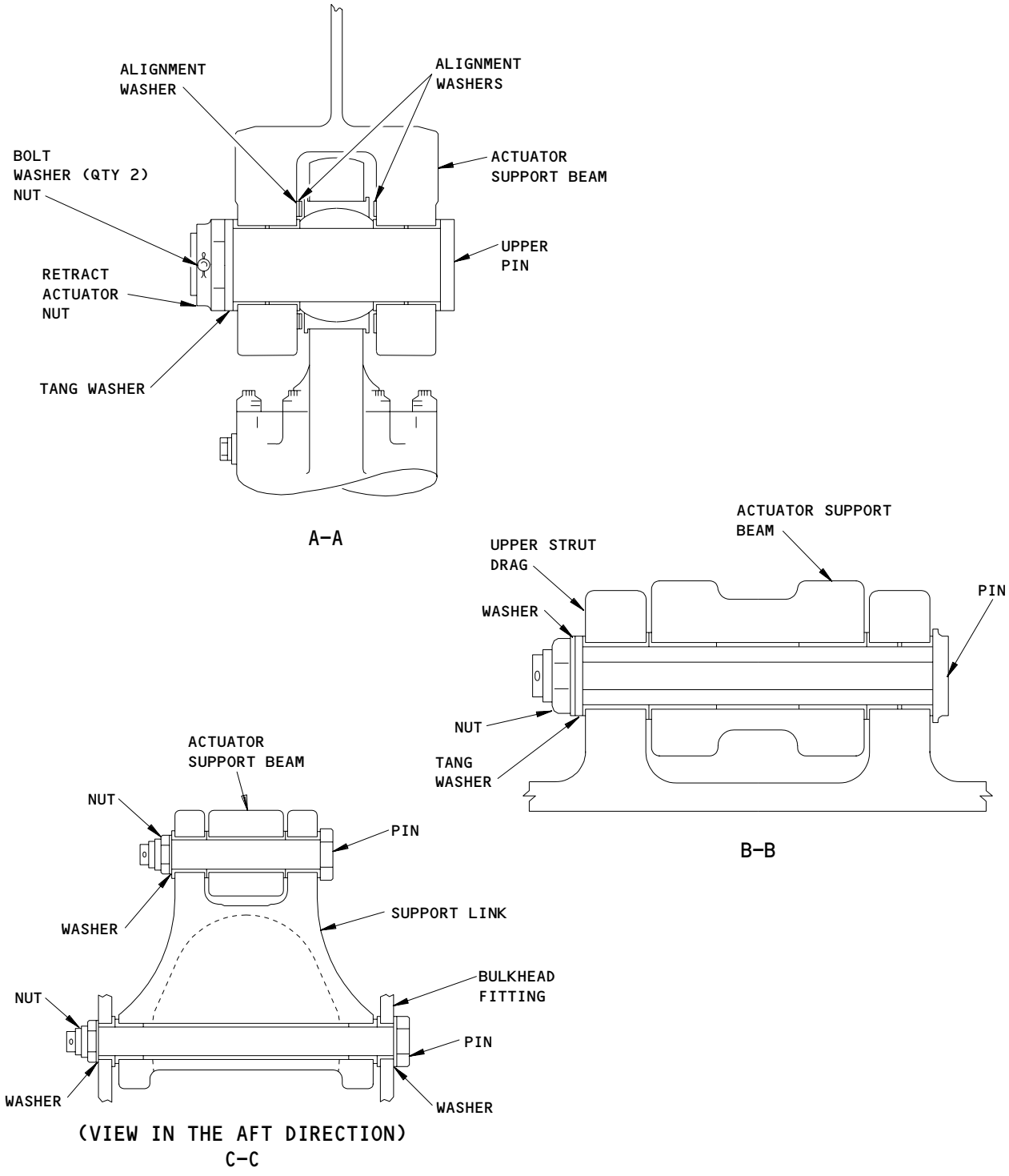
      S 014-004
      (1) To open the forward door of the nose landing gear, release the lock on ROD 2 of the operating mechanisms.

      S 034-005
      (2) Remove the light in the wheel well from the bulkhead fitting (Detail B).

      S 844-006
      (3) Hold the retract actuator.



Nose Landing Gear Actuator Support Beam Installation
Figure 401 (Sheet 1)



Nose Landing Gear Actuator Support Beam Installation
Figure 401 (Sheet 2)

S 034-007
(4) Remove the pin to disconnect the head end of the retract actuator from the actuator support beam (View A-A).

S 844-008
(5) Turn the actuator down.

S 844-009
(6) Use a rope to hold the actuator out of the area.

S 034-010
(7) Remove the pin to disconnect the actuator support beam from the upper drag strut (View B-B).

NOTE: The actuator support beam weighs approximately 70 pounds.

S 034-011
(8) Remove the pin to disconnect the support link from the bulkhead fitting (View C-C).

S 034-012
(9) Remove the actuator support beam and the support link.

S 034-013
(10) Remove the pin to disconnect the support link from the actuator support beam (View C-C).

TASK 32-21-04-404-014
3. Install the Actuator Support Beam for the Nose Landing Gear (Fig. 401)

NOTE: Wear limits for the components that follow are supplied in 32-21-04/601.

A. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

B. References
(1) 32-21-04/601, Nose Gear Actuator Support Beam
(2) 32-34-00/501, Nose Gear Extension and Retraction

C. Access
(1) Location Zones

115/116	Nose Landing Gear Wheel Well
710	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors

D. Install the Actuator Support Beam

S 434-015
(1) Apply grease to, and install these parts to connect the support link to the actuator support beam (View C-C):
(a) Pin
(b) Washer
(c) Nut
(d) Cotter pin

S 434-016
(2) Install these parts to connect the support link to the bulkhead fitting (View C-C):
(a) Pin
(b) Washers
(c) Nut
(d) Cotter pin

S 434-017
(3) Apply grease to, and install these parts to connect the support beam to the drag strut (View B-B):
(a) Pin
(b) Washers
(c) Nut
(d) Cotter pin
1) Tighten the nut to 85-110 pound-feet. Loosen, if it is necessary, to install the cotter pin.

S 434-018
(4) Apply grease to, and install these parts to connect the retract actuator to the upper drag strut (View A-A):
(a) Pin
(b) Washers
(c) Lockbolt
(d) Nuts
(e) Cotter pin
1) Tighten the nut to 60-80 pound-feet. Loosen, if it is necessary, to install the lockbolt.

E. Put the Airplane Back to Its Usual Condition

S 644-019
(1) Lubricate the actuator support beam at the grease fittings.

S 714-020
(2) Do the test for the Nose Gear Extension and Retraction (Ref 32-34-00).

S 844-021
(3) Manually close the forward doors for the nose landing gear.

NOSE GEAR ACTUATOR SUPPORT BEAM - INSPECTION/CHECK

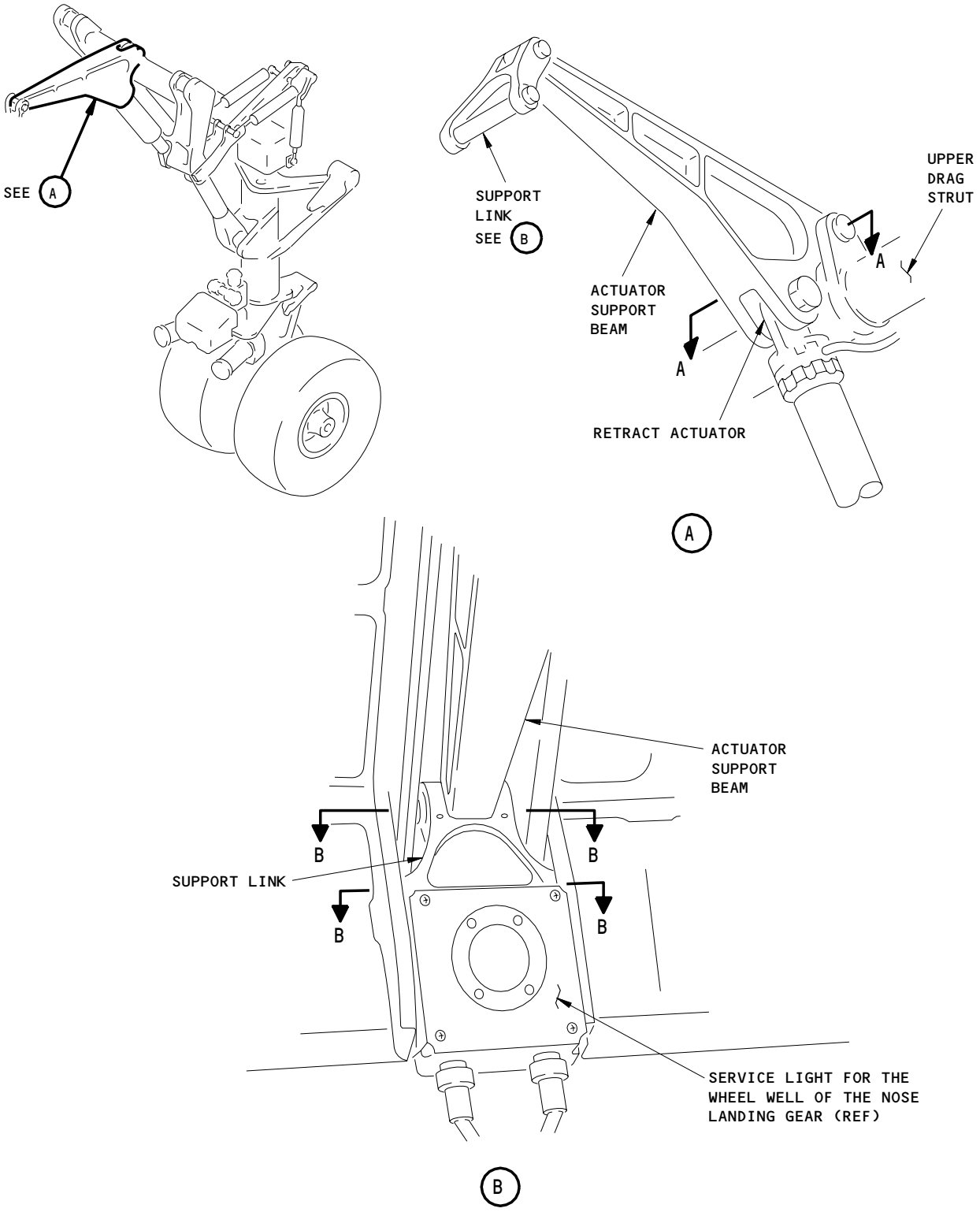
1. General
   A. This procedure only has an illustration and wear limit table which show the data for the wear limits. There are no procedures for access, removal or installation of the parts. Refer to the Nose Gear Actuator Support Beam - Removal/Installation for procedures to do these tasks.

TASK 32-21-04-206-001

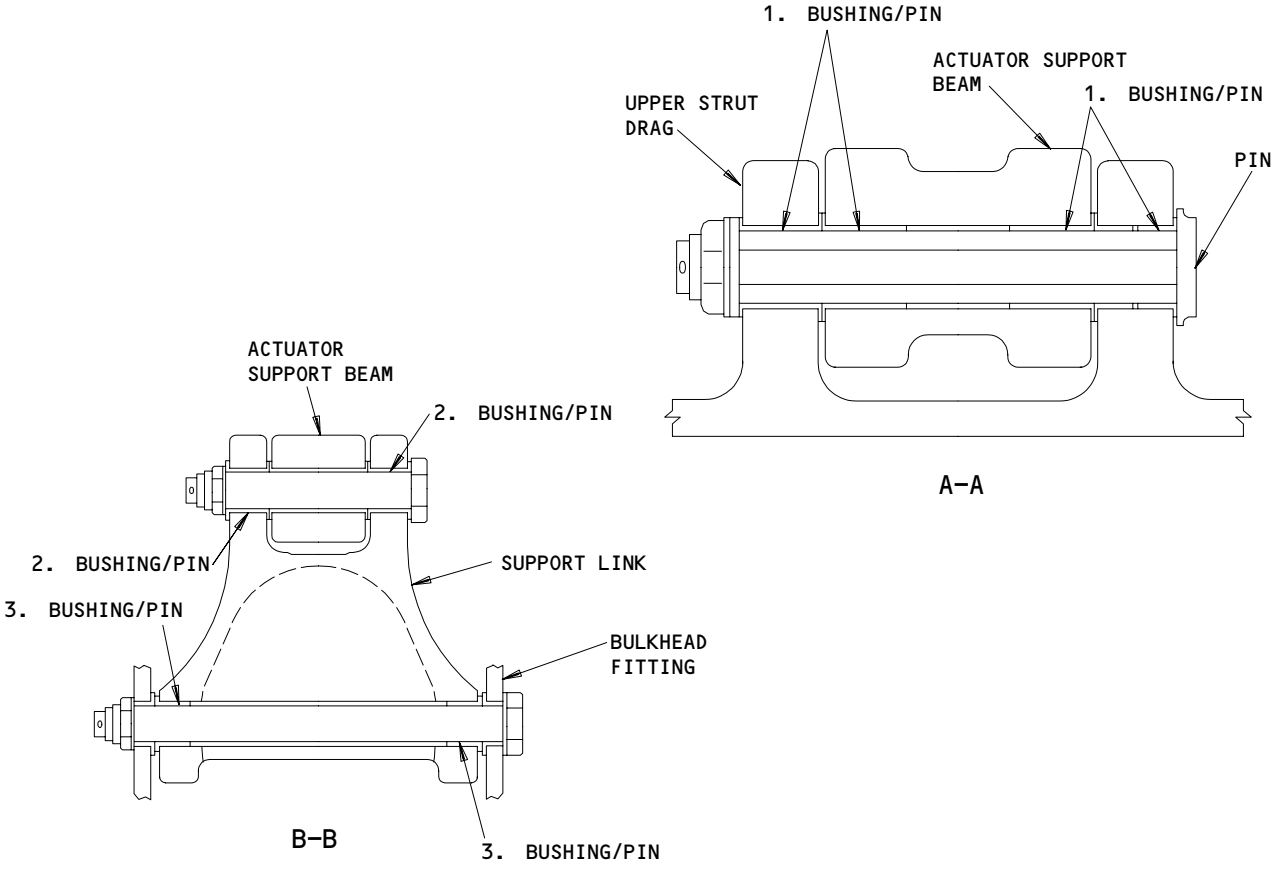
2. Wear Limits for the Actuator Support Beam of the Nose Landing Gear (Fig. 601)

   A. Wear Limits for the Actuator Support Beam

      S 226-002
      (1) Refer to Fig. 601 for the inspection points and the wear limit table.



Wear Limits for the Actuator Support Beam of the Nose Landing Gear
Figure 601 (Sheet 1)



INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	1.7500	1.7515	1.7525	0.0061	X		
	PIN	OD	1.7480	1.7490	1.7454			X	1
2	BUSHING	ID	0.9375	0.9390	0.9419	0.0054	X		
	PIN	OD	0.9355	0.9365	0.9336			X	1
3	BUSHING	ID	0.8750	0.8765	0.8794	0.0054	X		
	PIN	OD	0.8730	0.8740	0.8711			X	1

1 PART IS REPAIRABLE; REFER TO COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS.

Wear Limits for the Actuator Support Beam of the Nose Landing Gear
Figure 601 (Sheet 2)

NOSE GEAR UPPER AND LOWER DRAG STRUTS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains four tasks. The first task removes the upper drag strut for the nose landing gear. The second task installs the upper drag strut. The third task removes the lower drag strut for the nose landing gear. The fourth task installs the lower drag strut.

TASK 32-21-05-004-001

2. Remove the Upper Drag Strut for the Nose Landing Gear
   A. Equipment
      (1) Boom Hoist - A20001-79
      (2) Upper Drag Strut Pin Puller, NLG - A32013-1
      (3) Drag Strut Hoist Adapter, NLG - A32020-1
   B. References
      (1) 07-11-02/201, Jacking Airplane Nose
      (2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones

115/116	Nose Landing Gear Wheel Well
710	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors

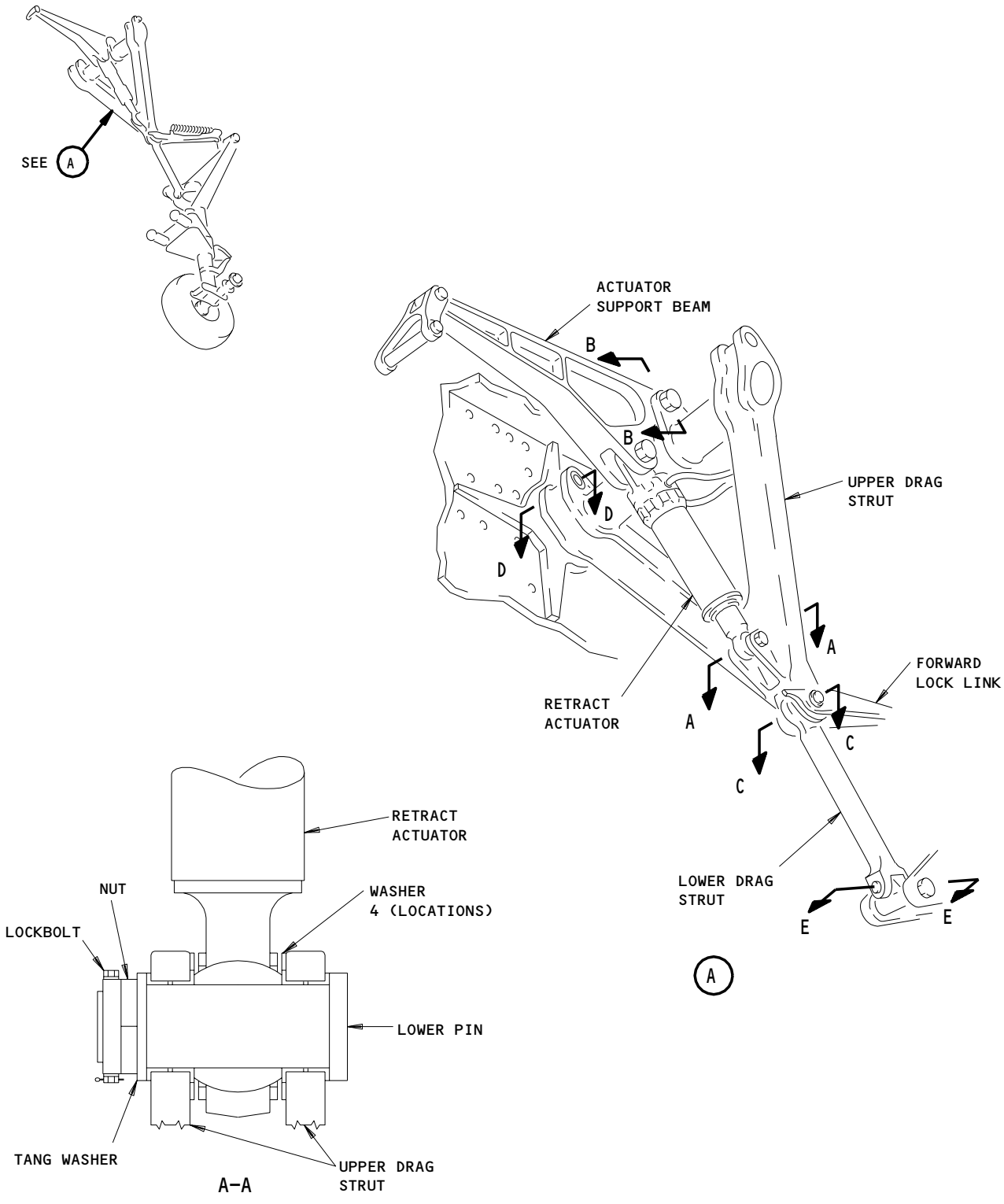
   D. Prepare to Remove the Upper Drag Strut

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

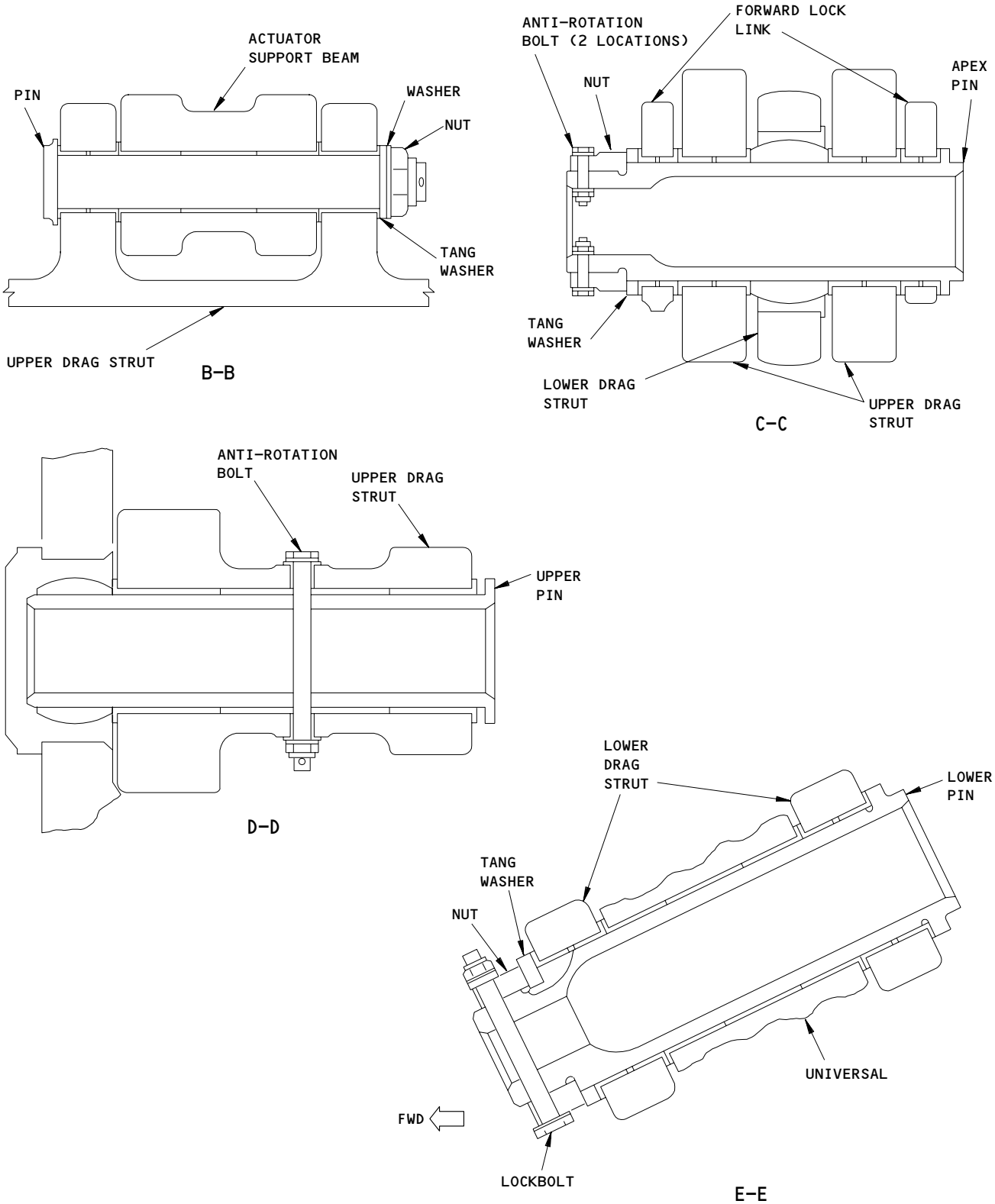
      S 864-003
      (2) Remove the pressure from the center hydraulic system (Ref 29-11-00).

   E. Remove the Upper Drag Strut

      S 844-004
      (1) To open the forward door of the nose landing gear, release the lock on rod 2 of the operating mechanisms.



Nose Landing Gear Upper and Lower Drag Struts Installation
Figure 401 (Sheet 1)



Nose Landing Gear Upper and Lower Drag Struts Installation
Figure 401 (Sheet 2)

S 584-005
(2) Lift the nose of the airplane (Ref 07-11-02).

S 034-006
(3) Remove the lower pin to disconnect the rod end of the retract actuator from the upper drag strut (View A-A).

S 844-007
(4) Use a rope to hold the actuator out of the area.

S 844-008
(5) Hold the actuator support beam to the ceiling of the wheel well.

S 034-009
(6) Remove the pin to disconnect the actuator support beam from the upper drag strut (View B-B).

S 494-010
(7) Install the boom hoist and the hoist adapter. Use the instructions supplied with the tools.

S 844-011
(8) Hold the lower drag strut and the lock link assembly.

S 034-012
(9) Remove the apex pin to disconnect the upper drag strut from the lower drag strut and the forward lock link (View C-C).

S 034-013
(10) Remove the upper pins to disconnect the upper drag strut from the sidewalls of the wheel well (View D-D).

NOTE: Use the pin puller if the pin is hard to remove.

S 024-014
(11) Turn and remove the upper drag strut.

S 094-015
(12) Remove the boom hoist and the hoist adapter.

TASK 32-21-05-404-016

3. Install the Upper Drag Strut on the Nose Landing Gear

NOTE: Wear limits for the components that follow are supplied in 32-21-05/601.

A. Equipment
(1) Upper Drag Strut Pin Puller, NLG - A32013-1
(2) Boom Hoist - A20001-79
(3) Drag Strut Hoist Adapter, NLG - A32020-1
B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
C. References
(1) 07-11-02/201, Jacking Airplane Nose
(2) 32-21-05/601, Nose Gear Drag Strut Assembly
(3) 32-34-00/501, Nose Gear Extension and Retraction
D. Access
(1) Location Zones

115/116	Nose Landing Gear Wheel Well
710	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors

E. Install the Upper Drag Strut

S 494-017
(1) Install the boom hoist and the hoist adapter. Use the instructions supplied with the tools.

S 584-018
(2) Lift the upper drag strut into position in the wheel well.

S 824-044
(3) Adjust the hoist to align the upper pin holes.

S 434-019

(4) Apply grease to, and install these parts to connect the upper drag strut to the sidewall of the wheel well (View D-D):
   (a) Pins
   (b) Antirotation bolts (Install bolt from aft side of strut)
   (c) Washers
   (d) Nuts
   (e) Cotter pins

S 434-020

(5) Apply grease to, and install these parts to connect the upper drag strut to the lower drag strut and the forward lock link (View C-C):
   (a) Apex pin
   (b) Washers
   (c) Nuts
   (d) Lockbolts
      1) Tighten the nut to a maximum of 100 pound-feet. Loosen to install the antirotation bolts.

S 094-021

(6) Remove the boom hoist and the hoist adapter.

S 434-022

(7) Apply grease to, and install these parts to connect the actuator support beam to the upper drag strut (View B-B):
   (a) Pin
   (b) Washers
   (c) Nut
   (d) Cotter pin

S 434-023

(8) Apply grease to, and install these parts to connect the rod end of the retract actuator to the upper drag strut (View A-A):
   (a) Pin

(b) Washers
(c) Nuts
(d) Lockbolt
(e) Cotter pin
1) Tighten the nut to 60-80 pound-feet. Loosen to install the lockbolt.

F. Put the Airplane Back to Its Usual Condition

S 644-024
(1) Lubricate the upper drag strut at the grease fittings.

S 714-025
(2) Do the Operational Test - Nose Landing Gear Extension and Retraction (Ref 32-34-00).

S 584-026
(3) Lower the nose of the airplane and remove the jack (Ref 07-11-02).

S 844-027
(4) Manually close the forward doors of the nose landing gear.

TASK 32-21-05-004-028

4. Remove the Lower Drag Strut of the Nose Landing Gear

A. References
(1) 07-11-02/201, Jacking Airplane Nose
(2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) 32-00-20/201, Landing Gear Downlocks

B. Access
(1) Location Zones

115/116	Nose Landing Gear Wheel Well
710	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors

C. Prepare to Remove the Lower Drag Strut

S 494-029
(1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

S 864-030
(2) Remove the pressure from the center hydraulic system (Ref 29-11-00).

D. Remove the Lower Drag Strut

S 844-031
(1) To open the forward door of the nose landing gear, release rod 2 of the operating mechanisms.

S 584-032
(2) Lift the nose of the airplane (Ref 07-11-02).

S 844-033
(3) Use a rope to hold the upper drag strut and the lock link assembly.

S 034-034
(4) Remove the lower pin to disconnect the lower drag strut from the universal (View E-E).

S 034-035
(5) Remove the apex pin to disconnect the lower drag strut from the upper drag strut and the forward lock link (View C-C).

S 024-036
(6) Remove the lower drag strut.

TASK 32-21-05-404-043

5. Install the Lower Drag Strut on the Nose Landing Gear

A. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

B. References
(1) 07-11-02/201, Jacking Airplane Nose
(2) 32-21-05/601, Nose Gear Drag Strut Assembly
(3) 32-34-00/501, Nose Gear Extension and Retraction

C. Access
(1) Location Zones

115/116	Nose Landing Gear Wheel Well
710	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors

D. Install the Lower Drag Strut

S 434-047

CAUTION: WHEN YOU INSTALL THE LOWER DRAG STRUT, MAKE SURE THAT THE HEAD OF THE DRAG BRACE-TO-UNIVERSAL CONNECTING PIN IS FACING UP. IF THE PIN IS NOT INSTALLED CORRECTLY, DAMAGE CAN OCCUR TO THE OUTER CYLINDER OF THE SHOCK STRUT WHEN THE NOSE LANDING GEAR RETRACTS.

(1) Apply grease to, and install these parts to connect the lower drag strut to the universal (View E-E):
   (a) Pin
   (b) Washers
   (c) Nuts
   (d) Lockbolt
   (e) Cotter pin
      1) Tighten to 60-80 pound-feet. Loosen to install the lockbolt.

S 434-038

(2) Apply grease to, and install these parts to connect the lower drag strut to the upper drag strut and the forward lock link (View C-C):
   (a) Apex pin
   (b) Washers
   (c) Nuts
   (d) Lockbolts
      1) Tighten the nut to a maximum of 100 pound-feet. Loosen to install the antirotation bolt.

E. Put the Airplane Back to Its Usual Condition

S 644-039

(1) Lubricate the lower drag strut at the grease fittings.

S 714-040

(2) Do the Operational Test - Nose Landing Gear Extension and Retraction (Ref 32-34-00).

S 584-041

(3) Lower the nose of the airplane and remove the jack (Ref 07-11-02).

S 844-042

(4) Manually close the forward doors of the landing gear.

NOSE GEAR DRAG STRUT ASSEMBLY - INSPECTION/CHECK

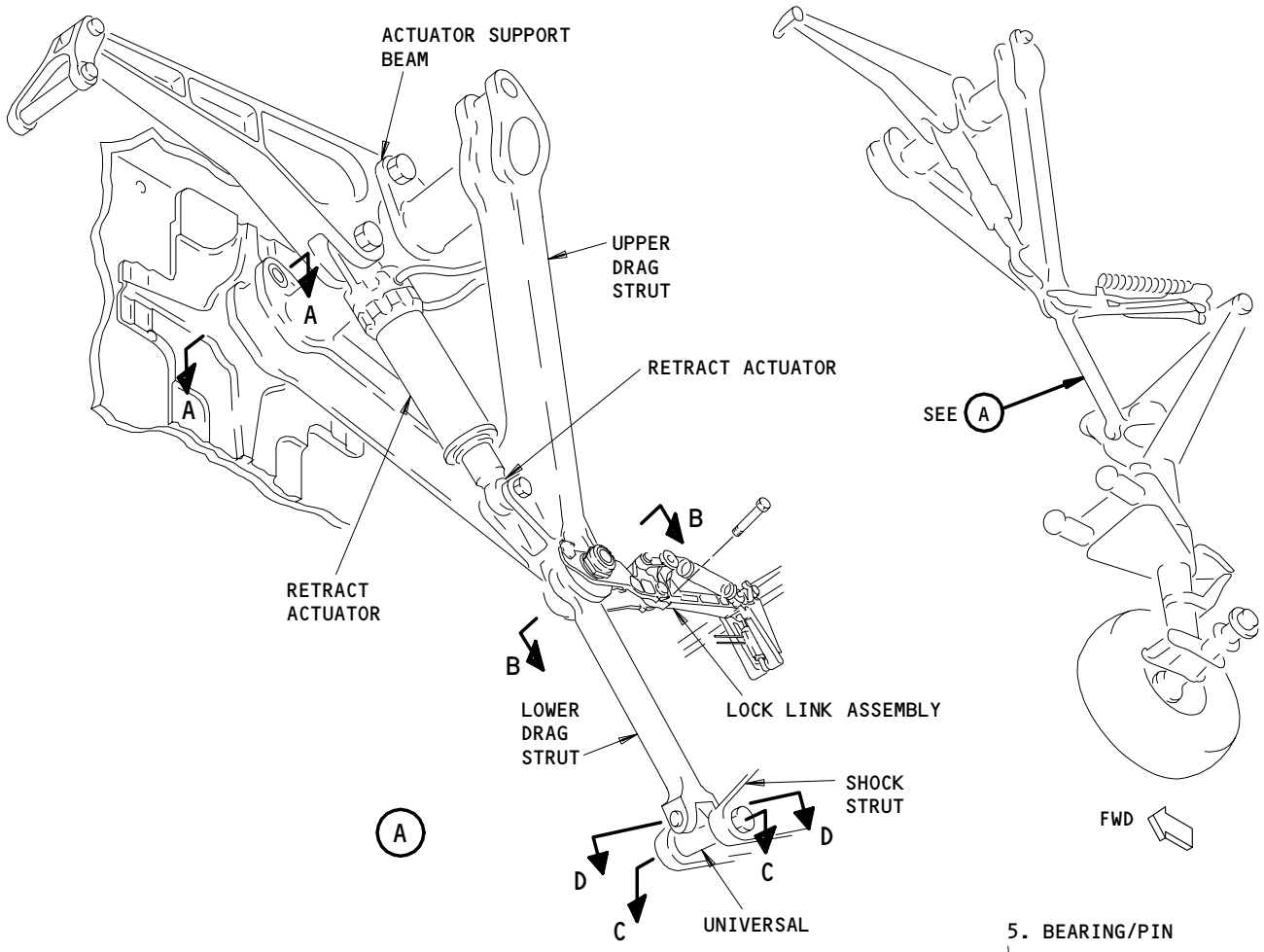
1. General
   A. This procedure only has an illustration and wear limit table which show the data for the wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Nose Gear Drag Strut Assembly - Removal/Installation for procedures to do these tasks.

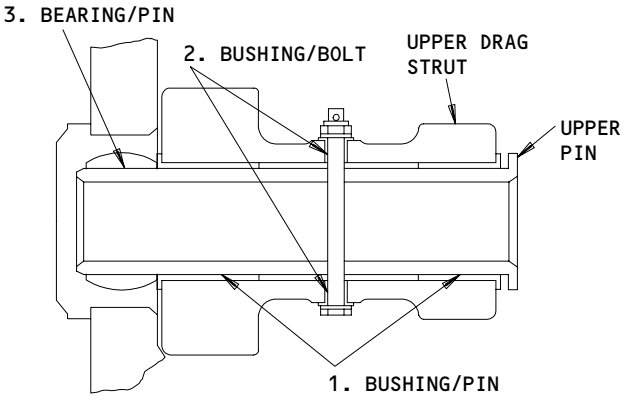
TASK 32-21-05-206-002

2. Wear Limits for the Drag Strut Assembly of the Nose Landing Gear (Fig. 601)

   A. Wear Limits for the Drag Strut Assembly

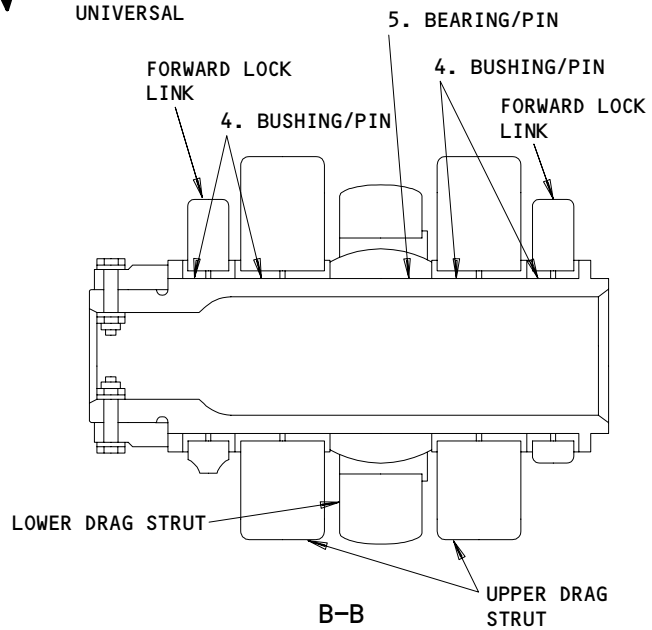
      S 226-001
      (1) Refer to Fig. 601 for the inspection points and the wear limits table.





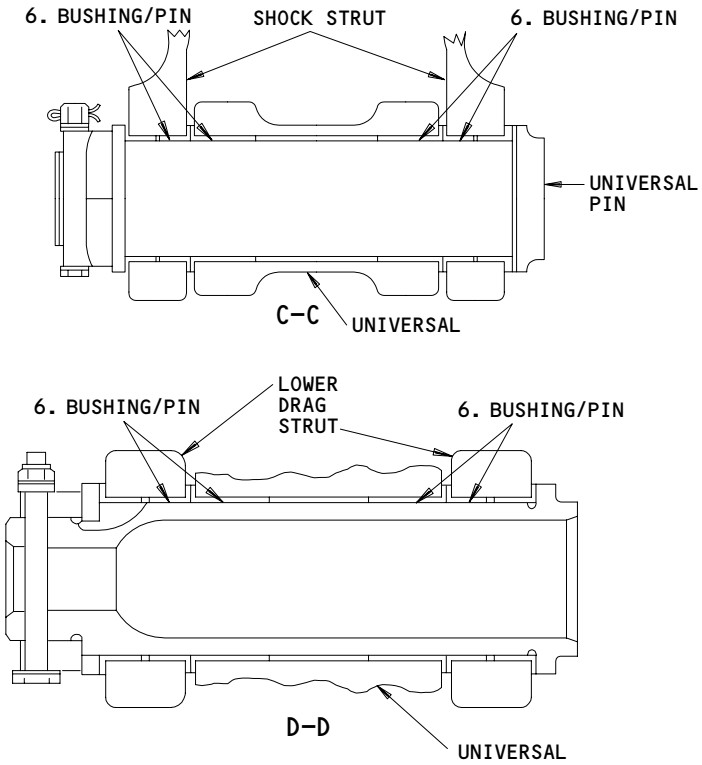
(RIGHT NOSE LANDING GEAR SHOWN)

A–A



B–B

Wear Limits for the Drag Strut Assembly of the Nose Landing Gear
Figure 601 (Sheet 1)



INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	2.2500	2.2515	2.2557	0.0069	X		
	PIN	OD	2.2476	2.2488	2.2446			X	1
2	BUSHING	ID	0.3750	0.3765	0.3787	0.0042	X		
	BOLT	OD	0.3735	0.3745	0.3722		X		
3	BEARING	ID	2.2495	2.2500	2.2542	0.0054	X		
	PIN	OD	2.2476	2.2488	2.2446			X	1
4	BUSHING	ID	2.7500	2.7515	2.7568	0.0088	X		
	PIN	OD	2.7460	2.7480	2.7426			X	1
5	BEARING	ID	2.7500	2.7505	2.7558	0.0078	X		
	PIN	OD	2.7460	2.7480	2.7420			X	1
6	BUSHING	ID	2.1250	2.1265	2.1300	0.0064	X		
	PIN	OD	2.1230	2.1240	2.1200			X	1

1 PART IS REPAIRABLE; REFER TO COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS.

Wear Limits for the Drag Strut Assembly of the Nose Landing Gear
Figure 601 (Sheet 2)

NOSE GEAR LOCK LINK ASSEMBLY - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the lock link assembly of the nose landing gear. The second task installs the lock link assembly for the nose landing gear.

TASK 32-21-06-004-044

2. Remove the Lock Link Assembly for the Nose Landing Gear (Fig. 401)
   A. References
      (1) 07-11-02/201, Jacking Airplane Nose
      (2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) 32-00-20/201, Landing Gear Downlocks
      (4) 32-21-09/401, Nose Gear Lock Spring
      (5) 32-61-03/201, Nose Gear Proximity Sensors
   B. Access
      (1) Location Zones

115/116	Nose Landing Gear Wheel Wells
710	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors

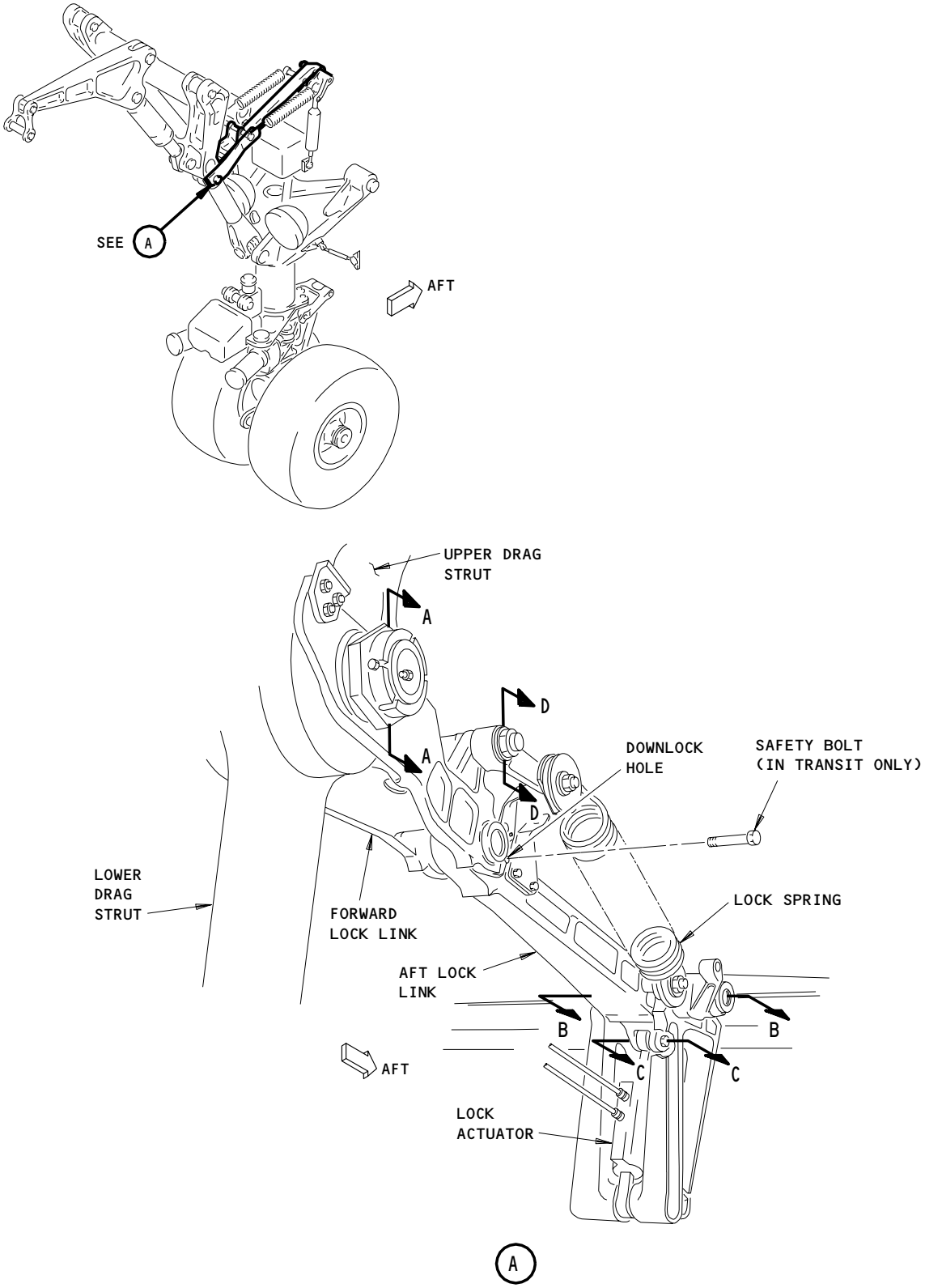
   C. Prepare to Remove the Lock Link Assembly

S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20/201).

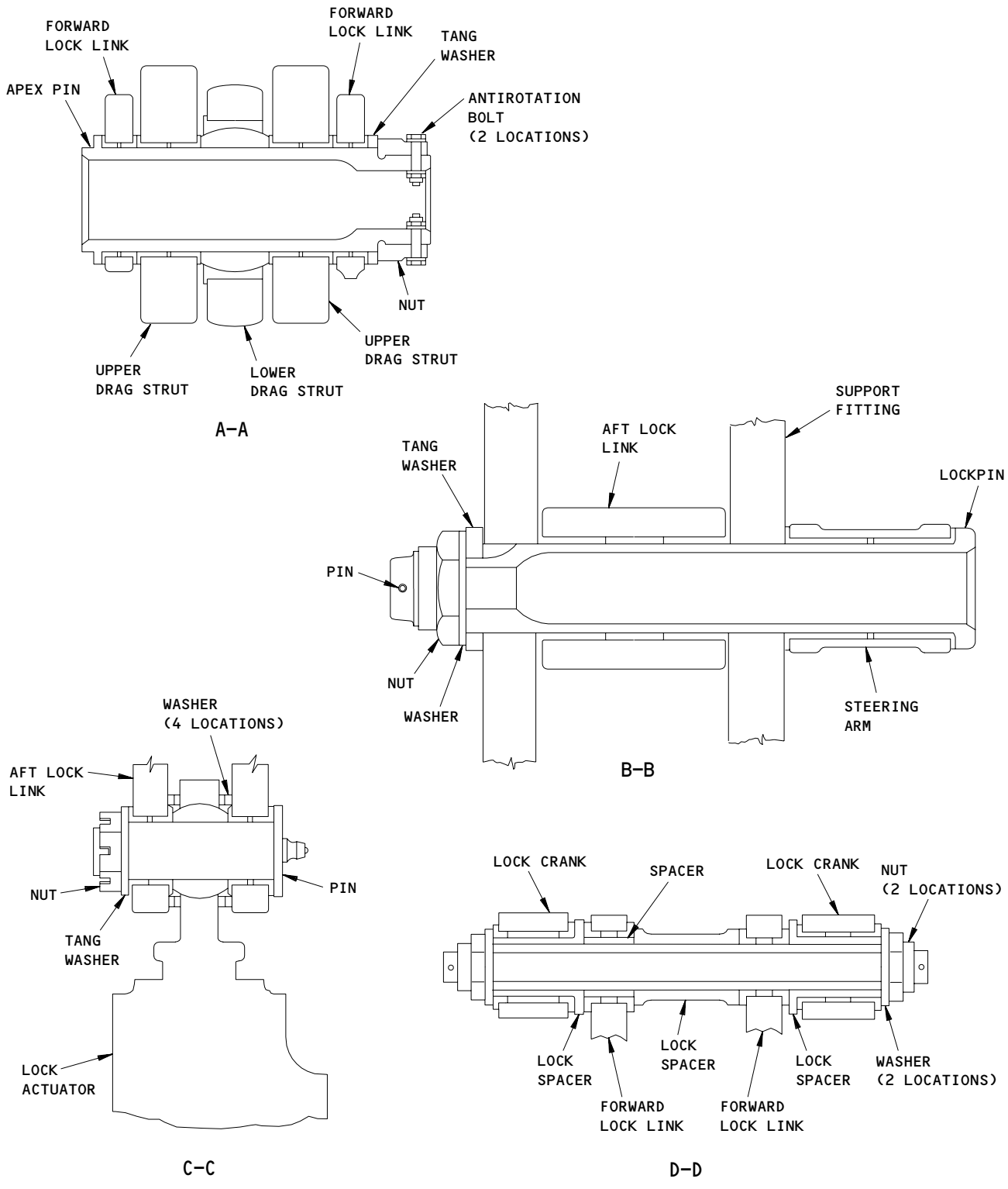
S 864-003
      (2) Remove the pressure from the center hydraulic system (Ref 29-11-00/201).

S 844-004
      (3) To open the forward doors of the nose landing gear, release the rod 2 of the operating mechanisms.

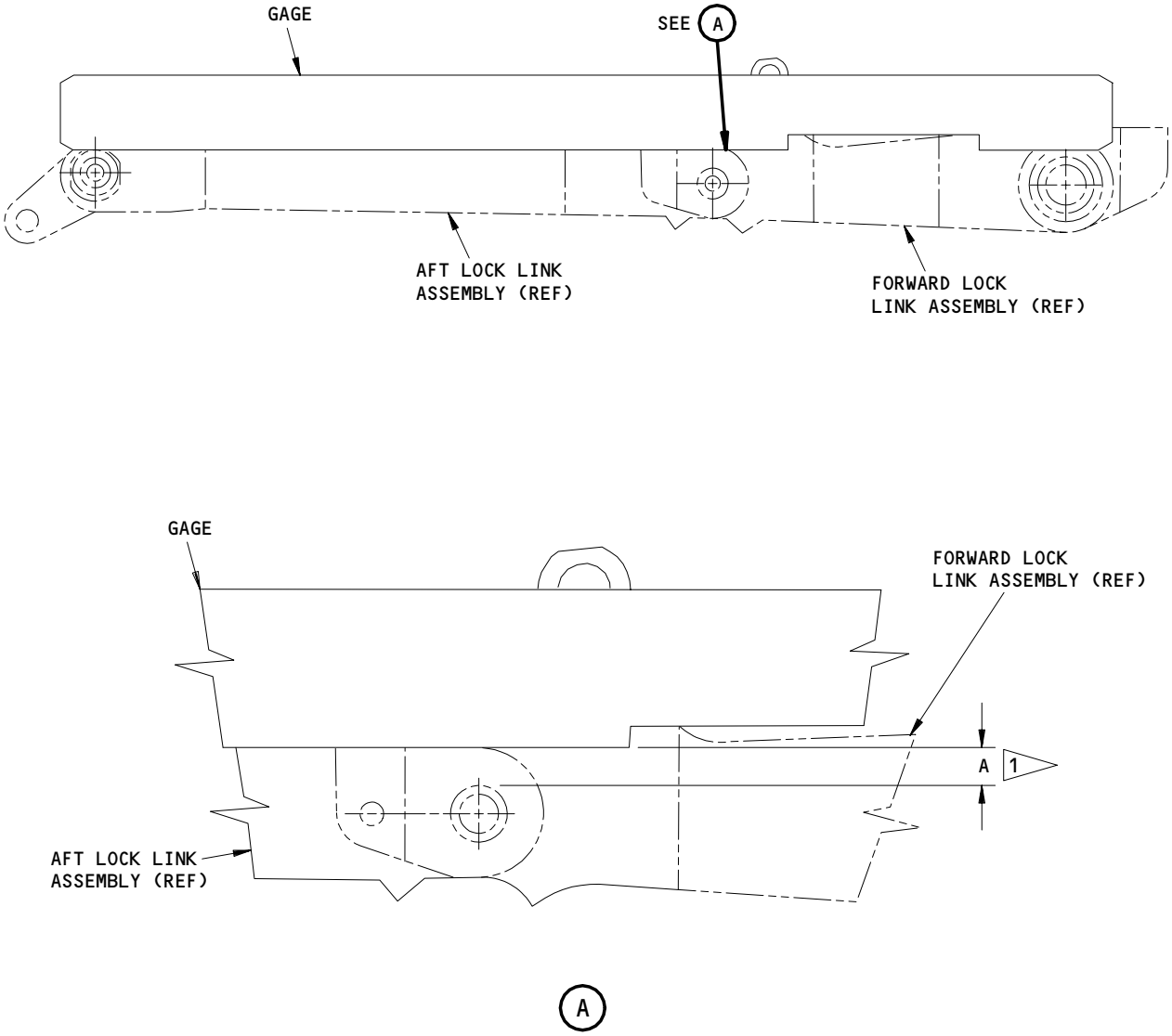
S 584-005
      (4) Lift the nose of the airplane (Ref 07-11-02/201).



Nose Landing Gear Lock Link Assembly Installation
Figure 401 (Sheet 1)



Nose Landing Gear Lock Link Assembly Installation
Figure 401 (Sheet 2)



1 THE DISTANCE "A" MUST BE 0.523-0.531 INCH.

Nose Gear Lock Link Overcenter Adjustment
Figure 402

D. Remove the Lock Link Assembly

S 034-006

(1) Remove the lock springs from the nose landing gear (Ref 32-21-09/401).

S 494-043

CAUTION: USE EQUIPMENT TO HOLD THE NOSE LANDING GEAR BEFORE YOU REMOVE THE LOCK LINK. IF THE NOSE LANDING GEAR MOVES, IT CAN CAUSE DAMAGE TO THE SENSORS ON THE NOSE LANDING GEAR.

(2) Install braces for the nose landing gear or put chocks below the wheels of the airplane. This equipment will prevent movement of the nose landing gear when the forward lock link is disconnected.

S 034-011

(3) Remove the nuts and the lock shaft to disconnect the lock cranks from the forward lock link.

S 034-012

(4) Remove the lock cranks (View D-D).

S 034-013

(5) Remove the downlocks for the nose landing gear (Ref 32-00-20/201).

S 494-014

(6) Install a safety bolt through the downlock hole of the nose landing gear.

NOTE: Use a bolt with the correct diameter and a length of 3-1/2 inches or longer.

S 034-015

(7) Remove the lock sensors for the nose landing gear (Ref 32-61-03/201).

S 034-016
(8) Remove the sensor bracket from the lock link assembly.

S 034-017
(9) Remove the pin to disconnect the rod end of the lock actuator from the aft lock link (View C-C). Use a rope to hold the lock actuator out of the area.

S 844-018
(10) Hold the lock link assembly.

S 034-019
(11) Remove the lock pin to disconnect the aft lock link from the support fitting (View B-B).

NOTE: The steering arm and the head end of the spring cartridge will be disconnected when the pin is removed. Hold the spring cartridge out of the area.

S 844-020
(12) Hold the lower drag strut.

S 034-021
(13) Remove the apex pin to disconnect the forward lock link from the upper and lower drag struts (View A-A).

S 024-022
(14) Remove the lock link assembly.

TASK 32-21-06-404-023

3. Install the Lock Link Assembly for the Nose Landing Gear (Fig. 401)

NOTE: Wear limits for components that follow are supplied in 32-21-06/601.

A. Equipment
(1) Rig Pin NS5 - P/N A20004-18, part of set A20004-XX (Ref 20-10-24)

(2) Overcenter Gage - P/N A32094-1

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

C. References
(1) 07-11-02/201, Jacking Airplane Nose
(2) 32-00-20/201, Landing Gear Downlocks
(3) 32-21-06/601, Nose Gear Lock Link Assembly
(4) 32-21-09/401, Nose Gear Lock Spring
(5) 32-34-00/501, Nose Gear Extension and Retraction
(6) 32-34-06/401, Nose Wheel Steering Spring Cartridge
(7) 32-61-03/201, Nose Gear Proximity Sensors

D. Access
(1) Location Zones

115/116	Nose Landing Gear Wheel Wells
710	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors

E. Install the Lock Link Assembly

S 494-024
(1) Install a safety bolt through the downlock hole of the nose landing gear.

NOTE: Use a bolt with the correct diameter and a length of 3-1/2 inches or longer.

S 034-007
(2) If you replace a forward or aft lock link, use the overcenter gage and do the steps that follow to make sure the dimension "A" is as shown on Fig. 402:

NOTE: The overcenter gage cannot be used if the lock link assembly is installed. If you replace a forward or aft lock link, you can do the check of the overcenter dimension at any time after removal or before installation of the lock link assembly. If the complete lock link assembly is replaced as a unit, a check of the "A" overcenter dimension is not necessary during removal or installation.

(a) Put the overcenter gage on the lock link assembly.

(b) Make sure the distance "A" is as shown on Fig. 402.
(c) If distance "A" is not correct, add or remove shims to the lock link stop (AMM 32-00-20/201).

S 844-025
(3) Put the lock link assembly in the correct position for installation.

S 434-026
(4) Apply grease to, and install these parts to connect the forward lock link to the upper and lower drag struts (View A-A):
(a) Apex pin
(b) Washers
(c) Nuts
(d) Antirotation bolts
1) Tighten the nut to a maximum of 100 pound-feet. Loosen, if it is necessary, to install the antirotation bolts.

S 844-027
(5) Put the steering arm and the spring cartridge in the correct position.

S 434-028
(6) Apply grease to, and install these parts to connect the aft lock link to the support fitting (View B-B):
(a) Lock pin
(b) Washers
(c) Nut
(d) Cotter pin
1) Tighten the nut to 85-110 pound-feet. Install the cotter pin.

S 434-029
(7) Apply grease to, and install these parts to connect the rod end of the lock actuator to the lock link (View C-C):
(a) Pin
(b) Washers
(c) Nut
1) Tighten the nut to 15 - 25 pound-inches.
(d) Cotter pin
1) Loosen the nut to the nearest castellation if it is necessary to install the cotter pin.

S 434-031
(8) Make sure the rig pin, NS5, can be installed through the holes in the drive crank and the lockout cam.

S 824-032
(9) Adjust the spring cartridge if it is necessary (Ref 32-34-06/401).

S 434-033
(10) Install the lock sensors on the nose landing gear (Ref 32-61-03/201).

S 434-034
(11) Install the sensor bracket on the lock link assembly.

S 434-030
(12) Apply grease to, and install these parts to connect the lock crank to the forward lock link (View D-D):
(a) Lock shaft
(b) Spacers
(c) Washers
(d) Nuts
(e) Cotter pins

S 434-035
(13) Install the lock springs on the nose landing gear (Ref 32-21-09/401).

F. Put the Airplane Back to Its Usual Condition

S 644-036
(1) Lubricate the lock links at the grease fittings.

S 714-037
(2) Do the test for the Nose Gear Extension/Retraction (Ref 32-34-00/501).

S 094-038
(3) Remove the braces for the nose landing gear or remove the chocks from the wheels.

S 584-039
(4) Lower the nose of the airplane and remove the jack (Ref 07-11-02/201).

S 094-040
(5) Remove the safety bolt.

S 494-041
(6) Install the downlocks on the nose landing gear (Ref 32-00-20/201).

S 844-042
(7) Manually close the forward doors of the nose landing gear.

NOSE GEAR LOCK LINK ASSEMBLY - INSPECTION/CHECK

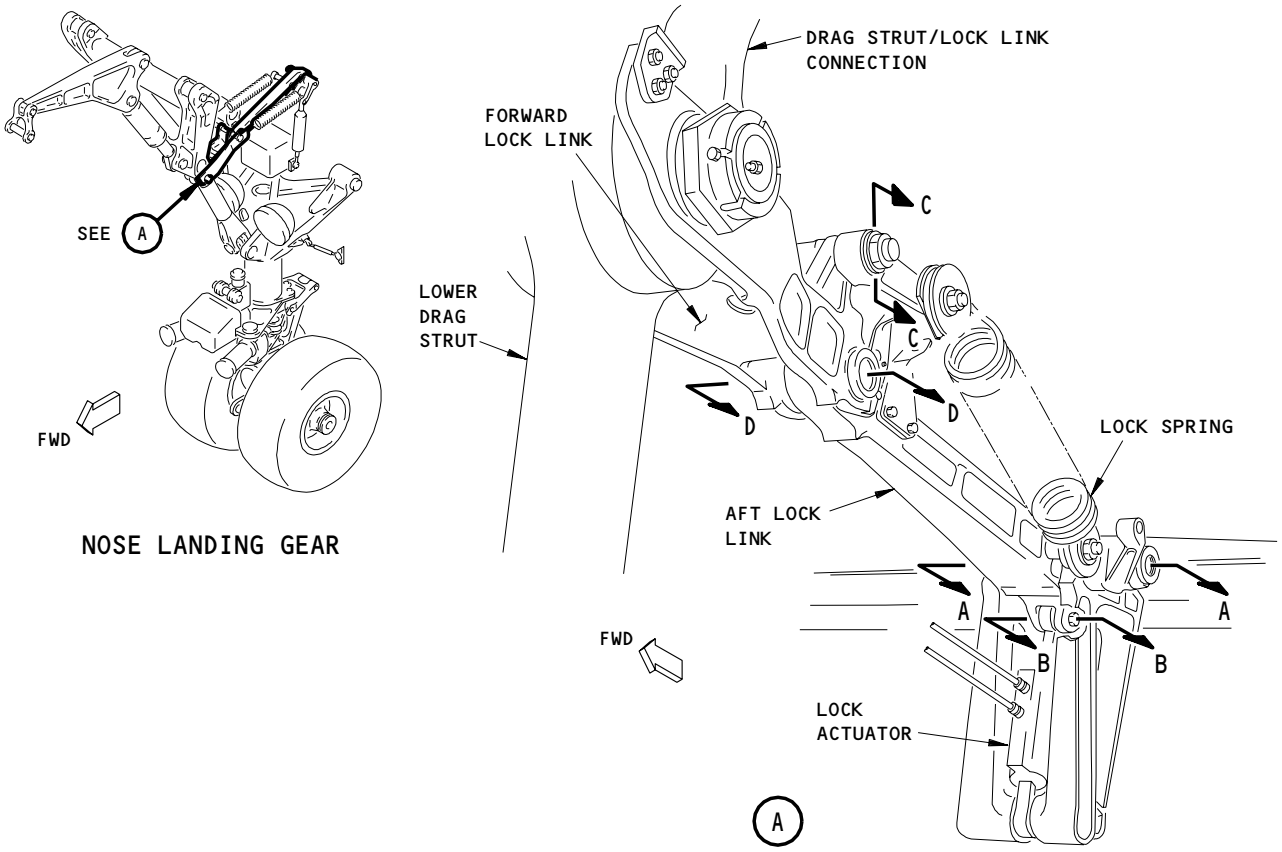
1. General
   A. This procedure only has an illustration and wear limit table which show the data for the wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Nose Gear Lock Link Assembly - Removal/Installation for procedures to do these tasks.

TASK 32-21-06-206-001

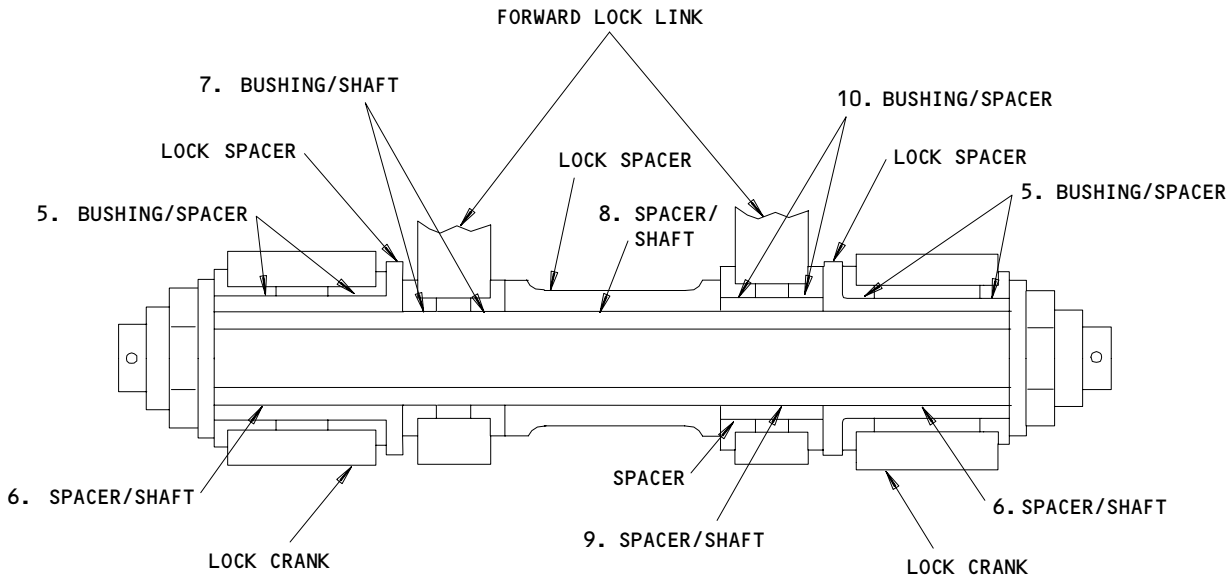
2. Wear Limits for the Lock Link Assembly (Fig. 601)
   A. Wear limits for the Lock Link Assembly.

S 226-002

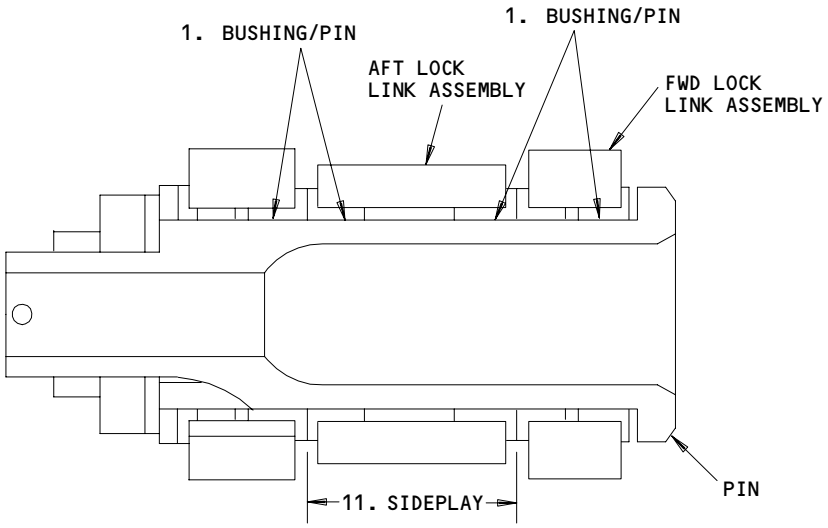
(1) Refer to Fig. 601 for the inspection points and the wear limit table.



Wear Limits for the Lock Link Assembly of the Nose Landing Gear
Figure 601 (Sheet 1)



C–C



D–D

Wear Limits for the Lock Link Assembly of the Nose Landing Gear
Figure 601 (Sheet 2)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	1.5000	1.5015	1.5049	0.0059	X		
	PIN	OD	1.4980	1.4990	1.4950			X	1
2	BUSHING	ID	0.8125	0.8140	0.8150	0.0053	X		
	PIN	OD	0.8105	0.8115	0.8087			X	1
3	BEARING	ID	0.8120	0.8125	0.8153	0.0038	X		
	PIN	OD	0.8105	0.8115	0.8087			X	1
4	ROD END	ID	1.2833	1.2848	1.2858	0.0060		X	1
	BEARING RACE	OD	1.2808	1.2813	1.2788		X		
5	BUSHING	ID	1.0000	1.0015	1.0045	0.0065	X		
	SPACER	OD	0.9970	0.9980	0.9950		X		
6	SPACER	ID	0.7500	0.7510	0.7550	0.0070	X		
	SHAFT	OD	0.7460	0.7480	0.7440			X	1
7	BUSHING	ID	0.7500	0.7515	0.7552	0.0072	X		
	SHAFT	OD	0.7460	0.7480	0.7442			X	1
8	SPACER	ID	0.7600	0.7700	0.7740	0.0260	X		
	SHAFT	OD	0.7460	0.7480	0.7440			X	1
9	SPACER	ID	0.7495	0.7510	0.7547	0.0067	X		
	SHAFT	OD	0.7460	0.7480	0.7442			X	1
10	BUSHING	ID	1.0000	1.0015	1.0049	0.0059	X		
	SPACER	OD	0.9976	0.9990	0.9956		X		
11	AFT LOCK LINK		----	----	----	2 0.0160	3		

1 THIS PART CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS.
2 MAXIMUM SIDEPLAY ALLOWED
3 REPLACE THE WORN BUSHINGS

Wear Limits for the Lock Link Assembly of the Nose Landing Gear
Figure 601 (Sheet 3)

NOSE GEAR LOCK SPRING - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the lock spring for the nose landing gear. The second task installs the lock spring for the nose landing gear.

TASK 32-21-09-004-024

2. Remove the Lock Spring for the Nose Landing Gear (Fig. 401)
   A. Equipment
      (1) Spring Extender Equipment - A32099-77
      (2) Spring Extender Equipment - A32099-78
   B. References
      (1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zone
          711 Nose Landing Gear

   D. Prepare to Remove the Lock Spring

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

      S 864-003
      (2) Remove the pressure from the center hydraulic system (Ref 29-11-00).
   E. Remove the Lock Spring

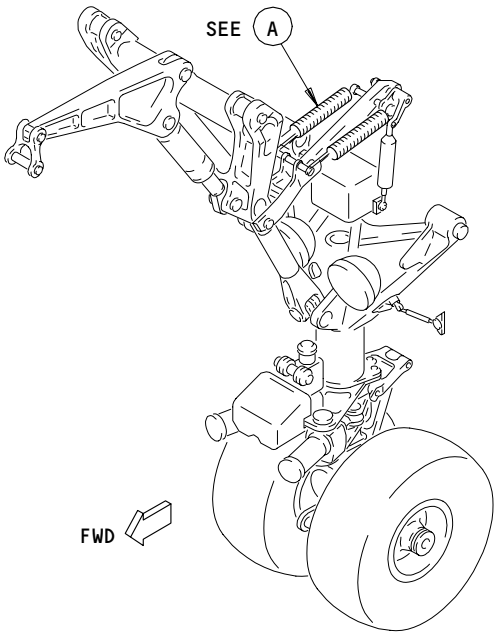
      S 014-019
      (1) To open the forward doors of the nose landing gear, release rod 2 of the operating mechanisms.

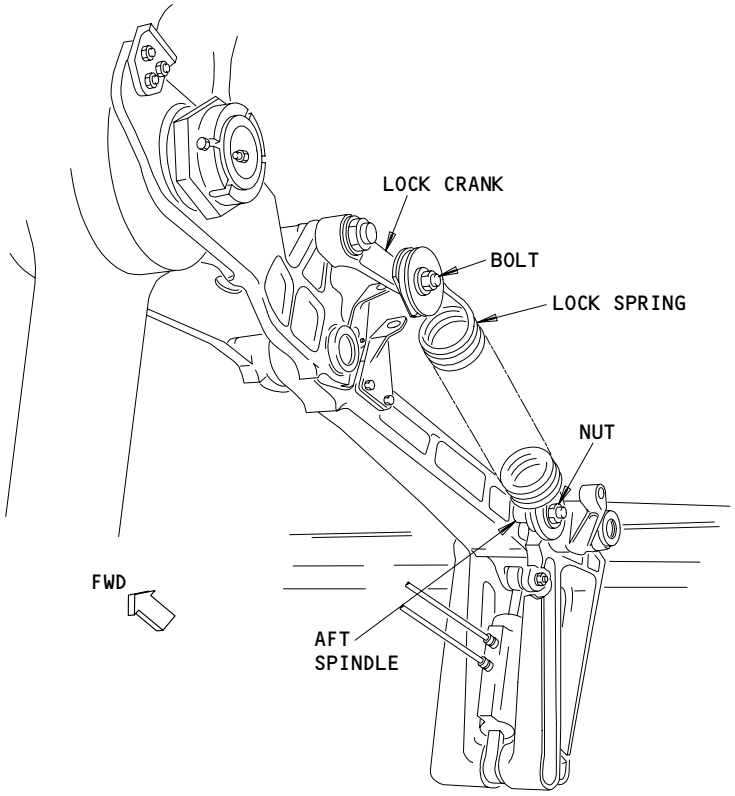
      S 494-021

      WARNING: REMOVE THE RIGHT SPRING FIRST. IF THE RIGHT SPRING IS NOT REMOVED FIRST, THE AFT SPINDLE CAN DISENGAGE AND CAUSE INJURY TO PERSONS.

      (2) Install the spring extender for the lock link. Use the instructions supplied with the tool.

      S 034-006
      (3) Remove the nut to disconnect the aft end of the of the spring and the spool from the aft spindle (Detail A).





A

Nose Gear Lock Spring Installation
Figure 401

S 034-007
(4) Remove the bolt to disconnect the forward end of the spring and the spool from the lock crank.

S 024-008
(5) Remove the lock spring.

S 094-009
(6) Remove the spring extender.

TASK 32-21-09-404-010
3. Install the Lock Spring for the Nose Landing Gear (Fig. 401)
A. Equipment
(1) Spring Extender Equipment - A32099-77
(2) Spring Extender Equipment - A32099-78
B. References
(1) 32-34-00/501, Nose Gear Extension and Retraction
C. Access
(1) Location Zone
711 Nose Landing Gear

D. Install the Lock Spring

S 434-022

WARNING: INSTALL THE LEFT SPRING FIRST. IF THE LEFT SPRING IS NOT INSTALLED FIRST, THE AFT SPINDLE CAN DISENGAGE AND CAUSE INJURY TO PERSONS.

(1) Put the spring and the spool in the spring extender. Make sure the machined side of the spool is on the inboard side of the assembly.

S 434-013
(2) Install the bolt, washer, and nut to connect the forward end of the spring and the spool to the lock crank (Detail A).

S 824-014
(3) Use the spring extender to align the aft end of the spring and the spool with the aft spindle.

S 434-015

(4) Install the washer, nut, and cotter pin to connect the aft end of the spring and the spool to the aft spindle.

S 094-016

(5) Remove the spring extender.

E. Put the Airplane Back to Its Usual Condition

S 414-023

(1) Manually close the forward doors of the nose landing gear.

NOSE GEAR TORSION LINKS - MAINTENANCE PRACTICES

1. General
   A. This procedure contains two tasks. The first task disconnects the torsion links from the apex and the conduit from the lower taxi light. The second task connects the torsion links and the conduit.

   TASK 32-21-11-002-001

2. Disconnect The Torsion Links (Fig. 201)
   A. References
      (1) 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          211/212 Control Cabin
          711 Nose Landing Gear

   C. Prepare to Disconnect the Torsion Links

      S 492-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

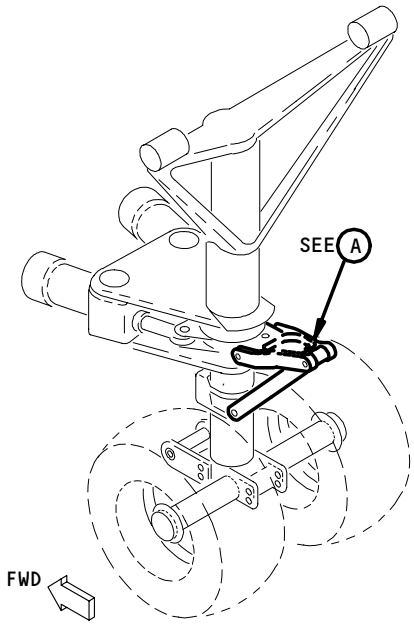
      S 862-006
      (2) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
          (a) 11N8, LIGHTING TAXI

      S 032-057
      (3) Do the steps that follow to disconnect the taxi light:
          (a) Remove the clamps from the conduit that goes to the lower taxi light.
              1) Disconnect the clamp near the junction box from the shock strut.
              2) Disconnect the clamps (2 locations) from the bracket on the upper torsion link.

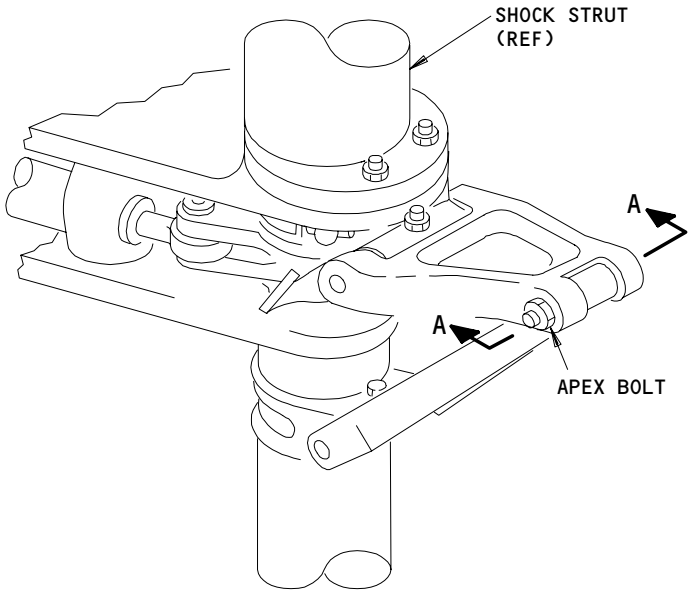
      S 032-058
      (4) Do the steps that follow to disconnect the torsion links:

          CAUTION: MAKE SURE THE UPPER TORSION LINK IS IN THE HORIZONTAL POSITION. IF THE UPPER TORSION LINK IS RELEASED, IT CAN CAUSE DAMAGE TO THE SENSORS.

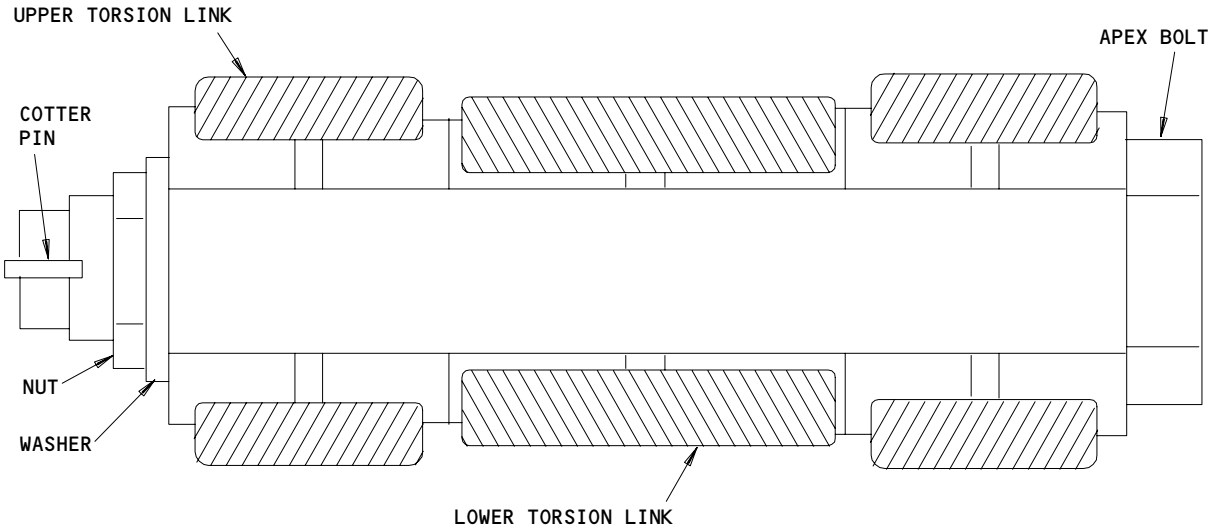
          (a) Hold the lower and the upper torsion links when you remove the apex bolt.
          (b) Remove the apex bolt.



NOSE LANDING GEAR



A



A–A

Torsion Link Connection on the Nose Landing Gear
Figure 201

(c) Carefully lower the lower torsion link until it is against the shock strut.
(d) Attach the upper torsion link to the shock strut with a rope to keep it in a horizontal position.

NOTE: To permit sufficient play for the upper torsion link to turn, attach the rope higher on the shock strut.

S 432-014
(5) Temporarily, attach the loose conduit to the lower shock strut.

TASK 32-21-11-402-021

3. Connect The Torsion Links (Fig. 201)
A. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
B. References
(1) 24-22-00/201, Electrical Power - Control
(2) 32-00-20/201, Landing Gear Downlocks
C. Access
(1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear

D. Install the Torsion Links

S 642-025
(1) Apply grease to the apex bolt.

S 822-026
(2) Align the holes in the upper and lower torsion links.

S 862-027
(3) Put the apex bolt through the upper and lower torsion links.

S 432-028
(4) Install the washer, the nut, and the cotter pin.
E. Put the Airplane Back to Its Usual Condition.

S 862-039
(1) Remove electrical power if it is not necessary (Ref 24-22-00).

NOSE GEAR TORSION LINKS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains four tasks. The first task removes the upper torsion link for the nose landing gear. The second task installs the upper torsion link. The third task removes the lower torsion link for the nose landing gear. The fourth task installs the lower torsion link.

TASK 32-21-11-004-003

2. Remove the Upper Torsion Link of the Nose Landing Gear (Fig. 401 and 402)
   A. Equipment
      (1) Towing Lever Lockpin, NLG - A09003-1
   B. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zone
          711 Nose Landing Gear

   D. Prepare to Remove the Upper Torsion Link

      S 844-004
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-005
      (2) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

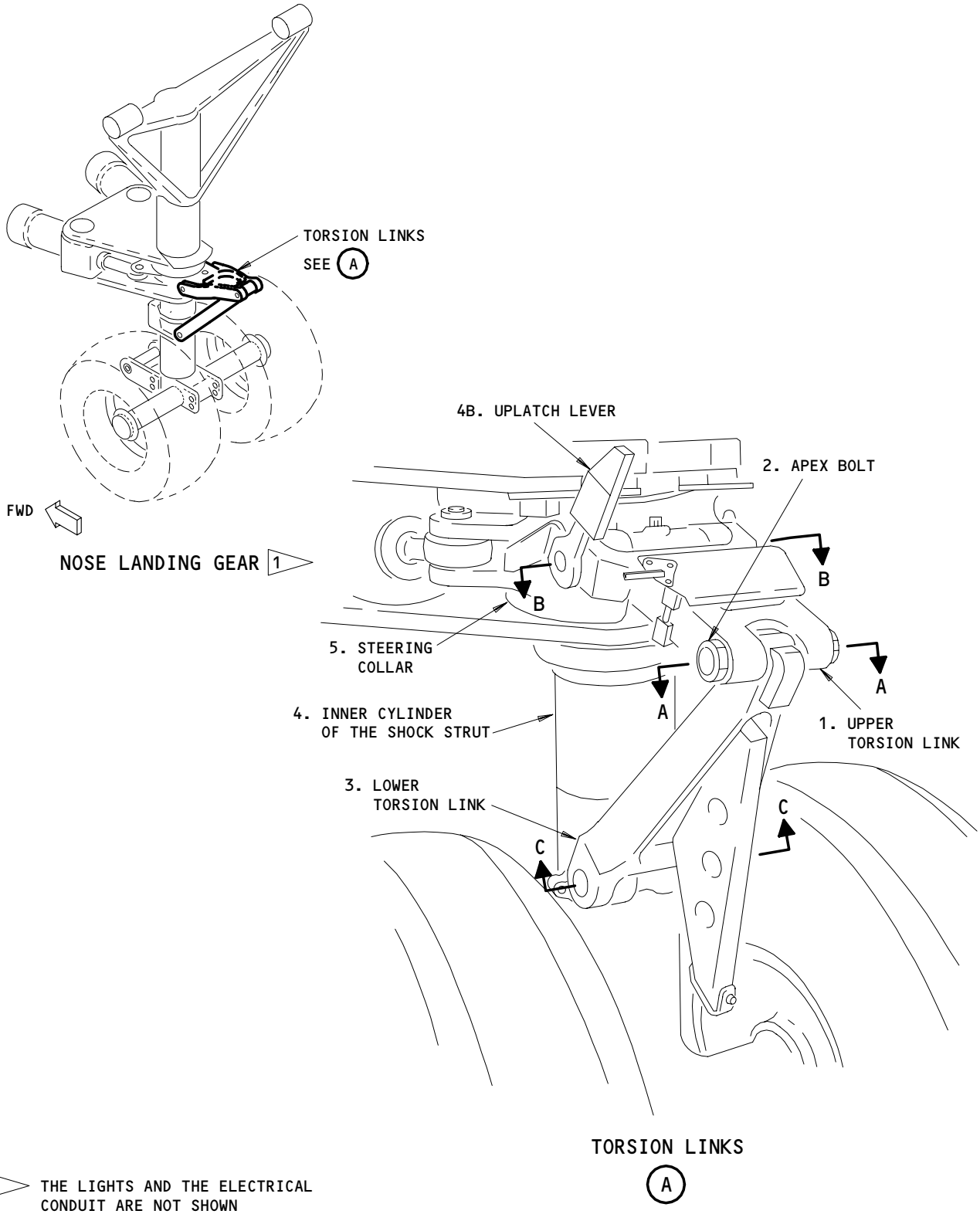
      S 494-006
      (3) Install the lockpin for the towing lever in the metering valve of the nose wheel steering.
   E. Remove the Upper Torsion Link

      S 034-009
      (1) Remove the bracket (2) for the upper torsion link (Fig. 402).

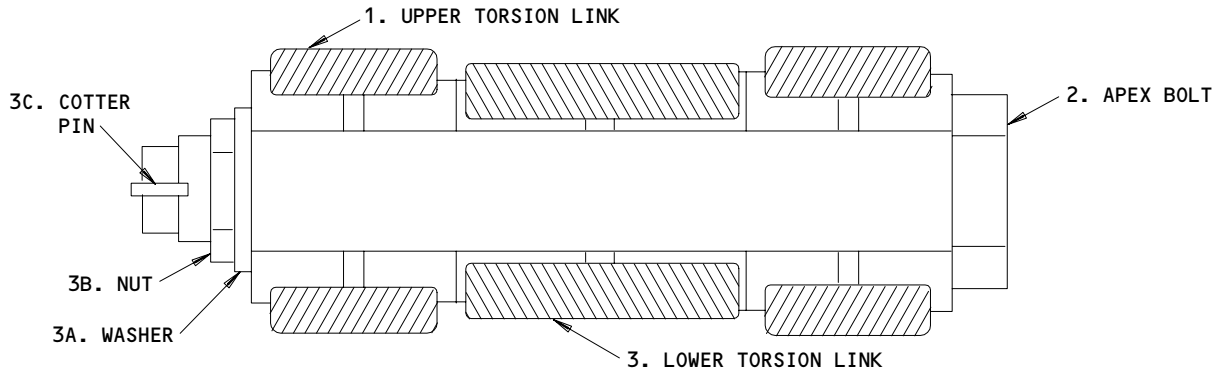
          NOTE: Remove the bracket (2) with the electrical conduit (3) and the clamps attached.

          (a) Remove the attach bolts (6) for the bracket and remove the bracket (2) from the upper link (1).

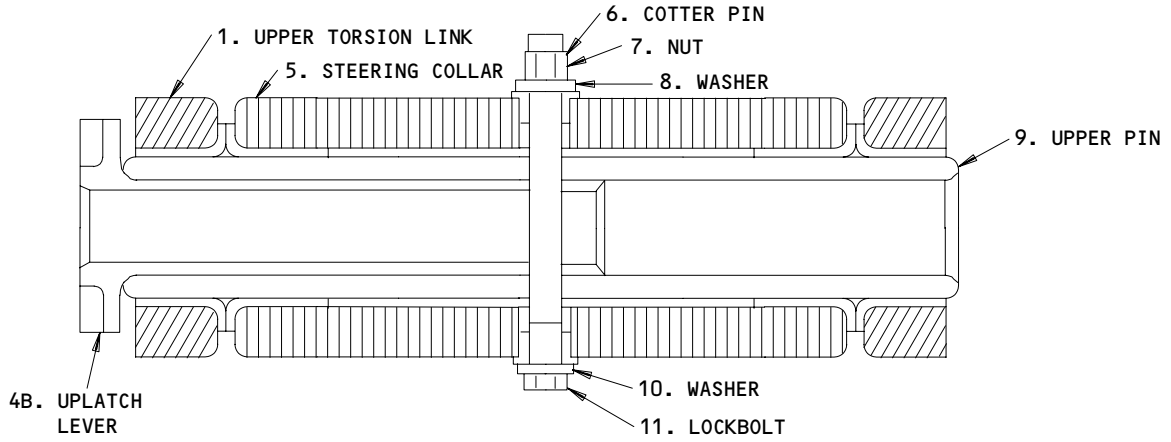
      S 034-010
      (2) Remove the apex bolt (2) to disconnect the upper and lower torsion links (Fig. 401).
          (a) Hold the lower torsion link when you remove the apex bolt (21).
          (b) Carefully lower the torsion link until it sets against the inner cylinder.



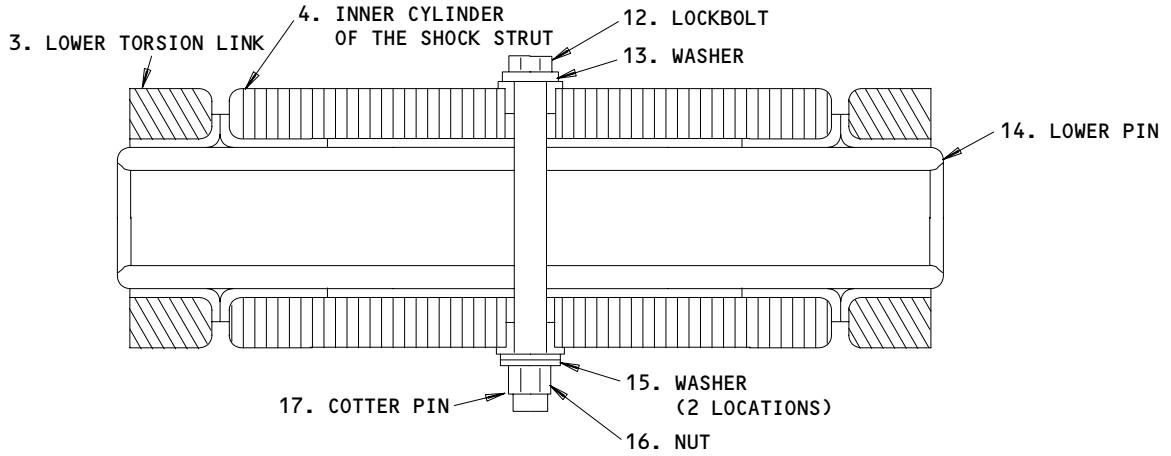
Installation of the Torsion Links for the Nose Landing Gear
Figure 401 (Sheet 1)



A–A

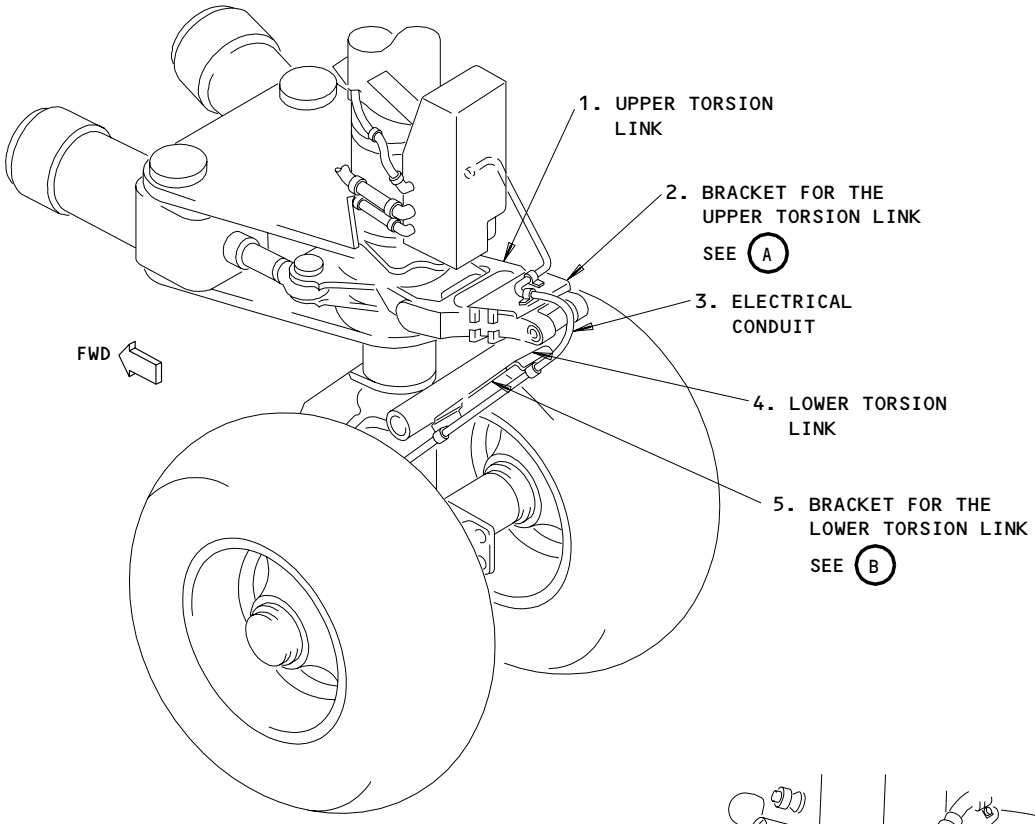


B–B

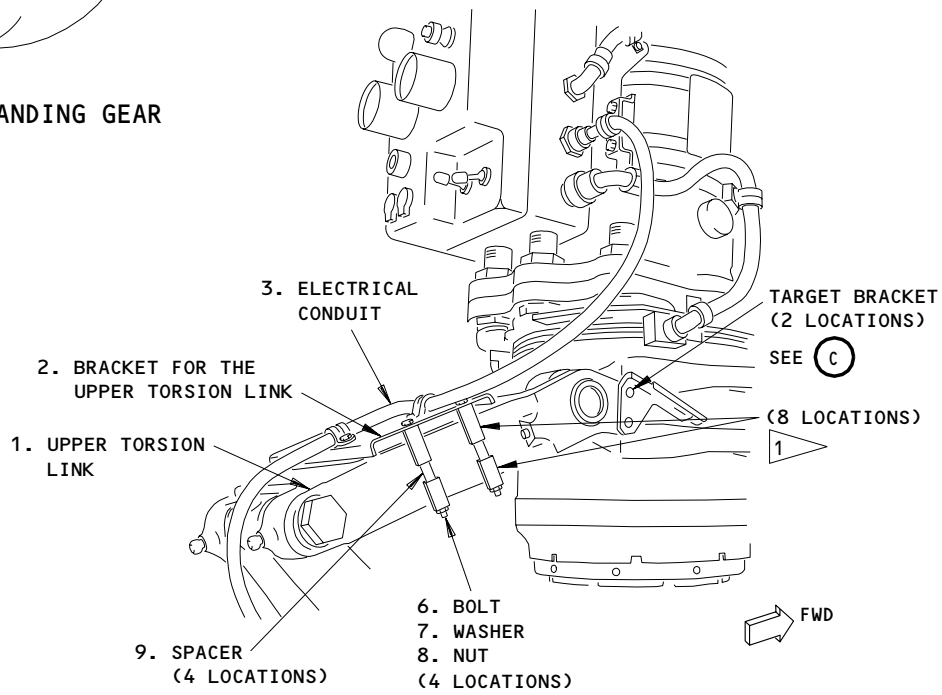


C–C

Installation of the Torsion Links for the Nose Landing Gear
Figure 401 (Sheet 2)



NOSE LANDING GEAR

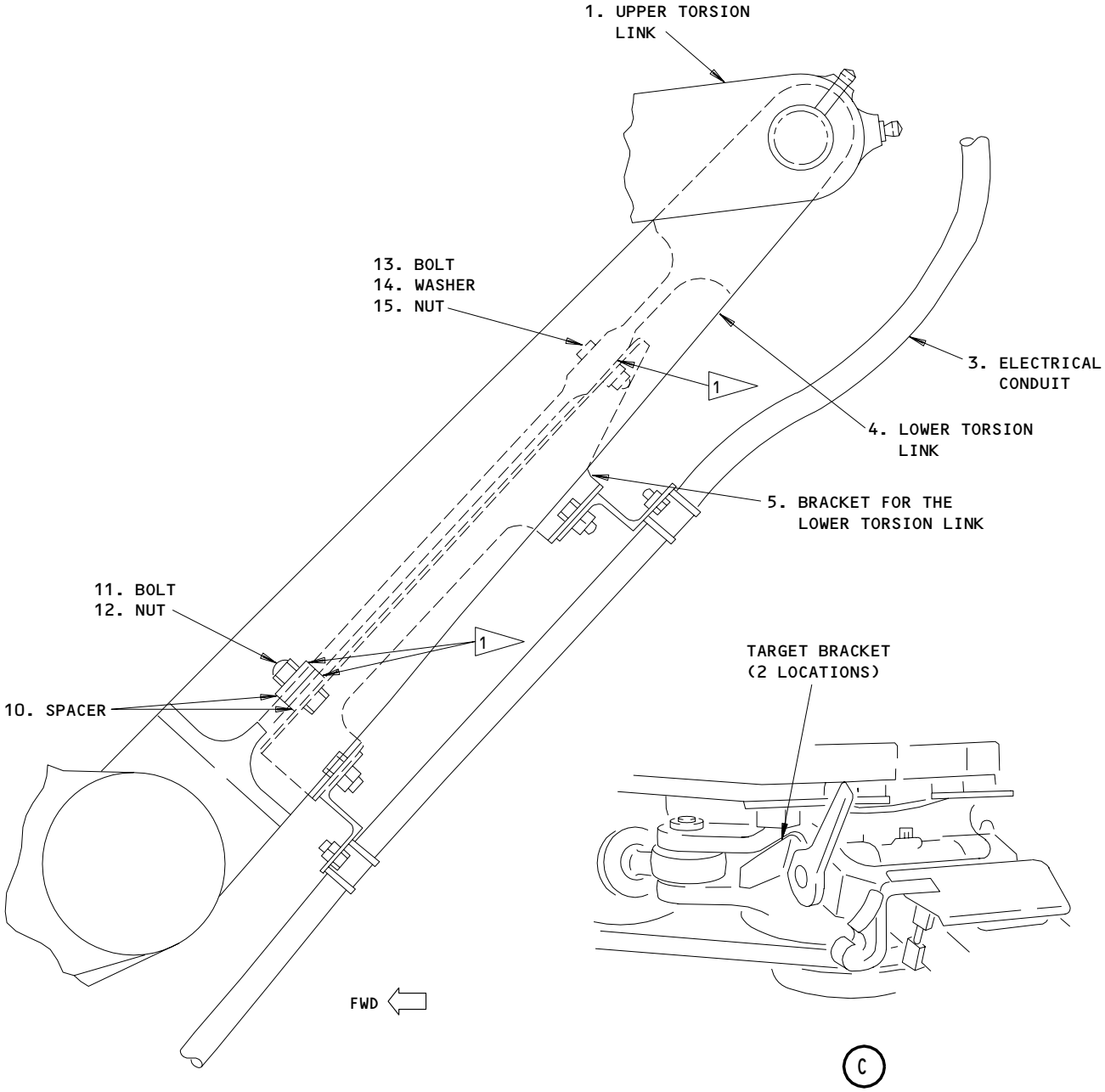


BRACKET FOR THE UPPER TORSION LINK

A

1 INSTALL ONE LAYER OF THE TAPE BETWEEN THE WIRE PROVISIONS BRACKETS AND THE NOSE LANDING GEAR

Installation of the Bracket for the Torsion Links on the Nose Landing Gear
Figure 402 (Sheet 1)



BRACKET FOR THE LOWER TORSION LINK

B

Installation of the Bracket for the Torsion Links on the Nose Landing Gear
Figure 402 (Sheet 2)

S 014-012
(3) Remove the lockbolt (11) to release the upper pin (9).

S 014-015
(4) Hold the upper torsion link (1) and remove the upper pin (9) to disconnect the upper torsion link (1) from the steering collar (5).

TASK 32-21-11-404-022

3. Install the Upper Torsion Link of the Nose Landing Gear (Fig. 401 and 402).

A. Equipment
(1) Towing Lever Lockpin, NLG - A09003-1
B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Recommended)
(2) D00013 Grease - MIL-G-23827 (Alternative)
C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Upper Torsion Link	32-21-02	01	70
	2	Apex Bolt			45
	3	Lower Torsion Link			60
	3A	Washer			50
	3B	Nut			55
	3C	Cotter Pin			40
	4B	Uplatch Lever			28
	6	Cotter Pin			5
	7	Nut			25
	8	Washer			20
	9	Upper Pin			30
	10	Washer			15
	11	Lockbolt			10
402	6	Bolt	32-61-61	01	87
	7	Washer			93
	8	Nut			114
	9	Spacer			106

D. References
(1) AMM 32-09-08/201, Nose Gear Not Compressed
(2) AMM 32-21-11/601, Nose Gear Torsion Links
E. Access
(1) Location Zone
711 Nose Landing Gear

F. Install the Upper Torsion Link

NOTE: The wear limits for the components that follow are supplied in AMM 32-21-11/601.

S 414-026

(1) Install the upper torsion link (1) on the steering collar (5) (Fig. 401, 402, View B-B).

NOTE: Make sure that the target brackets are installed on the upper torsion link.

(a) Apply grease to the upper pin (9).
(b) Put the upper torsion link (1) in position at the steering collar (5).

NOTE: Make sure that the target brackets are installed on the upper torsion link.

(c) Install the upper pin (9) to connect the upper torsion link to the steering collar.

S 434-031

(2) Install the lockbolt (11), washers (10, 8), nut (7), and cotter pin (6) to hold the upper pin (9) (View B-B).

S 414-035

(3) Connect the upper and lower torsion links (Fig. 401)
(a) Apply grease to the apex bolt (2).
(b) Align the holes for the upper and lower torsion links.
(c) Install the apex bolt (2), washer (3A), nut (3B), and cotter pin (3C) to connect the torsion links (View A-A).

S 434-048

(4) Install the bracket (2) for the upper torsion link (2) (Fig. 402).

NOTE: Install the bracket (2) with the electrical conduit (3) attached.

(a) Use solvent to clean the surface of the torsion link where the bracket and clamps will attach.
(b) Apply one layer of Mylar tape to the torsion link where the bracket and clamps will touch the torsion link.
(c) Make sure the electrical conduit (3) is not twisted.
(d) Put the bracket (2) on the link (1).
(e) Install the clamps with the bolts (6), spacers (9), washers (7), and nuts (8).

G. Put the Airplane Back to Its Usual Condition

S 724-133
(1) Do a check of the clearance for the nose landing gear not-compressed sensor (AMM 32-09-08/201).

S 644-049
(2) Lubricate the torsion link at the grease fittings.

S 094-050
(3) Remove the lockpin for the towing lever from the steering metering valve.

TASK 32-21-11-004-053

4. Remove the Lower Torsion Link of the Nose Landing Gear (Fig. 401 and 402)

A. Equipment
(1) Towing Lever Lockpin, NLG - A09003-1

B. References
(1) AMM 07-11-03/201, Jacking Airplane Axles
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 32-45-02/401, Nose Gear Wheel and Tire

C. Access
(1) Location Zone
711 Nose Landing Gear

D. Prepare to Remove the Lower Torsion Link

S 584-054
(1) Lift the axle of the nose landing gear (AMM 07-11-03/201).

S 494-055
(2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 864-056
(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 494-057
(4) Install the lockpin for the towing lever in the metering valve of the nose wheel steering.

S 014-058
(5) Remove the left or right wheel and tire of the nose landing gear (AMM 32-45-02/401).

E. Remove the Lower Torsion Link.

S 014-061
(1) Remove the bracket (5) from the lower torsion link (Fig. 402).

NOTE: Remove the bracket (5) with the electrical conduit (3) and the clamps attached.

S 014-062
(2) Remove the attach bolts (11, 14, 17) for the bracket to remove the stop bracket (5) from the link (4).

S 014-064
(3) Remove the apex bolt (2) to disconnect the upper and lower torsion links (Fig. 401).
(a) Hold the lower torsion link when you remove the apex bolt (2).
(b) Carefully lower the torsion link until it sets against the inner cylinder.

S 034-068
(4) Remove the lockbolt (12) to release the lower pin (14).

S 024-069
(5) Hold the lower torsion link (2) and remove the pin (14) to disconnect the torsion link (2) from the inner cylinder of the shock strut (4).

TASK 32-21-11-404-072
5. Install the Lower Torsion Link of the Nose Landing Gear (Fig. 401 and 402).

A. Equipment
(1) Towing Lever Lockpin, NLG - A09003-1
B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Recommended)
(2) D00013 Grease - MIL-G-23827 (Alternative)

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Upper Torsion Link	32-21-02	01	70
	2	Apex Bolt			45
	3	Lower Torsion Link			60
	3A	Washer			50
	3B	Nut			55
	3C	Cotter Pin			40
	12	Lockbolt			10
	13	Washer			15
	14	Lower Pin			35
	15	Washer			20
	16	Nut			25
	17	Cotter Pin			5
402	10	Spacer	32-61-61	01	266
	11	Bolt			262
	12	Washer			261
	13	Plate			323
	14	Bolt			76
	15	Washer			101
	16	Nut			114
	17	Bolt			74
	18	Washer			98

D. References
(1) AMM 07-11-03/201, Jacking Airplane Axles
(2) AMM 32-21-11/601, Nose Gear Torsion Links
(3) AMM 32-45-02/401, Nose Gear Wheel and Tire

E. Access
(1) Location Zone
711 Nose Landing Gear

F. Install the Lower Torsion Link

NOTE: Wear limits for the components that follow are supplied in AMM 32-21-11/601.

S 424-073

(1) Install the lower torsion link (3) on the inner cylinder (4) of the shock strut (Fig. 401, View C-C).
   (a) Apply grease to the lower pin (14).
   (b) Put the lower torsion link (3) in the correct position at the inner cylinder (4) of the shock strut.
   (c) Install the lower pin (14) to connect the lower torsion link and the inner cylinder of the shock strut.
   (d) Install the lockbolt (12), washers (13, 15), nut (16), and cotter pin (17) to hold the lower pin (14) (View C-C).

S 414-081

(2) Connect the upper and lower torsion links (Fig. 401)
   (a) Apply grease to the apex bolt (2).
   (b) Align the holes of the upper and lower torsion link.
   (c) Install the apex bolt (2), washer (3A), nut (3B), and cotter pin (3C) to connect the torsion links (View A-A).

S 434-093

(3) Install the bracket (5) for the lower torsion link (Fig. 402).

   NOTE: Install the bracket (5) with the electrical conduit (3) attached.

   (a) Use solvent to clean the surface of the torsion link where the bracket and the mounting parts attach.
   (b) Apply one layer of Mylar tape to the torsion link where the bracket and mounting parts will touch the torsion link.
   (c) Make sure the electrical conduit (3) is not twisted.

(d) Put the stop bracket (5) on the link (4).
(e) Install the attach bolt (17) and washer (18) for the upper bracket.
(f) Install the attach bolt (11), washer (12) and spacer (10) for the lower stop bracket.
(g) Attach the mounting plate (13) for the stop bracket to the torsion link and the stop bracket. Use the bolts (14), washers (15), and nuts (16).

G. Put the Airplane Back to Its Usual Condition.

S 434-094
(1) Install the wheel for the nose landing gear (AMM 32-45-02/401).

S 584-095
(2) Lower the axle for the nose landing gear and remove the jack (AMM 07-11-03/201).

S 644-096
(3) Lubricate the torsion link at the grease fittings.

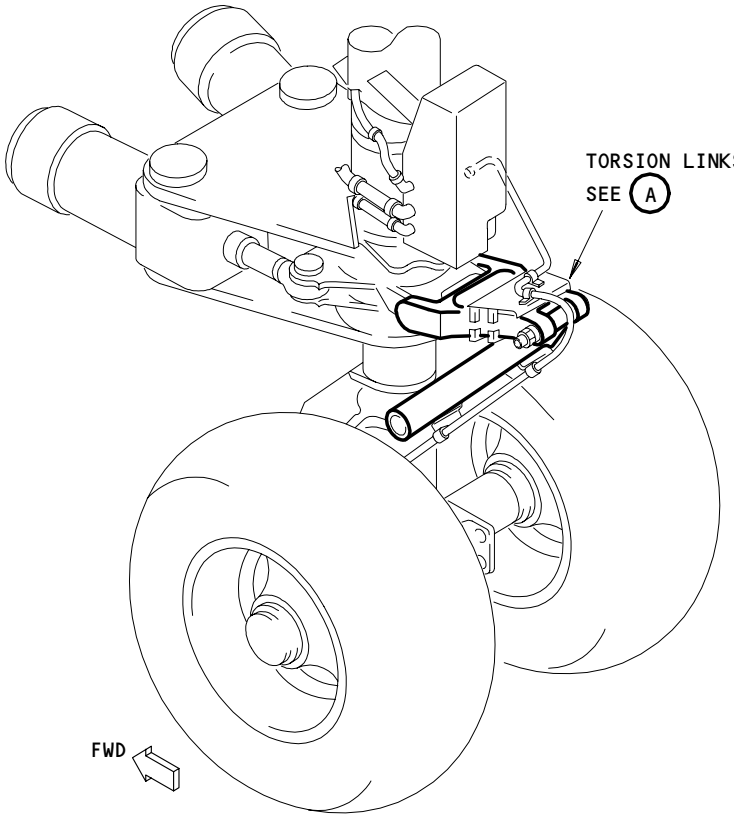
S 094-097
(4) Remove the lockpin for the towing lever from the steering metering valve.

NOSE GEAR TORSION LINKS - INSPECTION/CHECK

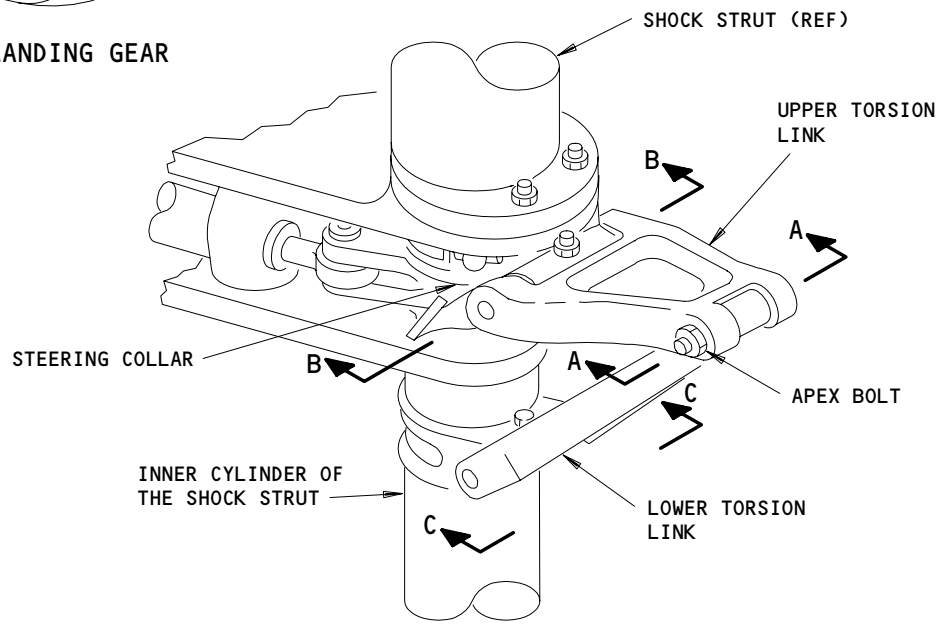
1. General
   A. This procedure only has illustrations and a wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Nose Gear Torsion Links Removal/Installation for procedures to do these tasks.

   TASK 32-21-11-226-013

2. Wear Limits for the Torsion Links on the Nose Landing Gear (Fig. 601)
   A. Access
      (1) Location Zone
          711 Nose Landing Gear

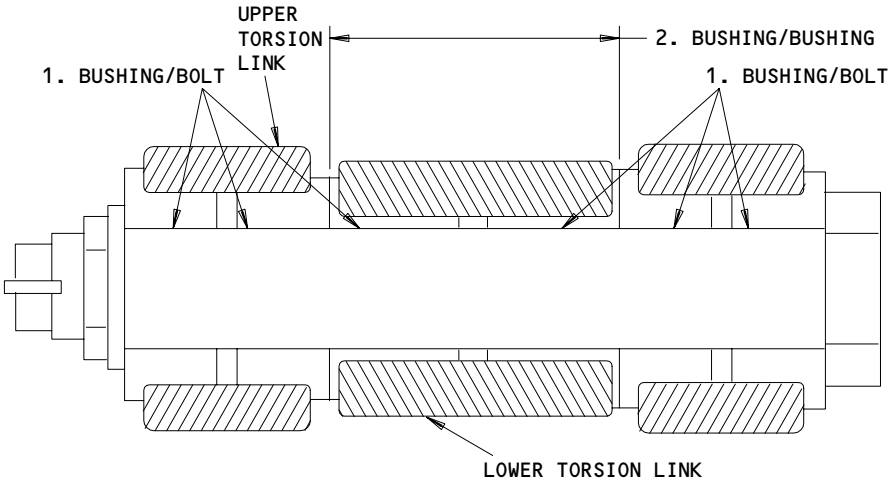


NOSE LANDING GEAR

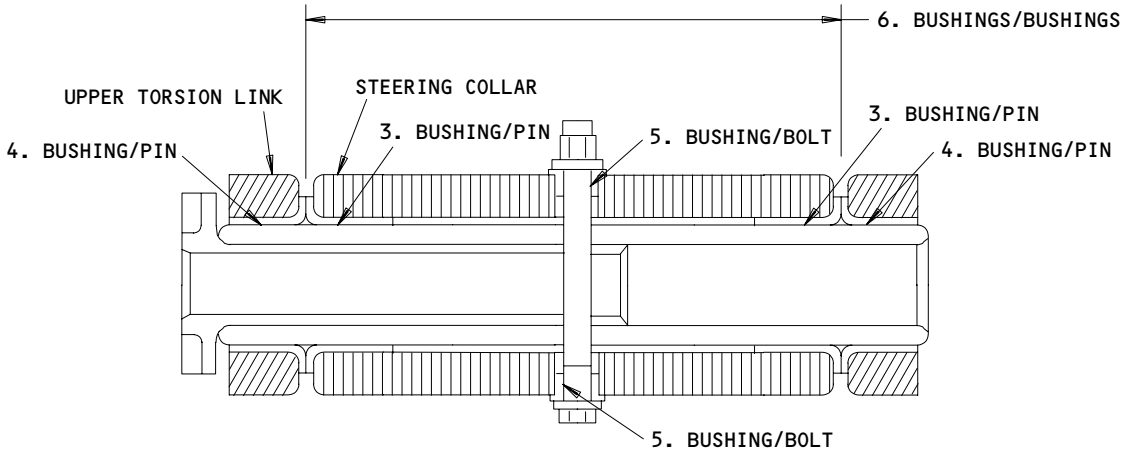


TORSION LINKS
A

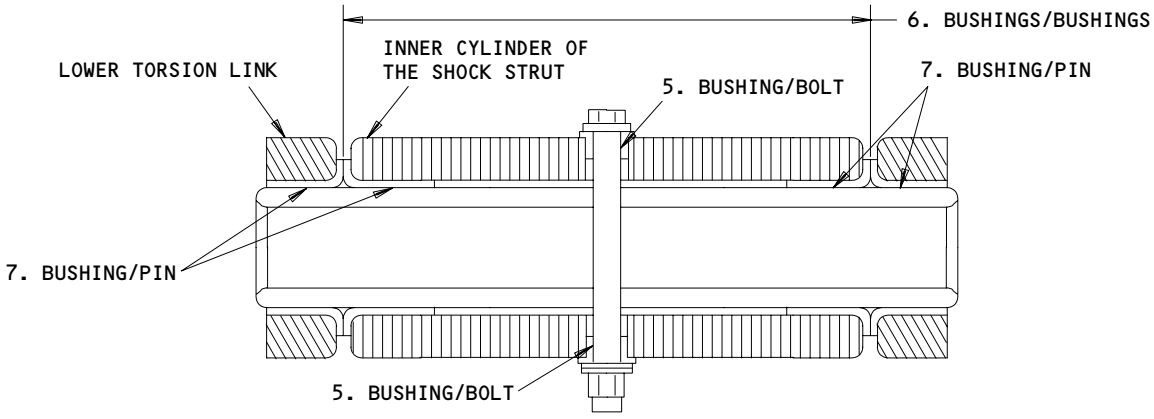
Wear Limits for the Torsion Links of the Nose Landing Gear
Figure 601 (Sheet 1)



A–A



B–B



C–C

Wear Limits for the Torsion Links of the Nose Landing Gear
Figure 601 (Sheet 2)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	0.8750	0.8765	0.8793	0.0054	X		
	BOLT	OD	0.8730	0.8740	0.8711			X	1
2	BUSHING	2	2.1200	2.1298	2.1416	0.0236			
	BUSHING	3	2.1180	2.1200	2.1062				
3	BUSHING	ID	1.5000	1.5015	1.5049	0.0059	X		
	PIN	OD	1.4980	1.4990	1.4950			X	1
4	BUSHING	ID	1.5000	1.5015	1.5040	0.0059	X		
	PIN	OD	1.4980	1.4990	1.4950			X	1
5	BUSHING	ID	0.3750	0.3780	0.3797	0.0052	X		
	BOLT	OD	0.3740	0.3745	0.3728			X	1
6	BUSHING	4	6.6005	6.6025	6.6070	0.0090			
	BUSHING	5	6.5980	6.6000	6.5935				
7	BUSHING	ID	1.7500	1.7515	1.7550	0.0061	X		
	PIN	OD	1.7480	1.7490	1.7450			X	1

1 THIS PART CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS.
2 DISTANCE BETWEEN INNER FLANGE FACES OF THE BUSHINGS IN THE UPPER TORSION LINK.
3 DISTANCE BETWEEN OUTER FLANGES OF THE BUSHINGS IN THE LOWER TORSION LINK.
4 DISTANCE BETWEEN INNER FLANGE FACES OF THE BUSHINGS IN THE TORSION LINK.
5 DISTANCE BETWEEN OUTER FLANGES OF THE BUSHINGS IN THE STEERING COLLAR OR INNER CYLINDER.

Wear Limits for the Torsion Links of the Nose Landing Gear
Figure 601 (Sheet 3)

NOSE GEAR TOW FITTING - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the tow fitting for the nose landing gear. The second task installs the tow fitting for the nose landing gear.

TASK 32-21-12-004-010

2. Remove the Tow Fitting for the Nose Landing Gear
   A. References
      (1) 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          711 Nose Landing Gear
          731/741 Main Landing Gear

   C. Prepare to Remove the Tow Fitting

      S 494-001
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).
   D. Remove the Tow Fitting

      S 034-002
      (1) Remove the attach bolts (3) to disconnect the tow fitting (7) from the inner cylinder of the shock strut.

      NOTE: If the attach bolt (3) has a hole for a cotter pin, discard the nut (6).

      S 024-011
      (2) Remove the tow fitting (7).

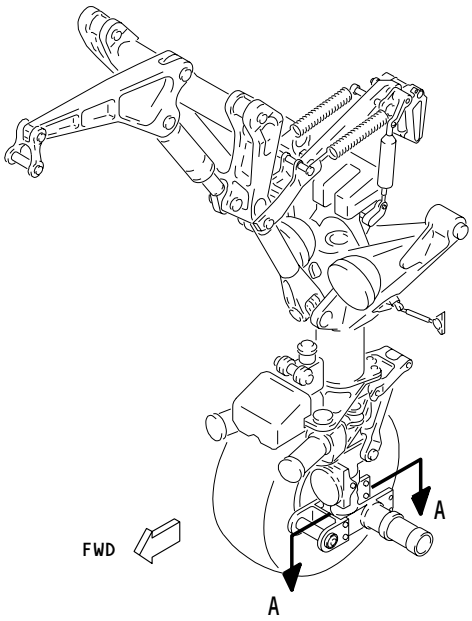
      S 034-003
      (3) Remove the bolt (2) and the end caps (8) to disconnect the tow pin (11) from the tow fitting (7) (View A-A).

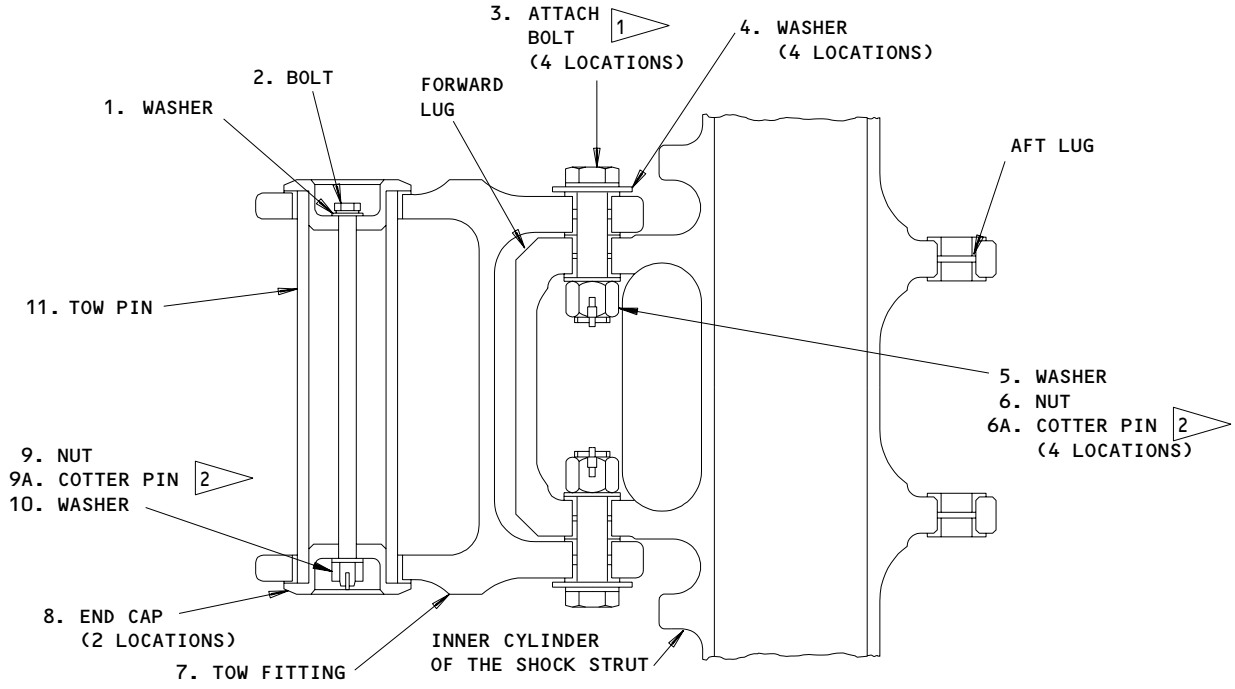
      S 034-004
      (4) Remove the tow pin (11).

TASK 32-21-12-404-005

3. Install the Tow Fitting for the Nose Landing Gear (Fig. 401)

   NOTE: The wear limits for the components that follow are supplied in 32-21-12/601.





A–A

1 THE DIRECTION OF THE HEAD OF THE BOLT IS OPTIONAL

2 NOT REQUIRED ON AIRPLANES WITH OPTIONAL SELF–LOCKING NUT

Nose Landing Gear Tow Fitting Installation
Figure 401

A. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

B. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Washer	32-21-01	01	490
	2	Bolt			480
	3	Attach Bolt			420
	4	Washer			430
	5	Washer			440
	6	Nut			450
	6A	COTTER PIN			410
	7	Tow Fitting			531
	8	End Cap			510
	9	Nut			500
	9A	COTTER PIN			470
	10	Washer			490
	11	Tow Pin			520

C. References
(1) 32-21-12/601, Nose Gear Tow Fitting

D. Access
(1) Location Zones
711 Nose Landing Gear
731/741 Main Landing Gear

E. Install the Tow Fitting

S 434-006
(1) Put the tow pin (11) into the tow fitting (7).

S 434-007
(2) Apply grease to and install these parts to connect the tow pin (11) to the tow fitting (7):
(a) Bolt (2)
(b) Washers (1 and 10)
(c) End caps (8)
(d) Nut (9)
(e) Cotter pin

S 424-008

(3) Apply grease to and install these parts to connect the tow fitting (7) to the inner cylinder of the shock strut (View A-A):
(a) Attach bolts (3)
(b) Washers (4 and 5)
(c) Nuts (6)
(d) Cotter pins

F. Put the Airplane Back to Its Usual Condition

S 644-009

(1) Lubricate the tow fitting at the grease fittings.

NOSE GEAR TOW FITTING - INSPECTION/CHECK

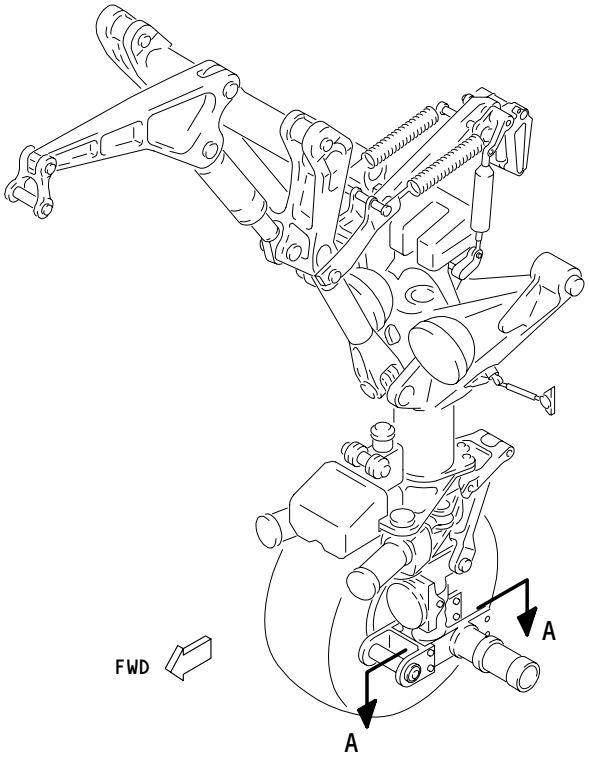
1. General
   A. This procedure only has an illustration and wear limit table which show the data for the wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Nose Gear Tow Fitting - Removal/Installation for procedures to do these tasks.

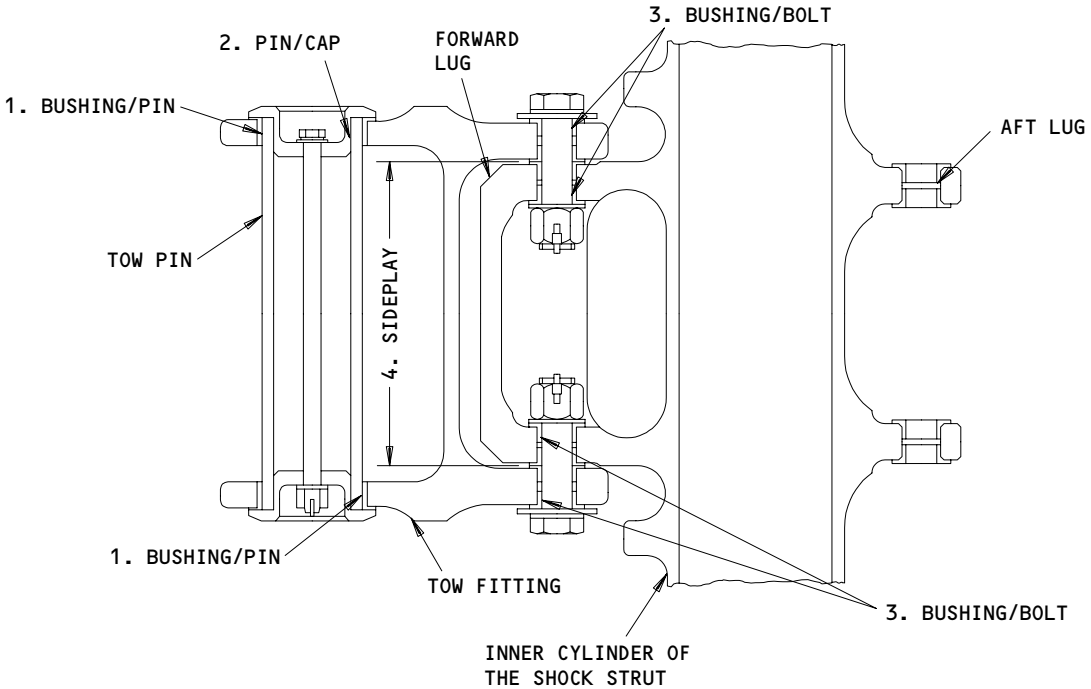
TASK 32-21-12-206-001

2. Wear Limits for the Tow Fitting on the Nose Landing Gear (Fig. 601)
   A. Wear Limits for the Tow Fitting.

S 226-002

(1) Refer to Fig. 601 for the inspection points and the wear limits table.





A-A

Wear Limits for the Tow Fitting on the Nose Landing Gear
Figure 601 (Sheet 1)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	2.2500	2.2515	2.2555	0.0065	X		
	PIN	OD	2.2480	2.2490	2.2450			X	1
2	PIN	ID	1.750	1.755	1.760	0.014		X	1
	CAP	OD	1.744	1.746	1.741		X		
3	BUSHING	ID	0.7500	0.7515	0.7537	0.0047	X		
	BOLT	OD	0.7485	0.7490	0.7468		X		
4	TOW FITTING		6.6136	6.6320	6.6688	0.0368 2	3		

1 THIS PART CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS.

2 MAXIMUM ALLOWABLE SIDEPLAY

3 REPLACE WORN BUSHINGS

Wear Limits for the Tow Fitting on the Nose Landing Gear
Figure 601 (Sheet 2)

271485

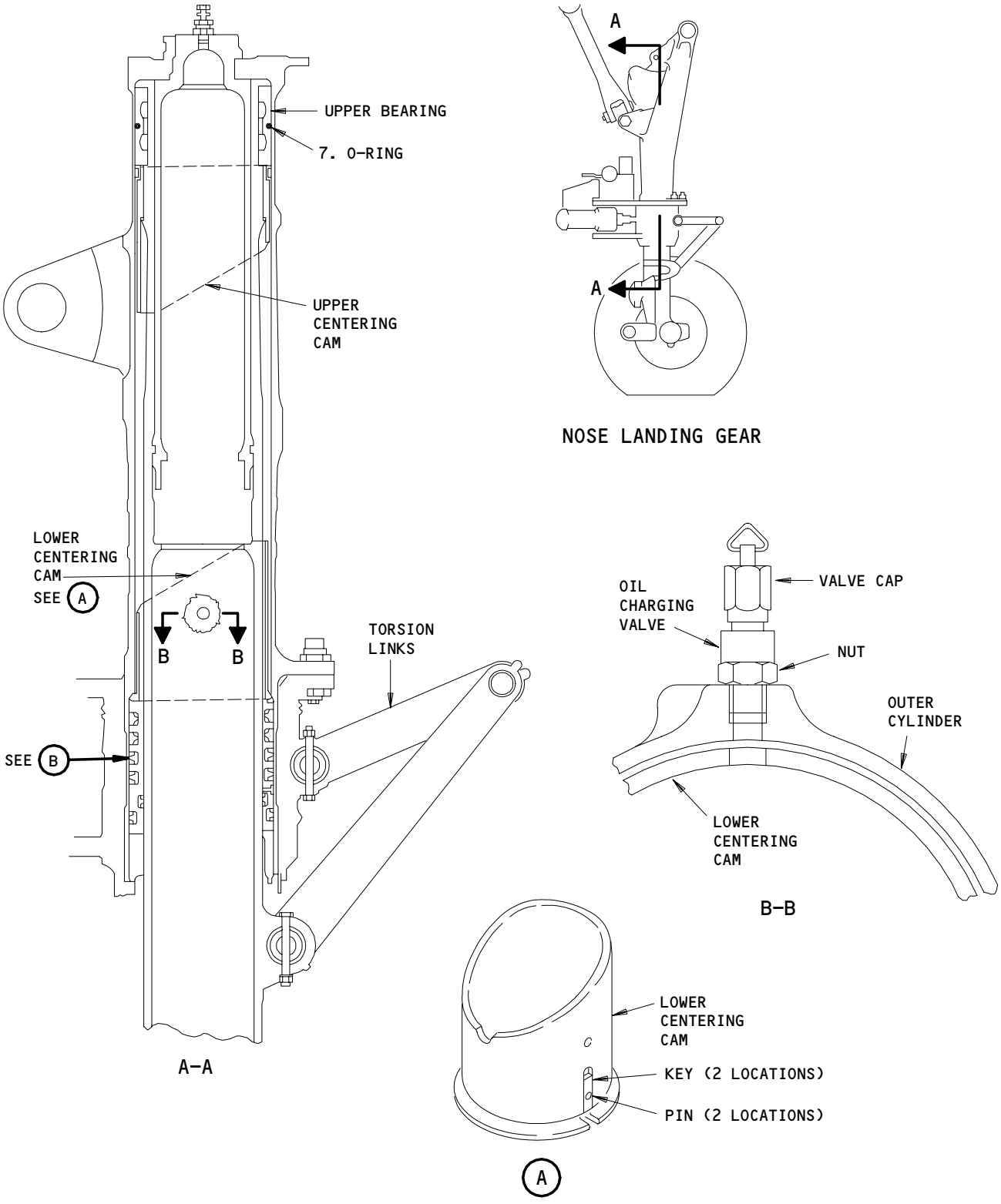
NOSE GEAR SHOCK STRUT SEALS - MAINTENANCE/PRACTICES

1. General
   A. This procedure contains two tasks to replace seals. Each of the seal replacement tasks is a procedure to replace the active seals on the shock strut of the nose landing gear. Task one replaces the active seals with the spare seals. Two sets of spare seals are in the grooves in the lower bearing of the shock strut. Task two replaces the active and the spare seals. Task two is used when the two sets of spare seals have been used.
   B. This procedure contains a task to inspect the shock strut for microcracks and a task to do temporary repair on shock struts that have microcracks.
   C. This procedure also contains a task to do an inspection of the scraper ring.

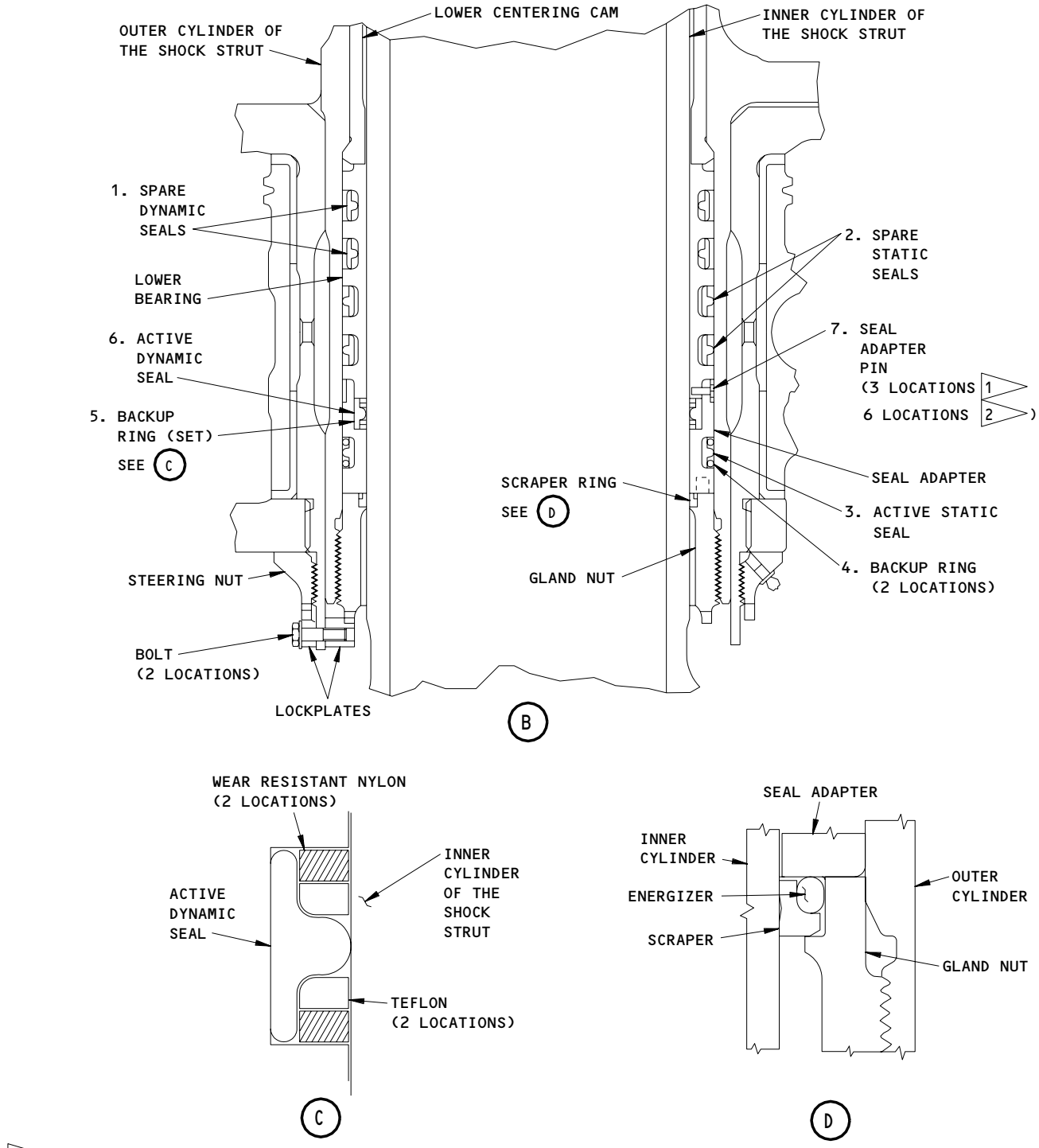
      NOTE: During the initial landing cycles of a new landing gear, thin dark olive-green streaks on the shock strut frequently occur. This condition is okay. The petrolatum and grease that we use during shock strut assembly cause these streaks. These streaks will stop after more landing cycles occur. These streaks are different from the red color streaks that are the indication of strut fluid leakage.

TASK 32-21-25-962-001

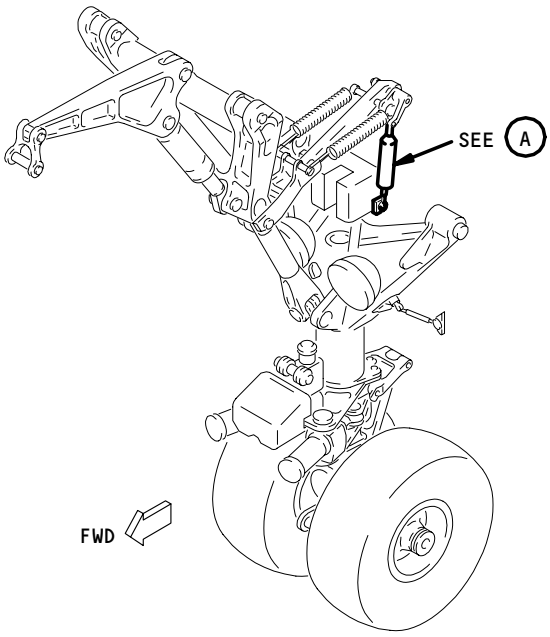
2. Active Seal Replacement With the Spare Seals
   A. Equipment
      (1) Gland Nut Wrench Adapter, NLG - A32021-1
      (2) Lower Seal Replacement Equipment, NLG - A32029-50
      (3) Shock Strut Drain Equipment, MLG/NLG - A32066-1
      (4) Servicing Cart, Landing Gear Shock Strut - PF55451-23
      (5) Inflator, Landing Gear Shock Strut - F70200-14
      (6) Drain Bucket
   B. Consumable Materials
      (1) G50136 Compound - BMS 3-38, Corrosion Inhibiting
      (2) D00062 Grease - MIL-G-4343

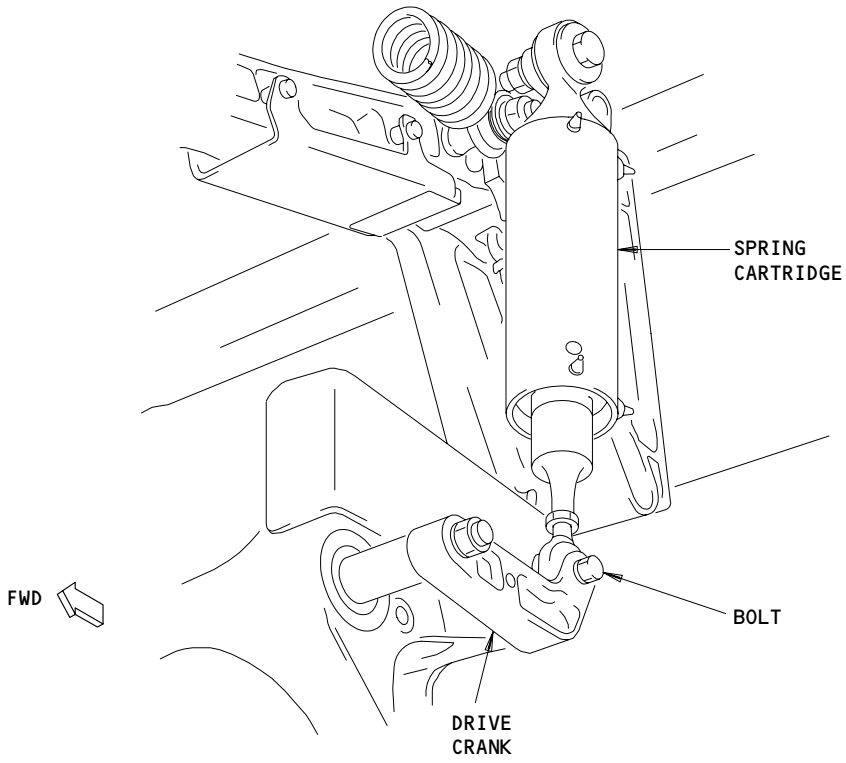


Replacement of the Shock Strut Seals for the Nose Landing Gear
Figure 201 (Sheet 1)



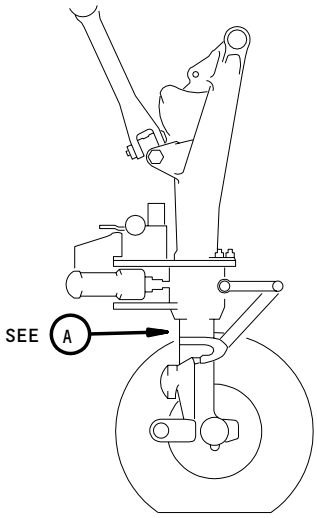
Replacement of the Shock Strut Seals for the Nose Landing Gear
Figure 201 (Sheet 2)



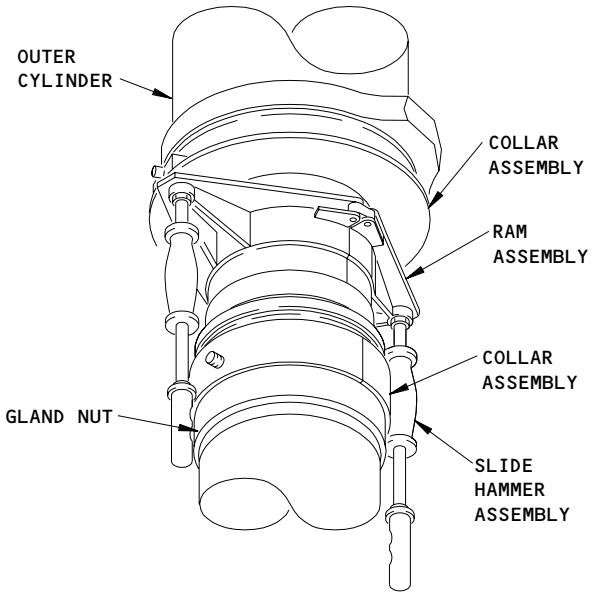


A

Location of the Spring Cartridge for Nose Wheel Steering
Figure 202



NOSE LANDING GEAR



DYNAMIC SEAL REPLACEMENT EQUIPMENT A32029

A

Equipment for the Seal Installation on the
Shock Strut for the Nose Landing Gear
Figure 203

(3) D00633 Grease - BMS 3-33 (Preferred)
(4) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(5) D00106 Fluid - MIL-H-6083, Hydraulic
(6) D00589 Lubricant, Hydraulic Assembly - AFS-682
(Recommended)
(7) D00128 Lubricant, Petrolatum - VV-P-236
(Alternative)
(8) A00226 Compound - BMS 8-45, Sealing

C. References
(1) 07-11-02/201, Jacking Airplane Nose
(2) 07-11-03/201, Airplane Axle Jacking
(3) 12-15-02/301, Nose Gear Shock Strut
(4) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(5) 32-00-20/201, Landing Gear Downlocks

D. Access
(1) Location Zones
115/116 Nose Landing Gear Wheel Well
711 Nose Landing Gear

E. Prepare to Replace the Active Seals (Fig. 201)

S 012-002
(1) Pull the release handles to open the doors of the nose landing gear.

NOTE: The release handles are in the nose wheel well.

S 492-003
(2) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

S 862-004
(3) Remove the pressure from the center hydraulic system (Ref 29-11-00).

S 862-005
(4) Deflate the shock strut of the nose landing gear.
(a) Remove the air valve cap at the top of the shock strut.

WARNING: LOOSEN THE AIR VALVE NUT A MAXIMUM OF TWO TURNS. AIR PRESSURE CAN BLOW THE VALVE OFF AND CAN CAUSE INJURY TO PERSONS.

(b) Loosen the nut for the air valve two turns.
(c) Let the shock strut fully deflate.
(d) Install a flexible hose on the air valve and put the other end of the hose in the drain bucket.
(e) Fully loosen the nut for the air valve.

S 492-006

CAUTION: CLEAN ALL THE HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY. THE HYDRAULIC FLUID CAN CAUSE DAMAGE TO THE TIRES.

(5) Install the drain equipment on the oil charging valve.

S 092-007

(6) Remove the drain equipment when all the oil has drained from the shock strut.

S 012-008

(7) Remove the oil charging valve.

S 862-009

(8) Lift the airplane nose until you can see approximately 13 inches of chrome on the inner cylinder (Ref 07-11-02).

S 232-197

(9) Measure and record the distance that the lower surface of the gland nut extends below the lower surface of the outer cylinder.

NOTE: The recorded measurement will be used to compare to the 2nd measurement made when the shock strut is assembled.

S 032-010

(10) Install the cam retainer in the position where the oil charging valve goes.

NOTE: The cam retainer holds the lower centering cam in it's position. If the centering cam falls from it's position it can cause injury to persons.

S 862-011

(11) Put the axle jack below the nose landing gear.

S 862-012

(12) Lift the inner cylinder until approximately 8 inches of chrome can be seen on the inner cylinder.

S 032-013

(13) Remove the lockplates of the gland nut (Detail B).

S 862-014

(14) Wind a cloth pad around the inner cylinder of the shock strut below the gland nut. This will prevent damage to the surface of the inner cylinder if the gland nut moves down.

S 032-015
(15) Use the gland nut wrench adapter to loosen the gland nut.

S 862-016
(16) Move the gland nut to the bottom of the inner cylinder.

S 862-018
(17) Move the scraper ring down the inner cylinder into the gland nut.

S 862-019
(18) Wind a cloth around the gland nut and the scraper ring to prevent damage to them.

S 492-020
(19) Install the seal protector.

S 432-021
(20) Put the rods into the seal adapter and tighten them by hand.

S 492-022
(21) Put the collar assembly loosely around the inner cylinder.

NOTE: The collar assembly must be loose to let the inner cylinder move when you lift the axle.

(a) Install the knurled screws loosely into the rods.

S 862-023
(22) Lift the inner cylinder until there is approximately 0.5 inch between the gland nut and the knurled screws.

S 432-024
(23) Tighten the collar assembly around the inner cylinder.

S 432-025
(24) By hand, tighten the knurled screws into the rods.

S 492-026
(25) Install the strap around the bottom of the inner cylinder.

S 862-027

WARNING: MAKE SURE YOUR HANDS ARE NOT NEAR THE TOP OF THE SEAL ADAPTER AND THE LOWER BEARING. THE LOWER CENTERING CAM CAN MOVE DOWN QUICKLY, AND CAN CAUSE INJURY TO PERSONS.

(26) Lower the inner cylinder to pull the seal adapter and the lower bearing out of the outer cylinder.

S 092-028
(27) Remove the axle jacks.

S 092-029
(28) Remove the strap from the inner cylinder.

F. Replace the Active Static Seal

S 012-030
(1) Move the backup rings from the groove for the active static seal.

S 212-031
(2) Examine the backup rings.
(a) Replace the backup rings if it is necessary.

S 032-032

CAUTION: BE CAREFUL NOT TO CAUSE DAMAGE TO THE INNER CYLINDER. DAMAGE ON THE SURFACE OF THE CYLINDER, CAN CAUSE DAMAGE TO THE SEALS AND THE CENTERING CAMS.

(3) Cut the active static seal. Use a plastic tool and a backup strip to prevent damage to the groove.
(a) Remove the active static seal from the outer groove in the seal adapter.

S 862-033
(4) Move the spare static seal out of the spare seal groove.

S 642-034
(5) Apply a thin layer of hydraulic fluid and petrolatum to the seal and the backup ring.

S 862-035
(6) Move the spare static seal and the backup rings into the outer groove in the seal adapter.

NOTE: Do not extend the seal more than necessary for the installation.

G. Replace the Active Dynamic Seal

S 012-036
(1) Remove the seal adapter pins to move the seal adapter and the lower bearing apart.

S 862-037
(2) Push the lower bearing into the outer cylinder.
(a) Install a stop on the seal protector to hold the lower bearing out of the area.

S 862-038
(3) Move the seal adapter up and then down until you see the active dynamic seal.

S 862-039
(4) Move the backup rings away from the active dynamic seal.

S 212-040
(5) Examine the backup rings.
(a) Replace the backup rings if it is necessary.

NOTE: The backup rings for the active dynamic seal, are two piece sets.

S 032-041

CAUTION: BE CAREFUL NOT TO CAUSE DAMAGE TO THE INNER CYLINDER. DAMAGE ON THE SURFACE OF THE CYLINDER, CAN CAUSE DAMAGE TO THE SEALS AND THE CENTERING CAMS.

(6) Cut the active dynamic seal. Use a plastic tool and a backup strip to prevent damage to the inner cylinder.
(a) Remove the active dynamic seal from the inner cylinder.

S 862-042
(7) Move the spare dynamic seal out of the spare seal groove.

S 642-043
(8) Apply a thin layer of hydraulic fluid and petrolatum to the backup rings.

NOTE: The backup rings for the active dynamic seal, are two piece sets.

S 862-044
(9) Move the spare dynamic seal and the backup rings into position in the inner groove in the seal adapter.

NOTE: Do not extend the seal more than necessary for the installation.

S 862-045
(10) Put the ram assembly around the inner cylinder between the lower bearing and the dynamic seal.

S 492-046
(11) Install the slide hammers on the ram assembly.

S 862-047
(12) Move the ram assembly down to push the dynamic seal into the correct position behind the seal adapter.

S 092-048
(13) Remove the ram assembly.

S 092-049
(14) Remove the slide hammers.

S 092-050
(15) Remove the stop from the seal adapter and let the lower bearing move down.

S 862-051
(16) Move the lower bearing down.

S 432-052
(17) Install the pins for the seal adapter to connect the seal adapter and the lower bearing.

H. Assemble the Shock Strut (Fig. 201)

S 212-192
(1) Do a check of the centering cam keys:

WARNING: MAKE SURE YOUR HANDS ARE NOT NEAR THE TOP OF THE SEAL ADAPTER AND THE LOWER BEARING. THE LOWER CENTERING CAM MOVES DOWN QUICKLY, AND CAN CAUSE INJURY TO PERSONS.

(a) Remove the cam retainer.
(b) Lower the centering cam.
(c) Make sure the keys for the centering cam are not loose.

S 092-056
(2) Remove the knurled screws, the collar assembly, and the rods.

S 862-057
(3) Put the ram assembly around the inner cylinder, below the seal adapter.

S 492-058
(4) Install the slide hammers on the ram assembly.

S 822-059
(5) Make sure the keys for the lower centering cam are aligned with the slots in the outer cylinder.

S 862-060
(6) Move the ram assembly up to push the lower bearing into the outer cylinder.

S 432-193
(7) Install the cam retainer.

S 092-061
(8) Remove the ram assembly and the seal protector.

S 642-176
(9) For gland nuts with a lube fitting installed, apply grease (MIL-G-4343) to the threads of the gland nut.

S 622-175
(10) For gland nuts without a lube fitting installed, do the steps that follow:
   (a) Remove the grease from the threads on the gland nut and the mating threads on the outer cylinder.
   (b) Apply a thin layer of corrosion inhibitive compound to the threads on the gland nut.
   (c) Apply a thin layer of corrosion inhibitive compound to the threads on the outer cylinder that will mate with the gland nut threads.

S 862-063
(11) Move the gland nut and the scraper ring up the inner cylinder.

NOTE: Use the illustration to make sure the orientation of the scraper ring is correct.

S 432-064
(12) Use the gland nut wrench adapter to tighten the gland nut.
   (a) Tighten the gland nut to 125-150 pound-feet. Loosen the gland nut to align the nearest slot with the hole through the steering nut and the outer cylinder.

S 232-198
(13) Measure the distance that the lower surface of the gland nut extends below the lower surface of the outer cylinder.

NOTE: The distance measured must be equal to the distance recorded prior to gland nut removal, within +0.02 inch.

S 432-065
(14) Install the lockplates for the gland nut.

S 432-066
(15) Install the lockwire.

S 392-067
(16) Apply the sealing compound to the gland nut.

S 012-068
(17) Remove the cam retainer.

S 412-069
(18) Install the oil charging valve.

S 432-070
(19) Tighten the valve body to 22-25 pound-feet (View B-B).

S 642-195

CAUTION: DO NOT OVER LUBRICATE THE GLAND NUT. USE MINIMUM PRESSURE ON THE HANDPUMP TO APPLY THE GREASE. APPLY THE EQUIVALENT OF 3-5 PUMPS OF A MEDIUM SIZE GREASE GUN. OVER LUBRICATION OR EXCESSIVE LUBE PRESSURE CAN CAUSE DAMAGE TO THE SCRAPER RING AND/OR SEALS.

(20) Lubricate the gland nut at the grease fittings.

I. Put the Airplane Back to Its Usual Condition (Fig. 201)

S 862-072
(1) Lift the nose of the airplane (Ref 07-11-02).
(a) Make sure the length of the shock strut is 16.20 inches when it is fully extended.

S 642-073
(2) Apply hydraulic fluid to the section of the inner cylinder you can see.

S 582-074
(3) Lower the nose of the airplane and remove the jack (Ref 07-11-02).

S 612-075
(4) Do the servicing of the shock strut for the nose landing gear (Ref 12-15-02).

S 412-076
(5) Manually close the doors of the nose landing gear.

TASK 32-21-25-402-168

3. Replacement of the Spare Seals

A. Consumable Materials
(1) G50136 Compound - BMS 3-38, Corrosion Inhibiting (Alternate)
(2) D00106 Fluid, Hydraulic - MIL- H- 6083
(3) D00589 Lubricant, Hydraulic Assembly - AFS-682 (Recommended)
(4) D00128 Lubricant, Petrolatum - VV-P-236 (Alternative)

B. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
201	1	Spare Dynamic Seal	32-21-02	01	615
	2	Spare Static Seal			610
	3	Active Static Seal			585
	4	Backup Ring			580
	5	Backup Ring Set			593
	6	Active Dynamic Seal			595
	7	Pin			600
	8	O-ring			625

C. References
(1) 07-11-02/201, Airplane Nose Jacking
(2) 07-11-03/201, Airplane Axle Jacking
(3) 29-11-00/201, Pressurization/ Depressurization Main Hydraulic System
(4) 32-00-20/201, Landing Gear Downlocks
(5) 32-21-03/401, Nose Gear Drag Strut
(6) 32-21-05/401, Nose Gear Upper and Lower Drag Struts
(7) 32-21-11/401, Nose Gear Torsion Links

D. Access
(1) Location Zones
115/116 Nose Landing Gear Wheel Well
711 Nose Landing Gear

E. Prepare for the Seal Replacement (Fig. 201)

S 012-077
(1) Pull the release handles, to open the doors of the nose landing gear.

NOTE: The release handles are in the nose wheel well.

S 492-078
(2) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

S 862-079
(3) Remove the pressure from the center hydraulic system (Ref 29-11-00).

S 862-080
(4) Deflate the shock strut of the nose landing gear.
(a) Remove the cap for the air valve.

WARNING: LOOSEN THE AIR VALVE NUT A MAXIMUM OF TWO TURNS. AIR PRESSURE CAN BLOW THE VALVE OFF AND CAN CAUSE INJURY TO PERSONS.

(b) Loosen the nut for the air valve two turns.
(c) Let the shock strut fully deflate.
(d) Install flexible hose on the air valve and put the other end of the hose in the drain bucket.
(e) Fully loosen the nut for the air valve.

S 492-081

CAUTION: CLEAN ALL THE HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY. HYDRAULIC FLUID CAN CAUSE DAMAGE TO THE TIRES.

(5) Install the drain equipment on the oil charging valve.

S 092-082
(6) Remove the drain equipment when all the oil has drained from the shock strut.

S 862-083
(7) Lift the airplane nose until you can see approximately 13 inches of chrome on the inner cylinder (Ref 07-11-02).

S 492-084
(8) Put the axle jacks below the nose landing gear.
(a) Lift the inner cylinder until you can see approximately 8 inches of chrome (Ref 07-11-03).

S 032-085
(9) Remove the lockplates of the gland nut (Fig 201, Detail B).

S 862-086
(10) Wind a cloth pad around the inner cylinder of the shock strut below the gland nut. This will prevent damage to the surface of the inner cylinder if the gland nut moves down.

S 032-087
(11) Use the gland nut wrench adapter to loosen the gland nut.

S 862-088
(12) Move the gland nut to the bottom of the inner cylinder.

S 862-089
(13) Move the scraper ring down the inner cylinder into the gland nut.

S 862-090
(14) Wind a cloth around the gland nut and the scraper ring to prevent damage to them.

S 492-091
(15) Install the seal protector.

S 432-092
(16) Put the rods into the seal adapter and tighten the rods with your hand.

S 432-093
(17) Put the collar assembly loosely around the inner cylinder.

NOTE: The collar assembly must be loose to let the inner cylinder move when you lift the axle.

(a) Install the knurled screws loosely into the rods.

S 862-094
(18) Lift the inner cylinder until there is approximately 0.5 inch between the gland nut and the knurled screws.

S 432-095
(19) Tighten the collar assembly around the inner cylinder.

S 432-096
(20) By hand, tighten the knurled screws into the rods.

S 432-097
(21) Install the strap around the bottom of the inner cylinder.

S 862-098

WARNING: MAKE SURE YOUR HANDS ARE NOT NEAR THE TOP OF THE SEAL ADAPTOR AND THE LOWER BEARING. THE LOWER CENTERING CAM CAN MOVE DOWN QUICKLY, AND CAN CAUSE INJURY TO PERSONS.

(22) Lower the inner cylinder to pull the seal adapter and the lower bearing out of the outer cylinder.

S 092-099
(23) Remove the axle jacks.

S 092-100
(24) Remove the strap from the inner cylinder.

S 092-101
(25) Remove the seal protector.

S 032-102
(26) Disconnect the torsion links at the apex (Ref 32-21-11).

S 032-151

(27) Remove the bolt to disconnect the lower end of the spring cartridge from the drive crank (Fig. 202). Hold the lower end of the spring cartridge back so it will not touch the drive crank when you move the nose landing gear forward.

S 012-103

CAUTION: HOLD THE AFT SIDE OF THE SHOCK STRUT WHEN YOU DISCONNECT THE DRAG STRUT FROM THE SHOCK STRUT. THE SHOCK STRUT CAN MOVE AFT WHEN YOU DISCONNECT IT FROM THE DRAG STRUT AND IT CAN CAUSE DAMAGE TO THE DOOR SENSORS FOR THE NOSE LANDING GEAR.

(28) Hold the aft side of the shock strut and remove the universal pin to disconnect the drag strut from the shock strut (Ref 32-21-03).

S 862-104

(29) Move the lower drag strut up and hold it out of the work area.

S 862-105

CAUTION: BE CAREFUL NOT TO CAUSE DAMAGE TO THE INNER CYLINDER. DAMAGE TO THE SURFACE OF THE CYLINDER CAN CAUSE DAMAGE TO THE SEALS.

(30) Hold the inner cylinder of the shock strut.

S 862-106

(31) Move the nose landing gear forward, on its tires, until the inner cylinder is removed from the outer cylinder.

S 862-107

(32) Hold the inner cylinder for the seal replacement.

F. Replace the Active and the Spare Seals

S 862-108

(1) Make sure the keys of the centering cam are not loose.

S 032-109

(2) Remove the pins to move the seal adapter and the lower bearing apart (Detail B).

S 862-110

(3) Move the backup rings (4 and 5) away from the active seals (3 and 6).

S 212-111

(4) Examine the backup rings.
(a) Replace the backup rings if it is necessary.

NOTE: The backup rings for the active dynamic seal are two piece sets.

S 032-112

CAUTION: BE CAREFUL NOT TO CAUSE DAMAGE TO THE INNER CYLINDER. DAMAGE ON THE SURFACE OF THE CYLINDER, CAN CAUSE DAMAGE TO THE SEALS AND THE CENTERING CAMS.

(5) Cut the active static (3) and the active dynamic (6) seals. Use a plastic tool and a backup strip to prevent damage to the inner cylinder.
   (a) Remove the seals from the inner cylinder.

S 642-113

(6) Apply a thin layer of hydraulic fluid and petrolatum to the seals and backup rings.

NOTE: The backup rings of the active dynamic seal are two piece sets.

S 862-114

(7) Move the new active dynamic seal (6) down the inner cylinder.
   (a) Put the seal over the lower bearing and into the inner groove behind the seal adapter.

NOTE: Do not extend the seals more than necessary for the installation.

   (b) Put the backup rings (5) adjacent to the seal.

S 862-115

(8) Put the ram assembly around the inner cylinder between the lower bearing and the dynamic seal.

S 492-116

(9) Install the slide hammers on the ram assembly.

S 862-117

(10) Move the ram assembly down to push the dynamic seal into the correct position behind the seal adapter.

S 092-118

(11) Remove the ram assembly.

S 092-119

(12) Remove the slide hammers.

S 862-120
(13) Move the seal adapter and the lower bearing together.

S 432-121
(14) Install the pins of the seal adapter to connect the seal adapter and the lower bearing.

S 862-122
(15) Move the new active static seal (3) down the inner cylinder into the outer groove in the seal adapter.

S 432-123
(16) Install the backup rings (4).

S 862-124
(17) Move the two new spare static seals (2) down the inner cylinder into the correct grooves in the lower bearing.

S 862-125
(18) Move the two new spare dynamic seals (1) down the inner cylinder into the correct grooves in the lower bearing.

S 032-126
(19) Remove the O-ring (7) from the upper bearing.

S 432-127
(20) Install a new O-ring (7) on the upper bearing.

S 412-128

CAUTION: BE CAREFUL WHEN YOU INSTALL THE INNER CYLINDER INTO THE OUTER CYLINDER. YOU CAN CAUSE DAMAGE TO THE UPPER AND LOWER BEARINGS AND TO THE SURFACE OF THE INNER CYLINDER.

(21) Put the inner cylinder in the correct position for the installation.

NOTE: Make sure the lower centering cam is in the correct position. The hole in the cam must be aligned with the oil charging valve.

(a) Move the nose landing gear aft.
(b) Put the nose landing gear into the outer cylinder.

S 412-129
(22) Install the universal pin to connect the drag strut to the shock strut (Ref 32-21-03).

S 432-152
(23) Install the bolt to connect the lower end of the spring cartridge to the drive crank (Fig. 202).

G. Put the Airplane Back to Its Usual Condition

S 822-130
(1) Align the cam keys in the lower centering cam with the slots in the outer cylinder. Use the positioner of the lower seal replacement equipment.

S 092-131
(2) Remove the knurled screws, the collar assembly, and the rods.

S 492-132
(3) Put the ram assembly around the inner cylinder below the seal adapter.

S 492-133
(4) Install the slide hammers on the ram assembly.

S 862-134
(5) Move the ram assembly up to push the lower bearing into the outer cylinder.

S 092-135
(6) Remove the ram assembly and the seal protector.

S 642-177
(7) For gland nuts with a lube fitting installed, apply grease to the threads of the gland nut.

S 622-178
(8) For gland nuts without a lube fitting installed, do the steps that follow:
   (a) Remove the grease from the threads on the gland nut and the mating threads on the outer cylinder.
   (b) Apply a thin layer of corrosion inhibitive compound to the threads on the gland nut.
   (c) Apply a thin layer of corrosion inhibitive compound to the threads on the outer cylinder that will mate with the gland nut threads.

S 862-137
(9) Move the gland nut and the scraper ring up the inner cylinder.

NOTE: Use the illustration to make sure the orientation of the scraper ring is correct.

S 432-138
(10) Use the gland nut wrench adapter to tighten the gland nut.
   (a) Tighten the gland nut to 125-150 pound-feet. Loosen the gland nut to align the nearest slot with the hole through the steering nut and the outer cylinder.

S 432-139
(11) Install the lockplates for the gland nut.

S 432-140
(12) Install the lockwire.

S 392-141
(13) Apply the sealing compound to the gland nut.

S 412-142
(14) Connect the upper and the lower torsion links at the apex (Ref 32-21-11).

S 412-143
(15) Install the oil charging valve.

S 432-144
(16) Tighten the valve body to 22-25 pound-feet.

S 642-196

CAUTION: DO NOT OVER LUBRICATE THE GLAND NUT. USE MINIMUM PRESSURE ON THE HANDPUMP TO APPLY THE GREASE. APPLY THE EQUIVALENT OF 3-5 PUMPS OF A MEDIUM SIZE GREASE GUN. OVER LUBRICATION OR EXCESSIVE LUBE PRESSURE CAN CAUSE DAMAGE TO THE SCRAPER RING AND/OR SEALS.

(17) Lubricate the gland nut at the grease fittings.

S 862-146
(18) Lift the nose of the airplane (Ref 07-11-02).
(a) Make sure the length of the shock strut is 16.20 inches when the shock strut is fully extended.

S 642-147
(19) Apply hydraulic fluid to the section of the inner cylinder you can see.

S 862-148
(20) Lower the nose of the airplane and remove the jack (Ref 07-11-02).

S 612-149
(21) Do the servicing of the shock strut for the nose landing gear (Ref 12-15-02).

S 412-150
(22) Manually close the doors of the nose landing gear.

TASK 32-21-25-202-155

4. Inspect the Nose Landing Gear Shock Strut for Microcracks

A. General

(1) You can see microcracks (chicken-wire cracks) on the chrome plating on large diameter parts when you look at these parts with an oblique light source. You can use a flashlight to look for these cracks. Frequently change the angle that you look at the surface to make sure you can see the cracks if they are there.

B. Consumable Materials

(1) B00316 Solvent - TT-N-95
(2) A00964 Primer - BMS 10-11

C. References

(1) 32-00-20/201, Landing Gear Downlocks
(2) 32-21-01/401, Nose Gear

D. Access

(1) Location Zones
710 Nose Landing Gear (NLG)

E. Prepare for the Inspect Procedure.

S 862-156

(1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20/201).

S 162-157

(2) Clean the chrome plated area on the inner cylinder of the shock strut with solvent.

F. Inspect Procedure

S 212-158

(1) Do the steps that follow to visually inspect the chrome plated surface for chicken-wire cracks:
(a) Use a light source at an oblique angle to look at the chrome plated surface. You can use a flashlight for this check. Look at the surface from different directions to make sure you see cracks that are there.

NOTE: Do not use a magnifying glass to do this inspection.

(b) Use the sharp point of a dental explorer to go across the chrome plated surface. It is possible that you will feel a sharp drag or "catch" when you go over a crack with this method.
(c) If you find cracks, go to the next step. If you do not find cracks, go to step (6).

S 212-159

(2) Look for one or more of the conditions that follow to find evidence of corrosion under the chrome plating:
(a) Poor chrome adhesion.

(b) Bubbles in the chrome plating.
(c) Chrome plate that seems to "lift" from the steel surface.
(d) Chrome plate comes off in flakes when you feel the surface with the dental explorer.

S 022-160
(3) If you find evidence of corrosion under the chrome plating, do the steps that follow:
(a) Remove and replace the nose landing gear (Ref 32-21-01/401).
(b) When the landing gear is overhauled, the chrome must be stripped and replaced with new chrome.

S 352-161
(4) If you did not find evidence of corrosion, and the cracks were detectable by a sharp drag, or "catch" with the dental explorer, do the steps that follow:
(a) Do the temporary repair in Paragraph 5.
(b) Inspect the shock strut again within 3 weeks. If the area of cracks has grown larger, then remove and replace the nose landing gear (Ref 32-21-01/401). When the landing gear is overhauled, the chrome must be stripped and replaced with new chrome. If the area of cracks has not grown larger, then do the steps that follow:
1) Do the repair in Paragraph 5.
2) Continue to do the inspection every 3 weeks.
3) Remove and replace the nose landing gear within 3 months of the first inspection that found cracks.
4) When the landing gear is overhauled, the chrome must be stripped and replaced with new chrome.

S 352-162
(5) If you did not find evidence of corrosion, and the cracks were not detectable with a dental explorer, do the steps that follow:
(a) Do the repair in paragraph 5.
(b) Inspect the shock strut again within 6 months.
(c) If the area of cracks has grown larger, do the steps that follow:
1) Do the repair in paragraph 5.
2) Replace the nose landing gear within 6 months.
3) When the landing gear is overhauled, the chrome must be stripped and replaced with new chrome.
(d) If the area of cracks has not grown larger, do the steps that follow:
1) Do the repair in paragraph 5.
2) Inspect the strut every 6 months until the landing gear is scheduled for overhaul.
3) When the landing gear is overhauled, the chrome on the strut must be stripped and replaced with new chrome.

S 162-163
(6) If you did not find cracks in the visual inspection, do the steps that follow:
(a) Use a cheesecloth to apply a thick layer of primer to the chrome plated surface that is exposed.
(b) Before the primer can dry, remove the unwanted wet primer with a clean dry cloth.
(c) Let the primer cure for not less than 4 hours.

TASK 32-21-25-302-164

5. Temporary Repair for Microcracks on the Nose Landing Gear Shock Strut

A. Consumable Materials
(1) A00964 Primer - BMS 10-11

B. References
(1) 07-11-02/201, Jacking Airplane Nose

C. Access
(1) Location Zones
710 Nose Landing Gear (NLG)

D. Procedure

S 582-165
(1) Lift the nose of the airplane on jacks until the inner cylinder is fully extended (Ref 07-11-02/201).

S 352-166
(2) Do the steps that follow to put wipe-on primer (F-19.45) on the entire chrome plated surface that includes areas that do not show chicken-wire cracks:
(a) Use a cheesecloth to apply a thick layer of primer to the chrome surface.
(b) Before the primer can dry, remove the unwanted wet primer with a clean dry cloth.
(c) Let the primer cure for not less than 4 hours.

E. Put the Airplane Back to Its Usual Condition.

S 582-167
(1) Lower the nose of the airplane and remove the jacks (Ref 07-11-02/201).

TASK 32-21-25-202-169

6. Scraper Ring Inspection for Nose Landing Gear

A. Consumable Materials
(1) D00508 MIL-H-5606 Hydraulic Fluid (Recommended)

NOTE: This oil is the recommended fluid for servicing of the shock strut.

(2) D00509 MIL-H-6083 Hydraulic Fluid (Alternate)

NOTE: You can use this fluid with MIL-H-5606 and you can use it as an alternative for MIL-H-5606.

B. References
(1) 32-00-20/201, Landing Gear Downlocks

C. Access
(1) Location Zones
711 Nose Landing Gear

D. Prepare for the Inspect Procedure.

S 862-170
(1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20/201).

E. Inspect Procedure

S 212-171
(1) Visually examine the chrome surface of the inner cylinder before you clean it.

NOTE: If you find vertical streaks of fluid or accumulated debris on the chrome surface, it means that part of the scraper ring is defective.

S 162-174
(2) Wipe the chrome surface that is visible on the inner cylinder with a rag that is soaked with shock strut fluid. Do this to remove any abrasive material that is collected on the inner cylinder. Remove the debris in a downward motion. This will make sure you do not push debris into the shock strut when you wipe the inner cylinder.

S 212-194
(3) Make sure the scraper ring is in the installed position. Normal operation can force the scraper ring down the inner cylinder. Sometimes you can see the scraper ring below the gland nut (Figure 201).

NOTE: A mirror and flashlight can help you to examine the scraper ring. Put the mirror below the outer cylinder and against the inner cylinder to see the condition and position of the scraper ring.

S 362-173
(4) If one of the two inspections finds a fault with the scraper ring, replace the scraper ring (AMM 32-21-25/201).

NOTE: The inner cylinder must be removed from the outer cylinder of the shock strut to replace the scraper ring.

TASK 32-21-25-202-179

7. Shock Strut Seal Leak Inspection

A. General

(1) This task gives the instructions to make sure a shock strut is serviceable when you find fluid leakage on the inner cylinder.

NOTE: During the initial landing cycles of a new landing gear, thin dark olive-green streaks on the shock strut frequently occur. This condition is okay. The petrolatum and grease that we use during shock strut assembly cause these streaks. These streaks will stop after more landing cyles occur. These streaks are different from the red color streaks that are the indication of strut fluid leakage.

B. References

(1) 05-51-01/201, Hard Landing or High Drag/Side Load Landing
(2) 09-11-00/201, Towing
(3) 12-15-02/301, Nose Gear Shock Strut
(4) 32-00-20/201, Landing Gear Downlocks

C. Access

(1) Location Zones

115/116	Nose Landing Gear Wheel Well
710	Nose Landing Gear (NLG)

D. Leak Check Procedure

S 492-180
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 212-181
(2) Inspect the shock struts for leakage.

S 792-182
(3) If you find leakage of the shock strut fluid on the inner cylinder, do the steps that follow to make sure the shock strut is serviceable:
(a) Wipe the surface of the inner cylinder with a clean cloth to remove all of the fluid from the leak.
(b) Monitor the inner cylinder where it meets the outer cylinder for 5 minutes.

(c) Make sure the extension of the inner cylinder does not change during this time.
(d) Make a record of the number of drops which come from the seals during the 5 minutes.
(e) Make a record of the location of the leak.
(f) Tow the airplane to cause movement between the inner cylinder and the outer cylinder (AMM 09-11-00/201).

NOTE: The minimum distance the airplane must be moved is two airplane lengths.

(g) Wipe the surface of the inner cylinder with a clean cloth to remove all of the fluid from the leak.
(h) Monitor the inner cylinder where it meets the outer cylinder for 5 minutes.
(i) Make sure the extension of the inner cylinder does not change during this time.
(j) Make a record of the number of drops which come from the seals during the 5 minutes.
(k) Make a record of the location of the leak.
(l) Calculate the average of the number of drops which came from the seals during both of the 5 minute measurements.

NOTE: If the average is less than 20 drops during the 5 minutes time, the shock strut is serviceable. If the leakage flows continuously the shock strut is not serviceable. If the leakage is greater than 20 drops during the 5 minutes time, but does not flow continuously, you will need to examine the fluid level of the shock strut.

S 792-183
(4) If the leakage stopped, do the steps that follow:

CAUTION: A DEFLATED OR FLAT STRUT CAN CAUSE DAMAGE DURING LANDING. IF THE AIRPLANE LANDED WITH A DEFLATED OR FLAT STRUT, DO A HARD LANDING INSPECTION PER AMM 05-51-01/201 TO MAKE SURE THERE IS NO DAMAGE.

(a) Continue to monitor the strut for leakage on subsequent landings. If you see more signs of leakage, do the entire leak check procedure again.

NOTE: If you find a continuous leakage flow on subsequent landings the shock strut is not serviceable.

(b) If you do not find leakage on subsequent landings, examine the fluid level of the shock strut (AMM 12-15-02/301) within 3 days or 10 flight cyles. No additional action is necessary.

S 792-184

(5) If there was leakage but it was less than 20 drops during the 5 minute period, do the steps that follow:

NOTE: 20 drops is equal to 1.0 cc.

CAUTION: A DEFLATED OR FLAT STRUT CAN CAUSE DAMAGE DURING LANDING. IF THE AIRPLANE LANDED WITH A DEFLATED OR FLAT STRUT, DO A HARD LANDING INSPECTION PER AMM 05-51-01/201 TO MAKE SURE THERE IS NO DAMAGE.

(a) Continue to monitor the strut for leakage on subsequent landings until you replace the seals. If the leakage continues or increases, do the entire seal leak check procedure again.
(b) If you do not find leakage on subsequent landings, examine the fluid level of the shock strut (AMM 12-15-02/301) within 3 days or 10 flight cyles.
(c) Continue to monitor the fluid level of the shock strut (AMM 12-15-02/301) at no more than 3 day or 10 flight cycle intervals, until you replace the seals.

S 792-185

(6) If there was leakage that was more than 20 drops during the 5 minute period but not continuous, do the steps that follow:

NOTE: 20 drops is equal to 1.0 cc.

CAUTION: A DEFLATED OR FLAT STRUT CAN CAUSE DAMAGE DURING LANDING. IF THE AIRPLANE LANDED WITH A DEFLATED OR FLAT STRUT, DO A HARD LANDING INSPECTION PER AMM 05-51-01/201 TO MAKE SURE THERE IS NO DAMAGE.

(a) Examine the fluid level of the shock strut (AMM 12-15-02/302).
(b) Continue to monitor the fluid level of the shock strut after each flight until you replace the seals.

S 792-186

(7) If the fluid leaked continuously during the 5 minute period, the shock strut is not serviceable. You must replace the seals.

NOSE GEAR SHOCK STRUT INNER CYLINDER - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first removes the NLG Inner Cylinder. Task two installs the NLG Inner Cylinder.

TASK 32-21-26-024-001

2. NLG Inner Cylinder Removal
   A. Equipment
      (1) A32021-1 NLG Gland Nut Wrench Adapter
      (2) A32029-50 NLG Lower Seal Replacement Equipment
      (3) A32066-1 MLG/NLG Shock Drain Equipment
      (4) A32047-29 NLG Shock Strut Component Maintenance Equipment
      (5) PF55451-23 Landing Gear Shock Strut Servicing Cart
      (6) F70200-14 Landing Gear Shock Strut Inflator
      (7) Drain Bucket
   B. References
      (1) AMM 07-11-02/201, Jacking Airplane Nose
      (2) AMM 07-11-03/201, Airplane Axle Jacking
      (3) AMM 12-15-02/301, Nose Gear Shock Strut
      (4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (5) AMM 32-00-20/201, Landing Gear Downlocks
      (6) AMM 32-21-03/401, Nose Gear Drag Strut
      (7) AMM 32-21-05/401, Nose Gear Upper and Lower Drag Struts
      (8) AMM 32-21-11/401, Nose Gear Torsion Links
   C. Access
      (1) Location Zones
          115/116 Nose Landing Gear Wheel Well
          711 Nose Landing Gear

   D. Remove NLG Inner Cylinder

      S 014-002
      (1) Pull the release handles, to open the doors of the nose landing gear.

      NOTE: The release handles are in the nose wheel well.

      S 284-003
      (2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-004
      (3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 864-005

(4) Deflate the shock strut of the nose landing gear.
   (a) Remove the cap for the air valve.

   WARNING: LOOSEN THE AIR VALVE NUT A MAXIMUM OF TWO TURNS. AIR PRESSURE CAN BLOW THE VALVE OFF AND CAUSE INJURY TO PERSONS.

   (b) Loosen the nut for the air valve two turns.
   (c) Let the shock strut fully deflate.
   (d) Install flexible hose on the air valve and put the other end of the hose in the drain bucket.
   (e) Fully loosen the nut for the air valve.

S 484-006

CAUTION: CLEAN THE HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY. HYDRAULIC FLUID CAN CAUSE DAMAGE TO THE TIRES.

(5) Install the drain equipment on the oil charging valve. Drain the shock strut.

S 084-007

(6) Remove the drain equipment when all the oil has drained from the shock strut.

S 584-008

(7) Lift the airplane nose until you can see approximately 13 inches of chrome on the inner cylinder (AMM 07-11-02/201).

S 234-060

(8) Measure and record the distance that the lower surface of the gland nut extends below the lower surface of the outer cylinder.

   NOTE: The recorded measurement will be used to compare to the 2nd measurement made when the shock strut is assembled.

S 484-009

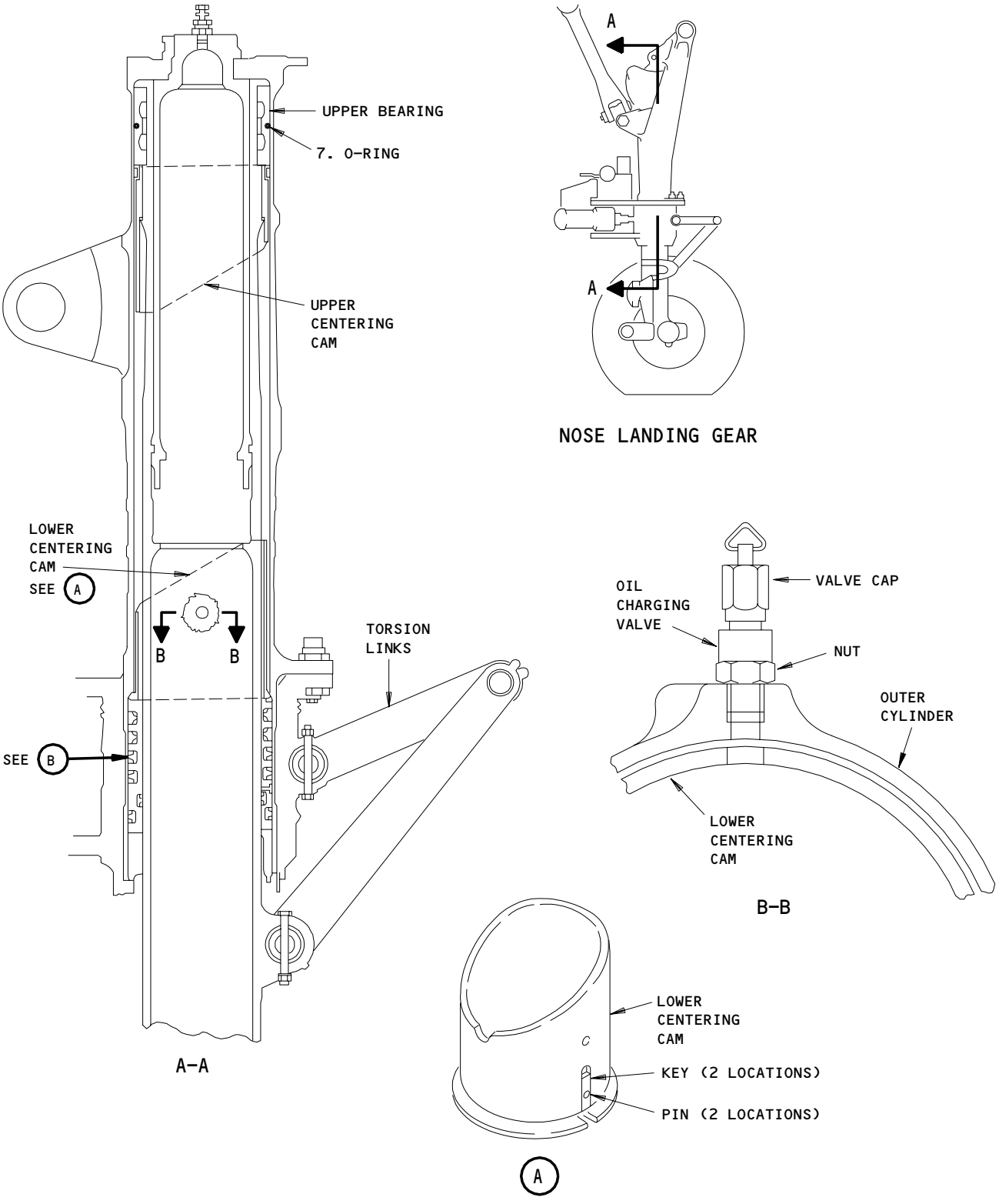
(9) Put the axle jacks below the nose landing gear.
   (a) Lift the inner cylinder until you can see approximately 8 inches of chrome (AMM 07-11-03/201).

S 024-010

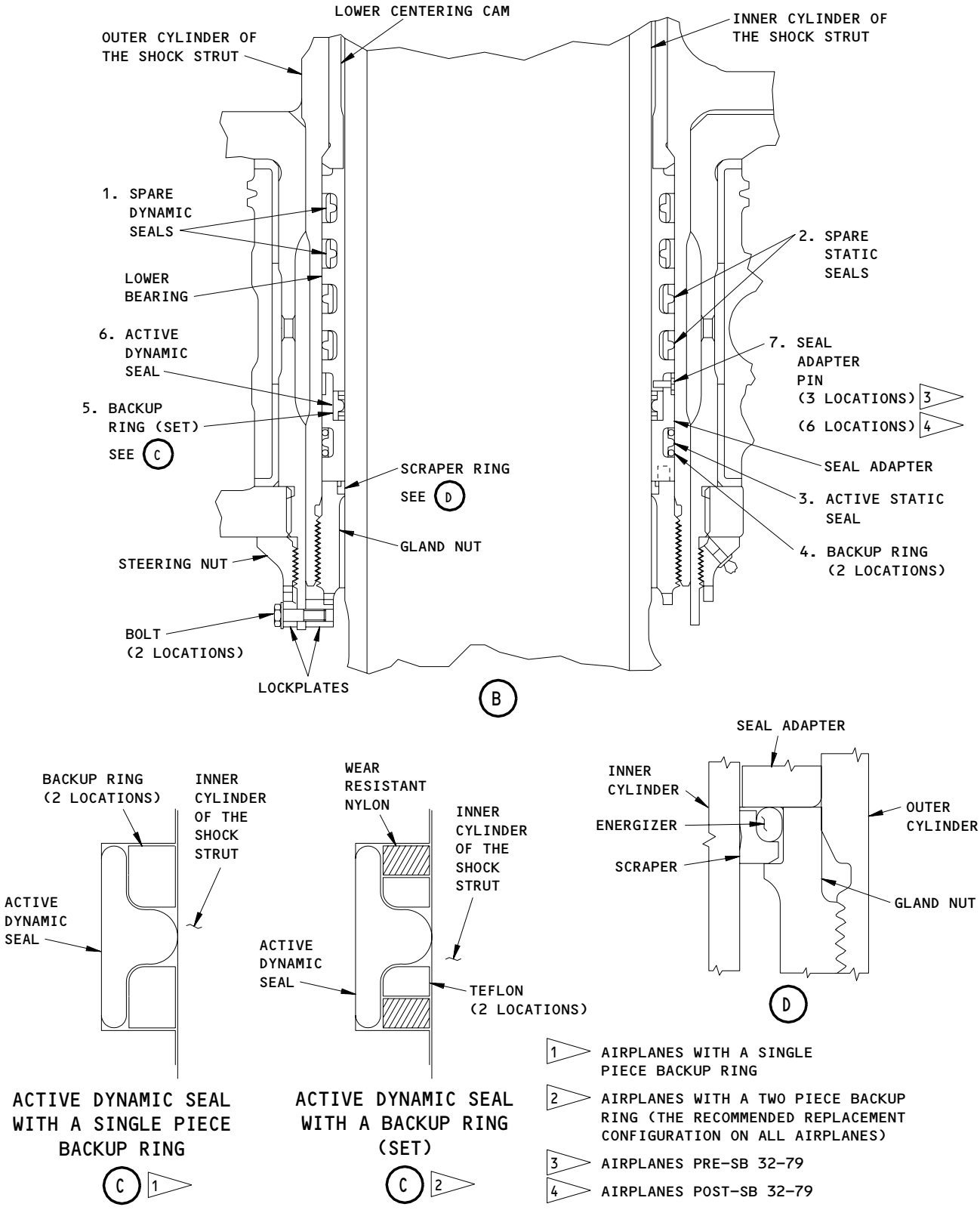
(10) Remove the lockplates of the gland nut (Fig 401, Detail B).

S 844-011

(11) Wind a cloth pad around the inner cylinder of the shock strut below the gland nut. This will prevent damage to the surface of the inner cylinder if the gland nut moves down.



NLG Shock Strut Inner Cylinder - Removal/Installation
Figure 401 (Sheet 1)



NLG Shock Strut Inner Cylinder - Removal/Installation
Figure 401 (Sheet 2)

S 024-012
(12) Use the gland nut wrench adapter to loosen the gland nut

S 844-013
(13) Move the gland nut to the bottom of the inner cylinder.

S 844-014
(14) Move the scraper ring down the inner cylinder into the gland nut.

S 844-015
(15) Wind a cloth around the gland nut and the scraper ring to prevent damage to them.

S 484-016
(16) Install the seal protector.

S 484-017
(17) Put the rods into the seal adapter and tighten the rods with your hand.

S 484-018
(18) Put the collar assembly loosely around the inner cylinder.

NOTE: The collar assembly must be loose to let the inner cylinder move when You lift the axle.

(a) Install the knurled screws loosely into the rods.

S 484-019
(19) Tighten the collar assembly around the inner cylinder.

S 484-020
(20) By hand, tighten the knurled screws into the rods.

S 484-021
(21) Install the strap around the bottom of the inner cylinder.

S 584-022

WARNING: MAKE SURE YOUR HANDS ARE NOT NEAR THE TOP OF THE SEAL ADAPTER AND THE LOWER BEARING. THE LOWER CENTERING CAM CAN MOVE DOWN QUICKLY AND CAN CAUSE INJURY TO PERSONS.

(22) Lower the inner cylinder to pull the seal adapter and the lower bearing out of the outer cylinder.

S 084-023
(23) Remove the axle jacks.

S 084-024
(24) Remove the strap from the inner cylinder.

S 084-025
(25) Remove the seal protector.

S 024-026
(26) Disconnect the torsion links at the apex (AMM 32-21-11/401).

S 024-029
(27) Remove the bolt to disconnect the lower end of the spring cartridge from the drive crank (Fig. 402). Hold the lower end of the spring cartridge back so it will not touch the drive crank when you move the nose landing gear forward.

S 024-027

CAUTION: HOLD THE AFT SIDE OF THE SHOCK STRUT WHEN YOU DISCONNECT THE DRAG STRUT FROM THE SHOCK STRUT. THE SHOCK STRUT CAN MOVE AFT WHEN YOU DISCONNECT IT FROM THE DRAG STRUT AND IT CAN CAUSE DAMAGE TO THE DOOR SENSORS FOR THE NOSE LANDING GEAR.

(28) Hold the aft side of the shock strut and remove the universal pin to disconnect the drag strut from the shock strut (AMM 32-21-03/401).

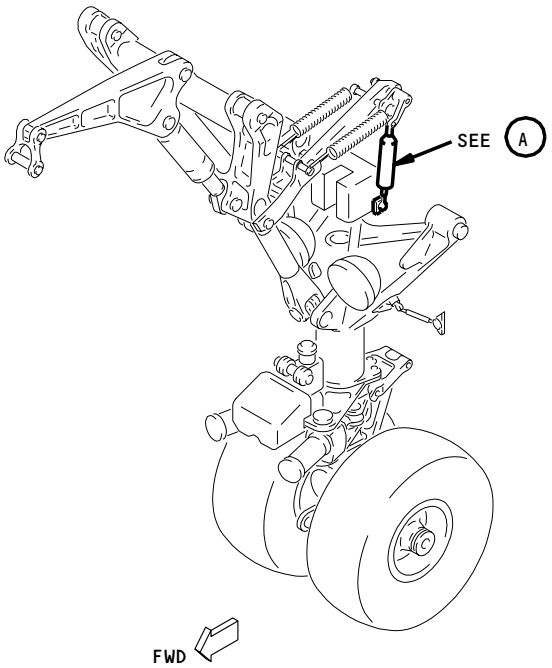
S 024-028
(29) Move the lower drag strut up and hold it out of the work area.

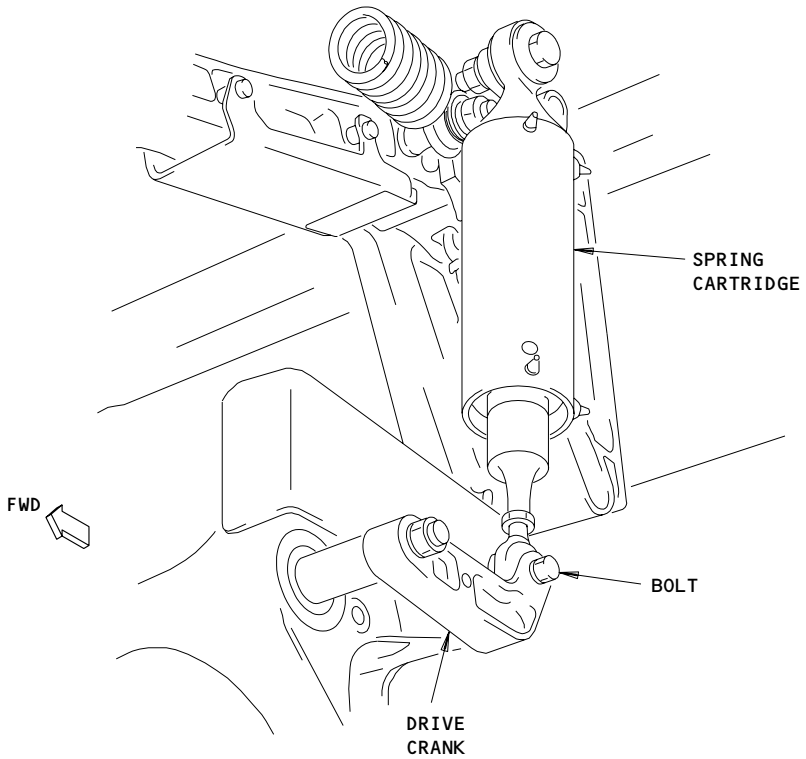
S 024-058

CAUTION: BE CAREFUL NOT TO CAUSE DAMAGE TO THE INNER CYLINDER. DAMAGE TO THE SURFACE OF THE CYLINDER CAN CAUSE DAMAGE TO THE SEALS.

(30) Hold the inner cylinder of the shock strut.

S 024-030
(31) Move the nose landing gear forward, on its tires until the inner cylinder is removed from the outer cylinder.





Location of the Spring Cartridge for Nose Wheel Steering
Figure 402

S 024-062

(32) If necessary, slide the retainer ring adapter into the inner cylinder and remove the metering pin with the retainer nut wrench.

TASK 32-21-26-444-031

3. NLG Inner Cylinder Installation

A. Equipment

(1) A32021-1 NLG Gland Nut Wrench Adapter
(2) A32029-50 NLG Lower Seal Replacement Equipment
(3) A32066-1 MLG/NLG Shock Drain Equipment
(4) A32047-29 NLG Shock Strut Component Maintenance Equipment
(5) A32047-1 NLG Shock Strut Component Maintenance Equipment
(6) PF55451-23 Landing Gear Shock Strut Servicing Cart
(7) F70200-14 Landing Gear Shock Strut Inflator
(8) Drain Bucket

B. Consumable Materials

(1) G50136 Compound, Corrosion Inhibiting - BMS 3-38
(2) D00062 Grease - MIL-G-4343
(3) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827)
(4) D00106 Hydraulic Fluid - MIL-H-6083
(5) D00589 Lubricant, Hydraulic Assembly - AFS-682 (Recommended)
(6) D00128 Lubricant, Petrolatum - VV-P-236 (Alternative)
(7) A00226 Compound, Sealing - BMS 8-45

C. Prepare for NLG Inner Cylinder Installation

S 424-032

(1) If new seals are not installed on the NLG Inner Cylinder, install new seals (AMM 32-21-25/201).

S 424-063

(2) If the metering pin is not installed on the inner cylinder, then do these steps to install the metering pin:
(a) Slide the metering pin into the inner cylinder.
(b) Place the retainer ring inside the non-flanged end of the retainer ring adapter and slide the adapter into the inner cylinder.
(c) Slide the retaining ring adapter inside the retainer ring adapter assembly and push the retainer ring into place and remove the ring adapter.
(d) Install the metering pin nut and tighten the nut to 75-100 lb-ft with the retainer nut wrench and remove the ring adapter and nut wrench tools.

D. Install NLG Inner Cylinder

S 844-033
(1) Put the NLG Inner Cylinder in the correct position for installation.

NOTE: Make sure the lower centering cam is in the correct position. The hole in the cam must be aligned with the oil charging valve.

(a) Move the NLG Inner Cylinder aft.
(b) Put the inner cylinder into the outer cylinder.

S 424-035
(2) Install the universal pin to connect the drag strut to the shock strut (AMM 32-21-03/401).

S 424-034
(3) Install the bolt to connect the lower end of the spring cartridge to the drive crank (Fig. 402).

E. Put the Airplane Back to Its Usual Condition

S 424-036
(1) Align the cam keys in the lower centering cam with the slots in the outer cylinder. Use the positioner of the lower seal replacement equipment.

S 024-037
(2) Remove the knurled screws, collar assembly and the rods.

S 424-038
(3) Put the ram assembly around the inner cylinder below the seal adapter.

S 484-039
(4) Install the slide hammers on the ram assembly.

S 424-040
(5) Move the ram assembly up to push the lower bearing into the outer cylinder.

S 084-041
(6) Remove the ram assembly and the seal protector.

S 644-042
(7) For gland nuts with a lube fitting installed, apply grease to the threads of the gland nut.

S 644-043
(8) For gland nuts without a lube fitting installed, do the steps that follow:
(a) Remove the grease from the threads on the gland nut and the mating threads on the outer cylinder.
(b) Apply a thin layer of corrosion inhibitive compound to the threads on the gland nut.
(c) Apply a thin layer of corrosion inhibitive compound to the threads on the outer cylinder that will mate with the gland nut threads.

S 424-044
(9) Move the gland nut and the scraper ring up the inner cylinder.

NOTE: Use the illustration to make sure the orientation of the scraper ring is correct.

S 424-045
(10) Use the gland nut wrench adapter to tighten the gland nut.
(a) Tighten the gland nut to 125-150 pound-feet. Loosen the gland nut to align the nearest slot with the hole through the steering nut and the outer cylinder.

S 234-061
(11) Measure the distance that the lower surface of the gland nut extends below the lower surface of the outer cylinder.

NOTE: The distance measured must be equal to the distance recorded prior to gland nut removal, within +0.02 inch.

S 424-046
(12) Install the lockplates for the gland nut.

S 424-047
(13) Install the lockwire.

S 394-048
(14) Apply the sealing compound to the gland nut.

S 424-049
(15) Connect the upper and the lower torsion links at the apex (AMM 32-21-11).

S 424-050
(16) Install the charging valve.

S 424-051
(17) Tighten the valve body to 22-25 pound-feet.

S 644-059

CAUTION: DO NOT OVER LUBRICATE THE GLAND NUT. USE MINIMUM PRESSURE ON THE HANDPUMP TO APPLY THE GREASE. APPLY THE EQUIVALENT OF 3-5 PUMPS OF A MEDIUM SIZE GREASE GUN. OVER LUBRICATION OR EXCESSIVE LUBE PRESSURE CAN CAUSE DAMAGE TO THE SCRAPER RING AND/OR SEALS.

(18) Lubricate the gland nut at the grease fittings.

S 584-053
(19) Lift the nose of the airplane (AMM 07-11-02/201).
(a) Make sure the length of the shock strut is 16.20 inches when the shock is fully extended.

S 644-054
(20) Apply hydraulic fluid to the section of the inner cylinder you can see.

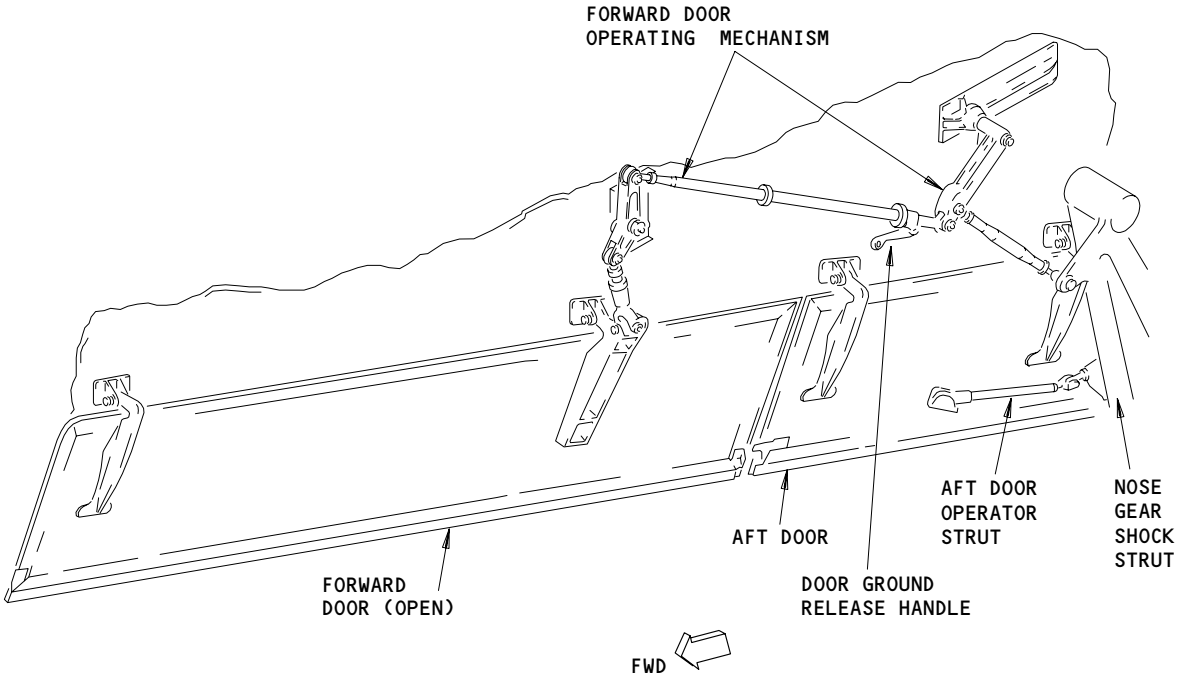
S 584-055
(21) Lower the nose of the airplane and remove the jack (AMM 07-11-02/201).

S 614-056
(22) Do the servicing of the shock strut for the nose landing gear (AMM 12-15-02/301).

S 414-057
(23) Manually close the doors of the nose landing gear.

NOSE GEAR DOORS - DESCRIPTION AND OPERATION

1. General
   A. The nose gear doors consist of two forward doors and two aft doors. Both sets of doors are mechanically operated by the gear. These doors are composite structures which cover the retracted nose gear during flight and fair into the contour of the airplane body to reduce aerodynamic drag.
2. Component Details (Fig. 1)
   A. Nose Gear Forward Doors
      (1) The forward doors attach to the outer edge of the nose wheel well by two hinges. The forward doors are mechanically operated by the nose gear. A three-rod bell crank and idler mechanism sequences movement of each door with respect to gear movement. The operating mechanisms attach to the aft hinges of the forward doors and to each side of the shock strut trunnion. The forward doors are sequenced so that they open while the gear is in transit and close when the gear is either locked up or locked down. A lock on each telescoping rod is manually released to open the forward doors for access to the nose wheel well during ground operations.



Nose Gear Doors
Figure 1

B. Nose Gear Aft Doors

(1) The aft doors attach to the outer edge of the nose wheel well by two hinges. The aft doors are mechanically operated by the nose gear also. A single rod attaches each aft door to the shock strut. The aft doors move with the gear, open when the gear is extended, and close when the gear is retracted.

NOSE GEAR FORWARD DOOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the forward doors of the nose landing gear. The second task installs the forward door of the nose landing gear and does a check for hinge movement.

   TASK 32-22-01-004-001

2. Remove the Forward Door of the Nose Landing Gear (Fig. 401)
   A. Equipment
      (1) Downlock, NLG - A32014-2
   B. References
      (1) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones

119/120	Control Cabin
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door

   D. Prepare to Remove the Forward Doors

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-057

      WARNING: MAKE SURE THE LANDING GEAR CONTROL LEVER IS IN THE OFF POSITION. IF THE DOORS COME OPEN THEY CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Make sure the landing gear control lever is in the OFF position and attach a DO-NOT-OPERATE tag.
   E. Remove the Forward Doors

      S 014-004
      (1) To open the forward doors of the nose landing gear, release the lock on rod 2 of the operating mechanisms.

      S 034-005
      (2) Remove the screw (15) to disconnect the bonding jumper from the forward hinge (View A-A).

S 034-006
(3) Remove the bolt (18) to disconnect the bonding jumper from the aft hinge (View B-B).

S 034-007
(4) Remove the bolts (1, 4, and 9) to remove the covers for the forward (3) and aft (11) door hinge.

S 034-008
(5) Remove the bolt (29) to disconnect the universal from the aft hinge (Detail C).

S 864-046
(6) Use a rope to hold the rod 3 out of the area.

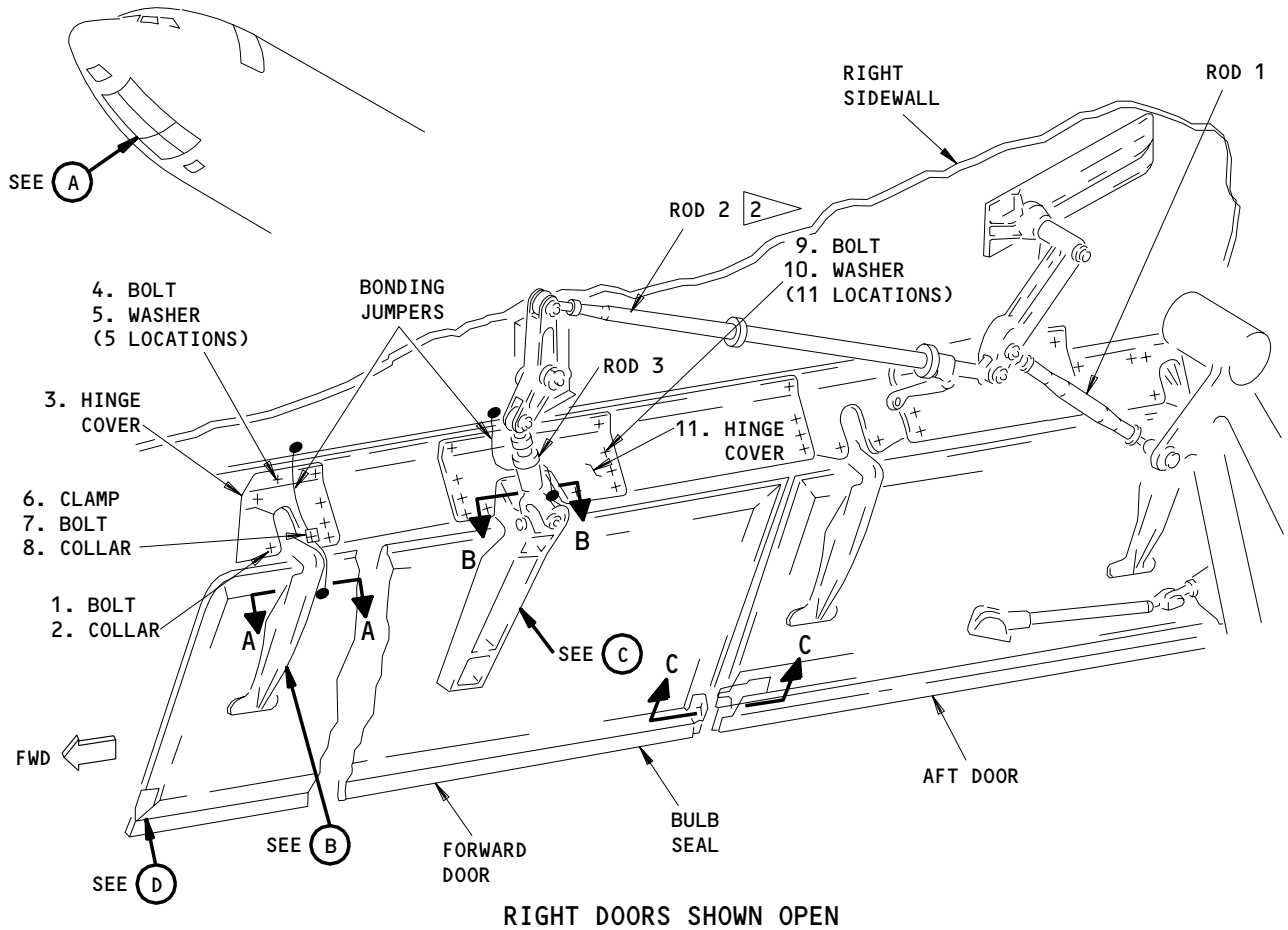
S 034-010
(7) Hold the forward door and remove the hinge bolt (21) to disconnect the forward hinge from the airplane (Detail B).

S 034-011
(8) Remove the hinge bolt (25) to disconnect the aft hinge from the airplane (Detail C).

S 024-012
(9) Remove the forward door (36).

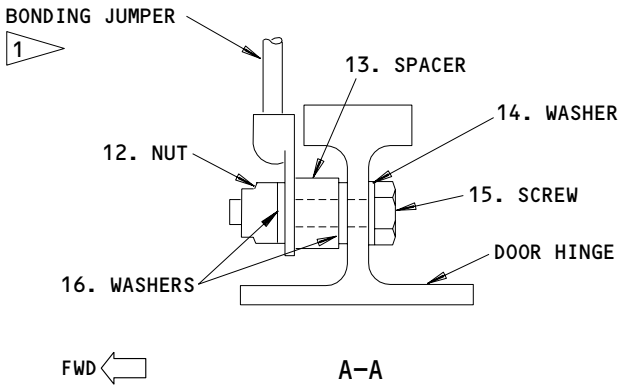
TASK 32-22-01-404-013

3. Install the Forward Door of the Nose Landing Gear (Fig. 401 and 402)
   A. Equipment
      (1) Downlock, NLG - A32014-2
   B. Consumable Materials
      (1) D00633 Grease - BMS 3-33 (Preferred)
      (2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
      (3) G50136 Compound, BMS 3-38 Corrosion Preventive

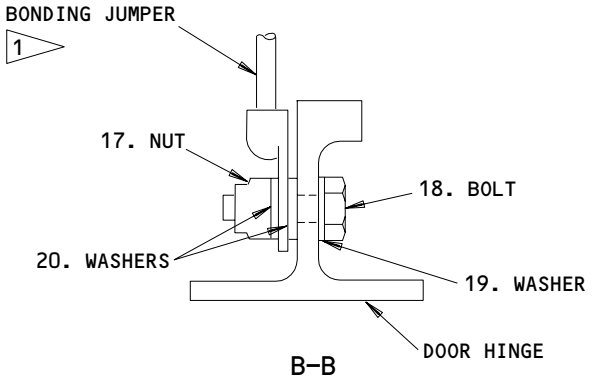


RIGHT DOORS SHOWN OPEN

A



A–A

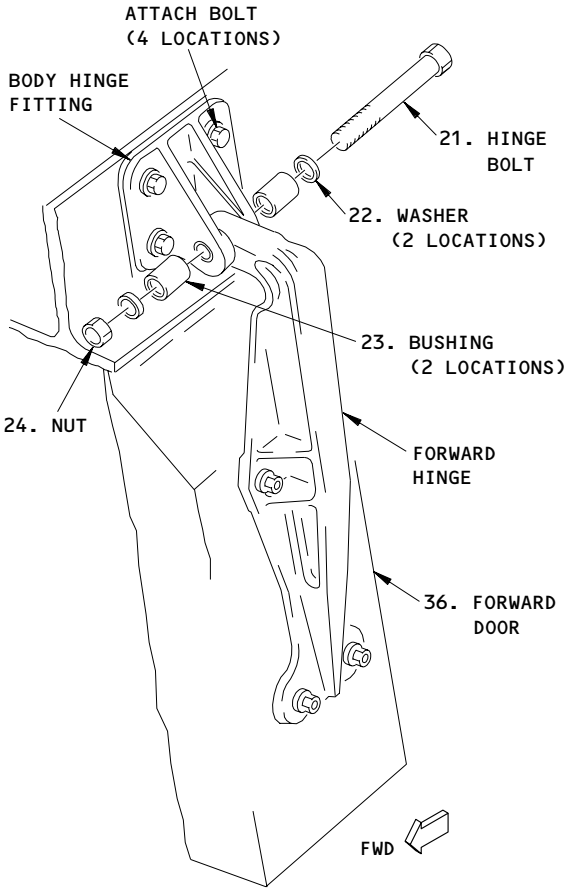


B–B

1 THE BLUE TERMINAL OF THE BONDING JUMPER MUST BE ATTACHED TO THE DOOR HINGE

2 MAKE SURE THE GREASE FITTING ON THE END OF ROD 2, NEAR THE BELLCRANK, IS IN THE UP POSITION.

Nose Landing Gear Forward Door Installation
Figure 401 (Sheet 1)



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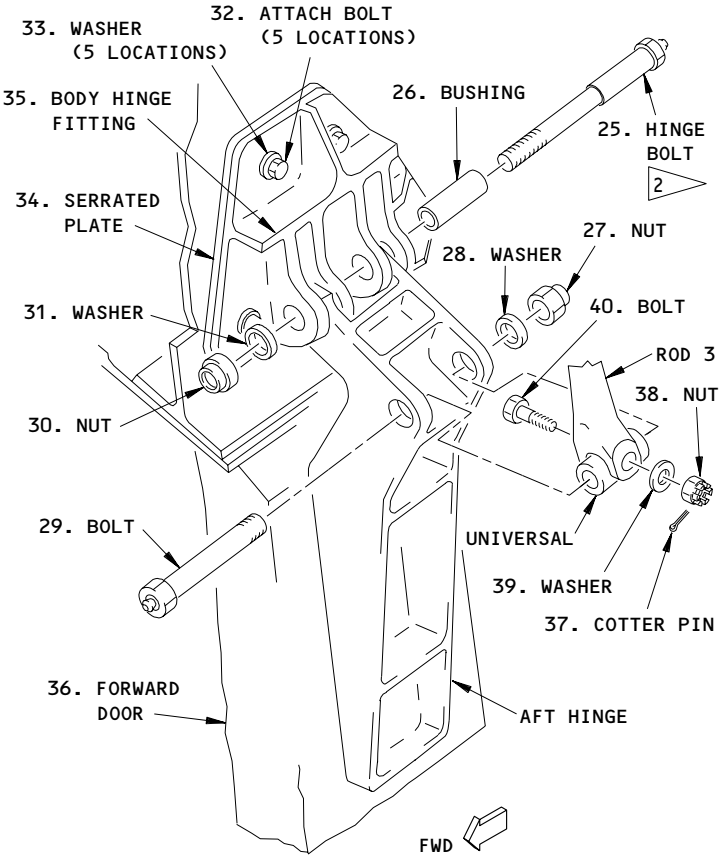

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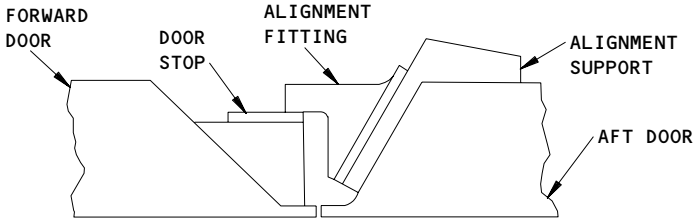
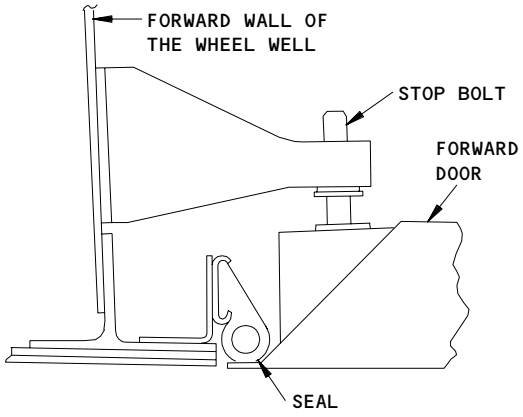


C–C



FORWARD STOP FITTING

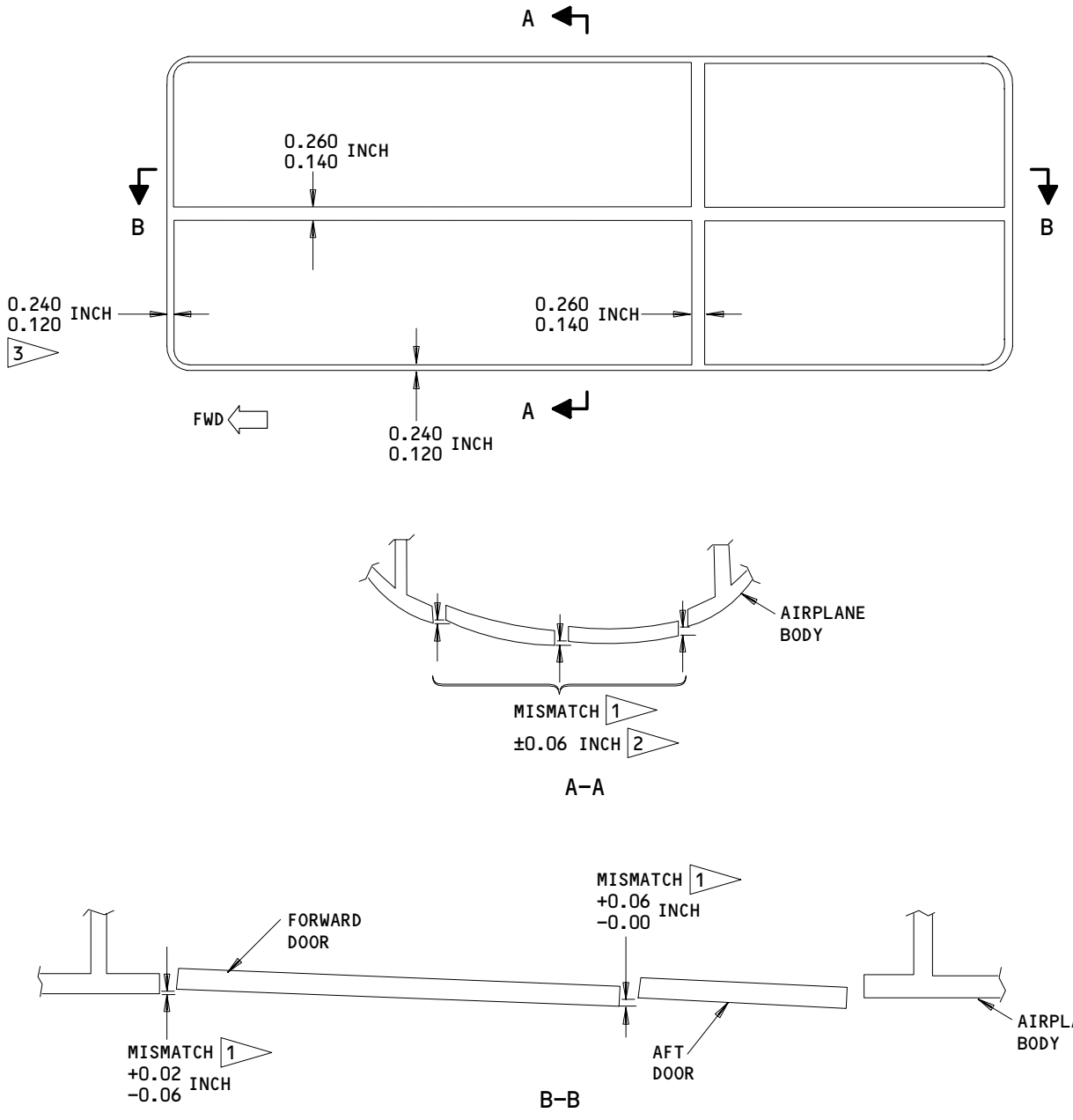
D

2 POSITION THE BOLT SO THE ZERK FITTING IS AFT

Nose Landing Gear Forward Door Installation
Figure 401 (Sheet 2)

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Bolt	53-16-01	01	500
	2	Collar			505
	3	Cover			545,550
	4	Bolt			480,485
	5	Washer			495
	6	Clamp	32-22-01	01	320
	7	Bolt			310
	8	Collar	53-16-01	01	505
	9	Bolt			475,480 485
	10	Washer			495
	11	Cover			565,570
	12	Nut	32-22-01	01	355
	13	Spacer			350
	14	Washer			345
	15	Screw			335
	16	Washer			340
	17	Nut			480
	18	Bolt			460
	19	Washer			475
	20	Washer			477
	21	Bolt			10
	22	Washer			15
	23	Bushing			25
	24	Nut			20
	25	Bolt			30
	26	Bushing			60



1 A POSITIVE TOLERANCE INDICATES THE DOOR IS OUTSIDE OF THE BODY CONTOUR, A NEGATIVE TOLERANCE INDICATES THE DOOR IS INSIDE OF THE BODY CONTOUR.

2 AT STATION 230, THE MISMATCH BETWEEN THE LEFT AND RIGHT DOOR CAN BE AS LARGE AS 0.12 INCH.

3 SAS 167;
THE TOLERANCE FOR THE FORWARD END OF THE LEFT FORWARD DOOR CAN BE 0.12 TO 0.26 INCH.

SAS 280;
THE TOLERANCE FOR THE FORWARD END OF THE LEFT FORWARD DOOR CAN BE 0.250 TO 0.30 INCH.

Nose Landing Gear Doors Gap and Mismatch
Figure 402

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401 (Cont'd)	27	Nut	32-22-02	01	150
	28	Washer			145
	29	Bolt			138
	30	Nut	32-22-01	01	55
	31	Washer			50
	32	Attach Bolts	53-16-01	01	60,65,70
	33	Washers			75,77
	34	Serated Plate			142,145
	35	Hinge Fitting			110,115
	36	Forward Door	32-22-01	01	490,495

D. References
(1) 07-11-02/201, Jacking Airplane Nose
(2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) 32-00-20/201, Landing Gear Downlocks
(4) 32-22-02/501, Nose Gear Forward Door Operating Mechanism
(5) 32-61-03/201, Nose Gear Proximity Sensors

E. Access
(1) Location Zones

119/120	Control Cabin
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door

F. Install the Forward Door

NOTE: A rigging check of the NLG door is not necessary if the same NLG door that was removed is reinstalled and no changes were made to the adjustment of the door stops, door seals, door hinges, or door pushrods. Thus, it is not necessary to jack the airplane.

S 414-014
(1) Manually close the other forward door for the nose landing gear.

S 584-015
(2) Lift the nose of the airplane to a sufficient height to permit the nose landing gear to retract (AMM 07-11-02/201).

S 094-016
(3) Remove the downlock from the nose landing gear (AMM 32-00-20/201).

NOTE: The downlock for the nose landing gear does not have to be put away.

S 864-017
(4) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 864-047

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Move the control lever for the landing gear to the UP position to retract the nose landing gear.

S 864-020
(6) Put the control lever to the OFF position and attach a DO-NOT-OPERATE tag.

S 494-021
(7) Install the downlock for the nose landing gear (AMM 32-00-20/201).

S 864-048
(8) Put the forward door (36) in the correct position for the installation.

S 434-023
(9) Apply grease to and install the hinge bolt (25), washer (31), bushing (26), and nut (30) to connect the aft hinge to the airplane.
(a) Tighten the nut to 220-280 pound-inches (Detail C, Fig. 401).

S 434-024
(10) Apply grease to and install the hinge bolt (21), washers (22), bushings (23), and nut (24) to connect the forward hinge to the airplane (Detail B).
(a) Adjust the fittings for the door hinge if it is necessary to install the bolt.

S 414-049
(11) Manually close the forward door.

S 824-026
(12) Make sure the mismatch between the door and structure along the outboard edge is in tolerance (View A-A, Fig. 402).

S 824-027
(13) If the mismatch is not in tolerance, do the steps that follow:
(a) Loosen the attach bolts for the hinge fitting (Detail B and C, Fig. 401).
(b) Lift or lower the hinge fittings if it is necessary, to get the mismatch in tolerance.

S 824-028
(14) Adjust the forward stop fitting (Detail D, Fig. 401) to get the mismatch between the door and structure along the forward edge in tolerance (View B-B, Fig. 402).

S 034-029
(15) Install the locking clip on the stop bolt after the adjustment.

S 824-030
(16) Adjust the alignment fitting on the aft door (View C-C, Fig. 401) to get the mismatch between the forward and aft doors in tolerance (View B-B, Fig. 402).

S 864-050
(17) Make sure there is a 0.02 - 0.07 inch gap between the bulb seals on the left and right forward doors when they are closed. Also make sure the seals are not compressed at any location along the entire length of the doors. If these two conditions are not satisfied, adjust the bulb seal between the left and right doors (AMM 32-22-02/501).

S 094-032

(18) Remove the downlock from the nose landing gear (AMM 32-00-20/201).

NOTE: It is not necessary to put the downlock for the nose landing gear away.

S 864-051

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(19) Move the control lever for the landing gear to the DN position to extend the nose landing gear.

S 494-034

(20) Install the downlock for the nose landing gear (AMM 32-00-20/201).

S 424-056

(21) Make sure the bolt (40) is secure and can rotate freely. If the bolt is damaged or can not rotate, do these steps:
(a) Remove the cotter pin (37), nut (38), washer (39) and bolt (40).
(b) Replace the bolt (40), if damaged, and clean the nut (38), washer (39) and bolt (40).
(c) Apply grease to the shank of the bolt (40).
(d) Apply compound to the threads of the nut (38) and the fay surfaces of the washer (39).
(e) Hold the universal in position on Rod 3 and install the bolt (40).
(f) Apply a thin layer of compound on the threads of the bolt (40).
(g) Install the washer (39) and nut (38).

(h) Tighten the nut (38) to 12-36 pound-inches.
(i) Loosen the nut (38) to the nearest position to install the cotter pin (37).

NOTE: Make sure the bolt (40) can rotate freely, if not, then loosen nut (38) to nearest position to allow the bolt to rotate.

(j) Install the cotter pin (37).
(k) Remove the excess compound.

S 434-035
(22) Apply grease to and install the bolt (29), washer (28), and nut (27) to connect the universal to the aft hinge.

G. Do a Check for Hinge Movement on the Aft Hinge of the Forward Door

S 864-052
(1) Apparent indications of hinge movement are as follows (Detail C):
(a) The attach bolts (32) and washers (33) are loose.
(b) The serrations on the hinge fitting (35) and the plate (34) are not aligned.

S 864-053
(2) If hinge movement is not apparent, do the steps that follow:
(a) Apply putty to the upper and lower edges of the hinge fitting.
(b) Manually close and open the forward door.
(c) Examine the putty for signs of hinge movement.

S 864-054
(3) If hinge movement is found, do the steps that follow:
(a) Remove the hinge.
(b) Make sure the serrations on the hinge fitting and plate are clean.
1) Make sure there is no damage to the serrations.
2) Make sure the serrations on the hinge fitting and plate attach together correctly.
(c) Install the hinge.

S 824-036
(4) Adjust the operating mechanism for the forward door of the nose landing gear (AMM 32-22-02/501).

S 584-037
(5) Lower the nose of the airplane and remove the jack (AMM 07-11-02/201).

S 864-038
(6) Remove the hydraulic power if it is not necessary (AMM 29-11-00/201).

S 434-039
(7) Install the bolts (1 and 4), collar (2), and washers (5) to connect the cover for the forward door hinge (3).

S 434-040
(8) Install the bolts (6) and washers (7) to connect the cover for the aft door hinge (8).

S 434-041
(9) Install the bolt (18), washers (19 and 20), and nut (17) to connect the cover for the bonding jumper to the aft hinge (View B-B).

S 434-042
(10) Install the screw (15), washers (14 and 16), spacer (13), and nut (12) to connect the bonding jumper to the forward hinge (View A-A).

H. Put the Airplane Back to Its Usual Condition

S 644-043
(1) Lubricate the door hinges at the grease fittings.

S 714-044
(2) Do a check of the proximity sensors for the doors of the nose landing gear (AMM 32-61-03/201).

S 414-045
(3) Manually close the forward doors of the landing gear.

NOSE GEAR FORWARD DOOR OPERATING MECHANISM - ADJUSTMENT/TEST

1. General
   A. This procedure contains two tasks. The first task adjusts the operating mechanisms and the bulb seals on the forward doors, this task requires the airplane to be on jacks. The second task adjusts the bulb seals on the forward doors with the airplane not on jacks.

TASK 32-22-02-825-001

2. Adjustment of the Operating Mechanism of the Forward Doors on the Nose Landing Gear
   A. Equipment
      (1) Downlock, NLG - A32014-2
      (2) Rig Pins from Set A2004-XX (Ref 20-10-24/201)
          (a) Rig Pin LDG1 - P/N A20004-26
   B. Consumable Materials
      (1) A00247 Sealant, Chromate Type - BMS 5-95
   C. References
      (1) 07-11-01/201, Jacking Airplane
      (2) 29-11-00/201, Main (Left, Right and Center) Hydraulic System
      (3) 32-00-20/201, Landing Gear Downlocks
      (4) 32-22-01/401, Nose Gear Forward Door
      (5) 32-61-03/201, Nose Gear Proximity Sensors
   D. Access
      (1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear (NLG)
713/714	NLG Forward Door

   E. Prepare to Adjust the Operating Mechanism of the Forward Doors

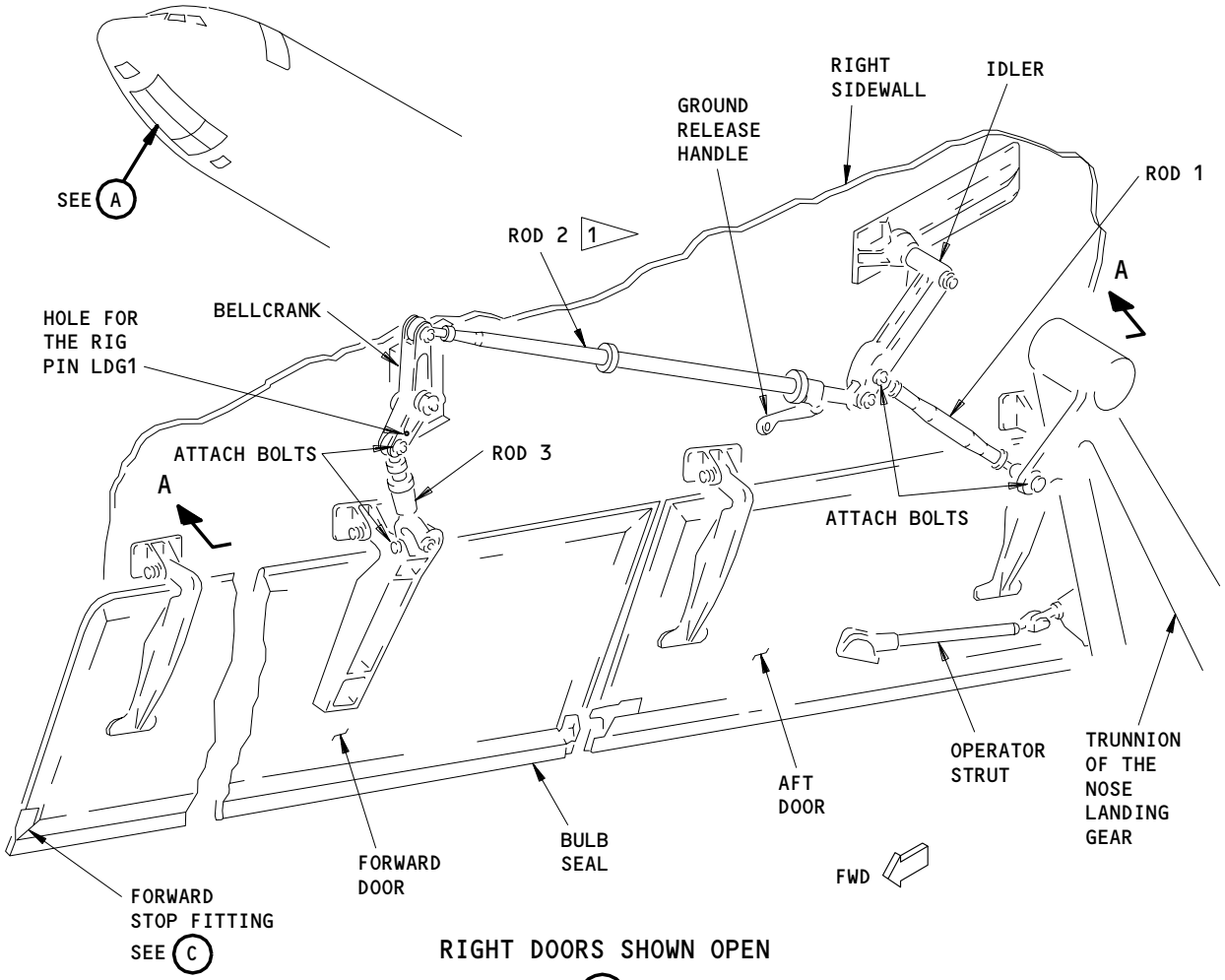
      NOTE: Wear limits, for the components in this procedure, are supplied in 32-22-02/601.

      S 495-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20/201).

      S 585-003
      (2) Lift the airplane until you can retract the nose landing gear (Ref 07-11-01/201).

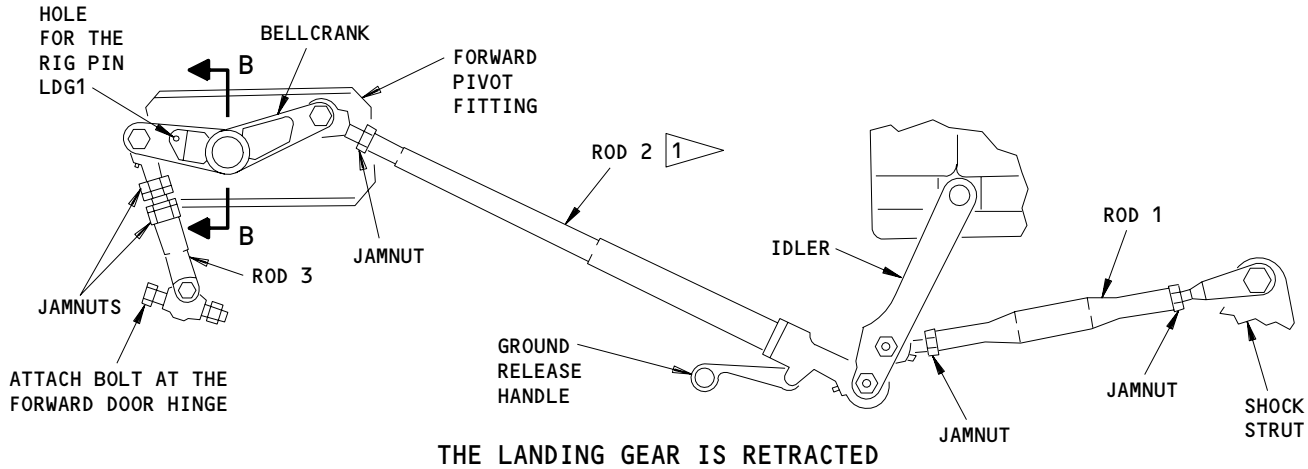
          NOTE: Jacking of the nose gear is not required if you need to adjust "only" the gap between the forward door bulb seals.

      S 825-004
      (3) Adjust the fair of the doors of the nose landing gear doors (Ref 32-22-01/401).



RIGHT DOORS SHOWN OPEN

A

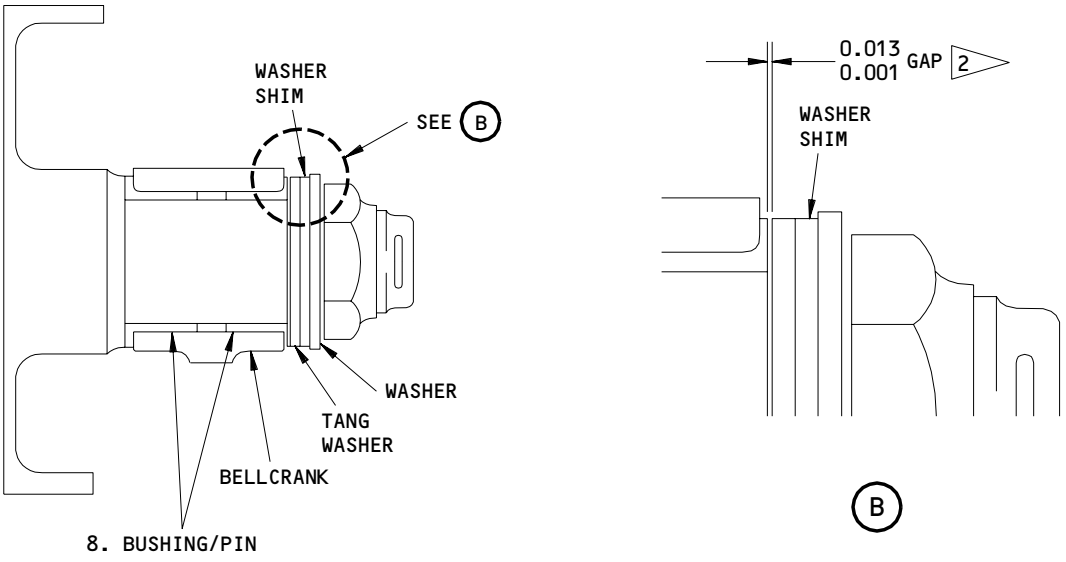


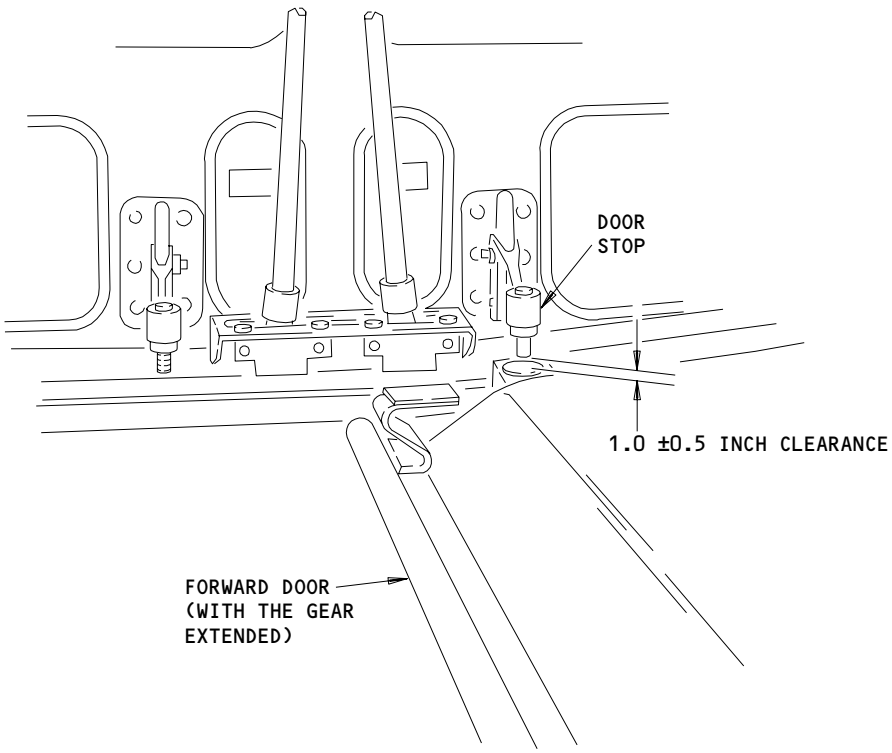
THE LANDING GEAR IS RETRACTED

A-A

1 MAKE SURE THE GREASE FITTING ON THE END OF ROD 2, NEAR THE BELLCRANK, IS IN THE UP POSITION.

Adjustment of the Operating Mechanism for the Forward Door of the Nose Landing Gear
Figure 501 (Sheet 1)





FORWARD STOP FITTING

C

2 DELAMINATE THE WASHER SHIM TO ATTAIN GAP

Adjustment of the Operating Mechanism for the Forward Door of the Nose Landing Gear
Figure 501 (Sheet 2)

S 015-005

(4) Pull the ground release handle on each side of the forward doors to open the doors.

F. Adjust the Operating Mechanism of the Forward Doors (Fig. 501)

S 865-006

(1) To adjust the initial length of rod 1, do the steps that follow:
   (a) Loosen the jamnuts on rod 1.
   (b) Adjust rod 1 until it is 18.75 +0.00 / -0.15 inches between the ball centers.
   (c) Tighten the jamnuts to 50-80 pound-feet but do not install the lockwire (View A-A).

S 865-007

(2) To adjust the length of rod 2, do the steps that follow:

NOTE: You can adjust the length of rod 2 on the left, and the right operating mechanism at the same time.

CAUTION: WHEN YOU DISCONNECT ROD 3 FROM THE HINGE ON THE FORWARD DOOR, MAKE SURE YOU TIE THE LOOSE END OF ROD 3 TO THE BELLCRANK. IF IT IS NOT SECURE, ROD 3 CAN CAUSE DAMAGE WHEN THE NOSE LANDING GEAR RETRACTS.

(a) Remove the bolt that attaches rod 3 to the forward door hinge.

NOTE: An alternative to rod 3 removal on the door that is already rigged is to attach a six foot lanyard to the release handle of rod 2 on that door. When the nose gear doors begin to cycle, pull on the lanyard to release the door and allow it to open.

(b) Tie the loose end of rod 3 to the bellcrank to make sure it is clear of the wheel well area. Put the forward door in position so it does not interfere with the landing gear during retraction.
(c) Do a check of the bellcrank washer gap (View B-B).
   1) If necessary, tighten the nut to 50-80 pound-feet.
(d) Turn the bellcrank to compress rod 2 until rod 2 latches.

CAUTION: MAKE SURE THE GREASE FITTING ON THE END OF THE ROD 2, NEAR THE BELLCRANK, IS IN THE UP POSITION. THE GREASE FITTING CAN CAUSE DAMAGE WHEN THE LANDING GEAR IS OPERATED.

(e) Adjust the length of rod 2 until you can install the rig pin LDG1 through the hole in the bellcrank and the engage hole in the forward pivot fitting.

NOTE: This is an initial adjustment which makes sure the bellcrank does not go overcenter when you retract the landing gear. The last adjustment of rod 2 is made when the landing gear is retracted.

(f) Tighten the jamnuts on rod 2 to 50-80 pound-feet (View A-A).
(g) Remove the rig pin.
(h) Remove the downlock from the nose landing gear (Ref 32-00-20/201).
(i) Pressurize the center hydraulic system (Ref 29-11-00/201).

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

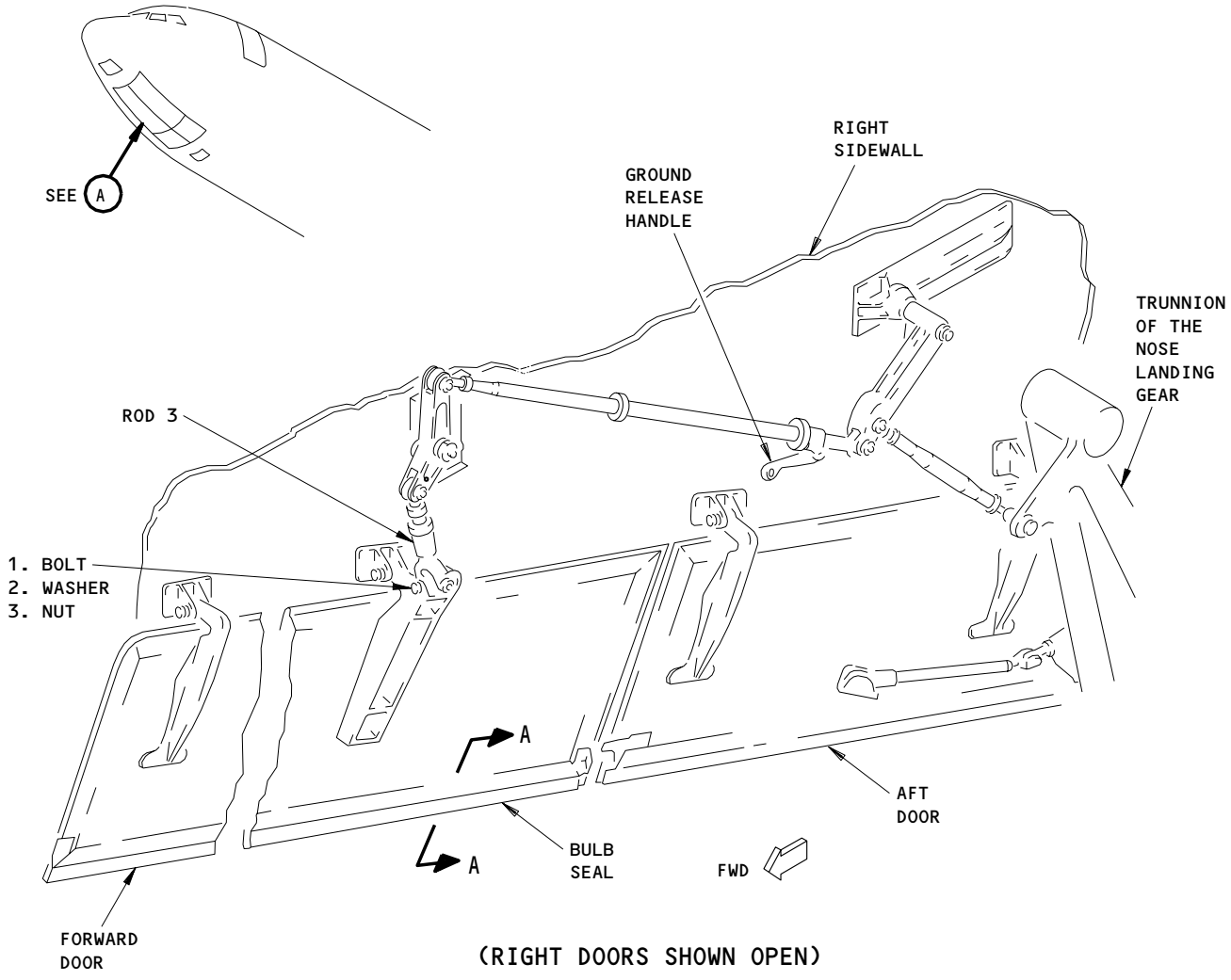
(j) Move the control lever for the landing gear to the UP position to retract the landing gear.
(k) Move the control lever for the landing gear to the OFF position.

CAUTION: MAKE SURE THE GREASE FITTING ON THE END OF THE ROD 2, NEAR THE BELLCRANK, IS IN THE UP POSITION. THE GREASE FITTING CAN CAUSE DAMAGE WHEN THE LANDING GEAR IS OPERATED.

(l) Adjust the length of rod 2 until you can install the rig pin LDG1 (View A-A).

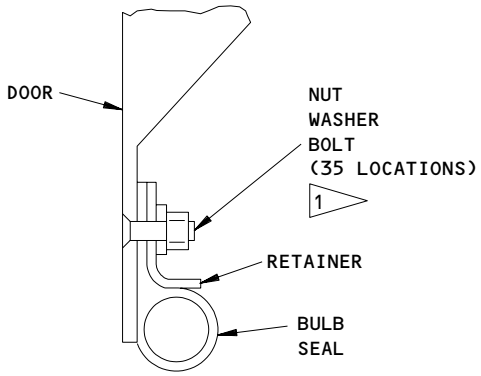
NOTE: This puts the bellcrank into the best position for operation.

(m) Remove the rig pin LDG1.
(n) Tighten the jamnut to 50-80 pound-feet but do not install the lockwire (View A-A).



(RIGHT DOORS SHOWN OPEN)

A



A-A

1 OPTIONAL WASHER CAN BE USED FOR ADJUSTMENT.

Adjustment of the Bulb Seal for the Forward Door of the Nose Landing Gear
Figure 502

F94674

S 865-008

(3) To adjust the length of rod 3, do the steps that follow for each door, one door at a time:
   (a) To connect the bellcrank to the door hinge with rod 3, do the steps that follow:
      1) Hold the door in the closed position.
      2) Install the bolt, bushings, washers, and nut.
      3) Tighten the bolt to 50-80 pound-feet. Loosen to the nearest locking position (Detail A).
      4) Install the cotter pin.
   (b) Loosen the jamnuts on rod 3 and make it shorter until the door touches the door stop.
   (c) Make a mark to show the position of rod 3 before you turn it more.

   CAUTION: DO NOT MAKE ROD 3 MORE THAN 1 TURN SHORTER. IF YOU PUT TOO MUCH LOAD ON THE DOORS, YOU CAN CAUSE DAMAGE TO THE DOORS OR THE OPERATING MECHANISM.

   (d) Make rod 3 shorter, a maximum of 1 turn, to give the door a load against the door stop.
   (e) Tighten the jam nuts on rod 3 but do not install the lockwires (View A-A).

S 825-024

(4) To adjust the bulb seal on the forward doors, do the steps that follow:
   (a) Check the bulb seals for damage or deformities and that the ends of the bulb seals have not filled with moisture or hardened, replace if necessary.
   (b) Manually close both forward NLG doors until they touch the door stops. Hold both doors in this closed position.
   (c) Make sure there is a 0.02 - 0.07 inch gap between the bulb seals on the left and right forward doors when they are closed. If the gap is not met along the entire length of the door, then do the steps that follow:

      NOTE: Record the areas where adjustment is necessary.

   (d) Open the forward NLG doors.
   (e) In the areas that need adjustment, do the steps that follow:
      1) Remove the sealant from the nuts that attach the bulb seals to the doors.

2) Loosen the nuts sufficiently to hold the bulb seal in position when moved for adjustment.

(f) Hold the doors in the closed position.

(g) Adjust the bulb seals so that the 0.02 - 0.07 inch gap is met along the entire length of the forward doors.

1) If you cannot get the necessary seal movement to do the adjustment, then do the steps that follow:

a) Replace the washers with the optional washers on both forward NLG doors. Reinstall the bulb seals with the nuts finger tight and do the adjustment task again.

b) BULB SEALS WITHOUT 0.50 INCH SLOTTED ATTACH POINTS; If the adjustment can not be accomplished with the optional washers. You can replace the bulb seal and retainer with the latest production parts or you can elongate the attach point holes on the bulb seal flange and retainer for both forward NLG doors. The holes can be elongated in the inboard direction a maximum of 0.10 inch (MT 53-001R3). Reinstall the bulb seals and retainers with the nuts finger tight and do the adjustment task again.

(h) Open the left forward NLG door and tighten the nuts on the bulb seal for the right forward NLG door.

(i) Hold both forward NLG doors closed and make sure the gap of 0.02 - 0.07 inch is met along the entire length of the forward NLG doors.

(j) Open the right forward NLG door and tighten the nuts on the bulb seal for the left forward NLG door.

(k) Open both doors and apply sealant to the nuts on the seal retainer.

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(l) Move the control lever for the landing gear to the DN position to extend the nose landing gear.

(m) Move the control lever for the landing gear to the OFF position.
(n) Install the downlock on the nose landing gear (Ref 32-00-20/201).

S 225-009
(5) To adjust the door droop, check the clearance between the door and the door stop (Detail C) with the steps that follow:

NOTE: An equal clearance between the door and the door stop for the two doors is good but it is not mandatory.

CAUTION: DO NOT INCREASE THE LENGTH OF ROD 3 BY MORE THAN ONE HALF TURN. THIS WILL DECREASE THE PRELOAD ON THE DOOR AND CAN CAUSE DAMAGE.

(a) If the clearance is not in tolerance, the length of rod 3 can be increased a maximum of a half turn.
(b) If the clearance is not in tolerance, do the steps that follow:
1) Adjust the length of rod 1.
a) If the clearance is larger than 1.5 inches, decrease the length of rod 1 by one turn.
b) If the clearance is less than 0.5 inch, increase the length of rod 1 by one turn.
2) Do all of the steps to adjust the length of rod 2 and the steps to put a load on the door again.
(c) If the clearance is in tolerance for the first door, do the steps that follow:
1) Pull the ground release handle to open the first door.
2) Remove rod 1 from the first operating mechanism but be careful not to change the length of rod 1.

NOTE: This step gives you access to rod 3 on the second door when the nose landing gear is retracted.

3) Do the steps to put a load on the door for the second door.

(d) If the clearance is in tolerance for each of the two doors, do the steps that follow:

1) Install rod 1 in the operating mechanism that was adjusted first.

a) Tighten the bolts to 50-60 pound-feet (Detail A).

b) Install the cotter pins.

S 415-010

(6) Manually close the doors for the nose landing gear.

S 095-011

(7) Remove the downlock from the nose landing gear (Ref 32-00-20/201).

S 865-012

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(8) Move the control lever for the landing gear to the UP position to retract the nose landing gear.

S 865-013

(9) Move the control lever for the landing gear to the DN position to extend the nose landing gear.

S 865-014

(10) Move the control lever for the landing gear to the OFF position.

S 495-015

(11) Install the downlock on the nose landing gear (Ref 32-00-20/201).

S 225-016

(12) Make sure the clearance between the doors and the door stops is correct (Detail C).

S 015-017
(13) Pull the two ground release handles to open the doors.

S 435-018
(14) Tighten the jamnuts to 50-80 pound-feet (View A-A).

S 435-019
(15) Install a lockwire on the jamnuts.

S 825-020
(16) Adjust the distance of the door closed sensor for the nose landing gear (Ref 32-61-03/201).

G. Put the Airplane Back to Its Usual Condition.

S 415-021
(1) Manually close the doors for the nose landing gear.

S 585-022
(2) Lower the airplane and remove the jacks (Ref 07-11-01/201).

S 865-023
(3) Remove the pressure from the hydraulic system, if it is not necessary (Ref 29-11-00/201).

TASK 32-22-02-825-026

3. Adjustment of the Bulb Seals of the Forward Doors on the Nose Landing Gear (Airplane not on Jacks)

A. Equipment
(1) Downlock, NLG - A32014-2

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(3) A00247 Sealant, Chromate Type - BMS 5-95

C. References
(1) 32-00-20/201, Landing Gear Downlocks

(2) 32-22-01/401, Nose Gear Forward Door

D. Access

(1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear (NLG)
713/714	NLG Forward Door

E. Prepare to Adjust the Bulb Seals of the Forward Doors

S 485-027

(1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20/201).

S 015-028

(2) Pull the ground release handle on each side of the forward doors to open the doors.

S 025-029

(3) Remove the bolt (1), washer (2), and nut (3) to disconnect rod 3 from the aft door hinge of both forward NLG doors (Fig. 502, Detail A).

F. Adjust the Bulb Seals of the Forward NLG Doors (Fig. 502)

S 215-034

(1) Check the bulb seals for damage or deformities and that the ends of the bulb seals have not filled with moisture or hardened, replace if necessary.

S 985-030

(2) Manually close both forward NLG doors until they touch the door stops. Hold both doors in this closed position.

S 225-031

(3) Make sure there is a 0.02 - 0.07 inch gap between the bulb seals on the left and right forward doors when they are closed. If the gap is not met along the entire length of the door, then do the steps that follow:

NOTE: Record the areas where adjustment is necessary.

(a) Open the forward NLG doors.

(b) In the areas that need adjustment, do the steps that follow:
1) Remove the sealant from the nuts that attach the bulb seals to the doors.
2) Loosen the nuts sufficiently to hold the bulb seal in position when moved for adjustment.
(c) Hold the doors in the closed position.
(d) Adjust the bulb seals so that the 0.02 - 0.07 inch gap is met along the entire length of the forward doors.
(e) If you cannot get the necessary seal movement to do the adjustment, then do the steps that follow:
1) Replace the washers with the optional washers on both forward NLG doors. Reinstall the bulb seals with the nuts finger tight and do the adjustment task again.
2) BULB SEALS WITHOUT 0.50 INCH SLOTTED ATTACH POINTS;
If the adjustment can not be accomplished with the optional washers. You can replace the bulb seal and retainer with the latest production parts or you can elongate the attach point holes on the bulb seal flange and retainer for both forward NLG doors. The holes can be elongated in the inboard direction a maximum of 0.10 inch (MT 53-001R3). Reinstall the bulb seals and retainers with the nuts finger tight and do the adjustment task again.
(f) Open the left forward NLG door and tighten the nuts on the bulb seal for the right forward NLG door.
(g) Hold both forward NLG doors closed and make sure the gap of 0.02 - 0.07 inch is met along the entire length of the forward NLG doors.
(h) Open the right forward NLG door and tighten the nuts on the bulb seal for the left forward NLG door.
(i) Open both doors and apply sealant to the nuts.

G. Put the Airplane Back to Its Usual Condition.

S 425-032

(1) To connect rod 3 to the aft hinge of both forward NLG doors, do the steps that follow:
(a) Apply grease to the bolt (1), washer (2), and nut (3).
(b) Position Rod 3 on the aft hinge of the forward NLG door.
(c) Install the bolt (1), washer (2), and nut (3).
(d) Tighten the nut (3) and install the cotter pin.

S 415-033

(2) Manually close the doors for the nose landing gear.

NOSE GEAR FORWARD DOOR OPERATING MECHANISM - INSPECTION/CHECK

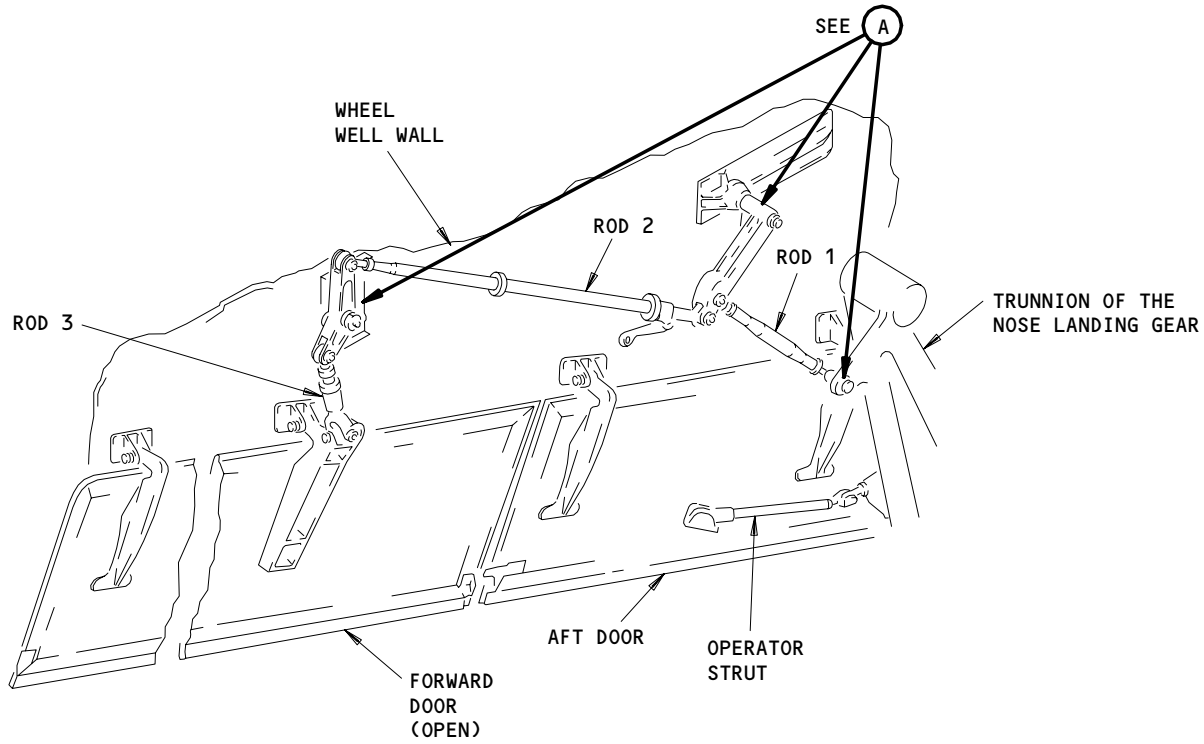
1. General
   A. This procedure only has an illustration and wear limit table which shows the data for the wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Aft Door Operator Rods - Removal/Installation for procedures to do these tasks.

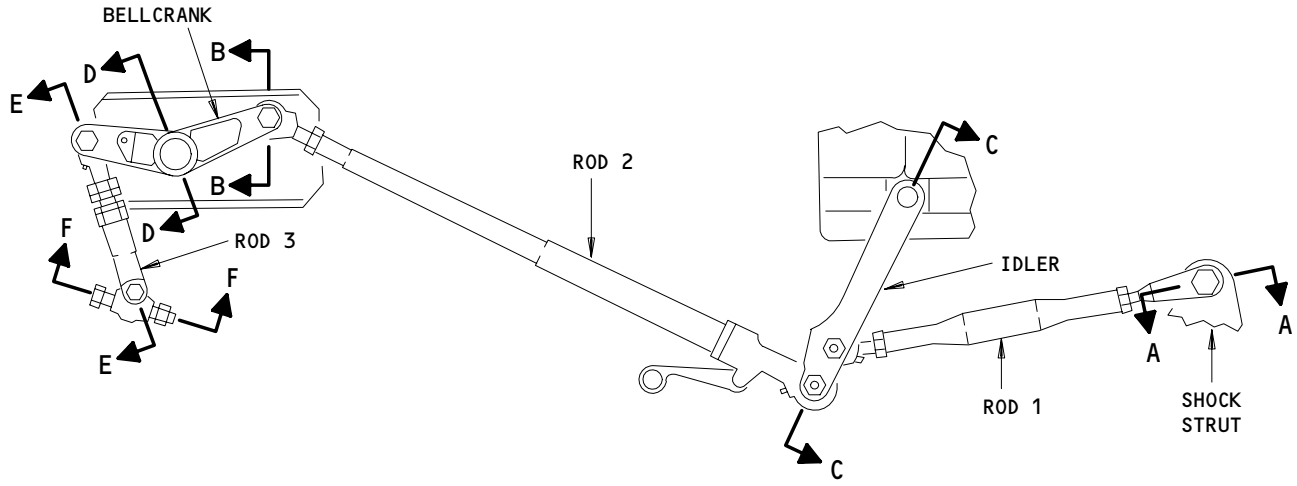
TASK 32-22-02-206-001

2. Wear Limits for the Operating Mechanism of the Forward Door on the Nose Landing Gear (Fig. 601)
   A. Wear Limits for the Operating Mechanism

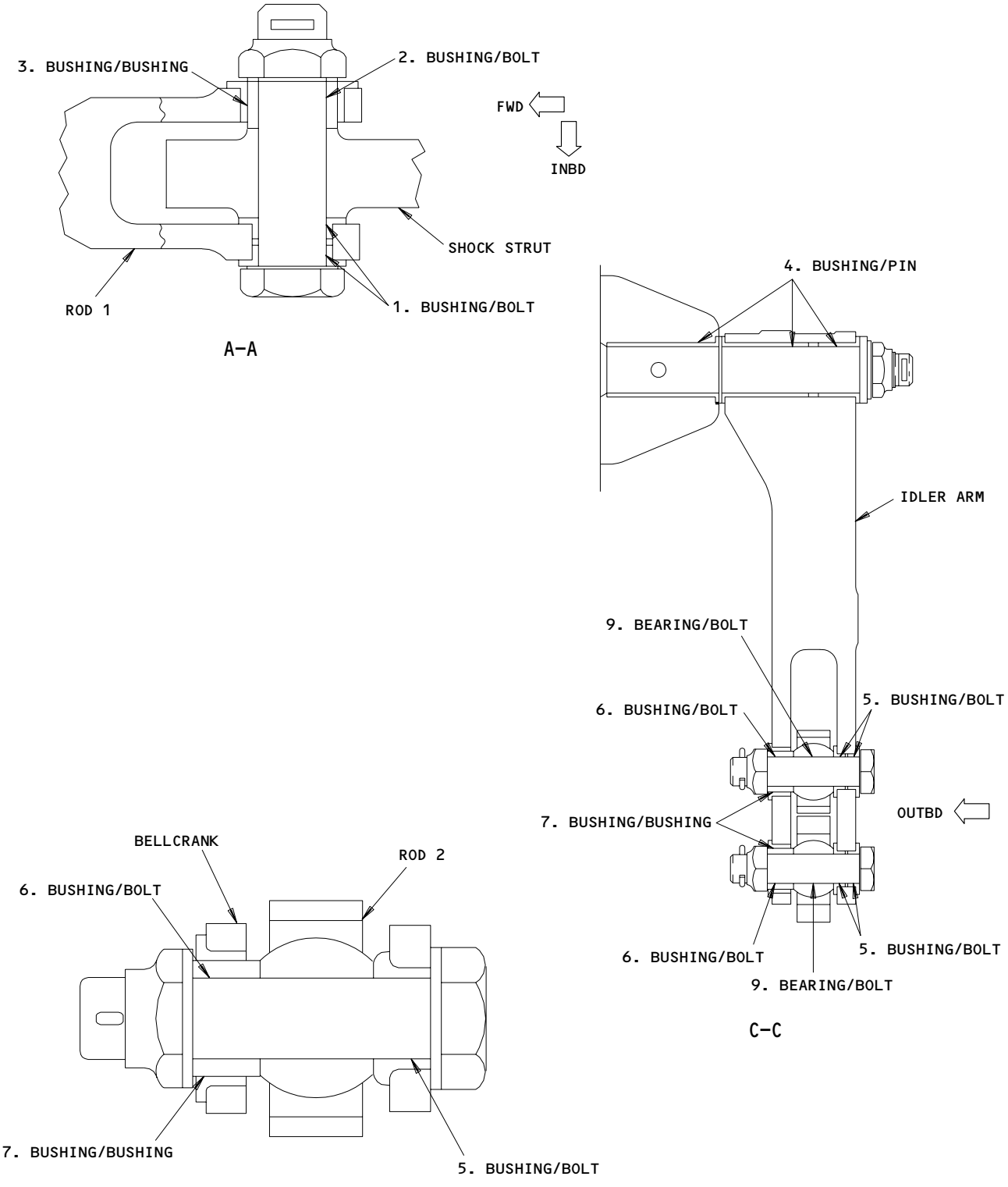
S 226-002

(1) Refer to Fig. 601 for the inspection points and the wear limits table.

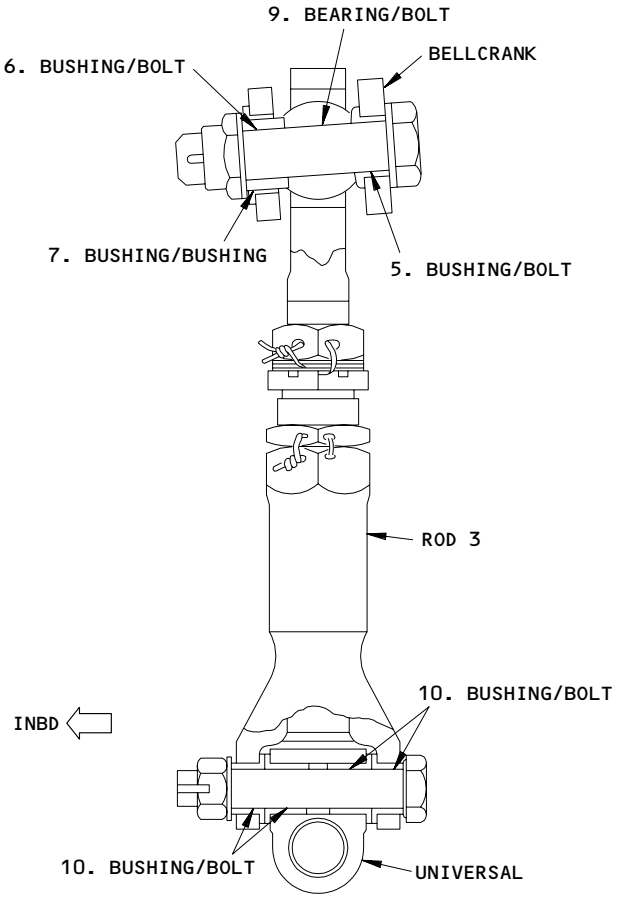




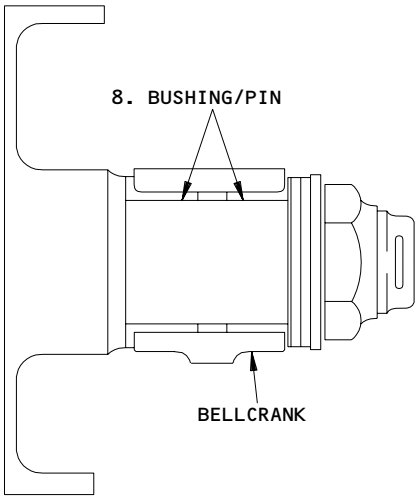
Wear Limits for the Operating Mechanism of the Forward Door on the Nose Landing Gear
Figure 601 (Sheet 1)



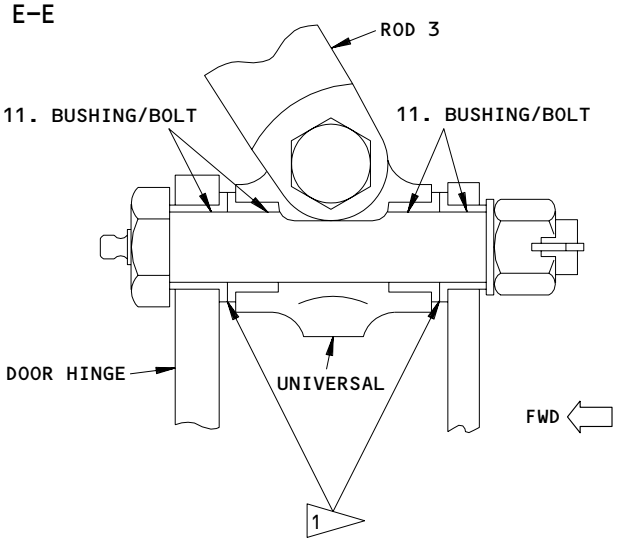
Wear Limits for the Operating Mechanism of the Forward Door on the Nose Landing Gear
Figure 601 (Sheet 2)



E-E



D-D



F-F

1 THE TOTAL MAXIMUM CLEARANCE PERMITTED IS 0.143 INCH.

Wear Limits for the Operating Mechanism of the Forward Door on the Nose Landing Gear
Figure 601 (Sheet 3)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
			DIAMETER		PER-MITTED WEAR DIM.	MAX DIA CLEAR-ANCE			
			MIN	MAX					
1	BUSHING	ID	0.7500	0.7515	0.7542	0.0052	X	X	
	BOLT	OD	0.7480	0.7490	0.7463		X		
2	BUSHING	ID	0.7495	0.7510	0.7537	0.0047	X		
	BOLT	OD	0.7480	0.7490	0.7463		X		
3	BUSHING	ID	1.0000	1.0015	1.0045	0.0055	X		
	BUSHING	OD	0.997	0.998	0.9960		X		
4	BUSHING	ID	1.0000	1.0015	1.0045	0.0050	X		
	PIN	OD	0.9985	0.9995	0.9965			X	1
5	BUSHING	ID	0.6250	0.6265	0.6291	0.0051	X		
	BOLT	OD	0.6230	0.6240	0.6214		X		
6	BUSHING	ID	0.6245	0.6260	0.6286	0.0046	X		
	BOLT	OD	0.6230	0.6240	0.6214		X		
7	BUSHING	ID	0.8750	0.8765	0.8794	0.0064	X		
	BUSHING	OD	0.8720	0.8730	0.8701		X		
8	BUSHING	ID	1.5000	1.5015	1.5049	0.0059	X		
	PIN	OD	1.4980	1.4990	1.4956			X	
9	BEARING	ID	0.6250	0.6254	0.6280	0.0040	X		
	BOLT	OD	0.6230	0.6240	0.6214		X		
10	BUSHING	ID	0.5000	0.5015	0.5039	0.0044	X		
	BOLT	OD	0.4985	0.4995	0.4971		X		
11	BUSHING	ID	0.6250	0.6265	0.6291	0.0046	X		
	BOLT	OD	0.6235	0.6245	0.6119		X		

1 THIS PART CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS.

Wear Limits for the Operating Mechanism of the Forward Door on the Nose Landing Gear
Figure 601 (Sheet 4)

NOSE GEAR AFT DOOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the aft doors of the nose landing gear. The second task installs the aft doors of the nose landing gear.

TASK 32-22-04-004-044

2. Remove the Aft Door of the Nose Landing Gear (Fig. 401)
   A. Equipment
      (1) Downlock, NLG - A32014-2
   B. References
      (1) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones

119/120	Control Cabin
711	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors

   D. Prepare to Remove the Aft Doors

S 494-002

      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

S 864-053

      WARNING: MAKE SURE THE LANDING GEAR CONTROL LEVER IS IN THE OFF POSITION. IF THE DOORS COME OPEN THEY CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Make sure the landing gear control lever is in the OFF position and attach a DO-NOT-OPERATE tag.
   E. Remove the Aft Doors

S 014-004

      (1) To open the forward doors of the nose landing gear, release the lock on rod 2 of the operating mechanisms.

S 034-005

      (2) Remove the bolt (15) to disconnect the bonding jumper from the forward hinge (View A-A).

S 034-006
(3) Remove the screw (20) to disconnect the bonding jumper from the aft hinge (View B-B).

S 034-007
(4) Remove the bolts (2, 4, 9, and 11) to remove the covers for the forward hinge (6) and the aft hinge (7) (Detail A).

S 034-008
(5) Remove the bolt (34) to disconnect the operator strut from the attach fitting (Detail D).

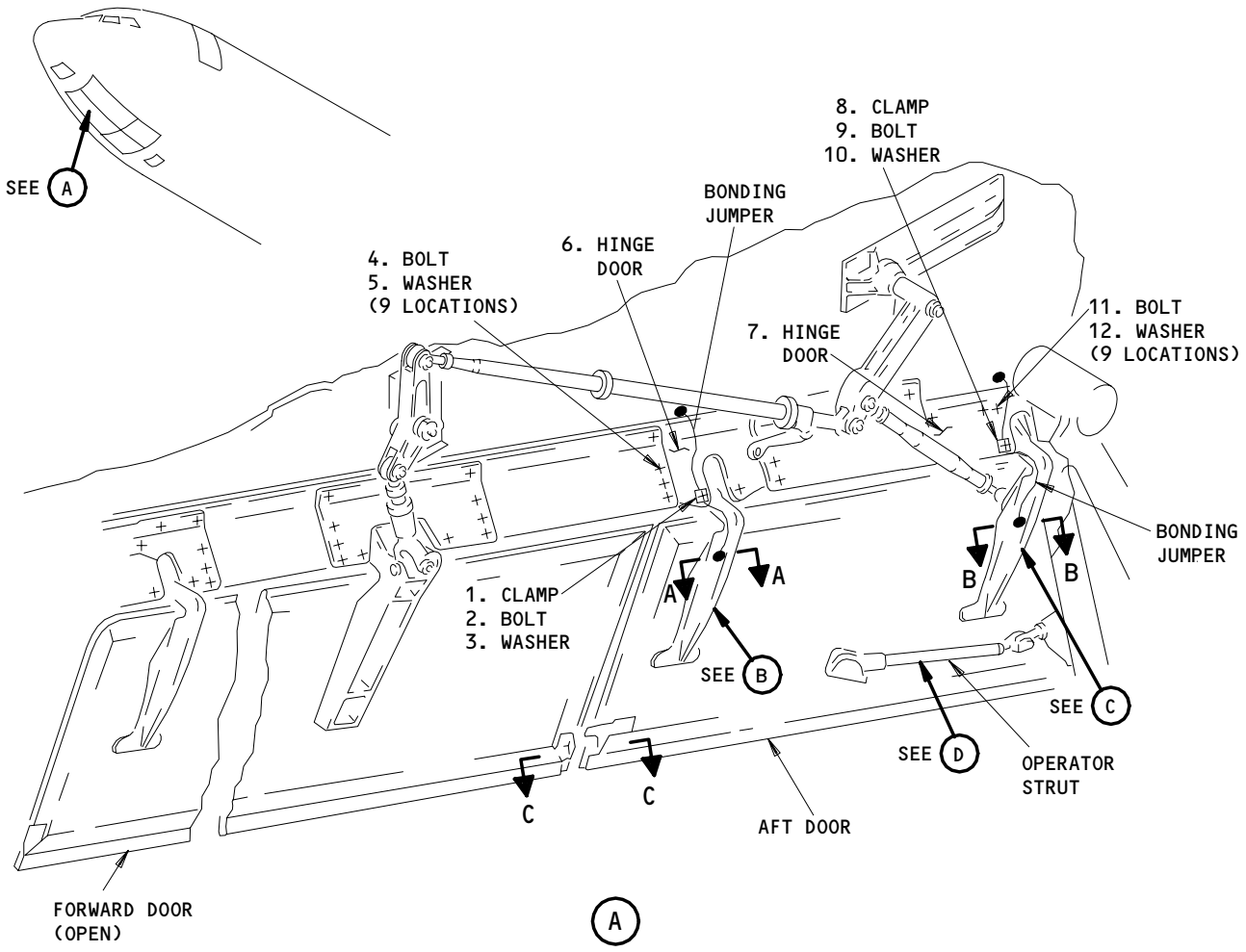
S 034-009
(6) Hold the aft door and remove the hinge bolt (25) to disconnect the forward hinge from the airplane (Detail B).

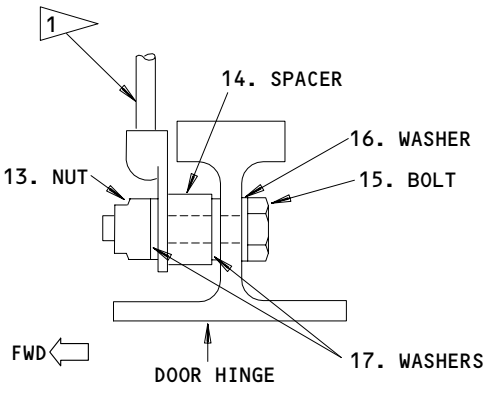
S 034-010
(7) Remove the hinge bolt (27) to disconnect the aft hinge from the airplane (Detail C).

S 024-011
(8) Remove the aft door (26).

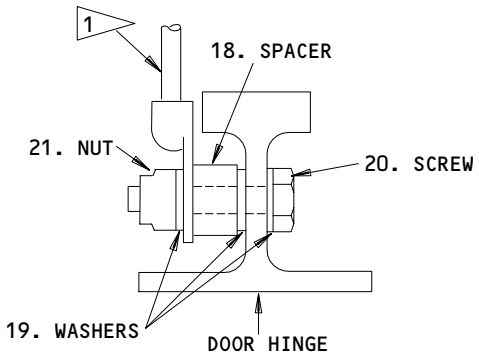
TASK 32-22-04-404-012

3. Install the Aft Door of the Nose Landing Gear (Fig. 401)
   A. Equipment
      (1) Downlock, NLG - A32014-2
   B. Consumable Materials
      (1) D00633 Grease - BMS 3-33 (Preferred)
      (2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)





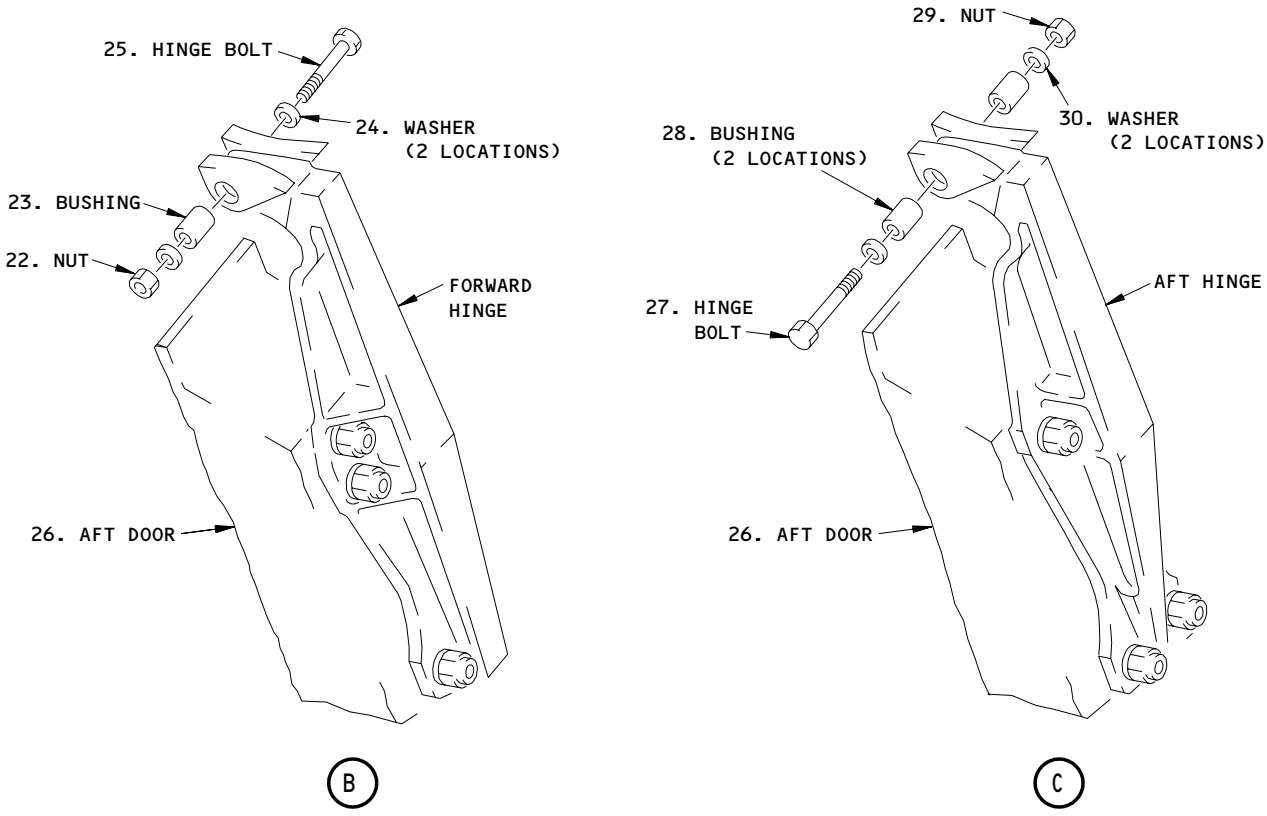
A–A

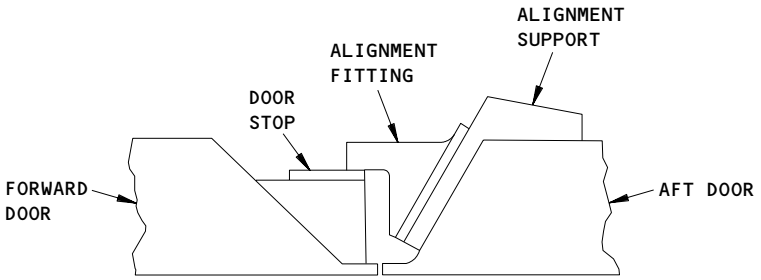


B–B

1 THE BLUE TERMINAL OF THE BONDING JUMPER MUST BE CONNECTED TO THE DOOR HINGE

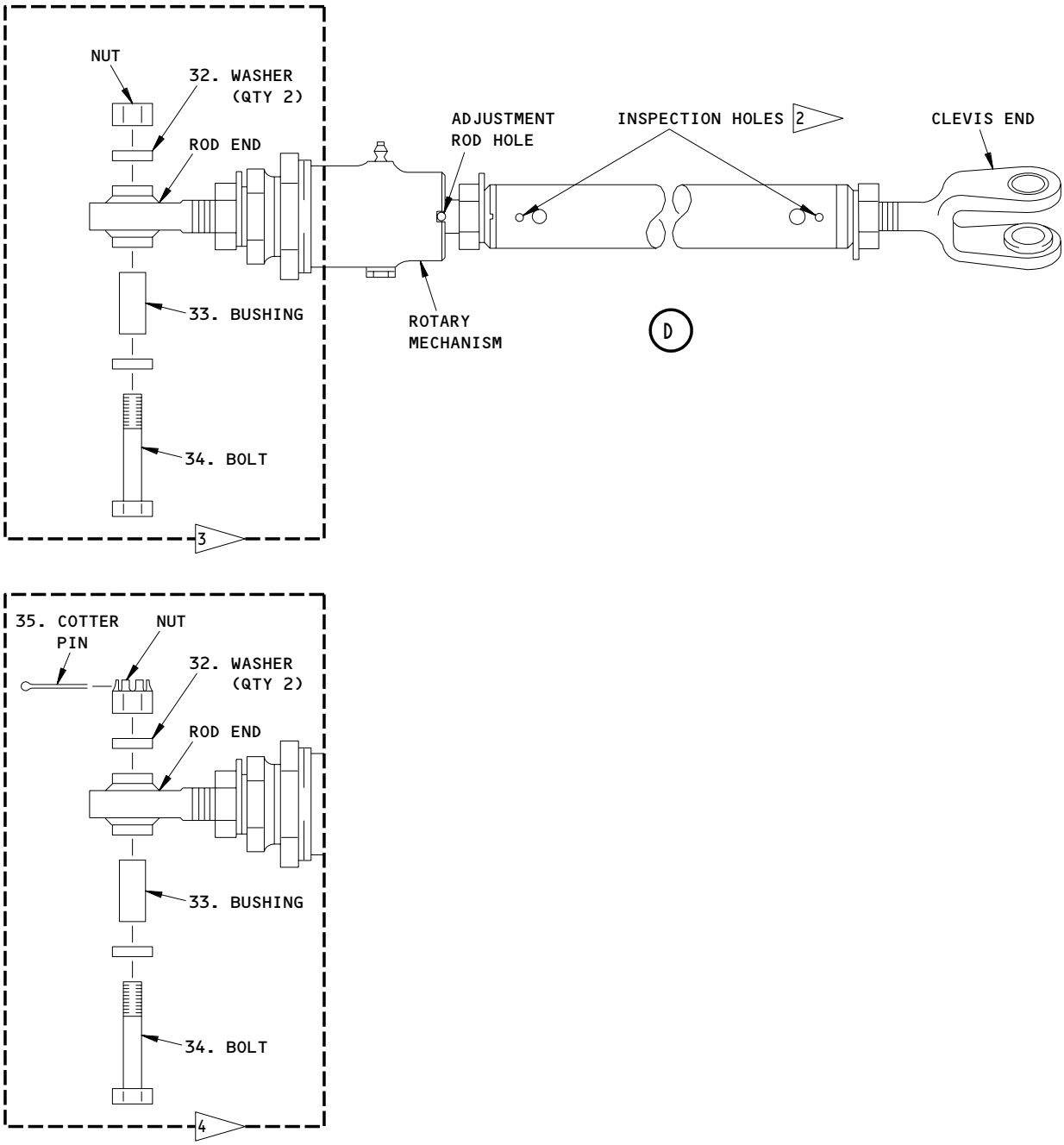
Nose Landing Gear Aft Door Installation
Figure 401 (Sheet 1)





C–C

Nose Landing Gear Aft Door Installation
Figure 401 (Sheet 2)

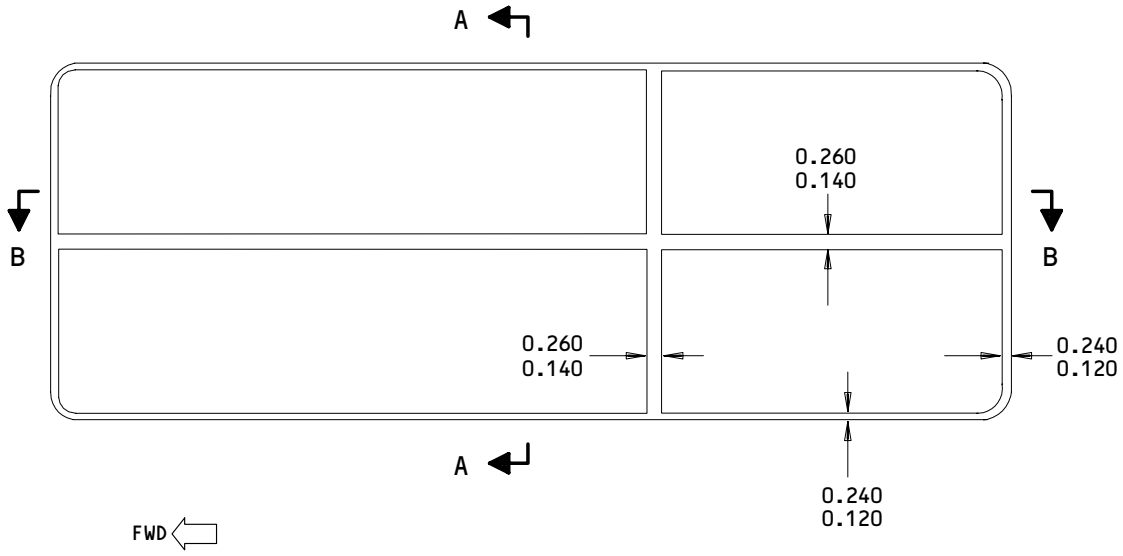


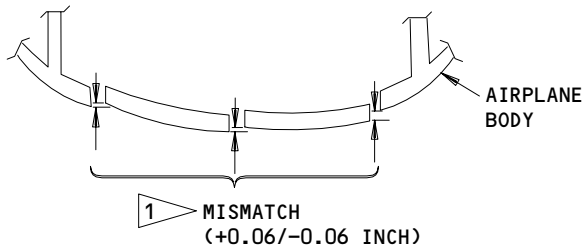
2 DO NOT LOOSEN OR ADJUST THE LARGE NUT ON THE ROTARY MECHANISM (SHOP ONLY ADJUSTMENT).
MAKE THE ADJUSTMENT ON THE ROD WITH THE INSPECTION HOLES.

3 WITHOUT COTTER PIN

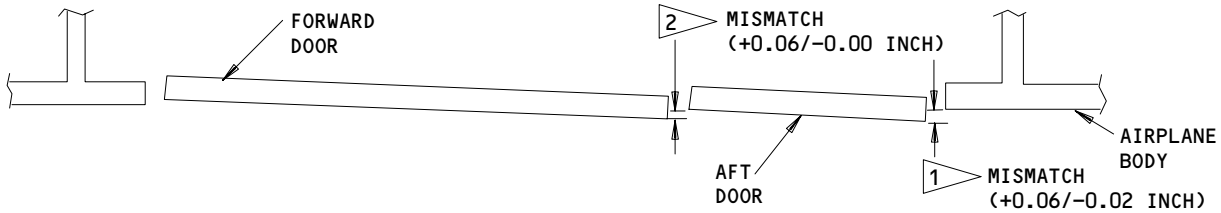
4 WITH COTTER PIN

Nose Landing Gear Aft Door Installation
Figure 401 (Sheet 3)





A-A



B-B

1 A POSITIVE TOLERANCE INDICATES THE DOOR IS OUTSIDE OF THE BODY CONTOUR
A NEGATIVE TOLERANCE INDICATES THE DOOR IS INSIDE OF THE BODY CONTOUR

2 A POSITIVE TOLERANCE INDICATES THE FORWARD DOOR
IS OUTSIDE OF THE AFT DOOR

Nose Landing Gear Doors Gap and Mismatch
Figure 402

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Clamp	32-22-01	01	320
	2	Bolt			310
	3	Washer	53-16-01	01	495
	4	Bolt			475,485
	5	Washer			495
	6	Door			600,605
	7	Door			610,615
	8	Clamp	32-22-01	01	320
	9	Bolt			310
	10	Washer	53-16-01	01	495
	11	Bolt			475,485, 490
	12	Washer			495
	13	Nut	32-22-01	01	445
	14	Spacer			440
	15	Bolt			420
	16	Washer			430
	17	Washer			435
	18	Spacer			395
	19	Washer			380
	20	Screw			370
	21	Nut			405
	22	Nut			181
	23	Bushing			183
	24	Washer			176
	25	Bolt			171
	26	Aft Door			188,191

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401 (Cont'd)	27	Bolt	32-22-01	01	173
	28	Bushing			186
	29	Nut			181
	30	Washer			178
	31	Nut			85
	32	Washer			80
	33	Bushing			90
	34	Bolt			75
	35	Cotter Pin			65

D. References
(1) 07-11-02/201, Jacking Airplane Nose
(2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) 32-00-20/201, Landing Gear Downlocks
(4) 32-61-03/201, Nose Gear Proximity Sensors

E. Access
(1) Location Zones
119/120 Control Cabin
711 Nose Landing Gear (NLG)
713/714 Forward NLG Doors
715/716 Aft NLG Doors

F. Install the Aft Doors

S 014-047
(1) Disconnect the operating mechanism for the forward door, from the forward door. The operating mechanism to be disconnected is on the same side as the aft door to be installed.

S 414-013
(2) Manually close the other forward door for the nose landing gear.

S 584-014
(3) Lift the nose of the airplane to a sufficient height to permit the nose landing gear to retract (Ref 07-11-02).

S 094-015
(4) Remove the downlock from the nose landing gear (Ref 32-00-20).

S 864-016
(5) Pressurize the center hydraulic system (Ref 29-11-00).

S 864-048

WARNING: MAKE SURE THE AREA AROUND THE NOSE GEAR, THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE NOSE GEAR, DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Move the control lever for the landing gear to the UP position to retract the nose landing gear.

S 864-018

(7) Move the control lever to the OFF position and attach a DO-NOT-OPERATE tag.

S 494-019

(8) Install the downlock for the nose landing gear.

S 864-049

(9) Put the aft door (26) in the correct position for the installation.

S 434-021

(10) Apply grease to and install the hinge bolt (27), washers (30), bushings (28), and nut (29) to connect the aft hinge to the airplane (Detail C).

S 434-022

(11) Apply grease to and install the hinge bolt (25), washers (24), bushing (23), and nut (22) to connect the forward hinge to the airplane (Detail B).

S 014-023

(12) Manually close the aft door.

S 824-024

(13) Make sure the mismatch between the door and the structure along the outboard edge is in tolerance (View A-A, Fig. 402).

S 824-025

(14) If the mismatch is not in tolerance, do the steps that follow:
  (a) Loosen the attach bolts for the body fitting (Details B and C, Fig. 401).
  (b) Lift or lower the fittings as necessary to get the mismatch in tolerance.

S 824-026

(15) Adjust the aft stop fitting to get the mismatch between the door and the structure along the aft edge in tolerance (View B-B, Fig. 402).

S 434-027
(16) Apply grease to and install the bolt (34), washers (32), bushing (33), and nut (31) to connect the operator strut to attach fitting (Detail D).

S 824-028
(17) Adjust the operator strut to permit the door to touch the stop fitting.

NOTE: Do not loosen or adjust the large nut on the rotary mechanism (shop only adjustment). The adjustment is made on the rod that is attached to the rotary mechanism where the adjustment rod hole is located.

(a) Install a 1/8" x 2" rod through the hole in the rotary mechanism to lock the mechanism while you adjust the strut.
(b) Make sure the rod and clevis ends of the rotary bearing can be seen through the inspection holes after the adjustment.

S 414-029
(18) Manually close the forward door.

S 824-030
(19) Adjust the alignment fitting on the aft door (View C-C, Fig. 401) to get the mismatch between the forward and aft doors in tolerance (View B-B, Fig. 402).

S 094-031
(20) Remove the downlock for the nose landing gear.

S 864-051

WARNING: MAKE SURE THE AREA AROUND THE NOSE GEAR, THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR, AND THE AREA AROUND THE TAIL SKID (IF APPLICABLE), IS CLEAR OF PERSONS AND EQUIPMENT. THE MOVEMENT OF THE NOSE GEAR, DOORS AND THE TAIL SKID CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(21) Move the control lever for the landing gear to the DN position to extend the nose landing gear.

S 494-033
(22) Install the downlock for the nose landing gear (Ref 32-00-20).

S 584-034
(23) Lower the nose of the airplane and remove the jack (Ref 07-11-02).

S 864-035
(24) Remove the hydraulic power if it is not necessary (Ref 29-11-00).

S 434-036
(25) Install the bolts (11) and washers (12) to connect the cover for the aft hinge (7).

S 434-037
(26) Install the clamp (8), bolt (9), and washer (10) to attach the bonding jumper to the door.

S 434-038
(27) Install the bolts (4) and washers (5) to connect the cover for the forward hinge (6).

S 434-045
(28) Install the clamp (1), bolt (2), and washer (3) to attach the bonding jumper to the door.

S 434-039
(29) Install the screw (20), washers (19), spacer (18), and nut (21) to connect the bonding jumper to the aft hinge (View B-B).

S 434-040
(30) Install the bolt (15), washers (16 and 17), spacer (14), and nut (13) to connect the bonding jumper to the forward hinge (View A-A).

G. Put the Airplane Back to Its Usual Condition

S 644-041
(1) Lubricate the door hinges at the grease fittings.

S 714-042
(2) Do a check of the proximity sensors for the doors of the nose landing gear (Ref 32-61-03).

S 414-043
(3) Manually close the forward doors of the nose landing gear.

EXTENSION AND RETRACTION - DESCRIPTION AND OPERATION

1. General
   A. The extension and retraction system includes the systems that follow:
      (1) The extension and retraction system of the main and nose landing gear
      (2) A control system
      (3) An alternate extension system.

      These systems provide the control and operation of the movement of all landing gear.
2. Component Details
   A. Landing Gear Control (AMM 32-31-00)
      (1) The landing gear controls include a control lever module and hydraulic selector valves for the main landing gear and the nose landing gear. They operate to send hydraulic pressure to the extension and retraction systems for the main and nose landing gear.
   B. Main Gear Extension and Retraction (AMM 32-32-00)
      (1) The extension and retraction system for the main landing gear includes hydraulic actuators and valves. These actuators and valves control the sequence of movement and operate the main landing gears and the doors for the main landing gear.
   C. Nose Gear Extension and Retraction (AMM 32-34-00)
      (1) The extension and retraction system for the nose landing gear includes hydraulic actuators and valves . These actuators and valves control the sequence of movement and operate the nose landing gear and the forward doors for the nose gear.
   D. Landing Gear Alternate Extension (AMM 32-35-00)
      (1) The alternate extension system unlocks the landing gear and doors when the normal extension system does not operate. The alternate extension system is also used to open the landing gear doors on the ground to get access into the wheel wells for maintenance.

LANDING GEAR EXTENSION AND RETRACTION

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
ACTUATOR – LANDING GEAR ALTERNATE EXTEND, M1104	9	1	119AL, MAIN EQUIP CTR	32-35-12
ACTUATOR – MAIN GEAR DOOR	2	2	LEFT & RIGHT MAIN WHEEL WELLS	32-32-12
ACTUATOR – MAIN GEAR DOOR ARMING LOCKOUT	3	2	LEFT & RIGHT MAIN WHEEL WELLS	32-35-11
ACTUATOR – MAIN GEAR DOOR LATCH	3	2	LEFT & RIGHT MAIN WHEEL WELLS, DOOR UPLOCK RELEASE MECHANISM HOUSING	32-32-13
ACTUATOR – MAIN GEAR DRAG BRACE LOCK	5	2	LEFT & RIGHT MAIN GEAR	32-32-02
ACTUATOR – MAIN GEAR RETRACT	6	2	551TB,651TB, WING ACCESS PANELS	32-32-01
ACTUATOR – MAIN GEAR SIDE BRACE LOCK	5	2	LEFT & RIGHT MAIN GEAR	32-32-02
ACTUATOR – NOSE GEAR LOCK	7	1	NOSE WHEEL WELL	32-34-02
ACTUATOR – NOSE GEAR RETRACT	8	1	NOSE WHEEL WELL	32-34-01
CABLES – LANDING GEAR EXTENSION AND RETRACTION	11	8	113AL, FWD EQUIP BAY TO SELECTOR VALVES IN RIGHT MAIN WHEEL WELL	32-00-25
CABLES – MAIN GEAR ALTERNATE EXTENSION	11	10	119AL, MAIN EQUIP CTR TO DOOR UPLOCK RELEASE QUADRANT ABOVE MAIN WHEEL WELLS	32-00-25
CABLES – MAIN GEAR DOOR GROUND RELEASE	11	4	197BL,198BR, MLG DOOR GROUND RELEASE LEVER ACCESS DOOR FORWARD AND UP TO DOOR UPLOCK RELEASE GROUND QUADRANT IN MAIN WHEEL WELL	32-00-25
CAM BOX – MAIN GEAR GEAR-OPERATED SEQUENCE VALVE	3	2	LEFT & RIGHT MAIN WHEEL WELLS	32-32-09
CARTRIDGE – NOSE WHEEL STEERING SPRING	8	1	NOSE WHEEL WELL	32-34-06
CIRCUIT BREAKERS	1		FLT COMPT, P6,P11	
LANDING GEAR ALTN EXT LATCH RST, C1177		1	11U14	*
LANDING GEAR ALTN EXT MOTOR, C4248		1	6F6	*
LANDING GEAR LEVER LOCK, C1174		1	11U20	*
CRANK – MAIN GEAR ALTERNATE EXTEND UPLOCK RELEASE	3	2	LEFT & RIGHT MAIN WHEEL WELLS	32-35-03
CYLINDER – MAIN GEAR TRANSFER	6	2	552CB,652CB, WING ACCESS PANELS	32-32-10
CYLINDER – NOSE GEAR TRANSFER	7	1	NOSE WHEEL WELL	32-34-04
DRUM AND LOCKOUT – NOSE WHEEL STEERING	8	1	NOSE WHEEL WELL	32-34-05
FUSE – MAIN GEAR TRUCK POSITIONER	6	4	552CB,652CB, WING ACCESS PANELS	32-32-19
HOOK – MAIN GEAR DOOR UPLOCK	3	2	LEFT & RIGHT MAIN WHEEL WELLS	32-32-14
LEVER – MAIN GEAR DOOR GROUND RELEASE	10	2	197BL,198BR, MLG DOOR GROUND RELEASE LEVER ACCESS DOOR	32-35-05
LOAD LIMITER – MAIN GEAR ALTERNATE EXTEND	9	2	119AL, MAIN EQUIP CTR	32-35-14
LOAD LIMITER – NOSE GEAR ALTERNATE EXTEND	9	1	119AL, MAIN EQUIP CTR	32-35-15
MODULE – LANDING GEAR CONTROL LEVER, M937	1	1	FLT COMPT, P3	32-31-01
POSITIONER – MAIN GEAR TRUCK	5	2	MAIN GEAR	32-32-18
QUADRANT – LANDING GEAR ALTERNATE EXTEND	9	2	119AL, MAIN EQUIP CTR	32-35-13
QUADRANT – LANDING GEAR CONTROL LEVER	1	1	FLT COMPT, P3, BEHIND CONTROL LEVER MODULE M937	32-31-00
QUADRANT – LANDING GEAR SELECTOR VALVE	4	1	ON TOP OF RIGHT MAIN WHEEL WELL DIRECTLY ABOVE LANDING GEAR SELECTOR VALVES	32-31-03
QUADRANT – MAIN GEAR ALTERNATE EXTEND UPLOCK RELEASE GROUND	3	2	LEFT & RIGHT MAIN WHEEL WELLS	32-35-07
QUADRANT – MAIN GEAR DOOR GROUND RELEASE	10	2	197BL,198BR, MLG DOOR GROUND RELEASE LEVER ACCESS DOOR	32-35-05

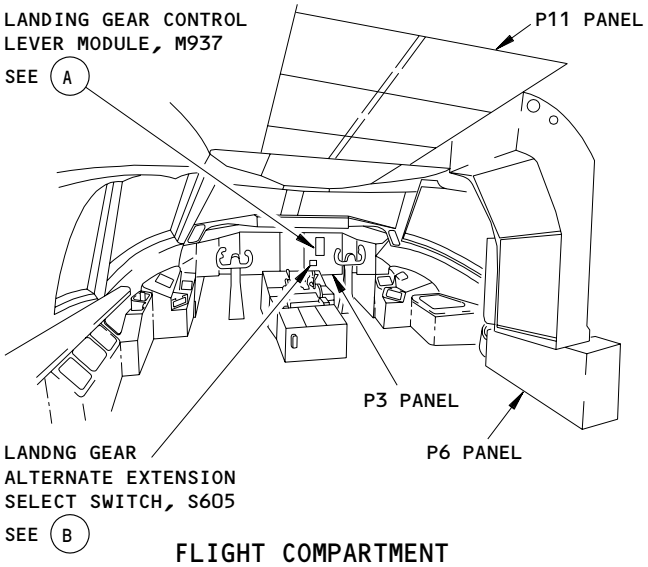
* SEE WM EQUIPMENT LIST

Component Index
Figure 101 (Sheet 1)

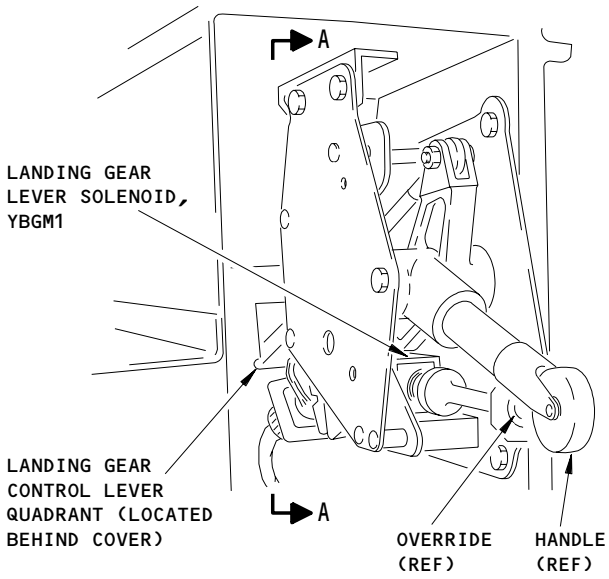
COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
RELAY - (REF 32-09-00, FIG. 101) SYS NO. 1 AIR/GND, K147 SYS NO. 2 AIR/GND, K209				
SOLENOID - LANDING GEAR LEVER LOCK, YGBM1	1	1	FLT COMPT, P3, CONTROL LEVER MODULE M937	*
SWITCH - (REF 27-62-00, FIG. 101) GEAR TILT PRESSURE, S452,S453				
SWITCH - LANDING GEAR ALTERNATE EXTENSION SELECT, S605	1	1	FLT COMPT, P3	*
SWITCH - LDG GR ALTN RETN, S606,S607	9	2	119AL, MAIN EQUIP CTR, ALTERNATE EXTEND ACTUATOR M1104	*
SWITCH - LANDING GEAR LEVER POSITION, DOWN, YBGS3,YBGS4	1	2	FLT COMPT, P3, CONTROL LEVER MODULE, M937	*
SWITCH - LANDING GEAR LEVER POSITION, OFF, YBGS2,YBGS6	1	2	FLT COMPT, P3, CONTROL LEVER MODULE, M937	*
SWITCH - LANDING GEAR LEVER POSITION, UP, YBGS1,YBGS5	1	2	FLT COMPT, P3, CONTROL LEVER MODULE, M937	*
VALVE - MAIN GEAR DOOR SAFETY	3	2	LEFT & RIGHT MAIN WHEEL WELLS, DOOR UPLOCK RELEASE MECHANISM HOUSING	32-35-10
VALVE - MAIN GEAR DOOR-OPERATED SEQUENCE	2	2	LEFT & RIGHT MAIN WHEEL WELLS	32-32-06
VALVE - MAIN GEAR GEAR-OPERATED SEQUENCE	3	2	LEFT & RIGHT MAIN WHEEL WELLS	32-32-08
VALVE - NOSE GEAR PRIORITY	7	1	NOSE WHEEL WELL	32-34-00
VALVES - LANDING GEAR SELECTOR	4	2	RIGHT MAIN WHEEL WELL	32-31-02

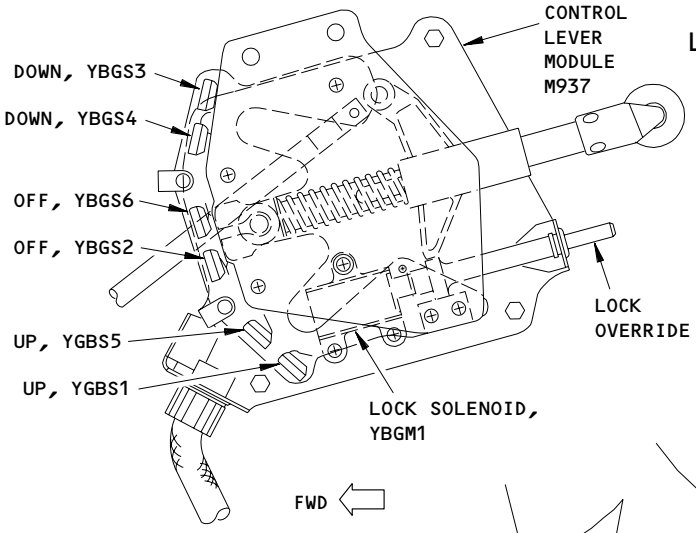
* SEE WM EQUIPMENT LIST

Component Index
Figure 101 (Sheet 2)



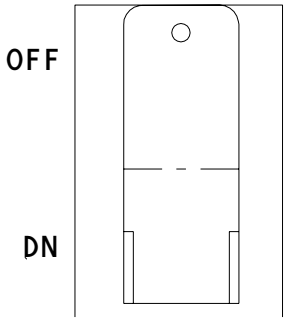
FLIGHT COMPARTMENT

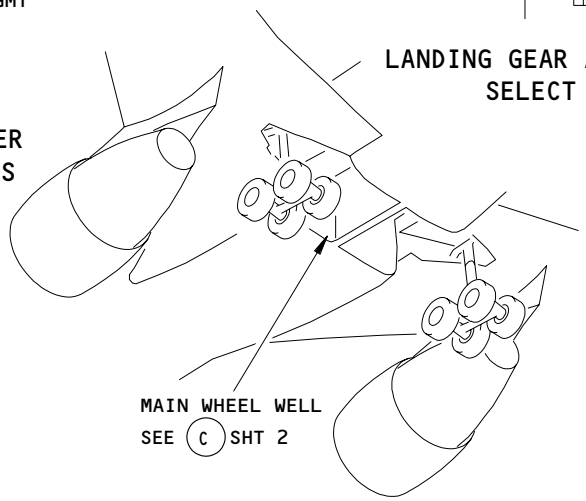




LANDING GEAR LEVER POSITION SWITCHES
A-A

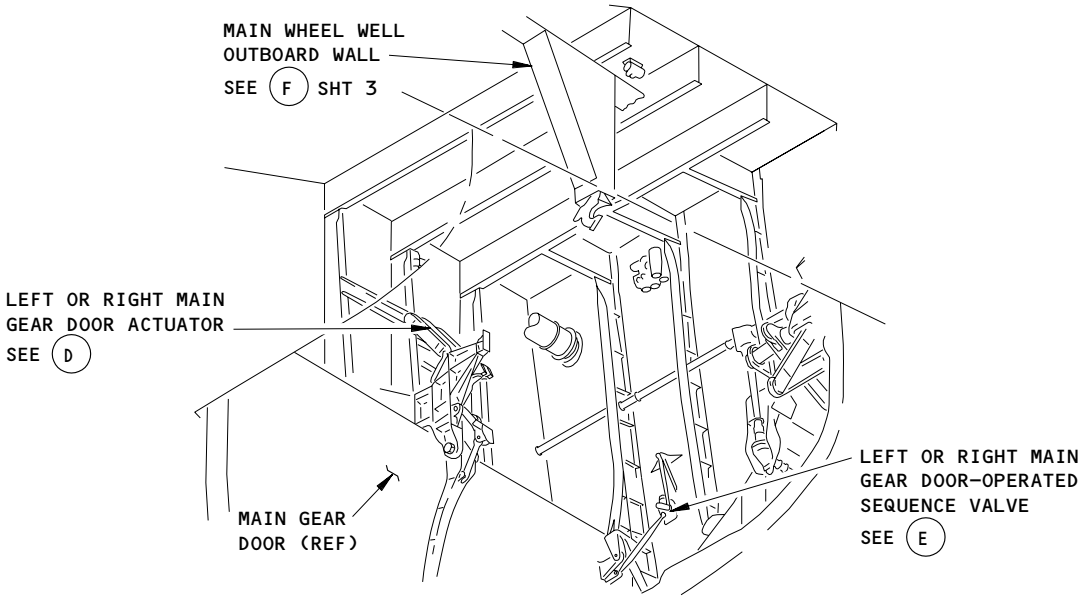
LANDING GEAR CONTROL LEVER MODULE, M937
(A)





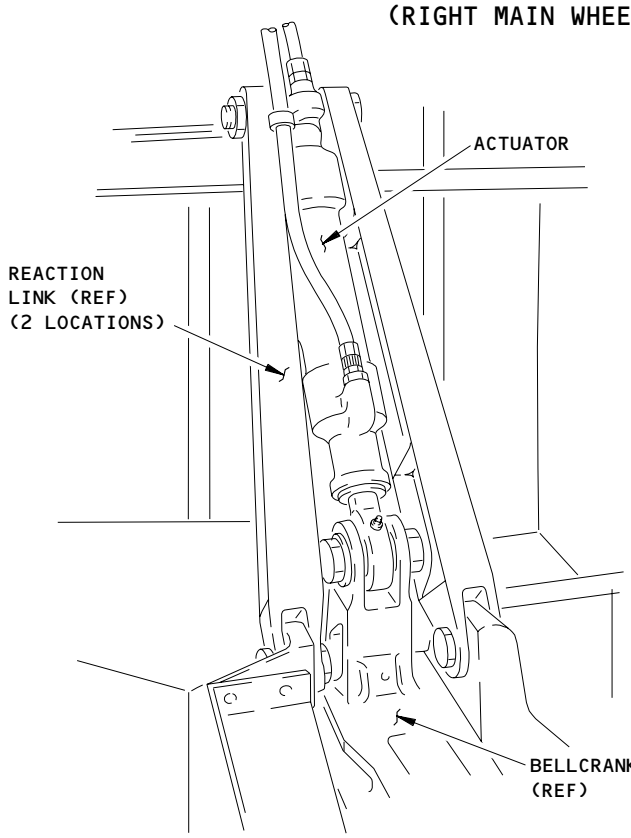
LANDING GEAR ALTERNATE EXTENSION SELECT SWITCH, S605
(B)

Landing Gear Extension and Retraction - Component Location
Figure 102 (Sheet 1)



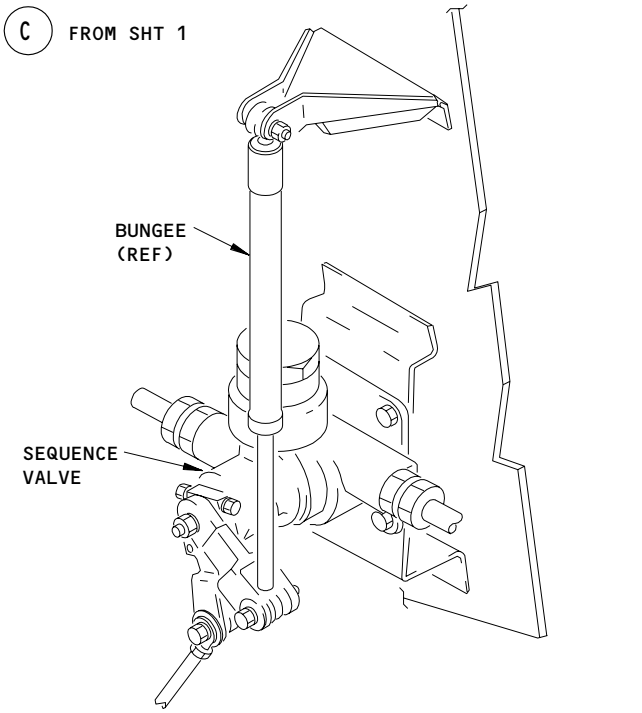
LEFT MAIN WHEEL WELL
(RIGHT MAIN WHEEL WELL IS EQUIVALENT)

(C) FROM SHT 1



LEFT OR RIGHT MAIN GEAR DOOR ACTUATOR

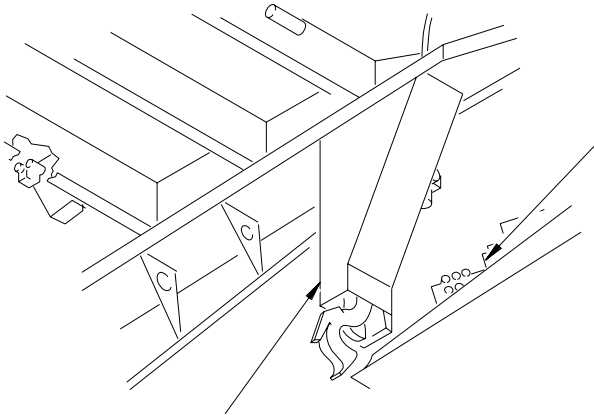
(D)



LEFT OR RIGHT MAIN GEAR DOOR-OPERATED
SEQUENCE VALVE

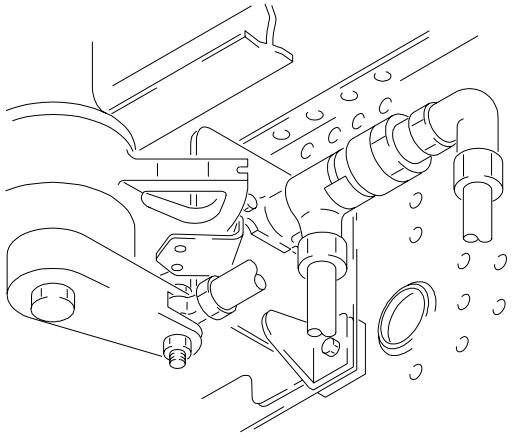
(E)

Landing Gear Extension and Retraction - Component Location
Figure 102 (Sheet 2)



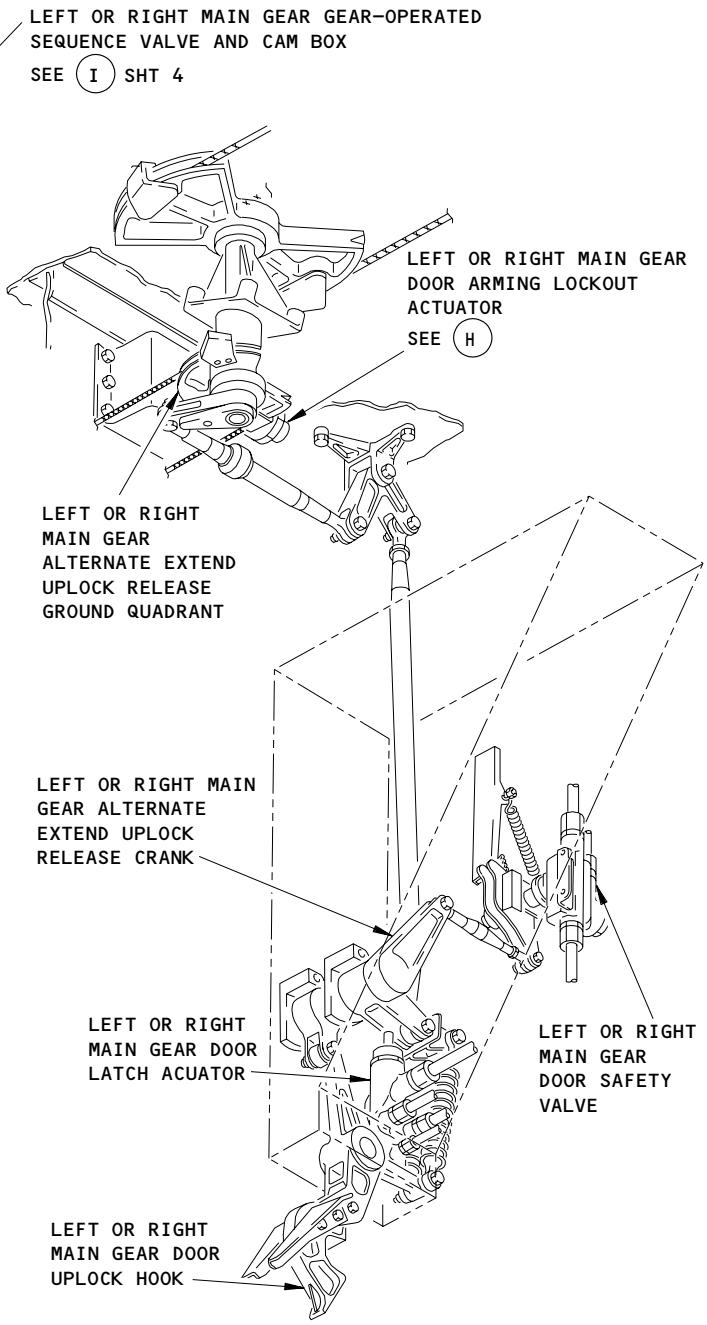
LEFT MAIN WHEEL WELL OUTBOARD WALL
(RIGHT MAIN WHEEL WELL OUTBOARD WALL IS EQUIVALENT)

F FROM SHT 2



LEFT OR RIGHT MAIN GEAR DOOR
ARMING LOCKOUT ACTUATOR

H

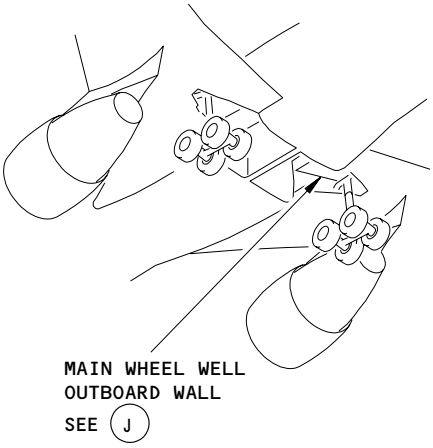


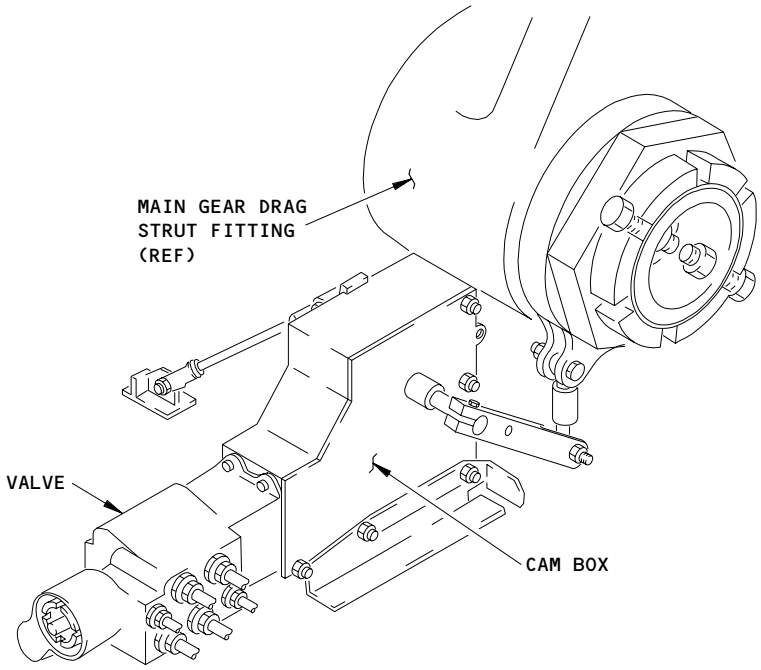
LEFT OR RIGHT MAIN GEAR DOOR UPLOCK RELEASE MECHANISM

G

Landing Gear Extension and Retraction - Component Location
Figure 102 (Sheet 3)

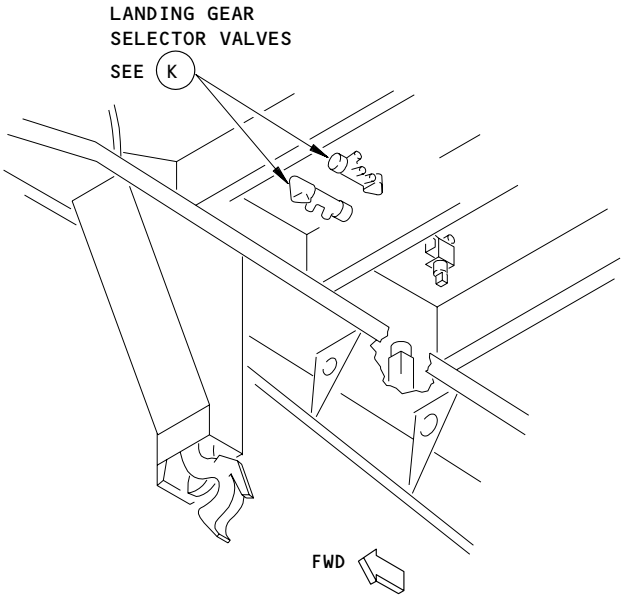
38862





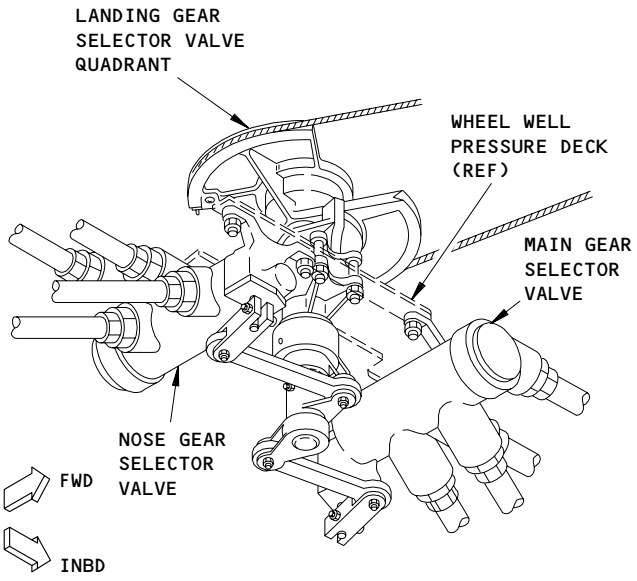
LEFT OR RIGHT MAIN GEAR GEAR-OPERATED
SEQUENCE VALVE AND CAM BOX

I FROM SHT 3



RIGHT MAIN WHEEL WELL

J

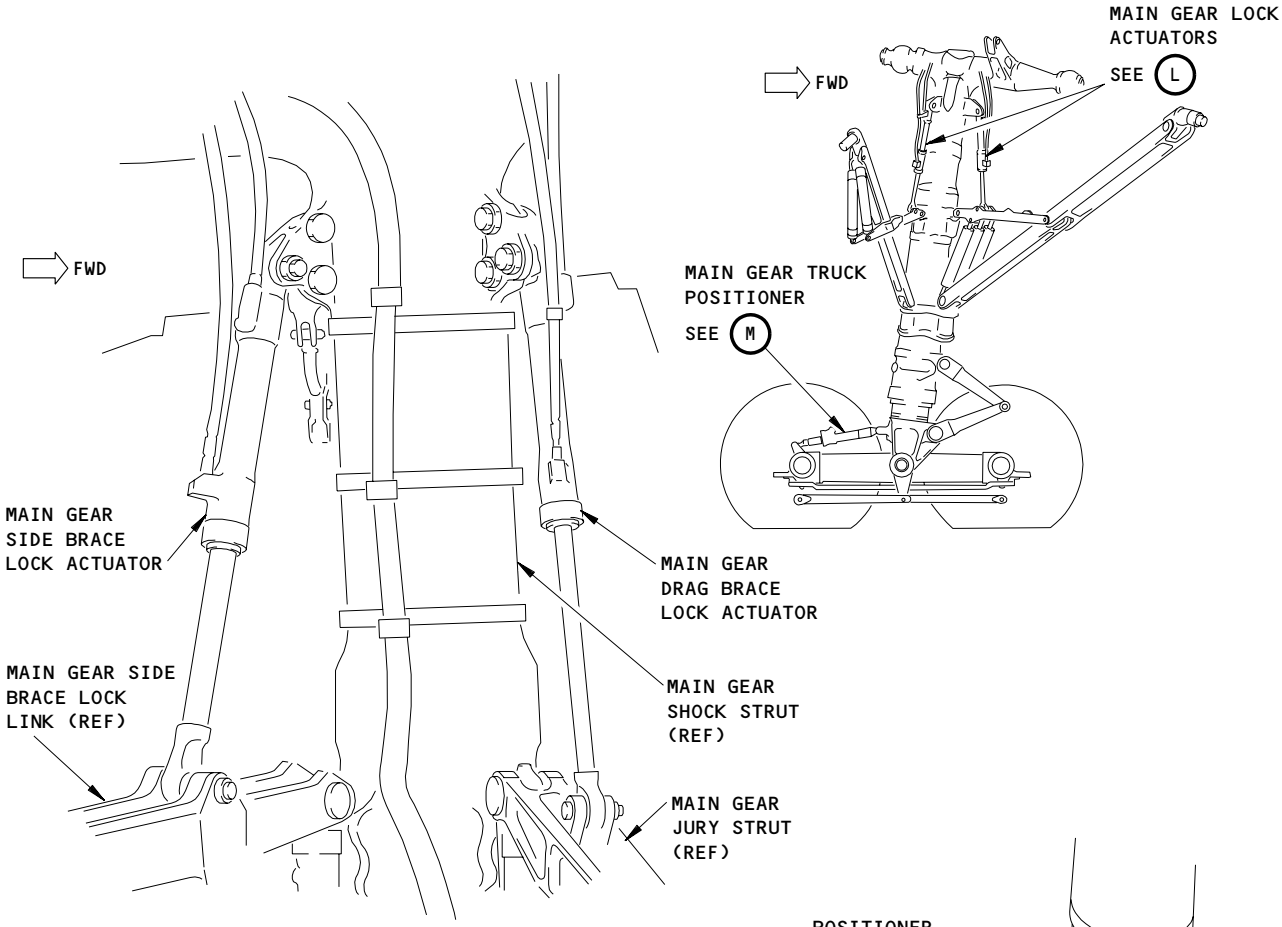


LANDING GEAR SELECTOR VALVES

K

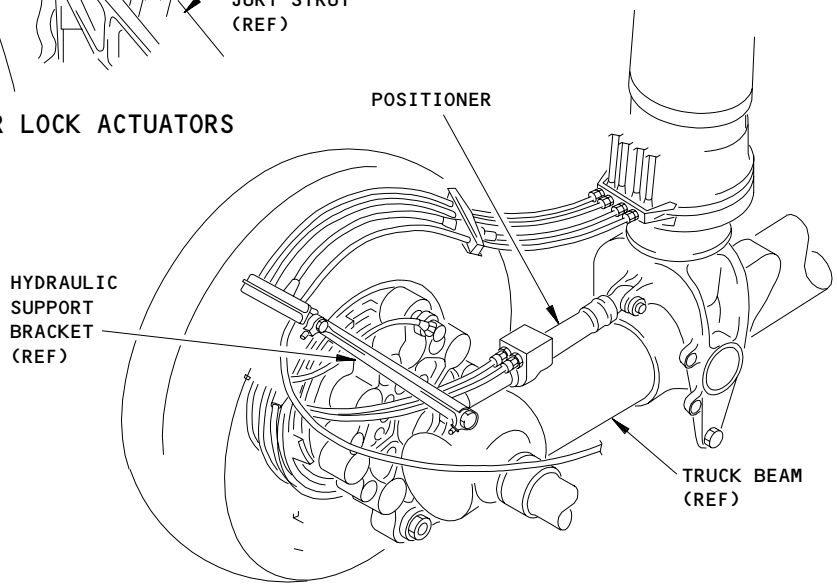
Landing Gear Extension and Retraction - Component Location
Figure 102 (Sheet 4)

38868



LEFT OR RIGHT MAIN GEAR LOCK ACTUATORS

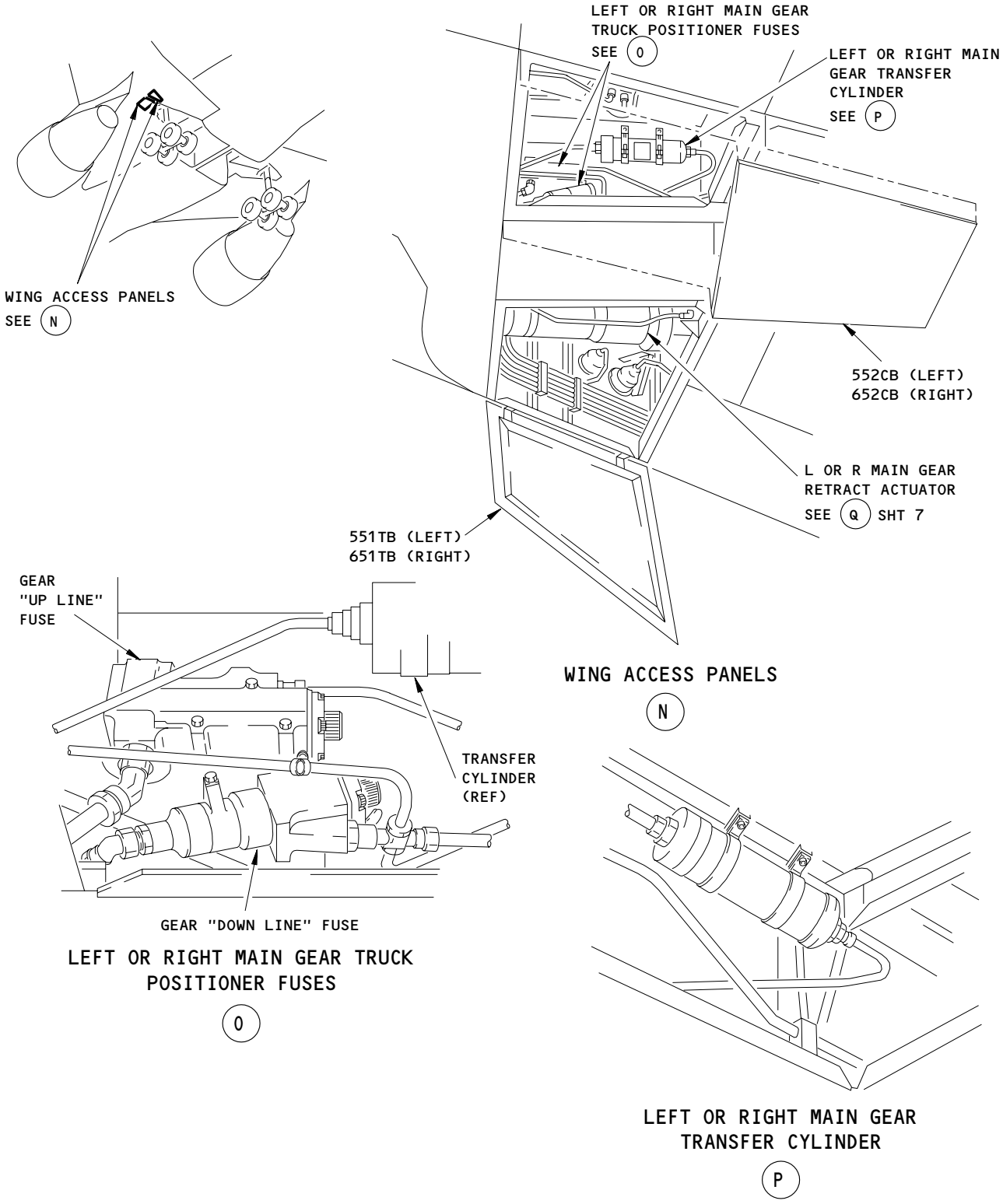
L



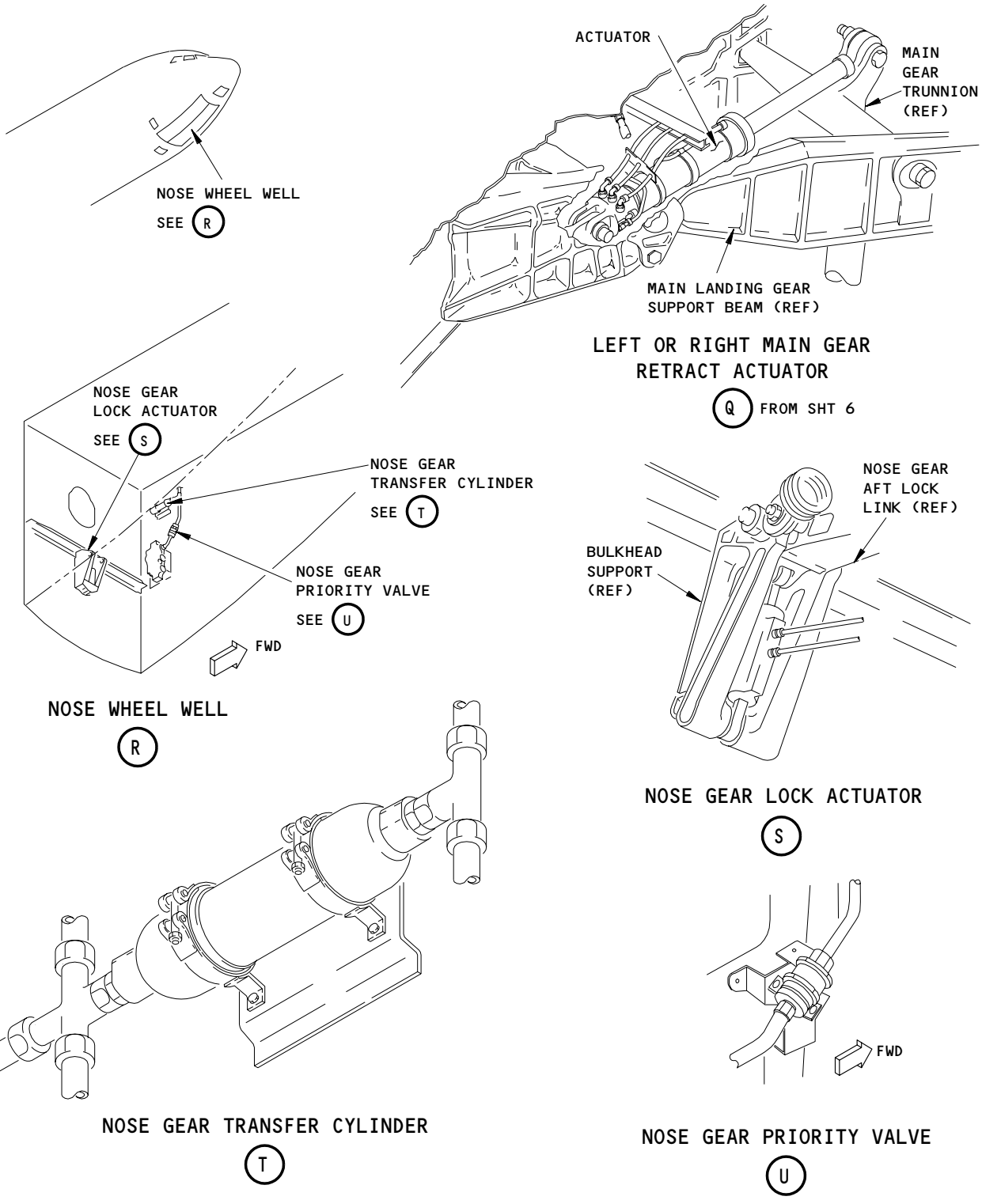
LEFT OR RIGHT MAIN GEAR TRUCK POSITIONER

M

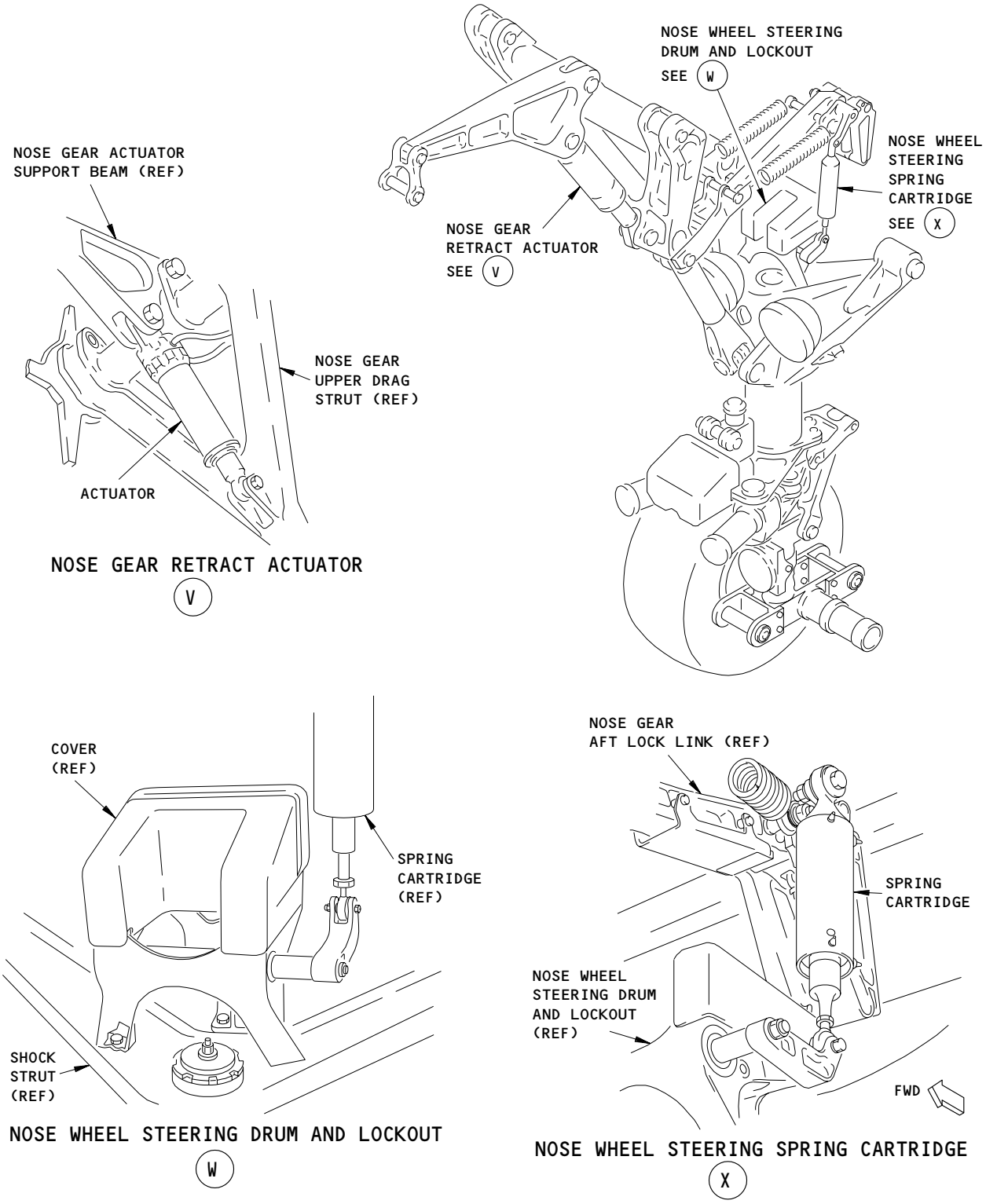
Landing Gear Extension and Retraction – Component Location
Figure 102 (Sheet 5)



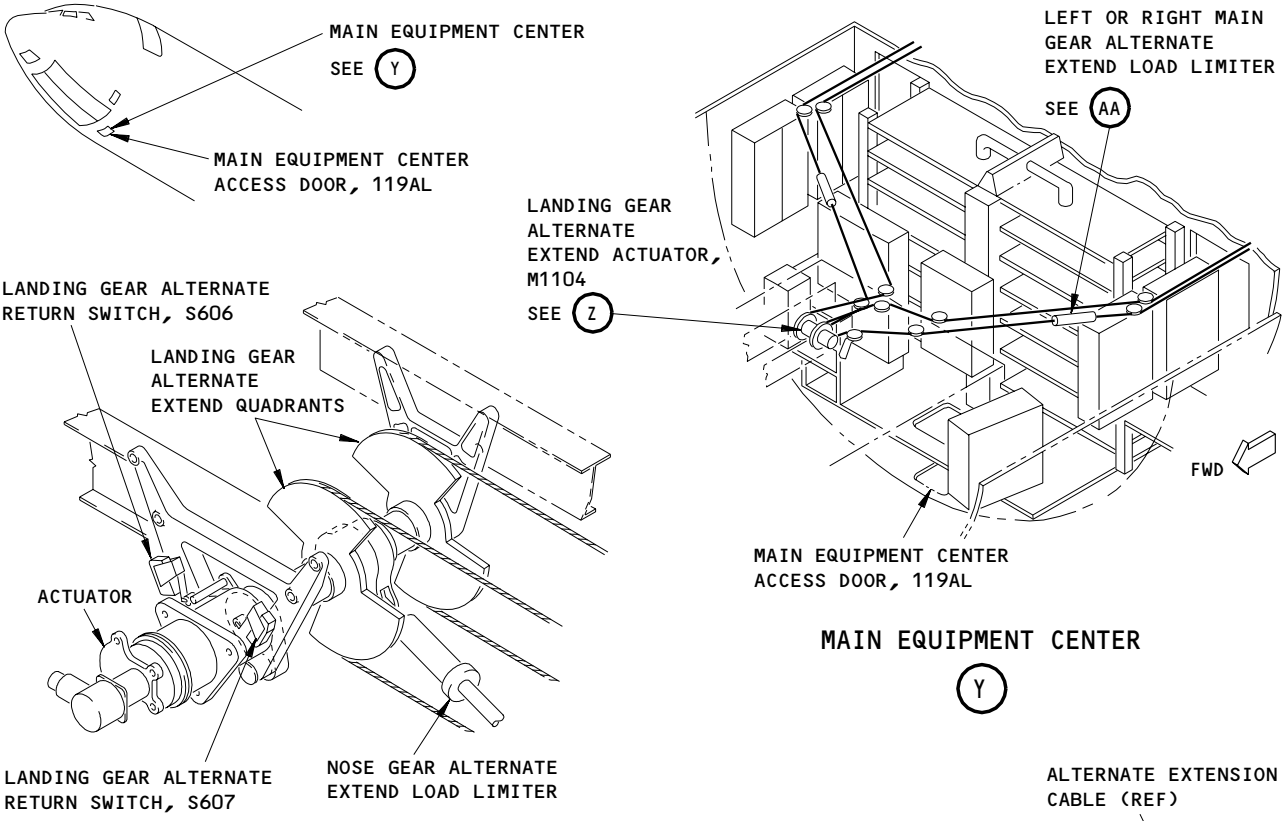
Landing Gear Extension and Retraction – Component Location
Figure 102 (Sheet 6)



Landing Gear Extension and Retraction – Component Location
Figure 102 (Sheet 7)



Landing Gear Extension and Retraction - Component Location
Figure 102 (Sheet 8)

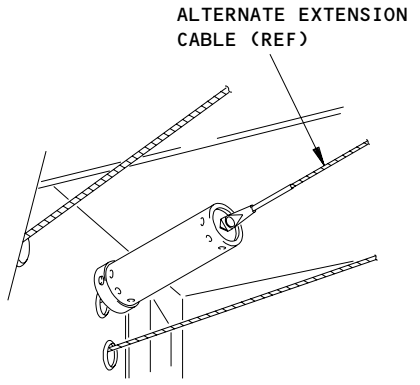


MAIN EQUIPMENT CENTER

Y

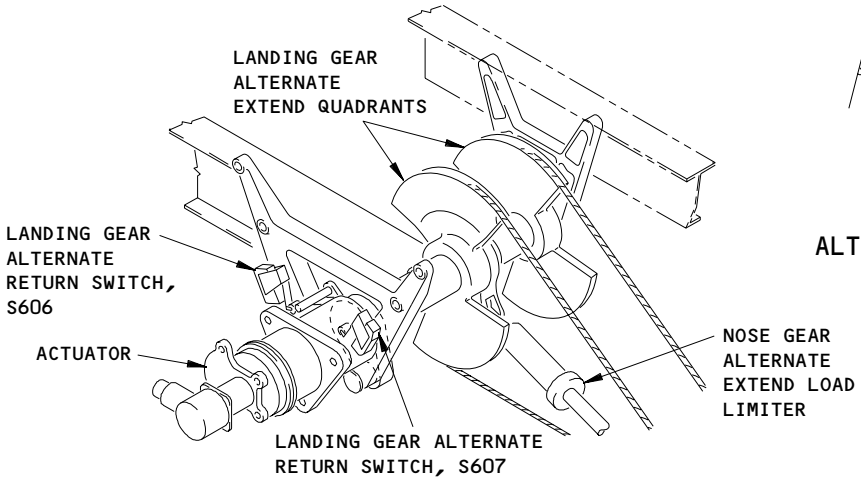
LANDING GEAR ALTERNATE EXTEND ACTUATOR, M1104

Z 1



LEFT OR RIGHT MAIN GEAR ALTERNATE EXTEND LOAD LIMITER

AA



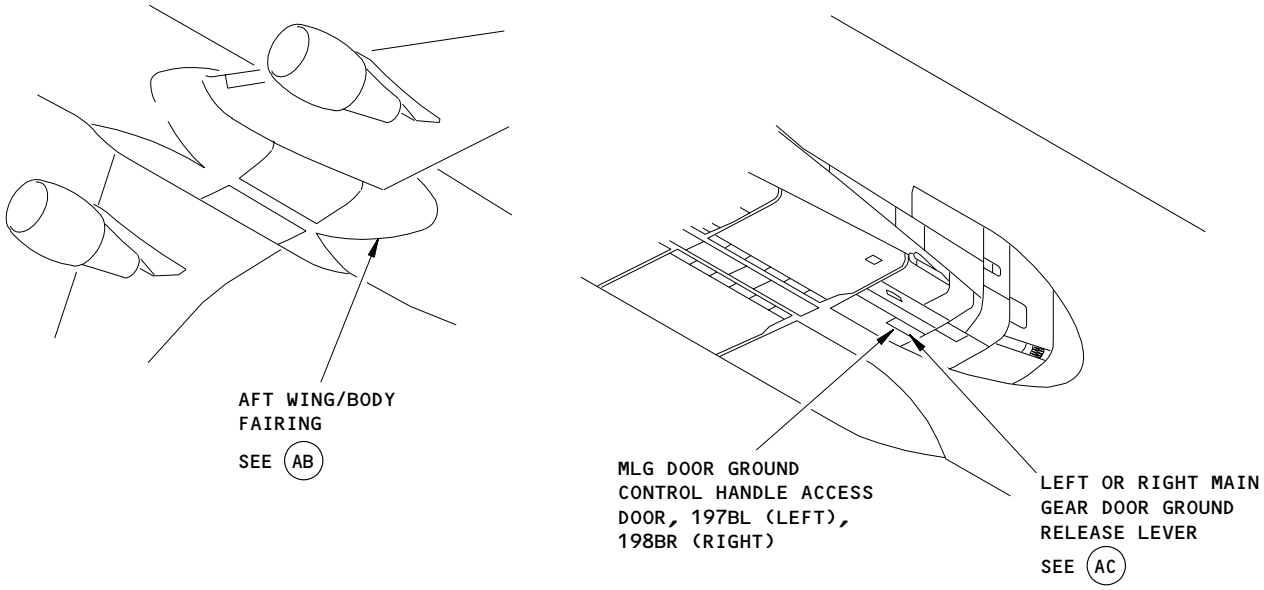
LANDING GEAR ALTERNATE EXTEND ACTUATOR, M1104

Z 2

1 NON-OFFSET ALTERNATE EXTEND QUADRANTS

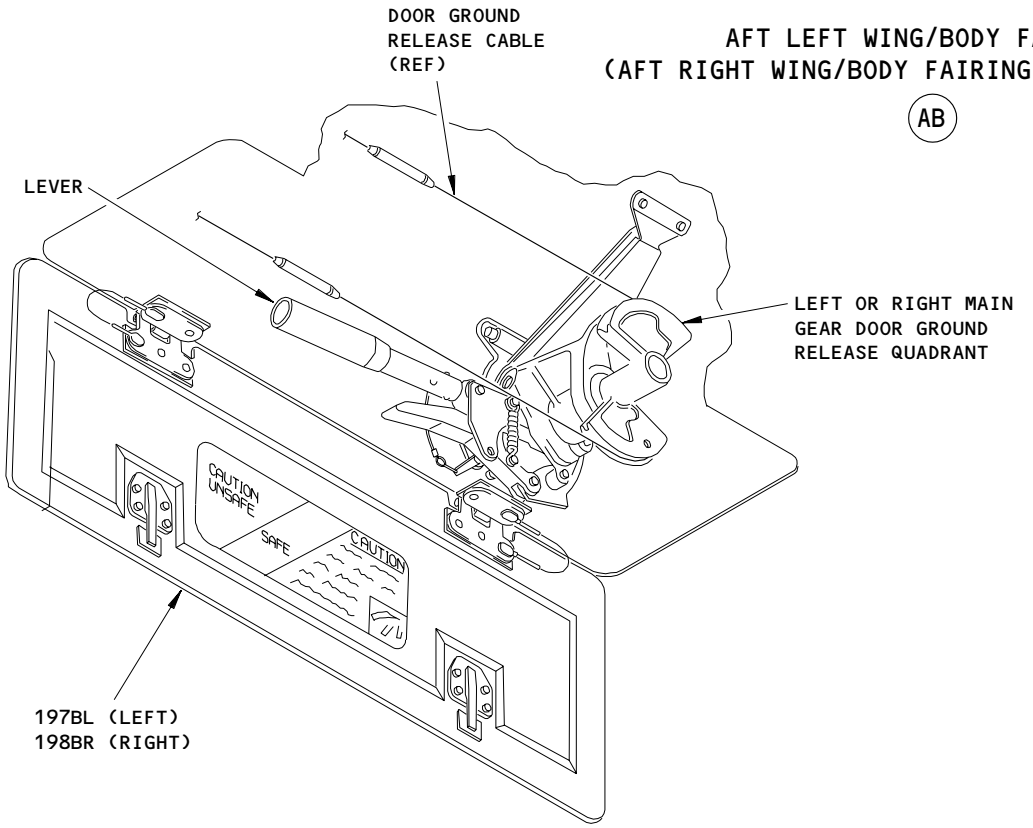
2 OFFSET ALTERNATE EXTEND QUADRANTS

Landing Gear Extension and Retraction - Component Location
Figure 102 (Sheet 9)



AFT LEFT WING/BODY FAIRING
(AFT RIGHT WING/BODY FAIRING IS EQUIVALENT)

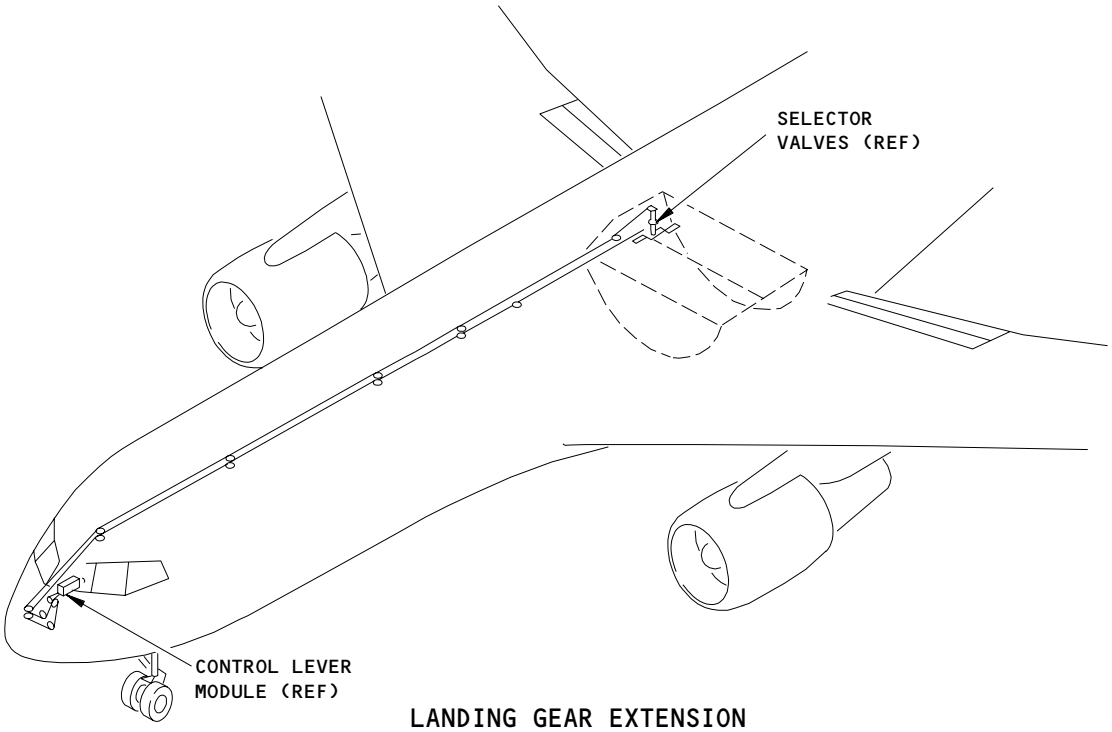
(AB)



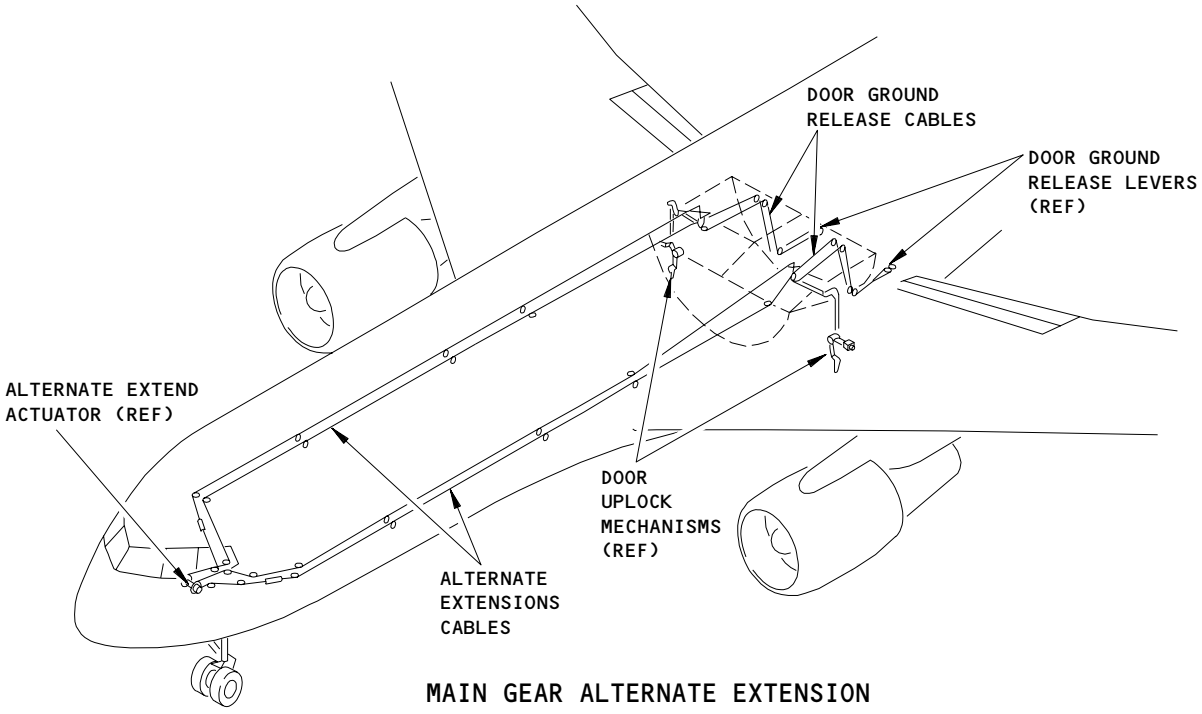
LEFT OR RIGHT MAIN GEAR DOOR GROUND RELEASE LEVER

(AC)

Landing Gear Extension and Retraction - Component Location
Figure 102 (Sheet 10)



LANDING GEAR EXTENSION
AND RETRACTION CONTROL CABLES

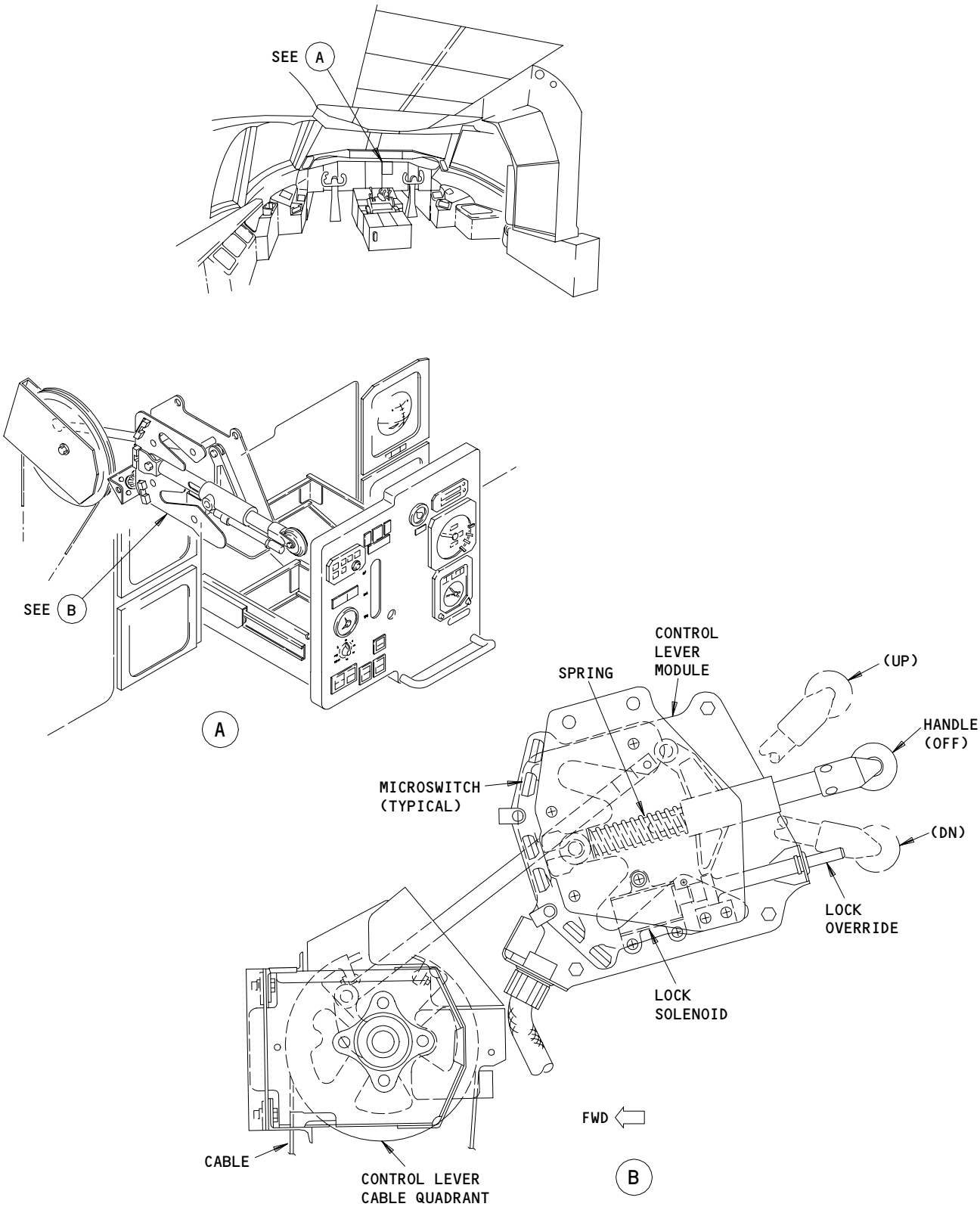


MAIN GEAR ALTERNATE EXTENSION
AND DOOR GROUND RELEASE CONTROL CABLES

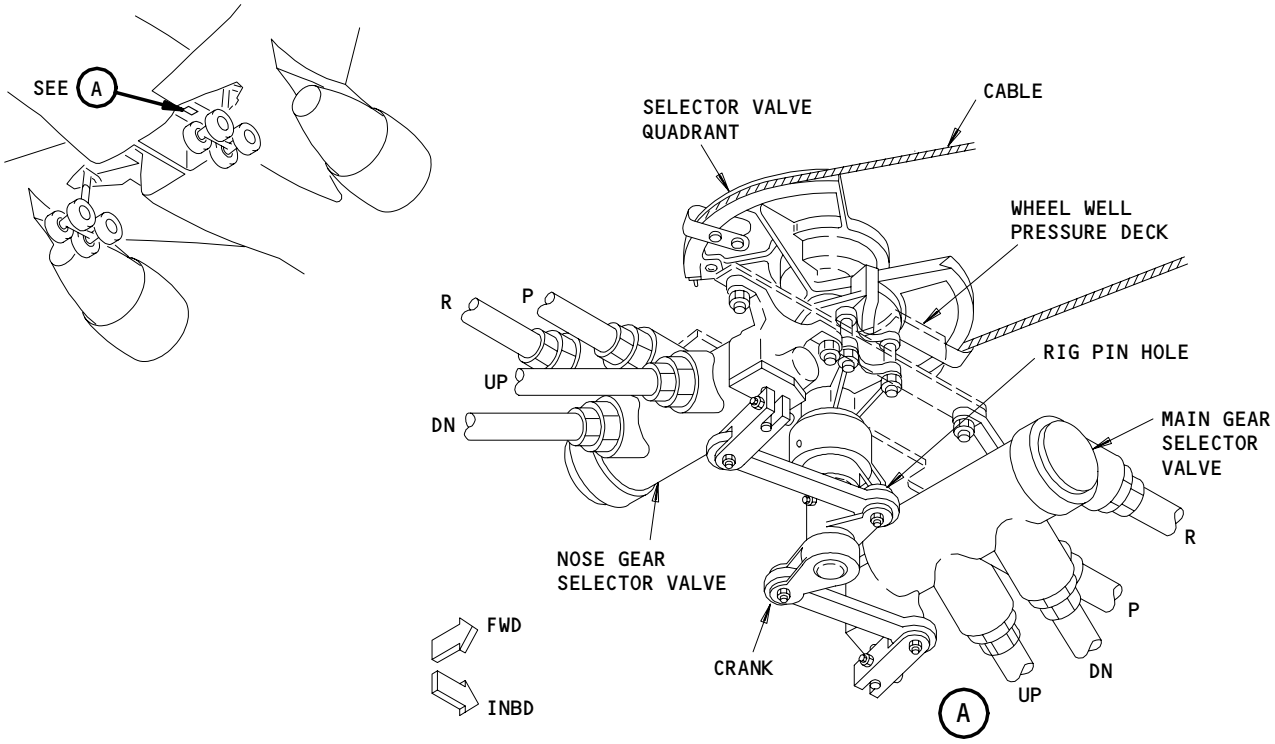
Landing Gear Extension and Retraction - Component Location
Figure 102 (Sheet 11)

LANDING GEAR CONTROL - DESCRIPTION AND OPERATION

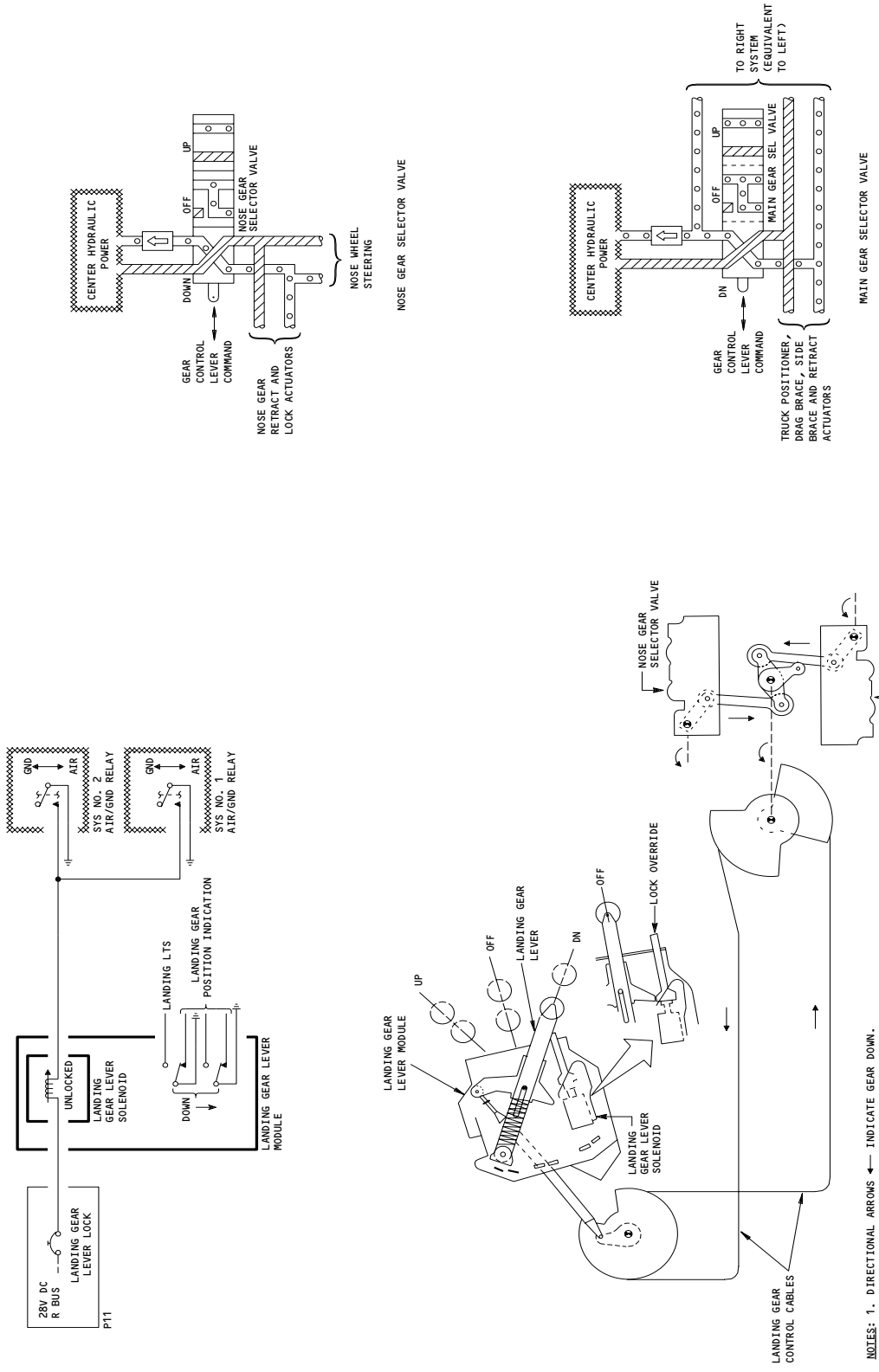
1. General
   A. A control lever on the pilot's center instrument panel, P3, operates the extension and retraction of the landing gear. Cables transmit the control lever movements to two selector valves in the right main wheel well. Cable inputs cause the selector valves to put pressure to the hydraulic actuators for extension and retraction of the nose and main landing gear. A lock solenoid prevents movement of the control lever to the UP position when the airplane weight is on the landing gear. A manual override can bypass the control lever lock to do a system test.
2. Component Details
   A. Landing Gear Control Lever Module (Fig. 1 and 3)
      (1) The control lever module for the landing gear is located on the right side of the pilot's center instrument panel, P3. Within the module, a detent plate is used to find the lever positions UP, OFF, and DN. The detent plate holds the spring-loaded handle in position until you pull the lever out of a detent and put it to a new position. Switches in the rear of the module indicate the position of the control lever to use in the position indication system for the landing gear to compare with the gear position. Movement of the control lever turns a quadrant. The quadrant has cables that go aft to the selector valve quadrant which operates the selector valves.
   B. Landing Gear Selector Valves (Fig. 2 and 3)
      (1) The selector valves for the main and nose landing gear send hydraulic pressure to extend and retract the gear. The valves have three positions, UP, OFF, and DN, that agree with the control lever positions. UP sends hydraulic pressure to retract the gear; DN reverses pressure and return lines to extend the gear; and OFF removes the pressure from the landing gear hydraulic system.



Landing Gear Control Lever Module
Figure 1



Landing Gear Selector Valves
Figure 2



Landing Gear Extension and Retraction Control Schematic
Figure 3

LANDING GEAR CONTROL - ADJUSTMENT/TEST

1. General
   A. This procedure has an operational test and an adjustment procedure for the landing gear control system. The operational test does a complete check of the landing gear control system. The adjustment procedure is used to make sure the system is adjusted correctly.
      (1) Do the steps that follow to make sure the control lever module is installed correctly:
         (a) Move the lever into and out of all detents. The lever must move smoothly with no interference, scraping or binding. When you release the lever at each detent, it must go into the detent without using any extra force.
         (b) With the lever in the extended position, push the lock override button and move the lever through its full travel. The lever must move smoothly with no interference, scraping or binding. When you release the button, it should return to the fully extended position with no interference, scraping or binding.

TASK 32-31-00-715-001

2. Operational Test - Landing Gear Control System (Fig. 501)
   A. Equipment
      (1) Force Gage Equipment - P/N G32021-18

   B. References
      (1) AMM 24-22-00/201, Electrical Power Control
      (2) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
      (3) AMM 32-00-20/201, Landing Gear Downlocks
      (4) AMM 32-09-02/201, Air/Ground Relay
   C. Prepare for the Test

      S 495-003
      (1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

      S 865-004
      (2) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

      S 865-002

      WARNING: MAKE SURE THE FLIGHT MODE SIMULATION PROCEDURE IS DONE CORRECTLY. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR IF THIS PROCEDURE IS NOT DONE CORRECTLY.

      (3) Do the Flight Mode Simulation procedure (AMM 32-09-02/201).

      S 865-005
      (4) Make sure this circuit breaker on the overhead circuit breaker panel, P11, is closed:
         (a) 11U20, LANDING GEAR LEVER LOCK

S 865-006
(5) Supply electrical power (AMM 24-22-00/201).

S 865-007
(6) Make sure the landing gear control lever is in OFF.

D. Do a Test of the Landing Gear Control System

S 495-030
(1) Install the force gage equipment on the control lever (Fig. 501) or use a spring scale to measure control lever forces.

S 865-008

WARNING: MAKE SURE THAT PRESSURE IS REMOVED FROM THE CENTER HYDRAULIC SYSTEM BEFORE YOU MOVE THE LANDING GEAR CONTROL LEVER. FAST MOVEMENT OF THE MAIN GEAR DOORS AND THE TAIL SKID (IF APPLICABLE) CAN CAUSE INJURY OR DAMAGE.

(2) Pull the landing gear control lever out of its detent and move it to UP and then DN. Do not use lock override.
(a) Make sure the force necessary to pull the control lever out of its detent is not more than 11 pounds.
(b) Make sure the tangential force that is necessary to move the control lever through the total lever travel from UP to DN is not more than 7 pounds.

S 095-031
(3) Remove the force gage equipment from the control lever.

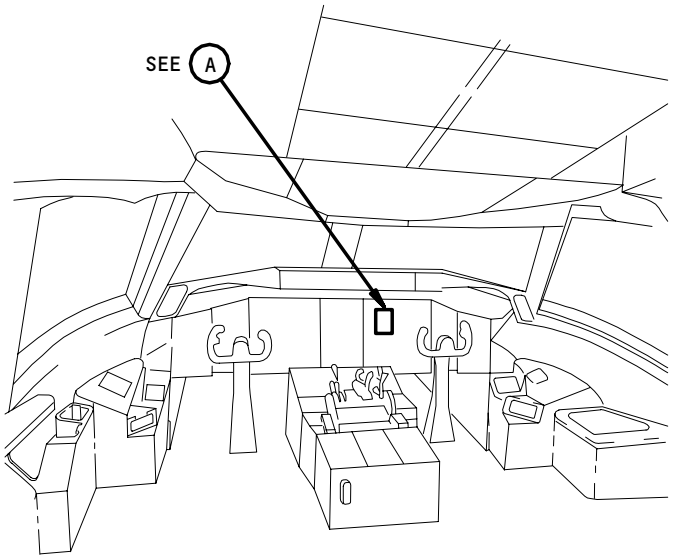
S 865-009
(4) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tag:
(a) 11U20, LANDING GEAR LEVER LOCK

S 715-010
(5) Make sure you cannot move the landing gear control lever to UP without lock override pushed.

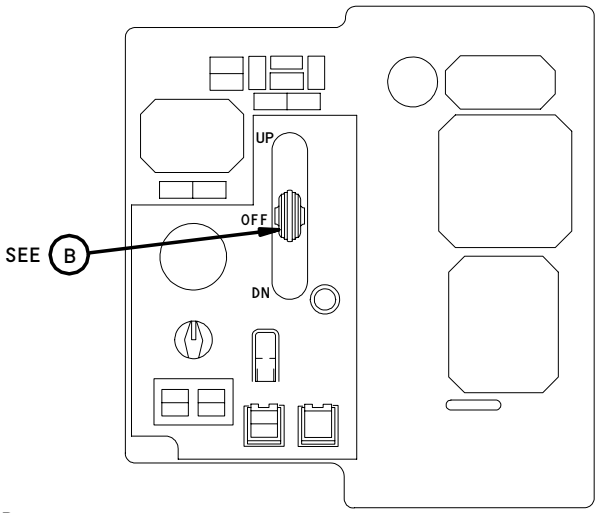
S 865-011
(6) Close this circuit breaker on the overhead circuit breaker panel, P11:
(a) 11U20, LANDING GEAR LEVER LOCK

S 865-012
(7) Move the landing gear control lever to DN.

S 865-013
(8) Remove electrical power (AMM 24-22-00/201).

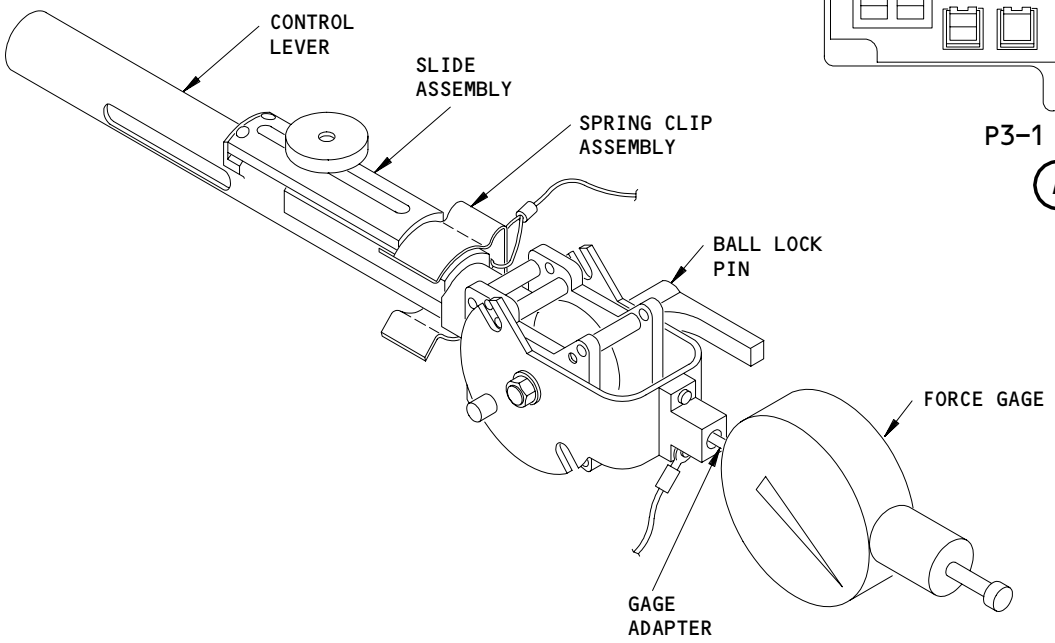


FLIGHT COMPARTMENT



P3-1 PANEL

A

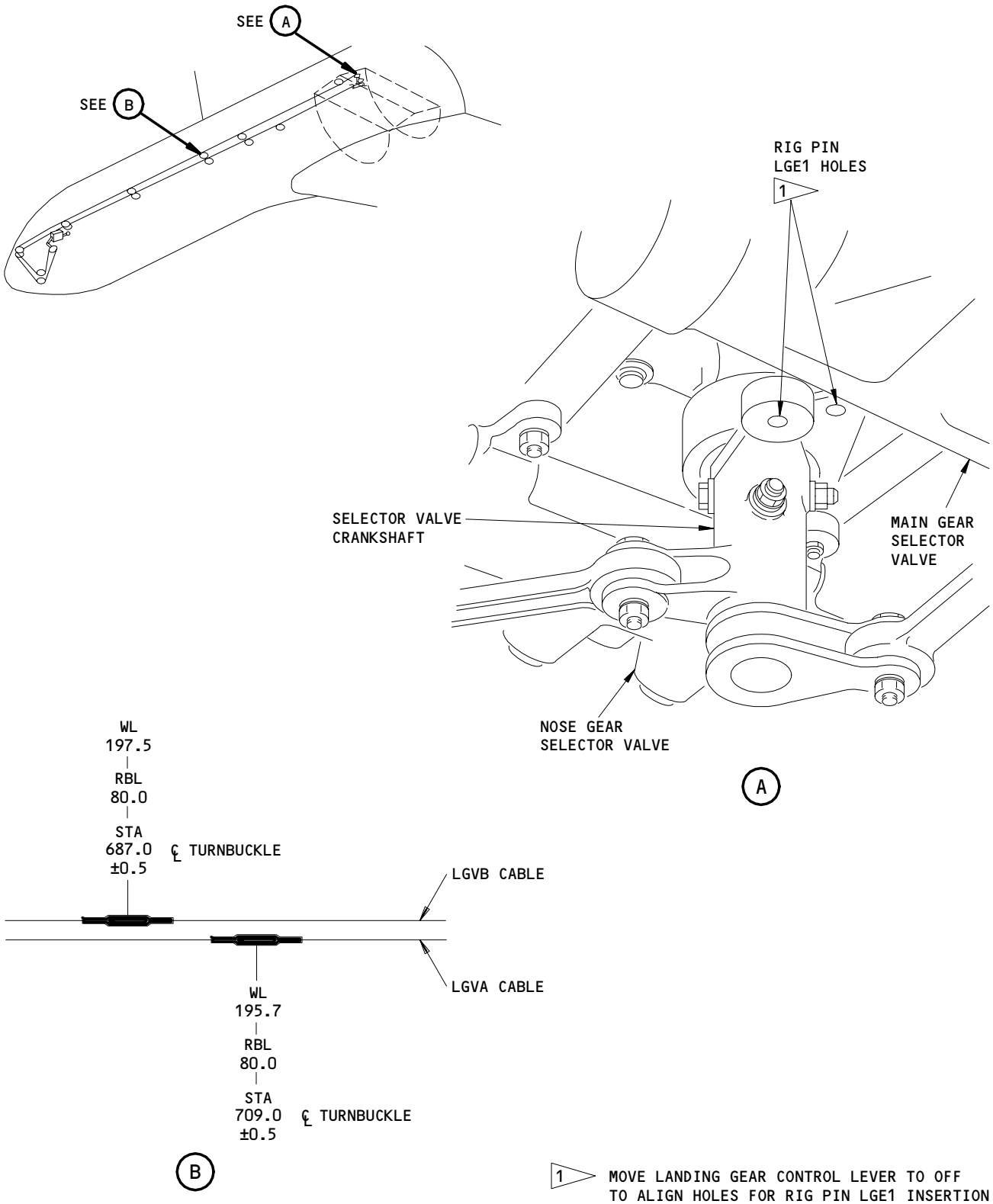


FORCE GAGE EQUIPMENT INSTALLED ON CONTROL LEVER

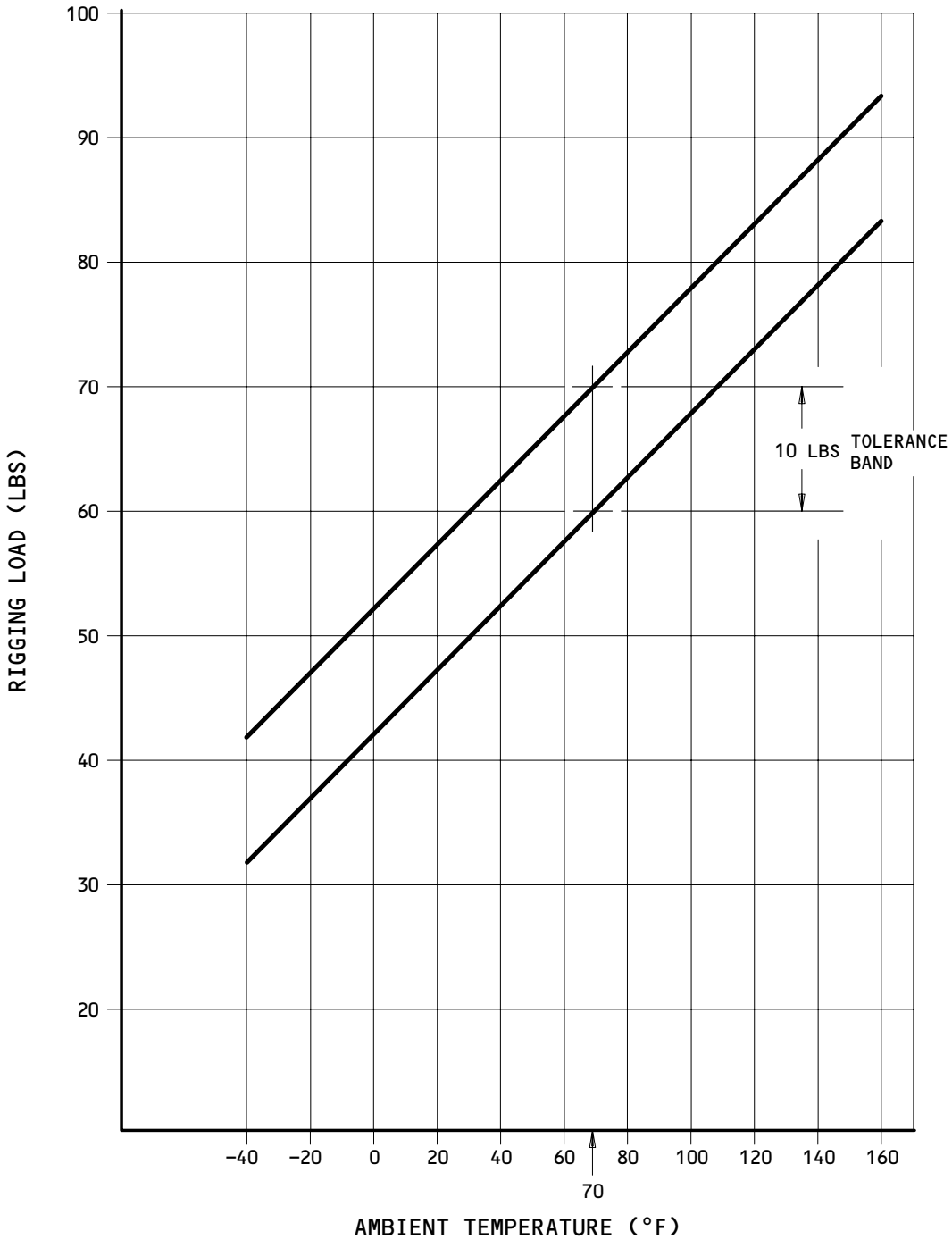
B

Installation of Force Gage Equipment on Control Lever
Figure 501

E73142



Landing Gear Control System Adjustment
Figure 502



Landing Gear Control Cable Adjustment
Figure 503

S 865-029
(9) Put the airplane in the ground mode (AMM 32-09-02/201).

TASK 32-31-00-825-014

3. Adjustment - Landing Gear Control System

A. General

(1) The landing gear control system is correctly adjusted when:
(a) You can easily insert rig pin LGE1 in the landing gear selector valve crankshaft with the landing gear control lever in OFF.
(b) The tension in LGVA and LGVB cables is per Fig. 503.

B. Equipment

(1) Rig Pin LGE1 - P/N A20004-15, part of Set A20004-XX (AMM 20-10-24/201)
(2) Cable Tensiometer - Commercially Available

C. References

(1) 29-11-00/201, Main (Left, Right and Center) Hydraulic Systems
(2) 32-00-15/201, Landing Gear Door Locks
(3) 32-00-20/201, Landing Gear Downlocks

D. Access

(1) Location Zones
143 Main Landing Gear Wheel Well (Left)
144 Main Landing Gear Wheel Well (Right)

E. Prepare for the Adjustment

S 215-015
(1) Make sure the temperatures inside and outside the airplane are within 5°F while you do the adjustment. The temperatures must be stable for one hour before you start the procedure.

S 865-016
(2) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

S 865-017

WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS CAN CAUSE INJURY OR DAMAGE IF THE LOCKS ARE NOT INSTALLED CORRECTLY.

(3) Open the main gear doors and install the door locks (AMM 32-00-15/201).

S 865-018

(4) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

F. Adjust the Landing Gear Control System (Fig. 502)

S 865-019

(1) Make sure the landing gear control lever is in OFF.

S 495-020

(2) Put rig pin LGE1 in the landing gear selector valve crankshaft located on top of the outboard main gear wheel well (Detail A).

S 825-021

(3) If new cable is to be installed, apply a load and move the cable as follows.

NOTE: Do not do this procedure when you adjust old cables.

(a) Tighten cables LGVA and LGVB to 120 ±10 pounds. Adjust the cables so that you can easily remove rig pin LGE1 without resistance.
(b) Remove rig pin LGE1.
(c) Pressurize the center hydraulic system (AMM 29-11-00/201).

WARNING: MAKE SURE THAT THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER. WITHOUT THE DOWNLOCKS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

WARNING: MAKE SURE THE AREA AROUND THE TAIL SKID (IF APPLICABLE) IS CLEAR OF PERSONS AND EQUIPMENT WHEN IT OPERATES. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(d) Move the landing gear control lever from UP to DN 25 times, to cycle the gear to maximum travel limits. Return the lever to OFF.
(e) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).
(f) Put rig pin LGE1 in the landing gear selector valve crankshaft again.

S 825-022

(4) Tighten LGVA and LGVB cables to the values shown in Fig. 503. Adjust the cables so that you can remove the rig pin easily.

S 095-023

(5) Remove rig pin LGE1.

S 435-024

(6) Install the turnbuckle locking clips on the turnbuckles adjusted in this procedure.

S 825-025

(7) Make sure all pulleys turn freely and do not hit the cable guard.

S 825-026

(8) Make sure the cables are not moved from the rigged or normal position by fairleads, rubstrips, or grommets.

S 825-027

(9) Make sure the cables do not touch the pulley or quadrant flanges for the total cable range of movement. The plane of the cable must be within 2 degrees of the pulley or quadrant.

S 095-028

WARNING: MAKE SURE THE DOOR LOCK REMOVAL PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE.

(10) Remove the main gear door locks and close the doors (AMM 32-00-15/201).

LANDING GEAR CONTROL LEVER MODULE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks, one for removal and one for installation of the landing gear control lever module.

TASK 32-31-01-004-001

2. Remove the Landing Gear Control Lever Module (Fig. 401)

   A. References
      (1) AMM 24-22-00/201, Electrical Power - Control
      (2) AMM 27-51-00/201, Trailing Edge Flap Deactivation
      (3) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          212 Control Cabin (Right)

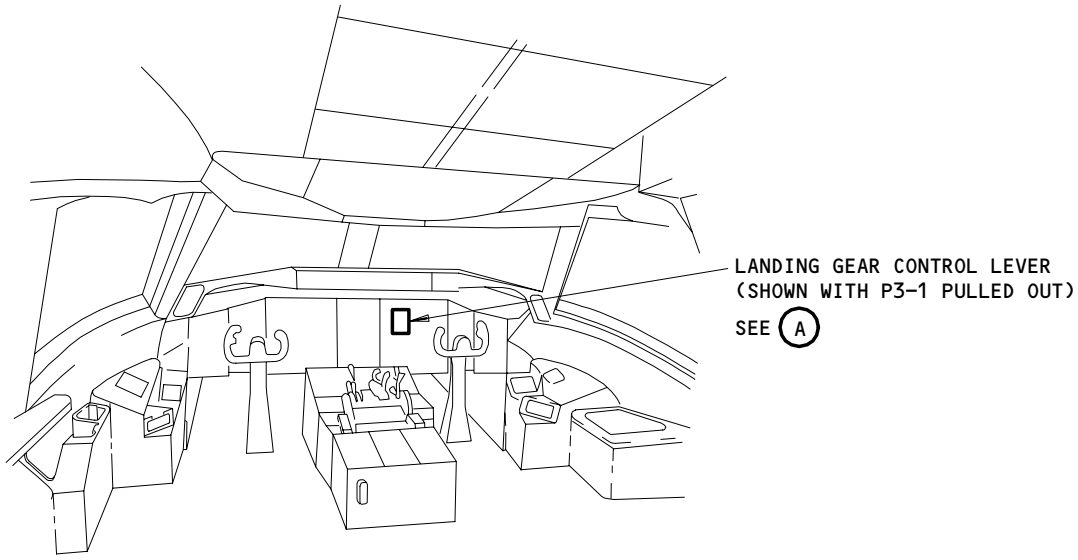
   C. Prepare for the Removal

      S 494-002
      (1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

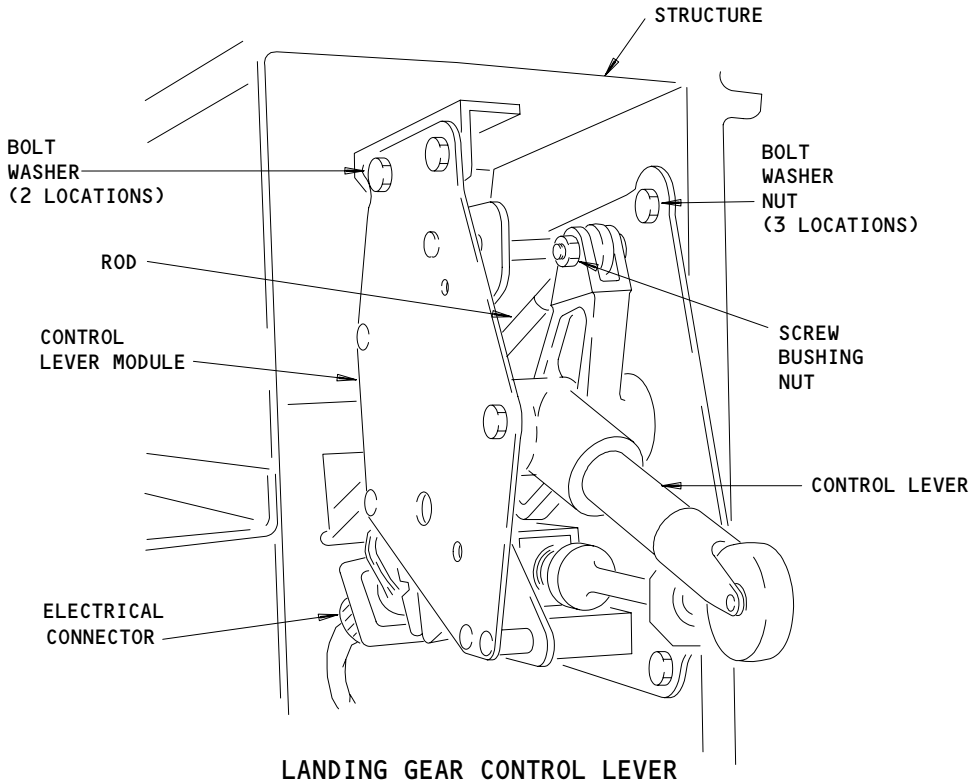
      S 864-003
      (2) Remove the pressure from the hydraulic systems (AMM 29-11-00/201).

      S 864-033
      (3) Do the procedure for deactivation of the trailing edge flaps (AMM 27-51-00/201).

      S 864-004
      (4) Open these circuit breakers on the overhead panel, P11, and attach DO-NOT-CLOSE tags:
          (a) AIRPLANES WITH THE "LANDING GEAR POSITION AIR/GND SYS 2 ALT" CIRCUIT BREAKER INSTALLED AT PANEL GRID LOCATION 11C29; 11C29, LANDING GEAR POSITION AIR/GND SYS 2 ALT
          (b) 11C30, LANDING GEAR POSITION AIR/GND SYS 1



FLIGHT COMPARTMENT



LANDING GEAR CONTROL LEVER
(SHOWN WITH P3-1 PULLED OUT)
(A)

Landing Gear Control Lever Module Installation
Figure 401

(c) 11U20, LANDING GEAR LEVER LOCK
(d) 11U23 or 11U24, POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

(e) 767-300;
1) 11U26, TAIL SKID CONT

S 214-005
(5) Make sure the landing gear control lever is in DN.

D. Remove the Landing Gear Control Lever Module

S 864-024
(1) Move the flap lever out of the UP position.

S 864-025
(2) Move the control wheel aft for clearance when you move the center instrument panel out on its tracks.

S 414-023
(3) Loosen the fasteners and move the center instrument panel, P3-1, out on the track to get access to the module.

NOTE: Check the wire bundles next to the landing gear control lever module for sheath fray. If no protective sheath fray is found, wrap the wire bundles together with tape or zippertubing. If the protective sheath is damaged, or wire damage is found, repair the wire bundles per the Boeing Standard Wiring Practices Manual, and wrap the bundles together with tape or zippertubing.

S 034-007
(4) Disconnect the electrical connector from the rear of the module.

S 034-031
(5) Loosen the nut on the screw that attaches the control rod to the control lever (Detail A).

S 864-032
(6) Move the control lever to the OFF position.

S 034-008
(7) Remove the screw to disconnect the control rod from the control lever (Detail A).

S 024-009
(8) Remove the nuts, washers, and bolts to disconnect the module from the structure, and remove the module.

TASK 32-31-01-404-010

3. Install the Landing Gear Control Lever Module (Fig. 401)

A. Consumable Materials

(1) C00308 Compound, Corrosion Preventive - MIL-C-11796 Class III

B. References

(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 27-51-00/201, Trailing Edge Flap Deactivation
(3) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 32-09-02/201, Air/Ground Relays
(6) AMM 32-31-00/501, Landing Gear Control
(7) AMM 32-35-00/501, Alternate Extend System
(8) AMM 32-42-00/501, Antiskid System
(9) AMM 32-61-00/501, Position Indication and Warning
(10) AMM 34-46-00/501, Ground Proximity Warning System

C. Access

(1) Location Zone
212 Control Cabin (Right)

D. Procedure

S 424-011
(1) Install the bolts, washers, and nuts to connect the control lever module to the structure (Detail A).

S 864-012
(2) Move the control lever to the OFF position.

S 624-013
(3) Apply a layer of corrosion preventive compound to the bore of the control rod bearing.

S 434-014
(4) Install the screw, bushing, and nut to connect the control rod to the contol lever.

S 864-027
(5) Put the control lever to the DN position.

S 864-026
(6) Tighten the nut on the screw that attaches the control rod to the control lever.

S 434-016
(7) Connect the electrical connector.

S 414-017
(8) Move the panel P3-1 into position and install the fasteners.

S 864-028
(9) Move the flap lever to the UP position.

S 864-030
(10) Do the procedure to activate the trailing edge flaps (AMM 27-51-00/201).

S 864-029
(11) Move the control wheel to the normal position if you moved it aft for clearance.

S 864-018
(12) Make sure these circuit breakers on the overhead panel, P11, are closed:
  (a) AIRPLANES WITH THE "LANDING GEAR POSITION AIR/GND SYS 2 ALT" CIRCUIT BREAKER INSTALLED AT PANEL GRID LOCATION 11C29;
  11C29, LANDING GEAR POSITION AIR/GND SYS 2 ALT
  (b) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
  (c) 11U20, LANDING GEAR LEVER LOCK
  (d) 11U23 or 11U24, POSITION AIR/GND SYS 2

    NOTE: This circuit breaker can be in one of these two locations.

  (e) 767-300;
  1) 11U26, TAIL SKID CONT

S 714-020
(13) Do the steps that follow to make sure the control lever module is installed correctly:
  (a) Move the lever into and out of all detents. The lever must move smoothly with no interference, scraping or binding. When you release the lever at each detent, it must go into the detent without using any extra force.
  (b) With the lever in the extended position, push the lock override button and move the lever through its full travel. The lever must move smoothly with no interference, scraping or binding. When you release the button, it should return to the fully extended position with no interference, scraping or binding.
  (c) Supply electrical power (AMM 24-22-00/201).
  (d) Pressurize the center hydraulic system (AMM 29-11-00/201).
  (e) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

WARNING: MAKE SURE THE AREA AROUND THE LANDING GEAR AND TAIL SKID (IF APPLICABLE) IS CLEAR OF PERSONS AND EQUIPMENT. THE MAIN GEAR DOORS WILL OPEN AND CLOSE QUICKLY WHEN YOU MOVE THE LANDING GEAR CONTROL LEVER. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(f) Make sure the lever cannot be moved to UP without the lever lock override button pushed in. Push the lever lock override button and make sure the control lever will move to UP.
(g) Move the landing gear control lever to DN. Make sure the green NOSE, LEFT, and RIGHT lights on the panel P3-1 are on.
(h) Put the air/ground relay system in the air mode (AMM 32-09-02/201).
(i) Make sure the control lever will move to UP.
(j) Move the landing gear control lever to DN. Make sure the green NOSE, LEFT, and RIGHT lights on the P3-1 are on.
(k) Put the air/ground relay system back to the ground mode (AMM 32-09-02/201).
(l) 767-300;
Do the steps that follow to do a check of tail skid indication and operation:
1) Move the control lever to the OFF position.
2) Make sure the tail skid retracts and the TAIL SKID light on the P3-1 panel comes on within 40 seconds. The EICAS message, TAIL SKID, must also show on the top display.
3) Move the control lever for the landing gear to the DN position.
4) Make sure the tail skid extends and the TAIL SKID light goes off. The EICAS message, TAIL SKID, must not show within 40 seconds.

S 714-040

(14) Do the Operational Test of the Landing Gear Control system (AMM 32-31-00/501).

S 714-041

(15) Do the Operational Test of the Landing Gear Alternate Extend System (AMM 32-35-00/501).

S 714-042

(16) Do the System Test of the Position Indication and Warning System for the Landing Gear (AMM 32-61-00/501).

S 714-043

(17) Do the Antiskid System Operational Test - Landing Gear Lever (AMM 32-42-00/501).

S 714-044

(18) Do the Operational Test of the Ground Proximity Warning System (GPWS) (AMM 34-46-00/501).

(a) Remove the pressure from the center hydraulic system if it is no longer necessary (AMM 29-11-00/201).

(b) Remove electrical power if it is no longer necessary (AMM 24-22-00/201).

LANDING GEAR SELECTOR VALVES - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks, one for removal and one for installation of the items that follow:
      (1) The selector valve for the nose landing gear
      (2) The selector valve for the main landing gear.

TASK 32-31-02-004-001

2. Remove the Selector Valve (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Main Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          143 Main Landing Gear Wheel Well (Left)
          144 Main Landing Gear Wheel Well (Right)

   C. Prepare for Removal

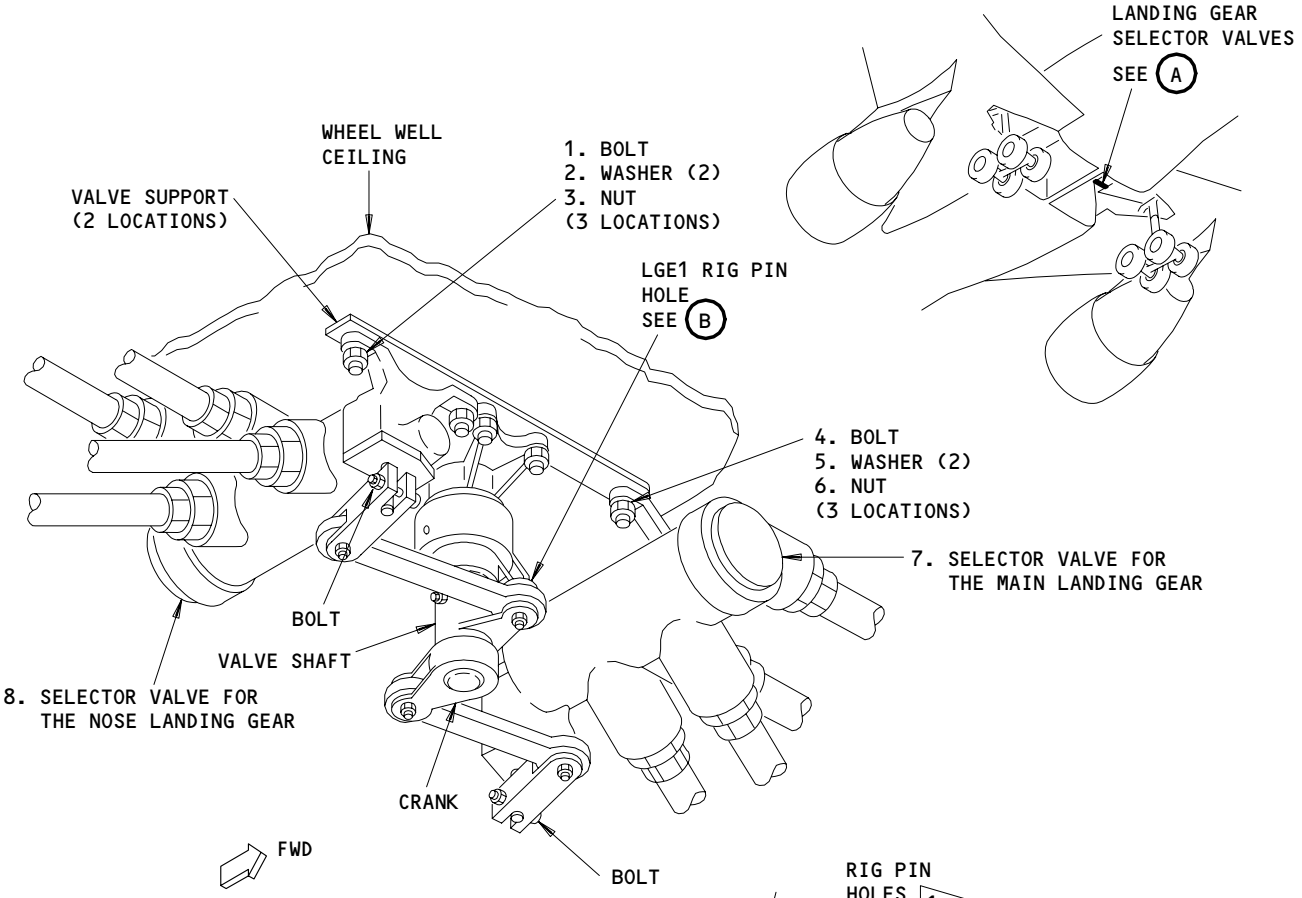
      S 214-002
      (1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

      S 494-003

      WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS, WHEN THEY CLOSE CAN CAUSE INJURY OR DAMAGE IF THE LOCKS ARE NOT CORRECTLY INSTALLED.

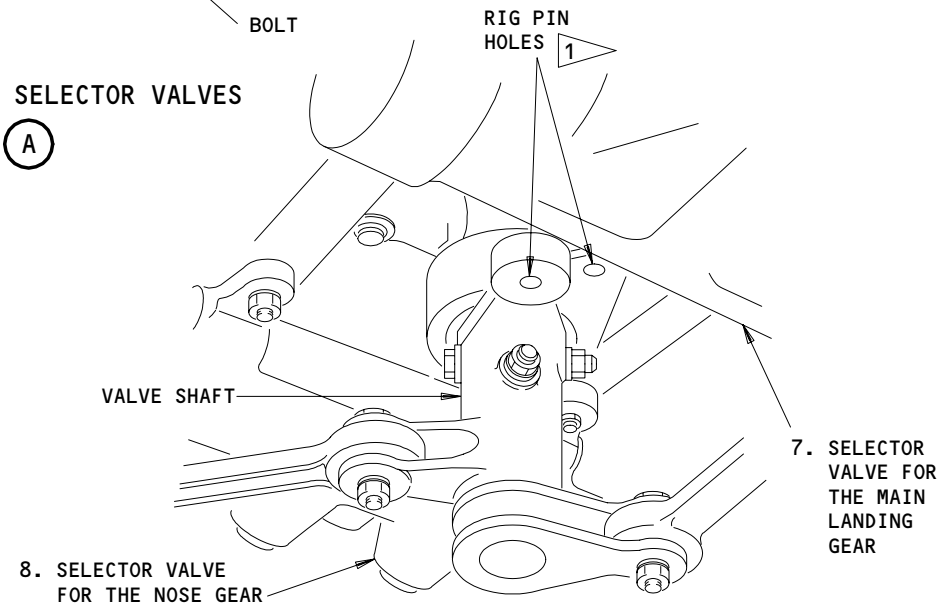
      (2) Open the main gear doors and install the door locks (AMM 32-00-15/201).

      S 864-004
      (3) Remove pressure from the center hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).



LANDING GEAR SELECTOR VALVES

A



LGE1 RIG PIN HOLE

B

1 MOVE THE CONTROL LEVER FOR THE LANDING GEAR TO "OFF" TO ALIGN THE HOLES FOR INSTALLATION OF THE RIG PINS

Landing Gear Selector Valves Installation
Figure 401

D. Remove the Landing Gear Selector Valve

S 074-023
(1) Disconnect hydraulic lines from the valve. Install plugs in the ports and the hoses. Clear the hoses out of the work area.

S 034-005
(2) Loosen the bolt to disconnect the crank from the splined valve shaft.

S 034-006
(3) Remove the bolts (1 or 4) to disconnect the selector valve from the valve support on the top of the wheel well.

S 024-007
(4) Remove the selector valve (7 or 8).

TASK 32-31-02-404-008

3. Install the Selector Valve (Fig. 401)

A. Equipment
(1) Rig Pin LGE1 - P/N A20004-15, part of kit A20004-1 (AMM 20-10-24/201)
(2) Cable Tensionmeter

B. Consumable Materials
(1) D00153 Fluid, Hydraulic - BMS 3-11, Type IV

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Bolt	32-31-02	01	15
	2	Washer			30
	3	Nut			40
	4	Bolt			15
	5	Washer			30
	6	Nut			40
	7	Valve Assy - Main Gear (Main Landing Gear Selector Valve)			230
	8	Valve Assy - Nose Gear (Nose Landing Gear Selector Valve)			195

D. References
(1) AMM 12-12-01/301, Hydraulic Systems
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Main Gear Door Locks

(4) AMM 32-00-20/201, Main Gear Downlocks
(5) AMM 32-31-00/501, Landing Gear Control

E. Access
(1) Location Zones
143 Main Landing Gear Wheel Well (Left)
144 Main Landing Gear Wheel Well (Right)

F. Procedure

S 614-009
(1) Fill the selector valve with hydraulic fluid. Install plugs in the ports.

S 984-010
(2) Put the selector valve (7 or 8) in position between the valve support on the top of the wheel well and the crank (Detail A).

S 424-011
(3) Install the bolts (1 or 4), washers (2 or 5), and nuts (3 or 6) to connect the selector valve to the valve support.

S 434-012
(4) Install the cranks onto the splined valve shaft and tighten the bolt.

S 434-013
(5) Make sure pressure is removed from the center hydraulic system (AMM 29-11-00/201). Connect the hydraulic lines to the ports on the selector valve.

G. Do the steps that follow to make sure the selector valve is installed correctly:

S 494-018
(1) Make sure rig pin LGE1 can be put into the rig pin holes easily with the landing gear control lever in OFF (Detail B).

S 224-019
(2) Make sure LGVB and LGVA control cables are at the correct tension (AMM 32-31-00/501).

S 864-020
(3) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 864-025

WARNING: MAKE SURE THAT THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER. WITHOUT THE DOWNLOCKS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

S 714-026

WARNING: MAKE SURE THE AREA AROUND THE TAIL SKID (IF APPLICABLE) IS CLEAR OF PERSONS AND EQUIPMENT WHEN IT OPERATES. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(5) Move the landing gear control lever from UP to DN several times. Return the lever to DN.

S 214-022

(6) Make sure hydraulic fluid does not leak from the selector valve.

H. Put the Airplane Back to Its Usual Condition

S 864-015

(1) Remove the pressure from the center hydraulic system if it is no longer necessary (AMM 29-11-00/201).

S 864-016

(2) Look to see that the hydraulic reservoirs are at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 094-017

WARNING: MAKE SURE THE DOOR LOCK REMOVAL PROCEDURE IS DONE CORRECTLY . FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE.

(3) Remove the main gear door locks and close the doors (AMM 32-00-15/201).

LANDING GEAR SELECTOR VALVE QUADRANT - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first task is for removal of the selector valve quadrant for the landing gear. The second task is for installation of the selector valve quadrant.

TASK 32-31-03-004-001

2. Remove the Selector Valve Quadrant (Fig. 401)
   A. Equipment
      (1) Main Gear Door Locks (AMM 32-00-15/201)
      (2) Rig Pin LGE1 - P/N A20004-15, part of kit A20004-1 (AMM 20-10-24/201)
   B. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
      (4) AMM 53-01-01/401, Floor Panels
   C. Access
      (1) Location Zones
          143 Main Landing Gear Wheel Well (Left)
          144 Main Landing Gear Wheel Well (Right)
          242 Passenger Cabin (Right)

   D. Prepare for Removal

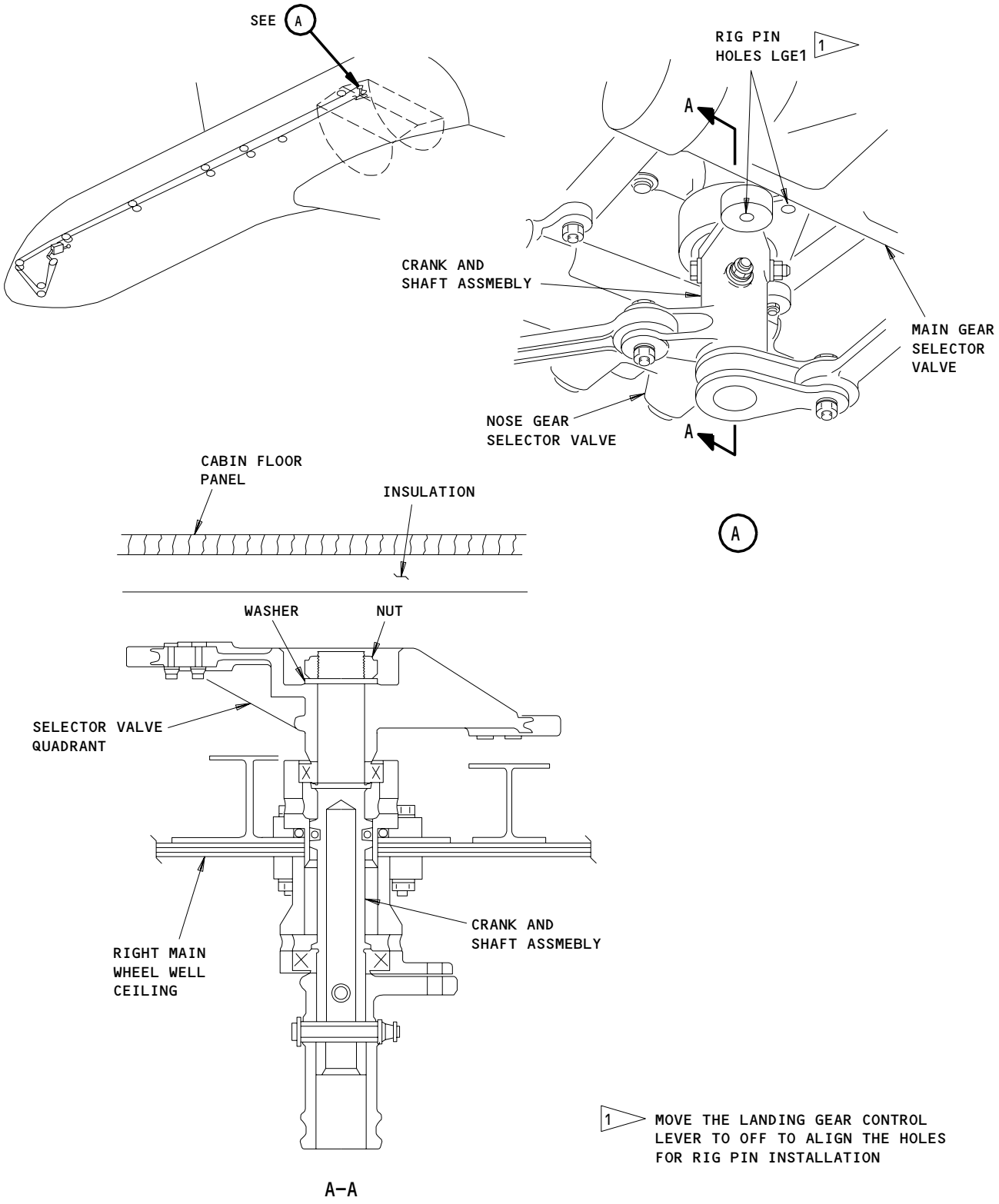
      S 214-006
      (1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

      S 494-005

      WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE IF THE LOCKS ARE NOT INSTALLED CORRECTLY

      (2) Open the main gear doors and install the door locks (AMM 32-00-15/201).

      S 864-004
      (3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).



Landing Gear Selector Valve Quadrant Installation
Figure 401

E. Remove the Selector Valve Quadrant

S 864-003
(1) Move the landing gear control lever to OFF.

S 494-002
(2) Put the rig pin LGE 1 through the rig pin holes on the selector valve crankshaft (Detail A).

S 014-016
(3) Remove the floor panel and insulation below the sixth passenger window aft of the overwing escape hatch on the right side of the airplane (AMM 53-01-01/401).

S 034-015
(4) Disconnect LGVA and LGVB control cables from the quadrant.

S 024-014
(5) Remove the nut and washer (View A-A). Remove the quadrant.

TASK 32-31-03-404-007

3. Install the Selector Valve Quadrant (Fig. 401)

A. Equipment
(1) Main Gear Door Locks (AMM 32-00-15/201)
(2) Rig Pin LGE1 - P/N A20004-15, part of kit A20004-1 (AMM 20-10-24/201)

B. References
(1) AMM 32-00-15/201, Landing Gear Door Locks
(2) AMM 32-31-00/501, Landing Gear Control
(3) AMM 53-01-01/401, Floor Panels

C. Access
(1) Location Zones
143 Main Landing Gear Wheel Well (Left)
144 Main Landing Gear Wheel Well (Right)
242 Passenger Cabin (Right)

D. Procedure

S 424-013
(1) Install the quadrant on the crankshaft.

S 434-012

(2) Install the washer and nut. Tighten the nut to 600-650 pound-inches (View A-A).

S 434-011

(3) Connect LGVA and LGVB control cables to the quadrant. Adjust the cables to the correct tension (AMM 32-31-00/501).

S 094-010

(4) Make sure the rig pin LGE1 can be removed easily. Remove the rig pin.

S 494-009

WARNING: MAKE SURE THE DOOR LOCK REMOVAL PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE CAN CAUSE INJURY OR DAMAGE.

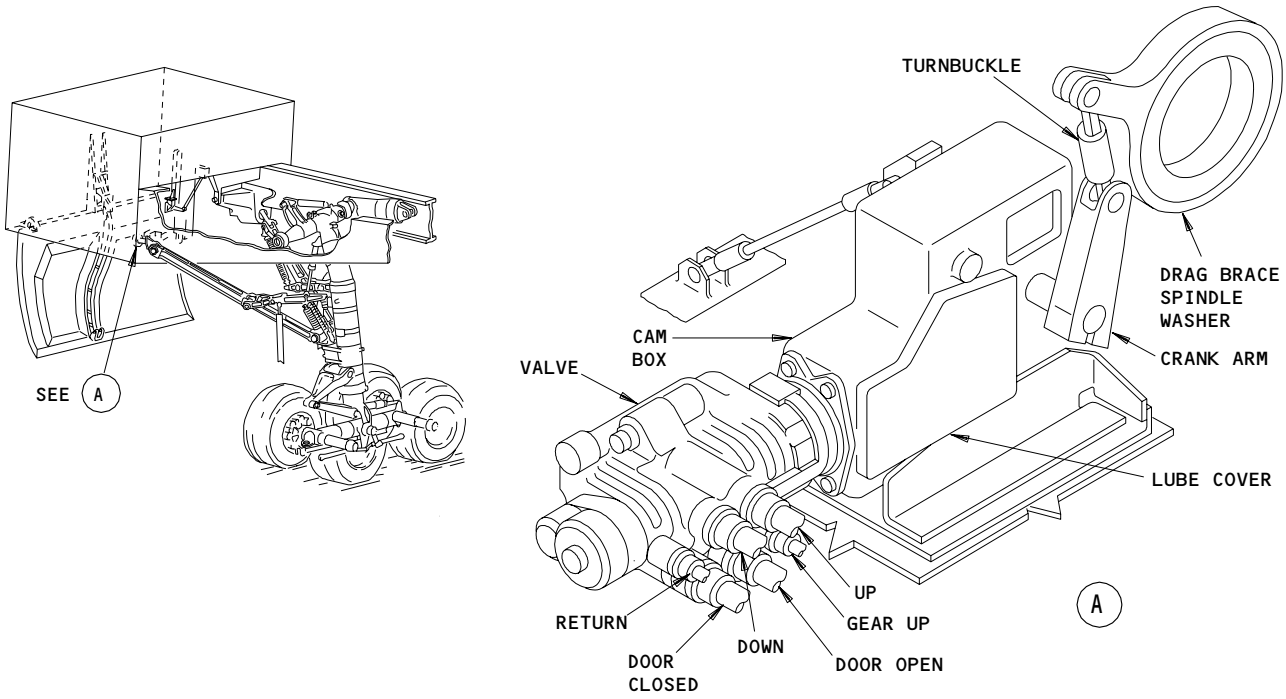
(5) Remove the main gear door locks and close the doors (AMM 32-00-15/201).

S 414-008

(6) Install the floor panel and insulation that you removed for access to the quadrant (AMM 53-01-01/401).

MAIN GEAR EXTENSION AND RETRACTION - DESCRIPTION AND OPERATION

1. General
   A. The main gear extension and retraction system includes door-operated and gear-operated sequence valves, door and latch actuators, transfer cylinders, truck positioners, and drag and side brace lock actuators. Moving the landing gear control lever to DN or UP provides center hydraulic system pressure to extend and retract the gear.
   B. Gear and door positions are monitored by the Landing Gear Position Indication System (Ref 32-61-00) which receives inputs from proximity sensors mounted on the side and drag braces and the doors.
2. Component Details
   A. Gear-Operated Sequence Valve (Fig. 1)



Gear-Operated Sequence Valve
Figure 1

(1) Gear-operated sequence valves control the main gear doors. Each door is controlled by a separate valve. The valves channel pressure from the selector valve to the latch and door actuators. Valve sequencing opens the door, keeps it open while the gear moves, then closes the door. The valve maintains pressure on the door actuator to keep the door open until the gear is fully extended or retracted. The upper drag brace spindle mechanically actuates the valve.

B. Gear-Operated Sequence Valve Cam Box (Fig. 2)

(1) The sequence valve cam box links the valve to the gear. The cam box spindle washer is splined to the drag brace upper spindle to rotate with it during extension and retraction. Washer rotation causes the cam box mechanisms to properly sequence landing gear door operation.

C. Door Latch Actuator (Fig. 3)

(1) The latch actuator is an actuator and a valve. When the door is closed, the actuator pushes against the door uplock hook to unlatch the door. The actuator then directs pressure to the door actuator to open the door.

D. Door Actuator (Fig. 4)

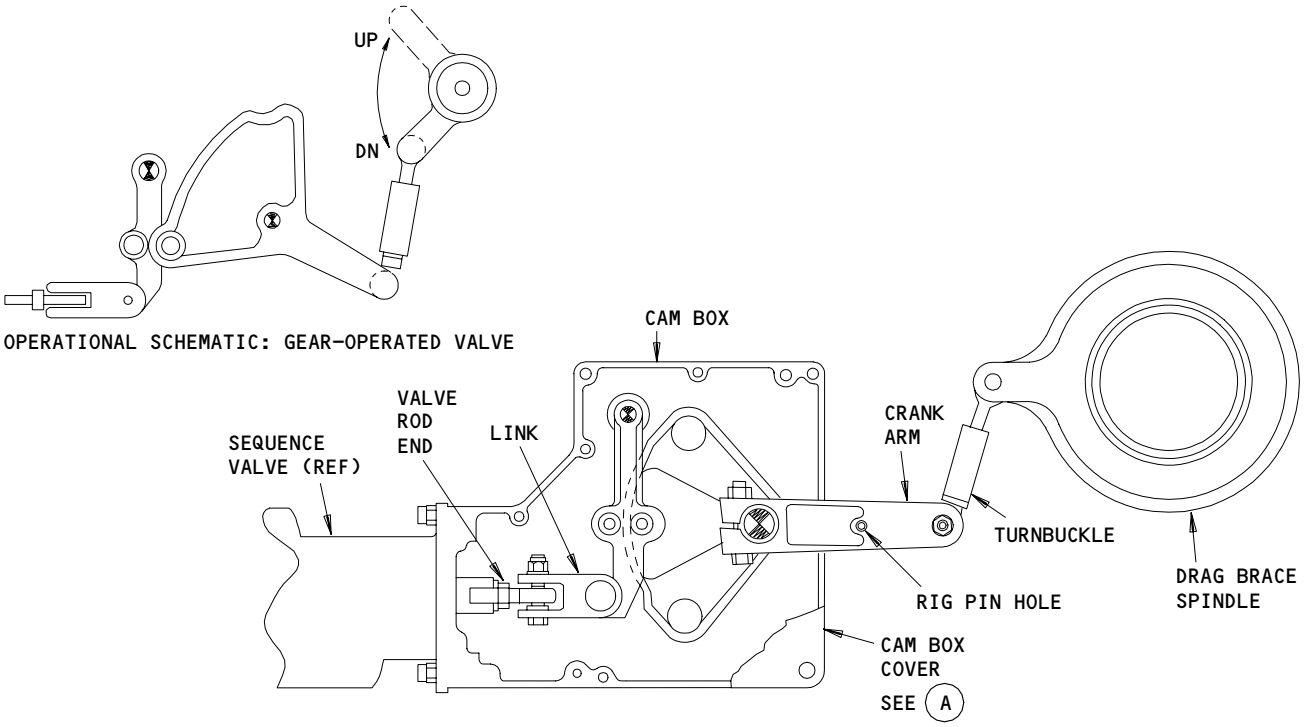
(1) The door actuator receives pressure from the selector valve through the gear-operated sequence valve and the latch actuator to open and close the landing gear door. The actuator is attached by a link to the keel beam at one end and the door hinge bellcrank at the other. The actuator retracts to open the door. The actuator has two internal snubbers to slow the door down at the end of a cycle.

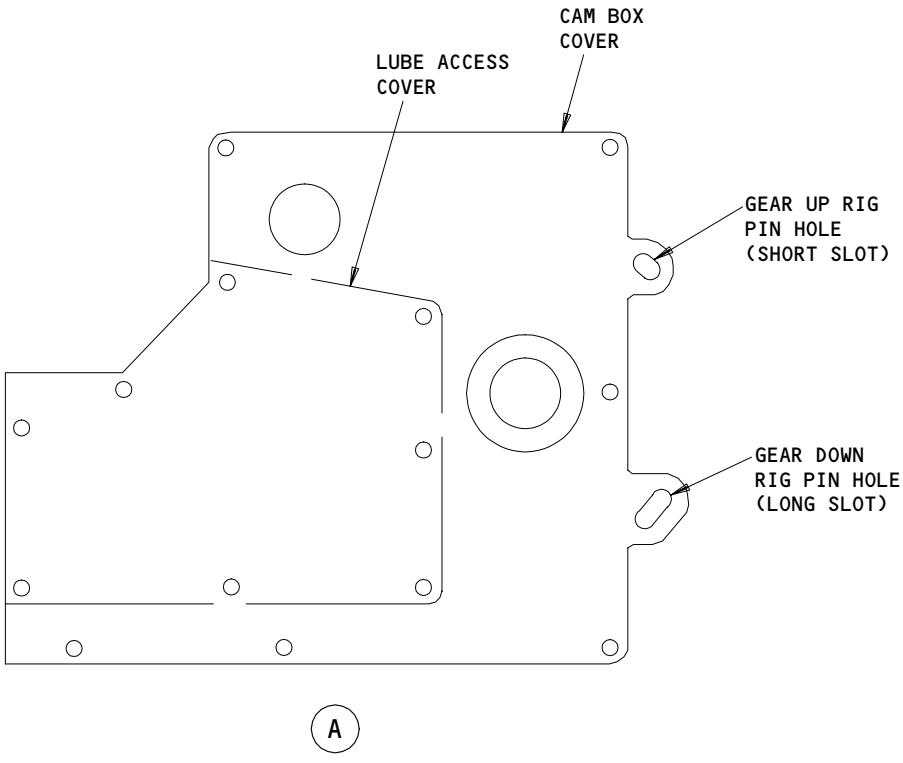
E. Main Gear Transfer Cylinder (Fig. 5)

(1) The transfer cylinder receives pressure from the selector valve. On gear extension, the transfer cylinder pressurizes the retract actuator to momentarily retract. The door can then unlatch without the weight of the gear on it.

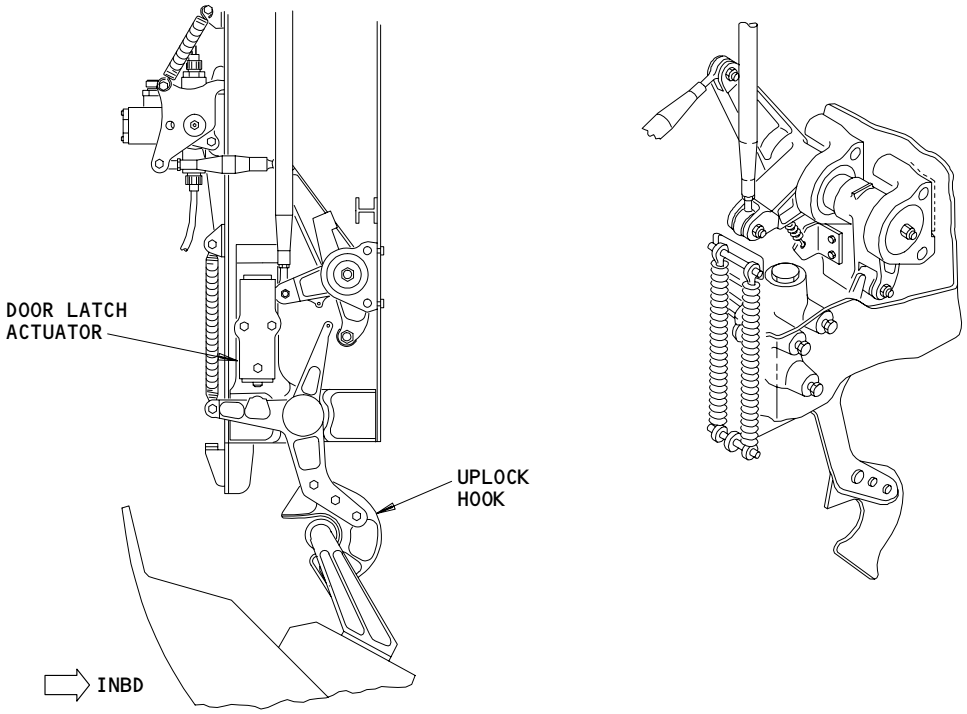
F. Door-Operated Sequence Valve (Fig. 6)

(1) The door-operated sequence valve controls pressure from the selector valve to the retract actuator. The valve ensures that the main gear door is open before the gear retracts. A control rod actuates the sequence valve as the main gear door opens and closes. In case of a control rod failure, a spring positions the valve to the door closed position. The valve allows full pressure to the retract actuator when the door is fully open.

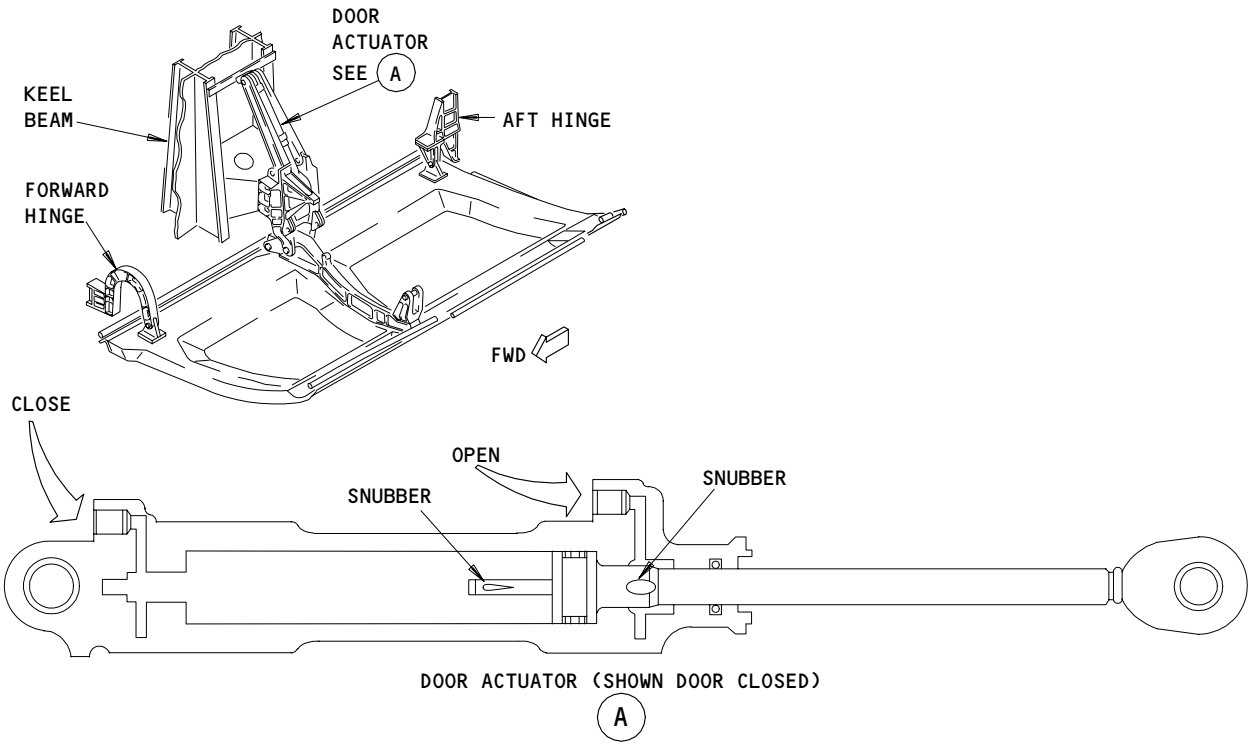




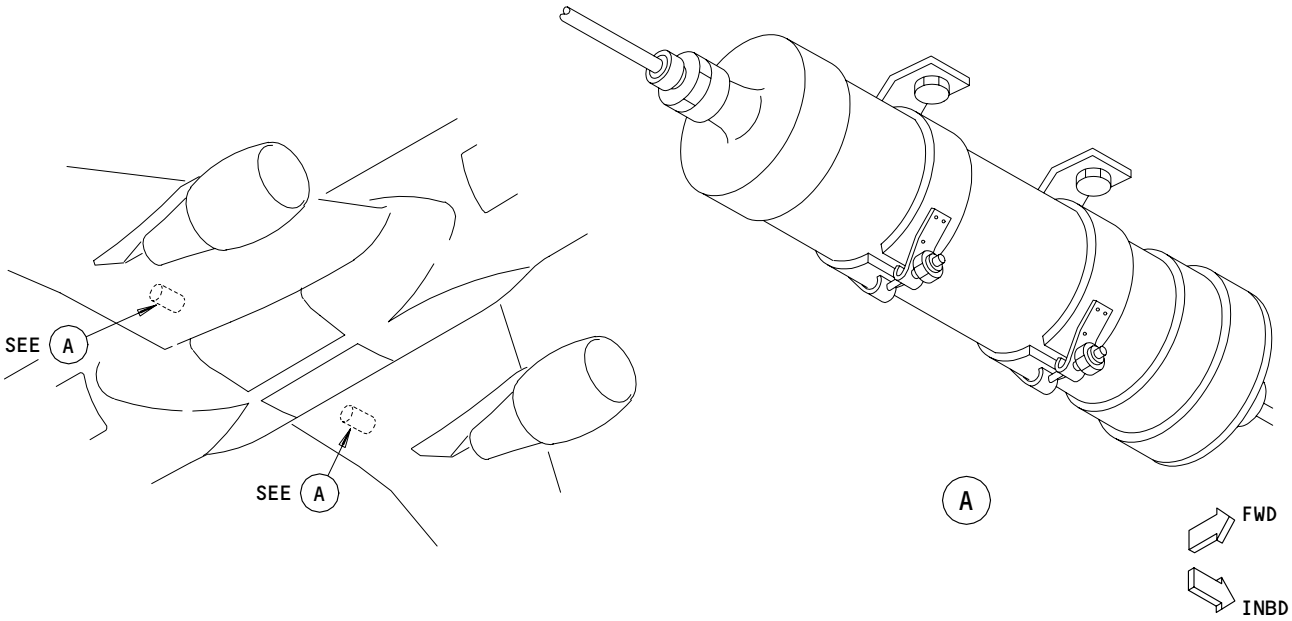
Gear-Operated Sequence Valve Cam Box
Figure 2



Door Latch Actuator
Figure 3



Door Actuator
Figure 4



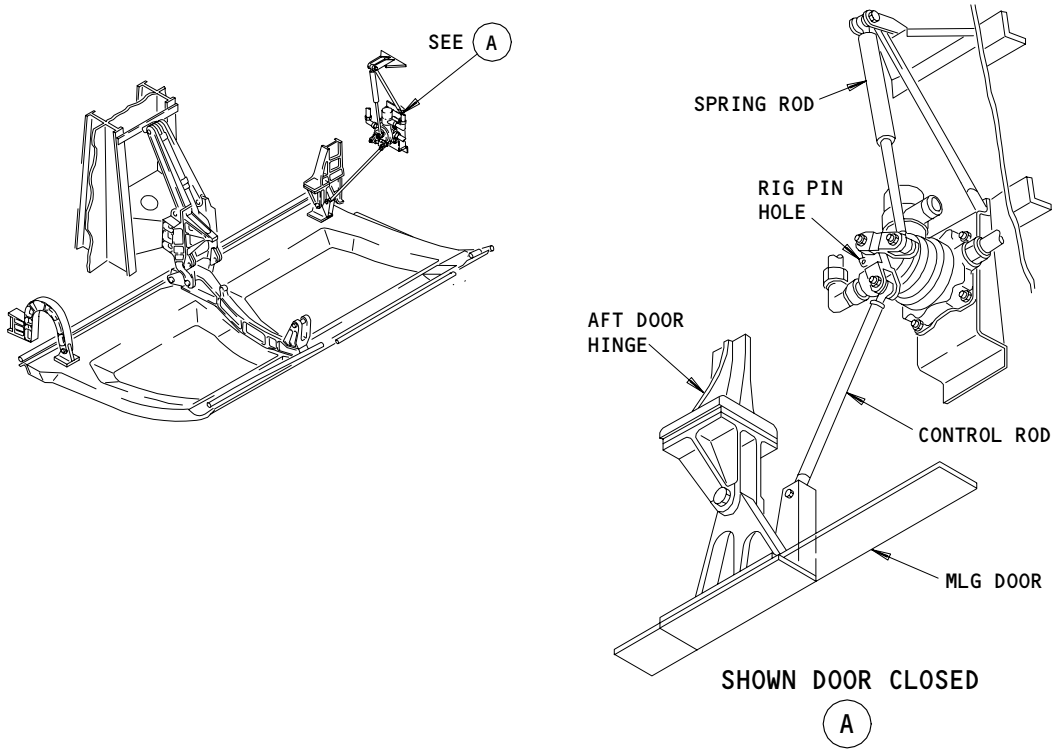
Main Gear Transfer Cylinder
Figure 5

G. Retract Actuator (Fig. 7)
   (1) The retract actuator extends and retracts the main gear. It is pinned to the wing rear spar and the main trunnion gear. The actuator retracts to retract the gear.

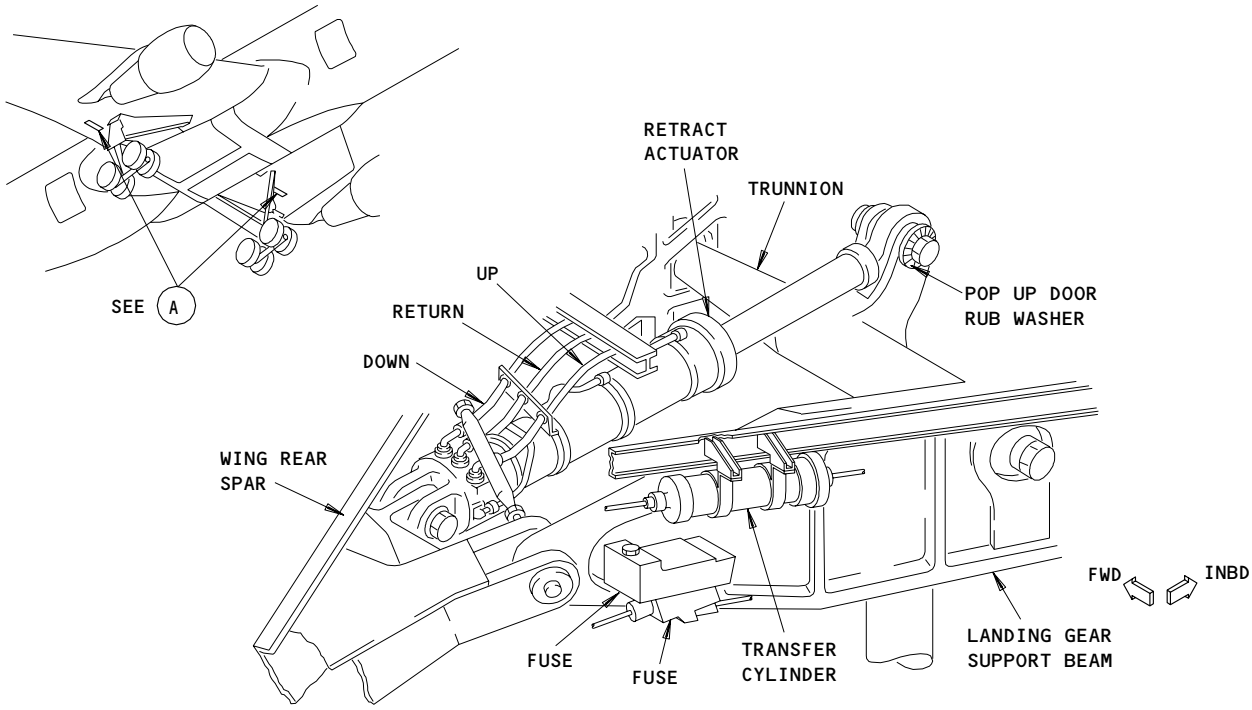
H. Side Brace Lock Actuator (Fig. 8)
   (1) The lock actuator pushes the lock link overcenter to lock the side brace when the gear is extended. Springs keep the lock link overcenter when the actuator is not pressurized. The actuator pulls the lock link out of overcenter to unlock the side brace for gear retraction.

I. Drag Brace Lock Actuator (Fig. 8)
   (1) The strut actuator pushes the jury strut overcenter to lock the drag brace when the gear is extended. Springs keep the jury strut overcenter when the actuator is not pressurized. The actuator pulls the jury strut out of overcenter to unlock the drag brace for gear retraction.

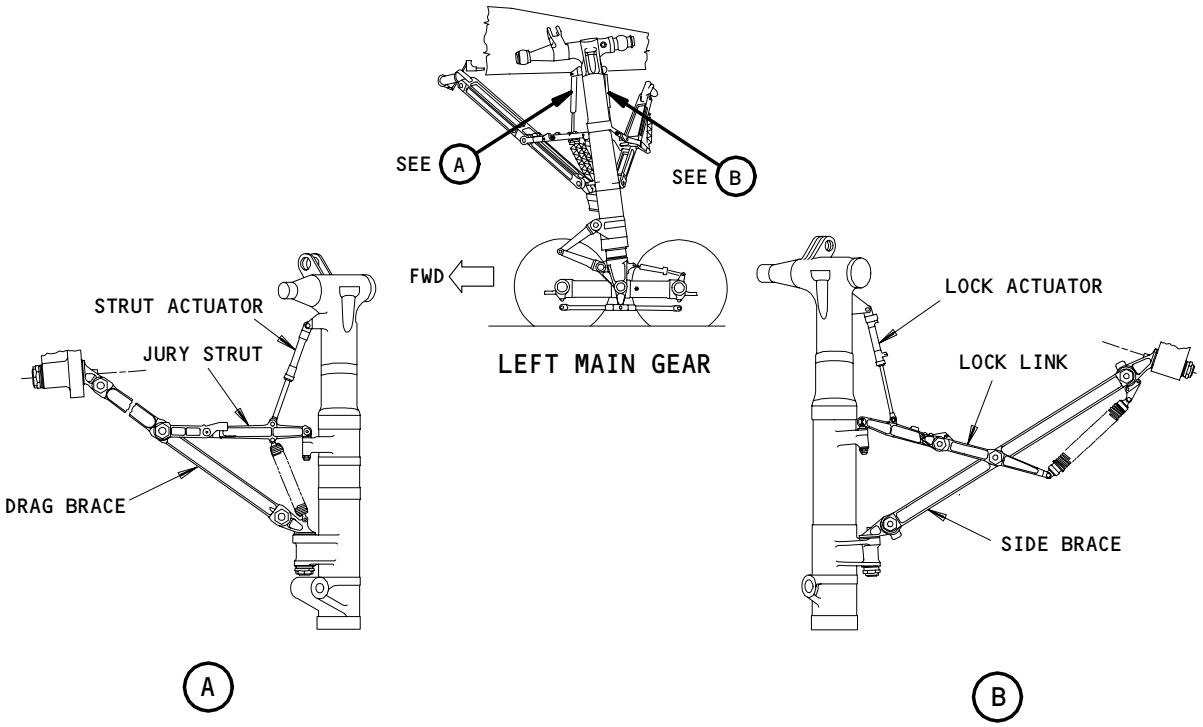
J. Truck Positioner (Fig. 9)
   (1) The truck positioner is a hydraulic actuator which tilts the truck to fit into the wheel well during gear retraction. It is mounted on the aft side of the shock strut between the truck and shock strut. The positioner retracts to tilt the gear during retraction; during landing an internal relief valve allows the positioner to be extended by the gear.



Door-Operated Sequence Valve
Figure 6



Main Gear Retract Actuator
Figure 7



Main Gear Lock Actuators
Figure 8

K. Truck Positioner Fuses (Fig. 9A)

(1) The truck positioner fuses are hydraulically located upstream of the lock actuators and the truck positioner. The fuses set, to prevent excessive hydraulic fluid loss, in case of a broken lock actuator or truck positioner hydraulic line. The fuses are normally reset automatically by removing and then supplying center system hydraulic pressure. The fuses also have a manual bypass capability that, in effect, resets the fuse when activated.

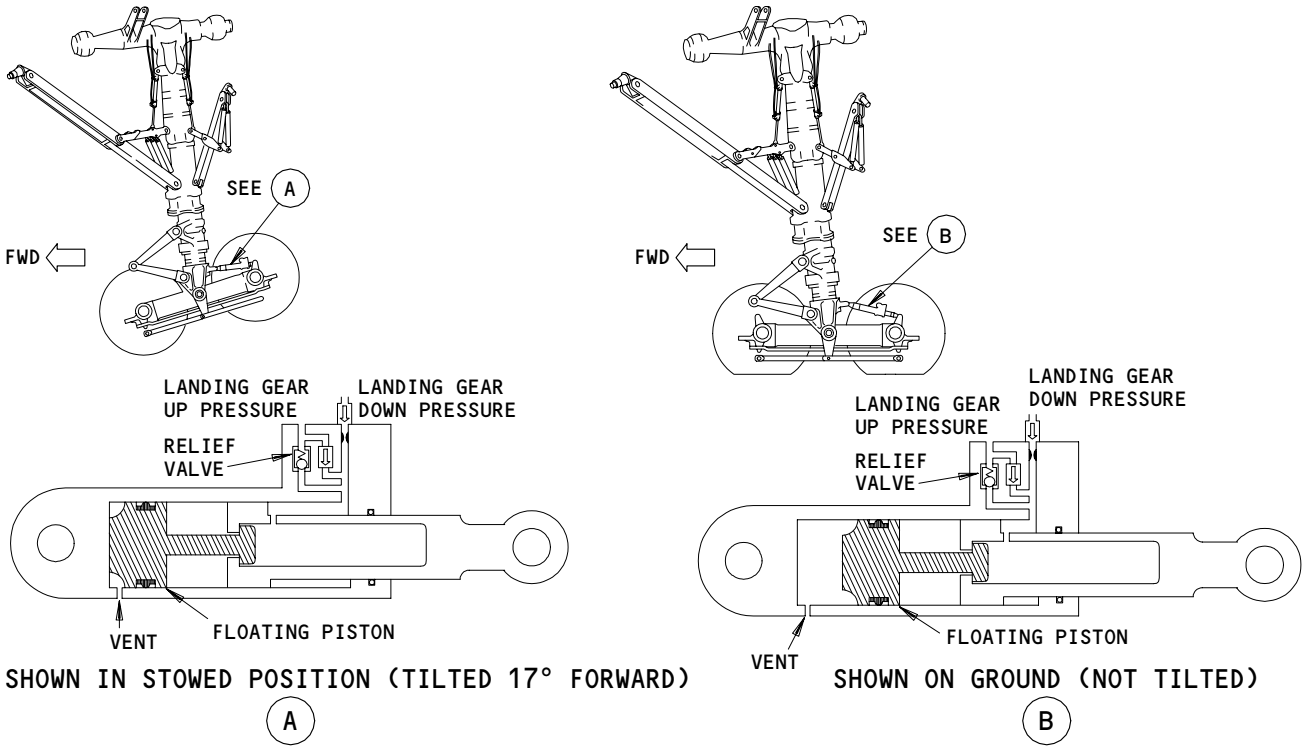
3. Operation (Fig. 10)

A. Functional Description

(1) Gear Extension

(a) To extend the main gear, the landing gear control lever should be moved to DN. Quadrants and cables then move the main gear selector valve to direct pressure from the center hydraulic system to the left and right main gears.

(b) The truck positioner receives pressure from the selector valve to tilt the truck. This allows the gear to extend without the truck interfering with the wheel well.



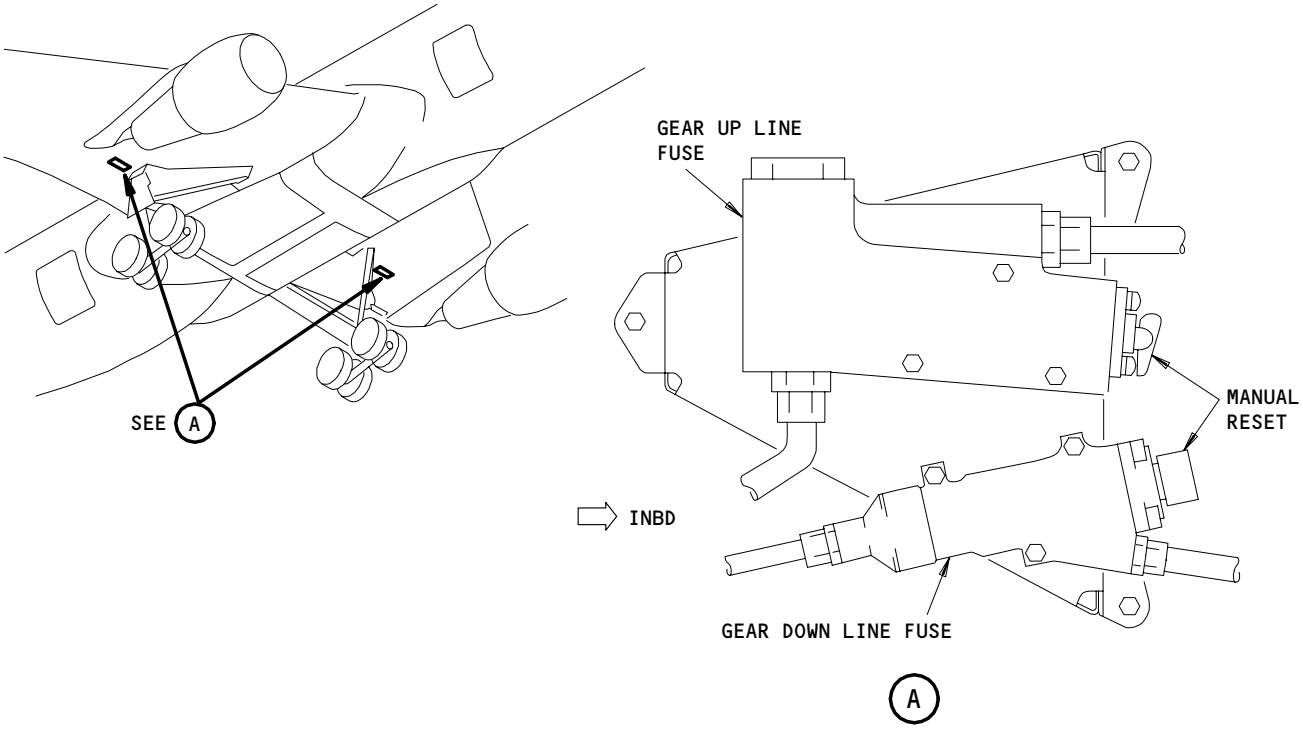
Truck Positioner
Figure 9

(c) The gear-operated sequence valve and the transfer cylinder receive pressure from the selector valve. The transfer cylinder momentarily causes the retract actuator to lift the gear off the door. Initially, the sequence valve is in the UP position. Pressure flows from the sequence valve to the latch actuator. Once pressurized, the latch actuator unlatches the door and directs pressure to the door actuator. The door actuator retracts to open the main gear door.

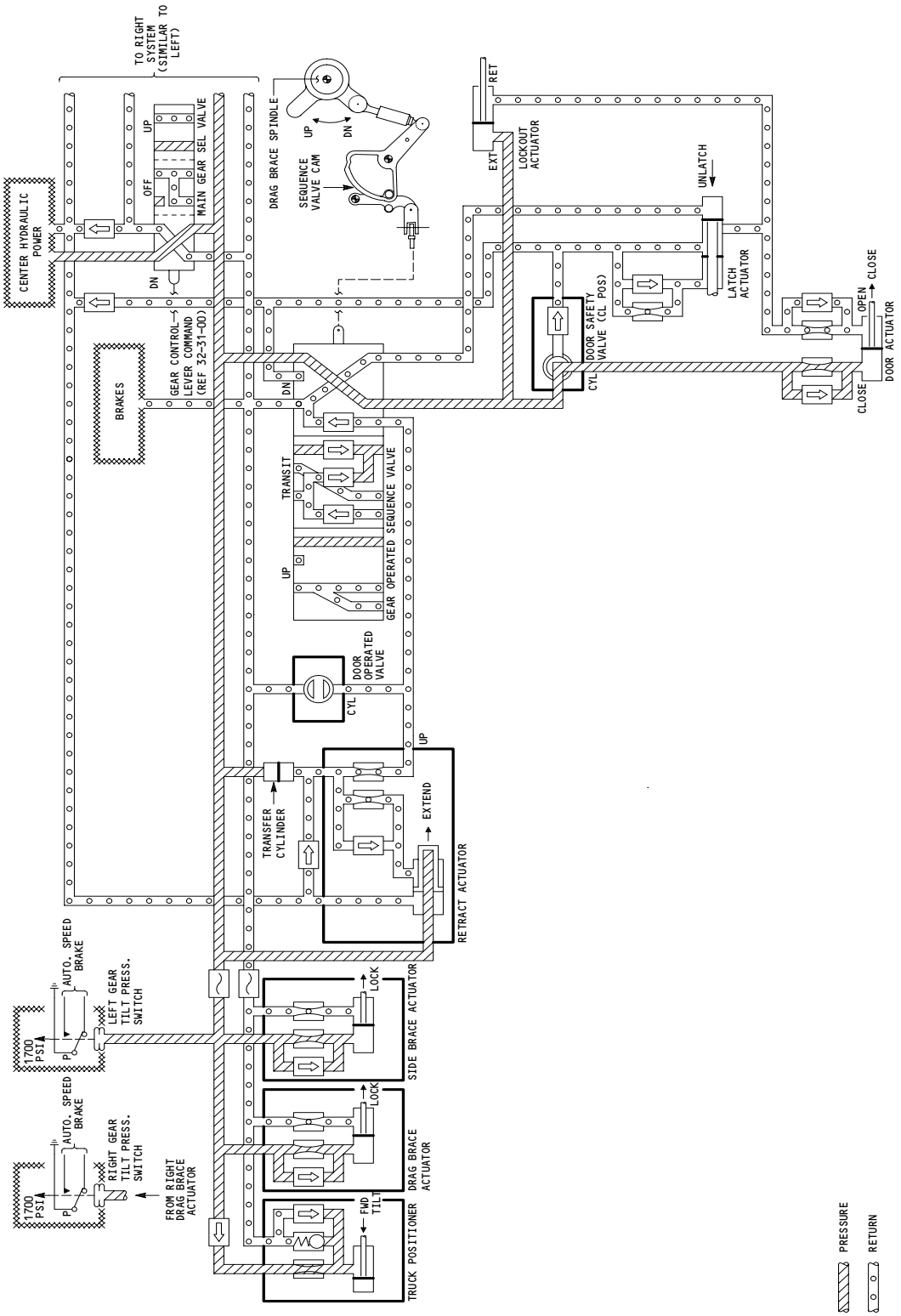
(d) As the door opens, a control rod opens the door-operated sequence valve. When the door-operated sequence valve opens, return flow from the retract actuator is no longer blocked. The retract actuator rod end opens to return. The retract actuator can now extend to extend the landing gear.

(e) As the landing gear extends, the drag brace upper spindle moves the gear-operated sequence valve to the IN TRANSIT position. This movement redirects pressure flow to maintain pressure on the latch and door actuators should the gear be retracted mid-cycle. Maintaining door actuator pressure assures that the door will remain open until a cycle is complete and the door can close without interference or damage.

(f) During gear extension, drag and side brace lock actuators are pressurized. When the gear is fully extended, the lock actuators extend to move the jury strut and lock link overcenter. Springs then keep the gear locked.



Main Gear Truck Positioner Fuses
Figure 9A



Main Landing Gear Extension and Retraction Schematic
Figure 10

(g) When the gear is down and locked, the gear-operated sequence valve moves to the DOWN position. This reverses the flow of pressure to the latch and door actuators. The latch actuator resets and the door actuator extends to close the door. The door-operated sequence valve control rod closes the valve to complete the extension cycle.

(h) When the gear touches ground a relief valve within the truck positioner allows the truck to be forced from the tilted position.

(2) Gear Retraction

(a) Main gear retraction is essentially the reverse of extension. To retract the main gear, the landing gear control lever should be in UP. The main gear selector valve will then direct pressure from the center hydraulic system to the left and right main gears.

(b) Initially, the gear-operated sequence valve is in DOWN. The sequence valve directs pressure to the latch actuator as during extension. The uplock hook is unlatched and the door actuator is pressurized to open the main gear door. Initially, the door-operated sequence valve is closed. All pressure passes to the drag and side brace lock actuators to retract and unlock the lock link and jury strut. The truck positioner is also pressurized to tilt.

(c) Once the door opens, the door-operated sequence valve also opens. The transfer cylinder delays pressurization of the retract actuator rod end until the gear is unlocked. The retract actuator then retracts and swings the gear up into the wheel well. As the gear retracts, the drag brace upper spindle rotates and moves the gear-operated sequence valve to IN TRANSIT as during extension.

(d) With the gear fully retracted, the gear-operated sequence valve moves to UP. Pressure is directed to extend the door actuator to close the door. The latch actuator is reset by the hook spring. The retraction cycle is complete.

MAIN GEAR EXTENSION AND RETRACTION - ADJUSTMENT/TEST

1. General
   A. This procedure has two tasks. One task is an operational test of the extension and retraction system for the main landing gear. The other task is a system test of the extension and retraction system.

TASK 32-32-00-705-001

2. Operational Test - Main Gear Extension and Retraction System
   A. General
      (1) This test is used to make sure the main gear operates within the allowable times. This test does not contain the data for a complete system adjustment.
   B. Equipment

      (1) Hydraulic Service Cart - 0 to 3000 psi, with 15 micron absolute filtration, capable of 30 gpm minimum at 3000 psig using hydraulic fluid.

          NOTE: The service cart is not necessary if airplane hydraulic power is used.

      (2) Stop Watch - Commercially Available
   C. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 24-22-00/201, Electrical Power - Control
      (3) AMM 29-11-00/201, Main (Left, Right and Center) Hydraulic Systems
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   D. Access
      (1) Location Zone
          212 Control Cabin (Right)

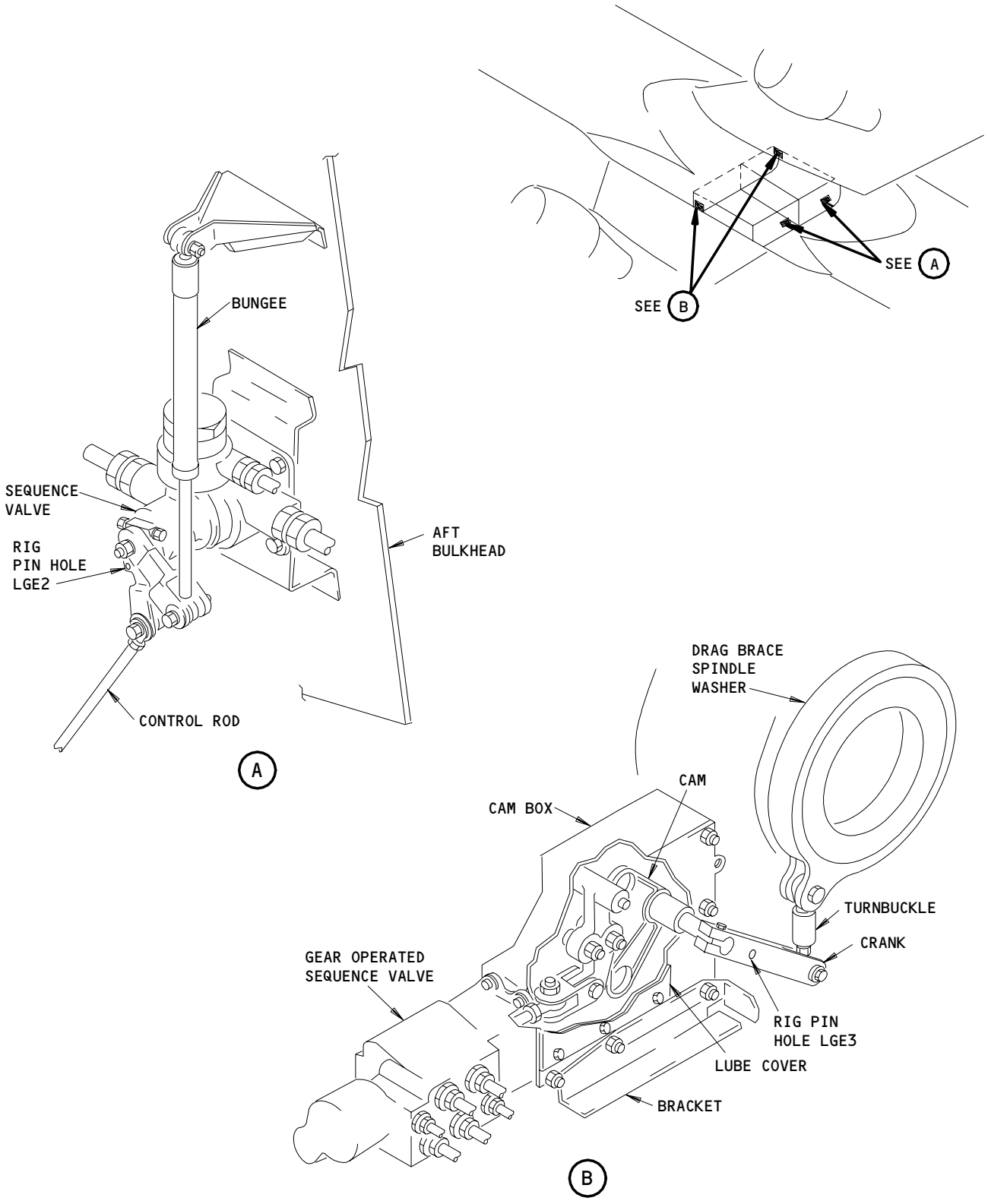
   E. Prepare for Extension and Retraction Test

      S 215-056

      WARNING: MAKE SURE THAT THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

      (1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

      S 865-003
      (2) Make sure that these circuit breakers on the overhead circuit breaker panel, P11, are closed:
          (a) AIRPLANES WITH THE "LANDING GEAR POSITION AIR/GND SYS 2 ALT" CIRCUIT BREAKER INSTALLED AT PANEL GRID LOCATION 11C29; 11C29, LANDING GEAR POSITION AIR/GND SYS 2 ALT
          (b) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
          (c) 11R3, LEFT IND LIGHTS 3



Main Landing Gear Extension and Retraction Adjustment
Figure 501

(d) 11U15, AIR/GND SYS 1
(e) 11U23 or 11U24, POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

S 865-009
(3) Lift the airplane on jacks until the wheels are clear of the ground (AMM 07-11-01/201).

S 865-008
(4) Supply electrical power (AMM 24-22-00/201).

S 085-057
(5) Remove the landing gear downlocks (AMM 32-00-20/201).

S 865-006
(6) Pressurize the center hydraulic system (AMM 29-11-00/201).

F. Do the Extension and Retraction Test

S 215-005
(1) Put one person in the flight deck and one person outside the airplane to monitor extension and retraction times. Measure the gear extension and retraction time from the time the gear doors open to the time the doors close. The time for tail skid operation (if applicable) is from the control lever in UP to when the tailskid is fully retracted. Provide interphone communication.

NOTE: During the operational test it is satisfactory if the left and right MLG doors do not close at the same time if the extension/retraction times are within limits.

NOTE: Do not use lock override during the operational test.

S 715-004

WARNING: MAKE SURE THE AREA AROUND THE LANDING GEAR DOORS, THE LANDING GEAR, AND THE TAIL SKID (IF APPLICABLE) IS CLEAR OF PERSONS AND EQUIPMENT WHEN THEY OPERATE. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Move the landing gear control lever continuously from DN to UP in 1 to 3 seconds. Do not use lock override.

NOTE: An Aural warning will come on during the operational test. Ignore the signal.

S 715-010

(3) If the center hydraulic system is pressurized with the air driven pump (ADP), make sure that gear retraction occurs within the times shown in the table that follows:

MAXIMUM TIME IN SECONDS	
RETRACTION	EXTENSION
18 (767-200)	22
20 (767-300)	22

S 715-048

(4) If the center hydraulic system is pressurized with a hydraulic service cart, make sure that gear retraction occurs within the times shown in the table that follows:

	TEST BENCH FLOW (GPM)	
	30 TO 40	40 OR HIGHER
RETRACT TIME	21 SEC (767-200) 25 SEC (767-300)	17 SEC (767-200) 19 SEC (767-300)
EXTEND TIME	23 SEC	22 SEC

S 715-052

(5) If the center hydraulic system is pressurized with the ACMP's only, make sure that gear retraction occurs within the times shown in the table that follows:

MAXIMUM TIME IN SECONDS	
RETRACTION	EXTENSION
45	23

S 715-011

(6) Move the control lever for the landing gear to DN. When landing gear extension is half complete, move the control lever continuously to UP in 2 to 4 seconds. The main landing gears should move in the opposite direction with no hydraulic leaks or damage to parts.

S 215-012

(7) Make sure the landing gear and the tail skid (if applicable) are in the up position.

S 715-013

(8) Move the control lever to DN.

S 215-018

(9) Make sure the landing gear extends and locks, the doors are closed, and the tail skid (if applicable) is extended.

S 715-017

(10) Move the control lever to UP. Do not use lock override.

S 715-016

(11) After the gear has retracted, move the control lever to OFF for 15 seconds. Move the control lever continuously to DN in 1 to 3 seconds and write down the extension time. Landing gear extension shall occur within the times shown in the table.

S 715-015
(12) Move the landing gear control lever to UP. Do not use lock override. When gear retraction is one-half complete, move the control lever continuously to DN in 2 to 4 seconds. The main landing gear should move in the opposite direction with no hydraulic leaks or damage to parts.

G. Put the Airplane Back to Its Usual Condition

S 865-014
(1) Make sure the control lever for the landing gear is in the DN position.

S 495-019
(2) Install downlocks for the nose and main landing gear (AMM 32-00-20/201).

S 865-023
(3) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-022
(4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

S 865-021
(5) Lower the airplane and remove the jacks (AMM 07-11-01/201).

TASK 32-32-00-735-020

3. System Test - Main Gear Extension and Retraction System

A. General
(1) This procedure is used to do a check of the main gear extension and retraction system with the aid of the landing gear indication lights.

B. References
(1) AMM 07-11-01/201 Jacking Airplanes
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 29-11-00/201, Main (Left, Right and Center) Hydraulic System
(4) AMM 32-00-20/201, Landing Gear Downlocks

C. Access
(1) Location Zone
212 Control Cabin (Right)

D. Prepare for Extension and Retraction Test

S 215-024
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 865-025

(2) Make sure that these circuit breakers on the overhead circuit breaker panel, P11, are closed:
(a) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(b) 11R3, LEFT IND LIGHTS 3
(c) 11U15, AIR/GND SYS 1
(d) 11U20, LANDING GEAR LEVER LOCK
(e) 11U23 or 11U24, POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

S 865-032

(3) Lift the airplane on jacks until the wheels are clear of the ground (AMM 07-11-01/201).

S 865-031

(4) Make sure the control lever for the landing gear on the first officer's instrument panel, P3, is in OFF.

S 865-030

(5) Supply electrical power (AMM 24-22-00/201).

E. Do the Test of the Extension and Retraction System

S 095-029

(1) Remove the landing gear downlocks (AMM 32-00-20/201).

S 865-028

(2) Pressurize the center hydraulic system by using the ADP (AMM 29-11-00/201).

S 865-027

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE PATHS OF THE NOSE AND MAIN GEAR DOORS, LANDING GEAR , AND TAIL SKID (IF APPLICABLE) WHEN THEY OPERATE. INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR IF THE AREA IS NOT CLEAR.

(3) Move the control lever on the P3 panel to UP. Do not use lock override.

S 215-026

(4) Make sure the landing gear retracts and the doors for the main landing gear close and lock within 20 seconds.

S 215-033
(5) Make sure the landing gear DOORS, NOSE, GEAR, LEFT, and RIGHT lights on the P3 panel are off.

NOTE: If the EICAS message LDG GEAR MONITOR shows on the lower display after the landing gear is retracted, examine the aft hinges on the forward doors of the nose landing gear. The EICAS message could be caused by the vertical movement of the hinges. Use the procedure in 32-22-01 to examine the hinges and repair them if it is necessary. Also examine the longitudinal seals on the forward doors. Make sure there are no gaps between the seals and that the seals do not overlap when the doors are closed to the stops.

S 215-049
(6) 767-300;
Look to see that the tail skid has fully retracted.

S 865-039
(7) Move the control lever on the P3 panel to OFF.

S 215-038
(8) Make sure that all landing gear lights on the P3 panel are off.

S 865-037
(9) Move the control lever on the P3 panel to DN.

S 215-036
(10) Make sure the landing gear DOORS and GEAR lights on the P3 panel are on and the NOSE, LEFT, and RIGHT lights are off.

S 215-035
(11) Make sure the landing gear doors open and the landing gear extends and locks.

S 215-034
(12) Make sure the landing gear doors close.

S 215-051
(13) 767-300;
Look to see that the tail skid extends.

S 215-042
(14) Make sure the landing gear DOORS light on the P3 panel is off and the NOSE, LEFT, and RIGHT lights are on.

S 865-043
(15) Move the landing gear control lever on the P3 panel to OFF. Do not use lock override.

S 215-044

(16) Make sure the landing gear NOSE, LEFT, RIGHT, and GEAR lights on the P3 panel are on.

F. Put the Airplane Back to Its Initial Condition

S 865-050

(1) Put the control lever for the landing gear to the DN position.

S 495-045

(2) Install the landing gear downlocks (AMM 32-00-20/201).

S 865-046

(3) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-047

(4) Lower the airplane and remove the jacks (AMM 07-11-01/201).

MAIN GEAR RETRACT ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first task is for removal of the retract actuator for the main landing gear. The other task is for installation of the retract actuator.

   TASK 32-32-01-004-054

2. Remove the Main Gear Retract Actuator
   A. Equipment
      (1) Main Gear Door Locks - (AMM 32-00-15/201)
      (2) Main Gear Retract Actuator Sling Equipment - A32006-77
      (3) Main Gear Retract Actuator Pin Puller - A32010-1
      (4) Main Gear Actuator Retraction/Extension Tool - A32027-53 (Recommended to support fleet combinations of 757 and 767 only)
      (5) Retraction/Extension Landing Gear Actuator Pump A32027-90 (Recommended to support mixed fleets which include 777)
      (6) Actuator Support Pin Restraining Wrench, MLG - A32065-1
      (7) Crowfoot Wrench - F70312-30
      (8) Fish Pole Hoist - Commercially available
   B. Consumable Materials
      (1) D00633 Grease - BMS3-33 (Preferred)
      (2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
      (3) D00153, Fluid, Hydraulic - BMS 3-11, Type IV
   C. References
      (1) AMM 06-44-00/201, Wing (Major Zones 500 and 600) Access Doors and Panels
      (2) AMM 07-11-01/201, Jacking Airplane
      (3) AMM 12-12-01/301, Hydraulic Systems
      (4) AMM 24-22-00/201, Electrical Power - Control
      (5) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (6) AMM 32-00-15/201, Landing Gear Door Locks
      (7) AMM 32-00-20/201, Landing Gear Downlocks

(8) AMM 32-12-13/801, Pop-Up Door for the Main Landing Gear
(9) AMM 32-32-01/601, Main Gear Retract Actuator

D. Access

(1) Location Zones

551 Rear Spar to MLG Support Beam (Left)
651 Rear Spar to MLG Support Beam (Right)

(2) Access Panels

551TB Wing Access Panel (Left)
551UB Wing Access Panel (Left)
551PT Wing Access Panel (Left)
651TB Wing Access Panel (Right)
651UB Wing Access Panel (Right)
651PT Wing Access Panel (Right)

E. Prepare for Removal (Fig. 401)

S 214-001

(1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

S 494-002

WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS COULD CAUSE INJURY OR DAMAGE IF THE LOCKS ARE NOT INSTALLED CORRECTLY.

(2) Open the main gear doors and install the door locks (AMM 32-00-15/201).

S 864-003

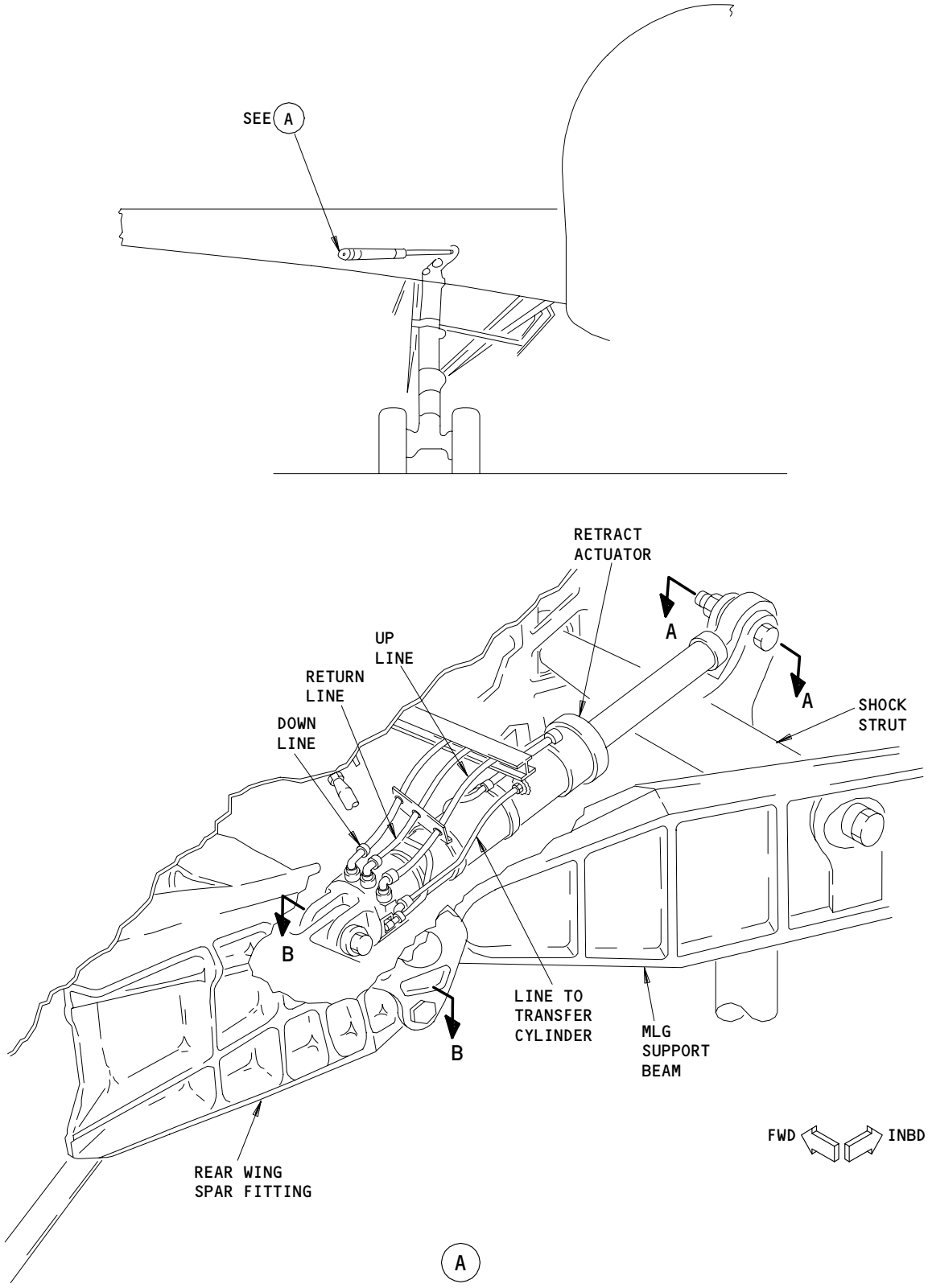
(3) Remove the pressure from the center hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

S 014-004

(4) To remove the left actuator, remove the access panels that follow (AMM 06-44-00/201):
(a) 551TB
(b) 551UB
(c) 551PT

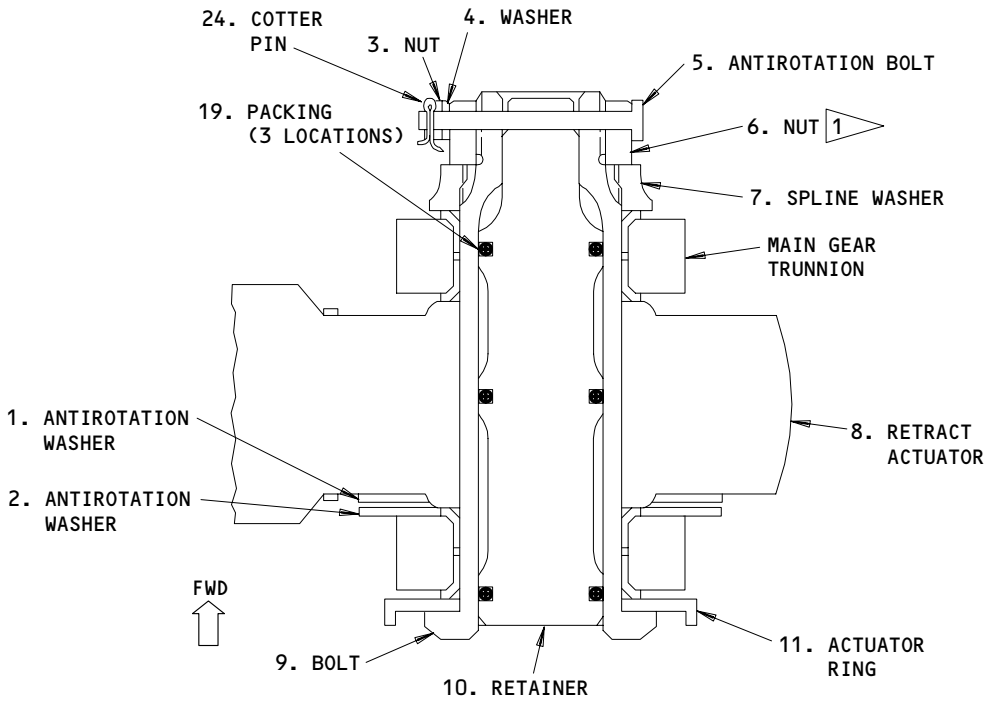
S 014-005

(5) To remove the right actuator, remove the access panels that follow (AMM 06-44-00/201):
(a) 651TB
(b) 651UB
(c) 651PT

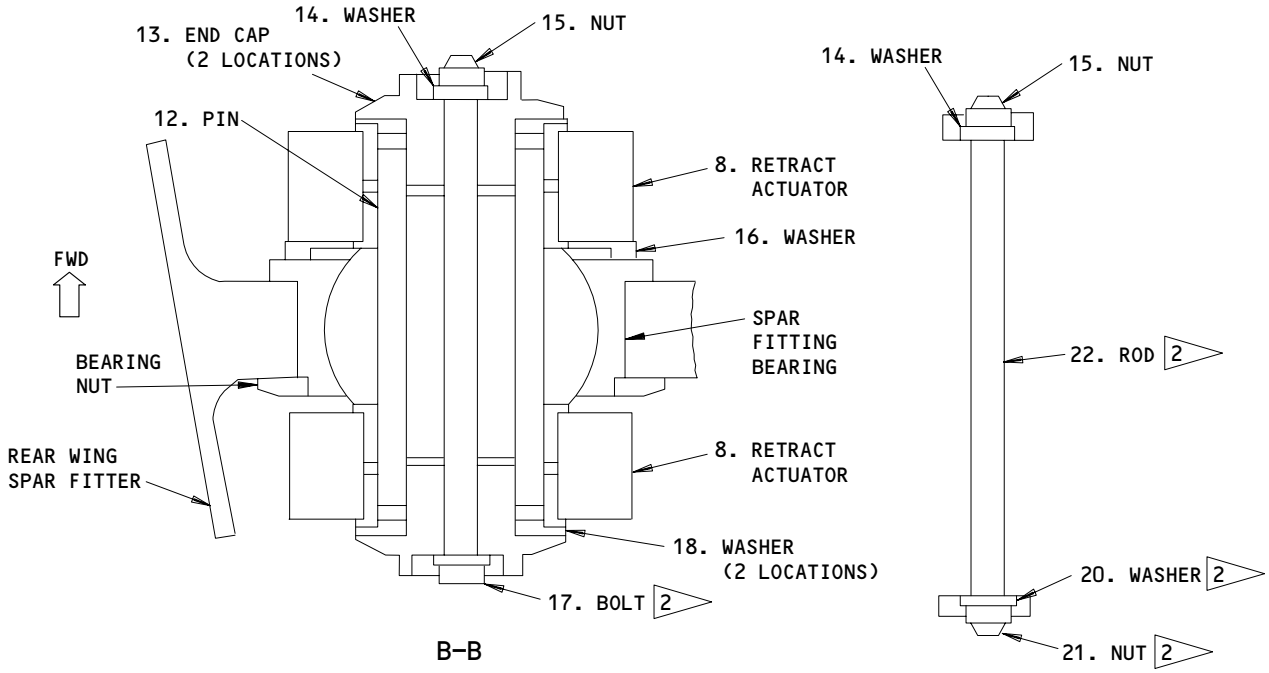


A

Main Gear Retract Actuator Installation
Figure 401 (Sheet 1)



A–A



B–B

B–B

1 NUT (6) MUST BE INSTALLED ON THE FORWARD SIDE OF THE ACTUATOR. BACK OFF NUT TO THE NEAREST LOCKING POSITION AND INSTALL ANTIROTATION BOLT (5)

2 BOLT (17) IS THE PREFERRED REPLACEMENT PART

Main Gear Retract Actuator Installation
Figure 401 (Sheet 2)

F. Procedure to Remove the Main Gear Retract Actuator

S 034-006

(1) Disconnect the hydraulic lines from the actuator (8). Install a plug in the hydraulic lines and the fitting where the line from the transfer cylinder is connected.

S 494-007

WARNING: DO NOT INSTALL A PLUG IN THE DOWN OR RETURN PORTS WHEN YOU RETRACT THE ACTUATOR ROD. THE HYDRAULIC LINES COULD BURST AND CAUSE INJURY OR DAMAGE.

(2) Use the instructions supplied with the tool to install the actuator retraction/extension tool.

NOTE: Connect the UP line of the pump to the hose that is connected to the UP port of the actuator. Connect the DOWN line of the pump to the hose from the DOWN port of the actuator. Connect the RETURN line of the pump to the hose from the RETURN line of the actuator.

S 494-008

(3) Install the main gear retract actuator sling per the instructions on the tool.

S 984-009

(4) Hold the actuator up with the sling.

S 034-083

(5) Remove the bolt (5), nut (3), washer (4) and cotter pin (24).

S 034-010

(6) Use the crowfoot wrench to loosen the nut (6).

S 034-011

(7) Remove the bolt (9), retainer (10), spline washer (7), antirotation washers (1) and (2) and actuator ring (11) to disconnect the rod end of the actuator (8) from the shock strut (Section A-A).

S 984-012

(8) Use the retraction/extension tool to retract the actuator rod.

S 034-013

(9) Disconnect the retraction/extension tool from the actuator (8) and install plugs in the hydraulic fittings.

S 034-014

(10) Remove the bolt (17) or threaded rod (22) and the end caps (13) from the actuator pin (12) (Fig 401).

NOTE: Use the pin restraining wrench to hold the pin when one end cap is removed (Section B-B).

S 034-015

(11) Use the pin puller to remove pin (12) and disconnect the head end of the actuator (8) from the rear spar fitting.

S 024-017

(12) Lower the actuator (8) from the airplane with the sling.

S 214-082

(13) Examine the rub strip on the pop-up door for the main gear.
   (a) If the rub strip is worn or damaged then remove the pop-up door and repair (AMM 32-12-13/801).
   (b) If the rub strip will be worn through before the next check then replace the rub strip (AMM 32-12-13/801).

TASK 32-32-01-404-018

3. Install the Main Gear Retract Actuator (Fig. 401)
   A. Equipment
      (1) Main Gear Door Locks - (AMM 32-00-15)
      (2) Main Gear Retract Actuator Sling Equipment - A32006-77
      (3) Main Gear Retract Actuator Pin Puller - A32010-1
      (4) Main Gear Actuator Retraction/Extension Tool - A32027-53
      (Recommended to support fleet combinations of 757 and 767 only)
      (5) Retraction/Extension Landing Gear Actuator Pump A32027-90
      (Recommended to support mixed fleets which include 777)
      (6) Actuator Support Pin Restraining Wrench, MLG - A32065-1
      (7) Crowfoot Wrench - F70312-30
      (8) Fish Pole Hoist - Commercially available
   B. Consumable Materials
      (1) A00379, Sealant - BMS 5-45, Class B or C

(2) D00633 Grease - BMS3-33 (Preferred)
(3) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(4) D00153, Fluid, Hydraulic - BMS 3-11, Type IV

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	8	Actuator Assy	32-32-01	01	100
	8	Actuator Assy		01A	100
	8	Actuator Assy		02	100
	19	Packing	32-11-01	01A	458
	24	Pin			425
	19	Packing		01C	508
	24	Pin			468
	19	Packing		01D	594
	24	Pin			554

D. References
(1) AMM 06-44-00/201, Wing (Major Zones 500 and 600) Access Doors and Panels

(2) AMM 12-12-01/301, Hydraulic Systems
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(5) AMM 32-00-15/201, Landing Gear Door Locks
(6) AMM 32-00-20/201, Landing Gear Downlocks
(7) AMM 32-32-01/601, Main Gear Retract Actuator

E. Access
(1) Location Zones
551 Rear Spar to MLG Support Beam (Left)
651 Rear Spar to MLG Support Beam (Right)

(2) Access Panels
551TB Wing Access Panel (Left)
551UB Wing Access Panel (Left)
551PT Wing Access Panel (Left)
651TB Wing Access Panel (Right)
651UB Wing Access Panel (Right)
651PT Wing Access Panel (Right)

F. Procedure to Install the Head End of the Actuator

S 984-019
(1) Make sure the rod of the actuator (8) is fully retracted.

S 984-020
(2) Use the main gear retract actuator sling to lift the actuator (8) into position.

S 434-021
(3) Do the steps that follow to connect the head end of the actuator (8) to the rear spar fitting:
(a) Put grease on the pin (12).
(b) Apply a layer of, BMS 5-26, Type II, Class B or C, sealant on the faying surface of the washer (16) that touches the actuator (8).

NOTE: Sealant is applied to prevent galvanic corrosion between the washer (16) and the actuator (8).

(c) Install the washer (16) (View B-B).

NOTE: View B-B shows the preferred installation. It is acceptable to install the spar fitting bearing in the opposite direction . The bearing nut will then be installed on the forward side of the bearing and the washer (16) on the aft side of the bearing.

(d) Install the pin (12) and washer (18).
(e) Install the caps (13).
(f) Tighten the caps to 650-850 pound-inches (View B-B).
(g) Install lockwire on the caps.

S 644-022
(4) Put grease on the bolt (17) or the rod (22).

S 434-056
(5) Install the bolt (17) or the rod (22), washer (14), nut (15), and nut (21) and washer (20), if rod (22) is used, to secure the caps (13). Tighten the nuts to 500-700 pound-inches.

G. Do a Check of the Retract Actuator

S 494-077
(1) Use the instructions supplied with the tool to install the actuator retraction/extension tool.

NOTE: Connect the UP line of the pump to the hose that is connected to the UP port of the actuator. Connect the DOWN line of the pump to the hose from the DOWN port of the actuator. Connect the RETURN line of the pump to the hose from the RETURN line of the actuator.

S 984-062
(2) Put the actuator in a position to prevent damage to the structure or other equipment when the rod end of the actuator extends or retracts.

S 864-078
(3) Extend the rod end of the actuator to fill it with BMS 3-11 hydraulic fluid.

S 094-063
(4) Remove the retraction/extension tool from the retract actuator.

S 864-064
(5) Make sure the pressure is removed from the center hydraulic system (AMM 29-11-00/201).

S 434-065
(6) Connect the hydraulic lines to the actuator (8).

S 494-066
(7) Make sure the downlocks are installed in the nose and main landing gear (AMM 32-00-20/201).

S 484-080

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(8) Open the main gear doors and install the door locks (AMM 32-00-15/201).

S 864-068

(9) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 714-069

(10) Move the control handle for the landing gear to the DN and then the UP position five times.

NOTE: This will operate the actuator through five cycles. If the actuator does not operate, it is possible the door-operated sequence valve is not fully open.

(a) If the actuator does not operate when you move the control handle, do these steps:
1) Make sure hydraulic pressure is available to the actuator.
2) Push on the door for the main landing gear and make sure you can see the rig pin hole for the door-operated sequence valve.

(b) Make sure the rod end of the actuator extends when you move the control handle to the DN position.

NOTE: This will make sure you connected the hydraulic hoses correctly.

(c) Make sure there is no leakage at the actuator fittings.

S 714-070

(11) Move the control handle to the OFF position.

H. Procedure to Install the Rod End of the Actuator

S 984-071

(1) Make sure the rod end of the actuator is aligned with the main landing gear trunnion.

NOTE: Put the rod end of the actuator in position so the lube fittings are above the center line of the actuator. This will make sure you can get access to the fittings easily.

S 434-028
(2) Install new packing (19) on the retainer (10).

S 644-026
(3) Apply grease to the bolt (9), the nut (6), and the antirotation bolt (5) before installation.

S 434-059
(4) Install the bolt (9) and the lube retainer (10 or 10A) through these components in the order given:
(a) The actuator ring (11).
(b) The antirotation washers (1, 2).
(c) The retract actuator (8).
(d) The spline washer (16).
(e) And the nut (6).

S 434-060
(5) Tighten the nut (6) to 70-90 pound-feet. Loosen the nut to the subsequent lock position (Fig 401, View A-A).

S 434-030
(6) Install the antirotation bolt (5), washer (4), nut (3) and pin (24). the cotter pin (24).

S 094-034
(7) Remove the main gear retract actuator sling equipment.

S 644-035
(8) Lubricate the actuator at its grease fittings.

I. Put the Airplane Back to Its Initial Condition.

S 414-050
(1) Install the access panels that follow (AMM 06-44-00/201):
(a) 551TB (651TB, right)
(b) 551UB (651UB, right)
(c) 551PT (651PT, right)

S 084-081

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

S 864-051
(3) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 864-074
(4) Put the control lever for the landing gear to the DN position.

S 864-052
(5) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).

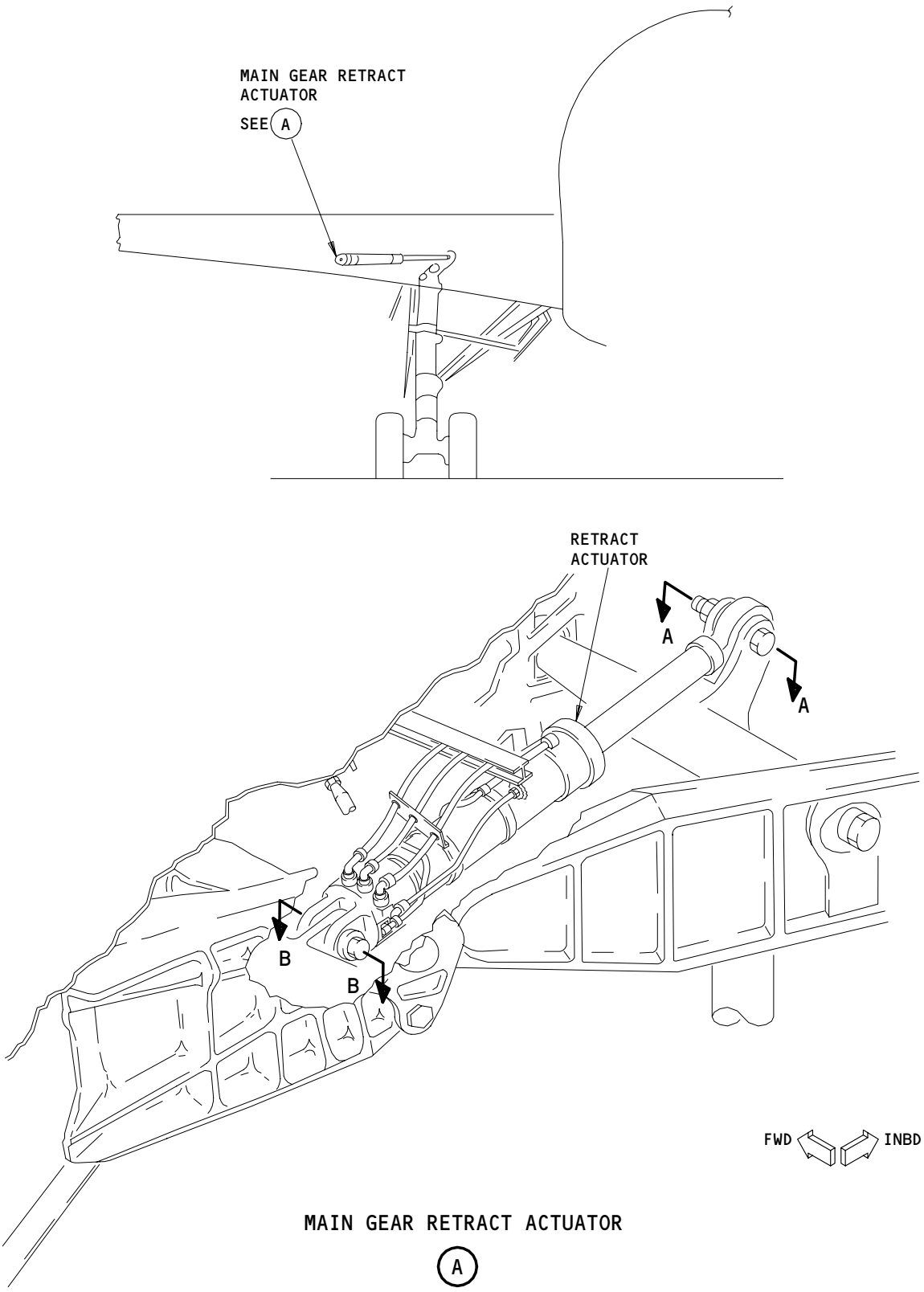
S 864-053
(6) Remove electrical power if it is not necessary (AMM 24-22-00/201).

MAIN GEAR RETRACT ACTUATOR - INSPECTION/CHECK

1. General
   A. This procedure only has illustrations and a wear limits table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Retract Actuator - Removal/Installation for procedures to do these tasks.

TASK 32-32-01-226-001

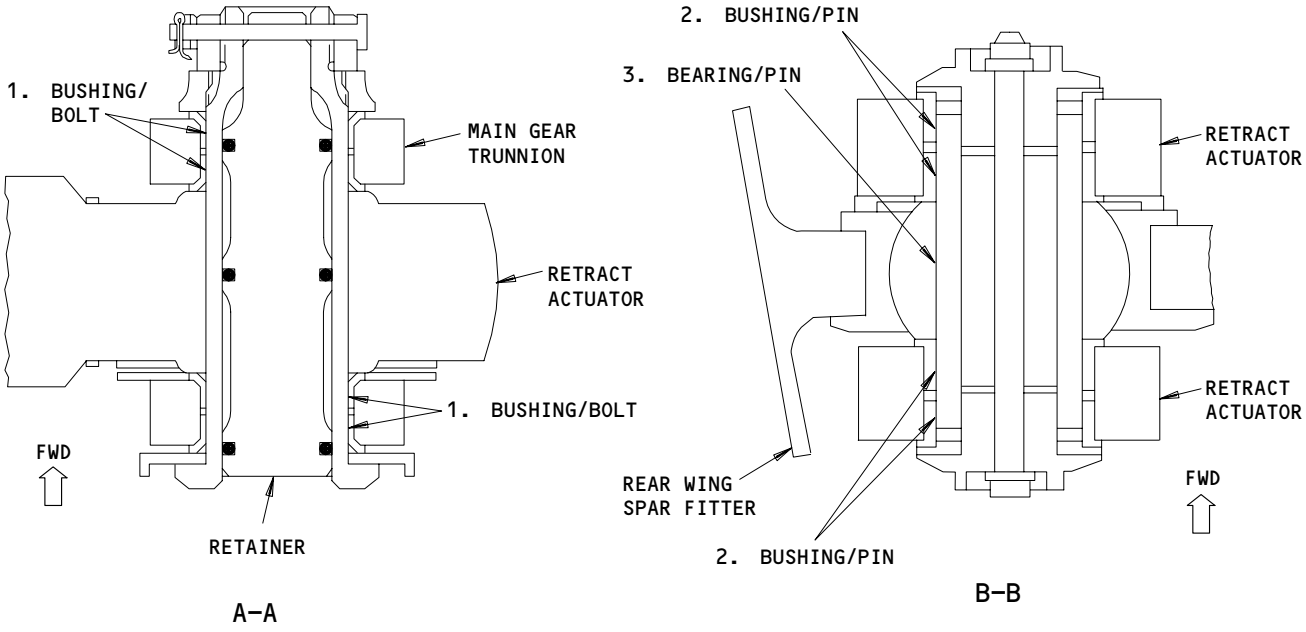
2. Main Gear Retract Actuator Wear Limits (Fig. 601)
   A. General
      (1) This procedure only has illustrations and a wear limits table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Retract Actuator - Removal/Installation for procedures to do these tasks.



MAIN GEAR RETRACT ACTUATOR

A

Main Gear Retract Actuator Wear Limits
Figure 601 (Sheet 1)



INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR.
			DIAMETER		ALLOWED WEAR DIM.	MAX DIAM CLEAR-ANCE			
			MIN	MAX					
1	BUSHING	ID	2.1250	2.1265	2.1314	0.0074	X		
	BOLT	OD	2.1220	2.1240	2.1191			X	1
2	BUSHING	ID	2.5618	2.5632	2.5720	0.0150	X		
	PIN	OD	2.5585	2.5590	2.5502			X	1
3	BEARING	ID	2.5618	2.5632	2.5720	0.0150	X		
	PIN	OD	2.5585	2.5590	2.5502			X	1

1 PART IS REPAIRABLE; REFER TO COMPONENT MAINTENANCE MANUAL FOR INSTRUCTIONS

Main Gear Retract Actuator Wear Limits
Figure 601 (Sheet 2)

MAIN GEAR LOCK ACTUATORS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks, one for removal and one for installation of the side brace or drag brace lock actuator.

TASK 32-32-02-004-001

2. Remove the Main Gear Lock Actuator (Fig. 401)

   A. References
      (1) AMM 12-12-01/301, Hydraulic Systems
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-32-00/501, Main Gear Extension and Retraction
      (6) AMM 32-32-02/601, Main Gear Lock Actuators
   B. Access
      (1) Location Zones
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

   C. Prepare for Removal

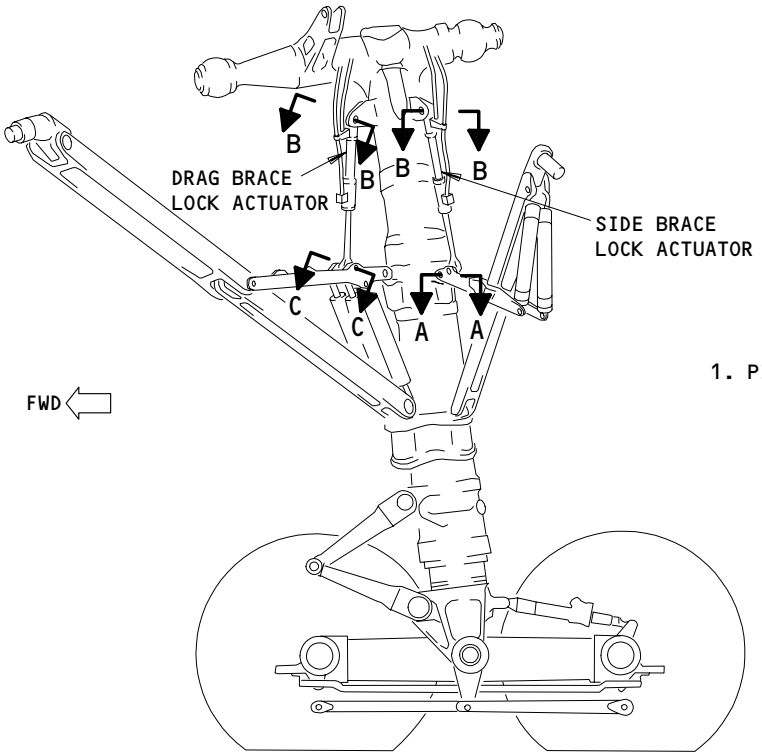
      S 494-002
      (1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

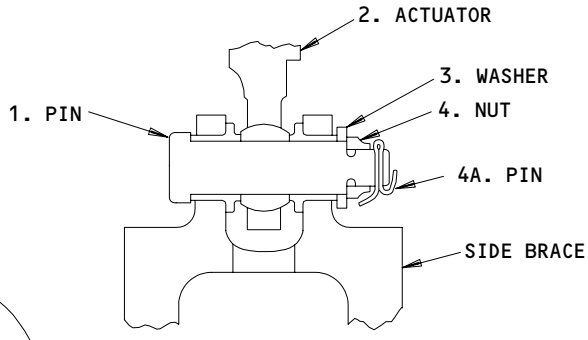
      S 494-003

      WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS COULD CAUSE INJURY OR DAMAGE IF THE LOCKS ARE NOT INSTALLED CORRECTLY.

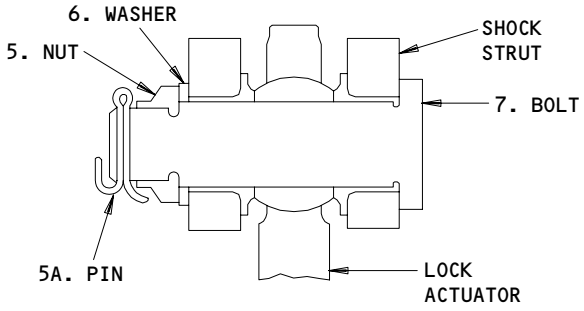
      (2) Open the main gear doors and install the door locks (AMM 32-00-15/201).

      S 864-004
      (3) Remove the pressure from the center hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).



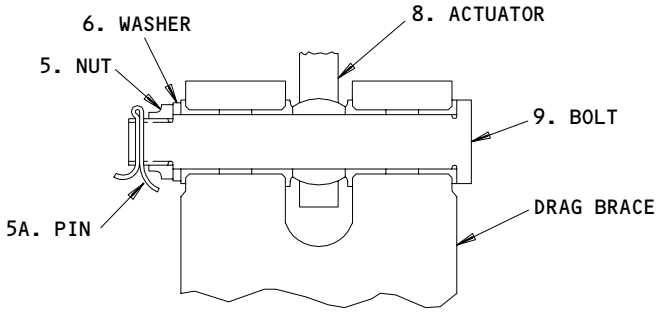


A–A



NOTE: ORIENTATION SHOWN BOLT HEAD AFT FOR DRAG BRACE LOCK ACTUATOR. BOLT HEAD IS FORWARD FOR SIDE BRACE ACTUATOR

B–B



C–C

Main Landing Gear Lock Actuator Installation
Figure 401

D. Remove the Main Gear Lock Actuator

S 034-005
(1) Remove the hydraulic lines and clamps from the actuator (2 or 8).
(a) Install plugs in the actuator ports and the hydraulic lines.
(b) Move the lines out of the work area.

S 034-006
(2) Disconnect the rod end of the actuator (2 or 8) from the side brace (Section A-A) or the drag brace (Section C-C).

S 024-007
(3) Remove the bolt (7) to disconnect the head end of the actuator (2 or 8) from the upper shock strut (Section B-B).

TASK 32-32-02-404-008

3. Install the Main Gear Lock Actuator (Fig. 401)

NOTE: Wear Limits for the component that is installed with this procedure are provided in 32-32-02/601.

A. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(3) D00153 Fluid, Hydraulic - BMS 3-11, Type IV

B. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Pin Assy - Side Strut	32-11-01	01	35
	2	Actuator - Assy	32-32-02	01	40
	3	Washer - Tang	32-11-01	01	55
	4	Nut			65
	4A	Pin			8
	5	Nut			60
	5A	Pin			9
	6	Washer - Tang			50
	7	Bolt			10
	8	Actuator - Assy	32-32-04	01	40
	9	Bolt	32-11-01	01	15

C. References
(1) AMM 12-12-01/301, Hydraulic Systems
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Door Locks

(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 32-32-00/501, Main Gear Extension and Retraction
(6) AMM 32-32-02/601, Main Gear Lock Actuators

D. Access

(1) Location Zones

731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

E. Procedure

S 614-009

(1) Fill the actuator (2 or 8) with hydraulic fluid and install plugs in the ports.

S 644-010

(2) Apply grease to the bolt (7), tang washer (6), and nut (5).

S 984-011

(3) Put the head end of the actuator (2 or 8) in the lugs on the upper shock strut.

S 424-030

(4) Install the bolt (7), tang washer (6), and nut (5) (View B-B).

S 424-028

(5) Tighten the nut (5) to 520-640 pound-inches.

S 424-029

(6) Install the pin (5A).

S 864-013

(7) Make sure that pressure is removed from the center hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

S 434-014

(8) Remove the plugs from the actuator ports and hydraulic lines, then install the hydraulic lines and clamps on the actuator (2 or 8).

S 864-015

(9) Supply hydraulic power (AMM 29-11-00/201).

S 214-016

WARNING: MAKE SURE THE NOSE AND MAIN LANDING GEAR DOWNLOCKS ARE INSTALLED BEFORE YOU MOVE THE LANDING GEAR CONTROL LEVER. IF THE CONTROL LEVER IS MOVED WITHOUT THE DOWNLOCKS INSTALLED, THIS CAN CAUSE THE LANDING GEAR TO RETRACT AND CAUSE INJURY OR DAMAGE.

(10) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

S 714-033

WARNING: MAKE SURE THE AREA AROUND THE TAIL SKID (IF APPLICABLE) IS CLEAR OF PERSONS AND EQUIPMENT WHEN IT OPERATES. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(11) Do a check of the actuator (2 or 8) to make sure it operates correctly.
   (a) Move the landing gear control lever between the DN and UP positions three or four times.
   (b) Make sure the actuator rod extends and retracts correctly.
   (c) Move the landing gear control lever to the DN position to put the rod in the extended position.

S 214-018

(12) Make sure the actuator (2 or 8) or the hydraulic connections show no hydraulic leaks.

S 644-019

(13) Apply grease to the pin (1) or the bolt (9), tang washer (3 or 6), and nut (4 or 5).

S 984-022

(14) Put the rod end of the actuator (2 or 8) in the lugs on the side or drag brace.

S 424-031

(15) For the side brace lock actuator, do these steps to connect the rod end of the actuator (View A-A):
   (a) Install the pin (1), tang washer (3), and nut (4)
   (b) Tighten the nut (4) to 520-640 pound-inches
   (c) Install the pin (4A).

S 424-032

(16) For the drag brace lock actuator, do these steps to connect the rod end of the actuator (View C-C):
   (a) Install the bolt (9), tang washer (6), and nut (5)
   (b) Tighten the nut (5) to 520-640 pound-inches
   (c) Install the pin (5A).

S 644-023

(17) Lubricate the actuator at its grease fittings.

S 864-024

(18) Remove the pressure from the hydraulic system if it is not necessary.

S 864-025

(19) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 094-026

WARNING: MAKE SURE THE DOOR LOCK REMOVAL PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE.

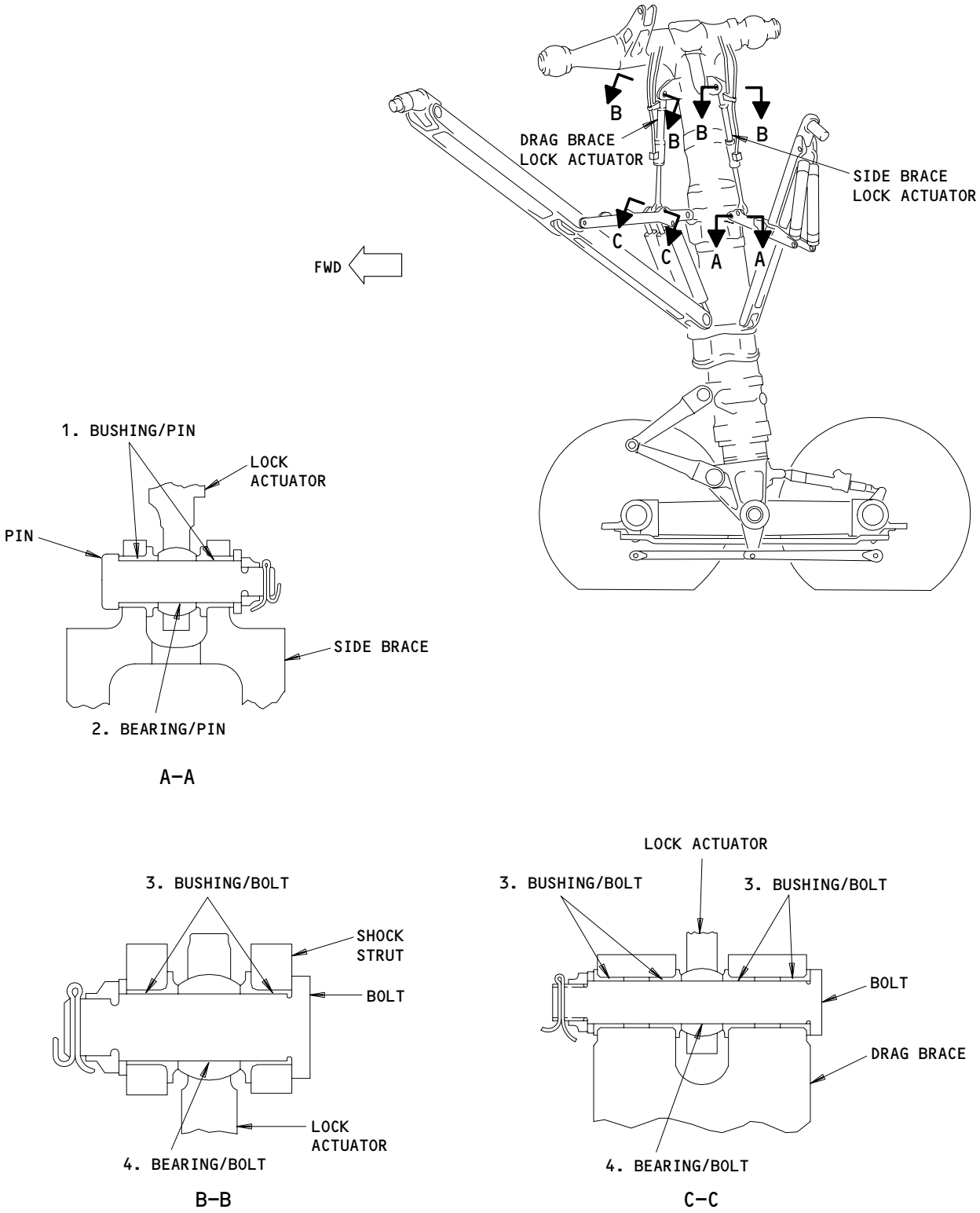
(20) Remove the main gear door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR LOCK ACTUATOR - INSPECTION/CHECK

1. General
   A. This procedure only has illustrations and a wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Lock Actuator - Removal/Installation for procedures to do these tasks.

TASK 32-32-02-226-001

2. Main Gear Lock Actuator Wear Limits (Fig. 601)
   A. General
      (1) This procedure only has illustrations and a wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Lock Actuator - Removal/Installation for procedures to do these tasks.



Main Gear Lock Actuator Wear Limits
Figure 601 (Sheet 1)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR.
			DIAMETER		ALLOWED WEAR DIM.	MAX DIAM CLEAR-ANCE			
			MIN	MAX					
1	BUSHING	ID	0.7500	0.7515	0.7532	0.0042	X		
	PIN	OD	0.7475	0.7495	0.7473			X	*[1]
2	BEARING	ID	0.7495	0.7500	0.7537	0.0042	X		
	PIN	OD	0.7475	0.7495	0.7458			X	*[1]
3	BUSHING	ID	0.8750	0.8765	0.8814	0.0054	X		
	BOLT	OD	0.8730	0.8740	0.8711		X		
4	BEARING	ID	0.8745	0.8750	0.8779	0.0039	X		
	BOLT	OD	0.8730	0.8740	0.8711		X		

*[1] PART CAN BE REPAIRED; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR PROCEDURES TO DO THE TASK.

Main Gear Lock Actuator Wear Limits
Figure 601 (Sheet 2)

MAIN GEAR SIDE BRACE LOCK SPRING - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. One task is for the removal of the lock spring on the side brace of the main landing gear. The other task is for the installation of the lock spring.

      NOTE: The lock spring cartridge is in tension to hold the lock links in the overcentered position. The lock springs are installed in a sliding cartridge to put a compressive load on the springs.

TASK 32-32-03-004-001

2. Remove the Lock Spring (Fig. 401)
   A. Equipment
      (1) Main Gear Side Brace Spring Compressor - A32003-1
   B. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

   D. Prepare for Removal

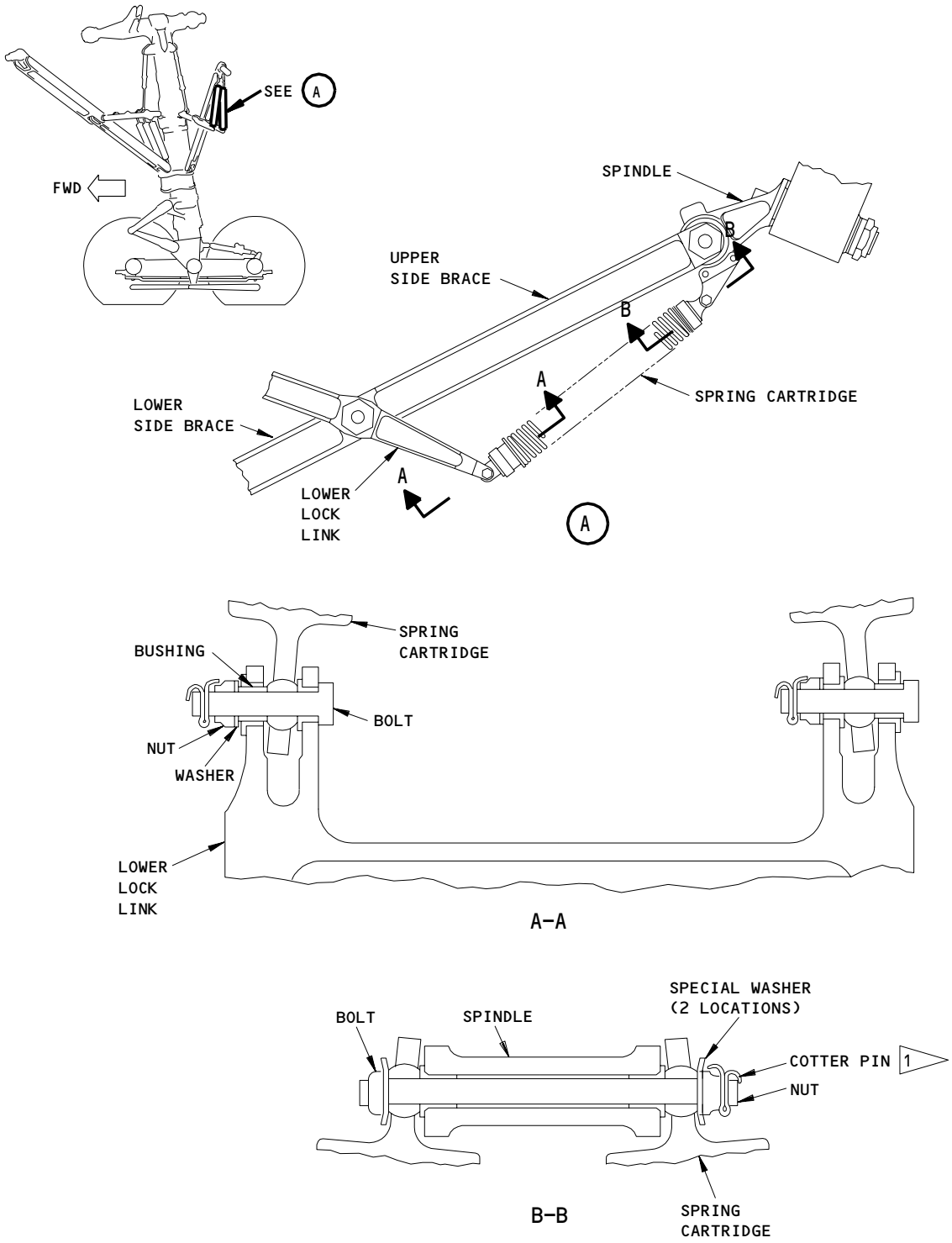
      S 214-002
      (1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

      S 494-003

      WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE IF THE LOCKS ARE NOT INSTALLED CORRECTLY.

      (2) Open the main gear doors and install the door locks (AMM 32-00-15/201).

      S 864-004
      (3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).



1 COTTER PIN ONLY INSTALLED ON DRILLED BOLT WITH CASTELLATED NUT. BOLT THAT IS NOT DRILLED USES SELF-LOCKING NUT.

Main Gear Side Brace Spring Cartridge Installation
Figure 401

E. Remove the lock spring.

S 494-009
(1) Install the spring compression tool on each lock spring per the instructions on the tool.

NOTE: The lock spring cartridge is in tension to hold the lock links in the overcentered position. The lock springs are installed in a sliding cartridge to put a compressive load on the springs.

S 034-008
(2) Remove the bolt from the lower connections (View A-A).

S 094-006
(3) Remove the lock spring from the compression tool.

S 024-007
(4) Remove the bolt to disconnect the lock springs from the upper side brace (View B-B).

TASK 32-32-03-404-005

3. Install the Lock Spring (Fig. 401)

A. Equipment
(1) Main Gear Side Brace Spring Compressor - A32003-1

B. Consumable Materials
(1) D00633 Grease - BMS3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(3) G50136 Corrosion Inhibiting Compound - BMS 3-38

C. References
(1) AMM 32-00-15/201, Landing Gear Door Locks

D. Access
(1) Location Zones
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

E. Procedure

S 644-014
(1) Apply grease to the bolt, bushing, washers, and nut (View B-B).

S 424-013
(2) Install the lock springs on the on the upper side brace and install the bolt, bushing, washer, and nut (View B-B).
(a) If you used the drilled bolt and castellated nut then install the cotter pin (View B-B).

NOTE: If you use the bolt that is not drilled, with a self-locking nut, then a cotter pin is not installed.

S 644-012

(3) Apply grease to the bolt, washer, and nut (View A-A).

S 434-015

(4) Install the lower end of the lock spring on the lower lock link. When you do this, use the spring compression tool to adjust for the correct length. Install the bolt, washers, nut, and cotter pin (View A-A).

NOTE: The lock spring cartridge is in tension to hold the lock links in the overcentered position. The lock springs are installed in a sliding cartridge to put a compressive load on the springs.

S 094-011

(5) Remove the compression tool from the lock spring.

S 094-010

WARNING: MAKE SURE THE DOOR LOCK REMOVAL PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE.

(6) Remove the main gear door locks and and close the doors (AMM 32-00-15/201).

MAIN GEAR JURY STRUT SPRINGS - REMOVAL/INSTALLATION

1. General
   A. This procedure provides two tasks, one for removal and one for installation of the main gear jury strut springs.

TASK 32-32-05-004-001

2. Remove the Main Gear Jury Strut Spring (Fig. 401)
   A. Equipment
      (1) Spring Extender for the Drag Brace - A32099-77
      (2) Spring Extender Equipment - A32099-78
   B. References
      (1) AMM 29-11-00/201, Main (Left, Right and Center) Hydraulic Systems
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

   D. Prepare for the Removal

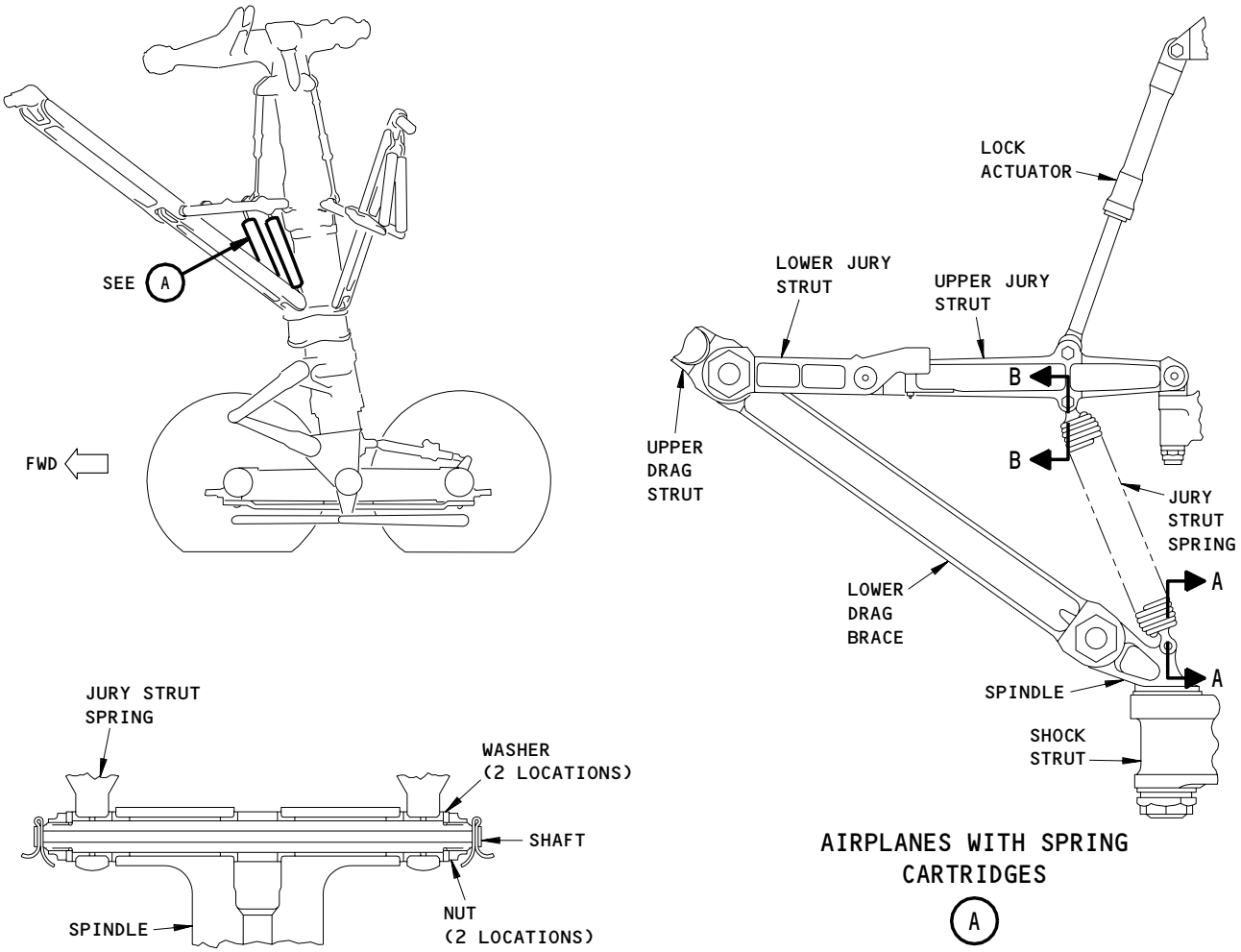
      S 214-002
      (1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

      S 494-003

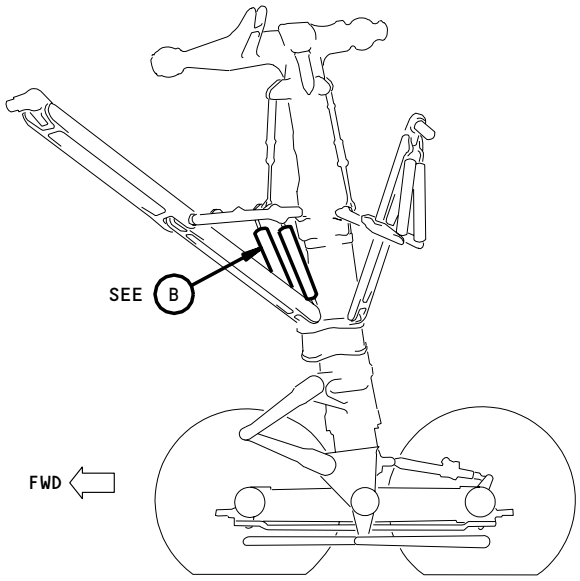
      WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE IF THE LOCKS ARE NOT INSTALLED CORRECTLY.

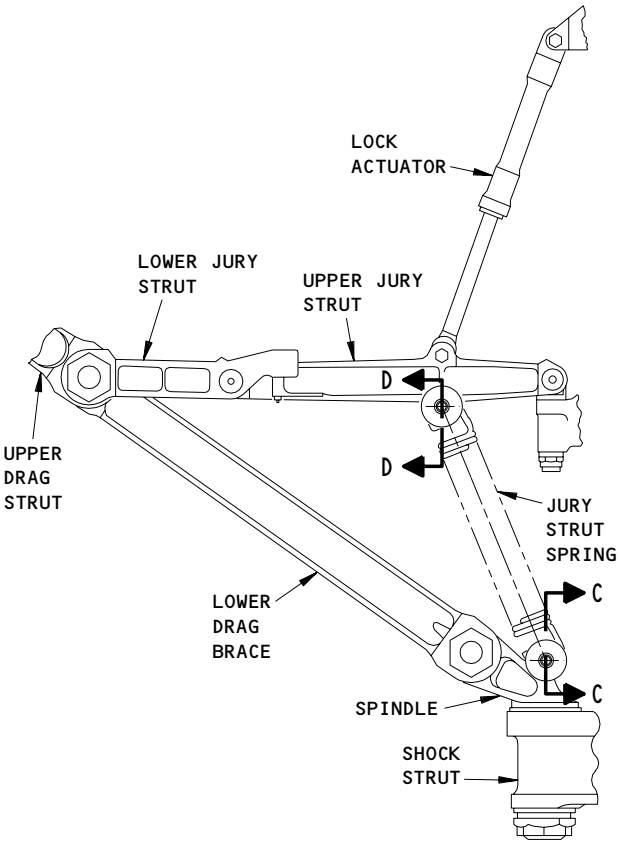
      (2) Open the main gear doors and install the door locks (AMM 32-00-15/201).

      S 864-007
      (3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).



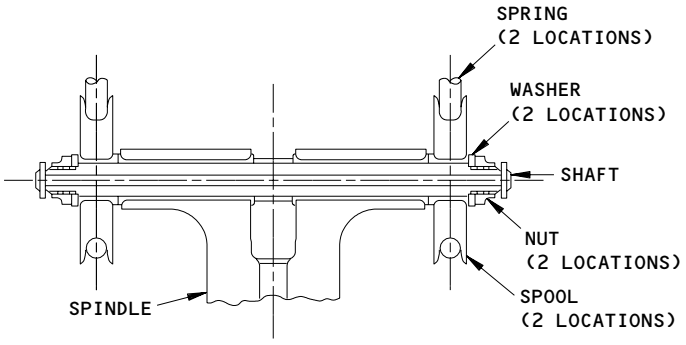
Main Gear Jury Strut Spring Installation
Figure 401 (Sheet 1)



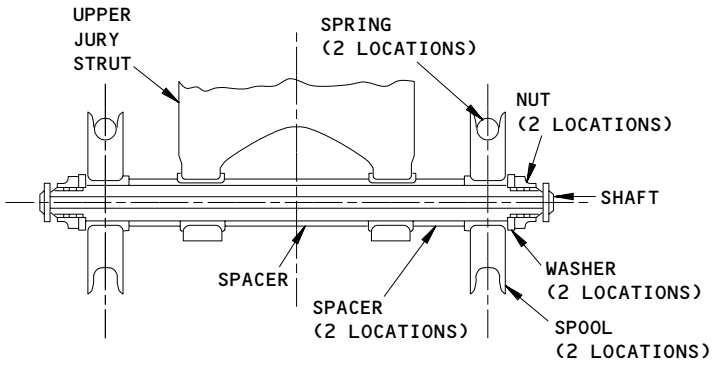


AIRPLANES WITH TENSION SPRINGS

B



C–C



D–D

Main Gear Jury Strut Spring Installation
Figure 401 (Sheet 2)

E. Remove the Main Gear Jury Strut Spring

S 494-020
(1) AIRPLANES WITH SPRING CARTRIDGES;
Do the steps that follow:
(a) Install the spring extender on the jury strut spring per the instructions supplied with the tool.
(b) Remove the nuts and tang washers from the upper and lower shafts.
1) Move the spring off the shaft (Views A-A and B-B).
(c) Remove the spring from the extender tool.

S 494-019
(2) AIRPLANES WITH TENSION SPRINGS;
Do the steps that follow:
(a) Install the spring extender on the jury strut spring per the instructions supplied with the tool.
(b) Remove the pins, nuts, and tang washers from the upper and lower shafts.
1) Move the spring off the shaft (Views C-C and D-D).
(c) Remove the spring from the extender tool.

TASK 32-32-05-404-009
3. Install the Main Gear Jury Strut Spring (Fig. 401)
A. Equipment
(1) Spring Extender for the Drag Brace - A32099-77
(2) Spring Extender Equipment - A32099-78
B. Consumable Materials
(1) D00633 Grease - BMS3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

C. References
(1) AMM 32-00-15/201, Landing Gear Door Locks
D. Access
(1) Location Zones
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

E. Procedure

S 424-021
(1) AIRPLANES WITH SPRING CARTRIDGES;
Do the steps that follow:
(a) Apply grease to the shaft, tang washers, and nuts.
(b) Move the shaft in to position for spring installation (Detail A).
(c) Install the spring extender on the jury strut spring.

(d) Move the spring on to the shaft while you use the extender to adjust for the correct length.
(e) Remove the extender from the spring.
(f) With all the springs in place, install the washers, nuts, and cotter pins (Views A-A and B-B).

S 424-022

(2) AIRPLANES WITH TENSION SPRINGS;
Do the steps that follow:
(a) Apply a thin layer of grease to the items that follow (View D-D):
1) Shank, threads and thread reliefs of the bolt
2) Washer faces
(b) Install the lock springs on the upper jury strut and install the pin, nut, washers, and bolt (View D-D).
(c) Wipe off the unwanted grease from the top connection of the springs.
(d) Apply a thin layer of grease to the items that follow (View C-C):
1) Shank, threads and thread reliefs of the bolts
2) Washer faces
(e) Install the spring extender on the jury strut spring.
(f) Move the spring on to the shaft with the open portion of the hooks facing forward while you use the extender to adjust for the correct length and install the pin, nut, washers, and bolt (View C-C).
(g) Wipe off the unwanted grease from the bottom connection of the springs.
(h) Remove the spring extender on the jury strut spring.

S 094-010

WARNING: MAKE SURE THE DOOR LOCK REMOVAL PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE.

(3) Remove the main gear door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR DOOR-OPERATED SEQUENCE VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure provides two tasks, one for removal and one for installation of the main gear door-operated sequence valve.

TASK 32-32-06-004-001

2. Remove the Main Gear Door-Operated Sequence Valve (Fig. 401)
   A. Equipment

      (1) Rig Pin from Set A20004-XX (AMM 20-10-24/201):
          (a) LGE2 - P/N A20004-12
   B. References
      (1) AMM 29-11-00/201, Main (Left, Right and Center) Hydraulic Systems
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          143 Main Landing Gear Wheel Well (Left)
          144 Main Landing Gear Wheel Well (Right)

   D. Prepare for the Removal

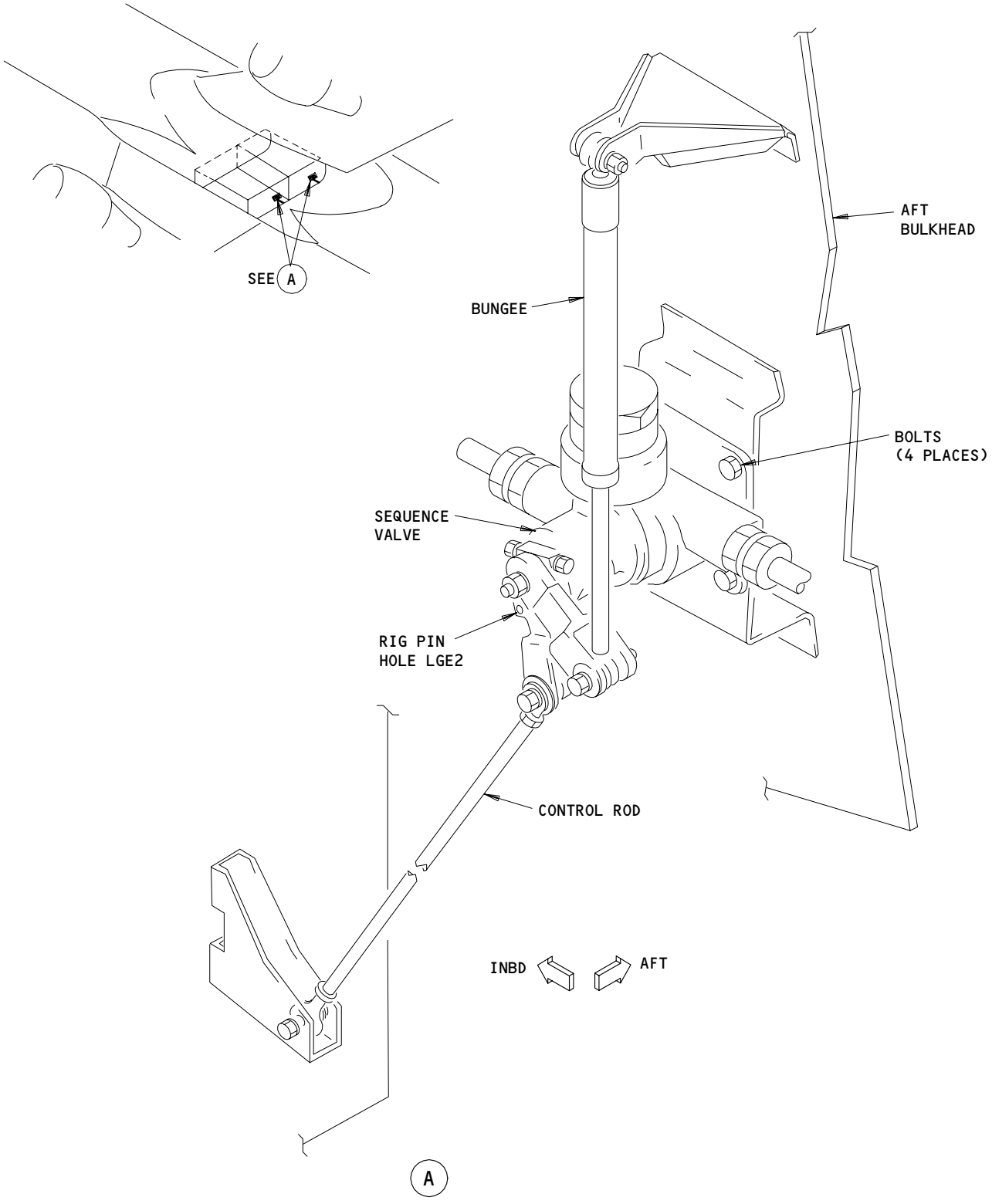
      S 214-002
      (1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

      S 494-003

      WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE IF THE LOCKS ARE NOT INSTALLED CORRECTLY.

      (2) Open the main gear doors and install the door locks (AMM 32-00-15/201).

      S 864-024
      (3) Remove the pressure from the center hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).



Main Gear Door-Operated Sequence Valve Installation
Figure 401

E. Remove the Main Gear Door-Operated Sequence Valve

S 034-005
(1) Disconnect the hydraulic lines from the sequence valve; install plugs in the valve ports and the hoses. Move the hoses out of the work area.

S 034-006
(2) Disconnect the upper end of the control rod from the sequence valve.

S 034-007
(3) Disconnect the lower end of the bungee from the sequence valve.

S 024-008
(4) Remove the bolts that attach the sequence valve to the aft bulkhead.

TASK 32-32-06-404-009

3. Install the Main Gear Door-Operated Sequence Valve (Fig. 401)

A. Equipment

(1) Rig Pin from Set A20004-XX (AMM 20-10-24/201):
(a) LGE2 - P/N A20004-12

B. References
(1) AMM 12-12-01/301, Hydraulic Systems
(2) AMM 29-11-00/201, Main (Left, Right and Center) Hydraulic Systems
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks

C. Access
(1) Location Zones
143 Main Landing Gear Wheel Well (Left)
144 Main Landing Gear Wheel Well (Right)

D. Procedure to Install the Sequence Valve

S 424-010
(1) Put the sequence valve into position on the aft bulkhead. Install the bolts and washers that attach the valve to the bulkhead (Detail A).

S 434-011
(2) Connect the upper end of the control rod to the sequence valve.

S 824-012
(3) With the main gear door fully open, adjust the length of the control rod until the rig pin LGE2 can be installed.

S 434-013
(4) Connect the lower end of the bungee to the sequence valve.

S 864-014

(5) Make sure that the pressure is removed from the center hydraulic system (AMM 29-11-00/201).

S 434-015

(6) Connect the hydraulic lines to the sequence valve.

E. Do a Test of the Sequence Valve for Correct Installation

S 094-016

WARNING: MAKE SURE THE DOOR LOCK REMOVAL PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE.

(1) Remove the main gear door locks (AMM 32-00-15/201).

S 864-017

(2) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 864-018

WARNING: MAKE SURE THAT THE AREAS AROUND THE NOSE AND MAIN GEAR DOORS, THE LANDING GEAR, AND THE TAIL SKID (IF APPLICABLE) ARE CLEAR OF PERSONS AND EQUIPMENT. IF THEY ARE NOT CLEAR INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Move the landing gear control lever from UP to DN three or four times. Return the lever to DN.

S 494-019

WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE IF THE LOCKS ARE NOT INSTALLED CORRECTLY.

(4) Open the main gear doors and install the door locks (AMM 32-00-15/201).

S 214-020

(5) Make sure the sequence valve does not have any hydraulic leaks.

F. Put the Airplane Back to its Usual Condition

S 864-021

(1) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-022

(2) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 094-023

WARNING: MAKE SURE THE DOOR LOCK REMOVAL PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE.

(3) Remove the main gear door locks and close the doors (AMM 32-00-15/201).

MAIN GEAR GEAR-OPERATED SEQUENCE VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first task is for removal of the gear-operated sequence valve for the main landing gear. The second task is for installation of the gear-operated sequence valve.

TASK 32-32-08-004-001

2. Remove the Main Gear Gear-Operated Sequence Valve (Fig. 401)

   A. References

      (1) AMM 29-11-00/201, Main (Left, Right and Center) Hydraulic Systems
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks

   B. Access

      (1) Location Zones
          143 Left Main Landing Gear Wheel Well
          144 Right Main Landing Gear Wheel Well

      (2) Access Panels
          551AB Left Wing Trailing Edge Access Panel
          651AB Right Wing Trailing Edge Access Panel

   C. Prepare for the Removal

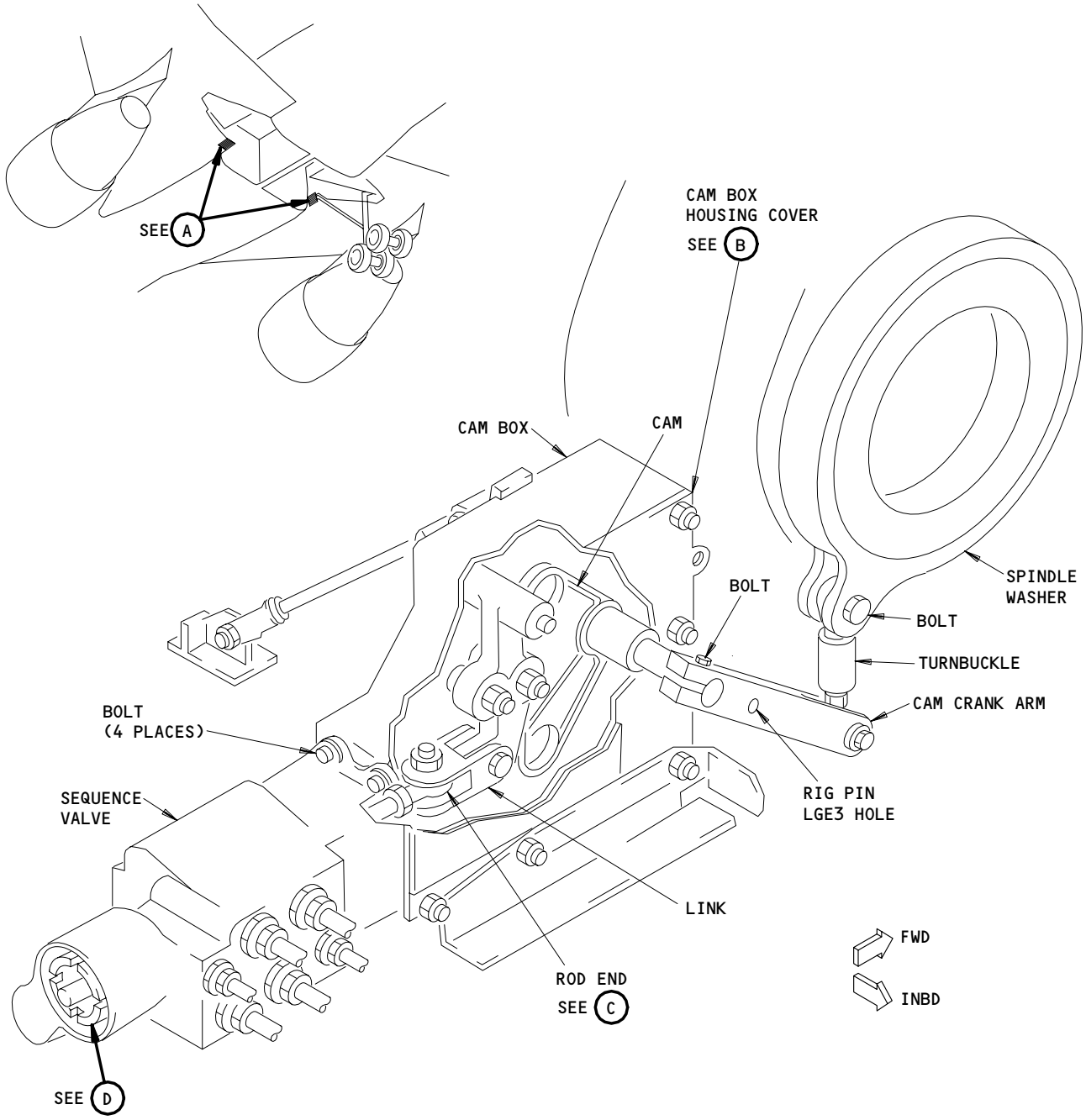
      S 214-002

      (1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

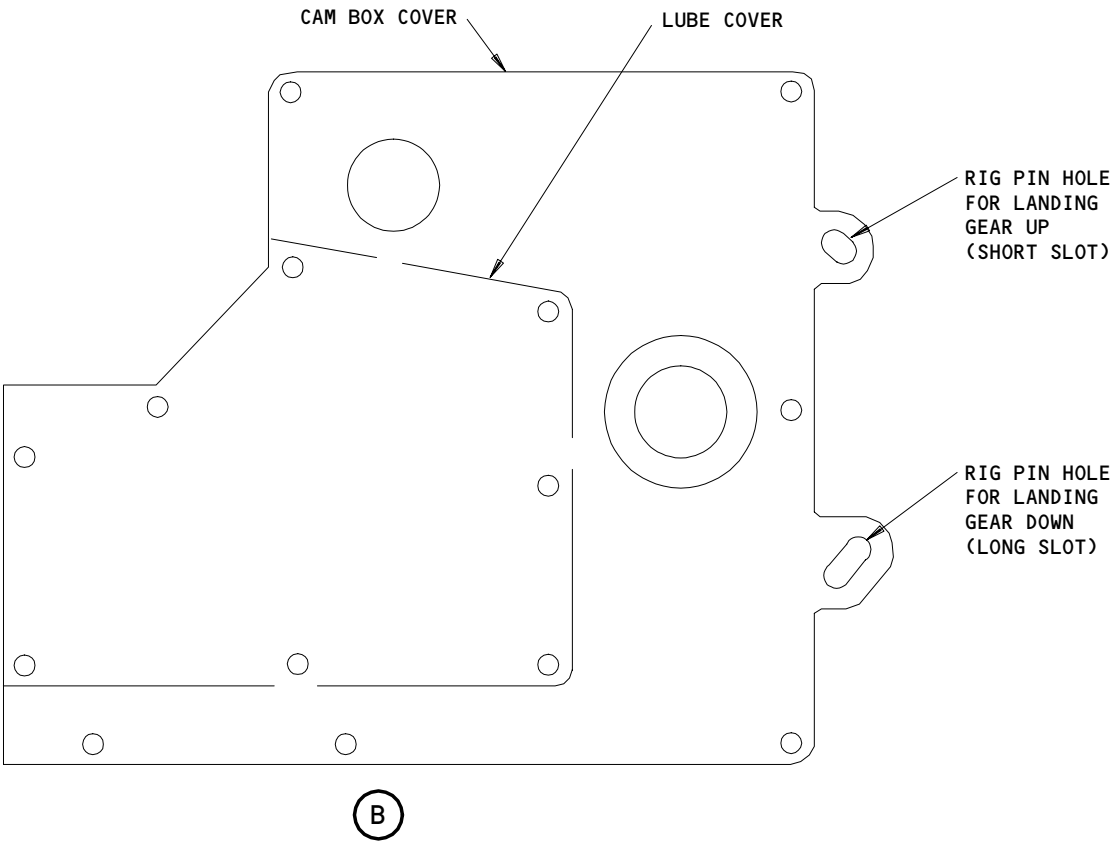
      S 494-003

      WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE IF THE LOCKS ARE NOT INSTALLED CORRECTLY.

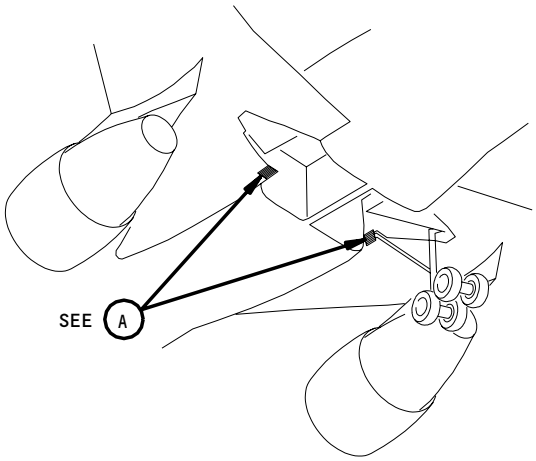
      (2) Open the main gear doors and install the door locks (AMM 32-00-15/201).

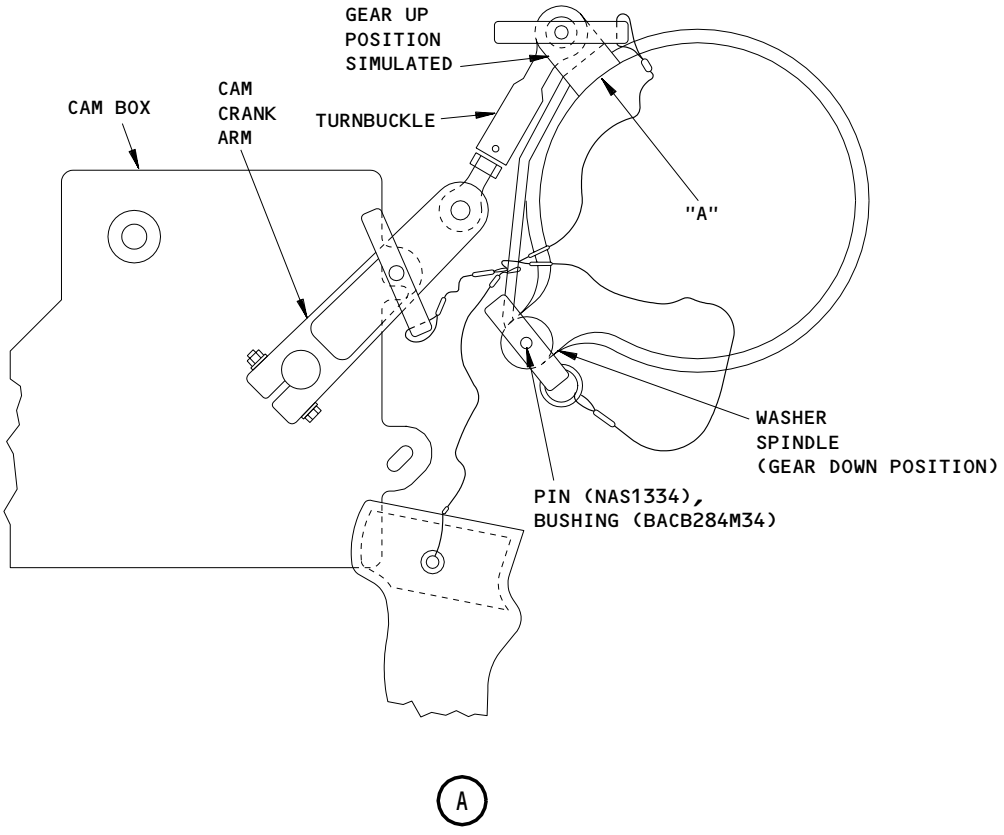


Main Landing Gear Gear-Operated Sequence Valve Installation
Figure 401 (Sheet 1)



Main Landing Gear Gear-Operated Sequence Valve Installation
Figure 401 (Sheet 2)





Main Landing Gear Gear-Operated Sequence Valve Adjustment Tool
Figure 402

S 864-004
(3) Remove the pressure from the center hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

D. Procedure

S 034-058
(1) Disconnect the hydraulic lines from the valve.

S 494-005
(2) Install plugs in the hydraulic lines and fittings.

S 034-006
(3) Remove the lube cover from the cam box (Detail B).

S 034-007
(4) Remove the bolt to disconnect the rod end of the sequence valve from the link (Detail C).

S 024-008
(5) Remove the bolts to disconnect the sequence valve from the cam box (Detail A).

S 034-009
(6) Loosen the nut, then loosen and remove the rod end from the sequence valve. Keep the nut, keyed lockwasher, and rod end for installation.

TASK 32-32-08-404-010

3. Install the Main Gear Gear-Operated Sequence Valve (Fig. 401, 402)

A. References
(1) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
(2) AMM 07-11-01/201, Jacking Airplane
(3) AMM 12-12-01/301, Hydraulic Systems
(4) AMM 29-11-00/201, Main (Left, Right and Center) Hydraulic Systems
(5) AMM 32-00-15/201, Landing Gear Door Locks
(6) AMM 32-00-20/201, Landing Gear Downlocks
(7) AMM 32-32-00/501, Main Gear Extension and Retraction

B. Equipment

(1) Gear-Operated Sequence Valve Adjustment Tool, MLG - A32055-1
(2) Rig Pin from Set A20004-XX (AMM 20-10-24/201):
(a) LGE3 - P/N A20004-15

C. Consumable Materials
(1) A00247 Sealant, Chromate Type - BMS 5-95
(2) D00633 Grease - BMS3-33 (Preferred)
(3) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

D. Access

(1) Location Zones

143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well

(2) Access Panels

551AB Left Wing Trailing Edge Access Panel
651AB Right Wing Trailing Edge Access Panel

E. Procedure to Install the Gear-Operated Sequence Valve

S 434-011

(1) Install the keyed lockwasher, nut, and rod end on the sequence valve. Do not tighten the rod end.

S 034-012

(2) Remove the bolt to disconnect the turnbuckle from the spindle splined washer.

S 034-013

(3) Remove the bolt to disconnect the crank from the splined shaft and remove the crank.

S 984-014

(4) Turn the cam to the approximate middle position between the upper (short-slotted) and the lower (long-slotted) rig pin holes (Fig. 401, Detail B).

S 434-015

(5) Install the bolts and washers with wet sealant to connect the valve to the cam box. Install the lockwire.

S 984-016

(6) Turn the valve spool to adjust the length of the rod end so that you can easily install the bolt to connect the rod end to the link.

NOTE: The sequence valve is in the spring-loaded neutral position at this point. The rod end must be connected to the link freely to be adjusted correctly.

S 434-017

(7) Install the bolt, washers, and nut to connect the rod end of the valve to the link. Tighten the nut to 50 to 80 pound inches.

S 434-018

(8) Turn the valve spool to align the closest slot on the valve slide with the keyed lockwasher tooth. Tighten the nut and install lockwire.

S 984-019
(9) Turn the cam shaft to the gear-up position and put the crank onto the splined shaft.

S 434-020
(10) Put the bolt through the crank to hold it in position.

S 494-021
(11) Install the rig pin LGE3 through the crank rig pin hole and the upper (short-slotted) rig pin hole in the valve cam box cover.

S 224-022
(12) Make sure the valve slide moves into the valve 0.28 to 0.38 inch (Fig. 401, Detail D).

S 094-023
(13) Remove the rig pin LGE3.

S 034-024
(14) Remove the bolt to disconnect the crank from the splined shaft and remove the crank.

S 434-025
(15) Turn the cam shaft to the gear down position and put the crank onto the splined shaft. Put the bolt through the crank to hold it in position.

S 494-026
(16) Install the rig pin LGE3 through the crank rig pin hole and into the lower (long-slotted) rig pin hole in the cam box cover (Fig. 401, Detail B).

S 224-027
(17) Make sure the valve slide moves out from the valve 0.56 to 0.76 inch from the rig position it was in before (Fig. 401, Detail D).

S 214-028
(18) If either valve slide movement is not within tolerance, do the step that follows:
(a) With the cam in the approximate middle position between the upper and lower rig pin holes, make sure there is no load on the bolt that connects the valve rod end to the link.

S 034-029
(19) If the installation is correct, do the steps that follow:
(a) Remove the rig pin LGE3.
(b) Remove the crank from the splined shaft.
(c) Return the cam to the middle position.

S 434-030
(20) Install the lube cover on the cam box (Fig. 401, Detail B).

S 864-059
(21) Make sure the pressure is removed from the center hydraulic system (AMM 29-11-00/201).

S 434-031
(22) Connect the hydraulic lines to the sequence valve.

S 824-032
(23) If the adjustment tool, which can simulate gear up position, is available use the procedure that follows to adjust the turnbuckle (Fig. 402):
  (a) Turn the cam to the gear up position and put the crank onto the splined shaft. Put the bolt through the crank to hold it in position.
  (b) Install the rig pin LGE3 (or the pin supplied with the adjustment tool) through the crank rig pin hole and into the gear up (short slot) rig pin hole in the valve cam box cover.
  (c) Install the sequence valve adjustment tool onto the spindle washer per the instructions below:
    1) Make sure the tool is firmly against the drag strut spindle.
    2) Remove the turnbuckle, and disconnect the crank arm from the cambox.
    3) Turn the splined shaft with your fingers toward the gear up position until the crank arm can be installed again.
    4) Use the NAS1334 quick release pin and the BACB28Y4M34 bushing to attach the tool to the spindle washer.
    5) Turn the crank to the UP position and install the rig pin.
    6) Put the rod end of the turnbuckle in the tool and use the "T" pin to attach it.
    7) Adjust the turnbuckle as necessary so that the tool radius touches the airplane spindle washer at location "A".
    8) Remove the rig pin and disconnect the turnbuckle.
    9) Remove the adjustment tool.
    10) Remove the crank arm and turn the shaft to the DOWN position. Install the crank arm. Install the turnbuckle and insert the rig pin to do a check of the DOWN rigging. Do the procedure to adjust the UP and DOWN rigging again if it is necessary.
    11) Install and tighten the turnbuckle nut.
  (d) Lift up on the crank arm so the rig pin LGE3 is firmly against the top of the gear up rig pin hole.

(e) If it is necessary, loosen the nut and adjust the turnbuckle to the shortest length that will permit installation of the rig pin through the eye of the turnbuckle and the tool clevis when the tool is against the spindle. The upper end of the turnbuckle must be aligned with the simulated gear up position of the adjustment tool.
(f) Disconnect the turnbuckle from the tool and remove the tool.
(g) Remove the rig pin LGE3 (or the pin supplied with the adjustment tool). Then remove the crank from the splined shaft, and turn the cam to the gear down position.
(h) Put the crank onto the splined shaft and put the bolt through the crank to hold it in position.
(i) Lubricate and install the bolt, bushing, washers, and nut to connect the turnbuckle to the spindle splined washer.
(j) Make sure the rig pin LGE3 can be installed through the crank rig pin hole and in the lower (long-slotted) rig pin hole in the valve cam box cover. Remove the rig pin.
(k) Do the adjustment procedure again if necessary.
(l) Install the bolt, washers, and nut to connect the crank to the splined shaft.
(m) Tighten the jamnut on the turnbuckle and install lockwire.

S 824-063

(24) If the adjustment tool, which can simulate gear up position, is not available use the procedure that follows to adjust the turnbuckle:
(a) Lift the airplane on jacks high enough for gear retraction (AMM 07-11-01 201).
(b) Turn the cam to the gear down position and put the crank onto the splined shaft.
(c) Install the bolt, washers, and nut to connect the crank to the splined shaft.
(d) Install the rig pin LGE3 through the crank rig pin hole and the gear down (long slot) rig pin hole in the valve cam box cover.
(e) Lubricate and install the bolt, bushing, washers, and nut to connect the turnbuckle to the splindle washer. If necessary, loosen the jam nut and adjust the length of the turnbuckle. Tighten the jam nut by hand.
(f) Remove the rig pin LGE3.
(g) Remove the access panel 551AB (651AB-right) to gain access to the sequence valve when the gear is retracted (AMM 06-44-00/201).

WARNING: MAKE SURE THE DOOR LOCK REMOVAL PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE.

(h) Remove the main gear door lock and close the main gear door (AMM 32-00-15/201).

NOTE: You need only to close the main gear door for the gear to be retracted.

(i) Remove the downlock from the gear to be retracted (AMM 32-00-20/201).

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE GEAR RETRACTION PATH AND THE TAIL SKID AREA (IF APPLICABLE). IF THE AREA IS NOT CLEAR INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(j) Move the landing gear control lever to UP to retract the main gear. Leave the lever in UP and attach a DO-NOT-OPERATE tag.
(k) Make sure the rig pin LGE3 can be installed through the rig pin hole on the crank and the upper (short-slotted) rig pin hole in the cam box cover.

NOTE: If it is necessary, loosen the nut to adjust the length of the turnbuckle so the rig pin is firmly against the top of the gear up rig pin hole.

(l) Tighten the jam nut and install the lockwire.
(m) Remove the rig pin.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE GEAR EXTENSION PATH AND THE TAIL SKID AREA (IF APPLICABLE). IF THE AREA IS NOT CLEAR INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(n) Remove the DO-NOT-OPERATE tag and move the control lever to DN to extend the gear.
(o) Install the main gear downlock (AMM 32-00-20/201).

WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE IF THE LOCKS ARE NOT INSTALLED CORRECTLY.

(p) Open the main gear door and install the door lock (AMM 32-00-15/201).

F. Do a Test of the Gear-Operated Sequence Valve.

S 864-047
(1) Lift the airplane on jacks high enough for gear extension and retraction (AMM 07-11-01/201).

S 094-048
(2) Remove the main gear downlocks (AMM 32-00-20/201).

S 094-049

WARNING: MAKE SURE THE DOOR LOCK REMOVAL PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE.

(3) Remove the main gear door locks and close the doors (AMM 32-00-15/201).

S 864-050
(4) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 714-062

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE DOOR AND GEAR RETRACTION PATHS. INJURY OR DAMAGE COULD RESULT IF THE AREA IS NOT CLEAR.

(5) Do the main gear extension and retraction test (AMM 32-32-00/501).

S 494-051
(6) Install the main gear downlocks (AMM 32-00-20/201).

S 864-052
(7) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 494-053

WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE.

(8) Open the main gear door and install the door lock (AMM 32-00-15/201).

S 214-054
(9) Make sure the sequence valve does not have any hydraulic leaks.

G. Put the Airplane Back to its Usual Condition.

S 614-055
(1) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 494-056

WARNING: MAKE SURE THE LOCK REMOVAL PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE.

(2) Remove the main gear door locks and close the doors (AMM 32-00-15/201).

S 864-057

(3) Remove the pressure from the hydraulic systems if it is not necessary (AMM 29-11-00/201).

MAIN GEAR GEAR-OPERATED SEQUENCE VALVE CAM BOX - REMOVAL/INSTALLATION

1. General
   A. This procedure provides two tasks. The first task removes the cam box for the gear-operated sequence valve of the main landing gear. The second task installs the cam box.

TASK 32-32-09-004-001

2. Remove the Cam Box for the Gear-Operated Sequence Valve (Fig. 401)

   A. References
      (1) AMM 29-11-00/201, Main (Left, Right and Center) Hydraulic Systems
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
      (4) AMM 32-32-08/401, Main Gear Gear-Operated Sequence Valve
   B. Access
      (1) Location Zones
          143 Left Main Landing Gear Wheel Well
          144 Right Main Landing Gear Wheel Well

   C. Prepare for Removal

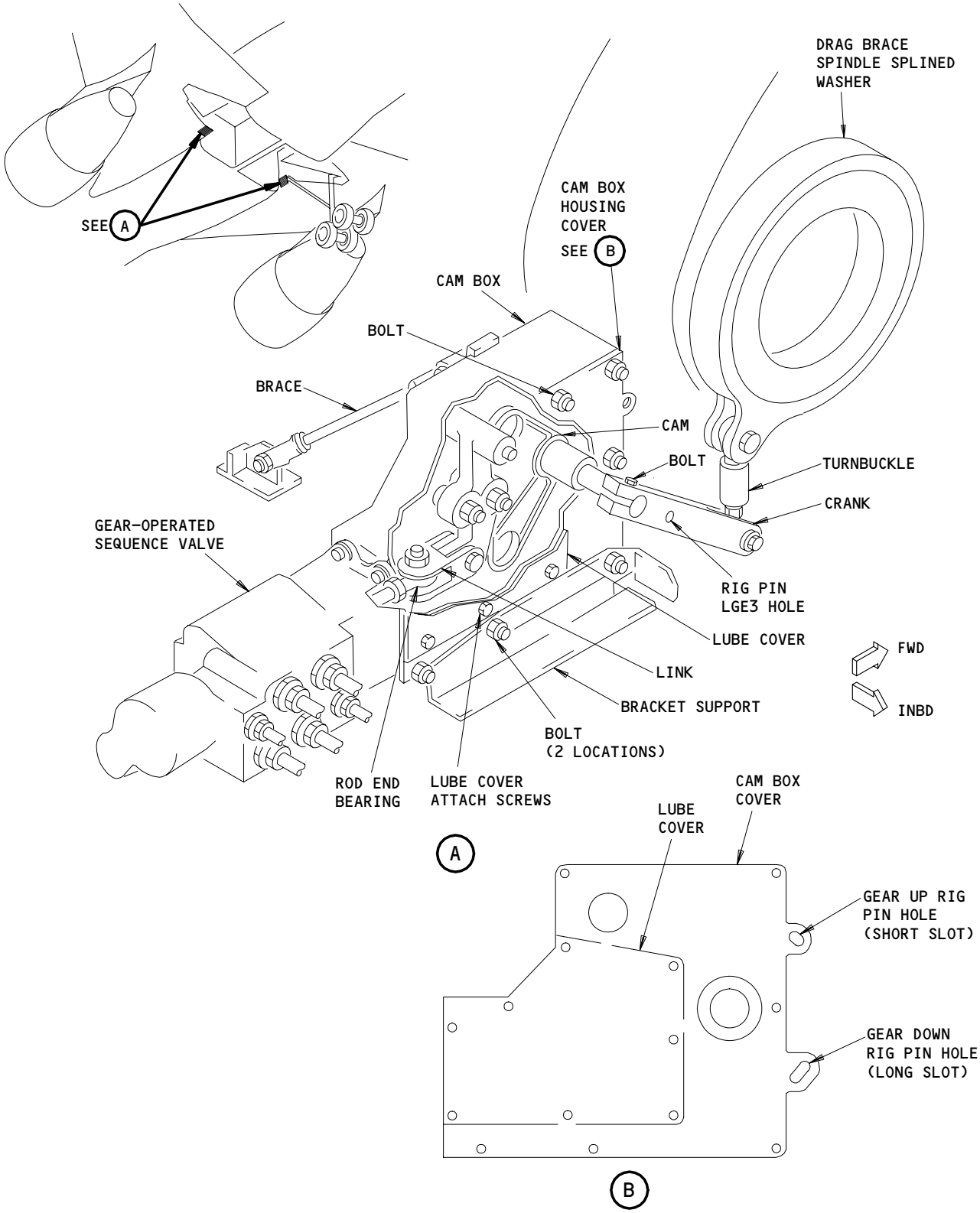
      S 214-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-003

      WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE IF THE LOCKS ARE NOT INSTALLED CORRECTLY.

      (2) Open the main gear doors and install the door locks (AMM 32-00-15/201).

      S 864-004
      (3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).



Main Landing Gear Gear-Operated Sequence Valve Cam Box Installation
Figure 401

D. Procedure

S 024-005
(1) Remove the gear-operated sequence valve (AMM 32-32-08/401). Move the actuator out of the way.

NOTE: The hydraulic lines do not need to be disconnected from the valve to remove the cam box.

S 034-006
(2) Loosen the bolt and remove the crank from the splined shaft of the cam.

S 034-007
(3) Remove the bolt to disconnect the cam box from the brace on the outboard side.

S 024-008
(4) Remove the bolts to disconnect the cam box from the bracket supports. Remove the cam box.

TASK 32-32-09-404-009
3. Install the Gear-Operated Sequence Valve Cam Box (Fig. 401)
A. Equipment

(1) Rig Pin from Set A20004-XX (AMM 20-10-24/201):
(a) LGE3 - P/N A20004-15
B. Consumable Materials
(1) A00247 Sealant, Chromate - Type BMS 5-95
(2) D00633, Grease, Corrosion Preventive - BMS 3-33 (Preferred)
(3) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)
C. References
(1) AMM 29-11-00/201, Main (Left, Right and Center) Hydraulic Systems
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-32-08/401, Main Gear Gear-Operated Sequence Valve
D. Access
(1) Location Zones
143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well

E. Procedure

S 424-010
(1) Put the box in position between the bracket supports; install the bolts, washers, and nuts to connect the cam box to the supports. Install shims as necessary between the supports and the cam box housing.

S 434-011
(2) Install the bolt, washer, and nut to connect the cam box to the brace on the outboard side.

S 034-012
(3) Remove the lube cover from the cam box (Detail B).

S 644-024
(4) In the cam box, apply a thick layer of grease to the cam and the cam follower.

S 034-013
(5) Remove the bolt to disconnect the rod end from the link.

S 034-023
(6) Install the rod end, keyed lockwasher, and nut onto the sequence valve. Do not tighten the nut.

S 984-015
(7) Turn the cam to the gear up position.

S 824-016
(8) Move the crank onto the splined shaft so that the rig pin LGE3 can be installed through the crank rig pin hole and the upper (short-slotted) rig pin hole in the valve cam box cover (Detail B). Tighten the nut that attaches the crank to the splined shaft.

S 094-017
(9) Remove the rig pin LGE3.

S 984-018
(10) Turn the crank to the approximate middle position.

S 434-019
(11) Install the lube cover on the cam box. Tighten the attach screws to 15-20 pound-inches.

S 424-020
(12) Install and adjust the gear-operated sequence valve (AMM 32-32-08/401).

S 094-021

WARNING: MAKE SURE THE DOOR LOCK REMOVAL PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE.

(13) Remove the main gear door locks and close the doors (AMM 32-00-15/201).

S 864-022

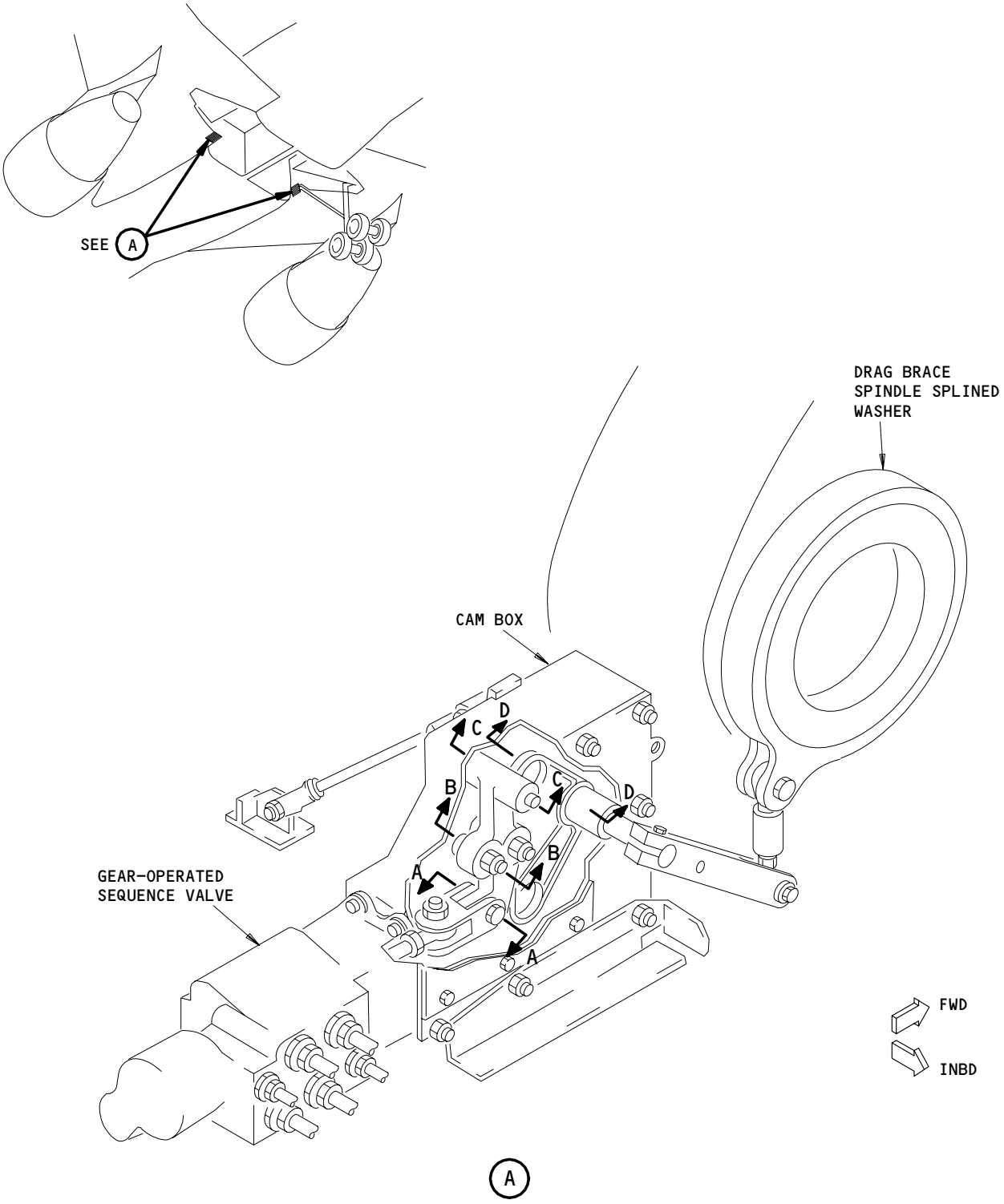
(14) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).

MAIN GEAR GEAR-OPERATED SEQUENCE VALVE CAM BOX - INSPECTION/CHECK

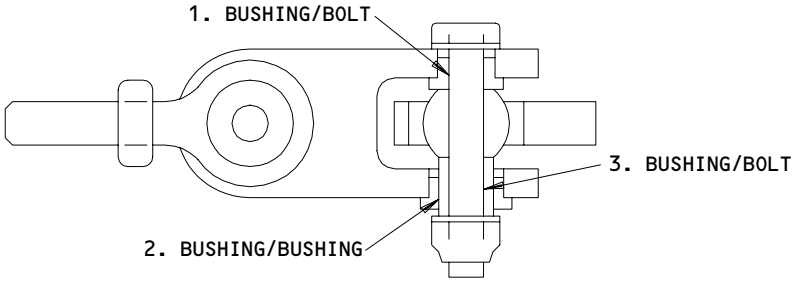
1. General
   A. This procedure only has illustrations and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Gear-Operated Sequence Valve Cam Box - Removal/Installation for procedures to do these tasks.

TASK 32-32-09-226-001

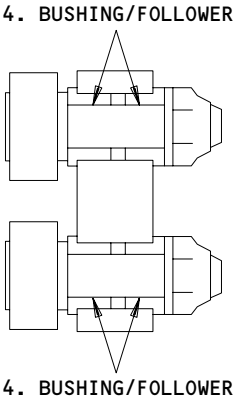
2. Main Gear Gear-Operated Sequence Valve Cam Box Wear Limits (Fig. 601)
   A. General
      (1) This procedure only has illustrations and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Gear-Operated Sequence Valve Cam Box - Removal/Installation for procedures to do these tasks.



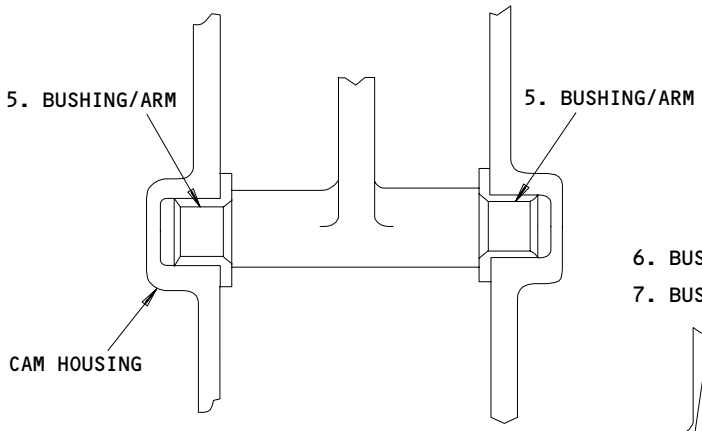
Main Gear Gear–Operated Sequence Valve Cam Box Wear Limits
Figure 601 (Sheet 1)



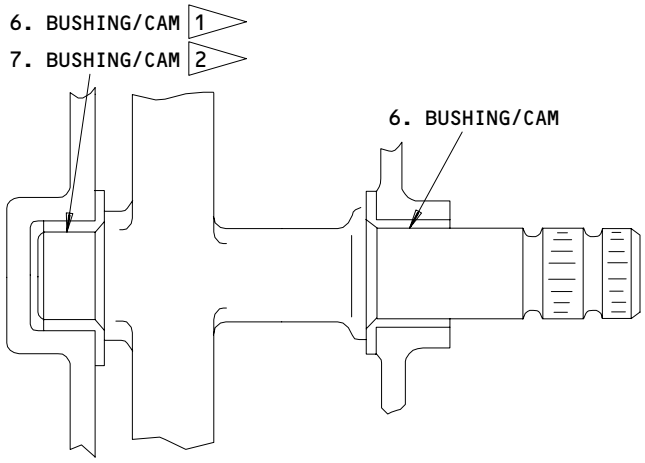
A–A



B–B



C–C



D–D

1 VALVE CAM BOX ON LEFT LANDING GEAR

2 VALVE CAM BOX ON RIGHT LANDING GEAR

Main Gear Gear–Operated Sequence Valve Cam Box Wear Limits
Figure 601 (Sheet 2)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR.
			DIAMETER		ALLOWED WEAR DIM.	MAX DIAM CLEAR-ANCE			
			MIN	MAX					
1	BUSHING	ID	0.2496	0.2506	0.2526	0.0031	X		
	BOLT	OD	0.2485	0.2495	0.2475		X		
2	BUSHING	ID	0.3746	0.3756	0.3773	0.0028	X		
	BUSHING	OD	0.3740	0.3745	0.3728		X		
3	BUSHING	ID	0.2500	0.2505	0.2525	0.0030	X		
	BOLT	OD	0.2485	0.2495	0.2475		X		
4	BUSHING	ID	0.3121	0.3131	0.3157	0.0037	X		
	FOLLOWER	OD	0.3105	0.3120	0.3094		X		
5	BUSHING	ID	0.5005	0.5015	0.5049	0.0089	X		
	ARM	OD	0.4940	0.4960	0.4926		X		
6	BUSHING	ID	0.8755	0.8765	0.8794	0.0084	X		
	CAM	OD	0.8700	0.8710	0.8681		X		
7	BUSHING	ID	0.7505	0.7515	0.7542	0.0072	X		
	CAM	OD	0.7460	0.7470	0.7443		X		

Main Gear Gear-Operated Sequence Valve Cam Box Wear Limits
Figure 601 (Sheet 3)

MAIN GEAR TRANSFER CYLINDER - REMOVAL/INSTALLATION

1. General
   A. This procedure has these tasks:
      (1) A removal of the main gear transfer cylinder
      (2) An installation of the main gear transfer cylinder.
   B. The main gear transfer cylinder is referred to as the transfer cylinder in this procedure.

TASK 32-32-10-004-001

2. Transfer Cylinder Removal (Fig. 401)
   A. References
      (1) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
      (2) AMM 29-11-00/201, Main (Left, Right and Center) Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          143 Left Main Landing Gear Wheel Well
          144 Right Main Landing Gear Wheel Well

      (2) Access Panels
          552CB Left Wing Trailing Edge Access Panel
          652CB Right Wing Trailing Edge Access Panel

   C. Prepare for the Removal

      S 214-023

      WARNING: MAKE SURE THAT THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

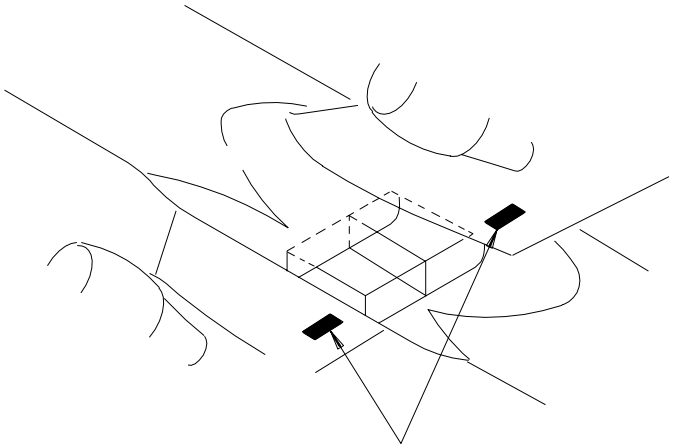
      (1) Make sure the downlocks are installed in the nose and main landing gear (AMM 32-00-20/201).

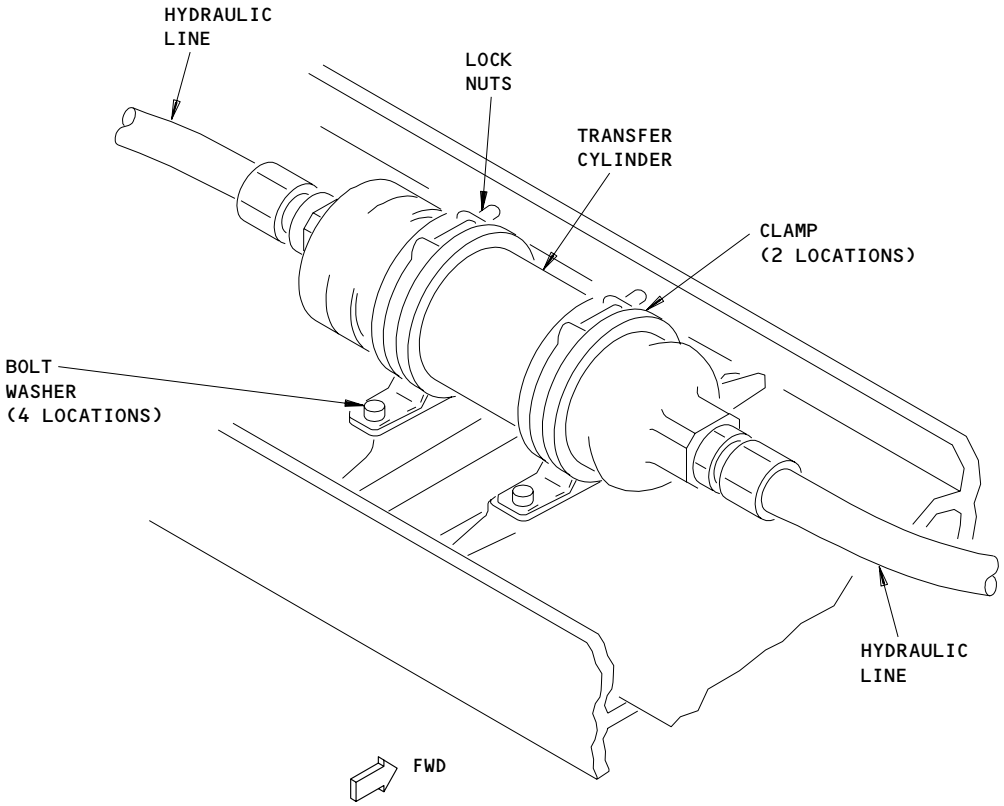
      S 484-024

      WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

      S 864-009
      (3) Remove the pressure from the center hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).





TRANSFER CYLINDER FOR
THE MAIN LANDING GEAR

(A)

Main Landing Gear Transfer Cylinder Installation
Figure 401

S 014-008
(4) Open the access panel 552CB or 652CB to get access to the transfer cylinder (AMM 06-44-00/201).

D. Transfer Cylinder Removal

S 024-025
(1) Disconnect the hydraulic lines from the transfer cylinder.

S 484-026
(2) Install a plug in the hydraulic lines and fittings.

S 024-027
(3) Loosen the clamps on both ends of the transfer cylinder.

S 024-005
(4) Remove the transfer cylinder.

TASK 32-32-10-404-004

3. Transfer Cylinder Installation (Fig. 401)

A. References
(1) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
(2) AMM 12-12-01/301, Hydraulic Systems
(3) AMM 29-11-00/201, Main (Left, Right and Center) Hydraulic System
(4) AMM 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-00-20/201, Landing Gear Downlocks

B. Consumable Materials
(1) D00153 Fluid, Hydraulic - BMS 3-11, Type IV
(2) G50136 Compound, BMS 3-38 Corrosion Inhibiting

C. Access
(1) Location Zones
143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well

(2) Access Panels
552CB Left Wing Trailing Edge Access Panel
652CB Right Wing Trailing Edge Access Panel

D. Transfer Cylinder Installation

S 614-028
(1) Fill the transfer cylinder from both ends with hydraulic fluid and install plugs in the fittings.

S 624-031
(2) Apply compound (BMS 3-38) to the shank and threads of the bolts.

S 424-019
(3) Put the transfer cylinder in position in the attach clamps. Tighten the clamps around the cylinder.

NOTE: The cylinder is symmetrical and may be installed either way in the system.

(a) Tighten the lock nuts on the clamps to 20-25 pound-inches (2.26-2.82 newton-meters).

S 864-018
(4) Make sure that pressure is removed from the center hydraulic system (AMM 29-11-00/201).

S 424-029
(5) Connect the hydraulic lines to the transfer cylinder.

E. Transfer Cylinder Installation Test

S 864-016
(1) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 214-015
(2) Make sure the downlocks are installed in the nose and main landing gear (AMM 32-00-20/201).

S 864-032

WARNING: MAKE SURE THE AREA AROUND THE TAIL SKID (IF APPLICABLE) IS CLEAR OF PERSONS AND EQUIPMENT. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Move the landing gear control lever to UP and return the lever to DN.

S 214-013
(4) Make sure there are no hydraulic fluid leaks.

F. Put the Airplane Back to Its Normal Condition.

S 864-021
(1) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 414-012
(2) Install the access panel 552CB or 652CB (AMM 06-44-00/201).

S 614-011

(3) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 084-030

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Remove the door locks (AMM 32-00-15/201).

MAIN GEAR DOOR ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure provides two tasks. The first task removes the main landing gear door actuator. The second task installs the main landing gear door actuator.

TASK 32-32-12-004-001

2. Remove the Main Landing Gear Door Actuator (Fig. 401)

   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          143 Left Main Landing Gear Wheel Well
          144 Right Main Landing Gear Wheel Well

   C. Prepare for Removal

      S 214-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-003

      WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE IF THE LOCKS ARE NOT INSTALLED CORRECTLY.

      (2) Open the main gear doors and install the door locks (AMM 32-00-15/201).

      S 864-004
      (3) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

D. Procedure

S 034-005
(1) Disconnect the hydraulic lines from the door actuator. Install plugs in the lines and fittings and move the lines out of the work area.

S 034-006
(2) Remove the bolts (9) to disconnect the reaction links (5) from the actuator support (Detail B).

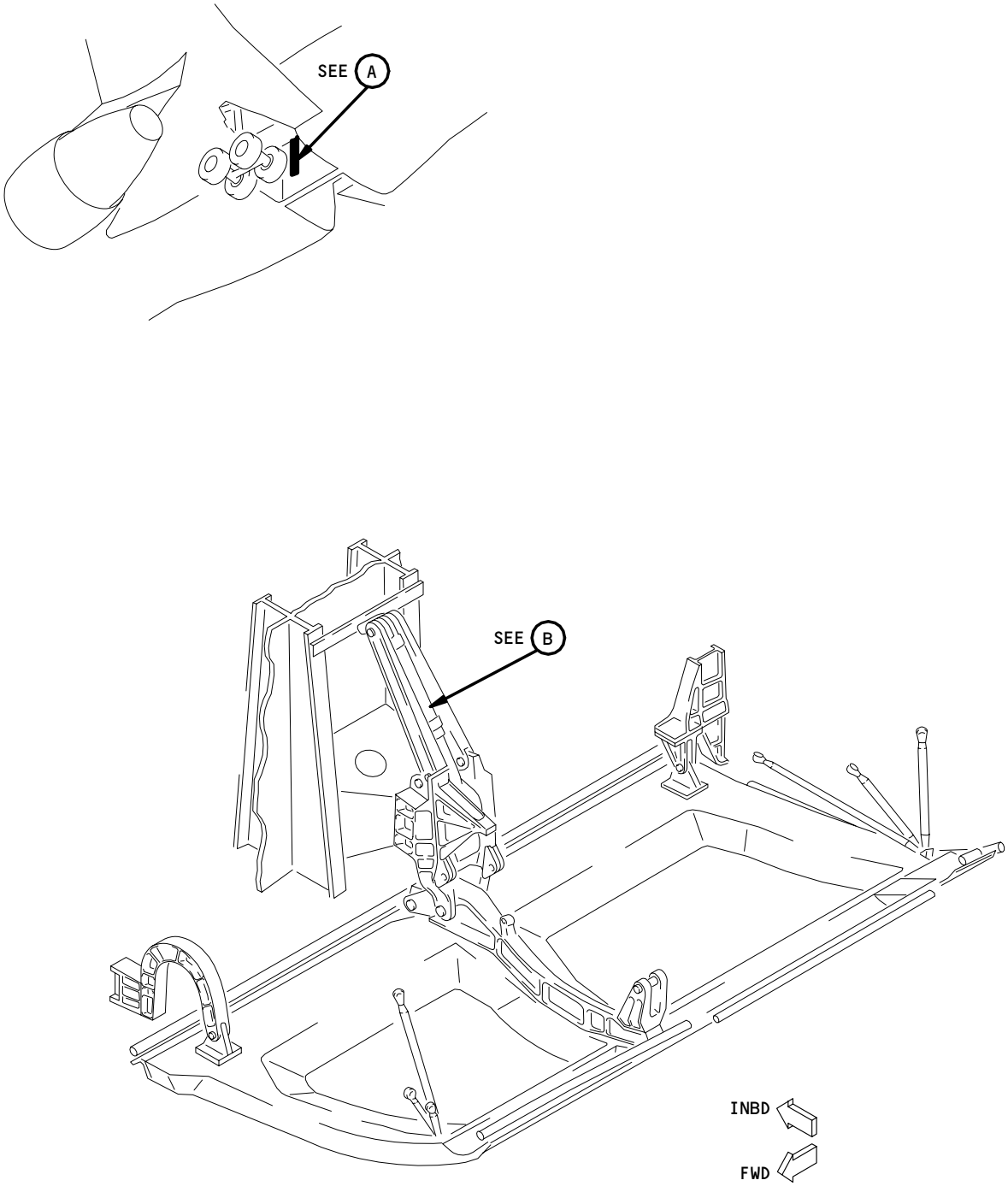
S 034-007
(3) Remove the bolt (8) to disconnect the rod end of the door actuator (6) from the bellcrank.

S 024-008
(4) Remove the bolt (1) to disconnect the head end of the door actuator (6) and the reaction links from the swing link. Remove the door actuator (6).

TASK 32-32-12-404-009
3. Install the Main Landing Gear Door Actuator (Fig. 401)

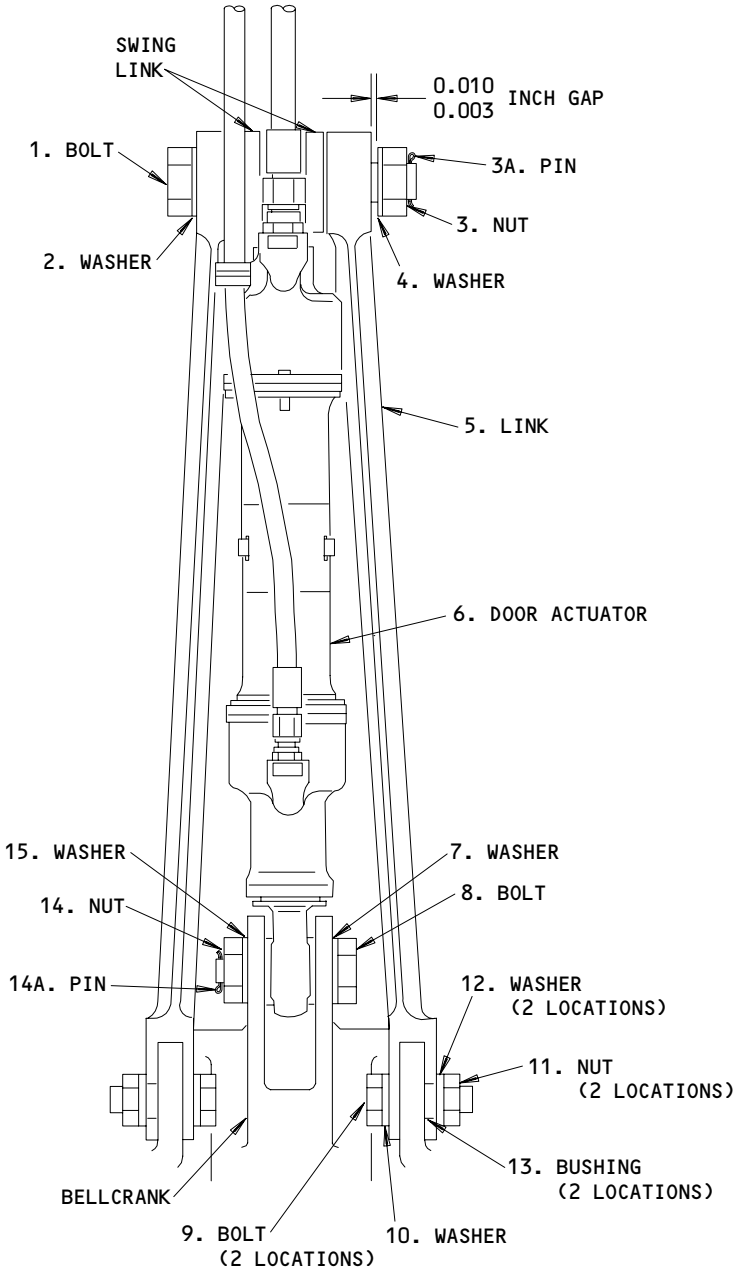
NOTE: The wear limits for the components that follow are found in 32-32-12/601, and 32-32-20/601.

A. Consumable Materials
(1) D00633, Grease, Corrosion Preventive - BMS 3-33 (Preferred)
(2) D00015, Grease, Corrosion Preventive - BMS 3-24 (Alternate)
(3) D00153, Fluid, Hydraulic - BMS 3-11, Type IV



A

Main Gear Door Actuator Installation
Figure 401 (Sheet 1)



Main Landing Gear Door Actuator Installation
Figure 401 (Sheet 2)

B. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Bolt - Special Shoulder	32-12-01	02	102
	2	Washer			111
	3	Nut			129
	3A	Pin			179
	4	Washer			120
	5	Link Assy			162
	6	Actuator Assy	32-32-12	01	65
	7	Washer	32-12-01	01	231
	8	Bolt - Special Shoulder			222
	9	Bolt			105
	10	Washer			114
	11	Nut			132
	12	Washer			123
	13	Bushing			135
	14	Nut			258
	14A	Pin			TBD
	15	Washer			232

C. References
(1) AMM 12-12-01/301, Hydraulic Systems
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-32-12/601, Main Gear Door Actuator
(5) AMM 32-32-20/601, Main Gear Door Operating Mechanism

D. Access
(1) Location Zones
143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well

E. Procedure

S 434-010
(1) Lubricate and install the bolt (1), washers (2 and 4) and nut (3). This connects the head end of the door actuator (6) and the reaction links (5) to the swing link.

S 434-011
(2) Tighten the nut (3) to 100-120 pound-feet. Loosen the nut (3) to get 0.003-0.010 gap between the bushing and washer.

S 434-025

(3) Install the pin (3A).

S 434-012

(4) Lubricate and install the bolt (8), washers (7 and 15) and nut (14). This connects the rod end of the actuator (6) to the bellcrank (Detail B).

NOTE: Install the washer (7) with the countersunk side towards the head end of the bolt.

S 434-013

(5) Tighten the nut (14) to 180-240 pound-inches. Loosen the nut to the nearest slot and install the pin (14A).

S 434-015

(6) Lubricate and install the bolts (9), washers (10 and 12), bushings (13), and nuts (11). This connects the reaction links (5) to the actuator support. Make sure the run-on torque for the nut (11) is more than 50 pound-inches. Tighten the nut to 200 +/- 40 pound-inches.

S 434-016

(7) Make sure the pressure is removed from the center hydraulic system (AMM 29-11-00/201). Connect the hydraulic lines to the door actuator (6).

S 864-017

(8) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 094-018

WARNING: MAKE SURE THE DOOR LOCK REMOVAL PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE.

(9) Remove the main gear door lock and close the door (AMM 32-00-15/201).

S 714-019

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE MAIN GEAR DOORS AND THE TAIL SKID (IF APPLICABLE). IF THE AREA IS NOT CLEAR INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(10) Move the landing gear control lever from UP to DN 3 to 5 times to operate the door. Return the lever to DN.

S 494-020

WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE IF THE LOCKS ARE NOT INSTALLED CORRECTLY.

(11) Open the main gear door and install the door lock (AMM 32-00-15/201).

S 214-021

(12) Make sure there are no leaks at the hydraulic connections.

S 864-022

(13) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 094-023

WARNING: MAKE SURE THE DOOR LOCK REMOVAL PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE.

(14) Remove the main gear door lock and close the door (AMM 32-00-15/201).

S 864-024

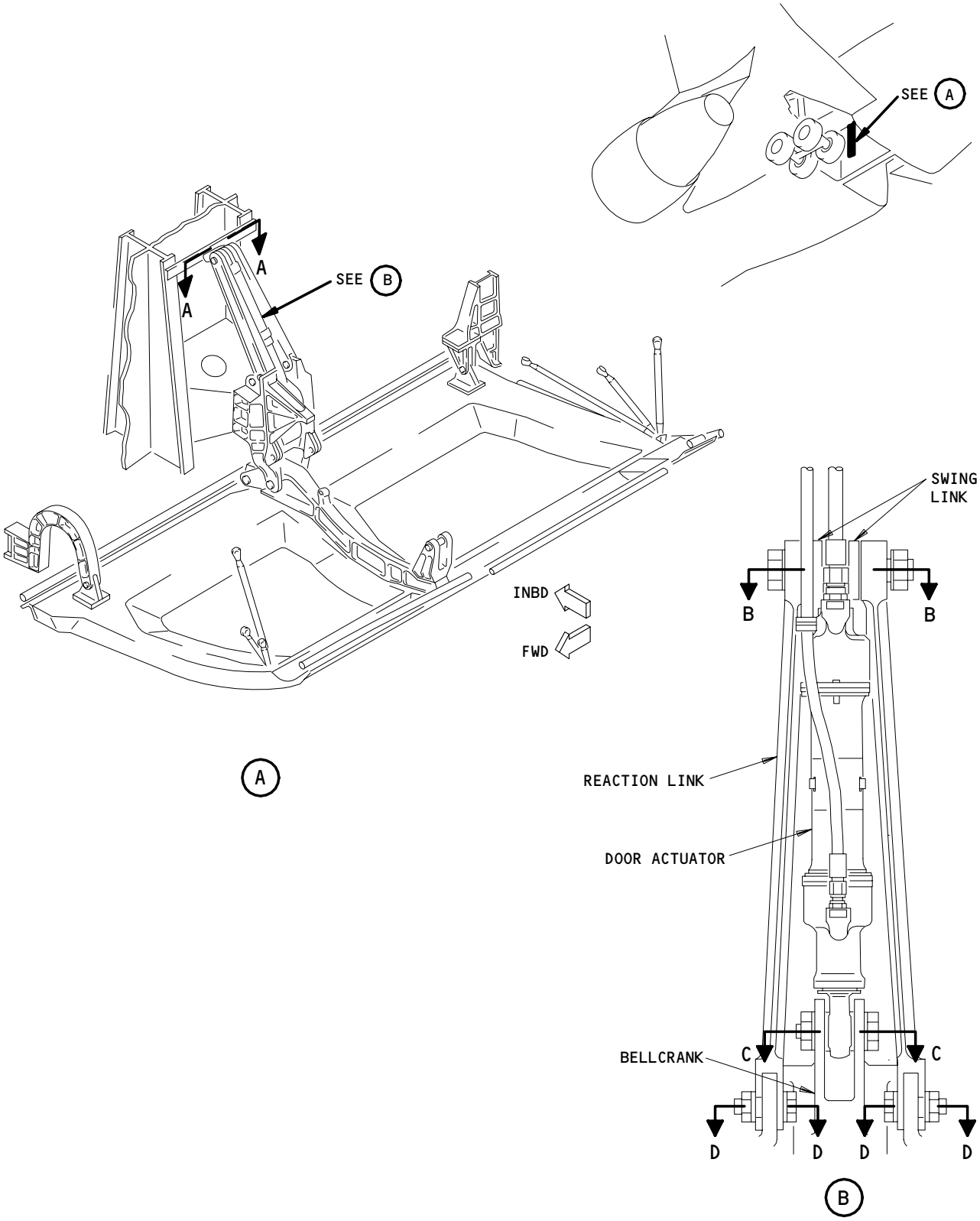
(15) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

MAIN GEAR DOOR ACTUATOR - INSPECTION/CHECK

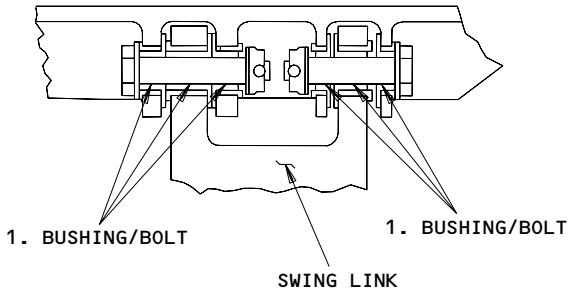
1. General
   A. This procedure only has illustrations and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Door Actuator - Removal/Installation for procedures to do these tasks.

TASK 32-32-12-226-001

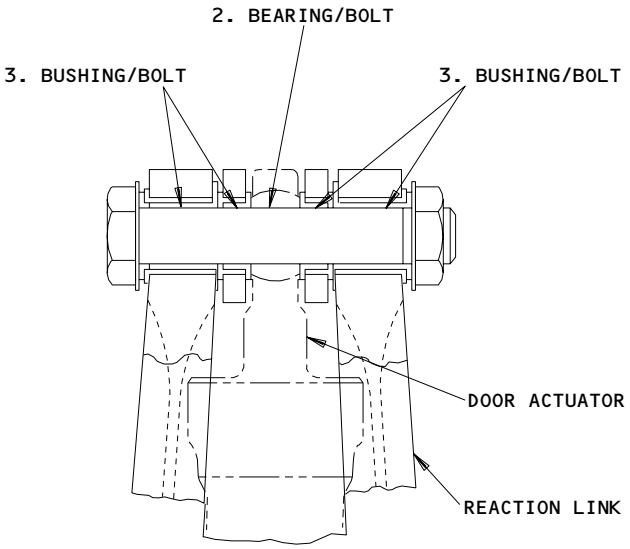
2. Main Gear Door Actuator Wear Limits (Fig. 601)
   A. General
      (1) This procedure only has illustrations and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Door Actuator - Removal/Installation for procedures to do these tasks.



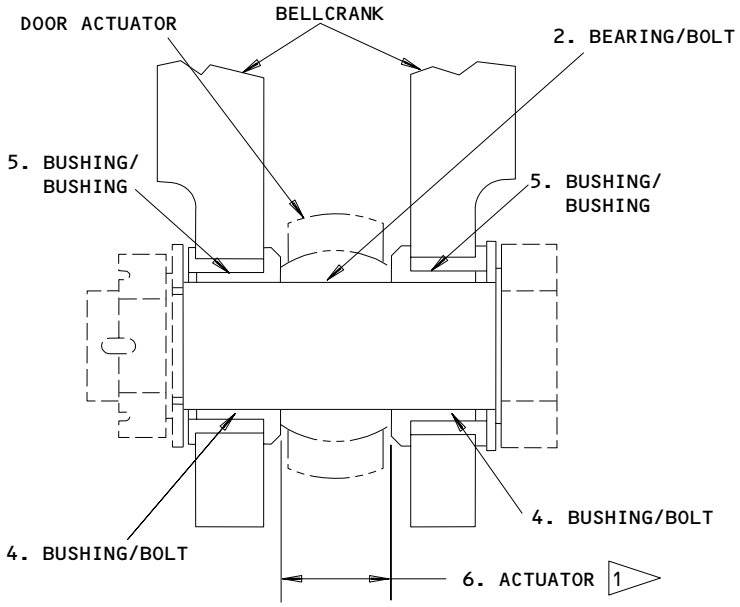
Main Gear Door Actuator Wear Limits
Figure 601 (Sheet 1)



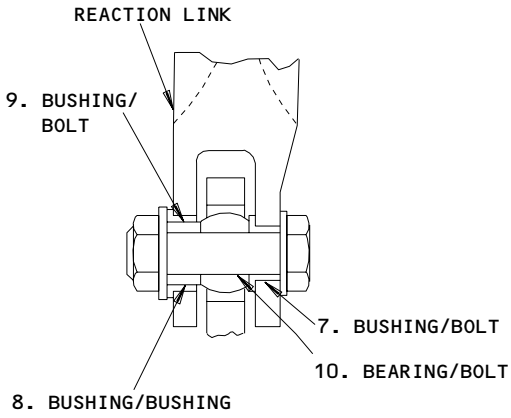
A-A



B-B



C-C



D-D

Main Gear Door Actuator Wear Limits
Figure 601 (Sheet 2)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS ALLOWED WEAR DIM.	WEAR LIMITS MAX DIAM CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR.
1	BUSHING	ID	0.3745	0.3755	0.3795	0.0050	X		
	BOLT	OD	0.3735	0.3745	0.3695		X		
2	BEARING	ID	1.1245	1.1250	1.1292	0.0052	X		
	BOLT	OD	1.1225	1.1240	1.1193		X		
3	BUSHING	ID	1.1245	1.1260	1.1314	0.0074	X		
	BOLT	OD	1.1225	1.1240	1.1171		X		
4	BUSHING	ID	1.1245	1.1260	1.1292	0.0052	X		
	BOLT	OD	1.1225	1.1240	1.1193		X		
5	BUSHING	ID	1.3125	1.3133	----	▷3	X		
	BUSHING	OD	1.3141	1.3149	----		X		
6	DOOR ACTUATOR		----	----	----	0.0540 ▷1	▷2		
7	BUSHING	ID	0.7495	0.7500	0.7580	0.0090	X		
	BOLT	OD	0.7480	0.7490	0.7405		X		
8	BUSHING	ID	1.0620	1.0630	1.0685	0.0070	X		
	BUSHING	OD	1.0605	1.0615	1.0550		X		
9	BUSHING	ID	0.7495	0.7505	0.7580	0.0090	X		
	BOLT	OD	0.7480	0.7490	0.7405		X		
10	BEARING	ID	0.7500	0.7504	0.7580	0.0090	X		
	BOLT	OD	0.7480	0.7490	0.7410		X		

▷1 MAXIMUM ALLOWABLE SIDEPLAY
▷2 REPLACE WORN BUSHINGS AND BEARING
▷3 INTERFERENCE FIT

Main Gear Door Actuator Wear Limits
Figure 601 (Sheet 3)

MAIN GEAR DOOR LATCH ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first task removes the door latch actuator for the main landing gear. The second task installs the door latch actuator.

TASK 32-32-13-004-001

2. Remove the Door Latch Actuator for the Main Landing Gear (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          143 Left Main Landing Gear Wheel Well
          144 Right Main Landing Gear Wheel Well

   C. Prepare for Removal

      S 214-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

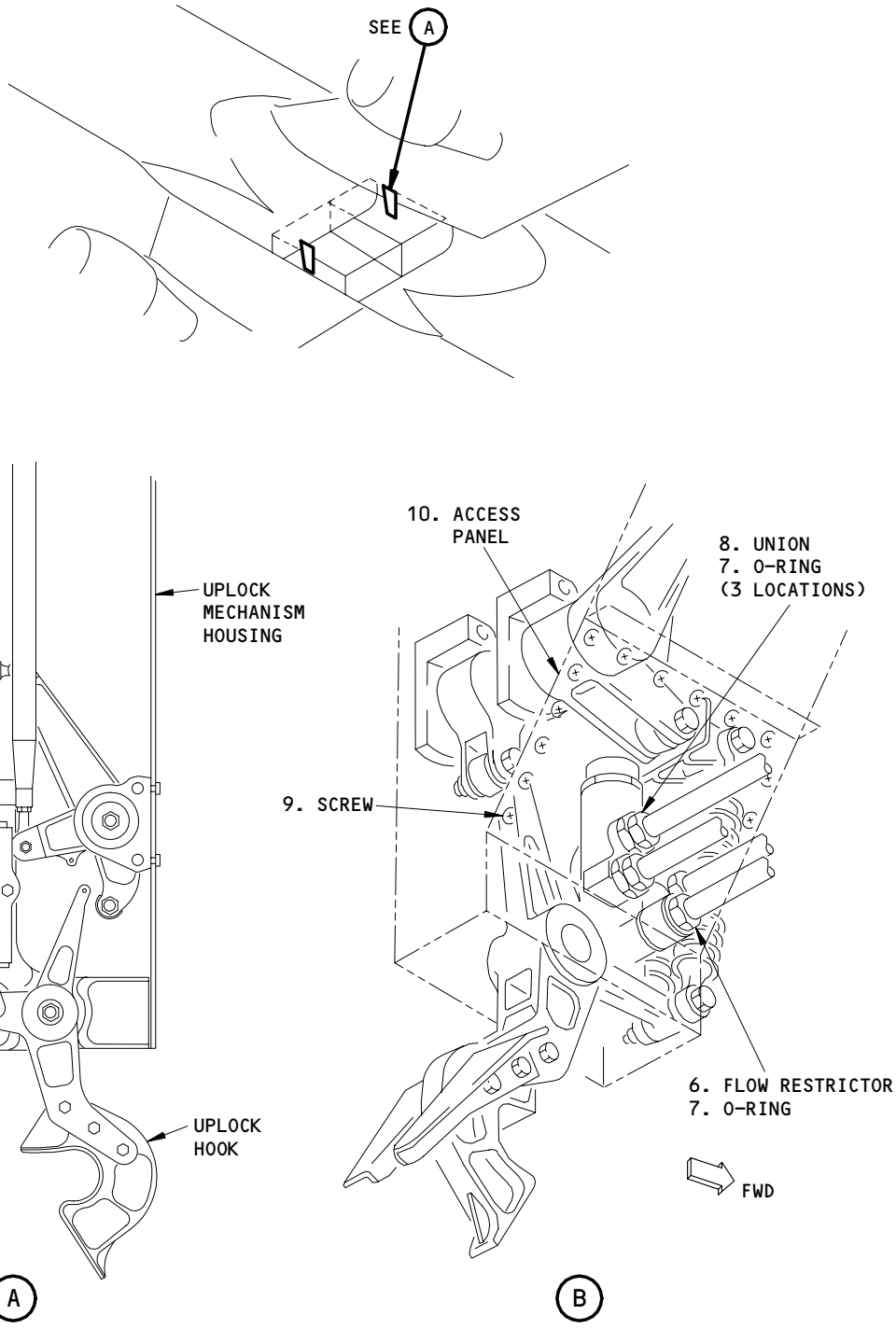
      S 494-003

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

      S 864-004
      (3) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

      S 014-005
      (4) Remove the access panel (10) from the forward side of the uplock mechanism housing.



Main Landing Gear Door Latch Actuator Installation
Figure 401

D. Procedure

S 034-006
(1) Remove the bolts (2, 4) to disconnect the actuator from the aft housing.

S 034-007
(2) Disconnect the hydraulic lines from the actuator (1).

S 034-008
(3) Install plugs in the ports and hoses that were disconnected.

S 024-009
(4) Remove the latch actuator (1).

S 034-010
(5) Remove the union fittings (8) and the flow restrictor (6) from the latch actuator (1) if they are not installed on the replacement actuator.

TASK 32-32-13-404-011

3. Install the Door Latch Actuator for the Main Landing Gear (Fig. 401)

A. Consumable Materials
(1) D00153 Fluid, Hydraulic - BMS 3-11, Type IV

B. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Actuator	32-32-13	01	10
	2	Bolt			13
	3	Washer			20
	4	Bolt			16
	5	Washer			22
	6	Flow Restrictor			40
	7	O-ring			50
	8	Union			35

C. References
(1) AMM 12-12-01/301, Hydraulic Systems
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks

D. Access
(1) Location Zones
143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well

E. Procedure to Install the Door Latch Actuator

S 434-012
(1) If the flow restrictor (6) and union fittings (8) are not installed on the replacement latch actuator (1), do the steps that follow:
(a) Flush the restrictor with hydraulic fluid before installation.
(b) Lubricate the new O-rings (7) and threaded fittings with hydraulic fluid.
(c) Install the union fittings (8) and flow restrictor (6) with new O-rings (7) in the valve ports.

S 614-013
(2) Fill the actuator (1) with hydraulic fluid.

S 494-028
(3) Install caps on the ports.

S 864-014
(4) Make sure that pressure is removed from the center hydraulic system and reservoir (AMM 29-11-00/201).

S 434-015
(5) Put the actuator (1) in position in the housing and connect the hydraulic lines.

S 424-027
(6) Install the bolts (2, 4) and washers (3, 5) to connect the actuator (1) to the aft side of the housing.

S 434-017
(7) Tighten the bolts (2, 4) to 115-135 pound-inches.

S 434-016
(8) Install lockwire on the bolt heads (2, 4).

F. Procedure to Make Sure the Actuator is Installed Correctly.

S 864-018

(1) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 094-019

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Remove the door locks from the main landing gear doors (AMM 32-00-15/201).

S 714-020

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE MAIN LANDING GEAR DOORS AND THE TAIL SKID (IF APPLICABLE). IF THE AREA IS NOT CLEAR INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Move the control lever for the landing gear from DN to UP to DN two or three times. Make sure that the main landing gear doors open and latch closed.

S 494-021

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 214-022

(5) Make sure there are no leaks at the hydraulic connections.

G. Put the Airplane Back to Its Usual Condition.

S 864-023

(1) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 414-024

(2) Replace the access panel on the forward side of the mechanism housing.

S 864-025

(3) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 094-026

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE OPEN DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Remove the door locks from the main landing gear door and close the doors (AMM 32-00-15/201).

MAIN GEAR DOOR UPLOCK HOOK - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first task is for removal of the door uplock hook for the main landing gear. The other task is for installation of the door uplock hook.

TASK 32-32-14-004-001

2. Remove the Main Landing Gear Door Uplock Hook (Fig. 401)
   A. Equipment
      (1) Main Gear Door Locks (AMM 32-00-15/201)
   B. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
      (4) AMM 32-61-02/201, Main Gear Proximity Sensors
   C. Access
      (1) Location Zones
          143 Left Main Landing Gear Wheel Well
          144 Right Main Landing Gear Wheel Well

   D. Prepare for Removal

      S 214-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-003

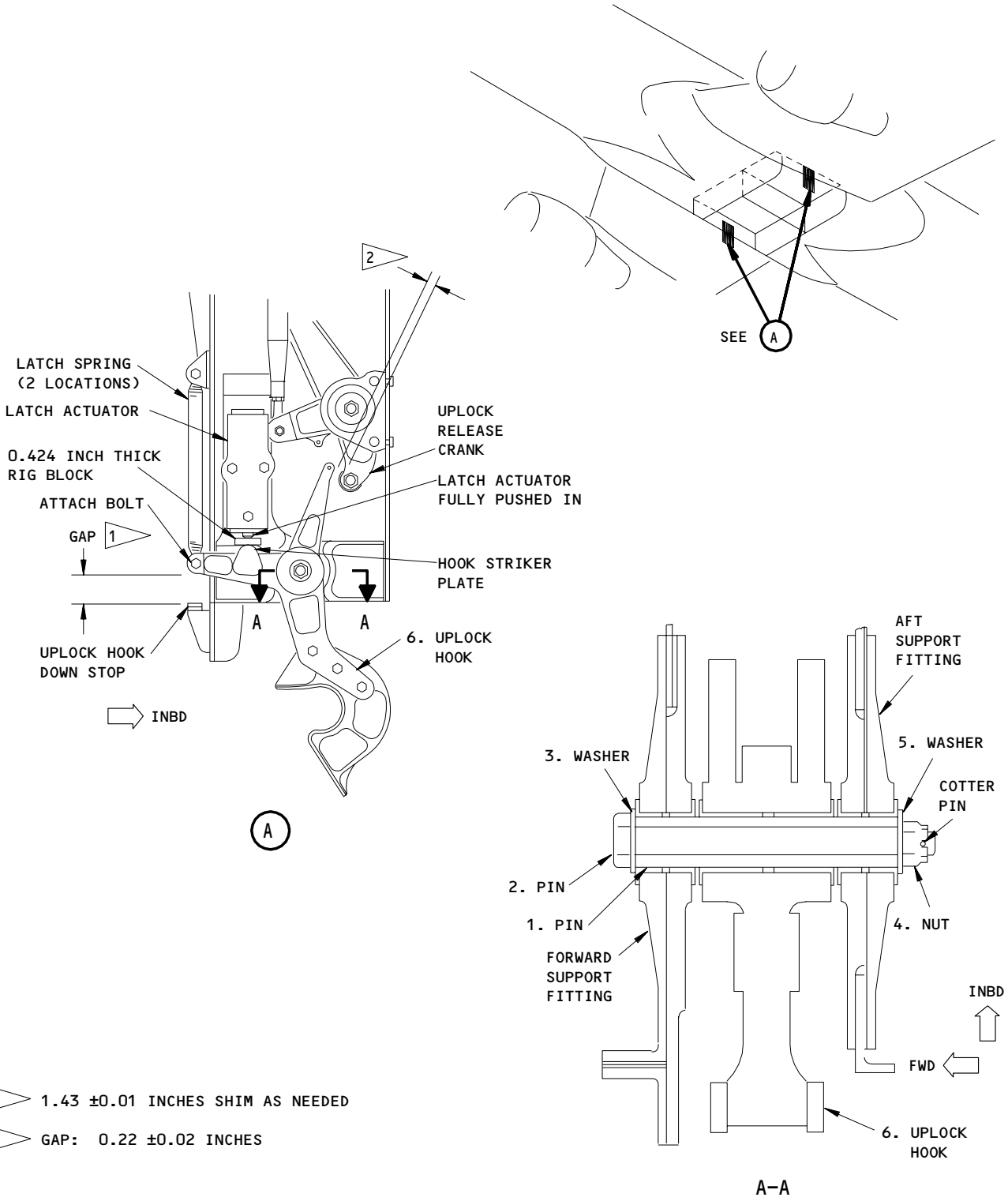
      WARNING: MAKE SURE THE DOOR LOCK INSTALLATION PROCEDURE IS DONE CORRECTLY. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE IF THE LOCKS ARE NOT INSTALLED CORRECTLY.

      (2) Open the main landing gear doors and install the door locks (AMM 32-00-15/201).

      S 864-004
      (3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).
   E. Procedure

      S 034-005
      (1) Remove the latch locked sensor and its wiring from the hook (6). Move it out of the work area (AMM 32-61-02/201).

      S 034-006
      (2) Disconnect the lower end of the latch springs from the uplock hook (6).



Main Landing Gear Door Uplock Hook Installation
Figure 401

S 024-007

(3) Remove the pins (1 and 2) to disconnect the uplock hook (6) from the support fitting (Section A-A). Remove the uplock hook (6).

TASK 32-32-14-404-008

3. Install the Main Landing Gear Door Uplock Hook (Fig. 401)

NOTE: The wear limits for the components that follow are found in 32-32-14/601.

A. Equipment
(1) Main Gear Door Locks (AMM 32-00-15/201)
(2) Rig Block - 0.424 ±0.001 inch thick

B. Consumable Materials
(1) A00247, Sealant, Chromate Type - BMS 5-95 (AMM 20-30-01/201)

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Pin	32-32-14	01	290
	2	Pin			295
	3	Washer			300
	4	Nut			305
	5	Washer			304
	6	Uplock Hook			400

D. References
(1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 32-32-14/601, Main Gear Door Uplock Hook
(5) AMM 32-35-00/501, Main Gear Alternate Extend System
(6) AMM 32-61-02/201, Main Gear Proximity Sensors

E. Access
(1) Location Zones
143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well

F. Procedure

S 434-011
(1) Put the hook (6) in the support fittings. Install the pins (1, 2), washers (3, 5), and nut (4). Tighten the nut (4) to 180-240 pound-inches and install the cotter pin.

S 434-010
(2) Connect the lower end of the latch springs to the uplock hook (6).

S 214-019
(3) Make sure the door locks are installed (AMM 32-00-15/201).

S 784-020
(4) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 824-021
(5) Stow the door ground release handle to put the uplock release crank in the normal position.

S 054-022
(6) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 494-009
(7) Install the 0.424 inch thick rig block between the latch actuator when it is fully pushed in and the uplock hook striker plate (6).

S 224-012
(8) Make sure the distance between the hook down stop and the hook is 1.43 ±.01 inches. Use shims to adjust the gap if necessary.

NOTE: Attach the rig block to the end of a suitable rod if necessary. Insert the rod through the bottom of the uplock mechanism near the hook.

S 224-016
(9) Make sure the distance between the hook (6) and the uplock release crank is 0.22 ±0.02 inch. Adjust the rod if necessary (AMM 32-35-00/501). Remove the rig block.

S 434-015
(10) Install the latch locked sensor on the hook (AMM 32-61-02/201).

S 094-014

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(11) Remove the main gear door locks and close the doors (AMM 32-00-15/201).

S 494-013

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(12) Use the door ground release levers to open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

NOTE: This step will make sure the uplock hook can move freely.

S 094-017

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

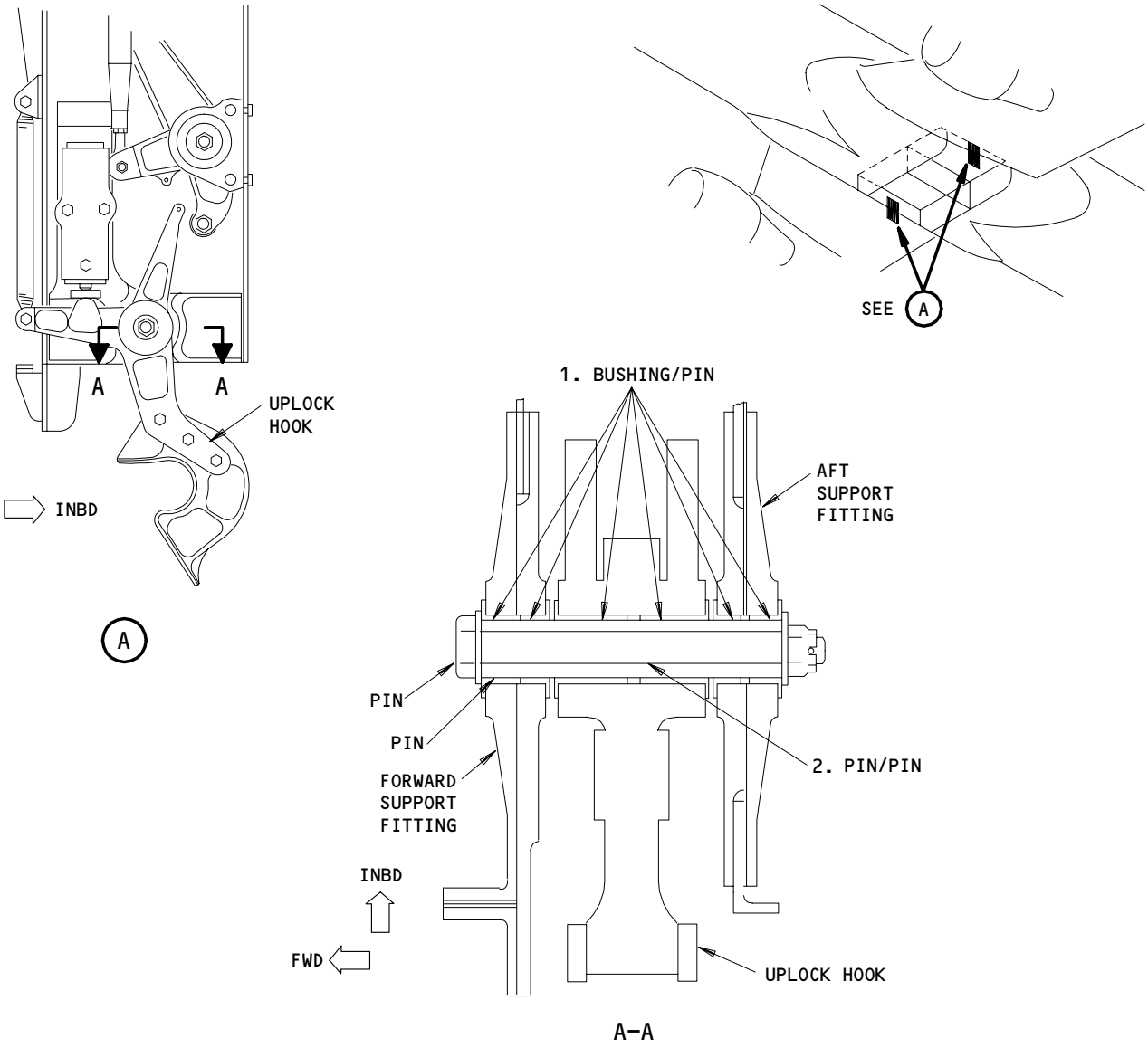
(13) Remove the door locks from the main landing gear doors and close the doors (AMM 32-00-15/201).

MAIN GEAR DOOR UPLOCK HOOK - INSPECTION/CHECK

1. General
   A. This procedure only has an illustration and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Door Uplock Hook - Removal/Installation for procedures to do these tasks.

TASK 32-32-14-226-001

2. Main Gear Door Uplock Hook Wear Limits (Fig. 601)
   A. General
      (1) This procedure only has an illustration and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Door Uplock Hook - Removal/Installation for procedures to do these tasks.



INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR.
			DIAMETER		ALLOWED WEAR DIM.	MAX DIAM CLEAR-ANCE			
			MIN	MAX					
1	BUSHING	ID	1.0000	1.0007	1.0040	0.0050	X		
	PIN	OD	0.9973	0.9990	0.9950		X		
2	PIN	ID	0.5560	0.5574	0.5549	0.0050	X		
	PIN	OD	0.5484	0.5499	0.5510		X		

Main Gear Door Uplock Hook Wear Limits
Figure 601

MAIN GEAR TRUCK POSITIONER - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task is to remove the truck positioner for the main landing gear. The second task is to install the truck positioner.

TASK 32-32-18-004-001

2. Remove the Truck Positioner for the Main Landing Gear (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

   C. Prepare for the Removal

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-003

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

      S 864-004
      (3) Remove the pressure from the center hydrualic system and hydraulic reservoir (AMM 29-11-00/201).

D. Remove the Truck Positioner

S 034-005
(1) Disconnect the hydraulic lines from the truck positioner (6) (Detail A).

S 494-006
(2) Install plugs in the hydraulic lines and fittings.

S 034-007
(3) Remove the pin (2). This disconnects the aft end of the truck positioner (6) from the truck beam for the main landing gear and the hydraulic hose support (View A-A).

S 034-008
(4) Remove the bolt (11). This disconnects the forward end of the truck positioner (6) from the inner cylinder of the shock strut (View B-B).

S 024-009
(5) Remove the truck positioner (6).

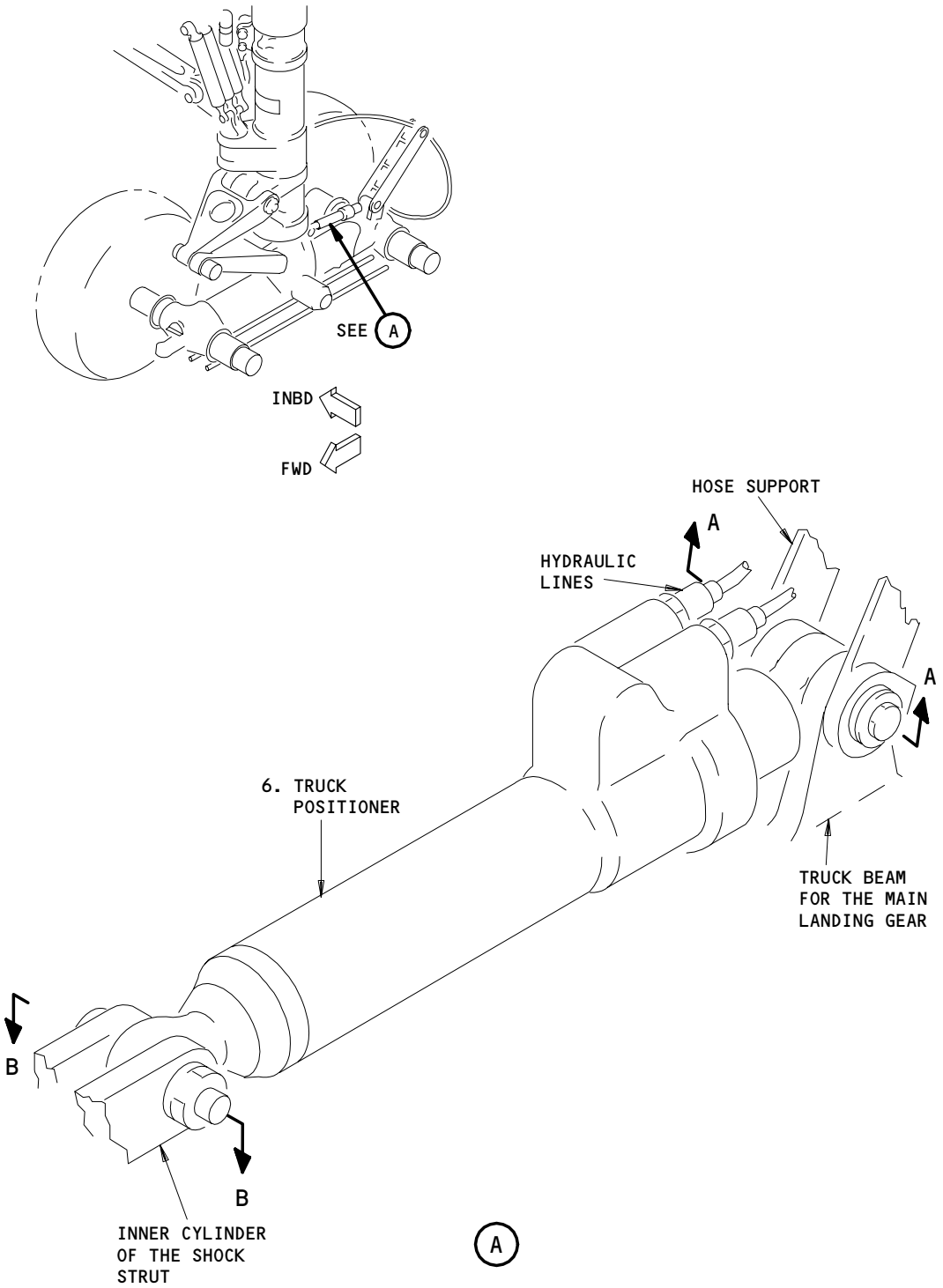
TASK 32-32-18-404-027

3. Install the Truck Positioner for the Main Landing Gear (Fig. 401)

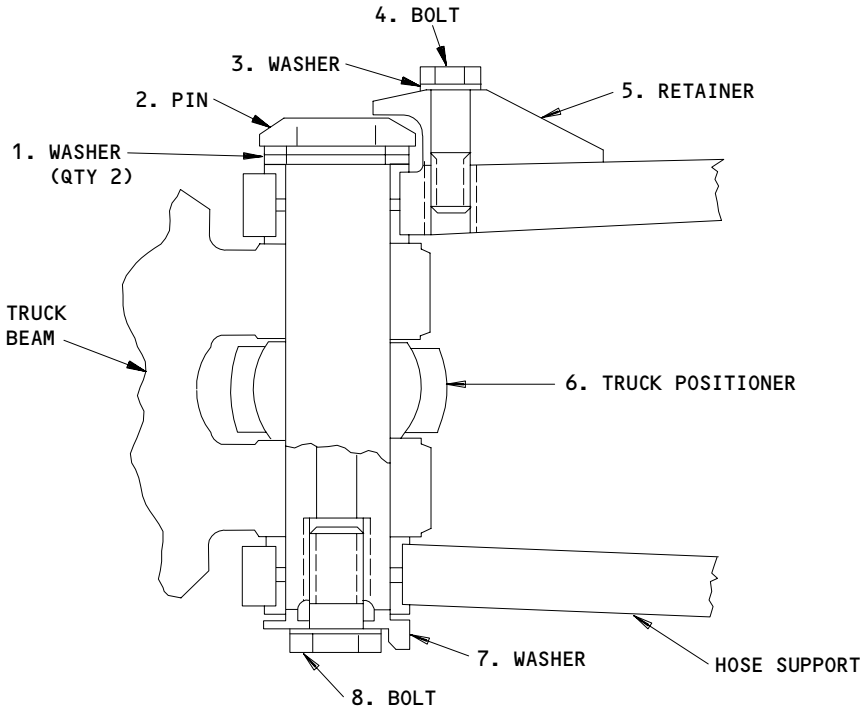
NOTE: The Wear Limits for the component that follows are given in 32-32-18/601.

A. References
(1) AMM 12-12-01/301, Hydraulic Systems
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Door Locks

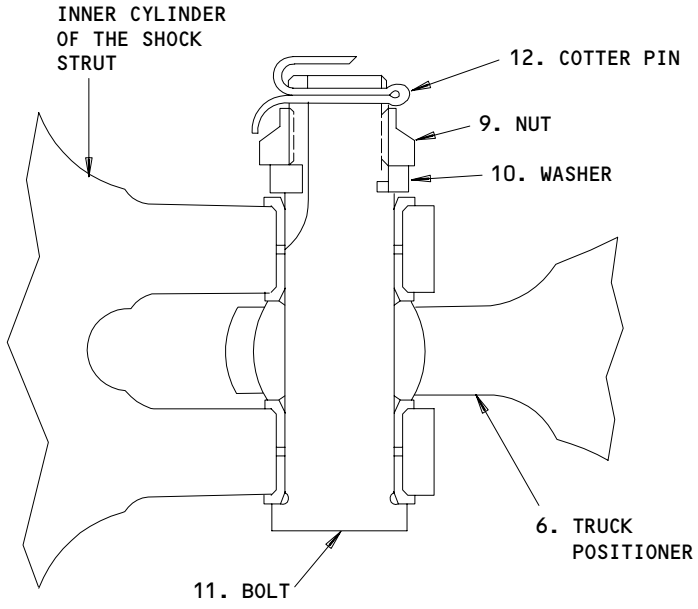
B. Consumable Materials
(1) A50110 Sealant - BMS 5-45 Class B-2
A50155 Sealant - BMS 5-45 Class C
(2) D00633 Grease - BMS3-33 (Preferred)
(3) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)



Main Landing Gear Truck Positioner Installation
Figure 401 (Sheet 1)

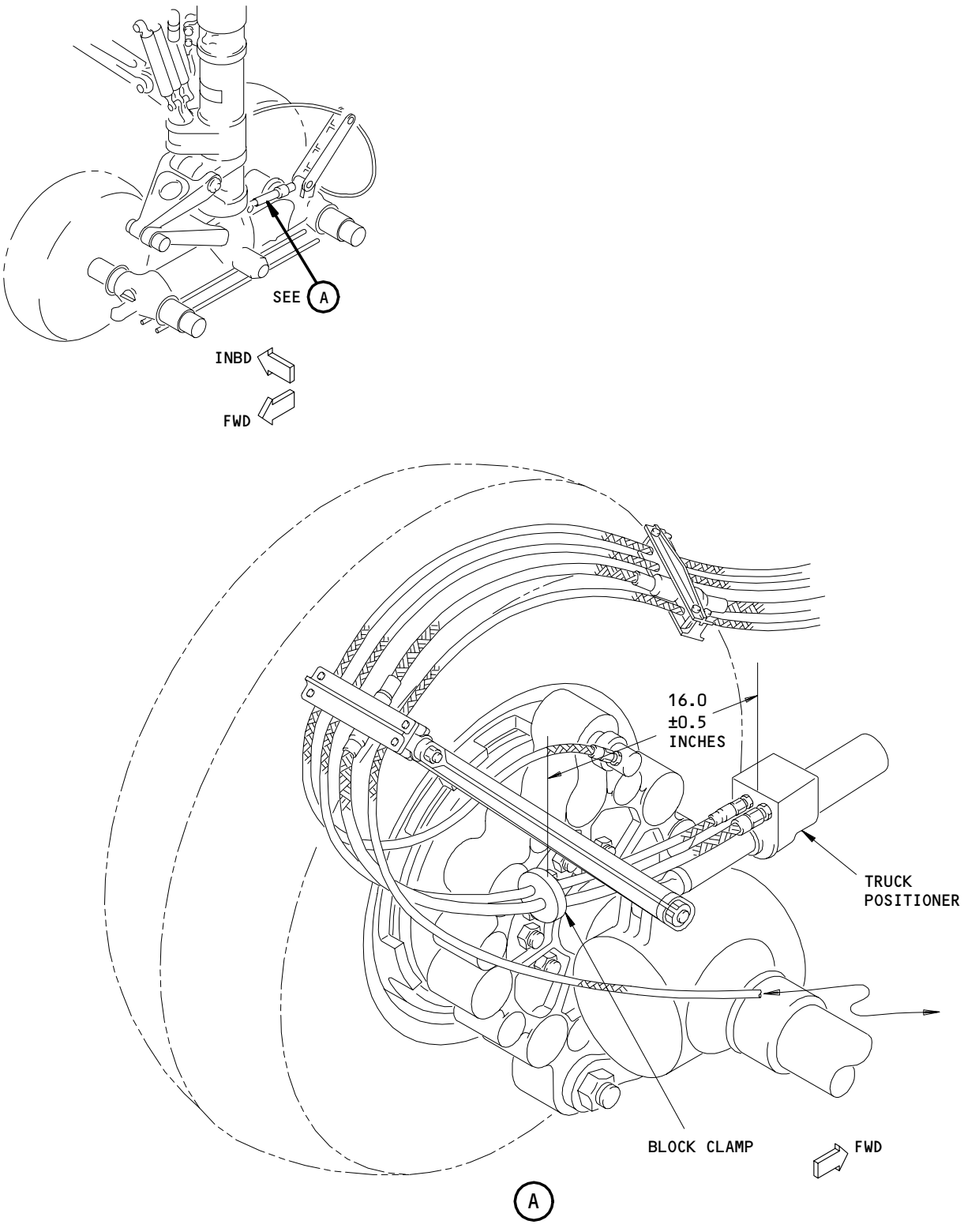


A–A



B–B

Main Landing Gear Truck Positioner Installation
Figure 401 (Sheet 2)



Installation of Block Clamp on Hydraulic Lines for Truck Positioner
Figure 402

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Washer	32-32-18	01	30
	2	Pin			19
	3	Washer			25
	4	Bolt			18
	5	Retainer			33
	6	Truck Positioner			65
	7	Washer			20
	8	Bolt			17
	9	Nut			59
	10	Washer			55
	11	Bolt			48
	12	Pin			47

D. Access
(1) Location Zones
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

E. Procedure

S 434-010
(1) Apply grease and install the bolt (11), nut (9), washer (10), and cotter pin (12). This connects the forward end of the truck positioner (6) to the inner cylinder of the shock strut (View B-B). Tighten the nut (9) to 1500-3300 pound-inches, with a target value of 2400 pound-inches.

S 984-011
(2) Remove the cap from port AA and open the check valve sufficiently to extend the truck positioner.

S 984-028
(3) Slowly extend the positioner until the aft end of the positioner is aligned with the lug on the truck beam.

NOTE: Do not extend the positioner more than the necessary length.

S 434-012
(4) Apply grease and install the pin (2), washers (1 and 7), and bolt (8). This connects the aft end of the truck positioner (6) to the truck beam for the main landing gear (View A-A). Tighten the bolt (8) to 585-715 pound-inches.

S 434-013
(5) Install lockwire on the bolt (8).

S 394-014
(6) Apply wet sealant to the shank of the bolt (4) with BMS 5-45 sealant.

S 434-015
(7) Install the retainer (5), bolt (4), and washer (3) on the hose support.

S 434-016
(8) Tighten the bolt (4) to 180-220 pound-inches (View A-A).

S 394-017
(9) Fill the bolt hole in the hose support with sealant.

S 434-018
(10) Install lockwire between the bolt head (4) and the retainer (5).

S 864-029
(11) Make sure the pressure is removed from the center hydraulic system and reservoir (AMM 29-11-00/201).

S 434-019

CAUTION: MAKE SURE THE HYDRAULIC HOSES ARE NOT TWISTED WHEN THEY ARE INSTALLED. TWISTED HOSES CAN RUB AGAINST THE HOSE SUPPORT AND CAUSE WEAR OF THE HOSES. A BLOCK CLAMP IS ALSO AVAILABLE AND CAN BE INSTALLED ON THE HYDRAULIC LINES (FIG. 402). THIS WILL PREVENT DAMAGE TO THE HOSES FROM THE HOSE SUPPORT.

(12) Connect the hydraulic lines to the truck positioner (6).

S 644-020
(13) Lubricate the points where the truck positioner is attached to the truck beam and the shock strut. Use the grease fittings at those locations.

S 864-021
(14) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 714-031

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID (IF APPLICABLE). IF THE AREA IS NOT CLEAR INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(15) Move the control lever for the landing gear from DN to UP to DN. Stay in each position for 3 or 4 minutes.

S 794-023

(16) Examine the positioner for hydraulic leaks.

S 614-024

(17) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 094-025

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(18) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

S 864-026

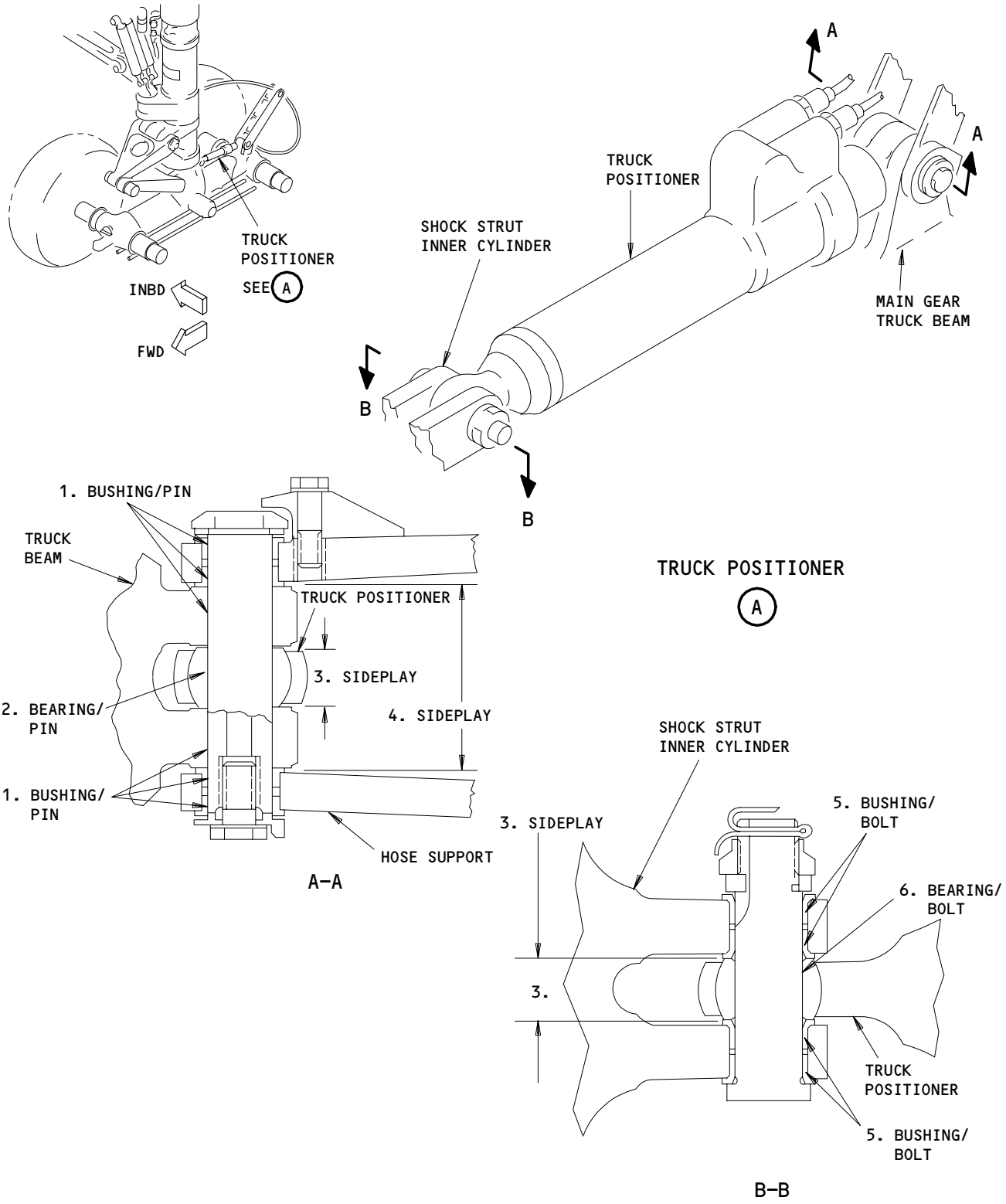
(19) Remove the hydraulic power from the hydraulic system if it is not necessary (AMM 29-11-00/201).

MAIN GEAR TRUCK POSITIONER - INSPECTION/CHECK

1. General
   A. This procedure only has an illustration and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Truck Positioner - Removal/Installation for the procedures to do these tasks.

TASK 32-32-18-226-001

2. Main Gear Truck Positioner Wear Limits (Fig. 601)
   A. General
      (1) This procedure only has an illustration and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Truck Positioner - Removal/Installation for the procedures to do these tasks.



Main Gear Truck Positioner Wear Limits
Figure 601 (Sheet 1)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS ALLOWED WEAR DIM.	WEAR LIMITS MAX DIAM CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR.
1	BUSHING	ID	1.0000	1.0015	1.0045	0.0055	X		
	PIN	OD	0.9980	0.9990	0.9960			X	1
2	BEARING	ID	0.9995	1.0000	1.0030	0.0040	X		
	PIN	OD	0.9980	0.9990	0.9960			X	1
3	TRUCK POSITIONER		----	----	----	0.0340 2	3		
4	TRUCK BEAM		----	----	----	0.1220 2	3		
5	BUSHING	ID	1.0000	1.0015	1.0045	0.0055	X		
	BOLT	OD	0.9980	0.9990	0.9960		X		
6	BEARING	ID	0.9995	1.0000	1.0030	0.0040	X		
	BOLT	OD	0.9980	0.9990	0.9960		X		

1 PART CAN BE REPAIRED; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR PROCEDURES TO DO THE TASK.
2 MAXIMUM APPROVED SIDEPLAY
3 REPLACE THE WORN BUSHINGS

Main Gear Truck Positioner Wear Limits
Figure 601 (Sheet 2)

271448

MAIN GEAR TRUCK POSITIONER FUSES - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. One task removes either the upper or the lower truck positioner fuse. The other task installs the truck positioner fuses.

TASK 32-32-19-004-002

2. Remove the Truck Positioner Fuse (Fig. 401)
   A. References
      (1) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
   B. Access
      (1) Location Zones
          552 Left Wing Trailing Edge
          652 Right Wing Trailing Edge

      (2) Access Panels
          552CB Left Wing Trailing Edge
          652CB Right Wing Trailing Edge

   C. Procedure to Remove the Fuse

      S 864-003
      (1) Remove the pressure from the center hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

      S 014-004
      (2) Get access to the fuse through panel 552CB or 652CB (AMM 06-44-00/201).

      S 034-005
      (3) Disconnect the hydraulic lines from the fuse. Install plugs in the lines and fittings.

      S 024-006
      (4) Remove the three bolts to disconnect the fuse from the support beam.

TASK 32-32-19-404-007

3. Install the Truck Positioner Fuse (Fig. 401)
   A. References
      (1) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels

(2) AMM 12-12-01/301, Hydraulic Systems
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

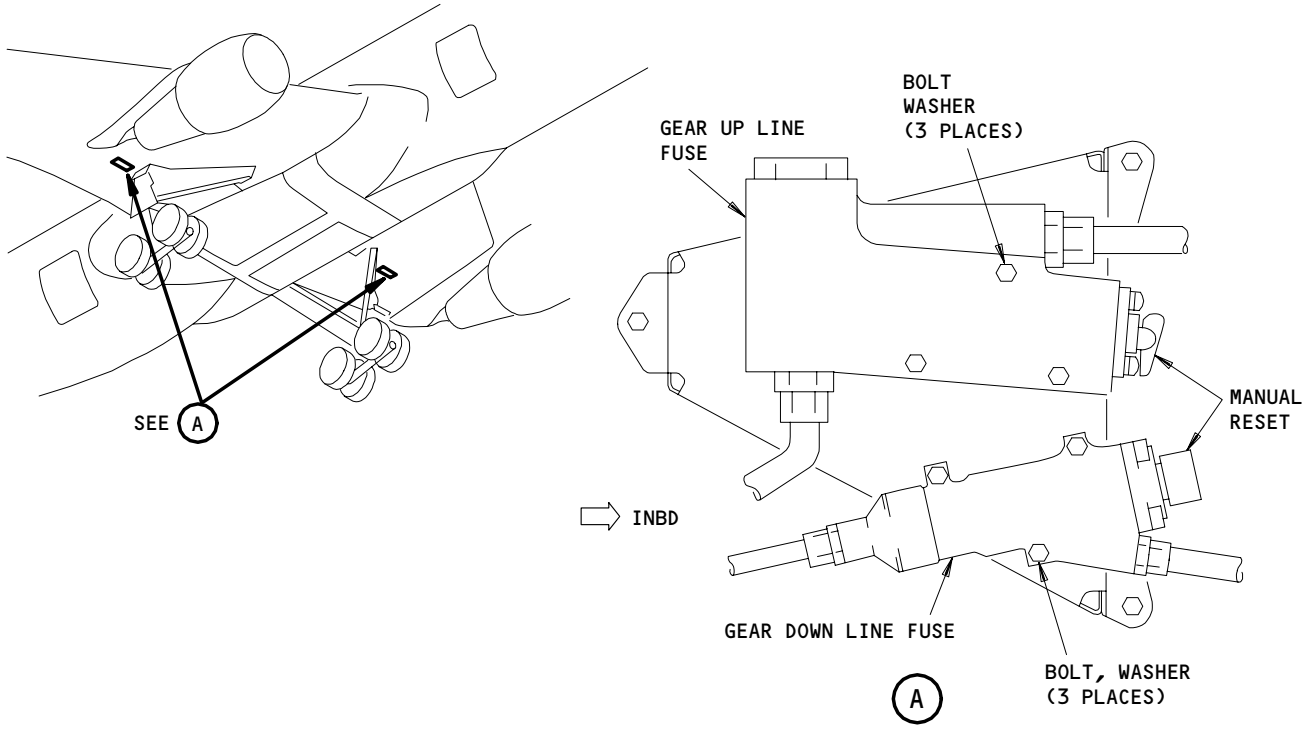
B. Access

(1) Location Zones
552 Left Wing Trailing Edge
652 Right Wing Trailing Edge

(2) Access Panels
552CB Left Wing Trailing Edge
652CB Right Wing Trailing Edge

C. Procedure

S 424-008
(1) Install the three bolts and washers to connect the fuse to the support beam.



Main Gear Truck Positioner Fuses Installation
Figure 401

S 434-009
(2) Connect the hydraulic lines to the fuse.

D. Procedure to Make Sure the Fuse is Reset

S 864-017
(1) 767-300 AIRPLANES;
Open this circuit breaker on the P11 panel and install a DO-NOT-CLOSE tag:
11U26, TAIL SKID CONT

S 214-001

WARNING: MAKE SURE THAT THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER. WITHOUT THE DOWNLOCKS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 864-010
(3) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 864-011

WARNING: MAKE SURE THE LANDING GEAR AREAS ARE CLEAR OF PERSONNEL AND EQUIPMENT. FAST MOVEMENT OF THE DOORS COULD CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Move the landing gear control lever to UP. Move the lever to DN.

NOTE: Let the control lever stay in each position for 5-10 seconds. The fuse is usually automatically reset when there is zero differential pressure across the fuse. The fuse also has a manual reset. If you use the manual reset hold it in the reset position for a minimum of 5 seconds.

(a) Look for a slight movement of the jury strut on the drag brace or the lock link of the side brace when you move the control lever to the UP and DN position.
(b) Do a visual check of the fuse for hydraulic leaks.

E. Put the Airplane Back to Its Usual Condition

S 414-013
(1) Install the access panel 552CB or 652CB (AMM 06-44-00/201).

S 864-019
(2) 767-300 AIRPLANES;
Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
11U26, TAIL SKID CONT

S 864-014
(3) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 214-015
(4) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

MAIN GEAR EXTENSION/RETRACTION HYDRAULIC FLOW FUSES - ADJUSTMENT/TEST

1. General
   A. This procedure has this task:
      (1) Test of the main landing gear up and down hydraulic fuses.

TASK 32-32-19-725-001

2. Test of the Hydraulic Fuses for the Main Landing Gear (Fig. 501)
   A. Equipment
      (1) Hydraulic Service Cart, 0 to 3000 psi (0 to 21000 KPa), with hydraulic fluid, fire resistant, BMS 3-11
   B. Consumable Materials
      (1) D00153 Hydraulic Fluid, Fire Resistant - BMS 3-11
   C. References
      (1) AMM 06-44-00/201, Wings Access Doors and Panels
      (2) AMM 12-12-01/301, Hydraulic Systems
      (3) AMM 24-22-00/201, Electrical Power Control
      (4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (5) AMM 32-00-15/201, Landing Gear Door Locks
      (6) AMM 32-00-20/201, Landing Gear Downlocks
   D. Prepare for the Test

      S 865-002
      (1) Supply electrical power (AMM 24-22-00/201).

      S 865-003
      (2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

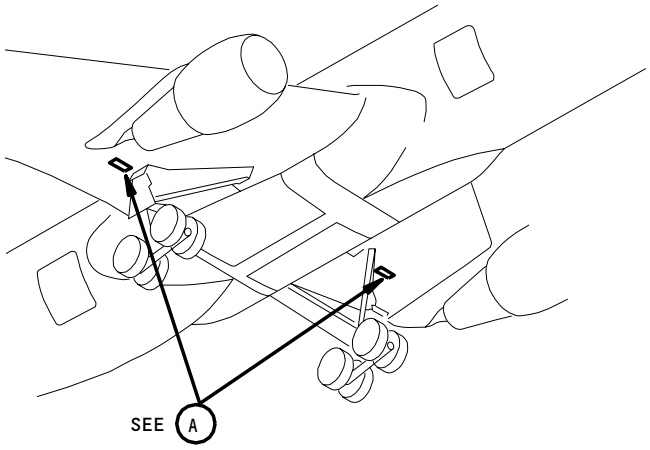
      S 485-037

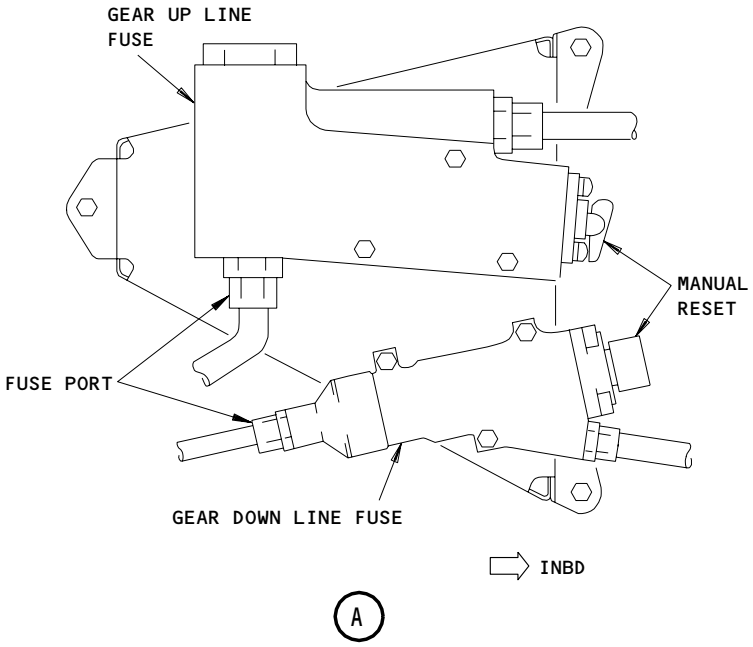
      WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

      (3) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

      S 015-004
      (4) Open the panel 552CB or 652CB (AMM 06-44-00/201) to access the hydraulic fuse.
   E. Test of the Gear Up Line Fuse

      S 865-005
      (1) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).





Main Gear Truck Positioner Fuses Test
Figure 501

S 035-006
(2) Disconnect the hydraulic line from the gear up line fuse port.

S 435-007
(3) Install a plug in the line.

S 865-008
(4) Put the control lever for the landing gear in the UP position.

S 725-009
(5) Put a container at the fuse port to catch hydraulic fluid. Fluid will flow from the fuse port when the hydraulic system is pressurized.

S 725-010
(6) If you attach a flexible hose to the connection on the fuse, then put the open end in a suitable fluid container.

S 725-011

WARNING: KEEP PERSONS CLEAR OF THE OPEN FUSE PORT WHILE THE HYDRAULIC LINE IS DISCONNECTED FROM THE PORT AND THE CENTER HYDRAULIC SYSTEM IS PRESSURIZED. HIGH PRESSURE HYDRAULIC FLUID CAN CAUSE INJURY TO PERSONS.

(7) Supply approximately 100 psi (688 KPa) to the center hydraulic system with a hydraulic ground cart (AMM 29-11-00/201).

S 725-012
(8) When the fuse closes, increase the applied pressure to 3,000 psi (21,000 KPa) and hold it for 5 minutes.

S 795-013
(9) Make sure that leakage from the fuse port is not more than one drop per minute for the last 3 minutes.

S 865-014
(10) Remove the power from the center hydraulic system (AMM 29-11-00/201).

S 035-015
(11) Remove the plug from the hydraulic line.

S 435-016
(12) Reconnect the hydraulic line.

S 845-017
(13) Reset the line fuse.

F. Test of the Gear Down Line Fuse

S 865-019
(1) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 035-020
(2) Disconnect the hydraulic line from the gear down line fuse port.

S 435-021
(3) Install a plug in the line.

S 865-022
(4) Put the control lever for the landing gear in the DN position.

S 725-023
(5) Put a container at the fuse port to catch hydraulic fluid. Fluid will flow from the fuse port when the hydraulic system is pressurized.

S 725-024
(6) If you attach a flexible hose to the connection on the fuse, then put the open end in a suitable fluid container.

S 725-025

WARNING: KEEP PERSONS CLEAR OF THE OPEN FUSE PORT WHILE THE HYDRAULIC LINE IS DISCONNECTED FROM THE PORT AND THE CENTER HYDRAULIC SYSTEM IS PRESSURIZED. HIGH PRESSURE HYDRAULIC FLUID CAN CAUSE INJURY TO PERSONS.

(7) Supply approximately 70 psi (482 KPa) to the center hydraulic system with a hydraulic ground cart (AMM 29-11-00/201).

S 725-026
(8) When the fuse closes, increase the applied pressure to 3,000 psi (21,000 KPa) and hold it for 5 minutes.

S 795-027
(9) Make sure that leakage from the fuse port is not more than one drop per minute for the last 3 minutes.

S 865-028
(10) Remove the power from the center hydraulic system (AMM 29-11-00/201).

S 035-029
(11) Remove the plug from the hydraulic line.

S 435-030
(12) Reconnect the hydraulic line.

S 845-031
(13) Reset the line fuse.

G. Procedure to Make Sure the Fuse is Reset

S 865-041
(1) 767-300 AIRPLANES;
Open this circuit breaker on the P11 panel and install a DO-NOT-CLOSE tag:
11U26, TAIL SKID CONT

S 705-042

WARNING: MAKE SURE THAT THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER. WITHOUT THE DOWNLOCKS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 865-043
(3) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 705-044

WARNING: MAKE SURE THE LANDING GEAR AREAS ARE CLEAR OF PERSONS AND EQUIPMENT. FAST MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Move the landing gear control lever to UP. Move the lever to DN.

NOTE: Let the control lever stay in each position for 5-10 seconds. The fuse is usually automatically reset when there is zero differential pressure across the fuse. The fuse also has a manual reset. Hold the manual reset in the reset position for a minimum of 5 seconds when you use it.

(a) Look for a slight movement of the jury strut on the drag brace or the lock link of the side brace when you move the control lever to the UP and DN position.

(b) Look for leaks at the connector fitting.

H. Put the Airplane Back to Its Usual Condition

S 865-033

(1) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 415-034

(2) Close the access panels for the hydraulic fuses.

S 085-039

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Remove the door locks (AMM 32-00-15/201).

S 865-046

(4) 767-300 AIRPLANES;
Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
11U26, TAIL SKID CONT

S 865-035

(5) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-036

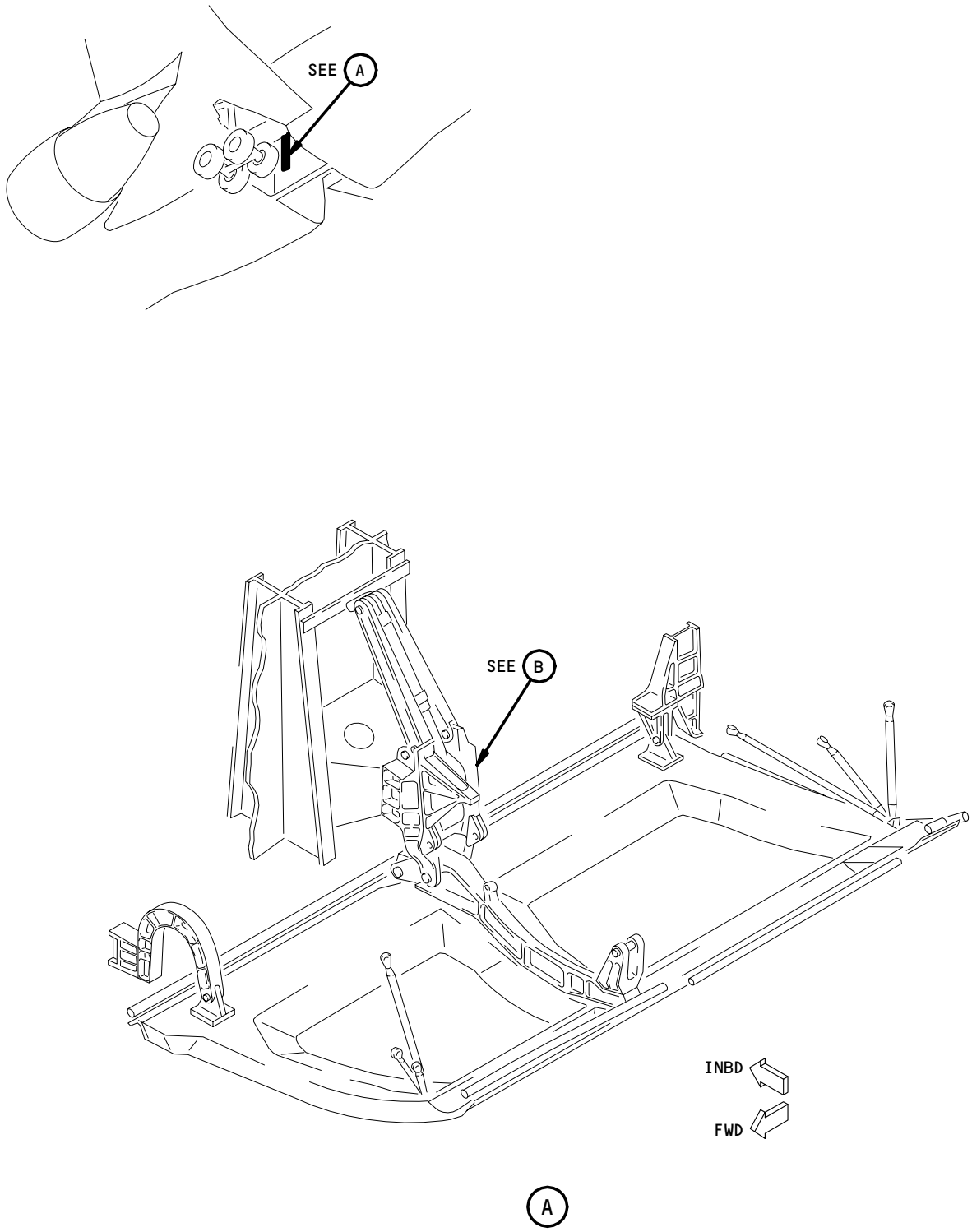
(6) Remove electrical power if it is not necessary (AMM 24-22-00/201).

MAIN GEAR DOOR OPERATING MECHANISM - INSPECTION/CHECK

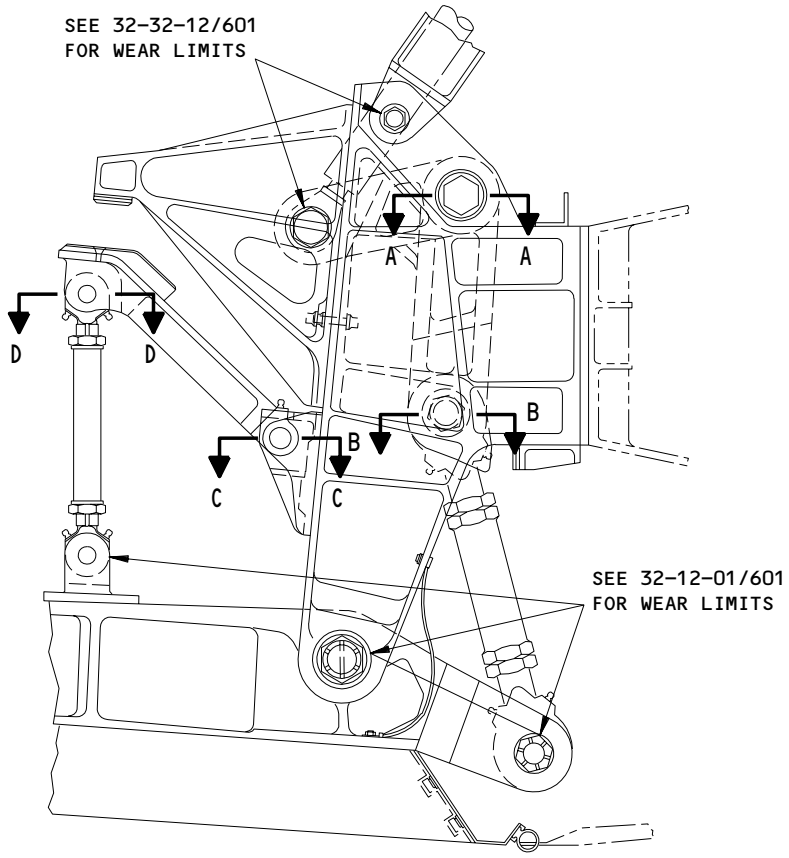
1. General
   A. This procedure only has illustrations and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Door Actuator Removal/Installation for procedures to do these tasks.

TASK 32-32-20-226-001

2. Main Gear Door Operating Mechanism Wear Limits (Fig. 601)
   A. General
      (1) This procedure only has illustrations and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Door Actuator Removal/Installation for procedures to do these tasks.

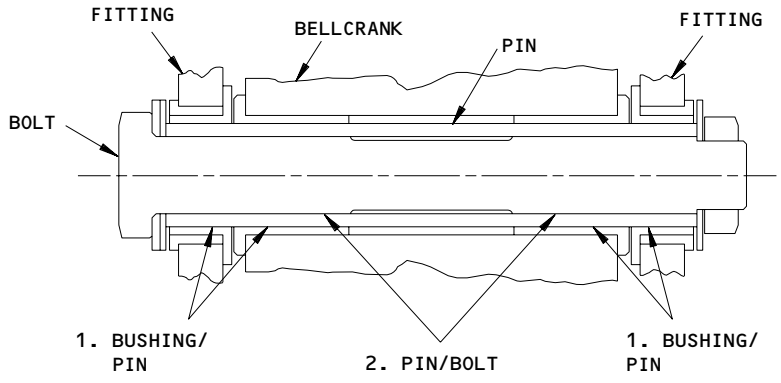


Main Gear Door Bellcrank Mechanism Wear Limits
Figure 601 (Sheet 1)



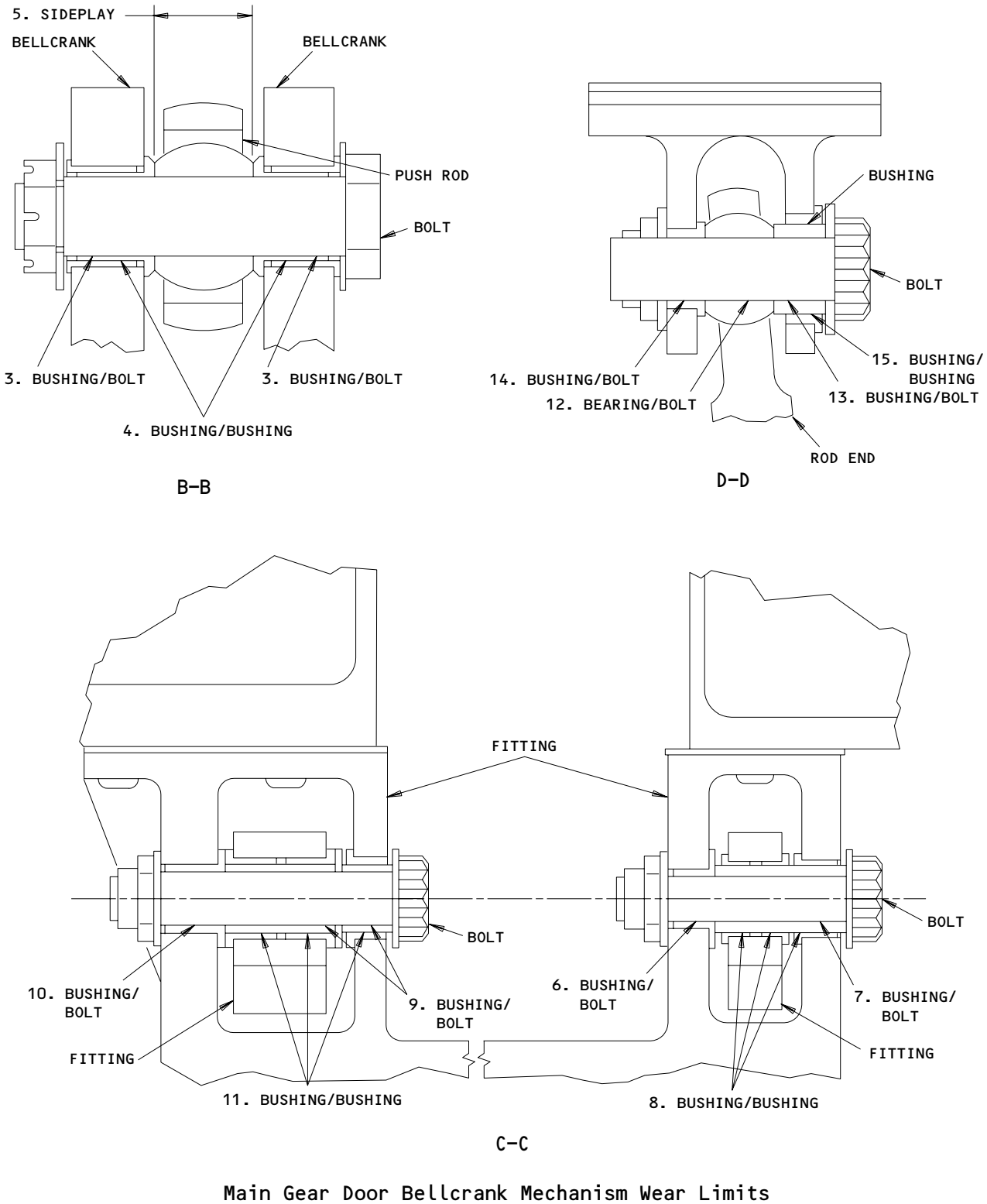
(DOOR CLOSED)

B



A-A

Main Gear Door Bellcrank Mechanism Wear Limits
Figure 601 (Sheet 2)



Main Gear Door Bellcrank Mechanism Wear Limits
Figure 601 (Sheet 3)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS ALLOWED WEAR DIM.	WEAR LIMITS MAX DIAM CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR.
1	BUSHING	ID	1.4995	1.5010	1.5053	0.0063	X		
	PIN	OD	1.4975	1.4990	1.4932			X	3
2	PIN	ID	1.1146	1.1161	1.1193	0.0052		X	3
	BOLT	OD	1.1126	1.1141	1.1094		X		
3	BUSHING	ID	1.1250	1.1255	1.1292	0.0052	X		
	BOLT	OD	1.1225	1.1240	1.1198		X		
4	BUSHING	ID	1.4999	1.5007	----	4	X		
	BUSHING	OD	1.5015	1.5023	----		X		
5	PUSHROD		----	----	----	0.0870 1	2		
6	BUSHING	ID	0.5620	0.5630	0.5665	0.0050	X		
	BOLT	OD	0.5605	0.5615	0.5570		X		
7	BUSHING	ID	0.5620	0.5625	0.5665	0.0050	X		
	BOLT	OD	0.5605	0.5615	0.5570		X		
8	BUSHING	ID	0.8120	0.8135	0.8169	0.0054	X		
	BUSHING	OD	0.8110	0.8115	0.8066		X		
9	BUSHING	ID	0.6245	0.6250	0.6290	0.0050	X		
	BOLT	OD	0.6230	0.6240	0.6195		X		
10	BUSHING	ID	0.6245	0.6255	0.6290	0.0050	X		
	BOLT	OD	0.6230	0.6240	0.6195		X		
11	BUSHING	ID	0.8745	0.8755	0.8790	0.0050	X		
	BUSHING	OD	0.8735	0.8740	0.8687		X		

1 MAXIMUM APPROVED SIDEPLAY

2 REPLACE THE WORN BUSHINGS AND BEARINGS

3 PART CAN BE REPAIRED; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR PROCEDURES TO DO THE TASK.

4 INTERFERENCE FIT

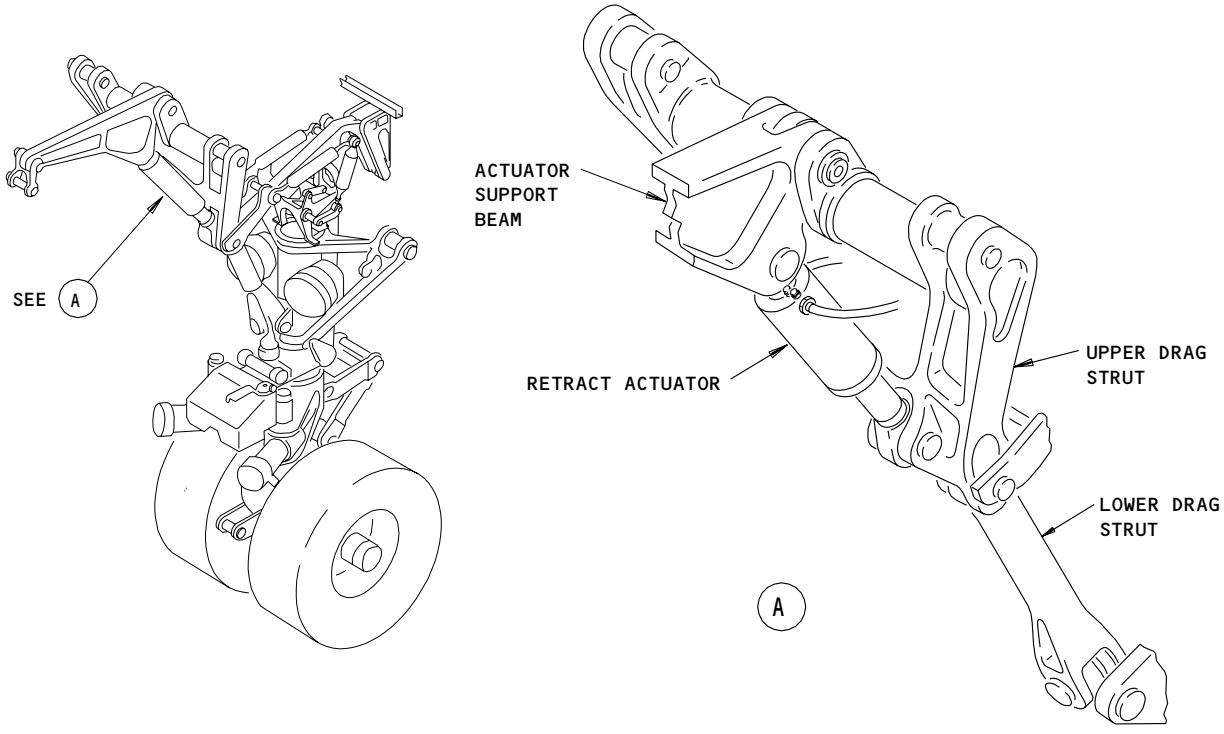
Main Gear Door Bellcrank Mechanism Wear Limits
Figure 601 (Sheet 4)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR.
			DIAMETER		ALLOWED WEAR DIM.	MAX DIAM CLEAR-ANCE			
			MIN	MAX					
12	BEARING	ID	0.7500	0.7504	0.7542	0.0052	X		
	BOLT	OD	0.7480	0.7490	0.7448		X		
13	BUSHING	ID	0.7495	0.7500	0.7542	0.0052	X		
	BOLT	OD	0.7480	0.7490	0.7448		X		
14	BUSHING	ID	0.7500	0.7515	0.7542	0.0052	X		
	BOLT	OD	0.7480	0.7490	0.7448		X		
15	BUSHING	ID	1.0615	1.0635	1.0679	0.0064	X		
	BUSHING	OD	1.0605	1.0615	1.0551		X		

Main Gear Door Bellcrank Mechanism Wear Limits
Figure 601 (Sheet 5)

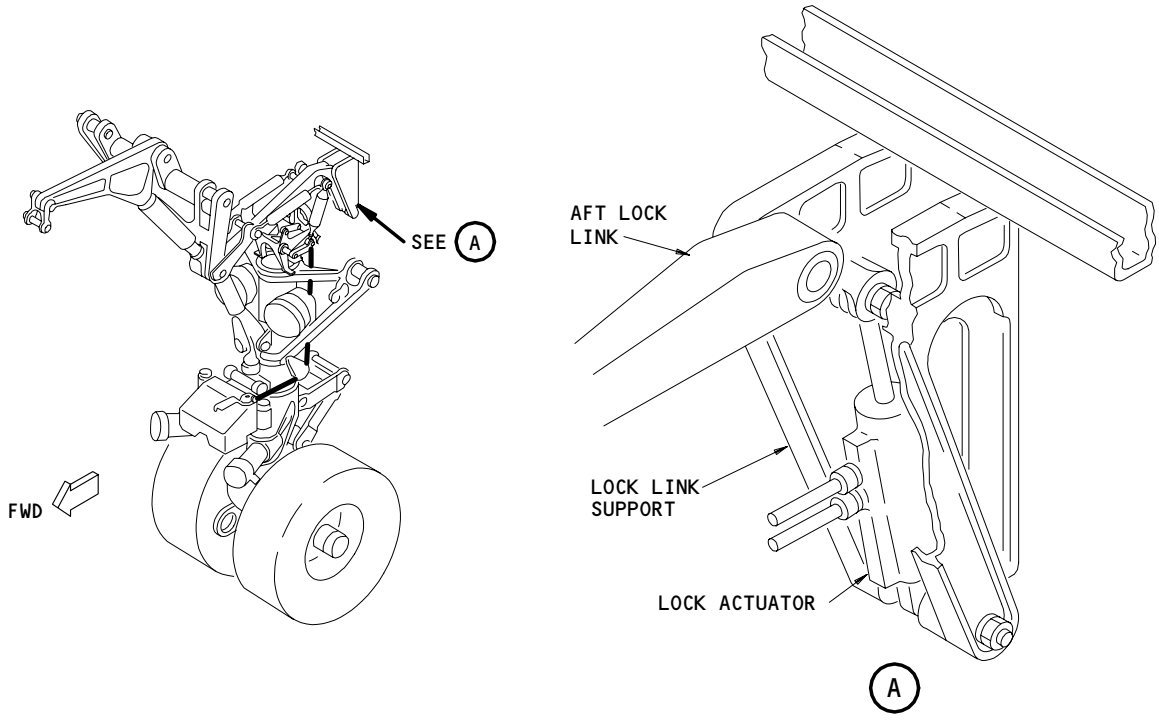
NOSE GEAR EXTENSION AND RETRACTION - DESCRIPTION AND OPERATION

1. General
   A. The nose gear extension and retraction system raises and lowers the nose gear. Components of the system include a retract actuator, lock actuator, transfer cylinder, priority valve, steering drum and lockout, and a steering spring cartridge.
   B. Gear and door positions monitored by the Landing Gear Position Indication System (AMM 32-61-00/001) receive inputs from proximity sensors mounted near the lock actuator and on the doors.
2. Component Details
   A. Retract Actuator (Fig. 1)
      (1) The retract actuator is a double-acting, hydraulic piston-type actuator with internal snubbing at both ends of piston travel. This actuator applies the force to raise and lower the gear. The actuator is located in the nose wheel well forward of the upper drag strut. The head end attaches to the actuator support beam, and the rod end attaches to the upper drag strut near the hinge point of the upper and lower struts.

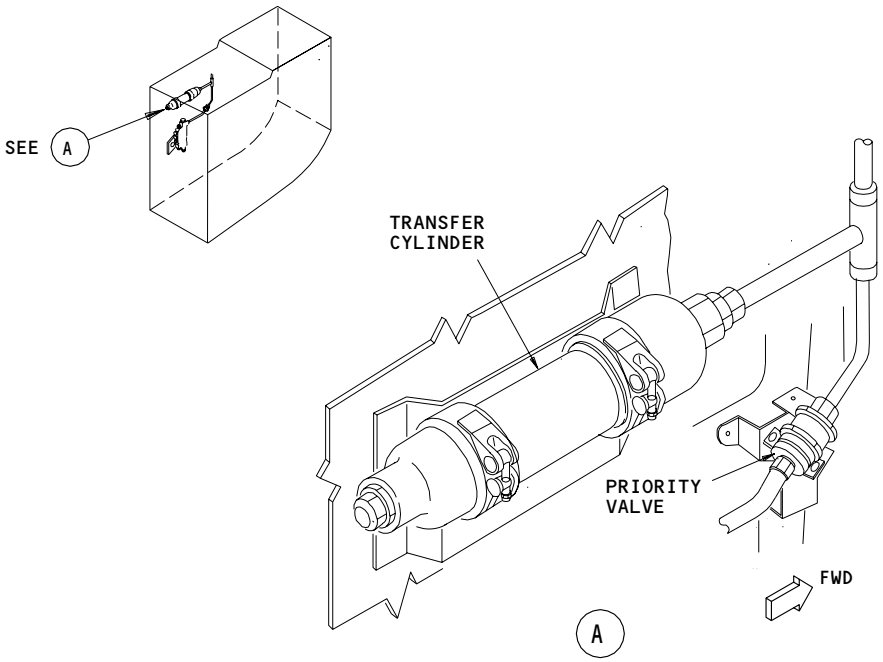


Nose Gear Retract Actuator
Figure 1

B. Lock Actuator (Fig. 2)
   (1) The lock actuator is also a double-acting, hydraulic piston-type actuator, but does not have internal snubbing. This actuator moves the lock link assembly out of the overcenter position to unlock the gear. The actuator is located on the aft wall of the nose wheel well behind the lock link assembly. The head end attaches to a support on the wall, and the rod end attaches to the aft lock link.
C. Transfer Cylinder (Fig. 3)
   (1) The transfer cylinder is a separator piston and cylinder assembly which provides a differential pressure in the hydraulic circuit in the area of the retract actuator. This pressure differential momentarily delays the action of the retract actuator thus ensuring that the gear is unlocked before gear movement begins. The cylinder is mounted onto the left wall of the nose wheel well by two clamps.
D. Priority Valve (Fig. 3)
   (1) The priority valve is an in-line, one-way hydraulic pressure relief valve. The valve prevents fluid flow to the extend port of the retract actuator until 1400 psi has been reached, which allows the lock actuator to unlock the gear prior to pressurizing the retract actuator. The valve allows free fluid flow to return during extension. The priority valve is located alongside the transfer cylinder on the left wall of the nose wheel well.
E. Nose Wheel Steering Drum and Lockout (Fig. 4)



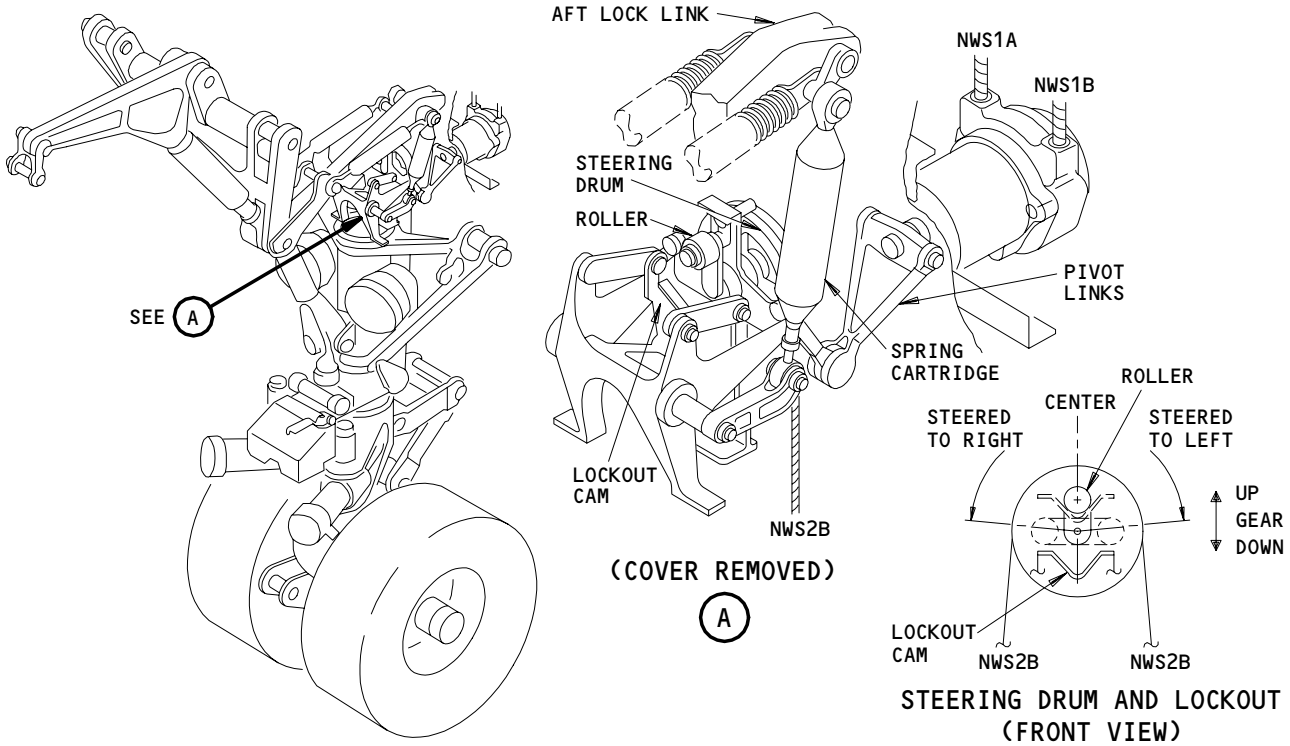
Nose Gear Lock Actuator
Figure 2



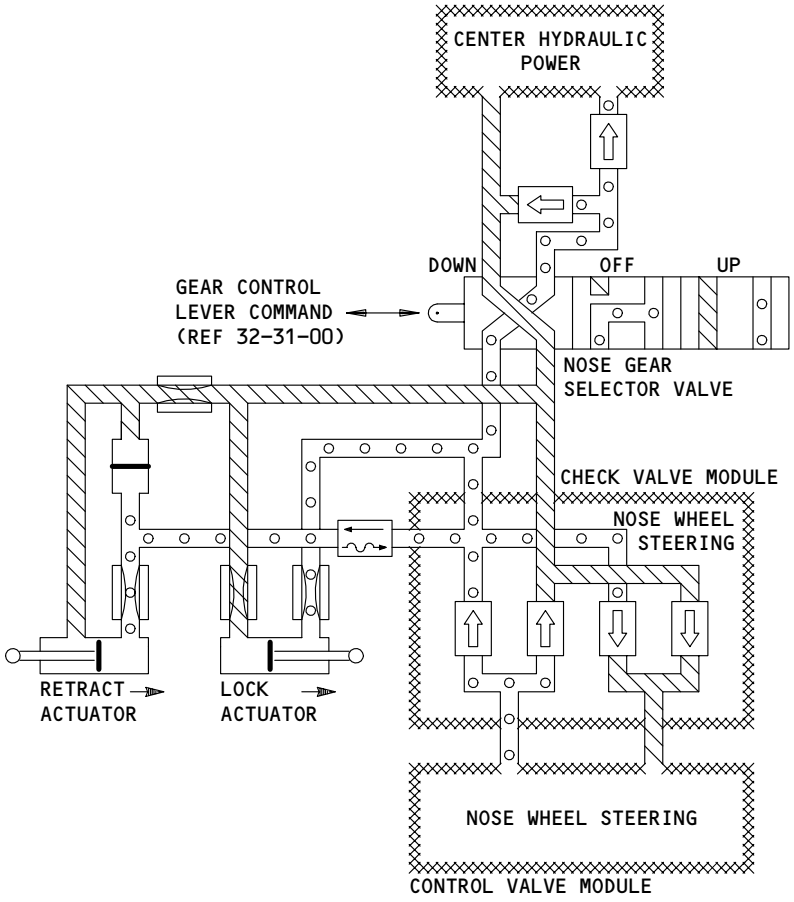
Nose Gear Transfer Cylinder and Priority Valve
Figure 3

(1) The steering drum and lockout is a quadrant and cam assembly which assists the steering system in centering the nose wheels for gear retraction. The lockout cam is linked to the aft lock link by a spring cartridge. Movement of the lock link during retraction causes the spring cartridge to rotate the lockout cam. The cam engages a roller connected to the drum which precisely centers the nose wheels for entry into the wheel well. The steering drum and lockout is located in a housing assembly which is attached to the top of the shock strut between the trunnions.

3. Operation (Fig. 5)
   A. Functional Description
      (1) Gear Retraction
         (a) The retraction cycle begins with the gear down and locked and the forward doors closed. With the landing gear control lever in UP, hydraulic fluid flows through the nose gear selector valve to pressurize the hydraulic lines for gear retraction.
         (b) Hydraulic fluid flows to the UP port of the lock actuator and to the priority valve and transfer cylinder. The lock actuator retracts to move the lock links out of the overcenter position and unlock the gear. The priority valve blocks fluid flow until the lock actuator has unlocked the gear and a pressure of 1400 psi has been reached. Fluid then flows to the UP port of the retract actuator and the actuator extends to retract the gear.



Nose Wheel Steering Drum and Lockout
Figure 4



Nose Gear Extension and Retraction Schematic
Figure 5

(c) While the gear is retracting, the forward doors open, allow the gear to move past them, and close back over the wheel well. The aft doors close directly with the gear.

(d) The lock link assembly folds and rotates from the horizontal to the vertical position. When the lock link assembly starts to rotate, the steering spring cartridge moves to engage the lockout cam and steering drum shaft to center the nose wheels. When the lock link assembly reaches the vertical position, the lock springs and the lock actuator move the lock links into the overcenter position to lock the gear up. After the gear is up and locked, the landing gear control system is used to make sure all hydraulic pressure is routed to return (AMM 32-31-00). This completes the retraction cycle.

(2) Gear Extension

(a) The extension cycle begins with the gear up and locked and the forward and aft doors closed. With the landing gear control lever in DN, hydraulic fluid flows through the nose gear selector valve to pressurize the hydraulic lines for gear extension.

(b) Hydraulic fluid flows to the DN port of the lock actuator and through the priority valve to the transfer cylinder and to the DN port of the retract actuator. The lock actuator extends to move the lock links out of the overcenter position and unlock the gear. The transfer cylinder fills with hydraulic fluid which delays hydraulic pressure to the retract actuator. This delay ensures that the gear is unlocked before gear movement begins. Finally, the retract actuator retracts to extend the gear.

(c) While the gear is extending, the forward doors open, allow the gear to move past them, and close back over the wheel well. The aft doors open directly with the gear and stay open.

(d) The lock link assembly folds and rotates from the vertical to the horizontal position. When the lock link assembly is reaching the horizontal position, the steering spring cartridge moves to disengage the lockout cam from the steering drum shaft thereby allowing nose wheel steering. Also the lock springs and the lock actuator move the lock links into the overcenter position to lock the gear down. The extension cycle is complete.

B. Control

(1) The nose gear extension and retraction system is controlled by the landing gear control system (AMM 32-31-00).

NOSE GEAR EXTENSION AND RETRACTION - ADJUSTMENT/TEST

1. General
   A. This procedure has two parts. The first part is an operational test of the extension and retraction system for the nose landing gear. The second part is a system test of the extension and retraction system for the nose landing gear.

   TASK 32-34-00-715-001
2. Operational Test - Nose Landing Gear Extension and Retraction
   A. General
      (1) This test does a check of the extension and retraction system for the nose landing gear to ensure satisfactory performance. The test does not contain the data for a full system test or adjustment of the extension and retraction system.
   B. Equipment
      (1) Hydraulic Service Cart - 0 to 3000 psi, with 15 micron absolute filtration, can provide 30 gpm minimum at 3000 psig with hydraulic fluid used.

          NOTE: The service cart is not necessary if airplane hydraulic power is used.

      (2) Stop watch
   C. Access
      (1) Location Zone
          211/212 Control Cabin
   D. References
      (1) AMM 07-11-02/201, Jacking Airplane Nose
      (2) AMM 24-22-00/201, Electrical Power - Control
      (3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   E. Prepare for the Operational Test

      S 215-072

      WARNING: MAKE SURE THAT THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

          S 865-005
      (2) Lift the airplane nose with jacks (AMM 07-11-02/201).

          S 865-004
      (3) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:
          (a) 11C30, LANDING GEAR POSITION AIR/GND SYS 1

(b) 11U15, AIR/GND SYS 1
(c) 11U20, LANDING GEAR LEVER LOCK
(d) 11U23 or 11U24, LANDING GEAR POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

(e) 11R3, LEFT IND LIGHTS 3

S 095-006
(4) Remove the downlock from the nose landing gear (AMM 32-00-20/201).

S 865-007
(5) Supply electrical power (AMM 24-22-00/201).

S 865-002
(6) Pressurize the center hydraulic system (AMM 29-11-00/201).

F. Do the Extension and Retraction Test

S 715-008
(1) Put one person at the control lever in the flight deck. Put another person outside the airplane near the nose landing gear. Use the person outside the airplane as an observer and to measure the time for the landing gear retraction test. Supply interphone communication between the two persons.

S 715-009

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON THE MAIN LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. IF THE CONTROL LEVER IS MOVED WITHOUT THE DOWNLOCKS INSTALLED, THE MAIN LANDING GEAR CAN RETRACT AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

MAKE SURE THE AREA AROUND THE LANDING GEAR DOORS, THE LANDING GEAR, AND THE TAIL SKID (IF APPLICABLE) IS CLEAR OF PERSONS AND EQUIPMENT. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Move the control lever for the landing gear from OFF to UP in 2 ± 1 seconds. Write down the retraction time for the landing gear.

NOTE: Measure the retraction time from the time the control lever is moved to UP to the time the nose gear doors completely close. Measure the time in seconds.

S 715-010

(3) Move the control lever for the landing gear from UP to DN. When landing gear extension is approximately one-half complete, move the control lever to UP at a constant rate in 3 ± 1 seconds. The nose landing gear shall change directions with no hydraulic leakage or damage to parts.

S 715-011

(4) Move the control lever for the landing gear to OFF for 15 seconds.

S 215-012

(5) Put a person in the flight compartment to be an observer and to measure the time for the landing gear extension.

S 715-013

(6) Move the control lever for the landing gear from OFF to DN in 2 ± 1 seconds. Write down the landing gear extension time.

NOTE: Measure the extension time from the time the gear handle is in the DN position until the NOSE gear green light comes on. Measure the time in seconds.

S 715-014

(7) Move the control lever for the landing gear from DN to UP. When landing gear retraction is approximately one-half complete, move the control lever to DN at a constant rate in 3 ± 1 seconds. The nose landing gear shall change directions with no hydraulic leakage or damage to parts.

S 715-015

(8) Move the control lever for the landing gear to OFF.

S 975-016

(9) If the center hydraulic system is pressurized with the air driven pump (ADP),
make sure that gear operation occurs within the times shown in the table that follows:

MAXIMUM OPERATING TIME	
RETRACTION	EXTENSION
14 SEC (767-200) 16 SEC (767-300)	14 SEC

S 975-020

(10) If the center hydraulic system is pressurized with a hydraulic service cart, make sure that gear operation occurs within the times shown in the table that follows:

	TEST BENCH FLOW (GPM)	
	30 TO 40	40 OR HIGHER
RETRACT TIME	15 SEC (767-200) 17 SEC (767-300)	14 SEC (767-200) 16 SEC (767-300)
EXTEND TIME	15 SEC	14 SEC

S 865-068

(11) Put the control lever for the landing gear to the DN position.

G. Put the Airplane Back to its Usual Condition

S 495-024

(1) Install the downlock for the nose landing gear (AMM 32-00-20/201).

S 095-025

(2) Lower the airplane nose and remove the jack (AMM 07-11-02/201).

S 865-026

(3) Remove the pressure from the center hydraulic system if not necessary (AMM 29-11-00/201).

S 865-027

(4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-34-00-735-028

3. System Test - Nose Gear Extension and Retraction System

A. General

(1) The system test does a check of the extension and retraction system for the nose landing gear. The items that follow are compared with the position of the control lever for the landing gear:

(a) Extension and retraction of the landing gear.

(b) Operation of the position indication for the landing gear.

(2) There is also an unlock pressure test for the nose landing gear. It is used to make sure the force necessary to unlock the nose landing gear is not more than the approved limits. If the force is more than the approved limits, the locking mechanism for the nose landing gear would not move freely. Use this test if you replace the nose landing gear or lock linkage components for the nose landing gear.

B. Equipment

(1) Variable Volume Test Bench - 0 to 4000 psi, with 15 micrometers absolute oil filtration. Capable of 50 gpm at 3000 psig (use required if Nose Gear Unlock Pressure Test Performed).

C. References

(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 29-11-00/201, Electrical Power
(4) AMM 32-00-20/201, Landing Gear Downlocks

D. Access

(1) Location Zone
211/212 Control Cabin

E. Prepare For the System Test

S 215-029

(1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

S 865-030

(2) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:
(a) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(b) 11R3, LEFT IND LIGHTS 3
(c) 11U15, AIR/GND SYS 1
(d) 11U20, LANDING GEAR LEVER LOCK

(e) 11U23 or 11U24, LANDING GEAR POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

S 495-031

(3) Lift the airplane on jacks until the wheels are clear of the ground (AMM 07-11-01/201).

S 865-032

(4) Make sure the control lever for the landing gear, on the First Officer's Panel P3, is in the OFF position.

S 865-033

(5) Supply electrical power (AMM 24-22-00/201).

F. Do the Extension and Retraction Test.

S 095-034

(1) Remove the downlocks from the nose and main landing gear (AMM 32-00-20/201).

S 865-035

(2) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 865-036

WARNING: MAKE SURE THE EXTENSION AND RETRACTION PATHS OF THE NOSE LANDING GEAR, THE MAIN LANDING GEAR , AND THE TAIL SKID (IF APPLICABLE) ARE CLEAR OF PERSONS AND EQUIPMENT. IF THE AREA IS NOT CLEAR, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD RESULT.

(3) Move the control lever for the landing gear on the P3 panel to UP.

S 215-037

(4) Make sure the landing gear retract and the nose landing gear is locked in the up position.

S 215-066
(5) Make sure the landing gear DOORS, NOSE, GEAR, LEFT, and RIGHT lights on the P3 panel are off.

NOTE: If the EICAS message LDG GEAR MONITOR shows on the lower display after the landing gear is retracted, examine the aft hinges on the forward doors of the nose landing gear. The EICAS message could be caused by the vertical movement of the hinges. Use the procedure in AMM 32-22-01/401 to examine the hinges and repair them if it is necessary. Also examine the longitudinal seals on the forward doors to make sure there are no gaps between the seals and that the seals do not overlap when the doors are closed to the stops.

S 215-067
(6) 767-300;
Make sure the tail skid has fully retracted.

S 865-039
(7) Move the control lever for the landing gear on the P3 panel to OFF.

S 215-040
(8) Make sure all the landing gear lights on the P3 panel are off.

S 865-041
(9) Move the control lever for the landing gear on the P3 panel to DN.

S 215-042
(10) Make sure the DOORS and GEAR lights for the landing gear on the P3 panel are on. Make sure the NOSE, LEFT, and RIGHT lights on the P3 panel are off.

S 215-043
(11) Make sure the landing gear doors open and the landing gear extends and locks.

S 215-044
(12) Make sure the landing gear doors close.

S 215-070
(13) 767-300;
Make sure the tail skid extends.

S 215-046
(14) Make sure the DOORS light for the landing gear on the P3 panel is off. Make sure the NOSE, LEFT, and RIGHT lights on the P3 panel are on.

S 865-047
(15) Move the control lever for the landing gear on the P3 panel to OFF.

S 215-048
(16) Make sure the NOSE, LEFT, RIGHT and GEAR lights for the landing gear on the P3 panel are on.

G. Do the Unlock Pressure Test for the Nose Landing Gear (Do this Test if you replaced the Nose Landing Gear, or the Lock Actuator or Lock Links for the Nose Landing Gear)

S 095-049
(1) Remove the downlock for the nose landing gear (AMM 32-00-20/201).

S 865-050
(2) Use the hydraulic test bench to pressurize the center hydraulic system (AMM 29-11-00/201) to 3000 psi.

S 495-051
(3) Make sure the downlocks for the main landing gear are installed (AMM 32-00-20/201).

S 865-053

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON THE MAIN LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. IF THE CONTROL LEVER IS MOVED WITHOUT THE DOWNLOCKS INSTALLED, THE MAIN LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

MAKE SURE THE EXTENSION AND RETRACTION PATHS OF THE NOSE AND MAIN LANDING GEAR, AND THE TAIL SKID (IF APPLICABLE) ARE CLEAR OF PERSONS AND EQUIPMENT. IF THE AREA IS NOT CLEAR, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(4) Move the control lever for the landing gear on the P3 panel to UP.

S 215-054
(5) Make sure the nose landing gear retracts.

S 215-055
(6) Make sure the DOORS, GEAR, LEFT and RIGHT lights for the landing gear on the P3 panel are on. Make sure the NOSE light on the P3 panel is off.

S 865-056
(7) Move the control lever for the landing gear to OFF.

S 865-057
(8) Decrease the bench pressure to the center hydraulic system below 1000 psi.

S 865-058
(9) Move the control lever for the landing gear to DN.

S 865-059
(10) Slowly increase the bench pressure until the nose landing gear unlocks. Make sure the pressure does not go above 2250 psi.

S 865-111
(11) Pressurize the center hydraulic system to 2800-3150 psig (AMM 29-11-00/201).

S 215-060
(12) Make sure the nose landing gear extends and locks.

S 485-112
(13) Install the downlock for the nose landing gear (AMM 32-00-20/201).

H. Put the Airplane Back to Its Normal Condition

S 865-069
(1) Put the control lever for the landing gear to the DN position.

S 485-113
(2) Install landing gear downlocks (AMM 32-00-20/201).

S 865-063
(3) Remove the power from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-064
(4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

S 085-114
(5) Lower the airplane and remove the jacks (AMM 07-11-01/201).

NOSE GEAR RETRACT ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first task removes the retract actuator for the nose landing gear. The second task installs the retract actuator.

TASK 32-34-01-004-027

2. Remove the Retract Actuator for the Nose Landing Gear (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   B. Equipment
      (1) Retract Actuator Sling, NLG - A32023-1
      (2) Fishpole Hoist - Commercially Available
   C. Access
      (1) Location Zone
          711 Nose Landing Gear

   D. Prepare for Removal

      S 214-001
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-002
      (2) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

      S 864-003
      (3) Release the lock on rod 2 of the mechanisms that operate the forward doors for the nose landing gear.
   E. Remove the Retract Actuator

      S 034-005
      (1) Disconnect the hydraulic lines from the actuator.

S 494-004
(2) Install plugs in the lines and fittings.

S 034-028

WARNING: THE ACTUATOR WEIGHS APPROXIMATELY 90 POUNDS. BE CAREFUL TO PREVENT INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Remove the lower pin (8) to disconnect the rod end of the actuator from the upper drag strut (Detail B).

S 494-006
(4) Install the retract actuator sling per the instructions supplied with the tool.

S 984-007
(5) Attach the sling to the fishpole hoist, and lift the actuator to release the pressure on the upper pin.

S 034-008
(6) Remove the upper pin (6) to disconnect the head end of the actuator from the actuator support beam.

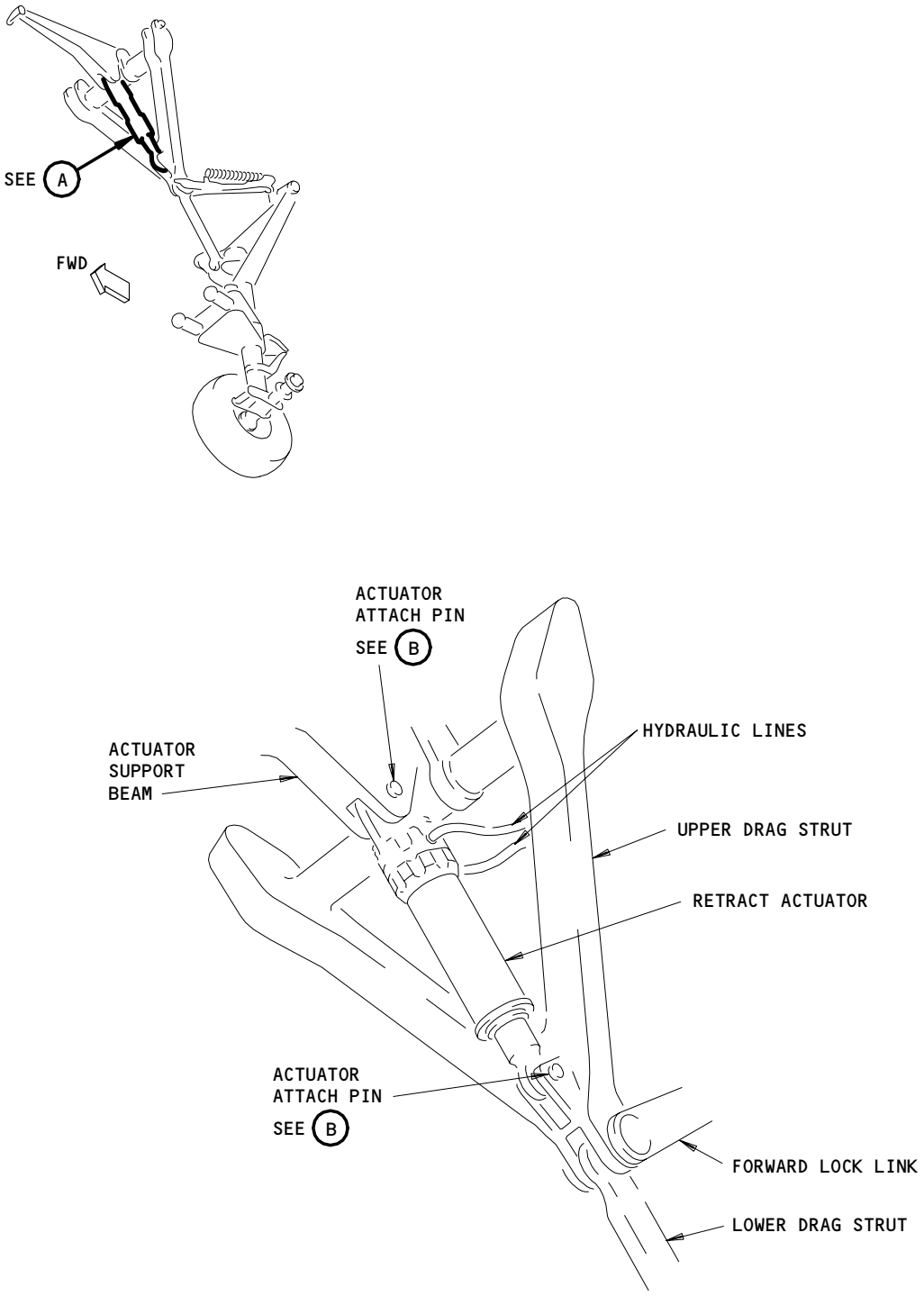
S 024-009
(7) Lower and remove the actuator (7).

S 094-026
(8) Remove the retract actuator sling.

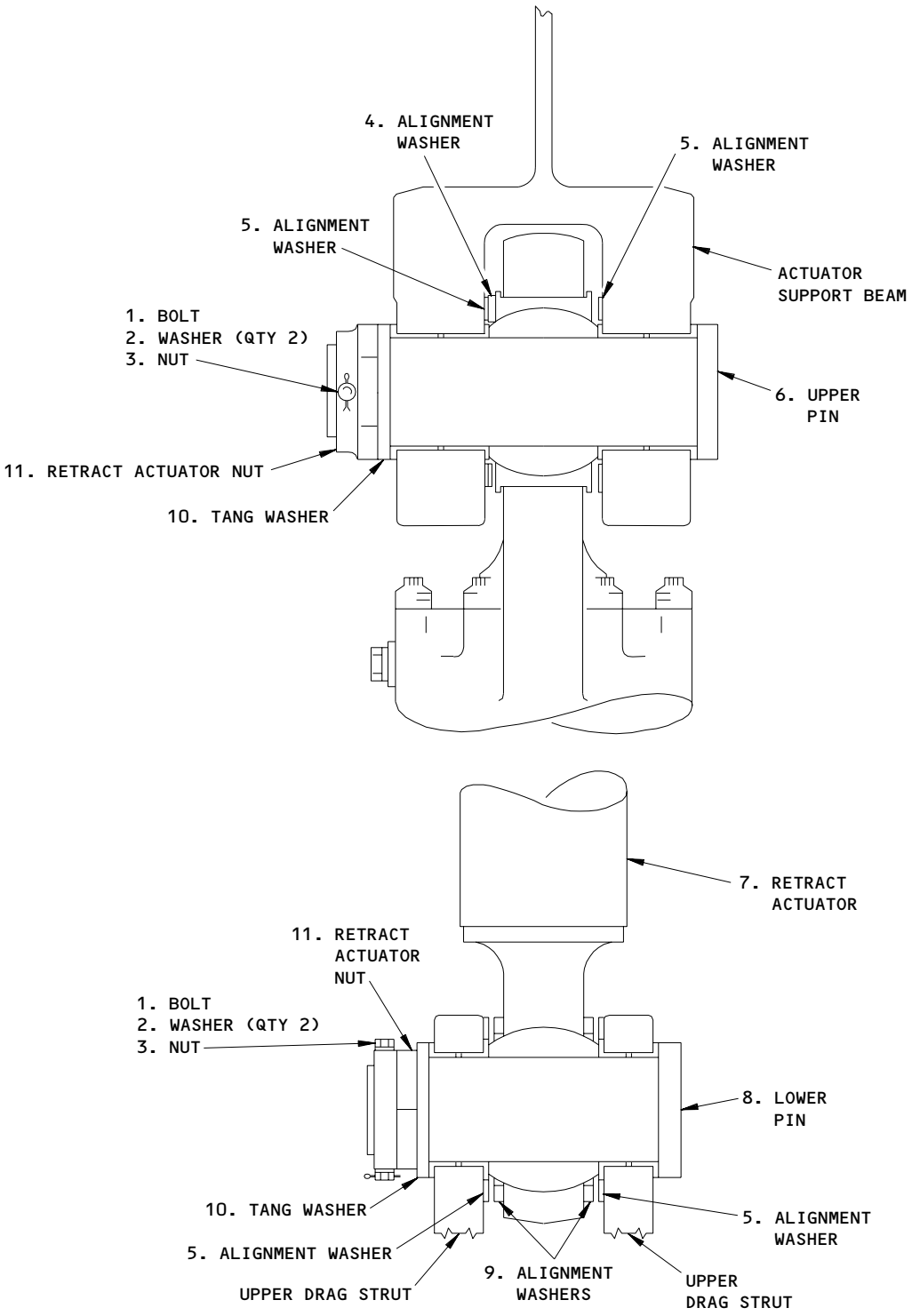
TASK 32-34-01-404-010
3. Install the Retract Actuator for the Nose Landing Gear (Fig. 401)

NOTE: The wear limits for the components that follow are found in 32-34-01/601.

A. References
(1) AMM 12-12-01/301, Hydraulic Systems Servicing



Nose Landing Gear Retract Actuator Installation
Figure 401 (Sheet 1)



Nose Landing Gear Retract Actuator Installation
Figure 401 (Sheet 2)

(2) AMM 32-34-00/501, Nose Gear Extension and Retraction
(3) AMM 32-34-01/601, Nose Gear Retract Actuator

B. Equipment
(1) Retract Actuator Sling, NLG - A32023-1
(2) Fishpole Hoist - Commercially available

C. Consumable Materials
(1) A00247 Sealant, Chromate Type - BMS 5-95
(2) D00633 Grease - BMS3-33 (Preferred)
(3) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(4) D00153 Fluid, Hydraulic - BMS 3-11, Type IV, Class I

D. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Bolt	32-21-01	01	70
	2	Washer			75
	3	Nut			80
	4	Alignment Washer			105
	5	Alignment Washer			100
	6	Upper Pin			85
	7	Retract Actuator	32-34-01	02	5
	8	Lower Pin	32-21-01	01	90
	9	Alignment Washer			95
	10	Tang Washer			110
	11	Retract Actuator Nut			115

E. Access
(1) Location Zone
711 Nose Landing Gear

F. Install the Retract Actuator

S 614-011
(1) Fill the actuator with hydraulic fluid. Install plugs in the hydraulic fittings.

S 494-012
(2) Install the retract actuator sling.

S 984-013
(3) Lift the actuator (7) into position in the wheel well.

S 434-014
(4) Lubricate and install the upper pin (6), washers (2, 4, 5, 10), lockbolt (1), nuts (3, 11), and cotter pin.

NOTE: This connects the head end of the actuator to the actuator support beam.

S 434-015
(5) Tighten the nut (11) to 60-80 pound-feet. If necessary, loosen the nut to install the lockbolt.

S 624-016
(6) Apply sealant to the nut on the upper pin and both ends of the lockbolt.

S 094-017
(7) Remove the retract actuator sling.

S 434-046
(8) If the airplanes is on jacks do the steps that follow:
(a) Lubricate and install the lower pin (8), washers (2, 5, 9, 10), lockbolt (1), nuts (3, 11) and cotter pin.

NOTE: This connects the rod end of the actuator to the upper drag strut.

(b) Tighten the nut (11) to 60-80 pound-feet. If necessary loosen the nut to install the lockbolt.
(c) Apply sealant to the nut on the lower pin and both ends of the lockbolt.
(d) Lubricate the upper and lower pins at the grease fittings.
(e) Connect the hydraulic lines to the actuator.
(f) Manually close the forward doors of the nose landing gear.
(g) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).
(h) Do a test of the extension and retraction system for the nose landing gear (AMM 32-34-00/501).

S 434-047

(9) If the airplane is not on jacks do the steps that follow:

(a) With the rod end of the actuator free to move, hold the actuator so the rod end will not hit anything when it extends and retracts as the actuator is operated.

(b) Connect the hydraulic lines to the actuator.

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON THE NOSE AND MAIN LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. IF THE CONTROL LEVER IS MOVED WITHOUT THE DOWNLOCKS INSTALLED, THE LANDING GEAR CAN RETRACT AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(c) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

(d) Pressurize the center hydraulic system (AMM 29-11-00/201).

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE MAIN LANDING GEAR DOORS AND THE TAIL SKID (IF APPLICABLE). IF THE AREA IS NOT CLEAR INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE ROD END OF THE ACTUATOR. MOVEMENT OF THE ROD CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(e) Move the control lever for the landing gear from the DN position to the UP position five times. Make sure the conditions that follow occur during this operation:

1) The actuator rod retracts when the control lever is put in the DN position. This will show that the hoses are correctly connected.

2) There are no hydraulic leaks at the fittings.

(f) Put the control lever to the OFF position.

(g) Lubricate and install the lower pin (8), washers (2, 5, 9, 10), lockbolt (1), nuts (3, 11) and cotter pin.

NOTE: This connects the rod end of the actuator to the upper drag strut.

(h) Tighten the nut (11) to 60-80 pound-feet. If necessary loosen the nut to install the lockbolt.

(i) Apply sealant to the nut on the lower pin and both ends of the lockbolt.
(j) Lubricate the upper and lower pins at the grease fittings.
(k) Deleted.
(l) Manually close the forward doors of the nose landing gear.
(m) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).
(n) Put the control lever for the landing gear in the DN position.
(o) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).
(p) Remove the downlocks from the nose and main landing gear (AMM 32-00-20/201).

NOSE GEAR RETRACT ACTUATOR - INSPECTION/CHECK

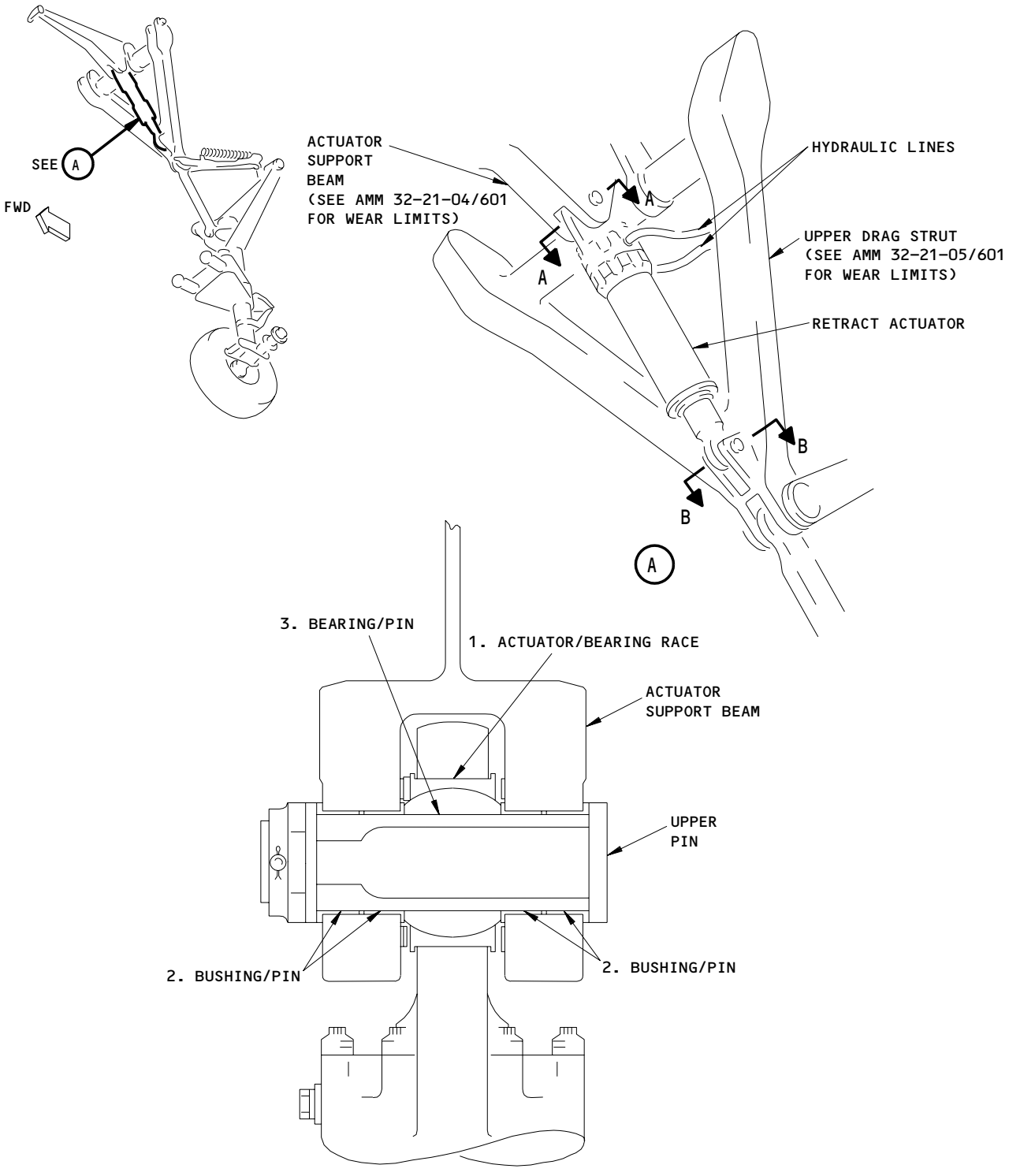
1. General
   A. This procedure only has illustrations and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Nose Gear Retract Actuator - Removal/Installation for procedures to do these tasks.

TASK 32-34-01-206-001

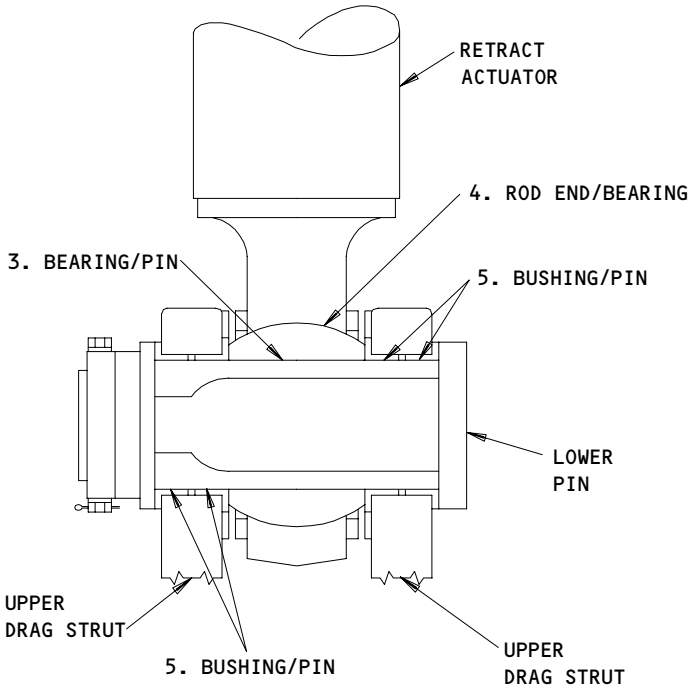
2. Nose Landing Gear Retract Actuator Wear Limits (Fig. 601)

   NOTE: Wear limits for other components that are connected to the retract actuator are included in the applicable Maintenance Manual subject for those components.

   A. General
      (1) This procedure only has illustrations and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Nose Gear Retract Actuator - Removal/Installation for procedures to do these tasks.



Nose Landing Gear Retract Actuator Wear Limits
Figure 601 (Sheet 1)



B–B

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR.
			DIAMETER		ALLOWED WEAR DIM.	MAX DIAM CLEAR-ANCE			
			MIN	MAX					
1	ACTUATOR	ID	3.9990	4.0005	4.0008	0.0010		X	1
	BEARING RACE	OD	4.0000	4.0005	3.9998		X		
2	BUSHING	ID	2.2500	2.2517	2.2557	0.0067	X		
	PIN	OD	2.2480	2.2490	2.2450			X	1
3	BEARING	ID	2.2495	2.2500	2.2540	0.0050	X		
	PIN	OD	2.2480	2.2490	2.2450			X	1
4	ROD END	ID	3.5180	3.5195	3.5200	0.0065		X	1
	BEARING	OD	3.5145	3.5150	3.5135		X		
5	BUSHING	ID	2.2500	2.2515	2.2555	0.0065	X		
	PIN	OD	2.2480	2.2490	2.2450			X	1

1 YOU CAN REPAIR THE PART; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR INSTRUCTIONS

Nose Landing Gear Retract Actuator Wear Limits
Figure 601 (Sheet 2)

NOSE GEAR LOCK ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the lock actuator for the nose landing gear. The second task installs the lock actuator for the nose landing gear.

TASK 32-34-02-004-001

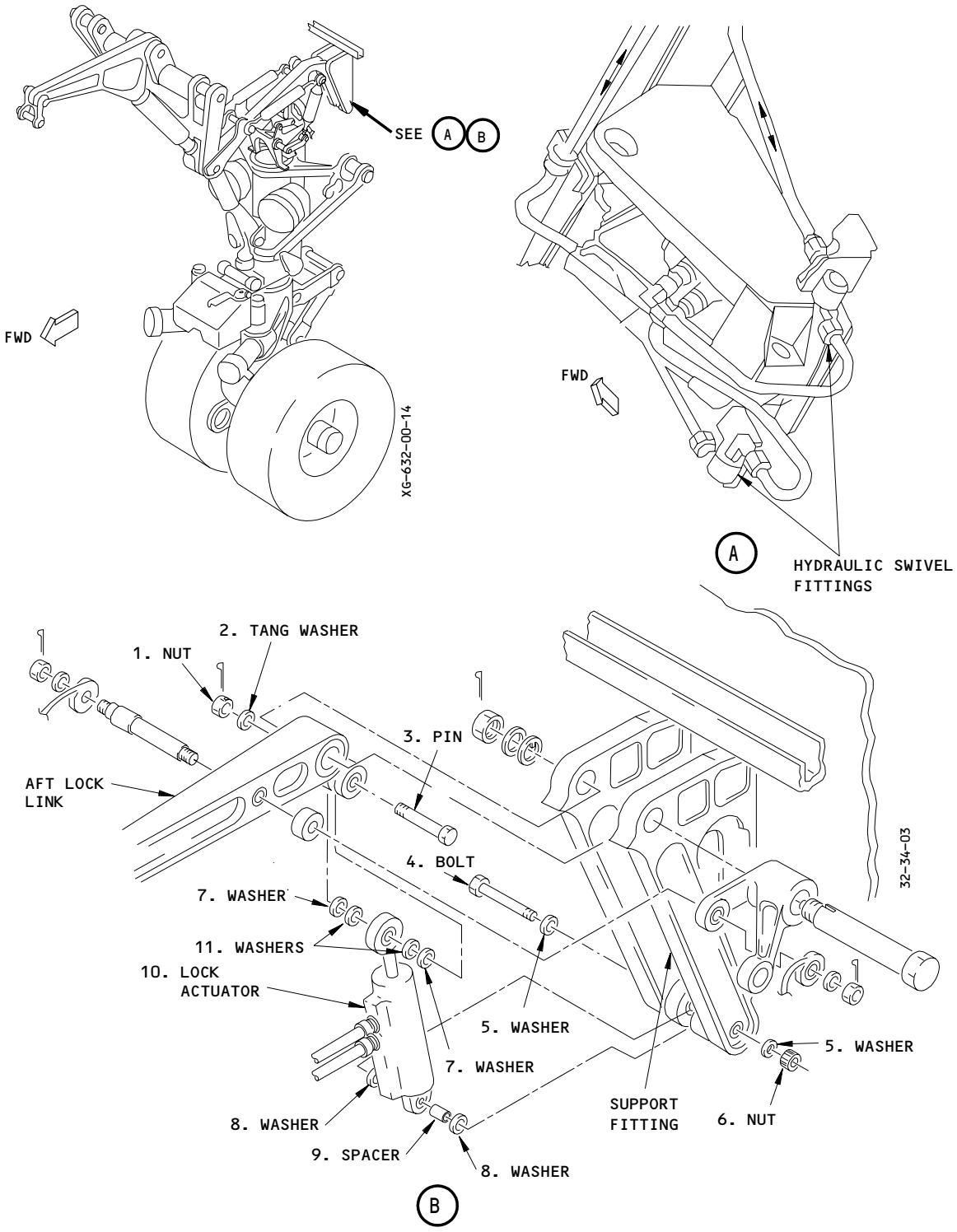
2. Remove the Lock Actuator for the Nose Landing Gear (Fig. 401)
   A. References
      (1) AMM 07-11-02/201, Nose Jacking
      (2) AMM 24-22-00/201, Electrical Power Control
      (3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          115 Nose Landing Gear Wheel Well (Left)
          116 Nose Landing Gear Wheel Well (Right)
          711 Nose Landing Gear

   C. Prepare for Removal

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-003
      (2) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:
          (a) 11R3, L IND LTS 3
          (b) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
          (c) 11U15, AIR/GND SYS 1

      S 864-004
      (3) Release the lock mechanisms that operate the forward doors on the nose landing gear. Open the forward doors for the nose landing gear.



Nose Landing Gear Lock Actuator Installation
Figure 401

S 584-005
(4) Lift the airplane nose on jacks until the wheels are clear of the ground (AMM 07-11-02).

S 864-006
(5) Supply electrical power (AMM 24-22-00/201).

S 094-007
(6) Remove the downlock from the nose landing gear (AMM 32-00-20/201).

S 864-008
(7) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 864-009

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON THE MAIN LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. IF THE CONTROL LEVER IS MOVED WITHOUT THE DOWNLOCKS INSTALLED, THE MAIN LANDING GEAR CAN RETRACT AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Retract the nose landing gear only until the rod end of the actuator is sufficiently clear of the support fitting to remove the pin (3) from the aft lock link (approximately 10 inches of wheel swing).

S 584-010
(9) Hold the nose landing gear in this position with bracing.

S 864-011
(10) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

D. Remove the Lock Actuator

S 034-012
(1) Disconnect the hydraulic lines from the lock actuator (Detail B).

S 494-013
(2) Install plugs in the lines and fittings.

S 034-014
(3) Remove the pin (3) to disconnect the rod end of the actuator from the aft lock link.

S 034-042
(4) Disconnect from either side of the lock actuator (10) common to the bolt (4), the hydraulic tube swivel fitting (Detail A).

S 494-043
(5) Install plugs on all open lines and fittings.

S 034-015
(6) Remove the bolt (4) to disconnect the head end of the actuator from the support fitting.

S 024-016
(7) Remove the lock actuator (10).

TASK 32-34-02-404-017

3. Install the Lock Actuator for the Nose Landing Gear (Fig. 401)

A. References
(1) AMM 07-11-02/201, Nose Jacking
(2) AMM 12-12-01/301, Hydraulic Systems Servicing
(3) AMM 24-22-00/201, Electrical Power Control
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(5) AMM 32-00-20/201, Landing Gear Downlocks

B. Consumable Materials
(1) A00247 Sealant, Chromate Type - BMS 5-95
(2) D00633 Grease - BMS3-33 (Preferred)
(3) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(4) D00148 Fluid, Hydraulic - BMS 3-11, Type IV, Class 1

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Nut	32-21-01	01	230
	2	Tang Washer			225
	3	Pin			200
	4	Bolt	32-34-02	01	5
	5	Washer			10
	6	Nut			25
	7	Alignment Washer	32-21-01	01	215
	8	Washer	32-34-02	01	15
	9	Spacer			20
	10	Actuator			30
	11	Alignment Washer	32-21-01	01	220

D. Access
(1) Location Zones
115 Nose Landing Gear Wheel Well (Left)
116 Nose Landing Gear Wheel Well (Right)
711 Nose Landing Gear

E. Procedure

S 614-018
(1) Fill the actuator with hydraulic fluid.

S 494-019
(2) Install plugs in the hydraulic fittings.

S 434-020
(3) Install the bolt (4), washers (5 and 8), spacer (9), and nut (6) to connect the head end of the actuator to the support fitting. Tighten the nut to 660-780 pound-inches.

S 434-049
(4) Install the pin (3), washers (2, 7, and 11), nut (1), and cotter pin. This connects the rod end of the actuator to the aft lock link. If the washer (11) is thicker, install washer (11) adjacent to the rod end of the actuator.

S 394-022
(5) Apply sealant to the nut (1).

S 434-023
(6) Make sure the pressure is removed from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 024-046
(7) Remove plugs installed in the lines and fittings of the hydraulic tube swivel fitting.

S 424-044
(8) Connect the hydraulic swivel fitting.

S 024-047
(9) Remove plugs from the hydraulic fittings on the lock actuator (10).

S 424-045
(10) Connect the hydraulic lines to the actuator.

S 644-024
(11) Lubricate the actuator at the grease fittings.

S 584-025
(12) Remove the bracing from the nose landing gear and lower the nose landing gear to the down and locked position.

S 494-026
(13) Install the downlocks on the nose landing gear (AMM 32-00-20/201).

F. Do a Check of the Actuator for Correct Installation

S 864-027
(1) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 714-028

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON THE MAIN LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. IF THE CONTROL LEVER IS MOVED WITHOUT THE DOWNLOCKS INSTALLED, THE MAIN LANDING GEAR CAN RETRACT AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

WHEN YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR, THE DOORS FOR THE MAIN LANDING GEAR WILL OPEN AND THE TAIL SKID (IF APPLICABLE) WILL RETRACT. IF THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR AND THE TAIL SKID (IF APPLICABLE) IS NOT CLEAR, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Move the control lever for the landing gear from DN to UP three or four times. Then put the lever to the DN position.

S 794-029

(3) Examine the actuator for hydraulic leaks.

S 794-048

(4) Examine the hydraulic swivel fittings on either side of the lock actuator (10) for leaks.

S 094-030

(5) Remove the downlock from the nose landing gear (AMM 32-00-20/201).

S 714-039

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE LANDING GEAR, THE DOORS FOR THE MAIN LANDING GEAR, AND THE TAIL SKID (IF APPLICABLE). THE NOSE LANDING GEAR WILL RETRACT, THE DOORS FOR THE MAIN LANDING GEAR WILL OPEN, AND THE TAIL SKID (IF APPLICABLE) WILL RETRACT WHEN YOU PUT THE CONTROL LEVER IN THE UP POSITION.

(6) Put the control lever for the landing gear to the UP position.

S 714-032

(7) Make sure the nose landing gear retracts and locks in the UP position.

S 714-033

(8) Put the control lever in the DN position.

S 714-034

(9) Make sure the nose landing gear extends and locks in the DN position.

S 494-035
(10) Install the downlock in the nose landing gear (AMM 32-00-20/201).

S 584-036
(11) Lower the airplane nose and remove the jack (AMM 07-11-02/201).

G. Put the Airplane Back to Its Usual Condition

S 614-037
(1) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 864-038
(2) Remove the power from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-040
(3) Remove electrical power if it is not necessary (AMM 24-22-00/201).

NOSE GEAR TRANSFER CYLINDER - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first task removes the transfer cylinder for the nose landing gear. The second task installs the transfer cylinder for the nose landing gear.

TASK 32-34-04-004-001

2. Remove the Transfer Cylinder for the Nose Landing Gear (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zone
          115 NLG Wheel Well (Left)

   C. Prepare for Removal

      S 214-002
      (1) Make sure the that landing gear downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

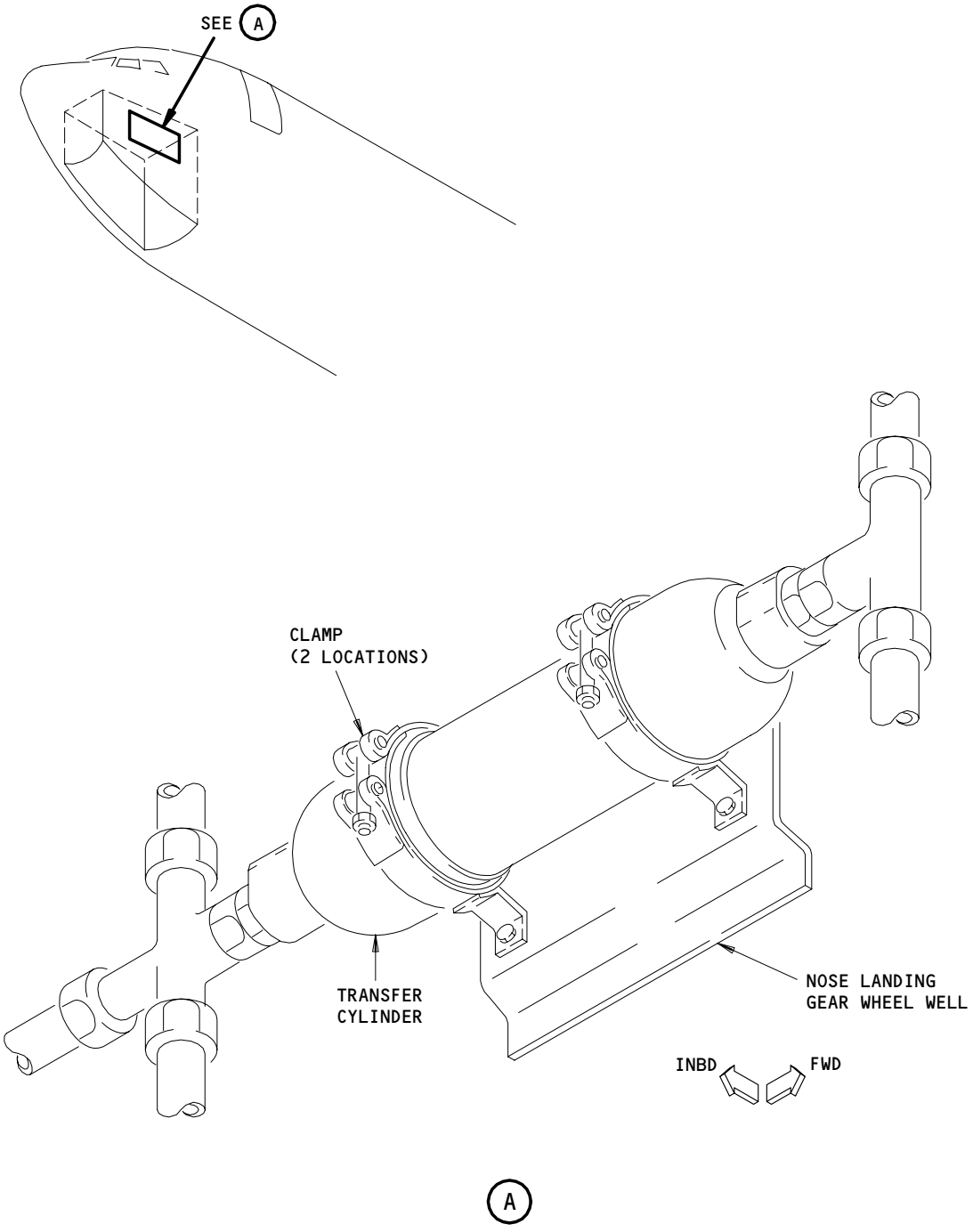
      S 864-003
      (2) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

      S 864-004
      (3) Release the lock on rod 2 of the mechanisms that operate the forward doors for the nose landing gear. Open the forward doors.
   D. Procedure

      S 034-005
      (1) Disconnect the hydraulic lines from the transfer cylinder (Detail A).

      S 494-006
      (2) Install plugs in the lines and fittings.

      S 034-007
      (3) Loosen the clamps on both ends of the transfer cylinder.



Nose Landing Gear Transfer Cylinder Installation
Figure 401

S 024-008
(4) Remove the transfer cylinder.

TASK 32-34-04-404-009

3. Install the Transfer Cylinder for the Nose Landing Gear (Fig. 401)

A. Consumable Materials
(1) D00153 Fluid, Hydraulic - BMS 3-11, Type IV, Class 1

B. References
(1) AMM 12-12-01/301, Hydraulic Systems Servicing
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-20/201, Landing Gear Downlocks

C. Access
(1) Location Zone
115 NLG Wheel Well (Left)

D. Procedure

S 614-010
(1) Fill the transfer cylinder from both ends with hydraulic fluid. Install plugs in the hydraulic fittings.

S 424-011
(2) Put the transfer cylinder in the clamps and tighten the clamps around the cylinder (Detail A).

NOTE: The cylinder is symmetrical and may be installed either way in the system.

S 864-018
(3) Make sure that pressure is removed from the center hydraulic system and hydraulic reservoir. Connect the hydraulic lines to the cylinder.

S 864-012
(4) Pressurize the center hydraulic system (AMM 29-11-00/201).

E. Procedure to Make Sure the Transfer Cylinder is Installed Correctly

S 714-017

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE MAIN LANDING GEAR DOOR AND TAIL SKID (IF APPLICABLE) AREA OF OPERATION. IF THIS AREA IS NOT CLEAR INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Move the control lever for the landing gear from UP to DN two or three times. Return the control lever to DN.

S 214-013

(2) Make sure there are no hydraulic leaks at the transfer cylinder.

S 864-014

(3) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-015

(4) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 864-016

(5) Manually close the forward doors for the nose landing gear.

NOSE WHEEL STEERING DRUM AND LOCKOUT - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the nose wheel steering drum and lockout. The second task installs the nose wheel steering drum and lockout.

TASK 32-34-05-004-001

2. Remove the Nose Wheel Steering Drum and Lockout (Fig. 401)
   A. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   B. Equipment
      (1) Rig Pin from Set A20004-XX (AMM 20-10-24/201):
         (a) NS3 - P/N A20004-16
         (b) NS6 - P/N A20004-19
   C. Access
      (1) Location Zone
         711 Nose Landing Gear (NLG)

   D. Prepare for Removal

      S 214-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-003
      (2) Use the door ground release handle on the mechanism that operates the forward doors for the nose landing gear to open the forward doors.

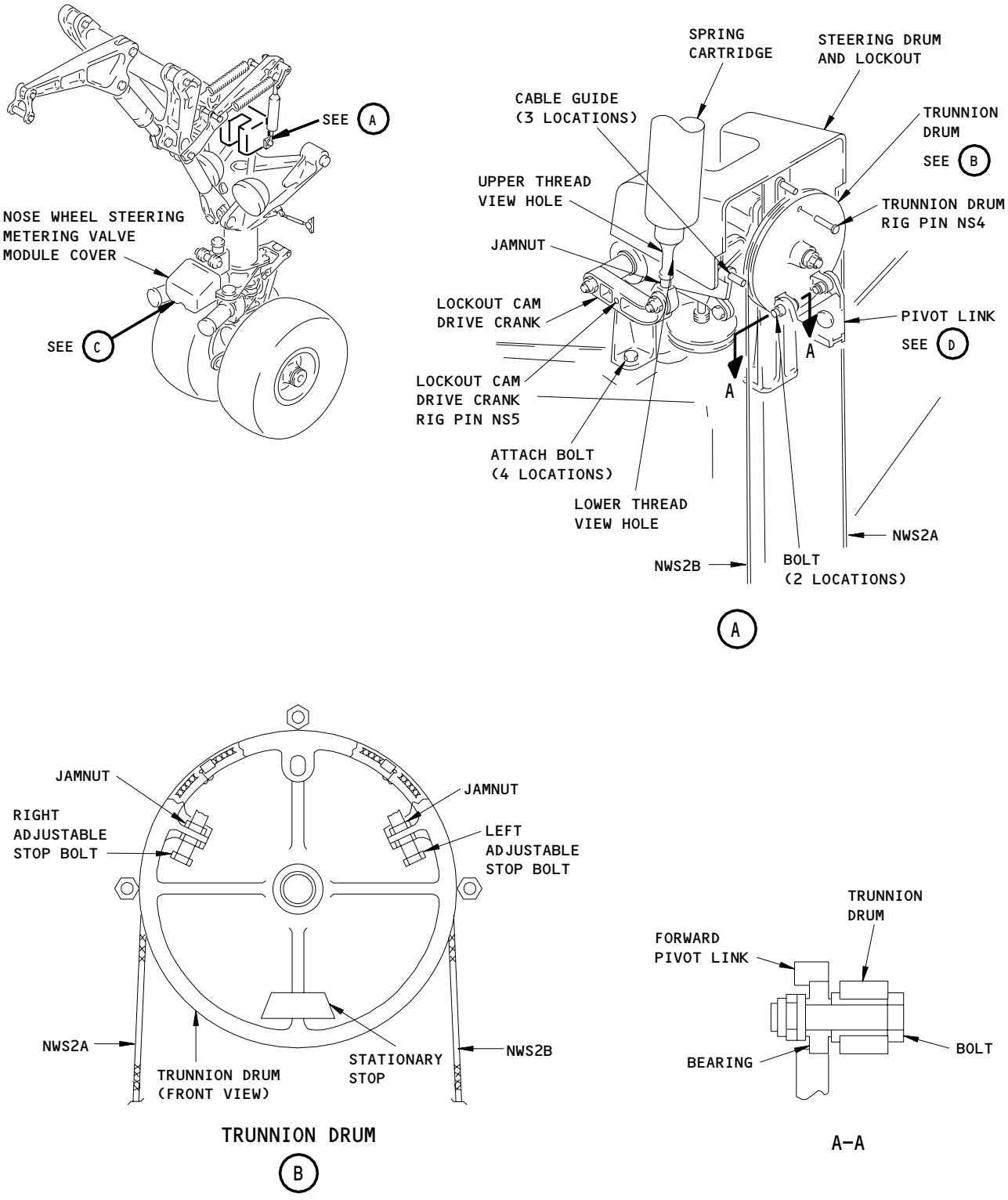
      S 864-004
      (3) Use the Captains' steering tiller to put the nose landing gear in the center position.
   E. Procedure

      S 034-005
      (1) Remove the cover on the metering valve module for the nose wheel steering.

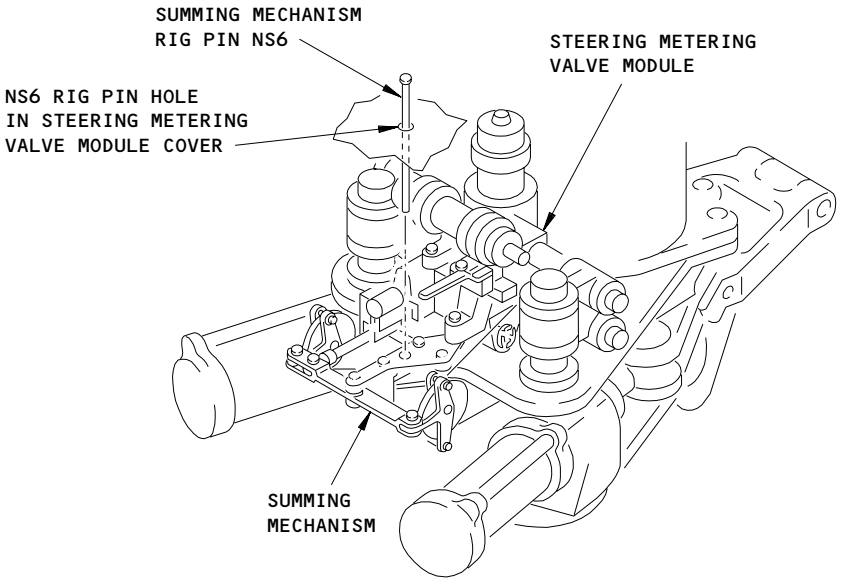
      S 494-006
      (2) Install rig pin NS6 in the summing mechanism (Detail C).

      S 414-007
      (3) Open the main equipment center access door, 119A (AMM 06-41-00/201).

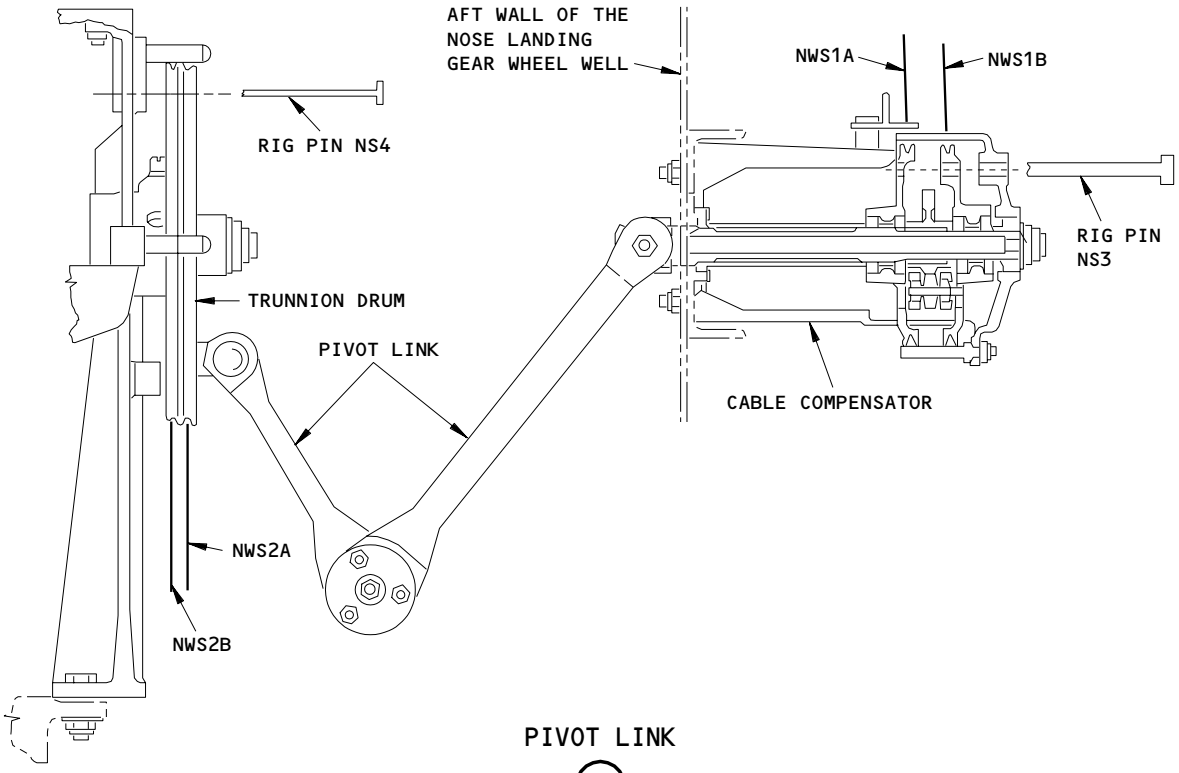
      S 494-008
      (4) Install rig pin NS3 in the cable compensator mechanism.



Nose Wheel Steering Drum and Lockout Installation
Figure 401 (Sheet 1)



C



PIVOT LINK

D

Nose Wheel Steering Drum and Lockout Installation
Figure 401 (Sheet 2)

S 034-009

(5) Remove the cable guides from the trunnion drum support.

S 034-010

(6) Loosen and remove the steering cables NWS2A and NWS2B from the trunnion drum (Detail A).

S 034-011

(7) Remove the bolt to disconnect the rod end of the spring cartridge from the drive crank (Detail A).

S 034-012

(8) Remove the bolts to disconnect the pivot links from the trunnion drum (View A-A). Attach the pivot links to structure.

S 024-013

CAUTION: BE CAREFUL TO PREVENT DAMAGE TO THE AIR VALVE AT THE TOP OF THE SHOCK STRUT.

(9) Remove the bolts that attach the steering drum and lockout to the top of shock strut outer cylinder (Detail A). Remove the steering drum and lockout. Be careful to prevent damage to the air valve.

NOTE: The trunnion drum is removed as part of the steering drum and lockout.

TASK 32-34-05-404-014

3. Install the Nose Wheel Steering Drum and Lockout (Fig. 401)

A. References

(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and 15 Panels

(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

(3) AMM 32-00-20/201, Landing Gear Downlocks

(4) AMM 32-21-11/201, Nose Gear Torsion Links
(5) AMM 32-51-00/501, Nose Wheel Steering System

B. Equipment
(1) Rig Pin from Set A20004-XX (AMM 20-10-24/201):
(a) NS3 - P/N A20004-16
(b) NS4 - P/N A20004-13
(c) NS5 - P/N A20004-18
(d) NS6 - P/N A20004-19
(2) Cable Tensiometer - 0-200-pound range for a 3/32-inch diameter cable (commercially available).
(3) Cord or Rope (used to hold the torsion links of the nose landing gear)
(4) Towing Lever Lockpin - A09003-1

C. Consumable Materials
(1) D00633 Grease - BMS3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

D. Access
(1) Location Zone
711 Nose Landing Gear (NLG)

E. Prepare for the Installation

S 864-028
(1) Make sure the pressure is removed from the center hydraulic system (AMM 29-11-00/201).

S 864-030
(2) Disconnect the torsion links (AMM 29-11-00/201).

F. Steering Drum and Lockout Installation

S 424-015

CAUTION: BE CAREFUL WHEN YOU DO THIS PROCEDURE TO PREVENT DAMAGE TO THE AIR VALVE AT THE TOP OF THE SHOCK STRUT.

(1) Install the bolts that attach the steering drum and lockout to the top of the shock strut outer cylinder (Detail A). Be careful to prevent damage to the air valve.

S 494-016
(2) Put the rig pin NS5 through the drive crank into the lockout structure.

S 824-017
(3) Do the steps that follow to adjust the steering spring cartridge:
(a) Loosen the jamnut on the rod end of the spring cartridge.
(b) Make the spring cartridge rod longer or shorter to align the rod end holes with the drive crank holes, and tighten the jamnut to 270-350 pound-inches. Make sure that sufficient thread is engaged.

S 434-018
(4) Install the bolt, washer, and nut to connect the rod end of the spring cartridge to the drive crank.

S 434-019
(5) Lubricate and install the bolts, bearings, washers, and nuts to connect the pivot links to the trunnion drum (View A-A).

S 494-020
(6) Install the rig pin NS4 in the trunnion drum.

S 434-021
(7) Install the nose wheel steering cables NWS2A and NWS2B. Tighten the cables per Table 401.

Table 401

CABLE	TEMPERATURE (°F)	CABLE TENSION (LB)
NWS2A NWS2B	ALL	60 ±10
NWS1A NWS1B	130	91 ±5
	110	86 ±5
	90	81 ±5
	70	75 ±5
	50	69 ±5
	30	64 ±5
	10	58 ±5
	-10	53 ±5
	-30	47 ±5
	-40	45 ±5

S 084-034
(8) Remove the rig pins NS3, NS4, and NS5. (Make sure that all rig pins fit loosely).

S 824-029

(9) Do the steps that follow to adjust stop bolts for the trunnion drum (Detail B):
   (a) Put the adjustable stop bolts for the trunnion drum in a position to permit the maximum movement of the trunnion drum.
   (b) Put the towing lever, on the metering valve module, to the TOWING position.
   (c) Install the towing lever lockpin.
   (d) Put the steering collar in the center position (+/-1/4 degrees) of the centered position of the nose wheel.
   (e) Manually push the upper torsion link to turn the steering collar 65 +/-1/4 degrees to the right.
   (f) Put the left adjustable stop bolt for the trunnion drum in a position to touch the stationary stop.
      1) Install the lockwire.
   (g) Put the nose wheel steering system to +/-1/4 degrees of the centered position for the nose wheel.
   (h) Turn the steering collar 65 +/-1/4 degrees to the left.
   (i) Put the right adjustable stop bolt for the trunnion drum in a position to touch the stationary stop.
      1) Install the lockwire.
   (j) Center the nose wheels.
   (k) Remove the rig pin NS6 from the summing mechanism.
   (l) Remove the towing lever lockpin.
   (m) Make sure the towing lever automatically goes to the NORMAL position.

S 424-035

(10) Use the tensiometer to make sure the cables NWS2A and NWS2B are tightened per Table 401.

S 424-036

(11) Install and lock the turnbuckle clips.

S 434-023

(12) Install the cable guides (2 places) on the trunnion drum support.

S 494-024

(13) Make sure that all the rig pins can be put in freely.

S 094-025

(14) Remove all the rig pins.

G. Put the Airplane Back to Its Usual Condition

S 864-031
(1) Connect the torsion links (AMM 32-21-11/201).

S 414-033
(2) Install the cover for the summing mechanism.

S 214-032
(3) Make sure the not compressed sensors and targets for the nose landing gear are not damaged.

S 864-026
(4) Manually close the forward doors for the nose landing gear.

NOSE WHEEL STEERING DRUM AND LOCKOUT - INSPECTION/CHECK

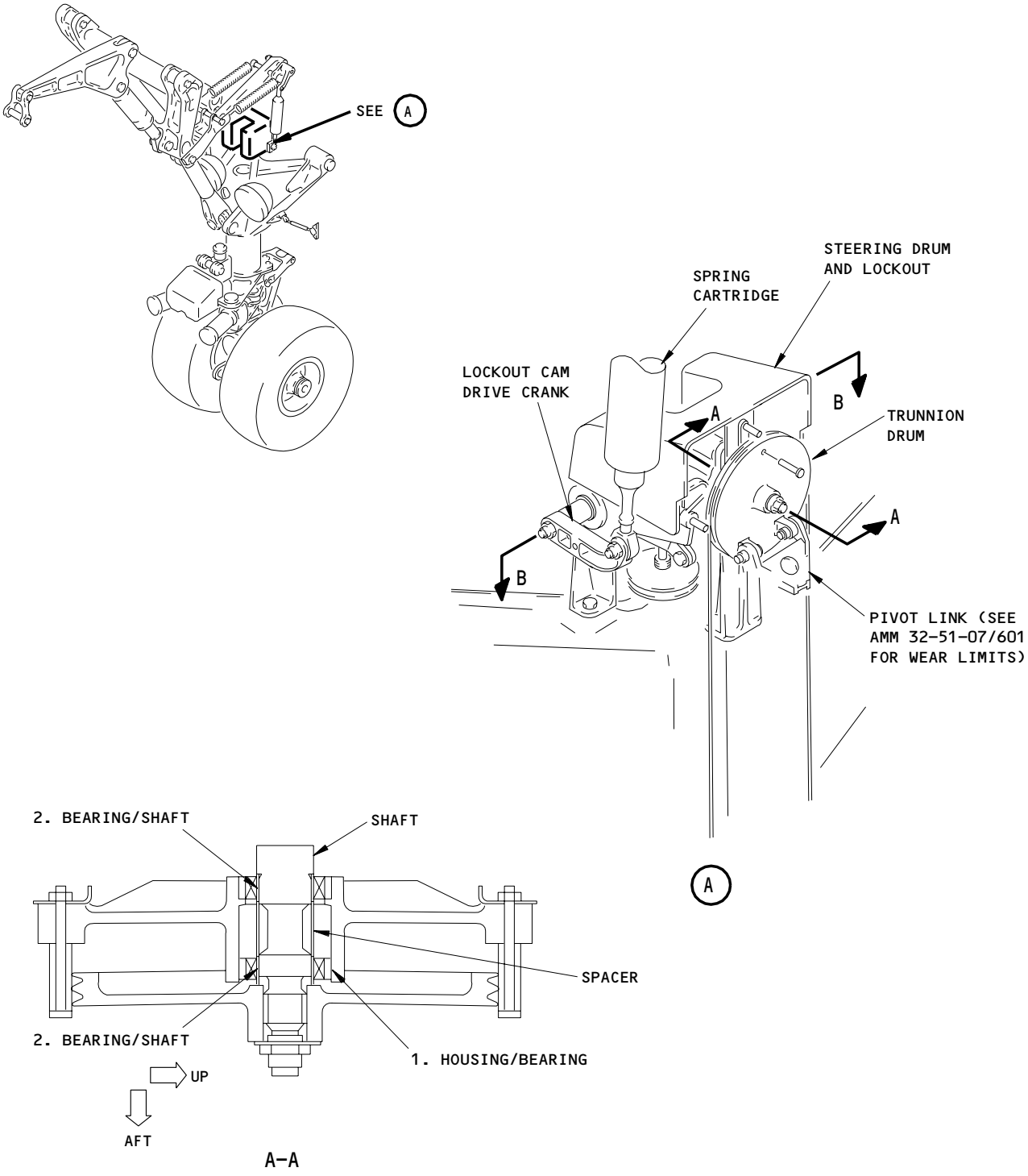
1. General
   A. This procedure only has illustrations and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Nose Wheel Steering Drum and Lockout - Removal/Installation for procedures to do these tasks.

TASK 32-34-05-206-001

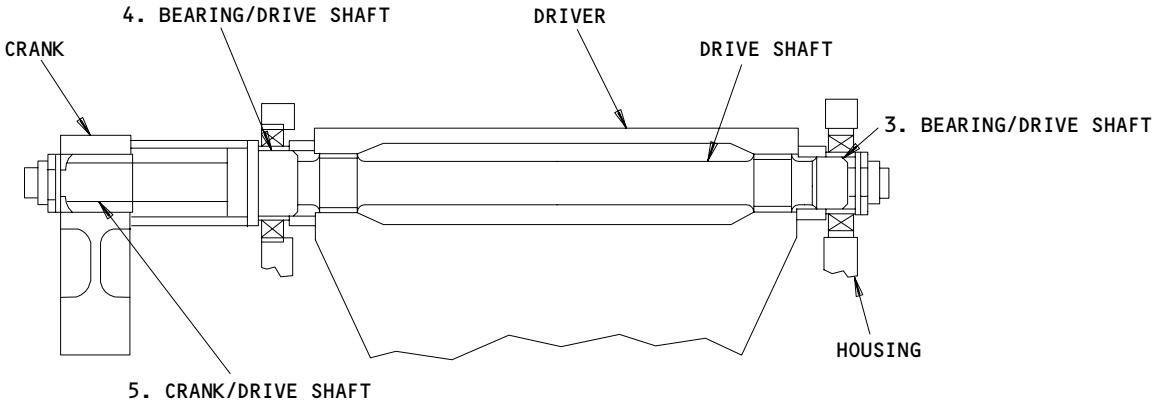
2. Nose Wheel Steering Drum and Lockout Wear Limits (Fig. 601)

   NOTE: Wear limits for other components that are connected to the steering drum are included in the applicable Maintenance Manual subject for those components.

   A. General
      (1) This procedure only has illustrations and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Nose Wheel Steering Drum and Lockout - Removal/Installation for procedures to do these tasks.



Nose Wheel Steering Drum and Lockout Wear Limits
Figure 601 (Sheet 1)



B-B

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR.
			DIAMETER		ALLOWED WEAR DIM.	MAX DIAM CLEAR-ANCE			
			MIN	MAX					
1	HOUSING	ID	1.7500	1.7510	1.7546	0.0046		X	1
	BEARING	OD	1.7490	1.7500	1.7464		X		
2	BEARING	ID	0.9990	1.0000	1.0025	0.0035	X		
	SHAFT	OD	0.9985	0.9990	0.9965			X	1
3	BEARING	ID	0.7495	0.7500	0.7522	0.0027	X		
	DRIVE SHAFT	OD	0.7490	0.7495	0.7473			X	1
4	BEARING	ID	0.9990	1.0000	1.0025	0.0035	X		
	DRIVE SHAFT	OD	0.9985	0.9990	0.9965			X	1
5	CRANK/DRIVE					0.0052		X	1
	SHAFT SPLINE					2		X	1

1 YOU CAN REPAIR THE PART; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR INSTRUCTIONS

2 MAXIMUM SPLINE TOOTH CLEARANCE

Nose Wheel Steering Drum and Lockout Wear Limits
Figure 601 (Sheet 2)

285980

NOSE WHEEL STEERING SPRING CARTRIDGE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the spring cartridge for the nose wheel steering. The second task installs the spring cartridge.

TASK 32-34-06-004-001

2. Remove the Spring Cartridge for the Nose Wheel Steering (Fig. 401)
   A. References
      (1) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zone
          115 NLG Wheel Well (Left)

   C. Prepare for Removal

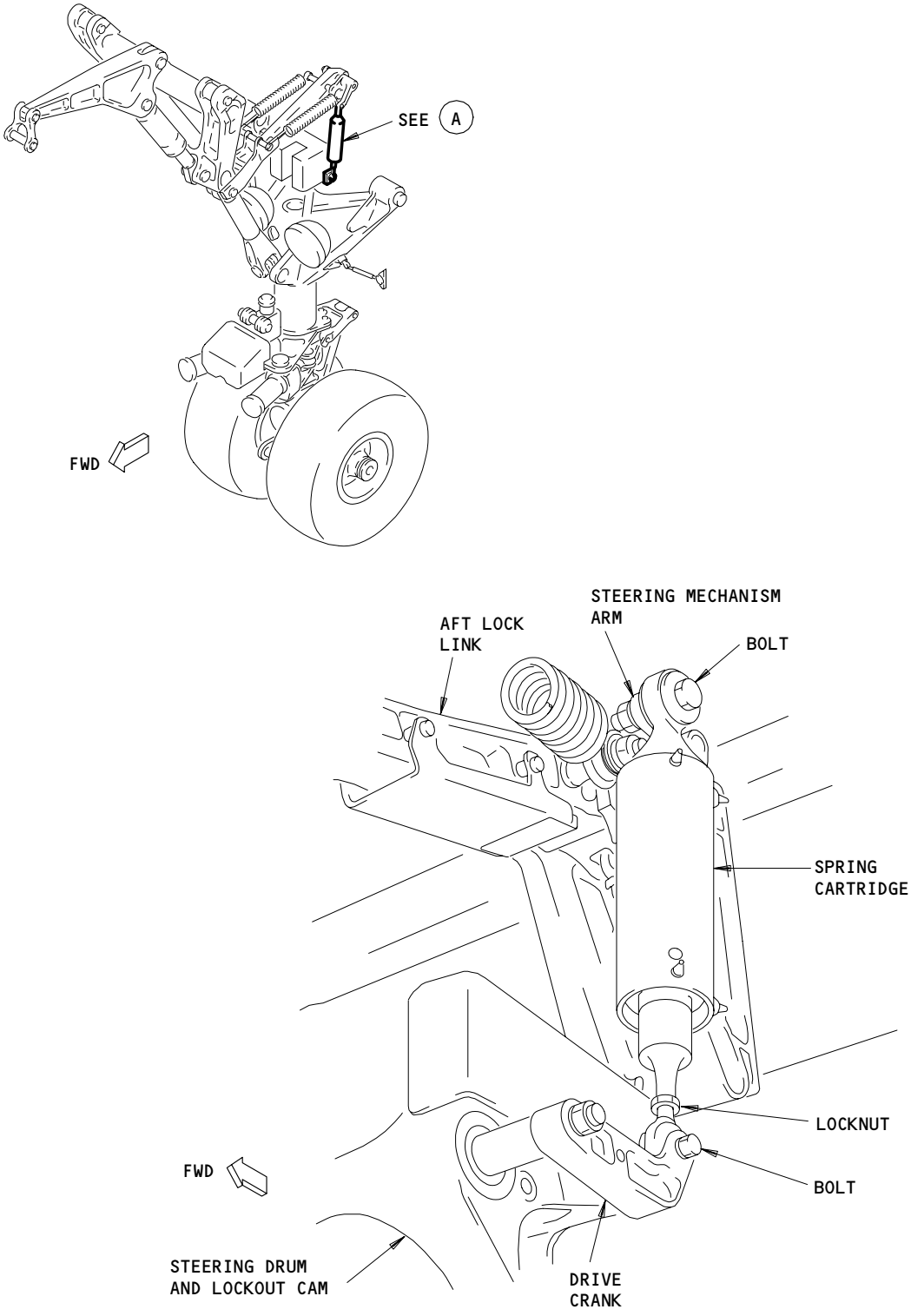
      S 214-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-003
      (2) Release the lock on rod 2 of the mechanisms that operate the forward doors for the nose landing gear. Open the forward doors.
   D. Procedure

      S 034-004
      (1) Remove the bolt to disconnect the rod end of the spring cartridge from the drive crank (Detail A).

      NOTE: The spring cartridge is under no external load when the landing gear is in the down and locked position.

      S 024-005
      (2) Remove the bolt to disconnect the end cap of the spring cartridge from the steering mechanism arm.



Nose Wheel Steering Spring Cartridge Installation
Figure 401

S 024-013
(3) Remove the spring cartridge.

TASK 32-34-06-404-006
3. Install the Spring Cartridge for the Nose Wheel Steering (Fig. 401)
A. Equipment
(1) Rig pin from set A20004-XX (AMM 20-10-24/201).
(a) NS5 - P/N A20004-18

B. Access
(1) Location Zone
115 NLG Wheel Well (Left)

C. Procedure

S 434-007
(1) Install the bolt, washers, and nut to connect the end cap of the spring cartridge to the steering mechanism arm. Install large washers on each side of the end cap (Detail A).

S 494-008
(2) Install the rig pin NS5 to put the drive crank in the correct position.

S 824-009
(3) Loosen the locknut on the rod end of the spring cartridge.

S 824-014
(4) Adjust the length of the rod to align the holes in the cartridge rod end and the drive crank.

S 434-015
(5) Tighten the locknut.

S 434-010
(6) Install the bolt, washer, and nut to connect the rod end of the cartridge to the drive crank.

S 094-011
(7) Remove the rig pin NS5.

S 864-012
(8) Manually close the forward doors for the nose landing gear.

NOSE GEAR PRIORITY VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first task removes the priority valve for the nose landing gear. The second task installs the priority valve for the nose landing gear.

TASK 32-34-07-004-001

2. Remove the Priority Valve for the Nose Landing Gear (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zone
          115 NLG Wheel Well (Left)

   C. Prepare for Removal

      S 214-002
      (1) Make sure the that landing gear downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-003
      (2) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

      S 864-004
      (3) Release the lock on rod 2 of the mechanisms that operate the forward doors for the nose landing gear. Open the forward doors.
   D. Procedure

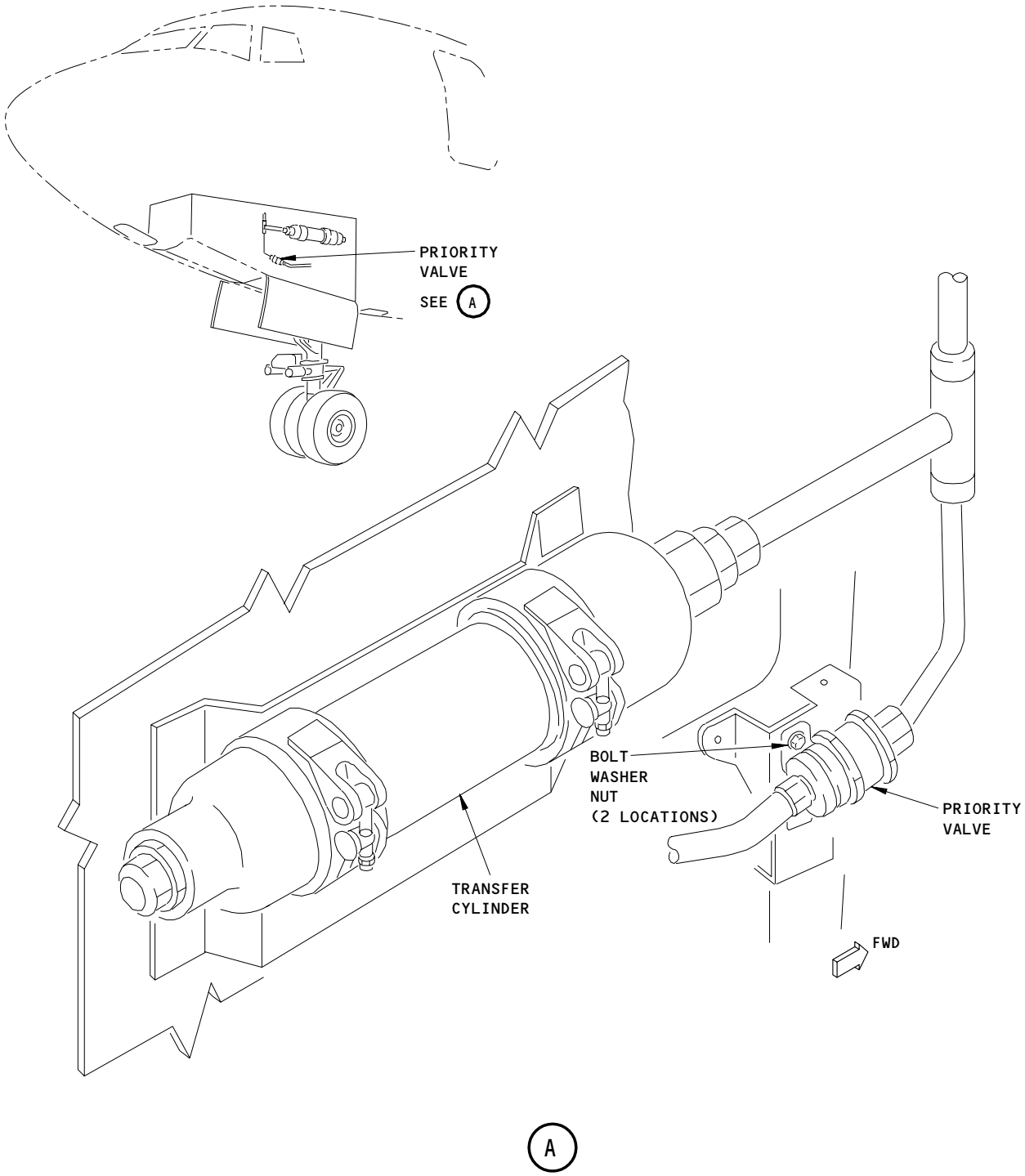
      S 024-019
      (1) Disconnect the hydraulic lines from the priority valve.

      S 484-020
      (2) Install plugs in the lines and fittings.

      S 024-023
      (3) Remove the bolts, washers, and nuts that attach the clamp to the structure.

      S 024-021
      (4) Remove the clamp from the priority valve.

      S 024-008
      (5) Remove the priority valve.



Nose Landing Gear Priority Valve Installation
Figure 401

TASK 32-34-07-404-009

3. Install the Priority Valve for the Nose Landing Gear (Fig. 401)

A. Consumable Materials

(1) D00153 Fluid, Hydraulic - BMS 3-11, Type IV, Class 1

B. References

(1) AMM 12-12-01/301, Hydraulic Systems Servicing
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-20/201, Landing Gear Downlocks

C. Access

(1) Location Zone
115 NLG Wheel Well (Left)

D. Procedure

S 424-011

(1) Put the priority valve and the clamp in position and install the bolts, washers, and nuts to attach it to the structure.

NOTE: The valve is not symmetrical and can only be installed in one direction in the system.

S 864-012

(2) Make sure that pressure is removed from the center hydraulic system and hydraulic reservoir.

S 424-022

(3) Remove the plugs from the hydraulic fittings and connect the hydraulic lines to the valve.

S 864-013

(4) Pressurize the center hydraulic system (AMM 29-11-00/201).

E. Procedure to Make Sure the Priority Valve is Installed Correctly

S 714-014

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE MAIN LANDING GEAR DOOR AND TAIL SKID (IF APPLICABLE) AREA OF OPERATION. IF THIS AREA IS NOT CLEAR INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Move the control lever for the landing gear from UP to DN two or three times. Return the control lever to DN.

S 214-015
(2) Make sure there are no hydraulic leaks at the priority valve.

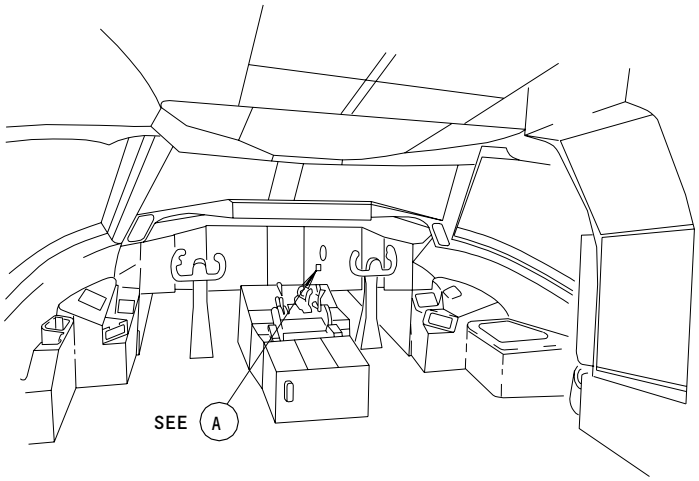
S 864-016
(3) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).

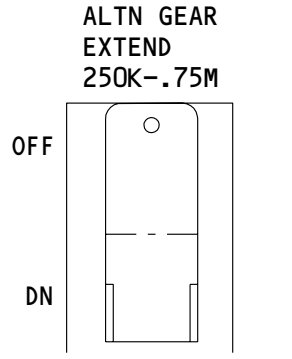
S 864-017
(4) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 864-018
(5) Manually close the forward doors for the nose landing gear.

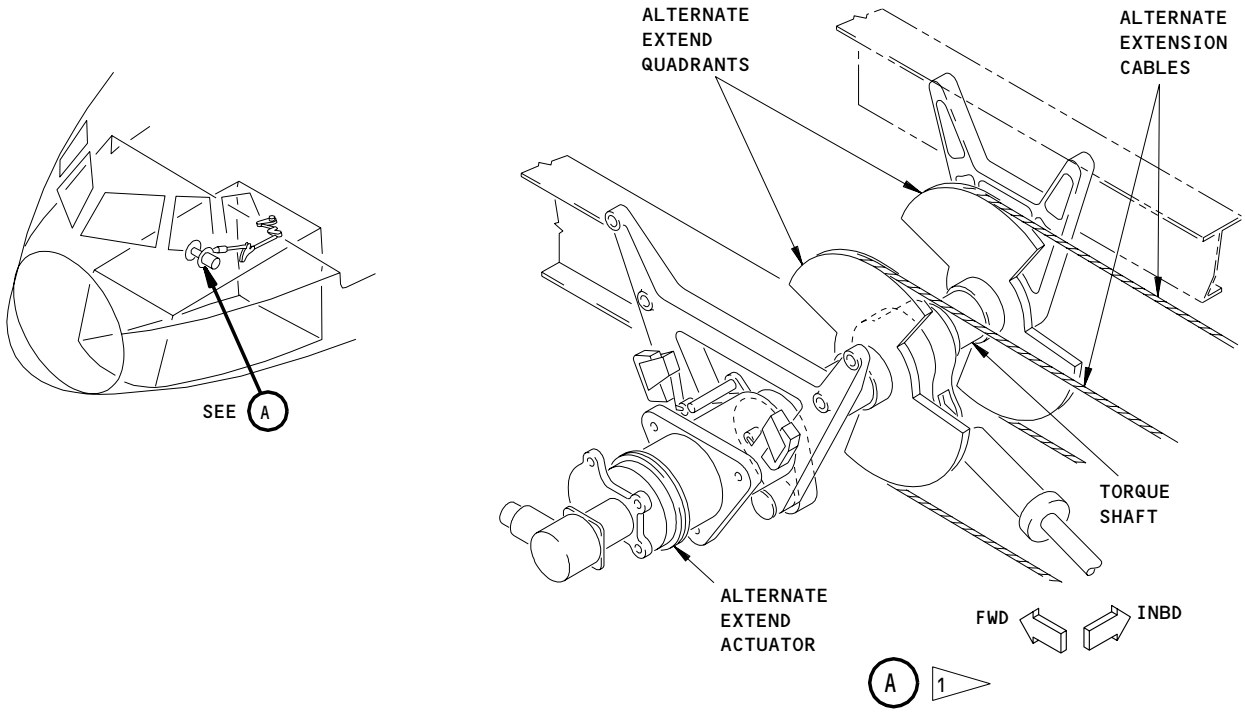
LANDING GEAR ALTERNATE EXTEND SYSTEM - DESCRIPTION AND OPERATION

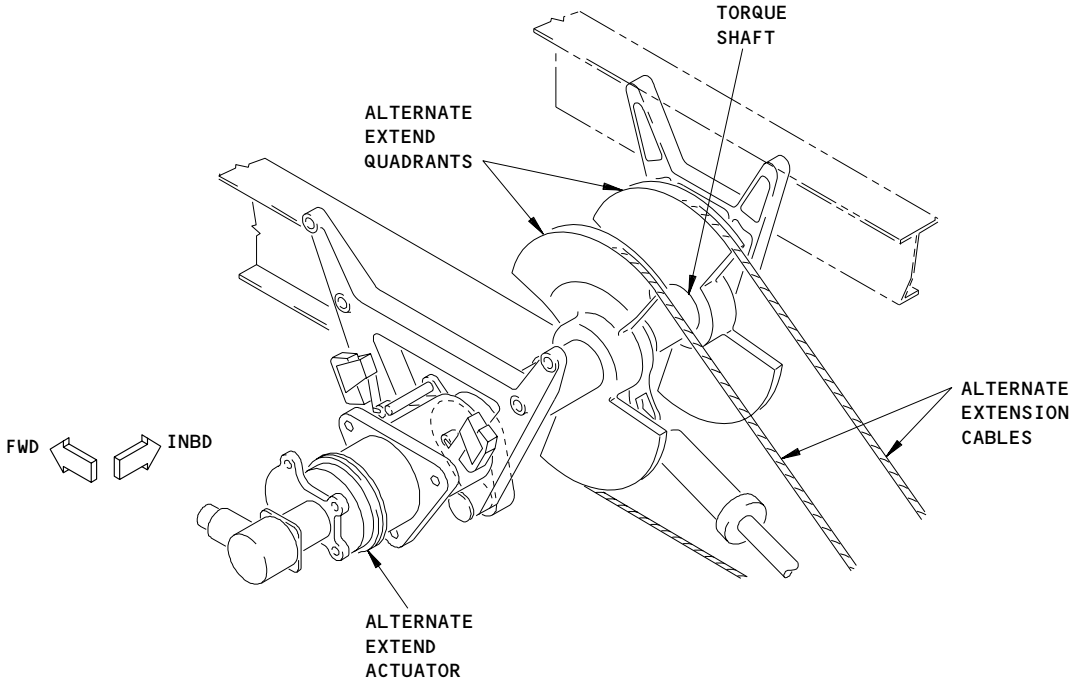
1. General
   A. The landing gear can be extended in case of a hydraulic failure with an electrical/mechanical system. The alternate extend system simultaneously releases the left and right main gear doors and the nose gear, allowing all three gears to free fall to the down-and-locked position. If any gear is jammed in the retracted position, the other gears can still be extended.
   B. The main gear doors can be opened during ground maintenance using a mechanical system. The doors are operated separately using individual door ground release levers located aft of each main gear door.
2. Component Details
   A. Landing Gear Alternate Extend System
      (1) Alternate Extension Select Switch (Fig. 1)
         (a) The alternate extension select switch is a toggle switch which has a guard that covers it when not in use. The switch is located below the landing gear control lever on the pilots' center instrument panel, P3, in the flight compartment.
         (b) This switch initiates the alternate extension cycle. When the switch is moved to DN, electrical power is supplied to the alternate extend actuator.
      (2) Alternate Extend Actuator and Quadrants (Fig. 2).





Alternate Extension Select Switch
Figure 1





1 NON-OFFSET ALTERNATE EXTEND QUADRANTS
2 OFFSET ALTERNATE EXTEND QUADRANTS

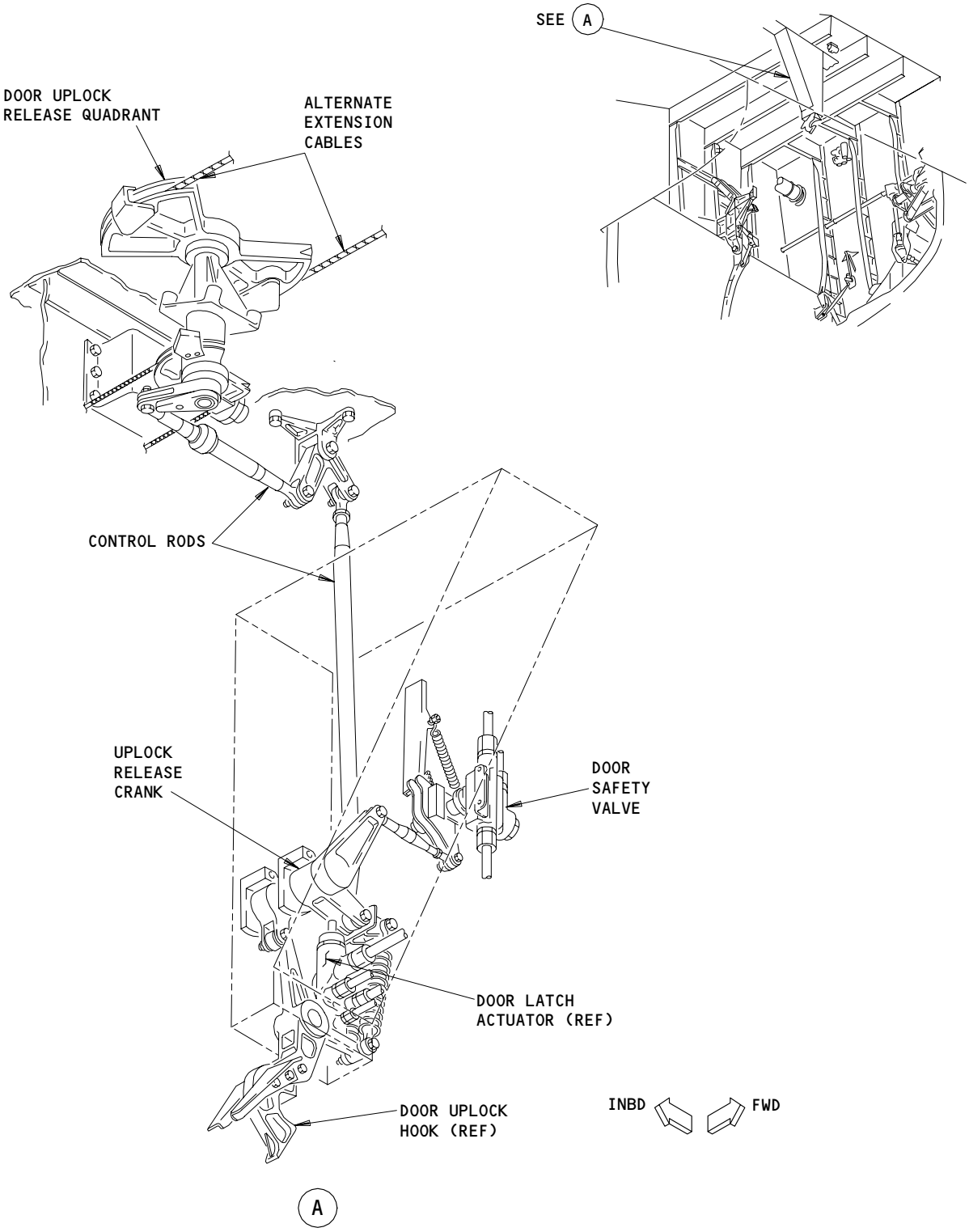
Alternate Extend Actuator and Quadrant
Figure 2

(a) The actuator is located under the flight compartment floor and is attached to a torque shaft. During alternate gear extension the actuator operates off emergency power to rotate the torque shaft.
(b) The torque shaft contains two quadrants, and a mechanical link to the nose gear.
(c) The quadrants, one for each main gear, operate control cables running aft to the main gear uplock release quadrants.

(3) Main Gear Door Uplock Release Quadrant (Fig. 3).
(a) A housing bolted to the wheel well pressure deck supports the door uplock release quadrant and shaft. Both the uplock release quadrant and the uplock release ground quadrant are mounted independently on the same shaft. The main gear alternate extend cables running from the alternate extend quadrant connect to this quadrant. During alternate extension, the cables rotate the quadrant which, in turn, moves the linkages to the door uplock mechanism in each main wheel well.
(b) This quadrant is located above the wheel well ceiling directly above the door arming lockout actuator and door uplock release ground quadrant.

(4) Uplock Release Crank (Fig. 3)
(a) The uplock release crank is part of the door uplock release mechanism. The crank is linked to the uplock release and uplock release ground quadrants shaft and also to the door safety valve. Motion from the alternate extension cables or door ground release cables, transmitted through the respective quadrants, rotates the crank. A roller contacts and moves the door uplock hook to release the main gear door. Movement of the crank also repositions the door safety valve.

(5) Door Safety Valve (Fig. 3)
(a) The door safety valve is a two-position valve which is installed in the door actuator close line to prevent inadvertent closing of the main gear door. The valve allows free flow of hydraulic fluid to the door actuator during normal extension. During alternate extension or door ground release, the valve is mechanically positioned to block the door close line leading from the sequence valve to the door actuator and open the close line from the door actuator to return. This positioning ensures that no hydraulic fluid will be trapped in the hydraulic line to hinder door opening, and also, no hydraulic pressure will be applied to the door actuator to arm the door for closing without actually closing the door.



Main Gear Door Uplock Release
Figure 3

(6) Alternate Extend Load Limiters (Fig. 4)

(a) The main and nose gear alternate extend load limiters are crush-core cartridges which fail when an excessive amount of force is applied due to damage or binding in the system. This failure prevents damage to the other major system components and allows unlocking of those gears which are not bound up.

(b) The nose gear load limiter is installed in the linkage from the alternate extend quadrants to the nose gear alternate extend roller. The main gear load limiters are installed in the alternate extension cables. Both nose and main load limiters are accessed in the E/E bay.

B. Door Ground Release System

(1) Door Ground Release Lever and Quadrant (Fig. 5)

(a) The main gear door ground release levers are located aft of each wheel well, in clear view of the wheel well area. Pulling down on a lever rotates the ground release quadrant fixed to the airplane structure.

(b) The lever consists of a handle and a detented plate with a latch lever which holds the handle in position. A safety pin which locks the handle can only be installed when the handle is in the completely stowed position or pulled out into the green SAFE zone on the safety placard.

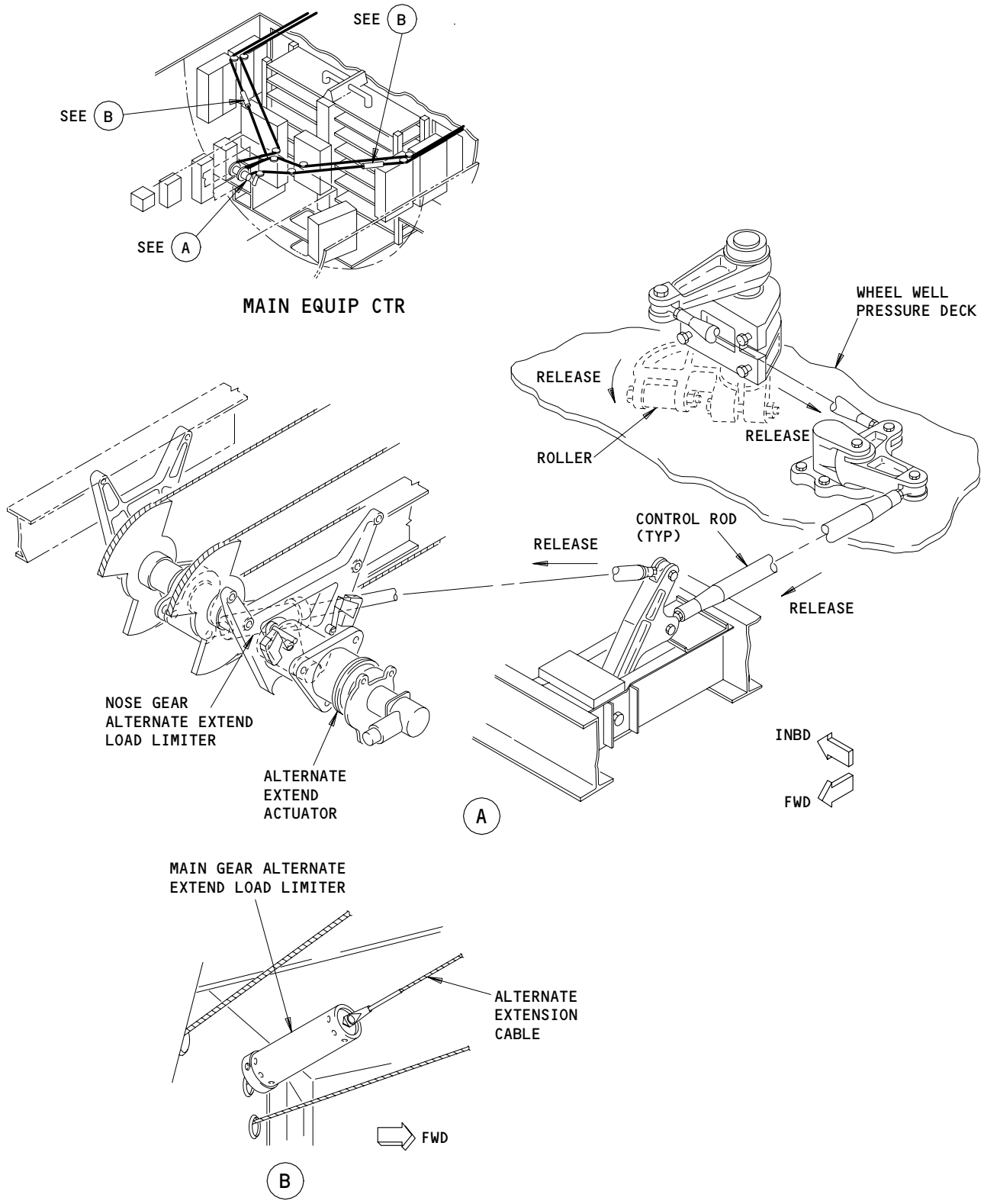
(2) Uplock Release Ground Quadrant (Fig. 6)

(a) The uplock release ground quadrant is located on the ceiling of the main wheel well on the same shaft as the uplock release quadrant. The door ground release cables connect to this quadrant. During door ground release, the cables rotate the quadrant which, in turn, moves the linkages to the door uplock release mechanism in the same manner that alternate extension does.

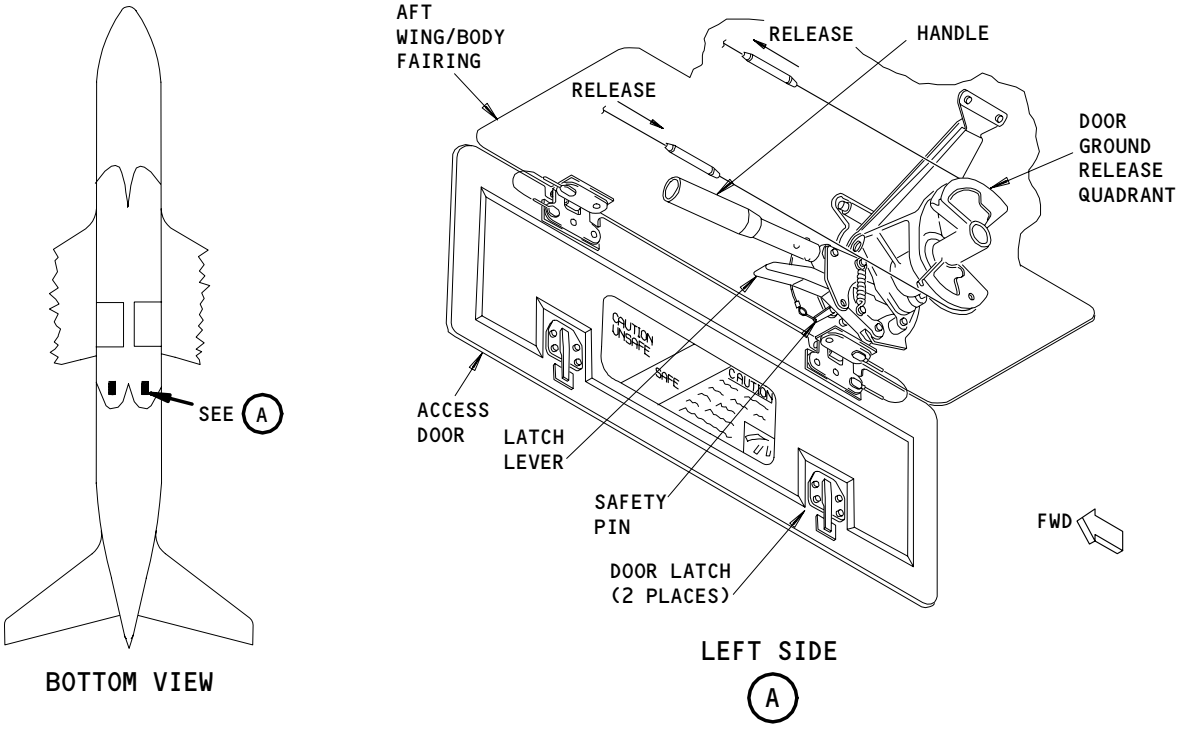
(b) When rotated to unlock the door, a spring-loaded lockout pawl engages in the detent on the ground quadrant. This locks the quadrant and prevents the ground release lever from being stowed without hydraulic pressure available to close the doors.

(3) Door Arming Lockout Actuator (Fig. 6)

(a) The door arming lockout actuator is a double-acting hydraulic piston-type actuator. This actuator is spring-loaded to return to the retracted position when no hydraulic pressure is applied. The actuator extends to release the lockout pawl from the detent in the door uplock release ground quadrant, thus allowing the door ground release lever to be stowed to close the door.



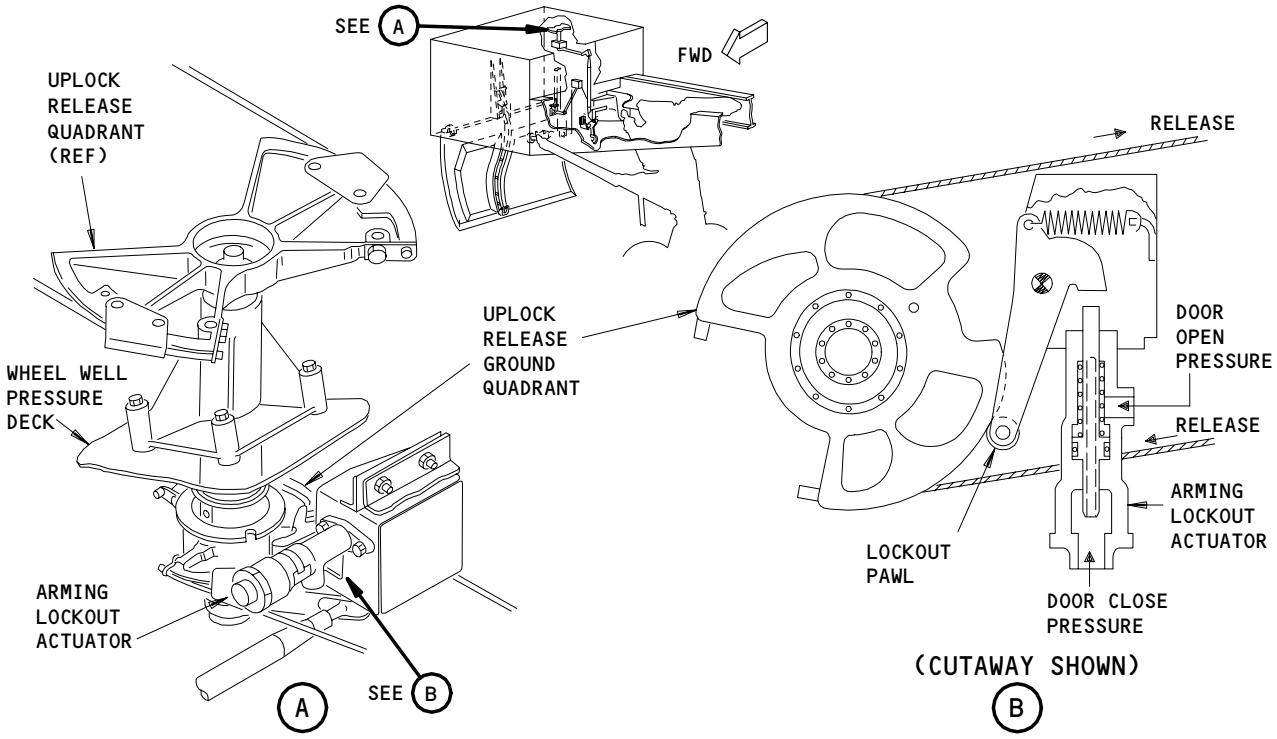
Nose and Main Gear Alternate Extend Load Limiters
Figure 4



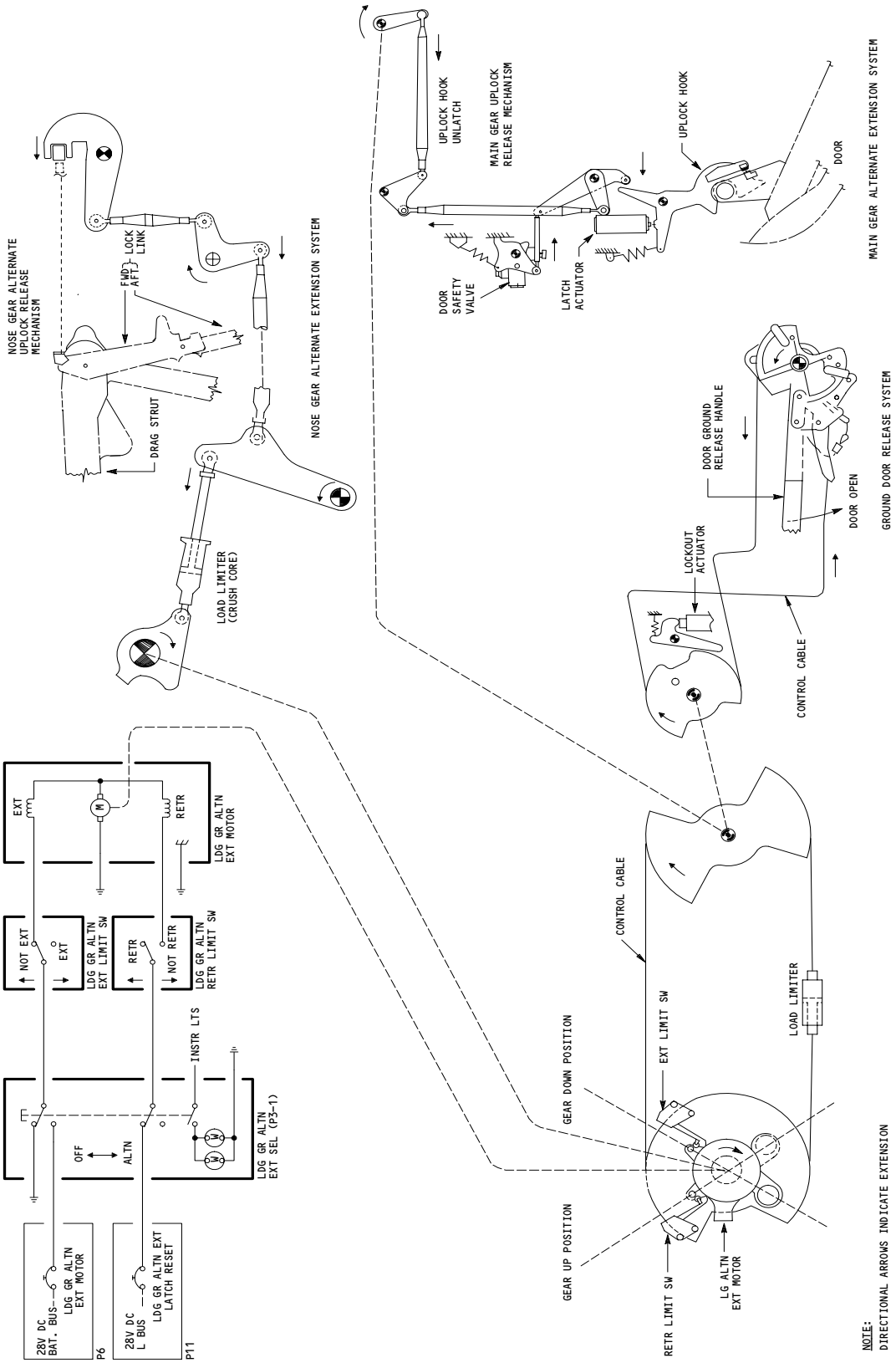
Main Gear Door Ground Release Lever and Quadrant
Figure 5

(b) The lockout actuator is located on the ceiling of the main wheel well next to the ground quadrant.

3. Operation (Fig. 7)
   A. Functional Description
      (1) Main Gear Alternate Extension
         (a) Moving the alternate extend switch operates an electric actuator located below the flight deck. The actuator rotates the alternate extend quadrants which pull cables that run aft to the uplock release quadrant. The cables rotate the uplock release quadrant and initiate the main gear door unlatching sequence.



Uplock Release Ground Quadrant and Arming Lockout Actuator
Figure 6



Landing Gear Alternate Extension Schematic
Figure 7

(b) The uplock release crank releases the door uplock hook and actuates the door safety valve to depressurize the door actuator. Once the uplock hook unlatches, the door opens and the gear free falls to the down and locked position.

(2) Nose Gear Alternate Extension

(a) The same switch that operates the main gear also operates the nose gear. When the electric actuator rotates, it operates a series of rods and cranks to push against the nose gear lock link.

(b) The lock link is forced out of the locked position. The weight of the gear pushes the door-operating mechanism rods to open the doors as the gear free falls to the down and locked position.

LANDING GEAR ALTERNATE EXTEND SYSTEM - ADJUSTMENT/TEST

1. General
   A. This procedure has these tasks for the alternate extension system for the landing gear:
      (1) An Operational Test
      (2) An Adjustment
      (3) A System Test.
   B. During the adjustment and the test of the alternate extend system, the motor for the alternate extend actuator has a limit of 2 cycles. Then, the unit must not operate for 10 minutes to permit it to become cool.
   C. Whenever an alternate extension has been performed make sure the load limiter clearances agree with Figure 503 and Figure 504. Replace the load limiter if the clearance is not in these limits (AMM 32-35-14/401 or AMM 32-35-15/401). If you replace the load limiter cartridges, do the test of the alternate extend system for the landing gear.

TASK 32-35-00-715-001

2. Operational Test - Alternate Extend System for the Landing Gear
   A. General
      (1) This procedure does an operational check of the alternate extend system for the nose and main landing gear. The airplane does not have to be lifted on jacks to do this test.
   B. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 24-22-00/201, Electrical Power - Control
      (3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-35-14/401, Main Gear Alternate Extend Load Limiter
      (6) AMM 32-35-15/401, Nose Gear Alternate Extend Load Limiter
   C. Equipment
      (1) Go/No Go Pins
          Go - 0.0185-0.0195 inch diameter
          No Go - 0.1045-0.1055 inch diameter
   D. Access
      (1) Location Zones

115	NLG Wheel Well (Left)
116	NLG Wheel Well (Right)
119	Main Equipment Center (Left)
120	Main Equipment Center (Right)
211	Control Cabin (Left)
212	Control Cabin (Right)

(2) Access Panel
119AL Main Equipment Center

E. Prepare for the Operational Test

S 495-002
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 865-003
(2) Supply electrical power (AMM 24-22-00/201).

S 865-004
(3) Put the control lever for the landing gear in the OFF position and attach a DO-NOT-OPERATE tag.

S 225-005
(4) Make sure the load limiter clearances agree with Fig. 503 and Fig. 504 (Figures 503 and 504 are located in TASK 32-35-00-825-019, Adjustment-Alternare Extend System for the Landing Gear). Replace the load limiter if any portion protruding from the cartridge is colored red or if the clearance is not in these limits (AMM 32-35-14/401 or AMM 32-35-15/401). If you replace the load limiter cartridges, start the operational test again.

S 945-006
(5) Put a person near the nose landing gear to monitor the alternate extension roller.

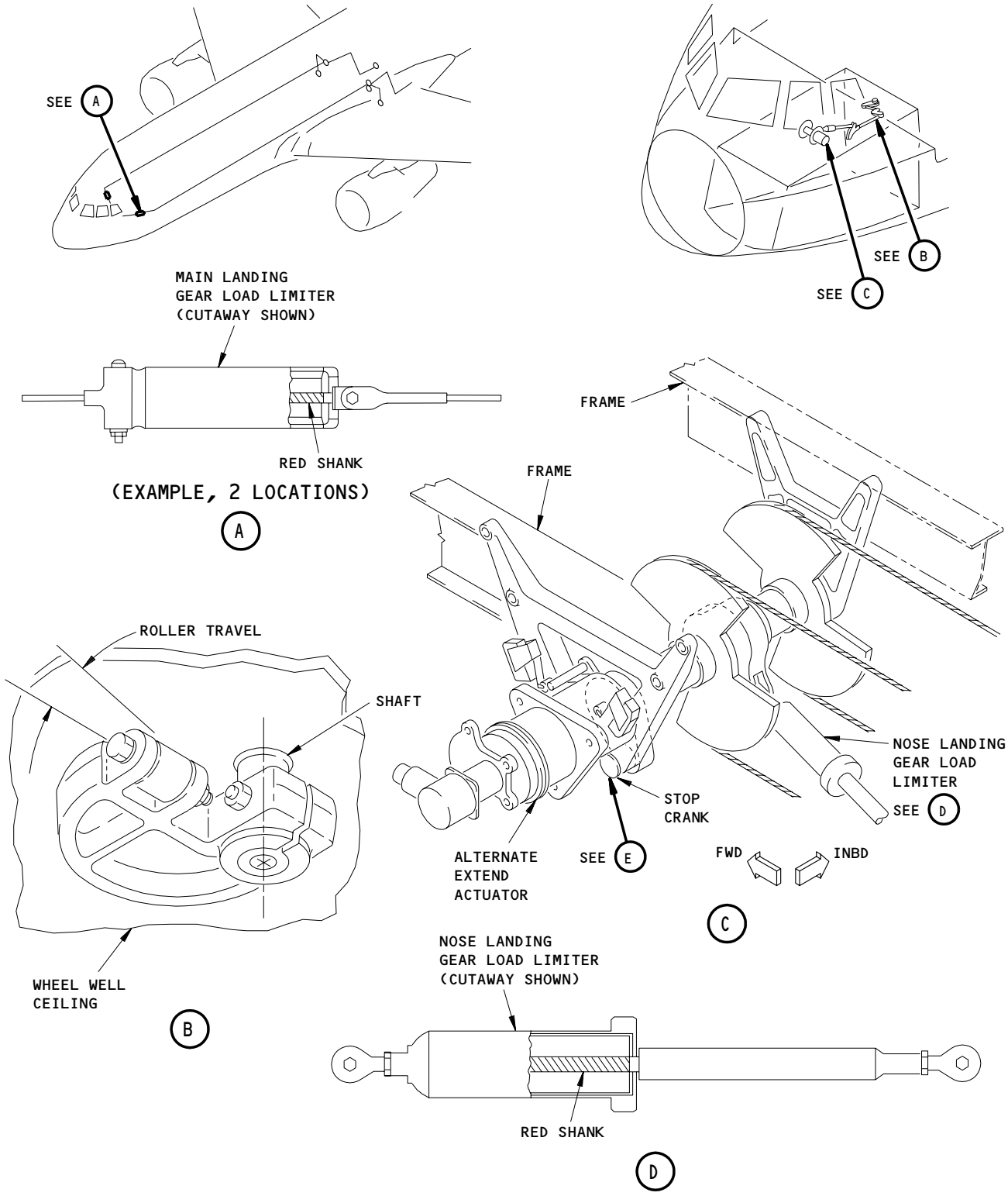
S 865-318
(6) 767-300 AIRPLANES;
Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
(a) 11U26, TAIL SKID CONT

F. Do the Operational Test for the Alternate Extension System

S 715-007

WARNING: MAKE SURE THAT PERSON AND EQUIPMENT STAY CLEAR OF THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Move the ALTN GEAR EXTENSION switch, on the panel P3, to the DN position, and make sure these conditions occur:
(a) The alternate extension roller for the nose landing gear (Detail B, Fig. 501) turns.
(b) The doors for the main landing gear open.



Alternate Extend System Operational Test
Figure 501 (Sheet 1)

S 015-008

(2) Get access to the alternate extend actuator and load limiters, in the electrical/electronics bay, through the panel 119AL (AMM 06-41-00/201).

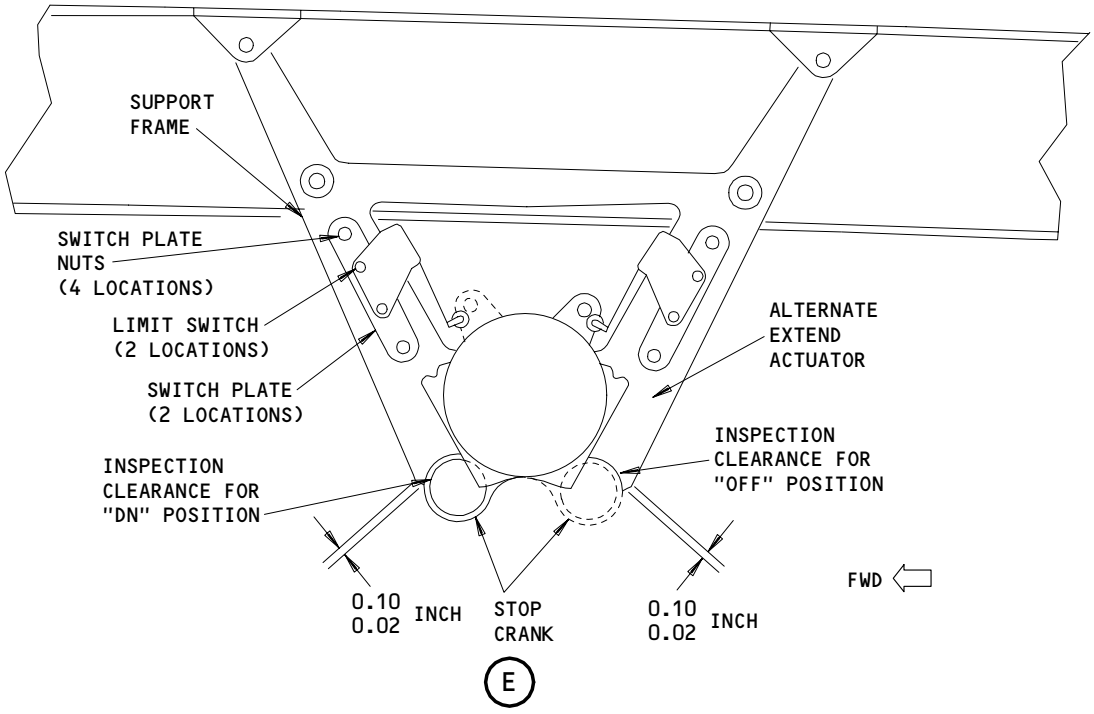
S 715-009

(3) Make sure the clearance between the stop crank and the frame is in the permitted tolerance as shown (Detail E, Fig. 501, Sheet 2). This will show that the actuator moved the full travel to the DN position.

NOTE: You can use the Go/No Go pins as an accurate tool to measure the clearance quickly if it is necessary.

S 225-010

(4) Make sure the load limiter clearances agree with Fig. 503 and Fig. 504 (Figures 503 and 504 are located in TASK 32-35-00-825-019, Adjustment-Alternate Extend System for the Landing Gear). Replace the load limiter if any portion protruding from the cartridge is colored red or if the clearances are not in these limits (AMM 32-35-14/401 or AMM 32-35-15/401). If you replace the load limiter cartridges, start the operational test again.



Alternate Extend System Operational Test
Figure 501 (Sheet 2)

S 715-011

CAUTION: DO NOT OPERATE THE NORMAL EXTENSION AND RETRACTION SYSTEM FOR AT LEAST 70 SECONDS AFTER YOU MOVE THE ALTN GEAR EXTENSION SWITCH TO THE OFF POSITION. THIS IS NECESSARY TO PERMIT THE ALTERNATE EXTEND SYSTEM TO SET AGAIN AND PREVENT DAMAGE TO THE SYSTEM COMPONENTS.

(5) Put the ALTN GEAR EXTENSION switch to the OFF position.

S 715-012

(6) Make sure the roller for alternate extension of the nose landing gear goes to the usual position.

NOTE: The alternate extension system is set again when you move the ALTN GEAR EXTENSION switch to the OFF position.

S 715-013

(7) Make sure the clearance between the stop crank and the frame is in the permitted tolerance as shown (Detail E, Fig. 501). This will show that the actuator moved the full travel to the OFF position.

NOTE: You can use the Go/No Go pins as an accurate tool to measure the clearance quickly if it is necessary.

S 865-293

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID (IF APPLICABLE). THE TAIL SKID (IF APPLICABLE) WILL EXTEND WHEN HYDRAULIC PRESSURE IS APPLIED AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 865-015

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(9) 767-300 AIRPLANES;
Remove the DO-NOT-CLOSE tag and close this circuit breaker on the overhead circuit breaker panel, P11:
(a) 11U26, TAIL SKID CONT

S 865-320
(10) Remove the DO-NOT-OPERATE tag from the control lever for the landing gear.

S 865-016
(11) Move the lever to the DN position to close the doors for the main landing gear.

S 865-017
(12) Remove the pressure from the center hydraulic system (AMM 29-11-00/201) if it is not necessary.

S 865-018
(13) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-35-00-825-019

3. Adjustment - Alternate Extend System for the Landing Gear

A. General

(1) Use this procedure to adjust the components of the alternate extend system that follow:
(a) Alternate extend actuator
(b) Alternate extend for the nose landing gear
(c) Uplock release for the main landing gear
(d) Alternate extend cables
(e) The cables for door ground release.

B. References

(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(4) AMM 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-00-20/201, Landing Gear Downlocks

C. Equipment

(1) Rig Pins from Kit A20004-XX (AMM 20-10-24/201):
(a) LGA1 - P/N A20004-15
(b) LGA3 - P/N A20004-20
(c) LGA4 - P/N A20004-14
(2) Rigging Block - 0.424 ±0.001 inch
(3) Go/No Go Pins
Go - 0.0185-0.0195 inch diameter
No Go - 0.1045-0.1055 inch diameter

D. Access

(1) Location Zones

115	NLG Wheel Well (Left)
116	NLG Wheel Well (Right)
119	Main Equipment Center (Left)
120	Main Equipment Center (Right)
143	MLG Wheel Well (Left)
144	MLG Wheel Well (Right)
211	Control Cabin (Left)
212	Control Cabin (Right)

(2) Access Panel

119AL	Main Equipment Center

E. Prepare for the Adjustment

S 945-020

(1) Make sure the difference between the internal and external airplane temperatures is less than 10°F for more than one hour before you start the adjustment.

S 495-021

(2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 495-022

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 865-023

(4) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 865-024

(5) Move the control lever for the landing gear to the DN position.

S 865-025

(6) Remove the safety pin, push the trigger, and move the ground release handle for the door to the stowed position.

S 415-026

(7) Install the safety pin.

S 865-294

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID (IF APPLICABLE). MOVEMENT OF THE TAIL SKID (IF APPLICABLE) CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Move the control lever for the landing gear to the OFF position.

S 865-028

(9) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 865-029

(10) Supply electrical power (AMM 24-22-00/201).

S 585-030

(11) Lift the airplane on jacks (AMM 07-11-01/201).

S 035-031

(12) Loosen the alternate extend cables and the cables for door ground release.

F. Do the Adjustment for the Alternate Extend Actuator (Fig. 502)

S 865-032

(1) Move the ALTN GEAR EXTENSION switch on the pilots' center instrument panel, P3, to the DN position.

S 825-033

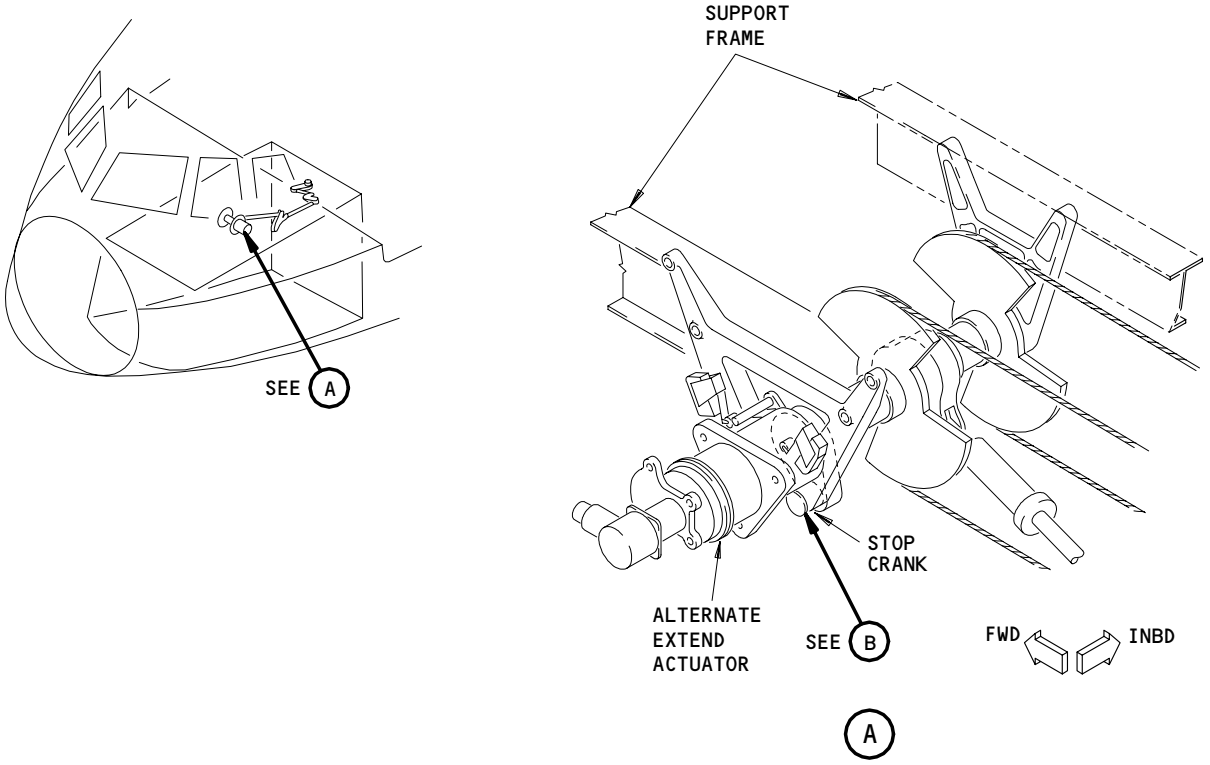
(2) Make sure you can install the GO pin between the stop crank and the frame at the DN position (Detail B).

S 825-034

(3) Make sure you cannot install the NO-GO pin (Detail B).

S 825-035

(4) If it is necessary, do the steps that follow to adjust the limit switch until you can install the GO pin and you cannot install the NO-GO pin:
(a) Loosen the nut at each end of the switch plate.
(b) Move the switch to make the adjustment.
(c) Tighten the nuts after the adjustment.



1 STOP CRANK SHOWN IN GEAR DOWN POSITION

2 STOP CRANK SHOWN IN GEAR UP POSITION

Alternate Extend Actuator Adjustment
Figure 502

S 865-036

CAUTION: DO NOT OPERATE THE NORMAL EXTENSION AND RETRACTION SYSTEM FOR AT LEAST 70 SECONDS AFTER YOU MOVE THE ALTN GEAR EXTENSION SWITCH TO THE OFF POSITION. THIS IS NECESSARY TO PERMIT THE ALTERNATE EXTEND SYSTEM TO SET AGAIN AND PREVENT DAMAGE TO THE SYSTEM COMPONENTS.

(5) Move the ALTN GEAR EXTENSION switch to the OFF position.

NOTE: The alternate extend system is set again when the ALTN GEAR EXTENSION switch is moved to the OFF position.

S 825-037

(6) Make sure you can install the GO pin between the stop crank and the frame at the OFF position (Detail B).

S 825-038

(7) Make sure you cannot install the NO-GO pin (Detail B).

S 825-039

(8) If it is necessary, do the steps that follow to adjust the limit switch until you can install the GO pin and you cannot install the NO-GO pin:
(a) Loosen the nut at each end of the switch plate.
(b) Move the switch to make the adjustment.
(c) Tighten the nuts after the adjustment.

S 865-040

(9) Make sure the ALTN GEAR EXTENSION switch and the stop crank are in the OFF position before you continue the adjustment procedure.

G. Do the Adjustment for Alternate Extend of the Nose Landing Gear (Fig. 503)

S 495-041

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN THE MAIN LANDING GEAR TO PREVENT THE ACCIDENTAL OPERATION OF THE LANDING GEAR. INJURY TO PERSONS AND/OR DAMAGE TO EQUIPMENT CAN OCCUR IF THE LANDING GEAR RETRACTS.

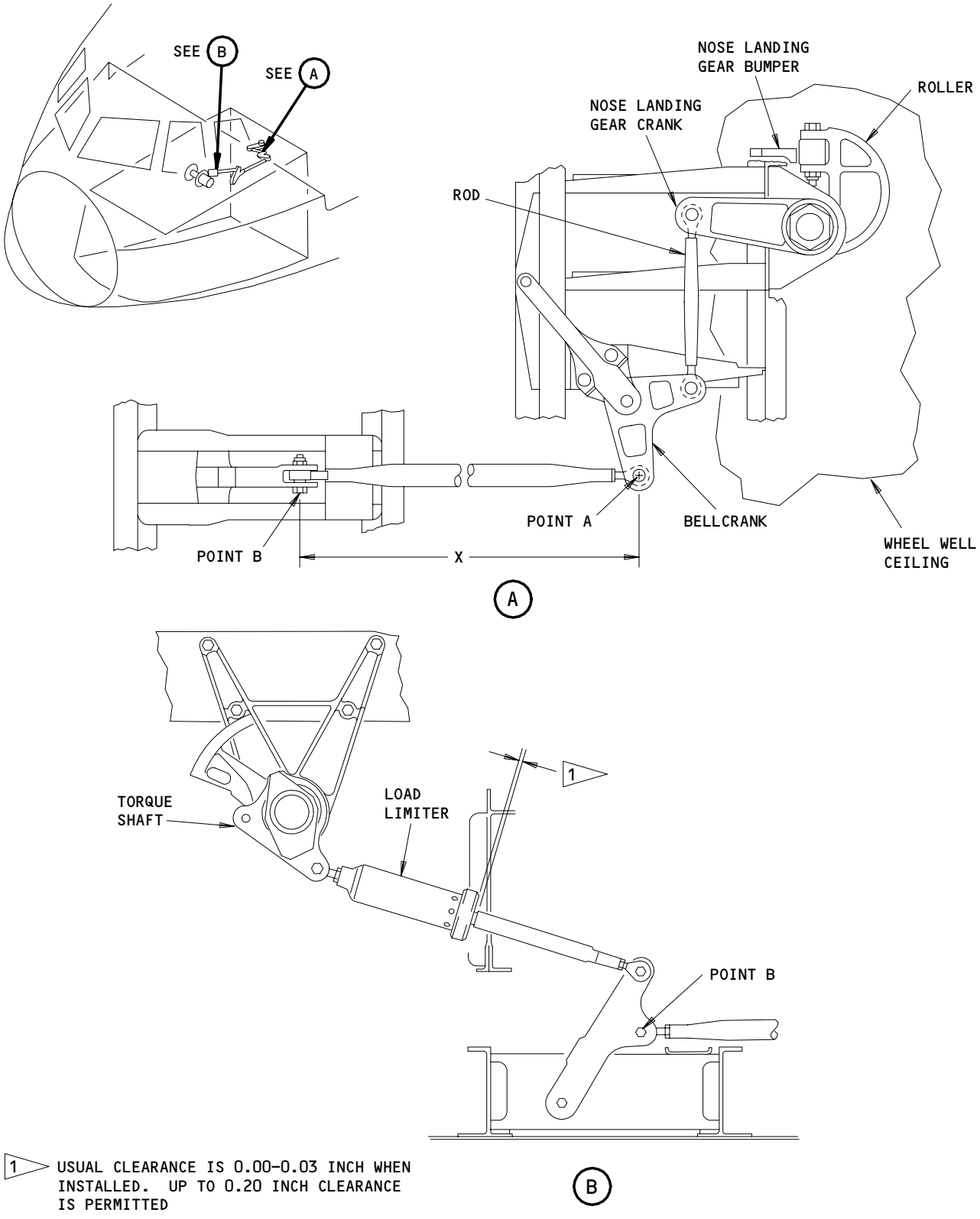
(1) Make sure the downlocks are installed on the main landing gear (AMM 32-00-20/201).

S 095-042

(2) Remove the downlock for the nose landing gear (AMM 32-00-20/201).

S 865-043

(3) Pressurize the center hydraulic system (AMM 29-11-00/201).



1 USUAL CLEARANCE IS 0.00-0.03 INCH WHEN INSTALLED. UP TO 0.20 INCH CLEARANCE IS PERMITTED

Nose Landing Gear Alternate Extend Adjustment
Figure 503

S 865-044

WARNING: MAKE SURE THE AREA AROUND THE NOSE WHEEL WELL AND TAIL SKID (IF APPLICABLE) IS CLEAR PERSONS AND EQUIPMENT BEFORE YOU RETRACT THE LANDING GEAR. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(4) Move the control lever for the landing gear, on the panel P3, to the UP position.

S 865-045

(5) When the nose landing gear is retracted, put the control lever back to the OFF position.

S 865-046

(6) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 035-047

(7) Remove the rod that connects point A and point B (Detail A).

S 985-048

(8) Turn the crank for the nose landing gear counterclockwise (seen from above) until the roller touches the bumper.

S 825-049

(9) Measure the dimension "X" between the point A and point B. Add 0.18 ±0.02 inch to the dimension, and adjust the rod to this distance.

S 435-050

(10) Install the rod between point A and point B, again. Install the bolts with the heads up.

S 865-051

WARNING: MAKE SURE THE AREA AROUND THE NOSE WHEEL WELL IS CLEAR OF PERSONS AND EQUIPMENT BEFORE YOU EXTEND THE LANDING GEAR. IF THE AREA IS NOT CLEAR, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(11) Move THE ALTN GEAR EXTENSION switch to the DN position to extend the nose landing gear.

NOTE: If it is necessary, you can apply a manual force to help the landing gear to the down-and-locked position.

S 225-052

(12) Make sure the load limiter clearances agree with Figure 503. Replace the load limiter if any portion protruding from the cartridge is colored red or if the clearances are not in these limits (AMM 32-35-15/401). If you replace the load limiter cartridge, start the test for the alternate extension system of the nose landing gear again.

S 865-053

CAUTION: DO NOT OPERATE THE NORMAL EXTENSION AND RETRACTION SYSTEM FOR AT LEAST 70 SECONDS AFTER YOU MOVE THE ALTN GEAR EXTENSION SWITCH TO THE OFF POSITION. THIS IS NECESSARY TO PERMIT THE ALTERNATE EXTEND SYSTEM TO SET AGAIN AND PREVENT DAMAGE TO THE SYSTEM COMPONENTS.

(13) Put the ALTN GEAR EXTENSION switch back to the OFF position.

S 495-054

(14) Install the downlock on the nose landing gear (AMM 32-00-20/201).

H. Do the Adjustment for the Uplock Release of the Main Landing Gear (Fig. 504)

S 985-219

(1) Make sure the door latch actuator piston is fully pushed in.

S 495-055

(2) Install the 0.424 inch rig block between the door latch actuator piston and the uplock hook striker plate.

NOTE: You can use a rig block that is attached to the end of a rod. Put the rod through the bottom of the uplock mechanism near the hook.

S 495-056

(3) Install the rig pin LGA4 in the door safety valve.

S 825-057

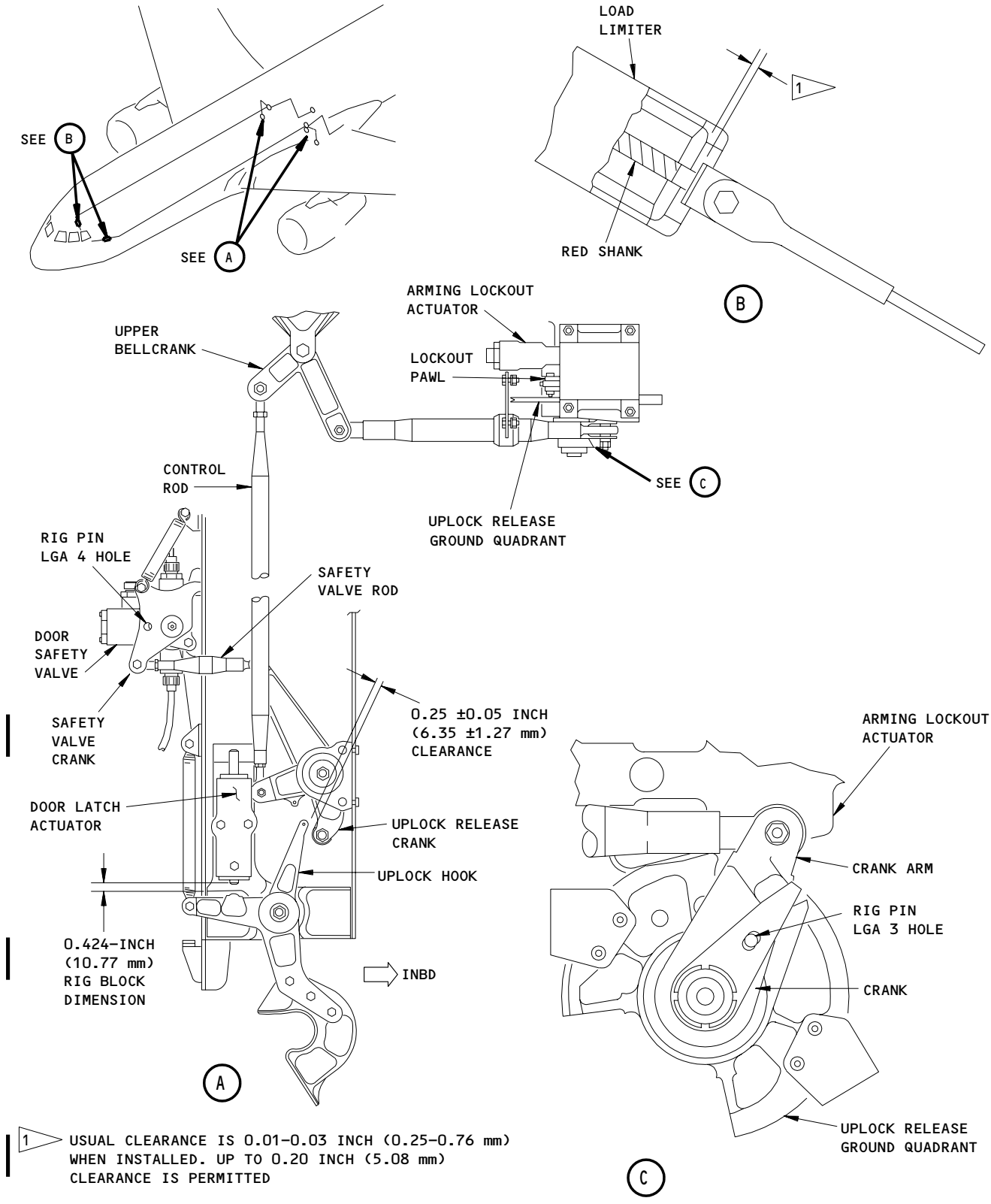
(4) Adjust the length of the safety valve rod to get a clearance of 0.25 ±0.05 inch between the uplock release crank and the uplock hook.

S 035-058

(5) Disconnect the control rod from the top bellcrank.

S 495-059

(6) Install the rig pin LGA3 through the crank, the crank arm, the ground quadrant for the uplock release, and the retainer guard.



1 USUAL CLEARANCE IS 0.01-0.03 INCH (0.25-0.76 mm) WHEN INSTALLED. UP TO 0.20 INCH (5.08 mm) CLEARANCE IS PERMITTED

Main Gear Door Uplock Release and Alternate Extend Cables Adjustment
Figure 504

S 825-060
(7) Adjust the length of the control rod to the shortest length that is necessary to permit it to be installed without force.

S 095-061
(8) Remove the rig pins LGA3 and LGA4.

S 095-062
(9) Remove the 0.424 inch rigging block.

I. Do the Adjustment of the Alternate Extend Cables

S 825-063
(1) If you will adjust cables that are new, do the steps that follow to put a load on them and to make sure they operate:

NOTE: This procedure does not apply when the cables are not new.

(a) Tighten the alternate extend cables AGE 1A, AGE 1B, AGE 2A, AGE 2B to 300 ±10 pounds.
(b) Adjust the cables until you can install the rig pins LGA3 and LGA4 without force (Fig. 504).
(c) If it is necessary, adjust the safety valve rod and the control rod to get a clearance of 0.25 ±0.05 inch between the uplock hook and the uplock release crank.
(d) Remove the rig pins LGA3 and LGA4.

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(e) Remove the door locks (AMM 32-00-15/201).
(f) Pressurize the center hydraulic system (AMM 29-11-00/201).
(g) Do the steps that follow a total of 6 times:

WARNING: MAKE SURE THE AREA AROUND THE LANDING GEAR DOORS AND THE TAIL SKID (IF APPLICABLE) IS CLEAR OF PERSONS AND EQUIPMENT. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

CAUTION: MAKE SURE THE ALTN GEAR EXTENSION SWITCH IS IN THE "OFF" POSITION. IF YOU OPERATE THE NORMAL EXTENSION AND RETRACTION SYSTEM WITH THE ALTN GEAR EXTENSION SWITCH IN THE "DN" POSITION YOU WILL CAUSE DAMAGE TO THE LOAD LIMITER FOR THE NOSE LANDING GEAR.

1) Move the control lever to the DN position.
2) Make sure the doors for the main landing gear close and latch.
3) Put the control lever back to the OFF position.
4) Move the ALTN GEAR EXTENSION switch to the DN position.

5) Make sure the latch on the doors for the main landing gear releases and the doors open.
6) Put the ALTN GEAR EXTENSION switch to the OFF position.
7) Make sure the uplock hook goes back to the latch position.

(h) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).
(i) Install the door locks for the main landing gear (AMM 32-00-15/201).

S 825-064
(2) If they are not new, tighten the alternate extend cables AGE 1A, AGE 1B, AGE 2A, AGE 2B (decrease the tension in new cables after they have been operated) to the values shown on Fig. 505.

S 495-065
(3) Make sure you can loosely install the rig pin LGA3 through these parts:
(a) The crank
(b) The crank arm
(c) The ground quadrant for the uplock release
(d) The retainer guard.

S 825-066
(4) If it is necessary, adjust the tension in the cables to align the rig pin holes until the rig pin can be installed loosely.

NOTE: The tension in the alternate extend cables must be in the tolerance range of Fig. 505.

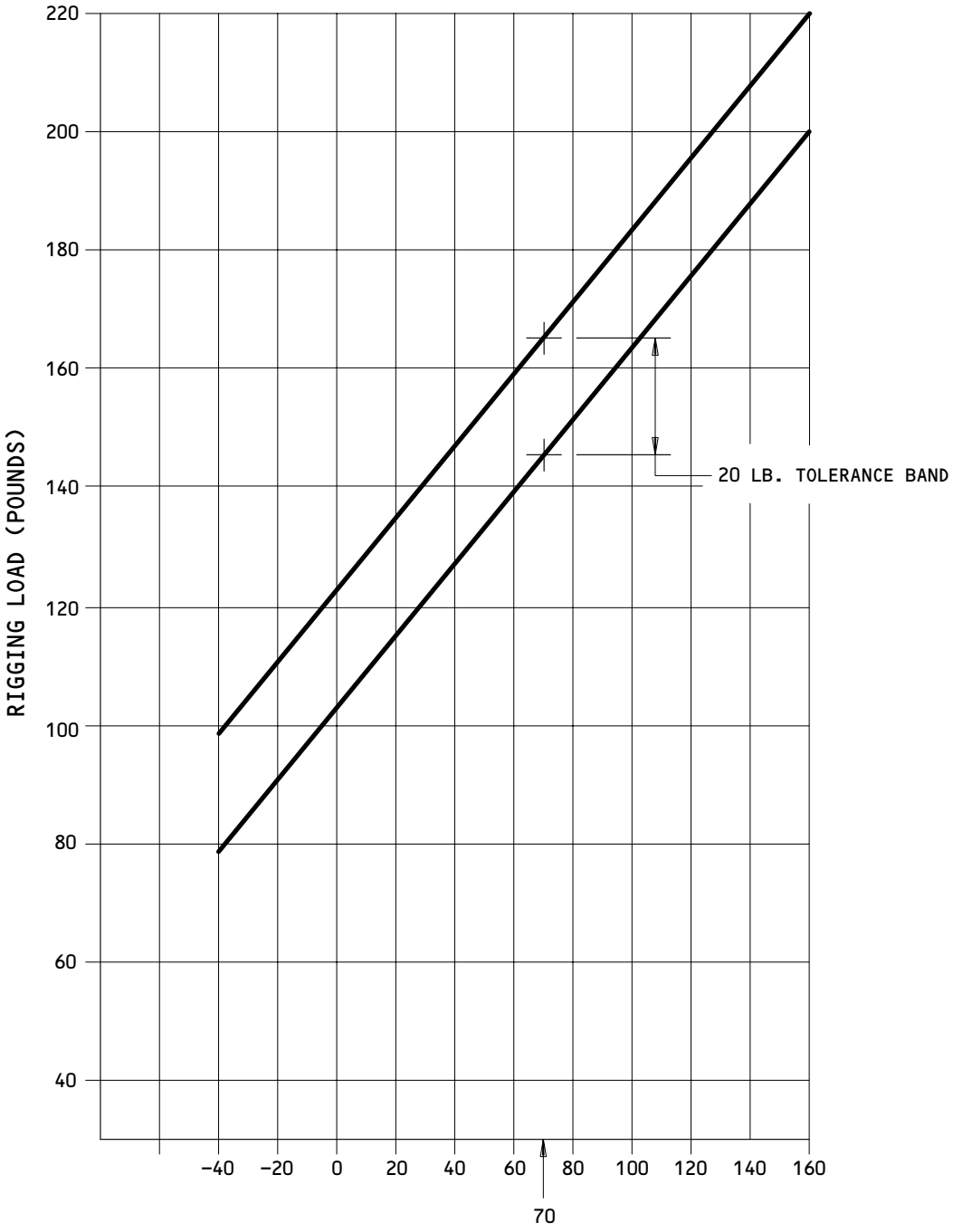
S 095-067
(5) Remove the rig pin LGA3.

S 435-068
(6) Install the turnbuckle lock clips on all the turnbuckles you adjusted in this procedure.

S 825-069
(7) Make sure that all the pulleys turn freely and do not touch the cable guard.

S 825-070
(8) Make sure that fairleads, rubstrips, or grommets do not move the cables from the adjusted or correct position.

ALTERNATE EXTEND CABLES



Alternate Extend Cable Tension
Figure 505

S 825-071

(9) Make sure the cables do not touch the pulley or quadrant flanges for the total length of the cable. The cable must not be more than 2 degrees from the plane of the pulley or quadrant.

S 225-072

(10) Make sure the load limiter clearance agrees with Figure 504. Replace the load limiter if any portion protruding from the cartridge is colored red or if the clearances are not in these limits (AMM 32-35-14/401). If you replace the load limiter cartridges, start the test for the adjustment procedure of the alternate extend cable again.

J. Do the Adjustment of the Cables for the Door Ground Release

NOTE: The ground release of the door for each main landing gear operates independently, but you can do the adjustments at the same time.

S 825-073

(1) If you will adjust new cables, do the steps that follow to put a load on them and to make sure they operate:

NOTE: This procedure does not apply when the cables you will adjust are not new.

(a) Put the two handles for door ground release in the adjustment position (Fig. 506).
(b) Put the rig pin LGA1 through the structure used for adjustment and the quadrant for each handle.
(c) Tighten the cables for the ground release of the doors, GDR 1A, GDR 1B, GDR 2A, GDR 2B to 220 ±10 pounds.
(d) Adjust the cables until you can install the rig pins LGA1 and LGA3 without force.
(e) Remove the rig pins LGA1 and LGA3.
(f) Install the safety pin in the handle for the door ground release.

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

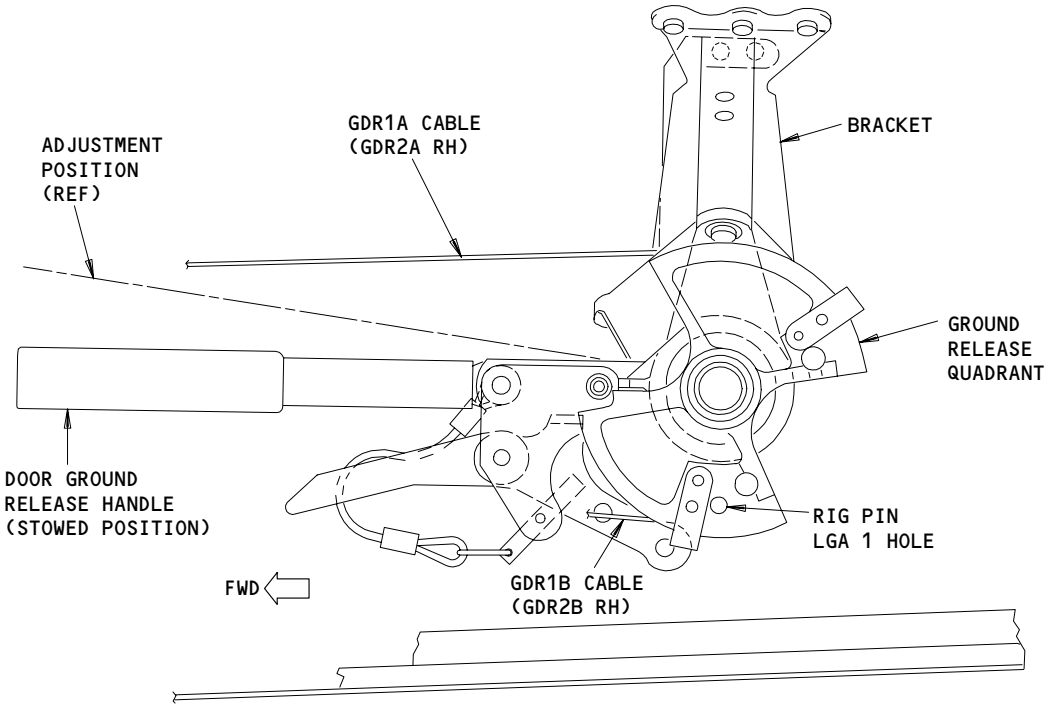
(g) Remove the door locks (AMM 32-00-15/201).
(h) Pressurize the center hydraulic system (AMM 29-11-00/201).

WARNING: MAKE SURE THE AREA AROUND THE LANDING GEAR DOORS AND THE TAIL SKID (IF APPLICABLE) IS CLEAR OF PERSONS AND EQUIPMENT. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(i) Move the control lever for the landing gear to the DN position to close the doors for the main landing gear.
(j) Do the steps that follow 25 times for the door on each main landing gear:

WARNING: MAKE SURE THE AREA AROUND THE LANDING GEAR DOORS AND THE TAIL SKID (IF APPLICABLE) IS CLEAR OF PERSONS AND EQUIPMENT. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

1) Remove the safety pin from the handle for the door ground release; pull the handle down until the trigger latches in the down position. The door will open.
2) Push the trigger and put the handle back to the stowed position. The door will close.



Main Landing Gear Door Ground Release Adjustment
Figure 506

WARNING: MAKE SURE THE AREA AROUND THE LANDING GEAR DOORS AND THE TAIL SKID (IF APPLICABLE) IS CLEAR OF PERSONS AND EQUIPMENT. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(k) Push the trigger on the handle for the door ground release.
(l) Pull the handle down until the trigger latches in the down position.
(m) Install the safety pin.
(n) Move the control lever for the landing gear to the OFF position.

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(o) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 825-074

(2) If they are not new, tighten the cables for the door ground release, GDR 1A, GDR1B, GDR2A, GDR2B (decrease the tension in new cables that were operated) to the values shown on Fig. 507.

S 865-075

(3) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 865-076

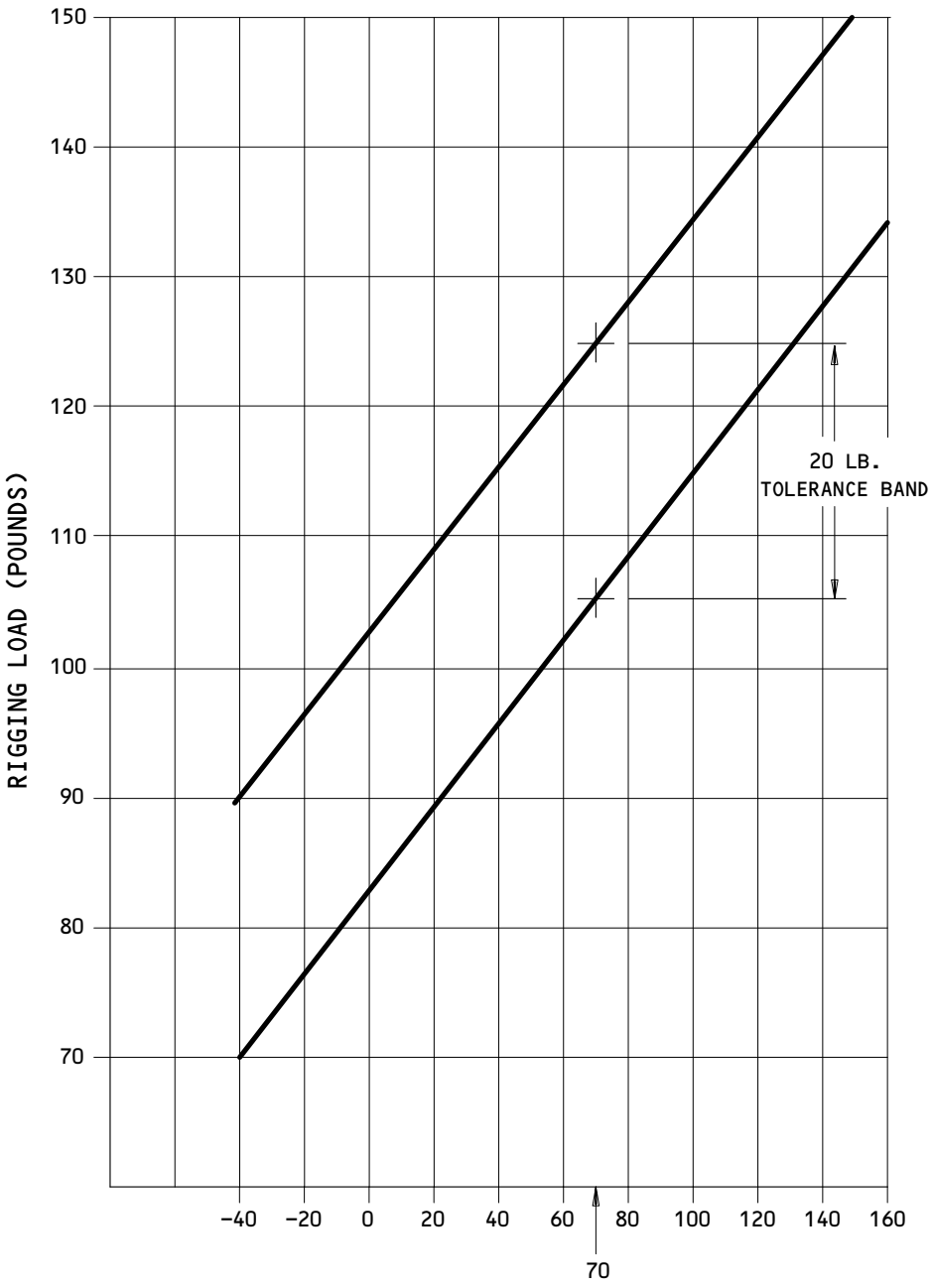
(4) Move the control lever for the landing gear to the DN position.

S 865-077

WARNING: MAKE SURE THE DOOR LOCKS ARE INSTALLED IN THE MAIN LANDING GEAR BEFORE YOU MOVE THE HANDLE FOR THE DOOR GROUND RELEASE. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Remove the safety pin from the handle for the door ground release.

DOOR GROUND RELEASE CABLES



Door Ground Release Cable Tension
Figure 507

S 865-078
(6) Push the trigger and move the handle to the rig position.

S 495-079
(7) Install the rig pin LGA1.

S 865-080
(8) Put the control lever for the landing gear back to the OFF position.

S 865-081
(9) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 495-082
(10) Make sure you can install the rig pin LGA3 loosely through the crank, crank arm, the ground quadrant for uplock release, and the retainer guard.

S 825-083
(11) If it is necessary, adjust the tension in the cables to align the rig pin holes until the rig pin can be installed loosely.

NOTE: The tension in the cables for the door ground release must be in the tolerance ranges of Fig. 507.

S 435-084
(12) Install the turnbuckle lock clips on all the turnbuckles you adjusted in this procedure.

S 095-085
(13) Remove the rig pins LGA1 and LGA3.

S 035-086
(14) Remove the safety pin from the handle for the door ground release.

S 865-087
(15) Push the trigger, and move the handle down until the trigger latches in the down position.

S 435-088
(16) Install the safety pin in the handle.

S 825-089
(17) Make sure that all the pulleys turn freely and do not touch the cable guard.

S 825-090
(18) Make sure the fairleads, rubstrips, or grommets do not move the cables from the adjusted or correct position.

S 825-091
(19) Make sure the cables do not touch the pulley or the quadrant flanges for the total length of the cable. The cable must not be more than 2 degrees from the plane of the pulley or quadrant.

K. Put the Airplane Back to Its Usual Condition

S 095-092
(1) Make sure the rig pins LGA1, LGA3, and LGA4 are removed.

S 085-222

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Remove the door locks (AMM 32-00-15/201).

S 865-094
(3) Make sure the handle for the door ground release is put in the stowed position.

S 865-184
(4) Put the control lever for the landing gear to the DN position.

S 865-095
(5) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-096
(6) Remove electrical power if it is not necessary (AMM 24-22-00/201).

S 585-097
(7) Lower the airplane and remove the jacks (AMM 07-11-01/201).

TASK 32-35-00-735-098

4. System Test - Alternate Extend System for the Landing Gear

A. General
(1) The alternate extend system for the landing gear does a test of these systems that are part of the alternate extend system:
(a) Alternate extend system for the landing gear.
(b) Door ground release.
(2) You can do the test of the door ground release with the airplane on or off the jacks.

B. References
(1) AMM 07-11-01/201, Jacking Airplane

(2) AMM 12-21-12/301, Nose Gear and Actuating Mechanisms
(3) AMM 12-21-14/301, Main Gear and Actuating Mechanisms
(4) AMM 24-22-00/201, Electrical Power - Control
(5) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(6) AMM 32-00-20/201, Landing Gear Downlocks
(7) AMM 32-61-02/201, Main Gear Proximity Sensors

C. Equipment
(1) Spring Scale (0 to 50 pounds)

D. Access
(1) Location Zones

115	NLG Wheel Well (Left)
116	NLG Wheel Well (Right)
119	Main Equipment Center (Left)
120	Main Equipment Center (Right)
211	Control Cabin (Left)
212	Control Cabin (Right)

(2) Access Panels

119AL	Main Equipment Center
197BL	MLG Door Ground Release (Left)
198BR	MLG Door Ground Release (Right)

E. Prepare for the Test

S 865-229
(1) Make sure the control lever for the landing gear is in the DN position.

S 865-231
(2) 767-300 AIRPLANES;
Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
(a) 11U26, TAIL SKID CONT

S 865-101
(3) Supply electrical power (AMM 24-22-00/201).

S 865-104
(4) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 485-232
(5) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 585-100
(6) Lift the airplane on jacks to permit landing gear extension and retraction (AMM 07-11-01/201).

NOTE: If you will only do the test of the door ground release, it is not necessary to lift the airplane on jacks.

S 865-233
(7) Make sure the ground door release handles are in the stowed (6 degree) detent position.

S 865-234
(8) Make sure the doors for the main landing gear are closed and locked.

F. Do the Test of the Alternate Extend of the Landing Gear

S 865-235
(1) Make sure this circuit breaker on the overhead circuit breaker panel, P11, is closed:
(a) 11U14, LDG GR ALTN EXT LTCH RESET

S 865-102
(2) Make sure this circuit breaker on the main distribution panel, P6, is closed:
(a) 6F6, LANDING GEAR ALTN EXT MOTOR

S 095-103
(3) Remove the downlocks from the nose and main landing gear (AMM 32-00-20/201).

S 865-105

WARNING: MAKE SURE THE AREA AROUND THE NOSE AND MAIN LANDING GEAR IS CLEAR OF PERSONS AND EQUIPMENT. WHEN THE LANDING GEAR RETRACTS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(4) Move the control lever for the landing gear to the UP position to retract the landing gears.

S 865-106
(5) Put the control lever back to the OFF position.

S 865-107

(6) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 735-223

(7) Make sure there is an observer at the nose gear and the main gear to measure the extension times.

NOTE: Measure the time from when you move the switch to the DN position to the point when the nose and main landing gear extend down.

S 735-108

WARNING: MAKE SURE THE AREA AROUND THE NOSE AND MAIN LANDING GEAR IS CLEAR OF PERSONS AND EQUIPMENT. WHEN THE LANDING GEAR EXTENDS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(8) Move the ALTN EXTENSION SELECT switch to the DN position.

(a) Make sure the nose gear extends in less than 50 seconds.

NOTE: If it is necessary, apply a manual force to help the nose landing gear to the down-and-locked position.

(b) Make sure the main landing gear extends in less than 26 seconds.

NOTE: The side braces for the main landing gear will lock overcenter, but it is possible the drag braces will not lock.

(c) If the alternate extend times are greater than the permitted times, then lubricate the landing gear trunnion, the drag brace and side brace fittings (AMM 12-21-12/301, AMM 12-21-14/301). Do the alternate extend test again.

S 735-236

CAUTION: DO NOT RETRACT THE LANDING GEAR WITH THE ALTN GEAR EXTENSION SWITCH IN THE DN POSITION. THIS CAN CAUSE DAMAGE TO THE LOAD LIMITER FOR THE NOSE GEAR.

CAUTION: DO NOT OPERATE THE NORMAL EXTENSION AND RETRACTION SYSTEM FOR AT LEAST 70 SECONDS AFTER YOU MOVE THE ALTN GEAR EXTENSION SWITCH TO THE OFF POSITION. THIS IS NECESSARY TO PERMIT THE ALTERNATE EXTEND SYSTEM TO SET AGAIN AND PREVENT DAMAGE TO THE SYSTEM COMPONENTS.

(9) Move the ALTN GEAR EXTEND switch to the OFF position and make sure the results that follow occur:
   (a) The uplock hooks for the main landing gear turn to the usual latch position (to the spring-loaded position, ready to receive the roller fitting of the main gear door)
   (b) The roller for the nose landing gear turns to the usual position.

S 865-109

(10) Move the control lever for the landing gear to the DN position.

S 865-110

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR IS CLEAR OF PERSONS AND EQUIPMENT. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(11) Slowly pressurize the center hydraulic system until the drag braces lock in the overcenter position. Make sure the pressure that is necessary to lock the drag braces is not more than 2250 psig.

NOTE: It is possible the drag braces will not be in the locked overcenter position.

S 865-111

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR IS CLEAR OF PERSONS AND EQUIPMENT. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(12) Remove the pressure from the center hydraulic system (AMM 29-11-00).

S 865-112

(13) Put the control lever for the landing gear back to the OFF position.

S 225-114

(14) Make sure the load limiter clearances agree with Figures 503 and 504. Replace the load limiter if any portion protruding from the cartridge is colored red or if the clearances are not in these limits (AMM 32-35-14/401 or AMM 32-35-15/401). If you replace the load limiter cartridges, start the alternate extend test for the landing gear again.
   (a) Get access to the electrical/electronics bay through the access panel 119AL (AMM 06-41-00/201).

S 615-124

(15) If you use the ADP or ACMP to provide hydraulic power, then make sure the level of the reservoir for the center hydraulic system is at least 50 percent full.

S 865-126

(16) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 865-127

WARNING: MAKE SURE THE AREA AROUND THE NOSE AND MAIN LANDING GEAR IS CLEAR OF PERSONS AND EQUIPMENT. WHEN THE LANDING GEAR RETRACTS, THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(17) Move the control lever for the landing gear to the UP position to retract the landing gear.

S 865-128

(18) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 865-129

(19) Move the control lever for the landing gear to the DN position.

S 735-130

WARNING: MAKE SURE THE AREA AROUND THE NOSE AND MAIN LANDING GEAR IS CLEAR OF PERSONS AND EQUIPMENT. WHEN THE LANDING GEAR EXTENDS, THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(20) Move the ALTN GEAR EXTEND switch to the DN position.
   (a) Make sure the nose landing gear extends in less than 50 seconds.
   (b) Make sure the main landing gear extend in less than 26 seconds.

      NOTE: The side braces for the main landing gear will lock overcenter, but it is possible that the drag braces will not lock.

S 015-113
(21) Get access to the electrical/electronics bay through the access panel 119AL (AMM 06-41-00/201).

S 225-131
(22) Make sure the load limiter clearances agree with Fig. 503 and Fig. 504. Replace the load limiter if any portion protruding from the cartridge is colored red or if the clearances are not in these limits (AMM 32-35-14/401 or AMM 32-35-15/401). If you replace the load limiter cartridges, start the alternate extend test for the landing gear again.

S 735-132
(23) Move the ALTN EXTENSION SELECT switch to the OFF position and make sure that the conditions that follow occur:
(a) The uplock hooks for the main landing gear turn to the latched position.
(b) The roller for the nose landing gear turns to the usual position in approximately 70 seconds.

S 735-151
(24) Make sure the alternate extend actuator moved full travel to the OFF position. To do this, make sure that the clearance between the stop crank and the frame is in the permitted tolerance range shown in Detail E, Fig. 501.

S 865-152
(25) Move the control lever for the landing gear to the OFF position.

S 825-153
(26) Examine the targets for the forward uplock sensors on the left and right landing gear. See if the tires touched them or if there is damage. If there are signs that the tires touched the targets, or there is damage, then make sure the target-to-sensor clearance is correct (AMM 32-61-02/201).

S 865-154
(27) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 865-155

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR IS CLEAR OF PERSONS AND EQUIPMENT. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(28) Move the control lever for the landing gear to the DN position to close doors.

S 495-156
(29) Install the downlocks on the nose and main landing gear (AMM 32-00-20/201).

S 865-157
(30) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-158
(31) Remove electrical power if it is not necessary (AMM 24-22-00/201).

S 585-159
(32) Lower the airplane and remove the jacks (AMM 07-11-01/201).

G. Do the Test of the Door Ground Release

S 865-160
(1) Move the control lever for the landing gear to the OFF position.

S 865-161
(2) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 865-162

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR ARE CLEAR OF PERSONS AND EQUIPMENT. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Move the control lever for the landing gear to the DN position to close the doors.

S 015-163
(4) Open the two access doors, 197BL and 198BR, to get access to the ground control handles for the doors on the left and right main landing gear (AMM 06-41-00/201).

S 495-164
(5) Attach a spring scale to the door ground release handle 13 inches from the pivot point.

S 735-165

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR IS CLEAR OF PERSONS AND EQUIPMENT. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(6) Do the steps that follow to open the door for the main landing gear:
(a) Remove the safety pin.
(b) Push the trigger on the handle.
(c) Apply a load to the spring scale, at a right angle with the handle.

S 735-166
(7) Make sure the force you use to pull the lever is not more than 50 pounds.

S 735-167
(8) Make sure the door falls to the open position in less than 22 seconds.

S 735-168
(9) Make sure the trigger is engaged in the detent to lock the handle in the down position.

S 735-169
(10) Make sure the handle is in the green (SAFE) area of the placard on the door.

S 735-170

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR IS CLEAR OF PERSONS AND EQUIPMENT. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(11) Do the steps that follow to close the door for the main landing gear:
(a) Remove the safety pin.
(b) Push the trigger on the handle.
(c) Put the handle back to the stowed position. The door will close.

S 865-171
(12) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 735-172

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR IS CLEAR OF PERSONS AND EQUIPMENT. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(13) Do the steps that follow to open the door for the main landing gear:
(a) Push the trigger on the handle.
(b) Pull the handle for the door ground release down until the trigger latches in the down position.

S 735-173
(14) Push the trigger and make sure the handle cannot be put in the stowed position.

NOTE: Do not apply more than 50 pounds force on the handle.

S 735-174
(15) Put the handle back to the open position.

S 865-175
(16) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 735-176

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR IS CLEAR OF PERSONS AND EQUIPMENT. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(17) Push the trigger and put the handle for the door ground release to the stowed position.

S 865-177
(18) Move the control lever for the landing gear to the OFF position.

S 735-178

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR IS CLEAR OF PERSONS AND EQUIPMENT. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(19) Do the steps that follow to open the doors for the main landing gear:
(a) Push the trigger on the handle for the door ground release.
(b) Move the handle down until the trigger latches in the down position.

S 735-179
(20) Push the trigger and make sure the handle cannot be put in the stowed position.

NOTE: Do not apply more than 50 pounds force on the handle.

S 735-180
(21) Put the handle back in the open position.

S 865-181
(22) Move the control lever for the landing gear to the DN position.

S 865-244

(23) 767-300 AIRPLANES;
Remove the DO-NOT-CLOSE tag and close this circuit breaker on the overhead circuit breaker panel, P11:
(a) 11U26, TAIL SKID CONT

S 735-182

WARNING: MAKE SURE THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR IS CLEAR OF PERSONS AND EQUIPMENT. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(24) Do the steps that follow to close the doors for the main landing gear:
(a) Push the trigger on the handle.
(b) Put the handle to the stowed position to close the doors.
(c) Install the safety pin.

S 865-183

(25) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

MAIN GEAR ALTERNATE EXTEND UPLOCK RELEASE CRANK - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the uplock release crank for the alternate extend system. The second task installs the uplock release crank.

TASK 32-35-03-004-001

2. Remove the Uplock Release Crank for the Alternate Extend System (Fig. 401)

NOTE: The wear limits for the components that follow are found in AMM 32-35-03/601.

A. Equipment
   (1) Rig Pins from kit A20004-XX (AMM 20-10-24/201):
      (a) LGA3 - P/N A20004-20
      (b) LGA4- P/N A20004-14
B. References
   (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
   (2) AMM 32-00-15/201, Landing Gear Door Locks
   (3) AMM 32-00-20/201, Landing Gear Downlocks
   (4) AMM 32-35-00/501, Main Gear Alternate Extend System
   (5) AMM 32-35-03/601, Main Gear Alternate Extend Uplock Release Crank
   (6) AMM 32-35-07/401, Main Gear Alternate Extend Uplock Release Ground Quadrant
C. Access
   (1) Location Zones
      143 Left Main Landing Gear Wheel Well
      144 Right Main Landing Gear Wheel Well

D. Prepare for Removal

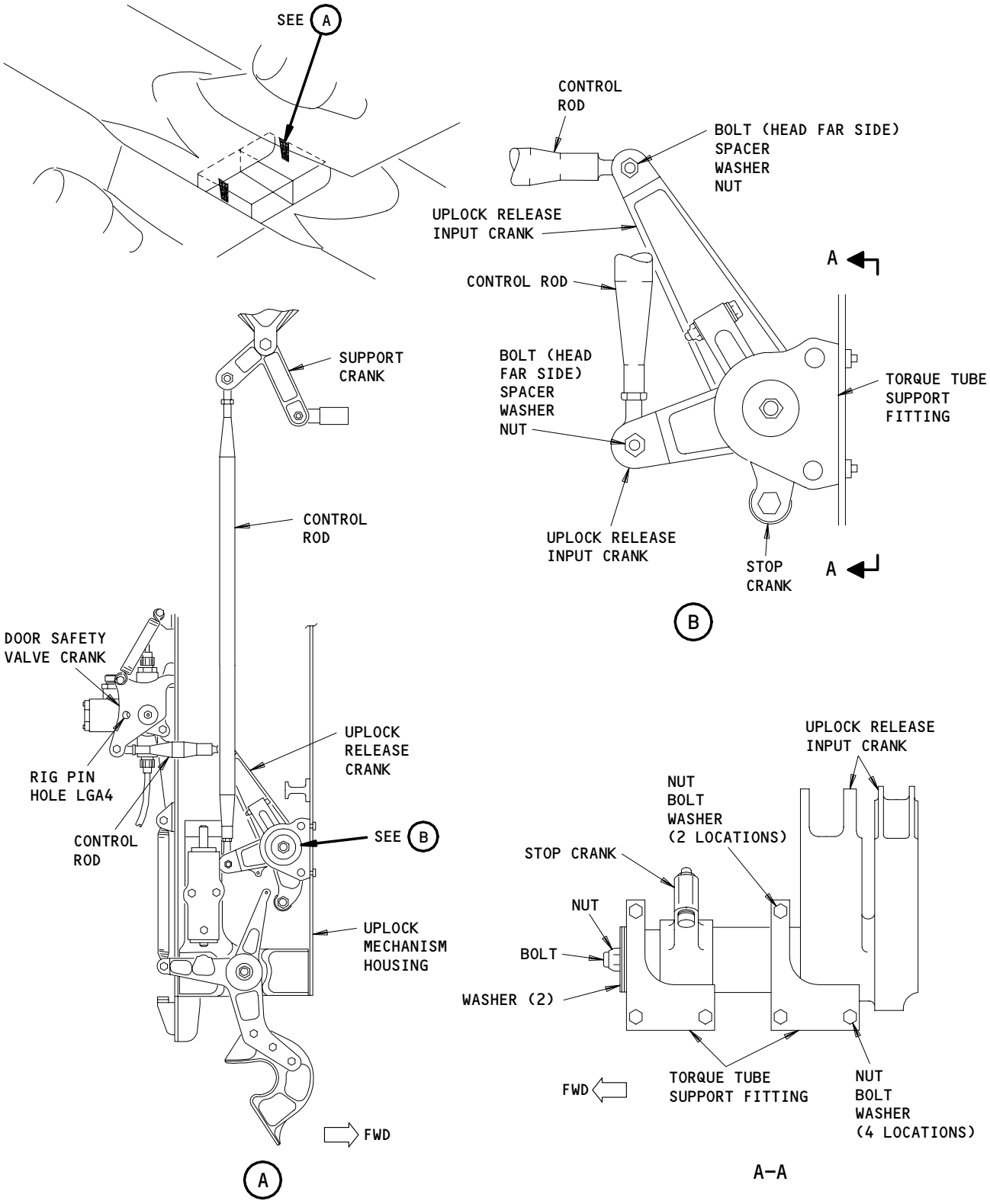
S 214-002
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 484-030

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the main landing gear doors and install the door locks (AMM 32-00-15/201).

S 864-004
(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).



Alternate Extend Uplock Release Crank Installation
Figure 401

S 014-005
(4) Remove the access panel on the forward side of the uplock mechanism housing.

S 864-006
(5) Make sure the control lever for the landing gear is in OFF.

E. Procedure

S 984-007
(1) Push the lockout pawl out of the detent in the uplock release ground quadrant. Hold the lockout pawl back with a device (AMM 32-35-07/401).

NOTE: The lockout pawl must be isolated from the uplock release ground quadrant. This permits you to move the door ground release lever with the hydraulic power off.

S 984-008
(2) Move the door ground release lever to the position used to rig the system.

S 494-009
(3) Put the rig pin LGA3 through the aligned holes in the uplock release ground quadrant and the cranks (AMM 32-35-00/501).

S 494-010
(4) Put the rig pin LGA4 through the door safety valve crank and the door safety valve.

S 034-011
(5) Disconnect the control rod between the safety valve crank and the uplock release crank (Detail A) at the uplock release crank (Detail B).

S 034-012
(6) Disconnect the control rod between the support crank and the uplock release crank (Detail A) at the uplock release crank (Detail B).

S 034-013
(7) Remove the nut and washer from the bolts to disconnect the torque tube support fittings from the uplock mechanism housing (View A-A). Remove the torque tube assembly from the uplock mechanism housing.

S 034-014
(8) Remove the bolt from the end of the torque tube. Slide the aft support fitting off the torque tube, and keep it for installation.

TASK 32-35-03-404-015

3. Install the Uplock Release Crank for the Alternate Extend System (Fig. 401)

A. Equipment

(1) Rig Pins from kit A20004-XX (AMM 20-10-24/201):

(a) LGA3 - P/N A20004-20

(b) LGA4- P/N A20004-14

B. Consumable Materials

(1) D00633 Grease - BMS 3-33 (Preferred)

(2) D00015 Grease - BMS 3-24 (Alternate)

C. References

(1) AMM 32-00-15/201, Landing Gear Door Locks

(2) AMM 32-35-00/501, Main Gear Alternate Extend System

D. Access

(1) Location Zones

143 Left Main Landing Gear Wheel Well

144 Right Main Landing Gear Wheel Well

E. Procedure

S 644-016

(1) Apply grease to the aft end of the torque tube.

S 434-017

(2) Slide the aft support fitting onto the torque tube.

S 434-018

(3) Install the washers and nut on the bolt at the end of the torque tube. Tighten the nut to 40-50 pound-inches (View A-A).

S 434-019

(4) Install the 6 bolts, washers, and nuts to connect the torque tube assembly to the uplock mechanism housing.

S 644-021

(5) Apply the grease to bolt, washer, nut, and spacer.

S 434-020

(6) Install the bolt, spacer, washer, and nut on the control rod to connect the uplock release crank to the door safety valve crank (Detail B).

S 984-022

(7) Make sure the lockout pawl is released. Make sure it fully engages the detent on the uplock release ground quadrant.

S 824-023
(8) Adjust the uplock release mechanism (AMM 32-35-00/501).

S 094-024
(9) Make sure the rig pins are removed.

S 414-025
(10) Replace the access panel.

S 084-029

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(11) Remove the door locks from the main landing gear doors and close the doors (AMM 32-00-15/201).

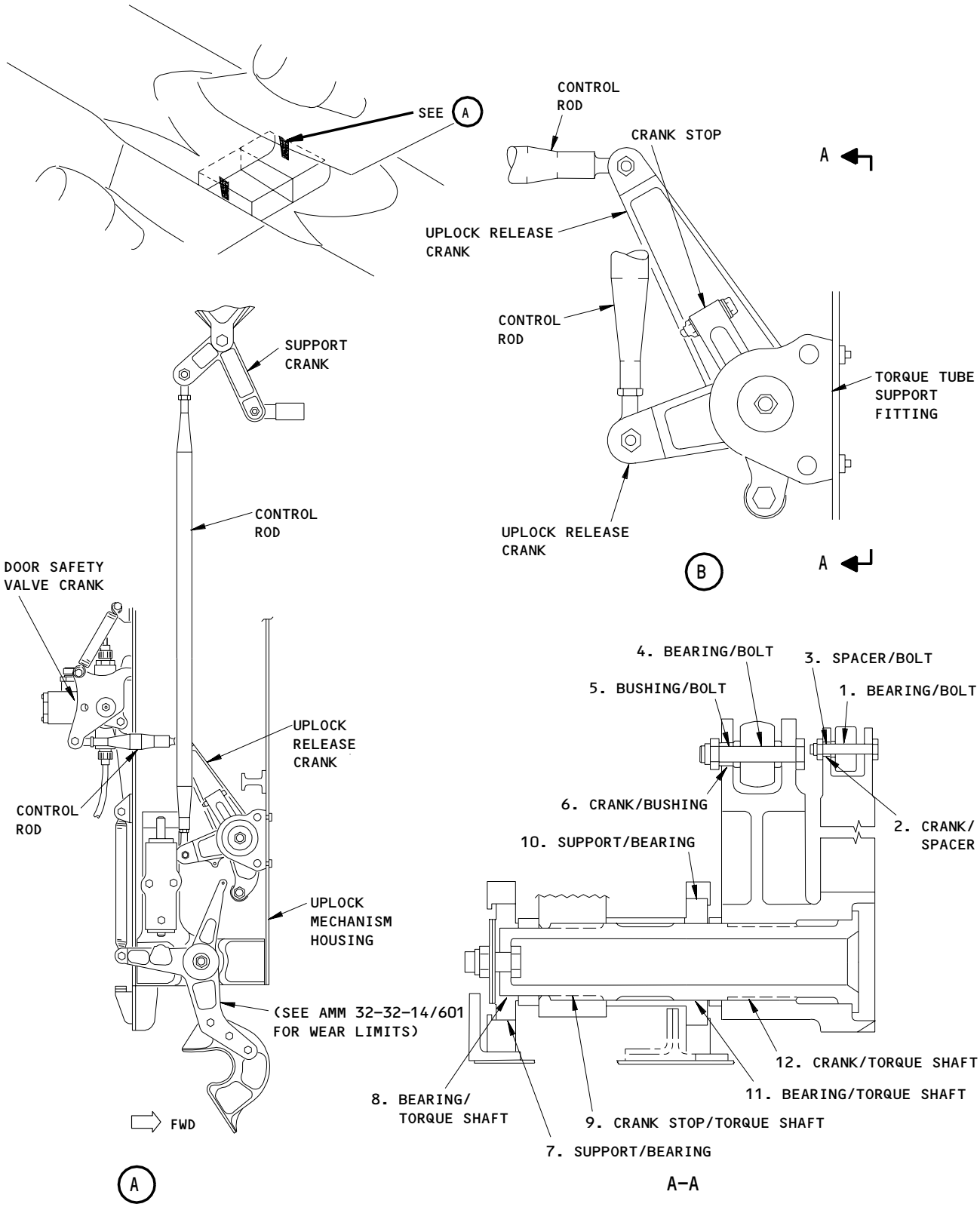
S 864-027
(12) Put the control lever for the landing gear to the DN position.

ALTERNATE EXTEND UPLOCK RELEASE CRANK - INSPECTION/CHECK

1. General
   A. This procedure only has illustrations and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Alternate Extend Uplock Release Crank - Removal/Installation for procedures to do these tasks.

TASK 32-35-03-206-001

2. Alternate Extend Uplock Release Crank Wear Limits (Fig. 601)
   A. General
      (1) This procedure only has illustrations and wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Alternate Extend Uplock Release Crank - Removal/Installation for procedures to do these tasks.



Alternate Extend Uplock Release Crank Wear Limits
Figure 601 (Sheet 1)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIAM CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR.
1	BEARING	ID	0.2495	0.2500	0.2525	0.0030	X		
	BOLT	OD	0.2485	0.2495	0.2465		X		
2	CRANK	ID	0.3745	0.3755	0.3775	0.0030		X	2
	SPACER	OD	0.3740	0.3745	0.3715		X		
3	SPACER	ID	0.2500	0.2505	0.2535	0.0040	X		
	BOLT	OD	0.2485	0.2495	0.2460		X		
4	BEARING	ID	0.3122	0.3125	0.3150	0.0030	X		
	BOLT	OD	0.3110	0.3120	0.3092		X		
5	BUSHING	ID	0.3125	0.3130	0.3160	0.0040	X		
	BOLT	OD	0.3110	0.3120	0.3085		X		
6	CRANK ASSY	ID	0.4370	0.4380	0.4400	0.0030		X	2
	BUSHING	OD	0.4365	0.4370	0.4340		X		
7	SUPPORT	ID	2.2500	2.2512	2.2540	0.0040		X	2
	BEARING	OD	2.2490	2.2500	2.2460		X		
8	BEARING	ID	1.3120	1.3130	1.3160	0.0040	X		
	TORQUE SHAFT	OD	1.3110	1.3120	1.3080			X	2
9	CRANK STOP		----	----	----	1	X		
	TORQUE SHAFT		----	----	----		X		
10	SUPPORT	ID	2.3750	2.3757	2.3780	0.0030		X	2
	BEARING	OD	2.3740	2.3750	2.3720		X		
11	BEARING	ID	1.4370	1.4380	1.4410	0.0040	X		
	TORQUE SHAFT	OD	1.4360	1.4370	1.4330			X	2
12	INPUT CRANK		----	----	----	1	X		
	TORQUE SHAFT		----	----	----		X		

1 VISUALLY EXAMINE (RECOMMEND INSPECTION BE UNDER MAGNIFICATION) ALL THE BEARING SURFACES ON SPLINES FOR OBVIOUS SIGNS OF TOO MUCH WEAR OR PITTING. YOU MUST KNOW WHAT TO LOOK FOR TO KNOW THE SIGNS OF TOO MUCH WEAR. IF THERE IS A QUESTION ABOUT THE AMOUNT OF WEAR, REPLACE THE SPLINED COMPONENT WITH NEW PARTS.

2 YOU CAN REPAIR THE PART; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR INSTRUCTIONS.

Alternate Extend Uplock Release Crank Wear Limits
Figure 601 (Sheet 2)

285194

MAIN GEAR DOOR GROUND RELEASE LEVER AND QUADRANT - REMOVAL/INSTALLATION

1. General
   A. This procedure contains the tasks that follow:
      (1) Removal of the Ground Release Lever for the Main Landing Gear Door
      (2) Installation of the Ground Release Lever for the Main Landing Gear Door
      (3) Removal of the Ground Release Quadrant
      (4) Installation of the Ground Release Quadrant.

TASK 32-35-05-004-001

2. Remove the Ground Release Lever for the Main Landing Gear Doors (Fig. 401)
   A. Equipment
      (1) Rig Pins from Set A20004-XX (AMM 20-10-24/201):
         (a) LGA1 - P/N A20004-15
         (b) LGA3 - P/N A20004-20
   B. References

      (1) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
      (4) AMM 32-35-07/401, Main Gear Alternate Extend Uplock Release Ground Quadrant
   C. Access
      (1) Location Zones
         197 Wing to Body Fairing (Left)
         198 Wing to Body Fairing (Right)

   D. Prepare for the Removal

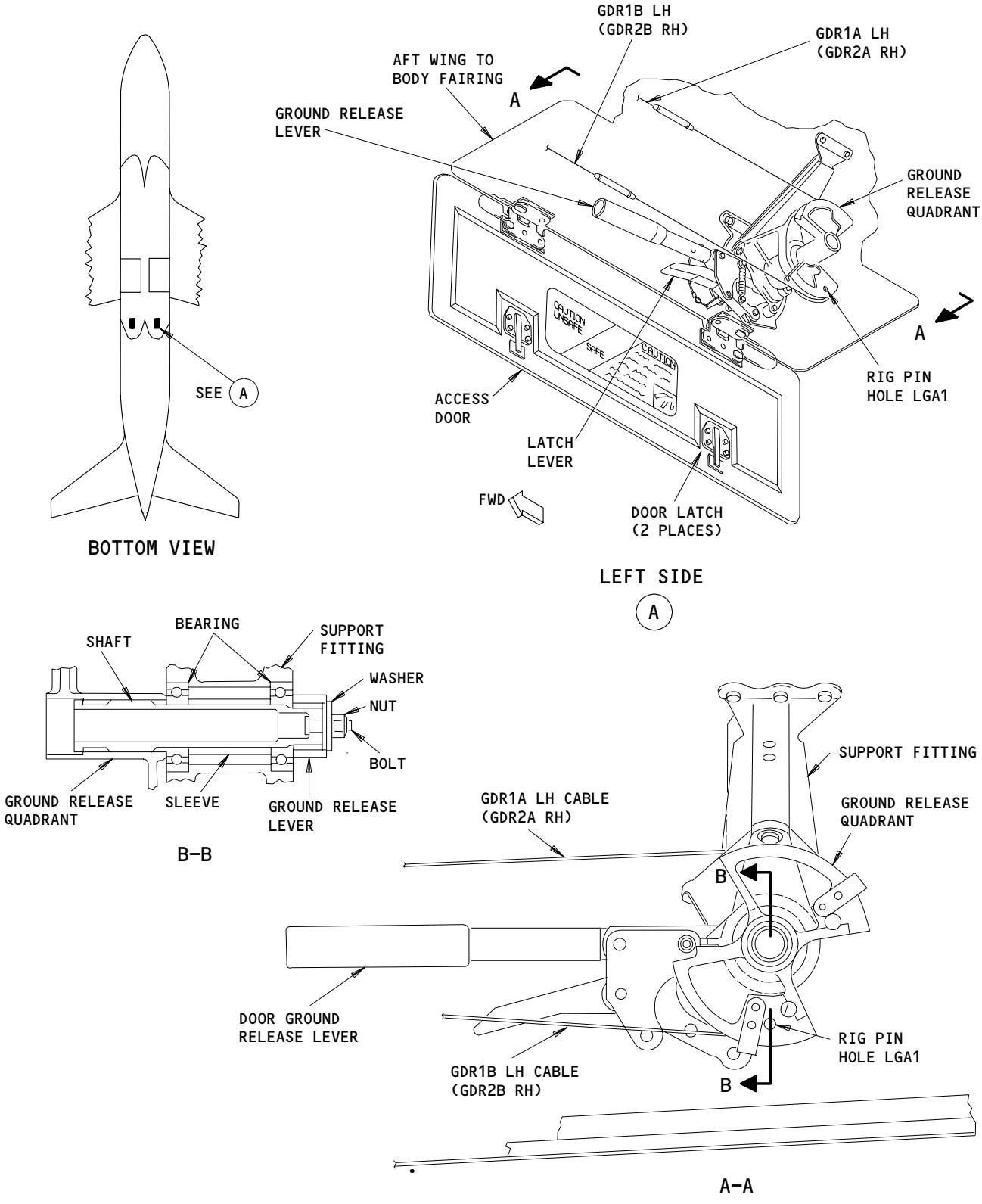
      S 214-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 484-044

      WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

      (2) Open the main landing gear doors and install the door locks (AMM 32-00-15/201).

      S 864-005
      (3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).



Main Gear Door Ground Release Lever and Quadrant Installation
Figure 401

E. Procedure

S 984-006
(1) Push the lockout pawl out of the detent in the quandrant. Hold the lockout pawl back with a device that can hold it in position (AMM 32-35-07/401).

NOTE: The lockout pawl must be isolated from the uplock release ground quadrant. This permits you to move the door ground release lever with the hydraulic power off.

S 984-007
(2) Move the door ground release lever to the position used to rig the system.

S 494-038
(3) Put the rig pin LGA1 through the ground release quadrant and the support fitting.

S 494-039
(4) Put the rig pin LGA3 through the cranks and the uplock release ground quadrant.

S 034-008
(5) Remove the nut and washer from the shaft (Section B-B).

S 024-009
(6) Move the lever off the shaft.

TASK 32-35-05-404-010

3. Install the Ground Release Lever for the Main Landing Gear Doors (Fig. 401)

A. Equipment
(1) Rig Pins from Set A20004-XX (AMM 20-10-24/201):
(a) LGA1 - P/N A20004-15
(b) LGA3 - P/N A20004-20
(2) Cable Tensiometer - Commercially Available

B. References

(1) AMM 32-00-15/201, Landing Gear Door Locks
(2) AMM 32-35-00/501, Main Gear Alternate Extend System

C. Access
(1) Location Zones
197 Wing to Body Fairing (Left)
198 Wing to Body Fairing (Right)

D. Procedure

S 214-011
(1) Make sure the shaft, bearing, and sleeve are installed (View B-B).

S 424-012
(2) Align the splines and slide the lever onto the shaft. Install the washer and nut to hold the lever on the shaft.

S 714-013
(3) Do a check of the GDR cable tension (AMM 32-35-00/501).

S 094-014
(4) Remove the rig pins LGA1 and LGA3.

S 984-015
(5) Move the door ground release lever to the fully open position.

S 984-016
(6) Release the lockout pawl. Make sure the pawl fully engages the detent on the uplock rlease ground quadrant.

S 084-045

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(7) Remove the door locks from the main landing gear (AMM 32-00-15/201).

TASK 32-35-05-004-018

4. Remove the Ground Release Quadrant (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          197 Wing to Body Fairing (Left)
          198 Wing to Body Fairing (Right)

C. Prepare for the Removal

S 214-019

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 484-046

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 864-021

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 034-022

(4) Disconnect the GDR cables from the quadrant (View A-A).

S 034-023

(5) Remove the nut and washer from the end of the shaft (View B-B). Remove the lever.

S 024-024

(6) Turn the quadrant until it is clear of the structure, then put the shaft and quadrant from the support fitting, sleeve, and bearings.

S 034-025

(7) Remove the shaft from the quadrant and keep it for for installation.

TASK 32-35-05-404-026

5. Install the Ground Release Quadrant (Fig. 401)

A. Equipment

(1) Rig Pins from Set A20004-XX (AMM 20-10-24/201):

(a) LGA1 - P/N A20004-15

(b) LGA3 - P/N A20004-20

(2) Cable Tensiometer - Commercially Available

B. References

(1) AMM 32-00-15/201, Landing Gear Door Locks
(2) AMM 32-35-00/501, Main Gear Alternate Extend System
(3) AMM 32-35-07/401, Main Gear Alternate Extend Uplock Release Ground Quadrant

C. Access

(1) Location Zones
197 Wing to Body Fairing (Left)
198 Wing to Body Fairing (Right)

D. Procedure

S 434-027
(1) Align the splines and slide the shaft fully into the quadrant (View B-B).

S 214-028
(2) Make sure the support fitting bearings and sleeve are installed.

S 424-029
(3) Slide the shaft through the bearings and sleeve until the quadrant touches the bearing.

S 434-030
(4) Align the splines and slide the lever onto the shaft. Install the washer and nut to hold the lever on the shaft.

S 434-031
(5) Connect the GDR cables to the quadrant (View A-A).

S 984-032
(6) Push the lockout pawl out of the detent in the uplock release ground quadrant. Hold the lockout pawl back with a device that can hold it in this position (AMM 32-35-07/401).

NOTE: The lockout pawl must be isolated from the uplock release quadrant. This permits you to move the door ground release lever with the hydraulic power off.

S 824-042
(7) Move the door ground release lever to the position used to rig the system.

S 494-040
(8) Put the rig pin LGA1 through the ground release quadrant and the support fitting.

S 494-041
(9) Put the rig pin LGA3 through the cranks and the uplock release ground quadrant.

S 824-033
(10) Adjust the GDR cable tension (AMM 32-35-00/501).

S 094-034
(11) Remove the rig pins LGA1 and LGA3.

S 984-035
(12) Move the door ground release lever to the fully open position.

S 984-036
(13) Release the lockout pawl. Make sure the pawl fully engages the detent on the uplock release ground quadrant.

S 084-047

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(14) Remove the door locks from the main landing gear (AMM 32-00-15/201).

MAIN GEAR ALTERNATE EXTEND UPLOCK RELEASE GROUND QUADRANT - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the uplock release ground quadrant. The second task installs the uplock release ground quadrant.

TASK 32-35-07-004-001

2. Remove the Uplock Release Ground Quadrant
   A. Equipment
      (1) Rig Pins from Kit A20004-XX (Ref 20-10-24):
          (a) LGA1 - P/N A20004-15
          (b) LGA3 - P/N A20004-20
   B. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          143 MLG Wheel Well (Left)
          144 MLG Wheel Well (Right)
          197 Wing to Body Fairing (Left)
          198 Wing to Body Fairing (Right)

   D. Prepare for Removal (Fig. 401)

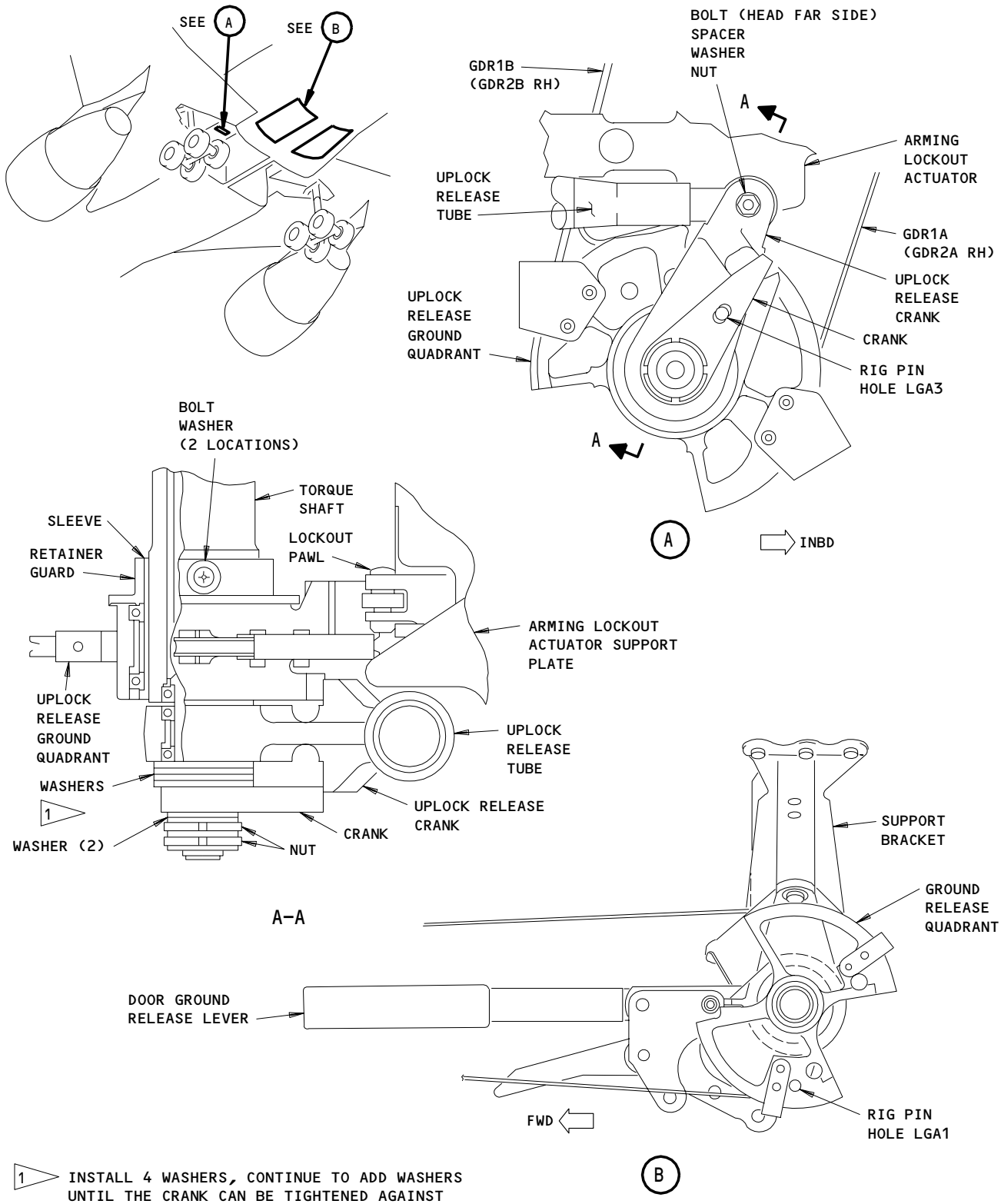
      S 214-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-003

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open the main landing gear doors and install the door locks (AMM 32-00-15/201).

      S 864-004
      (3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).



1 INSTALL 4 WASHERS, CONTINUE TO ADD WASHERS UNTIL THE CRANK CAN BE TIGHTENED AGAINST THE UPLOCK RELEASE CRANK

Alternate Extend Uplock Release Ground Quadrant Installation
Figure 401

E. Procedure

S 984-005
(1) Push the lockout pawl out of the detent in the quadrant. Hold the lockout pawl back with a device that can hold it in position.

NOTE: The lockout pawl must be isolated from the uplock release ground quadrant. This permits you to move the door ground release lever with the hydraulic power off.

S 984-028
(2) Move the door ground release lever to the position used to rig the system.

S 494-006
(3) Put the rig pin LGA1 through the ground release quadrant and the support bracket (Detail B).

S 034-007
(4) Disconnect the GDR cables from the uplock release ground quadrant.

S 034-008
(5) Disconnect the uplock release tube from the crank arm (Detail A).

S 034-009
(6) Remove the nuts and washers from the bottom of the crank shaft (View A-A).

S 034-010
(7) Move the crank off the torque shaft.

S 034-011
(8) Move the uplock release crank and washer off the torque shaft.

S 034-012
(9) Remove the bolts and washers from the retainer guard.

S 024-013
(10) Move the uplock release ground quadrant, sleeve, and retainer guard off the torque shaft. Keep the sleeve and retainer guard for installation.

TASK 32-35-07-404-014

3. Install the Uplock Release Ground Quadrant (Fig. 401)

A. Equipment
(1) Rig Pins from Kit A20004-XX (AMM 20-10-24):
(a) LGA1 - P/N A20004-15
(b) LGA3 - P/N A20004-20
(2) Cable Tensiometer

B. References
(1) AMM 32-00-15/201, Landing Gear Door Locks
(2) AMM 32-35-00/501, Landing Gear Alternate Extend System

C. Access
(1) Location Zones
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)
197 Wing to Body Fairing (Left)
198 Wing to Body Fairing (Right)

D. Procedure

S 424-015
(1) Put the sleeve, retainer guard, and quadrant onto the torque shaft (View A-A).

S 434-016
(2) Install the washer and bolt, to connect the sleeve and retainer guard to the torque shaft.

S 434-017
(3) Put the uplock release crank and washers on the torque shaft.

NOTE: Initially install 4 washers on the torque shaft.

S 434-018
(4) Put the crank on the torque shaft.

S 434-019
(5) Install the washers and nuts on the end of the torque shaft as shown in View A-A. Tighten the nuts to 150-200 pound-inches.

NOTE: Add more washers, if needed, between the uplock release crank and the crank. Do this until the crank can be installed tightly against the uplock release crank.

S 434-020
(6) Connect the uplock release tube to the uplock release crank (Detail A).

S 494-021
(7) Put the rig pin LGA3 through the cranks and the quadrant.

S 434-023
(8) Connect the GDR cables to the uplock release ground quadrant.

S 824-022
(9) Adjust the cable tension (AMM 32-35-00/501).

S 094-024
(10) Make sure the rig pins LGA1 and LGA3 are easily removed. Remove the rig pins.

S 984-025
(11) Move the door ground release lever to the fully open position.

S 984-026
(12) Release the lockout pawl. Make sure the pawl fully engages the detent on the uplock release ground quadrant.

S 094-027

WARNING: USE THE PROCEDURES IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(13) Remove the door locks from the main landing gear doors and close doors (AMM 32-00-15/201).

MAIN GEAR DOOR SAFETY VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the door safety valve for the main landing gear. The second task installs the door safety valve.

TASK 32-35-10-004-001

2. Remove the Main Landing Gear Door Safety Valve (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Main Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          143 MLG Wheel Well (Left)
          144 MLG Wheel Well (Right

   C. Prepare for Removal

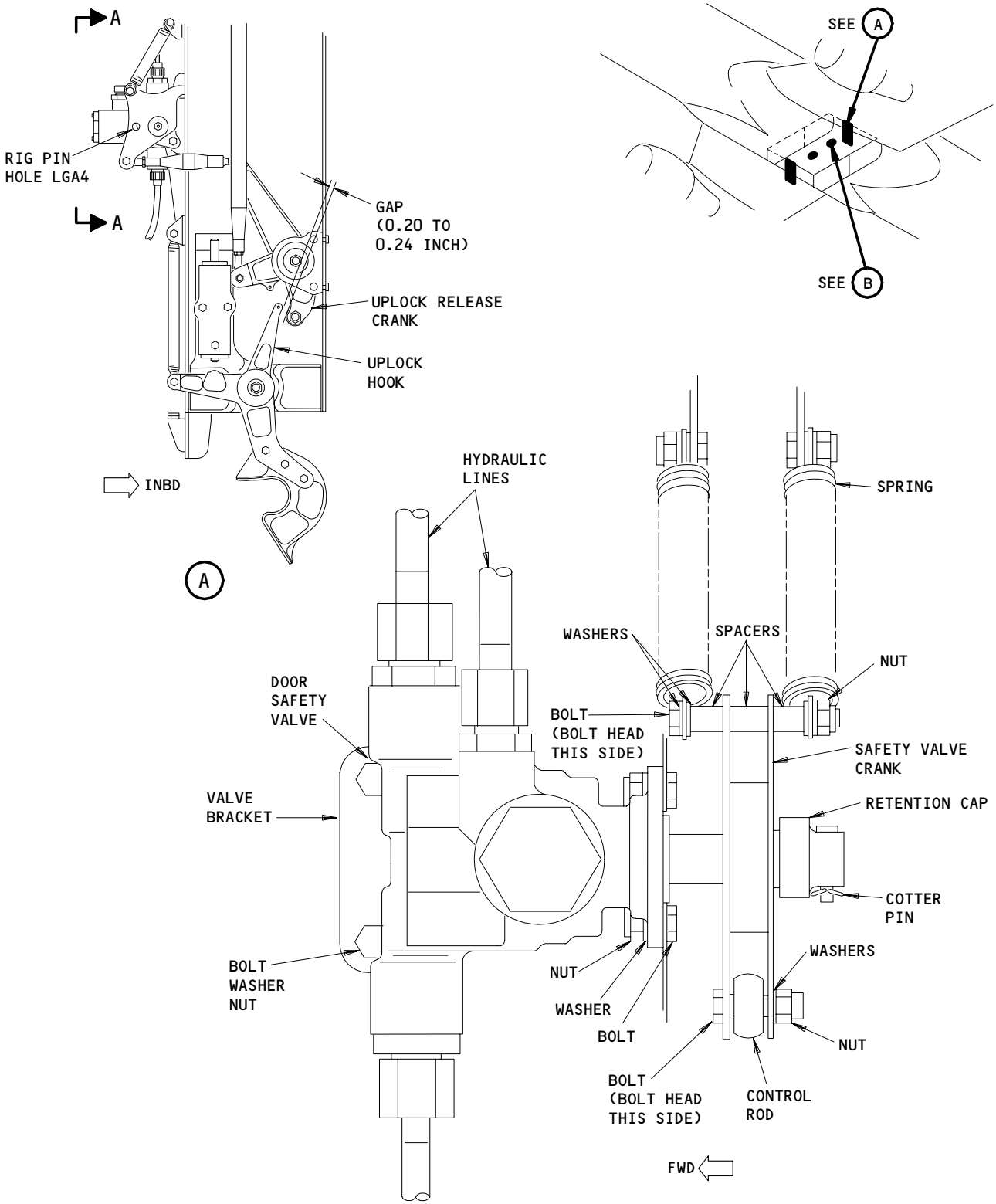
      S 214-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 484-038

      WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

      (2) Open the doors for the landing gear and install the door locks (Ref 32-00-15/201).

      S 864-004
      (3) Remove the pressure from the center hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).



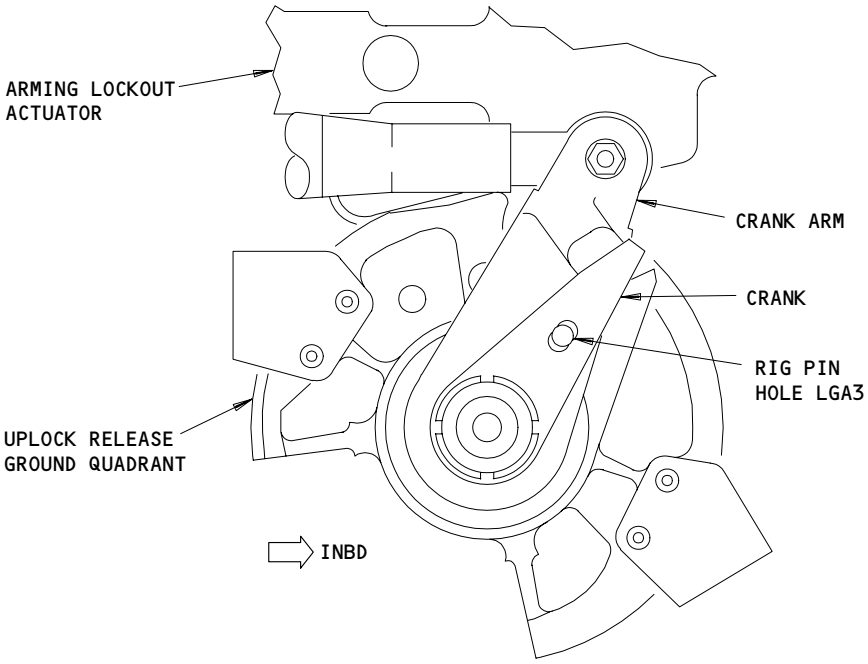
A-A
Main Landing Gear Safety Valve Installation
Figure 401 (Sheet 1)

D. Procedure

S 034-005
(1) Disconnect the hydraulic lines.

S 494-006
(2) Install plugs in the ports and lines.

S 034-007
(3) Disconnect the springs from the safety valve crank (View A-A).



B

Main Landing Gear Safety Valve Installation
Figure 401 (Sheet 2)

S 034-008
(4) Disconnect the control rod from the crank.

S 034-009
(5) Remove the cotter pin, retention cap, and shear pin to disconnect the crank from the safety valve.

S 034-010
(6) Remove the crank from the safety valve shaft. Remove the crank from the work area.

S 034-011
(7) Remove the bolts that hold the valve to the angle on the uplock mechanism housing.

S 034-012
(8) Remove the bolts that hold the valve bracket to the uplock mechanism housing.

S 024-013
(9) Remove the door safety valve from the work area.

TASK 32-35-10-404-014

3. Install the Main Landing Gear Door Safety Valve (Fig. 401)
   A. Equipment
      (1) Rig Pins from kit A20004-XX (AMM 20-10-24/201):
         (a) LGA3 - P/N A20004-20
         (b) LGA4 - P/N A20004-14

   B. Consumable Materials
      (1) D00153 Fluid, Hydraulic - BMS 3-11, Type IV
   C. References
      (1) AMM 12-12-01/301, Hydraulic Systems
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Main Gear Door Locks

(4) AMM 32-35-00/501, Main Gear Alternate Extend System

D. Access

(1) Location Zones

143 MLG Wheel Well (Left)

144 MLG Wheel Well (Right

E. Install the Door Safety Valve

S 614-015

(1) Fill the door safety valve with hydraulic fluid and install caps on the ports.

S 434-016

(2) Install the bolts that hold the valve bracket to the uplock mechanism housing (View A-A).

S 424-017

(3) Install the bolts that hold the valve to the angle on the uplock mechanism housing.

S 494-018

(4) Put the rig pin LGA4 through the rig pin holes (Detail A).

S 434-019

(5) Install the shear pin, retention cap, and cotter pin to connect the crank to the safety valve as shown on View A-A.

S 434-020

(6) Connect the control rod to the crank as shown on View A-A.

S 434-021

(7) Connect the springs to the safety valve crank (View A-A). Tighten the nut to 50-60 pound-inches.

S 434-022

(8) Make sure that pressure is removed from the center hydraulic system (AMM 29-11-00/201). Connect the hydraulic lines to the valve.

F. Make sure the Door Safety Valve is Installed Correctly

S 214-023

(1) Make sure the control lever for the landing gear is in DN.

S 494-024

(2) Make sure the rig pin LGA3 can easily be put through the rig pin hole on the uplock release ground quadrant for the alternate extend system (Detail B).

S 494-025

(3) Make sure the rig pin LGA4 can easily be put through the aligned rig pin holes on the safety valve and crank (Detail A).
   (a) If the pin cannot be installed correctly, adjust the control rod length.
   (b) Install a 0.424 inch rig block between the latch actuator piston and the uplock hook striker plate.
   (c) Measure the gap between the uplock hook and the uplock release crank to make sure it is correct (Detail A).
   (d) Remove the 0.424 inch rig block from between the latch actuator piston and the uplock hook striker plate.

S 824-026

(4) Adjust the gap if it is necessary (AMM 32-35-00/501).

S 094-027

(5) Remove the rig pins.

S 084-037

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Remove the door locks (AMM 32-00-15/201).

S 864-029

(7) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 714-030

WARNING: MAKE SURE THE MAIN LANDING GEAR DOOR AREA OF OPERATION IS CLEAR OF PERSONNEL AND EQUIPMENT. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Operate the door ground release lever 2 or 3 times, and make sure the door opens and closes.

NOTE: If the lever cannot be put back in place look to see if the control lever is in DN.

S 484-039

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(9) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 864-032

(10) Remove hydraulic power if it is not necessary (AMM 29-11-00/201).

S 214-033

(11) Examine the valve for hydraulic leaks.

G. Put the Airplane Back to Its Usual Condition

S 864-034

(1) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 084-040

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Remove the door locks from the main landing gear doors and close the doors (AMM 32-00-15/201).

MAIN GEAR DOOR ARMING LOCKOUT ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task is for the removal of the arming lockout actuator for the doors on the main landing gear. The second task is for the installation of the arming lockout actuator.

TASK 32-35-11-004-001

2. Remove the Arming Lockout Actuator for the Doors on the Main Landing Gear (Fig. 401)
   A. References
      (1) AMM 12-12-01/301, Hydraulic Systems
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Main Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          143 MLG Wheel Well (Left)
          144 MLG Wheel Well (Right)

   C. Prepare for the Removal

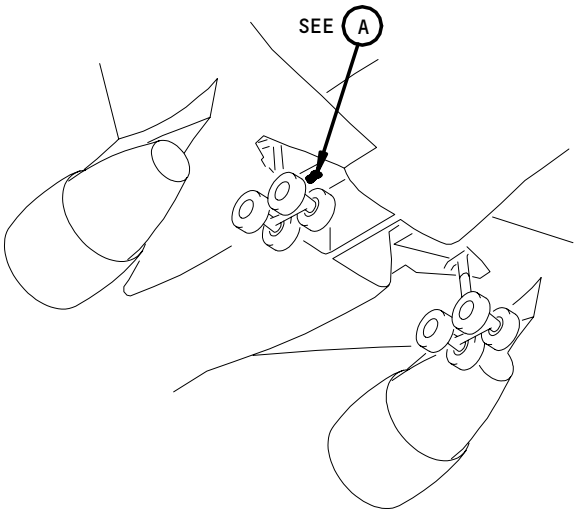
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

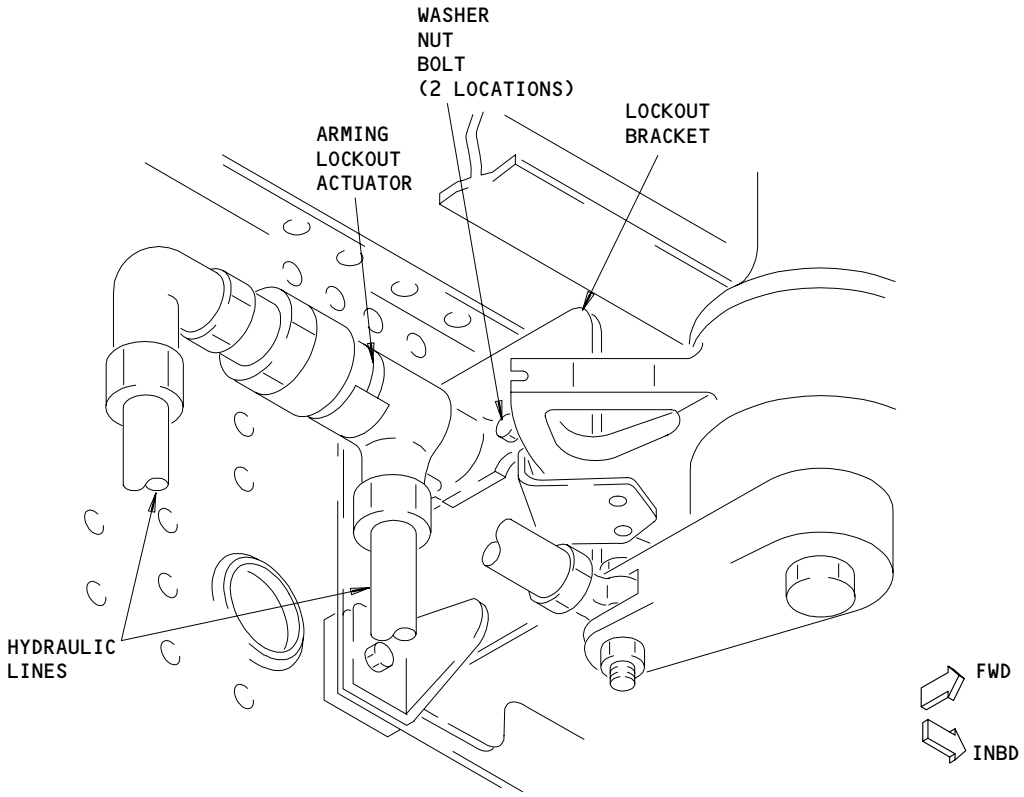
      S 484-028

      WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

      (2) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

      S 864-004
      (3) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).





A

Main Landing Gear Door Arming Lockout Actuator Installation
Figure 401

D. Remove the Actuator

S 034-005
(1) Disconnect the hydraulic lines from the arming lockout actuator.

S 494-006
(2) Install caps in the hydraulic ports and hoses. Move the hoses out of the work area.

S 024-007
(3) Remove the bolts that hold the actuator to the lockout bracket and remove the actuator.

TASK 32-35-11-404-008

3. Install the Arming Lockout Actuator for the Doors on the Main Landing Gear (Fig. 401)

A. Consumable Materials
(1) D00153 Fluid, Hydraulic - BMS 3-11, Type IV

B. References
(1) AMM 12-12-01/301, Hydraulic Systems
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Main Gear Door Locks

C. Access
(1) Location Zones
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)

D. Procedure to Install the Arming Lockout Actuator

S 614-009
(1) Fill the arming lockout actuator with hydraulic fluid.

S 494-010
(2) Install caps on the hydraulic ports.

S 424-011
(3) Install the bolts that hold the actuator to the lockout bracket (Detail A).

S 864-012

(4) Make sure that pressure is removed from the center hydraulic system (AMM 29-11-00/201).

S 434-013

(5) Connect the hydraulic lines to the actuator.

E. Do a Check of the Actuator for the Correct Installation

S 084-029

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Remove the door locks from the main landing gear doors and close the doors (AMM 32-00-15/201).

S 864-016

(2) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 714-017

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE DOORS FOR THE MAIN LANDING GEAR. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Operate the ground release lever for the doors 2 or 3 times, while you make sure the doors for the main landing gear open and close.

NOTE: If the door does not close, make sure the control lever for the landing gear is in the DN position.

S 714-018

WARNING: MAKE SURE THE AREA AROUND THE MAIN LANDING GEAR DOORS AND THE TAIL SKID (IF APPLICABLE) IS CLEAR OF PERSONS AND EQUIPMENT. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(4) Move the control lever from DN to the OFF position.

S 864-024

(5) Open the doors for the main landing gear with the ground release lever.

S 714-025

(6) Make sure you cannot stow the lever.

S 084-030

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(7) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 864-020

(8) Remove the power from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 794-021

(9) Examine the lockout actuator for hydraulic leaks.

F. Put the Airplane Back to Its Usual Condition

S 614-022

(1) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 084-031

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

S 864-026

(3) Put the control lever for the landing gear to the DN position.

LANDING GEAR ALTERNATE EXTEND ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the alternate extend actuator for the landing gear. The second task installs the alternate extend actuator.

TASK 32-35-12-004-001

2. Remove the Alternate Extend Actuator (Fig. 401)
   A. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
   B. Access
      (1) Access Panels
          119AL Electronics Bay Access Panel
   C. Prepare for Removal

      S 864-002
      (1) Open this circuit breaker on the main power distribution panel, P6, and attach a DO-NOT-CLOSE tag:
          (a) 6F6, LANDING GEAR ALTN EXT MOTOR

      S 864-003
      (2) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
          (a) 11U14, LANDING GEAR ALTN EXT LATCH RST

      S 414-004
      (3) Remove the electronics bay access panel, 119AL to get access to the actuator (AMM 06-41-00/201).
   D. Procedure

      S 034-005
      (1) Disconnect the electrical connector at the actuator.

      S 014-013
      (2) Remove the 3 bolts to disconnect the actuator from the torque shaft.

TASK 32-35-12-404-006

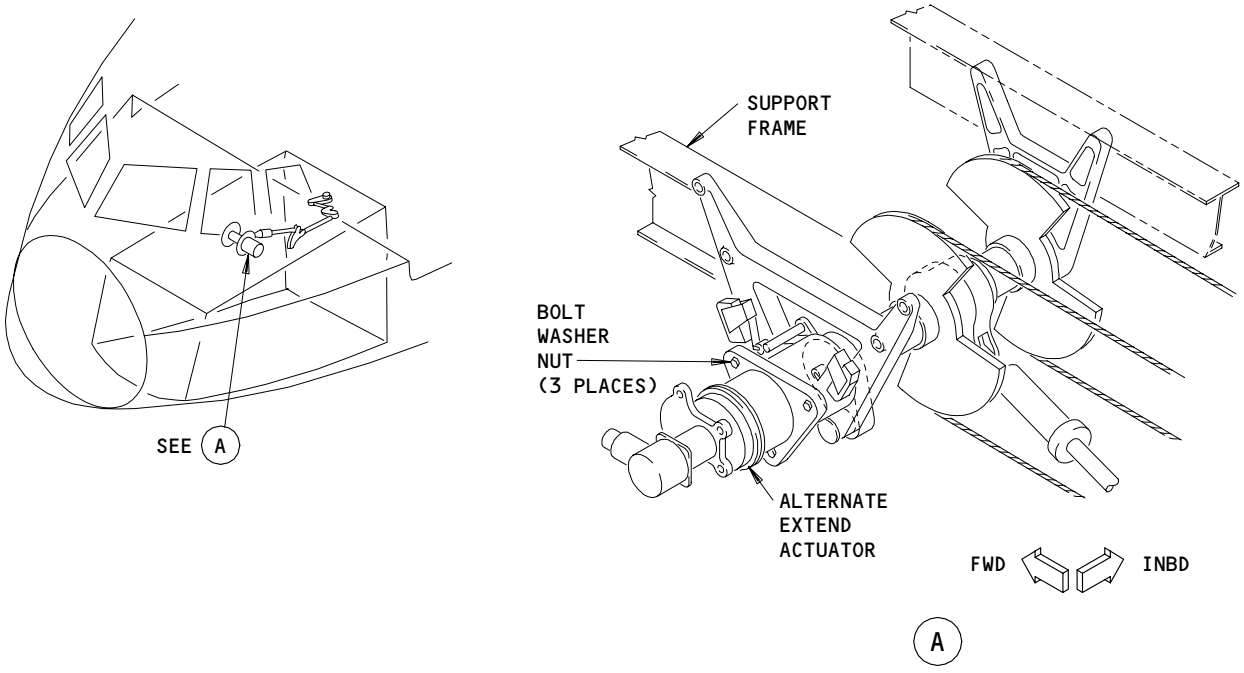
3. Install the Alternate Extend Actuator (Fig. 401)
   A. Consumable Materials
      (1) D00633 Grease, Corrosion Preventive - BMS 3-33 (Preferred)
      (2) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)

B. References
   (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
   (2) AMM 32-35-00/501, Landing Gear Alternate Extend System

C. Access
   (1) Access Panels
       119AL Electronics Bay Access Panel

D. Procedure

   S 644-007
   (1) Lightly lubricate the spline shaft with grease before you install the actuator.



Landing Gear Alternate Extend Actuator Installation
Figure 401

S 424-008
(2) Put the actuator in place. Install the bolts, washers, and nuts.

S 434-009
(3) Connect the electrical connector to the actuator.

S 864-010
(4) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the overhead circuit breaker panel, P11:
(a) 11U14, LANDING GEAR ALTN EXT LATCH RST

S 864-011
(5) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the main power distribution panel, P6:
(a) 6F6, LANDING GEAR ALTN EXT MOTOR

S 714-012
(6) Do an operational test of the alternate extend system (AMM 32-35-00/501).

LANDING GEAR ALTERNATE EXTEND QUADRANTS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the alternate extend quadrant. The second task installs the alternate extend quadrant.

TASK 32-35-13-004-001

2. Remove the Alternate Extend Quadrant (Fig. 401)
   A. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 32-35-12/401, Landing Gear Alternate Extend Actuator
   B. Access
      (1) Access Panel
          119AL Electronics Bay Access Door

   C. Prepare for Removal

      S 864-002
      (1) Attach a DO-NOT-OPERATE tag to the ALTN GEAR EXTENSION switch on the pilot's center instrument panel, P3.

      S 014-003
      (2) Open the electronics bay access panel, 119AL to get access to the alternate extend quadrants (AMM 06-41-00/201).

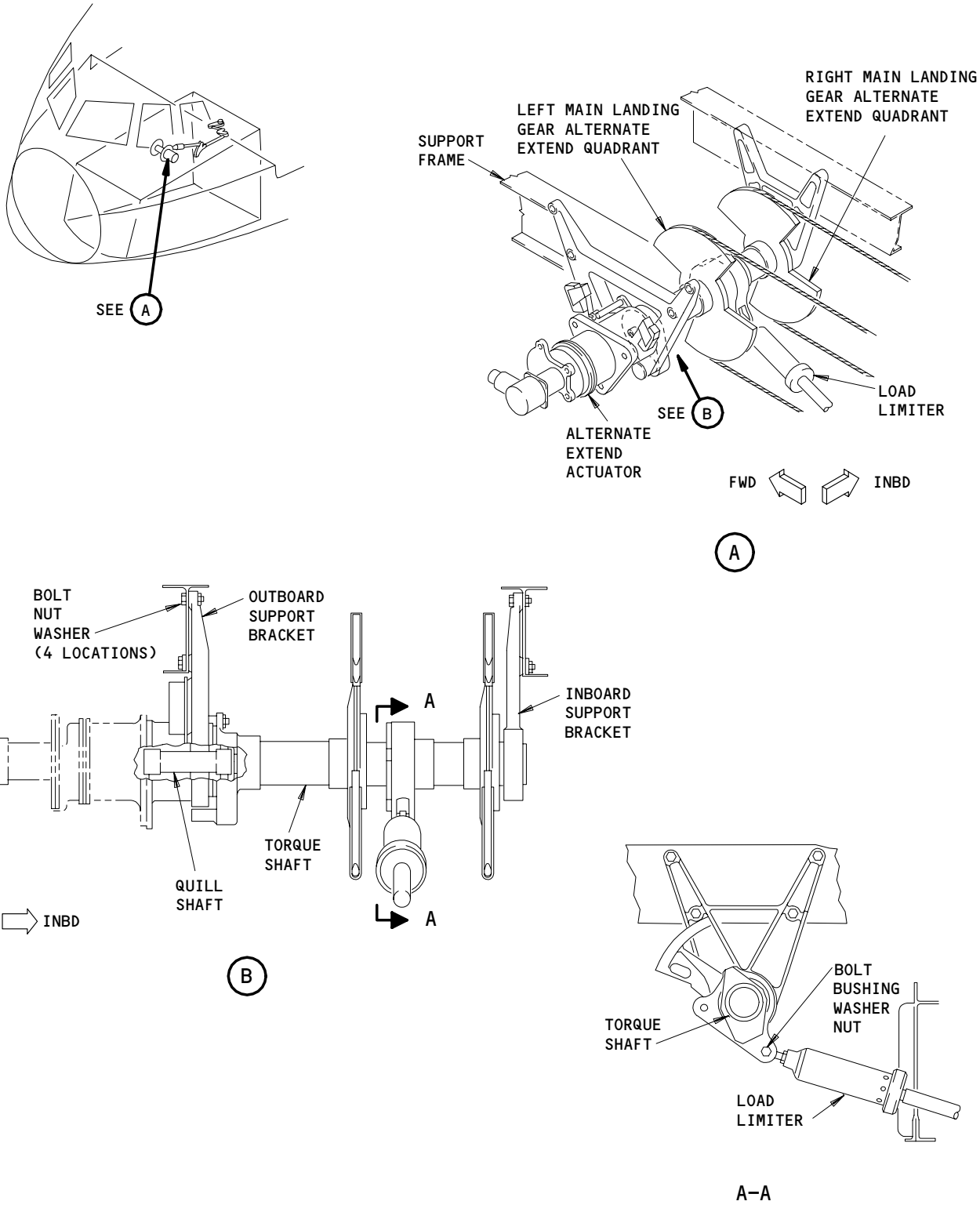
      S 024-004
      (3) Remove the alternate extend actuator for the landing gear (AMM 32-35-12/401).
   D. Procedure

      S 034-006
      (1) Remove the quill shaft from the torque shaft (Detail B/D).

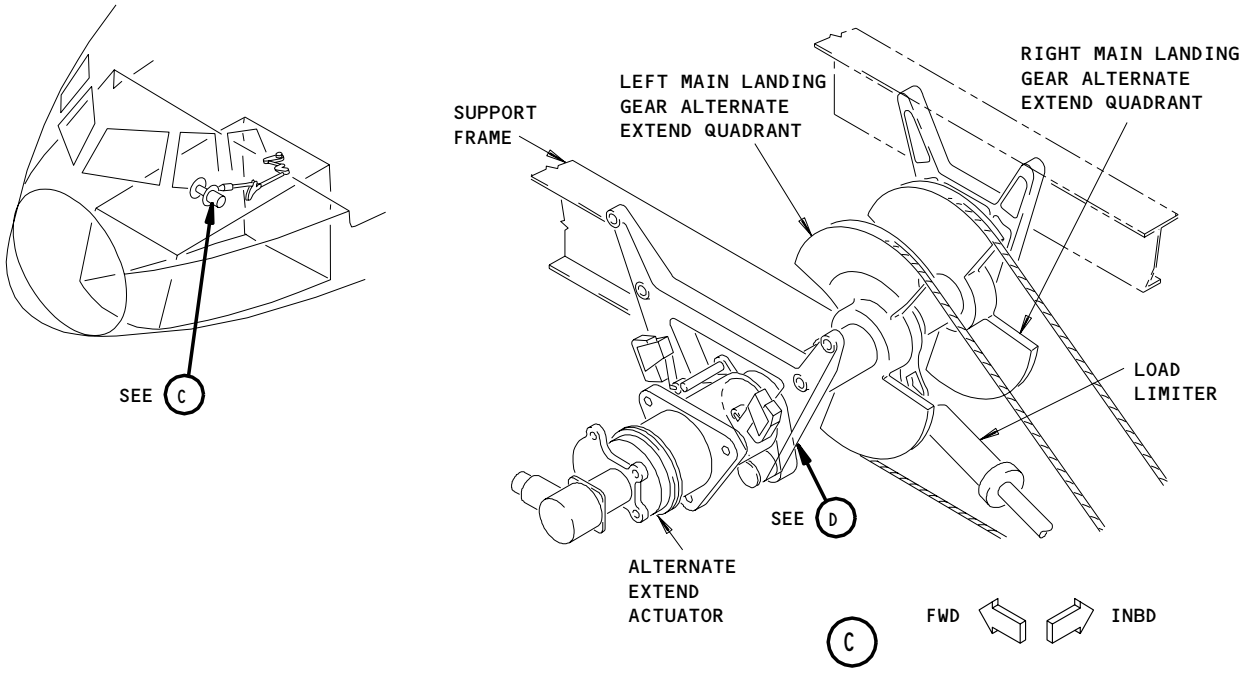
      S 034-008
      (2) Remove the bolt to disconnect the load limiter from the torque shaft (View A-A/B-B).

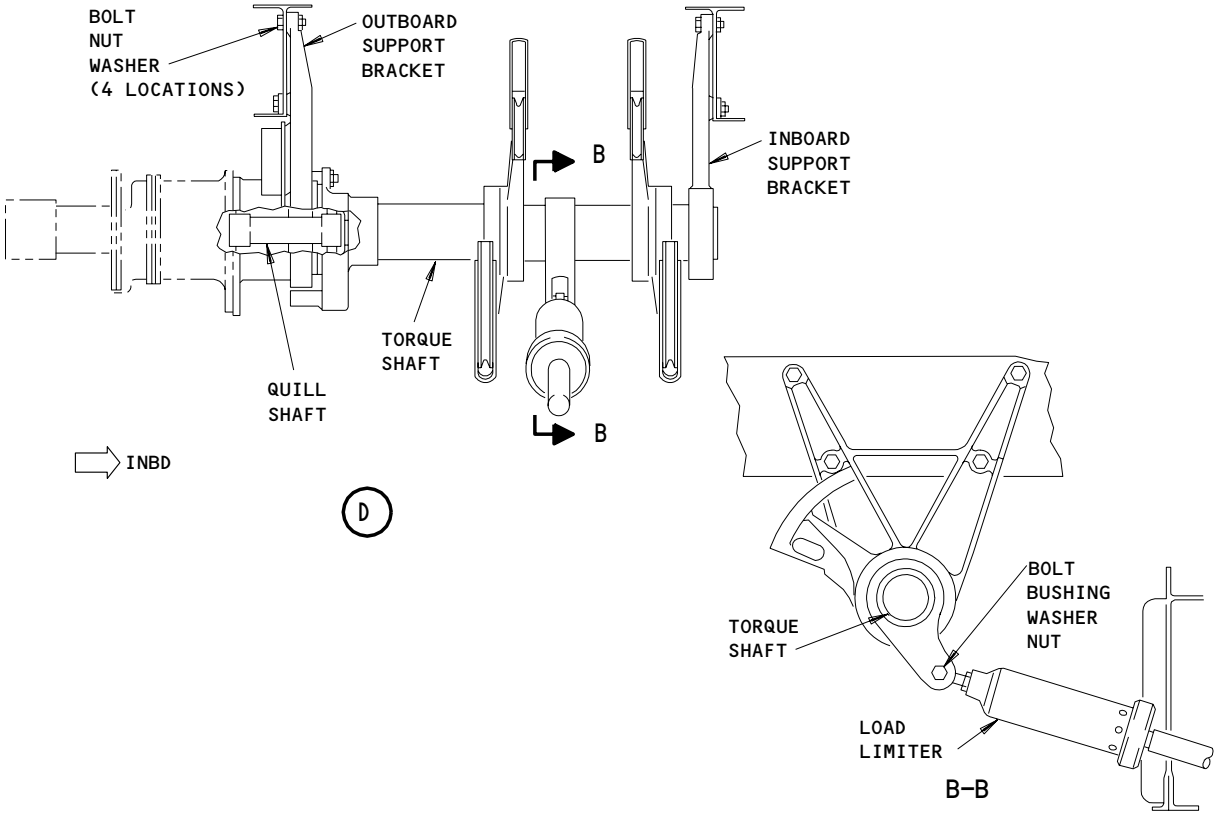
      S 034-009
      (3) Loosen the turnbuckles AGE 1A, AGE 1B, AGE 2A, and AGE 2B. The turnbuckles are found in the aft end of the forward cargo compartment, in the ceiling, outboard of the left and right sidewalls.

      S 034-010
      (4) Remove the retaining plates that hold the cables on the quadrants.



Landing Gear Alternate Extend Quadrant Installation
Figure 401 (Sheet 1)





Landing Gear Alternate Extend Quadrant Installation
Figure 401 (Sheet 2)

S 034-012
(5) Hold up the torque shaft and remove the bolts to disconnect the shaft from the outboard support bracket (Detail B/D).

S 984-013
(6) Turn the outboard support bracket and the torque shaft as necessary to be clear of the support frame.

S 034-014
(7) Move the shaft out of the inboard support bracket.

TASK 32-35-13-404-015

3. Install the Alternate Extend Quadrant (Fig. 401)

A. Consumable Materials
(1) D00633 Grease, Corrosion Preventive - BMS 3-33 (Preferred)
(2) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)

B. References
(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 32-35-00/501, Landing Gear Alternate Extend System
(3) AMM 32-35-12/401, Landing Gear Alternate Extend Actuator

C. Access
(1) Access Panels
119AL Electronics Bay Access Door

D. Procedure

S 424-016
(1) Put the torque shaft into the inboard support bracket; turn the outboard support bracket and the torque shaft to the correct position.

S 434-018
(2) Install the bolts, washers, and nuts to connect the outboard support bracket to the support frame (Detail B/D).

S 434-019
(3) Put the cables in position on the quadrants. Connect the retaining plates to the quadrants with the bolts, washers, and nuts.

S 434-021
(4) Install the bushing, bolt, washer, and nut to connect the load limiter to the torque shaft (View AA/B-B).

S 644-022
(5) Apply grease to the splines of the quill shaft.

S 434-023
(6) Install the quill shaft on the torque shaft (Detail B/D).

S 424-024

(7) Install the alternate extend actuator (AMM 32-35-12/401).

NOTE: Do not do the operational test of the alternate extend system per AMM 32-35-12/401.

S 864-025

(8) Remove the DO-NOT-OPERATE tag from the ALTN GEAR EXTENSION switch.

S 824-026

(9) Do these tasks of the Landing Gear Alternate Extend System - Adjustment/Test (AMM 32-35-00/501):
   (a) The Adjustment - Alternate Extend System for the Landing Gear except the Adjustment of the Cables for the Door Ground Release.
   (b) The System Test - Alternate Extend System for the Landing Gear except for the Test of the Depressurization Valves and the Test of the Door Ground Release.

MAIN GEAR ALTERNATE EXTEND LOAD LIMITER - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the alternate extend load limiter for the main landing gear. The second task installs the alternate extend load limiter.

TASK 32-35-14-004-014

2. Remove the Alternate Extend Load Limiter (Fig. 401)
   A. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 25-52-01/401, Containerize Cargo Compartment sidewall lining
   B. Access
      (1) Location Zones
          121 Forward Cargo Compartment (Left)
          122 Forward Cargo Compartment (Right)
          119 Main Equipment Center (Left)
          120 Main Equipment Center (Right)

      (2) Access Panels
          119AL Electronics Bay Access Door

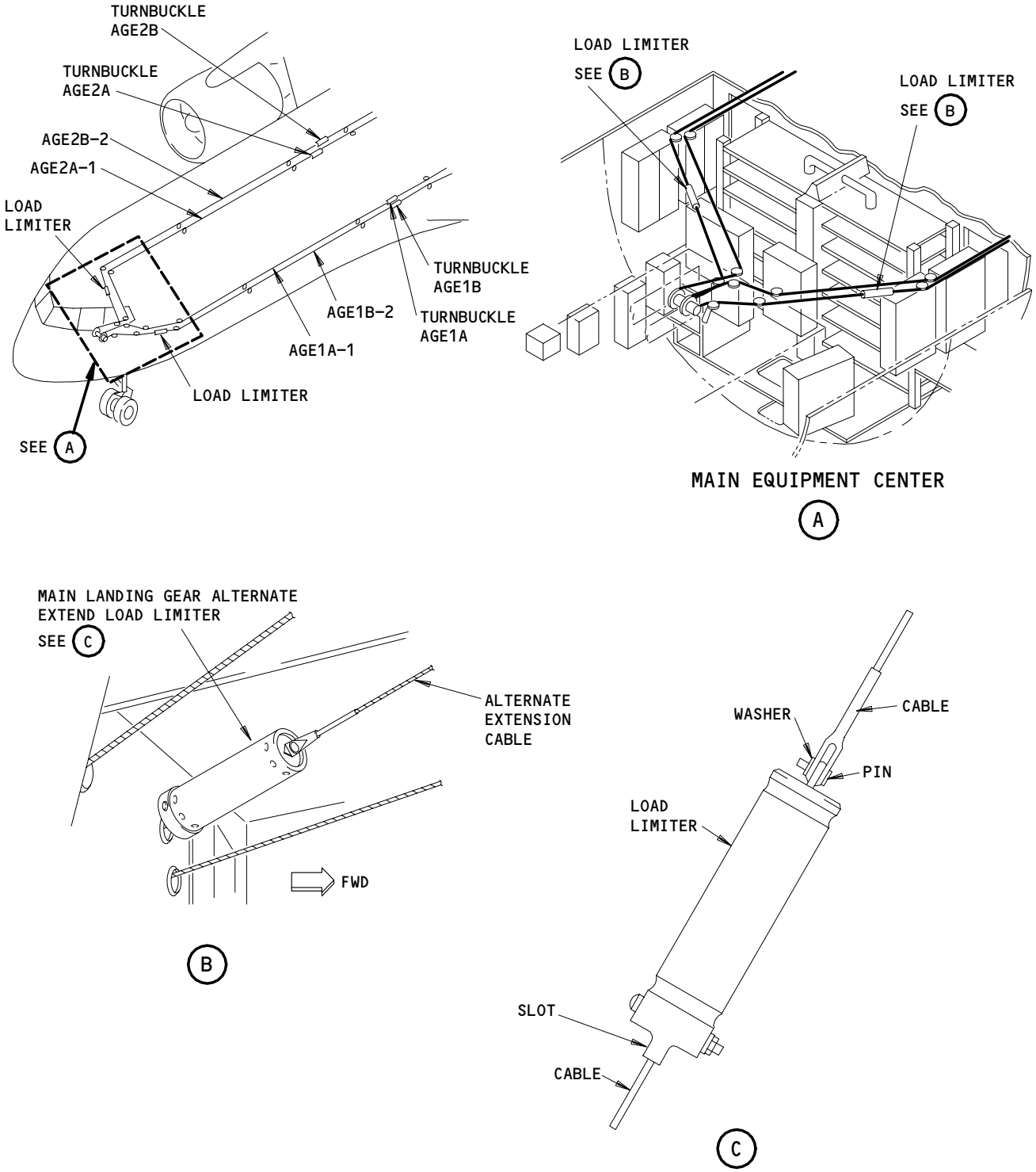
   C. Prepare for Removal

      S 014-001
      (1) Open the forward cargo door. Remove the left or right sidewall panel about 3 feet forward of the cargo compartment aft endliner (AMM 25-52-01/401).

      S 014-002
      (2) To remove the left load limiter, loosen the turnbuckle AGE1A. The turnbuckle can be found in the aft end of the forward cargo compartment, in the ceiling, outboard of the sidewall.

      S 014-003
      (3) To remove the right load limiter, loosen the turnbuckle AGE2B. The turnbuckle can be found in the aft end of the forward cargo compartment, in the ceiling, outboard of the sidewall.

      S 014-004
      (4) Open the main equipment center access door 119AL (AMM 06-41-00/201). Find the load limiters in the electronics access bay as follows:.
          (a) The left load limiter is in the ceiling along the left sidewall the same distance aft as the aft bulkhead of the nose wheel well.
          (b) The right load limiter is in the ceiling above the aft bulkhead of the nose wheel well. It is approximately 2 feet right of the airplane centerline.



Main Landing Gear Alternate Extend Load Limiter Installation
Figure 401

D. Procedure

S 034-005
(1) Remove the pin from the forward end of the load limiter.

S 024-006
(2) Disengage the cable from the slot in the end cap at the aft end of the load limiter. Remove the load limiter.

TASK 32-35-14-404-007

3. Install the Alternate Extend Load Limiter (Fig. 401)

A. References
(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 25-52-01/401, Containerize Cargo Compartment sidewall lining
(3) AMM 32-35-00/501, Landing Gear Alternate Extend System

B. Access
(1) Location Zones
121 Forward Cargo Compartment (Left)
122 Forward Cargo Compartment (Right)
119 Main Equipment Center (Left)
120 Main Equipment Center (Right)

(2) Access Panel
119AL Electronics Bay Access Door

C. Procedure

S 424-008
(1) Engage the cable in the slot in the end cap of the load limiter aft end.

S 434-009
(2) Install the pin, washer, and cotter pin to connect the cable to the load limiter forward end (Detail A).

S 824-010
(3) Adjust the alternate extend cables (AMM 32-35-00/501).

S 824-022
(4) Do the operational test for the alternate extension system (AMM 32-35-00/501).

S 414-011
(5) Close the access door for the main equipment center, 119AL (AMM 06-41-00/201).

S 414-012
(6) Install the sidewall panel that was removed (AMM 25-52-01/401).

S 414-013
(7) Close the forward cargo door.

NOSE GEAR ALTERNATE EXTEND LOAD LIMITER - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the alternate extend load limiter for the nose landing gear. The second task installs the alternate extend load limiter.

TASK 32-35-15-004-013

2. Remove the Alternate Extend Load Limiter for the Nose Landing Gear (Fig. 401)
   A. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
   B. Access
      (1) Location Zones
          119 Main Equipment Center (Left)
          120 Main Equipment Center (Right)

      (2) Access Panels
          119AL Electronics Bay Access Door

   C. Prepare for Removal

      S 864-001
      (1) Attach a DO-NOT-OPERATE tag to the ALTN GEAR EXTENSION switch on the pilots main panel, P3.

      S 014-002
      (2) Open the main equipment center access door 119AL to get access to the load limiter (AMM 06-41-00/201).
   D. Procedure

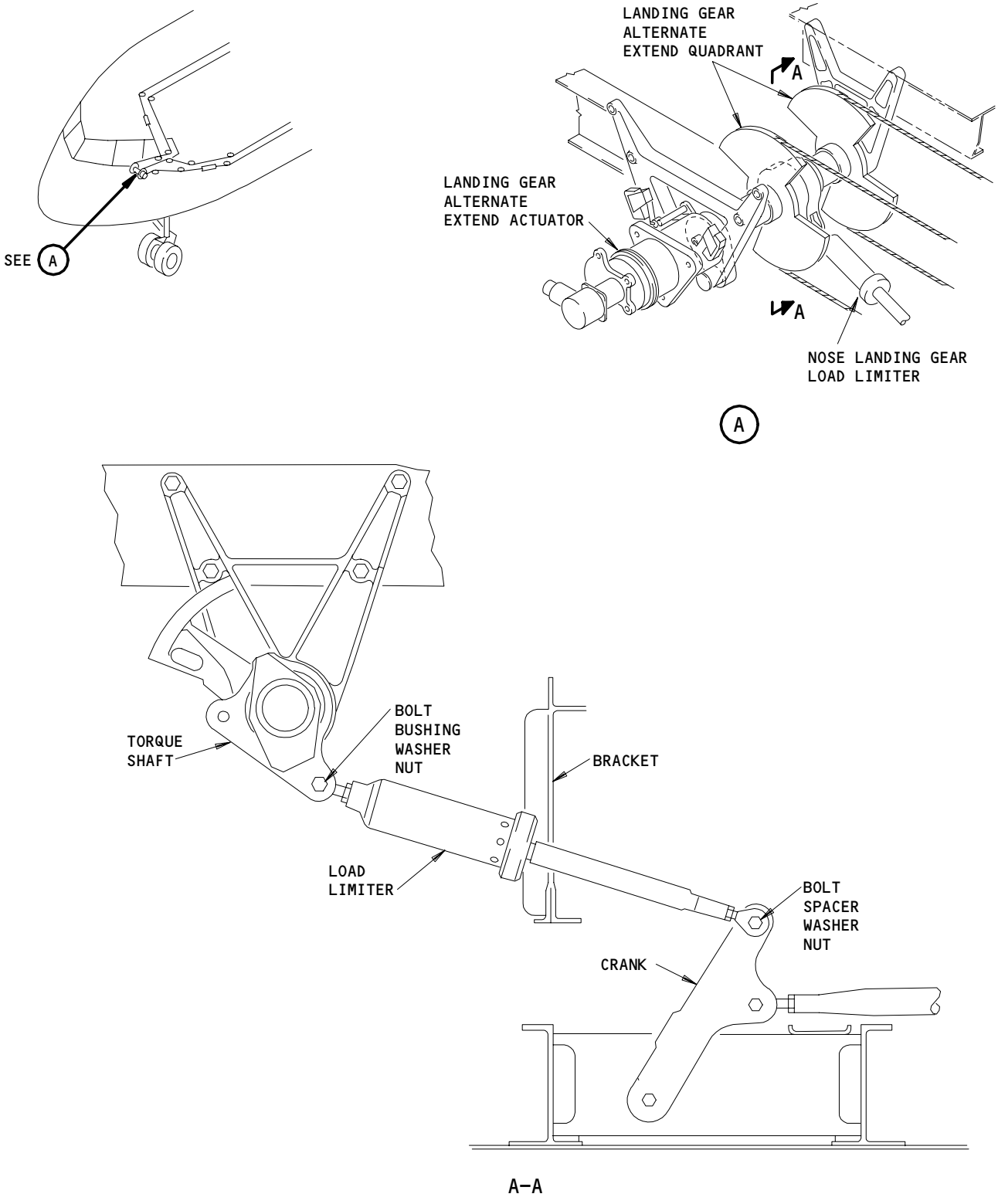
      S 084-003
      (1) Remove the bolt to disconnect the load limiter from the torque shaft.

      S 034-004
      (2) Remove the bolt to disconnect the load limiter from the crank.

      S 024-005
      (3) Take the load limiter out of the bracket.

TASK 32-35-15-404-006

3. Install the Alternate Extend Load Limiter for the Nose Landing Gear (Fig. 401)
   A. Consumable Materials
      (1) D00633 Grease - BMS 3-33 (Preferred)



Nose Landing Gear Alternate Extend Load Limiter Installation
Figure 401

(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

B. References

(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels

(2) AMM 32-35-00/501, Landing Gear Alternate Extend System

C. Access

(1) Location Zones

119 Main Equipment Center (Left)
120 Main Equipment Center (Right)

(2) Access Panels

119AL Electronics Bay Access Door

D. Procedure

S 424-007

(1) Put the rod end of the load limiter through the bracket.

S 644-008

(2) Apply grease to the spacer before installation.

S 434-009

(3) Install the spacer, bolt, washer, and nut to connect the rod end of the load limiter to the crank.

S 434-010

(4) Install the bushing, bolt, washer, and nut to connect the load limiter to the torque shaft.

S 864-011

(5) Remove the DO-NOT-OPERATE tag from the ALTN GEAR EXTENSION switch on the pilots main panel, P3.

S 824-012

(6) Do the Operational Test of the Alternate Extend System for the nose landing gear (AMM 32-35-00/501).

WHEELS AND BRAKES - DESCRIPTION AND OPERATION

1. General
   A. This section on wheels and brakes includes maintenance coverage on the following related topics.
      (1) Hydraulic brake system (AMM 32-41-00)
      (2) Antiskid/autobrake system (AMM 32-42-00)
      (3) Parking brake system (AMM 32-44-00)
      (4) Tires and wheels (AMM 32-45-00)
      (5) Brake temperature monitoring system (AMM 32-46-00)
2. Component Details
   A. Hydraulic Brake System
      (1) The hydraulic brake system is used to provide a means to slowdown and/or stop the airplane after landing touchdown and during taxi operations. Brakes installed in each of the main landing gear wheels are activated hydraulically by rudder pedal movement or automatically through the autobrake system (AMM 32-42-00) (see hydraulic brake system description and operation).
   B. Antiskid/Autobrake System
      (1) The antiskid system automatically releases and reapplies the brakes to prevent skids or loss of control during braking (see antiskid system description and operation).
      (2) The autobrake system automatically applies the brakes after landing, to slow the airplane at a deceleration rate selected by the pilots before landing (see antiskid system description and operation).
   C. Parking Brake System
      (1) The parking brake system enables the airplane brakes to be set for 8 hours minimum for parking (see parking brake system description and operation).
   D. Tires and Wheels
      (1) The tires and wheels support the aircraft during ground operations. Four tires and wheels are installed on each main gear and two on the nose gear (see wheels and tires description and operation).
   E. Brake Temperature Monitoring System
      (1) The brake temperature monitoring system provides a means for the flight crew to monitor the temperature of the brakes to prevent brake overheating during braking operation (see brake temperature monitoring system descirption and operation).

CORROSION PREVENTION IN THE HYDRAULIC BRAKE SYSTEM - MAINTENANCE PRACTICES

1. General
   A. The hydraulic brake system includes main landing gear brake assemblies, mechanical control linkage from the pilot's foot pedals to the brake metering valve modules, hydraulic valves, actuators and accumulators.
   B. Corrosion can occur on bearings in the linkage of the brake metering valve module.

TASK 32-40-01-602-001

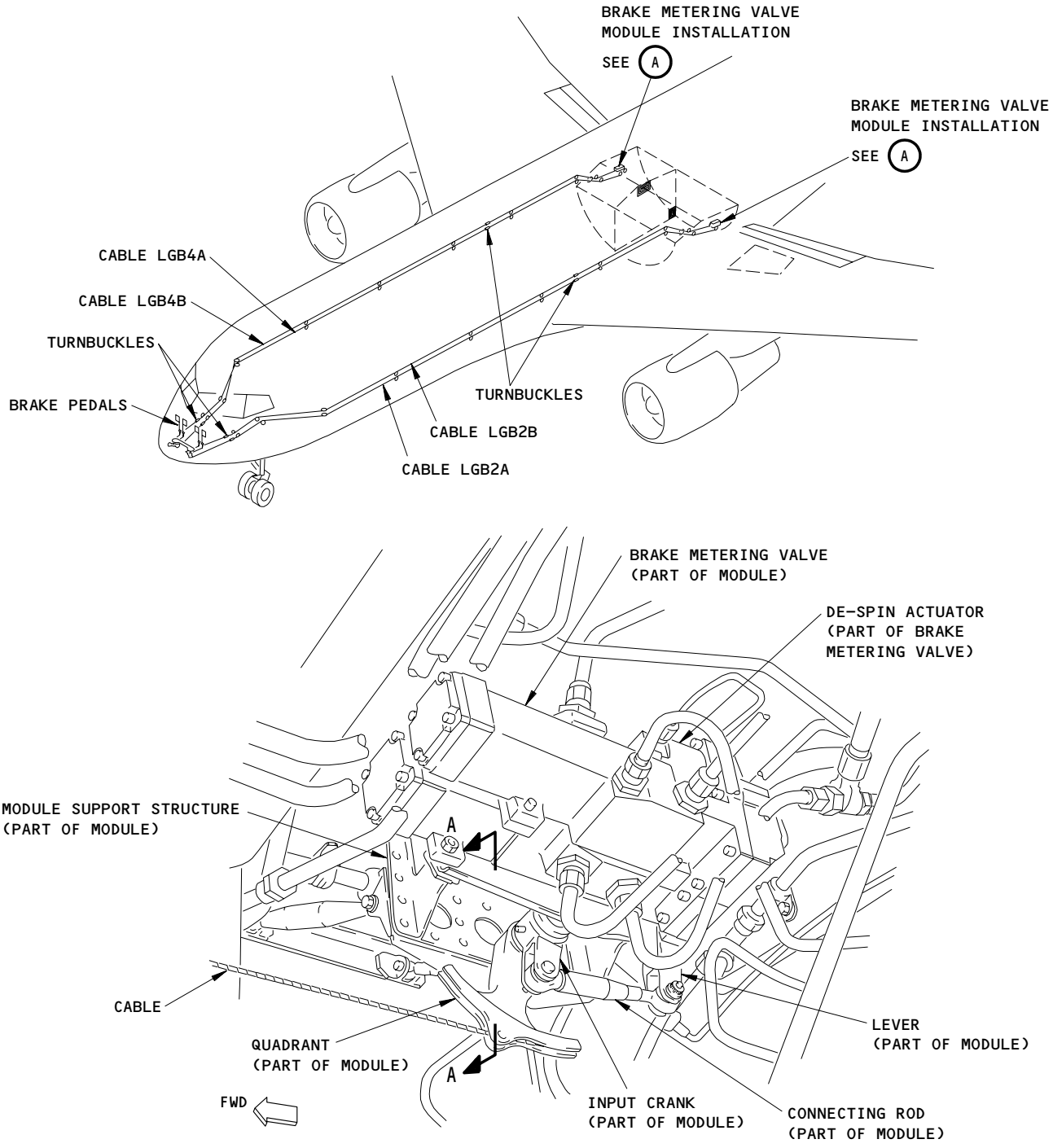
2. Corrosion Prevention
   A. References
      (1) AMM 51-24-09/701, Corrosion Inhibiting Coumpound-Cleaning/Painting
   B. Access
      (1) Location Zones
          143/144 Main Landing Gear Wheel Well
          731/741 Main Landing Gear (MLG)

   C. General
      (1) Improved Corrosion Protection
          (a) Airplanes line number 334 and on have corrosion resistant bearings in the module linkage per PRR B11857.
   D. Obey these steps when servicing the brakes

      S 212-004
      (1) Make regular checks of the brake metering valve module for corrosion of bearings in the linkage. If you find corrosion, replace the defective bearings with equivalent corrosion resistant bearings.

      S 622-003
      (2) Do not apply corrosion inhibiting compounds on grease joints or sealed bearings. These compounds dissolve grease and other lubricants. They are penetrating compounds and can get around the seals and into the bearings.

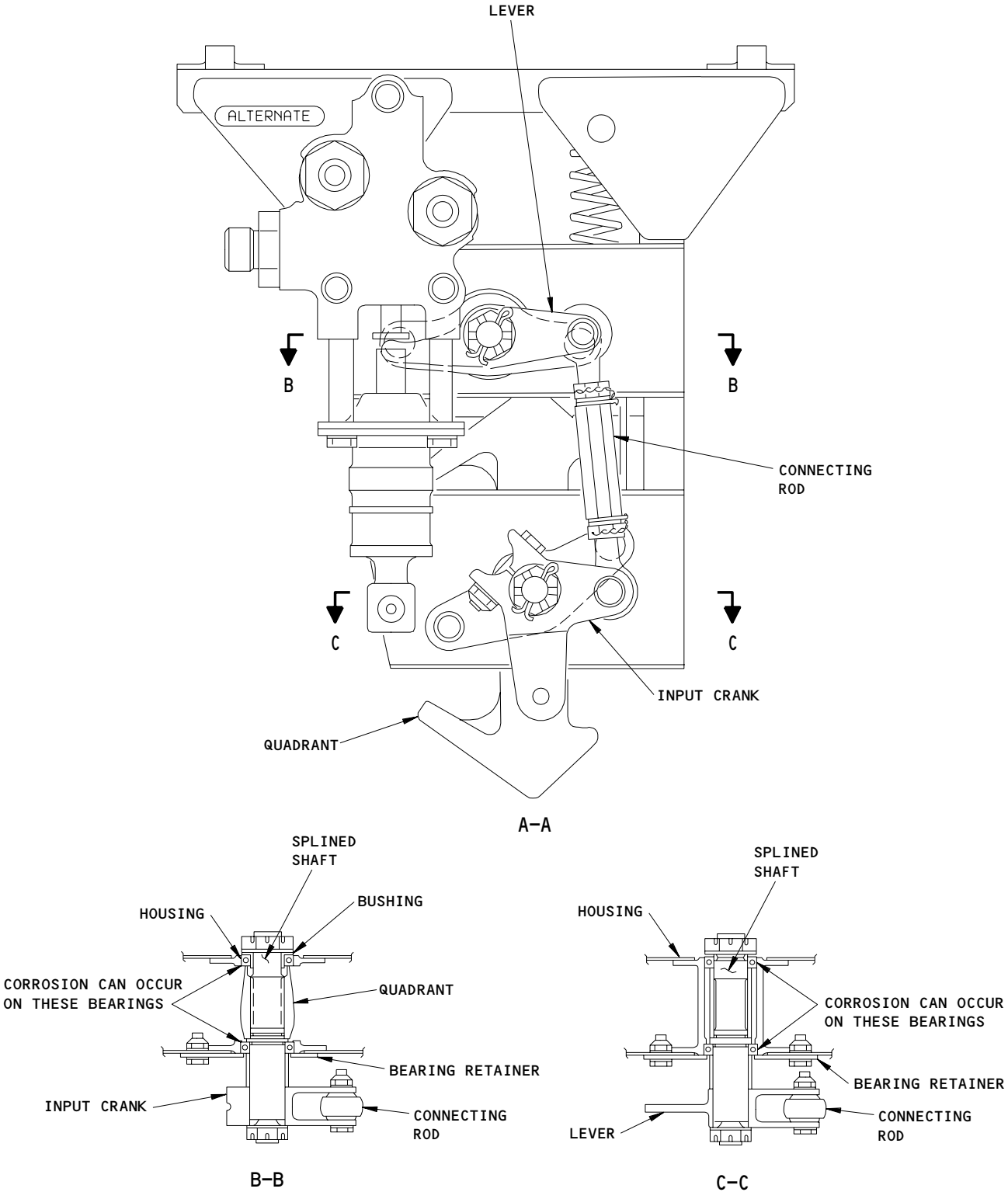
      S 622-002
      (3) For minor corrosion, to minimize the downtime of the airplane, the corrosion products should be cleaned off, followed by the application of a corrosion inhibiting compound into the affected area to retard the corrosion process (AMM 51-24-09/701). The finish system should be restored at the first opportunity consistent with the maintenance schedule.



BRAKE METERING VALVE MODULE
(RIGHT SIDE INSTALLATION SHOWN)

A

Brake Metering Valve Module
Figure 201 (Sheet 1)



Brake Metering Valve Module
Figure 201 (Sheet 2)

HYDRAULIC BRAKE SYSTEM - DESCRIPTION AND OPERATION

1. General
   A. The hydraulic brakes are controlled manually by applying foot pressure to the captain's and/or first officer's brake pedals, or automatically by the autobrake system (AMM 32-42-00/001). In the manual mode of operation, which is covered in this section of the maintenance manual, the four brakes on the left gear are operated by the pilot's left pedal(s) and the four brakes on the right gear are operated by the pilot's right pedal(s). The captain's and first officer's brake pedals are joined together by linkage so that braking force will be the combined force applied to the pedals by both pilots.
   B. The hydraulic brake system includes the main landing gear brake assemblies (8 places), mechanical control linkage from the pilot's foot pedals to the brake metering valve modules (left and right sides), hydraulic valves (accumulator isolation, alternate brake selector, brake metering valve modules), check valves, wheel brake (de-spin) actuator, surge accumulators (2 places), and pilot's brake system indications.
      (1) The brakes are multiple disk rotor-stator type units that are activated hydraulically.
      (2) The pedal and quadrant linkage consists of the pilot's foot pedal mechanism (bellcranks, pushrods, quadrants) which connects to the left and right metering valve modules by a cable system on each side of the airplane that goes aft through the floor beams from the linkage to the metering valve modules. The cables are guided by a series of pulleys mounted on the body structure.
      (3) The brake hydraulic system is normally powered by the right hydraulic system, however, if right system pressure is lost, the center system pressure is automatically selected by the alternate brake selector valve to operate the brakes. A brake accumulator is provided in the event loss of both right and center hydraulic systems occurs. A limited number of brake applications (5 or 6) can be accomplished using the accumulator source. A reserve source of brake hydraulic power can be selected if other sources become inactive. The reserve source consists of one electric motor-driven pump and a dedicated supply of hydraulic fluid in the center hydraulic system to operate the brake and nose wheel steering system.
      (4) Hydraulic system indications provided to the pilots include a brake system pressure gage, a low hydraulic brake pressure light, and Engine Indicating and Crew Alerting System (EICAS) caution messages (AMM 31-41-00/001).
   C. The parking brake system is included as a integral part of the hydraulic brake system and provides a means of keeping brakes on without applying constant foot brake pedal pressure (AMM 32-44-00/001).

D. The antiskid system operates through the hydraulic brake system to prevent skids during braking. During normal braking, pressure is unmodified by the antiskid valves. However, if one or more wheels enter a skid condition, the antiskid valves will automatically reduce hydraulic pressure to the affected brakes. When the skid has been averted, the antiskid valves will revert to normal, and allow normal braking to continue. The antiskid and autobrake systems are combined into one maintenance manual section (AMM 32-42-00/001).

E. The brake temperature monitoring system is installed to monitor the temperature of each of the eight brakes and to aid the pilots in avoiding an overheat condition when the brakes are being operated (Ref 32-46-00). Brake temperature values are displayed on the status mode of the EICAS system (AMM 31-41-00/001).

F. Gear retract braking, to stop the wheels from spinning prior to them entering the wheel well after take off, is accomplished from the gear-up hydraulic pressure line. This pressure actuates the autobrake (de-spin) actuators on the left and right brake metering valve modules which in turn actuates the brakes.

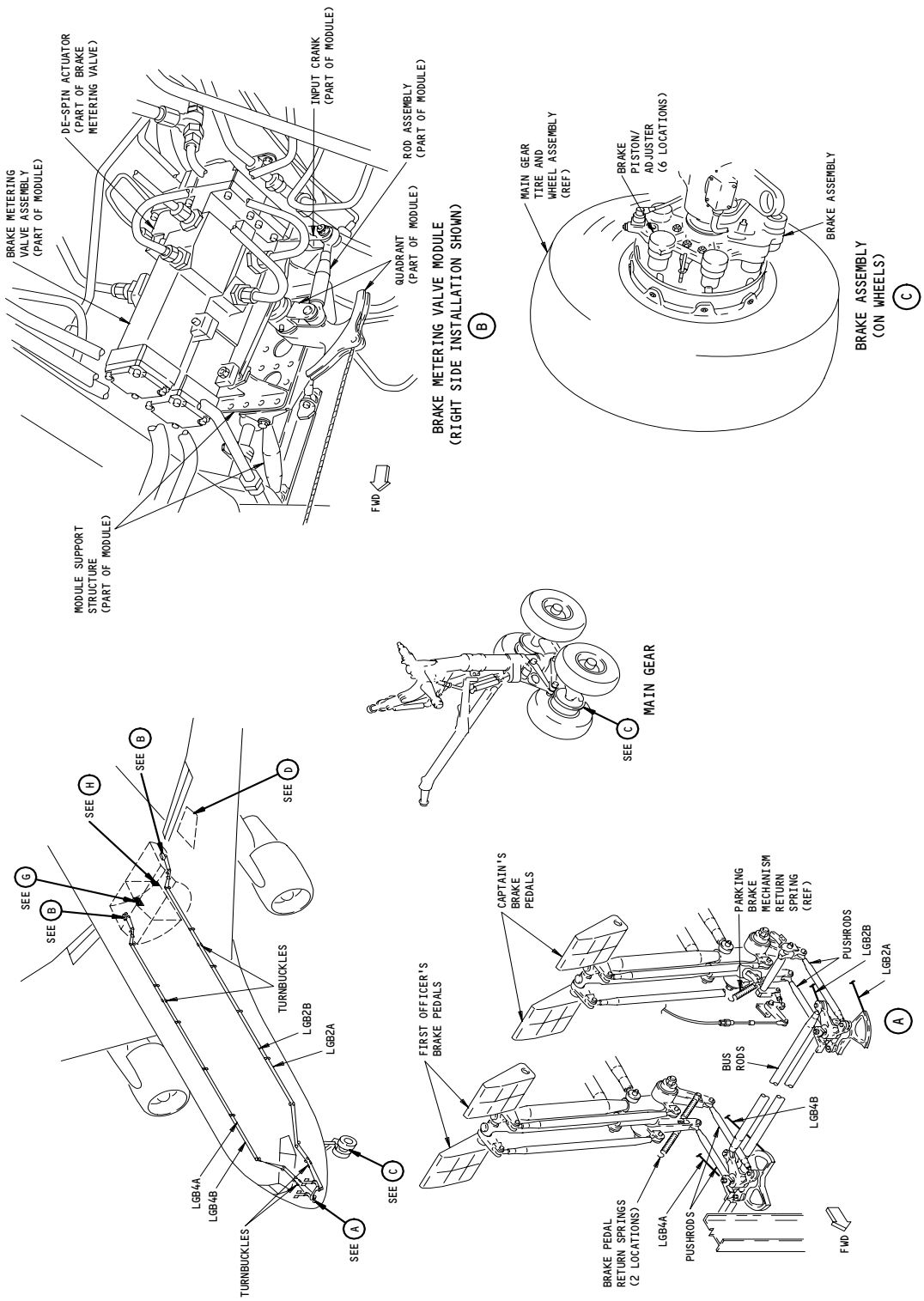
2. Component Details

A. Forward Brake Pedal and Quadrant Linkage (Fig. 1, Detail A)

(1) The captain's and first officer's brake pedal and quadrant linkages are similar and are integrated with the rudder pedal assemblies. Rotation of the left and right rudder pedals about the heel pedals is transmitted through control rods to the left and right lower bellcranks at the base of the rudder pedals. This motion is in turn transmitted through fore-aft control rods to the forward bellcranks which are connected to cable quadrants. Maximum brake pedal travel is approximately 17 degrees.

(2) The left brake cables are driven by a quadrant which is connected by a short shaft to the captain's left brake bellcrank. The right brake cables are driven by a quadrant which is connected by a short shaft to the first officer's right brake bellcrank. The captain's right brake bellcrank is mounted on the shaft that is part of the captain's left brake bellcrank and quadrant assembly and is free to rotate on this shaft. This bellcrank is connected by a transverse control rod to the first officer's right brake bellcrank and thus, to the right cable quadrant. The first officer's left brake bellcrank is in a similar manner, connected to the captain's left brake bellcrank and thus to the left cable system. This interconnecting mechanism allows the pilot's equal and simultaneous control.

(3) A spring is connected between each of the First Officer's rudder/brake pedal bellcranks and the pedal mechanism housing to ensure that the brake pedals return to the "brakes off" position when the brake pedals are released.



Hydraulic Brake System Component Location
Figure 1 (Sheet 1)

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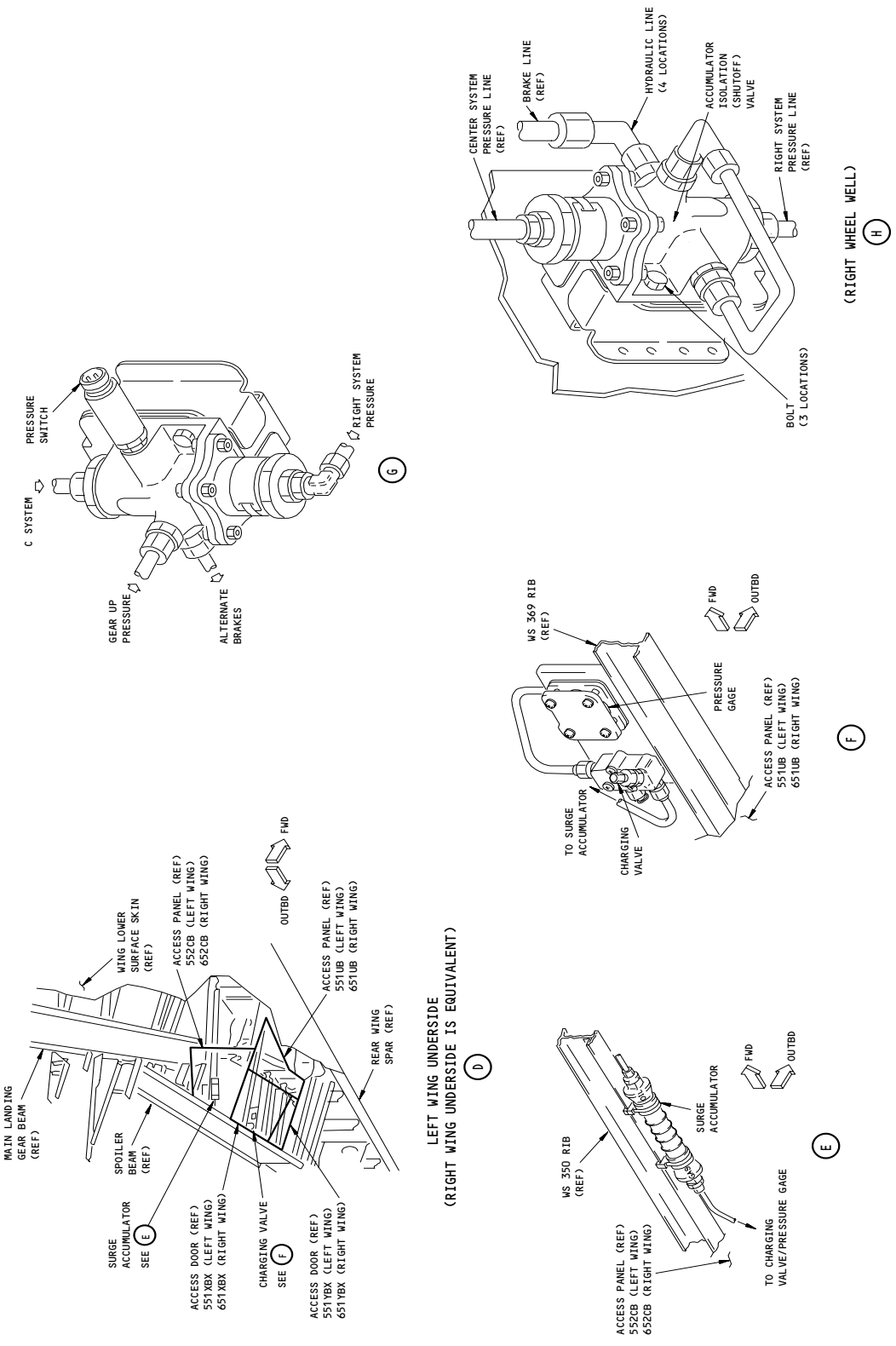


Hydraulic Brake System - Component Location
Figure 1 (Sheet 2)

244082

B. Cable Linkage (Fig. 1)

(1) The cable system transmits the pilot's brake control force from the brake pedal and quadrant linkage to the brake metering valve quadrant assembly. The metered brake pressure is a function of force applied to the brake metering valve instead of valve position. The brake cable system allows the brake pedals to rotate as metered pressure increases due to cable stretch being proportional to cable tension.

(2) The cables are 3/32 inch diameter and consist of two separate fore-aft runs. The left brake control cables run down the left side of the body and the right brake control cables run down the right side of the body beneath the passenger compartment floor panels.

(3) One set of cables on each side of the fuselage drive both metering valves in the metering valve module on that side of the airplane. The cables operate a quadrant and linkage on the metering valve module which operates both valves from a single input shaft.

(4) The cables leave the pressurized portion of the body at the upper forward section of the wheel well. Turnbuckles join forward and aft segments of each cable run.

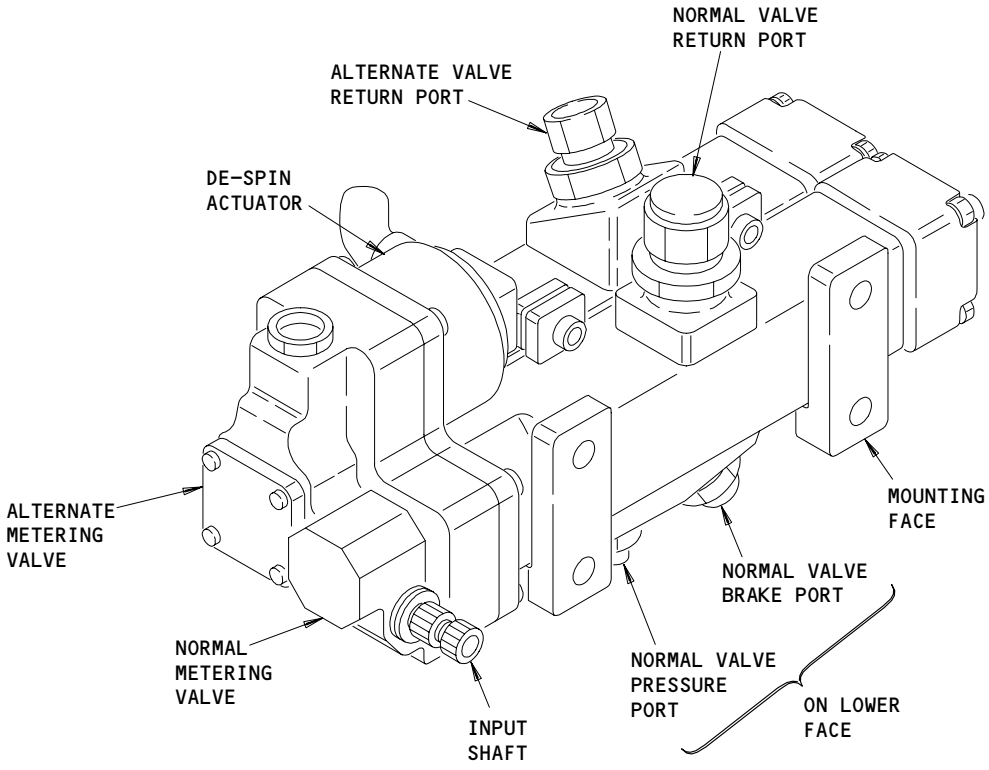
C. Brake Metering Valve Module Assembly (Fig. 1)

(1) There are two brake metering valve module module assemblies, one in the left wheel well, and one in the right wheel well that provide metered hydraulic actuation of the main landing gear wheel brakes.

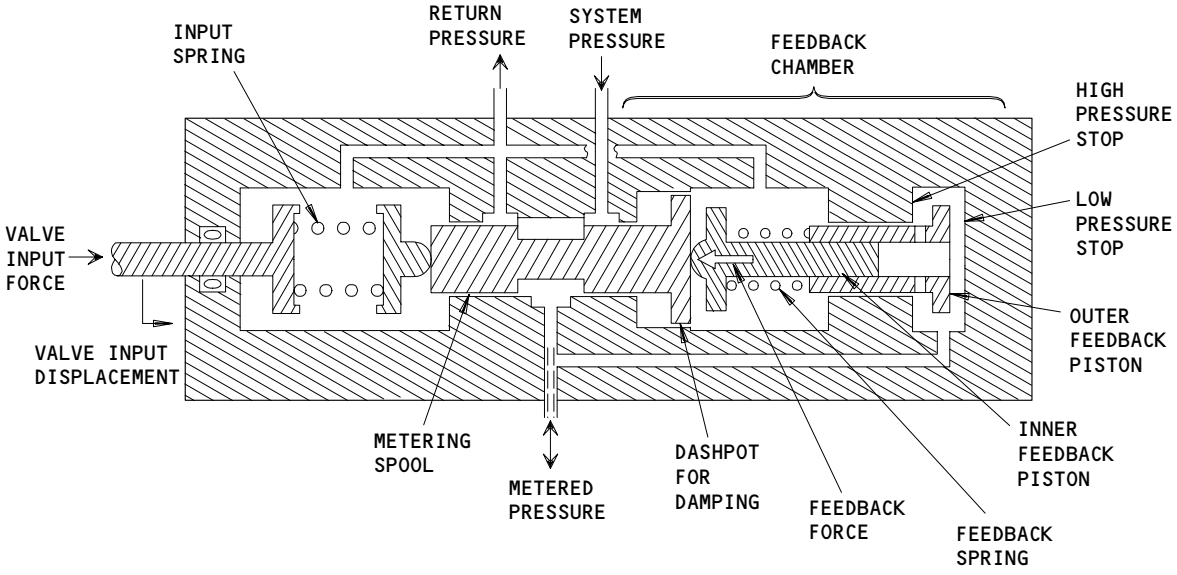
(2) Each module consists of a dual brake metering valve assembly (which includes a wheel brake actuator), valve support structure, quadrant and linkage to transfer input from brake pedal operated cables to the metering valves. The metering valve assemblies are line replaceable units.

(3) A screen filter is located at each of the normal and alternate hydraulic system input ports to the brake metering valve assembly. The filters are cleanable and are installed in place of the adapter unions installled at valve output ports.

(4) The dual brake metering valve (Fig. 2) functions to control hydraulic pressure to the brakes as a function of input deflection. There are two metering valves and a brake despin actuator in the assembly. Each of the two metering valves operate in a different hydraulic system. One valve operates in the normal hydraulic system and one in the alternate system. Only one of the metering valves is pressurized at a time. The valves are spring-loaded to the brakes off position when there is no input.



METERING VALVE ASSEMBLY



METERING VALVE OPERATIONAL SCHEMATIC
(NORMAL/ALTERNATE)

Brake Metering Valve Assembly
Figure 2

(5) The valves are positioned to meter brake pressure to the normal or alternate system by the brake pedals using a cable system and quadrant on the module to operate the metering valve input shaft through a linkage connection. The valves are spring-loaded to the brakes off position when there is no input. The metering valve spool on both actuators is displaced by individual cranks on the common input shaft to meter system pressure to the brakes. Metered pressure is routed to the brakes and internally to two feedback pistons and a feedback spring in the valve to provide variable metered pressure as a function of pedal travel. The valve operates in the low gain mode for pedal deflections up to approximately 5 degrees from the off position. In this mode, the amount of metered brake pressure increases slowly with each degree of pedal travel for optimal control during taxi maneuvering. At pedal deflections greater than 5 degrees the valve operates in the high gain mode. Here, the metered brake pressure increases rapidly with each degree of pedal travel for swift application of brake force during landing roll.

(6) The wheel brake actuator, when pressurized by gear retraction operation, will provide input to the alternate metering valve spool to stop the wheels from spinning after gear retraction.

D. Brake Accumulator (AMM 32-44-00/001)

(1) The brake accumulator provides a passive pressure source for approximately 5 to 6 brake applications when left and right hydraulic systems are not available. The accumulator is also used to extend parking brake holding time (AMM 32-44-00/001) and to stabilize the brake system supply pressure during initial brake application and any subsequent antiskid cycling.

(2) The accumulator is automatically charged by the right hydraulic system and the charge is maintained by check valve isolation of the supply line to prevent loss of pressure when the right system is depressurized.

E. Brake Hydraulic Surge Accumulator (Fig. 1)

(1) A brake hydraulic system surge accumulator is provided for each main gear. The accumulator, along with charging valve and pressure gage are installed in each wing between the main landing gear beams and spoiler beams at wing station 350 and 369. The accumulators are connected to the brake return lines downstream from the normal brake system antiskid valve module. The surge accumulators absorb sudden pressure incresaes in the brake return line to permit faster antiskid releases.

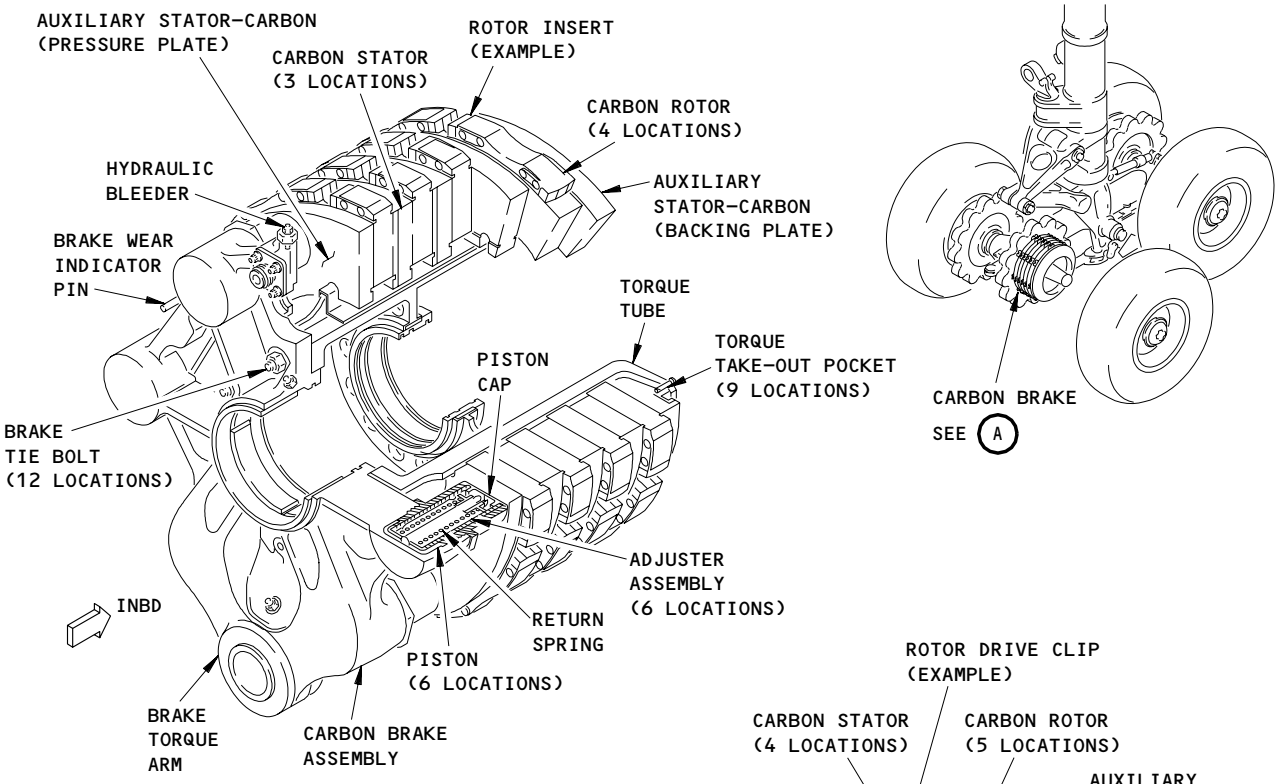
F. Alternate Brake Selector Valve (ABSV) (Fig. 1, Detail G)

(1) The ABSV is located on the keel beam, left wheel well.

(2) The ABSV is used to isolate the right hydraulic system source from the alternate brake system. When the right hydraulic (normal) system source is depressurized, the ABSV cycles to allow the center hydraulic (alternate) system source to provide brake pressurization. This ABSV valve cycling open takes place when control pressure drops to approximately 48 percent or less of the normal pressurized system.

G. Accumulator Isolation Valve (AIV) (Fig. 1, Detail H)
   (1) The AIV is located on the aft wall of the right wheel well.
   (2) The AIV is normally open. The AIV cycles closed to isolate the brake system accumulator when the center (alternate) hydraulic system reaches 48 percent or more of accumulator pressure. The AIV cycles to the open position when the center hydraulic (alternate) system drops to 48 percent or less of accumulator pressure to provide a backup system (accumulator) of brake pressurization.
   (3) The AIV and ABSV utilize the same basic valve unit with various ports connected into the brake system in a different manner to suit the different valve functions.

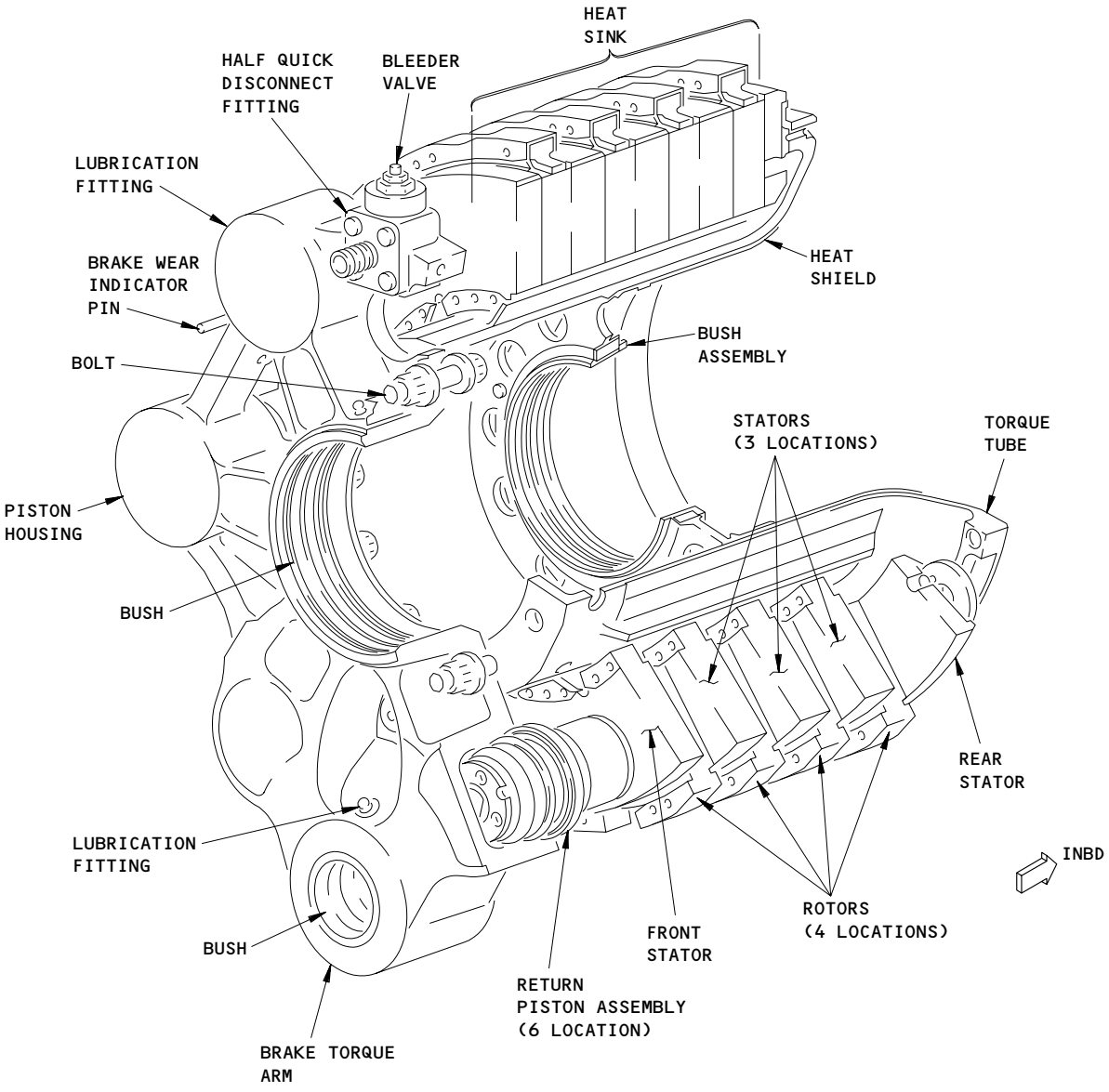
H. Hydraulic Brake Assembly (Honeywell Carbon Brakes) (Fig. 3)
   (1) The brakes are disk-type. The S160T300-X series brakes have five carbon rotors and four carbon stators. The S160T400-210 brake has four carbon rotors and three carbon stators. The rotors are keyed to the wheels and rotate with them. The stators are keyed to the backing plate and pressure plate which are also made of carbon and are auxiliary stators. Each brake contains six actuating pistons with internal automatic adjusters and return springs. When the brakes are applied, the pistons squeeze the rotors and stators against the backing plate. Braking torque is reacted on by the brake rods, which connect the brake torque arm to the landing gear shock strut lower fork. Each brake has two wear indicator pins to measure overall lining wear.
   (2) Brake pressure is applied hydraulically through six pistons which push against a pressure plate. The pressure plate in turn slides axially against the stators and rotors to compress against the torque plate. When pressure is released, brake adjuster springs pull the pressure plate back from contact with the rotor-stator stack.
   (3) The brake adjusters automatically maintain the offset of the pressure plate from the rotor-stator stack. As the brake disks wear, the adjustor compensates by allowing a pin and ball mechanism to deform a circular tube to automatically hold the required offset.
   (4) Two wear pins are installed in each brake assembly which indicate when brakes require replacement. The pins attach to the pressure plate and protrude through a brake housing bracket. The wear pins on new brakes initially protrude a specified length through a pin retainer bracket with brakes applied. The wear pins provide indication that brake replacement is required (wear pin is flush with the bracket).



CARBON BRAKE
(HONEYWELL)
(S160T400–210 BRAKE, 4 ROTORS)
A

CARBON BRAKE
(HONEYWELL)
(S160T300–X SERIES BRAKE, 5 ROTORS)
A

Brake Assembly
Figure 3 (Sheet 1)



CARBON BRAKE
(MESSIER-BUGATTI)
(S160T400-510)

(A)

NOTE: THE HAFT QUICK DISCONNECT FITTING IS NOT PART OF THE BRAKE ASSEMBLY AND IS ILLUSTRATED FOR INFORMATION ONLY.

Brake Assembly
Figure 3 (Sheet 2)

K99341

(5) A hydraulic hose disconnect fitting is attached at the top of the brake. The fitting provides a connection between the brake hydraulic hose and the brake. The disconnect fitting will automatically close the hydraulic line on both the hose and brake sides upon removal which eliminates hydraulic line bleeding requirements after brake replacement.

(6) A bleed plug is installed at the top of the brake assembly, adjacent to the disconnect fitting. The plug can be used to bleed air from the hydraulic brakes.

I. Hydraulic Brake Assembly (Messier-Bugatti Carbon Brakes) (Fig. 3)

(1) The brakes are disk-type. The S160T400-510 brakes have five carbon rotors and four carbon stators. The rotors are keyed to the wheels and rotate with them. The three center stators are keyed to the front stator and the rear stator. Each brake contains six return pistons with internal automatic adjusters and return springs. When the brakes are applied, the pistons squeeze the rotors and stators against the rear stator. Braking torque is reacted on by the brake rods, which connect the brake torque arm to the landing gear shock strut lower fork. Each brake has two wear indicator pins to measure overall lining wear.

(2) 6 Brake pressure is applied hydraulically through six pistons which push against the front stator. The front stator in turn slides axially against the center stators and the rotors to compress against the rear stator. When the pressure is released, the brake adjuster springs pull the return piston back from contact with the rotor-stator stack.

(3) The brake adjusters automatically maintain the offset of the release piston from the rotor-stator stack. As the brake disks wear, the adjustor compensates by allowing a pin and ball mechanism to deform a circular tube to automatically hold the required offset.

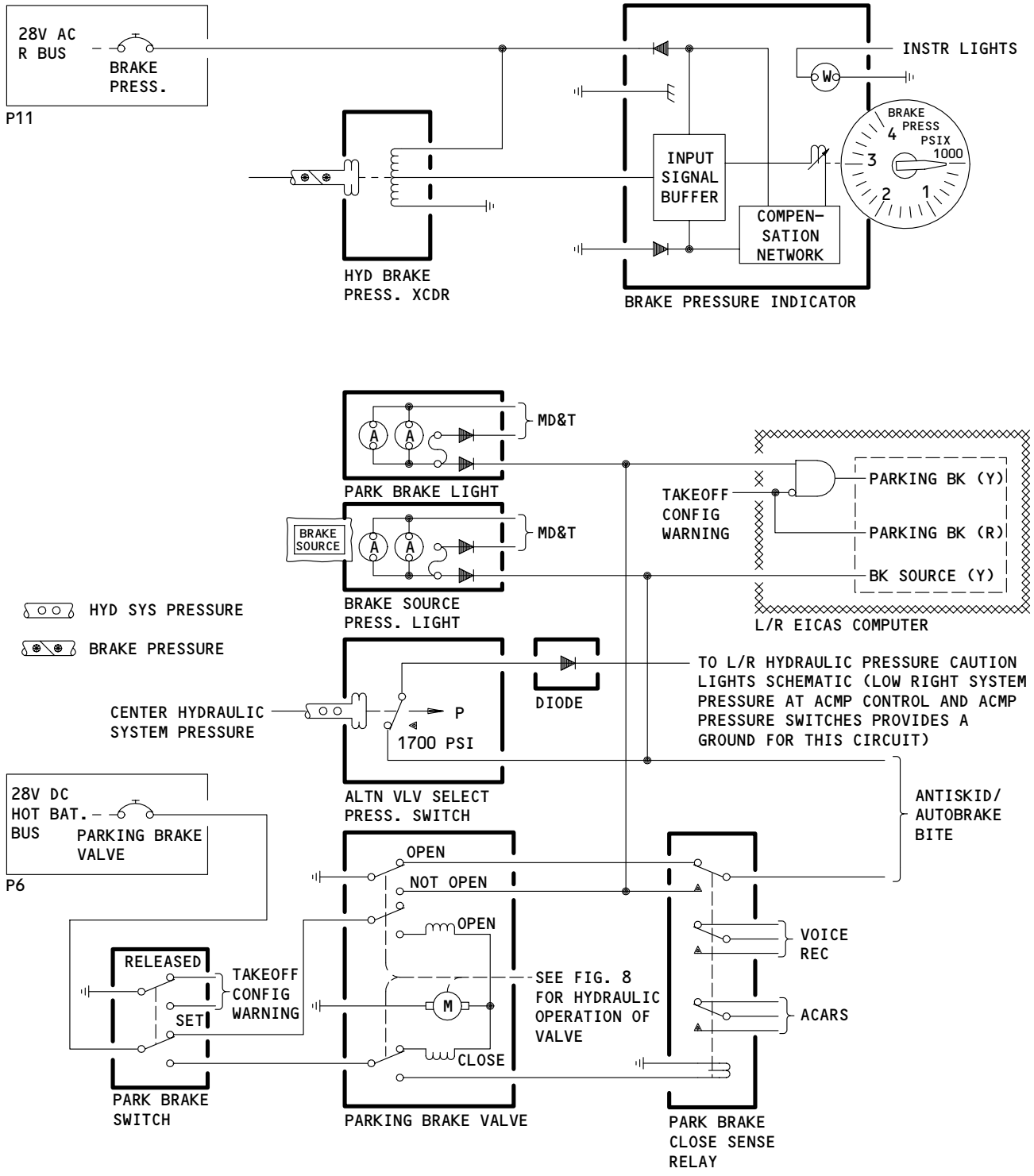
(4) Two wear pins are installed in each brake assembly which indicate when brakes require replacement. The pins attach to the pressure plate and protrude through a brake housing bracket. The wear pins on new brakes initially protrude a specified length through a pin retainer bracket with brakes applied. The wear pins provide indication that brake replacement is required (wear pin is flush with the bracket).

3. Operation

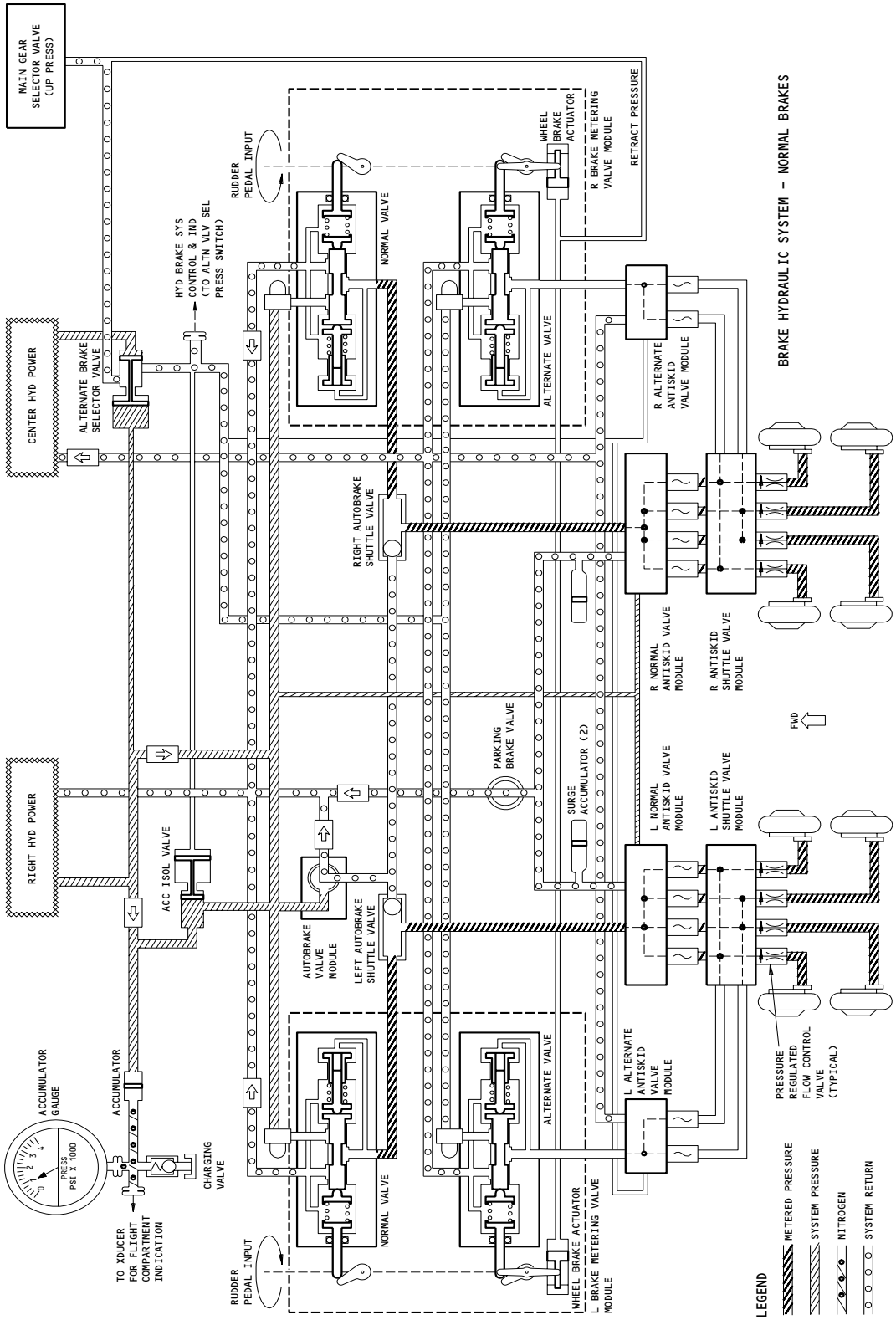
A. Functional Description - Hydraulic Brake Operation (Fig. 4 and Fig. 5)

(1) Brake pressure is supplied to the brakes through antiskid valves, which do not affect brake pressure unless the antiskid system is activated. For information on antiskid system operation, refer to 32-42-00/001, Description and Operation.

(2) When the captain's or first officer's brake pedals are depressed, a cable system opens the brake metering valves to direct hydraulic pressure to the brake units through the antiskid valve modules. The intensity of pressure applied to the brake unit depends on how far the pedals are depressed. When pedals are fully depressed, full system hydraulic pressure is applied to the brake units. When the pedals are released, fluid lines in the brake units are opened to hydraulic system return.

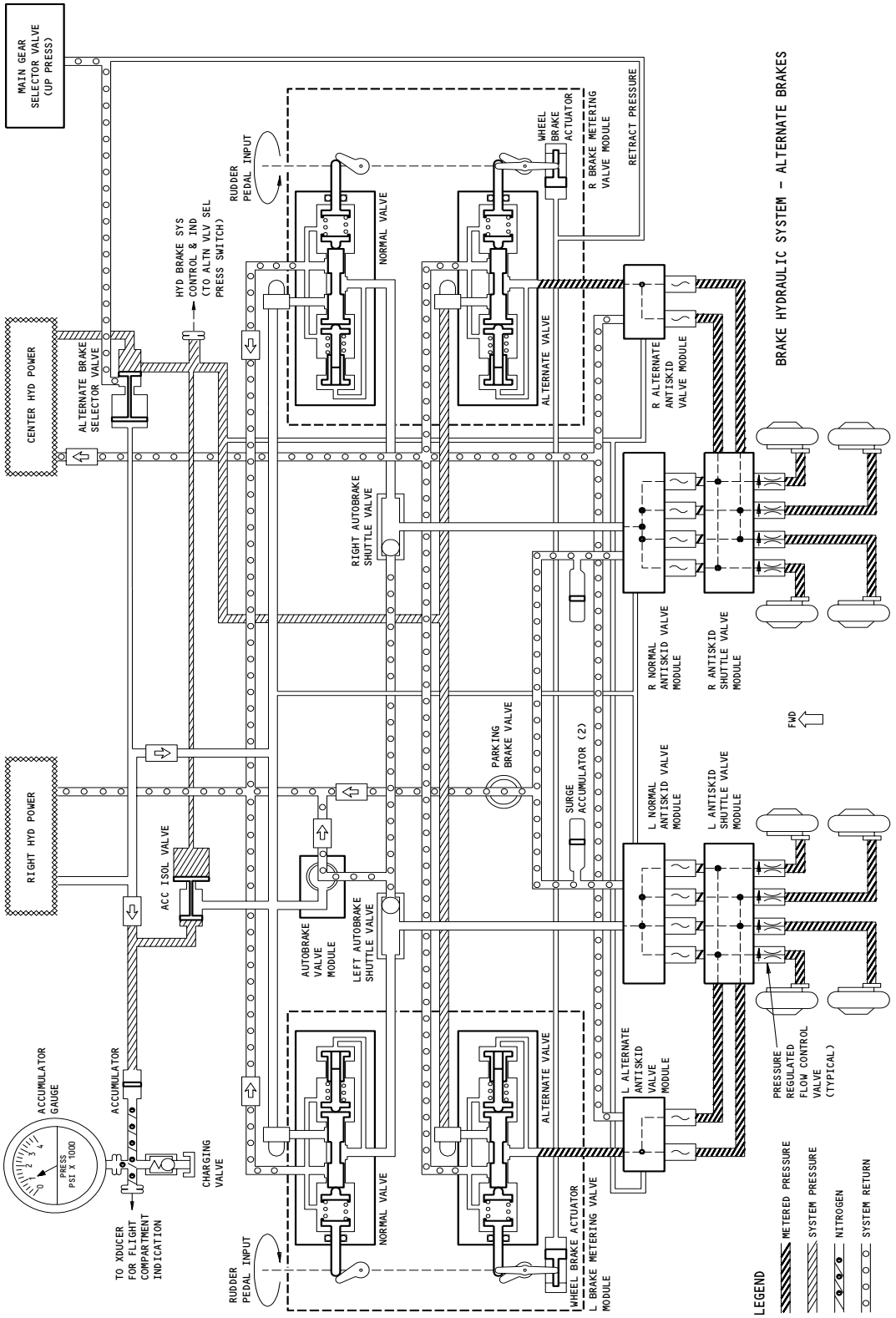


Hydraulic Brake System Control and Indication Schematic
Figure 4



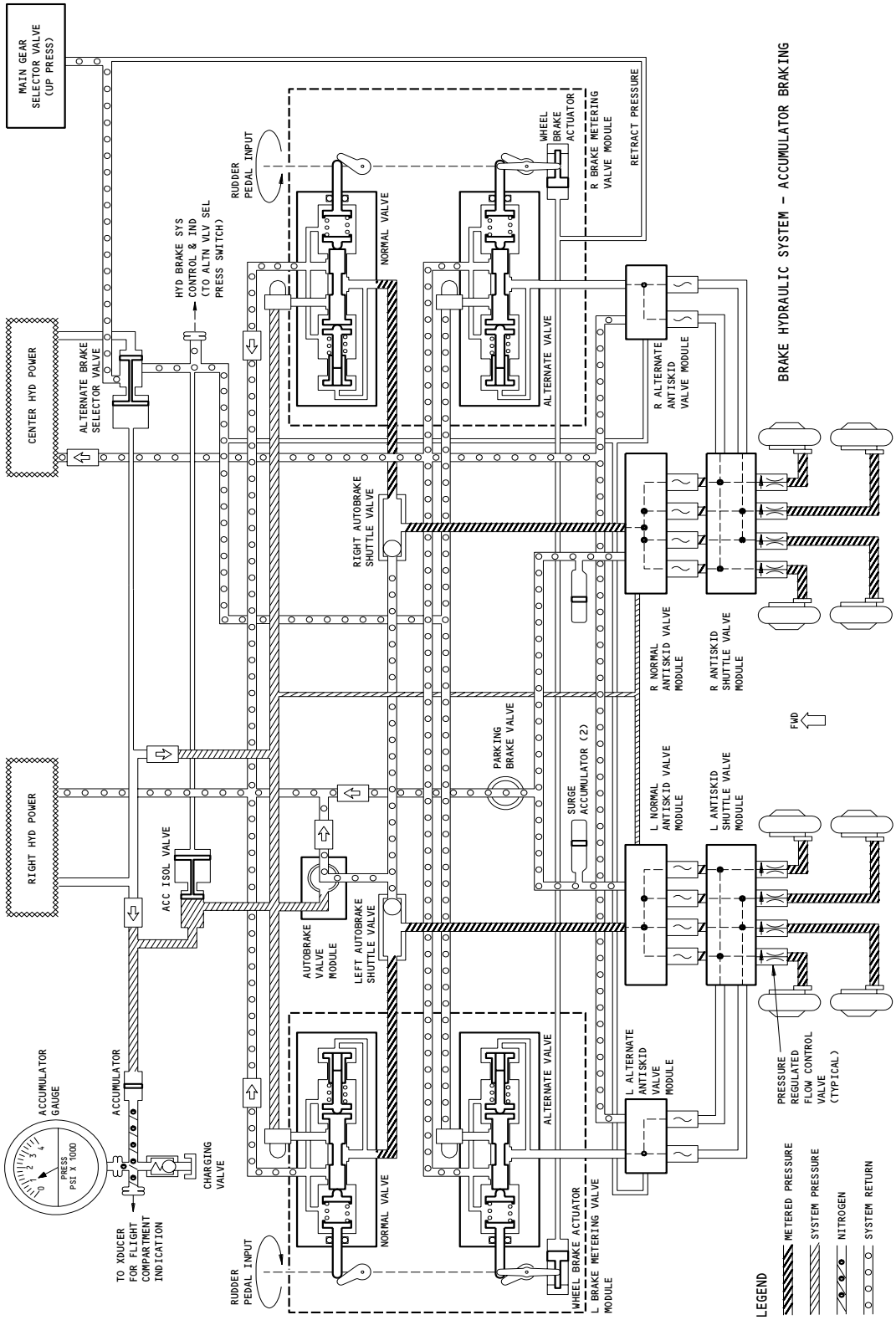
Hydraulic Brake System Simplified Hydraulic Schematic
Figure 5 (Sheet 1)

287861



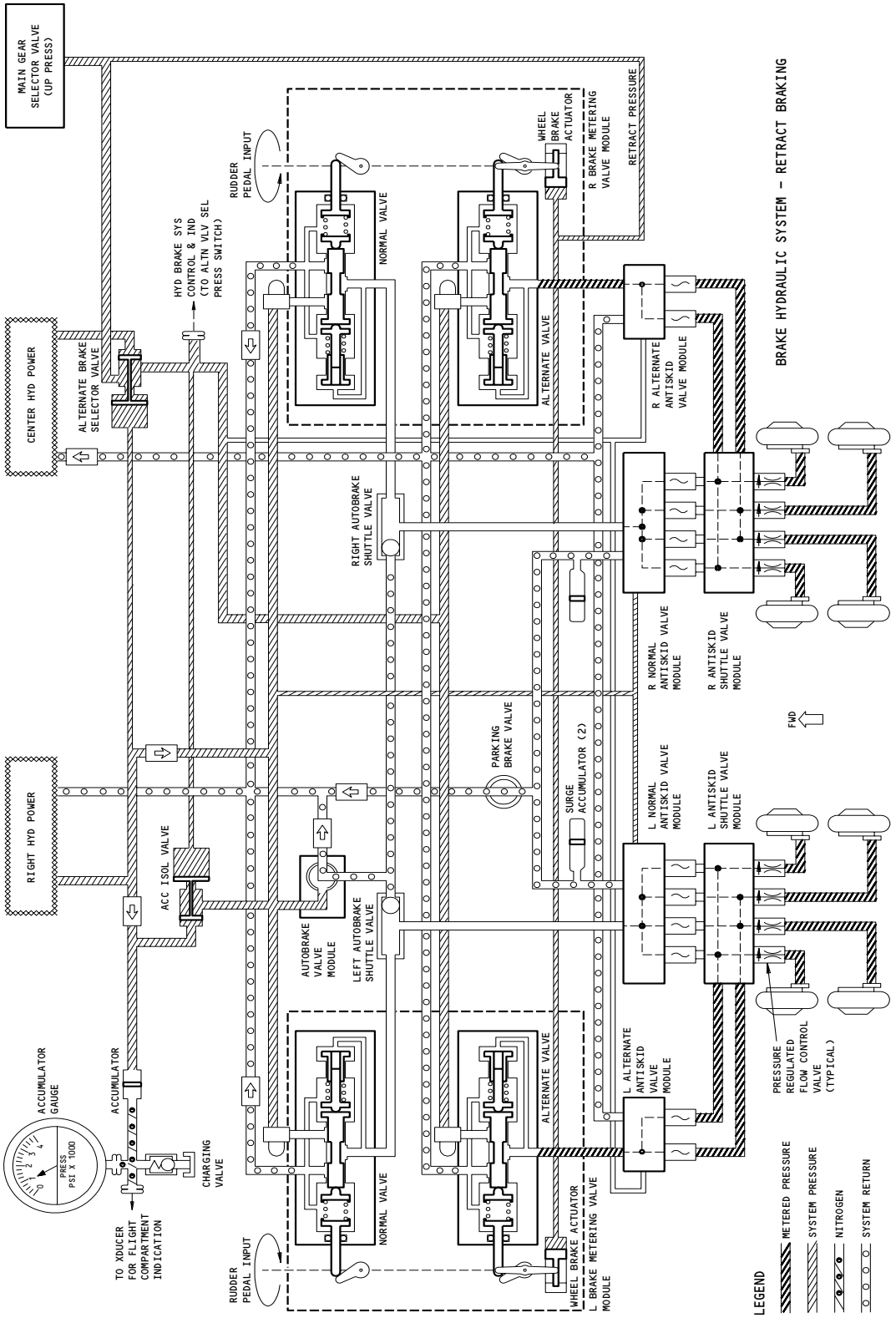
Hydraulic Brake System Simplified Hydraulic Schematic
Figure 5 (Sheet 2)

287863



Hydraulic Brake System Simplified Hydraulic Schematic
Figure 5 (Sheet 3)

287866



Hydraulic Brake System Simplified Hydraulic Schematic
Figure 5 (Sheet 4)

287858

(3) The left brake pedals control the brakes on the left main gear. Brakes on the right gear are controlled by the right brake pedals.

(4) Brakes are powered by the right or center hydraulic system: right system pressure through the normal brake metering valves in the left and right brake metering valve modules; and center system pressure through the alternate brake metering valves in the left and right brake metering valve modules. If right and center hydraulic systems are operating, right system pressure will be supplied to the brakes. The alternate brake selector valve in the left wheel well will be positioned to shut off center system pressure to the alternate metering valves.

(5) During gear retraction, pressure which retracts the gear is directed to the wheel brake actuators in the brake metering valve modules, and to the alternate brake selector valves. This provides center system pressure to stop wheel spinning.

(6) If right hydraulic system pressure falls below 1500 psi, the alternate brake selector valve (ABSV) in the left wheel well will open to apply center system pressure to the brakes. Center system pressure is applied through the alternate brake metering valves, alternate antiskid valves, and shuttle valves. Since center system pressure is higher, the shuttle valves are repositioned to direct center system pressure to the brakes.

(7) If right and center hydraulic systems are lost, the BRAKE SOURCE indicator light on the pilot's center instrument panel P1 illuminates and the message "BRAKE SOURCE" is displayed on the upper EICAS CRT display screen. This indicates that the hydraulic brake pressure is being supplied by the parking brake accumulator only.

  (a) A signal is also provided to the antiskid/autobrake control unit to remove the BITE monitor valve bias from the antiskid valve. This assures maximum braking with accumulator pressure only. See 32-42-00, BITE continuous monitor mode, for more information about antiskid valve bias.

  (b) A reserve pressure source can be activated to supply pressure to the brakes and nose wheel steering systems. The reserve pressure source is one of the electric motor driven pumps in the center system, and is dedicated to brakes and steering. Pressure from the reserve source is supplied to the brakes through the same valves and lines as the alternate (center) hydraulic pressure source.

  (c) The reserve pressure source is activated by pressing the RESERVE BKS & STRG switch on the captain's main instrument panel P1. When pressed, the light should illuminate.

(8) Hydraulic fuses are installed in the antiskid valve modules. The fuses shut off hydraulic pressure to individual brake units in the event of brake line rupture.

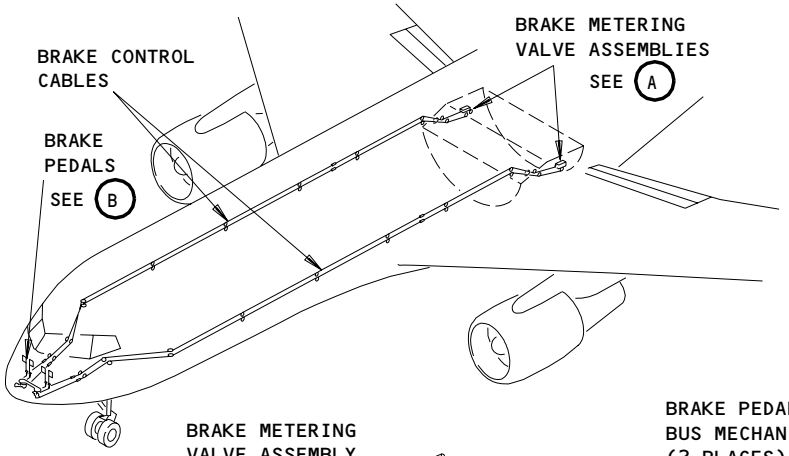
HYDRAULIC BRAKE SYSTEM

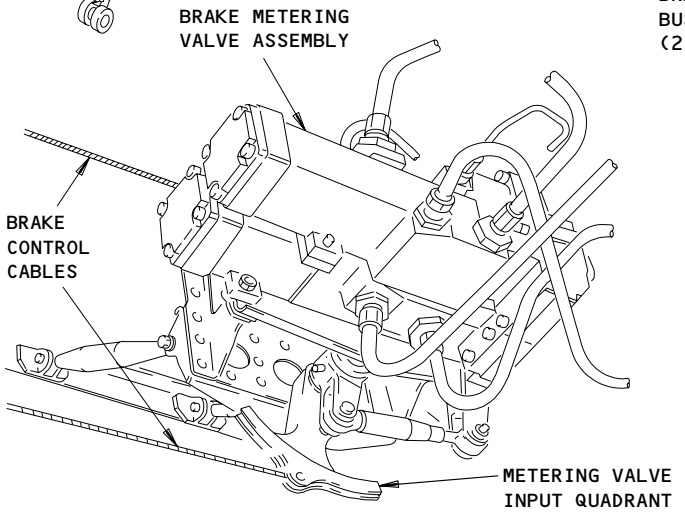
COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
ACCUMULATOR - BRAKE HYDRAULIC SURGE	3	1	552CB, 652CB, INBOARD WING TE	32-41-11
ACCUMULATOR - (REF 32-44-00, FIG. 101)				
PARKING BRAKE				
ASSEMBLY - BRAKE METERING VALVE	1	2	RIGHT & LEFT WHEEL WELL	
BLEEDER - HYDRAULIC BRAKE	3	8	MAIN LANDING GEAR	32-41-00
BRAKE - HYDRAULIC	3	8	MAIN LANDING GEAR	32-41-08
CABLES - BRAKE CONTROL	1	8	FWD CARGO COMPT CEILING AREA	32-00-25
CHECK VALVE - ACCUMULATOR ISOLATION	2	1	RIGHT WHEEL WELL	32-41-00
CIRCUIT BREAKERS	1		FLT COMPT, P6, P11	
BRAKE PRESS, C1180		1	11U22	*
IND LIGHTS 1, C1306		1	11A33	*
HYDRAULIC ELEC PUMP C1, C1085		1	11L15	*
LANDING GEAR PARKING BRAKE VLV, C1179		1	6F4	*
DISCONNECT - BRAKE	3	8	MAIN LANDING GEAR	32-41-06
GAGE - BRAKE PRESS INDICATOR, N10	1	1	FLT COMPT, P3	*
GAGE - (REF 32-44-00, FIG. 101)				
PARKING BRAKE ACCUMULATOR PRESSURE				
GAGE - SURGE ACCUMULATOR PRESSURE	3	2	552CB, 652CB, INBOARD WING TE	32-41-00
LIGHT - BRAKE SOURCE INDICATOR, L605	1	1	FLT COMPT, P1	*
MECHANISM - BRAKE PEDAL BUS	1	2	113AL, FWD EQUIP COMPT	32-41-01
MODULE - (REF 32-42-00, FIG. 101)				
ALTERNATE ANTISKID VALVE				
ANTISKID SHUTTLE VALVE				
AUTOBRAKE SHUTTLE VALVE				
AUTOBRAKE VALVE				
NORMAL ANTISKID VALVE				
PEDALS - BRAKE, CAPTAIN'S AND FIRST OFFICER'S	1	1	FLT COMPT	32-41-00
SWITCH - ALTN VALVE SELECT PRESS, S415	2	1	LEFT WHEEL WELL	*
SWITCH - (REF 29-11-00, FIG. 101)				
RESERVE BRAKES AND STEERING SELECT, S547				
SYS R ACMP CONTROL PRESSURE, S32				
TRANSDUCER - HYDRAULIC BRAKE PRESSURE, TS90	2	1	RIGHT WHEEL WELL	*
VALVE - ACCUMULATOR ISOLATION	2	1	RIGHT WHEEL WELL	32-41-05
VALVE - ALTERNATE BRAKE SELECTOR	2	1	LEFT WHEEL WELL	32-41-05
VALVE - SURGE ACCUMULATOR CHARGING	3	2	551XBX, 651XBX, INBOARD WING TE	32-41-11
VALVE - (REF 32-44-00, FIG. 101)				
PARKING BRAKE				
PARKING BRAKE ACCUMULATOR CHARGING				

* SEE WM EQUIPMENT LIST

Component Index
Figure 101

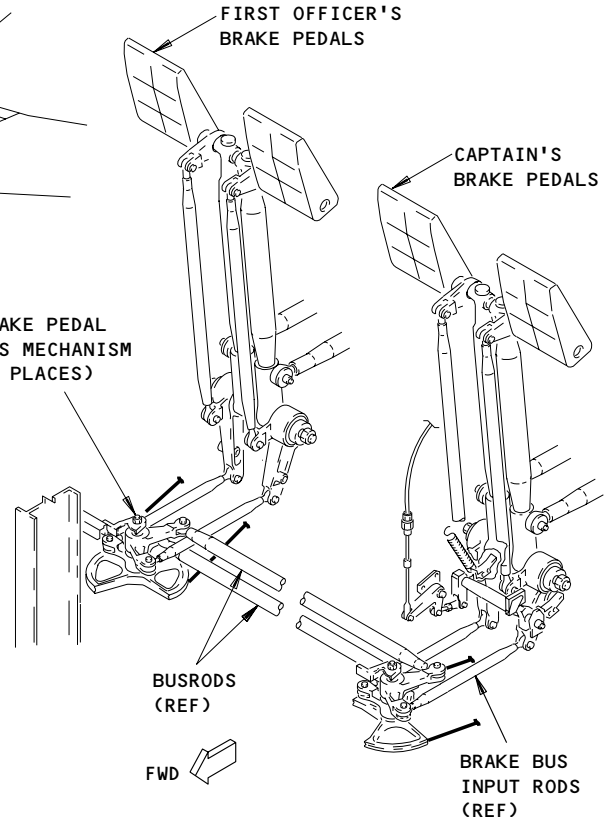
269915





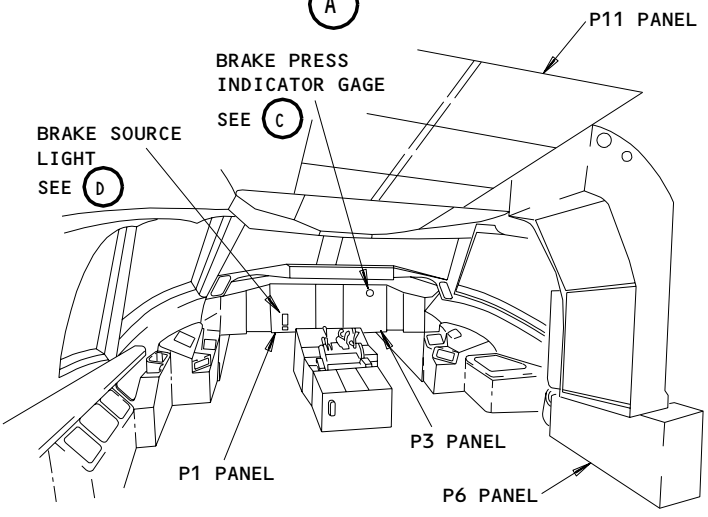
BRAKE METERING VALVE ASSEMBLY
(RIGHT SIDE INSTALLATION SHOWN)

A

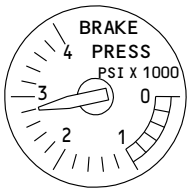


BRAKE PEDAL BUS MECHANISM

B

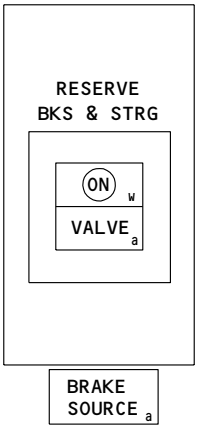


FLT COMPT



BRAKE PRESS INDICATOR GAGE, N10

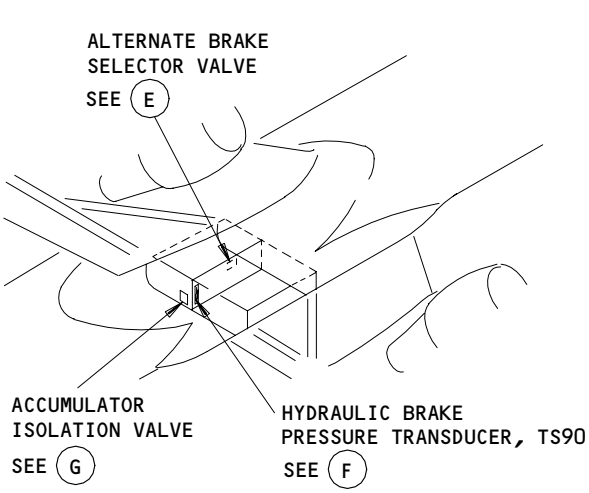
C

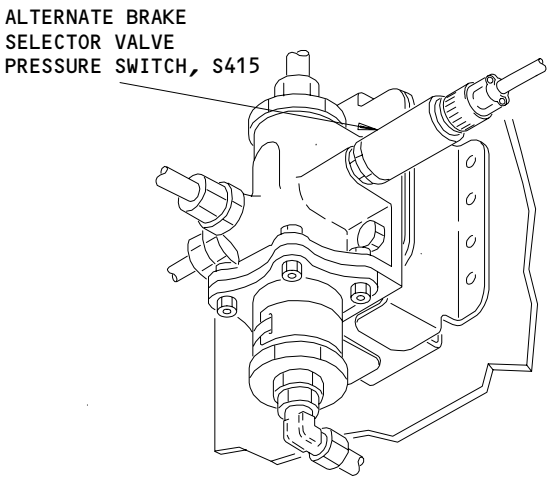


BRAKE SOURCE LIGHT, L605

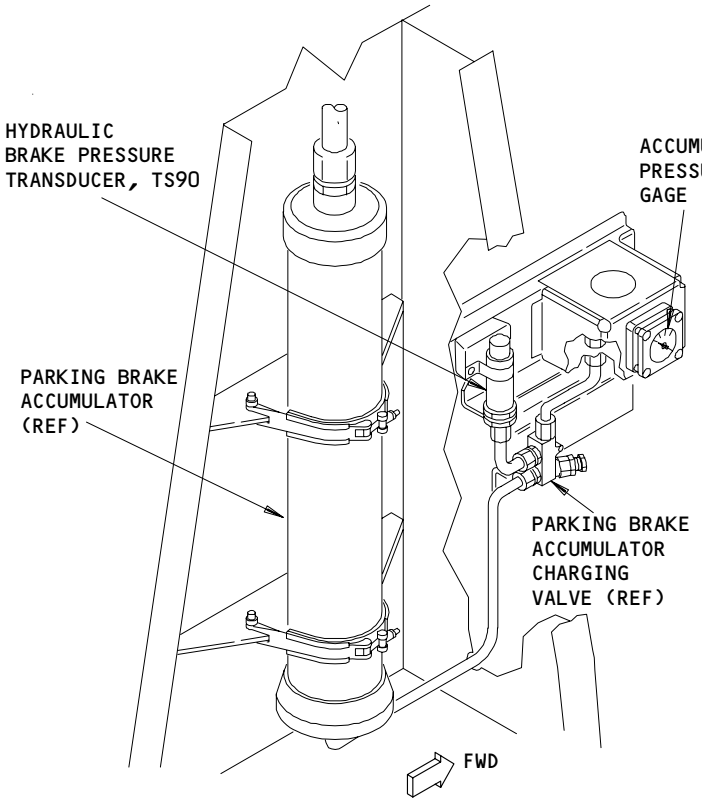
D

Component Location
Figure 102 (Sheet 1)

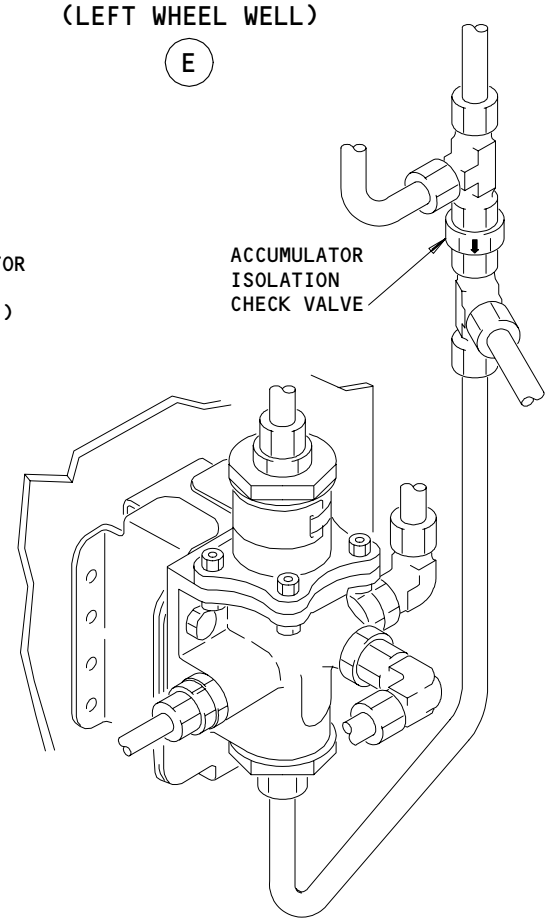




ALTERNATE BRAKE SELECTOR VALVE
(LEFT WHEEL WELL)
E

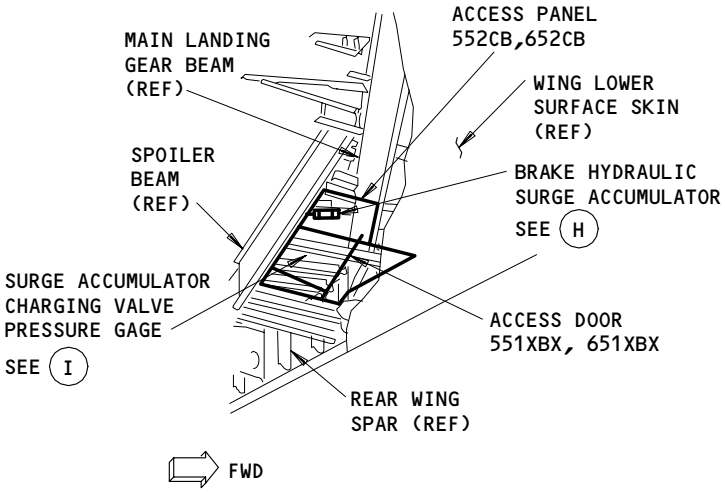


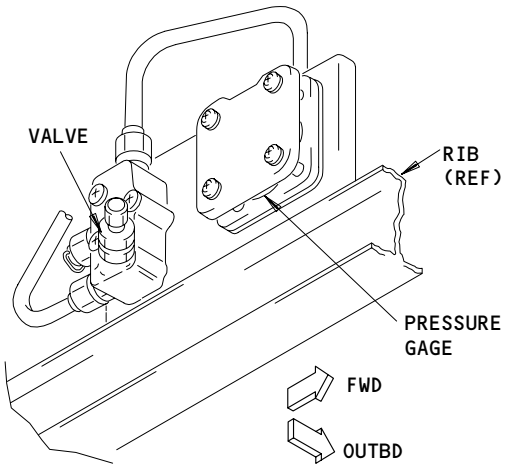
HYDRAULIC BRAKE
PRESSURE TRANSDUCER, TS90
(RIGHT WHEEL ONLY)
F



ACCUMULATOR ISOLATION
(SHUTOFF) VALVE
(RIGHT WHEEL WELL)
G

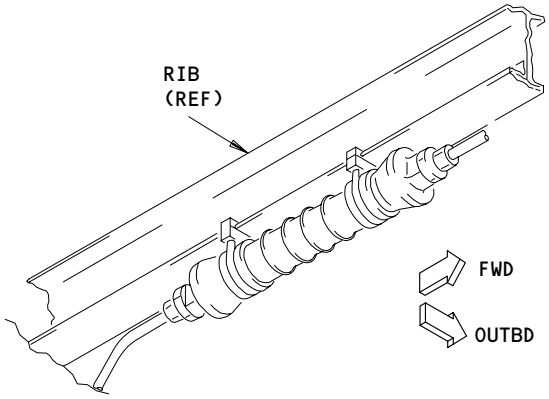
Component Location
Figure 102 (Sheet 2)





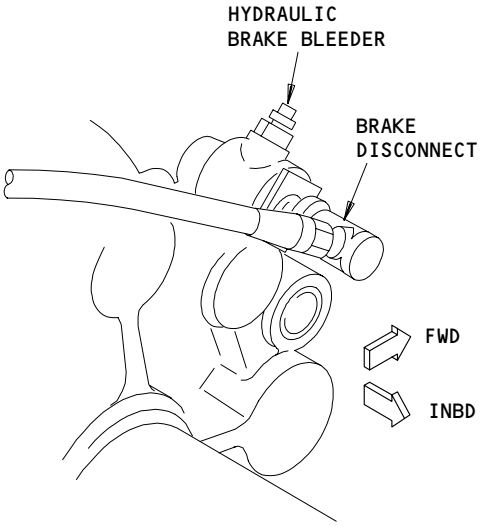
SURGE ACCUMULATOR CHARGING VALVE AND PRESSURE GAGE

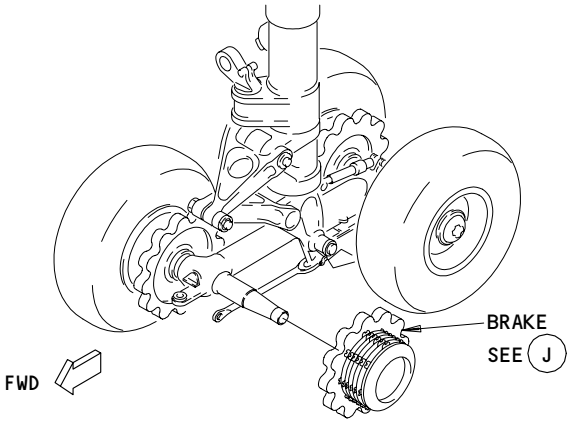
I



BRAKE HYDRAULIC SURGE ACCUMULATOR

H





BRAKE (TYPICAL-8-PLACES)

J

Component Location
Figure 102 (Sheet 3)

HYDRAULIC BRAKE SYSTEM - MAINTENANCE PRACTICES

1. General
   A. This section contains the maintenance procedures for the hydraulic brake system. The procedures that follow are contained in this section:
      (1) Bleed the wheel brake system for the main landing gear (par. 2)
      (2) The test to make sure the hydraulic fuses for the antiskid module operate correctly (par. 3)
         (a) The normal and alternate brake system include hydraulic fuses. These fuses keep the leakage of system fluid to a minimum when brake line separation occurs downstream of the fuse.
         (b) The procedure is a test of the fuse operation. It makes sure that the quantity of fluid leakage from the hydraulic system is kept to a minimum when leakage occurs. The test is done again for each fuse in the system.

TASK 32-41-00-682-001

2. Bleed the Wheel Brake System For the Main Landing Gear
   A. General

      (1) When you change a brake assembly, fill the new brake before you install it on the airplane.
   B. Consumable Materials
      (1) D00153 Hydraulic Fluid - BMS 3-11
   C. References
      (1) AMM 12-12-01/301, Hydraulic System Servicing
      (2) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   D. Access
      (1) Location Zones
         211 Control Cabin (Left Side)
         212 Control Cabin (Right Side)
         731 Main Landing Gear (Left)
         741 Main Landing Gear (Right)

   E. Prepare to Bleed the Brake (Fig. 201)

      S 492-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 492-004
      (2) Make sure the chocks are installed on the wheels.

S 492-003

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 862-005

(4) Make sure the parking brake is released.

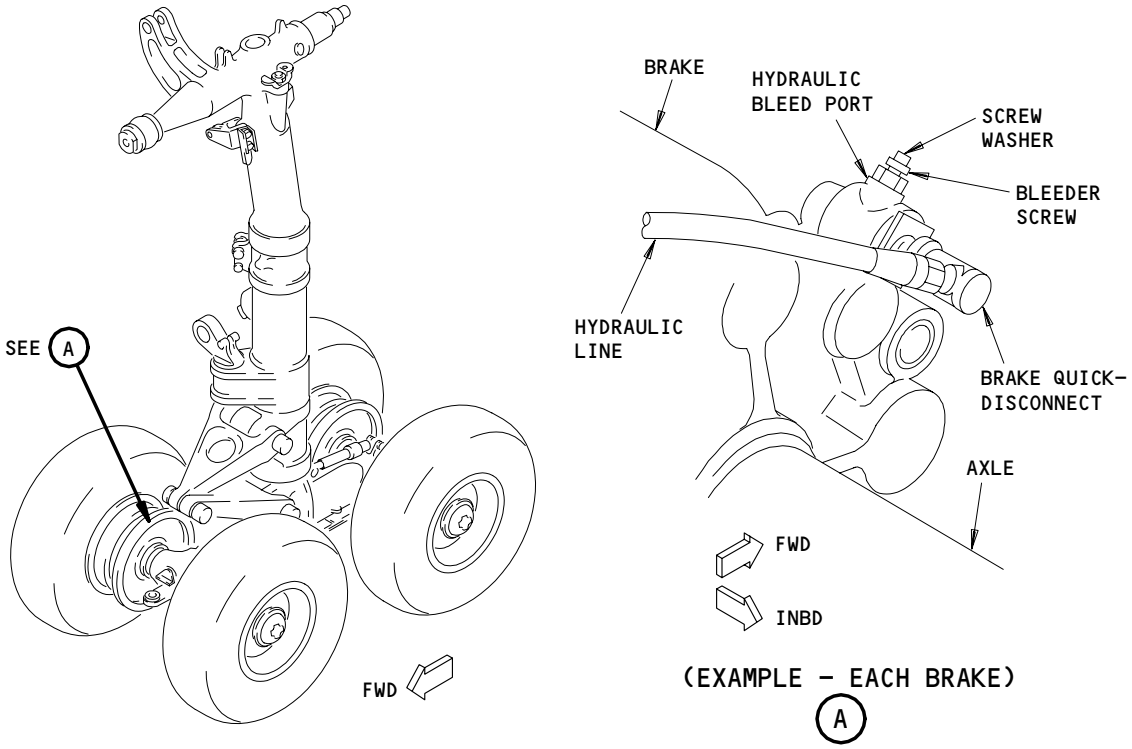
S 492-006

(5) Do the steps that follow to prepare the brake bleed port for the test:
   (a) Remove the screw and washer from the end of the bleeder screw.
   (b) Install the bleed hose over the end of the bleeder screw.
   (c) Put a container below the brake bleeder port so that fluid can flow directly from the bleed hose into the container.

F. Bleed the Wheel Brake System For the Main Landing Gear

S 862-007

(1) Pressurize the center hydraulic system (AMM 29-11-00/201).



Hydraulic Brake Bleed Port Location
Figure 201

S 982-008

(2) Slowly push the captain's brake pedals through approximately half of their normal travel and slowly release them. Do this procedure three or four times to remove the air from the brake lines.

S 982-009

(3) Fully push and release the brake pedals six times.

S 112-038

(4) Wear goggles to keep the spray from the brake bleed hose away from the eyes.

S 872-012

(5) Do the steps that follow to bleed the air from each brake at the hydraulic bleed port (Fig. 201):

(a) While you apply the brakes, open the bleeder valve slowly about one-half turn and allow fluid to flow from the hose until there is no evidence of air.

NOTE: If an external hydraulic power supply is used to pressurize the system, the brakes can be bled by setting the parking brake and reducing the supply pressure (800 psi is optimum).

Fluid can flow out of the hose very quickly and intermittently. Be sure that the flow goes into the container.

If fluid flow flow stops while the bleed fitting is open, the brake fuse has closed.

(b) If brake fuse is closed, do the steps that follow:

1) Close the bleed valve and rotate the fuse knob clockwise to manually reset the brake fuse. Hole the fuse knob in bypass position for 5 seconds minimum to make sure that the fuse resets.

NOTE: The hydraulic fuses are located on the antiskid module in the wheel well.

2) Open the bleeder valve and continue to bleed the brake until air is removed.

(c) Close the bleeder valve.

S 612-036

(6) Make sure that the fuses are not set by cycling the brake pedals and verifying that each brake operates.

S 612-013

(7) Make sure the fluid in the center hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 862-014

(8) Pressurize the right hydraulic system (AMM 29-11-00/201).

S 982-015

(9) Slowly push the captain's brake pedals through approximately half of their normal travel and slowly release them. Do this procedure three or four times to remove the air from the brake lines.

S 982-016

(10) Fully push and release the brake pedals six times.

S 872-018

(11) Bleed the air from each brake at the bleeder port as you did for the center hydraulic system.

(a) Install the screw with the washer in the end of the bleeder screw.

1) If you will not do the test for the antiskid fuse capacity that follows, tighten the bleeder screw to 60 +/-20 pound inches.

a) Install the lockwire between the bleeder screw and the bleed port.

S 612-037

(12) Make sure that the fuses are not set by cycling the brake pedals and verifying that each brake operates.

S 612-019

(13) Make sure the fluid in the right hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 862-020

(14) Set the parking brake.

G. Put the Airplane Back to Its Usual Condition

S 092-021

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the door locks and close the doors for the main landing gear (AMM 32-00-15/201).

S 862-022

(2) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 092-023

(3) Remove the wheel chocks.

TASK 32-41-00-702-024

3. Capacity Test For the Antiskid Module Hydraulic Fuse

A. Equipment

(1) Container - 3 U.S. gallon capacity minimum

B. Consumable Materials

(1) D00153 Hydraulic Fluid - BMS 3-11

C. References

(1) 12-12-01/301, Hydraulic System Servicing
(2) 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
(3) 32-00-15/201, Landing Gear Door Locks
(4) 32-00-20/201, Land Gear Downlocks

D. Access

(1) Location Zone

211 Control cabin (Left Side)
212 Control Cabin (Right Side)
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

E. Prepare For the Test of the Brake System Fuses

S 492-025

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 492-026

(2) Make sure the chocks are installed on the wheels.

S 492-027

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 862-028

(4) Make sure the parking brake is released.

F. Do the Capacity Test on the Brake Fuses

S 792-029

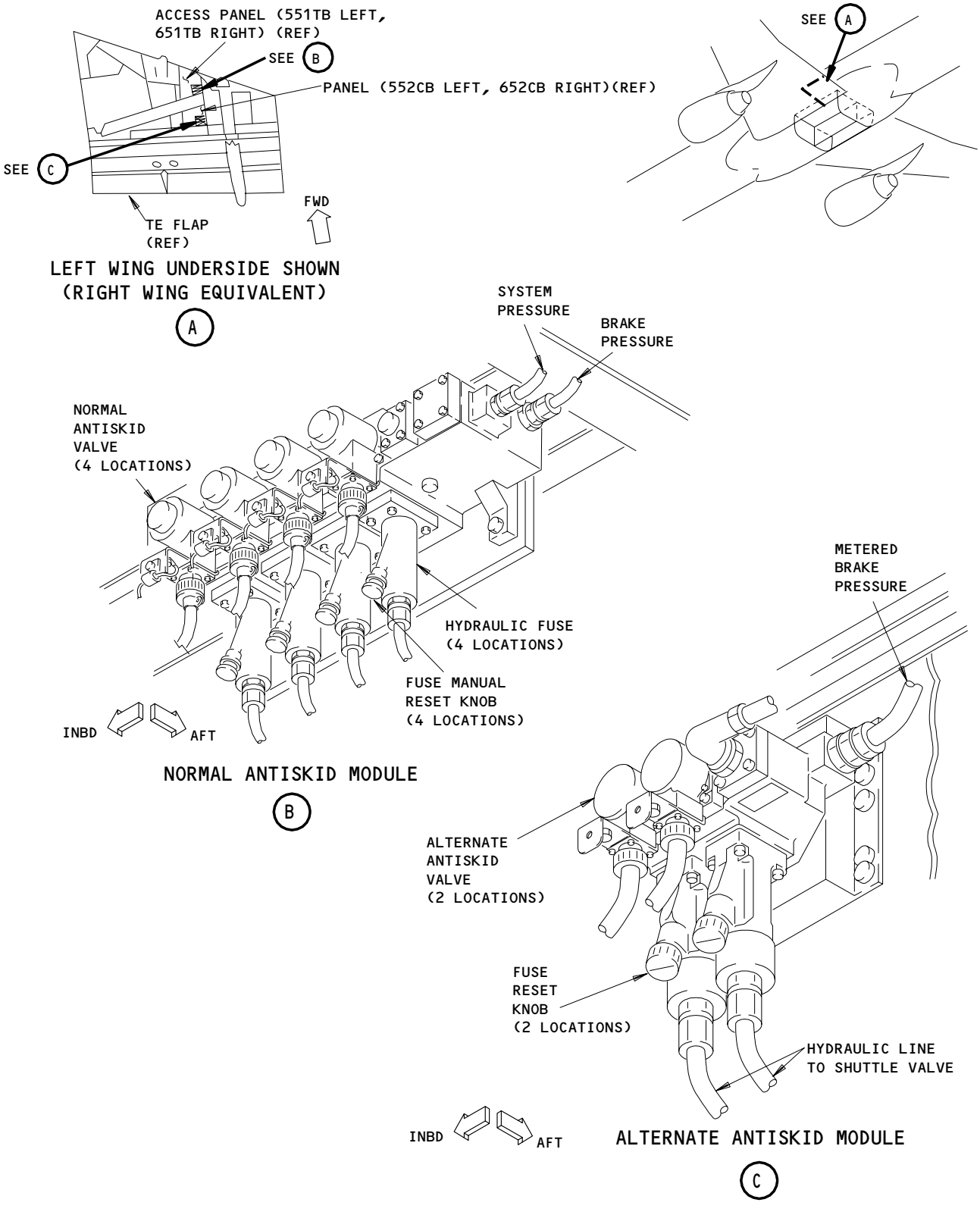
(1) To do a test of the fuses for the normal brake system, do the steps that follow:
   (a) Remove the screw and the washer from the end of the bleeder screw.
   (b) Install a bleed hose over the end of the bleeder screw.
   (c) Put a container with a minimum capacity of 3 U.S. gallons near the brake bleeder port so that fluid can flow directly from the bleed hose into the container.
   (d) Pressurize the right hydraulic system (AMM 29-11-00/201).
   (e) Push the brake pedals to the maximum travel to apply the full brake pressure.

      NOTE: You can use the parking brake to keep the brake pedals pushed for the fuse test.

   (f) Wear goggles to keep the spray from the brake bleed hose away from the eyes.
   (g) While you apply full brake pressure, open the bleeder screw a half of a turn. Let the fluid flow into the container until the flow stops. This shows that the fuse closed.

      NOTE: The fluid can flow out of the brake very quickly and intermittently. Do not let it get into the area around the container.

   (h) Close the bleeder screw.
   (i) Set the fuse as follows (Fig. 202):
      1) Hold the fuse reset knob in the bypass position for 5 seconds minimum to make sure the fuse is set.
      2) While you hold the fuse in the bypass position push in and hold the brakes and listen to hear an audible sound as the fuse fills up with hydraulic fluid.



Brake System Hydraulic Fuses (Sub-Assemblies of the Antiskid Valves)
Figure 202

(j) Do the fuse capacity test again for each of the other brake fuses for the normal brake system (seven locations).

NOTE: Monitor the hydraulic reservoir quantity carefully. The sequence of tests you do for the normal brake system will use approximately 2.8 gallons of hydraulic fluid.

(k) Make sure the quantity of fluid you collected is not more than 3 gallons total from all the brakes (8 locations).

(l) If you will not do the capacity test for the alternate brake system fuses at this time, do the steps that follow:
1) Do this task; Bleed the Wheel Brake System for the Main Landing Gear(AMM 32-41-00/201).
2) Remove the bleed hose.
3) Install the screw and the washer in the bleeder screw.
4) Tighten the bleeder screw to 60 +/-20 pound inches.
5) Install lockwire between the bleeder screw and the bleed port.

(m) Make sure the fluid in the right hydraulic system reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 792-030

(2) To do a test of the fuses for the alternate brake system, do the steps that follow:

(a) Remove the screw and the washer from the end of the bleeder screw.

(b) Install a bleed hose over the end of the bleeder screw.

(c) Put a container with a minimum capacity of 3 U.S. gallons near the brake bleeder port to let the fluid flow directly from the bleed hose into the container.

(d) Pressurize the center hydraulic system and remove the pressure from the right hydraulic system (AMM 29-11-00/201).

(e) Push the brake pedals the maximum travel to apply full brake pressure.

NOTE: You can use the parking brake to keep the brake pedals pushed for the fuse test.

(f) While you apply full brake pressure, open the bleeder screw a half of a turn. Let the fluid flow into the container until the flow stops. This shows that the fuse closed.

NOTE: The fluid can flow out of the brake very quickly and intermittently. Do not let it get into the area around the container.

(g) Close the bleeder screw.

(h) Set the fuse as follows (Fig. 202):
1) Hold the fuse reset knob in the bypass position for 5 seconds minimum to make sure the fuse is set.
2) While you hold the fuse in the bypass position push in and hold the brakes and listen to hear an audible sound as the fuse fills up with hydraulic fluid.

(i) Do the test again for each fuse.

NOTE: In the alternate brake system, two side by side brakes on an axle use one fuse. Thus, it is only necessary to bleed at the four bleed plug locations.

Monitor the hydraulic reservoir quantity carefully. The sequence of tests you do for the alternate brake system will use approximately 1.4 gallons of hydraulic fluid.

(j) Make sure the quantity of fluid you collected is not more than 1.5 gallons total from all of the brakes on the four axles.

(k) Do this task; Bleed the Wheel Brake System for the Main Landing Gear (AMM 32-41-00/201).

(l) Do the steps that follow to put the brakes to normal:
1) Remove the bleed hose.
2) Install the screw and the washer in the bleeder screw.
3) Tighten the bleeder screw to 60 +/-20 pound inches.
4) Install lockwire between the bleeder screw and the bleed port.

(m) Make sure the fluid in the center hydraulic system reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

G. Put the Airplane Back to Its Usual Condition

S 862-031

(1) Set the parking brake.

S 092-032

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Remove the door locks from the main landing gear and close the doors for the main landing gear (AMM 32-00-15/201).

S 862-033

(3) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).

HYDRAULIC BRAKE SYSTEM - ADJUSTMENT/TEST

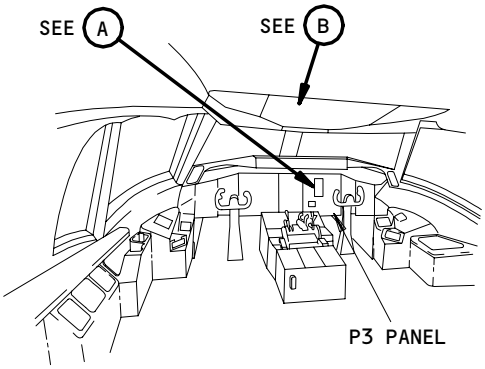
1. General
   A. This subject contains six tasks. The first task prepares the brake system for the operational tests. The second, third, and fourth tasks are operational tests of the brake system. The fifth task is a system adjustment. The sixth task is a system test.
      (1) The operational tests make sure that the hydraulic brake system operates properly. The tests can be done in a minimum of time and use only the equipment installed in the airplane. The operational tests are not intended to make sure that the system adjustments are correct or to replace the system test.
      (2) The system adjustment gives all the adjustments that are necessary to make sure that the system will operate properly.
      (3) The system test is a more detailed test than the operational tests and gives all adjustment specifications and system performance requirements.
      (4) The sequence in which the hydraulic systems are pressurized or depressurized can cause fluid to transfer between the center and right systems. The fluid transfer can cause a high fluid level in one system and a low fluid level in the other system. If the parking brake is set with the right and center, right only, or no hydraulic system pressurized and then released, with only the center system pressurized, fluid will transfer to the center system. If the parking brake is set with only the center system pressurized and then released with the right and center, right only, or no system pressurized, fluid will transfer to the right system. To minimize fluid transfer between systems, pressurize the right system before the center and left systems are pressurized. Also depressurize the center and left systems before the right system is depressurized.

TASK 32-41-00-715-073

2. Prepare for the Operational Tests of the Hydraulic Brake System (Fig. 501)
   A. References
      (1) AMM 24-22-00/201, Electrical Power - Control
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-41-00/201, Hydraulic Brake System
      (6) AMM 34-21-00/501, Inertial Reference System
   B. Access
      (1) Location Zones
          211 Control Cabin, Left
          212 Control Cabin, Right
          731 Landing Gear Left
          741 Landing Gear Right

   C. Procedure

      S 865-002
      (1) Supply electrical power (AMM 24-22-00/201).



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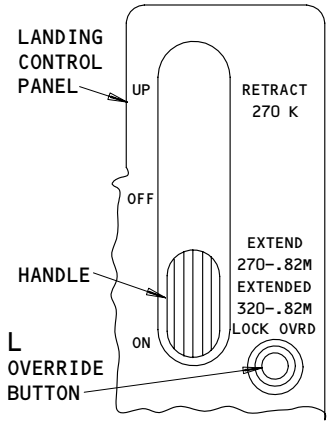
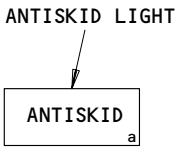
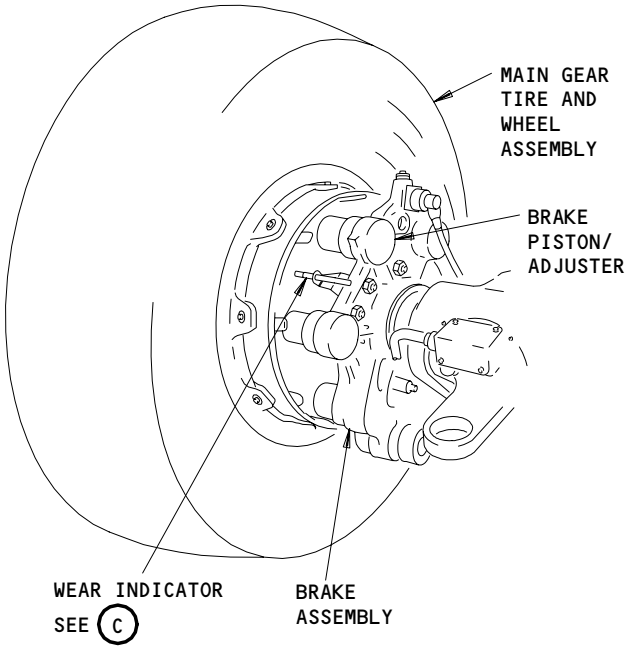


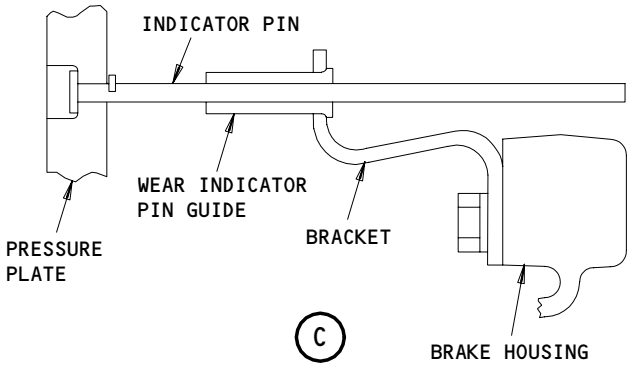
A



MISC ANNUNCIATOR ON P5

B





C

Alternate Brake System Operation Test Component Location
Figure 501 (Sheet 1)

S 495-003
(2) Make sure that the wheel chocks are installed at each wheel.

S 865-074
(3) Release the parking brake.

S 865-004
(4) Make sure that circuit breaker on the main power distribution panel, P6, is closed:
(a) 6F4, PARKING BRAKE VLV

S 865-005
(5) Make sure that these circuit breakers on the overhead panel, P11, are closed:
(a) 11A33, IND LIGHTS 1
(b) 11C31, LANDING GEAR ANTISKID 2-6
(c) 11C32, LANDING GEAR ANTISKID 3-7
(d) 11L15, HYDRAULIC ELEC PUMP CENTER 1
(e) 11L23, HYDRAULIC R ENG PUMP DEPRESS
(f) 11L24, HYDRAULIC ELEC PUMP CENTER 2
(g) 11U12, AUTOBRKS ANTISKID TEST/IND 1
(h) 11U18, LAND GEAR ANTISKID 1-5
(i) 11U20, LANDING GEAR LEVER LOCK
(j) 11U21, AUTOBRKS ANTISKID TEST/IND 2
(k) 11U22, BRAKE PRESS
(l) 11U27, LANDING GEAR ANTISKID 4-8

S 865-006
(6) Make sure that this P11 circuit breaker is open:
(a) 11U26, TAIL SKID CONT

S 865-007
(7) Make sure that the antiskid switch is ON, if installed, and the ANTISKID light on panel P5 is off.

TASK 32-41-00-705-082

3. Hydraulic Brake System Operational Test - Alternate Brake Source Selection (Fig. 501)

A. Reference

(1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

B. Access

(1) Location Zones

211 Control Cabin, Left
212 Control Cabin, Right
731 Main Landing Gear, Left
741 Main Landing Gear, Right

C. Procedure

S 865-075

(1) Do the Prepare for the Opertional Tests of the Hydraulic Brake System Test.

S 865-008

(2) Remove the pressure from the right and center hydraulic systems (AMM 29-11-00/201).

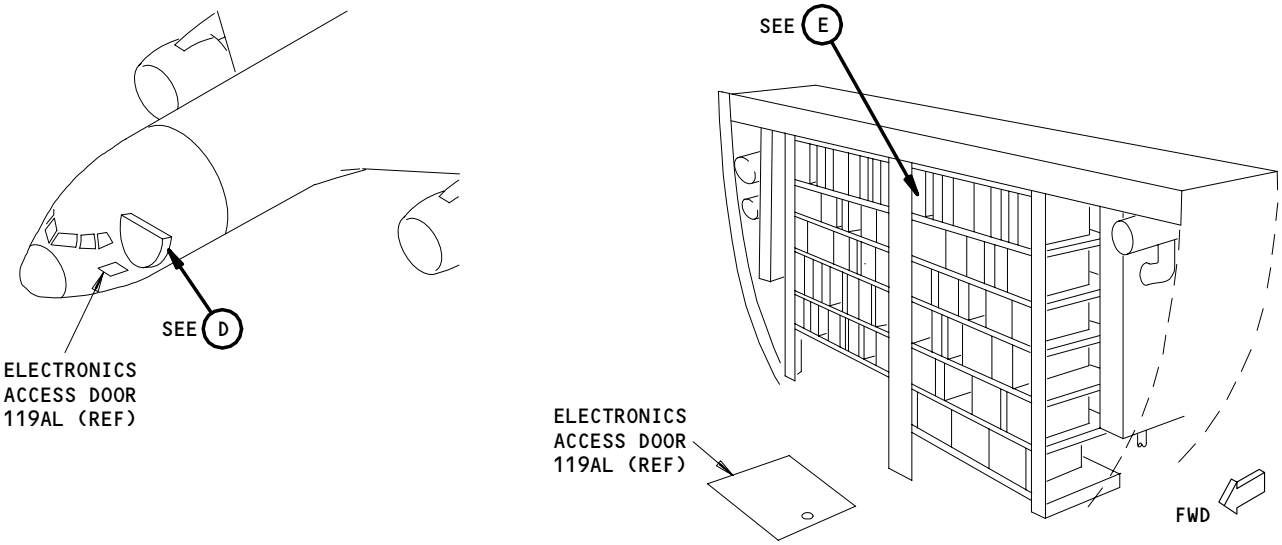
S 715-076

(3) Make sure that the BRAKE SOURCE light (on the Captain's instrument panel) is on.

S 715-077

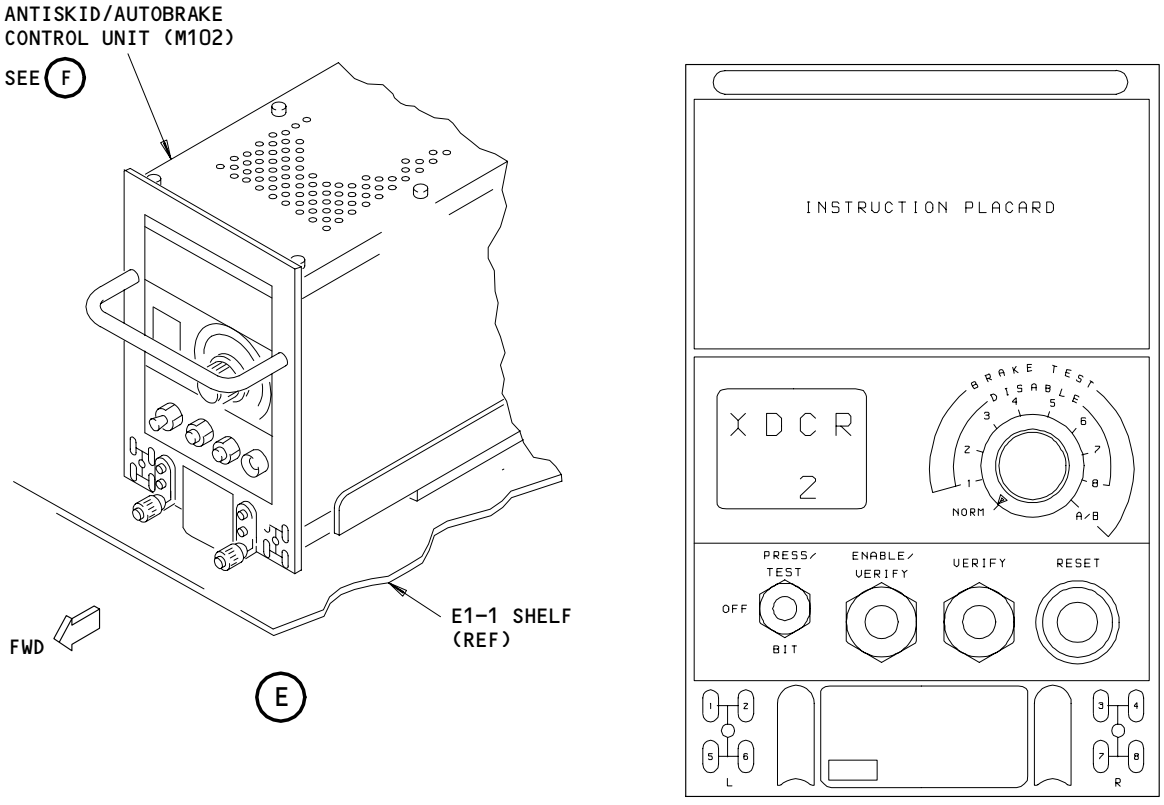
(4) Do the alternate brake source selection test as follows:

(a) Push in and release the brake pedals until the brake accumulator is depleted of fluid.
(b) Make sure that the BRAKE PRESS gauge (on the captain's center instrument panel) becomes stable at the top of the amber band.
(c) Pressurize the right hydraulic system (AMM 29-11-00/201).
(d) Make sure that the BRAKE SOURCE light goes off.
(e) Make sure that the BRAKE PRESS gauge shows 2800 to 3200 psi.



MAIN ELECTRONIC/ELECTRICAL EQUIPMENT CENTER

D



E

ANTISKID/AUTOBRAKE CONTROL UNIT
FRONT FACE

F

Alternate Brake System Operation Test Component Location
Figure 501 (Sheet 2)

(f) Pressurize the center hydraulic system (AMM 29-11-00/201).

NOTE: If you pressurize the center hydraulic system with the ACMPs, make sure both ACMPs are on.

(g) Push in and release the brake pedals several times.
(h) Make sure that the BRAKE PRESS gauge momentarily drops by 500 to 1000 psi each time that you apply the brakes, then goes to 2800 to 3200 psi.
(i) Remove the pressure from the right hydraulic system (AMM 29-11-00/201).
(j) Make sure that the FLIGHT CONTROL SHUTOFF - GROUND USE ONLY valve V99 and/or V102 is OPEN to allow the pressure to dissipate when you operate the control wheel or control column to remove any pressure that remains in the brake system.

NOTE: If valves V99 and/or V102 are closed, they can be opened manually or electrically by closing circuit breakers C1012 and or C1015, flollowed by pressing switch S1 and or S2, on the P61 panel to the ON position.

(k) Make sure the R hydraulic system pressure bleeds down to 0 to 160 psig and stays in that range.
(l) Bleed any pressure that remains in the R hydraulic system by moving the controls for the flight controls on the wing and/or the horizontal tail.
    1) Move the control wheel in the clockwise and counterclockwise directions to move the ailerons.
    2) Move the control column in the forward and back directions to move the elevators.
(m) Make sure the R hydraulic system pressure bleeds down to 0 to 160 psig and stays in that range.
(n) Wait for 10 minutes minimum to allow for any accumulator check valve leakage to occur before you put the flight control shutoff valves to the previous position.

(o) Put the FLIGHT CONTROL SHUTOFF - GROUND USE ONLY valve (V99 and/or V102) to the previous position.

NOTE: If you opened the valve, close it manually or put the S1 and or S2 switch to the OFF position, and then open circuit breaker C1012 and/or C1015.

(p) Make sure that the BRAKE SOURCE light is still off.
(q) Make sure that the BRAKE PRESS gauge still shows 2800 to 3200 psi.
(r) Push in and release the brake pedals several times.
(s) Make sure that the BRAKE PRESS gage still shows 2800 to 3200 psi.

NOTE: There will be a momentary pressure drop below 2800 psi with the right hydraulic system inoperative.

S 865-015
(5) Make sure that the L, R, and C IRU's are aligned and in NAV mode (AMM 34-21-00/501). (Do this task to prepare to test alternate brake system.)

D. Put the Airplane Back to Its Usual Condition

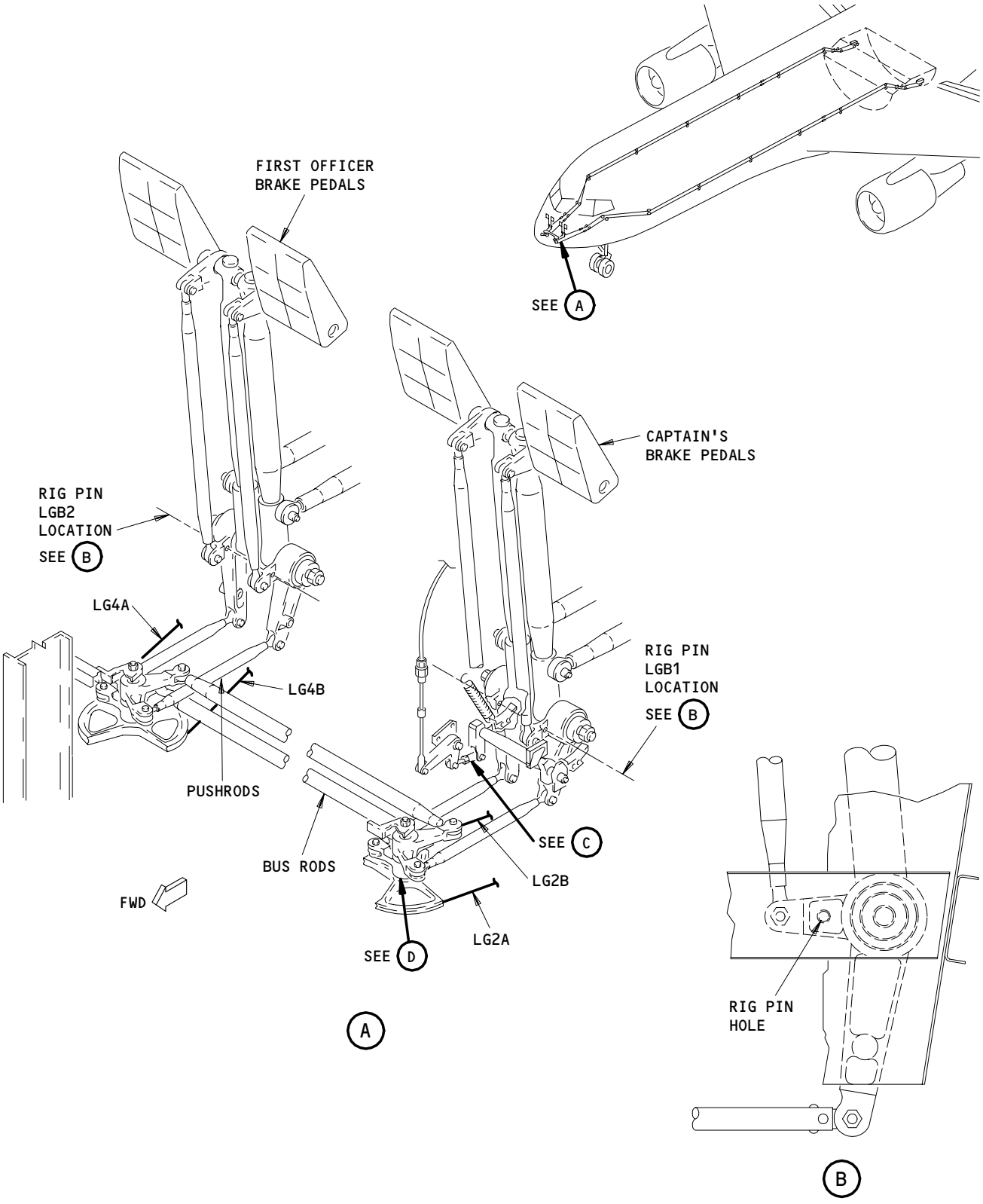
S 865-090
(1) Set the parking brake.

S 865-086
(2) Remove electrical power if it is not necessary (AMM 24-22-00/201).

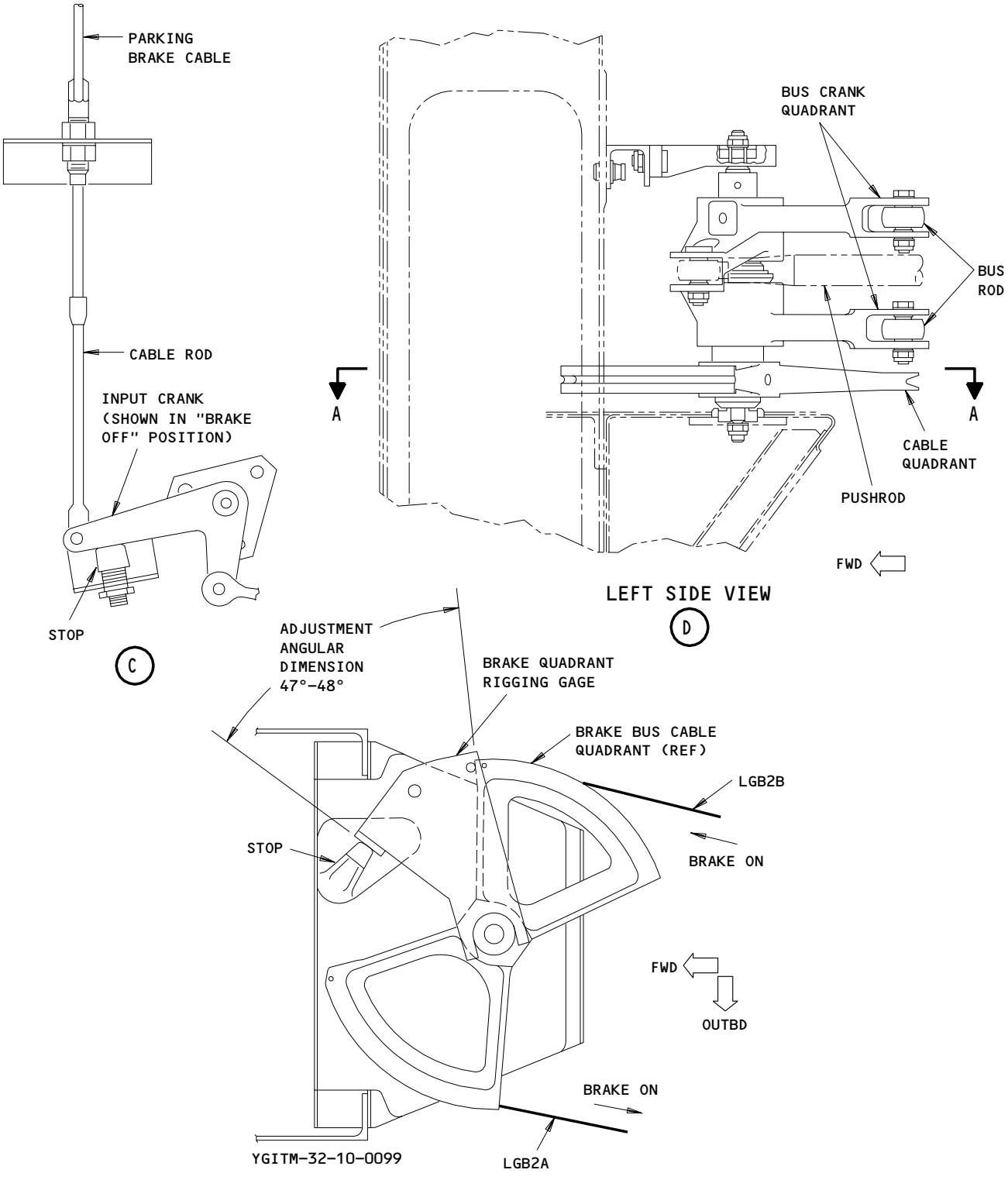
S 865-085
(3) Remove hydraulic power if it is not necessary (AMM 29-11-00/201).

TASK 32-41-00-705-087

4. Hydraulic Brake System Operational Test - Alternate Brake System (Fig. 501).
A. References
(1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(2) AMM 34-21-00/501, Inertial Reference System

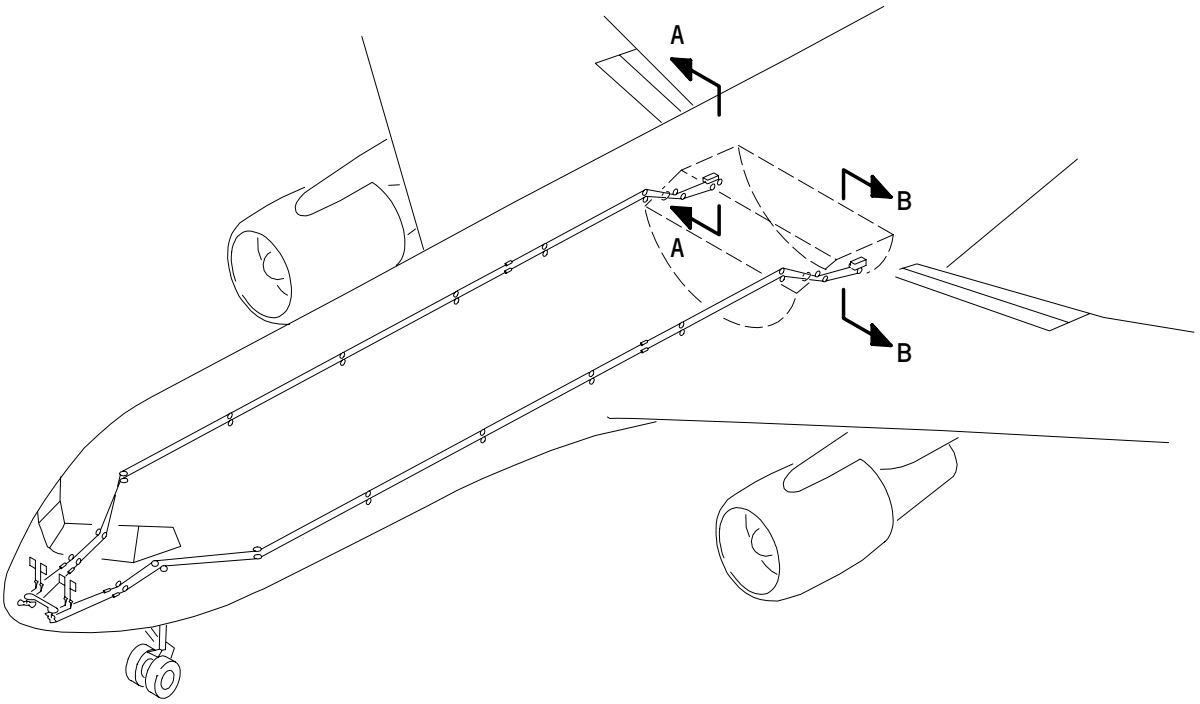


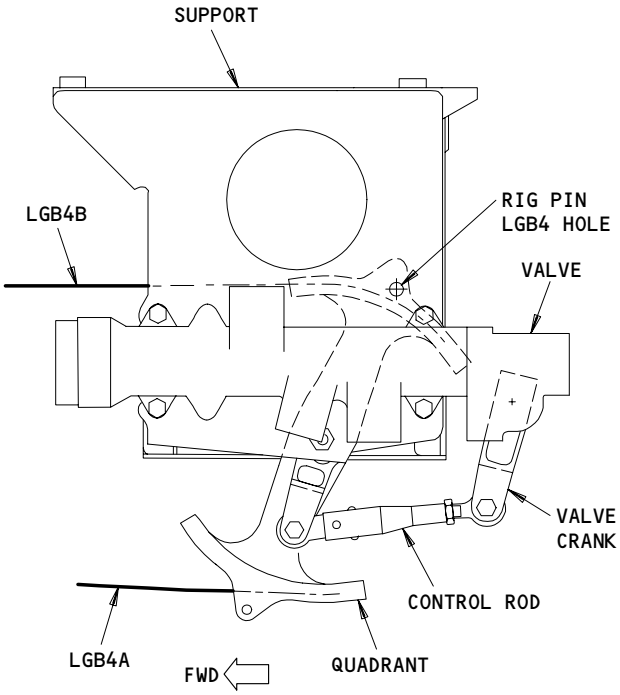
Pedal and Brake Bus Mechanism Adjustment
Figure 502 (Sheet 1)



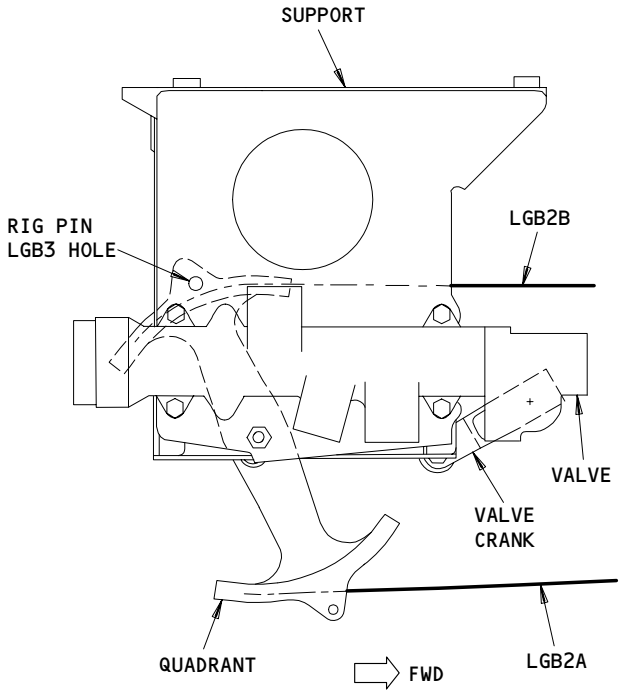
LEFT SIDE BRAKE BUS CABLE QUADRANT SHOWN, RIGHT SIDE OPPOSITE
A–A

Pedal and Brake Bus Mechanism Adjustment
Figure 502 (Sheet 2)



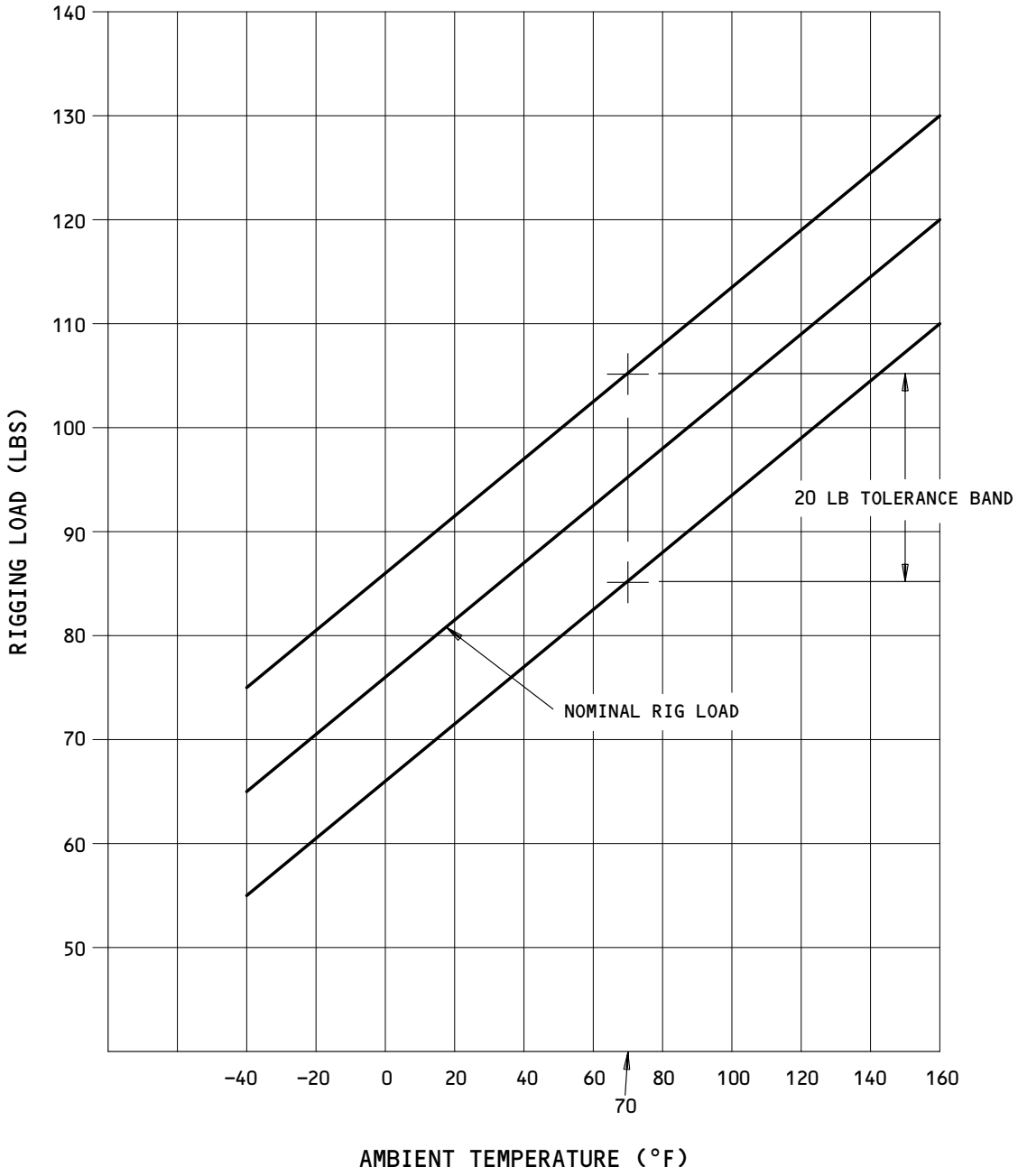


RIGHT WHEEL WELL METERING VALVE MODULE
A–A



LEFT WHEEL WELL METERING VALVE MODULE
B–B

Brake Metering Valve Module Adjustment
Figure 503



Brake Control Cable Rigging Loads
Figure 504

B. Access

(1) Location Zones

211 Control Cabin, Left
212 Control Cabin, Right
731 Main Landing Gear, Left
741 Main Landing Gear, Right

C. Procedure

S 865-088

(1) Make sure that the L, R, and C IRU's are aligned and in the NAV mode (AMM 34-21-00/501).

S 865-089

(2) Release the parking brake.

S 865-016

(3) Open this circuit breaker on the P6 main power distribution panel and install a DO-NOT-CLOSE tag:
(a) 6F4, PARKING BRAKE VALVE

NOTE: Open the PARK BRAKE VALVE circuit breaker before you set the parking brake to hold the applied brake pressure and not close the parking brake valve. If the parking brake valve is closed, antiskid operation is prevented and the alternate system brake release through the antiskid valves cannot be checked.

S 865-080

(4) Make sure that you have removed the pressure from the right hydraulic system (AMM 29-11-00/201).

S 865-108

(5) Pressurize the center hydraulic system and reservoir (AMM 29-11-00/201).

S 865-017
(6) Continue the alternate brake system test.

S 865-083
(7) Set the parking brake.

S 715-081
(8) Look at the wear indicator on each brake to make sure that brake pressure is applied.

S 865-078
(9) Make sure that the ANTISKID light on the P5 panel is off.

S 715-079
(10) Operate the brake test switch in the sequence shown in Table 501 and check for results as shown. Do the test for each brake switch position as follows:
   (a) Place the BRAKE TEST rotary switch, located on the front of antiskid/autobrake control unit (in the E/E bay), in the position shown in Table 501.
   (b) Press the ENABLE/VERIFY switch and hold, then press the VERIFY switch and release both at the same time. Make sure that the alternate brake pairs shown in Table 501 release for 5 ±2 seconds and then reapply. Make sure that the display messages on the control unit are as shown.

      NOTE: You can look at the movement of the brake pistons and the brake stack as the brake applies and releases to make sure that the brake pairs release and reapply as required.

TABLE 501

Brake Test Switch Position	Message	Brake Release *[1]
Brake Test 1	BRK 1	1-2
3	BRK 3	3-4
5	BRK 5	5-6
7	BRK 7	7-8

*[1] Brakes will cycle to release for 5±2 seconds, then reapply.

S 865-091
(11) Put the BRAKE TEST rotary switch to NORM and press the RESET switch on the Antiskid/Autobrake Control Unit.

S 865-092
(12) Close this circuit breaker on the P6 main power distribution panel:
(a) 6F4, PARK BRAKE VLV

D. Put the Airplane Back to Its Usual Condition.

S 865-093
(1) Remove electrical power if it is not necessary (Ref 24-22-00/201).

S 865-094
(2) Remove hydraulic power if it is not necessary (AMM 29-11-00/201).

TASK 32-41-00-705-095

5. Hydraulic System Operational Test - Alternate System Automatic Gear Retraction Brake (Fig. 501)

A. References
(1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(2) AMM 32-00-15/201, Landing Gear Doorlocks
(3) AMM 32-00-20/201, Landing Gear Downlocks

B. Access
(1) Location Zones
211 Control Cabin, Left
212 Control Cabin, Right
731 Main Landing Gear, Left
741 Main Landing Gear, Right

C. Procedure

S 495-018

WARNING: MAKE SURE THAT THE NOSE AND MAIN LANDING GEAR DOWNLOCKS ARE INSTALLED BEFORE YOU MOVE THE LANDING GEAR CONTROL LEVER. IF YOU MOVE THE CONTROL LEVER WITHOUT THE DOWNLOCKS INSTALLED THE LANDING GEAR CAN RETRACT AND INJURE PERSONNEL AND DAMAGE EQUIPMENT.

(1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

S 495-019

WARNING: REFER TO AMM 32-00-15/201 FOR THE DOOR LOCK INSTALLATION PROCEDURE. FAST MOVEMENT OF THE DOORS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT IF THE DOOR LOCKS ARE NOT CORRECTLY INSTALLED.

(2) Open the nose and main landing gear doors and install the door locks (AMM 32-00-15/201).

S 715-017

(3) Do a test of the alternate system automatic gear retraction brake (Fig. 501)

S 865-096

(4) Put chocks on the landing gear wheels.

S 865-097

(5) Release the parking brake.

S 865-020

(6) Pressurize the right and center hydraulic systems (AMM 29-11-00/201).

S 495-113

WARNING: MAKE SURE THE AREA AROUND THE TAIL SKID (IF APPLICABLE) IS CLEAR OF PERSONS AND EQUIPMENT WHEN IT OPERATES. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(7) Push the manual override button on the landing gear control panel and move the landing gear control handle to the UP position.

S 715-099

(8) Look at the wear indicator on each brake to make sure that pressure is applied.

S 865-100

(9) Move the landing gear control handle to the DN position.

S 715-101

(10) Look at the wear indicators on each brake to make sure that the pressure has released.

S 095-022

WARNING: REFER TO AMM 32-00-15/201 FOR THE LOCK REMOVAL PROCEDURE. FAST MOVEMENT OF THE DOORS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(11) Remove the main gear door locks (AMM 32-00-15/201).

TASK 32-41-00-705-102

6. Hydraulic Brake System Test - Normal System Braking (Fig. 501)

A. References

(1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

B. Access

(1) Location Zones

211 Control Cabin, Left
212 Control Cabin, Right
731 Main Landing Gear, Left
741 Main Landing Gear, Right

C. Procedure

S 865-025

(1) Pressurize the right and center hydraulic systems (AMM 29-11-00/201).

S 715-073

(2) Do a Test of the Normal System Braking

(a) Fully push in and hold the Captain's brake pedals.
(b) Look at the wear indicator on each brake to make sure that hydraulic pressure is applied.
(c) Release the brake pedals and look at the wear indicator on each brake to make sure that the brake releases.
(d) Do the test steps again with the First Officer's brake pedals.

D. Put the Airplane Back to Its Usual Condition.

S 865-106

(1) Set the parking brake.

S 865-027

(2) Remove hydraulic power if it is not necessary (AMM 29-11-00/201).

S 865-028

(3) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-41-00-835-029

7. Adjustment - Hydraulic Brake System (Fig. 502, 503)

A. General

(1) This procedure gives instruction for adjustment of the single cable hydraulic brake system to its proper operating condition.

B. Equipment

(1) Rig Pins from Set A20004-XX (AMM 20-10-24/201):
  (a) LGB1 - P/N A20004-24
  (b) LGB2-P/N A20004-24
  (c) LGB3 - P/N A20004-17
  (d) LGB4 - P/N A20004-17

(2) Cable Tensiometer - 0 to 300 pounds

(3) Rigging Gage Equipment,
Brake Quadrant -A32092-1,-A32092-2(Left Side),-A32092-3(Right Side)

C. References

(1) AMM 20-10-24/201, Rig Pins
(2) AMM 24-22-00/201, Electric Power
(3) AMM 25-52-02/401, Cargo Compartment Ceiling Panels
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(5) AMM 32-00-15/201, Landing Gear Door Locks
(6) AMM 32-00-20/201, Landing Gear Downlocks

D. Access

(1) Location Zones

211	Control Cabin, Left
212	Control Cabin, Right
731	Landing Gear Left
741	Landing Gear Right

E. Procedure

S 495-022

(1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

S 495-023

WARNING: REFER TO AMM 32-00-15/201 FOR DOOR LOCK INSTALLATION PROCEDURE. FAST MOVEMENT OF DOORS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT, IF LOCKS ARE NOT PROPERLY INSTALLED.

(2) Open the main gear doors and install door locks (AMM 32-00-15/201).

S 865-031

(3) Release the parking brake. Make sure that the parking brake is in the brake off position (Detail C, Fig. 502).

S 865-032

(4) Disconnect the metering valve module control rod from the valve crank in both the right and left wheel wells (Details A-A and B-B, Fig. 503).

S 485-033

(5) Install rig pins LGB3 and LGB4 through the metering valve quadrants and support structure (Details A-A, B-B, Fig. 503).

S 835-034

(6) Adjust the control rods so that rig pins LGB3 and LGB4 can be inserted and removed without binding in the rig pin holes. Connect the rods to the valve cranks.

S 485-034

(7) Disconnect the inboard and outboard pushrods from both sides of the brake pedal bus crank quadrants (Detail D, Fig. 502). Insert rig pins LGB1 and LGB2.

S 835-035

(8) Adjust the brake pedal pushrods to maintain the angular dimension between the brake bus cable quadrants and their stops per Detail A-A, Fig. 502. Use the left or right side brake quadrant rigging gage, as applicable, to measure and hold the angular dimension when you check and adjust the angular dimension.
   (a) Connect the pushrods to the brake pedal bus crank quadrants.
   (b) Check that the rig pins do not bind when you insert and remove them.
   (c) Make sure that the rod end threads cover at least half of the inspection hole in the pushrod near the rod end.
   (d) If the the rod end does not cover at least half of the inspection hole after adjustment, replace the BACB10AD5 rod end with a longer BACB10AD rod end to get sufficient length to cover the inspection hole.

S 015-036

(9) Remove the forward compartment (aft overhead) ceiling panels for access to the turnbuckles (MM 25-52-02).

NOTE: The cable turnbuckles are located in the ceiling area of the forward cargo compartment. Refer to Table 502 for the station locations.

TABLE 502	
Brake Cables	Turnbuckle Station Location
LGB2A - Inboard Lower Left	705.75
LGB2B - Inboard Upper Left	689.65
LGB4A - Inboard Lower Right	705.75
LGB4B - Inboard Upper Right	689.65

S 835-024

CAUTION: WHEN YOU TIGHTEN THE CABLES, DO NOT ALLOW THE SUM OF RIGGING LOADS IN CABLES LGB2A, OR LGB4A TO EXCEED THE SUM OF RIGGING LOADS IN LGB2B OR LGB4B, BY MORE THAN 150 LBS. IF THIS VALUE IS EXCEEDED THE RIGGING STOPS ON THE METERING VALVE MODULES MAY BE OVERLOADED.

(10) Loosen the cables at the turnbuckles (See Table 502).

S 835-038

(11) If new cables are installed, do the steps that follow to give an initial load to the cables that is necessary for use in this control system.
   (a) Tighten LGB2B and LGB2A cables to 210 ± 10 pounds.
   (b) Tighten LGB4B and LGB4A cables to 210 ± 10 pounds.
   (c) Make sure that you can insert and remove rig pins LGB1 and LGB2 freely (the pins do not bind in the holes) (Detail B, Fig. 502).
   (d) Remove four rig pins.
   (e) Alternately push in and release the left-hand brake pedal 25 times to operate the left-hand brake cable system through 25 cycles.
   (f) Alternately push in and release the right-hand brake pedal 25 times to operate the right-hand brake cable system through 25 cycles.

S 485-039

(12) Insert rig pins LGB1, LGB2, LGB3, and LGB4 (Fig. 502, 503).

S 835-040

(13) Adjust the cable rigging loads (Fig. 504). Make sure that all rig pins fit loosely. Make sure that you still have angular dimension of the brake bus cable quadrant-to-stop per Fig. 502, Section A-A. Adjust, if necessary.

S 485-041

(14) Remove four rig pins.

S 835-042
(15) Operate the left-hand system through three cycles with the left-hand brake pedal.

S 835-043
(16) Operate the right-hand system through three cycles with the right-hand brake pedal.

S 835-044
(17) Make sure that rig pins LGB1, LGB2, LGB3, and LGB4 can be installed and removed easily.

S 835-045
(18) Install turnbuckle locking clips.

S 735-046
(19) Do a test of the hydraulic brake system.

TASK 32-41-00-735-047

8. System Test - Hydraulic Brake System

A. General

(1) This test gives a check of the hydraulic brake system including all system adjustment specifications and tolerances required to assure optimum system performance.

(2) The hydraulic brake system test consists of these tests:

(a) Alternate brake source selection.

(b) Accumulator braking.

(c) Pedal forces and positions.

(d) Automatic gear retraction brake operation.

(e) Reserve power braking.

(3) Each of the above tests may be performed by itself as necessary to check a functional section in the system. For parking brake operation test, refer to AMM 32-44-00. For brake system bleeding procedure and hydraulic fuses operational check, refer to AMM 32-41-00, Maintenance Practices.

B. Equipment

(1) Pressure Gages - 0 to 4000 - F72977-62 psig (8 required)

(2) Spring Scale - 0 to 100 pound capacity, commercially available

(3) Protractor Assembly - 4MIT65B80307-1 or Protractor Kit - A27021-29

(4) Brake Pedal Measuring Equipment - J32001-64 Preferred, J32001-63 Alternate

NOTE: This equipment can be used instead of protractor assembly and spring scale to measure brake pedal forces and brake pedal angles. The brake pedal forces are base on a distance of 8.25 inches from the point of force application to brake pivot. The force reading for the J32001-64 tool shall be divided by a factor of 1.478.

C. References
(1) AMM 12-12-01/301, Hydraulic Systems
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(4) AMM 32-00-15/201, Landing Gear Downlocks
(5) AMM 32-41-00/201, Hydraulic Brake System
(6) AMM 32-44-00/501, Parking Brake System

D. Access
(1) Location Zones
211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right

E. Prepare for Test

S 425-103
(1) Install a 0 to 4000 psi pressure gage in the brake bleed fitting of each brake.

S 865-048
(2) Supply electrical power (AMM 24-22-00/201).

S 865-110
(3) Pressurize the right and center hydraulic systems and reservoirs (AMM 29-11-00/201).

NOTE: If you pressurize the center hydraulic system with the ACMPs, make sure both ACMPs are on.

S 865-050
(4) 767-300 AIRPLANES;
Open this circuit breaker on panel P11 and attach a DO-NOT-CLOSE tag:
(a) 11U26, TAIL SKID CONT

S 865-051
(5) Check that this main distribution panel P6 circuit breaker is closed:
(a) 6F4, PARKING BRAKE

S 865-052
(6) Check that these overhead panel P11 circuit breakers are closed:
(a) 11A33, IND LIGHTS 1
(b) 11L15, HYDRAULIC ELEC PUMP CENTER 1
(c) 11L23, HYDRAULIC R ENG PUMP DEPRESS
(d) 11L24, HYDRAULIC ELEC PUMP CENTER 2
(e) 11U20, LANDING GEAR LEVER LOCK
(f) 11U22, BRAKE PRESS

F. Test of the Hydraulic Brake System

S 735-053
(1) Do a test of the alternate brake source selection.
(a) Make sure that the center and right hydraulic systems pressure shown on the EICAS maintenance display on the P2 panel is between 2850 and 3150 psi.
(b) Make sure that the center system pressure light, the BRAKE SOURCE light, and the right system pressure light are off.
(c) Make sure that the brake pressure gage on panel P3-1 is between 2850 and 3150 psi and record this pressure reading for later reference.
(d) Make sure that each wheel brake pressure gage indication does not exceed 75 psi.
(e) Push the Captain's brake pedals in quickly and hold them down for 2 to 4 seconds, then quickly release them.
(f) Make sure that the brake pressure indications are as follows:
1) A momentary decrease in brake pressure indication on the brake pressure gage on the P3-1 panel.
2) A momentary decrease in right system pressure and no change in center system pressure indication on the EICAS maintenance display.
(g) If required, again push in the Captain's brake pedals quickly and hold them down for 2 to 4 seconds, then quickly release them. Make sure the that above conditions occur.

NOTE: Steps (e) thru (g) above verify that the alternate source select valve (ASSV) in the left wheel well is closed and the accumulator isolation valve (AIV) in the right wheel well is open.

S 865-054
(2) Remove the pressure from the right hydraulic system and allow the system pressure to bleed down (AMM 29-11-00/201).

S 735-055

(3) Continue the alternate brake source selection test.

(a) Make sure that the brake pressure indications are as follows:

1) The pressure gage on P3-1 shows ± 100 psi of the original right system pressure (2850 - 3150 psi).

2) The center system pressure indication on the EICAS maintenance display is between 2850 and 3150 psi.

3) The right system pressure indication on the EICAS maintenance display is 0-160 psi.

4) The SYS PRESS R light is on, and the SYS PRESS C light and the BRAKE SOURCE light on P1-3 are off.

(b) Push in the Captain's brake pedals quickly and hold them down for 2 to 4 seconds, then quickly release them.

(c) Make sure that brake pressure indications are as follows:

1) The center system pressure indication readout on the EICAS maintenance display decreases momentarily.

2) The pressure indication on the P3-1 brake pressure gage does not change.

3) The right system pressure indication on the EICAS maintenance display does not change.

(d) If necessary, again push in the Captain's brake pedal quickly and hold them down for 2 to 3 seconds, then quickly release them. Check that the above conditions occur.

NOTE: Steps (a) thru (d) above make sure that the ASSV is open and that the AIV is closed.

S 735-056

(4) Do a test of the accumulator braking.

(a) Make sure that the parking brake accumulator has the correct precharge (AMM 12-15-04/301).

(b) When the parking brake accumulator pressure becomes stable, remove the pressure from the center and right hydraulic systems (AMM 29-11-00/201).

NOTE: The accumulator pressure becomes stable when the indication on the the accumulator pressure gage has not changed in 2 minutes.

(c) Make sure that the hydraulic SYS PRESS C and SYS PRESS R lights on the P5 panel come on.

(d) Make sure that the center and right hydraulic systems pressures shown on the EICAS maintenance display on P2 are between zero and 160 psi.

(e) Make sure that the brake pressure gage indication on panel P3-1 is still ± 100 psi of the original right system pressure.

(f) Make sure that the BRAKE SOURCE light on panel P1-3 comes on and the BRAKE SOURCE message appears on the EICAS advisory display.
(g) Make a record of the pressure that is shown on the P3-1 panel brake pressure gage.
(h) Do these test steps to make sure that there will be enough hydraulic pressure for brake operation when the accumulator supplies the hydraulic power.

NOTE: You will apply and release the brakes four times in this test.

1) Push the Captain's brake pedals fully forward, hold them for 2 to 4 seconds, and then release them.
2) Make sure that the pressure shown on the pressure gage has decreased from the pressure that you made a record of.
3) Push the brake pedals fully forward for the second time and hold them for 2 to 4 seconds.
4) Release the brake pedals.
5) Push the brake pedals fully forward for the third time and hold them for 2 to 4 seconds.
6) Release the brake pedals and stop for 5 to 10 seconds.
7) Push the brake pedals fully forward for the fourth time and hold them while you look at the brake pressure indication on the brake pressure gage on the P3-1 panel.
8) Make sure that the brake pressure indication on the gage is more than 1,000 psig.
9) Release the brake pedals.

(i) Continue to push in fully, hold and release the brake pedals until the pressure indicated on the brake pressure gage on the P3-1 panel stabilizes at or near the brake accumulator pre-charge pressure.
(j) Push in the brake pedals fully, hold the pedals down, and check that the pressure indicated on each of the wheel brake pressure gages is 75 psig or less. Release the brake pedals.

S 865-058
(5) Make sure that the right hydraulic system, the center hydraulic system and the brake accumulator are depressurized to prepare for the pedal forces and positions test (AMM 29-11-00/201).

S 735-059
(6) Test the pedal forces and positions.
(a) Use a spring scale and protractor to measure brake pedal force and travel for each brake pedal per the chart that follows: Release the pedal after each check and make sure that it returns to 0.0 ±1.0 degrees.

PEDAL	BRAKE PEDAL TRAVEL (DEG)	BRAKE PEDAL FORCE (LBS)
Captain's Left	10.5 to 11.5	21 to 30
Captain's Left	0.5 to 1.5	6 to 9
Captain's Right	10.5 to 11.5	21 to 30
Captain's Right	0.5 to 1.5	6 to 9

S 865-107

(7) Pressurize the center hydraulic system and reservoir (AMM 29-11-00/201).

S 735-027

(8) Continue the test.

(a) Push in the brake pedals to the values shown in the chart that follows and make sure that you get the required brake pedal force and brake pressure readings for the brake pedal travel. Do the test by the steps that follow:

1) Use spring scale and protractor to measure the brake pedal force and travel.
2) Push in each brake pedal to the value shown in the chart.
3) Make sure that, after at least 5 seconds, the brake pedal force and wheel brake pressures for that brake pedal travel are as shown.

PEDAL	BRAKE PEDAL TRAVEL (DEG)	BRAKE PEDAL FORCE (LBS)	BRAKE PRESSURE (PSIG)
Captain's Left	4.5 to 5.5	36 to 42	500 to 700
Captain's Left	8.5 to 9.0	54 to 66	1800 to 2600
Captain's Right	4.5 to 5.5	36 to 42	500 to 700
Captain's Right	8.5 tO 9.0	54 to 66	1800 to 2600

S 865-061

(9) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 865-062

(10) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 735-063

(11) Continue the pedal forces and positions test.
  (a) Do the same test for brake pedal forces and wheel brake pressures at the brake pedal settings in the chart that you did with center hydraulic system pressure source.
  (b) Make sure that this circuit breaker on the main power distribution panel P6 is closed:
    1) 6F4, PARKING BRAKE VLV
  (c) Set the parking brake as follows:
    1) Push in both left and right brake pedals fully and hold them.
    2) Pull up the parking brake control handle on the center control stand.
    3) Release the brake pedals.
  (d) Make sure that both pedals stay depressed at an angle of 13.0 to 14.5 degrees.
  (e) Make sure that the PARK BRAKE light on the P10 panel is on.
  (f) Make sure that the brake pressure shown on each wheel brake test gage is 2400 psig minimum.
  (g) Push the brake pedals all the way in and then let them go to release the parking brake.
    1) Make sure that the parking brake control handle is fully retracted.
    2) Make sure that the PARK BRAKE light on the P10 panel is off.
    3) Make sure that the brake pedals go back to 0.0 ±1.0 degrees.

S 495-028

WARNING: MAKE SURE THAT THE NOSE AND MAIN LANDING GEAR DOWNLOCKS ARE INSTALLED BEFORE YOU MOVE THE LANDING GEAR CONTROL LEVER. IF YOU MOVE THE CONTROL LEVER WITHOUT THE DOWNLOCKS INSTALLED THE LANDING GEAR CAN RETRACT AND INJURE PERSONNEL AND DAMAGE EQUIPMENT.

(12) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

S 495-029

WARNING: REFER TO AMM 32-00-15/201 FOR THE DOOR LOCK INSTALLATION PROCEDURE. FAST MOVEMENT OF THE DOORS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT IF THE DOOR LOCKS ARE NOT CORRECTLY INSTALLED.

(13) Open the doors for the main landing gear doors and install the door locks (AMM 32-00-15/201).

S 865-030
(14) Pressurize the center hydraulic system and reservoir (AMM 29-11-00/201).

S 735-031
(15) Do a test of the automatic gear retraction brake operation.
(a) Make sure that the pressure shown on EICAS is 2900-3200 psig.
(b) Press the manual override button on the lower landing gear control panel and move the landing gear control handle to the UP position.
(c) AIRPLANES WITH BACR17E8-6 REDUCER FITTING IN THE "RET" PORT ON THE ALTERNATE BRAKE SELECTOR VALVE;
Make sure that the brakes apply within 2 seconds after you move the landing gear control handle to the UP position.
(d) AIRPLANES WITH CRISSAIR 6F3748 RESTRICTOR FITTING IN THE "RET" PORT ON THE ALTERNATE BRAKE SELECTOR VALVE;
Make sure that the brakes apply in 3 to 8 seconds after you move the landing gear control handle to the UP position.
(e) Make sure that the pressure at each wheel brake is 500 to 700 psig.
(f) Return the landing gear control handle to the DN position.
Make sure that the test gage indication at each wheel brake is 75 psig maximum.
(g) AIRPLANES WITH CRISSAIR 6F3748 RESTRICTOR FITTING IN THE "RET" PORT ON THE ALTERNATE BRAKE SELECTOR VALVE;
Do a check of alternate brake system operation as follows:
1) Remove the pressure from the right hydraulic system (AMM 29-11-00/201).
2) Push the brake redals quickly to their full travel and then release them.
3) Make sure that the brakes immediately engage and disengage when you apply the brake pedals and release them (not more than 1 (one) second).

S 865-064
(16) Remove the pressure from the center and right hydraulic systems (AMM 29-11-00/201) to prepare for the reserve power braking test.

S 615-065
(17) Make sure that the center hydraulic system reservoir is full. Add fluid if necessary (AMM 12-12-01/301). (Do this task to prepare for reserve power braking test.)

S 735-032
(18) Do a test of the reserve power braking.
(a) Push in and release the brake pedals until the brake pressure gage on the P3-1 panel shows a pressure of approximately 1000 psi (precharge pressure).

(b) Make sure these indications occur:
1) Both the right and the center hydraulic systems pressure indications on the EICAS maintenance display are between zero and 160 psi.
2) The BRAKE SOURCE light on panel P1-3 comes on.

(c) Push in the RESERVE BKS & STRG switch on panel P1 to give reserve hydraulic power. Make sure that you have the indications that follow:
1) The BRAKE SOURCE light goes off and the ISLN light on the P61 panel comes on.
2) The AC isolated pump (located in right wheel well) starts.
3) The center hydraulic system pressure indication on the EICAS maintenance display increases to 2850 - 3150 psi.
4) The VALVE light at RESERVE BKS & STRG switch comes on when the isolation valve is in transit (approximately 2 to 3 seconds) and then goes off.

NOTE: If the VALVE light does not go out it is an indication that one of two isolation valves has not completed its full stroke.

5) The ISLN light on the P61 panel comes on.

(d) Push the Captain's brake pedals all the way in and hold.

(e) Make sure that the brake pressure at each wheel brake is ±100 psi of the center hydraulic system pressure shown on the EICAS maintenance display.

(f) Release the brake pedals.

(g) Press the RESERVE BKS & STRG switch to turn off the pump. Make sure that the ISLN light on the P61 panel goes off.

G. Put the Airplane Back to Its Usual Condition.

S 865-066

(1) Make sure that the parking brake is released and the brakes are not applied.

S 865-067

(2) Remove the power from the center and right hydraulic systems if not already removed (AMM 29-11-00/201).

S 085-068

(3) Remove the pressure gages from each brake bleed fitting.

S 875-069

(4) Push in and release the brake pedals several times to bleed air from the brake line.

S 875-070

(5) Set the parking brake.

S 095-071

WARNING: REFER TO AMM 32-00-15/201 FOR THE LOCK REMOVAL PROCEDURE. FAST MOVEMENT OF THE DOORS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(6) Remove the main gear door locks and close the main gear doors.

S 865-105

(7) Remove electrical power if it is not necessary (AMM 24-22-00/201).

MAIN LANDING GEAR BRAKE BUS CRANK - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the linkages, shafts, and quadrants that are called the brake bus crank. The second task installs the brake bus crank.

TASK 32-41-01-024-069

2. Main Landing Gear Brake Bus Crank - Removal (Fig. 401)
   A. References
      (1) AMM 25-52-02/401, Forward Cargo Compartment (aft overhead) Ceiling Panels
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          211/212 Control Cabin

   C. Prepare for Removal

      S 494-001
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

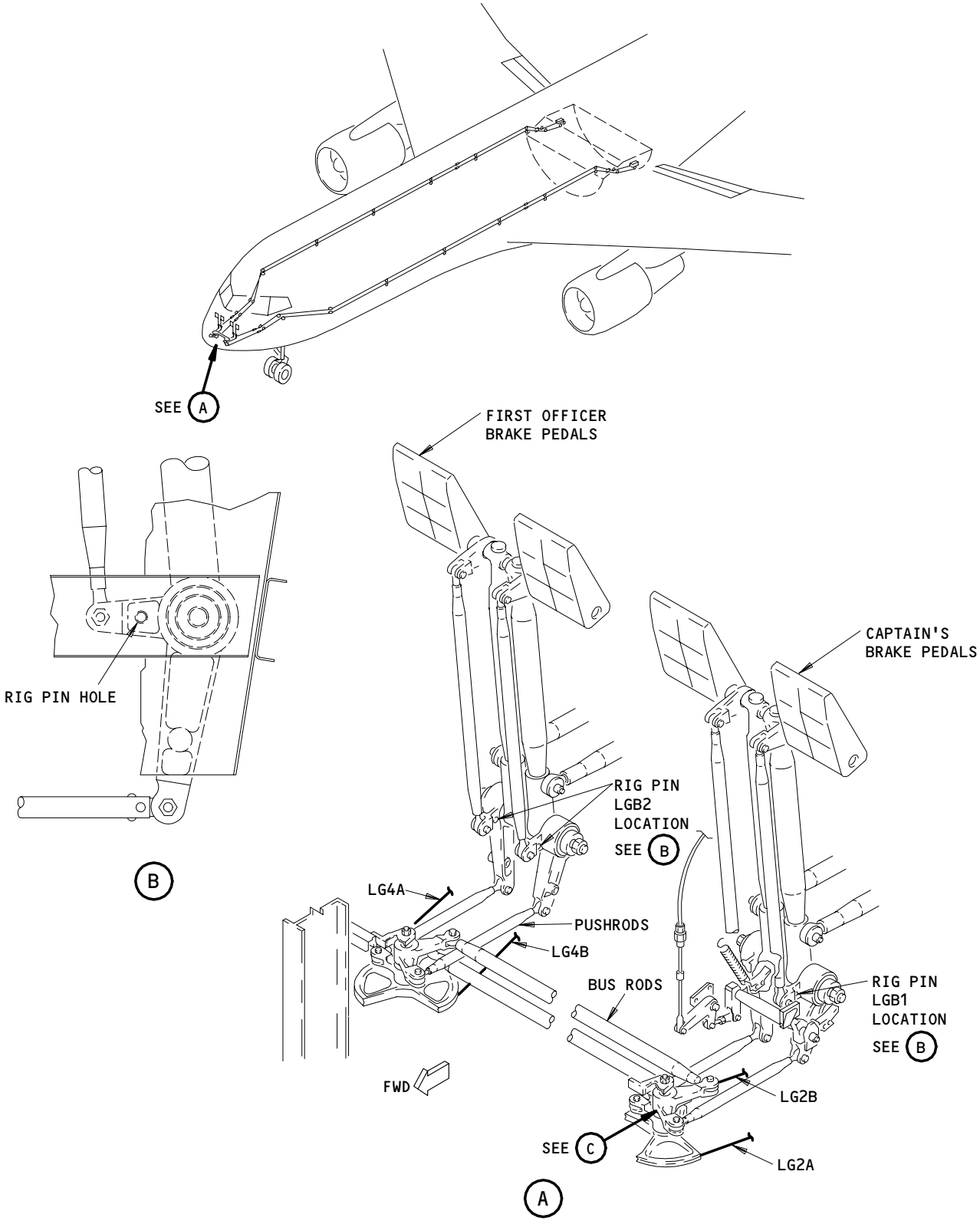
      S 864-002
      (2) Release the parking brake.

      S 864-003
      (3) Remove the pressure from the right and center hydraulic systems and reservoirs (AMM 29-11-00/201).

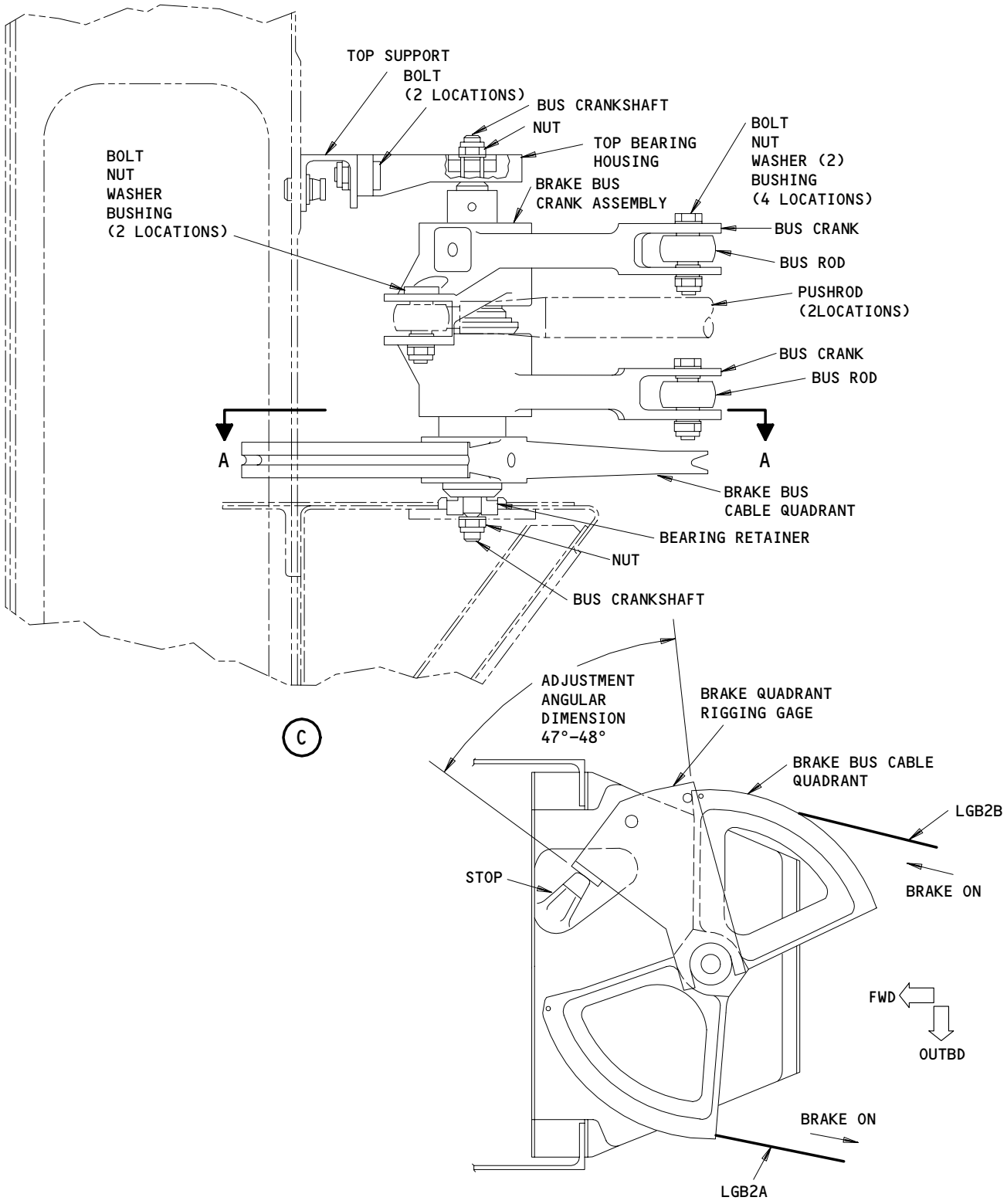
      S 864-004
      (4) Push in the brake pedals fully six times to remove the hydraulic pressure from the brake accumulator.

      NOTE: Wait a minimum of 5 seconds between each time that you apply the brakes.

      S 494-005
      (5) Install rig pins LGB1/LGB2 to put the brake cables in the neutral position.



Main Landing Gear Brake Bus Installation
Figure 401 (Sheet 1)



Main Landing Gear Brake Bus Crank Installation
Figure 401 (Sheet 2)

244104

S 014-006
(6) Remove the aft overhead ceiling panel in the forward cargo compartment to get access to the cable turnbuckles (AMM 25-52-02/401).

NOTE: The landing gear brake turnbuckles are outboard of the sidewalls at the locations shown below.

Brake Cables	Turnbuckle Location
LGB2A Inboard Lower Left	Station 683.0
LGB2B Inboard Upper Left	Station 713.0
LGB4A Inboard Lower Right	Station 705.0
LGB4B Inboard Upper Right	Station 691.0

S 034-030
(7) Loosen two turnbuckles (LGB2A, LGB2B, or LGB4A, LGB4B cables).

S 034-033
(8) Disconnect the cables from the quadrant and put tags on the cables to identify them.

S 034-034
(9) Disconnect the two horizontal bus rods from the aft side of the brake bus crank quadrant (Detail A).

S 034-035
(10) Disconnect the two pushrods from the aft side of the brake bus crank quadrant.

S 024-037
(11) Remove the bolts that attach upper bus crank assembly to the top support.

S 024-038
(12) Remove the nut and the washer from the bottom of the brake bus crank and remove the bus crank.

S 024-039
(13) Remove the nut from the upper end of the brake bus crank and remove the upper bearing housing and bearing.

TASK 32-41-01-404-070

3. Main Landing Gear Brake Bus Crank - Installation (Fig. 401)

A. Consumable Materials

(1) C00174 Compound, Corrosion Preventive - MIL-C-16173, Grade 1

(2) D00633 Grease - BMS 3-33 (Preferred)

(3) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

B. Equipment

(1) Cable Tensiometer - commercially available

(2) Rig Pins from set A20004-XX (AMM 20-10-24/201):

(a) LGB1 - P/N A20004-24

(b) LGB2 - P/N A20004-24

(3) Rigging Gage Equipment, Brake Quadrant-A32092-1,-A32092-2 (Left Side),-A32092-3 (Right Side)

C. References

(1) AMM 25-52-02/401, Forward Cargo Compartment (aft overhead) Ceiling Panels

(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

(3) AMM 32-00-20/201, Landing Gear Downlocks

(4) AMM 32-41-00/501, Hydraulic Brake System

D. Access

(1) Location Zones

211/212 Control Cabin

E. Procedure

S 494-040

(1) Make sure that rig pins LGB1/LGB2 are installed.

S 644-041

(2) Apply corrosion preventive compound to the bearing surfaces of the upper and lower ends of the bus crank shaft (Detail B).

S 424-042

(3) Install the top bearing and the top bearing housing on the upper end of the bus crank shaft.

S 644-043

(4) Lubricate the threaded surfaces of the top and bottom ends of the bus crank shaft with grease.

S 424-071

(5) Install the upper bearing assembly (bearing and housing) over the end of the shaft and attach with nut.

S 424-044

(6) Place the bus crank and shaft assembly so that the bottom end of the shaft is above the bearing and insert the shaft through the bearing.

S 424-045
(7) Attach the top bearing and housing assembly to the top support of the bus crank assembly.

S 644-046
(8) Apply grease to the ends of the bus rods and the fasteners.

S 434-047
(9) Connect the two bus rods to the aft crank arms of the left and right brake bus cranks with bushings bolt, washers (two), bushing and nut (8 locations) (Detail A).

S 644-048
(10) Apply grease to the ends of the pushrods and the fasteners.

S 434-072
(11) Connect the two pushrods to the forward crank arms of the left and right brake bus cranks with bushings bolt, washers (two), bushing, and nut (8 locations).

S 434-073
(12) Connect the cables to the bus crank cable quadrants. Remove the cable identification tags.

NOTE: You must keep the angular dimension in Section A-A, Fig. 401 between the cable quadrant and the stop while you adjust and tighten the cables. Use the rigging gage to keep the angular dimension.

S 834-064
(13) Adjust the turnbuckles to get the correct cable tension (AMM 32-41-00/501).

S 414-065
(14) Install the forward cargo compartment (aft overhead) ceiling panels.

S 864-066
(15) Pressurize the right and center hydraulic systems and reservoirs (AMM 29-11-00/201).

S 734-067
(16) Do a test of the normal and alternate brakes for proper operation (AMM 32-41-00/501).

S 864-068

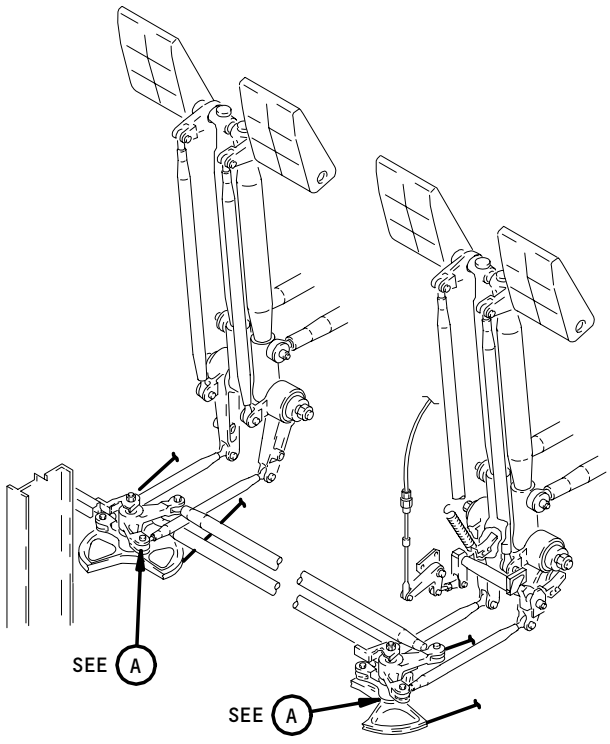
(17) Remove right and center systems hydraulic power if no longer necessary (AMM 29-11-00/201).

MAIN LANDING GEAR BRAKE BUS CRANK - INSPECTION/CHECK

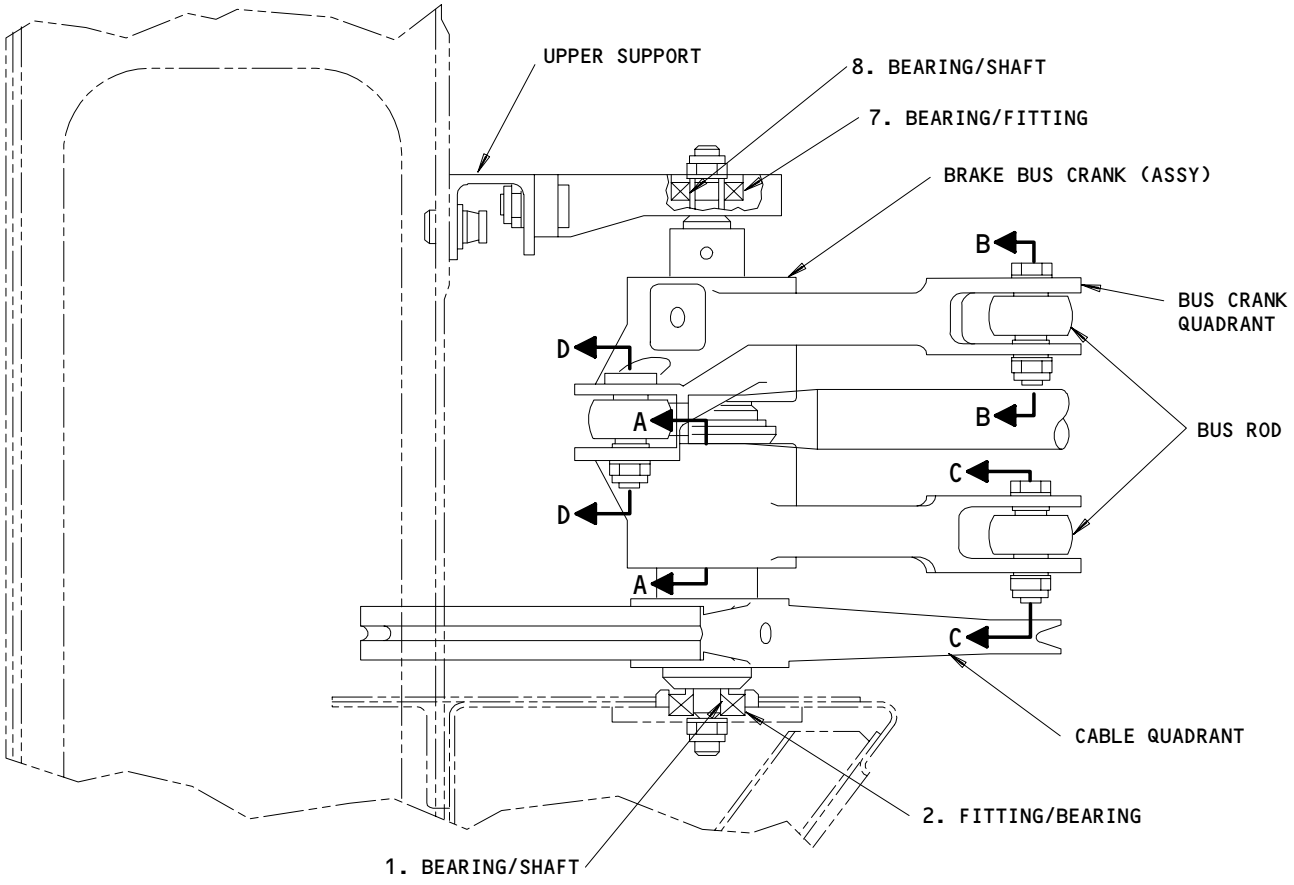
1. General
   A. This data consists of illustrations and wear limit charts. No procedure is given for this section for gaining access to permit inspection. For this information, refer to Main Landing Gear Bus Crank Removal/Installation.

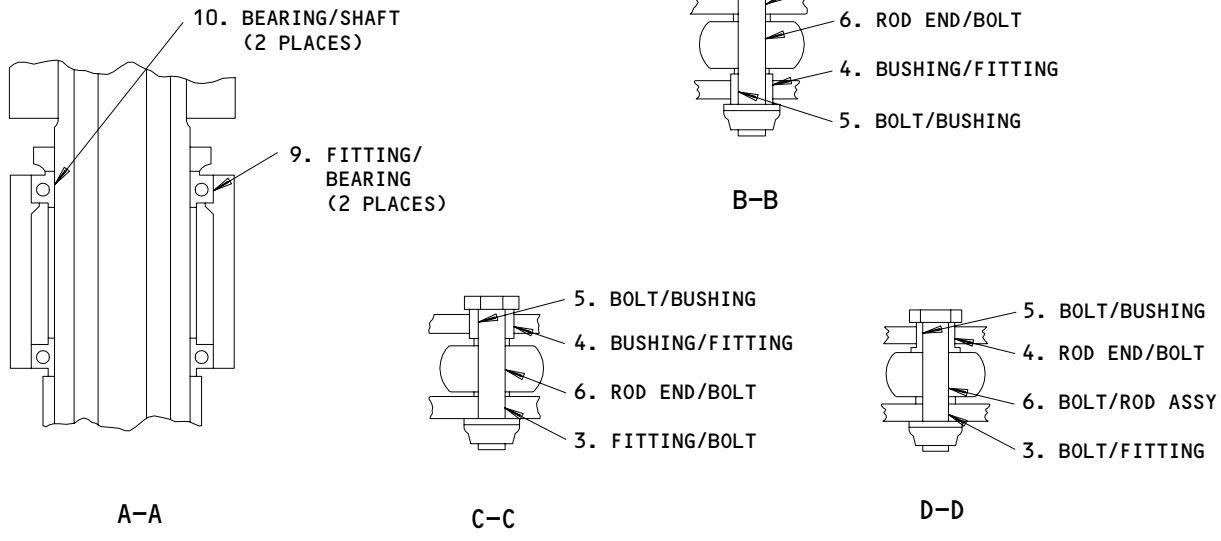
TASK 32-41-01-706-001

2. Main Landing Gear Brake Bus Crank Wear Limits
   A. General
      (1) Refer to Fig. 601 for inspection points and Fig. 602 for wear limit table.



Main Landing Gear Bus Crank Inspection/Check
Figure 601 (Sheet 1)





Main Landing Gear Brake Bus Crank Inspection/Check
Figure 601 (Sheet 2)

FIG. 601 INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS ALLOWED WEAR DIM.	WEAR LIMITS MAX DIAM CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR.
1	BEARING	ID	0.3745	0.3750	0.3750	0.0023	X		
	SHAFT	OD	0.3747	0.3752	0.3727			X	1
2	FITTING	ID	0.8738	0.8743	0.8773	0.0028		X	1
	BEARING	OD	0.8745	0.8750	0.8745		X		
3	QUADRANT	ID	0.2495	0.2505	0.2525	0.0060		X	1
	BOLT	OD	0.2485	0.2495	0.2465		X		
4	QUADRANT	ID	0.3766	0.3781	0.3801	0.0065		X	1
	BUSHING	OD	0.3756	0.3761	0.3736		X		
5	BUSHING	ID	0.2500	0.2515	0.2535	0.0070	X		
	BOLT	OD	0.2485	0.2495	0.2465		X		
6	ROD END	ID	0.2497	0.2500	0.2520	0.0055	X		
	BOLT	OD	0.2485	0.2495	0.2465		X		
7	FITTING	ID	0.8753	0.8758	0.8778	0.0033		X	1
	BEARING	OD	0.8745	0.8750	0.8745		X		
8	BEARING	ID	0.3745	0.3750	0.3750	0.0022	X		
	SHAFT	OD	0.3748	0.3753	0.3728			X	1
9	QUADRANT	ID	1.5000	1.5010	1.5030	0.0040		X	1
	BEARING	OD	1.4990	1.5000	1.4990		X		
10	BEARING	ID	1.0618	1.0632	1.0632	0.0044	X		
	SHAFT	OD	1.0608	1.0618	1.0588			X	1

1 PART IS REPAIRABLE

Main Landing Gear Brake Bus Crank Wear Table
Figure 602

588795

BRAKE METERING VALVES - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the left or right brake metering valve. The second task installs the left or right brake metering valve.
   B. There are two brake metering valves in the hydraulic brake system. A brake metering valve in the left wheel well gives metered brake input pressure to the left landing gear brakes. A brake metering valve in the right wheel well gives metered brake input pressure to the right landing gear brakes.

TASK 32-41-02-004-001

2. Remove the Brake Metering Valve
   A. Equipment
      (1) Rig pins from Set A20004-XX (AMM 20-10-24/201).
          (a) LGB3 - P/N A20004-17
          (b) LGB4 - P/N A20004-17
   B. References
      (1) AMM 20-10-24/201, Rig Pins
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          211 Control Cabin, Left
          212 Control Cabin, Right
          143 Main Landing Gear Wheel Well (Left)
          144 Main Landing Gear Wheel Well (Right)

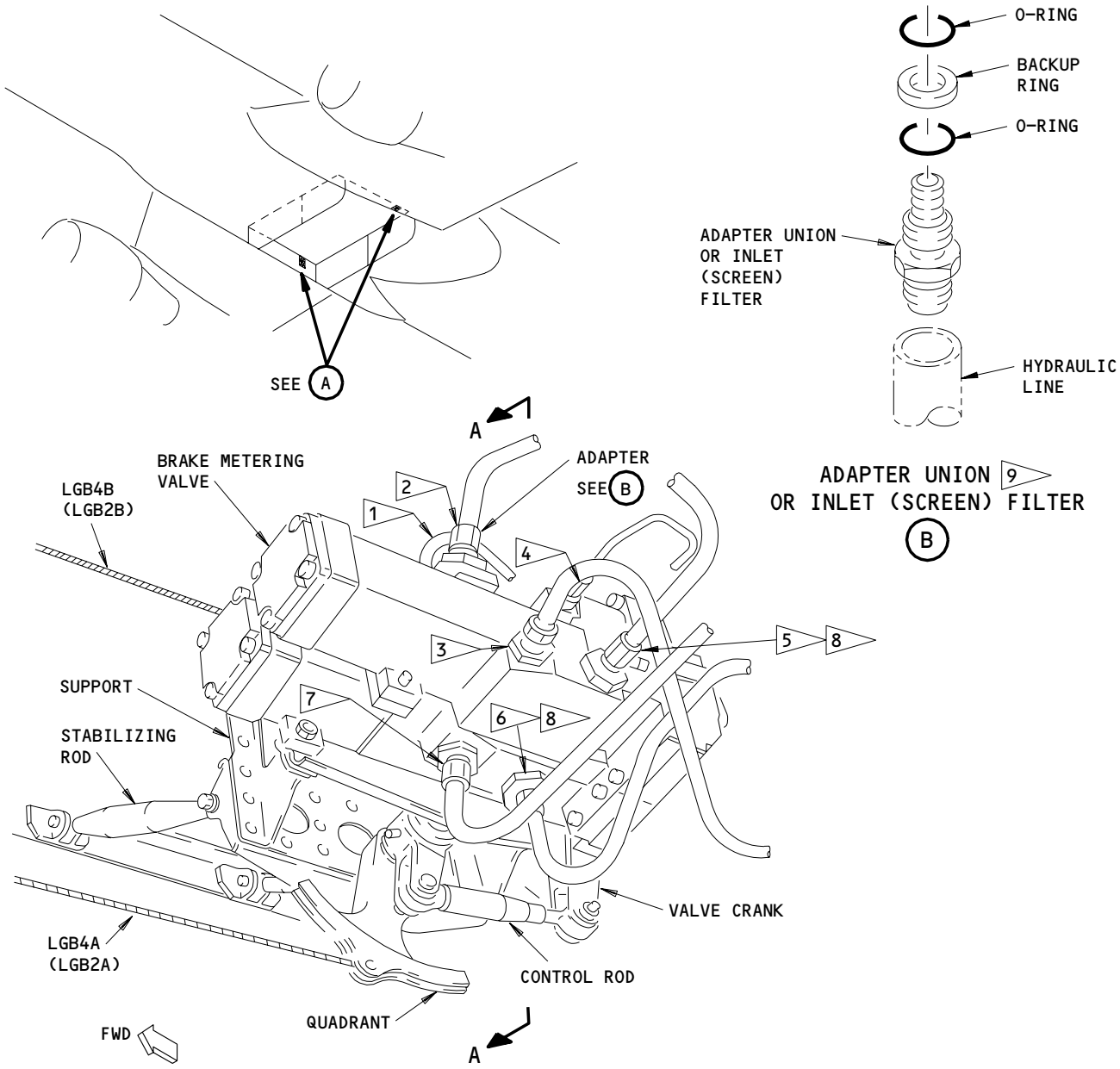
   D. Procedure

      S 424-015
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 024-014

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

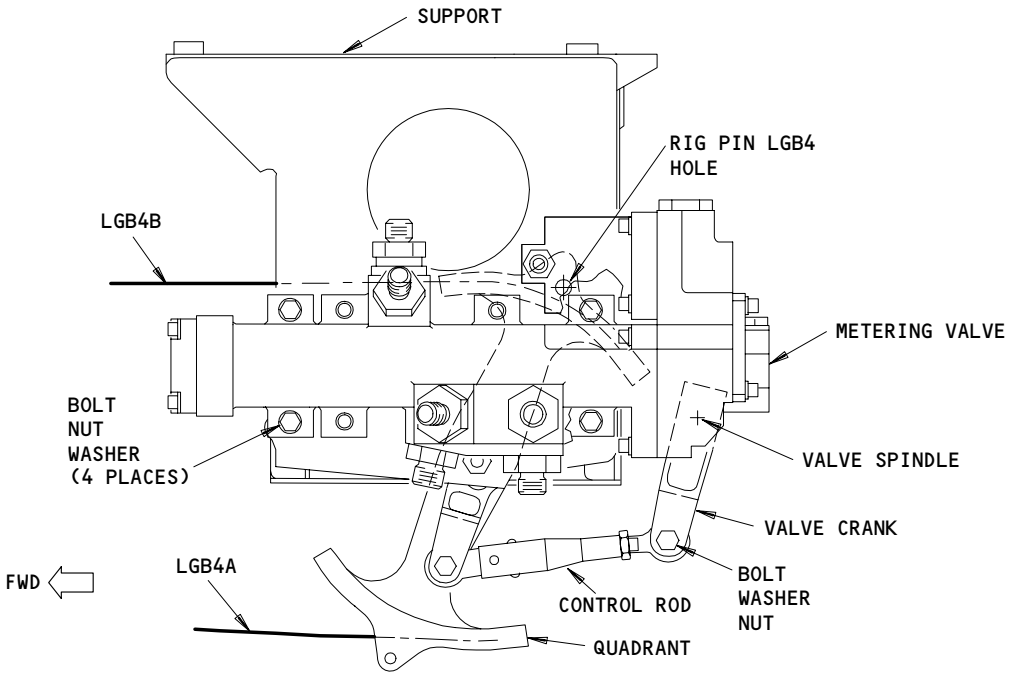


RIGHT WHEEL WELL BRAKE METERING VALVE
(LEFT WHEEL WELL VALVE OPPOSITE)

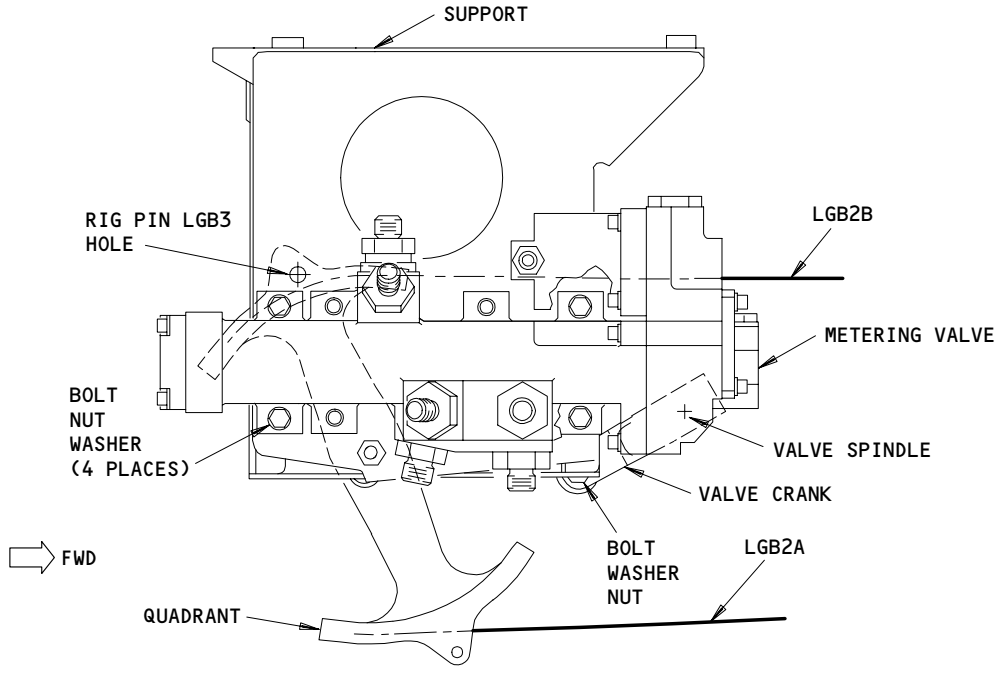
A

1 RETURN-RIGHT HYDRAULIC SYSTEM
2 RETURN-CENTER HYDRAULIC SYSTEM
3 BRAKES-ALTERNATE SYSTEM
4 BRAKES-DE-SPIN
5 PRESS-CENTER HYDRAULIC SYSTEM
6 PRESS-RIGHT HYDRAULIC SYSTEM
7 BRAKES-NORMAL SYSTEM
8 INLET FILTER INSTALLED
9 ADAPTER UNION INSTALLED EXCEPT WHERE NOTED

Brake Metering Valve Installation
Figure 401 (Sheet 1)



RIGHT WHEEL WELL METERING VALVE
A-A



LEFT WHEEL WELL METERING VALVE
A-A

Brake Metering Valve Installation
Figure 401 (Sheet 2)

S 494-002
(3) Install the wheel chocks.

S 864-003
(4) Release the parking brake.

S 864-004
(5) Remove the pressure from the right and center hydraulic systems and reservoirs (AMM 29-11-00/201).

S 864-005
(6) Push in and release the brake pedals fully seven times to remove hydraulic pressure from the brake accumulator.

NOTE: The brake metering valve is the same in the left and right wheel wells. The valve crank and control rod configurations are different in the left and right wheel wells.

S 494-006
(7) Install rig pin LGB3/LGB4 in the quadrant and support (Detail A-A).

NOTE: This puts the metering valve in the spring-loaded OFF position.

S 034-007
(8) Disconnect the hydraulic lines (seven locations) from the metering valve. Plug the hydraulic lines.

S 034-008
(9) Disconnect the valve crank from the control rod.

NOTE: Do not change the control rod adjustment.

S 034-009

CAUTION: KEEP THE CORRECT METERING VALVE CRANK/CONTROL ROD COMBINATION IN BOTH THE RIGHT AND LEFT WHEEL WELLS. NO MISMATCH IS ALLOWED. IF THERE IS MISMATCH, EQUIPMENT DAMAGE WILL OCCUR.

(10) Disconnect the valve crank from the valve spindle.

S 024-010

(11) Remove four bolts that connect the valve to the metering-valve-module support. Remove the valve.

S 034-011

(12) Remove the hydraulic port adapters from the valve (7 locations). Discard the O-rings and backup rings from the adapters.

S 034-012

(13) Install the plugs in the ports in the valve.

TASK 32-41-02-404-013

3. Install the Brake Metering Valve (Fig. 401)

NOTE: The brake metering valve is the same in the left and right wheel wells. The valve crank and the control rod are different for the left and right wheel wells valve installation.

A. Equipment
   (1) Rig pins from Set A20004-XX (AMM 20-10-24/201).
      (a) LGB3 - P/N A20004-17
      (b) LGB4 - P/N A20004-17
B. Consumable Materials
   (1) D00054 Lubricant, Hydraulic System Fittings - MCS 352B
C. References
   (1) AMM 20-10-24/201, Rig Pins
   (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
   (3) AMM 32-00-15/201, Landing Gear Door Locks
   (4) AMM 32-41-00/201, Hydraulic Brake System
   (5) AMM 32-41-00/501, Hydraulic Brake System
D. Access
   (1) Location Zones
      211 Control Cabin, Left
      212 Control Cabin, Right
      143 Main Landing Gear Wheel Well (Left)
      144 Main Landing Gear Wheel Well (Right)

E. Prepare for Installation

S 214-014
(1) Examine the metering valve inlet filters for contamination.

S 164-015
(2) Clean the inlet filters if necessary.

S 644-016
(3) Lubricate adapter unions, inlet filters, new O-rings and backup rings.

S 434-017
(4) Install the O-rings and backup rings on the adapter unions or inlet filters and install the adapters and filters on the metering valve assembly.

S 434-018
(5) Fill the valve with hydraulic fluid and put caps on the port adapters and inlet screen.

F. Install the Brake Metering Valve

S 424-019
(1) Hold the metering valve on the valve module support and install bolts, nuts, and washers (4 locations).

S 434-020

CAUTION: KEEP THE CORRECT METERING VALVE CRANK/CONTROL ROD COMBINATION IN BOTH RIGHT AND LEFT WHEEL WELLS. NO MISMATCH IS ALLOWED. IF THERE IS MISMATCH, EQUIPMENT DAMAGE WILL OCCUR.

(2) Connect the valve crank to the valve spindle.

S 434-021
(3) Connect the valve crank to the control rod.

S 434-022
(4) Remove the plugs from the valve hydraulic ports.

S 434-023
(5) Remove the caps from the hydraulic lines and the metering valve.

S 434-024
(6) Connect the hydraulic lines to the valve ports (7 locations).

S 094-025
(7) Remove rig pin LGB3/LGB4.

S 864-026
(8) Pressurize the right and center hydraulic systems and reservoirs (AMM 29-11-00/201).

S 874-027
(9) Bleed the air from the main gear wheel brake system (AMM 32-41-00/201).

S 794-028
(10) Check the hydraulic line connections for leaks.

S 714-029
(11) Do a test of the hydraulic brake system operation (AMM 32-41-00/501).

G. Restore Airplane to normal condition.

S 864-030
(1) Remove the power from the center and/or right hydraulic systems (AMM 29-11-00/201) if it is not necessary.

S 094-031

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Remove the main landing gear door locks (AMM 32-00-15/201).

BRAKE METERING VALVE MODULE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the left or right side brake metering valve module. The second task installs the left or right side brake metering valve module.

   TASK 32-41-03-004-001

2. Remove Brake Metering Valve Module
   A. Equipment
      (1) Rig pins from set A20004-XX (AMM 20-10-24/201):
         (a) LGB1 - P/N A20004-24
         (b) LGB2 - P/N A20004-24
   B. References
      (1) AMM 20-10-24/201, Rig Pins
      (2) AMM 24-22-00/201, Electrical Power - Control
      (3) AMM 25-52-02/401, Forward Cargo Compartment Ceiling Panels
      (4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (5) AMM 32-00-15/201, Landing Gear Door Locks
      (6) AMM 32-00-20/201, Landing Gear Downlocks
   C. Prepare for Removal

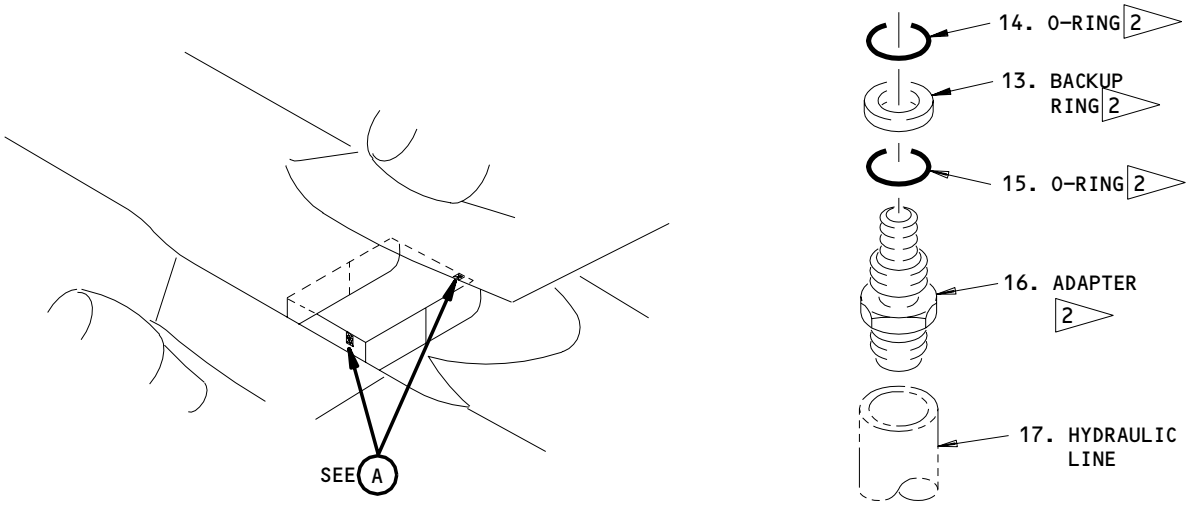
      S 494-002
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

      S 494-003

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

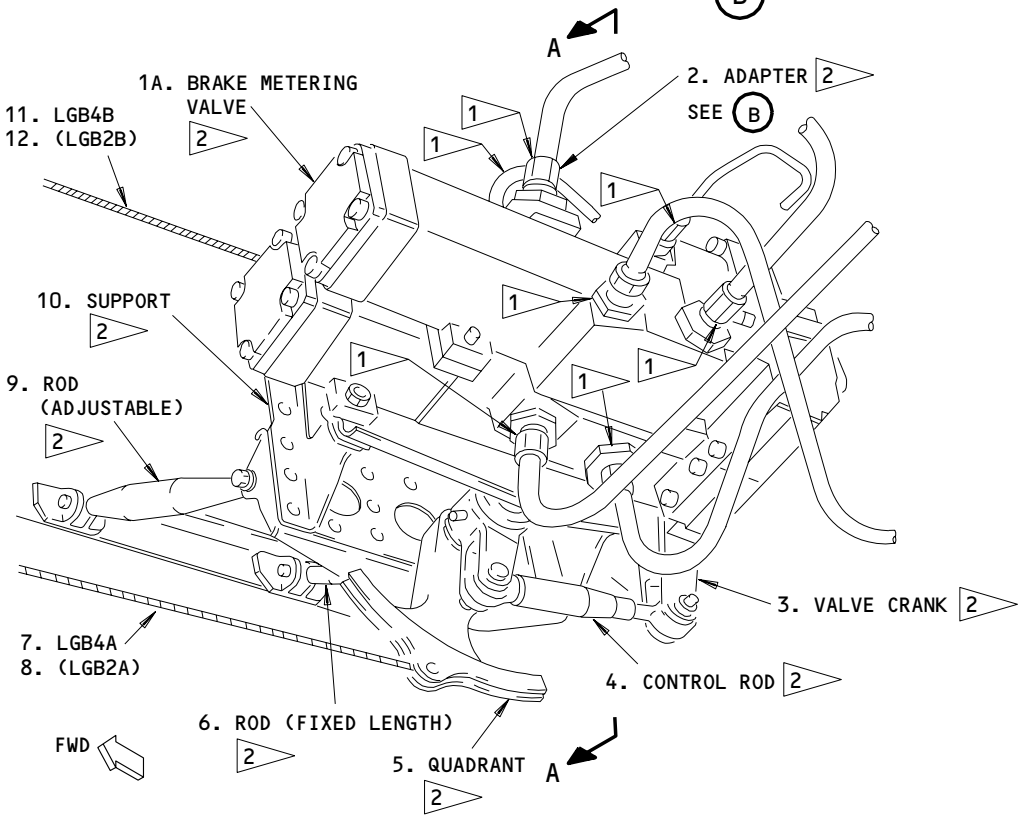
      (2) Open the main gear doors and install the door locks (AMM 32-00-15/201).

      S 494-004
      (3) Put chocks on the wheels.



ADAPTER (EXAMPLE)

B

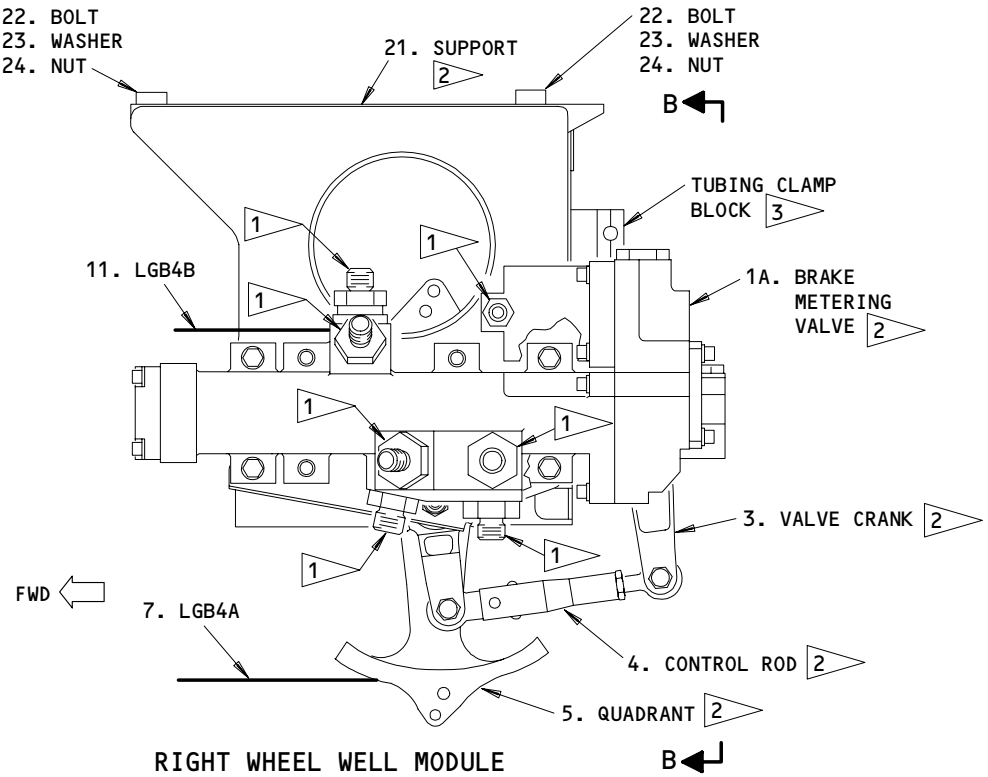


RIGHT WHEEL WELL BRAKE METERING VALVE MODULE
(LEFT WHEEL WELL MODULE OPPOSITE)

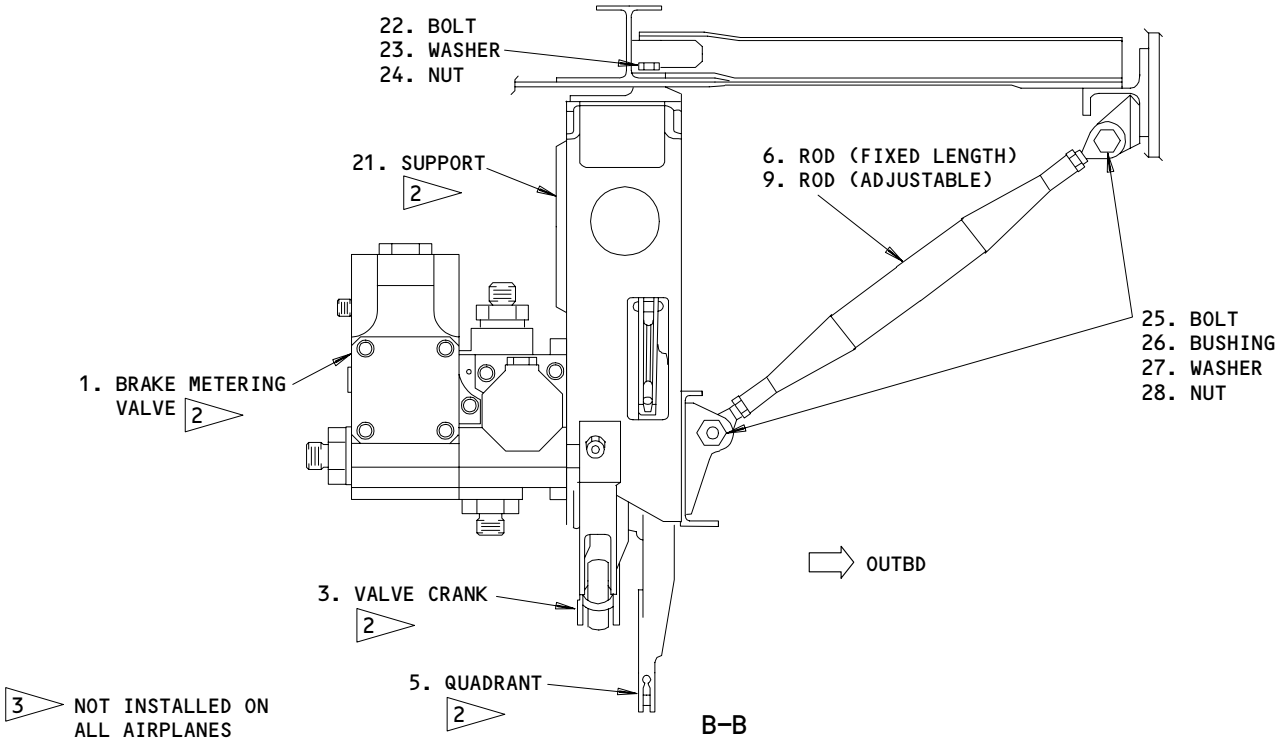
A

1 > SEE B
2 > COMPONENTS OF MODULE (26)

Brake Metering Valve Module Installation
Figure 401 (Sheet 1)



RIGHT WHEEL WELL MODULE
(LEFT WHEEL WELL MODULE OPPOSITE)
A–A



B–B

Brake Metering Valve Module Installation
Figure 401 (Sheet 2)

S 864-005
(4) Release the parking brake and attach a DO-NOT-OPERATE tag to the parking brake handle.

S 864-006
(5) Supply electrical power (AMM 24-22-00/201).

S 864-007
(6) Remove the pressure from the right and center hydraulic systems and reservoirs (AMM 29-11-00/201).

S 864-008
(7) Push in and release the brake pedals fully seven times to remove hydraulic pressure from the brake accumulator.

S 014-009
(8) Remove the forward cargo compartment (aft overhead) ceiling panels to gain access to the cable turnbuckles (AMM 25-52-02/401).

NOTE: The turnbuckles are located in the ceiling of the aft cargo compartment, outboard of the sidewalls.

D. Remove the Brake Metering Valve Module (Fig. 401)

S 484-010
(1) Install rig pins LGB1 and LGB2.

S 034-011
(2) Loosen cables at the turnbuckles, and disconnect them from quadrant (5) on metering valve module (1) that you will replace (Detail A-A).
(a) Cables LGB2A (8) and LGB2B (12) for the left wheel well module (1).
(b) Cables LGB4A (7) and LGB4B (11) for the right wheel well module (1).

S 034-012
(3) Disconnect the hydraulic lines from the valve (1A) (7 locations) (Detail A) and put caps on the lines.
(a) If installed, remove the clamp block that attaches the hydraulic line from the port on the top of the valve to the module support (21).

S 024-013
(4) Remove bolts, bushings, washers and nuts (25, 26, 27, 28) (4 locations) that attach rods (6, 9) and remove the rods.

S 024-014
(5) Hold the brake metering valve module (1) and remove bolts, washers and nuts (22, 23, 24) (2 locations). Remove the module (1).

S 034-015

(6) Remove these hydraulic fittings from valve (1A), discard the O-rings and put plugs in the ports (Details A and B):

(a) Adapter, O-rings and backup rings (16, 15, 14, 13) (7 locations).

TASK 32-41-03-404-016

3. Install the Brake Metering Valve Module (Fig. 401)

A. Equipment

(1) Rig pins from set A20004-XX (AMM 20-10-24/201):

(a) LGB1 - P/N A20004-24

(b) LGB2 - P/N A20004-24

B. Consumable Materials

(1) A00247 Sealant, Chromate Type - BMS 5-95

(2) B00054 Lubricant, Hydraulic System Fittings - MCS 352B

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Module	32-41-02	02	55,60
	1A	Valve *[1]			155
	3	Crank *[1]			240,245
	4	Rod *[1]			250
	5	Quadrant *[1]			265,270
	6	Rod, Fixed			30
	9	Rod, Adjustable			35
	13	Backup Ring/Ring *[1]			95,115, 135
	14	O-Ring/Packing *[1]			90,110, 130
	15	O-Ring/Packing *[1]			85,105, 125
	16	Adapter *[1]			80,100, 120
	21	Support *[1]			325,330
	22	Bolt			65
	23	Washer			70
	24	Nut			75
	25	Bolt			10
	26	Bushing			25
	27	Washer			15
	28	Nut			20

*[1] Components of module (1)

D. References
(1) AMM 20-10-24/201, Rig Pins
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 25-52-02/401, Forward Cargo Compartment Ceiling Panels
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(5) AMM 32-00-15/201, Landing Gear Door Locks
(6) AMM 32-00-20/201, Landing Gear Downlocks
(7) AMM 32-41-00/201, Hydraulic Brake System
(8) AMM 32-41-00/501, Hydraulic Brake System

E. Access
(1) Location Zones
143 Left MLG Wheel Well
144 Right MLG Wheel Well

F. Procedure

S 434-017
(1) Remove the plugs from the ports of the metering valve (1A).

S 434-018
(2) Apply lubricant to the adapters, O-rings and backup rings (16, 15, 14, 13) (7 locations) and install them in the ports of the valve (1A) (Detail A).

S 424-019
(3) Apply sealant to bolts, washers and nuts (22, 23, 24).

S 424-020
(4) Hold the module (1) at its installation position at the wheel well top surface and attach the module support (21) to the structure with bolt, nut, washer (22, 23, 24) (2 locations).

S 424-021
(5) Install the fixed length rod (6) with bolts, bushings, washers and nuts (25, 26, 27, 28) (2 locations).

NOTE: Rod (6) is installed at the aft location and rod (9) at the forward location.

S 834-022
(6) Adjust the rod (9) so that you can freely install the fasteners. Install the bolts, bushings, washers and nuts (25, 26, 27, 28) (2 places).

S 434-023
(7) Remove the caps from the hydraulic lines and connect the lines to the valve (1A) (Detail A).
(a) If the module has a tubing clamp block installation on the module support (21), attach the hydraulic line from the top hydraulic port on the valve to the clamp block.

S 434-024
(8) Install the cables to the quadrant (5).

S 024-018
(9) Remove rig pins LGB1 and LGB2.

S 834-025
(10) Adjust the hydraulic brake system (AMM 32-41-00/501).

S 864-026
(11) Pressurize the right and center hydraulic systems and reservoirs (AMM 29-11-00/201).

S 874-027
(12) Bleed the main gear wheel brake system (AMM 32-41-00/201).

S 294-028
(13) Check the hydraulic line connections for leaks.

S 734-029
(14) Do a test of the hydraulic brake system operation (AMM 32-41-00/501).

S 414-030
(15) Install the forward cargo compartment (aft overhead) ceiling panel (AMM 25-52-02/401).

S 094-031
(16) Remove the DO-NOT-OPERATE tag from the parking brake handle.

S 494-017

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(17) Remove the door locks from landing gear doors and close the doors (AMM 32-00-15/201).

S 864-032
(18) Remove electrical power is if is not necessary (AMM 24-22-00/201).

ALTERNATE BRAKE SELECTOR VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure has the folowing task:
      (1) A removal of the alternate selector brake valve
      (2) An installation of the alternate selector brake valve

TASK 32-41-04-004-008

2. Remove the Alternate Brake Selector Valve (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          143 Left MLG Wheel Well
          144 Right MLG Wheel Well

   C. Procedure

      S 494-001
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

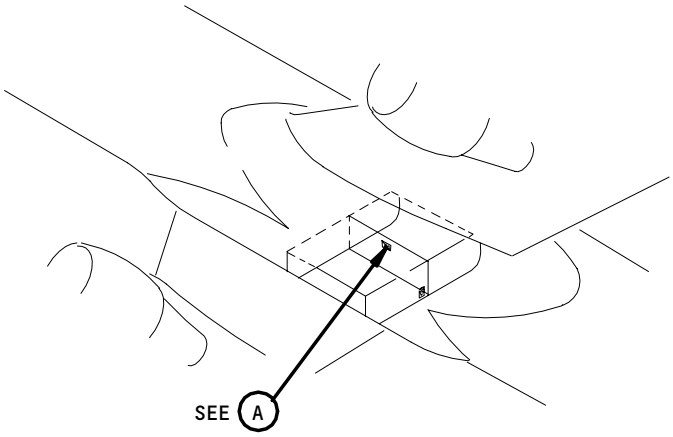
      S 494-002

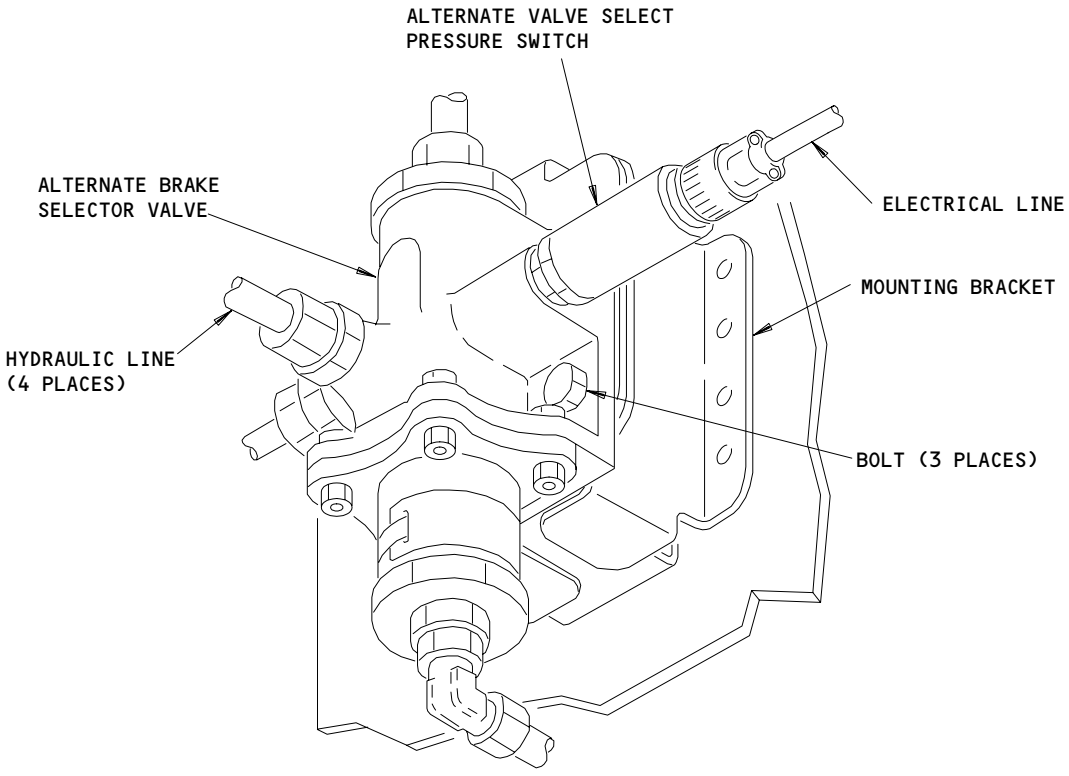
      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open the main gear doors and install the door locks (AMM 32-00-15/201).

      S 864-003
      (3) Remove the pressure from the right and center hydraulic systems and reservoirs (AMM 29-11-00/201).

      S 494-004
      (4) Put chocks on the wheels.





Alternate Brake Selector Valve Installation
Figure 401

S 864-005
(5) Release the parking brakes.

S 864-006
(6) Push in and release the brake pedals fully ten times to remove hydraulic pressure from the brake accumulator.

NOTE: Wait a minimum of 5 seconds between each brake application.

S 864-007
(7) Make sure that this circuit breaker on the overhead panel, P11, is open and attach a DO-NOT-CLOSE tag:
(a) 11R2, L IND LTS 2

S 034-008
(8) Disconnect the hydraulic lines from the selector valve.

S 864-009
(9) Disconnect the electrical connector from the pressure switch.

S 024-010
(10) Remove the bolts (three locations) that attach the selector valve to the airplane.

S 024-026
(11) Remove the pressure switch from the selector valve and discard the packing.

S 024-025
(12) If the valve that you will install does not have hydraulic fittings installed in the valve ports, remove the fittings from the ports on the valve that you remove and save for installation on the new valve.

NOTE: Put tags on the hydraulic fittings that you remove to identify the correct valve port locations for installation.

TASK 32-41-04-404-011
3. Install the Alternate Brake Selector Valve (Fig. 401)
A. Consumable Materials
(1) D00153 Fluid, Hydraulic - BMS 3-11

(2) B00799 Solvent -TT-N-95
(3) C00432 Coating, Primer - BMS 10-11, Type I, Yellow (Green Optional)
(4) C00423 Coating, Enamel - BMS 10-11, Type II, White Gloss, Color 702
(5) C00862 Coating, Brush Application - Alodine 600
(6) G50136 Corrosion Inhibiting Compound - BMS 3-38

B. References
(1) AMM 12-12-01/301, Hydraulic Reservoir Servicing
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(4) AMM 32-00-15/201, Landing Gear Door Locks

C. Access
(1) Location Zones
143 Left MLG Wheel Well
144 Right MLG Wheel Well

D. Procedure

S 114-029
(1) Do the steps below to give a good electrical bond between the mounting bracket and the alternate brake selector valve.
(a) Use solvent to clean the mating surfaces of the mounting bracket and the valve (AMM 20-10-22/701).
(b) Apply a brush coat of Alodine 600 to the surface of the bracket that was cleaned.

S 424-013
(2) Do the steps below to install the selector valve assembly on the bracket.
(a) Apply compound, BMS 3-38, to the shank and threads of the bolts.
(b) Put the selector valve assembly in its position on the mounting bracket.

(c) Install the bolts and washers to attach the valve to the bracket.

S 764-028

(3) Do an electrical bonding check to make sure that the maximum resistance between the valve and the bracket is 0.0025 ohm (2.5 milliohm) (AMM 20-10-21/601).

S 374-027

(4) Repair any finish on the valve or bracket that is damaged after you have done the resistance check as follows:
(a) Use solvent to clean the areas where the finish is damaged.
(b) Apply primer to the areas.
(c) Apply enamel, BMS 10-11, Type II, to the areas.

S 434-014

(5) Connect the hydraulic lines to the valve.

NOTE: If the hydraulic fittings have been removed from the brake ports, install the same part number fittings that were removed. In the RET port, make sure that you install the fitting that was removed (either the BAC 17E8-6 reducer fitting or the Crissair 6F3748 restrictor fitting.

S 434-031

(6) Connect pressure switch to valve.
(a) Lubericate packing using BMS3-11 before placing on pressure switch.
(b) Connect pressure switch to valve body.

S 434-015

(7) Connect the electrical connector to the valve.

S 864-016

(8) Remove the DO-NOT-CLOSE tag and close this circuit breaker on panel P11:
(a) 11R2, L IND LTS 2

S 864-017

(9) Supply electrical power (AMM 24-22-00/201).

S 864-018

(10) Pressurize the right and center hydraulic systems and reservoirs (AMM 29-11-00).

S 874-019

(11) Push in and release the brake pedals slowly and fully ten times to bleed air from the system.

NOTE: Wait a minimum of 5 seconds between each brake application.

S 614-020

(12) Make sure that the fluid level in the hydraulic reservoirs is correct. Add fluid if necessary (AMM 12-12-01/301).

S 864-021

(13) Remove the pressure from the right and center hydraulic systems and reservoirs (AMM 29-11-00/201).

S 714-022

(14) Do the test that follows to make sure that the alternate brake source selector valve operates:
   (a) Remove the pressure from the right and center hydraulic system (AMM 29-11-00/201).
   (b) Look to see that the BRAKE SOURCE light on the flight compartment P1-3 panel is on.
   (c) Pressurize the center hydraulic system and reservoir (AMM 29-11-00/201).
   (d) Make sure that the BRAKE SOURCE light is off. This check is to make sure that the selector valve has cycled to the open position.
   (e) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).
   (f) Make sure that the BRAKE SOURCE light comes on.
   (g) Pressurize the right and center hydraulic system and reservoir (AMM 29-11-00/201).
   (h) Push the manual override button on the landing gear control panel and move the landing gear control handle to the UP position.
   (i) Look at the wear indicator pin on each brake to make sure that pressure is applied to the brake.

      NOTE: This check is to show that the alternate brake selector works correctly to send system pressure to the brake for gear retract braking when the gear is retracted.

   (j) Move the landing gear control handle to the DN position.
   (k) Look at the wear indicator pins on each brake to make sure that the pressure has released.

S 094-006

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(15) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

S 864-023

(16) Remove electrical power if it is not necessary (AMM 24-22-00/201).

ACCUMULATOR ISOLATION VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task remove the accumulator isolation valve. The second task installs the accumulator isolation valve.

TASK 32-41-05-004-001

2. Remove Accumulator Isolation Valve (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones

144	Right MLG Wheel Well
211/212	Control Cabin

   C. Procedure

S 494-002

(1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

S 494-003

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the main gear doors and install door locks (AMM 32-00-15/201).

S 864-004

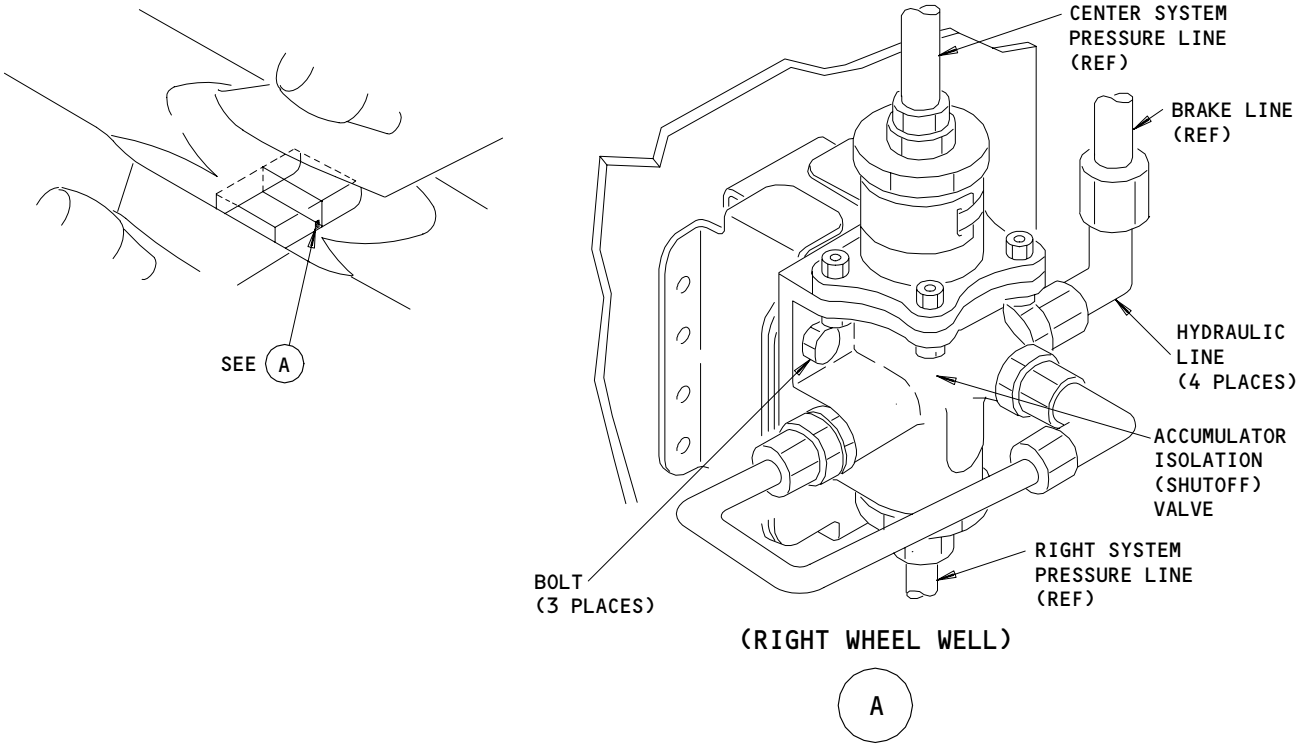
(3) Remove the pressure from the right and center hydraulic system and reservoirs (AMM 29-11-00/201).

S 494-005
(4) Put chocks on the wheels.

S 864-006
(5) Release the parking brakes.

S 864-007
(6) Push in and release the brake pedals fully seven times to remove hydraulic pressure from the brake accumulator.

NOTE: Wait a minimum of 5 seconds between each brake application.



Accumulator Isolation Valve Installation
Figure 401

S 034-008
(7) Disconnect the hydraulic lines from the valve. Put caps on the lines and plugs in the ports.

S 024-009
(8) Remove 3 bolts and remove the valve.

TASK 32-41-05-404-002

3. Install the Accumulator Isolation Valve (Fig. 401)
   A. Consumable Materials
      (1) D00153 Fluid, Hydraulic - BMS 3-11
   B. References
      (1) AMM 12-12-01/301, Hydraulic Reservoir Servicing
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
   C. Access
      (1) Location Zones

144	Right MLG Wheel Well
211/212	Left MLG Wheel Well

   D. Procedure

S 424-010
(1) Install the valve to the bracket with 3 bolts.

S 644-011
(2) Lubricate the fittings and seals with hydraulic fluid.

S 434-012
(3) Install the hydraulic lines (four locations).

S 864-014
(4) Pressurize the right and center system hydraulics and reservoirs (AMM 29-11-00/201).

S 714-013
(5) Do a test of Accumulator Isolation Valve Operation.
   (a) Push the brake pedals in slowly and fully six times to bleed air from the system.

NOTE: Wait a minimum of 5 seconds between each brake application.

(b) Make sure that the fluid level in the hydraulic reservoirs is correct. Add fluid if necessary (AMM 12-12-01/301).
(c) Make sure that the accumulator isolation valve cycles open.
(d) Look at the BRAKE PRESS gage located on P3-1 panel and make sure that it shows 3000 to 3600 psi.
(e) Push in and release the brake pedals and make sure that the BRAKE PRESS gage momentarily shows a pressure drop of 500 to 1000 psi during brake application and then returns to about 3000 to 3600 psi.

NOTE: This shows that the isolation valve has cycled to the open position.

S 864-016

(6) Remove the pressure from the right and center hydraulic systems and reservoirs (AMM 29-11-00/201).

S 094-017

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(7) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

MAIN LANDING GEAR BRAKE DISCONNECT - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the brake disconnect. The second task installs the brake disconnect.

TASK 32-41-06-004-001

2. Remove the Brake Disconnect (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          731 Left Main Landing Gear
          741 Right Main Landing Gear

   C. Prepare for the Removal

      S 494-002
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

      S 494-003

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

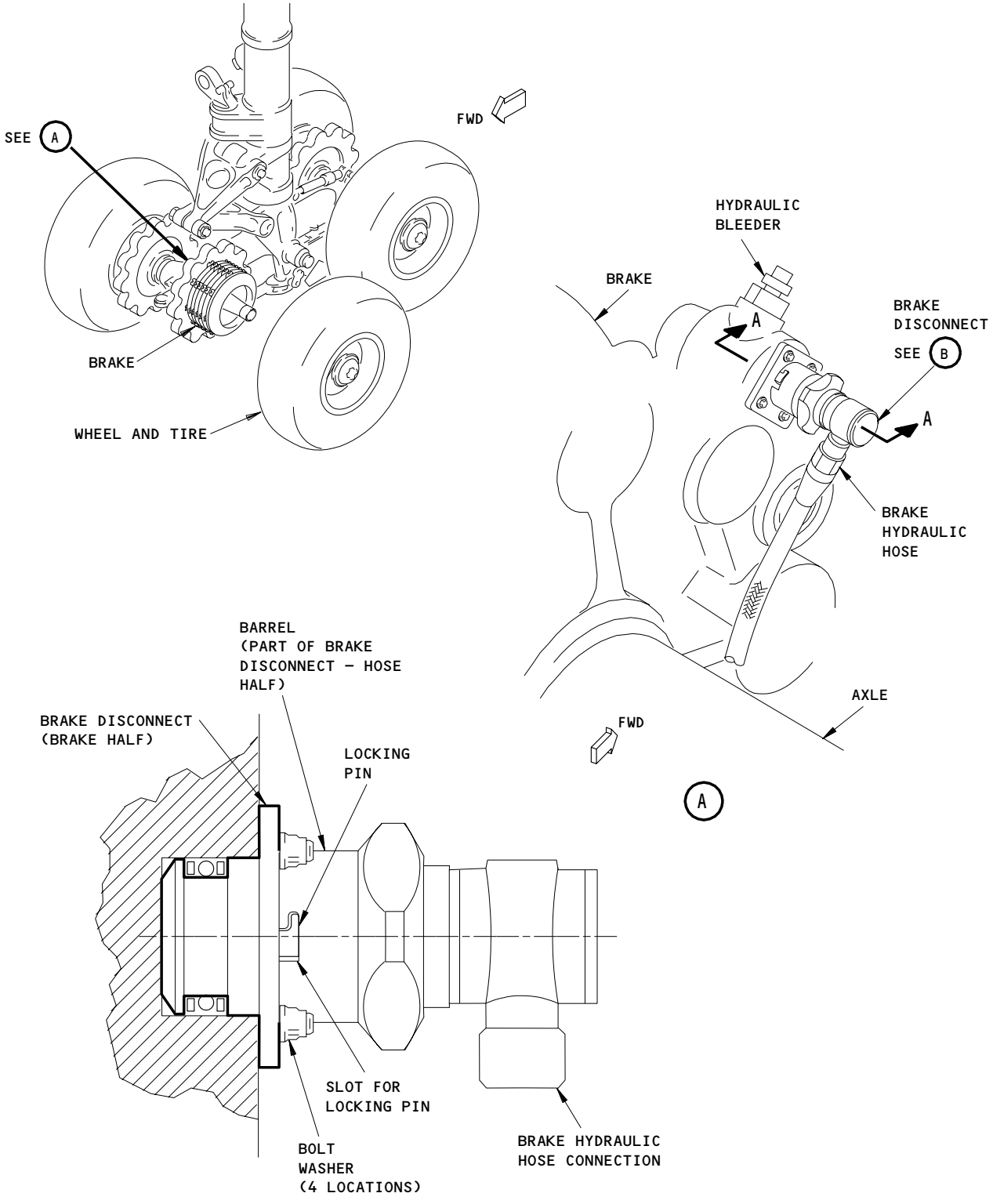
      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

      S 864-004
      (3) Make sure that the pressure is removed from the right and center hydraulic systems and reservoirs (AMM 29-11-00/201).

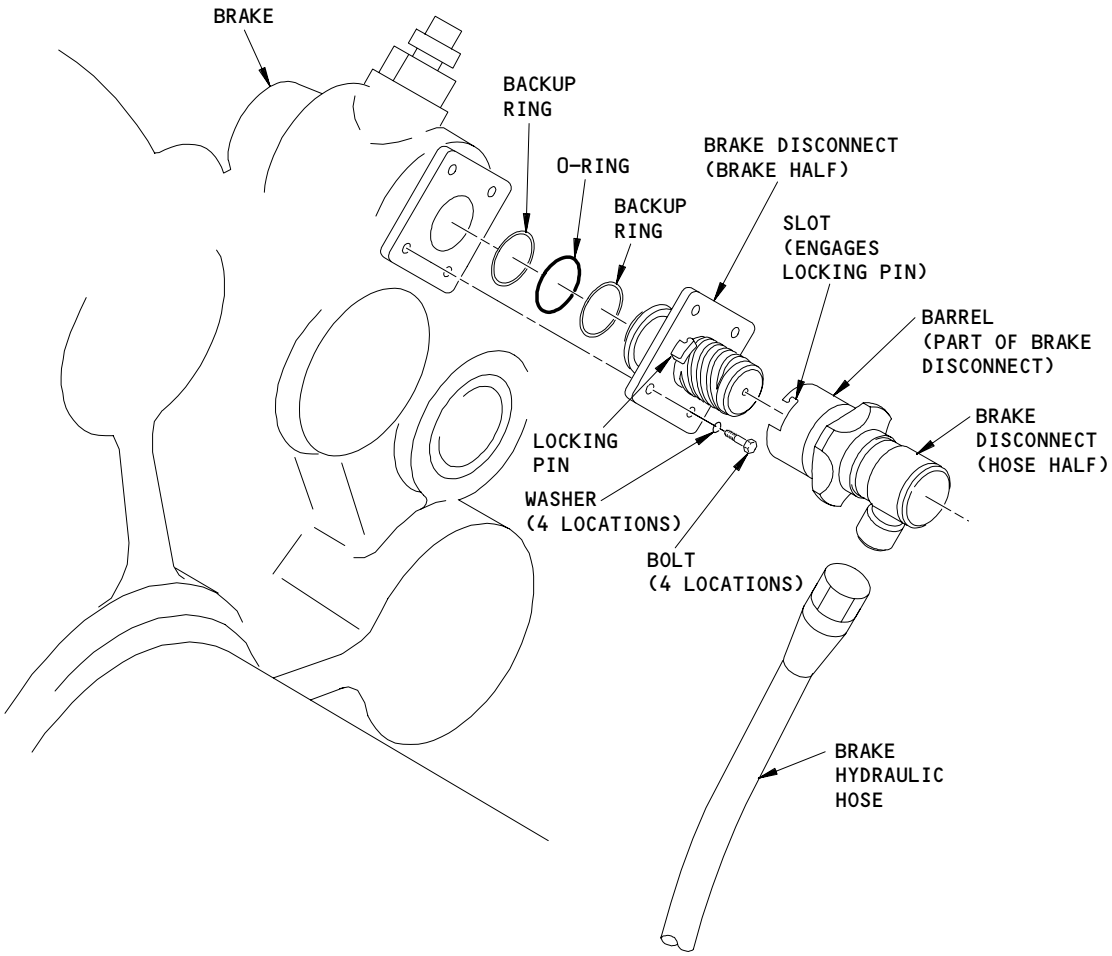
      S 864-005
      (4) Release the parking brake.

      S 864-006
      (5) Push in and release the brake pedals fully seven times to remove hydraulic pressure from the brake accumulator.

          NOTE: Wait a minimum of 5 seconds between each brake application.



Main Landing Gear Brake Disconnect Installation
Figure 401 (Sheet 1)



BRAKE DISCONNECT INSTALLATION

(B)

Main Landing Gear Brake Disconnect Installation
Figure 401 (Sheet 2)

D. Procedure to Remove the Brake Disconnect Assembly

S 024-024

(1) Disonnect the hose half of the brake disconnect from the brake half as follows:
   (a) Push the barrel on the brake half toward the brake and turn clockwise to disengage the locking pin on the brake half from the slot on the hose half.
   (b) Pull the barrel on the brake half of the disconnect away from the brake until the threads of the two halves of the brake disconnect are engaged and then turn the barrel counterclockwise to disconnect the hose half of the disconnect from the brake half.

S 024-025

(2) Remove the hydraulic hose from the brake disconnect (hose half).

S 034-007

(3) Put a cap on the brake hose and use a cord or other means to hold it away from the brake disconnect (Detail A).

S 024-008

(4) Remove the 4 bolts that attach the brake half of the disconnect to the brake and remove the disconnect. Remove the O-ring and the backup rings. Discard the O-ring.

NOTE: When you remove the brake disconnect, be careful not to spill hydraulic fluid on the brake or adjacent structure.

TASK 32-41-06-404-009

3. Install the Brake Disconnect (Fig. 401)

A. Consumable Materials
   (1) D00153 Fluid, Hydraulic - BMS 3-11
   (2) D00571 GREASE, (SEAL-IN LUBRICATION) BATCO X8401-2

B. References
   (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

(2) AMM 29-11-00/601, Main (Left, Right, and Center) Hydraulic Systems - Inspection/Check
(3) AMM 32-00-15/201, Landing Gear Door Locks

C. Access
(1) Location Zones
731 Left Main Landing Gear
741 Right Main Landing Gear

D. Prepare for Installation

S 864-020
(1) Make sure that the pressure is removed from the right and center hydraulic systems (AMM 29-11-00/201).

E. Brake Disconnect Installation (Brake Half)

S 644-027
(1) Apply a light coat of BATCO X8401-2 grease to the following:
(a) To both sides of the brake half.
(b) To the washers.
(c) To the threads and shank of the four mounting bolts.
(d) To the inside of the barrel of the brake disconnect.

S 644-028
(2) Lightly lubricate the O-rings and the backup rings with hydraulic fluid.

S 424-021
(3) Install the new O-ring and the backup rings on the brake disconnect (brake half).

S 424-011
(4) Install the brake disconnect (brake half) into the brake and attach with four bolts and washers and tighten the bolts to 72 to 82 inch-pounds (Detail A). Install lockwire.

F. Brake Disconnect Installation (hose half)

S 434-012
(1) Connect the hydraulic line to the brake disconnect (hose half). Tighten the "B" nut on the hose as follows:

NOTE: Apply a wrench to the wrench flats on the swivel fitting of the brake disconnect to hold it so that it does not turn when when you apply the torque to the "B"-Nut.

(a) Tighten the "B"- Nut fitting to 270 +/-13.5 pound -inches torque.
(b) Loosen the "B"- Nut fitting to decrease the torque to zero.
(c) Tighten the "B"- Nut fitting to 400 +/-20.5 pound -inches torque.

G. Procedure to Install the Brake Disconnect (Hose Half) to the Brake Disconnect (Brake Half)

S 024-022
(1) Put the barrel of the disconnect fitting (hose half) over the threaded surface of the disconnect fitting (brake half) until the threads are engaged.

S 424-023
(2) Turn the barrel clockwise until the locking pin on the brake disconnect (brake half) engages the slot on the barrel of the brake disconnect (hose half).
(a) It will be harder to turn the barrel when it touches the upper surface of the locking pin. When you continue to turn the barrel and it goes past the locking pin, spring force will push the barrel down and cause the slot to engage the locking pin.

H. Brake Disconnet Installation Test

S 864-013
(1) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 864-014
(2) Make sure that the parking brake is released.

S 874-015
(3) Fully push in and release the brake pedals six times to bleed the brake lines.

NOTE: Wait a minimum of 5 seconds between each brake application.

S 794-016
(4) After 5 to 10 minutes, make sure there are no leaks.

S 794-029

(5) If there are leaks in the hose half of the brake quick disconnect, refer to the hydraulic system external leakage limits for static seals in Table 601 in Chapter 29, Main (Left, Right, and Center) Hydraulic Systems - Inspection/Check (AMM 29-11-00/601).

S 714-017

(6) Make sure that the brakes operate properly as follows:
   (a) Push in and release the brake pedals while you watch the brake wear indicator pin for movement.
   (b) Make sure that the brake wear indicator pin extends and retracts when you push in and release the brake.

S 864-018

(7) Remove the power from the right hydraulic system, if it is no longer necessary (AMM 29-11-00/201).

S 494-019

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

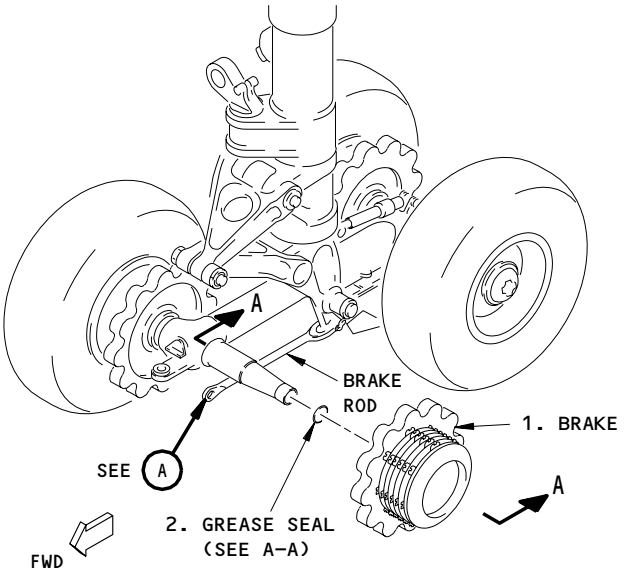
(8) Remove the door locks from landing gear doors and close the doors (AMM 32-00-15/201).

MAIN GEAR WHEEL BRAKES - REMOVAL/INSTALLATION

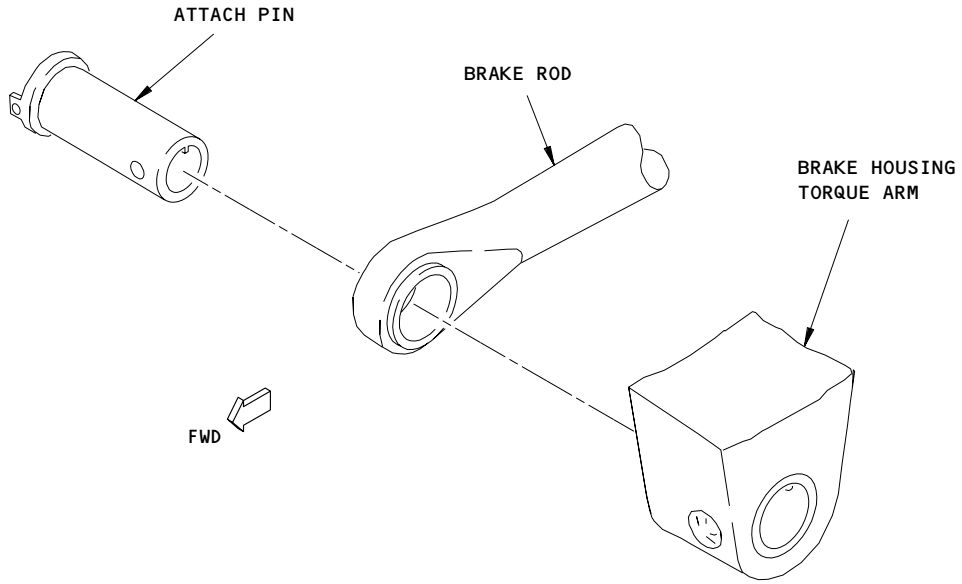
1. General
   A. This procedure contains two tasks. The first task removes the wheel brake for the main landing gear. The second task installs the wheel brake.
   B. The Honeywell S160T400-210 brake or the Messier-Bugatti S160T400-510 are replacements for the Honeywell S160T300-X series brakes. The interface between these brakes and the landing gear will stay the same, such that they are physically interchangeable. However, you cannot mix the S160T400-210, S160T400-510 or S160T300-X series brakes because of the differences in the brake torque and thermal characteristics. Make sure that you install the same type of brake that you removed. You must have all S160T400-210, S160T400-510 or S160T300-X series brakes on the airplane.

TASK 32-41-08-004-001-002

2. Remove the Wheel Brake For the Main Landing Gear
   A. Equipment
      (1) Protector Equipment - Axle Main Landing Gear A32098-12 for undersized axle threads only.
      (2) SAS 150-154;
          MTH 275-276 PRE-SB 32-85;
          MLG Axle and Axle Thread Protector Equipment -
          (a) A32098-1 (Preferred) Includes:
              - Protector - Axle, MLG - A32098-3
              - Protector - Axle Threads, MLG - A32098-2
          (b) A32007-17 (Optional) or A32007-16 (Optional) Includes:
              - Protector - Axle, MLG - A32007-6
              - Protector - Axle Threads, MLG - A32007-9
      (3) SAS 050-149, 155-999;
          MTH 275-276 POST-SB 32-85;
          MLG Axle and Thread Protector Equipment - A32098-1 (Required)
      (4) Brake Cradle - Commercially available
      (5) Dolly, Wheel/Brake - Commercially available
      (6) Sling, Nylon - MLG - Commercially available (a steel cable is optional to remove hot brakes)
   B. References
      (1) AMM 07-11-03/201, Jacking Airplane Axles
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-20/201, Landing Gear Downlocks



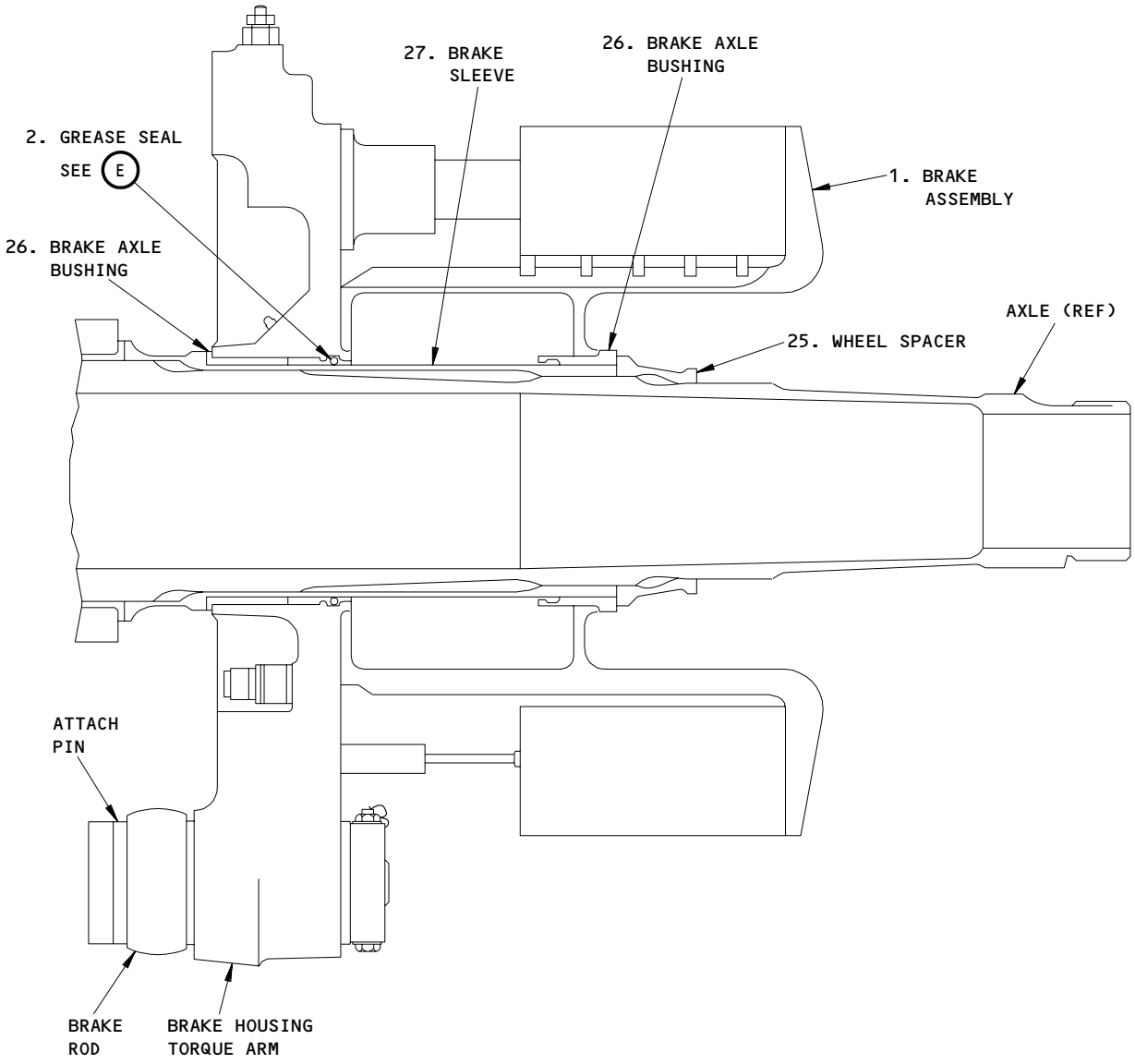
LEFT MAIN LANDING GEAR
(RIGHT MAIN LANDING GEAR OPPOSITE)



(EXAMPLE, 4 LOCATIONS)

A

Main Landing Gear Brake Installation
Figure 401 (Sheet 1)

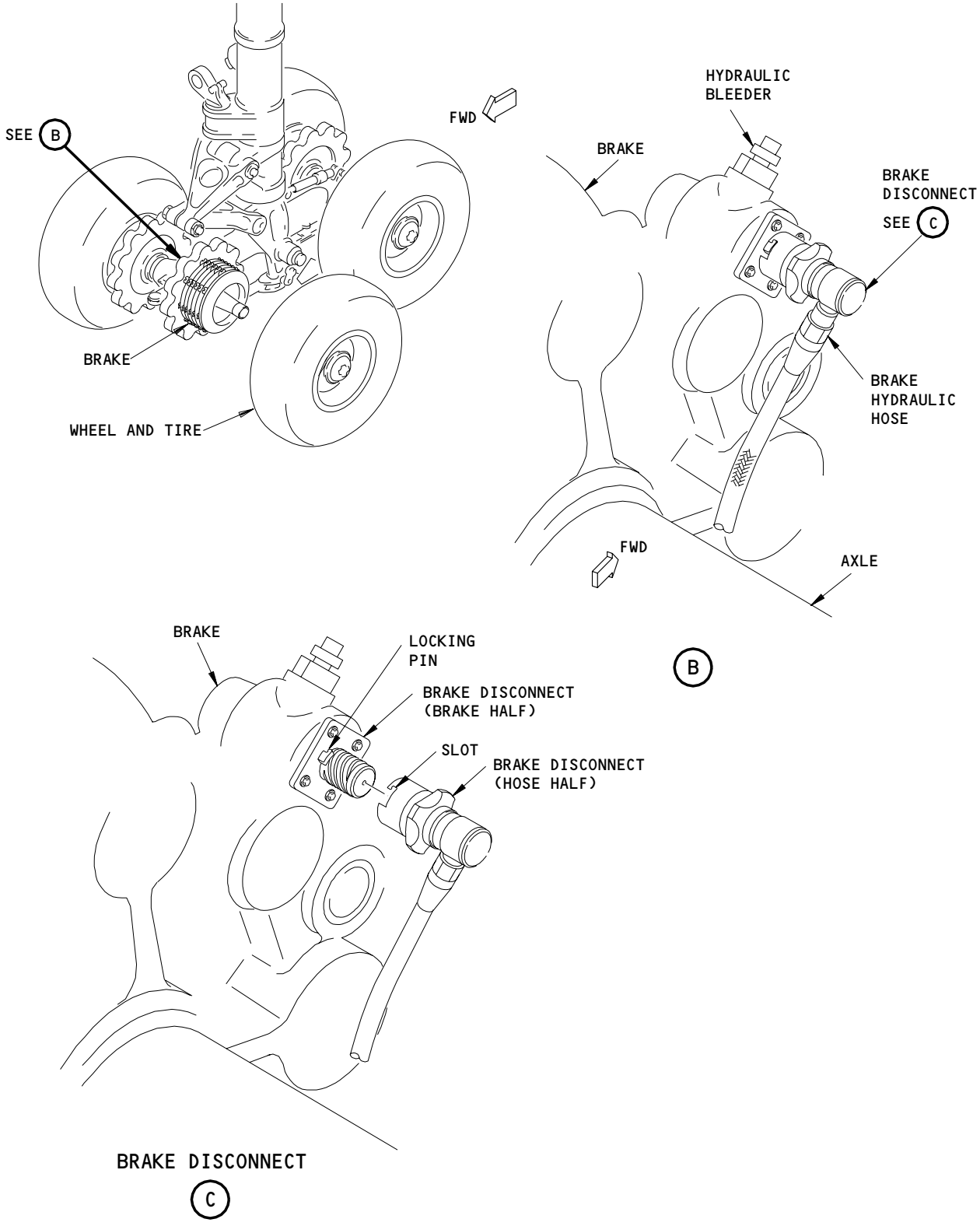


(VIEW WITH THE WHEEL REMOVED)
A-A

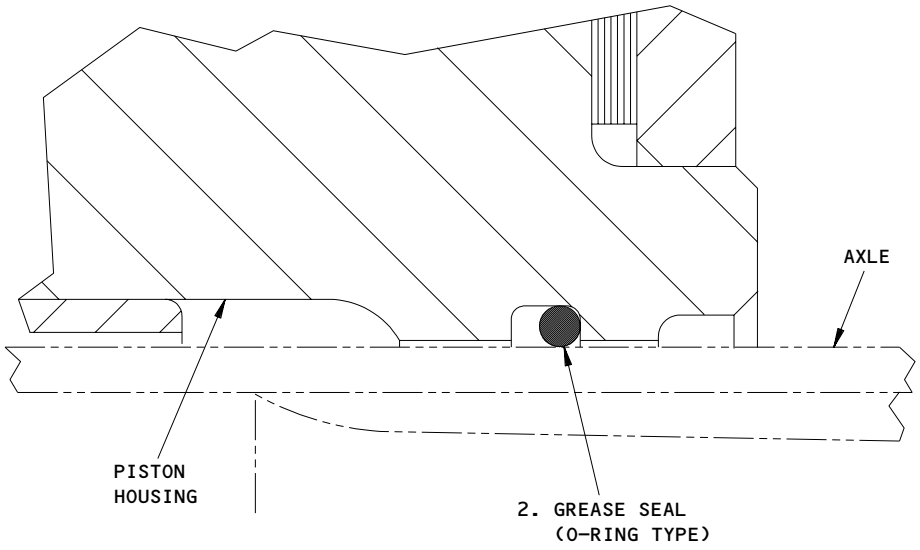
Main Landing Gear Brake Installation
Figure 401 (Sheet 2)

EFFECTIVITY
SAS 050-167, 275-280 WITHOUT SB 32-130
BUT WITH SB 32-132

D10909

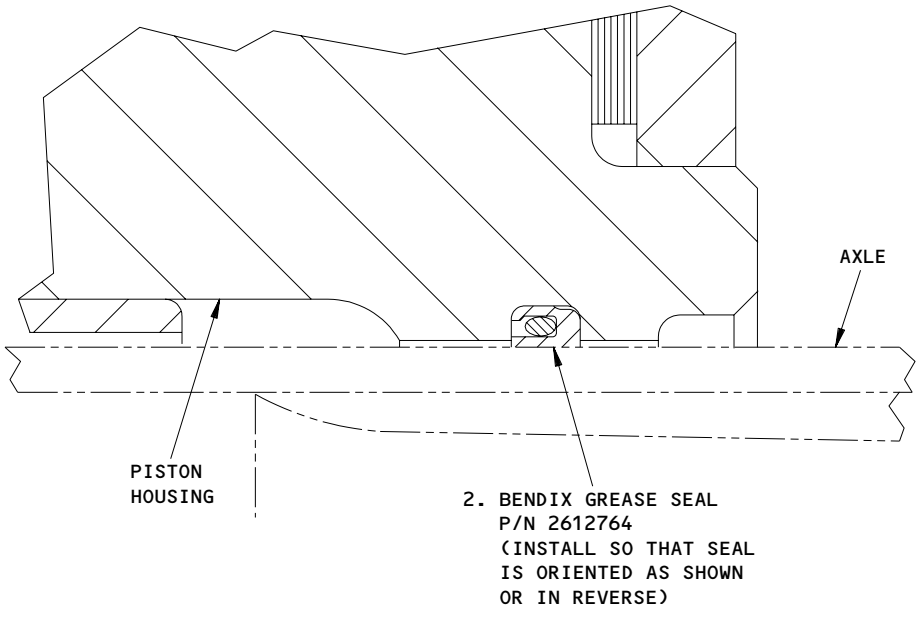


Main Landing Gear Brake Installation
Figure 401 (Sheet 3)



GREASE FITTING

E 1



GREASE FITTING

E 2

1 BENDIX OR MESSIER-BUGATTI BRAKE

2 BENDIX BRAKE

Main Landing Gear Brake Installation
Figure 401 (Sheet 4)

EFFECTIVITY
SAS 050-167, 275-280 WITHOUT SB 32-130
BUT WITH SB 32-132

L44747

(4) AMM 32-11-20/401, Main Gear Brake Rod
(5) AMM 32-45-01/401, Main Gear Wheel and Tire
(6) AMM 32-46-01/401, Brake Temperature Sensor

C. Access

(1) Location Zones

731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

D. Remove the Wheel Brake For the Main Landing Gear (Fig. 401)

S 494-002-002

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 024-068-002

(2) Disconnect Brake Rod (AMM 32-11-20/401)

S 584-005-002

(3) Lift the axle with the jack to lift the wheel and tire clear of the ground (AMM 07-11-03/201).

S 034-006-002

(4) Remove the wheel and tire for the main landing gear (AMM 32-45-01/401).

S 034-007-002

(5) Remove the brake temperature sensor (AMM 32-46-01/401) from the brake.

NOTE: If it is necessary to keep the temperature sensor with the brake assembly, disconnect the connector for the brake temperature sensor only.

S 864-008-002

(6) Remove the pressure from the right and center hydraulic systems and the hydraulic reservoirs (AMM 29-11-00/201).

S 874-009-002

(7) Push the brake pedals fully seven times to let the pressure out of the brake accumulator.

NOTE: Make sure there is a minimum of 5 seconds between each time you apply the brake.

S 034-010-002

(8) Do the steps that follow to remove the wheel spacer (25) from the axle (View A-A):
   (a) Pull the brake approximately 3 inches off the axle.
   (b) Loosen and move the wheel spacer (25) out on the axle.
   (c) Push the brake into the initial position.
   (d) Remove the wheel spacer (25) from the axle.

S 494-011-002

(9) Make sure that the axle protector and the axle thread protector are installed.

S 034-057-002

(10) Disconnect the brake hydraulic line from the brake at the brake quick disconnect as follows:
   (a) Turn the barrel of the brake disconnect (hose half) clockwise until the slot in the barrel is disengaged from the locking pin on the brake disconnect (brake half).
   (b) Pull the barrel on the brake disconnect (hose half) away from the brake to engage the threads in the brake half with the threads in the hose half and turn the barrel counterlockwise to separate the hose half from the brake half.
   (c) Tie the brake hose to adjacent landing gear structure to hold it away from the brake.

S 494-013-002

(11) Install a sling on the brake (1) to hold it during the removal.

NOTE: If the brake is hot, use a steel cable as an alternative to a sling to hold up the brake during the removal.

S 024-014-002

CAUTION: DO NOT HOLD THE BRAKE ON THE O.D. OF THE ROTORS AFTER YOU REMOVE THE BRAKE. YOU CAN DO THIS IF THE SURFACE YOU PUT THE ROTOR ON IS SMOOTH AND WILL GIVE UNDER THE WEIGHT OF THE CARBON DISKS AND THEN GO BACK TO ITS INITIAL SHAPE. IF THE WEIGHT OF THE BRAKE IS HELD ON THE O.D. OF THE ROTORS, IT CAN DAMAGE THE CARBON.

(12) Remove the brake (1).

S 984-015-002

(13) Put the brake (1), with the piston side up, on a dolly and cradle tool.

S 034-016-002

(14) Remove the brake grease seal (2) if the seal stays on the axle.

TASK 32-41-08-404-017-002

3. Install the Wheel Brake For the Main Landing Gear (Fig. 401)

A. Equipment

(1) SAS 150-154;
MTH 275-276 PRE-SB 32-85;
MLG Axle and Axle Thread Protector Equipment -
(a) A32098-1 (Preferred) Includes:
- Protector - Axle, MLG - A32098-3
- Protector - Axle Threads, MLG - A32098-2
(b) A32007-17 (Optional) Or A32007-16 (Optional) Includes:
- Protector - Axle, MLG - A32007-6
- Protector - Axle Threads, MLG - A32007-9

(2) SAS 050-149, 155-999;
MTH 275-276 POST-SB 32-85;
MLG Axle and Thread Protector Equipment - A32098-1 (Required)

(3) Protector Equipment - Axle Main Landing Gear
A32098-12 for undersized axle threads only.

(4) Brake Cradle - Commercially available

(5) Dolly, Wheel/Brake - Commercially available

(6) Sling, Nylon (MLG) - Commercially Available
(a steel cable is optional to remove hot brakes)

B. Consumable Materials

(1) D00633 Grease - BMS 3-33 (Recommended)
D00013 Grease - MIL-G-23827 (Alternative)

(2) Wheel bearing grease -
Aircraft, General Purpose, Wide Temperature:
(a) D00378 - Aeroshell 22 (Recommended)
(b) D00233 - Mobilgrease 28 (Alternative)

(c) D50005 - Mobil Aviation Grease SHC 100 (Alternative)
(d) D00258 - Aeroshell 5 (Alternative)
(3) G00009 Corrosion Inhibiting Compound - BMS 3-23
(4) A00359 Sealant - BMS 5-05
(5) D00153 Fluid, Hydraulic - BMS 3-11

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Brake	TBD		
	2	Grease Seal			
	3	Disconnect, Brake			
	13	Retainer Plate			
	14	Washer			
	15	Bolt			
	18	Retainer Plate			
	19	Retainer Plate			
	20	Spacer			
	21	Washer			
	22	Bolt			
	239	Washer			
	24	Nut			
	25	Wheel Spacer			
	26	Brake Axle Bushing			
	27	Brake Sleeve			

D. References
(1) AMM 07-11-03/201, Jacking Airplane Axles
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

(3) AMM 32-11-20/401, Main Gear Brake Rod
(4) AMM 32-11-26/601, Main Gear Axle
(5) AMM 32-41-06/401, Hydraulic Brake Disconnect
(6) AMM 32-45-01/401, Main Gear Wheel and Tire
(7) AMM 32-46-01/401, Brake Temperature Sensor

E. Access

(1) Location Zones

731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

F. Procedure

S 864-018-002

(1) Make sure the pressure is removed from the right and center hydraulic systems (AMM 29-11-00/201).

S 214-019-002

(2) Examine the part of the axle that you can see. Look for marks, galling, or corrosion.

NOTE: The wear limits for the axles on the main landing gear are in 32-11-26.

S 494-020-002

(3) Make sure the axle protector and the axle thread protector are installed.

S 644-021-002

WARNING: APPLY A THIN LAYER OF GREASE TO THE INTERFACE SURFACES OF THE BRAKE AND AXLE ONLY. DO NOT APPLY GREASE IN THE SPACE BETWEEN THE AXLE BUSHINGS ON THE BRAKE ASSEMBLY. IF YOU APPLY TOO MUCH GREASE, A FIRE CAN OCCUR WHEN THE BRAKES BECOME HOT.

(4) Apply a thin layer of wheel bearing grease (Aeroshell 22) to the brake sleeve on the axle. Also, apply wheel bearing grease (Aeroshell 22) to the axle bushings on the brake assembly such that the grooves in the bushings are completely filled with grease.

NOTE: Wheel bearing grease (Aeroshell 22) is used because it has a higher flash point.

S 434-067-002

CAUTION: MAKE SURE THE GREASE SEAL IS INSTALLED CORRECTLY. A DAMAGED GREASE SEAL WILL ALLOW GREASE TO FILL THE TORQUE TUBE AREA AND WILL CAUSE A FIRE IN OPERATION.

(5) Make sure the brake axle bushing (26) is correctly installed in the brake housing and there is no damage to the bushing (26)

S 434-061-002

(6) Install the grease seal (2) in the brake housing as follows:

NOTE: The grease seal (2) on a new brake assembly comes separately from the brake in its own container to prevent damage during transpotation of the brake.

(a) BENDIX OR MESSIER-BUGATTI O-RING TYPE GREASE SEAL;
Install the grease seal (2) carefully in the groove in the piston housing.

(b) BENDIX TWO PIECE GREASE SEAL(P/N 2612764);
Install the grease seal as shown in Fig./401.

NOTE: Make sure that the grease seal is oriented as shown in the piston housing groove for best grease seal performance.

S 434-025-002

(7) If the replacement brake does not have a quick-disconnect brake fitting half, remove the fitting half from the old brake and install it on the new brake as shown in AMM 32-41-06/401.

S 424-051-002

(8) Put the brake retainer plate (13) at the mounting surface on the brake disconnect port on the brake with the offset mounting hole oriented as shown in Fig. 401, Detail C.

(a) Make sure that the brake disconnect half is installed in the brake port (AMM 32-41-06/401) before you install the brake disconnect plate (13).

(b) Install the bolts (15) and the washers (14), four locations, to hold the brake fitting half (13) in the brake. Lockwire the bolt heads.

S 614-026-002

(9) Fill the brake (1) with hydraulic fluid, if it is necessary.

S 494-027-002

(10) Install the brake sling on the brake (1).

S 434-028-002

(11) Install the brake (1) on the axle.

(a) If it is difficult to install the brake on Bendix brakes with improved two-piece grease seal P/N 2612764, item number (2), do these steps:

1) Inspect the grease seal (2) to see if it is installed correctly and if there is any damage to the inside diameter of the grease seal that can cause resistance.

2) Replace the seal (2) if it is damaged.

3) Install the brake on the axle again and turn the brake slightly (clockwise and counterclockwise) while you push the brake into position.

S 424-058-002

(12) Connect the brake hydraulic hose to the brake at the brake disconnect as follows:

(a) Align the barrel of the brake disconnect fitting (hose half) with the brake disconnect fitting (brake half).

(b) Engage the barrel of the hose half with the threads on the brake half.

(c) Turn the barrel clockwise until the locking pin on the brake disconnect (brake half) engages the slot on the barrel of the brake disconnect (hose half).

1) It will be harder to turn the barrel when it touches the upper surface of the locking pin. When you continue to turn the barrel and it goes past the locking pin, spring force will push the barrel down and cause the slot to engage the locking pin.

S 434-029-002

(13) Examine the wheel spacer (25) (View A-A). Replace the wheel spacer (25) if you find galling.

S 644-030-002

(14) Apply a thin layer of wheel bearing grease (Aeroshell 22) to the thrust faces of the wheel spacer (25).

S 414-070-002

CAUTION: INSTALL THE WHEEL SPACER CORRECTLY,IMPROPER ORIENTATION WILL CAUSE DAMAGE TO THE INNER WHEEL HALF HUB.

(15) Install the wheel spacer (25) on the axle.

S 644-047-002

(16) Install the brake temperature sensor (AMM 32-46-01/401) if it was removed.

S 434-034-002

(17) If the brake temperature sensor was not removed, install the connector for the brake temperature sensor.

S 434-035-002

WARNING: DO NOT REMOVE THE DOOR LOCKS AFTER YOU INSTALL THE WHEEL AND TIRE. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT DURING THE BRAKE OPERATIONAL TEST.

(18) Install the wheel and tire for the main landing gear (AMM 32-45-01/401).

NOTE: Keep the brake rod and the brake torque arm aligned during the wheel and tire installation. This will let you install the pin when the jack is removed.

S 584-036-002

(19) Lower the airplane and remove the jacks (AMM 07-11-03/201).

S 424-069-002

(20) Connect the Brake Rod (AMM 32-11-20/401).

S 644-049-002

(21) Apply grease (Royco 11-MS) at the lubrication fitting on the brake rod (7) that attaches to the brake torque arm and to the lubrication fitting on the face of the brake housing (AMM 12-21-14/301).

S 864-038-002

(22) Do the applicable steps below to complete installation of the brake unit and to prepare the brake unit for an operational test.
   (a) It is not necessary to bleed a brake unit if these items are done before the installation of the brake unit:
      1) The inner half of a hydraulic brake disconnect is installed on the brake unit.
      2) The brake unit is completely filled with hydraulic fluid.

3) All air is bled from the brake.

(b) It is necessary to bleed a brake unit if all the items shown above are not done before installation of the brake unit.

(c) If it is not necessary to bleed the brake unit, do these steps:

1) Make sure that chocks are installed on the wheels.

2) Release the parking brake.

3) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

4) Do this sequence of steps six times to bleed any small quantities of air from the brakes.

a) Slowly push one of the two sets of brake pedals to limit of travel to fully operate the brakes.

b) Hold these brake pedals in this position momentarily.

c) Slowly release the brake pedals. Stop for ten seconds befor you operate the brakes again.

(d) If it is necessary to bleed the brake unit, bleed the brake unit with the procedure in 32-41-00/201.

G. Do the Test of Hydraulic Brake Operation

S 864-039-002

(1) Pressurize the right and center hydraulic systems (AMM 29-11-00/201).

S 714-040-002

(2) Push the brake pedals again and again to apply and release the brakes.

S 714-041-002

(3) Examine the movement and position of the indicator pins for brake wear to make sure the brake operation is correct.

S 794-042-002

(4) Make sure there are no hydraulic leaks at the brake disconnect fittings.

H. Put the Airplane Back to Its Initial Condition

S 864-043-002

(1) Remove the pressure from the right and center hydraulic systems if it is not necessary (AMM 29-11-00/201).

MAIN GEAR WHEEL BRAKES - REMOVAL/INSTALLATION

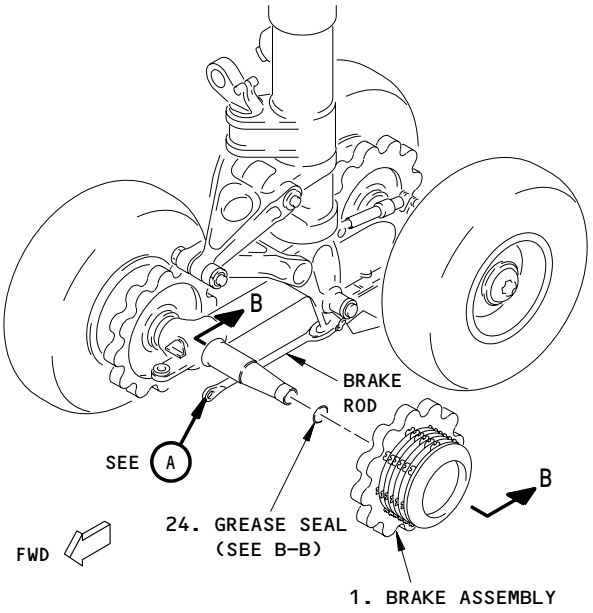
1. General
   A. This procedure contains two tasks. The first task removes the wheel brake for the main landing gear. The second task installs the wheel brake.
   B. The Honeywell S160T400-210 brake or the Messier-Bugatti S160T400-510 are replacements for the Honeywell S160T300-X series brakes. The interface between these brakes and the landing gear will stay the same, such that they are physically interchangeable. However, you cannot mix the S160T400-210, S160T400-510 or S160T300-X series brakes because of the differences in the brake torque and thermal characteristics. Make sure that you install the same type of brake that you removed. You must have all S160T400-210, S160T400-510 or S160T300-X series brakes on the airplane.

TASK 32-41-08-004-001-003

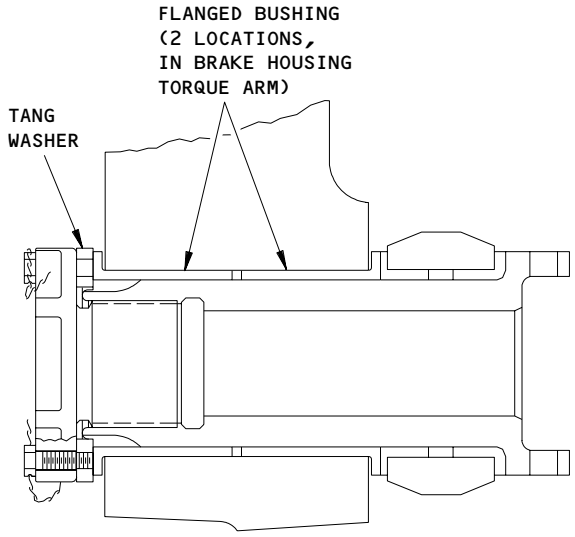
2. Remove the Wheel Brake For the Main Landing Gear
   A. Equipment
      (1) Protector Equipment - Axle Main Landing Gear A32098-1 (Recommended)
      (2) Protector Equipment - Axle Main Landing Gear A32098-12 for undersized axle threads only.
      (3) MLG Axle and Axle Thread Protector Equipment - A32007-17 (Alternative) A32007-16 (Alternative) Includes:
          (a) Protector - Axle, MLG - A32007-6 -
          (b) Protector - Axle Threads, MLG - A32007-9
      (4) Brake Cradle - Commercially available
      (5) Dolly, Wheel/Brake - Commercially available
      (6) Sling, Nylon - MLG - Commercially available (a steel cable is optional to remove hot brakes)
   B. References
      (1) AMM 07-11-03/201, Jacking Airplane Axles
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-11-20/401, Main Gear Brake Rod
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-45-01/401, Main Gear Wheel and Tire
      (6) AMM 32-46-01/401, Brake Temperature Sensor
   C. Access
      (1) Location Zones
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

   D. Remove the Wheel Brake For the Main Landing Gear (Fig. 401)

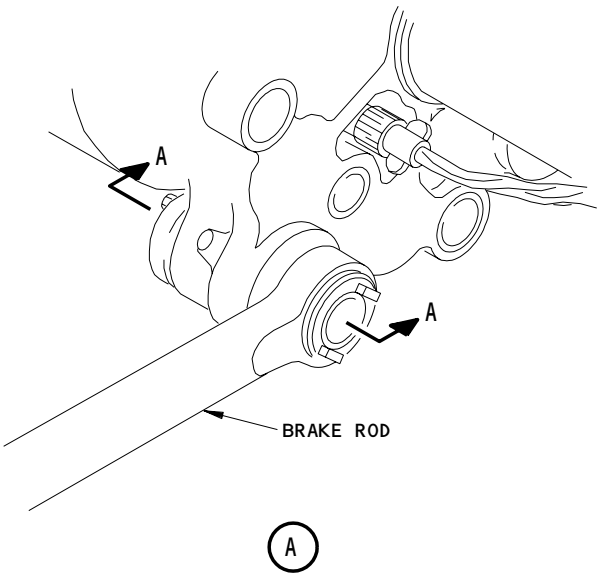
      S 494-002-003
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

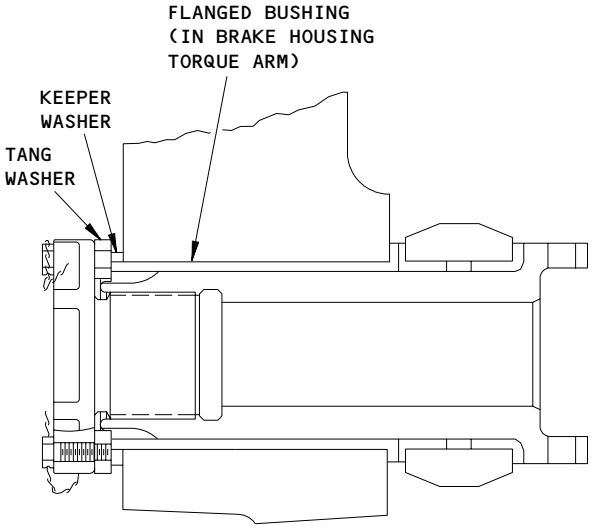


LEFT MAIN LANDING GEAR
(RIGHT MAIN LANDING GEAR IS OPPOSITE)



(AIRPLANES WITH BRAKES THAT HAVE TWO FLANGED BUSHINGS IN TORQUE ARM)
A-A



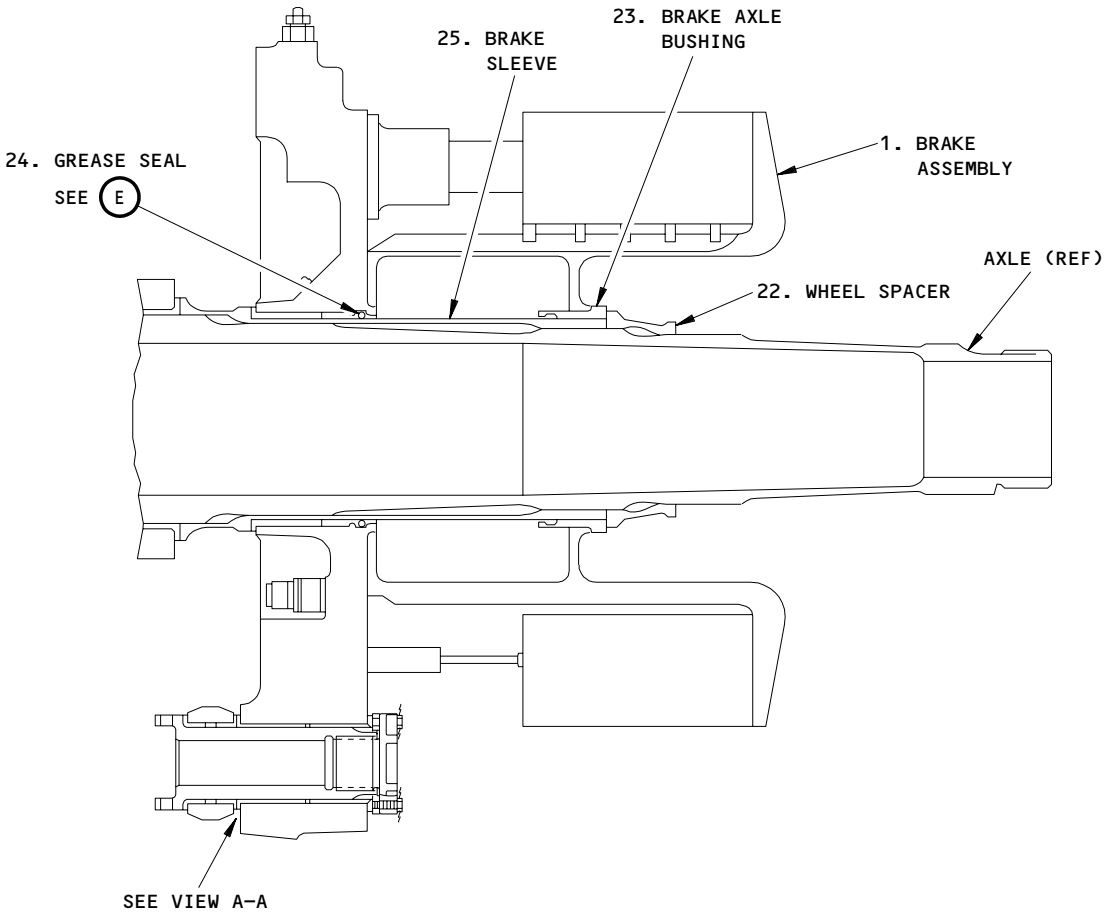


(AIRPLANES WITH BRAKES THAT HAVE ONE FLANGED BUSHING IN TORQUE ARM)
A-A

Main Landing Gear Brake Installation
Figure 401 (Sheet 1)

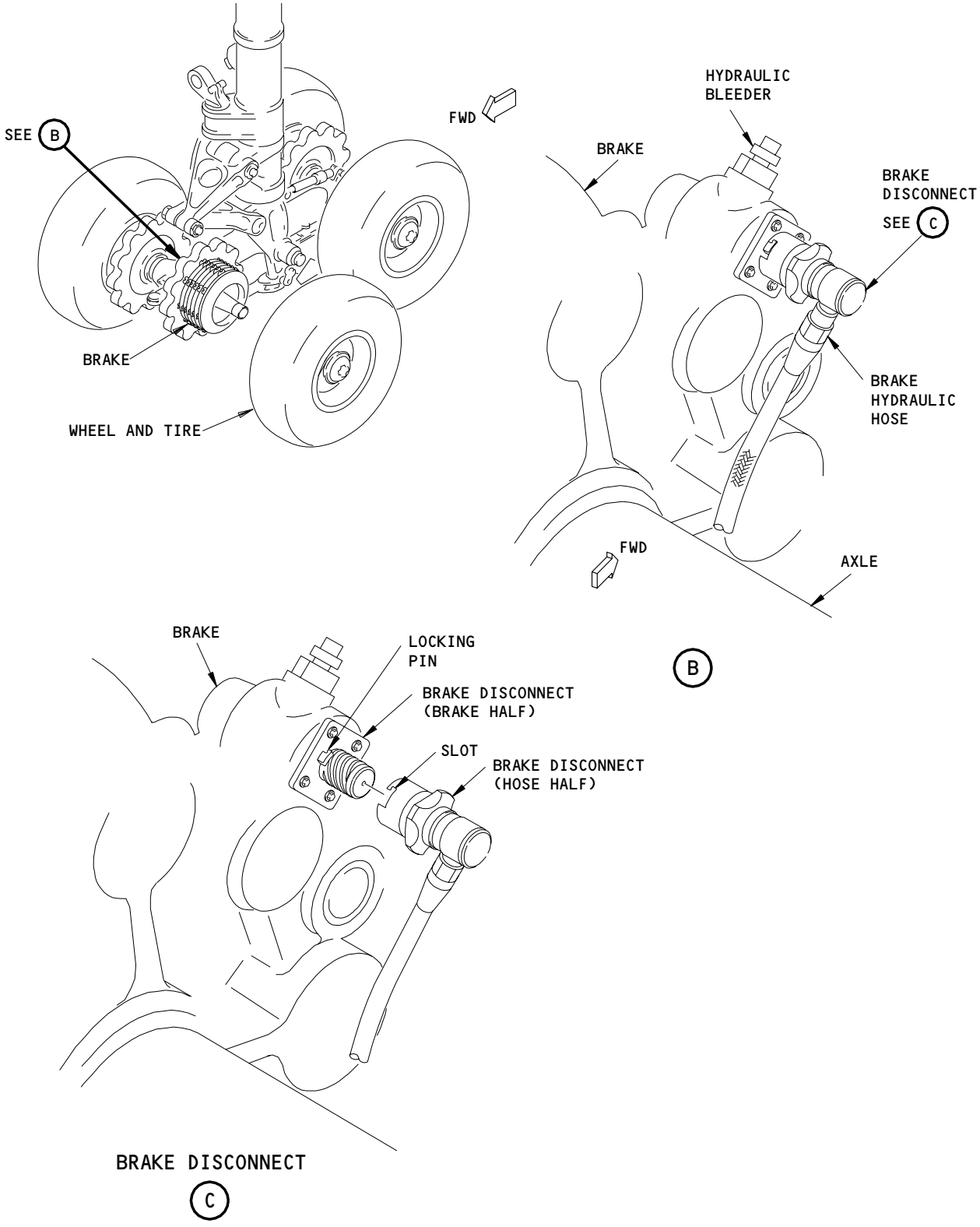
EFFECTIVITY
SAS 050-167 WITH SB 32-130 AND 32-132;
SAS 168-199, SAS 281-999

D21651

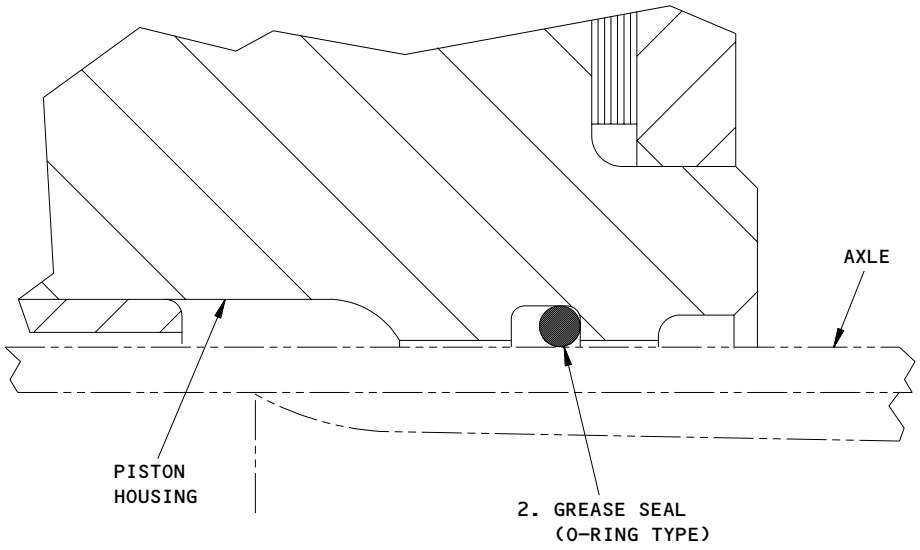


(VIEW WITH THE WHEEL REMOVED)
B-B

Main Landing Gear Brake Installation
Figure 401 (Sheet 2)

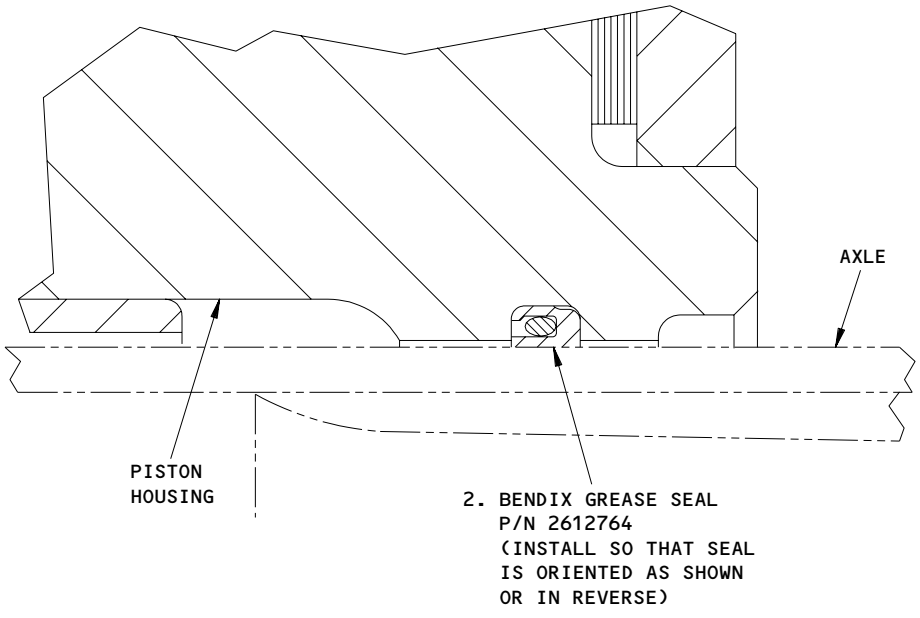


Main Landing Gear Brake Installation
Figure 401 (Sheet 3)



GREASE FITTING

E 1



GREASE FITTING

E 2

1 BENDIX OR MESSIER-BUGATTI BRAKE

2 BENDIX BRAKE

Main Landing Gear Brake Installation
Figure 401 (Sheet 4)

EFFECTIVITY
SAS 050-167 WITH SB 32-130 AND 32-132;
SAS 168-199, SAS 281-999

L44751

S 024-070-003
(2) Disconnect the brake rod (AMM 32-11-20/401)

S 584-004-003
(3) Lift the axle with the jack to lift the wheel and tire clear of the ground (AMM 07-11-03/201).

S 034-005-003
(4) Remove the wheel and tire for the main landing gear (AMM 32-45-01/401).

S 034-006-003
(5) Remove the brake temperature sensor (AMM 32-46-01/401) from the brake.

NOTE: If it is necessary to keep the temperature sensor with the brake assembly, disconnect the connector for the brake temperature sensor only.

S 864-007-003
(6) Remove the pressure from the right and center hydraulic systems and the hydraulic reservoirs (AMM 29-11-00/201).

S 874-008-003
(7) Push the brake pedals fully seven times to let the pressure out of the brake accumulator.

NOTE: Make sure there is a minimum of 5 seconds between each time you apply the brake.

S 034-009-003
(8) Do the steps that follow to remove the wheel spacer (22) from the axle (View A-A):
(a) Pull the brake approximately 3 inches off the axle.

(b) Loosen and move the wheel spacer (22) out on the axle.
(c) Push the brake into the initial position.
(d) Remove the wheel spacer (22) from the axle.

S 494-010-003

(9) Make sure that the axle protector and the axle thread protector are installed.

S 024-053-003

(10) Disconnect the brake hydraulic line from the brake at the brake quick disconnect as follows:
(a) Turn the barrel of the brake disconnect (hose half) clockwise until the slot in the barrel is disengaged from the locking pin on the brake disconnect (brake half).
(b) Pull the barrel on the brake disconnect (hose half) away from the brake to engage the threads in the brake half with the threads in the hose half and turn the barrel counterlockwise to separate the hose half from the brake half.
(c) Tie the brake hose to adjacent landing gear structure to hold it away from the brake.

S 494-012-003

(11) Install a sling on the brake (1) to hold it during the removal.

NOTE: If the brake is hot, use a steel cable as an alternative to a sling to hold up the brake during the removal.

S 024-013-003

CAUTION: DO NOT HOLD THE BRAKE ON THE O.D. OF THE ROTORS AFTER YOU REMOVE THE BRAKE. YOU CAN DO THIS IF THE SURFACE YOU PUT THE ROTOR ON IS SMOOTH AND WILL GIVE UNDER THE WEIGHT OF THE CARBON DISKS AND THEN GO BACK TO ITS INITIAL SHAPE. IF THE WEIGHT OF THE BRAKE IS HELD ON THE O.D. OF THE ROTORS, IT CAN DAMAGE THE CARBON.

(12) Remove the brake (1).

S 984-014-003

(13) Put the brake (1), with the piston side up, on a dolly and cradle tool.

S 034-015-003

(14) Remove the brake grease seal (24) if the seal stays on the axle.

TASK 32-41-08-404-016-003

3. Install the Wheel Brake For the Main Landing Gear (Fig. 401)

A. Equipment

(1) SAS 150-154;
MTH 275-276 PRE-SB 32-85;
MLG Axle and Axle Thread Protector Equipment -
(a) A32098-1 (Preferred)
Includes:
1) Protector - Axle, MLG - A32098-3
2) Protector - Axle Threads, MLG - A32098-2
(b) A32007-17 (Optional) Or A32007-16 (Optional)
Includes:
1) Protector - Axle, MLG - A32007-6 -
2) Protector - Axle Threads, MLG - A32007-9

(2) SAS 050-149, 155-999;
MTH 275-276 POST-SB 32-85;
MLG Axle and Thread Protector Equipment -
(a) A32098-1 (Required)

(3) Protector Equipment - Axle Main Landing Gear A32098-12 for undersized axle threads only.

(4) Brake Cradle - Commercially available

(5) Dolly, Wheel/Brake (Clyde Machine Model TB900) - Commercially available

(6) Sling, Nylon (MLG) - Commercially Available (a steel cable is optional to remove hot brakes)

B. Consumable Materials

(1) D00633 Grease - BMS 3-33 (Preferred)
D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

(2) Wheel bearing grease -
Aircraft, General Purpose, Wide Temperature:
(a) D00378 - Aeroshell 22
(b) D00233 - Mobilgrease 28
(c) D50005 - Mobil Aviation Grease SHC 100
(d) D00258 - Aeroshell 5 (Alternative)

(3) D00153 Fluid, Hydraulic - BMS 3-11

(4) A00359 Sealant - BMS 5-95

(5) G00009 Corrosion Inhibiting Compound - BMS 3-23

(6) G50136 Corrosion Inhibiting Compound - BMS 3-38

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Brake	32-41-06	01	175
	8	Brake Disconnect			32
	9	Retainer Plate			235
	10	Retainer Plate			240
	11	Washer			265
	12	Nut			270
	13	Hose Fitting Half			xxx
	15	Bolt			225
	16	Washer			230
	17	Brake Fitting Half			30
	18	Bolt			250
	19	Retainer Plate			220
	20	Spacer			255
	21	Washer			260
	22	Wheel Spacer			
	23	Brake Axle Bushing			
	24	Grease Seal			
	25	Wheel Spacer			

D. References

(1) AMM 07-11-03/201, Jacking Airplane Axles
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-11-20/401, Main Gear Brake Rod
(4) AMM 32-11-26/601, Main Gear Axle
(5) AMM 32-41-06/401, Hydraulic Brake Disconnect
(6) AMM 32-45-01/401, Main Gear Wheel and Tire
(7) AMM 32-46-01/401, Brake Temperature Sensor

E. Access

(1) Location Zones

731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

F. Procedure

S 864-017-003

(1) Make sure the pressure is removed from the right and center hydraulic systems (AMM 29-11-00/201).

S 214-018-003

(2) Examine the part of the axle that you can see. Look for marks, galling, or corrosion.

NOTE: The wear limits for the axles on the main landing gear are in 32-11-26.

S 494-019-003

(3) Make sure the axle protector and the axle thread protector are installed.

S 644-020-003

WARNING: APPLY A THIN LAYER OF GREASE TO THE INTERFACE SURFACES OF THE BRAKE AND AXLE ONLY. DO NOT APPLY GREASE IN THE SPACE BETWEEN THE AXLE BUSHINGS ON THE BRAKE ASSEMBLY. IF YOU APPLY TOO MUCH GREASE, A FIRE CAN OCCUR WHEN THE BRAKES BECOME HOT.

(4) Apply a thin layer of wheel bearing grease to the brake sleeve on the axle. Also, apply wheel bearing grease to the axle bushings on the brake assembly such that the grooves in the bushings are completely filled with grease.

NOTE: Wheel bearing grease is used because it has a higher flash point.

S 434-067-003

CAUTION: MAKE SURE THE GREASE SEAL IS INSTALLED CORRECTLY. A DAMAGED GREASE SEAL WILL ALLOW GREASE TO FILL THE TORQUE TUBE AREA AND WILL CAUSE A FIRE IN OPERATION.

(5) Make sure the brake axle bushing (23) is correctly installed in the brake housing and there is no damage to the bushing (23).

S 434-059-003
(6) Install the grease seal (24) in the brake housing as follows:

NOTE: The grease seal (24) on a new brake assembly comes from the brake in its own container to prevent damage during transpotation of the brake.

(a) BENDIX OR MESSIER-BUGATTI ONE-PIECE O-RING TYPE GREASE SEAL; Install the grease seal (24) carefully in the groove in the piston housing.
(b) BENDIX TWO-PIECE GREASE SEAL (P/N 2612764); Install the grease seal as shown in Fig./401.

NOTE: Make sure that the grease seal is oriented as shown in the piston housing groove for best grease seal performance.

S 434-024-003
(7) If the replacement brake does not have a quick-disconnect brake fitting half, remove the fitting half from the old brake and install it on the new brake as shown in AMM 32-41-06/401.

S 024-050-003
(8) Put the retainer plate (19) for the brake fitting half (17) of the brake disconnect at the mounting surface on the brake and install it as follows:
(a) Make sure that the brake disconnect half (17) is installed in the brake port (AMM 32-41-06/401) before you install the retainer plate (19).
(b) Install the bolts (15) and the washers (16), four locations, to hold the brake fitting half (17) in the brake. Lockwire the bolt heads.

S 614-025-003
(9) Fill the brake (1) with hydraulic fluid, if it is necessary.

S 494-026-003
(10) Install the brake sling on the brake (1).

S 434-027-003
(11) Install the brake (1) on the axle.

S 424-058-003
(12) Connect the brake hydraulic hose to the brake at the brake disconnect as follows:
(a) Align the barrel of the brake disconnect fitting (hose half) with the brake disconnect fitting (brake half).
(b) Engage the barrel of the hose half with the threads on the brake half.

(c) Turn the barrel clockwise until the locking pin on the brake disaconnect (brake half) engages the slot on the barrel of the brake disconnect (hose half).
1) It will be harder to turn the barrel when it touches the upper surface of the locking pin. When you continue to turn the barrel and it goes past the locking pin, spring force will push the barrel down and cause the slot to engage the locking pin.

S 434-028-003

(13) Examine the wheel spacer (22) (View A-A). Replace the wheel spacer (22) if you find galling.

S 644-029-003

(14) Apply a thin layer of wheel bearing grease to the thrust faces of the wheel spacer (22).

S 434-073-003

CAUTION: INSTALL THE WHEEL SPACER CORRECTLY,IMPROPER ORIENTATION WILL CAUSE DAMAGE TO THE INNER WHEEL HALF HUB.

(15) Install the wheel spacer (22) on the axle.

S 434-032-003

CAUTION: INSTALL THE SENSOR FOR THE BRAKE TEMPERATURE MONITOR WITH THE CONNECTOR MASTER KEYWAY IN THE DOWN POSITION. IF THE KEYWAY IS NOT IN THE DOWN POSITION, THE CONDUIT CONNECTED TO THE SENSOR WILL NOT MOVE FREELY. THIS CAN CAUSE DAMAGE TO THE CONDUIT.

(16) Install the brake temperature sensor (AMM 32-46-01/401) if it was removed.

S 434-033-003

(17) If the brake temperature sensor was not removed, install the connector for the brake temperature sensor.

S 434-034-003

WARNING: DO NOT REMOVE THE DOOR LOCKS AFTER YOU INSTALL THE WHEEL AND TIRE. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT DURING THE BRAKE OPERATIONAL TEST.

(18) Install the wheel and tire for the main landing gear (AMM 32-45-01/401).

NOTE: Keep the brake rod and the brake torque arm aligned during the wheel and tire installation. This will let you install the pin when the jack is removed.

S 584-035-003

(19) Lower the airplane and remove the jacks (AMM 07-11-03/201).

S 424-072-003

(20) Connect the Brake Rod (AMM 32-11-20/401)

S 644-048-003

(21) Apply grease (Royco 11-MS) at the lubrication fitting on the brake rod (2) that attaches to the brake torque arm and to the lubrication fitting on the face of the brake housing (AMM 12-21-14/301).

S 864-037-003

(22) Do the applicable steps below to complete installation of the brake unit and to prepare the brake unit for an operational test.
   (a) It is not necessary to bleed a brake unit if these items are done before the installation of the brake unit:
      1) The inner half of a hydraulic brake disconnect is installed on the brake unit.
      2) The brake unit is completely filled with hydraulic fluid.
      3) All air is bled from the brake.
   (b) It is necessary to bleed a brake unit if all the items shown above are not done before installation of the brake unit.
   (c) If it is not necessary to bleed the brake unit, do these steps:
      1) Make sure that chocks are installed on the wheels.
      2) Release the parking brake.
      3) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).
      4) Do this sequence of steps six times to bleed any small quantities of air from the brakes.
         a) Slowly push one of the two sets of brake pedals to limit of travel to fully operate the brakes.
         b) Hold these brake pedals in this position momentarily.
         c) Slowly release the brake pedals. Stop for ten seconds befor you operate the brakes again.

(d) If it is necessary to bleed the brake unit, bleed the brake unit with the procedure in 32-41-00/201.

G. Do the Test of Hydraulic Brake Operation

S 864-038-003

(1) Pressurize the right and center hydraulic systems (AMM 29-11-00/201).

S 714-039-003

(2) Push the brake pedals again and again to apply and release the brakes.

S 714-040-003

(3) Examine the movement and position of the indicator pins for brake wear to make sure the brake operation is correct.

S 794-041-003

(4) Make sure there are no hydraulic leaks at the brake disconnect fittings.

H. Put the Airplane Back to Its Initial Condition

S 864-042-003

(1) Remove the pressure from the right and center hydraulic systems if it is not necessary (AMM 29-11-00/201).

MAIN GEAR WHEEL BRAKES - INSPECTION/CHECK

1. General
   A. This procedure contains two tasks. The first task is an inspection of the brake for damage, leaks, brake pad wear, and correct operation of the parts that move with the wheel installed on the airplane. The second task is a more extensive examination of the brake with the wheel removed from the airplane

TASK 32-41-08-216-001-001

2. Inspect the Wheel Brake for the Main Landing Gear (With the Wheel Installed)

   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          731 Left Main Landing Gear
          741 Right Main Landing Gear

   C. Prepare for the Inspection

      S 496-002-001
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

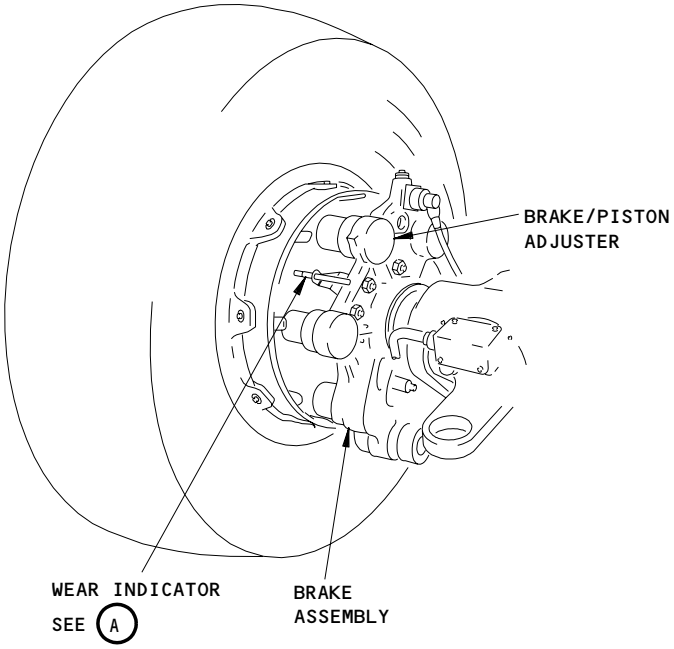
      S 496-003-001
      (2) Make sure that chocks are installed on the wheels.

      S 866-004-001
      (3) Release the parking brake.
   D. Procedure

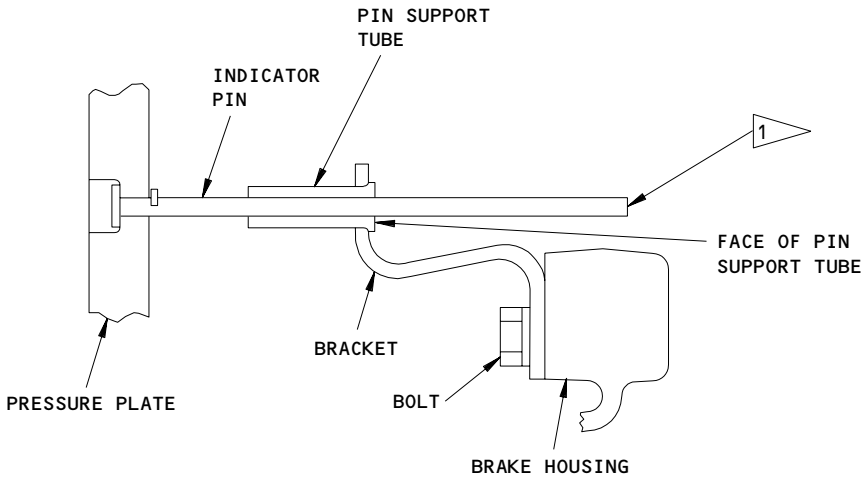
      S 866-023-001

      CAUTION: BE VERY CAREFUL WHEN YOU DO A CHECK OF THE BRAKES TO NOT SPILL HYDRAULIC BRAKE FLUID ON THE BRAKE LININGS. IF YOU SPILL BRAKE FLUID ON THE BRAKE LININGS, THE BRAKES WILL NOT OPERATE CORRECTLY.

      (1) Presssurize the Right hydraulic system and reservior. (AMM 29-11-00/201).



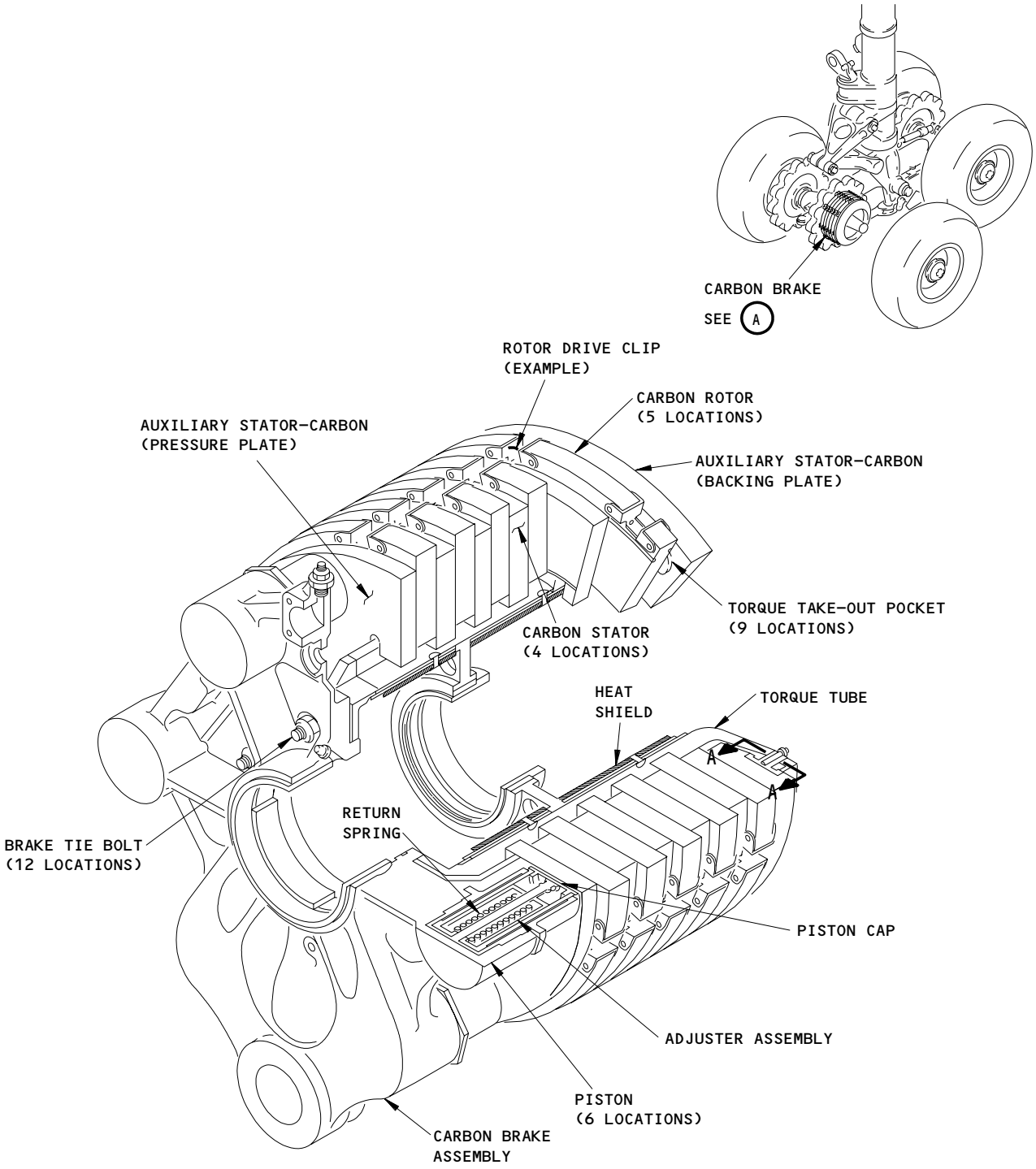
HONEYWELL CARBON BRAKE



WEAR INDICATOR
A

1 REPLACE THE BRAKE UNIT IF THE END OF THE INDICATOR PIN IS LEVEL WITH, OR BELOW, THE FACE OF THE PIN SUPPORT TUBE

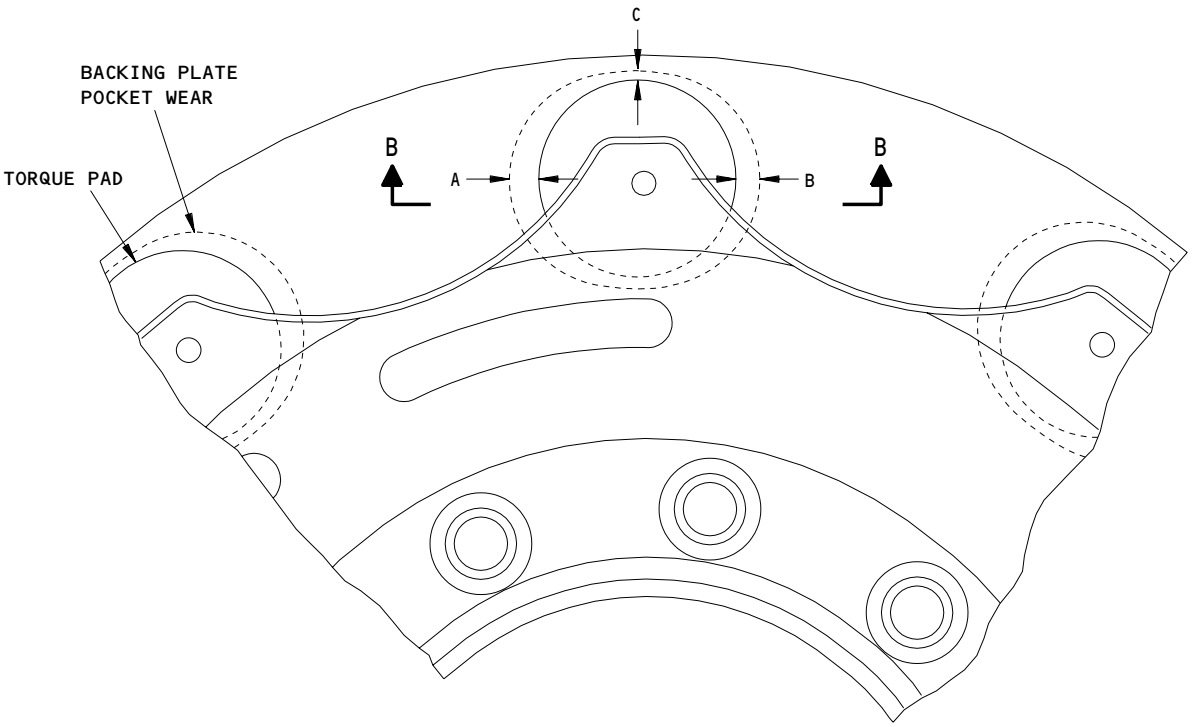
Brake Wear Check
Figure 601



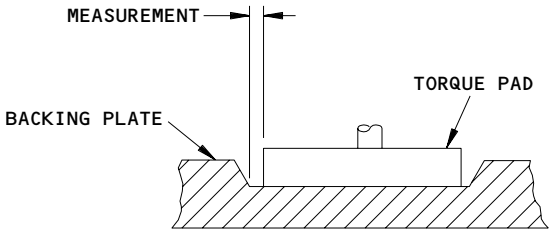
HONEYWELL CARBON BRAKE
(S160T300–X SERIES BRAKE, 5 ROTORS)

(A)

Brake Inspection
Figure 602 (Sheet 1)



BACKING PLATE POCKET WEAR
A-A

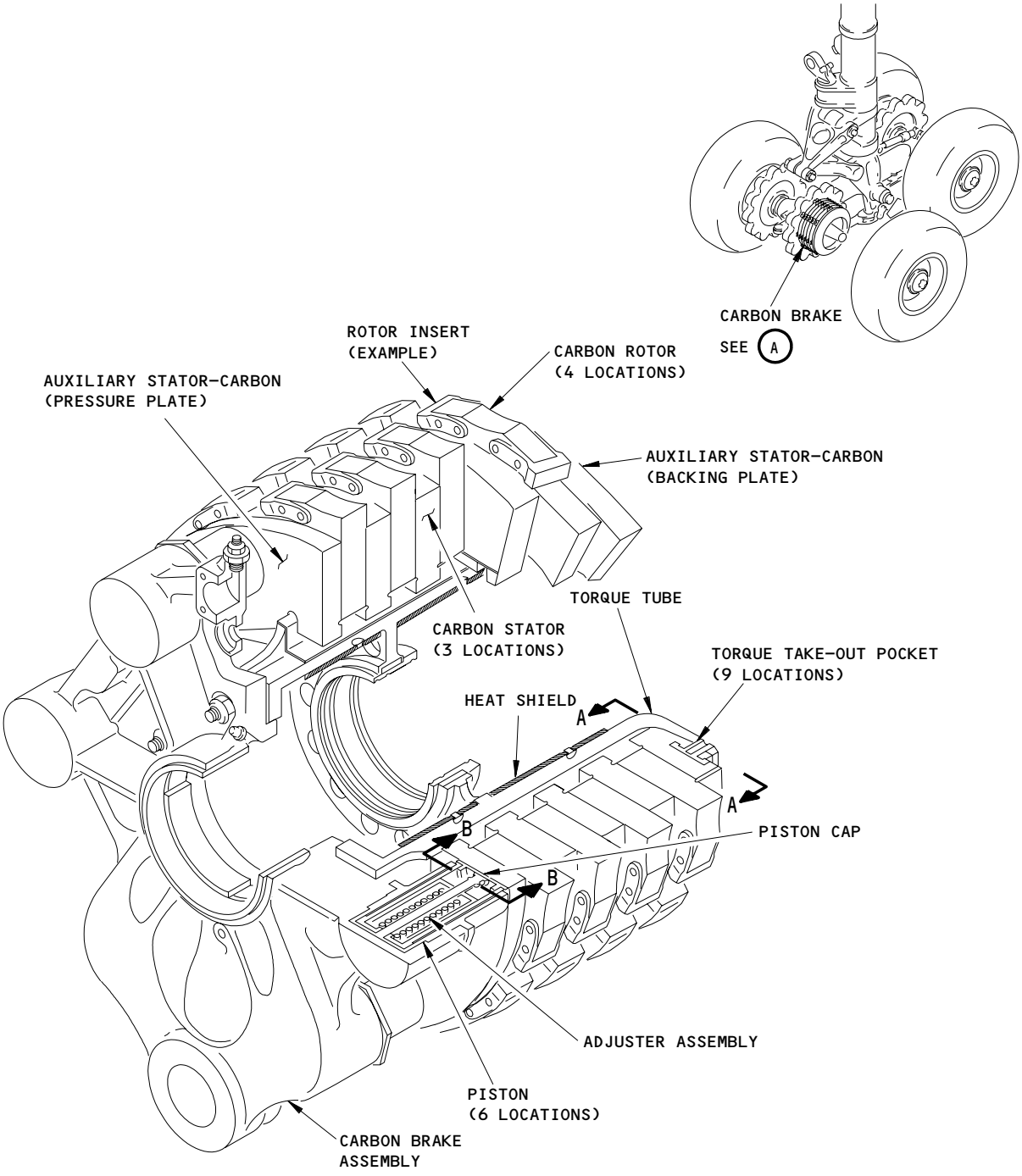


B-B

HONEYWELL CARBON BRAKE
(S160T300-X)

Brake Inspection
Figure 602 (Sheet 2)

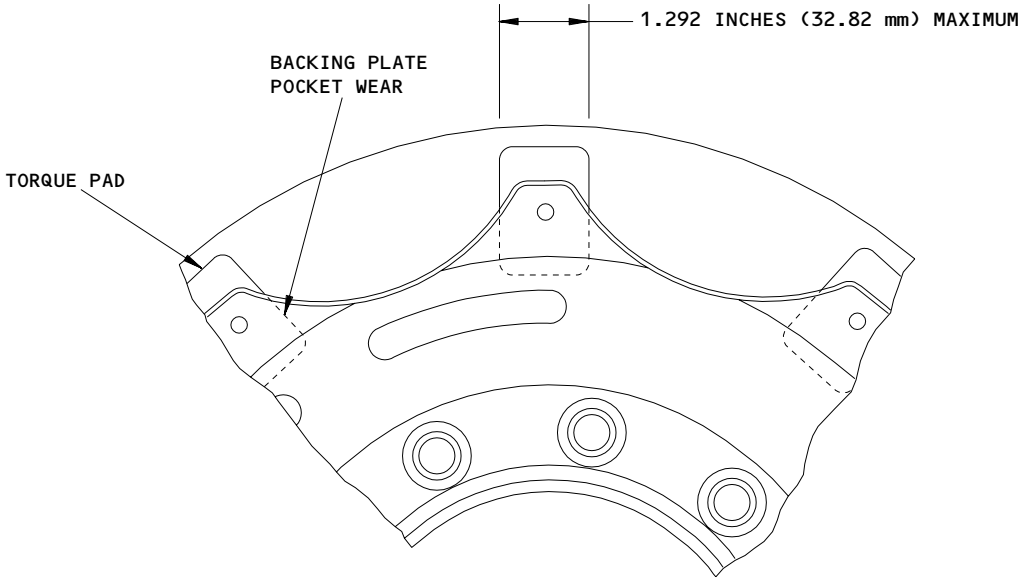
H17586



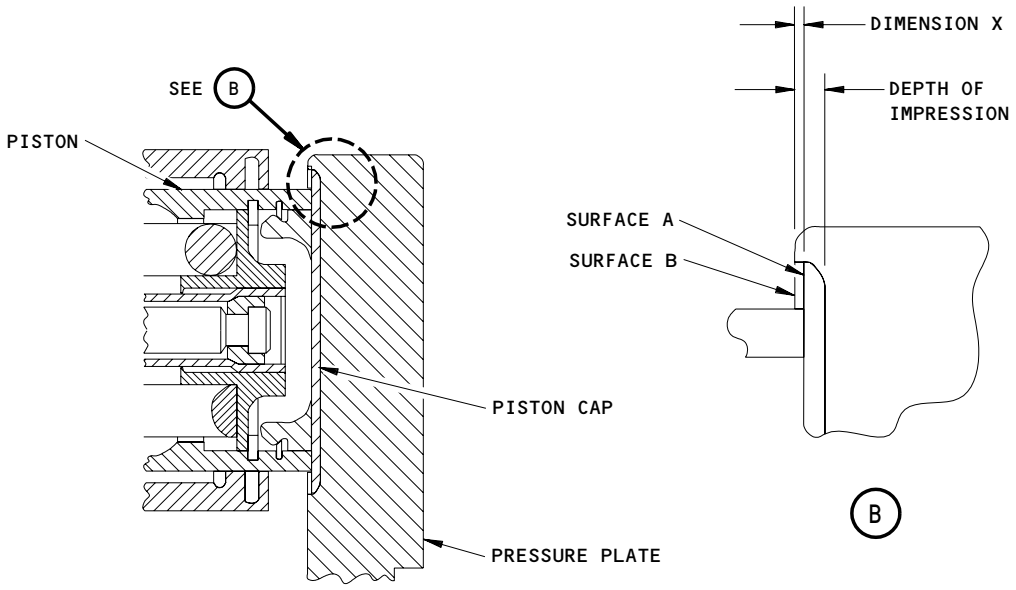
HONEYWELL CARBON BRAKE
(S160T400–210 BRAKE, 4 ROTORS)

A

Brake Inspection
Figure 602A (Sheet 1)

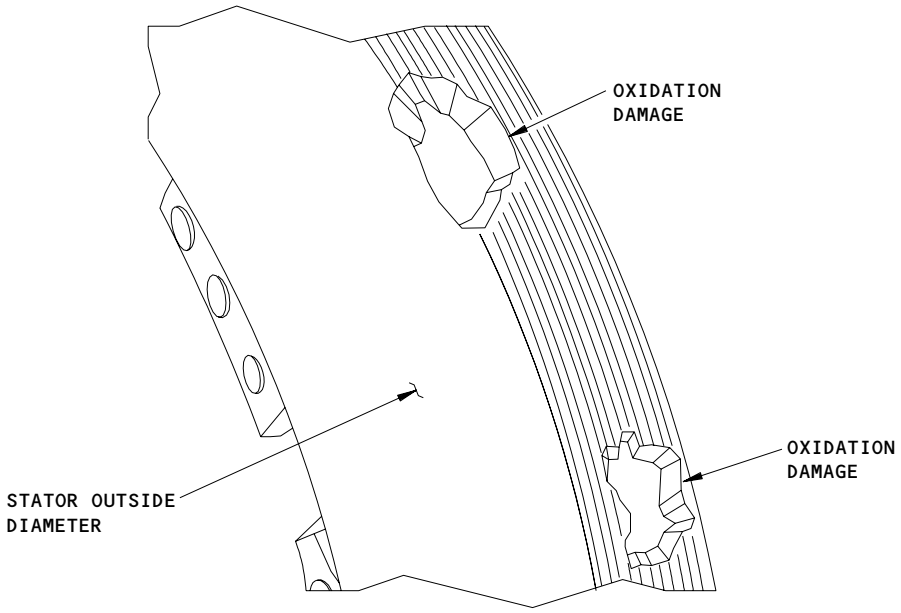


BACKING PLATE POCKET WEAR
(HONEYWELL CARBON BRAKE, S160T400-210)
A-A

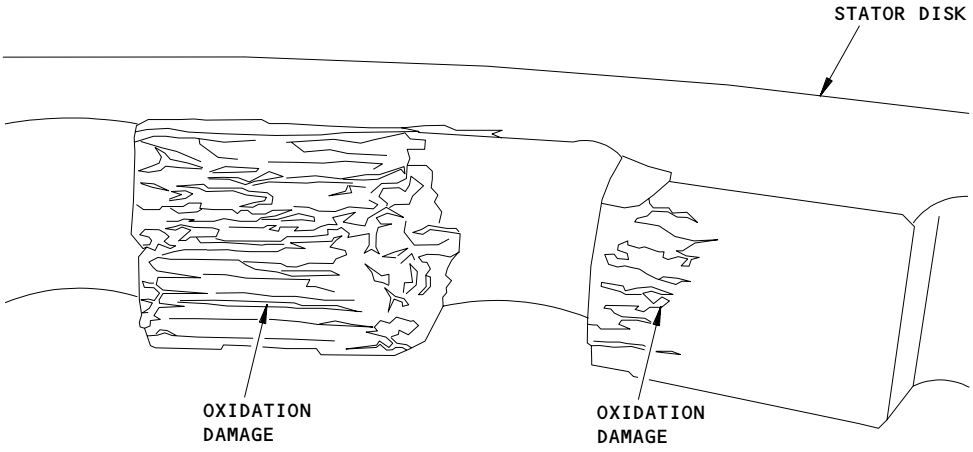


B-B

Brake Inspection
Figure 602A (Sheet 2)

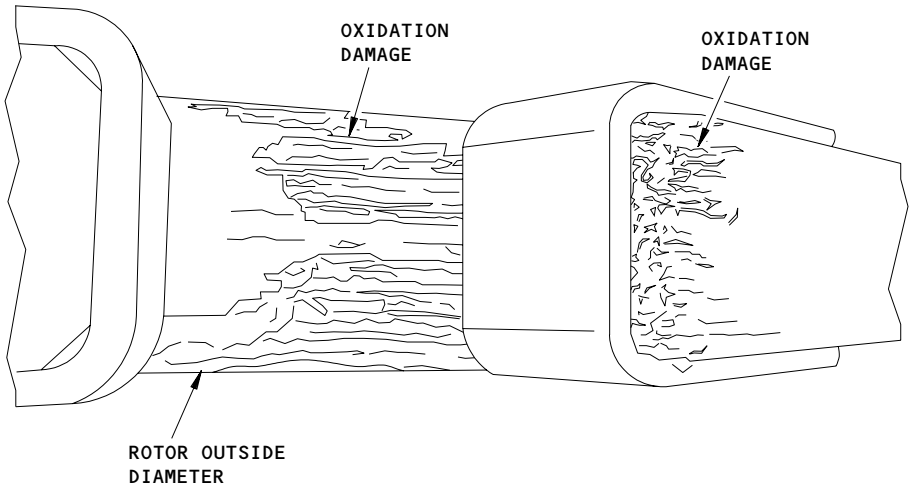


STATOR DISKS
(OXIDATION DAMAGE ON OUTSIDE DIAMETER)
(EXAMPLE)

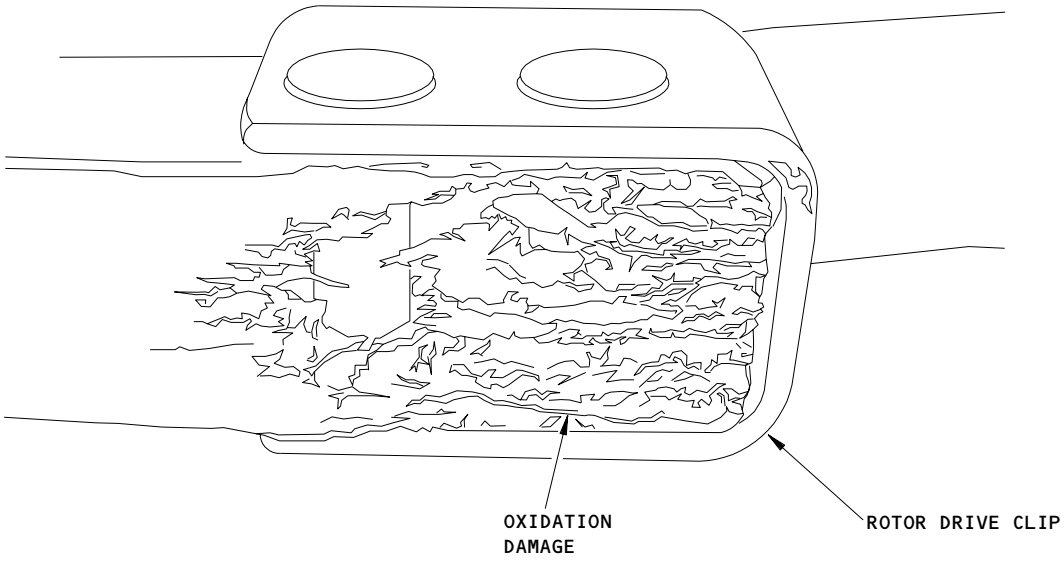


STATOR DRIVE LUGS
(OXIDATION DAMAGE ON INSIDE DIAMETER)
(EXAMPLE)

Carbon Brake Inspection For Oxidation (Wheel Removed)
Figure 603 (Sheet 1)

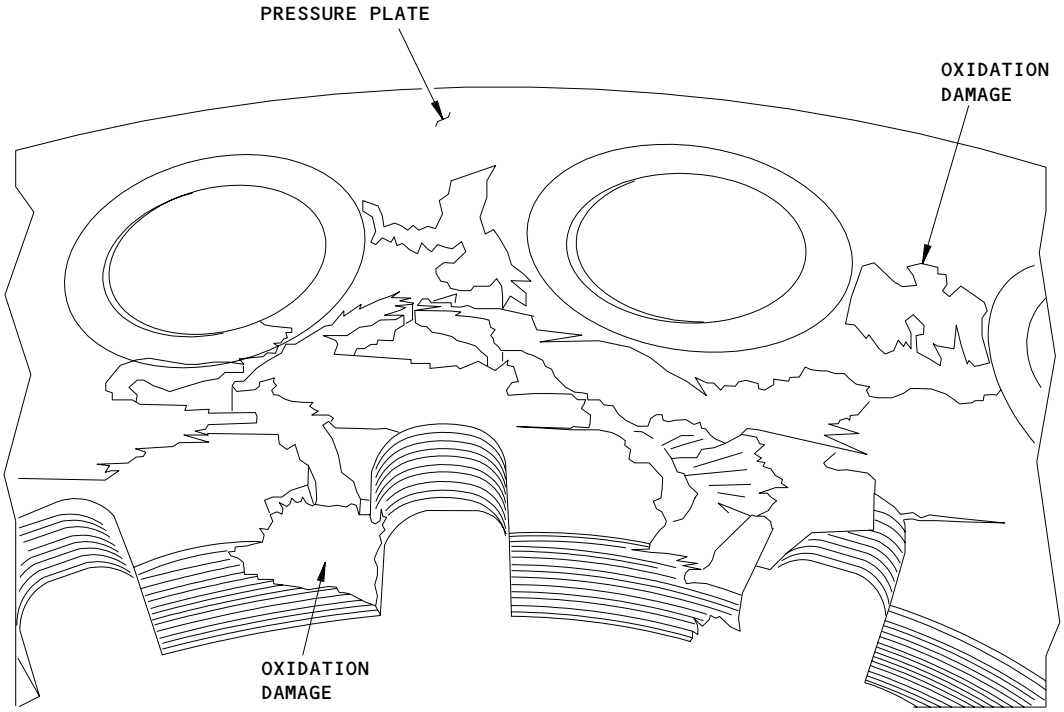


ROTOR DISK
(OXIDATION DAMAGE ON OUTSIDE DIAMETER)
(EXAMPLE)



ROTOR DRIVE CLIP
(OXIDATION DAMAGE ON OUTSIDE DIAMETER)
(EXAMPLE)

Carbin Brake Inspection for Oxidation (Wheel Removed)
Figure 603 (Sheet 2)



PRESSURE PLATE
(OXIDATION DAMAGE ON THRUST FACE)
(EXAMPLE)

Carbin Brake Inspection for Oxidation (Wheel Removed)
Figure 603 (Sheet 3)

S 796-035-001
(2) Fully apply and release the left and right captain's or first officer's brake pedals five times.

S 796-006-001
(3) With the brake pedals not applied, do a check of the brakes for fluid leaks at these locations:
(a) brake pistons.
(b) brake housing plugs.
(c) inlet and drain ports.
(d) bleed ports.

S 796-038-001
(4) If the total leakage per brake at the above location is greater than one (1) drop per minute with the pedals not applied, repair the leakage or replace the brakes prior to dispatch.

S 866-007-001
(5) Slowly apply the brake pedals to the stops.

S 796-036-001
(6) While the brake pedals are applied, do a check for leaks at the same places on the brake that you did in step (3).

S 796-037-001
(7) If the total leakage per brake at the above locations is greater that five (5) drops per minute while the brakes are being applied, repair the leakage or replace the brake prior to dispatch.

S 216-033-001
(8) Brakes with leaks below these limits must be rechecked prior to each flight, and should be repaired or replaced at the next opportunity that manpower and material allow.

S 216-024-001
(9) If it is suspected that a brake has been exposed to significant levels of contamination, the brake should be removed, inspected and cleaned in accordance with the brake supplier component maintenance manual. Signs of contamination include a wet or oily appearance, buildup of charred residue, or heavy smoke after landing.

S 216-022-001
(10) Release the brakes and make sure that the pressure plate returns to the proper brake released position.

S 796-039-001

(11) Carbon Brake Inspection, Pressure Plate Piston Impressions

(a) With brake unpressurized, visually inspect for pressure plate impressions from the piston caps.

(b) If pressure plate impressions do not exist, no additional inspection necessary.

(c) If pressure plate impressions exist, pressureize brake.

(d) If piston cap surface 'A' is flush (dimension'X'= 0) or below pressure plate surface 'B' (dimension 'X' > 0), then brake should be removed from airplane.

S 756-011-001

(12) Do a check for missing brake wear indicator pins.

NOTE: Each brake has two brake wear indicator pins.

(a) If the two wear pins are missing, you must replace the brake prior to the next flight.

(b) If one wear pin is missing, the brake can stay in service if the remaining wear pin operation is satisfactory.

S 216-012-001

(13) Do a check of brake wear as follows:

(a) Push the brake pedals fully forward to apply normal brake pressure (3000 psi).

(b) Look at the two wear pins on each brake to see if they extend out of the pin support tube (See Fig. 601).

(c) Replace the brake if the end of the indicator pin is level with, or below the face of the pin support tube.

S 866-013-001

(14) Remove the pressure from the right hydraulic system if it is not necessary (AMM 29-11-00/201).

S 866-014-001

(15) Put the airplane back to its usual condition.

TASK 32-41-08-206-015-001

3. Inspect the Wheel Brake for the Main Landing Gear (With the Wheel Removed)

A. References

(1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

(2) AMM 32-00-20/201, Landing Gear Downlocks

B. Access

(1) Location Zones

731 Left Main Landing Gear

741 Right Main Landing Gear

C. Procedure

S 026-016-001

(1) Remove the wheel and tire assembly (AMM 32-45-01/401).

S 216-025-001

(2) If it is suspected that a brake has been exposed to significant levels of contamination, the brake should be removed, inspected and cleaned in accordance with the brake supplier component maintenance manual. Signs of contamination include a wet or oily appearance, buildup of charred residue, or heavy smoke after landing.

S 216-017-001

(3) Examine the brake assembly for these types of damage:
   (a) Cracks that you can see.
   (b) Broken parts.
   (c) Parts that show a large amount of wear.
   (d) Other damage that can cause wear or leaks of hydraulic fluid.
   (e) Look for loose rotor drive clips and rivets.
   (f) Look for pieces of carbon that have broken off of the carbon rotor or stator disks.
   (g) Do a check of the O.D. of the four stator discs for the correct 12 o'clock positions of their alignment grooves. Replace the brake if any of the alignment grooves are not at the 12 o'clock position.

      NOTE: A stator groove that is not aligned is an indication of possible stator disc drive failure.

   (h) Examine the torque take-out pockets for wear and evidence that pieces of carbon have broken out of the pocket (Fig. 602 or 603).
      1) Replace the brake if one or more of the take-out pockets show significant wear on opposite sides so that they are not circular in shape (S160T300 series brakes).

         NOTE: Small amounts of wear in the pocket are acceptable, but if you can see a definite change in the shape of the pocket so that it does not look circular in shape, replace the brake.

2) Replace the brake if one or more of the take-out pockets show significant wear on opposite sides so that they are not rectangular in shape (S160T400-210 brakes). You can only inspect the take-out pockets on the S160T400-210 brake if the brake is removed from the axle.

NOTE: Small amounts of wear in the pocket are acceptable, but if you can see a definite change in the shape of the pocket so that it does not look rectangular in shape, replace the brake.

3) Replace the brake if relatively large pieces of carbon have broken off at a take-out pocket.

NOTE: It is allowable for the take-out pockets to show that small pieces of carbon have broken out of the pocket. If there is evidence that large pieces of carbon have broken off, replace the brake if it appears that the pieces are large enough to cause failure of the carbon backing plate.

(i) Do an examination of the heat shield on the torque tube I.D. at the backing plate end and repair any damage that you find as follows:

1) If you find that heat shield attachment rivets and/or retainers are missing, replace the brake (AMM 32-41-08/401).
2) If you find loose rivets and retainers, the brake can stay in service if the rivets and retainers are intact so that the heat shield stays in position.
3) If you see any damage to the open end of the heat shield (backing plate end) that changes the normal I.D. contour of the heat shield repair the damage as follows:

NOTE: Any damage to the heat shield that extends outside the normal contour of the heat shield may damage the the wheel hub O.D. when the wheel turns in normal operation.

a) Tap the heat shield edge damage to give the heat shield a smooth contour again.

S 206-042-001

(4) AIRPLANES WITH CARBON BRAKES;
Follow this procedure for inspection, with the wheel removed, for damage due to carbon brake oxidation. Carbon brakes should be replaced if any of the these conditions are found (Fig. 603).
(a) Examine the brake and surrounding areas for unusual carbon debris such as chips or small pieces of carbon broken off of the rotors and stators.
(b) Look for oxidation damage on the brake rotors and stators.
1) Carbon brake oxidation causes softness, flaking, and pieces to break off of the rotors and stators. Damage on the outside diameters of rotors and stators is easy to see, but damage can also occur on other areas of the rotors and stators. Examine all visible areas.
(c) Examine the brakes for indentations or flaking carbon where the hydraulic pistons touch the carbon pressure plate.
(d) Examine the brakes for bent or missing wear indicator pins. This can be an indication of carbon stator damage.
(e) With the parking brake released, make sure that all rotor assemblies can be freely rotated with no binding.
(f) Make sure that the metal rotor drive clips on the outside diameter of each carbon rotor do not show excessive movement and there is no loose flaking carbon near the clips.
(g) With one hand at the 3 o'clock position and the other hand at the 9 o'clock positon, rotate each stator individually and see that the stator does not move more than 0.25 inch as measured on the outside diameter of the stator, with the parking brake released.

NOTE: Most carbon brakes are configured with worn stator indicators. A worn stator indicator is a line machined in the stators at the 12 o'clock position of the brake. If this is the case, the worn stator indicators can be used as a visual reference to make sure that the stators do not rotate more than 0.25 inch when performing this step.

S 796-040-001

(5) Carbon Brake Inspection, Pressure Plate Piston Impressions
(a) With Brake unpressurized, visually inspect for Pressure Plate impressions from the Piston Caps.
(b) If Pressure Plate impressions do not exist, no additional inspection necessary.
(c) If Pressure Plate impressions exist, pressurize brake.
(d) If piston cap surface 'A' is flush (dimension'X' = 0) or below pressure plate surface 'B' (dimension 'x' > 0) then brake should be removed from airplane.

S 216-020-001

(6) Do these steps to make sure that the components that apply force to the brake rotors and stators operate properly:
   (a) Apply and release the brakes fully at least five times.
   (b) Make sure that the brake operates properly.
   (c) Make sure that the pressure plate moves freely while the brake operates.
   (d) Do this additional check to make sure that the pressure plate will operate properly:
      1) Make sure that the brake pedals are released and pressure is released from the brake.
      2) Manually move the pressure plate in the direction of the pistons. Use the wear pins as a handle while you move the pressure plate.
      3) Move the pressure plate back in contact with the adjacent rotor disc. Do not apply force to the pressure plate with a tool to make it move.
      4) Look at the piston side of the plate and make sure that the pressure plate drive lugs are in their correct position.
      5) Make sure that the brake running clearance is correct per the vendors Component Maintenance Manual.

S 216-021-001

(7) Make sure that the piston caps are tightly installed on the end of each piston. Replace the brake if the piston caps are not attached or are not there.

MAIN GEAR WHEEL BRAKES - INSPECTION/CHECK

1. General
   A. This procedure contains two tasks. The first task is an inspection of the brake for damage, leaks, brake pad wear, and correct operation of the parts that move with the wheel installed on the airplane. The second task is a more extensive examination of the brake with the wheel removed from the airplane

TASK 32-41-08-216-001-003

2. Inspect the Wheel Brake for the Main Landing Gear (With the Wheel Installed)

   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          731 Left Main Landing Gear
          741 Right Main Landing Gear

   C. Prepare for the Inspection

      S 496-002-003
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

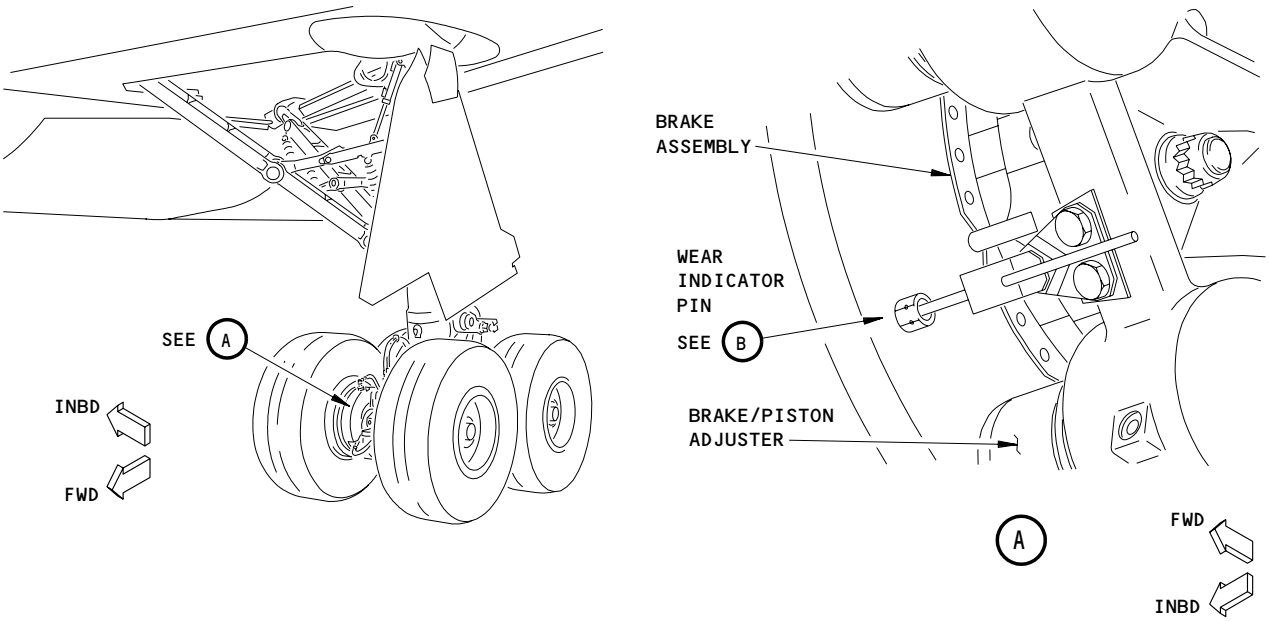
      S 496-003-003
      (2) Make sure that chocks are installed on the wheels.

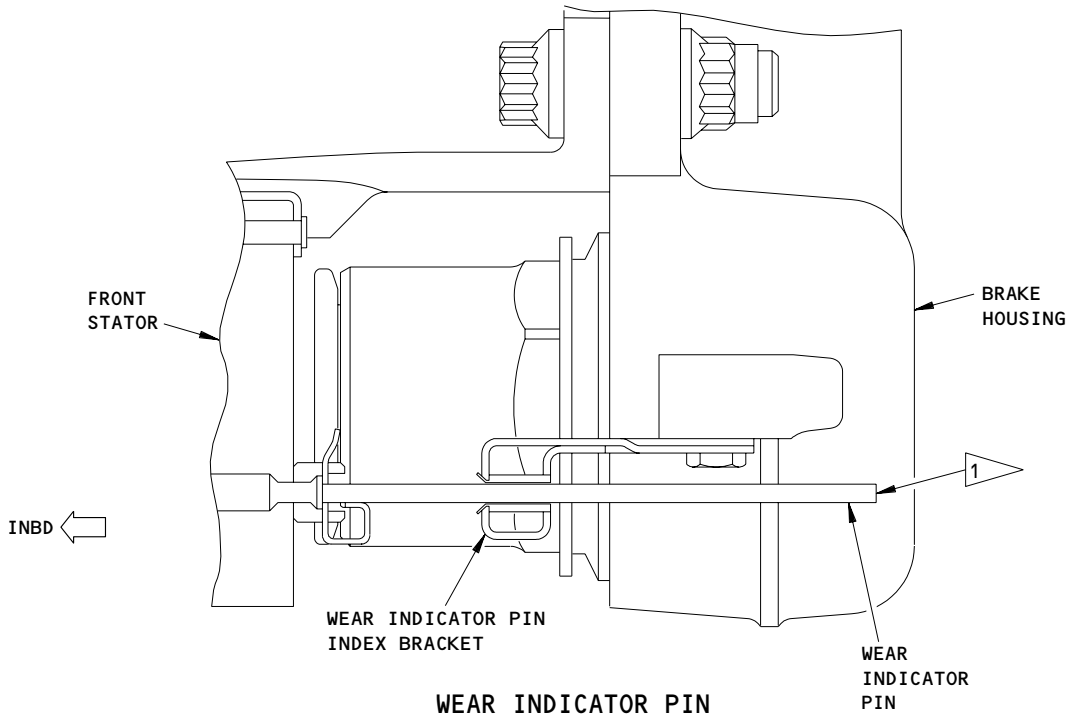
      S 866-004-003
      (3) Release the parking brake.
   D. Procedure

      S 866-005-003

      CAUTION: BE VERY CAREFUL WHEN YOU DO A CHECK OF THE BRAKES TO NOT SPILL HYDRAULIC BRAKE FLUID ON THE BRAKE LININGS. IF YOU SPILL BRAKE FLUID ON THE BRAKE LININGS, THE BRAKES WILL NOT OPERATE CORRECTLY.

      (1) Presssurize the right hydraulic system and reservoir. (AMM 29-11-00/201).



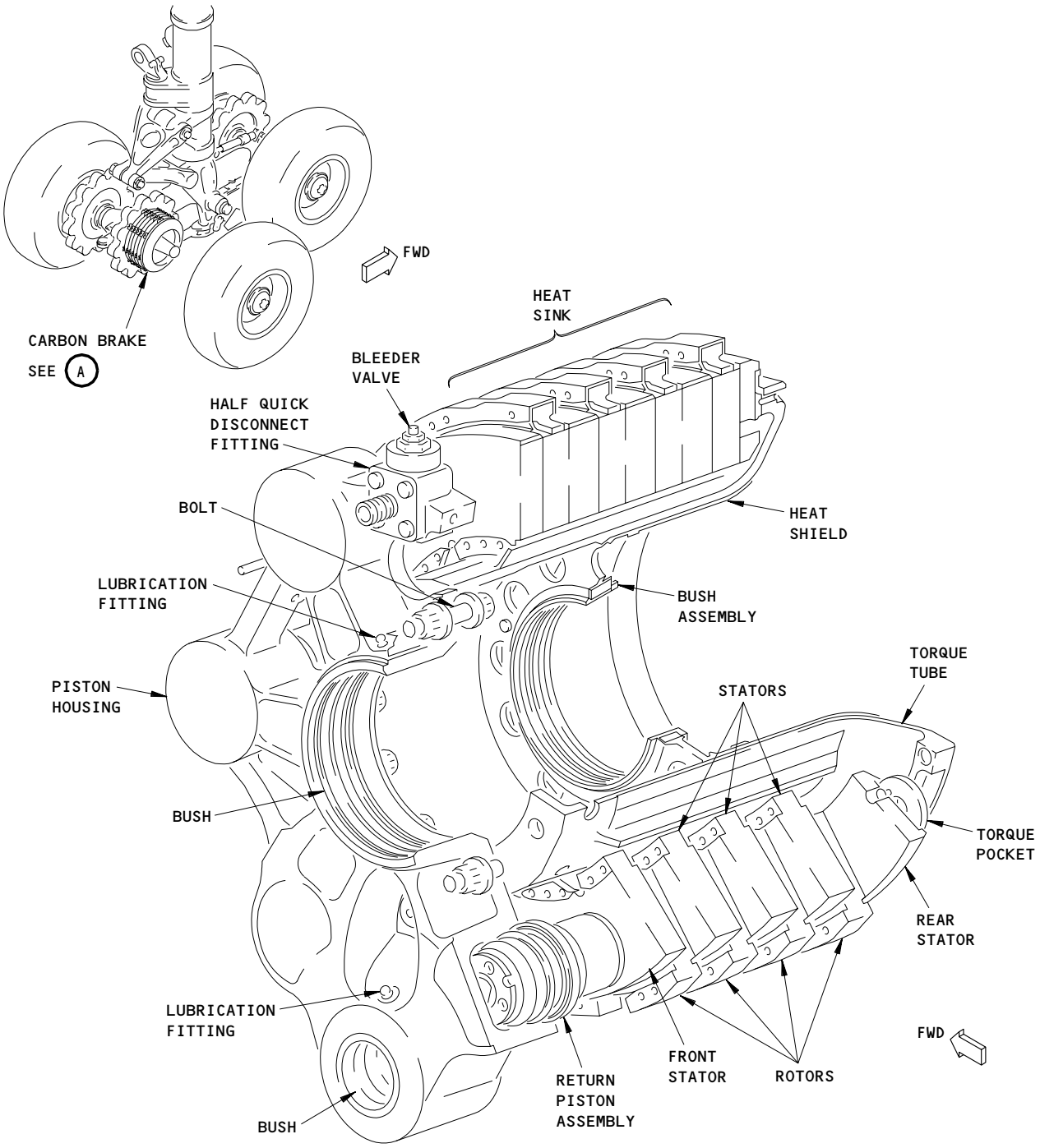


WEAR INDICATOR PIN

B

1 THE BRAKE UNIT IS FULLY WORN WHEN THE INDICATOR PIN IS FLUSH WITH THE FACE OF THE WEAR INDICATOR PIN INDEX BRACKET. REPLACE THE BRAKE UNIT WHEN THIS CONDITION OCCURS.

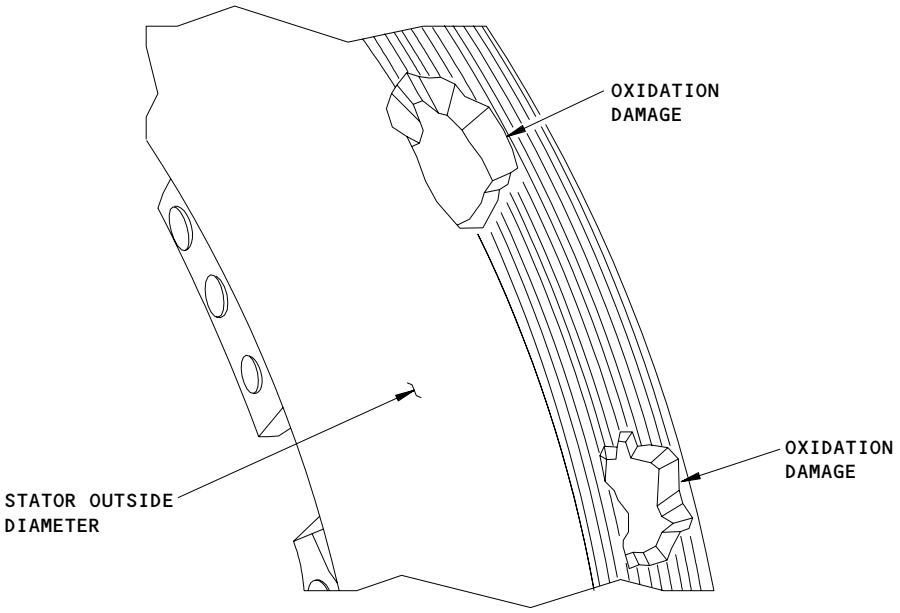
Brake Wear Check
Figure 601



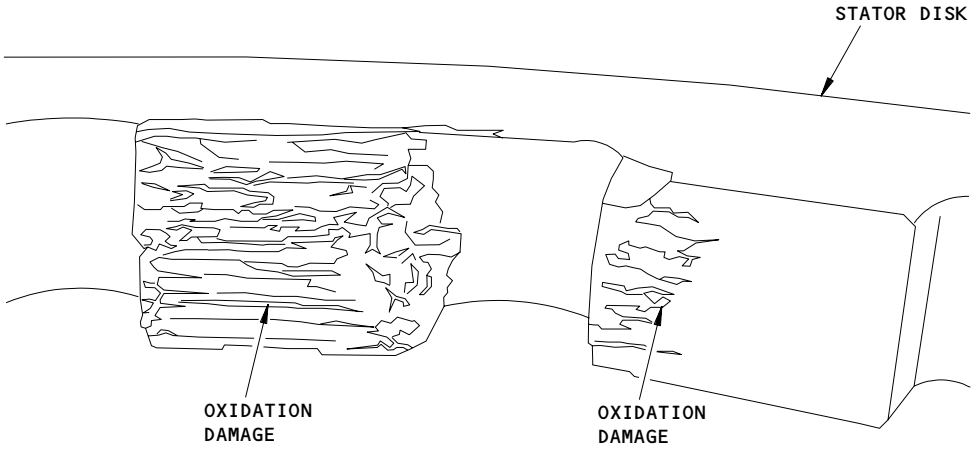
MESSIER – BUGATTI CARBON BRAKE
(S160T400-510 BRAKE, 4 ROTORS)

A

Brake Inspection
Figure 602

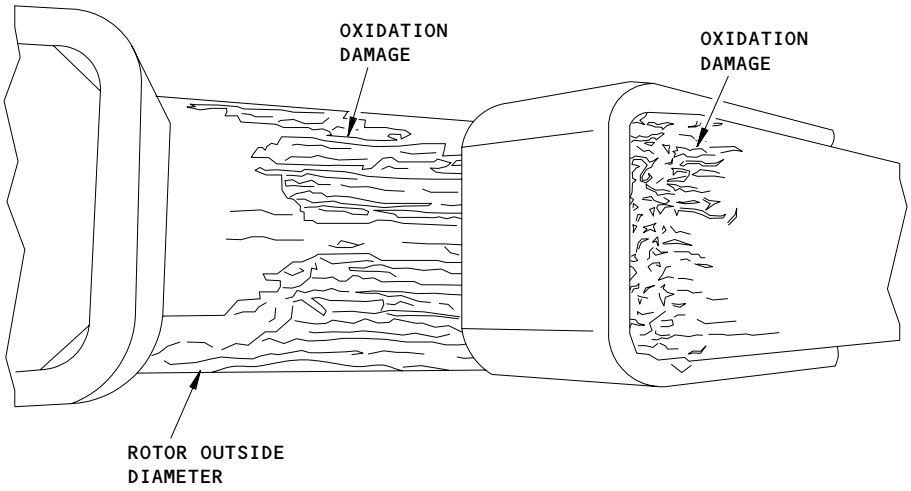


STATOR DISKS
(OXIDATION DAMAGE ON OUTSIDE DIAMETER)
(EXAMPLE)

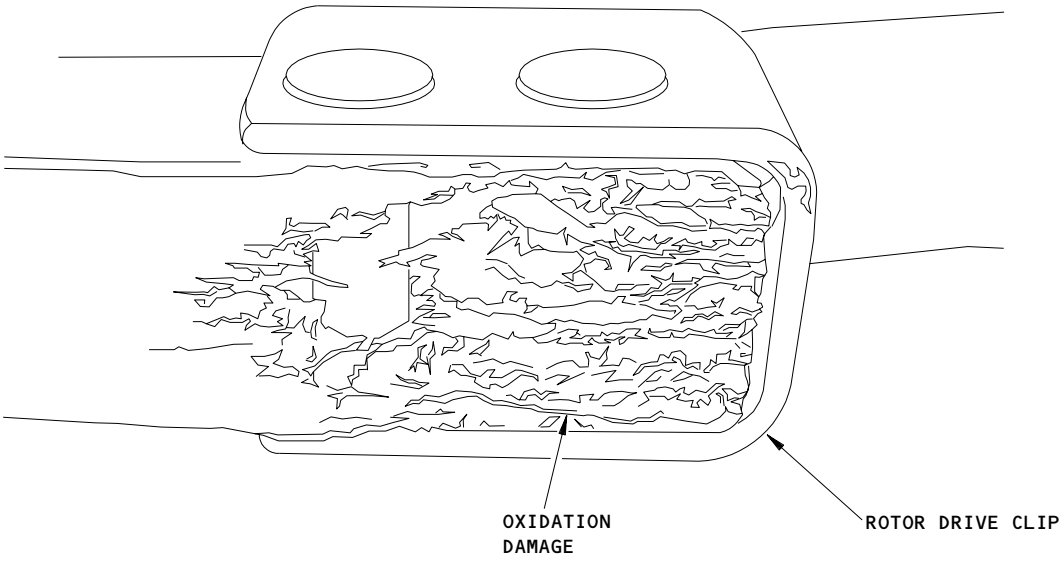


STATOR DRIVE LUGS
(OXIDATION DAMAGE ON INSIDE DIAMETER)
(EXAMPLE)

Carbon Brake Inspection For Oxidation (Wheel Removed)
Figure 603 (Sheet 1)

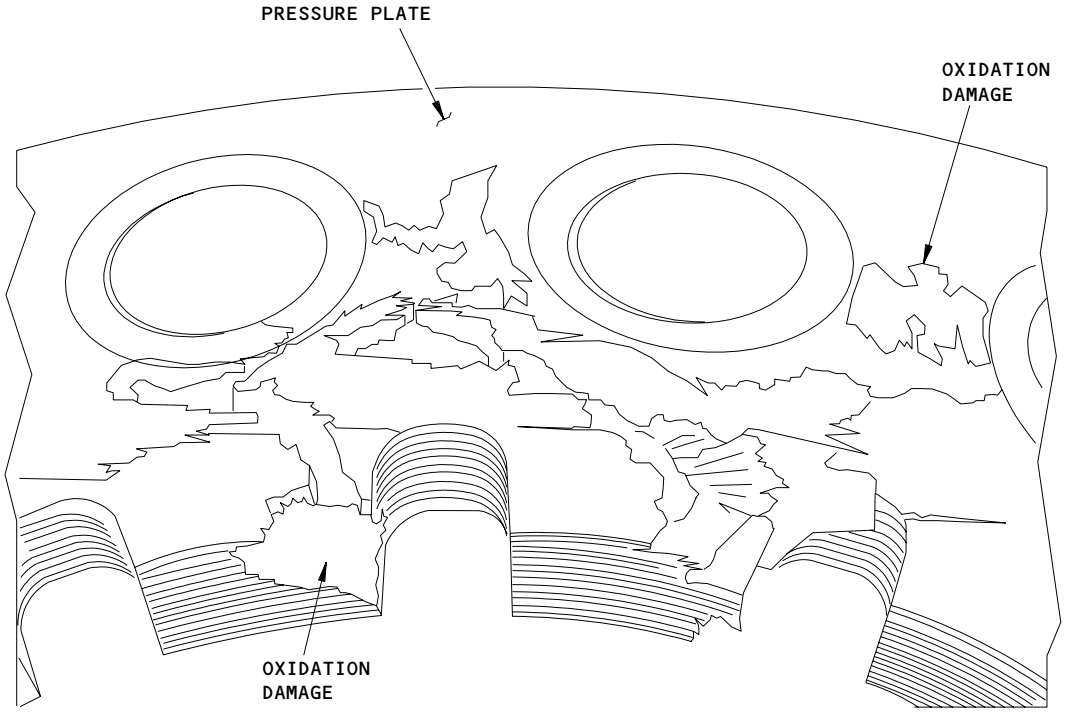


ROTOR DISK
(OXIDATION DAMAGE ON OUTSIDE DIAMETER)
(EXAMPLE)



ROTOR DRIVE CLIP
(OXIDATION DAMAGE ON OUTSIDE DIAMETER)
(EXAMPLE)

Carbin Brake Inspection for Oxidation (Wheel Removed)
Figure 603 (Sheet 2)



PRESSURE PLATE
(OXIDATION DAMAGE ON THRUST FACE)
(EXAMPLE)

Carbin Brake Inspection for Oxidation (Wheel Removed)
Figure 603 (Sheet 3)

S 796-031-003
(2) Fully apply and release the left and right captain's or first officer's brake pedals five times.

S 796-006-003
(3) With the brake pedals not applied, do a check of the brakes for fluid leaks at these locations:
(a) brake pistons.
(b) brake housing plugs.
(c) inlet and drain ports.
(d) bleed ports.
(e) all hydraulic line connections.

S 796-032-003
(4) If the total leakage per brake at the above locations is greater than one (1) drop per minute with the brake pedals not applied, repair the leaks or replace the brake prior to dispatch.

S 796-008-003
(5) Slowly apply the brake pedals to the stops.

S 796-033-003
(6) While the brake pedals are applied, do a check for leaks at the same places on the brake that you did in step (3).

S 796-034-003
(7) If the total leakage per brake at the above locations is greater than five (5) drops per minute while the brakes are being applied, repair the leakage or replace the brake prior to dispatch.

S 796-035-003
(8) Brakes with leaks below these limits must be rechecked prior to each flight, and should be repaired or replaced at the next opportunity that manpower and material allow.

S 216-028-003
(9) If it is suspected that a brake has been exposed to significant levels of contamination, the brake should be removed, inspected and cleaned in accordance with the brake supplier component maintenance manual. Signs of contamination include a wet or oily appearance, buildup of charred residue, or heavy smoke after landing.

S 216-027-003
(10) Release the brakes and make sure that the pressure plate returns to the proper brake released position.

S 756-011-003
(11) Do a check for missing brake wear indicator pins.

NOTE: Each brake has two brake wear indicator pins.

(a) If the two wear pins are missing, you must replace the brake prior to the next flight.
(b) If one wear pin is missing, the brake can stay in service if the remaining wear pin operation is satisfactory.

S 216-012-003
(12) Do a check of brake wear as follows:
(a) Push the brake pedals fully forward to apply normal brake pressure (3000 psi).
(b) Look at the two wear pins on each brake to see if they extend out of the wear indicator index pin bracket (See Fig. 601).
(c) The brake unit is fully worn when the indicator pin is flush with the face of the wear indicator pin index bracket. Replace the brake unit when this condition occurs.

S 866-015-003
(13) Remove the pressure from the right hydraulic system if it is not necessary (AMM 29-11-00/201).

S 866-016-003
(14) Put the airplane back to its usual condition.

TASK 32-41-08-206-017-003

3. Inspect the Wheel Brake for the Main Landing Gear (With the Wheel Removed)

A. References
(1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(2) AMM 32-00-20/201, Landing Gear Downlocks

B. Access
(1) Location Zones
731 Left Main Landing Gear
741 Right Main Landing Gear

C. Procedure

S 026-018-003
(1) Remove the wheel and tire assembly (AMM 32-45-01/401).

S 216-029-003
(2) If it is suspected that a brake has been exposed to significant levels of contamination, the brake should be removed, inspected and cleaned in accordance with the brake supplier component maintenance manual. Signs of contamination include a wet or oily appearance, buildup of charred residue, or heavy smoke after landing.

S 216-019-003

(3) Examine the brake assembly for these types of damage:
   (a) Cracks that you can see.
   (b) Broken parts.
   (c) Parts that show a large amount of wear.
   (d) Other damage that can cause wear or leaks of hydraulic fluid.

S 216-020-003

(4) Examine the brake heat sink (rotors and stators) for damage as follows):
   (a) Look for loose rotor drive clips and rivets.
   (b) Look for pieces of carbon that have broken off of the carbon rotor or stator disks.
   (c) Do a check of the O.D. of the four stator discs for the correct 12 o'clock positions of their alignment grooves. Replace the brake if any of the alignment grooves are not at the 12 o'clock position.

      NOTE: A stator groove that is not aligned is an indication of possible stator disc drive failure.

   (d) Examine the torque take-out pockets for wear and evidence that pieces of carbon have broken out of the pocket (Fig. 602).
      1) Replace the brake if one or more of the take-out pockets show significant wear on opposite sides so that they are not circular in shape.

         NOTE: Small amounts of wear in the pocket are acceptable, but if you can see a definite change in the shape of the pocket so that it does not look circular in shape, replace the brake.

      2) Replace the brake if relatively large pieces of carbon have broken off at a take-out pocket.

         NOTE: It is allowable for the take-out pockets to show that small pieces of carbon have broken out of the pocket. If there is evidence that large pieces of carbon have broken off, replace the brake if iat appears that the pieces are large enough to cause failure of the carbon backing plate.

   (e) Do an examination of the heat shield on the torque tube I.D. at the backing plate end and repair any damage that you find as follows:
      1) If you find that heat shield attachment rivets and/or retainers are missing, replace the brake (AMM 32-41-08/401).

2) If you find loose rivets and retainers, the brake can stay in service if the rivets and retainers are intact so that the heat shield stays in position.
3) If you see any damage to the open end of the heat shield (rear stator end) that changes the normal I.D. contour of the heat shield repair the damage as follows:

NOTE: Any damage to the heat shield that extends outside the normal contour of the heat shield may damage the the wheel hub O.D. when the wheel turns in normal operation.

a) Tap the heat shield edge damage to give the heat shield a smooth contour again.

S 206-036-003

(5) AIRPLANES WITH CARBON BRAKES;
Follow this procedure for inspection, with the wheel removed, for damage due to carbon brake oxidation. Carbon brakes should be replaced if any of the these conditions are found (Fig. 603).
(a) Examine the brake and surrounding areas for unusual carbon debris such as chips or small pieces of carbon broken off of the rotors and stators.
(b) Look for oxidation damage on the brake rotors and stators.
1) Carbon brake oxidation causes softness, flaking, and pieces to break off of the rotors and stators. Damage on the outside diameters of rotors and stators is easy to see, but damage can also occur on other areas of the rotors and stators. Examine all visible areas.
(c) Examine the brakes for indentations or flaking carbon where the hydraulic pistons touch the carbon pressure plate.
(d) Examine the brakes for bent or missing wear indicator pins. This can be an indication of carbon stator damage.
(e) With the parking brake released, make sure that all rotor assemblies can be freely rotated with no binding.

(f) Make sure that the metal rotor drive clips on the outside diameter of each carbon rotor do not show excessive movement and there is no loose flaking carbon near the clips.

(g) With one hand at the 3 o'clock position and the other hand at the 9 o'clock positon, rotate each stator individually and see that the stator does not move more than 0.25 inch as measured on the outside diameter of the stator, with the parking brake released.

NOTE: Most carbon brakes are configured with worn stator indicators. A worn stator indicator is a line machined in the stators at the 12 o'clock position of the brake. If this is the case, the worn stator indicators can be used as a visual reference to make sure that the stators do not rotate more than 0.25 inch when performing this step.

S 756-021-003

(6) Examine the torque take-out pockets for wear and evidence that pieces of carbon have broken out of the pocket (Fig. 602).

S 216-025-003

(7) Do these steps to make sure that the components that apply force to the brake rotors and stators operate properly:

(a) Apply and release the brakes fully at least five times.

(b) Make sure that the brake operates properly.

(c) Make sure that the front stator moves freely while the brake operates.

(d) Do this additional check to make sure that the pressure plate will operate properly:

1) Make sure that the brake pedals are released and pressure is released from the brake.

2) Manually move the front stator in the direction of the pistons. Use the wear pins as a handle while you move the front stator.

3) Move the front stator back in contact with the adjacent rotor disc. Do not apply force to the stator with a tool to make it move.
4) Look at the piston side of the stator and make sure that the drive lugs are in their correct position.
5) Make sure that the brake running clearance is correct per the vendors Component Maintenance Manual.

S 216-026-003

(8) Make sure that the piston caps are tightly installed on the end of each piston. Replace the brake if the piston caps are not attached or are not there.

BRAKE HYDRAULIC SYSTEM SURGE ACCUMULATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the brake hydraulic system surge accumulator. The second task installs the brake hydraulic system surge accumulator.
   B. The brake hydraulic system surge accumulator for the left gear brake is installed aft of the left wing rear spar between the spoiler beam and main landing gear beam at wing station 350 and 369. The surge accumulator for the right gear brake is installed opposite in the right wing. This procedure is applicable to either surge accumulator.

TASK 32-41-11-024-002

2. Remove the Brake Hydraulic System Surge Accumulator (Fig. 401)
   A. References
      (1) AMM 06-44-00/201, Wing Access Doors and Panels
      (2) AMM 12-15-09/301, Brake Hydraulic System Surge Accumulator
      (3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (4) AMM 32-00-15/201, Landing Gear Door Locks
      (5) AMM 32-00-20/201, Landing Gear Downlock
   B. Access
      (1) Location Zones
          552 MLG support beam to trailing edge, Left
          652 MLG support beam to trailing edge, Right

   C. Prepare for Removal

      S 494-031
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

      S 494-028
      (2) Put chocks on the wheels.

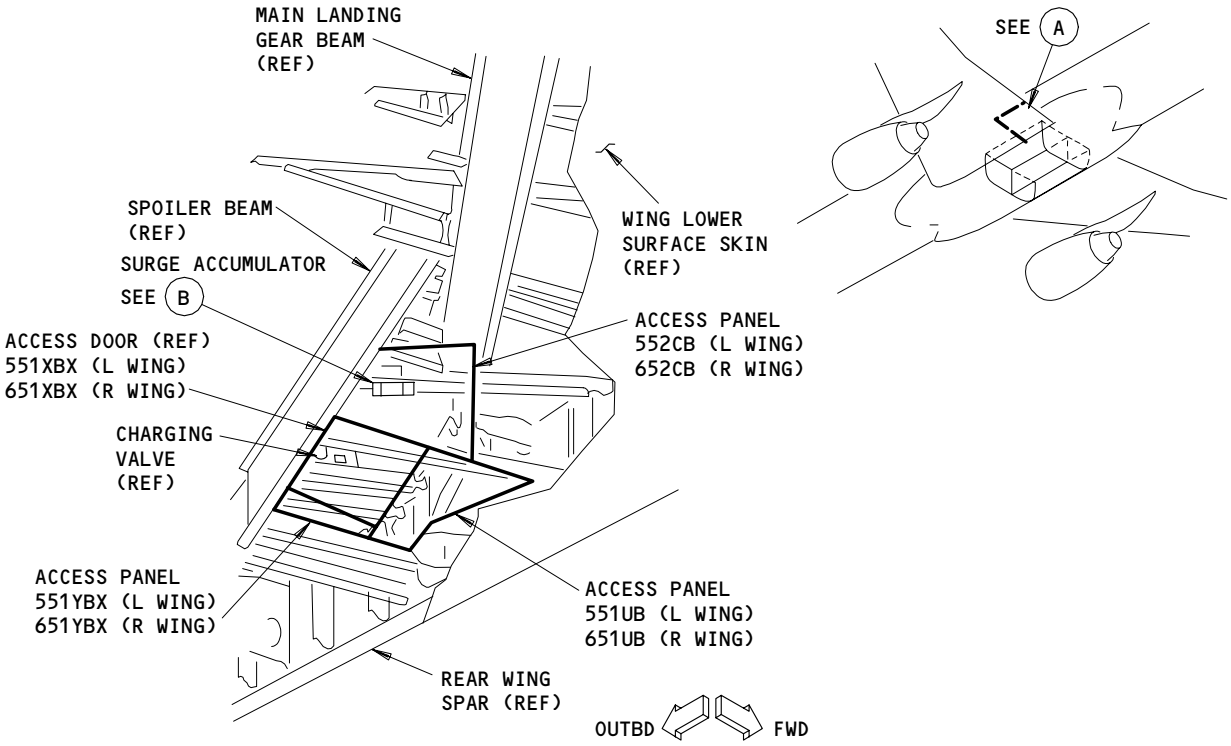
      S 494-030

      WARNING: USE THE PROCEDURE IN (AMM 32-00-15/201) TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

      (3) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

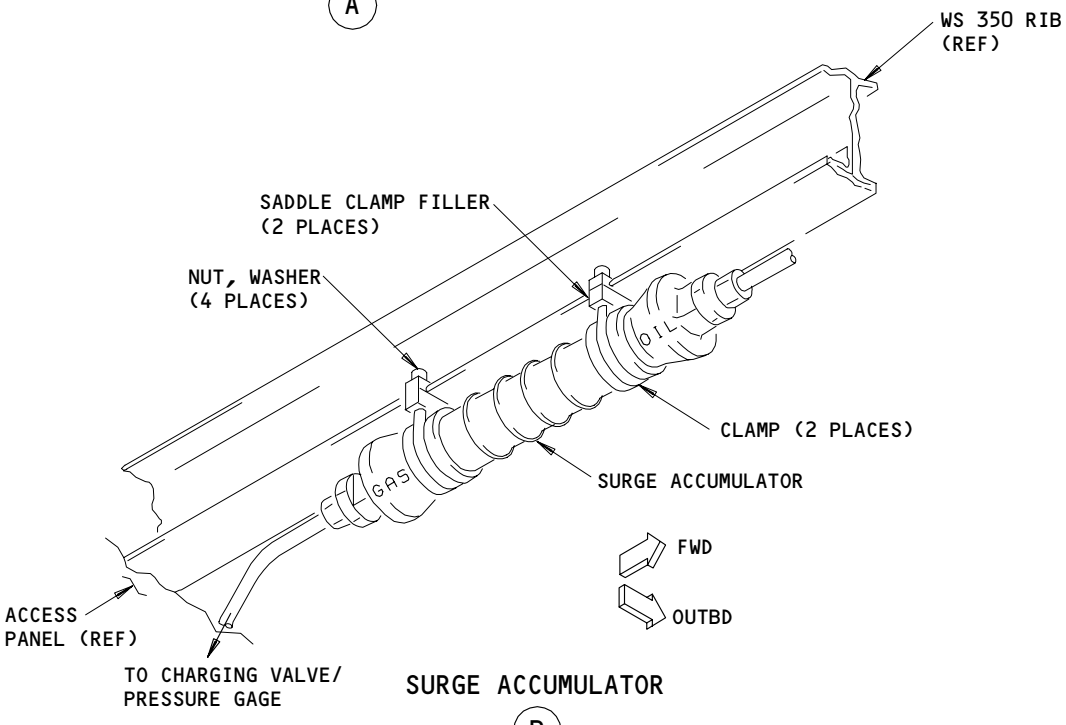
      S 864-004
      (4) Remove the pressure from the center and right hydraulic systems and reservoirs (AMM 29-11-00/201).

      S 864-005
      (5) Release the parking brake.



L WING UNDERSIDE SHOWN
(R WING SIMILAR)

A



SURGE ACCUMULATOR

B

Brake Hydraulic System Surge Accumulator Installation
Figure 401

S 014-006
(6) Get access to the accumulator through the trunnion doors and access panels as shown in Fig. 401 (AMM 06-44-00/201).

D. Procedure

S 864-007
(1) Remove the dust cap from the surge accumulator charging valve (Detail B).

S 864-008

WARNING: DO NOT LOOSEN THE VALVE BODY BECAUSE IT CAN COME OFF WITH FORCE AND CAUSE INJURY TO PERSONS.

(2) Loosen the swivel hex nut on the charging valve a minimum of one turn to release the pressure from the accumulator.

S 034-009
(3) Disconnect two hydraulic lines from the surge accumulator (Detail B). Cap and plug the hydraulic lines and accumulator ports.

S 024-010
(4) Remove the nuts on the accumulator clamps.

S 024-011
(5) Remove the clamps, fillers, saddle clamps and surge accumulator.

TASK 32-41-11-434-013

3. Install the Brake Hydraulic System Surge Accumulator (Fig. 401)

A. Consumable Materials
(1) B00054 Lubricant, Hydraulic Fittings - MC-352
(2) D00153 Hydraulic Fluid, Fire Resistant - BMS 3-11

B. References
(1) AMM 06-44-00/201, Wing Access Doors and Panels
(2) AMM 12-15-09/301, Brake Hydraulic System Surge Accumulator
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(4) AMM 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-00-20/201, Landing Gear Downlock

C. Access
(1) Location Zones
552 MLG support beam to trailing edge, Left
652 MLG support beam to trailing edge, Right

D. Procedure

S 434-012
(1) Install new O-rings lubricated with hydraulic fluid or lubricant on two reducer unions. Install the reducer unions on the accumulator (Detail B).

S 614-014
(2) Fill the accumulator with hydraulic fluid through the oil-side port and put a cap on the the reducer union.

S 424-015
(3) Place two clamps, saddle clamps and fillers on the accumulator and hold in its installation position in the airplane with the oil side of the accumulator forward (Detail B).

S 424-016
(4) Attach the accumulator with four nuts and washers on the clamps. Install the nuts finger tight only until you have completed the next two steps.

S 424-017
(5) Remove the caps from the reducer union on the accumulator.

S 434-018
(6) Align the hydraulic tubing with the reducer unions and connect the tubing.

S 424-019
(7) Tighten the nuts on the clamps to attach the accumulator.

S 614-020
(8) Charge the accumulator with pressurized dry nitrogen (AMM 12-15-09/301).

S 864-021
(9) Pressurize the center hydraulic system and reservoir (AMM 29-11-00/201).

S 874-022
(10) Push in and release the brake pedals at least four times to bleed air from the system.

S 714-023
(11) Do a test of hydraulic brake operation.
(a) Push in and release the brakes fully several times.
(b) Look at the movement of the two brake wear indicators to make sure that the brakes operate properly.

S 864-024
(12) Set the parking brakes.

S 794-025

(13) Look for leaks at both ends of the accumulator and make sure there are no leaks.

S 094-026

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(14) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

BRAKE SURGE ACCUMULATOR CHARGING VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the brake surge accumulator charging valve. The second task installs the brake surge accumulator charging valve.
   B. The brake hydraulic system surge accumulator charging valve for the left gear brake is installed aft of the left wing rear spar between the spoiler beam and main landing gear beam. The surge accumulator charging valve for the right gear brake is installed opposite in the right wing. This procedure is applicable to either the left or right brake surge accumulator charging valve.

TASK 32-41-12-004-012

2. Remove the Charging Valve (Fig. 401)
   A. References
      (1) AMM 06-44-00/201, Wing Access Doors and Panels
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlock
   B. Access
      (1) Location Zones
          552 MLG Support Beam to Trailing Edge (Left)
          652 MLG Support Beam to Trailing Edge (Right)

   C. Prepare for Removal

      S 494-001
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

      S 494-002
      (2) Put chocks on the wheels.

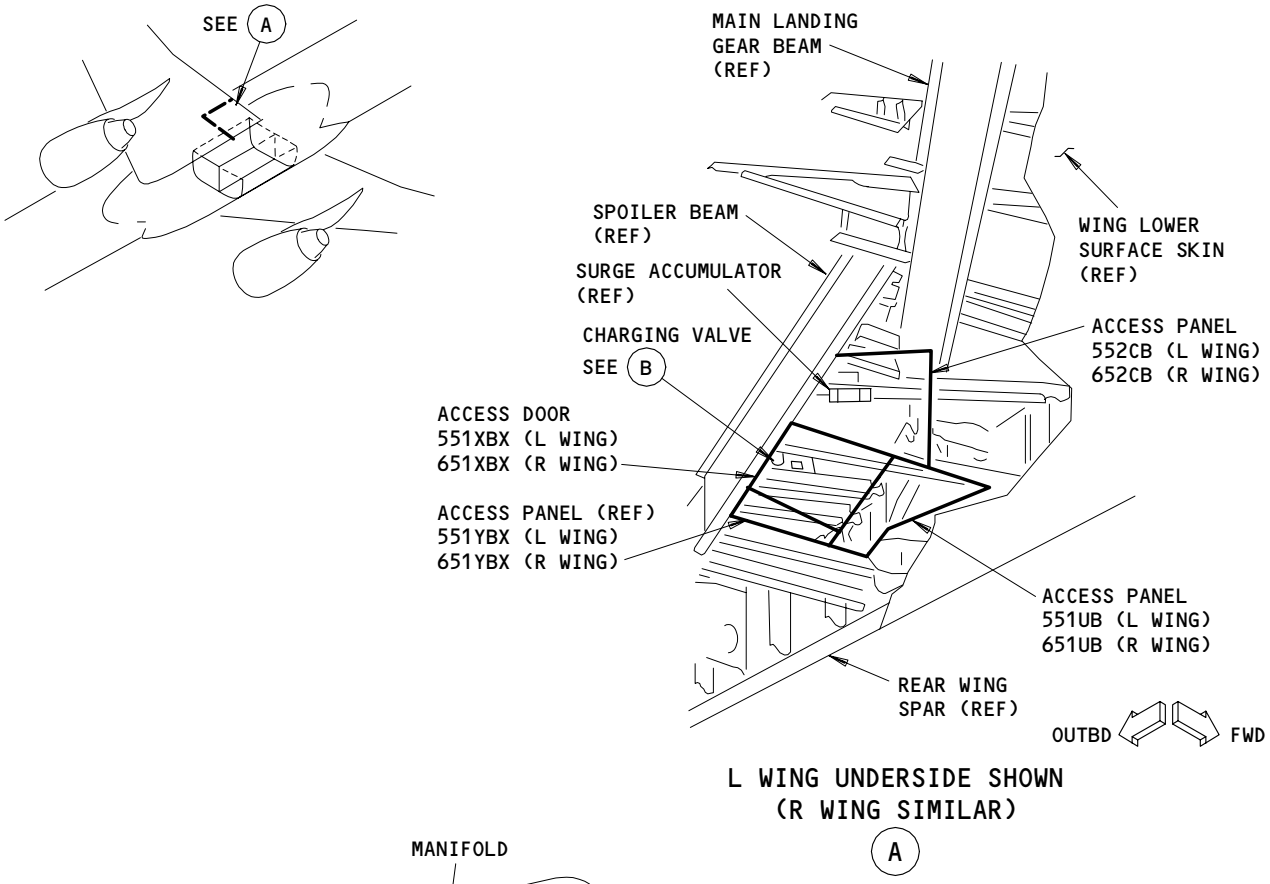
      S 494-003

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (3) Open the main landing gear doors and install the door locks (AMM 32-00-15/201).

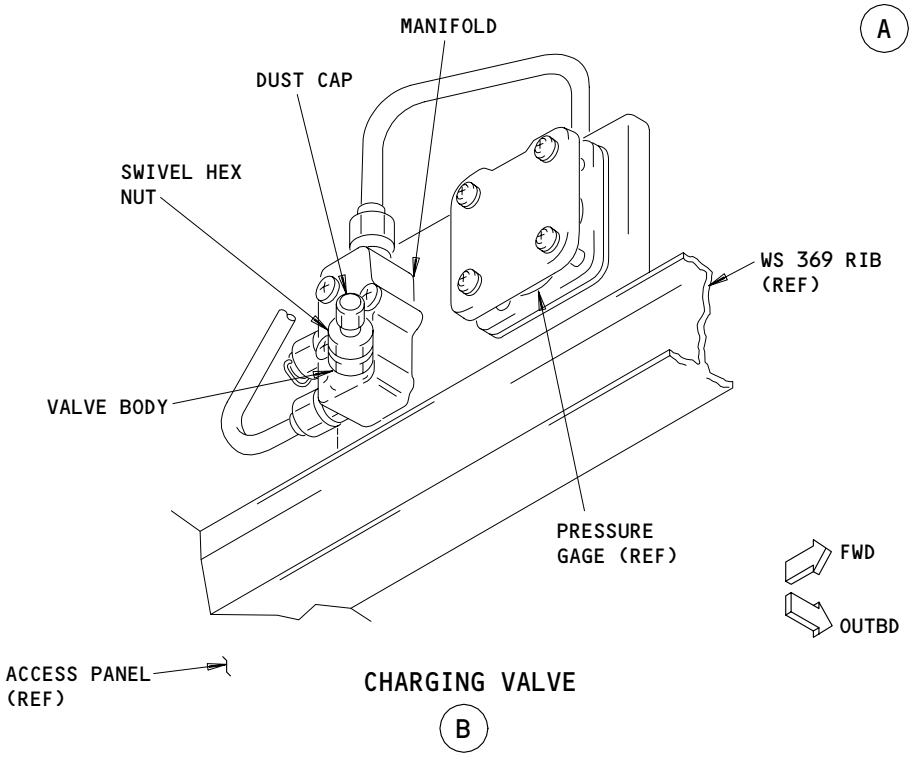
      S 864-004
      (4) Remove the pressure from the center and right hydraulic systems and reservoirs (AMM 29-11-00/201).

      S 864-005
      (5) Release the parking brake.



L WING UNDERSIDE SHOWN
(R WING SIMILAR)

A



CHARGING VALVE

B

Brake Hydraulic System Surge Accumulator Charging Valve Installation
Figure 401

S 014-006

(6) Get access to the charging valve through the trunnion doors and access panels per Fig. 401 (AMM 06-44-00/201).

D. Procedure to Remove the Charging Valve

S 864-008

(1) Remove the dust cap from the charging valve (Detail B).

S 864-013

WARNING: DO NOT LOOSEN THE VALVE BODY BECAUSE IT CAN COME OFF WITH FORCE AND CAUSE INJURY TO PERSONS.

(2) Loosen the swivel hex nut on the charging valve a minimum of one turn to release the pressure from the surge accumulator.

S 024-011

(3) Remove lockwire, loosen the valve body and remove the valve from the manifold.

S 034-012

(4) Remove the O-ring from the valve. Discard the O-ring.

TASK 32-41-12-404-013

3. Install the Charging Valve (Fig. 401)

A. Consumable Materials

(1) B00054 Lubricant, Hydraulic Fittings - MC-352

(2) D00153 Hydraulic Fluid, Fire Resistant - BMS 3-11

B. References

(1) AMM 12-15-09/301, Brake Hydraulic System Surge Accumulator

(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

(3) AMM 32-00-15/201, Landing Gear Door Locks

C. Access

(1) Location Zones

552 MLG Support Beam to Trailing Edge (Left)

652 MLG Support Beam to Trailing Edge (Right)

D. Procedure

S 644-014
(1) Lubricate the O-ring with hydraulic fluid or lubricant.

S 644-015
(2) Install the O-ring on the valve. .

S 424-016
(3) Install the valve on the manifold.

S 424-023
(4) Safety the valve to the manifold with lockwire.

S 614-017
(5) Charge the accumulator with pressurized dry nitrogen (AMM 12-15-09/301).

S 864-018
(6) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 864-019
(7) Set the parking brakes.

S 794-020
(8) Look for leaks at the charging valve after the parking brake accumulator pressure becomes stable at approximately 2500 psi.

S 094-021

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(9) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

HYDRAULIC BRAKE PRESSURE TRANSDUCER - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the transducer. The second task installs the transducer.

TASK 32-41-14-004-018

2. Remove the Hydraulic Brake Pressure Transducer (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Main Hydraulic Systems
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zone
          144 Right Main Landing Gear Wheel Well

   C. Equipment
      (1) Main Gear Door Locks (AMM 32-00-15/201)
   D. Prepare to Remove the Transducer

      S 494-003
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-001

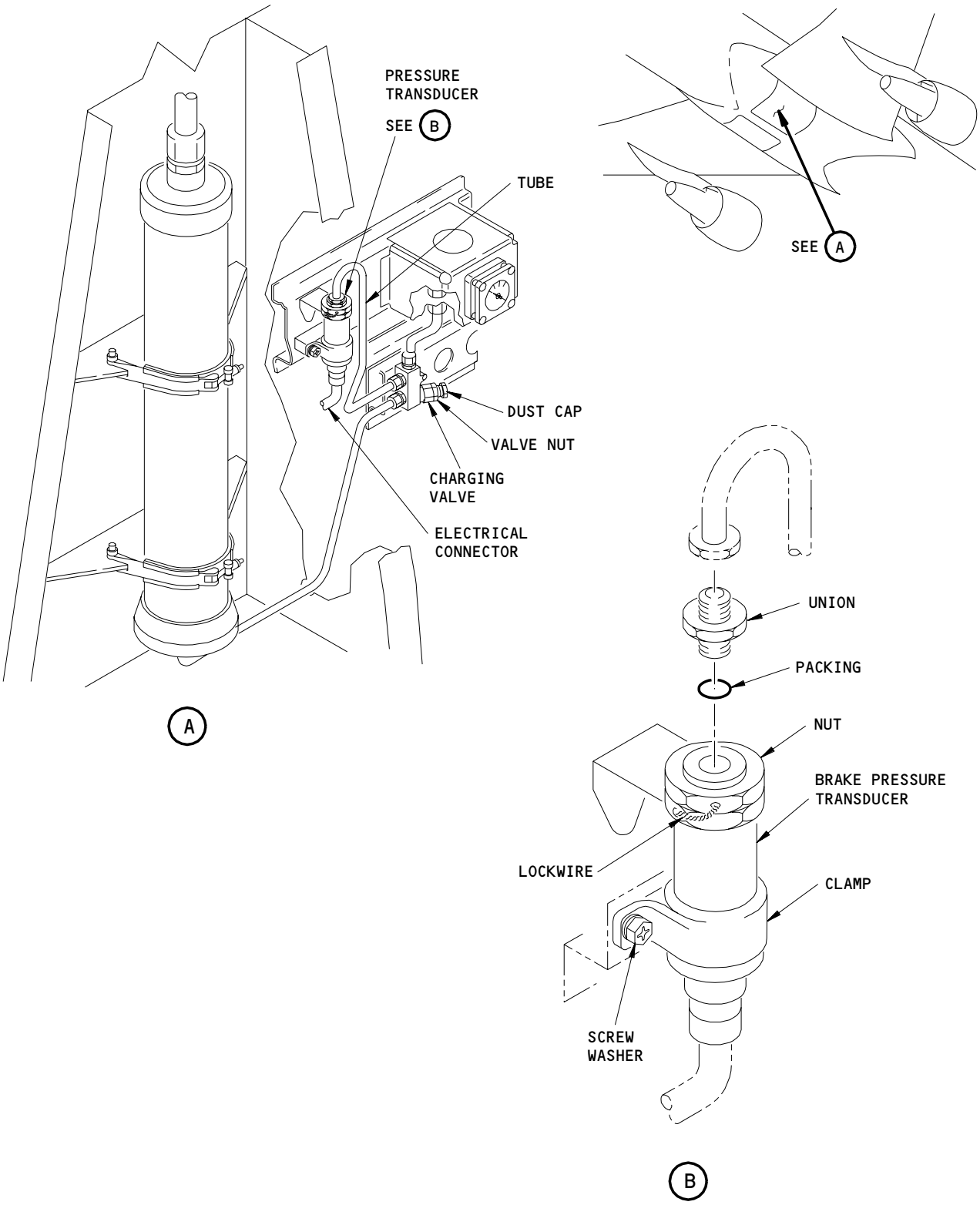
      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

      S 494-004
      (3) Make sure the chocks are below the wheels.

      S 044-005
      (4) Release the parking brakes.

      S 044-006
      (5) Remove the pressure from the right and center hydraulic systems (AMM 29-11-00/201).



Installation of the Hydraulic Brake Pressure Transducer
Figure 401

S 864-008
(6) Open this circuit breaker on the overhead panel, P11, and attach DO-NOT-CLOSE tag:
(a) 11U22, BRAKE PRESS

S 034-014
(7) Remove the cap from the charging valve (Detail A).

S 034-010

WARNING: DO NOT LOOSEN THE VALVE BODY. THE VALVE CAN BLOW OFF AND CAN CAUSE INJURY TO PERSONS.

(8) Loosen the swivel hexagonal nut on the charging valve a maximum of one turn to remove the pressure from the accumulator (Detail A).

NOTE: Look at the pressure gage adjacent to the charging valve. Make sure the pressure decreases.

E. Remove the Hydraulic Brake Pressure Transducer

S 034-030
(1) Disconnect the electrical connector from the transducer.

S 024-031
(2) Remove the tube that connects the transducer to the charging valve.

S 034-012
(3) Remove the union and packing.

S 964-013
(4) Discard the packing.

S 034-015
(5) Remove the screws, washers and clamp.

S 024-019
(6) Remove the lockwire, nut and transducer.

TASK 32-41-14-404-017
3. Install the Hydraulic Brake Pressure Transducer (Fig. 401)
A. Equipment
(1) Main Gear Door Locks (AMM 32-00-15/201)

B. Consumable Materials
(1) B00054 Lubricant, Hydraulic System Fittings - MCS 352B
(2) B00058 Soap-Solution (Noncorrosive)

C. References
(1) AMM 10-11-01/201, Normal Parking
(2) AMM 12-15-04/301, Parking Brake Accumulator
(3) AMM 29-11-00/201, Main Hydraulic Systems
(4) AMM 32-00-15/201, Landing Gear Door Locks

D. Access
(1) Location Zone
144 Right Main Landing Gear Wheel Well

E. Install the Transducer

S 644-020
(1) Lubricate the new packing.

S 434-021
(2) Install the new packing and union into the transducer.

S 424-022
(3) Install the transducer and nut into the bracket.

S 434-023
(4) Safety the nut with wire.

S 434-024
(5) Install the clamp, washers and screws.

S 434-032
(6) Install the tube that connects the transducer to the charging valve.

S 424-033
(7) Connect the electrical connector to the transducer.

S 864-026
(8) Pressurize the accumulator (AMM 12-15-04/301).

S 434-027
(9) Install the cap on the charging valve.

S 214-028
(10) Use a soap solution at the tube connection to examine for leaks.

F. Do a Check of Transducer Operation

S 724-039

(1) Make sure the pressure indication of the HYD PRESS gage on the Captain's Main Instrument Panel, P1, is 2800 to 3200 psig.

S 724-040

(2) Make sure the pressure indication on the HYD PRESS gage on the Captain's instrument panel is approximately the same as the indication on the direct reading pressure gage in the wheel well, adjacent to the accumulator.

G. Put the Airplane Back to Its Usual Condition

S 864-034

(1) Pressurize the right and center hydraulic systems (AMM 29-11-00/201).

S 864-035

(2) Set the parking brakes (AMM 10-11-01/201).

S 414-036

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Remove the door locks from the main landing gear doors and close the doors (AMM 32-00-15/201).

S 864-037

(4) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).

HYDRAULIC BRAKE PRESSURE INDICATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the pressure indicator. The second task installs the pressure indicator.

TASK 32-41-15-004-002

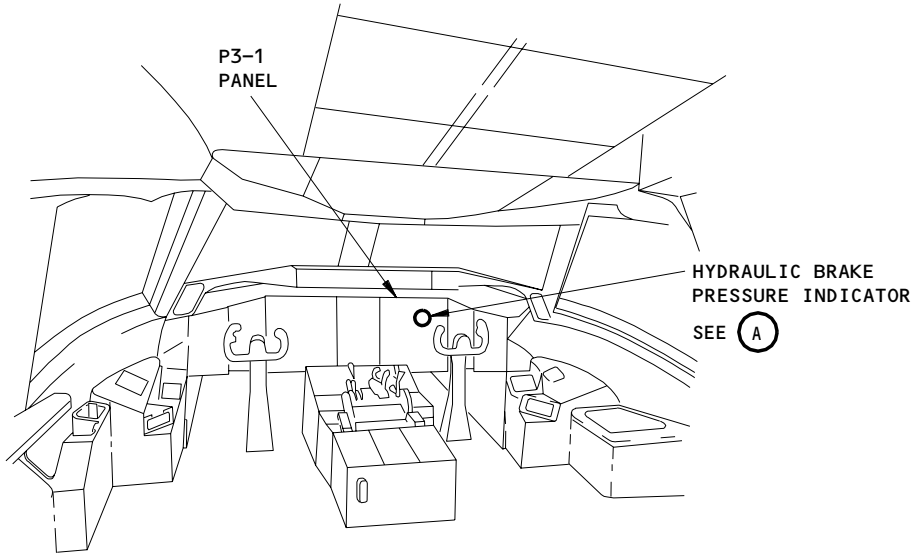
2. Hydraulic Brake Pressure Indicator Removal (Fig. 401)
   A. General
      (1) In subsequent steps, the hydraulic brake presssure indicator is referred to as the pressure indicator.
   B. Access
      (1) Location Zone
          221 Control Cabin, LH
          222 Control Cabin, RH

   C. Procedure

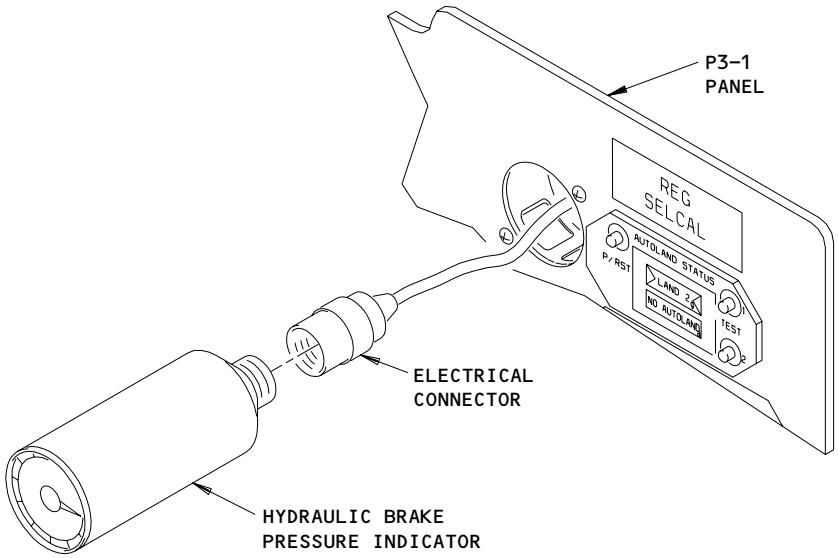
      S 024-003
      (1) Do these steps to remove the pressure indicator:.
          (a) Open this circuit breaker on the overhead panel, P11, and attach a DO-NOT-CLOSE tag:
              1) 11U22, BRAKE PRESS
          (b) Turn the panel screw on the top left side of the pressure gage to loosen the clamp.
          (c) Pull the pressure gage out of the panel.
          (d) Disconnect the electrical connector from the pressure indicator.

TASK 32-41-15-404-007

3. Install the Hydraulic Brake Pressure Indicator (Fig. 401)
   A. General
      (1) In subsequent steps, the hydraulic brake pressure indicator is referred to as the pressure indicator.
   B. References
      (1) AMM 24-22-00/201, Electrical Power - Control
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
   C. Access
      (1) Location Zone
          221 Control Cabin, LH
          222 Control Cabin, RH



FLIGHT COMPARTMENT



HYDRAULIC BRAKE PRESSURE INDICATOR (P3-1)

A

Hydraulic Brake Pressure Indicator Installation
Figure 401

D. Procedure

S 424-004

(1) Do these steps to install the pressure gage:
  (a) Connect the electrical connector to the pressure indicator.
  (b) Put the pressure gage in its position on the panel.
  (c) Turn the panel screw in the higher left side of the pressure indicator to tighten the clamp.
  (d) Close this circuit breaker on the overhead panel, P11, and remove the DO-NOT-CLOSE tag:
    1) 11U22, BRAKE PRESS

S 724-005

(2) Do the steps that follow to do a test of the pressure gage:
  (a) Make sure that the wheel chocks are installed.
  (b) Service the accumulator (AMM 12-15-04/301).
  (c) Supply electrical power (AMM 24-22-00/201).
  (d) Pressurize the right and center hydraulic systems and reservoirs (AMM 29-11-00/201).
  (e) Make sure that the pressure indication shown on the BRAKE PRESS indicator is 2800 to 3200 psig.

    NOTE: If indication is higher than 3200 psig, look at the indication of the direct reading pressure gage next to the brake accumulator in the wheel well. If the two indicators show the same pressure value +/- 100 psig, this shows that the BRAKE PRESS indicator gives an accurate indication of accumulator pressure.

E. Put the airplane back to it's normal condition.

S 864-008

(1) Remove hydraulic power if it is not necessary (AMM 29-11-00/201).

S 864-006

(2) Remove electrical power if it is not necessary (AMM 24-22-00/201).

MAIN LANDING GEAR BRAKE HOSE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains these two tasks:
      (1) Removal of a brake hose.
      (2) Installation of a brake hose.
   B. The tasks apply to each of the four brake hoses on the left or right main landing gear.

TASK 32-41-16-004-001

2. Remove the Brake Hose (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          731 Left Main Landing Gear
          741 Right Main Landing Gear

   C. Prepare for the Removal

      S 494-002
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20).

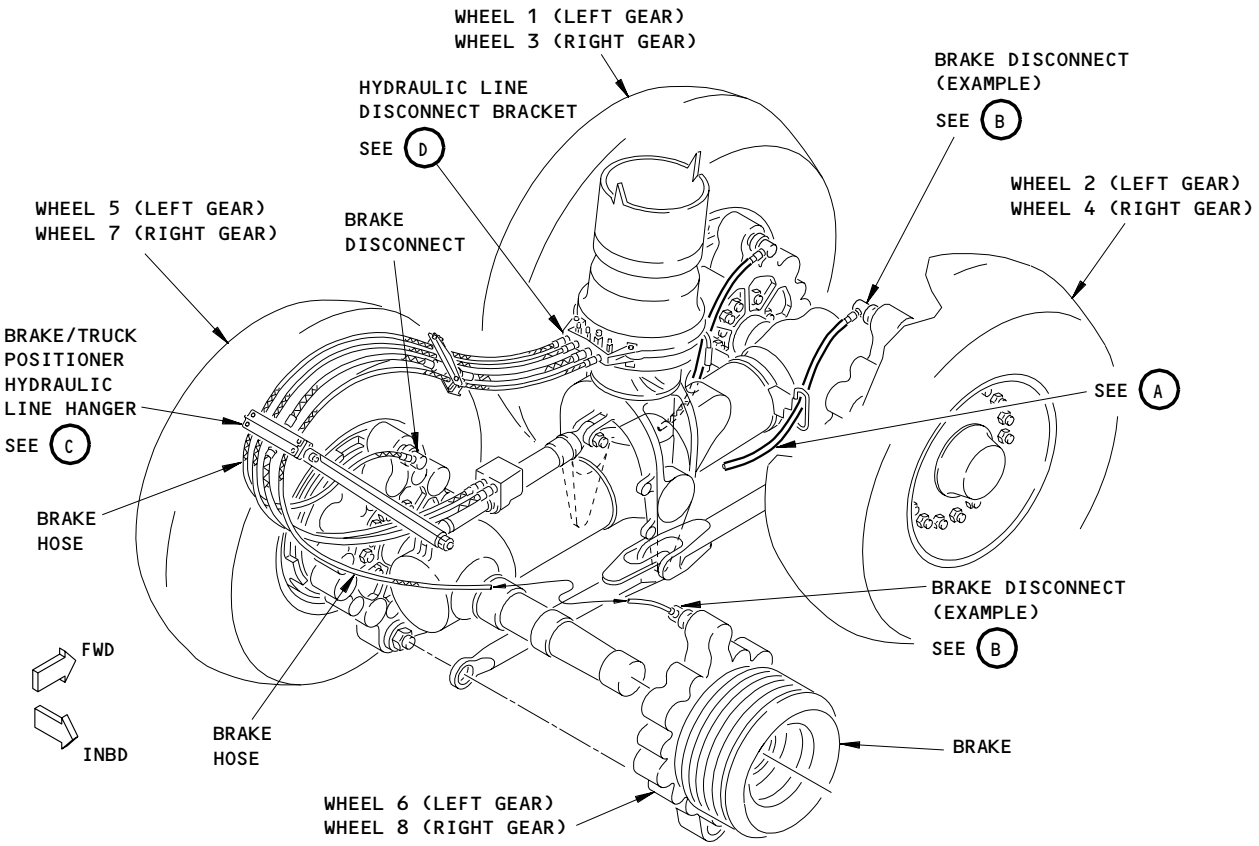
      S 494-003

      WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

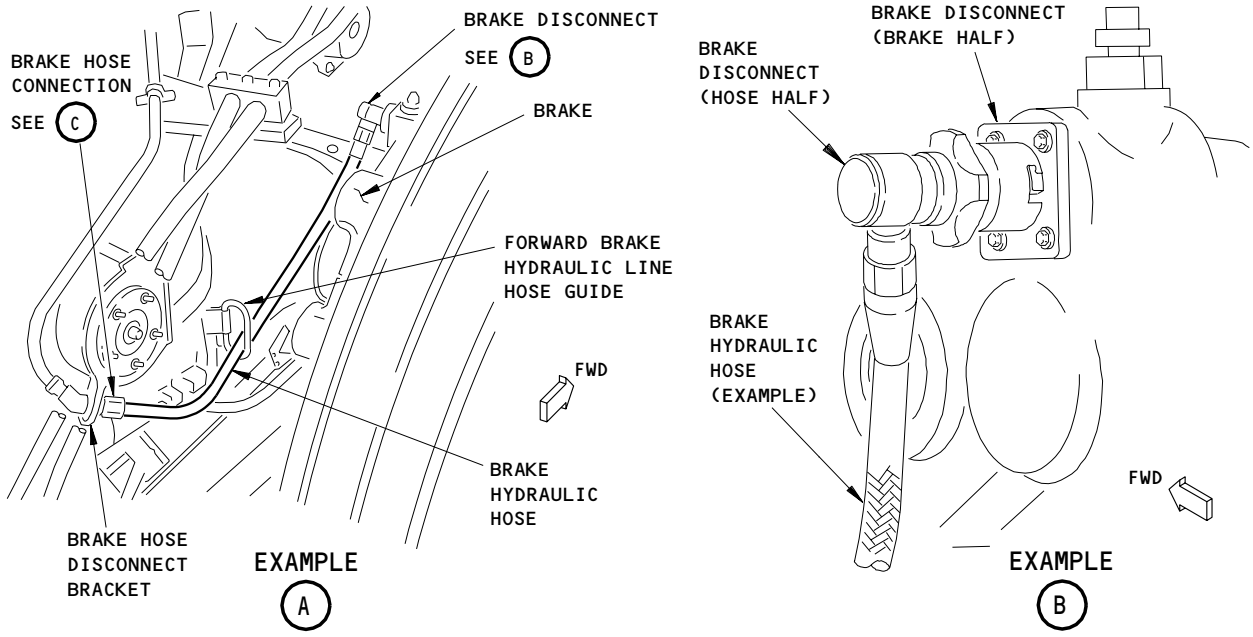
      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15).

      S 864-004
      (3) Make sure that the pressure is removed from the right and center hydraulic systems and reservoirs (AMM 29-11-00).

      S 864-005
      (4) Release the parking brake.



LEFT MAIN GEAR
(RIGHT SIMILAR)



Brake Hose Installation
Figure 401 (Sheet 1)

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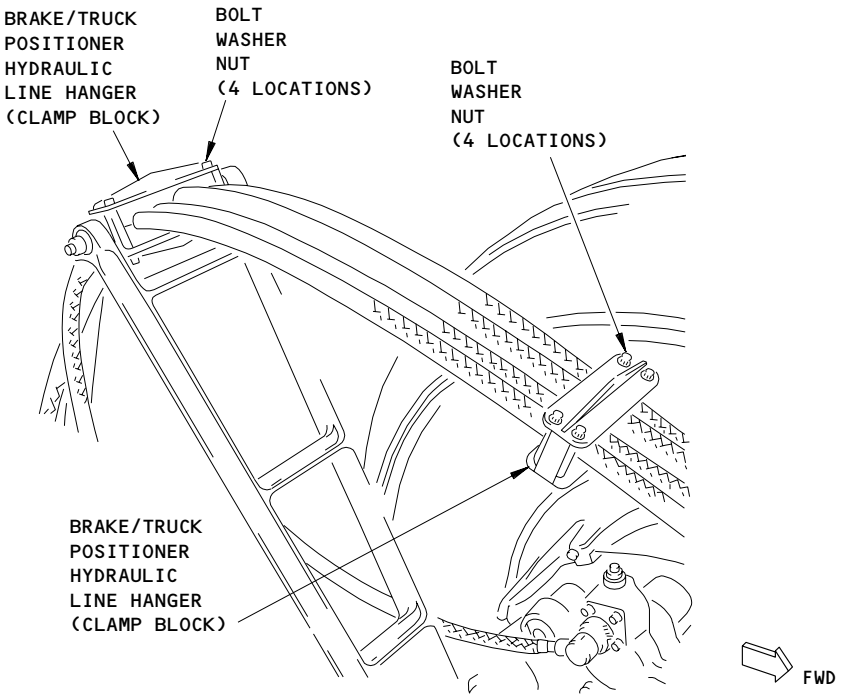

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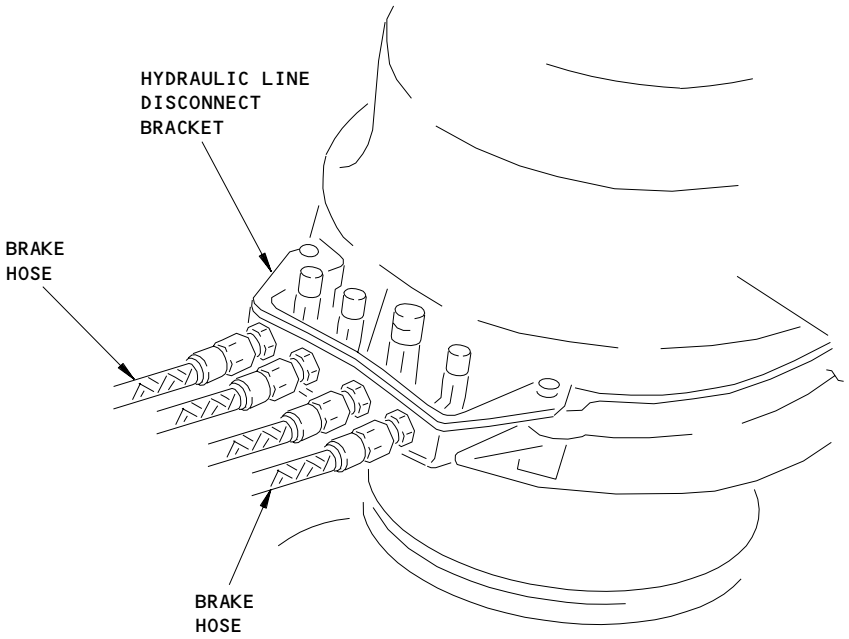


D

Brake Hose Installation
Figure 401 (Sheet 2)

S 864-006
(5) Push in and release the brake pedals fully seven times to remove hydraulic pressure from the brake accumulator.

NOTE: Wait a minimum of 5 seconds between each brake application.

D. Procedure to Remove the Brake Hose

S 024-007
(1) Disconnect the hose half of the brake disconnect from the brake half as shown in AMM 32-41-06/401.

S 024-008
(2) Remove the brake hose from the brake disconnect (hose half).

S 034-009
(3) Remove the other end of the brake hose from the brake disconnect bracket.

S 024-010
(4) FOR AFT INBOARD OR OUTBOARD BRAKE HOSE;
remove the fastener and loosen the clamp block as necessary to separate the hose from the clamp blocks (two locations).

TASK 32-41-16-404-011

3. Install the Brake Hose (Fig. 401)
A. Consumable Materials
(1) D00153 Fluid, Hydraulic - BMS 3-11
B. References
(1) AMM 12-12-01, Hydraulic Systems
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-41-00/201, Hydraulic Brake System
(5) AMM 32-41-06/401, Brake Disconnect
C. Access
(1) Location Zones
731 Left Main Landing Gear
741 Right Main Landing Gear

D. Prepare for Installation

S 864-012
(1) Make sure that the pressure is removed from the right and center hydraulic systems (AMM 29-11-00).

E. Brake Hose Installation

S 424-026
(1) For a forward brake hose, insert hose through hose guide on the side of the landing gear truck.

S 424-027
(2) Connect one end of the brake hose to the hydraulic fitting on the brake hose disconnect bracket on the landing gear trucks assembly. Tighten the fitting to 270 ± 13.5 pound-inches standard torque (AMM 20-10-09/401).

S 424-028
(3) If brake disconnect was removed, install the brake disconnect (AMM 32-41-06/401).

S 434-016
(4) Connect the other end of the brake hose to the brake disconnect (hose half). Tighten the "B" nut on the hose as follows:

NOTE: Apply a wrench to the wrench flats on the swivel fitting of the brake disconnect to hold it so that it does not turn when when you apply the torque to the "B"-Nut.

(a) Tighten the "B"- Nut fitting to 270 +/-13.5 pound -inches torque.
(b) Loosen the "B"- Nut fitting to decrease the torque to zero.
(c) Tighten the "B"- Nut fitting to 400 ± 20.0 pound-inches torque.

S 424-029
(5) AFT BRAKE HOSE;
insert the hose in the clamp block (two locations) and tighten the clamp block fasteners.

F. Brake Hose Installation Test

S 864-019
(1) Pressurize the right hydraulic system and reservoir (AMM 29-11-00).

S 864-020
(2) Make sure that the parking brake is released.

S 874-021
(3) Do the procedure to bleed the brakes (AMM 32-41-00/201).

S 794-022
(4) After 5 to 10 minutes, make sure there are no leaks.

S 714-023

(5) Make sure that the brakes operate properly as follows:
  (a) Push in and release the brake pedals while you watch the brake wear indicator pin for movement.
  (b) Make sure that the brake wear indicator pin extends and retracts when you push in and release the brake.

S 864-024

(6) Remove the power from the right hydraulic system, if it is no longer necessary (AMM 29-11-00).

S 864-030

(7) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill it if it is necessary (AMM 12-12-01/301).

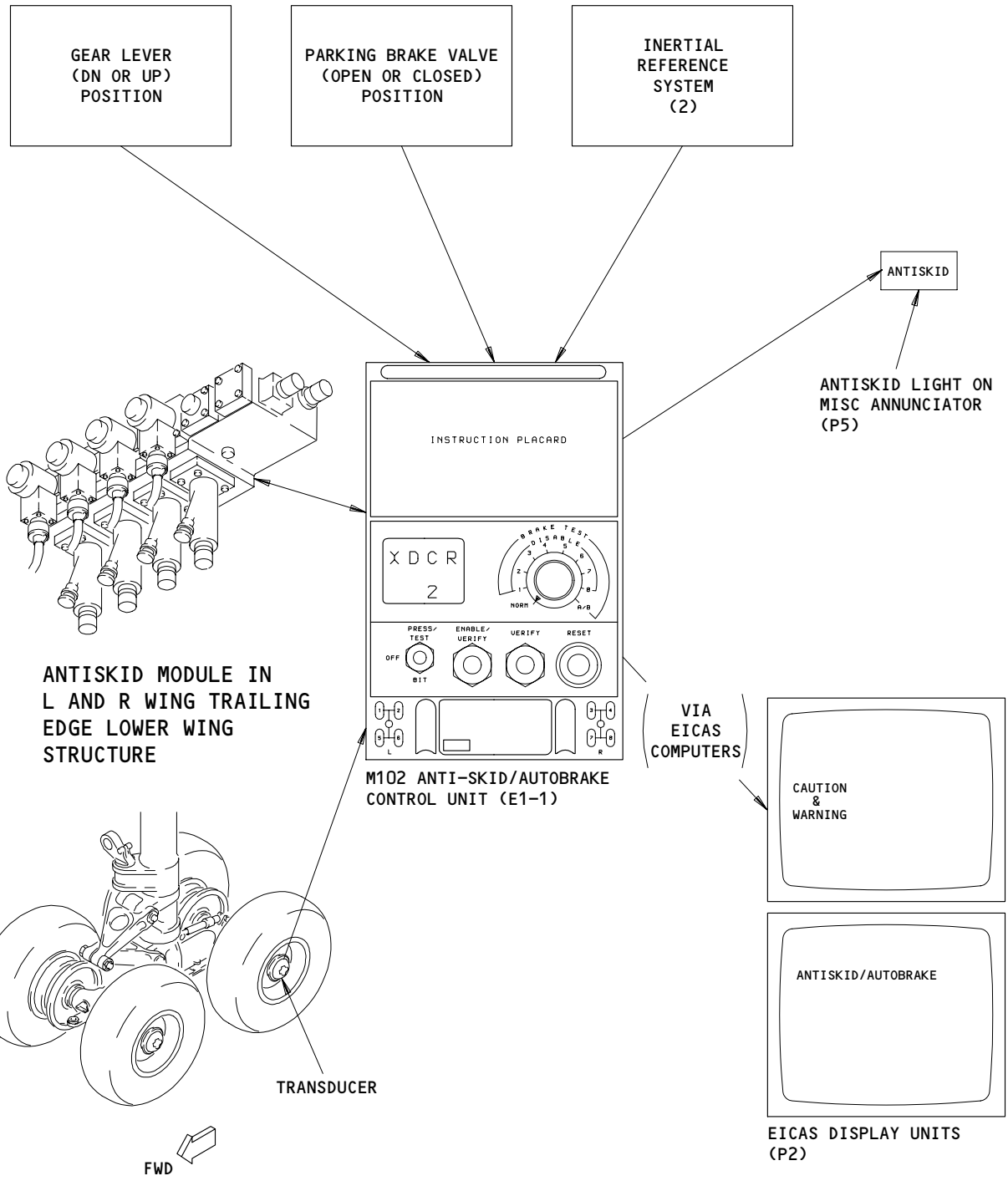
S 494-025

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

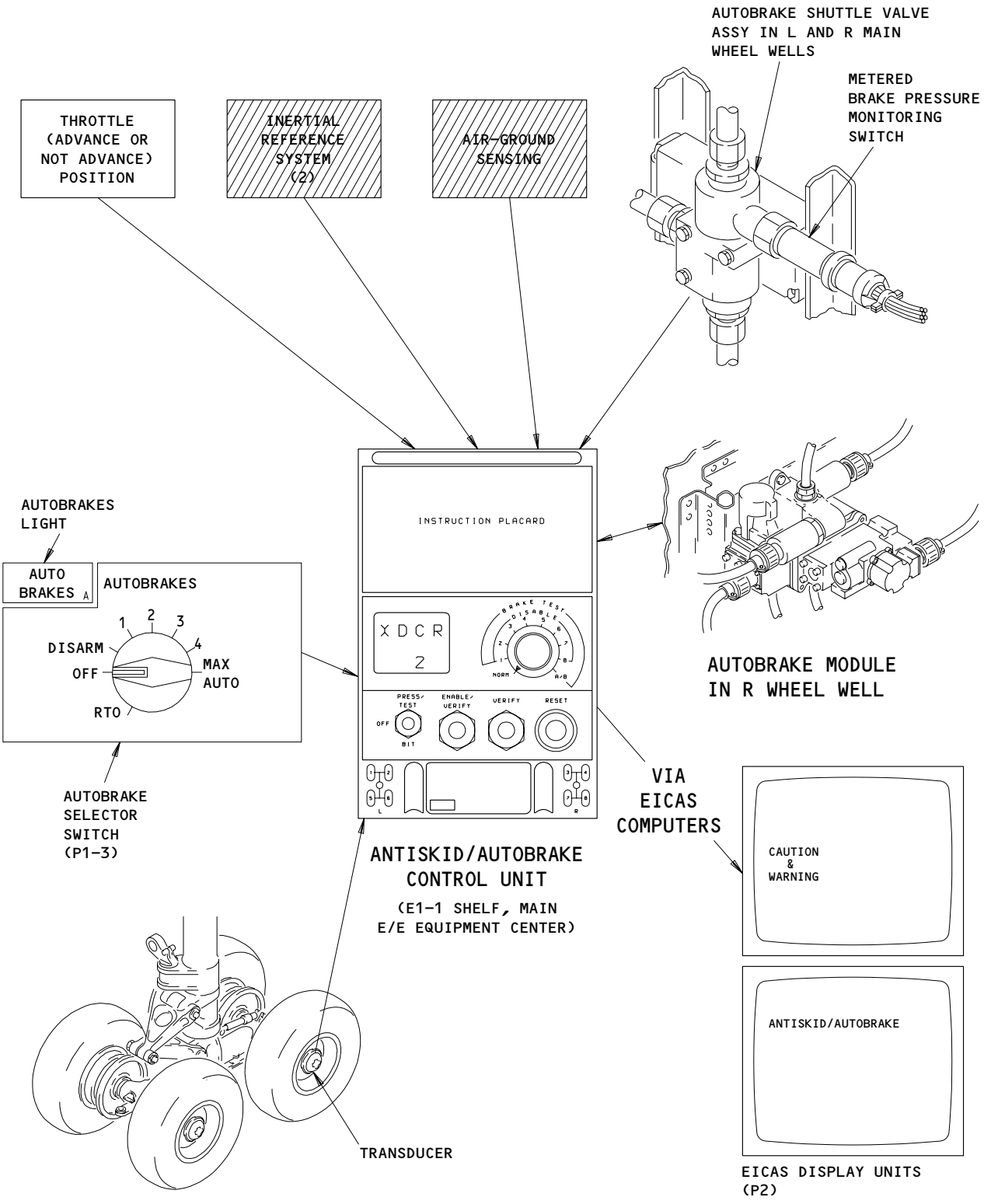
(8) Remove the door locks from landing gear doors and close the doors (AMM 32-00-15).

ANTISKID/AUTOBRAKE SYSTEM - DESCRIPTION AND OPERATION

1. General
   A. The antiskid and the autobrake systems are used in airplane braking. The antiskid system prevents wheel skids by limiting pressure to the brakes. The autobrake system provides automatic braking with braking level selected by the pilot.
   B. Full power braking systems require precise metering of hydraulic pressure to the brakes. The antiskid system works solely to prevent wheel skids. The autobrake system works with the antiskid system to provide complete automatic (feet off) braking. Simplified hydraulic and electrical flows of the antiskid and autobrake systems are shown in Fig. 12 and 14.
   C. Antiskid system (Fig. 1).
      (1) The system electronically compares actual airplane ground speed (from IRS) with wheel speed (from transducers) for hydroplane and touchdown protection. This comparison provides a brake release signal to the antiskid valves. The valves limit the pressure to the brakes. If the airplane speed drops below 7.5 knots, the system provides no brake release signal.
      (2) Pressure reduction under other conditions is achieved by each wheel controlling its antiskid valve through the control unit on the basis of wheel speed history. A rapid reduction in wheel speed is interpreted as a skid.
      (3) The system controls both normal and alternate brake systems through antiskid valves. Eight normal valves control individual wheels. Four alternate valves control the lateral-pair wheels. The system also provides locked wheel and hydroplane protection.
      (4) Four circuit breakers on the overhead circuit breaker panel P11 provide 28 v dc power to the system. When power to the system fails, an amber ANITSKID fault light on pilots' overhead panel (P5) illuminates. The Engine Indication and Crew Alerting System (EICAS) display on pilot's center instrument panel shows the ANTISKID advisory message (AMM 31-41-00/001).
      (5) The system requires the following airplane interface inputs:
         (a) Inertial Reference System (IRS) speed data (AMM 34-21-00/001)
         (b) Landing gear lever position (down or not down) signal (AMM 32-61-00/001)
         (c) Parking brake valve position signal (AMM 32-44-00/001)
   D. Autobrake system (Fig. 2)
      (1) The system applies brakes automatically at touchdown when the average wheel speed reaches 60 knots. It maintains a constant pilot-selected deceleration level throughout the landing roll. The only pilot effort required is to select the desired level prior to each landing. There is no interference with normal antiskid system operation. Full manual braking is always available.



Antiskid System
Figure 1



Autobrake System
Figure 2

(2) An AUTOBRAKES selector switch on pilots' center instrument panel (P1-3) provides pilots' choice of five levels (1, 2, 3, 4 and MAX AUTO) and one refused takeoff (RTO) mode of automatic braking. The system uses the main wheels average speed signal for spin up logic and the airplane IRS speed data for deceleration control. The system compares the airplane speed with the selected level of braking to generate a pressure command to the control servo valve. The valve provides the commanded pressure via the normal antiskid valves to the brakes.

(3) When RTO mode is selected, full pressure (3000 psi) is applied to the brakes. The system can be armed only when there is no fault in either antiskid or autobrake systems. The RTO mode on takeoff can be deactivated by placing the AUTOBRAKES selector switch to OFF or by operating brake pedals to apply > 500 psi brake metered pressure.

(4) The AUTOBRKS/ANTISKID TEST/IND 1 and AUTOBRKS/ANTISKID TEST/IND 2 circuit breakers on panel P11 provide 28 v dc power to the system. When power fails, an AUTOBRAKES light on pilots' center instrument panel illuminates. The EICAS display shows the AUTOBRAKES advisory message. Both AUTOBRKS/ANTISKID TEST/IND 1 and AUTOBRKS/ANTISKID TEST/IND 2 circuit breakers provide power for testing the system.

(5) The system requires the following airplane interface inputs:
   (a) An operational (no fault) antiskid system.
   (b) IRS data
   (c) Landing gear air/ground signal (AMM 32-09-02/001)
   (d) Thrust levers position (advanced or not advanced) signal (AMM 76-11-00/001)
   (e) Spoiler handle position (fully extended or not fully extended) signal (AMM 27-61-00/001)

E. An antiskid/autobrake control unit provides all the monitoring and control, including arming, disarming and self test of the system. The unit consists of seven microprocessor-based subsystem circuit cards. Four identical cards are for antiskid control, each providing control for two wheels. One card is for autobrake control. One card is for antiskid and autobrake monitoring. One card is for Built-In Test Equipment (BITE).

F. The antiskid/autobrake system consists of the following components (quantity shown in bracket):
- Transducer (8)
- Antiskid module, normal system (2)
- Antiskid module, alternate system (2)
- ANTISKID fault light on P5 (1)
- Antiskid shuttle valve module (2)
- Antiskid/autobrake control unit, M102 (1)
- Autobrake selector switch on P1-3 (1)
- Autobrake module (1)
- Autobrake shuttle valve assembly (2)
- AUTOBRAKES light on P1-3 (1)

2. Component Details
   A. Antiskid/Autobrake Crew Control Panels and Annunciators (Fig. 1 and 2)
      (1) ANTISKID fault light (Fig. 1)
         (a) An amber ANTISKID fault light on panel P5 illuminates to signal antiskid system fault when any of the following faults exists. At the same time the ANTISKID advisory message appears on the EICAS display.
            1) 28 volt/5 volt antiskid control unit power supply out of tolerance.
            2) Antiskid transducer wiring open or short.
            3) Antiskid module (normal or alternate) valve wiring open or short, or valve driver failure.
            4) Antiskid control unit card failure.
            5) Parking brake valve not fully open when the parking brake is released.
      (2) Five antiskid fail relays in P36 panel control ANTISKID light functions and the related EICAS message display. When the control unit lamp driver output signal is a ground (no fault in antiskid system), the relay energizes. The light extinguishes and no EICAS message appears. When the lamp driver output signal is an open circuit (fault in antiskid system), the relay de-energizes. The light illuminates and the related EICAS message appears. Four (normal antiskid) relays each control antiskid failure indication for two wheels. One relay controls alternate antiskid failure indication.
      (3) Autobrake selector switch (Fig. 2)
         (a) The switch, located on pilots center intrument panel P1-3, is a rotary, magnetic-latching eight position switch. The switch performs the following:
            1) Provide 28 v dc power to the antiskid/autobrake control unit
            2) Select 1, 2, 3, 4 or MAX AUTO airplane deceleration level and RTO.
            3) Arm or disarm the system.
            4) Turn on or turn off the AUTOBRAKES light.

(b) A positive detent between the DISARM and OFF positions ensures that when the switch moves to the DISARM position, it does not overshoot to OFF and prevent the AUTOBRAKES light from illuminating.

(c) By turning the switch counterclockwise from OFF to RTO, the autobrake system operates in the RTO mode. When the average wheel speed is above 85 knots and both engine thrust levers are moved to the idle position, full hydraulic pressure (3000 psi) applies automatically to the brakes.

(4) AUTOBRAKES light (Fig. 2)

(a) The AUTOBRAKES light is an amber light located near the selector switch. The light, controlled by the switch, comes on when:

1) The switch is at DISARM position
2) The switch is at OFF position and the autobrake module solenoid valve output pressure switch shows presence of high pressure.
3) The switch is at 1, 2, 3, 4, MAX AUTO or RTO position and system fault (autobrake or RTO) is detected.

NOTE: For the RTO position, the light comes on only when the conditions that follow occur:
- The airplane speed is higher than 85 knots.
- The thrust levers are at the idle position.

(b) When the selector switch is at to 1, 2, 3, 4 or MAX AUTO, the light illuminates for a moment as the switch is moved through the DISARM. The light then goes out when the unit confirms that arming requirements are met. When the system disarms, the light illuminates until the switch is placed to OFF or the system is rearmed.

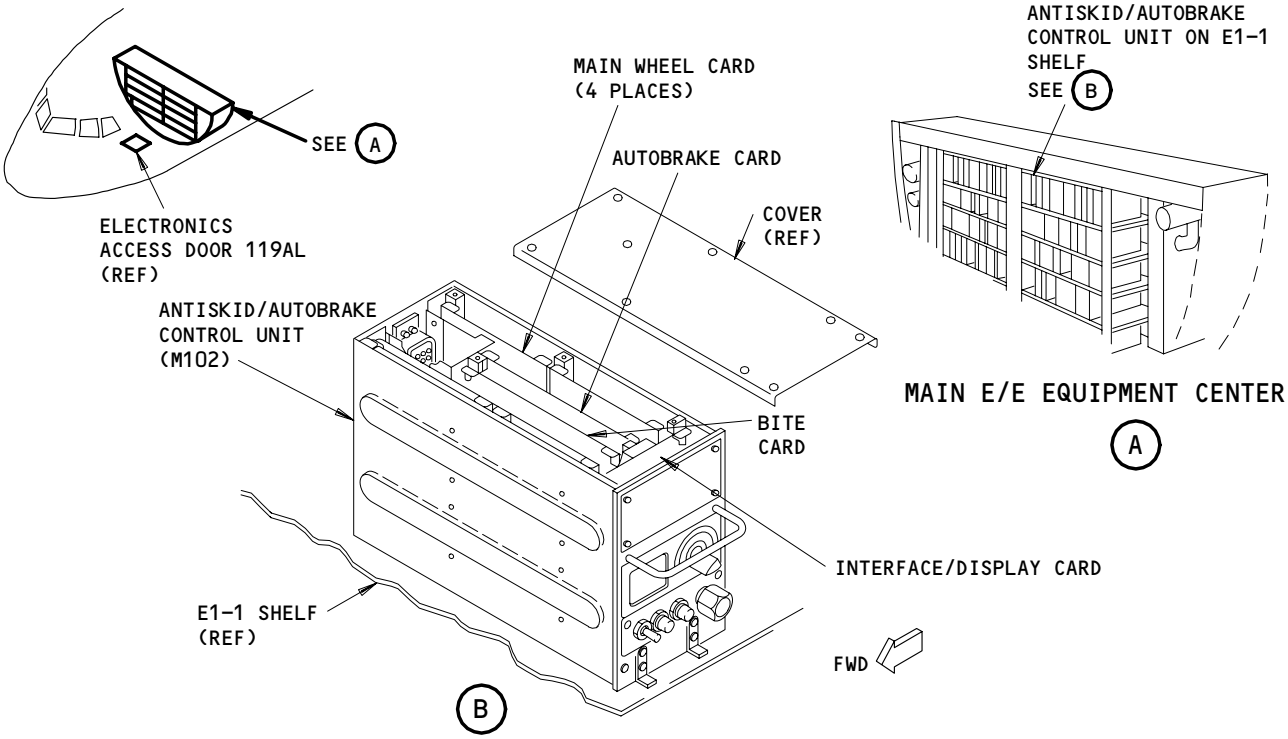
B. Antiskid/Autobrake Control Unit (Fig. 3)

(1) The control unit (M102) compares each wheel speed with the IRS ground speed for touchdown and hydroplane protection. A change in speed causes a change in control signal to increase or decrease hydraulic pressure to the brakes.

(2) The unit, located on the E1-1 shelf at the main equipment center, contains the following:
  (a) Four identical dual main wheel cards.
  (b) One autobrake card.
  (c) One BITE card.
  (d) One interface/display card.
  (e) A front control/display panel with alphanumeric readout and BITE test switches.

(3) The unit is an LRU, and circuit cards are also LRUs. Either unit or cards can be replaced as required in maintenance.

(4) Data links in the unit provides means of communication between cards. All cards contain logic circuits to generate the required signals for proper interface within the system. Power of 28 v dc to the card supplies the 26 v dc and the regulated 5 v dc source required for all logic circuits.



Antiskid/Autobrake Control Unit
Figure 3

(5) The main wheel card primary function is to change the mode of braking pressure and prevent wheel skid or lockup. Each wheel card provides skid protection for two wheels in tandem. Each wheel circuit shares a common power source line and is combined by locked wheel cross over function. A driver circuit in each card provides signal to the EICAS display via the EICAS computers when antiskid system fails.

(6) The autobrake card performs all autobrake functions, including control, logic, interface and BITE. The card shares with wheel cards for wheel speed and system test information. A driver circuit in the card provides signal to the AUTOBRAKES light and the EICAS computers when autobrake system fails.

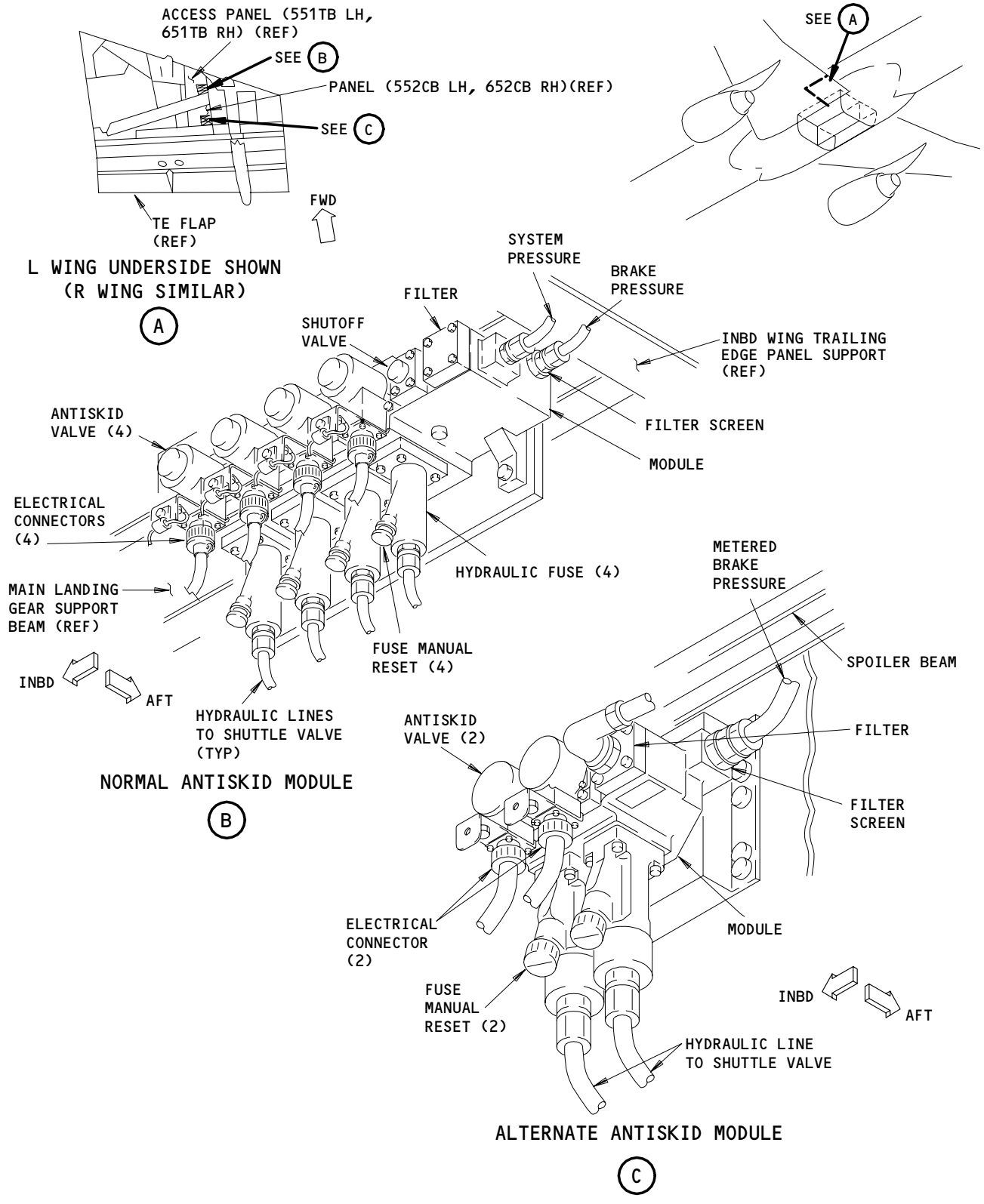
(7) Both wheel and autobrake cards contain self test and status circuits. The circuits check the system for faults and provide status to BITE card.

(8) The BITE card communicates with all other cards via the data link in the control unit. Its primary function is to monitor the operation of the four main wheel cards and the autobrake card. The function includes analyzing received data, examining analog voltages, performing test required, and providing fault signals to the memory. Logic circuits in the card determine BITE test switch inputs required for test.

(9) The interface/display card contains circuits for BITE and ANTISKID light functions.

C. Antiskid Module (Normal) (Fig. 4)

(1) Two 4-valve antiskid modules are used in the normal brake system. The modules are located at left and right wing stations 350, forward of the main gear support beam and immediately outboard of the gear trunnion door. Access to the module is thru wing trailing edge inboard lower wing structure access panel (551TB LH, 651TB RH). Each module contains four identical antiskid valves, four hydraulic fuses, a shutoff valve, two inlet filters, a check valve, a restrictor, and a housing with associated parts. The module provides individual wheel control to each main gear. Each module is an LRU as the fuses, shutoff valve, and inlet filters are separate component LRUs. The valves and filters can be removed for inspection without disconnecting hydraulic lines.



Antiskid Module Installation
Figure 4

D. Antiskid Module (Alternate) (Fig. 4)
   (1) Two 2-valve antiskid modules are used in the alternate brake system. The modules are located at left and right wing stations 350 forward of the spoiler support beam. Access to the module is thru wing trailing edge inboard lower wing structure access panel (552CB LH, 652CB RH). Each module contains two identical antiskid valves, two hydraulic fuses, one inlet filter, a check valve and a housing with associated parts. The module provides laterally paired wheel control to each main gear. Except for configuration differences and quantity of components and wheel control, the alternate 2-valve module functions similarly to the normal 4-valve module.

E. Antiskid Module Components (Fig. 4)
   (1) Antiskid valve
      (a) Each valve in the normal or alternate module consists of two stages. The first stage (servo valve assembly) develops hydraulic pressure proportional to the input current. The second stage (slide and sleeve assembly) repeats this pressure at the lower level required for brake control.
      (b) The first stage servo valve assembly consists of a torque motor and a hydraulic circuit. The motor, an electromagnetic device, produces an armature deflection proportional to input current. The armature is positioned between two nozzles, pressure and return, to increase or decrease first stage output pressure.
      (c) The slide and sleeve assembly consists primarily of a stop, a quill, and the slide and sleeve. Slide position is controlled by first stage output pressure on one end and pilots brake metered pressure on the other end.
      (d) The antiskid valves in the normal hydraulic system operate in the unigain mode. System pressure (3000 psi) is supplied to the first stage providing a constant pressure source by which the second stage is controlled. Through unigain operation, the valve is able to maintain consistent stopping performance throughout the braking range, independent of applied brake pressure.
      (e) The antiskid valves in the alternate hydraulic system operate in the multigain mode. Pilots brake metered pressure is supplied to the first stage rather than system pressure. As a result, the first stage output pressure is a function of both metered pressure and valve current. Multigain valves are used in the alternate system to simplify the system and reduce weight.
      (f) The alternate antiskid valves operate in the unigain mode, the same as the normal antiskid valves.

(2) Hydraulic fuses
  (a) The fuse prevents hydraulic fluid loss from the brake system if a line should rupture at any point downstream of the fuse. The fuse automatically shuts off all flow if the volume of fluid passing through is too great. The fuse is self-resetting and can be reset within 5 seconds against a pressure differential of 18-30 psi without the aid of reverse flow.
  (b) Fuse resetting is done manually by rotating the reset knob. This equalizes the pressure on both sides of fuse and allows the fuse to reset. When the reset knob is released, a spring forces the knob back to normal position. A slot in the knob allows visual verification of bypass valve position.

(3) Hydraulic filters
  (a) Two module filters, one at the metered pressure inlet and the other at the system pressure inlet, protect module components against clogging or malfunctioning. The filters provide filtration of hydraulic fluid prior to its entering the module housing.

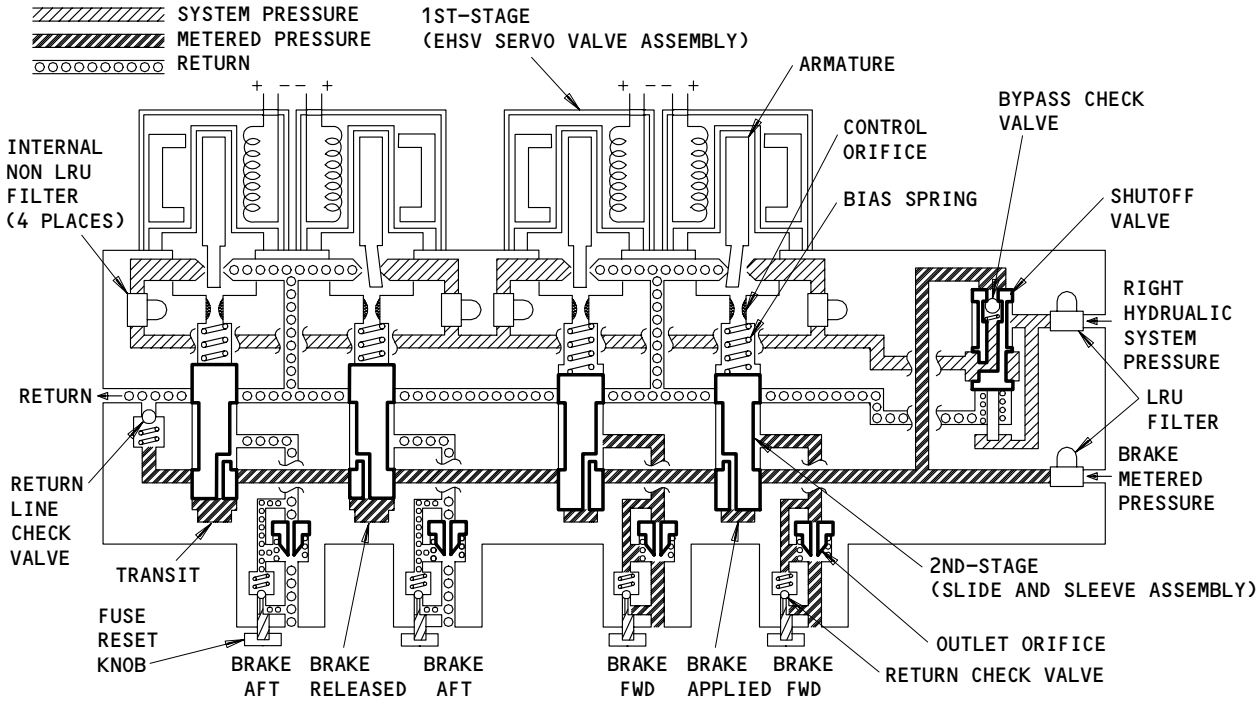
(4) Shutoff valve
  (a) A shutoff valve installed in the normal module prevents system pressure from being supplied to the antiskid valve without pilot metered pressure input of 260 psi or more. When the metered pressure > 260 psi, the valve ports fluid from the system pressure line to the antiskid valve. When the metered pressure < 240 psi, the valve switches and the flow is from the metered pressure line to the antiskid valve. The shutoff valve contains a check valve to allow metered pressure supply to the first stage of the antiskid valve if the shutoff valve closes.

(5) Check valve
  (a) A module return line check valve provides free flow from the metered pressure port to the antiskid valve via the shutoff valve, and prevents residual pressure in the brake return line.

(6) Restrictor
  (a) A 2-way restrictor or orifice is in the system pressure line upstream of the shutoff valve. The restrictor limits hydraulic flow during failure conditions (missing O-ring on antiskid valve or shutoff valve, or failed check valve in the shutoff valve).

F. Normal Antiskid Module Operation (Fig. 5)

(1) The torque motor armature in the first stage of the antiskid valve (servo valve assembly) sits itself between two nozzles as a function of input current. One nozzle is supplied with system pressure and the other is connected to return. With no command applied, the motor moves the armature against the return nozzle and control pressure equals supply pressure. With full current supplied, the motor moves armature against the pressure nozzle and control pressure equals return pressure. For each in between value of input current there is a characteristic armature position and control pressure value. The valve varies pressure from a high of pilot metered pressure to a low of no pressure (release).

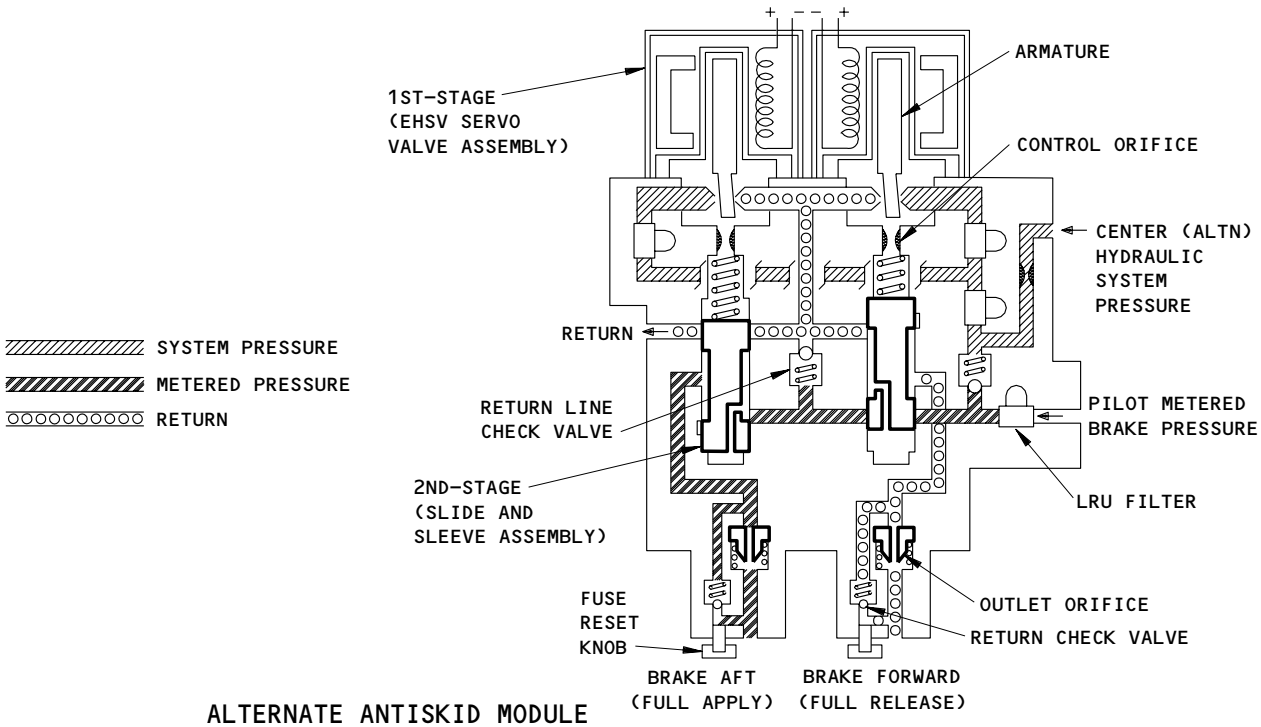


Antiskid Module (Normal) Functional Schematic
Figure 5

(2) The second stage (slide and sleeve assembly) is a spool valve driven by control pressure (from the first stage) on one end of the spool and brake pressure on the other. When control pressure exceeds pilot's metered pressure, the spool moves to port metered pressure directly to the brake. In the metering region, the second stage spool works as a pressure follower such that the brake pressure equals the control pressure. The bias spring on one end of the spool holds the spool down to allow full applied pressure to the brakes when the first stage is de-energized. A control orifice slows the second stage valve movement to control input. At the brake port an outlet orifice slows the application rate of the brakes in response to pressure input. When the metered pressure is removed, the return check valve allows free flow return from the brakes.

G. Alternate Antiskid Module Operation (Fig. 6)

(1) In general, the operation of the alternate antiskid module is the same as the normal antiskid module.



ALTERNATE ANTISKID MODULE

Antiskid Module (Alternate) Functional Schematic
Figure 6

(2) The module requires no shutoff valve and restrictor in its operation.

H. Antiskid Shuttle Valves (Fig. 7)

(1) The module contains four identical valves. The valve is either a one piece or two piece construction. Each valve is independent and pressure operated. Two modules are located one each at left and right wing trailing edge, forward of main gear support beam (directly under the antiskid module) and outboard of the gear trunnion door. Each valve shuttles pressure between normal and alternate systems. Access to the module is thru wing trailing edge inboard lower wing structure access panel (551TB LH, 651TB RH).

(2) The valve consists of an LRU valve assembly and an LRU filter. The valve has a manual override plug feature. The filter prevents system from contamination.

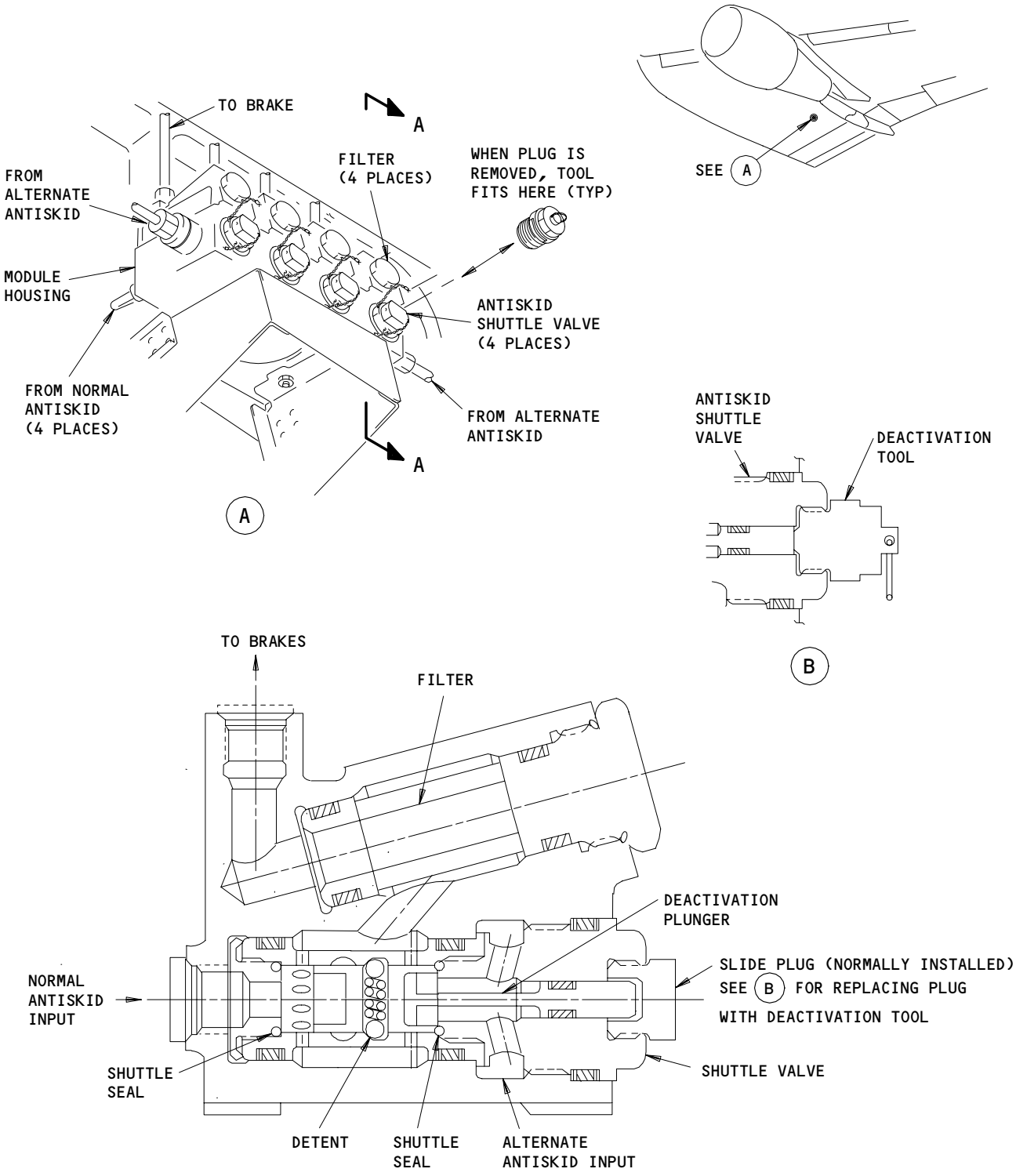
(3) The basic three-way, two position shuttle valve consists of a normal (input) port, an alternate (input) port and a brake (output) port. Under normal operation, the normal port connects to the brake port. If hydraulic system switches from normal to alternate, a detented slide in the valve moves to block the normal port. This slide shift allows fluid flow from the alternate port to the brake port. In this manner, one input port always connects to the brake port while the other is blocked.

(4) In the event of shuttle valve failure, the slide plug on the face of the valve is removed. A flight dispatch plug (a fly-away ground maintenance tool consisting of a small threaded plug) is installed in its place. The installed plug forces the slide in the valve to shift, thus blocking the normal port and opening the alternate port. This condition remains with the plug installed. The plug has no moving parts and is equipped either without or with a ring to allow an indicator tag to be tied to it while being used. When not in use, the plug is stored in the landing gear downlock pin box.

I. Antiskid Wheel Speed Transducers (Fig. 8)

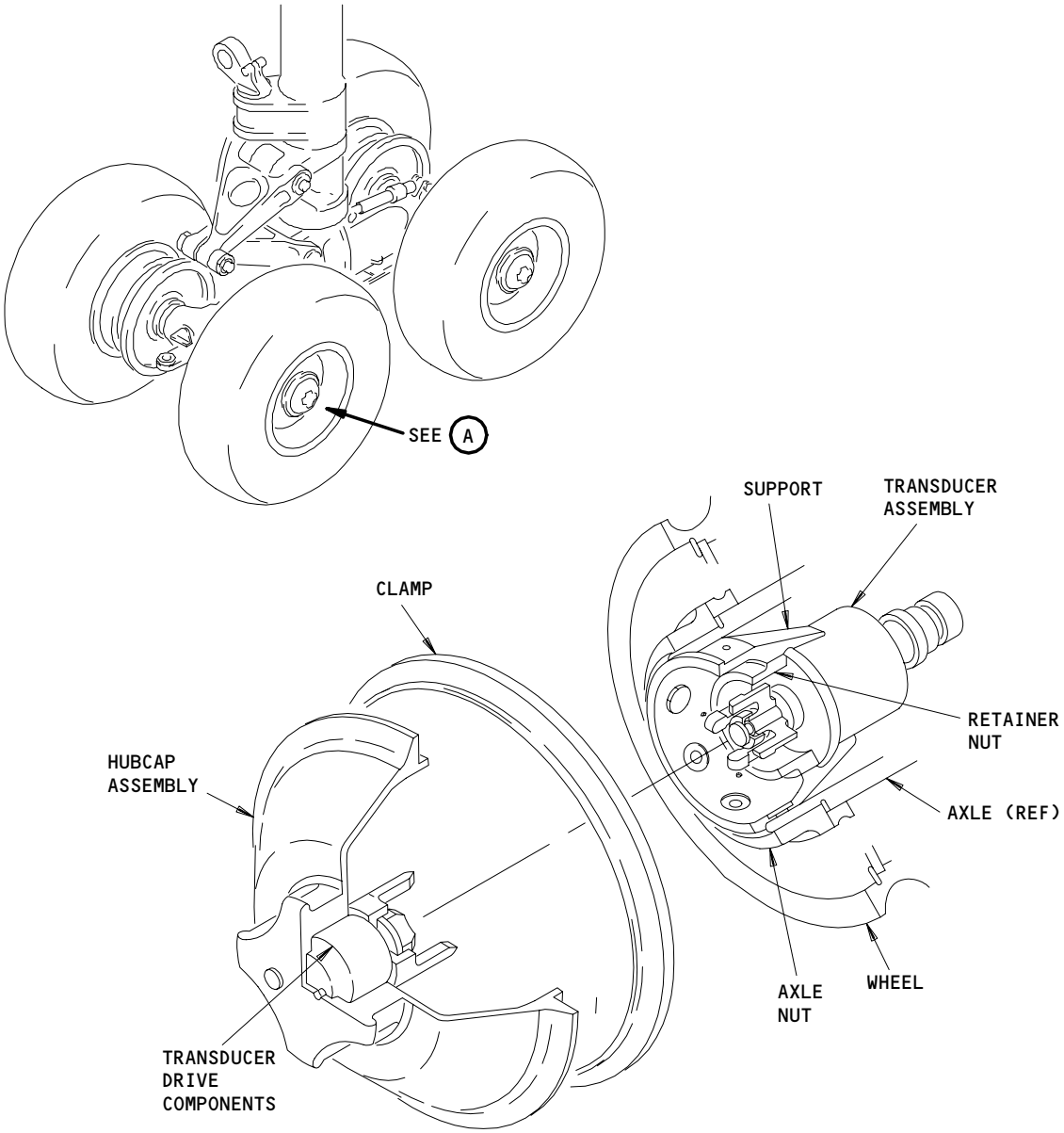
(1) SAS 050-149, 155-999;
The antiskid transducer is part of an assembly, the Antiskid TPIS Assembly that consists of these components:
- TPIS adapter
- Antiskid Assembly (consists of antiskid transducer and drive components)
- retainer nut for antiskid transducer
- heat shrink sleeve
- TPIS Wheel Interface Unit.

The antiskid transducer is inserted in the TPIS adapter and assembled to the adapter with the retaining nut.



A-A

Antiskid Shuttle Valve Module
Figure 7



Antiskid Wheel Speed Transducer
Figure 8 (Sheet 1)

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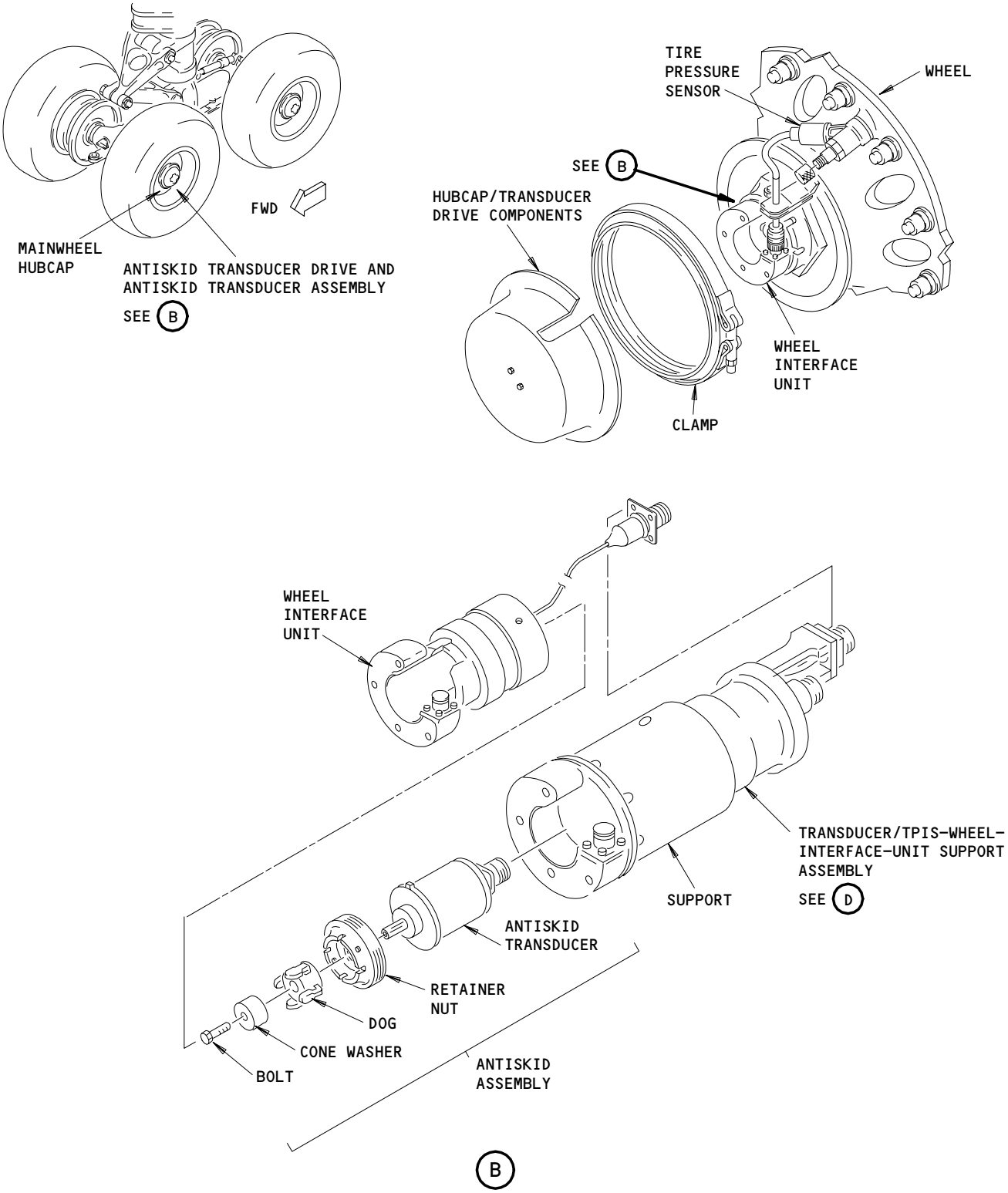

Antiskid Wheel Speed Transducer
Figure 8 (Sheet 2)

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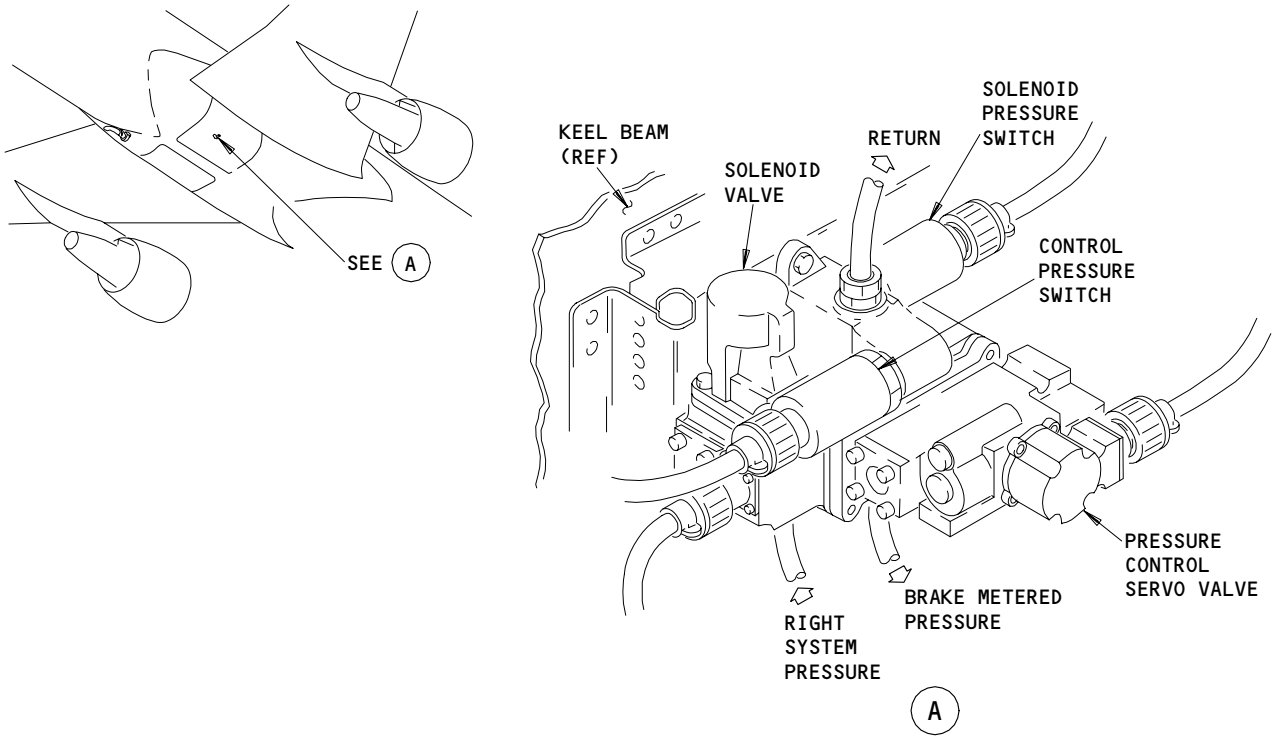
(2) SAS 151-154;
The antiskid transducer is part of an assembly, the antiskid assembly, that consists of the antiskid transducer and the transducer drive. The antiskid assembly is inserted in an axle-mounted support and is held in the support with a retaining nut.

(3) The transducer, a speed sensing device on each main gear wheel, contains only one moving part, a rotor which rotates inside a fixed stator. The stator attaches to a support inside the main wheel axle. The rotor, thru a four-arm dog rigidly attached on the rotor shaft, couples to the transducer drive in the hubcap. The drive, consisting of a bellows-type coupling and related mounting hardware inside the hubcap, turns the rotor when the wheel rotates. The dog/bellows coupling allows removal of the wheel and hubcap without disassembly of a bolted joint. Both transducer and drive are LRUs.

(4) The stator comprises a permanent magnet, a 150-tooth soft carbon steel pole piece, and a pickup coil. The magnet sets up a magnetic field around the coil, whereby the mating 150-toothed rotor produces dynamic discontinuities when rotated. Turning of the rotor provides field changes as the mating teeth come in and out of alignment to produce a series of voltage pulses (150 times per turn). The voltage, related to the speed of the wheel, provides the control unit with wheel speed data.

J. Autobrake Module (Fig. 9)

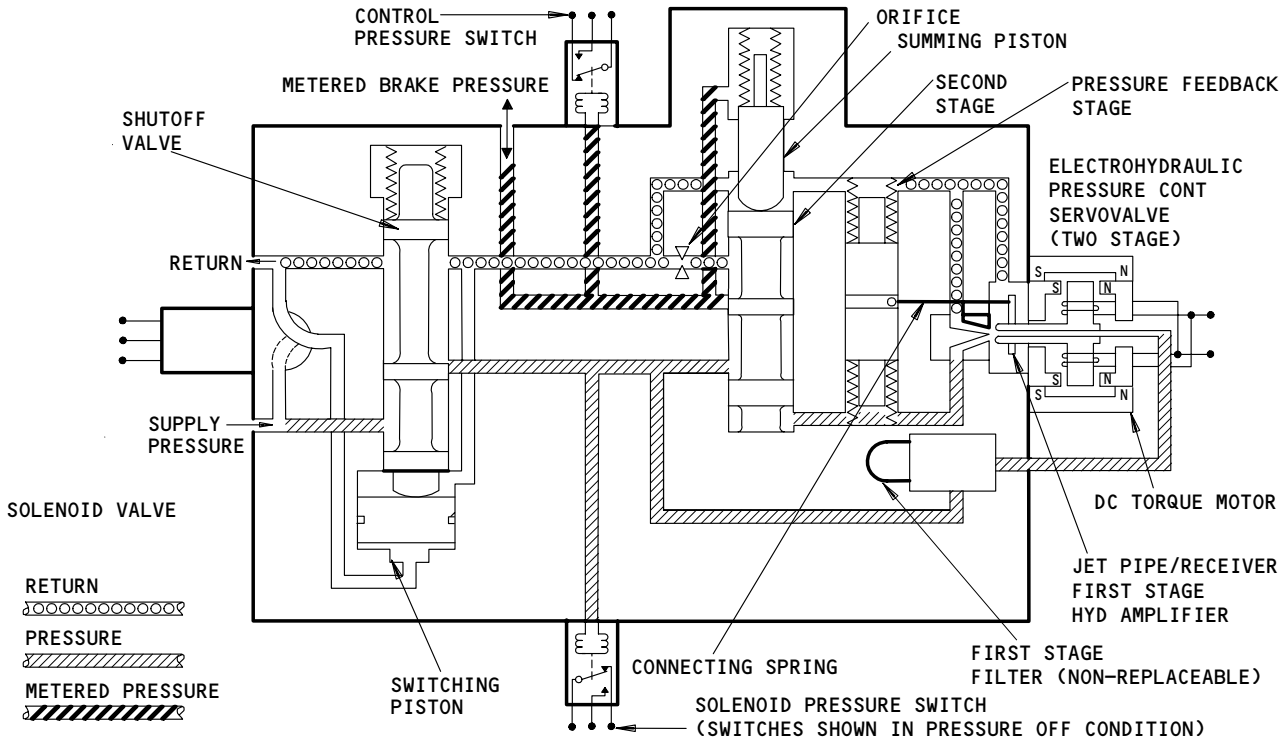


Autobrake Module
Figure 9

(1) The autobrake module is connected to the normal brake lines, and is located on the keel beam near the forward bulkhead of the right wheel well. The module contains an electric hydraulic pressure control servo valve (EHSV) (here in-after called the pressure control valve), an upstream three-way solenoid shutoff valve (here in-after called the solenoid valve), and two pressure switches, located one each at the outputs of the solenoid valve and the servo valve. The module is an LRU as the valves and switches are LRUs. Solenoid valve, pressure control valve and pressure switches can be replaced without removing the module from the airplane.

(2) The module develops brake pressure in response to selected deceleration for all required autobrake functions. The solenoid valve provides on-off control of hydraulic power to the valve module, and the pressure control valve controls output pressure from the module as commanded by the control unit. Pressure switches on the module monitor the pressure outputs from the solenoid valve and the pressure control valve and provide the logic to the control unit.

K. Autobrake Module Operation (Fig. 10)



Autobrake Module Schematic
Figure 10

(1) The solenoid valve is a 2-stage, 3-way operated shutoff valve. When de-energized, the valve moves to the right most or closed position. The mechanical spring acting on the spool and the presence of supply pressure (admitted via an internal passage of the spool) provides the closing force. This force drives the piston to the right and isolates supply pressure from the rest of the module. The module in turn ports output flow to return.

(2) Input of 28 v dc to the solenoid valve causes supply pressure to be applied to the piston. This drives the shutoff spool to a fixed, open position and applies pressure to the rest of the module. The valve pressure switch then closes to show high (above 750 psi) pressure. If the selector switch is at OFF and the solenoid pressure switch shows high pressure, the AUTOBRAKES light will come on.

(3) The pressure control valve consists of a jet-pipe first stage, an in between pressure-feedback stage and a slide-and-sleeve second stage. Supply fluid entering the pressure control valve second stage also feeds the jet pipe thru a first stage filter. The jet pipe directs a jet of fluid from a nozzle into two ports. The change of kinetic energy of the jet into static pressure in the two ports provides the pressure required to drive the second stage.

(4) A torque motor in the first-stage electrically controls jet pipe position and the amount of flow to two receiver ports. One ports the pressure to return, and the other controls the pressure.

(5) A feedback spring attached to the jet pipe on one end and the pressure-feedback spool on the other counters the input of the torque motor. The spring returns the jet pipe to its steady state position (for that particular pressure) when the commanded pressure is reached. The feedback spool moves and compresses a spring until the spring force equals the first-stage control pressure acting on the area of the feedback spool.

(6) Brake pressure and the first-stage command pressure act on equal areas at opposite ends of the second-stage spool which ports fluid either in or out of the brake as required until brake pressure equals the first-stage command pressure. Without first-stage command pressure applied, a spring biases the second stage to return. An 0.070 inch diameter orifice in the valve return port limits brake pressure release to ensure smooth brake release during autobrake disarm.

(7) The servo valve pressure switch checks module output pressure. When brake application conditions are met and the commanded deceleration exceeds the actual airplane deceleration by more than one foot per second square for more than three seconds, the system shuts down and the AUTOBRAKES light comes on.

L. Autobrake Shuttle Valve Assembly (Fig. 11)

(1) The assembly consists of either a one piece or two piece valve and a pressure sensing switch. The basic three-way valve allows brakes to work by either a manual or an autobrake system. Two valve assemblies are located one each in left and right wheel well transverse beams. Both valves and switches are LRUs. Pressure switch can be replaced without removing valve from the airplane.

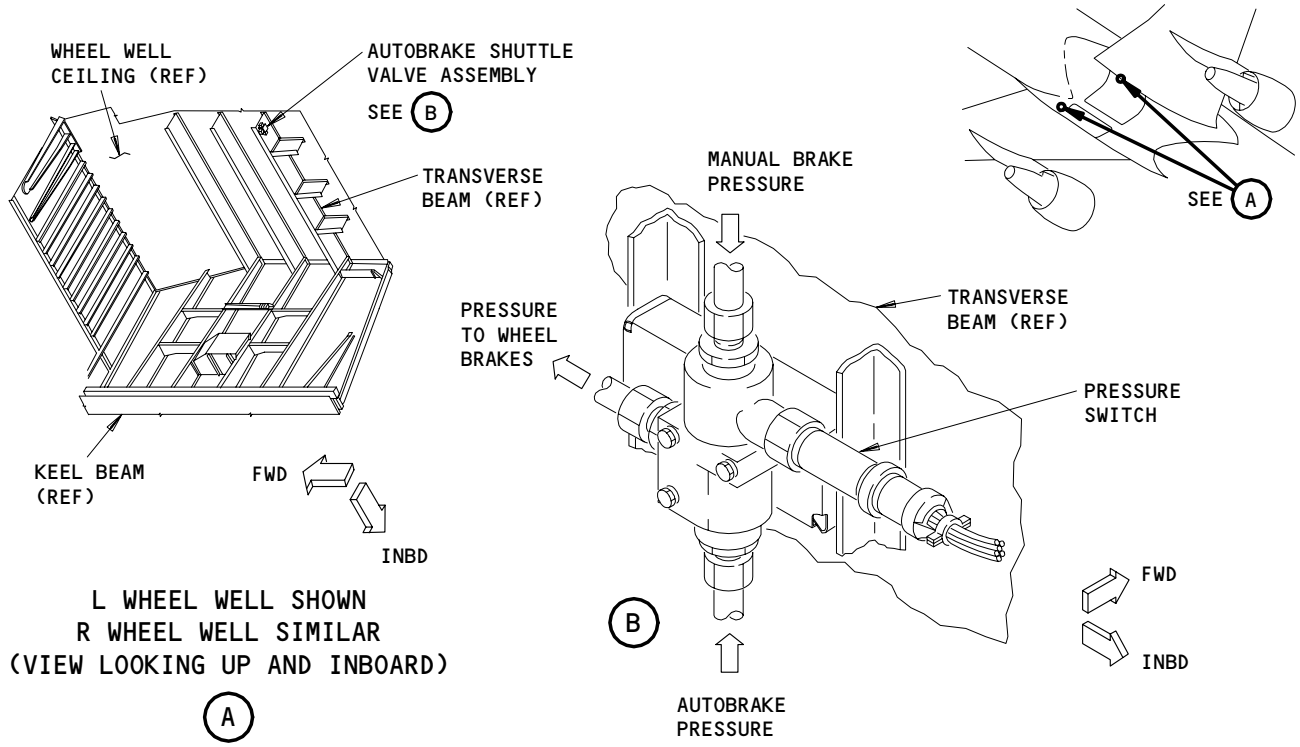
(2) The valve has two input ports (one normal, one auto) and one output port (brake). Under normal operation, the normal port connects to the brake port. When the autobrake system applies pressure, a detented slide located in the valve moves to block the normal port. This slide shift allows fluid flow from the auto port to the brake port.

(3) The pressure switch, connected to the normal input port, checks pressure downstream of the normal brake metering valves. When manual braking effort exceeds 500 psi on either the left or right pedal, the switch opens to provide an input to the control unit to disarm the system.

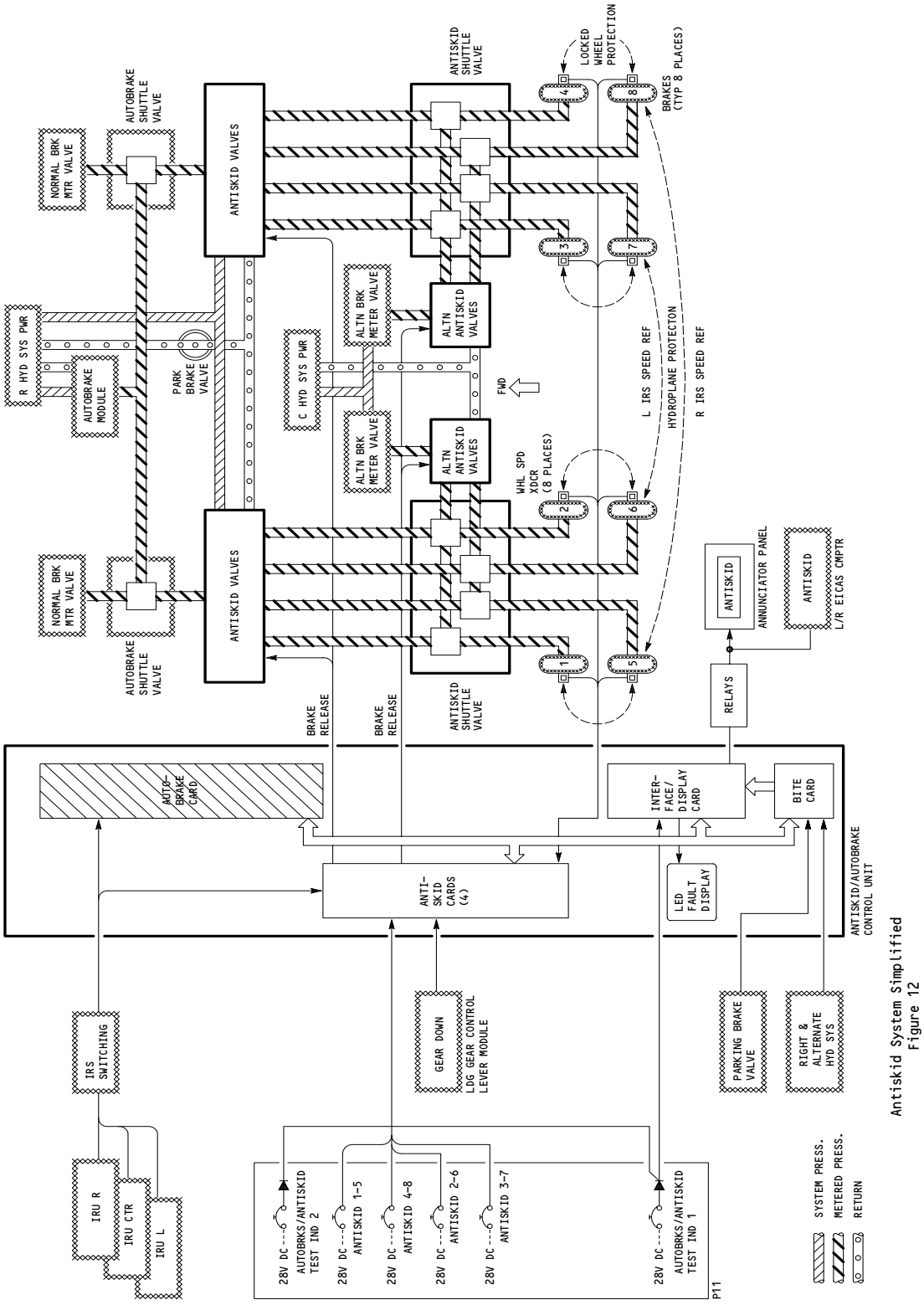
3. Operation

A. Functional Description

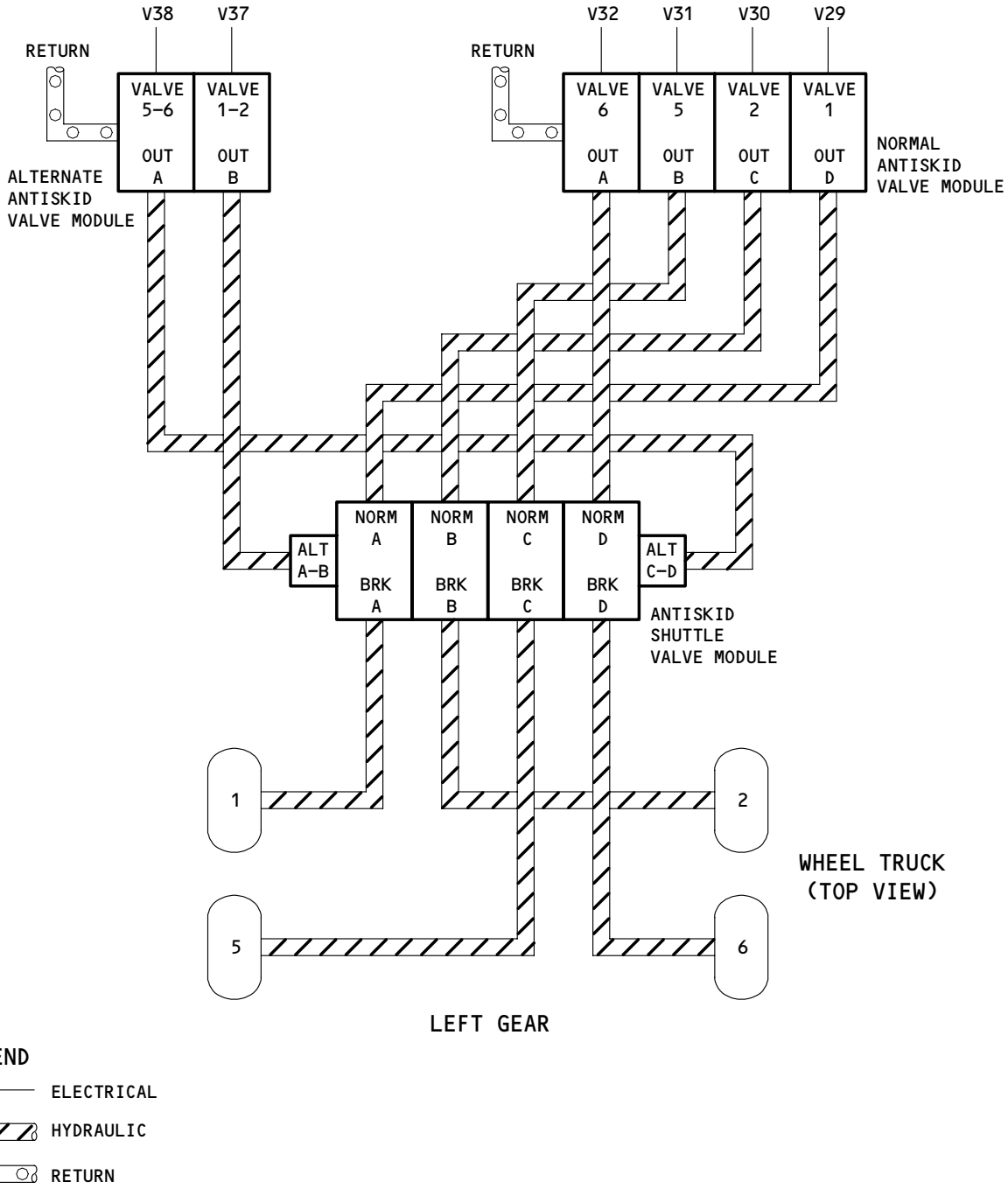
(1) Antiskid system simplified (Fig. 12)



Autobrake Shuttle Valve Assembly
Figure 11



Antiskid System Simplified
Figure 12



Antiskid Valve/Brake Control Paths Schematic
Figure 12A (Sheet 1)

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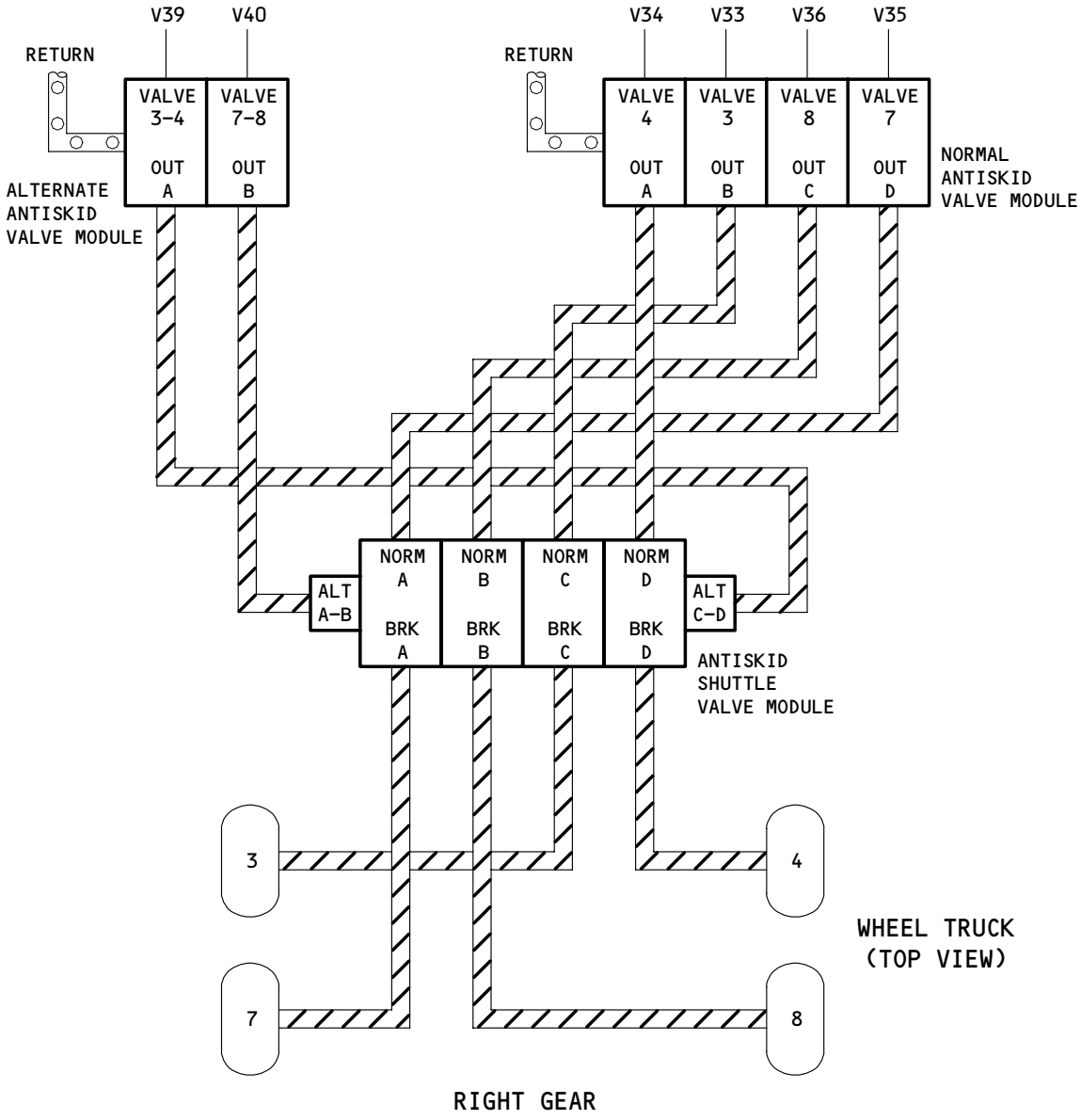


Antiskid Valve/Brake Control Paths Schematic
Figure 12A (Sheet 2)

(a) Four circuit breakers (ANTISKID 1-5, 2-6, 3-7, 4-8) on P11 provide 28 v dc power to the control unit. The four main wheel cards in the unit use wheel speed to calculate the maximum brake pressure that will not cause a skid. This results in a control signal to the antiskid valves which limit hydraulic pressure to the brakes. Two shuttle valve modules shuttle pressure between normal and alternate systems.

(b) The AUTOBRKS/ANTISKID TEST/IND 1 and AUTOBRKS/ANTISKID TEST/IND 2 circuit breakers on P11 provide 28 v dc power to the interface/display card for BITE functions. A data bus provides all the tie-ins between wheel cards, autobrake card, BITE card, and the interface/display card. The control unit provides fault signal to the EICAS computers and the ANTISKID light.

(c) Inputs to control unit affecting system functions include IRS speed data, and landing gear and parking brake lever position signals. The parking brake valve is checked for open to insure antiskid function. If the parking brake valve is sensed closed with the parking brake released, the EICAS advisory message ANTISKID OFF is displayed.

(2) Antiskid electrical power and system inputs (Fig. 13)

(a) Four individual circuit breakers (ANTISKID 1-5, 2-6, 3-7, and 4-8) on panel P11 supply 28 v dc power to four wheel cards in the control unit. The AUTOBRKS/ANTISKID TEST/IND 1 and AUTOBRKS/ANTISKID TEST/IND 2 circuit breakers on P11 provide 28 v dc power for BITE functions.

(b) Two IRS speed data inputs (L and R) provide airplane speed signal to the four wheel cards in the control unit. The left IRS supplies input to cards 2-6 and 3-7, and the right IRS supplies input to cards 1-5 and 4-8. If the left or right IRS input is not present, the captain and the first officer can place the IRS select switch on panel P1 or P3 in the ALTN position. This allows the L or R IRS select relay to energize providing alternate IRS speed data from the center IRS system.

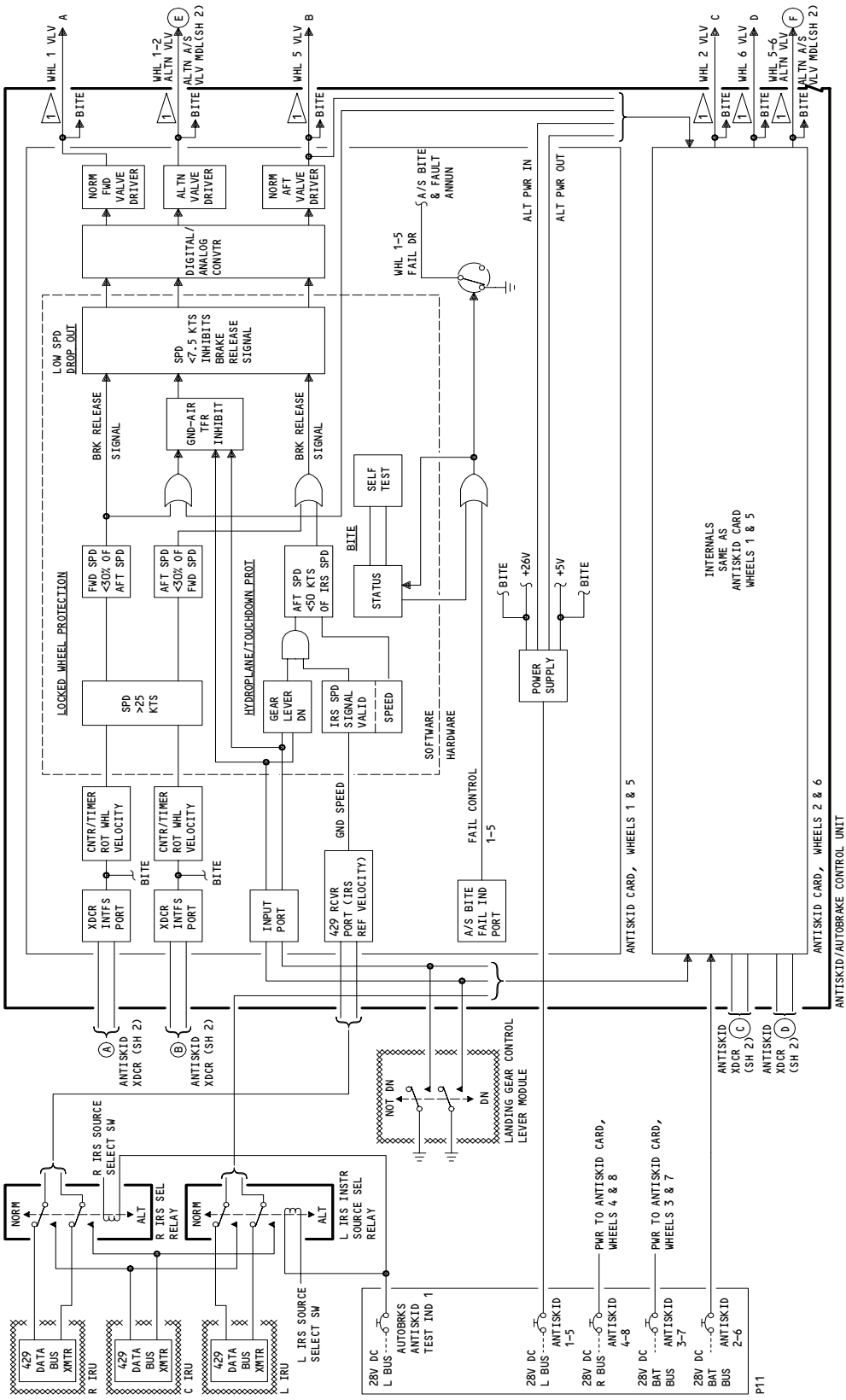
(c) Landing gear lever switch provides gear down signal to all wheel cards when the landing gear lever is in the DN position. Landing gear lever input is used to detect gear from "down" to "not down" transition after takeoff. The alternate antiskid valve drivers are then inhibited for 12 seconds to allow the gear retract braking system to arrest the wheels.

(3) Antiskid control schematic (Fig. 13)

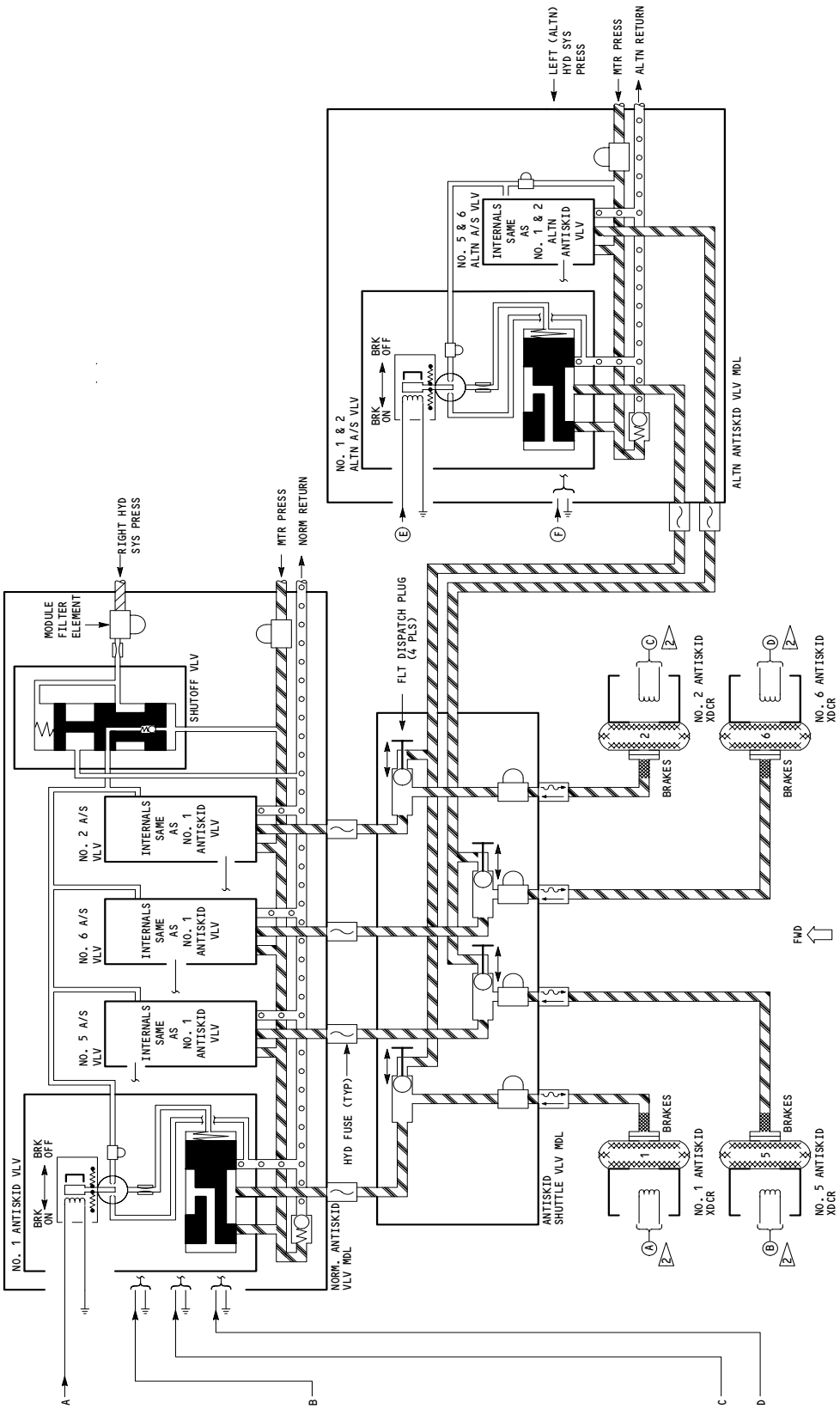
(a) Antiskid wheel control and logic

1) Individual wheel control

a) The microprocessor in each wheel card provides control for the fore and aft wheel pair. The card receives and processes wheel speed signals, receives and decodes IRS data, provides valve driver signals and communicates with the test and fault inputs from the BITE card. A digital/analog converter in the card provides the valve command to drive the respective valve for each wheel.



Antiskid Control Schematic
Figure 13 (Sheet 1)



Antiskid Control Schematic
Figure 13 (Sheet 2)

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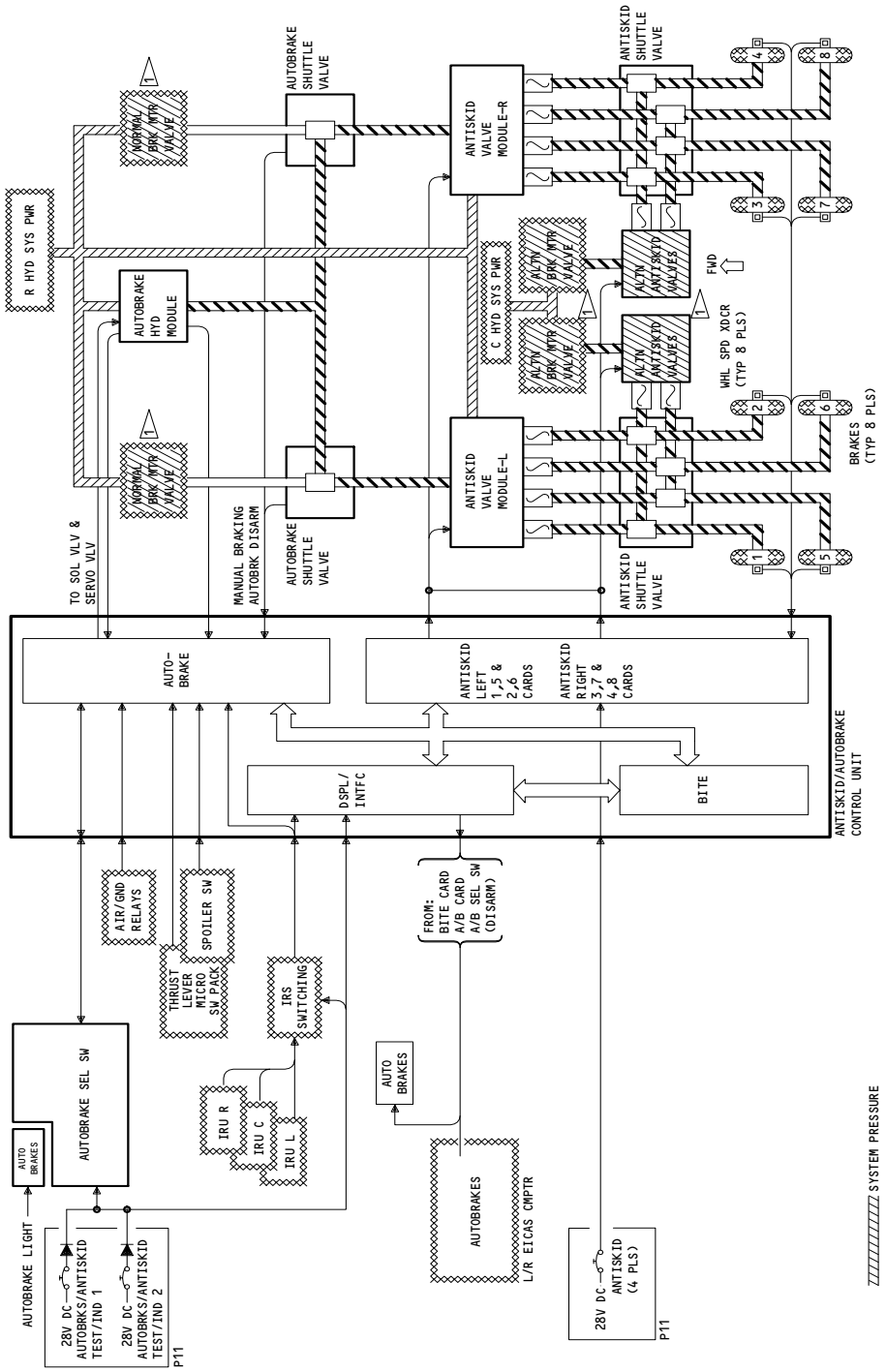
2) Paired wheel control
   a) The normal valve driver generates a second signal for the alternate valve driver. The second signal is OR'd with the paired wheel signal from the mating wheel card. The higher signal of the two drives the alternate valve for the laterally paired wheel.
3) Valve driver logic
   a) The wheel cards compare the brake applied pressure in three modes. These are proportional, integral and derivative. The proportional mode involves brake applied pressure with proportional wheel speed as the brake pressure changes to maintain a deceleration short of a skid. The integral mode checks the past performance of wheel speed. The derivative mode checks rate of change of the wheel speed. The three modes provide the data input required to produce a driving signal to the normal and alternate valve drivers. An alternate brake selector valve (not shown in Fig. 13) determines which valve driver is used.
4) Antiskid locked wheel protection
   a) Locked wheel protection, a secondary antiskid function, prevents lockup of individual wheels during all braking above 25 knots. The tandem pairing of locked wheel shown in Fig. 12 compares the wheel speed of paired wheels. It provides a full brake-release signal to the antiskid valve when the speed of the controlled wheel is less than 30 percent of the paired wheel.
5) Hydroplane/touchdown logic
   a) Hydroplane protection provided to the aft wheels to protect against hydroplane-induced wheel lockups also provides touchdown protection (Fig. 12). The control unit compares the IRS speed data with the wheel speed to generate a full brake release signal. The signal goes to the respective antiskid valve when the speed of the controlled wheel is at least 50 knots below the IRS ground speed. The hydroplane/touchdown protection requires valid IRS inputs and that landing gear is down and locked. Loss of IRS signal, however, does not affect other antiskid functions. Hydroplane/touchdown protection for the forward wheel is provided indirectly thru locked wheel protection.
6) Gear retract braking logic
   a) When the gear control lever is moved from the DN (down) position, the alternate valve drivers can not operate for 12.5 ±0.5 seconds. This lets the alternate system (the center system) supply the pressure to the brakes without the operation of the antiskid system. The brakes stop the main-landing-gear wheels before the landing gear retract into the wheel wells.

7) Low speed dropout logic
   a) A low speed dropout at 7.5 knots inhibits the valve drivers in the wheel control circuit. Below the dropout speed, the antiskid system provides no brake release signal.

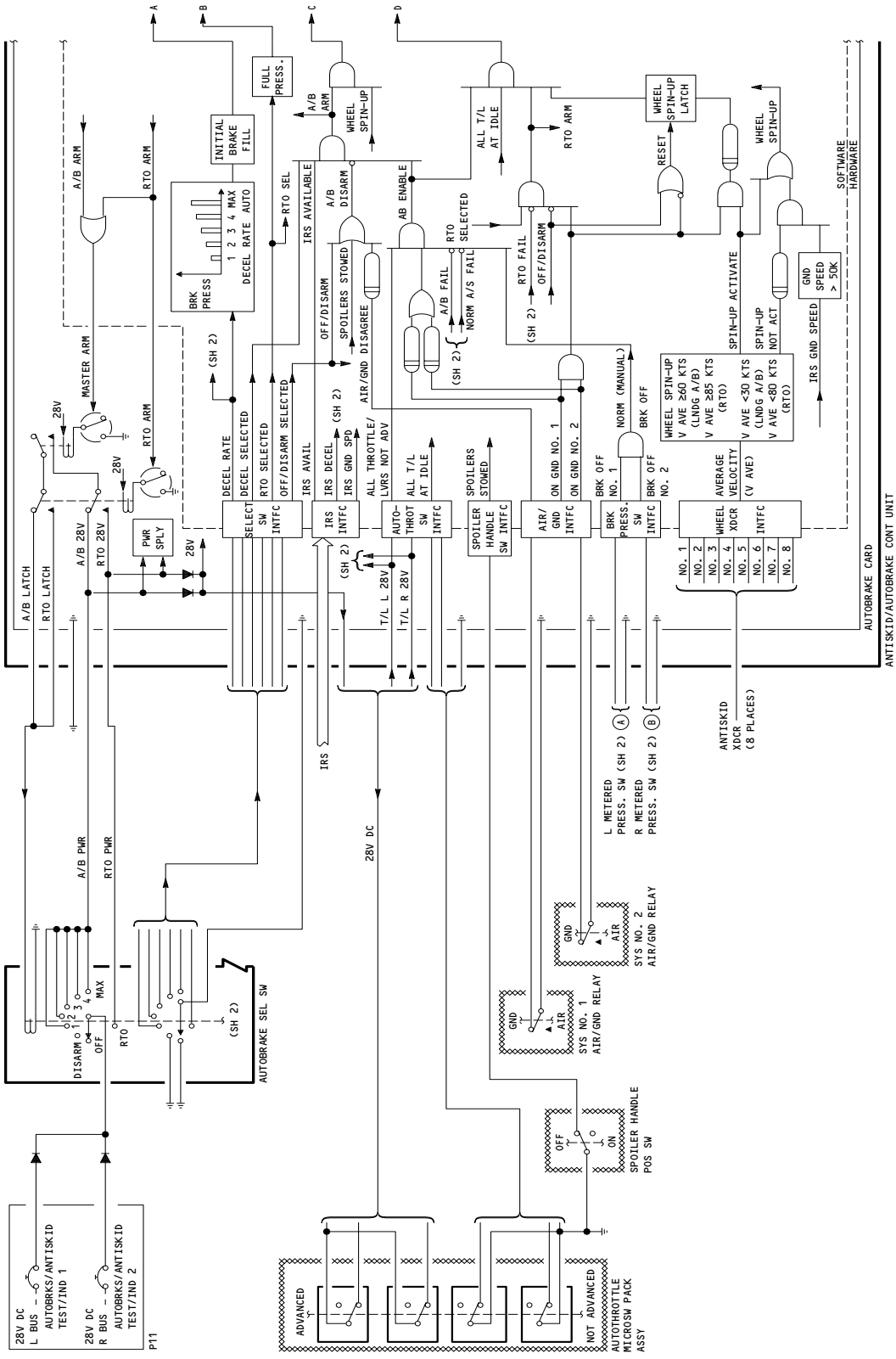
(4) Antiskid hydraulic operation (Fig. 13)
   (a) Brake pressure input of 260 psi or more to the normal antiskid module opens the shutoff valve to allow system pressure supply to the antiskid valves. On alternate system, pilot metered pressure supplies to the valve. The valve varies the output pressure to the brakes by moving the slide valve between apply and release, using an electrical signal from the control unit to the servo valve torque motor. The pressure flows thru the fuses to the shuttle valve module and then on to the brakes.
   (b) The wheel speed signal from transducer provides the required data input to the control unit. The unit uses the wheel speed to calculate the maximum brake pressure that will not cause a skid. This provides a control signal to the normal and alternate valves. The valves limit the pressure to the brakes. The antiskid system for left landing gear wheels 1, 2, 5, and 6 is shown in Fig. 13. The system for right landing gear wheels 3, 4, 7, and 8 is similar.

(5) Autobrake system simplified (Fig. 14)
   (a) The AUTOBRKS/ANTISKID TEST/IND 1 and AUTOBRKS/ANTISKID TEST/IND 2 circuit breakers on P11 provide 28 v dc power thru the AUTOBRAKES selector switch to the control unit. An autobrake card in the unit compares IRS deceleration data inputs with the selected deceleration (encoded in the control unit). This results in a pressure command to the autobrake valve. The valve provides the pressure via the normal antiskid valves to the brakes. Two autobrake shuttle valves shuttle pressure between the normal brake metered pressure output (manual) and the autobrake pressure output. When the metered pressure > 500 psi, either the left or right shuttle valve pressure switch opens. This results in an open circuit signal to the control unit to disarm the system.
   (b) The AUTOBRKS/ANTISKID TEST/IND 1 and AUTOBRKS/ANTISKID TEST/IND 2 circuit breakers on P11 provide 28 v dc power for the BITE functions. The control unit provides fault signal to the AUTOBRAKES light and the EICAS display via the EICAS computers.
   (c) Inputs to the control unit affecting autobrake functions include IRS data, air/ground signal, and thrust lever and spoiler handle position signals. A working antiskid system is required for autobrake operation.

(6) Autobrake control schematic (Fig. 15)



Autobrake System Simplified
Figure 14



Autobrake Control Schematic
Figure 15 (Sheet 1)

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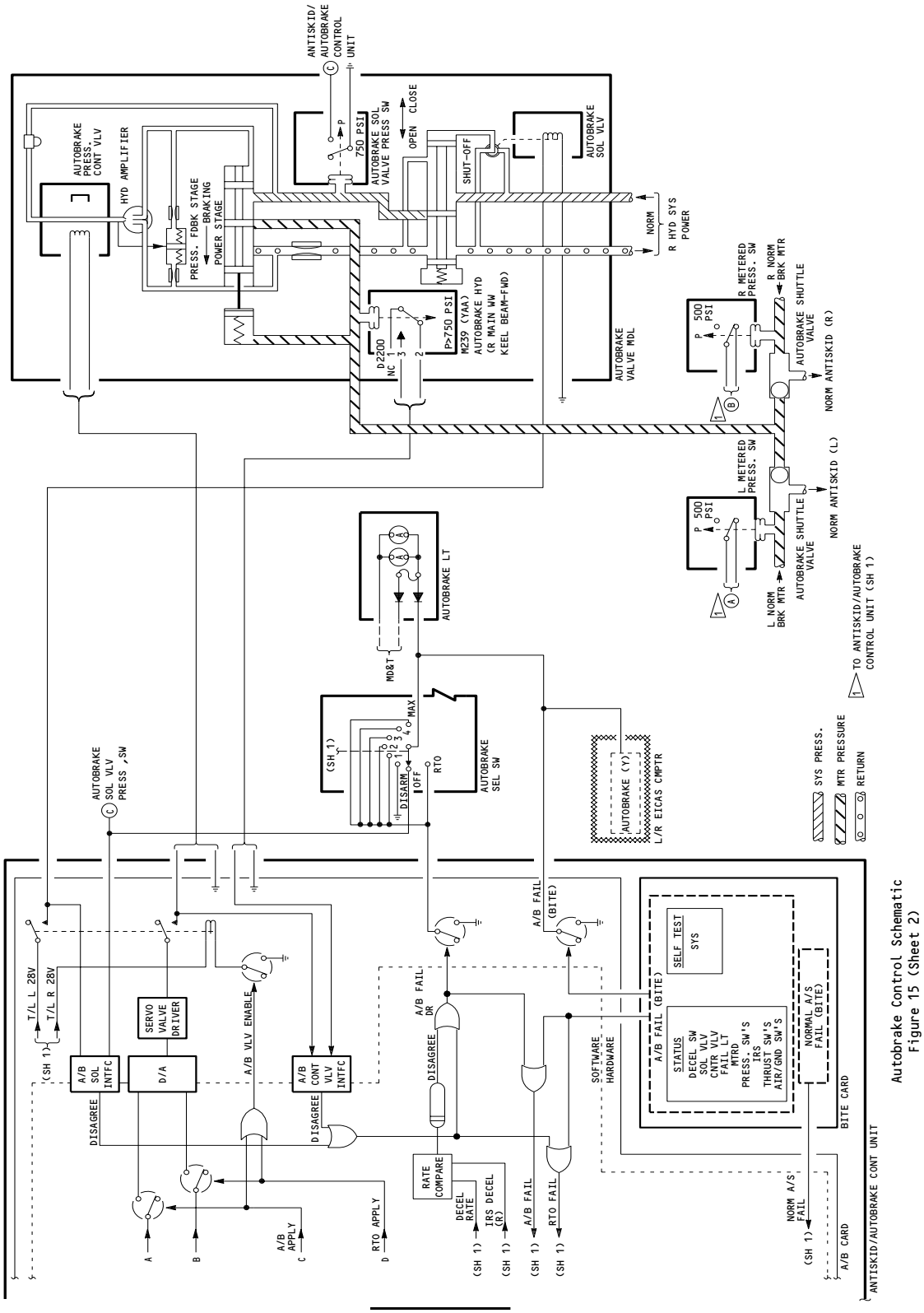

Autobrake Control Schematic
Figure 15 (Sheet 2)

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(a) Autobrake system inputs

1) The AUTOBRKS/ANTISKID TEST/IND 1 and AUTOBRKS/ANTISKID TEST/IND 2 circuit breakers on panel P11 provide 28 v dc power to the autobrake selector panel. A switch on the panel provides pilot's choice for autobrake functions. Prior to landing, the pilot arms the system by placing the switch at 1, 2, 3, 4 or MAX AUTO. At touchdown, the brakes apply automatically and maintain the braking desired by the pilot.

2) When the switch is at RTO, the system functions for aborted takeoff. The system applies pressure to the brakes when the average wheel speed is above 85 knots and both engine thrust levers are moved to idle.

3) Should a failure occur, the system disarms and the selector switch automatically moves to DISARM. At DISARM, the system releases the autobrake pressure, an AUTOBRAKES light comes on, and the EICAS display will show the AUTOBRAKES advisory message. The pilot can turn off the AUTOBRAKES light and remove the message by placing the switch to OFF. The light will not go off and the message will remain if the solenoid valve on the autobrake module is faulty (solenoid valve output pressure switch shows high pressure).

(b) Autobrake logic and control

1) Autobrake deceleration level inputs

a) These tables shows the pressures and deceleration levels that the system automatically applies:

S283T001-25 CONTROL UNIT			
Autobrake Selector Switch Position	Maximum Brake Pressure (psi ±200)	Decel Level (ft/sec/sec ±0.25)	Time necessary to get to the deceleration level after the autobrake is applied (seconds)
1	1290	4.375	0.5
2	1500	5.4375	1
3	1750	6.8125	1
4	2050	8.3125	2
MAX AUTO	3000	12.125	4

RTO	3000	(Deceleration is not controlled in the RTO mode. Maximum pressure is applied immediately.)

b) The autobrake selector switch positions are encoded in the autobrake card. The encoded level signal starts the brake fill logic and control the valve drivers to generate the selected deceleration rate.

2) Autobrake arming logic

a) The system arms and latches with a magnetic latching switch within 100 milliseconds when the following conditions are met:

1. A decel level (1, 2, 3, 4, or MAX AUTO) has been selected

NOTE: See RTO autobrake arming for the RTO position.

2. No autobrake failures detected
3. No antiskid failure detected on the normal system except that failures on a wheel whose indication has been deactivated will not prevent arming

4. All thrust lever switches show not advanced when either air/ground signal indicates ground mode
5. IRS signal available
6. AIRPLANES WITH STEEL BRAKE CONTROL UNITS (S283T001-11, -19);
   Brake pressure switches (both left and right) show low pressure (manual brake press < 750 psi)
7. AIRPLANES WITH CARBON BRAKE CONTROL UNITS (S283T001-13, -21, -23, -25);
   Brake pressure switches (both left and right) show low pressure (manual brake press < 500 psi)

b) The control unit provides an arm hold signal to the switch magnetic latch to keep the switch in the selected position when above requirements are met. If the arm hold signal is not present, the switch moves to DISARM.

3) Autobrake application logic

a) The control commands brake pressure by opening the solenoid valve and modulating the servo valve when:
1. Autobrake is armed.
2. All thrust lever switches are not advanced.
3. SAS 150-152;
   One air/ground sensor shows that the airplane is on the ground continuously for more than 0.2 seconds.

4. SAS 153-999;
   ALL MTH AIRPLANES;
   One air/ground sensor shows that the airplane is on the ground continuously for more than 0.1 seconds.
5. Wheel spin-up circuit activated.

b) The system applies the autobrake when the above conditions occur. When the third condition or subsequent conditions are gone, autobraking is removed but not disarmed and the time delay resets.

4) Wheel spin-up circuit and brake fill

a) The spin-up circuit includes a detection circuit and a latch circuit. The detection circuit activates when the average velocity of all wheels is 60 knots or greater and deactivates when the average velocity drops below 30 knots. The latch circuit latches three seconds after the airplane is on ground and the detection circuit is deactivated. The latch circuit resets (unlatches) when a ground-air transition takes place, or the autobrake system is turned off or disarmed.

b) Upon initiation of autobrake control, the control commands an initial brake fill to provide brake application.

5) Autobrake disarm logic
   a) For positions 1, 2, 3, 4, and MAX AUTO, the autobrake removes the power from the solenoid, the control servo valve drivers and from the selector switch latch when the conditions that follow occur:
      1. System is selected off.
      2. Either left or right metered pressure switch indicates pressure (manual brake application > 500 psi).
      3. Any thrust lever switch indicates advanced on the ground, except that any thrust lever switch indicating advanced for up to 3 seconds after touchdown will not disarm the system.
      4. Autobrake failure detected, including failure to apply pressure (indicated by the pressure control switch) when application conditions are met and the commanded deceleration exceeds the actual airplane deceleration by more than one foot per second square for more than three seconds.
      5. Antiskid failure on normal system detected except for failures on a wheel whose indication has been deactivated by the control unit selector switch.
      6. Spoilers stowed after having been deployed on the ground.
      7. IRS signal not present or faulty.

6) RTO autobrake arming
   a) Power is supplied to the RTO control and the selector switch latches in 300 milliseconds or less when the conditions that follow occur:

      NOTE: The switch goes to the OFF position if one or more of the conditions does not occur.

      1. RTO autobrake selected.
      2. No RTO autobrake failure detected.
      3. Both air/ground signals indicate ground mode.
7) RTO autobrake application
   a) The solenoid valve and the control servo valve open fully when:
      1. RTO autobrake armed.
      2. All thrust lever signals indicate idle thrust.
      3. RTO wheel spin-up circuit latched.(average wheel speed > 85 knots)
      4. Autobrake arming and application logic are satisfied with the exception of IRS failures and landing deceleration not selected.

8) RTO autobrake disarm
   a) The RTO is disarmed when one of the conditions that follow occurs:
      1. The switch is turned to the OFF position.
      2. One of the air/ground signals shows the air mode.

         NOTE: Power is removed from the latch, and the switch turns to the OFF position.

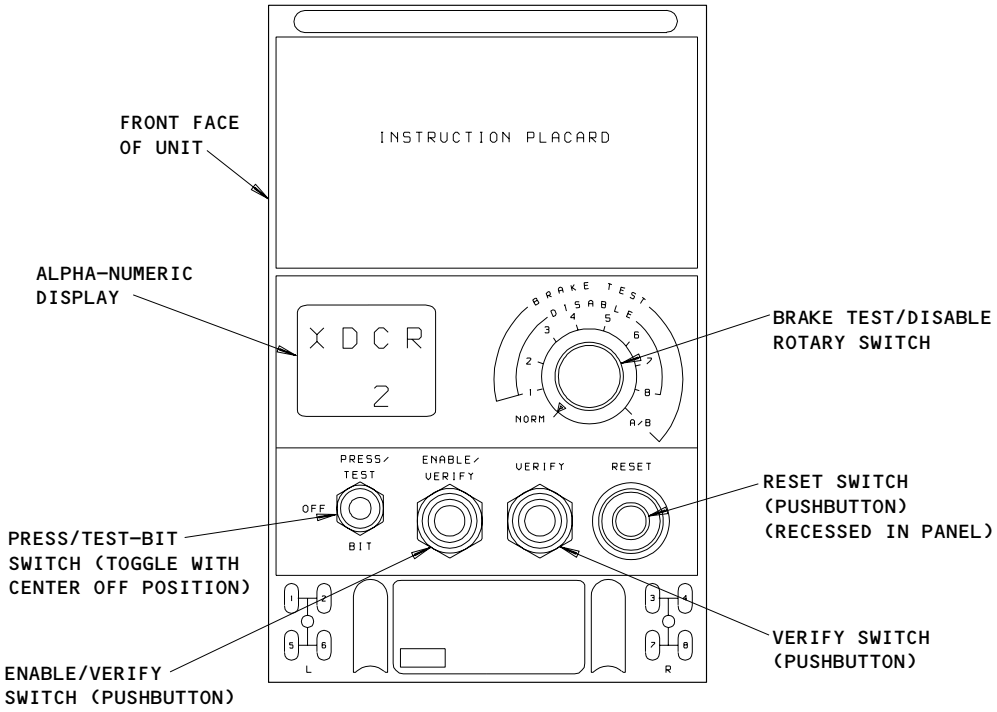
   b) The autobrakes will disarm after the RTO causes the brakes to apply, if one of the conditions that follow occur:

      NOTE: The AUTO BRAKES light comes on, but the switch will stay in the RTO position.

      1. One or more of the thrust levers is moved out of the idle position.
      2. The brakes are applied manually to a pressure greater than 500 psi.
      3. A failure occurs in one part of the antiskid or autobrake system.
      4. The speedbrake handle is pushed in after it was extended.
   c) The AUTO BRAKES light stays on until the switch is turned to the OFF position, or one of the air/ground signals is in the air mode.

(7) Autobrake hydraulic operation (Fig. 16)
   (a) The autobrake solenoid valve provides on-off control of normal hydraulic system power to the autobrake valve module. When a valve driver signal from the control unit is received, the valve opens and admits system pressure to the control servo valve. The pressure control valve varies the output pressure from the module as commanded by the control unit to maintain the selected deceleration. For description of the module operation, refer to Autobrake Module Operation.
   (b) The solenoid valve pressure switch senses the solenoid valve position (open or close). When the valve opens and admits system pressure to the module, the switch closes to show high (> 750 psi) pressure and provides an appropriate signal to the control unit. The control valve pressure switch senses the output pressure and provides an appropriate signal to the control unit for autobrake control.
   (c) Brake pressure output from the autobrake module positions the two autobrake shuttle valves to allow fluid flow via the normal antiskid modules to the brakes. Two pressure switches on the metered pressure port of the shuttle valves monitor manual brake pressure downstream of the brake metering valves. When manual braking effort exceeds 500 psi on either the left or right brake pedal, the switch opens and provides a signal to the control unit to disarm the system.

B. Antiskid/Autobrake System Built-In Test Equipment (BITE) (Fig. 16)
   (1) Extensive BITE on the control unit provides the system for both in-flight and on-ground testing. The BITE also provides system trouble shooting at LRU level. If the unit is the failed LRU, it isolates to the circuit card.
   (2) A BITE control and display panel and an instruction placard are on the front face of the unit. The panel face consists the following:
      (a) One alphanumeric display - provides readout and identifies the failed channel.
      (b) One BRAKE TEST/DISABLE rotary switch - allows selection of 1 thru 8, normal system operation test position, and an A/B brake test positions. In addition it disables fault indication on selected wheel. On airplanes dispatched with one wheel deactivated, the switch inhibits the inputs to the related channel, thus preventing the display of antiskid EICAS message and the illumination of the ANTISKID light.
      (c) One ENABLE/VERIFY momentary pushbutton switch - used with the VERIFY switch to enable a system test or brake operational test.
      (d) One VERIFY momentary pushbutton switch - performs a complete system test or brake operational test when used with ENABLE/VERIFY switch.



Antiskid/Autobrake Control Unit BITE
Figure 16

(e) One PRESS/TEST momentary, 3-position (PRESS/TEST-OFF-BIT) toggle switch - performs lamp test (switch in PRESS/TEST position) and recalls faults (switch in BIT position). The lamp test includes all segments of display, ANTISKID light and AUTOBRAKES light.

(f) One RESET pushbutton - clears memory of stored fault information.

(3) Three levels of BITE test are provided. These are system test, continuous monitor test, and brake operational test.

(a) System test

1) With both the ENABLE/VERIFY and VERIFY switches pressed, and the BRAKE TEST rotary switch in the NORM position, the control unit performs a complete system electrical test and sends its results to the BITE. When a fault is detected, the test identifies the failed LRU on the display. When the VERIFY switch is pressed and released again, subsequent faults will be shown until TEST END is shown, indicating no remaining faults.

(b) Continuous monitor test

1) The control unit checks the valves and transducer for continuity and the control circuit for proper functions.
   a) The control unit checks the antiskid valves (normal and alternate) by monitoring a small voltage which it applies to the valve torque motor. This voltage causes the antiskid valve torque motor armature to be biased slightly, away from the hydraulic return port.
   b) With full system pressure available, the bias can be overcome and the return port fully blocked. This allows full pressure to the brakes.
   c) With only accumulator pressure available, pressure against the armature may not be sufficient to overcome the bias. Pressure losses to return could occur, degrading brake performance.
   d) Therefore, without right or center system pressure, the BITE monitor function of the antiskid valves is suspended.
2) The test stores following detected faults (continuous and intermittent):
   a) Failed transducers
   b) Control circuit failure
   c) Faulty valves
   d) Parking brake control/parking brake valve disagreement
   e) Wheel deactivation
   f) Loss of IRS signal
3) Faults are stored in non-volatile memory for readout during ground maintenance. The can store data for at least 250 hours without power.

4) Memory recall for fault readout requires placing the PRESS/TEST switch at BIT and releasing; this shows the first fault. Subsequent BIT selections display any remaining faults until TEST END is shown. The RESET switch clears memory of all fault data.

(c) Brake operation test

1) The test checks the skid release feature and allows a visual brake check. The visual check is on a single wheel for the normal system, and on wheel pair for the alternate system. The test starts with the BRAKE TEST switch selected to one wheel and the ENABLE/VERIFY switch pressed. Pressing and releasing the VERIFY switch causes a one-time brake release and reapplication for the selected wheel (normal hydraulics) or wheel pair (alternate hydraulics).

2) With BRAKE TEST switch at NORM and ENABLE/VERIFY switch pressed, pressing the VERIFY switch performs an antiskid system check. The display reads TEST END when:

a) Transducers, valve circuit, associated airplane wiring, and power supply voltage are valid.

b) Parking brake control and parking brake valve are in agreement.

c) Gear retract braking test (with landing gear lever in OFF) is valid.

d) Cards in unit are operating normally.

3) With the selector switch at 1, 2, 3, 4 or MAX AUTO, BRAKE TEST switch at A/B and ENABLE/VERIFY switch pressed, pressing the VERIFY switch performs an autobrake system check. The display reads TEST END when:

a) Air/ground sensing shows airplane in ground mode.

b) Brake pressure meets the selected deceleration level.

c) Thrust levers are in retarded position.

(4) BITE logic (Fig. 13 and 14)

(a) The communication port in each wheel card provides the tie-in between cards. A BITE status circuit processes the incoming signal in and out of the self test circuits and provides a BITE status output to the driver circuit. A second BITE status output is OR'd with a failure signal input from other wheel cards to provide a driving signal to the driver circuit.

(5) Antiskid/Autobrake BITE and fault annunciation schematic (Fig. 17)

(a) Display card power and annunciation

1) A 28 v dc power is provided through the AUTOBRKS/ANTISKID TEST/IND 1 and AUTOBRKS/ANTISKID TEST/IND 2 circuit breakers on panel P11. The circuit breakers provide power to the autobrake, BITE, and interface/display cards in the control unit and to the antiskid alternate fail relay in panel P36.

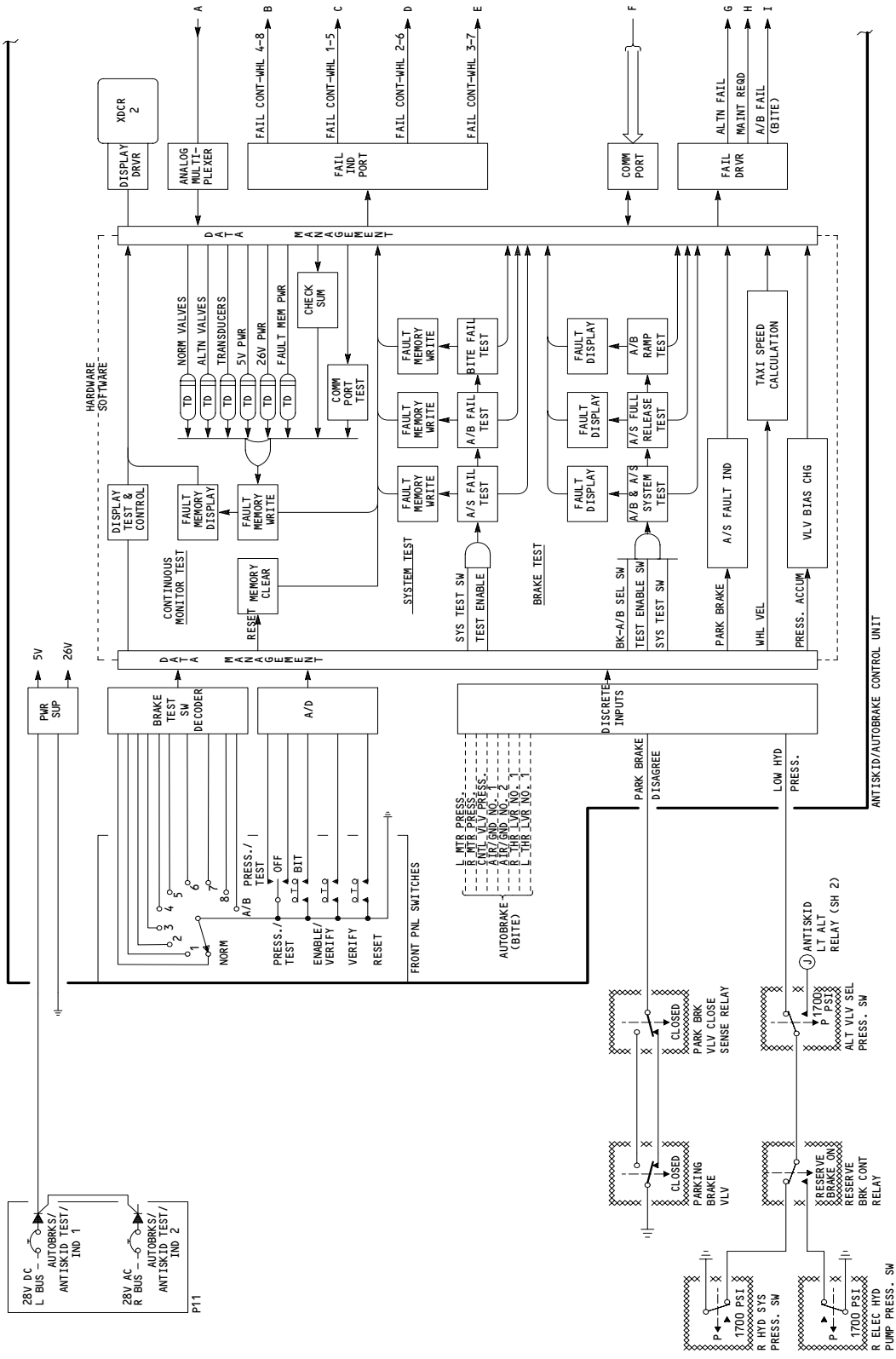
2) The interface/display card receives front panel rotary switch position discrete signals thru the panel switch input port. The display card also receives the autobrake discrete signals, the system fault signals (from BITE card), and the wheel card fault signals, thru the BITE/display port.

(b) Display card signal processing

1) The display card, thru data management, processes the discrete and fault signal inputs into the microprocessor.
2) The rotary switch position discrete signals allow the test initiation circuit to generate request commands. The commands are appropriate to its mode of operation (test level) to the wheel cards and autobrake card. Upon receipt, each card responds with the status information requested.
3) When fault is detected, the display card stores the fault in the memory and provides driving signals to the display driver and the fault light driver. The display driver enables the illumination of the display on the control unit (upper half of the display comes on immediately and the lower half follows after three seconds). The fault light driver receives the signal from the fault memory and turns on the ANTISKID light on P5.

(c) Antiskid wheel card signals

1) The BITE self test circuit in each wheel card provides a complete electrical self test to the antiskid system. The test includes component check for continuity and impedance, driver check for circuit failure, and a brake release test. Results of these tests are passed on to the BITE card via the data link.
2) The BITE status test circuit in each wheel card provides a monitoring test upon completion of the self test. The test monitors the following and provides its results to the BITE card:
   a) Gear position switch - up/down



Antiskid/Autobrake BITE Schematic and Fault Annunciation
Figure 17 (Sheet 1)

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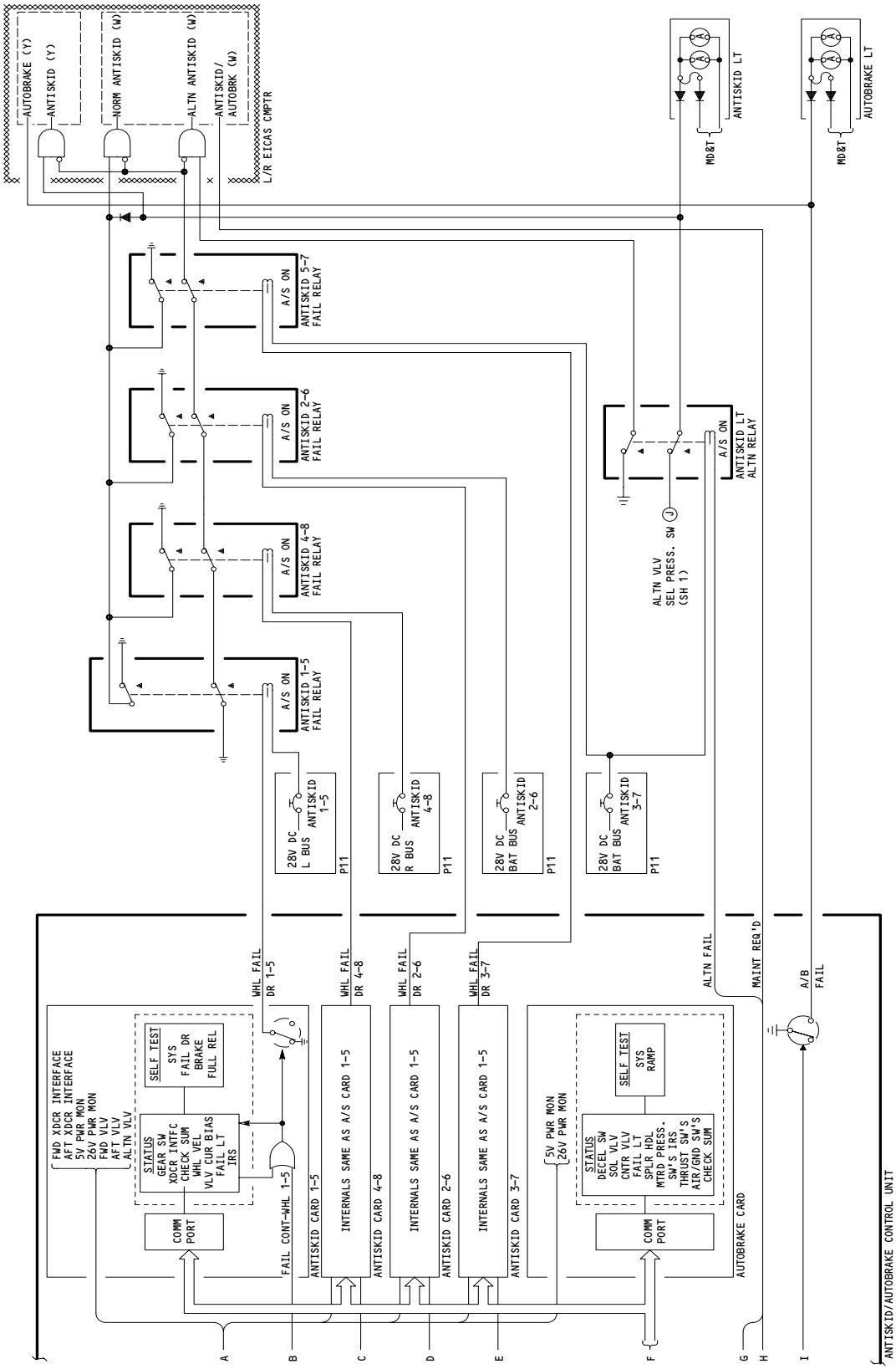


Antiskid/Autobrake BITE and Fault Annunciation Schematic
Figure 17 (Sheet 2)

b) Transducer interface - operable/nonoperable
c) Digital check sum - active location check with memory
d) Wheel velocity - transducer continuity and impedance
e) Valve current bias - electrical response to valves
f) Failure light drivers - continuous operation of light drivers
g) Digital parity - check digital word parity for correctness

3) The analog signal inputs from the wheel card to the BITE card are the wheel speed transducer voltages, the 26 v dc and 5 v dc regulated power source voltages and valve voltages.

(d) Autobrake card signals

1) The autobrake card BITE self test circuit provides electrical self test to the autobrake system (airplane in air with the AUTOBRAKES selector switch at 1, 2, 3, 4 or MAX AUTO). The self test circuit also provides a RAMP test (airplane on ground with the switch at RTO). Result of test is passed on to the BITE card via the data link.
2) The BITE status test circuit in the autobrake card provides a monitoring test upon completion of the self test (system or ramp). The test monitors the following and provides its results to the BITE card:
- Deceleration selection - a deceleration selected
- Solenoid and servo valves - continuity and impedance
- Failure light drivers - continuous operation of light drivers
- Digital parity - check digital word parity for correctness
- Digital checksum - active location check
- Throttle switch - continuity
- Air/ground sensing - continuity

(e) BITE card signal processing

1) The multiplexer in the BITE card selects the analog voltages to be monitored. A continuous monitor test circuit receives and processes the voltage signals (valves, transducers, 26 v dc and 5 v dc regulated power sources and fault memory power), the digital memory data and the system status input. The test circuit provides a time delay of all voltage failure indications as required by the logic circuit. The data management in the BITE card microprocessor allows a buffered flow of signals between BITE card and all other cards.

2) When the ENABLE/VERIFY switch and the VERIFY switch on the control unit are pressed, the BITE card starts a system test (BRAKE TEST switch at NORM) or an autobrake test (BRAKE TEST switch at A/B and AUTOBRAKES selector switch in any one deceleration position). Failure detected during test is recorded in the memory and shown on the display. Successful tests feed no fault signal to the BITE card and the system is operable.

C. Control

(1) Antiskid system (Fig. 1)

(a) A 28 v dc supplies operating power for the antiskid system thru four circuit breakers (ANTISKID WHEELS, 1-5, 2-6, 3-7, and 4-8) on P11 to the control unit. The system turns on when the circuit breakers are closed and the landing gear is down and locked. The system turns off when the circuit breakers are open. Antiskid system off is shown by the illuminations of ANTISKID light on P5 and the ANTISKID OFF advisory message on EICAS display.

(b) When hydraulic power of the right system is removed, the center system comes in to provide power to the alternate antiskid system automatically.

(c) The front face of the control unit (Fig. 16) contains BITE switches. These switches are used for checking transducer, valve and skid circuits on each wheel. A complete antiskid system test can also be performed with the BITE switches.

(d) One of the switches on the control unit, the BRAKE/TEST DISABLE switch (Fig. 16), is used to disable the EICAS indication for an antiskid failure that affects only the normal antiskid system. Antiskid failures that affect the alternate antiskid system can not be disabled. When a brake has been deactivated because of an antiskid failure, the BRAKE TEST/DISABLE switch is set to the position of the brake that is disabled. This disables the ANTISKID advisory message to clear the antiskid fault inhibit and allow the autobrake system to be armed. If another antiskid failure occurs, the ANTISKID advisory message will be displayed again and the autobrake system will be inhibited again. When the BRAKE TEST/DISABLE switch is in any position other than the NORM position, the ANTISKID maintenance message will be displayed.

(2) Autobrake system (Fig. 2)

(a) Arm autobrake system during landing.

1) Place AUTOBRAKES selector switch to 1, 2, 3, 4 or MAX AUTO position to turn on system.

2) Observe that AUTOBRAKES light goes out and the switch remains in level selected. This shows the autobrake system is armed.

3) Depress either or both brake pedals.

4) Observe that AUTOBRAKES light comes on indicating the taking over of autobrake braking by manual braking. The EICAS display shows AUTOBRAKE advisory message. The selector switch automatically trips to DISARM.

5) Place the selector switch to OFF.
6) Observe that AUTOBRAKE light goes out. The EICAS shows no AUTOBRAKE message. The autobrake system turns off.

(b) Arm autobrake system in RTO mode prior to takeoff.
1) Place AUTOBRAKES selector switch to RTO position to initiate autobrake RTO mode.
2) Observe that AUTOBRAKE light goes out and the switch remains at RTO. This shows that autobrake system of RTO mode is armed.

ANTISKID/AUTOBRAKE SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
ASSEMBLY – ANTISKID/BRAKE COOLING XDCR MOTOR	5	8	HUBCAP, MAIN WHL AXLE	32-42-06
TS358 FOR WHEEL 1			L FWD OUTBD WHL	
TS359 FOR WHEEL 2			L FWD INBD WHL	
TS362 FOR WHEEL 3			R FWD INBD WHL	
TS363 FOR WHEEL 4			R FWD OUTBD WHL	
TS360 FOR WHEEL 5			L AFT OUTBD WHL	
TS361 FOR WHEEL 6			L AFT INBD WHL	
TS364 FOR WHEEL 7			R AFT INBD WHL	
TS365 FOR WHEEL 8			R AFT OUTBD WHL	
ASSEMBLY – AUTOBRAKE SHUTTLE VALVE	4	2	MAIN WHEEL WELL, TRANSVERSE BEAM	32-42-10
CARD – AUTOBRAKE CIRCUIT	6	1	119AL, MAIN EQUIP CTR, E1-1, ANTISKID/AUTOBRAKE CONTROL UNIT, M102	32-42-01
CARD – BITE CIRCUIT	6	1	119AL, MAIN EQUIP CTR, E1-1, ANTISKID/AUTOBRAKE CONTROL UNIT, M102	32-42-01
CARD – INTERFACE/DISPLAY CIRCUIT	6	1	119AL, MAIN EQUIP CTR, E1-1, ANTISKID/AUTOBRAKE CONTROL UNIT, M102	32-42-01
CARD – MAIN WHEEL CIRCUIT	6	4	119AL, MAIN EQUIP CTR, E1-1, ANTISKID/AUTOBRAKE CONTROL UNIT, M102	32-42-01
CIRCUIT BREAKERS:	1		FLT COMPT, P6	
LANDING GEAR PARKING BRAKE VLV, C1179		1	6F4	*
R PLT A/B, C108		1	6K28	*
CIRCUIT BREAKERS:	1		FLT COMPT, P11	
AIR/GND SYS 1, C1182		1	11U15	*
ANTISKID 1-5, C1171		1	11U18	*
ANTISKID 2-6, C1183		1	11C31	*
ANTISKID 3-7, C1184		1	11C32	*
ANTISKID 4-8, C1172		1	11U27	*
AUTOBRKS/ANTISKID TEST/IND 2, C1173		1	11U21	*
AUTOBRKS/ANTISKID TEST/IND 1, C1176		1	11U12	*
IND LIGHTS 3, C1200		1	11A35	*
LANDING GEAR POSITION AIR/GND SYS 1, C1175		1	11C30	*
POSITION AIR/GND SYS 2, C1170		1	11U23	*
R IND LTS 2, C1274		1	11R29	*
DIODE – R33,R62,R63,R64	6	2	119AL, MAIN EQUIP CTR, E1-1	*
DIODE – (REF 31-01-36, FIG. 101) R129,R130				
DIODE – R217,R218,R609	1	2	FLT COMPT, P61	*
DRIVE – ANTISKID TRANSDUCER	5	8	MAIN WHEEL HUBCAP	32-42-04
FILTER – ALTERNATE ANTISKID MODULE INLET	2	2	552CB/L WING, 652CB/R WING	32-42-03
FILTER – ALTERNATE ANTISKID MODULE SCREEN	2	2	552CB/L WING, 652CB/R WING	32-42-03
FILTER – ANTISKID SHUTTLE VALVE MODULE	3	8	551TB/L WING, 651TB/R WING	32-42-07
FILTER – NORMAL ANTISKID MODULE INLET	3	2	551TB/L WING, 651TB/R WING	32-42-03
FILTER – NORMAL ANTISKID MODULE SCREEN	3	2	551TB/L WING, 651TB/R WING	32-42-03
FUSE – ALTERNATE ANTISKID MODULE	2	4	552CB/L WING, 652CB/R WING	32-42-03
FUSE – NORMAL ANTISKID MODULE	3	8	551TB/L WING, 651TB/R WING	32-42-03

* SEE WM EQUIPMENT LIST

Antiskid/Autobrake System – Component Index
Figure 101 (Sheet 1)

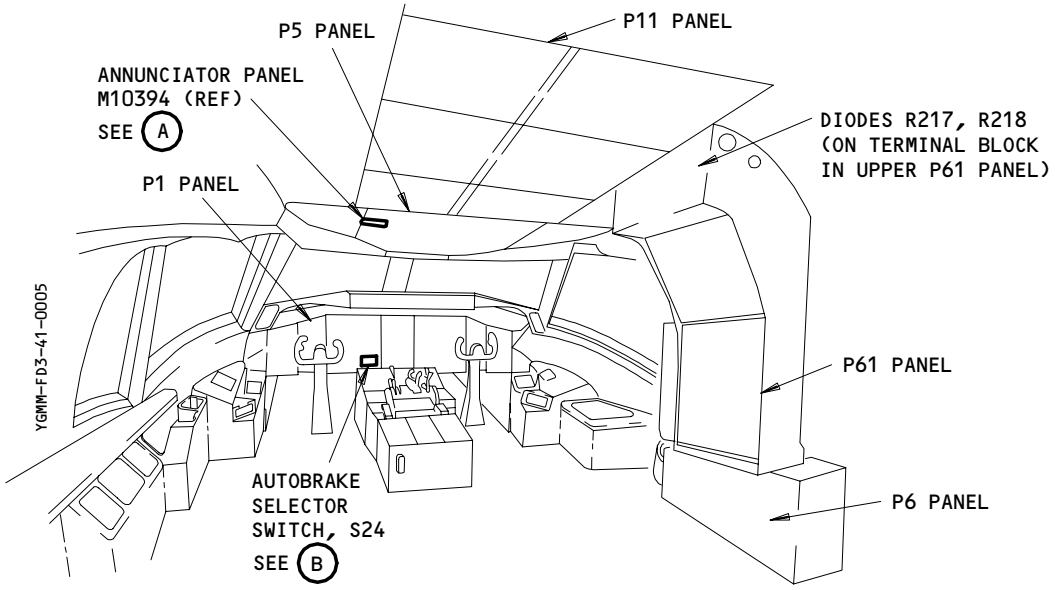
COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
LIGHT – ANTISKID, YDLL19	1	1	FLT COMPT, P5, ANNUNCIATOR PANEL, M10394	*
LIGHT – AUTOBRAKE, L119	1	1	FLT COMPT, P1	*
MODULE – AUTOBRAKE, M239	4	1	R MAIN WHEEL WELL, KEEL BEAM FWD	32-42-09
MODULE – LEFT ANTISKID SHUTTLE VALVE	3	1	551TB, L WING LWR SURFACE TE	32-42-07
MODULE – LEFT ANTISKID (ALTERNATE)	2	1	552CB, L WING LWR SURFACE TE	32-42-02
MODULE – LEFT ANTISKID (NORMAL)	3	1	551TB, L WING LWR SURFACE TE	32-42-02
MODULE – RIGHT ANTISKID SHUTTLE VALVE	3	1	651TB, R WING LWR SURFACE TE	32-42-07
MODULE – RIGHT ANTISKID (ALTERNATE)	2	1	652CB, R WING LWR SURFACE TE	32-42-02
MODULE – RIGHT ANTISKID (NORMAL)	3	1	651TB, R WING LWR SURFACE TE	32-42-02
PACK – (FIM 22-32-00/101) AUTOTHROTTLE MICROSWITCH, M966				
PANEL – (FIM 30-31-00/101) ANNUNCIATOR, M10394				
PANEL – (FIM 22-21-00/101) YAW DAMPER, M10250				
PLUG – FLIGHT DISPATCH DISCONNECT	3	1	551TB, L WING, 651TB, R WING, ANTISKID SHUTTLE VALVE	32-42-00
RELAY – (FIM 31-01-36/101) AIR/GROUND SYS 1, K199 ANTISKID 1 & 5 FAIL, K10229 ANTISKID 4 & 8 FAIL, K10230 ANTISKID 2 & 6 FAIL, K10231 ANTISKID 3 & 7 FAIL, K10232 ANTISKID ALTERNATE FAIL, K10233 EDP R PRESS SENSE, K127 LEFT IRS SELECT, K511 PARK BRAKE CLOSE SENSE, K419				
RELAY – (FIM 31-01-37/101) AIR/GROUND SYS 2, K293 RIGHT IRS SELECT, K510				
SWITCH – (FIM 32-41-00/101) ALTERNATE VALVE SEL PRESS, S415				
SWITCH – AUTOBRAKE SELECTOR, S24	1	1	FLT COMPT, P1-3	*
SWITCH – AUTOBRAKE SERVO VALVE PRESSURE, YAAS1	4	1	R MAIN WHEEL WELL, AUTOBRAKE MODULE, M239	32-42-09
SWITCH – AUTOBRAKE SOLENOID VALVE PRESS, YAAS2	4	1	R MAIN WHEEL WELL, AUTOBRAKE MODULE, M239	32-42-09
SWITCH – (FIM 34-22-00/101) L IRS INSTR SOURCE SEL, S4 R IRS INSTR SOURCE SEL, S12				

* SEE THE WDM EQUIPMENT LIST

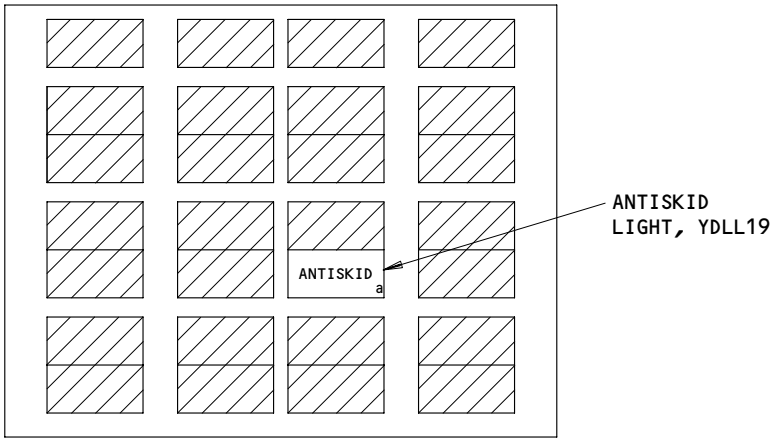
Antiskid/Autobrake System – Component Index
Figure 101 (Sheet 2)

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
SWITCH – LEFT METERED PRESSURE, S82	4	1	L MAIN WHEEL WELL, TRANSVERSE BEAM, AUTOBRAKE SHUTTLE VALVE ASSY	32-42-10
SWITCH – RIGHT METERED PRESSURE, S83	4	1	R MAIN WHEEL WELL, TRANSVERSE BEAM, AUTOBRAKE SHUTTLE VALVE ASSY	32-42-10
SWITCH – (FIM 31-51-00/101) SPEED BRAKE POSITION, S493				
SWITCH – THRUST LEVER POSITION, L NO. 1 (L AUTOBRAKE/AUTOBRAKE RTO), S2	7	1	113AL, AUTOTHROTTLE MICROSWITCH PACK, M966	22-32-04
SWITCH – THRUST LEVER POSITION, L NO. 2 (L AUTOBRAKE/AUTOBRAKE RTO), S3	7	1	113AL, AUTOTHROTTLE MICROSWITCH PACK, M966	22-32-04
SWITCH – THRUST LEVER POSITION, R NO. 1 (R AUTOBRAKE/AUTOBRAKE RTO), S6	7	1	113AL, AUTOTHROTTLE MICROSWITCH PACK, M966	22-32-04
SWITCH – THRUST LEVER POSITION, R NO. 2 (R AUTOBRAKE/AUTOBRAKE RTO), S7	7	1	113AL, AUTOTHROTTLE MICROSWITCH PACK, M966	22-32-04
UNIT – ANTISKID/AUTOBRAKE CONTROL, M102	6	1	119AL, MAIN EQUIP CTR, E1-1	32-42-01
UNIT – (FIM 34-21-00/101) CENTER INERTIAL REFERENCE, M160 LEFT INERTIAL REFERENCE, M159 RIGHT INERTIAL REFERENCE, M161				
VALVE – ANTISKID SHUTOFF	3	2	551TB/L WING, 651TB/R WING, NORMAL ANTISKID MODULE	32-42-03
VALVE – ANTISKID SHUTTLE	3	8	551TB/L WING, 651TB/R WING, SHUTTLE VALVE MODULE	32-42-07
VALVE – AUTOBRAKE SERVO, YAAV2	4	1	R MAIN WHEEL WELL, AUTOBRAKE MODULE, M239	32-42-09
VALVE – AUTOBRAKE SOLENOID (SHUTOFF), YAAV1	4	1	R MAIN WHEEL WELL, AUTOBRAKE MODULE, M239	32-42-09
VALVE – L ALT ANTISKID, V37, V38	2	2	552CB, L WING, LOWER SURFACE TE, ALT ANTISKID MODULE	32-42-03
VALVE – L NORM ANTISKID, V29,V30,V31,V32	3	4	551TB, L WING, LOWER SURFACE TE, NORM ANTISKID MODULE	32-42-03
VALVE – R ALT ANTISKID, V39, V40	2	2	652CB, R WING, LOWER SURFACE TE, ALT ANTISKID MODULE	32-42-03
VALVE – R NORM ANTISKID, V33,V34,V35,V36	3	4	651TB, R WING, LOWER SURFACE TE, NORM ANTISKID MODULE	32-42-03

Antiskid/Autobrake System – Component Index
Figure 101 (Sheet 3)

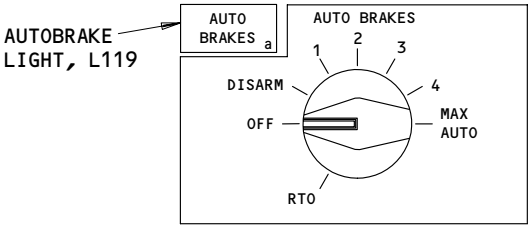


FLIGHT COMPARTMENT



ANNUNCIATOR PANEL, M10394 (REF)

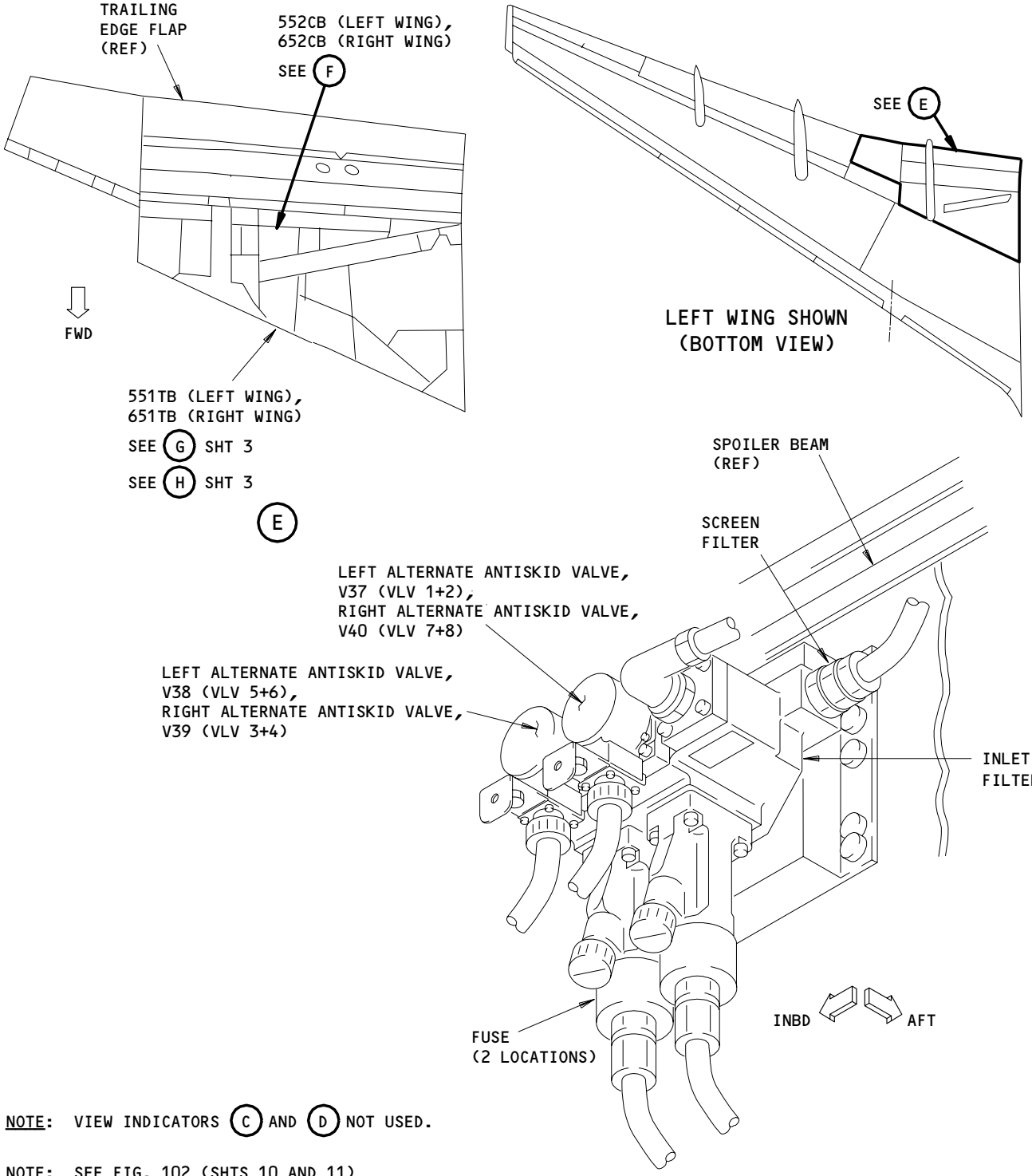
A



AUTOBRAKE SELECTOR SWITCH, S24

B

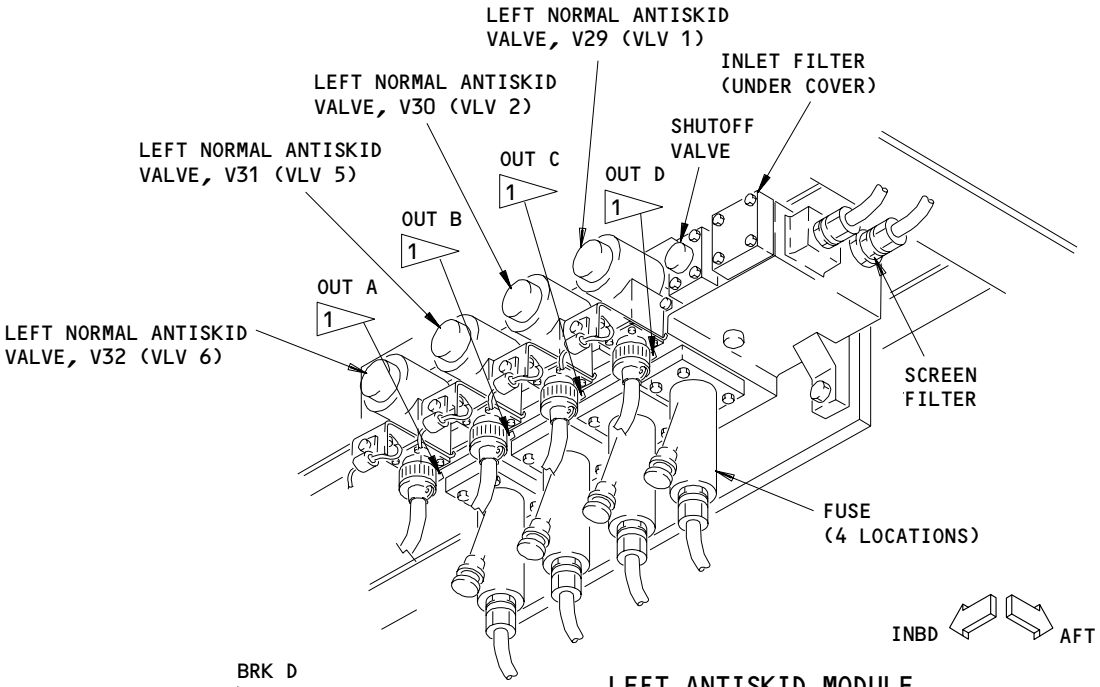
Component Location
Figure 102 (Sheet 1)



NOTE: VIEW INDICATORS C AND D NOT USED.

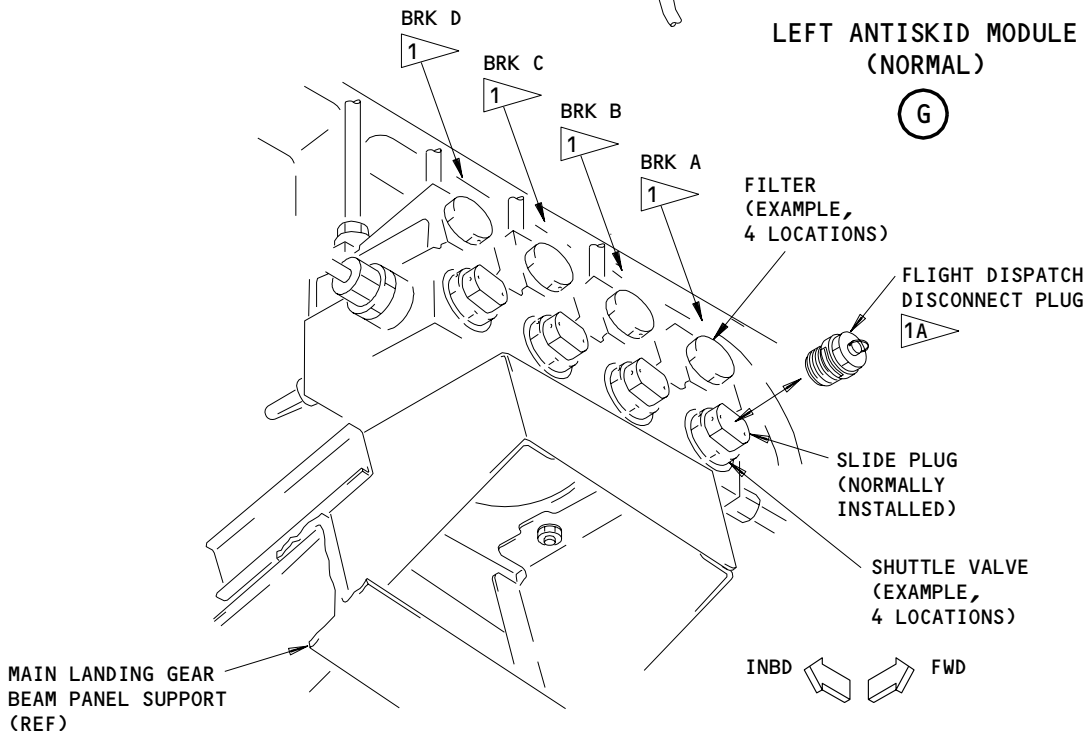
NOTE: SEE FIG. 102 (SHTS 10 AND 11) FOR SCHEMATIC OF FLOW PATHS FROM ANTISKID VALVES TO ANTISKID SHUTTLE VALVES TO BRAKES.

Antiskid/Auto Brake System - Component Location
Figure 102 (Sheet 2)



LEFT ANTISKID MODULE (NORMAL)

G



LEFT ANTISKID SHUTTLE VALVE MODULE

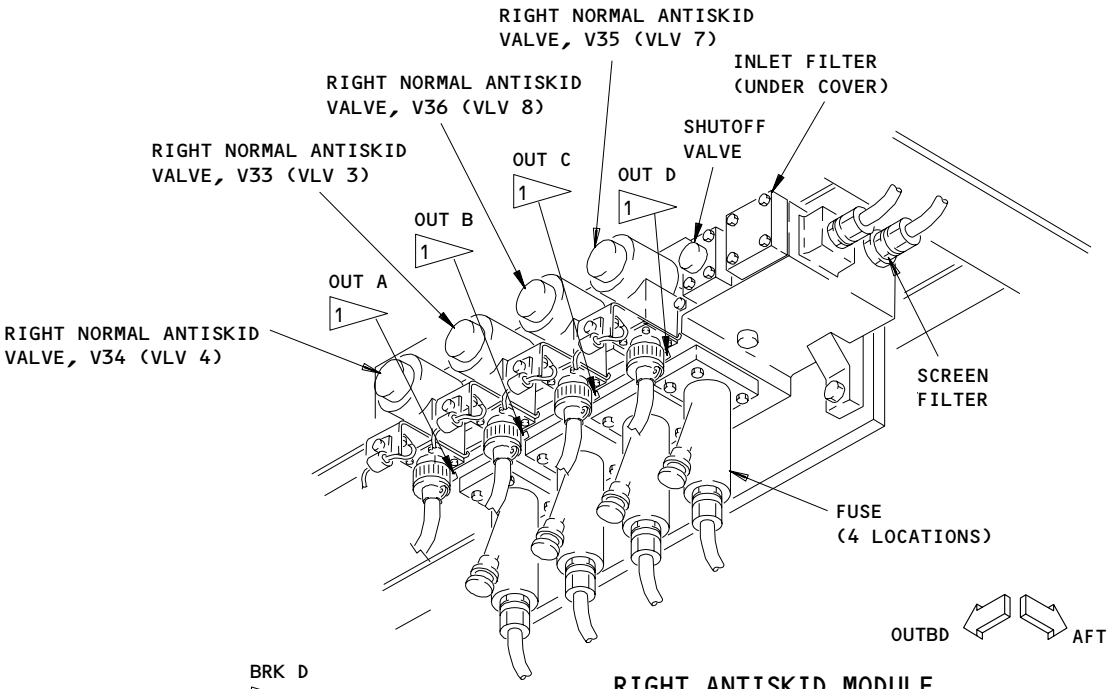
H

1 NOMENCLATURE OF VALVE PORT DECALS

1A NORMALLY STORED IN LANDING GEAR DOWNLOCK PIN BOX AS PART OF FLYAWAY EQUIPMENT WHEN NOT USED

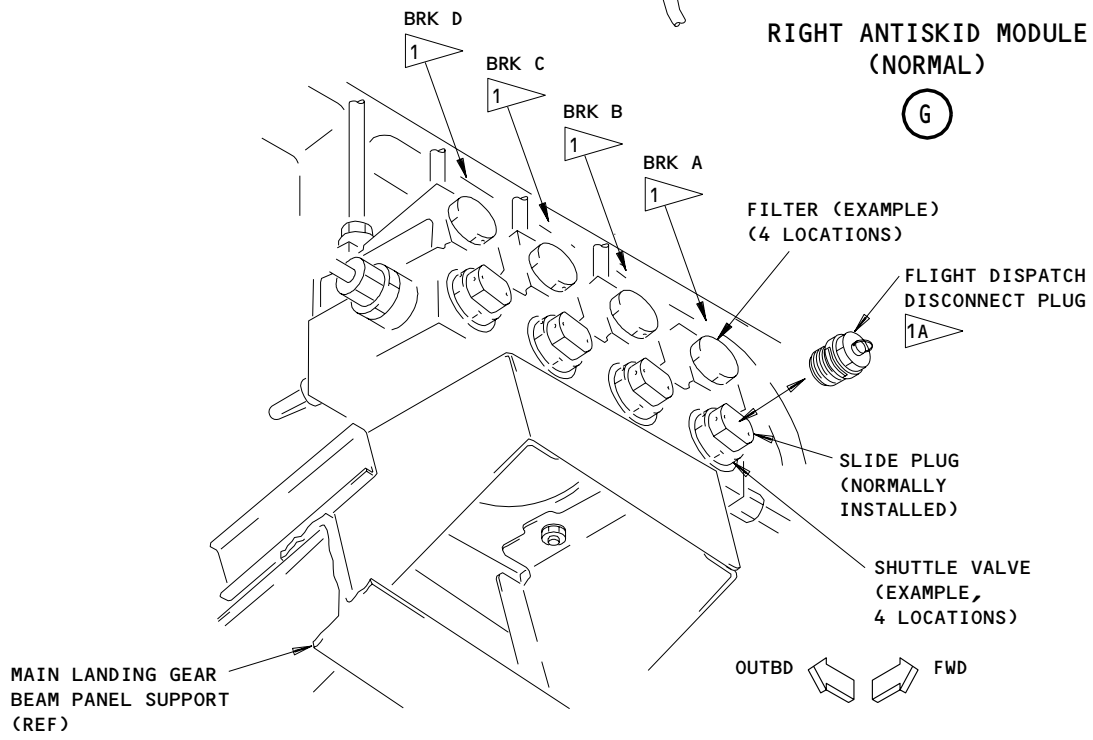
NOTE: SEE FIG. 102 (SHTS 10 AND 11) FOR SCHEMATIC OF FLOW PATHS FROM ANTISKID VALVES TO ANTISKID SHUTTLE VALVES TO BRAKES.

Antiskid/Auto Brake System - Component Location
Figure 102 (Sheet 3)



RIGHT ANTISKID MODULE (NORMAL)

G



RIGHT ANTISKID SHUTTLE VALVE MODULE

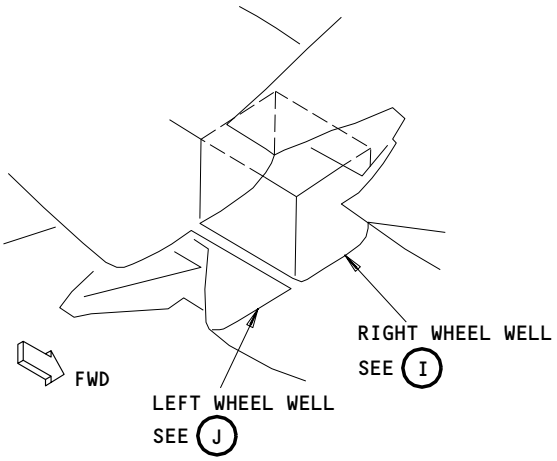
H

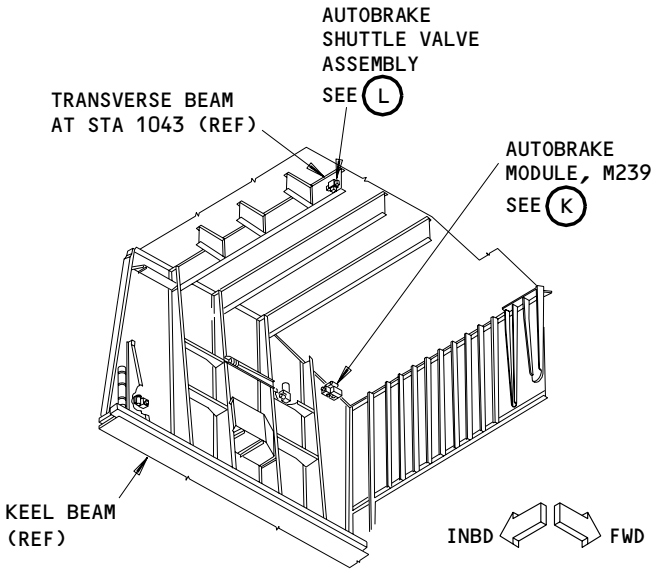
NOTE: SEE FIG. 102 (SHTS 10 AND 11) FOR SCHEMATIC OF FLOW PATHS FROM ANTISKID VALVES TO ANTISKID SHUTTLE VALVES TO BRAKES.

1 NOMENCLATURE OF VALVE PORT DECALS

1A NORMALLY STORED IN LANDING GEAR DOWNLOCK PIN BOX AS PART OF FLYAWAY EQUIPMENT WHEN NOT USED

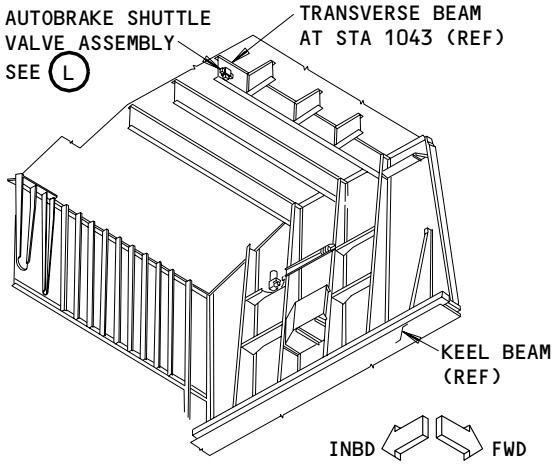
Antiskid/Auto Brake System – Component Location
Figure 102 (Sheet 4)





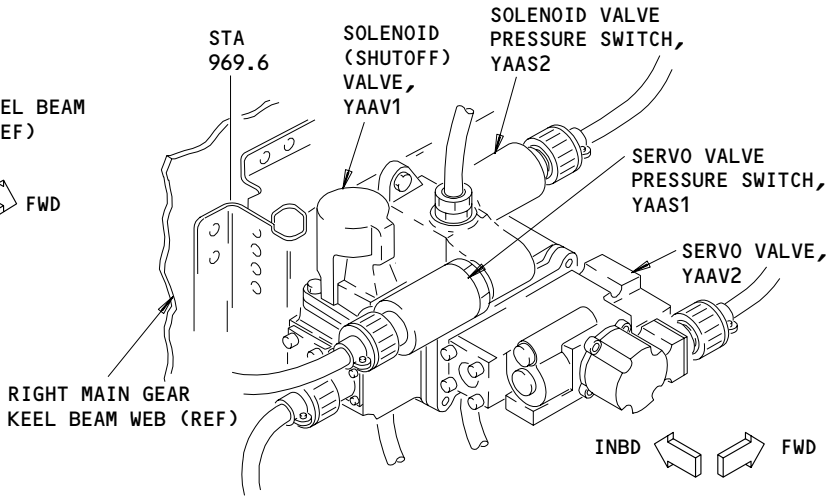
RIGHT WHEEL WELL

I



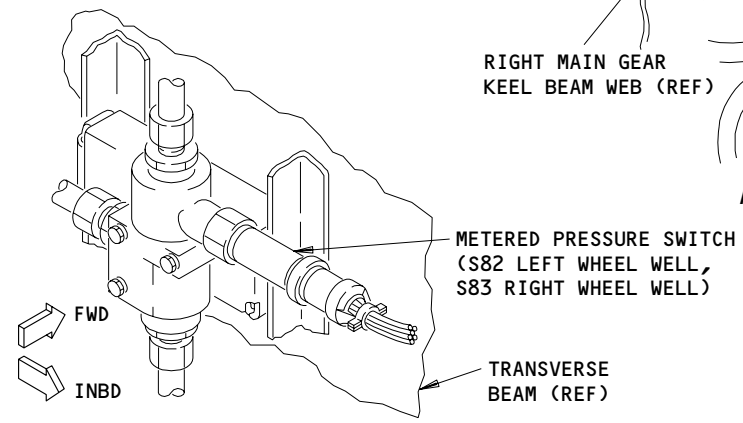
LEFT WHEEL WELL

J



AUTOBRAKE MODULE, M239

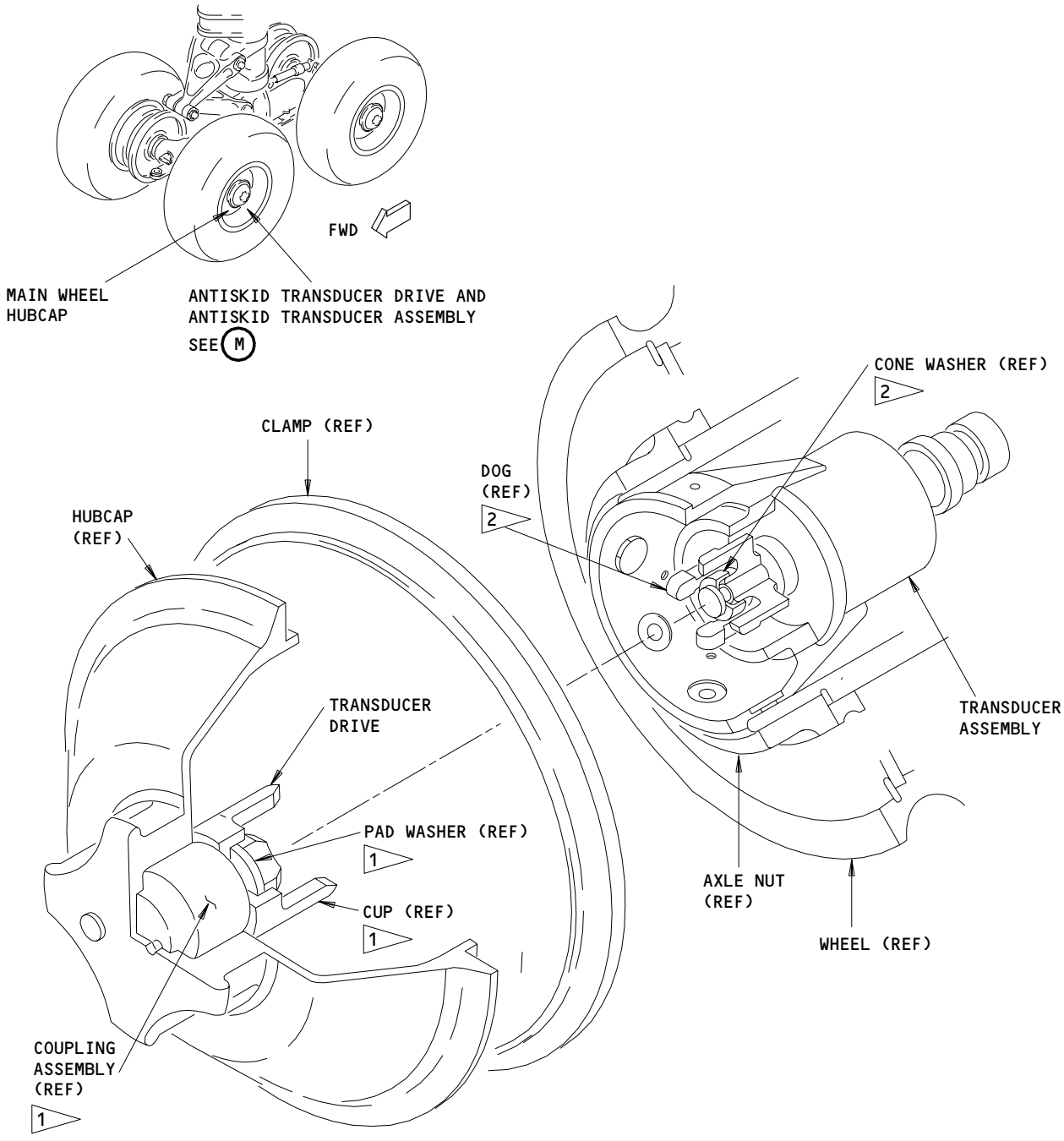
K



AUTOBRAKE SHUTTLE VALVE ASSEMBLY

L

Antiskid/Auto Brake System - Component Location
Figure 102 (Sheet 5)



ANTISKID TRANSDUCER DRIVE AND ANTISKID TRANSDUCER ASSEMBLY

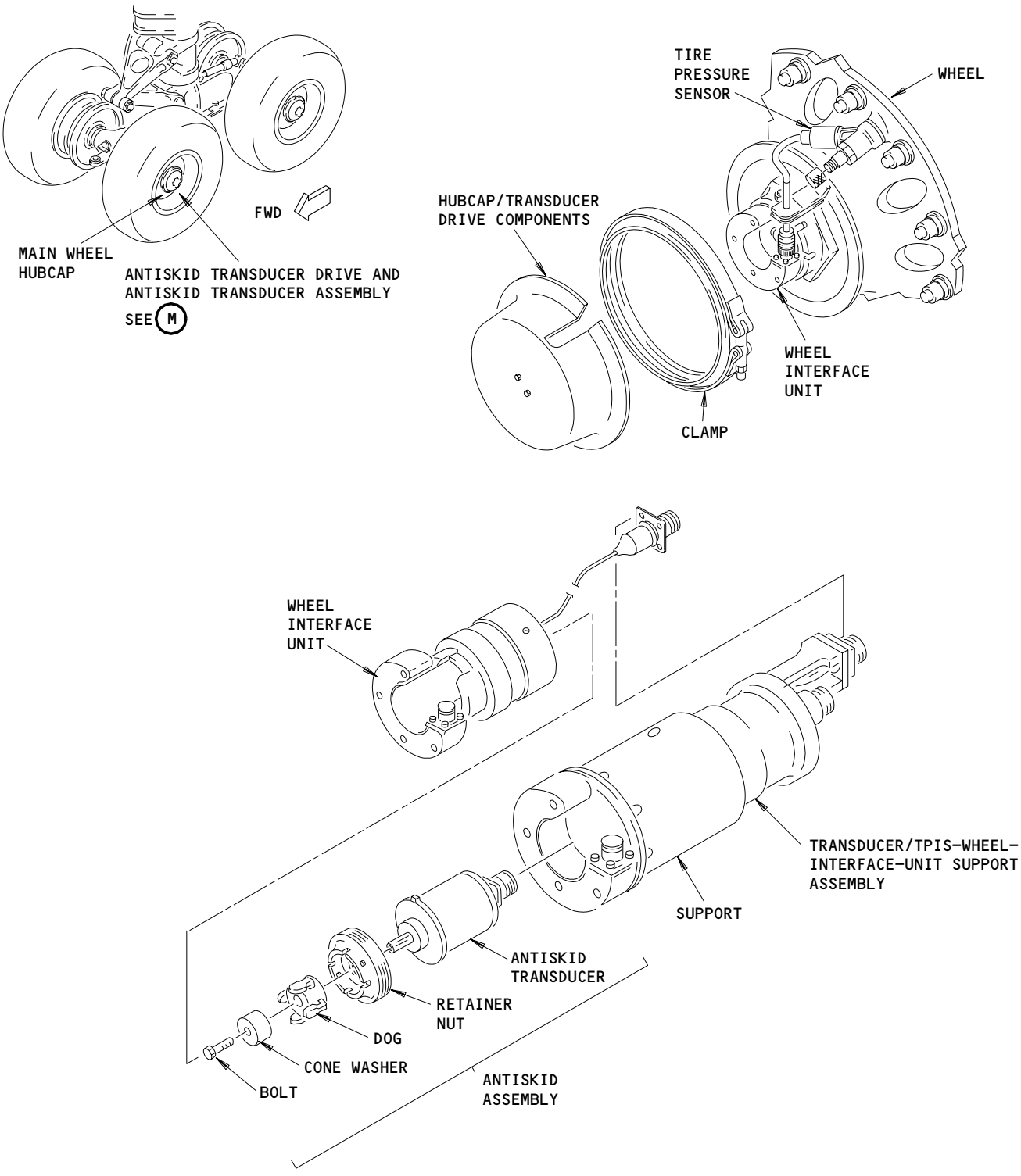
(M)

1 TRANSDUCER DRIVE COMPONENT

2 TRANSDUCER ASSEMBLY COMPONENT

Antiskid/Auto Brake System – Component Location
Figure 102 (Sheet 6)

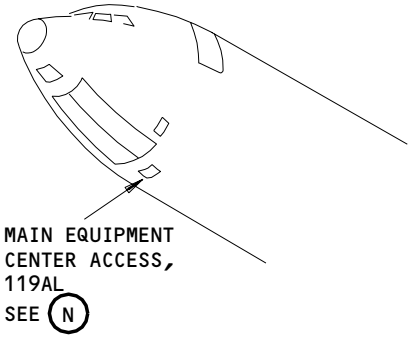
38606

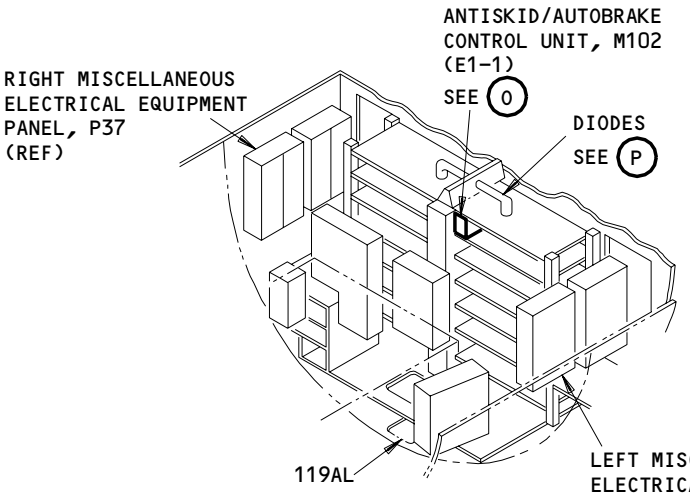


ANTISKID TRANSDUCER DRIVE AND ANTISKID TRANSDUCER ASSEMBLY

(M)

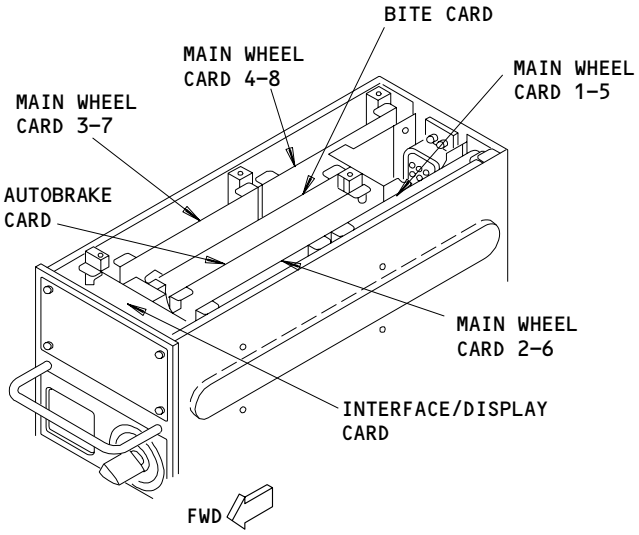
Antiskid/Auto Brake System - Component Location
Figure 102 (Sheet 7)





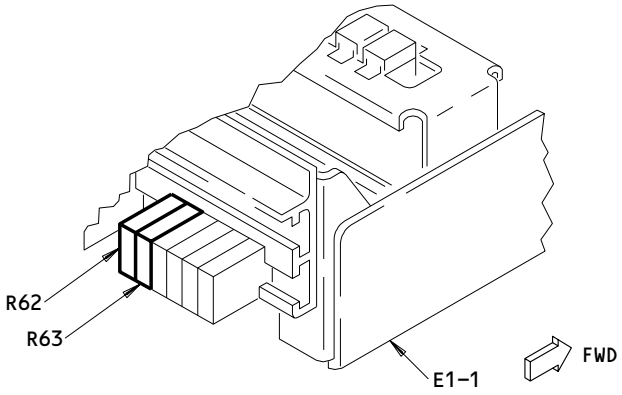
MAIN EQUIPMENT CENTER

(N)



ANTISKID/AUTOBRAKE CONTROL UNIT, M102
(COVER REMOVED)

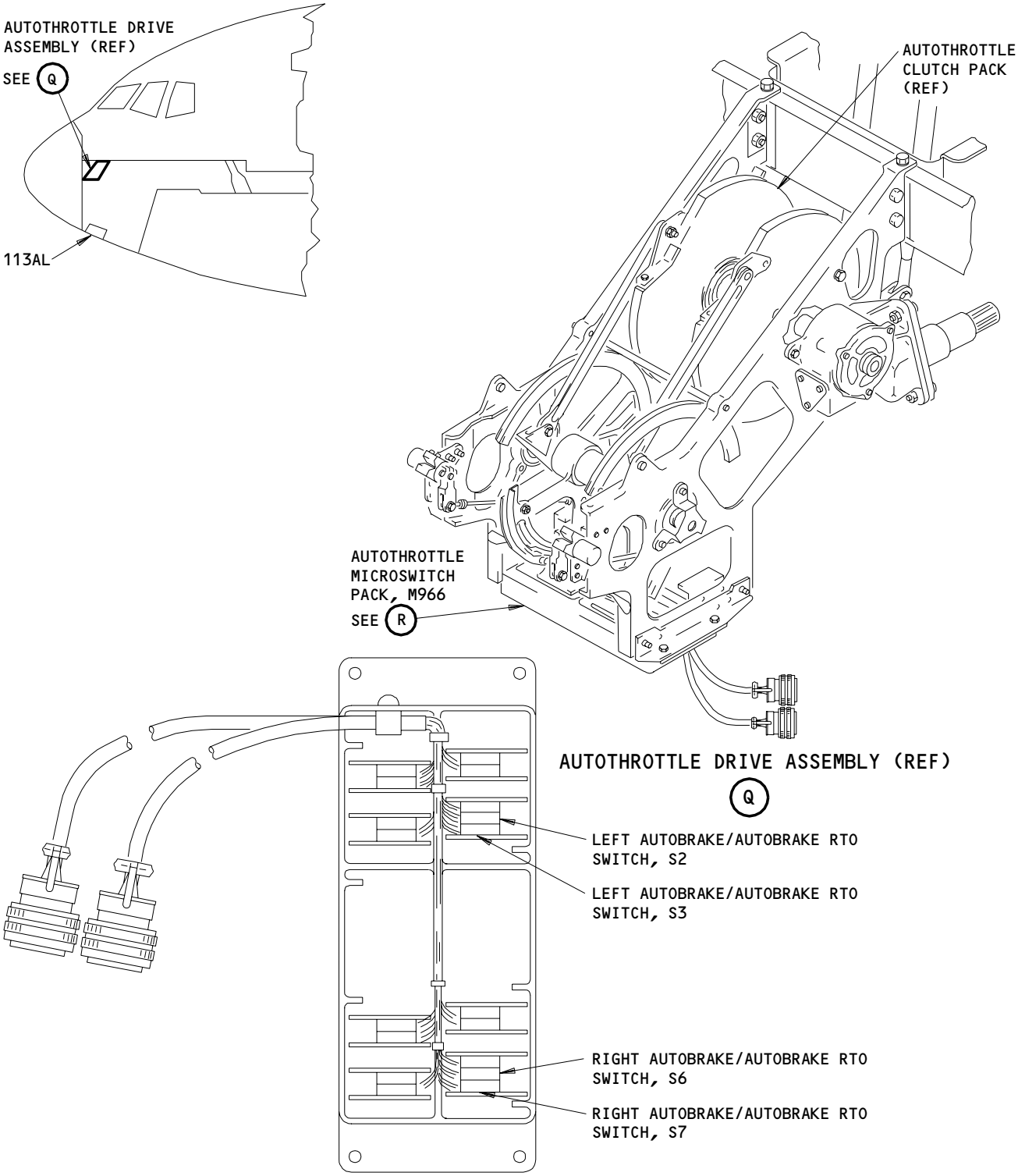
(O)



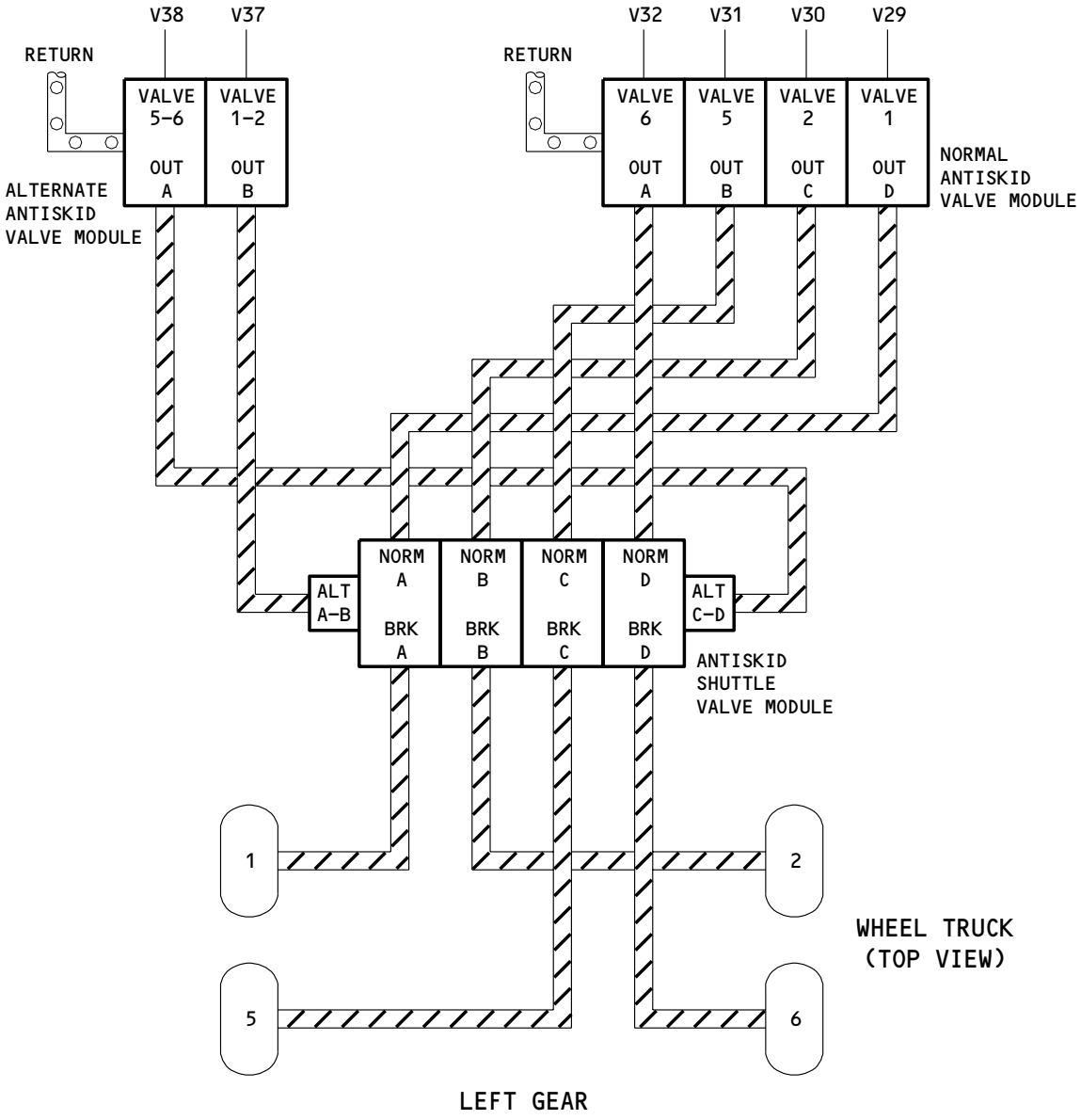
DIODES

(P)

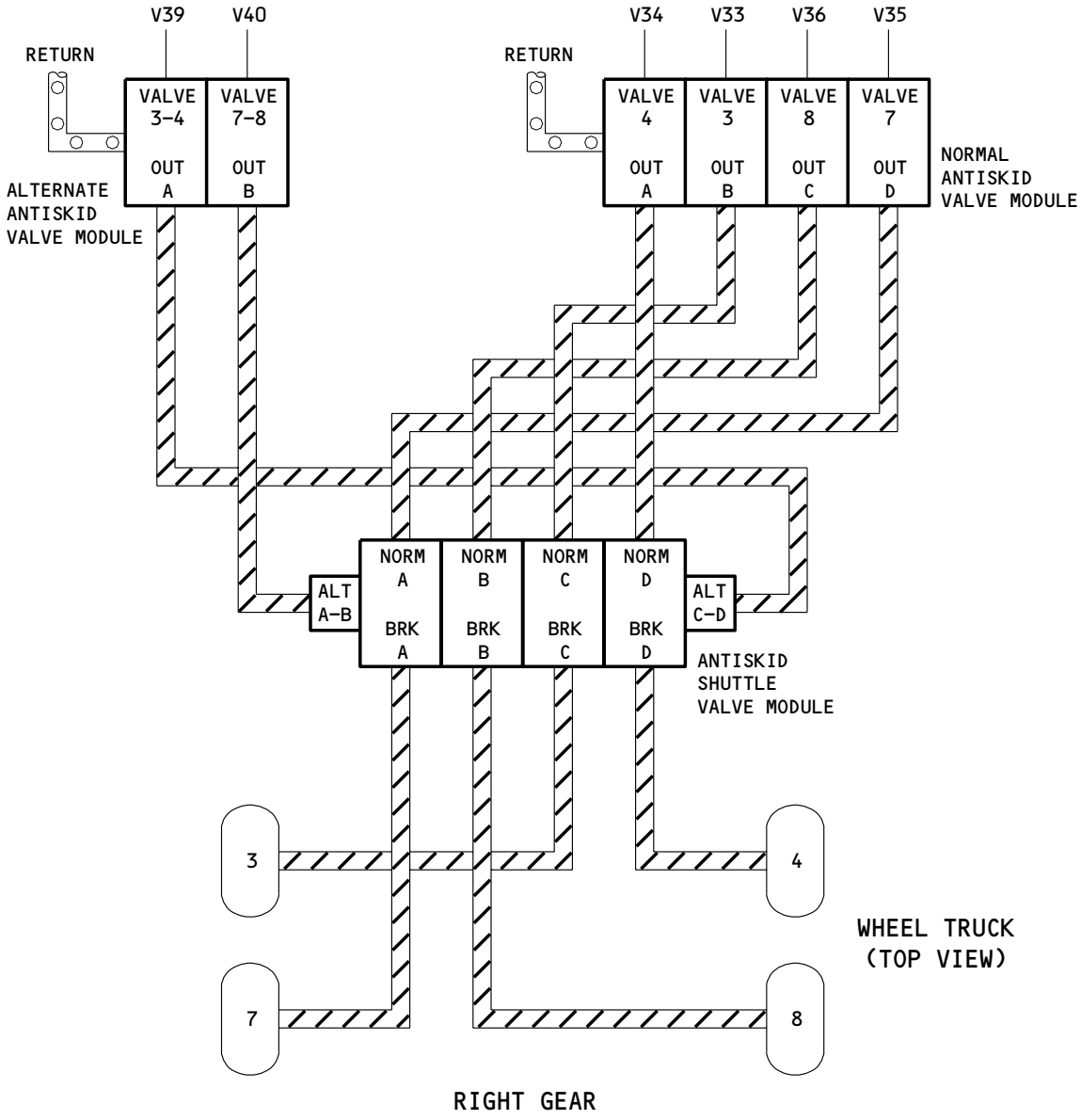
Antiskid/Auto Brake System - Component Location
Figure 102 (Sheet 8)



Antiskid/Auto Brake System - Component Location
Figure 102 (Sheet 9)



Antiskid/Auto Brake System - Component Location
Figure 102 (Sheet 10)



Antiskid/Auto Brake System - Component Location
Figure 102 (Sheet 11)

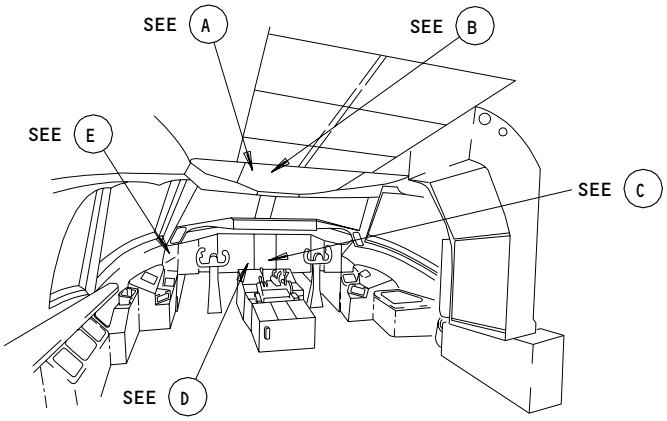
ANTISKID/AUTOBRAKE SYSTEM - ADJUSTMENT/TEST

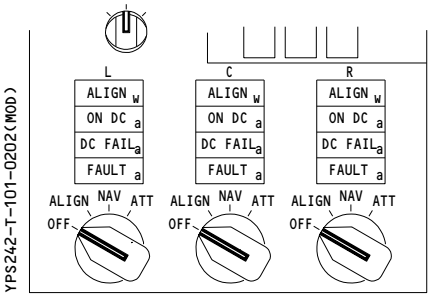
1. General
   A. This procedure contains eight tasks. Three of the tasks are operational tests of the antiskid system. One of the tasks is a spin-up test of the antiskid transducer. Four of the tasks are operational tests of the autobrake system. The eight tasks are as follows:
      (1) Antiskid System Operational Test - Indication
      (2) Antiskid System Operational Test - Landing Gear Lever
      (3) Antiskid System Operational Test - Brake Release
      (4) Antiskid Transducer Spin-Up Test
      (5) Autobrake System Operational Test - Power Distribution and Control
      (6) Autobrake System Operational Test - Control
      (7) Autobrake System Operational Test - Brake Application
      (8) Autobrake System Operational Test - RTO
   B. Each of the tests can be done separately as necessary to do an operational check of that part of the system. All of the tests can be done to do a complete operational check of the system.
   C. These indicator lights and EICAS displays give fault indications for the system:
      (1) An ANTISKID light on pilots' overhead panel P5.
      (2) One AUTOBRAKES light on pilots' the center instrument panel (P1-3).
      (3) The EICAS display units on the P2 panel give advisory and status/maintenance messages for the system.

TASK 32-42-00-715-001

2. Antiskid System Operational Test - Indication (Fig. 501)
   A. General
      (1) It is necessary to operate test switches on the Antiskid/Autobrake Control Unit (M102) in the main equipment center to do this test. Access to M102 is through the electronics access door, 119AL (AMM 06-41-00/201).
   B. References
      (1) AMM 24-22-00/201, Electrical Power - Control
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
   C. Access
      (1) Location Zones
          211 Control Cabin, Left
          212 Control Cabin, Right
          731 Landing Gear Left
          741 Landing Gear Right
          119 Main Equipment Center, Right

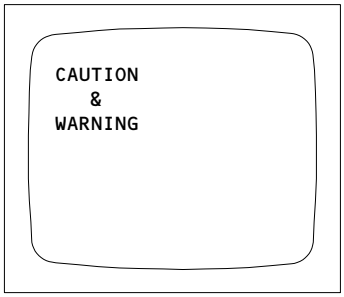
      (2) Access Panel
          119AL Main Equipment Center

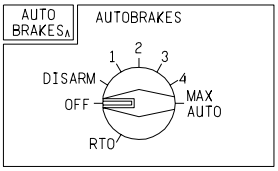




IRS MODE SELECT
SWITCH ON P5

A



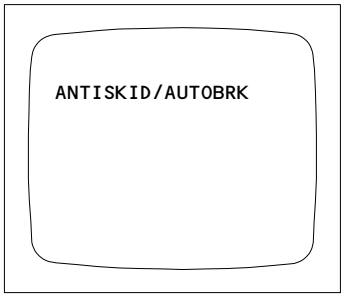


AUTOBRAKES SELECTOR
SWITCH ON P1-3

D

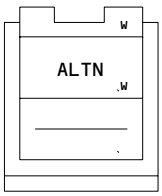
MISC ANNUNCIATOR ON P5

B



EICAS DISPLAY UNITS ON P2

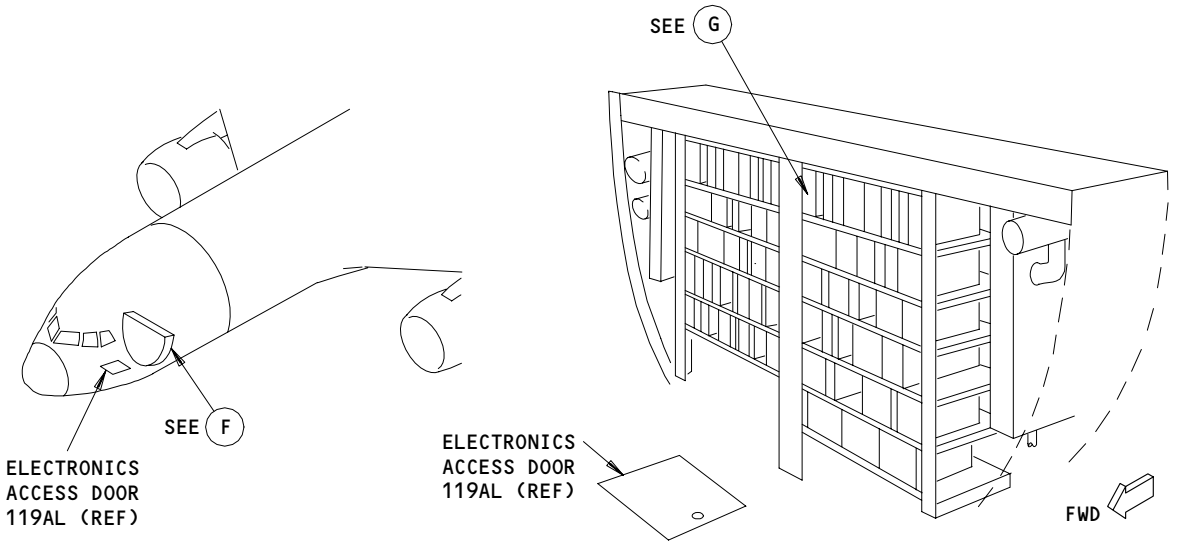
C



IRS INSTR SOURCE
SEL SWITCH ON P1-1 AND P3-3

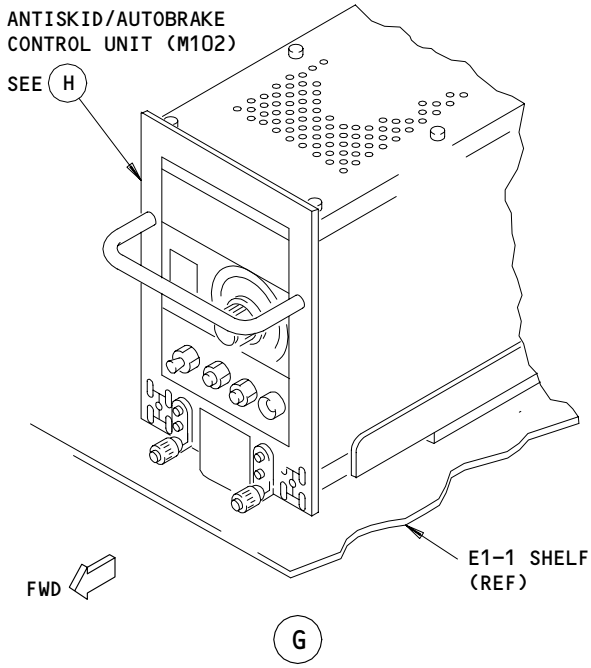
E

Antiskid/Autobrake System Adjustment/Test
Figure 501 (Sheet 1)



MAIN ELECTRONIC/ELECTRICAL EQUIPMENT CENTER

F



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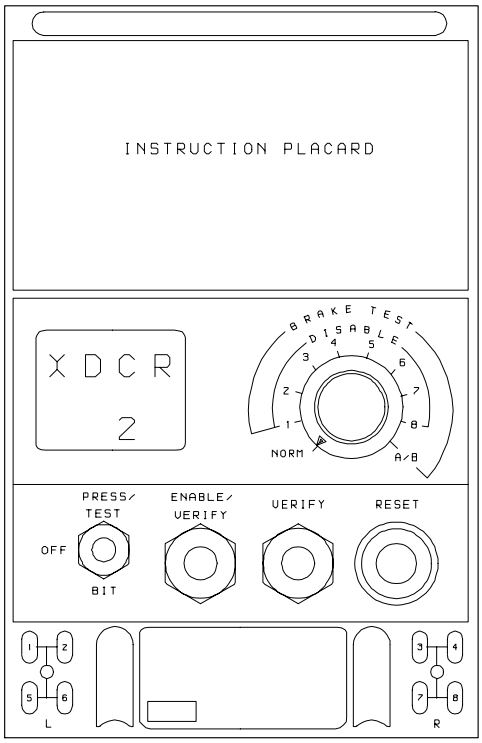


ANTISKID/AUTOBRAKE CONTROL UNIT
FRONT FACE

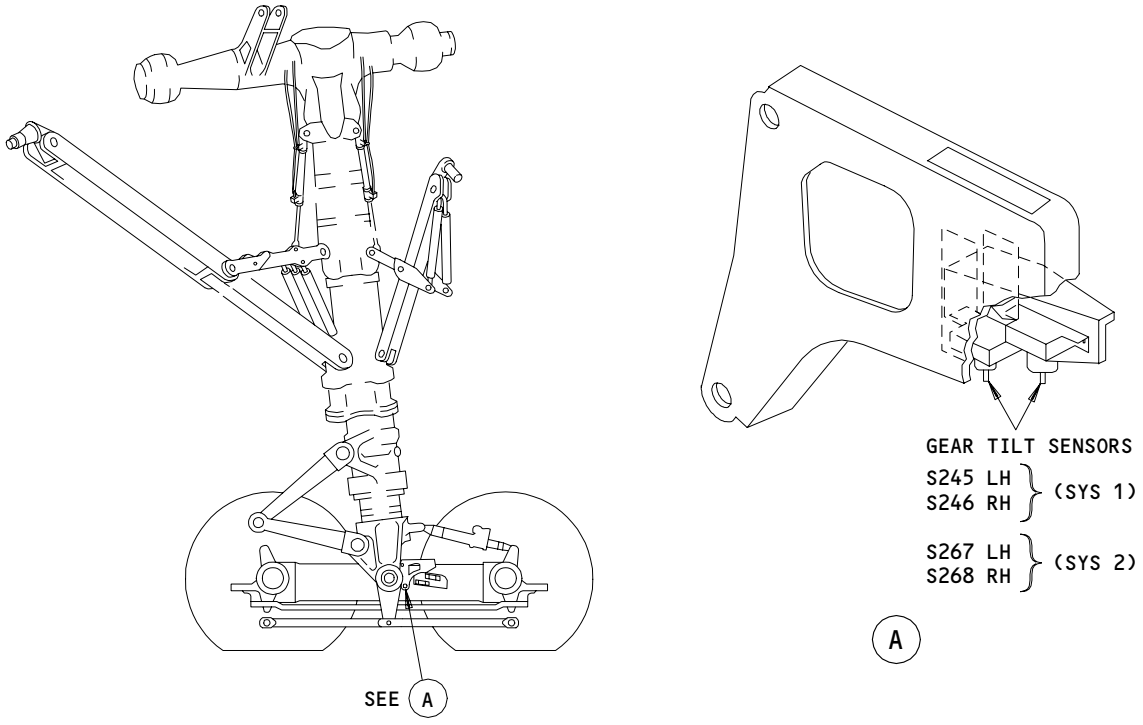
H

Antiskid/Autobrake System Adjustment/Test
Figure 501 (Sheet 2)

D. Prepare for the Test

S 865-002

(1) Make sure that these circuit breakers on the overhead circuit breaker panel, P11, are closed:
   (a) 11A32, IND LIGHTS TEST
   (b) 11A35, IND LIGHTS 3
   (c) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
   (d) 11C31, ANTISKID 2-6
   (e) 11C32, ANTISKID 3-7
   (f) 11R5, IND LTS DIM CONT
   (g) 11R29, R IND LTS 2
   (h) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
   (i) 11U15, AIR/GND SYS 1
   (j) 11U18, ANTISKID 1-5
   (k) 11U21, AUTOBRKS/ANTISKID TEST/IND 2



Main Gear Tilt Sensors Location
Figure 502

(l) 11U24 or 11U23, POSITION AIR/GND SYS 2
(m) 11U27, ANTISKID 4-8

S 865-003
(2) Make sure that these circuit breakers on the main power distribution panel, P6, are closed:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV
(b) 6K28, R PLT A/B

S 865-004
(3) Supply electrical power (AMM 24-22-00/201).

S 495-005
(4) Put chocks on the wheels.

S 865-006
(5) Release the parking brake.

S 865-007
(6) Put the thrust levers in the idle position.

S 865-008
(7) Make sure that the spoilers are retracted.

S 865-009
(8) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 865-010
(9) Make sure that the landing gear lever is in the DN position.

S 865-011
(10) Turn the OVHD PANEL dimmer control knob on the pilots overhead panel P5 fully clockwise.

E. Procedure

S 865-013
(1) Make sure that the BRAKE TEST rotary switch on the Antiskid/Autobrake Control Unit (M102) is in the NORM position.

S 865-014
(2) Do an IRS initialization as follows:
(a) Put the L, R nd C IRU's in the NAV mode (AMM 34-21-00/201).

NOTE: The IRU's must be aligned.

(b) Push in the RESET button on the Antiskid/Autobrake Control Unit. Make sure that the unit display shows MEM CLR for about 2 to 3 seconds.
(c) Push in the ENABLE/VERIFY switch on the unit and hold, then push in the VERIFY switch. Release the ENABLE/VERIFY and the VERIFY switches. Make sure that the unit display flashes WAIT while the test operates and then shows PWR A/B.
(d) Push and hold the VERIFY switch and make sure that the display shows TEST END.
(e) Push in the IRS INSTR SOURCE SEL switch on the Captain's main instrument panel, P1, to the ALTN position.
(f) Do the steps (c) and (d) again.
(g) Push in the IRS INSTR SOURCE SEL switch again and release it to make the switch go back to the usual (out) position.
(h) Push in the IRS INSTR SOURCE SEL switch on the first officer's main instrument panel P3 to the ALTN (in) position.
(i) Do steps (c) and (d) again.
(j) Push in the IRS SOURCE SEL switch on P3 again to make the switch go back to the usual (out) position.
(k) Set the parking brake.

S 715-015
(3) Do the antiskid indication test that follows for each of the steps in Table 501:
(a) Open the circuit breaker for the test step in Table 501:
(b) Make sure that the EICAS indication shown for the test step is the same as the indication shown in Table 501.
1) To display an EICAS status message, push in the STATUS key on the PILOT'S display select panel.
2) To show an EICAS maintenance message, push in the ECS/MSG key on the EICAS MAIN DISPLAY SELECT of the P61 accessory panel.
3) Do the test steps in Table 1 and make sure that you have the correct indications on the EICAS display as follows:
a) Put the computer select switch in the L position.

b) Make sure that the EICAS indications for each test step are the same as shown in Table 501.
c) Put the computer select switch in the R position.
d) Make sure that the EICAS indications for each test step are the same as shown in Table 501.

Table 501

Test Step	Circuit Breaker	Indication	Location
1	11U18, ANTISKID 1-5	ANTISKID	EICAS
		NORM ANTISKID	EICAS (maintenance/status page)
		ALTN ANTISKID	EICAS (maintenance/status page)
		ANTISKID/AUTOBRK	EICAS (maintenance page)
		ANTISKID	Misc annunciator on P5
2	11C31, ANTISKID 2-6	ANTISKID	EICAS
		NORM ANTISKID	EICAS (maintenance/status page)
		ALTN ANTISKID	EICAS (maintenance/status page)
		ANTISKID/AUTOBRK	EICAS (maintenance page)
		ANTISKID	Misc annunciator on P5
3	11C32, ANTISKID 3-7	ANTISKID	EICAS
		NORM ANTISKID	EICAS (maintenance/status page)
		ALTN ANTISKID	EICAS (maintenance/status page)
		ANTISKID/AUTOBRK	EICAS (maintenance page)
		ANTISKID	Misc annunciator on P5
4	11U27, ANTISKID 4-8	ANTISKID	EICAS
		NORM ANTISKID	EICAS (maintenance/status page)
		ALTN ANTISKID	EICAS (maintenance/status page)
		ANTISKID/AUTOBRK	EICAS (maintenance page)
		ANTISKID	Misc annunciator on P5
5	11U12, AUTOBRKS/ ANTISKID TEST/IND 1 11U21, AUTOBRKS/ ANTISKID TEST/IND 2	ALTN ANTISKID	EICAS (maintenance/status page)
		ANTISKID/AUTOBRK	EICAS (maintenance page)
6	6F4, LANDING GEAR PARKING BRAKE VLV	ANTISKID OFF	EICAS
		ANTISKID	Misc annunciator on P5
			*[1]

*[1] There is a three second delay before messages come into view after you open the PARKING BRAKE VLV circuit breaker.

S 715-381

(4) Push in the RESET button on the Antiskid/Autobrake Control Unit.

S 715-016

(5) Do the procedure that follows for each test step shown in Table 502:
   (a) Open the circuit breaker for the test step shown in Table 502:
   (b) Make sure the EICAS indication shown for the test step is the same as the indication shown in Table 502.
   (c) Close the circuit breakers.

Table 502

Test Step	Circuit Breaker	Indication	Location
1	11U18, ANTISKID 1-5 11C31, ANTISKID 2-6 11C32, ANTISKID 3-7 11U27, ANTISKID 4-8	ANTISKID OFF ANTISKID	EICAS Misc annunciator on P5
2	11C31, ANTISKID 2-6 11C32, ANTISKID 3-7 11U27, ANTISKID 4-8	ANTISKID NORM ANTISKID ALTN ANTISKID ANTISKID/AUTOBRK ANTISKID	EICAS EICAS (maintenance/status page) EICAS (maintenance/status page) EICAS (maintenance page) Misc annunciator on P5
3	11U18, ANTISKID 1-5 11C32, ANTISKID 3-7 11U27, ANTISKID 4-8	ANTISKID NORM ANTISKID ALTN ANTISKID ANTISKID/AUTOBRK ANTISKID	EICAS EICAS (maintenance/status page) EICAS (maintenance/status page) EICAS (maintenance page) Misc annunciator on P5
4	11U18, ANTISKID 1-5 11C31, ANTISKID 2-6 11U27, ANTISKID 4-8	ANTISKID NORM ANTISKID ALTN ANTISKID ANTISKID/AUTOBRK ANTISKID	EICAS EICAS (maintenance/status page) EICAS (maintenance/status page) EICAS (maintenance page) Misc annunciator on P5
5	11U18, ANTISKID 1-5 11C31, ANTISKID 2-6 11C32, ANTISKID 3-7	ANTISKID NORM ANTISKID ALTN ANTISKID ANTISKID/AUTOBRK ANTISKID	EICAS EICAS (maintenance/status page) EICAS (maintenance/status page) EICAS (maintenance page) Misc annunciator on P5

S 715-017

(6) Push in the RESET button on the Antiskid/Autobrake Control Unit.

S 715-215

(7) Make sure that the ANTISKID/AUTOBRK message is not in view now on the EICAS maintenance page (767-200/300).

S 715-020

(8) Momentarily push in the PRESS/TEST switch on the Antiskid/Autobrake Control Unit front panel and make sure these indications occur:
   (a) All segments of Antiskid/Autobrake Control Unit display come on for 5 ±2 seconds.
   (b) The ANTISKID light on the miscellaneous annunciator (P5) and the AUTOBRAKES light on the P1 panel come on.
   (c) The ANTISKID OFF and AUTOBRAKES messages are shown on the EICAS advisory display.
   (d) Open these circuit breakers on the P11 panel:
      1) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
      2) 11U21, AUTOBRKS/ANTISKID TEST/IND 2
   (e) Make sure that the ALTN ANTISKID message comes into view on the EICAS maintenance and status pages.
   (f) Make sure the ANTISKID/AUTOBRK message comes into view on the EICAS maintenance page.
   (g) Remove the power from the right hydraulic system (AMM 29-11-00/201).
   (h) Make sure that the ANTISKID message comes into view on the EICAS and the ANTISKID light on the miscellaneous annunciator panel (P5) comes on.
   (i) Make sure that the ALTN ANTISKID message comes into view on the EICAS maintenance and status pages.
   (j) Make sure that the ANTISKID/AUTBRK message comes into view on the EICAS maintenance page.
   (k) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).
   (l) Make sure that the ANTISKID light (P5) goes out and the ANTISKID message on the EICAS goes out of view.

S 865-021

(9) Close these circuit breakers on the P11 panel:
   (a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
   (b) 11U21, AUTOBRKS/ANTISKID TEST/IND 2
   (c) Make sure that the ALTN ANTISKID (EICAS maintenance and status pages) and the ANTISKID/AUTOBRK (EICAS maintenance page) messages go out of view.

TASK 32-42-00-715-262

3. Antiskid System Test - Landing Gear Lever (Fig. 501)

A. General

(1) It is necessary to operate the landing gear lever for parts of this test. Warnings about operation of the landing gear lever are in the applicable procedure steps. The parking brake is released during the test.

B. References

(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-00-20/201, Landing Gear Downlocks

C. Access

(1) Location Zones

211	Control Cabin, Left
212	Control Cabin, Right
731	Landing Gear Left
741	Landing Gear Right
119	Main Equipment Center, Right

(2) Access Panel

119AL	Main Equipment Center

D. Prepare for the Test

S 495-022

(1) Make sure the downlocks for the main and nose landing gear are installed (AMM 32-00-20/201).

S 495-023

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Open the doors for the main landing gear and install the door locks.

S 865-024

(3) Supply electrical power (AMM 24-22-00/201).

S 865-025

(4) Release the parking brake.

S 865-208

(5) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

E. Do the Antiskid Control Test

S 715-026

(1) To do a test of antiskid control, do a test of landing gear lever switch operation as follows:
(a) Put the landing gear lever in the OFF position.
(b) Push in and hold the ENABLE/VERIFY switch on the Antiskid/Autobrake Control Unit. Push in the VERIFY switch. Release both the ENABLE/VERIFY and the VERIFY switches. Make sure that the control unit display shows GEAR SW 1.
(c) Push in the VERIFY switch and make sure that the control unit display shows GEAR SW 2.
(d) Push in the VERIFY switch again and make sure that the display flashes WAIT and then shows PWR A/B.
(e) Push in the VERIFY switch again and make sure that the display shows TEST END.
(f) Put the landing gear lever in the DN position.

TASK 32-42-00-705-027

4. Antiskid System Test - Brake Release (Fig. 501)

A. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 34-21-00/501, Inertial Reference System

B. Access
(1) Location Zones
211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right
119 Main Equipment Center, Right

(2) Access Panel
119AL Main Equipment Center

C. General
(1) This is a test to make sure that the brakes release and reapply with the antiskid system controls.
(2) You can monitor brake adjuster indicator pin movement on the brake to see that the brakes release and reapply. Wheel pairs for locked wheel protection are wheels 1 and 5, 2 and 6, 3 and 7, and 4 and 8. The front panel of the Antiskid/Autobrake Control Unit (Fig. 501) shows the wheel number assignment.

(3) This section contains tests for checking proper cooperation of the antiskid valves for the normal amnd alternate brake systems. An antiskid transducer spin test checks overall brake operation.

D. Prepare for the Test

S 495-028

(1) Make sure the downlocks are installed on the main and nose landing gear (AMM 32-00-20/201).

S 495-029

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 495-030

(3) Make sure that chocks are installed on the landing gear wheels.

S 865-031

(4) Supply electrical power (AMM 24-22-00/201).

S 425-264

(5) Do these steps to install a pressure gage at each of the brake units of the main landing gear (8 locations):

(a) Make sure that the parking brake is released.

(b) Make sure that the brakes are not operated manually.

WARNING: THE BRAKES MUST NOT BE IN OPERATION WHEN YOU CONNECT OR DISCONNECT THE TWO PARTS OF A HYDRAULIC BRAKE DISCONNECT. IF YOU TRY TO CONNECT OR DISCONNECT A HYDRAULIC BRAKE DISCONNECT WITH THE BRAKE IN OPERATION, HYDRAULIC FLUID UNDER HIGH PRESSURE CAN RELEASE. THIS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(c) To remove all pressure from the brake unit, disconnect the hose half of the hydraulic brake disconnect from the brake half.

(d) Remove the brake bleeder assembly from the brake unit housing.

NOTE: Each brake bleeder assembly has a bleeder valve installed in an adapter. The adapter is installed in the brake unit housing.

CAUTION: BE CAREFUL DURING INSTALLATION OF THE PRESSURE GAGE IN THE PORT ON THE BRAKE UNIT HOUSING. DO NOT INSTALL THE PRESSURE GAGE WITH MORE THAN 110 POUND-INCHES OF TORQUE. IF YOU USE TOO MUCH TORQUE DURING INSTALLATION OF A PRESSURE GAGE, YOU CAN DAMAGE THE BRAKE UNIT HOUSING.

(e) Install a pressure gage in the port on the brake unit housing.
(f) Connect the hose half of the hydraulic brake disconnect to the brake half.

S 865-033
(6) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 865-035
(7) Put the L, R, and C IRUs in the NAV mode (AMM 34-21-00/501).

NOTE: The IRUs must be aligned.

E. Do a Brake Release Test with the Normal Brake Hydraulic System

S 865-351

WARNING: THIS TEST APPLIES AND RELEASES THE BRAKES. MAKE SURE THAT THE AREA AROUND THE BRAKES IS CLEAR AND THAT CHOCKS ARE INSTALLED ON THE AIRPLANE WHEELS. THIS WILL PREVENT POSSIBLE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Release the parking brake.

S 865-037
(2) Open this circuit breaker on the P6 panel:
(a) 6F4, PARKING BRAKE VLV

S 865-038
(3) Set the parking brake.

S 715-039
(4) Make sure that all of the brake pressure gages show within ±200 psi of right hydraulic system pressure.

NOTE: You don't have to hold the brake pedals for this test because the parking brake is set with pressure applied.

S 715-047
(5) Do a brake release test as follows for each of the eight brake positions as shown in Table 503:

NOTE: This test will show if two or more antiskid system hydraulic lines are connected to the incorrect valve ports. It is important that the brakes release only as shown in Table 503.

You can see the brake cycles if you look at the brake adjuster movement (about 0.15 to 0.20 inch) when the correct brake releases and then applies again. The brake pressure gages must show not more than 100 psi when the brake is released and 2900 ±200 psi when the brake is applied.

The ANTISKID light on P5, the ANTISKID message on the EICAS, the NORM ANTISKID message on the EICAS maintenance and the status pages will illuminate intermittently. The ANTISKID/AUTOBRK message on EICAS maintenance page will stay on for this test.

(a) Put the BRAKE TEST rotary switch on the Antiskid/Autobrake Control Unit in the position shown.
(b) Press the ENABLE/VERIFY switch and hold, then press the VERIFY switch. Make sure that the the brake shown in Column A cycles (releases for 5 ±2 seconds and then applies again). Make sure that the messages come into view as shown in the table.

NOTE: It is not necessary to release the ENABLE/VERIFY and VERIFY switches until you have completed the test at all eight brake test switch test positions "BRAKE TEST 1" thru "BRAKE TEST 8" (Steps 1 thru 8 of Table 503).

Table 503

Step	Brake Test Switch Position on the Control Unit	Control Unit Message Display During Brake Cycle	A	B
1	BRAKE TEST 1	BRK 1	1	1-2
2	BRAKE TEST 2	BRK 2	2	1-2
3	BRAKE TEST 3	BRK 3	3	3-4
4	BRAKE TEST 4	BRK 4	4	3-4
5	BRAKE TEST 5	BRK 5	5	5-6
6	BRAKE TEST 6	BRK 6	6	5-6
7	BRAKE TEST 7	BRK 7	7	7-8
8	BRAKE TEST 8	BRK 8	8	7-8

F. Do a Brake Release Test with the Alternate Brake Hydraulic System

NOTE: You should do this test as quickly as possible because hydraulic pressure could decrease enough to cause steps (6) and (7) to fail. Only the brake accumulator is pressurizing the brakes for this test and the parking brake valve is open because the circuit breaker has been opened before this test. Therefore, the accumulator pressure will continuosly decrease. Brake system pressure must be great enough to keep the brake metered pressure switches actuated in this test. The switches must be actuated to get the PRESS L and PRESS R messages in steps (6) and (7). If you wait, the accumulator pressure could decrease by a great enough amount so that the switches do not stay actuated and cause steps (6) and (7) to fail.

S 865-352

WARNING: THIS TEST APPLIES AND RELEASES THE BRAKES. MAKE SURE THAT THE AREA AROUND THE BRAKES IS CLEAR AND THAT CHOCKS ARE INSTALLED ON THE AIRPLANE WHEELS. THIS WILL PREVENT POSSIBLE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Make sure that the parking brake is set.

S 865-049

(2) Remove the pressure from the right and center hydraulic systems without moving the brake pedals (AMM 29-11-00/201).

S 715-050

(3) Make sure that the BRAKE SOURCE light on P1 comes on.

S 865-051
(4) Put the BRAKE TEST rotary switch on the Antiskid/Autobrake Control Unit in NORM.

S 715-052
(5) Push in and hold the ENABLE/VERIFY switch then push in the VERIFY switch.

S 715-053
(6) Release the ENABLE/VERIFY switch and the VERIFY switch. Make sure that the display shows PRESS L. (Left Metered Pressure Switch)

NOTE: Make sure that the accumulator pressure is greater than 850 psi with the parking brake set, or the metered pressure switches may not operate and the PRESS L message will not appear. The PRESS L and PRESS R messages are an indication of high metered brake pressure which will also send a signal to the control unit to disconnect the autobrake because the system senses brake pressure input from the brake pedals.

S 715-054
(7) Push in the VERIFY switch and make sure that the display shows PRESS R. (Right Metered Pressure Switch)

NOTE: Accumulator pressure must be greater than 850 psi with the parking brake set, or the metered pressure switches will not operate and the PRESS R message will not appear.

S 715-055
(8) Push in the VERIFY switch and make sure that the display shows PRESS ACC.

S 715-056
(9) Push in the VERIFY switch. Make sure that the display flashes WAIT and then shows PWR A/B.

S 715-057
(10) Push in the VERIFY switch. Make sure that the display shows TEST END.

S 865-237
(11) Release the parking brake.

S 865-058
(12) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 865-210
(13) Make sure that this circuit breaker on the P6 panel is open:
(a) 6F4, PARKING BRAKE VALVE

S 865-211
(14) Set the parking brake.

S 715-059
(15) Do steps 1 thru 8 of Table 503. Make sure that the alternate brake pairs shown in Column B release and reapply. They must release and reapply as they did with the normal hydraulic system.

NOTE: This test will show when two or more hydraulic lines in the antiskid system are connected to the incorrect valve ports. It is important that the brakes release occurs only on brakes as shown in Table 503.

S 865-265
(16) Remove the pressure from the Center Hydraulic System (AMM 29-11-00/201).

S 865-060
(17) Close this circuit breaker on panel P6:
(a) 6F4, PARKING BRAKE VLV

S 865-061
(18) Put the BRAKE TEST rotary switch to NORM.

S 865-062
(19) Push in the RESET button to remove all faults in the memory.

S 715-063
(20) Make sure that the ANTISKID/AUTOBRK message does not come into view on the EICAS maintenance page.

S 865-064

(21) Do the steps in the Restore Airplane to Normal paragraph if the test has been completed.

TASK 32-42-00-705-248

5. Antiskid Transducer Spin-Up Test (Fig. 501)

A. General

(1) This is a test to make sure that brakes apply and release while you manually turn the antiskid transducer.

(2) You can see the brakes apply and release if you look at the movement of the brake pistons or the brake wear indicator pins.

B. Equipment

(1) Antiskid Transducer Spin-Up Equipment -
A32075-10 (Recommended)
A32075-9 (Alternative)
A32075-1 (Alternative)

C. References

(1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 34-21-00/501, Inertial Reference System

D. Access

(1) Location Zones

211	Control Cabin, Left
212	Control Cabin, Right
731	Landing Gear Left
741	Landing Gear Right

E. Prepare for the Test

S 495-249

(1) Make sure the downlocks are installed on the main and nose landing gear (AMM 32-00-20/201).

S 495-250

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 495-251
(3) Make sure that chocks are installed on the landing gear wheels.

S 865-266
(4) Supply electrical power (AMM 24-22-00/201).

S 865-252
(5) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 865-293
(6) Open this circuit breaker on the P6 panel and attach a DO-NOT-CLOSE tag:
(a) 6F4, PARKING BRAKE VLV

S 865-294
(7) Set the parking brake.

F. Procedure to do the Antiskid Transducer Spin-Up Test

NOTE: When you do the transducer spin test, the locked wheel protetion and the skid protection functions are tested. Locked wheel protection continously compares the fore/aft (tandem) wheel speeds. A difference in wheel speeds of 30% will cause the brake pressure of the slower wheel to be released. For example, while you spin the transducer for wheel No. 1, the brake pressure for wheel No. 5 should release (the slower/stopped tandem wheel).

The second part of the transducer spin test, stopping the spinning transducer quickly, tests the skid protection funtion. When the transducer is stopped, the antiskid card senses this as a skid of the wheel and releases that brake. For example, when the spinning transduer for wheel No. 1 is stopped quickly, the brake pressure for wheel No. 1 should release.

S 035-369

WARNING: THE TEST THAT FOLLOWS APPLIES AND RELEASES THE BRAKES. MAKE SURE THAT THE AREA AROUND THE BRAKES IS CLEAR AND THAT CHOCKS ARE INSTALLED ON THE AIRPLANE WHEELS. THIS WILL PREVENT POSSIBLE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the hubcaps from all the main gear wheels.

S 715-256

(2) Turn the wheel speed transducer on wheel 1 as quickly as possible (approximately 600 RPM necessary) and make sure that while the wheel turns the other brake of the fore-aft pair (wheel 5) releases. Turn the wheel as follows for this test:
(a) Turn the wheel speed transducer with the transducer spinup tool.

S 715-257

(3) Stop the movement of the transducer as quickly as it is possible. Make sure that the brake (wheel 5) that had released applies again.

S 715-258

(4) Turn the transducer on wheel 1 again and then stop its movement quickly. Make sure that wheel 1 releases and then applies again.

S 715-259

(5) Do steps 2, 3, and 4 again for wheels 2 through 8.

S 435-260

(6) Install the hubcap as follows (if it was removed):
(a) Put the clamp in its position on the wheel flange.
(b) Hold the hubcap with the TPIS driver installed in it's position on the wheel flange and hold while you fasten the clamp. Tighten the nut on the T-bolt to 35 to 40 pound-inches.

S 865-292

(7) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P6 panel:
(a) 6F4, PARKING BRAKE VLV

S 865-291

(8) Release the parking brake.

TASK 32-42-00-715-263

6. Autobrake System Test - Power Distribution and Indication (Fig. 501)
A. General
(1) This is a test to make sure that the autobrake system arms and disarms when you open and close the autobrake sytem circuit breakers as shown in the test.

B. References
(1) AMM 24-22-00/201, Electrical Power - Control

C. Access
(1) Location Zones
211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right
119 Main Equipment Center, Right

(2) Access Panel
119AL Main Equipment Center

D. Procedure

S 865-065
(1) Supply electrical power (AMM 24-22-00/201).

S 495-066
(2) Put chocks on the airplane wheels.

S 865-067
(3) Release the parking brake.

S 865-282
(4) Make sure that the L, R, and C IRU'S are in the NAV mode.

NOTE: The IRU'S must be aligned.

S 715-068
(5) Put the AUTOBRAKES selector switch on the pilots' center instrument panel in position 1. Make sure that the switch stays in position 1 (which shows an armed autobrake system). Make sure that the AUTOBRAKES light goes off.

S 865-069
(6) Open this circuit breaker on P11:
(a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1

S 715-070
(7) Make sure that the AUTOBRAKES selector switch stays armed.

S 865-218
(8) Close circuit breaker 11U12, AUTOBKS/ANTISKID TEST/IND 1

S 865-071
(9) Open this circuit breaker on the P11 panel:
(a) 11U21, AUTOBRKS/ANTISKID TEST/IND 2

S 715-072
(10) Make sure that the AUTOBRAKES selector switch stays armed.

S 865-073
(11) Open these circuit breakers on the P11 panel:
(a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1

S 715-074
(12) Make sure that you have these indications:
(a) The AUTOBRAKES selector switch moves to DISARM.
(b) The AUTOBRAKES light comes on.
(c) The AUTOBRAKES message comes into view on the EICAS.
(d) The ALTN ANTISKID message comes into view on the EICAS maintenance and status pages.
(e) The ANTISKID/AUTOBRK message comes into view on the EICAS maintenance page.

S 865-075
(13) Close these circuit breakers on the P11 panel:
(a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
(b) 11U21, AUTOBRKS/ANTISKID TEST/IND 2
(c) Rotate the autobrake selector switch to the OFF position.

TASK 32-42-00-705-283

7. Autobrake System Test - Control (Fig. 501)

A. General

(1) This procedure is a test of the metered pressure, thrust lever, spoiler handle and air ground sensors channel on the display. The parking brake is released for this test.

NOTE: If there is a problem when you do the autobrake control test that makes it necessary to operate thrust lever, you should do a check of the throttle-switch microswitch pack (AMM 22-32-04/201).

B. Equipment

(1) Proximity Sensor Actuator/Deactuator Set - A27092-84 (4 Rectangular sensor actuators required)
(2) Protractor, Thrust Lever - G76002-15

C. References

(1) AMM 24-22-00/201, Electrical Power - Control

(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 34-21-00/501, Inertial Reference System

D. Access

(1) Location Zones

211	Control Cabin, Left
212	Control Cabin, Right
731	Landing Gear Left
741	Landing Gear Right
119	Main Equipment Center, Right

(2) Access Panel

119AL	Main Equipment Center

E. Prepare for the Test

NOTE: It is necessary to operate the spoiler handle for parts of this test.

S 495-076
(1) Make sure the downlocks for the main and nose landing gear are installed (AMM 32-00-20/201).

S 495-077

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 865-078
(3) Supply electrical power (AMM 24-22-00/201).

S 865-079
(4) Release the parking brake.

S 865-080
(5) Put the thrust levers in the idle position.

S 865-081
(6) Make sure that the spoilers are retracted.

S 865-082
(7) Put the L, R, and C IRU's in the NAV mode (AMM 34-21-00/501).

NOTE: The IRU's must be aligned.

S 865-085
(8) Pressurize the right hydraulic system (AMM 29-11-00/201).

F. Do the Autobrake System Control Test

S 865-086
(1) Put the AUTOBRAKES selector switch on the pilots' center instrument panel in the DISARM position..

S 715-087
(2) Apply force moderately to try to turn the AUTOBRAKE selector switch in the counterclockwise direction, but do not push in on the switch. Make sure that the switch does not move from the DISARM position.

S 865-088
(3) Push in on the switch and turn it to the OFF position.

S 715-089
(4) Apply moderate force moderately to try to turn the AUTOBRAKE selector switch in the clockwise direction, but do not push in the switch. Make sure that the switch does not move from the OFF position.

S 715-090
(5) Put the switch in position 1. Make sure that the switch stays in position 1 (which shows that the autobrake system is armed).

S 715-091
(6) Push in and hold the ENABLE/VERIFY switch on Antiskid/Autobrake Control Unit, and then push in the VERIFY switch.

S 715-219
(7) Release both the ENABLE/VERIFY and the VERIFY switches.

S 715-220
(8) Make sure that the display reads TEST END.

NOTE: While the test is running a WAIT message flashes 4 to 8 times on the control unit display. The autobrake selector switch should also disarm at the end of the test.

S 715-092
(9) Make sure that the AUTOBRAKE selector switch moves to the DISARM position at the end of the test.

S 715-093
(10) Turn the AUTOBRAKES selector switch to position 1.

S 715-221
(11) Make sure that the switch stays in this position (which will show that the system is armed).

S 715-094
(12) Push in and release the pilots' right brake pedal.

S 715-223
(13) Make sure that the AUTOBRAKES selector switch moves to the DISARM position and the AUTOBRAKES light comes on.

S 715-222
(14) Make sure that the AUTOBRAKES message comes into view on the EICAS.

S 715-095
(15) Turn the AUTOBRAKES selector switch to position 1.

S 715-284
(16) Make sure that the AUTOBRAKES light goes off and the AUTOBRAKES message on EICAS goes out of view.

S 715-096
(17) Push in and release the pilots' left brake pedal.

S 715-224
(18) Make sure that the AUTOBRAKES selector switch moves to the DISARM position and the AUTOBRAKES light comes on, and the AUTOBRAKES message appears on EICAS.

S 865-097
(19) Turn the AUTOBRAKES selector switch to the MAX AUTO position. Hold the switch in the MAX AUTO position for the next five steps.

S 865-098
(20) Move the right thrust lever 0.36 inch forward from the idle position.

S 715-100
(21) Make sure that the AUTOBRAKES light comes on and the EICAS message, AUTOBRAKES, shows.

S 715-101
(22) Push in and hold the ENABLE/VERIFY switch on the Antiskid/Autobrake Control Unit, then push in the VERIFY switch.

S 715-225
(23) Release the ENABLE/VERIFY and the VERIFY switches. Make sure that the display shows THR R1.

S 715-102
(24) Push in the VERIFY switch. Make sure that the display shows THR R2.

S 715-103
(25) Push the VERIFY switch again. Make sure that the display flashes WAIT and then shows A/B SEL.

S 715-104
(26) Push in the VERIFY switch. Make sure that the display shows TEST END.

S 715-105
(27) Release the AUTOBRAKES selector switch. Make sure that the switch moves to the DISARM position.

S 865-106
(28) Put the right thrust lever in the idle position.

S 865-107
(29) Turn the AUTOBRAKE selector switch to the MAX AUTO position. Hold the switch in the MAX AUTO position for the seven steps that follow.

S 865-108
(30) Move the left-thrust-lever 0.36 inch forward from the idle position.

S 715-110
(31) Make sure that the AUTOBRAKES light comes on and that the EICAS message, AUTOBRAKES, shows on the EICAS screen.

S 715-111
(32) Push in and hold the ENABLE/VERIFY switch on the Antiskid/Autobrake Control Unit and then push in the VERIFY switch.

S 715-227
(33) Release both the ENABLE/VERIFY and the VERIFY switches.

S 715-226
(34) Make sure that the display shows THR L1.

S 715-112
(35) Push in the VERIFY switch and make sure that the display shows THR L2.

S 715-113
(36) Push in the VERIFY switch again. Make sure that the display flashes WAIT and then shows A/B SEL.

S 715-114
(37) Push in the VERIFY switch and make sure that the display shows TEST END.

S 715-115
(38) Release the AUTOBRAKES selector switch.

S 715-236
(39) Make sure that the switch moves to the DISARM position.

S 865-116
(40) Put the left thrust lever in the idle position.

S 715-117
(41) Do the speedbrake switch test as follows:
(a) Turn the AUTOBRAKES selector switch to position 1. Make sure that the switch stays in position 1.

WARNING: THE TEST STEP THAT FOLLOWS OPERATES THE SPOILERS. MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE SPOILERS. THE SPOILERS CAN RETRACT QUICKLY AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(b) Put the speedbrake handle on the center control stand in the UP position.
(c) Push in and hold the ENABLE/VERIFY switch on the Antiskid/Autobrake Control Unit and then push in the VERIFY switch.
(d) Release both the ENABLE/VERIFY and the VERIFY switches.
(e) Make sure that the display shows SPLR HD.
(f) Put the speedbrake handle in the DOWN position.
(g) Make sure that the AUTOBRAKES selector switch moves to the DISARM position, and the AUTOBRAKES light comes on.
(h) Make sure that the EICAS message, AUTOBRAKES, shows on the EICAS screen.
(i) Push in the VERIFY switch on the Antiskid/Autobrake Control Unit.
(j) Make sure that the display flashes WAIT and then reads PWR A/B.
(k) Push in the VERIFY switch and make sure that the display shows TEST END.

S 715-310
(42) Do the Air/Ground relays test as follows:
(a) Install proximity switch actuators next to System 1 tilt sensor S245 for the left landing gear and next to System 1 tilt sensor S246 for the right landing gear (Fig. 502).
(b) Turn the AUTOBRAKES selector switch to the MAX AUTO position.
(c) Make sure that the switch stays in MAX AUTO.
(d) Make sure that the EICAS message, ANTISKID/AUTOBRK, shows on the EICAS maintenance page.

NOTE: The EICAS message will appear intermittently through the next 12 steps and then will disappear.

(e) Push in and hold the ENABLE/VERIFY switch on the Antiskid/Autobrake Control Unit, then push in the VERIFY switch.
(f) Release the ENABLE/VERIFY and the VERIFY switches.
(g) Make sure that the display shows A/G 1.
(h) Push in the VERIFY switch and make sure that the display shows A/G SW.
(i) Push in the VERIFY switch again.
(j) Make sure that the display flashes WAIT and then shows A/B SYS.
(k) Make sure that the AUTOBRAKES selector switch moves to the DISARM position, and the AUTOBRAKES light comes on. Make sure that the message AUTOBRAKES, shows on EICAS.
(l) Push in the VERIFY switch on the Antiskid/Autobrake Control Unit. Make sure that the display shows TEST END.
(m) Remove the proximity switch actuators from the system 1 sensors.
(n) Install the actuators next to System 2 tilt sensor S267 for the left landing gear and next to System 2 tilt sensor S268 for the right landing gear (Fig. 502).
(o) Turn the AUTOBRAKES selector switch to position 4. Make sure that the switch stays in position 4.
(p) Push in and hold the ENABLE/VERIFY switch on the Antiskid/Autobrake Control Unit, then push in the VERIFY switch.
(q) Release both the ENABLE/VERIFY and the VERIFY switches.
(r) Make sure that the display shows A/G 2.
(s) Push in the VERIFY switch and make sure that the display shows A/G SW.
(t) Push in the VERIFY switch again. Make sure that the display flashes WAIT and then shows A/B SYS.
(u) Make sure that the AUTOBRAKES selector switch moves to the DISARM position, and the AUTOBRAKES light comes on. Make sure that the EICAS message, AUTOBRAKES, shows on EICAS.
(v) Push in the VERIFY switch on the Antiskid/Autobrake Control Unit and make sure that the display shows TEST END.
(w) Push in the RESET button.
(x) Install proximity sensor actuators on gear-tilt sensors S245 and S246 (Fig. 502).

NOTE: Proximity switch actuators must not have been removed from sensors S267 and S268.

(y) Move the thrust levers forward.
(z) Turn the AUTOBRAKES selector switch to position 1.
(aa) Make sure that the switch stays in position 1.
(ab) Move the thrust levers aft to the idle position.
(ac) Turn the AUTOBRAKES selector switch to the OFF position.
(ad) Remove all the proximity sensor actuators.

TASK 32-42-00-705-118

8. Autobrake System Test - Autobrake Application (Fig. 501)

A. General

(1) The test gives a check of autobrake pressures for each autobrake switch position. Brake pressure gages are installed at each brake to monitor brake pressure.

B. Equipment

(1) Pressure gages - 0 to 4000 psi, for BMS 3-11 hydraulic fluid - F72977-62 (8 required)

C. References

(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 34-21-00/501, Inertial Reference System

D. Access

(1) Location Zones

211	Control Cabin, Left
212	Control Cabin, Right
731	Landing Gear Left
741	Landing Gear Right
119	Main Equipment Center, Right

(2) Access Panel

119AL	Main Equipment Center

E. Prepare for the Test

S 495-296

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 495-120

(2) Make sure that there are chocks on the wheels.

S 865-121

(3) Release the parking brake.

S 495-122

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Open the doors for the main gear and install the door locks (AMM 32-00-15/201).

S 865-123
(5) Supply electrical power (AMM 24-22-00/201).

S 485-240
(6) If necessary, do these steps to install a pressure gage at each of the eight brake units:
(a) Make sure that the parking brake is released.
(b) Make sure that the brakes are not operated manually.

WARNING: THE BRAKES MUST NOT BE IN OPERATION WHEN YOU CONNECT OR DISCONNECT THE TWO PARTS OF A HYDRAULIC BRAKE DISCONNECT. IF YOU TRY TO CONNECT OR DISCONNECT A HYDRAULIC BRAKE DISCONNECT WITH THE BRAKE IN OPERATION, HYDRAULIC FLUID UNDER HIGH PRESSURE CAN RELEASE. THIS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(c) To remove all pressure from the brake unit, disconnect the hose half of the hydraulic disconnect from the brake half.

(d) Remove the brake bleeder assembly from the brake unit housing.

NOTE: Each brake bleeder assembly has a bleeder valve installed in an adapter. The adapter is installed in the brake unit housing.

(e) Install a pressure gage in the port on the brake unit housing.

(f) Connect the hose half of the hydraulic brake disconnect to the brake half.

S 865-125
(7) Pressurize the hydraulic systems (AMM 29-11-00/201).

S 865-128
(8) Put the L, R, and C IRU's in the NAV mode (AMM 34-21-00/501).

NOTE: The IRU's must be aligned.

F. Do the Autobrake Application Test

S 865-350

WARNING: THIS TEST APPLIES AND RELEASES BRAKES. MAKE SURE THAT THE AREA AROUND THE BRAKES IS CLEAR AND THAT YOU HAVE PUT CHOCKS ON THE AIRPLANE WHEELS. THIS WILL PREVENT POSSIBLE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Put the BRAKE TEST rotary switch on the Antiskid/Autobrake Control Unit in the A/B position.

NOTE: The EICAS message, ANTISKID/AUTOBRK, on the maintenance page will be displayed when the BRAKE TEST rotary switch is not in the NORM position.

S 715-130

(2) Do the steps that follow for each of the autobrake-selector-switch positions shown in Table 504:

Table 504

Switch Position	Display Message	Brake Pressure Gage Indication (psig)
1	BRK A/B 1	1290 ±200
2	BRK A/B 2	1500 ±200
3	BRK A/B 3	1750 ±200
4	BRK A/B 4	2050 ±200
MAX AUTO	BRK A/B 5	3000 ±200

(a) Find the AUTOBRAKES selector switch (referred to as the selector switch) in the flight compartment on the P1-3 panel.
1) Turn the selector switch to one of the positions below "Switch Position" in Table 504.
2) Make sure that the selector switch stays in that position.

(b) Find the Antiskid/Autobrake Control Unit, M102, in the main equipment center.
1) Push and hold the ENABLE/VERIFY switch, then push the VERIFY switch.
2) Make sure that the display shows the same data below "Display Message" for the applicable selector switch position in Table 504.
3) Make sure that AUTOBRAKES shows on the EICAS display.
4) Make sure that the AUTOBRAKES light on the P1-3 panel comes on.

(c) Make sure that the pressure gage shows these pressures:
1) For approximately ten seconds the gage shows the pressure below "Brake Pressure" for the switch position in Table 504 .
2) Then the gage goes to 300 ± 200 psi for approximately five seconds.
3) Then the gage goes to less than 100 psi.
(d) Make sure that the selector switch goes to the DISARM position.

S 865-131
(3) Turn the AUTOBRAKES selector switch to OFF.

S 865-202
(4) Turn the BRAKE TEST rotary switch on Antiskid/Autobrake Control Unit to the NORM position.

S 865-203
(5) Press the RESET button on the Antiskid/Autobrake Control Unit to erase all faults from memory.

S 715-204
(6) Make sure that the EICAS message, ANTISKID/AUTOBRK, is not shown on the EICAS maintenance page.

TASK 32-42-00-705-286

9. Autobrake System Operational Test - RTO

A. General
(1) The autobrake RTO system automatically applies full system pressure (3000 psi) to the brakes when you do an RTO test. The system is armed at the AUTOBRAKES selector switch. Brake pressure gages that you install at the brake bleed fittings give brake pressure indications for the test.

B. Equipment
(1) Pressure gages - 0 to 4000 psi, for BMS 3-11 hydraulic fluid - F72977-62 (8 required)

C. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 34-21-00/501, Inertial Reference System

D. Access
(1) Location Zones
211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right
119 Main Equipment Center, Right

(2) Access Panel
119AL Main Equipment Center

E. Prepare for the Test

S 495-133
(1) Make sure that landing gear downlocks are installed (AMM 32-00-20/201).

S 495-134
(2) Make sure that the chocks are installed on the wheels.

S 495-212

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 865-136
(4) Supply electrical power (AMM 24-22-00/201).

S 865-137
(5) Put the L, R, and C IRU's in the NAV mode (AMM 34-21-00/201).

NOTE: The IRU's must be aligned.

S 865-141
(6) Put the thrust levers in the idle position.

S 865-142
(7) Make sure that the spoilers are retracted.

S 865-143
(8) Release the parking brake.

S 865-144
(9) Make sure that the landing gear lever is in the DN position.

F. Procedure to Do the Test of RTO

S 495-300

WARNING: THIS TEST APPLIES AND RELEASES THE BRAKES. MAKE SURE THE AREA AROUND THE BRAKES IS CLEAR AND WHEEL CHOCKS ARE INSTALLED. BRAKE OPERATION CAN CAUSE DAMAGE OR INJURY.

(1) Make sure the wheel chocks are installed.

S 865-214
(2) Make sure that persons are not near the landing gear while you do this test.

S 865-145
(3) Put the AUTOBRAKES selector switch in the RTO position. Make sure that the switch stays in the RTO position.

S 865-146
(4) Open the circuit breakers that follow on the overhead circuit breaker panel P11:
(a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
(b) 11U21, AUTOBRKS/ANTISKID TEST/IND 2

S 715-147
(5) Make sure that the AUTOBRAKES selector switch moves to the OFF position.

S 865-148
(6) Close the circuit breakers that follow on the P11 panel:
(a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
(b) 11U21, AUTOBRKS/ANTISKID TEST/IND 2

S 495-149
(7) Install a pressure gage in the brake bleed port of one of the brakes on the left main gear and one of the brakes on the right main gear.

S 865-150
(8) Pressurize the right system hydraulic and reservoir (AMM 29-11-00/201).

S 715-151
(9) Put the AUTOBRAKES selector switch in the RTO position. Make sure that the switch stays in the RTO position.

S 715-152
(10) Turn the BRAKE TEST rotary switch on the Antiskid/Autobrake Control Unit (M102) to the A/B position.

S 715-153
(11) Push in and hold the ENABLE/VERIFY switch, then push in the VERIFY switch.

S 715-230
(12) Release both the ENABLE/VERIFY and the VERIFY switches.

S 715-231
(13) Make sure that the display shows BRK RTO.

S 715-154
(14) Make sure that the pressure gage indications on the two gear increase to 3000 ±200 psi for about 15 seconds, and then decreases to less than 100 psi.

S 715-155
(15) Make sure that the AUTOBRAKES selector switch turns to the OFF position.

S 715-156
(16) Put the Antiskid/Autobrake Control Unit BRAKE TEST rotary switch in the NORM position.

S 865-157
(17) Push in the reset switch on the Antiskid/Autobrake Control Unit.

S 715-330
(18) Turn the autobrake selector switch to the OFF position.

TASK 32-42-00-845-289

10. Put the Airplane Back to Its Usual Condition

A. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Door Locks

B. Access
(1) Location Zones
211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right
119 Main Equipment Center, Right

(2) Access Panel
119AL Main Equipment Center

C. Procedure

S 865-191
(1) Remove the power from the hydraulic systems (AMM 29-11-00/201).

S 865-192
(2) Make sure the parking brake is released.

S 085-332
(3) Do these steps at each brake unit to remove the pressure gage and to install a brake bleeder assembly (8 locations).
(a) Make sure that the parking brake is released.
(b) Make sure that the parking brakes are not operated manually.

WARNING: THE BRAKES MUST NOT BE IN OPERATION WHEN YOU CONNECT OR DISCONNECT THE TWO PARTS OF A HYDRAULIC BRAKE DISCONNECT. IF YOU TRY TO CONNECT OR DISCONNECT A HYDRAULIC BRAKE DISCONNECT WITH THE BRAKE IN OPERATION, HYDRAULIC FLUID UNDER HIGH PRESSURE CAN RELEASE. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(c) To remove all pressure from the brake, disconnect the hose half of the hydraulic disconnect from the brake half.
(d) Remove the pressure gage from the brake unit housing.
(e) Do these steps to install a brake bleeder assembly on the brake unit housing:

NOTE: Each brake bleeder assembly has a bleeder valve installed in an adapter. The adapter is installed in the brake unit housing.

CAUTION: TIGHTEN THE ADAPTER TO 150-190 POUND INCHES. IF YOU TIGHTEN THE ADAPTER TO MORE THAN 190 POUND-INCHES, YOU CAN DAMAGE THE ADAPTER OR THE BRAKE UNIT HOUSING.

(f) Tighten the adapter to 150-190 pound-inches.

NOTE: The specified torque values are for installation of the adapter in the brake unit housing. The allowable torque range for the bleeder valve, which you do not operate in this procedure, is 40-80 pound-inches.

S 865-334
(4) Connect the hydraulic line to the brakes at the quick-disconnect fittings.

S 865-333
(5) Pressurize the hydraulic systems and reservoirs (AMM 29-11-00/201).

S 865-196
(6) Set the parking brake.

S 865-373
(7) Make sure there are no hydraulic leaks.

S 865-197
(8) Put the L, R, and C IRU's to the OFF position.

S 865-198
(9) Push in the RESET button on the Antiskid/Autobrake Control Unit to clear all faults from memory.

S 095-199

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(10) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

S 865-200
(11) Remove the power from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-201
(12) Remove electrical power if it is not necessary (AMM 24-22-00/201).

ANTISKID/AUTOBRAKE SYSTEM - INSPECTION/CHECK

1. General
   A. This procedure contains two tasks. The first task is an operational test of thrust lever switch operation for a Refused Takeoff (RTO) configuration. The second task is a test for operation of the solenoid valve, indications for operation of the valve, and operation of the valve relay.
   B. It is necessary to use the Built in Test Equipment (BITE) for the Antiskid/Autobrake Control Unit to do this test.

TASK 32-42-00-706-002

2. Thrust Lever Switch Operation for RTO Condition - Test (Fig. 601)
   A. References
      (1) 24-22-00/201, Electrical Power - Control
      (2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
      (3) 34-21-00/501, Inertial Reference System
   B. Access
      (1) Location Zones
          143/144 MLG Wheel Well
          211/212 Control Cabin
          731/741 Landing Gear
          119 Main Equipment Center (Right)

      (2) Access Panel
          119AL Main Equipment Center

   C. Procedure

      S 866-003
      (1) Supply electrical power (AMM 24-22-00/201).

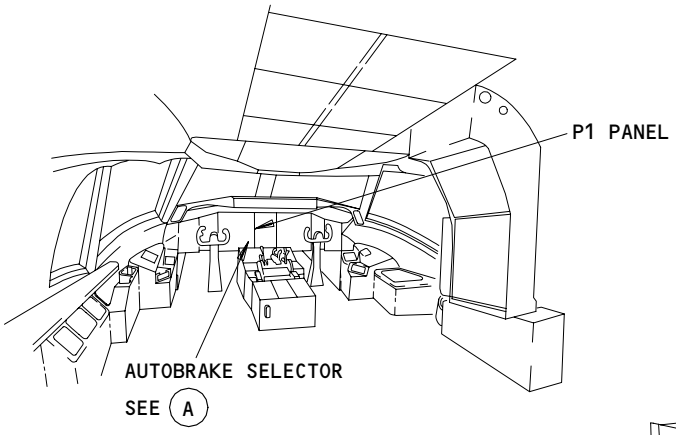
      S 866-004
      (2) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

      S 496-005
      (3) Make sure that the chocks are installed on the wheels.

      S 866-006
      (4) Release the parking brake.

      S 866-007
      (5) Make sure that the thrust levers are in the idle position.

      S 866-008
      (6) Make sure that the spoilers are retracted.



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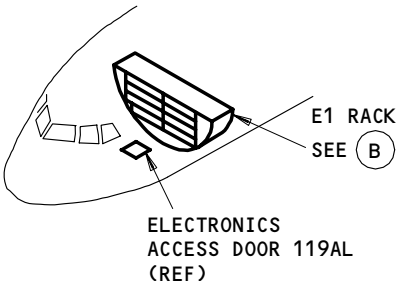
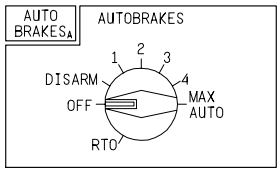
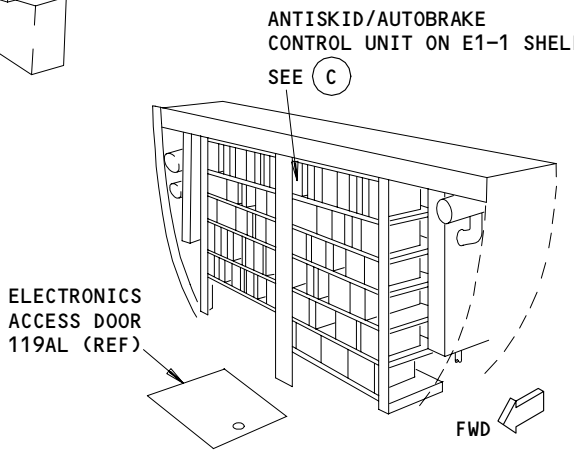




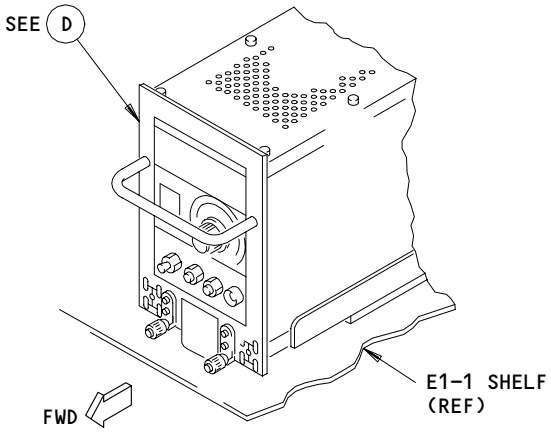
AUTOBRAKES SELECTOR
SWITCH ON P1-3

A



MAIN ELECTRONIC/ELECTRICAL
EQUIPMENT CENTER

B



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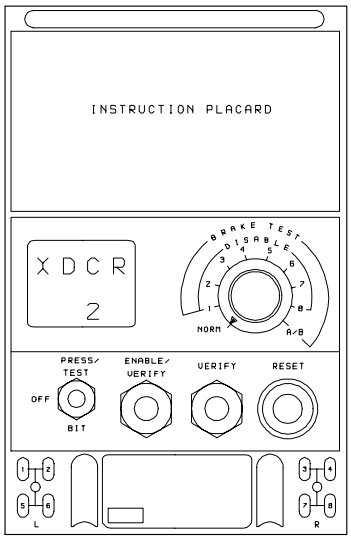
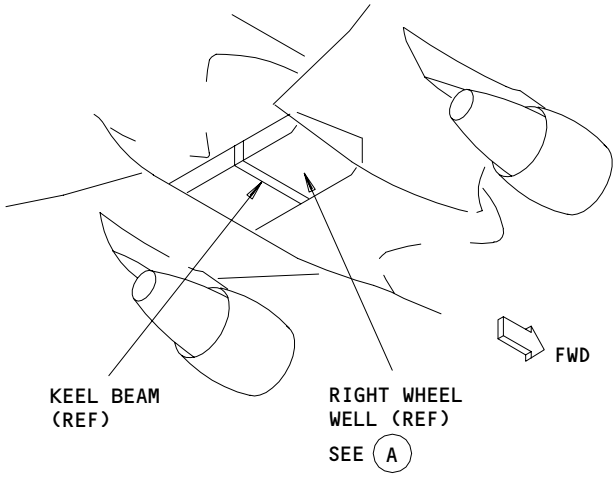
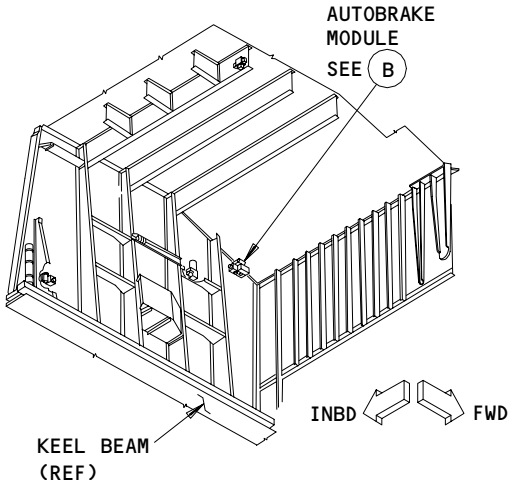


ANTISKID/AUTOBRAKE CONTROL UNIT
FRONT FACE

D

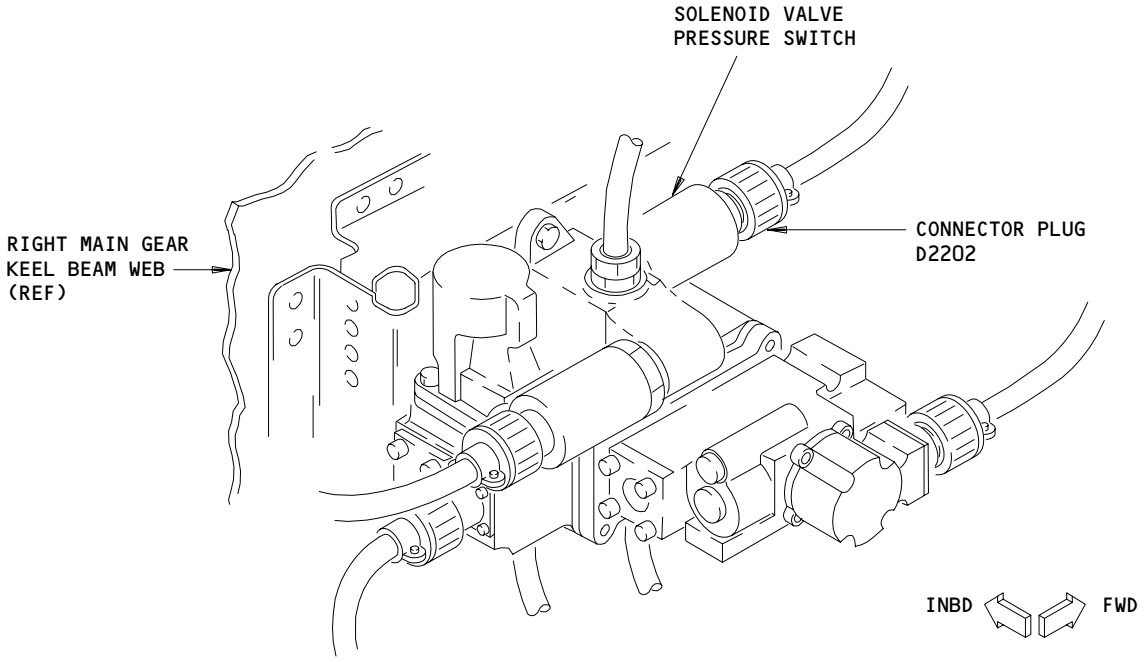
Antiskid/Autobrake System Check
Figure 601 (Sheet 1)





R WHEEL WELL (REF)

A



AUTOBRAKE MODULE

B

Antiskid/Autobrake System Check
Figure 601 (Sheet 2)

S 866-062
(7) Put the L, R, and C IRUs in the NAV mode (AMM 34-21-00/501).

NOTE: The IRUs must be aligned.

S 716-012
(8) Put the AUTOBRAKES selector switch on the P1-3 panel in the RTO position and make sure that it stays in this position.

S 716-013
(9) Make sure that the BRAKE TEST rotary switch on the antiskid/autobrake control unit is in the NORM position.

S 716-014
(10) On the antiskid/autobrake control unit, push in the ENABLE/VERIFY switch and hold, and then push in the VERIFY switch. Release the ENABLE/VERIFY and the VERIFY switches.

S 716-015
(11) Make sure that the unit display flashes WAIT while the test operates and do the steps that follow:
(a) Push in the VERIFY switch to continue the test if the display shows any message.
(b) Continue the test until TEST END shows on the display.

NOTE: The BITE test will run completely through to TEST END without stopping unless a configuration error or fault is detected. When an error is detected, the test is stopped and a message is displayed for 45 seconds or until VERIFY is selected. The control unit will drop out of the test mode if the VERIFY switch is not pushed within 45 seconds.

S 716-016
(12) Make sure that THR L1, THR R1, THR L2 and THR R2 do not show on the unit display. Ignore other indications.

S 716-017
(13) Move the thrust levers forward from the idle position.

S 716-018
(14) Push in and hold the ENABLE/VERIFY switch, and then push in the VERIFY switch. Release the ENABLE/VERIFY and VERIFY switches.

S 716-019
(15) Make sure that THR L1, THR R1, THR L2, and THR R2 show on the unit display. Ignore other indications.
(a) Push and release VERIFY switch to scroll the display.

S 866-022
(16) Move the AUTOBRAKES selector switch to the OFF position.

S 866-023
(17) Move the thrust levers to the idle position.

S 866-061
(18) Push in the RESET button on the control unit to remove all faults in memory.

S 866-024
(19) Put the L, R, and C IRUs to the OFF position.

S 866-025
(20) Set the parking brake.

S 866-026
(21) Remove power from the right hydraulic system if it is not necessary (AMM 29-11-00/201).

S 866-027
(22) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-42-00-716-001

3. Autobrake Solenoid Valve, Valve Indication, and Valve Relay Operation - Test (Fig. 601)

A. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 34-21-00/501, Inertial Reference System

B. Access
(1) Location Zones

143/144	MLG Wheel Well
211/212	Control Cabin
731/741	Landing Gear
119	Main Equipment Center (Right)

(2) Access Panel

119AL	Main Equipment Center

C. Prepare for the Test

S 496-028
(1) Make sure that chocks are installed on the airplane wheels.

S 496-030
(2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 496-031

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 866-032
(4) Supply electrical power (AMM 24-22-00/201).

S 866-033
(5) Make sure that the control lever for the landing gear is in the DN position.

S 866-034
(6) Release the parking brake.

S 866-035
(7) Make sure that the thrust levers are in the idle position.

S 866-036
(8) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 866-037
(9) Make sure that the spoilers are retracted.

S 716-038
(10) Put the L, R, and C IRUs in the NAV mode (AMM 34-21-00/501).

NOTE: The IRUs must be aligned.

S 716-039
(11) Make sure that the AUTOBRAKES selector switch is in the OFF position.

D. Do an Indication Test for Solenoid Valve Operation

S 866-042
(1) Disconnect electrical connector D2202 from the pressure switch for the solenoid valve on the autobrake module M239.

S 486-058
(2) Connect a jumper between pins 1 and 2 of connector D2202.

S 716-057
(3) Make sure that you have these indications:
(a) The AUTOBRAKES light on P1-3 comes on.
(b) The EICAS message AUTOBRAKES shows.

S 096-059
(4) Remove the jumper.

S 716-060
(5) Make sure that the AUTOBRAKES light goes off and the EICAS message AUTOBRAKES goes out of view.

S 866-044
(6) Install electrical connector D2202 to the pressure switch for the solenoid valve.

E. Do an Operational Test of the Solenoid Valve and the Solenoid Valve Relay

S 716-045
(1) Put the AUTOBRAKES selector switch on the P1-3 panel in position 1.

S 716-046
(2) Make sure that the BRAKE TEST rotary switch on the antiskid/autobrake control unit is in the NORM position.

S 716-047
(3) Push in the ENABLE/VERIFY switch and hold, and then push in the VERIFY switch. Release the ENABLE/VERIFY and the VERIFY switches.

S 716-048
(4) Make sure that the unit display flashes WAIT while the test operates, and shows TEST END after the test stops.
(a) If one or more failure indications show on the display when you do the test, make a record of them.

NOTE: If a failure indication shows on the display it is necessary to push the VERIFY switch to continue the test.

(b) Do the corrective action that is necessary for failure indication messages that show on the display.

S 716-049

(5) Make sure that the autobrake selector switch is in the DISARM position.

S 866-050

(6) Put the AUTOBRAKES selector switch in the OFF position.

F. Put the Airplane Back to Its Usual Condition

S 866-051

(1) Set the parking brake.

S 096-052

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

S 866-053

(3) Remove power from the right hydraulic system if it is not necessary (AMM 29-11-00/201).

S 866-054

(4) Put the L, R, and C IRUs to the OFF position.

S 866-055

(5) Remove electrical power if it is not necessary (AMM 24-22-00/201).

ANTISKID/AUTOBRAKE CONTROL UNIT AND CIRCUIT CARD - REMOVAL/INSTALLATION

1. General
   A. This subject contains five tasks. The first task removes the antiskid/autobrake control unit. The second task installs the antiskid/autobrake control unit. The third task does a BITE test of the antiskid/autobrake control unit. The fourth task is a removal procedure for circuit cards in the antiskid/autobrake control unit. The fifth task is an installation procedure for circuit cards in the antiskid/autobrake control unit.
   B. The antiskid/autobrake control unit (M102) is installed on a tray and held by two hold down extractors (self-locking mechanism). No tools are necessary for the removal or the installation of the unit (AMM 20-10-01/401).
   C. The unit contains static sensitive devices. Use the procedure in AMM 20-41-01/201 for the applicable instructions.

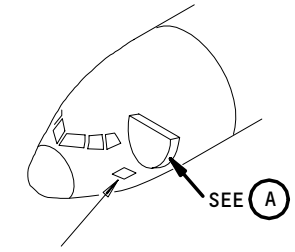
TASK 32-42-01-004-001

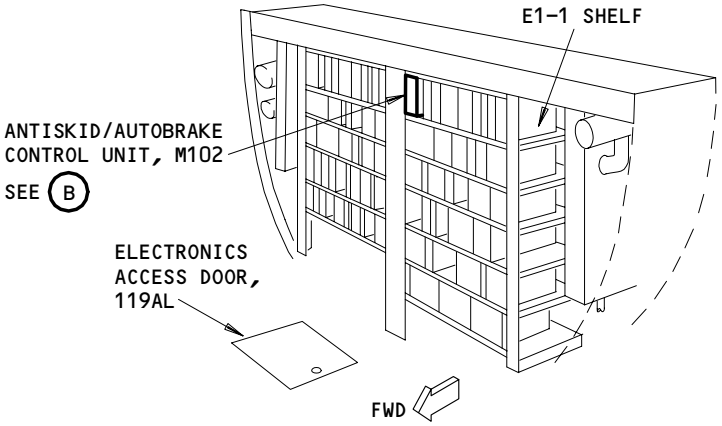
2. Remove the Antiskid/Autobrake Control Unit (Fig. 401)
   A. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 20-10-01/401, E/E Rack-Mounted Components
      (3) AMM 20-41-01/201, Static Sensitive Devices
   B. Access
      (1) Location Zone
          119 Main Equipment Center (Right)

      (2) Access Panel
          119AL Main Equipment Center

   C. Procedure

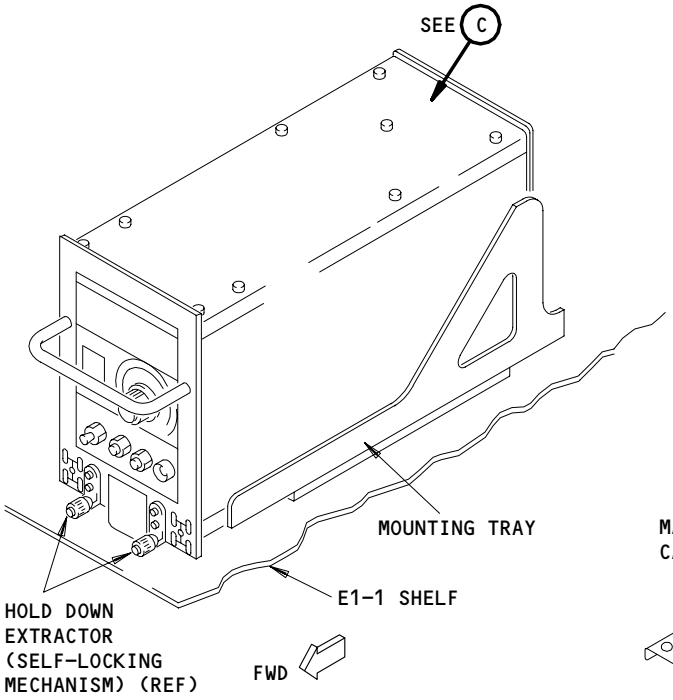
      S 864-002
      (1) Open these circuit breakers on the overhead circuit breaker panel P11 and attach DO-NOT-CLOSE tags:
          (a) 11U18, ANTISKID 1-5





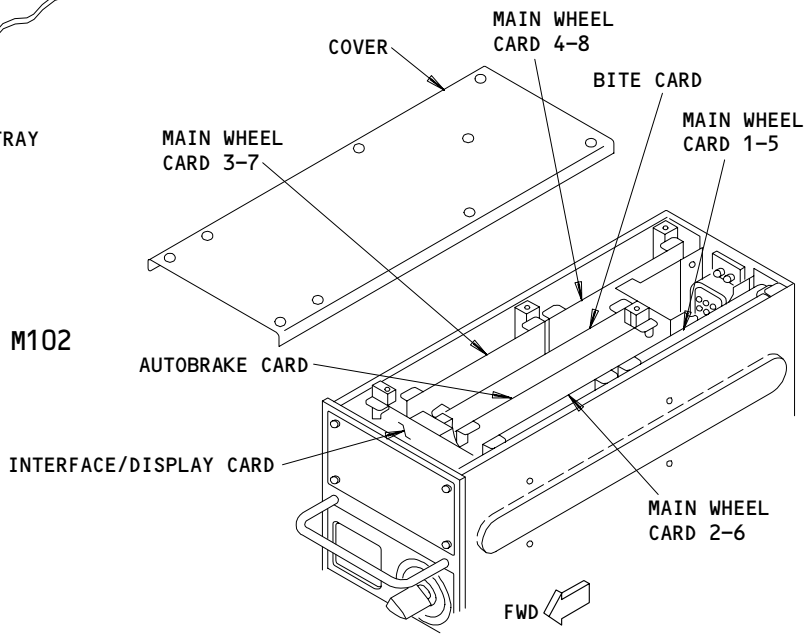
MAIN EQUIPMENT CENTER

A



ANTISKID/AUTOBRAKE CONTROL UNIT, M102

B



ANTISKID/AUTOBRAKE CONTROL UNIT, M102
(COVER REMOVED)

C

Antiskid/Autobrake Control Unit and Circuit Card Installation
Figure 401

(b) 11C31, ANTISKID 2-6
(c) 11C32, ANTISKID 3-7
(d) 11U27, ANTISKID 4-8
(e) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
(f) 11U21, AUTOBRKS/ANTISKID TEST/IND 2

S 014-003

(2) Get access to the main equipment center through the electronics access door 119AL (AMM 06-41-00/201).

S 914-004

CAUTION: DO NOT TOUCH THE ANTISKID/AUTOBRAKE CONTROL UNIT BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE ANTISKID/AUTOBRAKE CONTROL UNIT.

(3) Do the procedure for devices that are sensitive to electrostatic discharge (AMM 20-41-01/201).

S 024-005

(4) Remove the unit (AMM 20-10-01/401) from the E1-1 shelf.

TASK 32-42-01-424-042

3. Install the Antiskid/Autobrake Control Unit (Fig. 401)

A. References
(1) AMM 20-10-01/401, E/E Rack-Mounted Components
(2) AMM 20-41-01/201, Static Sensitive Devices

B. Access
(1) Location Zone
119 Main Equipment Center (Right)

(2) Access Panel
119AL Main Equipment Center

C. Procedure

S 914-006

CAUTION: DO NOT TOUCH THE ANTISKID/AUTOBRAKE CONTROL UNIT BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE ANTISKID/AUTOBRAKE CONTROL UNIT.

(1) Do the procedure for devices that are sensitive to electrostatic discharge (AMM 20-41-01/201).

S 424-052
(2) Install the unit on the E1-1 shelf (AMM 20-10-01/401).

S 864-008
(3) Remove DO-NOT-CLOSE tags and close these circuit breakers on panel P11:
(a) 11U18, ANTISKID 1-5
(b) 11C31, ANTISKID 2-6
(c) 11C32, ANTISKID 3-7
(d) 11U27, ANTISKID 4-8
(e) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
(f) 11U21, AUTOBRKS/ANTISKID TEST/IND 2

S 714-009
(4) Do a BITE test of the antiskid/autobrake control unit (Ref Par. 4).

TASK 32-42-01-704-010

4. Antiskid/Autobrake Control Unit BITE Test (Fig. 401)

A. General
(1) Do a BITE test of the antiskid/autobrake control unit to make sure that all the functions of the unit are correct.

B. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems.
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 34-21-00/501, Inertial Reference System

C. Access
(1) Location Zone
119 Main Equipment Center (Right)

(2) Access Panel
119AL Main Equipment Center

D. Prepare for the Test

S 494-011
(1) Make sure the downlocks are installed on the main and nose landing gear (AMM 32-00-20/201).

S 494-012

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 864-013

(3) Supply electrical power (AMM 24-22-00/201).

S 494-014

(4) Make sure that chocks are installed on the airplane wheels.

S 864-015

(5) Release the parking brake.

S 864-016

(6) Move the thrust levers to the idle position.

S 864-017

(7) Pressurize the right and center hydraulic systems and reservoirs (AMM 29-11-00/201).

S 864-018

(8) Make sure that the landing gear lever is in the DN position.

S 864-020

(9) Make sure that the BRAKE TEST switch on the unit (M102) is in the NORM position.

S 864-021

(10) Put the L, R and C IRU's in the NAV mode (AMM 34-21-00/501).

NOTE: The IRU's must be aligned.

S 714-022

(11) Push in the RESET button on the control unit. Make sure that the display shows MEM CLR for approximately five seconds.

E. Procedure to Do an Antiskid/Autobrake Control Unit BITE Test

S 714-023

(1) Do a unit display test.

(a) Put the PRESS/TEST-BIT switch on the unit to the PRESS/TEST position and release.

(b) Make sure that all the unit display segments, the ANTISKID annunciator light on P5, and the AUTOBRAKES indicator light on the P1-3 panel come on for approximately five seconds.

S 714-024

(2) Do a BIT (memory recall) test.
   (a) Put the PRESS/TEST-BIT switch to the BIT position and then release the switch.
   (b) Make sure that the TEST END or a stored fault is shown on the display. If a stored fault is shown, set BIT to continue until TEST END shows on the display.
   (c) Push in the RESET button on the unit to clear faults that are stored in the memory.

       NOTE: The unit display will show MEM CLR for approximately five seconds.

S 714-025

(3) Do an antiskid/autobrake control test.
   (a) Put the AUTOBRAKES selector switch on the P1-3 panel to the 1 position.
   (b) Push in the ENABLE/VERIFY switch on the unit and hold, then push in the VERIFY switch. Release the ENABLE/VERIFY and the VERIFY switches.

       NOTE: The display will flash WAIT until the test is complete.

   (c) Make sure that the message TEST END or a fault shows on the display. If a fault shows, push in the VERIFY switch to continue the test until the message TEST END shows.
   (d) Make sure that the autobrake selector switch moves to the DISARM position at the end of the test.
   (e) Push in the RESET button.

S 714-046

WARNING: MAKE SURE THAT THE AREA AROUND THE BRAKES IS CLEAR AND THAT THE CHOCKS ARE INSTALLED ON THE AIRPLANE WHEELS. THIS TEST APPLIES AND RELEASES THE BRAKES. MOVEMENT OF THE WHEELS CAN CAUSE POSSIBLE DAMAGE TO EQUIPMENT OR INJURY TO PERSONS.

(4) Do a normal antiskid brake test.
   (a) Release the parking brake.
   (b) Open this circuit breaker on panel P6:
       1) 6F4, Parking Brake Valve
   (c) Set the parking brake.

(d) Put the BRAKE TEST switch in the position shown for the test steps in Table 1.

(e) For each test step in Table 1, do the test that follows:

1) Push in the ENABLE/VERIFY switch and hold, and then push in the VERIFY switch. Release both the ENABLE/VERIFY and the VERIFY switches.

2) Make sure that the brake (column A) releases for five seconds and then applies again.

NOTE: Brake cycles can be seen if you look for brake wear indicator pin movement in the brake assembly. The wear pin moves about 0.1 inch when the brake on the wheel that you test releases and then applies again.

3) Make sure that the message display for each brake and the message shown in Table 1 are the same while you operate that brake through a cycle.

Table 401

Step	Brake Test Switch Position	Message Display During Brake Cycle	A	B
1	BRAKE TEST 1	BRK 1	1	1-2
2	BRAKE TEST 5	BRK 5	5	5-6
3	BRAKE TEST 2	BRK 2	2	1-2
4	BRAKE TEST 6	BRK 6	6	5-6
5	BRAKE TEST 3	BRK 3	3	3-4
6	BRAKE TEST 7	BRK 7	7	7-8
7	BRAKE TEST 4	BRK 4	4	3-4
8	BRAKE TEST 8	BRK 8	8	7-8

S 714-027

(5) Do an alternate antiskid brake test.

(a) Remove the hydraulic pressure from the right hydraulic system and reservoir (AMM 29-11-00/201).

(b) Make sure that the parking brake is set.

(c) Put the BRAKE TEST switch in the position shown for each test step in Table 401.

(d) For each test step, do the test that follows:

1) Push in the ENABLE/VERIFY switch and hold, then push in the VERIFY switch. Release both the ENABLE/VERIFY the VERIFY switches.

2) Make sure that the brake pairs on the same axle shown in column B release for 5 ±2 seconds and then apply again.

3) Operate each brake through a complete cycle and make sure that the message that shows is the message in Table 401.

(e) Release the parking brake.

(f) Close this circuit breaker on panel P6:
1) 6F4, PARKING BRAKE VALVE
(g) Put the BRAKE TEST switch back to the NORM position.

S 714-028
(6) Do an autobrake application test.
(a) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).
(b) Put the AUTOBRAKES selector switch in position 1 and make sure that it arms.
(c) Put the BRAKE TEST switch in the A/B position.
(d) Push in the ENABLE/VERIFY switch and hold, then push in the VERIFY switch. Release the ENABLE/VERIFY and the VERIFY switches.
(e) Make sure that the unit display shows BRK A/B 1, the EICAS shows the message AUTOBRAKES, and the AUTOBRAKES light
(f) Make sure that all the brakes apply for appproximately 15 seconds and then release.
(g) Make sure that the AUTOBRAKES selector switch moves to the DISARM position.

NOTE: The switch moves to the OFF position if RTO is set.

(h) Do steps (b) thru (g) again for the AUTOBRAKES selector switch positions 2, 3, 4, MAX AUTO and RTO.

NOTE: You will have these unit displays:
BRK A/B 2 for the 2 position ,
BRK A/B 3 for the 3 position ,
BRK A/B 4 for the 4 position ,
BRK A/B 5 for the MAX AUTO position.
BRK RTO for the RTO position

F. Put the Antiskid/Autobrake Control Unit Back to Its Usual Condition

S 864-029
(1) Put the AUTOBRAKES selector switch to the OFF position.

S 864-030
(2) Turn the BRAKE TEST switch to the NORM position.

S 864-031
(3) Push in the RESET button on the unit.

S 864-032
(4) Put the L, R, and C IRU's in the OFF position.

S 864-043
(5) Put the airplane back to its usual condition unless it is necessary to replace a component (Ref Par. 6).

TASK 32-42-01-004-033

5. Antiskid/Autobrake Control Unit Circuit Card Removal (Fig. 401)
   A. References
      (1) AMM 20-41-01/201, Static Sensitive Devices
   B. Procedure

S 424-034
(1) Remove a circuit card.
(a) Remove the antiskid/autobrake control unit (Ref par. 3).
(b) Remove the top cover of the unit to get access to the card.

CAUTION: DO NOT TOUCH THE CIRCUIT CARD BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO CIRCUIT CARDS.

(c) Do the procedure for the devices that are sensitive to electrostatic discharge (AMM 20-41-01/201).
(d) Remove the circuit card that it is necessary to replace.

TASK 32-42-01-424-035

6. Antiskid/Autobrake Control Unit Circuit Card Installation (Fig. 401)
   A. References
      (1) AMM 20-41-01/201, Static Sensitive Devices
   B. Procedure

S 424-036
(1) Install the circuit card.

CAUTION: DO NOT TOUCH THE CIRCUIT CARD BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO CIRCUIT CARDS.

(a) Do the procedure for the devices that are sensitive to electrostatic discharge (AMM 20-41-01/201).
(b) Install the card in the control unit.
(c) Install the cover on the control unit.
(d) Install the control unit (Ref par. 4).

S 864-044

(2) Put the airplane back to its usual condition unless it is necessary to replace a component (Ref. Par. 6)

TASK 32-42-01-844-037

7. Put the Airplane Back to Its Usual Condition

A. References

(1) AMM 24-22-00/201, Electrical Power - Control

(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems.

(3) AMM 32-00-15/201, Landing Gear Door Locks

B. Procedure

S 864-038

(1) Set the parking brake.

S 094-041

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

S 864-039

(3) Remove the power from the right and center hydraulic systems if it is not necessary (AMM 29-11-00/201).

S 864-040

(4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

ANTISKID MODULE (NORMAL AND ALTERNATE SYSTEMS) - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the antiskid module. The second task installs the antiskid modules.

TASK 32-42-02-004-001

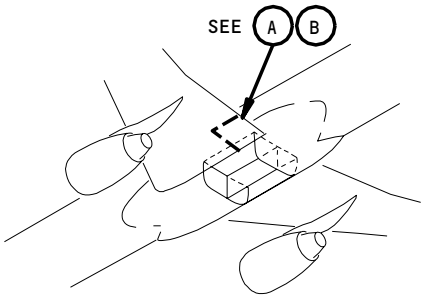
2. Antiskid Module - Removal
   A. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
      (3) AMM 24-22-00/201, Electrical Power - Control
      (4) AMM 27-51-00/201, Trailing Edge Flap System
      (5) AMM 27-81-00/201, Leading Edge Slat System
      (6) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
      (7) AMM 32-00-15/201, Landing Gear Door Locks
      (8) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          550/650 Wing Trailing Edge

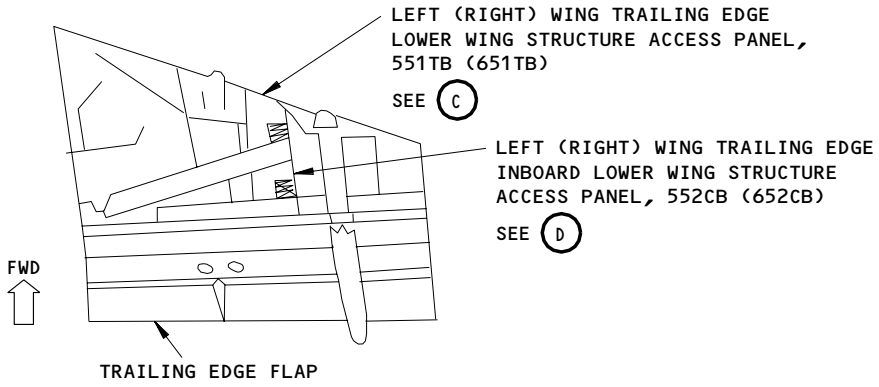
      (2) Access Panels
          551TB LH Wing Trailing Edge Access Panel
          651TB RH Wing Trailing Edge Access Panel
          552CB LH Wing Trailing Edge Access Panel
          652CB RH Wing Trailing Edge Access Panel
          551PT LH Wing Trailing Edge Access Panel
          651PT LH Wing Trailing Edge Access Panel

   C. Prepare for Removal

      S 494-035
      (1) Make sure that chocks are installed on the airplane wheels.

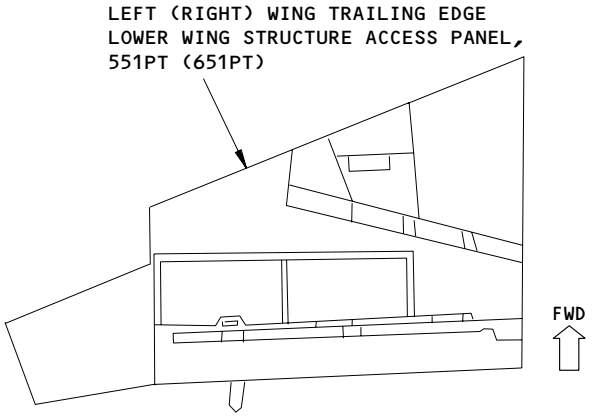
      S 494-003
      (2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).





BOTTOM VIEW
(LEFT WING IS SHOWN, RIGHT WING IS EQUIVALENT)

A

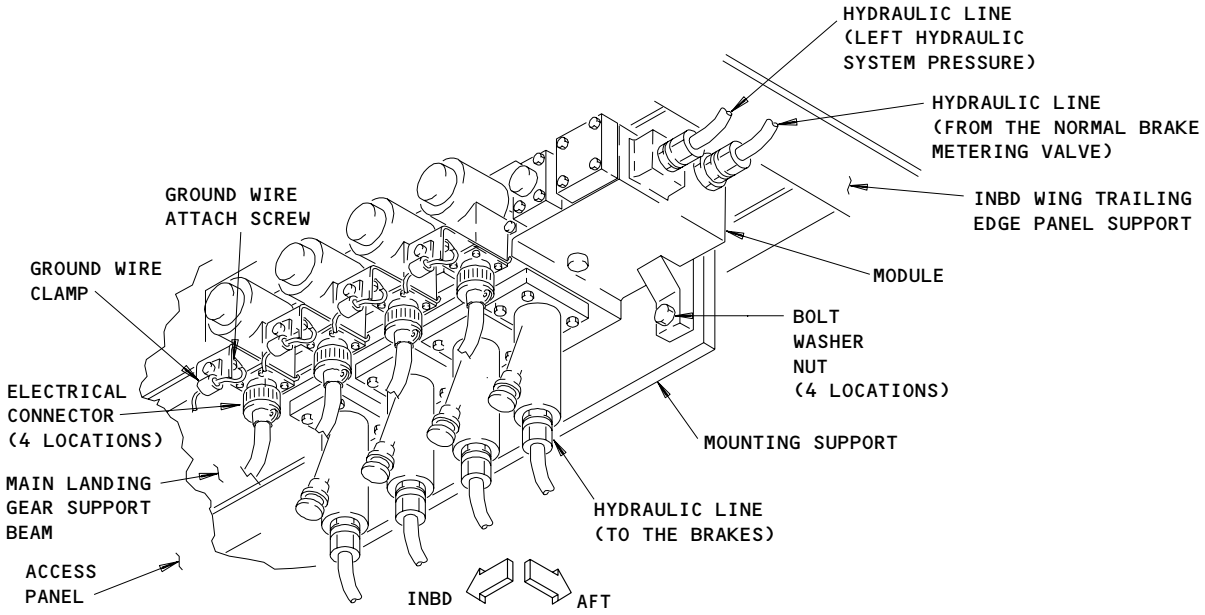


TOP VIEW
(LEFT WING IS SHOWN, RIGHT WING IS EQUIVALENT)

B

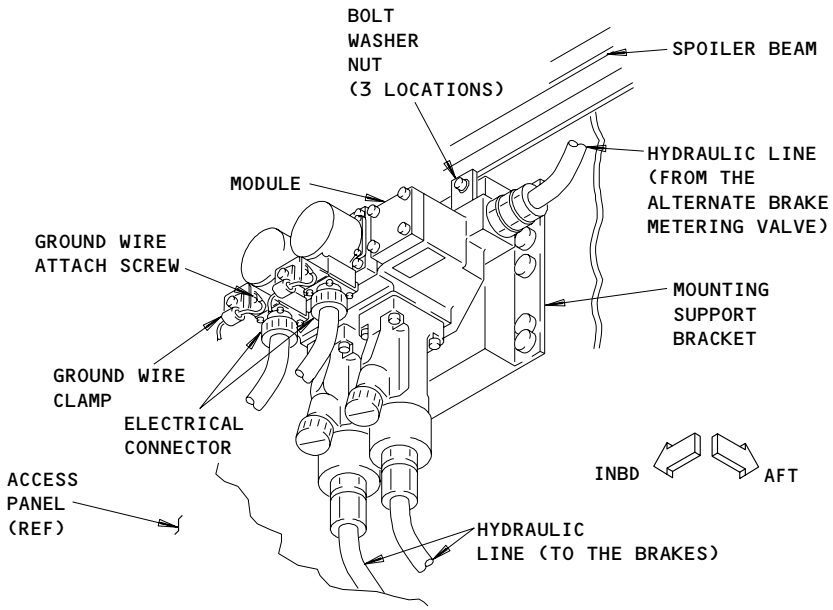
Antiskid Module Installation
Figure 401 (Sheet 1)

K36049



NORMAL ANTISKID MODULE INSTALLATION
(LEFT WING IS SHOWN, RIGHT WING IS EQUIVALENT)

C



ALTERNATE ANTISKID MODULE INSTALLATION
(LEFT WING IS SHOWN, RIGHT WING IS EQUIVALENT)

D

Antiskid Module Installation
Figure 401 (Sheet 2)

S 494-004

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Open the main gear doors and install door locks (AMM 32-00-15/201).

S 044-005

(4) Do the deactivation procedure for the flaps (AMM 27-51-00/201).

S 864-037

(5) Do the deactivation procedure for the slats (AMM 27-81-00/201).

S 864-006

(6) Supply electrical power (AMM 24-22-00/201).

S 864-007

(7) Remove the pressure from the right and center hydraulic systems and reservoirs (AMM 29-11-00/201).

S 014-008

(8) On the normal antiskid module, do the steps that follow to get access to the module:
   (a) Release the parking brake.
   (b) Operate the brake pedals seven to eight times to let the pressure out of the brake accumulator.
   (c) Get access to the module through the wing-trailing-edge access panel 551TB LH, 551PT LH, 552CB LH, 651PT RH, 651TB RH and 652CB RH (AMM 06-44-00/201).

S 014-009

(9) On the alternate antiskid module, get access to the module through the wing-trailing-edge inboard access panel 552CB LH, 652CB RH (AMM 06-44-00/201).

S 864-010

(10) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
   (a) 11C31, ANTISKID 2-6
   (b) 11C32, ANTISKID 3-7
   (c) 11U18, ANTISKID 1-5
   (d) 11U27, ANTISKID 4-8

D. Procedure to Remove the Antiskid Module

S 034-011

(1) Disconnect the electrical connector plugs and ground wires from the module. Put caps on the plugs and receptacles.

S 034-012
(2) Disconnect the hydraulic lines from the module. Install caps on the lines and plugs in the module ports.

S 024-013
(3) Hold the module and remove the attach bolts. For the normal antiskid module, put tags on the bolts to identify the installation location of the long bolts and the short bolts.

TASK 32-42-02-404-014

3. Antiskid Module Installation (Fig. 401)

A. Equipment
(1) Explosion proof Bonding Meter -- Microhm Bridge, Type 2 Bonding Meter (Avtron Model T-477W, Avtron Manufacturing Inc., Cleveland, Ohio)

B. Consumable Materials
(1) D00153 Hydraulic Fluid - BMS 3-11

C. References
(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 27-51-00/201, Trailing Edge Flap System
(5) AMM 27-81-00/201, Leading Edge Slat System
(6) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(7) AMM 32-00-15/201, Landing Gear Door Locks
(8) AMM 32-00-20/201, Landing Gear Downlocks
(9) AMM 32-41-00/201, Bleed The Wheel Brake System
(10) AMM 32-42-01/401, Antiskid/Autobrake Control Unit

D. Access
(1) Location Zones

550/650	Wing Trailing Edge

(2) Access Panels

551TB	LH Wing Trailing Edge Access Panel
651TB	RH Wing Trailing Edge Access Panel
552CB	LH Wing Trailing Edge Access Panel
652CB	RH Wing Trailing Edge Access Panel
551PT	LH Wing Trailing Edge Access Panel
651PT	RH Wing Trailing Edge Access Panel

E. Procedure

S 644-015
(1) Lubricate the O-rings and the fittings on the module with hydraulic fluid.

S 424-016
(2) Install the module with bolts, washers and nuts.

NOTE: On the normal antiskid module, the bottom two attach bolts are longer than the two top bolts.

S 434-017
(3) Connect the hydraulic lines to the module.

S 434-018
(4) Install the electrical connector plugs and the ground wires to the module.

S 864-019
(5) For the normal antiskid module installation, pressurize the right hydraulic system and reservior (AMM 29-11-00/201).

S 864-020
(6) For the alternate antiskid module installation, pressurize the center hydraulic system and reservior (AMM 29-11-00/201).

S 864-021
(7) Push in the the brake pedals fully and release at least four times.

S 864-042
(8) Bleed the brake lines from the antiskid valve to the brakes to remove air caught in the brake lines (AMM 32-41-00/201).

S 794-022
(9) After 5 minutes, do a check for leaks at the hydraulic fittings.

S 764-023
(10) Measure the bonding resistance for 0.0025 ohm maximum between the module and structure.

S 864-024
(11) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
(a) 11C31, ANTISKID 2-6
(b) 11C32, ANTISKID 3-7
(c) 11U18, ANTISKID 1-5
(d) 11U27, ANTISKID 4-8

S 714-025

(12) Do a test for correct operation of the antiskid module with the aid of the antiskid/autobrake control unit built-in-test equipment (BITE) as follows:

NOTE: Control unit (M102) is on the E1-1 shelf at the main electronic/electrical equipment center. Access is through the electronics access door 119AL (AMM 06-41-00/201). The BITE test switches and the test instruction placard for the BITE test are on are on the front panel of the unit.

(a) Do the antiskid/autobrake control test of the BITE test section (AMM 32-42-01/401).

(b) On the normal antiskid module, do the normal antiskid brake test of the BITE test section (AMM 32-42-01/401).

(c) On the alternate antiskid module, do the alternate antiskid brake test of the BITE test section (AMM 32-42-01/401).

F. On the normal antiskid module, do the steps that follow:

S 864-026

(1) Set the parking brake.

S 864-027

(2) Remove the power from the right hydraulic system (AMM 29-11-00/201).

S 414-028

(3) Close the lower wing structure access panels (551TB LH, 551PT LH, 552CB LH, 651PT RH, 651TB RH, 652CB RH).

S 864-029

(4) Do the reactivation procedure for the flaps (AMM 27-51-00/201).

S 864-036

(5) Do the reactivation procedure for the slats (AMM 27-81-00/201).

G. On the alternate antiskid module, do the steps that follow:

S 864-030

(1) Remove the power from the center hydraulic system (AMM 29-11-00/201).

S 414-031

(2) Close the lower-wing-structure access panel (552CB LH, 652CB RH).

S 864-032

(3) Do the reactivation procedure for the flaps (AMM 27-51-00/201).

S 864-038

(4) Do the reactivation procedure for the slats (AMM 27-81-00/201).

H. Put the Airplane Back to Its Usual Condition

S 094-034

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

S 864-033

(2) Remove electrical power if it is not necessary (AMM 24-22-00/201).

ANTISKID MODULE COMPONENTS (NORMAL AND ALTERNATE SYSTEMS) - REMOVAL/INSTALLATION

1. General
   A. This procedure has these tasks:
      (1) Antiskid Valve - Removal
      (2) Antiskid Valve - Installation
      (3) Antiskid Module Hydraulic Fuse - Removal
      (4) Antiskid Module Hydraulic Fuse - Installation
      (5) Antiskid Module Filter - Removal
      (6) Antiskid Module Filter - Installation
      (7) Antiskid Module Shutoff Valve - Removal
      (8) Antiskid Module Shutoff Valve - Installation

   TASK 32-42-03-944-001
2. Prepare for Removal
   A. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
      (3) AMM 24-22-00/201, Electrical Power - Control
      (4) AMM 27-51-00/201, Trailing Edge Flap System
      (5) AMM 27-81-00/201, Leading Edge Slat System
      (6) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (7) AMM 32-00-15/201, Landing Gear Door Locks
      (8) AMM 32-00-20/201, Landing Gear Downlocks
      (9) AMM 32-42-01/401, Antiskid/Autobrake Control Unit
   B. Access
      (1) Location Zones

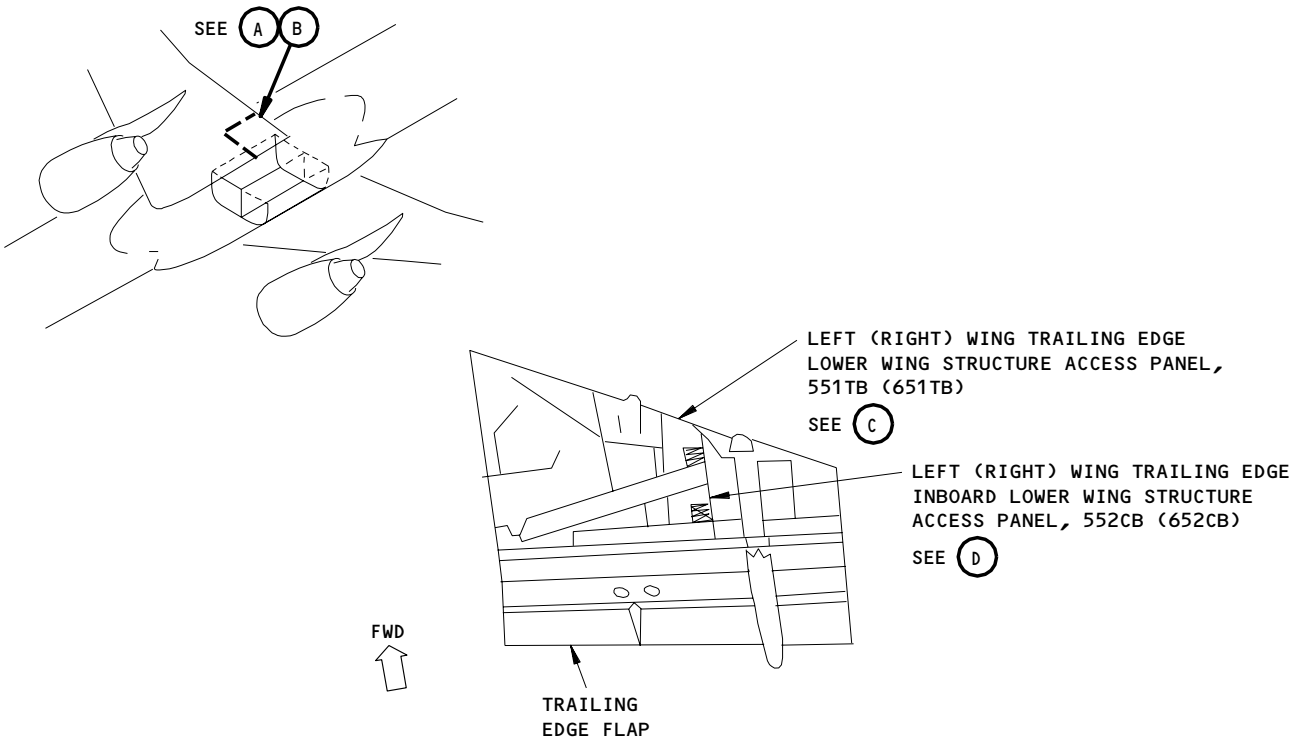
550/650	Wing Trailing Edge
211/212	Control Cabin
731/741	Landing Gear
119	Main Equipment Center (Right)

      (2) Access Panels

551TB	LH Wing Trailing Edge Access Panel
651TB	RH Wing Trailing Edge Access Panel
552CB	LH Wing Trailing Edge Access Panel
652CB	RH Wing Trailing Edge Access Panel
551PT	LH Wing Trailing Edge Access Panel
651PT	RH Wing Trailing Edge Access Panel
119AL	Main Equipment Center

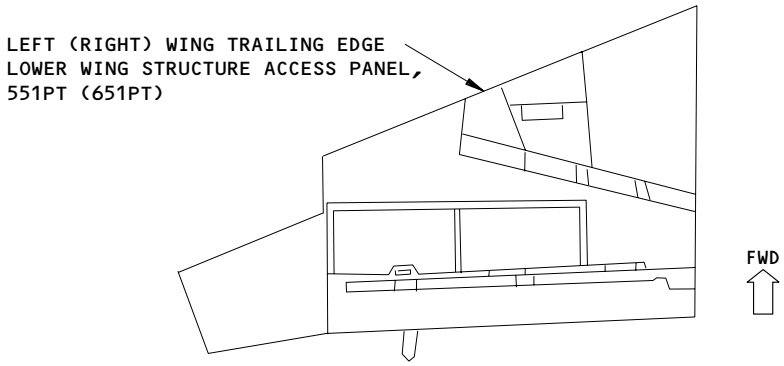
   C. Procedure

      S 494-002
      (1) Make sure that chocks are installed on the airplane wheels.



BOTTOM VIEW
(LEFT WING IS SHOWN, RIGHT WING IS EQUIVALENT)

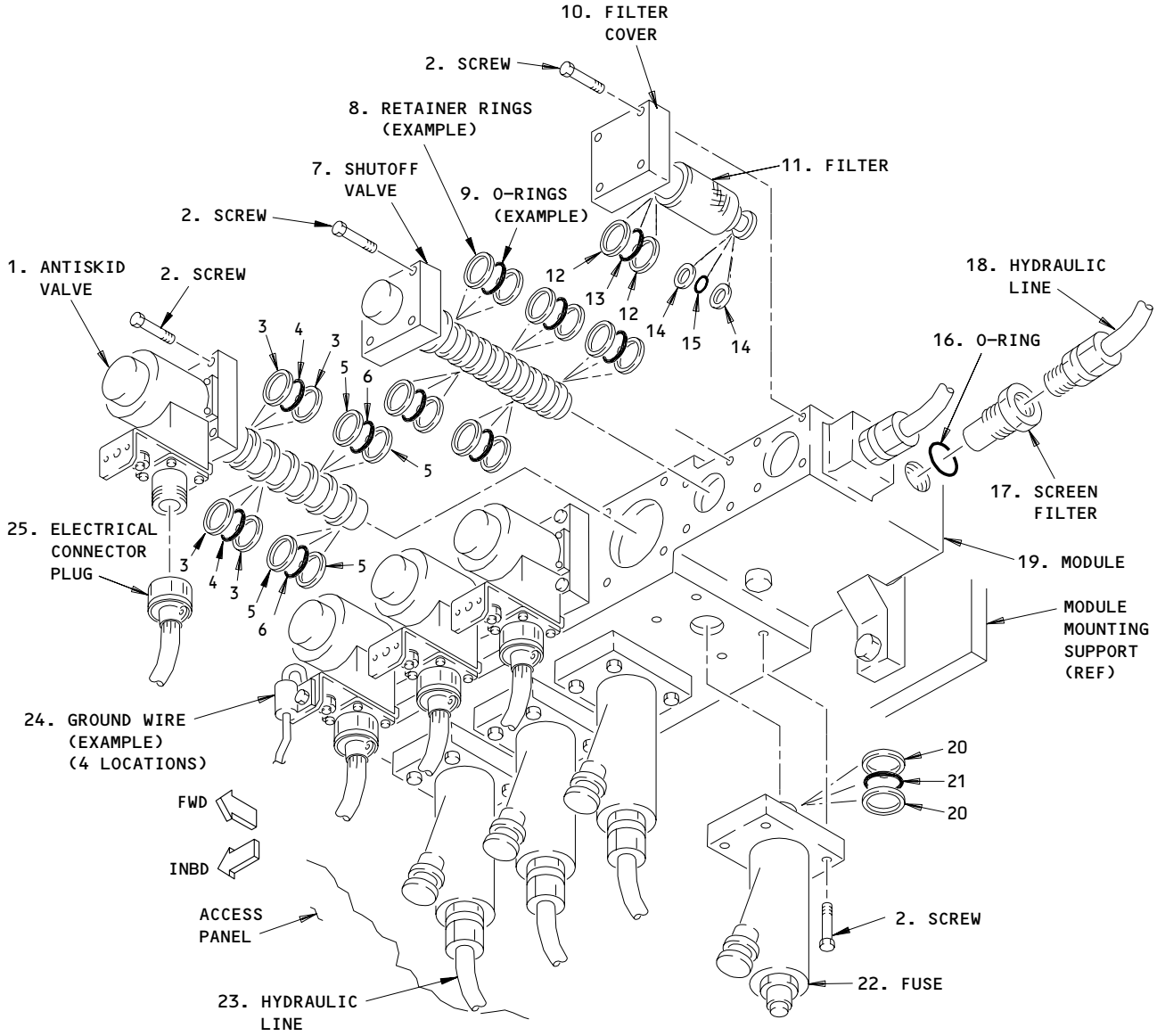
A



TOP VIEW
(LEFT WING IS SHOWN, RIGHT WING IS EQUIVALENT)

B

Antiskid Module Components Installation
Figure 401 (Sheet 1)

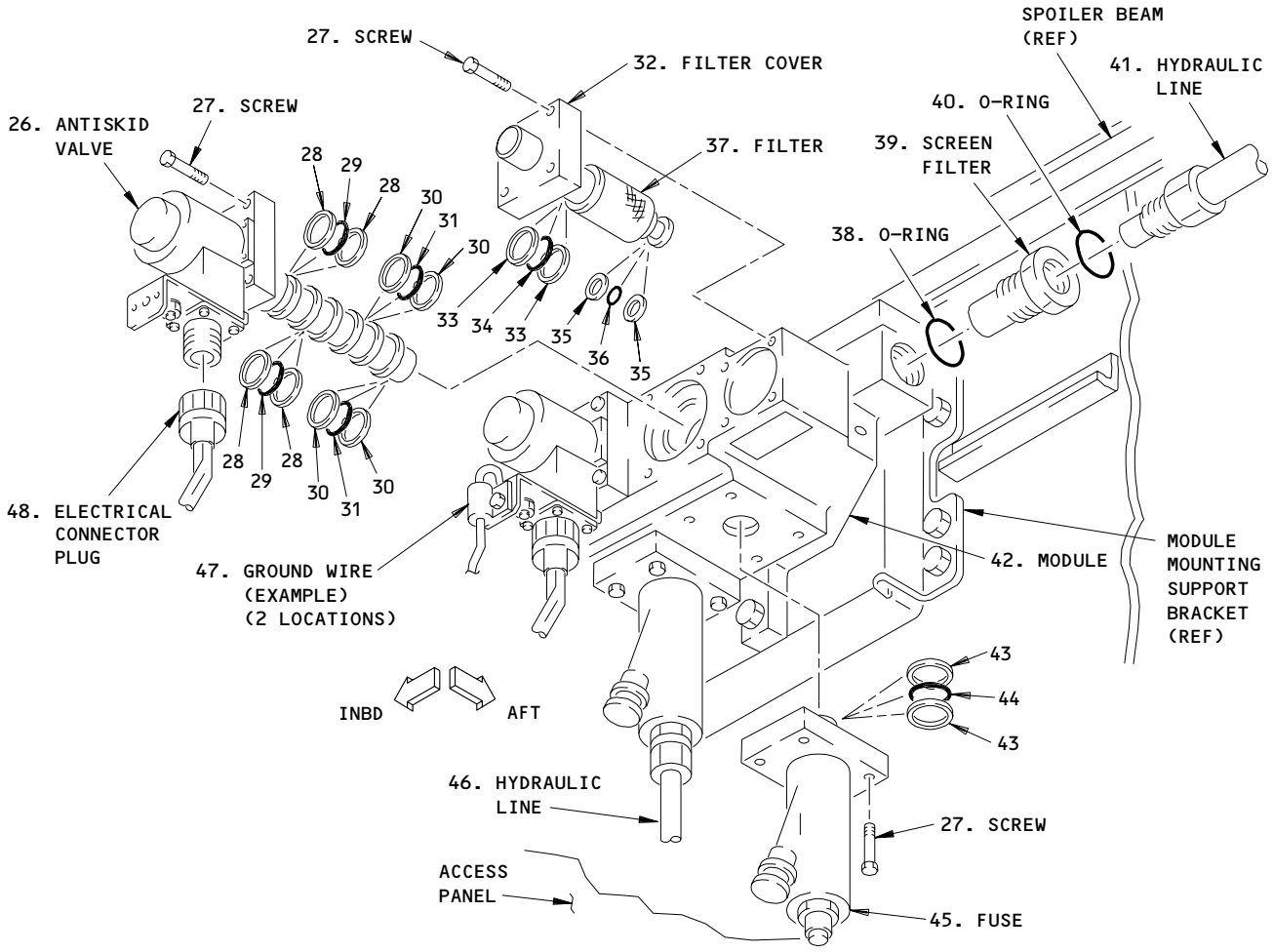


NORMAL ANTISKID MODULE COMPONENTS

(C)

NOTE: ARE RETAINER RINGS
ARE O-RINGS

Antiskid Module Components Installation
Figure 401 (Sheet 2)



ALTERNATE ANTISKID MODULE COMPONENTS

(D)

NOTE: ARE RETAINER RINGS
ARE O-RINGS

Antiskid Module Components Installation
Figure 401 (Sheet 3)

S 494-003
(2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20).

S 494-004

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Open the doors for the landing gear and install the door locks (AMM 32-00-15).

S 044-005
(4) Do the deactivation procedure for the flaps (AMM 27-51-00).

S 044-006
(5) Do the deactivation procedure for the slats (AMM 27-81-00).

S 864-007
(6) Supply electrical power (AMM 24-22-00).

S 864-008
(7) Remove the pressure from the right and center hydraulic systems and reservoirs (AMM 29-11-00).

S 014-009
(8) On the normal antiskid module, do the steps that follow to get access to the module:
  (a) Release the parking brake.
  (b) Operate the brake pedals seven to eight times to let the pressure out of the brake accumulator.
  (c) Get access to the module through the wing access panel 551TB LH, 651TB RH (AMM 06-44-00).

S 014-010

(9) On the alternate antiskid module, get access to the module through the wing access panel 552CB LH, 652CB RH (AMM 06-44-00).

S 864-011

(10) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
(a) 11C31, ANTISKID 2-6
(b) 11C32, ANTISKID 3-7
(c) 11U18, ANTISKID 1-5
(d) 11U27, ANTISKID 4-8

TASK 32-42-03-004-012

3. Antiskid Valve - Removal (Fig. 401)

A. Procedure

S 944-013

(1) Do the Prepare for Removal procedure (Ref Par. 2)

S 034-014

(2) Remove the electrical connector plug (25 or 48) and the ground wire (24 or 47) from the valve that you will replace. Put caps on the electrical connectors and electrical receptacles.

NOTE: Put tags on the electrical connectors to identify the valve that you will connect them to.

S 024-015

CAUTION: DO NOT LET DIRT OR OTHER UNWANTED MATERIAL GET IN THE PORTS OF THE VALVE BODY AND MODULE. IF UNWANTED MATERIAL GETS IN THE VALVE OR MODULE, A MALFUNCTION CAN OCCUR.

(3) Remove the screws (2 or 27) and lift the valve (1 or 26) from the module (19 or 42).

S 024-016

(4) Remove the retainers (3, 5 or 28, 30) and the O-rings (4, 6 or 29, 31) from the valve (1 or 26). Discard the O-rings.

TASK 32-42-03-404-017

4. Antiskid Valve - Installation (Fig. 401)

A. Equipment

(1) Packing Installation Tool - T63619, Hydro-Aire Division, Crane Co., Burbank, CA 91510 USA

B. Consumable Materials

(1) D00153 Hydraulic Fluid - BMS 3-11

(2) G00519 Lockwire

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Antiskid Valve (Normal)	32-42-02	02	105
	2	Screw			100 189,211
	3	Retainer Ring			130
	4	Packing (O-Ring)			120
	5	Retainer Ring			125
	6	Packing (O-Ring)			115
	26	Antiskid Valve (Alternate)	32-42-02	02	46
	27	Screw			47
	28	Retainer Ring			53
	29	Packing (O-Ring)			51
	30	Retainer Ring			52
	31	Packing (O-Ring)			50

D. References

(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels

(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-42-01/401, Antiskid/Autobrake Control Unit

E. Access

(1) Location Zones

550/650	Wing Trailing Edge
211/212	Control Cabin
731/741	Landing Gear
119	Main Equipment Center (Right)

(2) Access Panels

551TB	LH Wing Trailing Edge Access Panel
651TB	RH Wing Trailing Edge Access Panel
552CB	LH Wing Trailing Edge Access Panel
652CB	RH Wing Trailing Edge Access Panel
551PT	LH Wing Trailing Edge Access Panel
651PT	RH Wing Trailing Edge Access Panel
119AL	Main Equipment Center

F. Procedure

S 644-018

(1) Lubricate the O-rings (4, 6 or 29, 31) (new) and the retainers (3, 5 or 28, 30) with hydraulic fluid.

S 424-019

(2) Install the O-rings (4, 6, or 29, 31) and the retainers (3, 5 or 28, 30) on the valve (1 or 26).

S 424-020

CAUTION: DO NOT LET DIRT OR OTHER UNWANTED MATERIAL GET IN THE PORTS OF THE VALVE BODY AND MODULE. IF UNWANTED MATERIAL GETS IN THE VALVE OR MODULE, A MALFUNCTION CAN OCCUR.

(3) Install the valve (1 or 26) to the module (19 or 42) with the screws (2 or 27) and tighten to 100-110 pound-inches. Install lockwire, if required.

S 434-021

CAUTION: MAKE SURE THAT YOU CONNECT THE CORRECT ELECTRICAL CONNECTOR TO THE VALVE. IF YOU CONNECT THE INCORRECT CONNECTOR TO THE VALVE, DAMAGE TO THE SYSTEM WILL OCCUR.

(4) Install the electrical connector (25 or 48) and the ground wire (24 or 47) to the valve (1 or 26).

S 864-022

(5) For a valve installation on the normal antiskid module, pressurize the right hydraulic system and reservoir (Ref 29-11-00).

S 864-023

(6) For a valve installation on the alternate antiskid module, pressurize the center hydraulic system and reservoir.

S 864-024

(7) Push in the brake pedals fully four or more times.

S 794-025

(8) After five minutes, do a check of the valve installation for leaks.

S 864-104

(9) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
   (a) 11C32, ANTISKID 3-7
   (b) 11C31, ANTISKID 2-6
   (c) 11U18, ANTISKID 1-5
   (d) 11U27, ANTISKID 4-8

S 714-027

(10) Do a test of the valve with the aid of antiskid/autobrake control unit Built in Test Equipment (BITE) as follows:
   (a) Get access to the Antiskid/Autobrake Control Unit (M102) as follows:
      1) Remove electrical/electronics access door 119AL (AMM 06-41-00) to get access to the main electrical equipment center.

2) Find the antiskid/autobrake control unit M102 on equipment shelf E6-1.

(b) Do the antiskid/autobrake control test of the BITE test (AMM 32-42-01).

(c) For the normal antiskid valve, do the normal antiskid brake test part of the BITE test (AMM 32-42-01). Do this check to make sure that the brake operates that gets pressure through the hydraulic line with the valve that you installed.
For the alternate antiskid valve, do the alternate antiskid brake test part of the BITE test (AMM 32-42-01). Do the check to make sure that the brake operates that gets pressure through the line with the valve that you installed.

TASK 32-42-03-004-028

5. Antiskid Module Hydraulic Fuse - Removal (Fig. 401)

A. Procedure

S 944-029

(1) Do the Prepare for Removal procedure (Ref Par. 2)

S 034-030

(2) Disconnect the hydraulic line (23 or 46) from the fuse (22 or 45) and put a cap on the hydraulic line.

S 024-031

CAUTION: DO NOT LET DIRT OR OTHER UNWANTED MATERIAL GET IN THE PORTS OF THE FUSE AND THE MODULE. IF UNWANTED MATERIAL GETS IN THE FUSE OR MODULE, A MALFUNCTION CAN OCCUR.

(3) Remove the screws (2 or 27) and pull the fuse (22 or 45) from the module (19 or 42). Install a plug in the port of the module.

S 024-032

(4) Remove the retainers (20 or 43) and the O-ring (21 or 44) from the fuse (22 or 45). Discard the O-ring.

TASK 32-42-03-404-033

6. Antiskid Module Hydraulic Fuse - Installation (Fig. 401)

A. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	2	Screw	32-42-02	02	140
	20	Retainer Ring			150
	21	Packing (O-Ring)			145
	22	Fuse			135
	27	Screw	32-42-02	01	55
	43	Retainer Ring			57
	44	Packing (O-Ring)			56
	45	Fuse			54

B. Procedure

S 424-035

CAUTION: DO NOT LET DIRT OR OTHER UNWANTED MATERIAL GET IN THE PORTS OF THE FUSE AND THE MODULE. IF UNWANTED MATERIAL GETS IN THE FUSE OR MODULE, A MALFUNCTION CAN OCCUR.

(1) Lubricate the new O-ring (21 or 44) and the retainers (20 or 43) with hydraulic fluid before you install them.

S 424-102

(2) Install the fuse (22 or 45) with the O-ring (21 or 44) and the retainers (20 or 43) into the module (19 or 42).

S 424-036
(3) Install the screws (2 or 27) and tighten to a torque value of 100-110 pound-inches.

S 434-037
(4) Connect the hydraulic line (23 or 46) to the fuse (22 or 45).

S 864-038
(5) For the normal antiskid module,
pressurize the right hydraulic system and reservoir (AMM 29-11-00)

S 864-039
(6) For the alternate antiskid module,
pressurize the center hydraulic system and reservoir (AMM 29-11-00).

S 864-040
(7) Push in the brake pedals fully four or more times.

S 794-041
(8) After five minutes, look at the fuse installation to make sure there are no hydraulic leaks.

S 714-042
(9) Do a check of the operation of the brake that gets hydraulic pressure through the hydraulic line with the fuse that you replaced as follows:
(a) Push in the brake pedals and make sure that the brake operates.

NOTE: Look to see that the brake wear pin moves when you push in the brake pedal to make sure that the brake operates.

S 944-044
(10) Do the steps in the Return the Airplane to Its Usual Condition paragraph if more maintenance is not necessary.

TASK 32-42-03-004-045
7. Antiskid Module Inlet Filter - Removal (Fig. 401)
A. Procedure

S 944-046
(1) Do the Prepare for Removal procedure (Ref Par. 2).

S 034-052
(2) To remove the inlet filter from the alternate antiskid module, do the steps that follow first:
(a) Disconnect the hydraulic line from the filter cover (32).
(b) Put a cap on the hydraulic line.

S 034-053
(3) Remove the screws (2 or 27) and the filter cover (10 or 32).

S 024-103
(4) Remove the retainers (12 or 33) and the O-ring (13 or 34) from the filter cover (10 or 32). Discard the O-ring.

S 024-056

CAUTION: DO NOT LET DIRT OR OTHER UNWANTED MATERIAL GET IN THE FILTER OR THE PORTS OF THE MODULE. IF UNWANTED MATERIAL GETS IN THE FILTER OR MODULE, A MALFUNCTION CAN OCCUR.

(5) Remove the filter (11 or 37) from the module (19 or 42). Put a plug in the port on the module.

S 024-057
(6) Remove the retainers (14 or 35) and the O-ring (15 or 36) from the filter. Discard the O-ring.

TASK 32-42-03-404-058
8. Antiskid Module Inlet Filter - Installation (Fig. 401)
A. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	2	Screw	32-42-07	01	160
	10	Filter Cover			155
	11	Filter			165
	12	Retainer Ring			205
	13	Packing (O-Ring)			200
	14	Retainer Ring			180
	15	Packing (O-Ring)			170
	16	Packing (O-Ring)			195
	17	Screen Filter			190
	27	Screw	32-42-02	01	59
	32	Filter Cover			58A
	33	Retainer Ring			82
	34	Packing (O-Ring)			75
	37	Filter			60
	38	Packing (O-Ring)			90
	39	Screen Filter			85

B. Procedure

S 644-059

CAUTION: DO NOT LET DIRT OR OTHER UNWANTED MATERIAL GET IN THE FILTER OR THE PORTS OF THE MODULE. IF UNWANTED MATERIAL GETS IN THE FILTER OR MODULE, A MALFUNCTION CAN OCCUR.

(1) Lubricate all new O-rings and retainers with hydraulic fluid.

S 424-060

(2) Install the filter (11 or 37) with the new O-ring (15 or 36) and the retainers (14 or 35) into the module (19 or 42).

S 424-061

(3) Install a new O-ring (13 or 34) and the retainers (12 or 33) on the filter cover (10 or 32).

S 424-063

(4) Install the filter cover (10 or 32) to the module (19 or 42) with the screws (2 or 27). Tighten the screws to 100-110 pound-inches. Install lockwire,if required.

S 434-065

(5) For the installation on the alternate antiskid module, do the steps that follow:
   (a) Remove the cap from the hydraulic line.
   (b) Install the hydraulic line on the filter cover (32).

S 614-071

(6) Clean the screen filter (17 or 39) as follows:

   NOTE: You must remove and clean the screen filter (17 or 39) on the hydraulic inlet port fitting when you replace the filter element (11 or 37).

   (a) Disconnect the hydraulic line (18 or 41) that is connected to the screen filter (17 or 39). Put a cap on the line (18 or 41).
   (b) Remove the screen filter (17 or 39) and discard the O-ring (16 or 38).
   (c) Clean the screen filter.
   (d) Lubricate the new O-ring (16 or 38) with hydraulic fluid.
   (e) Install the new O-ring with the screen filter (17 or 39) on the valve module (19 or 42). Install lockwire.

S 434-072

(7) Connect the hydraulic line (18 or 41) to the screen filter (17 or 39).

S 864-073
(8) If you installed a filter in the normal antiskid module, pressurize the right hydraulic system and reservoir (AMM 29-11-00)

S 864-074
(9) If you installed a filter in the alternate antiskid module, pressurize the center hydraulic system and reservoir (AMM 29-11-00).

S 864-075
(10) Push in the brake pedals fully four or more times.

S 794-076
(11) After five minutes, do a visual check of the filter installation for leaks.

S 714-077
(12) Do a check of the operation of the brake that gets hydraulic pressure through the hydraulic line with the fuse that you replaced as follows:
(a) Push in the brake pedals and make sure that the brake operates.

NOTE: Look to see that the brake wear pin moves when you push in the brake pedal to make sure that the brake operates.

S 944-078
(13) Do the steps in the Return the Airplane to Its Usual Condition paragraph if more maintenance is not necessary.

TASK 32-42-03-004-084
9. Antiskid Module Shutoff Valve - Removal (Fig. 401)
A. Procedure

S 944-079
(1) Do the Prepare for Removal procedure (Ref Par. 2)

S 024-080
(2) Remove the screws (2) from the valve (7).

S 024-081

CAUTION: DO NOT LET DIRT OR OTHER UNWANTED MATERIAL GET IN THE PORTS OF THE MODULE. IF UNWANTED MATERIAL GETS IN THE MODULE, A MALFUNCTION CAN OCCUR.

(3) Remove the valve (7) from the module (19). Install a plug in the module port.

S 024-082

(4) Remove the retainers (8) and the O-rings (9) from the valve (7). Discard the O-rings.

TASK 32-42-03-404-083

10. Antiskid Module Shutoff Valve - Installation (Fig. 401)

A. Equipment

(1) Packing Installation Tool - T63619, Hydro-Aire Division, Crane Co., Burbank, CA 91510 USA

B. Consumable Materials

(1) D00153 Hydraulic Fluid - BMS 3-11

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	2	Screw	32-42-07	01	215
	7	Shutoff Valve			210
	8	Retainer Ring			205
	9	Packing (O-Ring)			200

D. References

(1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

E. Access

(1) Location Zones

550/650 Wing Trailing Edge
211/212 Control Cabin
731/741 Landing Gear
119 Main Equipment Center (Right)

(2) Access Panels

551TB LH Wing Trailing Edge Access Panel
651TB RH Wing Trailing Edge Access Panel
552CB LH Wing Trailing Edge Access Panel
652CB RH Wing Trailing Edge Access Panel
119AL Main Equipment Center

F. Procedure

S 644-086

CAUTION: DO NOT LET DIRT OR OTHER UNWANTED MATERIAL GET IN THE PORTS OF THE MODULE. IF UNWANTED MATERIAL GETS IN THE MODULE, A MALFUNCTION CAN OCCUR.

(1) Lubricate the O-rings (9) and the retainers (8) before installation.

S 424-087
(2) Install the valve (7) with the new O-rings (9) and the retainers (8) into the module (19).

S 424-088
(3) Install the screws (2) and tighten to 100-110 pound-inches. Install lockwire, if required.

S 864-089
(4) Pressurize the right hydraulic system and reservoir (AMM 29-11-00).

S 864-090
(5) Push in the brake pedals fully four or more times.

S 794-091
(6) After five minutes, do a visual check of the valve installation for leaks.

S 714-092
(7) Do a check of the operation of the brake that gets hydraulic pressure through the hydraulic line with the fuse that you replaced as follows:
(a) Push in the brake pedals and make sure that the brake operates.

NOTE: Look to see that the brake wear pin moves when you push in the brake pedal to make sure that the brake operates.

S 944-093
(8) Do the steps in the Return the Airplane to Its Usual Condition paragraph if more maintenance is not necessary.

TASK 32-42-03-944-094
11. Put the Airplane Back to Its Usual Condition
A. Procedure

S 944-095
(1) If you installed a component on the normal antiskid module, do the steps that follow:
(a) Set the parking brake.
(b) Remove the power from the right hydraulic system (Ref 29-11-00).
(c) Close the lower wing access panel 551TB LH, 651TB RH (Ref 06-44-00).

S 944-096
(2) If you installed a component on the alternate antiskid module, do the steps that follows:
(a) Remove the power from the center hydraulic system (AMM 29-11-00).

(b) Close the lower wing access panel 552CB LH, 652CB RH (AMM 06-44-00).

S 444-097

(3) Do the reactivation procedure for the flaps (AMM 27-51-00).

S 444-098

(4) Do the reactivation procedure for the slats (AMM 27-81-00).

S 094-099

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15).

S 864-100

(6) Remove electrical power if it is not necessary (AMM 24-22-00).

ANTISKID TRANSDUCER DRIVE - REMOVAL/INSTALLATION

1. General
   A. There are two tasks in this procedure. The first task removes the antiskid transducer drive components. The second task installs the antiskid transducer drive components.

TASK 32-42-04-424-046

2. Remove the Antiskid Transducer Drive (Fig. 401 and Fig. 402)
   A. References
      (1) AMM 32-00-15/201, Landing Gear Door Locks
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

   C. Procedure

      S 494-030
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

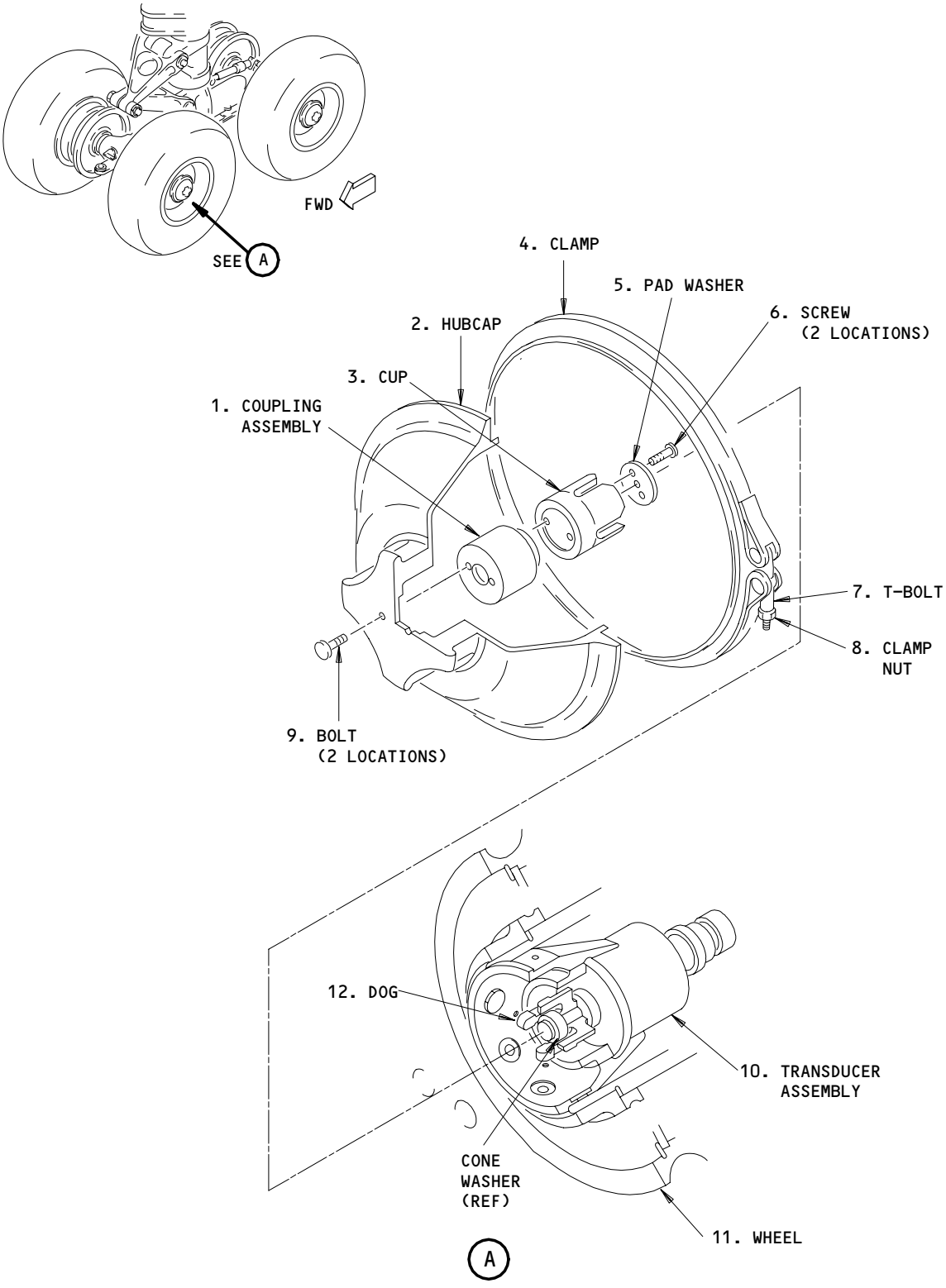
      S 494-031

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

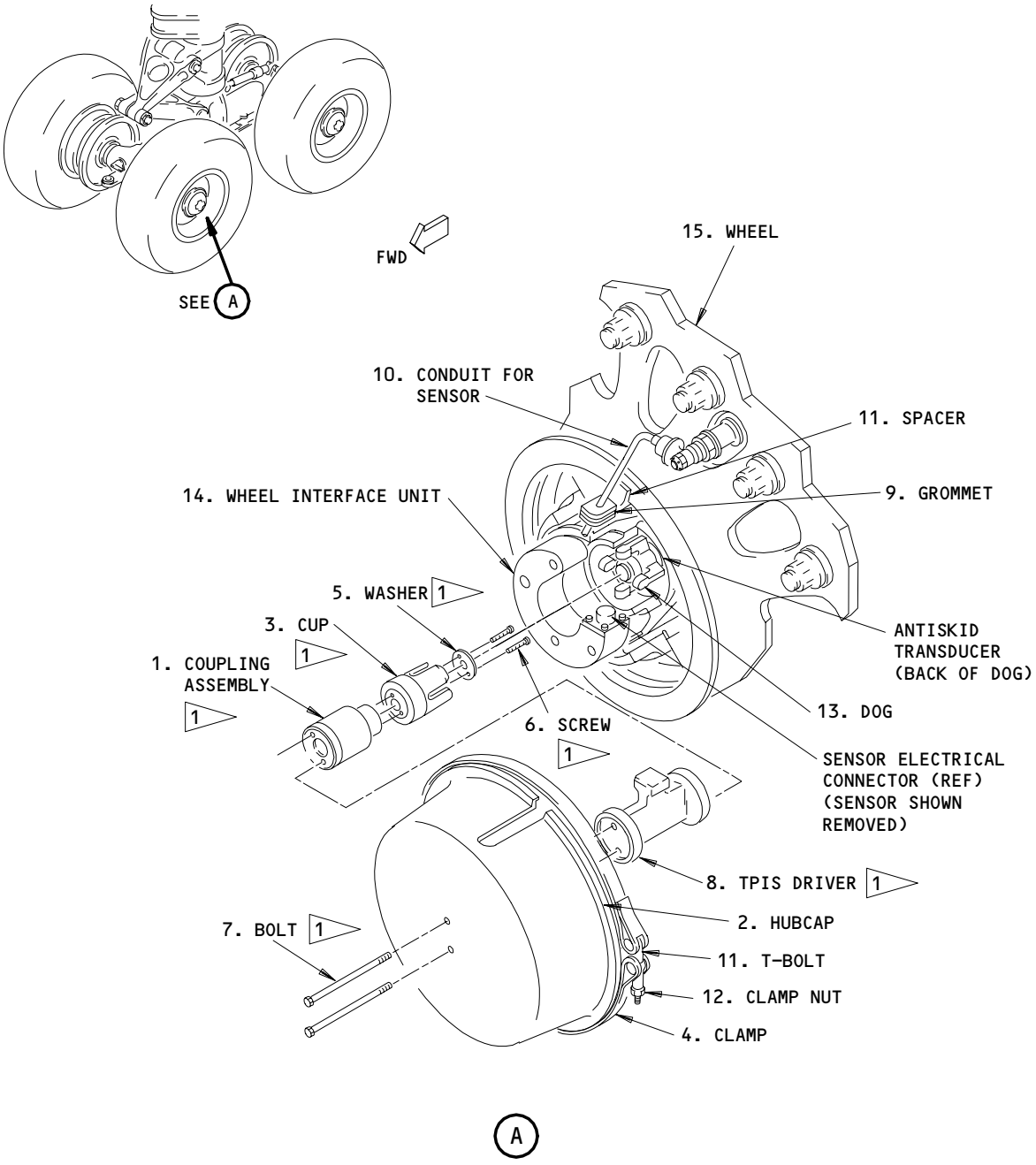
      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

      S 024-035
      (3) SAS 151-154;
      MTH 275-276 PRE-SB 32-85;
      Remove the clamp (4) and the hubcap (2) with the transducer drive components (1, 3, 5, 6, 7, and 8) attached.

      S 024-003
      (4) SAS 050-149, 155-999;
      MTH 275-276 POST-SB 32-85;
      Do the steps that follow to remove the hubcap (2):
      (a) Remove the clamp (4).
      (b) Hold the grommet (9) and spacer (11) to keep the conduit (10) in position.
      (c) Pull the hubcap (2), with the transducer drive components (1, 3, 5, 6, 7, and 8) installed, from the wheel, but be careful not to bend the conduit (10).



Transducer Drive Components Installation
Figure 401



1 TRANSDUCER DRIVE COMPONENTS

Antiskid Transducer Drive Components - Installation
Figure 402

695357

S 024-009
(5) SAS 151-154;
MTH 275-276 PRE-SB 32-85;
Remove the bolts (9) that hold the coupling assembly (1) to the hubcap (2).

S 024-011
(6) SAS 155-999;
MTH 275-276 POST-SB 32-85;
Remove the bolts (7) that hold the coupling assembly (1) and the TPIS driver (8) to the hubcap (2).

S 024-013
(7) Remove two screws (6) to remove the cup (3) and the pad washer (5) from the coupling assembly (1).

TASK 32-42-04-404-002

3. Install the Antiskid Transducer Drive (Fig. 401)

A. References
(1) AMM 32-00-15/201, Landing Gear Door Locks
(2) AMM 32-00-20/201, Landing Gear Downlocks

B. Access
(1) Location Zones
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

C. Procedure

S 424-023
(1) SAS 151-154;
MTH 275-276 PRE-SB 32-85;
Do the steps that follow:
(a) Install the cup (3) and the pad washer (5) on the coupling assembly (1) with the two screws (6) as follows:
1) Tighten and safety the two screws (6) as follows:
a) If the coupling assembly (1) does not have a threaded insert (all part number couplings except S161T102-5), tighten the screws (6) to 15-20 pound-inches.

1. Install lockwire.

b) If the coupling assembly (1) is a S161T102-5 coupling (with self-locking inserts) that has been in service, tighten the screws (6) and safety as follows:
   1. Measure the torque required to turn the attach screws (6) in the threads when you install the cup (3) and the pad washer (5).
   2. If the torque is 1.5 pound-inches or greater, tighten the screws (6) to the final torque of 15-20 pound-inches.

      NOTE: You can install lockwire, but it is not necessary.

   3. If the torque necessary to turn the screws (6) is less than 1.5 pound-inches, do one of the two steps that follow:
   4. Tighten the screws (6) to 15 to 17 pound-inches and install lockwire.
   5. Replace the coupling (1) with a new coupling (1) and tighten the screws (6) as shown in in the step that follows for assembly of a cup (4) on a new coupling (1).

c) If you install the cup (3) and the washer (5) on a new coupling, S161T102-5, tighten the screws (6) to 15 to 17 pound-inches.

   NOTE: You can install lockwire, but it is not necessary.

(b) Install two bolts (7) to install the assembly of the coupling assembly (1) and the cup (3) to the hubcap (2). Tighten the bolts (7) to 30-35 pound-inches and install the lockwire.
(c) Do the steps that follow to install the hubcap (2):
(d) Turn the dog on the transducer (10) until the cup (3) will engage the dog (12).
(e) Push the hubcap (2) on the wheel (11) until the cup (3) engages the dog (12).
(f) Put the clamp (4) on the joint of the hubcap (2) and the wheel (11).

(g) Tighten the clamp nut (8) on the T-bolt (7) to 35-40 pound-inches.

S 424-034

(2) SAS 050-149, 155-999;
MTH 275-276 POST-SB 32-85;
Do the steps that follow:

(a) Install two screws (6) to install the cup (3) and the pad washer (5) on the coupling assembly (1). Tighten the screws (6) to 15-20 pound-inches and install the lockwire.

1) Tighten and safety the two screws (6) as follows:

a) If the coupling assembly (1) does not have a threaded insert (all part number couplings except S161T102-5), tighten the screws (6) to 15-20 pound-inches.

1. Install lockwire.

b) If the coupling assembly (1) is a S161T102-5 coupling (with self-locking inserts) that has been in service, tighten the screws (6) and safety as follows:

1. Measure the torque required to turn the attach screws (6) in the threads when you install the cup (3) and the pad washer (5).

2. If the torque is 1.5 pound-inches or greater, tighten the screws (6) to the final torque of 15-20 pound-inches.

NOTE: You can install lockwire, but it is not necessary.

3. If the torque necessary to turn the screws (6) is less than 1.5 pound-inches, do one of the two steps that follow:

4. Tighten the screws (6) to 15 to 17 pound-inches and install lockwire.

5. Replace the coupling (1) with a new coupling (1) and tighten the screws (6) as shown in in the step that follows for assembly of a cup (4) on a new coupling (1).

c) If you install the cup (3) and the washer (5) on a new coupling, S161T102-5, tighten the screws (6) to 15 to 17 pound-inches.

NOTE: You can install lockwire, but it is not necessary.

(b) Hold the TPIS driver (8) for installation on the hubcap (2).
(c) Install two bolts (7) to install the assembly of the TPIS driver (8), the coupling assembly (1) and the cup (3), to the hubcap (2). Tighten the bolts to 30-35 pound-inches and install the lockwire.
(d) Do the steps that follow to install the hubcap (2):
1) Turn the dog on the transducer until the cup (3) engages the dog (13), and the slot in the hubcap (2) aligns with the conduit.
2) Hold the grommet (9) and spacer (11) to keep the conduit (10) straight, while you push the hubcap (2) on the axle.
3) Put the clamp (4) on the joint of the hubcap (2) and the wheel (11).
4) Tighten the clamp nut (12) on the T-bolt (11) to 35-40 pound-inches.

S 094-032

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

ANTISKID TRANSDUCER - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the antiskid transducer. The second task installs the antiskid transducer.
   B. The antiskid transducer is installed in the wheel axle to an antiskid transducer support. The support is attached to the axle with the same bolts that lock the axle nut to the axle. The assembly of the transducer and the transducer support must be removed from the axle to remove and install the transducer.

TASK 32-42-06-004-123-001

2. Antiskid Transducer - Removal (Fig. 401)
   A. Equipment
      (1) Wrench Adapter, Antiskid Transducer Retainer Nut - A32069-1
   B. References
      (1) 24-22-00/201, Electrical Power - Control
      (2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) 32-00-15/201, Landing Gear Door Locks
      (4) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

   D. Prepare for Removal

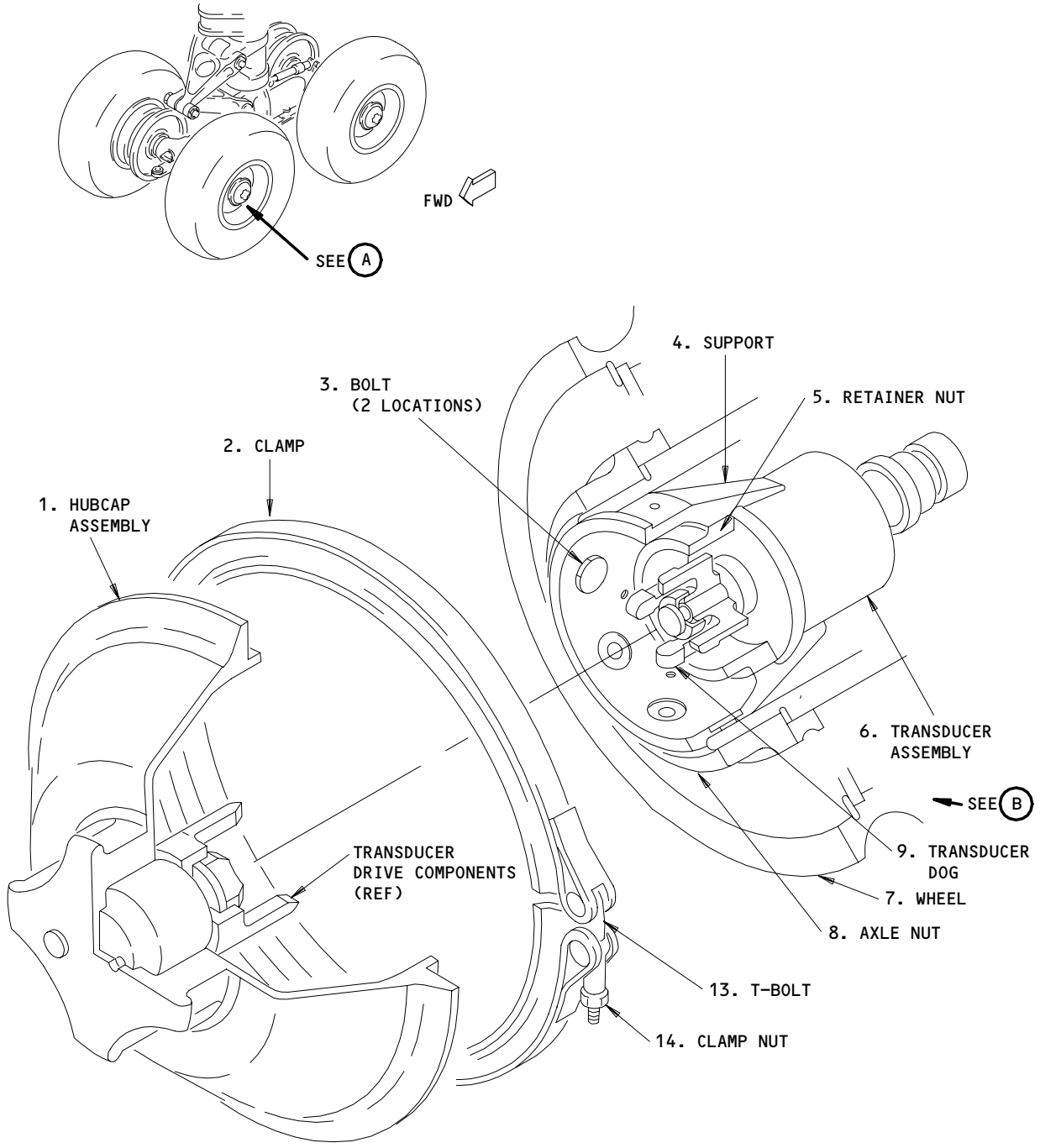
      S 494-124-001
      (1) Make sure that chocks are installed on the airplane wheels

      S 494-125-001
      (2) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

      S 494-126-001

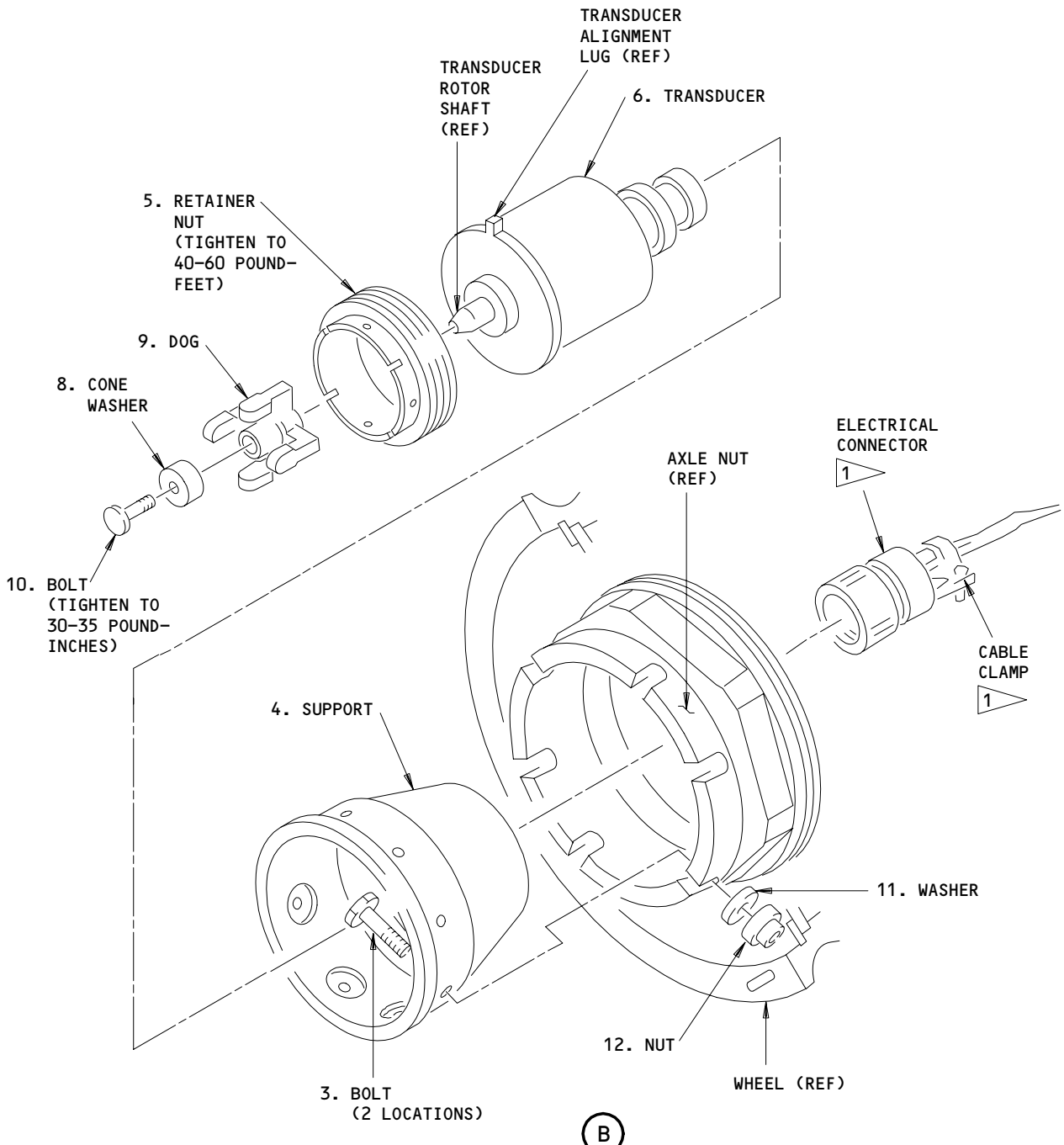
      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

      (3) Open the landing gear doors and install the door locks (Ref 32-00-15).



A

Antiskid Transducer Installation
Figure 401 (Sheet 1)



1 EXAMINE THE ELECTRICAL CONNECTOR TO SEE IF THE CABLE CLAMP SCREWS ARE LOCKWIRED. INSTALL LOCKWIRE IF IT IS NECESSARY

Antiskid Transducer Installation
Figure 401 (Sheet 2)

S 864-127-001
(4) Open these circuit breakers on overhead circuit breaker panel P11 and attach DO-NOT-CLOSE tags:
11U18, ANTISKID 1-5
11C31, ANTISKID 2-6
11C32, ANTISKID 3-7
11U27, ANTISKID 4-8

E. Procedure to Remove the Antiskid Transducer Assembly

S 034-128-001
(1) Remove the clamp (2) and the hubcap assembly (1).

S 034-129-001
(2) Remove the two axle nut bolts (3) but do not remove the axle nut.

S 034-130-001
(3) Remove the two bolts (3), the nuts (12), and the washers (11) but do not turn the axle nut.

S 024-131-001

CAUTION: DO NOT TWIST THE WIRE BUNDLE WHEN YOU REMOVE OR INSTALL THE TRANSDUCER. EQUIPMENT DAMAGE CAN OCCUR.

(4) Pull the support (4), with the transducer assembly (6) attached, out from the axle and disconnect the electrical connector.

S 024-132-001
(5) Remove the retainer nut (5).

S 024-133-001
(6) Remove the transducer assembly (6).

S 024-134-001
(7) Remove the bolt (10), the washer (8) and the dog (9) from the transducer assembly (6).

NOTE: The dog is the name of the mechanical coupling on the transducer shaft that engages the transducer drive on the hubcap.

TASK 32-42-06-404-135-001

3. Antiskid Transducer - Installation (Fig. 401)
A. Equipment
(1) Wrench Adapter, Antiskid Transducer Retainer Nut - A32069-1

(2) Antiskid Transducer Spinup Equipment
A32075-10 (Recommended)
A32075-9 (Alternative)
A32075-1 (Alternative)

B. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	HUBCAP ASSEMBLY	32-45-01	01	13
	2	CLAMP			10
	3	BOLT			20
	4	SUPPORT	32-42-06	01	40
	5	RETAINER NUT			37
	6	TRANSDUCER ASSEMBLY			45 *[1]
		TRANSDUCER			65
	8	CONE WASHER			55
	9	DOG			60
	10	BOLT			50
	11	WASHER	32-45-01	01	25
	12	NUT			30

*[1] INCLUDES THE TRANSDUCER DRIVE COMPONENTS

C. References
(1) 24-22-00/201, Electrical Power - Control
(2) 32-00-15/201, Landing Gear Door Locks

D. Access
(1) Location Zones
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

E. Procedure

S 214-136-001
(1) Examine the transducer connector for broken wires or other damage. Replace the connector if it necessary. Refer to Chapter 20, Wiring Diagram Manual, for connector replacement data.
(a) Examine the cable clamp on the electrical connnector to see if the clamp screws are lockwired. Install lockwire if the screws are not lockwired (See Fig. 401).

S 424-137-001

CAUTION: DO NOT TWIST THE WIRE BUNDLE WHEN YOU REMOVE OR INSTALL THE TRANSDUCER. EQUIPMENT DAMAGE CAN OCCUR.

(2) Put the dog (9) on the transducer rotor shaft and install the cone washer (8) with the bolt (10).
  (a) Tighten the bolt (10) to 30-35 pound-inches
  (b) Install lockwire.

S 424-138-001

(3) Install the transducer assembly (6) and the retainer nut (5) on the support (4).

NOTE: The lug on the transducer aligns with the notch in the support (4).

  (a) Tighten the retainer nut (5) to 40-60 pound-feet.
  (b) Install lockwire.

S 434-139-001

CAUTION: DO NOT TWIST THE WIRE BUNDLE WHEN YOU REMOVE OR INSTALL THE TRANSDUCER. EQUIPMENT DAMAGE CAN OCCUR.

(4) Install the electrical connector to the transducer (7).

S 424-140-001

(5) Install the support (4) with the two axle nut bolts (3), the washers (11) and the nuts (12).

S 214-141-001

(6) Examine the transducer drive components to make sure that they are not damaged or loose. If you can manually turn the transducer drive components, replace them.

S 984-142-001

(7) Make sure that the transducer drive on the hubcap (1) assembly will engage the antiskid transducer (6) correctly as follows:
  (a) Hold the hubcap assembly (1) in its position against the transducer (6) to make the transducer drive engage the dog (9) on the transducer (6).
  (b) Turn the transducer (6) quickly with the hubcap (1) to make sure that the transducer (6) will turn freely.
  (c) Do a visual check to make sure that the transducer drive engages the dog (9) on the transducer (6) tightly.

S 864-143-001

(8) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the overhead circuit breaker panel, P11:
11U18, ANTISKID 1-5
11C31, ANTISKID 2-6
11C32, ANTISKID 3-7
11U27, ANTISKID 4-8

S 864-144-001

(9) Supply electrical power (Ref 24-22-00).

S 714-145-001

(10) Do an operational test of the transducer

WARNING: MAKE SURE THAT THE AREA AROUND THE BRAKES IS CLEAR AND CHOCKS ARE INSTALLED ON THE WHEELS. THIS WILL PREVENT POSSIBLE DAMAGE TO EQUIPMENT OR INJURY TO PERSONS WHEN THE BRAKES APPLY AND RELEASE IN THIS TEST.

(a) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).
(b) Release the parking brake.
(c) Open this circuit breaker on the main power distribution panel P6:
6F4, PARKING BRAKE VLV
(d) Set the parking brake.

NOTE: With the parking brake set and hydraulic pressure on, you will not have to hold the brake pedals for the test.

(e) Turn the wheel speed transducers as quickly as possible (approximately 600 RPM required) and make sure that the tandem brake (locked wheel pair of the wheel that you do this test on) releases.

NOTE: The transducer spinup equipment tool can be used to quickly turn the transducer. The locked wheel pairs are the wheels that are in tandem (wheels 1-5, 2-6, 3-7, and 4-8).

(f) Stop the movement of the transducer quickly . Make sure that the brake for that wheel releases.
(g) After the brake releases, make sure that it applies again. Make sure that the tandem brake also applies again.
(h) Remove power from the right hydraulic system (Ref 29-11-00).
(i) Close this circuit breaker on the main power distribution panel P6:
6F4, PARKING BRAKE VLV

S 434-146-001

(11) Install the hubcap assembly (1) with the clamp (2). Tighten the clamp nut (11) on the T-bolt (10) to 35-40 pound-inches torque.

S 094-147-001

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(12) Remove the door locks from the landing gear doors and close the doors (Ref 32-00-15).

S 864-148-001

(13) Remove electrical power if it is not necessary (Ref 24-22-00).

ANTISKID TRANSDUCER - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the antiskid transducer. The second task installs the antiskid transducer.
   B. The antiskid transducer is part of an assembly that includes the antiskid transducer and components of the Tire Pressure Indicating System (TPIS). The assembly is called the Antiskid - TPIS assembly. The assembly is installed in the wheel axles. You must remove the Antiskid-TPIS Assembly from the axle to remove and install the antiskid transducer.

TASK 32-42-06-004-062-002

2. Antiskid Transducer - Removal (Fig. 401)
   A. Equipment
      (1) Wrench Adapter, Antiskid Transducer Retainer Nut - A32069-1
   B. References
      (1) 24-22-00/201, Electrical Power - Control
      (2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) 32-00-15/201, Landing Gear Door Locks
      (4) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

   D. Prepare for Removal

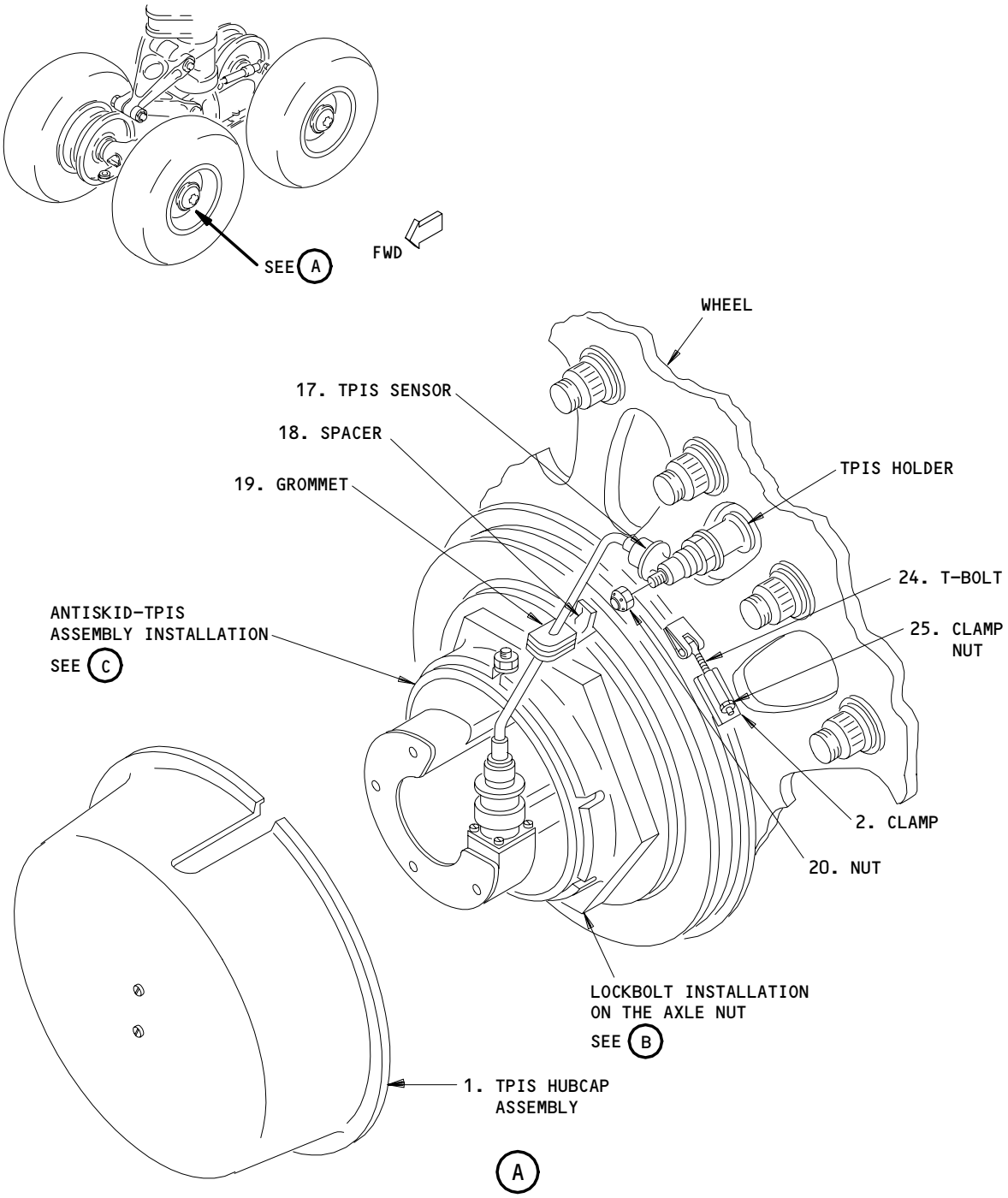
      S 494-063-002
      (1) Make sure that chocks are installed on the airplane wheels

      S 494-064-002
      (2) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

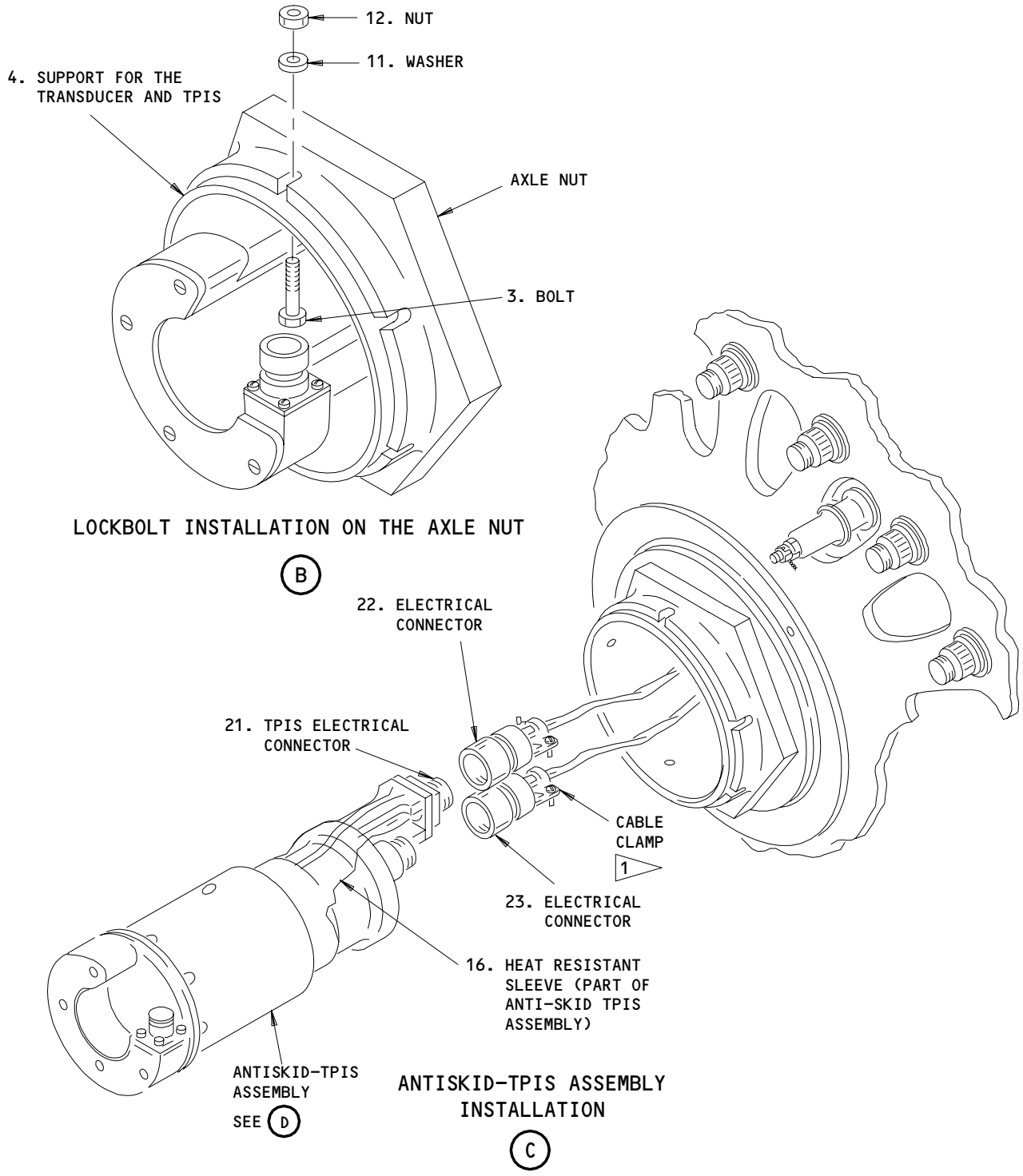
      S 494-065-002

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

      (3) Open the landing gear doors and install the door locks (Ref 32-00-15).

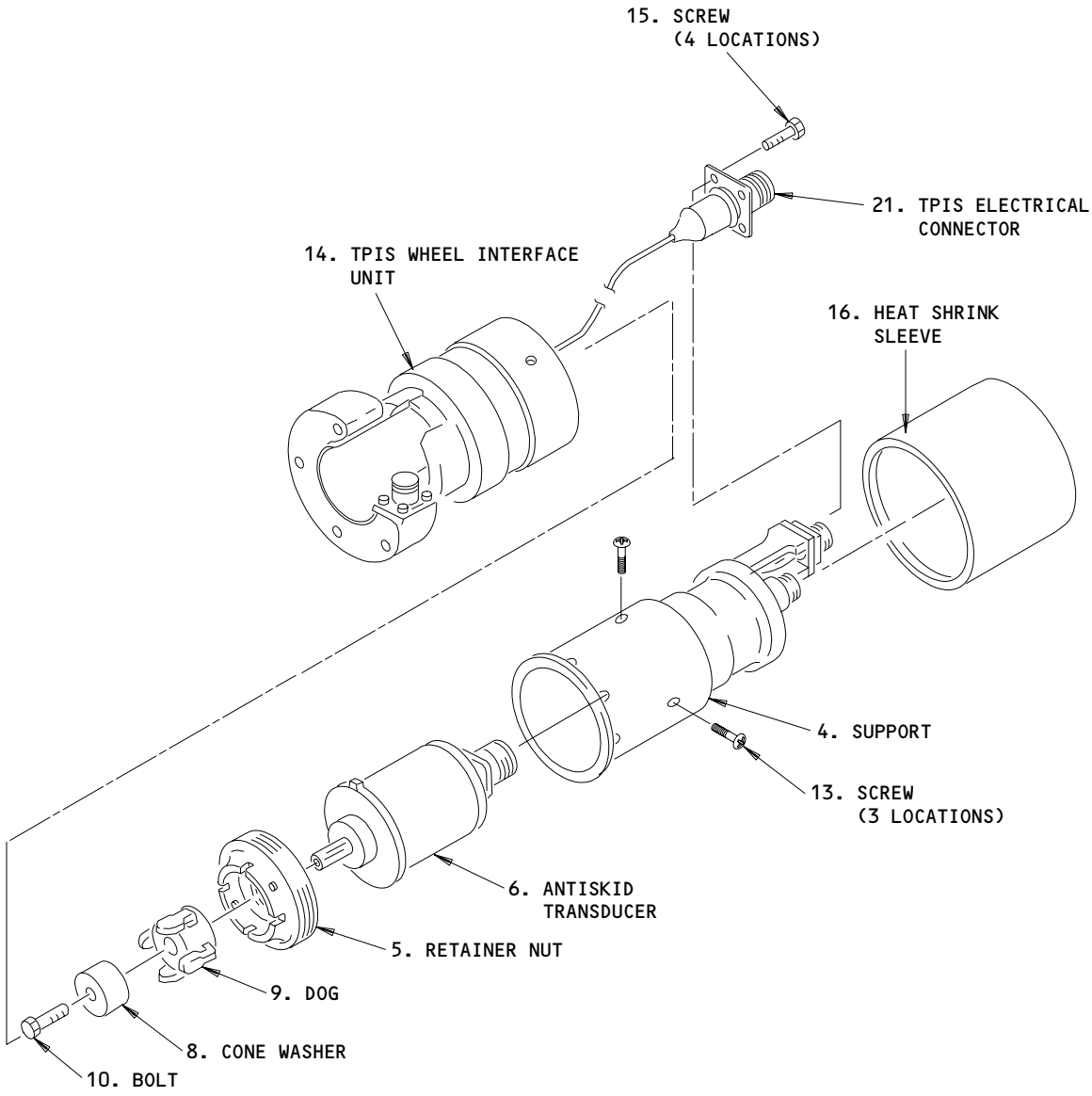


Antiskid Transducer - Installation
Figure 401 (Sheet 1)



1 EXAMINE THE ELECTRICAL CONNECTORS (22) AND (23) TO SEE IF THE CABLE CLAMP SCREWS ARE LOCKWIRED. INSTALL LOCKWIRE IF IT IS NECESSARY

Antiskid Transducer Installation
Figure 401 (Sheet 2)



ANTISKID-TPIS ASSEMBLY

(D)

Antiskid Transducer - Installation
Figure 401 (Sheet 3)

S 864-066-002

(4) Open these circuit breakers on overhead circuit breaker panel P11 and attach DO-NOT-CLOSE tags:
11U18, ANTISKID 1-5
11C31, ANTISKID 2-6
11C32, ANTISKID 3-7
11U27, ANTISKID 4-8

E. Procedure to Remove the Antiskid Transducer Assembly

S 034-067-002

(1) Do the steps that follow to remove the hubcap (1):
(a) Remove the clamp (2) from the hubcap (1).
(b) Hold the grommet (19), and the spacer (18) in its position.
(c) Pull the hubcap (1) away from the axle, but be careful not to bend the conduit.

S 034-068-002

(2) Do the steps that follow to remove the sensor (17) for the tire pressure indicating system (referred to as TPIS in this procedure):
(a) Remove the nut (20).
(b) Pull the TPIS sensor (17) from the TPIS holder.
(c) Immediately install the seal cap.

NOTE: The seal cap keeps the tire pressurized. The pressure decreases approximately 1 psi each minute if the seal cap is not installed.

S 034-069-002

(3) Remove the two bolts (3), the nuts (12), and the washers (11) but do not turn the axle nut.

S 024-070-002

CAUTION: DO NOT TWIST THE WIRE BUNDLE WHEN YOU REMOVE OR INSTALL THE TRANSDUCER. EQUIPMENT DAMAGE CAN OCCUR.

(4) Slowly pull the antiskid-TPIS assembly away from the axle until you can get access to the electrical connectors (22, 23).

S 024-092-002
(5) Remove the heat shrink sleeve (16) from the anriskid-TPIS assembly.

S 034-072-002
(6) Disconnect the electrical connector (22) from the TPIS electrical connector (21).

S 034-073-002
(7) Disconnect the electrical connector (23) from the antiskid transducer (6).

S 024-074-002
(8) Do the steps that follow to remove the wheel interface unit (14) from the support (4):
(a) Remove the four screws (15) that hold the connector to the rear of the support (4).
(b) Remove the three screws (13) from the support (4).
(c) Remove the wheel interface unit (14) from the support (4).

S 024-075-002
(9) Do the steps that follow to remove the transducer (6) from the support (4):
(a) Remove the retainer nut (5).
(b) Remove the bolt (10) that holds the cone washer (8), and the dog (9) to the transducer (6).

NOTE: Keep the bolt (10), the cone washer (8), and the dog (9) for installation on the new transducer. The dog (9) is a mechanical coupling on the transducer shaft that engages the tranducer drive on the hubcap.

(c) Remove the transducer (6) from the support (4).

TASK 32-42-06-404-076-002

3. Antiskid Transducer - Installation (Fig. 401)
A. Equipment
(1) Wrench Adapter, Antiskid Transducer Retainer Nut - A32069-1
(2) Antiskid Transducer Spinup Equipment
A32075-10 (Recommended)
A32075-9 (Alternative)
A32075-1 (Alternative)

B. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	TPIS HUBCAP ASSEMBLY	32-42-06	01	17
	2	CLAMP			TBD
	3	BOLT			TBD
	4	SUPPORT (ADAPTER)			35
	5	RETAINER NUT	32-42-06	01	37
	6	TRANSDUCER			65
		TRANSDUCER ASSEMBLY			45 *[1]
	8	CONE WASHER			55
	9	DOG			60
	10	BOLT			50
	11	WASHER	32-45-01	01	25
	12	NUT			30
	13	SCREW	32-42-06	01	32
	14	WHEEL INTERFACE UNIT			33
	15	SCREW			34
	16	HEAT SHRINK SLEEVE			31
	17	TPIS SENSOR			TBD
	18	SPACER			TBD
	19	GROMMET			TBD
	20	NUT			TBD

*[1] INCLUDES THE TRANSDUCER DRIVE COMPONENTS

C. References
(1) 24-22-00/201, Electrical Power - Control
(2) 32-00-15/201, Landing Gear Door Locks

D. Access
(1) Location Zones
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

E. Procedure

S 214-078-002
(1) Examine the transducer connector for broken wires or other damage. Replace the connector if it necessary. Refer to Chapter 20, Wiring Diagram Manual, for connector replacement data.
(a) Examine the cable clamp on the electrical connnector to see if the clamp screws are lockwired. Install lockwire if the screws are not lockwired (See Fig. 401).

S 214-079-002

CAUTION: DO NOT TWIST THE WIRE BUNDLE WHEN YOU REMOVE OR INSTALL THE TRANSDUCER. EQUIPMENT DAMAGE CAN OCCUR.

(2) Examine the transducer drive components to make sure that they are not damaged or loose. If you can manually turn the transducer drive components, replace them.

S 424-081-002

(3) Do the steps that follow to install the transducer (6) in the support (4):
   (a) Put the transducer (6) in the support (4).
   (b) Install the retainer nut (5).
   (c) Tighten the retainer nut (5) to 40-60 pound-inches.
      1) Install lockwire.
   (d) Install the dog (9) and the cone washer (8) on the shaft of the transducer (6).
   (e) Install the bolt (10) that holds the cone washer (8), and the dog (9) to the transducer (6).
      1) Tighten the bolt to 30-35 pound-inches.
      2) Install lockwire.

S 424-082-002

(4) Do the steps that follow to install the wheel interface unit (14) in the support (4):
   (a) Put the wheel interface unit (14) in the support (4).
   (b) Align the holes in the wheel interface unit (14) with the holes in the support (4).
   (c) Install the three screws (13) in the support (4).
   (d) Install the four screws (15) that hold the connector to the rear of the support (4).

   CAUTION: DO NOT TWIST THE WIRE BUNDLE WHEN YOU INSTALL THE CONNECTOR. DAMAGE TO THE TRANSDUCER OR OTHER EQUIPMENT CAN OCCUR IF YOU TWIST THE WIRE BUNDLE.

   (e) Connect the electrical connector (22) to the TPIS electrical connector (21).
   (f) Connect the electrical connector (23) to the antiskid transducer (6).
   (g) Push the support (4) into the axle.
   (h) Install the two bolts (3), nuts (12), and washers (11).

S 414-080-002

(5) Install the heat-shrink sleeve (16).

(a) Put the sleeve (16) over the antiskid-TPIS assembly approximately as shown in Detail C, Fig. 401.

NOTE: Make sure that the cable for the wheel interface unit is in the correct position before you install the sleeve over the cable. The purpose of the cable is to hold the electric cable in place.

(b) Use the operators standard procedure to apply heat to the sleeve to shrink fit the sleeve on the antiskid-TPIS assembly.

S 864-083-002

(6) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the overhead circuit breaker panel, P11:
11U18, ANTISKID 1-5
11C31, ANTISKID 2-6
11C32, ANTISKID 3-7
11U27, ANTISKID 4-8

S 864-084-002

(7) Supply electrical power (Ref 24-22-00).

S 714-085-002

(8) Do an operational test of the transducer:

WARNING: MAKE SURE THAT THE AREA AROUND THE BRAKES IS CLEAR AND CHOCKS ARE INSTALLED ON THE WHEELS. THIS WILL PREVENT POSSIBLE DAMAGE TO EQUIPMENT OR INJURY TO PERSONS WHEN THE BRAKES APPLY AND RELEASE IN THIS TEST.

(a) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).
(b) Release the parking brake.
(c) Open this circuit breaker on the main power distribution panel P6:
6F4, PARKING BRAKE VLV
(d) Set the parking brake.

NOTE: With the parking brake set and hydraulic pressure on, you will not have to hold the brake pedals for the test.

(e) Turn the wheel speed transducers as quickly as possible (approximately 600 RPM required) and make sure that the tandem brake (locked wheel pair of the wheel that you do this test on) releases.

NOTE: The transducer spinup equipment tool can be used to quickly turn the transducer. The locked wheel pairs are the wheels that are in tandem (wheels 1-5, 2-6, 3-7, and 4-8).

(f) Stop the movement of the transducer quickly . Make sure that the brake for that wheel releases.
(g) After the brake releases, make sure that it applies again. Make sure that the tandem brake also applies again.
(h) Remove power from the right hydraulic system (Ref 29-11-00).
(i) Close this circuit breaker on the main power distribution panel P6:
6F4, PARKING BRAKE VLV

S 434-086-002

(9) Do the steps that follow to install the TPIS sensor (17):
(a) Remove the seal cap.
(b) Put the TPIS sensor (17) on the TPIS holder.
(c) Install the nut (20).
(d) Install the lockwire on the nut (20).

S 434-087-002

(10) Install the hubcap (1) as follows:
(a) Examine the transducer drive coupling on the hubcap (1).
(b) Replace the coupling if you see damage or you can turn the coupling.
(c) Turn the dog (9) until the transducer drive engages the dog (9), and the slot in the hubcap (1) aligns with the conduit for the TPIS sensor (17).
(d) Hold the grommet (19), and the spacer (18) to make sure that the conduit does not bend while you push the hubcap (1) on the axle.
(e) Install the clamp (2) on the hubcap (1). Tighten the clamp nut (25) on the T-bolt (24) to 35-40 pound-inches.

S 614-088-002

(11) Make sure that the pressure in the tire is correct (Ref 12-15-03).

S 714-089-002

(12) Do a test of the TPIS as follows:
(a) Push the STATUS key on the pilot's display select panel until the tire pressure indications show on the lower EICAS display.
(b) Make sure that the EICAS display shows a tire pressure indication between 170 PSI and 215 PSI for the applicable tire.

S 094-090-002

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(13) Remove the door locks from the landing gear doors and close the doors (Ref 32-00-15).

S 864-091-002

(14) Remove electrical power if it is not necessary (Ref 24-22-00).

ANTISKID SHUTTLE VALVE, MODULE AND COMPONENTS - REMOVAL/INSTALLATION

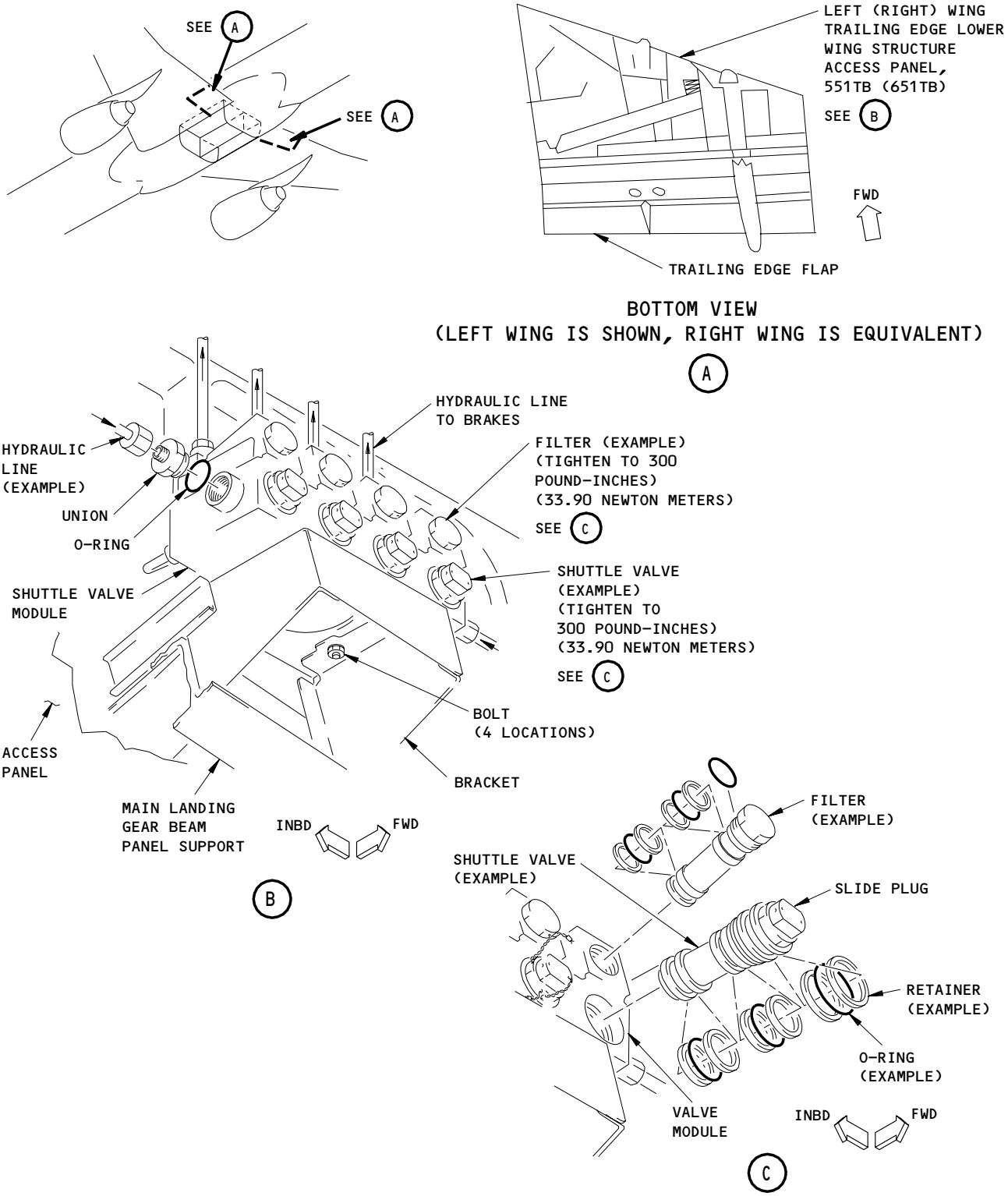
1. General
   A. This procedure contains six tasks. The tasks are as follows:
      (1) Antiskid Shuttle Valve Module - Removal
      (2) Antiskid shuttle Valve Module - Installation
      (3) Antiskid Shuttle Valve - Removal
      (4) Antiskid Shuttle Valve - Installation
      (5) Filter - Removal
      (6) Filter - Installation
   B. You do not need to remove the module or disconnect the hydraulic lines to remove one or more of the four shuttle valves or filters. The shuttle valve module is located below the antiskid module, forward of the main gear support beam, and outboard of trunnion door for the main gear. You can get access to the module through the wing trailing edge inboard lower wing structure access panel 551TB LH, or 651TB RH (Ref 06-44-00).
   C. The shuttle valve module test in par 6. F can find crossed electrical and hydraulic lines in the brake system. The test procedure makes sure that the shuttle valves are connected to the correct brakes.

TASK 32-42-07-944-001-001

2. Prepare for Removal
   A. References
      (1) 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
      (3) 24-22-00/201, Electrical Power - Control
      (4) 27-51-00/201, Trailing Edge Flap System
      (5) 27-81-00/201, Leading Edge Slat System
      (6) 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
      (7) 32-00-15/201, Landing Gear Door Locks
      (8) 32-00-20/201, Landing Gear Downlocks
      (9) 32-42-01/401, Antiskid/Autobrake Control Unit
   B. Access
      (1) Location Zones
          143 Left Main Landing Gear Wheel Well
          144 Right Main Landing Gear Wheel Well
          550 Left Wing Trailing Edge
          650 Right Wing Trailing Edge

   C. Procedure

      S 944-002-001
      (1) Make sure that the landing gear downlocks are installed (Ref 32-00-20).



Antiskid Shuttle Valve Installation
Figure 401

S 944-003-001
(2) Make sure that chocks are installed on the wheels.

S 494-004-001

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 044-005-001
(4) Deactivate the flap (Ref 27-51-00).

S 044-006-001
(5) Deactivate the slat (Ref 27-81-00).

S 864-007-001
(6) Supply electrical power (Ref 24-22-00).

S 864-008-001
(7) Release the parking brake.

S 864-009-001
(8) Remove the pressure from the right and center hydraulic systems and reservoirs (Ref 29-11-00).

S 864-010-001
(9) Operate the brake pedals through full travel seven or eight times to release the pressure from the brake accumulator.

S 014-011-001
(10) Remove access panel 551TB LH or 651TB RH from the bottom of the wing at the inboard trailing edge to get access to the module. (Ref 06-44-00).

TASK 32-42-07-004-012-001
3. Antiskid Shuttle Valve Module - Removal (Fig. 401)
A. Procedure

S 944-013-001
(1) Do the Prepare for Removal procedure (Ref. par. 2).

S 034-014-001
(2) Disconnect the hydraulic lines from the module. Install plugs in the ports of the module and caps on the hydraulic lines.

S 024-015-001
(3) Remove the bolts (four locations) and remove the module.

S 034-016-001
(4) Remove the hydraulic fittings from the ports on the module and discard the O-rings.

S 034-017-001
(5) Attach tags to the fittings to identify the ports that you removed them from.

TASK 32-42-07-404-018-001

4. Antiskid Shuttle Valve Module - Installation (Fig. 401)

A. General

(1) If you install an antiskid shuttle valve module with a part number of 2-8051-1 or 2-8051-1MOD, we recommend that you install a module on the opposite wing that has the same part number.

(a) The 2-8051-1 or 2-8051-1MOD modules will decrease or prevent hydraulic fluid transfer from the right system to the center system.

(b) If you install a 2-8051-1 or 2-8051-1MOD valve module with a 2-7460-3, 2-7460-4, or 2-7460-5 valve, fluid transfer can occur.

B. Consumable Materials

(1) D00153 Hydraulic Fluid - BMS 3-11

C. References

(1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(2) 32-42-01/401, Antiskid/Autobrake Control Unit

D. Access

(1) Location Zones

143	Left Main Landing Gear Wheel Well
144	Right Main Landing Gear Wheel Well
550	Left Wing Trailing Edge
650	Right Wing Trailing Edge

E. Procedure

S 644-057-001
(1) Lubricate new O-rings and the hydraulic fittings with hydraulic fluid before you install the fittings on the module.

S 434-020-001
(2) Install the fittings and the O-rings in the correct locations on the module.

S 424-021-001
(3) Attach the module to the bracket with the bolts, washers and nuts (four locations).

S 644-022-001
(4) Lubricate the hydraulic fittings on the module with hydraulic fluid.

S 434-023-001
(5) Connect the hydraulic lines to the module.

S 864-024-001
(6) Pressurize the right system hydraulic and reservoir (Ref 29-11-00).

S 864-025-001
(7) Push in the brake pedals fully four or more times.

S 794-026-001
(8) After five minutes, do a check for leaks at the hydraulic tube connections.

S 864-060-001
(9) Depressurize the right system hydraulic and reservoir (Ref 29-11-00).

S 864-061-001
(10) Pressurize the center system hydraulic and reservoir (Ref 29-11-00).

S 864-062-001
(11) Push in the brake pedals fully four or more times.

S 794-063-001
(12) After five minutes, do a check for leaks at the hydraulic tube connections.

S 874-064-001
(13) Bleed the brake system (AMM 32-41-00/201).

S 714-027-001
(14) Do a test of the antiskid shuttle valve module with the antiskid/autobrake control unit built-in-test equipment (BITE) as follows:

NOTE: The control unit (M102) is located on the E1-1 shelf at the main electronic/electrical equipment center. Access is thru the electronics access door 119AL (Ref 06-41-00). BITE test switches and test instruction placard are on unit front panel.

(a) Do the normal antiskid brake test of the BITE test section (Ref 32-42-01).
(b) Do the alternate antiskid brake test of the BITE test section (Ref 32-42-01).

TASK 32-42-07-404-028-001

5. Antiskid Shuttle Valve - Removal (Fig. 401)
A. Procedure

S 944-029-001
(1) Do the Prepare for Removal procedure (Ref Par. 2)

S 024-030-001

CAUTION: DO NOT LET DUST, DIRT, OR OTHER UNWANTED MATERIAL GET IN THE PORTS OF THE VALVE BODY AND MODULE. THIS CAN CAUSE THE VALVE TO MALFUNCTION.

(2) Remove the valve and lift it from the module.

S 024-031-001
(3) Remove the retainers and the O-rings from the valve. Discard the O-rings.

TASK 32-42-07-404-032-001

6. Antiskid Shuttle Valve - Installation (Fig. 401)
A. Equipment
(1) Packing Installation Tool - T63619, Hydro-Aire Division, Crane Co., Burbank, CA 91510, USA
B. Consumable Materials
(1) D00153 Hydraulic Fluid - BMS 3-11
C. References
(1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems

D. Access
(1) Location Zones
143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well

E. Procedure

S 644-033-001

CAUTION: RUBBER AND TEFLON O-RINGS ARE NOT INTERCHANGEABLE. IF YOU DO NOT INSTALL THE CORRECT O-RINGS, HYDRAULIC FLUID CAN TRANSFER FROM THE NORMAL BRAKE SYSTEM TO THE ALTERNATE BRAKE SYSTEM AND CAN CAUSE DAMAGE.

(1) Lubricate the O-rings and retainers with hydraulic fluid and install them on the valve.

S 424-034-001
(2) Install the valve on the module.

S 424-035-001
(3) Install lockwire.

S 864-036-001
(4) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).

S 794-037-001
(5) Stop five minutes and then do a check of the valve installation for leaks.

S 714-038-001
(6) Do the same test that you do after you install the shuttle valve module.

TASK 32-42-07-004-039-001
7. Antiskid Shuttle Valve Filter - Removal (Fig. 401)
A. Procedure

S 024-040-001

CAUTION: DO NOT LET DUST, DIRT, OR OTHER UNWANTED MATERIAL GET IN THE PORT OF THE MODULE. THIS CAN CAUSE THE SYSTEM TO MALFUNCTION.

(1) Remove the filter and lift it from the module.

S 034-041-001
(2) Remove the retainers and the O-rings from the filter. Discard the O-ring.

TASK 32-42-07-404-042-001

8. Antiskid Shuttle Valve Filter - Installation (Fig. 401)
   A. Equipment
      (1) Packing Installation Tool - T63619, Hydro-Aire Division, Crane Co., Burbank, CA 91510, USA
   B. References
      (1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
   C. Access
      (1) Location Zones
          143 Left Main Landing Gear Wheel Well
          144 Right Main Landing Gear Wheel Well

   D. Procedure

      S 644-043-001
      (1) Lubricate the O-rings and the retainers with hydraulic fluid and install them on the filter.

      S 424-044-001
      (2) Install the filter on the module.

      S 424-045-001
      (3) Install lockwire.

      S 864-046-001
      (4) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).

      S 794-047-001
      (5) Stop five minutes and then do a check of the filter installation for leaks.

TASK 32-42-07-944-048-001

9. Put the Airplane Back to Its Usual Condition
   A. References
      (1) 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
      (3) 24-22-00/201, Electrical Power - Control
      (4) 27-51-00/201, Trailing Edge Flap System
      (5) 27-81-00/201, Leading Edge Slat System
      (6) 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
      (7) 32-00-15/201, Landing Gear Door Locks
   B. Access
      (1) Location Zones
          143 Left Main Landing Gear Wheel Well
          144 Right Main Landing Gear Wheel Well

C. Procedure

S 864-049-001
(1) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).

S 864-050-001
(2) Set the parking brake.

S 414-051-001
(3) Close the lower wing access panel 551TB LH, 651TB RH.

S 444-052-001
(4) Activate the flap (Ref 27-51-00).

S 444-053-001
(5) Activate the slat (Ref 27-81-00).

S 094-054-001

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(6) Remove the door locks from landing gear doors and close the doors (AMM 32-00-15/201).

S 864-055-001
(7) Remove hydraulic power if it is not necessary (Ref 29-11-00)

S 864-056-001
(8) Remove electrical power if it is not necessary (Ref 24-22-00).

ANTISKID SHUTTLE VALVE, MODULE AND COMPONENTS - REMOVAL/INSTALLATION

1. General
   A. This procedure has these tasks:
      (1) Antiskid Shuttle Valve Module - Removal
      (2) Antiskid shuttle Valve Module - Installation
      (3) Filter - Removal
      (4) Filter - Installation
   B. You do not need to remove the module or disconnect the hydraulic lines to remove one or more of the filters. The shuttle valve module is located below the antiskid module, forward of the main gear support beam, and outboard of trunnion door for the main gear. You can get access to the module through the wing trailing edge inboard lower wing structure access panel 551TB LH, or 651TB RH (Ref 06-44-00).
   C. The shuttle valve module test in par 6. F can find crossed electrical and hydraulic lines in the brake system. The test procedure makes sure that the shuttle valves are connected to the correct brakes.

TASK 32-42-07-944-001-002

2. Prepare for Removal
   A. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
      (3) AMM 24-22-00/201, Electrical Power - Control
      (4) AMM 27-51-00/201, Trailing Edge Flap System
      (5) AMM 27-81-00/201, Leading Edge Slat System
      (6) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
      (7) AMM 32-00-15/201, Landing Gear Door Locks
      (8) AMM 32-00-20/201, Landing Gear Downlocks
      (9) AMM 32-42-01/401, Antiskid/Autobrake Control Unit
   B. Access
      (1) Location Zones
          143 Left Main Landing Gear Wheel Well
          144 Right Main Landing Gear Wheel Well
          550 Left Wing Trailing Edge
          650 Right Wing Trailing Edge

   C. Procedure

      S 944-002-002
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20).

S 944-003-002
(2) Make sure that chocks are installed on the wheels.

S 494-004-002

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Open the doors for the landing gear and install the door locks (AMM 32-00-15).

S 044-005-002
(4) Deactivate the flap (AMM 27-51-00).

S 044-006-002
(5) Deactivate the slat (AMM 27-81-00).

S 864-007-002
(6) Supply electrical power (AMM 24-22-00).

S 864-008-002
(7) Release the parking brake.

S 864-009-002
(8) Remove the pressure from the right and center hydraulic systems and reservoirs (AMM 29-11-00).

S 864-010-002
(9) Operate the brake pedals through full travel seven or eight times to release the pressure from the brake accumulator.

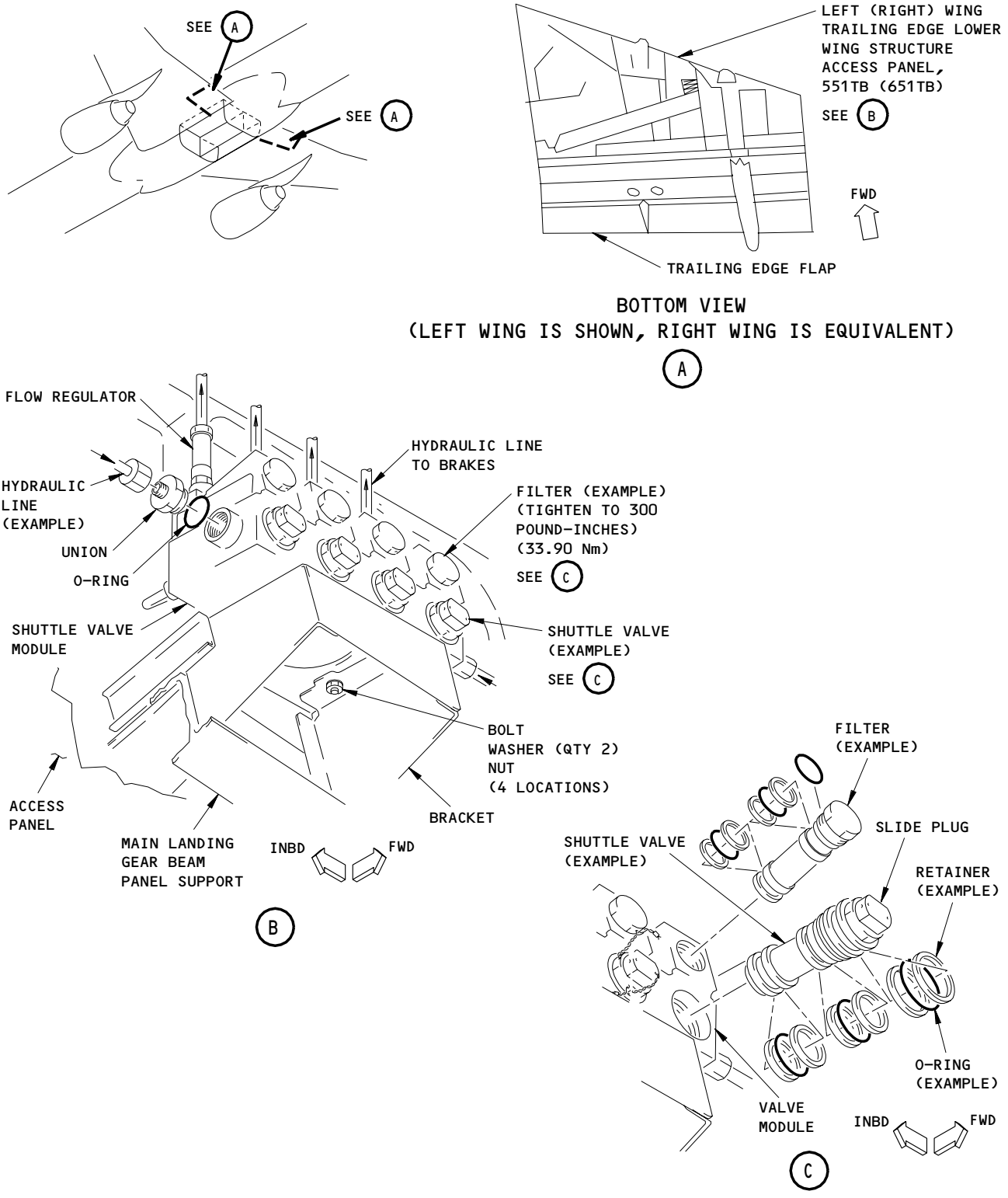
S 014-011-002
(10) Remove access panel 551TB LH or 651TB RH from the bottom of the wing at the inboard trailing edge to get access to the module. (AMM 06-44-00).

TASK 32-42-07-004-012-002

3. Antiskid Shuttle Valve Module - Removal (Fig. 401)

A. Procedure

S 944-013-002
(1) Do the Prepare for Removal procedure (Ref. par. 2).



Antiskid Shuttle Valve Installation
Figure 401

EFFECTIVITY
2-8051-1 ONLY

M96058

S 034-014-002
(2) Disconnect the hydraulic lines from the module. Install plugs in the ports of the module and caps on the hydraulic lines.

S 024-015-002
(3) Remove the bolts (four locations) and remove the module.

S 034-016-002
(4) Remove the hydraulic fittings from the ports on the module and discard the O-rings.

S 034-017-002
(5) Attach tags to the fittings to identify the ports that you removed them from.

TASK 32-42-07-404-018-002

4. Antiskid Shuttle Valve Module - Installation (Fig. 401)

A. General
(1) If you install an antiskid shuttle valve module with a part number of 2-8051-1 or 2-8051-1MOD, we recommend that you install a module on the opposite wing that has the same part number.
(a) The 2-8051-1 or 2-8051-1MOD modules will decrease or prevent hydraulic fluid transfer from the right system to the center system.
(b) If you install a 2-8051-1 or 2-8051-1MOD valve module with a 2-7460-3, 2-7460-4, or 2-7460-5 valve, fluid transfer can occur.

B. Consumable Materials
(1) D00153 Hydraulic Fluid - BMS 3-11

C. References
(1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(2) AMM 32-42-01/401, Antiskid/Autobrake Control Unit

D. Access
(1) Location Zones
143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well
550 Left Wing Trailing Edge
650 Right Wing Trailing Edge

E. Procedure

S 404-059-002
(1) Lubricate new O-rings and the hydraulic fittings with hydraulic fluid before you install the fittings on the module.

S 434-020-002
(2) Install the fittings and the O-rings in the correct locations on the module.

S 424-021-002
(3) Attach the module to the bracket with the bolts, washers and nuts (four locations).

S 644-022-002
(4) Lubricate the hydraulic fittings on the module with hydraulic fluid.

S 434-023-002
(5) Connect the hydraulic lines to the module.

S 864-024-002
(6) Pressurize the right system hydraulic and reservoir (AMM 29-11-00).

S 864-025-002
(7) Push in the brake pedals fully four or more times.

S 794-026-002
(8) After five minutes, do a check for leaks at the hydraulic tube connections.

S 864-060-002
(9) Depressurize the right system hydraulic and reservoir (AMM 29-11-00).

S 864-061-002
(10) Pressurize the center system hydraulic and reservoir (AMM 29-11-00).

S 864-062-002
(11) Push in the brake pedals fully four or more times.

S 794-063-002
(12) After five minutes, do a check for leaks at the hydraulic tube connections.

S 874-064-002
(13) Bleed the brake system (AMM 32-41-00/201).

S 714-027-002
(14) Do a test of the antiskid shuttle valve module with the built-in-test equipment (BITE) of the antiskid/autobrake control unit as follows:

NOTE: The control unit (M102) is located on the E1-5 shelf of the main electronic/electrical equipment center. Access is through the electronics access door 119AL (AMM 06-41-00/201). BITE test switches and test instruction placard are on the front panel of the unit.

(a) Do the normal antiskid brake test of the BITE test section (AMM 32-42-01).
(b) Do the alternate antiskid brake test of the BITE test section (AMM 32-42-01).

TASK 32-42-07-404-046-002

5. Antiskid Shuttle Valve - Removal (Fig. 401)
A. Procedure

S 024-047-002
(1) Do the Prepare for Removal procedure (Ref Par. 2).

S 024-050-002

CAUTION: DO NOT LET DUST, DIRT, OR OTHER UNWANTED MATERIAL GET IN THE PORTS OF THE VALVE BODY AND MODULE. THIS CAN CAUSE THE VALVE TO MALFUNCTION.

(2) Remove the valve and lift it from the module.

S 024-049-002
(3) Remove the retainers and the O-rings from the valve. Discard the O-rings.

TASK 32-42-07-404-051-002

6. Antiskid Shuttle Valve - Installation (Fig. 401)
A. Equipment
(1) Packing Installation Tool - T63619, Hydro-Aire Division, Crane Co., Burbank, CA 91510, USA
B. Consumable Materials
(1) D00153 Hydraulic Fluid - BMS 3-11
C. References
(1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems

D. Access
(1) Location Zones
143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well

E. Procedure

S 644-052-002

CAUTION: RUBBER AND TEFLON O-RINGS ARE NOT INTERCHANGEABLE. IF YOU DO NOT INSTALL THE CORRECT O-RINGS, HYDRAULIC FLUID CAN TRANSFER FROM THE NORMAL BRAKE SYSTEM TO THE ALTERNATE BRAKE SYSTEM AND CAN CAUSE DAMAGE.

(1) Lubricate the O-rings and retainers with hydraulic fluid and install them on the valve.

S 424-053-002
(2) Install the valve on the module.

S 424-054-002
(3) Install the lockwire.

S 864-055-002
(4) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).

S 794-056-002
(5) Stop five minutes and then do a check of the valve installation for leaks.

S 714-057-002
(6) Do the same test that you do after you install the shuttle valve module.

TASK 32-42-07-004-028-002
7. Antiskid Shuttle Valve Filter - Removal (Fig. 401)
A. Procedure

S 024-029-002

CAUTION: DO NOT LET DUST, DIRT, OR OTHER UNWANTED MATERIAL GET IN THE PORT OF THE MODULE. THIS CAN CAUSE THE SYSTEM TO MALFUNCTION.

(1) Remove the filter and lift it from the module.

S 034-030-002
(2) Remove the retainers and the O-rings from the filter. Discard the O-ring.

TASK 32-42-07-404-031-002

8. Antiskid Shuttle Valve Filter - Installation (Fig. 401)
   A. Equipment
      (1) Packing Installation Tool - T63619, Hydro-Aire Division, Crane Co., Burbank, CA 91510, USA
   B. References
      (1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
   C. Access
      (1) Location Zones
          143 Left Main Landing Gear Wheel Well
          144 Right Main Landing Gear Wheel Well

   D. Procedure

      S 644-032-002
      (1) Lubricate the O-rings and the retainers with hydraulic fluid and install them on the filter.

      S 424-033-002
      (2) Install the filter on the module.

      S 424-034-002
      (3) Install lockwire.

      S 864-035-002
      (4) Pressurize the right hydraulic system and reservoir (AMM 29-11-00).

      S 794-036-002
      (5) Stop five minutes and then do a check of the filter installation for leaks.

TASK 32-42-07-944-037-002

9. Put the Airplane Back to Its Usual Condition
   A. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 06-44-00/201, Wings (Major Zones 500 and 600) Access Doors and Panels
      (3) AMM 24-22-00/201, Electrical Power - Control
      (4) AMM 27-51-00/201, Trailing Edge Flap System
      (5) AMM 27-81-00/201, Leading Edge Slat System
      (6) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems

(7) AMM 32-00-15/201, Landing Gear Door Locks

B. Access

(1) Location Zones

143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well

C. Procedure

S 864-038-002

(1) Pressurize the right hydraulic system and reservoir (AMM 29-11-00).

S 864-039-002

(2) Set the parking brake.

S 414-040-002

(3) Close the lower wing access panel 551TB LH, 651TB RH.

S 444-041-002

(4) Activate the flap (AMM 27-51-00).

S 444-042-002

(5) Activate the slat (AMM 27-81-00).

S 094-043-002

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(6) Remove the door locks from landing gear doors and close the doors (AMM 32-00-15).

S 864-044-002

(7) Remove hydraulic power if it is not necessary (AMM 29-11-00)

S 864-045-002

(8) Remove electrical power if it is not necessary (AMM 24-22-00).

AUTOBRAKE SELECTOR SWITCH - REMOVAL/INSTALLATION

1. General
   A. This procedure contains the removal and installation tasks for the autobrake selector switch.
   B. The autobrake selector panel is removed when a malfunction of the brake control system is isolated to the autobrake selector switch. The removal task removes the autobrake selector panel from the Pilots' Control Panel, P1-3, and then removes the autobrake selector switch from the panel. The installation task installs the switch on the panel, and then installs the panel in the P1-3.

TASK 32-42-08-014-001

2. Autobrake Selector Switch - Removal
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 24-22-00/201, Electrical Power - Control
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          119 Main Equipment Center (Right)

      (2) Access Panel
          119AL Main Equipment Center
   C. Prepare for the Removal

      S 494-038

      WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

      (1) If the downlocks are not installed on all the landing gear, do this task: Install the downlock assemblies (AMM 32-00-20/201).

      S 864-032
      (2) Remove the electrical power (AMM 24-22-00/201).

      S 864-003
      (3) Open these circuit breakers and attach DO-NOT-CLOSE tags:
          (a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
          (b) 11U21, AUTOBRKS/ANTISKID TEST/IND 2

      S 864-033
      (4) Remove the pressure from the hydraulic system and the reservoir (AMM 29-11-00/201).

S 494-034
(5) Make sure that chocks are installed on all of the wheels.

D. Procedure

S 024-005
(1) Remove the P1-3 panel from the Pilot's Center Instrument Panel.

S 864-035
(2) Disconnect the electrical connectors behind the panel.

S 024-009
(3) Do these steps to remove the autobrake selector switch [2] from the control panel [9]:
(a) IF INSTALLED;
Remove the nut [6], cup [7] and seal [8] from the control panel [9].
(b) Remove the switch knob [5] from the shaft of the autobrake selector switch [2].
(c) Remove the lightplate [4] from the control panel [9].
(d) Disconnect the screw [3] that holds the autobrake selector switch [2] and the switch plate to the panel.
(e) Remove the autobrake selector switch [2] from the control panel [9].

S 024-036
(4) Disconnect the electrical connector [1] from the autobrake selector switch [2].

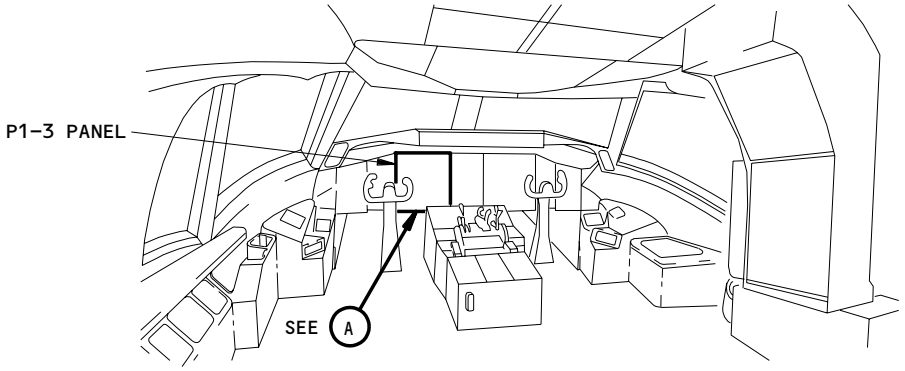
TASK 32-42-08-414-010

3. Autobrake Selector Switch - Installation

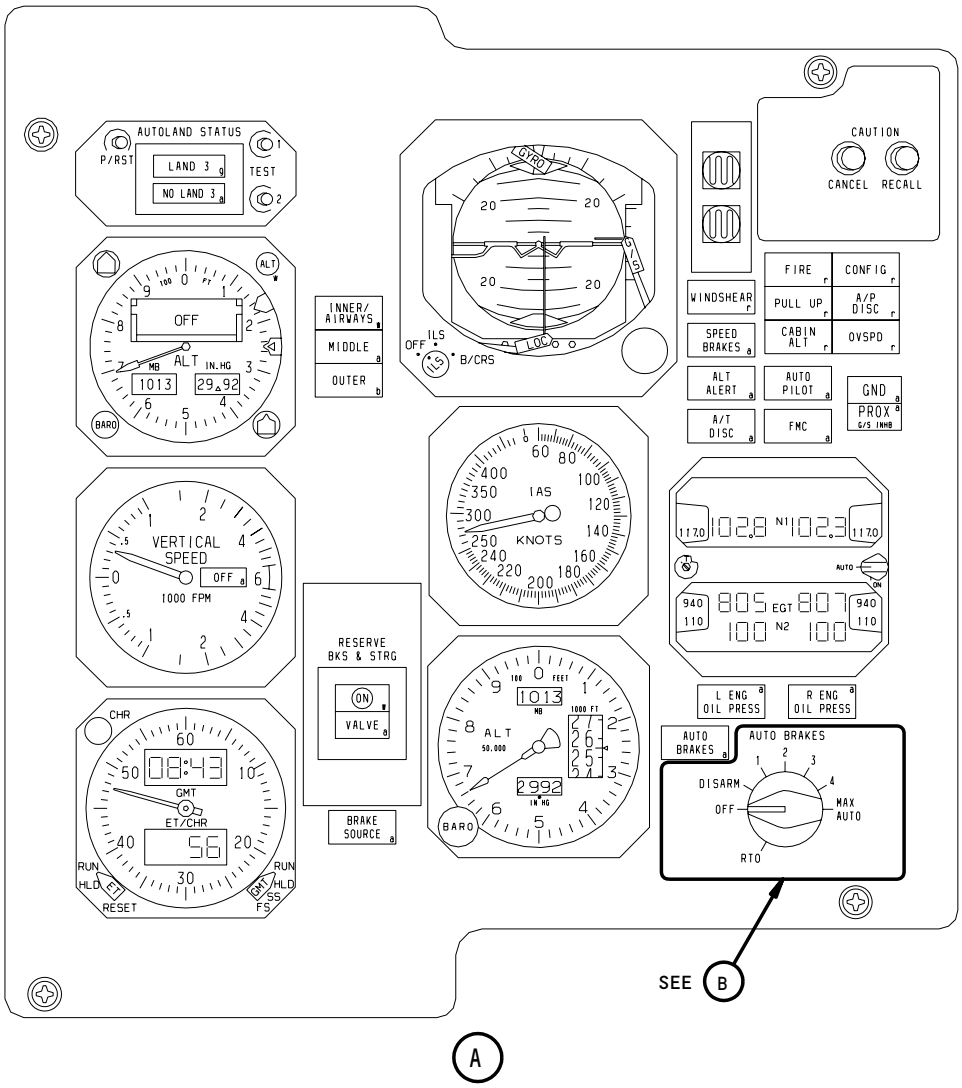
A. References
(1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 32-42-00/501, Antiskid/Autobrake

B. Access
(1) Location Zones
119 Main Equipment Center (Right)

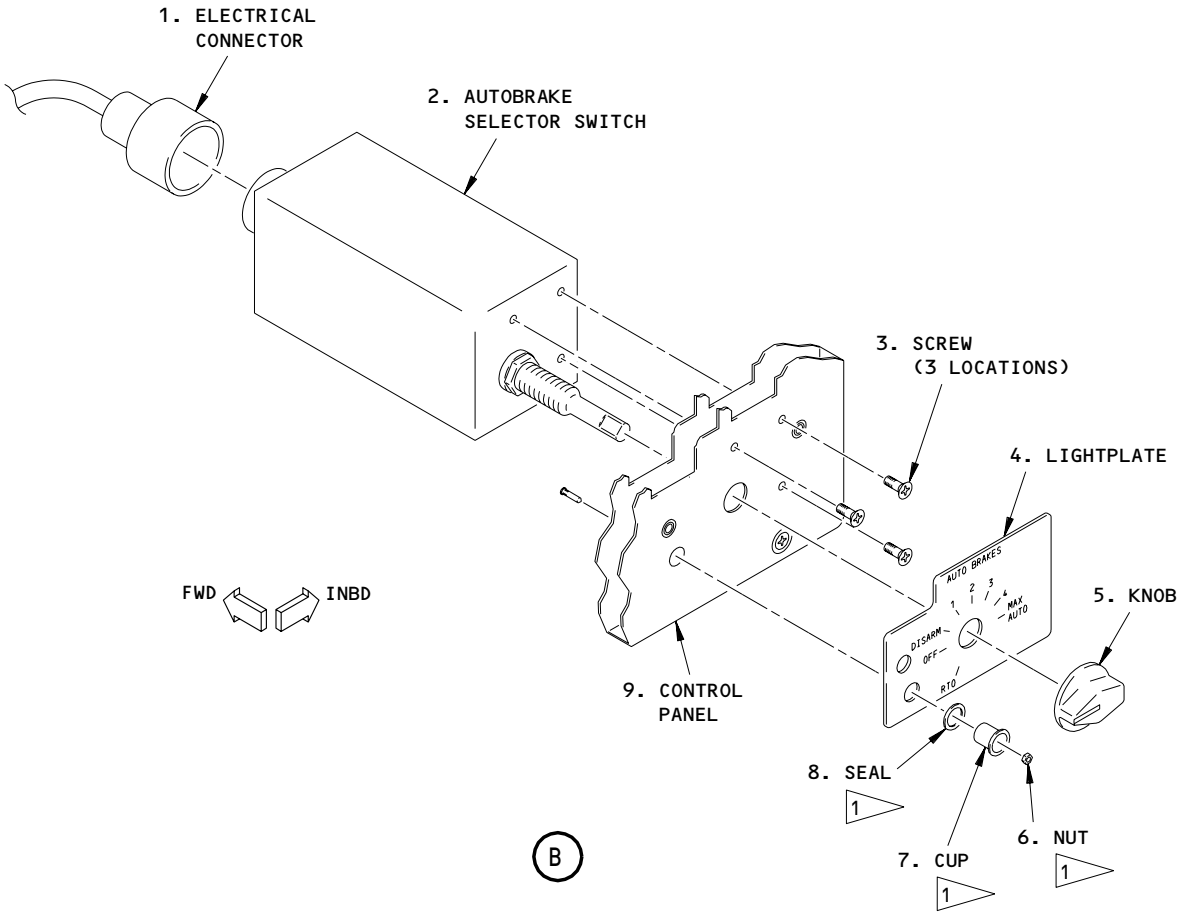
(2) Access Panel
119AL Main Equipment Center



FLIGHT COMPARTMENT



Autobrake Selector Switch Installation
Figure 401 (Sheet 1)



Autobrake Selector Switch Installation
Figure 401 (Sheet 2)

C. Procedure

S 424-011

(1) Install the autobrake selector switch [2] in the P1-3 panel with these steps:
   (a) Install the electrical connector [1] on the autobrake selector switch [2].
   (b) Install the autobrake selector switch [2] on the control panel [9].
   (c) Install the screws [3] that hold the autobrake selector switch [2] to the control panel [9], and tighten the screws.
   (d) IF INSTALLED;
   Install the seal [8], cup [7], and nut [6] to the panel.
   (e) Deleted.
   (f) Install the lightplate [4] on the control panel [9].
   (g) Install the switch knob [5] on the shaft of the autobrake selector switch [2].

S 414-014

(2) Install the P1-3 panel in the Pilot's Center Instrument Panel with these steps:
   (a) Connect the electrical connectors on the back of the panel.
   (b) Put the panel in its position on the pilot's instrument panel and tighten the fasteners (4 locations).

S 864-057

(3) Remove the DO-NOT-CLOSE tags and close these circuit breakers:
   (a) P6 Main Power Distribution Panel
      1) 11U12 AUTOBRKS/ANTISKID TEST/IND 1
      2) 11U21 AUTOBRKS/ANTISKID TEST/IND 2

S 864-058

(4) Pressurize the hydraulic system (AMM 29-11-00/201).

S 714-037

(5) Do a test of the autobrake selector switch installation with these steps:
   (a) Put the L, R, and C IRS mode select switches, located on the Pilot's Overhead Panel (P5) in NAV.
   (b) Release the parking brake.
   (c) Move the thrust levers to the IDLE position,
   (d) Pressurize the right hydraulic system (AMM 29-11-00/201).
   (e) Make sure that the landing gear lever is in the DN position,.
   (f) Make sure that the Brake Test rotary switch on the front panel of the Antiskid/Autobrake control unit (M102),located on the E1-1 shelf in the electronics compartment, is in the NORM position.

(g) Depress RESET on the control unit.

NOTE: The message "MEM CLR" will be displayed for approximately 2 to 3 seconds

(h) Turn the autobrake selector switch to MAX AUTO position and make sure that it arms.
(i) Depress ENABLE/VERIFY and hold, then depress verify.
(j) Release the ENABLE/VERIFY and VERIFY switches.

NOTE: While the system test is running a "WAIT" message will flash on the control unit display. The message will flash four to eight times. The autobrake selector switch should disarm at the end of the test.

(k) Make sure that the display then reads "TEST END".
(l) Turn the autobrake selector switch to position 1 and make sure that it arms.
(m) Turn the autobrake selector switch to position 2 and make sure that it arms.
(n) Turn the autobrake selector switch to position 3 and make sure that it arms.
(o) Turn the autobrake selector switch to position 4 and make sure that it arms.
(p) Turn the autobrake selector switch to position RTO and make sure that it arms.
(q) Turn the autobrake selector switch to the OFF position.

AUTOBRAKE MODULE AND COMPONENTS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains the tasks that follow:
      (1) Autobrake Module - Removal
      (2) Autobrake Module - Installation
      (3) Solenoid Valve - Removal
      (4) Solenoid Valve - Installation
      (5) Servo valve - Removal
      (6) Pressure Switch - Installation
      (7) Pressure switch - Removal
      (8) Servo Valve - Installation
   B. The autobrake module is mounted on the keel beam web in the right wheel well. It is located aft of the forward bulkhead near the wheel well ceiling.

TASK 32-42-09-944-001

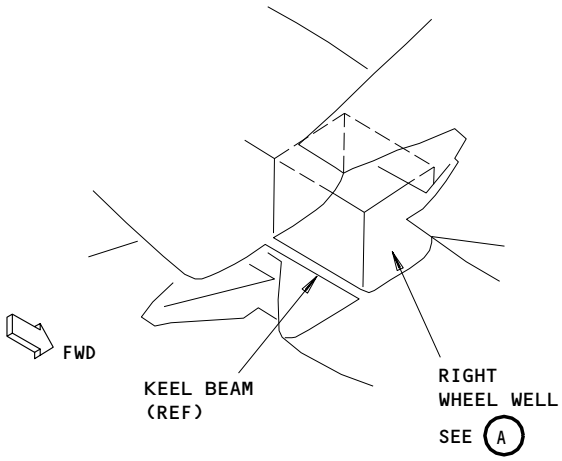
2. Prepare for Removal
   A. References
      (1) AMM 06-41-00/201, Fuselage (Main Zones 100 and 200) Access Doors and Panels.
      (2) AMM 24-22-00/201, Electrical Power - Control
      (3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
      (4) AMM 32-00-15/201, Landing Gear Door Locks
      (5) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones

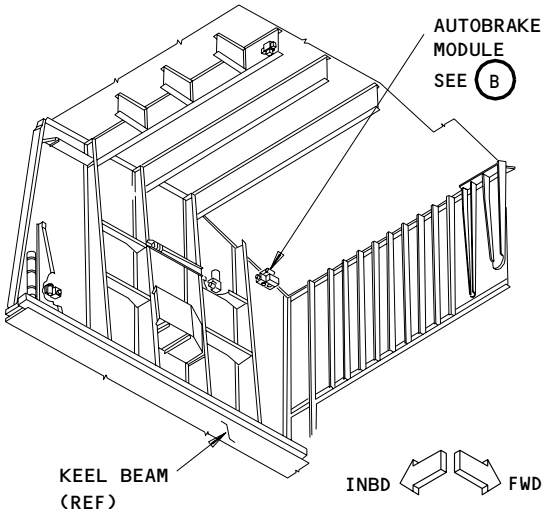
143	Right Main Landing Gear Wheel Well
144	Left Main Landing Gear Wheel Well
211/212	Control Cabin
119	Main Equipment Center (Right)

   C. Procedure

      S 494-002
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

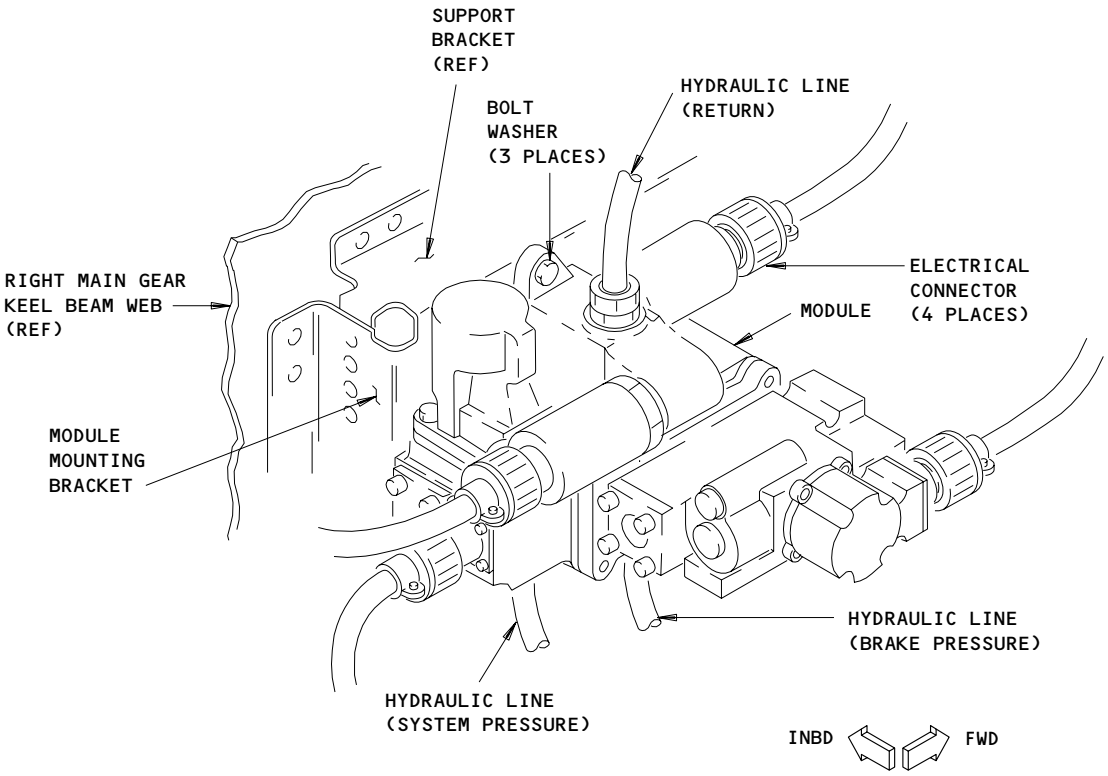
      S 494-003
      (2) Make sure that chocks are installed on the wheels.





RIGHT WHEEL WELL

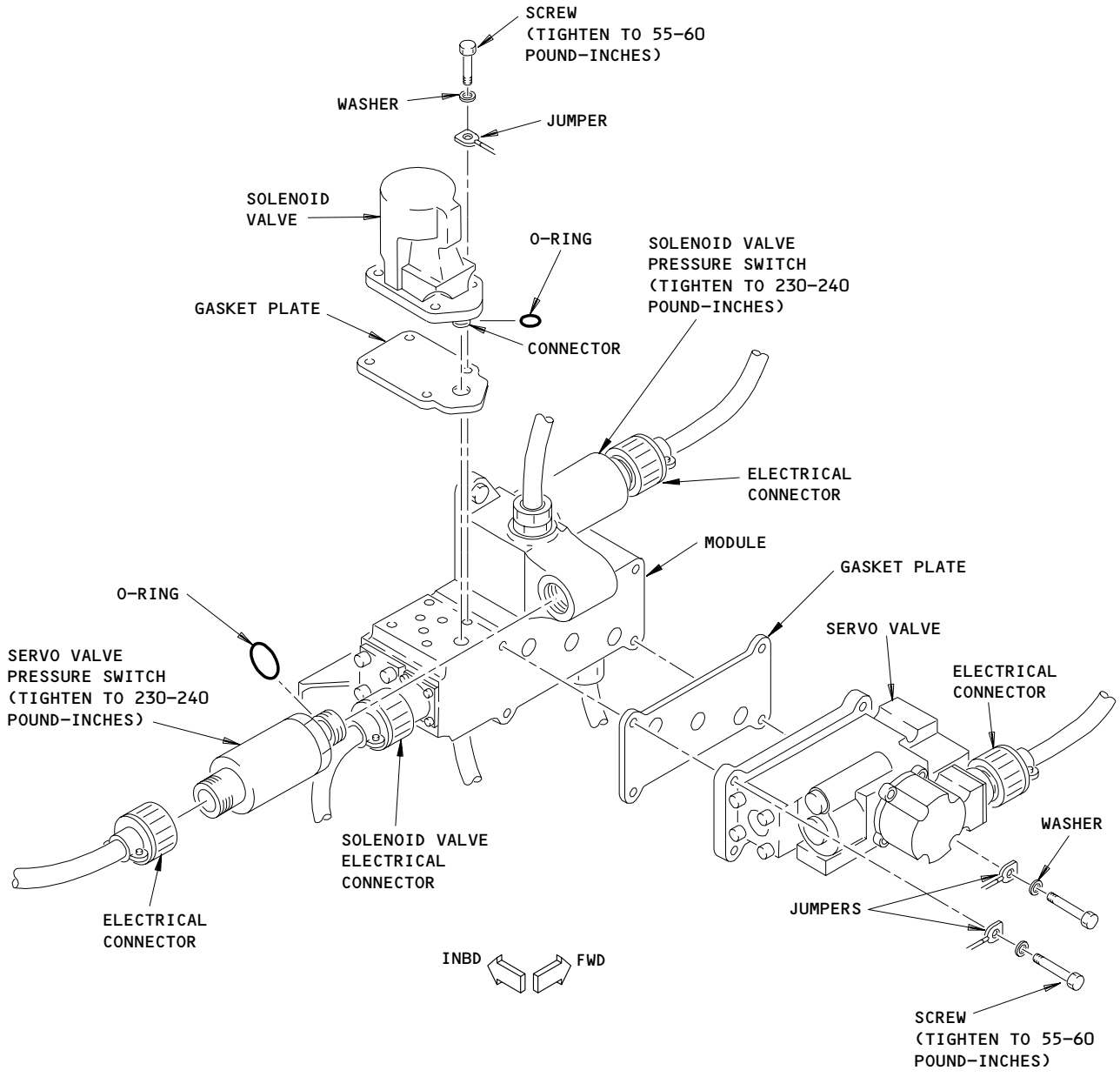
A



AUTOBRAKE MODULE

B

Autobrake Module Installation
Figure 401



Autobrake Module Component Installation
Figure 402

S 494-004

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Open the landing gear doors and install the door locks (AMM 32-00-15/201).

S 864-005

(4) Open these circuit breakers on the overhead circuit breaker panel P11 and attach DO-NOT-CLOSE tags:
(a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
(b) 11U21, AUTOBRKS/ANTISKID TEST/IND 2

S 864-006

(5) Supply electrical power (AMM 24-22-00/201).

S 864-007

(6) Release the parking brake.

S 864-008

(7) Remove the pressure from the right hydraulic system and reservoir (AMM 29-11-00/201).

S 864-009

(8) Push the brake pedals to their travel limits seven or eight times to release the hydraulic pressure from the brake accumulator.

TASK 32-42-09-004-010

3. Autobrake Module - Removal (Fig. 401)

A. Procedure

S 944-011

(1) Do the Prepare for Removal task (Ref Par. 2).

S 034-012

(2) Disconnect the hydraulic lines from the module.

S 494-013

(3) Put caps on the hydraulic lines and plugs in the ports of the module.

S 034-014

(4) Disconnect the electrical connectors from the module. Put caps on the electrical connectors and receptacles.

S 024-015
(5) Remove the module attach bolts while you hold the module. Save the bolts and washers.

NOTE: If you clean the alodized attachment bolts and washers so they will give an electrical ground, you can use them again.

S 024-016
(6) Remove the module.

TASK 32-42-09-404-017

4. Autobrake Module - Installation (Fig. 401)
   A. Consumable Materials
      (1) D00153 Hydraulic Fluid - BMS 3-11
      (2) Sealant - BMS 5095 (AMM 20-30-01/201)
   B. References
      (1) AMM 32-42-01/401, Antiskid/Autobrake Control Unit
   C. Access
      (1) Location Zones

143	Right Main Landing Gear Wheel Well
144	Left Main Landing Gear Wheel Well
211/212	Control Cabin
119	Main Equipment Center (Right)

   D. Procedure

S 424-018
(1) Put the autobrake module on the attachment bracket on the keel beam.

S 164-019
(2) Clean the attachment bolts and the washers for the module before you install them.

S 424-020
(3) Install the module and grounding straps with the bolts and the washers.

S 644-021
(4) Lubricate the O-rings and the hydraulic fittings on the module with hydraulic fluid.

S 434-022
(5) Install the hydraulic lines on the module.

S 864-023
(6) Install the electrical connectors to the recepacles on the module.

S 864-024
(7) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
(a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
(b) 11U21, AUTOBRKS/ANTISKID TEST/IND 2

S 714-025
(8) Do a test of the module with the antiskid/autobrake control unit built-in-test equipment (BITE).

NOTE: The control unit (M102) is on the E1-1 shelf of the main equipment center. You can get access to the control unit through the main equipment center access door, 119AL (AMM 06-41-00/201). The BITE Test switches and test instruction placard are on the front panel of the unit.

S 714-026
(9) Do the antiskid/autobrake control test of the BITE test section (AMM 32-42-01/401).

S 744-084
(10) Do the autobrake application test of the BITE test section (AMM 32-42-01/401).

S 794-027
(11) Do a check of the module installation for hydraulic leaks.

S 944-028
(12) Do the procedure to Put the Airplane Back to Its Usual Condition if it is not necessary to do any more maintenance.

TASK 32-42-09-004-029
5. Autobrake Module Solenoid Valve - Removal (Fig. 402)
A. Procedure

S 944-030
(1) Do the Prepare for Removal procedure (Ref Par. 2)

S 024-031

CAUTION: KEEP THE VALVE VERTICAL TO THE MODULE WHEN YOU REMOVE THE VALVE FROM THE MODULE. THIS IS NECESSARY TO PREVENT DAMAGE TO THE CONNECTOR PINS.

(2) Remove the four attachment screws and lift the valve off of the module.

S 034-032

(3) Remove the O-ring from the connector on the bottom of the valve and discard the O-ring. Put caps on the connector and the receptacle.

S 024-033

CAUTION: DO NOT LET CONTAMINANTION GET IN THE PORTS OF THE MODULE WHEN YOU REMOVE THE VALVE AND THE GASKET PLATE. IF CONTAMINATION GETS IN THE MODULE, DAMAGE TO THE SYSTEM CAN OCCUR.

(4) Remove the gasket plate from the module and discard it.

TASK 32-42-09-404-034

6. Autobrake Module Solenoid Valve - Installation (Fig. 402)

A. Consumable Materials

(1) D00153 Hydraulic Fluid - BMS 3-11
(2) A00247 Sealant - BMS 5-95

B. Access

(1) Location Zones

143	Right Main Landing Gear Wheel Well
144	Left Main Landing Gear Wheel Well
211/212	Control Cabin
119	Main Equipment Center (Right)

C. Procedure

S 644-035

(1) Lubricate a new O-ring with hydraulic fluid and install it on the connector at the bottom of the solenoid valve.

S 424-036
(2) Put a new gasket plate on the installation surface for the solenoid valve on the module.

S 424-037
(3) Put the solenoid valve on the gasket plate on the module.

S 424-038
(4) Intall the screw, the washer, and the bonding jumper (four locations). Tighten the screws to 55-60 pound-inches.

S 424-039
(5) Install lockwire.

S 394-040
(6) Apply sealant to the heads of the screws.

S 864-041
(7) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
(a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
(b) 11U21, AUTOBRKS/ANTISKID TEST/IND 2

S 714-042
(8) Do the test of the valve that is one of the tests in the module installation procedure..

S 794-043
(9) Do a check of the valve installation for leaks after you wait for five minutes.

S 944-044
(10) Do the task to Put the Airplane Back to Its Usual Condition if it is not necessary to do more maintenance.

TASK 32-42-09-004-047
7. Autobrake Module Servo Valve - Removal (Fig. 402)
A. Procedure

S 944-048
(1) Do the Prepare for Removal task (Ref Par. 2)

S 034-049
(2) Disconnect the electrical connector from the valve. Put caps on the electrical connector and the electrical recepatacle.

S 024-050

CAUTION: DO NOT LET CONTAMINATION GET IN THE PORTS OF THE MODULE WHEN YOU REMOVE THE VALVE AND THE GASKET PLATE. IF CONTAMINANTION GETS IN THE MODULE, DAMAGE TO THE SYSTEM CAN OCCUR.

(3) Remove the attachment screws and lift the valve off the module.

S 024-051

(4) Remove the gasket plate from the module and discard it.

TASK 32-42-09-404-052

8. Autobrake Module Servo Valve - Installation (Fig. 402)

A. Consumable Materials

(1) A00247 Sealant - BMS 5-95

B. Access

(1) Location Zones

143	Right Main Landing Gear Wheel Well
144	Left Main Landing Gear Wheel Well
211/212	Control Cabin

C. Procedure

S 424-053

(1) Assemble the gasket plate to the servo valve as follows:
(a) Hold a new gasket plate against the attachment plate of the servo valve.
(b) Install the screws (four locations) with a washer and a bonding jumper terminal through the flange of the servo valve and the gasket plate.
(c) Hold the assembly of the servo valve and the gasket plate on the surface of the module that you will install it to.

S 424-054

(2) Attach the assembly of the valve and the gasket to the module with the screws (four locations). Tighten the screws to 55 to 60 pound-inches.

S 424-055
(3) Install lockwire.

S 394-056
(4) Apply sealant to the screw heads.

S 434-057
(5) Install the electrical connector to the valve.

S 864-058
(6) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
(a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
(b) 11U21, AUTOBRKS/ANTISKID TEST IND 2

S 714-059
(7) Do the autobrake module test that is in the task to install the autobrake module.

S 794-060
(8) Do a check of the valve installation for leaks after five minutes.

S 944-061
(9) Do the task to Put the Airplane Back to Its Usual Condition if it is not necessary to do more maintenance.

TASK 32-42-09-004-062
9. Pressure Switch for the Solenoid Valve of the Autobrake Module or the Pressure Switch for the Servo Valve - Removal (Fig. 402)
A. Procedure

S 944-063
(1) Do the Prepare for Removal task (Ref Par. 2).

S 034-064
(2) Disconnect the electrical connector from the pressure switch. Put caps on the electrical conmnrctor and the electrical receptacle.

S 024-065
(3) Turn the pressure switch counterclockwise to remove it. Discard the O-ring.

S 034-066
(4) Put a plug in the port on the module.

S 034-067
(5) Put a cap on the electrical connector.

TASK 32-42-09-404-068

10. Pressure Switch for the Solenoid Valve of the Autobrake Module or the Pressure Switch for the Servo Valve - Installation (Fig. 402)

A. Consumable Materials
(1) AOO247 Sealant - BMS 5-95

B. Access
(1) Location Zones

143	Right Main Landing Gear Wheel Well
144	Left Main Landing Gear Wheel Well
211/212	Control Cabin

C. Procedure

S 634-069
(1) Lubricate a new O-ring wirth hydraulic fluid and install it on the pressure switch.

S 424-070
(2) Engage the threads of the pressure switch with the threads in the module port and turn the switch clockwise to install it. Tighten the switch to a torque value of 230-240 pound-inches.

S 424-071
(3) Install lockwire between the two pressure switches on the module.

S 434-072
(4) Install the electrical connector.

S 864-073
(5) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
(a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
(b) 11U21, AUTOBRKS/ANTISKID TEST/IND 2

S 714-074
(6) Do the autobrake module test that is in the autobrake installation task.

S 794-075
(7) Stop at least 5 minutes and then do a check of the switch installation for hydraulic leaks.

S 944-076
(8) Do the task to Put the Airplane Back to its Usual Condition if it not neccessary to do any more maintenanace.

TASK 32-42-09-944-077

11. Put the Airplane Back to its Usual Condition

A. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks

B. Procedure

S 864-078
(1) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 864-079
(2) Set the parking brake.

S 094-080

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Remove the door locks from the main landing gear doors and close the doors (AMM 32-00-15/201).

S 864-081
(4) Remove the power from the right system hydraulic power if it is not necessary (AMM 29-11-00/201).

S 864-082

(5) Remove electrical power if it is not necessary (AMM 24-22-00/201).

S 834-083

(6) Close the main equipment center access door, 119AL.

AUTOBRAKE SHUTTLE VALVE MODULE AND COMPONENTS - REMOVAL/INSTALLATION

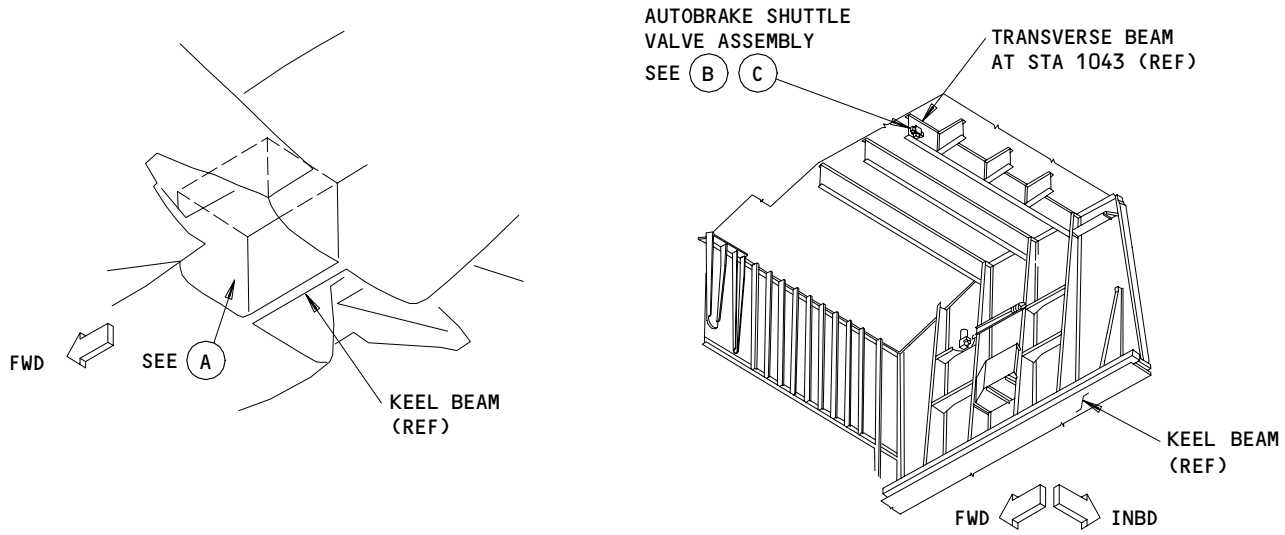
1. General
   A. The valve assembly is a module that consists of a shuttle valve, a pressure switch, and the module housing. This procedure contains six tasks to remove and install the module and components as follows:
      (1) Autobrake Shuttle Valve Module - Removal
      (2) Autobrake Shuttle Valve Module - Installation
      (3) Autobrake Shuttle Valve - Removal
      (4) Autobrake Shuttle Valve - Installation
      (5) Autobrake Shuttle Valve Pressure Switch - Removal
      (6) Autobrake Shuttle Valve Pressure Switch - Installation

TASK 32-42-10-944-001

2. Prepare for Removal
   A. References
      (1) 06-41-00/201, Fuselage (Main Zones 100 and 200) Access Doors and Panels
      (2) 24-22-00/201, Electrical Power - Control
      (3) 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
      (4) 32-00-15/201, Landing Gear Door Locks
      (5) 32-00-20/201, Landing Gear Downlocks
      (6) 32-42-01/401, Antiskid/Autobrake Control Unit
   B. Access
      (1) Location Zones
          211 Control Cabin, Left
          212 Control Cabin, Right
          731 Landing Gear Left
          741 Landing Gear Right
          119 Main Equipment Center (Right)

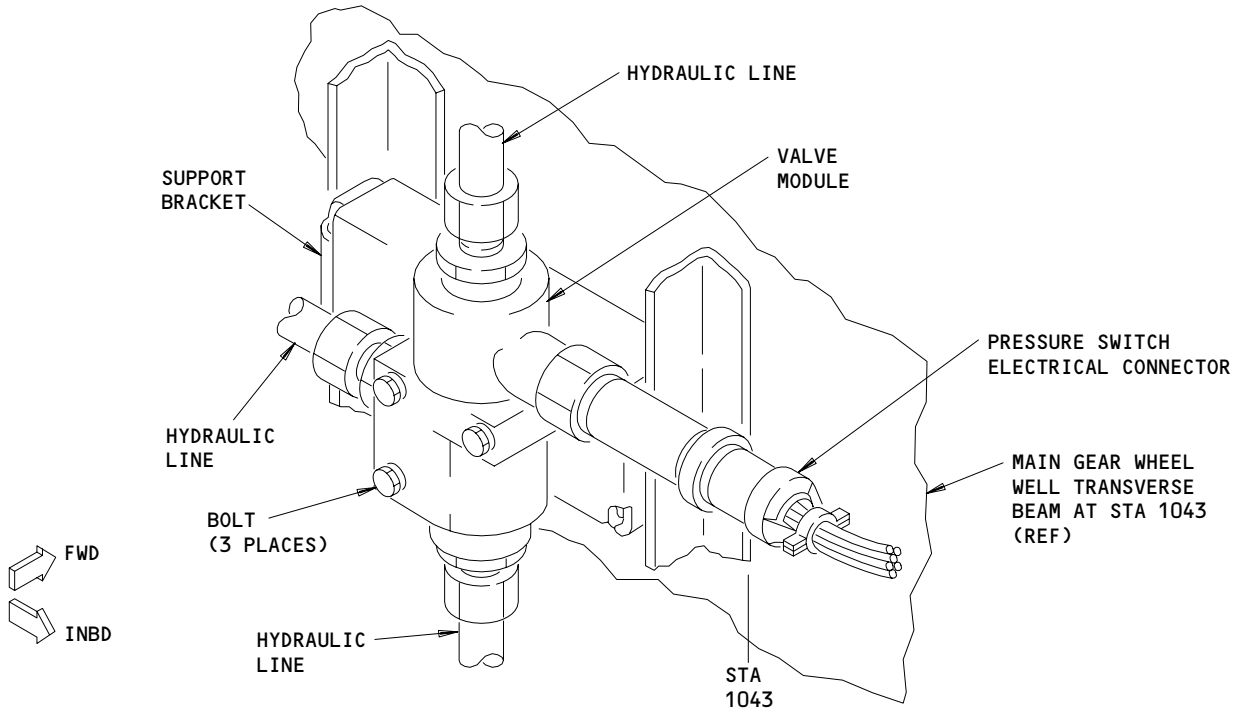
   C. Procedure

      S 494-002
      (1) Make sure that the downlocks are installed on the nose and main landing gear (Ref 32-00-20).



L WHEEL WELL SHOWN
(R WHEEL WELL SIMILIAR)

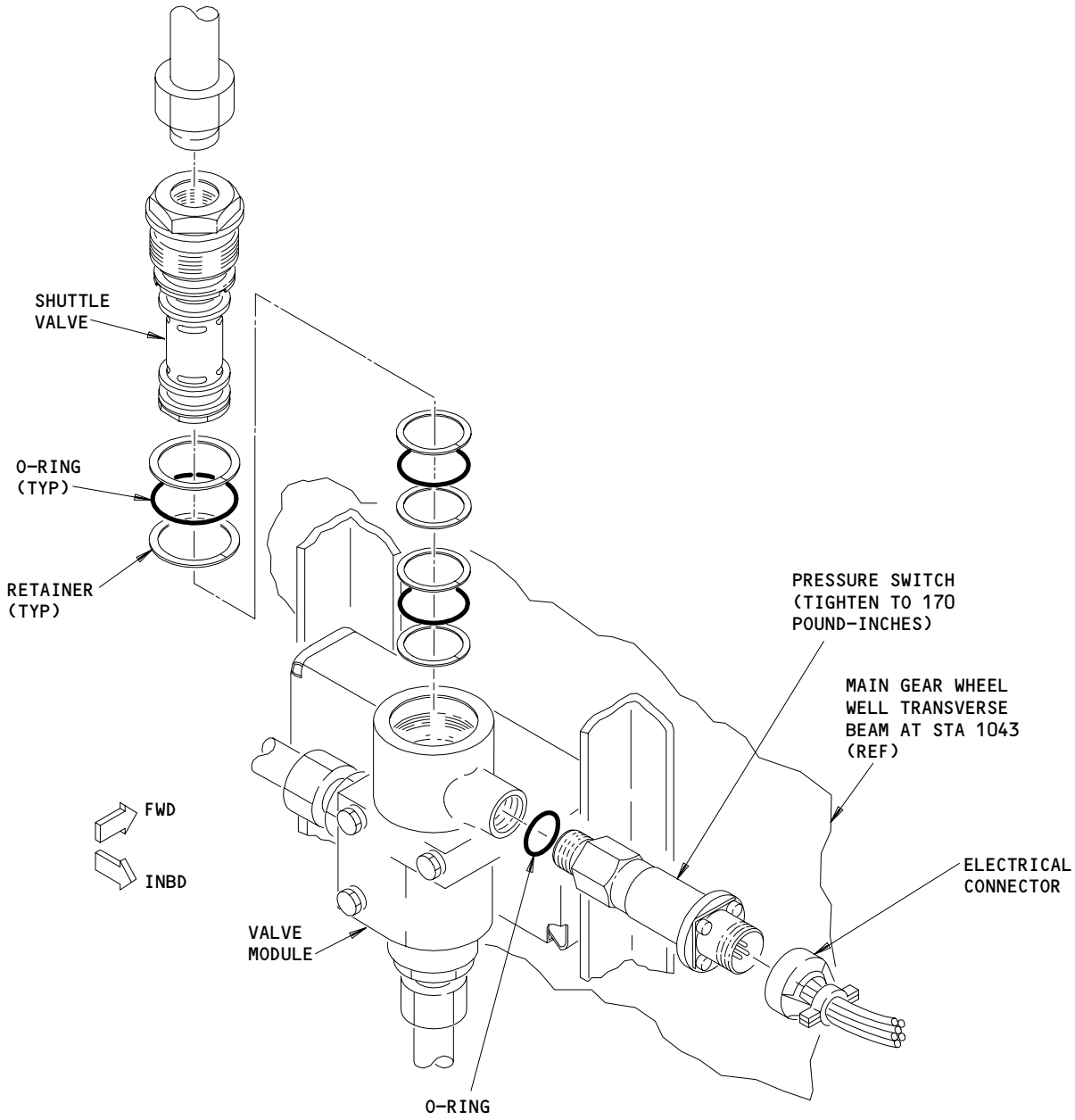
A



L AUTOBRAKE SHUTTLE VALVE ASSEMBLY INSTALLATION SHOWN,
R AUTOBRAKE SHUTTLE VALVE ASSEMBLY INSTALLATION SIMILAR

B

Autobrake Shuttle Valve Module/Component Installation
Figure 401 (Sheet 1)



L AUTOBRAKE SHUTTLE VALVE ASSEMBLY INSTALLATION SHOWN,
R AUTOBRAKE SHUTTLE VALVE ASSEMBLY INSTALLATION SIMILAR

(C)

Autobrake Shuttle Valve Module/Component Installation
Figure 401 (Sheet 2)

S 494-003

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 494-004
(3) Make sure that chocks are installed on the wheels.

S 864-005
(4) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
(a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
(b) 11U21, AUTOBRKS/ANTISKID TEST/IND 2

S 864-006
(5) Supply electrical power (Ref 24-22-00).

S 864-007
(6) Release the parking brake.

S 864-008
(7) Depressurize the right hydraulic system and reservoir (Ref 29-11-00).

S 864-009
(8) Push in the pedals slowly and fully at least seven times to release the hydraulic pressure from the brake accumulator.

TASK 32-42-10-004-010
3. Autobrake Shuttle Valve Module - Removal (Fig. 401)
A. Procedure

S 494-011
(1) Do the Prepare for Removal procedure (Ref Par. 2)

S 034-012
(2) Disconnect the hydraulic lines from the valve and put caps on the lines.

S 034-013
(3) Disconnect the electrical connector and put caps on the electrical connector and the receptacle.

S 024-014
(4) Remove three bolts and remove the valve module.

TASK 32-42-10-404-015

4. Autobrake Shuttle Valve Module - Installation (Fig. 401)

A. Equipment

(1) Explosionproof Bonding Meter - Microhm Bridge, Type 2 Bonding Meter (Avtron Model T477W, Avtron Manufacturing Inc., Cleveland, Ohio)

B. Consumable Materials

(1) D00153 Hydraulic Fluid - BMS 3-11

C. References

(1) 06-41-00/201, Fuselage (Main Zones 100 and 200) Access Doors and Panels

(2) 32-42-01/401, Antiskid/Autobrake Control Unit

D. Access

(1) Location Zones

211	Control Cabin, Left
212	Control Cabin, Right
731	Landing Gear Left
741	Landing Gear Right
119	Main Equipment Center (Right)

E. Procedure

S 164-016

(1) Clean the surface of the structure and module that will touch to get a correct electrical bond when the module is installed (Ref 20-10-22).

S 434-019

(2) Install the hydraulic lines and the electrical connector plug to the valve.

S 764-023

(3) Measure the bonding resistance between the valve and the support bracket. Make sure that it is 0.0025 ohm maximum.

S 864-020

(4) Remove the DO-NOT-CLOSE tags and close these circuit breakers on on the P11 panel:

(a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1

(b) 11U21, AUTOBRKS/ANTISKID TEST/IND 2

S 714-021
(5) Do a test of the operation of the shuttle valve module with the built-in-test equipment (BITE) on the antiskid/autobrake control unit as follows:

NOTE: The control unit (M102) is on the E1-1 shelf in the main electronic/electrical equipment center. Access is thru main equipment center access door 119AL (Ref 06-41-00). BITE test switches and test instruction placard are on the unit front panel.

(a) Do the antiskid/autobrake control test of the BITE test section (Ref 32-42-01).
(b) Do the autobrake application test of the BITE test section (Ref 32-42-01).

S 794-022
(6) Do a check of the valve module installation for leaks.

TASK 32-42-10-004-024
5. Autobrake Shuttle Valve Pressure Switch - Removal (Fig. 401)
A. Procedure

S 944-025
(1) Do the Prepare for Removal procedure (Ref Par. 2)

S 034-026
(2) Disconnect the electrical connector and put caps on the connector and the receptacle.

S 024-027
(3) Remove the pressure switch and discard O-ring. Put a plug in the valve port.

TASK 32-42-10-404-028
6. Autobrake Shuttle Valve Pressure Switch - Installation (Fig. 401)
A. Access
(1) Location Zones
211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right
119 Main Equipment Center, Right

B. Procedure

S 644-029
(1) Lubricate the O-ring with hydraulic fluid.

S 424-030
(2) Install the pressure switch with new O-rings in the valve port. Tighten the switch to 170 pound-inches.

S 424-031
(3) Install lockwire.

S 434-032
(4) Install the electrical connector.

S 864-033
(5) Remove the DO-NOT-CLOSE tags and close these (11U12) and circuit breakers on the P11 panel:.
(a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
(b) 11U21, AUTOBRKS/ANTISKID TEST/IND 2

S 714-034
(6) Do the same test that is in the the shuttle valve module installation procedure.

TASK 32-42-10-004-035
7. Autobrake Shuttle Valve - Removal (Fig. 401)
A. Procedure

S 034-036
(1) Disconnect the hydraulic line from shuttle valve (attached to the op of the module) and put a cap on it.

S 024-037

CAUTION: DO NOT LET CONTAMINANTS GET IN THE PORTS OF THE MODULE WHEN YOU REMOVE THE VALVE. IF CONTAMINANTS GET IN THE MODULE, DAMAGE TO THE SYSTEM CAN OCCUR.

(2) Remove valve from the module.

S 034-038

(3) Remove the retainers and the O-rings from the valve. Discard the O-rings.

TASK 32-42-10-404-039

8. Autobrake Shuttle Valve - Installation (Fig. 401)

A. Equipment

(1) Packing Installation Tool - T63619, Hydro-Aire Division, Crane Co., Burbank, CA 91510, USA

B. Access

(1) Location Zones

211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right
119 Main Equipment Center (Right)

C. Procedure

S 644-040

CAUTION: RUBBER AND TEFLON O-RINGS ARE NOT INTERCHANGEABLE. IF YOU DO NOT INSTALL THE CORRECT O-RINGS, HYDRAULIC FLUID CAN TRANSFER FROM THE NORMAL BRAKE SYSTEM TO THE ALTERNATE BRAKE SYSTEM AND CAUSE DAMAGE.

(1) Lubricate the O-rings and the retainers with hydraulic fluid and install them on the valve.

S 424-041

(2) Install the valve in the module.

S 424-042

(3) Install lockwire.

S 434-043

(4) Install the hydraulic line.

S 864-044
(5) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
(a) 11U12, AUTOBRKS/ANTISKID TEST/IND 1
(b) 11U21, AUTOBRKS/ANTISKID TEST/IND 2

S 714-045
(6) Do the same test that is in the the shuttle valve module installation procedure.

TASK 32-42-10-944-046
9. Put the Airplane Back to its Usual Condition
A. References
(1) 24-22-00/201, Electrical Power - Control
(2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(3) 32-00-15/201, Landing Gear Door Locks
B. Access
(1) Location Zones
211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right
119 Main Equipment Center (Right)

C. Procedure

S 864-047
(1) Set the parking brake.

S 094-048

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

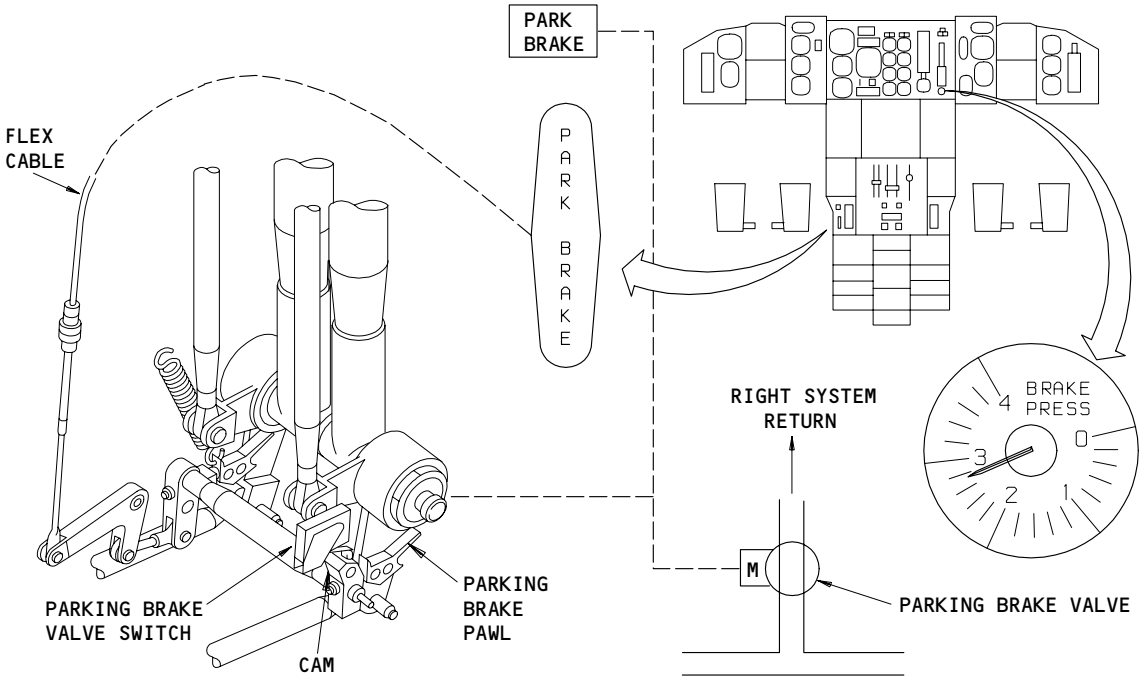
(2) Remove the door locks from landing gear doors and close the doors (AMM 32-00-15/201).

S 864-049
(3) Remove power from the right hydraulic system if it is not necessary (Ref 29-11-00)

S 864-050
(4) Remove electrical power if it is not necessary (Ref 24-22-00)

PARKING BRAKE SYSTEM - DESCRIPTION AND OPERATION

1. General (Fig. 1)
   A. The parking brake system utilizes pressure from an accumulator. Accumulator pressure operates through the normal brake system components to set the brakes for parking. A mechanism on the captain's brake pedals keeps the parking brakes set. The EICAS (Engine Indication and Crew Alerting System) on the center instrument panel displays the message PARKING BRAKE and the PARK BRAKE indicator light on the control stand panel P10 illuminates when the parking brakes are set.
   B. The parking brake system keeps the brakes set for up to 8 hours when normal brake system pressure is removed. Parking brake pressure is provided by an accumulator. The system also provides a reserve source of pressure for 5 to 7 brake applications when normal pressure sources are not available for ground operations.



Parking Brake System
Figure 1

16385

C. The parking brakes are set by depressing the captain's brake pedals, and latching them in this position by pulling the parking brake handle. This sets the brakes and closes the parking brake valve to limit leakage of brake pressure to return.

D. The parking brake mechanism is installed on the captain's brake pedals only.

2. Component Details

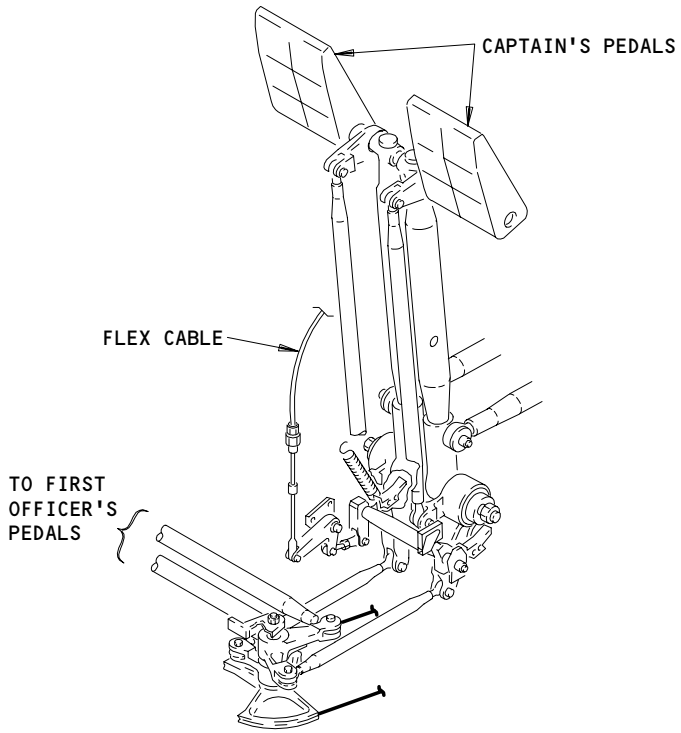
A. Parking Brake Mechanism (Fig. 2)

(1) The parking brake mechanism is installed on the captain's brake pedals only. The mechanism consists of a handle and cable, 2 parking brake pawls, 2 latch stops, and a switch.

(2) When the pedals are depressed and the handle is pulled, the pawls engage the latch stop mechanism to keep the pedals depressed, and actuate the parking brake switch to close the parking brake valve.

B. Parking Brake Accumulator (Fig. 3)

(1) The parking brake accumulator provides pressure to power the parking brakes when right and center system pressure is not available. The accumulator is precharged with nitrogen, and continually pressurized by the right system whenever the right system is operating. Nitrogen and hydraulic fluid are separated by a floating piston inside the accumulator.



Parking Brake Mechanism
Figure 2

(2) A nitrogen charging valve is located just forward of the accumulator in the right wheel well. A pressure gage and transducer connect to the charging line at the valve. The pressure gage in the wheel well senses pressure directly from the charging line. The pressure transducer provides signals to a gage on the captain's center instrument panel.

(3) Pressure within the accumulator should provide 5 to 7 brake applications when normal brake systems are not operating.

C. Parking Brake Shutoff Valve (Fig. 4)

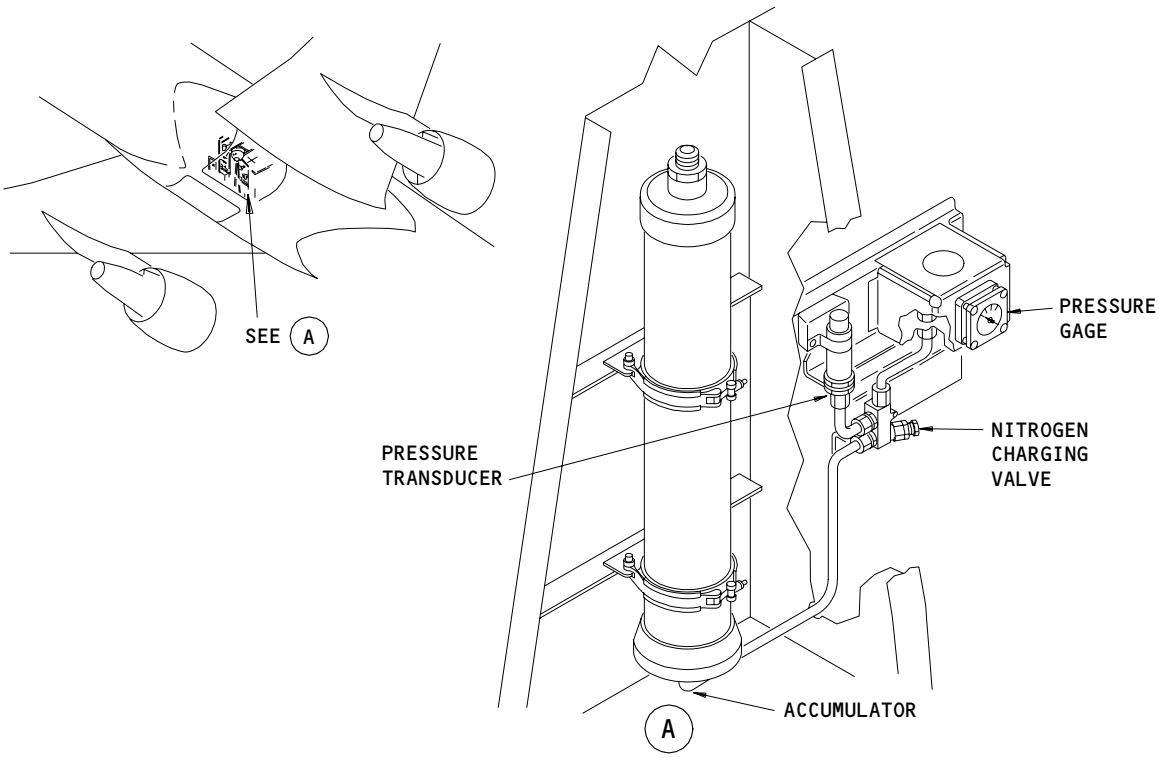
(1) The parking brake valve is located in the right wheel well, and installed in the right system brake return line. It is a 28 vdc electric motor operated valve.

(2) The valve is closed by setting the parking brakes. It is opened by releasing them. When the valve is closed, the brake antiskid return line is blocked and brake pressure is maintained. The PARK BRAKE light on the control stand will come on when the valve is not fully open.

(3) The valve has a manual override handle so the valve can be operated on the ground if electrical power is not available, or the parking brake switch has failed. Position 1 indicates the valve is open, position 2 indicates the valve is closed.

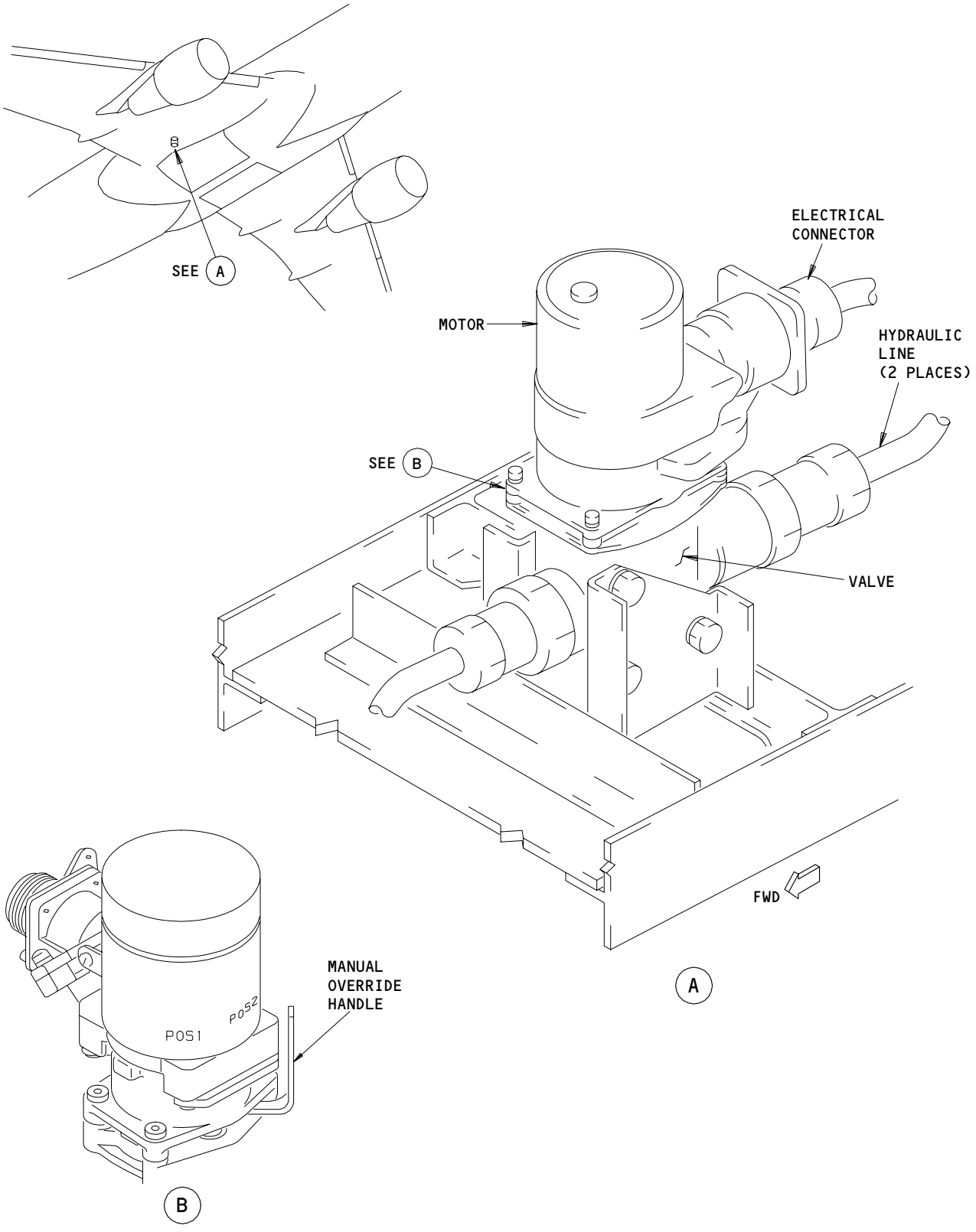
3. Operation

A. Parking Brake System Functional Description (Fig. 5)



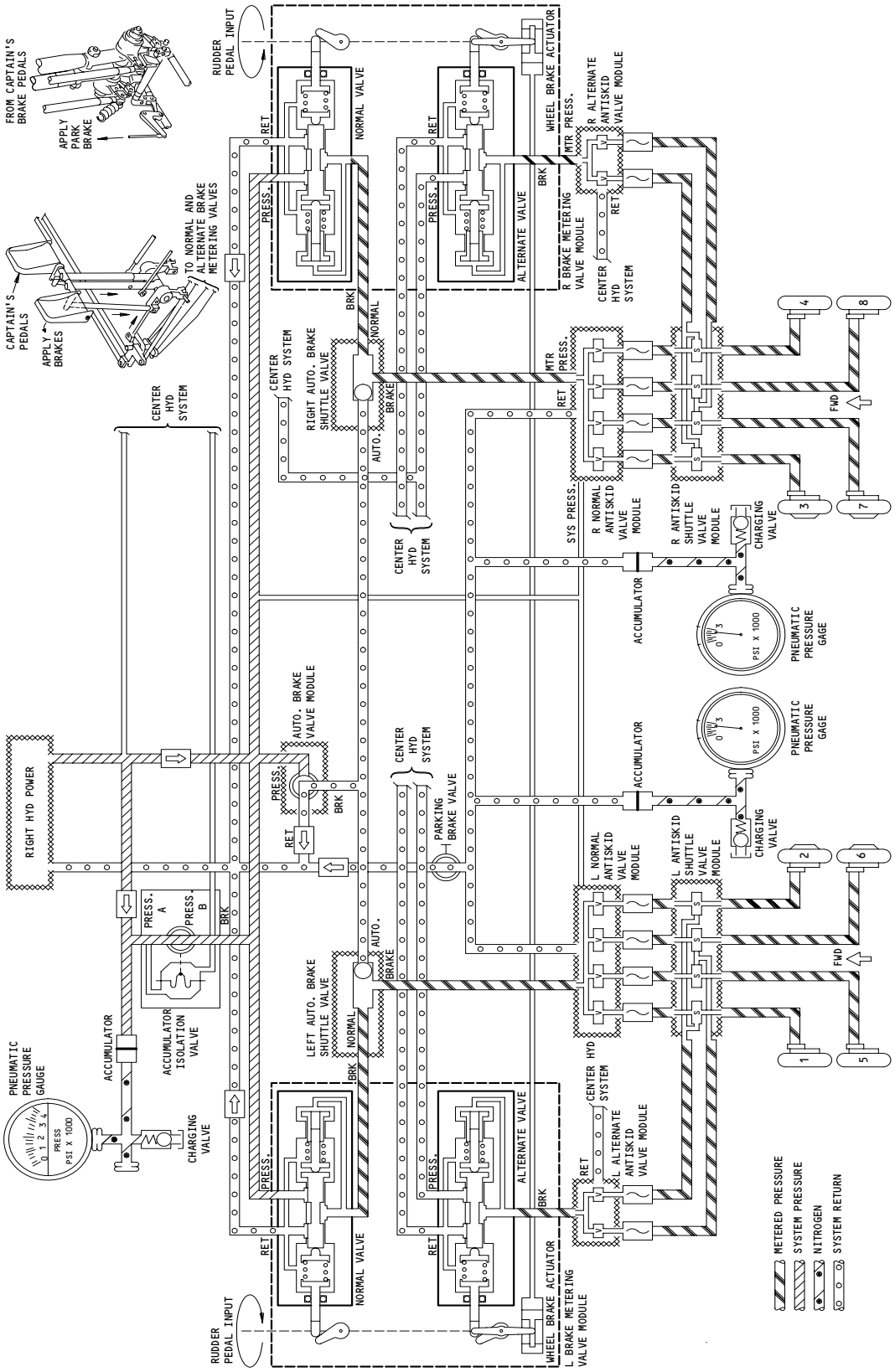
Parking Brake Accumulator
Figure 3

16396

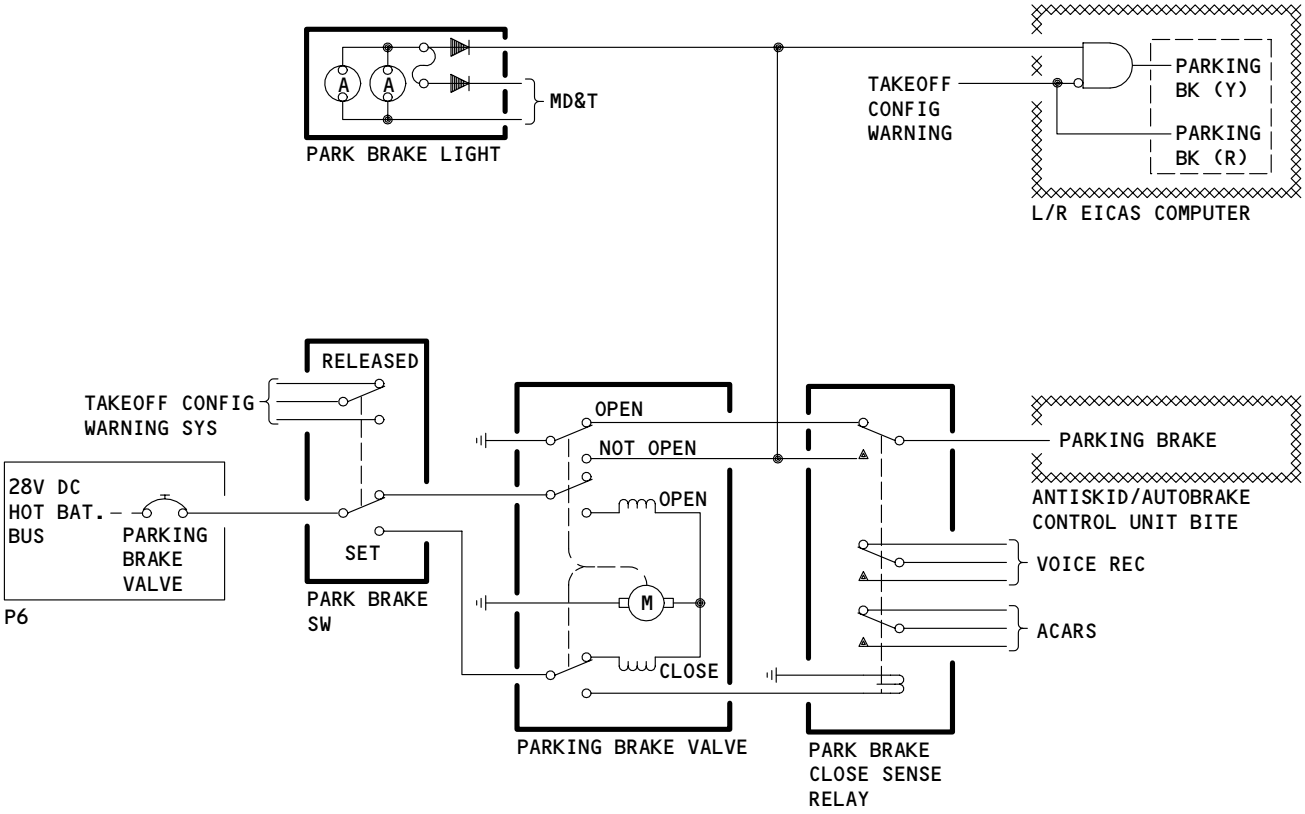


Parking Brake Valve
Figure 4

16398



Parking Brake System Simplified Hydraulic Schematic
Figure 5



Parking Brake System Simplified Electrical Schematic
Figure 6

T64377

(1) The parking brakes are set by depressing the captain's left and right brake pedals, and pulling the parking brake handle on the control stand. Power to set the brakes is provided through the normal brake hydraulic (right) system.
   (a) With a pressure source available, the captain's left and right brake pedals, when depressed, actuate the left and right gear brakes.
   (b) Pulling the parking brake handle, latches the brake pedals in the depressed position, and actuates a switch to close the parking brake valve. Keeping the brake pedals depressed keeps the brakes applied. Closing the parking brake valve prevents bleed-down of the parking brake accumulator by limiting leakage of fluid to return through the antiskid valves.

   CAUTION: PARKING BRAKE HANDLE SHALL BE PULLED STRAIGHT OUTWARD FROM P10 PANEL WITHOUT TWISTING WHEN SETTING BRAKE. FAILURE TO COMPLY WILL CAUSE DAMAGE TO HANDLE LINKAGE.

   (c) Power to operate the parking brake valve is available from the 28v dc hot battery bus. The valve can be closed manually, if power is not available, by moving the manual lever on the valve to POS 2.
   (d) The close sense relay is energized when the parking brake valve is closed. When the contacts close, they supply a signal to the antiskid/autobrake control unit. The relay also has switch contacts which interface with the ACARS and the voice recorder systems.
      1) The relay is located in the forward equipment center on the miscellaneous electrical equipment panel, P36.
   (e) The PARK BRAKE light next to the parking brake handle on the control stand will come on when the parking brake valve is not fully open and the message "PARKING BRAKE" is displayed on the EICAS display screen.
(2) The parking brakes are released by depressing and releasing the captain's brake pedals.
   (a) Depressing the brake pedals, with the parking brake handle unrestrained, disengages the pawls which keep the brake pedals depressed. Springs retract the pawls and pull the the handle down against the control stand.

CAUTION: PARKING BRAKE HANDLE NEED NOT BE MANIPULATED TO RELEASE PARKING BRAKE. PUSHING OR TWISTING PRESSURE ON HANDLE WILL CAUSE DAMAGE TO HANDLE LINKAGE.

(b) Retracting the pawls actuates the parking brake switch, which allows the parking brake valve to open, relieving brake pressure. When the parking brake valve is fully open, the PARK BRAKE light on the control stand will go out and the "PARKING BRAKE" message on the EICAS CRT display screen disappears.

B. Parking Brake Control

(1) Set parking brakes.

(a) Provide right hydraulic power (Ref 29-11-00/201), or ensure that hydraulic brake accumulator is fully charged (Ref 12-15-04/301).

(b) Provide electrical power (Ref 24-22-00/201).

(c) Close this circuit breaker on P6 panel:

(d) 6F4, PARKING BRAKE VLV

(e) Depress captain's left and right brake pedals fully.

CAUTION: DO NOT ROTATE PARKING BRAKE HANDLE. ROTATION OF HANDLE MAY DAMAGE PARKING BRAKE SYSTEM CABLE.

(f) Lift straight up on parking brake handle on control stand. Release brake pedals, then let go of parking brake handle.

(g) Check that parking brake handle remains lifted, and that PARK BRAKE light on control stand is on, after a few seconds.

WARNING: DO NOT ENTER WHEEL WELL TO REPOSITION PARKING BRAKE VALVE MANUALLY, UNLESS WHEEL WELL DOORS ARE LOCKED OPEN. REFER TO AMM 32-00-15/201 FOR LOCK INSTALLATION PROCEDURE. RAPID ACTION OF DOORS MAY CAUSE INJURY OR DAMAGE, IF LOCKS ARE NOT PROPERLY INSTALLED.

(2) Release parking brakes.

(a) Depress the captains brake pedals fully, then release them.

(b) Check that parking brake handle moves down against control stand, and that PARK BRAKE light on control stand is off, after a few seconds.

WARNING: DO NOT ENTER WHEEL WELL TO REPOSITION PARKING BRAKE VALVE MANUALLY, UNLESS WHEEL WELL DOORS ARE LOCKED OPEN. REFER TO AMM 32-00-15/201 FOR LOCK INSTALLATION PROCEDURE. RAPID ACTION OF DOORS MAY CAUSE INJURY OR DAMAGE, IF LOCKS ARE NOT PROPERLY INSTALLED.

(c) Remove all hydraulic power if no longer required (Ref 29-11-00/201).

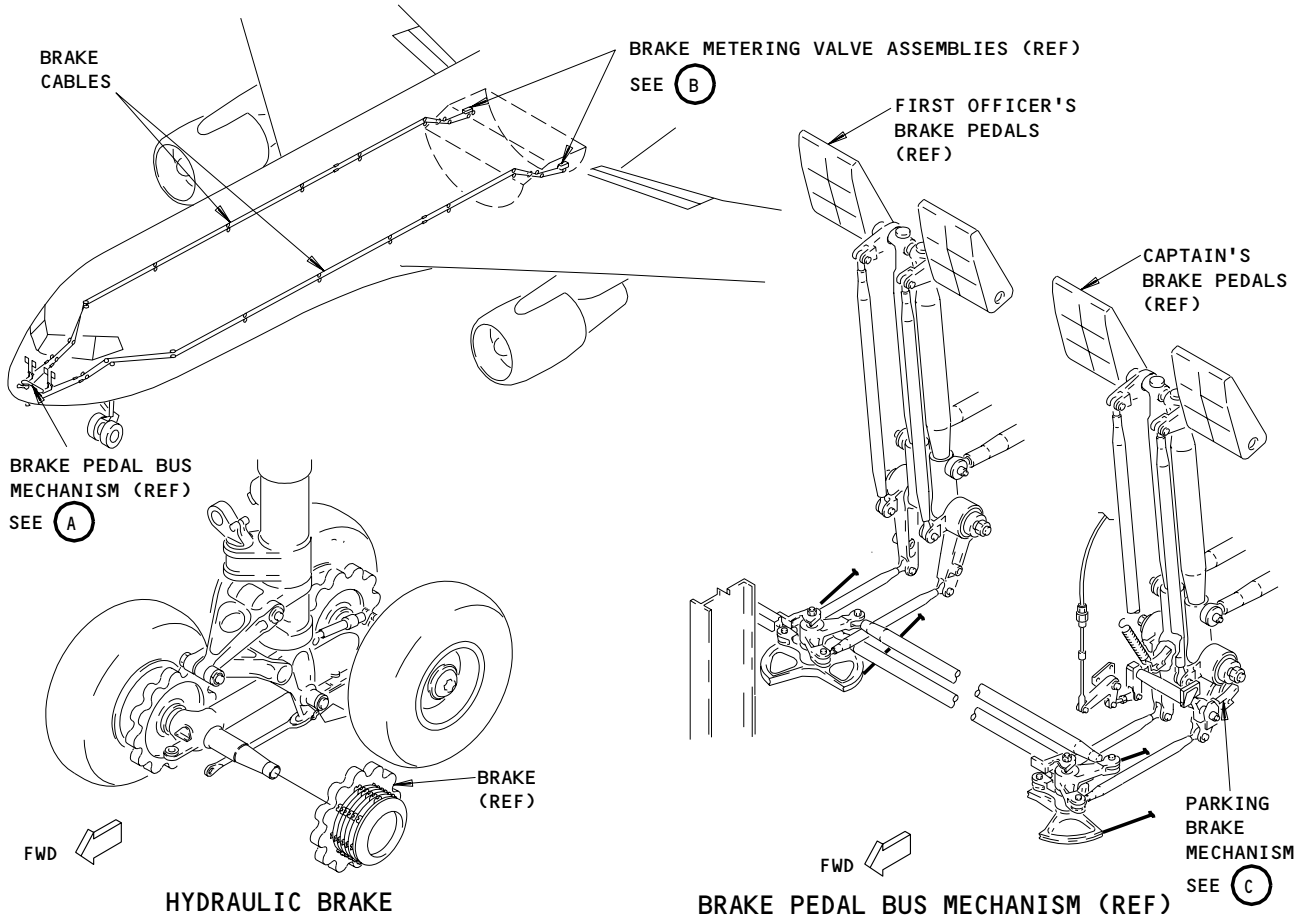
(d) Remove electrical power if no longer required (Ref 24-22-00/201).

PARKING BRAKE SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
ACCUMULATOR - PARKING BRAKE	2	1	RIGHT MAIN LANDING GEAR WHEEL WELL	32-44-06
BRAKES - (REF 32-41-00, FIG. 101) HYDRAULIC				
CABLES - (REF 32-41-00, FIG. 101) BRAKE				
CHECK VALVE - (REF 32-41-00, FIG. 101) ACCUMULATOR ISOLATION				
CIRCUIT BREAKERS	3		FLIGHT COMPARTMENT, P6, P11	
BRAKE PRESS., C1180		1	11U22	*
LANDING GEAR PARKING BRAKE VLV, C1179		1	6F4	*
GAGE - ACCUMULATOR PRESSURE	2	1	RIGHT MAIN LANDING GEAR WHEEL WELL	32-44-00
GAGE - (REF 32-41-00, FIG. 101) BRAKE PRESSURE, N10				
HANDLE/CABLE - PARKING BRAKE	3	1	FLIGHT COMPARTMENT, P10 AND 113AL, FORWARD EQUIPMENT CENTER	32-44-01
LIGHT - PARK BRAKE INDICATION, L592	3	1	FLIGHT COMPARTMENT, P10	*
MECHANISM - PARKING BRAKE	1	1	113AL, FORWARD EQUIPMENT CENTER, BRAKE PEDAL BUS MECHANISM	32-44-02
MODULE - (REF 32-41-00, FIG. 101) (NORMAL/ALTERNATE) METERING VALVE				
OVERRIDE LEVER - MANUAL	1	1	RIGHT MAIN LANDING GEAR WHEEL WELL	32-44-00
PEDALS - (REF 32-41-00, FIG. 101) BRAKE, CAPTAIN'S AND FIRST OFFICER'S		4		
RELAY - (REF 31-01-36, FIG. 101) CLOSE SENSE, K419		1	119AL, MAIN EQUIPMENT CENTER, P36	*
SWITCH - PARKING BRAKE, S459	1	1	113AL, FORWARD EQUIPMENT CENTER	32-44-08
TRANSDUCER - (REF 32-41-00, FIG. 101) BRAKE PRESSURE				
VALVE - (REF 32-41-00, FIG. 101) ACCUMULATOR ISOLATION				
VALVE AND MOTOR - PARKING BRAKE, V41	2	1	RIGHT MAIN LANDING GEAR WHEEL WELL	32-44-04
VALVE - ACCUMULATOR CHARGING	2	1	RIGHT MAIN LANDING GEAR WHEEL WELL	32-44-07

* SEE THE WDM EQUIPMENT LIST

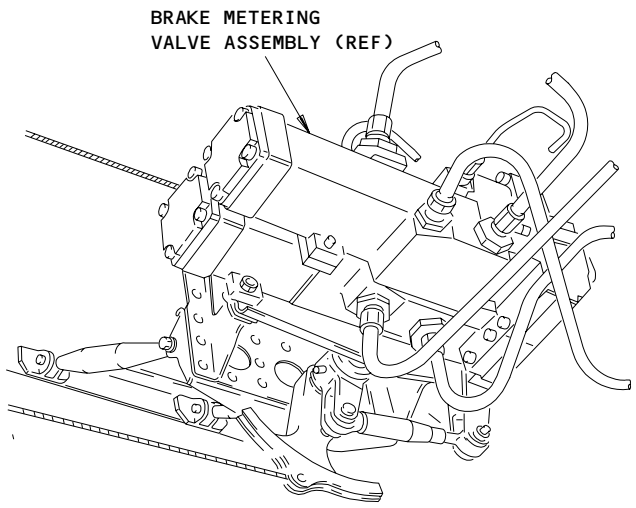
Parking Brake System - Component Index
Figure 101



HYDRAULIC BRAKE

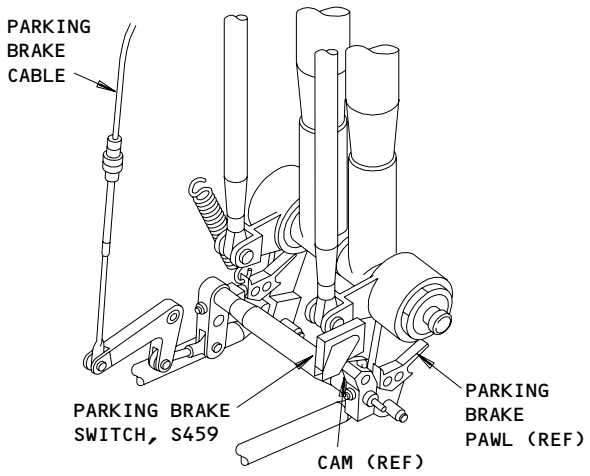
BRAKE PEDAL BUS MECHANISM (REF)

A



BRAKE METERING VALVE ASSEMBLY (REF)

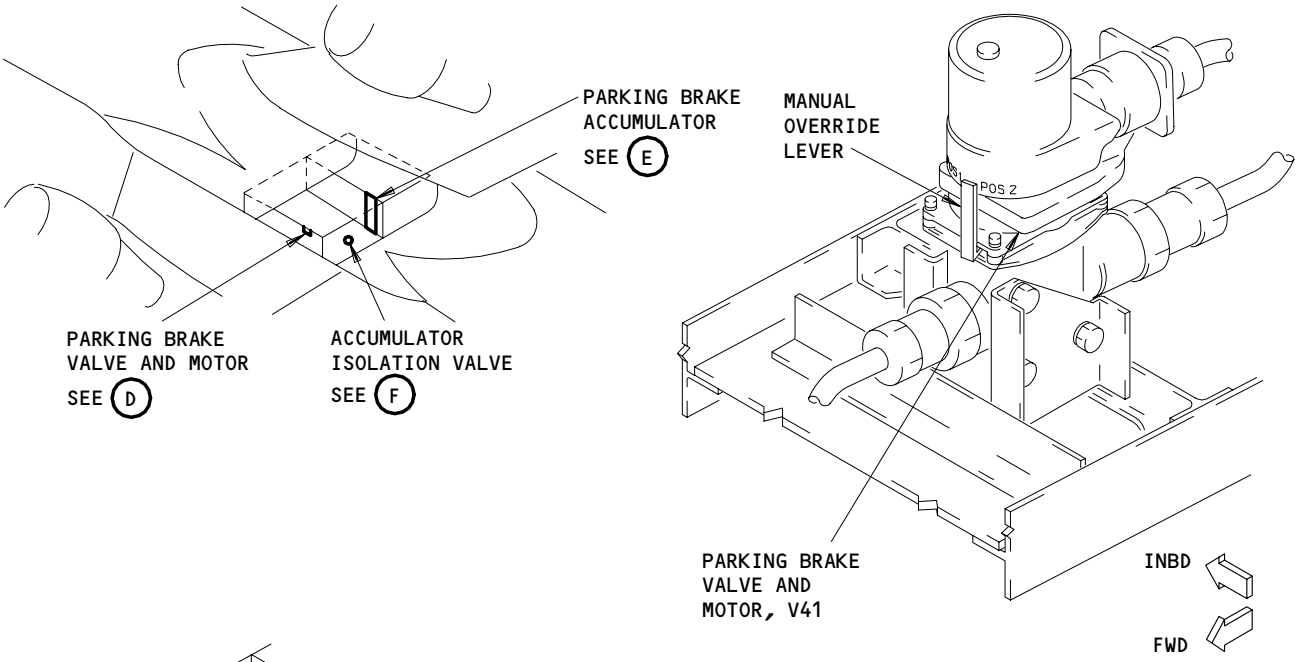
B



PARKING BRAKE MECHANISM

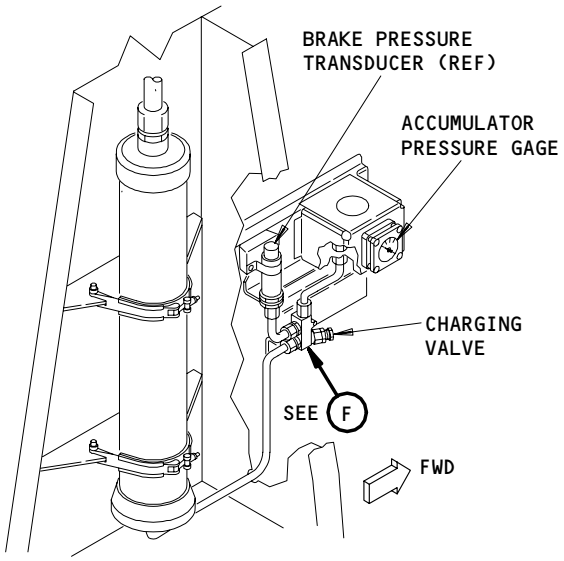
C

Parking Brake System – Component Location
Figure 102 (Sheet 1)



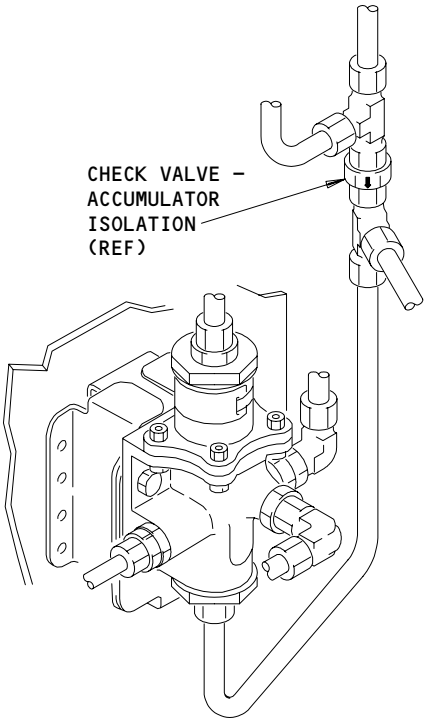
PARKING BRAKE VALVE AND MOTOR

D



PARKING BRAKE ACCUMULATOR

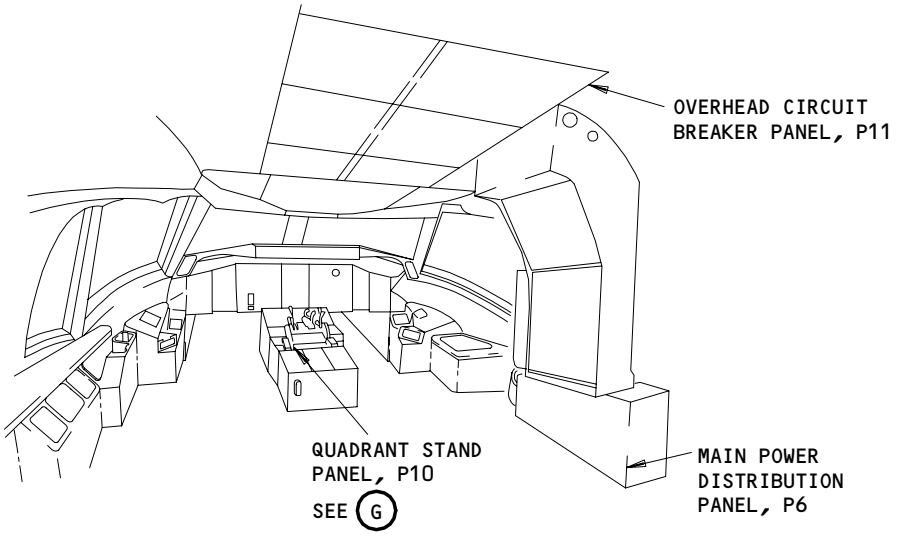
E



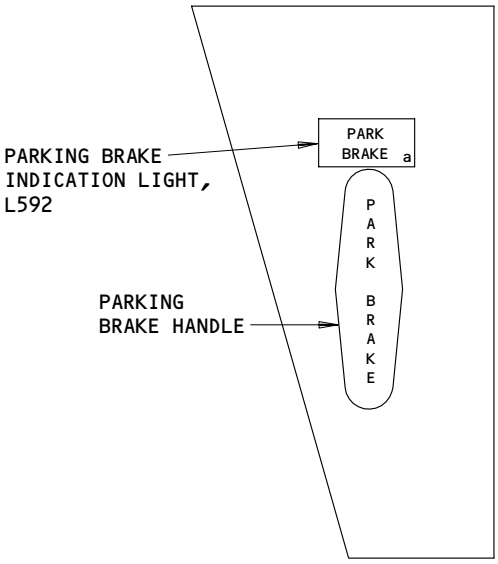
ACCUMULATOR ISOLATION VALVE (REF)
(RIGHT WHEEL WELL)

F

Parking Brake System – Component Location
Figure 102 (Sheet 2)



FLIGHT COMPARTMENT



QUADRANT STAND PANEL, P10

G

Parking Brake System – Component Location
Figure 102 (Sheet 3)

PARKING BRAKE SYSTEM - ADJUSTMENT/TEST

1. General
   A. This procedure contains two tasks. The first task adjusts the parking brake system. The second task is a test for the parking brake system.
   B. The sequence used to remove or add pressure to the hydraulic system causes the hydraulic fluid to move between the systems. To keep the movement of the hydraulic fluid to a minimum, do the steps that follow:
      (1) To pressurize the hydraulic system, pressurize the right system before you pressurize the center and left system.
      (2) To remove the pressure from the hydraulic system, remove the pressure from the center and left system before the right system.

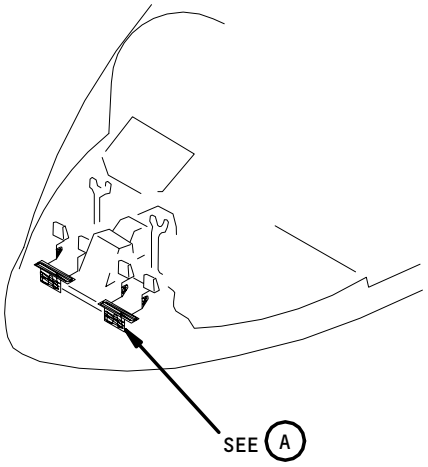
TASK 32-44-00-825-002

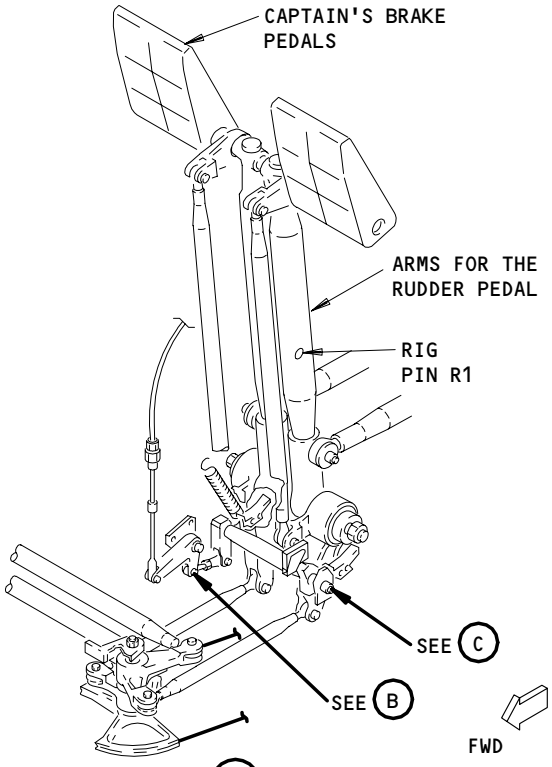
2. Adjustment of the Parking Brake System
   A. Equipment
      (1) Rig pins from Set A20004-XX (AMM 20-10-24/201):
         (a) R1 - P/N A20004-25
      (2) Ohmmeter
   B. References
      (1) AMM 32-44-02/401, Parking Brake Mechanism
   C. Access
      (1) Location Zones
         113/114 Area Forward of the Nose Landing Gear Wheel Well
         211/212 Control Cabin

      (2) Access Panel
         113AL Forward Equipment Bay

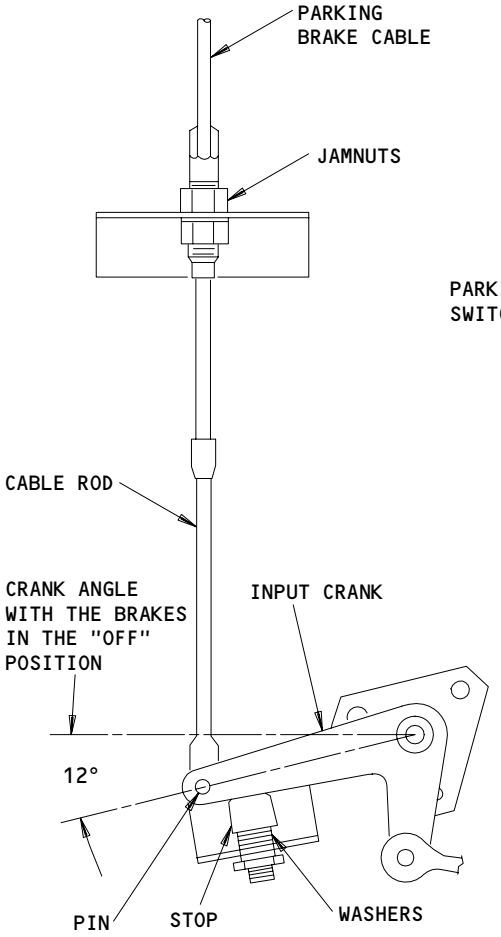
   D. Prepare to Adjust the Parking Brake System (Fig. 501, 502)

      S 495-003
      (1) Install the rig pin, R1, through the two arms of the rudder pedal and the structure (Detail A).
         (a) Turn the adjustment crank for the rudder pedal, if it is necessary, to align the arm holes with the structure holes.

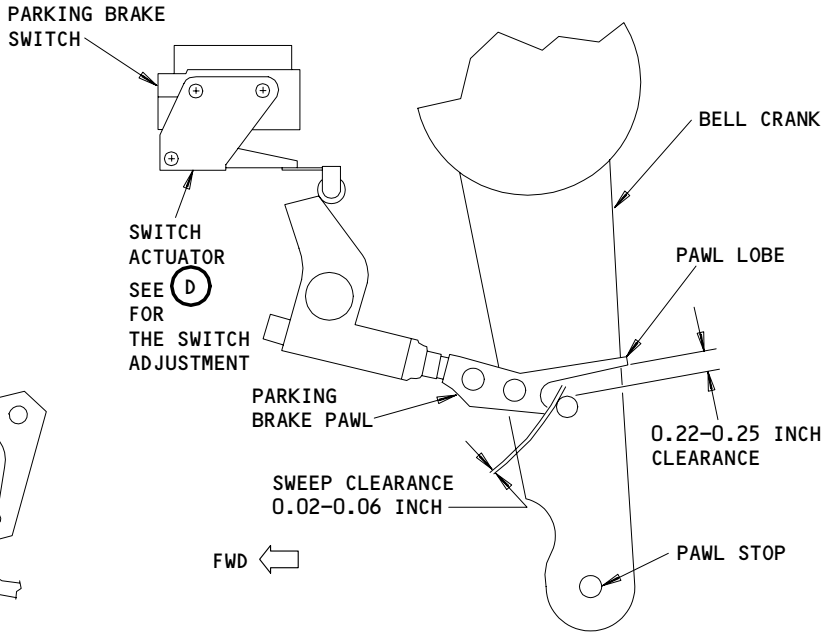




A



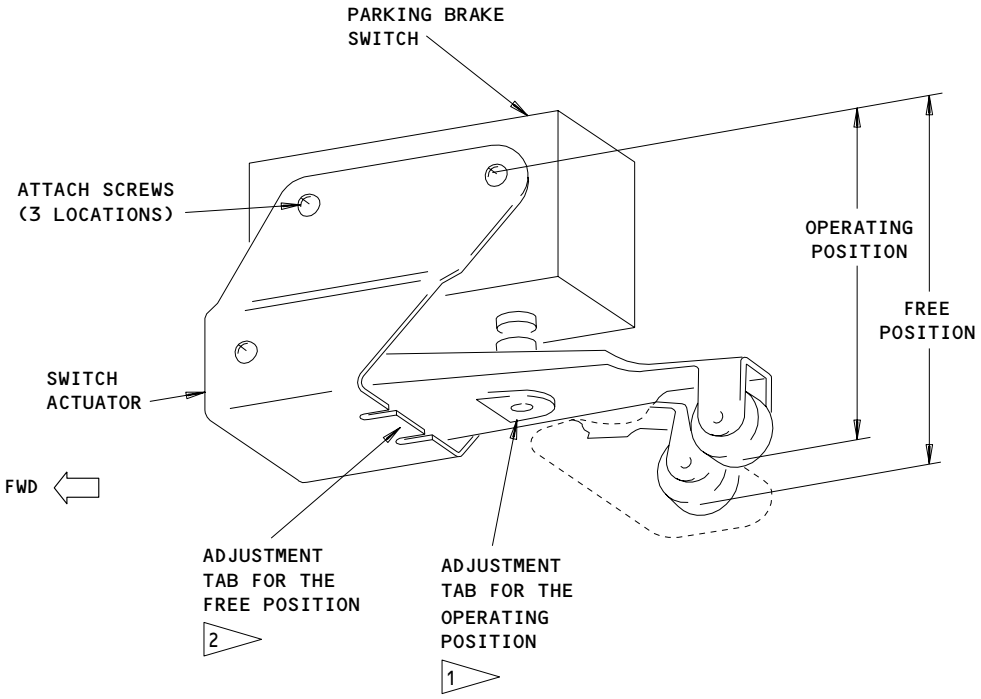
B



THE BELL CRANK IS SHOWN IN THE BRAKE "ON" POSITION. THE PAWL IS NOT ENGAGED IN THE STOP

C

Adjustment of the Parking Brake System
Figure 501 (Sheet 1)



ADJUSTMENT FOR THE SWITCH ACTUATOR
(THE SWITCH AND ACTUATOR ARE SHOWN
IN THE INSTALLED POSITION)
D

1 BEND THE TAB AWAY FROM THE PARKING BRAKE SWITCH TO DECREASE THE DIMENSION OF THE OPERATING POSITION

2 BEND THE TAB TO THE PARKING BRAKE SWITCH TO DECREASE THE DIMENSION OF THE FREE POSITION

Adjustment of the Parking Brake System
Figure 501 (Sheet 2)

E. Adjust the Parking Brake System

S 845-004
(1) Push the two brake pedals fully, and hold in this position.

S 825-001
(2) Adjust the pawl of the parking brake.
  (a) Adjust the pawls of the parking brake to get the sweep clearance shown in Detail C.
  (b) Lift the lever for the parking brake, if it is necessary, until the pawl is adjacent to the pawl stop.
  (c) Make sure the pawl is aligned to engage only the roller on the pawl stop.
    1) If the pawl makes an overlap with the washers and the collar, make sure the mechanism for the parking brake is installed correctly (AMM 32-44-02/401).

S 835-005
(3) Adjust the switch for the parking brake.(AMM 32-44-08/201)

S 835-006
(4) Adjust the stop for the input crank (Detail B).
  (a) Add or remove washers below the stop until the crank is 12 degrees below the horizontal and is against the stop.

    NOTE: The horizontal is a line parallel with the floor beams.

S 835-007
(5) Adjust the cable of the parking brake.
  (a) Disconnect the cable rod of the parking brake from the input crank.
  (b) Adjust the jamnuts on the cable rod until the pin can be installed through the input crank and the cable rod.
    1) The handle for the parking brake must be against the control stand.
    2) The input crank must be against the stop.

TASK 32-44-00-735-008

3. Parking Brake System Test

A. Equipment

(1) 0 to 4000 psi range pressure gage - compatible with BMS 3-11 hydraulic fluid

B. References

(1) AMM 12-15-04/301, Parking Brake Accumulator
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(4) AMM 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-00-20/201, Landing Gear Downlocks
(6) FIM 32-44-00/101, Parking Brake System

C. Access

(1) Location Zones

119	Main Equipment Center (Left and Right)
144	Right MLG wheel well
211/212	Control Cabin
731/741	Main Landing Gear

(2) Access Panels

119AL	Main Equipment Center
742	Right Main Gear and Wheel Well Components

D. Prepare to Do the Test for the Parking Brake System

S 865-009

(1) Supply electrical power (AMM 24-22-00/201)

S 495-010

(2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 495-050

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 425-081

(4) If necessary, do these steps to install a pressure gage at each of the brake units of the main landing gear (8 locations):
(a) Make sure that the parking brake is released.
(b) Make sure that the brakes are not operated manually.

WARNING: THE BRAKES MUST NOT BE IN OPERATION WHEN YOU CONNECT OR DISCONNECT THE TWO PARTS OF A HYDRAULIC BRAKE DISCONNECT. IF YOU TRY TO CONNECT OR DISCONNECT A HYDRAULIC BRAKE DISCONNECT WITH THE BRAKE IN OPERATION, HYDRAULIC FLUID UNDER HIGH PRESSURE CAN RELEASE. THIS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(c) To remove all pressure from the brake unit, disconnect the hose half of the hydraulic brake disconnect from the brake half.
(d) Remove the brake bleeder assembly from the brake unit housing.

NOTE: Each brake bleeder assembly has a bleeder valve installed in an adapter. The adapter is installed in the brake unit housing.

CAUTION: BE CAREFUL DURING INSTALLATION OF THE PRESSURE GAGE IN THE PORT ON THE BRAKE UNIT HOUSING. DO NOT INSTALL THE PRESSURE GAGE WITH MORE THAN 110 POUND-INCHES OF TORQUE. IF YOU USE TOO MUCH TORQUE DURING INSTALLATION OF A PRESSURE GAGE, YOU CAN DAMAGE THE BRAKE UNIT HOUSING.

(e) Install a pressure gage in the port on the brake unit housing.
(f) Connect the hose half of the hydraulic brake disconnect to the brake half.

S 845-012

(5) Make sure the accumulator for the parking brake is correctly charged (AMM 12-15-04/301).
(a) Use the instructions on the placard in the wheel well for the right main landing gear (AMM 12-15-04/301).

S 865-013

(6) Make sure this circuit breaker on the main power distribution panel, P6, is closed:
(a) 6F4, PARKING BRAKE VLV

E. Do the test that follows to check parking brake operation when you must dispatch the airplane and time is not available to do the more complete test in par. F.

NOTE: This is a thirty minute test that can be used prior to dispatch of the airplane to check parking brake capability for emergency purposes. It does not check for extended parking brake hold times.

S 495-058
(1) Chock the wheels.

S 865-059
(2) Release the parking brake .

S 865-060
(3) Verify personnel are clear of all tail flight control surfaces, then place the R TAIL FLT CONTROL SHUTOFF valve to the ON (valve open) position.

S 865-061
(4) Pressurize the right hydraulic system.

S 735-062
(5) Make sure the brake pressure is not less than 2800 psi.

S 735-063
(6) Leave the right hydraulic system powered for 10 minutes to stabilize accumulator temperature.

S 975-064
(7) Record the brake pressure.

S 865-065
(8) Remove power from the right hydraulic system.

S 735-066
(9) After 10 minutes with the parking brake released, the brake pressure must not have dropped more than 400 psid.

S 865-067
(10) Pressurize the right hydraulic system.

S 735-068
(11) Set the parking brake.

S 865-069
(12) Remove power from the right hydraulic system.

S 975-070
(13) Record the brake pressure.

S 735-071
(14) After 10 minutes with the parking brake set, the brake pressure must not have dropped more than 1500 psid.

NOTE: Brake pressure must drop rapidly by 1000 psid as the antiskid return line surge accumulators are filled.

S 735-072
(15) If the parking brake pressure drops faster than permitted in either test, do the applicable fault isolation procedure in the FIM 32-44-00 .

S 735-073
(16) Do the test that follows to check parking brake system operation and parking brake hold time at the next convenient maintenance opportunity.

F. Do the test that follows to check parking brake system operation and parking brake hold time.

S 845-045

CAUTION: DO NOT USE THE HANDLE FOR THE PARKING BRAKE WHEN YOU RELEASE THE PARKING BRAKE. IF YOU PUSH OR TWIST THE HANDLE, YOU CAN CAUSE DAMAGE TO THE CABLE LINKAGE OF THE PARKING BRAKE.

(1) Fully push and release the Captain's or the First Officer's brake pedals to release the parking brake.

S 865-015

(2) Supply power to the right system hydraulic (AMM 29-11-00/201).

S 845-016

CAUTION: DO NOT TWIST THE HANDLE OF THE PARKING BRAKE WHEN YOU SET THE PARKING BRAKE. IF YOU TWIST THE HANDLE, YOU CAN CAUSE DAMAGE TO THE CABLE OR LINKAGE OF THE PARKING BRAKE.

(3) Push the Captain's right brake pedal, and pull on the handle for the parking brake.
   (a) Release the brake pedals.
   (b) Do these steps for the Captain's left brake pedal.

S 845-017

(4) Push the two Captain's or First Officer's brake pedals fully.

S 865-055

(5) Pull the handle for the parking brake.

S 865-056

(6) Release the brake pedals.

S 865-057

(7) Make sure the parking brakes are set.

NOTE: The two brake pedals will stay in and the PARK BRAKE indicator light on the P10 panel will come on.

S 845-022
(8) Make sure the override lever for the parking brake valve is at POSITION 2, the closed position.

S 715-075
(9) Conduct the antiskid system release test to fill the surge accumulators using the Antiskid/Autobrake Control Unit (M102) located on the E1-1 shelf in the Main E-E center.
(a) Make sure the Antiskid/Autobrake Control Unit is powered (C/B's 11U18, 11C31, 11C32, 11U27, 11U12, 11U21 pushed in).
(b) Move the BRAKE TEST switch on the front of the antiskid/autobrake control unit to the "1" position.
(c) Press and hold the ENABLE/VERIFY button on the control unit.
(d) Press and hold the VERIFY button on the control unit.
(e) Release both the ENABLE/VERIFY and VERIFY buttons.
(f) Pause for 3 to 4 seconds to allow the No. 1 brake pressure to be released in response to pressing the verify button.
(g) Repeat the brake release test (steps c through f) 10 times or until the surge accumulators are full.
(h) Move the BRAKE TEST switch back to the normal position.

S 735-065
(10) Leave the right hydraulic system powered for 10 minutes.

S 865-066
(11) Remove power from the right hydraulic system.

S 735-067
(12) Make sure that the brake pressure is not less than 2800 psig.

S 975-068
(13) Record the brake pressure.

S 735-069
(14) Do one of the following brake pressure tests that follow:

NOTE: Normally, passing any of these tests will indicate parking capability for at least 8 hours. The longer test times give a higher level of confidence should the leakage characteristics not be normal.

(a) After 10 minutes, the pressure at the brake must not have dropped more than 125 psi.

(b) After 30 minutes, the pressure at the brake must not have dropped more than 300 psi.
(c) After 60 minutes, the pressure at the brake must not have dropped more than 540 psi.
(d) After 120 minutes, the pressure at the brake must not have dropped more than 840 psi.

S 735-070
(15) If the parking brake pressure drops faster than permitted, do the applicable fault isolation procedure in the FIM.

S 845-026
(16) Release the brake pedals to disengage the parking brakes.

S 845-027
(17) Make sure the handle for the parking brake goes to the off position.

S 845-028
(18) Make sure the PARK BRAKE indicator light on the P10 panel goes off.

G. Put the Airplane Back to Its Usual Condition

S 025-088
(1) Do these steps at each brake unit to remove the pressure gage and to install a brake bleeder assembly (8 locations)
(a) Remove the pressure gage from the brake unit housing.
(b) Do these steps to install a brake bleeder assembly on the brake unit housing:

NOTE: Each brake bleeder assembly has a bleeder valve installed in an adapter. The adapter is installed in the brake unit housing.

CAUTION: TIGHTEN THE ADAPTER TO 150-190 POUND INCHES. IF YOU TIGHTEN THE ADAPTER TO MORE THAN 190 POUND-INCHES, YOU CAN DAMAGE THE ADAPTER OR THE BRAKE UNIT HOUSING.

(c) Tighten the adapter to 150-190 pound-inches.

NOTE: The specified torque values are for installation of the adapter in the brake unit housing. The allowable torque range for the bleeder valve, which you do not operate in this procedure, is 40-80 pound-inches.

S 865-082
(2) Connect the hydraulic line to the brakes at the quick-disconnect fittings.

S 865-083
(3) Pressurize the hydraulic systems and reservoirs (AMM 29-11-00/201).

S 865-085
(4) Set the parking brake.

S 865-086
(5) Make sure there are no hydraulic leaks.

S 025-089
(6) Remove the power from the hydraulic system if it is not necessary. (AMM 29-11-00/201).

S 095-051

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(7) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

S 865-044
(8) Remove the electrical power if it is not necessary (AMM 24-22-00/201).

PARKING BRAKE HANDLE/CABLE - REMOVAL/INSTALLATION

1. General
   A. This procedure has these tasks:
      (1) Removes the handle and cable for the parking brake
      (2) Installs the handle and cable for the parking brake

   TASK 32-44-01-004-001

2. Remove the Handle and Cable for the Parking Brake (Fig. 401)
   A. Access
      (1) Location Zones
          113/114 Area Forward of the Wheel Well
          211/212 Control Cabin

      (2) Access Panels
          113AL Forward Equipment Bay

   B. Prepare to Remove the Handle and Cable

      S 864-002

      WARNING: REMOVE ELECTRICAL POWER FROM THE FLIGHT COMPARTMENT SEAT. ACCIDENTAL ELECTRICAL OPERATION OF THE FLIGHT COMPARTMENT SEAT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (1) Open these circuit breakers on the main power distribution panel, P6, and attach DO-NOT-CLOSE tags
          (a) 6H15, CAPT SEAT
          (b) 6J21, F/O SEAT

   C. Remove the Handle and Cable

      S 014-003
      (1) Remove the left side panel of the quadrant stand, P10, to get access to the cable assembly for the parking brake (Detail A).

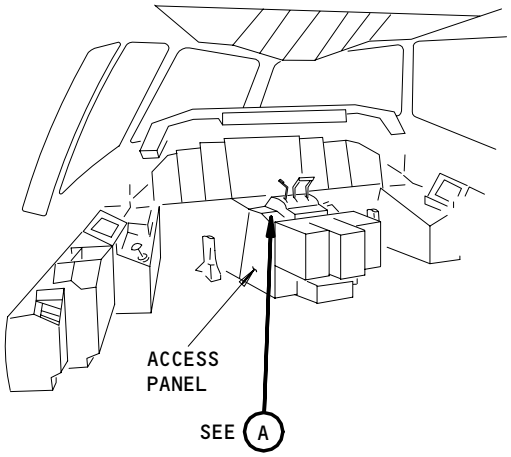
   D. Remove the three cable retention clamps on the inner side of the quadrant stand (Detail B).

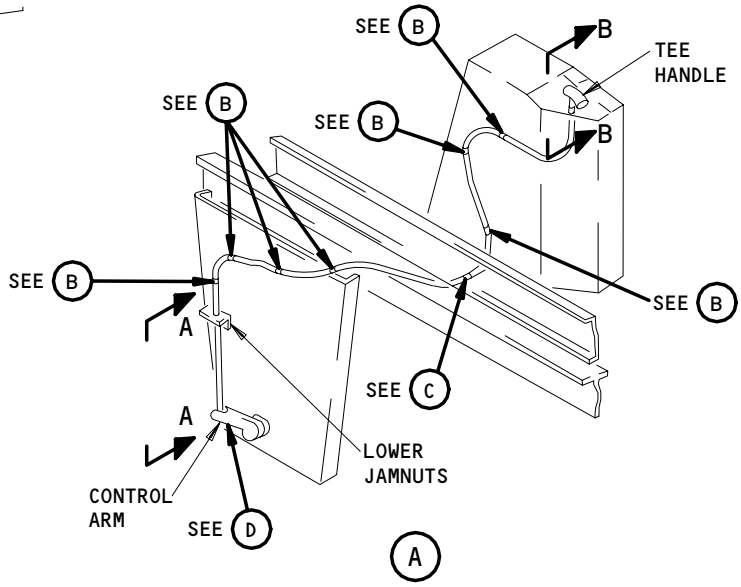
      S 034-004
      (1) Loosen the two set screws to remove the handle of the parking brake.

      S 014-005
      (2) Remove the tee handle (View B-B).

      S 034-007
      (3) Remove the acorn nut which holds the end fitting of the cable to the quadrant stand.

      S 014-008
      (4) Get access to the lower end of the cable through the forward equipment bay door, 113AL.





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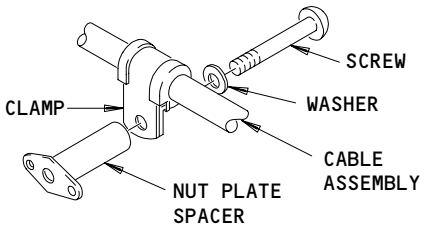
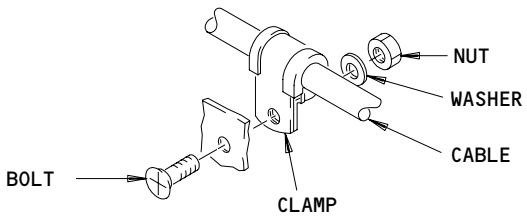


(EXAMPLE 7 LOCATIONS)

B



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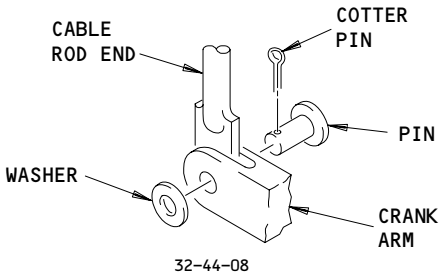
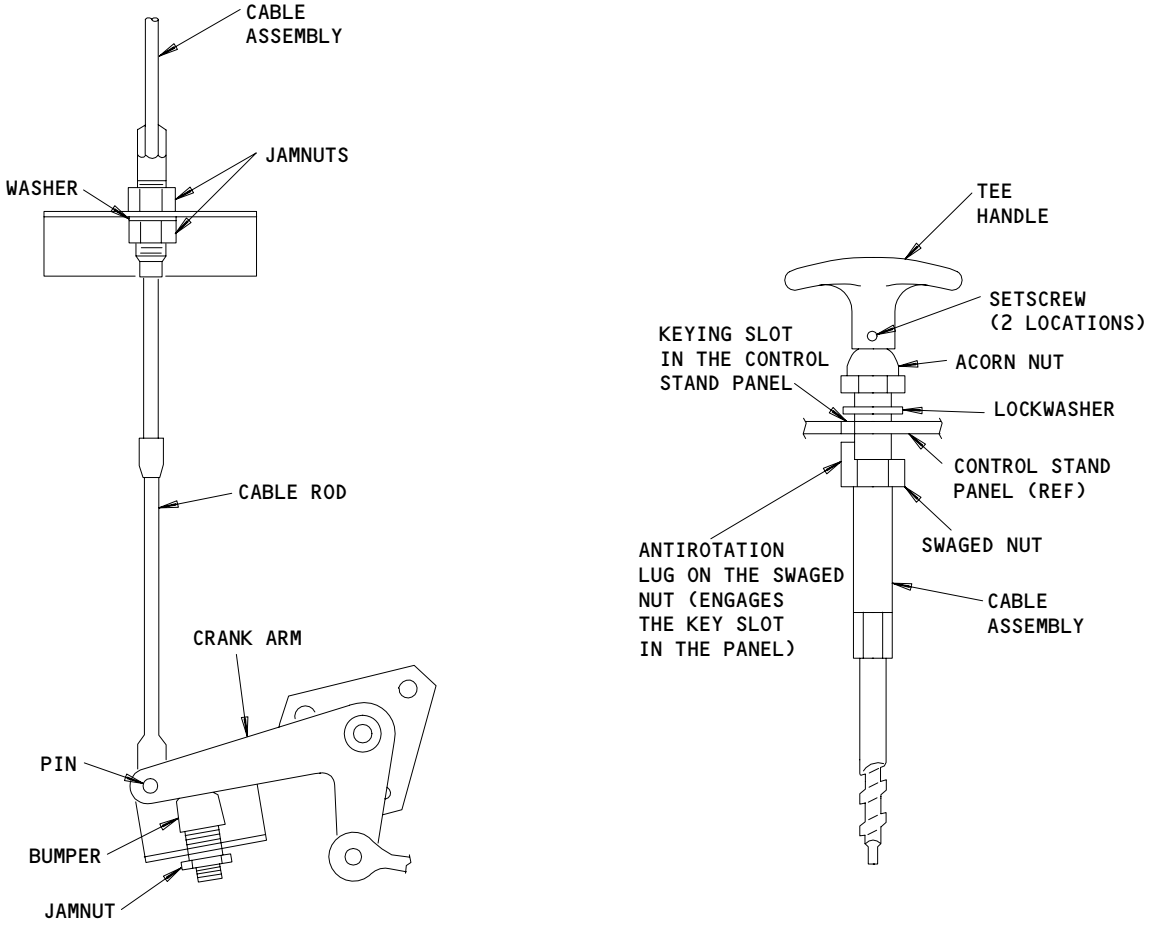


D

Installation of the Handle and Cable of the Parking Brake
Figure 401 (Sheet 1)



Installation of the Handle and Cable for the Parking Brake
Figure 401 (Sheet 2)

S 034-006
(5) Remove the pin which holds the end of the cable to the crank arm (Detail D).

S 034-009
(6) Remove the five clamps which hold the cable assembly to the support structure (Details B and C).

S 034-010
(7) Remove the jamnut which holds the cable to the bracket (View A-A).

S 024-011
(8) Remove the cable assembly.

TASK 32-44-01-404-012

3. Install the Handle and Cable for the Parking Brake (Fig. 401)

A. References
(1) AMM 24-22-00/201, Electrical Power - Control

B. Access
(1) Location Zones
113/114 Area Forward of the Wheel Well
211/212 Control Cabin
(2) Access Panels
13AL Forward Equipment Bay

C. Install the Handle and Cable.

S 014-013
(1) Remove the tee handle and the acorn nut at the top of the cable assembly.

S 034-014
(2) Remove the pin and the bottom jamnut from the lower end of the cable assembly.

S 434-015
(3) Attach the cable to the support structure.

S 434-016
(4) Install the clamps at eight locations (Details B and C).

S 864-017
(5) Push the top of the cable through the hole in the control stand panel.

S 434-018
(6) Engage the antirotation lug on the swaged nut with the key slot in the control stand panel.

S 434-019
(7) Install the acorn nut (View B-B).

S 864-021
(8) Put the tee handle in position at the top of the cable.

S 434-022
(9) Install the handle with the set screws.

S 824-023
(10) Adjust the lower part of the cable.

S 434-024
(11) Do the steps that follow to attach the cable to the mechanism for the parking brake (View A-A).

NOTE: The installation of the rudder pedal must be adjusted before you do the steps to adjust the cable.

(a) Put the tee handle against the control stand.
(b) Put the crank arm of the parking brake mechanism against the bumper stop (View A-A).
(c) Put the pin through the rod end of the cable and the crank arm.
1) Adjust the jamnuts at the lower end of the cable if it is necessary.
(d) Tighten the jamnuts.
(e) Install the pin with the cotter pin (Detail D).

D. Put the Airplane Back to Its Usual Condition

S 414-025
(1) Install the left side panel of the quadrant stand, P10.

S 864-026
(2) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the panel:
(a) 6H15, CAPT SEAT
(b) 6J21, F/O SEAT

S 714-027
(3) Do the steps that follow to do the test for the correct operation of the parking brake.
(a) Supply electrical power (AMM 24-22-00/201).
(b) Push the brake pedals fully forward.
(c) Hold the brake pedals in this position.
(d) Pull up on the tee handle of the parking brake to set the parking brake.
(e) Release the brake pedals.
(f) Make sure the conditions that follow occur:
1) The brake pedals stay in the fully forward position.

2) The tee handle for the parking brake stays in the extended position.
3) The light for the parking brake on the P10 panel comes on.

(g) Push the brake pedals fully forward to release the parking brake.

NOTE: It is not necessary to touch the handle of the parking brake to release the parking brake.

(h) Release the brake pedals.
(i) Make sure the conditions that follow occur:
1) The brake pedals go to the neutral position.
2) The tee handle of the parking brake retracts.
3) The light for the parking brake on the P10 panel goes off.

S 864-028

(4) Remove the electrical power (AMM 24-22-00/201).

PARKING BRAKE MECHANISM - REMOVAL/INSTALLATION

1. General
   A. This procedure has these tasks:
      (1) A removal of the mechanism for the parking brake
      (2) An installation of the mechanism for the parking brake

   TASK 32-44-02-004-032

2. Remove the Mechanism for the Parking Brake (Fig. 401)
   A. Access
      (1) Location Zones
          113/114 Area Forward of the Wheel Well
          211/212 Control Cabin

      (2) Access Panel
          113AL Forward Equipment Bay

   B. Prepare to Remove the Mechanism

      S 494-001
      (1) Put the chocks below the wheels.

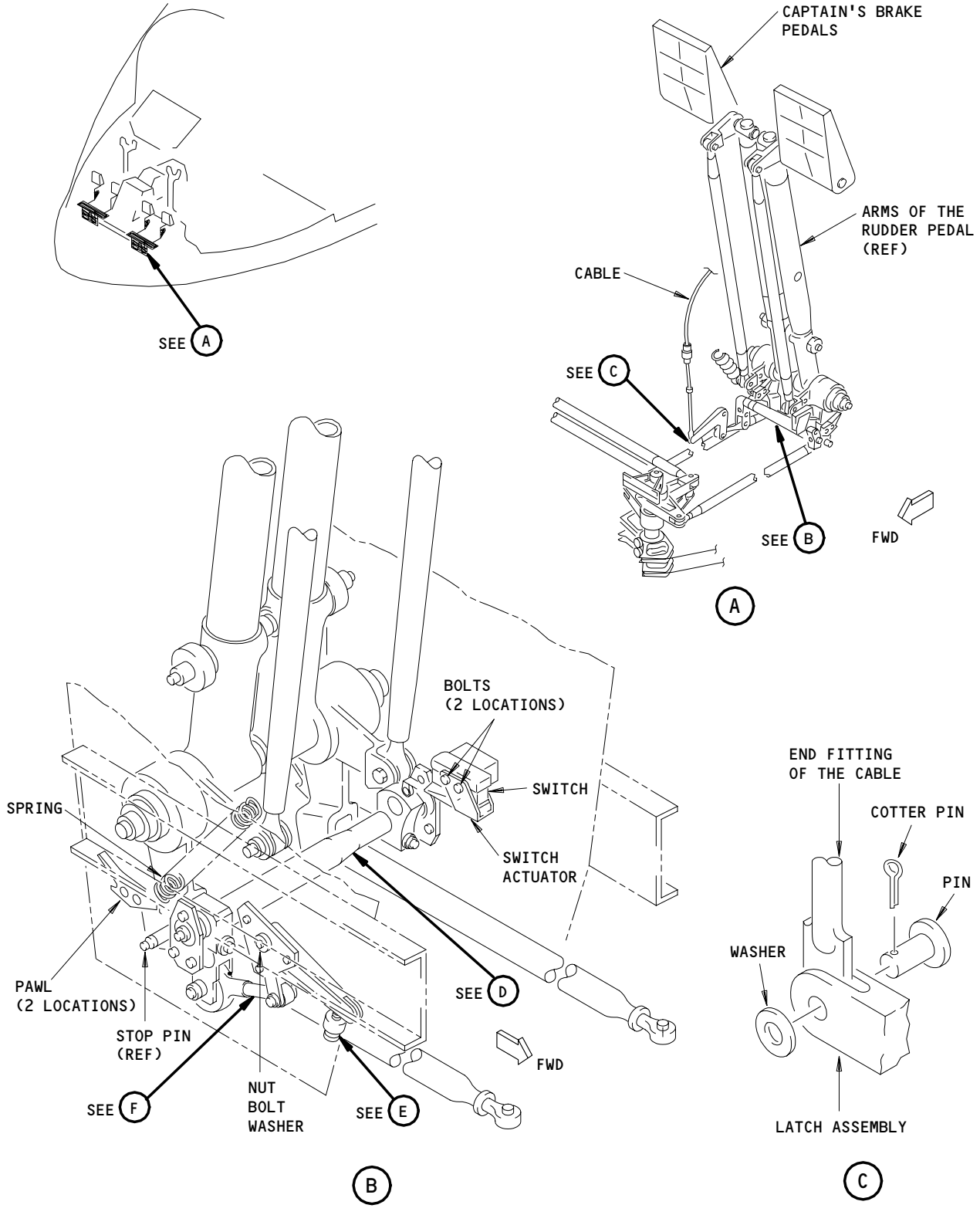
      S 844-002
      (2) Release the parking brake.

   C. Remove the Mechanism

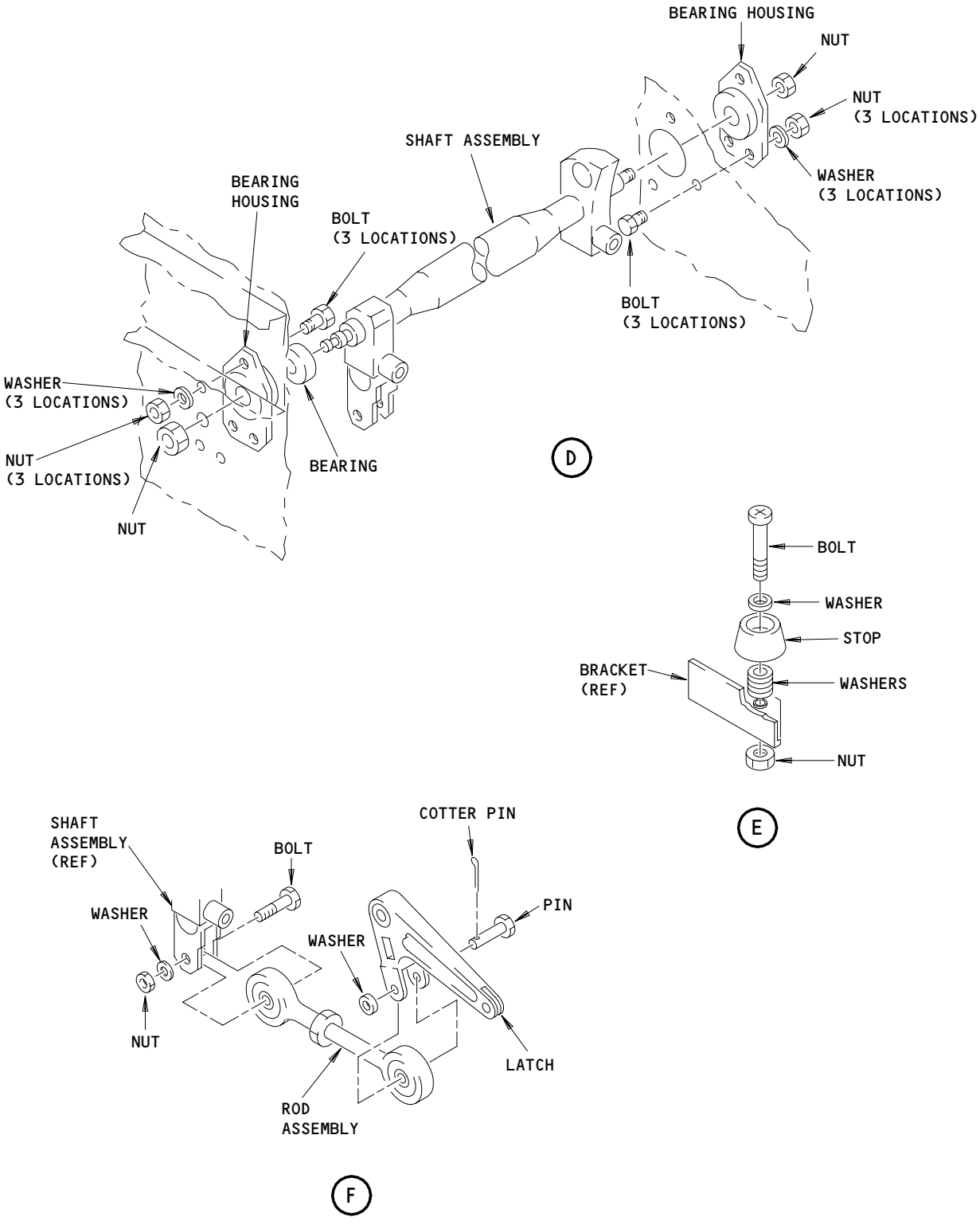
      S 034-003
      (1) Remove the fastener which holds the fitting for the lower cable to the latch assembly (Detail C).

      S 014-004
      (2) Remove the spring from the shaft assembly.

      S 864-034
      (3) Let the spring hang from the upper attach point (Detail B).



Installation of the Mechanism for the Parking Brake
Figure 401 (Sheet 1)



Installation of the Mechanism for the Parking Brake
Figure 401 (Sheet 2)

S 034-006
(4) Remove the fastener which holds the rod assembly to the shaft assembly (Detail F).

S 034-007
(5) Remove the nuts from the ends of the shaft assembly (Detail D). There is one nut on each side.

S 034-008
(6) Remove the fasteners which hold the bearing housings (2) to the support structure.

S 014-009
(7) Remove the shaft assembly and the bearing housing assemblies (2) (Detail D).

S 034-010
(8) Remove the fastener which holds the latch assembly to the support fitting.

S 014-011
(9) Remove the latch assembly and the rod assembly (Detail F).

S 034-012
(10) Remove the pin which holds the rod assembly to the latch assembly.

S 014-013
(11) Remove the switch assembly, if it is necessary (Detail B) (Ref 32-44-08).

S 014-014
(12) Remove the stop (Detail E).

TASK 32-44-02-404-015

3. Install the Mechanism for the Parking Brake (Fig. 401)
   A. References
      (1) AMM 32-44-00/501, Parking Brake Adjustment

(2) AMM 32-44-08/201, Parking Brake Switch

B. Access

(1) Location Zones

113/114 Area Forward of the Wheel Well
211/212 Control Cabin

(2) Access Panel

113AL Forward Equipment Bay

C. Install the Mechanism

S 414-016

(1) Install the parking brake switch, if removed (AMM 32-44-08/201). The switch actuator will be adjusted in a different step.

S 414-017

(2) Loosely install the stop (Detail E). The stop will be adjusted in a different step.

S 864-035

(3) Put the shaft assembly and the bearing assemblies (2) adjacent to the support structure.

S 434-036

(4) Install the fasteners which hold the housing assemblies to the support structure. There are three fasteners on each side.

S 434-033

(5) Tighten the fasteners.

S 434-019

(6) Install the nuts which hold the shaft assembly to the bearing housings. There is one nut on each side.

S 434-020

(7) Tighten the nuts sufficiently to make sure the bearings clamp up.

S 844-021

(8) Make sure the shaft assembly turns freely.

S 414-022

(9) Install the crank assembly with one fastener.

S 434-023

(10) Tighten the fastener (Detail F).

S 414-024

(11) Install the rod assembly between the latch fitting and the shaft assembly (Detail F).

S 434-025
(12) Tighten the nut at the forward end.

S 434-026
(13) Install the cotter pin in the aft end of the rod assembly.

S 414-027
(14) Connect the lower end fitting of the cable to the latch assembly (Detail C).

S 434-028
(15) Install the cotter pin.

D. Put the Airplane Back to Its Usual Condition

S 824-029
(1) Adjust the mechanism for the parking brake (AMM 32-44-00/501).

NOTE: This adjustment will set the position of the mechanism stop (Detail E).

S 864-037
(2) Set the parking brake.

S 094-031
(3) Remove the chocks.

PARKING BRAKE VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the valve for the parking brake. The second task installs the valve for the parking brake.

TASK 32-44-04-004-001

2. Remove the Valve for the Parking Brake (Fig. 401).
   A. Equipment
      (1) Main Gear Door Lock (Ref 32-00-15).
   B. References
      (1) 24-22-00/201, Electrical Power - Control
      (2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) 32-00-15/201, Landing Gear Door Locks
      (4) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          143/144 Main Landing Gear Wheel Well
          211/212 Control Cabin
   D. Prepare to Remove the Valve

S 494-002
(1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

S 494-003

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

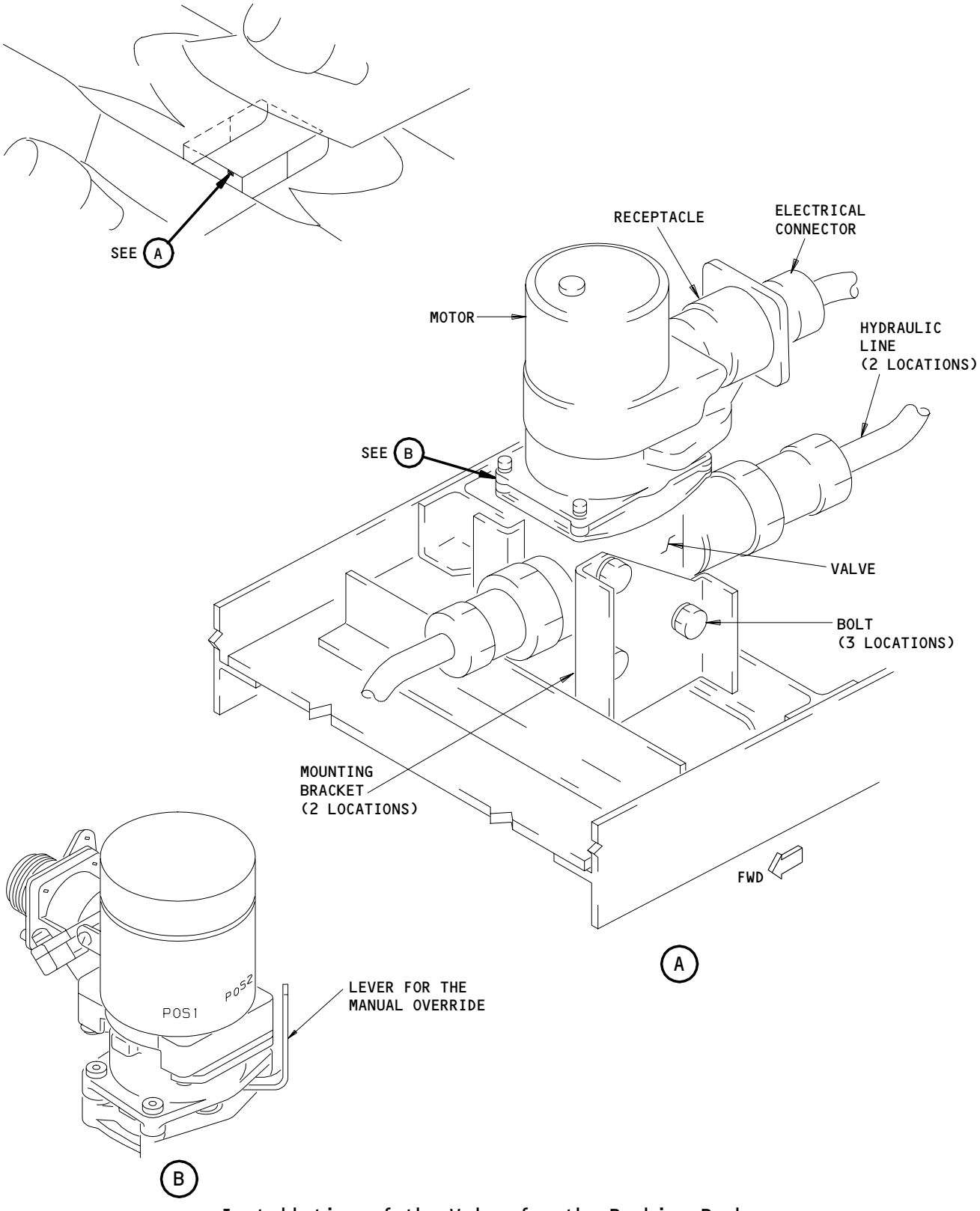
(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 864-005
(3) Remove the electrical power (Ref 24-22-00).

S 864-004
(4) Open this circuit breaker on the main power distribution panel, P6, and attach a DO-NOT-CLOSE tag:
(a) 6F4, PARKING BRAKE VLV

S 864-006
(5) Remove the pressure from the main hydraulic system (Ref 29-11-00).

S 494-007
(6) Put the chocks below the wheels of the main landing gear.



Installation of the Valve for the Parking Brake
Figure 401

S 864-008

(7) Make sure the lever for the manual override of the valve is in the open position (POS 1).

NOTE: The lever is in the wheel well for the main landing gear.

(a) Manually put the lever in the open position, if it is necessary.

S 864-009

CAUTION: DO NOT OPERATE THE HANDLE FOR THE PARKING BRAKE WHEN YOU RELEASE THE PARKING BRAKE. IF YOU TWIST THE HANDLE, YOU CAN CAUSE DAMAGE TO THE CABLE OR LINKAGE OF THE PARKING BRAKE.

(8) Release the parking brake.

S 864-010

(9) Push the Captain's brake pedals fully seven times to remove the pressure from the accumulator for the parking brake.

S 034-011

(10) Disconnect the electrical connector from the valve.
(a) Put a cap on the plug and the receptacle.

S 034-012

(11) Disconnect the two hydraulic lines from the valve.

S 864-013

(12) Discard the O-rings from the reducers.
(a) Put a cap on the lines.
(b) Put a plug in the openings.

S 034-014

(13) Remove the three bolts.
(a) Remove the valve for the parking brake.
(b) Remove the motor for the parking brake valve.

TASK 32-44-04-404-015

3. Install the Valve for the Parking Brake (Fig. 401)

A. Equipment
(1) Main Gear Door Lock (Ref 32-00-15).

B. Consumable Materials
(1) D00153 Fluid, Hydraulic - BMS 3-11

C. References
(1) 24-22-00/201, Electrical Power - Control
(2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) 32-00-15/201, Landing Gear Door Locks
(4) 32-44-00/501, Parking Brake System Test

D. Access
(1) Location Zones
143/144 Main Landing Gear Wheel Well
211/212 Control Cabin

E. Install the Valve

S 644-016
(1) Use hydraulic fluid to lightly lubricate the new O-rings and the valve reducers.

S 434-017
(2) Install the O-rings on the reducers.

S 864-018
(3) Put the valve in position between the mounting brackets.

NOTE: The electrical receptacle must face in the aft direction.

S 424-019
(4) Install the valve with the three bolts (Detail A).

S 434-020
(5) Connect the hydraulic lines to the valve.

S 434-021
(6) Install the electrical connector on the valve.

F. Put the Airplane Back to Its Usual Condition.

S 864-022
(1) Pressurize the right hydraulic system (Ref 29-11-00).

S 864-023
(2) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P6 panel:
(a) 6F4, PARKING BRAKE VLV

S 374-024
(3) Do the test of the parking brake system (Ref 32-44-00).

S 794-025
(4) Examine the valve for leaks.

S 094-026

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

S 864-027

(6) Remove the pressure from the right hydraulic system (Ref 29-11-00).

S 864-028

(7) Remove the electrical power if it is not necessary (Ref 24-22-00).

PARKING BRAKE ACCUMULATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the accumulator for the parking brake. The second task installs the accumulator for the parking brake.

TASK 32-44-06-004-001

2. Remove the Accumulator for the Parking Brake (Fig. 401).
   A. Equipment
      (1) Main Gear Door Locks - (AMM 32-00-15/201)
   B. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          144 Right Main Landing Gear Wheel Well

   D. Prepare to Remove the Accumulator.

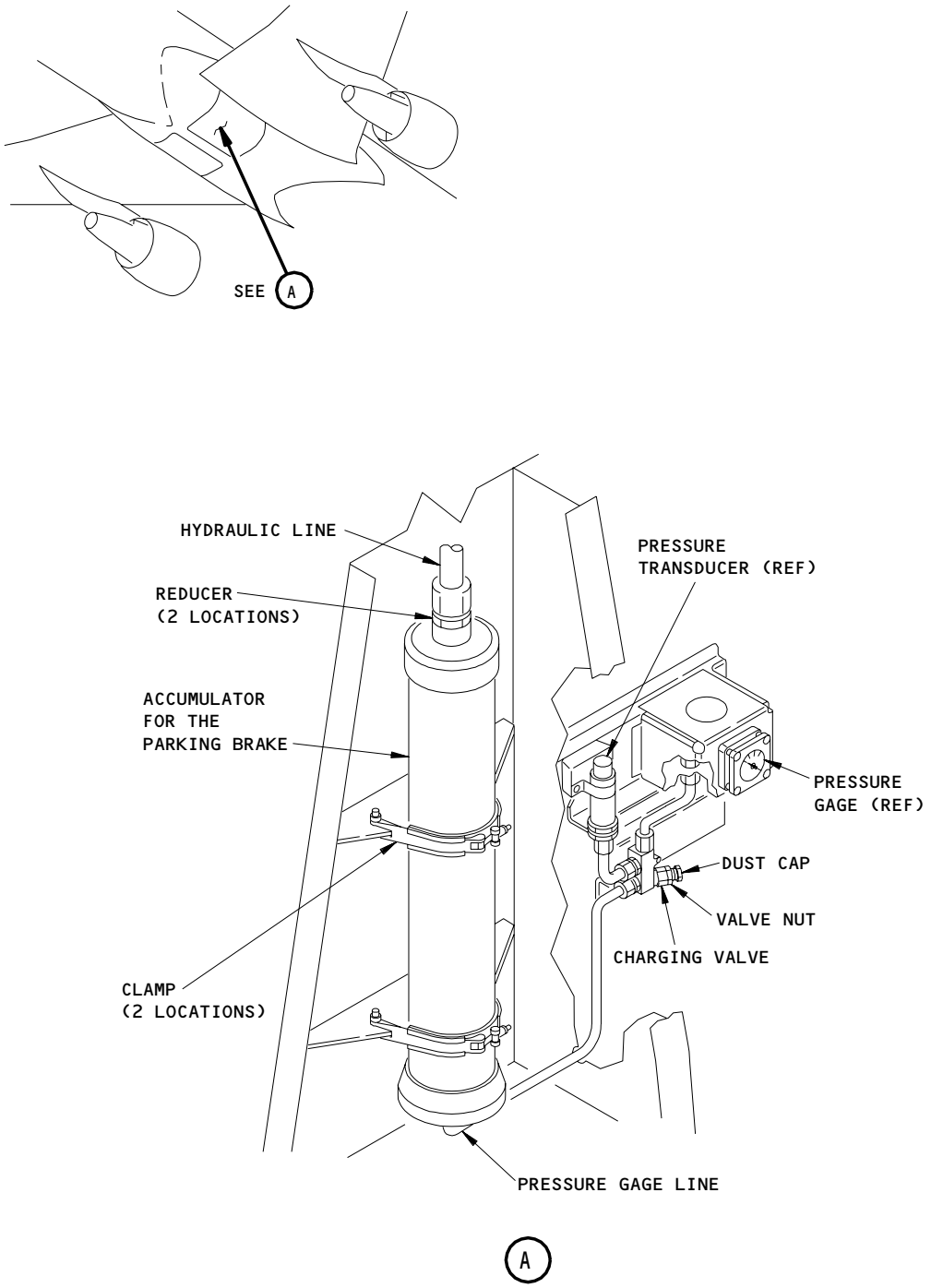
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-003

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

      S 494-004
      (3) Ensure wheels are properly chocked.



Parking Brake Accumulator Installation
Figure 401

S 844-005
(4) Release the parking brake.

S 864-006
(5) Remove the pressure from the right and center hydraulic systems and reservoirs (AMM 29-11-00/201).

E. Remove the Accumulator.

S 844-007
(1) Push the two brake pedals fully, a minimum of seven times, to remove the pressure from the accumulator.
(a) After you have applied the brakes seven times minimum, make sure that the brake pistons at each brake do not move as you apply and release the brakes.

S 034-008
(2) Remove the dust cap from the nitrogen charging valve of the accumulator.

S 034-009

WARNING: DO NOT LOOSEN THE VALVE BODY FROM THE CHARGING VALVE MANIFOLD. THE VALVE CAN BLOW OFF AND CAUSE INJURY TO PERSONS.

(3) Loosen the valve nut at the nitrogen charging valve to remove the pressure from the accumulator (Detail A).

S 034-010
(4) Disconnect the hydraulic line or fitting from the top of the accumulator.
(a) Put a cap on the line.
(b) Put a cap on the opening for the hydraulic accumulator.

S 034-011
(5) Disconnect the line to the charging valve manifold. The line is on the lower end of the accumulator.

S 034-012
(6) Loosen the nuts on the accumulator clamps.

S 034-013
(7) Open the accumulator clamps.

S 024-014
(8) Remove the accumulator.

TASK 32-44-06-404-015

3. Install the Accumulator for the Parking Brake (Fig. 401)

A. Equipment
(1) Main Gear Door Locks - (AMM 32-00-15/201)

B. Consumable Materials
(1) D00153 Fluid, Hydraulic - BMS 3-11

C. References
(1) AMM 10-11-01/201, Normal Parking
(2) AMM 12-15-04/301, Parking Brake Accumulator
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(4) AMM 32-00-15/201, Landing Gear Door Locks

D. Access
(1) Location Zones
144 Right Main Landing Gear Wheel Well

E. Install the Accumulator.

S 614-016
(1) Fill the accumulator with hydraulic fluid.
(a) Put a cap on the connection.

S 214-017
(2) Examine the support clamps for the accumulator.
(a) Replace the clamps if they are damaged.

S 424-018
(3) Install the accumulator.
(a) Make sure the hydraulic lines that connect to the top and bottom of the accumulator are aligned with the hydraulic fittings on the accumulator.
(b) Tighten the clamps.

S 434-019
(4) Connect the line to the bottom of the accumulator.

S 434-020
(5) Connect the hydraulic line to the top of the accumulator.

S 864-021
(6) Pressurize the accumulator at the nitrogen charging valve (AMM 12-15-04/301).

NOTE: The instructions to pressurize the accumulator are supplied on a placard found next to the pressure gage.

S 434-022
(7) Put the cap on the charging valve.

S 864-023
(8) Supply power to the right hydraulic system (AMM 29-11-00/201).

S 214-024
(9) Examine the connection between the hydraulic line and fitting at the top of the accumulator for leaks.

S 214-026
(10) Apply a soap solution to the connection at the charging line.
(a) Examine the connection for air bubbles.

S 214-025
(11) Examine the connection between the line for the charging valve manifold and the accumulator for leaks.

F. Do a Test for the Operation of the Hydraulic Brake.

S 844-027
(1) Push and release the brake pedals fully a minimum of seven times.

S 214-028
(2) Monitor the movement of the brake pistons.
(a) Make sure the brakes operate correctly.

G. Put the Airplane Back to Its Usual Condition.

S 864-030
(1) Set the parking brakes (AMM 10-11-01/201).

S 494-029

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

PARKING BRAKE CHARGING VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the charging valve for the parking brake. The second task installs the charging valve for the parking brake.

TASK 32-44-07-004-001

2. Remove the Charging Valve for the Parking Brake (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zone
          144 Right Main Landing Gear Wheel Well

   C. Equipment
      (1) Main Gear Door Locks (AMM 32-00-15/201)
   D. Prepare to Remove the Charging Valve

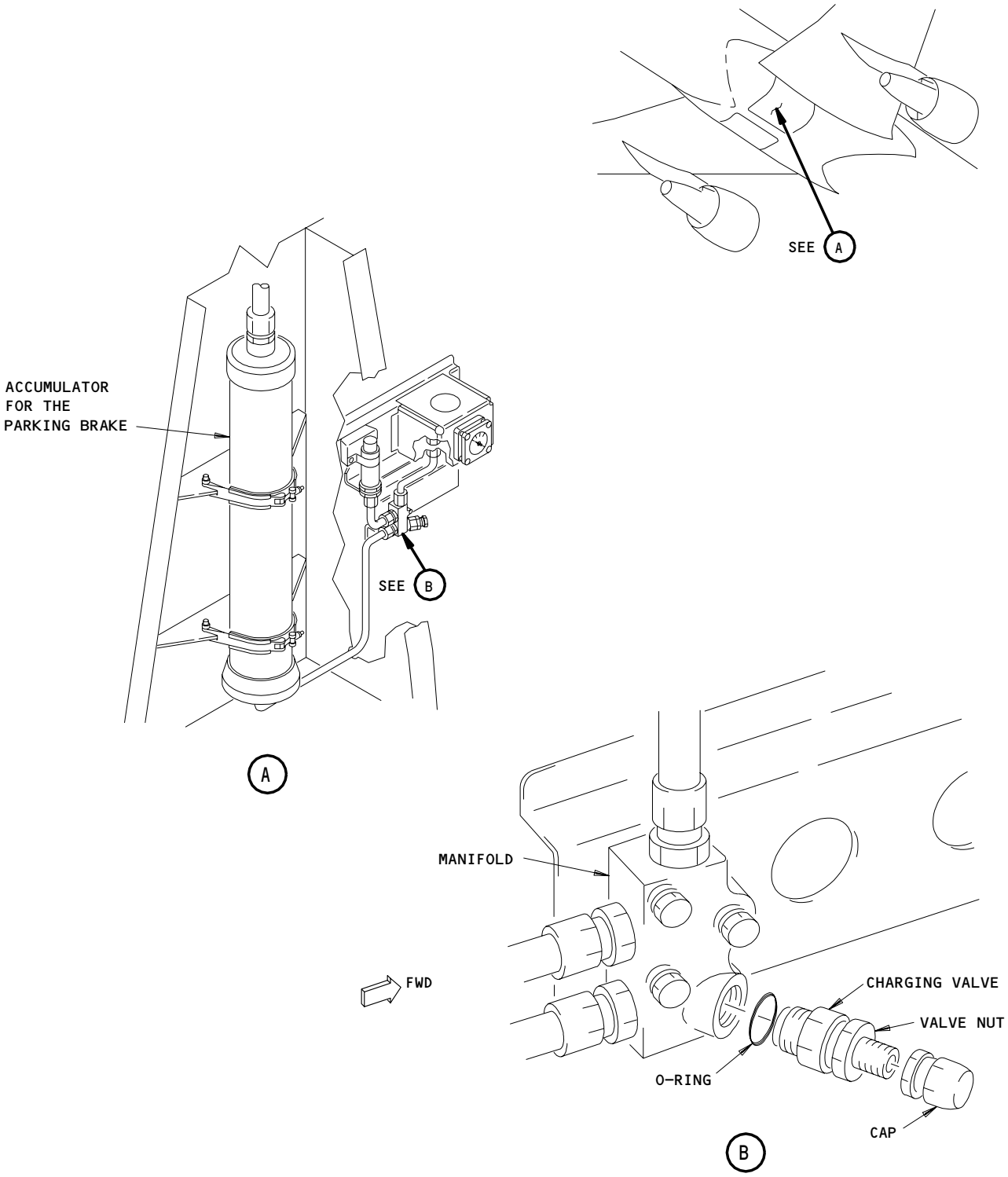
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-003

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

      S 494-004
      (3) Ensure wheels are properly chocked.



Installation of the Charging Valve for the Parking Brake
Figure 401

S 864-005
(4) Release the parking brake.

S 864-006
(5) Remove the pressure from the right and center hydraulic systems (AMM 29-11-00/201).

E. Remove the Charging Valve.

S 844-007
(1) Fully push the brake pedals seven times to remove the pressure from the hydraulic system for the brakes.

S 034-008
(2) Remove the cap from the nitrogen charging valve (Details A and B).

S 034-009

WARNING: DO NOT LOOSEN THE VALVE BODY FROM THE CHARGING VALVE MANIFOLD. THE VALVE CAN BLOW OFF AND CAN CAUSE INJURY TO PERSONS.

(3) Loosen the valve nut on the charging valve to remove the pressure from the accumulator (Detail B).

S 034-011
(4) Loosen the charging valve assembly from the manifold body.

S 024-012
(5) Remove the charging valve assembly from the manifold body.

S 034-013
(6) Discard the O-ring from the charging valve.

TASK 32-44-07-404-014

3. Install the Charging Valve for the Parking Brake (Fig. 401)
   A. Equipment
      (1) Main Gear Door Locks (AMM 32-00-15/201)
   B. Consumable Materials
      (1) B00054 Lubricant, Hydraulic System Fittings - MCS 352B
   C. References
      (1) AMM 10-11-01/201, Normal Parking
      (2) AMM 12-15-04/301, Parking Brake Accumulator
      (3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (4) AMM 32-00-15/201, Landing Gear Door Locks
   D. Access
      (1) Location Zones
          144 Right Main Landing Gear Wheel Well

E. Procedure

S 644-015
(1) Lightly lubricate the new O-ring and the threads of the charging valve (Detail B).

S 434-016
(2) Install the new O-ring on the valve.

S 424-017
(3) Use a lockwire to install the charging valve in the manifold.

S 864-018
(4) Pressurize the accumulator (AMM 12-15-04/301) (Detail A).

S 434-019
(5) Install a cap on the charging valve.

S 924-020
(6) Use a soap solution at the connections to examine the charging valve for leaks.

S 864-021
(7) Pressurize the right hydraulic system (AMM 29-11-00/201).

S 864-022
(8) Set the parking brakes (AMM 10-11-01/201).

F. Put the Airplane Back to Its Usual Condition.

S 494-023

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the door locks from the main landing gear doors and close the doors (AMM 32-00-15/201).

S 864-024
(2) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).

PARKING BRAKE SWITCH - MAINTENANCE PRACTICES

1. General
   A. This procedure contains four tasks. The first task removes the switch for the parking brake. The second task installs the switch for the parking brake. The third task adjusts the switch for the parking brake. The fourth task does a test of the switch for the parking brake.

TASK 32-44-08-002-001

2. Remove the Switch for the Parking Brake (Fig. 201)
   A. Access
      (1) Location Zones
          113/114 Area Forward of the Nose Landing Gear Wheel Well
          211/212 Control Cabin

      (2) Access Panel
          113AL Forward Equipment Bay

   B. Prepare to Remove the Switch.

      S 862-002

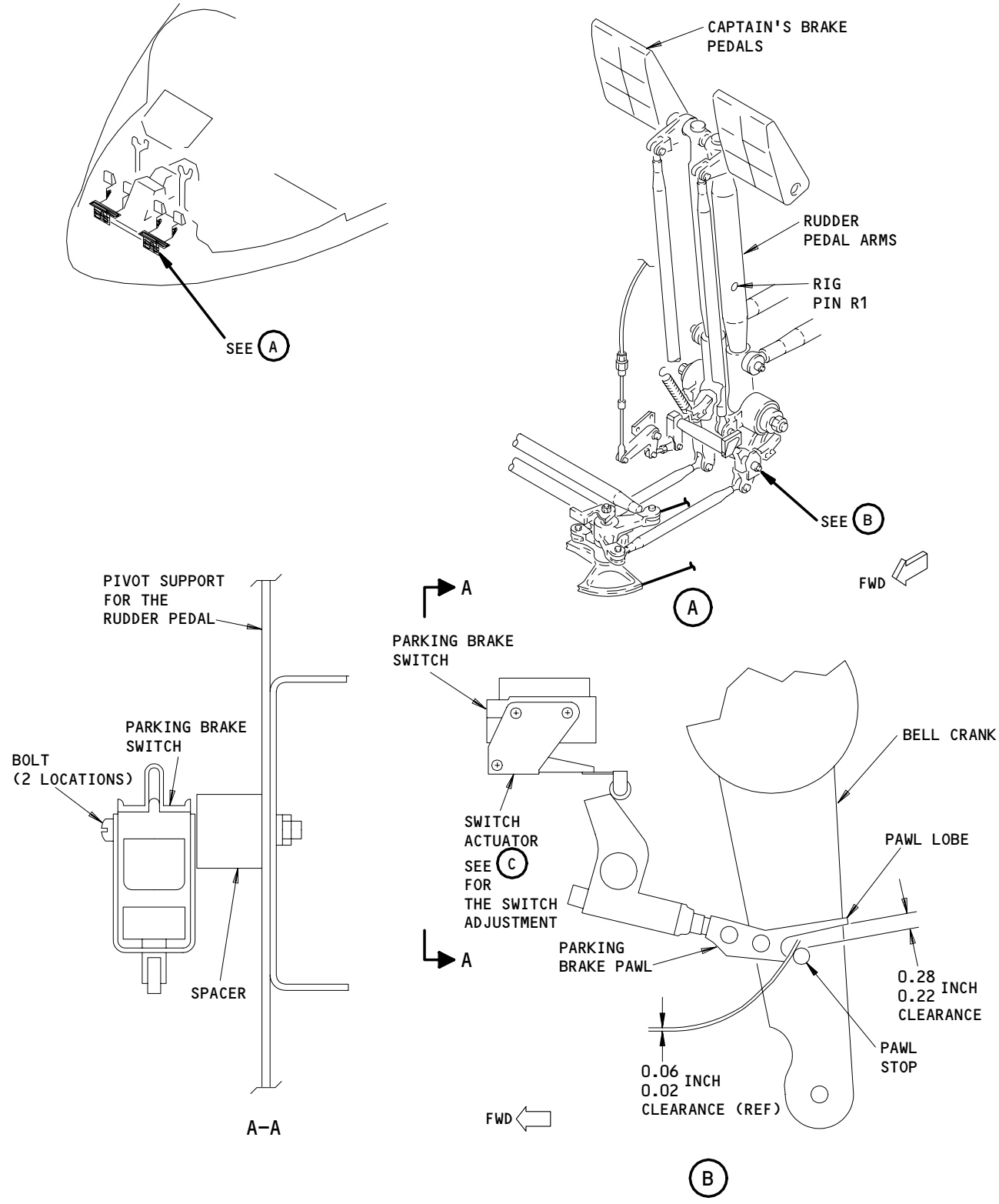
      CAUTION: DO NOT OPERATE THE HANDLE FOR THE PARKING BRAKE WHEN YOU RELEASE THE PARKING BRAKE. IF YOU TWIST THE HANDLE, YOU CAN CAUSE DAMAGE TO THE CABLE OR LINKAGE OF THE PARKING BRAKE.

      (1) Push the two brake pedals to release the parking brake.

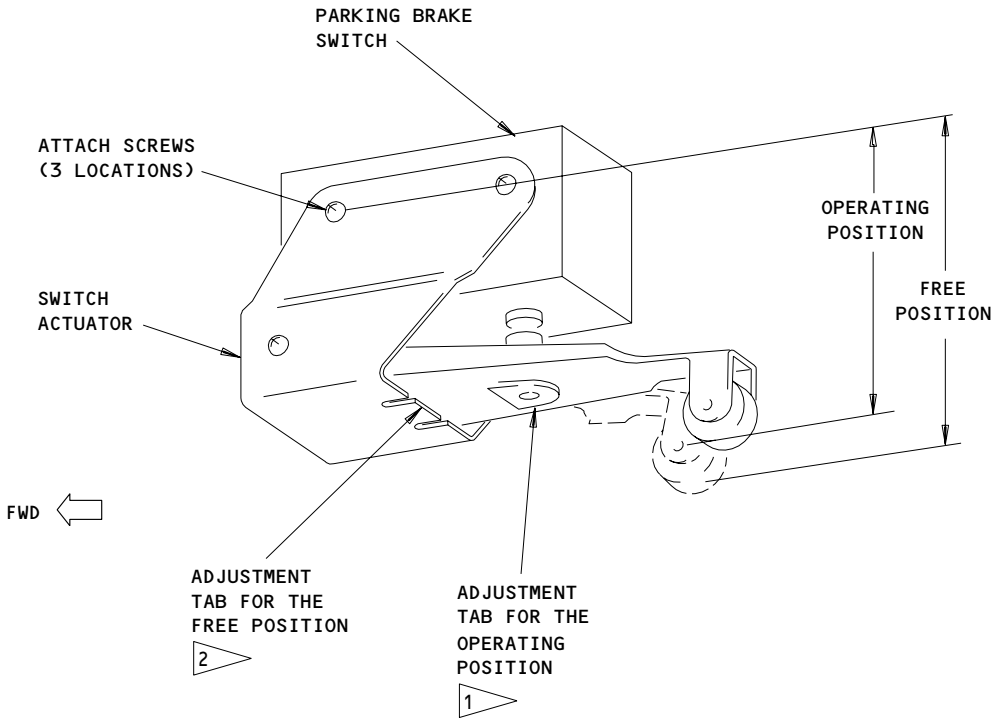
      S 862-003
      (2) Open this circuit breaker on the main power distribution panel, P6, and attach a DO-NOT-CLOSE tag:
          (a) 6F4, PARKING BRAKE VLV
   C. Remove the Switch

      S 032-004
      (1) Disconnect the electrical wires from the switch.

      S 032-006
      (2) Remove the fasteners which hold the switch to the pivot support for the rudder pedals (View A-A).



Installation of the Switch for the Parking Brake
Figure 201 (Sheet 1)



ADJUSTMENT FOR THE SWITCH ACTUATOR
(THE SWITCH AND ACTUATOR ARE SHOWN
IN THE INSTALLED POSITION)

C

1 BEND THE TAB AWAY FROM THE PARKING BRAKE SWITCH TO DECREASE THE DIMENSION OF THE OPERATING POSITION

2 BEND THE TAB TO THE PARKING BRAKE SWITCH TO DECREASE THE DIMENSION OF THE FREE POSITION

Installation of the Switch for the Parking Brake
Figure 201 (Sheet 2)

S 022-007
(3) Remove the switch and the spacer.

TASK 32-44-08-402-005

3. Install the Switch for the Parking Brake (Fig. 201)

A. Access

(1) Location Zones

113/114 Area Forward of the Nose Landing Gear Wheel Well
211/212 Control Cabin

(2) Access Panel

113AL Forward Equipment Bay

B. Prepare to Install the Switch

S 862-008
(1) Make sure the parking brake is released.

C. Install the Switch

S 412-009
(1) Put the switch and spacer in the correct position on the pivot support for the rudder pedals.

S 422-010
(2) Install the switch with the fasteners.

TASK 32-44-08-822-011

4. Adjustment of the Switch for the Parking Brake (Fig. 201)

A. Equipment

(1) Rig Pin from Set A20004-XX (AMM 20-10-24/201):
(a) R1 - P/N A20004-25

B. Access

(1) Location Zones

113/114 Area Forward of the Nose Landing Gear Wheel Well
211/212 Control Cabin

(2) Access Panel

113AL Forward Equipment Bay

C. Adjust the Switch

S 492-012
(1) Install the rig pin, R1, through the two arms of the rudder pedal.

S 862-044
(2) Verify this circuit breaker on the main power distribution panel, P6, is open and that a DO-NOT-CLOSE tag is attached:
(a) 6F4, PARKING BRAKE VLV

S 862-013
(3) Push the two brake pedals fully, until the stops limit the travel of the brake pedal, and hold the pedals in this position.

S 822-027
(4) Put a 0.22 to 0.28 inch shim between the parking brake pawl and the pawl stop on the bellcrank.

S 862-031
(5) Pull slowly on the parking brake handle until the parking brake pawl touches the shim and hold it in this position.

S 762-032
(6) Do a check for continuity between the C and the NO trerminals.

NOTE: The electrical wires must be disconnected when you do a continuity check.

S 822-015
(7) If there is not continuity, bend the tab on the switch actuator (Detail C) until there is continuity.

NOTE: When the switch adjustment is correct, the switch will operate to the closed position when the pawl lobe on the parking brake pawl is between 0.22 to 0.28 inch from the pawl stop on the bellcrank as shown in Detail B.

S 082-017
(8) Remove the rig pin, R1, from the rudder pedals.

S 862-018
(9) Push the brake pedals to release the parking brake.

S 032-033
(10) Remove the 0.22 to 0.28 inch shim.

S 762-035
(11) Do a check for continuity between the C and the NO terminals.

S 822-034
(12) If there is continuity, bend the tab on the switch actuator until there is not continuity.

NOTE: Bend the tab away from the switch plunger to remove the preload (a clearance of 0.005 +/-0.005 inch between the switch plunger and the switch actuator striker is permitted).

S 432-019
(13) Connect the electrical wires to the switch.

S 712-037
(14) Push the two brake pedals fully until the stops limit the travel of the brake pedals and pull the parking brake handle.

S 712-038
(15) Make sure the EICAS message PARKING BRAKE SET shows on the EICAS display.

S 712-039
(16) If the EICAS message PARKING BRAKE SET does not show, then do the adjustment procedure again.

S 712-040
(17) Push the two brake pedals to release the parking brake.

S 712-041
(18) Make sure the EICAS message PARKING BRAKE SET does not show on the EICAS display.

S 712-042
(19) If the EICAS message PARKING BRAKE SET shows, then do the adjustment procedure again.

TASK 32-44-08-712-016

5. Do a Test of the Switch Operation for the Parking Brake

A. Equipment
(1) Ohmmeter - commercially available

B. References
(1) AMM 24-22-00/201, Electrical Power - Control

C. Access

(1) Location Zones

113/114 Area Forward of the Nose Landing Gear Wheel Well
211/212 Control Cabin

(2) Access Panels

113AL Forward Equipment Bay

D. Do a Test of the Switch Operation

S 862-025

(1) Supply electrical power (AMM 24-22-00/201).

S 862-020

(2) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P6 panel:

(a) 6F4, PARKING BRAKE VLV

S 862-021

(3) Push the brake pedals fully until they touch the stops.

S 862-022

CAUTION: DO NOT TWIST THE HANDLE OF THE PARKING BRAKE WHEN YOU SET THE PARKING BRAKE. IF YOU TWIST THE HANDLE, YOU CAN CAUSE DAMAGE TO THE CABLE OR LINKAGE OF THE PARKING BRAKE.

(4) Pull the handle for the parking brake on the Captain's control stand panel.

(a) Release the pedals to set the parking brake.

(b) Make sure the PARK BRAKE indicator comes on and stays on.

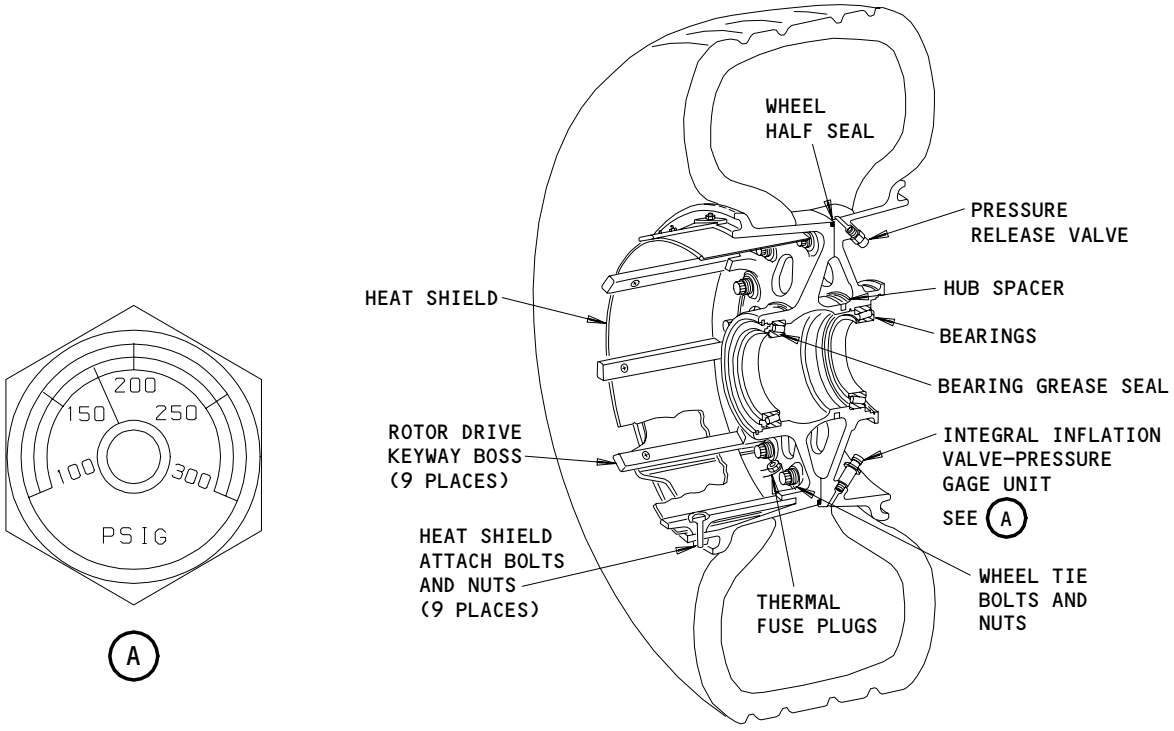
E. Put the Airplane Back to Its Usual Condition

S 862-024

(1) Remove electrical power if it is not necessary (AMM 24-22-00/201).

WHEELS AND TIRES - DESCRIPTION AND OPERATION

1. General
   A. The airplane is supported by 10 wheel and tire assemblies; 2 on the nose landing gear, and 4 on each main landing gear truck.
   B. Two spin brakes stop spinning of the nose wheels on retraction.
   C. SAS 050-149, 155-999;
      MTH ALL AIRPLANES;
      A Tire Pressure Indicating System (TPIS) supplies indication of tire pressure on the EICAS display on the flight deck. A message for an abnormal tire pressure condition is also given on the EICAS display. The system contains a Tire Pressure Monitor Unit (TPMU), 8 Main Wheel Interface Units, 2 Nose Wheel Interface Units, and 10 Tire Pressure Sensors. The TPMU is installed in the Electrical/Electronics Compartment on the E1-2 Shelf. A TPIS Interface Unit is installed in the end of each axle, and a TPIS Sensor is installed on each wheel.
2. Component Details
   A. Main Gear Tire and Wheel Assembly (Fig. 1)
      (1) Main Gear Wheels
         (a) Wheels on the main gear are of forged aluminum, two piece construction. Preformed packing is installed between wheel halves to provide a pneumatic seal.
         (b) Outboard wheel halves contain inflation valves and safety relief valves which relieve excess pressure buildups between 375 and 450 psig.



Main Gear Tire and Wheel Assembly
Figure 1

(c) Each inboard wheel half contains a multi-layer heat shield which protects the wheel from heat generated by the brake. Three thermal fuses melt at approximately 350°F (177°C) to release excessive tire pressure due to heat build-up.
(d) Nine keys on each wheel, engage and drive the brake rotor disks.

(2) Main Gear Tires
(a) All main gear tires are tubeless.
(b) The tire size(s) and rating(s) are as follows:

MLG TIRES S160T201-XXXX						
DASH NO.	TIRE SIZE	PLY RATING	SPEED (MPH)	MAX LOAD (LBS)	UNLOADED PRESSURE (PSI)	MODEL 767
-232	H45X17.0-20	26	225	40,000	195	-200
-2321	H45X17.0-20	26	225	40,000	195/175 (1)	-200
-332	H46X18.0-20	26	225	41,500	190	200,300
-3321	H46X18.0-20	26	225	41,500	190/170 (1)	200,300
-3421	H46X18.0-20	28	225	44,200	200/180 (1) (2)	200,300
-3621	H46X18.0-20	32	225	51,100	230/205 (1) (2)	200,300
-3631	H46X18.0-20	32	235	51,100	230/205 (1) (2)	200,300
-3632	H46X18.0-20	32	235	51,100	205	200,300
-3732	H46X18.0-20	34	235	54,900	220	200,300

(1) Dual pressure rating
(2) Primary use on airplanes is at low pressure rating

(c) It is not permissible to use tires of different sizes on the same axle.

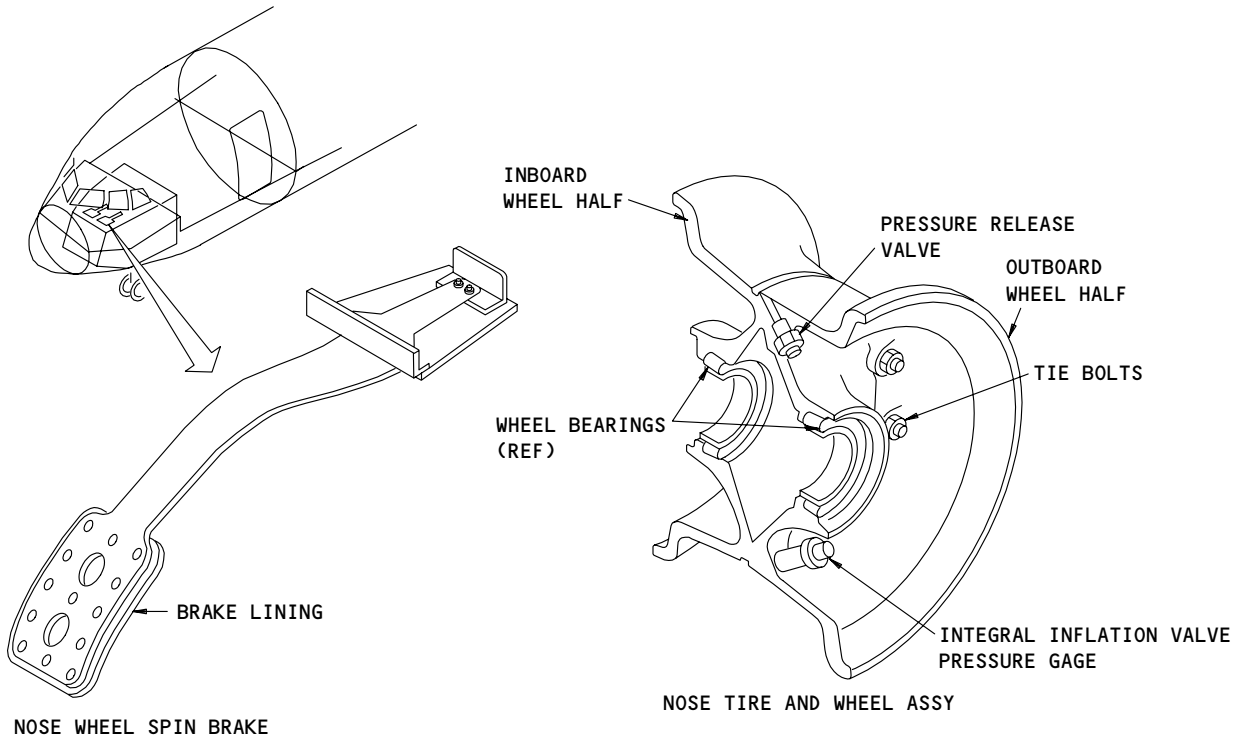
(d) You can install wheel and tire assemblies, with tires that have different ply, speed, or load ratings, on the same axle if these conditions are obeyed:

1) The size of the tires are the same
2) The tires are inflated to the same pressure
3) The tire pressure is not more than the correct pressure for the applicable airplane load (AMM 12-15-03/301).
4) The operation speed is not more than the speed rating of the lowest speed tires.
5) The operation load of the tires is not more than the rated load of the tires.

B. Nose Wheel and Tire Assembly (Fig. 2)

(1) Nose Gear Wheels
  (a) Wheels on the nose gear are of forged aluminum, two piece construction. Packing is placed between the halves to prevent air leaks.
  (b) Each outboard wheel half contains an inflation valve and safety relief valve, which relieves excess pressure buildups between 375 and 450 psig.

(2) Nose Gear Tires
  (a) All nose gear tires are tubeless.
  (b) The tire size(s) and rating(s) are as follows:



Nose Wheel and Spin Brake
Figure 2

NLG TIRES S160T201-XXXX						
DASH NO.	TIRE SIZE	PLY RATING	SPEED (MPH)	MAX LOAD (LBS)	UNLOADED PRESSURE (PSI)	MODEL 767
-402	H37X14.0-15	20	225	22,000	150	-200
-412	H37X14.0-15	22	225	24,100	165	-200, -300
-413	H37X14.0-15	22	235	24,100	165	-200, -300, -400
-4132	H37X14.0-15	22	235	24,100	145	-200, -300, -400
-422	H37X14.0-15	24	225	26,700	180	-200, -300
-423	H37X14.0-15	24	235	26,700	180	-200, -300, -400
-4232	H37X14.0-15	24	235	26,700	160	-200, -300, -400

(c) It is not permissible to use tires of different sizes on the same axle.

(d) You can install wheel and tire assemblies, with tires that have different ply, speed, or load ratings, on the same axle if these conditions are obeyed:

1) The size of the tires are the same
2) The tires are inflated to the same pressure
3) The tire pressure is not more than the correct pressure for the applicable airplane load (AMM 12-15-03/301).
4) The operation speed is not more than the speed rating of the lowest speed tires.
5) The operation load of the tires is not more than the rated load of the tires.

C. Nose Wheel Spin Brake (Fig. 2)

(1) Two wheel spin brakes, attached to the nose wheel well ceiling, stop the nose wheels from spinning after takeoff. Brake linings are installed on the forward ends of the spin brakes to provide good frictional contact surfaces.

3. SAS 050-149, 155-999;
MTH ALL AIRPLANES
Tire Pressure Indicating System

A. General

(1) The tire pressure indicating system (TPIS) supplies the flight crew with tire pressure indication and messages on EICAS. A gear synoptic display on the lower EICAS is selected to show the tire pressures. The status key on the pilot's display select panel is used to select the display. The display shows the pressure of each of the ten tires. A normal tire pressure is shown in cyan and an abnormal tire pressure is shown in white. The pressures shown are accurate to +/- 4 psi when tire pressures are between 100 and 200 psi. The status message, TIRE PRESSURE, is shown on the lower EICAS display if an abnormal tire pressure is detected. Abnormal tire pressures are:

(a) Any tire pressure less than the low threshold of 100 psi.

(b) Any main gear tire pressure deviation from the average threshold (greater than 18%).

(c) Any tire pressure deviation between an axle pair greater than the threshold (25% for main gear tires, 12% for nose gear tires).

(2) The system gets power for flight operation from 28 vdc L Bus through a power transfer relay on the P33 forward miscellaneous equipment panel. For ground operations this relay changes the power source from the 28 vdc L bus to the 28 vdc Ground Handling Bus.

(3) The Tire Pressure Indicating System (TPIS) contains these components:

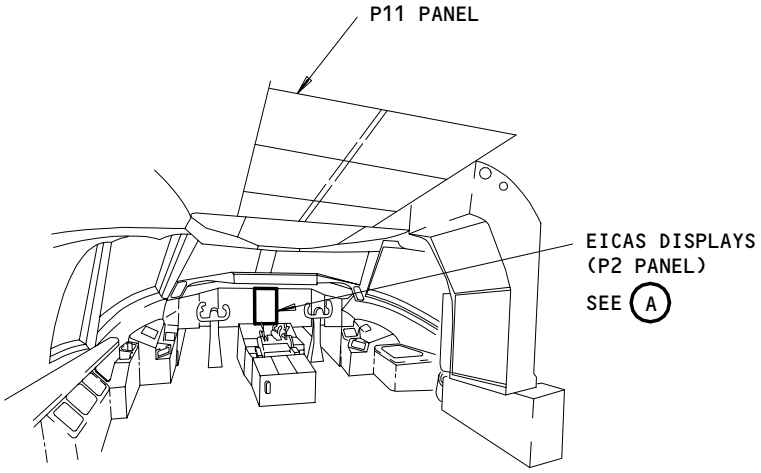
- Tire Pressure Monitor Unit (TPMU), Qty 1, Location- E1-4 shelf
- Tire Prsssure Sensor, Qty 10, 1 in each wheel
- Main Wheel Interface Unit, Qty 8, 1 in each main wheel
- Nose Wheel Interface Unit, Qty 2, 1 in each nose wheel
- Tire Pressure Sensor Holder/Integral Inflation Valve, Qty 10, 1 in each wheel

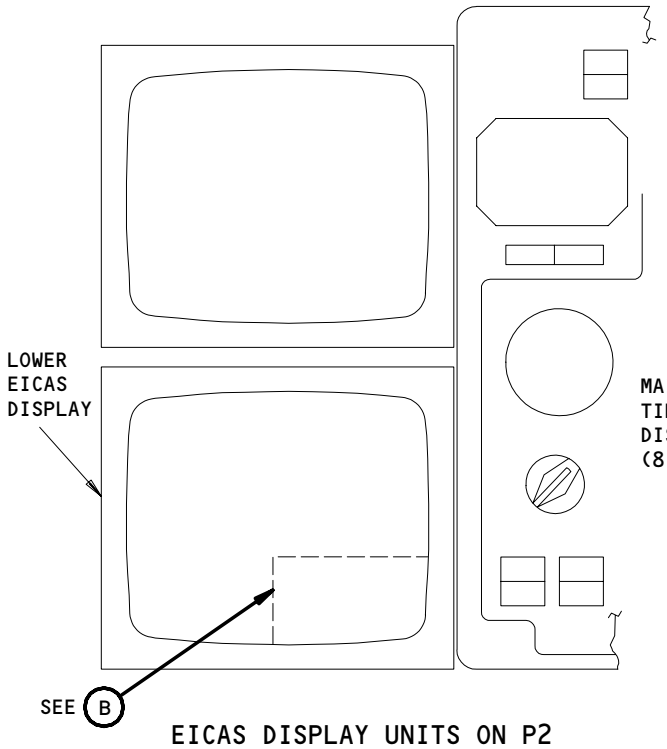
(4) Component Details

(a) Tire Pressure Monitoring Unit (TPMU)

1) The TPMU supplies these functions:

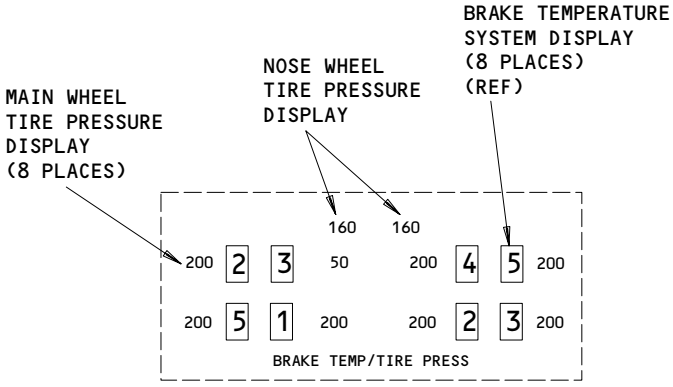
- Gets tire pressure signal from each tire pressure sensor
- Calculates the limits of permitted pressure ranges -
- Transmits on an ARINC 429 digital bus, tire pressure data to the EICAS for display on EICAS.
- Monitors all sensors and interface units for malfunctions.
- Does automated tests of the system when you use the controls on the BITE panel of the TPMU.





EICAS DISPLAY UNITS ON P2

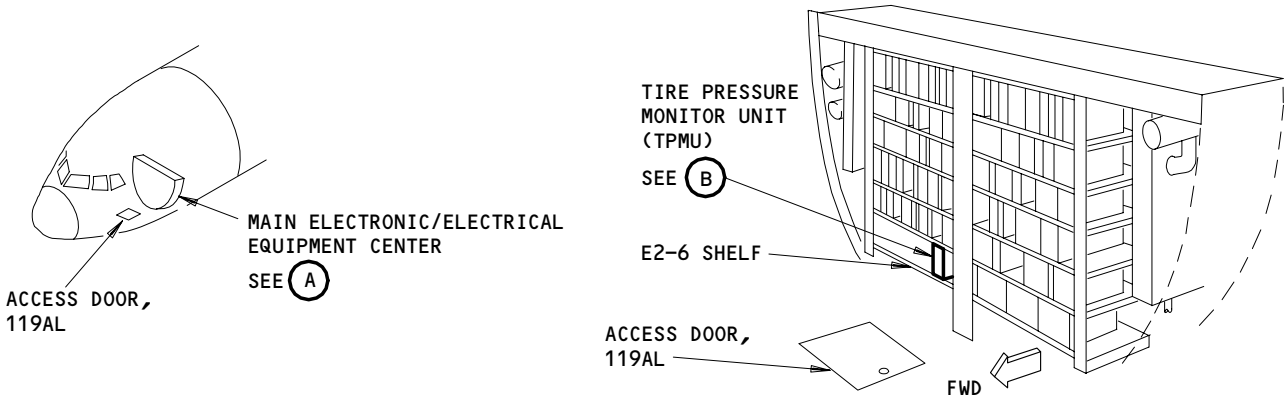
A



TIRE PRESSURE INDICATING SYSTEM
EICAS DISPLAY

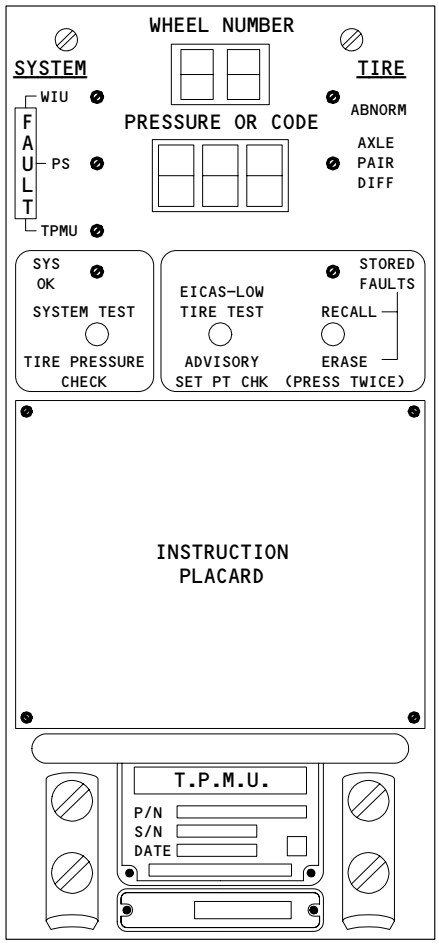
B

Tire Pressure Indicating System – EICAS Display
Figure 3



MAIN ELECTRONIC/ELECTRICAL EQUIPMENT CENTER

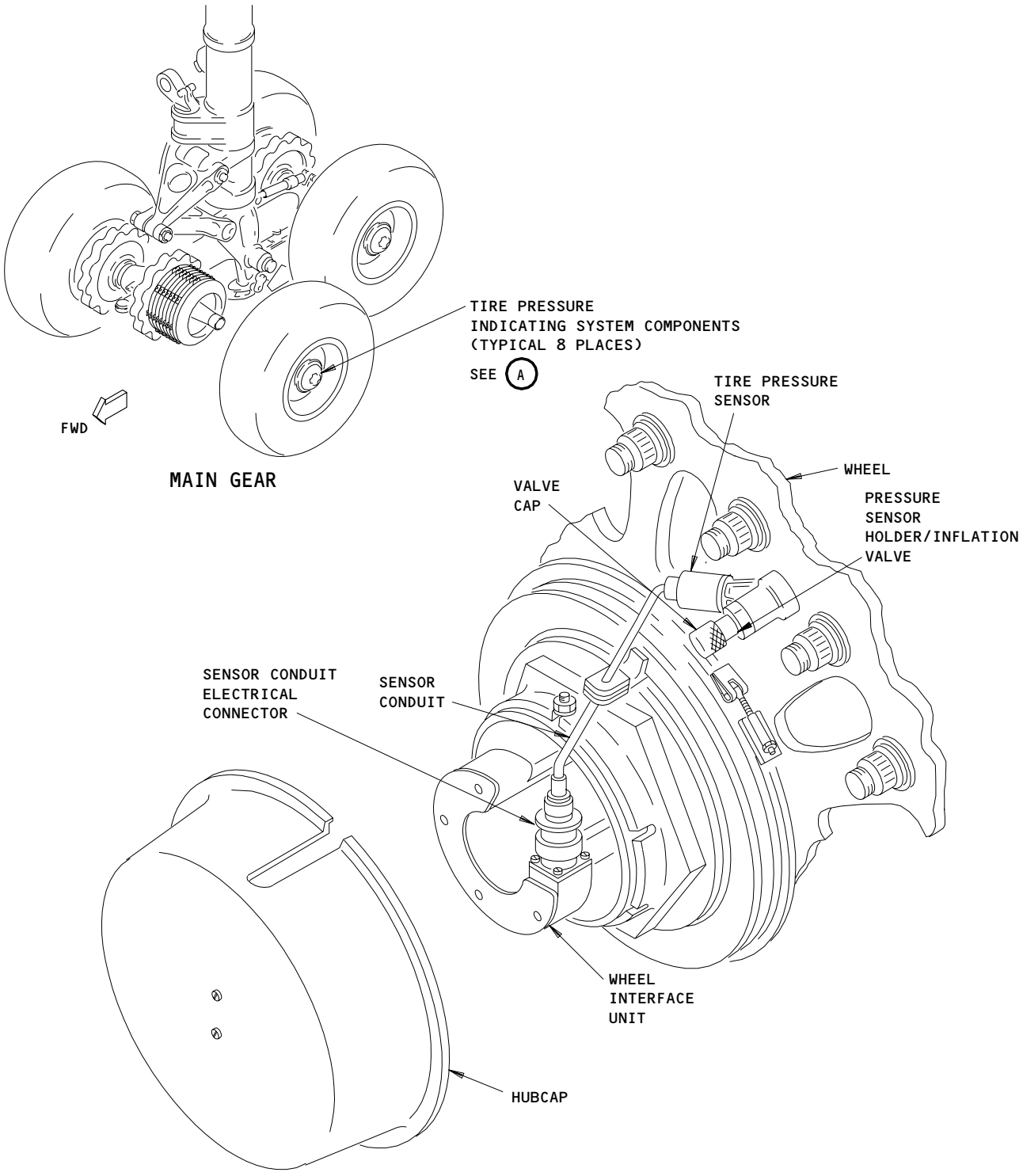
A



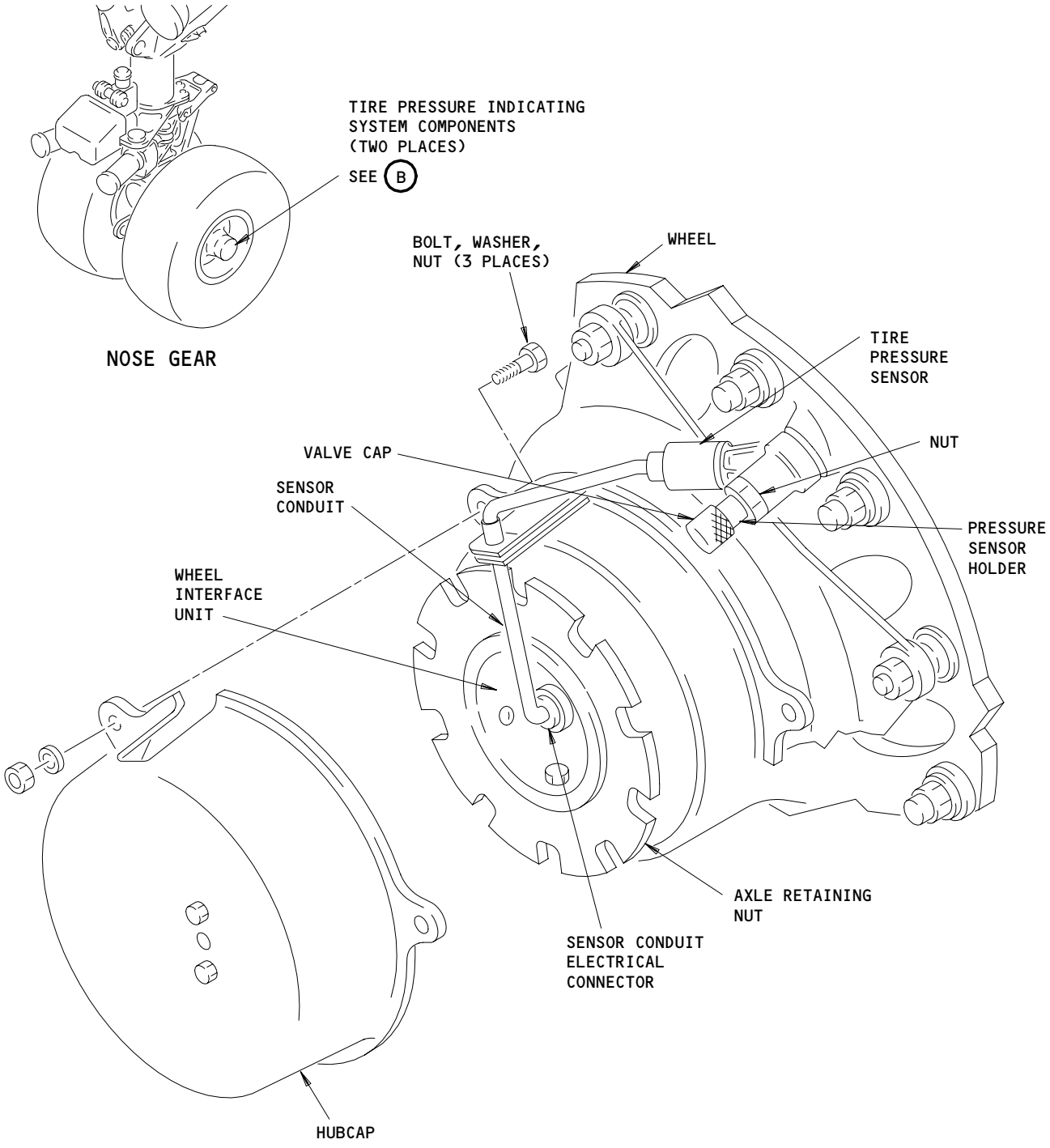
TIRE PRESSURE MONITOR UNIT (TPMU)

B

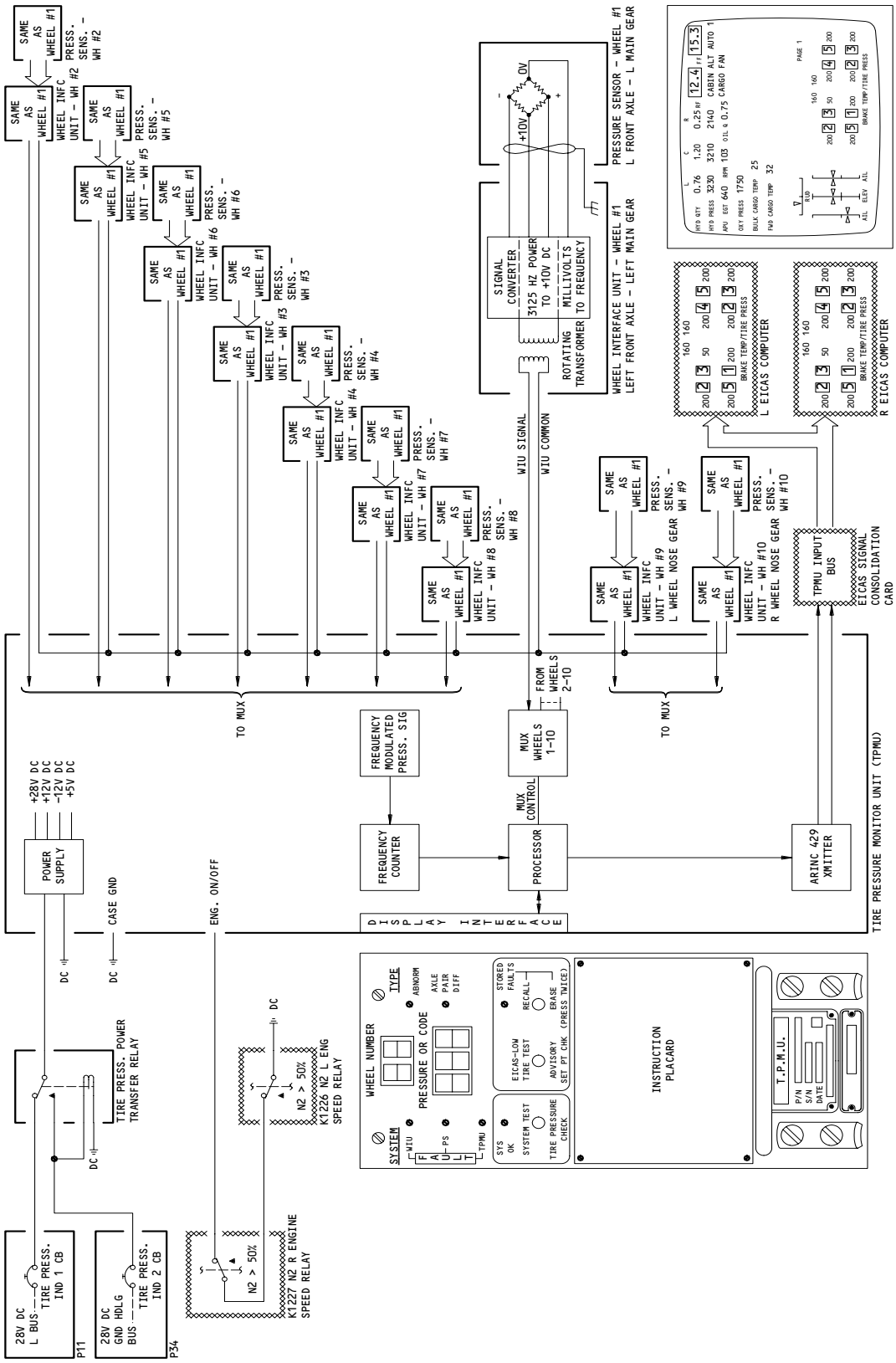
Tire Pressure Monitor Unit
Figure 4



Tire Pressure Indicating System Components – Landing Gear
Figure 5 (Sheet 1)



Tire Pressure Indicating System Components - Landing Gear
Figure 5 (Sheet 2)



Tire Pressure Indicating System
Figure 6

2) To get pressure signals from the sensors, a logic circuit in the TPMU changes the 28vdc supply power to a 3125 Hz ac signal. This signal goes to an analog card where it is changed into a sine wave. The sine wave energizes the tire pressure sensors. The sensors then transmit an ac signal with a frequency that is in direct proportion to the tire pressure.
3) A tire pressure advisory signal is sent to EICAS when any of the conditions that follow occur:
   a) Any main gear tire pressure decreases below 100 psi and any nose gear pressure decreases below 100 psi.
   b) Any main gear tire pressure deviates by 18% above or 18% below the average of eight tire pressures. The average is established by discarding the pressure values of the two highest and the two lowest main gear tires and taking the average of the four remaining.
   c) The difference in pressure between any two main gear tires on the same axle is more than 25% of the lower tire pressure.
   d) The difference in pressure between the two nose gear tires is more than 12% of the lower tire pressure.
4) Circuits in the TPMU isolate malfunctions of the tire pressure indicating system to the defective line replacable unit in the system. The defective unit is identified and stored in the nonvolatile memory. Faults are monitored as follows:
   a) Sensor Faults: Sensor circuits are monitored for short circuits, open circuits, and indicating pressure outside an acceptable range.
   b) Channel Faults: The wheel interface unit and associated wiring are monitored for short circuits, open circuits, and out-of-range frequencies.
   c) TPMU Faults: Malfunctions of the TPMU are isolated to the defective circuit card. The data is contained in a nonvolatile memory in the TPMU and is used during shop overhaul.
5) All circuit cards for the TPMU are contained within the TPMU. All tests and trouble shooting of the TPMU are done with the built-in-test controls on a control panel on the TPMU. If a malfunction is isolated to the TPMU, it can be removed and replaced as a unit.

(b) Main Wheel Interface Unit

1) The main-wheel-interface unit, one for each of the eight main wheels, transmits the ac signal from the TPMU across the rotating interface of the wheel and converts this signal to DC for excitation of the pressure sensor. The unit contains two basic components, a stator and a rotor. The rotor is installed in the stator on two bearing assemblies that permit it to turn freely. The stator and rotor contain coils to make a transformer to transmit the 31v rms (92v p-p) 3125 Hz ac signal from the TPMU to the rotor on the wheel-interface-unit. The ac signal is converted by electronics in the rotor to a 10v dc signal that is used to energize the sensor.

2) The Interface Unit is part of an assembly that consists of the interface unit, the antiskid transducer and a support assembly. The interface unit and the antiskid transducer are assembled axially inside the support assembly which is attached by bolts to the inside of the wheel axle. The antiskid transducer is behind the interface unit. A gear on the hubcap TPIS driver engages a surface on the rotor of the interface unit so that when the wheel and hubcap rotate the hubcap turns the interface unit rotor. A gear on the end of the hubcap driver engages a gear on the antiskid transducer and turns the antiskid transducer.

(c) Nose Wheel Interface Unit

1) Two nose-wheel-interface units, one for each of the two nose wheels, transmits the ac signal from the TPMU across the rotating interface of the wheel and converts this signal to DC for excitation of the pressure sensor. The unit contains two basic components, a stator and a rotor. The rotor is installed in the stator on two bearing assemblies that permit it to turn freely. The stator and rotor contain coils to make a transformer to transmit the 31v rms (92v p-p) 3125 Hz ac signal from the TPMU to the rotor on the wheel-interface-unit. The ac signal is converted by electronics in the rotor to a 10v dc signal that is used to energize the sensor.

2) The interface unit is installed axially inside the nose wheel axle and attached to the axle by bolts through the inter face unit stator and the axle. A gear on the hubcap TPIS driver engages a surface on the rotor of the interface unit so that when the wheel and hubcap rotate the hubcap turns the interface unit rotor.

(d) Tire Pressure Sensor

1) One tire pressure sensor is installed on each wheel (10 total). The pressure sensor assembly contains the sensing element and support which is connected by a conduit to an electrical connector. The connector connects to the rotor on the wheel-interface unit.

2) The sensor contains strain gages in a Wheatstone Bridge configuration which, when energized by a 10v dc signal, transmit a dc signal that is proportional to tire pressure.
3) The sensor is connected to the wheel by a tire-pressure-sensor holder/integral fill valve which is installed in the wheel. The holder contains an orifice that passes pressure from the tire to the tire pressure sensor. When the sensor is not connected to the holder, gas can escape from the tire through the orifice in the holder. A cap is supplied to cover the orifice when the sensor is not installed.

(e) Pressure Sensor Holder/Integral Fill Valve (PSH/IFV)
1) A pressure sensor/integral fill valve (PSH/IFV) is installed on each wheel. The PSH/IFV is a combination tire inflation valve and tire pressure sensor holder. An orifice in the PSH/IFV body transmits tire pressure to the pressure sensor which is installed axially over the PSH/IFV body. The tire inflation valve is in the outer end of the PSH/IFV body. There is a cap on the end of the tire inflation valve. A normal tire inflation tool can be connected to the tire inflation valve to inflate the tire.

4. SAS 050-149, 155-999;
MTH ALL AIRPLANES;
Operation (Fig. 4)
A. Functional Description
(1) The TPMU energizes the tire pressure sensors as described above and gets tire pressure signals from each sensor in sequence as described above. It changes the pressure signal to digital data and calculates anomalies as described above. It transmits the anomalies and the pressure for each tire to the EICAS display and displays tire pressure conditions on the front panel of the TPMU when you do a system test by the instructions on the front panel of the TPMU.
(2) The EICAS shows tire pressure in decimal numbers on the GEAR synoptic screen. Normal tire pressures are shown in blue. Anomalies in tire pressure are shown in white. The EICAS level S message, TIRE PRESSURE, is also displayed when any of the these conditions occur:
- Any tire pressure less than a preset value
- A differential tire pressure of more than a set percentage between two tires on the same axle
- A main gear tire pressure that has deviated more than a set percentage above or below the average of the main gear tire pressures.

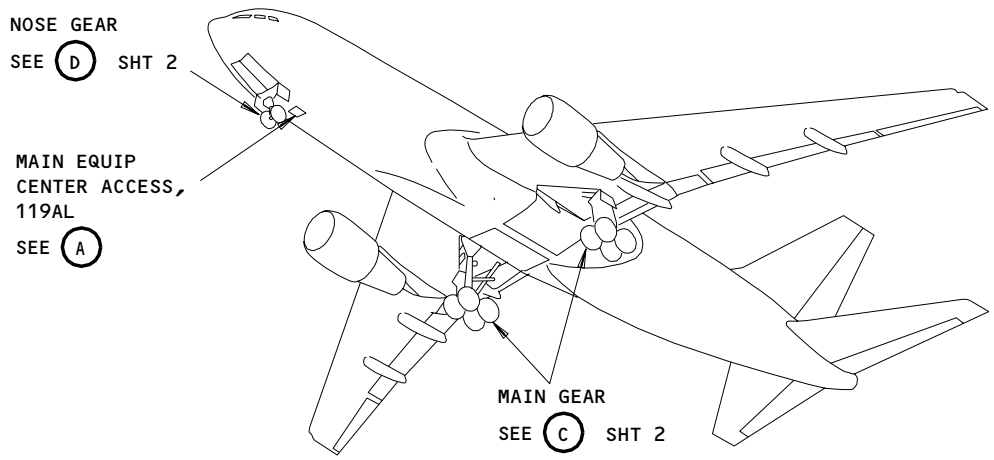
TPMU, WIU, and pressure sensors are continously monitored by Built-In Test Equipment (BITE) circuitry. Detected faults are indicated by the EICAS level S and M messages, TIRE PRESS SYS.

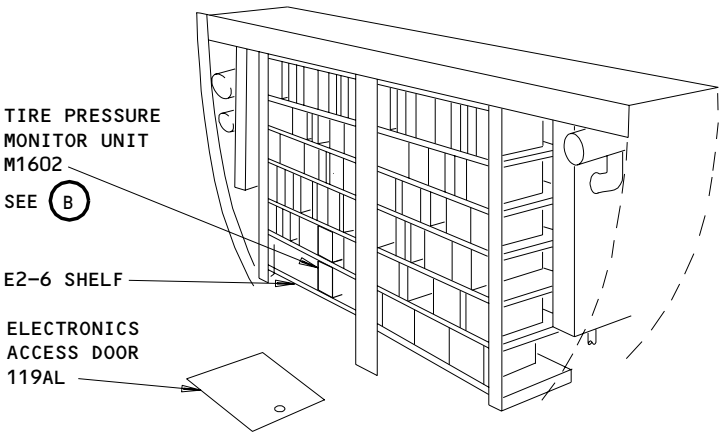
WHEELS AND TIRES

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
ASSEMBLY - MAIN GEAR TIRE & WHEEL	2	8	MAIN LANDING GEAR	32-45-01
ASSEMBLY - NOSE GEAR TIRE & WHEEL	2	2	NOSE LANDING GEAR	32-45-02
CIRCUIT BREAKER -	1		FLT COMPT, P11	
TIRE PRESSURE IND 1, C1186		1	11U17	*
CIRCUIT BREAKER -	1		APU EXTERNAL PWR PNL, P34	
TIRE PRESSURE IND 2, C1187		1	34M11	*
COMPUTER - (REF 31-41-00, FIG. 101)				
L EICAS, M10181				
R EICAS, M10182				
RELAYS - (REF 31-01-36, FIG. 101)				
TIRE PRESS PWR XFER, K1225				
SENSOR - TIRE PRESSURE 1, TS505	2	1	L MAIN GEAR, L FWD AXLE	32-45-11
SENSOR - TIRE PRESSURE 2, TS506	2	1	L MAIN GEAR, R FWD AXLE	32-45-11
SENSOR - TIRE PRESSURE 3, TS507	2	1	R MAIN GEAR, L FWD AXLE	32-45-11
SENSOR - TIRE PRESSURE 4, TS508	2	1	R MAIN GEAR, R FWD AXLE	32-45-11
SENSOR - TIRE PRESSURE 5, TS509	2	1	L MAIN GEAR, L AFT AXLE	32-45-11
SENSOR - TIRE PRESSURE 6, TS510	2	1	L MAIN GEAR, R AFT AXLE	32-45-11
SENSOR - TIRE PRESSURE 7, TS511	2	1	R MAIN GEAR, L AFT AXLE	32-45-11
SENSOR - TIRE PRESSURE 8, TS512	2	1	R MAIN GEAR, R AFT AXLE	32-45-11
SENSOR - TIRE PRESSURE 9, TS513	2	1	NOSE GEAR, L AXLE	32-45-12
SENSOR - TIRE PRESSURE 10, TS514	2	1	NOSE GEAR, R AXLE	32-45-12
SPIN BRAKE - NOSE GEAR TIRE	2	2	NOSE WHEEL WELL, CEILING	32-45-05
UNIT - TIRE PRESSURE MONITOR, M1602	1	1	119AL, MAIN EQUIP CTR E2-6	32-45-10
UNIT - WHEEL INTERFACE 1, M1629	2	1	L MAIN GEAR, L FWD AXLE	32-45-13
UNIT - WHEEL INTERFACE 2, M1628	2	1	L MAIN GEAR, R FWD AXLE	32-45-13
UNIT - WHEEL INTERFACE 3, M1627	2	1	R MAIN GEAR, L FWD AXLE	32-45-13
UNIT - WHEEL INTERFACE 4, M1626	2	1	R MAIN GEAR, R FWD AXLE	32-45-13
UNIT - WHEEL INTERFACE 5, M1625	2	1	L MAIN GEAR, L AFT AXLE	32-45-13
UNIT - WHEEL INTERFACE 6, M1624	2	1	L MAIN GEAR, R AFT AXLE	32-45-13
UNIT - WHEEL INTERFACE 7, M1623	2	1	R MAIN GEAR, L AFT AXLE	32-45-13
UNIT - WHEEL INTERFACE 8, M1622	2	1	R MAIN GEAR, R AFT AXLE	32-45-13
UNIT - WHEEL INTERFACE 9, M1621	2	1	NOSE GEAR, L AXLE	32-45-14
UNIT - WHEEL INTERFACE 10, M1620	2	1	NOSE GEAR, R AXLE	32-45-14
VALVE - TIRE INFLATION/PRESSURE SENSOR HOLDER	2	10	MAIN & NOSE LANDING GEAR	32-45-08

* SEE WDM EQUIPMENT LIST

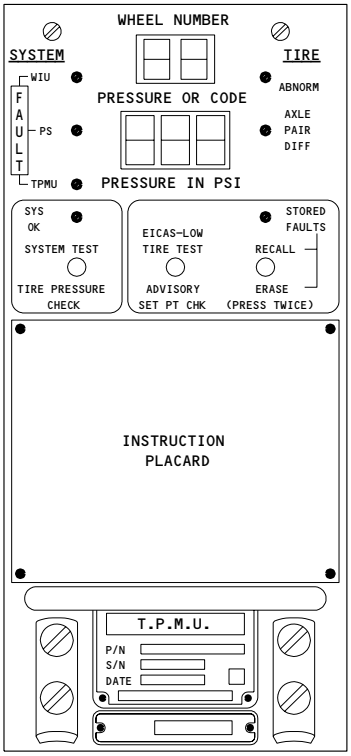
Component Index
Figure 101





MAIN ELECTRONIC/ELECTRICAL EQUIPMENT CENTER

(A)

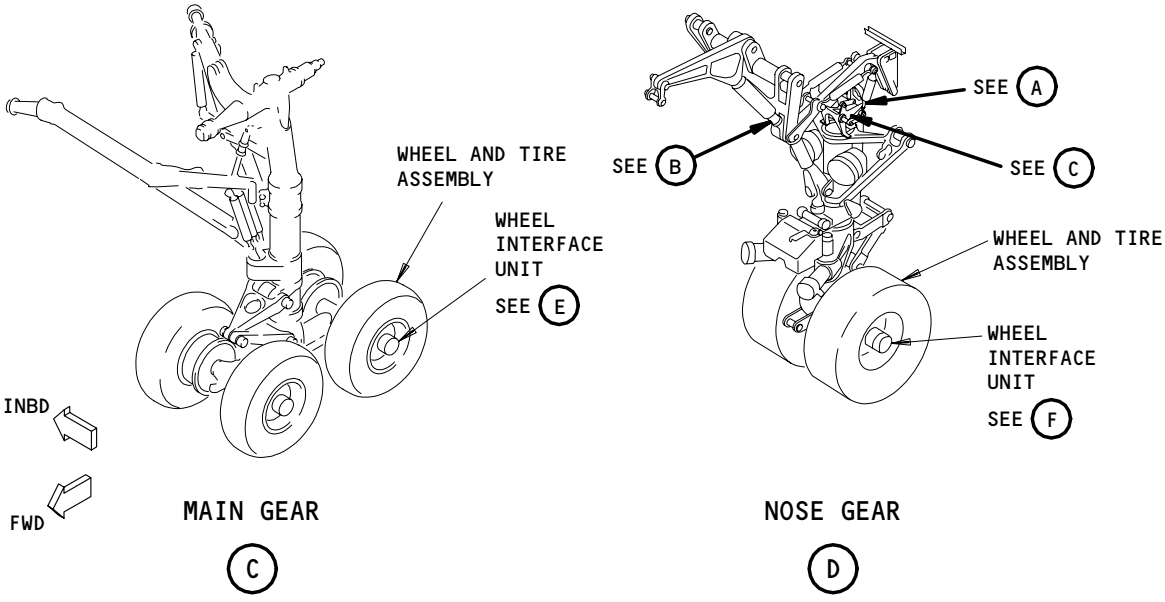


TIRE PRESSURE MONITOR UNIT, M1602

(B)

Tires and Wheels - Component Locations
Figure 102 (Sheet 1)

673374



MAIN GEAR

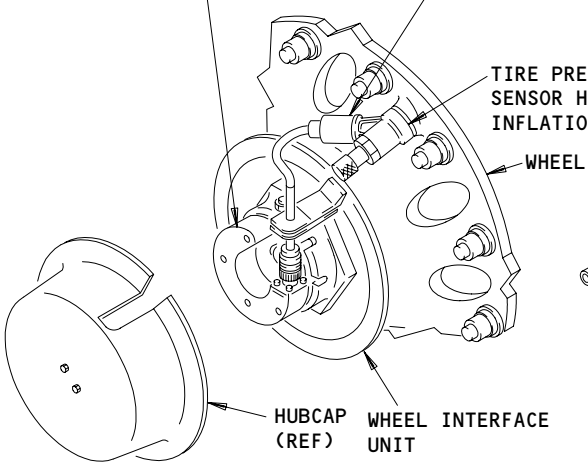
C

NOSE GEAR

D

MAIN WHEEL INTERFACE UNIT,
M1629 (LH MG LF AXLE)
M1628 (LH MG RF AXLE)
M1627 (RH MG LF AXLE)
M1626 (RH MG RF AXLE)
M1625 (LH MG LA AXLE)
M1624 (LH MG RA AXLE)
M1623 (RH MG LA AXLE)
M1622 (RH MG RA AXLE)

TIRE PRESSURE SENSOR,
TS505 (LH MG LF AXLE)
TS506 (LH MG RF AXLE)
TS507 (RH MG LF AXLE)
TS508 (RH MG RF AXLE)
TS509 (LH MG LA AXLE)
TS510 (LH MG RA AXLE)
TS511 (RH MG LA AXLE)
TS512 (RH MG RA AXLE)

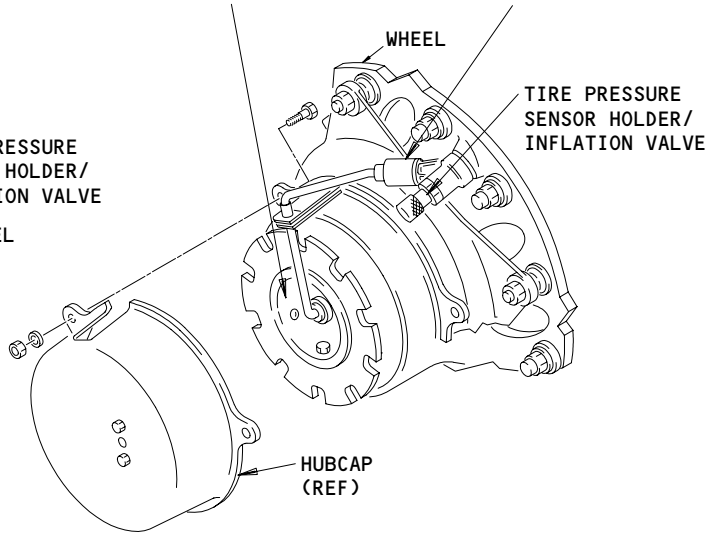


WHEEL INTERFACE UNIT

E

NOSE WHEEL INTERFACE UNIT,
M1621 (LH NOSE GEAR)
M1620 (RH NOSE GEAR)

TIRE PRESSURE SENSOR,
TS513 (LH NOSE GEAR)
TS514 (RH NOSE GEAR)

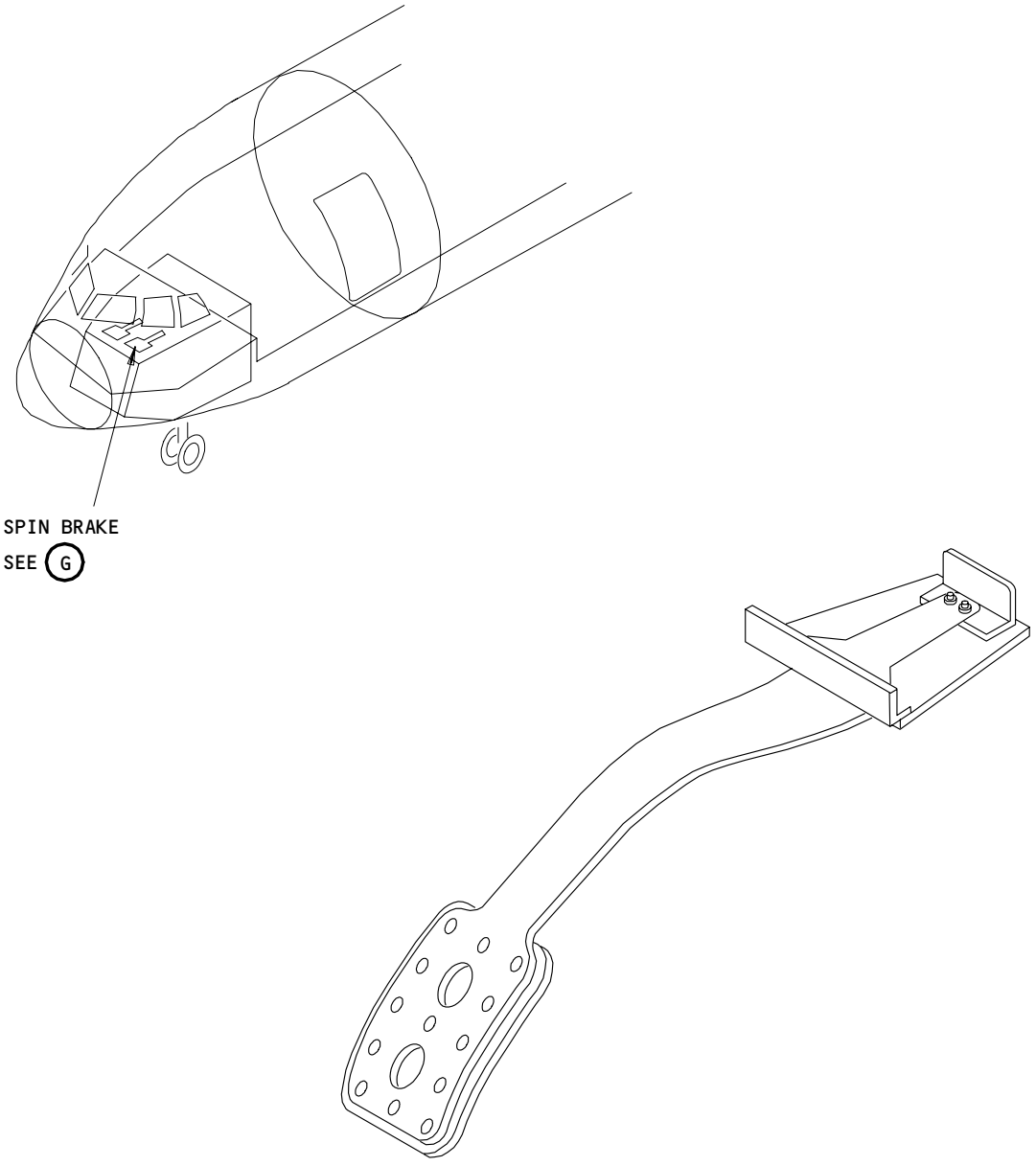


TIRE INTERFACE UNIT

F

Tires and Wheels – Component Location
Figure 102 (Sheet 2)

673713



Tires and Wheels - Component Location
Figure 102 (Sheet 3)

TIRES AND WHEELS - ADJUSTMENT/TEST

1. General
   A. This procedure contains two tasks. The first task is an operational test of the Tire Pressure Monitor Unit (TPMU). The second task is a system test of the Tire Pressure Indicating System (TPIS).
   B. This procedure uses the EICAS and the Built in Test Equipment (BITE) function of the Tire Pressure Monitor Unit (TPMU) to do a test of the Tire Pressure Indicating System (TPIS). The test makes sure that the TPMU, the TPIS sensors and interface units at each wheel operate correctly. It also makes sure that all interfaces between the components and the EICAS computer operate correctly.
   C. It is only necessary to use the EICAS and the TPMU to do the operational tests. To do a complete test of the TPMU, it is necessary to disconnect the TPIS sensor at each wheel.

TASK 32-45-00-705-088

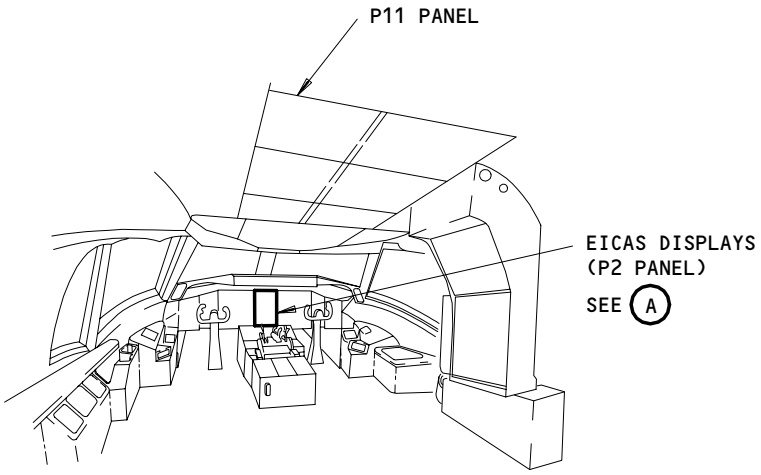
2. Operational Test - Tire Pressure Indicating System (Fig. 501)
   A. General
      (1) This procedure uses the EICAS and the BITE feature of the TPMU to do an operational test of the system.
   B. References
      (1) 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) 12-15-03/301, Tires
      (3) 24-22-00/201, Electrical Power, Control
   C. Access
      (1) Location Zones
          211 Control Cabin, Left
          212 Control Cabin, Right
          731 Landing Gear Left
          741 Landing Gear Right
          120 Main Equipment Center, Right

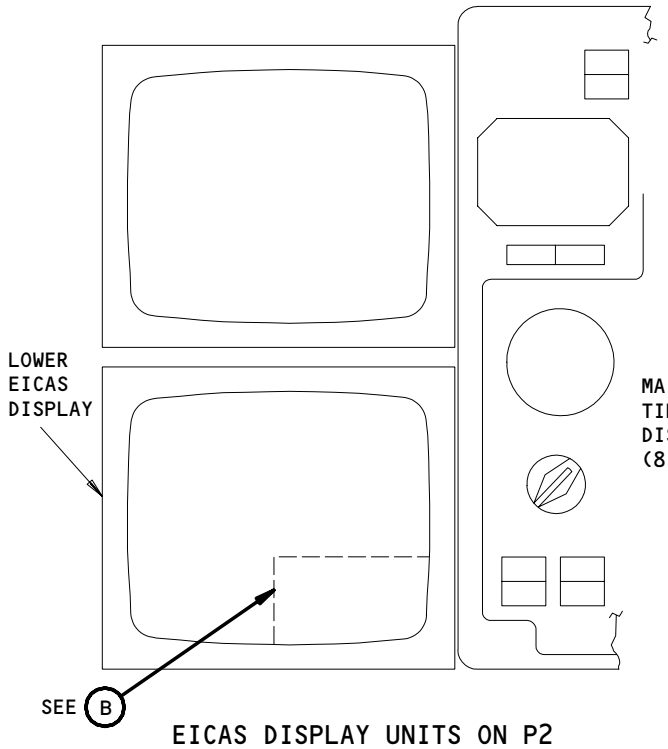
   D. Prepare for the Test

      S 615-035
      (1) Make sure that the tires are inflated to the correct pressure (Ref 12-15-03).

      S 865-036
      (2) Supply electrical power (Ref 24-22-00).

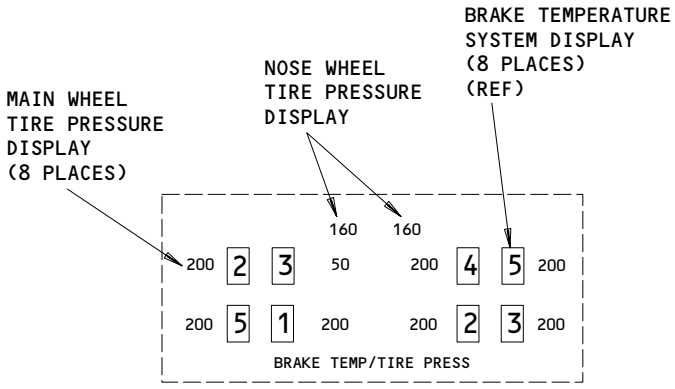
      S 865-037
      (3) Make sure these circuit breakers are closed on the overhead P11 panel:
          (a) 11J02, L CMPTR EICAS
          (b) 11J03, EICAS UPPER DISPL
          (c) 11J29, R CMPTR EICAS
          (d) 11J30, EICAS LOWER DISPL
          (e) 11J32, EICAS DISPLAY SELECT





EICAS DISPLAY UNITS ON P2

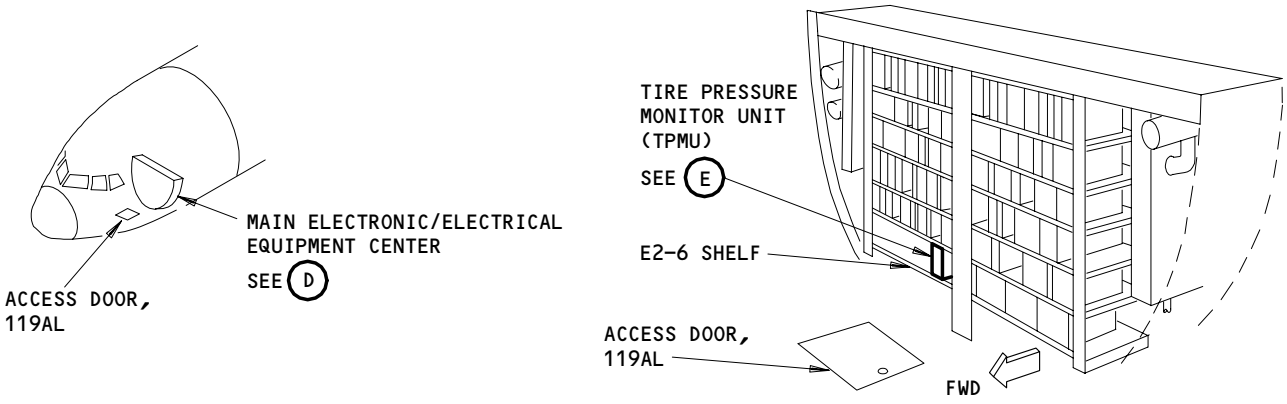
A



TIRE PRESSURE INDICATING SYSTEM
EICAS DISPLAY

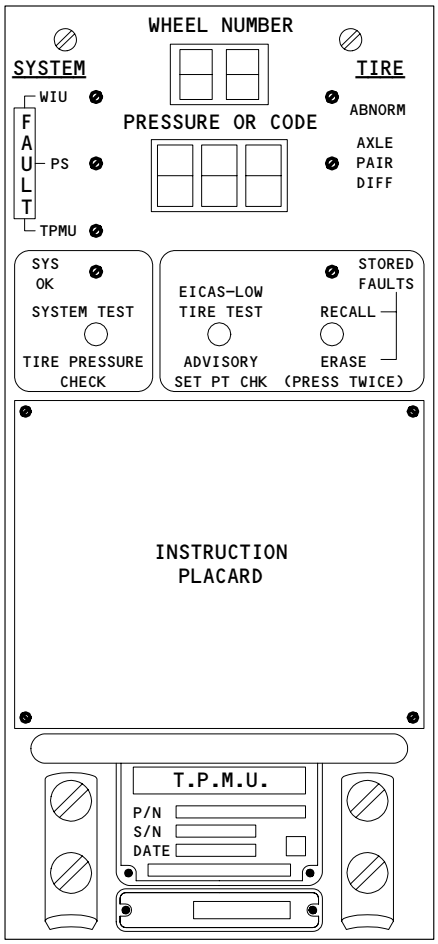
B

Tire Pressure Indicating System - Adjustment/Test
Figure 501 (Sheet 1)



MAIN ELECTRONIC/ELECTRICAL EQUIPMENT CENTER

D



TIRE PRESSURE MONITOR UNIT (TPMU)

E

Tire Pressure Indicating System - Adjustment/Test
Figure 501 (Sheet 2)

667492

EFFECTIVITY
SAS 050-149, 155-999;
MTH ALL AIRPLANES

(f) 11J34, WARN ELEX A
(g) 11U17, TIRE PRESS IND 1

S 015-038
(4) Open the main equipment center access door, 119AL (Ref 06-41-00).

S 015-039
(5) Locate the TPMU at the E2-6 shelf in the main E/E bay.

E. Do a Test of the Tire Pressure Indicating System

S 865-040
(1) Move the switch to SYSTEM TEST on the front panel of the TPMU.

S 715-041
(2) Make sure that after the display and indicator test, the SYS OK indicator is on.

S 715-042
(3) Set the STATUS key on the pilot's display select panel until the tire pressure indication appears on the lower EICAS display.

S 715-043
(4) Make sure that the tire pressure indication on the EICAS display for each of the eight main gear tires is between 170 PSI and 215 PSI.

S 715-044
(5) Make sure that the tire pressure indication on the EICAS display for each of the two nose gear tire pressures is between 135 PSI and 200 PSI.

F. Put the Airplane Back to its Usual Condition.

S 415-045
(1) Close the main equipment center access door, 119AL (Ref 06-41-00).

S 865-046
(2) Remove electrical power if it is not necessary (Ref 24-22-00).

TASK 32-45-00-705-047

3. System Test - Tire Pressure Indicating System (Fig. 501)

A. General

(1) It is necessary to disconnect the TPIS sensor at each wheel for this test to make sure that the TPMU can identify a sensor malfunction. This is a test to make sure that all the components in the system operate correctly. This is also a test to make sure that all the interfaces between the components and the EICAS operate correctly.

B. Equipment

(1) S283U006-9 Seal Cap

C. References

(1) 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) 12-15-03/301, Tires
(3) 24-22-00/201, Electrical Power-Control
(4) 32-00-20/201, Landing Gear Down Locks
(5) 32-45-11/401, Main Gear TPIS Sensor
(6) 32-45-12/401, Nose Gear TPIS Sensor

D. Access

(1) Location Zones

211	Control Cabin, Left
212	Control Cabin, Right
731	Landing Gear Left
741	Landing Gear Right
120	Main Equipment Center, Right

E. Prepare for the Test

S 495-048

(1) Install the landing gear down locks (Ref 32-00-20).

S 615-049

(2) Make sure that all tires are inflated to the correct pressure (Ref 12-15-03).

S 865-050
(3) Supply electrical power (Ref 24-22-00).

S 865-051
(4) Make sure these circuit breakers are closed on the overhead P11 panel:
(a) 11D15, ENG SPEED SENSE L2
(b) 11D16, ENG SPEED SENSE R2
(c) 11J02, L. CMPTR EICAS
(d) 11J03, EICAS UPPER DISPL
(e) 11J29, R. CMPTR EICAS
(f) 11J30, EICAS LOWER DISPL
(g) 11J32, EICAS DISPLAY SELECT
(h) 11J34, WARN ELEX A
(i) 11U17, TIRE PRESS IND 1

S 015-052
(5) Open the main equipment bay access door, 119AL (Ref 06-41-00).

S 015-053
(6) Locate the TPMU at the E2-6 shelf in the main E/E bay.

F. Do the System LRU Test

S 735-054
(1) Make sure that the "TPMU" fault indicator on the TPMU is not on.

S 735-055
(2) Do the steps that follow for each of the eight main gear wheels:
(a) Measure the tire pressure for the wheel (Ref 12-15-03).
(b) Set TIRE PRESSURE CHECK until the wheel number appears on the display on the front panel of the TPMU.
(c) Make sure that the TPMU tire pressure indication for the wheel that you will test is the pressure that you measured manually for the wheel.

(d) Set the STATUS key on the Pilot's display select panel until the tire pressure readout appears in the lower EICAS display.
(e) Make sure that the EICAS display shows the tire pressure that you measured manually for the applicable wheel.

S 735-073
(3) Do the steps that follow for each of the two nose gear wheels:
(a) Measure the tire pressure for the applicable wheel (Ref 12-15-03).
(b) Set the switch to TIRE PRESSURE CHECK until the wheel number appears on the display on the front panel of the TPMU.
(c) Make sure that the tire pressure value on the TPMU display agrees with the pressure that was measured manually for each wheel.
(d) Set the STATUS key on the Pilot's display select panel until the tire pressure indication appears in the lower EICAS display.
(e) Make sure that the EICAS display shows the tire pressure that was measured manually for the applicable wheel.

G. Do the Wheel/Channel Identification Test

S 735-056
(1) Set the STATUS key on the Pilot's display select panel until the tire pressure indication appears in the lower EICAS display.

S 735-057
(2) Make sure that the EICAS display shows each of the eight main gear tire pressures between 170 PSI and 215 PSI.

S 735-058
(3) Make sure that the EICAS display shows each of the nose gear tire pressures between 135 PSI and 200 PSI.

S 015-059
(4) Remove the eight main gear hubcaps (Ref 32-45-11).

S 015-060
(5) Remove the two nose gear hubcaps (Ref 32-45-12).

S 735-061
(6) Do the steps that follow for each of the eight main gear wheels:
(a) Disconnect the connector for the pressure sensor (Ref 32-45-11).
(b) Make sure that the EICAS display for the wheel that you do the test for does not have a pressure display.
(c) Connect the pressure sensor connector.
(d) Make sure that the EICAS tire pressure display for the applicable wheel is shown.

S 735-062
(7) Do the steps that follow for each of the two nose gear wheels:
(a) Disconnect the connector for the pressure sensor (Ref 32-45-12).
(b) Make sure that the EICAS display for the wheel that you do the test for does not have a pressure display.
(c) Connect the pressure sensor connector.
(d) Make sure that the EICAS tire pressure display for the applicable wheel is shown.

H. Do the Low Tire Pressure Simulation Test

S 735-093
(1) Set EICAS - LOW TIRE TEST on the TPMU front panel. Make sure that the conditions that follow occur during the test:

NOTE: This test assumes that the engines are off - N2 less than 50 percent.

NOTE: While you do the EICAS - LOW TIRE SIMULATION TEST, the TPMU will count down the time. The time starts at 15 seconds.

(a) The EICAS display shows each of the main gear and nose gear tire pressures at 50 PSI.
(b) The color of the tire pressure indications is white.
(c) The TIRE PRESSURE status message appears on EICAS.

S 735-064
(2) Make sure that the conditions that follow occur at the end of the test:
  (a) The EICAS display shows each of the eight main gear tire pressures between 170 PSI and 215 PSI.
  (b) The EICAS display shows each of the two nose gear tire pressures between 135 PSI and 200 PSI.
  (c) The TIRE PRESSURE status message disappears from the EICAS display.

S 015-066
(3) Find the N2 speed cards (M1092 and M1093) in the electrical systems card file (P50).

S 735-068
(4) Set TEST CH 2 with the test switch on the right N2 speed card (M1092), and hold the switch in the test position.

S 735-069
(5) Set EICAS - LOW TIRE TEST on the TPMU front panel.

S 735-070
(6) Make sure that code EEE appears on the TPMU front panel display.

S 735-072
(7) Set NORMAL with the test switch on the right N2 speed card (M1092).

S 735-074
(8) Set EICAS - LOW TIRE TEST on the TPMU front panel.

S 735-075
(9) Make sure that the TPMU front panel display shows a count down sequence that starts at "15".

S 735-082
(10) Set TEST CH 2 with the test switch on the left N2 speed card (M1093), and hold the switch in the test position.

S 735-077
(11) Set EICAS - LOW TIRE TEST on the TPMU front panel.

S 735-078
(12) Make sure that code EEE appears on the TPMU front panel display.

S 735-080
(13) Set NORMAL with the test switch on the left N2 speed card (M1093).

S 735-081
(14) Set EICAS - LOW TIRE TEST on the TPMU front panel.

I. Do the System Test

S 735-083
(1) Set SYSTEM TEST on the TPMU front panel.

S 735-084
(2) Make sure that after the the display and indicator test the SYS OK indicator comes on.

S 735-085
(3) Set ERASE - STORED FAILTS on the TPMU front panel.

NOTE: You must push the ERASE switch two times to activate the function.

NOTE: While you erase the stored LRU faults, the TPMU display will count down the time. The time starts at 30 seconds.

J. Put the Airplane Back to its Usual Condition

S 415-086
(1) Close the main equipment center access door, 119AL (Ref 06-41-00).

S 865-087

(2) Remove electrical power if it is not necessary (Ref 24-22-00).

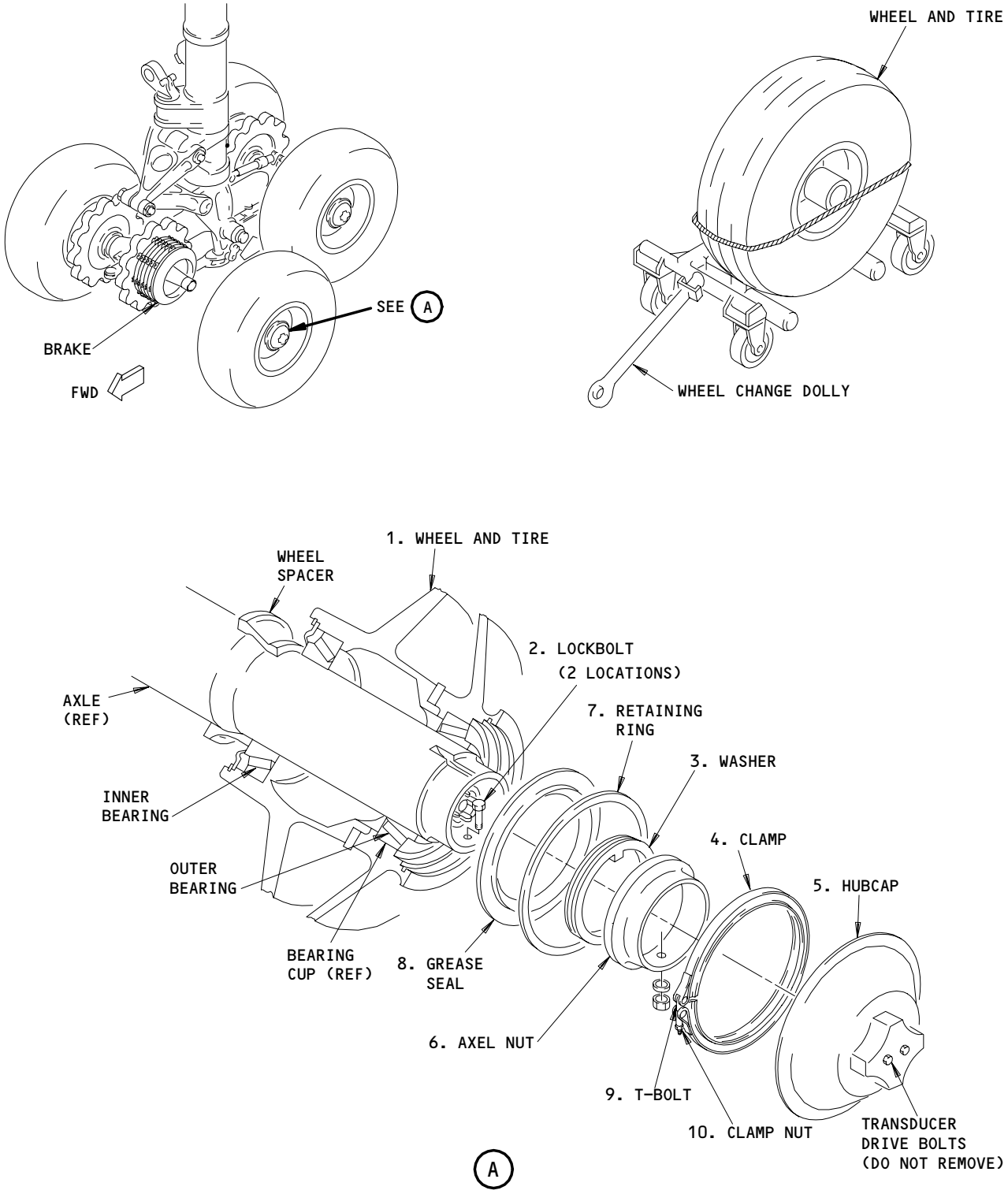
MAIN GEAR WHEEL AND TIRE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the main gear wheel and tire assembly. The second task installs the main gear wheel and tire assembly.
   B. You can install wheel and tire assemblies, with tires that have different ply, speed, or load ratings, on the same axle if these conditions are obeyed:
      (1) The size of the tires are the same
      (2) The tires are inflated to the same pressure
      (3) The tire pressure is not more than the correct pressure for the applicable airplane load
      (4) The operation speed is not more than the speed rating of the tires
      (5) The operation load of the tires is not more than the rated load of the tires.

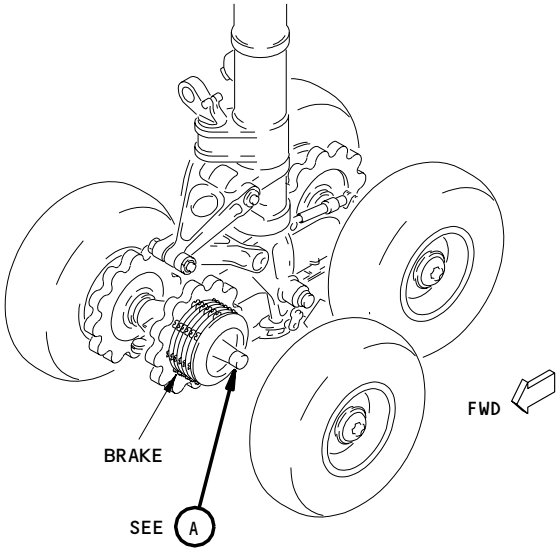
TASK 32-45-01-004-045-001

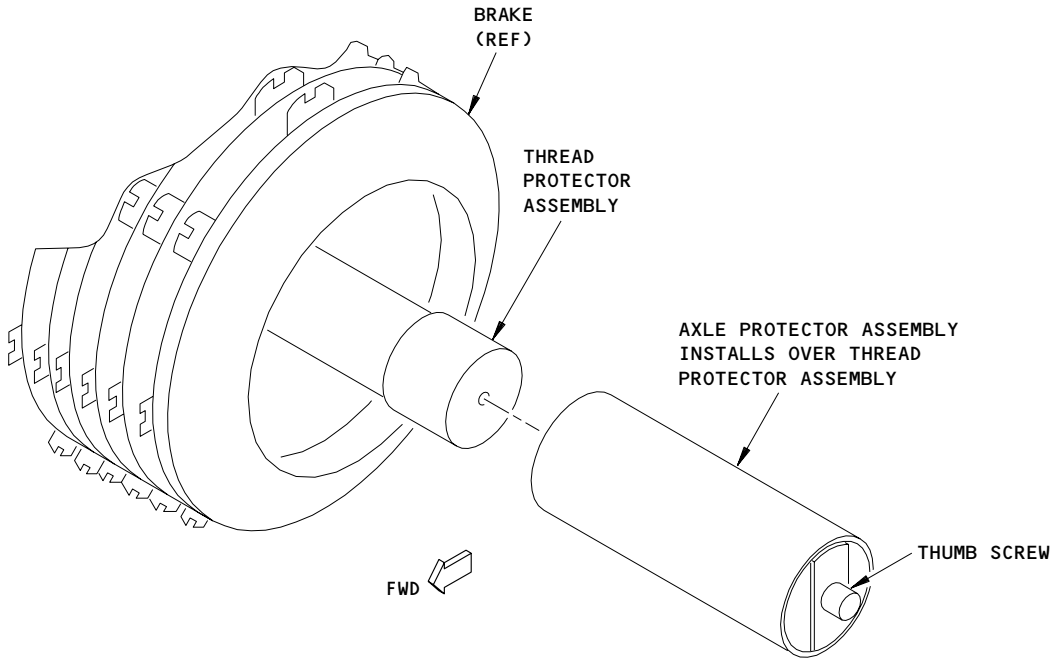
2. Remove the Main Gear Wheel And Tire Assembly (Fig. 401)
   A. Equipment
      (1) Wheel Change Dolly - (MALABAR 175) - commercially available
      (2) MLG Axle and Axle Thread Protector Equipment A32098-1 (Preferred) Includes:
      - Protector - Axle, MLG - A32098-3
      - Protector - Axle Threads, MLG - A32098-2

      A32007-17 (Optional) or A32007-16 (Optional) Includes:
      - Protector - Axle, MLG - A32007-6 - (2)
      - Protector - Axle Threads, MLG - A32007-9
      (3) MLG Wheel Retaining Nut Wrench - A32012-13 (Preferred)
      (4) MLG Wheel Retaining Nut Wrench - A32012-6,-9,-12 (Optional)
      (5) Tire Deflation Tool - 968RB (Safe-Cor Tools, Fairview, PA 16415)
      (6) Tire Inflation Tool - A12007-11
      (7) Protective Cover - Inner Wheel Surface - BTA-72028-A, Bill Thomas Assoc. Inc., 7405 Woodley Ave, Van Nuys, Calif.
   B. References
      (1) 07-11-03/201, Jacking Airplane Axles
      (2) 12-15-03/301, Landing Gear Tire
      (3) 24-22-00/201, Electrical Power - Control
      (4) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (5) 32-00-20/201, Landing Gear Downlocks
      (6) 32-11-26/601, Main Gear Axle



Main Gear Wheel and Tire Installation
Figure 401





AXLE PROTECTOR ASSEMBLY

A

Main Gear Wheel and Tire Installation
Figure 401A

(7) 32-45-03/601, Wheels
(8) 32-45-04/601, Tires

C. Access
(1) Location Zones
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

D. Procedure

S 864-009-001
(1) Supply electrical power (Ref 24-22-00).

S 494-010-001
(2) Make sure that the landing gear downlocks are installed (Ref 32-00-20).

S 864-011-001
(3) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).

S 864-012-001
(4) Make sure that this circuit breaker on the main power distribution panel, P6, is closed:.
(a) PARKING BRAKE VALVE, 6F4

S 944-013-001
(5) Raise the axle with a jack until the tire does not touch the ground (Ref 07-11-03).

S 864-014-001
(6) Set the parking brake to the hold the brake in the engaged position.

S 864-015-001
(7) Make sure that the PARK BRAKE indicator light on the quadrant stand panel, P10, is on.

S 684-051-001

WARNING: BEFORE YOU REMOVE THE WHEEL AND TIRE ASSEMBLY YOU MUST DEFLATE THE TIRE OR INSPECT THE WHEEL AND TIRE TO MAKE SURE THEY ARE SAFE. INSPECT THE WHEEL AND TIRE FOR THE CONDITIONS LISTED BELOW. A DEFECTIVE WHEEL AND TIRE ASSEMBLY CAN EXPLODE DURING OR AFTER REMOVAL IF YOU DO NOT DEFLATE THE TIRE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Do one of the steps that follow:

NOTE: If you plan to install the same wheel and tire assembly and the assembly is safe it is not always necessary to deflate the tire. However, if you will not install the same wheel and tire assembly deflate the tire to prevent transporting an inflated tire.

(a) Inspect the wheel and tire assembly for the conditions that follow:
1) The tire is worn too much (AMM 32-45-04/601)
2) The tire has damage
3) The tire is unusually hot
4) The wheel has damage
5) One or more of the tie bolts have damage or are missing.
6) If you find one or more of these conditions you must deflate the tire.

(b) Deflate the tire with the tire deflation tool.
1) If you think that the valve core is damaged so that you can not use the normal procedure to deflate the tire, do these steps:
a) Turn the valve assembly slowly in a counterclockwise direction until air begins to leak through the boss.
b) Push lightly on the valve assembly at the same time.
c) Remove the valve assembly from the tire after all the pressure in the tire has been released.

S 034-018-001

(9) Hold the hubcap (5) while you remove the clamp (4).

S 034-019-001

(10) Remove the assembly of the hubcap (5) and the antiskid transducer drive.

S 024-020-001

(11) Remove the lockbolts (2), the wheel retaining nut (6), the washer (3), the retaining ring (7) and the grease seal (8).

NOTE: Do not remove the transducer from the axle.

S 494-021-001
(12) Install the axle thread protector on the axle.

S 944-022-001
(13) Put the wheel change dolly under the wheel and tire assembly (1).

S 424-023-001
(14) Remove the wheel and tire assembly (1).

S 944-024-001
(15) Install a protective cover on the inner side of the wheel to protect the wheel from damage.

S 934-052-001
(16) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

TASK 32-45-01-404-025-001

3. Install the Main Gear Wheel and Tire Assembly (Fig. 401)

A. Equipment

(1) Wheel Change Dolly - (MALABAR 175) - commercially available

(2) MLG Axle and Axle Thread Protector Equipment A32098-1 (Preferred)
Includes:
- Protector - Axle, MLG - A32098-3
- Protector - Axle Threads, MLG - A32098-2

A32007-17 (Optional) or A32007-16 (Optional) Includes:
- Protector - Axle, MLG - A32007-6 - (2)
- Protector - Axle Threads, MLG - A32007-9

(3) MLG Wheel Retaining Nut Wrench - A32012-13 (Preferred)

(4) MLG Wheel Retaining Nut Wrench - A32012-6,-9,-12 (Optional)

(5) Tire Deflation Tool - 968RB (Safe-Cor Tools, Fairview, PA 16415)

(6) Tire Inflation Tool - A12007-11

(7) Protective Cover - Inner Wheel Surface - BTA-72028-A, Bill Thomas Assoc. Inc., 7405 Woodley Ave, Van Nuys, Calif.

B. Consumable Materials

(1) Wheel bearing grease - Aircraft, General Purpose, Wide Temperature:
(a) D00378 - Aeroshell 22

(b) D00233 - Mobilgrease 28
(c) D50005 - Mobil Aviation Grease SHC 100
(d) D00258 - Aeroshell 5 (Alternative)

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Wheel and Tire	32-45-01	01	45
	2	Lockbolt			20
	3	Washer			40
	4	Clamp			10
	5	Hubcap			15
	6	Retainer Nut			35
	7	Retaining Ring			80
	8	Grease Seal			85

D. References
(1) 07-11-03/201, Jacking Airplane Axles
(2) 12-15-03/301, Landing Gear Tire
(3) 24-22-00/201, Electrical Power - Control
(4) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(5) 32-11-26/601, Main Gear Axle
(6) 32-41-08/601, Main Gear Wheel Brakes
(7) 32-45-03/601, Wheels
(8) 32-45-04/601, Tires

E. Access
(1) Location Zones
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

F. Procedure

S 214-026-001
(1) Examine the wheel assembly and the exposed area of the axle assembly for damage and wear before you install it on the airplane (AMM 32-45-03).

NOTE: Wear Limits for the main gear axles are given in 32-11-26.

S 214-047-001
(2) Examine the tires for wear (AMM 32-45-04/601).

S 214-048-001
(3) Examine the antiskid transducer drive in the hubcap and axle for damage.

S 214-049-001
(4) Make sure the antiskid transducer drive is not loose.

S 214-028-001
(5) Examine the heat shield on the inside diameter of the brake torque tube to make sure that there are no projections that may touch the wheel hub.

S 214-046-001
(6) Do an inspection of the brake (AMM 32-41-08/601).

S 494-029-001
(7) Make sure that the axle thread protector is installed.

S 424-030-001

CAUTION: MAKE SURE THAT THE WHEEL SPACER IS INSTALLED ON THE AXLE. IF THE WHEEL SPACER IS NOT INSTALLED, THE WHEEL AND BRAKE WILL BIND AND CAUSE DAMAGE.

CAUTION: INSTALL THE WHEEL SPACER CORRECTLY,IMPROPER ORIENTATION WILL CAUSE DAMAGE TO THE INNER WHEEL HALF HUB.

(8) Make sure that the wheel spacer is installed on the axle.

S 644-031-001
(9) Apply a thin layer of wheel bearing grease to the surface of the axle where it will contact the inner and outer wheel bearings.

NOTE: Do not lubricate the surface of the axle between the wheel bearings.

S 644-044-001
(10) Lubricate the wheel bearings and fill the cavity outside of the bearings with wheel bearing grease.

S 424-032-001
(11) Install the grease seal (8) and the retaining ring (7).

S 094-034-001
(12) Remove the protective cover from the wheel assembly (1).

S 424-033-001

CAUTION: DO NOT HIT ANY OF THE CARBON DISCS WITH THE WHEEL WHEN YOU INSTALL THE WHEEL AND TIRE ASSEMBLY BECAUSE YOU CAN DAMAGE THE CARBON. IF YOU THINK THE WHEEL COULD HAVE HIT THE CARBON, YOU SHOULD PULL OUT THE WHEEL FAR ENOUGH TO EXAMINE THE CARBON DISCS.

(13) Put the wheel and tire assembly (1) on the dolly.

S 424-035-001
(14) Align the lugs on the wheel (1) with the brake rotor slots and slide the wheel (1) in position on the brake and the axle.

S 094-036-001
(15) Remove the axle thread protector.

S 644-037-001
(16) Lubricate the axle washer with grease.

S 424-038-001
(17) Align the washer tang with the groove in the axle and slide the washer (3) on the axle.

S 644-039-001
(18) Apply grease to the threads of the axle nut (6).

S 424-040-001
(19) Put the axle nut (6) on the axle and tighten it by hand.

S 864-041-001
(20) Release the parking brake.

S 424-042-001
(21) Use the procedure that follows to tighten the axle nut (6) to the necessary torque.
(a) While you turn the wheel, tighten the nut to 500-600 pound-feet to seat the axle sleeve against the truck beam.
(b) Fully loosen the nut.
(c) AIRPLANES WITH GREASE DAMS;
While you turn the wheel again, tighten the nut to 150 pound-feet.

NOTE: The end of the axle nut may extend beyond the axle up to 0.113 inches (2.87 mm).

(d) AIRPLANES WITHOUT GREASE DAMS;
While you turn the wheel again, tighten the nut to 150 pound-feet.

NOTE: The end of the axle nut may extend beyond the axle up to 0.056 inches (1.42mm).

(e) Install the lockbolt (2), two locations, as follows:
1) Make sure that the bolt holes in the axle nut align with the bolt holes in the axle.
2) If the holes do not align, continue to turn the axle nut to the first location where the holes align, but do not turn the nut more than fifteen degrees.
3) Install the lockbolt (2), two locations.

S 424-001-001
(22) Install the lockbolts (2) through the transducer flange, the axle, and the wheel retainer nut. The heads of the bolts must be inside the axle.

S 424-053-001
(23) Tighten the lockbolts (2) to 75-85 pound-inches, above run-on torque.

NOTE: Check the self locking nut (AMM 20-11-01/201).

S 614-002-001
(24) Make sure the tire is at the correct pressure. Inflate the tire with nitrogen if it is necessary (Ref 12-15-03/301).

S 944-003-001
(25) Lower the main gear with the jack (Ref 07-11-03).

S 944-004-001
(26) Remove the jack (Ref 07-11-03).

S 424-005-001
(27) Install the hubcap (5) with the antiskid transducer drive attached.

S 424-006-001
(28) Fasten the clamp (4) and tighten the nut (10) on the T-bolt to 35-40 pound-inches torque.

S 864-007-001
(29) Remove hydraulic power from the right hydraulic system (Ref 29-11-00).

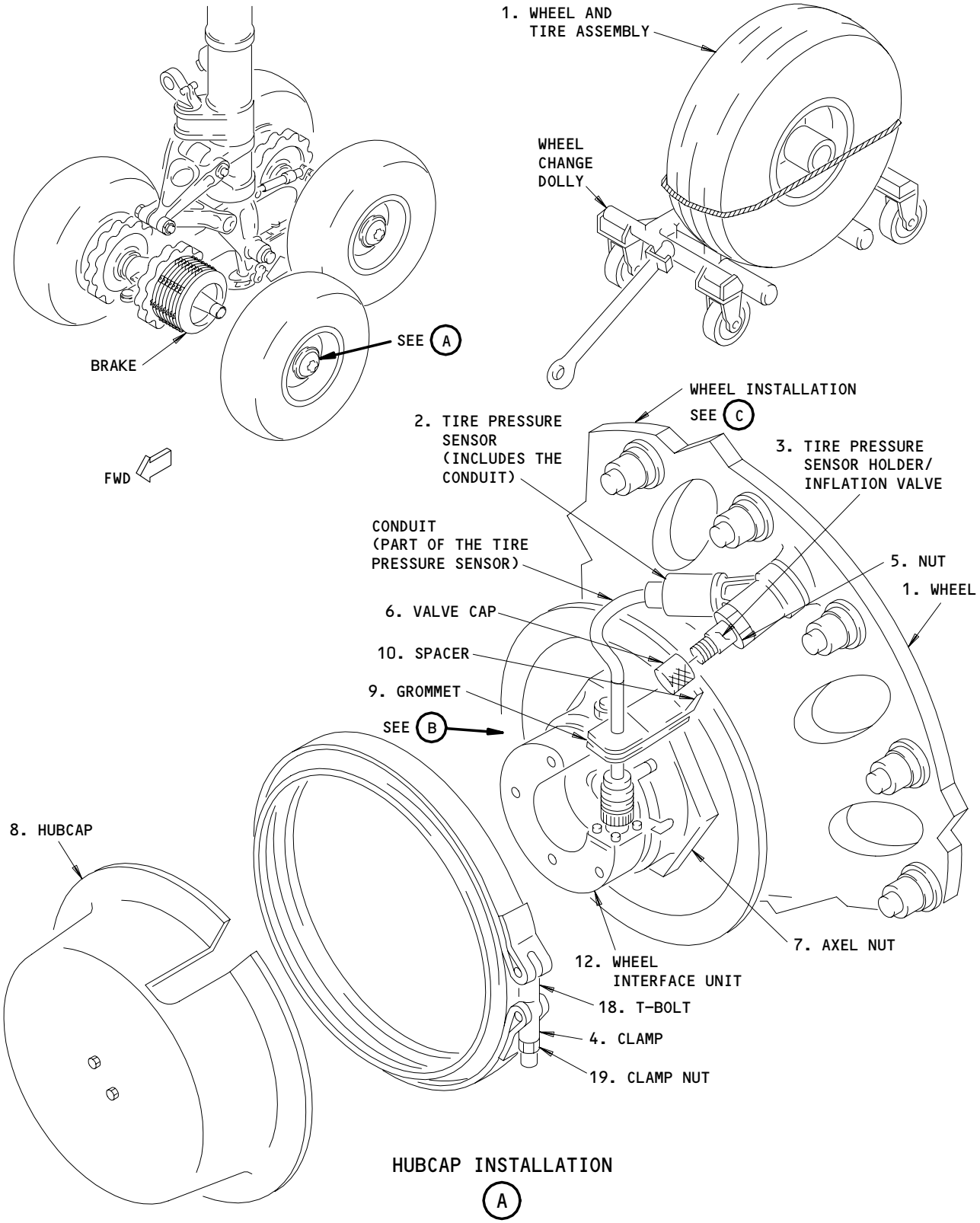
S 864-008-001
(30) Remove electrical power if it is not necessary (Ref 24-22-00).

MAIN GEAR WHEEL AND TIRE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the main gear wheel and tire assembly. The second task installs the main gear wheel and tire assembly.
   B. You can install wheel and tire assemblies, with tires that have different ply, speed, or load ratings, on the same axle if these conditions are obeyed:
      (1) The size of the tires are the same
      (2) The tires are inflated to the same pressure
      (3) The tire pressure is not more than the correct pressure for the applicable airplane load
      (4) The operation speed is not more than the speed rating of the tires
      (5) The operation load of the tires is not more than the rated load of the tires.

TASK 32-45-01-404-001-002

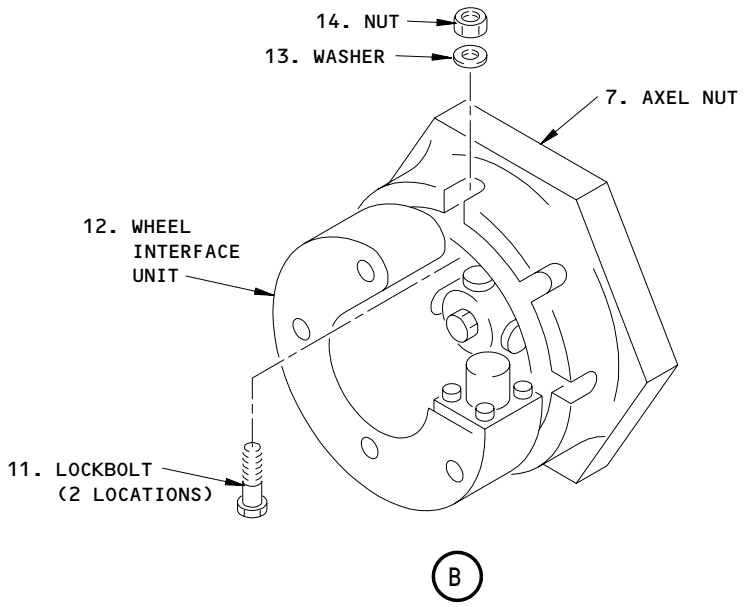
2. Remove the Main Gear Wheel And Tire Assembly (Fig. 401)
   A. Equipment
      (1) Wheel Change Dolly - (MALABAR 175) - commercially available
      (2) MLG Axle and Axle Thread Protector Equipment - A32098-1. Includes:
      - Protector - Axle, MLG - A32098-3
      - Protector - Axle Threads, MLG - A32098-2
      (3) MLG Wheel Retaining Nut Wrench - A32012-13
      (4) Tire Deflation Tool - 968RB (Safe-Cor Tools, Fairview, PA 16415)
      (5) Tire Inflation Tool - A12007-11
      (6) Protective Cover - Inner Wheel Surface - BTA-72028-A, Bill Thomas Assoc. Inc., 7405 Woodley Ave, Van Nuys, Calif.
   B. References
      (1) AMM 07-11-03/201, Jacking Airplane Axles
      (2) AMM 12-15-03/301, Landing Gear Tire
      (3) AMM 24-22-00/201, Electrical Power - Control
      (4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (5) AMM 32-00-20/201, Landing Gear Downlocks

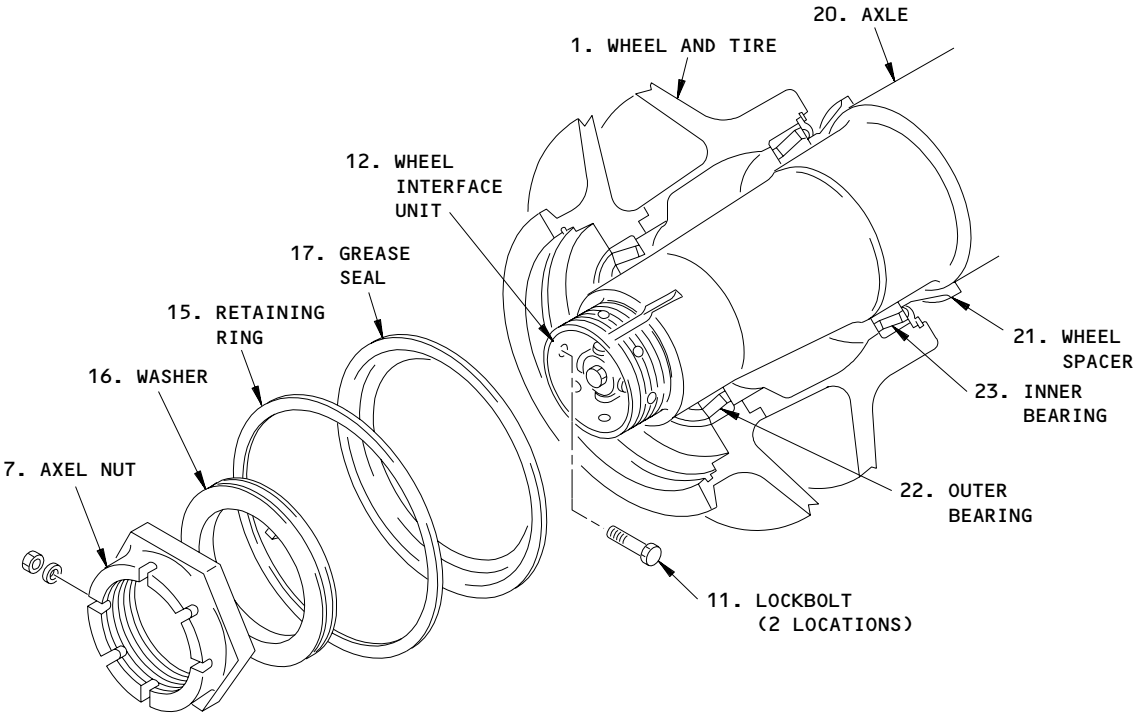


HUBCAP INSTALLATION

(A)

Main Gear Wheel and Tire Installation
Figure 401 (Sheet 1)

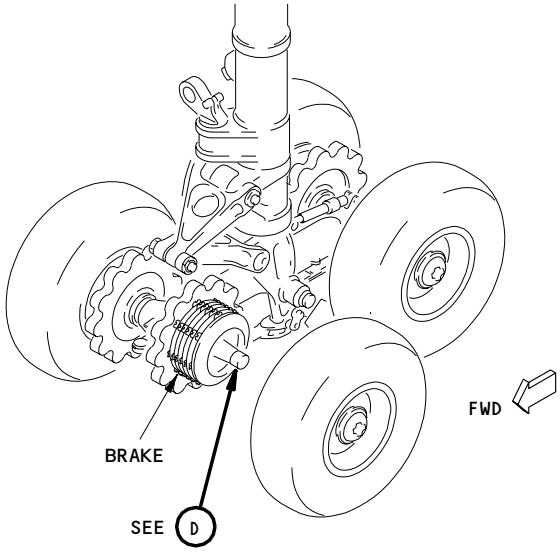


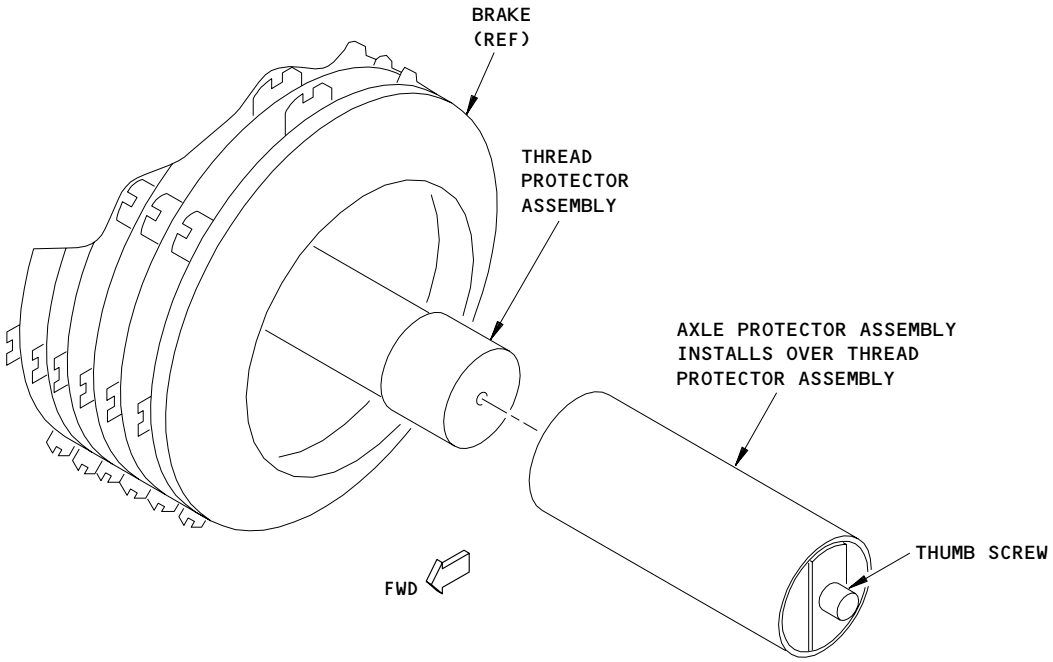


WHEEL INSTALLATION

C

Main Gear Wheel and Tire Installation
Figure 401 (Sheet 2)





AXLE PROTECTOR ASSEMBLY

D

Main Gear Wheel and Tire Installation
Figure 401 (Sheet 3)

L70866

(6) AMM 32-45-00/501, Tires and Wheels
(7) AMM 32-45-00/501, Tire Valve

C. Prepare for Removal

S 864-002-002
(1) Supply electrical power (AMM 24-22-00/201).

S 494-005-002
(2) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

S 864-006-002
(3) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 864-007-002
(4) Make sure that this circuit breaker on the main power distribution panel, P6, is closed:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV

S 864-008-002
(5) Open this circuit breaker on the overhead panel P11 and attach a DO-NOT-CLOSE tag:
(a) 11U17, TIRE PRESS IND 1

S 864-009-002
(6) Open this circuit breaker on the external power panel P34 and attach a DO-NOT-CLOSE tag:
(a) 34M11, TIRE PRESS IND 2

S 944-010-002
(7) Raise the axle with a jack until the wheels do not touch the ground (AMM 07-11-03/201).

S 864-011-002
(8) Set the parking brake.

S 864-012-002

(9) Make sure that PARK BRAKE indicator light on quadrant stand panel, P10, is on.

S 034-013-002

WARNING: YOU MUST DEFLATE THE TIRE BEFORE YOU REMOVE THE WHEEL AND TIRE ASSEMBLY. A DEFECTIVE WHEEL AND TIRE CAN EXPLODE IF YOU DO NOT DEFLATE THE TIRE BEFORE YOU REMOVE THE ASSEMBLY. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(10) Deflate the tire with the tire deflation tool.

S 034-047-002

WARNING: DO NOT USE TOO MUCH FORCE ON THE VALVE CORE. THE CORE PARTS CAN MOVE APART AND LET THE SLEEVE AND THE LOWER END OF THE POPPET STAY IN THE VALVE STEM.

MAKE SURE THAT ALL PERSONS ARE CLEAR OF THE VALVE PATH. IF THE VALVE BLOWS OFF WHILE YOU REMOVE IT, INJURY TO PERSONS CAN OCCUR.

(11) If you think that the valve core is damaged so that you can not use the normal procedure to deflate the tire, do this task (AMM 32-45-08/401) Tire Valve Removal.

D. Procedure to Remove the Wheel and Tire Assembly

S 034-003-002

(1) Do the steps that follow to remove the hubcap (8):
   (a) Remove the clamp (4) from the hubcap (8).
   (b) Hold the grommet (9) and the spacer (10) in position.
   (c) Pull the hubcap (8) away from the hub, but be careful not to bend the conduit.

(d) Remove the clamp (4) and pull the hubcap (8) off the wheel (1).
(e) Remove clamp (4) and remove hubcap with antiskid transducer drive attached.

S 034-004-002

(2) Remove the tire pressure sensor (2).
(a) Remove the nut (5).
(b) Pull the sensor (2) from the pressure sensor holder on the wheel (1).
(c) Install a seal cap on the inflation valve/pressure-sensor holder (3) on the wheel.

NOTE: Ten seal caps (one for each wheel and tire) are part of the airplane fly-away equipment. Use the seal cap to prevent pressure loss through the inflation valve/pressure-sensor holder (3) if the tire is inflated. Without a sensor or cap over the holder the tire will loose pressure at approximately 1 psi per minute.

(d) Install the nut (5).
(e) Disconnect the tire pressure sensor (2) electrical connector from the wheel interface unit (12) and remove the sensor.

NOTE: If this sensor will be used in this wheel position keep the grommet on the conduit. If a new sensor will be installed remove the grommet and keep it with the hubcap.

S 024-016-002

(3) Remove the wheel and tire assembly.
(a) Remove the lockbolts (11), the wheel retaining nut (7), the washer (16), the retaining ring (15) and the grease seal (17).

NOTE: Do not remove the wheel interface unit (12) from axle cavity.

(b) Install axle thread protector on axle (20).
(c) Position wheel change dolly under wheel (1), and remove wheel and tire (1).
(d) Install protective cover over inner wheel surface to protect against damage.

(e) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

TASK 32-45-01-404-017-002

3. Install the Main Gear Wheel and Tire Assembly (Fig. 401)

A. Equipment

(1) Wheel Change Dolly - (MALABAR 175) - commercially available
(2) MLG Axle and Axle Thread Protector Equipment - A32098-1. Includes:
- Protector - Axle, MLG - A32098-3
- Protector - Axle Threads, MLG - A32098-2
(3) MLG Wheel Retaining Nut Wrench - A32012-13
(4) Tire Deflation Tool - 968RB (Safe-Cor Tools, Fairview, PA 16415)
(5) Tire Inflation Tool - A12007-11
(6) Protective Cover - Inner Wheel Surface - BTA-72028-A, Bill Thomas Assoc. Inc., 7405 Woodley Ave, Van Nuys, Calif.

B. References

(1) AMM 07-11-03/201, Jacking Airplane Axles
(2) AMM 12-15-03/301, Landing Gear Tire
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(5) AMM 32-00-20/201, Landing Gear Downlocks
(6) AMM 32-11-26/601, Main Gear Axle
(7) AMM 32-41-08/601, Main Gear Wheel Brakes
(8) AMM 32-45-00/501, Tires and Wheels
(9) AMM 32-45-03/601, Wheels
(10) AMM 32-45-04/601, Tires
(11) AMM 32-45-11/601, Tire Pressure Sensor

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Wheel and Tire	To Be Furnished		
	2	Tire Pressure Sensor			
	3	Tire Pressure Sensor Holder			
	4	Clamp			
	5	Mounting Ring Assembly Nut			
	6	Fan and Drive Assembly Valve Cap			
	7	Wheel Retention Nut			
	8	Hubcap			
	9	Grommet			
	10	Spacer			
	11	Lockbolt			
	12	Wheel Interface Unit			
	13	Washer			
	14	Nut			
	15	Retaining Ring			
	16	Washer			
	17	Grease Seal			
	21	Wheel Spacer			

D. Consumable Materials
(1) Wheel bearing grease -
Aircraft, General Purpose, Wide Temperature:
(a) D00378 - Aeroshell 22
(b) D00233 - Mobilgrease 28
(c) D50005 - Mobil Aviation Grease SHC 100
(d) D00258 - Aeroshell 5 (Alternative)

E. Prepare for Installation

NOTE: Before you install the main landing gear wheel(s), and tire assembly, check all installation components for contaminants and/or foreign material and clean as required.

S 214-018-002

(1) Examine the wheel assembly and the exposed area of the axle assembly for damage and wear before you install it on the airplane (AMM 32-45-03/601).

NOTE: Wear Limits for the main gear axles are given in 32-11-26.

S 214-019-002
(2) Examine the tires for wear (AMM 32-45-04/601).

S 214-049-002
(3) Examine the antiskid transducer drive in the hubcap and axle for damage.

S 214-050-002
(4) Make sure the antiskid transducer drive is not loose.

S 214-020-002
(5) Examine the heat shield on the inside diameter of the brake torque tube to make sure that there are no projections that may touch the wheel hub.

S 214-046-002
(6) Do an inspection of the brake (AMM 32-41-08/601).

S 494-021-002
(7) Make sure that an axle thread protector is installed on axle.

F. Procedure

S 434-022-002

CAUTION: IF THE WHEEL SPACER IS NOT INSTALLED ON THE AXLE, THE WHEEL AND BRAKE WILL BIND AND CAUSE DAMAGE.

CAUTION: INSTALL THE WHEEL SPACER CORRECTLY,IMPROPER ORIENTATION WILL CAUSE DAMAGE TO THE INNER WHEEL HALF HUB.

(1) Make sure that the wheel spacer (21) is on the axle (20).
(a) Apply a thin layer of wheel bearing grease to the surface of the axle where it will contact the inner and outer wheel bearings.

NOTE: Do not lubricate surface of axle (20) between wheel bearings (18, 19).

S 644-023-002

(2) Lubricate wheel bearings (22 and 23) and fill the cavity outside of the bearings with wheel bearing grease.

S 424-024-002

(3) Install the grease seal (17) and the retaining ring (15).

S 094-025-002

(4) Remove the protective cover if it is installed on the inner surface of the wheel assembly (1).

S 944-026-002

(5) Put the wheel and tire (1) assembly on the dolly and use the dolly to move the wheel and tire assembly into position on the axle.

S 424-027-002

CAUTION: DO NOT HIT ANY OF THE CARBON DISCS WITH THE WHEEL WHEN YOU INSTALL THE WHEEL AND TIRE ASSEMBLY BECAUSE YOU CAN DAMAGE THE CARBON. IF YOU THINK THE WHEEL COULD HAVE HIT THE CARBON, YOU SHOULD PULL OUT THE WHEEL FAR ENOUGH TO EXAMINE THE CARBON DISCS.

(6) Align brake rotor slots with lugs in wheel and slide wheel/tire assembly into position on brake and axle.

S 094-028-002

(7) Remove axle thread protector.

S 644-029-002

(8) Lubricate axle washer (16) with grease.

S 424-030-002

(9) Align the washer (16) tang with the groove in the axle and slide the washer (16) on the axle.

S 644-031-002
(10) Apply grease to the threads of the axle nut (7).

S 424-032-002
(11) Hand tighten the nut (7) on the axle (20).

S 424-034-002
(12) Use the procedure that follows to tighten the axle nut (7) to the necessary torque:
(a) While you turn the wheel, tighten the nut to 500-600 pound-feet to seat the axle sleeve against the truck beam.
(b) Stop the wheel.
(c) Fully loosen the nut.
(d) AIRPLANES WITH GREASE DAMS;
While you turn the wheel again, tighten the nut to 150 pound-feet.

NOTE: The end of the axle nut may extend beyond the axle up to 0.113 inches (2.87 mm).

(e) AIRPLANES WITHOUT GREASE DAMS;
While you turn the wheel again, tighten the nut to 150 pound-feet.

NOTE: The end of the axle nut may extend beyond the axle up to 0.056 inches (1.42mm).

S 424-035-002
(13) Install two lockbolts (11) through the wheel interface unit (12), the axle (20), and the slot in the axle nut (7) as follows:
(a) Make sure that the lockbolt slots in the axle nut (7) align with the lockbolt holes in the axle (20) and the wheel interface unit (12).

(b) If the lockbolt holes do not align, continue to turn the axle nut (7) to the first location where the holes align, but do not turn the nut more than fifteen degrees.
(c) Install the lockbolts (11) with the head inside the axle (20).

NOTE: Turn the rotor on the wheel interface unit (12) as necessary to get access to install the lockbolts (11).

(d) Install the washer (13) and nut (14) and tighten to 75-85 pound-inches, above run-on torque.

NOTE: Check the self locking nut (AMM 20-11-01/201).

S 434-036-002
(14) Install the tire pressure sensor (2) (AMM 32-45-11/401)

S 614-037-002
(15) Make sure the tire is at the correct pressure. Inflate with nitrogen if it is necessary (AMM 12-15-03/301).

S 944-038-002
(16) Lower the main landing gear and remove the jack (AMM 07-11-03/201).

S 424-040-002
(17) Install the hubcap (8) with the antiskid transducer drive attached. Fasten the clamp (4) and tighten the nut (19) on the T-bolt (18) to 35-40 pound-inches torque.

S 864-041-002
(18) Close this circuit breaker on the overhead panel P11 and remove the DO-NOT-CLOSE tag:
(a) 11U17, TIRE PRESS IND 1

S 864-045-002
(19) Close this circuit breaker on the external pwer panel P34 and remove the DO-NOT-CLOSE tag:
(a) 34M11, TIRE PRESS IND 2

S 714-042-002
(20) Do a tire pressure indicating system operational test (AMM 32-45-00/501).

S 864-043-002
(21) Depressurize the right hydraulic system (AMM 29-11-00/201).

S 864-044-002
(22) Remove electrical power if it is not necessary (AMM 24-22-00/201).

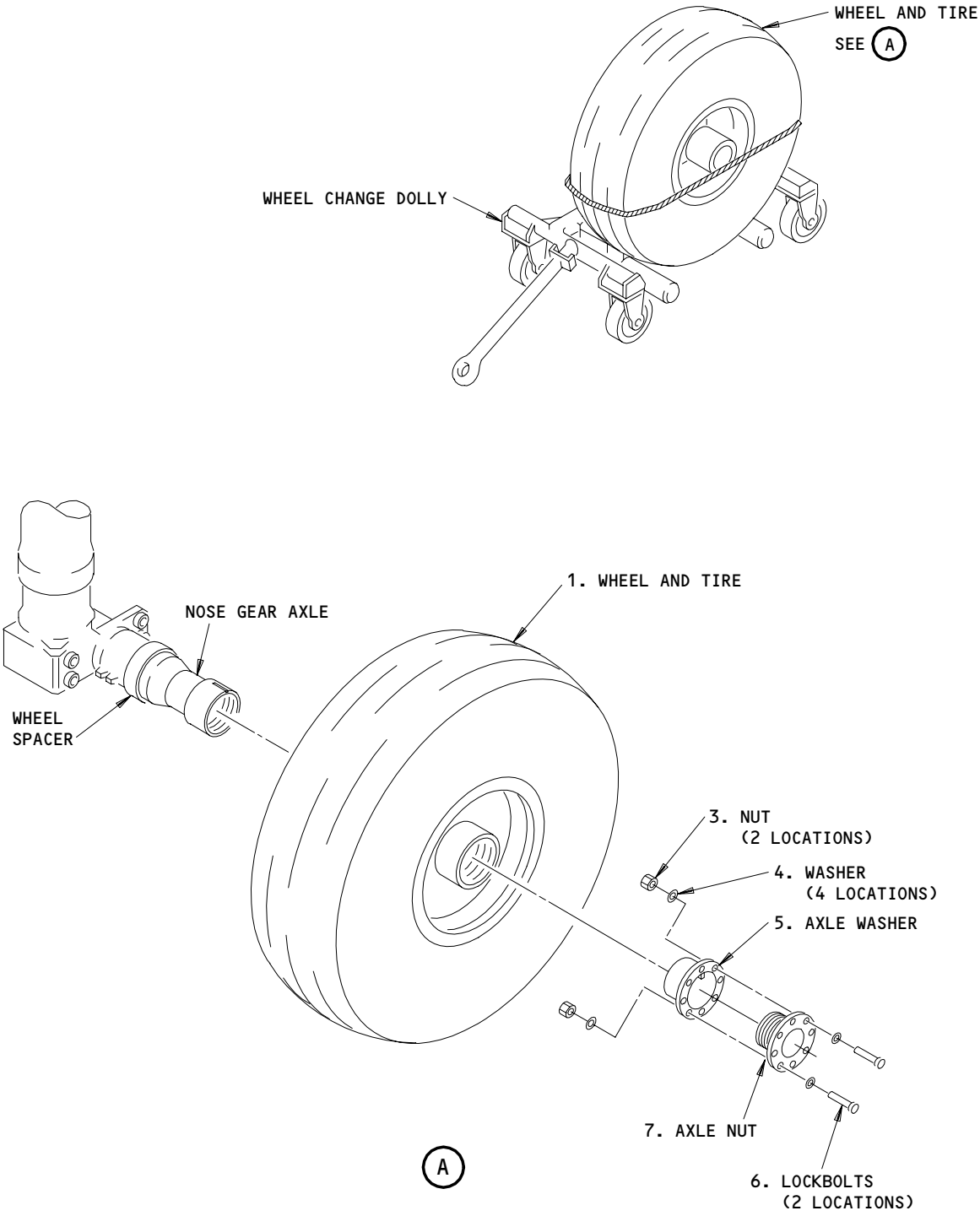
NOSE GEAR WHEEL AND TIRE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the wheel and tire assembly for the nose landing gear. The second task installs the wheel and tire assembly for the nose landing gear.
   B. You can install wheel and tire assemblies, with tires that have different ply, speed, or load ratings, on the same axle if these conditions are obeyed:
      (1) The size of the tires are the same
      (2) The tires are inflated to the same pressure
      (3) The tire pressure is not more than the correct pressure for the applicable airplane load
      (4) The operation speed is not more than the speed rating of the tires
      (5) The operation load of the tires is not more than the rated load of the tires.

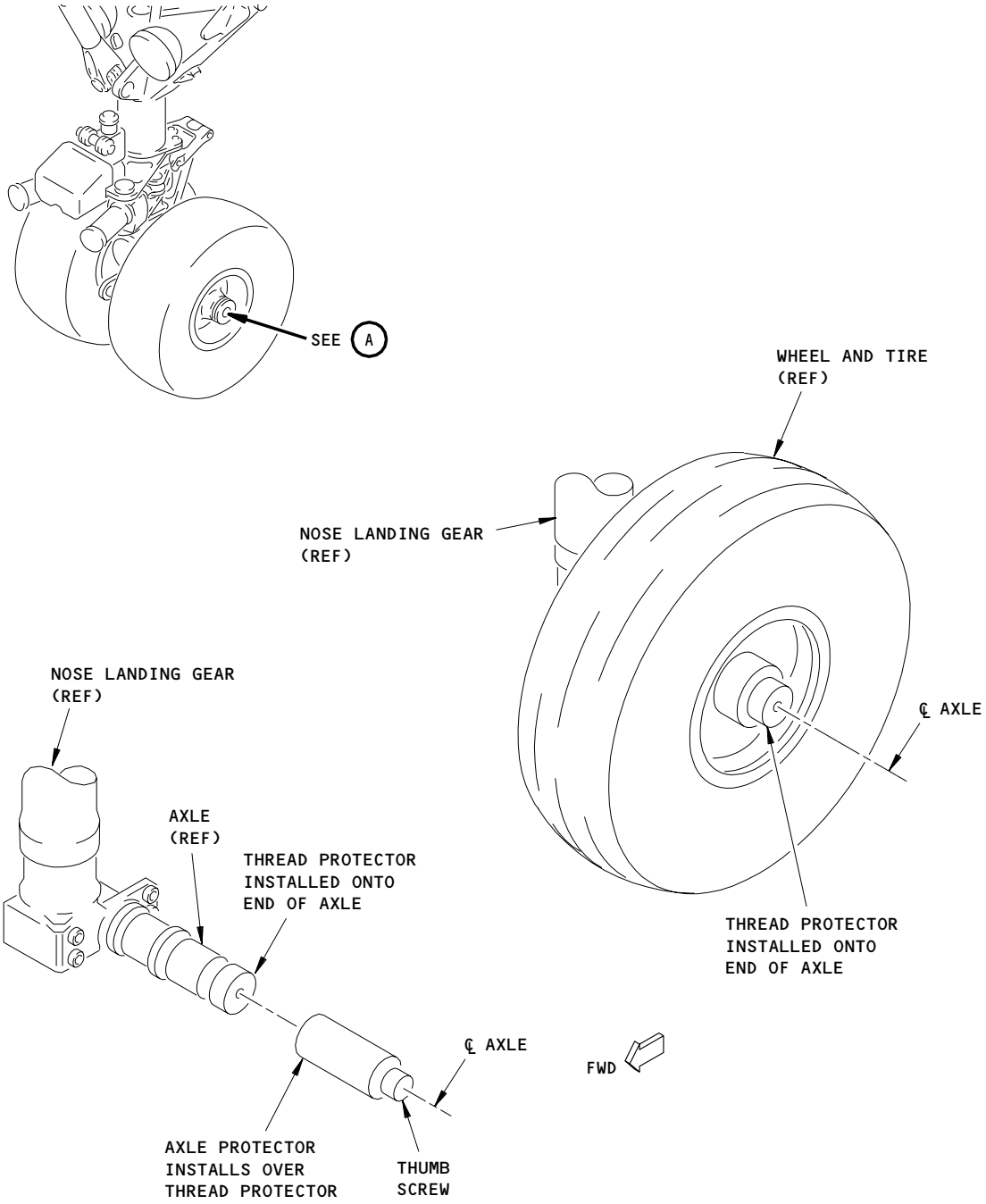
TASK 32-45-02-024-001-001

2. Remove the Nose Gear Wheel and Tire Assembly (Fig. 401)
   A. Equipment
      (1) Wheel Change Dolly - Malabar 175 or equivalent
      (2) Nose Landing Gear Axle Protector - A32022-1
      (3) NLG Wheel Retaining Nut Wrench - A32025-1
      (4) Tire Deflation Tool - 968RB (Safe-Cor Tools, Fairview, PA 16415)
      (5) Tire Inflation Tool - A12007-11
   B. References
      (1) 07-11-03/201, Jacking Airplane Axles
      (2) 12-15-03/301, Landing Gear Tire
      (3) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zone
          711 Nose Landing Gear (NLG)
   D. Procedure

      S 494-002-001
      (1) Make sure that the landing gear downlocks are installed (Ref 32-00-20).



Nose Gear Wheel and Tire Installation
Figure 401



Nose Gear Wheel and Tire Installation
Figure 401A

S 944-003-001

WARNING: IT IS RECOMMENDED THAT YOU REMOVE ONLY ONE WHEEL/TIRE ASSEMBLY FROM THE NOSE GEAR AT A TIME. IF YOU REMOVE THE TWO WHEEL/TIRE ASSEMBLIES FROM THE NOSE GEAR AT THE SAME TIME, STRUCTURAL DAMAGE AND INJURY TO PERSONS CAN OCCUR IF THE AIRPLANE FALLS.

(2) Raise the axle with a jack sufficiently so that there is clearance between the tire and the ground (Ref 07-11-03).

S 034-040-001

WARNING: BEFORE YOU REMOVE THE WHEEL AND ASSEMBLY YOU MUST DEFLATE THE TIRE OR INSPECT THE WHEEL AND TIRE TO MAKE SURE THEY ARE SAFE. INSPECT THE WHEEL AND TIRE FOR THE CONDITIONS LISTED BELOW. A DEFECTIVE WHEEL AND TIRE ASSEMBLY CAN EXPLODE DURING OR AFTER REMOVAL IF YOU DO NOT DEFLATE THE TIRE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Do one of the steps that follows:.

NOTE: If you plan to install the same wheel and tire assembly and the assembly is safe it is not always necessary to deflate the tire. However, if you will not install the same wheel and tire assembly deflate the tire to prevent transporting an inflated tire.

(a) Inspect the wheel and tire assembly for the conditions that follow:
1) The tire is worn too much (AMM 32-45-04/601).
2) The tire has damage.
3) The tire is unusually hot.
4) The wheel has damage.
5) One or more of the tie bolts have damage or are missing.

(b) If you find one or more of these conditions, you must deflate the tire.

(c) Deflate the tire as follows:

WARNING: MAKE SURE THAT ALL PERSONS ARE CLEAR OF THE VALVE PATH. IF THE VALVE BLOWS OFF WHILE YOU REMOVE IT, INJURY TO PERSONS CAN OCCUR.

CAUTION: DO NOT USE TOO MUCH FORCE ON THE VALVE CORE. THE CORE PARTS CAN MOVE APART AND LET THE SLEEVE AND THE LOWER END OF THE POPPET STAY IN THE VALVE STEM.

(d) If the valve core has damage and you can not deflate the tire with the tire deflation tool, do the steps that follow to deflate the tire:
  1) Turn the valve assembly slowly in a counterclockwise direction until there is gas leakage through the boss.
  2) At the same time, push lightly on the valve assembly.
  3) Remove the valve assembly from the tire after all the pressure in the tire has been released.
(e) Deflate the tire with the tire deflation tool.

S 024-007-001

(4) Remove the axle nut (7) as follows:
  (a) Remove the lockbolt (6), the nut (3), and the two washers (4), at two locations.
  (b) Remove the axle nut (7).
  (c) Remove the axle washer (5).

S 024-011-001

(5) Remove the axle washer (5).

S 944-013-001

(6) Put the wheel change dolly under the wheel and tire assembly (1).

S 024-014-001

(7) Remove the wheel and tire assembly (1).

S 494-012-001

(8) Install the axle protector.

S 934-041-001

(9) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

TASK 32-45-02-424-015-001

3. Install the Nose Gear Wheel and Tire Assembly (Fig. 401)

A. Equipment

(1) Wheel Change Dolly - Malabar 175 or equivalent
(2) NLG Wheel Retaining Nut Wrench - A32025-1
(3) Tire Inflation Tool - A12007-11

B. Consumable Materials

(1) D00378 Grease - Aeroshell No. 22 (Preferred)
Aeroshell No. 5 (Optional)

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Wheel and Tire Assembly	32-45-02	01	35
	3	Nut			20
	4	Washer			15
	5	Axle Washer			30
	6	Lockbolt			10
	7	Axle Nut			25

D. References

(1) 07-11-03/201, Jacking Airplane Axles
(2) 12-15-03/301, Landing Gear Tire
(3) 32-00-20/201, Landing Gear Downlocks

E. Access

(1) Location Zone
711 Nose Landing Gear (NLG)

F. Procedure

S 094-016-001

(1) Remove the axle protector.

S 214-038-001

(2) Examine the wheel and tire assembly before you install it on the airplane (Ref 32-45-03, 32-45-04).

S 214-017-001

(3) Examine the part of the axle that you can see for evidence of scoring, galling, or corrosion.

S 424-018-001

CAUTION: MAKE SURE THAT THE WHEEL SPACER IS INSTALLED. IF THE SPACER IS NOT INSTALLED, THE WHEEL BEARING CAN BECOME LOOSE AND CAUSE SUBSEQUENT WHEEL FAILURE.

(4) Make sure that the spacer is installed on the axle.

S 424-019-001

(5) Make sure that the wheel spacer (7) is installed on the nose gear axle (8).

S 644-020-001

(6) Apply a thin layer of grease to the axle in the area where the wheel bearings touch the axle.

NOTE: Do not lubricate the axle surfaces between the wheel bearings.

S 644-021-001

(7) Lubricate the axle threads and the wheel bearings with grease.

S 944-022-001

(8) Put the wheel and tire (1) on the dolly and slide it on the axle (Fig. 401).

S 424-025-001

(9) Use the procedure that follows to tighten the axle nut (7).
   (a) While you turn the wheel, tighten the axle nut to 76-92 pound-feet.
   (b) Stop the wheel.
   (c) Loosen the nut to zero torque.
   (d) While you turn the wheel again, tighten the nut to 34 pound-feet.
   (e) Continue to tighten the nut if it is necessary to align the lockbolt holes, but do not exceed 75 pound-feet.
      1) Do not loosen the nut to align the lockbolt holes.
      2) If you can not get alignment of the lockbolt holes at the maximum allowable torque, fully loosen the nut and do the procedure to tighten the nut again.

S 424-027-001

(10) Install the axle nut (7) as follows:
   (a) Align the tang on the axle washer (5) and install the axle washer (5) on the axle.
   (b) Apply grease to the threads of the axle nut (7).

S 424-028-001

(11) Engage the threads of the axle nut (7) with the threads on the axle (8) and tighten the axle nut (7) as follows:
   (a) While you turn the wheel, tighten the axle nut to 76-92 pound-feet.
   (b) Stop the wheel.
   (c) Loosen the nut to zero torque.
   (d) While you turn the wheel again, tighten the nut to 34 pound-feet.
   (e) Continue to tighten the nut if it is necessary to align the lockbolt holes, but do not exceed 75 pound-feet.
      1) Do not loosen the nut to align the lockbolt holes.
      2) If you can not get alignment of the lockbolt holes at the maximum allowable torque, fully loosen the nut and do the procedure to tighten the nut again.

S 424-029-001

(12) Install the lockbolt (6), the nut (3), two washers (4), two locations, to lock the axle nut (7) to the axle.

   (a) Do not loosen the nut to align the lockbolt holes.
   (b) If you can not get alignment of the lockbolt holes at the maximum allowable torque, fully loosen the nut and do the procedure to tighten the nut again.

S 424-035-001

(13) Install the nut (3), the washer (4), and the lockbolt (6), two locations, to lock the axle nut (5) to the axle (8).

S 424-042-001

(14) Tighten the lockbolts (6) to 100-150 pound-inches, above run-on torque.

   NOTE: Check the self locking nut (AMM 20-11-01/201).

S 614-036-001

(15) Make sure that the tire is inflated with nitrogen to the correct pressure (Ref 12-15-03).

S 944-037-001

(16) Lower the nose gear and remove the jack (Ref 07-11-02).

NOSE GEAR WHEEL AND TIRE - REMOVAL/INSTALLATION

1. General
   A. You can install wheel and tire assemblies, with tires that have different ply, speed, or load ratings, on the same axle if these conditions are obeyed:
      (1) The size of the tires are the same
      (2) The tires are inflated to the same pressure
      (3) The tire pressure is not more than the correct pressure for the applicable airplane load
      (4) The operation speed is not more than the speed rating of the tires
      (5) The operation load of the tires is not more than the rated load of the tires.

TASK 32-45-02-024-001-002

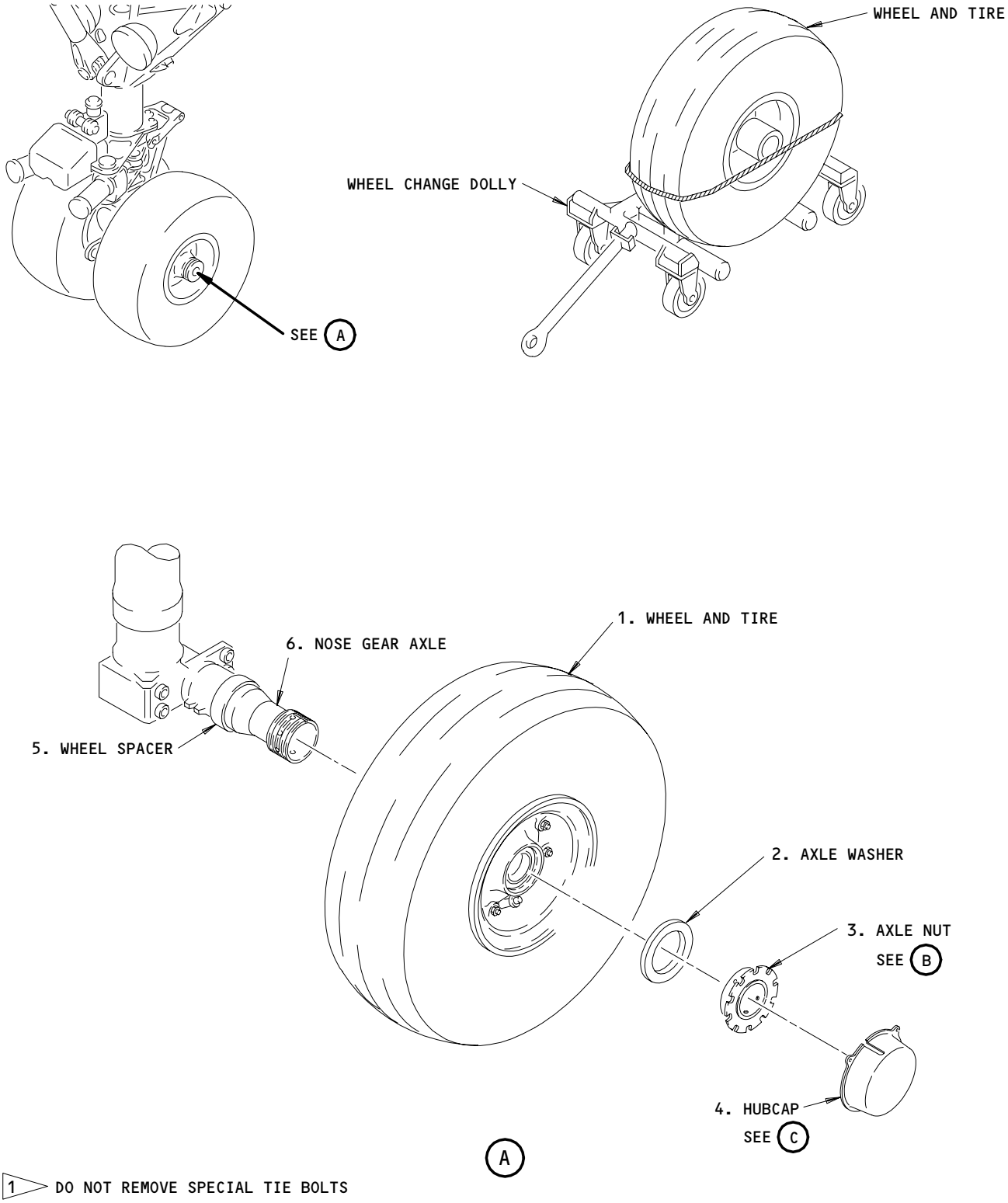
2. Remove the Wheel and Tire for the Nose Landing Gear
   A. Equipment
      (1) Nose Gear Axle Jack - Commercially Available
      (2) Wheel Change Dolly - Malabar 175 or Equivalent
      (3) Nose Landing Gear Axle Protector - A32097-1
      (4) NLG Wheel Retaining Nut Wrench - A32025-1
      (5) Tire Deflation Tool - 968RB (Safe-Cor Tools, Fairview, PA 16415)
   B. References
      (1) 07-11-03/201, Jacking Airplane Axles
      (2) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zone
          711 Nose Landing Gear

   D. Prepare for the Removal

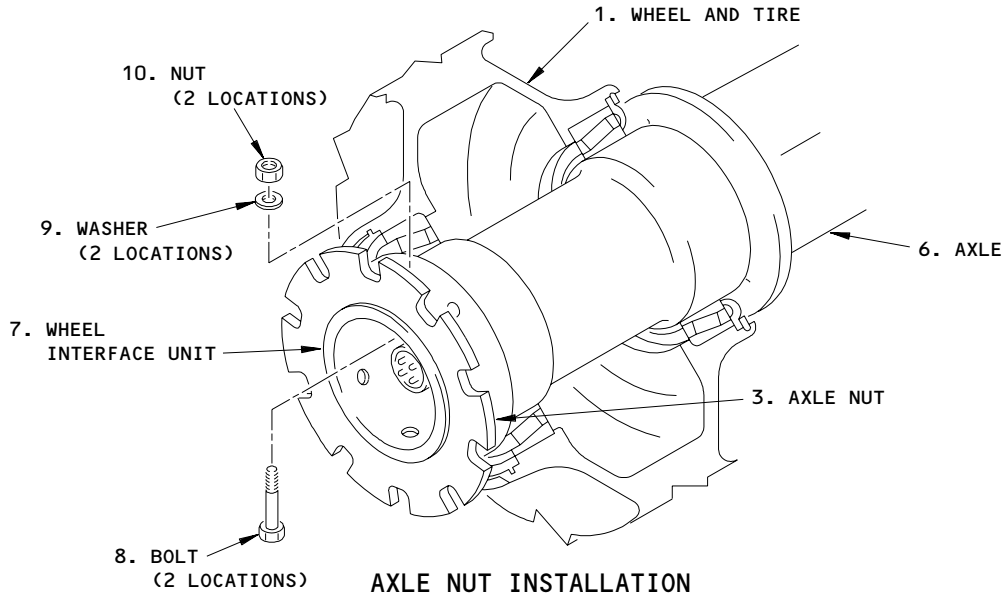
      S 864-002-002
      (1) Open this circuit breaker on the overhead panel, P11, and attach a DO-NOT-CLOSE tag:
          (a) 11U17, TIRE PRESS IND 1

      S 864-003-002
      (2) Open this circuit breaker on the APU external power panel, P34, and attach a DO-NOT-CLOSE tag:
          (a) 34M11, TIRE PRESS IND 2

      S 214-004-002
      (3) Make sure the landing gear downlocks are installed (Ref 32-00-20/201).

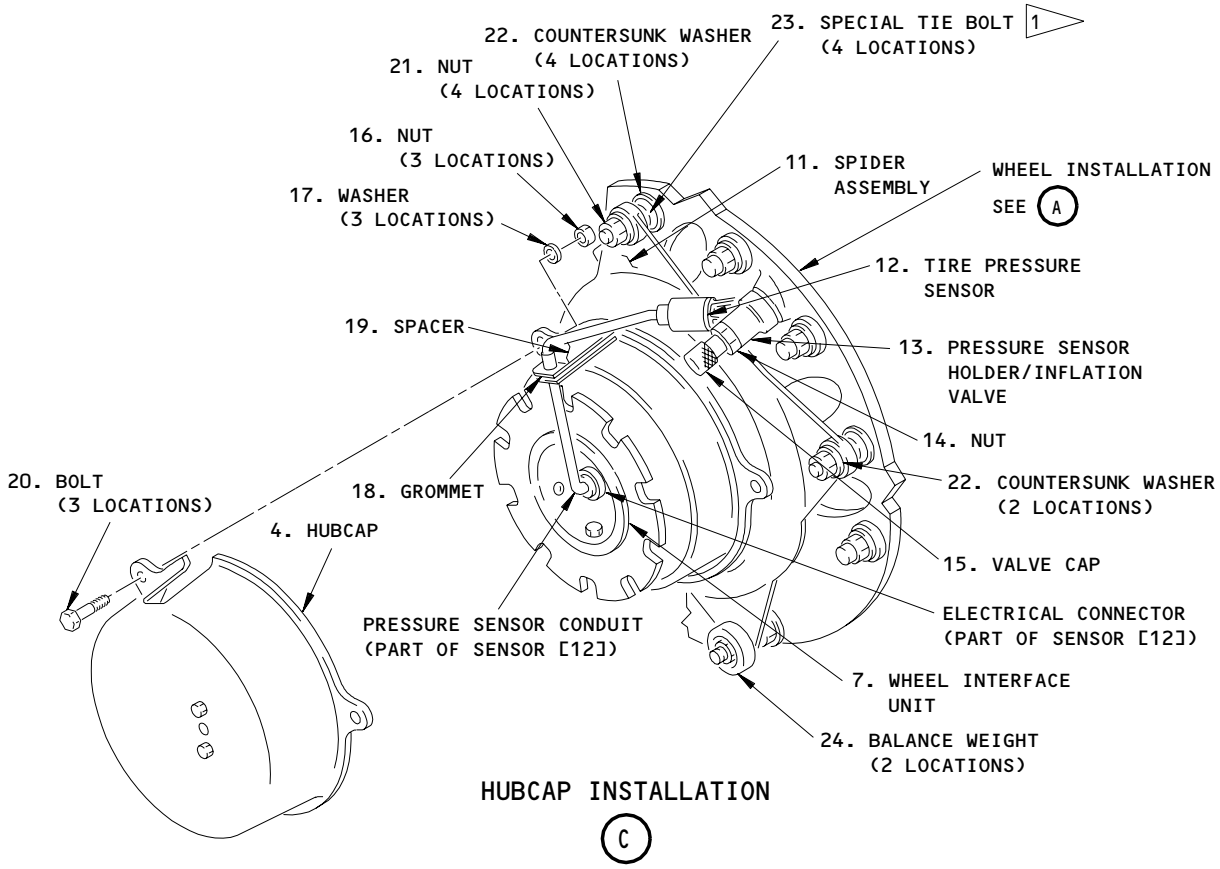


Nose Gear Wheel and Tire Installation
Figure 401 (Sheet 1)



AXLE NUT INSTALLATION

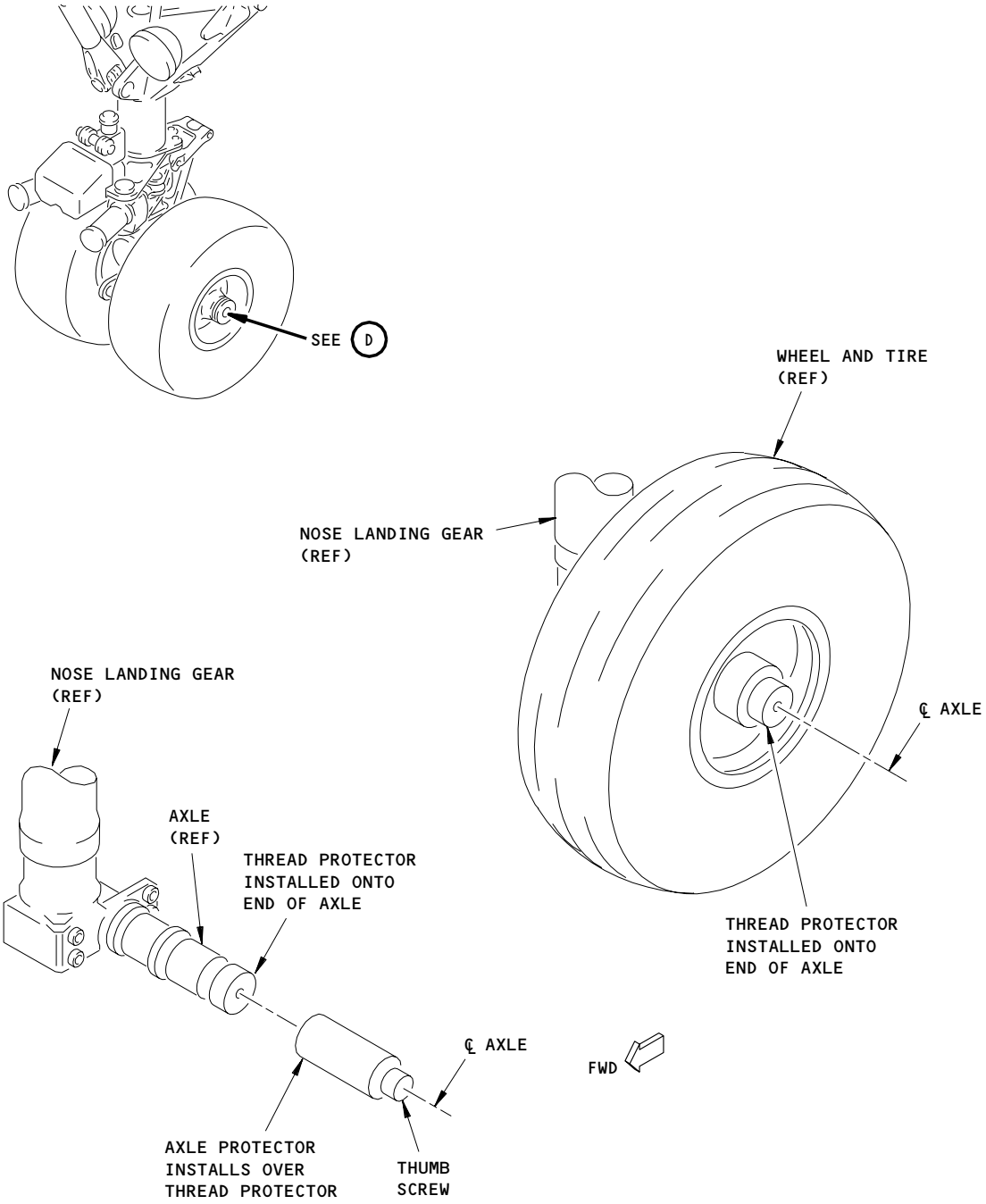
B



HUBCAP INSTALLATION

C

Nose Gear Wheel and Tire Installation
Figure 401 (Sheet 2)



Nose Gear Wheel and Tire Installation
Figure 401 (Sheet 3)

S 944-005-002

WARNING: IT IS RECOMMENDED THAT YOU REMOVE ONLY ONE WHEEL/TIRE ASSEMBLY FROM THE NOSE GEAR AT A TIME. IF YOU REMOVE THE TWO WHEEL/TIRE ASSEMBIES FROM THE NOSE GEAR AT THE SAME TIME, STRUCTURAL DAMAGE AND INJURY TO PERSONS CAN OCCUR IF THE AIRPLANE FALLS.

(4) Lift the axle (6) with a jack until there is clearance between the tire (1) and the ground (Ref 07-11-03/201).

S 684-006-002

WARNING: BEFORE YOU REMOVE THE WHEEL AND TIRE ASSEMBLY, YOU MUST DEFLATE THE TIRE OR INSPECT THE WHEEL AND TIRE TO MAKE SURE THEY ARE SAFE. A DEFECTIVE WHEEL AND TIRE CAN EXPLODE DURING OR AFTER REMOVAL IF YOU DO NOT DEFLATE THE TIRE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Do one of the steps that follows:.

NOTE: If you plan to install the same wheel and tire assembly and the assembly is safe it is not always necessary to deflate the tire. However, if you will not install the same wheel and tire assembly deflate the tire to prevent transporting an inflated tire.

(a) Inspect the wheel and tire assembly for the conditions that follow:
1) The tire is worn too much (Ref 32-45-04/601)
2) The tire has damage.
3) The tire is unusually hot.
4) The wheel has damage.
5) One or more of the tie bolts have damage or are missing.
6) If you find one or more of these conditions, you must deflate the tire.

(b) Deflate the tire as follows:
1) Deflate the tire with the tire deflation tool.

WARNING: MAKE SURE THAT ALL PERSONS ARE CLEAR OF THE VALVE PATH. IF THE VALVE BLOWS OFF WHILE YOU REMOVE IT, INJURY TO PERSONS CAN OCCUR.

CAUTION: DO NOT USE TOO MUCH FORCE ON THE VALVE CORE. THE CORE PARTS CAN MOVE APART AND LET THE SLEEVE AND THE LOWER END OF THE POPPET STAY IN THE VALVE STEM.

2) If the valve core has damage and you can not remove pressure from the tire with the tire deflation tool, do the steps that follow:

NOTE: The valve core is in the pressure sensor holder/inflation valve (13).

3) Disconnect the tire pressure sensor (12) from the pressure sensor holder/inflation valve (13).
   a) Remove the lockwire and the nut (14), and pull the sensor (12) from the pressure sensor holder (13) on the wheel.
4) Slowly turn the pressure sensor holder/inflation valve (13) in a counterclockwise direction until there is gas leakage through the boss.
5) At the same time, push lightly on the valve stem of the pressure sensor holder/inflation valve (13).
6) Remove the pressure sensor holder/inflation valve (13) after all the pressure in the tire has been released.

E. Remove the Wheel and Tire (Fig. 401)

S 034-008-002

(1) Do the steps that follow to remove the hubcap (4):
   (a) Remove the three bolts (20) from the hubcap assembly (4) along with the washers (17) and nuts (16).
   (b) Hold the grommet (18) and the spacer (19) in their positions.
   (c) Pull the hubcap (4) away from the hub.

NOTE: Be careful not to bend the pressure sensor conduit when you remove the hubcap.

S 034-009-002

(2) Do the steps that follow to remove the spider assembly (11):
   (a) Remove the nuts (21) and the balance weights (24).
   (b) Pull the spider assembly (11) from the shank end of the special tie bolts (23).
   (c) Remove the countersunk washers (22) that are between the flange of the spider assembly (11) and the attach nut for the special tie bolt (23).

S 034-010-002

(3) Remove the tire pressure sensor (12).
   (a) Remove the lockwire and the nut, then pull the tire pressure sensor (12) from the pressure sensor holder/inflation valve (13).
   (b) Install a seal cap on the pressure sensor holder/inflation valve (13).

      NOTE: Ten seal caps, one for each wheel and tire, are located with the airplanes fly-away equipment.

      The seal caps will prevent a release of pressure through the pressure sensor holder/inflation valve (13) if the tire is inflated. Without a tire pressure sensor (12) or a seal cap installed, the tire pressure will decrease approximately 1 psi per minute.

   (c) Disconnect the tire pressure sensor (12) from the wheel interface unit (7) and remove the sensor (12).

      NOTE: If you will install the used tire pressure sensor (12) in this wheel position, keep the grommet (18) on the pressure sensor conduit. If you will install a new sensor (12), remove the grommet (18) and keep it with the hubcap (4).

S 024-011-002

(4) Do the steps that follow to remove the wheel and tire (1):
   (a) Remove the nuts (10), washers (9) and bolts (8).

      NOTE: Turn the rotor on the wheel interface unit (7), if it is necessary, for access to remove the bolts.

   (b) Remove the axle nut (3) with the wrench adapter.
   (c) Remove the axle washer (2).
   (d) Install an axle protector.
   (e) Use a wheel change dolly to remove the wheel and tire (1).

      NOTE: Make sure the axle washer (2) is not attached to the wheel and tire assembly when you remove the assembly.

(f) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

TASK 32-45-02-424-012-002

3. Install the Wheel and Tire for the Nose Landing Gear

A. Equipment
(1) Wheel Change Dolly - Malabar 175 or Equivalent
(2) Tire Inflation Tool - A12007-11

B. Consumable Materials
(1) D00378 Grease - Aeroshell No. 22 (Preferred) or Aeroshell No. 5 (Optional)

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Wheel and Tire Assembly	32-45-02	01	36
	2	Axle Washer			32
	3	Axle Nut			37
	4	Hubcap			305
	5	Wheel Spacer			205
	7	Wheel Interface Unit			330
	8	Bolt			235
	9	Washer			240
	10	Nut			245
	11	Spider Assembly			325
	12	Tire Pressure Sensor(S283T024-3)			TBD
	13	Pressure Sensor Holder/ Inflation Valve			287
	14	-Nut (subassembly of item 13)			
	15	-Valve Cap (subassembly of item 13)			
	16	Nut			270
	17	Washer			265
	18	Grommet			275
	19	Spacer			280
	20	Bolt			260
	21	Nut			315
	22	Countersunk Washer			310
	24	Balance Weight			320

D. References
(1) 07-11-03/201, Jacking Airplane Axles
(2) 12-15-03/301, Landing Gear Tire
(3) 32-45-00/501, Tires and Wheels

E. Access
(1) Location Zone
711 Nose Landing Gear

F. Install the Wheel and Tire (Fig. 401)

S 094-013-002
(1) Remove the axle protector.

S 214-027-002
(2) Examine the wheel and tire assembly before you install it on the airplane (Ref 32-45-03, 32-45-04).

S 214-014-002
(3) Examine the part of the axle that you can see for scoring, galling, or corrosion.

S 214-015-002

CAUTION: MAKE SURE THE WHEEL SPACER IS INSTALLED. IF THE SPACER IS NOT INSTALLED, THE WHEEL BEARING CAN BECOME LOOSE AND CAUSE SUBSEQUENT WHEEL FAILURE.

(4) Make sure the wheel spacer (5) is installed on the axle (6).

S 424-016-002
(5) Do the steps that follow to install the wheel and tire (1):
(a) Apply a thin layer of grease on the axle (6) in the area where the wheel bearings touch the axle.

NOTE: Do not lubricate the axle (6) surfaces between the wheel bearings.

(b) Lubricate the axle (6) threads and the wheel bearings with grease.
(c) Use a wheel dolly to move the wheel and tire assembly (1) into its position on the axle (6).

CAUTION: MAKE SURE THAT THE AXLE WASHER IS INSTALLED. IF THE WASHER IS NOT INSTALLED, THE WHEEL BEARING CAN FAIL.

(d) Install the axle washer (2).
(e) Apply grease to the axle nut (3) threads.
(f) Tighten the axle nut (3) as follows:
1) While you turn the wheel, tighten the axle nut to 76-92 pound-feet.
2) Stop the wheel and loosen the nut to be at zero torque.
3) While you turn the wheel again, tighten the nut to 34 pound-feet.

4) If the holes in the axle nut and washer do not align, do the step that follows:
   a) Turn the nut to align the holes, do not torque to more than 75 pound-feet.

      NOTE: Do not only loosen the nut to align the bolt holes. If the bolt holes do not align at the maximum permitted torque, loosen the nut fully and do the tighten procedure again for the wheel axle nut.

(g) Install the bolts (8), washers (9) and nuts (10) (2 locations).

NOTE: The bolt heads must be on the inner side of the axle (6).

(h) Tighten the nuts (10) to 75-85 pound-inches, above run-on torque.

NOTE: Check the self locking nut (AMM 20-11-01/201).

S 434-017-002

(6) Do the steps that follow to install the pressure sensor conduit (12):
   (a) Install the grommet (18) on the pressure sensor conduit.
   (b) Connect the tire pressure sensor (12) to the wheel interface unit (7).

NOTE: Do not connect the sensor (12) to the pressure sensor holder/inflation valve (13) on the wheel until you install the hubcap (4). This will let you turn the hubcap to engage the transducer coupling and the driver for the wheel interface unit and not pull the pressure sensor conduit.

S 614-018-002

(7) Make sure the tire is inflated to the correct pressure (Ref 12-15-03/301).

S 944-019-002

(8) Use the jack to lower the axle (6) until the weight of the airplane is on the wheels (Ref 07-11-03/201).

S 434-020-002

(9) Do the steps that follow to install the spider assembly (11):

(a) Install the countersunk washers (22) on the shank ends of the special tie bolts (23) that have the long shanks.

NOTE: Install the washers with the countersunk side to the special tie bolt.

(b) Hold the spider assembly (11) on the shank end of the special tie bolts (23).

NOTE: Install the concave side of the spider adjacent to the tire pressure sensor. This is the side of the spider that gives the most clearance between the spider and the tire pressure sensor.

(c) Install the balance weights (24) on the shank end of the two special tie bolts (23) that are on the opposite side of the wheel from the tire pressure sensor (12).

(d) Install the countersunk washers (22) on the shank end of the two special tie bolts (23) on the side of the wheel with the tire pressure sensor (12).

(e) Install the nuts (21).

(f) Tighten the nuts (21) to 50-60 pound-inches.

S 434-021-002

(10) Do the steps that follow to install the hubcap (4):

(a) Put the hubcap (4) in its position.

(b) Move the hubcap (4) until you can put the grommet (18), on the pressure sensor conduit, in the slot in the hubcap.

(c) Put the spacer (19) below the grommet (18) and push it in the slot in the hubcap (4) when the hubcap is installed.

(d) Turn the hubcap (4) lightly back and forth until the driver in the hubcap engages with the rotor in the wheel interface unit.

(e) Turn the hubcap (4) until the bolt holes in the hubcap align with the mating holes in the wheel.

(f) Install the bolts (20), washers (17), and nuts (16) and install a lockwire.

S 434-022-002

(11) Do the steps that follow to connect the tire pressure sensor (12) to the pressure sensor holder/inflation valve (13):

(a) Remove the valve cap (15) from the pressure sensor holder/ inflation valve (13).

CAUTION: CONNECT THE TIRE PRESSURE SENSOR IMMEDIATELY AFTER YOU REMOVE THE SEAL CAP. THIS PREVENTS GAS LEAKAGE THROUGH THE PRESSURE SENSOR HOLDER ON THE INFLATION VALVE. WITHOUT THE TIRE PRESSURE SENSOR OR THE SEAL CAP INSTALLED, THE TIRE PRESSURE WILL DECREASE APPROXIMATELY 1 PSI PER MINUTE. THIS CAN CAUSE DAMAGE TO THE TIRE IF IT IS OPERATED WITHOUT SUFFICIENT PRESSURE.

(b) Remove the nut (14) and the seal cap from the pressure sensor holder/inflation valve (13).
(c) Connect the tire pressure sensor (12) to the pressure sensor holder/inflation valve (13) on the wheel.

NOTE: The tire pressure sensor (12) can be installed at one of 12 possible angles in 30 degree increments around the holder. When you install the tire pressure sensor, make sure the pressure sensor conduit is not loose or pulled.

(d) Install and tighten the nut (14) and install a lockwire.
(e) Install the valve cap (15) on the end of the pressure sensor holder/inflation valve (13).

S 614-023-002
(12) Make sure the tire pressure is correct and inflate the tire with nitrogen if it is necessary (Ref 12-15-03/301).

S 864-024-002
(13) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the overhead panel, P11:
(a) 11U17, TIRE PRESS IND 1

S 864-025-002
(14) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the APU external power panel, P34:
(a) 34M11, TIRE PRESS IND 2

S 714-026-002
(15) Do the operational test for the indicating system for tire pressure (Ref 32-45-00/501).

WHEELS - INSPECTION/CHECK

1. General
   A. This procedure contains two tasks. The first task is an inspection of the landing gear wheels for damage with the wheels installed on the airplane. The second task is an inspection of the landing gear wheels for damage with the wheels removed from the airplane.
   B. To prevent the failure of a wheel when the airplane is in service, discard the wheel if examination shows that it has turned on a runway without a tire for a full revolution or more.

TASK 32-45-03-216-001

2. Examine the Wheels (Wheel Installed on Airplane) (Fig. 601)
   A. References
      (1) 32-00-20/201, Landing Gear Downlocks
      (2) 32-45-01/401, Main Gear Wheel and Tire
   B. Access
      (1) Location Zones
          711 Nose Landing Gear
          731 Landing Gear Left
          741 Landing Gear Right

   C. Procedure

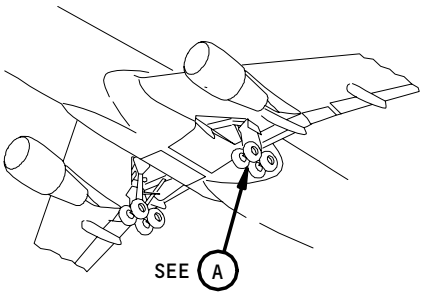
      S 496-002
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20).

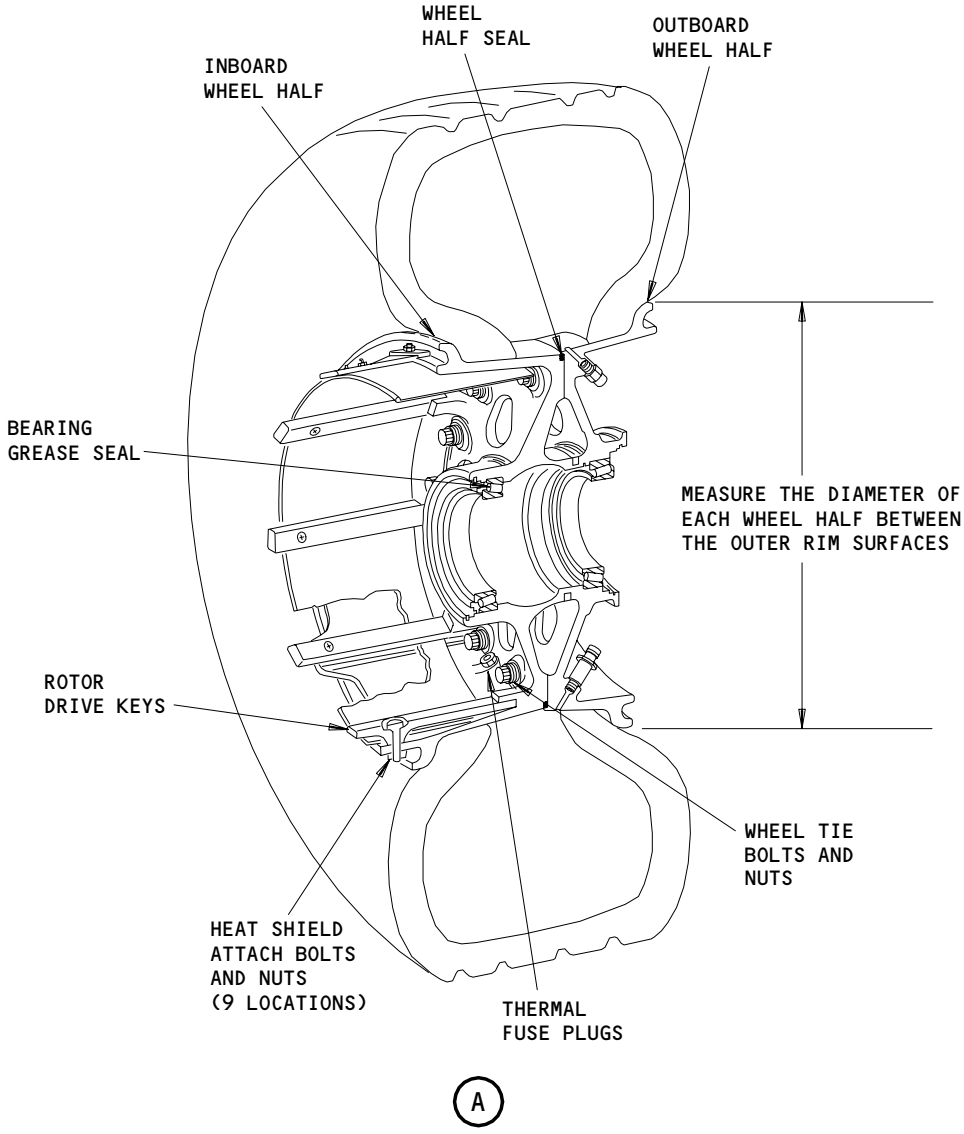
      S 216-003
      (2) Examine the wheels for cracks, flaked paint and corrosion.

      S 216-033
      (3) Examine the main gear wheels for evidence that they have overheated.

      S 216-004
      (4) If a wheel or wheels have a flat tire or the tire is not there, do the steps that follow:
          (a) If the tire on a wheel is flat, replace the wheel and tire assembly.

              NOTE: If two wheels on the same axle have flat tires, put tags on the wheels to make sure that they are checked for deformation in the overhaul shop.





Main Gear Overheated Wheel Check
Figure 601

(b) If there is no tire on the wheel, discard the wheel if there is evidence that the wheel has turned on the runway without the tire.

NOTE: If an airplane is moved on a wheel without a tire, the wheel is permanently damaged. Damage occurs quickly in the vertical part of the rim flange, but you cannot always see the damage. If such a wheel is used again, the wheel rim flange will usually break suddenly into small pieces. Thus, no repairs are permitted although damage is not always apparent.

S 216-005

(5) If two tires on the same axle are flat, make sure that you tag the wheels to do a check for deformation as given in the wheel supplier data before you install tires on them.

S 216-006

(6) Do a check of the hubcaps for loose retainer clamps and tighten or replace them if it is necessary.

S 216-007

(7) Examine the tiebolt installations for:
(a) Loose tiebolts and tiebolt nuts
(b) Damaged tiebolts
(c) Missing tiebolt(s).

S 426-008

(8) If you found a loose or damaged tiebolt or if there is a missing tiebolt, remove the wheel (AMM 32-45-01/401, Main Wheel; AMM 32-45-02/401, Nose Wheel).

S 216-009

(9) If you removed the wheel, do the steps to examine the wheel with the wheel removed from the airplane (below).

NOTE: Carefully examine the wheel for damage and broken parts.

S 216-010

(10) If you removed a main wheel, examine the brake for damage and broken parts.

S 216-014

(11) Do a check to make sure the heat shield fasteners are tightly attached. Tighten the nuts to 800 ± 25 lb-in, if it is necessary.

TASK 32-45-03-216-015

3. Examine the Wheels (Wheel Removed from the Airplane (Fig. 601)

A. Equipment

(1) Tire Deflation Tool - 968RB (for small bore valve stems)
968RB-1 (for large bore valve stems)
(Safe-Cor Tools, Fairview, PA 16415)

B. Consumable Materials

(1) Grease - MIL-T-5544 (LUBTORK) or
MIL-T-83483 (MOLYLUBE)
(marked on wheel rim)

C. Procedure

S 216-016

(1) Examine the metal parts of the wheel for breaks, cracks, nicks, scratches, scoring, stripped or crossed thread, corrosion, distortion, worn plating, gouging, or other injurious defects.

S 216-017

(2) Examine the seal retainer for cracks, distortion or surface damage.

S 216-018

(3) Examine the grease seal for nicks or gouges and evidence of overheating.

S 216-019

(4) Examine the bearing and the bearing surfaces for distortion, flat spots and sufficient lubrication.

S 216-035

(5) Do a complete examinination of the wheel assembly and part of the axle that you can see for evidence of scoring, galling or corrosion:

NOTE: If a new or overhauled wheel is being installed, it is not necessary to do an inspection of the wheel assembly.

(a) If you find corrosion when you do this task, go to the Corrosion Prevention Manual (CPM), D634T401, for the necessary repairs.

(b) Make sure that you maintain the corrosion inhibiting compounds in this area as specified in the CPM.

S 216-026

(6) Examine the brake keyway inserts for battering and wear.

S 216-027

(7) Examine the tiebolt installations for:
(a) Loose tiebolts and tiebolt nuts
(b) Damaged tiebolts
(c) Tiebolt locations that do not have tiebolts.

S 026-034

(8) If you found a loose or damaged tiebolt or a tiebolt location without a tiebolt, replace the wheel and tire assembly.

S 216-028

(9) Examine the wheels and tag wheels with blown thermal fuses.

NOTE: Tag wheels with blown thermal fuses for special attention during examination.

S 216-029

(10) Do a check of a overheated wheel or a wheel that has a contained blown thermal fuse for out-of-round condition by measuring largest and smallest OD's on each wheel half. Check that diameter difference does not exceed 0.020 inch.

S 216-030

(11) Do a check to make sure the thermal fuse retainer is tight and tighten it if it is necessary.

S 216-031

(12) Do a check to make sure that the balance weights are tightly installed.

S 216-032
(13) Do a check of the inboard and outboard bearings for wear.

S 206-040
(14) If the fuse plug is melted or partially melted, do the High Energy Stop/Heat Damage Conditional Inspection (AMM 05-51-14/201).

TIRES - INSPECTION/CHECK

1. General
   A. This section gives the procedures for an inspection and check of the landing gear tires when they are installed on the airplane. The data that follows is to be used to increase tire life, and to decrease maintenance time.
   B. If the tires have flat spots or are burst because of a locked wheel slide condition (not a tire structural failure), refer to 05-51-16.

TASK 32-45-04-216-001

2. Tires Inspection/Check
   A. References
      (1) AMM 05-51-16/201, Burst/Flat Spotted Tires (Conditional Inspection)
      (2) AMM 12-15-03/301, Tires - Servicing
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Procedure

      S 496-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 496-003
      (2) Put wheel chocks on all landing gear wheels to prevent the airplane movement.

      S 616-004
      (3) Do a check of the tire pressure to see if it is within the allowable pressure range (AMM 12-15-03/301).
         (a) If a tire has been turned when it is flat, all tires on that axle must be removed. Also, all tires on that axle must be removed when a tire is turned at 20 percent or more below the allowable pressure range.
         (b) If it is shown that a pressure decrease occurred after the airplane was parked (and the tire did not turn), remove the tire with the low pressure (AMM 12-15-03/301).
   C. Examine the Tires

      S 216-005
      (1) Do the steps that follow and examine the tires for wear and damage conditions.
         (a) Refer to figure 602 for wear and damage conditions and replace the tires that exceed the limits.

            NOTE: Refer to Fig. 601 for tire nomenclature and tire construction details.

(b) Examine the tires for the presence of contaminants.
  1) Keep the tires clean of contaminants such as oils, fuels, hydraulic fluids, aircraft cleaning agents, and greases. Cover the tire if these or other potentially harmful chemicals may spill or drip on the tire.
  2) Wipe off the tire with a soapy solution if the tire becomes contaminated.
  3) The tire should be removed from service as soon as practical if the surface of the tire appears soft, spongy, or there are bulges present.

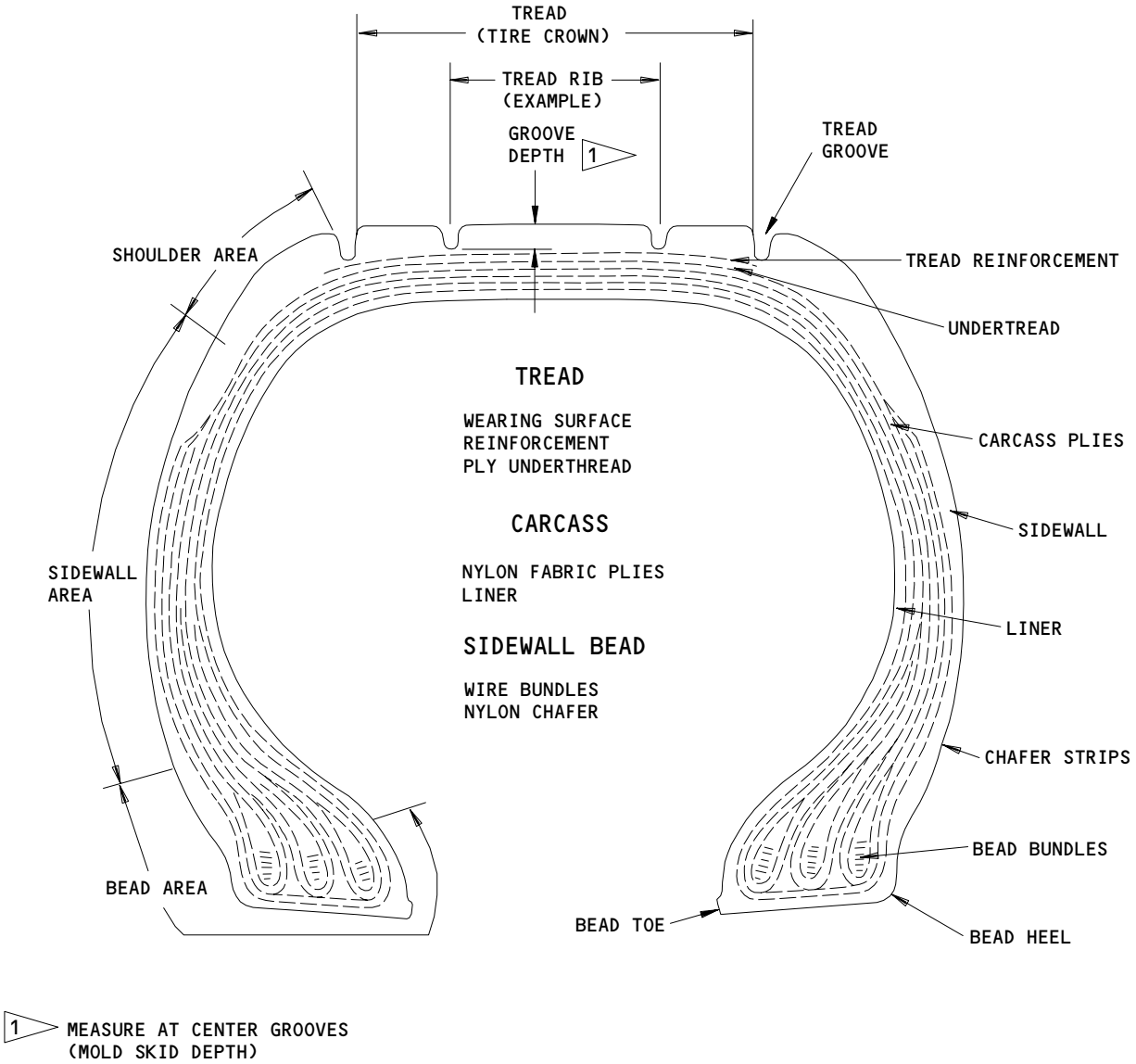
(c) Examine the tires for air leaks, abrasions, unusual worn areas, cuts, and flat spots (See Fig. 602 for damage limits).

(d) Remove the tires that have the damage or wear conditions that follow:
  1) Cuts or weather cracks in the grooves, tread, shoulder, or the sidewalls that exceed the limits shown in Fig. 602.
  2) Blisters, bulges, or other signs of ply separation in the tread, shoulder, or sidewall area.
  3) Tires with a flat spot which shows the thread reinforcement ply (bias) or cut protector (radial).

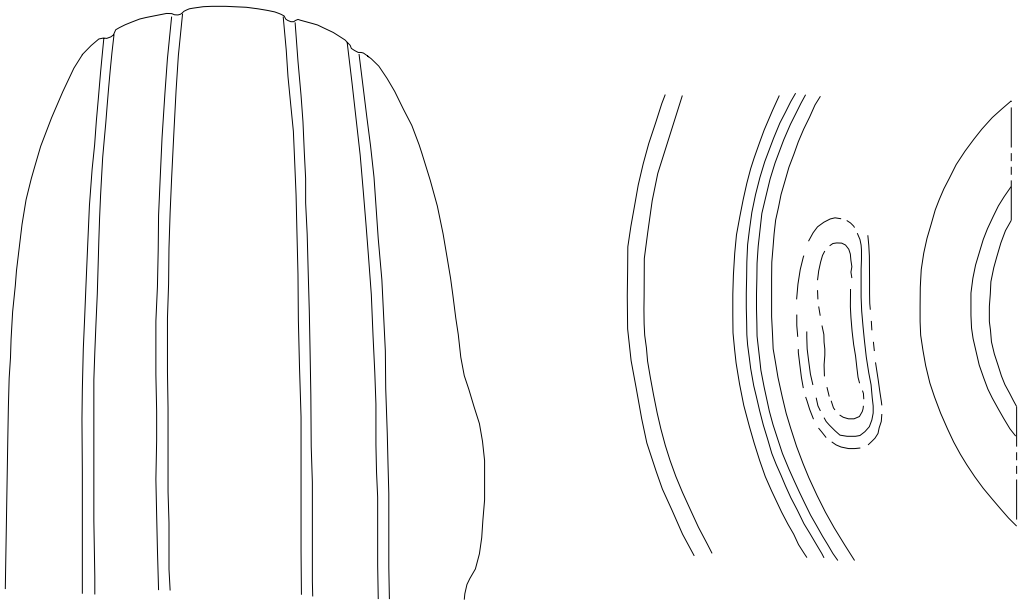
     NOTE: If the cut protector (radial) or tread reinforcement ply (bias) shows, the tire should be replaced as soon as possible. If necessary, the tire may be used for a small number of landings until it is replaced. However, you may not be able to retread the tire if you leave the tire in service too long with this condition.

  4) Other types of damage which can cause tire problems.

(e) Examine the tires for worn areas:
  1) Measure the depth of the tire tread groove at three points that are equally spaced apart.
  2) If the average depth of any groove is 1/32 inch (0.79 mm) or less, the tire must be replaced at the next convenient maintenance opportunity.
  3) If the tread ply (radial) or carcass ply (bias) shows at any location, the tire is not serviceable and must be replaced.

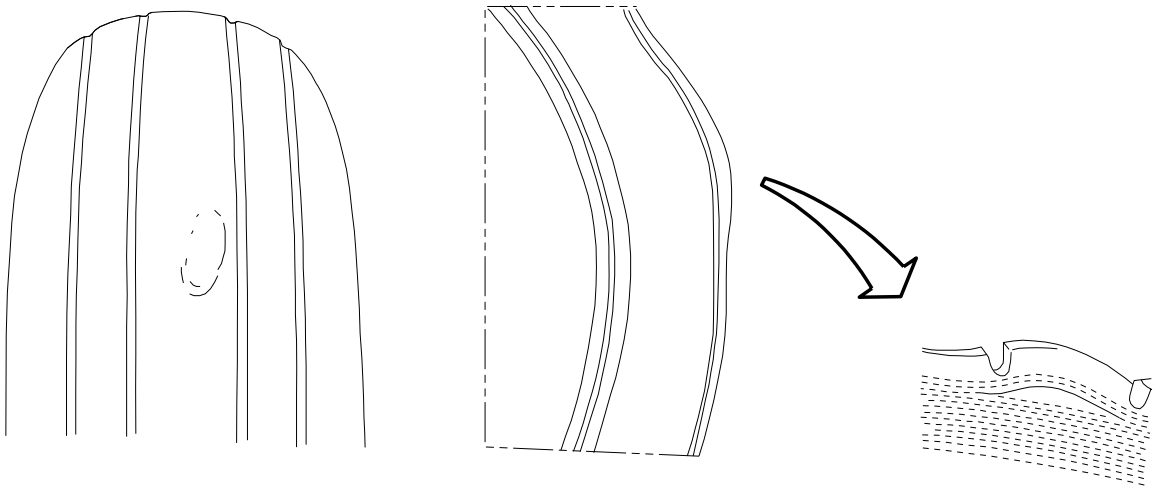


Tire Nomenclature (Example)
Figure 601



SIDEWALL SEPARATION

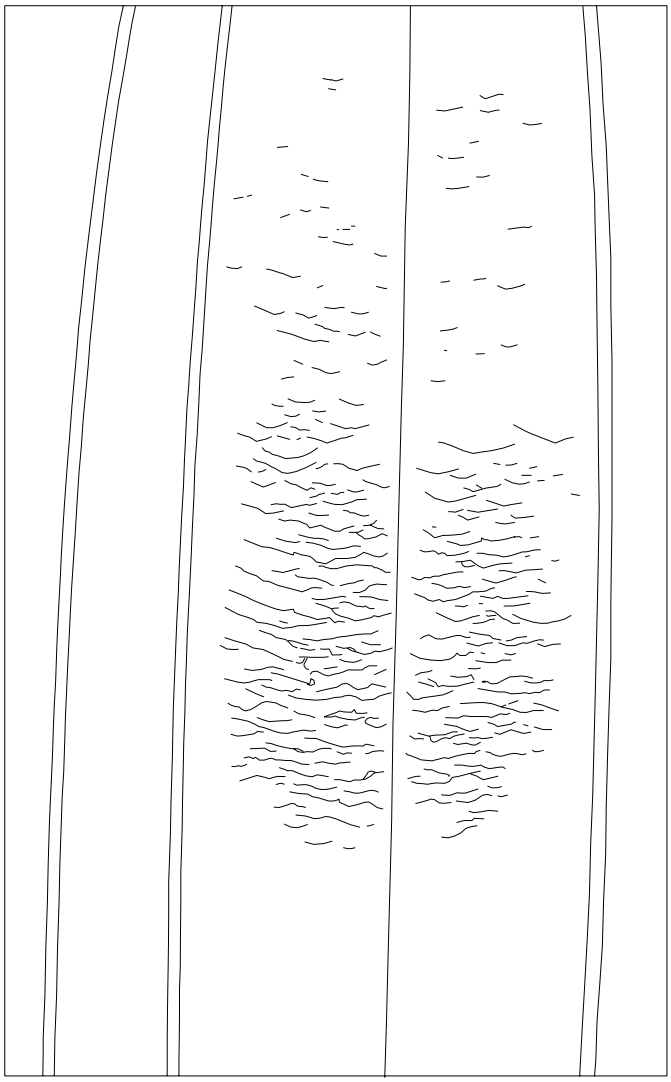
TIRES WITH BLISTERS OR BULGES IN THE SIDEWALL ARE NOT SERVICEABLE. REMOVE TIRE IMMEDIATELY.



TREAD SEPARATION

TIRES WITH BLISTERS OR BULGES IN THE TREAD ARE NOT SERVICEABLE. REMOVE TIRE IMMEDIATELY.

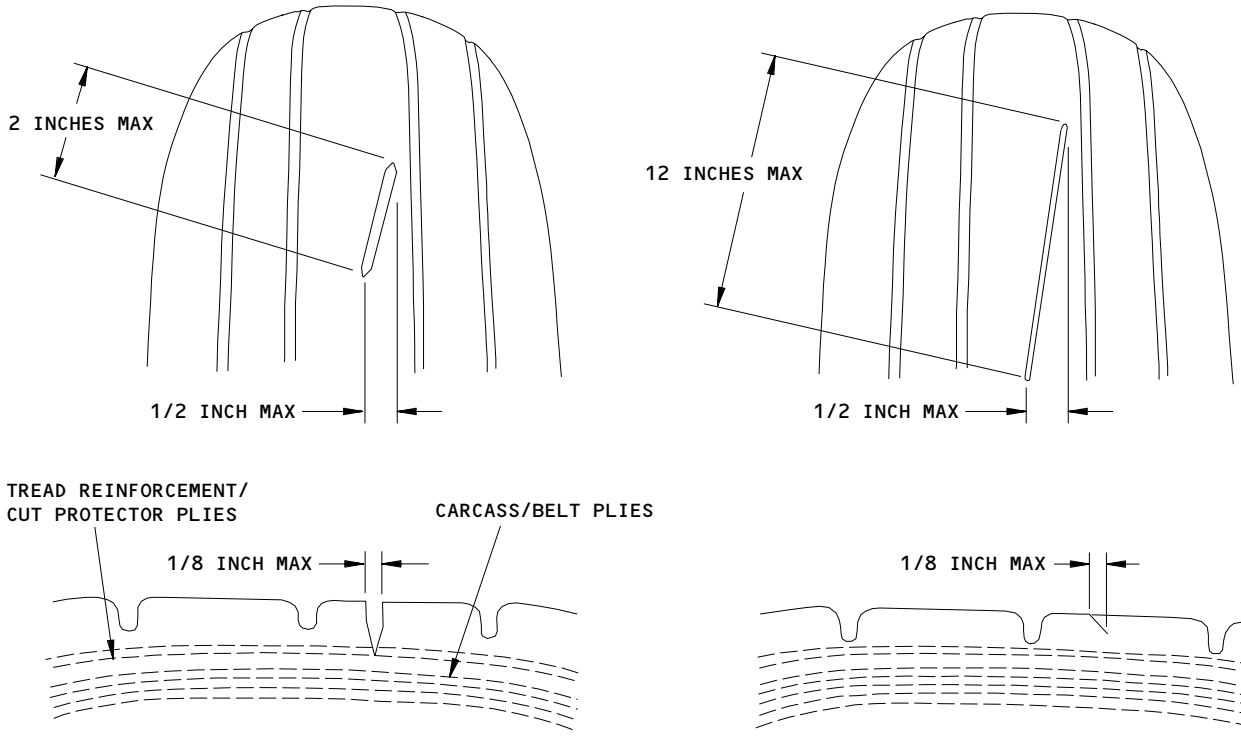
Tire Damage/Wear Conditions
Figure 602 (Sheet 1)



CHEVRON CUTS

TIRES WITH CHEVRON CUTS IN THE TREAD ARE NOT SERVICEABLE IF ANY OF THE SINGLE CUT LIMITS ARE EXCEEDED OR CHUNKING OCCURS WHICH EXPOSES THE FABRIC.

Tire Damage/Wear Conditions
Figure 602 (Sheet 2)

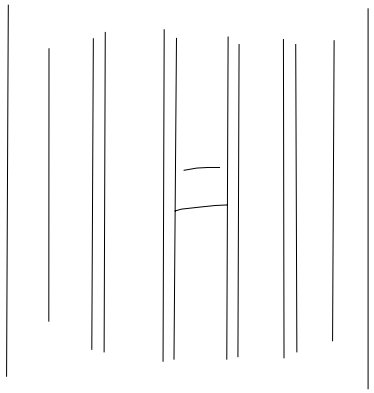


CIRCUMFERENTIAL CUTS

CUTS THAT PENETRATE THE TREAD REINFORCEMENT/CUT PROTECTOR PLIES ARE NOT SERVICEABLE IF:

(A) CUT EXCEEDS THE ABOVE LIMITS.
(B) CUT PENETRATES THE CARCASS PLIES (BIAS) OR BELT PLIES (RADIAL)
(C) CUT IS NOT CONTAINED WITHIN ONE RIB.

CUTS THAT DO NOT EXPOSE FABRIC ARE NOT SERVICEABLE IF THEY EXCEED THE ABOVE LIMITS.

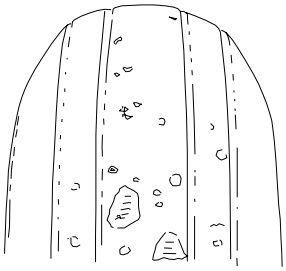


TRANSVERSE CUTS

(A) TRANSVERSE CUTS THAT ARE CONTAINED WITHIN A RIB AND PENETRATE INTO THE CARCASS PLIES (BIAS) OR BELT PLIES (RADIAL) ARE NOT SERVICEABLE.

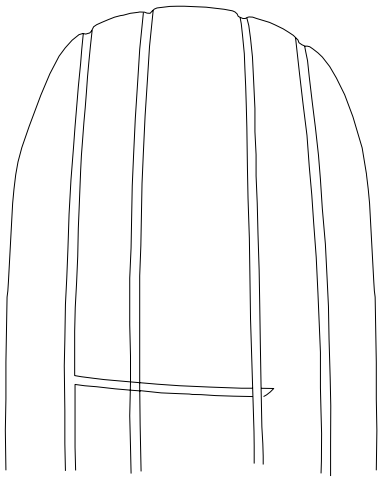
(B) CUTS THAT EXTEND ACROSS A RIB FROM GROOVE TO GROOVE WHICH ARE DEEPER THAN THE GROOVE ARE NOT SERVICEABLE.

Tire Damage/Wear Conditions
Figure 602 (Sheet 3)



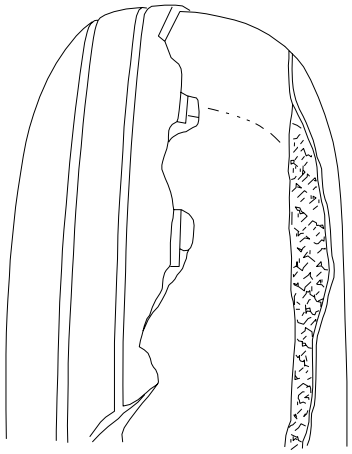
TREAD FLAKING, CHIPPING OR CHUNKING

TIRES WITH FLAKING, CHIPPING OR CHUNKING TREADS ARE NOT SERVICEABLE IF ANY FABRIC IS EXPOSED.



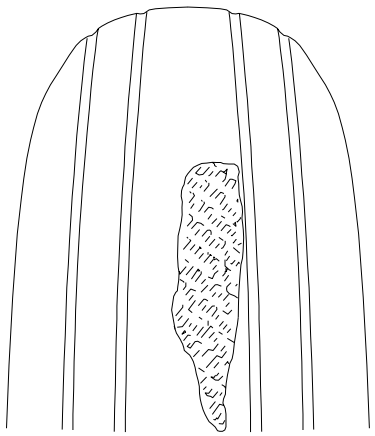
OPEN TREAD SPLICE

TIRES WITH AN OPEN TREAD SPLICE ARE NOT SERVICEABLE. A CLOSED TREAD SPLICE WILL APPEAR AS A THIN LINE THAT CROSSES THE TREAD RIBS.



THROWN TREAD

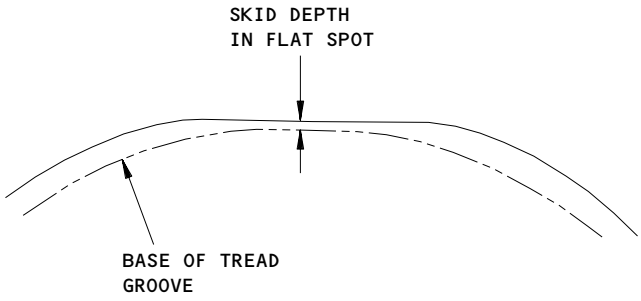
TIRES WITH THROWN TREADS ARE NOT SERVICEABLE.



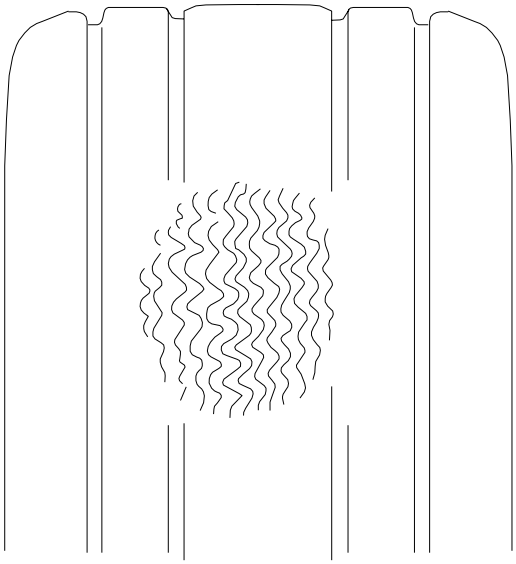
PEELED RIB

TIRES WITH PEELED RIBS ARE NOT SERVICEABLE.

Tire Damage/Wear Conditions
Figure 602 (Sheet 4)

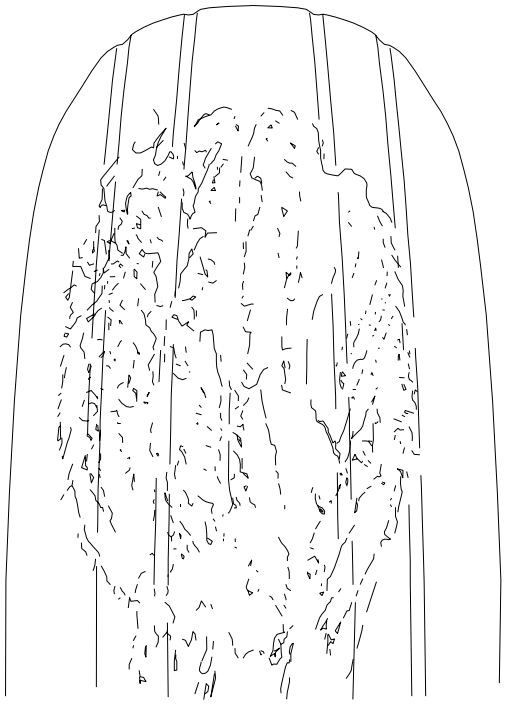


TREAD FLAT SPOTS



FLAT SPOT

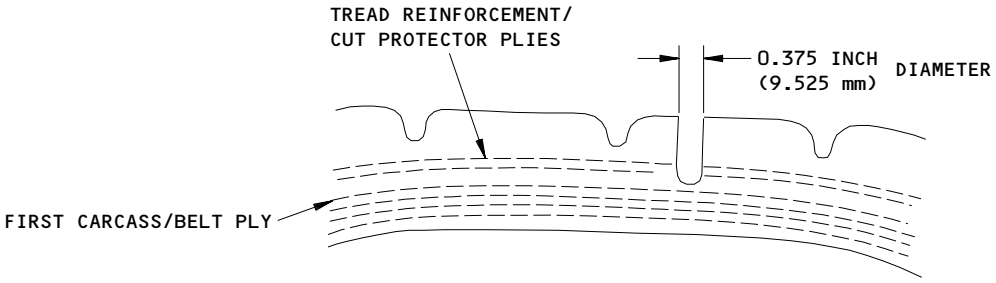
TIRES WITH FLAT SPOTS ARE NOT SERVICEABLE IF THE FLAT SPOT EXPOSES THE TREAD REINFORCEMENT OR CUT PROTECTOR PLIES OR TIRE BALANCE AFFECTED.



ICE SKID BURN/TREAD RUBBER REVERSION

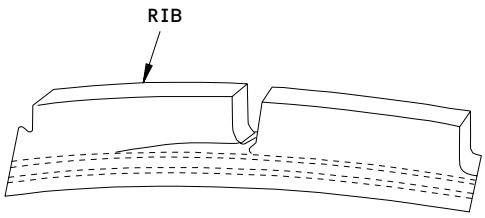
TIRES WITH ICE BURN/TREAD RUBBER REVERSION ARE NOT SERVICEABLE IF THE DAMAGE EXPOSES THE TREAD REINFORCEMENT OR CUT PROTECTOR PLIES OR TIRE BALANCE IS AFFECTED.

Tire Damage/Wear Conditions
Figure 602 (Sheet 5)



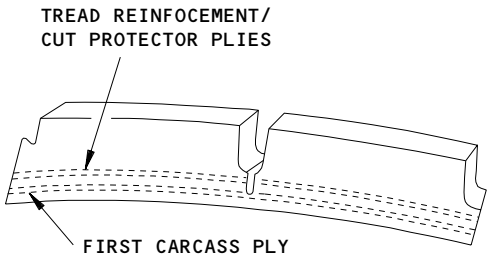
PUNCTURE

TIRES WITH HOLES LARGER THAN 0.375 INCH (9.525 mm) DIAMETER OR HOLES THAT PENETRATE INTO THE CARCASS PLIES (BIAS) OR BELT PLIES (RADIAL) ARE NOT SERVICEABLE.



RIB UNDERCUTS

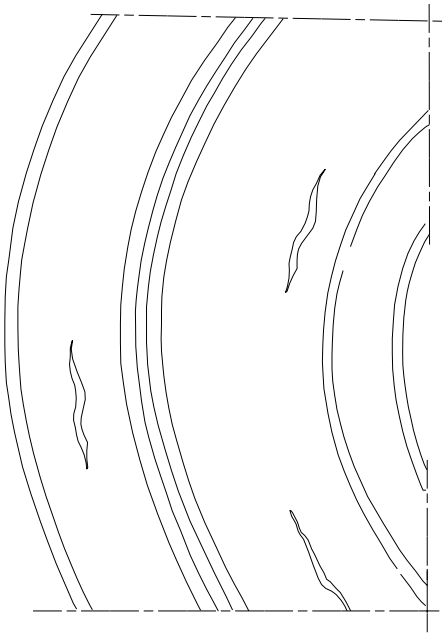
TIRES WITH A CRACK THAT EXTENDS BELOW A TREAD RIB ARE NOT SERVICEABLE.



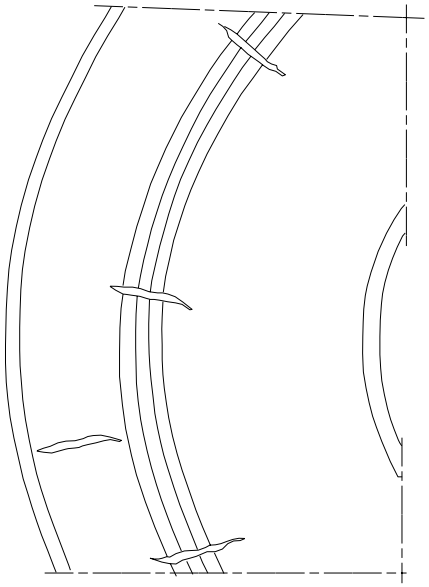
GROOVE CRACKS

TIRES WITH CIRCUMFERENTIAL CRACKS AT THE BOTTOM OF THE GROOVES ARE NOT SERVICEABLE IF THE CRACKS EXPOSES ANY FABRIC.

Tire Damage/Wear Conditions
Figure 602 (Sheet 6)

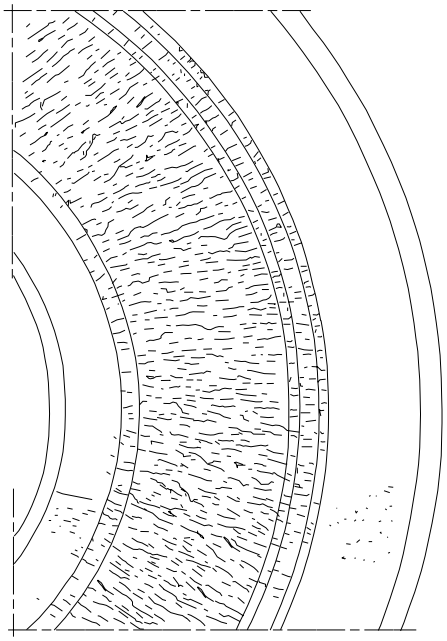


CIRCUMFERENTIAL SIDEWALL CRACKS OR CUTS



RADIAL SIDEWALL CRACKS OR CUTS

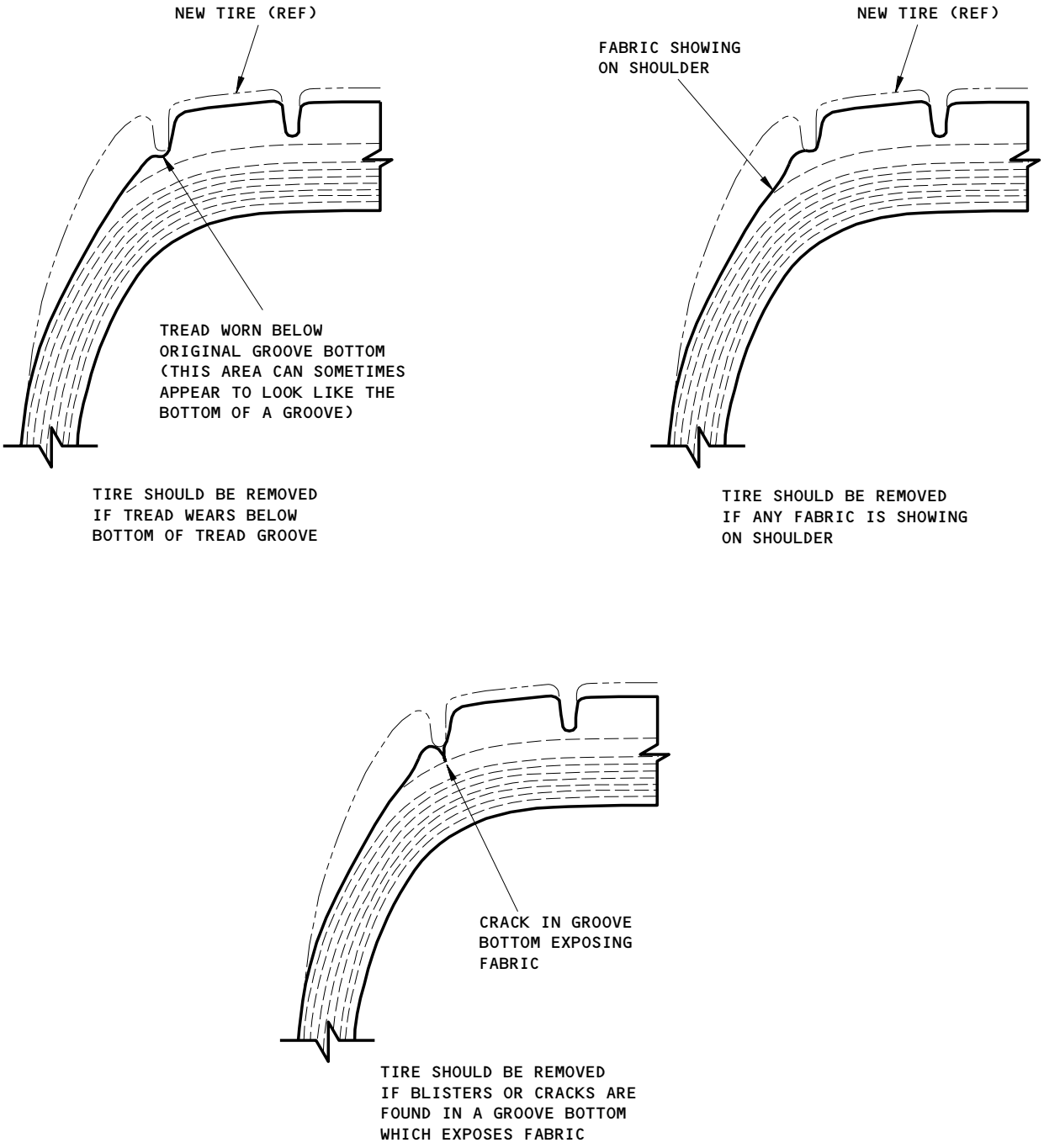
TIRES WITH CIRCUMFERENTIAL OR RADIAL CRACKS OR CUTS IN THE SIDEWALL OR SHOULDER AREA THAT EXPOSE THE FABRIC ARE NOT SERVICEABLE.



OZONE AND/OR WEATHER CRACKS OR CUTS

TIRES WITH CRACKS OR CUTS IN THE SIDEWALL WHICH ARE CAUSED BY AGE/WEATHER DETERIORATION ARE NOT SERVICEABLE IF THE FABRIC IS EXPOSED.

Tire Damage/Wear Conditions
Figure 602 (Sheet 7)



SHOULDER WEAR CONDITIONS

Tire Damage/Wear Conditions
Figure 602 (Sheet 8)

4) If the tread is worn so that the cut protector (radial) or tread reinforcement ply (bias) shows at any location, the tire must be replaced at the next convenient maintenance opportunity.

NOTE: If the cut protector (radial) or tread reinforcement ply (bias) shows, the tire should be replaced as soon as possible. If necessary, the tire may be used for a small number of landings until it is replaced. However, you may not be able to retread the tire if you leave the tire in service too long with this condition.

D. Examine the thermal fuse

S 216-007

(1) The steps that follow are the specifications for the thermal fuse conditions:

(a) A tire is not serviceable when there is a decrease in the pressure because the wheel thermal fuse melted or extruded. When this occurs, remove the tire and do the high energy stop/heat damage conditional inspection (AMM 05-51-14/201).

NOTE: All other main gear tire-wheels must be examined for signs that the thermal fuses are melted, extruded, or they leaked. This is specially at the tire-wheel positions that have hot brakes.

(b) When an inspection shows that a wheel thermal fuse is not fully melted (extruded) but does not leak, do the steps that follow:

1) Do the high energy stop/heat damage conditional inspection (AMM 05-51-14/201).
2) Examine the wheel before each flight until the tire-wheel is not serviceable and is removed.

(c) When a tire-wheel assembly, or a wheel has been removed because of the steps that follow, tag the wheel and tell why it was removed. Also, do an inspection of the wheel (Ref 32-45-03).

1) The wheel turned on a runway without a tire.
2) Each tire on the same axle is a flat tire, and they were turned on a runway.

NOTE: Put tags on both wheels to be inspected.

3) The wheel shows signs of a melted, extruded, or a wheel thermal fuse that leaks.

4) When one of the wheels on an axle has a flat tire, replace the other tire-wheel assembly on that axle. Also, do this if the tire is not there. Put a tag on the assembly to discard the tire (Ref 12-15-03).

NOTE: When the pressure decrease was after the airplane was parked (the tire did not turn), the good tire on that axle does not have to be replaced.

NOSE WHEEL SPIN BRAKE - MAINTENANCE PRACTICES

1. General
   A. This procedure has these tasks:
      (1) A removal of the spin brake for the nose wheel
      (2) Installs the spin brake
      (3) An inspection for wear of the brake shoes on the spin brake

   TASK 32-45-05-022-001

2. Remove the Spin Brake for the Nose Wheel
   A. References
      (1) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          115/116 Nose Landing Gear Wheel Well

   C. Remove the Spin Brake (Fig. 201)

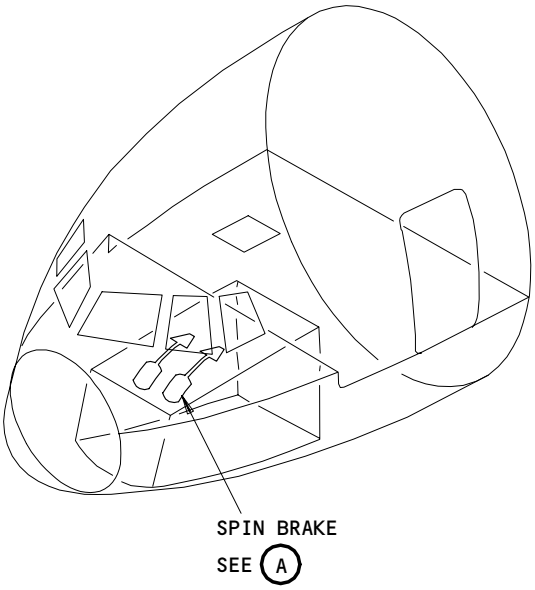
      S 212-002
      (1) Make sure the landing gear downlocks are installed (AMM 32-00-20/201).

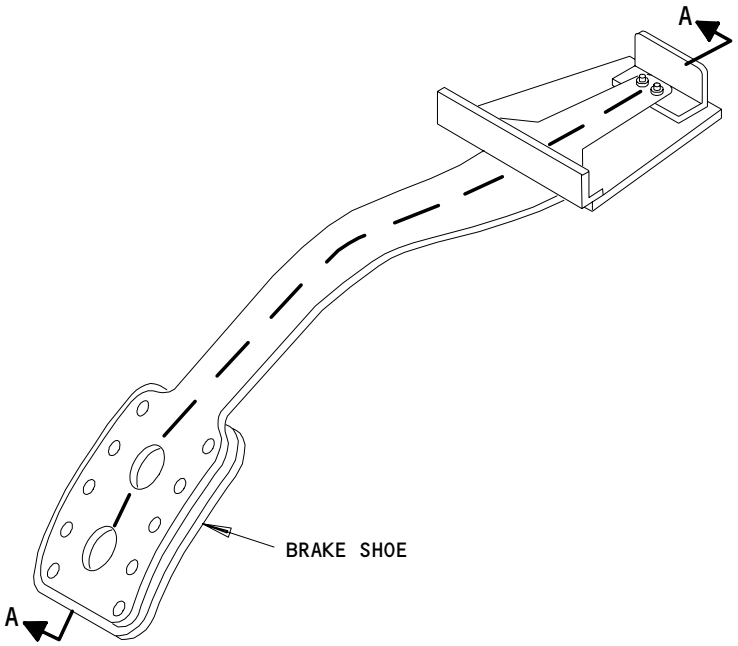
      S 012-003
      (2) Open the forward doors for the nose gear for access to the spin brake.

      S 032-004
      (3) Remove the bolts (1) that attach the spin brake to the wheel well structure at the spring arm (3).

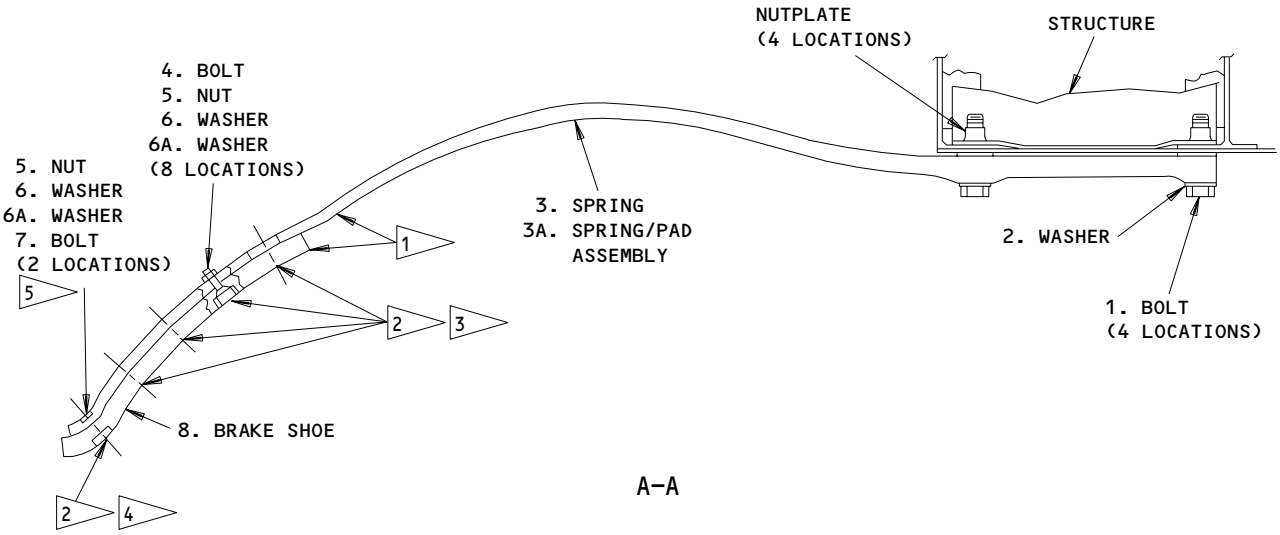
      S 022-005
      (4) Remove the spin brake.

      S 032-006
      (5) Do the steps that follow if it is necessary to replace the brake shoe (8):
          (a) Remove the bolts (4, 7), nuts (5), and washers (6).





Spin Brake Installation
Figure 201 (Sheet 1)



THE INSTRUCTIONS TO DRILL AND ASSEMBLE THE BRAKE SHOE (8) TO THE SPRING ARM (3), IF THE PARTS HAVE NOT BEEN DRILLED BEFORE, ARE AS FOLLOWS:

1 HOLD THE BRAKE SHOE (8) TO THE SPRING ARM (3). DO STEPS 2 , 3 , AND 4 . IF THE BRAKE SHOE DOES NOT FIT THE CONTOUR OF THE SPRING ARM, HEAT THE BRAKE SHOE TO A MAXIMUM OF 250° F. THEN, CLAMP THE BRAKE SHOE TO THE SPRING ARM.

2 DRILL 0.203–0.207 INCH DIAMETER HOLES THROUGH THE BRAKE SHOE (8). DRILL 0.203–0.207 INCH DIAMETER HOLES THROUGH THE SPRING ARM (3), IF IT IS NECESSARY. USE THE HOLES IN THE REMOVED SPRING ARM AND BRAKE SHOE TO FIND THE HOLE LOCATIONS FOR THE NEW PARTS (10 LOCATIONS).

3 COUNTERBORE AND COUNTERSINK 8 UPPER HOLES IN THE BRAKE SHOE AS FOLLOWS:

COUNTERBORE:	0.30–0.35 INCH DEEP X 0.688–0.708 INCH DIAMETER
COUNTERSINK:	100 DEGREES X 0.380–0.420 INCH DIAMETER

4 COUNTERBORE AND COUNTERSINK 2 LOWER HOLES IN THE BRAKE SHOE AS FOLLOWS:

COUNTERBORE:	0.17–0.23 INCH DEEP X 0.688–0.708 INCH DIAMETER
COUNTERSINK:	100 DEGREES X 0.380–0.420 INCH DIAMETER

5 IF THE SPRING ARM (3) IS NOT DRILLED, SPOTFACE THE LOWER TWO HOLES ON THE UPPER SURFACE OF THE SPRING ARM TO 0.64–0.66 INCH DIAMETER. MAKE THE FILLET RADIUS 0.69 INCH. THE THICKNESS OF THE SPRING ARM AT THE HOLE LOCATIONS IS TO BE A MINIMUM OF 0.28 INCH AFTER THE SPOTFACE IS DONE.

Spin Brake Installation
Figure 201 (Sheet 2)

(b) Remove the brake shoe (8).

TASK 32-45-05-422-007

3. Install the Spin Brake for the Nose Wheel

A. Access

(1) Location Zones

115/116 Nose Landing Gear Wheel Well

B. Install the Spin Brake (Fig. 201)

S 422-037

(1) Do the steps that follow to install the brake shoe (8), if it is necessary:

(a) If the brake shoe (8) and/or spring (3) holes are not drilled, drill and assemble them as shown in Fig. 201.

(b) Install the brake shoe (8) on the spring (3) with the bolts, nuts, and washers.

S 432-009

(2) Hold the spring (3) or spring/pad assembly (3A) on the wheel well structure.

S 432-010

(3) Install the bolts and washers.

S 412-011

(4) Manually close the forward doors for the nose gear.

TASK 32-45-05-222-012

4. Inspection for the Spin Brake

A. Access

(1) Location Zones

115/116 Nose Landing Gear Wheel Well

B. Examine the Spin Brake (Fig. 201)

S 212-033

(1) Examine the brake shoes for wear.

S 222-034

(2) If the top surface of a brake shoe is 1/32 inch or less above the countersunk bolt head, replace the brake shoe.

TIRE INFLATION VALVE REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the tire inflation valve. The second task installs the tire inflation valve.
   B. This procedure applies to the tire inflation valves for the main landing gear and the nose landing gear.

TASK 32-45-08-004-001

2. Remove the Tire Inflation Valve (Fig. 401)
   A. Equipment
      (1) Tire Deflation Tool - 968RB (for small bore valves stems)
      968RB-1 (for large bore valve stems)
      (Safe-Cor Tools, Fairview, PA 16415)
   B. References
      (1) 07-11-03/201, Jack Airplane Axle
      (2) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
      731 Main Landing Gear (Left)
      741 Main Landing Gear (Right)

   D. Procedure

      S 494-002
      (1) Make sure that the landing gear downlocks are installed (Ref 32-00-20).

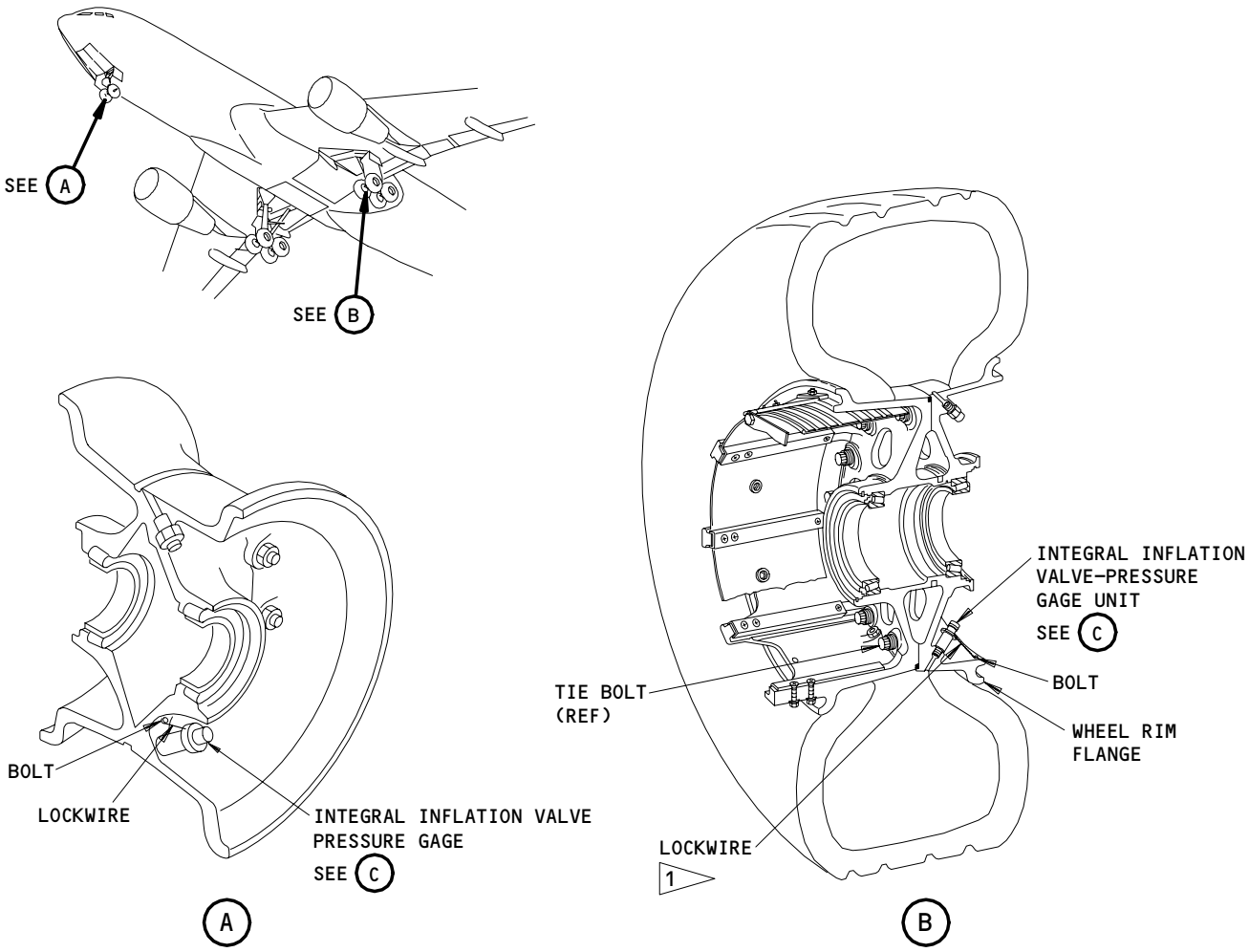
      S 944-003
      (2) Raise the axle with a jack until the tire does not touch the ground (Ref 07-11-03).

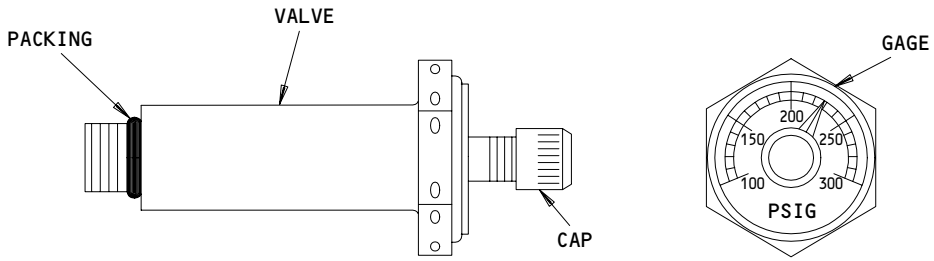
      S 034-004

      WARNING: MAKE SURE THAT YOU DEFLATE THE TIRE BEFORE YOU REMOVE THE VALVE. IF YOU DO NOT DEFLATE THE TIRE, VALVE PARTS CAN COME OUT OF THE VALVE AT HIGH VELOCITY AND CAUSE INJURY TO PERSONS WHEN YOU TRY TO REMOVE THE VALVE.

      (3) Deflate the tire.

      S 024-006
      (4) SAS 151-154;
      Break the lockwire and turn the valve counterclockwise to remove it from the wheel.



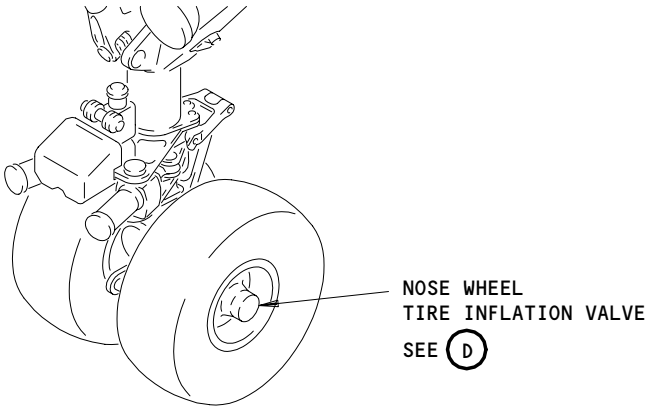


(EXAMPLE 10 LOCATIONS)

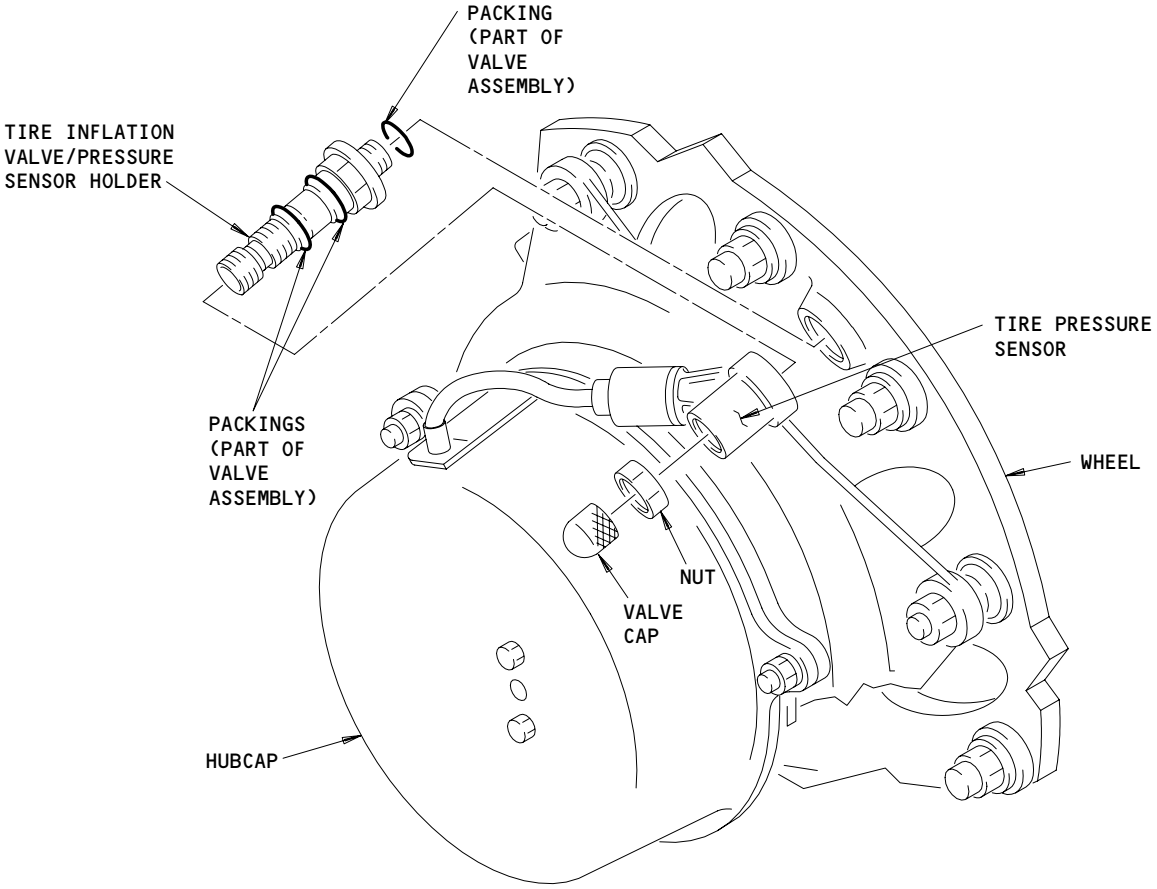
C

1 INSTALL LOCKWIRE BETWEEN THE VALVE AND BOLT ON THE WHEEL RIM FLANGE (AS SHOWN) OR BETWEEN THE VALVE AND TAB WASHER ON THE ADJACENT WHEEL TIE BOLT (IF INSTALLED)

Tire Inflation Valve Installation
Figure 401 (Sheet 1)



NOSE GEAR



NOSE WHEEL TIRE INFLATION VALVE INSTALLATION SHOWN
(MAIN WHEEL VALVE INSTALLATION SIMILAR)

D

Tire Inflation Valve/Pressure Sensor Holder - Installation
Figure 401 (Sheet 2)

S 024-011
(5) SAS 050-149, 155-999;
MTH ALL AIRPLANES;
Do the steps that follow:
(a) Remove the lockwire.
(b) Remove the valve cap and nut.
(c) Pull the tire pressure sensor from the inflation-valve/holder.
(d) Unscrew the inflation-valve/holder from the wheel.

TASK 32-45-08-404-012

3. Install the Tire Inflation Valve (Fig. 401)

A. References
(1) 07-11-03/201, Jack Airplane Axle
(2) 12-15-03/301, Tires - Servicing
(3) 32-44-00/001, Parking Brake

B. Access
(1) Location Zones
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

C. Consumable Materials
(1) D00011 Silicone Compound VV-D1078

D. Procedure

S 644-014
(1) SAS 151-154;
Do the steps that follow:
(a) Lightly lubricate a new packing with silicone compound and install the packing on the valve stem.
(b) Install the valve assembly in the wheel and tighten to 150-200 pound-inches.
(c) Lockwire the valve to the wheel as follows:
1) On nose gear wheels, lockwire the valve to the small bolt in the flange area of the wheel.
2) On main gear wheels, lockwire the valve to either the adjacent small bolt on the wheel rim flange or to the tab washer on the adjacent wheel tie bolt (the wheel will have either the small bolt on the wheel rim flange or the tab washer on the tie bolt).

S 424-016
(2) SAS 050-149, 155-999;
MTH ALL AIRPLANES;
Do the steps that follow:
(a) Install the inflation-valve/holder.
1) Lightly lubricate a new packing with silicone compound.
2) Install the packing on the inflation-valve/holder.
3) Screw the inflation-valve/holder into the wheel.
4) Tighten the inflation-valve/holder to 225-250 pound inches

(b) Install the tire pressure sensor on the inflation-valve/holder.
1) Remove the cap and nut from the inflation-valve/holder.
2) Lightly lubricate the packings on the inflation-valve/holder with silicone compound.
3) Install the tire pressure sensor on the inflation-valve/holder.

NOTE: The sensor can be installed at one of 12 possible angles in 30 degree increments around the inflation-valve holder. It must be installed so that the sensor conduit is not loose or pulled.

4) Install and tighten the nut.
(c) Lockwire the inflation-valve/holder to the wheel as follows:
1) On nose gear wheels, lockwire the valve to the small bolt in the flange area of the wheel.
2) On main gear wheels, lockwire the valve/holder to either the adjacent small bolt on the wheel rim flange or to the tab washer on the adjacent wheel tie bolt (the wheel will have either the small bolt on the wheel rim flange or the tab washer on the tie bolt).
(d) Install the cap.

S 614-019
(3) Inflate the tire (Ref 12-15-03).

S 794-020
(4) Do a check of the valve installation for leaks.

S 944-021
(5) Lower the wheel on the jack (Ref 07-11-03).

S 944-022
(6) Remove the jack (Ref 07-11-03).

S 864-023
(7) Set the parking brake (Ref 32-44-00).

TIRE PRESSURE MONITOR UNIT - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the tire pressure monitor unit. The second task installs the tire pressure monitor unit.
   B. The tire pressure monitor unit is referred to as the TPM unit in this procedure.

TASK 32-45-10-404-001

2. Tire Pressure Monitor Unit - Removal (Fig. 401)
   A. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 20-10-01/401, E/E Rack-Mounted Components
      (3) AMM 20-41-01/201, Static Sensitive Devices
   B. Access
      (1) Location Zones
          211 Control Cabin, Left
          212 Control Cabin, Right
          731 Landing Gear Left
          741 Landing Gear Right
          120 Main Equipment Center, Right

   C. Procedure

      S 864-002
      (1) Open this circuit breaker on the overhead panel, P11, and install a DO-NOT-CLOSE tag:
          (a) 11U17, TIRE PRESS IND 1

      S 014-003
      (2) Open the access door for the main equipment center 119AL (AMM 06-41-00/201).

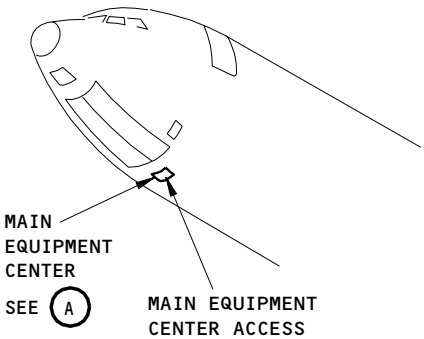
      S 864-004
      (3) Open this circuit breaker on the APU external power panel, P34, and install a DO-NOT-CLOSE tag:
          (a) 34M11, TIRE PRESS IND 2

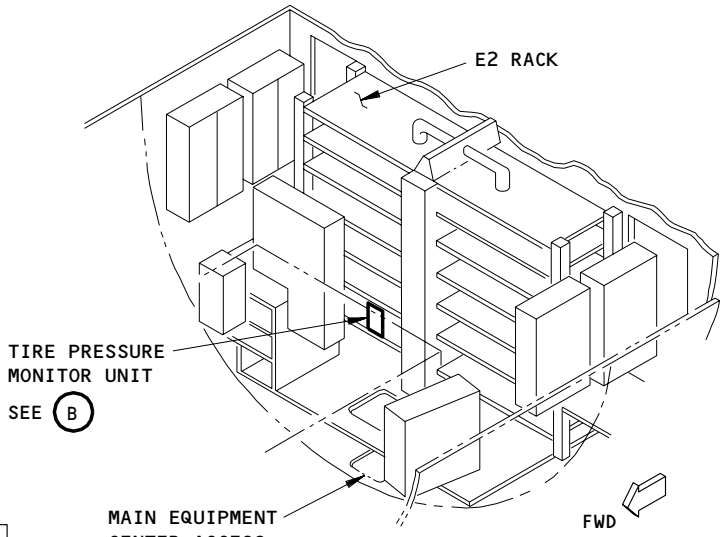
      S 014-005
      (4) Find the TPM unit on the E2-6 shelf.

      S 024-006

      CAUTION: THE TPM UNIT IS SENSITIVE TO STATIC ELECTRICITY. READ THE PROCEDURE FOR EQUIPMENT THAT IS SENSITIVE TO STATIC ELECTRICITY (AMM 20-41-01/201) BEFORE YOU TOUCH THE TPM UNIT. STATIC ELECTRICITY CAN DAMAGE THE TPM UNIT.

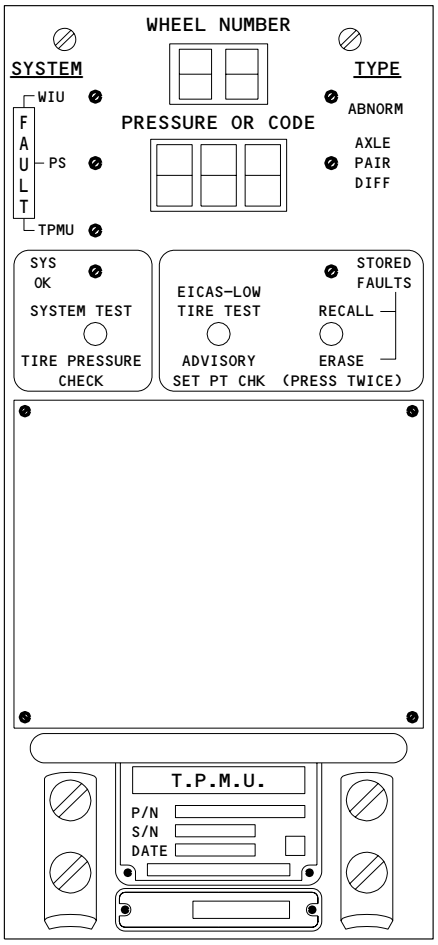
      (5) Remove the TPM unit (AMM 20-10-01/401).





MAIN EQUIPMENT CENTER

A



TIRE PRESSURE MONITOR UNIT

B

Tire Pressure Monitor Unit – Installation
Figure 401

TASK 32-45-10-404-007

3. Tire Pressure Monitor Unit - Installation (Fig. 401)

A. References

(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels

(2) AMM 20-10-01/401, E/E Rack-Mounted Components

(3) AMM 20-41-01/201, Static Sensitive Devices

B. Access

(1) Location Zones

211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right
120 Main Equipment Center, Right

C. Procedure

S 424-012

CAUTION: THE TPM UNIT IS SENSITIVE TO STATIC ELECTRICITY. READ THE PROCEDURE FOR EQUIPMENT THAT IS SENSITIVE TO STATIC ELECTRICITY (AMM 20-41-01/201) BEFORE YOU TOUCH THE TPM UNIT. STATIC ELECTRICITY CAN DAMAGE THE TPM UNIT.

(1) Install the TPM unit on E2-6 shelf (AMM 20-10-01/401).

S 864-009

(2) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11U17, TIRE PRESS IND 1

S 864-010

(3) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P34 panel:
(a) 34M11, TIRE PRESS IND 2

S 714-011

(4) Do a Test of the Tire Pressure Indicating System
(a) Set the switch to the SYSTEM TEST position on the TPMU front panel.
(b) Make sure that after the end of the display and indicator test, the SYS OK indicator light is on.
(c) Set the STATUS key on the pilot's display select panel until the tire pressure indication appears in the lower EICAS display.
(d) Make sure that the EICAS tire pressure indications for each of the main gear tire pressures is between 170 PSI and 215 PSI.
(e) Make sure that the EICAS tire pressure indications for the two nose gear tires is between 135 PSI and 200 PSI.
(f) Close the access door for the main equipment center.

MAIN GEAR TIRE PRESSURE SENSOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the tire pressure sensor. The second task installs the tire pressure sensor.
   B. There is one tire pressure sensor on the wheel of each main gear. It will be referred to as the sensor in this procedure. Remove it when the tire pressure monitor unit detects a sensor malfunction.
   C. The sensor is installed on a tire pressure sensor holder/inflation valve which is referred to as the pressure sensor holder in this procedure.

TASK 32-45-11-004-001

2. Remove the Tire Pressure Sensor (Fig. 401)
   A. Equipment
      (1) S283U006-9 Sealing Cap
   B. References
      (1) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

   D. Prepare for Removal

      S 944-002
      (1) Make sure that chocks are installed at all wheels.

      S 494-003
      (2) Make sure that the landing gear downlocks are installed (Ref 32-00-20).

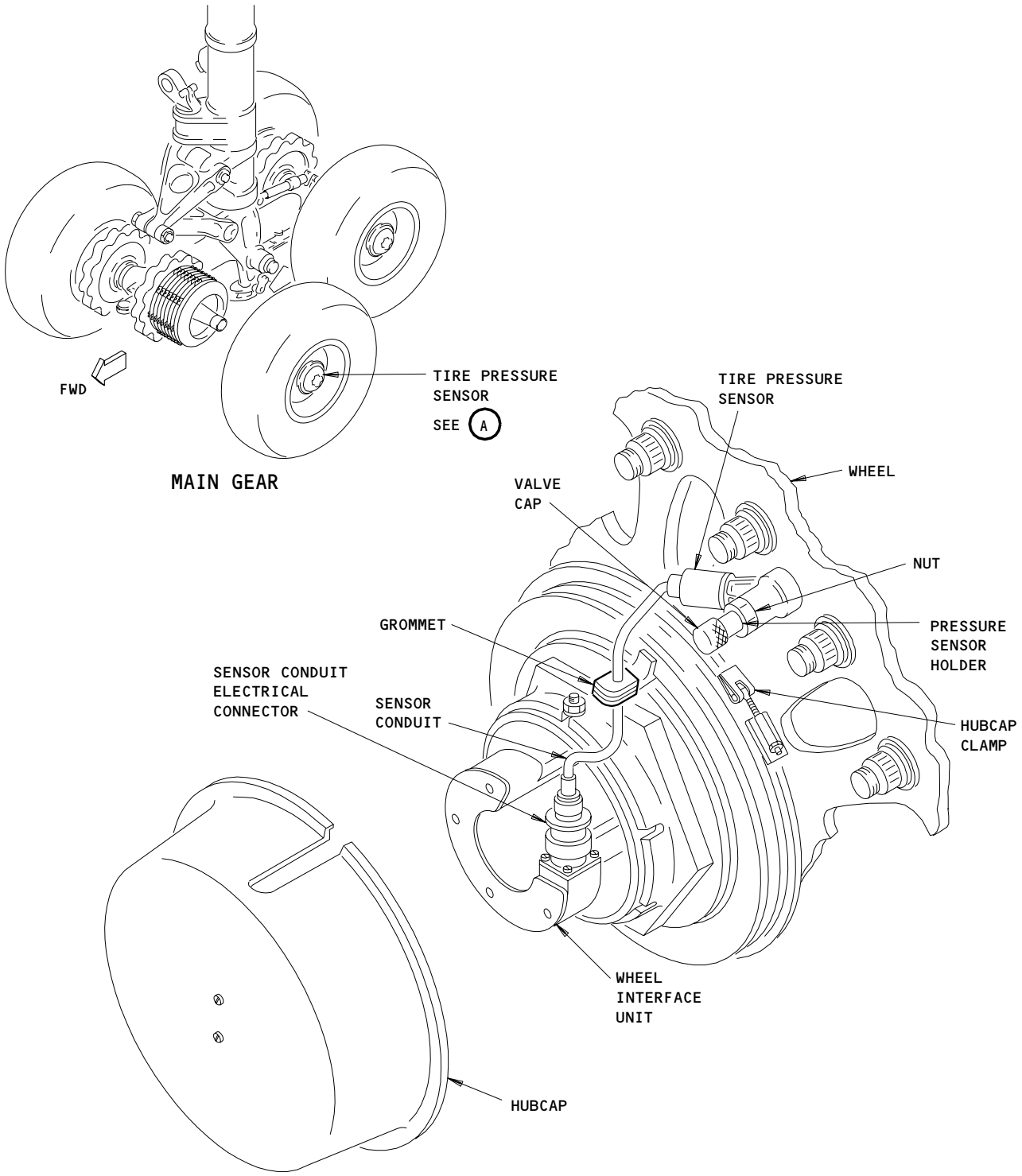
      S 864-004
      (3) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
          (a) 11U17, TIRE PRESS IND 1

      S 864-005
      (4) Open this circuit breaker on the APU EXTERNAL power panel, P34, nd attach a DO-NOT-CLOSE tag:
          (a) 34M11, TIRE PRESS IND 2
   E. Procedure to Remove the Sensor (Fig. 401).

      S 034-006

      CAUTION: PUSH THE SPACER AND GROMMET ON THE SENSOR CONDUIT OUT OF THE SLOT IN THE HUBCAP WHILE YOU REMOVE THE HUBCAP. KEEP THE SPACER WITH THE HUBCAP. DO NOT PULL ON THE CONDUIT BECAUSE IT CAN CAUSE DAMAGE TO THE SENSOR ASSEMBLY.

      (1) Remove the clamp and pull the hubcap off the wheel.



Main Gear Tire Pressure Sensor Installation
Figure 401

S 924-007

(2) Remove the sensor.

(a) Remove the lockwire and the nut, and pull the sensor from the sensor holder on the wheel.

CAUTION: INSTALL THE SEAL SENSOR HOLDER CAP IMMEDIATELY AFTER YOU REMOVE THE SENSOR TO PREVENT GAS FROM BLEEDING OUT THROUGH THE SENSOR HOLDER ON THE WHEEL. WITHOUT THE SENSOR OR THE SEAL CAP INSTALLED, TIRE PRESSURE WILL DECREASE AT APPROXIMATELY ONE PSI PER MINUTE. THIS MAY CAUSE DAMAGE TO THE TIRE IF IT IS OPERATED WITHOUT SUFFICIENT PRESSURE.

(b) Install a seal cap over the sensor holder. Install the nut.

NOTE: Ten seal caps are provided with the airplane fly-away equipment, one for each wheel.

(c) Disconnect the sensor conduit from the wheel interface unit and remove the sensor from the airplane.

(d) Remove the grommet from the sensor.

TASK 32-45-11-404-024

3. Install the Tire Pressure Sensor (Fig. 401)

A. Equipment

(1) S283U006-9 Sealing Cap

B. References

(1) 32-00-20/201, Landing Gear Downlocks

(2) 24-22-00/201, Electrical Power

(3) 32-45-00/501, Wheels and Tires

C. Access

(1) Location Zones

731 Main Landing Gear (Left)

741 Main Landing Gear (Right)

D. Procedure to Install the Sensor

S 494-022

(1) Make sure that the main gear downlocks are installed (Ref 32-00-20).

S 424-009

(2) Do the steps that follow to install the sensor:

(a) Put the hubcap clamp in position on the wheel but do not tighten it.

(b) Install the grommet on the sensor conduit.

S 434-010

(3) Connect the conduit to the wheel interface unit.

NOTE: Do not connect the sensor to the holder on the wheel until you have installed the hubcap. This will allow you to turn the hubcap to engage the transducer coupling and the wheel interface unit driver and not pull on the sensor conduit.

S 434-011

(4) Do these steps to install the hubcap assembly:
   (a) Put the hubcap in position so that you can put the grommet on the sensor conduit in the slot on the hubcap.
   (b) Put the spacer under the grommet and push it in the slot in the hubcap when you install the hubcap.
   (c) Turn the hubcap lightly back and forth until the drive components for the antiskid transducer and the wheel interface unit engage as follows:
      1) The antiskid transducer coupling in the hubcap engages with the dog on the antiskid transducer.
      2) The wheel interface unit driver in the hubcap engages with the rotor in the wheel interface unit.
   (d) Turn the hubcap until the pin in the hubcap falls into the mating hole in the wheel.
   (e) Put the clamp over the edge of the hubcap and tighten the clamp nut to 35 to 40 pound inches.

S 424-012

(5) Do the steps that follow to install the sensor:

S 494-023

CAUTION: CONNECT THE SENSOR IMMEDIATELY AFTER YOU REMOVE THE SEAL CAP TO PREVENT GAS FROM BLEEDING OUT THROUGH THE TIRE PRESSURE SENSOR HOLDER ON THE WHEEL. WITHOUT THE SENSOR OR THE SEAL CAP INSTALLED, TIRE PRESSURE WILL DECREASE AT APPROXIMATELY ONE PSI PER MINUTE. THIS MAY CAUSE DAMAGE TO THE TIRE IF IT IS OPERATED WITHOUT SUFFICIENT PRESSURE.

(6) Remove the nut and the seal cap from the pressure sensor holder.

NOTE: Return the seal cap to the airplane fly-away equipment.

S 424-014
(7) Install the sensor on the holder.

NOTE: You can install the sensor at one of 12 possible angles in 30 degree increments around the holder. It must be installed so that the sensor conduit is not loose or pulled.

S 434-015
(8) Install the nut, torque to 150 (17 N'm) to 200 (23 N'm) in-lbs and install a lockwire.

S 424-016
(9) Install the cap over the end of the sensor holder.

S 424-017
(10) Connect the sensor conduit electrical connector to the receptacle on the wheel interface unit.

S 864-018
(11) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 circuit breaer panel:
(a) 11U17, TIRE PRESS IND 1

S 864-019
(12) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P34 APU control panel:
(a) 34M11, TIRE PRESS IND 2

S 714-020
(13) Do an operational test of the tire pressure indicating system (Ref 32-45-00).

S 864-021
(14) Remove electrical power (Ref 24-22-00).

NOSE GEAR TIRE PRESSURE SENSOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the tire pressure sensor. The second task installs the tire pressure sensor.
   B. There is a tire pressure sensor on each wheel of the nose gear. It will be referred to as the sensor in this procedure. Remove it when the tire pressure monitor unit detects a sensor malfunction, or the sensor is damaged.
   C. The sensor is installed on a tire pressure sensor holder/inflation valve which is referred to as the pressure sensor holder in this procedure.

TASK 32-45-12-004-001

2. Remove the Tire Pressure Sensor (Fig. 401)
   A. Equipment
      (1) S283U006-09 Sealing Cap
   B. References
      (1) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

   D. Procedure to Remove the Sensor

      S 494-002
      (1) Make sure that landing gear downlocks are installed (Ref 32-00-20).

      S 864-003
      (2) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
          (a) 11U17, TIRE PRESS IND 1

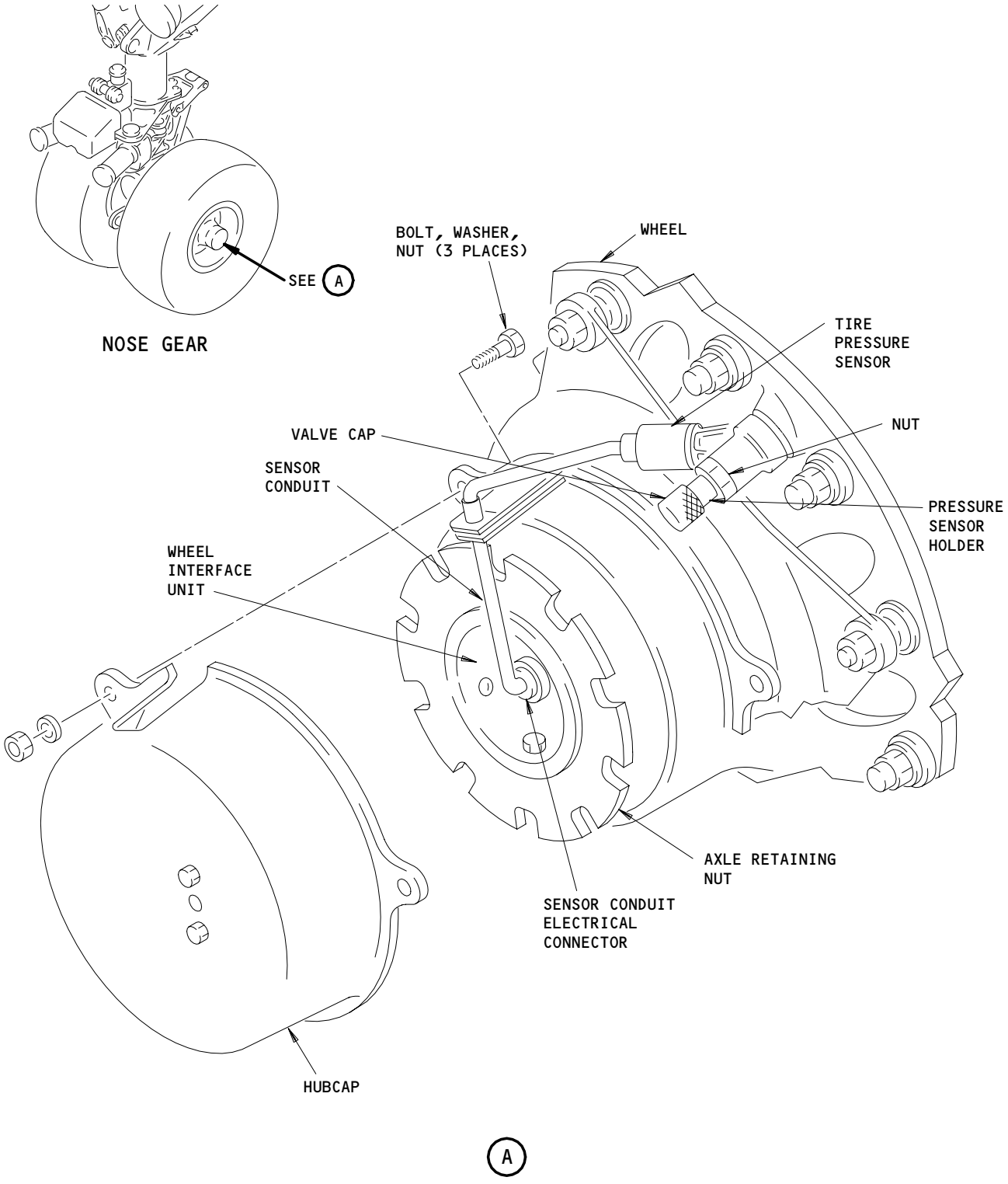
      S 864-018
      (3) Open this circuit breaker on the APU external power panel, P34, and attach a DO-NOT-CLOSE tag.
          (a) 34M11, TIRE PRESS IND 2

      S 034-019

      CAUTION: PUSH THE SPACER AND GROMMET ON THE SENSOR CONDUIT OUT OF THE SLOT IN THE HUBCAP WHILE YOU REMOVE THE HUBCAP. KEEP THE SPACER WITH THE HUBCAP. DO NOT PULL ON THE CONDUIT BECAUSE IT CAN CAUSE DAMAGE TO THE SENSOR ASSEMBLY.

      (4) Remove three bolts and pull the hubcap off the wheel.

      S 024-004
      (5) Remove the lockwire and the nut, and pull the sensor from the sensor holder on the wheel.



Nose Gear Tire Pressure Sensor - Installation
Figure 401

S 494-005

CAUTION: INSTALL THE SEAL CAP IMMEDIATELY AFTER YOU REMOVE THE SENSOR TO PREVENT GAS FROM BLEEDING OUT THROUGH THE PRESSURE SENSOR HOLDER ON THE WHEEL. WITHOUT THE SENSOR OR THE SEAL CAP INSTALLED, TIRE PRESSURE WILL DECREASE AT APPROXIMATELY ONE PSI PER MINUTE. THIS MAY CAUSE DAMAGE TO THE TIRE IF IT IS OPERATED WITHOUT SUFFICIENT PRESSURE.

(6) Install a seal cap over the pressure sensor holder on the wheel. Install the nut.

NOTE: Ten seal caps are provided with the airplane as fly-away equipment.

S 024-006

(7) Disconnect the sensor conduit from the wheel interface unit and remove the sensor from the airplane.

S 024-007

(8) Remove the grommet from the sensor.

TASK 32-45-12-404-008

3. Install the Tire Pressure Sensor (Fig. 401)

A. Equipment
   (1) S283U006-09 Sealing Cap

B. References
   (1) 32-00-20/201, Landing Gear Downlocks
   (2) 32-45-00/501, Wheels and Tires

C. Access
   (1) Location Zones
      731 Main Landing Gear (Left)
      741 Main Landing Gear (Right)

D. Procedure to Install the Sensor

S 494-017

(1) Make sure that the landing gear downlocks are installed (Ref 32-00-20).

S 424-014

(2) Install the grommet on the pressure sensor conduit.

S 424-015

(3) Connect the pressure sensor to the wheel interface unit.

NOTE: Do not connect the sensor to the holder on the wheel until you have installed the hubcap. This will allow you to turn the hubcap to engage the transducer coupling and wheel interface unit driver and not pull on the sensor conduit.

S 434-009

(4) Do the steps that follow to install the hubcap assembly:
   (a) Put the hubcap in position so that the grommet on the sensor conduit can be put in the slot in the hubcap.
   (b) Put the spacer under the grommet and push it in the slot in the hubcap when you install the hubcap.
   (c) Turn the hubcap until the bolt holes in the hubcap align with the attachment holes in the wheel and install three bolts and washers. Install a lockwire.

S 424-010

(5) Do the steps that follow to install the sensor:
   (a) Remove the valve cap from the pressure sensor holder.

CAUTION: CONNECT THE SENSOR IMMEDIATELY AFTER YOU REMOVE THE SEAL CAP TO PREVENT GAS FROM BLEEDING OUT THROUGH THE PRESSURE SENSOR HOLDER ON THE INFLATION VALVE. WITHOUT THE SENSOR OR THE SEAL CAP INSTALLED, TIRE PRESSURE WILL DECREASE AT APPROXIMATELY ONE PSI PER MINUTE. THIS MAY CAUSE DAMAGE TO THE TIRE IF IT IS OPERATED WITHOUT SUFFICIENT PRESSURE.

   (b) Remove the nut and the seal cap from the pressure sensor holder.

NOTE: Return the seal cap to the airplane fly-away equipment.

   (c) Install the sensor on the holder.

NOTE: You can install the sensor at one of 12 possible angles in 30-degree increments around the holder. It must be installed so that the sensor conduit is not loose or pulled.

(d) Install and torque the nut to 150 (17 N'm) to 200 (23 N'm) in-lbs.
(e) Install a lockwire.
(f) Install the cap over the end of the sensor holder.
(g) Connect the electrical connector of the sensor conduit to the receptacle on the wheel interface unit.

S 864-011
(6) Remove the DO-NOT-CLOSE tag and close this P11 panel circuit breaker:
(a) 11U17, TIRE PRESS IND 1

S 864-012
(7) Remove the DO NOT-CLOSE tag and close this circuit breaker on the APU control panel, P54:
(a) 34M11, TIRE PRESS IND 1

S 714-013
(8) Do an operational test of the tire pressure indicating system (Ref 32-45-00).

WHEEL INTERFACE UNIT, MAIN GEAR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the wheel interface unit for the main gear. The second task installs the wheel interface unit for the main gear.
   B. One wheel interface unit is installed in each main gear wheel axle (eight total). The wheel interface unit is replaced when a malfunction is isolated to the unit.
   C. The hubcap and tire pressure sensor must be removed from the wheel to get access to the wheel interface unit. The wheel interface unit is installed in a support assembly that also contains the antiskid transducer. The support assembly must be removed from the axle, and the antiskid transducer and interface unit disconnected from the wire bundle. The interface unit can then be removed from the support.
   D. After the wheel interface unit has been installed, you must do an operational test of the tire pressure indicating system and the brake control system.

TASK 32-45-13-004-026

2. Remove the Wheel Interface Unit for a Main Gear (Fig. 401)
   A. References
      (1) 07-11-03/201, Jack Airplane Axle
      (2) 32-00-20/201, Landing Gear Downlocks
      (3) 32-00-15/201, Landing Gear Door Locks
   B. Access
      (1) Location Zones
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

   C. Prepare for Removal.

      S 494-002
      (1) Make sure that the landing gear downlocks are installed (Ref 32-00-20/201).

S 494-027

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the main gear doors and install the door locks (AMM 32-00-15/201).

S 864-028

(3) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
   (a) 11C31, ANTISKID 2-6
   (b) 11C32, ANTISKID 3-7
   (c) 11U18, ANTISKID 1-5
   (d) 11U27, ANTISKID 4-8
   (e) 11U17, TIRE PRESS IND 1

S 864-029

(4) Open this circuit breaker on the and attach a DO-NOT-CLOSE tag:
   (a) P34 APU External Power panel
      1) 34M11, TIRE PRESS IND 2

D. Procedure to Remove the Wheel Interface Unit (Fig. 401).

S 014-030

CAUTION: PUSH THE SPACER AND GROMMET ON THE SENSOR CONDUIT OUT OF THE SLOT IN THE HUBCAP AS THE HUBCAP IS REMOVED. KEEP THE SPACER WITH THE HUBCAP. DO NOT PULL ON THE CONDUIT BECAUSE IT CAN CAUSE DAMAGE TO THE SENSOR ASSEMBLY.

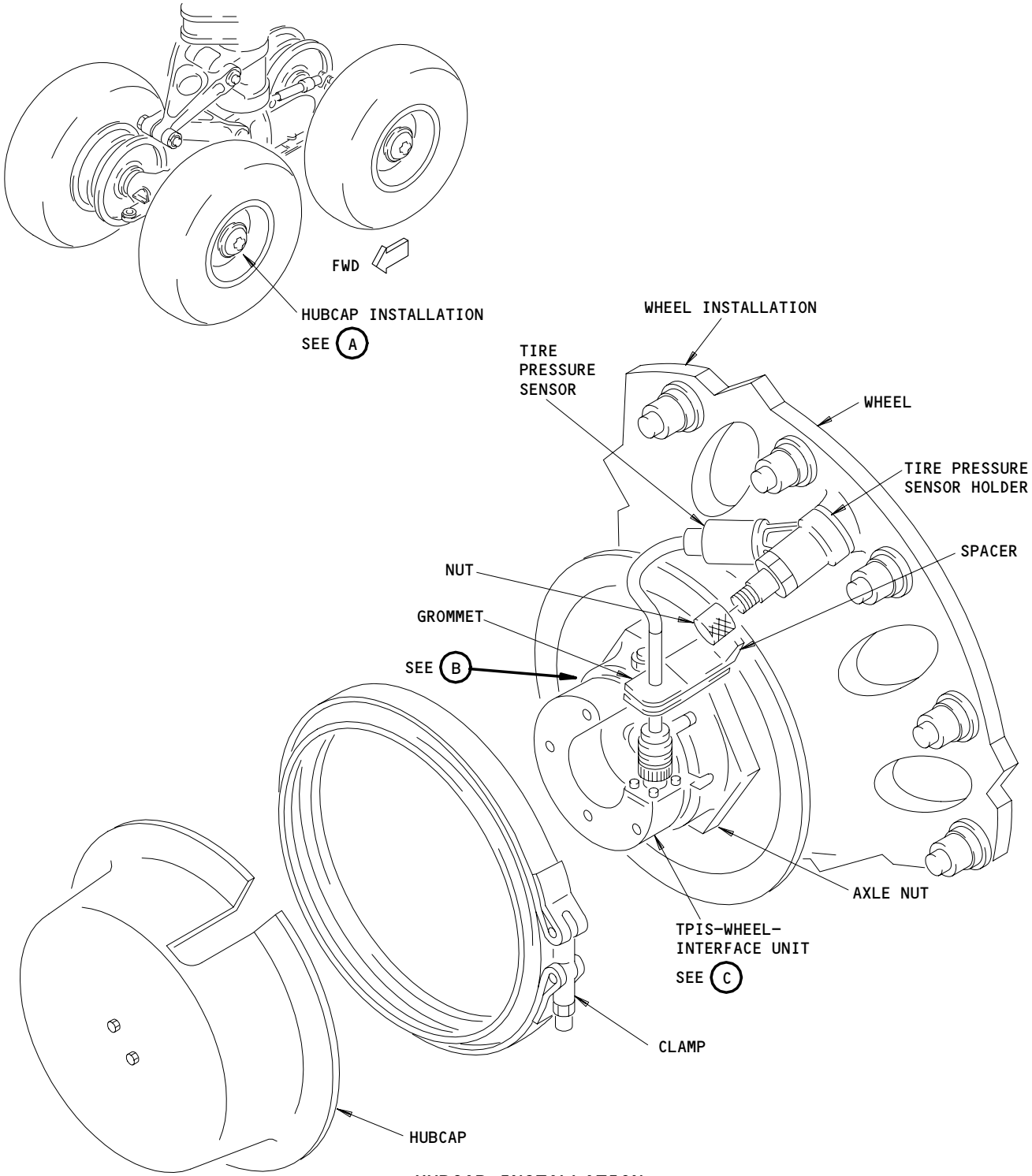
(1) Remove the hubcap and pull the hubcap off the wheel.

S 034-031

(2) Remove the tire pressure sensor.
   (a) Remove the tire pressure sensor from the pressure sensor holder on the wheel.

   CAUTION: INSTALL THE SEAL CAP IMMEDIATELY AFTER YOU REMOVE THE PRESSURE SENSOR TO PREVENT GAS FROM BLEEDING OUT THROUGH THE TIRE PRESSURE SENSOR HOLDER ON THE WHEEL. WITHOUT THE SENSOR OR THE SEAL CAP INSTALLED, THE TIRE PRESSURE WILL DECREASE AT APPROXIMATELY ONE PSI PER MINUTE. THIS MAY CAUSE DAMAGE TO THE TIRE IF IT IS OPERATED WITHOUT SUFFICIENT PRESSURE.

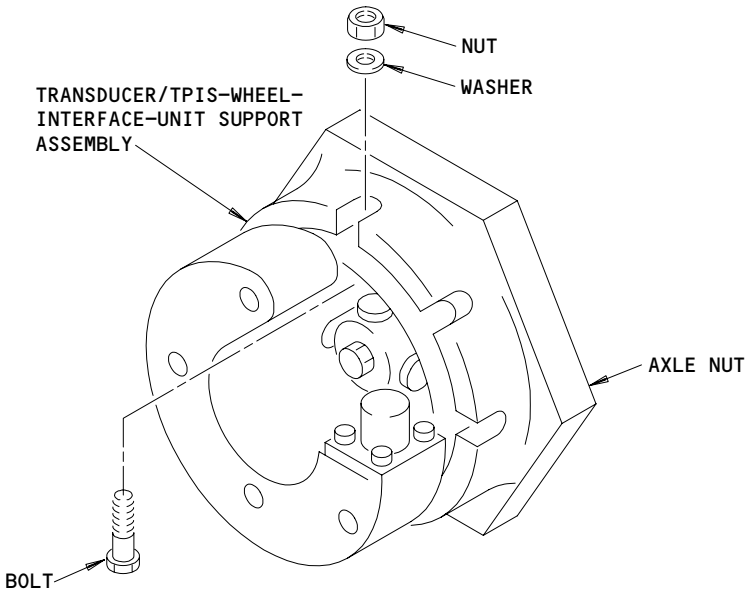
   (b) Install a seal cap over the holder for the tire pressure sensor on the wheel.
   (c) Disconnect the tire pressure sensor from the wheel interface unit.



HUBCAP INSTALLATION

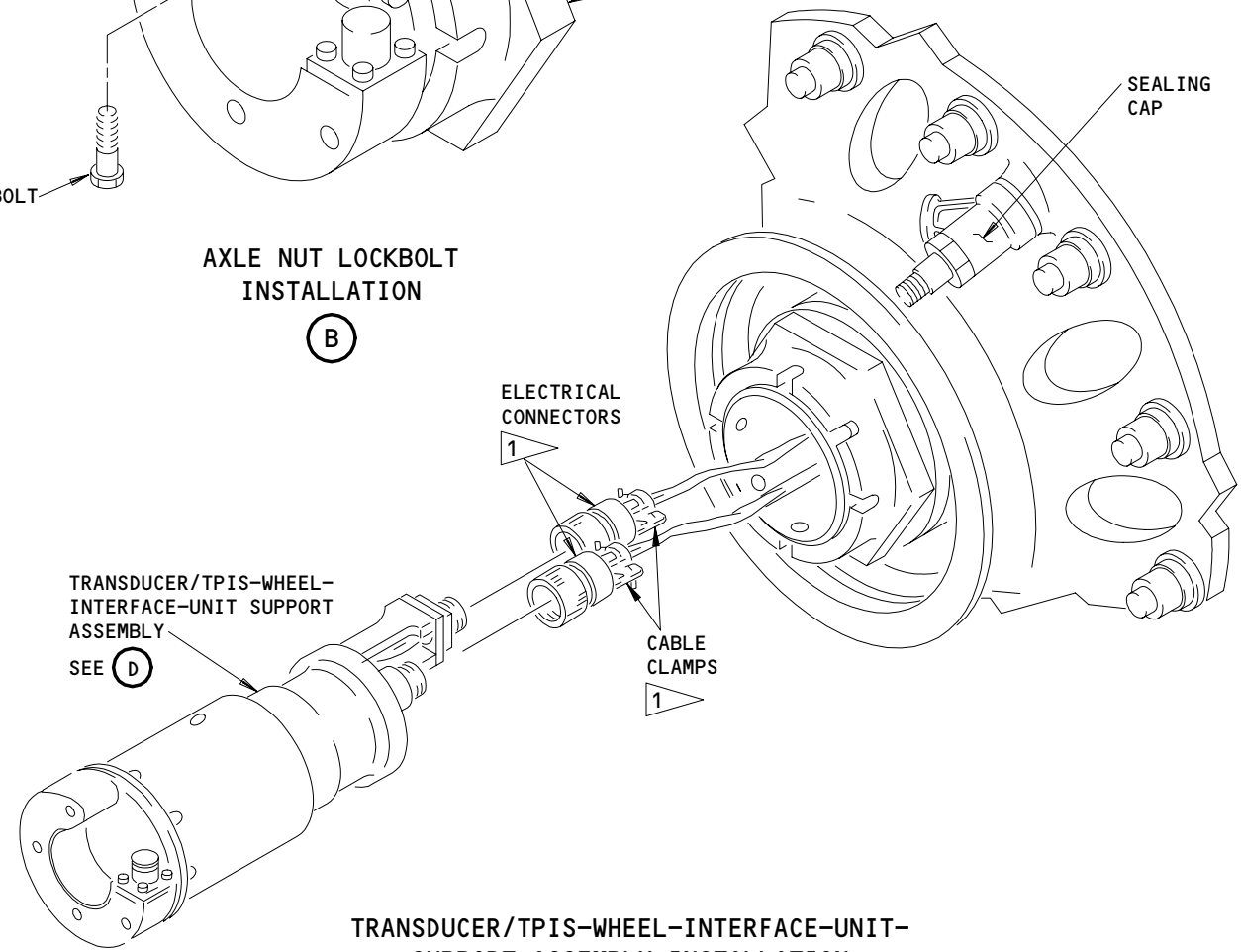
A

Main Gear TPIS-Wheel-Interface Unit Installation
Figure 401 (Sheet 1)



AXLE NUT LOCKBOLT INSTALLATION

B



TRANSDUCER/TPIS-WHEEL-INTERFACE-UNIT-SUPPORT ASSEMBLY INSTALLATION

C

1 EXAMINE THE ELECTRICAL CONNECTORS TO SEE IF THE CABLE CLAMP SCREWS ARE LOCKWIRED. INSTALL LOCKWIRE IF IT IS NECESSARY

Main Gear TPIS-Wheel-Interface Unit Installation
Figure 401 (Sheet 2)

(d) Remove the sensor from the wheel.

NOTE: If this sensor will be used in this wheel position keep the grommet on the conduit. If a new sensor will be installed remove the grommet and keep it with the hubcap.

S 034-032

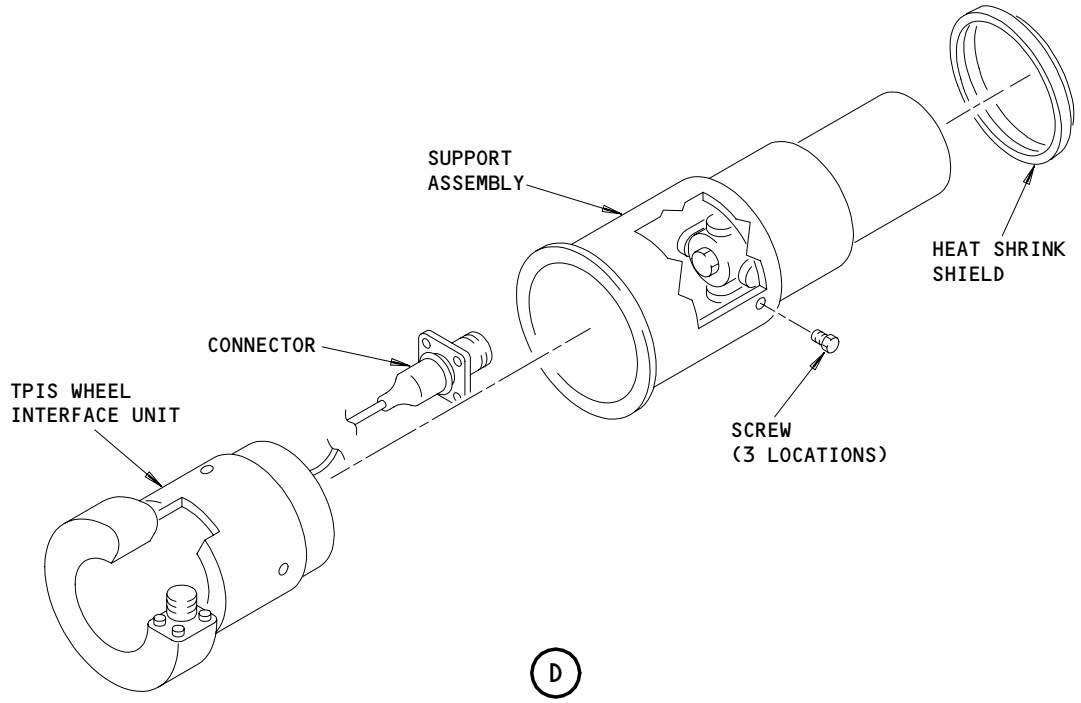
(3) Remove the two lockbolts, the nuts and the washers.

NOTE: Turn the rotor on the wheel interface unit if it is necessary to get access to the bolts for removal.

S 024-033

CAUTION: DO NOT PULL OR TWIST ON THE WIRE HARNESS WHEN YOU REMOVE THE SUPPORT ASSEMBLY FOR THE WHEEL INTERFACE UNIT AND THE ANTISKID TRANSDUCER FROM THE AXLE. DO NOT LET THE UNIT HANG FROM THE WIRES OUT OF THE AXLE. YOU CAN CAUSE DAMAGE TO THE WIRES, THE ANTISKID TRANSDUCER OR THE WHEEL INTERFACE UNIT.

(4) Pull the support assembly for the antiskid transducer and the wheel interface unit out of the end of the axle.



Main Gear TPIS Wheel Interface Unit Installation
Figure 401 (Sheet 3)

S 024-053

(5) Disconnect the the wire bundle from the back of the support assembly at the connectors shown below:

CONNECTORS			
Left Gear Truck		Right Gear Truck	
Wheel No. 1	Wheel No. 2	Wheel No. 3	Wheel No. 4
D2012	D2014	D2020	D2022
D13392	D13390	D13388	D13386
Wheel No. 5	Wheel No. 6	Wheel No. 7	Wheel No. 8
D2016	D2018	D2024	D2026
D13384	D13382	D13380	DT13378

S 024-035

(6) Remove the wheel interface unit from the support assembly.
   (a) Remove the connnector for the wheel interface unit from the back of the support.
   (b) Remove the heat shrink sleeve from the support.

CAUTION: DO NOT PULL OR TWIST ON THE WHEEL INTERFACE UNIT WIRES WHEN YOU REMOVE THE WHEEL INTERFACE UNIT FROM THE SUPPORT. YOU CAN CAUSE DAMAGE TO THE WIRES OR THE WHEEL INTERFACE UNIT.

   (c) Remove three screws from the side of the support and remove the wheel interface unit from the support assembly.

NOTE: It is not always possible to remove the interface unit with the nose gear on the ground. If it is necessary, lift the airplane with a jack before you remove the interface unit (Ref 07-11-03/201). Lower the airplane after you remove the interface unit (Ref 07-11-03/201).

TASK 32-45-13-404-036

3. Install the Wheel Interface Unit for a Main Gear (Fig. 401)
   A. References
      (1) 12-15-03/301, Tires

(2) 32-00-201/201, Landing Gear Downlocks
(3) 32-00-15/201, Landing Gear Door Locks
(4) 32-41-00/501, Brake Control System
(5) 32-42-03/401, Transducer Coupling
(6) 32-45-00/501, Wheels and Tires

B. Access

(1) Location Zones

731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

C. Procedure to Install the Wheel Interface Unit

S 494-037

(1) Make sure that the landing gear downlocks are installed (Ref 32-00-20/201).

S 754-051

(2) Examine the transducer connector for broken wires or other damage. Replace the connector if it necessary. Refer to Chapter 20, Wiring Diagram Manual, for connector replacement data.
(a) Examine the cable clamp on the electrical connnector to see if the clamp screws are lockwired. Install lockwire if the screws are not lockwired (See Fig. 401).

S 424-038

(3) Install the wheel interface unit in the support.
(a) Put the connector on the wheel interface unit through the access hole in the side of the support.
(b) Put the wheel interface unit in the support and turn it to align the locating pin in the interface unit with the hole in the support.
(c) Install three screws to attach the wheel interface unit to the support.

NOTE: Turn the interface unit in the support for 2 to 3 turns. The rotor on the wheel interface unit must turn freely in the housing after the screws are installed. If it does not turn freely replace the NAS1801-3-5 screws with NAS1801-3-4 screws.

(d) Put the wire in position around the outside of the support and attach the connector to the back of the support with four screws. Install a lockwire.
(e) Install the heat shrink sleeving over the wire that is around the support.

S 424-039

(4) Install the support assembly in the end of the axle.

CAUTION: DO NOT PULL OR TWIST THE WIRE HARNESS WHEN YOU CONNECT THE TRANSDUCER AND THE WHEEL INTERFACE UNIT TO THE WIRE BUNDLE. YOU MAY CAUSE DAMAGE TO THE WIRE BUNDLES, THE TRANSDUCER OR THE WHEEL INTERFACE UNIT.

(a) Hold the support assembly at the end of the axle and connect the correct electrical connectors on the wire bundle to the mating electrical connectors on the transducer and the wheel interface unit. The correct connectors for each wheel are given below.

CONNECTORS			
Left Gear Truck		Right Gear Truck	
Wheel No. 1	Wheel No. 2	Wheel No. 3	Wheel No. 4
D2012	D2014	D2020	D2022
D13392	D13390	D13388	D13386
Wheel No. 5	Wheel No. 6	Wheel No. 7	Wheel No. 8
D2016	D2018	D2024	D2026
D13384	D13382	D13380	DT13378

(b) Put the support assembly in position in the end of the axle and install two lock bolts, washers and nuts.

NOTE: Turn the rotor on the wheel interface unit if it is necessary to get access to install the bolts.

S 434-040

(5) Install the tire pressure sensor.

(a) Put the hubcap clamp in position on the wheel but do not tighten it.

(b) Install the grommet on the conduit for the tire pressure sensor.

(c) Connect the tire pressure sensor to the wheel interface unit.

NOTE: Do not connect the sensor to the holder on the wheel until after you install the hubcap. This will allow you to turn the hubcap if it is necessary to engage the transducer coupling and the driver for the wheel interface unit driver and not pull on the sensor conduit.

S 864-041

(6) Close these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
(a) 11C31, ANTISKID 2-6
(b) 11C32, ANTISKID 3-7
(c) 11U18, ANTISKID 1-5
(d) 11U27, ANTISKID 4-8
(e) 11U17, TIRE PRESS IND 1

S 864-042

(7) Close this ciruit breaker on the APU External Power Panel, P34, and attach a DO-NOT-CLOSE tag:
(a) 34M11, TIRE PRESS IND 2

S 214-043

(8) Examine the drive couplings in the hubcap to make sure they are correctly installed and in good condition. Replace components that are damaged (Ref 32-42-03/401).

S 434-044

(9) Do these steps to install the hubcap.
(a) Turn the dog on the antiskid transducer until the cap on the hubcap engages the dog, and the slot on the hubcap aligns with the conduit on the tire pressure sensor.
(b) Hold the grommet and the spacer in position to keep the conduit straight, while you push the hubcap on the axle.
(c) Install the clamp. Tighten the clamp nut to 35-40 pound-inches torque.

S 434-045

(10) Connect the tire pressure sensor to the holder on the wheel.

WARNING: DO NOT USE TOOLS TO REMOVE THE SEAL CAP. IF YOU USE TOOLS YOU CAN ACCIDENTALLY REMOVE THE SENSOR HOLDER AND DEFLATE THE TIRE. FAST TIRE DEFLATION CAN FIRE THE SENSOR HOLDER AT A HIGH SPEED AND CAUSE INJURY OR DAMAGE.

CAUTION: CONNECT THE PRESSURE SENSOR IMMEDIATELY AFTER YOU REMOVE THE SEAL CAP TO PREVENT GAS FROM BLEEDING OUT THROUGH THE HOLDER FOR THE TIRE PRESSURE SENSOR HOLDER. WITHOUT THE SENSOR OR SEAL CAP INSTALLED, THE TIRE PRESSURE WILL DECREASE AT APPROXIMATELY ONE PSI PER MINUTE. THIS MAY CAUSE DAMAGE TO THE TIRE IF IT IS OPERATED WITHOUT SUFFICIENT PRESSURE.

(a) Remove the seal cap from the holder for the tire pressure sensor.
(b) Connect the tire pressure sensor.

NOTE: The sensor can be installed at one of 12 possible angles in 30 degree increments around the holder. It must be installed so that the sensor conduit is not loose or pulled.

(c) Install the nut and tighten it.
(d) Install a lockwoire.

S 614-046
(11) Make sure that the tire is inflated to the correct pressure (Ref 12-15-03).

S 714-047
(12) Do an operational test of the brake control system (Ref 32-41-00).

S 714-048
(13) Do an operational test of the tire pressure indicating system (Ref 32-45-00).

S 094-049
(14) Remove the landing gear door locks (Ref 32-00-15).

WHEEL INTERFACE UNIT - NOSE GEAR REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the wheel interface unit for the nose gear. The second task installs the wheel interface unit for the nose gear.
   B. One wheel interface unit is installed in each end of the nose gear wheel axle. The hubcap and tire pressure sensor must be removed from the wheel to get access to the wheel interface unit.
   C. After the wheel interface unit has been installed, you must do an operational test of the tire pressure indicating system and the brake control system.

TASK 32-45-14-004-024

2. Remove a Wheel Interface Unit for the Nose Gear (Fig. 401)
   A. References
      (1) 07-11-03/201, Jack Airplane Axle
      (2) 32-00-15/201, Landing Gear Door Locks
      (3) 32-00-20/201, Landing Gear Downlocks
      (4) 32-45-00/501, Tire Pressure Indicating System
   B. Access
      (1) Location Zones
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

   C. Prepare for Removal

      S 494-025
      (1) Make sure that landing gear downlocks are installed (Ref 32-00-20).

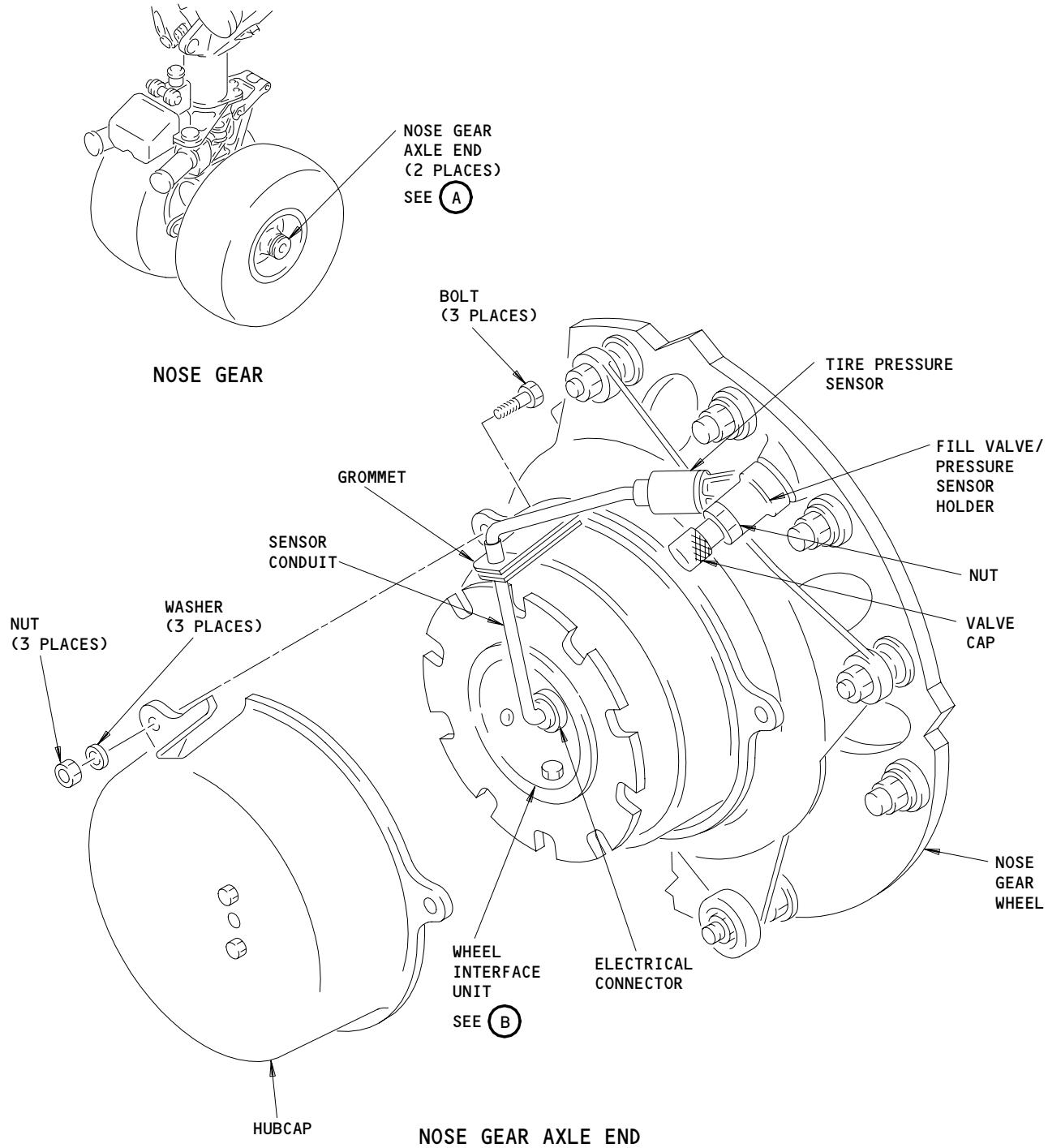
      S 494-026

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

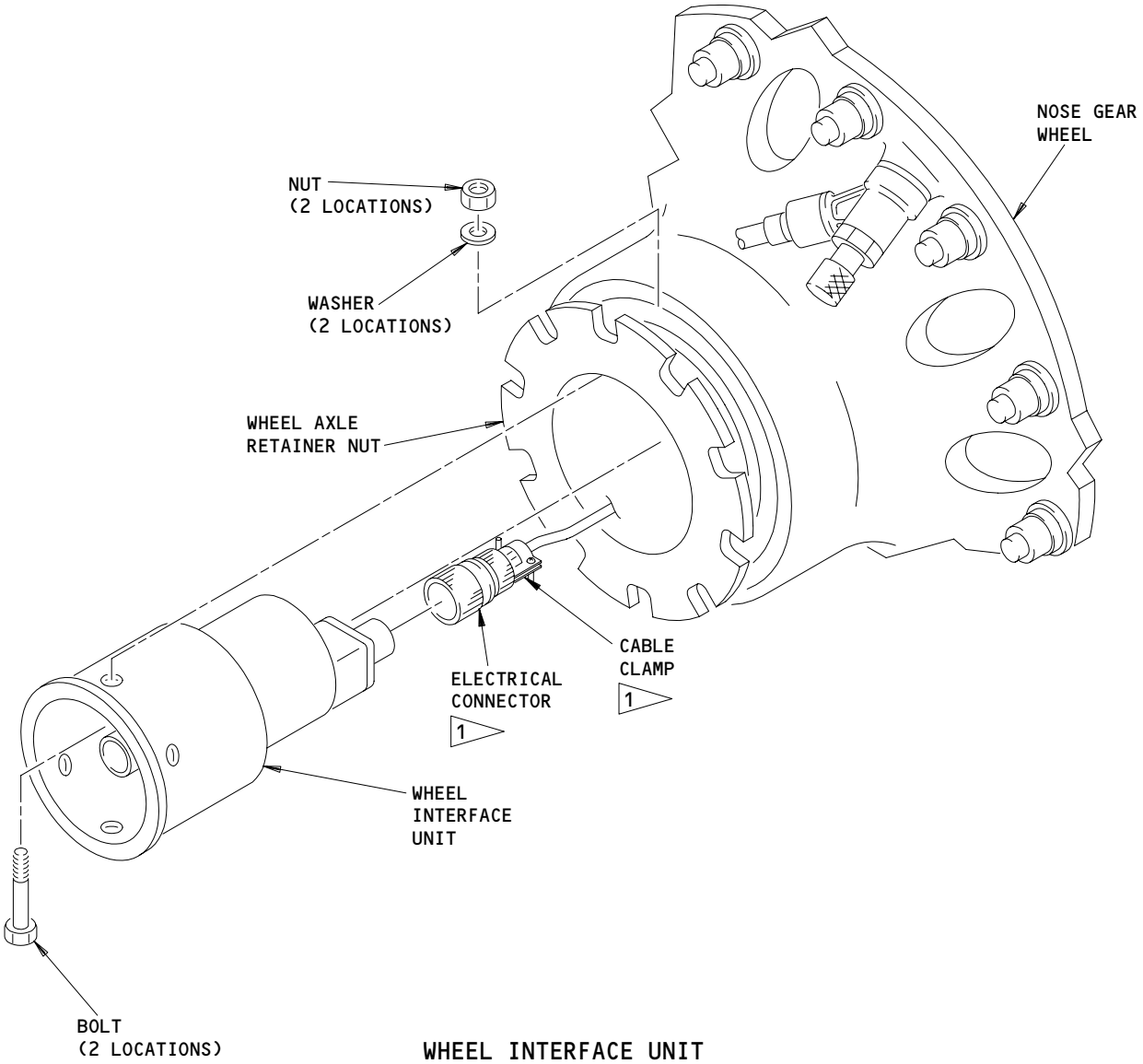
      (2) Open the nose gear doors and install the door locks (AMM 32-00-15/201).

      S 864-027
      (3) Open this circuit breaker on the pilot's overhead circuit breaker panel, P11, and install a DO-NOT-CLOSE tag:
          (a) 11U17, TIRE PRESS IND 1

      S 864-045
      (4) Open this circuit breaker on the APU/external power panel, P34, and install a DO-NOT-CLOSE tag.
          (a) 34M11, TIRE PRESS IND 2
   D. Procedure to Remove the Wheel Interface Unit



Nose Gear Wheel Interface Unit - Installation
Figure 401 (Sheet 1)



WHEEL INTERFACE UNIT

(B)

1 EXAMINE THE ELECTRICAL CONNECTORS TO SEE IF THE CABLE CLAMP SCREWS ARE LOCKWIRED. INSTALL LOCKWIRE IF IT IS NECESSARY

Nose Gear Wheel Interface Unit - Installation
Figure 401 (Sheet 2)

672979

EFFECTIVITY
SAS 050-149, 155-999;
MTH ALL AIRPLANES

S 034-028

CAUTION: PUSH THE SPACER AND THE GROMMET ON THE SENSOR CONDUIT OUT OF SLOT IN THE HUBCAP WHILE YOU REMOVE THE HUBCAP. KEEP THE SPACER WITH THE HUBCAP. DO NOT PULL ON THE CONDUIT BECAUSE IT CAN CAUSE DAMAGE TO THE SENSOR ASSEMBLY.

(1) Remove the hubcap assembly as follows:
   (a) Remove three bolts while you hold the hubcap.
   (b) Pull the hubcap off of the wheel.

S 034-029

(2) Remove the tire pressure sensor from the pressure sensor holder on the wheel as follows:
   (a) Remove the lockwire and the nut.
   (b) Pull the pressure sensor from the pressure sensor holder.

   CAUTION: INSTALL THE SEAL CAP IMMEDIATELY AFTER YOU REMOVE THE PRESSURE SENSOR TO PREVENT GAS FROM BLEEDING OUT THROUGH THE TIRE-PRESSURE-SENSOR HOLDER ON THE WHEEL. WITHOUT THE SENSOR OR THE SEAL CAP INSTALLED, THE TIRE PRESSURE WILL DECREASE AT APPROXIMATELY ONE PSI PER MINUTE. THIS MAY CAUSE DAMAGE TO THE TIRE IF IT IS OPERATED WITHOUT SUFFICIENT PRESSURE.

   (c) Disconnect the tire pressure sensor from the wheel interface unit.
   (d) Remove the sensor from the wheel.
   (e) Install a seal cap on the pressure sensor holder.

S 024-033

(3) Remove the nuts, washers and lockbolts that attach the axle nut to the wheel interface unit.

   NOTE: Turn the rotor on the wheel interface unit to get access to the bolts for removal.

S 024-035

CAUTION: DO NOT PULL OR TWIST ON THE WIRE HARNESS WHEN YOU REMOVE THE SUPPORT ASSEMBLY FOR THE WHEEL INTERFACE UNIT FROM THE AXLE. YOU CAN CAUSE DAMAGE TO THE WIRE BUNDLE OR THE TRANSDUCER.

(4) Pull the interface unit out of the axle.

NOTE: It is not always possible to remove the interface unit with the nose gear on the ground. If it is necessary, lift the airplane with a jack before you remove the interface unit (AMM 07-11-03/201). Lower the airplane after you remove the interface unit (AMM 07-11-03/201).

S 024-036

(5) Disconnect the wire bundle from the end of the support assembly for the wheel interface unit at the electrical connector as shown below:

CONNECTORS	
Left Wheel	Right Wheel
D13376	D13374

TASK 32-45-14-404-037

3. Install a Wheel Interface Unit for the Nose Gear

A. References

(1) 32-45-00/501, Wheels and Tires

B. Access

(1) Location Zones

731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

C. Procedure

S 754-046

(1) Examine the transducer connector for broken wires or other damage. Replace the connector if it necessary. Refer to Chapter 20, Wiring Diagram Manual, for connector replacement data.

(a) Examine the cable clamp on the electrical connnector to see if the clamp screws are lockwired. Install lockwire if the screws are not lockwired (See Fig. 401).

S 424-038

CAUTION: DO NOT PULL OR TWIST THE WIRE HARNESS WHEN YOU CONNECT THE WHEEL INTERFACE UNIT TO THE WIRE BUNDLE. YOU CAN CAUSE DAMAGE TO THE WIRE BUNDLE.

(2) Hold the support assembly at the end of the axle and connect the electrical connector of the wire bundle to the electrical receptacle on the the support assembly. The correct connector is shown below:

CONNECTORS	
Left Axle	Right Axle
D13376	D13374

S 424-039

(3) Put the support assembly in position in the end of the axle and install the lock bolts, the washers and the nuts.

NOTE: Turn the rotor on the wheel interface unit if it is necessary to get access to install the bolts.

S 434-040

(4) Install the tire pressure sensor.
(a) Put the hubcap clamp in position on the wheel but do not tighten it.
(b) Install the grommet on the conduit of the tire pressure sensor.
(c) Connect the tire pressure sensor to the wheel interface unit.

NOTE: Do not connect the sensor to the holder on the wheel until you install the hubcap. If the sensor is connected to the wheel, it is difficult to turn the hubcap to engage the transducer drive because you will pull on the conduit when you turn the hubcap.

S 434-041

(5) Install the hubcap assembly.
(a) Put the hubcap in position so that the grommet on the sensor conduit can be put into the slot in the hubcap.
(b) Put the spacer under the grommet and push it into the slot in the hubcap when the hubcap is installed.
(c) Turn the hubcap lightly back and forth until the driver for the wheel interface unit in the hubcap engages the rotor in the wheel interface unit.

(d) Turn the hubcap until the bolt holes in the hubcap align with the mating bolt holes in the wheel and hold the hubcap while you install three bolts and three washers.
(e) Install a lockwire at each bolt.

S 434-042
(6) Connect the tire pressure sensor to the holder on the wheel as follows:
(a) Remove the cap from the tire inflation valve.

CAUTION: INSTALL THE PRESSURE SENSOR IMMEDIATELY AFTER YOU REMOVE THE SEAL CAP TO PREVENT GAS FROM BLEEDING OUT THROUGH THE TIRE PRESSURE SENSOR HOLDER ON THE WHEEL. IF THE SENSOR OR THE SEAL CAP IS NOT INSTALLED, THE TIRE PRESSURE WILL DECREASE AT APPROXIMATELY ONE PSI PER MINUTE. THIS CAN CAUSE DAMAGE TO THE TIRE IF IT IS OPERATED WITHOUT SUFFICIENT PRESSURE.

(b) Remove the nut and the seal cap from the inflation valve/tire pressure sensor holder.
(c) Connect the tire pressure sensor to the inflation valve/tire pressure sensor holder on the wheel.

NOTE: You can install the sensor at one of 12 possible angles in 30 degree increments around the holder. Make sure that the sensor conduit does not feel loose or stretched after you install it.

(d) Install the nut and tighten it.
(e) Install lockwire.
(f) Install the cap on the inflation valve.

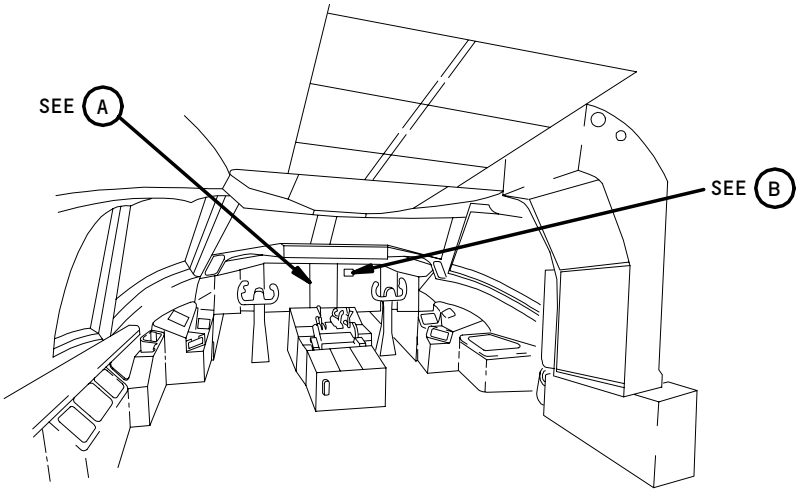
S 864-043
(7) Close this circuit breaker on the P11 panel and attach a DO-NOT-CLOSE tag:
(a) 11U17, TIRE PRESS IND 1

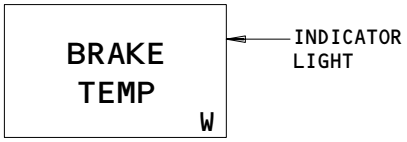
S 864-044
(8) Close this circuit breaker on the P34 panel and attach a DO-NOT-CLOSE tag:
(a) 34M11, TIRE PRESS IND 2

S 714-023
(9) Do operational test of the tire pressure indicating system (Ref 32-45-00).

BRAKE TEMPERATURE MONITORING SYSTEM - DESCRIPTION AND OPERATION

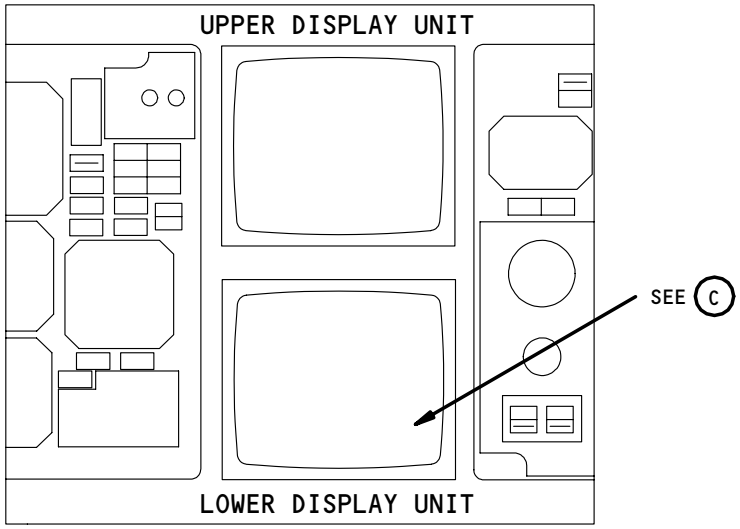
1. General (Fig. 1)
   A. The brake temperature monitoring system indicates to the captain and first officer, the temperature of each main gear brake, and alerts them to a brake, high temperature condition.
   B. Brake temperatures are monitored continuously by individual sensors (thermocouples) in each of the eight main gear brakes. The individual brake temperature signals are received by the Brake Temperature Monitor Unit, and transmitted by separate circuit to the two EICAS (Engine Indicating and Crew Alerting System) computers.
   C. The individual brake temperatures are displayed , as unit values (numbers between 0 and 9), on the status page of the flight compartment EICAS module on the pilot's P2 panel.
   D. A high temperature condition in any brake will illuminate a BRAKE TEMP light on the first officer's P3 panel.
   E. The Brake Temperature monitor unit includes monitor test and sensor test features. The unit also compensates for ambient temperature, at the negative input of the sensor.
2. Component Details
   A. Brake Sensors (Fig. 2)
      (1) One sensor is installed in each of the 8 main landing gear brakes (Details A and B). The function is to sense temperature and supply the monitor unit with a voltage input that is proportional to brake temperature. The sensor is a chromel-alumel thermocouple encased in an inconel mesh sheath attached to a stainless steel housing and electrical connector. The connector has chromel and alumel pins that mate with chromel and alumel pins in the airplane connector. Each sensor is connected by a pair of thermocouple wires enclosed in conduit to junction boxes on the lower end of each main landing gear shock strut.
   B. Brake Temperature Monitor Unit (Fig. 2)
      (1) The monitor unit is located in the main equipment center, E2-4 rack. It has two plug-in printed circuit boards mounted internally which contain the system electronic circuitry. Nine light emitting diodes (LED), and a spring return test switch are mounted on the front panel of the monitor to provide test indication of the monitor unit and sensor circuit integrity.





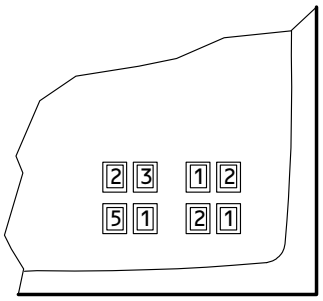
PANEL P3

B



LOWER AND UPPER EICAS DISPLAY UNITS

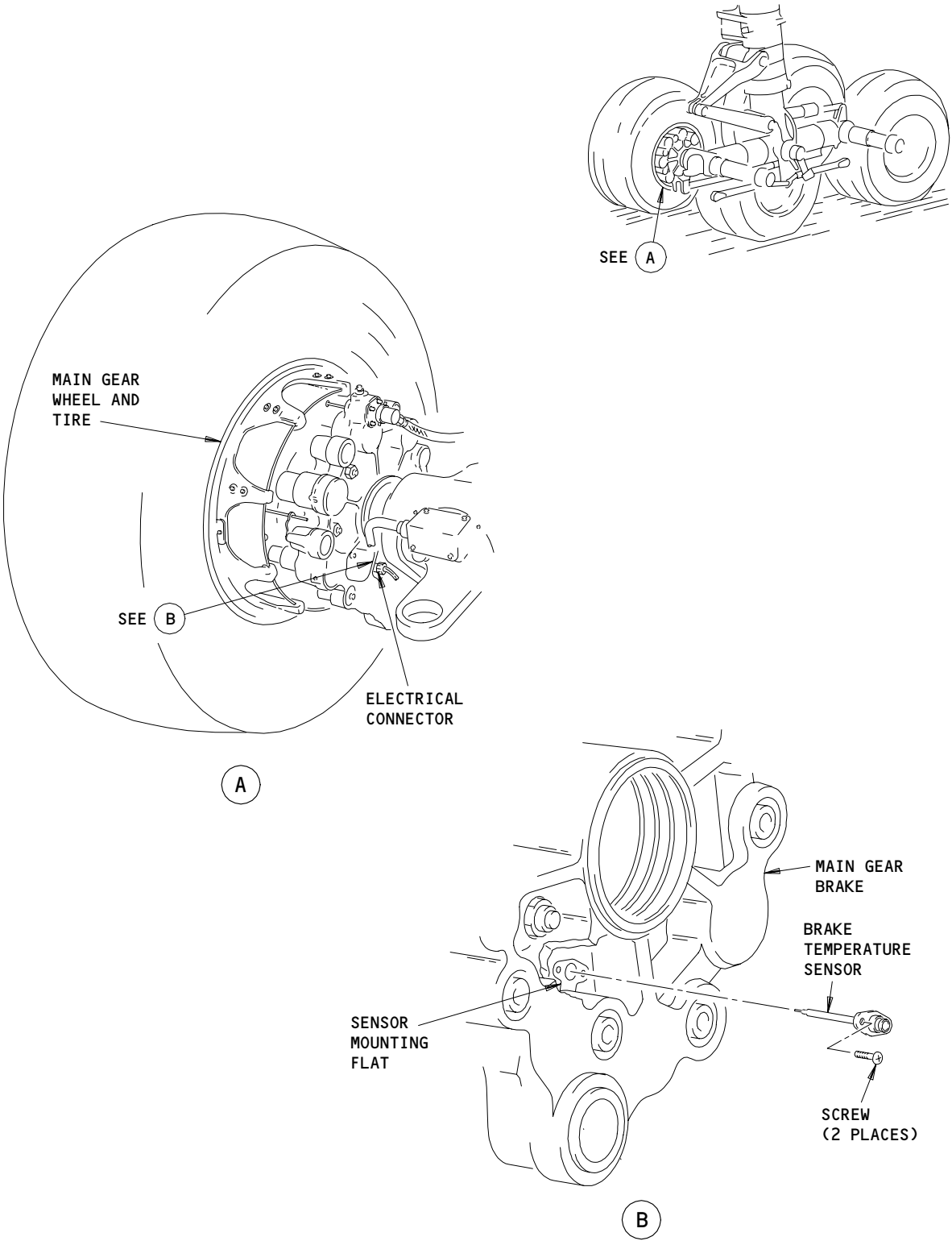
A



C

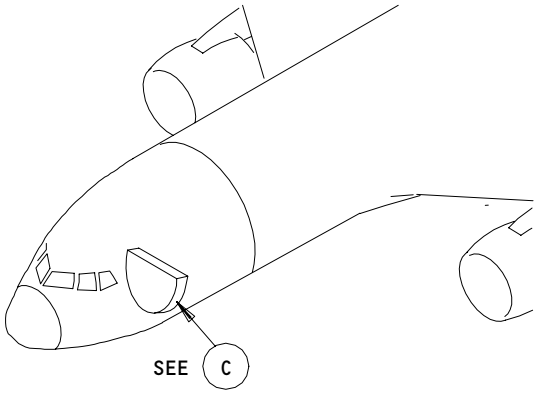
Brake Temperature Monitoring System Indication
Figure 1

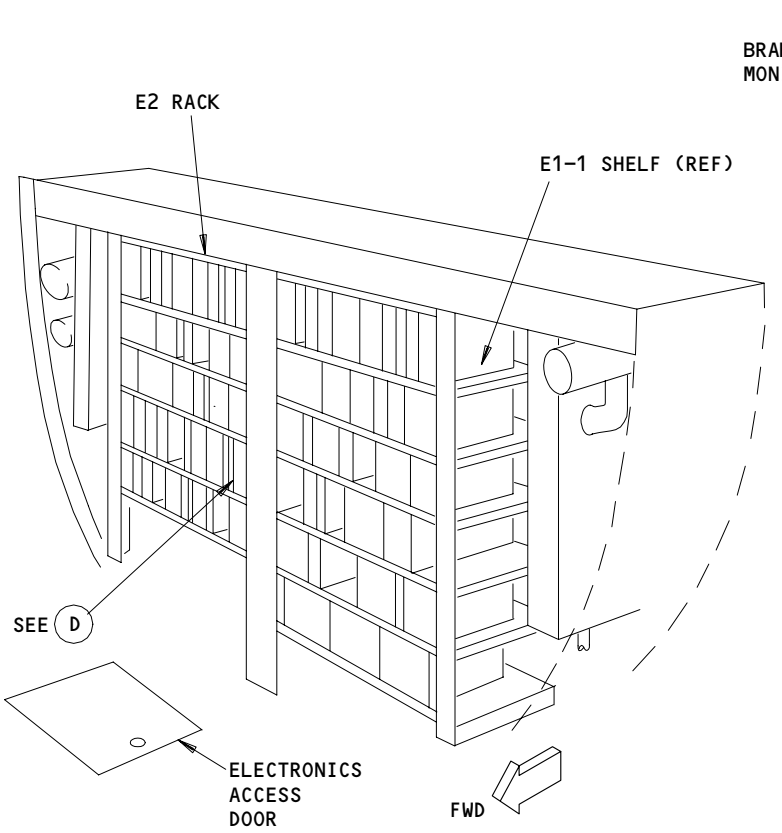
37389



Brake Temperature Monitoring System Component Location
Figure 2 (Sheet 1)

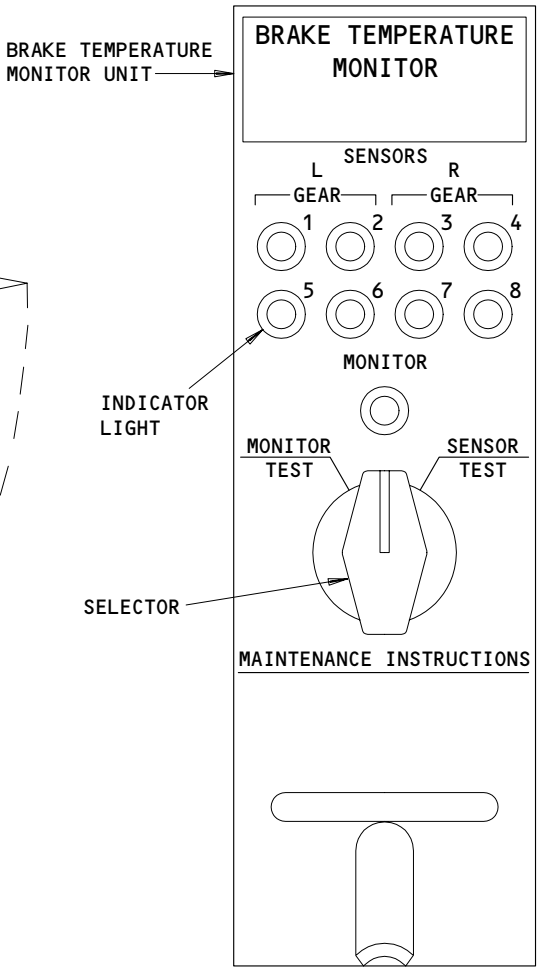
36646





MAIN ELECTRONIC/ELECTRICAL EQUIPMENT CENTER

C



D

Brake Temperature Monitoring System Component Location
Figure 2 (Sheet 2)

36818

(2) The monitor unit receives brake temperature signals from the sensors, and produces outputs which activate temperature indications on EICAS and the BRAKE TEMP warning light.

(3) Continuous brake temperature signals are provided to the EICAS system for display on the flight compartment EICAS display screen.

(a) Unit values from 0 to 9 are displayed corresponding to a brake temperature range of 105°C to 758°C.

(b) The indicated numbers are displayed with a surrounding box. Either or both the digits and boxes are displayed in a blue or white color. The color blue indicates a normal condition. The color white indicates either a threshold or a high temperature condition.

(c) If the temperature rises above 427°C, the monitor energizes the 'BRAKE TEMP' light indication in the flight compartment. This indication will clear when the brake temperature goes back down to approximately 362°C or below.

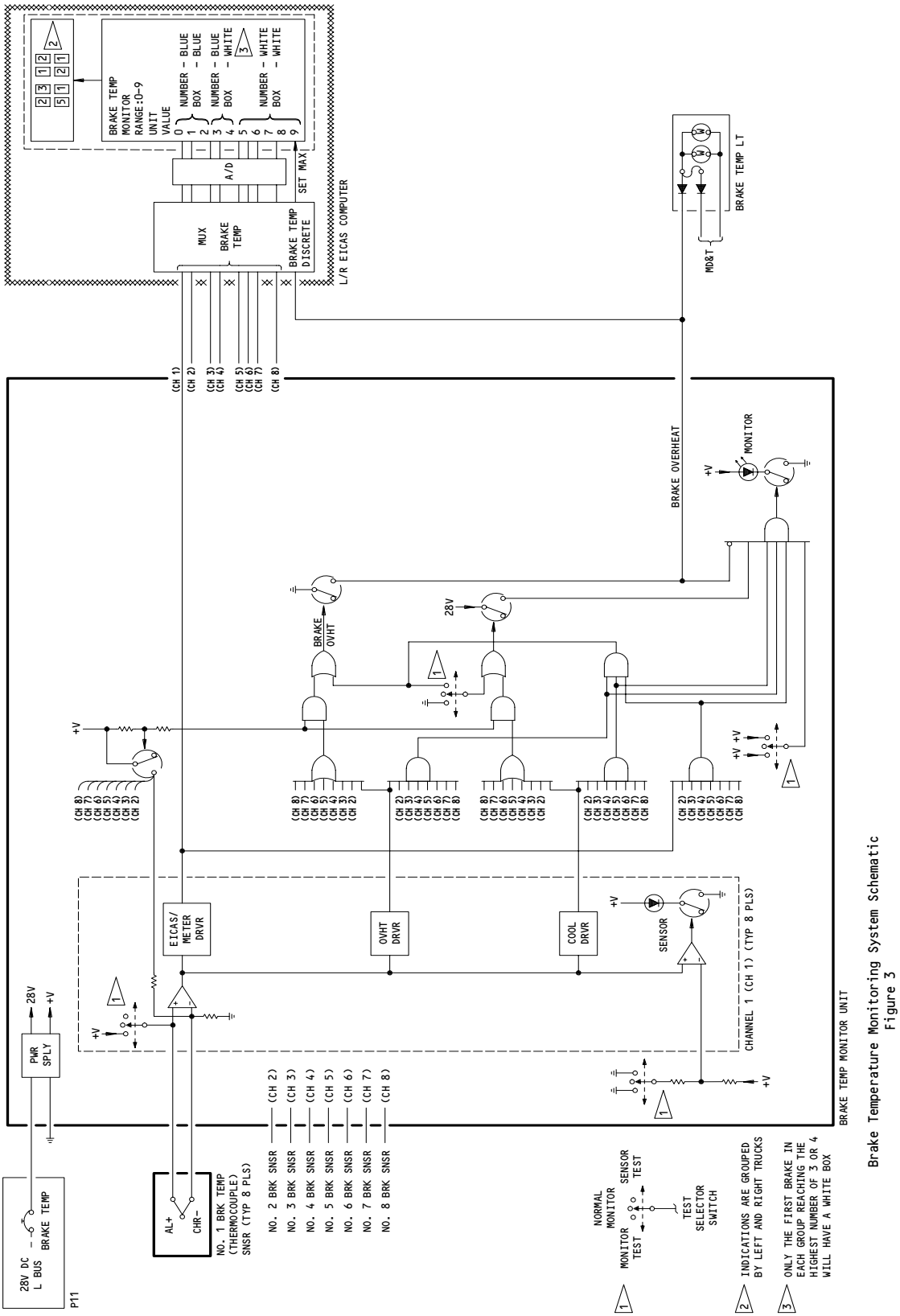
(4) The monitor unit has its own Built-In Test Equipment (BITE) circuits self contained for testing the brake temperature system. A monitor test and sensor test are included and are defined as follows:

(a) By selecting the MONITOR TEST position with the selector switch on the front panel of the monitor unit, a simulated high temperature condition signal is generated for all brake locations. If the system is normal, the nine LED indicators will illuminate on the face of the monitor unit, the EICAS indicators will all show uniform unit values of 7 or above and the flight deck BRAKE TEMP light indication will appear. In this test, the sensors themselves are not a part of the circuit that is tested.

(b) By selecting the SENSOR TEST position with the selector switch, a simulated signal is applied across each of the eight brake sensor thermocouples. If either the sensor or its' wiring is 'open' or 'shorted to ground' the simulated signal will not be received by the monitor unit. The loss of signal in any of the sensors will be indicated by a dark LED for that sensor and the monitor unit. Normally, all eight sensor LED's and the monitor LED will be illuminated during the sensor test.

C. EICAS Computers and Display Units (Fig. 1)

(1) Refer to 31-41-00 description and operation for information on the internal logic and function of EICAS.



Brake Temperature Monitoring System Schematic
Figure 3

(2) The two EICAS computers are connected in parallel to provide system redundancy. A 0 to 5 volt signal corresponding to a 105°C to 758°C brake temperature is provided to the EICAS computers for each of the sensors. The EICAS system then displays unit values of 0 to 9 corresponding to the brake temperatures provided to EICAS.

(3) The temperature ranges for EICAS unit values vs. brake temperature (approximate) are as follows:

NOTE: Increasing and decreasing brake temperature ranges overlap to eliminate the rapid flip-flop between numbers that would occur if a brake temperature input was at the switch point with non-overlapping ranges.

Temperature ranges are approximate and may vary slightly due to EICAS and brake temperature monitor unit tolerances.

EICAS INDICATION	BRAKE TEMPERATURE °C (Increasing)	BRAKE TEMPERATURE °C (Decreasing)
0	Up to 151	Below 125
1	152 to 216	190 to 125
2	217 to 281	255 to 191
3	282 to 346	320 to 256
4	347 to 412	386 to 321
5	413 to 477	451 to 387
6	478 to 542	516 to 452
7	543 to 608	582 to 517
8	609 to 673	647 to 583
9	Over 673	Down to 648

(4) The indications are grouped by the left and right trucks.

(5) Displayed unit values and surrounding boxes may be displayed in either a white or blue (cyan) color for different conditions. The color of the readouts and boxes are as follows:

(a) Normal condition - all readouts ranging from 0 to 2 units. The boxes and numerals will be blue (cyan) in color.

(b) Threshold condition - any readout showing 3 or 4 units. The box will be white and the numeral will be blue. Only one box in each group can be white in the threshold condition. The first box to reach the highest readout (3 or 4) in each group shall be white in color.

(c) High temperature condition - any readout with a value of 5 or above. All readouts 5 and above will have the numeral and it's surrounding box white in color.

3. Operation (Fig. 3)

A. The system is operational when 28 VDC from the left DC bus is supplied to the monitor unit through the BRAKE TEMP circuit breaker on the flight compartment P11 panel.

B. Thermocouple sensors installed at each of eight main landing gear wheel brake locations supply a compensated (ambient adjusted) input signal, corresponding to the sensed brake temperature, to the monitor unit.

C. The monitor unit provides a 0 to 5 volt output signal to the EICAS computers corresponding to the brake temperature signal from each brake.

D. The EICAS system then displays the brake temperatures, in numerals ranging from 0 to 9 corresponding to the brake temperature range of each brake.

E. If any brake temperature value should exceed 5 (above 427°C) a BRAKE TEMP light on the flight compartment P3 panel will illuminate. The indication will extinguish when the actual brake temperature falls below 362°C.

F. Brake Temperature Monitor Unit Buit-In Test Equipment (BITE)

(1) The brake temperature monitor system can be tested using a self-test BITE feature. The BITE tests either the monitor indicator circuit or the sensor circuits.

(2) A BITE control/display panel and an instruction placard are on the front face of the unit. The panel face consists of the following:

(a) Nine red LED indicator lights. Eight brake sensor lights and one monitor unit light.

(b) Rotary spring loaded MONITOR/SENSOR test selector switch.

1) When the selector is held in the MONITOR position, the monitoring and test logic circuits are checked. All nine LED indicator lights should illuminate.

2) Failure of the MONITOR light to illuminate indicates a control or test logic malfunction.

3) Failure of a SENSOR light and MONITOR light to illuminate indicates a sensor channel malfunction.

(c) With the selector held in the SENSOR position, the eight sensors are checked for open and short circuits.

1) If a faulted sensor is detected, the MONITOR and affected SENSOR light(s) will not illuminate.

(3) During the MONITOR test, the following flight compartment indications should be displayed:

(a) BRAKE TEMP light will illuminate.

(b) On EICAS status page in lower unit, all eight unit brake temperatures display a 7 or greater and box and numeral will be white in color.

(4) When performing a BITE test of the brake temperature monitor unit, always perform the MONITOR TEST prior to performing the SENSOR TEST to ensure that all monitor unit circuits are functioning properly.

4. Control

A. Provide electrical power (Ref 24-22-00).

B. Energize the EICAS system (Ref 31-41-00).

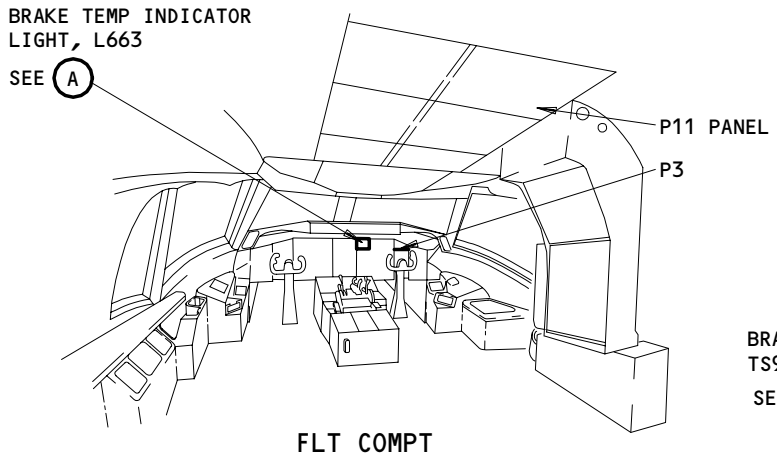
C. Close BRAKE TEMP circuit breaker on the flight compartment P11 panel.

BRAKE TEMPERATURE MONITORING SYSTEM

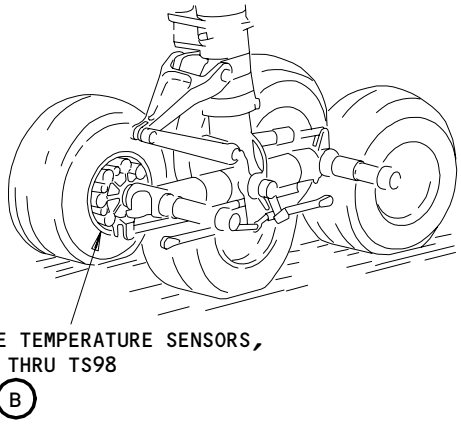
COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
BRAKES (REF 32-41-00, FIG. 101)				
CIRCUIT BREAKER			FLT COMPT, P11	
BRAKE TEMP, C1181		1	11U16	*
COMPUTER - EICAS L, M10181 (REF 31-41-00, FIG. 101)				
COMPUTER - EICAS R, M10182 (REF 31-41-00, FIG. 101)				
LIGHT - BRAKE TEMP INDICATOR, L663	1	1	P3, FLT COMPT	*
PANEL - EICAS, DISPLAY SELECT, M10195 (REF 31-41-00, FIG. 101)				
SENSORS - BRAKE TEMPERATURE (TS91 THRU TS98)	1	8	MAIN LANDING GEAR	32-46-01
UNIT - BRAKE TEMPERATURE MONITOR, M115	2	1	119AL, MAIN EQUIP CTR, E2	32-46-03
UNIT - EICAS LOWER DISPLAY, N10014 (REF 31-41-00, FIG. 101)				

* SEE WM EQUIPMENT LIST

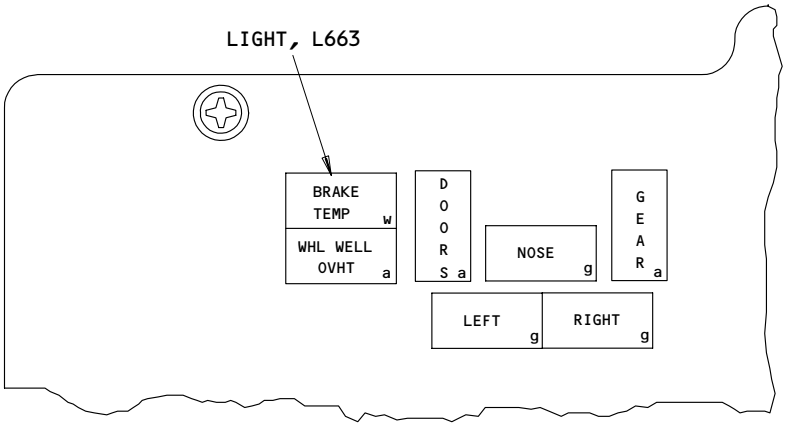
Component Index
Figure 101



FLT COMPT

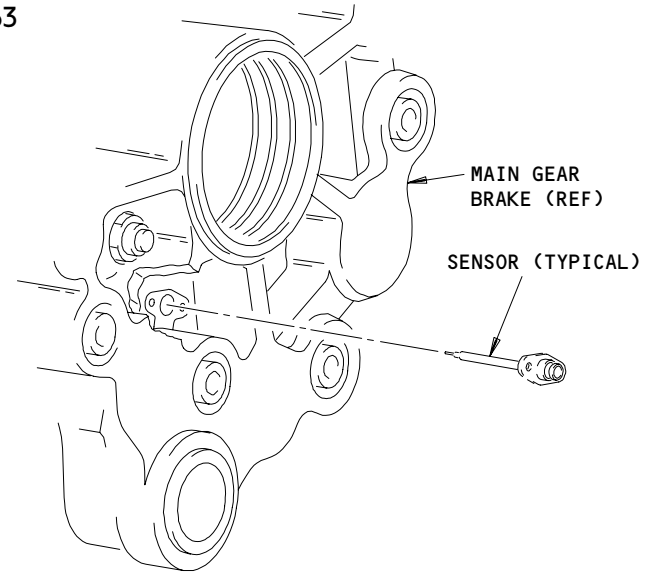


MAIN LANDING GEAR



BRAKE TEMP INDICATION LIGHT, L663

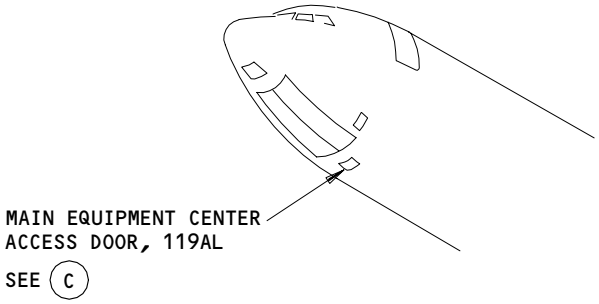
A

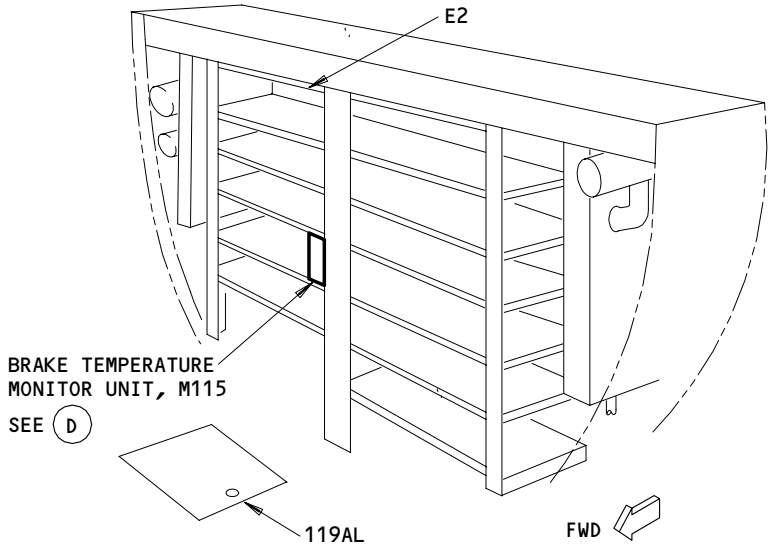


BRAKE TEMPERATURE SENSORS, TS91 THRU TS98

B

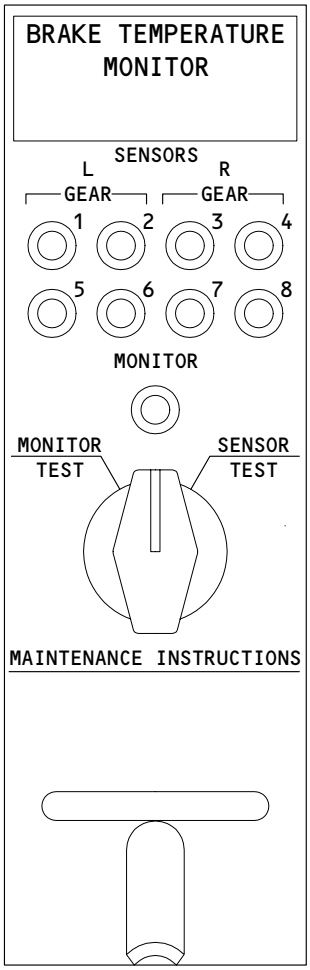
Component Location
Figure 102 (Sheet 1)





MAIN EQUIPMENT CENTER

C



BRAKE TEMPERATURE MONITOR UNIT

D

Component Location
Figure 102 (Sheet 2)

38604

BRAKE TEMPERATURE MONITORING SYSTEM - ADJUSTMENT/TEST

1. General
   A. This procedure contains two tasks. The first task is a BITE test of the brake temperature monitoring system. The second task is a test to make sure that each brake temperature sensor operates correctly.
   B. The BITE test is a self test of the brake temperature monitoring system. The BITE test has a monitor test and a sensor test.
      (1) The monitor test looks at the operation of the monitor unit and the indication circuits in the flight compartment.
      (2) The sensor test looks at the circuit between the monitor unit and the sensors, and the circuits of the sensors.
   C. This procedure also has a test to make sure that each brake temperature sensor operates. The test is necessary only when the main gear or the gear truck assembly has been replaced.

TASK 32-46-00-715-018

2. Brake Temperature Monitoring System - Test (Fig. 501)
   A. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 24-22-00/201, Electrical Power - Control
      (3) AMM 05-51-14/201, Brake Temp Light/High Energy Stop Condition - (Conditional - Inspection)
   B. Access
      (1) Location Zone
          120 Main Equipment Center (Right)

      (2) Access Panel
          119AL Main Equipment Center

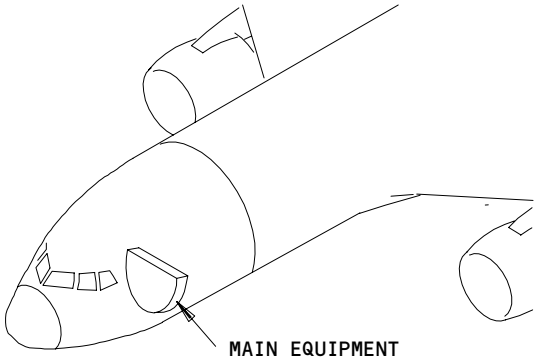
   C. Prepare to do a test of the Brake Temperature Monitoring System

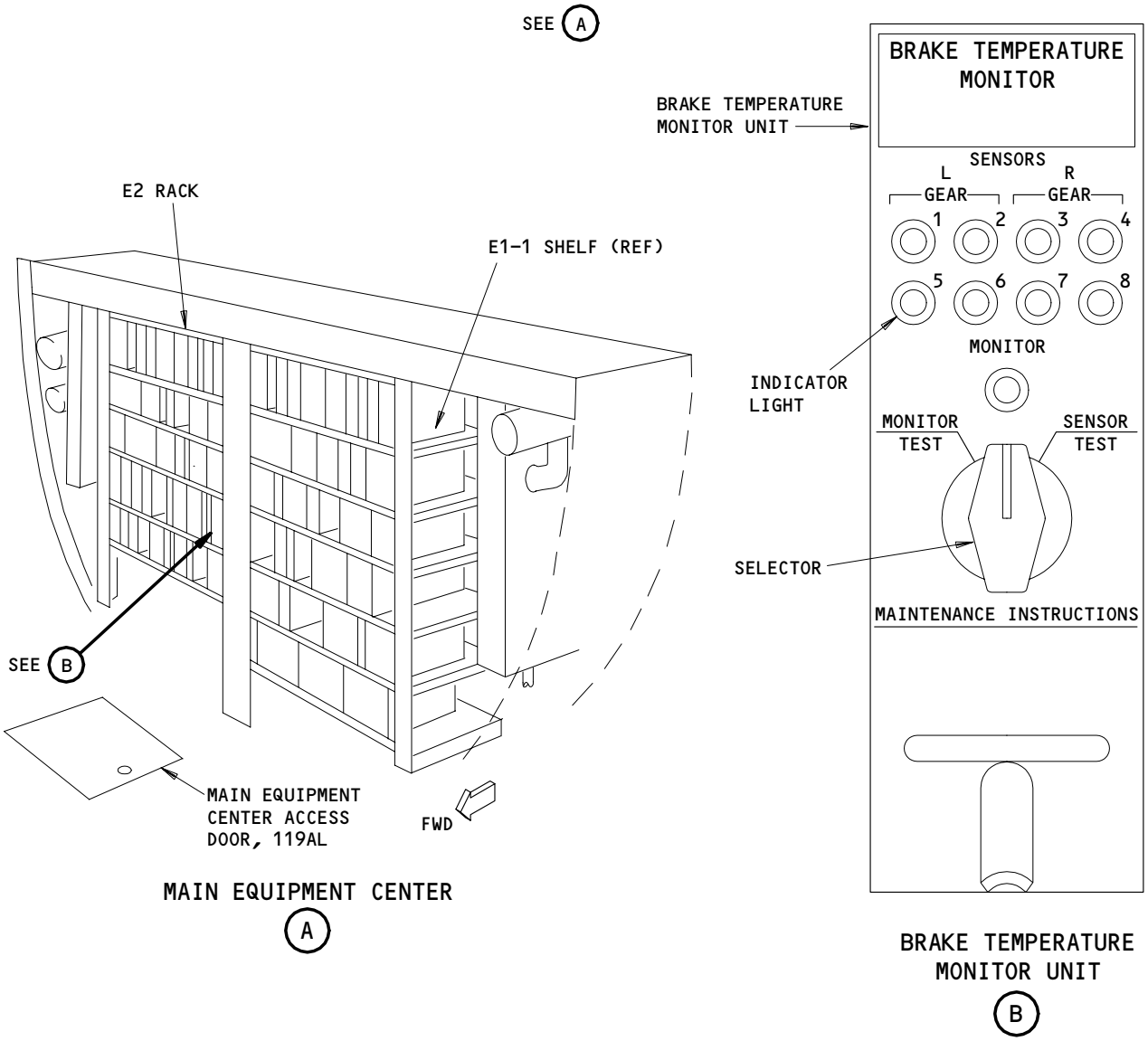
      S 865-013
      (1) AMM Supply electrical power (AMM 24-22-00/201).

      S 865-014
      (2) Make sure that these circuit breakers on the overhead circuit breaker panel (P11) are closed:
          (a) 11U16, BRAKE TEMP
          (b) EICAS circuit breakers (6 locations)

      S 015-016
      (3) Open the main equipment center access door, 119AL (AMM 06-41-00/201).

      S 015-017
      (4) Find the brake temperature monitor unit on the E2 rack.



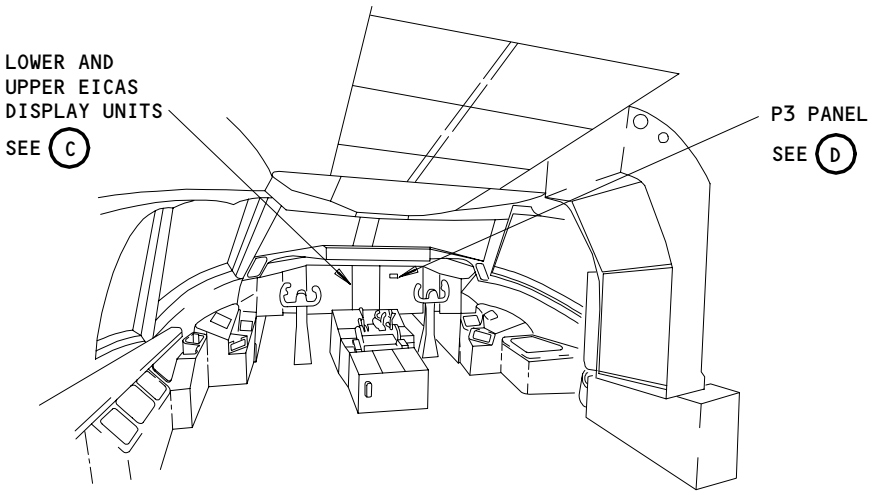


MAIN EQUIPMENT CENTER
A

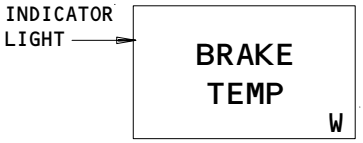
BRAKE TEMPERATURE
MONITOR UNIT
B

Brake Temperature Monitor System Test
Figure 501 (Sheet 1)

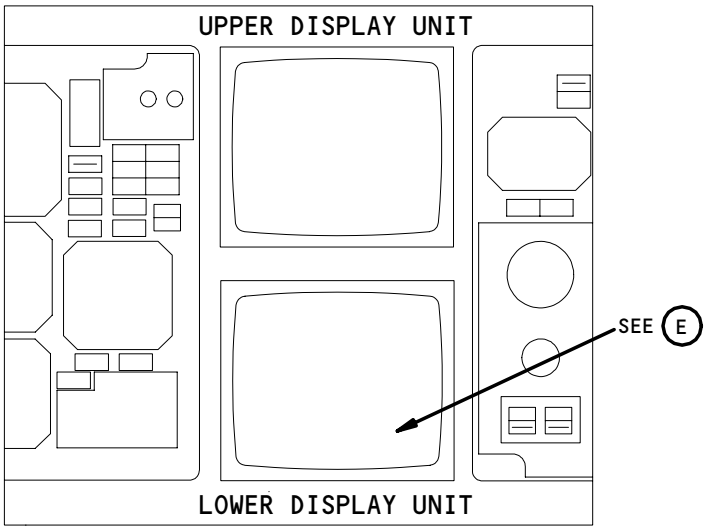
20743



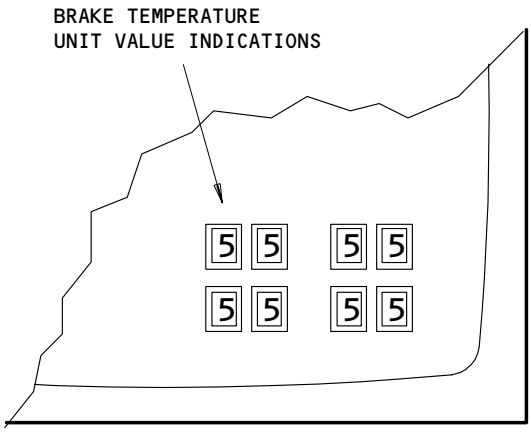
FLIGHT COMPARTMENT



P3 PANEL
D



LOWER AND UPPER EICAS DISPLAY UNITS
C



E

Brake Temperature Monitor System Test
Figure 501 (Sheet 2)

D. Procedure to do a Test of the Brake Temperature Monitoring System

S 715-012

(1) Do the Monitor Test

(a) Put the monitor selector in the MONITOR TEST position and hold it there.

1) Make sure that all nine indicator lights on the face of the monitor come on.

2) Make sure that the brake temperature indications for each brake on the brake temperature display on the EICAS show a number 7 or larger.

3) Make sure that the BRAKE TEMP light in the flight compartment comes on.

NOTE: All of the above indications must show, or the system has a malfunction. To do a check of the brake temperature system, do this task: BRAKE TEMP Ligth/High Energy Stop Condition - Maintenance Practices (Conditional Inspection), (AMM 05-51-14/201).

(b) Release the selector.

1) Make sure that all lights on the control unit go out.

2) Make sure that the BRAKE TEMP light goes out.

NOTE: The brake temperatures must be below 212°F (100°C) for this test.

3) Make sure that the number 0 shows for each of the brakes on the EICAS brake temperature display.

NOTE: The brake temperatures must be below 212°F (100°C) for this test.

S 715-011

(2) Do the Sensor Test

(a) Put the monitor selector in the SENSOR TEST position and hold it there.

1) Make sure that all indicator lights on the face of monitor unit come on.

NOTE: The system has a malfunction when the indications do not come on.
Ignore the BRAKE TEMP light and the EICAS displays for the sensor test.

(b) Release the selector.

1) Make sure that all the indicator lights on the monitor unit go out.

TASK 32-46-00-715-001

3. Brake Temperature Sensors - Operational Test of Each Sensor

NOTE: This test is necessary only if the landing gear or the gear truck assembly has been replaced.

A. Procedure

S 715-002
(1) Do the Test of the Brake Temperature Monitoring System (Ref Par. 2).

S 035-003
(2) Disconnect the electrical connector from the brake temperature sensor on wheel No. 1.

S 715-005
(3) Hold the monitor selector in the SENSOR TEST position.
  (a) Make sure that all the lights on the monitor, except the light for sensor No. 1, come on.
  (b) Make sure that the brake temperature display on EICAS shows an indication of 7 or more for brakes No. 2 through No. 8.
  (c) Make sure that the indication for brake No. 1 is 0.

S 865-004
(4) Release the selector.

S 435-006
(5) Connect the electrical connector to the sensor on wheel No. 1.

S 715-007
(6) Do steps (2) thru (5) for wheels, No. 2 thru No. 8.

S 715-008
(7) After you have done the test for all the sensors and connected the electrical connectors, do these steps:
  (a) Put the monitor selector in the SENSOR TEST position.
    1) Make sure that all nine lights on the monitor come on.
  (b) Release the selector.
    1) Make sure that all nine lights go out.

S 435-009
(8) Close the main equipment center access door, 119AL.

S 865-010
(9) Remove electrical power if it is not necessary (AMM 24-22-00/201).

BRAKE TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the brake temperature sensor. The second task installs the brake temperature sensor.

TASK 32-46-01-004-011

2. Remove the Brake Temperature Sensor (Fig. 401)
   A. References
      (1) AMM 06-41-00/201, Fuselage Access Doors and Panels
      (2) AMM 24-22-00/201, Electrical Power - Control
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

   C. Procedure

      S 484-021

      WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

      (1) Make sure the downlocks are installed in the main and nose landing gear (AMM 32-00-20/201).

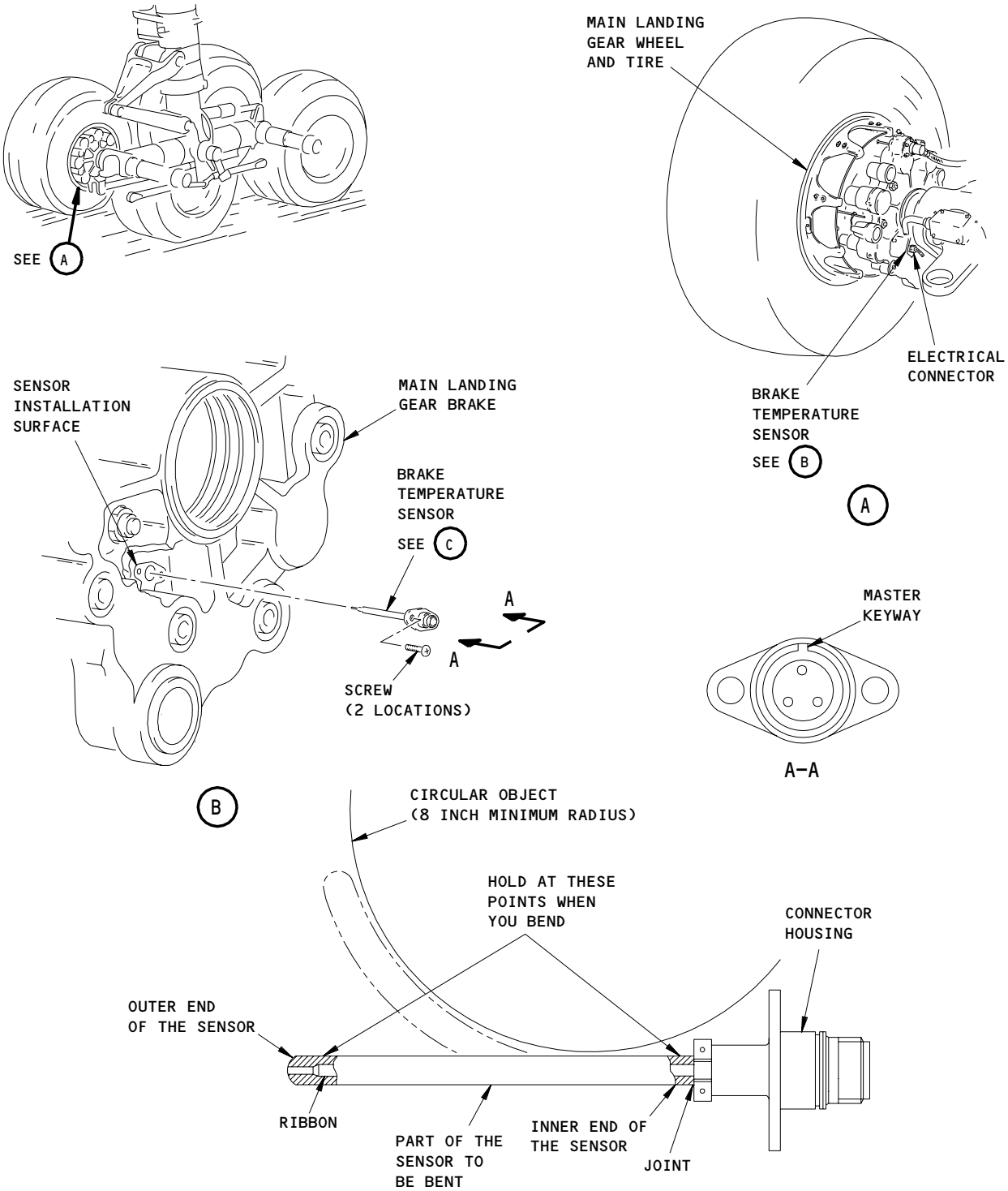
      S 864-013
      (2) Open this circuit breaker on the overhead circuit breaker panel P11, and attach a DO-NOT-CLOSE tag:
          (a) 11U16, BRAKE TEMP

      S 034-014
      (3) Disconnect the electrical connector from the temperature sensor (Detail A).

      S 024-015
      (4) Remove two screws and remove the sensor from the brake (Detail B).

TASK 32-46-01-424-016

3. Install the Brake Temperature Sensor (Fig. 401)
   A. Standard Tools and Equipment
      (1) Mandrel or Pipe (minimum radius of 8 in or 203.2 mm) - used to bend the sensor.
   B. Consumable Materials
      (1) C00259 Primer - BMS 10-11, Type I (Ref 20-30-03).



BRAKE TEMPERATURE SENSOR BENDING

C

Brake Temperature Sensor Installation
Figure 401

(2) D00010 Antiseize Compound - MIL-A-907 (AMM 20-30-04/201)

C. References
(1) AMM 06-41-00/201, Fuselage Access Doors and Panels
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 32-00-20/201, Landing Gear Downlocks

D. Access
(1) Location Zones
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

E. Procedure

S 484-026

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed in the main and nose landing gear (AMM 32-00-20/201).

S 374-002
(2) Apply two layers of primer to sensor where it will touch the brake (Detail B).

S 624-022
(3) Apply high-temperature antiseize lubricant on the part of the sensor that will be installed in the brake assembly.

NOTE: This step is optional. The application of the high-temperature anti-seize lubricant will make it easier to install the sensor and to remove it in the future.

S 424-017

CAUTION: INSTALL THE SENSOR WITH THE MASTER KEYWAY OF THE SENSOR IN THE TOP POSITION. IF THE KEYWAY IS NOT IN THE TOP POSITION, THE ELECTRICAL CONDUIT CAN BEND AND BE DAMAGED WHEN YOU CONNECT IT TO THE SENSOR.

(4) Install the sensor in the brake assembly with the master keyway in the top position (Detail A-A).

NOTE: If the installation of the sensor in the brake assembly appears to be difficult, the sensor can be bent to make the installation easier. To do this, do the bending procedure that follows and make sure that you obey the CAUTION in that procedure.

S 354-023

CAUTION: DO NOT APPLY FORCE TO THE CONNECTOR HOUSING ON THE SENSOR OR THE JOINT BETWEEN THE CONNECTOR HOUSING AND THE PART OF THE SENSOR TO BE BENT. THE JOINT CAN BREAK AND/OR DAMAGE TO THE SENSOR CAN OCCUR.

(5) If it is necessary, do the steps that follow to bend the part of the brake temperature sensor that will be installed in the brake assembly (Fig. 401, Detail C):

NOTE: Although the sensor can be bent up to a minimum radius of 8 in (203.2 mm), bend it only enough to to allow installation into the brake assembly.

(a) Hold the inner end of the sensor to be bent with one hand and hold the outer end with your other hand.
(b) Bend the sensor around a circular object, such as mandrel or pipe.

NOTE: The use of a circular object will prevent the ribbon, which is in the sensor, from kinking. Make sure it has a minimum radius of 8 in (203.2 mm).

S 424-028
(6) Carefully put the bent part of the brake temperature sensor into the brake assembly, without applying force to the connector housing and the joint.

S 424-005
(7) Install the two screws that hold the brake temperature sensor to the brake assembly.

S 434-006
(8) Connect the electrical connector to the sensor.

S 864-001
(9) Close this circuit breaker on the P11 panel and remove the DO-NOT-CLOSE tag:
(a) 11U16, BRAKE TEMP

S 714-008
(10) Do an Operational Test of the Brake Temperature Sensor
(a) Suppy electrical power (AMM 24-22-00/201).

(b) Open the main equipment center access door, 119AL (Ref 06-41-00)
(c) Find the brake temperature monitor unit on the E2 rack.
(d) Put the monitor selector in the MONITOR TEST position and hold it there.
(e) Make sure that the nine indicator lights on the face of the monitor unit come on.

NOTE: If all of the lights do not come on, the system has a malfunction.

(f) Release the selector and make sure that the nine lights on the monitor unit go out.
(g) Put the monitor selector in the SENSOR TEST position and hold it there.
(h) Make sure that all the indicator lights on the face of the monitor come on.

NOTE: If all the lights do not come on, the system has a malfunction.

(i) Release the selector and make sure that all the indicator lights on the monitor unit go out.

S 434-009
(11) Close the main equipment center access door, 119AL.

S 864-010
(12) Remove electrical power if it is not necessary (AMM 24-22-00/201).

BRAKE TEMPERATURE MONITOR UNIT - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the brake temperature monitor unit. The second task installs the brake temperature monitor unit.
   B. The Brake Temperature Monitor Unit, M115, is found on shelf E2-4 of the main Electrical/Electronic equipment rack.

TASK 32-46-03-004-001

2. Remove the Brake Temperature Monitor Unit (Fig. 401)
   A. References
      (1) 20-10-01/401, E/E Rack-Mounted Components
   B. Access
      (1) Location Zone
          120 Main Equipment Center (Right)

      (2) Access Panel
          119AL Main Equipment Center

   C. Procedure

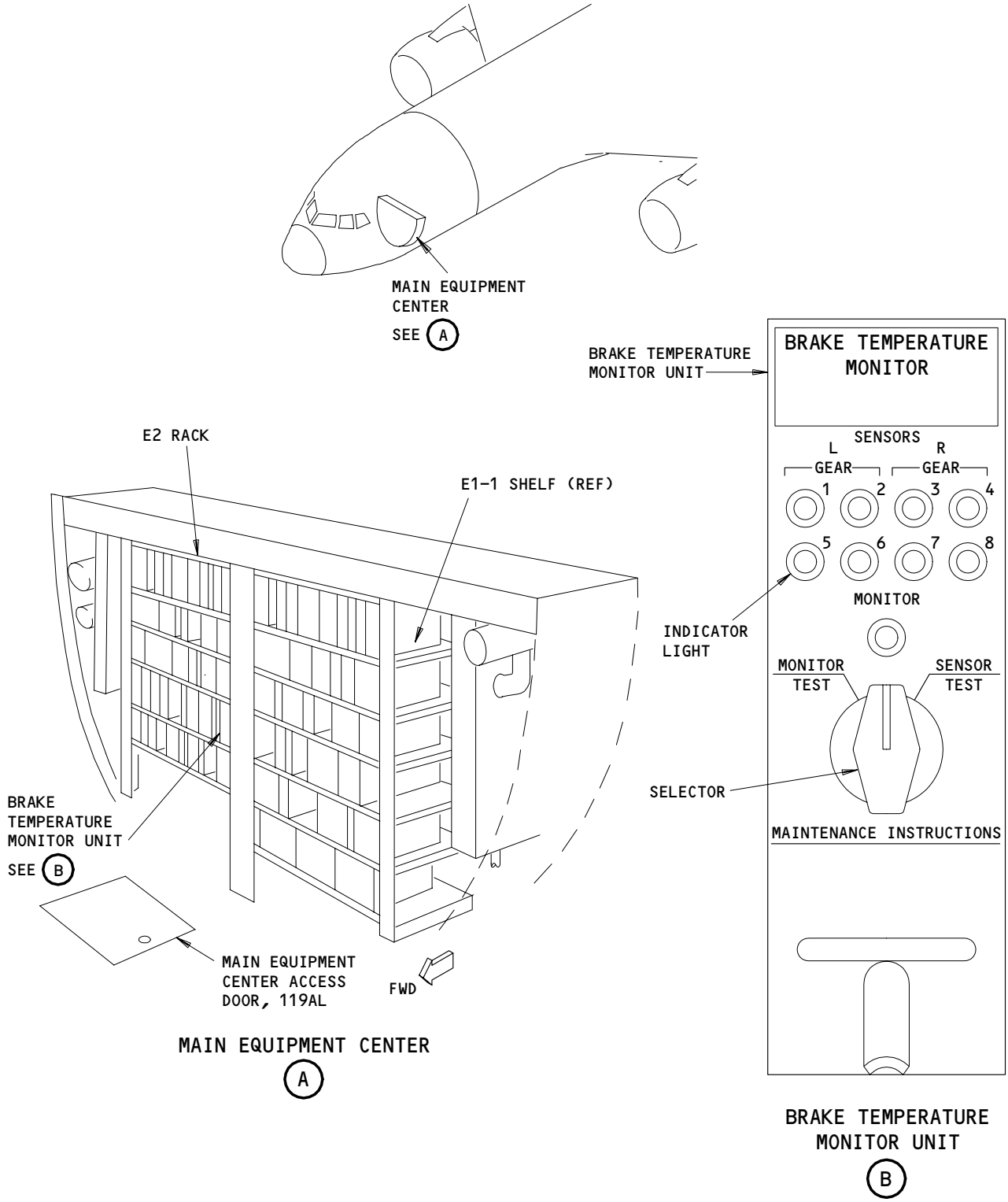
      S 014-002
      (1) Get access to the main equipment center through the electronics access door 119AL.

      S 864-003
      (2) Open this circuit breaker on the overhead circuit breaker panel P11, and attach a DO-NOT-CLOSE tag:
          (a) 11U16, BRAKE TEMP

      S 024-004
      (3) Remove the brake temperature monitor unit from the electrical equipment rack E2-4 (Ref 20-10-01).

TASK 32-46-03-404-005

3. Install the Brake Temperature Monitor Unit (Fig. 401)
   A. References
      (1) 20-10-01/401, E/E Rack-Mounted Components



Brake Temperature Monitor Unit Installation
Figure 401

20744

(2) 32-46-00/501, Brake Temperature Monitor System Test

B. Access

(1) Location Zone
120 Main Equipment Center (Right)

(2) Access Panel
119AL Main Equipment Center

C. Procedure

S 424-006

(1) Install the brake temperature monitor unit in the E2-4 electrical equipment rack (Ref 20-10-01).

S 864-007

(2) Close this circuit breaker on the overhead panel P11, and remove the DO-NOT-CLOSE tag:
(a) 11U16, BRAKE TEMP

S 714-008

(3) Do a test of the brake temperature monitor unit (Ref 32-46-00).

NOSE WHEEL STEERING SYSTEM - DESCRIPTION AND OPERATION

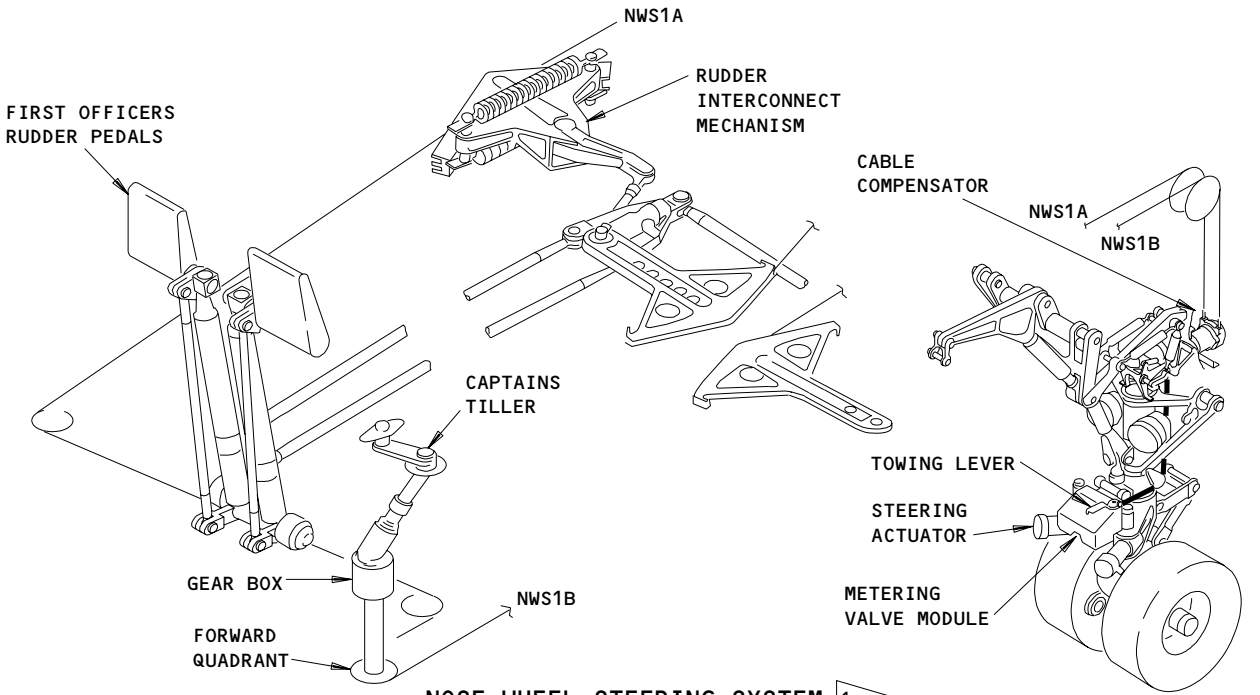
1. General (Fig. 1)

A. AIRPLANES WITH SINGLE NWS TILLER;
The nose wheel steering system is hydraulically powered by the center hydraulic system and mechanically controlled. Primary control of the steering system is from the captain's tiller handle in the flight compartment. An interconnect mechanism provides limited control from the rudder pedals. Hydraulic actuators, which are controlled by a metering valve module, turn the nose wheels 65 degrees left or right of center, if the command is from the tiller handle. Command from the rudder pedals turns the nose wheels 7.5 degrees left or right of center. A towing lever on the steering metering valve module permits towing without disconnecting the shock strut torsion links. The system is automatically deactivated when the nose gear is retracted.

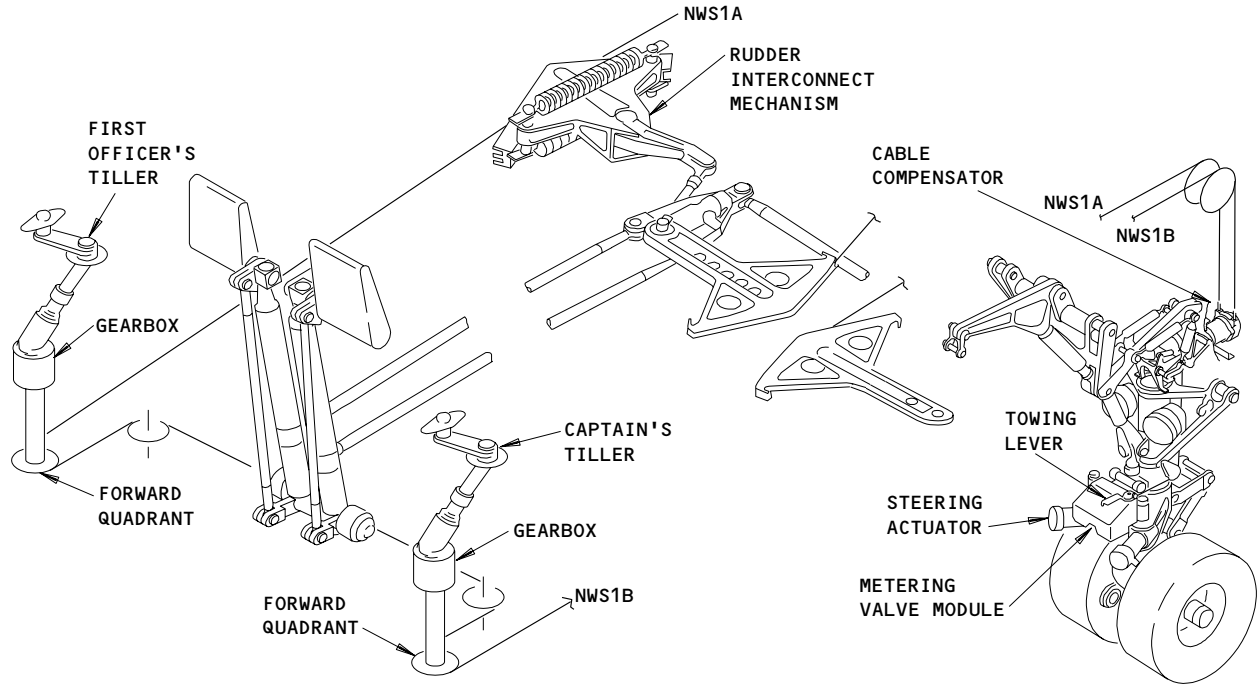
B. AIRPLANES WITH DUAL NWS TILLERS;
The nose wheel steering system is hydraulically powered by the center hydraulic system and mechanically controlled. Primary control of the steering system is from the captain's and/or first officer's tiller handles in the flight compartment. An interconnect mechanism provides limited control from the rudder pedals. Hydraulic actuators, which are controlled by a metering valve module, turn the nose wheels 65 degrees left or right of center, if the command is from either of the tiller handles. Command from the rudder pedals turns the nose wheels 7.5 degrees left or right of center. A towing lever on the steering metering valve module permits towing without disconnecting the shock strut torsion links. The system is automatically deactivated when the nose gear is retracted.

CAUTION: DO NOT USE METERING VALVE MODULE AS A STEP FOR ACCESSING WHEEL WELL. DAMAGE TO METERING VALVE MODULE COMPONENTS CAN RESULT.

C. Two cable loops control the steering system.
(1) AIRPLANES WITH SINGLE NWS TILLER;
The body cable loop extends from the tiller to the cable compensator. The rudder pedal interconnect mechanism is connected to the body cable loop.



NOSE WHEEL STEERING SYSTEM 1



NOSE WHEEL STEERING SYSTEM 2

1 AIRPLANES WITH CAPTAIN'S TILLER ONLY.

2 AIRPLANES WITH CAPTAIN'S AND FIRST OFFICER'S TILLER.

Nose Wheel Steering System – Component Location
Figure 1

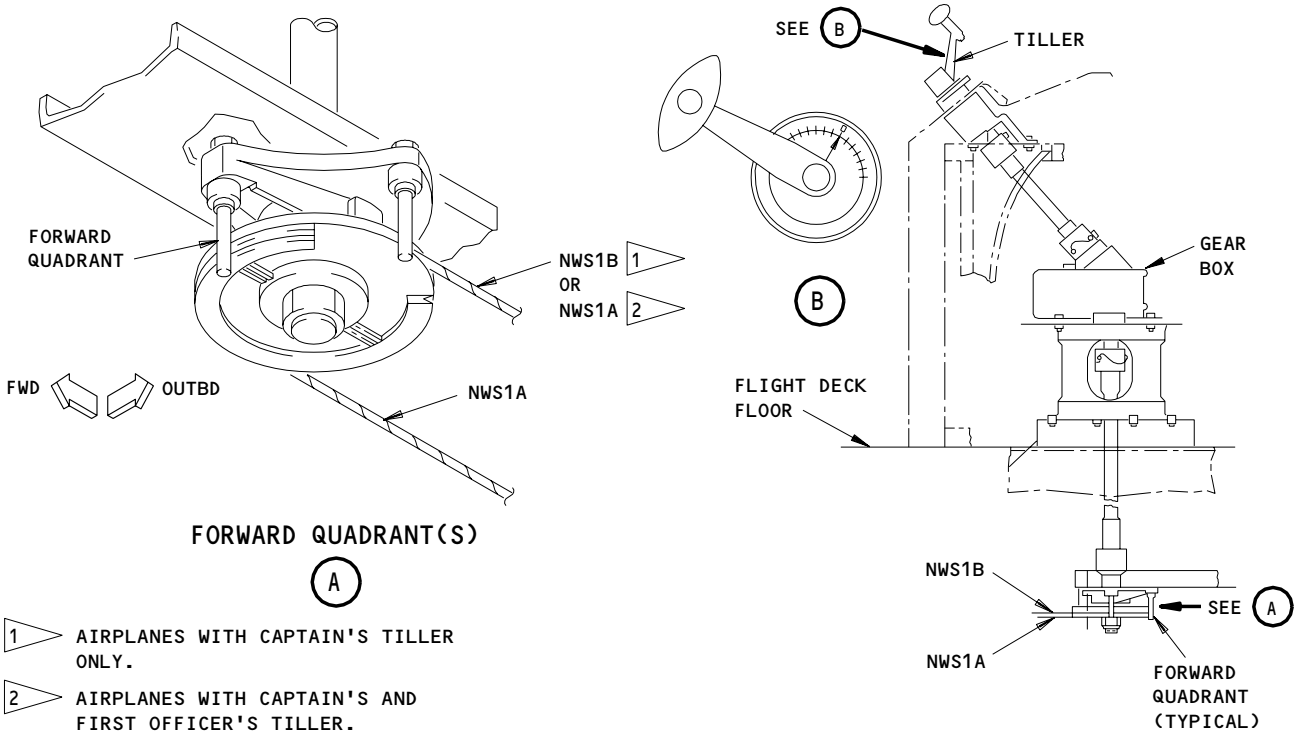
(2) AIRPLANES WITH DUAL NWS TILLERS;
The body cable loop extends from the captain's and first officer's tillers to the cable compensator. The rudder pedal interconnect mechanism is connected to the body cable loop.

(3) The landing gear cable loop extends from the nose gear trunnion drum to the summing mechanism and steering collar.

(4) The two cable loops are connected by pivot links between the cable compensator and nose gear trunnion drum. In the event, if one of the body loop cables break, the cable compensator prevents a steering 'hard over' condition by disengagement from a centering cam component.

2. Component Details

A. Tiller and Gearbox (Fig. 2)



Steering Tillers and Forward Quadrant
Figure 2

B. AIRPLANES WITHOUT FIRST OFFICER'S NWS TILLER;
Tiller and Gearbox (Fig. 2)
(1) The steering tiller allows the captain to manually steer the airplane. The tiller handle can be turned 360 degrees (maximum) in either direction. This turns the nose wheels 65 degrees (maximum) either direction from center.
(2) A nose wheel position indicator is installed at the base of the tiller handle to show the angle of the nose wheels from center. The indicator is driven by planetary gear train.
(3) Steering tiller handle forces are reduced by a 4:1 reduction gearbox, which is located between the tiller handle and forward quadrant.

C. AIRPLANES WITH FIRST OFFICER'S NWS TILLER;
Tiller and Gearbox (Fig. 2)
(1) The steering tillers allows the captain and/or first officer to manually steer the airplane. The tiller handles can be turned 360 degrees (maximum) in either direction. This turns the nose wheels 65 degrees (maximum) either direction from center.
(2) A nose wheel position indicator is installed at the base of each tiller handle to show the angle of the nose wheels from center. The indicators are driven by planetary gear train.
(3) Steering tiller handle forces are reduced by 4:1 reduction gearboxes, which are located between the captain's and first officer's tiller handles and forward quadrants.

D. Forward Quadrant (Fig. 2)

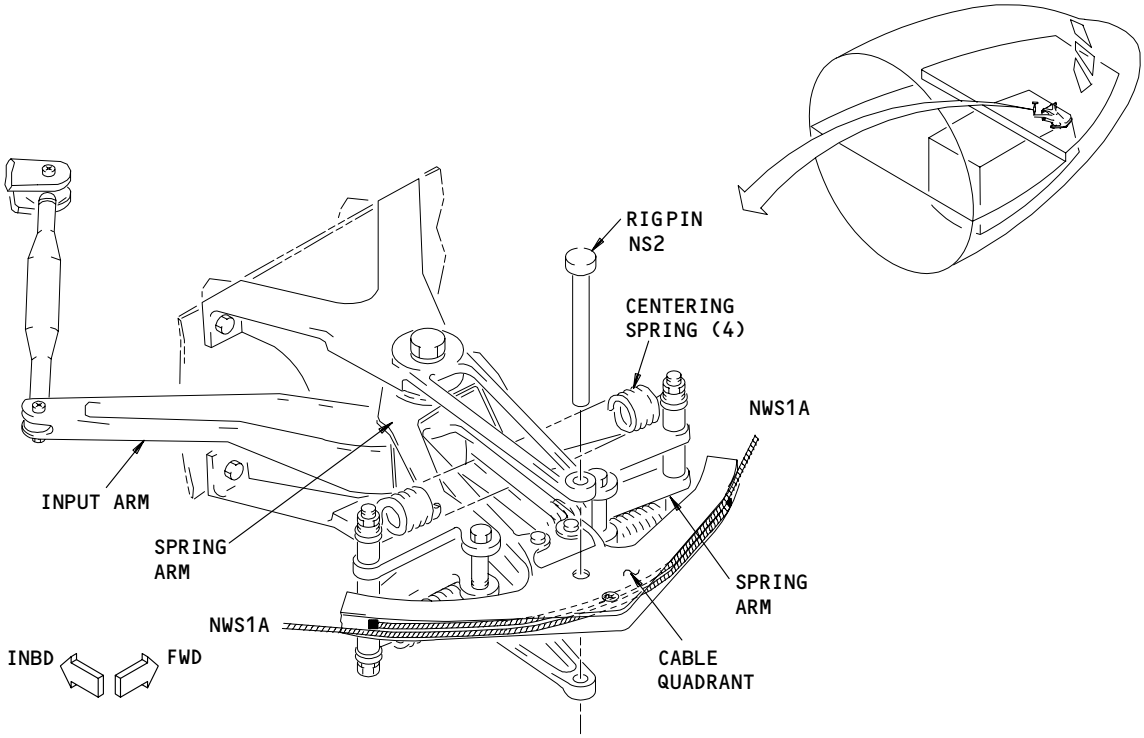
E. Forward Quadrant(s) (Fig. 2)
(1) AIRPLANES WITH SINGLE NWS TILLER;
The forward quadrant transmits tiller handle inputs to the nose wheel steering control cables in the body.
(2) AIRPLANES WITH DUAL NWS TILLERS;
The forward quadrants transmit captain's and/or first officer's tiller handle inputs to the nose wheel steering control cables in the body.
(3) The centering and rudder pedal interconnect mechanism enables limited nose wheel steering from the rudder pedals. The interconnect assembly comprises a cable quadrant, input arm, and two spring-loaded crank arms installed in a housing on the nose wheel well right side panel.

(4) The interconnect input arm is connected by a control rod to the rudder pedal forward quadrant and jackshaft assembly, so that the interconnect mechanism turns as the rudder pedal quadrant turns.

(5) AIRPLANES WITH SINGLE NWS TILLER;
When using the tiller, the centering springs operate as an override to enable the captain to turn the quadrant against a fixed rudder input arm. The springs also return the steering system and nose wheels to center.

(6) AIRPLANES WITH DUAL NWS TILLERS;
When using the captain's and/or first officer's tillers the centering springs operate as an override to enable the operator to turn the quadrant against a fixed rudder input arm. The springs also return the steering system and nose wheels to center.

F. Cable Compensator (Fig. 4)



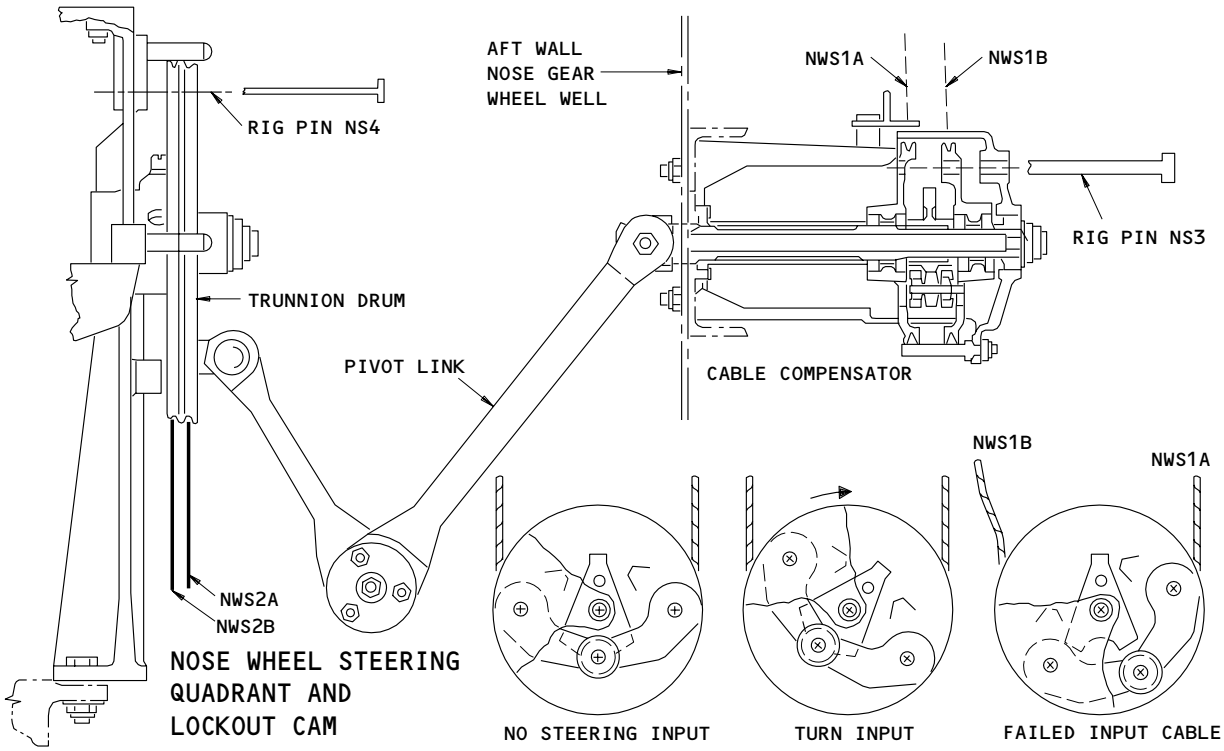
Interconnect Assembly
Figure 3

(1) The cable compensator enables the nose wheels to center if a cable in the body cable loop breaks during a turn. It also precludes sudden, extreme steering inputs to the nose wheels in the event of an upper cable loop break. The compensator consists of two cable drums on a shaft with a driving cam between. Steering cables terminate in each of the drums to turn the shaft as the tiller is turned. Two links connect to opposite drums. A cam roller, installed at the junction of the two links, engages the cam to drive the shaft. If a cable breaks, the cam roller disengages the cam to remove input to the steering system.

G. Pivot Links and Trunnion Drum (Fig. 4)

(1) The pivot links transmit steering input from the body cable loop to the gear cable loop. The two links form a hinged turning lever which connects to the cable compensator shaft and nose wheel trunnion drum. During gear retraction, the pivot links straighten and prevent steering input to the steering system.

(2) The trunnion drum transmits steering input from the body cable loop to the steering metering valve module when the airplane is on the ground. When the gear retracts, a lockout cam extends upward to engage the roller on a crank on the trunnion drum shaft. This rotates the trunnion drum to precisely center the nose wheels for retraction. Cams inside the shock strut aid in centering the nose wheels before the lockout cam engages the roller except when rudders are being used.



Cable Compensator and Trunnion Drum
Figure 4

(3) Cables connected to the trunnion drum turn the summing mechanism on the metering valve module when the tiller is turned or when rudders are depressed. Adjustable stops on the forward side of the drum limit drum rotation to 90 degrees either direction. This limits wheel turns to 65 degrees either side of center.

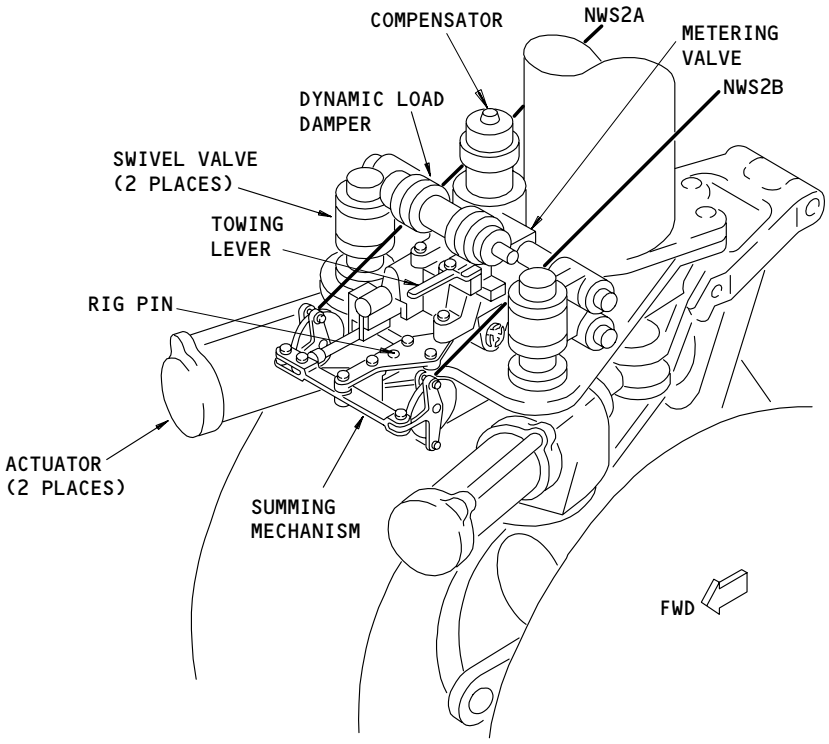
H. Steering Metering Valve Module Components (Fig. 5)

(1) The steering metering valve module consists of a towing shutoff valve, bypass valve, control valve, dynamic load damper, compensator, summing mechanism, and two swivel valves.

(2) The towing shutoff valve shuts off hydraulic pressure to the steering system, and puts the dynamic load damper in a bypass mode to prevent hydraulic blocks during towing. The valve is operated manually by the towing lever and installing the towing lever lockpin.

(3) The bypass valve operates by hydraulic pressure differential. The valve serves to relieve excessive internal hydraulic pressure from developing when towing the airplane, the wheels encounter obstacles, or one tire is flat.

(4) The control valve controls the direction and rate of turning of the nose wheels. It is a slide and sleeve arrangement which is spring loaded for self-centering.



Steering Actuators and Metering Valve Module
Figure 5

(5) The dynamic load damper provides nose gear shimmy damping. The damper valve is spring centered and controlled by hydraulic pressure differences. Small shimmy movements of the nose wheels produce hydraulic pressure differences across the damper valve. The damper valve then opens fluid lines between the two actuators, which dampens the shimmy effects.

(6) The compensator maintains back pressure in wheel steering system, when system hydraulic pressure is removed. The compensator is spring loaded closed. System hydraulic pressure opens the valve to enable nose wheel steering.

(7) The summing mechanism provides steering input and a nose wheel position feedback to maintain steering position. It contains a summing lever, two cable pulleys, and valve input rod. Cable pulleys attach to the summing lever, and turn the lever when the cables move. The valve input rod, connects the summing lever to the metering valve module input lever, to direct hydraulic pressure to the steering actuators. The summing lever has a turning stop, which prevents excessive input to the input lever.

(8) The swivel valves direct hydraulic fluid from the metering valve module to the steering actuators. Each swivel valve has two pairs of fluid ports and two operating modes. In first mode operation, one pair of ports, directs fluid from system pressure through the actuators and back to return. In second mode operation, the other pair of ports, directs fluid from system pressure to both sides of an actuator piston at the same time. When the nose wheels are turned less than 30 degrees either side of center, both swivel valves operate in the first mode. When the nose wheels are turned approximately 30 degrees either side of center, one of the valves operates in the first mode and the other operates in the second mode. This condition continues for all nose wheel angles greater than 30 degrees. The swivel valves are mechanically connected to the actuator pivot points and are positioned by the rotation of the actuators as the nose wheels turn.

I. Steering Actuators (Fig. 5)

(1) The steering actuators are hydraulically powered to turn the nose wheels. The actuators are supported by their trunnions, in support plates on the nose gear shock strut. Metering valve module swivel valves are installed in the actuator trunnions. The actuator piston rods connect to, and drive the steering collar to obtain nose wheel steering.

J. Steering Collar (Fig. 6)

(1) The steering collar transmits turning forces from the steering actuators to the nose wheels. The collar is free to rotate about the shock strut outer cylinder. Torsion links attach to the steering collar and shock strut inner cylinder, and turn the nose wheels when the actuators turn the collar.

(2) The steering control cable loop which is installed on the landing gear, wraps around the steering collar to provide feed-back control to the summing lever and steering metering valve.

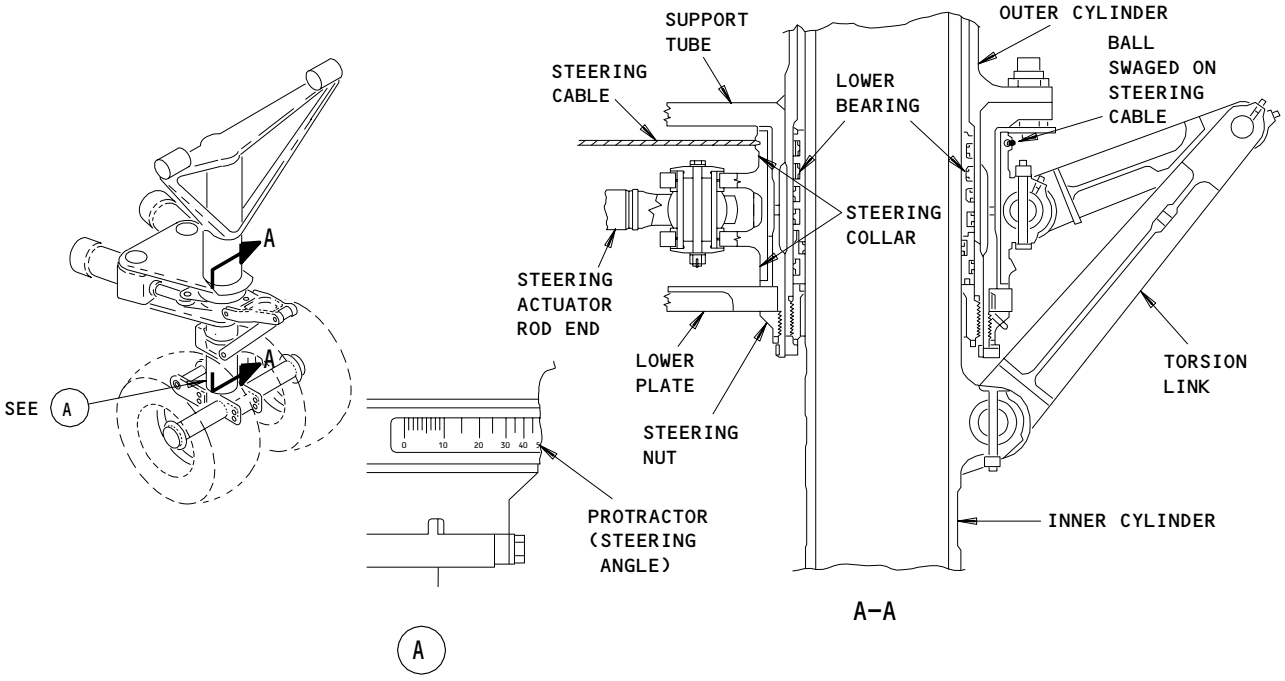
(3) The nose wheel steering angle is indicated directly on the shock strut protractor indicator.

K. Check Valve Module (Fig. 7)

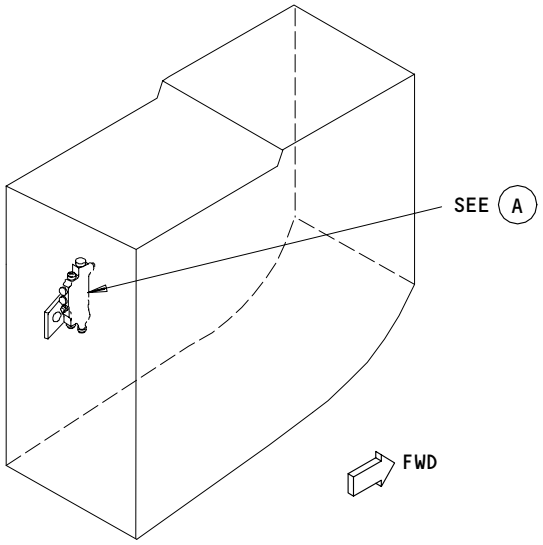
(1) The check valve module maintains continuous hydraulic pressure to the steering system, whether the nose gear lever is up or down. The module consists of four check valves.

3. Operation

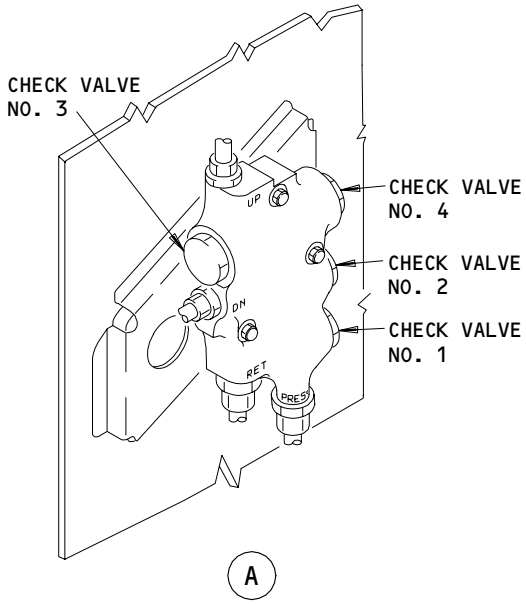
A. Mechanical Operation (Fig. 8)

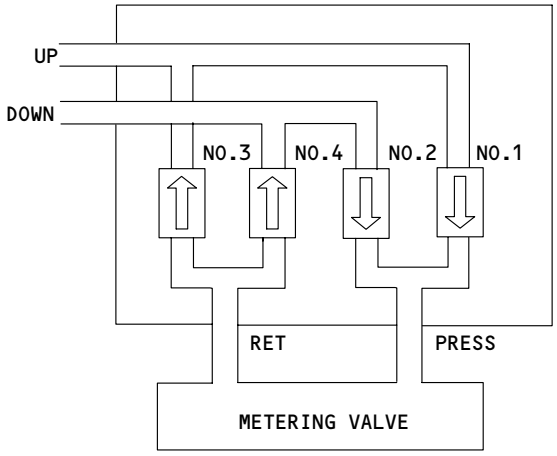


Nose Wheel Steering Collar
Figure 6



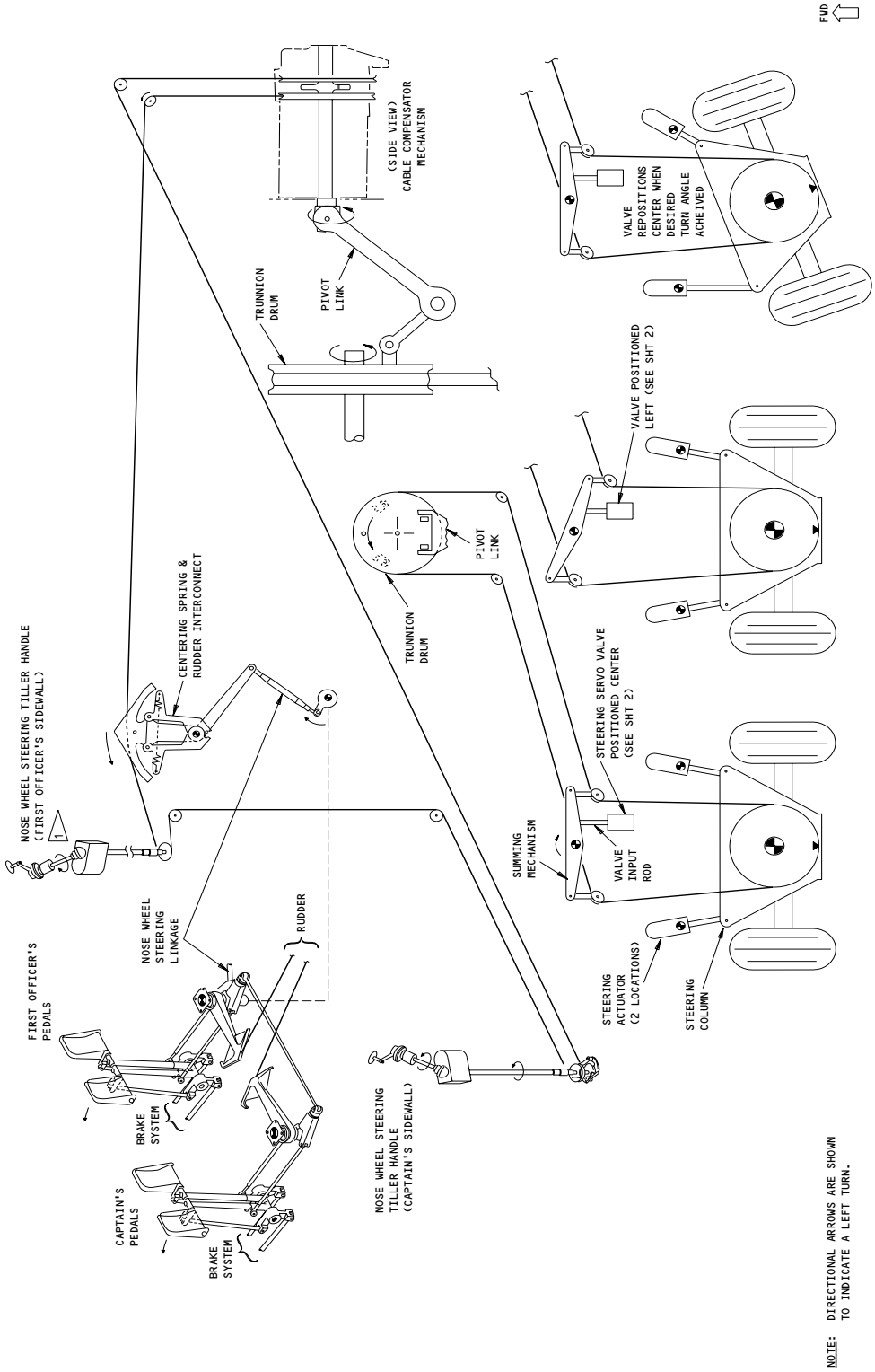
NOSE GEAR WHEEL WELL



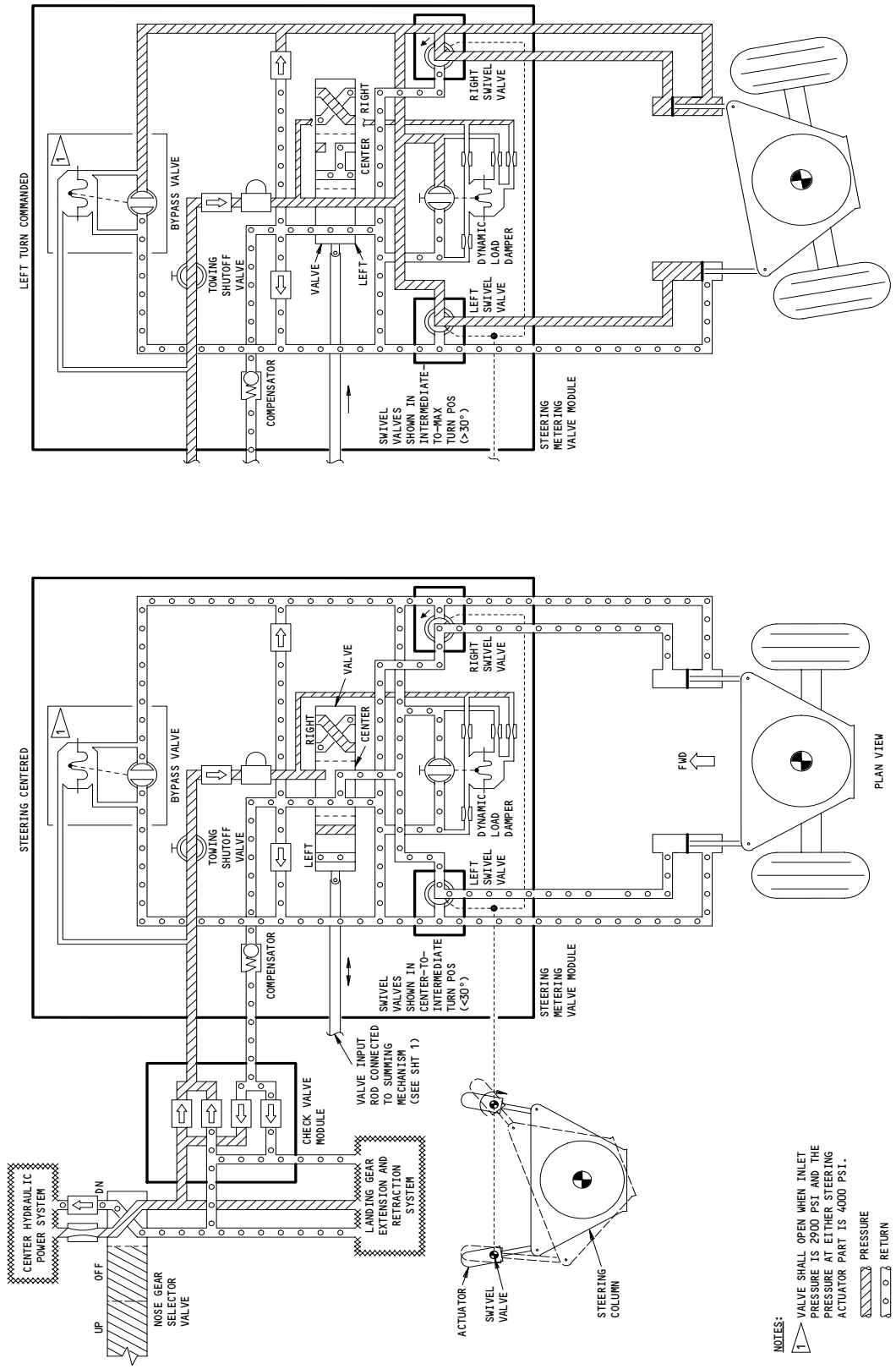


MODULE SCHEMATIC

Nose Wheel Steering Check Valve Module
Figure 7



Nose Wheel Steering System Schematic
Figure 8 (Sheet 1)



Nose Wheel Steering System Schematic
Figure 8 (Sheet 2)

(1) AIRPLANES WITH SINGLE NWS TILLER;
Nose wheel steering is available with the steering tiller or rudder pedals, when the landing gear and control lever are down, and center system hydraulic power is available.

(2) AIRPLANES WITH DUAL NWS TILLERS;
Nose wheel steering is available with the captain's and/or first officer's steering tillers or rudder pedals, when the landing gear and control lever are down, and center system hydraulic power is available.

(3) AIRPLANES WITH SINGLE NWS TILLER;
When the tiller handle is turned, steering cables in the fuselage (below flight compartment floor) turn the cable compensator shaft.

(4) AIRPLANES WITH DUAL NWS TILLERS;
When either of the tiller handles are turned, steering cables in the fuselage (below flight compartment floor) turn the cable compensator shaft.

(5) Pivot links connect the compensator to the trunnion drum, such that the drum turns as the compensator turns.

(6) As the trunnion drum turns, steering cables on the nose gear move the summing lever to displace the control valve in the steering metering valve module. This directs hydraulic pressure to the steering actuators, which turn the nose wheels through the steering collar and torsion links until the desired turn is reached.

(7) When the nose wheels reach the angle of turn, which corresponds to tiller handle input, the control cables will reposition the summing lever to null the control valve slide, to end the turn.

(8) AIRPLANES WITH SINGLE NWS TILLER;
The tiller must be held throughout the turn. If the handle is released, centering springs in the rudder pedal interconnect mechanism, will return the wheels to center.

(9) AIRPLANES WITH DUAL NWS TILLERS;
Either the captain's or first officer's tiller must be held throughout the turn. If the handle is released, centering springs in the rudder pedal interconnect mechanism, will return the wheels to center.

(10) If a steering cable breaks, the cable compensator prevents radical steering inputs to the system. If the right body cable breaks, right turn steering is still available, but not left turn steering. If the left body cable breaks, only left turn steering remains. If the lower cable loop fails, input to the spring-loaded metering valve slide piston is removed and the metering valve springs, acting on the piston slide, center the slide, porting both sides of the steering actuators to return. The residual system pressure now acting on the actuators is overcome by the castering affect of the nose gear wheels, which tend to align the wheels with the direction of aircraft motion.

(11) The nose wheels must be precisely centered for gear retraction. Centering cams inside the shock strut approximately center the wheels as the shock strut extends when no rudder pedal steering commands or tiller lever commands are received by the system. As the gear unlocks for retraction, a cam on the lockout mechanism rotates the trunnion drum to precisely center the wheels. The lockout cam also prevents steering inputs from the tiller.

B. Hydraulic Operation (Fig. 8)

(1) The nose wheel steering system is powered by the center hydraulic system. The following, describes hydraulic operation during a left turn. Right turns are accomplished in a similar way.

(2) During a left turn, hydraulic pressure from the metering valve is applied to the rod end of the right steering actuator and head end of the left steering actuator. The right actuator pulls and the left actuator pushes on the collar to accomplish a left turn. The push-pull sequence is controlled by the swivel valve and continues until the nose wheels are turned approximately 30 degrees.

(3) When the nose wheels are turned approximately 30 degrees to the left, the right steering actuator is fully retracted, and in a nulled condition. During the extension and retraction of the actuators, the actuators rotate about their pivot points. The swivel valves are positioned by the rotation of the actuators. Due to the geometry of the actuator steering column, the retracting actuator rotates significantly more that the extending actuator and causes the corresponding swivel valve to enter its second mode of operation. At this point, hydraulic pressure is ported to both sides of the right actuator, which is then back driven (extended) to assist the turning effort. The left actuator extends through the maximum nose wheel turning angle of approximately 65 degrees.

(4) When the airplane is to be towed, the towing lever on the steering metering valve is moved to the towing position and the towing lever lockpin is installed. This shuts off hydraulic supply to the metering valves and opens both sides of both steering actuators to return, to prevent hydraulic blocks when the nose wheels are turned by the tow bar.

NOSE WHEEL STEERING SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
ACTUATOR – STEERING	1	2	NOSE LANDING GEAR	32-51-03
ASSEMBLY – RUDDER FWD QUADRANT AND JACKSHAFT (FIM 27-21-00/101)				
CABLES – STEERING	1	1	113AL, FWD EQUIP COMPT; NOSE LANDING GEAR	32-00-25
CARTRIDGE – SPRING (FIM 32-30-00/101)				
CENTERING CAM AND CAM ROLLER (FIM 32-30-00/101)				
COLLAR – STEERING	1	1	NOSE LANDING GEAR	32-51-05
COMPENSATOR – CABLE	1	1	119AL, MAIN EQUIP CTR	32-51-06
DRUM – NOSE WHEEL STEERING TRUNNION (FIM 32-30-00/101)				
LINKS – PIVOT	1	1	NOSE WHEEL WELL, AFT BULKHEAD	32-51-07
MECHANISM – CENTERING AND RUDDER INTERCONNECT	2	1	113AL, FWD EQUIP COMPT	32-51-02
MECHANISM – SUMMING	1	1	NOSE LANDING GEAR	32-51-00
MODULE – METERING VALVE	1	1	NOSE LANDING GEAR	32-51-04
MODULE – CHECK VALVE	2	1	NOSE WHEEL WELL, AFT LEFT SIDE	32-51-08
PEDALS – CAPTAIN'S AND FIRST OFFICER'S RUDDER (FIM 27-21-00/101)				
QUADRANT – FORWARD	3	1	113AL, FWD EQUIP COMPT	32-51-10
TILLER AND GEARBOX	3	2	FLT COMPT, P13 AND P14	32-51-01
VALVE – NOSE GEAR SELECTOR (FIM 32-30-00/101)				

Nose Wheel Steering System – Component Index
Figure 101

38817

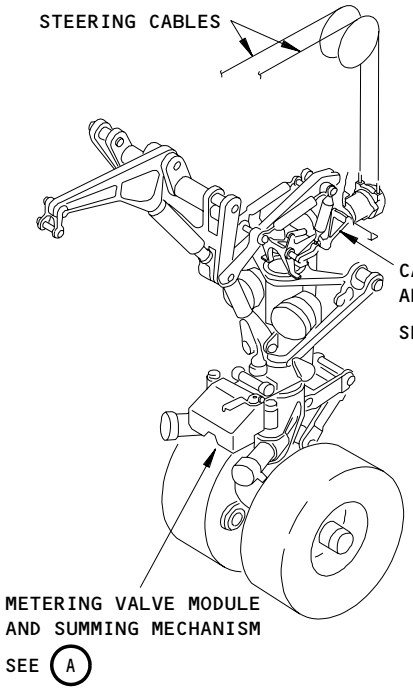
NOSE WHEEL STEERING SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
ACTUATOR - STEERING	1	2	NOSE LANDING GEAR	32-51-03
ASSEMBLY - (REF 27-21-00, FIG. 101) RUDDER FWD QUADRANT AND JACKSHAFT				
CABLES - STEERING	1	1	113AL, FWD EQUIP COMPT; NOSE LANDING GEAR	32-00-25
CARTRIDGE - (REF 32-30-00, FIG. 101) SPRING				
CENTERING CAM AND CAM ROLLER - (REF 32-30-00, FIG. 101)				
COLLAR - STEERING	1	1	NOSE LANDING GEAR	32-51-05
COMPENSATOR - CABLE	1	1	119AL, MAIN EQUIP CTR	32-51-06
DRUM - (REF 32-30-00, FIG. 101) NOSE WHEEL STEERING TRUNNION				
LINKS - PIVOT	1	1	NOSE WHEEL WELL, AFT BULKHEAD	32-51-07
MECHANISM - CENTERING AND RUDDER INTERCONNECT	2	1	113AL, FWD EQUIP COMPT	32-51-02
MECHANISM - SUMMING	1	1	NOSE LANDING GEAR	32-51-00
MODULE - METERING VALVE	1	1	NOSE LANDING GEAR	32-51-04
MODULE - CHECK VALVE	2	1	NOSE WHEEL WELL, AFT LEFT SIDE	32-51-08
PEDALS - (REF 27-21-00, FIG. 101) CAPTAIN'S AND FIRST OFFICER'S				
QUADRANT - FORWARD	3	1	113AL, FWD EQUIP COMPT	32-51-10
TILLER AND GEARBOX	3	1	FLT COMPT, P13	32-51-01
VALVE - (REF 32-30-00, FIG. 101) NOSE GEAR SELECTOR				

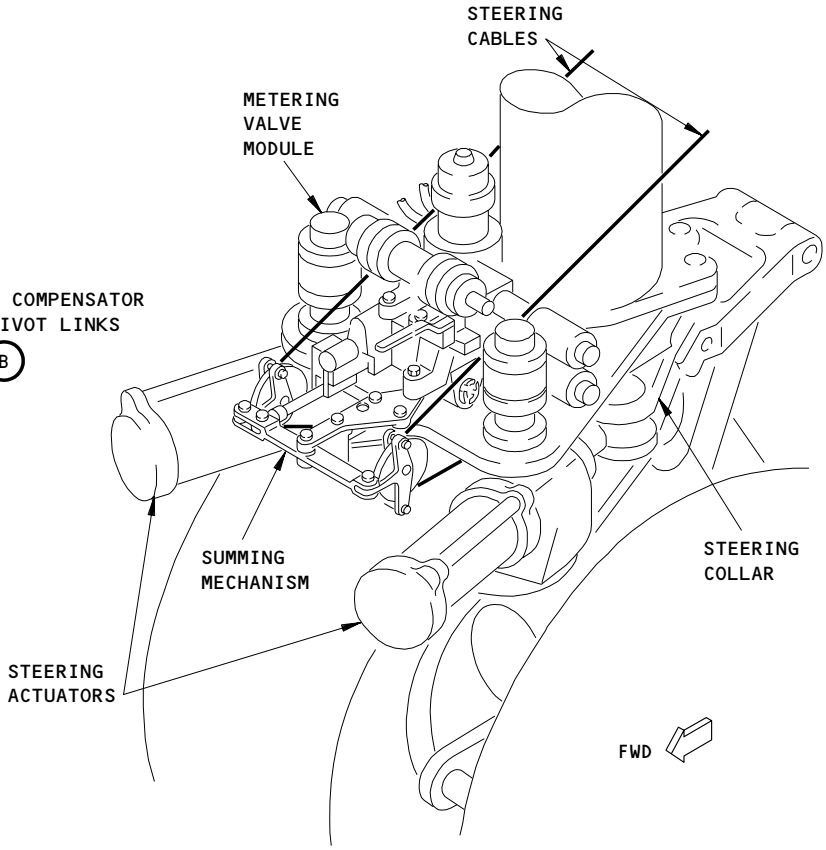
Nose Wheel Steering System - Component Index
Figure 101A

EFFECTIVITY
AIRPLANES WITHOUT FIRST OFFICER'S TILLER

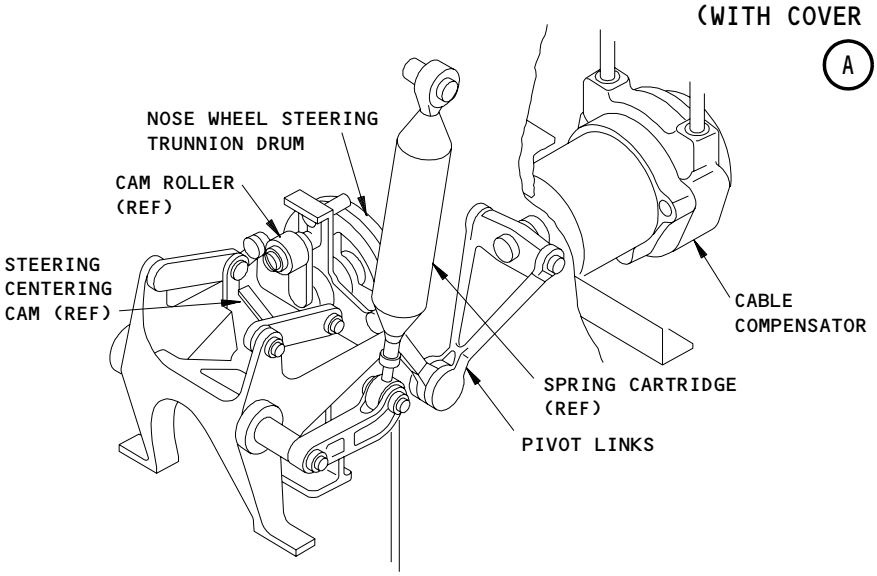
823826



NOSE LANDING GEAR

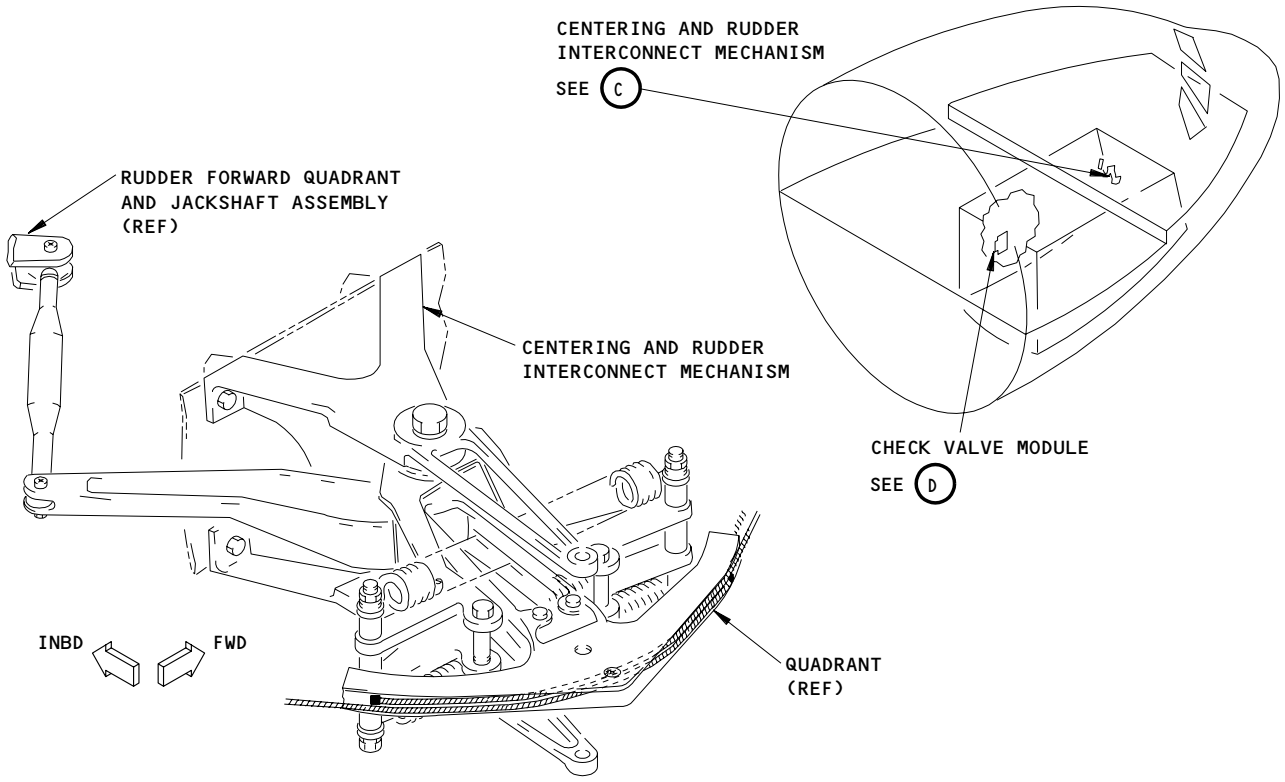


METERING VALVE MODULE AND SUMMING MECHANISM
(WITH COVER REMOVED)
(A)



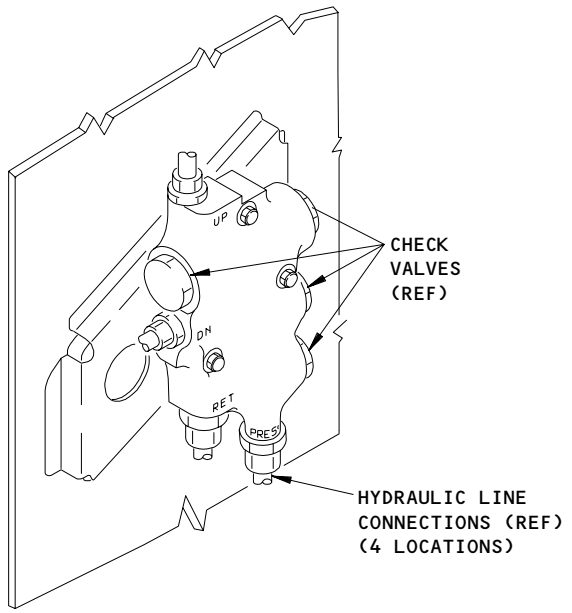
CABLE COMPENSATOR AND PIVOT LINKS
(B)

Nose Wheel Steering System – Component Location
Figure 102 (Sheet 1)



CENTERING AND RUDDER INTERCONNECT MECHANISM

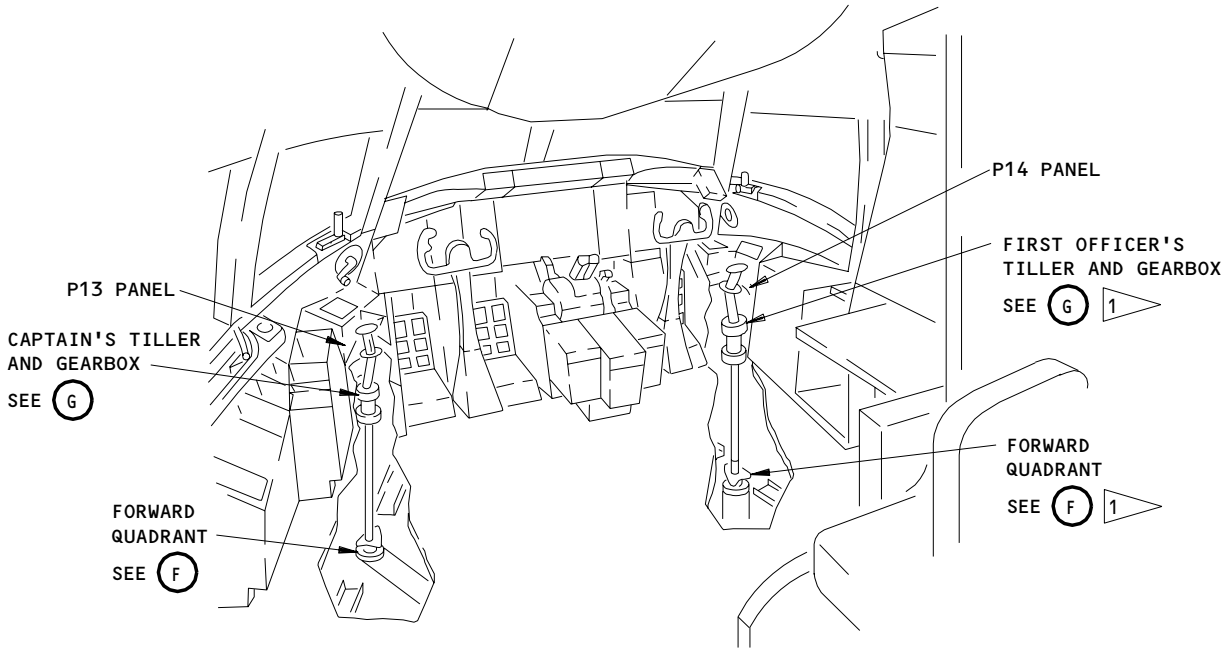
C



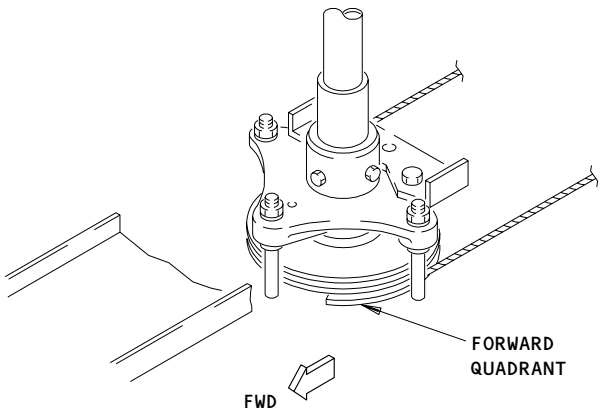
CHECK VALVE MODULE

D

Nose Wheel Steering System – Component Location
Figure 102 (Sheet 2)

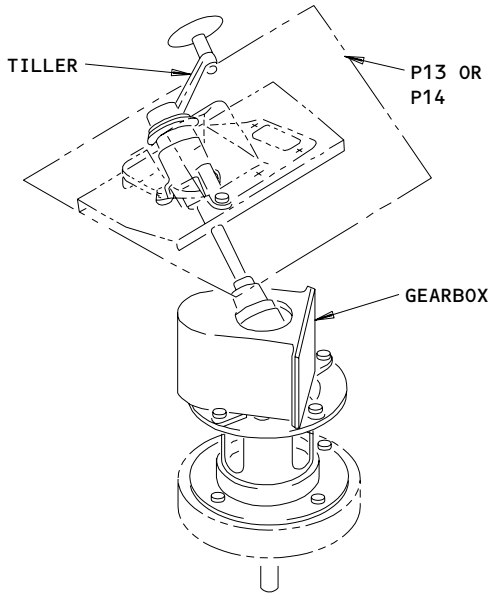


FLIGHT COMPARTMENT



FORWARD QUADRANT

F



TILLER AND GEARBOX

G

1 AIRPLANES WITH CAPTAIN'S AND FIRST OFFICER'S TILLER.

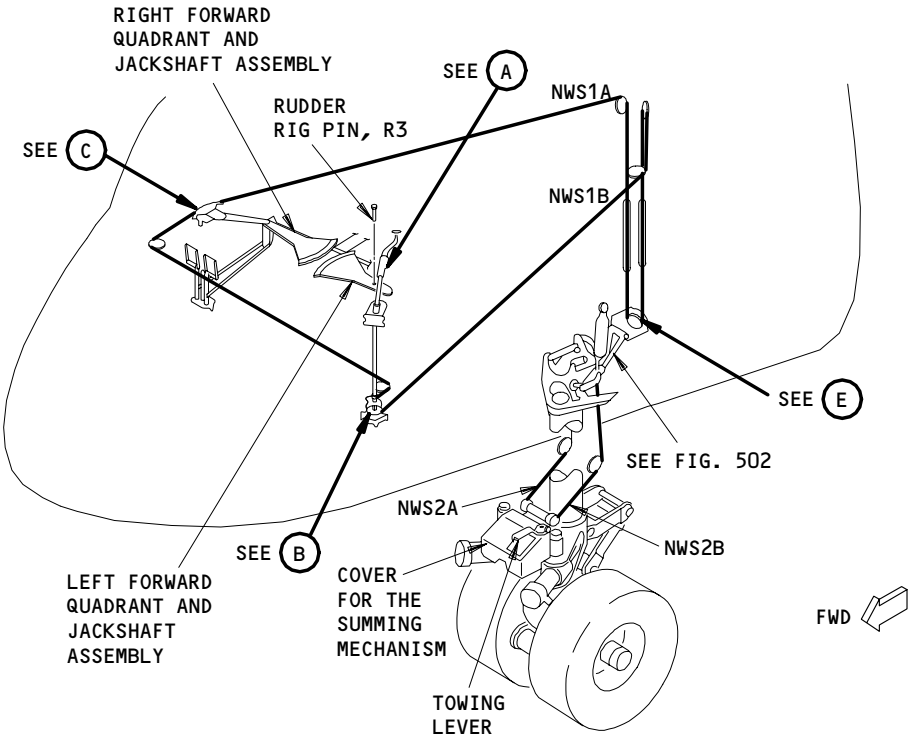
Nose Wheel Steering System – Component Location
Figure 102 (Sheet 3)

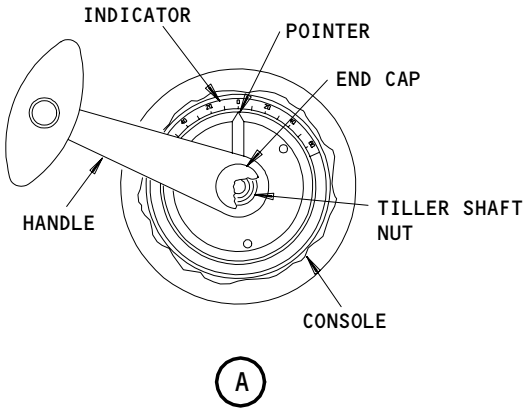
NOSE WHEEL STEERING SYSTEM - ADJUSTMENT/TEST

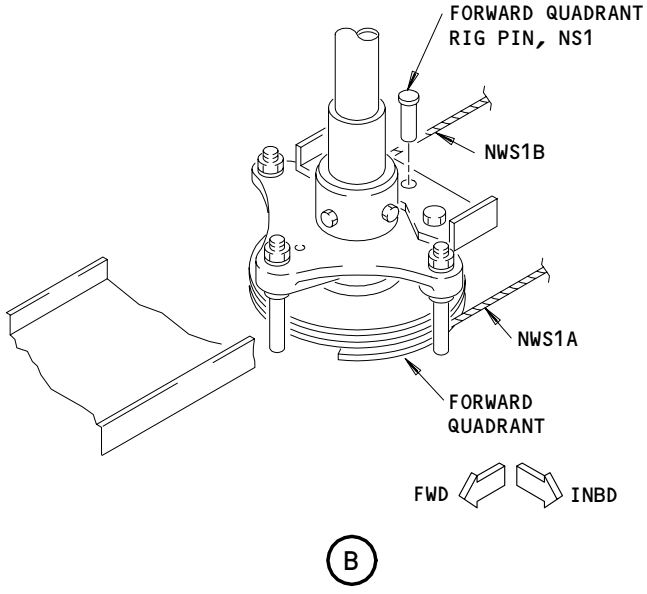
1. General
   A. This procedure contains two tasks. The first task is an adjustment of the nose wheel steering system. It includes a check of rig pin fit and cable tension for the nose wheel steering system and an adjustment of the nose wheel steering system. The second task does a system test for the nose wheel steering system.
   B. The nose wheel steering system must be adjusted correctly before you can do the system test for the nose wheel steering system.

TASK 32-51-00-835-001

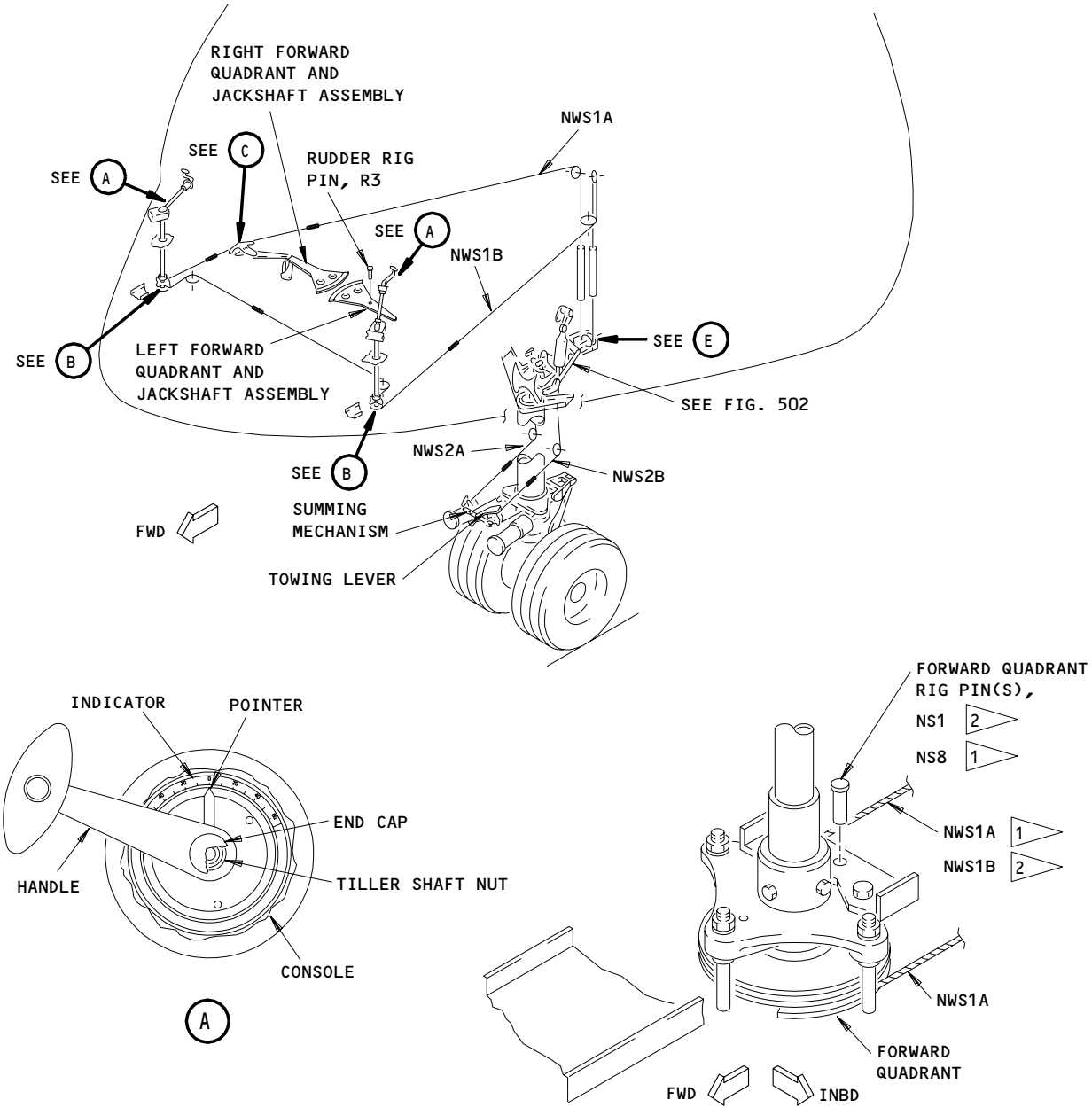
2. The Adjustment of the Nose Wheel Steering System
   A. General
      (1) To do the adjustment for the nose wheel steering system, the pressure must be removed from the center hydraulic system.
      (2) There must be no more than a 5°F difference between the inner and the outer temperatures of the airplane. The temperatures must be stable for one hour or more before you do the adjustment and also during the adjustment.
      (3) To find the center position of the nose wheel and the steering collar, use the centering cam of the shock strut (the shock strut must be fully extended). Manual aid can be necessary to make sure the cam is in the center.
      (4) A protractor is installed on the steering collar of the nose landing gear. The protractor shows the steering angle and can be used to find the the center position.
      (5) When you do the adjustment, the nose landing gear must be in the extended position. The torsion links must be disconnected and the upper torsion link must be held away from the nose wheel.
   B. Equipment
      (1) Rig Pins from Set A20004-XX (AMM 20-10-24)
         (a) NS1 - P/N A20004-14
         (b) NS2 - P/N A20004-22
         (c) NS3 - P/N A20004-16
         (d) NS4 - P/N A20004-13
         (e) NS5 - P/N A20004-18
         (f) NS6 - P/N A20004-19
         (g) NS7 - P/N A20004-14







Adjustment of the Body-Mounted Component for the Nose Wheel Steering
Figure 501 (Sheet 1)



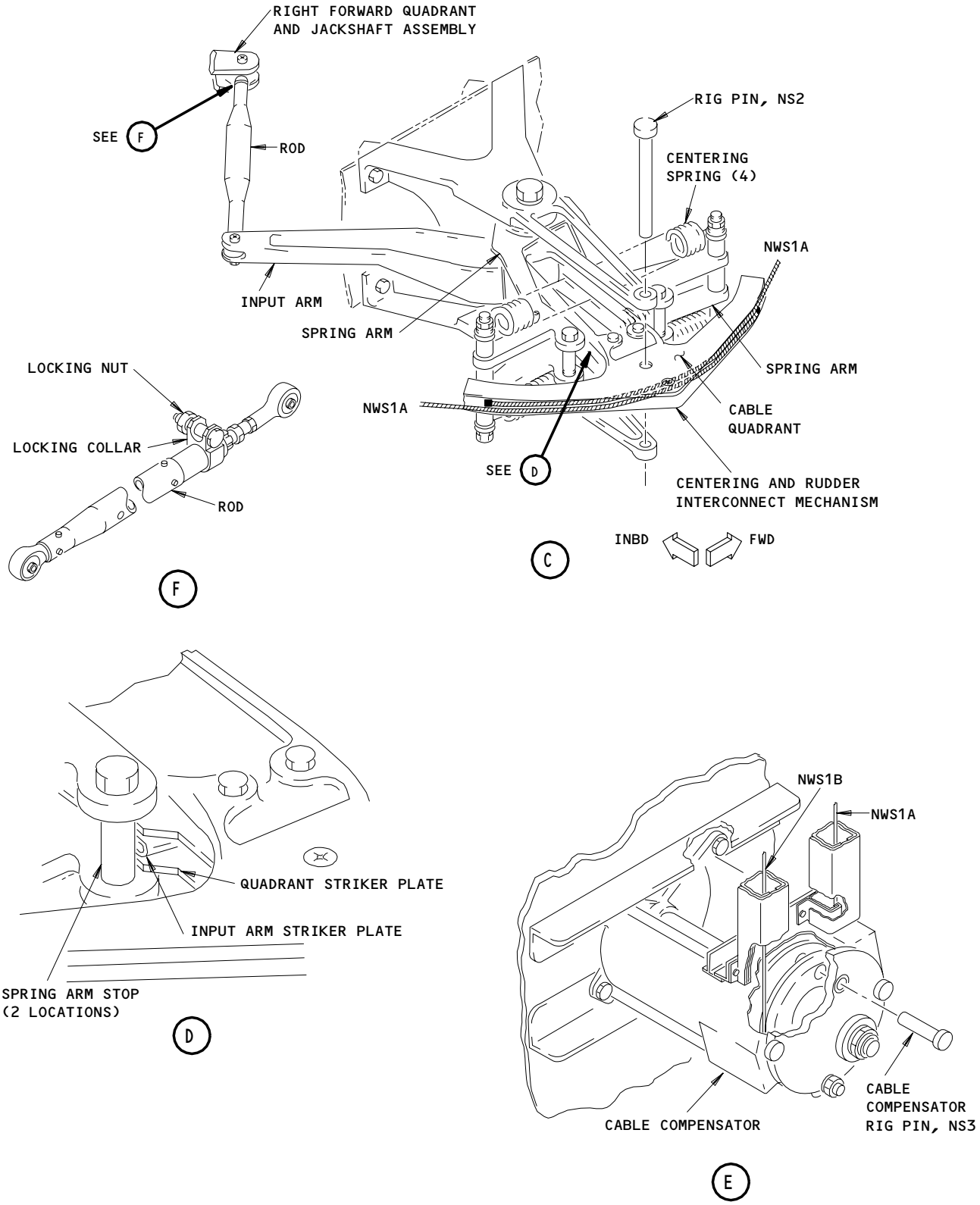
1 FIRST OFFICER'S TILLER QUADRANT

2 CAPTAIN'S TILLER QUADRANT

Adjustment of the Body-Mounted Component for the Nose Wheel Steering
Figure 501 (Sheet 2)

EFFECTIVITY
AIRPLANES WITH FIRST OFFICER'S TILLER

689428



Adjustment of the Body-Mounted Component for the Nose Wheel Steering
Figure 501 (Sheet 3)

(h) AIRPLANES WITH FIRST OFFICER'S TILLER;
NS8 - P/N A20004-14
(i) R3 - P/N A20004-14

(2) Cable Tensiometer - 0-200-pound range for a 3/32-inch diameter cable (commercially available).

(3) Cord or Rope (used to hold the torsion links of the nose landing gear)

(4) Towing Lever Lockpin - A09003-1

C. Consumable Materials

(1) C00308 Compound, Corrosion Preventive - MIL-C-11796

(2) D00633 Grease, Corrosion Preventive - BMS 3-33 (Preferred)

(3) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)

D. References

(1) AMM 07-11-01/201, Jacking Airplane

(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

(3) AMM 32-00-20/201, Landing Gear Downlocks

(4) AMM 32-21-11/201, Nose Gear Torsion Links

E. Access

(1) Location Zone
711 Nose Landing Gear

F. Check of the Adjustment of the Nose Wheel Steering System

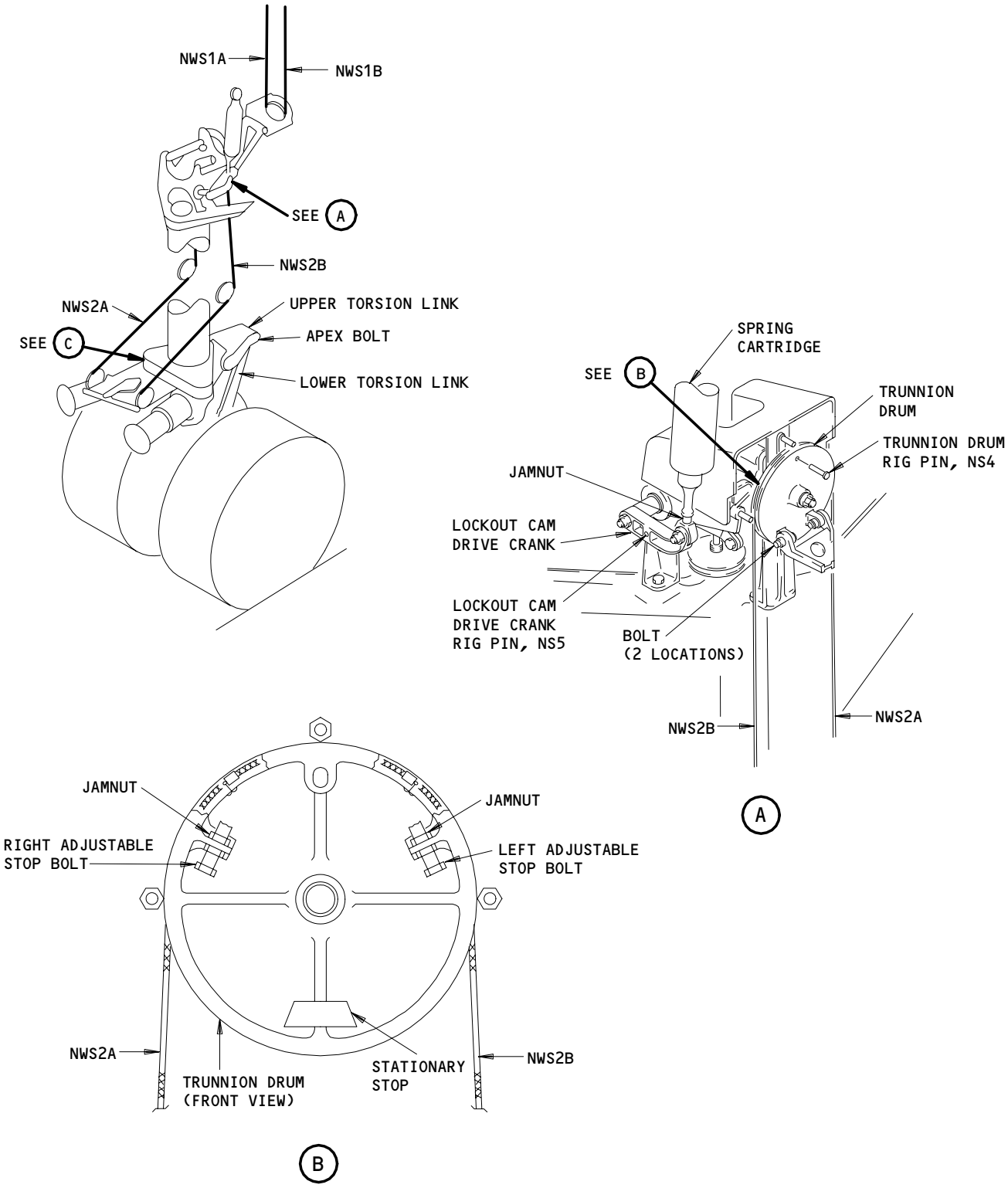
S 495-002

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

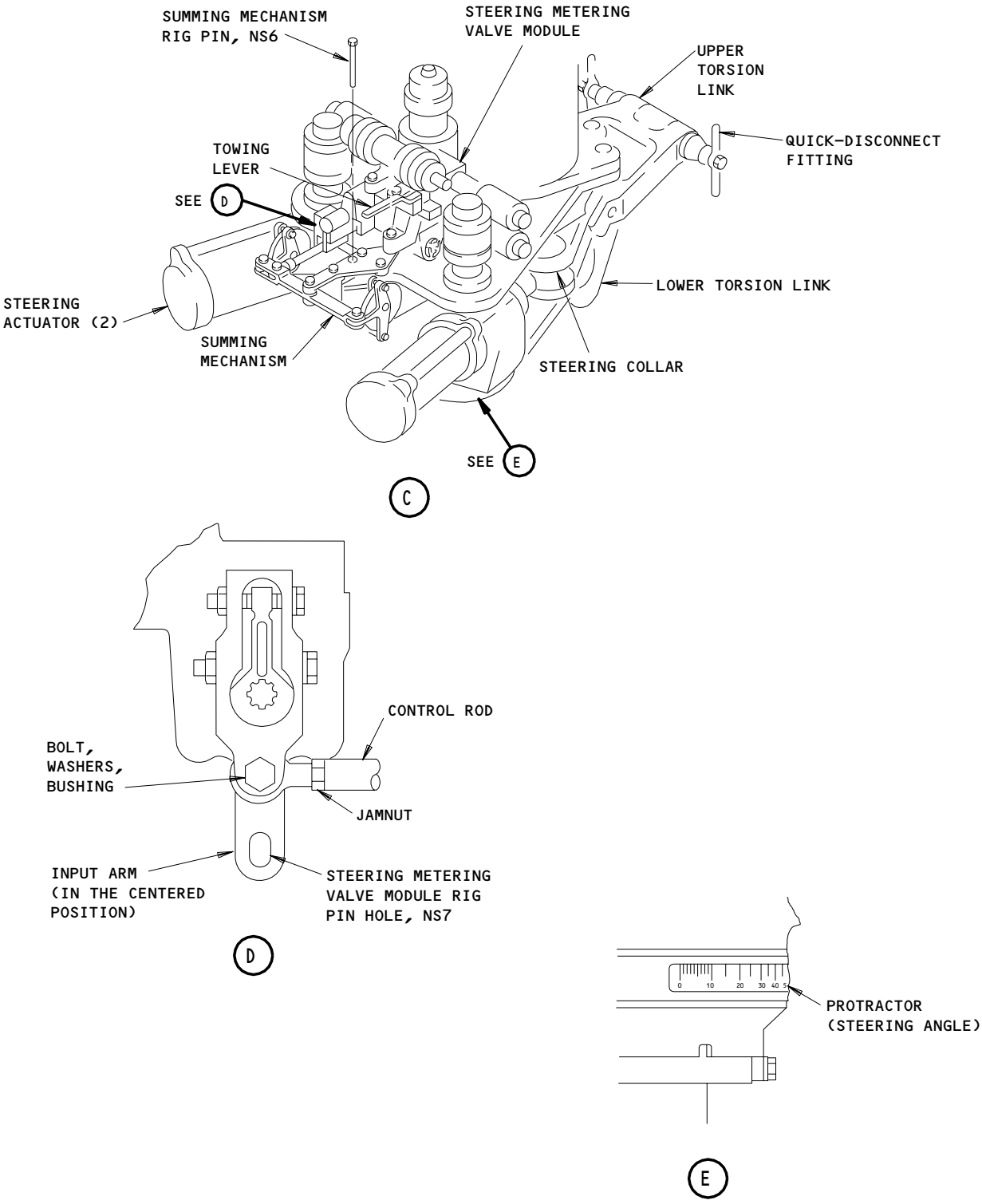
S 865-003

WARNING: MAKE SURE YOU REMOVE THE PRESSURE FROM THE CENTER HYDRAULIC SYSTEM BEFORE YOU DO THE ADJUSTMENT FOR THE NOSE WHEEL STEERING. IF YOU DO NOT REMOVE THE HYDRAULIC PRESSURE, THE NOSE WHEELS CAN TURN WHEN YOU MOVE THE TILLER. THE MOVEMENT OF THE NOSE WHEEL CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Make sure the pressure is removed from the center hydraulic system (AMM 29-11-00/201).



Adjustment of the Gear-Mounted Component for the Nose Wheel Steering
Figure 502 (Sheet 1)



Adjustment of the Gear-Mounted Component for the Nose Wheel Steering
Figure 502 (Sheet 2)

S 585-004

(3) Lift the airplane until the shock strut of the nose landing gear is fully extended (AMM 07-11-01/201) .

NOTE: The nose of the airplane is lifted on jacks to find the center position of the nose landing gear and the steering collar. The internal centering cam of the shock strut is used to do this. If the jacks are not available you can use grease plates under the nose wheels to put the nose gear and steering collar in the center position. If you will do this procedure without jacks, make sure the airplane is towed at least 12 feet in a straight line before it is parked.

S 865-005

(4) Move the towing lever (Fig. 501) on the metering valve module to the TOWING position.

S 495-006

(5) Install the towing lever lockpin.

S 015-007

(6) Disconnect the torsion links (AMM 32-21-11/201).

S 865-169

CAUTION: DO NOT TURN THE NOSE LANDING GEAR INNER CYLINDER. IF YOU TURN THE INNER CYLINDER, YOU CAN CAUSE INTERNAL DAMAGE TO THE SHOCK STRUT.

(7) Turn the steering collar fully to the left then to the right using the upper torsion link.
   (a) Make sure the not compressed sensor targets of the nose landing gear do not touch the adjacent structure.

S 865-009

(8) With the centering cam in the detent, put the steering collar to ±1/4 degree of the center position.

NOTE: It can be necessary to manually put the nose landing gear in the center position.

S 865-011

(9) Make sure the position indicator for the nose wheel, found on the tiller handle, is ±2 degrees of zero.

S 225-012

(10) Use a cable tensiometer to make sure the tension in the cables NWS1A, NWS1B, NWS2A, and NWS2B are in tolerance (Table 501).

Table 501		
CABLE	TEMPERATURE (°F)	CABLE TENSION (LB)
NWS2A NWS2B	ALL	60 ±10
NWS1A NWS1B	130	91 +15/-5
	110	86 +15/-5
	90	81 +15/-5
	70	75 +15/-5
	50	69 +15/-5
	30	64 +15/-5
	10	58 +15/-5
	-10	53 +15/-5
	-30	47 +15/-5
	-40	45 +15/-5

S 015-013
(11) Remove the cover for the summing mechanism.

S 495-014
(12) Install the rig pins that follow:
(a) NS1 (Detail B, Fig. 501)
(b) NS2 (Detail C, Fig. 501)
(c) NS3 (Detail E, Fig. 501)
(d) NS4 (Detail A, Fig. 502)
(e) NS5 (Detail A, Fig. 502)
(f) NS6 (Detail C, Fig. 502)
(g) NS7 (Detail D, Fig. 502)
(h) AIRPLANES WITH FIRST OFFICER'S TILLER;
NS8 (Detail B, Fig. 501)

(i) R3 (Fig. 501)
1) Make sure the rig pins have a loose fit in the rigging holes.
a) If the rig pins do not have a loose fit, do the procedure to adjust the nose wheel steering system.
2) Remove the rig pins.

G. Adjust the Nose Wheel Steering System

S 015-015
(1) Disconnect the rod for the interconnect mechanism of the rudder pedal from the right forward quadrant and the jackshaft assembly (Detail C, Fig. 501).

S 015-016
(2) Disconnect the forward pivot link from the trunnion drum (Detail A, Fig. 502).
(a) Use a rope to hold the two pivot links away from the cable system.

S 015-017

WARNING: DO NOT DISASSEMBLE THE PRELOADED SPRING ASSEMBLY. DISCONNECT THE SPRING ASSEMBLY AT THE SPECIFIED POINT OR YOU CAN CAUSE INJURY TO PERSONS.

(3) Disconnect the spring cartridge from the drive crank of the lockout cam (Detail A, Fig. 502).

S 865-018
(4) Hold the spring cartridge to prevent damage to the seals of the upper rod end bearing.

S 015-019
(5) Disconnect the control rod of the summing mechanism from the input arm of the metering valve (Detail D, Fig. 502).

S 495-158
(6) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
Install the rig pins NS1 thru NS7 for the steering system and the rig pin R3 for the rudder system.

S 495-159
(7) AIRPLANES WITH FIRST OFFICER'S TILLER;
Install the rig pins NS1 thru NS8 for the steering system and the rig pin R3 for the rudder system.

S 825-125
(8) Adjust the length of the rudder pedal interconnect mechanism rod
(a) When the rod is connected to the right forward quadrant and the jackshaft assembly the two spring arm stops touch the striker plates on the quadrant and the input arm.

S 425-150
(9) Tighten the locking nut on the locking collar to 30-50 pound-inches (Detail C, Fig. 501).

S 625-084
(10) Apply the corrosion preventive compound to the surfaces of all of the fasteners.

S 435-026
(11) Connect the rod to the forward quadrant and the jackshaft assembly.

S 865-027
(12) Make sure the rig pins that follow have a loose fit:
(a) NS2 in the interconnect mechanism of the rudder pedal.
(b) R3 in the left forward quadrant and the jackshaft assembly.

S 825-126
(13) Adjust the length of the spring cartridge rod end.
(a) When the cartridge is connected to the drive crank of the lockout cam, the rig pin NS5 will have a loose fit in the crank (Detail A, Fig. 502).

S 435-028
(14) Tighten the jamnut on the spring cartridge to 270-350 pound-inches (Detail A, Fig. 502).

S 435-029
(15) Install the lockwire.

S 645-030
(16) With grease, lubricate the inner holes of the cartridge end bearing.

S 435-031
(17) Connect the spring cartridge to the drive crank of the lockout cam.

S 865-032
(18) Make sure the rig pin NS5 has a loose fit in the drive crank.

S 825-127
(19) Adjust the length of the control rod for the summing mechanism.
  (a) When the rod is connected to the input arm of the metering valve module, the steps that follow will occur:
    1) The rig pin NS6 will have a loose fit in the summing mechanism.
    2) The rig pin NS7 will have a loose fin in the metering valve module.

S 435-033
(20) Tighten the jamnut on the control rod to 150-200 pound-inches (Detail D, Fig. 502).

S 435-034
(21) Install the lockwire.

S 645-035
(22) Use grease to lubricate the rod bushing and the fasteners.

S 415-036
(23) Connect the rod to the module input arm.

S 865-037
(24) Make sure the rig pins NS6 and NS7 have a loose fit.

S 825-038
(25) Adjust the cables, NWS1A, NWS1B, NWS2A, and NWS2B to 120 ±10 pounds.

NOTE: Do not lock the turnbuckles at this time.

S 095-039
(26) Remove the rig pin NS3.

S 645-040
(27) Use grease to lubricate the attach fasteners of the forward pivot link.

S 415-041
(28) Connect the pivot link to the trunnion drum.

S 865-042
(29) Make sure all the rig pins have a loose fit.

NOTE: The rig pin NS3 has been removed from the cable compensator.

S 095-043
(30) Remove all of the rig pins.

S 865-044

WARNING: MAKE SURE THESE CONDITIONS OCCUR BEFORE YOU PRESSURIZE THE HYDRAULIC SYSTEM:

MAKE SURE THE CONTROL LEVER FOR THE LANDING GEAR IS IN THE DN POSITION AND THAT THE DOWNLOCKS ARE INSTALLED ON THE LANDING GEAR.

MAKE SURE THE TORSION LINKS FOR THE NOSE LANDING GEAR ARE DISCONNECTED AND HELD OUT OF THE AREA.

IF THESE CONDITIONS DO NOT OCCUR BEFORE YOU PRESSURIZE THE HYDRAULIC SYSTEM, THE LANDING GEAR CAN MOVE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(31) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 985-045
(32) Operate the tiller through a full 360 degrees. Do this 15 times.

S 865-046
(33) Remove the pressure from the center hydraulic system.

S 495-160
(34) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
Install the rig pins NS1 thru NS7.

S 495-161
(35) AIRPLANES WITH FIRST OFFICER'S TILLER;
Install the rig pins NS1 thru NS8.

S 825-051
(36) Connect the spring cartridge to the drive crank of the lockout cam.

NOTE: Do not lock the turnbuckles.

S 865-052
(37) Make sure all of the rig pins have a loose fit.

S 095-053
(38) Remove all of the rig pins but NS6 which is in the summing mechanism.

S 865-054
(39) Put the adjustable stop bolts for the trunnion drum in a position to permit the maximum movement of the trunnion drum (Fig. 502 Detail B).

S 865-055
(40) Put the towing lever, on the metering valve module, to the TOWING position.

S 495-056
(41) Install the towing lever lockpin.

S 865-057
(42) Put the steering collar in the center position (±1/4 degrees) of the centered position of the nose wheel.

S 985-058
(43) Manually push the upper torsion link to turn the steering collar 65 ±1/4 degrees to the right.

S 865-059
(44) Put the left adjustable stop bolt for the trunnion drum, in a position to touch the stationary stop.
(a) Install the lockwire.

S 865-060
(45) Put the nose wheel steering system to ±1/4 degrees of the centered position for the nose wheel.

S 865-061
(46) Turn the steering collar 65 ±1/4 degrees to the left.

S 865-062
(47) Put the right adjustable stop bolt for the trunnion drum in a position to touch the stationary stop.
(a) Install the lockwire.

S 865-063
(48) Center the nose wheels.

S 095-064
(49) Remove the rig pin NS6 from the summing mechanism.

S 095-065
(50) Remove the towing lever lockpin.

S 865-066
(51) Make sure the towing lever automatically goes to the NORMAL position.

S 435-067
(52) Use the tensiometer, to be sure the cables NWS1A/NWS1B and NWS2A/NWS2B are tightened as shown in Table 501.

S 435-068
(53) Install and lock the turnbuckle clips.

H. Put the Airplane Back to Its Usual Condition

S 415-069
(1) Connect the torsion links (AMM 32-21-11/201).

S 435-070
(2) Install the cover for the summing mechanism.

S 865-071
(3) Make sure the not compressed sensors and targets for the nose landing gear, are not damaged.

TASK 32-51-00-735-072

3. Do the System Test for the Nose Wheel Steering System

A. General
(1) The nose wheel steering system must be adjusted correctly before you do the system test for nose wheel steering.
(2) The nose of the airplane is lifted on jacks to find the center position of the nose landing gear and the steering collar. The internal centering cam of the shock strut is used to do this. If the jacks are not available you can use grease plates under the nose wheels to put the nose gear and steering collar in the center position. If you will do this procedure without jacks, make sure the airplane is towed at least 12 feet in a straight line before it is parked.

B. Equipment
(1) Rig Pins from Set A20004-XX (AMM 20-10-24):
(a) NS1 - P/N A20004-14
(b) NS4 - P/N A20004-13
(c) NS6 - P/N A20004-19
(d) NS7 - P/N A20004-14
(e) AIRPLANES WITH FIRST OFFICER'S TILLER;
NS8 - P/N A20004-14
(2) Stop Watch - commercially available
(3) Towing Lever Lockpin - A09003-1

C. Consumable Materials
(1) D00633 Grease, Corrosion Preventive - BMS 3-33 (Preferred)
(2) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)

D. References
(1) AMM 07-11-01/201, Jacking Airplane

(2) AMM 27-21-00/501, Rudder Control System
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(4) AMM 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-00-20/201, Landing Gear Downlocks
(6) AMM 32-21-11/201, Nose Gear Torsion Links

E. Access

(1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear

F. Prepare to Do the Test for the Nose Wheel Steering System

S 865-123
(1) Make sure the conditions that follow have occurred:
(a) The rudder system has been fully adjusted.
(b) You have done the test for the rudder system.
(c) The rudder pedals are in the neutral position.
(d) The rudder trim on the aft pilots control stand, P8, is at the zero setting.

S 495-073
(2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 865-074
(3) Make sure the control lever for the landing gear is in the DN position.

S 495-075

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 015-076
(5) Remove the cover for the summing mechanism.

S 865-077
(6) Make sure the TAIL FLT CONTROL SHUTOFF switches, L, C, and R, on the right side panel, P61, are in the OFF position (AMM 27-21-00/501).
(a) Attach DO-NOT-OPERATE tags to these switches.

S 865-078
(7) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are open and that DO-NOT-OPERATE tags are attached (AMM 27-21-00/501):
(a) 11H17, FLT CONT SHUTOFF TAIL L

(b) 11H27, FLT CONT SHUTOFF TAIL R
(c) 11H18, FLT CONT SHUTOFF TAIL C

S 865-079
(8) Make sure the pressure is removed from the center hydraulic system (AMM 29-11-00/201).

S 585-080
(9) To do the centering system test, lift the airplane to fully extend the shock strut of the nose landing gear (AMM 07-11-01/201).

NOTE: The nose of the airplane is lifted on jacks to find the center position of the nose landing gear and the steering collar. The internal centering cam of the shock strut is used to do this.

S 865-081
(10) With the centering cam in the detent, make sure the nose wheel steering system is in the centered position.

NOTE: It can be necessary to manually put the nose landing gear in the centered position. You can use the protractor on the steering collar to make sure the steering collar is in the center position.

G. Do the Test for the Nose Wheel Steering System

S 735-083
(1) Do a test of the nose wheel steering system for clearance, to make sure it moves freely, and for centering.
(a) Put the towing lever, on the steering metering valve module, to the TOWING position.
(b) Install the towing lever lockpin.
(c) Use the upper torsion link, to manually turn the steering collar to the right until the steering actuators touch bottom.
1) Make sure the angular displacement of the steering collar is a minimum of 68 degrees from the center position.

NOTE: When the torsion links are disconnected, the angular displacement can be larger than 68 degrees.

2) Make sure these parts in the nose wheel steering system are displaced freely and, do not bind, hit or touch:
a) The cables
b) The turnbuckles
c) The pulleys
d) The quadrants
e) The summing mechanism
f) The tiller

g) The steering actuators

3) Put the steering collar to the center position.

4) Do the steps again but turn the steering collar to the left.

(d) Disconnect the forward pivot link from the trunnion drum (Detail A, Fig. 502).

(e) Remove the towing lever lockpin.

(f) Make sure the towing lever automatically goes to the NORMAL position.

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE NOSE WHEEL STEERING SYSTEM BEFORE YOU SUPPLY HYDRAULIC POWER TO THE SYSTEM. PARTS OF THE NOSE WHEEL SYSTEM CAN TURN AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(g) Supply power to the center hydraulic system (AMM 29-11-00).

(h) By hand, push the lever for the summing mechanism to move the input lever for the metering valve to the full forward position.

1) Hold the lever in this position until the steering collar starts to move.

(i) Slowly release the lever for the summing mechanism.

(j) Make sure the input arm of the metering valve module goes to the centered position (Detail D, Fig. 502).

(k) Install rig pin NS7 in the input arm of the metering valve.

1) Make sure the rig pin has a loose fit.

(l) Remove the rig pin NS7.

(m) Push the lever for the summing mechanism.

1) Hold the lever until the steering collar goes to the center position.

(n) Fully push the lever for the summing mechanism to move the input lever of the metering valve aft.

1) Hold the lever in this position until the steering collar starts to move.

(o) Slowly release the lever for the summing mechanism.

(p) Make sure the input arm of the metering valve module goes to the centered position (Detail D, Fig. 502).

(q) Install the rig pin NS7 in the input arm of the metering valve.

1) Make sure the rig pin has a loose fit.

(r) Remove the rig pin NS7.

(s) Push and hold the lever for the summing mechanism until the steering collar goes to the center position.

(t) Remove the pressure from the center hydraulic system.
(u) Use the grease to lubricate the fasteners of the forward pivot links.
(v) Connect the pivot link to the trunnion drum.
(w) Install the rig pins that follow and make sure they have a loose fit:
1) NS4 in the trunnion drum.
2) NS6 in the summing mechanism.
(x) Remove the rig pins NS4 and NS6.
(y) Install the cover for the summing mechanism.
(z) Make sure the not compressed sensors and targets of the nose landing gear are not damaged.

H. Prepare to do the Test of the Tiller Handle Steering

NOTE: Too much freeplay, or backlash, of the nosewheel steering tiller shows an out of tolerance condition for the parts of the tiller/gearbox/quadrant installation given below:
- The two spindled couplings between the tiller and the gearbox - 0.035 inches backlash permitted for each coupling
- The gearbox - 0.091 inches backlash permitted
- The splined couplings between the gearbox and the forward quadrant - 0.139 inches backlash permitted for each coupling.

NOTE: If the backlash at the tiller knob is more than 0.44 inches, one of the items above can be out of tolerances. This data is provided as additional information that can be considered to determine the condition of the tiller/gearbox/quadrant installation. It is not a requirement for satisfactory completion of the test of the tiller handle steering.

S 215-149
(1) If you need to do a check of the freeplay of the tiller handle, do the steps that follow:
(a) Install the rig pin NS1 (Detail B, Fig. 501).

(b) AIRPLANES WITH FIRST OFFICER'S TILLER;
Install rig pin NS8 (Detail B, Fig. 501)
(c) Move the tiller handle and measure the tangential movement of the center of the knob on the handle. If it is more than 0.44 inches, there is excessive wear in the components of the tiller/gearbox/quadrant. The components must be removed to determine the actual wear.
(d) Remove the rig pin NS1.
(e) AIRPLANES WITH FIRST OFFICER'S TILLER;
Remove rig pin NS8 (Detail B, Fig. 501)

S 035-085

CAUTION: MAKE SURE THE UPPER TORSION LINK IS HELD IN THE HORIZONTAL POSITION WHEN YOU DISCONNECT IT. IF THE UPPER TORSION LINK IS NOT HELD IN THE HORIZONTAL POSITION, IT CAN CAUSE DAMAGE TO THE SENSOR TARGETS DURING THE STEERING TESTS.

MAKE SURE THE SENSOR TARGETS DO NOT TOUCH THE ADJACENT STRUCTURE WHEN YOU MOVE THE STEERING SYSTEM FULLY LEFT OR RIGHT. IF THE SENSOR TARGETS TOUCH THE ADJACENT STRUCTURE, THE SENSOR TARGETS CAN BE DAMAGED.

(2) Disconnect the torsion links (AMM 32-21-11/201).
(a) Hold the upper torsion link in the horizontal position.

S 865-086

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM MOVABLE SURFACES BEFORE YOU SUPPLY FULL POWER TO THE NOSE WHEEL STEERING SYSTEM. WHEN YOU SUPPLY FULL POWER TO THE NOSE WHEEL STEERING SYSTEM, SOME OF THE SURFACES CAN MOVE, AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Pressurize the center hydraulic system (AMM 29-11-00/201).

I. Do the Test for the Tiller Handle Steering

S 725-164

(1) Do the steps that follow to make sure the tiller steering system operates correctly with the Captain's tiller:
(a) Turn the Captain's tiller handle from the center position to the right until the adjustable stop bolt on the trunnion drum touches the stationary stop, and do the steps that follow:
1) Hold the tiller handle in this position.
2) Make sure the angular displacement of the steering collar is 65 ±1 degrees.
3) Release the Captain's tiller handle.
4) Make sure the Captain's tiller handle automatically goes to the neutral (center) position.
5) Make sure the Captain's tiller handle goes to the center position in less than 4 seconds (Fig. 501 Detail A).

6) Make sure the steering collar goes to ±2 degrees of the center position.
7) Make sure the Indicator for the nose gear position on the Captain's tiller goes to the neutral position.
8) Turn the Captain's tiller handle to the left and do the steps above again again.

S 725-165

(2) Do the steps that follow to do a check of the maximum torque necessary to operate the Captain's steering tiller:
(a) Remove the end cap from the Captain's tiller handle where the tiller handle attaches to the shaft.
(b) Apply a torque wrench to the nut of the tiller shaft.

CAUTION: DO NOT USE MORE THAN 50 POUND-INCHES OF TORQUE ON THE TILLER SHAFT. IF YOU USE MORE THAN 50 POUND-INCHES OF TORQUE, YOU CAN CAUSE DAMAGE TO THE STEERING TILLER MECHANISM.

(c) Use a torque wrench to turn the tiller shaft to the right.
(d) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
Make sure the maximum torque necessary to complete the full movement is not more than 37 pound-inches.
(e) AIRPLANES WITH FIRST OFFICER'S TILLER;
Make sure the maximum torque necessary to complete the full movement is not more than 41 pound-inches.
(f) Turn the tiller handle to the left and do the steps again.
(g) Let the tiller steering system go to the center position.
(h) Remove the torque wrench.
(i) Put the end cap on the tiller shaft.

S 725-167

(3) AIRPLANES WITH FIRST OFFICER'S TILLER;
Do the steps that follow to make sure the tiller steering system operates correctly with the First Officer's tiller:
(a) Turn the First Officer's tiller handle from the center position to the right until the adjustable stop bolt on the trunnion drum touches the stationary stop and do the steps that follow:
1) Hold the tiller handle in this position
2) Make sure the angular displacement of the steering collar is 65 ±1 degrees.
3) Release the First Officer's tiller.
4) Make sure the tiller goes to the neutral (center) position.
5) Make sure the First Officer's tiller goes to the center position in less than 4 seconds (Fig. 501, Detail A).
6) Make sure the steering collar goes to ±2 degrees of the center position.
7) Make sure the indicator for the nose gear position on the First Officer's tiller goes to the neutral position.
8) Make sure the nose gear indicators on the Captain's and First Officers's tiller agree in ±3 degrees.

(b) Turn the First Officer's tiller handle to the left and do the above steps again.

S 725-158

(4) AIRPLANES WITH FIRST OFFICER'S TILLER;
Do the steps that follow to do a check of the maximum torque necessary to operate the First Officer's steering tiller:
(a) Remove the end cap from the First Officer's tiller handle where the tiller handle attaches to the shaft.
(b) Apply a torque wrench to the nut of the tiller shaft.

CAUTION: DO NOT USE MORE THAN 50 POUND-INCHES OF TORQUE ON THE TILLER SHAFT. IF YOU USE MORE THAN 50 POUND-INCHES OF TORQUE, YOU CAN CAUSE DAMAGE TO THE STEERING TILLER MECHANISM.

(c) Use a torque wrench to turn the tiller shaft to the right.
(d) AIRPLANES WITH FIRST OFFICER'S TILLER;
Make sure the maximum torque necessary to complete the full movement is not more than 41 pound-inches.
(e) Turn the tiller handle to the left and do the steps again.
(f) Let the tiller steering system go to the center position.
(g) Remove the torque wrench.
(h) Put the end cap on the tiller shaft.

S 865-093

(5) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 865-094

(6) Make sure the not-compressed sensors and targets for the nose landing gear are not damaged.

J. Prepare to Do the Test for the Rudder Pedal Steering.

S 035-095

CAUTION: MAKE SURE THE UPPER TORSION LINK IS HELD IN THE HORIZONTAL POSITION WHEN YOU DISCONNECT IT. IF THE UPPER TORSION LINK IS NOT HELD IN THE HORIZONTAL POSITION, IT CAN CAUSE DAMAGE TO THE SENSOR TARGETS DURING THE STEERING TESTS.

MAKE SURE THE SENSOR TARGETS DO NOT TOUCH THE ADJACENT STRUCTURE WHEN YOU MOVE THE STEERING SYSTEM FULLY LEFT OR RIGHT. IF THE SENSOR TARGETS TOUCH THE ADJACENT STRUCTURE, THE SENSOR TARGETS CAN BE DAMAGED.

(1) Make sure the torsion links of the nose landing gear are disconnected.

S 865-096

(2) Make sure the upper torsion link is held in the horizontal position.

S 865-097

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM MOVABLE SURFACES BEFORE YOU SUPPLY FULL POWER TO THE NOSE WHEEL STEERING SYSTEM. WHEN YOU SUPPLY FULL POWER TO THE NOSE WHEEL STEERING SYSTEM SOME OF THE SURFACES CAN MOVE AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Pressurize the center hydraulic system (AMM 29-11-00/201).

K. Do the Test for the Rudder Pedal Steering

S 865-098

(1) Fully depress and hold the Captains's right rudder pedal.

NOTE: Do not hold the tiller handle.

(a) Make sure the steering collar turns right 7 1/2 ±1 degrees.
(b) Release the Captain's right rudder pedal.
(c) Look at the centering springs for the rudder pedal control system to see if the rudder pedal goes to the neutral position.
(d) Make sure the steering collar goes to ±1 1/2 degrees of the center position.
(e) Push the Captain's left rudder pedal and do the steps again.

S 865-100

(2) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 865-101

(3) Make sure the not-compressed sensors and targets for the nose landing gear are not damaged.

L. Prepare to Do the Test for the Forced Centering System.

S 495-102

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 495-128

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Make sure the doors for the main landing gear are open and the door locks are installed (AMM 32-00-15/201).

S 435-104

(3) Connect the torsion links if they were disconnected (AMM 32-21-11/201).

S 585-105
(4) Lift the airplane with jacks (AMM 07-11-01/201).

S 095-106
(5) Remove the downlock from the nose landing gear (AMM 32-00-20/201).

S 865-107

WARNING: BEFORE YOU SUPPLY PRESSURE TO THE CENTER HYDRAULIC SYSTEM, MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE NOSE LANDING GEAR, THE NOSE LANDING GEAR DOORS, AND THE MOVABLE SURFACES. WHEN YOU SUPPLY PRESSURE TO THE CENTER HYDRAULIC SYSTEM, THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(6) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 865-108
(7) Fully push and hold the Captain's right rudder pedal.
  (a) Make sure the nose landing gear turns to the right from the center position.
  (b) Put the lever for the landing gear to the UP position to retract the landing gear.
  (c) Make sure the nose landing gear automatically centers before it moves through 5 degrees from the fully down position.

    NOTE: There will be an increase in the force on the rudder pedal during the landing gear retraction.

  (d) Release the Captain's right rudder pedal.
  (e) Look at the centering springs for the rudder pedal control system to see if the rudder pedal goes to the neutral position.
  (f) Put the lever for the landing gear to the DN position to extend the landing gear.
  (g) Make sure the nose landing gear is ±1 degree from the centered position.
  (h) Push and hold the Captain's left rudder pedal and do the steps again.

S 865-109
(8) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 495-110

(9) Install the downlocks on the nose landing gear (AMM 32-00-20/201).

S 585-111

(10) Lower the airplane (AMM 07-11-01/201).

M. Prepare to Do the Test for Towing

S 035-146

CAUTION: MAKE SURE THE UPPER TORSION LINK IS HELD IN THE HORIZONTAL POSITION WHEN YOU DISCONNECT IT. IF THE UPPER TORSION LINK IS NOT HELD IN THE HORIZONTAL POSITION, IT CAN CAUSE DAMAGE TO THE SENSOR TARGETS DURING THE STEERING TESTS.

MAKE SURE THE SENSOR TARGETS DO NOT TOUCH THE ADJACENT STRUCTURE WHEN YOU MOVE THE STEERING SYSTEM FULLY LEFT OR RIGHT. IF THE SENSOR TARGETS TOUCH THE ADJACENT STRUCTURE, THE SENSOR TARGETS CAN BE DAMAGED.

(1) Make sure the torsion links of the nose landing gear are disconnected.

S 865-147

(2) Make sure the upper torsion link is held in the horizontal position.

S 865-112

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM MOVABLE SURFACES BEFORE YOU SUPPLY FULL POWER TO THE NOSE WHEEL STEERING SYSTEM. WHEN YOU SUPPLY FULL POWER TO THE NOSE WHEEL STEERING SYSTEM SOME OF THE SURFACES CAN MOVE AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 865-113

(4) Put the towing lever on the steering metering valve module to the TOWING position.

S 495-114

(5) Install the towing lever lockpin.

N. Do the Test for the Towing

S 865-115

(1) Use the upper torsion link, to move the steering collar 15 ±5 degrees to the right, and to the left of the center position.

S 865-124

(2) Turn the steering collar to the center position.

S 095-116

WARNING: MAKE SURE THE STEERING COLLAR IS IN THE CENTERED POSITION BEFORE YOU REMOVE THE TOWING LEVER LOCKPIN. WHEN YOU REMOVE THE TOWING LEVER LOCKPIN, THE UPPER TORSION LINK AND THE STEERING COLLAR WILL TURN QUICKLY TO THE CENTER POSITION AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Remove the towing lever lockpin.

S 865-117

(4) Make sure the towing lever automatically goes to the NORMAL position.

O. Put the Airplane Back to Its Usual Condition

S 865-118

(1) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 095-119

(2) Remove all of the test equipment.

S 435-120

(3) Connect the torsion links if they have not been connected (AMM 32-21-11/201).

S 865-129

(4) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel (AMM 27-21-00/501):
(a) 11H17, FLT CONT SHUTOFF TAIL L
(b) 11H27, FLT CONT SHUTOFF TAIL R
(c) 11H18, FLT CONT SHUTOFF TAIL C

S 865-121

(5) Remove the DO-NOT-OPERATE tags on the P61 panel (AMM 27-21-00/501).
(a) Put the TAIL FLT CONTROL SHUTOFF switches L, C and R to the ON POSITION.

NOSE WHEEL STEERING TILLER AND GEARBOX - REMOVAL/INSTALLATION

1. General
   A. This procedure contains six tasks. The first task removes the tiller handle for the nose wheel steering. The second task installs the tiller handle. The third task removes the tiller for the nose wheel steering. The fourth task installs the tiller. The fifth task removes the gearbox for the nose wheel steering. The sixth task installs the gearbox.
   B. AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
      The tiller and gearbox assembly is on the left side console in the flight compartment.
   C. AIRPLANES WITH FIRST OFFICER'S TILLER;
      The captain's tiller and gearbox assembly is on the left side console in the flight compartment. The first officer's tiller and gearbox assembly is on the right side console.

TASK 32-51-01-004-107

2. Remove the Tiller Handle for the Nose Wheel Steering (Fig. 401)

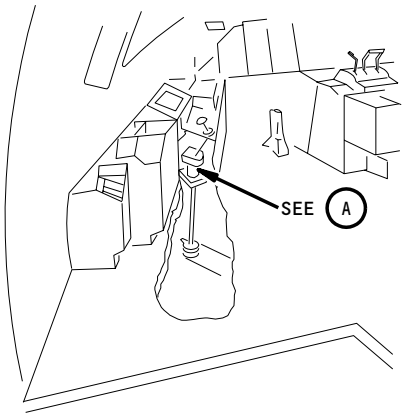
   A. Access
      (1) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
          Location Zone
              211 Control Cabin (Left Side)

      (2) AIRPLANES WITH FIRST OFFICER'S TILLER;
          Location Zones
              211 Control Cabin (Left Side)
              212 Control Cabin (Right Side)

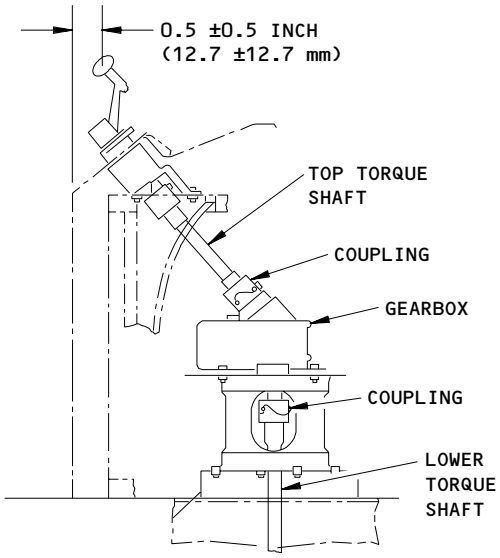
   B. Prepare for the Removal

      S 864-109
      (1) Make sure the position indicator for the nose steering wheel, found on the tiller handle, is approximately in the center position.

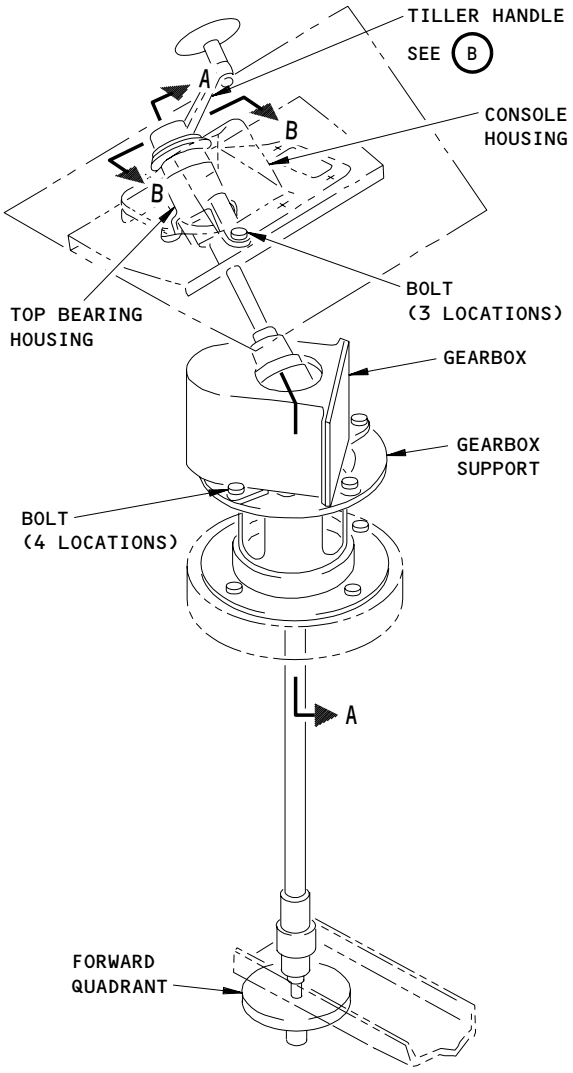
      S 864-110
      (2) Make sure the position indicator for the nose steering wheel, found on the tiller handle, is +/- 2 degrees of zero.



FLIGHT COMPARTMENT



A–A



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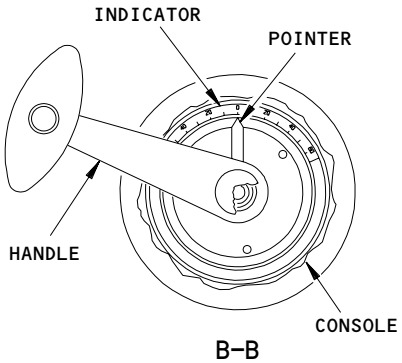
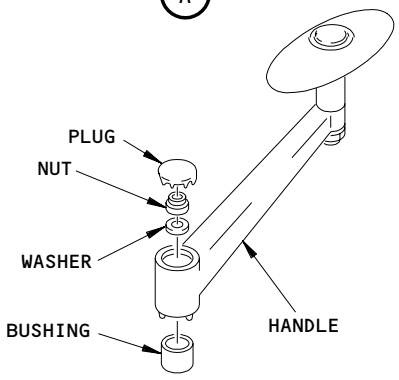
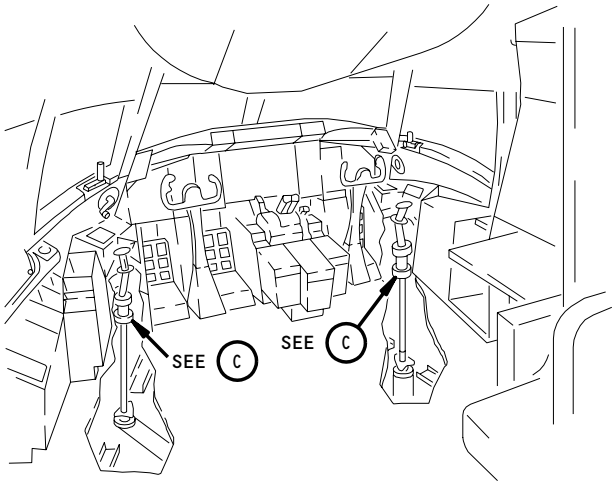


B–B



B

Nose Wheel Steering Tiller and Gearbox Installation
Figure 401 (Sheet 1)



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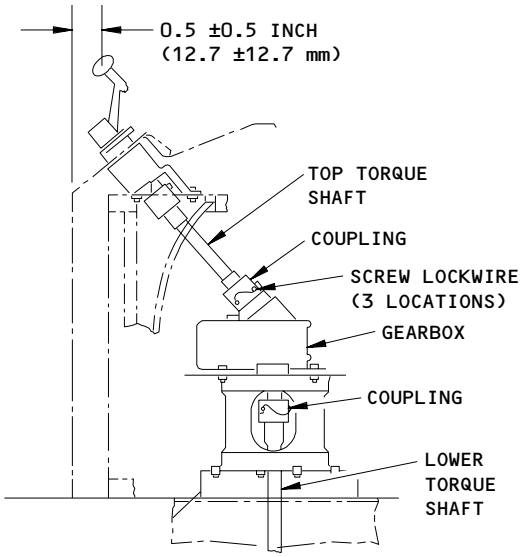
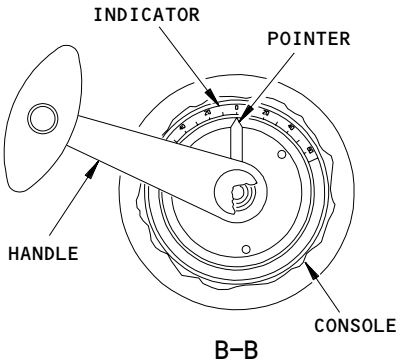


A–A



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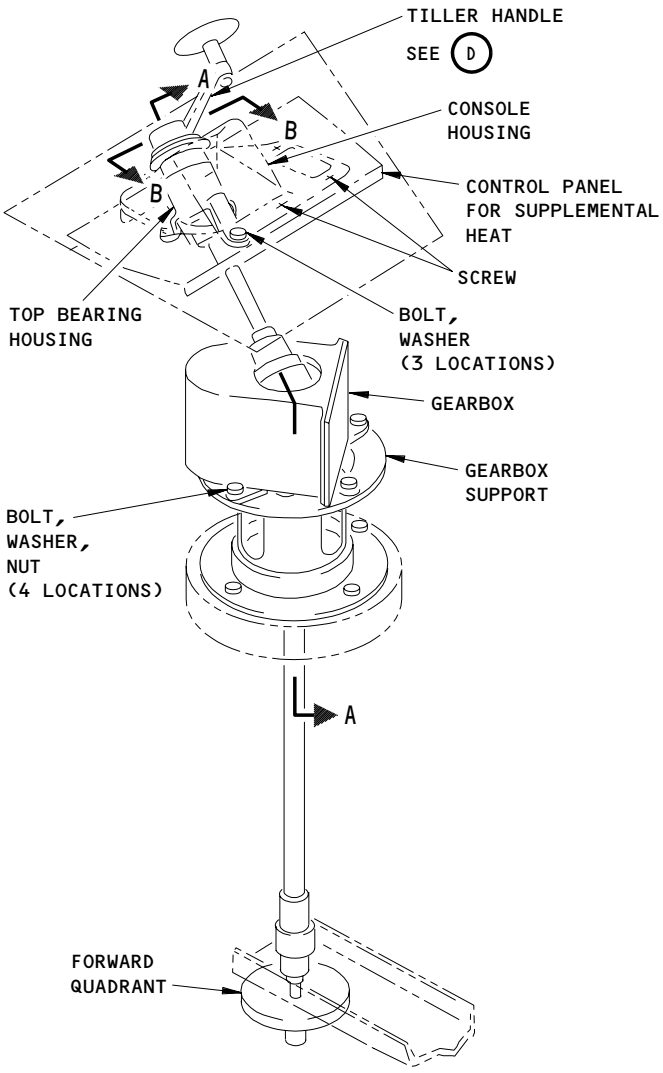
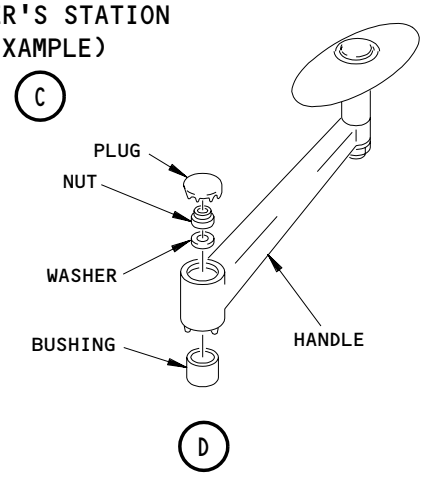


CAPTAIN'S AND FIRST OFFICER'S STATION (EXAMPLE)



Nose Wheel Steering Tiller and Gearbox Installation
Figure 401 (Sheet 2)

C. Procedure to Remove the Steering Tiller

S 034-111
(1) Remove the plug button, nut, and washer from the tiller handle shaft.

S 024-112
(2) Remove the tiller handle and the indicator cover from the shaft.

TASK 32-51-01-004-123

3. Install the Tiller Handle for the Nose Wheel Steering (Fig. 401)

A. Consumable Materials
(1) D00633 Grease, Corrosion Preventive - BMS 3-33 (Preferred)
(2) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)

B. Access
(1) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
Location Zone
211 Control Cabin (Left Side)

(2) AIRPLANES WITH FIRST OFFICER'S TILLER;
Location Zones
211 Control Cabin (Left Side)
212 Control Cabin (Right Side)

C. Procedure to Install the Steering Tiller

S 644-113
(1) Apply grease to the indicator cover gears.

S 434-114
(2) Align the indicator cover with the center mark on the bearing housing assembly and put it in position on the shaft.

S 644-115
(3) Apply BMS3-33 grease to the splines of the tiller handle and the shaft.

S 424-116
(4) Put the handle in the position to make sure the center of the knob is 0.50 +/- 0.50 forward of the aft surface of the console assembly (station 171.5 ref), (view A).

S 424-117
(5) Move the handle on the shaft with the indicator cover pointer and the marker aligned.

S 434-118
(6) Attach the handle to the shaft with the washer and nut (Detail B, View B-B).

S 434-119
(7) Tighten the nut to 150-200 pound-inches.

S 434-120
(8) Install the plug button on the tiller handle.

TASK 32-51-01-004-124
4. Remove the Tiller for the Nose Wheel Steering (Fig. 401)

NOTE: AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
This procedure removes the Captain's console housing, top bearing housing, and top torque shaft as a unit.

NOTE: AIRPLANES WITH FIRST OFFICER'S TILLER;
This procedure removes the Captain's or First Officer's tiller handle, console housing, top bearing housing, and top torque shaft as a unit.

A. Equipment
(1) Rig Pin NS1 - P/N A20004-14, part of Set A20004-XX (AMM 20-10-24/201)
(2) Towing Lever Lockpin - A09003-1
B. References

(1) AMM 32-51-00/501, Nose Wheel Steering System
C. Access
(1) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
Location Zone
211 Control Cabin (Left Side)

(2) AIRPLANES WITH FIRST OFFICER'S TILLER;
Location Zones
211 Control Cabin (Left Side)
212 Control Cabin (Right Side)

D. Prepare for the Removal

S 864-004
(1) Move the towing lever to the towing position.

S 494-005
(2) Install the towing lever lockpin.

S 494-007
(3) If you will remove the captain's tiller, install the rig pin NS1 in the captain's forward quadrant (AMM 32-51-00/501).

S 494-008
(4) If you will remove the first officer's tiller, install the rig pin NS8 in the forward quadrant for the first officer (AMM 32-51-00/501).

E. Procedure to Remove the Steering Tiller

S 024-121
(1) Do the Remove the Tiller Handle procedure.

S 034-009
(2) Remove the three screws to remove the control panel for supplemental heat (foot/shoulder) from the tiller console housing.

S 014-010
(3) Remove the four screws to remove the cover for the tiller console housing.

S 034-011
(4) Remove the lockwire and three screws to disconnect the top torque shaft from the gearbox at the coupling (Detail A).

S 034-012
(5) Remove the three bolts from the top bearing housing.

S 024-013
(6) Remove the top bearing housing, and top torque shaft as a unit.

TASK 32-51-01-404-125

5. Install the Tiller for the Nose Wheel Steering (Fig. 401)

NOTE: AIRPLANES WITH FIRST OFFICER'S TILLER;
This procedure installs the Captain's console housing, top bearing housing, and top torque shaft as an unit.

NOTE: AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
This procedure installs the Captain's or First Officer's tiller handle, console housing, top bearing housing, and top torque shaft as an unit.

A. Equipment
(1) Rig Pin NS1 - P/N A20004-14, part of Set A20004-XX (AMM 20-10-24/201)

(2) Rig Pins from Set A20004-XX (AMM 20-10-24/201):
(a) NS1 - P/N A20004-14
(b) AIRPLANES WITH FIRST OFFICER'S TILLER;
NS8 - P/N A20004-14
(3) Towing Lever Lockpin - A09003-1

B. Consumable Materials
(1) D00633 Grease, Corrosion Preventive - BMS 3-33 (Preferred)
(2) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)

C. References

(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(3) AMM 32-21-11/401, Nose Gear Torsion Links
(4) AMM 32-51-00/501, Nose Wheel Steering System
(5) AMM 32-51-01/601, Nose Wheel Steering Tiller and Gearbox

D. Access
(1) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
Location Zone
211 Control Cabin (Left Side)

(2) AIRPLANES WITH FIRST OFFICER'S TILLER;
Location Zones
211 Control Cabin (Left Side)
212 Control Cabin (Right Side)

E. Procedure to Install the Steering Tiller

NOTE: The wear limits for the tiller are in AMM 32-51-01/601.

S 864-017
(1) Make sure the towing lever is in the towing position with the lockpin installed.

S 494-019
(2) If you will install the captain's tiller, make sure the rig pin NS1 is installed in the captain's forward quadrant (AMM 32-51-00/501).

S 494-020
(3) If you will install the first officer's tiller, make sure the rig pin NS8 is installed in the forward quadrant for the first officer (AMM 32-51-00/501).

S 644-021
(4) Apply grease to the top torque shaft, coupling, and gearbox shaft splines.

S 984-022
(5) Put the top torque shaft through the console in its position and into the gearbox coupling.

S 434-023
(6) Attach the top bearing housing to the structure with the three bolts (Detail A).

S 644-024
(7) Apply grease to the coupling screws (Detail A).

S 434-025
(8) Connect the top torque shaft to the gearbox shaft coupling with the three screws.

S 434-026
(9) Tighten the three screws.

S 434-092
(10) Install lockwire on the three screws.

S 424-122
(11) Do the Install the Tiller Handle procedure.

S 434-037
(12) Put the tiller console housing in its position and install the four screws.

S 434-038
(13) Install the control panel for supplemental heat (foot/shoulder) on the tiller housing.

S 094-040
(14) Remove the rig pin NS1 or NS8 from the forward quadrant.

S 864-041
(15) Make sure the nose wheels are in the center.

S 094-042
(16) Remove the lockpin from the towing lever.

S 864-043
(17) Make sure the towing lever moves to the NORMAL position.

F. Do the Test of the Tiller Handle Steering

NOTE: Too much freeplay, or backlash, of the nosewheel steering tiller shows an out of tolerance condition for the parts of the tiller/gearbox/quadrant installation given below:
- The two spindled couplings between the tiller and the gearbox - 0.035 inches backlash permitted for each coupling
- The gearbox - 0.091 inches backlash permitted
- The splined couplings between the gearbox and the forward quadrant - 0.139 inches backlash permitted for each coupling.

NOTE: If the backlash at the tiller knob is more than 0.44 inches, one of the items above can be out of tolerances. This data is provided as additional information that can be considered to determine the condition of the tiller/gearbox/quadrant installation. It is not a requirement for satisfactory completion of the test of the tiller handle steering.

S 214-102
(1) If you need to do a check of the backlash, or freeplay, of the tiller handle, do the steps that follow:
(a) Install the rig pin NS1

(b) AIRPLANES WITH FIRST OFFICER'S TILLER;
Install rig pin NS8.
(c) Move the tiller handle and measure the tangential movement of the center of the knob on the handle. If it is more than 0.44 inches, there is excessive wear in the components of the tiller/gearbox/quadrant. The components must be removed to determine the actual wear.
(d) Remove the rig pin NS1.
(e) Remove rig pin NS8.

S 984-044

CAUTION: ATTACH THE DISCONNECTED TOP TORSION LINK IN THE HORIZONTAL POSITION (PERPENDICULAR TO THE OUTER CYLINDER OF THE SHOCK STRUT). DAMAGE TO THE SENSOR TARGETS CAN OCCUR WHEN YOU DO THE TEST OF THE STEERING SYSTEM IF THE TOP TORSION LINK IS NOT IN THE HORIZONTAL POSITION.

TO MAKE SURE THE SENSOR TARGETS WILL BE CLEAR OF ALL THE ADJACENT STRUCTURE, SLOWLY MOVE THE STEERING SYSTEM FULL LEFT AND RIGHT.

(2) Disconnect the torsion links for the nose landing gear at the apex joint (AMM 32-21-11/401).

S 984-045
(3) Attach the top torsion link in the horizontal position (perpendicular to the outer cylinder of the shock strut).

S 864-046
(4) Supply electrical power (AMM 24-22-00/201).

S 864-047

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE MOVABLE SURFACES OF THE STEERING SYSTEM FOR THE NOSE WHEEL. WHEN THE STEERING SYSTEM IS SUPPLIED WITH POWER, THE MOVABLE SURFACES CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 714-050

(6) Turn the captain's or first officer's tiller handle from the center position, in the clockwise direction until the adjustable stop bolt on the trunnion drum touches the stop, and do the steps that follow:
   (a) Hold the tiller in this position.
   (b) Make sure the angular movement of the steering collar is 65 ±1 degrees.

      NOTE: Read the angle from one side only.

      NOTE: For aiplanes with 60 degree placard installed, the pointer will move from 0 to 60 degrees, then 4 to 6 degrees more grads back down the other side of the placard.

   (c) Release the tiller.
   (d) Make sure the tiller goes to the center position without your help.
   (e) Make sure the tiller goes to the center position in less than 4 seconds.
   (f) Make sure the steering collar is not more than ±2 degrees from the center position when it goes to the center.

S 714-057

(7) Turn the tiller handle counterclockwise and do the steps again.

S 724-058

(8) Do the steps that follow to do a test of the maximum torque to turn the steering tiller through full travel:
   (a) Remove the end cap from the tiller handle where the tiller handle attaches to the shaft.
   (b) Put the torque wrench on the tiller shaft nut.

      CAUTION: DO NOT APPLY MORE THAN 50 POUND-INCHES TORQUE. IF YOU APPLY TOO MUCH TORQUE, THE STEERING TILLER MECHANISM WILL NOT MOVE FREELY.

   (c) Turn the captain's tiller shaft to the right (clockwise) with a torque wrench.

(d) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
Make sure that the maximum torque necessary to complete full travel is not more than 37 pound-inches.
(e) AIRPLANES WITH FIRST OFFICER'S TILLER;
Make sure that the maximum torque necessary to complete full travel is not more than 41 pound-inches.
1) Let the system go to the center position.
(f) Turn the captain's tiller shaft to the left (counterclockwise) with a torque wrench.
(g) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
Make sure that the maximum torque necessary to complete full travel is not more than 37 pound-inches.
(h) AIRPLANES WITH FIRST OFFICER'S TILLER;
Make sure that the maximum torque necessary to complete full travel is not more than 41 pound-inches.
1) Let the system go to the center position.
2) Turn the first officer's tiller shaft to the right (clockwise) with a torque wrench.
3) AIRPLANES WITH FIRST OFFICER'S TILLER;
Make sure that the maximum torque necessary to complete full travel is not more than 41 pound-inches.
4) Let the system go to the center position.
5) Turn the first officer's tiller shaft to the left (counterclockwise) with a torque wrench.
6) AIRPLANES WITH FIRST OFFICER'S TILLER;
Make sure that the maximum torque necessary to complete full travel is not more than 41 pound-inches.
7) Let the system go to the center position.

S 714-126
(9) AIRPLANES WITH FIRST OFFICER'S TILLER;
Make sure the position indicators on the captain's and first officer's tiller agree ±3 degrees.

G. Put the Airplane Back to Its Usual Condition

S 864-061
(1) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-062
(2) Remove electrical power if it is not necessary (AMM 24-22-00/201).

S 434-063
(3) Connect the torsion links for the nose landing gear (AMM 32-21-11/401).

S 864-064
(4) Make sure there is no damage to the not compressed sensors and targets for the nose landing gear.

TASK 32-51-01-004-066
6. Remove the Captain's and/or First Officer's Gearbox for Nose Wheel Steering (Fig. 401)
A. Remove the Gearbox

S 024-067
(1) Do the Remove the Steering Tiller procedure.

S 014-069
(2) Remove the access panel on the inboard side of the auxiliary instrument panel for the captain or first officer, P13 or P14. This will give access to the tiller gearbox.

S 034-070
(3) Remove the lockwire and three screws (View A-A) to disconnect the lower torque shaft from the gearbox at the coupling.

S 034-071
(4) Remove the four bolts which attach the gearbox to the support.

S 024-072
(5) Remove the gearbox.

TASK 32-51-01-404-074
7. Install the Captain's and/or First Officer's Gearbox for Nose Wheel Steering (Fig. 401)
A. Equipment
(1) Rig Pins from Set A20004-XX (AMM 20-10-24/201):
(a) NS1 - P/N A20004-14

(b) AIRPLANES WITH FIRST OFFICER'S TILLER;
NS8 - P/N A20004-14

(2) Towing Lever Lockpin - A09003-1

B. Consumable Materials

(1) D00633 Grease, Corrosion Preventive - BMS 3-33 (Preferred)

(2) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)

C. References

(1) AMM 24-22-00/201, Electrical Power - Control

(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems

(3) AMM 32-21-11/401, Nose Gear Torsion Links

(4) AMM 32-51-00/501, Nose Wheel Steering System

(5) AMM 32-51-01/601, Nose Wheel Steering Tiller and Gearbox

D. Access

(1) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
Location Zone
211 Control Cabin (Left Side)

(2) AIRPLANES WITH FIRST OFFICER'S TILLER;
Location Zones
211 Control Cabin (Left Side)
212 Control Cabin (Right Side)

E. Install the Gearbox

NOTE: The wear limits for the gearbox are in AMM 32-51-01/601.

S 494-076

(1) If you will install the captain's gearbox, make sure the rig pin NS1 is installed in the captain's forward quadrant (AMM 32-51-00/501).

S 494-077

(2) If you will install the first officer's gearbox, make sure the rig pin NS8 is installed in the forward quadrant for the first officer (AMM 32-51-00/501).

S 864-078

(3) Make sure the towing lever is in the towing position.

S 494-079

(4) Make sure the towing lever lockpin is installed.

S 644-080

(5) Apply grease to the gearbox shaft, splines, and the coupling splines of the lower torque shaft (Detail A).

S 984-081

(6) Align the shaft with the coupling.

S 424-082
(7) Attach the gearbox to the structure that holds the gearbox with the four bolts.

S 644-083
(8) Apply grease to the lower torque shaft screws.

S 434-084
(9) Connect the lower torque shaft to the gearbox shaft with the three screws.

S 434-085
(10) Tighten the screws and install lockwire.

S 424-086
(11) Do the Install the Steering Tiller procedure.

S 714-087
(12) Do the test of the tiller handle steering that is in the section for the steering tiller installation.

F. Put the Airplane Back to Its Usual Condition

S 864-088
(1) Remove the pressure from the center hydraulic system (AMM 29-11-00/201) if it is not necessary.

S 864-089
(2) Remove the electrical power (AMM 24-22-00/201) if it is not necessary.

S 434-090
(3) Connect the torsion links for the nose landing gear (AMM 32-21-11/401).

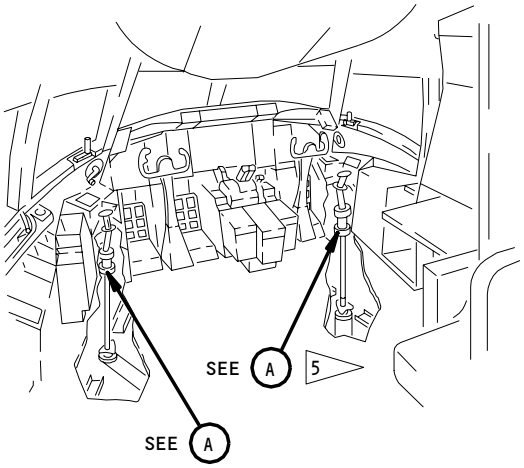
S 864-091
(4) Make sure the not compressed sensors and targets for the nose landing gear are not damaged.

NOSE WHEEL STEERING TILLER AND GEARBOX - INSPECTION/CHECK

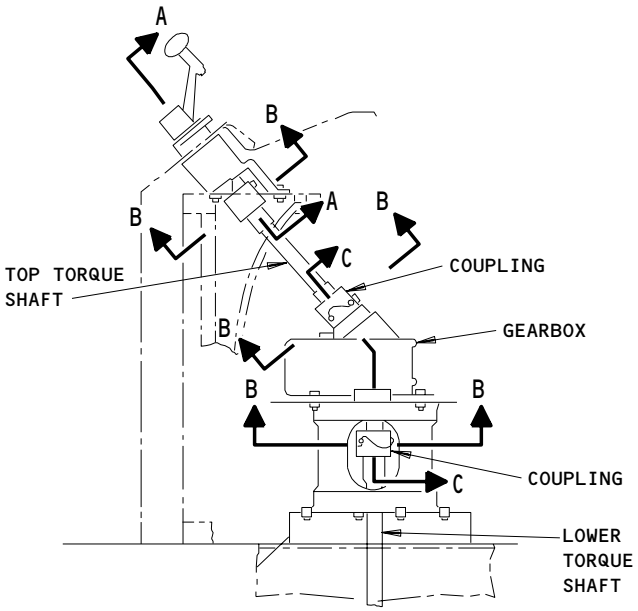
1. General
   A. This procedure only has illustrations and wear limit tables which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Nose Wheel Steering Tiller and Gearbox - Removal/Installation (AMM 32-51-01/401) for procedures to do these tasks.

TASK 32-51-01-226-001

2. Wear Limits for the Tiller and Gearbox of the Nose Wheel Steering (Fig. 601)
   A. General
      (1) This procedure only has illustrations and wear limit tables which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Nose Wheel Steering Tiller and Gearbox - Removal/Installation (AMM 32-51-01/401) for procedures to do these tasks.

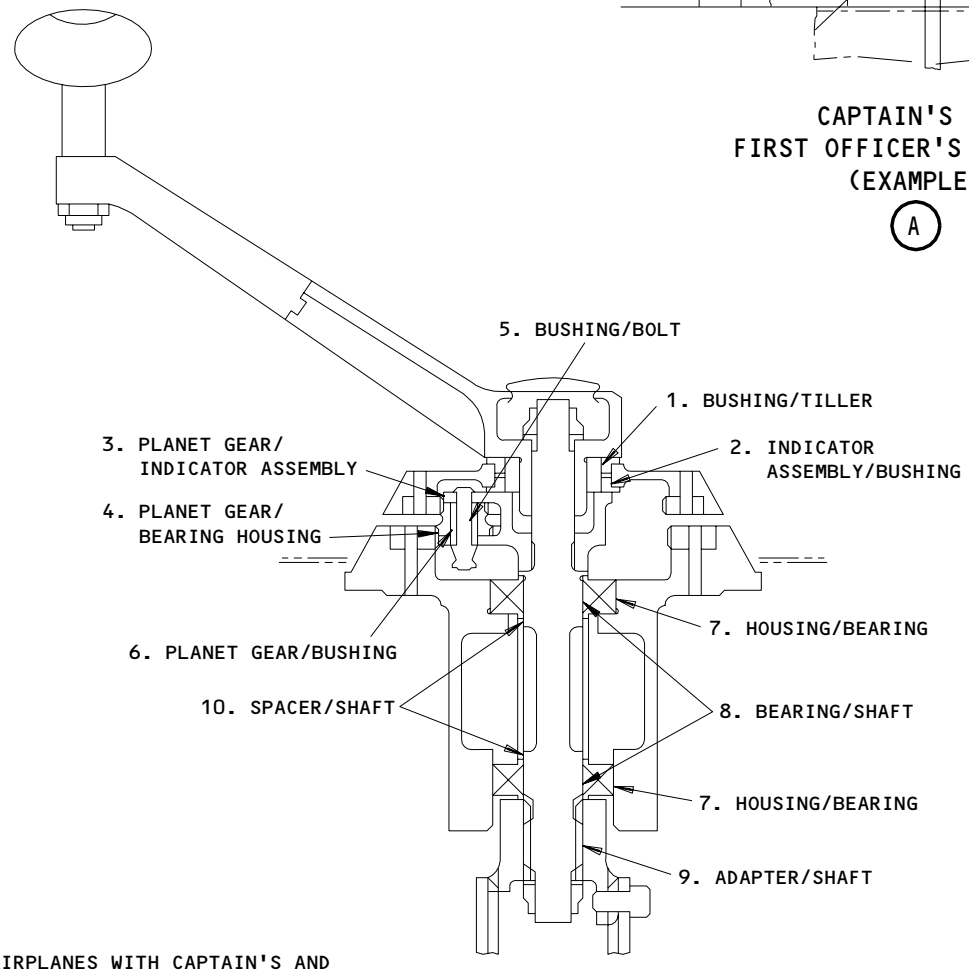


FLIGHT COMPARTMENT



CAPTAIN'S AND
FIRST OFFICER'S STATIONS
(EXAMPLE)

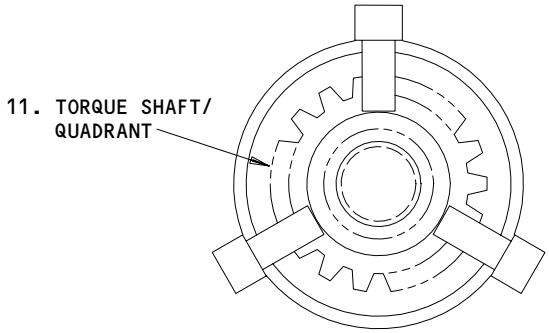
A



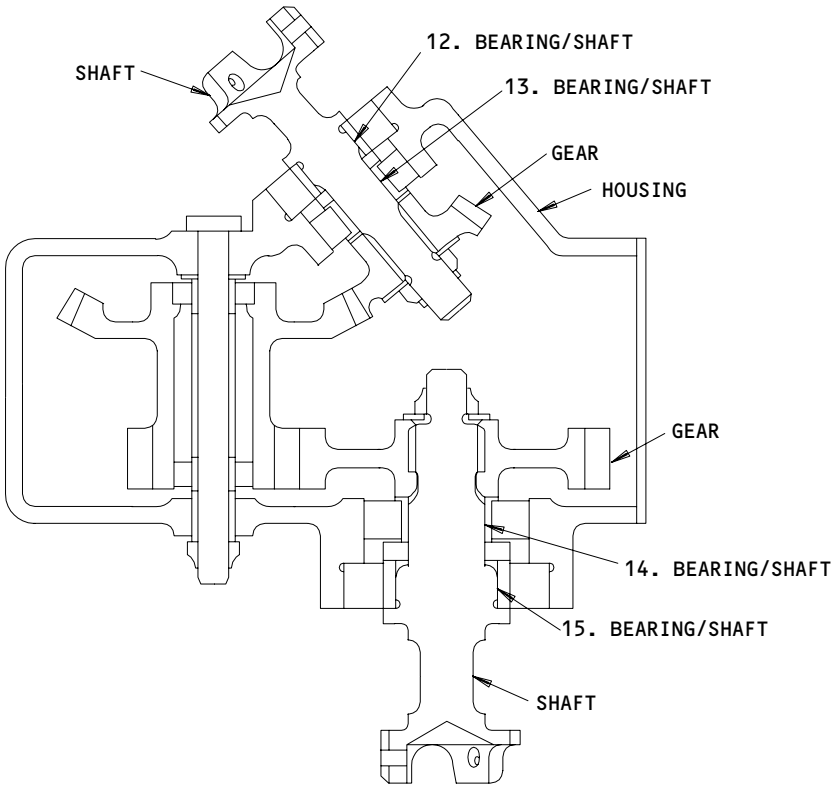
5 AIRPLANES WITH CAPTAIN'S AND FIRST OFFICER'S TILLER.

A-A

Nose Wheel Steering Tiller and Gearbox Wear Limits
Figure 601 (Sheet 1)



B–B



C–C

Nose Wheel Steering Tiller and Gearbox Wear Limits
Figure 601 (Sheet 2)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
			DIAMETER		PERMITTED WEAR DIMENSION INCHES	MAXIMUM DIAMETER CLEARANCE INCHES			
			MINIMUM INCHES	MAXIMUM INCHES					
1	BUSHING	ID	0.7495	0.7500	0.7500	0.0020	X		
	TILLER	OD	0.7480	0.7490	0.7480			X	1
2	INDICATOR ASSEMBLY	ID	1.0620	1.0630	1.0640	0.0025		X	1
	BUSHING	OD	1.0605	1.0615	1.0605		X		
3	PLANET GEAR	3	0.0307	0.0317	0.0317	0.0040		X	1
	INDICATOR ASSEMBLY	3	0.0307	0.0317	0.0317	4		X	1
4	PLANET GEAR	3	0.0307	0.0317	0.0317	0.0040		X	1
	BEARING HOUSING	3	0.0307	0.0317	0.0317	4		X	1
5	BUSHING	ID	0.1640	0.1645	0.1650	0.0015	X		
	BOLT	OD	0.1630	0.1635	0.1630		X		
6	PLANET GEAR	ID	0.2812	0.2817	0.2822	0.0010		X	1
	BUSHING	OD	0.2807	0.2812	0.2807		X		
7	HOUSING	ID	1.3748	1.3753	1.3758	0.0008		X	1
	BEARING	OD	1.3745	1.3750	1.3745		X		
8	BEARING	ID	0.6245	0.6250	0.6255	0.0010	X		
	SHAFT	OD	0.6240	0.6245	0.6240			X	1
9	ADAPTER	ID	0.0982	0.1008	0.1008	0.0052		X	1
	SHAFT	OD	0.0956	0.0982	0.0956			X	1
10	SPACER	ID	0.6270	0.6770	0.6775	0.0530	X		
	SHAFT	OD	0.6240	0.6245	0.6240			X	1
11	TORQUE SHAFT	2	0.0982	0.1010	0.1010	0.0056		X	1
	QUADRANT	3	0.0954	0.0982	0.0954	4			1

1 WORN PART CAN BE REPAIRED.
2 SPLINE SPACE WIDTH.
3 SPLINE TOOTH THICKNESS.
4 SPLINE TOOTH CLEARANCE.

Nose Wheel Steering Tiller and Gearbox Wear Limits
Figure 601 (Sheet 3)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS ALLOWED WEAR DIM.	WEAR LIMITS MAX DIAM CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR.
12	BEARING	ID	0.6247	0.6250	0.6271	0.0024	X		
	SHAFT	OD	0.6242	0.6247	0.6226			X	1
13	BEARING	ID	0.4997	0.5000	0.5019	0.0022	X		
	SHAFT	OD	0.4992	0.4997	0.4978			X	1
14	BEARING	ID	0.7497	0.7500	0.7522	0.0025	X		
	SHAFT	OD	0.7492	0.7497	0.7475			X	1
15	BEARING	ID	0.9997	1.0000	1.0025	0.0028	X		
	SHAFT	OD	0.9992	0.9997	0.9972			X	1

Nose Wheel Steering Tiller and Gearbox Wear Limits
Figure 601 (Sheet 4)

CENTERING AND RUDDER INTERCONNECT MECHANISM - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the centering and rudder interconnect mechanism. The second task installs the centering and rudder interconnect mechanism.

TASK 32-51-02-004-001

2. Remove the Centering and Rudder Interconnect Mechanism
   A. Equipment
      (1) Rig Pins from kit A20004-XX (AMM 20-10-24/201):
          (a) R3 - P/N A20004-14
          (b) NS1 - P/N A20004-14
          (c) NS2 - P/N A20004-22
          (d) NS3 - P/N A20004-16
   B. References
      (1) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zone
          119 Main Equipment Center (Left)
          211 Control Cabin (Left)
          212 Control Cabin (Right)

   D. Prepare for the Removal

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 014-003
      (2) Get access to the interconnect mechanism (Fig. 401) and the other components below the flight compartment floor through the E/E compartment.

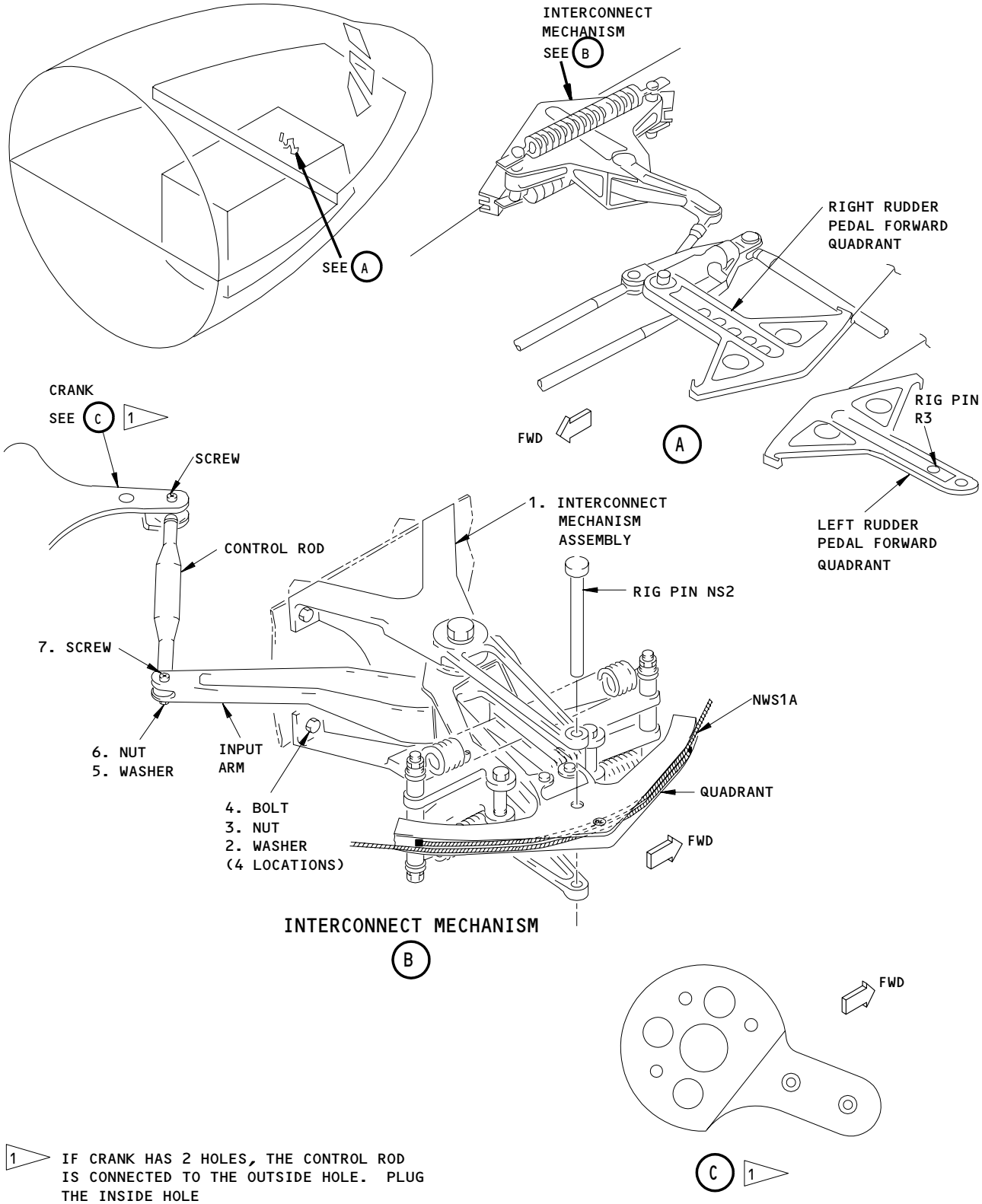
      S 864-004
      (3) Put the nose wheels in the center.

      S 864-005
      (4) Make sure the rudder pedals are in the neutral position and that the rudder trim is set at zero.

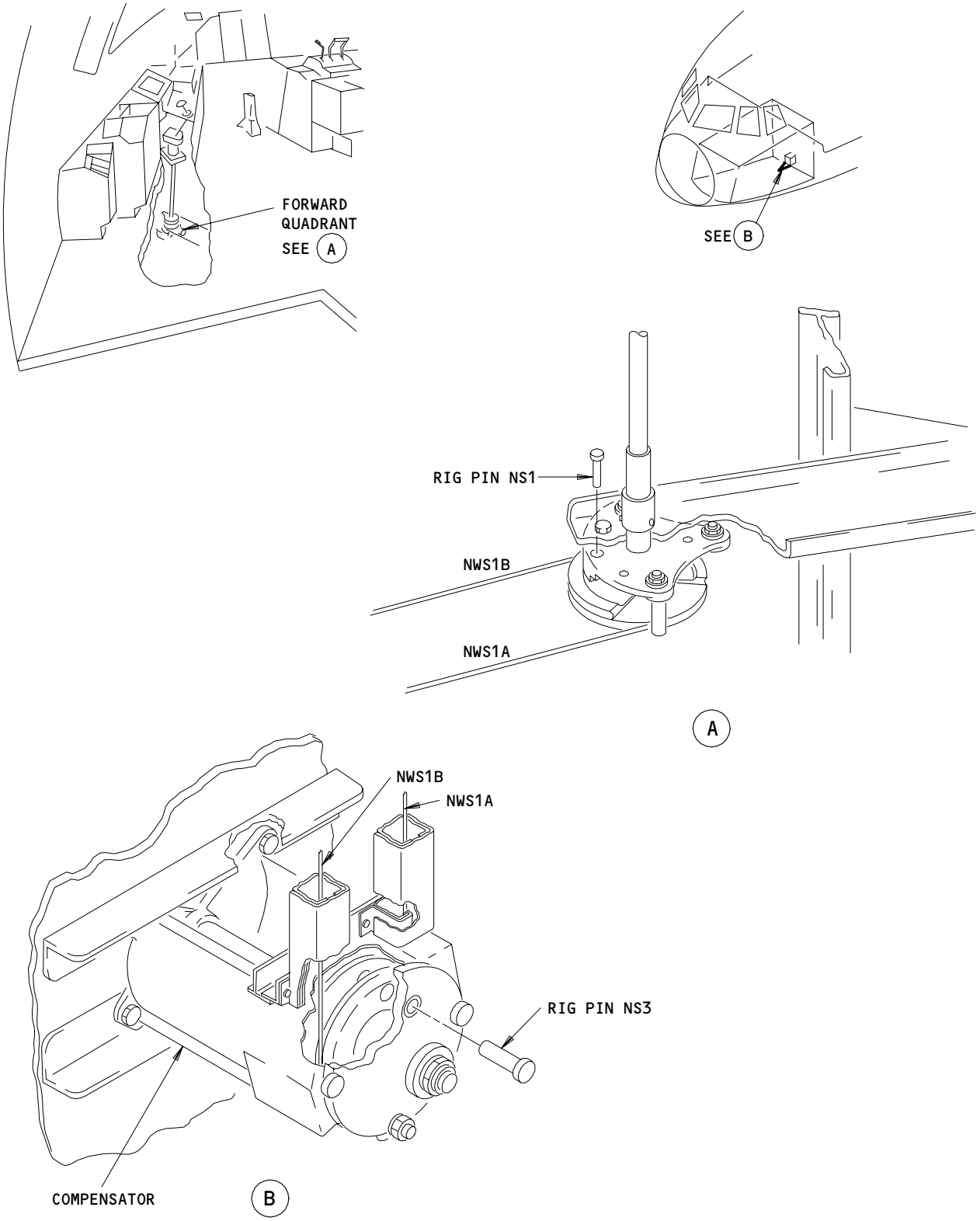
      S 494-006
      (5) Put the rig pin NS1 in the forward quadrant (Detail A, Fig. 402).

      S 494-007
      (6) Put the rig pin NS2 in the interconnect mechanism (Detail B, Fig. 401).

      S 494-008
      (7) Put the rig pin NS3 in the cable compensator (Detail B, Fig. 402).



Centering and Rudder Interconnect Mechanism Installation
Figure 401



Cable Compensator and Forward Quadrant Rig Pins
Figure 402

E. Remove the Mechanism

S 034-009
(1) Loosen the two cables attached to the interconnect quadrant equally to decrease the tension.

S 034-010
(2) Disconnect the cables from the quadrant.

S 034-011
(3) Disconnect the control rod from the input arm (Detail B, Fig. 401).

S 024-012
(4) Remove the four fasteners that hold the mechanism to the structure, and remove the mechanism.

S 094-013
(5) Remove the rig pin NS2 from the interconnect mechanism.

TASK 32-51-02-404-014

3. Install Centering And Rudder Interconnect Mechanism (Fig. 401)

NOTE: The wear limits for the components that follow are found in AMM 32-51-02/601.

A. Equipment
(1) Rig Pins from kit A20004-XX (AMM 20-10-24/201):
(a) R3 - P/N A20004-14
(b) NS1 - P/N A20004-14
(c) NS2 - P/N A20004-22
(d) NS3 - P/N A20004-16

B. Consumable Materials
(1) C00308 Compound, Corrosion Preventive - MIL-C-11796

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Interconnect Mechanism Assembly	32-51-02	01 01A	50 120

D. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 32-21-11/401, Nose Gear Torsion Links
(5) AMM 32-51-00/501, Nose Wheel Steering System
(6) AMM 32-51-02/601, Centering and Rudder Interconnect Mechanism

E. Access
(1) Location Zones
119 Main Equipment Center (Left)
211 Control Cabin (Left)
212 Control Cabin (Right)

F. Procedure

S 864-015
(1) Make sure the nose wheels are in the center.

S 494-016
(2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 624-017
(3) Apply the corrosion preventive compound on all the mating surfaces of the control rod and the fasteners.

S 424-018
(4) Attach the interconnect mechanism to the structure with the four fasteners.

S 494-019
(5) Make sure the rig pins NS1 and NS3 are installed in the forward quadrant and the cable compensator (Fig. 402).

S 434-020
(6) Connect the NWS1A control cables to the interconnect quadrant (Detail B, Fig. 401), but do not tighten.

S 494-021
(7) Install the rig pin R3 into the forward quadrant for the left rudder pedals (Detail A).

S 824-022
(8) Adjust the control rod such that, when connected to the input arm, the rig pin NS2 installs easily in the interconnect quadrant.

S 434-023
(9) Connect the control rod to the interconnect input arm. Do not remove the rig pin NS2.

S 824-024
(10) Adjust the two parts of the cables for the nose wheel steering, NSW1A (AMM 32-51-00/501).

S 094-025
(11) Remove the rig pins R3, NS1, NS2, and NS3.

S 714-026
(12) Do the steps that follow to make sure the rudder pedal steering operates correctly:

CAUTION: ATTACH THE DISCONNECTED TORSION LINK IN THE HORIZONTAL POSITION (AT RIGHT ANGLES TO THE OUTER CYLINDER OF THE SHOCK STRUT). DAMAGE TO THE SENSOR TARGETS CAN OCCUR WHEN YOU DO THE TEST OF THE STEERING SYSTEM IF THE TOP TORSION LINK IS NOT IN THE HORIZONTAL POSITION.

TO MAKE SURE THE SENSOR TARGETS WILL BE CLEAR OF ALL THE ADJACENT STRUCTURE, SLOWLY MOVE THE STEERING SYSTEM FULL LEFT AND RIGHT.

(a) Disconnect the torsion links for the nose landing gear at the apex joint (AMM 32-21-11/401).

(b) Attach the top torsion link in the horizontal position (perpendicular to the outer cylinder of the shock strut).
(c) Supply electrical power (AMM 24-22-00/201).

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE MOVABLE SURFACES OF THE STEERING SYSTEM FOR THE NOSE WHEEL. WHEN THE STEERING SYSTEM IS SUPPLIED WITH POWER, THE MOVABLE SURFACES CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(d) Pressurize the center hydraulic system (AMM 29-11-00/201).
(e) Fully push in the right rudder pedal on the captain's side and hold it. Do not prevent movement of the tiller handle.
(f) Make sure the steering collar turns clockwise 7 1/2 ±1 degrees.
(g) Release the right rudder pedal on the captain's side.
(h) Make sure the centering springs in the control system for the rudder pedals move the rudder pedals to neutral.
(i) Makes sure the steering collar goes to the center ±1 1/2 degree.
(j) Do the last five steps again, but push the left rudder pedal on the captain's side.

G. Put the Airplane Back to Its Usual Condition

S 864-027
(1) Remove the pressure from the center hydraulic system (AMM 29-11-00/201) if it is not necessary.

S 864-028
(2) Remove electrical power (AMM 24-22-00/201) if it is not necessary.

S 434-029
(3) Connect the torsion links for the nose landing gear (AMM 32-21-11/401).

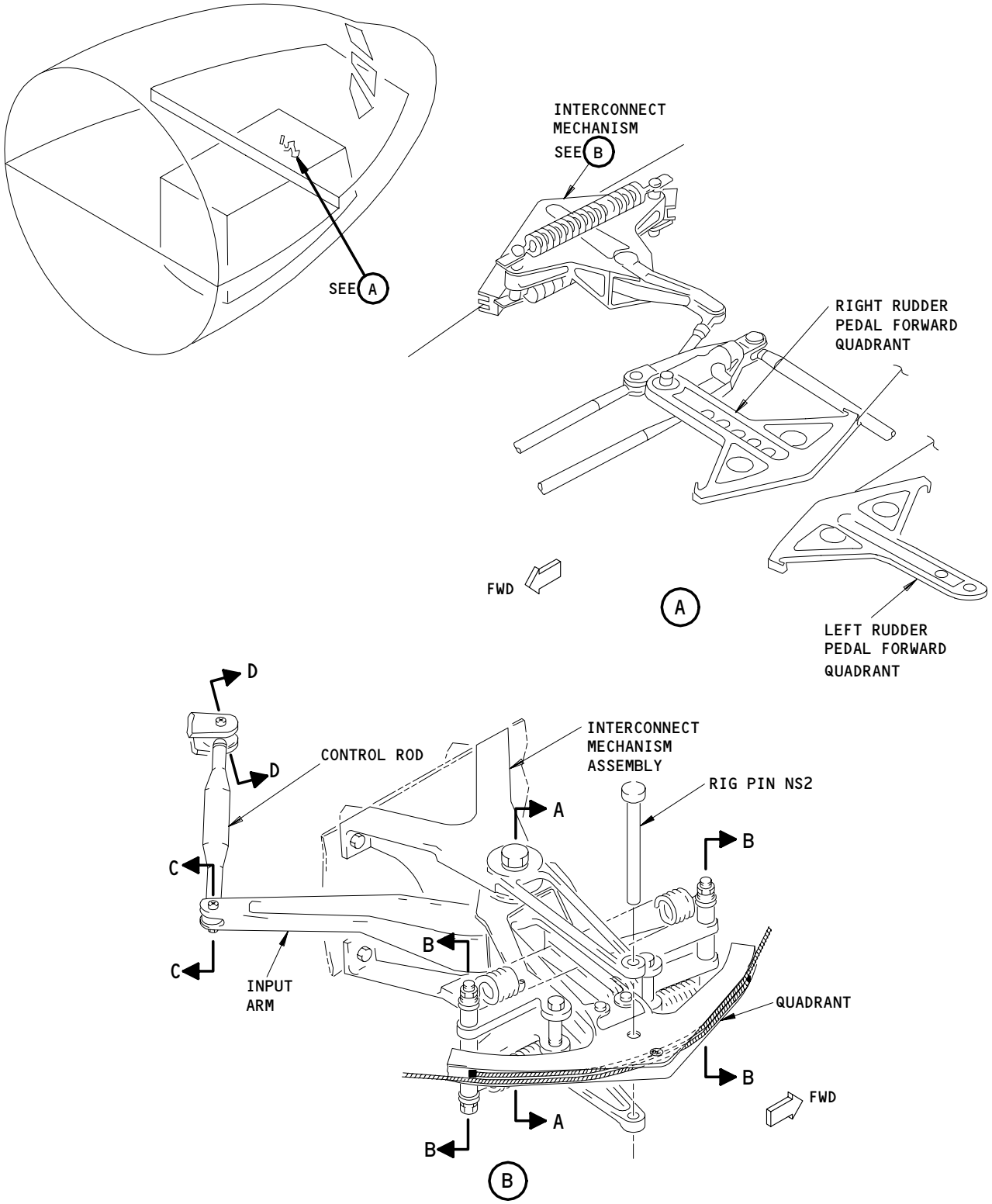
S 864-030
(4) Make sure there is no damage to the not compressed sensors and targets for the nose landing gear.

CENTERING AND RUDDER INTERCONNECT MECHANISM - INSPECTION/CHECK

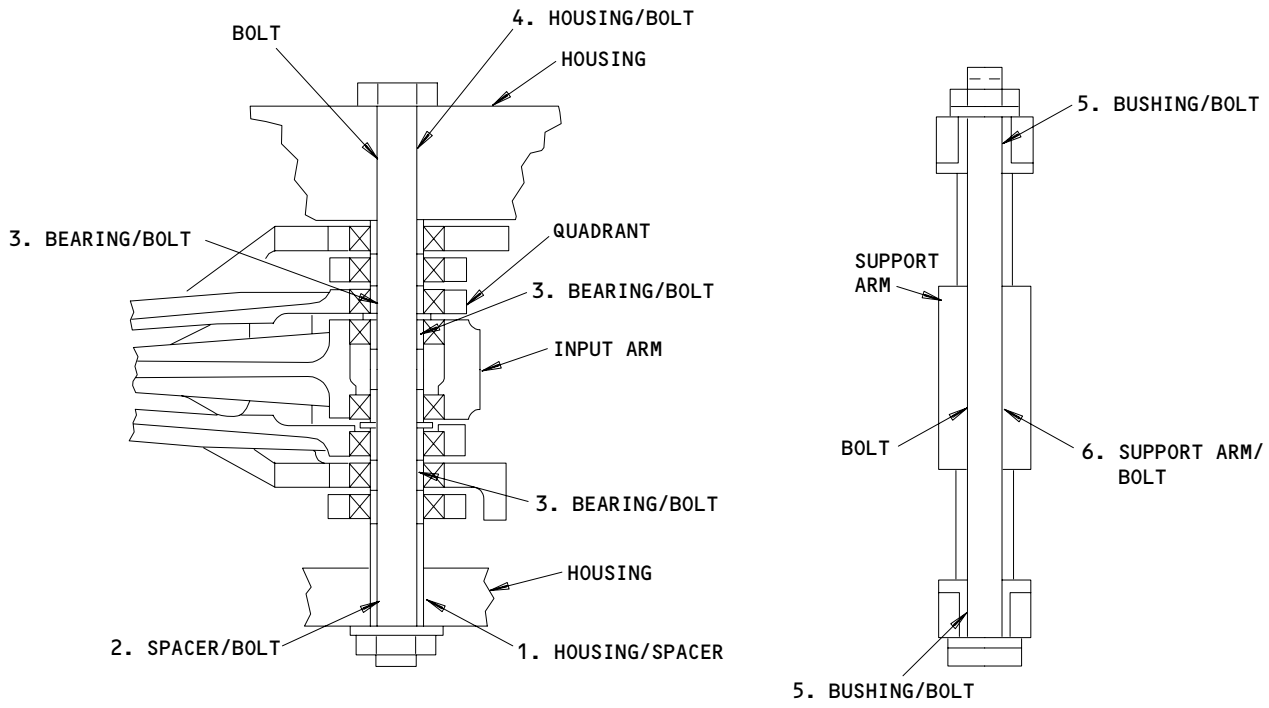
1. General
   A. This procedure only has illustrations and wear limit tables which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Centering and Rudder Interconnect Mechanism - Removal/Installation (AMM 32-51-02/401) for procedures to do these tasks.

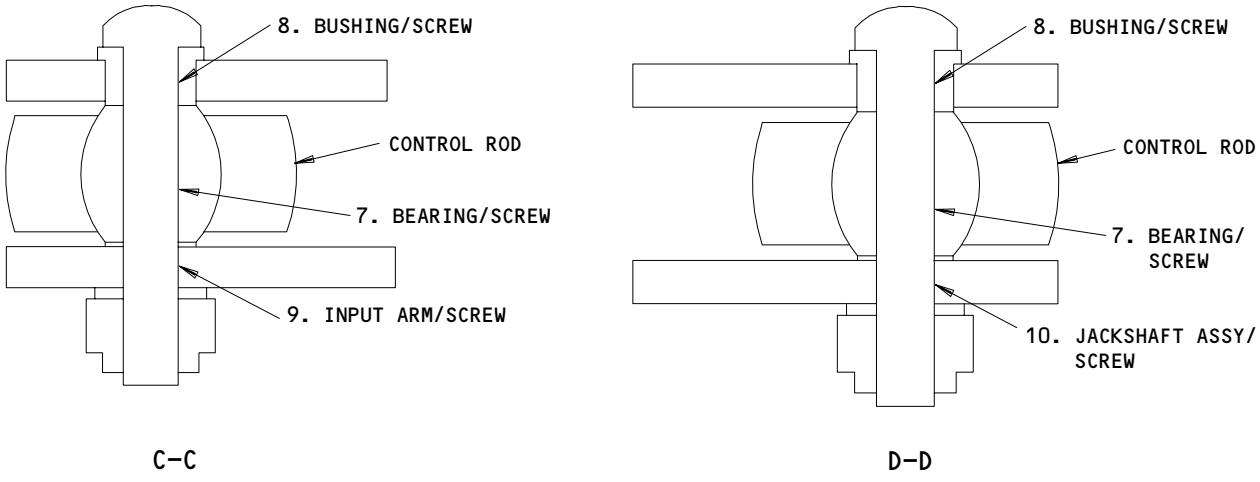
TASK 32-51-02-226-001

2. Wear Limits for the Centering and Rudder Interconnect Mechanism (Fig. 601)
   A. General
      (1) This procedure only has illustrations and wear limit tables which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Centering and Rudder Interconnect Mechanism - Removal/Installation (AMM 32-51-02/401) for procedures to do these tasks.



Centering and Rudder Interconnect Mechanism Wear Limits
Figure 601 (Sheet 1)





C–C D–D

Centering and Rudder Interconnect Mechanism Wear Limits
Figure 601 (Sheet 2)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	HOUSING	ID	0.6870	0.6920	0.6941	0.0076		X	1
	SPACER	OD	0.6860	0.6865	0.6843		X		
2	SPACER	ID	0.5000	0.5005	0.5029	0.0034	X		
	BOLT	OD	0.4985	0.4995	0.4971		X		
3	BEARING	ID	0.4995	0.5000	0.5024	0.0029	X		
	BOLT	OD	0.4985	0.4995	0.4970		X		
4	HOUSING	ID	0.5000	0.5050	0.5074	0.0079		X	1
	BOLT	OD	0.4985	0.4995	0.4970		X		
5	BUSHING	ID	0.2500	0.2515	0.2535	0.0040	X		
	BOLT	OD	0.2485	0.2495	0.2473		X		
6	SUPPORT ARM	ID	0.2500	0.2540	0.2560	0.0065		X	1
	BOLT	OD	0.2485	0.2495	0.2435		X		
7	BEARING	ID	0.1897	0.1900	0.1925	0.0030	X		
	SCREW	OD	0.1870	0.1895	0.1870		X		
8	BUSHING	ID	0.1900	0.1915	0.1940	0.0045	X		
	SCREW	OD	0.1870	0.1895	0.1870		X		
9	INPUT ARM	ID	0.1900	0.1940	0.1965	0.0070		X	1
	SCREW	OD	0.1870	0.1895	0.1870		X		
10	JACKSHAFT ASSY	ID	0.1900	0.1940	0.1965	0.0070		X	1
	SCREW	OD	0.1870	0.1895	0.1870		X		

1 YOU CAN REPAIR THE PARTS, REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS.

Centering and Rudder Interconnect Mechanism Wear Limits
Figure 601 (Sheet 3)

NOSE GEAR STEERING ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the steering actuator for the nose wheel steering. The second task installs the actuator for the nose wheel steering.

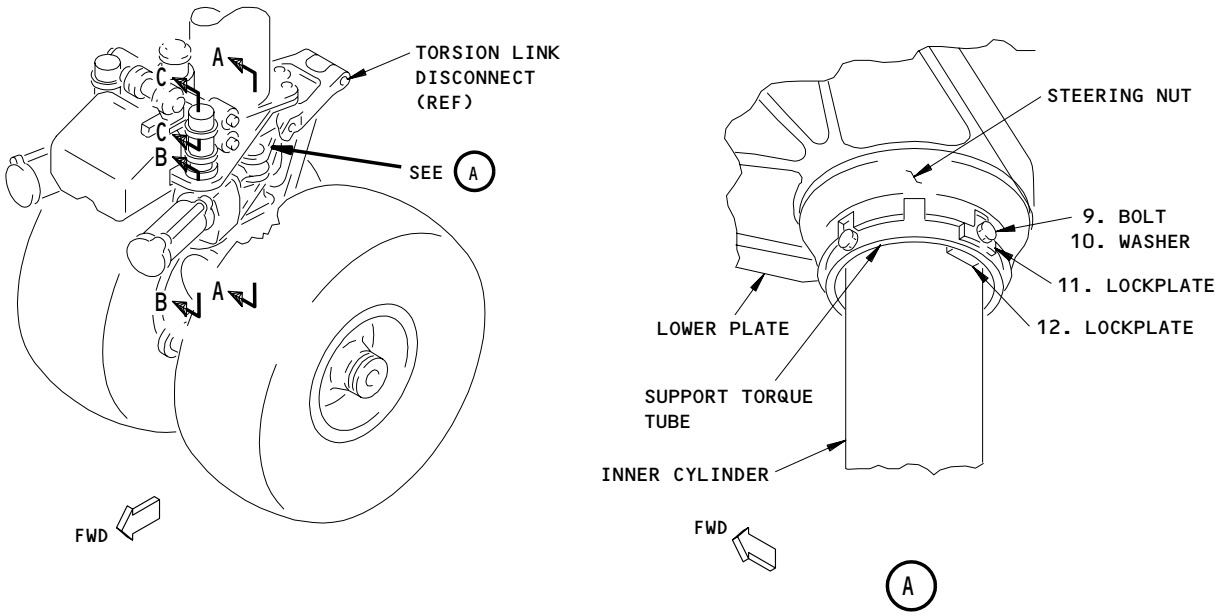
TASK 32-51-03-004-001

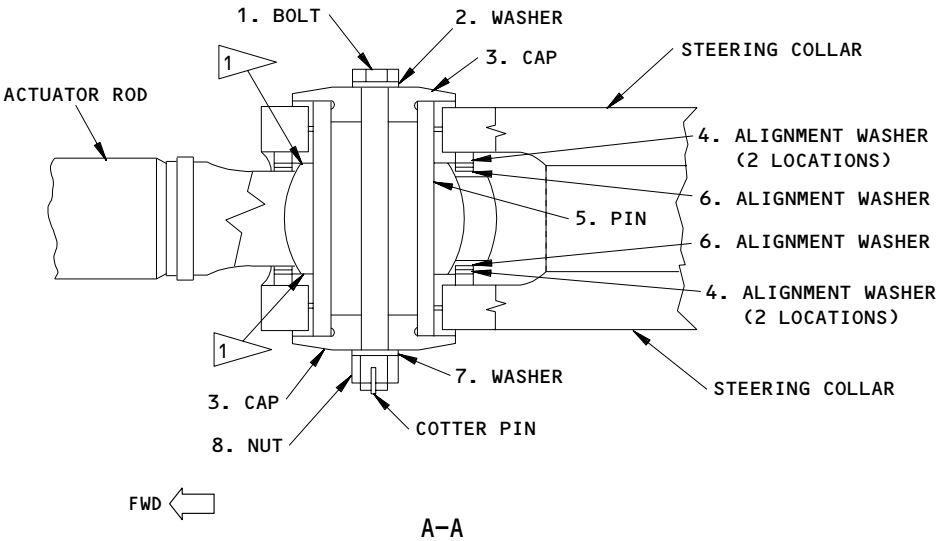
2. Remove the Actuator for the Nose Wheel Steering (Fig. 401)
   A. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-20/201, Landing Gear Downlocks
      (4) AMM 32-21-11/201, Nose Gear Torsion Links
   B. Equipment
      (1) Steering Nut Wrench Adapter, NLG - A32034-1
      (2) Steering Actuator Wrench, NLG - A32035-1
      (3) Rope - commercially available
      (4) Spanner Wrench, Metering Valve Retainer Nut - F72959-6 or F72959-35
   C. Access
      (1) Location Zones
          711 Nose Landing Gear (NLG)
          211 Control Cabin (Left)
          212 Control Cabin (Right)

   D. Prepare for the Removal

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-003
      (2) Remove the pressure from the center hydraulic system and reservoir (AMM 29-11-00/201).

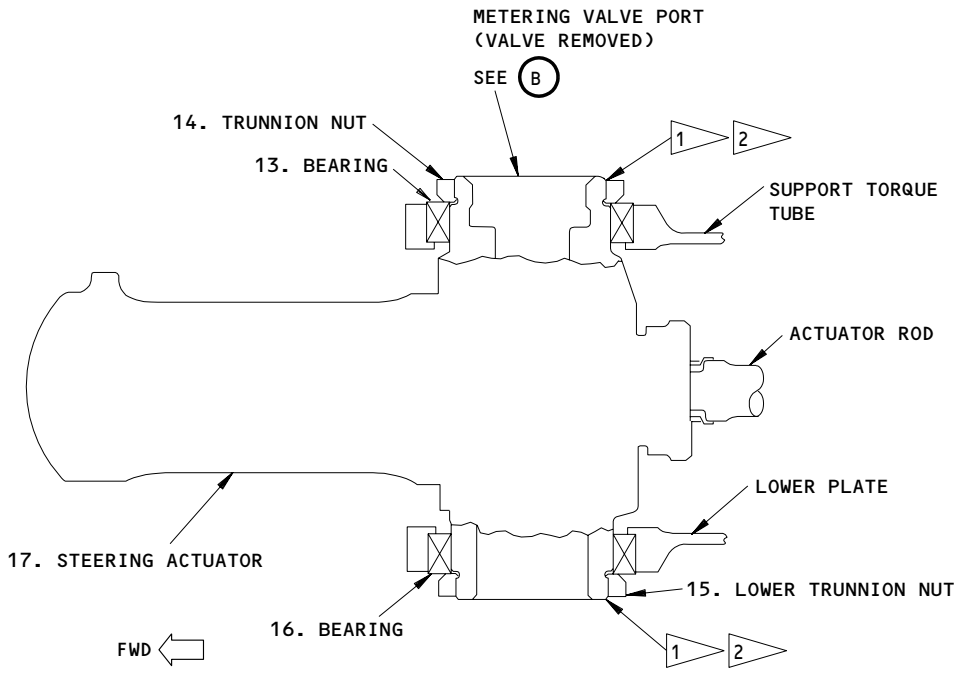




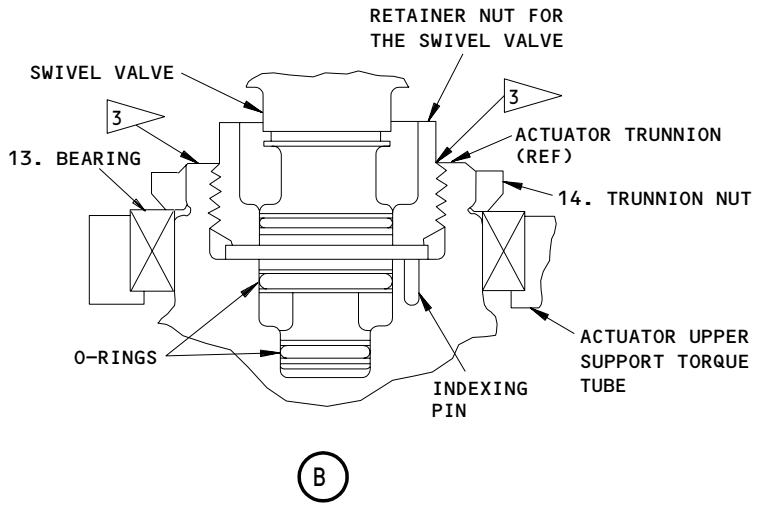
A–A

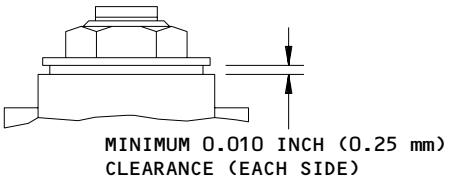
1 INSTALL ACTUATOR WITH EQUAL TRUNNION THREAD EXPOSED ABOVE TRUNNION NUTS EXCEPT THAT CLEARANCE BETWEEN FACE OF ROD END SPHERICAL BEARING AND FACE OF STEERING COLLAR CLEVIS BUSHING AT TOP AND BUTTOM MUST BE EQUAL WITHIN 0.003 INCH (0.076 mm).

Nose Landing Gear Steering Actuator Installation
Figure 401 (Sheet 1)



B-B





C-C

2 MAKE SURE THE EMPTY SPACE BETWEEN THE NUT AND THE THREAD RELIEF IS FULL OF SEALING COMPOUND

3 APPLY SEALANT AT THE JOINT, ALL AROUND

Nose Landing Gear Steering Actuator Installation
Figure 401 (Sheet 2)

S 034-004
(3) Disconnect the top and lower torsion links (AMM 32-21-11/201).

S 984-008
(4) Turn the steering collar on the nose landing gear to get the clearance to remove the end bolt of the actuator rod (Section A-A).

S 034-009
(5) Remove the pin (5) to disconnect the actuator rod from the steering collars (Section A-A).

S 034-010
(6) Use the spanner wrench to loosen the two retainer nuts for the steering metering valve at the top trunnion (View B).

S 034-011
(7) Remove the two lower trunnion nuts (15) (Section B-B).

NOTE: Use the steering actuator wrench.
Be very careful to not cause damage to the bearings or to the threads of the trunnions.

S 034-012
(8) Remove the bolt (9), the washer (10), and the lock plates (11 and 12) (View A).

S 984-013
(9) Temporarily attach the steering collar to the shock strut to prevent movement off of the support torque tube.

S 034-014
(10) Loosen the steering nut from the support torque tube on the top, with the wrench adapter, to release the lower plate.

S 034-015
(11) Move the lower plate down and away from the torque tube (View A).

S 584-016
(12) Lift the nose of the airplane on jacks if it is necessary to get the clearance (AMM 07-11-01/201).

NOTE: There must be clearance to move the actuator trunnion away from the top and lower plates.

S 024-017

CAUTION: YOU MUST SUPPLY SUFFICIENT SUPPORT FOR THE ACTUATOR WHEN YOU REMOVE THE TRUNNION NUT (14). IF YOU DO NOT YOU CAN CAUSE DAMAGE TO THE TRUNNION BEARING. THE ACTUATOR WEIGHS APPROXIMATELY 45 POUNDS.

(13) Support the actuator and remove the top actuator trunnion nut (14) with the actuator wrench.

NOTE: Be very careful to not cause damage to the threads of the trunnions.

S 024-018

(14) Remove the actuator (17) from the airplane.

TASK 32-51-03-404-019

3. Install the Actuator for the Nose Wheel Steering (Fig. 401)

A. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 12-12-01/301, Hydraulic Systems
(3) AMM 20-10-02/401, Bearings and Bushings
(4) AMM 24-22-00/201, Electrical Power - Control
(5) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(6) AMM 32-21-11/201, Nose Gear Torsion Links

B. Equipment
(1) Steering Nut Wrench Adapter, NLG - A32034-1
(2) Steering Actuator Wrench, NLG - A32035-1
(3) Rope - commercially available
(4) Spanner Wrench, Metering Valve Retainer Nut - F72959-6 or F72959-35

C. Consumable Materials
(1) D00633 Grease - BMS3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(3) C00308 Compound, Corrosion Preventive - MIL-C-11796

(4) G50136 Corrosion Inhibiting Compound - BMS 3-38
(5) D00153 Fluid, Hydraulic - BMS 3-11
(6) A00248 Sealant - BMS 5-26 Type II Class A-1/2
A00247 Sealant - BMS 5-95 Chromate
(7) A00100 Sealant, Temperature Resistant - MIL-S-8802

D. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	17	Actuator	32-51-04 32-51-03	01 01	150 15

E. Access
(1) Location Zones
711 Nose Landing Gear (NLG)
211 Control Cabin (Left)
212 Control Cabin (Right)

F. Procedure

S 434-020
(1) Hold the steering collar against the support torque tube.

S 394-021
(2) Apply BMS 5-26 or BMS 5-95 sealant to the upper and lower trunnion threads (View B and Section B-B).

S 434-067
(3) Do the steps that follow to install the bearings (13 and 16):
(a) Apply MIL-C-11796 corrosion preventative compound to the outside diameter of the bearings (13 and 16).
(b) Apply MIL-C-11796 corrosion preventative compound to the inside diameter of the bearing housing in the top and lower plates.

CAUTION: THE TRUNNION BEARING IS A PRECISION BEARING. DO NOT PERMIT THE BEARINGS TO MISALIGN MORE THAN ONE DEGREE DURING BEARING INSTALLATION. DO NOT PERMIT THE TRUNNION NUT TO TOUCH THE BEARING SIDE SHIELDS OR SEALS. DO NOT TAP OR HAMMER ON THE BEARING. YOU CAN EASILY CAUSE DAMAGE TO THE TRUNNION BEARINGS.

(c) Use hand pressure to install the bearings (13 and 16) (AMM 20-10-02/401).

NOTE: Final seating of the bearing will occur when the trunnion nut is tightened.

S 624-022

(4) Apply BMS 3-38 corrosion preventive compound to the top and lower trunnion journals and bearings in the top and lower plates.

S 424-023

CAUTION: THE TRUNNION BEARING IS A PRECISION BEARING. DO NOT HIT THEM WITH A HAMMER OR SHAKE THEM WHEN YOU INSTALL THE ACTUATOR. MAKE SURE THE BEARINGS ARE ALIGNED DURING INSTALLATION.

(5) Do the steps that follow to install the upper trunnion nut (14):

CAUTION: MAKE SURE THE INDEX PIN ON THE SWIVEL VALVE IS CORRECTLY ALIGNED WITH THE MATING HOLE IN THE ACTUATOR TRUNNION. IF THEY ARE NOT ALIGNED CORRECTLY, IT IS POSSIBLE THE STEERING SYSTEM WILL NOT OPERATE CORRECTLY.

(a) Carefully align the index pin on the swivel valve with the mating hole in the actuator trunnion (View B).
(b) Carefully put the actuator (17) into the bearing (13) of the top plate and the swivel valve (View B).
(c) Hold the free end of the actuator up to prevent bearing misalignment.

CAUTION: DO NOT TIGHTEN THE TRUNNION NUTS MORE THAN 8 DEGREES PAST THE POINT WHERE THE SURFACES FIRST TOUCH. THIS WILL PREVENT DAMAGE TO THE BEARINGS.

(d) Install the upper trunnion nut (14) until the nut and the bearing touch.

S 644-024

(6) Apply hydraulic fluid to the retainer nut threads.

S 434-025

(7) Install the retainer nut for the swivel valve (View B) and tighten it to 700-750 pound-inches with the spanner wrench.

S 224-026
(8) Make sure that the clearance between the top swivel valve washer(s) on the left and right sides and the valve body is at least 0.010 inch (Section C-C).

S 824-027
(9) If you do not have the necessary clearance, adjust the vertical alignment of the steering actuator(s).

S 394-028
(10) Apply fillet seal between the retainer nut for the swivel valve and actuator top trunnion.

S 644-029
(11) Apply a layer of grease to the top shock strut and the mating threads of the steering nut.

S 434-030
(12) Lift the lower plate into its position against the steering collar and the journals on the actuator lower trunnion (Section B-B).

NOTE: Be very careful to not cause damage to the bearings or to the threads of the trunnions.

S 434-032
(13) Install and tighten the steering nut to 75-100 pound-feet with the wrench adapter.

S 824-033
(14) Release the steering collar and make sure the collar turns freely.

S 034-034
(15) If it is necessary, loosen the steering nut to align the holes for the steering nut lockplates (11 and 12), bolt (9), and washer (10).

S 434-035
(16) Install the steering nut lockplates (11 and 12), bolt (9), and washer (10).

S 824-072
(17) Use the top torsion link to turn the collar until the holes in the actuator rod and the collar are aligned (Section A-A). Do not install the pin (5) in this step.

S 034-071

CAUTION: DO NOT TIGHTEN THE TRUNNION NUTS MORE THAN 8 DEGREES PAST THE POINT WHERE THE SURFACES FIRST TOUCH. THIS WILL PREVENT DAMAGE TO THE BEARINGS.

(18) Install and tighten the lower trunnion nut (15) until it touches the inner races of the trunnion bearings. Then do this check:
   (a) Make sure the conditions that follow occur when you install and tighten the lower trunnion nuts (15):
      1) Install the actuator with equal trunnion thread exposed above the trunnion nuts except that the clearance between the face of the rod end spherical bearing and the face of the steering collar clevis bushing at the top and bottom must be equal within 0.003 inch (0.076 millimeters). If these conditions do not occur you must seat the bearings again.

S 394-039
(19) Apply fillet seal of BMS 5-26 or BMS 5-95 sealant between the bearings and nuts at the top and lower trunnion bearings.

S 394-069
(20) Apply fillet seal of BMS 5-26 or BMS 5-95 sealant between the inner race of the bearings and the trunnion on the side that is away from the trunnion nuts.

S 644-040
(21) Apply a layer of grease to the bolt (1) and washers (2 and 7) that hold the pin (5) for the actuator rod.

S 984-041
(22) Align the hole in the actuator rod with hole in the steering collar.

S 434-042
(23) Install the pin (5), alignment washers (4 and 6), caps (3), bolt (1), washers (2 and 7), nut (8) and cotter pin (Section A-A). Tighten the nut to align the hole for the cotter pin, if it is necessary.

S 644-043
(24) Lubricate the end fitting of the actuator rod at the grease fitting.

S 864-044
(25) Supply electrical power (AMM 24-22-00/201).

S 864-045

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE MOVABLE SURFACES OF THE STEERING SYSTEM FOR THE NOSE WHEEL. WHEN THE STEERING SYSTEM IS SUPPLIED WITH POWER, THE MOVABLE SURFACES CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(26) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 874-046

(27) Operate the steering tiller through its cycle, three or four times, to bleed the steering system.

G. Do a Test of the Tiller Handle Steering

S 714-047

CAUTION: ATTACH THE DISCONNECTED TORSION LINK IN THE HORIZONTAL POSITION (AT RIGHT ANGLES TO THE OUTER CYLINDER OF THE SHOCK STRUT). DAMAGE TO THE SENSOR TARGETS CAN OCCUR WHEN YOU DO THE TEST OF THE STEERING SYSTEM IF THE TOP TORSION LINK IS NOT IN THE HORIZONTAL POSITION.

TO MAKE SURE THE SENSOR TARGETS WILL BE CLEAR OF ALL THE ADJACENT STRUCTURE, SLOWLY MOVE THE STEERING SYSTEM FULL LEFT AND RIGHT.

(1) Turn the tiller handle clockwise from the center position until the adjustable stop bolt on the trunnion drum touches the stop.

S 714-048

(2) Hold it in this position.

S 714-049

(3) Make sure the steering collar turned 65 ±1 degrees.

S 714-050

(4) Release the tiller.

S 714-051

(5) Make sure the tiller goes to neutral (the center) without help in 4 seconds.

S 714-052

(6) Make sure the steering collar goes to a position less than ±2 degrees from the center.

S 714-053

(7) Do the six steps before this again, but turn the tiller handle counterclockwise.

S 794-054
(8) Look for hydraulic leaks.

H. Put the Airplane Back to Its Usual Condition

S 864-055
(1) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 614-056
(2) Make sure the fluid in the main (center) hydraulic reservoir is at the correct level (AMM 12-12-01/301).

S 864-057
(3) Remove the electrical power if it not necessary (AMM 24-22-00/201).

S 984-058
(4) Align the top and lower torsion links.

S 644-059
(5) Connect the top and lower torsion links (AMM 32-21-11/201).

S 864-065
(6) Make sure there is no damage to the not-compressed sensors and targets for the nose landing gear.

NOSE GEAR STEERING METERING VALVE MODULE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the metering valve module for the nose wheel steering. The second task installs the metering valve.

TASK 32-51-04-004-001

2. Remove the Metering Valve Module for Nose Wheel Steering (Fig. 401)
   A. Equipment
      (1) Spanner Wrench - F72959-6 or F72959-35
   B. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          211 Control Cabin (Left)
          212 Control Cabin (Right)
          711 Nose Landing Gear (NLG)

   D. Procedure

      S 864-002
      (1) Remove the pressure from the center hydraulic system and reservoir (AMM 29-11-00/201).

      S 494-003
      (2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 014-004
      (3) Remove the summing mechanism cover and the right support bracket.

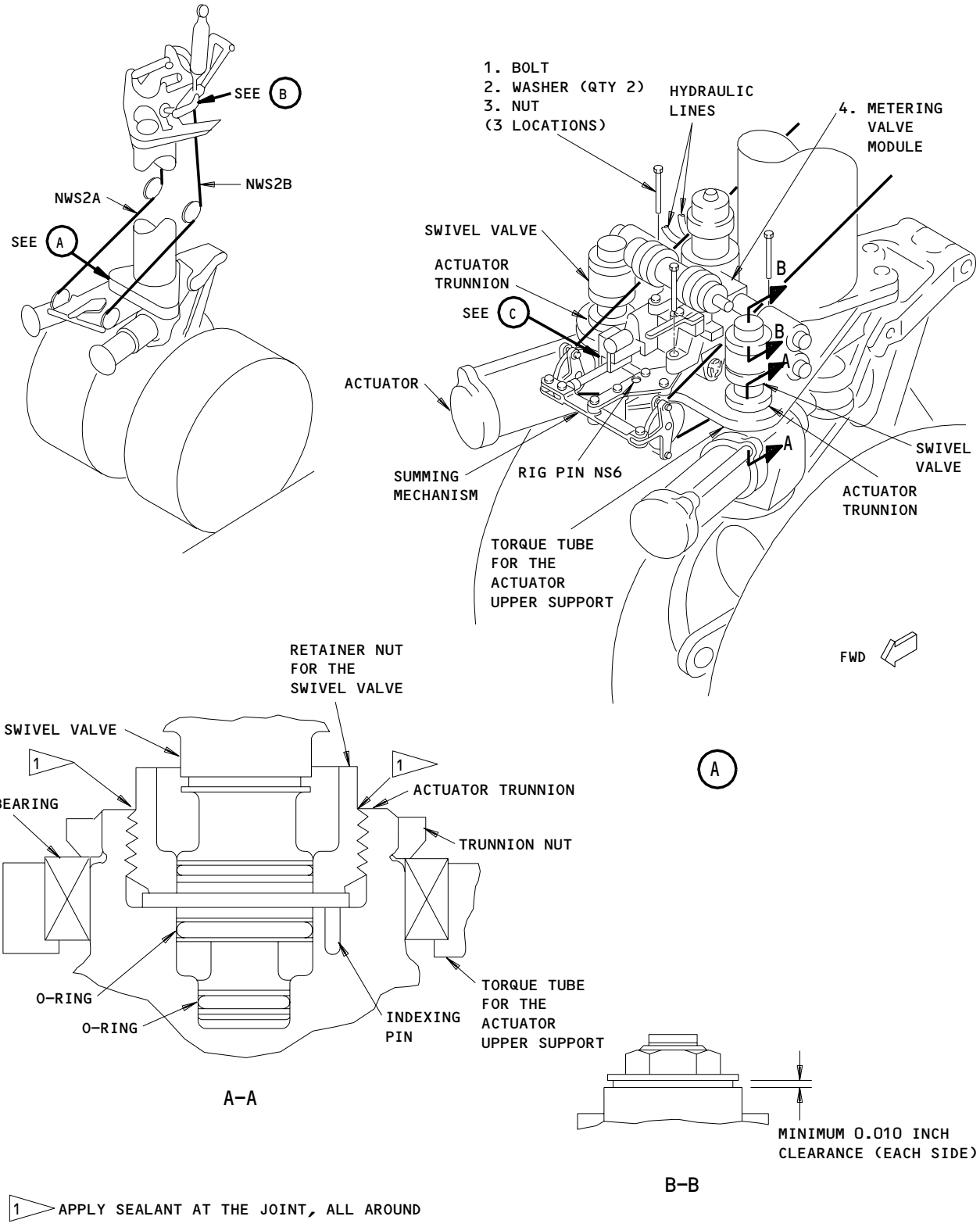
      S 034-005
      (4) Loosen the steering cables NWS2A and NWS2B at the turnbuckles. The cable are installed on the nose landing gear.

      S 034-006
      (5) Remove the bolt (5) (Details A and C).

      S 034-007
      (6) Disconnect the rod from the summing mechanism that connects to the input arm on the metering valve module (Detail A and C).

      S 034-008
      (7) Disconnect the hydraulic lines from the metering valve.

      S 494-009
      (8) Install caps and plugs in the hydraulic lines and ports.



Nose Landing Gear Steering Metering Valve Module - Installation
Figure 401 (Sheet 1)

S 024-010

(9) Remove the three bolts (1) to disconnect the metering valve (4) from the torque tube of the top support for the steering actuator.

S 024-011

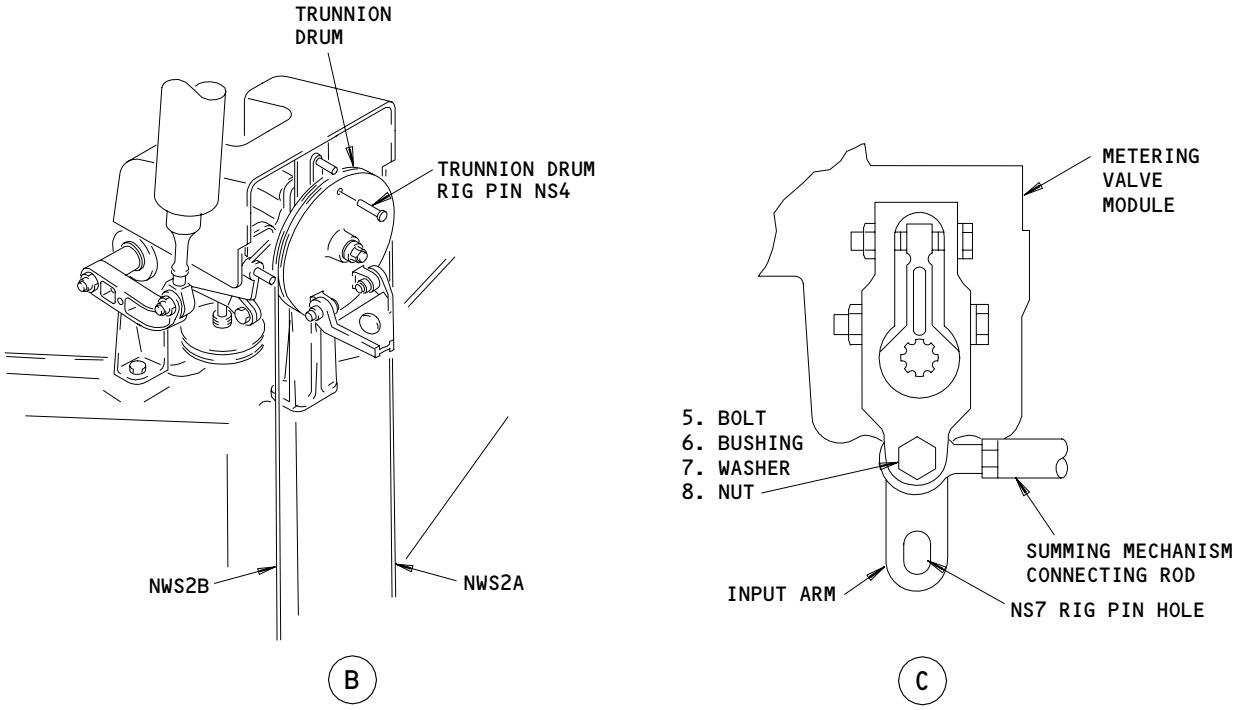
CAUTION: MAKE SURE THE SWIVEL VALVES AT EACH END OF THE METERING VALVE MOVE EQUALLY DURING THE REMOVAL. YOU CAN CAUSE DAMAGE TO THE VALVE TUBE IF THE SWIVEL VALVES ARE NOT REMOVED EQUALLY.

(10) Use the spanner wrench to loosen the retainer nut for the swivel valve. Loosen them equally at each end of the metering valve. Be careful when you remove the metering valve (4) to prevent contamination of the open hydraulic ports.

NOTE: The hydraulic ports will be open when you remove the metering valve from the actuator trunnions. Make sure the area around and in the trunnions is clean before the hydraulic ports are open to prevent contamination.

S 494-012

(11) Install caps in the open hydraulic ports for the swivel valve in the actuator trunnions.



Nose Gear Steering Metering Valve Module Installation
Figure 401 (Sheet 2)

TASK 32-51-04-404-013

3. Install the Metering Valve Module for the Nose Wheel Steering (Fig. 401)

A. Equipment

(1) Rig Pins from Set A20004-XX (AMM 20-10-24/201)
  (a) NS4 - P/N A20004-13
  (b) NS6- P/N A20004-19
  (c) NS7- P/N A20004-14
(2) Spanner Wrench - F72959-6 or F72959-35
(3) Cable Tensiometer - 0 to 200 pound range for 3/32 inch diameter cables (commercially available)

B. Consumable Materials

(1) A00248 Sealant - BMS 5-26 Type II Class A-1/2
(2) D00633 Grease, Corrosion Preventive - BMS 3-33 (Preferred)
(3) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)
(4) D00153 Fluid, Hydraulic - BMS 3-11

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	4	Metering Valve Module	32-51-04	01 01A	123 45

D. References

(1) AMM 12-12-01/301, Hydraulic Systems
(2) AMM 24-22-00/201, Electrical Power Control
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 32-21-11/401, Nose Gear Torsion Links
(6) AMM 32-51-03/401, Nose Gear Steering Actuator

E. Access

(1) Location Zones
  211 Control Cabin (Left)
  212 Control Cabin (Right)
  711 Nose Landing Gear (NLG)

F. Install the Metering Valve Module

S 494-014

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 864-015

(2) Make sure the pressure is removed from the center hydraulic system and reservoir (AMM 29-11-00/201).

S 684-016

(3) Drain the hydraulic fluid from the valve before installation.

S 644-017

(4) Lubricate the fittings, packings, and seals with hydraulic fluid.

S 424-018

CAUTION: MAKE SURE THE INDEX PINS ON THE SWIVEL VALVES ARE CORRECTLY ALIGNED WITH THE MATING HOLES IN THE TRUNNION SOCKETS. IF THEY ARE NOT ALIGNED CORRECTLY, IT IS POSSIBLE THE STEERING SYSTEM WILL NOT OPERATE CORRECTLY.

(5) Put the swivel valves for the metering valve assembly into the steering actuator trunnions. Make sure the valve index pins are installed in the locator pin holes in the left and right trunnions (View A-A).

S 644-019

(6) Apply hydraulic fluid to the threads on the retainer nuts for the left and right metering valves.

S 434-020

CAUTION: KEEP THE TWO ENDS OF THE METERING VALVE ASSEMBLY LEVEL DURING INSTALLATION. IF YOU DO NOT TIGHTEN THE RETAINER NUTS EQUALLY, THIS CAN CAUSE DAMAGE TO THE VALVE ASSEMBLY TUBE.

(7) Use the spanner wrench to tighten the retainer nuts for the metering valve equally at each end. Tighten the retainer nut to 700-750 pounds-inches.

S 224-021

(8) Make sure that the clearance between the top swivel valve washer(s) on the left and right sides and the valve body is as shown on Fig. 401 (View B-B).
   (a) If the clearance is not correct, vertically align the steering actuator(s) (AMM 32-51-03/401).

S 394-022

(9) Apply sealant between the trunnion and the retainer nut.

S 434-023

(10) Attach the metering valve (4) with the bolts (1), washers (2), and nuts (3).

S 434-024
(11) Connect the return and supply hydraulic lines to the metering valve and tighten the connectors.

S 494-025
(12) Install the rig pins NS4, NS6 and NS7 in the summing mechanism for the trunnion drum and the metering valve (Details A, B and C).

S 824-026
(13) Install and tighten the control cables NWS2A and NSW2B. Adjust the cable tension to 60 ±10 pounds.

S 644-027
(14) Apply grease to the bushing on the rod that connects to the input arm and the bolt (5).

S 434-028
(15) Install the bolt (5), bushing (6), washer (7), and nut (8) to connect the rod to the input arm of the metering valve (Detail C). Tighten the bolt.

S 824-029
(16) Adjust the rod length until you can easily install the rig pins NS4, NS6 and NS7.

S 434-030
(17) Tighten the locknut and install lockwire.

S 094-031
(18) Remove the rig pins NS4, NS6 and NS7.

S 434-032
(19) Install the right support bracket.

S 864-033
(20) Supply electrical power (AMM 24-22-00/201).

S 864-034

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE MOVABLE SURFACES OF THE STEERING SYSTEM FOR THE NOSE WHEEL. WHEN YOU SUPPLY POWER TO THE STEERING SYSTEM, THE MOVABLE SURFACES CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(21) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 034-035

CAUTION: ATTACH THE DISCONNECTED TORSION LINK IN THE HORIZONTAL POSITION (AT RIGHT ANGLES TO THE OUTER CYLINDER OF THE SHOCK STRUT). DAMAGE TO THE SENSOR TARGETS CAN OCCUR WHEN YOU DO THE TEST OF THE STEERING SYSTEM IF THE TOP TORSION LINK IS NOT IN THE HORIZONTAL POSITION.

TO MAKE SURE THE SENSOR TARGETS WILL BE CLEAR OF ALL THE ADJACENT STRUCTURE, SLOWLY MOVE THE STEERING SYSTEM FULL LEFT AND RIGHT.

(22) Disconnect the torsion links for the nose landing gear at the apex joint (AMM 32-21-11/401).

S 874-036

(23) Operate the steering tiller through its full cycle a minimum of six times to bleed the air from the system.

G. Do a Test of the Tiller Handle Steering.

S 714-037

(1) Turn the tiller handle clockwise from the center position until the adjustable stop bolt on the trunnion drum touches the stop that does not move.

S 714-038

(2) Hold this position.

S 714-039

(3) Make sure the steering collar turned 65 ±1 degrees.

S 714-040

(4) Release the tiller.

S 714-041

(5) Make sure the tiller goes to neutral (the center) without help in 4 seconds.

S 714-042

(6) Make sure the steering collar goes to a position less than ±1 1/2 degree of the center.

S 714-043

(7) Do the six steps before this again, but turn the tiller handle counterclockwise.

S 734-044
(8) Do the steps that follow to make sure the maximum torque to operate the steering tiller through its full travel is correct:
(a) Remove the end cap from the tiller handle where the tiller handle attaches to the shaft.
(b) Put the torque wrench on the tiller shaft nut.

CAUTION: DO NOT USE MORE THAN 50 POUND-INCHES OF TORQUE. TOO MUCH TORQUE CAN CAUSE THE STEERING TILLER MECHANISM TO NOT MOVE FREELY.

(c) Use the torque wrench to turn the tiller shaft clockwise.
(d) Make sure the maximum torque to operate the tiller full travel is not more than 37 pound-inches.
(e) Do the two steps before this again, but turn the tiller counterclockwise.
(f) Permit the system to go to the center.
(g) Remove the torque wrench.
(h) Install the end cap on the tiller shaft.

S 794-045
(9) Examine the metering valve module for hydraulic leaks.

H. Put the Airplane Back to Its Usual Condition

S 864-046
(1) Remove the pressure from the center hydraulic system (AMM 29-11-00/201) if it is not necessary.

S 614-047
(2) Make sure the fluid in the center hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 414-048
(3) Install the summing mechanism cover.

S 864-049
(4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

S 434-050
(5) Connect the torsion links for the nose landing gear (AMM 32-21-11/401).

S 864-051
(6) Make sure there is no damage to the not compressed sensors and targets for the nose landing gear.

NOSE WHEEL STEERING COLLAR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the steering collar for the nose wheel steering. The second task installs the steering collar for the nose wheel steering.

TASK 32-51-05-004-001

2. Remove the Steering Collar for the Nose Wheel Steering (Fig. 401 and 402)
   A. References
      (1) AMM 24-22-00/201, Electrical Power Control
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-20/201, Landing Gear Downlocks
      (4) AMM 32-21-11/401, Nose Gear Torsion Links
      (5) AMM 32-21-25/201, Nose Gear Shock Strut Seals
   B. Equipment
      (1) Rig Pin NS4 - P/N A20004-13, part of kit A20004-XX (Ref 20-10-24)
      (2) Steering Nut Wrench Adapter, NLG - A32034-1
      (3) Steering Actuator Wrench, NLG - A32035-1
      (4) Towing Lever Lockpin - A09003-1
   C. Access
      (1) Location Zone
          711 Nose Landing Gear

   D. Prepare to Remove the Steering Collar

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

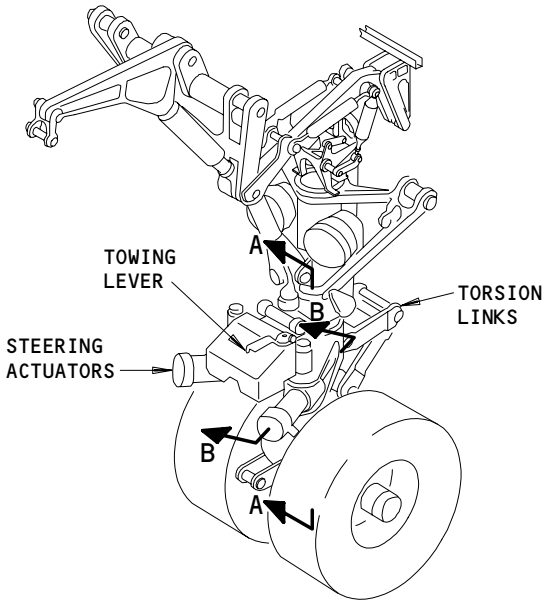
      S 864-003
      (2) Supply electrical power (AMM 24-22-00/201).

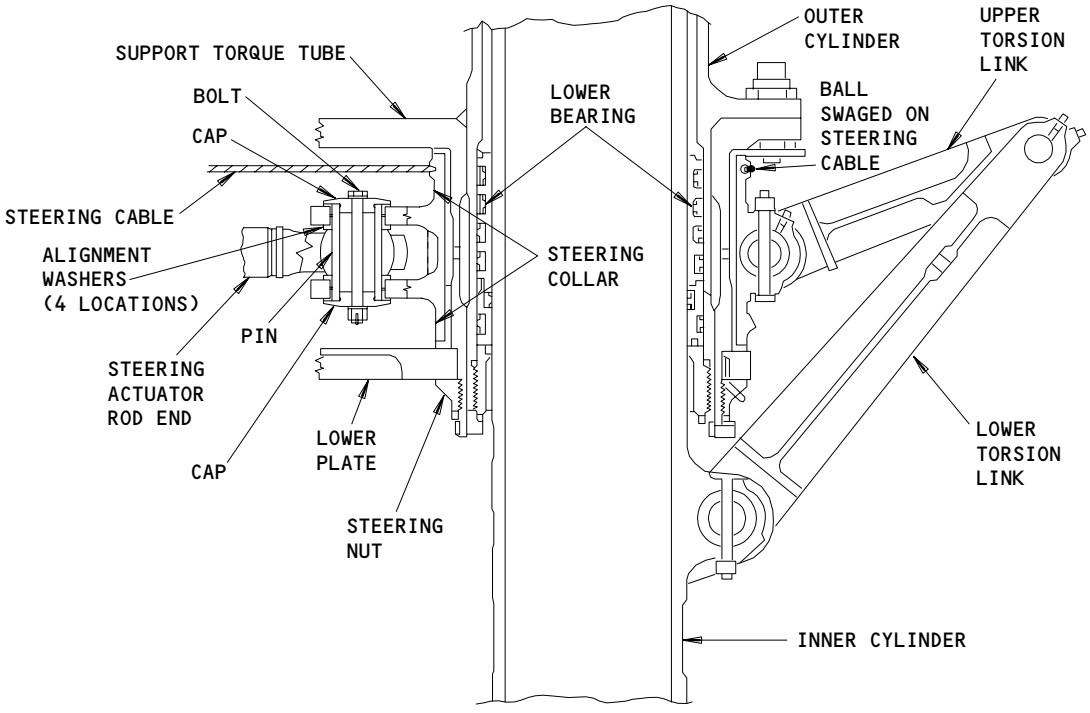
      S 864-004
      (3) Pressurize the center hydraulic system (AMM 29-11-00/201).

      S 864-005
      (4) Center the nose wheels.

      S 494-006
      (5) Install the rig pin NS4 in the trunnion drum (Fig. 402, Detail A).

      S 864-007
      (6) Remove the pressure from the center hydraulic system and reservoir (AMM 29-11-00/201).





A–A

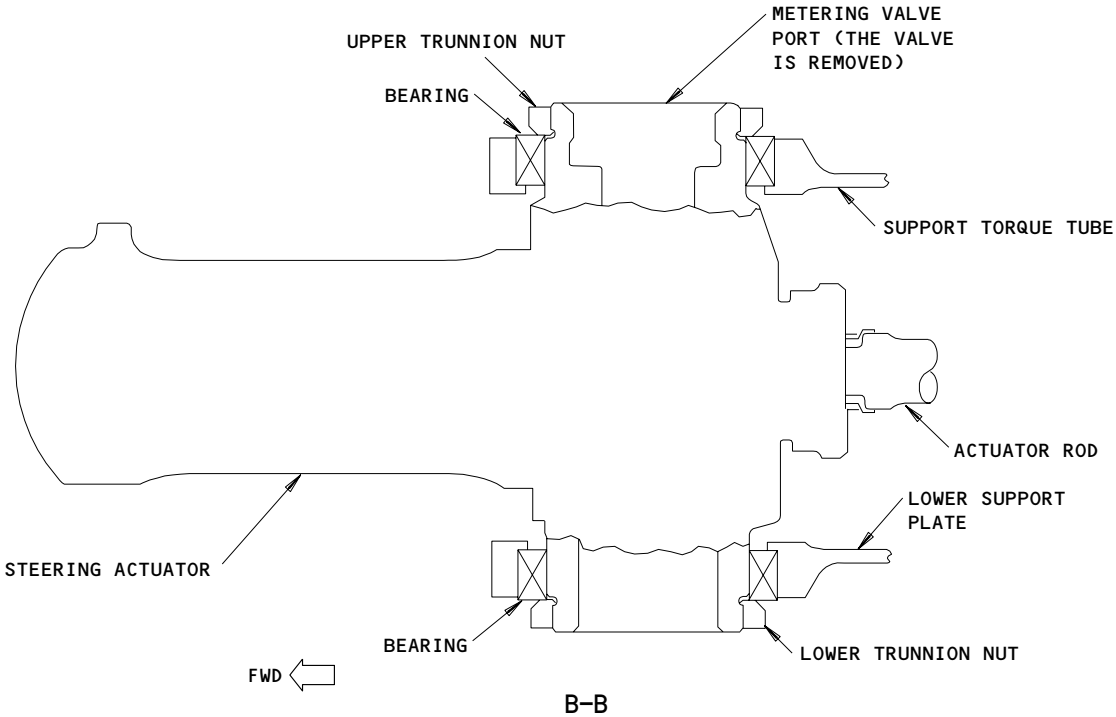
Installation of the Steering Collar on the Nose Wheel Steering
Figure 401 (Sheet 1)

E. Remove the Steering Collar

S 034-008
(1) Loosen the cable (NWS2A and NWS2B) turnbuckles.

S 034-009
(2) Disconnect the cables from the outer cylinder of the shock strut.

S 014-010
(3) Remove the inner cylinder of the shock strut from the outer cylinder of the shock strut (AMM 32-21-25/201, Active and Spare Seal Replacement).



Installation of the Steering Collar on the Nose Wheel Steering
Figure 401 (Sheet 2)

S 014-011
(4) Remove the upper torsion link from the steering collar (AMM 32-21-11/401).

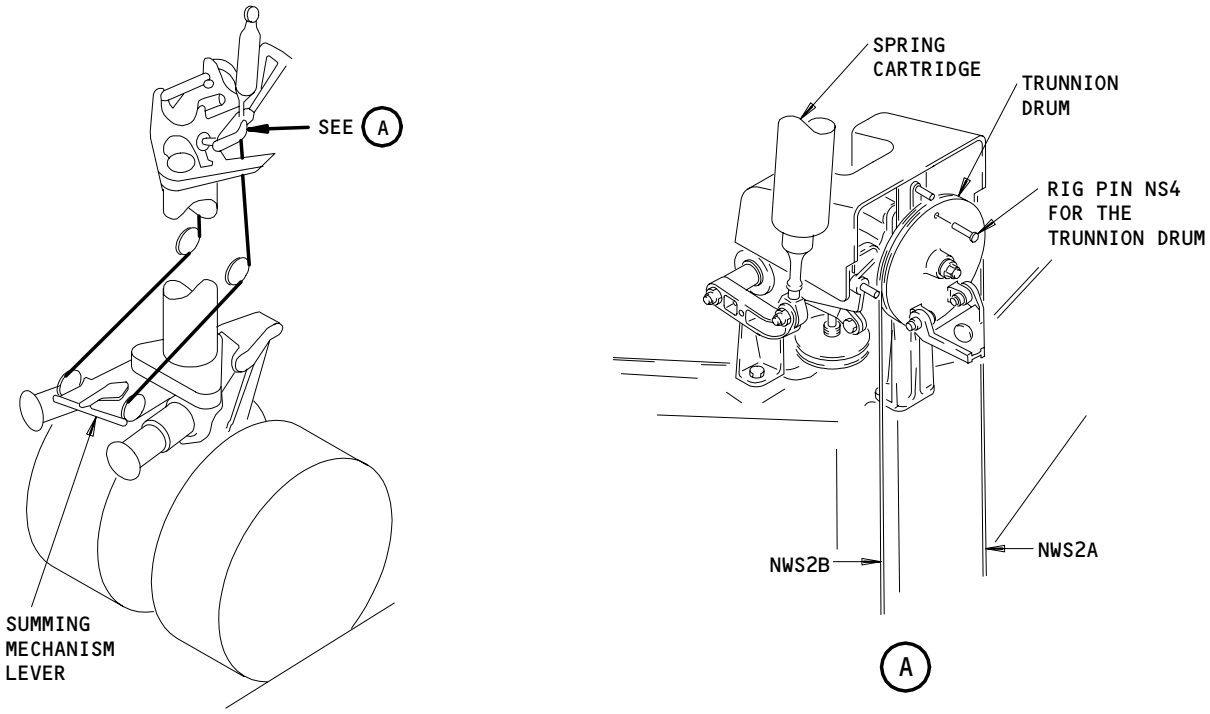
S 864-012
(5) Move the towing lever on the metering valve module to the TOWING position.

S 494-013
(6) Install the towing lever lockpin (Fig. 402).

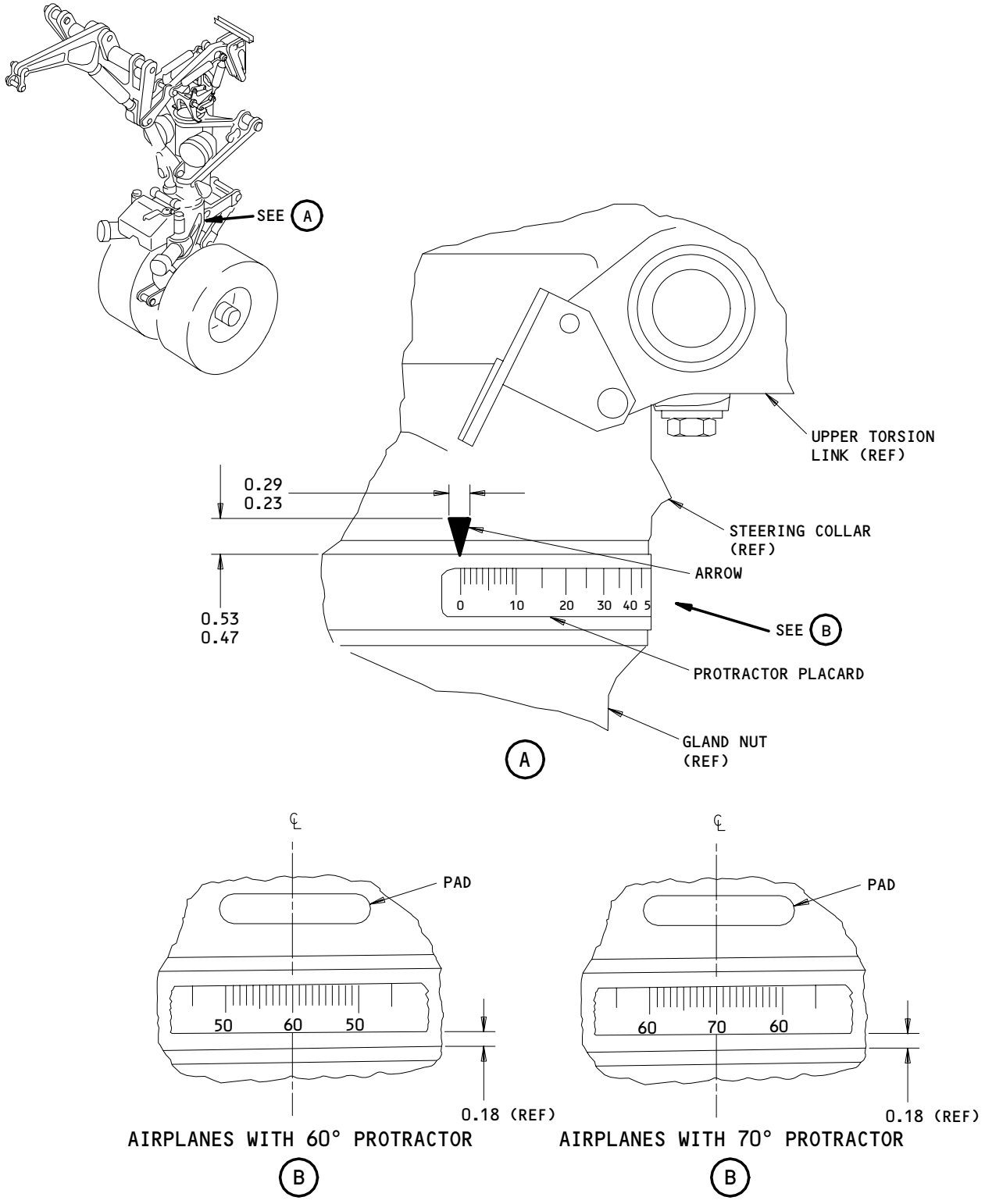
S 864-014
(7) Turn the steering actuators until the actuator rod ends are clear of the upper and lower support plates.

S 034-015
(8) Remove the bolts and the pins which connect the actuator rods to the steering collar (View A-A).

S 034-016
(9) Remove the lower trunnion nuts which hold the steering actuators to the lower support plate (View B-B). Use the steering actuator wrench.



Trunnion Drum of the Nose Wheel Steering
Figure 402



NOTE: ALL DIMENSIONS ARE IN INCHES.

Installation of the Protractor on the Steering Collar
Figure 403

S 014-017
(10) Remove the steering nut lockplate.

S 014-018
(11) Hold the lower support plate and the steering collar to do the steps that follow:
(a) Remove the steering nut with the wrench adapter.
(b) Remove the lower support plate.
(c) Remove the steering collar.

TASK 32-51-05-404-019

3. Install the Steering Collar on the Nose Wheel Steering (Fig. 401)

A. References
(1) AMM 24-22-00/201, Electrical Power Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-21-11/401, Nose Gear Torsion Links
(4) AMM 32-21-25/201, Nose Gear Shock Strut Seals
(5) AMM 32-51-00/501, Nose Wheel Steering System

B. Equipment
(1) Rig Pin NS4 - P/N A20004-13, part of kit A20004-XX (Ref 20-10-24)
(2) Steering Nut Wrench Adapter, NLG - A32034-1
(3) Steering Actuator Wrench, NLG - A32035-1
(4) Towing Lever Lockpin - A09003-1

C. Consumable Materials
(1) D00633 Grease - BMS3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(3) C00308 Compound, Corrosion Preventive - MIL-C-11796
(4) A00248 Sealant - BMS 5-26 Type II Class A - 1/2
(5) A00100 Sealant, Temperature Resistant - MIL-S-8802

D. Access
(1) Location Zone
711 Nose Landing Gear

E. Install the Steering Collar

S 864-020
(1) Use the towing lever lockpin to make sure the towing lever is in the TOWING position.

S 644-021
(2) Use grease to lubricate the collar bushings and the mating surfaces on the support torque tube.

S 434-022
(3) Put the steering collar on the torque tube.
(a) To keep the steering collar on the torque tube, temporarily attach the steering collar to the shock strut.

S 644-023

(4) Use grease to lubricate the spline surfaces on the lower support plate and the torque tube.

S 624-024

(5) Apply the corrosion preventive compound to the parts that follow (View B-B).
  (a) The lower trunnion journals of the steering actuator.
  (b) The bearings in the support plate.

S 824-025

(6) Align the missing spline tooth on the lower plate with the indexing tooth on the torque tube.

S 824-026

(7) Make sure the trunnion holes on the plate align with the actuator trunnions.

S 434-027

(8) Put the plate on the torque tube.

S 434-028

(9) Attach the plate to the torque tube with the steering nut (View A-A).
  (a) Tighten the nut to 75-100 pound-feet with the wrench adapter.

S 414-029

(10) Install the steering nut lockplate with the fasteners.

S 094-030

(11) Remove the collar support.

S 394-031

(12) Apply the sealant or the sealing compound to the lower trunnion threads of the actuator.

S 434-032

CAUTION: DO NOT TIGHTEN THE TRUNNION NUTS TOO MUCH. DO NOT TURN THE TRUNNION NUT MORE THAN 8 DEGREES AFTER THE POINT WHERE THE SURFACES FIRST TOUCH. THIS WILL PREVENT DAMAGE TO THE BEARINGS.

(13) Make sure the conditions that follow occur when you use the wrench to install and tighten the upper and lower trunnion nuts:
  (a) The threads that come out of the top and the bottom ends are equal.
  (b) The area between the nuts and the thread relief is fully filled with the sealant or the sealing compound.

(c) If these two conditions do not occur, you must seat the bearing again.

S 394-034
(14) Apply a seal between the bearings and the nuts at the lower trunnion bearings.

S 864-035
(15) Turn each steering actuator to permit the rod end hole of each actuator to align with the holes in the steering collar.

S 644-036
(16) Butter lubricate the bolts and the washers which hold the actuator rod ends to the steering collar.

S 414-037
(17) Install the attachment pins and the fasteners to connect the rod ends to the steering collar (Detail A).

S 434-038
(18) Tighten the nuts only as necessary to install the cotter pins.

S 864-039
(19) Make sure the steering collar can turn freely in each direction.

S 434-040
(20) Install the inner cylinder of the shock strut (AMM 32-21-25/201, Active and Spare Seal Replacement).

S 434-041
(21) Install the upper torsion link (AMM 32-21-11/401).

NOTE: Do not connect the upper and lower torsion links at this time.

S 434-042
(22) Connect the steering cables (NWS2A, NWS2B).

S 824-063
(23) Adjust the tension of the steering cables and do a check of the rig pin fit (AMM 32-51-00/501).

S 094-043
(24) Make sure all the rig pins are removed.

S 864-044
(25) Make sure the wheels of the nose landing gear are in the center position.

S 094-045
(26) Remove the towing lever lockpin.

S 864-046
(27) Make sure the towing lever automatically moves to the NORMAL position.

S 714-047
(28) Do the test for the operation of the nose wheel steering system (AMM 32-51-00/501).

S 034-048

CAUTION: DISCONNECT THE UPPER TORSION LINK AND HOLD IT IN THE HORIZONTAL POSITION. IF THE UPPER TORSION LINK IS NOT IN THE HORIZONTAL POSITION, IT CAN CAUSE DAMAGE TO THE SENSOR TARGETS DURING THE STEERING TESTS.

CAUTION: MAKE SURE THE SENSOR TARGETS WILL BE CLEAR OF ALL THE ADJACENT STRUCTURES WHEN THE STEERING SYSTEM MOVES. IF THE SENSOR TARGETS TOUCH THE ADJACENT STRUCTURES, THE SENSOR TARGETS CAN BE DAMAGED

(29) Make sure the torsion links of the nose landing gear are disconnected.

S 864-049
(30) Make sure the upper torsion link is held in a horizontal position.

S 864-050

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE MOVEABLE SURFACES BEFORE THE NOSE WHEEL STEERING IS FULLY POWERED. MOVABLE SURFACES CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(31) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 864-051
(32) Do the steps that follow two times. The first time, turn the steering tiller in the clockwise direction. The second time, turn the steering tiller in the counterclockwise direction.
(a) Turn the handle of the steering tiller from the center position until the adjustable stop bolt on the trunnion drum touches the stationary stop.

(b) Hold the handle in this position and do the steps that follow:
1) Make sure the angular displacement of the steering collar is 65 ±1 degrees.

NOTE: Read the angle from one side only.

NOTE: For aiplanes with 60 degree placard installed, the pointer will move from 0 to 60 degrees, then 4 to 6 degrees more grads back down the other side of the placard.

2) Release the steering tiller.
3) Make sure the steering tiller automatically moves to the neutral (center) position.
4) Make sure the steering tiller goes to the center position in less that 4 seconds.
5) Make sure the steering collar goes to the center position ±2 degrees.

F. Put the Airplane Back to Its Usual Condition

S 864-052
(1) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-053
(2) Remove the electrical power if it is not necessary (AMM 24-22-00/201).

S 414-054
(3) Connect the torsion links of the nose landing gear (AMM 32-21-11/401).

S 864-055
(4) Make sure the not compressed sensors and targets of the nose landing gear are not damaged.

TASK 32-51-05-404-056

4. Install the Protractor Placard on the Steering Collar (Fig. 403)

A. General
(1) Use this procedure if you need to install a new protractor placard on the steering collar.

B. References
(1) AMM 07-11-02/201, Jacking Airplane Nose
(2) AMM 12-15-02/301, Nose Gear Shock Strut
(3) AMM 20-10-14/401, Aluminum Foil Markers
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

C. Procedure

S 614-057
(1) Make sure the shock strut is pressurized (AMM 12-15-02/301).

S 584-058
(2) Lift the nose of the airplane on jacks (AMM 07-11-02/201).

NOTE: Extension and pressurization of the shock strut will make make sure the centering cams are engaged.

S 864-059
(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

S 424-064
(4) Put the placard in position as shown in Detail B. Put the 60-degree mark (60 degree placard) or the 70-degree mark (70 degree placard) within +/-0.10 inch of the centerline of the pad on the aft side of the steering collar. Apply the placard (AMM 20-10-14/401).

S 404-061
(5) Put the arrow within +/-0.02 inch of the zero degree mark on the protractor. Apply the placard (AMM 20-10-14/401).

S 584-062
(6) Lower the nose of the airplane and remove the jacks (AMM 07-11-02/201).

NOSE WHEEL STEERING CABLE COMPENSATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the cable compensator of the nose wheel steering. The second task installs the cable compensator for the nose wheel steering.

TASK 32-51-06-004-001

2. Remove the Cable Compensator of the Nose Wheel Steering (Fig. 401)
   A. Equipment
      (1) Rig Pins from Set A20004-XX (Ref 20-10-24/201):
          (a) NS1 - P/N A20004-14
          (b) NS2 - P/N A20004-22
          (c) NS3 - P/N A20004-16
          (d) NS4 - P/N A20004-13
          (e) AIRPLANES WITH FIRST OFFICER'S TILLER;
              NS8 - P/N A20004-14
   B. References

      (1) 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
      (2) 32-00-20/201, Landing Gear Downlocks
      (3) 32-51-00/501, Nose Wheel Steering System
   C. Access
      (1) Location Zones
          119 Main Equipment Center (Left and Right)
          711 Nose Landing Gear

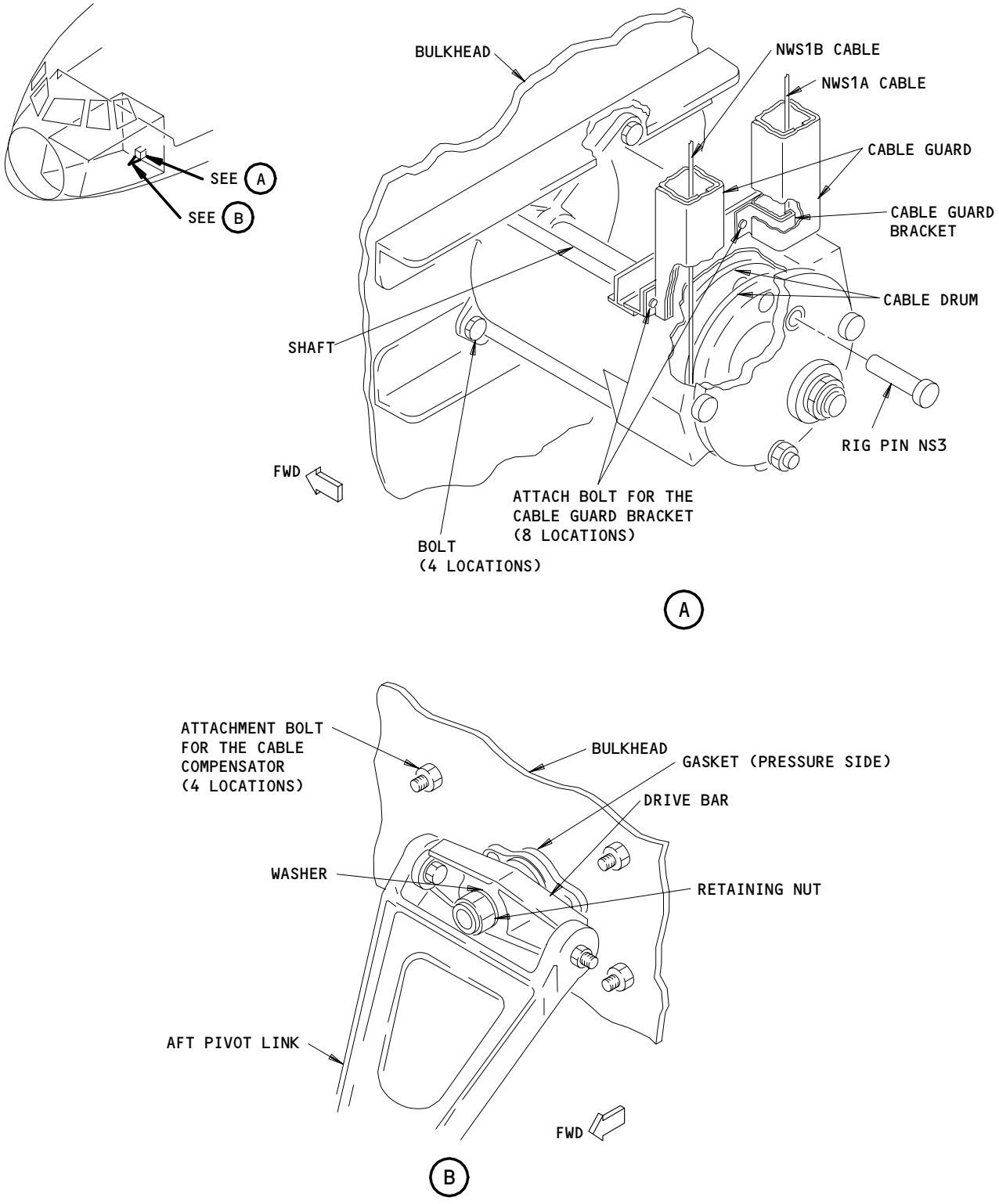
      (2) Access Panel
          119AL Main Equipment Center

   D. Prepare to Remove the Cable Compensator

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-003
      (2) Make sure the nose gear steering system is centered.

      S 864-004
      (3) Remove the pressure from the center hydraulic system (AMM 29-11-00).



Installation of the Cable Compensator for the Nose Wheel Steering
Figure 401

E. Remove the Cable Compensator

S 494-075
(1) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
Put the rig pin NS1 in the forward quadrant.

S 494-076
(2) AIRPLANES WITH FIRST OFFICER'S TILLER;
Put the rig pin NS1 in the Captain's forward quadrant and put the rig pin NS8 in the First Officer's forward quadrant (AMM 32-51-00).

S 494-006
(3) Put the rig pin NS2 in the rudder interconnect mechanism (AMM 32-51-00/501).

S 494-008
(4) Put the rig pin NS4 in the trunnion drum (AMM 32-51-00/501).

S 034-009
(5) Open the access panel, 119AL to get access to the parts that follow:
(a) The compensator unit, which is on the forward bulkhead (station 287), in the main equipment center.
(b) The upper cable loop, which is in the forward equipment center.

S 034-010
(6) Remove the bolts which attach the cable guard brackets to the cable compensator.

S 034-011
(7) Remove the guard brackets to get access to the cable ends (View A).

S 014-012
(8) Loosen the cables NWS1A and NWS1B at the turnbuckle location in the forward equipment center.

S 034-013
(9) Disconnect the cables from the compensator drums (Detail A).

S 034-014
(10) Remove and discard the cotter pins from the terminal end of the cable.

S 034-015
(11) Remove the retaining nut and the washer from the cable compensator shaft.

S 034-016
(12) Remove the drive bar and the aft pivot link from the shaft (View B).
(a) Hold the pivot links to prevent damage to the structure.

S 034-017
(13) Remove the four bolts which attach the cable compensator to the bulkhead.

S 024-018
(14) Remove the cable compensator.

S 034-019
(15) Remove the compensator gasket from the bulkhead.

TASK 32-51-06-404-020

3. Install the Cable Compensator for the Nose Wheel Steering (Fig. 401)

A. Equipment
(1) Rig Pins from Set A20004-XX (AMM 20-10-24/201):
(a) NS1 - P/N A20004-14
(b) NS2 - P/N A20004-22
(c) NS3 - P/N A20004-16
(d) NS4 - P/N A20004-13
(e) AIRPLANES WITH FIRST OFFICER'S TILLER;
NS8 - P/N A20004-14

B. Consumable Materials
(1) D00633 Grease, Corrosion Preventive - BMS 3-33 (Preferred)
(2) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)
(3) A00027 Adhesive - BAC 5010, Type 60
(4) A00257 Sealant, Chromate Type - BMS 5-95

C. References

(1) 32-51-00/501, Nose Wheel Steering System

D. Access
(1) Location Zones
119 Main Equipment Center (Left and Right)
711 Nose Landing Gear

(2) Access Panel
119AL Main Equipment Center

E. Install the Cable Compensator

S 494-077
(1) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
Make sure the rig pins, NS1 and NS2 are installed in the forward quadrant and the rudder interconnect mechanism.

S 494-078
(2) AIRPLANES WITH FIRST OFFICER'S TILLER;
Make sure the rig pins NS1 and NS8 are installed in the Captain's and the First Officer's forward quadrant. Make sure the rig pin NS2 is installed in the rudder interconnect mechanism.

S 494-025
(3) Make sure the rig pins NS3 and NS4 are installed in the replacement compensator unit and the trunnion drum.

S 164-026
(4) Clean the surfaces where the compensator gasket will be installed.

S 344-027
(5) Apply the adhesive to the two sides of the compensator gasket and to the cable compensator surface.

S 434-028
(6) Push the compensator gasket on the bulkhead.
(a) Remove the unwanted adhesive.

S 864-029
(7) Put the splined shaft of the cable compensator through the bulkhead.

S 394-030
(8) Apply the sealant to the four fasteners.

S 424-031
(9) Attach the compensator to the bulkhead (Details A and B).

S 434-032
(10) Tighten the fasteners.

S 644-033
(11) Apply grease to the surfaces of the splined shaft of the compensator and the drive bar.

S 414-034
(12) Install the drive bar and the aft pivot link.

S 434-035
(13) Tighten the retaining nut on the splined shaft to 100-150 pound-inches (Detail B).

S 434-036
(14) Connect the cables NWS1A and NWS1B to the compensator drums.

S 434-037
(15) Tighten the cables at the turnbuckles.

S 434-038
(16) Install the cotter pins on the terminal ends of the cables.

S 434-039
(17) Attach the cable guard brackets to the compensator.

F. Put the Airplane Back to Its Usual Condition

S 824-040
(1) Adjust and tighten the cables (AMM 32-51-00).

S 094-079
(2) AIRPLANES WITH FIRST OFFICER'S TILLER;
Remove the rig pins NS1, NS2, NS3, NS4 and NS8.

S 084-080
(3) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
Remove the rig pins NS1, NS2, NS3, and NS4.

S 714-044
(4) Do the test for the tiller handle steering (AMM 32-51-00).

NOSE WHEEL STEERING PIVOT LINKS - REMOVAL/INSTALLATION

1. General

A. This procedure contains two tasks. The first task removes the pivot links of the nose wheel steering. The second task installs the pivot links of the nose wheel steering.

TASK 32-51-07-004-001

2. Remove the Pivot Links of the Nose Wheel Steering (Fig. 401)

A. Equipment

(1) Rig Pin NS4 - P/N A20004-13, part of kit A20004-1 (AMM 20-10-24)

B. References

(1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(2) 32-00-20/201, Landing Gear Downlocks
(3) 32-51-00/501, Nose Wheel Steering System

C. Access

(1) Location Zone
711 Nose Landing Gear

D. Prepare to Remove the Pivot Links

S 494-002
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20).

S 864-003
(2) Make sure the nose wheels are centered.

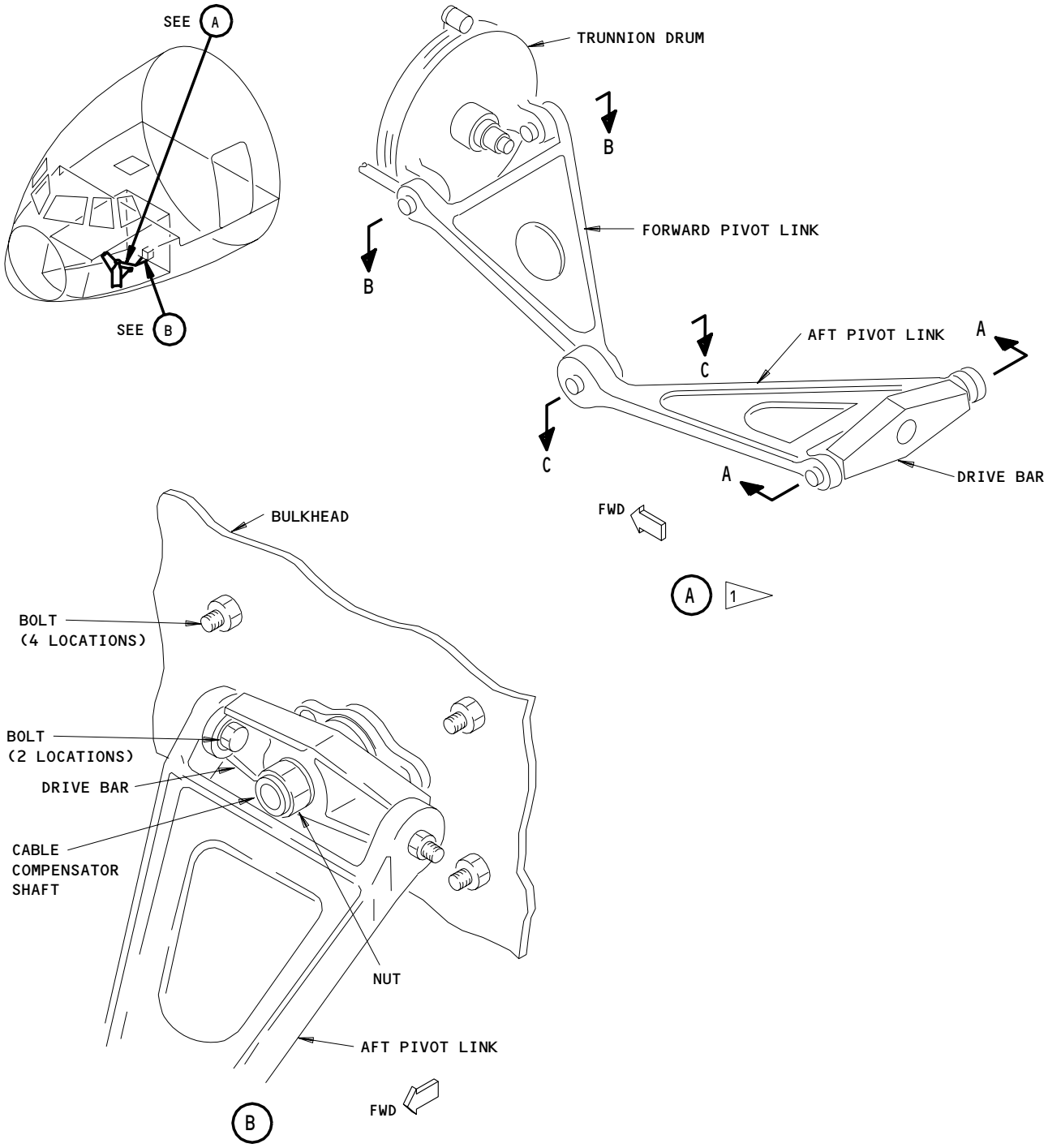
S 494-004
(3) Install the rig pin, NS4, in the trunnion drum for the nose wheel steering (AMM 32-51-00).

S 864-005
(4) Remove the pressure from the center hydraulic system (AMM 29-11-00).

E. Remove the Pivot Links

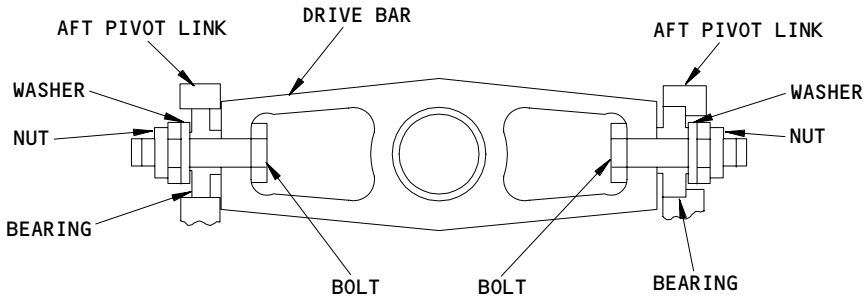
S 034-006
(1) Remove the fasteners which connect the forward pivot link to the trunnion drum of the nose wheel steering (View B-B).

S 034-007
(2) Remove the nut and the washer from the cable compensator shaft (Detail B).

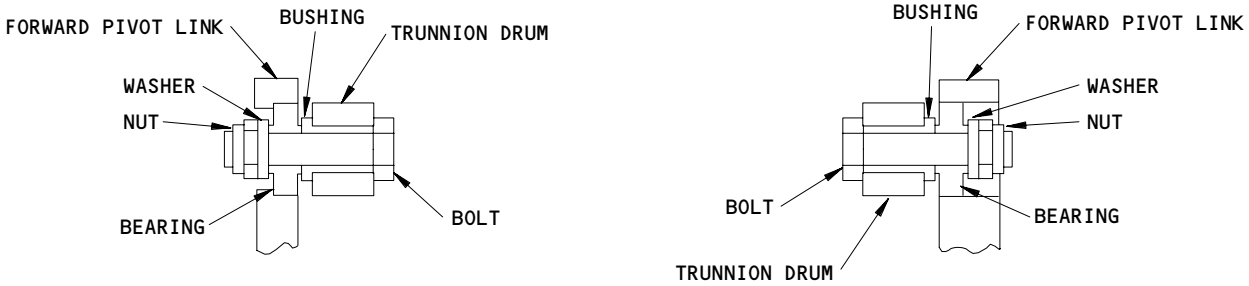


1 THE PIVOT LINK PAIR CAN BE INSTALLED AS SHOWN OR UPSIDE DOWN. IF YOU INSTALL IT UPSIDE DOWN THE FORWARD LINK AND THE AFT LINK MUST STAY IN THEIR RELATED FORWARD AND AFT POSITION. THE PIVOT LINK JOINT ALWAYS POINTS DOWN.

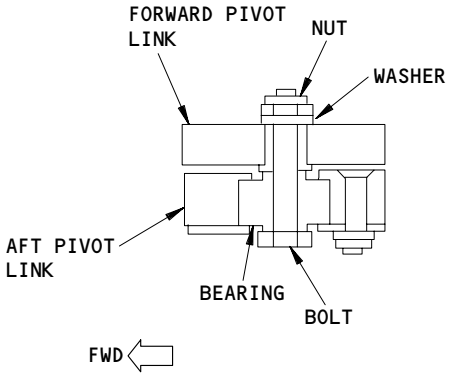
Installation of the Pivot Links for the Nose Wheel Steering
Figure 401 (Sheet 1)



A–A



B–B



C–C

Installation of the Pivot Links for the Nose Wheel Steering
Figure 401 (Sheet 2)

S 034-008
(3) Move the drive bar and the aft pivot link from the compensator shaft.

S 014-009
(4) Remove the pivot link and the drive bar assembly.

S 034-010
(5) Remove the bolts which attach the drive bar to the aft link, if more separation is necessary (View A-A).

TASK 32-51-07-404-011

3. Install the Pivot Links of the Nose Wheel Steering (Fig. 401)

A. Equipment
(1) Rig Pin NS4 - P/N A20004-13, part of kit A20004-1 (AMM 20-10-24)

B. Consumable Materials
(1) D00633 Grease, Corrosion preventive - BMS 3-33 (Preferred)
(2) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)

C. References
(1) 32-51-00/501, Nose Wheel Steering System

D. Access
(1) Location Zone
711 Nose Landing Gear

E. Install the Pivot Links

S 864-012
(1) Make sure the nose gear is centered.

S 494-013
(2) Make sure the rig pin, NS4, is installed.

S 434-014
(3) If the links were separated, assemble the links before you install them in the airplane (View C-C).

S 644-015
(4) Apply grease to the surfaces of the bolt that will touch.

S 434-016
(5) Install the bolt with the head on the same side as the bearing retainer plate.

S 644-017
(6) Apply grease to the bolts and washers of the aft pivot link.

S 414-018
(7) Connect the aft link to the drive bar if they were separated (View A-A).

S 644-019
(8) Apply grease to the bearing and bolts of the forward pivot link.

S 434-020
(9) Use the bolts to connect the forward link to the trunnion drum for the nose wheel steering (View B-B).

NOTE: The head of the bolt must be inboard.

S 644-021
(10) Apply grease to the splines of the cable compensator shaft and the mating splines of the drive bar.

S 434-022
(11) Move the drive bar over the cable compensator shaft.
(a) Align the missing tooth index with the compensator shaft.

S 434-023
(12) Install the washer and the nut (Detail B).
(a) Tighten the nut to 100-150 pound-inches.

F. Put the Airplane Back to Its Usual Condition

S 094-024
(1) Remove the rig pin, NS4.

S 714-025
(2) Do the test for the operation of the nose wheel tiller steering (AMM 32-51-00).

NOSE WHEEL STEERING PIVOT LINKS - INSPECTION/CHECK

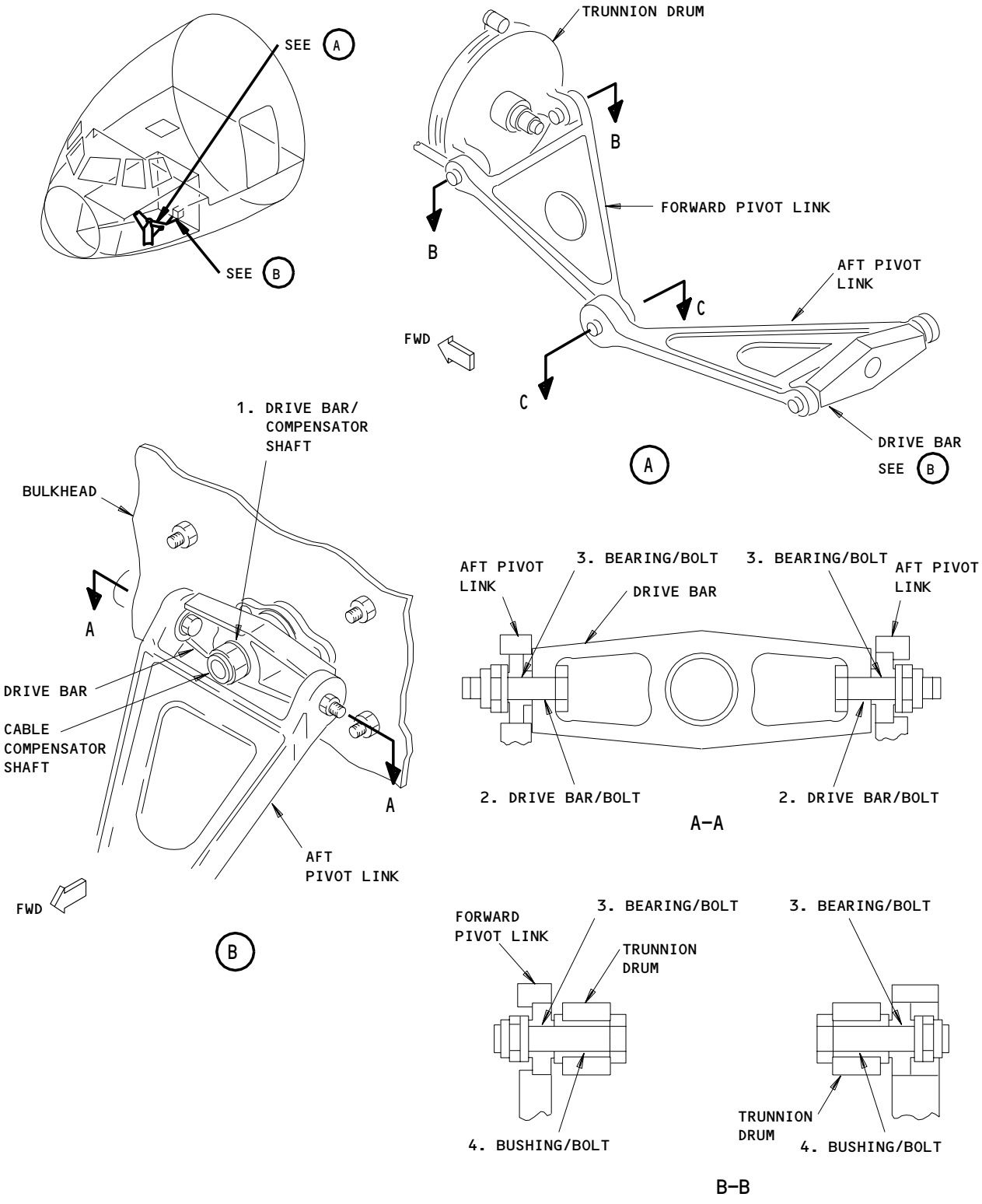
1. General
   A. This procedure only has an illustration and wear limit table which show the data for the wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Nose Wheel Steering Pivot Links - Removal/Installation for procedures to do these tasks.

TASK 32-51-07-206-002

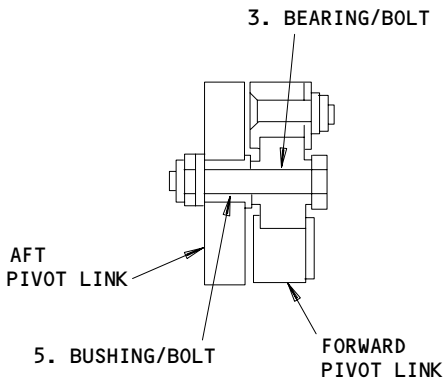
2. Wear Limits for the Pivot Links of the Nose Wheel Steering (Fig. 601)
   A. Wear Limits for the Pivot Links

S 226-001

(1) Refer to Fig. 601 for the inspection points and the wear limit table.



Wear Limits for the Pivot Links of the Nose Wheel Steering
Figure 601 (Sheet 1)



C–C

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
			DIAMETER		PER-MITTED WEAR DIM.	MAX DIA CLEAR-ANCE			
			MIN	MAX					
1	DRIVE BAR	▷2◁	0.0982	0.1008	0.1008	0.0052 ▷4◁		X	▷1◁
	COMPENSATOR SHAFT	▷3◁	0.0956	0.0982	0.0956			X	▷1◁
2	DRIVE BAR	ID	0.2500	0.2515	0.2525	0.0030		X	▷1◁
	BOLT	OD	0.2485	0.2495	0.2485		X		
3	BEARING	ID	0.2495	0.2500	0.2510	0.0015	X		
	BOLT	OD	0.2485	0.2495	0.2485		X		
4	BUSHING	ID	0.2500	0.2515	0.2525	0.0030	X		
	BOLT	OD	0.2485	0.2495	0.2485		X		
5	BUSHING	ID	0.2495	0.2505	0.2515	0.0020	X		
	BOLT	OD	0.2485	0.2495	0.2485		X		

▷1◁ THIS PART CAN BE REPAIRED. REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THIS INFORMATION.
▷2◁ SPLINE SPACE WIDTH
▷3◁ SPLINE TOOTH THICKNESS
▷4◁ SPLINE TOOTH CLEARANCE

Wear Limits for the Pivot Links of the Nose Wheel Steering
Figure 601 (Sheet 2)

NOSE WHEEL STEERING CHECK VALVE MODULE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains four tasks. The first task removes the check valves from the check valve module of the nose wheel steering. The second task installs the check valves. The third task removes the check valve module of the nose wheel steering. The fourth task installs the check valve module.

TASK 32-51-08-004-001

2. Remove the Check Valves from the Check Valve Module of the Nose Wheel Steering (Fig. 401)
   A. General
      (1) This procedure can be used for each check valve installed on the check valve module.
   B. References
      (1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones

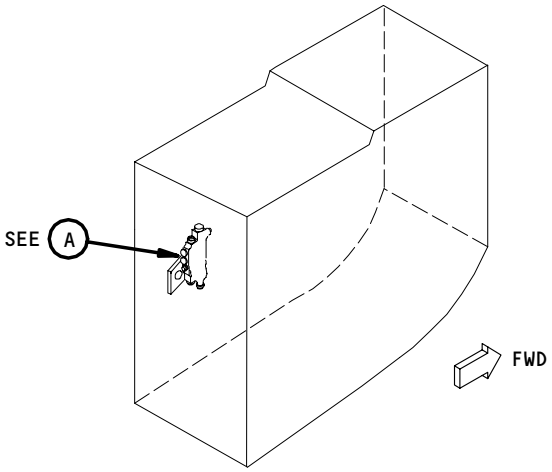
115/116	Nose Landing Gear Wheel Well
711	Nose Landing Gear

   D. Prepare to Remove the Check Valve

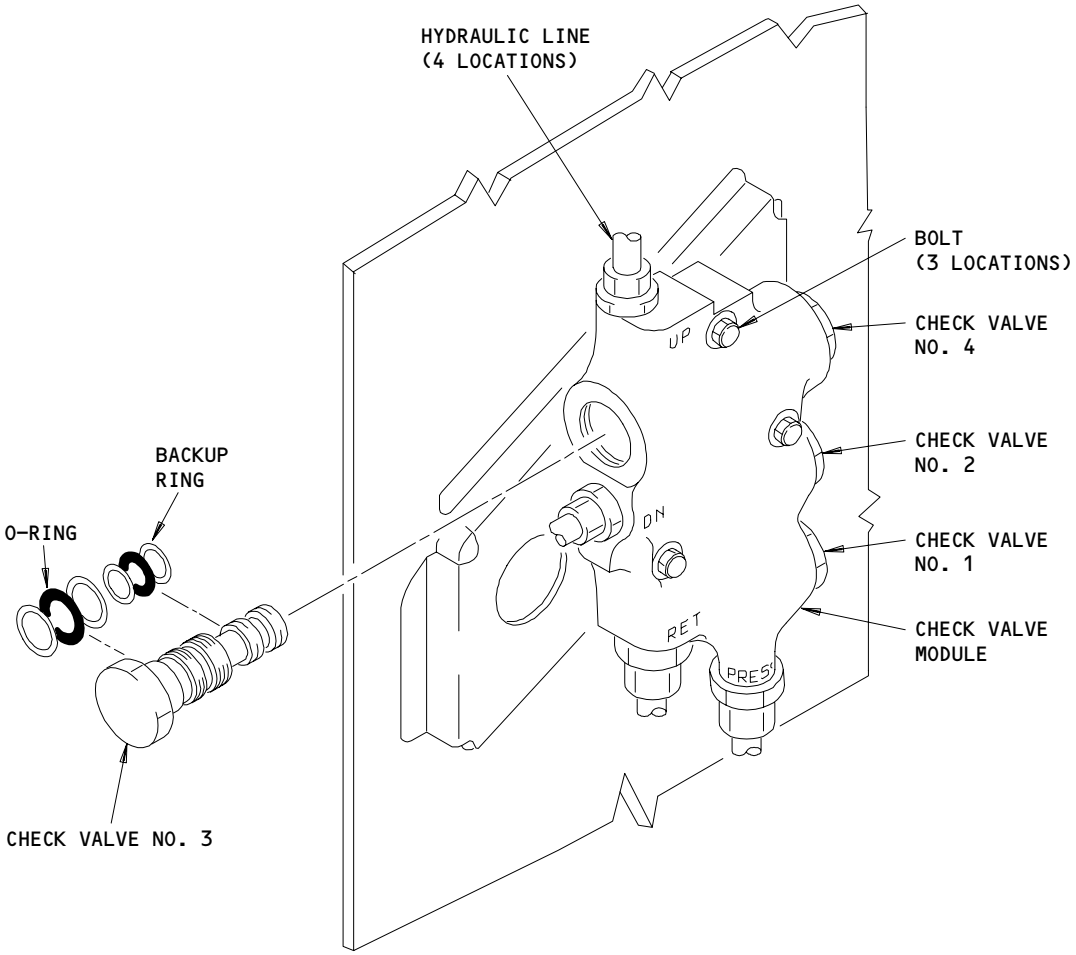
      S 494-004
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20).

      S 864-005
      (2) Remove the pressure from the center hydraulic system and reservoir (AMM 29-11-00).

      S 024-006
      (3) Remove the check valve from the check valve module.



NOSE LANDING GEAR WHEEL WELL



A

Installation of the Check Valve Module for the Nose Wheel Steering
Figure 401

S 034-007
(4) Discard the O-rings and the backup rings.

TASK 32-51-08-404-002

3. Install the Check Valves of the Check Valve Module for the Nose Wheel Steering (Fig. 401).

A. Consumable Materials
(1) B00054 Lubricant, Hydraulic Systems - MCS 352B

B. References
(1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

C. Access
(1) Location Zones

115/116	Nose Landing Gear Wheel Well
711	Nose Landing Gear

D. Install the Check Valve

S 434-008
(1) Install the O-rings and the backup rings on the check valve.

S 644-009
(2) Lubricate the O-rings and the backup rings.

S 644-010
(3) Lubricate the internal threads of the check valve module.

S 424-011
(4) Install the check valve in the check valve module.

S 434-028
(5) Tighten the check valve to 425-500 pound-inches (Fig. 401).

S 434-012
(6) Install the lockwire on the check valve.

E. Put the Airplane Back to Its Usual Condition

S 864-013
(1) Pressurize the center hydraulic system (AMM 29-11-00).

S 794-014
(2) Examine the check valve for a hydraulic leak.

S 864-015
(3) Remove the pressure from the center hydraulic system (AMM 29-11-00).

TASK 32-51-08-004-003

4. Remove the Check Valve Module of the Nose Wheel Steering (Fig. 401)
   A. References
      (1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          115/116 Nose Landing Gear Wheel Well
          711 Nose Landing Gear

   C. Prepare to Remove the Check Valve Module

      S 494-016
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20).

      S 864-017
      (2) Remove the pressure from the center hydraulic system and reservoir (AMM 29-11-00).

      S 034-018
      (3) Disconnect the hydraulic lines from the check valve module.
   D. Remove the Check Valve Module

      S 034-019
      (1) Remove the three bolts from the check valve module.

      S 024-020
      (2) Remove the check valve module.

TASK 32-51-08-404-029

5. Install the Check Valve Module of the Nose Wheel Steering (Fig. 401)
   A. Consumable Materials
      (1) B00054 Lubricant, Hydraulic Systems - MCS 352B

B. References
(1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
C. Access
(1) Location Zones
115/116 Nose Landing Gear Wheel Well
711 Nose Landing Gear

D. Install the Check Valve Module.

S 864-021
(1) Put the check valve module in its position.

S 024-022
(2) Use the three bolts to attach the check valve module.

S 644-023
(3) Lubricate the seals of the hydraulic fittings.

S 434-024
(4) Install the hydraulic lines.
E. Put the Airplane Back to Its Usual Condition

S 864-025
(1) Pressurize the center hydraulic system (AMM 29-11-00).

S 794-026
(2) Examine the check valve module for hydraulic leaks.

S 864-027
(3) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00).

NOSE WHEEL STEERING FORWARD QUADRANT - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the forward quadrant of the nose wheel steering. The second task installs the forward quadrant of the nose wheel steering.

TASK 32-51-10-004-002

2. Remove the Forward Quadrant for the Nose Wheel Steering (Fig. 401)
   A. Equipment
      (1) Rig Pins from kit A20004-XX (AMM 20-10-24):
          (a) NS1 - P/N A20004-14
          (b) NS2 - P/N A20004-22
          (c) NS4 - P/N A20004-13
          (d) AIRPLANES WITH FIRST OFFICER'S TILLER;
              NS8 - P/N A20004-14
      (2) Towing Lever Lockpin - A09003-1
   B. References
      (1) AMM 32-51-00/501, Nose Wheel Steering System
   C. Access
      (1) Location Zones

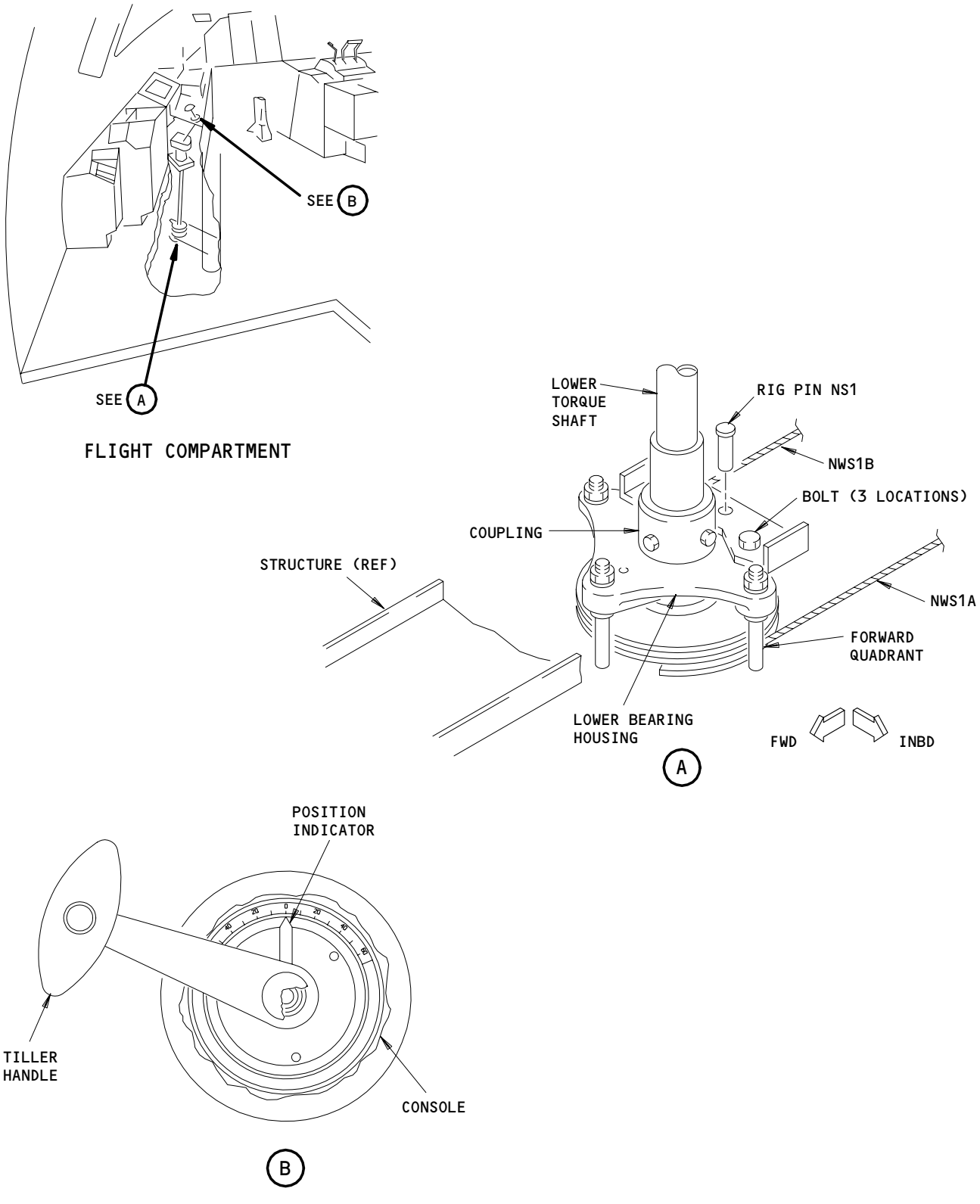
119	Main Equipment Center (Left and Right)
211/212	Control Cabin
711	Nose Landing Gear

          (a) Access Panel
              119AL Main Equipment Center

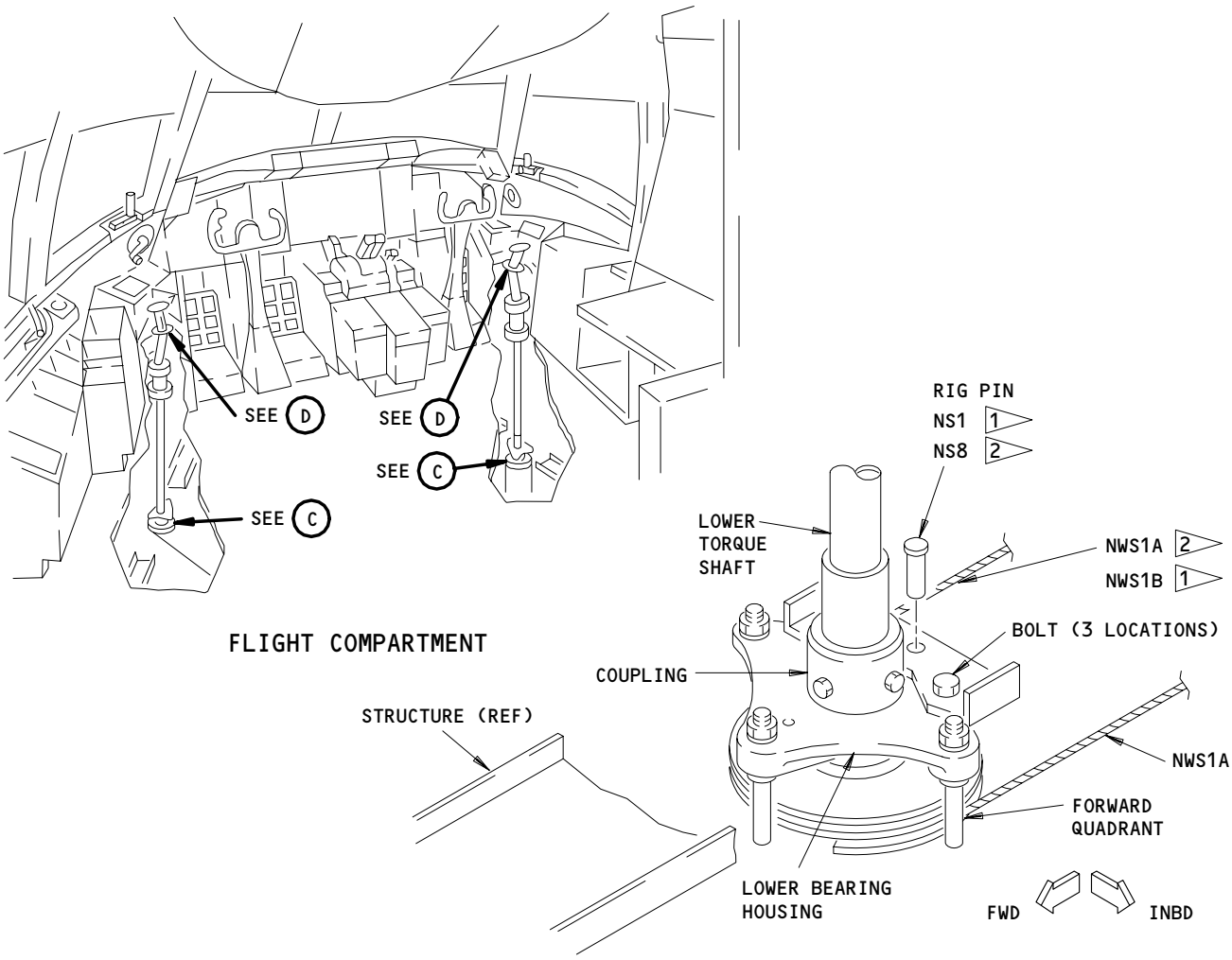
   D. Prepare to Remove the Forward Quadrant

      S 864-003
      (1) Put the mechanism for the nose wheel steering in the center position.

      S 864-004
      (2) Put the towing lever on the steering metering valve to the TOWING position.



Installation of the Forward Quadrant for the Nose Wheel Steering
Figure 401 (Sheet 1)



Installation of the Forward Quadrant for the Nose Wheel Steering
Figure 401 (Sheet 2)

EFFECTIVITY
AIRPLANES WITH FIRST OFFICER'S TILLER

689459

S 494-005
(3) Install the towing lever lockpin.

S 494-080
(4) Install the rig pin, NS2, in the rudder interconnect mechanism (AMM 32-51-00/501).

S 494-006
(5) Install the rig pin, NS4, in the trunnion drum (AMM 32-51-00/501).

E. Remove the Forward Quadrant

S 034-084
(1) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
Disconnect the lower torque shaft from the forward quadrant at the coupling.

S 034-085
(2) AIRPLANES WITH FIRST OFFICER'S TILLER;
Disconnect the lower torque shaft from the Captain's and/or the First Officer's forward quadrant at the coupling.

S 034-086
(3) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
Remove and discard the cotter pins from the forward quadrant.
(a) Loosen the cable turnbuckles.
(b) Remove the cables NWS1A and NWS1B from the forward quadrant.

S 014-087
(4) AIRPLANES WITH FIRST OFFICER'S TILLER;
Remove and discard the cotter pins from the forward quadrant.
(a) Loosen the cable turnbuckles.
(b) Remove the cables NWS1A and NWS1B on the Captain's side or NWS1A (at 2 locations) on the First Officer's side from the forward quadrant.

S 034-018
(5) Remove the bolts which attach the lower bearing housing and the forward quadrant to the support structure.

S 024-020
(6) Remove the forward quadrant.

TASK 32-51-10-404-022

3. Install the Forward Quadrant for the Nose Wheel Steering (Fig. 401)

A. Equipment
(1) Rig Pins from kit A20004-XX (AMM 20-10-24):
(a) NS1 - P/N A20004-14
(b) NS2 - P/N A20004-22
(c) NS4 - P/N A20004-13
(d) AIRPLANES WITH FIRST OFFICER'S TILLER;
NS8 - P/N A20004-14
(2) Towing Lever Lockpin - A09003-1

B. Consumable Materials
(1) D00633 Grease, Corrosion Preventive - BMS 3-33 (Preferred)
(2) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)

C. References
(1) AMM 32-51-00/501, Nose Wheel Steering System

D. Access
(1) Location Zones

119	Main Equipment Center (Left and Right)
211/212	Control Cabin
711	Nose Landing Gear

(a) Access Panel

119AL	Main Equipment Center

E. Install the Forward Quadrant

S 494-023
(1) Make sure the towing lever is in the TOW position.

S 494-024
(2) Make sure the towing lever lockpin is installed on the steering metering valve.

S 494-025
(3) Make sure the rig pin NS2 is installed in the rudder interconnect mechanism (AMM 32-51-00/501).

S 494-026
(4) Make sure the rig pin NS4 is installed in the trunnion drum (AMM 32-51-00/501).

S 644-027
(5) Apply grease to the splined surfaces of the lower torque shaft, the coupling, and the torque shaft adapter.

S 424-088

(6) AIRPLANES WITH FIRST OFFICER'S TILLER;
Do the steps that follow:

(a) Attach the lower bearing housing and the Captain's or First Officer's forward quadrant to the airplane structure. Use the three fasteners.

(b) Install the rig pins NS1 (for the Captain's side) and NS8 (for the First Officer's side) in the lower bearing housings and the forward quadrants.

(c) Connect the cables NWS1A and NWS1B (for the Captain's side) and/or NWS1A (at 2 locations on the First Officer's side) to the forward quadrants.

(d) Install the cotter pins.

(e) Tighten the cables (AMM 32-51-00/501).

NOTE: Tighten the cables if the temperatures in and outside the airplane are in 5°F of each other. The inner temperature must be stable for 1 hour or more before you tighten the cables.

(f) Make sure the rig pins NS1 and NS8 fit loosely in the rig pin holes of the Captain's and First Officer's forward quadrant.

(g) Install the turnbuckle locking clips.

(h) Apply grease to the coupling screws of the lower torque shaft.

(i) Turn the Captain's and/or the First OFficer's tiller handle(s) until the handle pointer(s) and the marker(s) align on the center.

(j) Connect the lower torque shaft to the forward quadrant (Detail A and B).

(k) Install a lockwire.

(l) With the pointer(s) centered, the tiller handle(s) must be 0.50 ±0.50 inch forward of the aft surface on the console assembly (AMM 32-51-00/501).

(m) Remove the rig pins NS1, NS2, NS4 and NS8.

S 424-089

(7) AIRPLANES WITHOUT FIRST OFFICER'S TILLER;
Do the steps that follow:

(a) Attach the lower bearing housing and the forward quadrant to the airplane structure with the three fasteners.

(b) Install the rig pin NS1 in the lower bearing housing and the forward quadrant.

(c) Connect the NWS1A and the NWS1B cables to the forward quadrant.

(d) Install the cotter pins.
(e) Tighten the cables (AMM 32-51-00/501).

NOTE: Tighten the cables if the temperatures in and outside the airplane are in 5°F of each other. The inner temperature must be stable for 1 hour or more before you tighten the cables.

(f) Make sure the rig pin NS1 fits loosely in the rig pin hole of the forward quadrant.
(g) Install the turnbuckle locking clips.
(h) Apply grease to the coupling screws of the lower torque shaft.
(i) Turn the tiller handle until the handle pointer and the marker align on the center.
(j) Connect the lower torque shaft to the forward quadrant (Detail A and B).
(k) Install a lockwire.
(l) With the pointer centered, the tiller handle must be 0.50 ±0.50 inch forward of the aft surface on the console assembly (AMM 32-51-00/501).
(m) Remove the rig pins NS1, NS2, and NS4.

F. Put the Airplane Back to Its Usual Condition

S 094-051
(1) Remove the towing lever lockpin from the towing lever.

S 864-052
(2) Make sure the towing lever moves to the NORMAL position.

S 714-053
(3) Do the test for the tiller handle steering of the nose wheel steering system (AMM 32-51-00/501).

NOSE WHEEL STEERING METERING VALVE COMPENSATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the metering valve compensator for the nose wheel steering. The second task installs the metering valve compensator for the nose wheel steering.

TASK 32-51-11-004-001

2. Remove the Metering Valve Compensator for the Nose Wheel Steering (Fig. 401)
   A. Equipment
      (1) Crowfoot Wrench, 3-inch - commercially available
   B. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear

   D. Prepare to Remove the Metering Valve Compensator

      S 864-003
      (1) Remove the pressure from the center hydraulic system and reservoir (AMM 29-11-00/201).

      S 494-004
      (2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).
   E. Remove the Metering Valve Compensator

      S 874-005

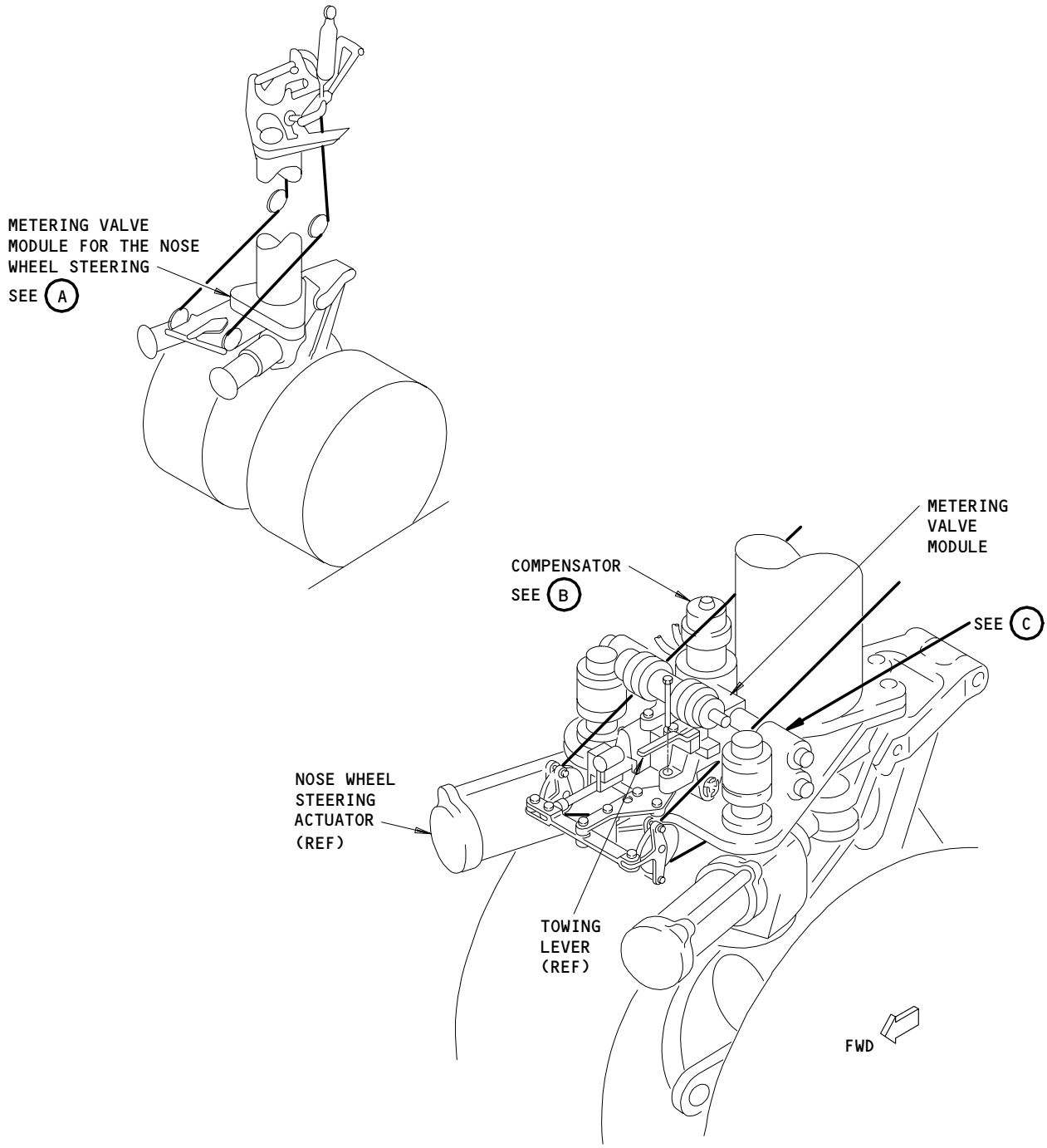
      WARNING: BLEED THE PRESSURE FROM THE METERING VALVE COMPENSATOR BEFORE YOU REMOVE IT. IF YOU DO NOT BLEED THE PRESSURE BEFORE YOU REMOVE THE COMPENSATOR, IT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (1) Loosen the bleed plug (Fig. 401) to bleed the hydraulic pressure from the compensator.

      S 034-006
      (2) Use the crowfoot wrench to loosen the compensator from the module.

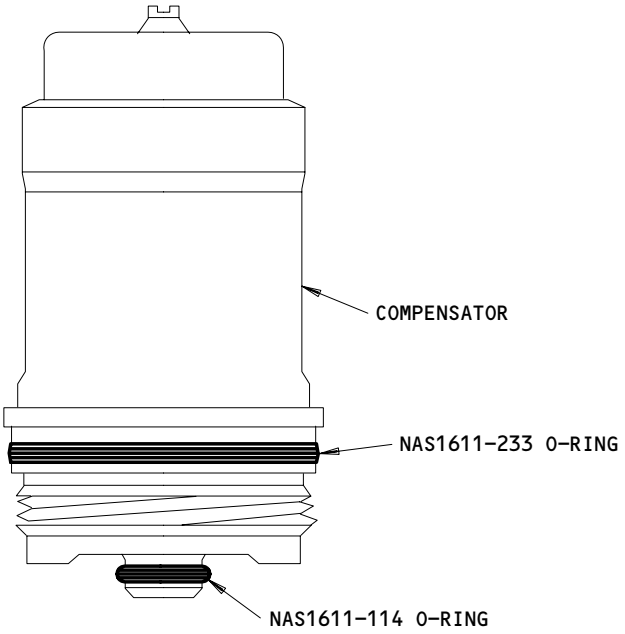
      S 024-007
      (3) Remove the compensator and the O-rings from the boss.

      S 034-008
      (4) Tighten the bleed plug to 170-190 pound-inches (Fig. 401).



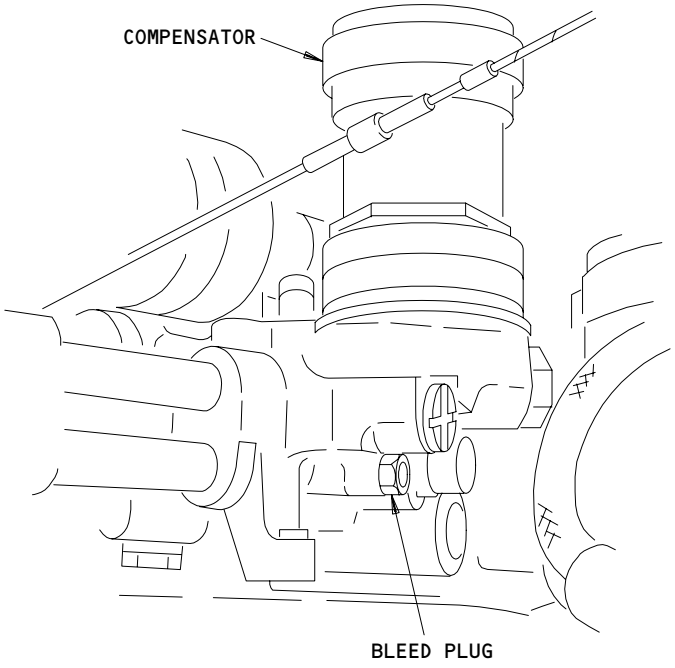
METERING VALVE MODULE FOR THE NOSE WHEEL STEERING
A

Installation of the Metering Valve Compensator for the Nose Wheel Steering
Figure 401 (Sheet 1)



INSTALLATION OF THE COMPENSATOR O-RING

B



C

Installation of the Metering Valve Compensator for the Nose Wheel Steering
Figure 401 (Sheet 2)

TASK 32-51-11-404-002

3. Install the Metering Valve Compensator for the Nose Wheel Steering (Fig. 401)

A. Consumable Materials

(1) A00250 Sealant - BMS 5-26 Type II Class B-1/2

(2) D00153 Fluid, Hydraulic - BMS 3-11

B. References

(1) AMM 12-12-01/301, Hydraulic Systems

(2) AMM 24-22-00/201, Electrical Power Control

(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

(4) AMM 32-21-11/401, Nose Gear Torsion Links

C. Access

(1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear

D. Install the Metering Valve Compensator

S 864-009

(1) Make sure the pressure is removed from the center hydraulic system and reservoir (AMM 29-11-00/201).

S 434-010

(2) Install the two O-rings on the compensator (Fig. 401).

S 644-011

(3) Apply a thin layer of the sealant to the threads of the compensator.

S 424-012

(4) Attach the compensator to the boss on the metering valve.

S 434-013

(5) Tighten the compensator to 275-300 pound-inches (Fig. 401).

S 434-014

(6) Install the lockwire between the compensator and the metering valve.

S 864-015

(7) Supply electrical power (AMM 24-22-00/201).

S 864-016

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE MOVABLE SURFACES BEFORE HYDRAULIC POWER IS SUPPLIED TO THE NOSE WHEEL STEERING SYSTEM. MOVABLE SURFACES CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Supply power to the center hydraulic system (AMM 29-11-00/201).

S 034-017

CAUTION: DISCONNECT THE UPPER TORSION LINK AND HOLD IT IN THE HORIZONTAL POSITION. IF THE UPPER TORSION LINK IS NOT IN THE HORIZONTAL POSITION, IT CAN CAUSE DAMAGE TO THE SENSOR TARGETS DURING THE STEERING TESTS.

CAUTION: MAKE SURE THE SENSOR TARGETS WILL BE CLEAR OF ALL THE ADJACENT STRUCTURES WHEN THE STEERING SYSTEM MOVES. IF THE SENSOR TARGETS TOUCH THE ADJACENT STRUCTURES, THE SENSOR TARGETS CAN BE DAMAGED.

(9) Disconnect the torsion links of the nose landing gear at the apex joint (AMM 32-21-11/401).

S 864-018

(10) With the steering tiller, turn the nose wheel steering to the full left then the full right position. Do this a minimum of six times.

NOTE: This will bleed the air from the nose wheel steering system.

S 714-019

(11) Do the steps that follow to do the test for the tiller handle steering:
   (a) Do the steps that follow two times for the tiller handle. The first time turn the tiller handle in the clockwise direction. The second time turn the tiller handle in the counterclockwise direction.
      1) Turn the tiller handle from the center position until the adjustable stop bolt on the trunnion drum touches the stationary stop.
      2) Hold the tiller handle in this position.
      3) Make sure the angular displacement of the steering collar is 65 ±1 degrees.
      4) Release the tiller handle.
         a) Make sure the tiller handle automatically moves to the neutral (center) position in less than four seconds.
         b) Make sure the steering collar is no more than ±2 degrees from the center position.
   (b) Examine the metering valve compensator for hydraulic leaks.

E. Put the Airplane Back to Its Usual Condition

S 864-020
(1) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 614-021
(2) Make sure the hydraulic fluid reservoir, for the center hydraulic system, is filled.
(a) Add hydraulic fluid if it is necessary (AMM 12-12-01/301).

S 864-022
(3) Remove the electrical power if it is not necessary (AMM 24-22-00/201).

S 414-023
(4) Connect the torsion links for the nose landing gear (AMM 32-21-11/401).

S 214-024
(5) Make sure the not compressed sensors and targets, for the nose landing gear, are not damaged.

NOSE WHEEL STEERING METERING VALVE DYNAMIC LOAD DAMPER - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the metering valve dynammic load damper for the nose wheel steering. The second task installs the metering valve dynamic load damper for the nose wheel steering.

TASK 32-51-12-004-001

2. Remove the Metering Valve Dynamic Load Damper for the Nose Wheel Steering (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear

   C. Prepare to Remove the Metering Valve Compensator

      S 494-003
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-002
      (2) Removed the pressure from the center hydraulic system and reservoir (AMM 29-11-00/201).
   D. Procedure to Remove the Metering Valve Dynamic Load Damper

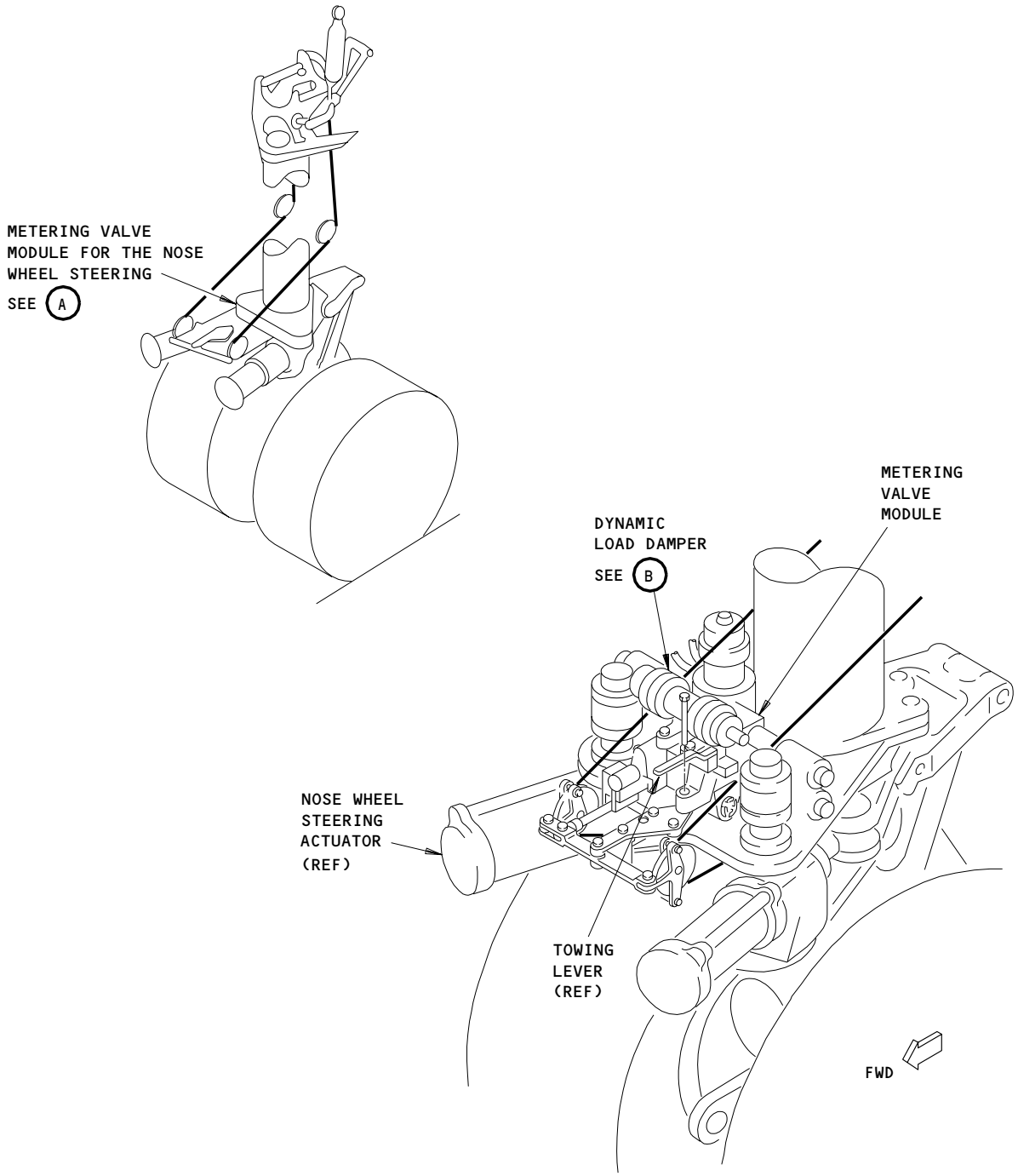
      S 034-004
      (1) Remove the four bolts (1) and the four washers (2).

      S 024-030

      CAUTION: YOU MUST BE CAREFUL WHEN YOU REMOVE THE DYNAMIC LOAD DAMPERNER FROM THE MANIFOLD. IF YOU CAUSE DAMAGE TO THE SURFACES THAT SEAL HYDRAULIC FLUID YOU WILL CAUSE A LEAK.

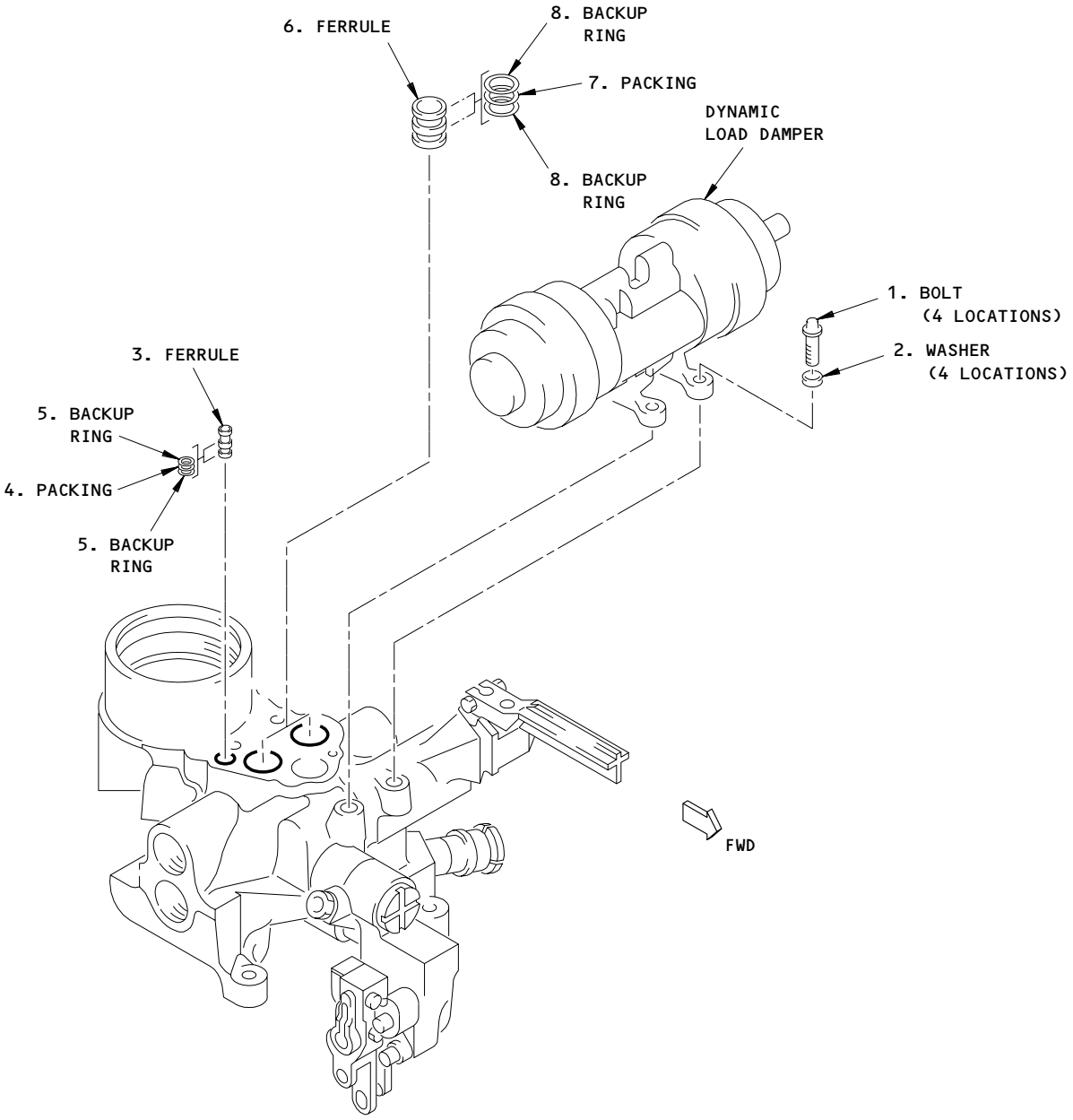
      (2) Remove the dynamic load damper from the manifold assembly.

      S 034-007
      (3) Remove the ferrule (3).



METERING VALVE MODULE FOR THE NOSE WHEEL STEERING
A

Installation of the Metering Valve Dynamic Load Damper for the Nose Wheel Steering
Figure 401 (Sheet 1)



DYNAMIC LOAD DAMPER

(B)

Installation of the Metering Valve Dynamic Load Damper for the Nose Wheel Steering
Figure 401 (Sheet 2)

G70186

S 034-008
(4) Remove the four backup rings (5) and the two packing (4).

S 034-009
(5) Remove the two ferrule (6).

S 034-010
(6) Remove the four backup ring (8) and the two packing (7) from each ferrule (6).

TASK 32-51-12-004-011

3. Install the Metering Valve Dynamic Load Damper for the Nose Wheel Steering (Fig. 401)

A. Consumable Materials
(1) Fluid, Hydraulic - BMS 3-11
(2) Lubricant - MCS352B

B. References
(1) AMM 12-12-01/301, Hydraulic Systems
(2) AMM 24-22-00/201, Electrical Power Control
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(4) AMM 32-21-11/401, Nose Gear Torsion Links

C. Access
(1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear

D. Procedure to Install the Metering Valve Dynamic Load Damper

S 644-012
(1) Lightly lubricate the two packing (7) and the four backup ring (8) with MCS352B lubricant.

S 434-013
(2) Install the two packing (7) and the four backup ring (8) on each of the two ferrule (6).

S 434-014
(3) Install the two ferrule (6) in the manifold assembly.

S 644-015
(4) Lightly lubricate the two packing (4) and the four backup ring (5) with MSC-352 lubricant.

S 434-016

(5) Install the two packing (4) and the four O-ring (5) on the ferrule (3).

S 434-017

(6) Install the ferrule (6) in the manifold assembly.

S 424-018

(7) Attach the dynamic load damper to the manifold assembly with four bolts (1) and four washers (2) .

S 434-019

(8) Tighten the four bolts (1) to 150-180 pound-inches.

S 864-020

(9) Supply electrical power (AMM 24-22-00/201).

S 864-021

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE NOSE WHEEL STEERING SYSTEM BEFORE YOU SUPPLY HYDRAULIC POWER TO THE SYSTEM. PART OF THE NOSE WHEEL SYSTEM CAN TURN AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(10) Supply power to the center hydraulic system (AMM 29-11-00/201).

S 034-022

CAUTION: MAKE SURE THE UPPER TORSION LINK IS HELD IN THE HORIZONTAL POSITION (AT A RIGHT ANGLE TO THE OUTER CYLINDER OF THE SHOCK STRUT) WHEN YOU DISCONNECT IT. IF THE UPPER TORSION LINK IS NOT IN THE HORIZONTAL POSITION, IT CAN CAUSE DAMAGE TO THE SENSOR TARGETS DURING THE STEERING TESTS.

MAKE SURE THE SENSOR TARGETS DO NOT TOUCH THE ADJACENT STRUCTURE WHEN YOU MOVE THE STEERING SYSTEM FULLY LEFT OR RIGHT. IF THE SENSOR TARGETS TOUCH THE ADJACENT STRUCTURE, THE SENSOR TARGETS CAN BE DAMAGED.

(11) Disconnect the torsion links of the nose landing gear at the apex joint (AMM 32-21-11/401).

S 864-023
(12) With the steering tiller, turn the nose wheel steering to the full left then the full right position. Do this a minimum of six times.

NOTE: This will bleed the air from the nose wheel steering system.

S 714-024
(13) Do the steps that follow to do the test for the tiller handle steering:
(a) Do the steps that follow two times for the tiller handle. The first time turn the tiller handle in the clockwise direction. The second time turn the tiller handle in the counterclockwise direction.
1) Turn the tiller handle from the center position until the adjustable stop bolt on the trunnion drum touches the stationary stop.
2) Hold the tiller handle in this position.
3) Make sure the angular displacement of the steering collar is 65 ±1 degrees.
4) Release the tiller handle.
a) Make sure the tiller handle automatically moves to the neutral (center) position in less than four seconds.
b) Make sure the steering collar is no more than ±2 degrees from the center position.
(b) Examine the metering valve compensator for hydraulic leaks.

E. Put the Airplane Back to Its Usual Condition

S 864-025
(1) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 614-026
(2) Make sure the hydraulic fluid reservoir, for the center hydraulic system, is filled.
(a) Add hydraulic fluid if it is necessary (AMM 12-12-01/301).

S 864-027
(3) Remove the electrical power if it is not necessary (AMM 24-22-00/201).

S 434-028
(4) Connect the torsion links for the nose landing gear (AMM 32-21-11/201).

S 864-029

(5) Make sure the not compressed sensors and targets, for the nose landing gear, are not damaged.

NOSE GEAR STEERING SUMMING MECHANISM - REMOVAL/INSTALLATION

1. General
   A. This procedure has these tasks:
      (1) A removal of the nose gear steering summing mechanism
      (2) An installation of the nose gear steering summing mechanism.
   B. The nose gear steering summing mechanism is referred to as the summing mechanism (1) in this procedure.

TASK 32-51-13-004-001

2. Summing Mechanism Removal (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          211 Control Cabin (Left)
          212 Control Cabin (Right)
          711 Nose Landing Gear (NLG)

   C. Prepare for the Removal

      S 864-002
      (1) Remove the pressure from the center hydraulic system and reservoir (AMM 29-11-00/201).

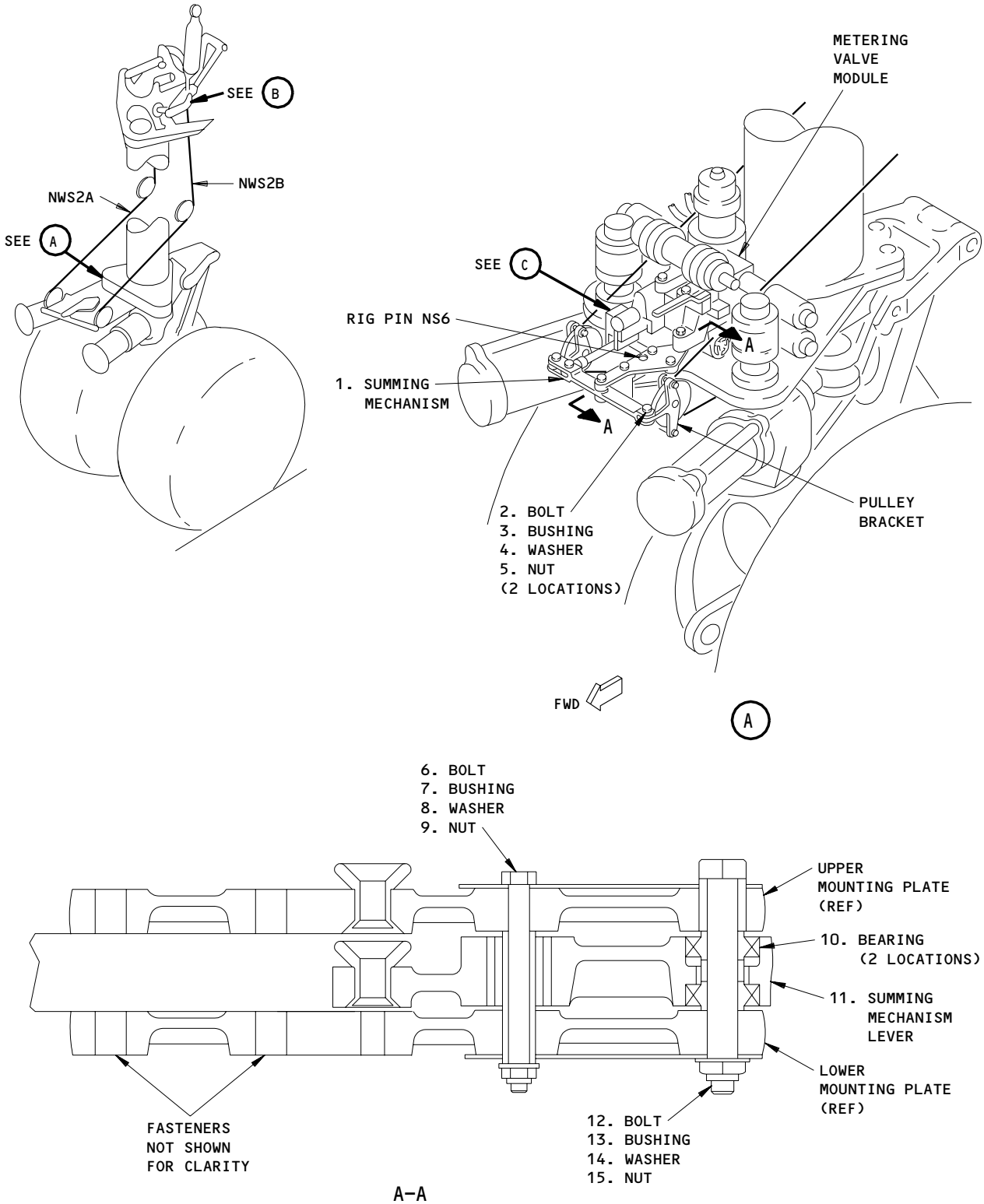
      S 484-053

      WARNING: MAKE SURE THAT THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

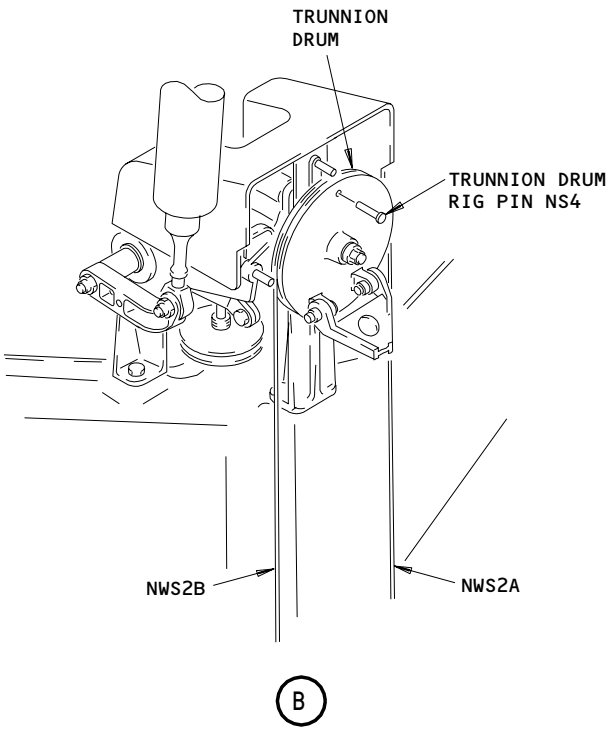
      (2) Make sure the downlocks are installed in the nose and main landing gear (AMM 32-00-20/201).

      S 014-004
      (3) Remove the summing mechanism cover and the right support bracket.

      S 024-073
      (4) Loosen the steering cables NWS2A and NWS2B at the turnbuckles. The cables are installed on the nose landing gear.



Nose Gear Steering Summing Mechanism Installation
Figure 401 (Sheet 1)



Nose Gear Steering Summing Mechanism Installation
Figure 401 (Sheet 2)

D. Summing Mechanism Removal

S 024-054
(1) Remove the nuts (5), washers (4), bolts (2), and bushings (3) to disconnect the pulley brackets from the summing mechanism (1).

S 024-055
(2) Remove the nut (19), washer (18), bolt (16), and bushing (17) to disconnect the connecting rod on the summing mechanism from the input arm on the metering valve module.

S 024-056
(3) Remove the nuts (9, 15), washers (8, 14), bolts (6, 12), and bushings (7, 13) to disconnect the summing mechanism lever (11) from the upper and lower mounting plates.

S 024-057
(4) Remove the summing mechanism (1).

TASK 32-51-13-404-013

3. Summing Mechanism Installation (Fig. 401)
A. References
(1) AMM 12-12-01/301, Hydraulic Systems - Servicing
(2) AMM 24-22-00/201, Electrical Power Control
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 32-21-11/401, Nose Gear Torsion Links
B. Equipment
(1) Rig Pins from Set A20004-XX (AMM 20-10-24)
(a) NS4 - P/N A20004-13
(b) NS6- P/N A20004-19
(c) NS7- P/N A20004-14
(2) Cable Tensiometer - 0 to 200 pound range for 3/32 inch diameter cables (commercially available)
C. Consumable Materials
(1) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)

(2) D00633 Grease, Corrosion Preventive - BMS 3-33 (Preferred)

D. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Summing Mechanism	32-51-04	01	365 455 540

E. Access

(1) Location Zones

211 Control Cabin (Left)
212 Control Cabin (Right)
711 Nose Landing Gear (NLG)

F. Prepare for the Installation

S 484-058

(1) Make sure the downlocks are installed in the nose and main landing gear (AMM 32-00-20/201).

S 864-015

(2) Make sure the pressure is removed from the center hydraulic system and reservoir (AMM 29-11-00/201).

G. Summing Mechanism Installation

S 604-059

(1) Apply grease, BMS3-33, to the parts below:

(a) The inside diameter of the holes on the upper and lower mounting plates where you will install the bushings (7, 13)

(b) The inside and outside diameters of the bushings (7, 13)

(c) The surfaces of the bolts (6, 12)

S 604-063
(2) Apply grease (BMS 3-33) to the parts below:
(a) The inside diameters of the housings on the summing mechanism lever (11) where you will install the bearings (10)
(b) The outside diameters of the bearings (10).

S 424-060
(3) Install the bearings (10) in the summing mechanism lever (11).

S 424-061
(4) Put the summing mechanism lever (11) in its position between the upper and lower mounting plates.

S 424-062
(5) Install the bolts (6, 12), bushings (7, 13), washers (8, 14), and nuts (9, 15) to connect the summing mechanism lever (11) to the upper and lower mounting plates.

NOTE: The bolt (6) is a mechanical stop to limit the movement of the summing mechanism (1) as it turns around bolt (12).

S 604-064
(6) Apply grease, BMS3-33, to the parts below:
(a) The inside diameter of the holes in the summing mechanism lever (11) where you will install the bushings (3)
(b) The inside and outside diameters of the bushings (3)
(c) The surfaces of the bolts (2).

S 424-065
(7) Install the bolts (2), bushings (3), washers (4), and nuts (5) to connect the pulley brackets to the summing mechanism lever (11).

S 484-066
(8) Install the rig pins NS4, NS6 and NS7 in the trunnion drum, the summing mechanism (1), and the metering valve input arm.

S 824-027
(9) Install and tighten the control cables NWS2A and NSW2B. Adjust the cable tension to 60 ±10 pounds.

S 644-067
(10) Apply grease, BMS3-33, to the parts below:
(a) The inside diameter of the hole in the input lever where you will install the bushing (17)
(b) The inside and outside diameter of the bushing (17)
(c) The surfaces of the bolt (16).

S 424-068
(11) Install the bolt (16), bushing (17), washer (18), and nut (19) to attach the connecting rod to the input arm of the metering valve.

S 824-030
(12) Adjust the length of the connecting rod until you can easily install the rig pins NS4, NS6 and NS7.

S 424-069
(13) Tighten the locknut on the connecting rod and install lockwire.

S 084-070
(14) Remove the rig pins NS4, NS6 and NS7.

S 864-034
(15) Supply electrical power (AMM 24-22-00/201).

S 864-035

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE MOVABLE SURFACES OF THE STEERING SYSTEM FOR THE NOSE WHEEL. WHEN YOU SUPPLY POWER TO THE STEERING SYSTEM, THE MOVABLE SURFACES CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(16) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 024-071

CAUTION: ATTACH THE DISCONNECTED TORSION LINK IN THE HORIZONTAL POSITION (AT RIGHT ANGLES TO THE OUTER CYLINDER OF THE SHOCK STRUT). DAMAGE TO THE SENSOR TARGETS CAN OCCUR WHEN YOU DO THE TEST OF THE STEERING SYSTEM IF THE TOP TORSION LINK IS NOT IN THE HORIZONTAL POSITION.

TO MAKE SURE THE SENSOR TARGETS WILL BE CLEAR OF ALL THE ADJACENT STRUCTURE, SLOWLY MOVE THE STEERING SYSTEM FULL LEFT AND RIGHT.

(17) Disconnect the torsion links for the nose landing gear at the apex joint (AMM 32-21-11/401).

H. Summing Mechanism Installation Test

S 714-038

(1) Turn the tiller handle clockwise from the center position until the adjustable stop bolt on the trunnion drum touches the stop on the structure.

S 714-039

(2) Hold this position.

S 714-040

(3) Make sure the steering collar turned 65 ±1 degrees.

S 714-041

(4) Release the tiller.

S 714-042

(5) Make sure the tiller goes to neutral (the center) without help in 4 seconds.

S 714-043

(6) Make sure the steering collar goes to a position less than ±1 1/2 degree of the center.

S 714-044

(7) Do the six steps before this again, but turn the tiller handle counterclockwise.

S 734-045

(8) Do the steps that follow to make sure the maximum torque to operate the steering tiller through its full travel is correct:
   (a) Remove the end cap from the tiller handle where the tiller handle attaches to the shaft.
   (b) Put the torque wrench on the tiller shaft nut.

   CAUTION: DO NOT USE MORE THAN 50 POUND-INCHES OF TORQUE. TOO MUCH TORQUE CAN CAUSE THE STEERING TILLER MECHANISM TO NOT MOVE FREELY.

   (c) Use the torque wrench to turn the tiller shaft clockwise.
   (d) Make sure the maximum torque to operate the tiller full travel is not more than 37 pound-inches (4.18 newton-meters).
   (e) Do the two steps before this again, but turn the tiller counterclockwise.
   (f) Permit the system to go to the center.
   (g) Remove the torque wrench.
   (h) Install the end cap on the tiller shaft.

I. Put the Airplane Back to Its Usual Condition

S 864-047

(1) Remove the pressure from the center hydraulic system (AMM 29-11-00/201) if it is not necessary.

S 614-048

(2) Make sure the fluid in the center hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 414-049

(3) Install the summing mechanism cover.

S 864-050

(4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

S 424-072

(5) Connect the torsion links for the nose landing gear (AMM 32-21-11/201).

S 864-052

(6) Make sure there is no damage to the not compressed sensors and targets for the nose landing gear.

LANDING GEAR POSITION INDICATING AND WARNING SYSTEM - DESCRIPTION AND OPERATION

1. General
   A. The system shows status of landing gear and gear doors to the pilots.
   B. 767-300 AIRPLANES;
      The system also shows status of tail skid to the pilots.
   C. Two independent landing gear subsystems (only one for tail skid) are used to provide redundant control to indication lights and EICAS (Engine Indication and Crew Alerting System) messages.
   D. The system also provides inputs to the aural warning system, landing configuration warning module (AMM 31-51-00).
   E. The system consists of indication lights on pilots' center instrument panel P3 and EICAS messages on the upper EICAS display in panel P2 (Fig. 1). The lights indicate the status of the landing gear and gear doors to the pilots.
   F. 767-300 AIRPLANES;
      A light also indicates the status of the tail skid.
   G. The system receives gear position signals from the PSEU (Proximity Switch Electronics Unit) to turn on or off the indicator lights and EICAS messages. Proximity sensors which provide landing gear, gear door, and tail skid position signals to the PSEU are part of the proximity switch system (AMM 32-09-03).
   H. Two independent landing gear and door subsystems (system 1 and system 2) provide redundant control of the indication lights and EICAS messages. Output signals of system 1 and system 2 are combined to ensure reliability of the system.
2. Component Details (Fig. 1)
   A. Indicator Lights
      (1) Five landing gear indication lights, one amber GEAR disagreement light (hereafter called the GEAR light), one amber DOORS light, and three green NOSE, LEFT and RIGHT lights are located on panel P3. Indication lights have no delay before being turned on.
      (2) 767-300 AIRPLANES;
          One amber TAIL SKID disagreement light is also located on the P3 panel.

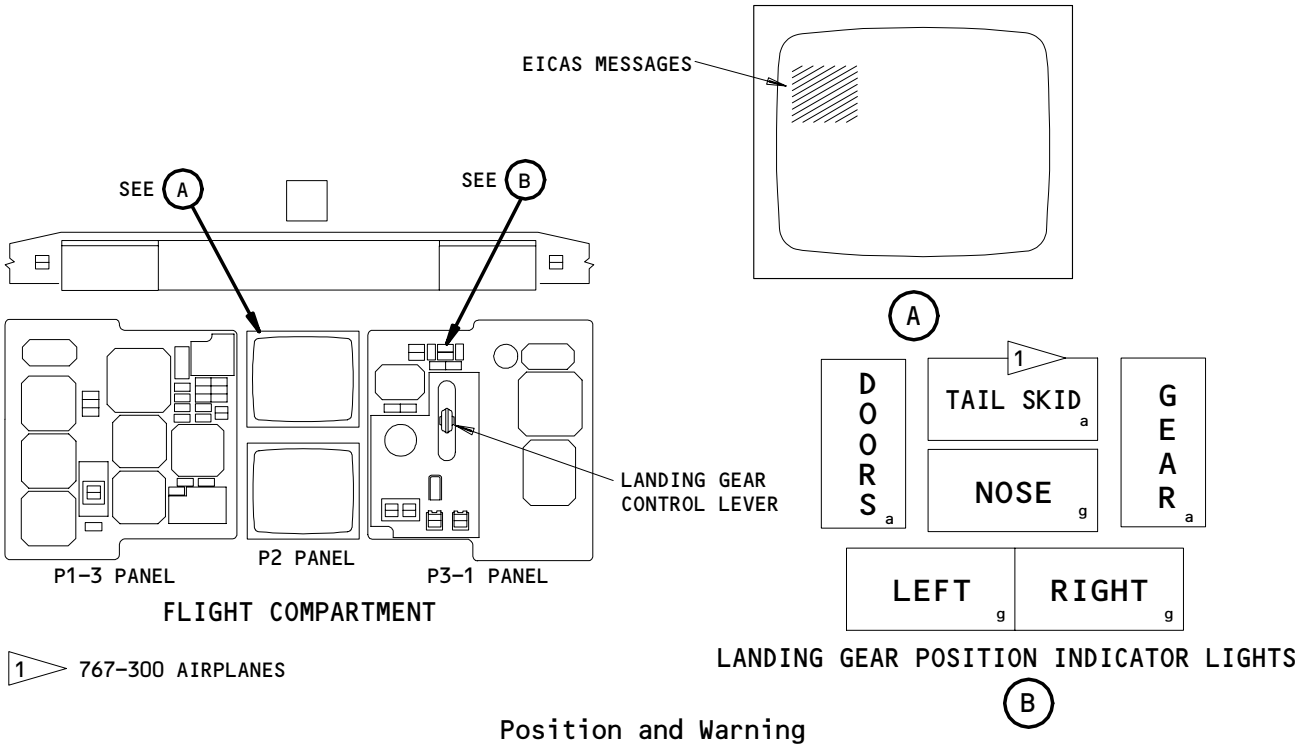
(3) Landing gear indicator lights (except for TAIL SKID) have dual light bulbs with independent power sources to reduce the possibility of indicator lights failing to illuminate as a result of a power failure.

(4) The GEAR light basically indicates a disagreement between the position of the landing gear handle and the landing gear. When the landing gear is in transit, the light will be on. When the landing gear is down and locked, but the landing gear handle is out of the down detent the amber GEAR light will be on. The amber GEAR light will be on also when the landing gear is up and locked but the main gear door is open. When the gear is up and locked, or down and locked, the light will be off.

(5) The DOORS light illuminates when any of the landing gear doors are not completely closed and locked. When all the landing gear doors are completely closed and locked, the amber DOORS light will be off. The DOORS light is not affected by the nose gear door closed sensors when the nose gear is down.

(6) The green NOSE light illuminates when the nose landing gear is down and locked. When the nose landing gear is not down and locked, the green NOSE light is off.

(7) The green LEFT light illuminates when system 1 or 2 left side and drag braces are down and locked. When system 1 and 2 left side and drag braces are not down and locked, the green LEFT light is off.



Position and Warning
Figure 1

316547

(8) The green RIGHT light illuminates when system 1 or 2 right side and drag braces are down and locked. When system 1 and 2 right side and drag braces are not down and locked, the green RIGHT light is off.

(9) 767-300 AIRPLANES;
The TAIL SKID light illuminates when a disagreement exists between landing gear and tail skid position. The disagreement can be all gear down and tail skid not extended or all gear up/all doors closed and tail skid not retracted.

(10) The system provides green gear down indication (green LEFT, RIGHT, and NOSE lights) if sensor in system 1 or system 2 indicates down and locked.

B. EICAS Display

(1) The landing gear indication for EICAS is on the EICAS display P2 panel on the pilots' center instrument panel. The EICAS messages linked to landing gear position indicating and warning system are as follows:

One amber GEAR DISAGREE
One amber L SIDE BRACE
One amber L DRAG BRACE
One amber R SIDE BRACE
One amber R DRAG BRACE
One amber GEAR DOORS
One white LDG GEAR MONITOR

During normal operation, System 1 and 2 provide redundant control of EICAS messages. All amber EICAS messages have a 25 or 35 second delay before appearing on the EICAS display. The white EICAS message has a 30 second delay.

(2) 767-300 AIRPLANES;
One amber TAIL SKID message is also linked to the landing gear position indication and warning system.

(3) In addition to EICAS display, an aural warning will be sounded along with any of the amber caution level messages.

(4) Nine maintenance level messages help fault isolation for the LDG GEAR MONITOR status level message. Each of the messages is stored in EICAS non-volatile memory (NVM). The messages are as follows:

MESSAGE	SYSTEM INPUT
GEAR DISAGREE	Sys 1 and 2 landing gear disagree indications disagree, up or down
GEAR DOORS	Sys 1 and 2 gear door position indications disagree
NOSE GEAR DOWN	Sys 1 and 2 nose gear down indications disagree
NOSE GEAR LOCKED	Sys 1 and 2 nose gear locked indications disagree
L SIDE BRACE	Sys 1 and 2 left main gear side brace down and locked indications disagree
L DRAG BRACE	Sys 1 and 2 left main drag brace down and locked indications disagree
R SIDE BRACE	Sys 1 and 2 right main gear side brace and locked indications disagree
R DRAG BRACE	Sys 1 and 2 right main gear drag brace down and locked indications disagree
ALL GEAR DOWN	The landing gear system shows that all of the landing gear is down and locked, the Nose Gear Down and Locked input shows that the nose gear is up.

The LDG GEAR MONITOR message will appear whenever one or more of the above maintenance messages are enabled. The maintenance messages have time delays varying from 2 to 30 seconds.

NOTE: The LDG MONITOR status message is not in NVM but is displayed when one or more of the NVM maintenance messages are displayed.

(5) When system 1 and system 2 both indicate a gear disagreement and a specific brace or gear is not down and locked, the indicator light(s) and EICAS message(s) will be as shown in Table 1. The EICAS messages will occur following a 25 second delay.

Table 1
Gear/Tail Skid Disagreement Indication *[1]

Control Lever	Gear/Tail Skid	Indicator Lights	EICAS Messages
Down	All gear not down	GEAR (amber)	GEAR DISAGREE
Down	L gear not down	GEAR (amber) RIGHT (green) NOSE (green)	GEAR DISAGREE
Down	R gear not down	GEAR (amber) LEFT (green) NOSE (green)	GEAR DISAGREE
Down	L side brace not locked	GEAR (amber) RIGHT (green) NOSE (green)	L SIDE BRACE
Down	L drag brace not locked	GEAR (amber) RIGHT (green) NOSE (green)	L DRAG BRACE
Down	R side brace not locked	GEAR (amber) LEFT (green) NOSE (green)	R SIDE BRACE
Down	R drag brace not locked	GEAR (amber) LEFT (green) NOSE (green)	R DRAG BRACE
Down	Nose gear, L gear and R side brace not locked	GEAR (amber)	GEAR DISAGREE R SIDE BRACE
Down	Nose gear, L gear and R drag brace not locked	GEAR (amber)	GEAR DISAGREE R DRAG BRACE
Down	Nose gear, R gear and L side brace not locked	GEAR (amber)	GEAR DISAGREE L SIDE BRACE
Down	Nose gear, R gear and L drag brace not locked	GEAR (amber)	GEAR DISAGREE L DRAG BRACE

Table 1
Gear/Tail Skid Disagreement Indication *[1]

Control Lever	Gear/Tail Skid	Indicator Lights	EICAS Messages
Down	L side brace and R drag brace not locked	GEAR (amber) NOSE (green)	L SIDE BRACE R DRAG BRACE
Down	L drag brace and R side brace not locked	GEAR (amber) NOSE (green)	L DRAG BRACE R SIDE BRACE
Down	All gear down and tail skid not extended	TAIL SKID (amber)	TAIL SKID
Up	All gear down	GEAR (amber) LEFT (green) RIGHT (green) NOSE (green)	GEAR DISAGREE
Up	Nose gear up, L and R gear down	GEAR (amber) LEFT (green) RIGHT (green)	GEAR DISAGREE
Up	R gear down	GEAR (amber) RIGHT (green)	GEAR DISAGREE
Up	L gear down	GEAR (amber) LEFT (green)	GEAR DISAGREE
Up	L or R gear not up (door not closed)	GEAR (amber) DOORS (amber)	GEAR DISAGREE
Up	All gear up and tail skid not retracted	TAIL SKID (amber)	TAIL SKID

*[1] TAIL SKID INDICATION ON 767-300 AIRPLANES ONLY

(6) When the landing gear is up and locked and any landing gear door is not closed and locked, the GEAR DOORS message on EICAS will be displayed following a 35 second delay. When all landing gear are down and locked, the message will be displayed only when the main landing gear door is open.

C. Relays

(1) The left drag brace relay (K718) located in the main equipment center on E1-2 rack, operates the green LEFT gear down light. The system 1 and/or 2 left drag brace down sensors operate the control side of the relay. The system 1 and/or 2 left side brace down sensors provide an open circuit or ground for the light thru the relay contact.

(2) The right drag brace relay (K719), located in the main equipment center on E1-2 rack, operates the green RIGHT gear down light. The system 1 and/or 2 right drag brace down sensors operate the control side of the relay. The system 1 and/or 2 right side brace down sensors provide an open circuit or ground for the light thru the relay contact.

D. Sensors

(1) Main landing gear drag brace down sensors (Fig. 2)

(a) Two sensors (S237 LH, S241 RH) for system 1, and two sensors (S259 LH, S263 RH) for system 2, are located on the main gear lower jury struts. The sensors provide logic signals for indicator lights GEAR (amber), LEFT (green), and RIGHT (green), and for EICAS messages L DRAG BRACE, R DRAG BRACE, GEAR DISAGREE and LDG GEAR MONITOR.

(2) Main landing gear side brace down sensors (Fig. 2)

(a) Two sensors (S236 LH, S240 RH) for system 1, and two sensors (S258 LH, S262 RH) for system 2, are located on the main gear side brace lock links at the apex. The sensors provide logic signals for amber indicator lights GEAR and DOORS, and for EICAS message L SIDE BRACE, R SIDE BRACE , GEAR DISAGREE, and LDG GEAR MONITOR.

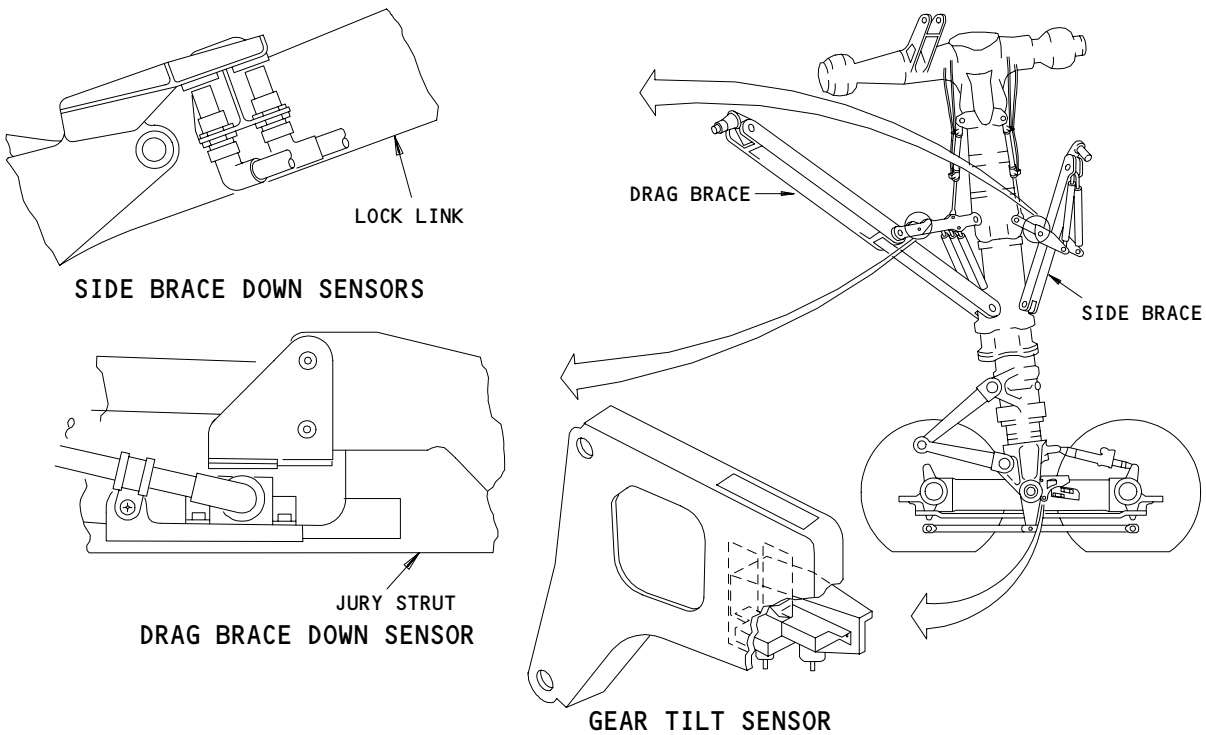
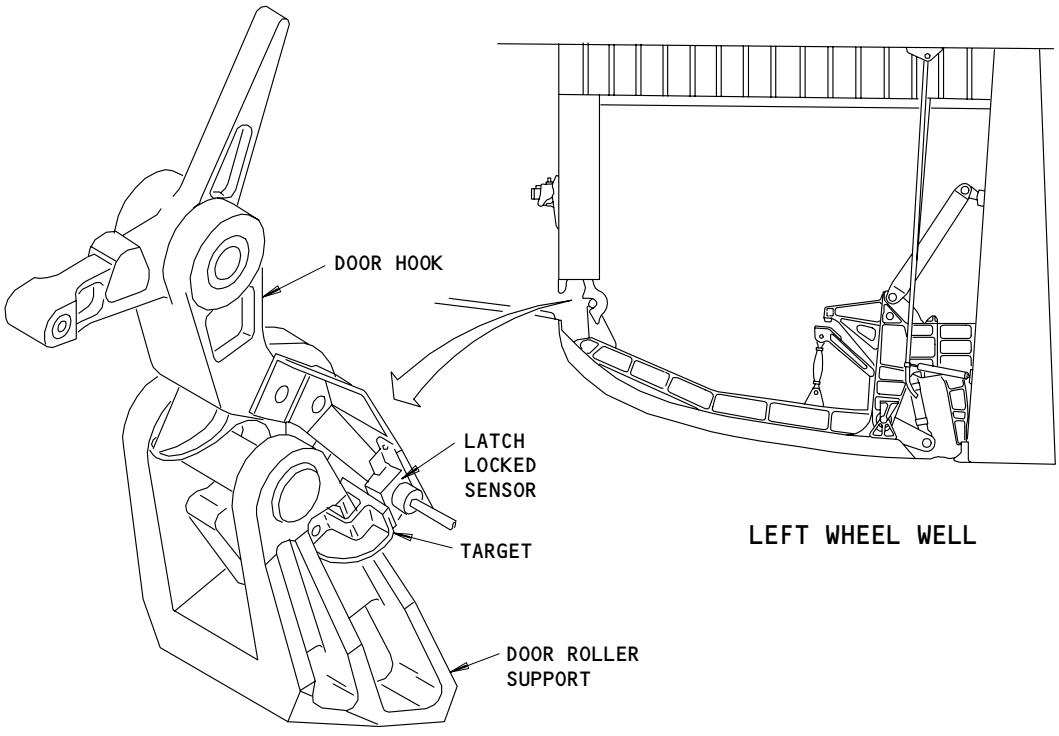


Figure 2

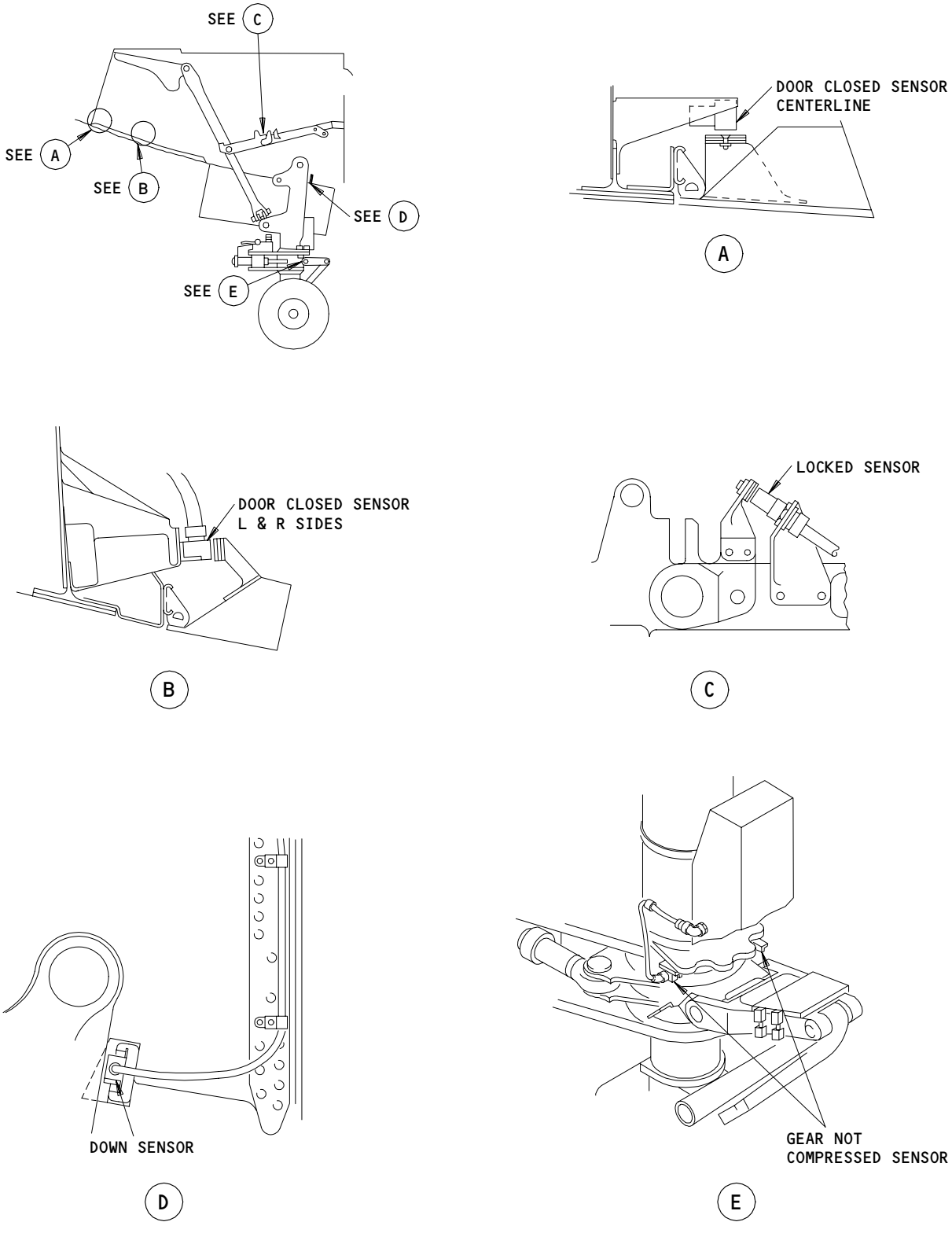
(3) Main landing gear tilt sensors (Fig. 2)
  (a) Two sensors (S245 LH, S246 RH) for system 1, and two sensors (S267 LH, S268 RH) for system 2, are located on the left side of each bogie beam, aft of the main gear shock strut. These sensors provide logic signals for these EICAS messages through the air/ground relays (AMM 32-09-02/201 and AMM 32-09-07/201):
    1) AIR/GND DISAGREE
    2) AIRPLANES WITH S242N701-1001 EICAS;
       AIR/GND SYS

(4) Main landing gear door latch locked sensor (Fig. 3)
  (a) Two sensors (S238 LH, S242 RH) for system 1, and two sensors (S260 LH, S264 RH) for system 2, are located on the brackets on each side of the main gear door uplock hooks. The sensors provide logic signals for amber indicator lights GEAR and DOORS, and EICAS message GEAR DOORS, GEAR DISAGREE, and LDG GEAR MONITOR.

(5) Nose gear locked sensors (Fig. 4)
  (a) A sensor (S233) for system 1 and a sensor (S255) for system 2 are located on the left and right side of the nose gear aft lock link respectively. The sensors provide logic signals for indicator lights GEAR (amber) and NOSE (green), and EICAS message GEAR DISAGREE and LDG GEAR MONITOR.



MLG Door Proximity Sensors
Figure 3



Nose Gear Proximity Sensors
Figure 4

(6) Nose gear down sensors (Fig. 4)
(a) A sensor (S232) for system 1 and a sensor (S254) for system 2 are located on the left and right nose wheel well wall respectively, aft of the shock strut trunnion. The sensors provide logic signals for indicator lights GEAR (amber), and NOSE (green), and EICAS messages GEAR DISAGREE, LDG GEAR MONITOR.

(7) Nose gear not compressed sensors (Fig. 4)
(a) A sensor (S244) for system 1 and a sensor (S266) for system 2 are located on the left and right side respectively of the nose wheel steering collar. The sensors provide logic signals for these EICAS messages through the air/ground relays (AMM 32-09-02/201 and AMM 32-09-08/201):
1) NOSE A/G DISAGREE
2) AIRPLANES WITH S242N701-1001 EICAS;
NOSE A/G SYS

(8) Nose door closed sensors (Fig. 4)
(a) Two sensors (S234 LH, S235 RH) for system 1, and two sensors (S256 LH, S257 RH) for system 2, are located on the nose wheel well structure along forward door centerline and forward left and right sides. When the gear is up, the sensors provide logic signals for the amber indicator light DOORS, and for EICAS messages GEAR DOORS and LDG GEAR MONITOR.

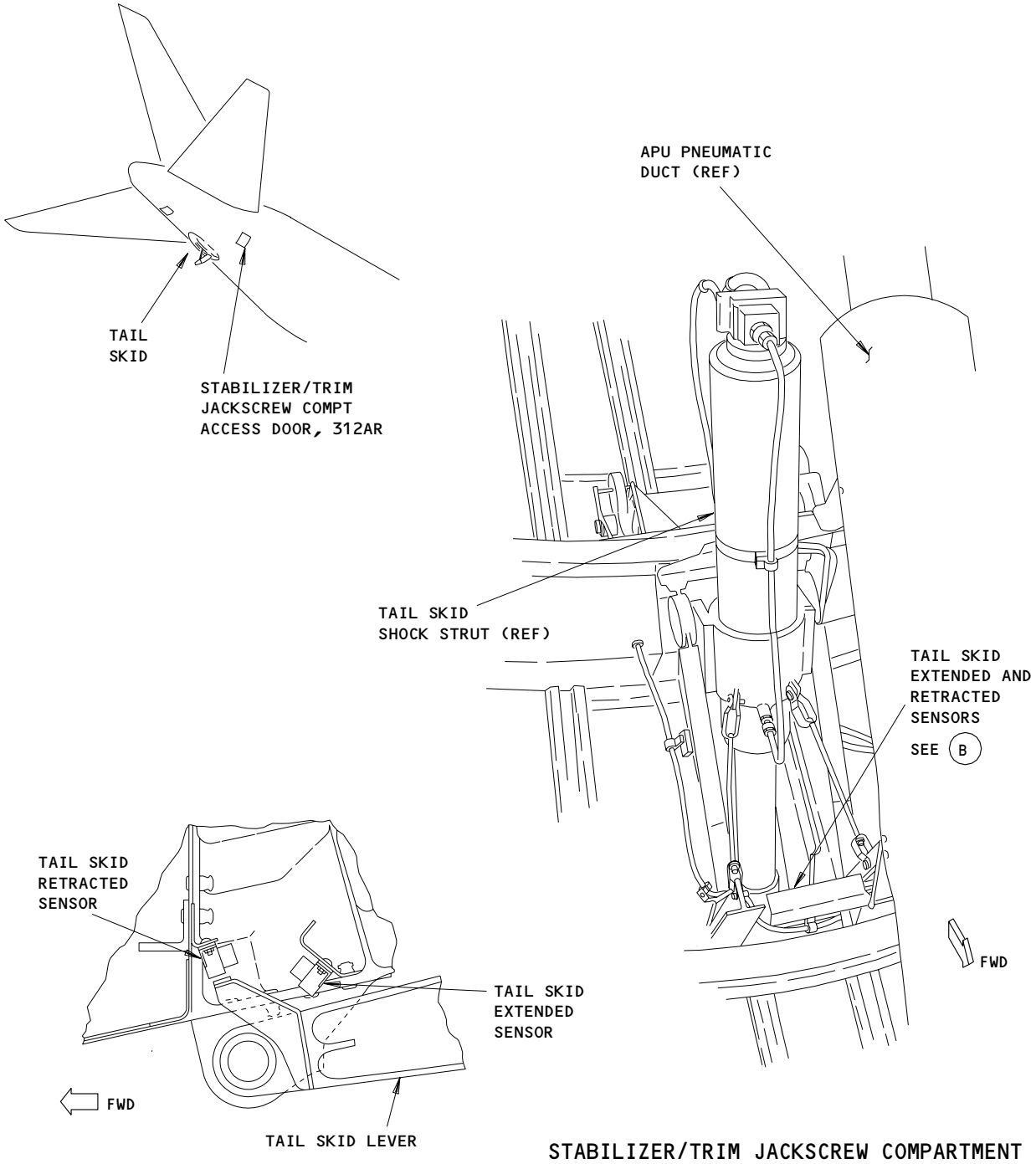
(9) 767-300 AIRPLANES;
Tail skid extended and retracted sensors (Fig. 4A)
(a) A sensor (S247) for tail skid extended and a sensor (S248) for tail skid retracted are located in the stabilizer/trim jackscrew compartment, on the lower airplane structure, just foward of the tail skid assembly. The sensors provide logic signals for the amber TAIL SKID indicator light and the EICAS, TAIL SKID message.

3. Operation

A. Functional Description (Fig. 5, 6, 7)

(1) The landing gear system 1 and system 2 sensors, through their sensing of target near or far, provide landing gear and gear door position signals to the PSEU.

(2) 767-300 AIRPLANES;
The tail skid extended and retracted sensors, through their sensing of target near or target far, provide tail skid position signals to the PSEU.



Tail Skid Proximity Sensors
Figure 4A

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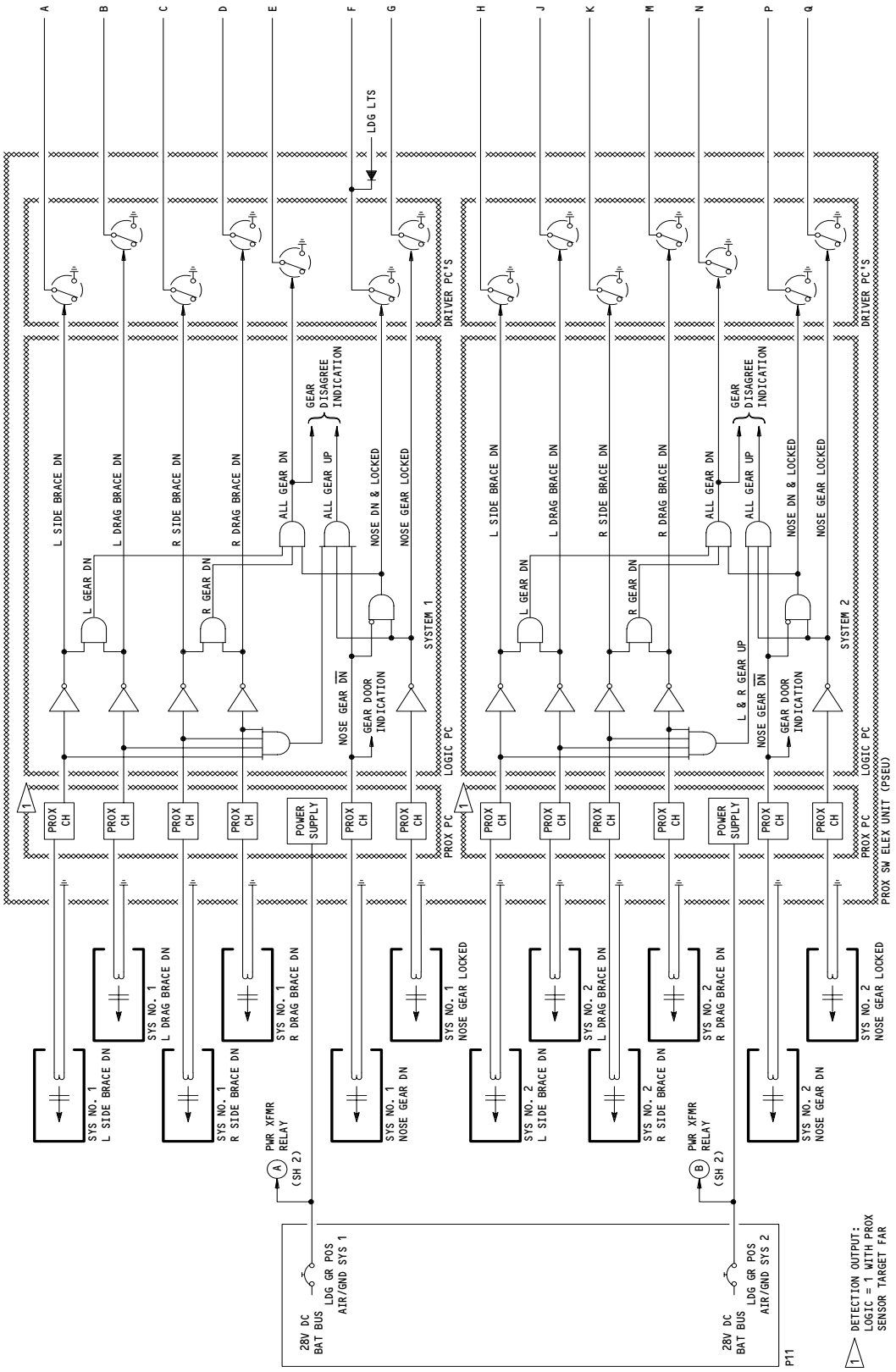
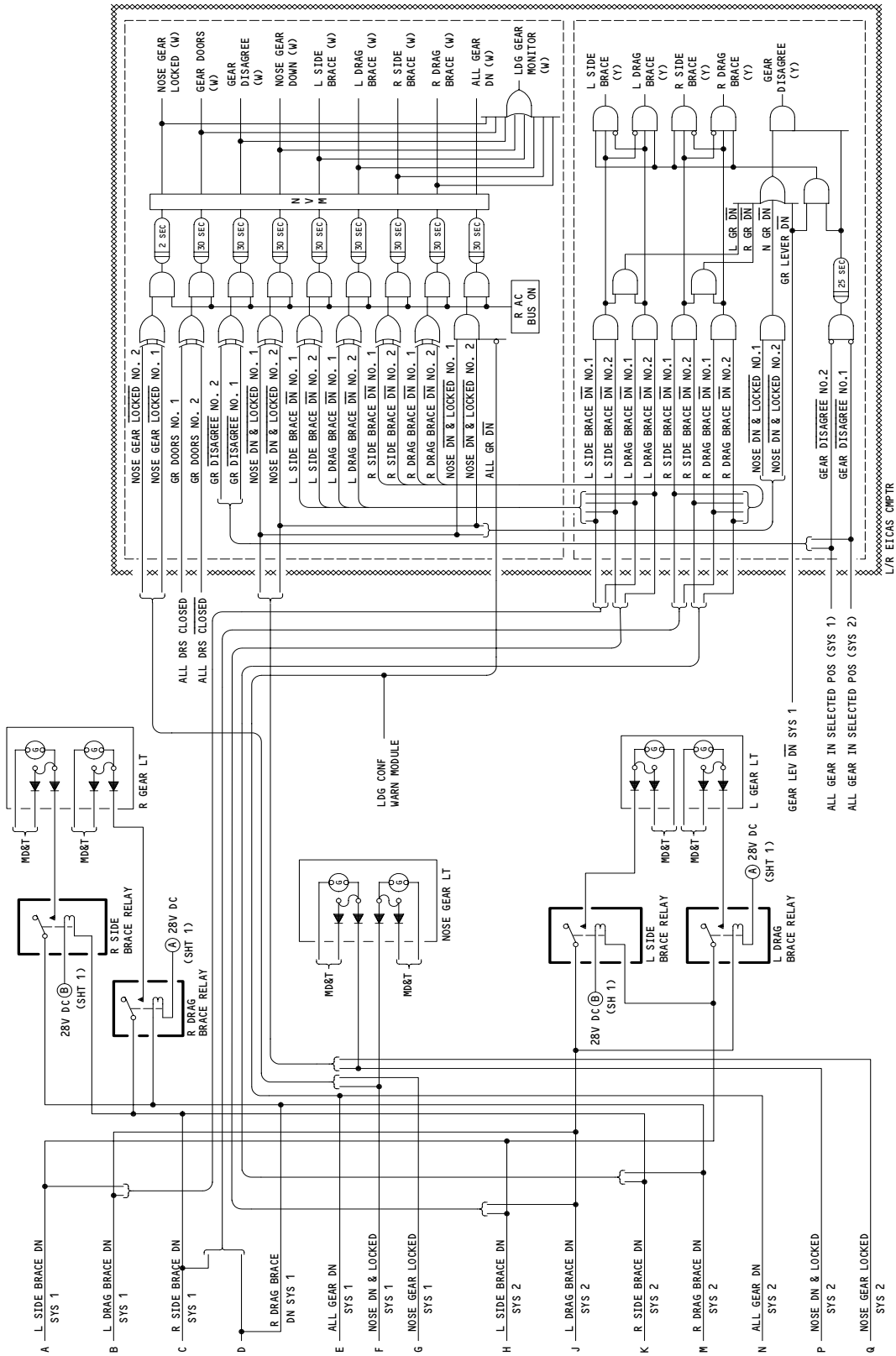
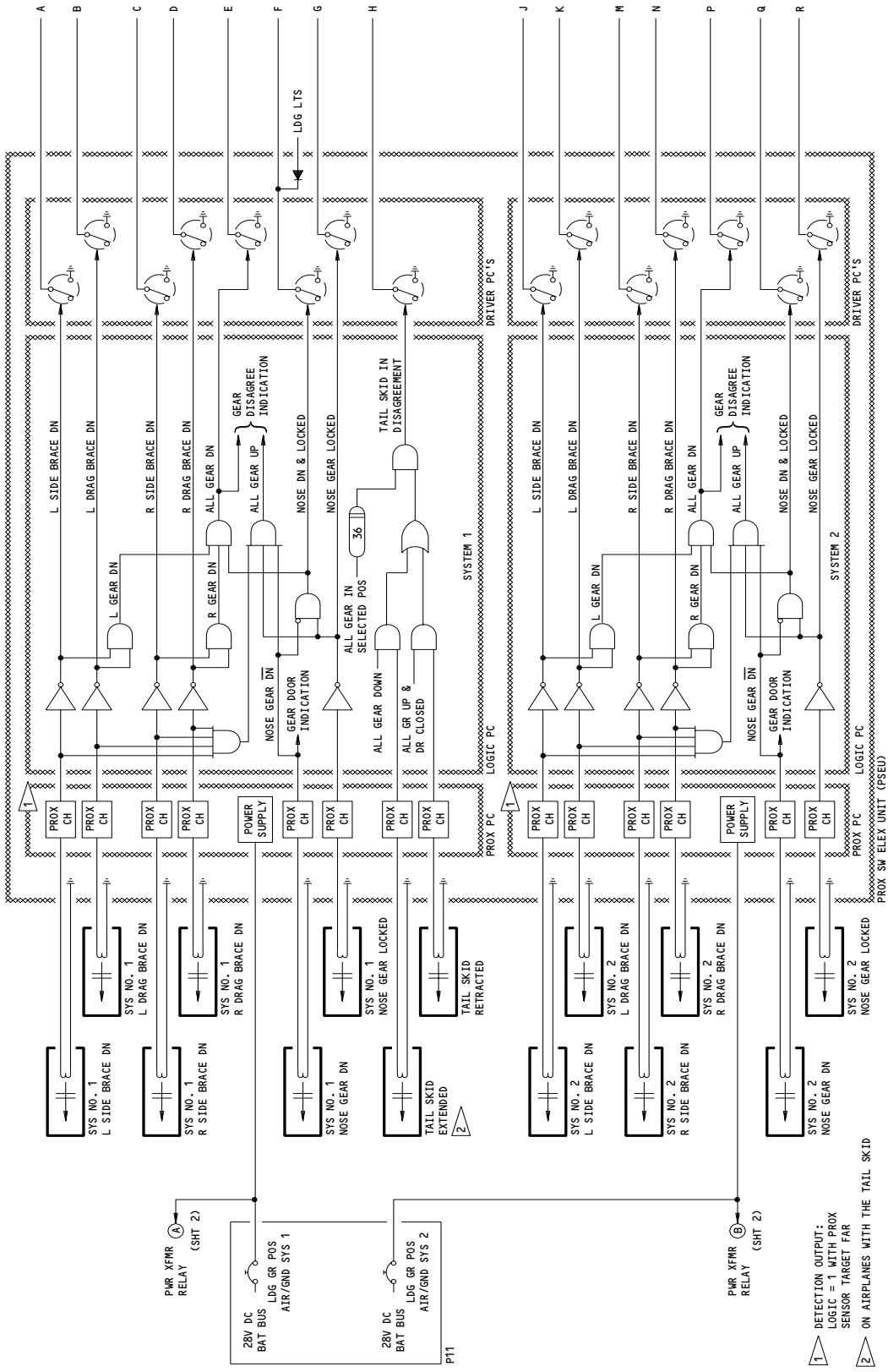


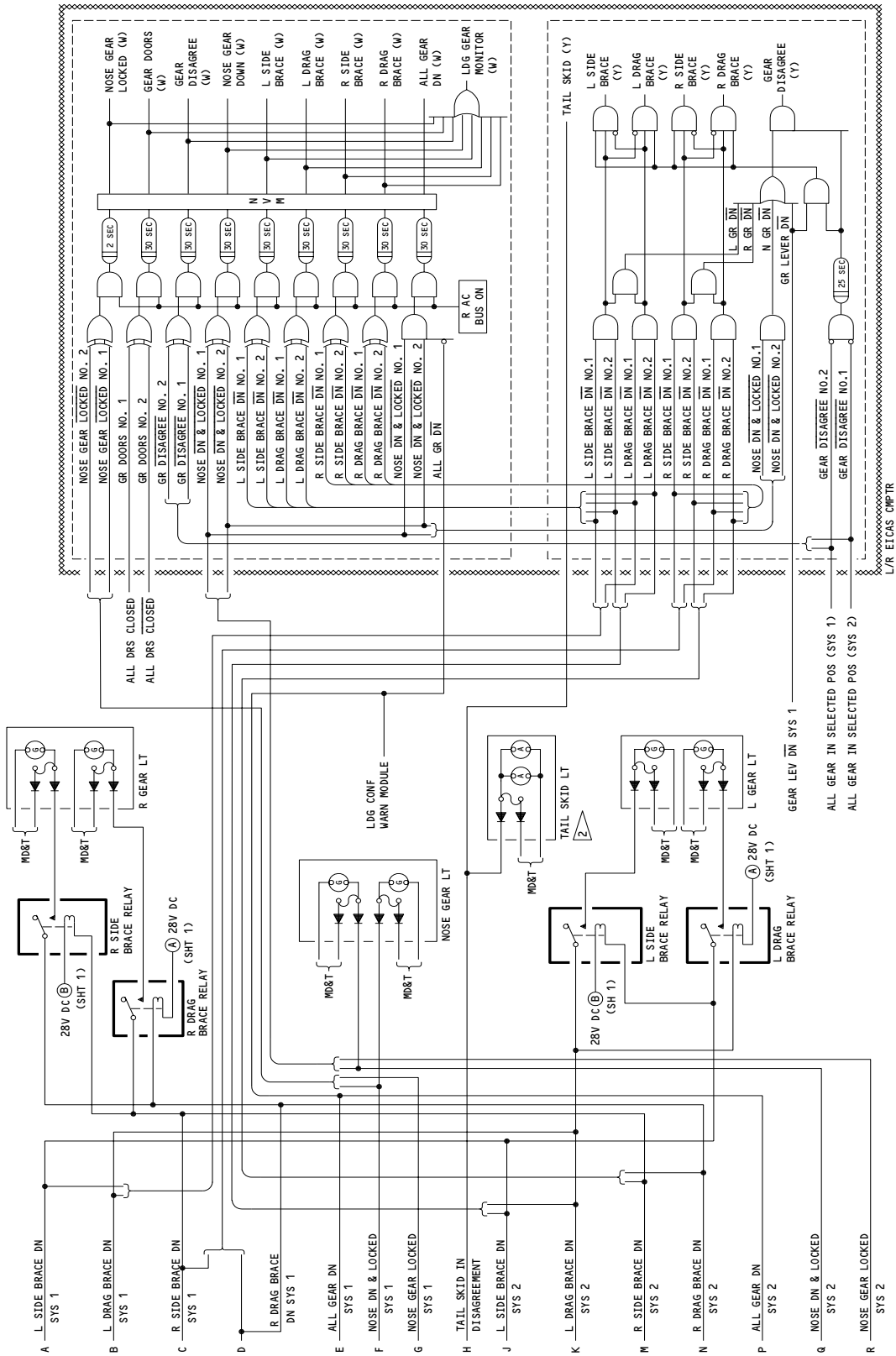
Landing Gear Position Indication Schematic
Figure 5 (Sheet 1)



Landing Gear Position Indication Schematic
Figure 5 (Sheet 2)

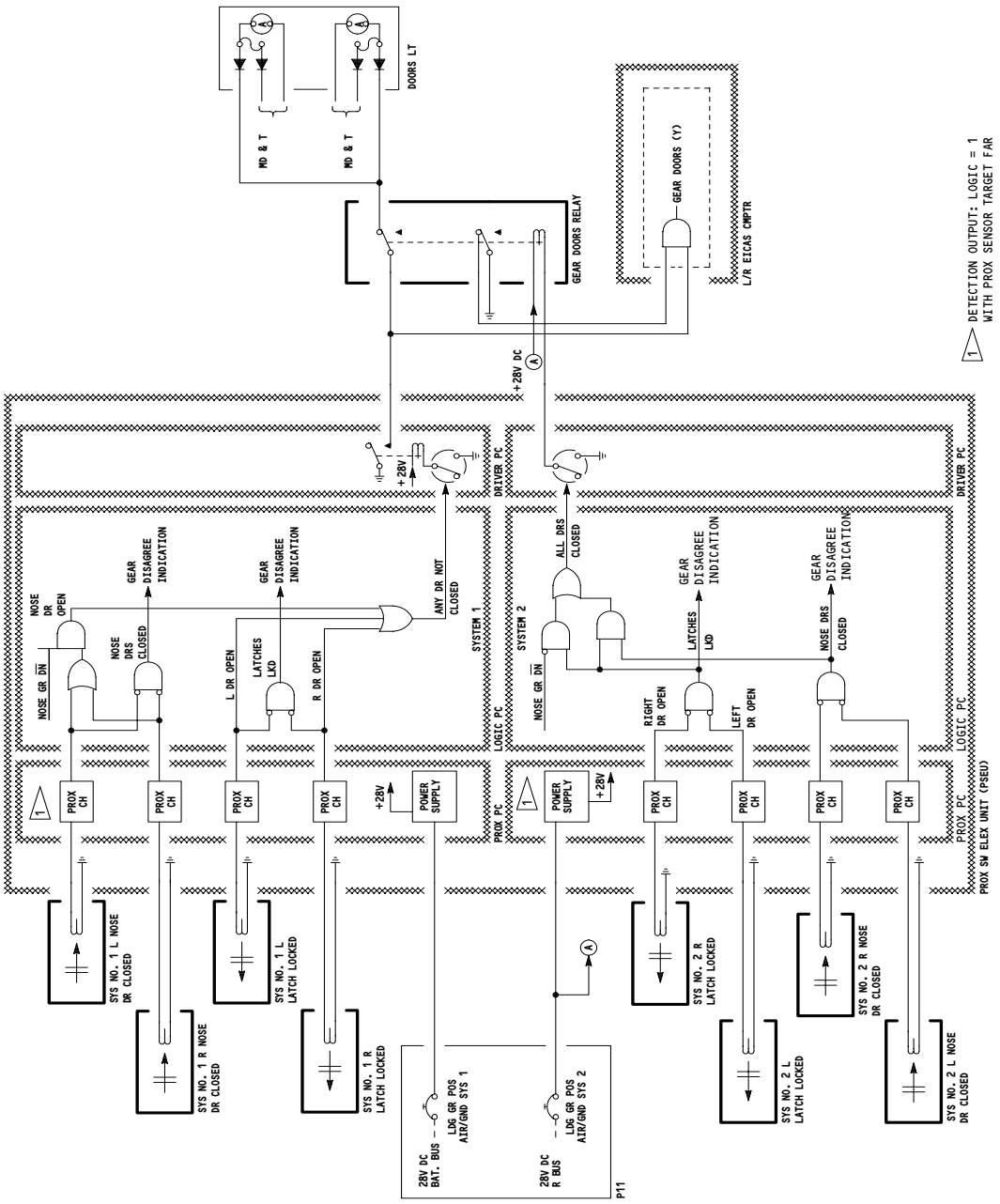


Landing Gear Position Indication Schematic
Figure 5A (Sheet 1)

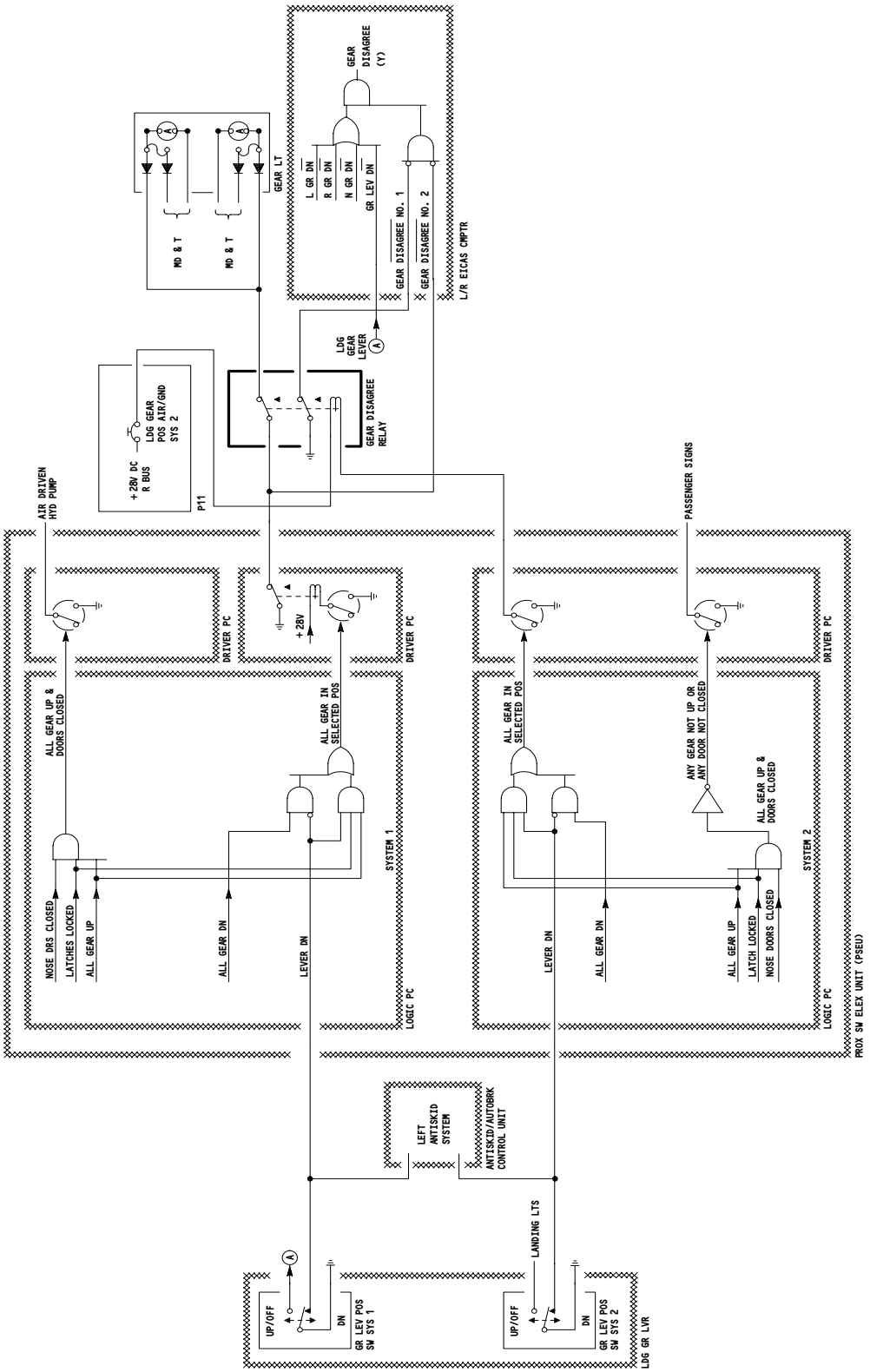


Landing Gear Position Indication Schematic
Figure 5A (Sheet 2)

223909



Landing Gear Door Position Indication Schematic
Figure 6



Landing Gear Position (Gear Disagree) Indication Schematic
Figure 7

(3) The PSEU processes the landing gear, gear doors, and tail skid sensor signals for indication lights and EICAS messages functions.

(4) Five landing gear indication lights, one amber TAIL SKID disagreement light, one amber GEAR disagreement/door open light (hereafter called the GEAR light), one amber DOORS light, and three green NOSE, LEFT and RIGHT lights, are located on panel P3.

(5) 767-300 AIRPLANES;
In addition, an amber TAIL SKID disagreement is located on the P3 panel.

(6) When a target is in proximity (NEAR) to its sensor, a logic 0 output produced in the PSEU proximity card will be supplied to the PSEU logic card. When a target is out of proximity (FAR) to its sensor, a logic 1 output produced in the prox card will be supplied to the logic card. The logic card converts these inputs singly and in groups into output signals to the driver card. When the input to the driver card is a logic 1, the driver card turns on the associated relay, amber light, or EICAS message. Power of 28V dc supply for the light comes from the master dim and test circuit (Ref 33-16-00).

(7) The sensor and logic circuits perform three independent functions in deciding landing gear status. The gear down and warning circuits decide whether the gear is down and locked, up and locked, or in transit.

(8) Landing gear lever position signal is also used in deciding landing gear status. Lever position (down or not down) signal comes from two micro-switches on the gear lever.

(9) If all gears are up and locked, all gear and lever positions agree, and all gear doors closed, the following lights and messages will be off:

NOSE light (green)
LEFT light (green)
RIGHT light (green)
DOORS light (amber)
GEAR light (amber)
GEAR DISAGREE message (amber)
L SIDE BRACE message (amber)
L DRAG BRACE message (amber)
R SIDE BRACE message (amber)
R DRAG BRACE message (amber)
GEAR DOORS message (amber)
LDG GEAR MONITOR message (white)

(10) 767-300 AIRPLANES;
The amber TAIL SKID light and TAIL SKID (amber) EICAS message are off when tail skid position, extended or retracted, agrees with landing gear position, extended or retracted with gear doors closed.

(11) The green LEFT gear down light is illuminated if either system 1 or 2 left drag brace down sensors are target near, and either system 1 or 2 left side brace down sensors are target near. When both systems 1 and 2 left drag and/or side brace sensors are at target far, the green LEFT light will be off.

(12) The green RIGHT gear down light is illuminated if either system 1 or 2 right drag brace down sensors are target near, and either system 1 or 2 right side brace down sensors are target near. When both systems 1 and 2 right drag and/or side brace sensors are at target far, the green RIGHT light will be off.

(13) The amber GEAR light illuminates when the gear is in transit or when the gear is down and locked but the gear lever is out of the down detent. The amber GEAR light also illuminates when any gear is not fully locked up or down. When all gear are up and locked or down and locked and all gear doors are closed, the amber GEAR light will be off.

(14) The amber DOORS light illuminates when the main gear doors are not closed and latched, or the forward nose gear doors are open and the nose gear is not down.

(15) The green NOSE light illuminates when the nose gear is down and locked. The green LEFT light illuminates when both the left side and drag braces are down and locked. The green RIGHT light illuminates when both the right side and drag braces are down and locked.

(16) 767-300 AIRPLANES;
The amber TAIL SKID light illuminates for the following conditions:

NOTE: The TAIL SKID light has a 36 ±4 second time delay, which gives the tail skid time to move to its new position. The time delay is started when all gear are in their new positions, after the landing gear lever is moved to a new position (up or down).

(a) All landing gear retracted, all gear doors closed, and tail skid extended.

(b) All landing gear extended and tail skid retracted.

NOTE: Tail skid position is controlled by the landing gear lever. The tail skid is retracted when gear lever is in the UP or OFF position and extended when gear lever is in the DN position.

(17) The landing gear EICAS messages normally appear on the upper EICAS display. The EICAS displays are located on the pilots' center instrument panel between panels P1 and P3. There are several different EICAS messages to indicate gear, gear doors, and tail skid status. Specifically these are:

GEAR DISAGREE (amber)
L SIDE BRACE (amber)
L DRAG BRACE (amber)
R SIDE BRACE (amber)
R DRAG BRACE (amber)
GEAR DOORS (amber)
TAIL SKID (amber) *[1]
LDG GEAR MONITOR (white)
*[1] 767-300 AIRPLANES

(18) The GEAR DISAGREE message is displayed when the position of any gear (either in the up or down condition) disagrees with the gear lever (See Table 1).

(19) The L or R SIDE BRACE message is displayed when the left or right side brace, as applicable, is not down and locked and the gear lever is down. The L or R SIDE BRACE and the GEAR DISAGREE EICAS messages will be as shown in Table 1.

(20) The L or R DRAG BRACE message is displayed when the left or right drag brace, as applicable, is not down and locked and the gear lever is down. The L or R DRAG BRACE and the GEAR DISAGREE EICAS messages will be as shown in Table 1.

(21) The GEAR DOORS message is displayed when any landing gear doors are open.

(22) 767-300 AIRPLANES;
The TAIL SKID message is displayed for the following conditions:

NOTE: The TAIL SKID EICAS message has the same 36 ±4 second time delay described for the TAIL SKID light.

(a) All landing gear retracted, all gear doors closed, and tail skid extended.

(b) All landing gear extended and tail skid retracted.

NOTE: Tail skid position is controlled by the landing gear lever. The tail skid is retracted when gear lever is in the UP or OFF position and extended when gear lever is in the DN position.

(23) The LDG GEAR MONITOR message is displayed when system 1 and 2 outputs from the PSEU are not identical.

(24) For more information on EICAS operation, refer to AMM 31-41-00.

LANDING GEAR POSITION INDICATING AND WARNING SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
CIRCUIT BREAKER -	9		FLT COMPT, P11	
LANDING GEAR POSITION AIR/GND SYS 1, C1175		1	11C30	*
LANDING GEAR POSITION AIR/GND SYS 2 ALTN, C1575		1	A 11C29 OR 11E19	*
POSITION AIR/GND SYS 2, C1170		1	B 11U23 OR 11U24	*
PROX SW TEST, C1178		1	11T36	*
COMPUTER - (FIM 31-41-00/101)				
EICAS L, M10181				
EICAS R, M10182				
DIODE - SYS 1, R33,R120,R122,R123,R124,R125, R183	10	7	119AL, MAIN EQUIP CTR, E1-2	*
DIODE - SYS 2, R64,R121,R179,R180,R181,R182, R184	10	7	119AL, MAIN EQUIP CTR, E1-2	*
LIGHT - INDICATOR				
DOORS, L658	9	1	FLT COMPT, P3	*
GEAR, L657	9	1	FLT COMPT, P3	*
LEFT, L652	9	1	FLT COMPT, P3	*
NOSE, L654	9	1	FLT COMPT, P3	*
RIGHT, L653	9	1	FLT COMPT, P3	*
TAIL SKID, L804 1	9	1	FLT COMPT, P3	*
MODULE - (FIM 32-09-03/101)				
PROXIMITY SWITCH ELECTRONICS UNIT (PSEU), M162				
MODULE - (FIM 32-30-00/101)				
LANDING GEAR CONTROL LEVER, M937				
RELAY - DRAG BRACE, K718	10	1	119AL, MAIN EQUIP CTR, E1-2	*
RELAY - DRAG BRACE, K719	10	1	119AL, MAIN EQUIP CTR, E1-2	*
RELAY - GEAR DISAGREE, K651	10	1	119AL, MAIN EQUIP CTR, E1-2	*
RELAY - GEAR DOORS, K652	10	1	119AL, MAIN EQUIP CTR, E1-2	*
RELAY - SIDE BRACE, K874	10	1	119AL, MAIN EQUIP CTR, E1-2	*
RELAY - SIDE BRACE, K875	10	1	119AL, MAIN EQUIP CTR, E1-2	*
SENSOR - LEFT DRAG BRACE DOWN, SYS 1, S237	2	1	MAIN GEAR, JURY STRUT	32-61-02
SENSOR - LEFT DRAG BRACE DOWN, SYS 2, S259	2	1	MAIN GEAR, JURY STRUT	32-61-02
SENSOR - LEFT LATCH LOCKED, SYS 1, S238	3	1	MAIN WHEEL WELL, DOOR LATCH	32-61-02
SENSOR - LEFT LATCH LOCKED, SYS 2, S260	3	1	MAIN WHEEL WELL, DOOR LATCH	32-61-02
SENSOR - LEFT SIDE BRACE DOWN, SYS 1, S236	1	1	MAIN GEAR, LOCK LINK	32-61-02
SENSOR - LEFT SIDE BRACE DOWN, SYS 2, S258	1	1	MAIN GEAR, LOCK LINK	32-61-02
SENSOR - RIGHT DRAG BRACE DOWN, SYS 1, S241	2	1	MAIN GEAR, JURY STRUT	32-61-02
SENSOR - RIGHT DRAG BRACE DOWN, SYS 2, S263	2	1	MAIN GEAR, JURY STRUT	32-61-02
SENSOR - RIGHT LATCH LOCKED, SYS 1, S242	3	1	MAIN WHEEL WELL, DOOR LATCH	32-61-02
SENSOR - RIGHT LATCH LOCKED, SYS 2, S264	3	1	MAIN WHEEL WELL, DOOR LATCH	32-61-02
SENSOR - RIGHT SIDE BRACE DOWN, SYS 1, S240	1	1	MAIN GEAR, LOCK LINK	32-61-02
SENSOR - RIGHT SIDE BRACE DOWN, SYS 2, S262	1	1	MAIN GEAR, LOCK LINK	32-61-02

* SEE THE WDM EQUIPMENT LIST

A THE "LANDING GEAR POSITION AIR/GND SYS 2 ALTN" CIRCUIT BREAKER, C1575, CAN BE IN ONE OF THESE TWO LOCATIONS.

B THE "POSITION AIR/GND SYS 2" CIRCUIT BREAKER, C1170, CAN BE IN ONE OF THESE TWO LOCATIONS.

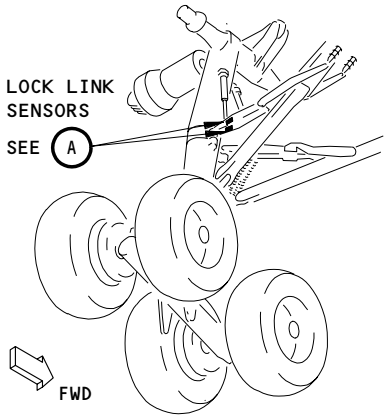
1 767-300 AIRPLANES

Landing Gear Position Indicating and Warning System - Component Index
Figure 101 (Sheet 1)

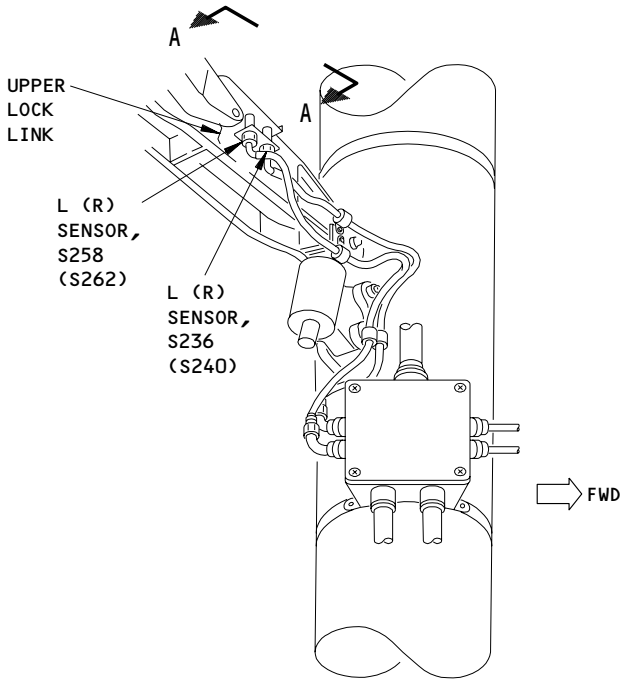
720934

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
SENSOR - LEFT NOSE DOOR CLOSED, SYS 1, S234	6	1	NOSE WHEEL WELL, LEFT BULKHD	32-61-03
SENSOR - LEFT NOSE DOOR CLOSED, SYS 2, S256	7	1	NOSE WHEEL WELL, LEFT BULKHD	32-61-03
SENSOR - NOSE GEAR LOCKED, SYS 1, S233	5	1	NOSE GEAR, LOCK LINK	32-61-03
SENSOR - NOSE GEAR LOCKED, SYS 2, S255	5	1	NOSE GEAR, LOCK LINK	32-61-03
SENSOR - NOSE GEAR DOWN, SYS 1, S232	4	1	NOSE WHEEL WELL, AFT BULKHD	32-61-03
SENSOR - NOSE GEAR DOWN, SYS 2, S254	4	1	NOSE WHEEL WELL, AFT BULKHD	32-61-03
SENSOR - RIGHT NOSE GEAR DOOR CLOSED, SYS 1, S235	6	1	NOSE WHEEL WELL, FWD BULKHD	32-61-03
SENSOR - RIGHT NOSE GEAR DOOR CLOSED, SYS 2, S257	7	1	NOSE WHEEL WELL, FWD BULKHD	32-61-03
SENSOR - TAIL SKID EXTENDED, S247 1	8	1	312AR, STABILIZER/TRIM JACKSCREW COMPT	32-61-04
SENSOR TAIL SKID RETRACTED, S248 1	8	1	312AR, STABILIZER/TRIM JACKSCREW COMPT	32-61-04
SWITCH - (FIM 32-30-00/101) LANDING GEAR LEVER POSITION, DOWN YGBS3,YGBS4				

Landing Gear Position Indicating and Warning System - Component Index
Figure 101 (Sheet 2)

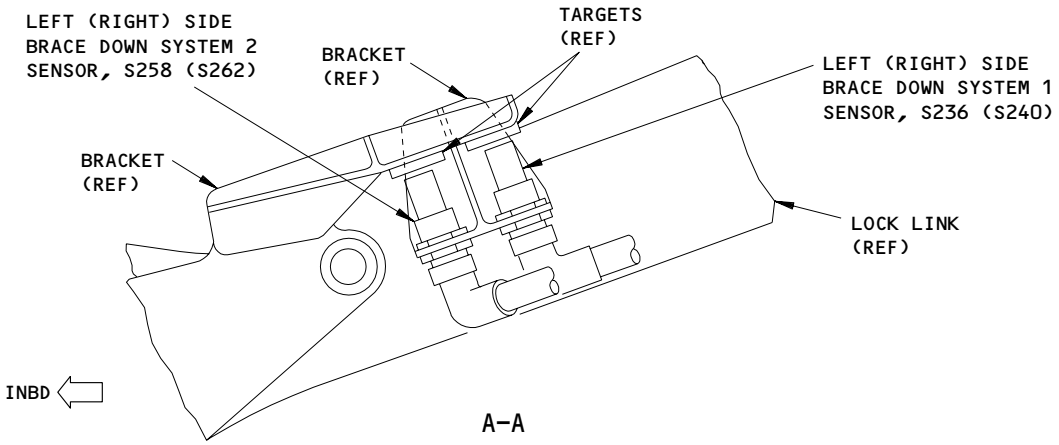


LEFT MAIN GEAR
(RIGHT MAIN GEAR IS EQUIVALENT)



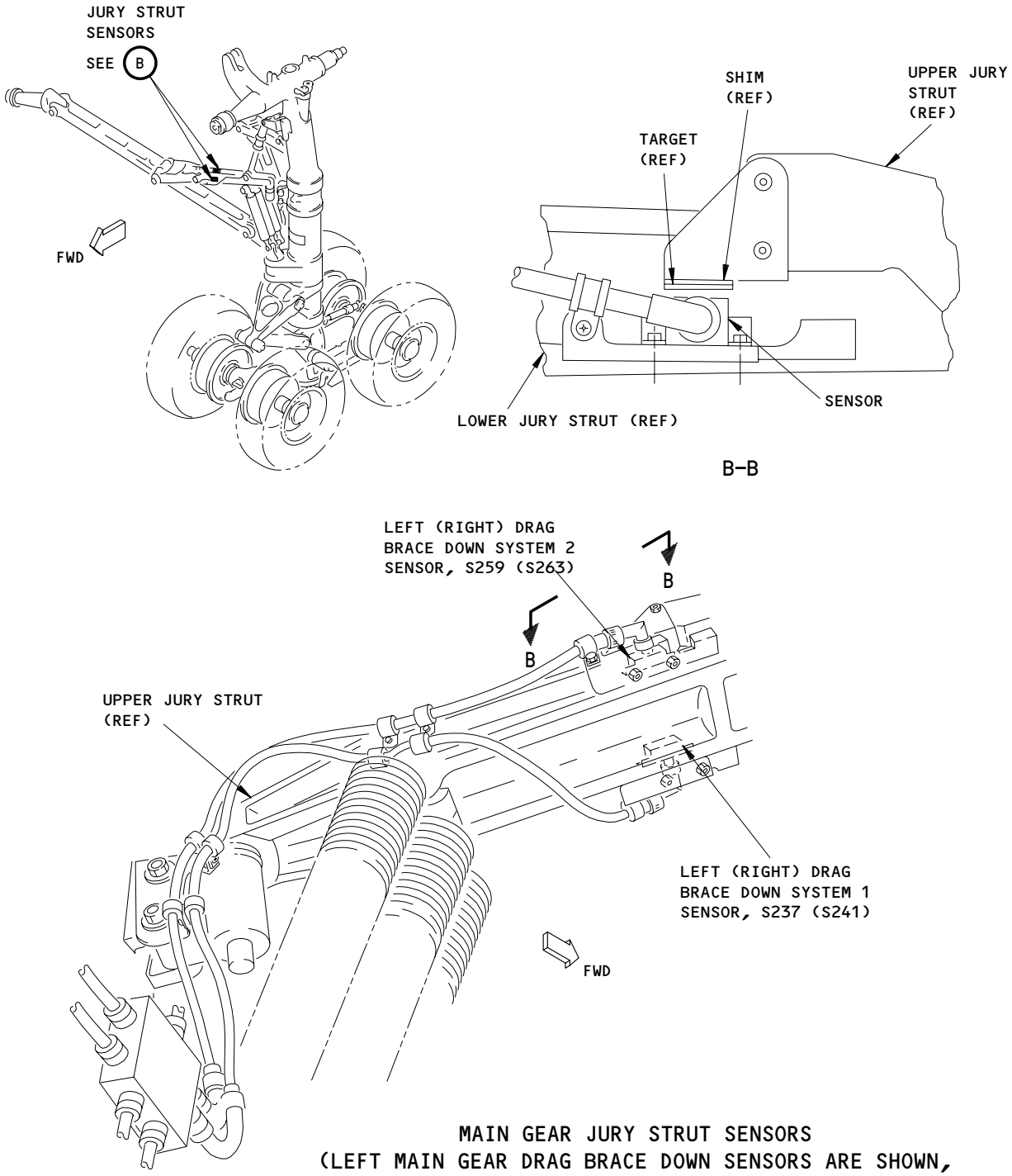
MAIN GEAR LOCK LINK SENSORS
(LEFT MAIN GEAR SIDE BRACE DOWN SENSORS ARE SHOWN,
RIGHT MAIN GEAR SIDE BRACE DOWN SENSORS ARE EQUIVALENT)

A



A-A

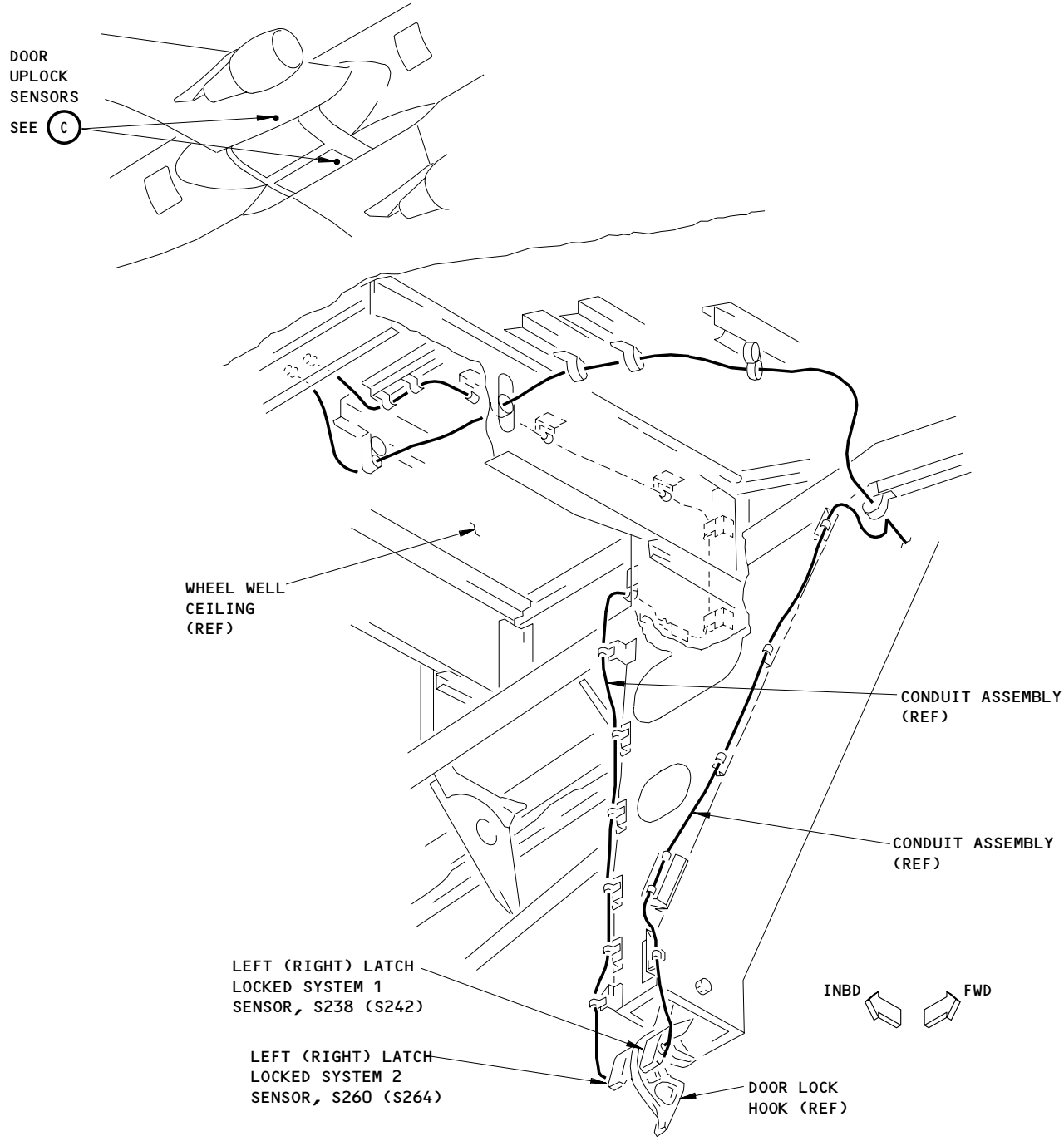
Landing Gear Position Indicating and Warning System - Component Location
Figure 102 (Sheet 1)



MAIN GEAR JURY STRUT SENSORS
(LEFT MAIN GEAR DRAG BRACE DOWN SENSORS ARE SHOWN,
RIGHT MAIN GEAR DRAG BRACE DOWN SENSORS ARE EQUIVALENT)

B

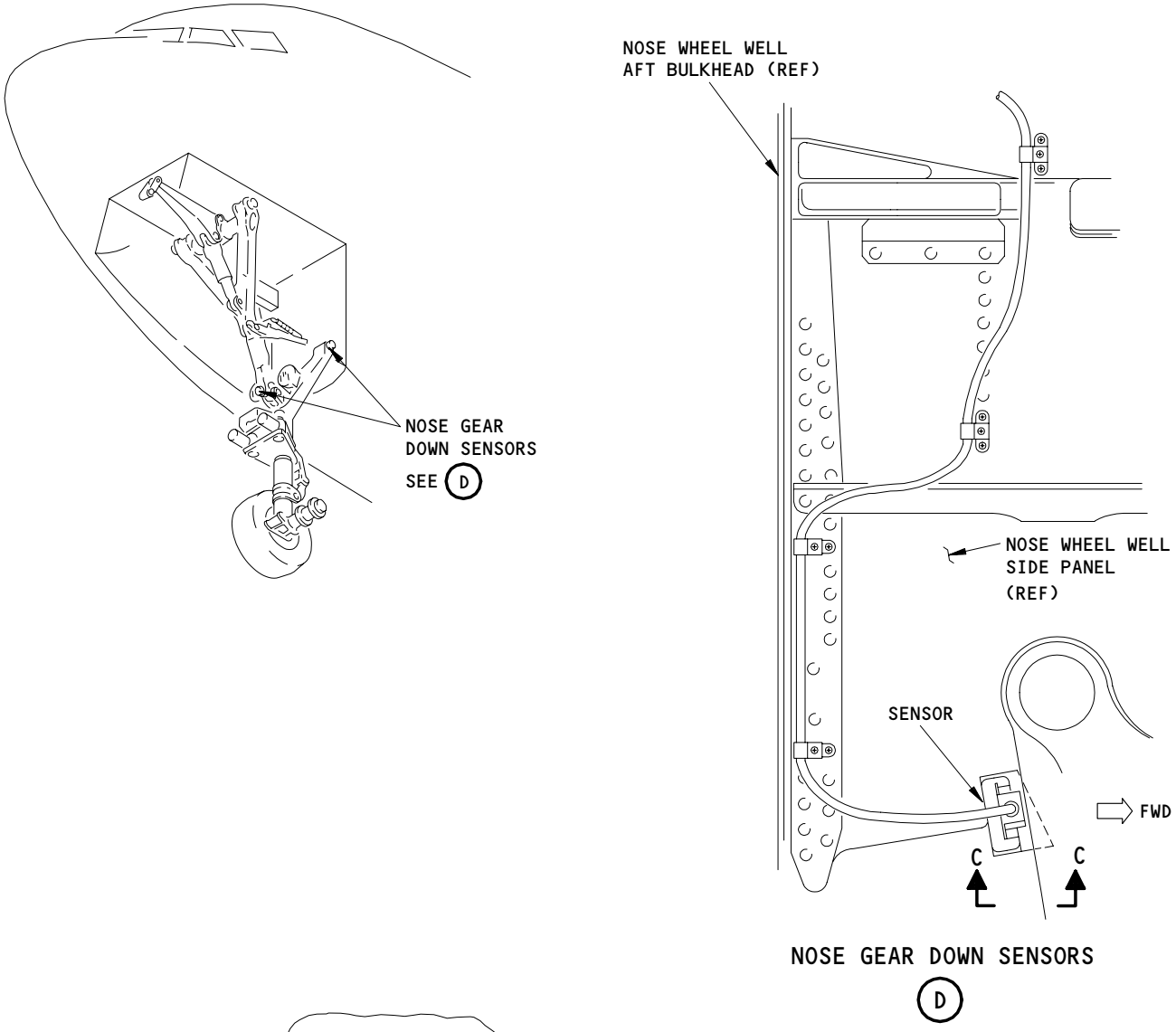
Landing Gear Position Indicating and Warning System – Component Location
Figure 102 (Sheet 2)



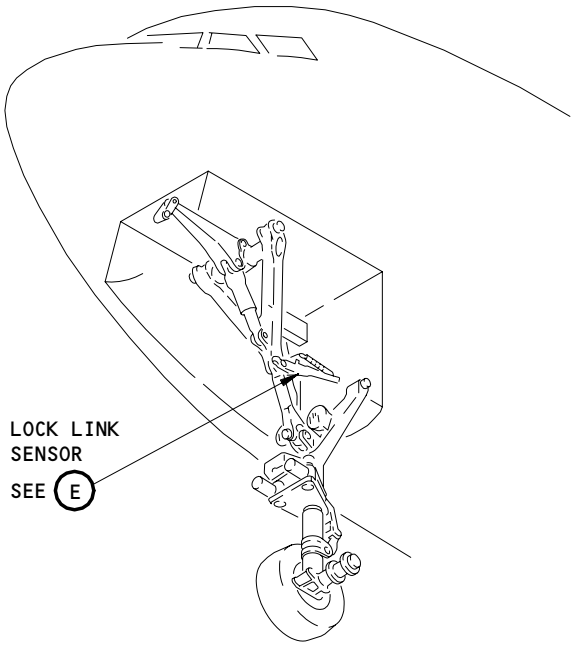
MAIN GEAR DOOR UPLOCK SENSORS
(LEFT MAIN GEAR LATCH LOCKED SENSORS ARE SHOWN,
RIGHT MAIN GEAR LATCH LOCKED SENSORS ARE EQUIVALENT)

C

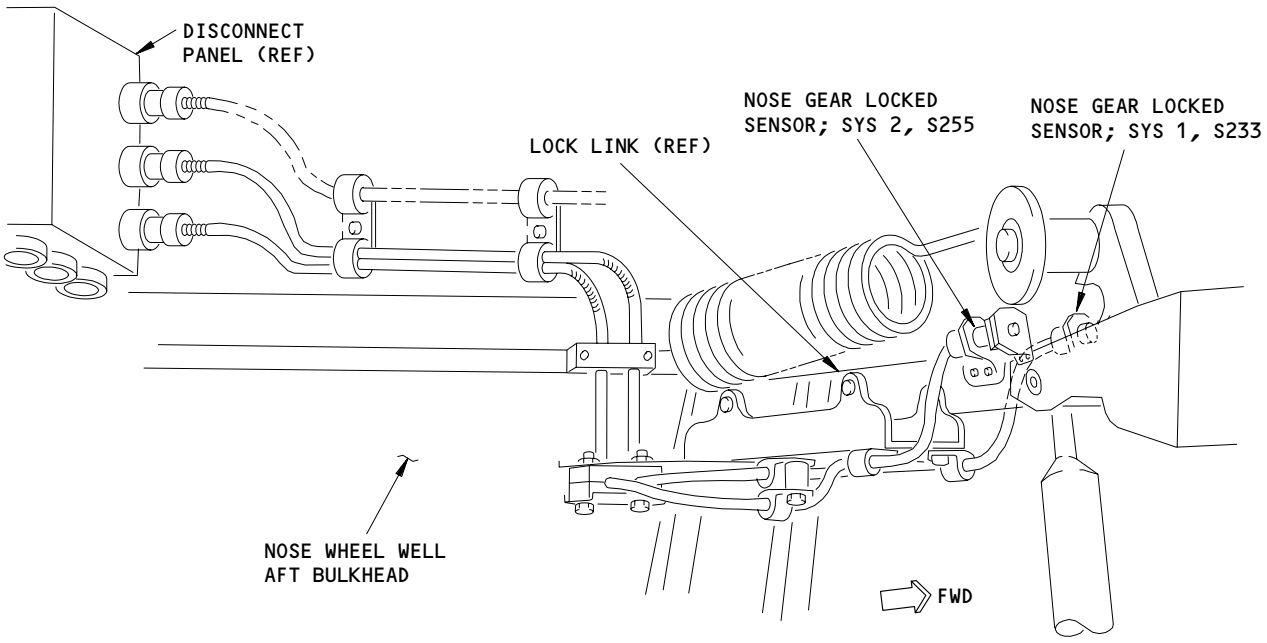
Landing Gear Position Indicating and Warning System – Component Location
Figure 102 (Sheet 3)



Landing Gear Position Indicating and Warning System – Component Location
Figure 102 (Sheet 4)

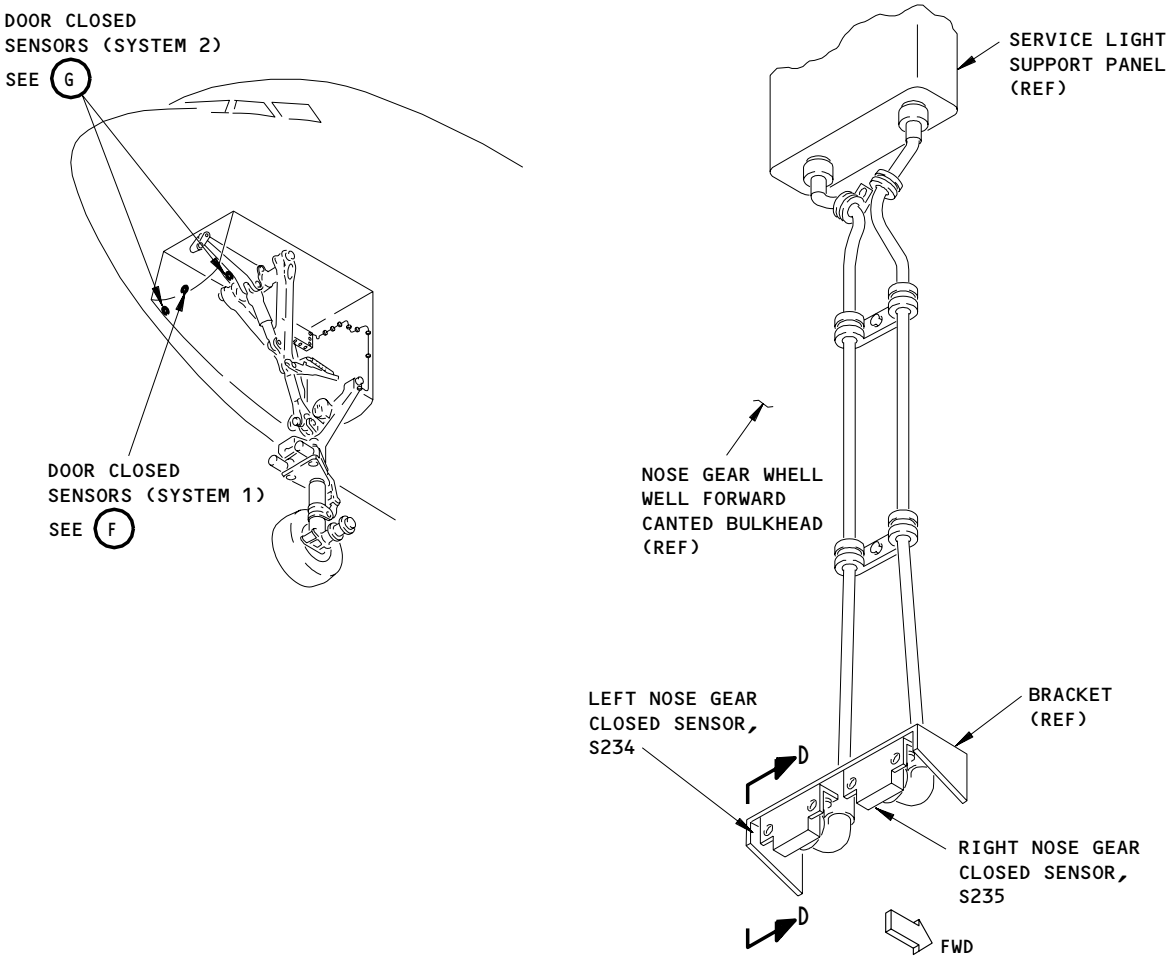


NOSE GEAR LOCKED SENSORS



NOSE GEAR LOCK LINK SENSORS
E

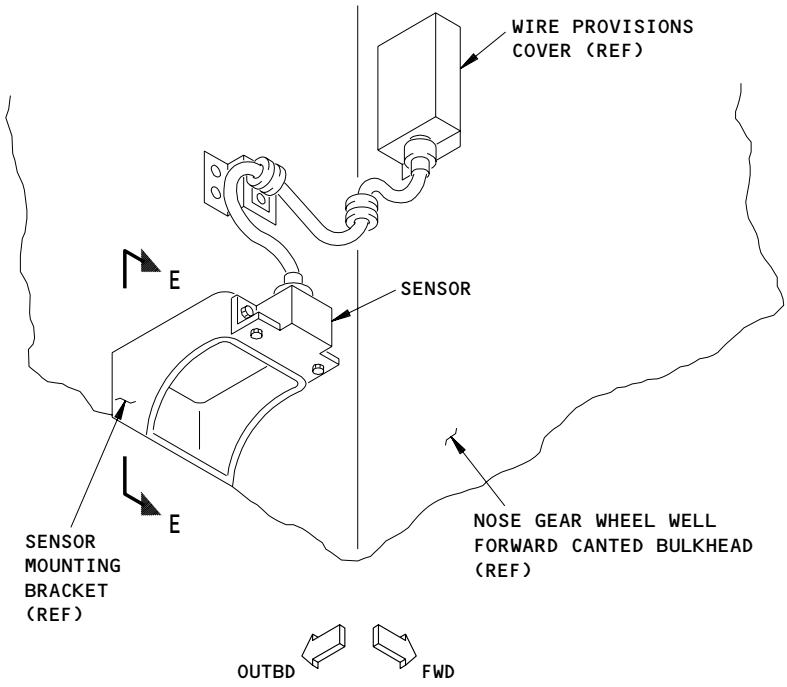
Landing Gear Position Indicating and Warning System - Component Location
Figure 102 (Sheet 5)



NOSE GEAR DOOR CLOSED SENSORS
(SYSTEM 1)
F

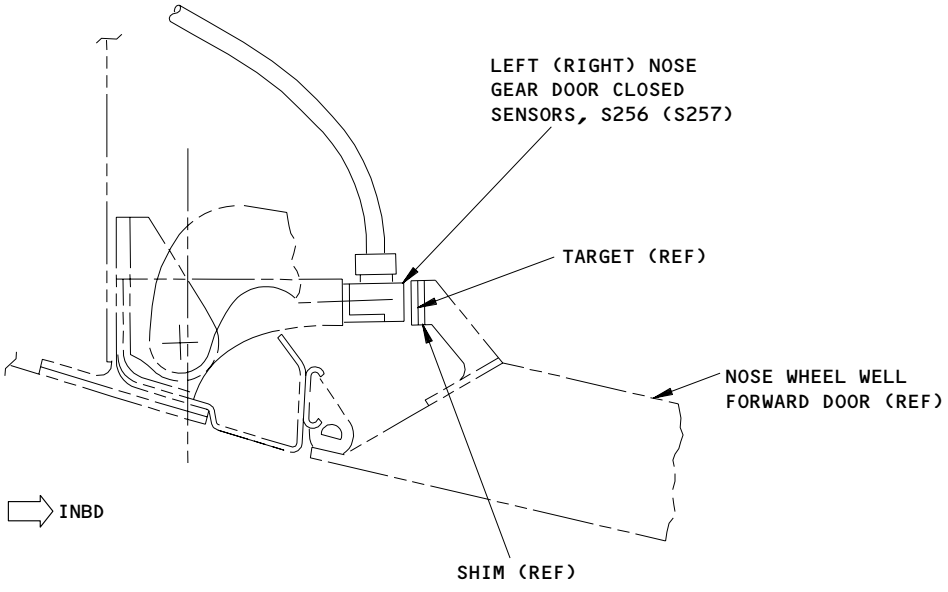
D–D

Landing Gear Position Indicating and Warning System – Component Location
Figure 102 (Sheet 6)



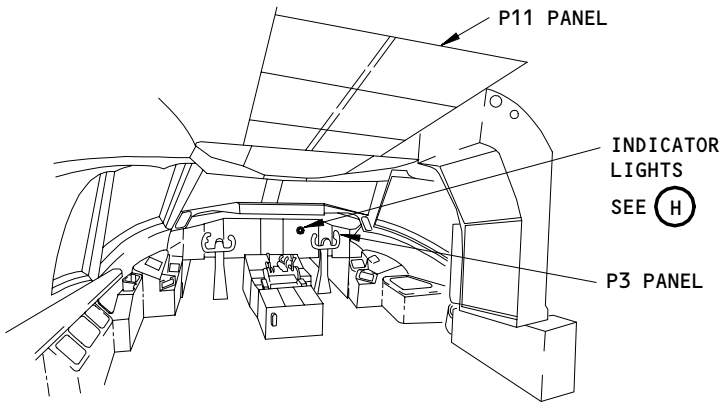
NOSE GEAR DOOR CLOSED SENSORS (SYSTEM 2)

G

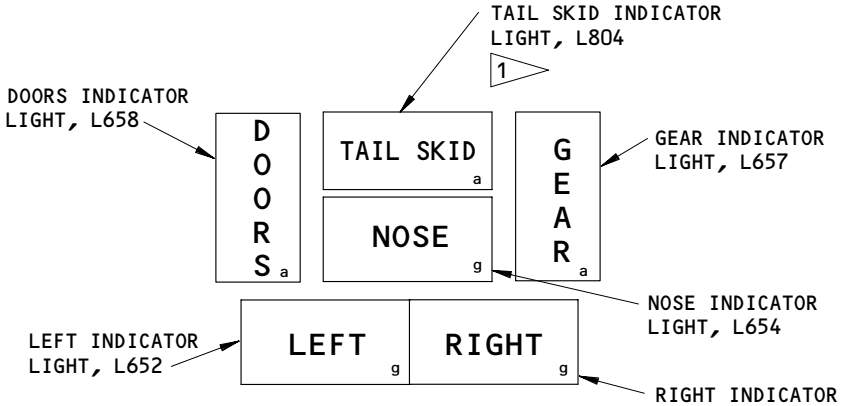


E-E

Landing Gear Position Indicating and Warning System - Component Location
Figure 102 (Sheet 7)

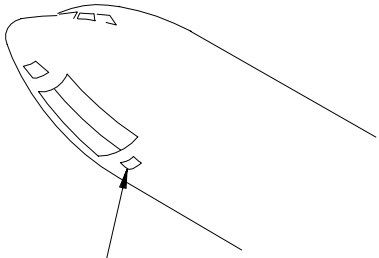


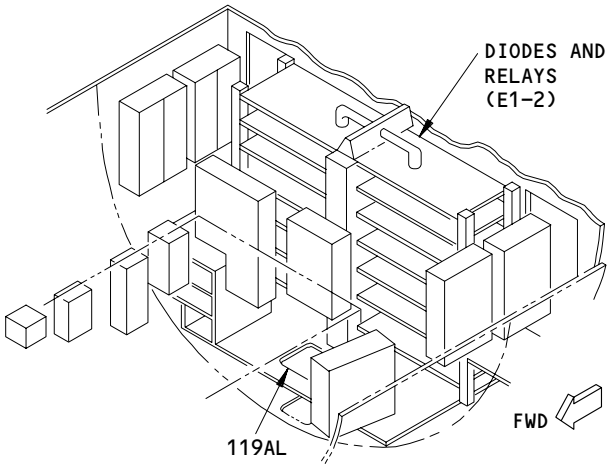
FLIGHT COMPARTMENT



INDICATOR LIGHTS

H



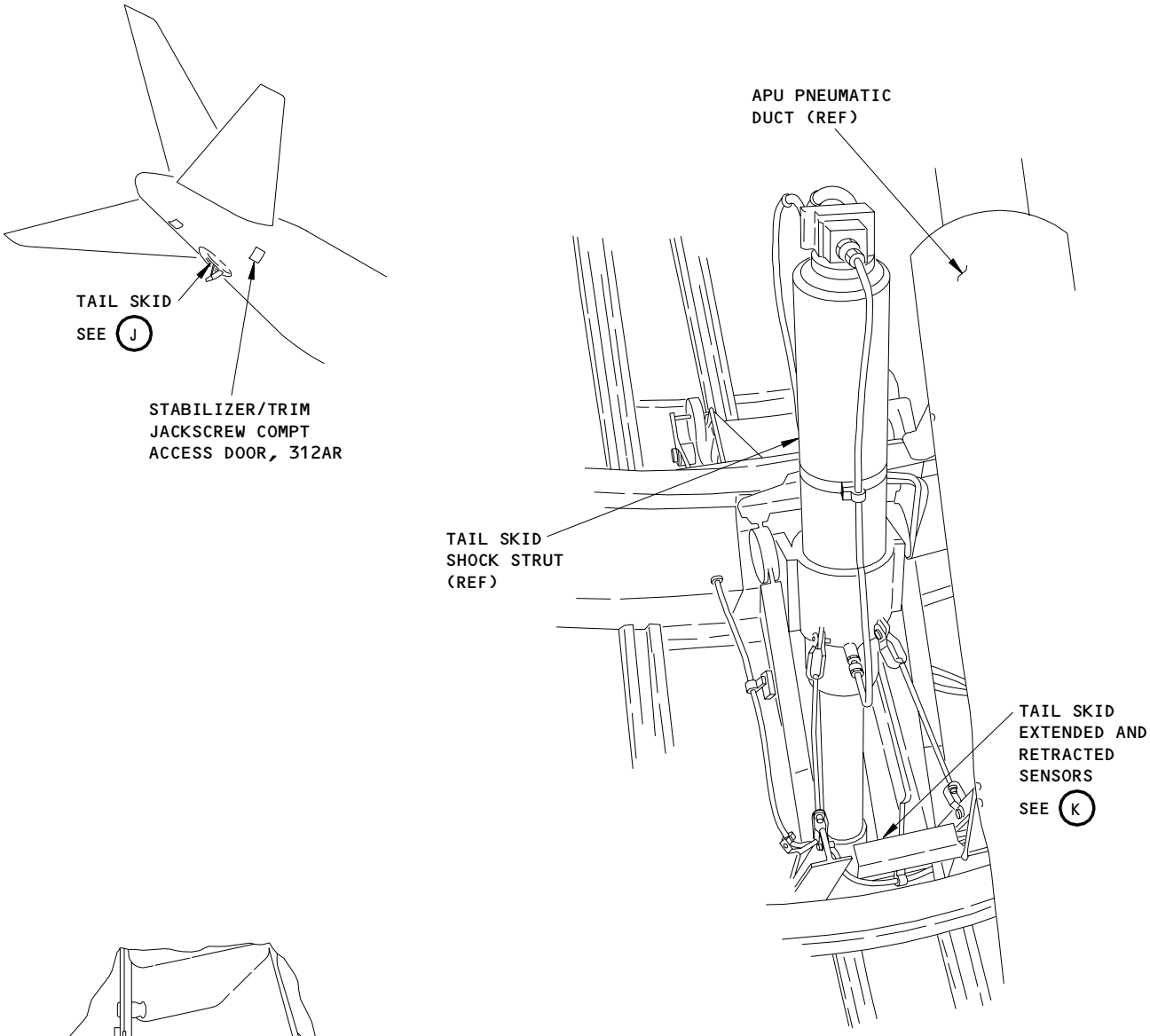


MAIN EQUIPMENT CENTER

I

1 767-300 AIRPLANES

Landing Gear Position Indicating and Warning System - Component Location
Figure 102 (Sheet 8)



Landing Gear Position Indicating and Warning System – Component Location
Figure 102 (Sheet 9)

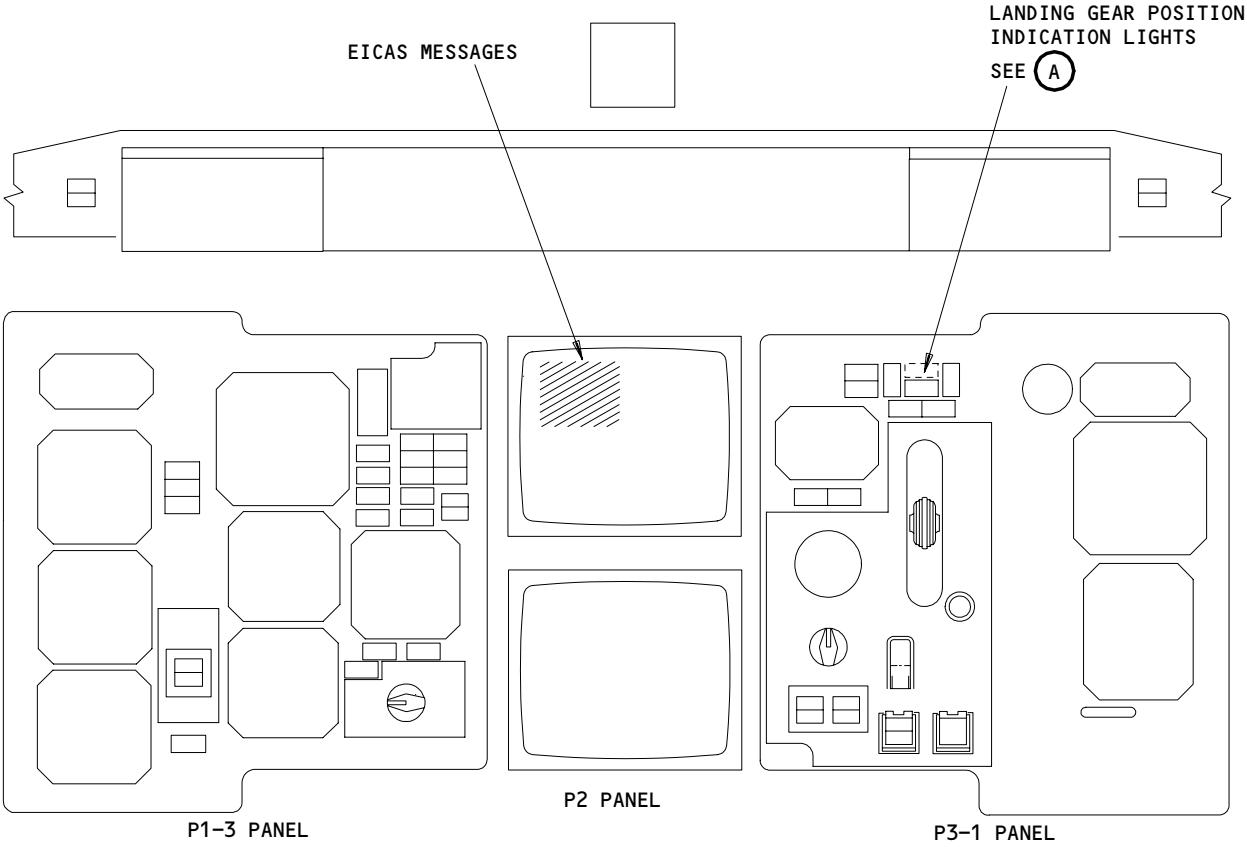
LANDING GEAR POSITION INDICATING AND WARNING SYSTEM - ADJUSTMENT/TEST

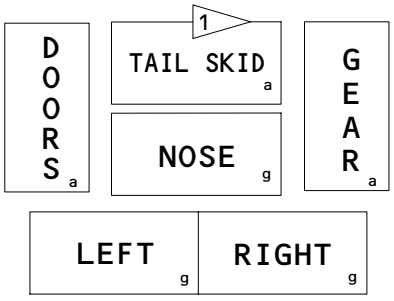
1. General
   A. This procedure consists of these tasks:
      (1) A system test of the landing gear system PSEU (Proximity Switch Electronic Unit) sensors and the position indication circuits.
         (a) 767-300 AIRPLANES;
            To do a complete system test, you must also do the task for the operational test of the tail skid warning system.
      (2) An operational test of the tail skid warning system.
      (3) A test of the sensors for the tail skid. The BITE of the PSEU is used to do this test.

         NOTE: You do not need to do this test of the tail skid proximity sensors if you do the operation test of the tail skid warning system.

      (4) An inductance and resistance test of the proximity sensors.

   TASK 32-61-00-705-003
2. System Test - Position Indication and Warning System for the Landing Gear
   A. General
      (1) The tests that follow make up the system test for the landing gear position indication and warning system. Each of the tests may be done by itself to do a test on that part of the system.
         (a) PSEU (Proximity Switch Electronics Unit) sensors
         (b) Left landing gear position indication
         (c) Right landing gear position indication
         (d) Nose landing gear position indication
         (e) Landing gear doors indication
         (f) Landing gear monitor
         (g) Landing Gear Position Air/Gnd circuit breakers.
         (h) 767-300 AIRPLANES;
            Operational test of the tail skid warning system.
      (2) The airplane can be on the ground or on jacks during the test.



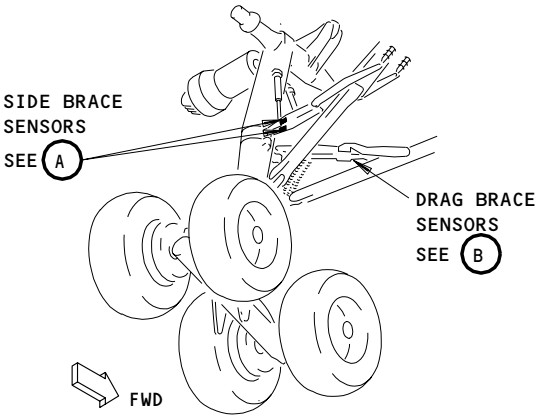


LANDING GEAR POSITION INDICATION LIGHTS

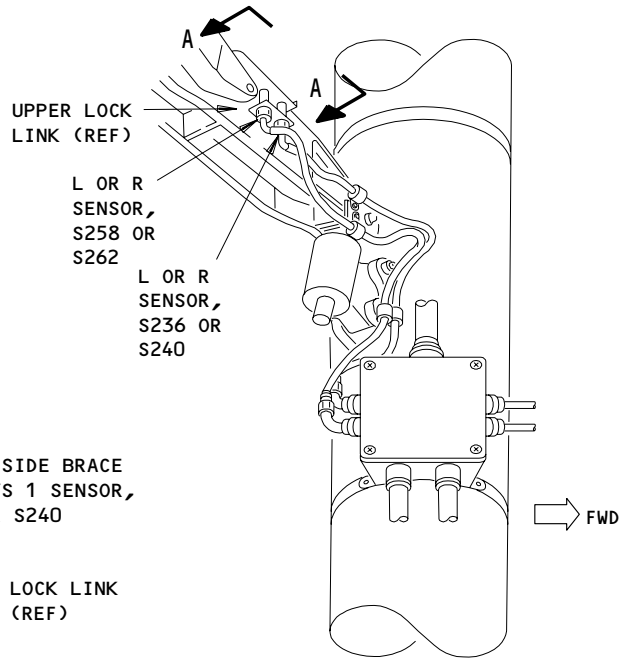
A

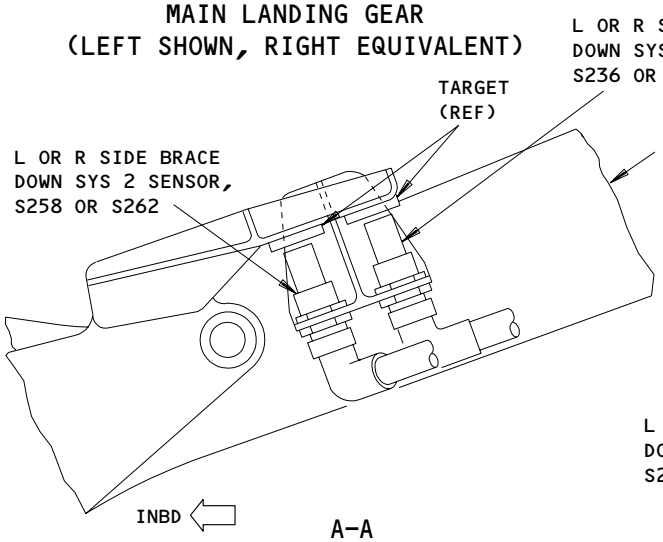
1 767-300 AIRPLANES

Landing Gear Position Indication and Warning System - Adjustment/Test
Figure 501



MAIN LANDING GEAR
(LEFT SHOWN, RIGHT EQUIVALENT)

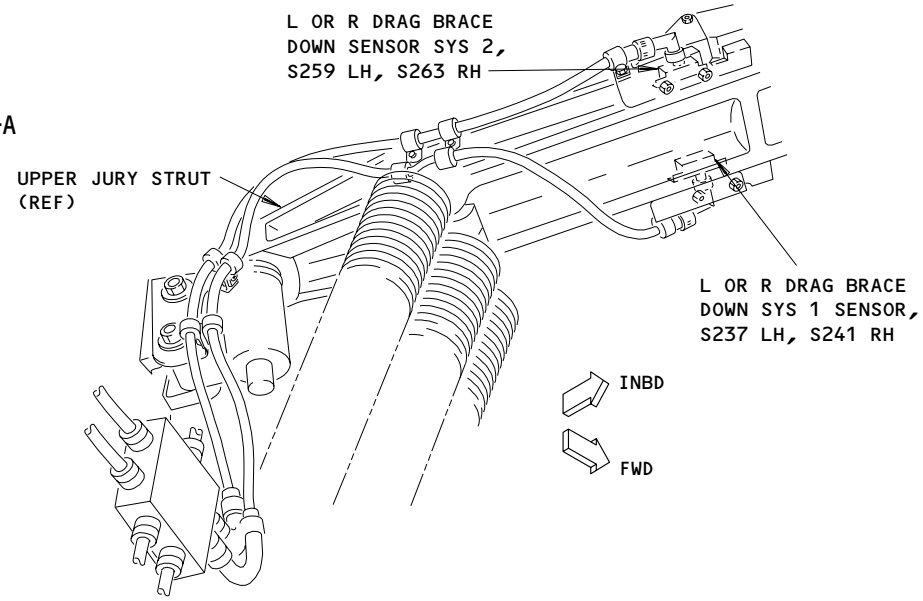




MAIN LANDING GEAR SIDE BRACE SENSORS
(LEFT MAIN LANDING GEAR SIDE BRACE DOWN
SENSORS SHOWN, RIGHT EQUIVALENT)

A

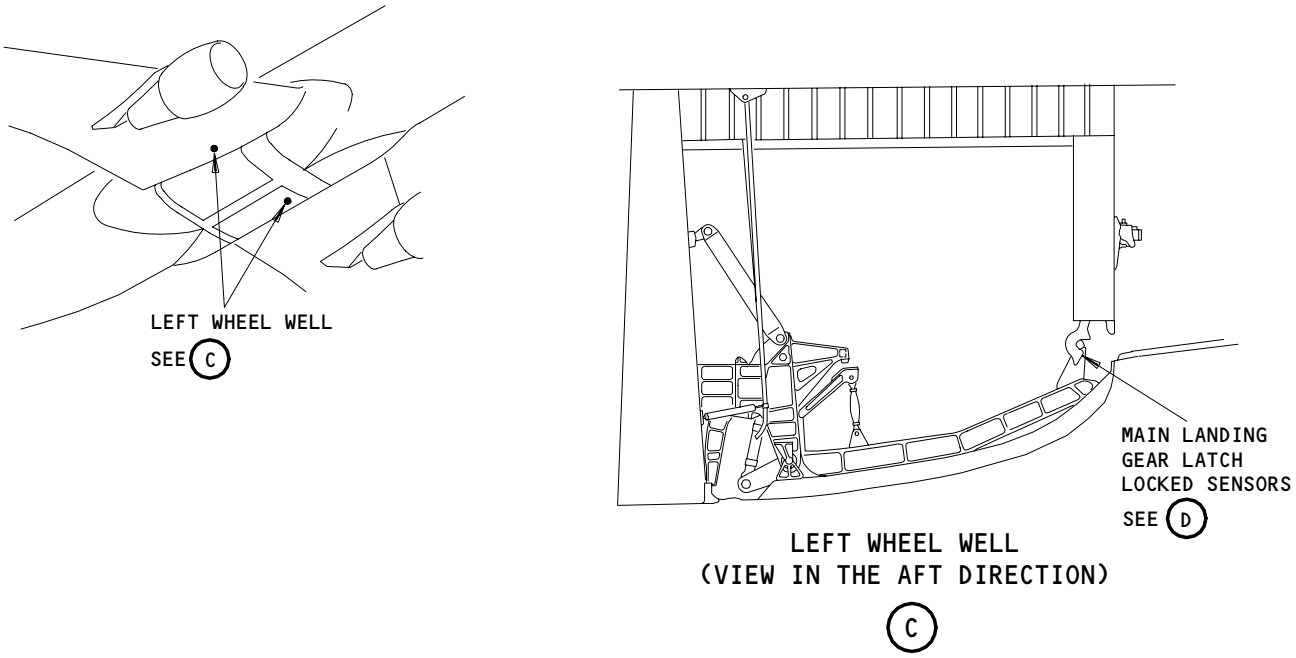
A-A



MAIN LANDING GEAR JURY STRUT SENSORS
(LEFT MAIN LANDING GEAR DRAG BRACE DOWN SENSORS SHOWN, RIGHT EQUIVALENT)

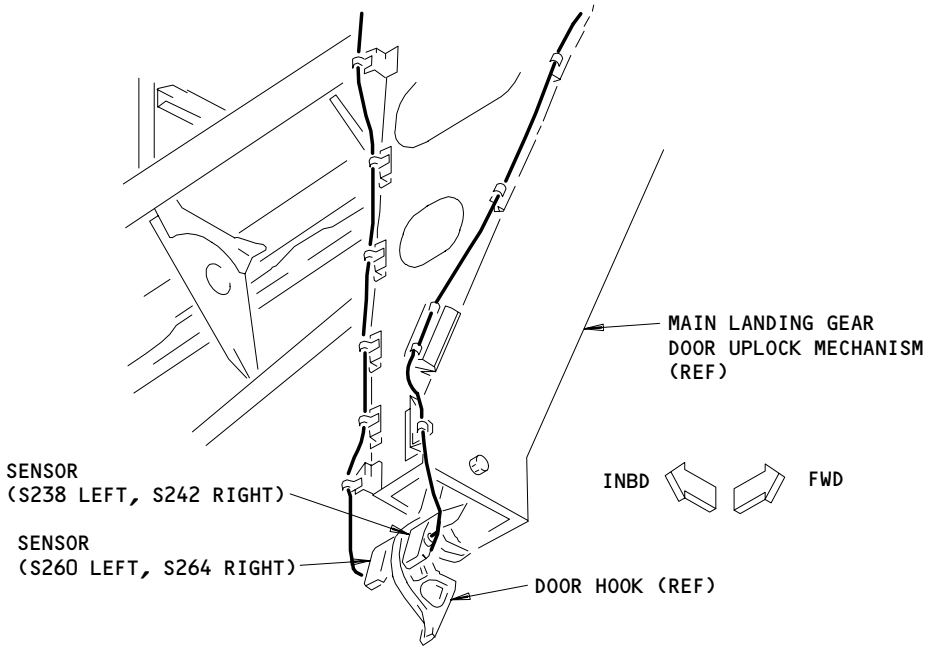
B

Main Landing Gear Proximity Sensors Location
Figure 502 (Sheet 1)



LEFT WHEEL WELL
(VIEW IN THE AFT DIRECTION)

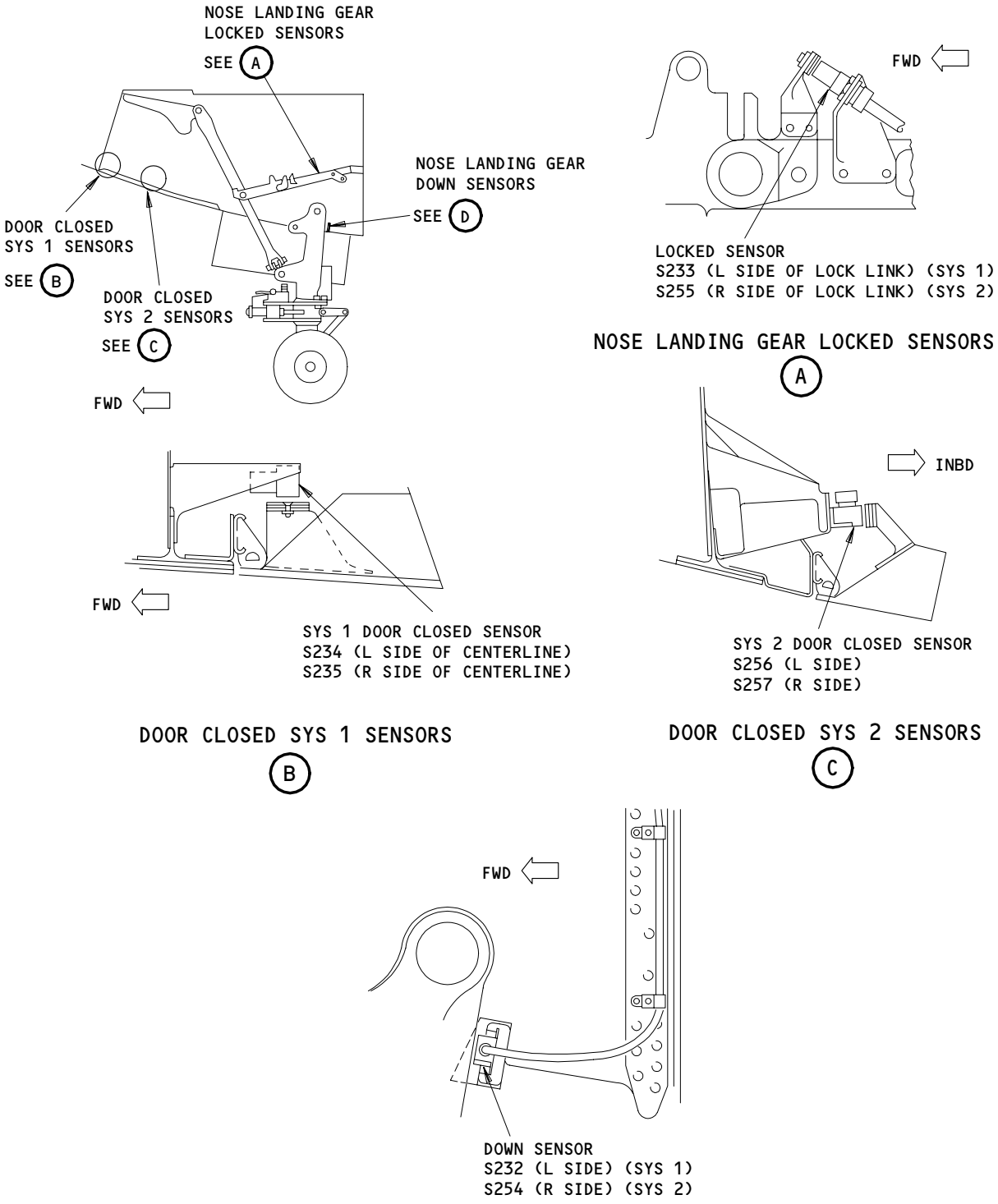
C



MAIN LANDING GEAR LATCH LOCKED SENSORS
(LEFT MAIN LANDING GEAR LATCH LOCKED SENSORS SHOWN, RIGHT EQUIVALENT)

D

Main Landing Gear Proximity Sensor Location
Figure 502 (Sheet 2)



Nose Landing Gear Proximity Sensors Location
Figure 503

(3) The proximity sensors are actuated when an actuator is put tightly against the sensor face when the target is away from the sensor.
(4) The proximity sensors are deactuated when a deactuator is put between the sensor face and the target. The deactuator must touch the target, but not the surface of the sensor.
(5) When you use PSEU BITE (par. 2.E) to do a target test of rectangular type sensors, this could cause incorrect proximity card failure displays. PSEU BITE target test of round type sensors do not cause these incorrect failure displays.

B. Equipment
(1) Proximity Sensor Actuator/Deactuator Set - A27092-106
(4 rectangular sensor actuators, 2 rectangular sensor deactuators and 2 cylindrical sensor deactuators are necessary)

C. References
(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 29-11-00/201, Depressurize/Pressurize Main Hydraulic System
(4) AMM 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-00-20/201, Landing Gear Downlocks

D. Access
(1) Location Zones

115	Nose Landing Gear Wheel Well (Left)
116	Nose Landing Gear Wheel Well (Right)
119	Main Equipment Center (Left)
120	Main Equipment Center (Right)
143	Main Landing Gear Wheel Well (Left)
144	Main Landing Gear Wheel Well (Right)
212	Control Cabin (Right)
711	Nose Landing Gear (NLG)
731	Main Landing Gear (MLG) - (Left)
741	Main Landing Gear (MLG) - (Right)

(2) Access Panels

119AL	Main Equipment Center Access Door

E. Prepare for the Test

S 495-004
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 495-005
(2) Make sure the chocks are installed at the wheels.

S 865-006
(3) Make sure the doors for the main and nose landing gear are closed (AMM 32-00-15/201).

S 865-007
(4) Make sure the control lever for the landing gear on the P3 panel is in the DN position.

S 865-008
(5) Supply electrical power (AMM 24-22-00/201).

S 865-009
(6) Pressurize the center hydraulic system and reservoir (AMM 29-11-00/201).

S 865-010
(7) Make sure these circuit breakers on the overhead panel, P11, are closed:

(a) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(b) 11U23 or 11U24, POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

F. Do a Test of the PSEU Position Indication Sensors for the Landing Gear

S 015-011
(1) Open the access door for the main equipment center, 119AL (AMM 06-41-00/201) and find the PSEU on the E1 equipment rack.

S 745-012
(2) Push the PRESS/TEST switch on the BITE controls of the PSEU.

NOTE: A number 888 will show on the LED display. All the lights will be on until you release the switch.

S 745-013

(3) Use the SENSOR CHANNEL SELECT thumb switches on the BITE control panel to set the sensor for the test (Table 501).

Table 501		
S254	S232	Nose Gear Down
S233	S255	Nose Gear Locked
S236	S258	L Side Brace Down
S237	S259	L Drag Brace Down
S240	S262	R Side Brace Down
S241	S263	R Drag Brace Down

S 745-014

(4) Do the PSEU sensor target test.

NOTE: If a rectangular sensor target is less than 0.03 inch from the sensor surface, the PSEU may incorrectly indicate a failure of the related proximity card during the TARGET test. This condition occurs because the target/sensor is rigged incorrectly. A simulated target was used during the test. A label on the PSEU recommends that you keep the simulated target at least 0.03 inch away from the sensor. To get the 0.03 inch minimum distance between the target and the sensor use a simulated target (actuator or deactuator tool) that has 0.03 inch of plastic coating.

(a) Push the TARGET TEST switch and hold for 1 second.
(b) Make sure the selected sensor number is on the LED display and that after 4 seconds, the TARGET NEAR light is on.
(c) Install a deactuator on the sensor.

(d) Push the TARGET TEST switch and hold for 1 second.
(e) Make sure the sensor number is on the LED display and that after 4 seconds, the TARGET FAR light is on.
(f) Remove the deactuator from the sensor.
(g) Do the six steps before this for each sensor shown in Table 501.

S 495-015

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 745-016
(6) Continue the PSEU Sensor Target Test
(a) Use the SENSOR CHANNEL SELECT thumb switches to set the sensor for the test (Table 502).

Table 502

S260	S238	L Latch Locked
S242	S264	R Latch Locked
S234	S256	L Nose Door Closed
S235	S257	R Nose Door Closed

(b) Push the TARGET TEST switch and hold for 1 second.
(c) Make sure the sensor number is on the LED display and that after 4 seconds, the TARGET FAR light is on.
(d) Install an actuator on the sensor.
(e) Push the TARGET TEST switch and hold for 1 second.
(f) Make sure the sensor number is on the LED display and that after 4 seconds, the TARGET NEAR light is on.
(g) Remove the actuator from the sensor.
(h) Do the seven steps before this for each sensor shown in Table 502.

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(i) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

G. Do a Test of the Position Indication for the Left Main Landing Gear

S 735-039

(1) Make sure the doors for the main and nose landing gear are closed.
  (a) Make sure that you get these flight deck effects:
    1) Make sure the green NOSE, LEFT, and RIGHT lights on the P3-1 panel are on.
    2) Make sure the amber DOORS and GEAR lights on the P3-1 panel are off.

S 905-389

(2) For left side brace down, S236 (System 1), and left drag brace down, S259 (System 2), do the following:
  (a) Install the deactuators.
  (b) Make sure you get these flight deck effects:
    1) Make sure the green NOSE, LEFT, and RIGHT lights are on.
    2) Make sure the amber DOORS light is off and the GEAR light is on.
  (c) Remove the deactuators from S236 and S259.

S 495-391

(3) For left drag down sensor, S237 (system 1), and left brace down sensor, S258 (system 2), do the following:
  (a) Install the deactuators.
  (b) Make sure you get these flight deck effects:
    1) Make sure the green NOSE, LEFT and RIGHT lights are on.
    2) Make sure the amber GEAR light is on.
    3) Make sure the amber DOORS light is off.
  (c) Remove the deactuators from sensors S237 and S258.

S 495-057

(4) For left side brace down sensors S236 (system 1) and S258 (system 2), do the following:
  (a) Install the deactuators.

(b) Move the EICAS computer select switch on the EICAS DISPLAY select panel to the L position. After 30 seconds, make sure the EICAS message L SIDE BRACE shows on the upper display.
(c) Move the EICAS computer select switch to the R position. Make sure the EICAS message L SIDE BRACE shows on the upper display.
(d) Make sure that you get these flight deck effects:
1) Make sure the green LEFT gear light on the P3-1 panel is off.
2) Make sure that the amber GEAR light is on.
(e) Remove the deactuators from the left side brace down sensors S236 and S258.

S 735-062
(5) Make sure the green NOSE, LEFT and RIGHT lights are on.

S 735-063
(6) Make sure the amber GEAR and DOORS lights are off.

S 495-064
(7) For left drag brace down sensors S237 (system 1) and S259 (system 2), do the following:
(a) Install the deactuators.
(b) After 30 seconds, make sure the EICAS message L DRAG BRACE shows on the upper display.
(c) Move the EICAS computer select switch to the L position. Make sure the EICAS message L DRAG BRACE shows on the upper display.
(d) Make sure that you get these flight deck effects:
1) Make sure that the green LEFT gear light on the P3-1 panel is off.
2) Make sure that the amber GEAR light is on.
(e) Remove the deactuators from the left drag brace down sensors S237 and S259.

H. Do a Test of the Position Indication for the Right Main Landing Gear

S 865-069
(1) Make sure the doors for the main and nose landing gear are closed.

S 865-392

(2) Make sure that you get these flight deck effects:
  (a) Make sure that the green NOSE, LEFT, and RIGHT lights on the P3-1 panel are on.
  (b) Make sure that the amber DOORS and GEAR lights on the P3-1 panel are off.

S 495-076

(3) For the right side brace down sensor, S262 (system 2), and the right drag brace down sensor, S241 (system 1).
  (a) Install the deactuators.
  (b) Make sure that you get these flight deck effects:
    1) Make sure the amber DOORS light is off and the GEAR light is on.
    2) Make sure the green NOSE, LEFT, and RIGHT lights are on.
  (c) Remove the deactuators from S241 and S262.

S 495-080

(4) For the right side brace down sensor, S240 (system 1), and right drag brace down sensor, S263 (system 2), do the following:
  (a) Install the deactuators.
  (b) Make sure you get these flight deck effects:
    1) Make sure the amber GEAR light is on and the amber DOORS light is off.
    2) Make sure that the green NOSE, LEFT, and RIGHT lights on the P3-1 panel are on.
  (c) Remove the deactuators from sensor S240 and S263.
  (d) Make sure that you get these flight deck effects:
    1) Make sure that the green NOSE, LEFT, and RIGHT lights on the P3-1 panel are on.
    2) Make sure that the amber DOORS and GEAR lights on the P3-1 panel are off.

S 495-086

(5) For the right side brace down sensors S240 (system 1) and S262 (system 2), do the following:
  (a) Install the deactuators.

(b) Make sure the EICAS computer select switch is in the L position.
(c) After 30 seconds, make sure the EICAS message R SIDE BRACE shows on the upper display.
(d) Move the EICAS computer select switch to the R position. Make sure the EICAS message R SIDE BRACE shows on the upper display.
(e) Make sure that you get these flight deck effects:
1) Make sure the green RIGHT gear light on the P3-1 panel is off.
2) Make sure that the amber GEAR light is on.
(f) Remove the deactuators from the right side brace down sensors S240 and S262.

S 735-092
(6) Make sure the green NOSE, LEFT, and RIGHT lights are on.

S 735-093
(7) Make sure the amber GEAR and DOORS lights are off.

S 495-094
(8) For the right drag brace down sensors S241 (system 1) and S263 (system 2), do the following:
(a) Install the deactuators.
(b) After 30 seconds, make sure the EICAS message R DRAG BRACE shows on the upper display.
(c) Move the EICAS computer select switch to the L position. Make sure the EICAS message R DRAG BRACE shows on the upper display.
(d) Make sure the green RIGHT light is off and the amber GEAR light is on.
(e) Remove the deactuators from the right drag brace down sensors S241 and S263.

I. Do a Test of the Position Indication for the Nose Landing Gear

S 865-099
(1) Make sure the doors for the main and nose landing gear are closed.

S 865-394

(2) Make sure that you get these flight deck effects:
  (a) Make sure the green NOSE, LEFT and RIGHT lights are on.
  (b) Make sure the amber DOORS and GEAR lights are off.

S 495-106

(3) For the nose gear locked sensor, S233 (system 1), do the following:
  (a) Install the deactuator.
  (b) Make sure the left side of the green NOSE light is on and the right side is off.

S 495-108

(4) For the nose gear locked sensor, S255 (system 2), do the following:
  (a) Install the deactuator.
  (b) Make sure that you get these flight deck effects:
    1) Make sure the green NOSE gear light on the P3-1 panel is off.
    2) Make sure the amber GEAR light is on.
  (c) Make sure the EICAS computer select switch is in the L position.
  (d) After 30 seconds, make sure the EICAS message GEAR DISAGREE shows on the upper display.
  (e) Move the EICAS computer select switch to the R position. Make sure the EICAS message GEAR DISAGREE shows on the upper display.
  (f) Remove the deactuators from the locked sensors S233 and S255 on the nose landing gear.

J. Do a Test of the Landing Gear Doors Indication

S 495-119

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 865-396

(2) Make sure the amber DOORS light is on.

S 865-121
(3) Make sure the EICAS computer select switch is in the R position.

S 735-122
(4) After approximately 30 seconds, make sure the EICAS message GEAR DOORS shows on the upper display.

S 735-123
(5) Move the EICAS computer select switch to the L position. Make sure the EICAS message GEAR DOORS shows on the upper display.

S 495-124
(6) For the left and right latch locked sensors S238, S242 (LH, RH system 1) and S260, S264 (LH, RH system 2), do the following:
(a) Install the actuators.
(b) Make sure the amber DOORS light is off.
(c) After approximately 30 seconds, make sure the EICAS message GEAR DOORS does not show on the upper display.

NOTE: Use the EICAS computer selector switch to verify GEAR DOORS displays for right and left doors.

(d) Remove the actuators from the left and right latch locked sensors S238, S242, S260 and S264.
(e) Make sure the amber DOORS light is on.
(f) After approximately 30 seconds, make sure the EICAS message GEAR DOORS shows on the upper display.
(g) Move the EICAS computer select switch to the R position. Make sure the EICAS message GEAR DOORS shows on the upper display.

S 095-132

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(7) Remove the door locks from the main landing gear and close the doors (AMM 32-00-15/201).

K. Do a Test of the EICAS Message LDG GEAR MONITOR

S 865-148
(1) Make sure the main and nose landing gear doors are closed.

S 865-397
(2) Make sure that you get these flight deck effects:
  (a) Make sure the green NOSE, LEFT, and RIGHT lights on the P3-1 panel are on.
  (b) Make sure the amber DOORS and GEAR lights on the P3-1 panel are off.

S 865-151
(3) Make sure the EICAS computer select switch is in the R position.

S 735-152
(4) Do a test of the locked sensor for the nose landing gear (S233) as follows:
  (a) Push these switches on the EICAS maintenance panel to erase the memory and to read the EICAS messages. The EICAS maintenance panel is found on the P61 right side panel in the flight compartment.
    1) ECS/MSG
    2) AUTO READ
    3) ERASE (hold 2 seconds). Repeat until all the pages are clear.
    4) AUTO READ
  (b) Install a deactuator on the sensor S233.
  (c) After 30 seconds, make sure the EICAS message LDG GEAR MONITOR shows on the lower display.
  (d) Move the EICAS computer select switch to the L position. Make sure the EICAS message LDG GEAR MONITOR shows on the lower display.
  (e) Do a check of the EICAS messages maintenance as follows:
    1) After 2 seconds, make sure the EICAS message NOSE GEAR LOCKED shows on the lower display. After 30 seconds, make sure the EICAS messages GEAR DISAGREE and NOSE GEAR DOWN show on the lower display.

2) Move the EICAS computer select switch to the L position. Make sure the EICAS messages NOSE GEAR LOCKED, GEAR DISAGREE, and NOSE GEAR DOWN show on the lower display.

(f) Remove the deactuator from the sensor S233.

(g) Push these switches on the EICAS maintenance panel.

1) AUTO READ
2) ERASE (hold 2 seconds). Repeat until all the pages clear.
3) AUTO READ

(h) After 30 seconds, make sure the EICAS message LDG GEAR MONITOR does not show on the lower display.

(i) Move the EICAS computer select switch to the R position. Make sure the EICAS message LDG GEAR MONITOR does not show on the lower display.

(j) Make sure the EICAS messages do not show as follows:

1) Make sure the EICAS messages NOSE GEAR LOCKED, GEAR DISAGREE, and NOSE GEAR DOWN does not show on the lower display.
2) Move the EICAS computer select switch to the R position. Make sure the EICAS messages NOSE GEAR LOCKED, GEAR DISAGREE, and NOSE GEAR DOWN does not show on the lower display.

S 735-153

(5) Do the step before this one again (which did a check of S233) for each of the sensors that follow:

SENSOR	SENSOR DESCRIPTION
S255	Nose Gear Locked
S232	Nose Gear Down
S254	Nose Gear Down
S237	L Drag Brace Down
S259	L Drag Brace Down
S240	R Side Brace Down
S262	R Side Brace Down
S241	R Drag Brace Down
S263	R Drag Brace Down
S236	L Side Brace Down
S258	L Side Brace Down
S238	L Latch Locked
S260	L Latch Locked
S242	R Latch Locked
S264	R Latch Locked

(a) Install a deactuator on the sensor.

NOTE: Deactuators should be installed one at a time and each sensor test run independently prior to installing deactuators on the other sensors. This will only give maintenance messages for the specific sensor on the EICAS computer display.

1) Move the EICAS computer select switch to the L or R position, after 30 seconds, make sure the EICAS message shows on the lower display for the specific sensor tested.

(b) Remove the deactuator from the sensor.

(c) Push these switches on the EICAS maintenance panel.

1) AUTO READ
2) ERASE (hold 2 seconds). Repeat until all the pages clear.
3) AUTO READ

L. Do a Test of the Position Air/Gnd Circuit Breakers for the Landing Gear

S 865-163

(1) Make sure the EICAS computer select switch is in the L position.

S 865-164

(2) Make sure the main and nose landing gear doors are closed.

S 735-165

(3) Make sure the green NOSE, LEFT and RIGHT lights are on.

S 735-166

(4) Make sure the amber DOORS and GEAR lights are off.

S 865-167

(5) Open these circuit breakers on the overhead panel P11:

(a) 11C29, LANDING GEAR POSITION AIR/GND SYS 2 ALT
(b) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(c) 11U23 or 11U24, POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

S 735-168
(6) Make sure the green NOSE, LEFT and RIGHT lights are off.

S 735-169
(7) Make sure the amber DOORS and GEAR lights are on.

S 865-170
(8) Close this circuit breaker on the overhead panel P11:
(a) 11C30, LANDING GEAR POSITION AIR/GND SYS 1

S 735-175
(9) Make sure the right sides of NOSE, LEFT and RIGHT lights are on and the left sides are off.

S 735-180
(10) Make sure the amber DOORS and GEAR lights are off.

S 865-181
(11) Close these circuit breakers on the P11 panel:
(a) 11C29, LANDING GEAR POSITION AIR/GND SYS 2 ALT
(b) 11U23 or 11U24, POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

S 865-182
(12) Open this circuit breaker on the P11 panel:
(a) 11C30, LANDING GEAR POSITION AIR/GND SYS 1

S 735-188
(13) Make sure the left sides of NOSE, LEFT and RIGHT lights are on and the right sides are off.

S 735-273
(14) Make sure the amber DOORS and GEAR lights are off.

S 735-196
(15) Open these circuit breakers on the overhead panel P11:
(a) 11C29, LANDING GEAR POSITION AIR/GND SYS 2 ALT
(b) 11U23 or 11U24, POSITION AIR/GRD SYS 2

NOTE: This circuit breaker can be in one of these two locations.

S 735-197
(16) Make sure the amber DOORS and GEAR lights are on and the green NOSE, LEFT, and RIGHT lights are off.

S 865-198
(17) Open this circuit breaker on the overhead panel P11:
(a) 11A33, IND LIGHTS 1

S 735-199
(18) Make sure the top part of the amber DOORS and GEAR lights is on and the bottom part is off.

S 865-200
(19) Close this circuit breaker on the overhead panel P11:
(a) 11A33, IND LIGHTS 1

S 865-001
(20) Open this circuit breaker on the overhead panel P11:
(a) 11R28, R IND LTS 1

S 735-201
(21) Make sure the bottom part of the amber DOORS and GEAR lights is on and the top part is off.

S 865-202
(22) Close these circuit breakers on the P11 panel:
(a) 11C29, LANDING GEAR POSITION AIR/GND SYS 2 ALT

(b) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(c) 11R28, R IND LTS 1
(d) 11U23 or 11U24, POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

S 735-203
(23) Make sure the green NOSE, LEFT, and RIGHT lights are on.

S 865-264
(24) Open this circuit breaker on the overhead panel P11:
(a) 11A33, IND LIGHTS 1

S 735-204
(25) Make sure the left sides of the green NOSE, LEFT, and RIGHT lights are on and the right sides are off.

S 865-205
(26) Close this circuit breaker on the overhead panel P11:
(a) 11A33, IND LIGHTS 1

S 865-002
(27) Open this circuit breaker on the overhead panel P11:
(a) 11R28, R IND LTS 1

S 735-206
(28) Make sure the right sides of the green NOSE, LEFT, and RIGHT lights are on and the left sides are off.

M. Put the Airplane Back to Its Usual Condition

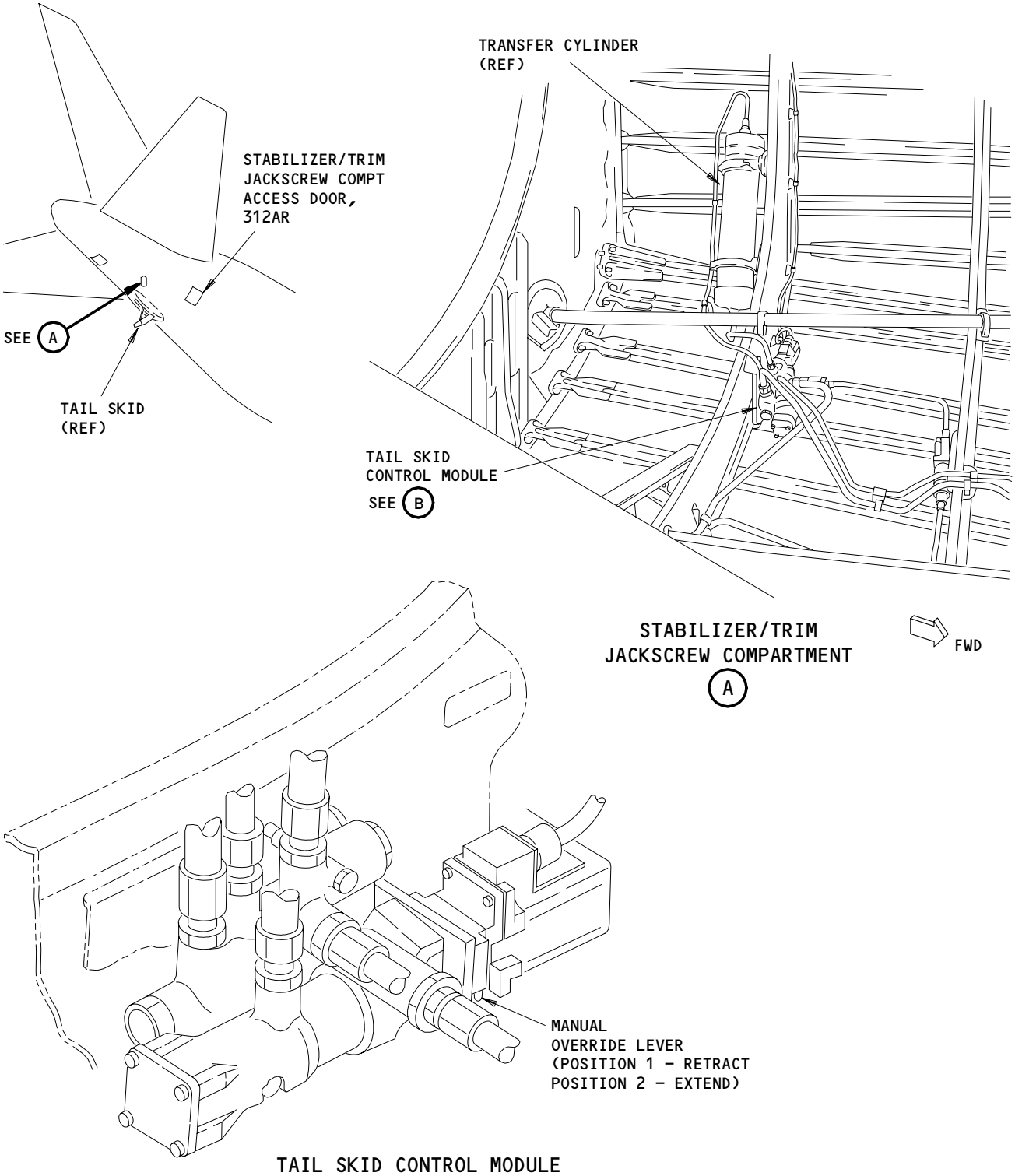
S 095-207
(1) Remove all the actuators and deactuators.

S 415-208
(2) Close the access door for the main equipment center, 119AL if opened.

S 865-211
(3) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-61-00-715-269

3. 767-300 AIRPLANES;
Do an Operational Test of the Tail Skid Warning System



Tail Skid Control Module Manual Override
Figure 504

244333

A. References
(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 29-11-00/201, Depressurize/Pressurize Main Hydraulic System
(5) AMM 32-00-20/201, Landing Gear Downlocks

B. Access
(1) Location Zones
120 Main Equipment Center (Right)
212 Control Cabin (Right)
311 Area Aft of Pressure Bulkhead (Left)
312 Area Aft of Pressure Bulkhead (Right)
(2) Access Panels
119AL Main Equipment Center Access Door
312AR Stabilizer/Trim Jackscrew Compartment Access Door

C. Prepare for the Test

S 495-262
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 865-265
(2) Make sure the control lever for the landing gear on the P3 panel is in the DN position.

S 865-266
(3) Supply electrical power (AMM 24-22-00/201).

S 865-267
(4) Pressurize the center hydraulic system and reservoir (AMM 29-11-00/201).

S 865-268
(5) Make sure these circuit breakers on the overhead panel, P11, are closed:
(a) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(b) 11U23, POSITION AIR/GND SYS 2
(c) 11U26, TAIL SKID CONTROL

D. Procedure

S 715-237
(1) Make sure the TAIL SKID light on the P3 panel is not on and the EICAS message TAIL SKID is not shown on the upper display.

S 865-240
(2) Open this circuit breaker on the P11 panel and attach a DO-NOT-CLOSE tag:
(a) 11U26, TAIL SKID CONT

S 015-241

WARNING: STAY OFF OF THE ACCESS DOOR 312AR. THE WEIGHT OF A PERSON COULD CAUSE THE SPRING-LOADED LATCHES TO RELEASE, AND CAUSE INJURY TO PERSONS WHEN THEY FALL THROUGH THE OPEN DOOR.

(3) Open the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201).

S 865-242

(4) Find the tail skid control module in the stabilizer/trim jackscrew compartment (Fig. 504).

S 865-243

WARNING: MAKE SURE THE TAIL SKID AREA IS CLEAR OF PERSONS AND EQUIPMENT BEFORE YOU MOVE THE MANUAL OVERRIDE LEVER ON THE TAIL SKID CONTROL MODULE TO POSITION 1. WHEN YOU PUT THE MANUAL OVERRIDE LEVER IN POSITION 1 THE TAIL SKID WILL RETRACT AND THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Move the manual override lever on the tail skid control module to POSITION 1.

S 715-244

(6) Make sure the tail skid retracts.

S 715-245

(7) Make sure the TAIL SKID light comes on.

S 715-246

(8) Move the EICAS computer select switch to the L position and make sure the EICAS message TAIL SKID shows on the upper display.

S 715-247

(9) Move the EICAS computer select switch to the R position and make sure the EICAS message TAIL SKID shows on the upper display.

S 865-249

(10) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11U26, TAIL SKID CONT

S 715-250

(11) Make sure the TAIL SKID light is not on and the EICAS message TAIL SKID does not show when the tail skid is fully extended.

E. Put the Airplane Back to Its Usual Condition

S 415-263
(1) Close the access door for the stabilizer/trim jackscrew compartment, 312AR.

S 865-275
(2) Remove the power from the center hydraulic system (AMM 29-11-00/201), if it is not necessary.

S 865-276
(3) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-61-00-745-266

4. 767-300 AIRPLANES;
Use the PSEU BITE Test to Do an Operational Test of the Tail Skid Warning System

A. References
(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 29-11-00/201, Depressurize/Pressurize Main Hydraulic System
(5) AMM 32-00-20/201, Landing Gear Downlocks

B. Access
(1) Location Zones
119 Main Equipment Center (Left)
212 Control Cabin (Right)
311 Area Aft of Pressure Bulkhead (Left)
312 Area Aft of Pressure Bulkhead (Right)
(2) Access Panels
119AL Main Equipment Center Access Door
312AR Stabilizer/Trim Jackscrew Compartment Access Door

C. Prepare for the Test

S 495-274
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 865-258
(2) Make sure the control lever for the landing gear on the P3 panel is in the DN position.

S 865-259
(3) Supply electrical power (AMM 24-22-00/201).

S 865-260
(4) Pressurize the center hydraulic system and reservoir (AMM 29-11-00/201).

S 865-261
(5) Make sure these circuit breakers on the overhead panel, P11, are closed:
(a) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(b) 11U23, POSITION AIR/GND SYS 2
(c) 11U26, TAIL SKID CONTROL

D. Procedure

S 015-214
(1) Open the access door for the main equipment center, 119AL (AMM 06-41-00/201) and find the PSEU on the E1 equipment rack.

S 865-215
(2) Make sure the control lever for the landing gear on the P3 panel is in the DN position.

S 865-216
(3) Make sure the tail skid is extended.

S 745-217
(4) Push the PRESS/TEST switch on the BITE controls of the PSEU.

NOTE: A number 888 will show on the LED display. All the lights will be on until you release the switch.

S 745-218
(5) Use the SENSOR CHANNEL SELECT thumb switches on PSEU BITE control panel to put in the code 247 (for S247, tail skid extended).

S 745-219
(6) Push the TARGET TEST switch and hold for 1 second.

S 745-220
(7) Make sure the sensor code is on the LED display and that after 4 seconds, the TARGET NEAR light is on.

S 745-221
(8) Put in the code 248 (for S248, tail skid retracted) on the PSEU BITE control panel.

S 745-222
(9) Push the TARGET TEST switch and hold for 1 second.

S 745-223
(10) Make sure the sensor code is on the LED display and that after 4 seconds, the TARGET FAR light is on.

S 865-224
(11) Open this circuit breaker on the overhead panel, P11, and attach a DO-NOT-CLOSE tag:
(a) 11U26, TAIL SKID CONT

S 015-225

WARNING: STAY OFF OF THE ACCESS DOOR 312AR. THE WEIGHT OF A PERSON COULD CAUSE THE SPRING-LOADED LATCHES TO RELEASE, AND CAUSE INJURY TO PERSONS WHEN THEY FALL THROUGH THE OPEN DOOR.

(12) Open the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201).

S 865-226
(13) Find the tail skid control module in the stabilizer/trim jackscrew compartment (Fig. 504).

S 985-270

WARNING: MAKE SURE THE TAIL SKID AREA IS CLEAR OF PERSONS AND EQUIPMENT BEFORE YOU MOVE THE MANUAL OVERRIDE LEVER ON THE TAIL SKID CONTROL MODULE TO POSITION 1. WHEN YOU PUT THE MANUAL OVERRIDE LEVER IN POSITION 1 THE TAIL SKID WILL RETRACT AND THIS CAN CAUSE INJURY TO PERSONS.

(14) Move the manual override lever on the tail skid control module to POSITION 1.

S 865-227
(15) Make sure the tail skid is retracted.

S 745-228
(16) Put in the code 247 (for S247, tail skid extended) on the PSEU BITE control panel.

S 745-229
(17) Push the TARGET TEST switch and hold for 1 second.

S 745-230
(18) Make sure the sensor code is on the LED display and that after 4 seconds, the TARGET FAR light is on.

S 745-231
(19) Put in the code 248 (for S248, tail skid retracted) on the PSEU BITE control panel.

S 745-232
(20) Push the TARGET TEST switch and hold for 1 second.

S 745-233
(21) Make sure the sensor code is on the LED display and that after 4 seconds, the TARGET NEAR light is on.

S 865-234

WARNING: MAKE SURE THE TAIL SKID AREA IS CLEAR OF PERSONS AND EQUIPMENT BEFORE YOU CLOSE THE TAIL SKID CONTROL CIRCUIT BREAKER. THE TAIL SKID WILL EXTEND AND THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(22) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11U26, TAIL SKID CONT

S 865-235
(23) Make sure the tail skid is extended.

E. Put the Airplane Back to Its Usual Condition

S 415-251
(1) Close the access door for the main equipment center, 119AL.

S 415-252
(2) Close the access door for the stabilizer/trim jackscrew compartment, 312AR.

S 865-253
(3) Remove the power from the center hydraulic system (AMM 29-11-00/201), if it is not necessary.

S 865-254
(4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-61-00-765-280

5. Inductance and Resistance Test of the Proximity Sensors

A. General
(1) This procedure does these tasks:
(a) Test the resistance of each sensor.
(b) Tests the inductance of each sensor and compares it to a known tolerance for the target far and the target near position.
(c) This task checks the resistance and inductance of the landing gear sensors. For sensors which have high resistance values or bad inductance values, refer to FIM 32-09-03/101 to decide to adjust the sensor or replace the sensor.
(2) This test requires the airplane to be on jacks to swing the landing gear. This allows all landing gear sensors to be tested in the target far and target near conditions.

B. Reference
(1) AMM 07-11-01/201, Jack the airplane
(2) AMM 29-11-00/201, Pressurize the Hydraulic System
(3) FIM 32-09-03/101, Proximity Switch System

C. Equipment
(1) BK Precision model 878 or 875B inductance meter or equivalent, 1000Hz excitation frequency.

D. Access
(1) Location Zones
119 Main Equipment Center (LH, RH)

E. Prepare for the Test

S 015-281
(1) Do this task: Remove the PSEU, AMM 32-09-04/401.

S 765-282
(2) Measure the resistance at the pins on the E3 rack for each main and nose gear sensor.

NOTE: Refer to WDM 32-61-11 or WDM 32-61-12 for the position indication sensors. Refer to WDM 32-09-11 or WDM 32-09-12 for the air/ground sensors.

(a) If the resistance is greater than 25 ohms, refer to FIM 32-09-03/101 to correct the problem.

S 765-283
(3) Measure the inductance at the pins on the PSEU connector on the E3 rack for each main and nose gear sensor.

NOTE: If the excitation frequency on the inductance meter is selectable, then you should select a frequency of 1000 Hertz.

(a) Record the inductance value and target position (near or far) for comparison to the inductance values listed in the steps below.
(b) Measure the sensor inductances with the gear in both the down and up positions. Refer to AMM 07-11-01/201 to jack the airplane to permit gear retraction.

S 045-291

WARNING: DO THE DEACTIVATION PROCEDURE FOR THE SPOILERS OR MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE SPOILERS. THE SPOILERS CAN MOVE QUICKLY AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Do the deactivation procedure for the spoilers (AMM 27-61-00/201).

S 865-285
(5) Move all three landing gears to the up position.

S 765-286
(6) Measure the inductance of all landing gear sensors. Record the target positions of all sensors as target near or target far.
(a) If the inductance for a sensor in the target near position is below 5.2 millihenries or more than 6.5 millihenries, refer to FIM 32-09-03/101 to correct the problem.

(b) If the sensor inductance for the target far state is greater than 5.0 millihenries or less than 4.7 millihenries, refer to FIM 32-09-03/101 to correct the problem.

S 865-287

(7) Lower the airplane from the jacks (AMM 07-11-01/201), if it is no longer necessary.

S 415-288

(8) Install the PSEU (AMM 32-09-04/401).

S 415-289

(9) Put the safety-sensitive systems back to their initial conditions (AMM 32-09-02/201).

S 865-290

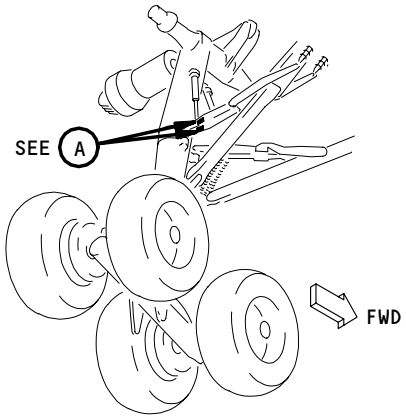
(10) Remove electrical power if it is not necessary (AMM 24-22-00/201).

MAIN GEAR PROXIMITY SENSORS - MAINTENANCE PRACTICES

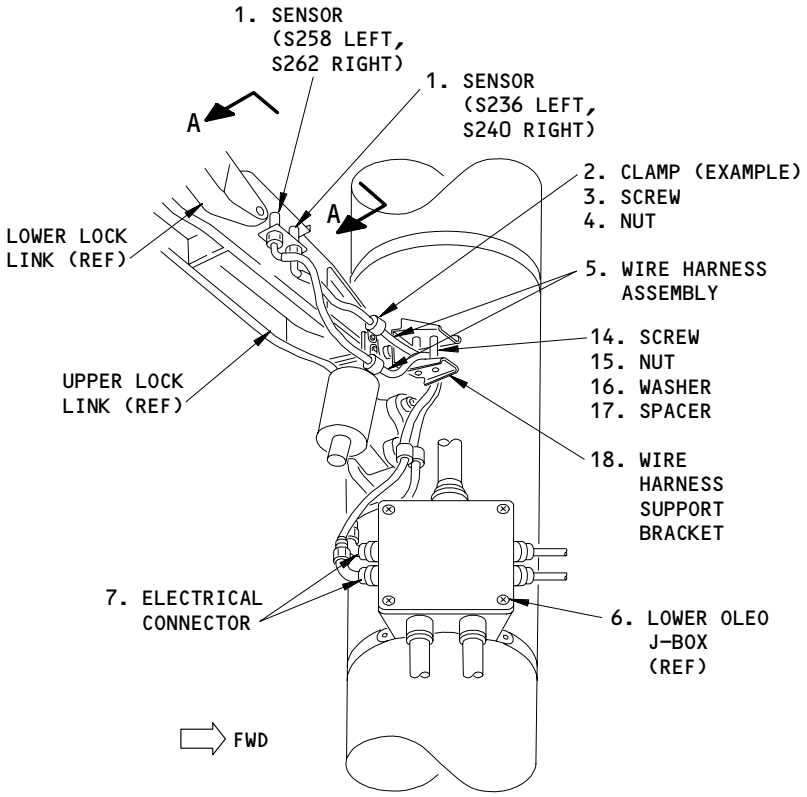
1. General
   A. This procedure contains four tasks for the proximity sensors for the main landing gear:
      (1) The first task is for the removal of the proximity sensor.
      (2) The second task is for the installation of the proximity sensor.
      (3) The third task does a test of the proximity sensor.
      (4) The fourth task measures and adjusts the sensor clearance.
   B. All of these tasks are for the proximity sensors that follow:
      (1) Side brace down sensors (S236, S240, S258, S262) in Fig. 201
      (2) Drag brace down sensors (S237, S241, S259, S263) in Fig. 202
      (3) Latch locked (uplock) sensors (S238, S242, S260, S264) in Fig. 203
   C. The wire harness assemblies of the side brace down and the drag brace down sensors are removed and installed with the sensor attached. Keep the conduits in their positions when you remove the latch locked sensors and wires from the airplane.
   D. For removal, installation, adjustment, and test for the truck tilt sensors on the main gear (AMM 32-09-07/201).

TASK 32-61-02-002-001

2. Remove the Proximity Sensor for the Main Landing Gear
   A. Equipment
      (1) Pull Wire (pull tape), 100 inches in length - Commercially Available
   B. References
      (1) AMM 24-22-00/201, Electrical Power - Control
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
      (4) AMM 32-09-07/201, Main Gear Tilt Sensors
   C. Access
      (1) Location Zones
          143 MLG Wheel Well (Left)
          144 MLG Wheel Well (Right)
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)



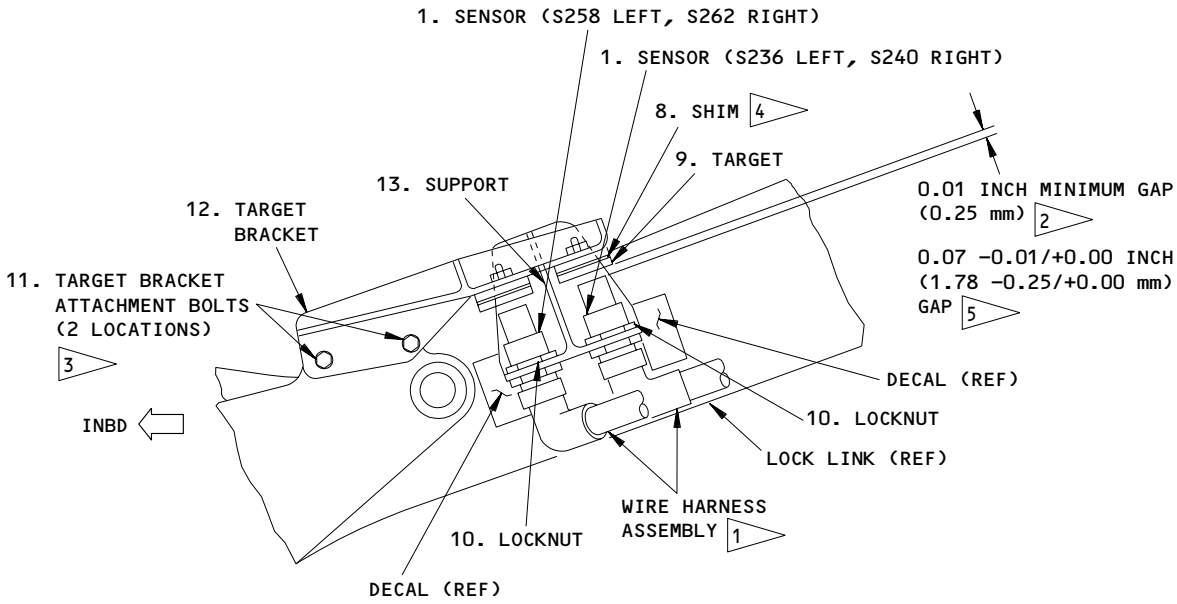
LEFT MAIN LANDING GEAR
(RIGHT MAIN LANDING
GEAR IS EQIVALENT)



LEFT MAIN LANDING GEAR SIDE BRACE DOWN SENSORS
(RIGHT MAIN LANDING GEAR SIDE BRACE
DOWN SENSORS IS EQUIVALENT)

A

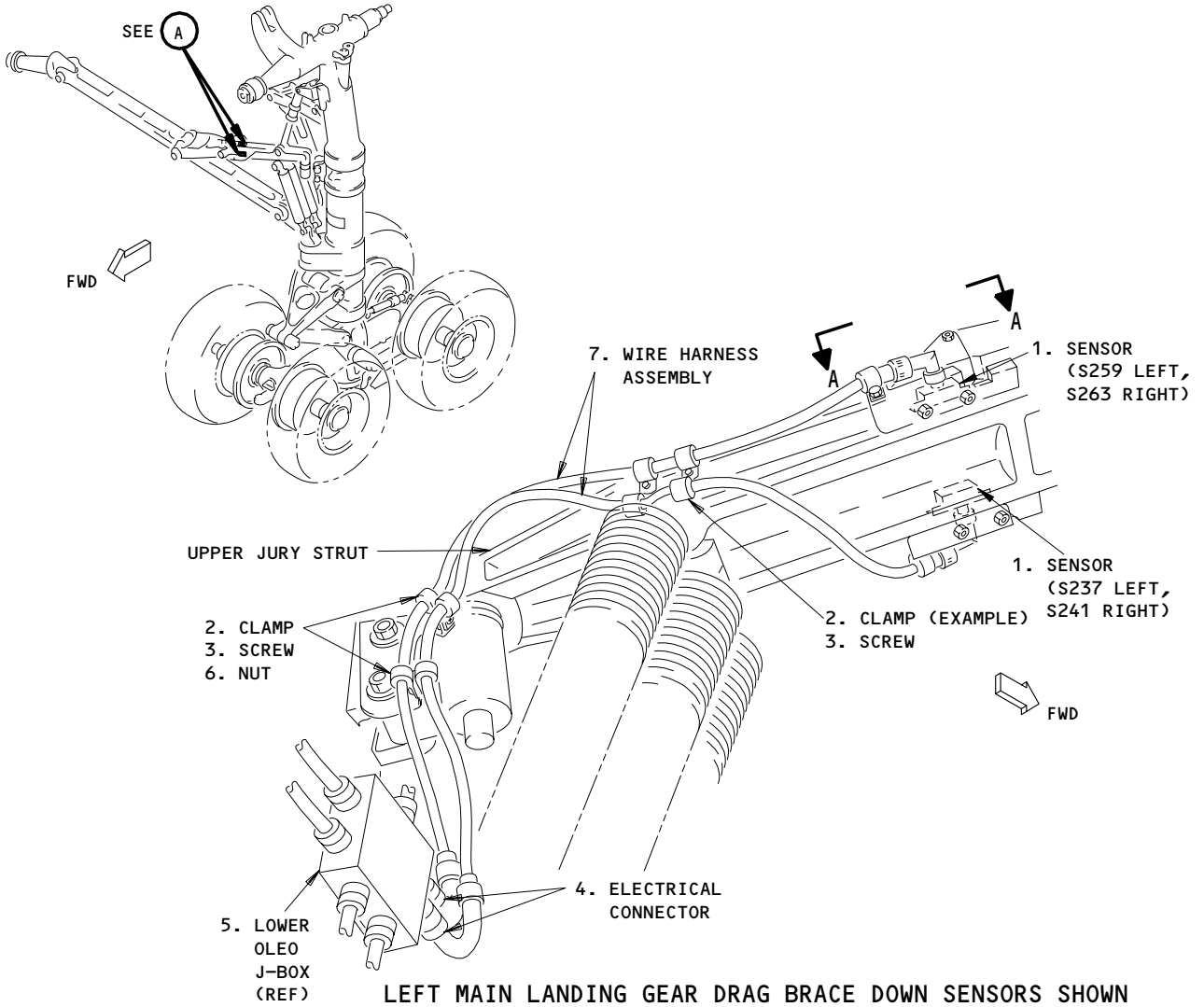
Side Brace Down Sensor Installation
Figure 201 (Sheet 1)



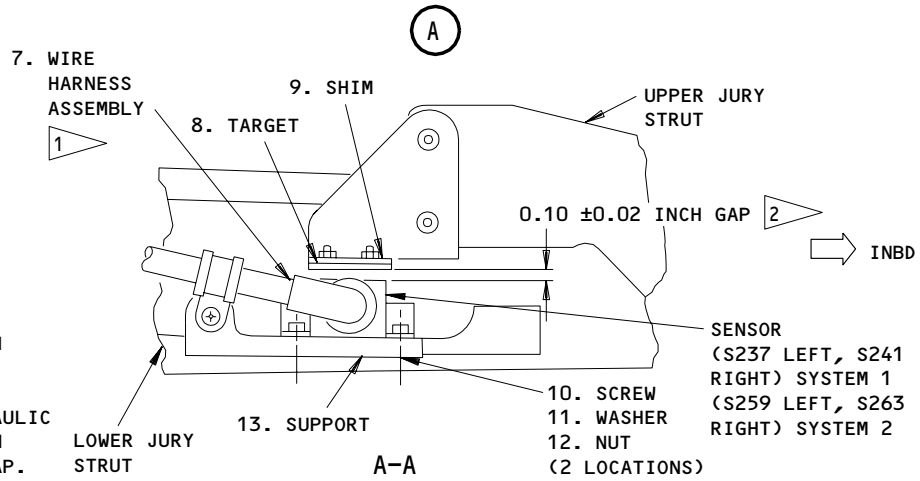
A–A

1. INSTALL THE COUPLING NUT FOR THE WIRE HARNESS ASSEMBLY BY HAND. TIGHTEN THE NUT WITH A TOOL NO MORE THAN 1/8 TURN. DO NOT HOLD THE WIRE HARNESS ASSEMBLY WITH A TOOL WHEN YOU TIGHTEN THE LOCKNUTS.
2. MAKE SURE YOU SUPPLY HYDRAULIC POWER TO THE CENTER SYSTEM BEFORE YOU MEASURE THIS GAP.
3. APPLY SEALANT WHENEVER THESE BOLTS ARE ADJUSTED
4. LAMINATIONS ARE 0.002 INCH (0.050 mm) THICKNESS
5. MEASURE THIS GAP WITHOUT HYDRAULIC POWER APPLIED TO THE CENTER SYSTEM.

Side Brace Down Sensor Installation
Figure 201 (Sheet 2)



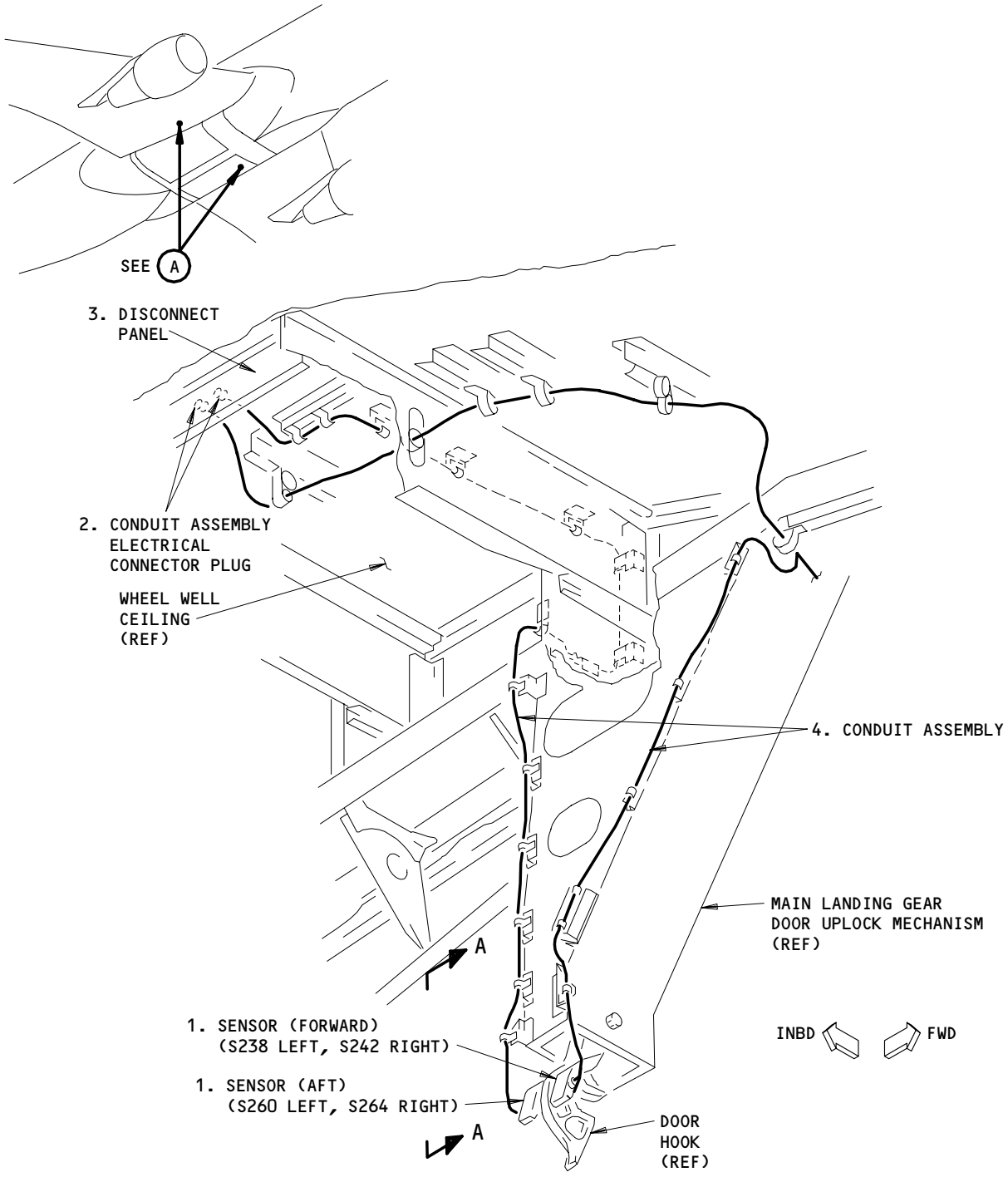
LEFT MAIN LANDING GEAR DRAG BRACE DOWN SENSORS SHOWN
(RIGHT MAIN LANDING GEAR DRAG BRACE DOWN SENSORS EQUIVALENT)



1 INSTALL THE COUPLING NUT FOR THE WIRE HARNESS ASSEMBLY BY HAND PLUS NO MORE THAN ANOTHER 1/8 TURN

2 MAKE SURE YOU SUPPLY HYDRAULIC POWER TO THE CENTER SYSTEM BEFORE YOU MEASURE THIS GAP.

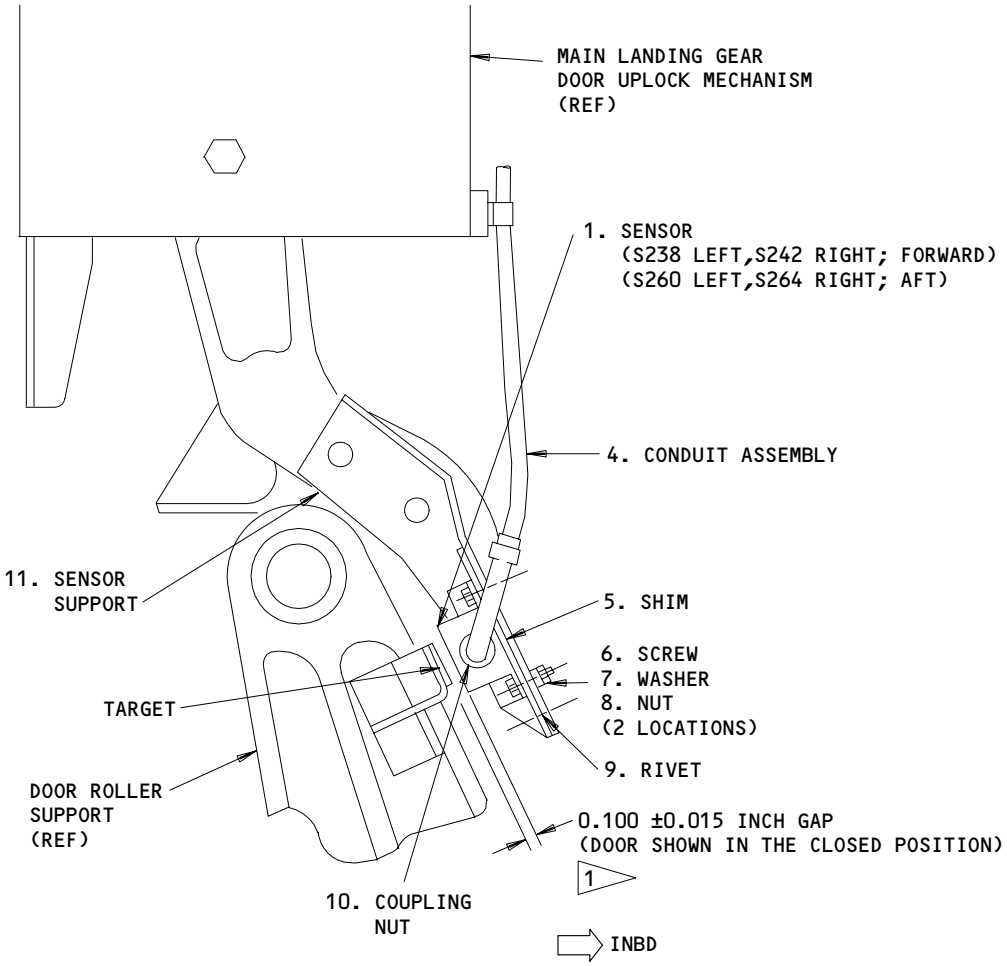
Drag Brace Down Sensor Installation
Figure 202



LEFT MAIN LANDING GEAR LATCH LOCKED SENSORS SHOWN
(RIGHT MAIN LANDING GEAR LATCH LOCKED SENSORS EQUIVALENT)

(A)

Latch Locked Sensor Installation
Figure 203 (Sheet 1)



LEFT MAIN LANDING GEAR LATCH LOCKED SENSORS SHOWN
(RIGHT MAIN LANDING GEAR LATCH LOCKED SENSORS EQUIVALENT)
A-A

1 DO THE CHECK OF THE GAP WITH THE POWER REMOVED FROM THE CENTER HYDRAULIC SYSTEM

Latch Locked Sensor Installation
Figure 203 (Sheet 2)

D. Prepare for Removal

S 862-002
(1) Remove electrical power (AMM 24-22-00/201).

S 492-003
(2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 492-004
(3) Make sure the wheels are chocked.

S 492-005

WARNING: USE THE PROCEDURE, (AMM 32-00-15), TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 212-039
(5) Look at the sensor, its mounting bracket and the target for signs of damage.
   (a) Make a record if damage is found. This data will be used during the installation.

E. Remove the Proximity Sensor for the Main Landing Gear (Fig. 201, Fig. 202, Fig. 203)

NOTE: It is only necessary to do the steps for the applicable sensor.

S 022-006
(1) Remove the Side Brace Down Sensor (Fig. 201).
   (a) Remove the locknut (10) and remove the sensor (1) from the support (13).
   (b) Disconnect the electrical connector (7) from the lower oleo J-Box (6).
   (c) Remove the screws (3), nuts (4), and clamps (2).
   (d) Remove the outer screw (14), nut (15), washer (16), and spacer (17) from the wire harness support (18).
   (e) Remove the wire harness assembly (5) (with the sensor attached).

S 022-007
(2) Remove the Drag Brace Down Sensor (Fig. 202).
   (a) Remove the screws (10), washers (11), and nuts (12) and remove the sensor (1) from the support (13).
   (b) Disconnect the electrical connector (4) from the lower oleo J-Box (5).

(c) Remove the screws (3) and clamps (2), then remove the wire harness assembly (7) (with the sensor attached).

S 022-008

(3) Remove the Latch Locked Sensor (Fig. 203).
(a) Disconnect the electrical connector plug (2) for the conduit assembly from the disconnect panel (3).

CAUTION: WRITE DOWN THE WIRE COLOR CODE AND PIN LOCATIONS FOR THE CORRECT INSTALLATION OF NEW SENSOR WIRES. IF THE SENSOR WIRES ARE INSTALLED INCORRECTLY, A MALFUNCTION OF THE LANDING GEAR INDICATION WILL OCCUR.

(b) Use a pin extraction tool to remove the connector pins from the plug (2) (Chapter 20, SWPM).
(c) Attach a pull wire to the sensor leads. This makes it easier to put the new sensor leads through the conduit assembly (4).
(d) Disconnect the coupling nut (10) from the sensor (1).
(e) Remove the screws (6), washers (7), and nuts (8) to remove the sensor (1) from the support (11).
(f) Pull the sensor electrical leads from the conduit (4).

NOTE: Do not pull the tape that is attached to the leads out of the conduit.

TASK 32-61-02-402-010

3. Install the Proximity Sensor for the Main Landing Gear

A. Equipment
(1) Pull Wire (pull tape), 100 inches in length - Commercially Available

B. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
201	1	Sensor	32-61-60	01	85
	2	Clamp		01	15
	3	Screw		01	20,25
	4	Nut		01	30
	5	Wire harness assembly		01	45,50
	14	Screw		01	310
	15	Nut		01	325
	16	Washer		01	320
	17	Spacer		01	315
202	1	Sensor		01	80
	2	Clamp		01	15
	3	Screw		01	20,25
	6	Nut		01	30
	7	Wire harness assembly		01	35,40
	10	Screw		01	82
	11	Washer		01	83
	12	Nut		01	84
203	1	Sensor	32-61-02	01	10,15
	2	Connector plug		15	40,45
	4	Conduit assembly		15	5,10, 15,20
	5	Shim		01	55
	6	Screw		01	40
	7	Washer		01	45
	8	Nut		01	50

C. References
(1) AMM 20-10-23/401, Lockwires

D. Access
(1) Location Zones
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

E. Install the Proximity Sensor for the Main Landing Gear (Fig. 201, Fig. 202, Fig. 203)

NOTE: It is only necessary to do the steps for the applicable sensor.

S 422-036

CAUTION: DO NOT DROP OR HIT THE SENSORS. YOU CAN CAUSE DAMAGE TO THE INTERNAL COMPONENTS OF THE SENSORS AND CAUSE A FAILURE OF THE INDICATION SYSTEM.

(1) Install the Side Brace Down Sensor (Fig. 201).
  (a) Install the wire harness assembly (5) with the clamps (2), screws (3), and nuts (4).
  (b) Make sure the routing for the wire harness assembly is through the wire harness support bracket (18).
    1) Install the outer screw (14), spacer (17), washer (16), and nut (15).

  CAUTION: MAKE SURE THE WIRE HARNESS IS NOT TWISTED. IF IT IS TWISTED, THIS CAN CAUSE DAMAGE TO THE WIRE CONDUITS DURING LANDING GEAR RETRACTION,

  (c) Make sure the conditions that follow occur for the wire harness installation:
    1) The wire harness is not twisted.
    2) The routing for the wire harness is near the upper lock link.
    3) The conduit location marker is at the center of each clamp.
  (d) Install the electrical connector (7) on the J-Box (6).
  (e) Do the test of the sensor with the actuator test tool.

    NOTE: Refer to the task which does a test of the sensors.

    1) Make sure the sensor is kept more than one inch away from all metal surfaces during the test.
  (f) Install the sensor (1) with the locknut (10).
  (g) Install lockwire on the locknut (10) (AMM 20-10-23/401).
  (h) Make sure the conditions for the installation of the wire harness (which are described in a previous step) are correct.
  (i) If the installation is incorrect, do the steps that follow:
    1) Loosen the clamps on the upper lock link and the shock strut.
    2) Loosen the connectors on the J-box.
    3) Adjust the wire harness until the installation is correct.
    4) Tighten all the clamps and connectors.
  (j) Apply sealant to the clamp bolts.
  (k) If the sensor, its mounting bracket or the target showed signs of damage, do the task that measures and adjusts the clearance between the sensor and target.

S 422-037

CAUTION: DO NOT DROP OR HIT THE SENSORS. YOU CAN CAUSE DAMAGE TO THE INTERNAL COMPONENTS OF THE SENSORS AND CAUSE A FAILURE OF THE INDICATION SYSTEM.

(2) Install the Drag Brace Down Sensor (Fig. 202).
  (a) Install the wire harness assembly (7) with the clamps (2) and screws (3).
  (b) Install the electrical connector (4) on the J-Box (5).
  (c) Do the test of the sensor with the actuator test tool.

    NOTE: Refer to the task which does a test of the sensors.

    1) Make sure the sensor is kept more than one inch away from any metal surface during the test.
  (d) Install the sensor (1) on the lower jury strut and the support (13) under the lower jury strut with screws (10), washers (11), and nuts (12).
  (e) If the sensor, its mounting bracket or the target showed signs of damage, do the task that measures and adjusts the clearance between the sensor and target.

S 422-038

CAUTION: DO NOT DROP OR HIT THE SENSORS. YOU CAN CAUSE DAMAGE TO THE INTERNAL COMPONENTS OF THE SENSORS AND CAUSE A FAILURE OF THE INDICATION SYSTEM.

(3) Install the Latch Locked Sensor (Fig. 203).
  (a) Twist the sensor leads. Attach a pull wire to the leads and put them through the conduit (4).

    NOTE: Put tape on the lead ends where they are attached to the pull wires to make it smooth. Do this to make sure the leads go through the conduit smoothly.

  (b) Install the sensor (1) with the screws (6), washers (7), and nuts (8).
  (c) Crimp the pins on the sensor leads and use an insertion tool to put the pins into the connector plug (2) (Chapter 20, SWPM).
  (d) Install the electrical connector (1) to the disconnect panel (3).
  (e) Do the test of the latch locked sensor.

    NOTE: Refer to the task which does a test of the sensors.

(f) Tighten the conduit coupling nut (10) to the sensor (1) with your hand.
(g) Install lockwire on the coupling nut (10) (AMM 20-10-23/401).

NOTE: Not all coupling nuts have provisions for lockwire. If the coupling nut does not have holes drilled for lockwire, then you do not need to install the lockwire.

(h) If the sensor, its mounting bracket or the target showed signs of damage, do the task that measures and adjusts the clearance between the sensor and target.

TASK 32-61-02-702-018

4. Test the Proximity Sensor for the Main Landing Gear

A. General

(1) A correctly installed sensor will have the necesary clearance as shown in Fig. 201 thru 203. Clearance adjustment usually is not necessary. Measure the clearance if the sensor support, the sensor target, or target support is moved, changed, or damaged, or if the main landing gear door is re-rigged. Clearance adjustment procedures are in the task that follows this one.
(2) The test of the sensor is done with the airplane on the ground and not on jacks. On the M162 Proximity Switch Electronics Unit (PSEU) on E1-2 shelf (AMM 32-09-04) you can do a target position test. This test will make sure that the sensor operates correctly. You must use the actuator test tool to do a sensor operation check.

B. Equipment

(1) Proximity Sensor Actuator/Deactuator Set - A27092-106 (Rectangular and round sensor deactuators are necessary)
(2) Proximity Sensor Actuator Test Set
A32102- 25 (Recommended)
A32102-1 (Alternatve)
or KHT 8-758-01 (Rectangular and round sensor actuators are necessary) or

KHT 8-750-01 Go Gauge (Rectangular Actuator)
KHT 8-752-01 Go Gauge (Circular Actuator)
ELDEC Corporation Aircraft Systems Division,
PO Box 3002, Bothell WA, 98041-3002
(alternative)

NOTE: These tools make sure the sensor operates to its specified limits.

C. References

(1) AMM 06-41-00/201, Fuselage Access Doors and Panels
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 29-11-00/201, Main (Left, Right, Center) Hydraulic Systems

(4) AMM 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-00-20/201, Landing Gear Downlocks
(6) AMM 32-09-04/401, Proximity Switch Electronics Unit

D. Access

(1) Location Zones

143	MLG Wheel Well (Left)
144	MLG Wheel Well (Right)
731	Main Landing Gear (Left)
741	Main Landing Gear (Right)

(2) Access Panel

119AL	Door - Main Equipment Center

E. Prepare for the Test

S 492-019

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201). Make sure the chocks are installed at the wheels.

S 492-020

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 862-021

(3) Make sure these circuit breakers on the overhead panel, P11 are closed:
(a) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(b) 11U23 or 11U24, POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

S 862-022

(4) Supply electrical power (AMM 24-22-00/201).

S 012-023

(5) Open the access door for the main equipment center, 119AL (AMM 06-41-00/201) and find the PSEU on the E1 rack.

F. Do the Test of the Proximity Sensor for the Main Landing Gear

S 742-024

(1) Test of the Side Brace Down Sensors (S236, S240, S258, S262) or the Drag Brace Down Sensors (S237, S241, S259, S263):

(a) Use the PSEU to do a target position test to make sure the sensor is installed correctly.

NOTE: The PRESS/TEST switch, SENSOR CHANNEL SELECT thumb switches, TARGET NEAR and TARGET FAR lights, and the 3-digit LED display are found on the BITE panel of the PSEU.

1) Push the PRESS/TEST switch. Make sure the number 888 and all five indicator lights on the PSEU are on until the switch is released.
2) Use the SENSOR CHANNEL SELECT dials to put in the sensor number for a test.

NOTE: Set the dials to the sensor number that you want to test.

Sensor Description	Sensor No.
Side brace, left gear, inboard	258
Side brace, left gear, outboard	236
Side brace, right gear, inboard	262
Side brace, right gear, outboard	240
Drag brace, left gear, forward	237
Drag brace, left gear, aft	259
Drag brace, right gear, forward	241
Drag brace, right gear, aft	263

3) Do the test of the sensor with the actuator test tool.

NOTE: You can only do this test if the sensor is not installed in its bracket or if the gear is not fully extended or retracted. This test is used during the installation of the sensor.

a) Make sure the sensor is more than one inch away from all metal surfaces.
b) Push the TARGET TEST switch and hold for one second.
c) Make sure the sensor number is shown on the LED display, and, after four seconds, the TARGET FAR light comes on.
d) Hold or install the actuator test tool on the face of the sensor.

NOTE: You can use tape to attach the actuator to the sensor.

e) Push the TARGET TEST switch and hold for one second.
f) Make sure the sensor number is shown on the LED display, and, after four seconds, the TARGET NEAR light comes on.
g) Remove the actuator from the sensor.

4) Do the test of the sensor with the deactuator tool.

NOTE: This test is not necessary after a sensor installation. You can use this test to find if a sensor will change from target near to target far.

a) Push the TARGET TEST switch and hold for one second.
b) Make sure the sensor number is shown on the LED display, and, after four seconds, the TARGET NEAR light comes on.
c) Install a deactuator on the sensor.
d) Push the TARGET TEST switch for one second.
e) Make sure the sensor number is again shown and, after four seconds, the TARGET FAR light comes on.
f) Remove the deactuator from the sensor.

S 742-025

(2) Test of the Latch Locked Sensors (S238, S242, S260, S264):

(a) Use the PSEU to do a target position test to make sure the sensor is installed correctly.

1) Push the PRESS/TEST switch. Make sure the number 888 and all five indicator lights on the PSEU are on until the switch is released.
2) Use the SENSOR CHANNEL SELECT dials to put in the sensor number for a test.

NOTE: Set the dials to the sensor number that you want to test.

Sensor Description	Sensor No.
Left gear, forward	238
Left gear, aft	260
Right gear, forward	242
Right gear, aft	264

3) Do the test of the latch locked sensor:
   a) Push the TARGET TEST switch and hold for one second.
   b) Make sure the correct sensor number is shown on the LED display, and after four seconds, the TARGET FAR light comes on.

   WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

   c) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).
   d) Push the TARGET TEST switch for one second.
   e) Make sure the correct sensor number is shown, and after four seconds, the TARGET NEAR light comes on.
4) Do this check of the latch locked sensor conduit:
   a) Make sure that the conduit is loose between the latch locked sensor and the last clamp on the conduit.
   b) If it is necessary, adjust the clamps and conduit so that the conduit is not too tight.

G. Put the Airplane Back to its Usual Condition.

S 092-040

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201) if the doors are open.

S 862-027

(2) Remove electrical power if it is not necessary (AMM 24-22-00/201).

S 412-028

(3) Close the access door for the main equipment center, 119AL.

TASK 32-61-02-822-029

5. Measure and Adjust the Clearance for the Proximity Sensor on the Main Landing Gear

A. Consumable Materials
   (1) A00139 Adhesive - BMS 5-19 Class B-1/2
   (2) C00259 Primer - BMS 10-11, Type I
   (3) A00247 Sealant - BMS 5-95

B. References
   (1) AMM 29-11-00/201, Main (Left, Right, Center) Hydraulic Systems
   (2) AMM 32-00-15/201, Landing Gear Door Locks

C. Access
   (1) Location Zones
       143 MLG Wheel Well (Left)
       144 MLG Wheel Well (Right)
       731 Main Landing Gear (Left)
       741 Main Landing Gear (Right)

D. Prepare for the Adjustment

S 492-041

WARNING: USE THE PROCEDURE, (AMM 32-00-15), TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) If it is necessary to adjust the gap for the side brace down sensor or the drag brace down sensor, open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 862-043

(2) Use the table that follows to determine the airplane configuration necessary to correctly measure the clearances for the main landing gear sensors:

SENSOR DESCRIPTION	HYDRAULIC POWER ON/OFF	AIRPLANE ON GROUND OR ON JACKS
Side Brace Down Sensor	Off (1) Max On (1) Min	Ground (1)
Drag Brace Down Sensor	On (1)	Ground (1)
Latch Locked Sensor	Off (1) (3)	Ground (2)
(1) Mandatory configuration		
(2) Recommended configuration		
(3) Can put the landing gear lever in the OFF position to remove hydraulic pwoer to the landing gear.		

E. Procedure to Measure and Adjust the Clearance For the Proximity Sensor

S 822-031

(1) Measure / Adjust the Clearance for the Side Brace Down Sensor (Fig. 201):

NOTE: Measurements are required for the correct maximum and minimum gaps. Measure and adjust, if necessary, the maximum gap to the correct value with hydraulic power off. Then with the hydraulic power on, measure the minimum gap. If the minimum gap is less than 0.01 inch, do not adjust it. Instead, with the hydraulic power off, measure and adjust the maximum gap to the correct value to provide a minimum gap of 0.01 inch.

(a) Measure the maximum clearance between the sensor and its target (refer to Fig. 201). Continue if an adjustment is necessary.
(b) If you need to do a small clearance adjustment, do these steps:
    1) Loosen the attachment bolts (11) for the target bracket.
    2) Move the bracket (12) to get the correct clearance.
    3) Tighten the bolts (11) and apply sealant.
(c) If movement of the target bracket does not permit sufficient adjustment, you must remove the targets (9).
    1) Add or remove shims (8) or remove laminations from the shims to get the correct sensor to target clearance (Fig. 201).
    2) Install the target (9) and shims (8) after you get the correct clearance.

CAUTION: SUPPLY HYDRAULIC POWER TO THE CENTER SYSTEM AFTER YOU HAVE ADJUSTED THE MAXIMUN CLEARANCE . IF YOU DO NOT , YOU CAN GET AN INCORRECT CLEARANCE AND CAUSE DAMAGE TO THE SENSOR AND TARGET WHEN HYDRAULIC POWER IS SUPPLIED.

(d) Supply hydraulic power to the center system (AMM 29-11-00/201).
(e) Measure the minimum clearance between the sensor and its target (refer to Fig. 201). Continue if an adjustment is necessary.

NOTE: Once the correct minimum gap is at least 0.01 inch, be certain that with the hydraulic power off, the maximum gap is in the correct range.

(f) If you need to do a small clearance adjustment, do these steps:
1) Loosen the attachment bolts (11) for the target bracket.
2) Move the bracket (12) to get the correct clearance.
3) Tighten the bolts (11) and apply sealant.

(g) If movement of the target bracket does not permit sufficient adjustment, you must remove the targets (9).
1) Add or remove shims (8) or remove laminations from the shims to get the correct sensor to target clearance (Fig. 201).
2) Install the target (9) and shims (8) after you get the correct clearance.
3) Apply the primer to the shims as necessary.

(h) Remove hydraulic power to the center system.

(i) If the maximum gap with hydraulic power off and the minimum gap with hyraulic power on are not correct, repeat the above steps (a) through (h) to make sure the correct gaps exist for both with and without hydraulic power.

S 822-032

(2) Measure / Adjust the Clearance for the Drag Brace Down Sensor (Fig. 202):

CAUTION: SUPPLY HYDRAULIC POWER TO THE CENTER SYSTEM BEFORE YOU MEASURE THE CLEARANCE OR MAKE ADJUSTMENTS. IF YOU DO NOT SUPPLY HYDRAULIC POWER, YOU CAN GET AN INCORRECT CLEARANCE AND CAUSE DAMAGE TO THE SENSOR AND TARGET WHEN HYDRAULIC POWER IS SUPPLIED.

(a) Supply hydraulic power to the center system (AMM 29-11-00/201).

(b) Measure the clearance between the sensor and its target (refer to Fig. 202). Continue if an adjustment is necessary.

(c) Remove the nut, washer and screw that attaches the target to the support and remove the target (8).

(d) Add or remove shims (9) and remove 0.002 inch laminations from the shim to adjust the clearance.

(e) After the last adjustment, install the target (8) with the screws, washers and nuts and apply sealant.

(f) Apply primer to the shims and target as necessary.

S 822-033

(3) Measure / Adjust the Clearance for the Latch Locked Sensor (Fig. 203):

(a) Make sure the center system hydraulic power is removed (AMM 29-11-00/201).

(b) Measure the clearance between the sensor and its target (refer to Fig. 203). Continue if an adjustment is necessary.

NOTE: Do a check of the clearance with the main landing gear door closed.

WARNING: USE THE PROCEDURE, (AMM 32-00-15), TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(c) Open the door for the main landing gear and install the door lock (AMM 32-00-15/201).
(d) Remove the screws (6), washers (7) and nuts (8) to remove the sensor from the support.
(e) Remove the rivet (9) that attaches the shims to the support.
(f) Add or remove shims (5) and remove 0.002 inch laminations from the shim to adjust the sensor clearance.
(g) After the last adjustment, bond the shims that were added to the shims that were there.
(h) Rivet the shims to the support.
(i) Install the sensor on the support with the screws (6), washers (7) and nuts (8).

F. Put the Airplane Back to Its Usual Condition

S 092-034

WARNING: USE THE PROCEDURE, (AMM 32-00-15), TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the door locks from the main landing gear doors and close the doors (AMM 32-00-15/201).

S 862-035
(2) Remove hydraulic power (AMM 29-11-00/201) if it is not necessary.

NOSE GEAR PROXIMITY SENSORS - MAINTENANCE PRACTICES

1. General
   A. This procedure contains the tasks that follow for the proximity sensors on the nose landing gear:
      (1) Sensor removal
      (2) Sensor installation
      (3) Sensor test
      (4) Sensor clearance measurement and adjustment.
   B. This section contains the procedures to do maintenance on these proximity sensors on the nose landing gear. For maintenance practices of the not compressed sensors on the nose landing gear, refer to AMM 32-09-08/201:
      (1) Down sensors for the nose landing gear (S232, S254) in Fig. 201
      (2) Locked sensors for the nose landing gear (S233, S255) in Fig. 202
      (3) Door closed sensors for the nose landing gear (S234, S235, S256, S257) in Fig. 203
   C. Remove the wire harness or conduit assembly of the sensor with the sensor attached.
   D. For removal, installation, adjustment, and test procedures for the not compressed sensor for the nose landing gear, refer to AMM 32-09-08/201.

TASK 32-61-03-002-001

2. Remove the Proximity Sensor for the Nose Landing Gear
   A. References
      (1) AMM 24-22-00/201, Electrical Power - Control
      (2) AMM 32-00-15/201, Main Gear Downlocks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
      (4) AMM 32-09-08/201, Nose Gear Not Compressed Sensors
   B. Access
      (1) Location Zones
          115 NLG Wheel Well (Left)
          116 NLG Wheel Well (Right)
          711 Nose Landing Gear (NLG)

   C. Prepare for the Removal

      S 492-039
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 492-002

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Open the doors for the nose landing gear and install the door locks (AMM 32-00-15/201).

S 492-004

(3) Make sure the chocks are installed on the wheels.

S 862-005

(4) Remove electrical power (AMM 24-22-00/201).

S 982-006

(5) Open the doors for the nose landing gear.

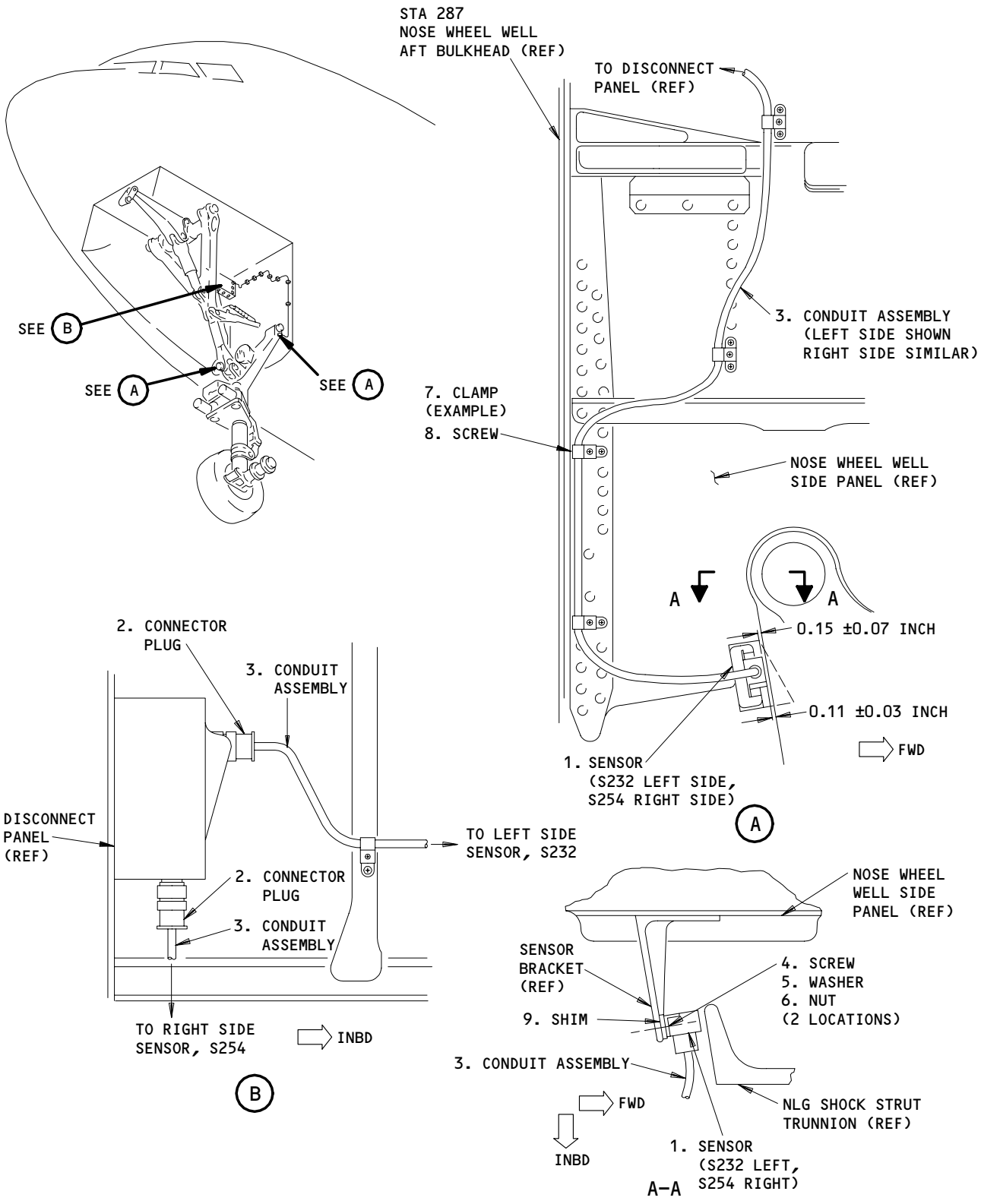
S 212-041

(6) Look at the sensor, its mounting bracket and the target for signs of damage.
   (a) Make a record if damage is found. This data will be used during the installation.

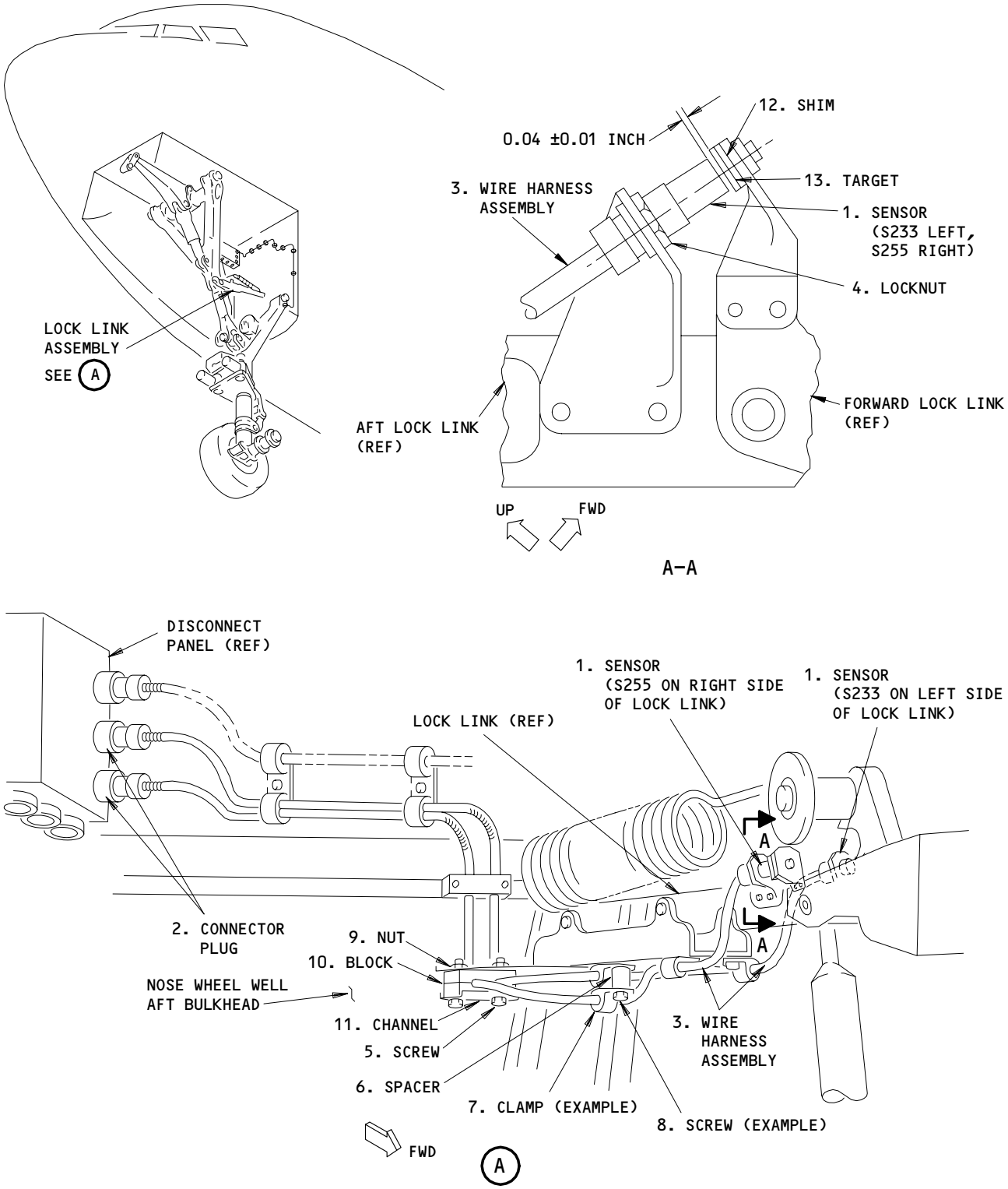
D. Remove the Proximity Sensor for the Nose Landing Gear (Fig. 201, Fig. 202, Fig. 203)

S 022-007

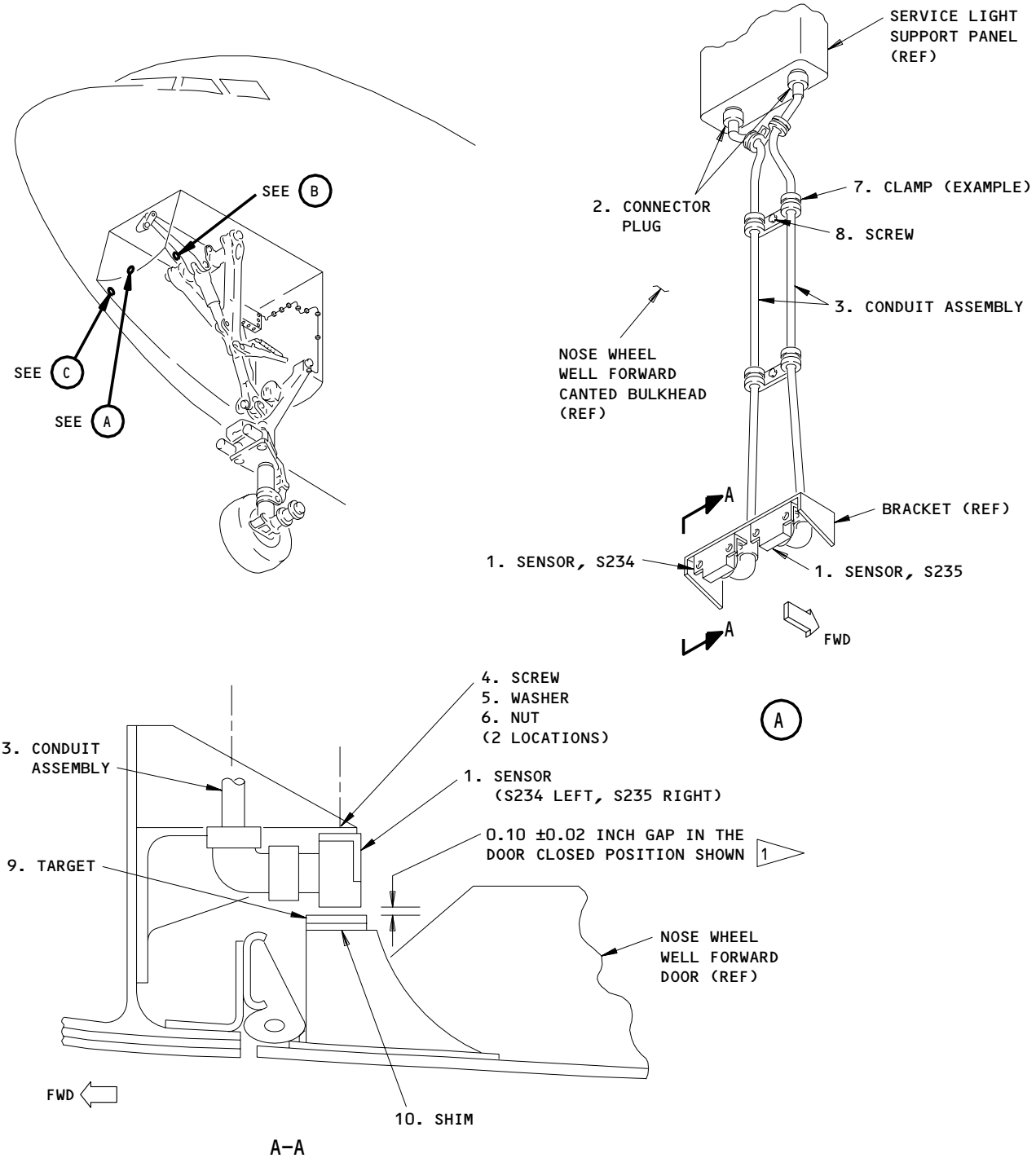
(1) Do the steps that follow to remove the down sensors (Fig. 201), the locked sensors (Fig. 202), or the door closed sensors (Fig. 203), for the nose landing gear:
   (a) Remove the sensor (1) from the bracket.
   (b) Disconnect the electrical connector plug (2) from the sensor (1).
   (c) Remove the items that follow to remove the wire harness or the conduit assembly (3) (with the sensor attached):
      1) Screws (8)
      2) Clamps (7)



Nose Landing Gear Down Sensor Installation
Figure 201



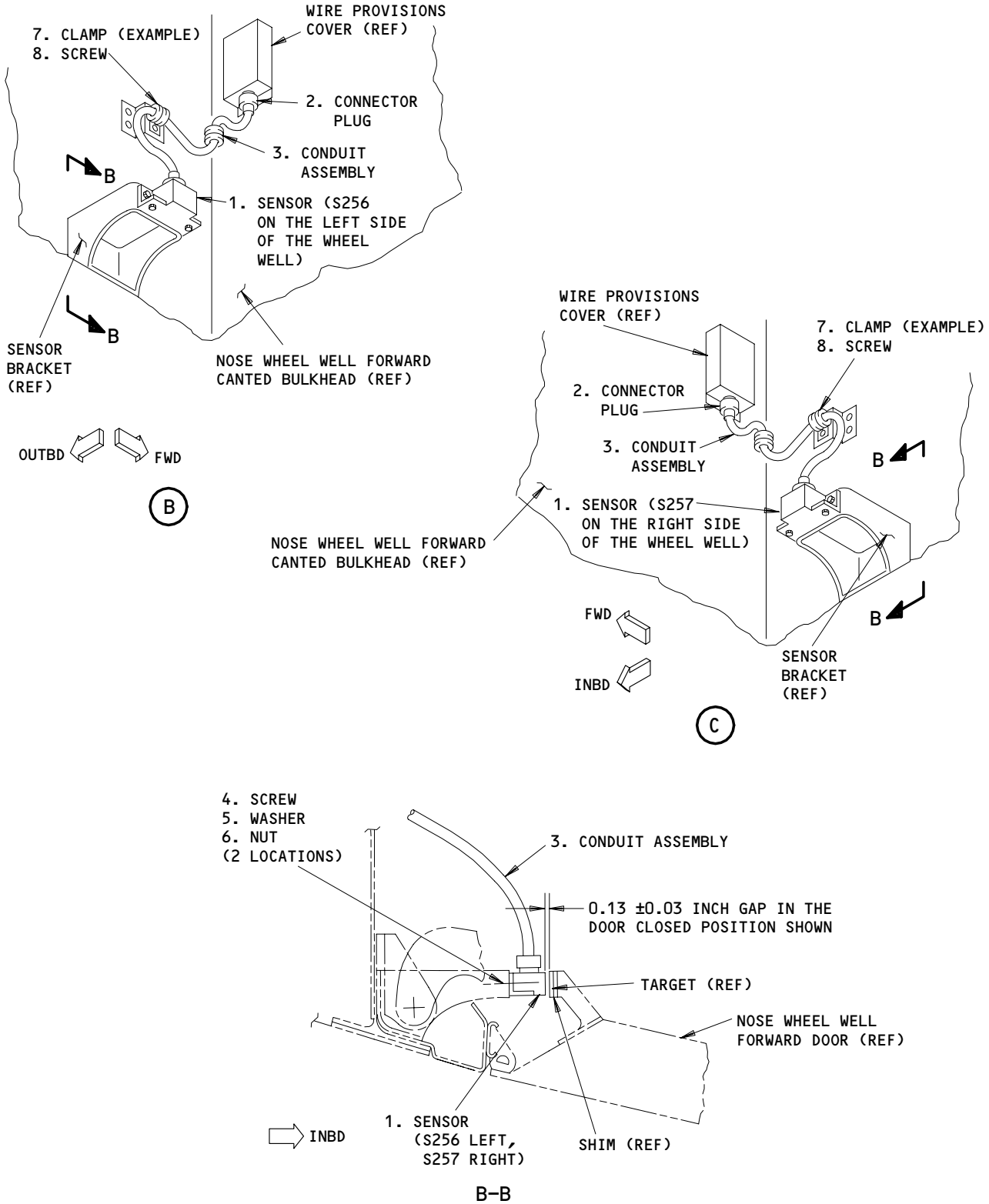
Nose Landing Gear Locked Sensor Installation
Figure 202



A–A

1 THE SENSOR GAP WILL BE GREATER THAN WHAT IS SHOWN WITH THE NOSE LANDING GEAR DOWN. YOU MUST DISCONNECT THE DOOR CLOSE MECHANISM FROM THE DOOR OR PUT THE LANDING GEAR IN THE UP POSITION TO GET THIS GAP. SEE THE MEASUREMENT/ADJUSTMENT PROCEDURES FOR INSTRUCTIONS.

Nose Landing Gear Door Closed Sensor Installation
Figure 203 (Sheet 1)



Nose Landing Gear Door Closed Sensor Installation
Figure 203 (Sheet 2)

3) Screws (5)
4) Nuts (9)
5) Block (10)
6) Channel (11) (if applicable).

TASK 32-61-03-402-009

3. Install the Proximity Sensor for the Nose Landing Gear

A. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
201	1	Sensor	32-61-03	15	53
	1	Sensor		15	55
	2	Connector plug		15	51
	3	Conduit assembly		15	40
	3	Conduit assembly		15	45
	4	Screw		05	130
	5	Washer		05	140
	6	Nut		05	145
	7	Clamp		15	16
	8	Screw		15	5
	9	Shim		05	150
202	1	Sensor		01	50
	1	Sensor		01	75
	3	Wire harness assembly		01	45
	3	Wire harness assembly		01	70
	5	Screw		01	25
	6	Spacer		01	20
	7	Clamp		01	5
	8	Screw		01	10
	8	Screw		01	15
	9	Nut		01	30
	10	Block		01	35
	11	Channel		01	40
	12	Shim		04	110
	13	Target		04	100
	13	Target		04	105

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
203	1	Sensor	32-61-03	15	120
	1	Sensor		15	65
	2	Connector plug		15	21
	2	Connector plug		15	47
	3	Conduit assembly		15	19
	3	Conduit assembly		15	49
	3	Conduit assembly		15	33
	3	Conduit assembly		15	35
	4	Screw		05	26
	4	Screw		05	76
	5	Washer		05	31
	5	Washer		05	86
	6	Nut		05	36
	6	Nut		05	91
	7	Clamp		15	17
	8	Screw		15	5
	8	Screw		15	10
	9	Target		05	101
	10	Shim		05	98

B. References
   (1) AMM 20-10-23/401, Lockwires
   (2) AMM 32-00-15/201, Main Gear Downlocks

C. Access
   (1) Location Zones
      115 NLG Wheel Well (Left)
      116 NLG Wheel Well (Right)
      711 Nose Landing Gear (NLG)

D. Procedure

S 422-040

CAUTION: DO NOT DROP OR HIT THE SENSORS. YOU CAN CAUSE DAMAGE TO THE INTERNAL COMPONENTS OF THE SENSORS AND CAUSE A FAILURE OF THE INDICATION SYSTEM.

(1) Do the steps that follow to install the down sensors (Fig. 201), the locked sensors (Fig. 202), or the door closed sensors (Fig. 203) for the nose landing gear:
   (a) Install the items that follow to install the wire harness or conduit assembly (3):
      1) Clamps (7)
      2) Screws (8)
      3) Block (10)
      4) Channel (11) (if applicable)
      5) Screws (5)
      6) Nuts (9)
   (b) Install the electrical connector plug (2).
   (c) Do a test of the sensor with the actuator test tool.

      NOTE: Do this step before you install the sensor in its mounting bracket. Refer to the task which does a test of the sensors.

      1) Make sure the sensor is kept more than one inch away from all metal surfaces during the test.
   (d) On a rectangular sensor (Fig. 201 and 203), do the steps that follow:
      1) Install the sensor (1) on the bracket with the screws (4), washers (5) and nuts (6).
      2) Tighten the conduit coupling nut to the sensor (1) with your hand.
      3) Install the lockwire (AMM 20-10-23/401).
   (e) On a circular sensor (Fig. 202), do the steps that follow:
      1) Install the sensor (1) on the bracket with the locknut (4).
      2) Install the lockwire (AMM 20-10-23/401).

S 822-042

(2) If the sensor, its mounting bracket or the target showed signs of damage, do the task that measures and adjusts the clearance between the sensor and target.

S 092-011

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Remove the door locks and close the doors for the nose landing gear (AMM 32-00-15/201).

TASK 32-61-03-722-043

4. Test of the Proximity Sensor for the Nose Landing Gear

A. General

(1) A correctly installed sensor will have the necessary clearance as shown in Fig. 201, Fig. 202, Fig. 203. Clearance adjustment usually is not necessary. Measure the clearance if the sensor bracket, the sensor target, or the target bracket is moved, changed, or damaged, or if the door for the nose landing gear is re-rigged.

(2) Do the test of the sensor with the airplane on the ground and not on jacks. On the M162 Proximity Switch Electronic Unit (PSEU) on the E1-2 shelf (AMM 32-09-04/401), you can do a target position test. This test will make sure the relation between the sensor and the target is correct. The test does a check for an open or shorted sensor condition (use the SENSOR CHANNEL SELECT switches on the PSEU and then push the TARGET TEST switch).

B. Equipment

(1) Proximity Sensor Actuator/Deactuator Set -
A27092-106
(A rectangular and circular sensor deactuator is necessary)

(2) A32102-1, Proximity Sensor Actuator Test Set
A32102-25 (Recommended)
A32102-1 (Alternative)
or
KHT 8-758-01 , Proximity Sensor Actuator Test Set
KHT 8-750-01 - Go Gauge (Rectangular Actuator)
KHT 8-752-01 - Go Gauge (Circular Actuator)
ELDEC Corporation Aircraft Systems Division,
PO Box 3002, Bothell WA, 98041-3002
(alternative)

NOTE: These tools make sure the sensor operates within the specified limits.

C. References

(1) AMM 06-41-00/201, Fuselage Access Doors and Panels

(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 32-00-20/201, Landing Gear Downlocks

D. Access

(1) Location Zones

115	NLG Wheel Well (Left)
116	NLG Wheel Well (Right)
711	Nose Landing Gear (NLG)

(2) Access Panel

119AL	Door - Main Equipment Center Access

E. Prepare for the Test

S 492-012
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 492-013
(2) Make sure the chocks are installed on the wheels.

S 862-014
(3) Make sure these circuit breakers on the overhead circuit breaker panel P11 are closed:
(a) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(b) 11U23 or 11U24, POSITION AIR/GND SYS 2

NOTE: This circuit breaker can be in one of these two locations.

S 862-015
(4) Supply electrical power (AMM 24-22-00/201).

S 012-016
(5) Open the main equipment center access 119AL (AMM 06-41-00/201) and find the PSEU on the E1 rack.

F. Do the Test of the Proximity Sensor for the Nose Landing Gear

S 742-017
(1) Do the steps that follow to do a test of the down sensors (S232, S254) or the locked sensors (S233, S255) for the nose landing gear:
(a) Use the PSEU to do a target position test to make sure the sensor is installed correctly.

NOTE: The PRESS/TEST switch, SENSOR CHANNEL SELECT dials, TARGET NEAR and TARGET FAR lights and the 3-digit LED display are found on the BITE panel of the PSEU.

1) Push the PRESS/TEST switch.
2) Make sure the number 888 and all five indicator lights on the PSEU are on until you release the switch.

3) Use the SENSOR CHANNEL SELECT dials to put in the sensor number for a test.

   NOTE: Set the dials to the sensor number that you want to test.

Sensor Description	Sensor No.
Gear down, left side	232
Gear down, right side	254
Gear locked, left side	233
Gear locked, right side	255

4) Push the TARGET TEST switch and hold it for one second.
5) Make sure the correct sensor number is shown on the LED display, and after four seconds, make sure this target status light (NEAR, FAR) is shown:
   a) If the sensor is not installed in its mounting bracket or the nose gear is not fully up/down and locked, the target status indication will be FAR.
   b) If the sensor is installed in its mounting bracket and the nose gear is fully down and locked, the target status indication will be NEAR.
6) Do the test of the sensor with the actuator test tool.

   NOTE: You can only do this test if the sensor is not installed in its bracket or if the gear is not fully extended or retracted. This test is used during the installation of the sensor.

   a) Hold or install the actuator test tool on the face of the sensor.

      NOTE: You can use tape to attach the actuator to the sensor.

   b) Push the TARGET TEST switch and hold for one second.
   c) Make sure the correct sensor number is shown on the LED display, and, after four seconds, the TARGET NEAR light comes on.
   d) Remove the actuator from the sensor.
7) Do the test of the sensor with the deactuator tool.

   NOTE: This test is not necessary after a sensor installation. You can use this test to find if a sensor will change from target near to target far.

   a) Install a deactuator on the sensor.
   b) Push the TARGET TEST switch for one second.
   c) Make sure the sensor number shows again and, after four seconds, the TARGET FAR light comes on.
   d) Remove the deactuator from the sensor.

S 742-018

(2) Do the steps that follow to do a test of the door closed sensors (S234, S235, S256, S257) for the nose landing gear:

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Open the nose landing gear doors and install the door locks (AMM 32-00-15/201).

(b) Use the PSEU to do a target position test to make sure the sensor is installed correctly.

1) Push the PRESS/TEST switch. Make sure the number 888 and all five indicator lights on the PSEU are on until you release the switch.

2) Use the SENSOR CHANNEL SELECT dials to put in the sensor number for the test.

NOTE: Set the dials to the sensor number that you want to test.

Sensor Description	Sensor No.
Door closed, forward bulkhead, left	234
Door closed, forward bulkhead, right	235
Door closed, left side	256
Door closed, right side	257

3) Push the TARGET TEST switch and hold it for one second.

4) Make sure the correct sensor number shows on the LED display, and, after four seconds, the TARGET FAR light comes on.

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

5) Remove the door locks and close the nose landing gear doors (AMM 32-00-15/201).

6) Make sure the correct sensor number shows, and, after four seconds, the TARGET NEAR light comes on.

NOTE: The sensors, S234 and S235 may show target far with nose landing gear down. Do the next step to put the door in the fully closed position and do the test again.

7) If the sensors S234 and S235 shows target far, then do these steps to retest the sensors in a fully closed position:
   a) Open the nose landing gear doors (AMM 32-00-15/201).
   b) Disconnect the rod 3 from the forward landing gear doors.

      NOTE: Refer to AMM 32-22-02/501 for removal instructions.

   c) Secure the rods so they will not hit the doors when the doors are closed.
   d) Use the SENSOR CHANNEL SELECT dials to put in the sensor number for the left door closed sensor.

      NOTE: Set the dials to the sensor number 234.

   e) Push the left forward nose landing gear door to the fully closed position.
   f) Push the TARGET TEST switch and hold it for one second.
   g) Make sure the correct sensor number shows on the LED display, and, after four seconds, the TARGET NEAR light comes on.
   h) Use the SENSOR CHANNEL SELECT dials to put in the sensor number for the right door closed sensor.

      NOTE: Set the dials to the sensor number 235.

   i) Push the right forward nose landing gear door to the fully closed position.
   j) Push the TARGET TEST switch and hold it for one second.
   k) Make sure the correct sensor number shows on the LED display, and, after four seconds, the TARGET NEAR light comes on.
   l) Re-connect the rod 3 to the forward landing gear doors.

      NOTE: Refer to AMM 32-22-02/501 for installation instructions.

S 982-019

(3) Close the door for the nose landing gear if it was open.

S 042-049

(4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

S 412-021

(5) Close the access door for the main equipment center, 119AL (AMM 06-41-00/201).

TASK 32-61-03-822-022

5. Measure / Adjust the Clearance for the Proximity Sensor on the Nose Landing Gear

A. Consumable Materials

(1) A00142 Adhesive - BMS 5-44 Class B-1/2

(2) A00551 Adhesive - BMS 5-45 Class B-1/2

B. Access

(1) Location Zones

115 NLG Wheel Well (Left)

116 NLG Wheel Well (Right)

711 Nose Landing Gear (NLG)

C. Prepare for Measurement / Adjustment

S 862-045

(1) Use the table that follows to determine the airplane configuration necessary to correctly measure the clearances for the nose landing gear sensors:

SENSOR DESCRIPTION	HYDRAULIC POWER ON/OFF	AIRPLANE ON GROUND OR ON JACKS
Down Sensor	Off (2) (3)	Ground (1)
Locked Sesnor	On (2)	Ground (2)
Door Closed Sensor	Off (1) (3)	Ground (2)
(1) Mandatory configuration		
(2) Recommended configuration		
(3) Can put the landing gear lever in the OFF position to remove hydraulic power to the landing gear.		

D. Procedure to Measure and Adjust the Clearance for the Down Sensor (Fig. 201)

S 222-023

(1) Measure the clearance between the sensor and its target (refer to Fig. 201). Continue if an adjustment is necessary.

S 032-024

(2) Remove the screws (4), washers (5) and nuts (6) to remove the sensor (1) from the bracket.

S 032-025

(3) Remove the rivet that attaches the shims to the bracket.

S 822-028
(4) Add or remove shims (remove 0.002 inch laminates from the shim) to get the correct clearance.

S 432-026
(5) If you add shims, bond them to the shims that are there and install a rivet.

S 432-027
(6) Install the sensor with the screws (4), washers (5) and nuts (6).

E. Procedure to Measure and Adjust the Clearance for the Locked Sensor (Fig. 202).

S 222-029
(1) Measure the clearance between the sensor and its target (refer to Fig. 202). Continue if an adjustment is necessary.

S 032-030
(2) Remove the target.

S 822-031
(3) Add or remove shims (remove 0.002 inch laminates from the shim) to get the correct clearance.

S 432-032
(4) After the last adjustment, bond the shims that were added and install the target.

F. Procedure to Measure and Adjust the Clearance for the Door Closed Sensor (Fig. 203)

NOTE: You must do the sensor clearance adjustment after the last adjustment of the doors if the doors were adjusted again. The forward doors for the nose landing gear are open from 0.50 to 1.50 inch with the nose landing gear extended. The doors operate to be fully closed with the nose landing gear retracted. You make sure the sensor clearance is correct with one door open and the other door closed. The door that is closed is pushed up against the door stop.

S 982-033
(1) Open the doors for the nose landing gear (AMM 32-00-15/201).

S 012-050
(2) Disconnect the rod 3 from the forward landing gear doors.

NOTE: Refer to AMM 32-22-02/501 for removal instructions.

S 862-051
(3) Secure the rods so they will not hit the doors when the doors are closed.

S 982-034
(4) Push one of the doors up against the door stops.

S 222-034
(5) Measure the clearance between the sensor and its target (refer to Fig. 203). Continue if an adjustment is necessary. Do the procedure again for the opposite side.

S 032-035
(6) For a sensor installation with the shims installed with the target:
(a) Remove the rivets to remove the target.

S 032-036
(7) For a sensor installation with the shims installed with the sensor:
(a) Remove the screws (4), washers (5) and nuts (6) to remove the sensor from the bracket.

S 822-037
(8) Add or remove shims (remove 0.002 inch laminates from the shim) to get the correct clearance.

S 432-038
(9) After the last adjustment, bond the shims that were added and install the target or sensor.

S 412-053
(10) Re-connect the rod 3 to the forward landing gear doors.

NOTE: Refer to AMM 32-22-02/501 for installation instructions.

S 412-052
(11) Close the nose landing gear doors.

TAIL SKID PROXIMITY SENSORS - MAINTENANCE PRACTICES

1. General
   A. This procedure consists of these tasks:
      (1) A task to remove the proximity sensors.
      (2) A task to install the proximity sensors.
      (3) A test of the proximity sensors.
      (4) A task to adjust the sensor gaps.
   B. These tasks apply to these sensors:
      (1) Tail skid extended (S247)
      (2) Tail skid retracted (S248)
   C. The sensors are found in the stabilizer/trim jackscrew compartment on the lower airplane structure. (Fig. 201).

TASK 32-61-04-002-001

2. Remove the Proximity Sensor for the Tail Skid
   A. References
      (1) AMM 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels
      (2) AMM 24-22-00/201, Electrical Power - Control
      (3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          311 Area Aft of the Pressure Bulkhead (Left)
          312 Area Aft of the Pressure Bulkhead (Right)

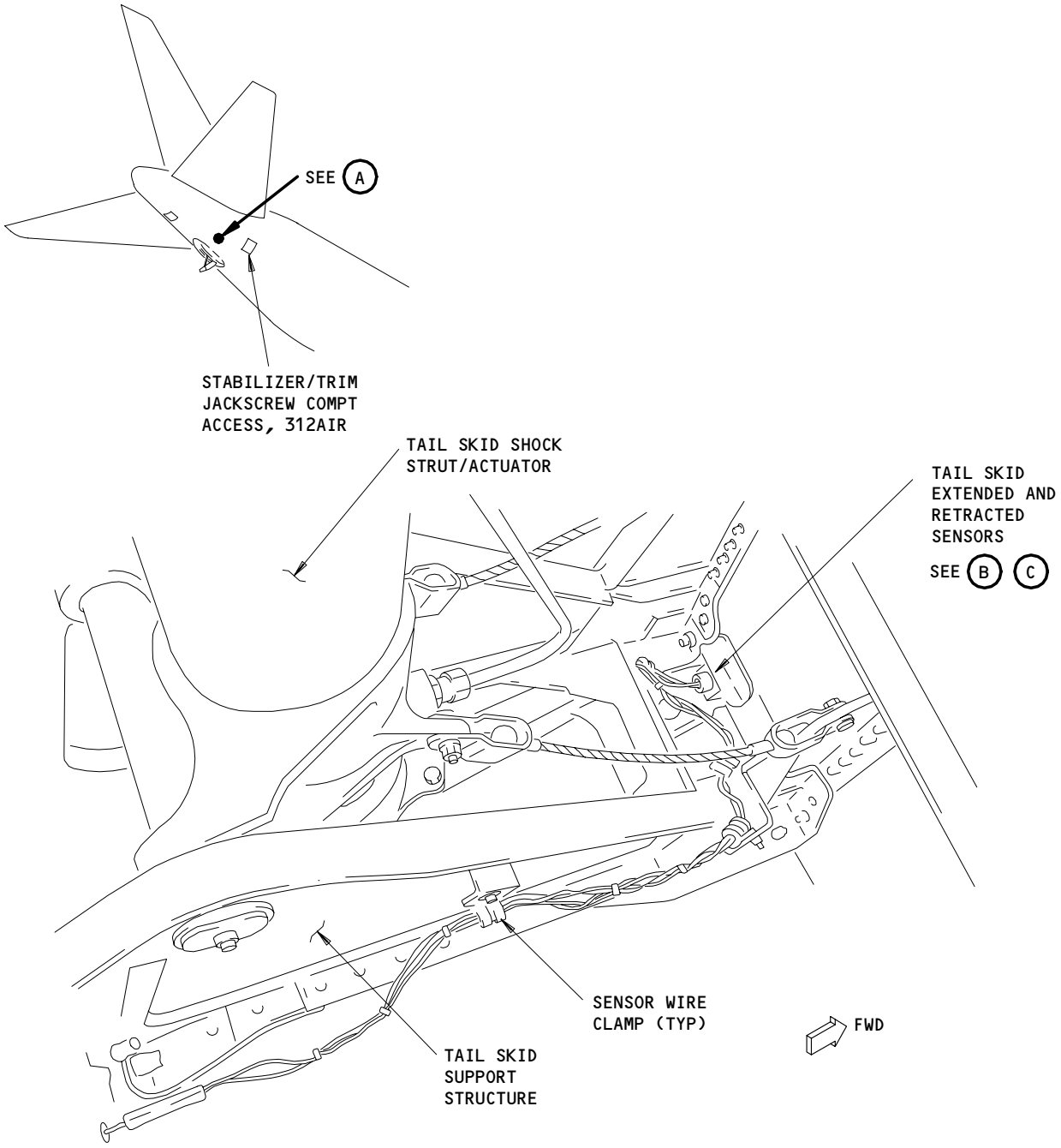
      (2) Access Panel
          312AR Door - Stabilizer/Trim Jackscrew Compartment

   C. Prepare for the Removal

      S 492-054

      WARNING: MAKE SURE THE DOWNLOCK PINS ARE INSTALLED IN THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

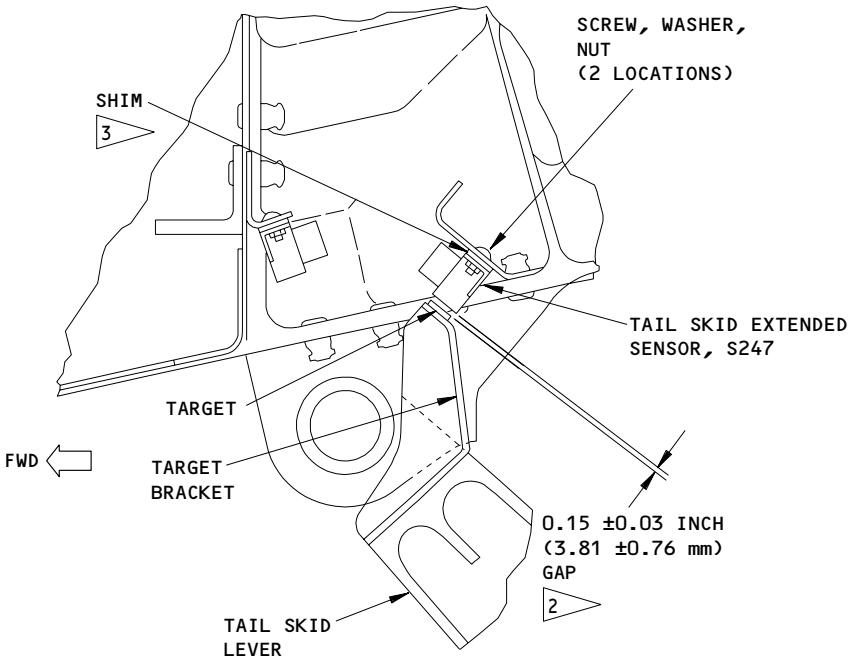
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).



STABILIZER/TRIM JACKSCREW COMPARTMENT

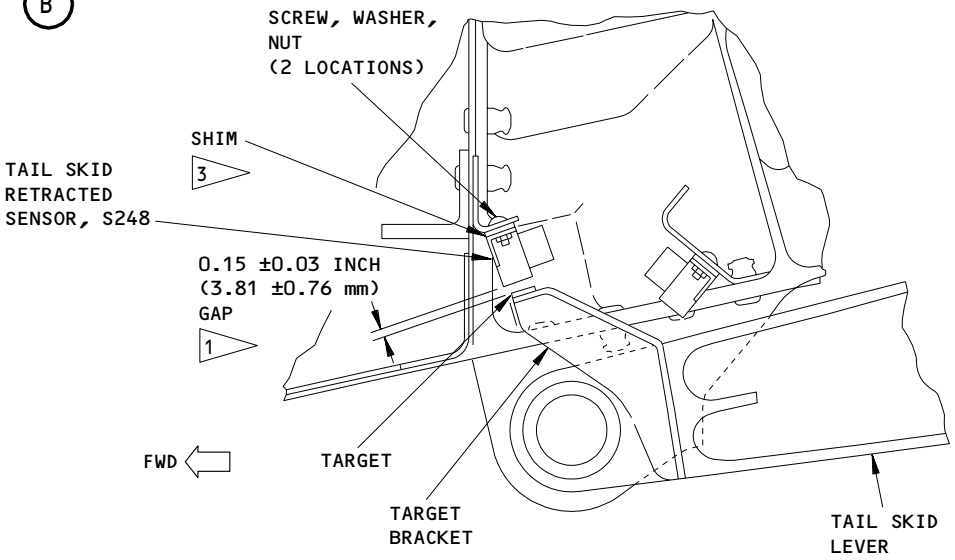
A

Tail Skid Extended and Retracted Sensor Installation
Figure 201 (Sheet 1)



TAIL SKID EXTENDED SENSOR

B



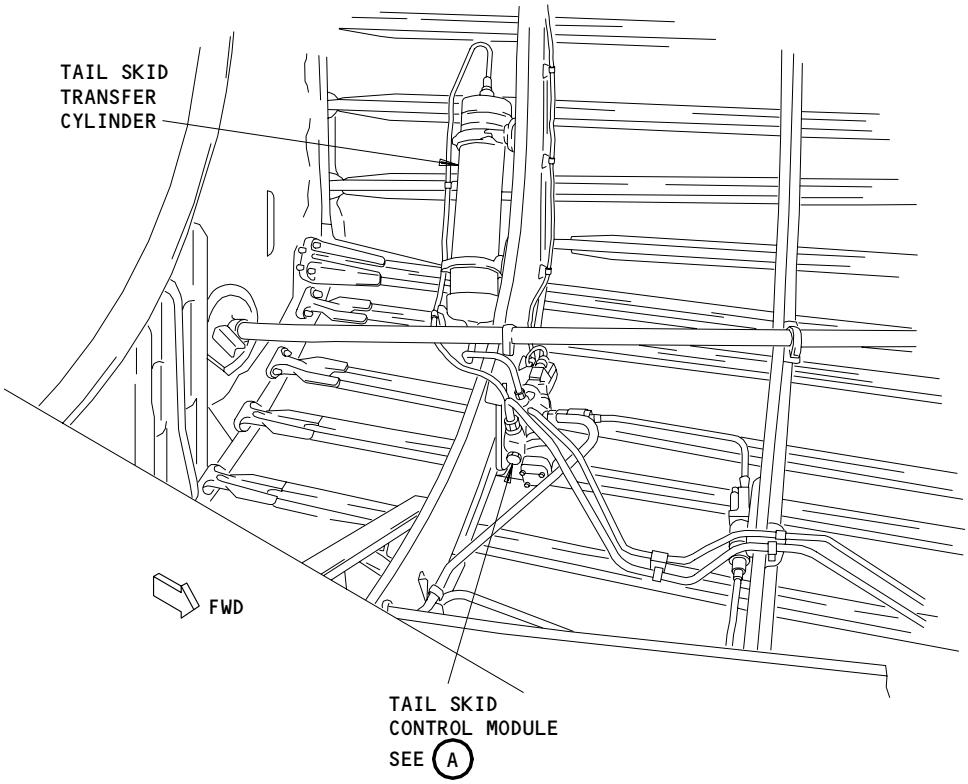
TAIL SKID RETRACTED SENSOR

C

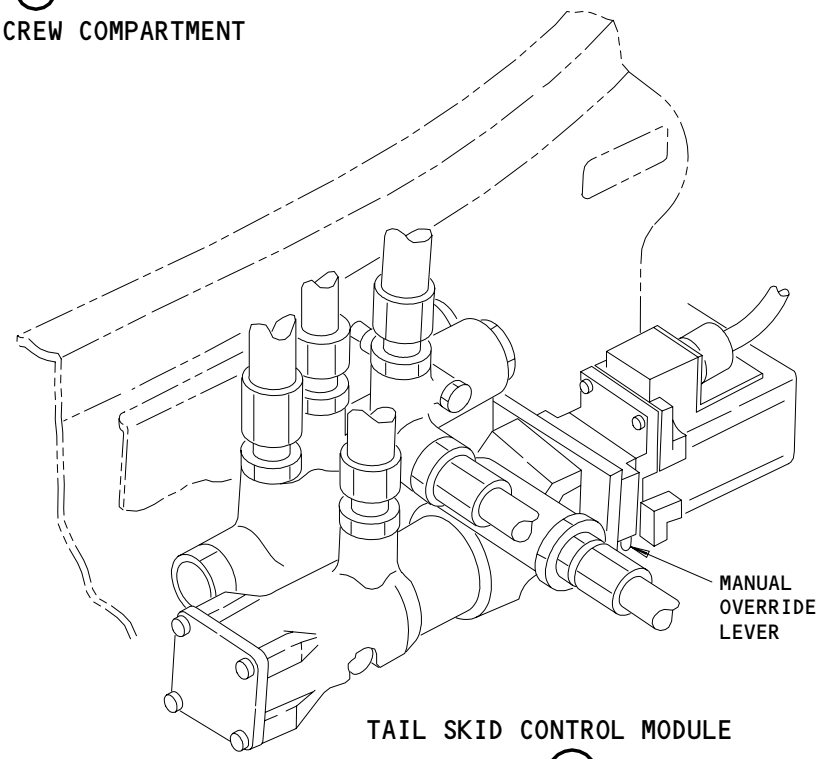
1. SENSOR OPERATION MUST OCCUR 0.70–1.70 INCH (17.78–43.18 mm) BEFORE THE SHOCK STRUT FULLY RETRACTS.
2. SENSOR OPERATION MUST OCCUR 1.00–2.00 INCH (25.4–50.8 mm) BEFORE THE SHOCK STRUT FULLY EXTENDS.
3. TO ADJUST THE GAP ADD/REMOVE SHIMS OR REMOVE LAMINATES FROM THE SHIM.

Tail Skid Extended and Retracted Sensor Installation
Figure 201 (Sheet 2)

224330



STABILIZER/TRIM JACKSCREW COMPARTMENT



TAIL SKID CONTROL MODULE
(A)

Tail Skid Control Module Manual Override
Figure 202

S 492-003
(2) Make sure the chocks are installed on the wheels.

S 862-004
(3) Supply electrical power (AMM 24-22-00/201).

S 862-005
(4) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 862-006
(5) Open this circuit breaker on the overhead circuit breaker panel P11 and attach a DO-NOT-CLOSE tag:
(a) 11U26, TAIL SKID CONT

S 012-007

WARNING: STAY OFF OF THE ACCESS DOOR 312AR. THE WEIGHT OF A PERSON OR PERSONS CAN CAUSE RELEASE OF THE SPRING-LOADED LATCHES. THIS CAN CAUSE INJURY TO PERSONS WHEN THEY FALL THROUGH THE OPEN DOOR.

(6) Open the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201).

S 862-008
(7) To remove the sensor for tail skid extended, do these steps:

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID LEVER. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Move the manual override lever on the control module for the tail skid to the retract position.
(b) Make sure the tail skid retracts.

S 862-009

(8) To remove the tail skid retracted sensor, make sure the manual override lever on the control module for the tail skid is in the extend position and the tail skid is extended.

S 862-049

(9) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

D. Remove the Proximity Sensor for the Tail Skid (Fig. 201)

S 032-012

(1) Remove the nuts, washers and screws to remove the sensor from the bracket.

S 932-013

CAUTION: WRITE DOWN THE WIRE COLOR CODE AND PUT A TAG ON THE WIRES FOR THE CORRECT INSTALLATION. THIS WILL PREVENT THE MALFUNCTION OF THE TAIL SKID INDICATION.

(2) Find the sensor wiring splice and put a tag with the color code on each wire.

S 032-048

(3) Cut the sensor wires at the wire bundle splices.

S 032-014

(4) Loosen or remove the clamps on the wire bundles as necessary to remove the sensor wires and remove the sensor.

TASK 32-61-04-402-015

3. Install the Proximity Sensor for the Tail Skid (Fig. 201)

A. Consumable Materials

(1) A00247 Sealant - BMS 5-95, Class B

B. References

(1) AMM 51-31-01/201, Seals and Sealing

(2) SWPM 20-30-12, Assembly of Splices

C. Access

(1) Location Zones

311 Area Aft of the Pressure Bulkhead (Left)
312 Area Aft of the Pressure Bulkhead (Right)

(2) Access Panel

312AR Door - Stabilizer/Trim Jackscrew Compartment

D. Procedure

S 422-016

(1) Install the sensor on the bracket with the screws, washers and nuts.

S 432-017

(2) Put the sensor wires through the wire bundle clamps to the area of the splice. Tighten or install the clamps.

S 432-018

(3) Make a splice of the sensor wires to the wire bundle (SWPM 20-30-12).

S 712-019

(4) Use the Test of the Proximity Sensor for the Tail Skid to do a test of the sensor.

TASK 32-61-04-702-022

4. Test of the Proximity Sensor for the Tail Skid

A. General

(1) A correctly installed sensor will have the correct gap (refer to Fig. 201). Gap adjustment usually is not necessary. Measure the gap if the sensor bracket, the sensor target, or the target bracket is moved, changed, or damaged. The gap adjustment procedures are in paragraph 5.

(2) Use the Proximity Switch Electronic Unit (PSEU) to do a test of the sensors. The PSEU is found on the E1-2 shelf in the main equipment center. A target position test will make sure the relation between the sensor and its target is correct. The test does a check for an open or shorted sensor condition (use the SENSOR CHANNEL SELECT switches on the PSEU and then push the TARGET TEST switch).

B. Consumable Materials

(1) A00139 Adhesive - BMS 5-19 Class B-1/2

C. References

(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(5) AMM 32-00-20/201, Landing Gear Downlocks

D. Access

(1) Location Zones

119	Main Equipment Center (Left)
120	Main Equipment Center (Right)
311	Area Aft of the Pressure Bulkhead (Left)
312	Area Aft of the Pressure Bulkhead (Right)

(2) Access Panel

119AL	Door - Main Equipment Center Access
312AR	Door - Stabilizer/Trim Jackscrew Compartment

E. Prepare for the Test

S 492-055

WARNING: MAKE SURE THE DOWNLOCK PINS ARE INSTALLED IN THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 492-024

(2) Make sure the chocks are installed on the wheels.

S 862-025

(3) Supply electrical power if it is necessary (AMM 24-22-00/201).

S 862-026

(4) Pressurize the center hydraulic system if it is necessary (AMM 29-11-00/201).

S 862-027

(5) Make sure these circuit breakers on the overhead circuit breaker panel P11 are closed:
(a) 11C30, LANDING GEAR POSITION AIR/GND SYS 1
(b) 11U23, POSITION AIR/GND SYS 2

S 862-028

(6) Open this circuit breaker on the P11 panel and attach a DO-NOT-CLOSE tag:
(a) 11U26, TAIL SKID CONT

S 012-029

(7) Open the access panel for the main equipment center, 119AL (AMM 06-41-00/201) and find the PSEU on the E1 rack.

F. Do the Test of the Proximity Sensor for the Tail Skid

S 862-030

(1) Make sure the tail skid is extended.

S 742-031

(2) For the sensor for tail skid extended (S247), use the thumb switches for SENSOR CHANNEL SELECT the PSEU BITE control panel to put in code 247.
   (a) Push the TARGET TEST switch and hold it for one second.
   (b) Make sure the sensor code shows on the LED display and that after four seconds, the TARGET NEAR light is on.

S 742-032

(3) For the sensor for tail skid retracted (S248), put in the code 248 on the PSEU BITE control panel.
   (a) Push the TARGET TEST switch and hold it for one second.
   (b) Make sure the sensor code shows on the LED display and that after four seconds, the TARGET FAR light is on.

S 012-033

WARNING: STAY OFF OF THE ACCESS DOOR 312AR. THE WEIGHT OF A PERSON OR PERSONS CAN CAUSE RELEASE OF THE SPRING-LOADED LATCHES. THIS CAN CAUSE INJURY TO PERSONS WHEN THEY FALL THROUGH THE OPENING.

(4) Open the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201).

S 862-034

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Put the manual override lever on the tail skid control module to the retract position and make sure the tail skid retracts.

S 742-035

(6) For the sensor for tail skid extended (S247), put the code 247 on the PSEU BITE control panel.
   (a) Push the TARGET TEST switch and hold it for one second.
   (b) Make sure the sensor code shows on the LED display and that after four seconds, the TARGET FAR light is on.

S 742-050

(7) For the sensor for tail skid retracted (S248), put code 248 on the PSEU BITE control panel.
   (a) Push the TARGET TEST switch and hold it for one second.
   (b) Make sure the sensor code shows on the LED display and that after four seconds, the TARGET NEAR light is on.

TASK 32-61-04-822-051

5. Clearance Adjustment for the Proximity Sensors on the Tail Skid

A. References

(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems

B. Access

(1) Location Zones

311	Area Aft of the Pressure Bulkhead (Left)
312	Area Aft of the Pressure Bulkhead (Right)

(2) Access Panel

312AR	Door - Stabilizer/Trim Jackscrew Compartment

C. Prepare for the Adjustment

S 862-036

(1) Open this circuit breaker on the overhead circuit breaker panel P11 and attach a DO-NOT-CLOSE tag:
   (a) 11U26, TAIL SKID CONT

S 012-037

WARNING: STAY OFF OF THE ACCESS DOOR 312AR. THE WEIGHT OF A PERSON OR PERSONS COULD CAUSE RELEASE OF THE SPRING-LOADED LATCHES. THIS CAN CAUSE INJURY TO PERSONS WHEN THEY FALL THROUGH THE OPEN DOOR.

(2) Open the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201).

S 822-038
(3) To adjust the gap on the tail skid extended sensor, do the step that follows:
(a) Make sure the tail skid is extended.

S 822-039
(4) To adjust the gap for the sensor for tail skid retracted do the steps that follow:
(a) Make sure the center hydraulic system is pressurized (AMM 29-11-00/201).

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(b) Put the manual override lever on the tail skid control module in the retract position and make sure the tail skid retracts (Fig. 202).
(c) Remove the power from the center hydraulic system (AMM 29-11-00)/201).

S 222-041
(5) Make sure the gap is correct (refer to Fig. 201). Do the steps that follow if adjustment is necessary:
(a) Remove the nuts, washers and screws to remove the sensor from the bracket.
(b) Add or remove shims (remove 0.002 inch laminates from the shim) to get the correct gap.
(c) After you make the last adjustment, bond the shims that you added to the shims that are there.
(d) Install the sensor with the screws, washers and nuts.

D. Put the Airplane Back to Its Usual Condition

S 412-043
(1) Close the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201).

S 412-044
(2) Close the access door for the main equipment center, 119AL (AMM 06-41-00/201).

S 862-045
(3) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11U26, TAIL SKID CONT

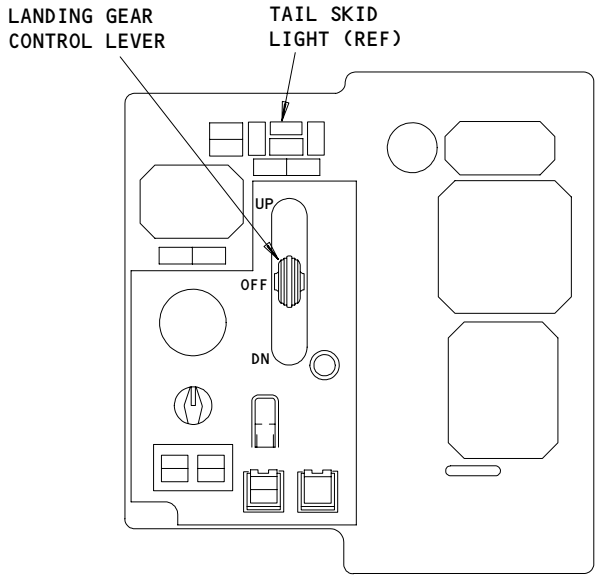
S 862-046
(4) Remove the power from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 862-047

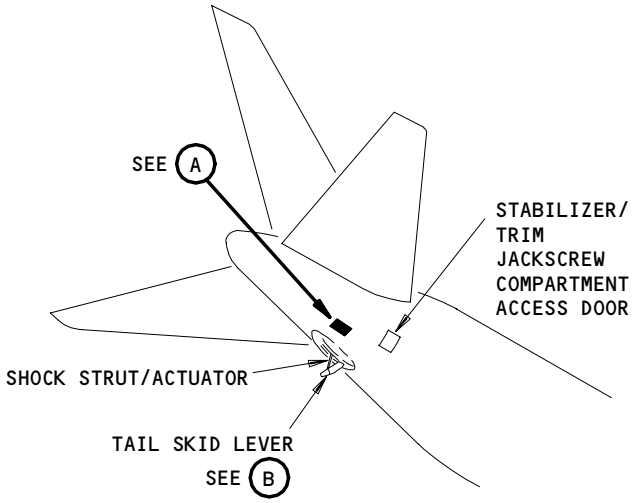
(5) Remove electrical power if it is not necessary (AMM 24-22-00/201).

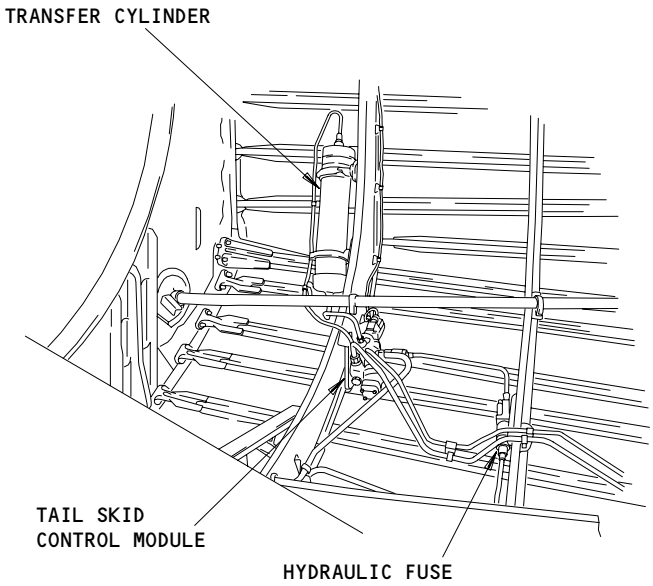
TAIL SKID SYSTEM - DESCRIPTION AND OPERATION

1. General (Fig. 1)
   A. The retractable tail skid protects the aft fuselage area from damage resulting from overrotation during takeoff or landing. The tail skid is electrically controlled and hydraulically operated in response to position of the landing gear control lever.
   B. The tail skid extends when the landing gear control lever is in the DN detent and retracts when the landing gear control lever is moved out of the DN detent to the UP or OFF positions.
   C. The tail skid system is powered by the 28v dc right bus and center hydraulic system.
   D. Tail skid system components are a control module, hydraulic fuse, hydraulic transfer cylinder, blocking valve, shock strut/actuator and tail skid lever.
   E. Tail skid position is monitored by the Proximity Switch Electronics Unit (PSEU) and the Landing Gear Position Indication and Warning System. Tail skid position disagreement is indicated by an amber TAIL SKID annunciator light on the first officers instrument panel, P3 and a caution level TAILSKID message on EICAS (Ref 32-61-00).
2. Component Details
   A. Tail Skid Control Module (Fig. 2)
      (1) The control module is located on the lower left side of the stabilizer/trim jackscrew compartment, just forward of the tail skid hydraulic transfer cylinder.
      (2) The tail skid control module consists of a motor-operated control valve, pressure-operated valve, flow limiter and two check valves.
      (3) The control module directs system hydraulic pressure to the appropriate extend or retract ports of the tail skid shock strut/actuator to enable extension or retraction of the tail skid.
      (4) The motor-operated control valve has a manual override to position the valve for extension or retraction.
   B. Hydraulic Fuse (Fig. 3)
      (1) The hydraulic fuse is located on the left side of the stabilizer/trim jackscrew compartment, just forward of the tail skid control module.
      (2) The fuse prevents hydraulic fluid loss from the tail skid system if a leak occurs at any point downstream of the fuse. The fuse automatically shuts off all flow if an excessive volume of fluid passes through it. The fuse is self-resetting and will reset within 5 seconds against a pressure differential of 18-30 psi.
      (3) The fuse can be reset by rotating the manual by-pass knob. This equalizes the pressure on both sides of fuse and allows the fuse to reset.
   C. Transfer Cylinder (Fig. 4)



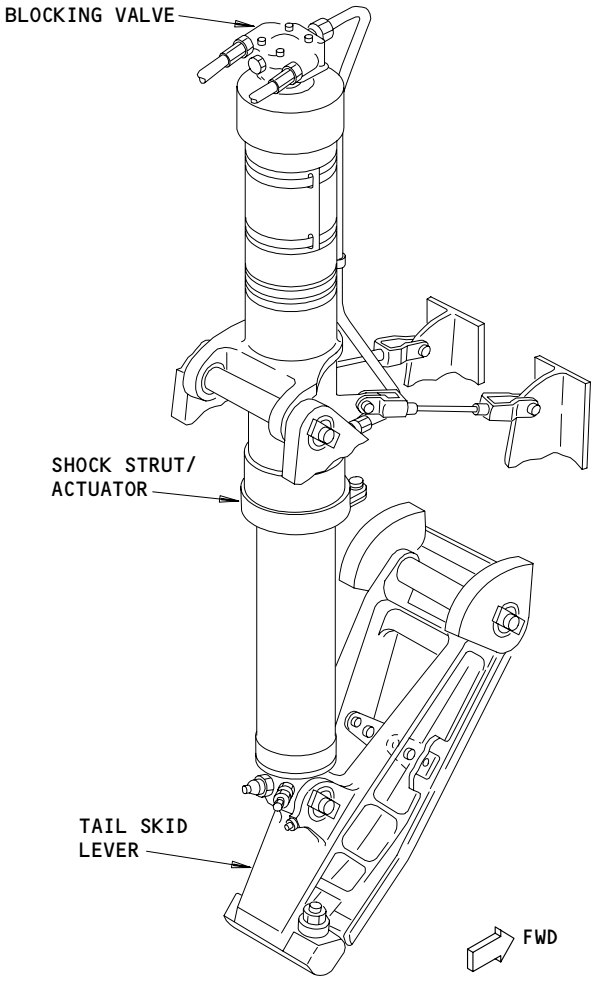
FIRST OFFICER'S INSTRUMENT PANEL





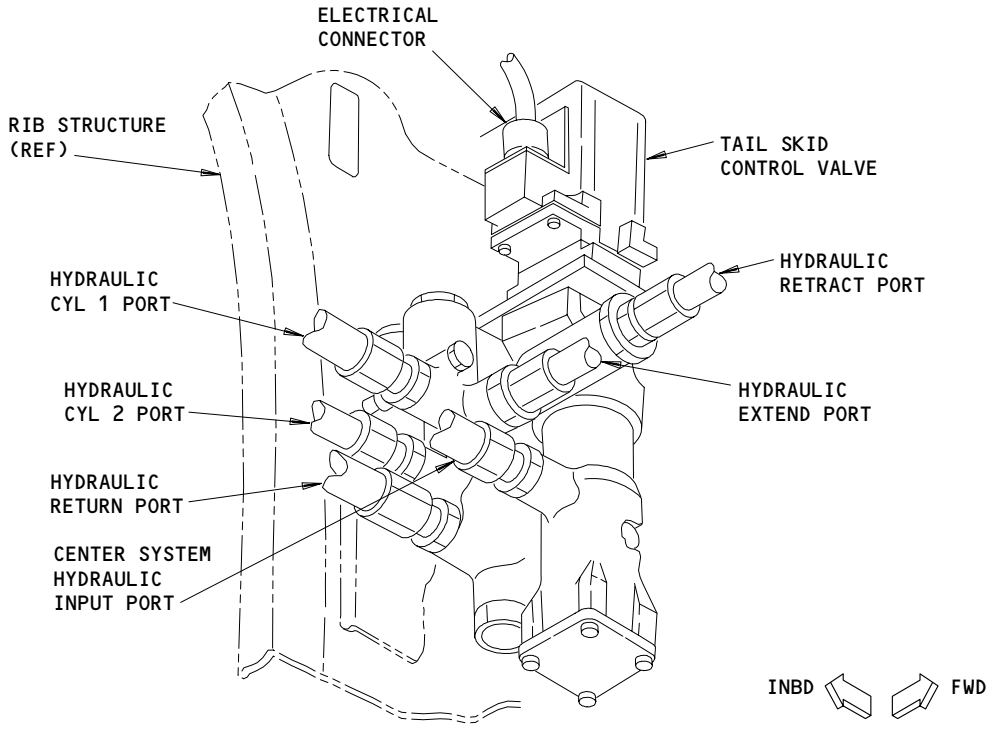
STABILIZER/TRIM JACKSCREW COMPARTMENT

A

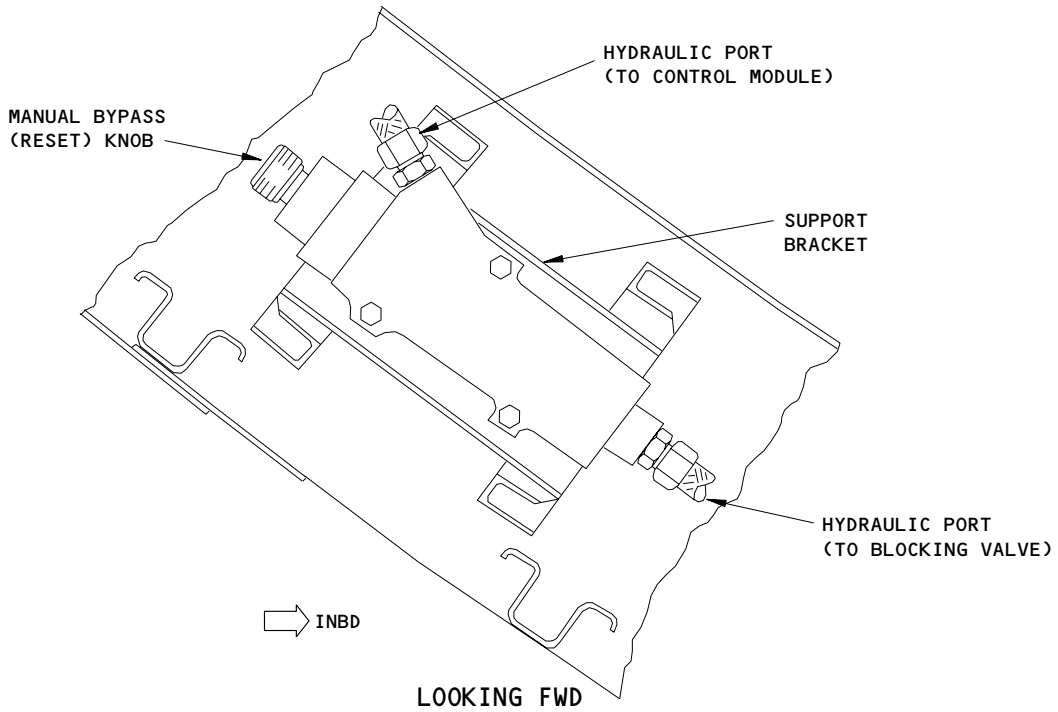


B

Tail Skid System
Figure 1



Tail Skid Control Module
Figure 2

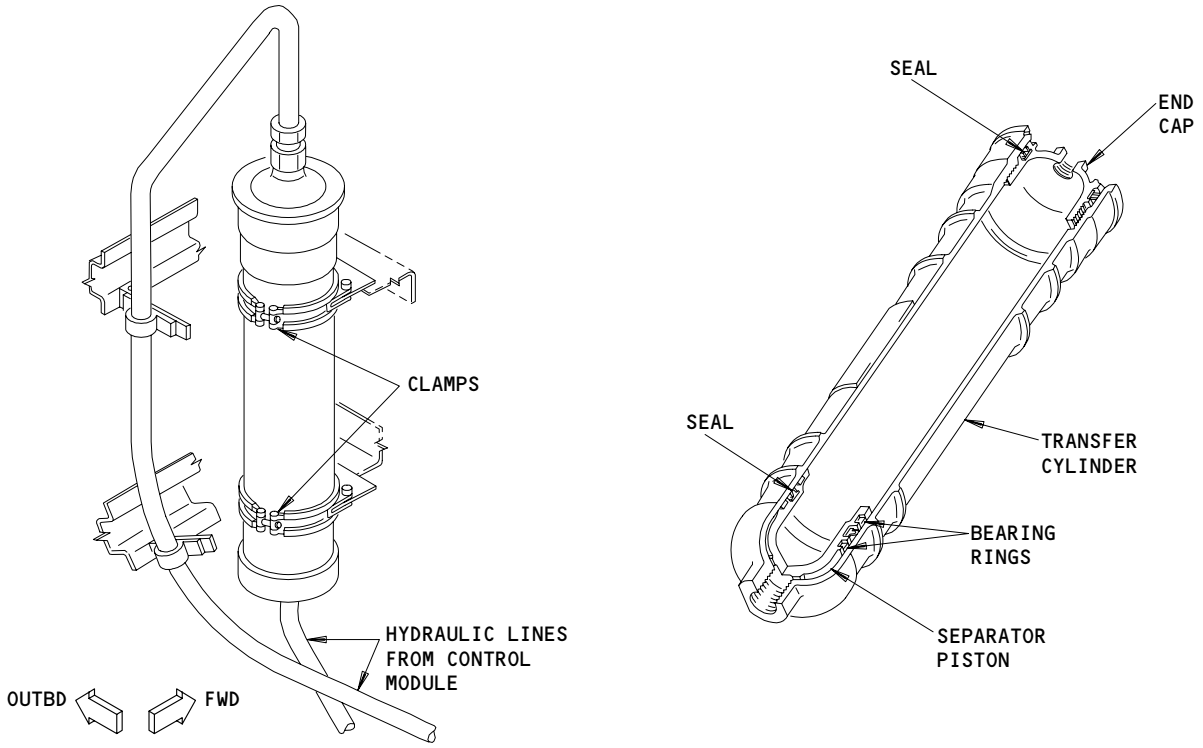


Tail Skid Hydraulic Fuse
Figure 3

(1) The transfer cylinder is located on the left side of the stabilizer/trim jackscrew compartment, stationed approximately with the tail skid shock strut/actuator.
(2) The transfer cylinder is a separator piston and a cylinder assembly. The cylinder is used to provide a fixed fluid volume for extension, thus preventing center hydraulic system pressure from compressing the nitrogen change in the shock strut.

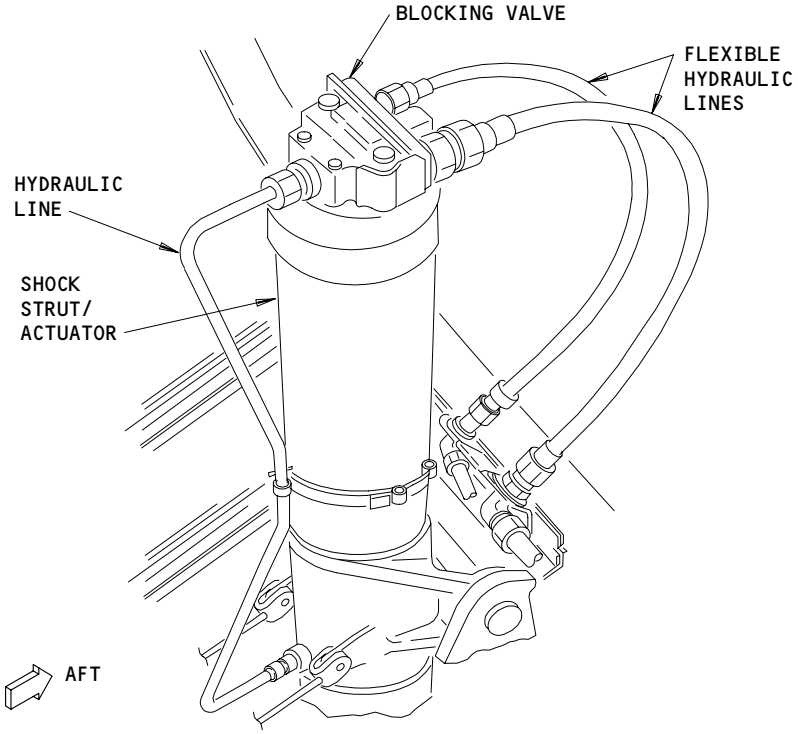
D. Blocking Valve (Fig. 5)
(1) The blocking valve is mounted on top of the shock strut/actuator, located in the stabilizer/trim jackscrew compartment.
(2) The blocking valve is closed when the tail skid is extended. This allows the pressure bleed orifice to regulate the flow of hydraulic pressure through the extend side of the shock strut/actuator on a tail strike. The blocking valve also contains a thermal relief valve.

E. Tail Skid Shock Strut/Actuator (Fig. 6)
(1) The shock strut/actuator is centered on lower airplane structure below the horizontal stabilizer jackscrew in the stabilizer/trim jackscrew compartment.

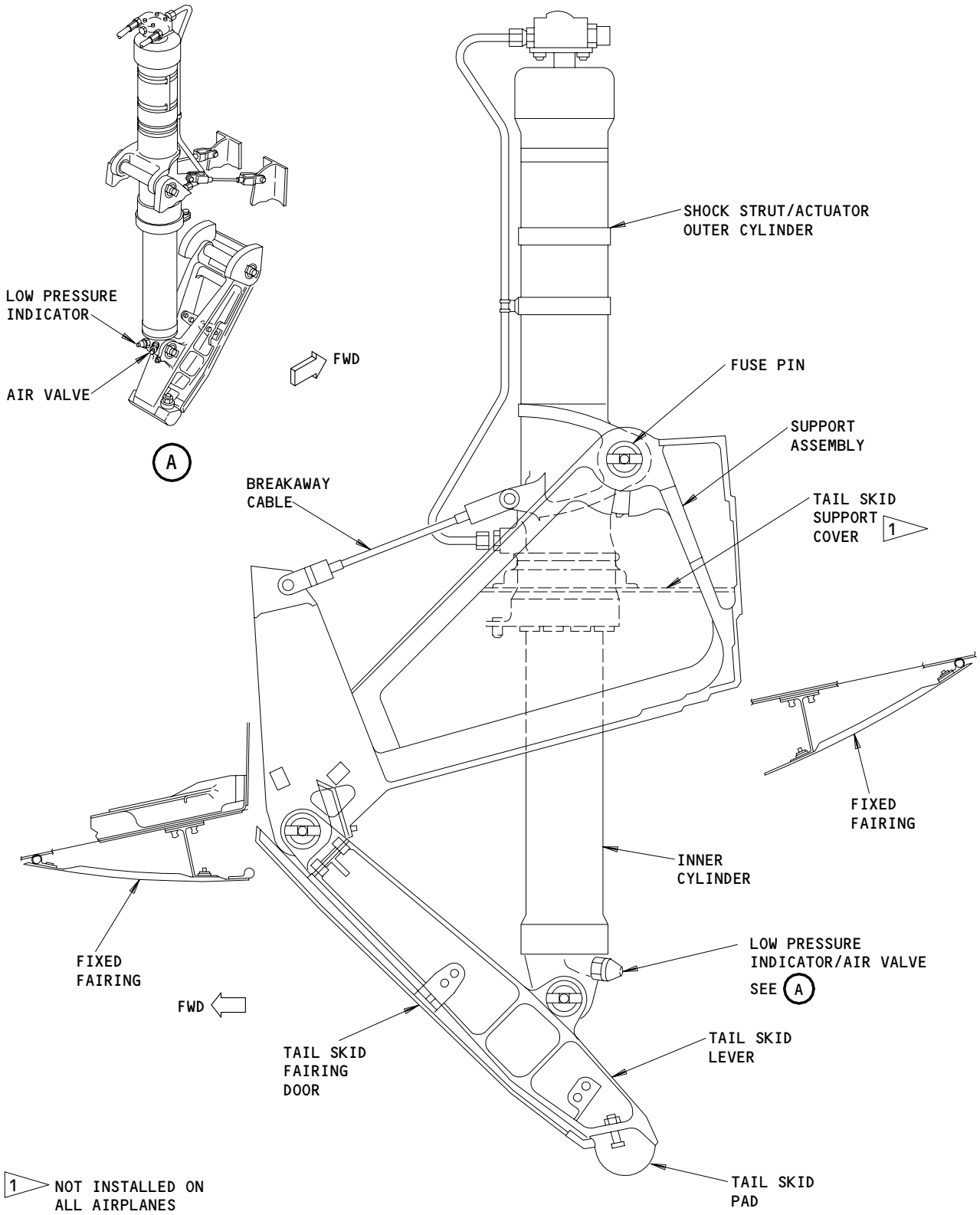


Tail Skid Hydraulic Transfer Cylinder
Figure 4

(2) The shock strut/actuator consists of a outer and inner cylinder, shock absorption orifice, low pressure indicator and an air valve.
(3) The shock strut/actuator extends and retracts the tail skid lever and absorbs the impact during a tail skid strike.
(4) The shock strut/actuator is charged through an air valve at the rod end of the shock strut/actuator. The shock strut/actuator is inflated with dry air or nitrogen to 300-350 psi and provides shock absorption. A resettable low pressure indicator is visible when air pressure is 175-230 psi.
(5) The upper attach point of the shock strut attaches to the support assembly by a fuse pin. The fuse pin shears under extreme loads to provide a release of the tail skid to prevent major damage to airplane structure.
    (a) Two breakaway cables attach to the shock strut/actuator. The cables prevent the shock strut/actuator from striking the horizontal stabilizer/trim jackscrew if the fuse pin should shear.



Tail Skid Blocking Valve
Figure 5

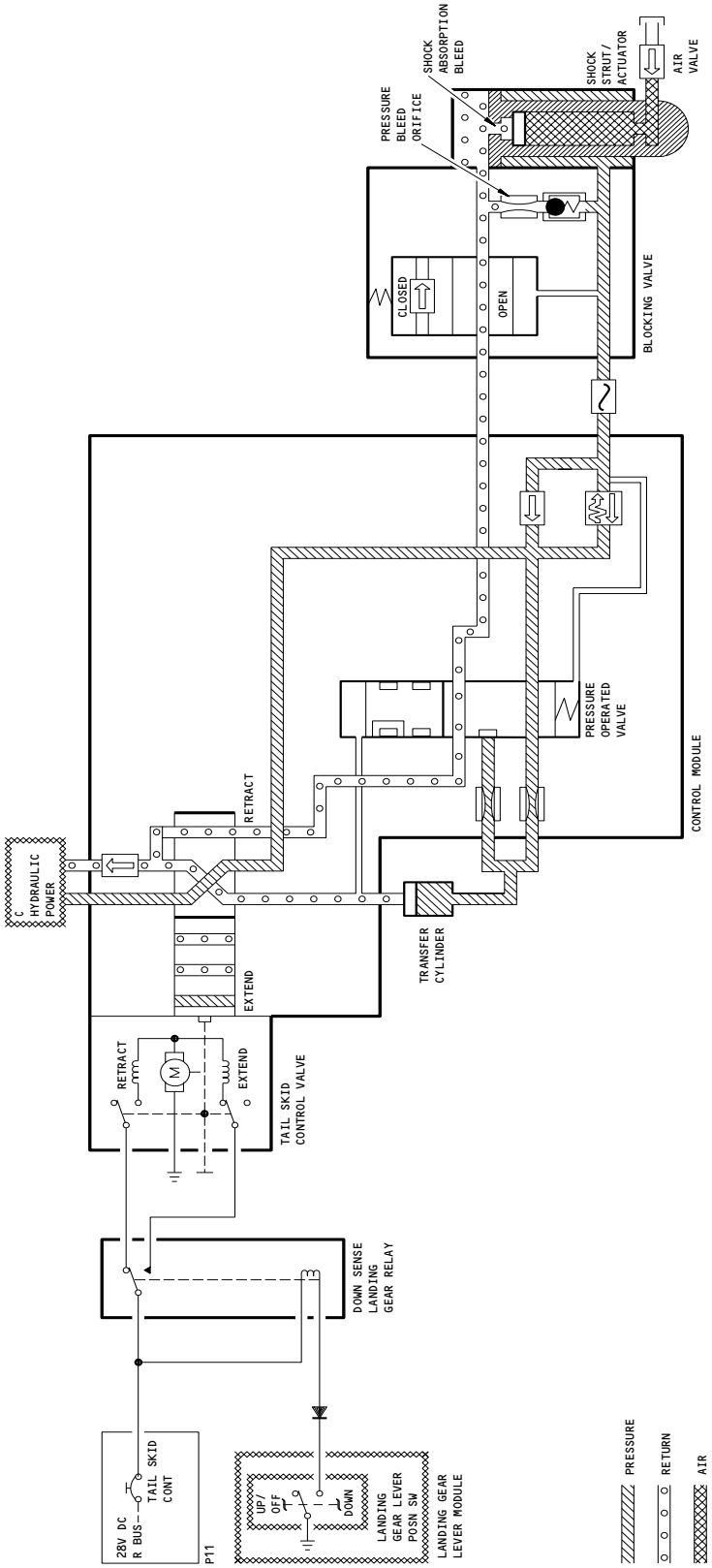


Tail Skid Shock Strut/Actuator and Lever
Figure 6

331534

F. Tail Skid Lever (Fig. 6)
(1) The lever, pivoting on a support assembly, is attached to the rod end of the shock strut/actuator. The lever is located on the bottom of the fuselage, forward of the APU doors.
(2) A movable fairing door attaches to the bottom of the lever, and forms part of the fixed fairing when retracted.
(3) A replaceable strike pad is mounted on the end of the lever.

3. Operation (Fig. 7)
A. Functional Description
(1) Tail Skid Extension
(a) To extend the tail skid, move the landing gear control lever to DN detent. The down sense landing gear relay is energized, supplying 28v dc power to the extend coil of the motor-operated control valve.
(b) The control valve rotates to the extend position. Flow through the control valve will cause the pressure-operated valve to move to the extend position, allowing fluid to fill the transfer cylinder.
(c) As the transfer cylinder piston moves in response to fluid pressure from the control module, the existing volume of fluid in the transfer cylinder piston passes through the blocking valve and fills the extend port of the tail skid shock strut/actuator.
(d) When all the fluid has been transferred from the transfer cylinder to the extend port of the shock strut/actuator, the tail skid will be fully extended and the blocking valve will close.
(e) The fluid volume forced out from the retract port of the shock strut/actuator during extension flows through the hydraulic fuse, and control module to hydraulic return.
(f) A return line check valve protects against loss of fluid in the center hydraulic system due to a failure in the return side of the tail skid hydraulic actuation circuit.
(g) In the extended position the fluid in the extend side of the shock strut/actuator is contained by the blocking valve. The fluid can only exit through the pressure bleed orifice or through the shock absorption orifice, compressing the nitrogen gas volume in the shock strut/actuator.



Tail Skid Operation Schematic
Figure 7

(2) Tail Skid Retraction
  (a) To retract the tail skid, move the landing gear control lever out of the DN detent to the OFF or UP position. The down sense landing gear relay is de-energized, supplying 28v dc power to the retract coil of the motor-operated control valve.
  (b) The control valve rotates to the retract position. Flow through the control valve will cause the pressure-operated valve to move to the retract position. This allows fluid to pass through a retract orifice to fill the transfer cylinder, returning the piston to its pre-extend position.
    1) Filling the transfer cylinder prior to tail skid retraction ensures that adequate fluid will be available to extend the shock strut/actuator if tail skid extension is demanded during the retraction sequence.
  (c) Fluid passing through the flow limiter and hydraulic fuse causes the blocking valve to open, and then fills the retract port of the shock strut/actuator.
    1) The flow limiter in the control module controls the retract time of the shock strut/actuator to be consistent with the retract time of the landing gear.
  (d) The fluid volume forced from the extend port of the shock strut/actuator during retraction, flows through the blocking valve, control module to hydraulic return.
  (e) The landing gear lever is normally moved to OFF following completion of landing gear. The OFF position depressurizes the landing gear hydraulic system but maintains tail skid hydraulic pressure so that the tail skid is held in the retracted position.
(3) Tail Skid Strike
  (a) On a tail skid strike, the shock strut/actuator is compressed to absorb the impact of the strike.
  (b) The amount of compression of the shock strut/actuator is regulated by the amount of fluid allowed to pass through the pressure bleed orifice and the amount of fluid allowed to pass through the shock absorption orifice to compress the nitrogen gas.
  (c) The pressure bleed orifice is sized to allow only a few cubic inches of fluid to pass through during tail skid compression. The remaining fluid is forced through the shock absorption orifice, compressing the nitrogen gas volume, absorbing impact energy.
  (d) At excessive loads, a fuse pin will shear to prevent damage to airplane structure. The shock strut/actuator will move upward, pivoting about the breakaway cables. This prevents the shock strut/actuator from contacting the horizontal stabilizer/trim jackscrew.

B. Control

(1) To place the tail skid system in operation, perform the following.

(a) Provide electrical power (Ref 24-22-00).

(b) Provide center system hydraulic power (Ref 29-11-00).

(c) Check that TAIL SKID CONT circuit breaker on overhead circuit breaker panel P11 is closed.

WARNING: MAKE SURE THE AREA AROUND THE TAIL SKID IS CLEAR OF PERSONS AND EQUIPMENT WHEN IT OPERATES. IF THE AREA IS NOT CLEAR INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(d) Place landing gear control lever in DN detent to extend tail skid.

(e) Move landing gear control lever out of DN detent to OFF position to retract tail skid.

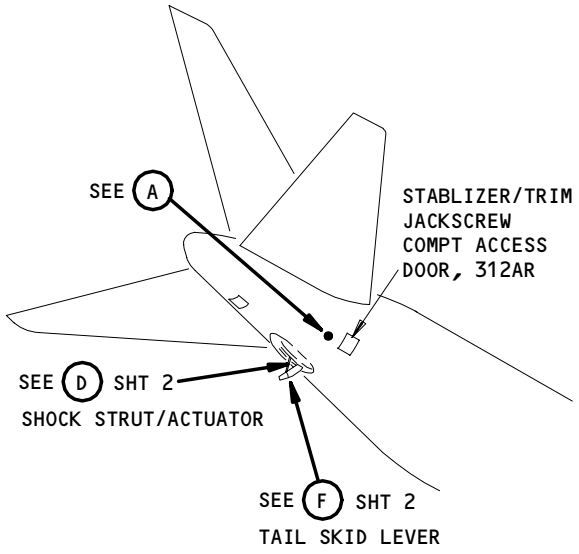
(f) To enable tail skid position indication refer to 32-61-00.

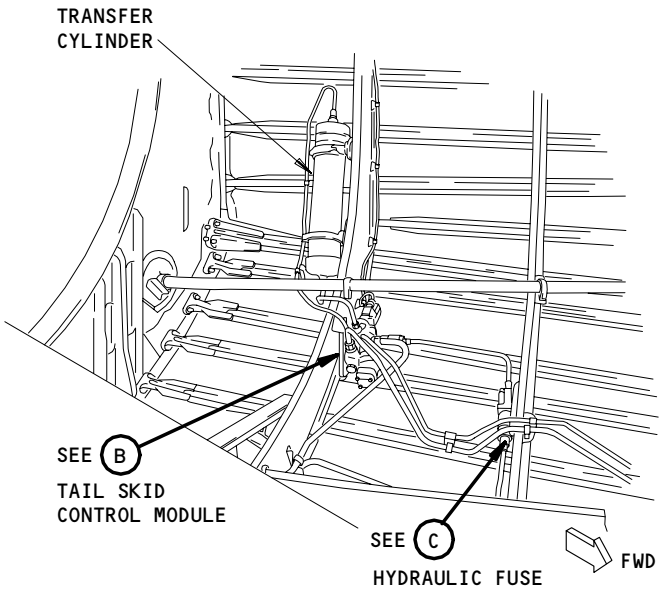
TAIL SKID SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
CIRCUIT BREAKER –	3		FLT COMPT, P11	
LANDING GEAR POSITION AIR/GND SYS 1, C1175		1	11C30	*
POSITION AIR/GND SYS 2, C1170		1	11U23	*
PROX SW TEST, C1178		1	11T36	*
TAIL SKID CONT, C1185		1	11U26	*
COMPUTER – (FIM 31-41-00/101)				
L EICAS, M10181				
R EICAS, M10182				
CYLINDER – TRANSFER	1	1	312AR, STABILIZER/TRIM JACKSCREW COMPARTMENT, L SIDE	32-71-02
DIODE – ISOLATION, R63,R188	3	1	119AL, MAIN EQUIP CTR, E1-2	*
FUSE – TAIL SKID HYDRAULIC	1	1	312AR, STABILIZER/TRIM JACKSCREW COMPARTMENT, L SIDE	32-71-04
INDICATOR – LOW PRESSURE	2	1	SHOCK STRUT/ACTUATOR, TAIL SKID FIXED FAIRING	32-71-05
LEVER – TAIL SKID	2	1	TAIL SKID FIXED FAIRING	32-71-06
LIGHT – (FIM 32-61-00/101)				
TAIL SKID, L804				
MODULE – (FIM 32-30-00/101)				
LANDING GEAR CONTROL LEVER, M937				
MODULE – TAIL SKID CONTROL	1	1	312AR, STABILIZER/TRIM JACKSCREW COMPARTMENT, L SIDE	32-71-01
RELAY – (FIM 31-01-36/101)				
DOWN SENSE LANDING GEAR, K904				
SENSOR – (FIM 32-61-00/101)				
TAIL SKID EXTENDED, S247				
TAIL SKID RETRACTED, S248				
STRUT/ACTUATOR – TAIL SKID SHOCK	2	1	312AR, STABILIZER/TRIM JACKSCREW COMPARTMENT	32-71-05
SWITCH – (FIM 32-30-00/101)				
LANDING GEAR LEVER POSITION DOWN, YBGS3				
UNIT – (FIM 32-09-03/101)				
PROXIMITY SWITCH ELECTRONIC (PSEU), M162				
VALVE – TAIL SKID AIR	2	1	SHOCK STRUT/ACTUATOR, TAIL SKID FIXED FAIRING	32-71-05
VALVE – TAIL SKID, BLOCKING	2	1	312AR, STABILIZER/TRIM JACKSCREW COMPARTMENT, SHOCK STRUT/ ACTUATOR	32-71-03
VALVE – TAIL SKID CONTROL, V124	1	1	312AR, STABILIZER/TRIM JACKSCREW COMPARTMENT, TAIL SKID CONTROL MODULE	32-71-01

* SEE THE WDM EQUIPMENT LIST

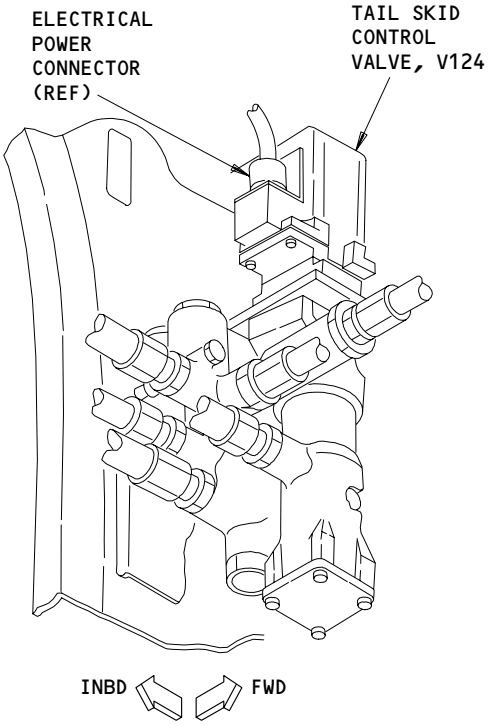
Tail Skid System – Component Index
Figure 101





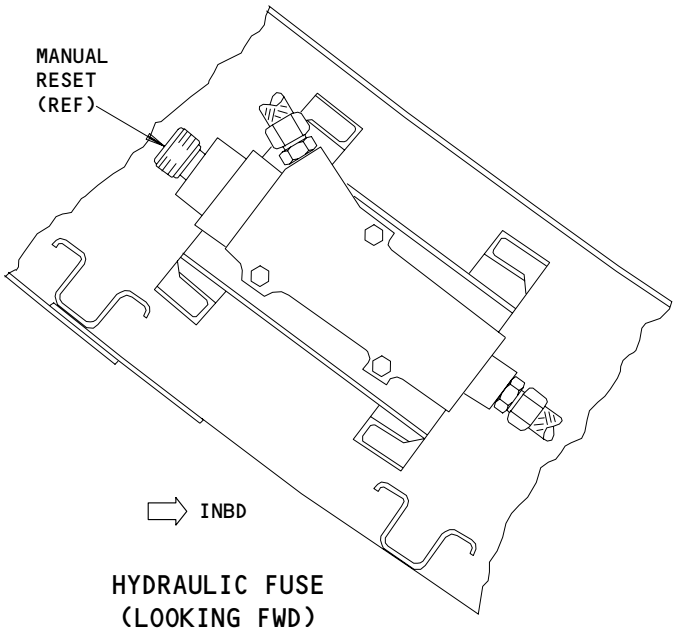
STABLIZER/TRIM JACKSCREW COMPARTMENT

A



TAIL SKID CONTROL MODULE

B

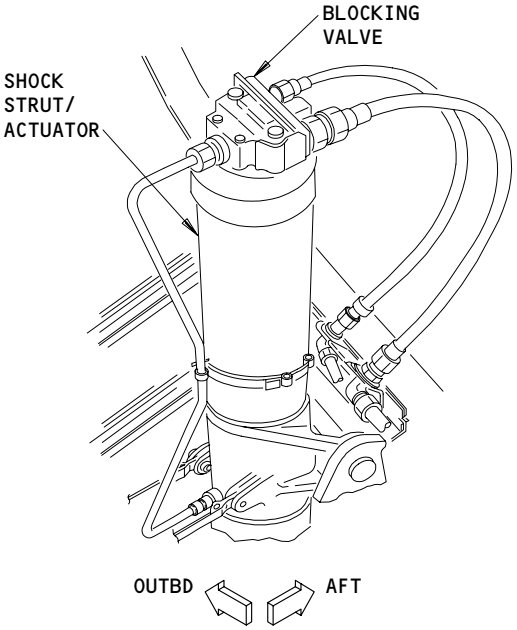


HYDRAULIC FUSE
(LOOKING FWD)

C

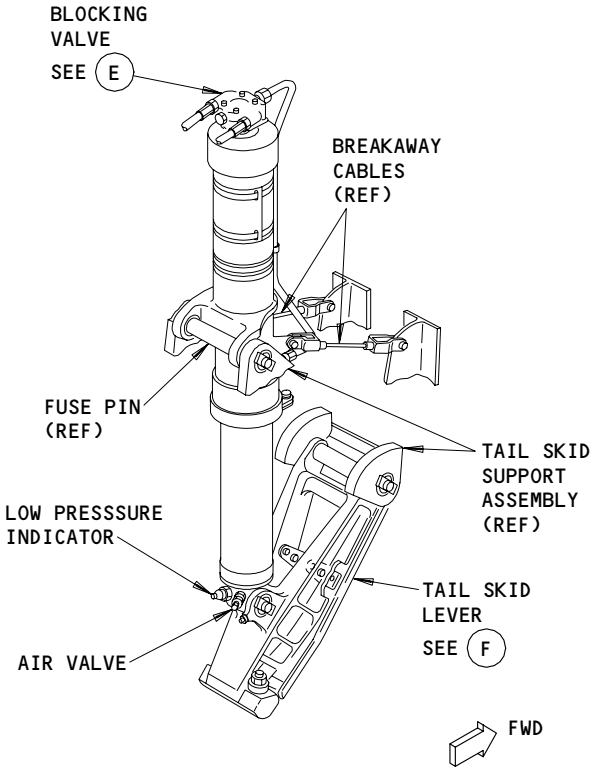
Component Location (Details From Sht 1)
Figure 102 (Sheet 1)

222346



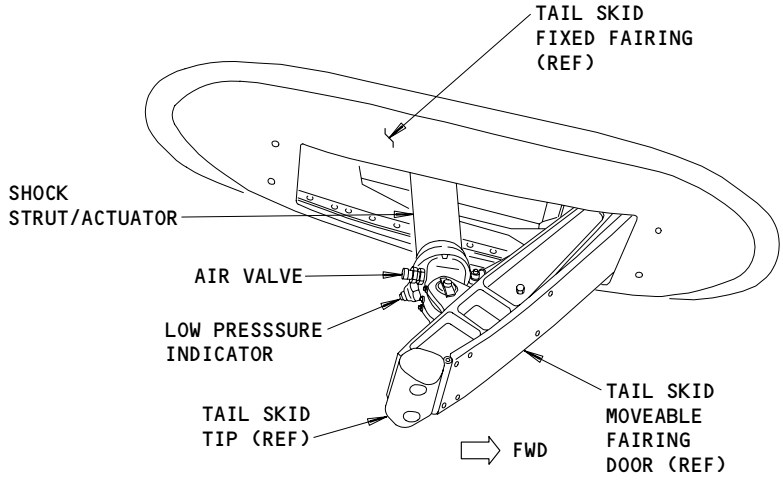
BLOCKING VALVE

(E)



SHOCK STRUT/ACTUATOR
(FROM SHT 1)

(D)

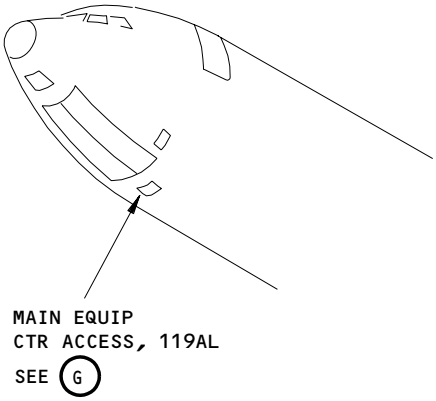


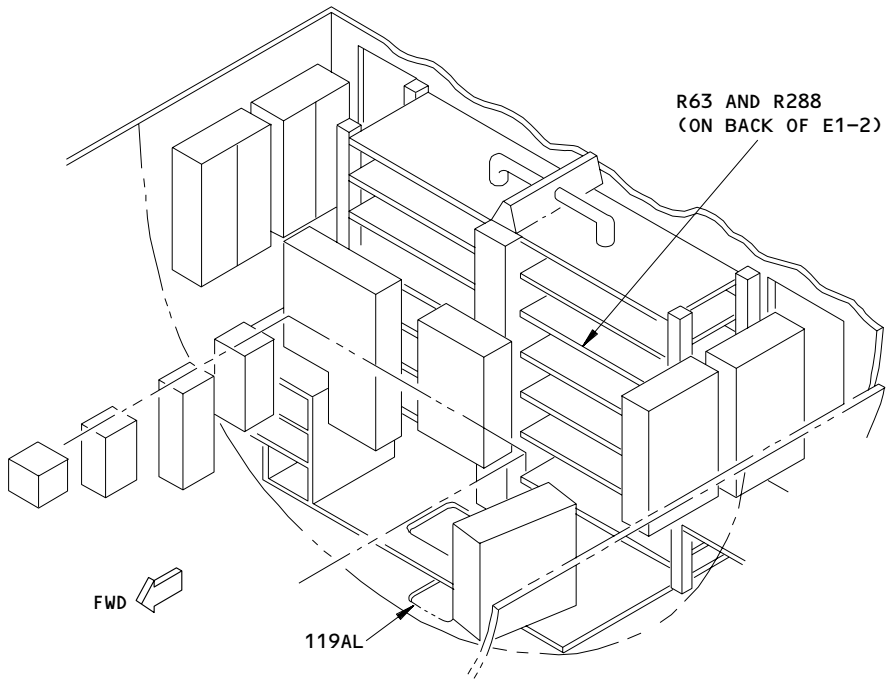
TAIL SKID LEVER

(F)

Component Location
Figure 102 (Sheet 2)

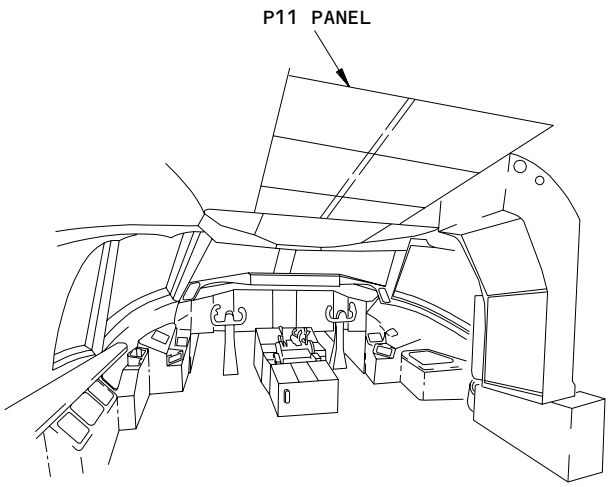
222353





MAIN EQUIP CTR

(G)



FLT COMPT

Component Location
Figure 102 (Sheet 3)

222362

TAIL SKID SYSTEM - ADJUSTMENT/TEST

1. General
   A. This section contains the procedures that follow:
      (1) The operational test for the extension and retraction of the tail skid.
      (2) The system test for the extension and retraction of the tail skid.
      (3) The adjustment of the movable door for the tail skid.
   B. To do the adjustment/test of the position indication for the tail skid refer to AMM 32-61-00/501.

TASK 32-71-00-715-001

2. Operational Test - Tail Skid Extension and Retraction
   A. General
      (1) This test does a check of the tail skid system for permitted operation times. This test does not do a check of the completed adjustment for the system.
   B. Equipment
      (1) Stopwatch
   C. References
      (1) AMM 24-22-00/201, Electrical Power - Control
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   D. Access
      (1) Location Zone
          212 Control Cabin (Right)
          311 Area Aft of the Pressure Bulkhead (Left)
          312 Area Aft of the Pressure Bulkhead (Right)

   E. Prepare For the Operational Test

      S 495-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

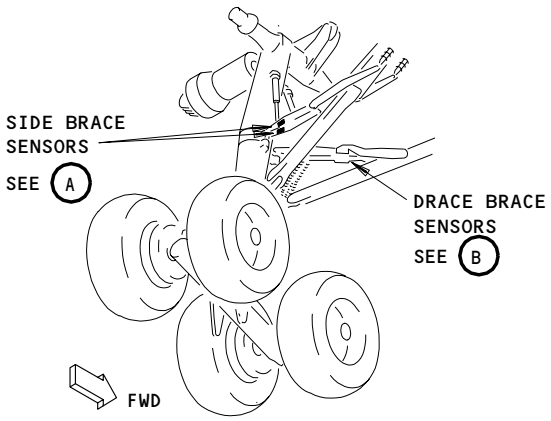
      S 495-003

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

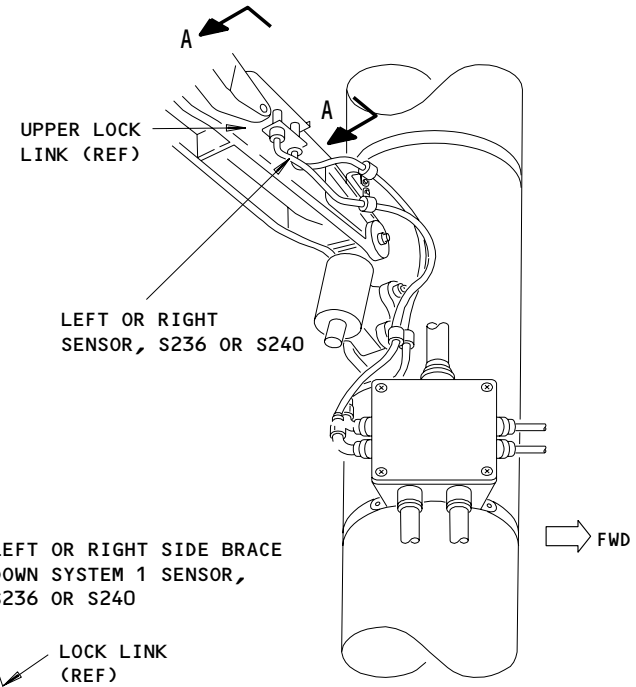
      (2) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

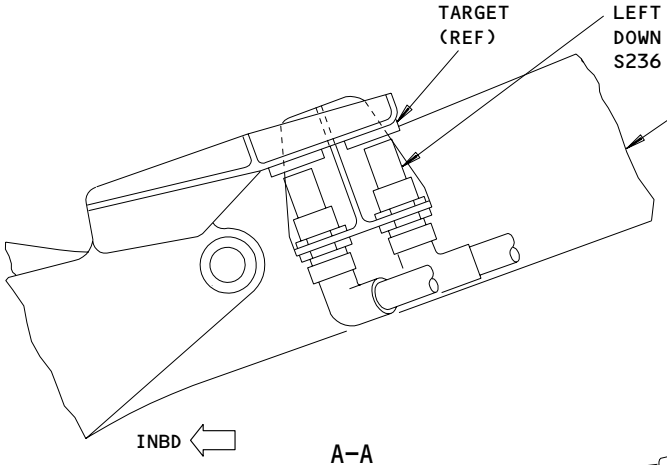
      S 865-004
      (3) Supply electrical power (AMM 24-22-00/201).

      S 865-005
      (4) Pressurize the center hydraulic system (AMM 29-11-00/201).



MAIN LANDING GEAR
(LEFT SHOWN, RIGHT EQUIVALENT)

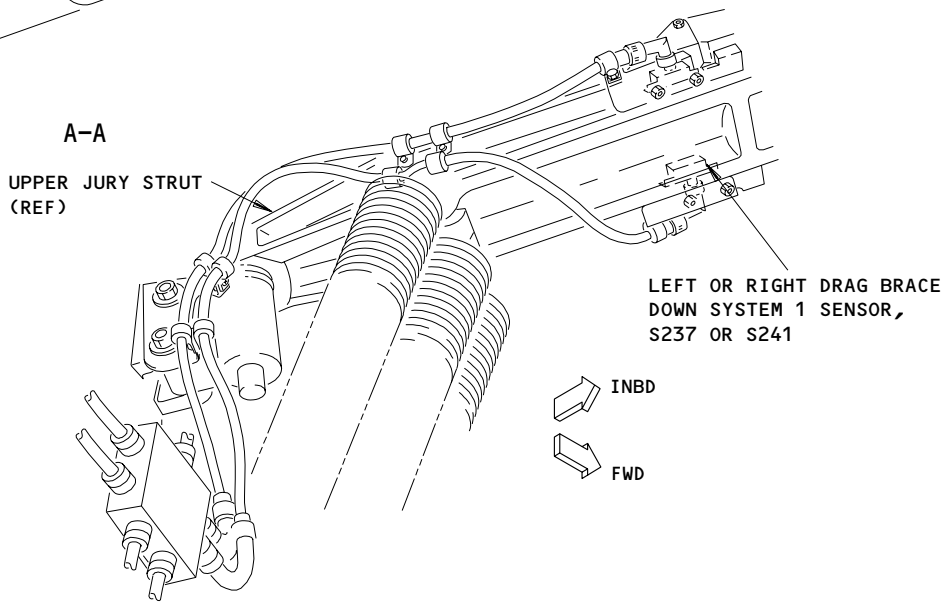




MAIN LANDING GEAR SIDE BRACE SENSORS
(LEFT MAIN GEAR SIDE BRACE DOWN
SENSORS SHOWN, RIGHT EQUIVALENT)

A

A-A

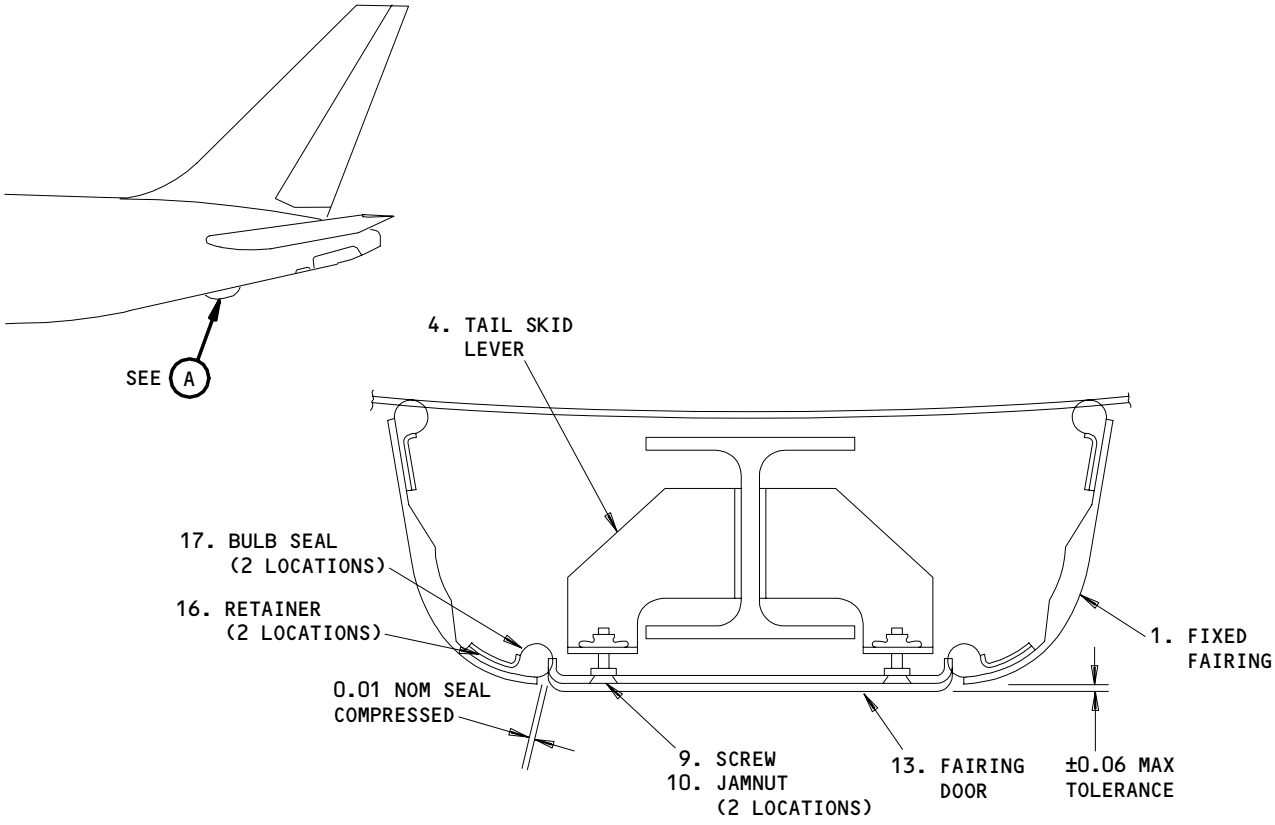


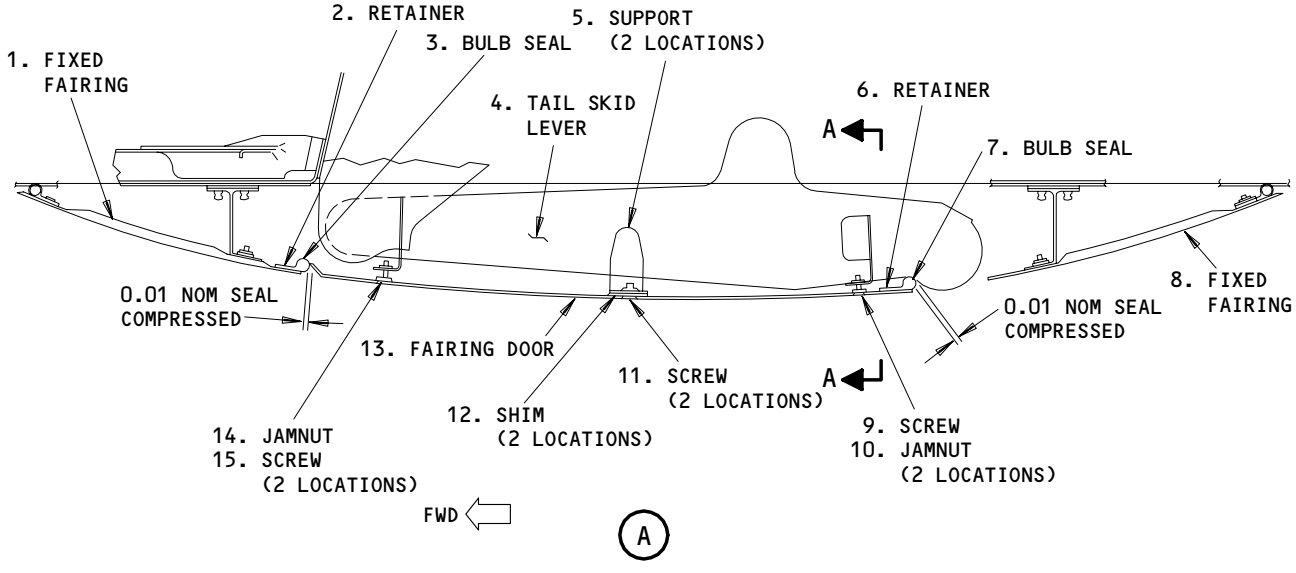
MAIN LANDING GEAR JURY STRUT SENSORS
(LEFT MAIN LANDING GEAR DRAG BRACE DOWN SENSORS SHOWN, RIGHT EQUIVALENT)

B

Main Landing Gear Proximity Sensors Location
Figure 501

225246





Tail Skid Movable Fairing Door Adjustment
Figure 502

S 945-006

(5) Put one person at the control lever for the landing gear in the flight deck. Put a person outside the airplane near the tail skid to monitor the tail skid for operation and time to operate. Use the interphone to speak between the two persons.

F. Do the Test For the Tail Skid Time of Operation

S 495-007

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON THE NOSE AND MAIN LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. IF YOU MOVE THE CONTROL LEVER WHEN THE DOWNLOCKS ARE NOT INSTALLED, THE LANDING GEAR CAN RETRACT AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 715-008

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID. MOVEMENT OF THE TAIL SKID CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Move the control lever for the landing gear from DN to UP in 2± 1 seconds. Write down the retraction time for the tail skid.

NOTE: Measure the time for retraction from when you move the control lever to the UP position until the tail skid fully retracts. Measure the time in seconds.

S 715-009

(3) Move the control lever to OFF for 15 seconds.

S 715-010

(4) Move the control lever from OFF to DN in 2± 1 seconds. Write down the extension time for the tail skid.

S 715-011

(5) Make sure the times for the operation of the tail skid were as follows:

HYDRAULIC POWER SOURCE HYDRAULIC FLOW IN GPM	MAX TIME OF OPERATION	
	RETRACTION	EXTENSION
AIRPLANE ADP-37	20 sec	22 sec
HYDRAULIC CART-55	16 sec	22 sec

G. Put the Airplane Back to Its Usual Condition

S 095-012

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the door locks from the main landing gear doors and close the doors (AMM 32-00-15/201).

S 865-013

(2) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-014

(3) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-71-00-735-015

3. System Test - Extension and Retraction System For the Tail Skid

A. General

(1) This test does a check of the extension and retraction system for the tail skid. To do this, it compares the TAIL SKID light and the EICAS message, TAIL SKID with the position of the control lever for the landing gear.

B. Equipment
(1) Proximity Sensors Actuator/Deactuator Set - P/N A27092-106 (2 rectangular actuators, 2 cylindrical deactuators, and 3 rectangular deactuators required).

C. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 31-41-00/201, Maintenance Message Erase Procedure
(4) AMM 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-00-20/201, Landing Gear Downlocks

D. Access
(1) Location Zone

115	NLG Wheel Well (Left)
116	NLG Wheel Well (Right)
143	MLG Wheel Well (Left)
144	MLG Wheel Well (Right)
212	Control Cabin (Right)
311	Area Aft of the Pressure Bulkhead (Left)
312	Area Aft of the Pressure Bulkhead (Right)
731	Main Landing Gear (Left)
741	Main Landing Gear (Right)

E. Prepare For the System Test

S 495-016
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 865-017
(2) Supply electrical power (AMM 24-22-00/201).

S 865-018
(3) Pressurize the center system hydraulic system (AMM 29-11-00/201).

S 865-019
(4) Make sure these circuit breakers on the overhead circuit breaker panel P11 are closed:
(a) 11C30, LANDING GEAR POSITION AIR/GND SYS 1

(b) 11J2, EICAS CMPTR L
(c) 11J3, EICAS UPPER DISPLAY
(d) 11J29, EICAS CMPTR R
(e) 11J30, EICAS LOWER DISPLAY
(f) 11J31, EICAS DSPL SW
(g) 11J32, EICAS DSPL SELECT
(h) 11U23, LANDING GEAR POSITION AIR/GND SYS 2

F. Do the System Test For the Extension and Retraction of the Tail Skid.

S 495-067

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 495-068

(2) Install a proximity sensor actuator on the sensors that follow:

Sensor No.	Sensor Name and Location
S238	Latch For the Left Main Landing Gear Locked Sys 1 (wheel well for the left main landing gear, outboard)
S242	Latch For the Right Main Landing Gear Locked Sys 1 (wheel well for the right main landing gear, outboard)

S 495-020

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON THE NOSE AND MAIN LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. IF YOU MOVE THE CONTROL LEVER WHEN THE DOWNLOCKS ARE NOT INSTALLED, THE LANDING GEAR CAN RETRACT AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 865-071

(4) Move the control lever for the landing gear to the UP position to retract the tail skid.

S 865-023

(5) Open this circuit breaker on the P11 panel and install a DO-NOT-CLOSE tag:
(a) 11U26, TAIL SKID CONT

S 735-024

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID. MOVEMENT OF THE TAIL SKID CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(6) Move the control lever for the landing gear to the DN position.

S 735-025

(7) At the same time, start the stopwatch and move the control lever momentarily to OFF, then put the lever to DN.

NOTE: When you operate the control lever, it sets the PSEU time delay for the tail skid.

S 735-026

(8) Make sure the yellow TAIL SKID light on the P3 panel comes on and the EICAS message, TAILSKID, shows on the top display after 36± 4 seconds.

S 735-027

(9) Move the COMPUTER switch on the EICAS DISPLAY select panel between the L and R positions. Make sure the EICAS message, TAILSKID, shows for the two computers.

S 865-028

(10) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11U26, TAIL SKID CONT

S 735-029

(11) Make sure the yellow TAIL SKID light on the P3 panel and the EICAS message, TAILSKID, go out when the tail skid is fully extended.

S 865-030

(12) Open this circuit breaker on the P11 panel and install a DO-NOT-CLOSE tag:
(a) 11U26, TAIL SKID CONT

S 495-031
(13) Install a proximity sensor actuator on the sensors that follow:

Sensor No.	Sensor Name and Location
S234 *[1]	Left Door For the Nose Landing Gear Closed (nose wheel well)
S235 *[1]	Right Door For the Nose Landing Gear Closed (nose wheel well)

*[1] Necessary only if the doors for the nose landing gear are not closed.

S 495-032
(14) Install a proximity sensor deactuator on the sensors that follow:

Sensor No.	Sensor Name and Location
S232	Nose Landing Gear Down Sys 1 (left side of the nose wheel well, aft of the shock strut)
S236	Left Side Brace Down Sys 1 (main landing gear, lock link)
S237	Left Drag Brace Down Sys 1 (main landing gear, jury strut)
S240	Right Side Brace Down Sys 1 (main landing gear, lock link)
S241	Right Drag Brace Down Sys 1 (main landing gear, jury strut)

S 735-033
(15) Move the control lever for the landing gear to the OFF position.

S 735-034
(16) At the same time, start the stopwatch and move the control lever momentarily to DN. Then put the lever to OFF.

S 735-035

(17) Make sure the yellow TAIL SKID light on the P3 panel comes on after 36± 4 seconds.

S 865-036

WARNING: MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE TAIL SKID AREA BEFORE YOU CLOSE THE "TAIL SKID CONT" (11U26) CIRCUIT BREAKER WITH THE CONTROL LEVER FOR THE LANDING GEAR IN THE "OFF" POSITION. THE TAIL SKID WILL RETRACT AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(18) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11U26, TAIL SKID CONT

S 735-037

(19) Make sure the yellow TAIL SKID light on the P3 panel goes out and the EICAS message, TAILSKID, does not show on the top display when the tail skid retracts.

NOTE: Ignore the EICAS messages that follow if they are shown:

LDG GEAR MONITOR (Status)
GEAR DISAGREE (Maintenance)
L DRAG BRACE (Maintenance)
L SIDE BRACE (Maintenance)
NOSE GEAR DOWN (Maintenance)
R DRAG BRACE (Maintenance)
R SIDE BRACE (Maintenance)

S 095-038

(20) Remove the proximity sensor actuators from the sensors that follow:

Sensor No.	Sensor Name and Location
S234 *[1]	Left Door For the Nose Landing Gear Closed (nose wheel well)
S235 *[1]	Right Door For the Nose Landing Gear Closed (nose wheel well)
S238	Latch For the Left Main Landing Gear Locked Sys 1 (wheel well for the left main landing gear, outboard)
S242	Latch For the Right Main Landing Gear Locked Sys 1 (wheel well for the right main landing gear, outboard)

*[1] If it was installed.

S 095-039

(21) Remove the proximity sensor deactuators from sensors that follow:

Sensor No.	Sensor Name and Location
S232	Nose Landing Gear Down Sys 1 (left side of the nose wheel well, aft of the shock strut)
S236	Left Side Brace Down Sys 1 (main landing gear, lock link)
S237	Left Drag Brace Down Sys 1 (main landing gear, jury strut)
S240	Right Side Brace Down Sys 1 (main landing gear, lock link)
S241	Right Drag Brace Down Sys 1 (main landing gear, jury strut)

S 865-040

(22) Do the Maintenance Message Erase procedure (AMM 31-41-00/201).
   (a) Push the ECS/MSG switch on the EICAS MAINT panel on the right side panel P61.
   (b) Push the EVENT AUTO READ switch to show the EICAS maintenance messages.
   (c) Push the ERASE switch for 3 seconds. Do the steps again until all the pages are clear.

(d) Push the EVENT AUTO READ switch.

G. Put the Airplane Back to Its Usual Condition

S 865-041

(1) Move the control lever for the landing gear to the DN position.

S 865-042

(2) Remove the pressure from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-043

(3) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-71-00-825-069

4. Adjustment - Movable Fairing Door For the Tail Skid (Fig. 502)

A. General

(1) This procedure has the instructions to adjust the fit of the movable fairing door for the tail skid to the tail skid fixed fairing. The instructions also make sure the fairing door and the fixed fairing are correctly aligned.

B. Equipment

(1) Maintenance Lock For the Retractable Tail Skid - A32088-7

C. References

(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks

D. Prepare for the Adjustment

S 495-044

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 495-045

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 865-046

(3) Open this circuit breaker on the overhead circuit breaker panel, P11:
(a) 11U26, TAIL SKID CONT

E. Do the Adjustment of the Moveable Fairing Door for the Tail Skid

S 495-047

(1) Install the maintenance lock for the retractable tail skid around the inner cylinder of the extended shock strut/actuator.

S 035-048
(2) Remove the screws (11) and shims (12) from the fairing door (13) (Detail A).

S 035-049
(3) Loosen the jamnuts (10, 14) (Detail A and View A-A).

S 095-050
(4) Remove the maintenance lock from the inner cylinder of the shock strut/actuator.

S 865-051
(5) Do the steps that follow to retract the tail skid:
  (a) Supply electrical power (AMM 24-22-00/201).
  (b) Pressurize the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).
  (c) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
    1) 11U26, TAIL SKID CONT

  WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

  (d) Move the control lever for the landing gear to the OFF position.
  (e) Make sure the tail skid is retracted.
  (f) Open this circuit breaker on the P11 panel and attach a DO-NOT-CLOSE identifier:
    1) 11U26, TAIL SKID CONT

S 825-052
(6) Adjust screws (9, 15) to align fairing door (13) with fixed fairing (1) (Section A-A).

S 865-053
(7) Do the steps that follow to extend the tail skid:
  (a) Remove the DO-NOT-CLOSE identifier and close this circuit breaker on the P11 panel:
    1) 11U26, TAIL SKID CONT

  WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID. MOVEMENT OF THE TAIL SKID CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

  (b) Move the control lever for the landing gear to the DN position.
  (c) Open this circuit breaker on the P11 panel and attach a DO-NOT-CLOSE tag:
    1) 11U26, TAIL SKID CONT

(d) Install the maintenance lock around the inner cylinder of the extended shock strut/actuator for the tail skid.

S 435-054

(8) Tighten the jamnuts (10, 14) (Detail A and View C-C).

S 825-055

(9) Install the shims (12) between the supports (5) and the fairing door (13) (Detail A). Remove layers from the shims, if it is necessary, to get the correct thickness.

S 435-056

(10) Install the screws (11) into the fairing door (13) (Detail A).

S 095-057

(11) Remove the maintenance lock from the inner cylinder of the shock strut/actuator.

S 865-058

(12) Do the steps that follow to retract the tail skid:

(a) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:

1) 11U26, TAIL SKID CONT

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID. MOVEMENT OF THE TAIL SKID CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(b) Move the control lever for the landing gear to the OFF position.

S 825-059

(13) Make sure the fairing door (13) is aligned with the fixed fairing (1) (View A-A).

S 825-060

(14) Adjust the bulb seals (3, 17) and retainers (2, 16) to get the necessary interference (Detail A and View A-A) between the fairing door (13) and the bulb seals.

S 825-061

(15) Adjust the bulb seal (7) and retainer (6) to get the necessary interference between the tail skid lever (4) and the bulb seal (7).

F. Put the Airplane Back to Its Usual Condition

S 865-062

(1) Do the steps that follow to extend the tail skid:

(a) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:

1) 11U26, TAIL SKID CONT

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID. MOVEMENT OF THE TAIL SKID CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(b) Move the control lever for the landing gear to the DN position.

S 095-063

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 DOOR TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Remove the door locks from the doors for the main landing gear and close the doors (AMM 32-00-15/201).

S 865-064

(3) Remove the pressure from the center hydraulic system (AMM 29-11-00/201) if it is not necessary.

S 865-065

(4) Remove electrical power (AMM 24-22-00/201) if it is not necessary.

TAIL SKID CONTROL MODULE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task is for removal of the control module for the tail skid. The second task installs the control module.

TASK 32-71-01-004-001

2. Remove the Control Module for the Tail Skid (Fig. 401)
   A. References
      (1) 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels
      (2) 24-22-00/201, Electrical Power - Control
      (3) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (4) 32-00-15/201, Landing Gear Door Locks
      (5) 32-00-20/201, Landing Gear Downlocks
      (6) 32-71-02/401, Tail Skid Transfer Cylinder
   B. Access
      (1) Location Zones
          212 Control Cabin (Right)
          311 Area Aft of the Pressure Bulkhead (Left)
          312 Area Aft of the Pressure Bulkhead (Right)

      (2) Access Panel
          312AR Door - Stabilizer/Trim Jackscrew Compartment

   C. Prepare for the Removal

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

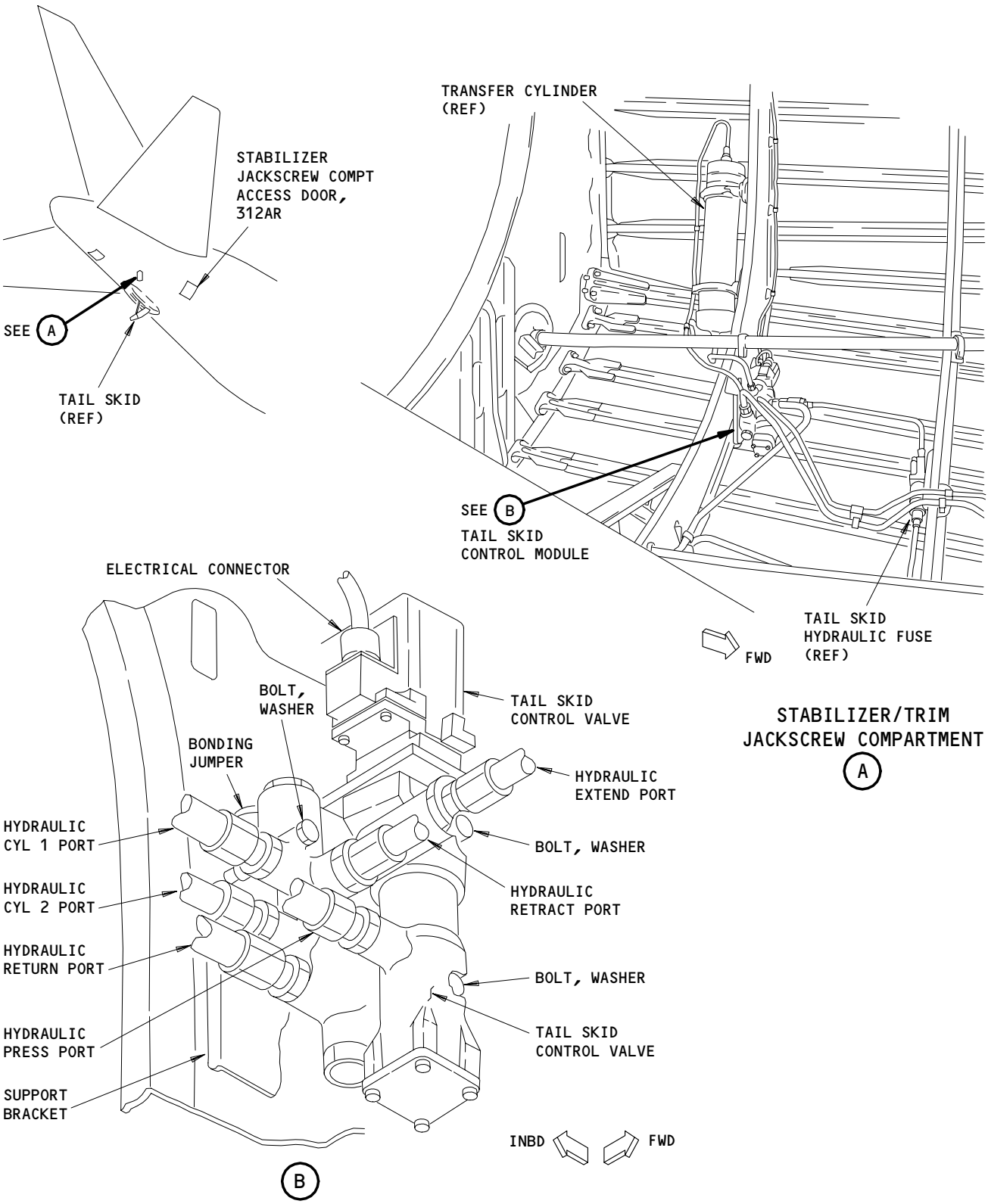
      S 494-003

      WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

      S 864-005
      (3) Supply electrical power (AMM 24-22-00/201).

      S 864-006
      (4) Pressurize the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).



Tail Skid Module Installation
Figure 401

224145

S 864-007

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID AND IN THE STABILIZER/TRIM JACKSCREW COMPARTMENT. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Move the control lever for the landing gear, on the pilots' panel P3-1, to the OFF position.

S 864-008

(6) Make sure the tail skid fully retracts.

NOTE: The transfer cylinder piston must be at the bottom and the fluid bled from the integral end cap side of the cylinder (AMM 32-71-02/401).

S 864-009

(7) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
(a) 11U26, TAIL SKID CONT

S 864-010

(8) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

D. Remove the Control Module for the Tail Skid

S 014-011

WARNING: STAY OFF OF THE ACCESS DOOR 312AR. THE WEIGHT OF A PERSON OR PERSONS CAN CAUSE THE SPRING-LOADED LATCHES TO RELEASE. THIS CAN CAUSE INJURY TO PERSONS WHEN THEY FALL THROUGH THE OPEN DOOR.

(1) Open the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201) and find the control module.

S 034-012

(2) Disconnect the electrical connector from the control module.

S 034-013

(3) Disconnect the hydraulic lines from the control module.

S 934-045
(4) Put a tag on the lines for installation.

S 034-046
(5) Discard the O-rings.

S 494-014
(6) Install caps in the hydraulic ports and plugs on the lines.

S 034-015
(7) Remove the bolt that connects the bonding jumper to the control module.

S 024-016
(8) Remove the bolts (3 locations) that connect the control valve to the support bracket and remove the control valve.

TASK 32-71-01-404-017

3. Install the Control Module For the Tail Skid (Fig. 401)

A. Equipment
(1) Hydraulic Service Cart (Ref 29-11-00)

B. Consumable Materials
(1) D00149 Fluid, Hydraulic - BMS 3-11, Type 4

C. References
(1) 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels
(2) 12-25-01/301, Airplane Servicing (Cleaning and Washing)
(3) 24-22-00/201, Electrical Power - Control
(4) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(5) 32-00-15/201, Landing Gear Door Locks
(6) 32-00-20/201, Landing Gear Downlocks

D. Access
(1) Location Zones
212 Control Cabin (Right)
311 Area Aft of the Pressure Bulkhead (Left)
312 Area Aft of the Pressure Bulkhead (Right)

(2) Access Panel
312AR Door - Stabilizer/Trim Jackscrew Compartment

E. Procedure to Install the Control Module

S 864-018
(1) Make sure that pressure is removed from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 424-019
(2) Put the control module in position against the support bracket.

S 434-020
(3) Install the bolts and washers (3 locations) that hold the control module to the support bracket.

S 434-021
(4) Connect the bonding jumper to the control module. Install the bolt, washer and nut.

S 434-022
(5) Install new O-rings onto the hydraulic ports on the control module. Lubricate them with hydraulic fluid when you install them.

S 434-023
(6) Connect the hydraulic lines to the control module.

S 434-024
(7) Install the electrical connector to the control module.

S 864-025
(8) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11U26, TAIL SKID CONT

F. Do a Check of the Control Module for the Correct Operation

S 494-026
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 714-027

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID AND IN THE STABILIZER/TRIM JACKSCREW COMPARTMENT. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Move the control lever for the landing gear to the DN position.

S 864-028

(3) If a hydraulic service cart is available, pressurize the center hydraulic system to 160-180 psi for approximately 5 minutes (AMM 29-11-00/201). If a service cart is not available, go to step (4) of this check.

NOTE: Do not pressurize the hydraulic reservoir.

(a) Examine the control module for hydraulic leaks.

S 864-030

(4) Pressurize the center hydraulic system to 3000 psi (AMM 29-11-00/201).

NOTE: It is possible the tail skid will not fully extend.

S 794-031

(5) Examine the control module for hydraulic leaks.

S 494-032

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON THE NOSE AND MAIN LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. IF THE CONTROL LEVER IS MOVED WITHOUT THE DOWNLOCKS INSTALLED, THE LANDING GEAR CAN RETRACT AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(6) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 864-033

(7) Move the control lever for the landing gear to the OFF position.

S 714-034

(8) Make sure the tail skid retracts. Make sure the TAIL SKID light on the pilots' panel P3-1 within 40 seconds. The EICAS message, TAIL SKID, must show on the top display.

S 794-035

(9) Examine the control module for hydraulic leaks.

S 864-036

(10) Move the control lever for the landing gear to DN.

S 714-037

(11) Make sure the tail skid extends. Make sure the TAIL SKID light goes off and the EICAS message, TAIL SKID, does not show on the top display within 40 seconds.

S 794-038
(12) Examine the control module for hydraulic leaks.

S 714-039
(13) If the module you installed does not operate correctly, do the steps that follow:
(a) Move the control lever for the landing gear to OFF and back to DN three or four times. Do this to let the tail skid retract and extend three or four times.
(b) Do the check of the control module for correct installation again.

G. Put the Airplane Back to Its Usual Condition

S 164-040
(1) Clean all hydraulic fluid leakage from the installation area (AMM 12-25-01/301).

S 414-041
(2) Close the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201).

S 094-042

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Remove the door locks from the main landing gear doors and close the doors (AMM 32-00-15/201).

S 864-043
(4) Remove the pressure from the center hydraulic system. Disconnect the hydraulic service cart from the ground power connections (AMM 29-11-00/201).

S 864-044
(5) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TAIL SKID TRANSFER CYLINDER - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the transfer cylinder for the tail skid. The second task installs the transfer cylinder for the tail skid.

TASK 32-71-02-004-001

2. Remove the Transfer Cylinder for the Tail Skid System (Fig. 401)
   A. References
      (1) 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels
      (2) 24-22-00/201, Electrical Power Control
      (3) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (4) 32-00-15/201, Landing Gear Door Locks
      (5) 32-00-20/201, Landing Gear Downlock
   B. Access
      (1) Location Zones
          211 Control Cabin (Right)
          311 Area Aft of the Pressure Bulkhead (Left)
          312 Area Aft of the Pressure Bulkhead (Right)

      (2) Access Panels
          312AR Door - Stabilizer/Trim Jackscrew Compartment

   C. Prepare to Remove the Transfer Cylinder

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

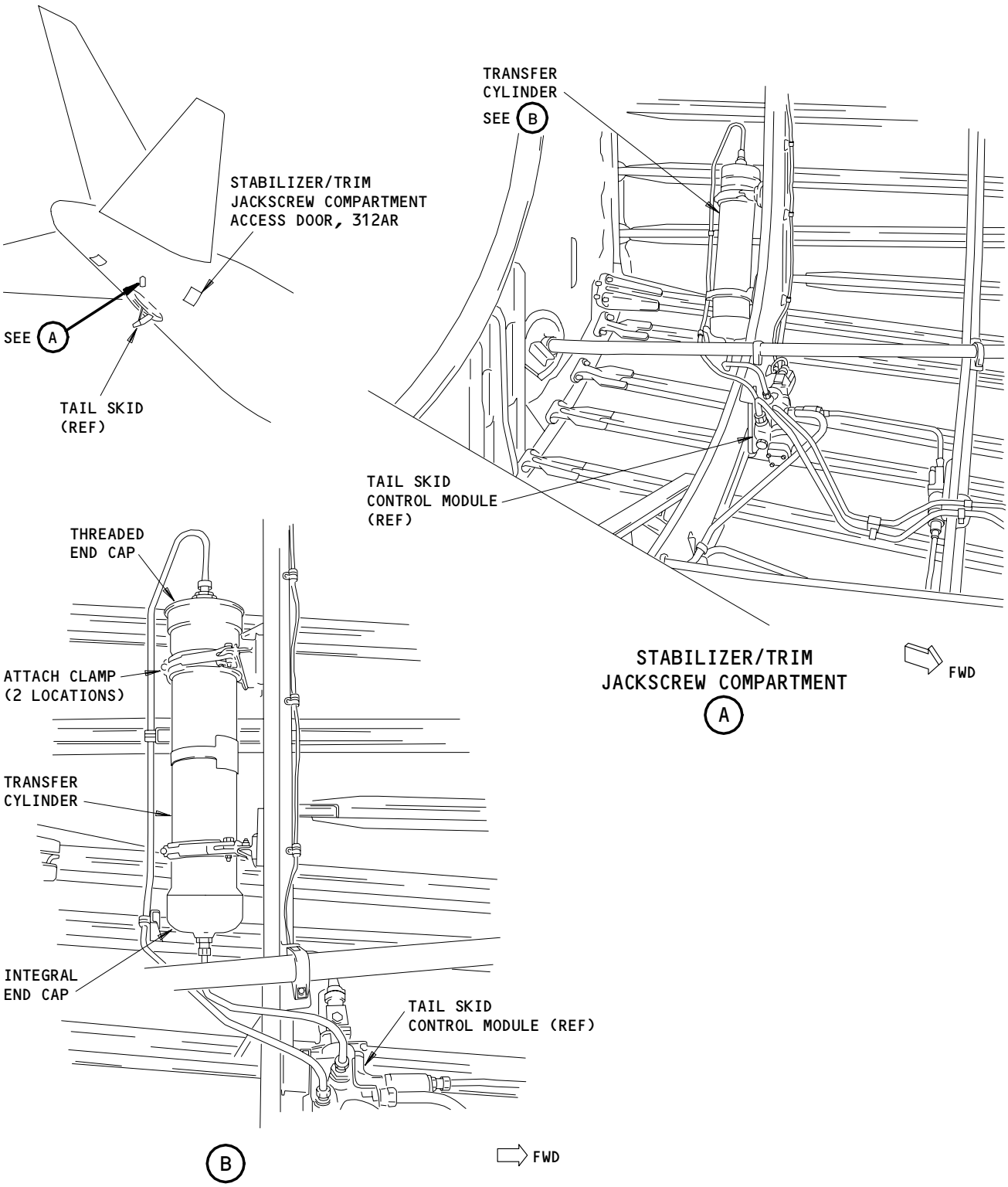
      S 494-003

      WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open the doors for the main landing gear and install the door locks (Ref 32-00-15).

      S 864-004
      (3) Supply electrical power (Ref 24-22-00).

      S 864-005
      (4) Pressurize the center hydraulic system and reservoir (Ref 29-11-00).



Tail Skid Transfer Cylinder Installation
Figure 401

S 864-006

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID AND IN THE STABILIZER/TRIM JACKSCREW COMPARTMENT. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Move the control lever for the landing gear to the OFF position.

S 864-007

(6) Make sure the tail skid fully retracts.

NOTE: The transfer cylinder piston must be at the bottom and the fluid bled from the integral end cap side of the cylinder.

S 864-008

(7) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
(a) 11U26, TAIL SKID CONT

S 864-009

WARNING: DO NOT MANUALLY OPERATE THE CONTROL VALVE FOR THE TAIL SKID. THE TAIL SKID WILL EXTEND AND CAN CAUSE INJURY TO PERSONS.

(8) Remove the pressure from the center hydraulic system and reservoir (Ref 29-11-00).

D. Remove the Transfer Cylinder

S 014-010

WARNING: STAY OFF THE ACCESS DOOR 312AR. THE WEIGHT OF A PERSON OR PERSONS CAN CAUSE THE SPRING-LOADED LATCHES TO RELEASE. THIS CAN CAUSE INJURY TO PERSONS WHEN THEY FALL THROUGH THE OPEN DOOR.

(1) Open the access door for the stabilizer/trim jackscrew compartment, 312AR (Ref 06-42-00).

S 034-011

(2) Disconnect the hydraulic hoses from the transfer cylinder.

S 034-012
(3) Discard the O-rings.

S 494-013
(4) Install caps in the ports and plugs in the hoses.

S 034-014
(5) Disconnect the attach clamps on the two ends of the cylinder.

S 024-015
(6) Remove the cylinder.

TASK 32-71-02-404-016

3. Install the Transfer Cylinder for the Tail Skid (Fig. 401)

A. Consumable Materials
(1) D00149 Fluid, Hydraulic - BMS 3-11, Type IV

B. References
(1) 12-12-01/301, Hydraulic Systems
(2) 12-25-01/301, Airplane Servicing (Cleaning and Washing)
(3) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(4) 32-00-15/201, Landing Gear Door Locks

C. Access
(1) Location Zones
211 Control Cabin (Right)
311 Area Aft of the Pressure Bulkhead (Left)
312 Area Aft of the Pressure Bulkhead (Right)

(2) Access Panel
312AR Door - Stabilizer/Trim Jackscrew Compartment

D. Install the Transfer Cylinder

S 864-017
(1) Fill the threaded end cap port with the hydraulic fluid, to move the piston to the integral end cap side of the cylinder.

NOTE: The transfer cylinder piston must be at the bottom and the fluid bled from the integral end cap side of the cylinder.

S 034-018
(2) Put a cap on the hydraulic fittings.

S 864-019
(3) Make sure the pressure is removed from the center hydraulic system and reservoir (Ref 29-11-00).

S 424-020
(4) Put the transfer cylinder in its position in the attach clamps with the threaded end cap up.

S 034-021
(5) Tighten the attach clamps around the transfer cylinder.

S 434-022
(6) Install the O-rings on the hydraulic ports of the transfer cylinder. Lubricate the O-rings with hydraulic fluid when you install them.

S 434-023
(7) Connect the hydraulic hoses to the two ends of the transfer cylinder.

S 864-024
(8) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11U26, TAIL SKID CONT

E. Do a Check of the Transfer Cylinder for the Correct Operation.

NOTE: Air can get in the transfer cylinder during the installation. It can be necessary to operate the tail skid more than once to bleed the transfer cylinder.

S 494-025
(1) Make sure the downlocks are installed on the nose and main landing gear.

S 864-026
(2) Pressurize the center hydraulic system and reservoir (Ref 29-11-00).

S 714-027

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID AND IN THE STABILIZER/TRIM JACKSCREW COMPARTMENT. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Move the control lever for the landing gear to the DN position.

S 714-028
(4) Make sure these conditions occur:
(a) The tail skid extends.

(b) The TAIL SKID light, on the pilots' P3 panel, stays off.
(c) The EICAS message, TAIL SKID, does not show on the top display within 40 seconds.

S 714-029

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID AND IN THE STABILIZER/TRIM JACKSCREW COMPARTMENT. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Move the control lever for the landing gear to the OFF position.

S 714-030
(6) Make sure these conditions occur:
(a) The tail skid retracts.
(b) The TAIL SKID light, on the pilots' P3 panel, comes on.
(c) The EICAS message, TAIL SKID, shows on the top display.

S 794-031
(7) Examine the transfer cylinder for hydraulic leaks.

F. Put the Airplane Back to Its Usual Condition

S 164-032
(1) Clean all hydraulic fluid leakage from the installation area (Ref 12-25-01).

S 414-038
(2) Close the access door for the stabilizer/trim jackscrew compartment 312AR (Ref 06-42-00).

S 864-033
(3) Move the control lever for the landing gear to the DN position.

S 864-039
(4) Make sure these conditions occur:
(a) The tail skid extends.

(b) The TAIL SKID light, on the pilots' P3 panel, is off.
(c) The EICAS message, TAIL SKID, does not show on the top display within 40 seconds.

S 614-034
(5) Make sure the fluid in the center hydraulic reservoir is at the correct level (Ref 12-12-01).
(a) Fill the center hydraulic reservoir if it is necessary.

S 094-035

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT

(6) Remove the door locks from the main landing gear and close the doors (Ref 32-00-15).

S 864-036
(7) Remove the power from the hydraulic system if it is not necessary (Ref 29-11-00).

S 864-037
(8) Remove electrical power if it is not necessary (Ref 24-22-00).

TAIL SKID BLOCKING VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the blocking valve for the tail skid. The second task installs the blocking valve.

TASK 32-71-03-004-001

2. Remove the Blocking Valve for the Tail Skid (Fig. 401)
   A. References
      (1) AMM 06-42-00/201, Empennage (Major Zone 300) Access Door and Panels
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          311 Area Aft of the Pressure Bulkhead (Left)
          312 Area Aft of the Pressure Bulkhead (Right)

      (2) Access Panel
          312AR Door - Stabilizer/Trim Jackscrew Compartment

   C. Prepare for the Removal

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

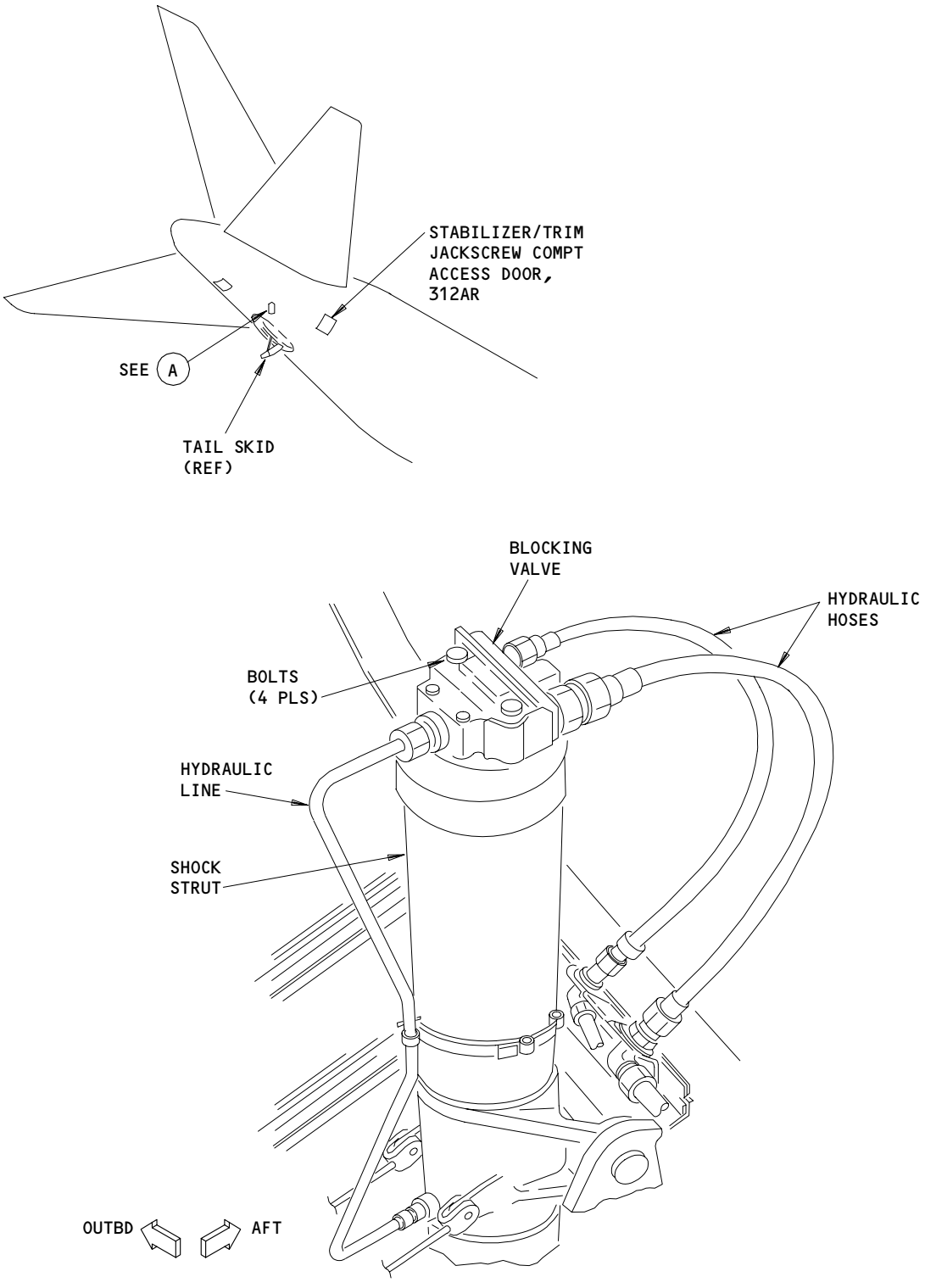
      S 484-040

      WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

      S 864-005
      (3) Make sure the tail skid is extended.

      S 864-006
      (4) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
      (a) 11U26, TAIL SKID CONT



Tail Skid Blocking Valve Installation
Figure 401

224153

S 864-007

WARNING: DO NOT MANUALLY OPERATE THE CONTROL VALVE FOR THE TAIL SKID. THE TAIL SKID WILL EXTEND AND CAN CAUSE SERIOUS INJURY TO PERSONS.

(5) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

D. Remove the Blocking Valve for the Tail Skid

S 014-008

WARNING: STAY OFF THE ACCESS DOOR 312AR. THE WEIGHT OF A PERSON OR PERSONS CAN CAUSE THE SPRING-LOADED LATCHES TO RELEASE. THIS CAN CAUSE INJURY TO PERSONS WHEN THEY FALL THROUGH THE OPEN DOOR.

(1) Open the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201).

S 034-010

(2) Disconnect the two hydraulic hoses from the aft side of the blocking valve.

S 494-011

(3) Install caps in the ports and plugs in the hoses.

S 034-012

(4) Disconnect the hydraulic line from the forward side of the blocking valve.

S 494-013

(5) Install a cap in the port and a plug in the line.

S 024-014

CAUTION: AFTER YOU REMOVE THE BLOCKING VALVE PUT A COVER ON THE TOP OF THE SHOCK STRUT. THIS WILL PREVENT CONTAMINATION OF THE HYDRAULIC FLUID.

(6) Remove the 4 bolts that connect the blocking valve to the shock strut.

S 494-037
(7) Put a cover on the top of the shock strut.

S 034-015
(8) Remove the O-rings and packing from the blocking valve. Discard the O-rings and packing.

TASK 32-71-03-404-016

3. Install the Blocking Valve for the Tail Skid (Fig. 401)

A. References
(1) AMM 06-42-00/201, Empennage (Major Zone 300) Access Door and Panels
(2) AMM 12-12-01/301, Hydraulic Systems
(3) AMM 12-25-01/301, Airplane Servicing (Cleaning and Washing)
(4) AMM 24-22-00/201, Electrical Power Control
(5) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(6) AMM 32-00-15/201, Landing Gear Door Locks
(7) AMM 32-00-20/201, Landing Gear Downlocks

B. Consumable Materials
(1) D00149 Fluid Hydraulic - BMS 3-11 Type IV
(2) D00633 Grease - BMS3-33 (Preferred)
(3) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)

C. Access
(1) Location Zones
212 Control Cabin (Right)
311 Area Aft of the Pressure Bulkhead (Left)
312 Area Aft of the Pressure Bulkhead (Right)

(2) Access Panel
312AR Door - Stabilizer/Trim Jackscrew Compartment

D. Procedure to Install the Blocking Valve

S 864-017
(1) Make sure that pressure is removed from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 434-018
(2) Install new O-rings and packing onto the blocking valve. Lubricate the O-rings and packing with hydraulic fluid when you install them.

S 644-019
(3) Apply grease to the bolt shanks, threads and washer faces.

S 424-020
(4) Put the blocking valve in position on the top of the shock strut and install the bolts and washers (4 locations).

S 434-021
(5) Connect the hydraulic line to the blocking valve.

S 434-022
(6) Connect the two hydraulic hoses to the blocking valve.

S 864-023
(7) Remove the DO-NOT CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11U26, TAIL SKID CONT

E. Do a Check of the Blocking Valve for the Correct Operation

S 864-024
(1) Supply electrical power if it is necessary (AMM 24-22-00/201).

S 864-025
(2) Pressurize the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 494-009

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON THE NOSE AND MAIN LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. IF THE CONTROL LEVER IS MOVED WITH THE DOWNLOCKS INSTALLED, THE LANDING GEAR CAN RETRACT AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 714-026

WARNING: MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID AND IN THE STABILIZER TRIM JACKSCREW COMPARTMENT. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Move the control lever for the landing gear to the OFF position.

S 714-027
(5) Make sure the tail skid retracts. Make sure the TAIL SKID light (on the pilot's panel P3-1) is on and the EICAS message TAILSKID shows on the upper display within 40 seconds.

S 714-028
(6) Move the control lever to DN.

S 714-029
(7) Make sure the tail skid extends. Make sure the TAIL SKID light on the P3-1 panel is off and the EICAS message TAILSKID does not show on the upper display within 40 seconds.

S 794-030
(8) Examine the blocking valve for hydraulic leaks.

F. Put the Airplane Back to Its Usual Condition

S 164-031
(1) Clean all hydraulic fluid leakage from the installation area (AMM 12-25-01/301).

S 414-032
(2) Close the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201).

S 614-033
(3) Make sure the fluid in the center hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 084-039

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Remove the door locks (AMM 32-00-15/201).

S 864-035
(5) Remove the power from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-036
(6) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TAIL SKID HYDRAULIC FUSE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the tail skid hydraulic fuse. The second task installs the tail skid hydraulic fuse.

TASK 32-71-04-004-031

2. Remove the Tail Skid Hydraulic Fuse (Fig. 401)
   A. References
      (1) 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels.
      (2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) 32-00-15/201, Landing Gear Door Locks
      (4) 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          311 Area Aft of Pressure Bulkhead (Left)
          312 Area Aft of Pressure Bulkhead (Right)

      (2) Access Panel
          312AR Stabilizer/Trim Jackscrew Compartment Access Door

   C. Prepare for Removal

      S 214-001
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

      S 494-002

      WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open main landing gear doors and install the door locks (Ref 32-00-15).

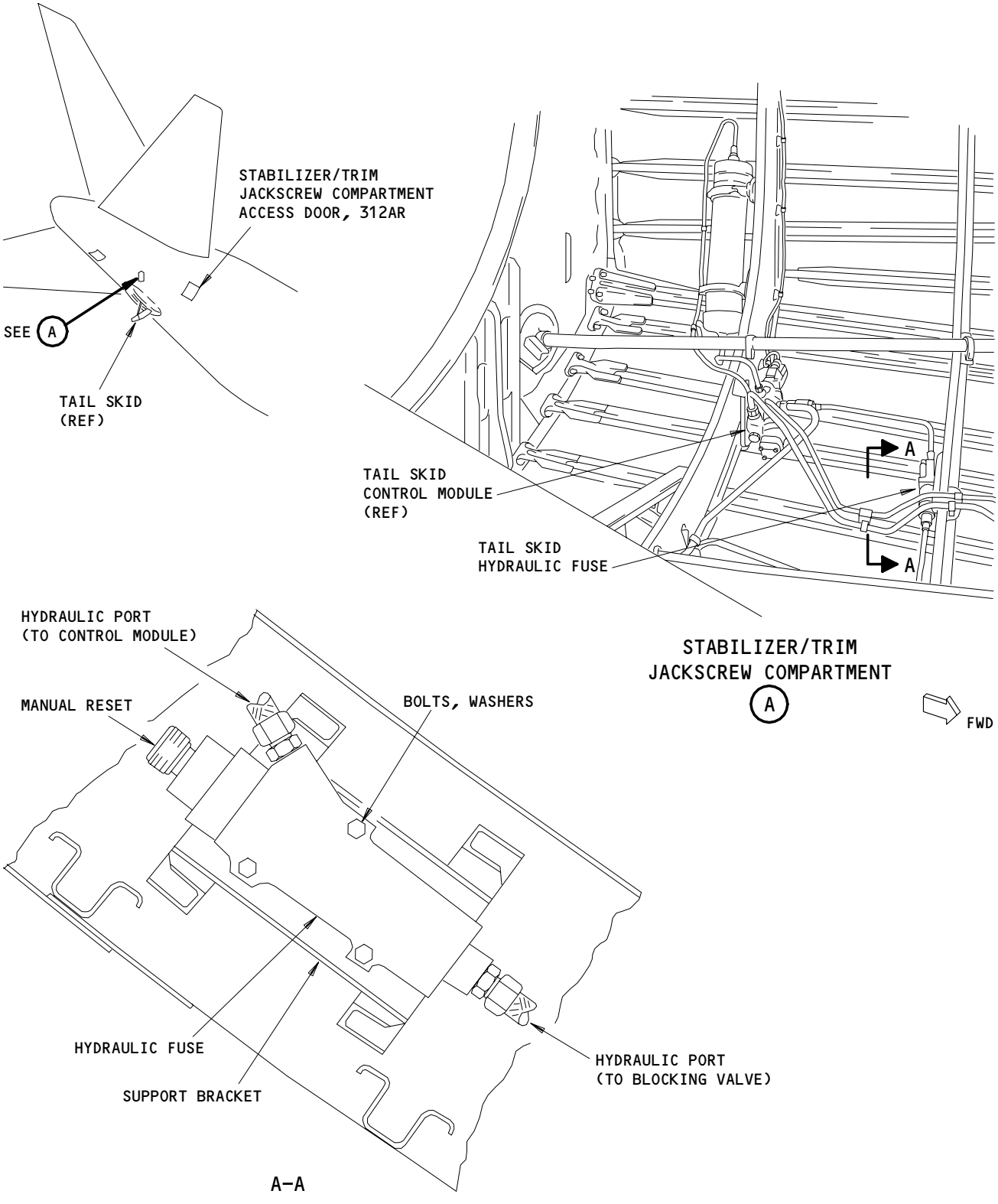
      S 214-003
      (3) Make sure the tail skid is extended.

      S 864-004
      (4) Open this circuit breaker on the overhead circuit breaker panel P11 and attach a DO-NOT-CLOSE tag:
          (a) 11U26, TAIL SKID CONT

      S 864-005

      WARNING: DO NOT MANUALLY OPERATE THE TAIL SKID CONTROL VALVE. EXTENSION OF THE TAIL SKID CAN CAUSE INJURY TO PERSONNEL.

      (5) Remove the pressure from the center hydraulic system and hydraulic reservoir (Ref 29-11-00).



Tail Skid Hydraulic Fuse Installation
Figure 401

224371

D. Procedure

S 014-006

WARNING: STAY OFF OF THE ACCESS DOOR 312AR. THE WEIGHT OF A PERSON COULD CAUSE THE SPRING-LOADED LATCHES TO RELEASE, AND CAUSE INJURY TO PERSONS WHEN THEY FALL THROUGH THE OPEN DOOR.

(1) Open the stabilizer/trim jackscrew compartment access door, 312AR (Ref 06-42-00).

S 034-007

(2) Disconnect the hydraulic lines from the fuse.

S 494-008

(3) Install caps in the fuse ports and plugs in the hydraulic lines.

S 024-009

(4) Remove the bolts (3 locations) that connect the fuse to the support bracket. Remove the fuse.

TASK 32-71-04-404-010

3. Install the Tail Skid Hydraulic Fuse (Fig. 401)

A. References

(1) 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels.
(2) 12-12-01/301, Hydraulic Systems
(3) 12-25-01/301, Airplane Servicing (Cleaning and Washing)
(4) 24-22-00/201, Electrical Power Control
(5) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(6) 32-00-15/201, Landing Gear Door Locks
(7) 32-00-20/201, Landing Gear Downlocks

B. Access

(1) Location Zones

311 Area Aft of Pressure Bulkhead (Left)
312 Area Aft of Pressure Bulkhead (Right)

(2) Access Panel
312AR Stabilizer/Trim Jackscrew Compartment Access Door

C. Procedure to Install the Hydraulic Fuse

S 864-011
(1) Make sure that pressure is removed from the center hydraulic system and hydraulic reservoir (Ref 29-11-00).

S 614-012
(2) Fill the fuse with hydraulic fluid.

S 424-013
(3) Install the bolt and washer (3 locations) to connect the fuse to the support bracket. Tighten the bolts to 50-80 inch-pounds.

S 434-014
(4) Connect the hydraulic lines to the fuse.

S 864-015
(5) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11U26, TAIL SKID CONT

D. Procedure to make sure the Tail Skid extends and retracts correctly (this checks the fuse for proper installation).

S 214-016
(1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

S 214-017
(2) Make sure the door locks are installed on the main landing gear (Ref 32-00-15).

S 864-018
(3) Supply electrical power (Ref 24-22-00) if it is not already supplied.

S 864-019

(4) Pressurize the center hydraulic system and hydraulic reservoir (Ref 29-11-00).

S 864-020

WARNING: MAKE SURE THAT PERSONS AND EQUPMENT ARE CLEARED FROM THE TAIL SKID AND THE AREA INSIDE THE STABILIZER TRIM JACKSCREW COMPARTMENT. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Move the control lever for the landing gear of OFF.

S 214-021

(6) Look to see that the tail skid retracts. Make sure the TAIL SKID light (on the P3 panel) is on and the TAILSKID EICAS message shows on the upper display within 40 seconds.

S 864-022

(7) Move the control lever to DN.

S 214-023

(8) Look to see that the tail skid extends. Make sure the TAIL SKID light (on the P3 panel) is off and the TAILSKID EICAS message does not show on the upper display within 40 seconds.

S 214-024

(9) Examine the hydraulic fuse for hydraulic leaks.

E. Put the Airplane Back to Its Usual Condition

S 164-025

(1) Clean up hydraulic fluid from the installation area if necessary (Ref 12-25-01).

S 414-026

(2) Close the access door for the stabilizer/trim jackscrew compartment, 312AR.

S 864-027

(3) Make sure the fluid in the center hydraulic reservoir is at the correct level. Fill if it is necessary (Ref 12-12-01).

S 094-028

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Remove the door locks from the main landing gear and close the doors (Ref 32-00-15).

S 864-029

(5) Remove the power from the center hydraulic system if it is not necessary (Ref 29-11-00).

S 864-030

(6) Remove electrical power if it is not necessary (Ref 24-22-00).

TAIL SKID HYDRAULIC FUSE - ADJUSTMENT/TEST

1. General
   A. This procedure contains this task:
      (1) Test of the tail skid hydraulic fuse.

   TASK 32-71-04-725-032

2. Test of the Tail Skid Hydraulic Fuse (Fig. 501)
   A. References
      (1) AMM 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels.
      (2) AMM 12-12-01/301, Hydraulic Systems
      (3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (4) AMM 32-00-15/201, Landing Gear Door Locks
      (5) AMM 32-00-20/201, Landing Gear Downlocks
   B. Equipment
      (1) Hydraulic Service Cart, 0 to 3000 psi (0 to 21000 KPa), with hydraulic fluid, fire resistant, BMS 3-11.
      (2) Container - Oil Resistant, 5 gallon (commercially available).
   C. Consumable Materials
      (1) D00153 Hydraulic Fluid, Fire Resistant - BMS 3-11
   D. Access
      (1) Location Zones
          311 Area Aft of Pressure Bulkhead (Left)
          312 Area Aft of Pressure Bulkhead (Right)

      (2) Access Panel
          312AR Stabilizer/Trim Jackscrew Compartment Access Door

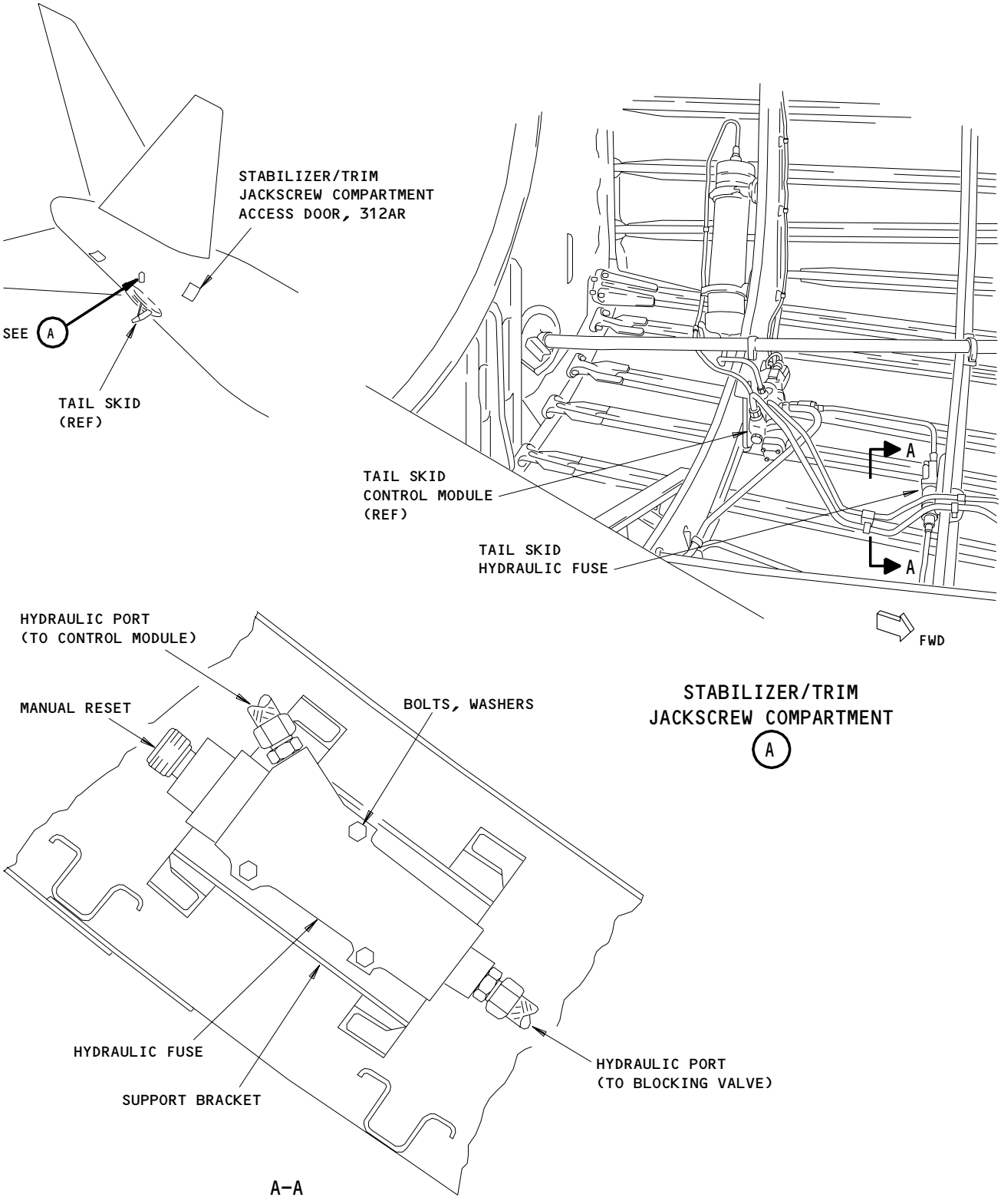
   E. Prepare for the Test

      S 215-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 425-033

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open main landing gear doors and install the door locks (AMM 32-00-15/201).



Tail Skid Hydraulic Fuse
Figure 501

K18508

S 865-006

WARNING: DO NOT MANUALLY OPERATE THE TAIL SKID CONTROL VALVE. EXTENSION OF THE TAIL SKID CAN CAUSE INJURY TO PERSONNEL.

(3) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

F. Procedure

S 015-007

WARNING: STAY OFF OF THE ACCESS DOOR 312AR. THE WEIGHT OF A PERSON COULD CAUSE THE SPRING-LOADED LATCHES TO RELEASE, AND CAUSE INJURY TO PERSONS WHEN THEY FALL THROUGH THE OPEN DOOR.

(1) Open the stabilizer/trim jackscrew compartment access door, 312AR (AMM 06-42-00/201).

S 025-034

(2) Disconnect the hydraulic line from the fuse to the blocking valve. Leave the hydraulic line to the control module attached.

S 425-048

WARNING: MAKE SURE YOU INSTALL A METAL PLUG IN THE DISCONNECTED HYDRUALIC LINE. HYDRAULIC FLUID COULD FLOW OUT OF THE LINE IF THE LANDING GEAR CONTROL LEVER WAS MOVED TO THE DOWN POSITION WITH HYDRAULIC PRESSURE SUPPLIED. THIS COULD CAUSE INJURY TO PERSONS OR DAMAGE TO THE EQUIPMENT.

(3) Install a plug in the disconnected line.

S 725-038

(4) Put a container at the fuse port to catch hydraulic fluid. Fluid will flow from the fuse port when the hydraulic system is pressurized.

NOTE: You can attach a flexible hose to the fuse, then put the hose in the container.

S 865-037

(5) Put the control lever for the landing gear in the UP position.

S 725-039

WARNING: KEEP PERSONS CLEAR OF THE OPEN FUSE PORT WHILE THE HYDRAULIC LINE IS DISCONNECTED FROM THE PORT AND THE CENTER HYDRAULIC SYSTEM IS PRESSURIZED. HIGH PRESSURE HYDRAULIC FLUID CAN CAUSE INJURY TO PERSONS.

(6) Supply 70 psi (482 KPa) to the center hydraulic system with a hydraulic ground cart (AMM 29-11-00/201).

S 725-047

(7) When the fuse closes, increase the applied pressure to 3000 psi (21000 KPa) and hold it for 5 minutes.

S 795-040

(8) Make sure the leakage from the fuse port is not more then one drop per minute for the last 3 minutes.

S 865-041

(9) Remove the power from the center hydraulic system (AMM 29-11-00/201).

S 025-042

(10) Remove the plug from the hydraulic line.

S 425-043

(11) Reconnect the hydraulic line to the fuse.

S 845-044

(12) Reset the line fuse.

G. Procedure to Make Sure the Tail Skid is Reset

S 865-057

WARNING: MAKE SURE THAT THE DOWNLOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER. WITHOUT THE DOWNLOCKS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the downlocks are installed in the nose and main landing gear (AMM 32-00-20/201).

S 865-058

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 865-050

(3) Supply electrical power (AMM 24-22-00/201) if it is not already supplied.

S 865-051

(4) Pressurize the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 215-052

WARNING: MAKE SURE THAT PERSONS AND EQUPMENT ARE CLEARED FROM THE TAIL SKID AND THE AREA INSIDE THE STABILIZER TRIM JACKSCREW COMPARTMENT. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Move the control lever for the landing gear to the OFF position.

S 215-053

(6) Look to see that the tail skid retracts. Make sure the TAIL SKID light (on the P3 panel) is on and the TAILSKID EICAS message shows on the upper display within 40 seconds.

S 865-054

(7) Move the control lever to DN.

S 215-055

(8) Look to see that the tail skid extends. Make sure the TAIL SKID light (on the P3 panel) is off and the TAILSKID EICAS message does not show on the upper display within 40 seconds.

S 215-056

(9) Examine the hydraulic fuse for hydraulic leaks.

H. Put the Airplane Back to Its Usual Condition

S 165-026

(1) Clean up hydraulic fluid from the installation area if necessary.

S 415-027

(2) Close the access door for the stabilizer/trim jackscrew compartment, 312AR.

S 865-028

(3) Make sure the fluid in the center hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 415-046

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOOR OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Remove the door locks (AMM 32-00-15/201).

S 865-030

(5) Remove the power from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-031

(6) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TAIL SKID SHOCK STRUT/ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the tail skid shock strut/actuator. The second task installs the tail skid shock strut/actuator.

TASK 32-71-05-004-001

2. Remove the Tail Skid Shock Strut/Actuator (Fig. 401, 402)
   A. References
      (1) AMM 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels
      (2) AMM 24-22-00/201, Electrical Power Control
      (3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-71-06/201, Tail Skid Lever
   B. Equipment
      (1) Hoist, Tail Skid Shock Strut/Actuator - A32090-14
   C. Access
      (1) Location Zones
          311 Area Aft of Pressure Bulkhead (Left)
          312 Area Aft of Pressure Bulkhead (Right)

      (2) Access Panel
          312AR Door - Stabilizer/Trim Jackscrew Compartment

   D. Prepare For Removal

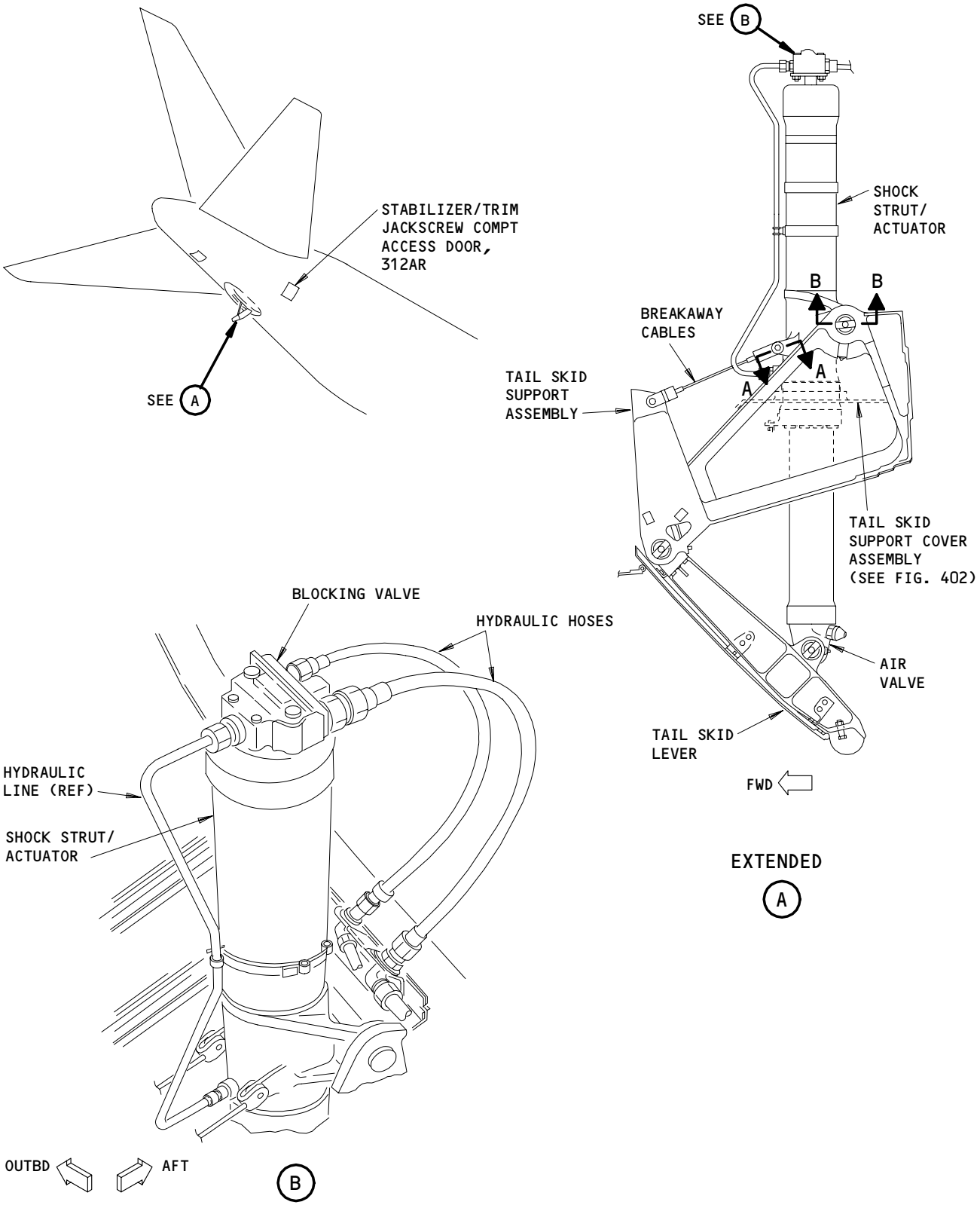
      S 864-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-003
      (2) Make sure the tail skid is extended.

      S 864-004
      (3) Open this circuit breaker on the overhead circuit breaker panel P11 and attach a DO-NOT-CLOSE tag:
          (a) 11U26, TAIL SKID CONT

      S 864-005
      (4) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).
   E. Procedure to Remove the Tail Skid Shock Strut/Actuator

      S 984-006
      (1) Do the steps that follow to remove the pressure from the shock strut/actuator:
          (a) Remove the air valve cap.
          (b) Slowly open the air valve to remove the pressure from the shock strut/actuator.
          (c) Close the air valve and install the air valve cap.



Tail Skid Shock Strut/Actuator Installation
Figure 401 (Sheet 1)

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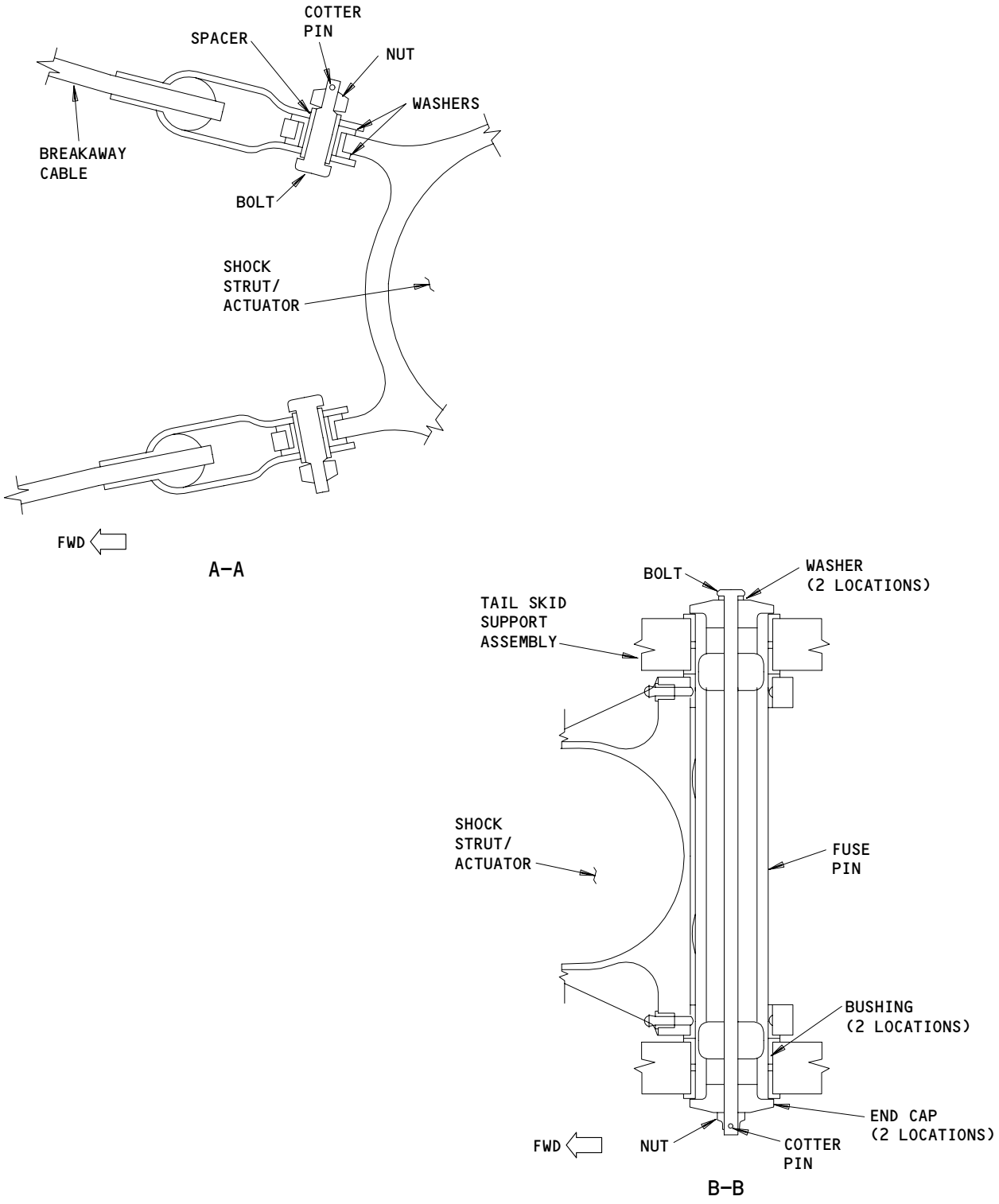
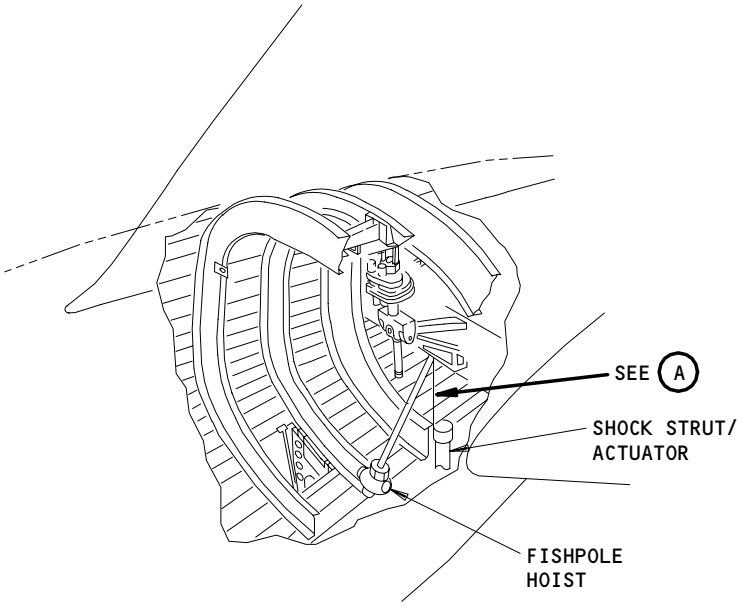
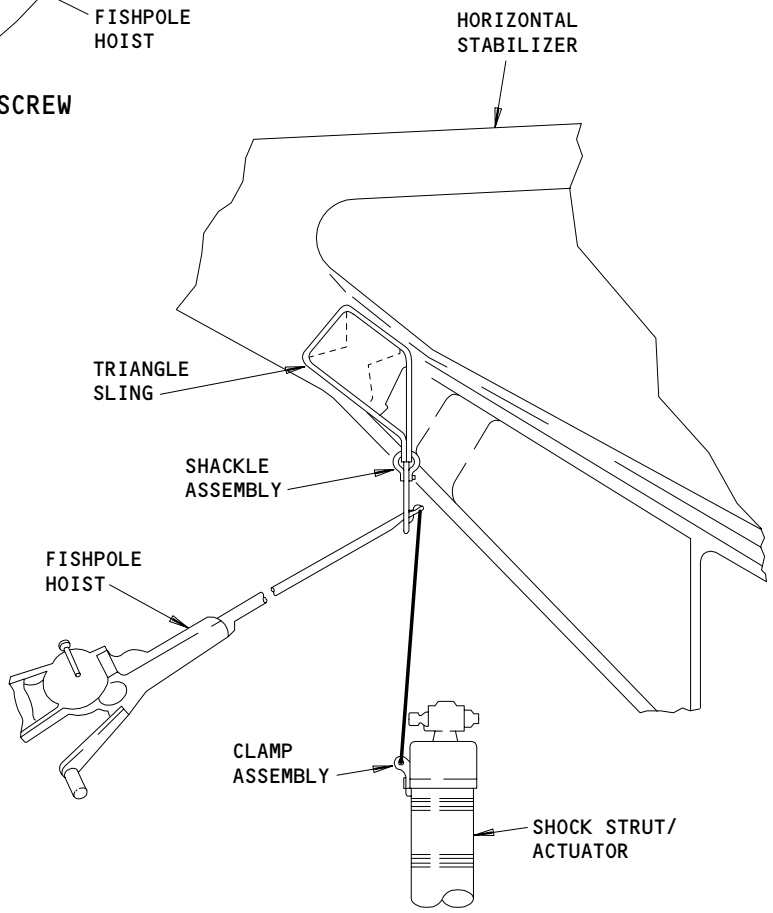


Tail Skid Shock Strut/Actuator Installation
Figure 401 (Sheet 2)

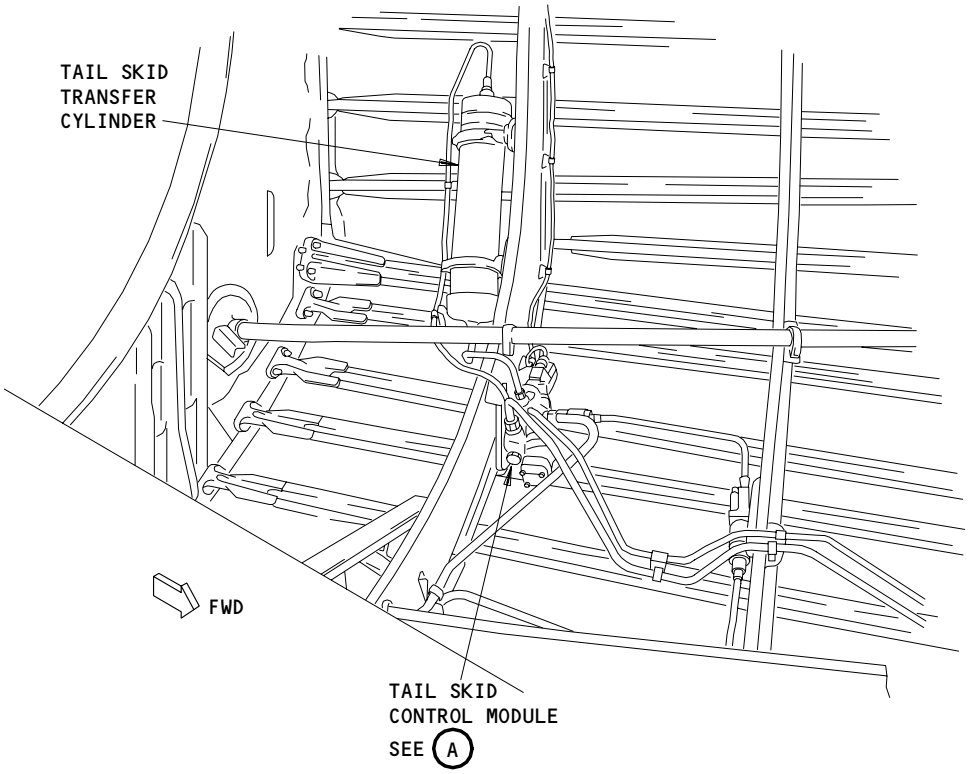


STABILIZER/TRIM JACKSCREW
COMPARTMENT

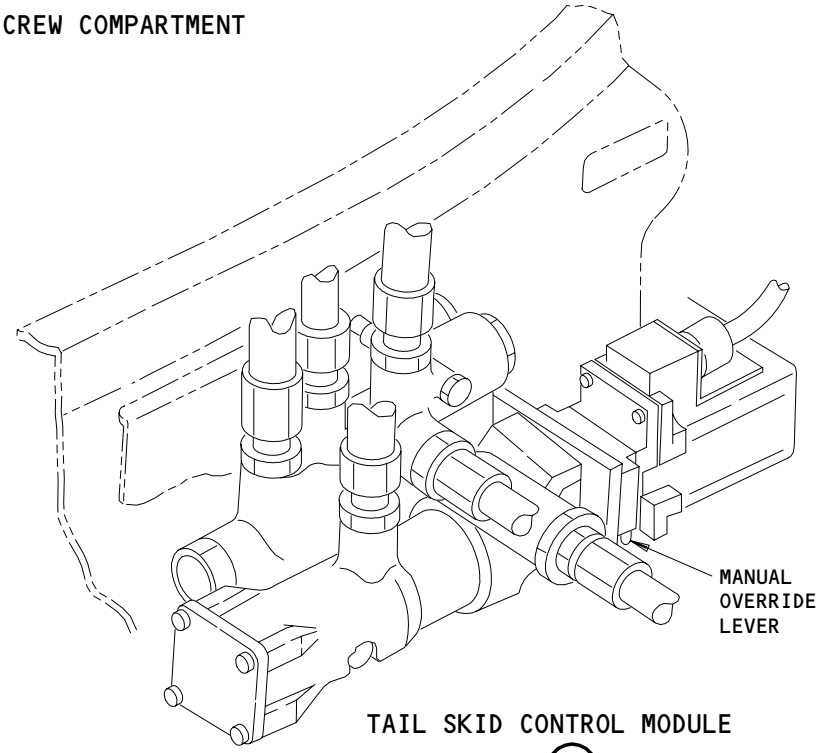


HOIST EQUIPMENT INSTALLATION
(A)

Tail Skid Shock Strut/Actuator Installation
Figure 401 (Sheet 3)



STABILIZER/TRIM JACKSCREW COMPARTMENT



TAIL SKID CONTROL MODULE
(A)

Tail Skid Control Module Manual Override
Figure 402

586174

S 034-007
(2) Remove the tail skid lever (Ref 32-71-06/201).

F. Do the Steps That Follow to Retract the Inner Cylinder of the Shock Strut/Actuator:

S 864-008
(1) Supply electrical power (Ref 24-22-00/201).

S 864-009
(2) Pressurize the center hydraulic system (AMM 29-11-00/201).

S 014-010

WARNING: STAY OFF THE ACCESS DOOR 312AR. THE WEIGHT OF A PERSON CAN CAUSE THE SPRING-LOADED LATCHES TO RELEASE, AND CAUSE INJURY TO PERSONS WHEN THEY FALL THROUGH THE OPEN DOOR.

(3) Open the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201).

S 984-012
(4) Put the manual override lever on the tail skid control module to the retract position (Fig. 402).

S 864-013
(5) Remove the pressure from the center hydraulic system (AMM 29-11-00/201).

G. Continue the Procedure to Remove the Strut/Actuator.

S 494-014

WARNING: MAKE SURE THE HOIST AND THE SHOCK STRUT/ACTUATOR HOIST ATTACHMENT ARE CORRECTLY ATTACHED. THE SHOCK STRUT/ACTUATOR WEIGHS APPROXIMATELY 80 POUNDS. IT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT IF THE HOIST OR HOIST ATTACHMENT ARE NOT CORRECTLY ATTACHED .

(1) Do the steps that follow to install the hoist equipment for the tail skid shock strut/actuator (Fig. 401).
   (a) Install the triangle sling on the horizontal stabilizer structure above the shock strut/actuator.
   (b) Attach the shackle assembly to the triangle sling.
   (c) Install the powered fishpole hoist.
   (d) Install the clamp assembly on the shock strut/actuator.

S 494-015
(2) Attach the hoist to the clamp assembly on the shock strut/actuator.

S 034-016

(3) Disconnect the two hydraulic hoses from the aft side of the blocking valve.

S 494-017

(4) Install caps on the ports and plugs on the hoses (Fig. 401).

S 034-018

(5) Remove the bolts that connect the breakaway cables to the shock strut/actuator. Discard the cotter pins (Fig. 401).

S 034-019

(6) Remove the bolt and the end caps from the upper point where the shock strut/actuator attaches to the tail skid support assembly (Fig. 401). Discard the cotter pin.

S 034-020

(7) Remove the fuse pin from the upper point where the shock strut/actuator attaches to the tail skid support assembly (Fig. 401).

S 024-023

(8) Lower the shock strut/actuator out of the airplane, through the tail skid access in the fuselage, down to the ground.

S 094-024

(9) Remove the hoist attachment from the shock strut/actuator.

TASK 32-71-05-404-025

3. Install the Tail Skid Shock Strut/Actuator (Fig. 401)

A. References

(1) AMM 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels
(2) AMM 12-12-01/301, Hydraulic Systems
(3) AMM 12-15-05/301, Tail Skid Shock Strut/Actuator

(4) AMM 12-25-01/301, Airplane Servicing (Cleaning and Washing)
(5) AMM 24-22-00/201, Electrical Power Control
(6) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(7) AMM 32-71-06/201, Tail Skid Lever
(8) AMM 51-31-01/201, Seals and Sealing

B. Equipment
(1) Hoist, Tail Skid Shock Strut/Actuator - A32090-14

C. Consumable Materials
(1) D00633 Grease, Corrosion Preventive - BMS 3-33 (Preferred)
(2) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)
(3) A00247 Sealant - BMS 5-95, Class B

D. Access
(1) Location Zones
311 Area Aft of Pressure Bulkhead (Left)
312 Area Aft of Pressure Bulkhead (Right)

(2) Access Panel
312AR Door - Stabilizer/Trim Jackscrew Compartment

E. Procedure

S 434-056

WARNING: MAKE SURE THE HOIST AND THE SHOCK STRUT/ACTUATOR HOIST ATTACHMENT ARE CORRECTLY ATTACHED. THE SHOCK STRUT/ACTUATOR WEIGHS APPROXIMATELY 80 POUNDS. IT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT IF THE HOIST OR HOIST ATTACHMENT ARE NOT CORRECTLY ATTACHED .

(1) Install the clamp assembly on the shock strut/actuator.

S 494-027
(2) Attach the hoist to the clamp assembly on the shock strut/actuator.

S 984-028
(3) Lift the shock strut/actuator into the stabilizer/trim jackscrew compartment.

S 644-031
(4) Apply grease (BMS 3-33) to the bushings of the tail skid support assembly.

S 644-032
(5) Apply a thin layer of grease (BMS 3-33) to all the surfaces of the mounting bolt shanks, bushings, washers, end caps, threads, fuse pin and attach pins used to attach the shock strut/actuator and lever.

S 434-033
(6) Install the fuse pin at the upper point where the shock strut/actuator attaches to the tail skid support assembly (Fig. 401).

S 434-034
(7) Install the end caps, washer, bolt, and nut (Fig. 401). Tighten the nut. Install a new cotter pin.

S 094-035
(8) Remove the hoist attachment from the shock strut/actuator.

S 094-036
(9) Remove the clamp assembly from the shock strut/actuator.

S 094-037
(10) Remove the shock strut/actuator hoist equipment from the airplane structure.

S 434-038
(11) Install the bolt, washer, spacer, and nut to connect the breakaway cable to the shock strut/actuator (Fig. 401). Tighten the nuts. Install a new cotter pin.

S 434-039
(12) Do the step before this one again to connect the second breakaway cable.

S 434-040
(13) Connect the two hydraulic hoses to the blocking valve.

S 434-041
(14) Install the tail skid lever (AMM 32-71-06/201).

F. Do the Steps That Follow to Make Sure the Shock Strut/actuator Operates Correctly:

S 864-042
(1) Supply electrical power (AMM 24-22-00/201) if it is necessary.

S 864-043
(2) Pressurize the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 984-044

WARNING: REMOVE ALL PERSONS AND EQUIPMENT FROM THE TAIL SKID LEVER AREA. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Put the manual override lever on the tail skid control module to the extend position (Fig. 402).

S 714-045

(4) Make sure the tail skid extends fully.

S 984-046

(5) Put the manual override lever for the tail skid control module to the retract position.

S 714-047

(6) Make sure the tail skid retracts fully.

NOTE: If it is necessary, do the extension and retraction steps three or four times to bleed the tail skid hydraulic system.

G. Continue the Procedure to Install the Tail Skid Shock Strut Actuator.

S 794-048

(1) Make sure the blocking valve did not leak hydraulic fluid.

S 614-049

(2) Pressurize the shock strut/actuator with dry air or nitrogen (AMM 12-15-05/301).

H. Put the Airplane Back to Its Usual Condition

S 944-050

(1) Clean up hydraulic fluid that leaked from around the installation area (AMM 12-25-01/301).

S 414-051

(2) Close the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201).

S 214-052

(3) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 864-053

(4) Remove DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11U26, TAIL SKID CONT

S 864-054

(5) Remove the power from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-055

(6) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TAIL SKID LEVER - MAINTENANCE PRACTICES

1. General
   A. This procedure contains the tasks that follow:
      (1) Procedure to remove the tail skid lever.
      (2) Procedure to install the tail skid lever
      (3) Procedure to inspect the tail skid tip.

TASK 32-71-06-002-031

2. Remove the Tail Skid Lever (Fig. 201)
   A. References
      (1) AMM 32-00-20/201, Landing Gear Downlock
   B. Equipment
      (1) Maintenance Lock for the Retractable Tail Skid - A32088-7
   C. Access
      (1) Location Zones
          311 Area Aft of Pressure Bulkhead (Left)
          312 Area AFt of Pressure Bulkhead (Right)

   D. Prepare For Removal (Fig. 201)

      S 212-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 212-003
      (2) Make sure the tail skid is extended.

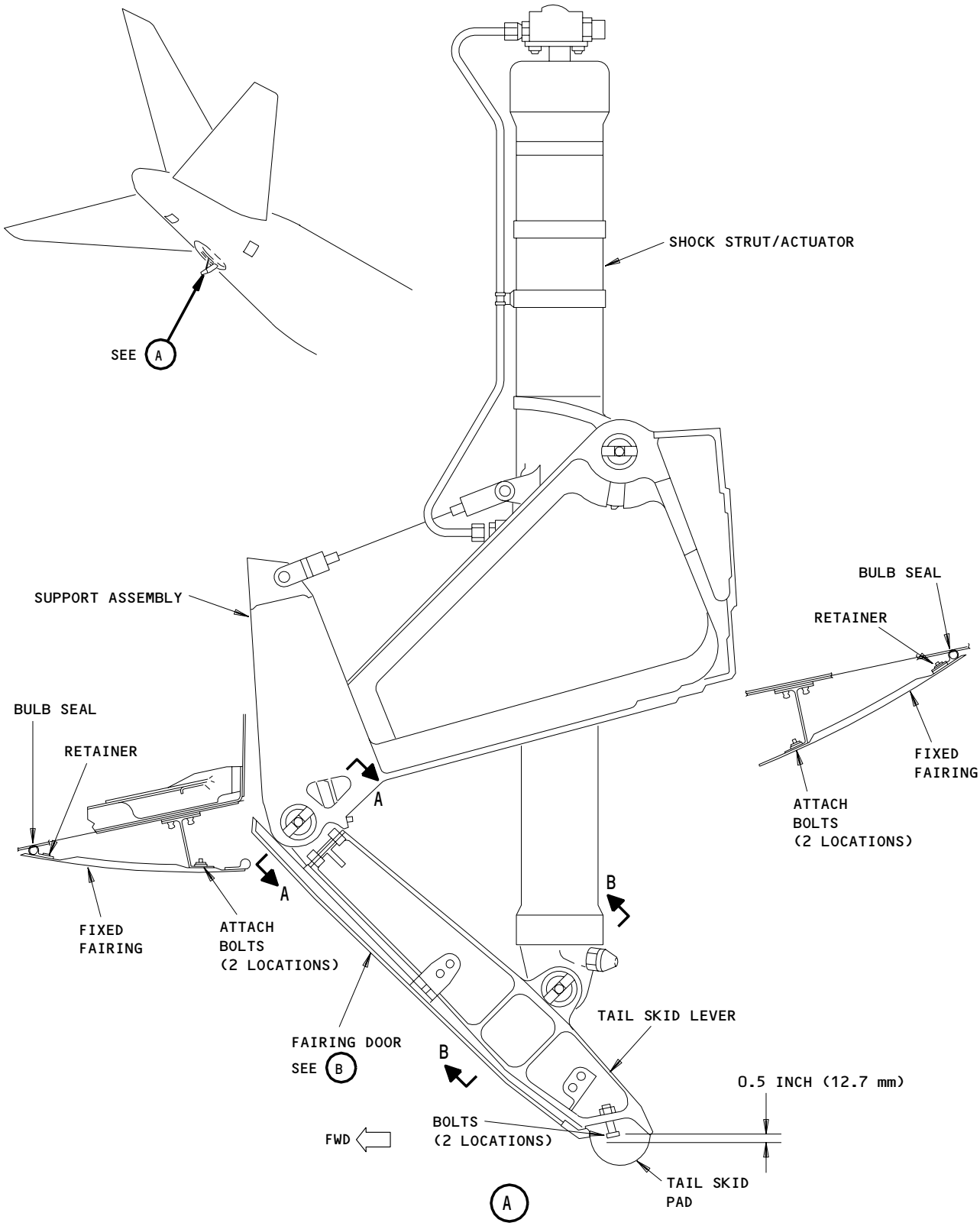
      S 862-004
      (3) Open this circuit breaker on the overhead circuit breaker panel P11 and attach a DO-NOT-CLOSE tag:
          (a) 11U26, TAIL SKID CONT
   E. Procedure

      S 492-005
      (1) Install the retractable tail skid maintenance lock around the cylinder of the extended shock strut/actuator.

      S 032-006
      (2) Remove the bolts that attach the tail skid fixed fairing to the fuselage. Remove the fairing.

      S 032-007
      (3) Remove the bolt and the end caps from the forward attach point of the tail skid lever (View A-A). Discard the cotter pin.

      S 982-008
      (4) Hold up the forward attach point of the lever.



Tail Skid Lever Installation
Figure 201 (Sheet 1)

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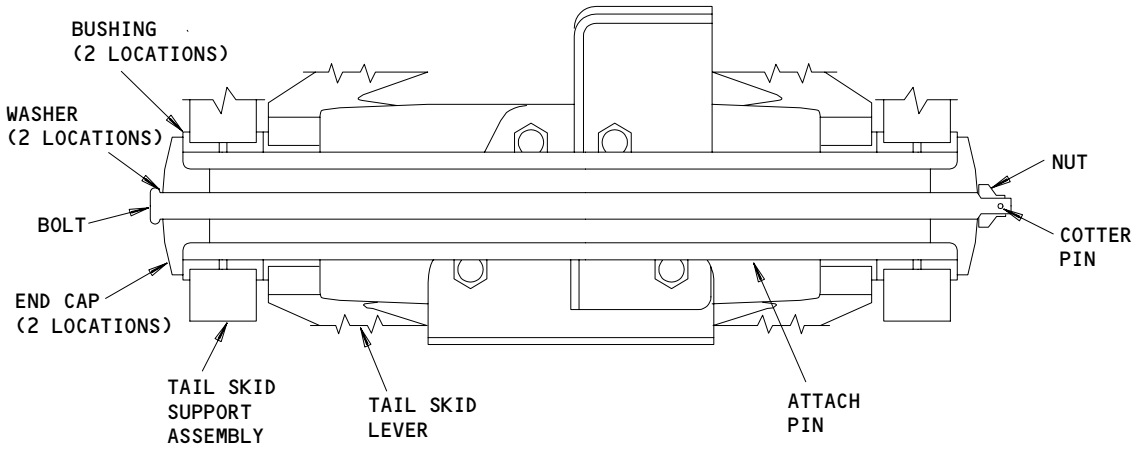
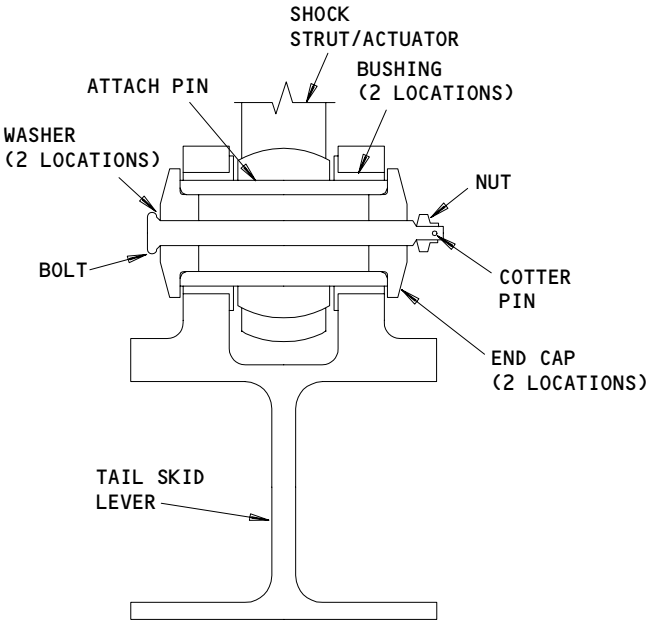
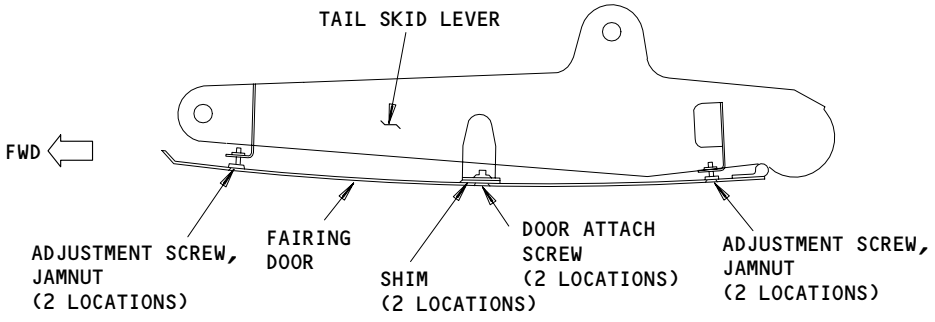


A–A



B–B



Tail Skid Lever Installation
Figure 201 (Sheet 2)

S 032-009
(5) Remove the attach pin that connects the forward attach point of the lever to the support assembly (View A-A).

S 032-010
(6) Remove the bolt and end caps from the aft attach point of the lever (View B-B). Discard the cotter pin.

S 022-011
(7) Remove the attach pin that connects the aft attach point of the lever to the shock strut/actuator (View B-B). Remove the lever.

S 032-012
(8) If the tail skid lever that was removed is not being installed again, and the replacement lever does not have a lever fairing door, do the steps that follow to remove the door from the lever that was removed:
(a) Remove the fairing door attach screws.
(b) Loosen the forward and aft adjustment screw jamnuts for the forward lever fairing door.
(c) Loosen the fairing door adjustment screws to release the fairing door from the tail skid lever and remove the fairing door.

NOTE: Do not remove the adjustment screws from the fairing door.

(d) Keep the fairing door, screws, and washers for installation.

TASK 32-71-06-402-001
3. Install the Tail Skid Lever (Fig. 201)
A. References
(1) AMM 32-61-04/201, Tail Skid Proximity Sensors
(2) AMM 32-71-00/501, Tail Skid Moveable Fairing Door
B. Equipment
(1) Retractable Tail Skid Maintenance Lock - A32088-7

C. Consumable Materials
(1) D00633 Grease, Corrosion Preventive - BMS 3-33 (Preferred)
(2) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)

D. Access
(1) Location Zones
311 Area Aft of Pressure Bulkhead (Left)
312 Area Aft of Pressure Bulkhead (Right)

E. Procedure

S 432-013
(1) Install the fairing door on the tail skid lever if it is not already installed on the lever.
(a) Install the fairing door with the attach and door adjustment screws.

NOTE: Do not tighten the attach screws or the adjustment screw jamnuts at this time. The final adjustments on the fairing door will be made after the tail skid lever and the fixed fairing are installed.

S 642-014
(2) Apply a light layer of grease (BMS 3-33) to the bushings of the support assembly (View A-A).

S 642-030
(3) Apply a light layer of grease (BMS 3-33) to the components of the shock strut/actuator and lever attach points as follows:
(a) Bolt shanks
(b) Bushings
(c) Washers
(d) End caps
(e) Threads
(f) Attach pins

S 982-015
(4) Align the aft attach point of the tail skid lever with the attach point of the shock strut/actuator.

S 432-016
(5) Install the attach pin that connects the aft attach point of the lever to the shock strut/actuator (View B-B).

S 432-017
(6) Install the end caps, bolt, washers and nut (View B-B). Tighten the nut. Install a new cotter pin.

S 982-018
(7) Align the forward attach point of the tail skid lever with the tail skid support.

S 432-019
(8) Install the attach pin that connects the forward attach point of the lever to the support assembly (View A-A).

S 432-020
(9) Install the end caps, bolts, washers and nut. Tighten the nut. Install a new cotter pin.

S 432-021
(10) Do the steps that follow to install the tail skid fixed fairing (Detail A):
  (a) Lift the fairing into position.
  (b) Install the forward and aft bolts, but do not tighten.
  (c) Adjust the bulb seal and retainer so the seal touches all around the fairing upper edge.
  (d) Tighten the forward and aft bolts.

S 822-022
(11) Adjust the moveable fairing door (AMM 32-71-00/501).

S 822-023
(12) Do a check of the gap for the tail skid extend and retract proximity sensors (AMM 32-61-04/201).

F. Put the Airplane Back to Its Usual Condition

S 092-024
(1) Remove the retractable tail skid maintenance lock from the inner cylinder of the shock strut/actuator.

S 862-025
(2) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11U26, TAIL SKID CONT

TASK 32-71-06-202-026

4. Tail Skid Tip Inspection/Check (Fig. 201)

A. Access
(1) Location Zones
311 Area Aft of Pressure Bulkhead (Left)
312 Area AFt of Pressure Bulkhead (Right)

B. Check of the Tail Skid Tip for Wear and Correct Installation

S 222-027
(1) Replace the tip when the surface wears to within 1/2 inch of the head of the attach bolts.

S 212-028
(2) Cracks or a corner on the tip that is not there, outboard of the attach bolts, are permitted.

S 212-029
(3) Cracks that start at the bolt holes require replacement of the tip.

SAS C. Restore Tail Skid Top Coating after Tail Strike.
SAS
SAS S 952-035
SAS (1) After suspected tail strike, inspect skid tip, and if paint is found
SAS damaged, clean area and restore skid tip top coating.

SAS NOTE: For SK: use blue paint P/N 724-304-01.
SAS For MP: use epoxy primer 10P4-2 and red paint P/N
SAS Aerodur-UVR-red390.
SAS

TAIL SKID CONTROL MODULE COMPONENTS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains these four tasks:
      (1) Removal of the motor-operated valve assembly from the tail skid control module
      (2) Installation of the motor-operated valve assembly on the tail skid control module
      (3) Removal of the motor-operated actuator from the tail skid control module
      (4) Installation of the motor-operated actuator from the tail skid control module.

   TASK 32-71-07-004-001

2. Remove the Motor-Operated Valve Assembly (Fig. 401)
   A. References
      (1) 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels
      (2) 24-22-00/201, Electrical Power - Control
      (3) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (4) 32-00-15/201, Landing Gear Door Locks
      (5) 32-00-20/201, Landing Gear Downlocks
      (6) 32-71-02/401, Tail Skid Transfer Cylinder
   B. Access
      (1) Location Zones
          212 Control Cabin (Right)
          311 Area Aft of the Pressure Bulkhead (Left)
          312 Area Aft of the Pressure Bulkhead (Right)

      (2) Access Panel
          312AR Door - Stabilizer/Trim Jackscrew Compartment

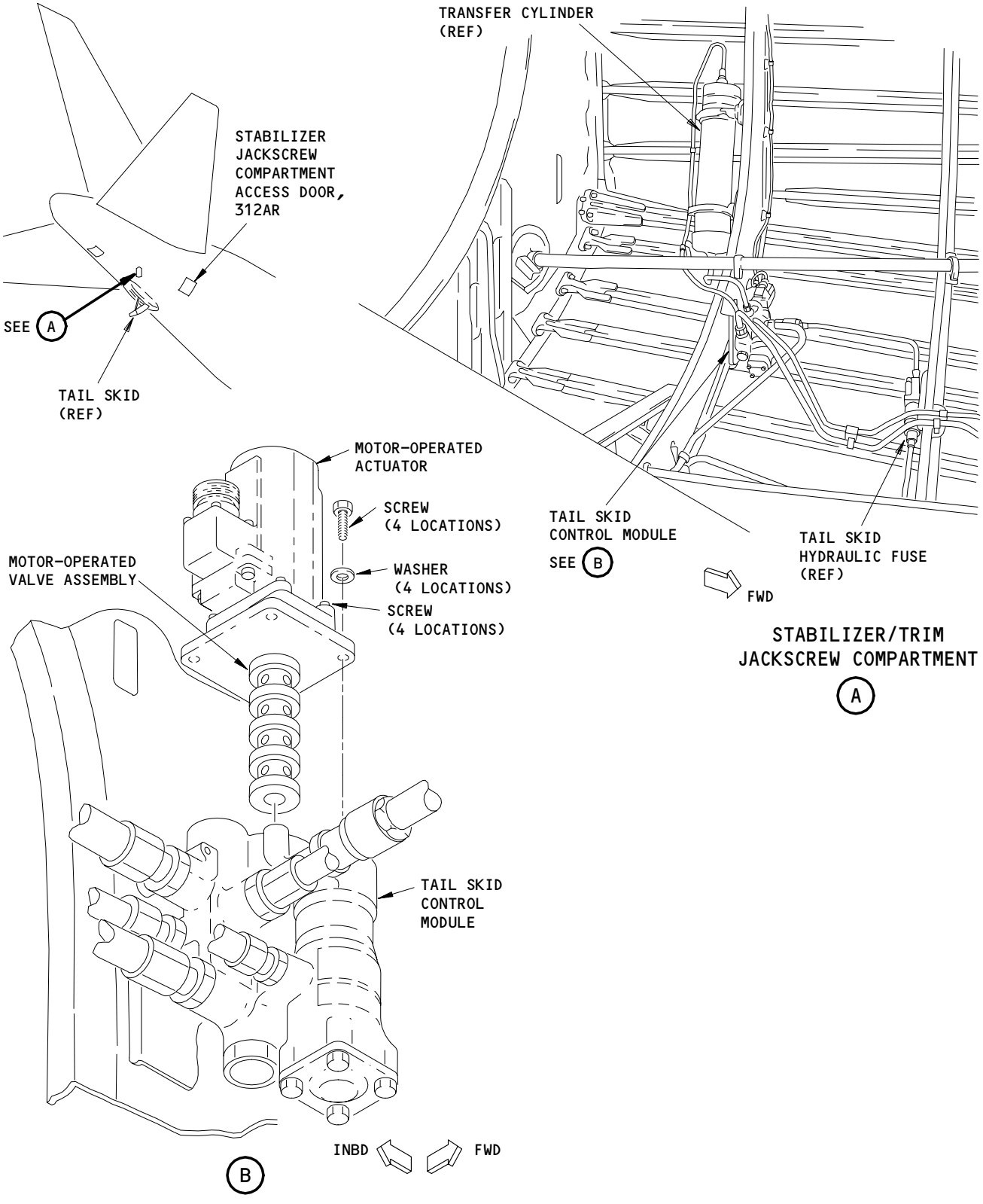
   C. Prepare for the Removal

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-003

      WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (2) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).



Installation of the Tail Skid Module Components
Figure 401

E73199

S 864-004
(3) Supply electrical power (AMM 24-22-00/201).

S 864-005
(4) Pressurize the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 864-006

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID AND IN THE STABILIZER/TRIM JACKSCREW COMPARTMENT. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Move the control lever for the landing gear, on the pilots' panel P3-1, to the OFF position.

S 864-007
(6) Make sure the tail skid fully retracts.

NOTE: The transfer cylinder piston must be at the bottom and the fluid bled from the integral end cap side of the cylinder (Ref 32-71-02).

S 864-008
(7) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
(a) 11U26, TAIL SKID CONT

S 864-009
(8) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

D. Remove the Motor-Operated Valve Assembly

S 014-010

WARNING: STAY OFF OF THE ACCESS DOOR 312AR. THE WEIGHT OF A PERSON OR PERSONS CAN CAUSE THE SPRING-LOADED LATCHES TO RELEASE. THIS CAN CAUSE INJURY TO PERSONS WHEN THEY FALL THROUGH THE OPEN DOOR.

(1) Open the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201) and find the control module.

S 034-011
(2) Disconnect the electrical connector from the control module.

S 024-013
(3) Do the steps that follow to remove the motor-operated valve assembly from the control module:
(a) Remove the screws and washers
(b) Remove the motor-operated valve assembly from the control module
(c) Install a protective plug in the hole in the control module.

TASK 32-71-07-404-018

3. Install the Motor-Operated Valve Assembly (Fig. 401)

A. Equipment
(1) Hydraulic Service Cart (Ref 29-11-00)

B. Consumable Materials
(1) D00149 Fluid, Hydraulic - BMS 3-11, Type 4

C. References
(1) AMM 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels
(2) AMM 12-25-01/301, Airplane Servicing (Cleaning and Washing)
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(5) AMM 32-00-15/201, Landing Gear Door Locks
(6) AMM 32-00-20/201, Landing Gear Downlocks

D. Access
(1) Location Zones
212 Control Cabin (Right)
311 Area Aft of the Pressure Bulkhead (Left)
312 Area Aft of the Pressure Bulkhead (Right)

(2) Access Panel
312AR Door - Stabilizer/Trim Jackscrew Compartment

E. Procedure to Install the Motor-Operated Control Valve Assembly

S 864-049
(1) Make sure that pressure is removed from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 424-020
(2) Do the steps that follow to install the motor-operated valve assembly on the control module:
(a) Lubricate the O-rings and backup rings with hydraulic fluid
(b) Remove the plug from the control module

(c) Install the motor-operated valve assembly in the control.

NOTE: Install the valve assembly in the control module with the electrical connector inboard.

(d) Install the screws and washers to attach the valve assembly to the control module
(e) Tighten the screws to 115-125 pound-inches
(f) Install lockwire on the screws.

S 434-016
(3) Install the electrical connector on the motor-operated valve assembly.

S 864-017
(4) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11U26, TAIL SKID CONT

F. Do a Check of the Motor-Operated Valve Assembly for the Correct Operation

S 494-027
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 714-028

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID AND IN THE STABILIZER/TRIM JACKSCREW COMPARTMENT. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Move the control lever for the landing gear, on the pilots' panel P3-1, to the DN position.

S 864-029
(3) Pressurize the center hydraulic system (AMM 29-11-00/201).

NOTE: Do not pressurize the hydraulic reservoir.

S 494-033

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON THE NOSE AND MAIN LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. IF THE CONTROL LEVER IS MOVED WITHOUT THE DOWNLOCKS INSTALLED, THE LANDING GEAR CAN RETRACT AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 864-034
(5) Move the control lever for the landing gear to the OFF position.

S 714-035
(6) Make sure the tail skid retracts. Make sure the TAIL SKID light on the pilots' panel P3-1 comes on within 40 seconds. The EICAS message, TAIL SKID, must show on the top display.

S 794-050
(7) Examine the control module at the valve assembly to make sure there are no hydraulic leaks.

S 864-037
(8) Move the control lever for the landing gear to DN.

S 714-051
(9) Make sure the tail skid extends. Make sure the TAIL SKID light goes off and the EICAS message, TAIL SKID, does not show on the top display within 40 seconds.

S 794-052
(10) Examine the control module at the valve assembly to make sure there are no hydraulic leaks.

G. Put the Airplane Back to Its Usual Condition

S 164-041
(1) Clean all hydraulic fluid leakage from the installation area (AMM 12-25-01/301).

S 414-042
(2) Close the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201).

S 094-043

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Remove the door locks from the main landing gear doors and close the doors (AMM 32-00-15/201).

S 864-053

(4) Remove the pressure from the center hydraulic system. Disconnect the hydraulic service cart from the ground power connections (AMM 29-11-00/201).

S 864-045

(5) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-71-07-004-014

4. Remove the Motor-Operated Actuator (Fig. 401)

A. References

(1) AMM 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(4) AMM 32-00-15/202, Landing Gear Door Locks
(5) AMM 32-00-20/201, Landing Gear Downlocks

B. Access

(1) Location Zones

212 Control Cabin (Right)
311 Area Aft of the Pressure Bulkhead (Left)
312 Area Aft of the Pressure Bulkhead (Right)

(2) Access Panel

312AR Door - Stabilizer/Trim Jackscrew Compartment

C. Prepare for the Removal

S 494-025

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 494-024

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

S 864-022

(3) Supply electrical power (AMM 24-22-00/201).

S 864-023

(4) Pressurize the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 864-048

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID AND IN THE STABILIZER/TRIM JACKSCREW COMPARTMENT. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Move the control lever for the landing gear, on the pilots' panel P3-1, to the OFF position.

S 714-021

(6) Make sure the tail skid fully retracts.

NOTE: The transfer cylinder piston must be at the bottom and the fluid bled from the integral end cap side of the cylinder (AMM 32-71-02).

S 864-054

(7) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
(a) 11U26, TAIL SKID CONT

S 864-018

(8) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

D. Remove the Motor-Operated Actuator

S 014-028

WARNING: STAY OFF OF THE ACCESS DOOR 312AR. THE WEIGHT OF A PERSON OR PERSONS CAN CAUSE THE SPRING-LOADED LATCHES TO RELEASE. THIS CAN CAUSE INJURY TO PERSONS WHEN THEY FALL THROUGH THE OPEN DOOR.

(1) Open the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201) and find the control module.

S 034-026

(2) Disconnect the electrical connector from the control module.

S 024-027

(3) Do the steps that follow to remove the motor-operated actuator from the control module:
(a) Move the manual override lever to position 1
(b) Remove the screws from the motor-operated actuator
(c) Remove the motor-operated actuator from the control module
(d) If an identification plate is installed on the actuator, remove the plate. Keep the plate for installation on the replacement actuator.

TASK 32-71-07-404-029

5. Install the Motor-Operated Actuator (Fig. 401)

A. Equipment

(1) Hydraulic Service Cart (AMM 29-11-00)

B. Consumable Materials

(1) D00149 Fluid, Hydraulic - BMS 3-11, Type 4

C. References

(1) AMM 06-42-00/201, Empennage (Major Zone 300) Access Doors and Panels
(2) AMM 12-25-01/301, Airplane Servicing (Cleaning and Washing)
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(5) AMM 32-00-15/201, Landing Gear Door Locks
(6) AMM 32-00-20/201, Landing Gear Downlocks

D. Access

(1) Location Zones

212 Control Cabin (Right)
311 Area Aft of the Pressure Bulkhead (Left)
312 Area Aft of the Pressure Bulkhead (Right)

(2) Access Panel

312AR Door - Stabilizer/Trim Jackscrew Compartment

E. Install the Motor-Operated Actuator

S 864-030

(1) Make sure the pressure is removed from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 404-015

(2) Do the steps that follow to install the motor-operated actuator on the control module:
(a) If the identification plate was removed from the used actuator, install it on the new actuator
(b) Make sure the manual override lever is in position 1
(c) Put the motor-operated actuator on the control module
(d) Install the screws and washers to attach the actuator to the control module
(e) Tighten the screws to 13-15 pound-inches
(f) Install lockwire on the screws.

S 434-047

(3) Install the electrical connector on the motor-operated valve assembly.

S 864-046

(4) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11U26, TAIL SKID CONT

F. Do a Check of the Motor-Operated Actuator for the Correct Operation

S 494-045

(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 864-058

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE TAIL SKID AND IN THE STABILIZER/TRIM JACKSCREW COMPARTMENT. TAIL SKID MOVEMENT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Move the control lever for the landing gear, on the pilots' panel P3-1, to the DN position.

S 864-043

(3) Pressurize the center hydraulic system (AMM 29-11-00/201).

NOTE: Do not pressurize the hydraulic reservoir.

S 494-042

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON THE NOSE AND MAIN LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. IF THE CONTROL LEVER IS MOVED WITHOUT THE DOWNLOCKS INSTALLED, THE LANDING GEAR CAN RETRACT AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 714-041

(5) Move the control lever for the landing gear to the OFF position.

S 714-040

(6) Make sure the tail skid retracts. Make sure the TAIL SKID light on the pilots' panel P3-1 comes on within 40 seconds. The EICAS message, TAIL SKID, must show on the top display.

S 794-057

(7) Examine the control module at the actuator assembly to make sure there are no hydraulic leaks.

S 714-056

(8) Move the control lever for the landing gear to DN.

S 714-037

(9) Make sure the tail skid extends. Make sure the TAIL SKID light goes off and the EICAS message, TAIL SKID, does not show on the top display within 40 seconds.

S 794-055

(10) Examine the control module at the actuator assembly to make sure there are no hydraulic leaks.

G. Put the Airplane Back to Its Usual Condition

S 164-035

(1) Clean all hydraulic fluid leakage from the installation area (AMM 12-25-01/301).

S 414-034

(2) Close the access door for the stabilizer/trim jackscrew compartment, 312AR (AMM 06-42-00/201).

S 094-033

WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Remove the door locks from the main landing gear doors and close the doors (AMM 32-00-15/201).

S 864-032

(4) Remove the pressure from the center hydraulic system. Disconnect the hydraulic service cart from the ground power connections (AMM 29-11-00/201).

S 864-031

(5) Remove electrical power if it is not necessary (AMM 24-22-00/201).