A. File the attached Temporary Revision/Alerts in the Manual Supplement in ATA Chapter/Section/Subject/Page sequence

B. File this Control Page in front of the Chapter TRs/Alerts.

C. The following list shows active TRs/Alerts together with TRs/Alerts added by this control page.

Chapter Section Subject	Page		TR/Alert No.
32-21-01	412		32-551
32-35-00	503	* Boe	32-1002
32-41-10	401-410	Boe	32-326
32-41-10	601-605	Boe	32-327
32-42-11	401	Boe	32-1001

D. Remove and Destroy the following TRs/Alerts:

* Indicates TRs/Alerts issued with this control page

757 MAINTENANCE MANUAL

TEMPORARY REVISION No. 32-551

THIS TEMPORARY REVISION IS ISSUED BY BRITISH AIRWAYS ENGINEERING (TECHNICAL INFORMATION SERVICES, G2, TBA, S401, P. O. BOX 10, HEATHROW AIRPORT, HOUNSLOW, MIDDLESEX TW6 2JA).
CAA DESIGN APPROVAL No. DAI/8566/78.

Manual Reference 32-21-01 Page 412

REASON FOR REVISION

To add a caution clarifying the correct assembly of the gear operated sequencing valve control rod.

ACTION

TASK 32-21-01-404-025
3. Install the Nose Landing Gear

F. Prepare for the Installation of the Nose Landing Gear

(10) Install the control rod and the support bracket for the gear operated sequence valve.

Read the following additional caution

CAUTION: THE CONTROL ROD MUST BE CONNECTED TO THE OUTBOARD SIDE OF THE CRANK ON THE TOP OF THE NLG. INCORRECT INSTALLATION CAN CAUSE FAILURE OF THE CONTROL ROD OR SUPPORT BRACKET RESULTING IN THE NLG BECOMING UNLOCKED ON THE GROUND.

LANDING GEAR ALTERNATE EXTENSION - ADJUSTMENT/TEST

TEMPORARY REVISION 32-1002

FILING INSTRUCTIONS

This temporary revision applies only to the AMM document D633N132. For the printed manual, file this temporary revision adjacent to the page(s) affected.

For the microfilm manual, file this temporary revision in sequence by ATA number. Mark the microfilm cartridge to indicate that it has been changed by temporary revision(s).

This temporary revision will be incorporated in the revision dated Jan 28/02.

Revision reason: Changed the clearances and the procedure for adjustment of the door locked switch to include changes to the rigging document.

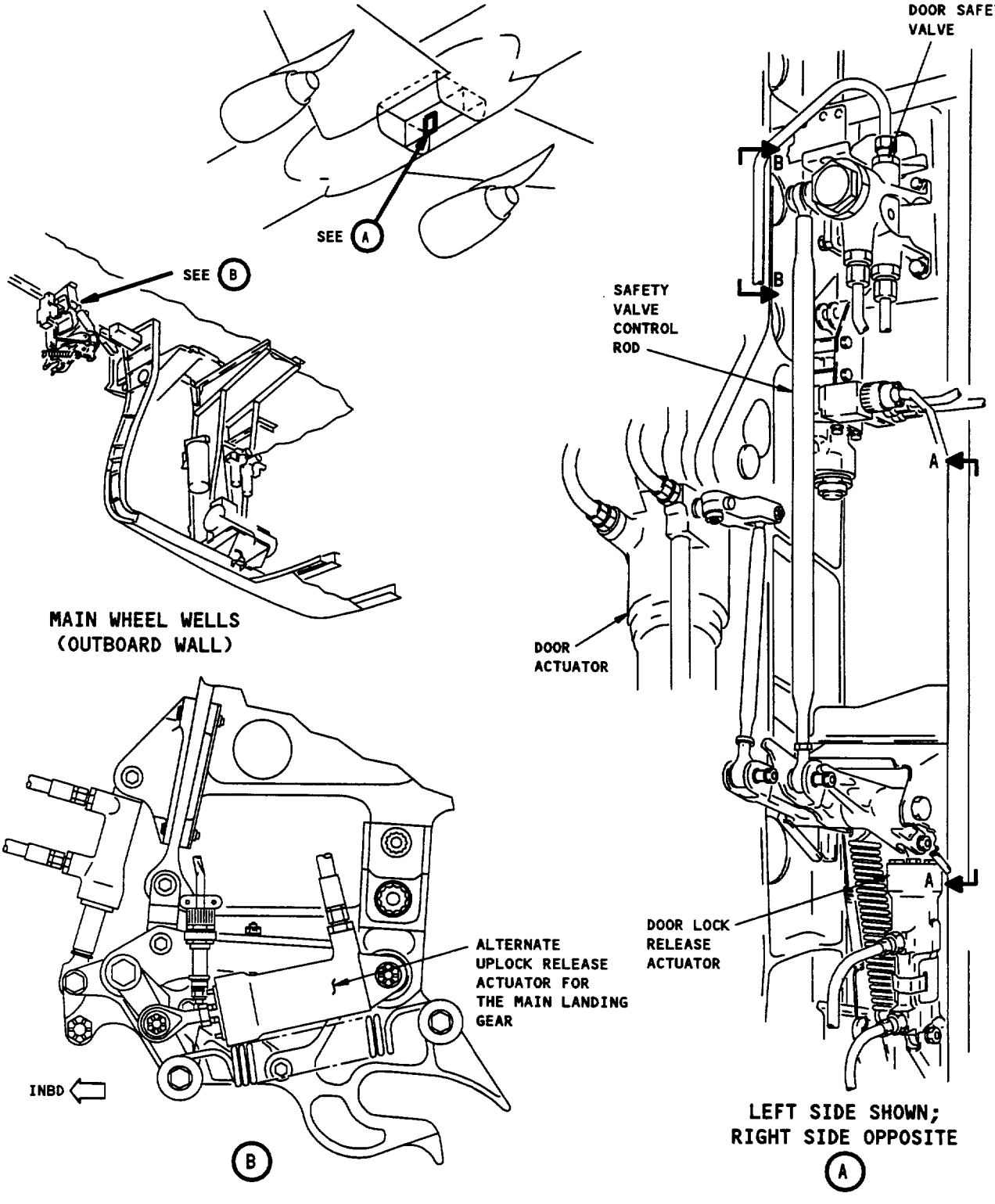
This temporary revision furnishes an advance copy of the enclosed page(s) which supersede any previously issued page(s). The information thereon is to be used until this revision is either incorporated or rescinded.

At the end of this TR there is a TR Status Report for document D633N132.

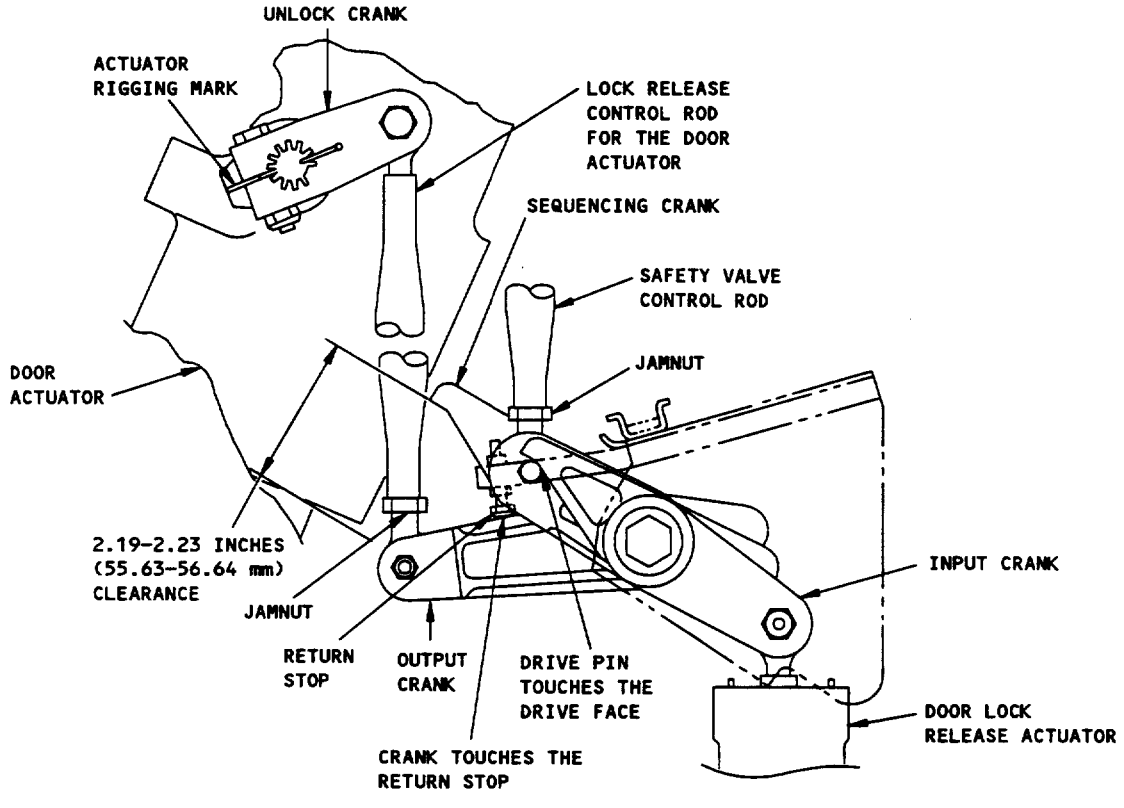
REVISED LIST OF EFFECTIVE PAGES FOR THIS DOCUMENT

PAGE	DATE	CODE	PAGE	DATE	CODE	PAGE	DATE	CODE
501	MAY 28/99	01	520	MAY 28/99	03			
502	MAY 28/99	01	* 521	OCT 05/01	04.1			
* 503	JUN 20/90	01	* 522	OCT 05/01	04.1			
* 504	OCT 05/01	01.1	* 523	OCT 05/01	04.101			
505	SEP 20/98	01	* 524	OCT 05/01	04.1			
506	MAY 28/99	01	* 525	OCT 05/01	08.101			
* 507	DEC 20/90	01	* 526	MAY 28/99	08			
* 508	OCT 05/01	01.1	527	MAY 28/99	08			
509	SEP 20/98	01	528	MAY 28/99	08			
510	SEP 20/98	01	529	JAN 28/01	13			
511	JUN 20/91	01	530	JAN 28/01	15			
512	MAY 28/99	01	531	SEP 28/00	12			
513	JUN 20/91	01	532	JAN 28/01	06			
514	SEP 20/98	01	533	JAN 28/01	10			
515	SEP 20/95	06	534	JAN 28/01	07			
516	MAY 28/99	05	535	SEP 28/00	04			
517	MAY 28/99	05	536	JAN 28/01	14			
518	SEP 28/01	04						
519	MAY 28/99	04						

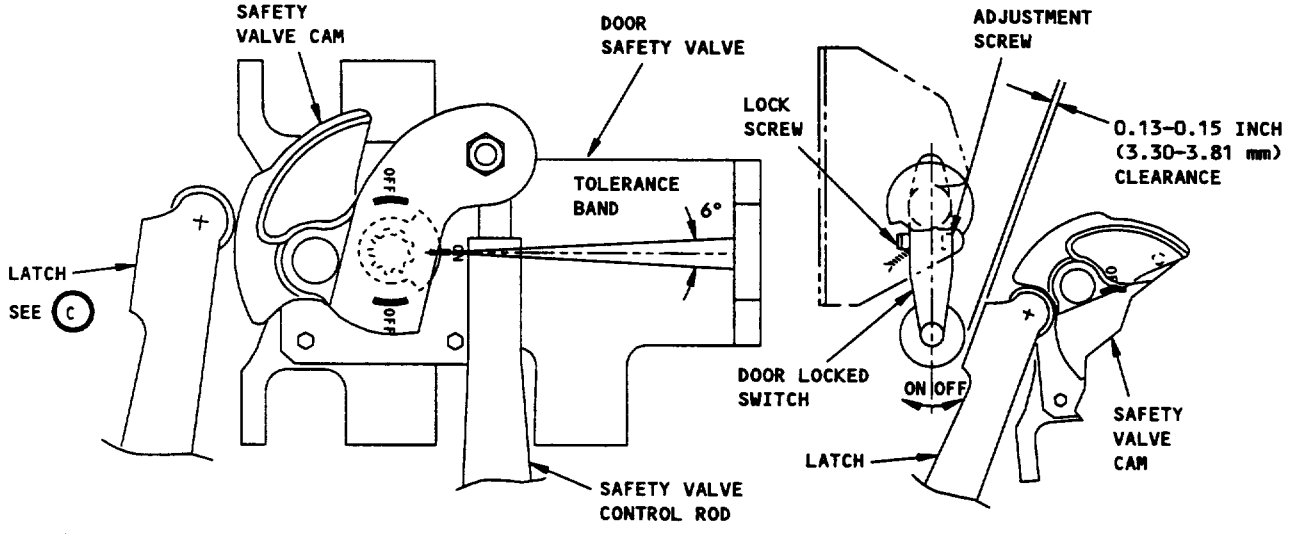
* INDICATES PAGE INCLUDED IN THIS TEMPORARY REVISION.



Main Landing Gear Door Actuator Lock Release Mechanism Adjustment
Figure 501 (Sheet 1)



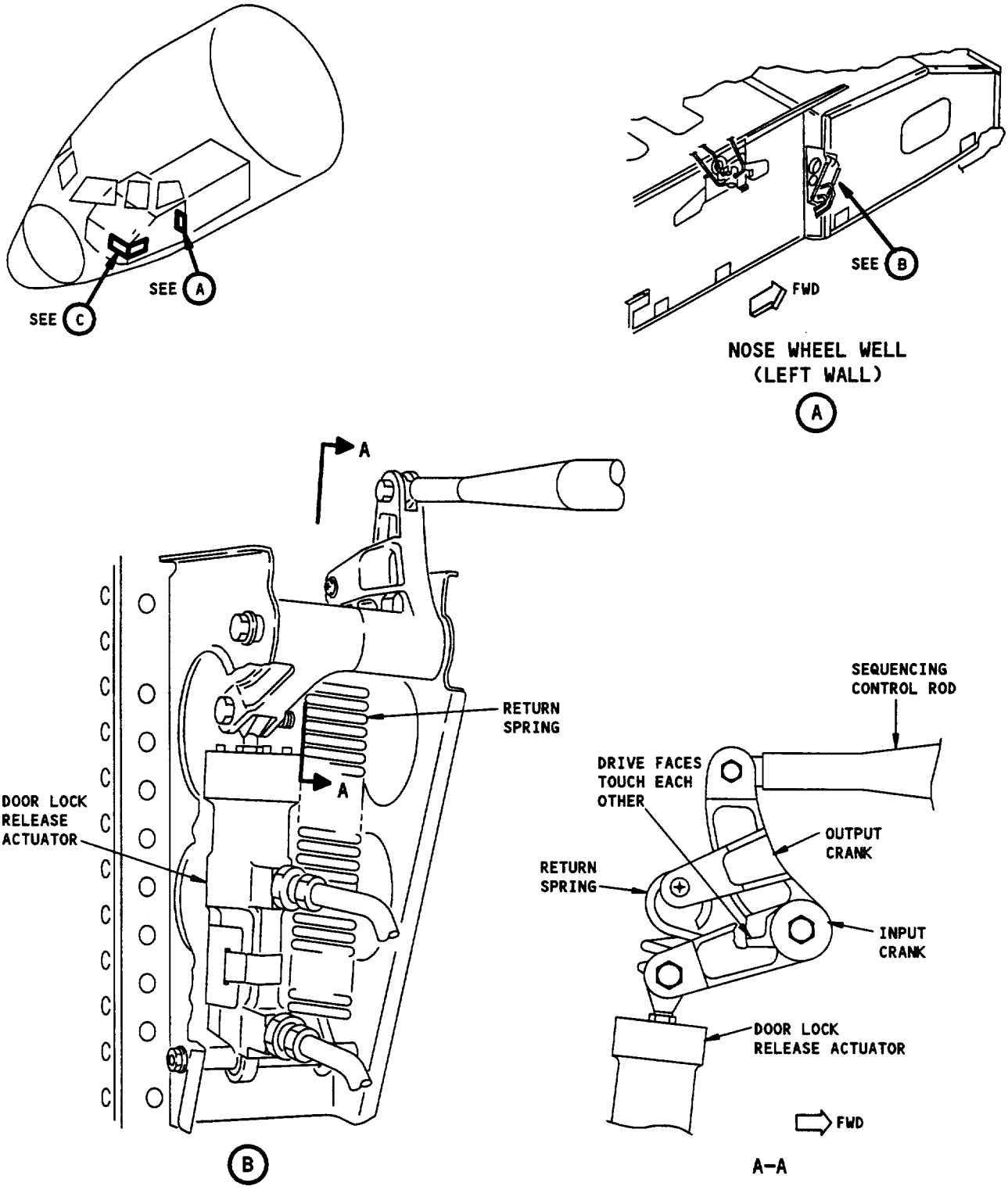
SAFETY VALVE ON POSITION
A-A



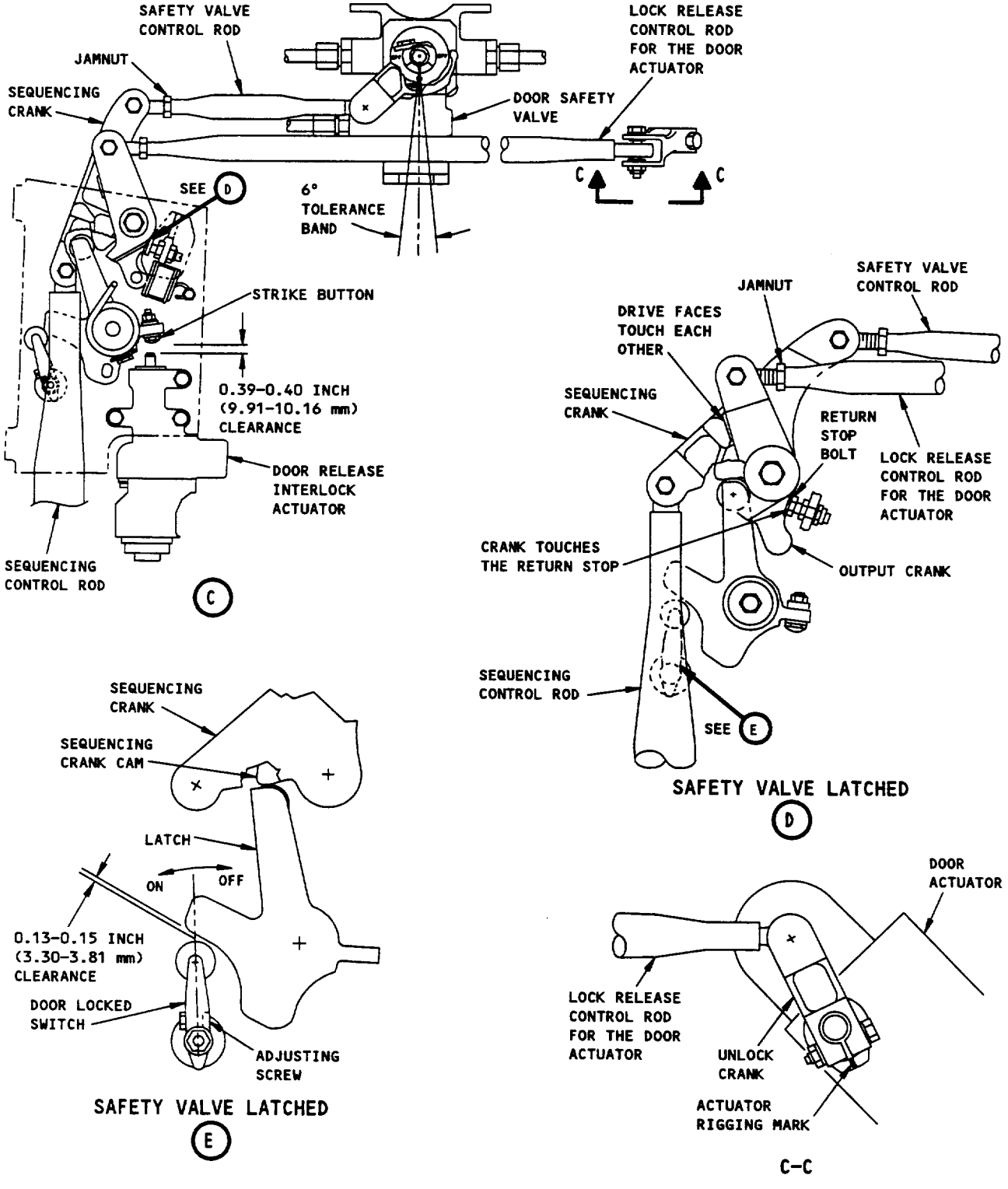
SAFETY VALVE ON POSITION
B-B

SAFETY VALVE OFF POSITION
C

Main Landing Gear Door Actuator Lock Release Mechanism Adjustment
Figure 501 (Sheet 2)



Nose Landing Gear Door Actuator Lock Release Mechanism Adjustment
Figure 502 (Sheet 1)



Nose Landing Gear Door Actuator Lock Release Mechanism Adjustment
Figure 502 (Sheet 2)

S 825-110

(3) Adjust the length of the control rod for the safety valve. Adjust it until the door safety valve is in the ON position in the tolerance range (View B-B).
   (a) Loosen the jamnut on the control rod.
   (b) Increase or decrease the length of the control rod if necessary. Make the adjustment to put the ON indicator mark at the limit of the counter-clockwise edge of the tolerance range. Increase the length of the control rod by 1/2 turn.
   (c) Make sure you can see threads on the rod end that cover at least one-half of the inspection hole.
   (d) Tighten the jamnut to 50-75 pound-inches (View A-A).
   (e) Apply antiseize compound to the threads that are in the open.

S 825-108

(4) Adjust the return stop for the output crank such that the conditions that follow occur (View A-A):
   (a) The door lock release actuator is fully retracted.
   (b) The drive pin on the sequencing crank touches the drive face on the input crank.
   (c) The output crank touches the return stop for the output crank.
   (d) Adjust the return stop. Make it so that the clearance between the drive face on the sequencing crank and the drive pin on the output crank is between 2.19-2.23 inches (55.63-56.64 millimeters).

S 825-106

(5) Adjust the length of the lock-release control rod for the door actuator. Align the centerline of the slot on the unlock crank for the door actuator with the centerline of the actuator rigging mark. The slot and the rigging mark should be less than 0.01 inch apart.
   (a) Loosen the jamnut.
   (b) Increase or decrease the length of the control rod if it is necessary.
   (c) Make sure you can see threads on the rod end that cover at least one-half of the inspection hole.
   (d) Tighten the jamnut to 50-75 pound-inches.
   (e) Apply antiseize compound to the threads that are in the open.

S 865-105

(6) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P6 panel:
   (a) 6F5, LANDING GEAR ALTN EXT CONT

S 985-104

(7) Pull the control rod for the safety valve down to turn the safety valve. Turn the safety valve to the latched position and engage the latch in the cam (Detail B).

S 825-103
(8) Make sure the roller on the door locked switch touches the latch roller face.

S 825-102
(9) Adjust the screw on the door locked switch until the conditions that follow occur:
(a) The latch touches the safety valve cam.
(b) The red DOOR UNSAFE light stays off when the clearance between the latch and the roller for the door locked switch is set between 0.13-0.15 inch (3.30-3.81 millimeters) (Detail C).

S 825-188
(10) Make sure the adjustment for the door closed switch is as shown in Figure 503. If it is necessary, use the two nuts to get the correct dimension for switch actuation.

S 865-101
(11) Open this circuit breaker on the P6 panel and attach a DO-NOT-CLOSE tag:
(a) 6F5, LANDING GEAR ALTN EXT CONT

S 825-100
(12) Do a check of all the adjustments again.

S 435-099
(13) Install lockwire on the jamnuts for the output crank return stop (AMM 20-10-23/401).

S 435-098
(14) Tighten the locking screw on the door locked switch to hold the adjustment screw in position. Install lockwire (AMM 20-10-23/401).

S 825-095
(15) Do the procedure again for the lock-release mechanism for the door actuator on the other main landing gear.

H. Adjust the Lock-Release Mechanism for the Actuator on the Door for the Nose Landing Gear (Fig. 502, 503)

S 985-094
(1) Use the spring extender to extend and disengage the return spring from the output crank (Detail B).

S 015-093
(2) Remove the access cover from the bracket above the door lock release actuator (Detail B).

S 825-092
(3) Make sure the door lock release actuator is fully retracted.

S 825-090

(4) Move the sequencing control rod aft until the drive faces on the input and output cranks touch (Detail D).

S 825-089

(5) Increase or decrease the length of the safety valve control rod if it is necessary. Make the adjustment to put the ON indicator mark at the limit of the counter-clockwise edge of the tolerance range. Increase the length of the control rod by 1/2 turn.
   (a) Loosen the jamnut.
   (b) Increase or decrease the length of the control rod if it is necessary.
   (c) Make sure you can see the threads on the rod end through the inspection hole. At least one-half of what you see through the inspection hole should be threads.
   (d) Tighten the jamnut to 50-75 pound-inches.
   (e) Apply antiseize compound to the threads that are in the open.

S 825-088

(6) Move the sequencing control rod forward to engage the latch in the cam on the sequencing crank. Put the pin through the door lock holes in the latch and bracket.

S 825-087

(7) Move the control rod that releases the lock on the door actuator to the left left until the drive faces on the sequencing and output cranks touch (Detail C).

S 825-086

(8) Adjust the length of the control rod that releases the lock on the door actuator. Align the centerline of the slot in the door actuator unlock crank with the centerline of the rigging mark on the door actuator unlock lever. The slot and the rigging mark must be less than 0.01 inch apart (View C-C).
   (a) Loosen the jamnut.
   (b) Increase or decrease the length of the control rod if it is necessary.
   (c) Make sure you can see threads on the end of the control rod through the inspection hole. At least half of what you see through the inspection hole must be threads.
   (d) Tighten the jamnut to 50-75 pound-inches.
   (e) Apply an antiseize compound to the threads that are in the open.

S 825-085

(9) Adjust the return stop bolt so that the bolt touches the output crank (Detail D).

S 495-084

(10) Remove the pin from the door lock hole.

S 865-083
(11) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P6 panel:
(a) 6F5, LANDING GEAR ALTN EXT CONT

S 825-082
(12) Make sure the roller on the door locked switch touches the latch roller face.

S 825-081
(13) Adjust the screw on the door locked switch until the conditions that follow occur (Detail E):
(a) The latch touches the cam on the sequencing crank.
(b) The red DOOR UNSAFE light stays off when the clearance between the door locked switch and the latch is 0.13-0.15 inch (3.30-3.81 millimeters) (Detail E).

S 825-189
(14) Make sure the adjustment for the door closed switch is as shown in Figure 503. If it is necessary, use the two nuts to get the correct dimension for switch actuation.

S 865-080
(15) Open this circuit breaker on the P6 panel and attach a DO-NOT-CLOSE tag:
(a) 6F5, LANDING GEAR ALTN EXT CONT

S 435-079
(16) Connect the return spring to the output crank (Detail B).

S 825-078
(17) Do a check of all the adjustments again.

S 435-077
(18) Install lockwire on the jamnuts for the output crank return stop and the adjustment screw on the door locked switch (AMM 20-10-23/401).

S 825-076
(19) Manually release the latch from the cam on the sequencing crank.

S 825-075
(20) Adjust the washers below the strike button on the latch. Do this to get the necessary dimension between the bolt and the piston for the door release interlock actuator as shown (Detail C). Apply primer to the washers.

S 415-074
(21) Install the access cover on the bracket.

I. Put the Airplane Back to Its Initial Condition

S 865-066
(1) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 865-065
(2) Supply electrical power (AMM 24-22-00/201).

S 865-195

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE AND MAIN LANDING GEAR. THE DOORS CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Remove the DO-NOT-OPERATE tag from the control lever for the landing gear and move it to the DN position.

S 865-063
(4) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P6 panel:
(a) 6F5, LANDING GEAR ALTN EXT CONT
(b) 6F6, LANDING GEAR ALTN EXT MOTOR

S 865-062
(5) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11S17, DOORS CLOSE GROUND ACCESS

S 865-053
(6) Remove the pressure from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-052
(7) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-35-00-705-051

6. System Test - Ground Release of the Landing Gear Doors (Fig. 503)
A. General
(1) This test contains a check of the ground release of the landing gear doors.

B. References
(1) AMM 06-41-00/201, Fuselage (Major Zone 100 and 200) Access Doors and Panels
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems

C. Access
(1) Location Zones
144 Main Landing Gear Wheel Well (Right)
211 Control Cabin (Left)
212 Control Cabin (Right)
711 Nose Landing Gear
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

(2) Access Panel
198PR Door - Landing Gear Ground Control (Right)

D. Do the Test of the Ground Release System for the Landing Gear Doors

S 495-050
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 865-049
(2) Make sure these circuit breakers on the main power distribution panel, P6, are closed:
(a) 6F5, LANDING GEAR ALTN EXT CONT
(b) 6F6, LANDING GEAR ALTN EXT MOTOR

S 865-048
(3) Make sure this circuit breaker on the overhead circuit breaker panel, P11, is closed:
(a) 11S17, DOORS CLOSE GROUND ACCESS

S 865-047
(4) Supply electrical power (AMM 24-22-00/201).

TEMPORARY REVISION STATUS REPORT FOR DOCUMENT D633N132

THIS LIST CONTAINS ALL TRs WITH TR DATES AFTER SEP 28/00. THIS LIST CREATED AT 2001/09/28.19:54:03 UTC

TR NUMBER	TR DATE	DATE INCORPORATED	SUBJECT
12-1001	JUL 18/01	SEP 28/01	12-21-09
27-1002	FEB 02/01	# 27-1003	27-62-00
27-1003	MAR 07/01	MAY 28/01	27-62-00
28-1001	SEP 29/00	JAN 28/01	28-22-11
32-1001	OCT 26/00	JAN 28/01	32-42-11
32-1002	OCT 05/01	* ACTIVE	32-35-00
35-1001	JAN 29/01	MAY 28/01	35-21-04
70-1001	DEC 14/00	JAN 28/01	70-12-04
72-1002	JUL 20/01	SEP 28/01	72-00-00

TR NUMBER	TR DATE	DATE INCORPORATED	SUBJECT

* INDICATES TR WAS ACTIVE AT THE TIME OF THIS REPORT;
REMOVE IT WHEN YOU RECEIVE THE REGULAR REVISION DATED JAN 28/02.
# INDICATES TR WAS SUPERSEDED BY THE TR LISTED.

MAIN GEAR WHEEL BRAKE - REMOVAL/INSTALLATION

TEMPORARY REVISION 32-326

FILING INSTRUCTIONS

For the printed manual, file this temporary revision adjacent to the page(s) affected.

For the microfilm supplement, file this temporary revision in sequence by ATA number. Mark the microfilm cartridge to indicate that it has been changed by temporary revision(s).

Revision reason: MC3240MK5025 (SB32-126). Replace Dunlop carbon brakes with BF Goodrich steel brakes on airplane NB322 (BAB).

This temporary revision furnishes an advance copy of the enclosed page(s) which supersede any previously issued page(s). The information thereon is to be used until this revision is either incorporated or rescinded.

REVISED LIST OF EFFECTIVE PAGES FOR THIS DOCUMENT

PAGE	DATE	CODE	PAGE	DATE	CODE	PAGE	DATE	CODE
* 401	DEC 20/96	01						
* 402	JAN 20/98	05						
* 403	JUN 20/89	01						
* 404	DEC 20/96	01						
* 405	DEC 20/96	01						
* 406	DEC 20/96	14						
* 407	JUL 23/98	19						
* 408	JUL 23/98	12						
* 409	JUL 23/98	17						
* 410	JUL 23/98	12						

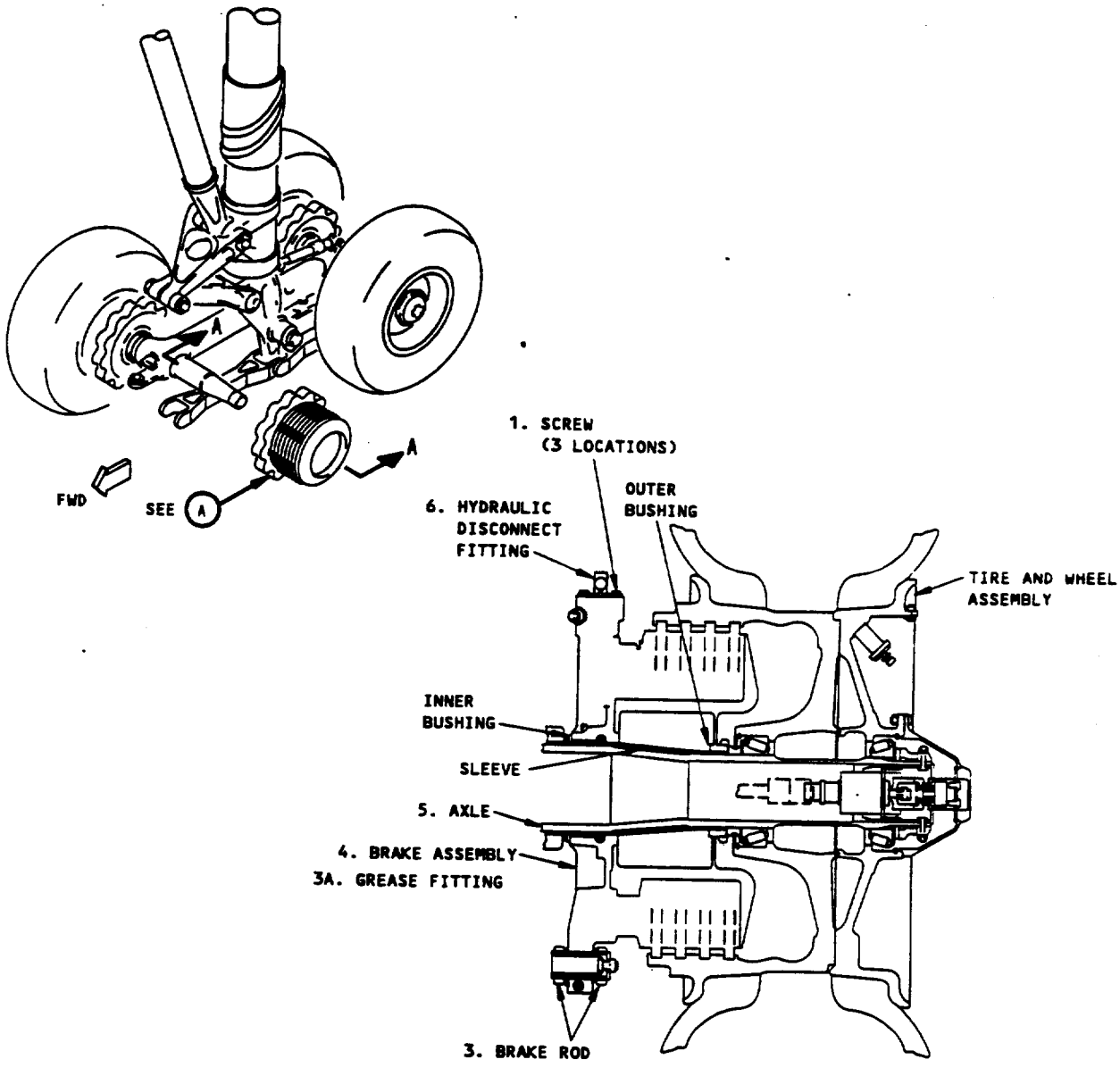
* INDICATES PAGE INCLUDED IN THIS TEMPORARY REVISION.

MAIN GEAR WHEEL BRAKE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the main gear wheel brake from the axle. The second task installs the main gear wheel to the axle.

TASK 32-41-10-004-001

2. Remove the Main Gear Wheel Brake
   A. Equipment
      (1) Sling, Nylon - MLG (use steel cable for removal of a hot brake)
      (2) Protector (Sleeve and Cap), Axle MLG - B32010-15 (Preferred), B32015-2 (Optional)
      (3) Brake Puller - B32016-13
      (4) Brake Cradle (Clyde Machines Model BC 300 or equivalent) - Commercially available.
      (5) Dolly, Wheel/Brake (Clyde Machines Model TB 900) - Commercially Available.
      (6) Torque Wrench - Commercially Available (For torque ranges, Ref Fig. 401)
      (7) 9/16-Inch Deep Socket Wrench - Commercially Available
      (8) Shipping Plug, P/N 01943-51011 - Moeller Mfg Co. Greenville, MS.
   B. References
      (1) AMM 07-11-03/201, Jacking Airplane Axles
      (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
      (5) AMM 32-41-00/501, Hydraulic Brake System
      (6) AMM 32-41-08/401, Brake Disconnect Valve
      (7) AMM 32-44-00/001, Parking Brake System
      (8) AMM 32-45-01/401, Main Gear Wheel and Tire
   C. Access
      (1) Location Zones
         731 Left Main Landing Gear
         741 Right Main Landing Gear

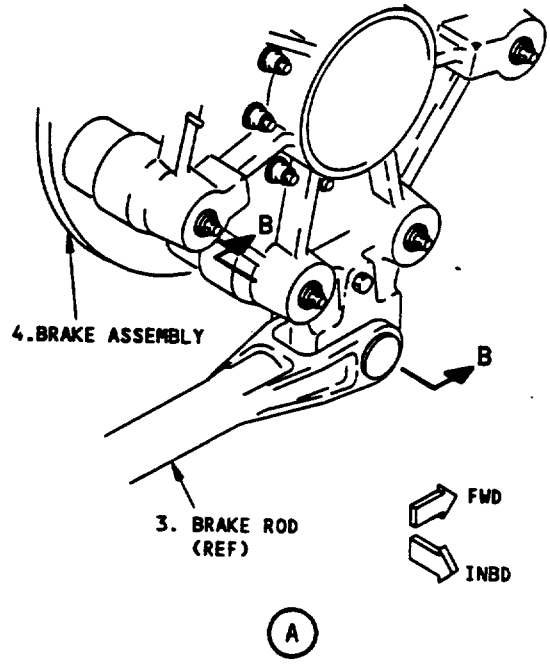


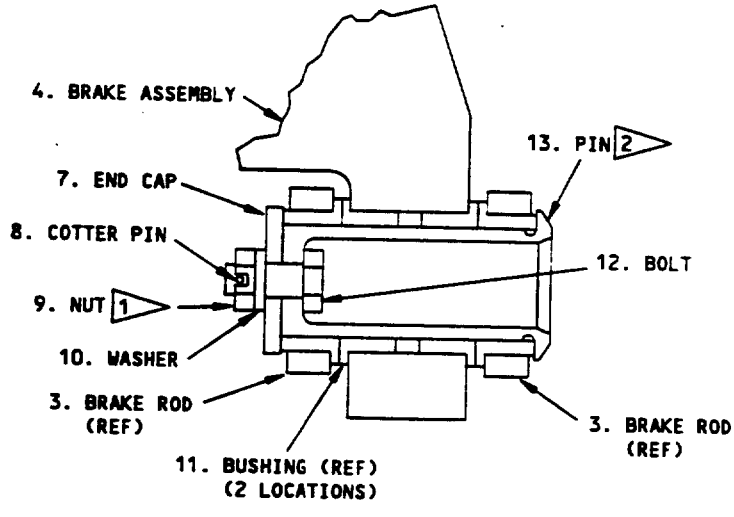
BRAKE ASSEMBLY
(SHOWN WITH THE WHEEL INSTALLED)
A-A

1 TIGHTEN TO 100-200 POUND-INCHES

2 INSTALL WITH HEAD ON TRUCK SIDE AS SHOWN (PREFERRED)
INSTALL WITH HEAD ON BRAKE SIDE (OPTIONAL, NOT SHOWN)

Main Gear Wheel Brake Installation
Figure 401 (Sheet 1)





Main Gear Wheel Brake Installation
Figure 401 (Sheet 2)

D. Prepare for Removal

S 494-002
(1) Make sure the landing gear downlocks are installed (AMM 32-00-20/201).

S 034-004
(2) Look at the brake rod to brake connection. If the the pin retainer bolt is on the truck side of the pin, do the step that follows:

CAUTION: THE PIN RETAINER BOLT (12) SHOULD BE REMOVED BEFORE JACKING TO AVOID DAMAGE DUE TO POSSIBLE INTERFERENCE BETWEEN THE JACK AND BOLT (12).

(a) Remove the cotter pin (8), bolt (12), and nut (9) that hold the retainer pin (13) in position.

NOTE: You can remove the retainer bolt (12) with a 9/16-inch deep socket tool that you insert into the pin (13) recess.

S 584-005
(3) Jack the main gear axle(s) (AMM 07-11-0/201).

S 024-052
(4) If the pin (13) was installed with its head on the brake side, do the step that follows:
(a) Remove the pin (13) while you support the brake rod (3).

S 034-006
(5) If the pin (13) was installed with the head on the truck side, do the steps that follow:
(a) Remove the cotter pin (8), bolt (12), and nut (9) that hold the retainer pin (13).

NOTE: You can remove the retainer bolt (12) with a 9/16-inch deep socket tool that you insert into the pin (13) recess.

(b) Pull the pin (13) about half way out of the fitting on the brake assembly (4).
(c) Lower the landing gear with the jack until the airplane weight is on the tires.
(d) Remove the jack if necessary for clearance to remove the pin (13).
(e) Remove the pin (13) while you support the brake rod (3).
(f) Jack the main gear axle(s) again (AMM 07-11-03/201).

S 014-007
(6) Remove the main gear wheel and tire (AMM 32-45-01/401).

S 864-008
(7) Remove pressure from the main hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

S 864-009
(8) Release the parking brake (AMM 32-44-00/001).

S 864-010
(9) Release hydraulic pressure from the brake accumulator by the step that follows:
(a) Push in on the brake pedals fully 6 times.

NOTE: Pause a minimum of 5 seconds after each application before the next application.

S 494-011
(10) Make sure the axle protector (cap and sleeve) is installed.

S 034-012
(11) Disconnect the hydraulic line at the brake disconnect fitting (6) (AMM 32-41-08/401).

NOTE: The disconnect fitting (6) automatically seals the hydraulic lines to prevent fluid leakage. The brake valve coupling, which is installed in the brake, seals the brake to prevent leakage of fluid in the brake. It also permits the brakes to be filled and bled in the workshop.

(a) Remove the brake valve coupling from the brake.

NOTE: It is not necessary to do this step if this brake will be installed again or if the new brake already has the brake valve coupling installed.

(b) Put the brake valve coupling in a clean container and keep it for installation in the new brake.
(c) Install a shipping plug in the disconnect port on the brake.

S 034-014

(12) Remove two clamp screws (15) to disconnect the brake temperature sensor conduit at the conduit clamps (16) from the bracket on the brake (4).

E. Remove the Main Gear Wheel Brake

S 484-051

WARNING: USE EXTREME CARE WHEN YOU REMOVE THE BRAKE ASSEMBLY FROM THE TRUCK AXLE BECAUSE THE BRAKE ASSEMBLY MAY BE HOT

CAUTION: SUPPORT THE BRAKE ASSEMBLY SECURELY WITH THE SLING AND HOIST EQUIPMENT BECAUSE IT WEIGHS APPROXIMATELY 218 POUNDS (STEEL BRAKES OR 145 POUNDS (CARBON BRAKES).

(1) Install a nylon sling on the brake (4) for support during removal. If the brake (4) is hot, use a steel cable instead of the nylon sling.

S 024-016

(2) Remove the brake (4) with the brake puller tool.

TASK 32-41-10-404-017

3. Install the Main Gear Wheel Brake (Fig. 401)
A. Equipment
(1) Alignment Equipment - Brake Rotor, MLG - B32058-27
(2) Sling, nylon - MLG (use steel cable for removing hot brake)

(3) Protector (Sleeve and Cap) - Axle MLG - B32010-15 (Preferred), B32015-2 (Optional)
(4) Torque Wrench - Commercially Available (For torque ranges, Ref Fig. 401)
(5) 9/16-Inch Deep Socket Wrench - Commercially Available

B. Consumable Materials
(1) D00013 Grease - MIL-G-23827
(2) D00528 Grease - Royco 11-MS
(3) D00153 Fluid, Hydraulic - BMS 3-11
(4) D00378 Grease, Wheel Bearing -
MIL-G-81322 Aeroshell 22 (Preferred)
MIL-G-81322 Mobilgrease 28 (Optional)
(5) D00388 Grease, Wheel Bearing -
MIL-G-3545 Aeroshell 5 (Optional)

C. Parts

BF GOODRICH STEEL BRAKE

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Screw (Optional to 407j plus 409)	32-41-10	01	407
	1	Bolt			407j
	2	Washer (use with bolt 407j)			409
	4	Brake Assembly		01	10
		Packing (O-ring) in Brake Piston Housing			293
	6	Brake Disconnect Fitting			415
		Brake Valve Coupling			460
		Backup Ring			500
		Packing (O-ring)			505
	7	Cap - End	32-11-01	10	140
	8	Cotter Pin			122
	9	Nut			125
	10	Washer			124
	11	Bushing	32-41-10	01	375
	12	Bolt	32-11-01	10	123
	13	Pin			145
	14	Brake Temperature Sensor	32-46-03	01	45
	15	Screw	32-46-51	01	110, 390
	16	Clamp			105, 385

*[1] Packing not installed on Dunlop brakes S160N020-1, -5, and -7.

D. References
(1) AMM 07-11-03/201, Jacking Airplane Axles
(2) AMM 12-21-14/301, Main Gear and Actuating Mechanisms
(3) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems

(4) AMM 32-11-26/601, Main Gear Axle
(5) AMM 32-41-00/501, Hydraulic Brake System
(6) AMM 32-41-08/401, Brake Disconnect Valve
(7) AMM 32-44-00/001, Parking Brake System
(8) AMM 32-45-01/401, Main Gear Wheel and Tire

E. Access

(1) Location Zones

731 Left Main Landing Gear
741 Right Main Landing Gear

F. Prepare for Installation

S 864-020

(1) Make sure that hydraulic pressure was removed from the left, right, and center hydraulic systems (AMM 29-11-00/201).

S 214-021

(2) Examine the part of the axle (5) that you can see for scoring, galling, or corrosion.

NOTE: The wear limits for the main gear axles are in AMM 32-11-26.

S 494-023

(3) Make sure that the axle protector (cap and sleeve) is installed.

S 644-024

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 and to the axle bushings on the brake assembly.

S 434-042

(5) Make sure that the O-ring (packing) is installed in the inner bushing of the brake assembly.

S 614-045

(6) Make sure that the brake (4) that you will install is filled with hydraulic fluid and bled.

NOTE: The brake valve coupling (zero leak type) which is installed in the brake, allows the brake to be pre-filled and bled before it is installed on the airplane.

G. Install the Main Gear Wheel Brake (Fig. 401)

S 424-046

CAUTION: BE SURE THAT SLING AND HOIST EQUIPMENT WILL HOLD THE WEIGHT OF EQUIPMENT BECAUSE IT WEIGHS APPROXIMATELY 218 POUNDS (STEEL BRAKES OR 145 POUNDS (CARBON BRAKES).

(1) Use the brake sling and position the brake (4) on the axle (5).

S 434-028

(2) Install the hydraulic line disconnect fitting (6) (AMM 32-41-08/401).
   (a) Make sure that the three bolts that attach the disconnect fitting (6) to the brake are tightened to 72 to 88 pound-inches.
   (b) Make sure the brake valve coupling, backup rings, and the O-ring are installed in the brake before you install the hydraulic disconnect fitting.

S 414-030

(3) Install the main gear wheel and tire (AMM 32-45-01/401).

NOTE: Use of the brake rotor alignment tool will ease the wheel installation.

S 584-050

CAUTION: MAKE SURE THAT THE BRAKE ROD DOES NOT TOUCH THE GROUND WHEN THE MAIN GEAR IS LOWERED TO THE GROUND.

(4) Lower the main gear and the remove jack (AMM 07-11-03/201).

S 434-034

(5) Connect the brake rod (3) to the brake (4):
   (a) Apply Royco 11-MS grease to the pin (13), end cap (7), lockbolt (12), washer (10), nut (9), and cotter pin (8).
   (b) Insert the pin (13) through the brake rod (3) and brake assembly (4) joint as shown on Fig. 401.
   (c) Insert the bolt (12) through the hole at the bottom of the recess in the pin (13).

(d) Insert the end cap (7) over the threaded end of the bolt (12).
(e) Install the bolt (12) and end cap (7) to the pin (13) with the washer (10), and nut (9).
1) Tighten the nut (9) to 100 - 200 pound-inches.
2) Install the cotter pin through nut (9).

S 714-036
(6) Do a test of the hydraulic brake operation (AMM 32-41-00/501).

NOTE: It is not necessary to bleed the brakes again for this test.

S 584-037
(7) Remove the axle jack(s) from the airplane (AMM 07-11-03/201).

S 714-038
(8) Do a test of the brake temperature monitoring system operation (AMM 32-46-00/501).

MAIN GEAR WHEEL BRAKE - INSPECTION/CHECK

TEMPORARY REVISION 32-327

FILING INSTRUCTIONS

For the printed manual, file this temporary revision adjacent to the page(s) affected.

For the microfilm supplement, file this temporary revision in sequence by ATA number. Mark the microfilm cartridge to indicate that it has been changed by temporary revision(s).

Revision reason: MC3240MK5025 (SB32-126). Replace Dunlop carbon brakes with BF Goodrich steel brakes on airplane NB322 (BAB).

This temporary revision furnishes an advance copy of the enclosed page(s) which supersede any previously issued page(s). The information thereon is to be used until this revision is either incorporated or rescinded.

REVISED LIST OF EFFECTIVE PAGES FOR THIS DOCUMENT

PAGE	DATE	CODE	PAGE	DATE	CODE	PAGE	DATE	CODE
* 601	MAR 20/92	01						
* 602	SEP 20/90	01						
* 603	SEP 20/91	01						
* 604	SEP 20/96	01						
* 605	SEP 20/96	02						

* INDICATES PAGE INCLUDED IN THIS TEMPORARY REVISION.

MAIN GEAR WHEEL BRAKE - INSPECTION/CHECK

1. General
   A. This procedure contains two tasks. The first task is an inspection of the landing gear brakes with the wheel installed. The second task is an inspection of the landing gear brakes with the wheel removed.
   B. This procedure gives instructions to do a check of the landing gear brakes for these conditions:
   -hydraulic fluid leaks.
   -adjuster and pressure plate movement.
   -brake lining wear.
   C. Some BF Goodrich brakes have plastic tags that show "ALTERNATE WORN BRAKE RTO COMPLIANCE". These tags are near the brake wear pins. The tags are put on brakes that comply with FAA worn brake requirements. You can ignore these tags during this procedure.

TASK 32-41-10-946-003

2. Prepare for the Inspection
   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
         731 Left Main Landing Gear
         741 Right Main Landing Gear

   C. Procedure

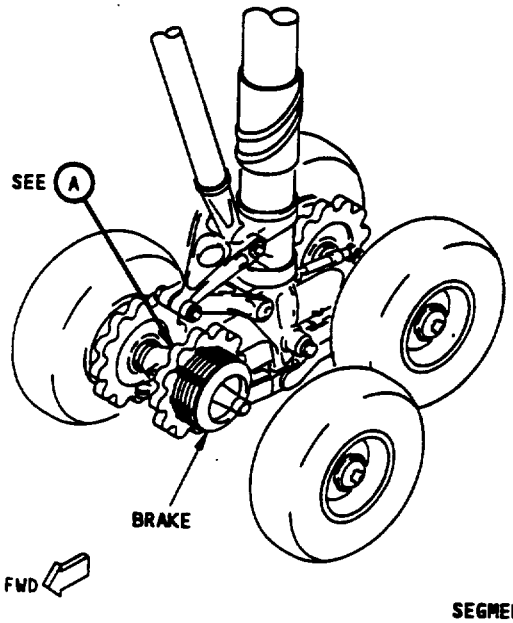
      S 496-020
      (1) Make sure that the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

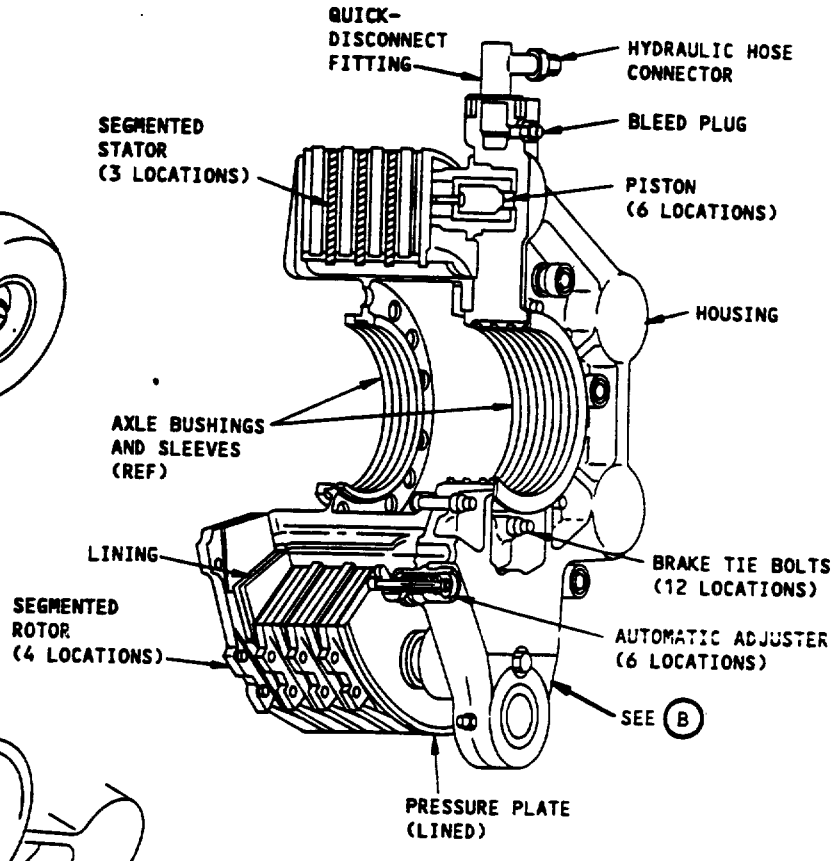
      S 496-001

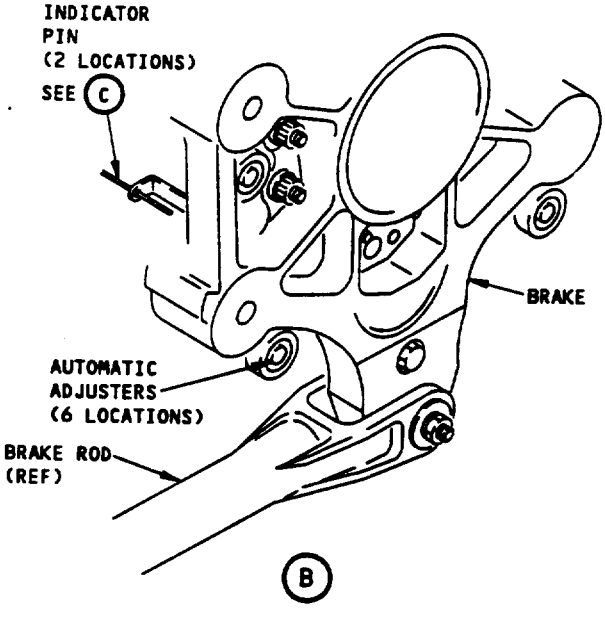
      WARNING: USE THE PROCEDURE IN 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

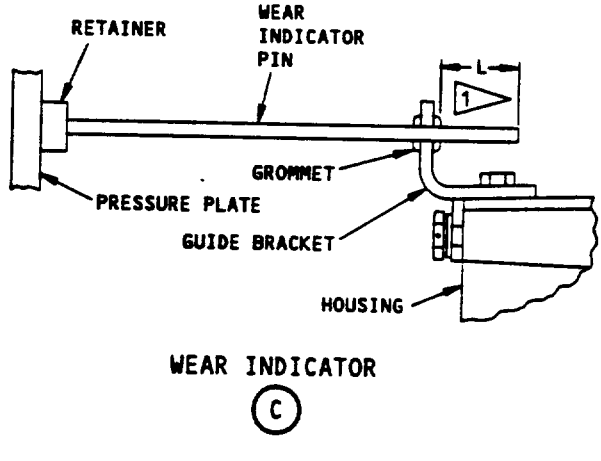
      (2) Open the doors for the landing gear and install the door locks (Ref 32-00-15).

      S 866-002
      (3) Release the parking brake.









WEAR INDICATOR
C

1 DIMENSION "L" IS AN INDICATION OF HOW MUCH MORE THE BRAKE CAN WEAR BEFORE IT MUST BE REPLACED. WHEN DIMENSION "L" IS ZERO (WEAR INDICATOR PIN DOES NOT COME OUT OF THE GROMMET ON THE GUIDE BRACKET) THE BRAKE MUST BE REPLACED

Brake Wear Check
Figure 601

TASK 32-41-10-616-004

3. Landing Gear Wheel Brake Inspection (With the Wheel Installed)

A. Procedure

S 946-005

(1) Do the Prepare for Inspection Procedure (Ref par. 2).

S 796-021

CAUTION: DO NOT LET BRAKE FLUID GET ON THE BRAKE LININGS. IF BRAKE FLUID GETS ON THE BRAKE LININGS, THE BRAKES WILL NOT OPERATE CORRECTLY.

(2) Do a check of the brake(s) for hydraulic fluid leaks as follows:
   (a) Remove the pressure from the main hydraulic system (Ref 29-11-00).
   (b) Do a check of the brakes for leaks at these locations:
      1) All hydraulic line connections.
      2) Bleed ports.
      3) Inlet ports.
      4) Ports that drain hydraulic fluid.
      5) Plugs in the piston housing.
      6) Pistons.
   (c) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).
   (d) Look for fluid leaks again while the system is pressurized:
      1) Apply the brakes and hold them.
      2) Look for leaks again at the same locations on the brake where you looked when the system was not pressurized.
      3) Release the brakes.
      4) Do a check for leaks again at the same locations on the brakes.
   (e) If you find leaks, repair or replace the brake assembly

S 716-007

(3) Do the check that follows to make sure that the brakes operate:
   (a) Apply the brakes and hold them.
   (b) Look at the rotors and stators on the brakes to make sure that they engage.
   (c) Release the brakes.
   (d) Look at the rotors and stators on the brake to make sure that they disengage.

S 216-009

(4) Do a check of each brake for missing brake adjusters and do the steps that follow if one or more brake adjusters are missing:

NOTE: Each brake has six brake adjusters.

(a) Replace the brake if two or more brake adjusters are missing.
(b) You can continue the brake in service if a maximum of one brake adjuster is missing if you do the steps that follow:
1) Do a check of the differential pressure indicator on the right and left hydraulic system return filters as shown in 29-11-00/601.
2) Replace the brake at the next maintenance stop where brakes are available.

S 216-027

(5) Do a check for missing brake wear indicator pins.

NOTE: Each brake has two brake wear indicator pins.

(a) If two brake 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 wear pin operation is satisfactory.

S 216-010

(6) Do a check for permitted brake wear as follows:
(a) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).
(b) Push the brake pedals fully forward and hold them in this position.
(c) Measure the dimension "L" (Fig. 601) at the two indicator pin locations on each brake.
(d) Replace the brake if a "L" dimension is zero (flush) or less.

TASK 32-41-10-216-011

4. Landing Gear Brake Inspection (With the Wheel Removed)

A. Procedure

S 216-012

(1) Do the Prepare for Inspection procedure (Ref Par. 2).

S 216-013

(2) Examine the brake assembly for these types of damage that can cause leaks or a malfunction of the brake:
(a) Cracks that you can see.
(b) Parts that are broken.
(c) Parts that have much wear.

S 716-014

(3) Do the checks that follow while you operate the brakes as follows:

(a) Apply and release the brakes fully a minimum of five times and do these checks for each cycle of the brake:

1) Make sure that the brake operates and the pressure plate moves freely while the brake operates.

2) Make sure that the pressure plate goes to the initial position after each time that you apply the brake.

3) Make sure that the adjuster pins go to their initial position after each time that you apply and release the brake.

(b) Do a check to make sure that the brake clearance is not less than 0.060 inch at four locations around the perimeter of the brake.

1) Measure this clearance between the pressure plate assembly and the adjacent rotor at four locations that are an equal distance apart.

NOTE: The minimum clearance can be 0.050 inch for a brake that is in service.

TASK 32-41-10-866-022

5. Put the Airplane Back to Its Usual Condition

A. References

(1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

(2) 32-00-15/201, Landing Gear Door Locks

B. Access

(1) Location Zones

731 Left Main Landing Gear

741 Right Main Landing Gear

C. Procedure

S 866-017

(1) Set the parking brake.

S 866-018

(2) Remove the power from the right hydraulic system if it is not necessary (Ref 29-11-00).

S 096-019

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

(3) Remove the locks from the landing gear doors and close the doors (Ref 32-00-15).

AUTOBRAKE SELECTOR SWITCH (S24) - REMOVAL/INSTALLATION

TEMPORARY REVISION 32-1001

FILING INSTRUCTIONS

This temporary revision applies only to document D633N132. For the printed manual, file this temporary revision adjacent to the page(s) affected.

For the microfilm supplement, file this temporary revision in sequence by ATA number. Mark the microfilm cartridge to indicate that it has been changed by temporary revision(s).

This temporary revision will be incorporated in the revision dated Jan 28/01.

Revision reason: Change illustration page numbers so illustrations come after first page of text.

This temporary revision furnishes an advance copy of the enclosed page(s) which supersede any previously issued page(s). The information thereon is to be used until this revision is either incorporated or rescinded.

At the end of this TR there is a TR Status Report for document D633N132.

REVISED LIST OF EFFECTIVE PAGES FOR THIS DOCUMENT

PAGE	DATE	CODE	PAGE	DATE	CODE	PAGE	DATE	CODE
* 401	OCT 26/00	01A.101						
* 402	OCT 26/00	01A.1						
* 403	OCT 26/00	01A.1						
* 404	SEP 28/00	01A						
405	SEP 28/00	01A						

* INDICATES PAGE INCLUDED IN THIS TEMPORARY REVISION.

AUTOBRAKE SELECTOR SWITCH (S24) - REMOVAL/INSTALLATION

1. General
   A. The Autobrake Selector Switch (S24) is installed on the P1-3 panel.
   B. This procedure contains the following tasks:
      (1) Autobrake Selector Switch - Removal
      (2) Autobrake Selector Switch - Installation
      (3) Autobrake Selector Switch - Test

TASK 32-42-11-004-001

2. Autobrake Selector Switch - Removal (Fig. 401)
   A. Equipment
      (1) Circuit Breaker Lockout Clip - 1012LC-R
   B. Reference
      (1) AMM 24-22-00/201, Electrical Power - Control
   C. Access
      (1) Location Zones
          211/212 Flight Compartment

   D. Prepare for Removal

      S 864-020
      (1) Open the following circuit breakers on the P11 overhead panel and attach DO NOT CLOSE tags:
          (a) 11S14, AUTOBRAKES/ANTISKID TEST IND 1
          (b) 11S21, AUTOBRAKES/ANTISKID TEST IND 2

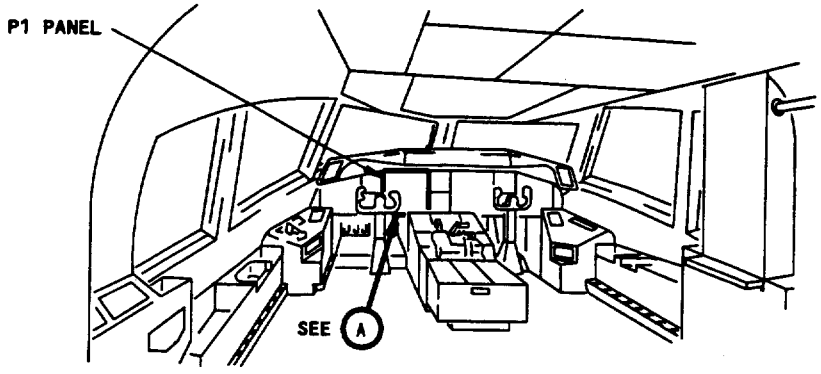
      S 024-003
      (2) Remove the knob (5) from the autobrake selector switch (2).

      S 024-004
      (3) Unfasten the two screws and remove the lightplate (4).

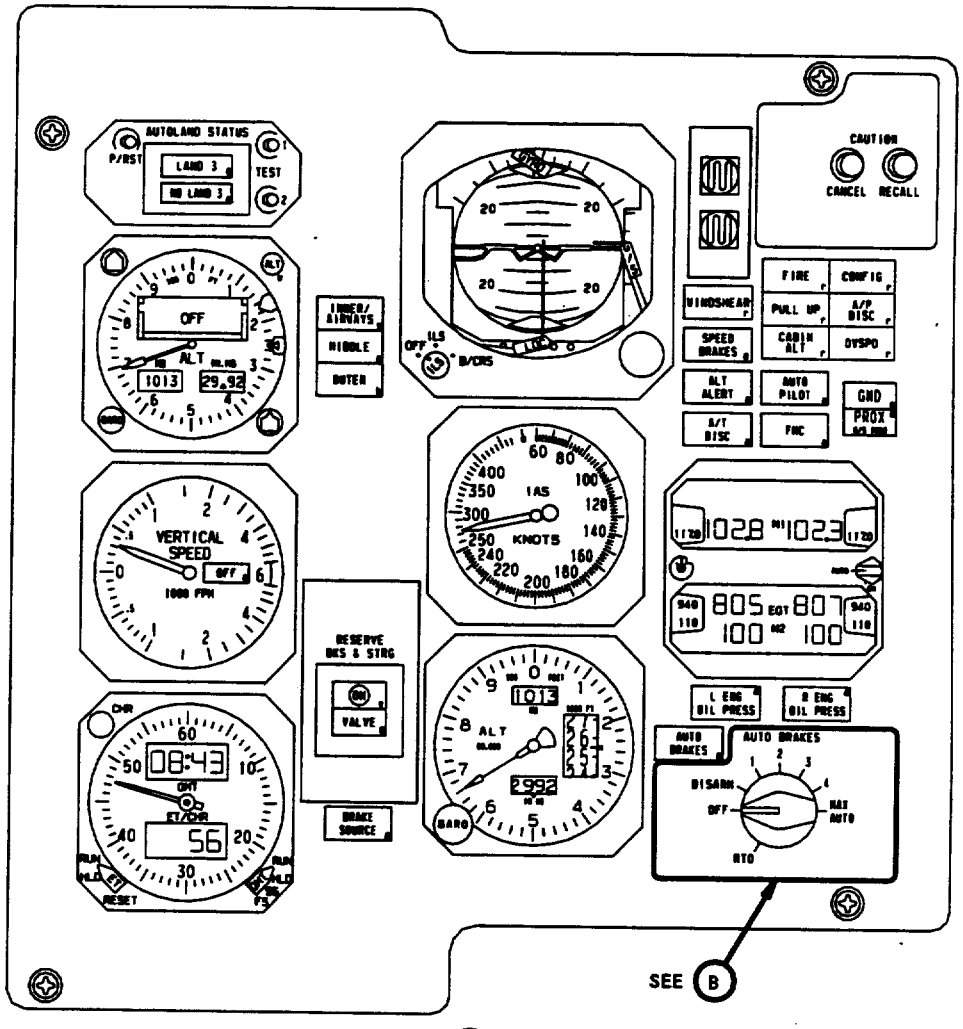
      S 024-005
      (4) Release the P1-3 instrument panel.

      S 864-006
      (5) Disconnect the electrical connector (D2374) (1) from the back of the autobrake selector switch (2).

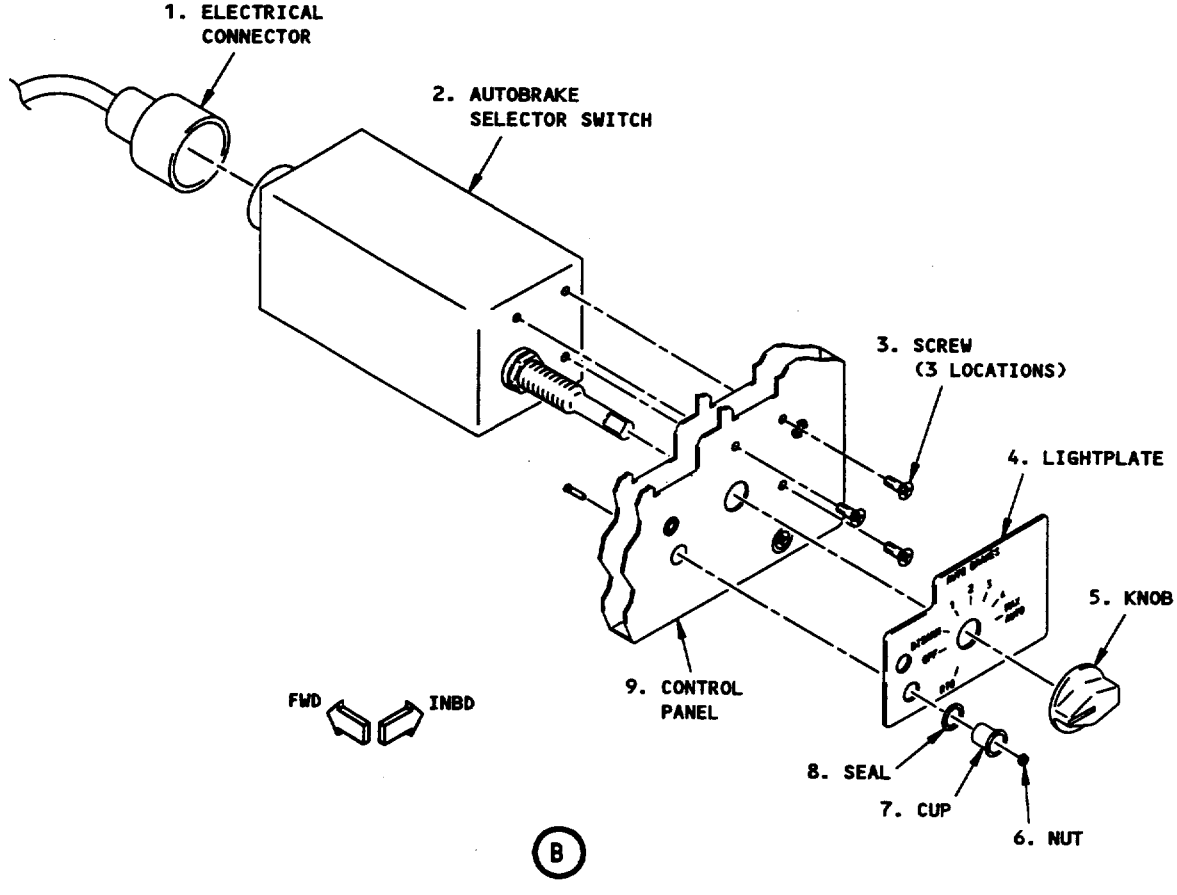
      S 024-007
      (6) Remove the three screws (3) and withdraw the autobrake selector switch (2).



FLIGHT COMPARTMENT



Autobrake Selector Switch Installation
Figure 401 (Sheet 1)



Autobrake Selector Switch Installation
Figure 401 (Sheet 2)

TASK 32-42-11-404-008

3. Autobrake Selector Switch - Installation

A. Reference

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

B. Access

(1) Location Zones

211/212 Flight Compartment

C. Prepare for Installation

S 864-009

(1) Ensure the following circuit breakers on the P11 overhead panel are open:

(a) 11S14, AUTOBRAKES/ANTISKID TEST IND 1

(b) 11S21, AUTOBRAKES/ANTISKID TEST IND 2

S 424-010

(2) Install the autobrake selector switch (2) and secure the three screws (3).

S 424-011

(3) Install the lightplate (4) and secure with two screws.

S 864-012

(4) Connect the electrical connector (D2374) (1) to the autobrake selector switch (2).

S 424-013

(5) Install the autobrake selector switch knob (5).

S 864-014

(6) Remove the DO NOT CLOSE tags and close the following circuit breakers on the P11 panel:

(a) 11S14, AUTOBRAKES/ANTISKID TEST IND 1

(b) 11S21, AUTOBRAKES/ANTISKID TEST IND 2

TASK 32-42-11-704-015

4. Autobrake Selector Switch - Test

A. Prepare for Test

S 864-016

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

TEMPORARY REVISION STATUS REPORT FOR DOCUMENT D633N132

THIS LIST CONTAINS ALL TRs WITH TR DATES AFTER JAN 28/00. THIS LIST CREATED AT 2000/10/19.22:32:25 UTC

TR NUMBER	TR DATE	DATE INCORPORATED	SUBJECT
27-1001	JUN 05/00	SEP 28/00	27-81-18
28-1001	SEP 29/00	* ACTIVE	28-22-11
32-1001	OCT 26/00	* ACTIVE	32-42-11
71-1001	FEB 18/00	MAY 28/00	71-51-00
72-1001	FEB 29/00	MAY 28/00	72-00-00
73-1001	JUN 26/00	SEP 28/00	73-11-06

TR NUMBER	TR DATE	DATE INCORPORATED	SUBJECT

* INDICATES TR WAS ACTIVE AT THE TIME OF THIS REPORT;
REMOVE IT WHEN YOU RECEIVE THE REGULAR REVISION DATED JAN 28/01.
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210	JAN 28/04	02
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203	SEP 20/94	02
204	MAR 20/96	02
205	JAN 28/05	02
206	MAR 20/96	02
207	SEP 28/99	04
208	SEP 28/99	02
209	SEP 28/99	05
210	MAR 20/96	05
211	SEP 28/99	05
212	SEP 28/00	05

PAGE	DATE	CODE
32-09-08		CONT.
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214	SEP 28/99	04
32-09-09		
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403	SEP 28/99	02
404	SEP 28/99	02
32-09-10		
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403	MAY 28/01	02
404	MAY 28/01	01
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4	MAR 15/83	01
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402	MAY 28/02	03
403	JAN 28/01	02
404	MAR 20/90	01
405	MAR 20/90	01
406	MAR 20/96	01
407	MAR 20/96	01
408	MAY 28/99	04
409	SEP 28/99	03
410	SEP 28/04	03
411	MAY 20/08	01
412	JAN 28/05	04
413	JAN 28/05	01
414	JAN 28/05	01
415	JAN 28/05	01
416	JAN 28/05	01
417	JAN 28/05	01
418	JAN 28/05	03
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402	MAY 28/03	01
403	SEP 28/00	01
404	JAN 28/00	01

PAGE	DATE	CODE
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405	JAN 28/00	01
406	JAN 28/00	01
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408	MAY 28/99	01
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402	MAY 28/99	01
403	SEP 28/03	01
404	JAN 28/00	01
405	SEP 28/00	03
406	SEP 28/03	03
407	SEP 28/00	01
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402	MAY 28/99	01
403	JAN 28/00	01
404	MAR 20/91	02
405	SEP 28/03	02
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405	JAN 28/00	01
406	SEP 28/03	01
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403	MAY 28/02	01
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R 405	JAN 20/09	01.101
R 406	JAN 20/09	01.101
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405	MAY 28/99	01
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405	JAN 28/00	03
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407	DEC 20/96	02
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32-11-17		
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403	DEC 20/92	03
404	MAR 20/97	04
405	MAY 28/00	03
406	MAY 28/99	03

PAGE	DATE	CODE
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405	JAN 28/05	01
406	JAN 28/05	01
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403	MAY 28/99	02
404	MAY 28/99	01
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403	MAY 28/04	02
404	MAY 28/04	02
405	MAY 28/04	02
406	MAY 28/04	02
407	SEP 28/05	01
408	SEP 28/05	01
409	SEP 28/07	01
410	SEP 28/05	02
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413	SEP 28/05	01
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415	SEP 20/08	01
416	SEP 28/05	01

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R 422	JAN 20/09	01.1
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206	JUN 20/95	01
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R 216	JAN 20/09	01.1
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220	MAR 20/97	02
221	JUN 20/95	02
222	JUN 20/95	02
223	DEC 20/95	03
224	DEC 20/96	04
225	SEP 28/03	03
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R 227	JAN 20/09	03.101
R 228	JAN 20/09	03.101
R 229	JAN 20/09	03.101
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235	SEP 28/02	01
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406	MAY 28/99	01

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412	JAN 28/06	09
413	JAN 28/06	02
414	SEP 28/05	18
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804	SEP 28/01	01
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404	JAN 28/05	08
405	MAY 28/99	08
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413	JAN 28/00	03
414	JAN 28/05	05
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418	MAY 28/00	01
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32-21-12		
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602	JUN 20/90	01

PAGE	DATE	CODE
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411	SEP 20/96	01
R 412	JAN 20/09	01.101
R 413	JAN 20/09	01.1
414	SEP 28/03	02
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206	JUN 20/91	01
207	MAR 20/96	01
208	MAR 20/97	01
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R 210	JAN 20/09	01.1
R 211	JAN 20/09	01.101
212	MAY 28/00	01
213	MAY 28/00	01
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32-22-05		
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114	MAR 20/90	01
115	SEP 15/85	01
116	MAR 15/87	01
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3	DEC 15/82	01
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404	JAN 28/05	01
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2	MAR 20/90	02
3	MAR 20/90	01
4	MAR 20/88	01

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7	MAR 20/88	01
8	MAR 20/91	09
9	MAR 20/91	02
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405	JAN 28/06	01
406	JAN 28/01	02
407	JAN 28/01	04
408	SEP 28/00	04
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404	JAN 28/05	01

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402	MAY 28/99	01
403	SEP 28/07	01
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32-32-15		
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404	MAY 28/05	01

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203	MAR 20/90	02
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7	MAR 20/91	01
8	MAR 20/90	10
9	MAR 20/90	03
10	DEC 20/96	01
11	MAR 20/90	01
12	MAR 20/90	01
13	DEC 20/90	01
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R 15	JAN 20/09	01.1
R 16	JAN 20/09	09.101
R 17	JAN 20/09	07.101
R 18	JAN 20/09	03.1
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540	MAY 20/08	12
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542	MAY 20/08	15
543	MAY 20/08	11
544	MAY 20/08	06
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404	JAN 28/07	03
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405	JAN 28/02	01
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407	SEP 28/06	01
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403	JAN 28/02	01
404	JAN 28/07	01

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8	MAY 28/00	02A
9	MAR 20/91	02A
10	MAR 20/91	02A
11	MAR 20/91	02A
12	JAN 28/02	05A
13	SEP 20/93	04A
14	MAR 20/91	02A
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19	JAN 28/02	03A
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22	JAN 28/02	02A
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512	SEP 28/02	04A

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PAGE	DATE	CODE
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406	SEP 28/01	03

PAGE	DATE	CODE
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11	SEP 28/01	10
12	MAR 15/87	05
13	MAR 20/93	19
14	SEP 28/00	14
15	JUN 15/87	02
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17	MAR 20/93	06
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19	MAR 20/90	05
R 20	JAN 20/09	06.1
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R 22	JAN 20/09	05.1
R 23	JAN 20/09	05.1
R 24	JAN 20/09	13.1

PAGE	DATE	CODE
32-42-00		CONT.
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R 26	JAN 20/09	12.101
R 27	JAN 20/09	12.101
R 28	JAN 20/09	14.1
R 29	JAN 20/09	05.1
R 30	JAN 20/09	08.101
R 31	JAN 20/09	12.1
R 32	JAN 20/09	11.1
R 33	JAN 20/09	13.101
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D 42	DELETED	13
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525	SEP 28/06	02
526	MAY 28/99	09

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PAGE	DATE	CODE
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416	JAN 28/06	01
417	SEP 28/04	01
418	SEP 28/04	02

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405	MAY 28/00	03
406	MAY 28/00	04

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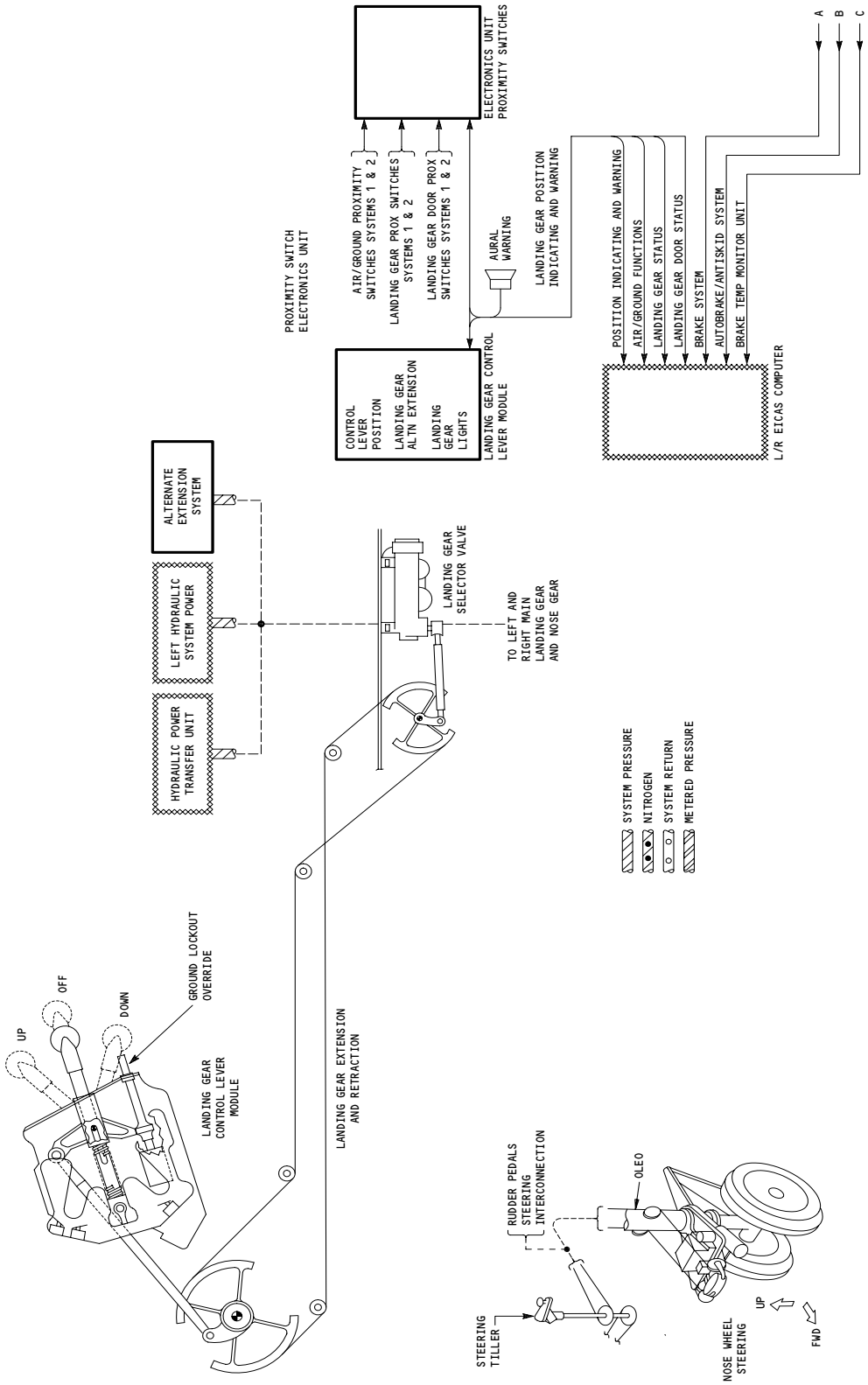
LANDING GEAR - DESCRIPTION AND OPERATION

1. General
   A. The landing gear system is a combination of sub-systems which provide control and support of the airplane while on the ground. The system includes the main and nose landing gear, an extension and retraction system, braking, steering, and a position indicating system (Fig. 1).
2. Component Details
   A. Air/Ground Relays (AMM 32-09-00)
      (1) Proximity sensors on the nose and main landing gear and truck positioner hydraulic inlet pressure switches provide inputs to the proximity switch electronics unit (PSEU) to indicate whether the airplane is on the ground or in the air. The PSEU controls air/ground relay switching which controls the various airplane systems for air or ground mode operation.
   B. Main Landing Gear and Doors (AMM 32-10-00)
      (1) The main landing gear consists of two gears and associated doors which support approximately 85 per cent of the airplanes' weight. The gears are located under the wing, inboard of the engine nacelles.
   C. Nose Landing Gear and Doors (AMM 32-20-00)
      (1) The nose landing gear consists of one nose gear and associated doors which supports the nose of the airplane. The gear is located near the nose of the airplane beneath the flight deck.
   D. Extension and Retraction (AMM 32-30-00)
      (1) The extension and retraction system consists of control cables, and hydraulic actuators and valves which control and operate landing gear movement.
   E. Wheels and Brakes (AMM 32-40-00)
      (1) The airplane is supported on the ground by wheel and tire assemblies mounted on the landing gear. The main gear wheels are equipped with brakes which aid in stopping the airplane.
      (2) An automatic brake control and antiskid protection system aids airplane braking (AMM 32-42-00).

   F. Steering (AMM 32-51-00)
      (1) Directional control of the airplane on the ground is provided by a nose wheel steering system. The system consists of control cables, and hydraulic actuators and valves which rotate the nose wheels.
   G. Position and Warning (AMM 32-61-00)
      (1) The position and warning system monitors and indicates the status of landing gear and doors positon as a check for proper operation. Sensors on the gears and doors monitor the position, and the information is displayed by indicator lights in the flight deck.



Landing Gear Systems Simplified Schematic
Figure 1 (Sheet 1)

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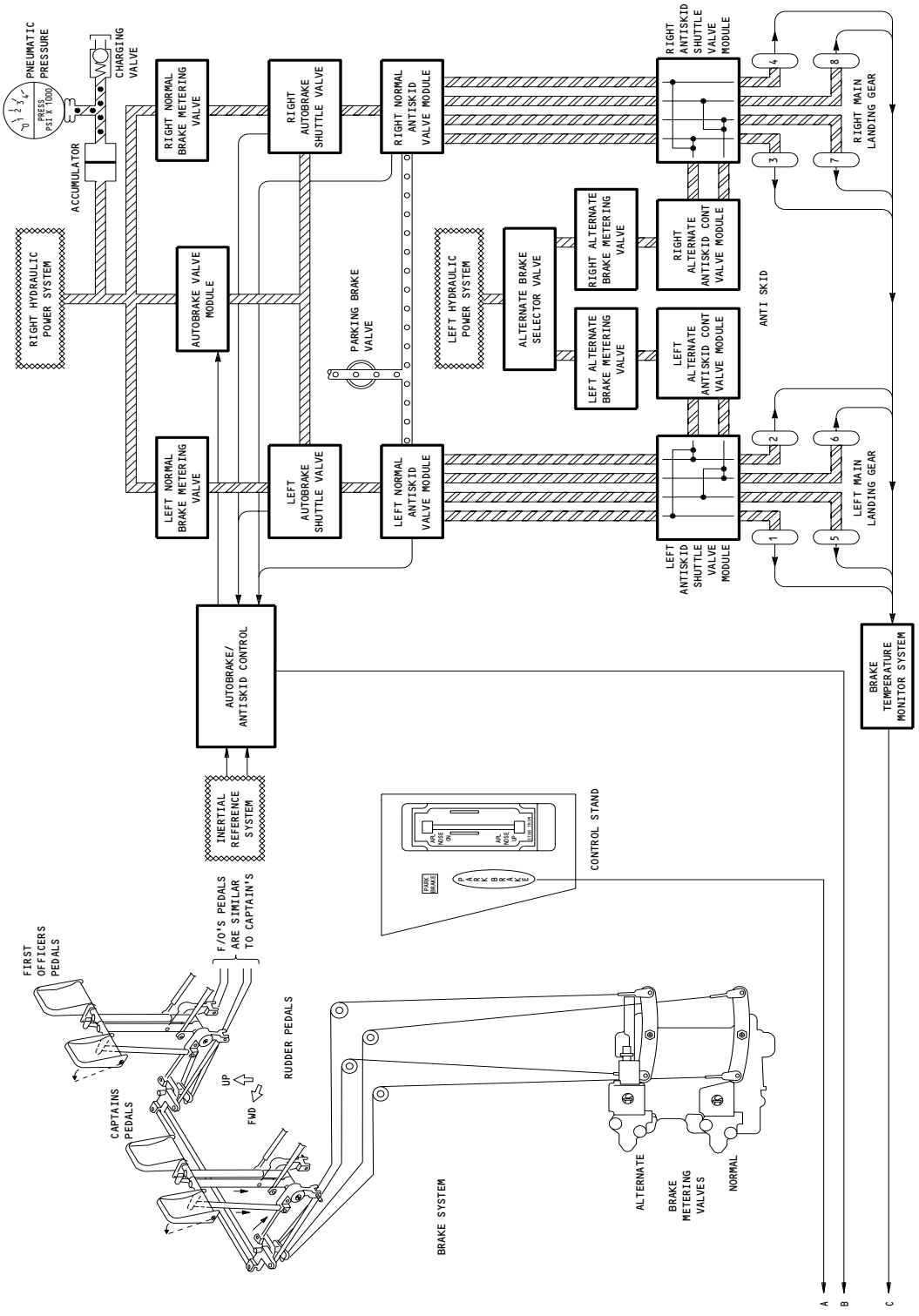


Landing Gear Systems Simplified Schematic
Figure 1 (Sheet 2)

LANDING GEAR SHOCK STRUT INNER CYLINDER - INSPECTION FOR CHROME PLATE CORROSION

1. General
   A. This procedure has two parts. The first is an inspection of the shock strut inner cylinder for chrome cracking or chipping. The second part is to repair cracked chrome on the inner cylinder. There is no standard repair for chipped off chrome. Chrome cracking is a different condition then chrome chipping. If the chrome has chipped, bubbled, lifted, or if the base metal has been exposed there is no standard repair.
   B. Chrome plateing on large diameter parts will show very small and narrow lines that look like cracks. These lines (microcracks or chicken-wire cracks) naturally occur when the chrome plate was 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.

TASK 32-00-03-206-001

2. Inspection for Cracking and Chipping on the Shock Strut Inner Cylinder Chrome
   A. Equipment
      (1) Dental Explorer
      (2) Plastic Scraper
   B. 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

          NOTE: You can use MIL-H-5606 as an alternate to the preferred MIL-H-6083.

   C. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 32-00-15/201, Landing Gear Down Locks
      (3) AMM 32-00-20/201, Landing Gear Door Locks
   D. Prepare for the Procedure

      S 216-002

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

      (1) Make sure the ground locks are installed in all the landing gear (AMM 32-00-15/201).

S 416-003

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 32-00-20/201). Install the locks on both of the main doors and on the nose door.

S 826-004

(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 116-005

(4) Clean the chrome plated area on the inner cylinder of the shock strut with solvent. Wipe the chrome dry.

E. Procedure

S 216-006

(1) Examine the chrome surface on the outer diameter of the inner strut for cracks (chicken-wire cracks):

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

NOTE: You can use a flashlight for this check.

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

NOTE: Do not use a magnifying glass to do this inspection. Cracks are normal on the chrome and do not need to be repaired unless they extend to the base metal.

(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 with this method. Make sure the plastic scraper is new, as used scrapers will not satisfactorily find the cracks.

(d) If you see any possible area of corrosion, chipping, or lifting 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 216-008

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

(a) Look for one or more of the conditions that follow to find signs of possible corrosion under the chrome plating:

1) Poor chrome bonds with the base metal.
2) Bubbles in the chrome plating.
3) An area of chrome plate that moves above the smooth surface of the adjacent chrome plate when you move the dental explorer across it.
4) Chrome plate that comes off in flakes when you move the dental explorer over the chrome plate. If any of these conditions are present the inner cylider is not serviceable.

CAUTION: MAKE SURE THE SUBSEQUENT INSPECTIONS CHECK THE REPAIR UNTIL THE SHOCK STRUT IS OVERHAULED. CONTINUED USE OF A LANDING GEAR WITH THE REPAIR FOR CRACKING CHROME MAY RESULT IN SEAL DAMAGE, SHOCK STRUT FLUID CONTAMINATION, AND POSSIBLE STRUT PRESSURE LOSS. THERE IS NO PERMANENT REPAIR FOR CRACKED CHROME, THE CRACK WILL REMAIN UNTIL THE CHROME IS REMOVED AND REPLACED.

(b) After the temporary repair is done, make sure the inspection procedure (AMM 32-00-03/601) is done between four and six months again, and 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.
1) Measure the size of the area that has the cracks, and make a sketch of the location and shape of the area, and mark the dimensions on the sketch. Make sure you keep this data so it can be used for the next inspection.
2) Use a wiper to apply a thick layer of primer to the cracked chrome surface.
3) Before the primer dries, remove the excess with a clean, dry cloth. Make sure no primer gets on the seals or scrapers, as they can be damaged by the primer and may start to leak.
4) Let the primer cure for at least 4 hours.

F. Put the Airplane back to its Usual Condition

S 016-007

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 CONTROL CABLES - MAINTENANCE PRACTICES

1. General
   A. This procedure gives the data to get the location and to make all of the control cables for the landing gear.
   B. The control cables are put into three groups. These groups are:
      (1) Extension and retraction cables
      (2) Brake cables
      (3) Nose wheel steering cable
   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 32-00-05-212-001

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.

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
201	1	Cable	32-31-02	02	45
	2	Cable			55
	3	Cable			60
	4	Turnbuckle and Clip			30,40
	5	Cable			50

(2) Brake 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. 202, cables LGB2A-2 and LGB2B-2 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	Turnbuckle and Clip	32-51-53	01	22 27
	2	Cable			50
	3	Cable			55
	4	Cable			74
	5	Cable			73
	6	Cable			73
	7	Cable			74
	8	Cable			55
	9	Cable			50
	10	Cable			35
	11	Cable			45
	12	Cable			45
	13	Cable			35

(3) Control Cables for the Nose Wheel Steering of the Landing Gear.

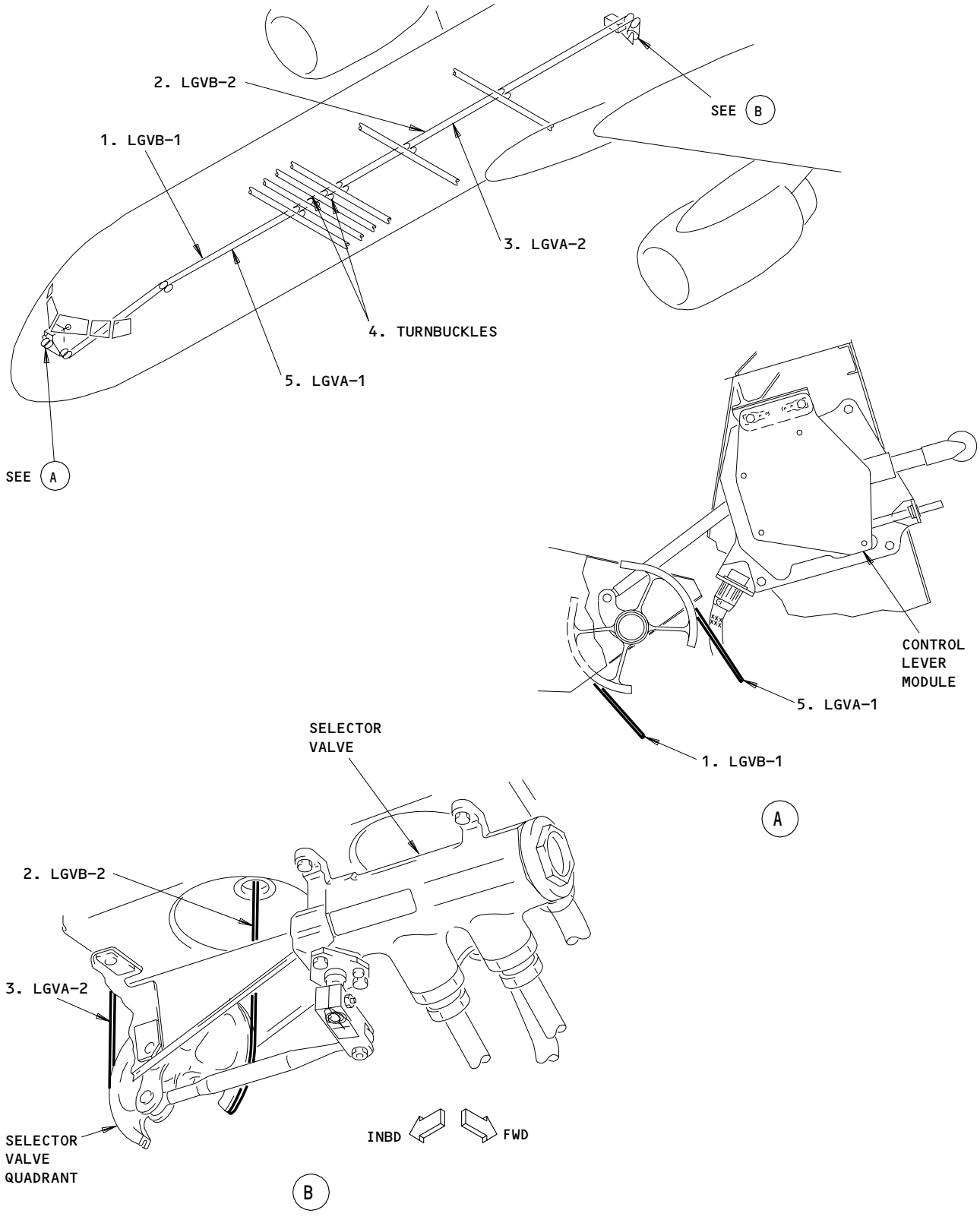
NOTE: You can mix zinc-only and tin-zinc coated cables but opposite cable segments in the same cable loop must be of the same type (For example, in Fig. 203, cables NWSA-1 and NWSB-1 or NGPPA-2 and NGPPB-2 must be replaced together with both new cables either zinc-only or tin-zinc.) This will prevent asymmetric cable stretch that can make cable rigging bad.

(a) ALL EXCEPT GUI 115;
Use the table that follows:

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
203	1	Cable	32-51-53	01	25
	2	Cable			30
	3	Cable			40
	4	Turnbuckle and Clip			10
					15
	5	Cable			20
	6	Cable			55
	7	Cable			45
	8	Cable			50
	9	Cable			35

(b) GUI 115;
Use the table that follows:

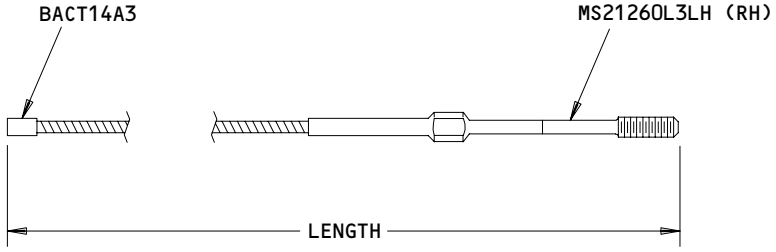
AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
203A	1	Cable	32-51-53	01	25
	2	Cable			30
	3	Cable			40
	4	Turnbuckle and Clip			10
					15
	5	Cable			20
	6	Cable			55
	7	Cable			45
	8	Cable			50
	9	Cable			35
	10	Cable			65
	11	Cable			60
	12	Cable			60
	13	Cable			65
	14	Turnbuckle and Clip			10
					13



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

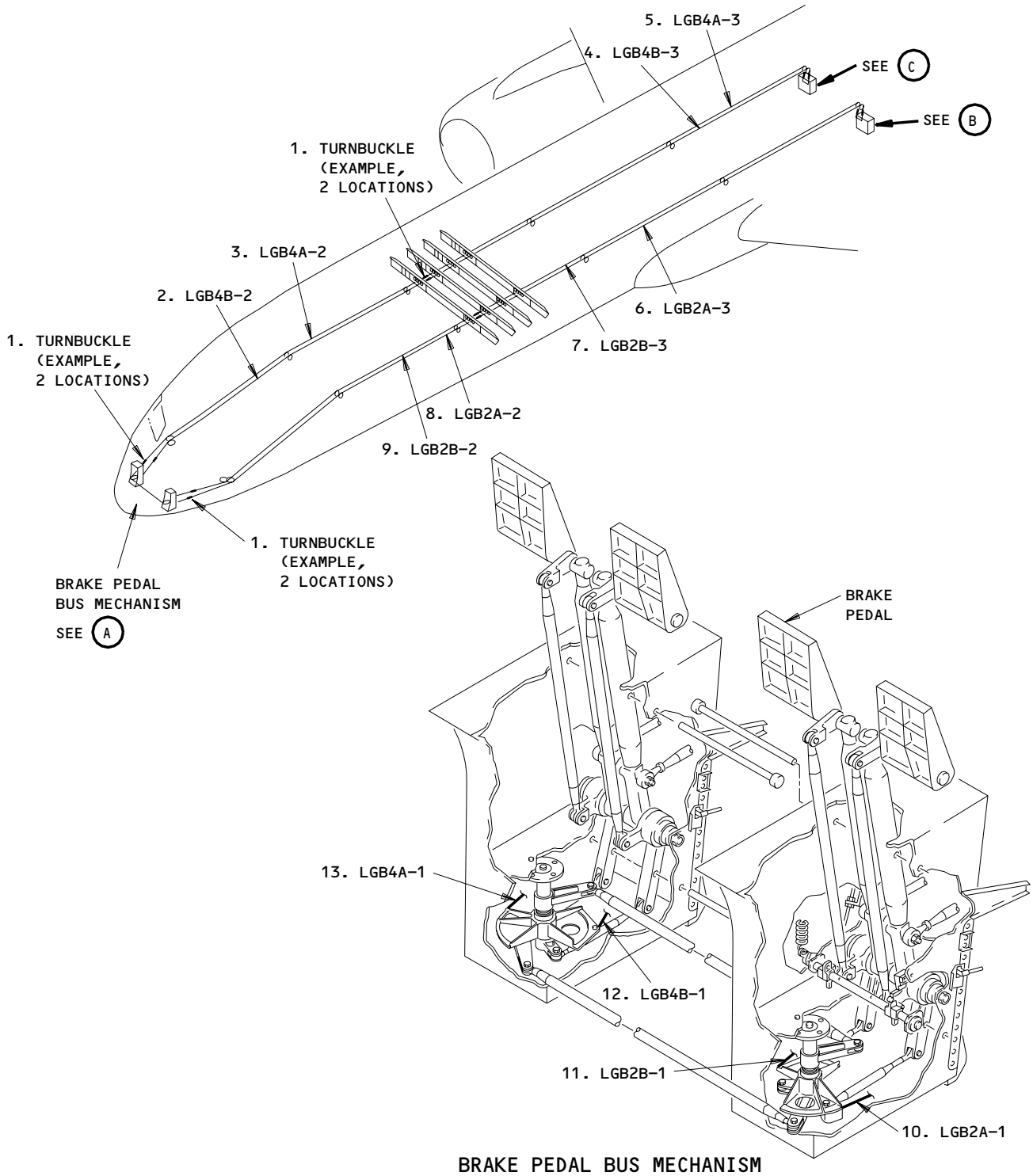
CABLE REFERENCE	NUMBER REQUIRED	LENGTH (INCHES)	CABLE TYPE	TERMINALS	
				1	2
LGVA-1	1	420.1	*[1]	BACT14A3	MS21260L3LH
LGVA-2	1	449.0	*[1]	BACT14A3	MS21260L3RH
LGVB-1	1	400.5	*[1]	BACT14A3	MS21260L3RH
LGVB-2	1	468.6	*[1]	BACT14A3	MS21260L3LH

*[1] CABLE MATERIAL: CARBON STEEL - TYPE I COMPOSITION A (TZ) PER BMS 7-265
CABLE SIZE AND CONSTRUCTION: 3/32 - 7 X 7



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

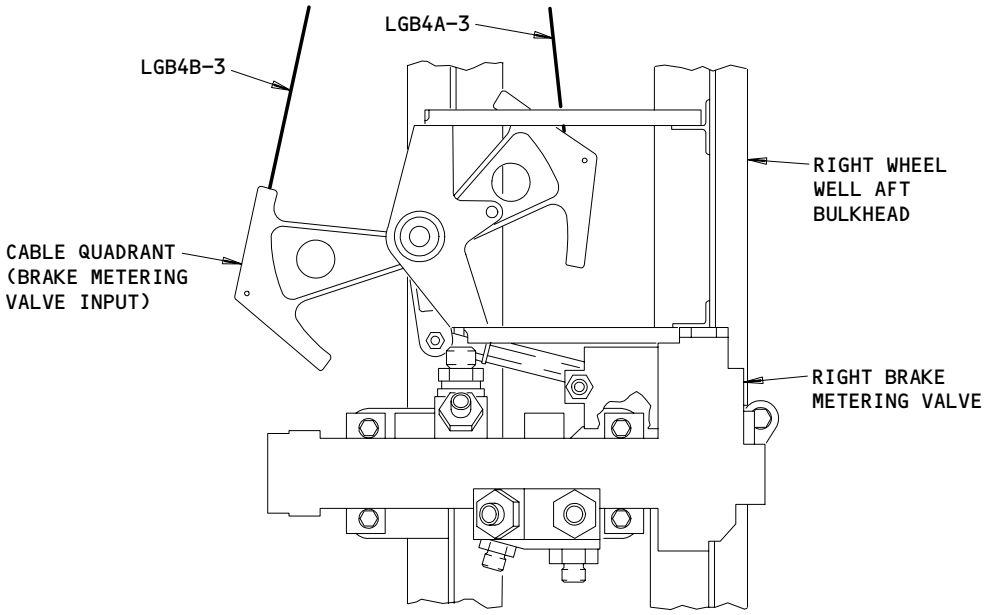
Landing Gear Extension and Retraction Control Cables
Figure 201 (Sheet 2)



BRAKE PEDAL BUS MECHANISM

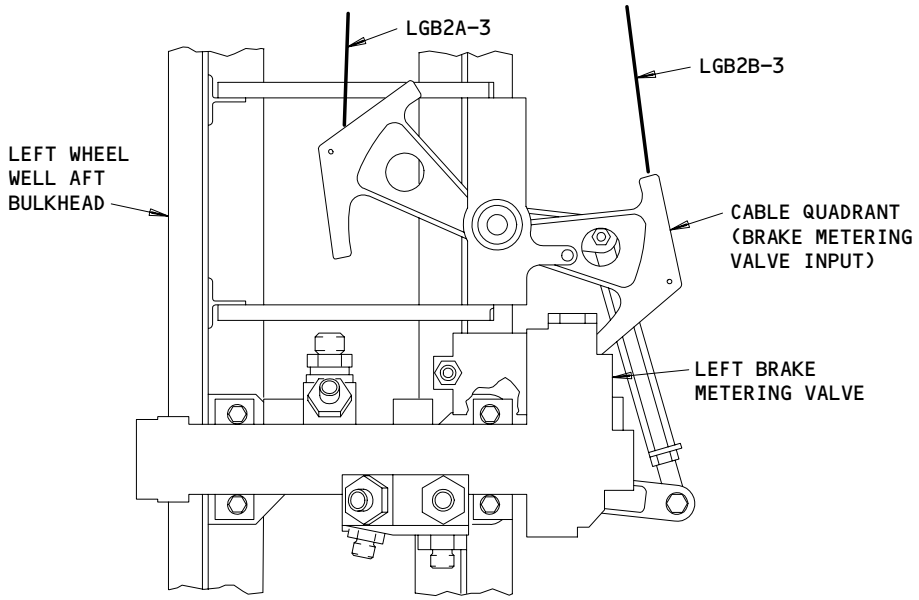
A

Landing Gear Brake Control Cables
Figure 202 (Sheet 1)



RIGHT BRAKE CABLES

B



LEFT BRAKE CABLES

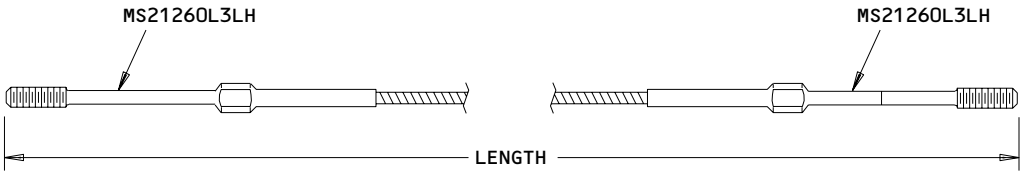
C

Brake Metering Valve Installation
Figure 202 (Sheet 2)

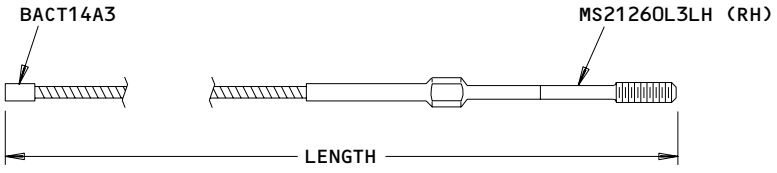
CABLE REFERENCE	NUMBER REQUIRED	LENGTH	TERMINALS	
			1	2
LGB2A-1	1	26.2	BACT14A3	MS21260L3RH
LGB2A-2	1	358.0	MS21260L3LH	MS21260L3LH
LGB2A-3	1	470.6	BACT14A3	MS21260L3RH
LGB2B-1	1	34.9	BACT14A3	MS21260L3RH
LGB2B-2	1	344.7	MS21260L3LH	MS21260L3LH
LGB2B-3	1	474.3	BACT14A3	MS21260L3RH
LGB4A-1	1	26.2	BACT14A3	MS21260L3RH
LGB4A-2	1	358.0	MS21260L3LH	MS21260L3LH
LGB4A-3	1	470.6	BACT14A3	MS21260L3RH
LGB4B-1	1	34.9	BACT14A3	MS21260L3RH
LGB4B-2	1	344.7	MS21260L3LH	MS21260L3LH
LGB4B-3	1	474.3	BACT14A3	MS21260L3RH

CABLE MATERIAL: CARBON STEEL - TYPE I COMPOSITION A (TZ) PER BMS 7-265

CABLE SIZE AND CONSTRUCTION: 3/32 - 7 X 7

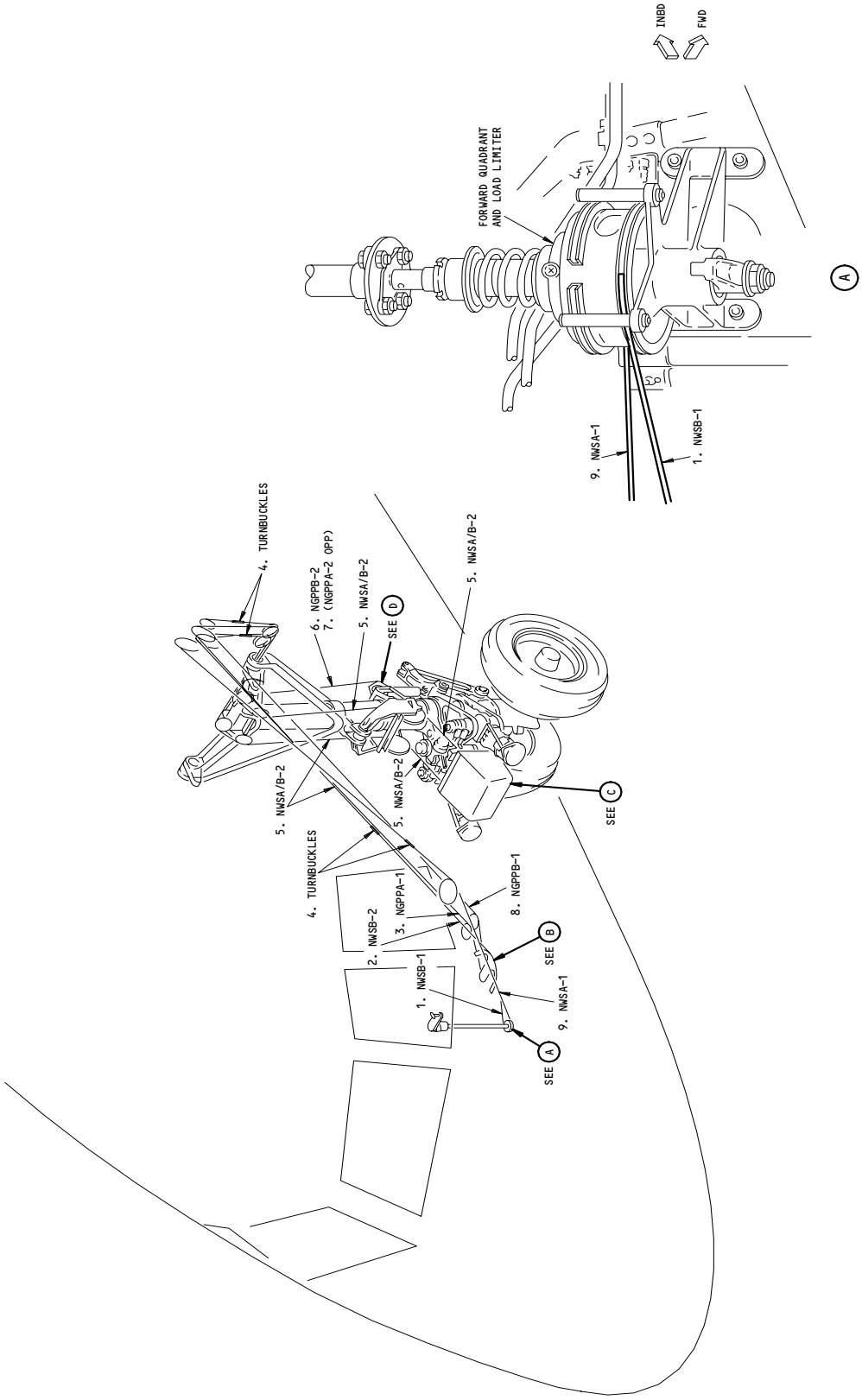


LGB2A-2,LGB2B-2,LGB4A-2,LGB4B-2

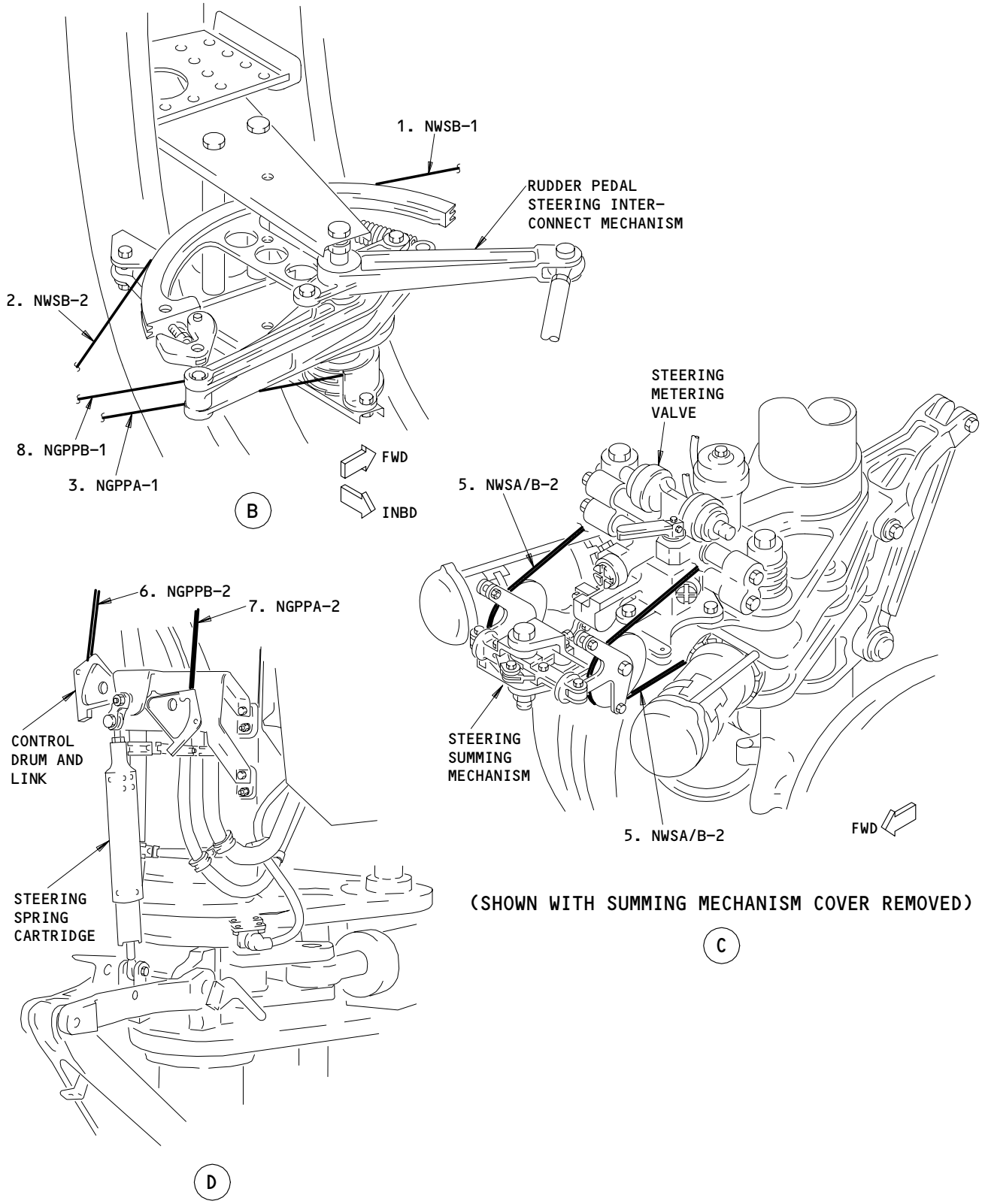


LGB2A-1,LGB2A-3,LGB2B-1,LGB2B-3,
LGB4A-1,LGB4A-3,LGB4B-1,LGB4B-3

Landing Gear Brake Control Cables
Figure 202 (Sheet 3)



Nose Wheel Steering Control Cables
Figure 203 (Sheet 1)



Nose Wheel Steering Control Cables
Figure 203 (Sheet 2)

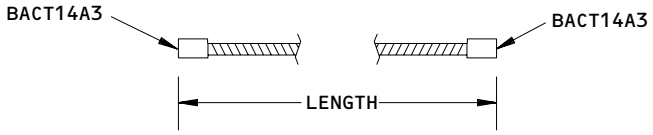
70539

CABLE REFERENCE	NUMBER REQUIRED	LENGTH (INCHES)	CABLE TYPE	TERMINALS		
				1	2	3
NWSA-1	1	63.3	1	BACT14A3	MS21260L3RH	----
NWSB-1	1	32.1	1	BACT14A3	BACT14A3	----
NWSB-2	1	57.2	1	BACT14A3	MS21260L3LH	----
NWSA/B-2	1	(L) 494.0	2 3	MS21260L3LH	MS21260L3RH	BACT14B3
	1	(B) 237.3	2 3	----	----	----
NGPPA-1	1	150.7	1	BACT14B3	MS21260L3RH	----
NGPPA-2	1	83.5	1	BACT14B3	MS21260L3LH	----
NGPPB-1	1	150.0	1	BACT14B3	MS21260L3LH	----
NGPPB-2	1	83.4	1	BACT14B3	MS21260L3RH	----

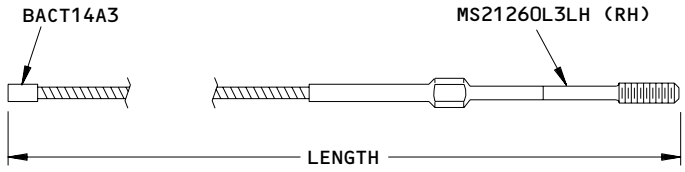
1 CABLE MATERIAL: CARBON STEEL - TYPE I COMPOSITION A (TIN-ZINC) PER BMS 7-265
CABLE SIZE AND CONSTRUCTION: 3/32 - 7 X 7

2 CABLE NWSA/B-2 IS A SINGLE CABLE DIVIDED INTO TWO PARTS (NWSA-2 & NWSB-2) BY A BACT14B3 BALL TERMINAL

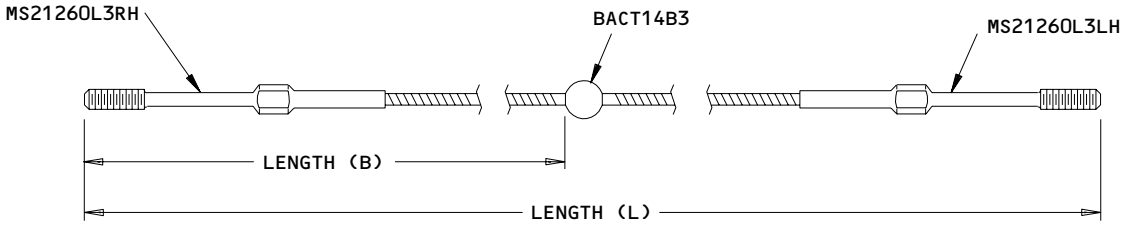
3 CABLE MATERIAL: CRES - TYPE I COMPOSITION B PER BMS 7-265
CABLE SIZE AND CONSTRUCTION: 3/32 - 7 X 7



NWSB-1



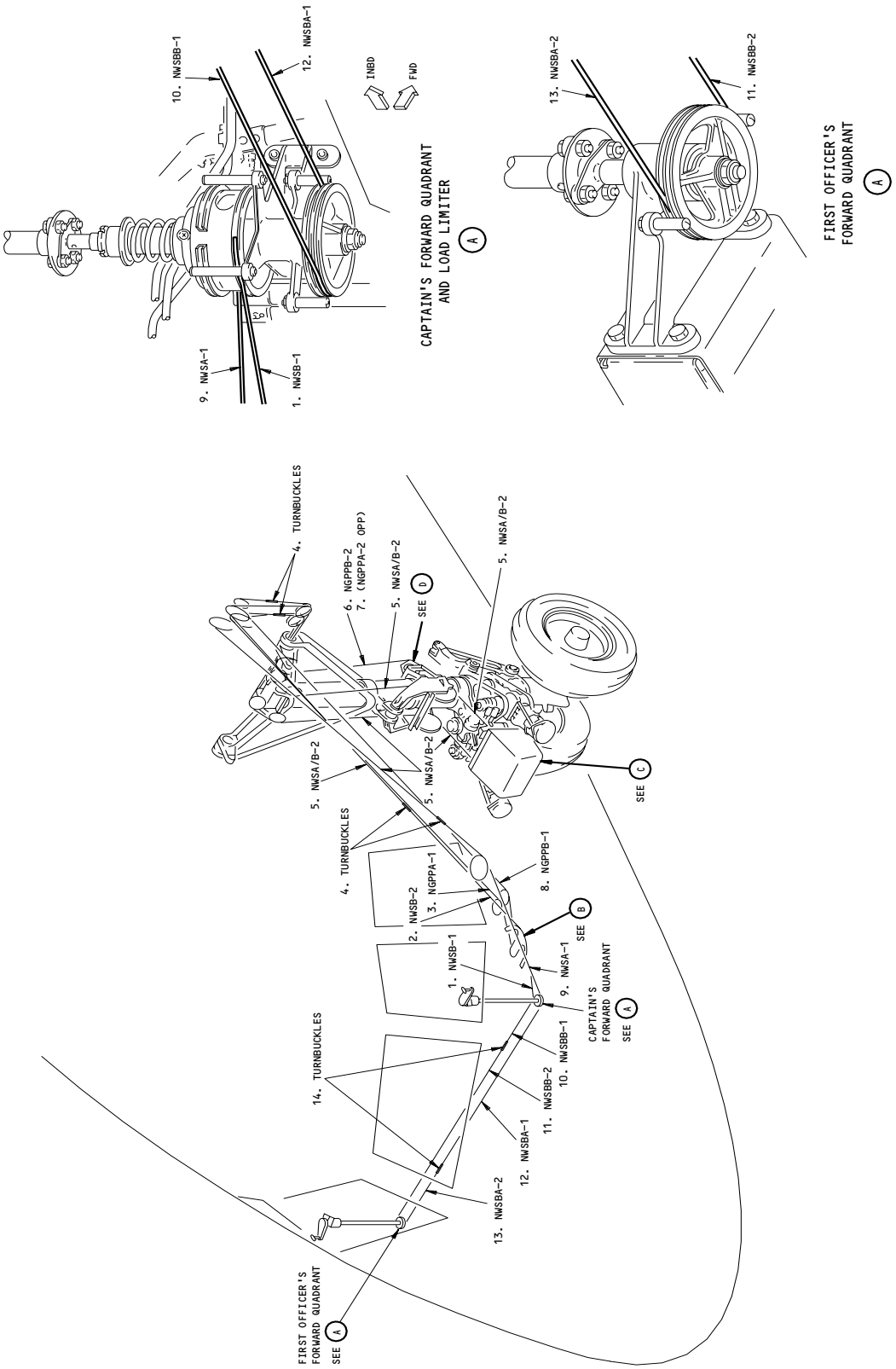
NWSA-1,NWSB-2
NGPPA-1,NGPPA-2,NGPPB-1,NGPPB-2



NWSA/B-2

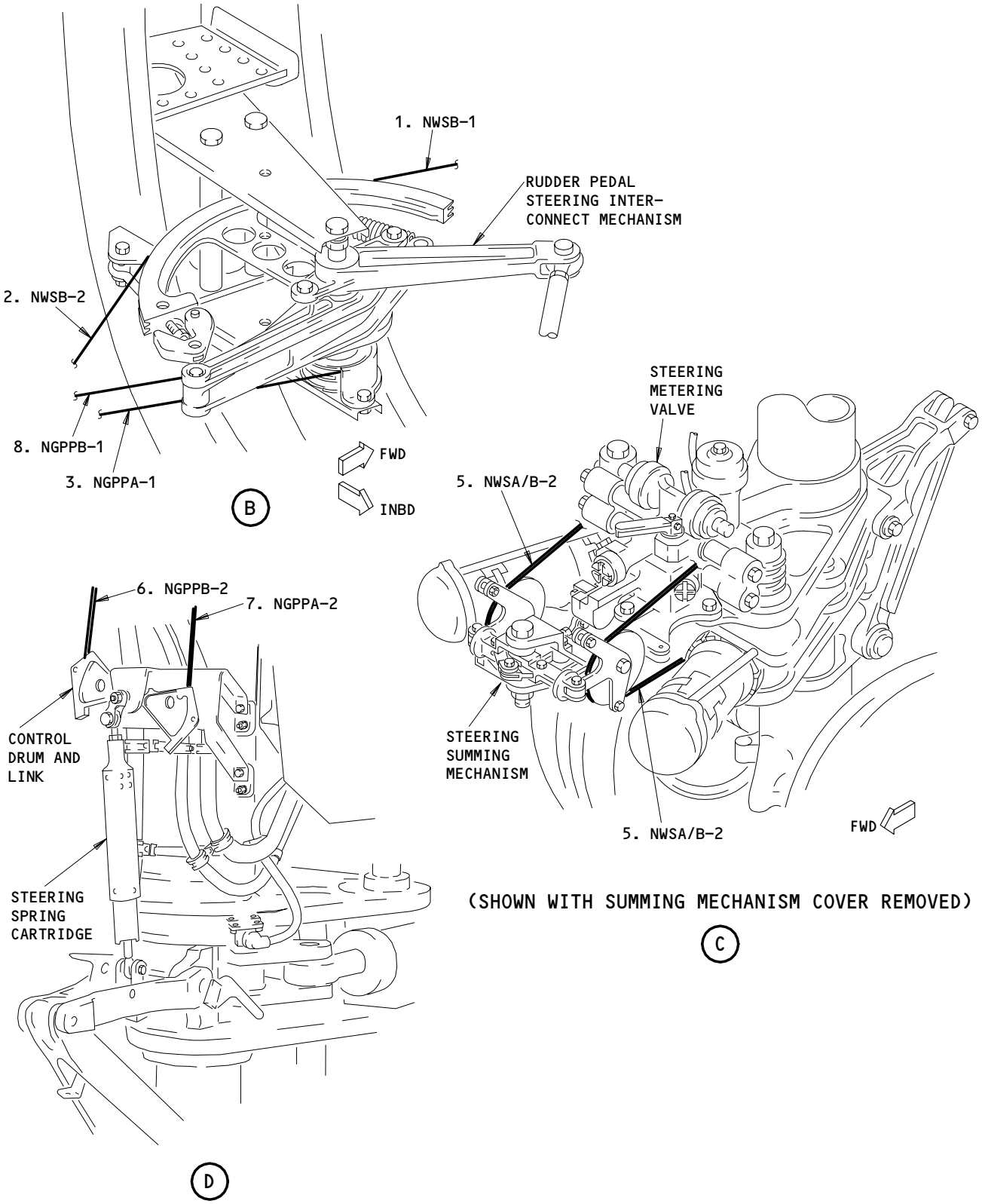
Nose Wheel Steering Control Cables
Figure 203 (Sheet 3)

599136



Nose Wheel Steering Control Cables
Figure 203A (Sheet 1)

780754



Nose Wheel Steering Control Cables
Figure 203A (Sheet 2)

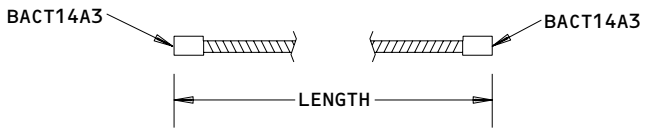
A44763

CABLE REFERENCE	NUMBER REQUIRED	LENGTH (INCHES)	CABLE TYPE	TERMINALS		
				1	2	3
NWSA-1	1	63.3	1	BACT14A3	MS21260L3RH	----
NWSB-1	1	32.1	1	BACT14A3	BACT14A3	----
NWSB-2	1	55.9	1	BACT14A3	MS21260L3LH	----
NWSA/B-2	1	(L) 494.0	2 3	MS21260L3LH	MS21260L3RH	BACT14B3
	1	(B) 237.3				
NWSBA-1	1	64.6	1	BACT14A3	MS21260L3RH	----
NWSBA-2	1	21.6	1	BACT14A3	MS21260L3LH	----
NWSBB-1	1	21.6	1	BACT14A3	MS21260L3LH	----
NWSBB-2	1	64.6	1	BACT14A3	MS21260L3RH	----
NGPPA-1	1	150.7	1	BACT14B3	MS21260L3RH	----
NGPPA-2	1	83.5	1	BACT14A3	MS21260L3LH	----
NGPPB-1	1	150.0	1	BACT14B3	MS21260L3LH	----
NGPPB-2	1	83.4	1	BACT14A3	MS21260L3RH	----

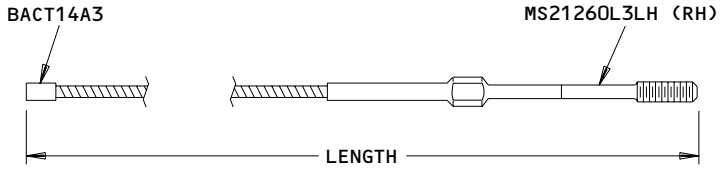
1 CABLE MATERIAL: CARBON STEEL - TYPE I COMPOSITION A (TZ) PER BMS 7-265
CABLE SIZE AND CONSTRUCTION: 3/32 - 7 X 7

2 CABLE MATERIAL: CARBON STEEL - TYPE I COMPOSITION B (CRES) PER BMS 7-265
CABLE SIZE AND CONSTRUCTION: 3/32 - 7 X 7

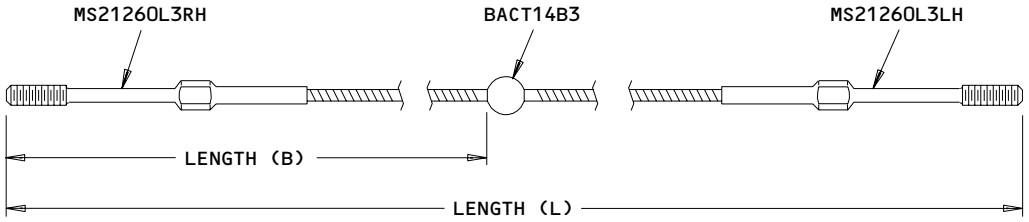
3 CABLE NWSA/B-2 IS A SINGLE CABLE DIVIDED INTO TWO PARTS (NWSA-2 & NWSB-2) BY A BACT14B3 BALL TERMINAL



NWSB-1



NWSA-1, NWSB-2, NWSBA-1, NWSBA-2, NWSBB-1, NWSBB-2
NGPPA-1, NGPPA-2, NGPPB-1, NGPPB-2



NWSA/B-2

Nose Wheel Steering Control Cables
Figure 203A (Sheet 3)

LANDING GEAR INNER CYLINDER 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 32-00-10-216-003

2. Landing Gear Inner Cylinder Chrome Inspection
   A. References
      (1) AMM 12-15-01/301, Main Landing Gear Shock Strut Servicing
      (2) AMM 12-15-02/301, Nose Landing Gear Shock Strut Servicing
      (3) AMM 32-00-10/701, Landing Gear Inner Cylinder Chrome Cleaning
      (4) AMM 32-00-10/801, Landing Gear Inner Cylinder Chrome Plate Repair
      (5) AMM 32-00-15/201, Landing Gear Door Locks
      (6) 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 416-001

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) Install the door locks on both of the main doors and on the nose door (AMM 32-00-15/201).

S 216-005

(3) 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 the 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 616-006

(4) Clean the inner cylinder chrome of the landing gear (AMM 32-00-10/701).

E. Procedure

S 216-007

(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 216-008

(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.

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 the Airplane
      (2) AMM 12-15-01/301, Main Landing Gear Shock Strut Servicing
      (3) AMM 12-15-02/301, Nose Landing Gear Shock Strut Servicing
      (4) AMM 32-00-10/601, Landing Gear Inner Cylinder Chrome Inspection
      (5) AMM 32-00-10/801, Landing Gear Inner Cylinder Chrome Plate Repair
      (6) AMM 32-00-15/201, Landing Gear Door Locks
      (7) AMM 32-00-20/201, Landing Gear Downlocks
   B. Consumable Materials
      (1) D00467 Fluid - Landing Gear Shock Strut
   C. Access
      (1) Location Zones
          711 Nose Landing Gear
          731/741 Main Landing Gear
   D. Prepare to clean the shock strut

      S 417-003

      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 417-002

      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) Make sure the door locks are installed on all the landing gear (AMM 32-00-15/201).

S 107-004

(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 107-005

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 107-006

(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 32-00-10/701, Landing Gear Inner Cylinder Chrome Cleaning
      (2) AMM 32-00-15/201, Landing Gear Door locks
      (3) 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
          711 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) Make sure that the door locks are installed for all landing gear (AMM 32-00-15/201).

S 618-004

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

E. Procedure

S 358-005

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 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 358-006

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.

(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 618-007
(3) Clean the landing gear inner cylinder chrome (AMM 32-00-10/701).

LANDING GEAR DOOR GROUND OPERATIONS AND LOCKING PROCEDURE - MAINTENANCE PRACTICES

1. General
   A. The door locks for the nose and main landing gear must be installed before you do work in or near the wheel wells.
   B. This procedure contains two tasks. Task one opens the landing gear doors and installs the door locks. Task two removes the door locks and closes the landing gear doors.

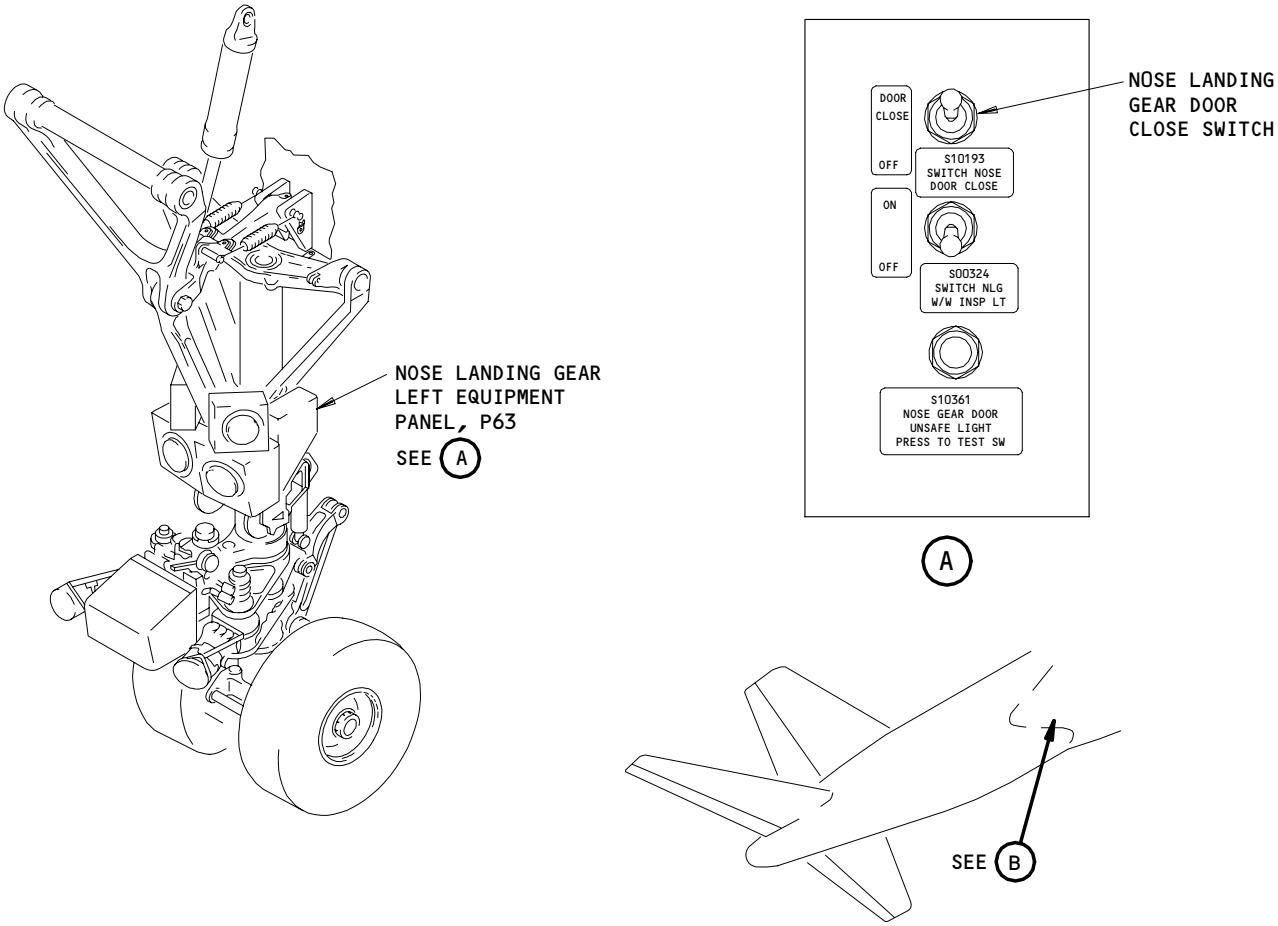
TASK 32-00-15-402-010

2. Open the Doors for the Landing Gear and Install the Door Locks
   A. Equipment
      (1) Door Actuator Lock Equipment, MLG - B32012-45
      (2) Door Actuator Lock, NLG - B32013-12
   B. References
      (1) 06-41-00/201, Fuselage (Major 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 System
      (4) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones

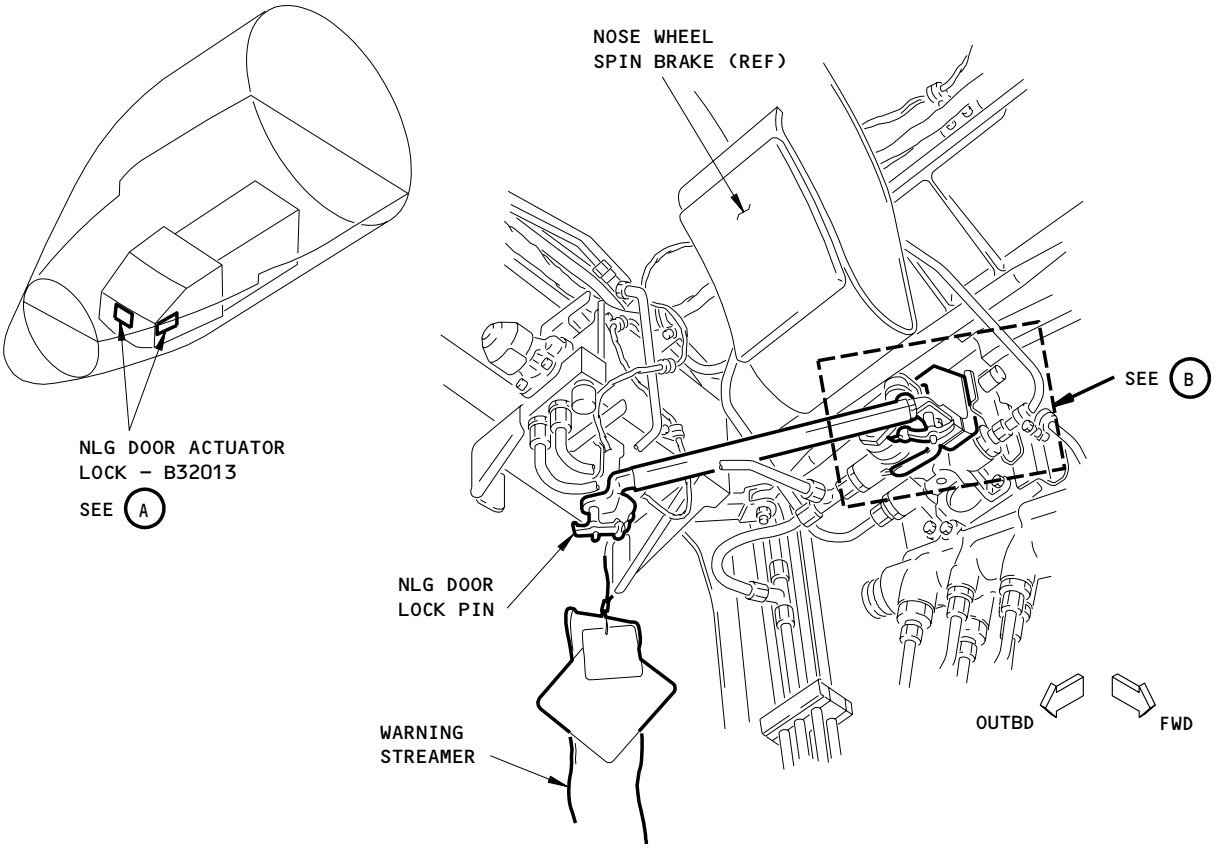
115/116	Nose Landing Gear (NLG) Wheel Well
143/144	Main Landing Gear (MLG) Wheel Well
711	Nose Landing Gear
713/714	Forward NLG Doors
715/716	Aft NLG Doors
731/741	Main Landing Gear
732/742	MLG Body Doors
733/743	MLG Oleo Doors

      (2) Access Panels

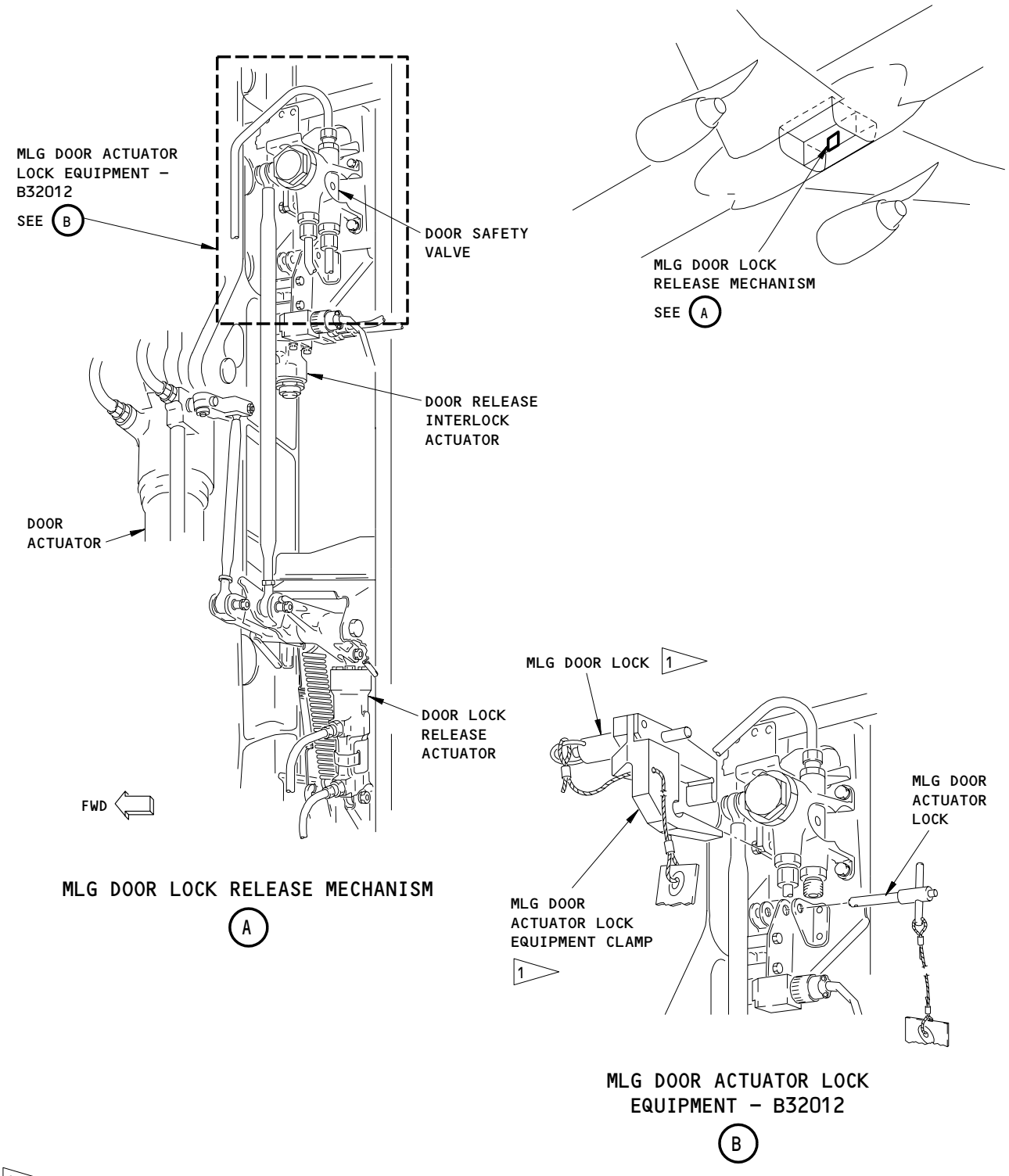
197PL	Ground Control Access Door (Left)
198PR	Ground Control Access Door (Right)



Door Ground Control Switches
Figure 201



Nose Landing Gear (NLG) Door Lock Installation
Figure 202



Main Landing Gear (MLG) Door Locks Installation
Figure 203

D. Prepare to Install the Door Locks.

S 492-012

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

S 092-072

CAUTION: IF THE NLG DOOR LOCK TOOL IS INSTALLED AND THE MLG DOORS ARE CLOSED, DO NOT OPEN THE MLG DOORS UNTIL THE NLG DOOR LOCK TOOL IS REMOVED. IF YOU DO NOT REMOVE THE DOOR LOCK TOOL BEFORE OPENING THE MLG DOORS, THE POWER PACK MAY NOT TURN OFF AND WILL BECOME TOO HOT. IF THE POWER PACK BECOMES TOO HOT, THE ALTERNATE EXTENSION SYSTEM MAY NOT OPERATE.

(2) If the NLG doors are open, make sure that the NLG door actuator lock (B32013) is not installed.

NOTE: The NLG/MLG doors can be closed independent of each other.

S 862-013

(3) Supply electrical power (Ref 24-22-00).

S 012-014

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT AROUND THE NOSE OR MAIN LANDING GEAR BEFORE YOU OPEN THE DOORS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

CAUTION: DO NOT OPERATE THE POWER PACK (ALTERNATE EXTEND) FOR MORE THAN FIVE MINUTES. IT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE MOTOR.

(4) Do not operate the power pack until it becomes cool:

(a) Let the temperature of the power pack motor become less than 150°F before you operate it again.

NOTE: If you cannot measure the temperature of the motor, let it become cool until you can touch it with your hand.

S 862-074

(5) Open the ground control access door, 198PR (Ref 06-41-00), to get access to the electrical service panel, P72, for the main wheel well (Fig. 201).

S 862-016

CAUTION: DO NOT HOLD THE "ALL DOORS OPEN" SWITCHES IN THE "ARM" AND "OPEN" POSITIONS FOR MORE THAN TWO (2) SECONDS. IF YOU HOLD THE SWITCHES TOO LONG, THE POWER PACK CAN BECOME TOO HOT, AND CAN CAUSE THE ALTERNATE EXTENSION SYSTEM TO NOT OPERATE.

(6) At the same time, move the ALL DOORS OPEN ARM switch to the ARM position and the ALL DOORS OPEN switch to the OPEN position.

NOTE: The power pack releases the doors but does not put the doors in the open position.

(a) The main and nose landing gear doors will come open.
(b) If it is necessary, manually put the doors to the fully open position.

S 862-017

WARNING: MAKE SURE THE PRESSURE IS REMOVED FROM THE LEFT AND RIGHT HYDRAULIC SYSTEMS BEFORE YOU GO INTO THE WHEEL WELLS TO INSTALL THE DOOR LOCKS. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR IF THE SYSTEM IS PRESSURIZED.

(7) Remove the pressure from the left and right hydraulic systems and reservoirs (Ref 29-11-00).

E. Install the Door Locks.

S 842-018

(1) Make sure the L and R MAIN GEAR DOOR UNSAFE lights in each main wheel well are off. The lights are on the keel beam.

NOTE: The door safety valve is in the OFF (or SAFETY) position when the safety light is off.

S 842-019

(2) Push the MAIN GEAR DOOR UNSAFE LT PTT switch, on the P72 panel, to make sure the DOOR UNSAFE lights come on.

S 842-061
(3) Release the switch.

S 842-062
(4) Make sure the lights go off.

S 412-023
(5) Close the access door 198PR (Ref 06-41-00).

S 492-025
(6) Install the door locks for the main landing gear (2 locations) (Fig. 203).

S 842-026
(7) Make sure the NOSE GEAR DOOR UNSAFE light, on the front wall of the nose wheel well, is off.

S 842-027
(8) Push the NOSE GEAR DOOR UNSAFE LT PTT switch on the left equipment panel, P63, for the nose landing gear.

S 842-056
(9) Make sure the DOOR UNSAFE light comes on.

S 842-057
(10) Release the switch.

S 842-058
(11) Make sure the light goes off.

S 492-028
(12) Install the door lock for the nose landing gear (Fig. 202).

S 842-029
(13) Make sure the warning streamers on the door locks can be seen from the ground.

S 862-030
(14) Remove the electrical power if it is not necessary (Ref 24-22-00).

TASK 32-00-15-002-031

3. Remove the Door Locks and Close the Landing Gear Doors

A. Equipment
(1) Door Actuator Lock Equipment, MLG - B32012-45
(2) Door Actuator Lock, NLG - B32013-12

B. References
(1) 06-41-00/201, Fuselage (Major 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 System

(4) 32-00-20/201, Landing Gear Downlocks

C. Access

(1) Location Zones

115/116	Nose Landing Gear (NLG) Wheel Well
143/144	Main Landing Gear (MLG) Wheel Well
711	Nose Landing Gear
713/714	Forward NLG Doors
715/716	Aft NLG Doors
731/741	Main Landing Gear
732/742	MLG Body Doors
733/743	MLG Oleo Doors

(2) Access Panels

197PL	Ground Control Access Door (Left)
198PR	Ground Control Access Door (Right)

D. Prepare to Remove the Door Locks.

S 862-032

(1) Supply electrical power (Ref 24-22-00).

S 862-033

WARNING: MAKE SURE THE PRESSURE IS REMOVED FROM THE LEFT AND RIGHT HYDRAULIC SYSTEMS BEFORE YOU GO INTO THE WHEEL WELLS TO REMOVE THE DOOR LOCKS. A PRESSURIZED SYSTEM CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Remove the pressure from the left and right hydraulic systems and reservoirs (Ref 29-11-00).

S 842-034

(3) Make sure the L and R MAIN GEAR DOOR UNSAFE lights in each main wheel well are off. The lights are on the keel beam.

NOTE: The door safety valve is in the OFF (or SAFETY) position when the safety light is off.

S 012-035

(4) Open the ground control access door, 198PR for the landing gear doors (AMM 06-41-00/201) (Fig. 201).

S 842-037

(5) If the DOOR UNSAFE light, on the keel beam in each main wheel well, is on, do the steps that follow:

(a) At the same time, move the ALL DOORS OPEN ARM switch to the ARM position and the ALL DOORS OPEN switch to the OPEN position.

(b) Make sure the light goes off.

S 842-039
(6) Push the MAIN GEAR DOOR UNSAFE LT PTT switch on the P72 panel.
(a) Make sure the DOOR UNSAFE lights come on.
(b) Release the switch.
(c) Make sure the lights go off.

S 092-041
(7) Remove the door locks from the main landing gear (2 locations) (Fig. 203).

S 842-042
(8) Make sure the NOSE GEAR DOOR UNSAFE light, on the front wall of the nose wheel well, is off.

S 842-043
(9) If the DOOR UNSAFE light, on the keel beam in each main wheel well, is on, do the steps that follow:
(a) At the same time, move the ALL DOORS OPEN ARM switch to the ARM position and the ALL DOORS OPEN switch to the OPEN position.
(b) Make sure the light goes off.

S 842-045
(10) Push the NOSE GEAR DOOR UNSAFE LT PTT switch on the left equipment panel, P63, for the nose landing gear.
(a) Make sure the DOOR UNSAFE light comes on.
(b) Release the switch.
(c) Make sure the light goes off.

S 092-046
(11) Remove the door lock for the nose landing gear (Fig. 202).

S 842-047
(12) Make sure the control lever for the landing gear is in the DN position.

E. Put the Airplane Back to Its Usual Condition

S 862-048

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE WHEEL WELL AREAS WHEN YOU CONNECT THE HYDRAULIC POWER AND CLOSE THE DOORS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Pressurize the left hydraulic system and reservoirs (Ref 29-11-00).

S 842-049
(2) Move the MAIN GEAR DOOR CLOSE switch to the DOOR CLOSE position, to close the main landing gear doors.

S 412-051
(3) Close the access door 198PR (Ref 06-41-00).

S 842-053
(4) Move the NOSE GEAR DOOR CLOSE switch to the DOOR CLOSE position, to close the nose landing gear doors.

S 862-054
(5) Remove the hydraulic power if it is not necessary (Ref 29-11-00).

S 862-055
(6) Remove the electrical power if it is not necessary (Ref 24-22-00).

LANDING GEAR DOWNLOCKS - MAINTENANCE PRACTICES

1. General
   A. The downlocks for the nose and main landing gear must be installed on the airplane when:
      (1) There is maintenance done on the airplane
      (2) The airplane is parked and unattended
      (3) The airplane is parked for extended times
      (4) The airplane is towed.
   B. The downlocks are kept in the downlock pins bag in the flight compartment of the airplane.
   C. This procedure contains two tasks. Task one tells how to remove the downlocks. Task two tells how to install the downlocks.

TASK 32-00-20-002-001

2. Remove the Downlocks for the Nose and Main Landing Gear (Fig. 201 and 202)
   A. Equipment
      (1) Downlock Removal/Installation Tool, MLG and NLG - A32015-9
      (2) Downlocks, MLG and NLG - B32001-4
   B. Access
      (1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear (NLG)
713/714	NLG Doors Forward
715/716	NLG Doors Aft
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors
311	Area Aft of the Pressure Bulkhead (Left) 757-300 only
312	Area Aft of the Pressure Bulkhead (Right) 757-300 only

   C. Remove the Downlocks

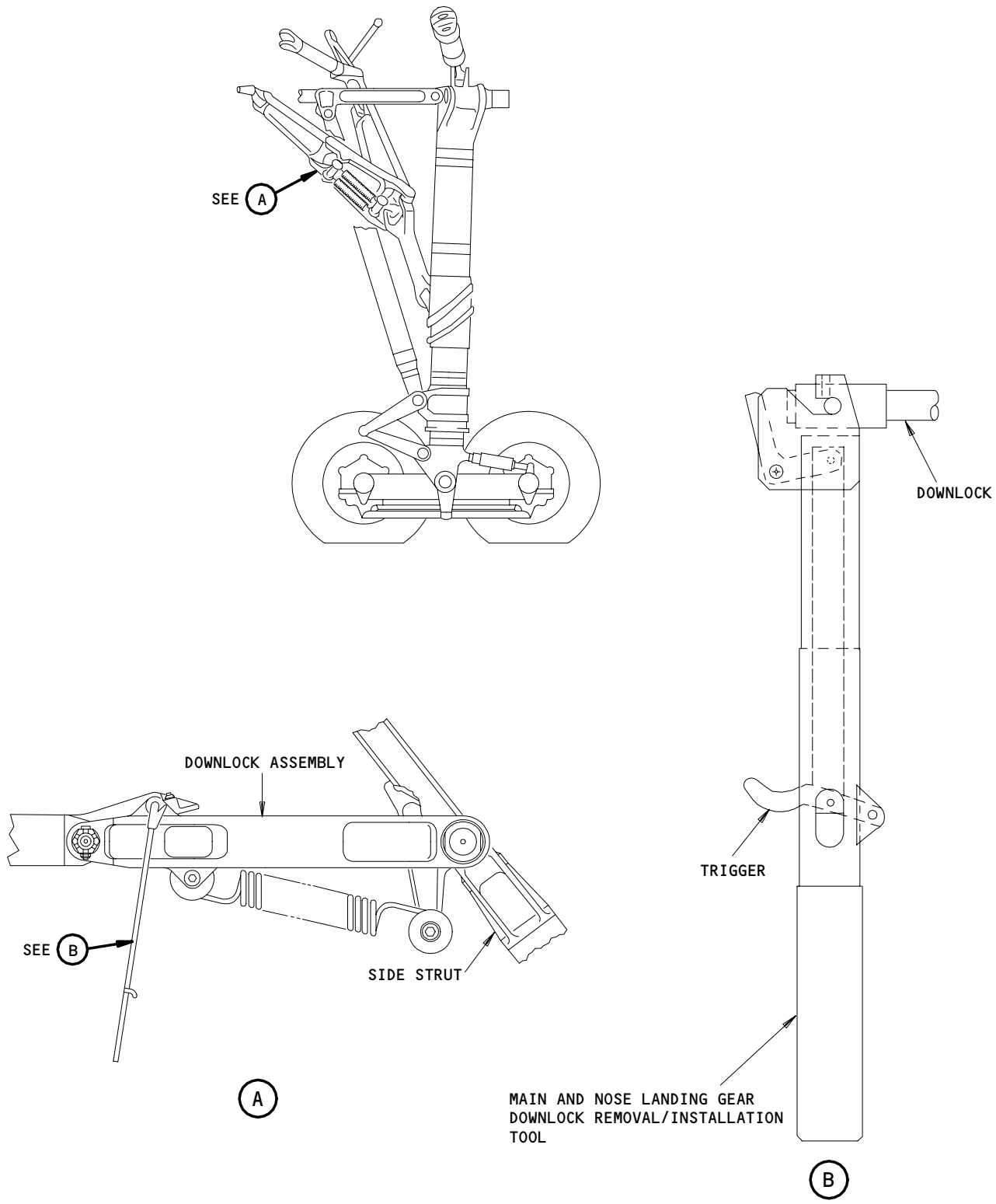
S 842-002
      (1) Make sure the control lever for the landing gear is in DN.

S 092-003
      (2) Use the removal/installation tool to remove the downlocks from the main and nose landing gears.

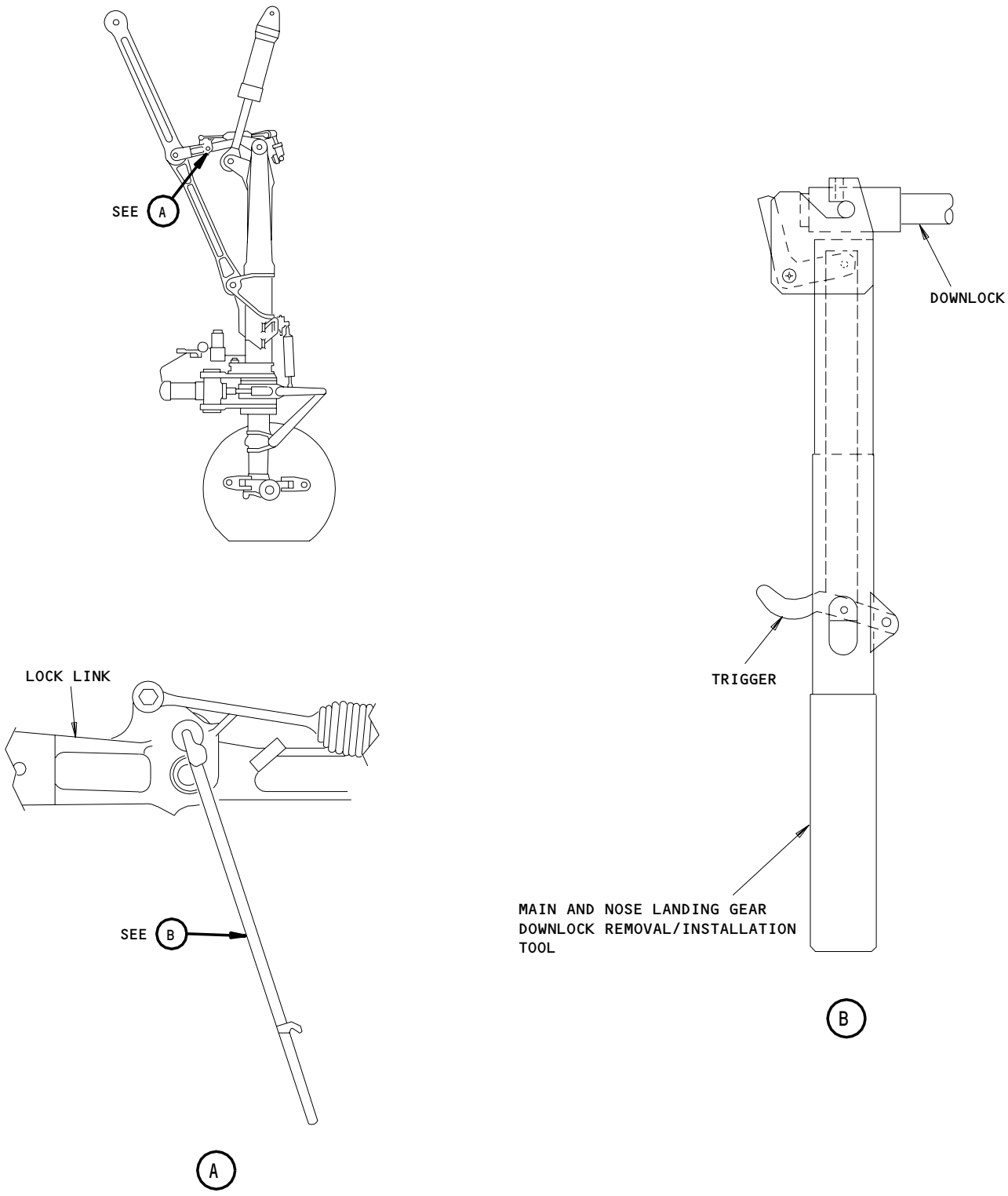
S 492-004
      (3) Put the downlocks in the downlock pins bag.

TASK 32-00-20-402-005

3. Install the Downlocks for the Nose and Main Landing Gear
   A. Equipment
      (1) Downlock Removal/Installation Tool, MLG and NLG - A32015-9



Main Landing Gear Downlock Installation
Figure 201



Nose Landing Gear Downlock Installation
Figure 202

(2) Downlocks, MLG and NLG - B32001-4

B. Access

(1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear (NLG)
713/714	NLG Doors Forward
715/716	NLG Doors Aft
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors
311	Area Aft of the Pressure Bulkhead (Left) 757-300
312	Area Aft of the Pressure Bulkhead (Right) 757-300

C. Install the Downlocks

S 842-006

(1) Make sure the control lever for the landing gear is in DN.

S 092-007

(2) Remove the downlocks from the downlock pins bag.

S 492-008

(3) Use the downlock removal/installation tool (Detail B) to install the downlocks on the main landing gear (2 locations), (Detail A, Fig. 201).

S 492-009

(4) Use the downlock removal/installation tool (Detail B) to install the downlock for the nose landing gear (Detail A, Fig. 202).

S 842-010

(5) Make sure the red warning streamers can be seen from the ground.

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 relays (AMM 32-09-02/001)
      (2) Proximity switch system (AMM 32-09-03/001)
   B. The air/ground relays provide switching and control functions for various airplane systems.
   C. GUI 115;
      The air/ground relays are located in misc relay panels P33, P36 and P37.
   D. ALL EXCEPT GUI 115;
      The relays are located in misc relay panels P36 and P37.
   E. The relays energize or de-energize to provide air or ground mode operating condition. They are either energized in air or on ground. Air/ground sensing is provided by inputs from the nose gear not compressed sensors, main gear truck tilt sensors and truck position actuator hydraulic inlet pressure switches in the proximity switch system.
   F. The proximity switch system provides position sensing for landing gear, doors and thrust reversers. The system consists a proximity switch electronics unit (PSEU) located on the E3-4 shelf in the main equipment center, and numerous proximity sensors on landing gear, doors and engines. The sensors senses 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 –	1		FLT COMPT, P6	
HYD GEN CONT, C4349		1		*
L AOA HEAT, C1134		1		
PITOT HEAT CAPT MAIN, C1110		1		
PITOT HEAT F/O MAIN, C1116		1		
PITOT HEAT L AUX, C1112		1		
PITOT HEAT R AUX, C1114		1		
R AOA HEAT, C1135		1		
TAT PROBE HEAT, C4003		1		
CIRCUIT BREAKER –	1		FLT COMPT, P11	*
AIR/GND SYS 1, C1182		1		
AIR/GND SYS 2, C1170		1		
APU ALT CONT, C1390		1		
AUTOBK ANTISKID TEST IND 1, C1176		1		
AUTOBK ANTISKID TEST IND 2, C1173		1		
AUTO SPEEDBRAKE, C1023		1		
CABIN ALTITUDE CONTROL AUTO 1, C686		1		
CABIN ALTITUDE CONTROL AUTO 2, C701		1		
CABIN ALTITUDE CONTROL MANUAL, C683		1		
CABIN ALTITUDE CONTROL SELECT, C658		1		
ENG PROBE HTR L, C4298		1		
ENG PROBE HTR R, C4299		1		
FLIGHT RECORDER AC, C561		1		
FLIGHT RECORDER DC, C578		1		
FLT CONT CMPTR SERVO C, C524		1		
FLT CONT CMPTR SERVO L, C522		1		
FLT CONT CMPTR SERVO R, C523		1		
FLT CONT SHUTOFF TAIL C, C4035		1		
FLT CONT SHUTOFF TAIL L, C4033		1		
FLT CONT SHUTOFF TAIL R, C4034		1		
LANDING GEAR POS SYS 1, C1175		1		
LANDING GEAR POS SYS 2, C4279		1		
LANDING GEAR POS SYS 2 ALTN, C4478		1		
MAINT CONT DSPL, C520		1		
PROX SW TEST, C4223		1		
RAT CONT, 4061		1		
RAT AUTO, 4216		1		
TMC DC, C525		1		
WING ANTI-ICE, C1132	1	1		
CIRCUIT BREAKER –		1	119BL, MAIN EQUIP CTR, P37	*
HEATERS DRAIN MST AIR, C1142		1		
HEATERS F/O AUX HI, C699	1	1		
CIRCUIT BREAKER –			119BL, MAIN EQUIP CTR, P70	*
CAPT AUX HTR HI, C662		1		
CIRCUIT BREAKER –	1		822, AFT EQUIP CTR, E6	*
APU CONT, C1382		1		

* SEE THE WDM EQUIPMENT LIST

NOTE: LISTED CIRCUIT BREAKERS ARE NOT ON ALL AIRPLANES.

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

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
COMPUTER – (FIM 31-41-00/101)				
EICAS L, M10181				
EICAS R, M10182				
MODULE – (FIM 32-09-03/101)				
PROXIMITY SWITCH ELECTRONICS UNIT (PSEU), M162				
RELAY –	2		119BL, MAIN EQUIP CTR, P36 PANEL	
AIR/GROUND SYSTEM 1, K124				
AIR/GROUND SYSTEM 1, K135				
AIR/GROUND SYSTEM 1, K140				
AIR/GROUND SYSTEM 1, K141				
AIR/GROUND SYSTEM 1, K142				
AIR/GROUND SYSTEM 1, K143				
AIR/GROUND SYSTEM 1, K144 1				
AIR/GROUND SYSTEM 1, K145				
AIR/GROUND SYSTEM 1, K148				
AIR/GROUND SYSTEM 1, K149				
AIR/GROUND SYSTEM 1, K167				
AIR/GROUND SYSTEM 1, K170				
AIR/GROUND SYSTEM 1, K177				
AIR/GROUND SYSTEM 1, K178				
AIR/GROUND SYSTEM 1, K199				
AIR/GROUND SYSTEM 1, K10107				
AIR/GROUND SYSTEM 1, K10108				
AIR/GROUND SYSTEM 1, K10238				
AIR/GROUND SYSTEM 1, K10296				
AIR/GROUND SYSTEM 1, K10306				
AIR/GROUND SYSTEM 1, K10307				
AIR/GROUND SYSTEM 1, K10384				
AIR/GROUND SYSTEM 1, K10385				
AIR/GROUND SYSTEM 1, K10388				
AIR/GROUND SYSTEM 1, K10691				
RELAY –	2		119BL, MAIN EQUIP CTR, P37 PANEL	
AIR/GROUND SYSTEM 2, K200				
AIR/GROUND SYSTEM 2, K201				
AIR/GROUND SYSTEM 2, K202				
AIR/GROUND SYSTEM 2, K203				
AIR/GROUND SYSTEM 2, K204				
AIR/GROUND SYSTEM 2, K205				
AIR/GROUND SUSTEM 2, K206				
AIR/GROUND SYSTEM 2, K207				
AIR/GROUND SYSTEM 2, K208				
AIR/GROUND SYSTEM 2, K209				
AIR/GROUND SYSTEM 2, K211				
AIR/GROUND SYSTEM 2, K213				
AIR/GROUND SYSTEM 2, K214				
AIR/GROUND SYSTEM 2, K215				
AIR/GROUND SYSTEM 2, K219				
AIR/GROUND SYSTEM 2, K263				

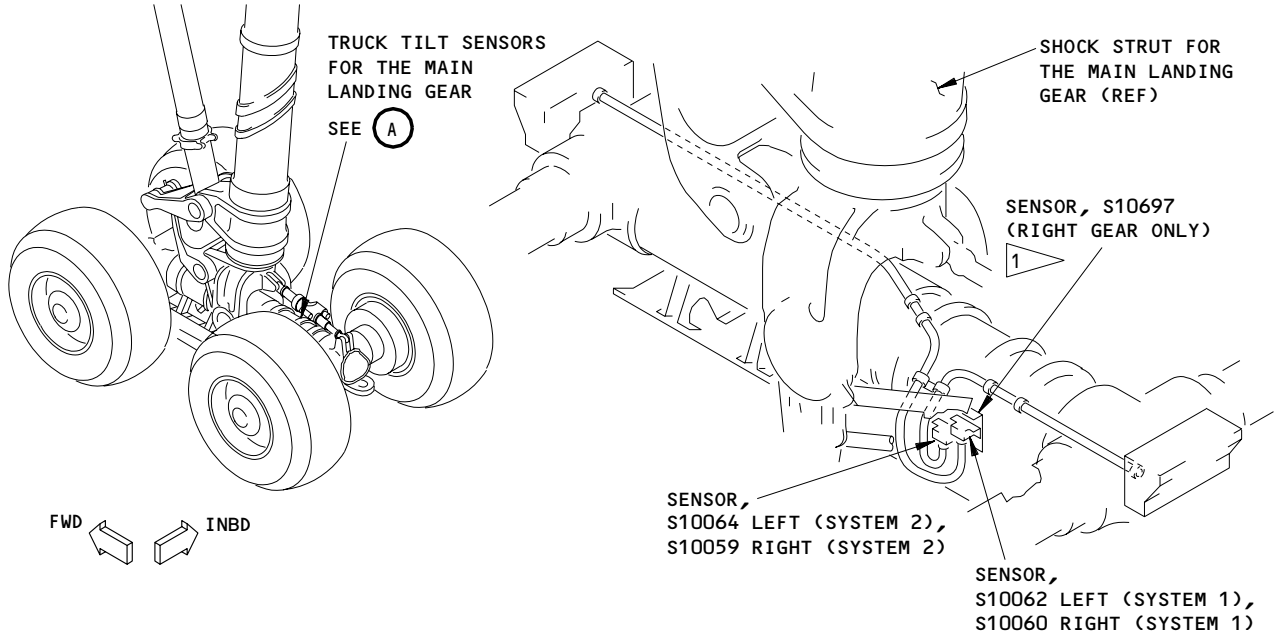
* SEE THE WDM EQUIPMENT LIST

1 119BL, MAIN EQUIP CTR, P33 ON SOME AIRPLANES

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

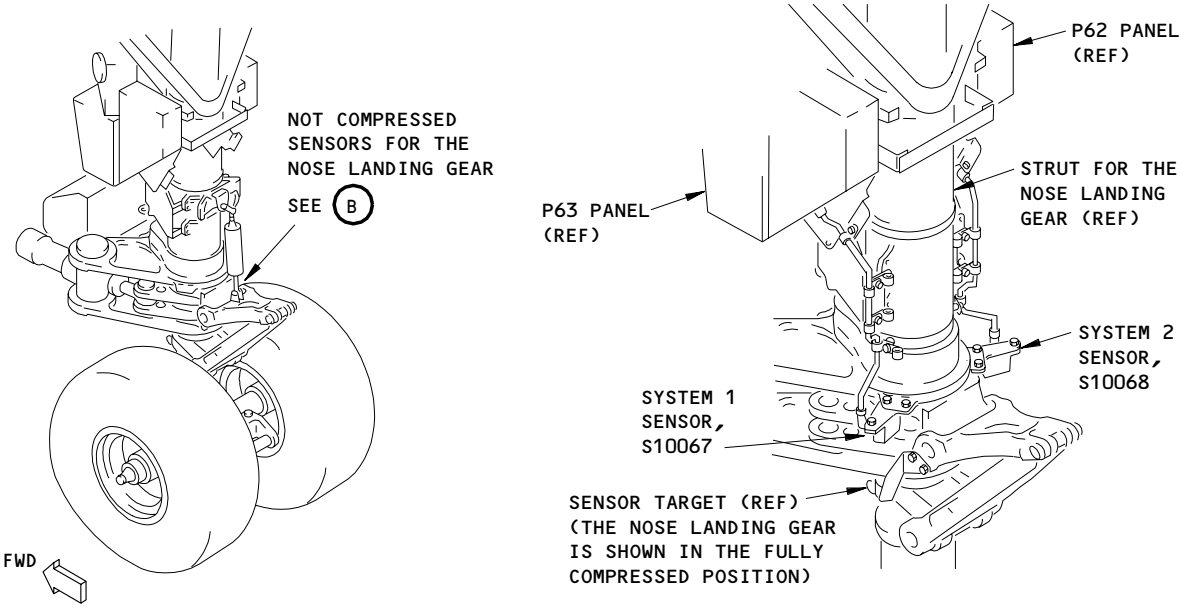
COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
RELAY - (CONTINUED) AIR/GROUND SYSTEM 2, K10201 AIR/GROUND SYSTEM 2, K10202 AIR/GROUND SYSTEM 2, K10203 AIR/GROUND SYSTEM 2, K10239 AIR/GROUND SYSTEM 2, K10258 AIR/GROUND SYSTEM 2, K10293 AIR/GROUND SYSTEM 2, K10294 AIR/GROUND SYSTEM 2, K10295 AIR/GROUND SYSTEM 2, K10308 AIR/GROUND SYSTEM 2, K10309 AIR/GROUND SYSTEM 2, K10386 AIR/GROUND SYSTEM 2, K10387 BAT BUS XFER RELAY, K10718	2		119BL, MAIN EQUIP CTR, P37 PANEL	32-09-07
SENSOR - RIGHT MAIN GEAR TRUCK NOT TILT, S10697	1	1		32-09-07
SENSOR - SYS 1 LEFT MAIN GEAR TRUCK NOT TILT, S10062	1	1	TRUCK BEAM OF THE LEFT MAIN LANDING GEAR	32-09-07
SENSOR - SYS 1 NOSE GEAR NOT COMPRESSED, S10067	1	1	NOSE LANDING GEAR STRUT, LEFT SIDE	32-09-08
SENSOR - SYS 1 RIGHT MAIN GEAR TRUCK NOT TILT, S10060	1	1	TRUCK BEAM OF THE RIGHT MAIN LANDING GEAR	32-09-07
SENSOR - SYS 2 LEFT MAIN GEAR TRUCK NOT TILT, S10064	1	1	TRUCK BEAM OF THE LEFT MAIN LANDING GEAR	32-09-07
SENSOR - SYS 2 NOSE GEAR NOT COMPRESSED, S10068	1	1	NOSE LANDING GEAR STRUT, RIGHT SIDE	32-09-08
SENSOR - SYS 2 RIGHT MAIN GEAR TRUCK NOT TILT, S10059	1	1	TRUCK BEAM OF THE RIGHT MAIN LANDING GEAR	32-09-07
SWITCH - (FIM 32-30-00/101) LEFT GEAR TILT PRESSURE, S452 RIGHT GEAR TILT PRESSURE, S453				

Landing Gear Multiple Use Systems/Components - Component Index
Figure 101 (Sheet 3)



TRUCK TILT SENSORS FOR THE MAIN LANDING GEAR

A

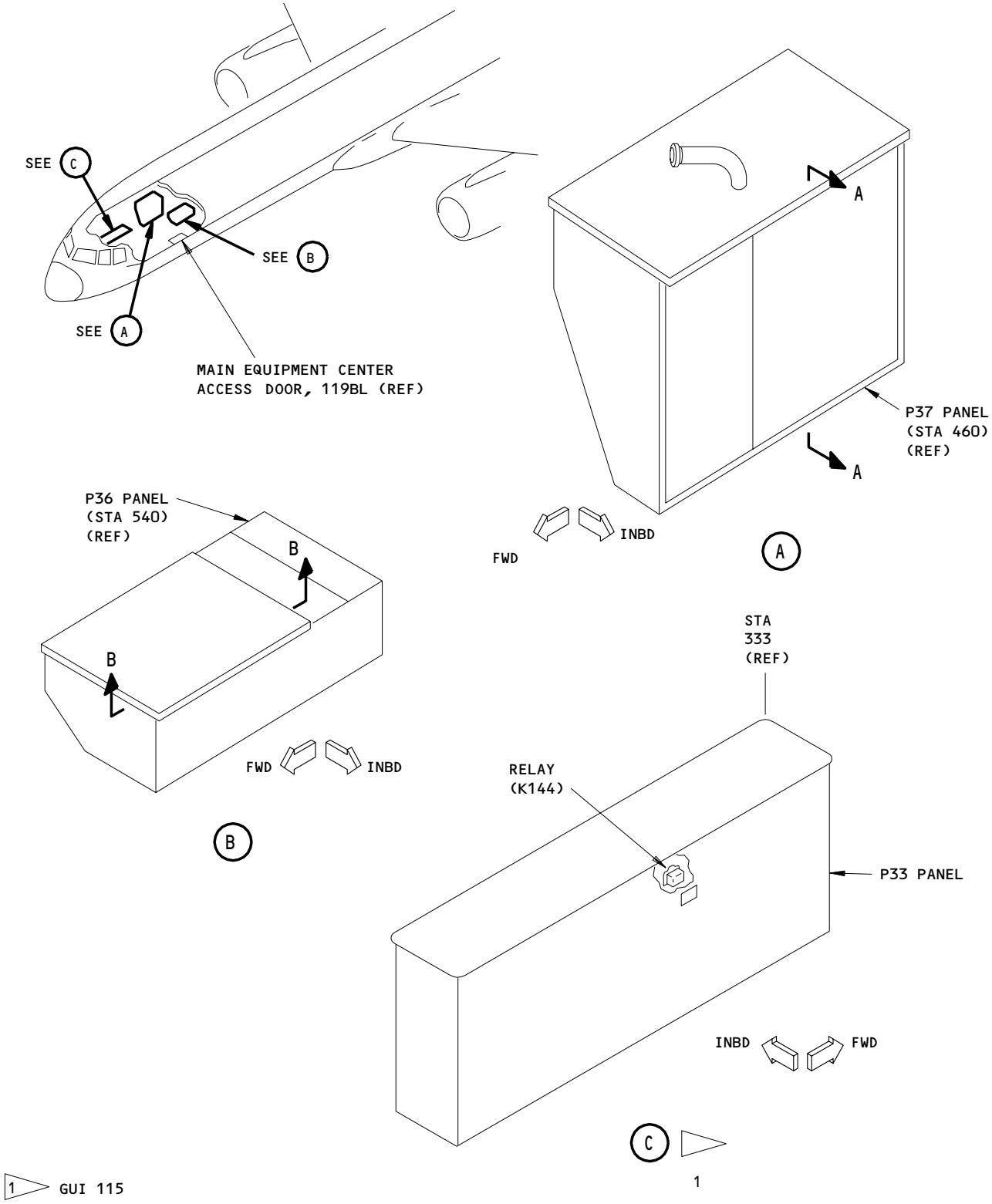


NOT COMPRESSED SENSORS FOR THE NOSE LANDING GEAR

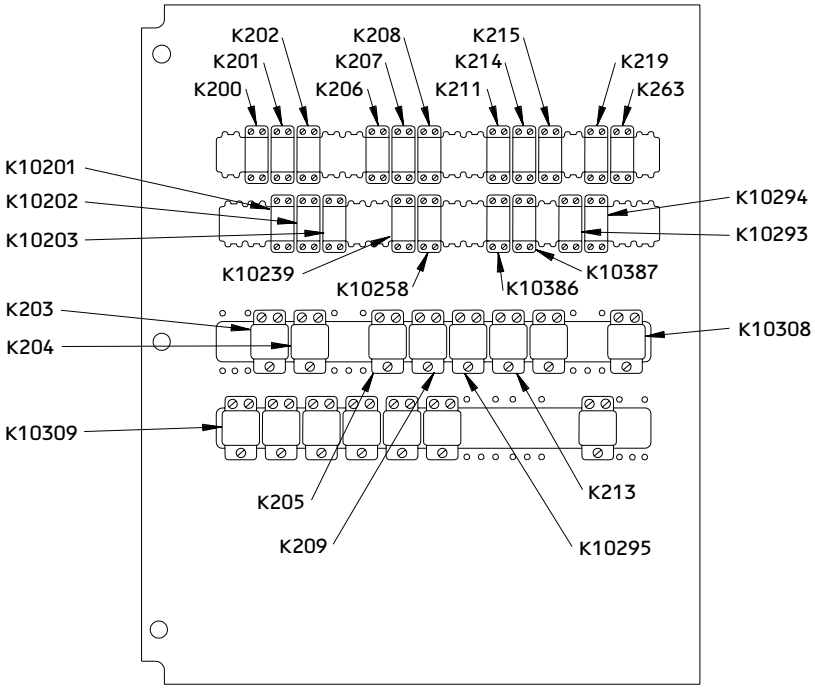
B

1 NOT INSTALLED ON ALL AIRPLANES

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

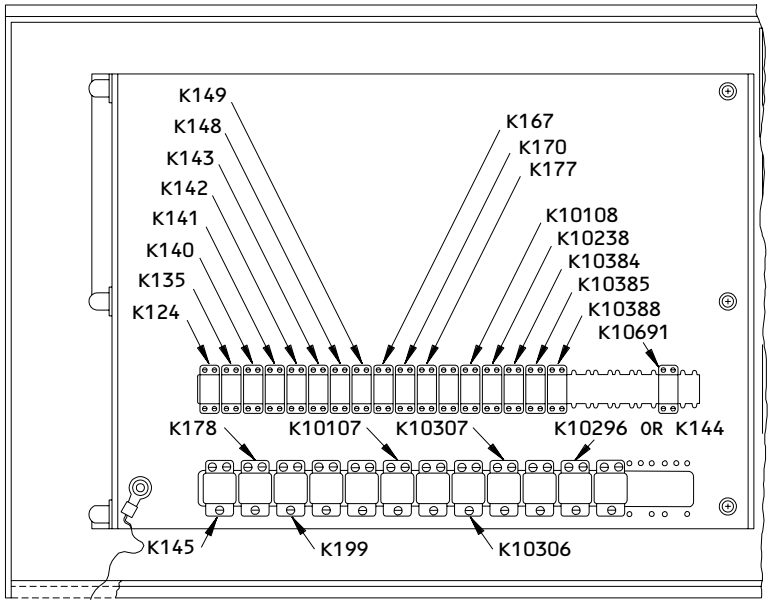


Landing Gear Multiple Use Systems/Components - Component Location
Figure 102 (Sheet 2)



NOTE: EXAMPLE RELAY INSTALLATION SHOWN. RELAYS SHOWN ARE NOT ON ALL AIRPLANES. RELAYS ARE IDENTIFIED BY EQUIPMENT NUMBER IN PANEL.

RELAY INSTALLATION IN P37 PANEL (EXAMPLE)
A-A

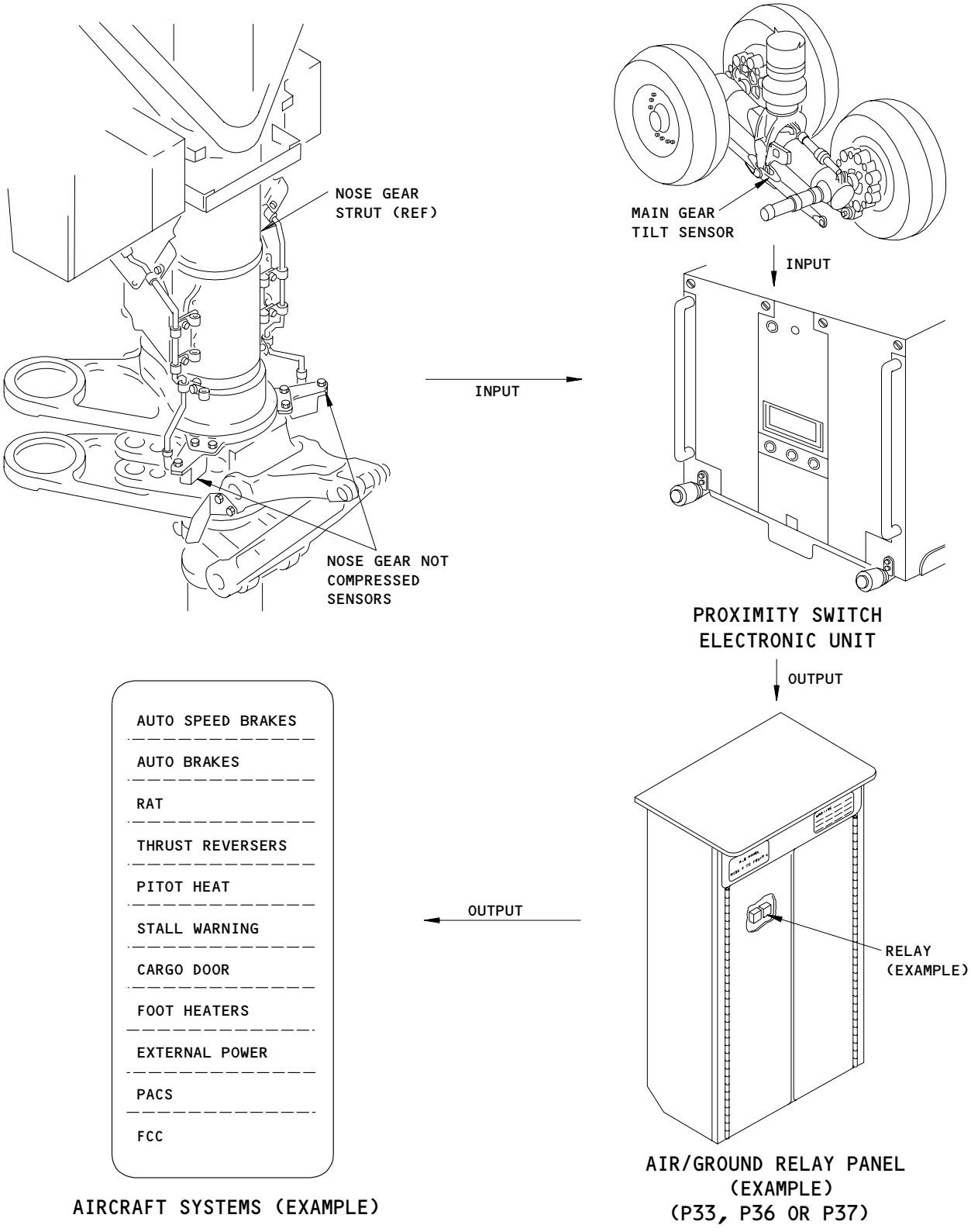


RELAY INSTALLATION IN P36 PANEL (EXAMPLE)
B-B

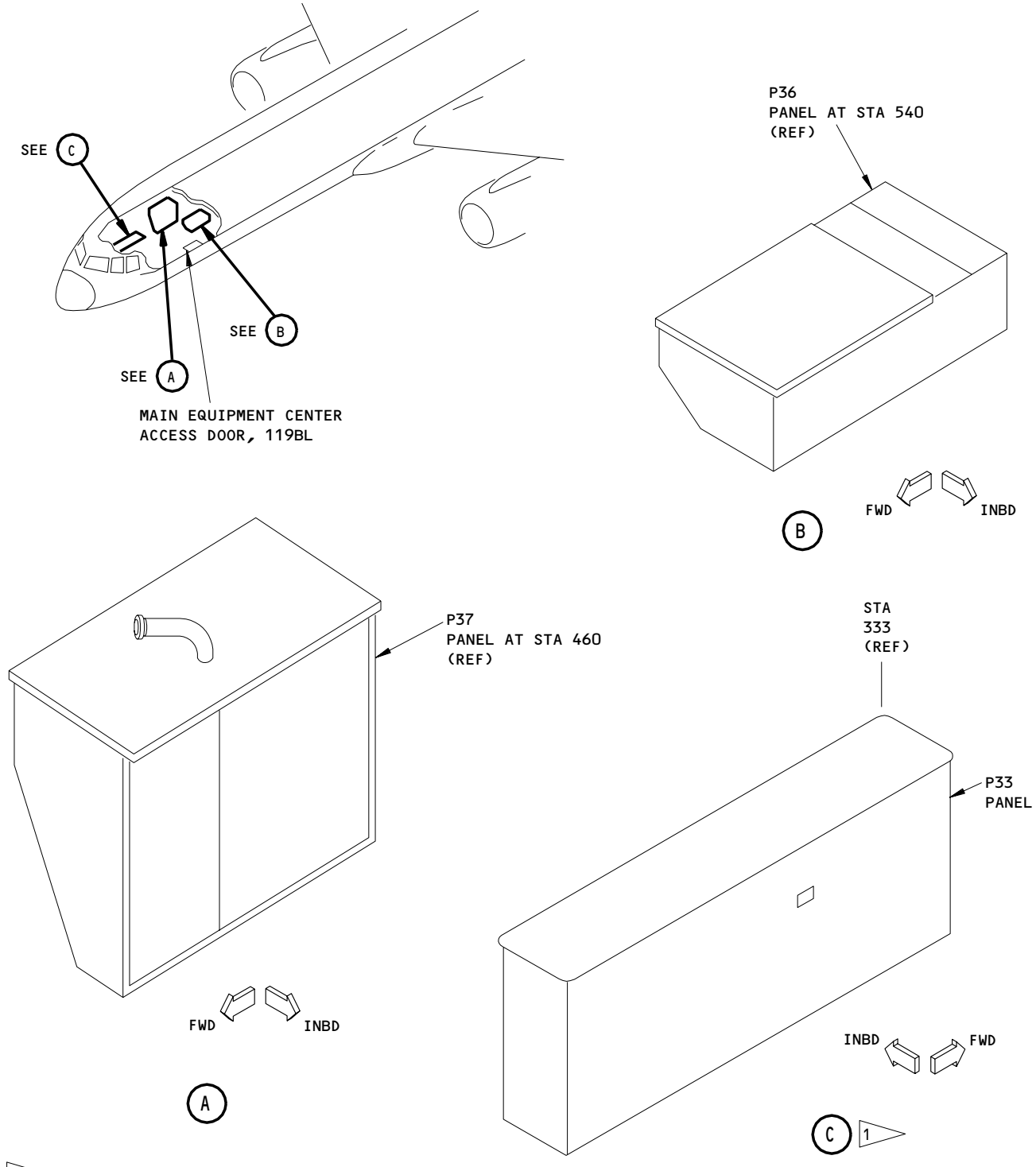
Landing Gear Multiple Use Systems/Components - Component Location
Figure 102 (Sheet 3)

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). Air/ground sensing is provided by inputs from the nose gear not compressed sensors, main gear truck tilt sensors, and truck positioner actuator hydraulic inlet pressure switches. 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 airplane 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, and truck positioner actuator hydraulic inlet pressue switches open) or in the air (main gear trucks tilted, nose gear shock strut extended, and inlet pressure switches closed), 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.
   Air/ground system 1 or air/ground system 2 each consists of a number of relays, nose gear not compressed sensor, and left and right main gear truck tilt sensors. All relays are 4-pole, double-throw, rated at 2 or 10 amperes.
   C. ON GUI 115;
   The relays are located in P33, P36 and P37 relay panels in the main E/E compartment.
   D. ON ALL EXCEPT GUI 115;
   The relays are located in P36 and P37 relay panels in the main E/E compartment.
2. Component Details
   A. Air/Ground Relays (Fig. 2)
      (1) All system 1 and system 2 air/ground control relays are 4-pole, double-throw, 2 or 10 amp-rated, hermetically sealed 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. System 1 relays are located in P36 panel. System 2 relays are located in P37 panel.



Air/Ground Sensing
Figure 1



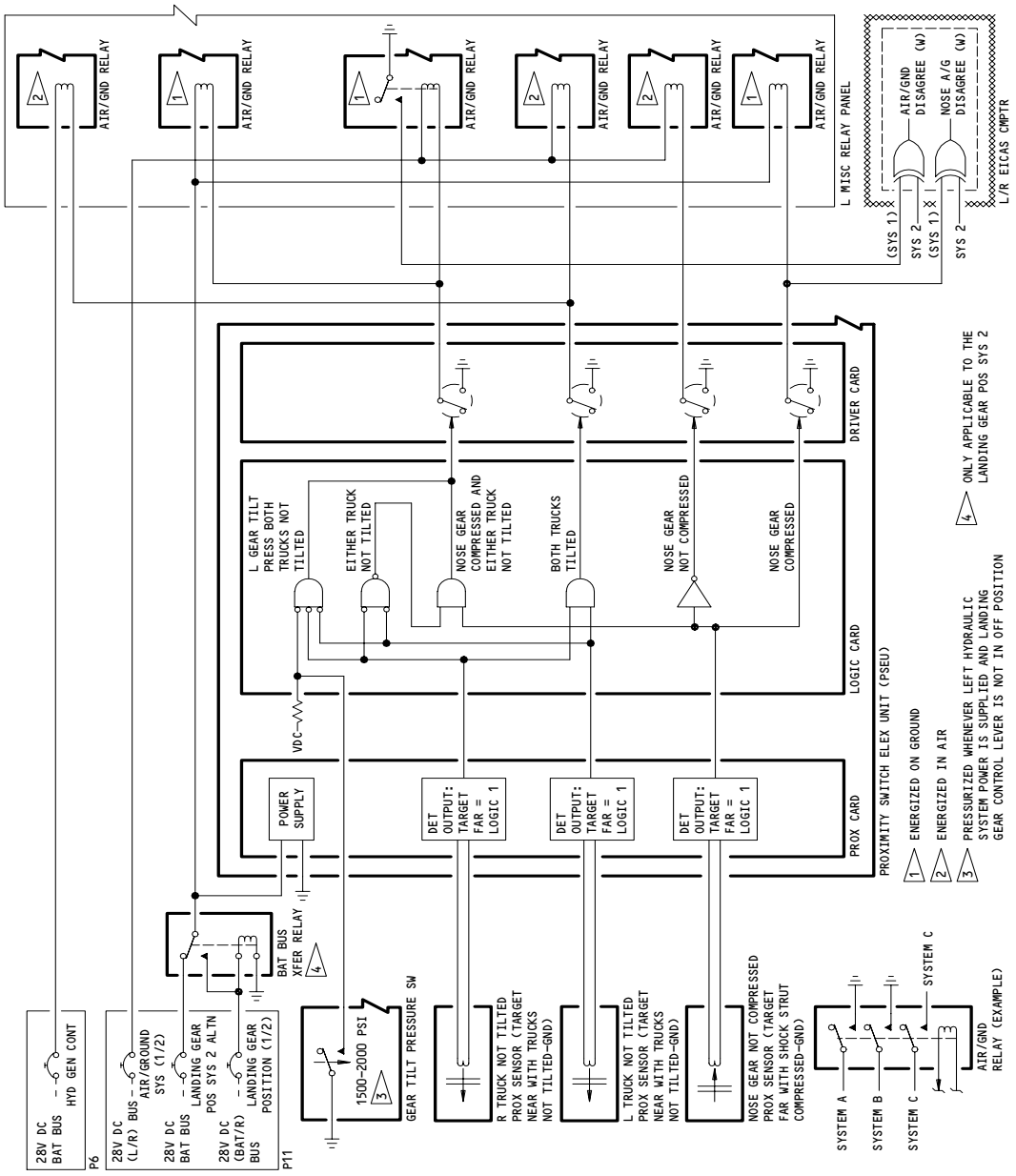
Air/Ground Relays Location
Figure 2

(2) ON GUI 115;
Relay K144, a system 1 relay, is in the P33 panel.

B. Nose Gear Not Compressed Sensors (Fig. 1)
(1) A proximity sensor S10067 for system 1 and a proximity sensor S10068 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 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 air/ground 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.

C. Main Gear Truck Tilt Sensors (Fig. 1)
(1) Two proximity sensors (S10062, LH, S10060 RH) for system 1, and two proximity sensors (S10064 LH, S10059 RH) for system 2, are located on the outboard side of the 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. One of the on ground signals from system 1 and sytem 2 also goes to the left and right EICAS computers for air/ground output comparison. If the on ground signal outputs from systems 1 and 2 do not agree, the computers provide an AIR/GND DISAGREE message on the EICAS status/maintenance display.
(2) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS INSTALLED;
If either the system 1 or system 2 air/ground logic fails 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, except one, receive 28v dc power from their respective landing gear AIR/GND SYS 1, POS SYS 1, AIR/GND SYS 2, POS SYS or LANDING GEAR POS SYS 2 ALTN 2 circuit breakers on overhead circuit breaker panel P11.
(b) One air/ground relay receives its 28v dc power from the HYD GEN CONT circuit breaker on main power distribution panel P6.
(c) 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.



Air/Ground Relays Schematic
Figure 3

290562

(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.

(3) EICAS

(a) The NOSE A/G DISAGREE message on the EICAS display indicates system 1 and 2 air/ground signal output disagreement. The disagreement may be caused by malfunction of sensor (nose gear compressed), PSEU or associated wiring in the system. If the air/ground relay itself is faulty, the above message will not be shown on EICAS display since EICAS inputs for this message come directly from the PSEU .

(b) The AIR/GND DISAGREE message on the EICAS display indicates system 1 and 2 air/ground relay disagreement. The disagreement may be caused by malfunction of sensor (main gear truck tilted), PSEU, associated wiring in the system or a faulty relay. EICAS computer receives a ground signal from one or more air/ground relays rather than the PSEU, therefore a faulty relay may cause EICAS input disagreement and subsequent message display.

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 seven tasks. The tasks are:
      (1) Prepare the safety systems for air mode simulation.

          NOTE: This task is also 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 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. Use tasks 1 through 4 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 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 set to off 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 prepare the 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 27-61-00/201, Spoiler/Speedbrake Control System

C. Access

(1) Location Zones

119/120 Main Equipment Center
211/212 Control Cabin

(2) Access Panels

119BL 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 prepare systems for air mode.

E. Prepare for the Air Mode

S 862-074

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

(a) 6F1, RAT MAN PWR
(b) 6F2, RAT MAN CONT
(c) 6L13 or 6L15, CAPT MAIN PITOT HEAT

NOTE: This circuit breaker is in one of these locations.

(d) 6L14 or 6L16, CAPT MAIN PITOT HEAT

NOTE: This circuit breaker is in one of these locations.

(e) 6L17, L AOA HEAT
(f) 6L21, R AUX PITOT HEAT
(g) 6L22, F/O MAIN PITOT HEAT
(h) 6L23, R AOA HEAT
(i) 6L24, TAT PROBE HEAT

S 862-075

(2) Open these circuit breakers on the overhead circuit breaker panel, P11, and and attach DO-NOT-CLOSE tags:
(a) 11B14, CABIN ALTITUDE CONTROL MANUAL
(b) 11B15, CABIN ALTITUDE CONTROL SELECT
(c) 11B34, APU ALTN CONT

NOTE: If the APU operation is continuously monitored in the flight compartment, then the APU can be operated and this circuit breaker does not need to be opened.

(d) 11C29, ANTI-ICE WING
(e) 11D26, RAT CONT
(f) 11D27, RAT AUTO
(g) 11E18, FLT CONT COMPUTER SERVO LEFT

NOTE: The FLT CONT COMPUTER SERVO circuit breakers can be closed if there is no hydraulic pressure on the wing and tail servos.

(h) 11E21, FLT CONT COMPUTER SERVO CENTER
(i) 11E36, FLT CONT COMPUTER SERVO RIGHT
(j) 11F15, TMC DC
(k) 11J7, FLIGHT RECORDER AC
(l) 11J8, FLIGHT RECORDER DC
(m) 11N15, CABIN ALTITUDE CONTROL AUTO 1
(n) 11N24, CABIN ALTITUDE CONTROL AUTO 2
(o) 11R14, ENG PROBE HTR LEFT
(p) 11R23, ENG PROBE HTR RIGHT

(q) 11R36, PROX SW TEST
(r) 11S4 or 11S6, MAINT CONT DSPL
(s) 11S14, AUTOBK ANITSKID TEST IND 1
(t) 11S21, AUTOBK ANTISKID TEST IND 2

S 862-077
(3) Put the FLT CONTROL SHUTOFF switches L, C, and R on the right sidewall panel, P61, to the OFF position and attach DO-NOT-OPERATE tags.
(a) Make sure the amber switch position lights are on.

S 862-083
(4) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:

(a) 11H17, FLT CONT SHUTOFF TAIL LEFT
(b) 11H18, FLT CONT SHUTOFF TAIL CENTER
(c) 11H28, FLT CONT SHUTOFF TAIL RIGHT

S 042-085

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.

(5) 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 862-079
(6) Open these circuit breakers on the right miscellaneous electrical equipment panel, P37, and attach DO-NOT-CLOSE tags:
(a) 37F3, HEATERS F/O AUX LO
(b) 37F4, HEATERS F/O AUX HI

(c) 37F7, HEATERS DRAIN MST AIR DRAIN

S 862-080

(7) Open these circuit breakers on the miscellaneous electrical equipment panel, P70, and attach DO-NOT- CLOSE tags:
(a) 70A5, CAPT AUX HTR LO
(b) 70A6, CAPT AUX HTR HI

S 862-082

(8) Open this circuit breaker on the E6 aft equipment rack and attach a DO-NOT-CLOSE tag:

NOTE: If the APU operation is continuously monitored in the flight compartment, then the APU can be operated and this circuit breaker does not need to be opened.

(a) APU CONT

S 862-052

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.

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

TASK 32-09-02-862-051

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

A. General

(1) This procedure gives the data necessary to simulate the flight 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 the deactuators on the tilt sensors of the main gear and actuators on the 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 nose gear tilt sensors and deactuators to the main gear 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 flight mode and the ground mode occurs through the inputs of these sensors and switches and their related electronics:
(a) The truck tilt sensors of the main landing gear.
(b) The not compressed sensors of the nose landing gear.
(c) The pressure switch for the shuttle valve on the truck positioner.

(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

NOTE: Two rectangular sensor actuators, four rectangular deactuators, and, on some airplanes, one circular deactuator is needed for this test.

NOTE: The actuators and deactuators 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

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

(2) Access Panels

119BL	Main Equipment Center

E. Prepare to Simulate the Air Mode

S 862-003
(1) Supply electrical power (AMM 24-22-00/201).

S 862-065
(2) Look at P11 panel at grid location 11C19, and identify the circuit breaker name that is at this location.
(a) Airplanes with "Landing Gear Pos Sys 2 Altn" circuit breaker installed at panel grid location 11C19, make sure this circuit breaker is closed:
1) 11C19, LANDING GEAR POS SYS 2 ALTN

S 862-004
(3) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:
(a) 11C30, LANDING GEAR POS SYS 1
(b) 11S15, LANDING GEAR AIR/GND SYS1
(c) 11S19, LANDING GEAR AIR/GND SYS2
(d) 11S23, POS SYS 2

S 862-014
(4) Make sure this circuit breaker on the main power distribution panel, P6, is closed:
(a) 6C3, HYD GEN CONT

F. Simulate the Air Mode

S 042-053

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 before you simulate the air mode.

S 862-063

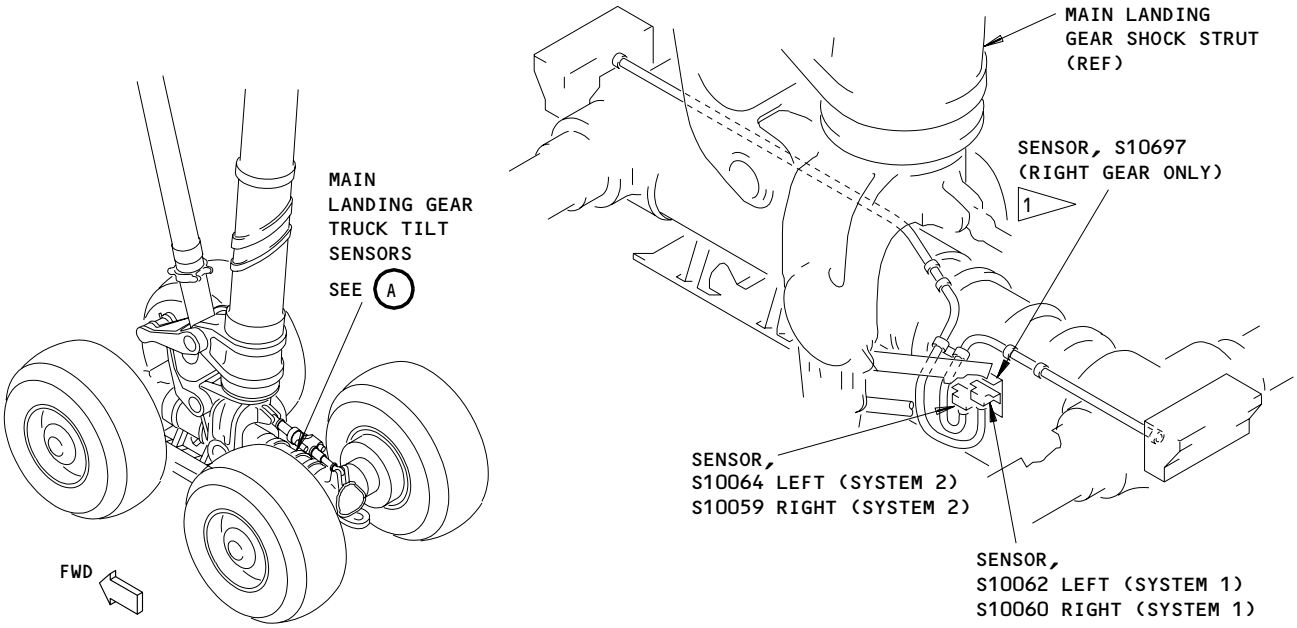
(2) Put the air/ground relay system in the air mode (Option 1).

NOTE: If you do not want to lift the airplane with jacks, do the steps in Option 2. You will need actuators and deactuators for the proximity sensors if you use Option 2. If a landing gear or air/ground proximity sensors have been removed, then do the steps which follow option 2 in install proximity sensors on the affected gear.

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

S 862-054

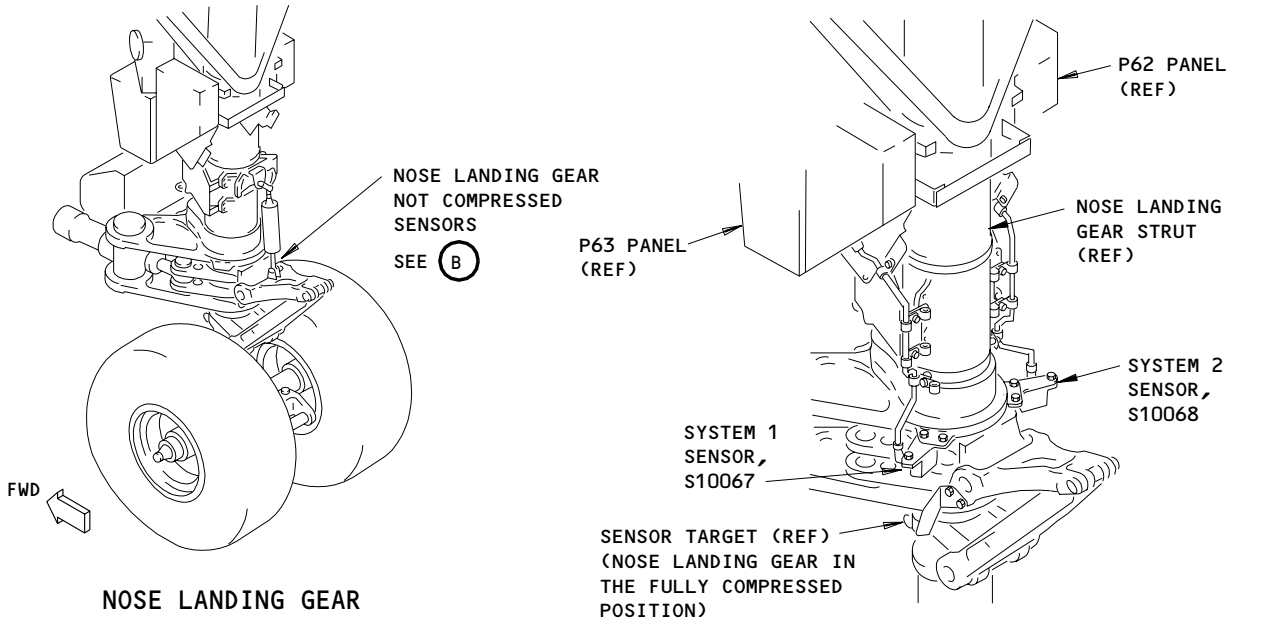
(3) Put the air/ground relay system in the air mode (Option 2).
   (a) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).
   (b) Put the chocks below the wheels.
   (c) Put actuators and deactuators on the proximity sensors of the landing gear to simulate the air mode (Fig. 201):
      1) Put the deactuators on the truck tilt sensors of the main landing gear that follow:
         a) S10062 for system 1 on the left main landing gear
         b) S10060 for system 1 on the right main landing gear
         c) S10064 for system 2 on the left main landing gear
         d) S10059 for system 2 on the right main landing gear



MAIN LANDING GEAR

MAIN LANDING GEAR TRUCK TILT SENSORS

A



NOSE LANDING GEAR

NOSE LANDING GEAR NOT COMPRESSED SENSORS

B

1 NOT INSTALLED ON ALL AIRPLANES

Sensor Location of the Air/Ground Relays for the Flight Mode Simulation
Figure 201

K24917

2) Put the actuators on the not compressed sensors of the nose landing gear that follow:
a) S10067 for system 1 on the nose landing gear
b) S10068 for system 2 on the nose landing gear

S 862-090
(4) 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 the deactuators on the truck tilt sensors of the main landing gear.
(d) Put the actuators on the not compressed sensors of the nose landing gear.

TASK 32-09-02-442-017

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

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

B. Access
(1) Location Zones

711	Nose Landing Gear
731/741	Main Landing Gear

C. Put the Airplane in the Ground Mode

S 082-018
(1) If the actuators and deactuators were installed, do the steps that follow:
(a) Remove the deactuators from the truck tilt sensors of the main landing gear.
(b) Remove the actuators from the not compressed sensors of the nose landing gear.

S 582-019
(2) If the airplane was on jacks, lower the airplane and remove the jacks (AMM 07-11-01/201).

S 822-099

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

S 862-064

(4) 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 P34, P37, and P70 panels.

S 442-062

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

TASK 32-09-02-442-055

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

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

B. Access
   (1) Location Zones
      119/120 Main Equipment Center
      211/212 Control Cabin

   (2) Access Panels
      119BL Main Equipment Center

C. Procedure

S 442-056

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

S 862-057

(2) Remove the DO-NOT-CLOSE tags and put the FLT CONTROL SHUTOFF switches L, C, and R on the right sidewall panel, P61, to the ON position.

S 862-073

(3) Close all the circuit breakers that were opened in the "Prepare for Air Mode - Instructions" table in the task to Prepare the Safety-Sensitive Systems for Air Mode Simulation (first task).

NOTE: The circuit breakers were on the P6, P11, P34, P37, and P70 panels and on the E6 equipment rack.

S 862-021

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

TASK 32-09-02-002-022

6. Remove the Air/Ground Relays

A. General

(1) The air/ground relays can be found on the panels that follow:

(a) The left miscellaneous electrical equipment panel, P36.

(b) 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

119/120 Main Equipment Center

(2) Access Panels

119BL Main Equipment Center

D. Prepare to Remove the Air/Ground Relays

S 862-023

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

S 412-024

(2) Open the access door, 119BL, for the main equipment center to get access to the panels for the air/ground relays (AMM 06-41-00).

E. Remove the Air/Ground Relays (Fig. 202)

S 032-025

(1) Remove the attach screws to remove the air/ground relays.

S 022-026

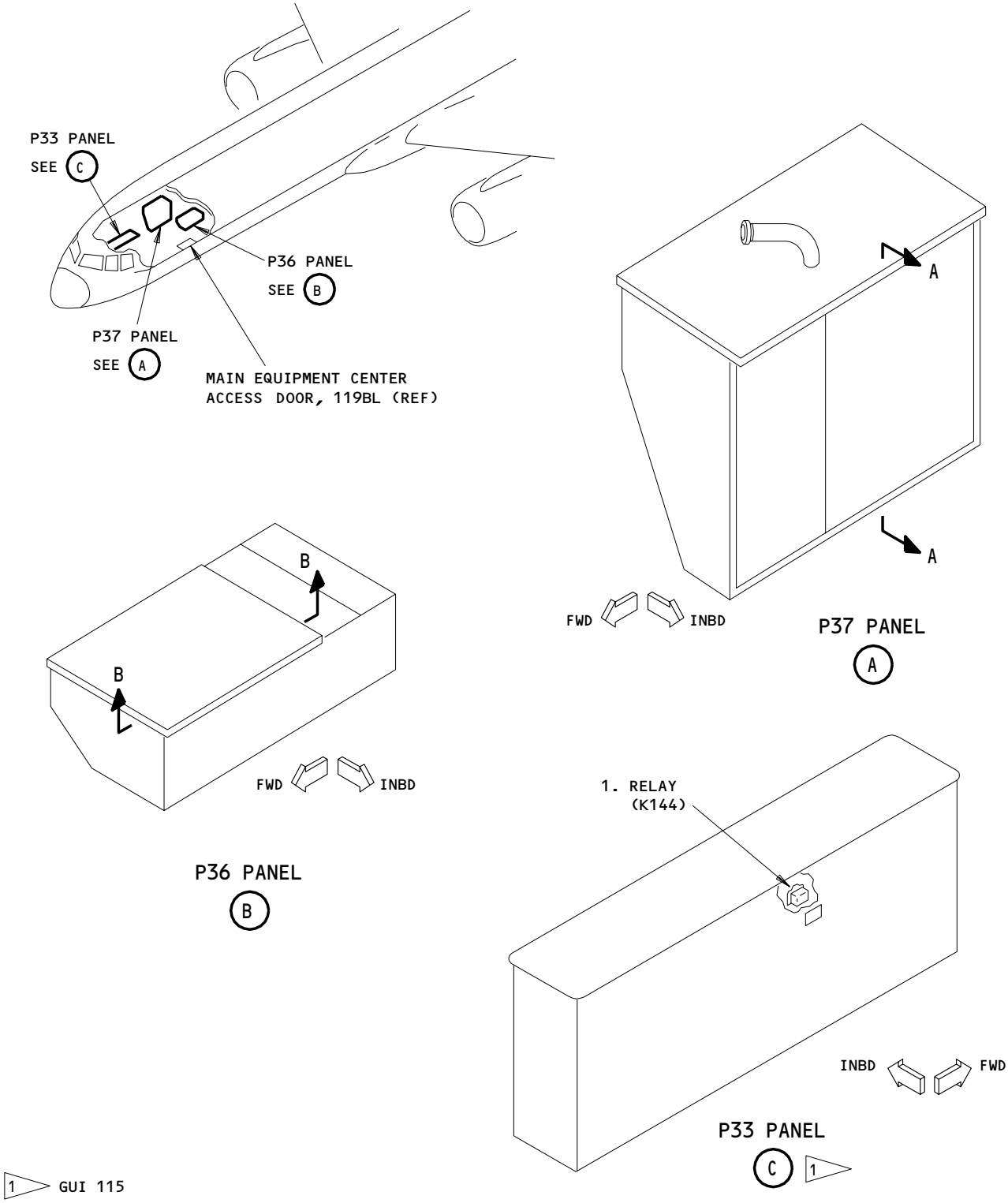
(2) Remove the air/ground relays.

TASK 32-09-02-402-027

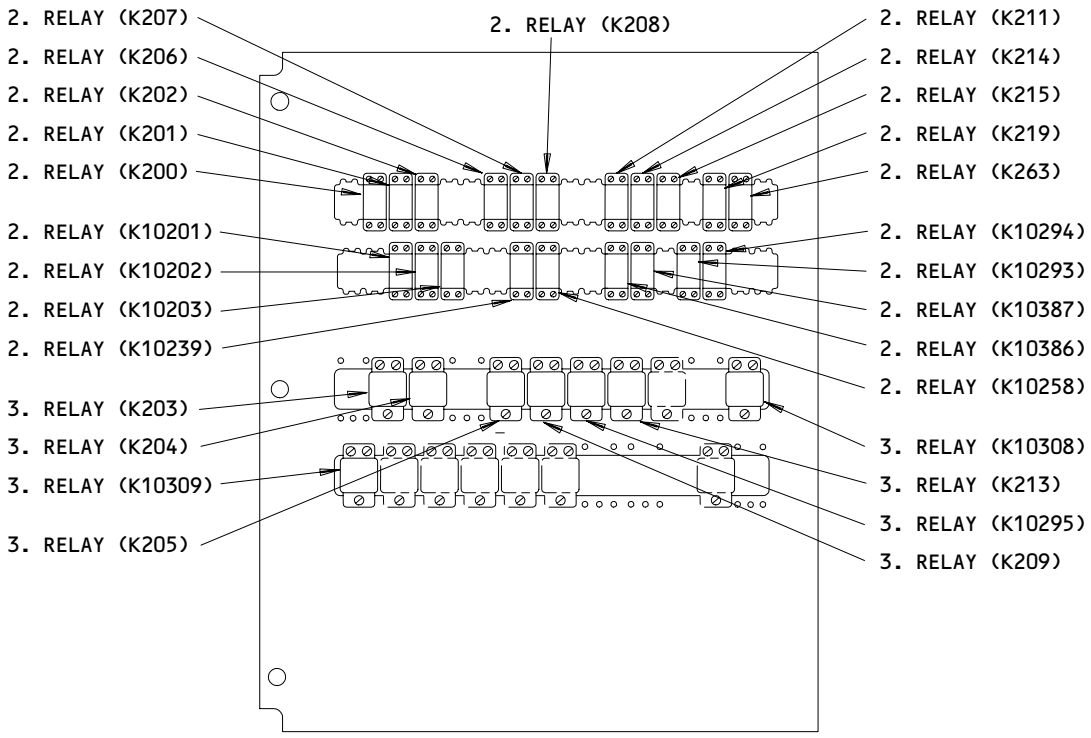
7. Install the Air/Ground Relays

A. Parts

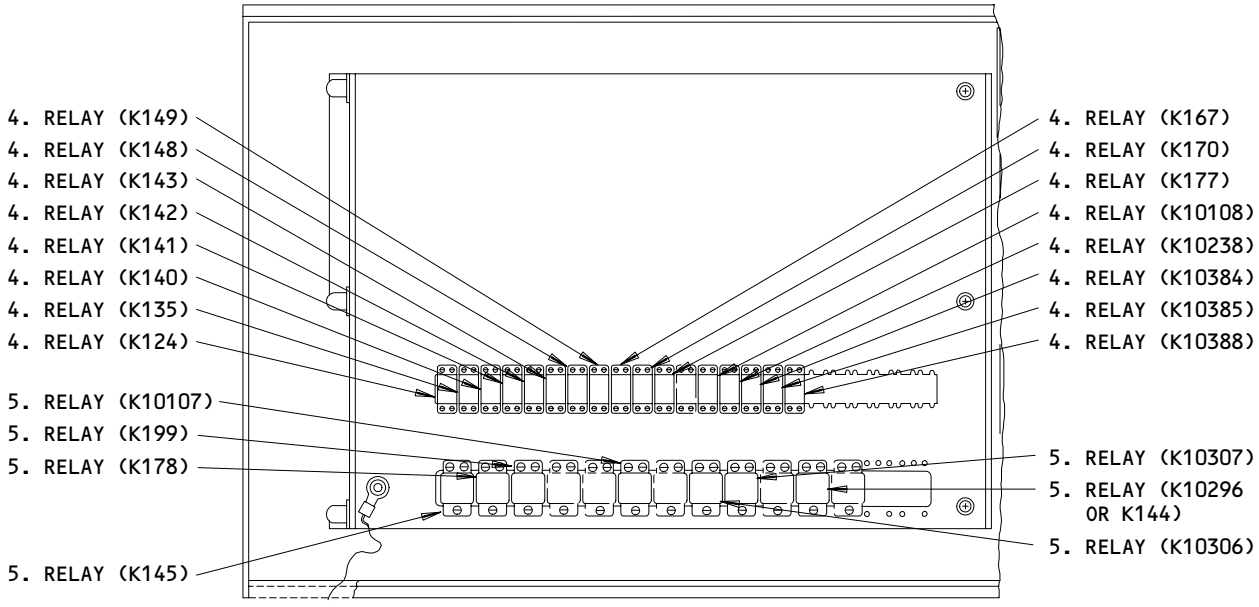
AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
202	1	Relay	32-09-02	05	10
	2	Relay		04	117,120
	3	Relay		04	125,130
	4	Relay		03	100
	5	Relay		03	105,110



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



EXAMPLE RELAY INSTALLATION
IN THE P37 PANEL
A-A



NOTE: AIRPLANE MAY NOT HAVE ALL THESE RELAYS

EXAMPLE RELAY INSTALLATION
IN THE P36 PANEL
B-B

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

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
119/120 Main Equipment Center

(2) Access Panels
119BL Main Equipment Center

D. Prepare to Install the Air/Ground Relays

S 862-028
(1) Remove the electrical power if it has not been removed from the airplane (AMM 24-22-00/201).

E. Install the Air/Ground Relays

S 712-030
(1) Do the test for the air/ground relay to make sure it operates correctly.

NOTE: The test is in the task that follows.

S 422-029
(2) Use the screws to install the air/ground relays to the panel.

TASK 32-09-02-712-031

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 the air mode. To make the test easier, a breakout box is used. Table 1 shows the energized or de-energized condition of each air/ground relay.
(3) Do one more test for the K142 and the K202 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. Access
(1) Location Zones
119/120 Main Equipment Center

(2) Access Panels
119BL Main Equipment Center

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

S 862-069
(1) Look at P11 panel at grid location 11C19, and identify the circuit breaker name that is at this location.
(a) Airplanes with "Landing Gear Pos Sys 2 Altn" circuit breaker installed at panel grid location 11C19, make sure this circuit breaker is closed:
1) 11C19, LANDING GEAR POS SYS 2 ALTN

S 862-032
(2) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:
(a) 11C30, LANDING GEAR POS SYS 1
(b) 11S15, LANDING GEAR AIR/GND SYS1
(c) 11S19, LANDING GEAR AIR/GND SYS2
(d) 11S23, POS SYS 2

S 862-042
(3) Make sure this circuit breaker on the main power distribution panel, P6, is closed:
(a) 6C3, HYD GEN CONT

F. Do the Test for the Ground Mode

S 862-043
(1) Supply electrical power (AMM 24-22-00/201).

S 762-044
(2) Do a continuity check for the air/ground relay.

NOTE: Refer to Table 201 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.

TABLE 201
AIR/GROUND RELAY

RELAY NO.	PANEL	RELAY STATUS 1		CONNECTOR NUMBER	CONTINUITY BETWEEN THESE PINS:	
		GND	AIR		GROUND	AIR
K124	P36	D	E	D582	1-13,5-3,7-14,11-9	1-2,5-4,7-8,11-10
K135	P36	E	D	D1780	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K140	P36	E	D	D584	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K141	P36	E	D	D586	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K142	P36	E	D	D588	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K143	P36	E	D	D590	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K144	P33 2 P36 2	E	D	D592	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K145	P36	D	E	D594	A2-A3,B2-B3,C2-C3,D2-D3	A2-A1,B2-B1,C2-C1,D2-D1
K148	P36	E	D	D600	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K149	P36	E	D	D602	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K167	P36	E	D	D1782	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K170	P36	E	D	D604	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K177	P36	E	D	D606	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K178	P36	E	D	D608	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K199	P36	E	D	D598	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K200	P37	E	D	D610	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K201	P37	E	D	D612	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K202	P37	E	D	D614	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K203	P37	E	D	D616	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K204	P37	E	D	D618	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K205	P37	D	E	D620	A2-A3,B2-B3,C2-C3,D2-D3	A2-A1,B2-B1,C2-C1,D2-D1
K206	P37	E	D	D622	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K207	P37	E	D	D624	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K208	P37	E	D	D1868	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K209	P37	D	E	D626	A2-A3,B2-B3,C2-C3,D2-D3	A2-A1,B2-B1,C2-C1,D2-D1
K211	P37	E	D	D630	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K213	P37	E	D	D634	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K214	P37	E	D	D636	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K215	P37	E	D	D1872	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K219	P37	D	E	D1870	1-13,5-3,7-14,11-9	1-2,5-4,7-8,11-10
K263	P37	E	D	D1866	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K10107	P36	E	D	D596	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K10108	P36	D	E	D1784	1-13,5-3,7-14,11-9	1-2,5-4,7-8,11-10
K10201	P37	E	D	D1864	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K10202	P37	E	D	D628	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K10203	P37	D	E	D632	1-13,5-3,7-14,11-9	1-2,5-4,7-8,11-10
K10238	P36	E	D	D2754	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K10239	P37	E	D	D2676	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K10258	P37	D	E	D3118	1-13,5-3,7-14,11-9	1-2,5-4,7-8,11-10
K10293	P37	E	D	D4046	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K10294	P37	E	D	D4122	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K10295	P37	E	D	D4048	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K10296	P36	E	D	D4124	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3

NOTE: BEFORE YOU DO THE CHECK FOR CONTINUITY, MAKE SURE THE POWER IS REMOVED FROM THE USER SYSTEMS CONNECTED TO THE RELAY. THE RELAY BREAKOUT BOX CAN BE USED TO MAKE THE CHECK EASIER.

1 E = ENERGIZED
D = DE-ENERGIZED

2 THIS RELAY IS INSTALLED IN P33 OR P36 PANEL

Air/Ground Relay Problem
Figure 202 (Sheet 3)

TABLE 201 (CONTINUED)
AIR/GROUND RELAY

RELAY NO.	PANEL	RELAY STATUS 1		CONNECTOR NUMBER	CONTINUITY BETWEEN THESE PINS:	
		GND	AIR		GROUND	AIR
K10306	P36	E	D	D4182	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K10307	P36	E	D	D4184	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K10308	P37	E	D	D4090	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K10309	P37	E	D	D4092	A2-A1,B2-B1,C2-C1,D2-D1	A2-A3,B2-B3,C2-C3,D2-D3
K10384	P36	E	D	D4706	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K10385	P36	E	D	D4708	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K10386	P37	E	D	D4674	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K10387	P37	E	D	D4676	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9
K10388	P36	D	E	D4510	1-13,5-3,7-14,11-9	1-2,5-4,7-8,11-10
K10691	P36	E	D	D6914	1-2,5-4,7-8,11-10	1-13,5-3,7-14,11-9

NOTE: BEFORE YOU DO THE CHECK FOR CONTINUITY, MAKE SURE THE POWER IS REMOVED FROM THE USER SYSTEMS CONNECTED TO THE RELAY. THE RELAY BREAKOUT BOX CAN BE USED TO MAKE THE CHECK EASIER.

Air/Ground Relay Problem
Figure 202 (Sheet 4)

G. Do the Test for the Air Mode

S 042-058

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 before you simulate the air mode.

S 862-059

(2) Put the actuators and deactuators 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 862-060

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

S 762-047

(4) Do a continuity check for the air/ground relay.

NOTE: Refer to Table 201 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.

S 712-048

(5) On relay K142 or K202,
do the MCDP test(s) 51 AIR/GND RLY to make sure the Autopilot/Flight Director and the Thrust Management System Interface operates (AMM 22-41-00/501).

H. Put the Airplane Back to Its Usual Condition

S 862-049

(1) Do the task to put the air/ground relay system in the ground mode.

S 442-061

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

S 862-050

(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 contains the steps necessary to make sure the air/ground relays operate correctly and the EICAS messages are shown.

TASK 32-09-02-735-001

2. The System Test for the Air/Ground Relay System
   A. General
      (1) It is not necessary to retract the landing gear to do this test. You will use actuators and deactuators on the proximity sensors to simulate the air mode and the ground mode.
      (2) There are two parallel logic systems for the air/ground relay system.
      (3) When you put the actuators and deactuators on the air/ground relay sensors, the indications change.
      (4) When you put the actuator adjacent to the proximity sensor, the sensor is operated. For the rectangular sensors the maximum distance between the sensor and the actuator is 0.15 inches. This distance is 0.05 inches for round sensors. The actuator can touch the sensing surface of the sensor.
      (5) To stop the operation of the proximity sensor, put the deactuator between the sensor face and the target. The deactuator can touch the sensor or the target or the sensor and the target.
   B. Equipment
      (1) Proximity Sensor Actuator/Deactuator Set - A27092-84 (2 Rectangular sensor deactuators and 2 rectangular system actuators are necessary)
      (2) Voltmeter or Ohmmeter - commercially available
   C. References
      (1) 24-22-00/201, Electrical Power - Control
      (2) 27-61-00/201, Spoiler/Speedbrake Control System
      (3) 29-11-00/201, Pressurize/Depressurize Main Left Hydraulic System
      (4) 32-00-20/201, Landing Gear Downlocks
      (5) 32-09-02/201, Air/Ground Relays

D. Access

(1) Location Zones

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

(2) Access Panels

199BL	Main Equipment Center

E. Prepare to Do the Test

S 865-002

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

S 495-003

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

S 495-004

(3) Make sure the chocks are below the wheels.

S 045-005

WARNING: PREPARE THE SAFETY-SENSITIVE SYSTEMS FOR THE AIR MODE BEFORE INSTALL THE ACTUATORS OR DEACTUATORS ON THE SENSORS. IN THE AIR MODE, MANY OF THE AIRPLANE SYSTEMS CAN OPERATE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Prepare the safety-sensitive systems for air mode simulation (Ref 32-09-02/201).

S 865-006

(5) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:
(a) 11C19, LANDING GEAR POS SYS 2 ALTN
(b) 11C30, LANDING GEAR POS SYS 1

(c) 11R36, PROX SW TEST
(d) 11S15, LANDING GEAR AIR/GND SYS1
(e) 11S19, LANDING GEAR AIR/GND SYS2
(f) 11S23, POS SYS 2
(g) EICAS circuit breakers (6 locations)

S 865-007
(6) Make sure the control lever for the landing gear is in the DN position.

S 865-008
(7) Remove the pressure from the left hydraulic system (Ref 29-11-00).

S 875-011

WARNING: BE CAREFUL WHEN YOU BLEED THE HYDRAULIC FLUID. THERE IS PRESSURE ON THE HYDRAULIC FLUID. WHEN YOU BLEED THE PRESSURIZED HYDRAULIC FLUID, IT CAN CAUSE INJURY TO PERSONS.

CAUTION: PUT A FUNNEL ON THE BLEED PORT ON THE TRUCK TILT POSITIONER OF THE MAIN LANDING GEAR. THE HYDRAULIC FLUID WILL FLOW APPROXIMATELY THREE FEET FROM THE BLEED PORT. THE HYDRAULIC FLUID CAN CAUSE DAMAGE TO THE EQUIPMENT.

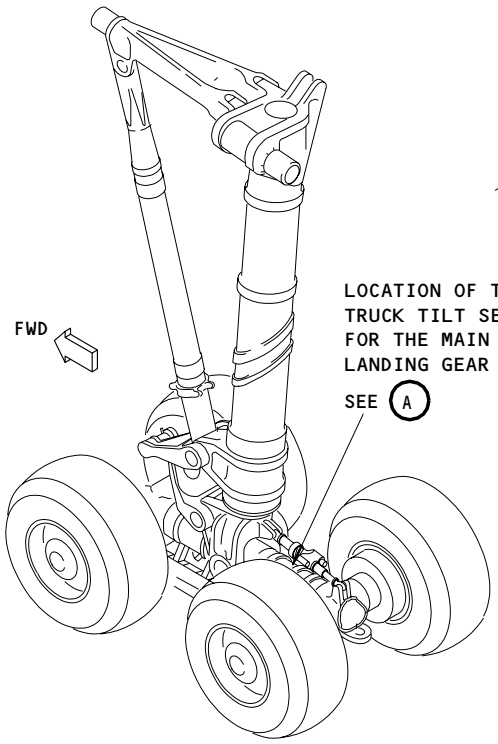
(8) Use the bleed ports on the truck tilt positioners of the main landing gear, to remove the pressure from the positioners.

F. Do the Test for the Air/Ground Relays (Fig. 501)

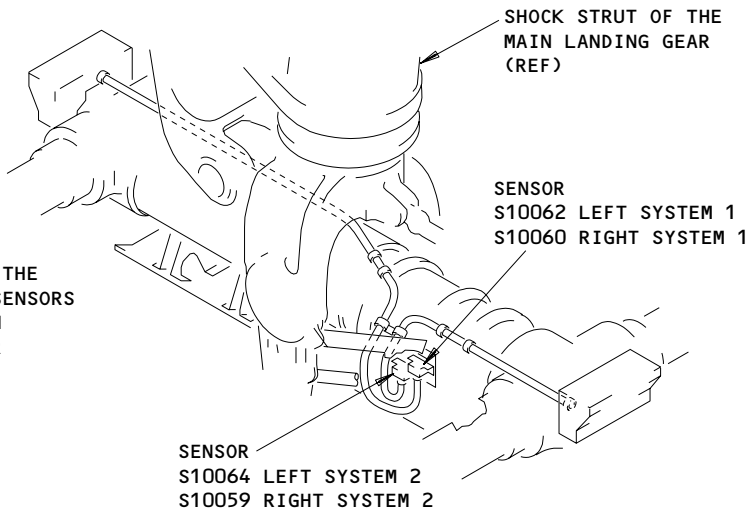
S 765-010
(1) Use a volt/ohmmeter to measure the voltage between pins 6 (+ voltage) and 12 (ground). The connectors to be measured are in column A of Tables 1 and 2. The measured voltage of each connector must be the same as the voltage shown in column B of Tables 1 and 2.

NOTE: When you measure a 0 VDC, a 500 ohm load resistor or the equivalent must be connected in parallel with the volt/ohmmeter.

All the voltages are ±2.0 volts.

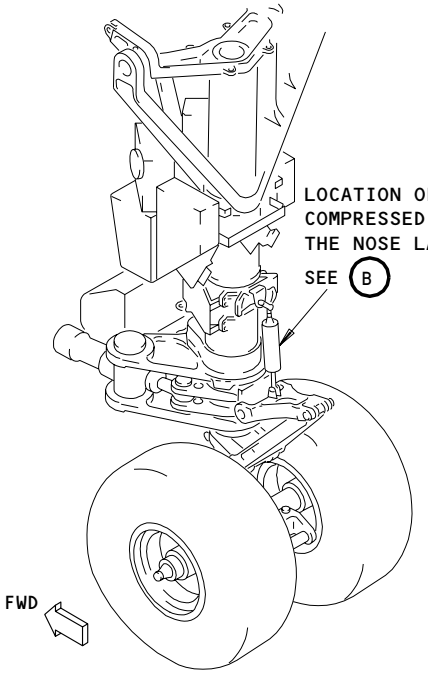


MAIN LANDING GEAR

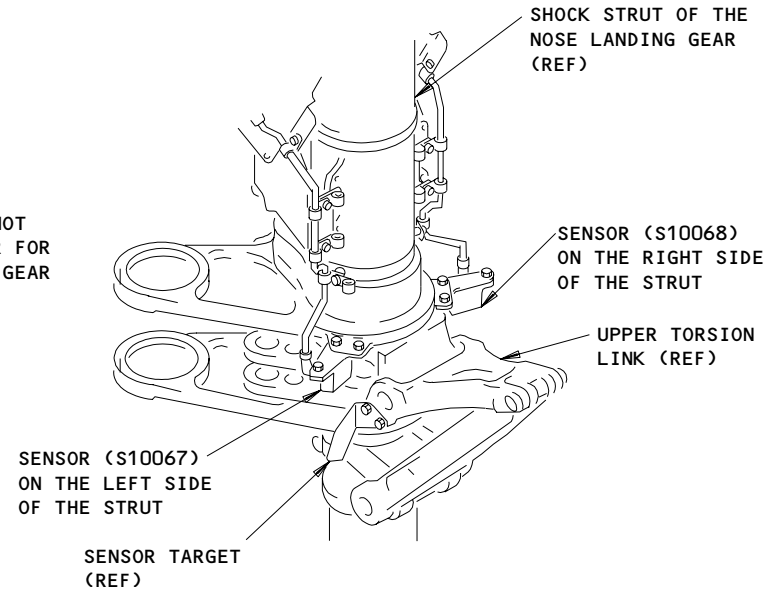


LOCATION OF THE TRUCK TILT SENSORS FOR THE MAIN LANDING GEAR

A



NOSE LANDING GEAR



LOCATION OF THE NOT COMPRESSED SENSOR FOR THE NOSE LANDING GEAR

B

System Test for the Air/Ground Relays
Figure 501

Table 1 System 1 Relays (P36)					
	Column				
A	B (Vdc)	C1 (Vdc)	C2 (Vdc)	D (Vdc)	E (Vdc)
D1784 of K10108	0.0	28.0	28.0	28.0	28.0
D606 of K177	28.0	0.0	0.0	28.0	0.0
D582 of K124	0.0	0.0	28.0	0.0	0.0
D586 of K141	28.0	0.0	0.0	28.0	0.0
D596 *[1] of K10107	28.0	0.0	0.0	28.0	0.0
D1782 of K167	28.0	0.0	0.0	28.0	0.0
D1780 of K135	28.0	0.0	0.0	0.0	0.0
D4708 of K10385	28.0	0.0	0 0	28.0	0.0

*[1] Measure between the pins X1 (+) and X2 (gnd)

Table 2 System 2 Relays (P37)					
	Column				
A	B (Vdc)	C1 (Vdc)	C2 (Vdc)	D (Vdc)	E (Vdc)
D2676 of K10239	28.0	0.0	0.0	28.0	0.0
D632 of K10203	0.0	0.0	28.0	0.0	0.0
D1866 of K263	28.0	0.0	0.0	28.0	0.0
D636 of K214	28.0	0.0	0.0	28.0	0.0
D1870 of K219	0.0	28.0	28.0	28.0	28.0
D616 *[1] of K203	28.0	0.0	0.0	28.0	0.0
D1872 of K215	28.0	0.0	0.0	0.0	0.0
D4674 of K10386	28.0	0.0	0.0	28.0	0.0

*[1] Measure between the pins X1 (+) and X2 (gnd)

S 865-012

(2) Erase the EICAS (Engine Indication and Crew Alerting System) memory.
  (a) Push ECS/MSG to set the format.
  (b) Push EVENT READ-AUTO to set the format.

(c) Write down the EICAS messages shown on the non-volatile EICAS message list.
(d) Push and hold the ERASE switch until the EICAS messages go out of view.
(e) Do the last three steps again, until all the EICAS memory has been erased.

S 865-013
(3) Move the EICAS computer select switch to the L position.
(a) Make sure the NOSE A/G DISAGREE, AIR/GND DISAGREE, NOSE A/G SYS, and AIR/GND SYS messages are not shown on the EICAS.

S 865-014
(4) Move the EICAS computer select switch to the R position.
(a) Make sure the NOSE A/G DISAGREE, AIR/GND DISAGREE, NOSE A/G SYS, and AIR/GND SYS messages are not shown on the EICAS.

S 965-015
(5) Install or remove the switch actuators or deactuators on the proximity sensors as shown below:

SENSOR	LOCATION	ACTUATOR	DEACTUATOR
S10067	Nose Gear	Install	- -

S 865-016
(6) NOSE A/G DISAGREE (status msg)
AIR/GND DISAGREE (status msg)

S 865-072
(7) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS;
AIR/GND SYS (advisory msg)

S 865-017
(8) Move the EICAS computer select switch to the L position.
(a) NOSE A/G DISAGREE (status msg)
AIR/GND DISAGREE (status msg)

(b) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS;
AIR/GND SYS (advisory msg)

S 765-018

(9) Use a volt/ohmmeter to measure the voltage between pins 6 (+ voltage) and 12 (ground). The connectors to be measured are in column A of Tables 1 and 2. The measured voltage of each connector must be the same as the voltage shown in column C1 of Table 1 and column B of Table 2.

S 865-019

(10) Pressurize the left hydraulic system (Ref 29-11-00).

S 765-020

(11) Use a volt/ohmmeter to measure the voltage between pins 6 (+ voltage) and 12 (ground). The connectors to be measured are in column A of Tables 1 and 2. The measured voltage of each connector must be the same as the voltage shown in column D of Table 1 and column B of Table 2.

S 965-021

(12) Install or remove the switch actuators or deactuators on the proximity sensors as shown below:

SENSOR	LOCATION	ACTUATOR	DEACTUATOR
S10068	Nose Gear	Install	- -
S10064	Left Main Gear	- -	Install

S 765-022

(13) Use a volt/ohmmeter to measure the voltage between pins 6 (+ voltage) and 12 (ground). The connectors to be measured are in column A of Tables 1 and 2. The measured voltage of each connector must be the same as the voltage shown in column D of Table 1 and column E of Table 2.

S 965-023

(14) Install or remove the switch actuators or deactuators on the proximity sensors as shown below:

SENSOR	LOCATION	ACTUATOR	DEACTUATOR
S10064	Left Main Gear	- -	Remove
S10059	Right Main Gear	- -	Install

S 765-024
(15) Use a volt/ohmmeter to measure the voltage between pins 6 (+ voltage) and 12 (ground). The connectors to be measured are in column A of Tables 1 and 2. The measured voltage of each connector must be the same as the voltage shown in column D of Table 1 and column E of Table 2.

S 965-025
(16) Install or remove the switch actuators or deactuators on the proximity sensors as shown below:

SENSOR	LOCATION	ACTUATOR	DEACTUATOR
S10064	Left Main Gear	- -	Install

S 865-026
(17) Erase the EICAS memory.

S 865-027
(18) Make sure the NOSE A/G DISAGREE message is not shown on the EICAS.

S 865-074
(19) Deleted.

S 765-028
(20) Use a volt/ohmmeter to measure the voltage between pins 6 (+ voltage) and 12 (ground). The connectors to be measured are in column A of Tables 1 and 2. The measured voltage of each connector must be the same as the voltage shown in column D of Table 1 and column C2 of Table 2.

S 865-029
(21) Make sure the AIR/GND DISAGREE message is shown on the EICAS. Permit 10 seconds for a message to come into view.

S 865-076
(22) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS;
Make sure the AIR/GND SYS message shows on the EICAS.

S 865-030
(23) Move the EICAS computer select switch to the R position.
(a) Make sure the AIR/GND DISAGREE message is shown on the EICAS.
(b) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS;
Make sure the AIR/GND SYS message shows on the EICAS.

S 965-031
(24) Install or remove the switch actuators or deactuators on the proximity sensors as shown below:

SENSOR	LOCATION	ACTUATOR	DEACTUATOR
S10064	Left Main Gear	- -	Remove
S10059	Right Main Gear	- -	Remove

S 865-032
(25) Erase the EICAS memory.

S 865-033
(26) Make sure the AIR/GND DISAGREE message is not shown on the EICAS.

S 865-078
(27) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS;
Make sure the AIR/GND SYS message does not show on the EICAS.

S 965-034
(28) Install or remove the switch actuators or deactuators on the proximity sensors as shown below:

SENSOR	LOCATION	ACTUATOR	DEACTUATOR
S10068	Nose Gear	Remove	- -

S 865-035
(29) Make sure the NOSE A/G DISAGREE message is shown on the EICAS.
Permit 10 seconds for the message to come into view.

S 865-065
(30) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS;
Make sure the NOSE A/G SYS message shows on the EICAS.

S 965-036

(31) Install or remove the switch actuators or deactuators on the proximity sensors as shown below:

SENSOR	LOCATION	ACTUATOR	DEACTUATOR
S10062	Left Main Gear	- -	Install

S 765-037

(32) Use a volt/ohmmeter to measure the voltage between pins 6 (+ voltage) and 12 (ground). The connectors to be measured are in column A of Tables 1 and 2. The measured voltage of each connector must be the same as the voltage shown in column E of Table 1 and column B of Table 2.

S 965-038

(33) Install or remove the switch actuators or deactuators on the proximity sensors as shown below:

SENSOR	LOCATION	Actuator	DEACTUATOR
S10062	Left Main Gear	- -	Remove
S10060	Right Main Gear	- -	Install

S 765-039

(34) Use a volt/ohmmeter to measure the voltage between pins 6 (+ voltage) and 12 (ground). The connectors to be measured are in column A of Tables 1 and 2. The measured voltage of each connector must be the same as the voltage shown in column E of Table 1 and column B of Table 2.

S 965-040

(35) Install or remove the switch actuators or deactuators on the proximity sensors as shown below:

SENSOR	LOCATION	ACTUATOR	DEACTUATOR
S10062	Left Main Gear	- -	Install

S 865-041

(36) Make sure the AIR/GND DISAGREE message is shown on the EICAS. Permit 10 seconds for the message to come into view.

S 865-067
(37) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS;
Make sure the AIR/GND SYS message shows on the EICAS.

S 865-042
(38) Move the EICAS computer select switch to the L position.
(a) Make sure the AIR/GND DISAGREE message is shown on the EICAS.
(b) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS;
Make sure the AIR/GND SYS message shows on the EICAS.

S 765-043
(39) Use a volt/ohmmeter to measure the voltage between pins 6 (+ voltage) and 12 (ground). The connectors to be measured are in column A of Tables 1 and 2. The measured voltage of each connector must be the same as the voltage shown in column C2 of Table 1 and column B of Table 2.

S 965-044
(40) Install or remove the switch actuators or deactuators on the proximity sensors as shown below:

SENSOR	LOCATION	ACTUATOR	DEACTUATOR
S10068	Nose Gear	Install	- -

S 765-045
(41) Use a volt/ohmmeter to measure the voltage between pins 6 (+ voltage) and 12 (ground). The connectors to be measured are in column A of Tables 1 and 2. The measured voltage of each connector must be the same as the voltage shown in column C2 of Table 1 and column D of Table 2.

S 865-046
(42) Remove the pressure from the left hydraulic system (Ref 29-11-00).

S 875-047

WARNING: BE CAREFUL WHEN YOU BLEED THE HYDRAULIC FLUID. THERE IS PRESSURE ON THE HYDRAULIC FLUID. WHEN YOU BLEED THE PRESSURIZED HYDRAULIC FLUID, IT CAN CAUSE INJURY TO PERSONS.

CAUTION: PUT A FUNNEL ON THE BLEED PORT ON THE TRUCK TILT POSITIONER OF THE MAIN LANDING GEAR. THE HYDRAULIC FLUID WILL FLOW APPROXIMATELY THREE FEET FROM THE BLEED PORT. THE HYDRAULIC FLUID CAN CAUSE DAMAGE TO THE EQUIPMENT.

(43) Use the bleed ports on the truck tilt positioners of the main landing gear, to remove the pressure from the positioners.

S 765-048
(44) Use a volt/ohmmeter to measure the voltage between pins 6 (+ voltage) and 12 (ground). The connectors to be measured are in column A of Tables 1 and 2. The measured voltage of each connector must be the same as the voltage shown in column C2 of Table 1 and column C1 of Table 2.

S 965-049
(45) Install or remove the switch actuators or deactuators on the proximity sensors as shown below:

SENSOR	LOCATION	ACTUATOR	DEACTUATOR
S10060	Right Main Gear	- -	Remove
S10062	Left Main Gear	- -	Remove

S 865-050
(46) Pressurize the left hydraulic system (Ref 29-11-00).

S 865-051
(47) Erase the EICAS memory.

S 865-052
(48) Remove the pressure from the left hydraulic system (Ref 29-11-00).

S 865-068
(49) Make sure the NOSE A/G DISAGREE, AIR/GND DISAGREE, NOSE A/G SYS, and AIR/GND SYS messages do not show on the EICAS.

S 965-054
(50) Install or remove the switch actuators or deactuators on the proximity sensors as shown below:

SENSOR	LOCATION	ACTUATOR	DEACTUATOR
S10067	Nose Gear	Remove	- -

S 965-055
(51) Use a volt/ohmmeter to measure the voltage between pins 6 (+ voltage) and 12 (ground). The connectors to be measured are in column A of Tables 1 and 2. The measured voltage of each connector must be the same as the voltage shown in column B of Table 1 and column C1 of Table 2.

S 865-056
(52) Make sure the NOSE A/G DISAGREE is shown on the EICAS.

S 865-070
(53) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS;
Make sure the NOSE A/G SYS message shows on the EICAS.

S 865-057
(54) Move the EICAS computer select switch to the R position.
(a) Make sure the NOSE A/G DISAGREE message is shown on the EICAS.
(b) AIRPLANES WITH S242N701-1001 EICAS COMPUTERS;
Make sure the NOSE A/G SYS message shows on the EICAS.

G. Put the Airplane Back to Its Usual Condition

S 095-058
(1) Remove all the actuators and the deactuators.

S 445-062
(2) Put the safety-sensitive systems back to their initial conditions (Ref 32-09-02/201).

S 865-060
(3) Make sure the control lever for the landing gear is in the DN position.

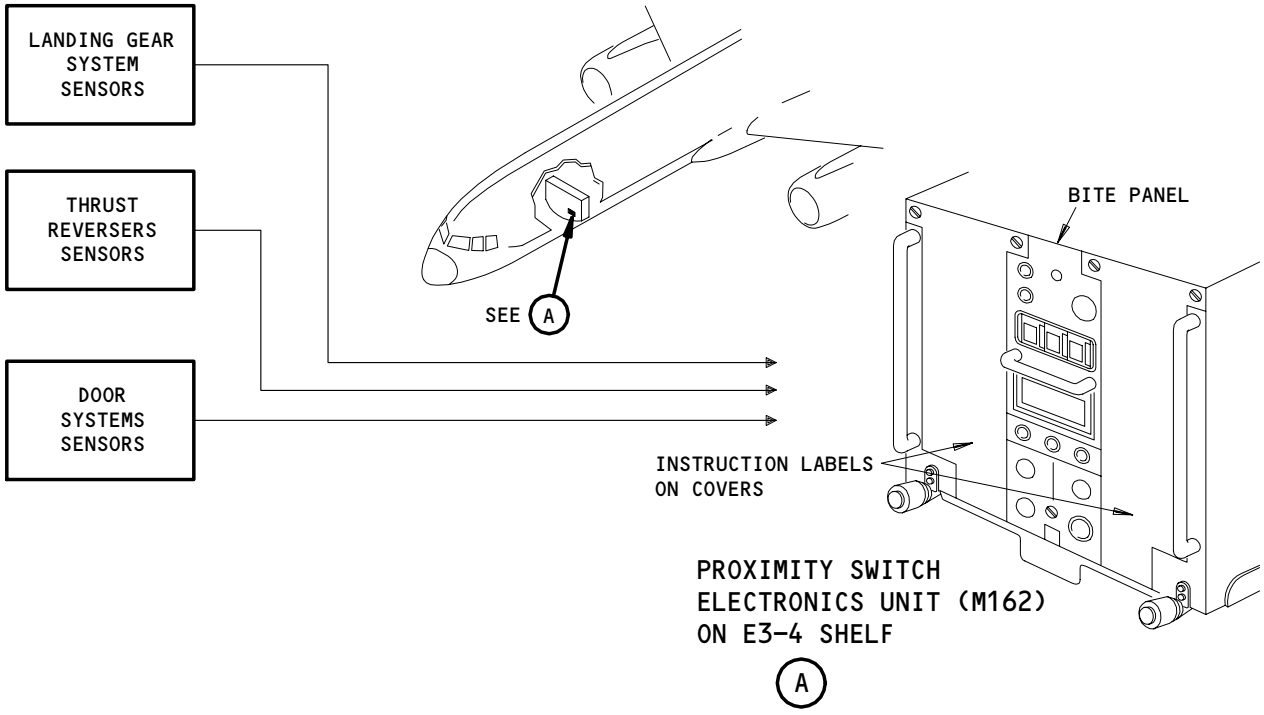
S 865-061
(4) Remove the electrical power if it is not necessary (Ref 24-22-00/201).

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 and thrust reversers, and basically involves the following subsystems:

      Landing gear systems (systems 1 and 2) (Ref 32-09-02 and 32-61-00)
      Cargo door control system (Ref 52-34-00)
      Door system (Ref 52-71-00)
      Thrust reverser auto restow (left and right) (Ref 78-34-00)
      Thrust reverser indication (left and right) (Ref 78-36-00)

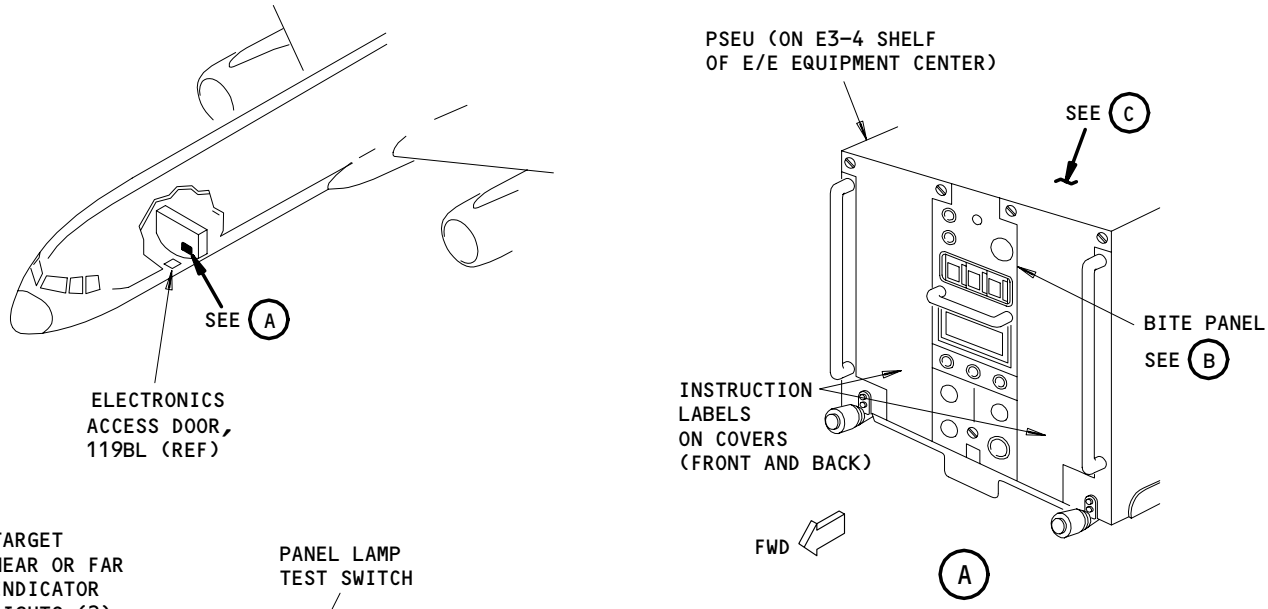
   B. The sensors sense the proximity of targets installed and provide position signals to the PSEU. Discrete operational inputs to the PSEU include mechanical switches which represent system command or position sensing signal. The PSEU converts all these inputs into output signals for operation and control of relays, lamps and other electronics.

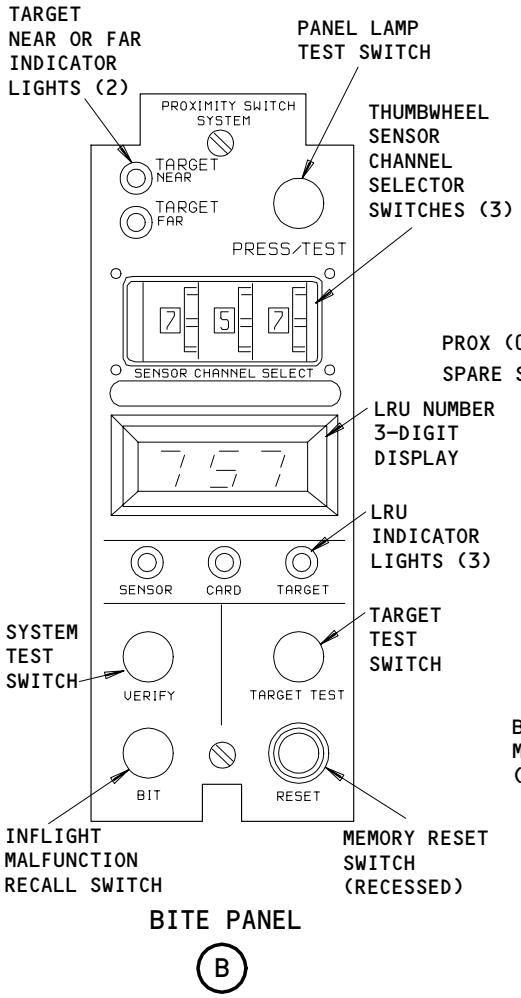


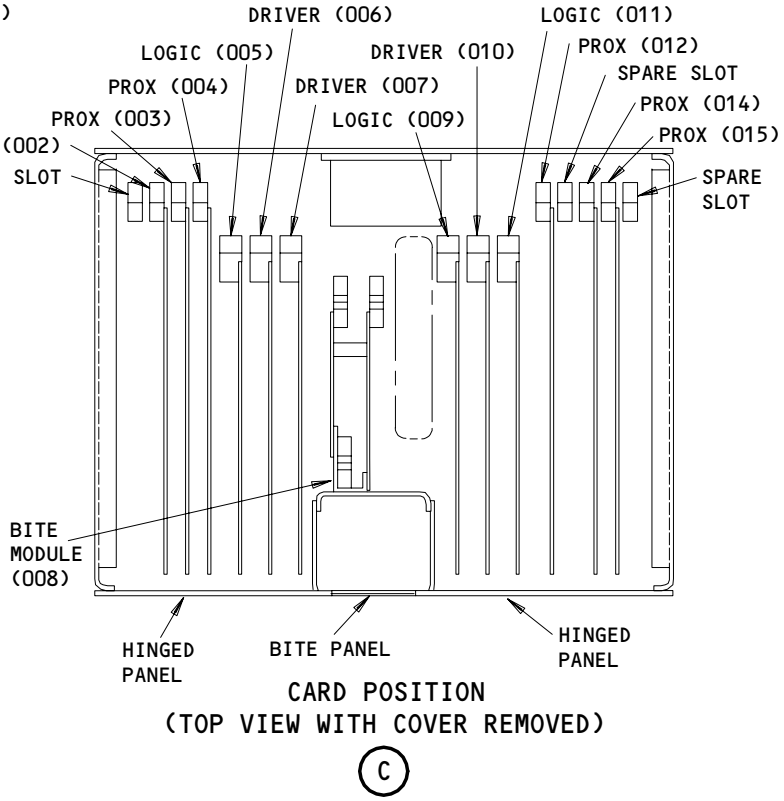
Proximity Switch System
Figure 1

C. The system incorporates built-in-test equipment (BITE) in the PSEU to provide both in-flight testing and on-ground system trouble shooting. BITE tests on a malfunctioning PSEU produce a fault code which indicates the faulty sensor or target state, card, or absence of section operating voltage.
   (1) Sensor fault codes correspond to sensor number except for the right thrust reverser.
   (2) Card fault codes correspond to card slot position in the PSEU.
   (3) Power supply and discrete input fault codes are numbered from 400 to 407 and 421 to 426 respectively.
   (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.

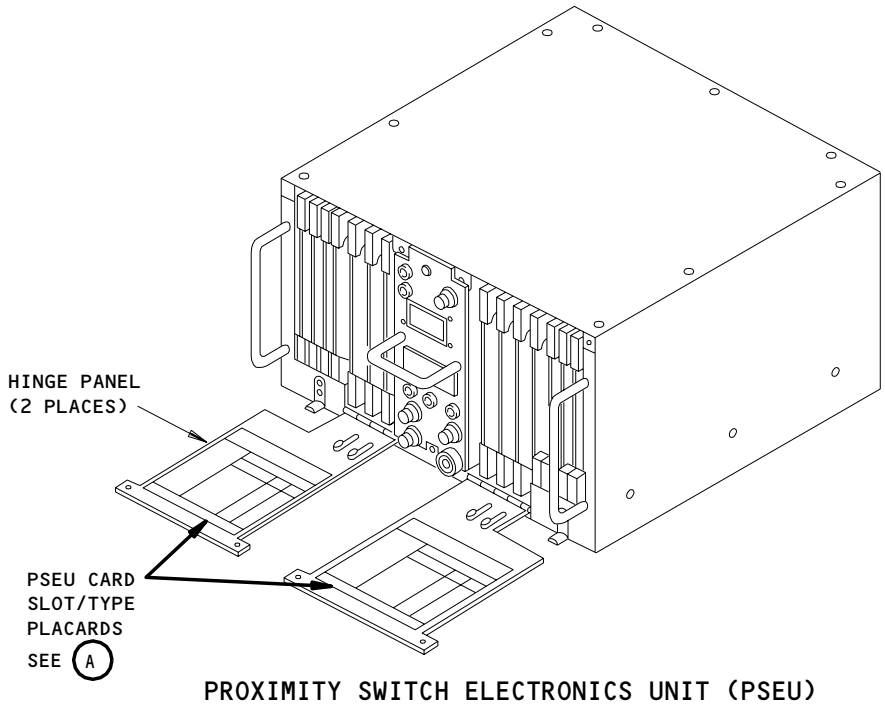
2. Component Details
   A. Proximity Switch Electronics Unit (PSEU) (Fig. 2, 2A)
      (1) The PSEU (M162), located on the E3-4 shelf in the main equipment center, consists of the following:
         (a) Six interchangeable prox cards
         (b) Three logic cards (two interchangeable, one non-interchangeable)
         (c) Three interchangeable driver cards
         (d) A BITE module composed of two unique BITE cards and a control panel
      (2) The PSEU chassis accommodates 12 active cards, 3 spare cards, and a BITE module.
      (3) 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 also 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.
      (4) 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.
   B. Prox Card
      (1) Each prox card can monitor the relative sensor target positions of up to 16 sensors.







Proximity Switch Electronics 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

001	A4 002	A4 003	A4 004		A1 005		A5 006		A5 007

CARD TYPE AND SLOT NO. (001-007)

SUBSYSTEM	CARD SLOT NO. PROXIMITY	LOGIC	DRIVER
CARGO DOOR CONTROL	4 (S312-S315,S350,S352, S357,S359)	9	7
T/R INDICATION L	2 (S435-S438)	5	6
T/R INDICATION R	12 (S170-S173)	11	10
T/R AUTO RESTOW L	15 (S433-S434)	11	10
T/R AUTO RESTOW R	3 (S099,S102)	5	6
DOOR SYSTEMS	2 (S083,S085,S086,S088, S373-S378) 15 (S089,S096,S097,S318, S373-S378)	9	7
LDG GEAR SYS #1	14 (S057,S060-S062,S065-S067, S238-S243,S319,S320)	11	10
LDG GEAR SYS #2	3 (S059,S064,S068-S070,S072-S074,S076-S079,S081,S321)	5	6
SCAVENGE VALVE L	12 (S445)	11	10
SCAVENGE VALVE R	4 (S447)	5	6

CARD TYPE CODES

A1	LOGIC #1	A4	PROXIMITY
A2	LOGIC #2	A5	DRIVER

LEFT PLACARD SHOWN, RIGHT SIMILAR

(A)

PSEU Card Slot/Type Information Placards
Figure 2A

(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 cards such that output signals are provided according to specified combinations of input signals.

(2) The two interchangable cards each contain logic for the landing gear, thrust reverser indication and thrust reverser auto restow systems. The cards are interchangable because logic for landing system 1 and 2 are identical as well as for the left and right engine thrust reversers.

(3) The non-interchangable card contains logic for the door and cargo door control systems.

D. Driver Card

(1) Each driver card contains 38 driver channels. The card supplies appropriate open or ground signals to drive airplane indicating and control systems.

(2) Type 1 drivers (of which there are 35 per card) supply a ground when powered and will fail to open with loss of power.

(3) Type 2 drivers (of which there are 3 per card) provide an open or a ground when energized, 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.

E. BITE Module

(1) The BITE module is a microprocessor based sytem 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) The sensors provide the position sensing inputs to the PSEU. They are distributed to these systems:
  (a) Door System (Ref 52-71-00).
  (b) Thrust Reverser System (Ref 78-36-00).
  (c) Landing Gear System (Ref 32-09-02 and 32-61-00).
  (d) Cargo Door Control (Ref 52-34-00).

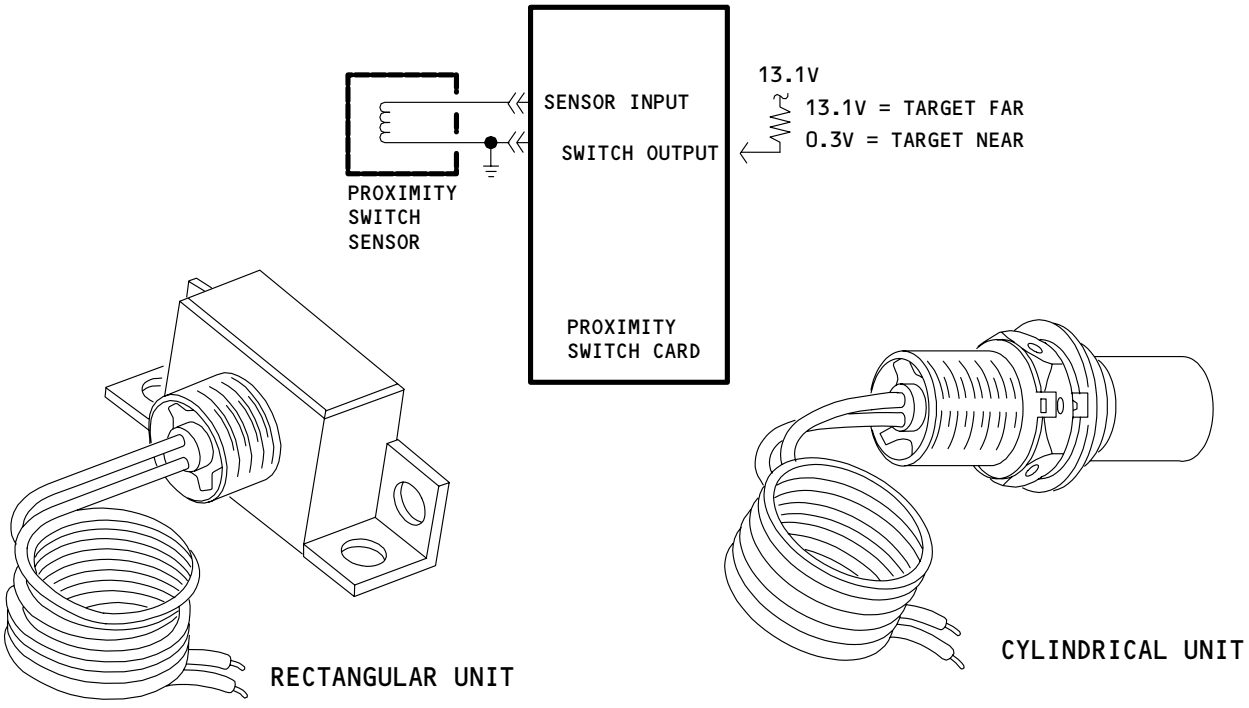
(2) The sensor, a two-wire device connected to the PSEU prox card, is a magnetic field-producing coil-core combination. The sensor is contained in a non-magnetic stainless steel case. When a steel (magnet) target is brought near or moved away from the sensor face, the sensor inductance increases or decreases 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. The sensor actuation gap varies with types of sensor and sensor installation. Regardless of gap differences, all sensors provide same function and output to the prox card in the PSEU.

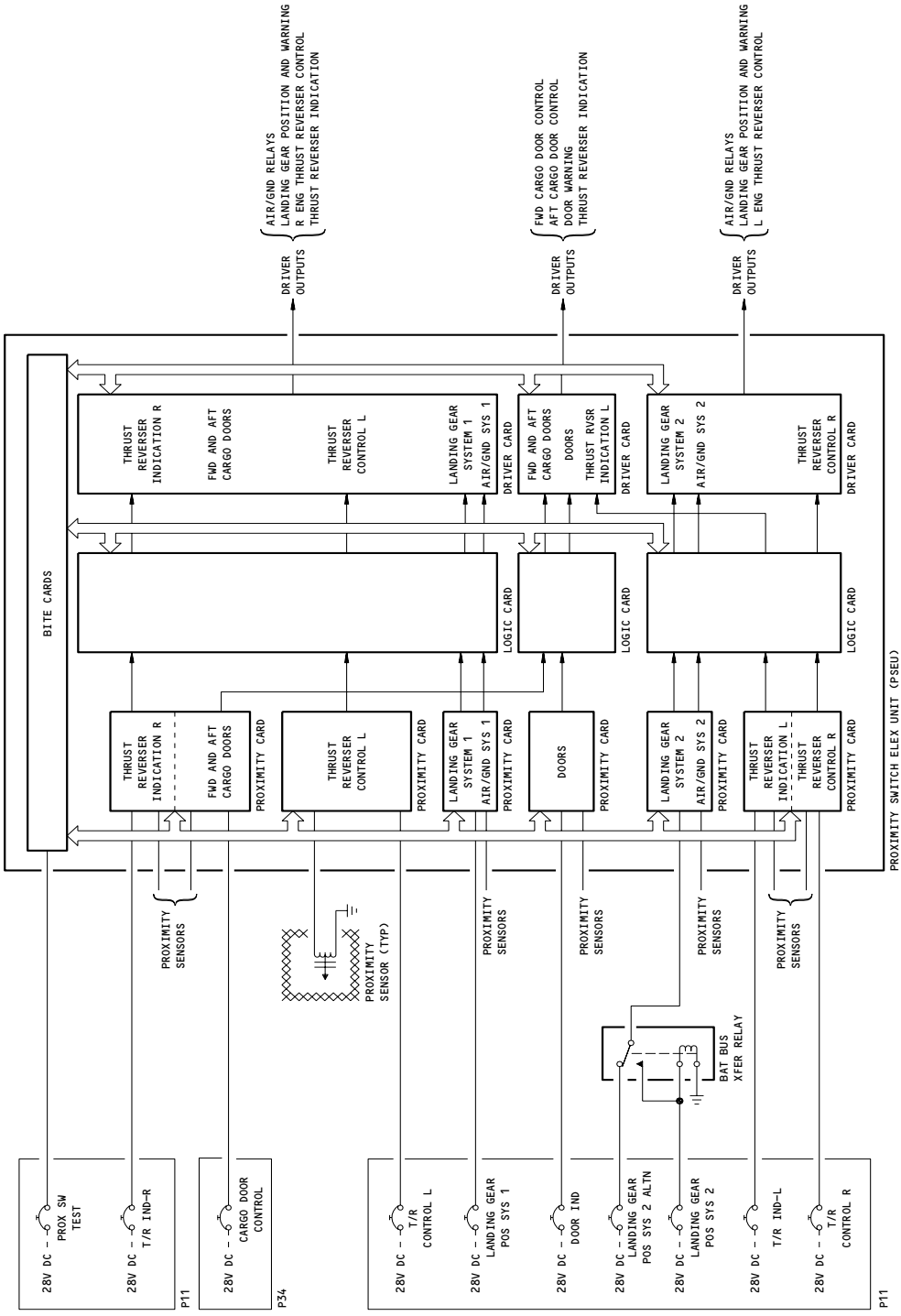
(4) For sensor details and locations, refer to section of airplane subsystems listed in General paragraph.

3. Operation

A. Functional Description (Fig. 4)



Proximity System Sensors
Figure 3



Proximity Switch System Schematic
Figure 4 (Sheet 1)

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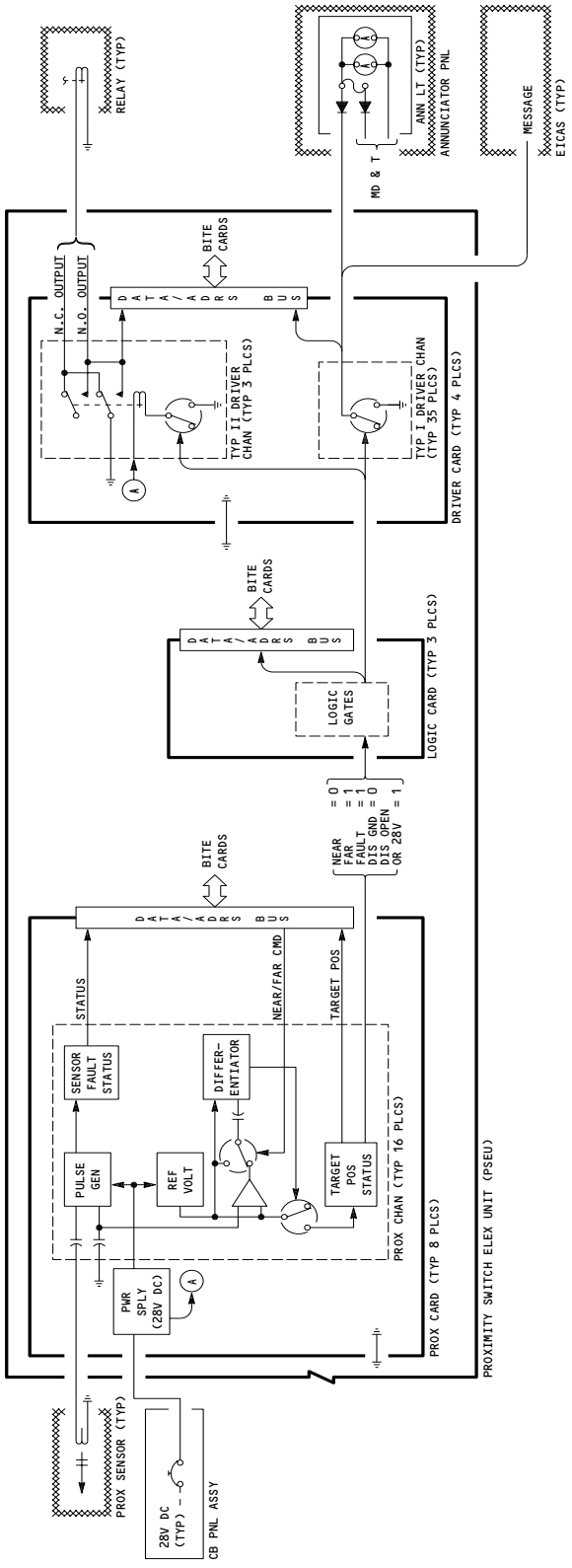
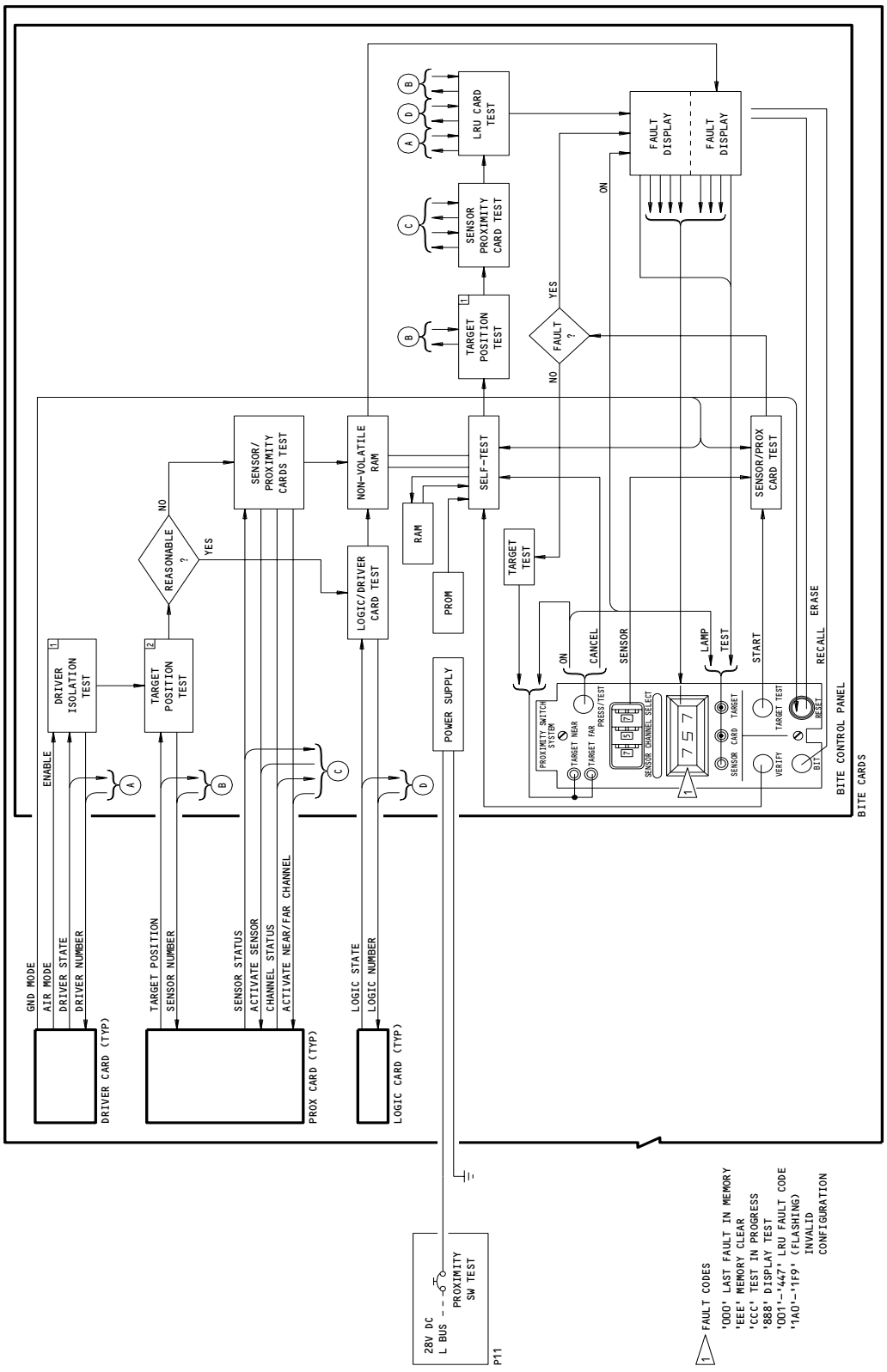


Proximity Switch System Schematic
Figure 4 (Sheet 2)



Proximity Switch System Schematic
Figure 4 (Sheet 3)

276225

(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 13V (logic 1) with a target far condition.

(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 up sys 1
422	Landing gear lever down sys 1
423	Landing gear lever down sys 2
424	Landing gear lever up sys 1
425	Gear truck positioner hydraulic pressure sys 1
426	Gear truck positioner hydraulic pressure sys 2

(3) Both prox card output signals and the discrete switches output (gear truck positioner actuator hydraulic inlet pressure switches position, 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)

(1) The PSEU BITE section is a microprocessor based system used to locate system faults. The BITE also 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.

(3) On-ground BITE testing can only be activated when both main landing gear trucks are not tilted. 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.

(4) The in-flight mode automatically monitors critical flight 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 outputs 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.

(5) 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

NOTE: If card fault code (005 or 011) is indicated, check landing gear lever input prior to replacing card. The indication may occur only as a result of an in-flight BITE (BIT switch).

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). 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 sensor test mode. Simultaneous activation with PRESS/TEST switch will turn off BITE power and reset BIT testing.

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.

(6) 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.

(7) A separate power source provides power for the two BITE cards, the display, and five lights. The thumbwheel sensor channel selector is not lighted.

(8) A microcomputer in one of the BITE card provides control for all BITE functions.

(9) The BITE can be used for both in-flight monitoring and on-ground system trouble shooting. Three levels of BITE are provided. These are automatic in-flight monitoring, on-ground system test, and sensor target position test.

(10) Automatic in-flight monitoring

(a) The in-flight monitoring 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 are checked for open and short circuits. Input discrepancies are checked by initiating a target position reasonableness test for those groups of sensors listed for "In-Flight 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)
1. Thrust reverser in transit - L engine	5
2. Thurst reverser in transit - R engine	5
3. Any access door unsafe	2
4. Any cargo door unsafe	2
5. Any entry door unsafe	2
6. Any emergency door unsafe	2
7. Any gear not in selected position (System No. 1)	60
8. Any gear not in selected position (System No. 2)	60
9. On ground (System No. 2)	5
10. On ground (System No. 1)	5
11. Nose gear compressed (System No. 1)	5
12. Nose gear compressed (System No. 2)	5

(11) On-ground system test

(a) On the ground, BITE can be used to perform a complete system test or individual subsystem tests. Both the complete system test and subsystem test 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 shortens BITE testing by approximately 2 minutes. However, only the selected subsystem is tested and test on the nonvolatile RAM section is omitted.

(c) To select the on-ground system or subsystem test, on the PSEU, enter appropriate CHANNEL SELECT code listed below:

CHANNEL SELECT	SUBSYSTEM
500	Cargo Door Control System
501	All Thrust Reverser Systems
502	Door System
503	Landing Gear System No. 1
504	Landing Gear System No. 2
505	All Systems

Select any code other than 500-505 for complete system test.

(d) Pressing the VERIFY switch on the BITE panel starts testing. Test is inhibited when the 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. Complete system test takes approximately 4 minutes (2 minutes for subsystem test). 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, BITE functions are verified by performing a PROM (programmable-read-only-memory) checksum test, a RAM (random-access-memory) read/write test, a nonvolatile RAM read/write test, and a CPU (central processing unit) self-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.

(12) Target position reasonableness test

(a) The target position reasonableness test is performed as part of the in-flight 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

Group No.	Sub-System & Mode	Sensor Status *[1]		BITE Test	
		Sensor Target Near/Discrete Input Low *[2]	Sensor Target Near/Discrete Input High *[2]	In-Flt	Ground
1	Door System Mode: Doors Closed	S10083, S10085, S10086, S10088, S10090-S10097		Yes	No
1	Door System Mode: Doors Closed	S10083, S10085, S10086, S10088-S10091, S10093-S10095, S10097, S10373-S10378		Yes	No
2	Landing Gear System No. 1 Mode: Extended	S10057, S10061, S10065, S10066, 422	S10238-S10240, 421	Yes	Yes
3	Landing Gear System No. 1 Mode: Retracted	S10065, S10238-S10243, 421	S10057, S10061, S10066, 422	Yes	No
4	Landing Gear System No. 2 Mode: Extended	S10070, S10074, S10078, S10079, 423	S10069, S10073, S10077, 424	Yes	Yes
5	Landing Gear System No. 2 Mode: Retracted	S10069, S10072, S10073, S10076-S10078, S10081, 424	S10070, S10074 S10079, 423	Yes	No
6	Tilt Sensors Mode: Air	S10067, S10068, 425, 426	S10059, S10060, S10062, S10064	Yes	No

Table 3
Target Position Reasonableness Test

Group No.	Sub-System & Mode	Sensor Status *[1]		BITE Test	
		Sensor Target Near/Discrete Input Low *[2]	Sensor Target Near/Discrete Input High *[2]	In-Flt	Ground
7	Tilt Sensors Mode: Ground	S10059, S10060, S10062, S10064, 425, 426	S10067, S10068	No	Yes
8	Thrust Reverser Left Engine Mode: Stowed	S164 (435), S165 (436)	S166 (437), S167 (438)	Yes	Yes
9	Thrust Reverser Right Engine Mode: Stowed	S164 (170), S165 (171)	S166 (172), S167 (173)	Yes	Yes

*[1] PSEU sensor codes are the last three digits of the sensor number except where noted in parentheses.
*[2] See Table 1 for listing of discrete inputs.

(13) 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 type of fault is shown by the SENSOR or CARD indicator. No target position indication will occur if a failed sensor is detected.

(14) 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.

(15) BITE system operation (Fig. 4)

(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 check 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) Provide BITE self test.
2) Determine target descrepancies by comparing groups of sensors for reasonableness of position.
3) Check sensor and sensor wiring for open and short circuits.
4) Functionally test all logic and output driver circuits and all sensor circuits for target near and target far modes.

5) Failed LRU will be shown on three-digit display by number, and by sensor, card, or target light illumination at end of test.
6) Start continuation of test whenever the VERIFY test switch is again pressed.
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 compontnts are monitored by the BITE at all time. Any component malfunction 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 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). The system is in operation when these circuit breakers are closed.

(2) The front of the PSEU (Fig. 2) 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
CARD – PSEU DRIVER, YTFM003	2	3	119BL, MAIN EQUIP CENTER, E3-4, PSEU M162	32-09-06
CARD – PSEU LOGIC 1, YTFM002	2	2	119BL, MAIN EQUIP CENTER, E3-4, PSEU M162	32-09-06
CARD – PSEU LOGIC 2, YTFM005	2	1	119BL, MAIN EQUIP CENTER, E3-4, PSEU M162	32-09-06
CARD – PSEU PROX, YTFM001	2	6	119BL, MAIN EQUIP CENTER, E3-4, PSEU M162	32-09-06
CIRCUIT BREAKER –	1		FLIGHT COMPARTMENT, P11	
DOOR IND, C4144		1		*
LANDING GEAR POS SYS 1, C1175		1		*
LANDING GEAR POS SYS 2, C4279		1		*
LANDING GEAR POS SYS 2 ALTN, C4478		1		*
PROX SW TEST, C4223		1		*
THRUST REVERSER CONT, C1482		1		*
THRUST REVERSER CONT, C1483		1		*
THRUST REVERSER IND, C1480		1		*
THRUST REVERSER IND, C1481		1		*
CIRCUIT BREAKER –	1		119BL, MAIN EQUIP CENTER, P34	
CARGO DR CONT, C1403		1	34A5	*
MODULE – (FIM 32-30-00/101) LANDING GEAR CONTROL LEVER, M937				
MODULE – PROXIMITY SWITCH ELECTRONICS UNIT (PSEU), M162	1	1	119BL, MAIN EQUIP CENTER, E3-4	32-09-06
MODULE – PSEU BITE, YTFM004	2	1	119BL, MAIN EQUIP CENTER, E3-4, PSEU M162	32-09-06
SENSOR – CARGO DOOR CONTROL SYSTEM PROXIMITY (FIM 52-34-00/101) S10350-S10359				
SENSOR – DOOR SYSTEM PROXIMITY (FIM 52-71-00/ 101) S10083-S10097 S10373-S10378				

* SEE THE WDM EQUIPMENT LIST

Proximity Switch System – Component Index
Figure 101 (Sheet 1)

G24910

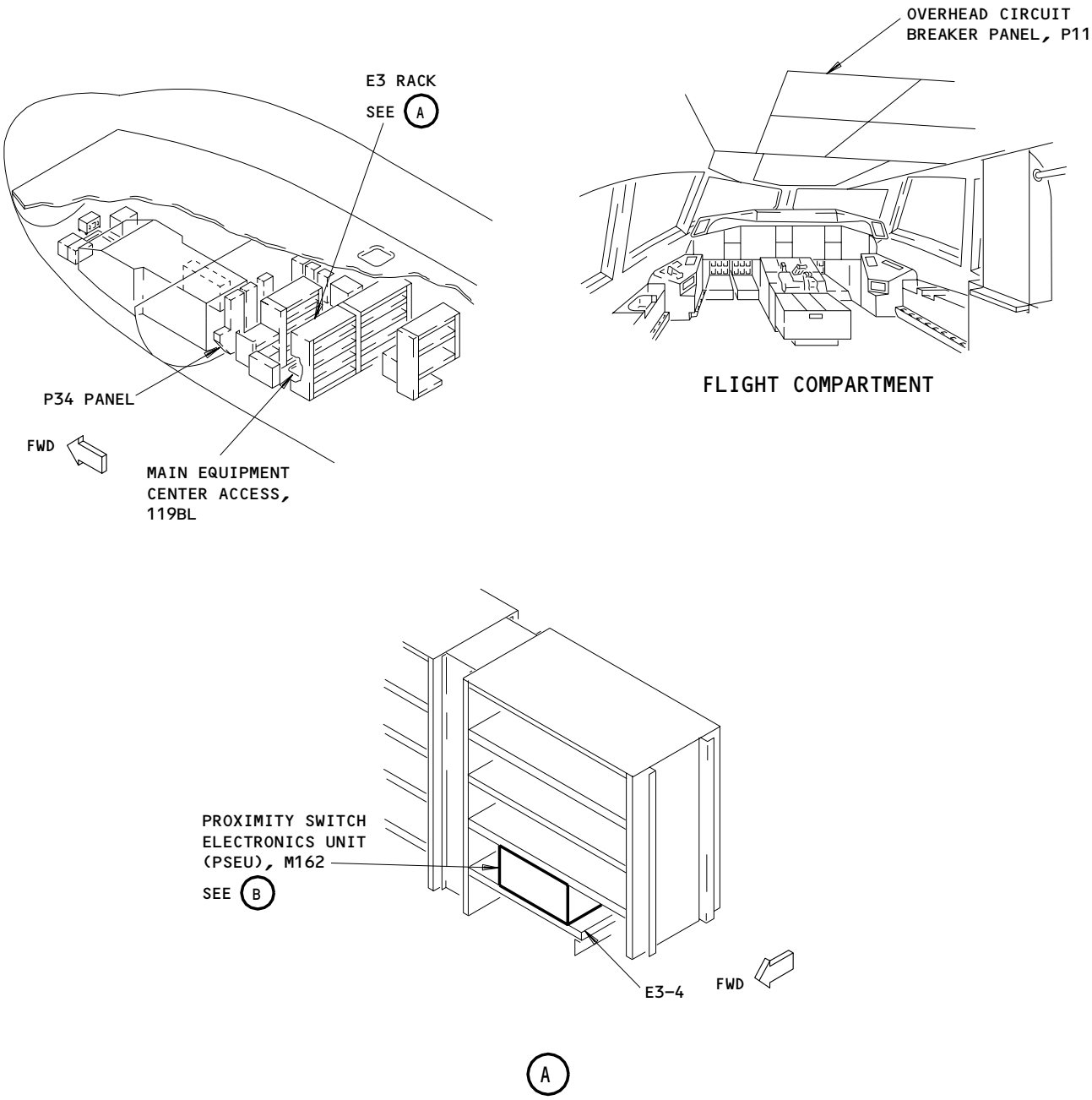
COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
SENSORS - LANDING GEAR SYSTEM PROXIMITY (AIR/GND)(32-09-00/101) S10059 S10060 S10062 S10064 S10067 S10068 SENSORS - LANDING GEAR SYSTEM PROXIMITY (POSITION INDICATION)(32-61-00/101) S10057 S10061 S10065-S10066 S10069 S10070-S10081 S10238-S10243 SENSORS - THRUST REVERSER SYSTEM PROXIMITY (78-36-00/101) S164-S167 A S10435-S10438 B SWITCH - AUTO RESTOW PROX SENSOR L & R (78-34-00/101) S10105-S10108 SWITCH - GEAR TRUCK TILT PRESSURE (32-30-00/101) S452-S453				

* SEE THE WDM EQUIPMENT LIST

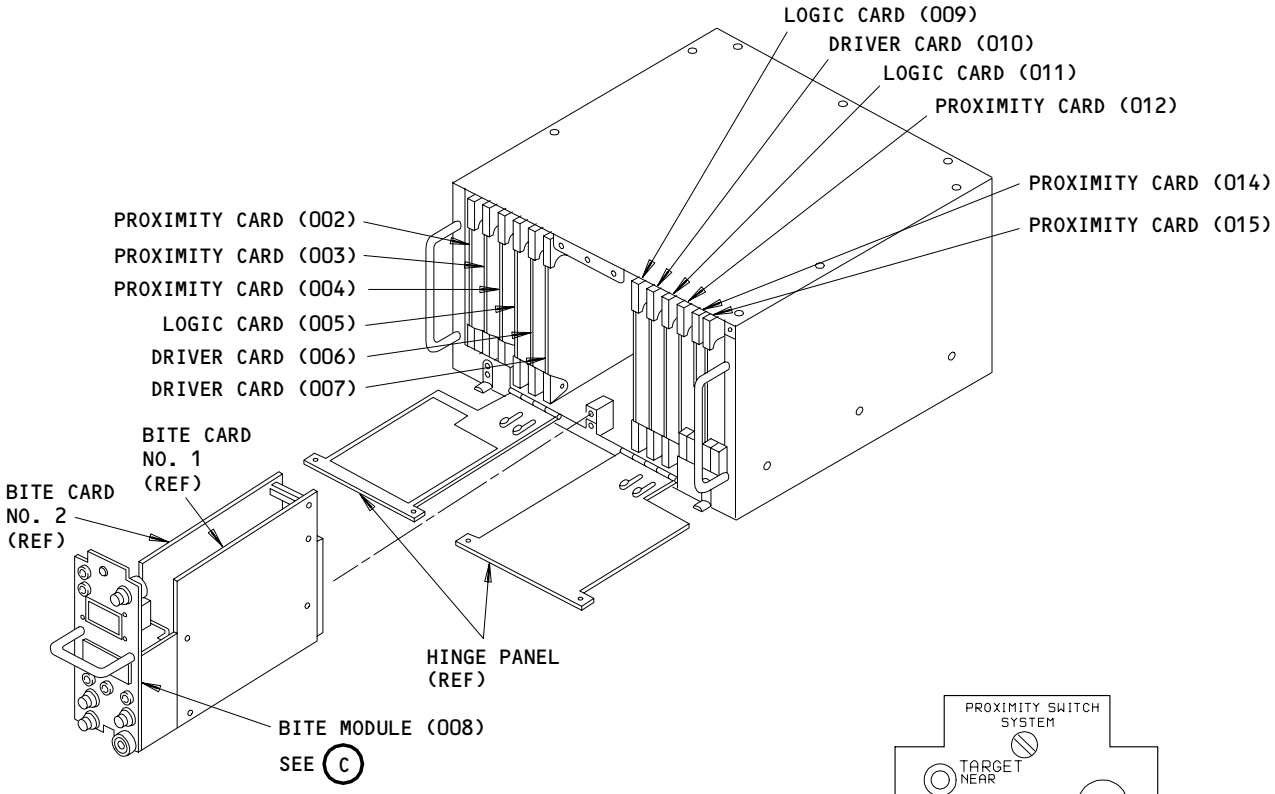
A AIRPLANES WITHOUT THRUST REVERSER SYNC-LOCKS

B AIRPLANES WITH THRUST REVERSER SYNC-LOCKS

Proximity Switch System - Component Index
Figure 101 (Sheet 2)

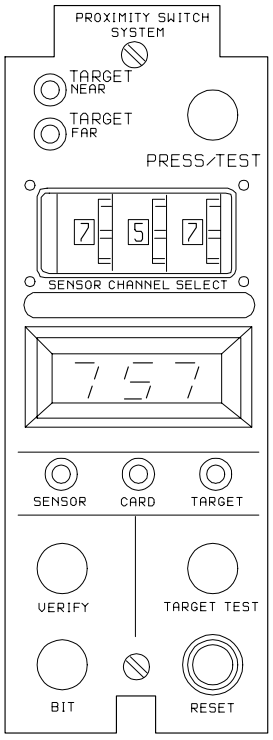


Proximity Switch System - Component Location
Figure 102 (Sheet 1)



PROXIMITY SWITCH ELECTRONICS UNIT (PSEU), M162

B FROM SHT 1



BITE MODULE (008)

C

Proximity Switch System – Component Location
Figure 102 (Sheet 2)

PROXIMITY SWITCH ELECTRONICS UNIT - REMOVAL/INSTALLATION

1. General
   A. The M162 proximity switch electronics unit (PSEU) is installed on the E3-4 shelf in the main equipment center. The PSEU is attached to a tray and is held in position with two hold-down-extractors (self-locking mechanism). No tools are necessary for the removal or the installation (AMM 20-10-01/401).
   B. The PSEU contains static sensitive devices. Refer to AMM 20-41-01/201 for the handling procedures.

TASK 32-09-04-004-001

2. Remove 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 20-10-01/401, E/E Rack-Mounted Components
      (3) AMM 20-41-01/201, Electrostatic Discharge Sensitive Devices
      (4) AMM 32-09-02/201, Air/Ground Relays
   B. Access
      (1) Location Zones
          119 Main Equipment Center
          211/212 Control Cabin

      (2) Access Panel
          119BL Main Equipment Center

   C. Prepare for the Removal of the Proximity Switch Electronics Unit (Fig. 401)

      S 044-018

      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.

      (1) Prepare the safety-sensitive systems for air mode simulation (AMM 32-09-02/201).

      S 864-004
      (2) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
          (a) 11B29, ENGINES RIGHT T/R IND
          (b) 11B30, ENGINES RIGHT T/R CONT

(c) 11C19, LANDING GEAR POS SYS 2 ALTN
(d) 11C30, LANDING GEAR POS SYS 1
(e) 11D11, ENGINES LEFT T/R IND
(f) 11D12, ENGINES T/R CONT-L
(g) 11R33, DOOR IND
(h) 11R36, PROX SW TEST
(i) 11S23, POS SYS 2

S 014-019

(3) Get access to the APU external power panel, P34, and the PSEU thru the access door for the main equipment center, 119BL (AMM 06-41-00/201).

S 864-006

(4) Open this circuit breaker on the APU external power panel, P34, and attach DO-NOT-CLOSE tag:
(a) 34A5, CARGO DOOR CONT

D. Remove the Proximity Switch Electronics Unit (Fig. 401)

S 914-020

CAUTION: DO NOT TOUCH THE PROXIMITY SWITCH ELECTRONICS UNIT BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE PROXIMITY SWITCH ELECTRONICS UNIT.

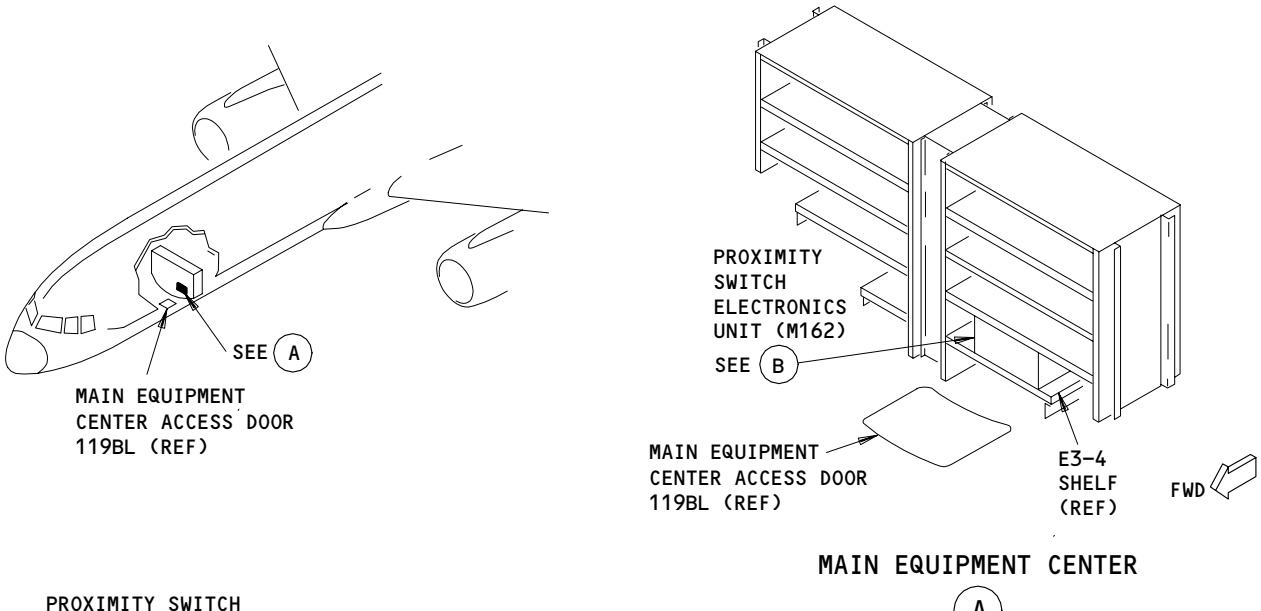
(1) Do the procedure for devices that are sensitive to electrostatic discharge (AMM 20-41-01/201).

S 024-008

(2) Remove the PSEU (AMM 20-10-01/401) from the E3-4 shelf.

TASK 32-09-04-404-009

3. Install the Proximity Switch Electronics Unit (Fig. 401)
A. References
(1) AMM 20-41-01/201, Electrostatic Discharge Sensitive Devices



Proximity Switch Electronics Unit Installation
Figure 401

(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 27-61-00/201, Spoiler Speedbrake Control System
(4) AMM 32-09-02/201, Air/Ground Relays

B. Access

(1) Location Zones
119 Main Equipment Center
211/212 Control Cabin

(2) Access Panel
119BL Main Equipment Center

C. Install the Proximity Switch Electronics Unit

S 914-021

CAUTION: DO NOT TOUCH THE PROXIMITY SWITCH ELECTRONICS UNIT BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE PROXIMITY SWITCH ELECTRONICS UNIT.

(1) Do the procedure for devices that are sensitive to electrostatic discharge (AMM 20-41-01/201).

S 424-011

(2) Install the PSEU on the E3-4 shelf.

S 864-012

(3) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
(a) 11B29, ENGINES RIGHT T/R IND
(b) 11B30, ENGINES RIGHT T/R CONT
(c) 11C19, LANDING GEAR POS SYS 2 ALTN
(d) 11C30, LANDING GEAR POS SYS 1
(e) 11D11, ENGINES LEFT T/R IND
(f) 11D12, ENGINES LEFT T/R CONT
(g) 11R33, DOOR IND
(h) 11R36, PROX SW TEST
(i) 11S23, POS SYS 2

S 864-013

(4) Remove the DO-NOT-CLOSE tags and close this circuit breaker on the P34 panel:
(a) 34A5, CARGO DOOR CONT

S 444-024

(5) Put the safety-sensitive systems back to their initial conditions (AMM 32-09-02/201).

D. Test the PSEU

S 864-033
(1) Supply electrical power (AMM 24-22-00/201).

S 744-034
(2) Do these steps to test the PSEU:
(a) Push the PRESS/TEST switch to do a lamp test on the PSEU front panel. Make sure the five indicator lights (SENSOR, CARD, TARGET, TARGET NEAR, TARGET FAR) come on and the 3-digit display shows the code 888.
(b) If no light comes on and no code 888 is shown, then push the PRESS/TEST switch and TARGET TEST switch at the same time.

NOTE: When you push the PRESS/TEST and the TARGET TEST switches together, the internal circuit of the PSEU sets the BITE.

(c) To see the inflight faults, push the BIT switch until the code 000 shows.
(d) Write down each fault shown on the PSEU and the EICAS status/maintenance messages.

NOTE: The display will show the code 000 or NO FAULTS or if all the faults have been shown. All of the panel indicators go off 2 minutes after they come on.

(e) Set the SENSOR CHANNEL SELECT DIALS on the PSEU to any code other than the codes 500-505.

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.

(f) Do the deactivation procedure for the spoilers (AMM 27-61-00/201) or move all persons and equipment away from the spoilers.
(g) Push the RESET switch to erase the PSEU memory.
(h) Push the VERIFY switch to do a test of the on-ground system.

(i) Make sure the display shows the code 999 at the end of the test.

NOTE: The display will flash the code EEE when you erase the memory. The display will flash the code CCC when you do the test. The test is approximately 2 minutes. When the test is completed, the code 999 is shown. All the panel indicators will go off 60 seconds after they come on.

When you do the test, the air/ground relays are cycled to the air mode then to the ground mode. This will cause some nuisance EICAS messages and flashing lights in the flight compartment. There can be some electrical power bus switching. This is normal.

(j) Write down then erase all the maintenance messages in the EICAS memory as follows:
1) Push the ECS/MSG switch on the EICAS maintenance panel, P61.
2) Push the EVENT AUTO READ switch to show the EICAS maintenance messages.
3) Write down all the messages that show.
4) Push the ERASE switch.
5) Push the EVENT AUTO READ switch again to show the second page of the maintenance messages.
6) Write down the messages that show.
7) Push the ERASE switch. Continue this procedure until no more show when you push the EVENT AUTO READ switch.

E. Put the Airplane Back to Its Usual Condition

S 864-016
(1) Remove electrical power if it is not necessary (AMM 24-22-00/201).

S 414-023
(2) Close the access door, 119BL, for the main equipment center.

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 (PSEU). The second task installs the circuit card in the PSEU. The third task does a test for the PSEU.
   B. It is not necessary to remove the 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 (Fig. 401)
   A. References
      (1) 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) 20-41-01/201, Electrostatic Sensitive Devices
      (3) 32-09-02/201, Air/Ground Relays
   B. Access
      (1) Location Zones
          119/120 Main Equipment Center
          211/212 Control Cabin

      (2) Access Panels
          119BL Main Equipment Center

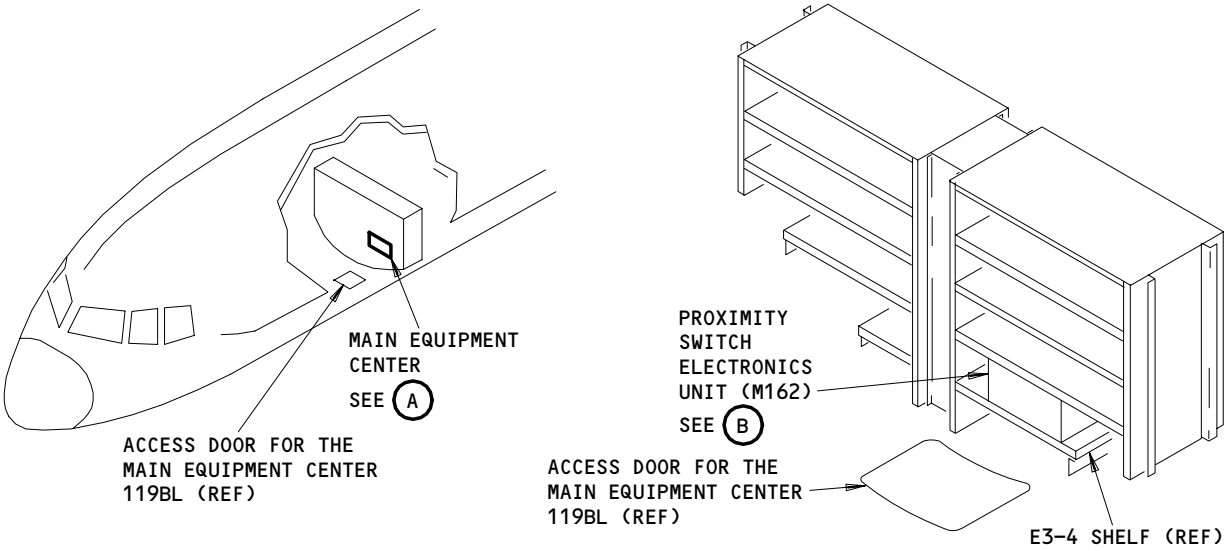
   C. Prepare to Remove the Circuit Cards

      S 044-020

      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.

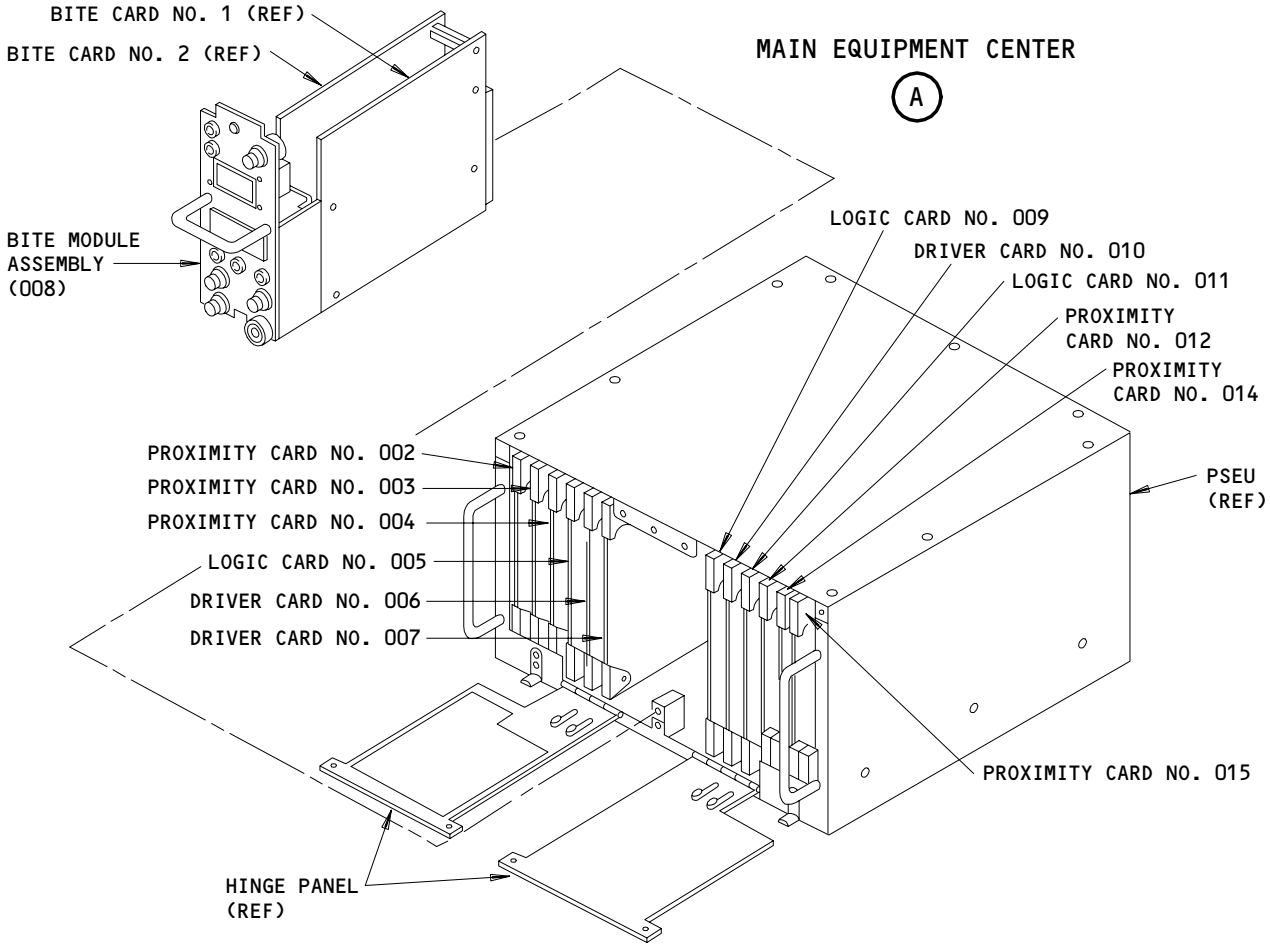
      (1) Prepare the safety-sensitive systems for air mode simulation (Ref 32-09-02/201).

      S 864-003
      (2) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
          (a) 11B29, ENGINES RIGHT T/R IND
          (b) 11B30, ENGINES RIGHT T/R CONT
          (c) 11C19, LANDING GEAR POS SYS 2 ALTN
          (d) 11C30, LANDING GEAR POS SYS 1
          (e) 11D11, ENGINES LEFT T/R IND
          (f) 11D12, ENGINE T/R CONT-L
          (g) 11R33, DOOR IND
          (h) 11R36, PROX SW TEST
          (i) 11S23, POS SYS 2



MAIN EQUIPMENT CENTER

(A)



PROXIMITY SWITCH ELECTRONICS UNIT (M162)

(B)

Circuit Card Installation for the Proximity Switch Electronics Unit
Figure 401

S 014-004

(3) Open the access door, 119BL, to get access to the APU external power panel, P34, and the PSEU (Ref 06-41-00).

S 864-005

(4) Open this circuit breaker on the APU external power panel, P34, and attach a DO-NOT-CLOSE tag:
(a) 34A5, CARGO DOOR CONT

D. Remove the Circuit Cards

S 914-006

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 (Ref 20-41-01).

S 024-007

(2) Do the steps that follow to remove the circuit cards:
(a) ALL THE CIRCUIT CARDS EXCEPT THE TWO BITE CARDS;
Open the left or right front panel of the PSEU.
1) Write down the card number and location for each circuit card.
2) Operate the card extractors and pull the circuit cards out of the chassis.

TASK 32-09-06-404-008

3. Install the Circuit Card in the Proximity Switch Electronics Unit (Fig. 401)
A. References
(1) 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels

(2) 20-41-01/201, Electrostatic Sensitive Devices
(3) 32-09-02/201, Air/Ground Relays

B. Access

(1) Location Zones
119/120 Main Equipment Center
211/212 Control Cabin

(2) Access Panels
119BL Main Equipment Center

C. Install the Circuit Cards

S 914-009

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 (Ref 20-41-01).

S 424-010

(2) Do the steps that follow to install the circuit cards:
(a) ALL THE CIRCUIT CARDS EXCEPT THE BITE CARDS;
Put the circuit cards in the correct locations.
1) Align the guide pins for the connector.
2) Carefully push the circuit card until it is fully engaged.
3) Close the front panel.

S 864-011

(3) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
(a) 11B29, ENGINES RIGHT T/R IND
(b) 11B30, ENGINES RIGHT T/R CONT
(c) 11C19, LANDING GEAR POS SYS 2 ALTN
(d) 11C30, LANDING GEAR POS SYS 1
(e) 11D11, ENGINES LEFT T/R IND
(f) 11D12, ENGINE T/R CONT- L
(g) 11R33, DOOR IND
(h) 11R36, PROX SW TEST
(i) 11S23, POS SYS 2

S 864-012
(4) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P34 panel:
(a) 34A5, CARGO DOOR CONT

S 444-013
(5) Put the safety-sensitive systems back to their initial conditions (Ref 32-09-02/201).

TASK 32-09-06-704-014

4. Do the Test for the Proximity Switch Electronics Unit

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

B. Access
(1) Location Zones
119/120 Main Equipment Center
211/212 Control Cabin

(2) Access Panels
119BL Main Equipment Center

C. Prepare to Do the Test

S 864-015
(1) Supply electrical power (Ref 24-22-00).

D. Do the Test

S 714-016
(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 show the code 888.
1) If no indicator light comes on or no code 888 shows, push the RESET/TEST and the TARGET/TEST switches at the same time.

NOTE: When the PRESS/TEST and the TARGET/TEST switches are pushed together, the internal circuit breaker of the PSEU will reset the BITE.

(d) Push the BIT switch to see the in flight faults.
1) Continue to push the BIT switch until the display shows 000.

NOTE: The display will show the code 000 if there are no faults or if all the faults have been shown. All the panel indicators will go off two minutes after they come on.

2) Write down each fault shown.
3) Write down the EICAS status/maintenance messages if they are shown.

(e) Put the dials for the PSEU SENSOR CHANNEL SELECT, to any code but the codes 500 through 505.

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.

(f) Do the deactivation procedure for the spoilers (Ref 27-61-00) or move all persons and equipment away from the spoilers.

(g) 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.

(h) Push the VERIFY switch to do a test of the on ground system.

NOTE: The display will flash CCC during the test. Permit about 2 minutes for the test of the on ground systems.

(i) 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.

(j) 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 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 864-017
(1) Remove electrical power if it is not necessary (Ref 24-22-00).

S 444-018
(2) Do the activation procedure for the spoilers if you did the deactivation procedure (Ref 27-61-00).

S 414-019
(3) Close the access door, 119BL, for the main equipment center.

MAIN GEAR TRUCK TILT SENSORS - MAINTENANCE PRACTICES

1. General
   A. This procedure contains three tasks.
      (1) The first task removes the truck tilt sensors for the main landing gear.
      (2) The second task installs the truck tilt sensors on the main landing gear.
      (3) The third task does a test for the truck tilt sensors on the main landing gear.

TASK 32-09-07-002-001

2. Remove the Truck Tilt Sensors for the Main Landing Gear
   A. Equipment
      (1) Pin Insertion/Extraction Tool
          Part on Crimp Tool Kit - DMC 567
          Daniels Manufacturing Corp.
          526 Thorpe Road
          Orlando, Forida 32824
   B. References
      (1) AMM 24-22-00/201, Electrical Power - Control
      (2) AMM 32-00-20/201, Landing Gear Downlocks
      (3) AMM 32-09-02/201, Prepare the Safety-Sensitive Systems for Air Mode Simulation
   C. Access
      (1) Location Zones
          731/741 Main Landing Gear

   D. Prepare to Remove the Truck Tilt 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 wheels are chocked.

S 862-068

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.

(3) Do the task to prepare the safety-sensitive systems for air mode simulation (AMM 32-09-02/201).

S 212-037

(4) Look at the sensor, its mounting bracket and the target for signs of damage or corrosion between the sensor and the shim.

NOTE: Check the shims for signs of corrosion and repair as necessary. Refer to Service Letter 757-SL-32-057 for more data.

(a) Make a record if damage is found. This data will be used during the installation.

E. Remove the Truck Tilt Sensor (Fig. 201)

S 032-005

(1) Remove the bolts which hold the covers to the J-1 or the J-2 junction box.

NOTE: The junction box is on the truck beam of the main landing gear.

S 862-006

CAUTION: WRITE DOWN THE COLOR CODE AND THE PIN LOCATION OF THE SENSOR WIRES BEFORE YOU DISCONNECT THE WIRES. THIS WILL MAKE THE INSTALLATION OF THE WIRES EASIER AND WILL PREVENT THE MALFUNCTION OF THE AIR/GROUND RELAY SYSTEM.

(2) Put a tag with the color code and the pin locations on the sensor wires.

S 032-007

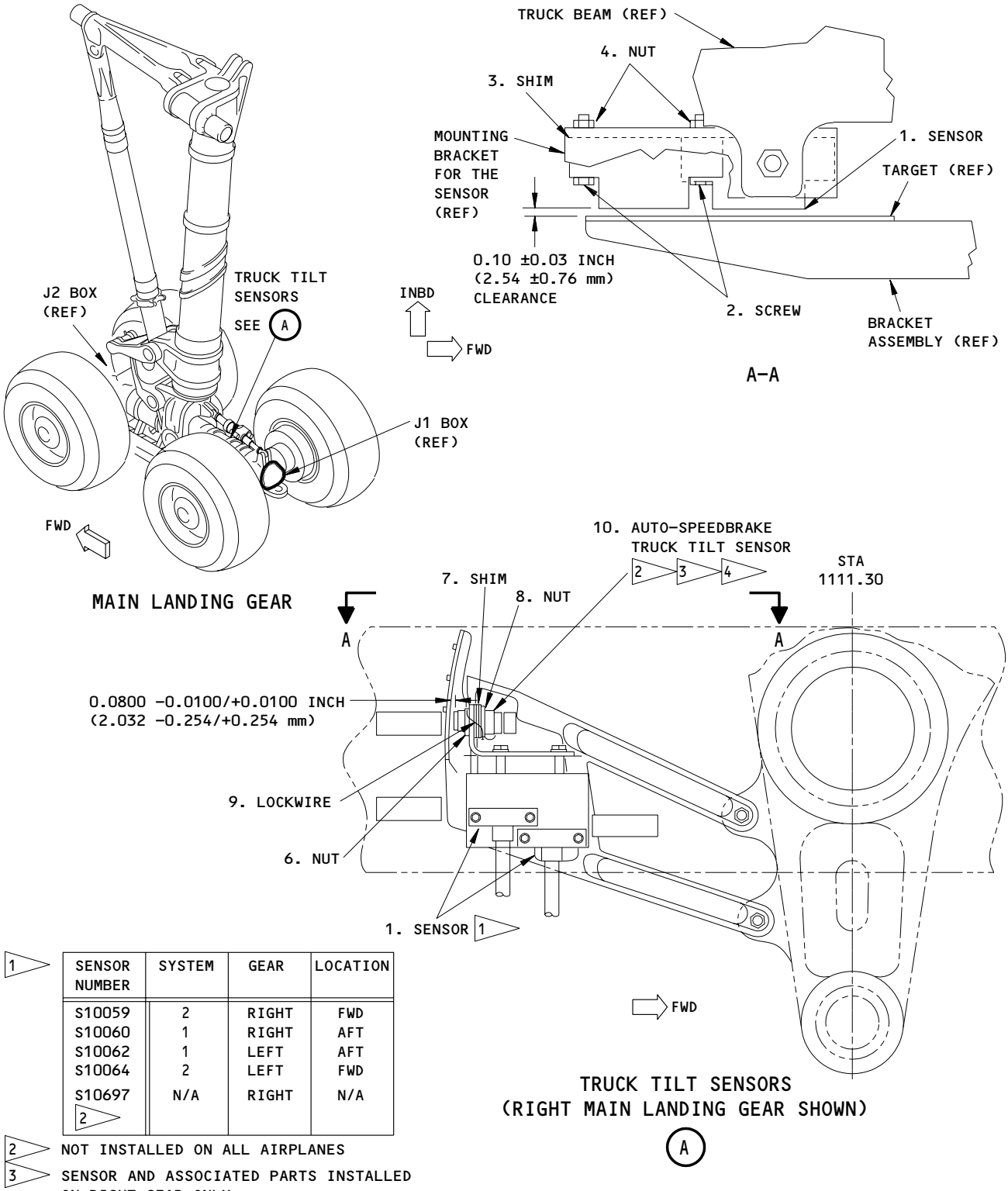
(3) Use a pin extraction tool, to remove the sensor wire from the terminal block in the junction box.

S 862-008

(4) Put a line on the sensor wires to make the installation easier.

S 032-009

(5) Disconnect the conduit coupling nut from the sensor (1).



1

SENSOR NUMBER	SYSTEM	GEAR	LOCATION
S10059	2	RIGHT	FWD
S10060	1	RIGHT	AFT
S10062	1	LEFT	AFT
S10064	2	LEFT	FWD
S10697 2	N/A	RIGHT	N/A

2 NOT INSTALLED ON ALL AIRPLANES

3 SENSOR AND ASSOCIATED PARTS INSTALLED ON RIGHT GEAR ONLY

4 AIRPLANES POST-SB 27A0130

Installation of the Truck Tilt Sensor for the Main Landing Gear
Figure 201

S 032-010
(6) For the rectangular sensors remove the sensor mounting screws (2).

S 032-071
(7) AIRPLANES WITH AUTO-SPEEDBRAKE TRUCK TILT SENSOR, S10697;
Refer to the following procedure (Fig. 201):
(a) Remove the jam nut and washer.
(b) Remove the sensor (10) from the bracket.
(c) Remove the shims from the sensor.

NOTE: Keep the shims. You will use them on the replacement sensor.

S 022-011
(8) Remove the sensors (1) and (10) and pull the sensor wires from the conduit.

NOTE: Make sure you do not pull the end of the line near the splice location for the sensor wires into the conduit.

TASK 32-09-07-402-012
3. Install the Truck Tilt Sensor on the Main Landing Gear (Fig. 201)
A. Equipment
(1) Pin Insertion/Extraction Tool
Part on Crimp Tool Kit - DMC 567
Daniels Manufacturing Corp.
526 Thorpe Road
Orlando, Forida 32824
B. Consumable Materials
(1) Braided Lock Stitch - BMS 13-54A
C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
201	1	Sensor	32-09-07	01 01A	210,213 214,215 260,265 420,530

D. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 27-62-00/501, Auto-Speedbrake Control System - Adjustment/Test
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) Chapter 20, Standard Wiring Practices Manual (SWPM)

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

F. Install the Truck Tilt Sensor (Fig. 201).

S 432-038

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 AIR/GROUND RELAY SYSTEM.

(1) Twist the sensor wires together.

S 862-014
(2) If you install a new sensor, do the step that follows:
(a) Put a line on the sensor wires.

S 432-042
(3) Put the wires through the conduit to the junction box on the truck of the main landing gear.

S 432-043
(4) Pull the sensor wire through the conduit into the junction box.

S 432-044
(5) Tighten with your hand, the conduit coupling nut to the sensor (1).

S 862-021
(6) If you install a new sensor, cut the sensor wire to the correct length (SWPM Chapter 20).
(a) Crimp the pins to the sensor wires.

S 432-045
(7) Install the sensor wires into the terminal block in the junction box.

NOTE: Use the pin insertion tool.

S 722-040
(8) Do the test of the sensor with the actuator test tool.

NOTE: Refer to the task which does a test of the sensors.

(a) Make sure the sensor is kept more than one inch away from all metal surfaces during the test.

S 422-039
(9) For the rectangular sensors use the screws (2), the shims (3), and the nuts (4) to install the sensor (1).
(a) Tighten the screws (2).

S 422-070
(10) For the auto-speedbrake truck tilt sensor (S10697) do these steps:
(a) Put the shims on the sensor.
(b) Put the sensor in the bracket.
(c) Secure the sensor with the nut.

S 222-048
(11) Make sure the clearance between the sensor and its target is correct (refer to Fig. 201).

NOTE: This step is very important if damage was found to the sensor, target, or the mounting brackets.

S 432-067
(12) For the auto-speedbrake truck tilt sensor, put lockwire on the attaching nut.

S 432-041
(13) Put a lockwire on the conduit coupling nut.

S 432-049
(14) In the junction box (J-1), put the wire bundles together with the braided lock stitch.

NOTE: This will prevent the wires from wear on the cover of the junction box.

S 412-046
(15) Use the bolts to install the cover on the J-1 or the J-2 junction box.
(a) Tighten the bolts.

TASK 32-09-07-702-027

4. The Test for the Truck Tilt Sensor of the Main Landing Gear

A. General

(1) If the sensor is installed correctly, the clearance between the sensor and the target will be as shown in Figure 201. Although an adjustment is usually not necessary, you must do a check of the clearance. If an adjustment is necessary, you can remove layers of the lamination from the shim.

(2) 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 sensor actuator tool is used to do a check of sensor operation during a sensor installation. A deactuator tool can be used to find if a sensor signal will change from target near to target far (for a sensor that is installed in its bracket).

NOTE: If a test of the auto-speedbrake truck tilt sensor is required, do the System Test - Auto-Speedbrake System (AMM 27-62-00/501).

B. Equipment
(1) Proximity Sensor Actuator/Deactuator Set - A27092-106
(2) Proximity Sensor Actuator Test Set - A32102-25
(Rectangular actuator is necessary) or

KHT 8-750-01 Go Gauge (Rectangular Actuator)
Eldec Corporation Aircraft Systems Division
P.O. Box 3002, Bothel WA, 98041-3002
(Alternative)

NOTE: These tools makes sure 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) Chapter 20, Wiring Diagram Manual (WDM)

D. Access
(1) Location Zones

119/220	Main Equipment Center
211/212	Control Cabin
731/741	Main Landing Gear

(2) Access Panels

119BL	Main Equipment Center

E. Prepare to Do the Test for the Truck Tilt Sensors

S 492-028
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 492-029
(2) Make sure the wheels are chocked.

S 862-030
(3) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:
(a) 11C19, LANDING GEAR POS SYS 2 ALTN
(b) 11C30, LANDING GEAR POS SYS 1
(c) 11R36, PROX SW TEST
(d) 11S23, POS SYS 2

S 862-031
(4) Supply electrical power (AMM 24-22-00/201).

F. Do the Test for the Truck Tilt Sensor

NOTE: If a test of the auto-speedbrake truck tilt sensor is required, do the System Test - Auto-Speedbrake System (AMM 27-62-00/501).

S 012-032
(1) Open the access panel, 119BL, to get access to the PSEU (AMM 06-41-00/201).

S 722-050
(2) 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 airplane is lifted on jacks. 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) 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
064	Left gear, forward sensor
059	Right gear, forward sensor
062	Left gear, aft sensor
060	Right gear, aft sensor

(c) Push the TARGET TEST switch and hold for one second.
(d) Make sure the correct sensor number is shown on the LED display, and, after four seconds, the TARGET FAR light comes on.

(e) 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.

(f) Push the TARGET TEST switch and hold for one second.
(g) Make sure the correct sensor number is shown on the LED display, and, after four seconds, the TARGET NEAR light comes on.
(h) Remove the actuator from the sensor.

S 722-051
(3) 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) 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
064	Left gear, forward sensor
059	Right gear, forward sensor
062	Left gear, aft sensor
060	Right gear, aft sensor

(b) Push the TARGET TEST switch and make sure the TARGET NEAR light comes on.
(c) Put the deactuator on the sensor.
(d) Push the TARGET TEST switch and make sure the TARGET FAR light comes on.
(e) Remove the deactuator from the sensor.

S 862-034
(4) Push the RESET switch on the front panel of the PSEU to erase the PSEU memory.

NOTE: The display will flash the code EEE while the memory is erased.

G. Put the Airplane Back to Its Usual Condition

S 412-035
(1) Close the access panel, 119BL.

S 862-069
(2) Return the safety-sensitive systems to their initial conditions (AMM 32-09-02/201).

S 862-036

(3) Remove the 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 nose landing gear not compressed sensors.
      (2) A task to install the nose landing gear not compressed sensors.
      (3) A task to test the nose landing gear not compressed sensors.
      (4) A task to measure and adjust the clearance between the sensor and the sensor target.

TASK 32-09-08-002-055

2. Removal of the Nose Landing Gear Not Compressed Sensor
   A. Equipment
      (1) Pin Insertion/Extraction Tool
          Part on Crimp Tool Kit - DMC 567
          Daniels Manufacturing Corp.
          526 Thorpe Road
          Orlando, Forida 32824
   B. References
      (1) AMM 24-22-00/201, Electrical Power - Control
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          711 Nose Landing Gear
   D. Prepare To Remove the Sensors

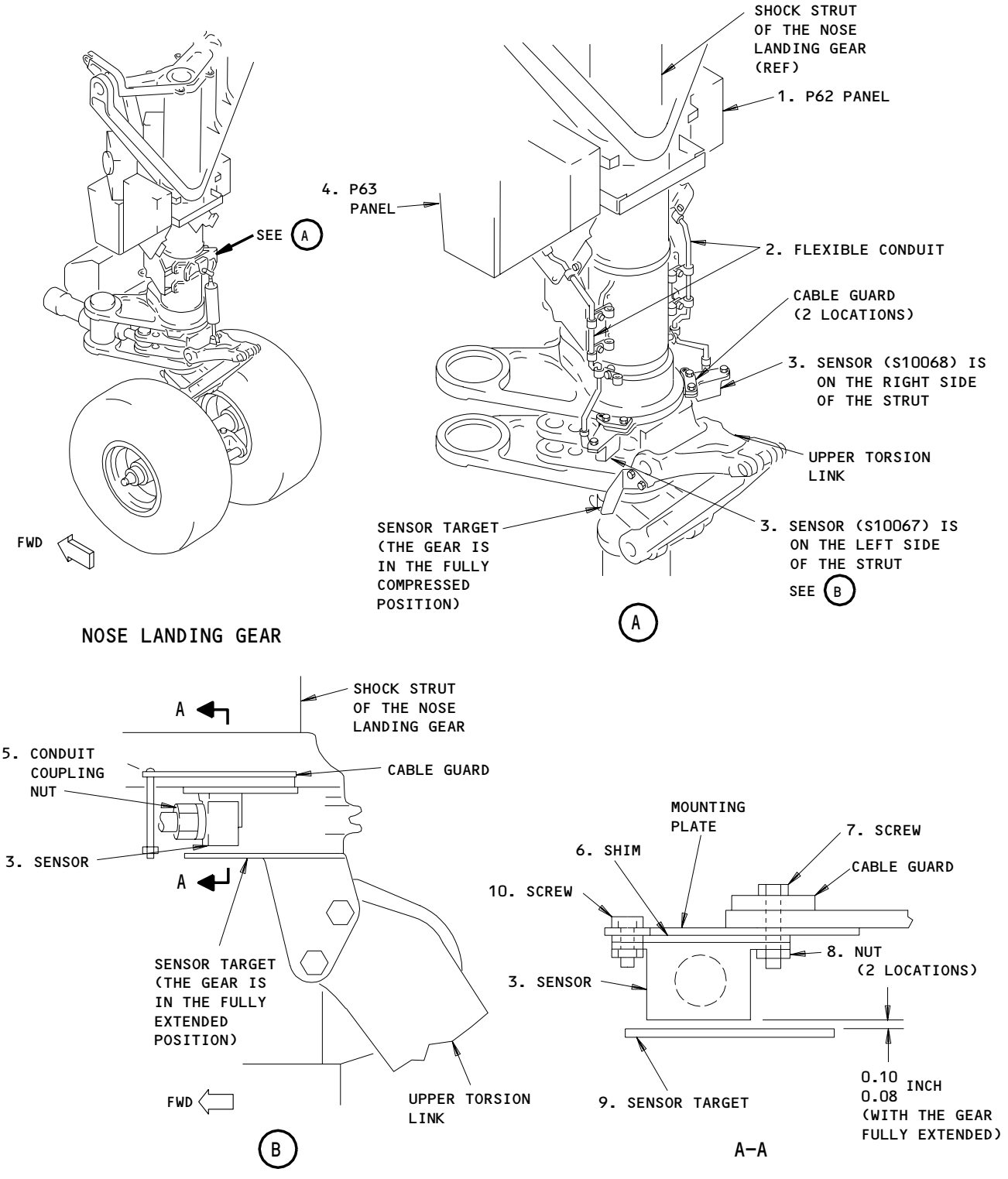
      S 492-003
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 492-002
      (2) Make sure the chocks are below the wheels.

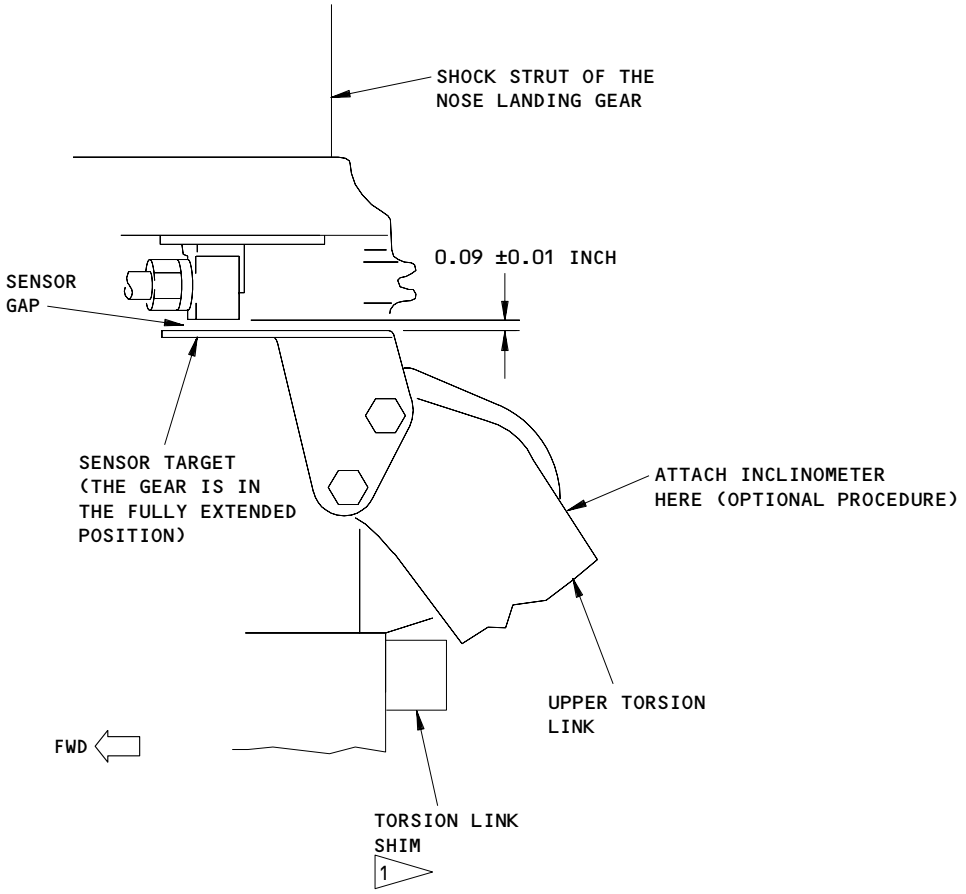
      S 862-004
      (3) Remove the electrical power (AMM 24-22-00/201).
   E. Remove the Nose Landing Gear Not Compressed Sensor (Fig. 201)

      S 212-056
      (1) 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.

      S 032-005
      (2) Remove the bolts which hold the access covers to the panel P62 (1) or P63 (4).



Installation of the Nose Landing Gear Not Compressed Sensor
Figure 201



1 ADJUST THE POSITION OF THE TORSION LINK SHIM (SUPPORTS THE WEIGHT OF THE TORSION LINK) UNTIL THE INCLINOMETER INDICATES 31.5 DEGREES FROM VERTICAL OR THE REFERENCE SENSOR GAP IS 0.09 ±0.01 INCH.

Sensor Gap Measurement
Figure 202

S 862-006

CAUTION: WRITE DOWN THE COLOR CODE AND THE PIN LOCATIONS OF THE SENSOR WIRES BEFORE YOU DISCONNECT THEM. THIS WILL MAKE THE INSTALLATION OF THE NEW SENSOR WIRES EASIER AND WILL PREVENT THE MALFUNCTION OF THE AIR/GROUND RELAY SYSTEM.

(3) Put a tag with the color code and the pin locations on the sensor wires.

S 032-007

(4) Use a pin extraction tool to remove the sensor wires from the terminal block in the panel.

S 862-008

(5) Put a line on the sensor wires to make the installation easier.

S 032-011

(6) Disconnect the conduit coupling nut (5) from the sensor (3).

S 032-012

(7) Remove the sensor mounting screws (7 and 10).

S 022-013

(8) Remove the sensor (3) and pull the sensor wires from the conduit (2). Do not pull the lines fully out.

NOTE: The wire bundle ties can be cut to remove the sensor wires.

TASK 32-09-08-402-014

3. Install the Nose Landing Gear Not Compressed Sensor (Fig. 201)

A. Equipment

(1) Pin Insertion/Extraction Tool
Part on Crimp Tool Kit - DMC 567
Daniels Manufacturing Corp.
526 Thorpe Road
Orlando, Forida 32824

B. Parts

MM		NOMENCLATURE	IPC		
FIG	ITEM		SUBJECT	FIG	ITEM
201	3	Sensor	32-09-08	01	135

C. References
(1) Chapter 20, Standard Wiring Practices Manual (SWPM)

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

E. Install the Sensors

S 432-050

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.

S 432-049
(2) If you install a new sensor, do the steps that follow:
(a) Put a line on the sensor wires.
(b) Put the wires through the conduit (2) to the terminal block in P62 (1) or P63 (4).

S 862-022
(3) Pull the sensor wire through the conduit into the panel box.

S 432-052
(4) Tighten with your hand the conduit coupling nut (5) to the sensor (3).

S 862-023
(5) If you install a new sensor, cut the sensor wire to the correct length.
(a) Crimp the pins to the sensor wires (SWPM, Chapter 20).

S 432-054
(6) Install the sensor wires in the terminal block in the panel.

NOTE: Use the pin insertion tool.

S 722-057
(7) Do the test of the sensor with the actuator test tool.

NOTE: Refer to the task which does a test of the sensors.

(a) Make sure the sensor is kept more than one inch away from all metal surfaces during the test.

S 412-051
(8) Use the screws (7 and 10), the shims (6), and the nuts (8) to install the sensor (3).
(a) Tighten the screws (7 and 10).

S 222-053
(9) Make sure the clearance between the sensor and its target is correct (refer to Fig. 201).

NOTE: This step is very important if damage was found to the sensor, target, or the mounting brackets.

S 432-056
(10) Put a lockwire on the conduit coupling nut (5).

S 432-055
(11) Install the wire bundle ties to hold the sensor wires to the adjacent wire bundle in the junction box.

S 412-050
(12) Use the bolts to install the access panel.

TASK 32-09-08-702-026

4. The Test for the Nose Landing Gear Not Compressed Sensor

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 (gear not compressed).

B. Equipment
(1) Proximity Sensor Actuator Test Set - A32102-1
(Rectangular actuator is necessary) or

KHT 8-750-01 Go Gauge (Rectangular Actuator)
Eldec Corporation Aircraft Systems Division
P.O. Box 3002, Bothel WA, 98041-3002
(Alternative)

NOTE: These tools makes sure 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

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

(2) Access Panels

119BL	Main Equipment Center

E. Prepare to do the Test

S 492-027
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 492-028
(2) Make sure the chocks are below the wheels.

S 862-029
(3) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:
(a) 11C30, LANDING GEAR POS SYS 1
(b) 11C19, LANDING GEAR POS SYS 2 ALTN
(c) 11R36, PROX SW TEST
(d) 11S23, POS SYS 2

S 862-030
(4) Supply electrical power (AMM 24-22-00/201).

F. Do the Test for the Nose Landing Gear Not Compressed Sensor

NOTE: This test will make sure the sensor operates correctly. It will not find an incorrect distance between the sensor and the sensor target.

S 222-031

(1) If the mounting support or target for the sensor has been moved, make sure the sensor-to-target clearance is correct. Use the steps for the clearance adjustment.

S 012-032

(2) Open the access panel, 119BL, to get access to the PSEU (AMM 06-41-00/201).

S 722-033

(3) 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
067	Left side
068	Right side

(b) Push the TARGET TEST switch on the PSEU.

1) Make sure the correct sensor number is shown on the display, and after four seconds that the TARGET FAR light comes on.

(c) 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.

(d) Push the TARGET TEST switch on the PSEU.

1) Make sure the correct sensor number is shown on the display, and after four seconds that the TARGET NEAR light comes on.

(e) Remove the actuator from the sensor.

S 862-034

(4) Push the RESET switch on the front panel of the PSEU to erase the PSEU memory.

NOTE: The display will flash the code EEE while it erases the memory.

S 412-035
(5) Close the access panel, 119BL (AMM 06-41-00/201).

S 862-036
(6) Remove the electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-09-08-202-037

5. Measure / Adjust the Clearance for the Nose Landing Gear Not Compressed Sensor

NOTE: This task is not required if there is no evidence of damage and the original shim is being reused.

A. General
(1) If the sensor is installed correctly, the clearance between the sensor and the target will be as shown in Figure 201. You must measure the sensor gap if there is any evidence of damage or if the original shim is not used.. If an adjustment is necessary, you can remove layers of the lamination from the shim.

B. Consumable Materials
(1) A00273 Adhesive - BMS 5-126, Type III, Class 1

C. References
(1) 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) 07-11-02/201, Jacking Airplane Nose
(3) AMM 20-10-22/701, Metal Surfaces
(4) AMM 24-22-00/201, Electrical Power - Control
(5) AMM 32-00-20/201, Landing Gear Downlocks
(6) AMM 32-21-09/401, Nose Gear Torsion Links

D. Access
(1) Location Zones

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

(2) Access Panels

119BL	Main Equipment Center

E. Equipment
(1) Inclinometer - 0 to 60 degree minimum, magnetic mount, 0.5 degree or better accuracy.
(This tool used with alternate procedure)
(2) Torsion Link Shim - A32096-45
(This tool used with alternate procedures)

F. Measure the Sensor Gap (Jack Procedure)

NOTE: This is the preferred method for measuring the sensor gap.

S 492-052
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 492-053
(2) Make sure the chocks are below the wheels.

S 862-040
(3) Lift the nose of the airplane until the wheels are off the ground (AMM 07-11-02/201).

S 862-041
(4) Make sure the steering for the nose landing gear is in the center position.

S 222-042
(5) Measure the clearance between the sensor and the sensor target (refer to Fig. 201).

S 862-043
(6) If the distance is not the same, do the task to adjust the sensor gap.

G. Measure the Sensor Gap (Alternate Procedure)

NOTE: Use this method when you cannot use a jack on the nose gear and both the primary and alternate gaps are questionable. You should remeasure the sensor gaps when the airplane can be lifted on jacks.

S 862-058
(1) Make sure the steering for the nose landing gear is in the center position.

S 032-059
(2) Disconnect the nose gear upper torsion link from the lower torsion link at the apex bolt (AMM 32-21-09/401).

NOTE: Do the steps in the removal task which removes the apex bolt that connects the upper and lower torsion links.

S 482-060
(3) Attach the inclinometer to the nose gear upper torsion link (Fig. 202).

NOTE: Attach the inclinometer to the upper outer section next to the pivot pin.

S 982-061
(4) Adjust the nose gear upper torsion link so the inclinometer shows 58.5 degrees from vertical.

NOTE: Use the torsion link shim to hold the weight of the torsion link. (Fig. 202)

S 222-062
(5) Measure the clearance between the sensor and sensor target.

S 832-063
(6) If the sensor gap is not within tolerance (Fig. 201) do the task to adjust the sensor gap.

S 092-064
(7) Remove the torsion link shim.

S 432-065
(8) Connect the upper and lower torsion links (AMM 32-21-09/401).

NOTE: Do the steps in the installation task which installs the apex bolt to connect the upper and lower torsion links.

H. Measure the Sensor Gap (Alternate Procedure)

NOTE: Use this method when you cannot use a jack on the nose gear. This method can be used when only one sensor has indication of being out of tolerance.

S 862-066
(1) Make sure the steering for the nose landing gear is in the center position.

S 932-067
(2) Attach a tag to the sensor which may need adjustment.

S 032-068
(3) Disconnect the nose gear upper torsion link (AMM 32-21-09/401).

NOTE: Do the steps in the removal task which removes the apex bolt that connects the upper and lower torsion links.

S 982-069
(4) Position the torsion link until the gap on the Not Compressed-Sensor known to be within tolerance is 0.09 +/- 0.01 inches.

NOTE: Use the torsion link shim to hold the weight of the torsion link. (Fig. 202)

S 222-070
(5) Measure the sensor gap.

S 822-071
(6) If the sensor gap is not within tolerance (Fig. 201) do the task to adjust the sensor gap.

S 932-072
(7) Remove the tag attached to the sensor.

S 492-073
(8) Remove the torsion link shim.

S 432-074
(9) Connect the upper and lower torsion links (AMM 32-21-09/401).

NOTE: Do the steps in the installation task which installs the apex bolt to connect the upper and lower torsion links.

I. Adjust the Sensor Gap

S 032-075
(1) Remove the screws (7 and 10) to remove the sensor (3) from the mounting plate.

S 032-076
(2) Remove the shim (6) from the mounting plate.

NOTE: The shim is bonded to the mounting plate. It can be hard to remove.

S 112-077
(3) Clean the mounting plate where the shim (4) was attached with solvent (AMM 20-10-22/701).

S 432-078
(4) Use the screws (7 and 10) and the nuts (8) to install the new shim (6) and the sensor (3) to the mounting plate.
(a) Do not bond the shim at this time.

S 822-079
(5) Remove layers of the lamination from the shim (6) to adjust the distance (Fig. 201).

NOTE: Each layer of the lamination on the shim (6) is 0.003 inches thick.

S 432-080
(6) When you get the correct distance, remove the sensor (3) and bond the shim (6) to the mounting plate with the adhesive.

S 432-081
(7) Use the screws (7 and 10) and nuts (8) to install the sensor (3).

S 722-082
(8) Do the procedure to retest the sensor.

J. Retest the Sensor

S 012-044
(1) Open the access panel, 119BL, to get access to the PSEU (AMM 06-41-00/201).

S 722-045
(2) Do a target position test to make sure the sensor operates correctly.
(a) Set the sensor channel with the PSEU's SENSOR CHANNEL SELECT switch.
(b) Push the TARGET TEST switch and make sure the TARGET NEAR Light comes on.

S 862-054
(3) Push the RESET switch on the front panel of the PSEU to erase the PSEU memory.

NOTE: The display will flash the code EEE while it erases the memory.

K. Put the Airplane Back to Its Usual Condition

S 412-046
(1) Close the access panel, 119BL.

S 862-047

(2) Lower the nose of the airplane and remove the jacks (AMM 07-11-02/201).

S 862-048

(3) Remove the electrical power if it is not necessary (AMM 24-22-00/201).

NOSE GEAR NOT COMPRESSED SENSOR TARGET BRACKET - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the target for the nose gear not compressed sensor. The second task installs the target for the nose gear not compressed sensor.

TASK 32-09-09-004-001

2. Remove the Target Bracket for the Nose Landing Gear Not Compressed Sensor
   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

119/120	Main Equipment Center
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door
730/740	Main Landing Gear and Doors

      (2) Access Panel

119BL	Main Equipment Center

   C. Prepare for the Removal of the Target (Fig. 401)

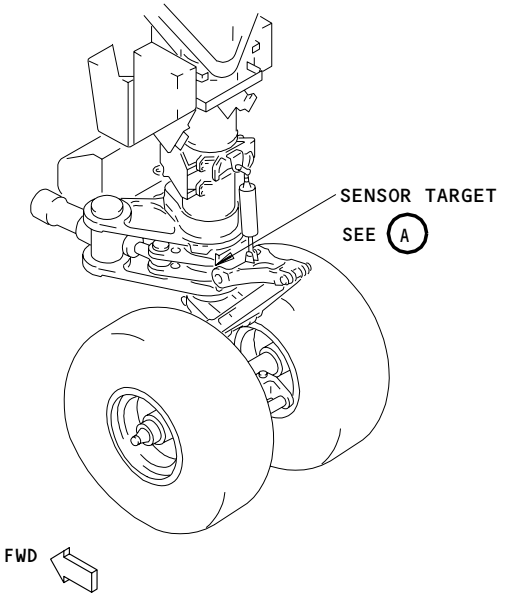
      S 494-002
      (1) Make sure the landing gear downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

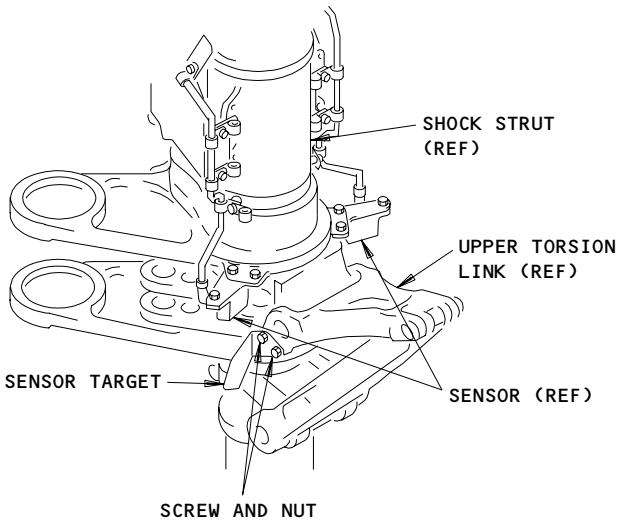
      S 494-011

      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).

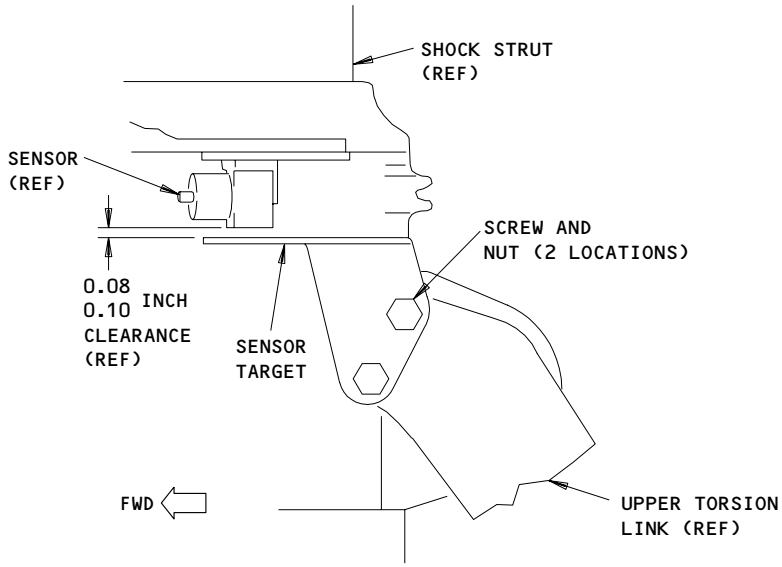
      S 494-004
      (3) Put chocks at the wheels.





SENSOR TARGET WITH GEAR FULLY COMPRESSED
(TARGET ON LEFT SIDE OF STRUT SHOWN,
TARGET ON RIGHT SIDE OF STRUT SIMILAR)

(A)



SENSOR TARGET WITH GEAR FULLY EXTENDED
(TARGET ON LEFT SIDE OF STRUT SHOWN,
TARGET ON RIGHT SIDE OF STRUT SIMILAR)

(A)

Target Installation for the Nose Landing Gear Not Compressed Sensor
Figure 401

D. Remove the Target Bracket for the Nose Landing Gear Not Compressed Sensor

S 024-005

(1) Remove the two screws on the target bracket.

TASK 32-09-09-404-006

3. Install the Target Bracket for the Nose Landing Gear Not Compressed Sensor

A. References

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

(2) AMM 07-11-02/201, Jacking Airplane Nose

(3) AMM 32-09-08/201, Nose Gear Not Compressed Sensors

B. Access

(1) Location Zones

119/120	Main Equipment Center
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door
730/740	Main Landing Gear and Doors

(2) Access Panel

119BL	Main Equipment Center

C. Install the Target Bracket

S 424-007

(1) Use the two screws to install the target bracket. Tighten the nut to 30-35 pound-inches (Detail A).

S 844-008

(2) Do the task to measure the clearance between the sensor and target bracket (AMM 32-09-08/201).

S 824-012

(3) If it is necessary to adjust the clearance, use the adjustment procedure for the target clearance (AMM 32-09-08/201).

D. Put the Airplane Back to Its Usual Condition

S 584-009

(1) Lower the airplane and remove the jack if necessary (AMM 07-11-02/201).

S 844-010

(2) If electrical power was supplied to the airplane for the target rigging, do the steps that follow:

(a) Open the access door for the main equipment center, 119BL, (AMM 06-41-00/201) and find the PSEU on the E3 rack.

(b) Push the RESET switch on the front panel of the PSEU to erase the PSEU memory.

NOTE: The display will flash the code "EEE" while you erase the PSEU memory.

(c) Close the access door for the main equipment center 119BL.

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 on the main landing gear. The second task installs the target support bracket for the tilt sensor on the main landing gear.

TASK 32-09-10-004-004

2. Remove the Target Support Bracket for the Tilt Sensor on the Main Landing Gear (Fig. 401)
   A. References
      (1) 32-00-15/201, Landing Gear Door Ground Operations and Locking Procedure
      (2) 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          731/741 Main Landing Gear (MLG)
          732/742 MLG Body Doors
          733/743 MLG Oleo Doors

   C. Prepare for the Removal of the Bracket

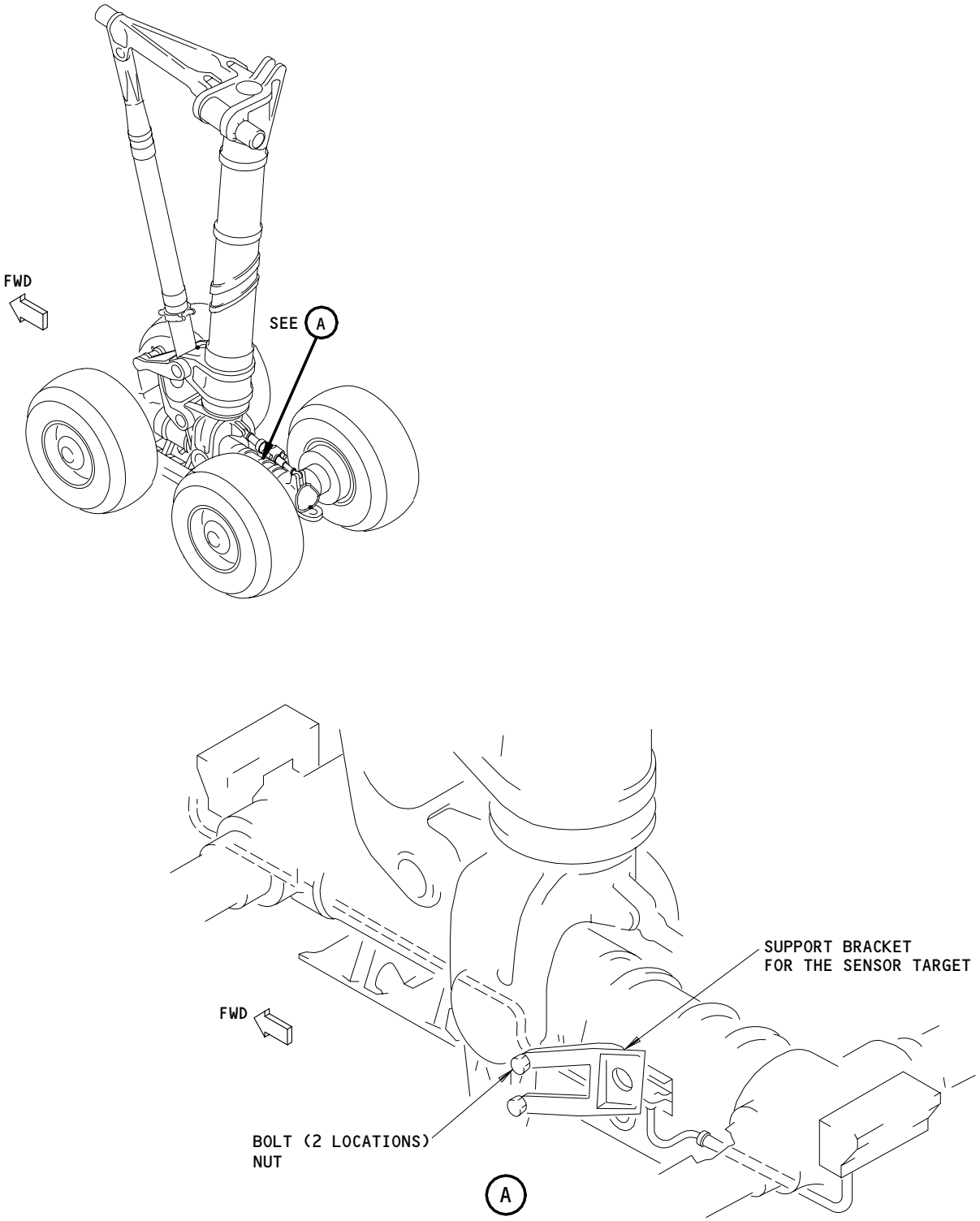
      S 494-001
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

      S 494-010

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE 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 494-002
      (3) Install the chocks for the wheel.



Truck Tilt Sensor Target Support Bracket Installation for the Main Landing Gear
Figure 401

D. Remove the Bracket

S 034-005

(1) Remove the nuts and the bolts that hold the bracket to the track on the main landing gear.

S 024-006

(2) Remove the bracket.

TASK 32-09-10-404-007

3. Install the Target Support Bracket for the Tilt Sensor on the Main Landing Gear (Fig. 401)

A. Consumable Materials

(1) A00246, Sealant, Chromate - BMS 5-95 Type I

B. References

(1) 32-00-15/201, Landing Gear Door Ground Operations and Locking Procedure

(2) 32-09-07/201, Main Gear Truck Tilt Sensors

C. Access

(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

D. Install the Bracket

S 844-008

(1) Do the steps that follow to install the bracket:

(a) Apply the sealant to the faying surfaces.

(b) Put the sealant on the threads of the bolts.

(c) Install the bracket with the nuts and the bolts.

S 944-009

CAUTION: USE THE PROCEDURE IN AMM 32-09-07/201 TO MAKE SURE THE SENSOR/TARGET DISTANCE IS CORRECT. IF THE SENSOR/TARGET DISTANCE IS NOT IN TOLERANCE, THE AIR/GROUND RELAY SYSTEM WILL NOT OPERATE CORRECTLY.

(2) Make sure that the sensor/target distance is correct (Ref 32-09-07).

E. Put the Airplane Back to Its Usual Condition

S 094-011

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.

(1) Remove the door locks from the landing gear doors and close the doors (Ref 32-00-15).

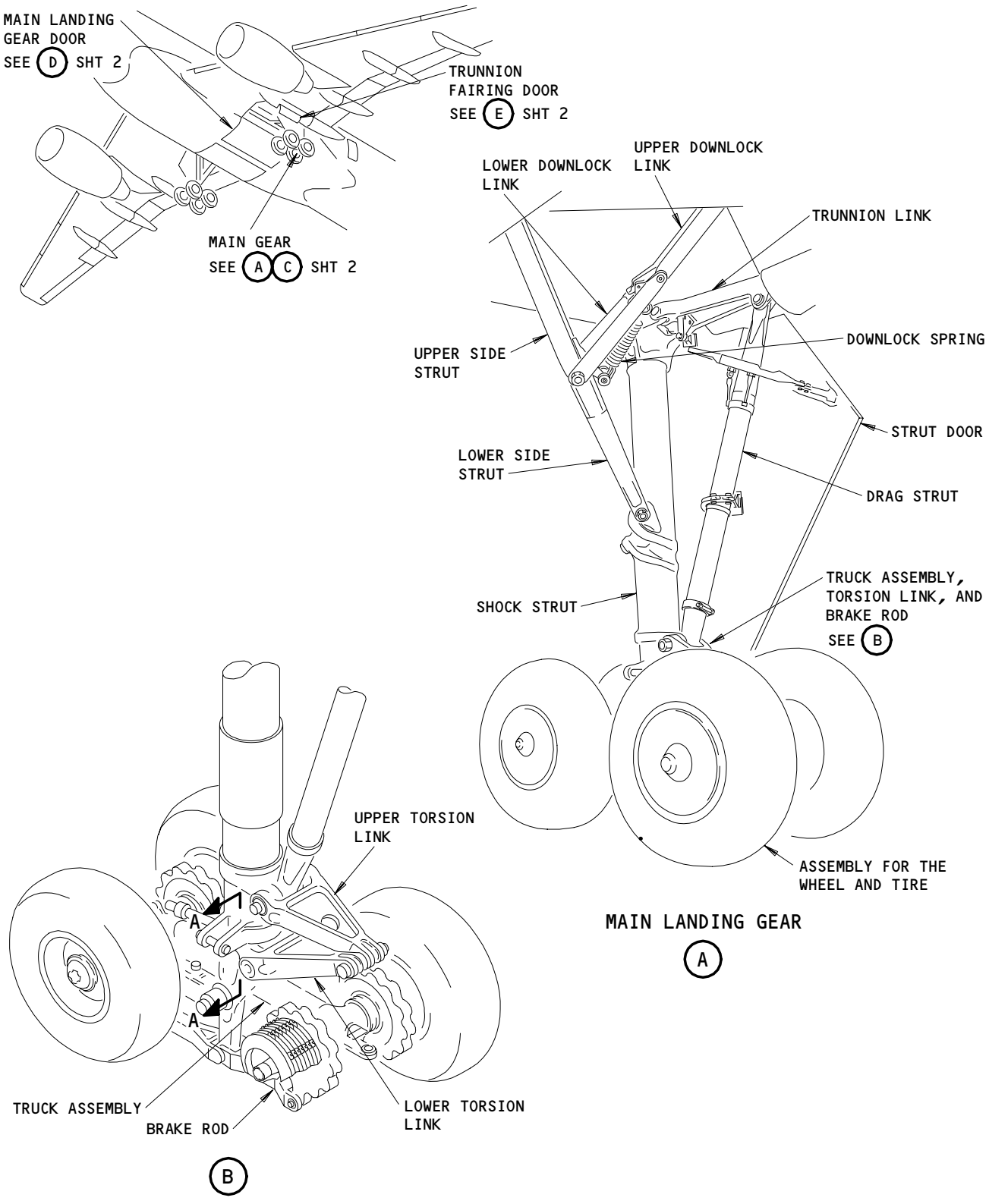
MAIN LANDING GEAR AND DOORS - DESCRIPTION AND OPERATION

1. General
   A. The main landing gear consists of two main gears (Ref 32-11-00) which absorb landing, taxiing, and take-off loads and support the airplane while on the ground. The gears are located on each side of the airplane and are mounted between the rear wing spar and the main landing gear beam. During flight, the gears retract inboard into the wing cavities and fuselage wheel wells and are covered by doors (Ref 32-12-00). The doors fair into the airplane body contour to reduce aerodynamic drag.

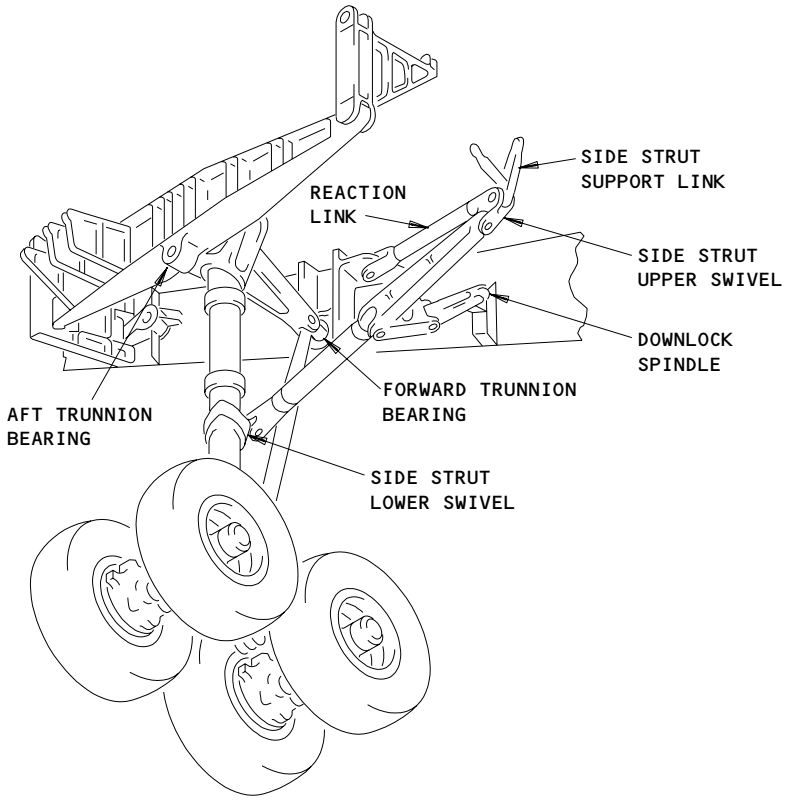
MAIN LANDING GEAR AND DOORS

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
BEARING – MAIN GEAR AFT TRUNNION	2	2	MAIN LANDING GEAR	32-11-01
BEARING – MAIN GEAR FORWARD TRUNNION	2	2	MAIN LANDING GEAR	32-11-01
DOOR – MAIN GEAR	2	2	WHEEL WELL OF THE MAIN LANDING GEAR	32-12-01
DOOR – MAIN GEAR STRUT	1	2	MAIN LANDING GEAR	32-12-04
DOOR – MAIN GEAR TRUNNION FAIRING	2	2	MAIN LANDING GEAR	32-12-10
GEAR – MAIN	1 & 2	2	MAIN LANDING GEAR	32-11-01
LINK – MAIN GEAR LOWER DOWNLOCK	1	2	MAIN LANDING GEAR	32-11-13
LINK – MAIN GEAR LOWER TORSION	1	2	MAIN LANDING GEAR	32-11-16
LINK – MAIN GEAR REACTION	2	2	MAIN LANDING GEAR	32-11-10
LINK – MAIN GEAR SIDE STRUT SUPPORT	2	2	MAIN LANDING GEAR	32-11-09
LINK – MAIN GEAR TRUNNION	1	2	MAIN LANDING GEAR	32-11-01
LINK – MAIN GEAR UPPER DOWNLOCK	1	2	MAIN LANDING GEAR	32-11-13
LINK – MAIN GEAR UPPER TORSION	1	2	MAIN LANDING GEAR	32-11-16
ROD – MAIN GEAR BRAKE	1	8	MAIN LANDING GEAR	32-11-19
SEALS – MAIN GEAR SHOCK STRUT	2	12	MAIN LANDING GEAR, SHOCK STRUT	32-11-25
SPINDLE – MAIN GEAR DOWNLOCK	2	2	MAIN LANDING GEAR	32-11-15
SPRING – MAIN GEAR DOWNLOCK	1	4	MAIN LANDING GEAR	32-11-22
STRUT – MAIN GEAR DRAG	1	2	MAIN LANDING GEAR	32-11-03
STRUT – MAIN GEAR LOWER SIDE	1	2	MAIN LANDING GEAR	32-11-05
STRUT – MAIN GEAR SHOCK	1	2	MAIN LANDING GEAR	32-11-00
STRUT – MAIN GEAR UPPER SIDE	1	2	MAIN LANDING GEAR	32-11-05
SWIVEL – MAIN GEAR SIDE STRUT LOWER	2	2	MAIN LANDING GEAR	32-11-07
SWIVEL – MAIN GEAR SIDE STRUT UPPER	2	2	MAIN LANDING GEAR	32-11-07
TRUCK ASSEMBLY – MAIN GEAR	1	2	MAIN LANDING GEAR	32-11-17
WHEEL/TIRE ASSEMBLY	1	8	MAIN LANDING GEAR	32-45-01

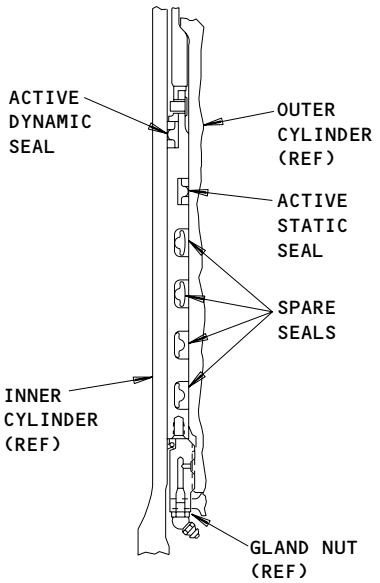
Main Landing Gear and Doors – Component Index
Figure 101



Main Landing Gear and Doors - Component Location
Figure 102 (Sheet 1)

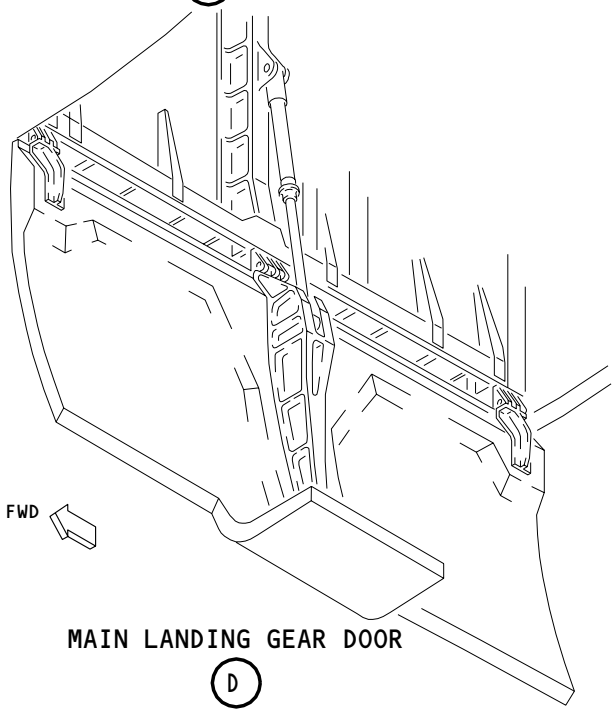


MAIN LANDING GEAR



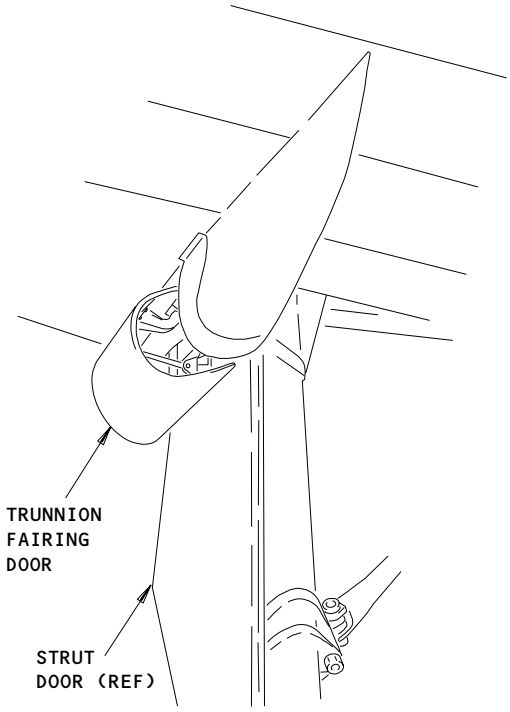
SHOCK STRUT SEALS FOR
THE MAIN LANDING GEAR
A-A

C



MAIN LANDING GEAR DOOR

D



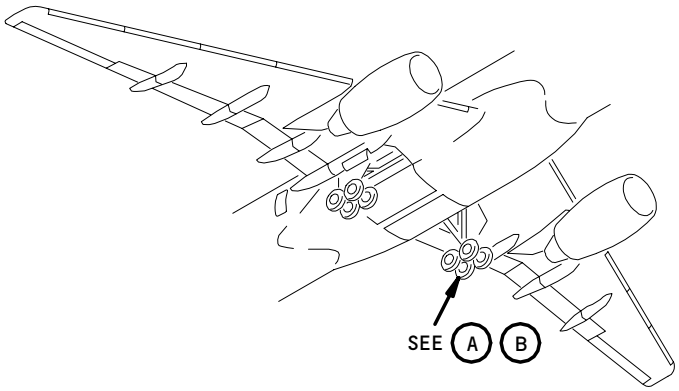
TRUNNION FAIRING DOOR FOR
THE MAIN LANDING GEAR

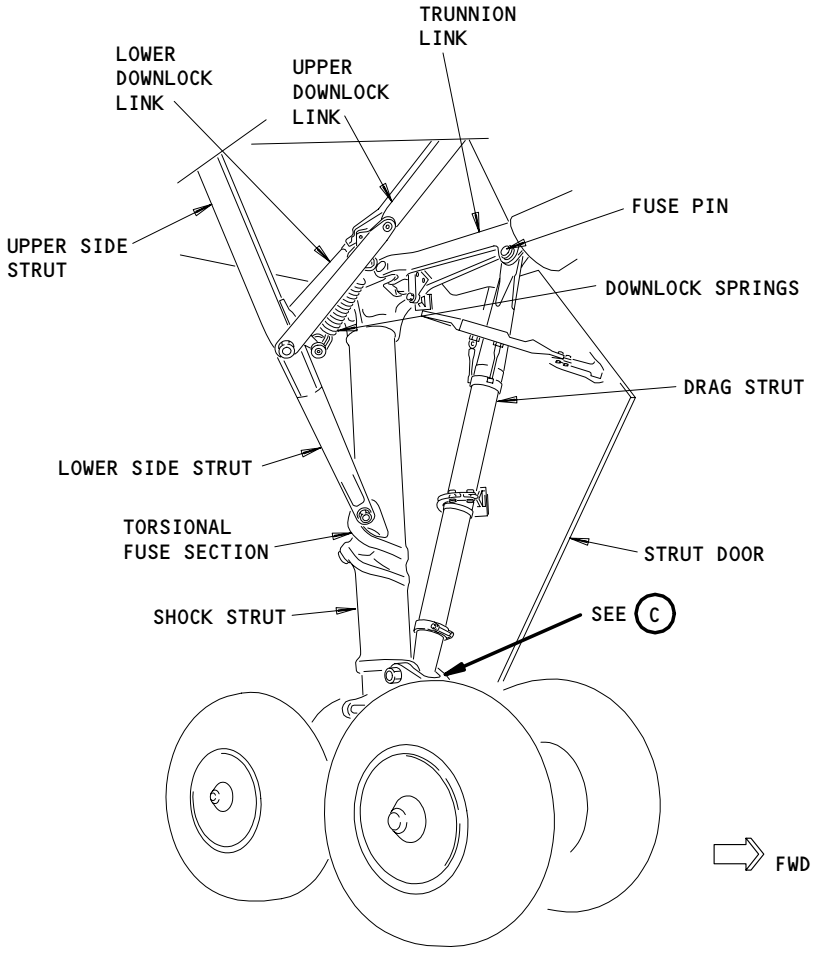
E

Main Landing Gear and Doors - Component Location
Figure 102 (Sheet 2)

MAIN GEAR - DESCRIPTION AND OPERATION

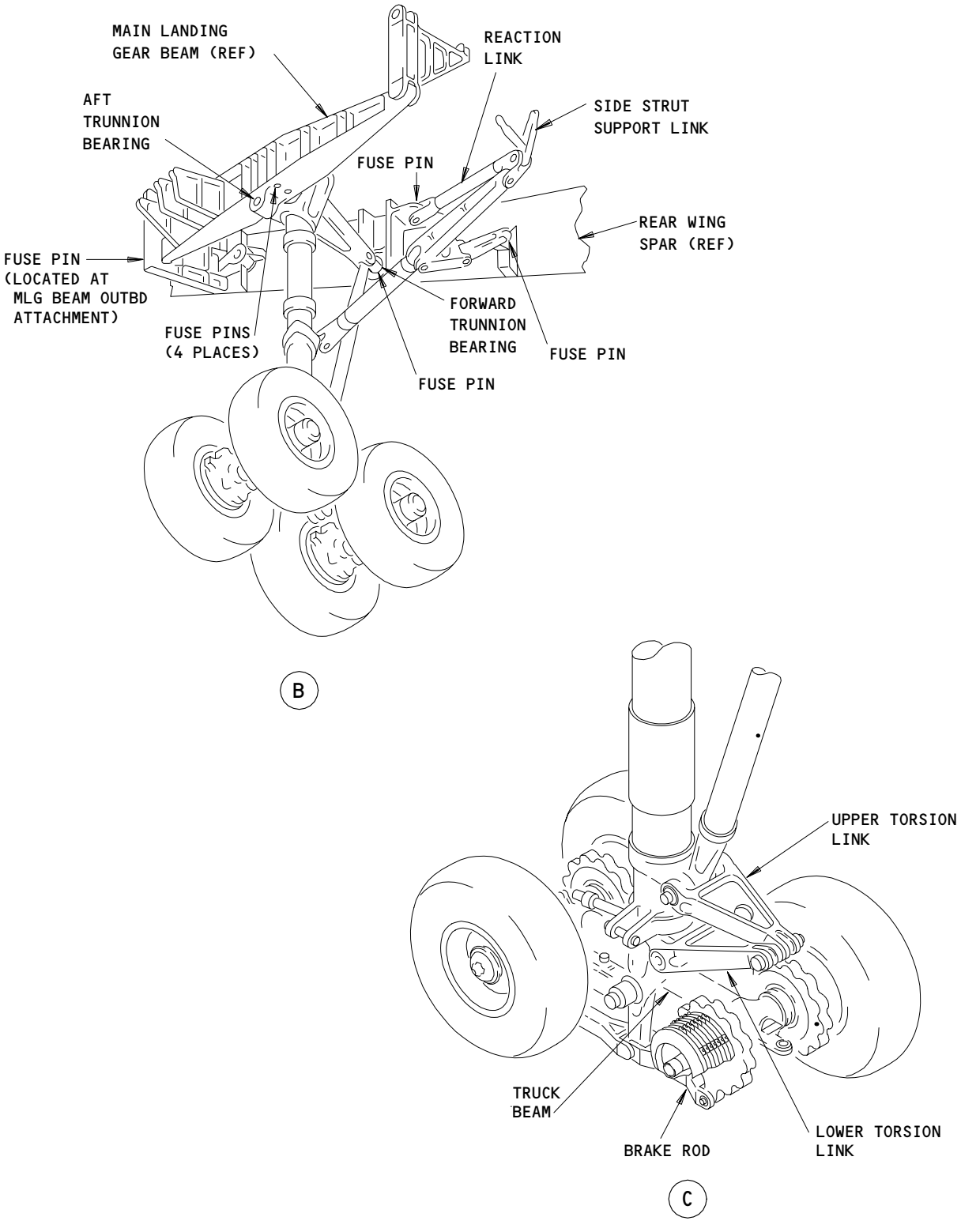
1. General
   A. Most of the airplane weight is supported on the ground by two main gears.
   B. Each gear is installed on the wing between the rear wing spar and the main landing gear beam.
   C. Each gear includes a shock strut, drag strut, side strut and downlock assembly, trunnion link, reaction link, torsion links, and truck assembly.
2. Component Details
   A. Trunnion Link (Fig. 1)
      (1) The trunnion link is installed between the shock strut and the rear wing spar. Loads from the drag strut are transmitted through the trunnion link to airplane structure. The forward end of the link mounts in a spherical bearing on the rear wing spar. Under severe impact, the pin connection at the bearing will fail, and allow the gear to break away from airplane structure with minimal damage. Attachment for the drag strut and strut door are located on the trunnion link.
   B. Shock Strut (Fig. 1)
      (1) The shock strut is the primary supporting member of the main gear. The strut consists of inner and outer cylinders which are charged with an air-oil mixture to absorb loads during landing, taxiing, and take-off. The shock strut mounts into a spherical bearing on the main landing gear beam and attaches to the trunnion link.
      (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 two cylinders. Two sets of spare seals are stored in annular grooves in the lower bearing.
      (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 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 flow of hydraulic fluid and thus controls rebound of the shock strut.





A

Main Gear
Figure 1 (Sheet 1)



Main Gear
Figure 1 (Sheet 2)

(4) The outer cylinder provides attachments for the drag strut, lower side strut, and upper torsion link. Also attached to the outer cylinder is an uplock roller which engages in the uplock hook during gear retraction to lock the gear up. The inner cylinder provides attachments for the truck assembly and lower torsion link.

C. Torsion Links (Fig. 1)

(1) The torsion links prevent the shock strut inner cylinder from rotating as it moves in and out of the outer cylinder during normal operation. This maintains truck directional headings at all times.

(2) The upper link connects to the shock strut outer cylinder, the lower link connects to the inner cylinder, and the two links are connected together to form a hinged joint.

D. Truck Assembly (Fig. 1)

(1) The truck assembly distributes airplane loads from the shock strut to the wheels and tires. The assembly consists of a truck beam, axles, brake rods, and a protective shield.

(2) The truck beam is the primary supporting member of the truck assembly. It pivots about the center where it is attached to the lower end of the shock strut. Tow fittings are installed on each end of the beam for forward and aft towing.

(3) Two axles are installed in the truck beam, and are locked into place by retaining tow fittings. Four brakes are installed on protective sleeves which surround the axles. Four wheels are mounted directly on the axles.

(4) Brake rods link each brake to the shock strut. The rods transmit brake torque to the gear.

(5) Wire bundles on the truck beam are protected from objects thrown from the tires by a protective shield clamped underneath the truck beam.

E. Drag Strut (Fig. 1)

(1) The drag strut absorbs forward and aft loads on the gear. The strut is a one-piece brace which forms a triangle with the trunnion link and shock strut.

(2) The upper end attaches to the trunnion link near the forward trunnion bearing. The lower end attaches to the shock strut at the upper torsion link attachment. Fittings on the drag strut provide mounting for the main gear strut door.

F. Side Strut and Downlock Assembly (Fig. 1)
   (1) The side strut and downlock assembly locks the main gear into the extended position, and provides lateral support of the gear. The assembly consists of the side strut and the downlock, both of which are two-member braces which fold during extension and retraction.
   (2) The side strut consists of an upper and a lower strut hinged in the center. The lower strut attaches to a rotating swivel on the shock strut. The upper strut attaches to a universal swivel on the reaction link.
   (3) The downlock consists of an upper and a lower link, also hinged in the center. The lower link attaches to the hinge point of the side strut. The upper link attaches to a rotating spindle on the main gear jury support brace. Two downlock springs are located on the lower downlock link to aid in locking the main gear into the extended position. A downlock pin is inserted through the two links to lock the gear for safety during ground operations.

G. Reaction Link (Fig. 1)
   (1) The reaction link transmits lateral loads from the side strut to airplane structure. The outboard end of the link attaches to the rear wing spar above the trunnion link. The inboard end attaches to a support link connected to a body frame.

H. Fuse Pins (Fig. 1)
   (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) There are three gear fuse pins which break to let the gear structure come apart. The first is the pin which connects the drag strut to the trunnion link. The second is the pin which connects the upper downlock link to the upper spindle. The third is a torsional fuse which connects the lower side strut to the shock strut.
   (3) Six other fuse pins connect the gear to wing structure. One fuse pin attaches the trunnion link into the forward trunnion bearing. Four fuse pins attach the aft trunnion bearing housing to the main landing gear support beam. One more fuse pin attaches the reaction link to the forward trunnion bearing housing at the outboard end of the link.
   (4) The main landing gear support beam is attached to wing structure at the outboard end by another fuse pin. This pin is designed to fail first under excessive vertical loads.

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.

TASK 32-11-01-004-077

2. Remove the Main Landing Gear (Fig. 401, 402)
   A. Equipment
      (1) B32006-13 MLG Shock Strut Positioner Link
      (2) B32011-14 MLG Thread Protector Set
      (3) B32018-1 MLG Trunnion Link to Strut Alignment Pin
      (4) 757-200, -300;
          B32020-45 MLG Removal/Instl Equipment (Recommended)
      (5) 757-200;
          B32020-1, -33 MLG Removal/Instl Equipment (Alternative)
      (6) B32029-1 MLG Trunnion Link Support Equipment
      (7) B32044-12 MLG Structural Fuse Pin Puller Equipment
      (8) F70312-38 Crowfoot Wrench
      (9) Automotive-Type Axle Jacks - Commercially Available
   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
      (6) AMM 32-12-04/401, Main Gear Strut Door
      (7) AMM 32-32-15/401, Main Gear Truck Positioner Actuator
      (8) AMM 57-54-07/401, MLG Trunnion Fairing
   C. Access
      (1) Location Zones

119/120	Main Equipment Center
211/212	Control Cabin
500/600	Left Wing/Right Wing
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

      (2) Access Panel

119BL	Main Equipment Center

D. Prepare for Removal of the Main Landing Gear

S 494-001

(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 left and right hydraulic systems and reservoirs (AMM 29-11-00/201).

S 864-005

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

S 874-007

(5) Push the two brake pedals fully and release. Push the pedals six times to bleed the hydraulic pressure from the parking brake lines. Make sure the PARK BRAKE indicator light on the quadrant stand panel, P10, is off.

S 864-008

(6) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
(a) 11S16, BRAKE TEMP (if installed)
(b) 11S15, LANDING GEAR AIR/GND SYS1
(c) 11S19, LANDING GEAR AIR/GND SYS2
(d) 11S18, LDG GEAR ANTISKID 1-5

(e) 11C31, ANTISKID 2-6 (Left Gear)
(f) 11C32, ANTISKID 3-7 (Right Gear)
(g) 11S22, ANTISKID 4-8 (Right Gear)

E. Remove the Main Landing Gear

S 014-010

(1) Remove the strut door (AMM 32-12-04/401).

S 864-094

WARNING: CLEAR THE AREA BELOW THE WING BEFORE YOU DEFLATE THE SHOCK STRUT. IF YOU DEFLATE ONE SHOCK STRUT THE WINGTIP CAN MOVE DOWN AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Deflate the shock strut.
(a) Remove the air valve cap.

WARNING: LOOSEN THE AIR VALVE NUT A MAXIMUM OF TWO TURNS. AIR PRESSURE CAN BLOW THE VALVE OUT AND INJURE PERSONS.

(b) Loosen the outer nut a maximum of two turns, let the shock strut deflate fully.
(c) Install a flexible hose on the air valve. Put the other end of the hose in a bucket to catch the hydraulic fluid.
(d) Loosen the air valve nut fully.

S 584-012

(3) Lift the airplane approximately 11 inches (AMM 07-11-01/201).

S 024-122

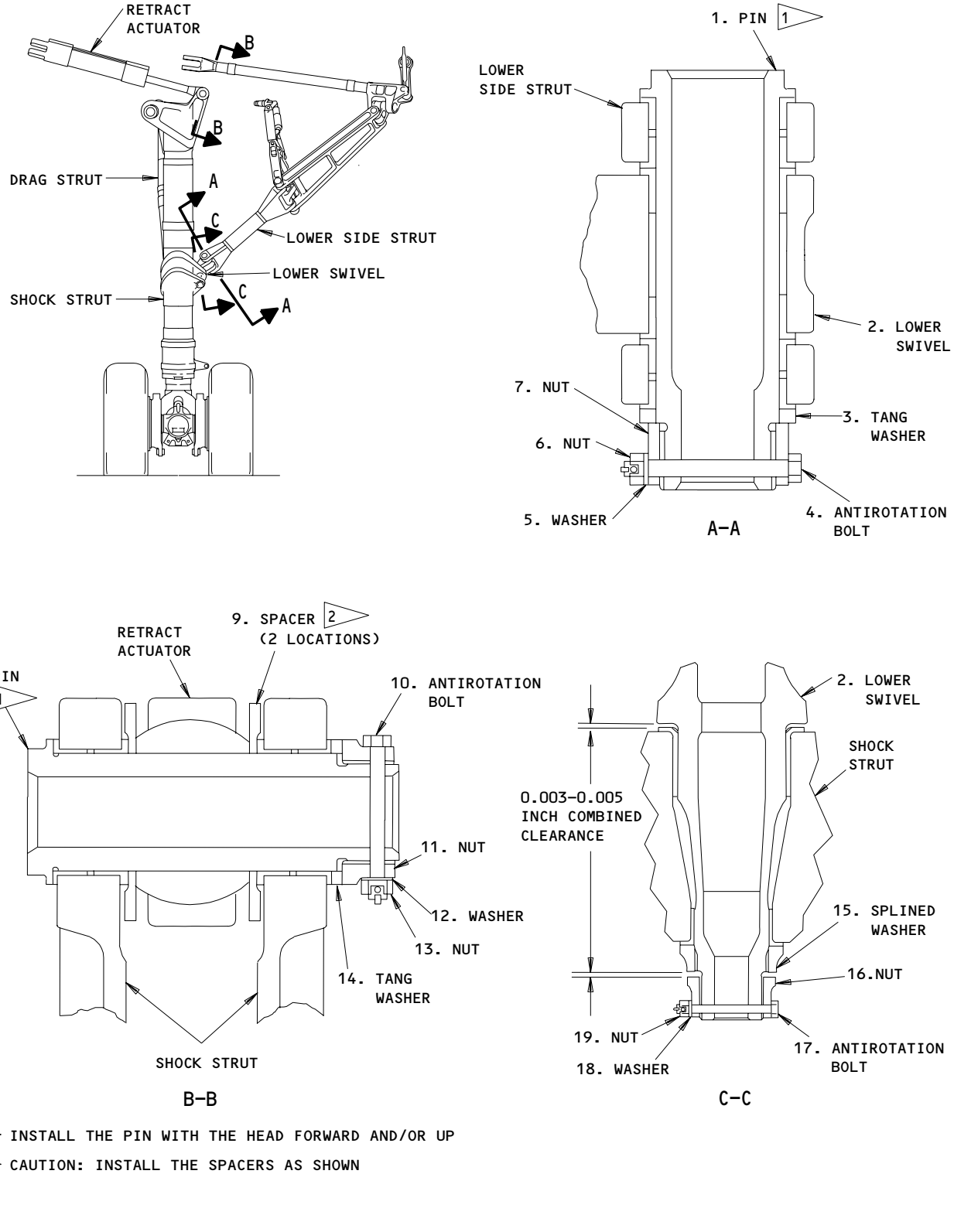
(4) Remove the truck positioner actuator (AMM 32-32-15/401). Replace the actuator with the shock strut positioner line. Use the instructions supplied with the tool.

S 034-014

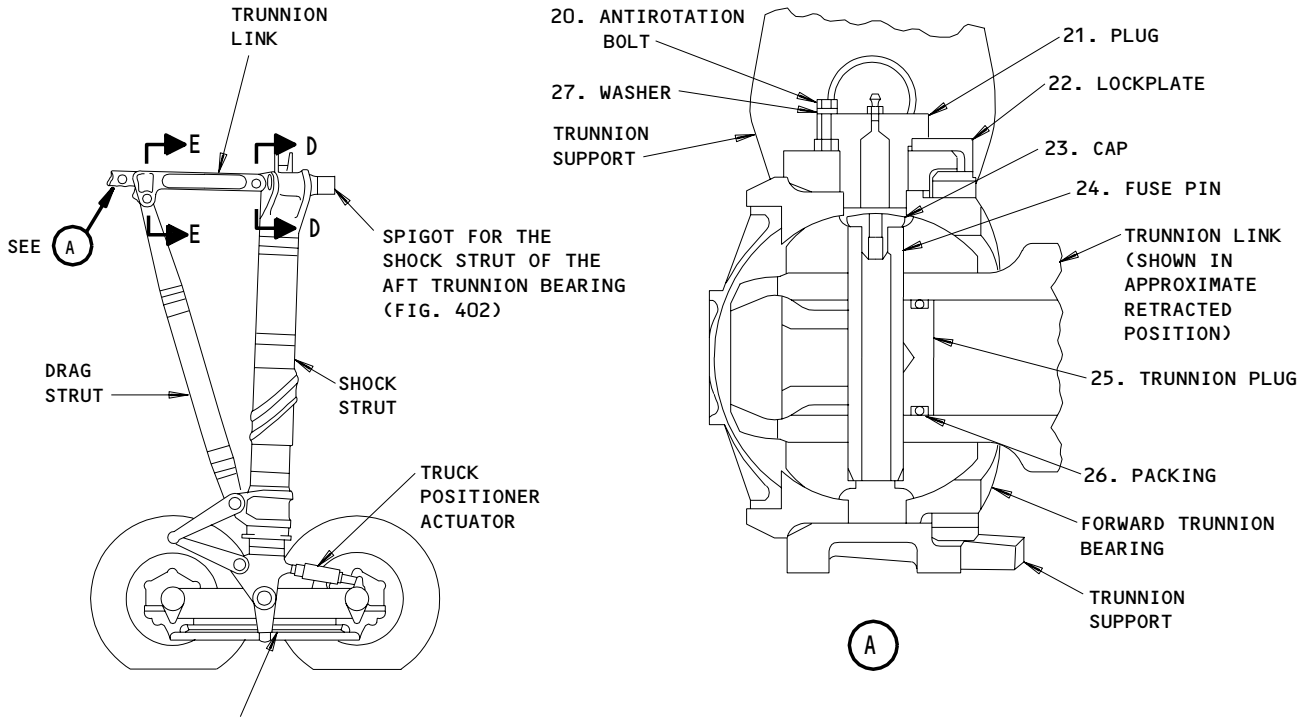
(5) Remove the nut (7) with the crowfoot wrench.

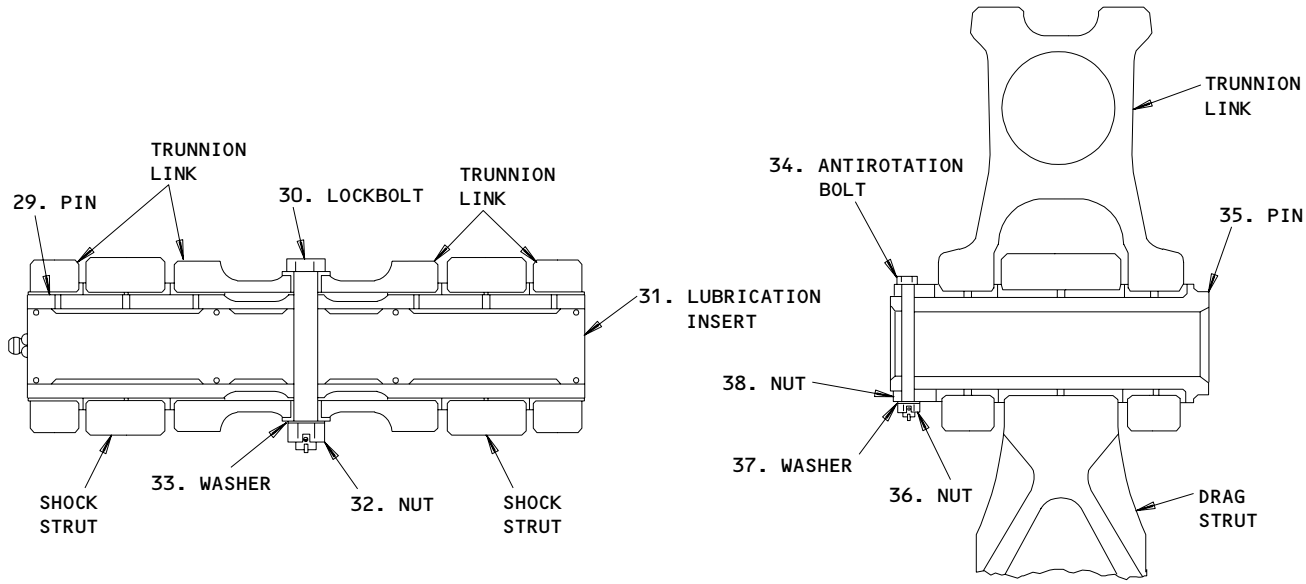
S 034-005

(6) Install the thread protector and remove the pin (1) to disconnect the lower side strut from the lower swivel (View A-A).

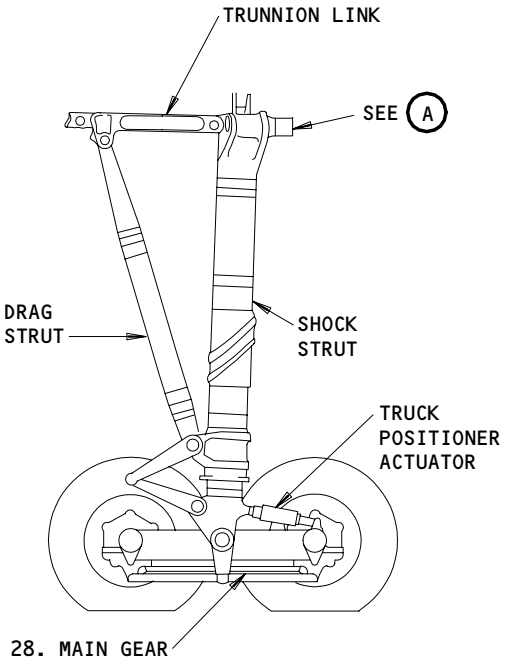


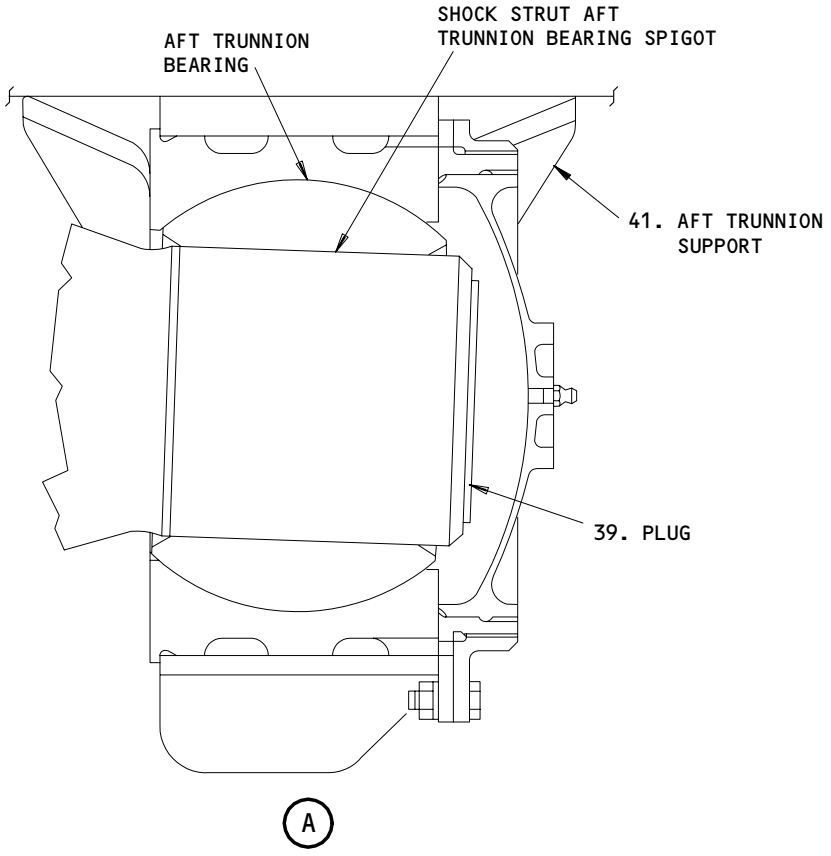
Main Landing Gear Installation
Figure 401 (Sheet 1)



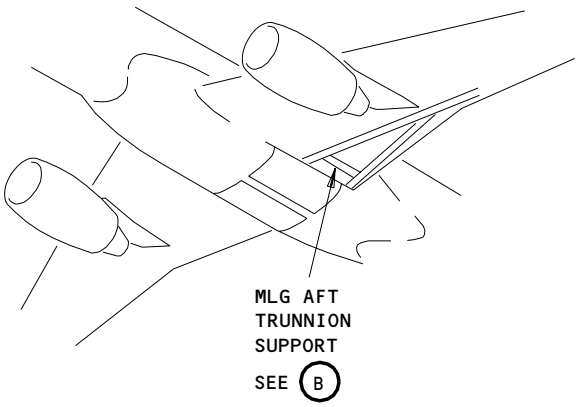


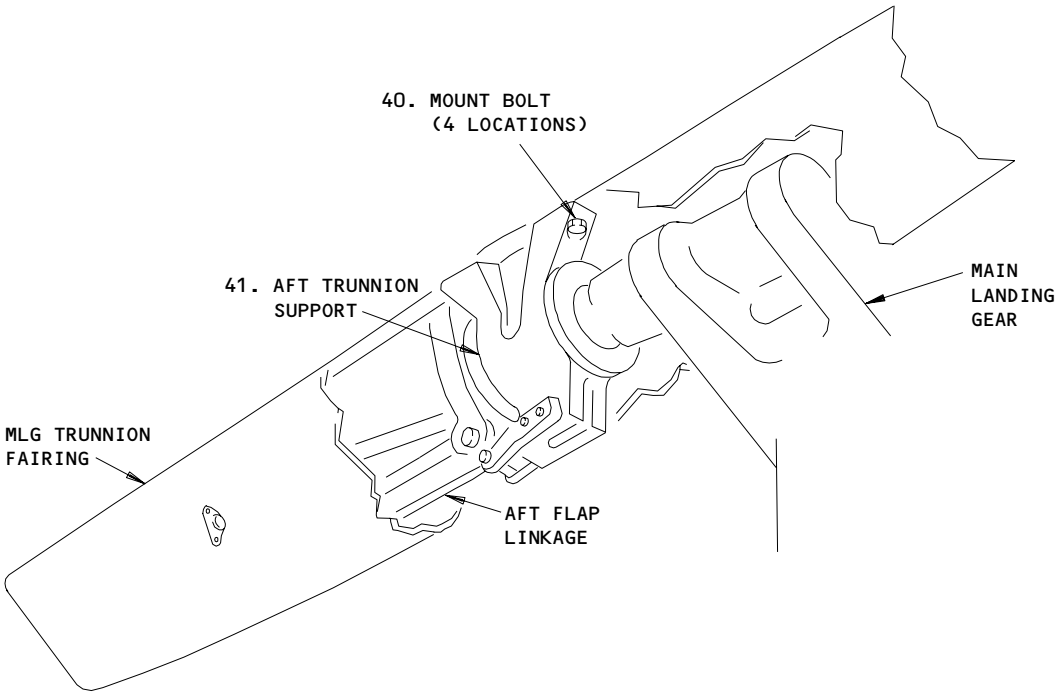
Main Landing Gear Installation
Figure 401 (Sheet 2)





Main Gear Aft Trunnion Bearing Spigot and Support
Figure 402 (Sheet 1)





MLG AFT TRUNNION SUPPORT

B

Main Gear Aft Trunnion Bearing Spigot and Support
Figure 402 (Sheet 2)

S 844-006
(7) Move the lower end of the side strut and attach it away from the shock strut.

S 034-015
(8) Remove the nut (16) with the crowfoot wrench.

S 034-007
(9) Install the thread protector and remove the lower swivel (2) from the shock strut (View C-C).
(a) Keep the lower swivel.

S 034-008

WARNING: BE CAREFUL WHEN YOU DISCONNECT THE ROD END OF THE RETRACT ACTUATOR FROM THE SHOCK STRUT. THE ACTUATOR IS HEAVY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(10) Remove the nut (11) with the crowfoot wrench.

S 034-009
(11) Install the thread protector and remove the pin (8) to disconnect the rod end of the retract actuator from the shock strut (View B-B).

S 014-087
(12) Lift the free end of the actuator above the shock strut.

S 034-011
(13) Attach the actuator to the structure.

S 494-017
(14) Install the removal/installation equipment. Use the instructions supplied with the tool.

S 034-018
(15) Disconnect the hydraulic lines from the connections on the top and bottom of the trunnion link.

S 034-078
(16) Disconnect the electrical lines from the connection on the top and bottom of the trunnion link.

S 494-091
(17) Install the trunnion link support tool around the trunnion link. Use the instructions supplied with the tool.

S 034-019
(18) Remove the nut (38) with the crowfoot wrench. Install the thread protector and remove the pin (35) to disconnect the drag strut from the trunnion link (View E-E). Attach the drag strut to the shock strut.

S 034-020
(19) Remove the lubrication insert (31) and the pin (29) to disconnect the trunnion link from the shock strut (View D-D).

S 014-021
(20) Lift the trunnion link and attach it away from the shock strut.

S 014-022
(21) Increase the length of the positioner link for the shock strut. Move the shock strut to a vertical position.

NOTE: Use an inclinometer to find when the shock strut is vertical.

S 014-023
(22) Lift the outer cylinder of the shock strut with the removal/installation equipment. Use automotive-type axle jacks to move the truck inboard or outboard. This will remove pressure from the aft bearing.

S 014-024
(23) Apply a force on the aft side of the shock strut. Move the main landing gear forward to disengage it from the bearing.

S 014-025
(24) Lower the outer cylinder of the shock strut and remove the removal/installation equipment.

S 024-026
(25) Remove the main landing gear from below the airplane (28).

NOTE: To move the truck more easily, lift one end of it with an automotive-type axle jack.

S 034-027
(26) Remove the antirotation bolt (20), the plug (21), and the lockplate (22) from the forward trunnion support (Detail A).

S 584-028
(27) Move the trunnion link into an approximate gear retracted position until the fuse pin and the cap are seen. Remove the cap (23) and the fuse pin (24), with the pin puller, to disconnect the trunnion link from the forward bearing.

S 014-029
(28) Pull aft on the trunnion link to remove it from the bearing. Remove the trunnion link.

S 034-030
(29) If different gear will be installed, remove the plug (39) from the spigot on the shock strut for the aft trunnion bearing (Fig. 402). Keep the plug for installation.

S 014-095
(30) Remove the two aft sections of the MLG trunnion fairing (AMM 57-51-10/401).

S 434-096
(31) Connect the aft inboard flap to the main inboard flap.

S 494-126
(32) Use a suitable support to hold the aft inboard flap in it's position to prevent movement.

S 034-097
(33) Disconnect the aft flap linkage from the trunnion support.

S 034-098
(34) Remove the mount bolts (40).

S 034-099
(35) Remove the aft trunnion support (41).

TASK 32-11-01-404-031
3. Install the Main Landing Gear (Fig. 401, 402)
A. Equipment
(1) B32006-13 MLG Shock Strut Positioner Link
(2) B32011-14 MLG Thread Protector Set
(3) B32018-1 MLG Trunnion Link to Strut Alignment Pin
(4) 757-200, -300;
B32020-45 MLG Removal/Instl Equipment (Recommended)

(5) 757-200;
B32020-1, -33 MLG Removal/Instl Equipment
(Alternative)
(6) B32029-1 MLG Trunnion Link Support Equipment
(7) B32044-12 MLG Structural Fuse Pin
Puller Equipment
(8) F70312-38 Crowfoot Wrench
(9) Automotive-Type Axle Jacks -
Commercially Available

B. Consumable Materials
(1) C00174 Corrosion Preventive Compound -
MIL-C-16173, grade 4
(2) D00633 Grease - BMS 3-33 (Recommended)
(3) D00013 Grease - MIL-G-23827 (Alternative)
(4) D00014 Grease - MIL-G-21164
(5) A01077 Adhesive - Silicone Rubber, RTV 102 (BAC1050 Type 60)
(Recommended)
(6) A00027 Adhesive - Silicone, RTV 174 (BAC5010
Type 60) (Alternate)

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	2	Lower Swivel	32-11-04	02	80
	3	Tang Washer			55
	14	Tang Washer	32-11-00	01	32
	26	Packing			90

D. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 12-12-01/301, Hydraulic Systems
(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 32-12-04/401, Main Gear Strut Door
(7) AMM 32-32-00/501, Main Gear Extension and Retraction
(8) AMM 32-32-15/401, Main Gear Truck Positioner Actuator
(9) AMM 32-41-00/201, Hydraulic Brake System
(10) AMM 32-42-00/501, Antiskid/Autobrake System
(11) AMM 32-46-00/501, Brake Temperature Monitoring System
(12) AMM 57-54-07/401, MLG Trunnion Fairing

E. Access

(1) Location Zones

119/120	Main Equipment Center
211/212	Control Cabin
500/600	Left Wing / Right Wing
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

(2) Access Panel

119BL	Main Equipment Center

F. Install the Main Landing Gear

S 424-032
(1) Attach the drag strut to the shock strut.

S 034-026
(2) Remove the pin (35) to disconnect the drag strut from the trunnion link (View E-E).

S 034-033
(3) Disconnect the hydraulic lines and the electrical lines from the trunnion link.

S 034-034
(4) Hold the trunnion link. Remove the lubrication insert (31) and the pin (29) to disconnect the trunnion link from the shock strut (View D-D).

S 414-035
(5) Apply grease (BMS 3-33) to the packing (26).

S 434-027
(6) Install the plug (25) and the packing (26) into the end of the trunnion link.

S 494-092
(7) Install the trunnion link support tool around the trunnion link. Use the instructions supplied with the tool.

S 414-125

CAUTION: MAKE SURE THE ORIENTATION OF THE FORWARD TRUNNION BEARING HAS THE THINNER FACE OF THE BALL IN THE AFT DIRECTION AND THE STENCILED ARROW UP. IMPROPER INSTALLATION WILL CAUSE DAMAGE TO EQUIPMENT.

(8) Insert the trunnion link into the forward trunnion bearing until the fuse pin holes are aligned (Detail A).

S 644-037
(9) Apply grease (BMS 3-33) to the fuse pin (24) and the cap (23).

S 434-038
(10) Install the fuse pin and the cap.

S 414-038
(11) Apply adhesive to the contact surfaces of the lockplate (22). Install the lockplate.

S 644-039
(12) Apply MIL-G-21164 to the threads of the plug (21).

S 434-040
(13) Install the plug. Tighten the plug by hand and make sure it is engaged.

S 644-040
(14) Apply grease (BMS 3-33) to the antirotation bolt (20) and the washer (27).

S 434-041
(15) Install the bolt and the washer.

S 434-088
(16) Move the trunnion link until it is in the approximate gear extended position. Lift the trunnion link and attach it to the structure.

S 094-042
(17) Hold the shock strut. Remove the truck positioner actuator (AMM 32-32-15/401), and replace it with the shock strut positioner link. Use the instructions supplied with the tool.

S 414-043
(18) Adjust the length of the positioner link until you can move the shock strut to a vertical position.

NOTE: Use an inclinometer to find when the strut is vertical.

S 414-044
(19) Position the main landing gear under the airplane for installation.

NOTE: To move the truck easier, lift one end of it with an automotive-type axle jack. Align the centerline of the truck parallel to the centerline of the airplane.

S 494-045
(20) Install the removal/installation equipment. Use the instructions supplied with the tool.

S 434-046
(21) If the plug (39) was removed, apply adhesive to the plug (39) and install it in the spigot (Fig. 402). Do not remove the adhesive which is pushed out from the plug installation.

S 434-100
(22) Put the trunnion support (41) in position on the aft trunnion bearing spigot (Fig. 402).

S 414-101
(23) Lift the outer cylinder to put the aft trunnion support (41) in position on the MLG beam.

S 434-102
(24) Install the bolts (40) to attach the aft trunnion support to the MLG beam. Tighten the bolts to 2200-2400 pound-inches.

S 434-127
(25) Connect the aft flap linkage to the trunnion support.

S 094-128
(26) Remove the support equipment that held the aft inboard flap in position.

S 034-129
(27) Disconnect the aft inboard flap from the main inboard flap.

S 414-130
(28) Install the two aft sections of the MLG trunnion fairing (AMM 57-51-10/401).

S 624-049
(29) Apply corrosion preventive compound to the inner diameter of the pin (35).

S 414-050
(30) Lower the trunnion link. Install the thread protector.

S 644-051
(31) Apply grease (BMS 3-33) to the pin (35), antirotation bolt (34), washer (37), nuts (36, 38), and the cotter pin.

S 434-052
(32) Install these parts to connect the drag strut to the trunnion link. Use the crowfoot wrench to tighten nut (38) to 840-1080 pound-inches. Loosen to the nearest lock position to install the antirotation bolt.

NOTE: You can make the positioner link shorter and lift the forward end of the truck to align the trunnion link, the drag strut, and the shock strut.

S 434-053
(33) Install the alignment pin for the trunnion link.

S 644-054
(34) Apply grease (BMS 3-33) to the pin (29).

S 434-051
(35) Install the pin to connect the trunnion link to the shock strut.

S 094-055
(36) Align the lockbolt hole and remove alignment pin.

S 644-056
(37) Apply grease (BMS 3-33) to the lubrication insert (31), the lockbolt (30), washer (33), nut (32), and the cotter pin. Install the parts. Tighten the nut (32) to 150-250 pound-inches. Loosen to the nearest lock position to install the cotter pin.

S 094-093
(38) Remove the trunnion link support tool from the trunnion link.

S 434-057
(39) Connect the hydraulic lines and the electrical lines to the top and bottom of the connections on the trunnion link.

S 094-058
(40) Lower the outer cylinder and remove the removal/installation equipment.

S 624-059
(41) Apply corrosion preventive compound to the inner diameter of the pin (8).

S 494-060
(42) Install the thread protector.

S 644-061
(43) Apply grease (BMS 3-33) to the pin (8), spacers (9), antirotation bolt (10), washers (12, 14), nuts (11, 13) and the cotter pin.
(a) Install these parts to connect the retract actuator to the shock strut.
(b) Tighten the nut (11) to 70-80 pound-feet as shown using crowfoot wrench (View B-B). Loosen the nut. Tighten the nut to 5-10 pound-feet. Loosen to the nearest lock position to install the antirotation bolt.

S 494-062
(44) Install the thread protector on the lower side strut swivel.

S 644-063
(45) Apply grease (BMS 3-33) to the antirotation bolt (17), washers (15, 18), nuts (16, 19), cotter pin, and the shaft of the swivel.

S 434-063
(46) Install the lower swivel (2) on the outer shock strut.
(a) Tighten the nut (16) to 150-200 pound-feet. Loosen the nut then tighten it to 5-10 pound-feet. Loosen to the nearest lock position to install the antirotation bolts. Use the crowfoot wrench (View C-C).

S 624-064
(47) Apply corrosion preventive compound to the inner diameter of the pin (1).

S 414-065
(48) Lower and align the lower side strut with the lower swivel.

S 494-066
(49) Install the thread protector.

S 644-067
(50) Apply grease (BMS 3-33) to the pin (1), antirotation bolt (4), washers (3, 5), nuts (6, 7), and the cotter pin.
(a) Tighten the nut (7) to 70-90 pound-feet. Loosen to the nearest lock position to install the antirotation bolt (View A-A). Use the crewfoot wrench.

S 414-068
(51) Remove the positioner link for the shock strut.

S 434-069
(52) Install the truck positioner actuator (AMM 32-32-15/401).

S 614-067
(53) Examine the hydraulic reservoir for the correct level. Servicing can be necessary (AMM 12-12-01/301).

S 644-068
(54) Lubricate the main landing gear (AMM 12-21-14/301).

S 584-069
(55) Lift the airplane for clearance for the gear retraction (AMM 07-11-01/201).

S 714-070
(56) Inflate the shock strut to 300 psig for the gear extension/retraction test.

G. Put the Airplane Back to Its Usual Condition.

S 414-103
(1) Install the MLG trunnion fairing (AMM 57-51-10/401).

S 864-071
(2) Close these circuit breakers on the overhead circuit breaker panel, P11:
(a) 11S16, BRAKE TEMP (if installed)
(b) 11S15, LANDING GEAR AIR/GND SYS1
(c) 11S19, LANDING GEAR AIR/GND SYS2
(d) 11S18, LDG GEAR ANTISKID 1-5
(e) 11C31, ANTISKID 2-6 (Left Gear)

(f) 11C32, ANTISKID 3-7 (Right Gear)
(g) 11S22, ANTISKID 4-8 (Right Gear)

S 714-072
(3) Do an operational test of the main landing gear (AMM 32-32-00/501).

S 414-073
(4) Install the strut door (AMM 32-12-04/401).

S 584-074
(5) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 614-075
(6) Do the servicing of the shock strut for the main landing gear (AMM 12-15-01/301).

S 714-106
(7) Do the checks on the brake system as follows:
(a) Bleed the brake system (AMM 32-41-00/201).
(b) Do the antiskid module hydraulic brake fuse test (AMM 32-41-00/201).
(c) Do these tests:
1) Operational tests of the autobrake and antiskid systems (AMM 32-42-00/501).
(d) AIRPLANES WITH BRAKE TEMPERATURE MONITOR SYSTEM;
Do the test of the brake temperature sensor. Make sure the wiring connections for each sensor are correct (AMM 32-46-00/501, Steps for the Monitor Test).

S 094-076

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

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

MAIN GEAR DRAG STRUT - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the drag strut for the main landing gear. The second task installs the drag strut for the main landing gear.

   TASK 32-11-03-004-001

2. Remove the Main Landing Gear Drag Strut (Fig. 401)
   A. Equipment
      (1) Boom Hoist - A20001-79
      (2) Thread Protector Set, MLG - B32011-14
      (3) Hoist Adapter Set, MLG - B32015-38
      (4) Crowfoot Wrenches - F70312-30, -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 32-12-04/401, Main Gear Strut Door
   C. Access
      (1) Location Zones
          731/741 Main Landing Gear (MLG)
          732/742 MLG Body Doors
          733/743 MLG Oleo Doors

   D. Prepare for the Removal of the Drag Strut for the Main Landing Gear

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

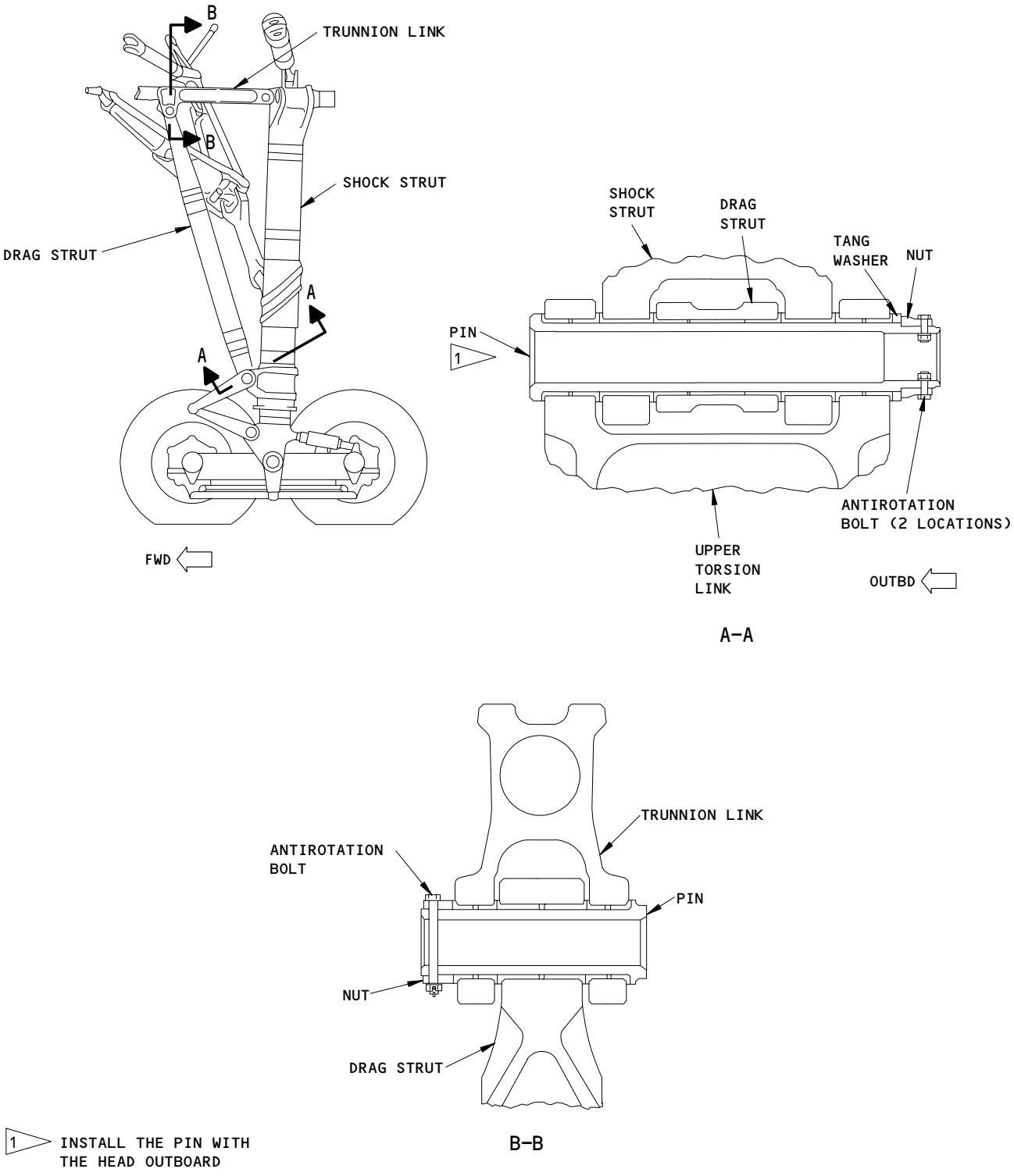
      S 484-033

      WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY 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 left hydraulic system (AMM 29-11-00/201).

      S 584-005
      (4) Lift the airplane (AMM 07-11-01/201).



Main Gear Drag Strut Installation
Figure 401

S 014-006
(5) Remove the strut door for the main landing gear (AMM 32-12-04/401).

S 034-007
(6) Disconnect the support brackets for the hydraulic lines and the electrical lines from the drag strut.

S 864-026
(7) Hold the torsion links for the main landing gear to prevent movement.

E. Remove the Drag Strut for the Main Landing Gear.

S 494-009
(1) Install the hoist adapter on the drag strut.
(a) Attach the adapter to the boom hoist.

S 864-027
(2) Lift the drag strut to release the pressure on the attach pins.

S 034-011
(3) Remove the nut with the crowfoot wrench.
(a) Install the thread protector.
(b) Remove the pin to disconnect the drag strut and the upper torsion link from the shock strut (View A-A).

S 034-012
(4) Remove the nut with the crowfoot wrench.
(a) Install the thread protector.
(b) Remove the pin to disconnect the drag strut from the trunnion link (View B-B).

S 024-013
(5) Lower the drag strut and remove it.

TASK 32-11-03-404-014

3. Install the Main Landing Gear Drag Strut (Fig. 401)
A. Equipment
(1) Boom Hoist - A20001-79

(2) Thread Protector Set, MLG - B32011-14
(3) Hoist Adapter Set, MLG - B32015-38
(4) Crowfoot Wrenches - F70312-30, -47

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Recommended)
(2) D00013 Grease - MIL-G-23827 (Alternative)

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-12-04/401, Main Gear Strut Door

D. Access
(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

E. Prepare to Install the Drag Strut for the Main Landing Gear

S 494-015
(1) Install the hoist adapter on the drag strut.

S 494-028
(2) Attach the hoist adapter to the boom hoist.

S 864-029
(3) Lift the drag strut into the correct position on the main landing gear.

F. Install the Drag Strut for the Main Landing Gear

S 414-017
(1) Install the thread protector.
(a) Apply grease to the pin, the washer, the nuts, the antirotation bolt, and the cotter pin.
(b) Install these parts to connect the drag strut to the trunnion link.
(c) Use the crowfoot wrench and tighten the nut to 70-90 pound-feet. Loosen to the nearest lock position to install the antirotation bolts.

S 414-030

(2) Install the thread protector.

(a) Apply grease to the pin, the washers, the nuts, and the antirotation bolts.

(b) Install these parts to connect the drag strut and the upper torsion link to the shock strut.

(c) Use the crowfoot wrench and tighten the nut to 70-90 pound-feet. Loosen to the nearest lock position to install the antirotation bolt.

S 094-019

(3) Remove the hoist adapter and the boom hoist.

G. Put the Airplane Back to Its Usual Condition

S 434-020

(1) Connect the support brackets for the hydraulic lines and the electrical lines to the drag strut.

S 414-021

(2) Install the strut door for the main landing gear (AMM 32-12-04/401).

S 644-022

(3) Lubricate the strut at the grease fittings.

S 584-023

(4) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 084-034

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

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

MAIN GEAR DRAG STRUT - INSPECTION/CHECK

1. General
   A. This procedure only has an illustration, and a 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 Gear Drag Strut - Removal/Installation for the procedures to do these tasks.

TASK 32-11-03-206-001

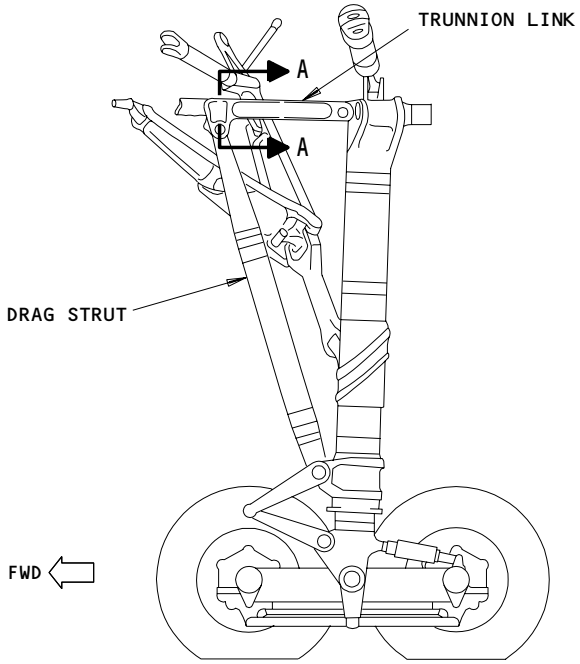
2. Wear Limits for the Drag Strut of the Main Landing Gear (Fig. 601)

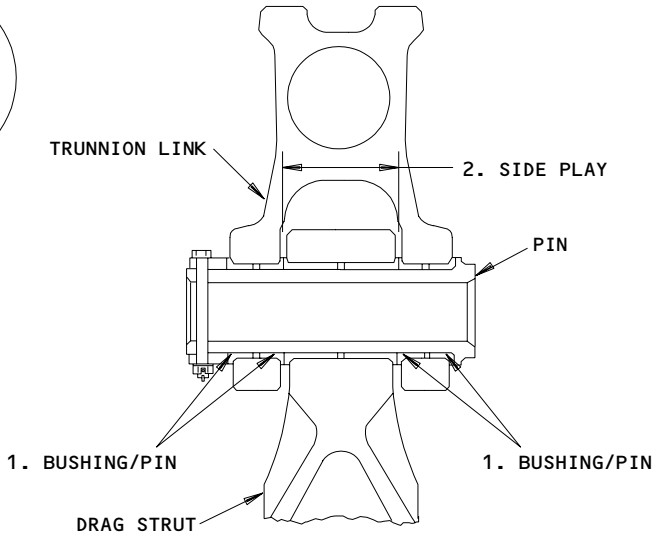
NOTE: Wear limits for components connected to the drag strut can be found in the Maintenance Manual subject for the component.

A. Wear Limits for the Drag Strut.

S 226-002

(1) Refer to Fig. 601 for the inspection points and the wear limit table.





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 DIAM CLEAR-ANCE			
			MIN	MAX					
1	BUSHING	ID	2.0000	2.0010	2.0048	0.0058	X		
	PIN	OD	1.9980	1.9990	1.9952			X	1
2	SIDEPLAY	ID	2.6600	2.6620	2.6643	0.0063			

1 THE PART IS REPAIRABLE; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE REPAIR INSTRUCTIONS.

Main Landing Gear Drag Strut Wear Limits
Figure 601

MAIN GEAR SIDE STRUT AND DOWNLOCK ASSEMBLY - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the side strut and the downlock assembly from the main landing gear. The second task installs the side strut and the downlock assembly on the main landing gear.

TASK 32-11-04-004-001

2. Remove the Side Strut and the Downlock Assembly for the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Thread Protector Set, MLG - B32011-14
      (2) Crowfoot Wrench - F70312-38
      (3) Boom Hoist - A20001-79
      (4) Drag Strut and Side Strut Sling Equipment, MLG - A32008-52
   B. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Main (Left, Center, and Right) Hydraulic Systems
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-32-02/401, Main Gear Downlock Actuator
   C. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

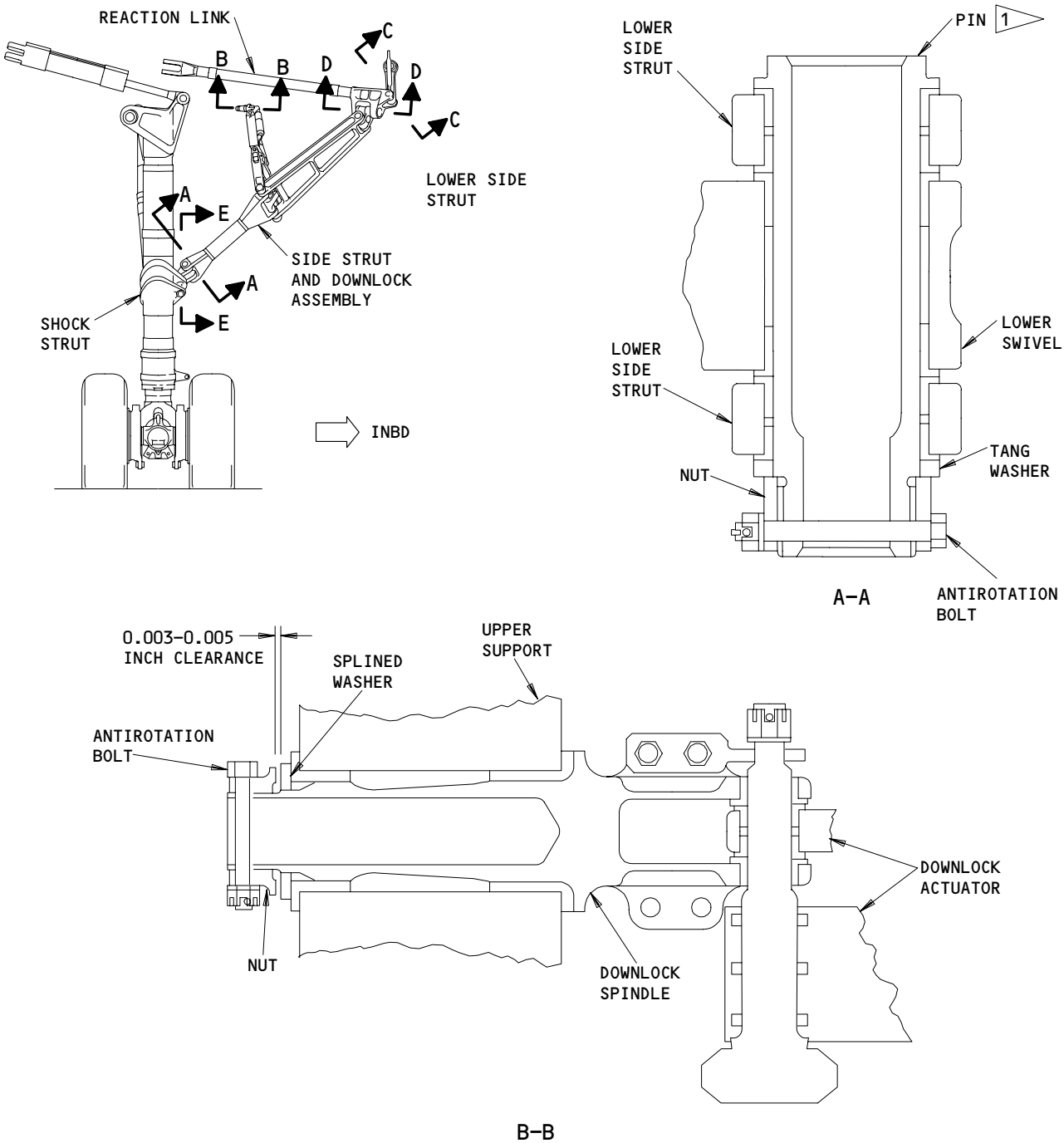
   D. Prepare for the Removal of the Side Strut and the Downlock Assembly

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 484-055

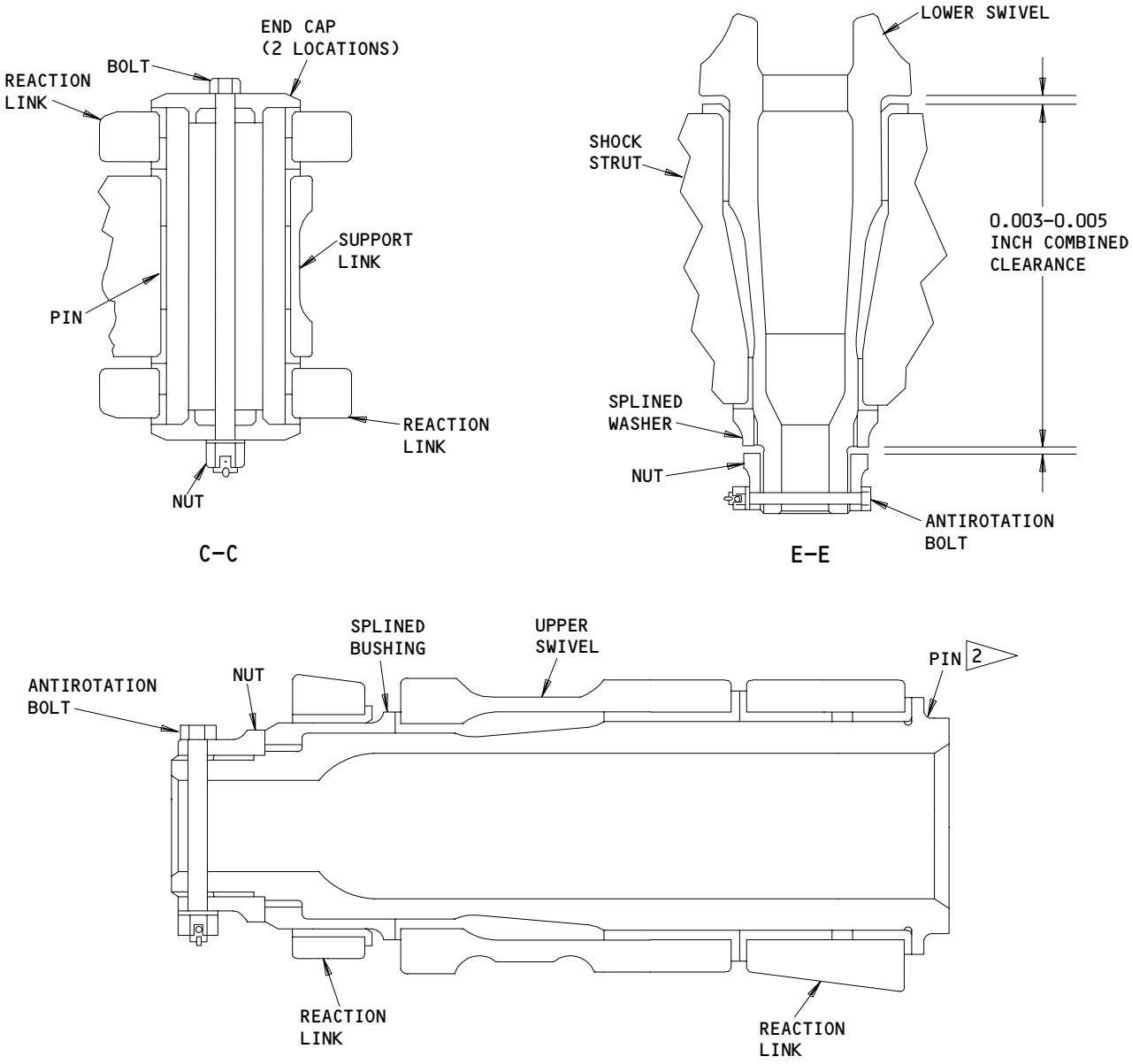
      WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

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



1 INSTALL THE PIN WITH THE HEAD UP

Side Strut and Downlock Assembly Installation for the Main Landing Gear
Figure 401 (Sheet 1)



2 INSTALL PIN WITH HEAD INBOARD

Side Strut and Downlock Assembly Installation for the Main Landing Gear
Figure 401 (Sheet 2)

S 864-004
(3) Remove the pressure from the left hydraulic system reservoir (AMM 29-11-00/201).

S 584-005
(4) Lift the airplane (AMM 07-11-01/201).

S 014-006
(5) Remove the downlock actuator for the main landing gear (AMM 32-32-02/401).

S 094-007
(6) Remove the downlock for the main landing gear and replace it with a bolt.

E. Remove the Side Strut and the Downlock Assembly

S 494-008
(1) Install the sling equipment. Use the instructions supplied with the tool.

S 014-009
(2) Remove the nut with the crowfoot wrench (View A-A).
(a) Install the thread protector.
(b) Remove the pin to disconnect the lower swivel from the lower side strut.

S 014-010
(3) Remove the nut to disconnect the downlock spindle from the upper support (View B-B).
(a) Remove the downlock spindle.

S 034-011
(4) Disconnect the clamps for the hydraulic line from the reaction link.

S 014-012
(5) Hold the reaction link. Remove the pin to disconnect the reaction link from the support link (View C-C).

S 844-013
(6) Move the inboard end of the reaction link aft to give clearance to remove the pin for the upper swivel.

S 014-014
(7) Remove the nut with the crowfoot wrench (View D-D).
(a) Install the thread protector.
(b) Remove the pin to disconnect the upper swivel from the reaction link.

S 034-049
(8) Lower the side strut and the downlock assembly with the hoist.

S 024-050
(9) Remove the side strut and the downlock assembly.

S 014-016
(10) Use the crowfoot wrench to remove the nut which connects the lower swivel to the shock strut (View E-E).
(a) Install the thread protector.
(b) Remove the lower swivel.

TASK 32-11-04-404-017

3. Install the Side Strut and Downlock Assembly on the Main Landing Gear (Fig. 401)

A. Equipment
(1) Thread Protector Set, MLG - B32011-14
(2) Crowfoot Wrench - F70312-38
(3) Boom Hoist - A20001-79
(4) Drag Strut and Side Strut Sling Equipment, MLG - A32008-52

B. Consumable Materials
(1) C00174 Corrosion Preventive Compound - MIL-C-16173, Grade 4

(2) D00633 Grease - BMS 3-33 (Recommended)
(3) D00013 Grease - MIL-G-23827 (Alternative)

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-32-02/401, Main Gear Downlock Actuator

D. Access
(1) Location Zones
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Oleo Doors

E. Install the Side Strut and the Downlock Assembly

S 404-018
(1) Install the thread protector.

S 644-034
(2) Apply grease to the antirotation bolt, the washers, the nuts, the cotter pin, and the shaft of the swivel.

S 424-035
(3) Install the lower swivel on the shock strut.

S 434-036
(4) Use the crowfoot wrench to tighten the nut to 1800-2400 pound-inches (View E-E).
(a) Loosen the nut then tighten it to 60-120 pound-inches to give clearance.
(b) Loosen the nut to the nearest lock position to install the antirotation bolt.

S 844-019
(5) Make sure there is a bolt through the downlock holes.

S 484-020
(6) Install the sling equipment on the side strut and the downlock assembly. Use the instructions supplied with the tool.
(a) Lift the side strut and the downlock assembly into its position on the main landing gear with the hoist.

S 624-021
(7) Apply the corrosion preventive compound to the inner diameter of the pins.

S 414-022
(8) Install the thread protector.

S 644-037
(9) Apply grease to the pin, the antirotation bolt, the nuts, the washer, the bushing, and the cotter pin.

S 434-038
(10) Install the parts to connect the upper swivel to the reaction link.

S 434-039
(11) Use the crowfoot wrench to tighten the nut to 1800-2400 pound-inches (View D-D).
  (a) Loosen the nut then tighten it to 60 pound-inches.
  (b) Move the nut forward to the nearest lock position to install the antirotation bolt. Do not go over 2400 pound-inches.

S 844-023
(12) Move the inboard end of the reaction link forward.
  (a) Align the reaction link with the support link.

S 644-044
(13) Apply grease to the pin, the bolt, the end caps, the washer, the nut, and the cotter pin.

S 434-040
(14) Install the parts to connect the reaction link to the support link.

S 434-041
(15) Tighten the nut for the hydraulic line to 100-200 pound-inches (View C-C).
  (a) Install the cotter pin.

S 434-025
(16) Connect the clamps for the hydraulic line to the reaction link.

S 644-045
(17) Apply grease to the antirotation bolt, the washers, the nuts, the cotter pin, and the spindle shaft.

S 414-042
(18) Install the downlock spindle on the upper support.

S 434-043
(19) Tighten the nut to 480-600 pound-inches (View B-B).
(a) Loosen the nut then tighten it to 60-120 pound-inches to give clearance.
(b) Loosen the nut to the nearest lock position to install the antirotation bolt.

S 424-027
(20) Install the thread protector.

S 644-046
(21) Apply grease to the pin, the washers, the nuts, and the antirotation bolt.

S 414-047
(22) Install the parts to connect the lower side strut to the lower swivel.

S 434-048
(23) Use the crowfoot wrench to tighten the nut to 840-1080 pound-inches (View A-A).
(a) Loosen to the nearest lock position to install the antirotation bolt.

F. Put the Airplane Back to Its Usual Condition

S 094-028
(1) Remove the sling equipment.

S 094-029
(2) Remove the bolt from the downlock holes.

S 094-051
(3) Install the downlock for the main landing gear.

S 414-030
(4) Install the downlock actuator for the main landing gear (AMM 32-32-02/401).

S 644-031
(5) Lubricate the struts and the links at the grease fittings.

S 584-032
(6) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 084-056

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

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

MAIN GEAR UPPER AND LOWER SIDE STRUTS - REMOVAL/INSTALLATION

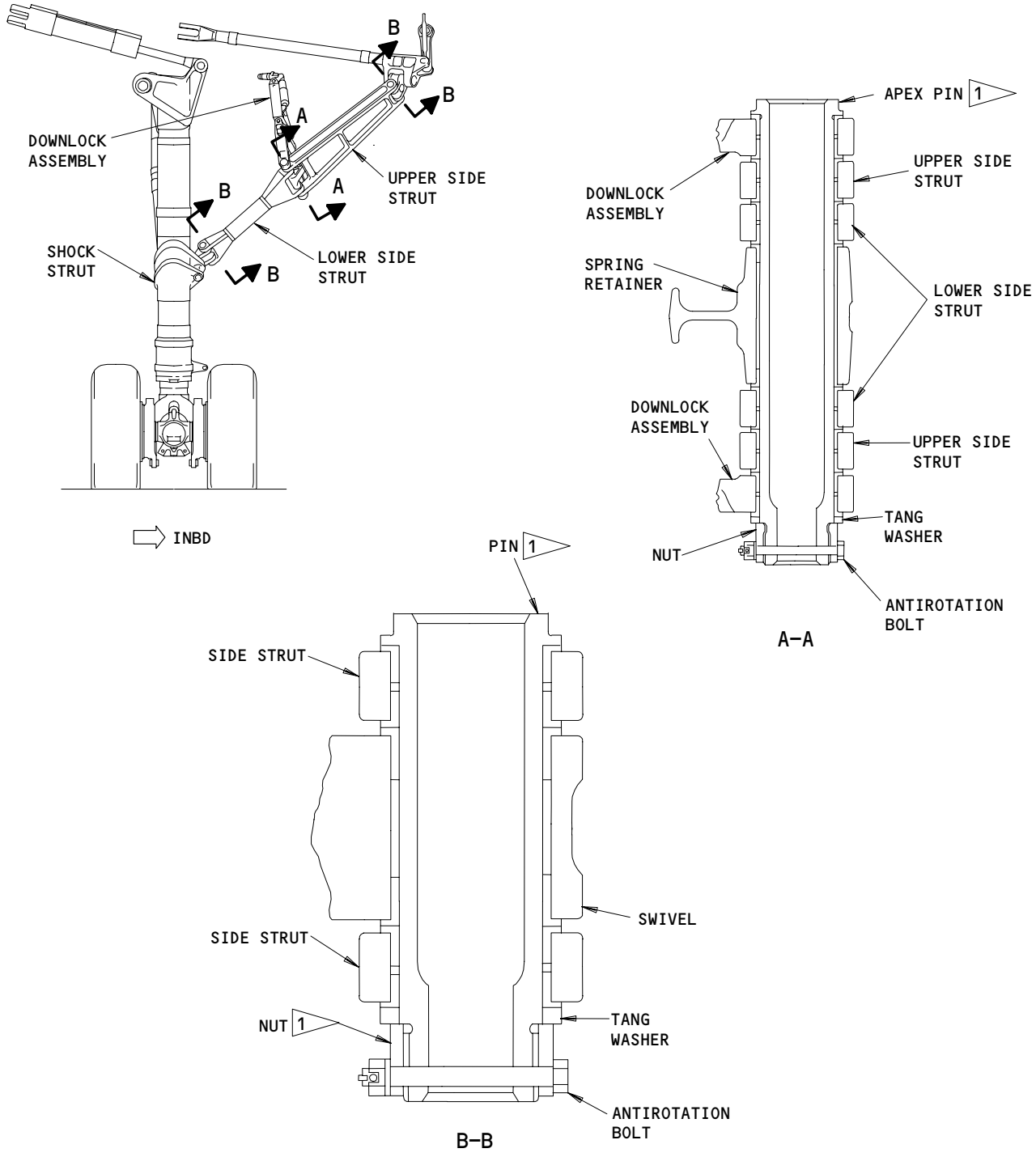
1. General
   A. This procedure contains four tasks. The first task removes the upper side strut for the main landing gear. The second task installs the upper side strut for the main landing gear. The third task removes the lower side strut for the main landing gear. The fourth task installs the lower side strut for the main landing gear.

TASK 32-11-05-004-001

2. Remove the Upper Side Strut for the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Drag Strut and Side Strut Sling Equipment, MLG (components of A32008-52)
         (a) Adapter - A32008-6
         (b) Clamp - A32008-38
      (2) Thread Protector Set, MLG - B32011-14
      (3) Crowfoot Wrench - F70312-38
   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 32-11-22/401, Main Gear Downlock Springs
   C. Access
      (1) Location Zones
         731/741 Main Landing Gear (MLG)
         732/742 MLG Body Doors
         733/743 MLG Oleo Doors

   D. Prepare for the Removal of the Upper Side Strut for the Main Landing Gear.

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).



1 INSTALL THE PIN WITH THE HEAD UP

Main Landing Gear Upper and Lower Side Struts Installation
Figure 401

S 484-045

WARNING: OBEY THE INSTALLATION PROCEDURE FOR 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 left hydraulic system (AMM 29-11-00/201).

S 584-005

(4) Lift the airplane (AMM 07-11-01/201).

E. Remove the Upper Side Strut for the Main Landing Gear.

S 864-039

(1) Hold the lower side strut and downlock assembly to prevent movement of these parts.

S 014-006

(2) Remove the downlock springs (Ref 32-11-22).

S 494-007

(3) Install the sling equipment. Use the instructions supplied with the tool.

S 034-008

(4) Remove the nut with the crowfoot wrench.
  (a) Install the thread protector.
  (b) Remove the pin to disconnect the upper side strut, the downlock assembly, the spring retainer, and the lower side strut (View A-A).

S 034-009

(5) Remove the nut with the crowfoot wrench.
  (a) Install the thread protector.

(b) Remove the pin to disconnect the upper side strut from the upper swivel (View B-B).

S 024-010

(6) Lower the upper side strut and remove it.

TASK 32-11-05-404-037

3. Install the Upper Side Strut for the Main Landing Gear

A. Equipment

(1) Drag Strut and Side Strut Sling Equipment, MLG (components of A32008-52)
(a) Adapter - A32008-6
(b) Clamp - A32008-38
(2) Thread Protector Set, MLG - B32011-14
(3) Crowfoot Wrench - F70312-38

B. Consumable Materials

(1) C00174 Corrosion Preventive Compound - MIL-C-16173, grade 4
(2) D00633 Grease - BMS 3-33 (Recommended)
(3) D00013 Grease - MIL-G-23827 (Alternative)

C. References

(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-11-22/401, Main Gear Downlock Springs

D. Access

(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

E. Install the Upper Side Strut for the Main Landing Gear.

S 494-011

(1) Install the sling equipment on the upper side strut. Use the instructions supplied with the tool.

S 584-012

(2) Lift the upper side strut into the correct position on the main landing gear.

S 624-013

(3) Apply the corrosion preventive compound to the inner diameter of the two pins.

S 434-014

(4) Install the thread protector.

(a) Apply grease to the pin, the washers, the nuts, and the antirotation bolt.

(b) Install these parts to connect the upper side strut to the upper swivel.

(c) Use the crowfoot wrench to tighten the nut to 70-90 pound-feet. Loosen to the nearest lock position to install the antirotation bolt (View B-B).

S 424-015

(5) Install the thread protector.

(a) Apply grease to the pin, the washers, the nuts, and the antirotation bolt.

(b) Install these parts to connect the upper side strut, the downlock assembly, the spring retainer, and the lower side strut.

(c) Tighten the nut to 70-90 pound-feet. Loosen to the nearest lock position to install the antirotation bolt (View A-A).

S 094-016

(6) Remove the sling equipment.

F. Put the Airplane Back to Its Usual Condition

S 414-017

(1) Install the downlock springs (AMM 32-11-22/401).

S 644-018

(2) Lubricate the strut at the grease fittings.

S 584-019

(3) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 944-020

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 for the landing gear and close the doors (AMM 32-00-15/201).

TASK 32-11-05-404-021

4. Remove the Lower Side Strut For the Main Landing Gear (Fig. 401)

A. Equipment

(1) Drag Strut and Side Strut Sling Equipment, MLG (components of A32008-52)
  (a) Adapter - A32008-6
  (b) Clamp - A32008-38
(2) Thread Protector Set, MLG - B32011-14
(3) Crowfoot Wrench - F70312-38

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 32-11-22/401, Main Gear Downlock Springs

C. Access

(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

D. Prepare for the Removal of the Lower Side Strut for the Main Landing Gear.

S 494-022

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

S 944-023

WARNING: OBEY THE INSTALLATION PROCEDURE FOR 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 864-024

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

S 584-025

(4) Lift the airplane (AMM 07-11-01/201).

E. Remove the Lower Side Strut for the Main Landing Gear.

S 864-040
(1) Hold the upper side strut and downlock assembly to prevent movement of these parts.

S 014-026
(2) Remove the downlock springs (AMM 32-11-22/401).

S 864-041
(3) Hold the lower side strut.

S 034-027
(4) Remove the nut with the crowfoot wrench.
(a) Install the thread protector.
(b) Remove the pin to disconnect the lower side strut, the downlock assembly, the spring retainer, and the upper side strut (View A-A).

S 034-028
(5) Remove the nut with the crowfoot wrench.
(a) Install the thread protector.
(b) Remove the pin to disconnect the lower side strut from the lower swivel (View B-B).

S 024-029
(6) Remove the lower side strut.

TASK 32-11-05-404-038

5. Install the Lower Side Strut for the Main Landing Gear

A. Equipment
(1) Drag Strut and Side Strut Sling Equipment, MLG (components of A32008-52)
(a) Adapter - A32008-6
(b) Clamp - A32008-38
(2) Thread Protector Set, MLG - B32011-14

B. Consumable Materials
(1) C00174 Corrosion Preventive Compound - MIL-C-16173, grade 4
(2) D00013 Grease - MIL-G-23827

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-11-22/401, Main Gear Downlock Springs

D. Access
(1) Location Zones
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Oleo Doors

E. Install the Lower Side Strut for the Main Landing Gear.

S 434-030
(1) Install the thread protector.
(a) Apply grease to the pin, the washers, the nuts, and the antirotation bolt.
(b) Install these parts to connect the lower side strut, the upper side strut, the spring retainer, and the downlock assembly.
(c) Tighten the nut to 70-90 pound-feet. Loosen to the nearest lock position to install the antirotation bolt (View A-A). Use the crowfoot wrench.

S 624-031
(2) Apply the corrosion preventive compound to the inner diameter of the two pins.

S 424-032
(3) Install the thread protector.
(a) Apply grease to the pin, the washers, the nuts, and the antirotation bolt.
(b) Install these parts to connect the lower side strut to the lower swivel.
(c) Tighten the nut to 70-90 pound-feet. Loosen to the nearest lock position to install the antirotation bolt (Section B-B). Use the crowfoot wrench.

F. Put the Airplane Back to Its Usual Condition

S 414-033
(1) Install the downlock springs (AMM 32-11-22/401).

S 644-034
(2) Lubricate the strut at the grease fittings.

S 584-035
(3) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 084-046

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

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

MAIN GEAR UPPER AND LOWER SIDE STRUTS - INSPECTION/CHECK

1. General
   A. This procedure only has an illustration, and a 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 Gear Upper and Lower Side Struts - Removal/Installation for the procedures to do these tasks.

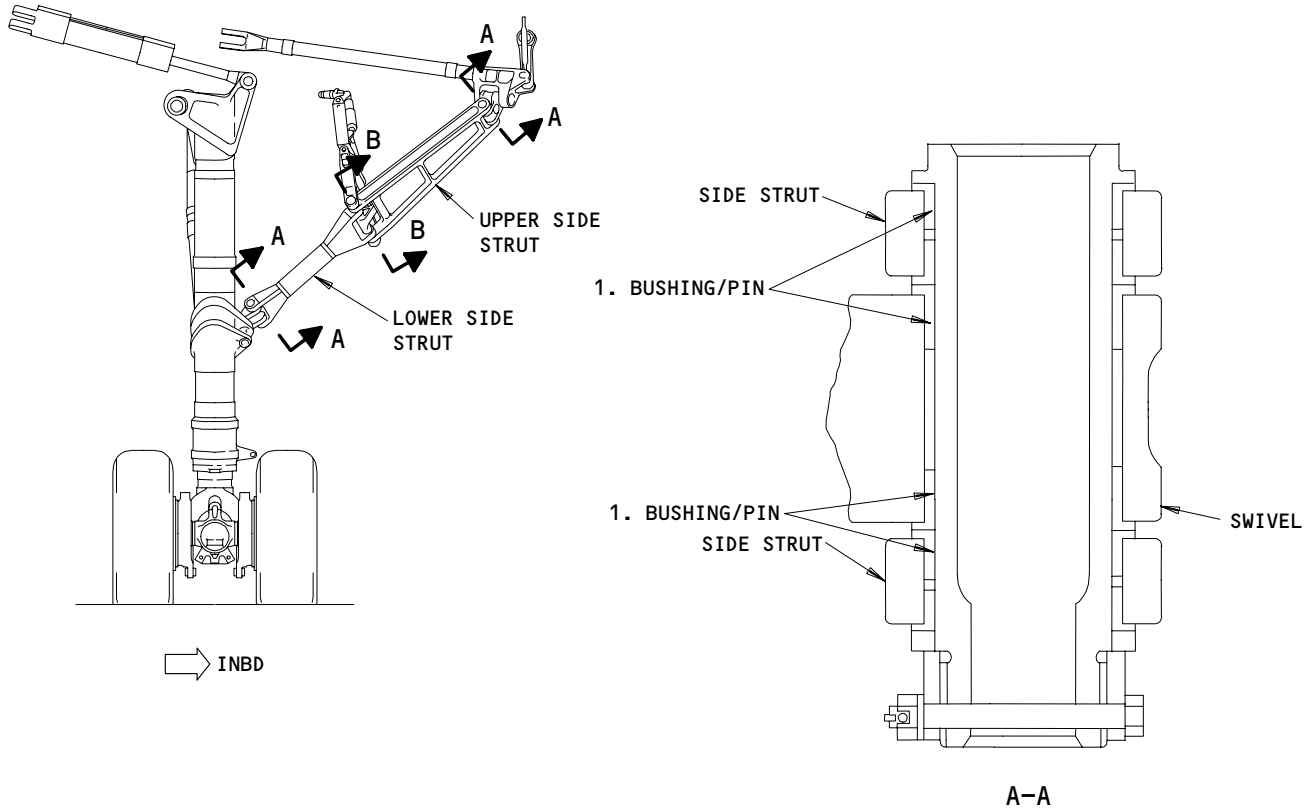
TASK 32-11-05-206-002

2. Wear Limits for the Upper and Lower Side Struts of the Main Landing Gear (Fig. 601)

   NOTE: Wear limits for components attached to the upper and lower side struts can be found in the Maintenance Manual subject for the components.

   A. Wear Limits for the Upper and Lower Side Struts.

      S 226-001
      (1) Refer to Fig. 601 for the inspection points and the wear limits table.



Main Landing Gear Upper and Lower Side Struts 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 DIAM CLEAR-ANCE			
			MIN	MAX					
1	BUSHING	ID	2.1250	2.1260	2.1299	0.0059	X		
	PIN	OD	2.1230	2.1240	2.1201			X	1

1 THE PART IS REPAIRABLE; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE REPAIR INSTRUCTIONS.

Main Landing Gear Upper and Lower Side Struts Wear Limits
Figure 601 (Sheet 2)

306333

MAIN GEAR SIDE STRUT SWIVELS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains four tasks. The first task removes the upper side strut swivel for the main landing gear. The second task installs it. The third task removes the lower side strut swivel for the main landing gear. The fourth task installs it.

TASK 32-11-07-004-001

2. Remove the Upper Side Strut Swivel of the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Thread Protector Set, MLG - B32011-14
      (2) Crowfoot Wrenches - F70312-37, -38
   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 (MLG)
          732/742 MLG Body Doors
          733/743 MLG Oleo Doors

   D. Prepare for the Removal of the Upper Side Strut Swivel.

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

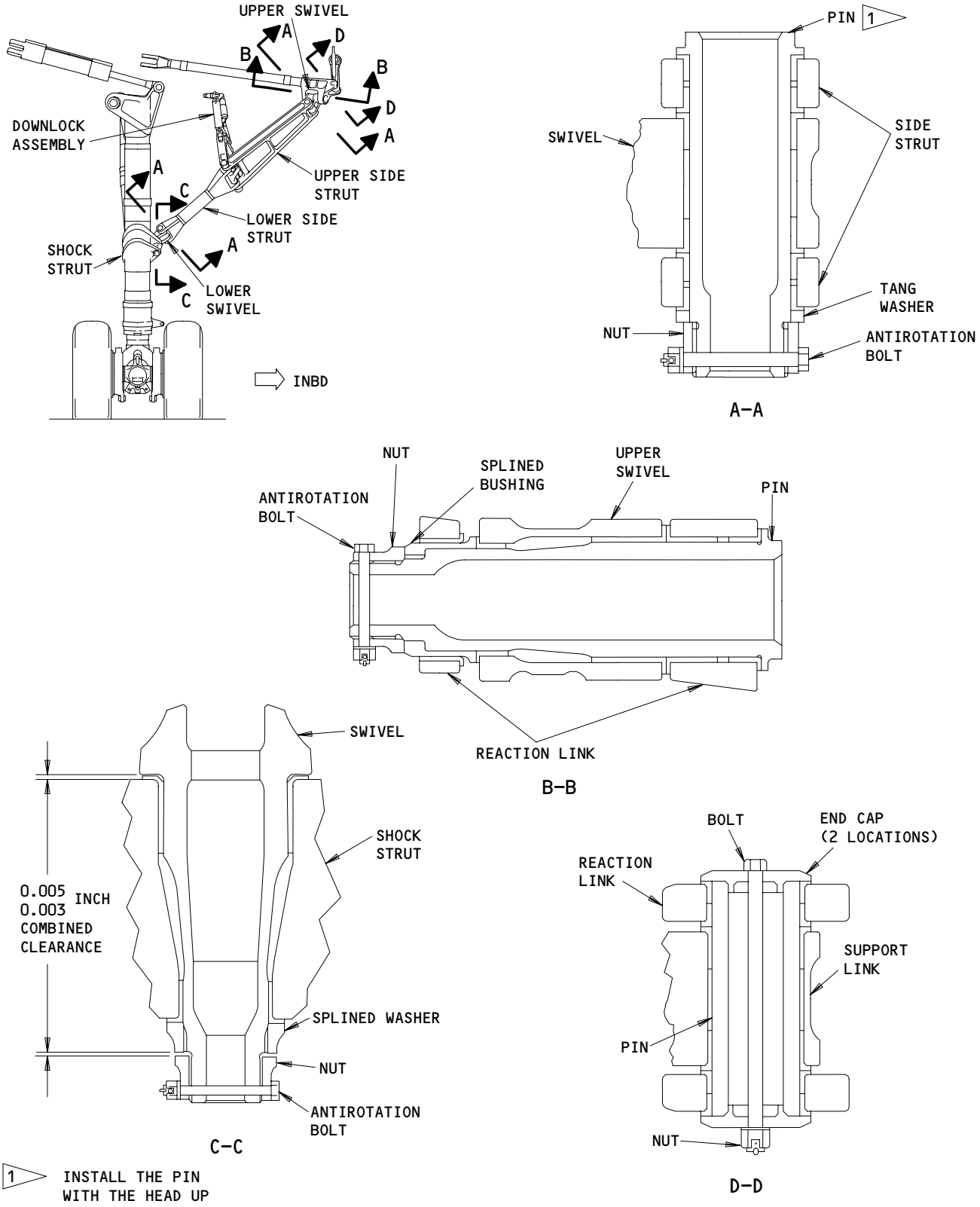
      S 484-043

      WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY 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 left hydraulic system (AMM 29-11-00/201).

      S 584-005
      (4) Lift the airplane (AMM 07-11-01/201).



Main Gear Side Strut Swivels Installation
Figure 401

E. Remove the Upper Side Strut Swivel.

S 844-006
(1) Hold the side strut and the downlock assembly to prevent movement.

S 034-007
(2) Remove the nut with the crowfoot wrench.
(a) Install the thread protector.
(b) Remove the pin to disconnect the upper side strut from the swivel (View A-A).
(c) Use rope to hold the upper side strut away from the area.

S 034-008
(3) Disconnect the clamps for the hydraulic line from the reaction link.

S 014-009
(4) Hold the reaction link and remove the pin to disconnect the reaction link from the support link (Section D-D).

S 034-010
(5) Move the inboard end of the reaction link aft to provide clearance to remove the pin for the upper swivel.

S 034-011
(6) Remove the nut with the crowfoot wrench.
(a) Install the thread protector.
(b) Remove the pin to disconnect the swivel from the reaction link (View B-B).

S 024-012
(7) Remove the upper swivel.

TASK 32-11-07-404-035

3. Install the Upper Side Strut Swivel of the Main Landing Gear

A. Equipment
(1) Thread Protector Set, MLG - B32011-14
(2) Crowfoot Wrenches - F70312-37, -38

B. Consumable Materials
(1) C00528 Corrosion Preventive Compound - MIL-C-16173, grade 4

(2) D00633 Grease - BMS 3-33 (Recommended)
(3) D00013 Grease - MIL-G-23827 (Alternative)

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks

D. Access
(1) Location Zones
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Oleo Doors

E. Install the Upper Side Strut Swivel.

S 624-013
(1) Apply the corrosion preventive compound to the inner diameter of the two pins.

S 414-014
(2) Install the thread protector.
(a) Apply grease to the pin, the antirotation bolt, the nuts, the washers, the bushing and the cotter pin.
(b) Install these parts to connect the swivel to the reaction link.
(c) Tighten the nut to 1800-2400 pound-inches. Loosen then tighten to 60 pound-inches. Move forward to the nearest lock position to install the antirotation bolt. Do not use over 2400 pound-inches (View B-B).

S 424-015
(3) Move the reaction link forward to the correct position.
(a) Apply grease to the pin, the bolt, the end caps, the washer, the nut, and the cotter pin.
(b) Install these parts to connect the reaction link to the support link.
(c) Tighten the nut to 100-200 pound-inches (View D-D).

S 434-016
(4) Connect the clamps for the hydraulic line to the reaction link.

S 494-037
(5) Install the thread protector.
(a) Apply grease to the pin, the antirotation bolt, the nuts, the washers, and the cotter pin.
(b) Install these parts to connect the upper side strut to the swivel.
(c) Tighten the nut to 840-1080 pound-inches. Loosen the nut to the nearest lock position to install the antirotation bolt.

F. Put the Airplane Back to Its Usual Condition

S 644-017
(1) Lubricate the swivel at the grease fittings.

S 584-018

(2) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 084-044

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

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

TASK 32-11-07-004-020

4. Remove the Lower Side Strut Swivel of the Main Landing Gear (Fig. 401)

A. Equipment

(1) Thread Protector Set, MLG - B32011-14

(2) Crowfoot Wrenches - F70312-37, -38

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 (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

D. Prepare to Remove the Lower Side Strut Swivel.

S 494-021

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

S 484-045

WARNING: OBEY THE INSTALLATION PROCEDURE FOR 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 864-023

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

S 584-024
(4) Lift the airplane (AMM 07-11-01/201).

E. Remove the Lower Side Strut Swivel.

S 844-025
(1) Hold the side strut and downlock assembly to prevent movement.

S 034-026
(2) Remove the nut with the crowfoot wrench.
(a) Install the thread protector.
(b) Remove the pin to disconnect the lower side strut from the swivel (View A-A).

S 034-027
(3) Remove the nut with the crowfoot wrench to disconnect the swivel from the shock strut (View C-C).
(a) Install the thread protector on the swivel.

S 024-028
(4) Remove the lower swivel.

TASK 32-11-07-404-036

5. Install the Lower Side Strut Swivel of the Main Landing Gear

A. Equipment
(1) Thread Protector Set, MLG - B32011-14
(2) Crowfoot Wrenches - F70312-37, -38

B. Consumable Materials
(1) C00528 Corrosion Preventive Compound - MIL-C-16173, grade 4
(2) D00633 Grease - BMS 3-33 (Recommended)
(3) D00013 Grease - MIL-G-23827 (Alternative)

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks

D. Access
(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

E. Install the Lower Side Strut Swivel.

S 624-029

(1) Apply the corrosion preventive compound to the inner diameter of the two pins.

S 414-030

(2) Install the thread protector.
   (a) Apply grease to the antirotation bolt, the washers, the nuts, the cotter pin, and the shaft of the swivel.
   (b) Install the swivel on the shock strut.
   (c) Tighten the nut to 1800-2400 pound-inches. Loosen the nut. Tighten the nut to 60-120 pound-inches. Loosen to the nearest lock position to install the antirotation bolt (View C-C). Use the crowfoot wrench.

S 424-031

(3) Install the thread protector.
   (a) Apply grease to the pin, the antirotation bolt, the washer, the nuts, and the cotter pin.
   (b) Install these parts to connect the lower side strut to the swivel.
   (c) Tighten the nut to 840-1080 pound-inches (View A-A). Loosen to the nearest lock position to install the antirotation bolt. Use the crowfoot wrench.

F. Put the Airplane Back to Its Usual Condition

S 644-032

(1) Lubricate the swivel at the grease fittings.

S 584-033

(2) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 084-046

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

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

MAIN GEAR SIDE STRUT SUPPORT LINK - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the support link for the side strut on the main landing gear. The second task installs the support link for the side strut on the main landing gear.

TASK 32-11-09-004-001

2. Remove the Support Link for the Side Strut on 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
   B. Access
      (1) Location Zones
          731/741 Main Landing Gear (MLG)
          732/742 MLG body doors
          733/743 MLG oleo doors

   C. Prepare for the Removal of the Support Link.

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

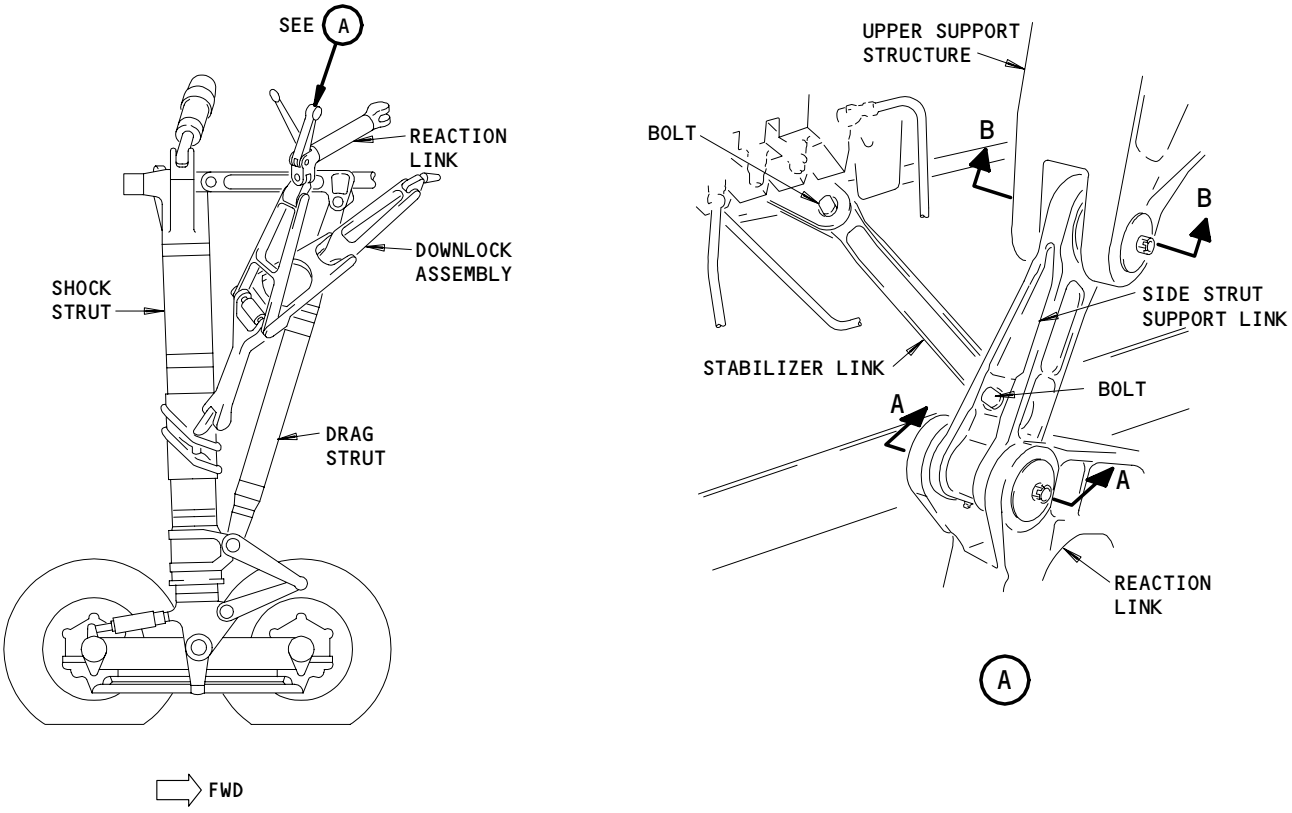
      S 484-035

      WARNING: OBEY THE INSTALLATION PROCEDURE FOR 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 left hydraulic system (AMM 29-11-00/201).

      S 584-005
      (4) Lift the airplane (AMM 07-11-01/201).



Main Gear Side Strut Support Link Installation
Figure 401

D. Remove the Support Link.

S 844-006
(1) Hold the reaction link to prevent movement.

S 014-007
(2) Remove the pin to disconnect the support link from the reaction link (View A-A).

S 014-008
(3) Remove the bolt to disconnect the stabilizer link from the support link (Detail A).

S 014-009
(4) Remove the pin to disconnect the support link from the structure fitting (View B-B).

S 024-010
(5) Remove the support link.

S 034-011
(6) Remove the bolt to disconnect the stabilizer link from the structure support (Detail A).

TASK 32-11-09-404-012

3. Install the Side Strut for the Support Link on the Main Landing Gear (Fig. 401)

A. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Recommended)
(2) D00013 Grease - MIL-G-23827 (Alternative)

B. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks

C. Access
(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG body doors
733/743	MLG oleo doors

D. Install the Support Link.

S 644-019
(1) Apply grease to the bolt, the bushing, the washer, the nut, and the cotter pin.

S 414-020
(2) Install the parts to connect the stabilizer link to the structure support.

S 414-021
(3) Install the bushing at the threaded end of the bolt.

S 434-022
(4) Tighten the nut to 150-250 pound-inches (Detail A).
    (a) Loosen the nut to the nearest lock position to install the cotter pin.

S 644-023
(5) Apply grease to the pin, the bolt, the end caps, the washer, the nut and the cotter pin.

S 414-024
(6) Install the parts to connect the support link to the structure fitting.

S 434-025
(7) Tighten the nut to 100-200 pound-inches (View B-B).
    (a) Install the cotter pin.

S 644-026
(8) Apply grease to the bolt, the washer, the nut and the cotter pin.

S 414-027
(9) Install the parts to connect the stabilizer link to the support link.

S 434-028
(10) Tighten the nut to 150-250 pound-inches.
    (a) Loosen the nut to the nearest lock position to install the cotter pin.

S 644-029
(11) Apply grease to the pin, the bolt, the end caps, the washer, the nut, and the cotter pin.

S 414-030
(12) Install the parts to connect the reaction link to the support link.

S 434-031

(13) Tighten the nut to 100-200 pound-inches (View A-A).

(a) Install the cotter pin.

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 084-036

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

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

MAIN GEAR REACTION LINK - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the reaction link for the main landing gear. The second task installs the reaction link for the main landing gear.

TASK 32-11-10-004-001

2. Remove the Reaction Link for the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Door Lock, Landing Gear - (Ref 32-00-15)
      (2) Boom Hoist - A20001-79, -55
      (3) Thread Protector Set, MLG - B32011-14
      (4) Hoist Adapter Set, MLG - B32015-38
      (5) Crowfoot Wrench - F70312-37
   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 (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

   D. Prepare for the Removal of the Reaction Link

S 494-002

(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 AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

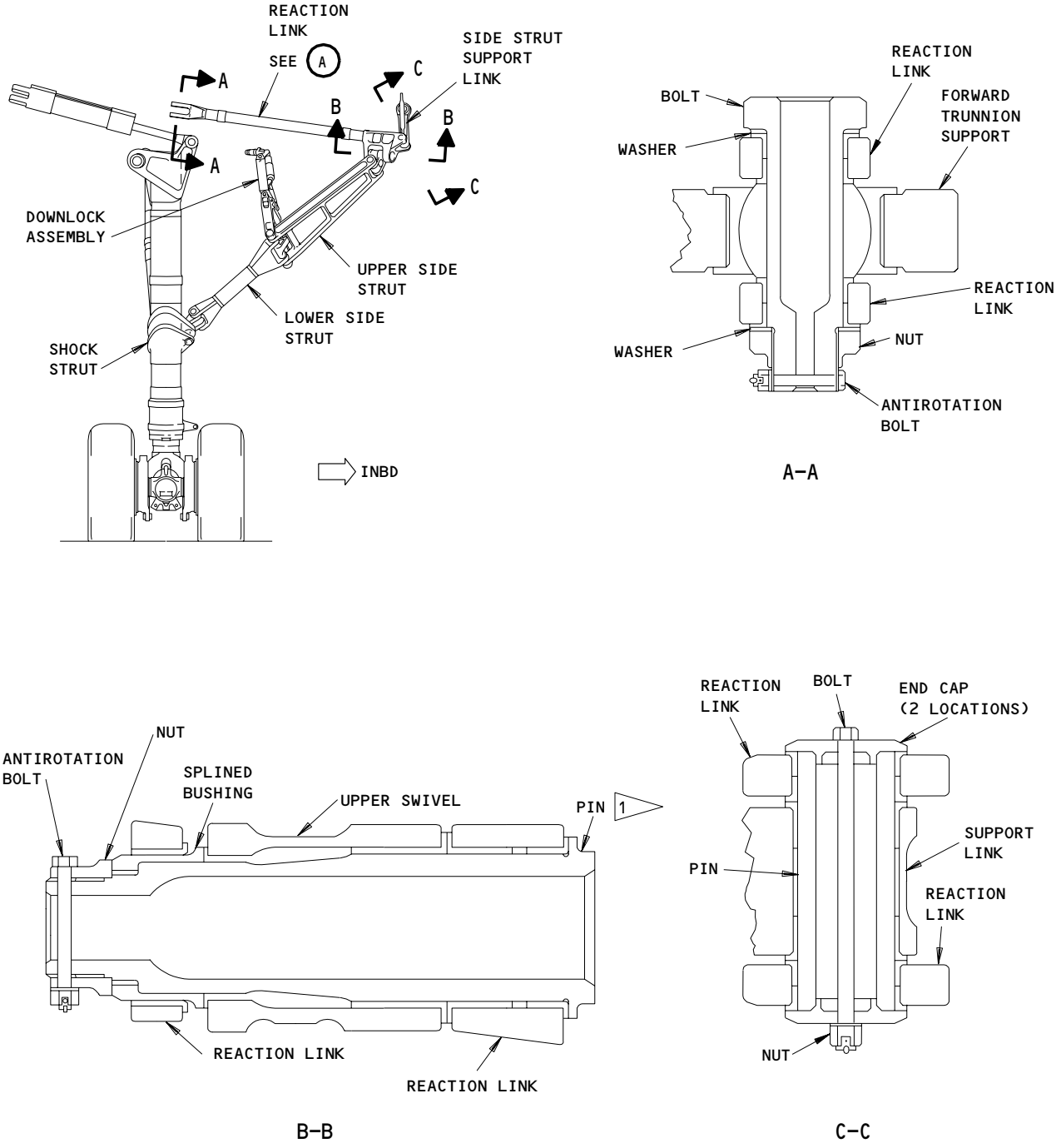
(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 864-004

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

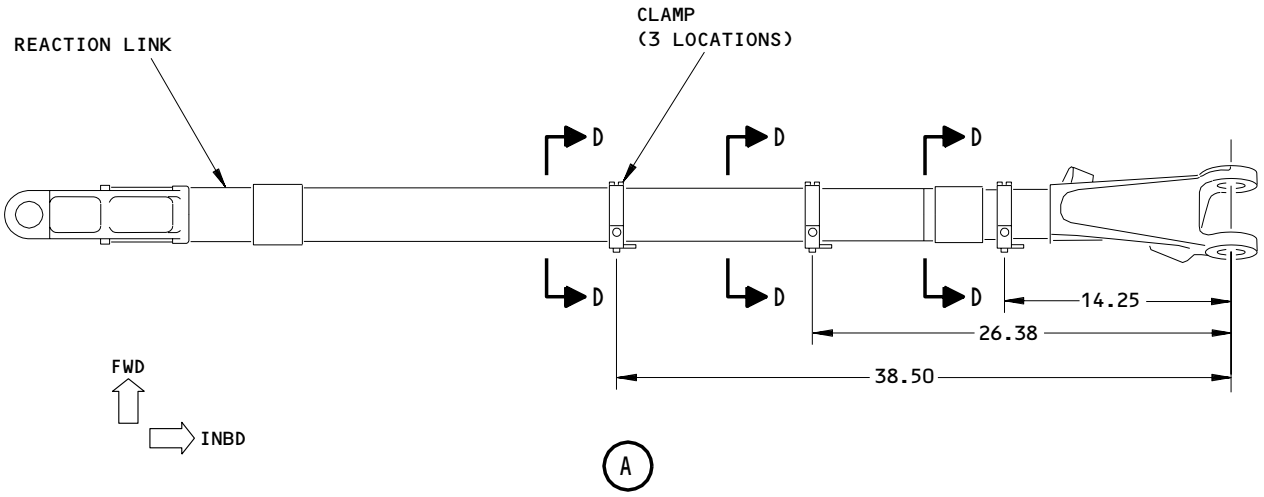
S 584-005

(4) Lift the airplane (AMM 07-11-01/201).

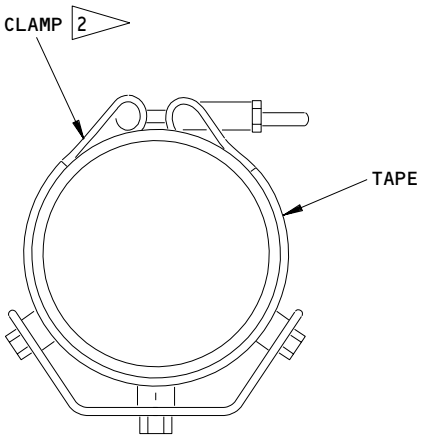


1 INSTALL THE PIN WITH THE HEAD INBOARD

Main Gear Reaction Link Installation
Figure 401 (Sheet 1)



ALL DIMENSIONS ARE IN INCHES



D–D

2 INSTALL THE CLAMP STUD IN THE UP DIRECTION FOR LEFT AND RIGHT GEAR.

Main Gear Reaction Link Installation
Figure 401 (Sheet 2)

E. Remove the Reaction Link

S 224-030
(1) Note the location of the clamps for the hydraulic line on the reaction link. Write it down.

S 034-006
(2) Disconnect the clamps for the hydraulic line from the reaction link.

S 494-007
(3) Install the hoist and the hoist adapter. Use the instructions supplied with the tools. Lift the hoist to release the pressure on the attach pins.

S 844-008
(4) Hold the upper side strut to prevent its movement.

S 014-009
(5) Remove the pin to disconnect the reaction link from the support link (View C-C).

S 034-010
(6) Move the inboard end of the reaction link aft to provide clearance to remove the upper swivel pin.

S 034-011
(7) Remove the nut with the crowfoot wrench. Install the thread protector.

S 014-012
(8) Remove the pin to disconnect the reaction link from the upper swivel (View B-B).

S 014-013
(9) Remove the bolt to disconnect the reaction link from the forward trunnion support (View A-A).

S 024-014
(10) Lower the reaction link and remove it.

TASK 32-11-10-404-015

3. Install the Reaction Link for the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Door Lock, Landing Gear - (Ref 32-00-15)
      (2) Boom Hoist - A20001-79, -55
      (3) Thread Protector Set, MLG - B32011-14
      (4) Hoist Adapter Set, MLG - B32015-38
      (5) Crowfoot Wrench - F70312-37
   B. Consumable Materials
      (1) D00633 Grease - BMS 3-33 (Recommended)
      (2) D00013 Grease - MIL-G-23827 (Alternative)

(3) C00174 Compound - Corrosion Prevention, MIL-C-16173 grade 4

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks

D. Access
(1) Location Zones
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Oleo Doors

E. Install the Reaction Link

S 494-016
(1) Install the hoist and the hoist adapter on the reaction link. Lift the link into the correct position on the main landing gear.

S 624-017
(2) Apply corrosion prevention compound to the inner diameter of the bolt (View A-A).

S 414-018
(3) Apply grease to the outer diameter of the bolt. Install the bolt, the washers and the nut to connect the reaction link to the forward trunnion support. Tighten the nut to 480-840 pound-inches. Do not loosen. Install the antirotation bolt (View A-A).
(a) Install the antirotation bolt, the washers, and the nut in the hole of the bolt and the nut. Tighten the nut and install the cotter pin.

S 624-019
(4) Apply corrosion prevention compound to the inner diameter of the pin (View B-B).

S 414-020
(5) Install the thread protector. Apply grease to the outer diameter of the pin. Install the pin, the bushing, and the nut, to connect the upper swivel to the reaction link. Tighten the nut to 1800-2400 pound-inches. Loosen the nut then tighten to 60 pound-inches and move to the nearest lock position. Install the antirotation bolt. Do not use more than 2400 pound-inches (View B-B).
(a) Install the antirotation bolt, the washers, and the nut Tighten the nut and install the cotter pin.

S 844-021
(6) Move the inboard end of the reaction link forward to align it with the support link.

S 424-022

(7) Apply grease to the pin, the bolt, the end caps, the washer, the nut and the cotter pin. Install the parts, to connect the reaction link to the support link. Tighten the nut to 100-200 pound-inches and install the cotter pin.

F. Put the Airplane Back to Its Usual Condition

S 434-023

(1) Connect the clamps for the hydraulic line to the reaction link.

NOTE: Use the clamp locations from the removal, or Figure 401, to install the clamps.

S 644-024

(2) Lubricate the link at the grease fittings.

S 584-025

(3) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 084-032

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

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

MAIN GEAR REACTION LINK - INSPECTION/CHECK

1. General
   A. This procedure only has an illustration, and a 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 Gear Reaction Link - Removal/Installation for the procedures to these tasks.

   TASK 32-11-10-206-002

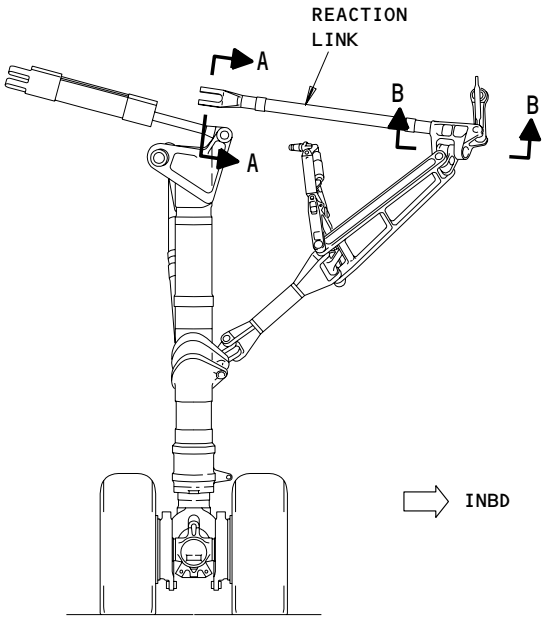
2. Wear Limits for the Downlock Assembly of the Main Landing Gear (Fig 601)

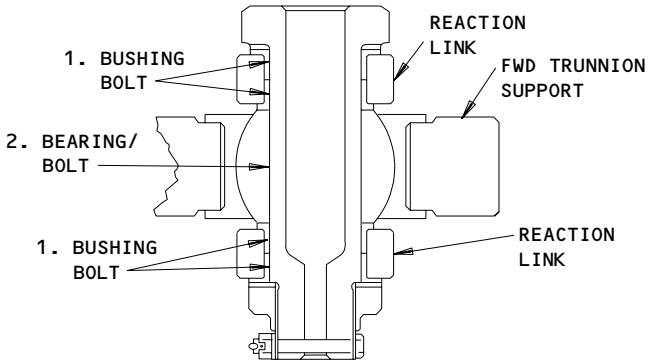
   NOTE: Wear limits for components attached to the reaction link can be found in the Maintenance Manual subject for the components.

   A. Wear Limits for the Reaction Link

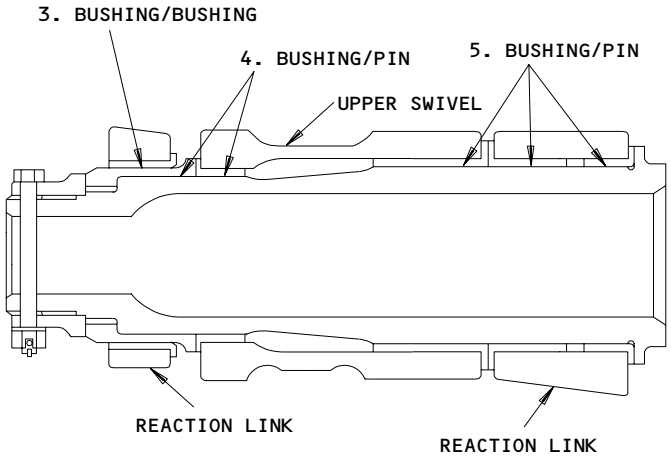
      S 226-001

      (1) Refer to Fig. 601 for the inspection points and the wear limit table.





A-A



B-B

Main Landing Gear Reaction Link 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	BUSHING	ID	1.7500	1.7510	1.7541	0.0051	X		
	BOLT	OD	1.7485	1.7490	1.7459			X	1
2	BEARING	ID	1.7500	1.7510	1.7560	0.0070	X		
	BOLT	OD	1.7485	1.7490	1.7459			X	1
3	BUSHING	ID	2.7605	2.7615	2.7658	0.0068	X		
	BUSHING	OD	2.7580	2.7590	2.7547		X		
4	BUSHING	ID	2.5000	2.5010	2.5052	0.0062	X		
	PIN	OD	2.4980	2.4990	2.4948			X	1
5	BUSHING	ID	2.8750	2.8760	2.8814	0.0064	X		
	PIN	OD	2.8730	2.8740	2.8696			X	1

1 THE PART IS REPAIRABLE; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE REPAIR INSTRUCTIONS.

Main Landing Gear Reaction Link Wear Limits
Figure 601 (Sheet 2)

MAIN GEAR DOWNLOCK ASSEMBLY - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the downlock assembly for the main landing gear. The second task installs the downlock assembly for the main landing gear.

TASK 32-11-12-004-001

2. Remove the Downlock Assembly for the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Thread Protector Set, MLG - B32011-14
      (2) Crowfoot Wrench - F70312-38
   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 32-11-22/401, Main Gear Downlock Springs
      (6) AMM 32-32-02/401, Main Gear Downlock Actuator
   C. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG body doors
733/743	MLG oleo doors

   D. Prepare for the removal of the downlock assembly.

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.

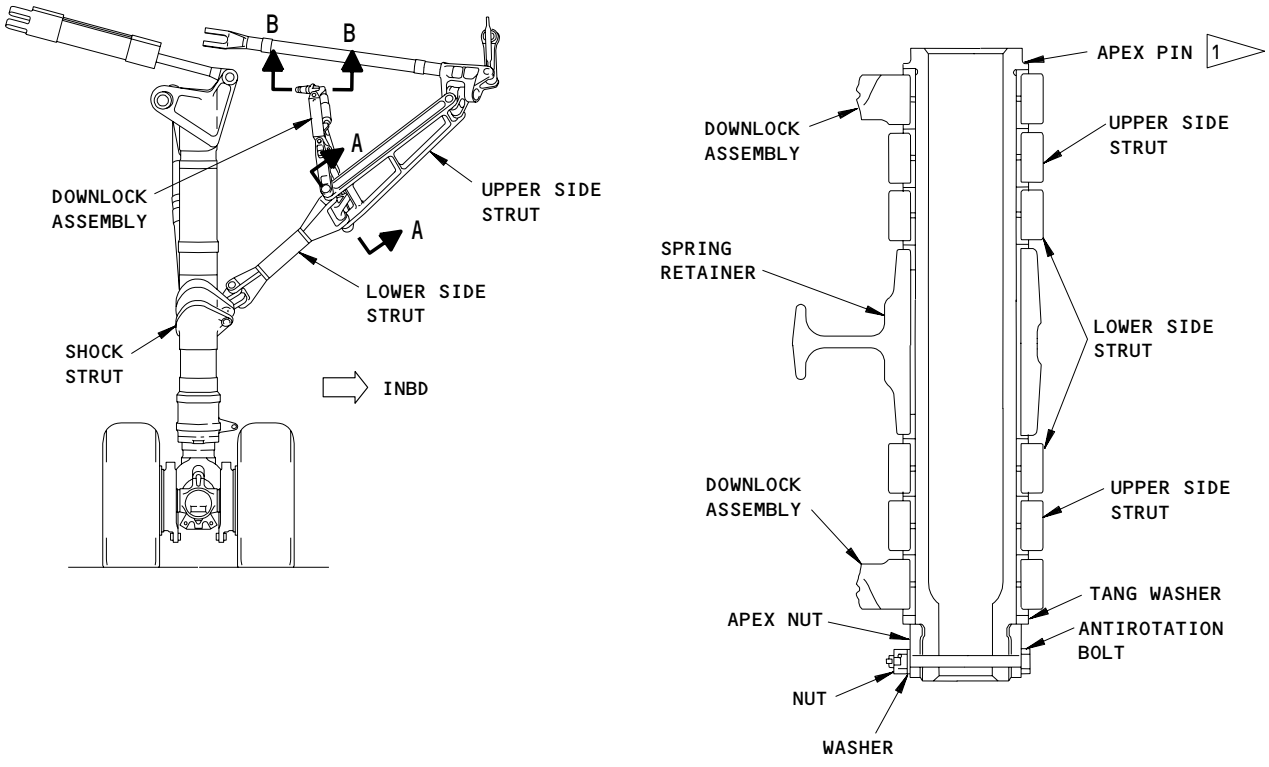
(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 864-004

(3) Remove the pressure from the left hydraulic system reservoir (AMM 29-11-00/201).

S 584-005

(4) Lift the airplane (AMM 07-11-01/201).



1 INSTALL THE PIN WITH THE HEAD UP

Main Gear Downlock Assembly Installation
Figure 401

E. Remove the downlock assembly.

S 014-006
(1) Remove the downlock and replace it with a bolt.

S 014-007
(2) Remove the downlock actuator for the main landing gear (AMM 32-32-02/401).

S 014-008
(3) Remove the downlock springs (AMM 32-11-22/401).

S 844-009
(4) Hold the upper and the lower side struts to prevent movement.

S 014-010
(5) Remove the nut with the crowfoot wrench (View A-A).
(a) Install the thread protector.
(b) Remove the pin to disconnect the downlock assembly and the spring retainer from the upper and lower side struts.

S 014-011
(6) Remove the nut to disconnect the upper downlock spindle from the upper support fitting (Section B-B).

S 024-012
(7) Remove the downlock assembly.

TASK 32-11-12-404-013

3. Install the Downlock Assembly for the Main Landing Gear (Fig. 401)
A. Equipment
(1) Thread Protector Set, MLG - B32011-14
(2) Crowfoot Wrench - F70312-38
B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Recommended)
(2) D00013 Grease - MIL-G-23827 (Alternative)

(3) G01395 Compound, Corrosion Preventive - BMS 3-27 (Recommended)
(4) C50056 Compound, Non-drying Corrosion Inhibiting Resin Mix, BMS 3-38 (Alternative)
(5) G50136 Paste, Corrosion Inhibiting Non-drying, BMS 3-38 (Alterna (Alternative)
(6) G50237 Compound, Corrosion Inhibiting Non-drying Cor-Ban 27L, BMS 3-38 (Alternative)

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks
(3) AMM 32-11-22/401, Main Gear Downlock Springs
(4) AMM 32-32-02/401, Main Gear Downlock Actuator

D. Access
(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG body doors
733/743	MLG oleo doors

E. Install the downlock assembly.

S 094-014
(1) Remove the downlock springs, if they are installed (AMM 32-11-22/401).

S 414-015
(2) Install the downlock in the apex of the downlock links.

S 644-024
(3) Apply grease to the shaft of the upper spindle and apex pin.

S 494-033
(4) Install the thread protector on the apex pin.

S 624-034
(5) Apply compound to the splined and tang washer, the antirotation bolts, washers, nuts and the threads of the castellated nuts.

S 424-035

CAUTION: WHEN YOU INSTALL THE DOWNLOCK ASSEMBLY THE HEAD OF THE MIDDLE PIN MUST FACE DOWN. IF THE ASSEMBLY IS NOT INSTALLED CORRECTLY DAMAGE TO EQUIPMENT WILL OCCUR.

(6) Hold the downlock assembly in the installed position between the upper and lower side struts and with the downlock spindle in the upper support fitting.

NOTE: The middle pin of the downlock assembly is the only pin that is installed with the head down. The other pins are installed with the head up, the pin will not fall out if the antirotation bolt breaks.

S 414-025

(7) To attach the downlock spindle to the upper support fitting, do the steps that follow (View B-B):
- (a) Apply compound to the threads of the downlock spindle.
- (b) Install the splined washer and spindle nut, hand tight, on the downlock spindle.
- (c) Tighten the spindle nut 480-600 pound-inches.
- (d) Apply grease to a 0.003-0.005 inch thick feeler gage or shim.
- (e) Loosen the spindle nut until you can position the feeler gage between the spindle nut and the splined washer.
- (f) Tighten the spindle nut 60-120 pound-inches.

NOTE: As you tighten the nut, make sure the feeler gage stays in position.

- (g) Remove the feeler gage or shim.
- (h) Install the antirotation bolt, washer, nut and cotter pin.

NOTE: If needed, you may loosen the castellated nut to the nearest lock position

- (i) Remove the excess compound.

S 424-036

(8) Hold the downlock spring retainer, the upper and lower side strut and the downlock assembly in the installed position (View A-A).

S 424-040

(9) Install the apex pin.

S 424-039

(10) To attach the apex pin to the downlock assembly and side strut, do the steps that follow (View A-A):
- (a) Remove the thread protector from the apex pin.

(b) Apply compound to the threads of the apex pin.
(c) Install the tang washer and apex nut, hand tight, on the apex pin.
(d) Tighten the apex nut 840-1080 pound-inches.
(e) Install the antirotation bolt, washer, nut and cotter pin.

NOTE: If needed, you may loosen the castellated nut to the nearest lock position

(f) Remove the excess compound.

F. Put the Airplane Back to Its Usual Condition.

S 414-019
(1) Install the downlock actuator for the main landing gear (AMM 32-32-02/401).

S 414-020
(2) Install the downlock springs for the main landing gear (AMM 32-11-22/401).

S 644-021
(3) Lubricate the links at the grease fittings.

S 584-022
(4) Lower the airplane and remove the jacks (AMM 07-11-01/201).

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.

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

MAIN GEAR DOWNLOCK ASSEMBLY - INSPECTION/CHECK

1. General
   A. This procedure only has an illustration and wear limit table which shows the data for the wear limit. There are no procedures for access, removal or installation of the parts. Refer to Main Gear Downlock Assembly - Removal/Installation for procedures to do these tasks.

TASK 32-11-12-206-001

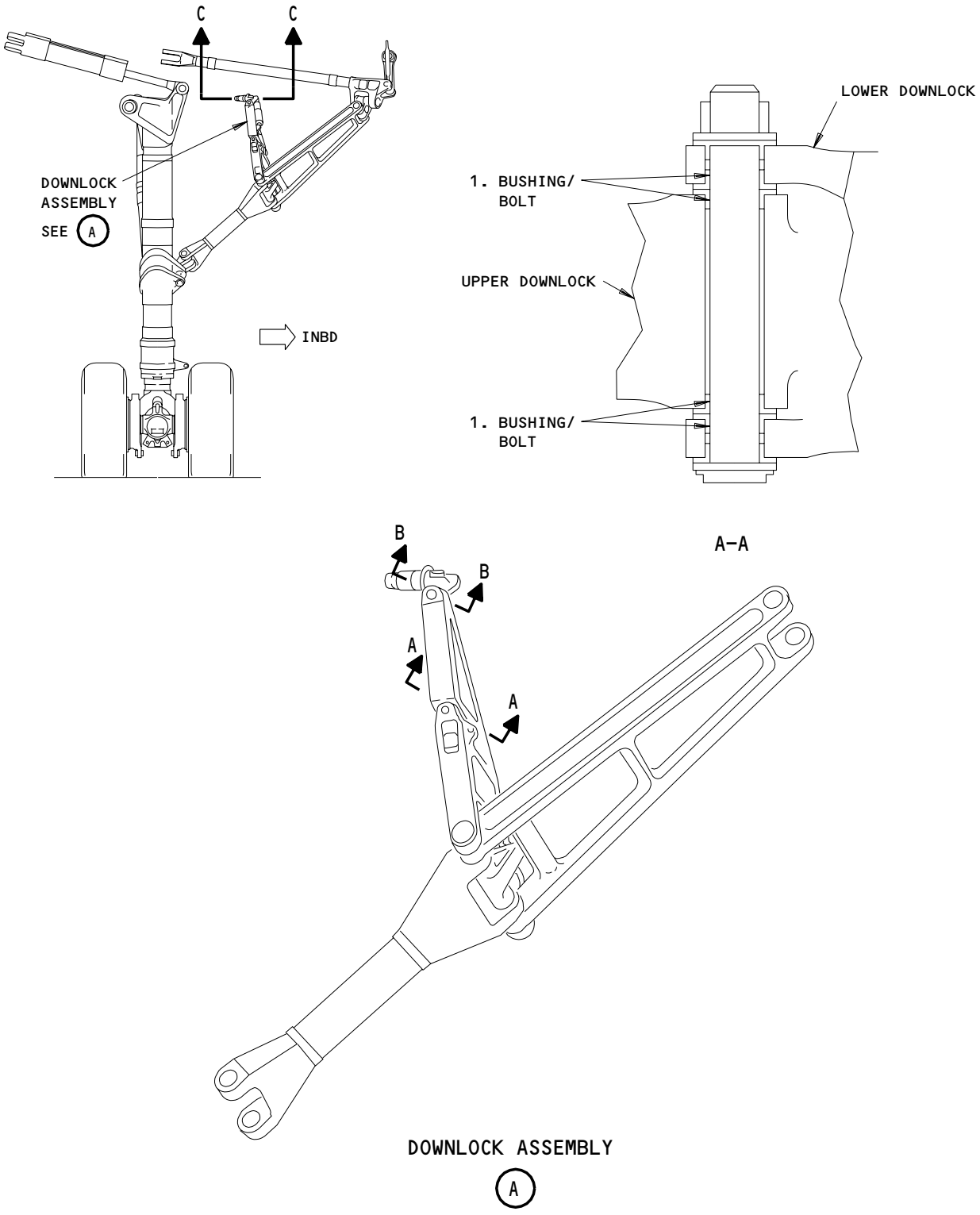
2. Main Gear Downlock Assembly Wear Limits (Fig. 601)

   NOTE: Wear limits for components attached to the Main Gear Downlock can be found in the Maintenance Manual subject for the components.

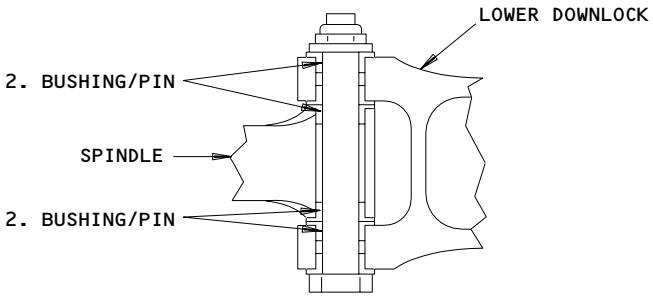
   A. Wear Limits for the Downlock Assembly

      S 206-002

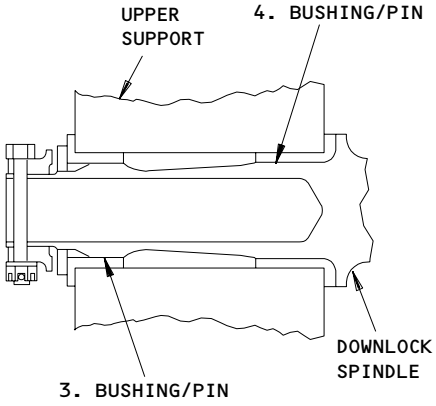
      (1) Refer to Fig. 601 for the inspection points and the wear limits table.



Main Landing Gear Downlock Assembly Wear Limits
Figure 601 (Sheet 1)



B–B



C–C

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	1.1875	1.1885	1.1912	0.0042	X		
	BOLT	OD	1.1865	1.1870	1.1843			X	1
2	BUSHING	ID	0.7085	0.7095	0.7117	0.0042	X		
	PIN	OD	0.7070	0.7075	0.7053		X		
3	BUSHING	ID	1.4385	1.4395	1.4440	0.0070	X		
	PIN	OD	1.4355	1.4365	1.4325		X		
4	BUSHING	ID	1.8115	1.8125	1.8170	0.0070	X		
	PIN	OD	1.8085	1.8095	1.8055		X		

1 THE PART IS REPAIRABLE; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE REPAIR INSTRUCTIONS

Main Landing Gear Downlock Assembly Wear Limits
Figure 601 (Sheet 2)

MAIN GEAR DOWNLOCK SPINDLE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the downlock spindle on the main landing gear. The second task installs the downlock spindle on the main landing gear.

TASK 32-11-15-004-001

2. Remove the Downlock Spindle for the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Door Lock, Landing Gear - (AMM 32-00-15/201)
   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 (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

   D. Prepare for the Removal of the Downlock Spindle

S 494-002

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

S 494-016

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.

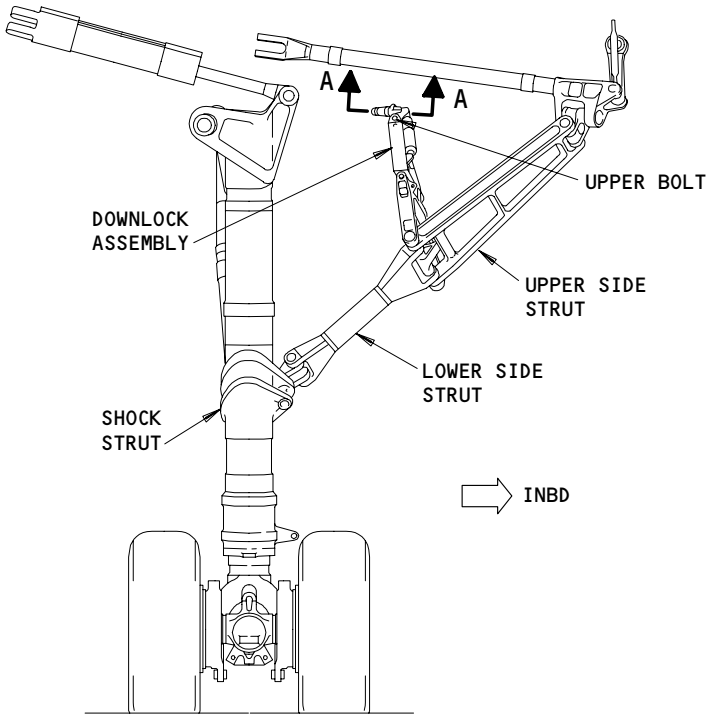
(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

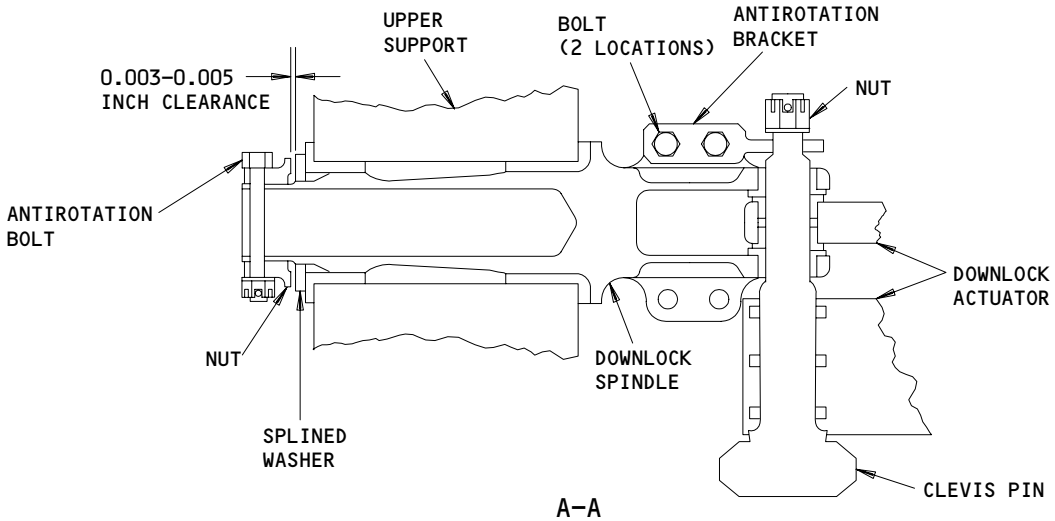
S 864-004

(3) Remove the pressure from the left hydraulic system and reservoir (AMM 29-11-00/201).

S 584-005

(4) Lift the airplane (AMM 07-11-01/201).





Main Gear Downlock Spindle Installation
Figure 401

E. Remove the Downlock Spindle.

S 844-006
(1) Hold the downlock assembly to prevent movement.

S 014-007
(2) Remove the clevis pin to disconnect the head end of the downlock actuator from the upper downlock link (View A-A).

S 014-008
(3) Remove the upper bolt to disconnect the upper downlock link from the downlock spindle. Tie the upper link and the actuator out of the area.

S 014-009
(4) Remove the bolts to disconnect the antirotation bracket from the downlock spindle (View A-A).

S 014-010
(5) Remove the nut to disconnect the downlock spindle from the upper support fitting.

S 024-011
(6) Remove the downlock spindle.

TASK 32-11-15-404-012

3. Install the Downlock Spindle for the Main Landing Gear (Fig. 401)

A. Equipment
(1) Door Lock, Landing Gear - (AMM 32-00-15/201)

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Recommended)
(2) D00013 Grease - MIL-G-23827 (Alternative)
(3) D00054 Lubricant, Hydraulic Systems - MCS-352B

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 32-00-15/201, Landing Gear Door Locks

D. Access
(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

E. Install the Downlock Spindle.

S 644-013
(1) Apply grease to the shaft of the downlock spindle, the antirotation bolt, the washers, the nuts, and the cotter pin.

S 414-014
(2) Install the spindle on the upper support fitting.

S 434-015
(3) Tighten the nut to 480-600 pound-inches. Loosen the nut and then tighten it to 60-120 pound-inches to get the clearance between the washer and the nut. Loosen to the nearest lock position to install the antirotation bolt as shown (View A-A).

S 414-018
(4) Install the bolts, the washers, and the nuts to connect the anitrotation bracket to the downlock spindle. Install one washer behind each nut.

S 414-015
(5) Apply grease to the upper bolt, the tang washer, the nut, and the cotter pin. Install these parts to connect the upper downlock link to the downlock spindle. Tighten the nut to 100-300 pound-inches.

S 424-016
(6) Apply the lubricant to the clevis pin. Install the clevis pin to connect the head end of the downlock actuator to the upper downlock link.

F. Put the Airplane Back to Its Usual Condition

S 414-017
(1) Apply grease to the washer, the nut, and the cotter pin. Install these parts. Tighten the nut to 100-200 pound-inches and install the cotter pin (Section A-A).

NOTE: Use caution to prevent contamination to the hydraulic system.

S 644-018
(2) Lubricate the spindle at the grease fittings with grease.

S 584-019
(3) Lower the airplane and remove the jacks (AMM 07-11-01/201).

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 OR DAMAGE TO EQUIPMENT.

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

MAIN GEAR TORSION LINKS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the torsion links on the main landing gear. The second task installs the torsion links on the main landing gear.

TASK 32-11-16-004-001

2. Remove the Torsion Links for the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Thread Protector Set, MLG - B32011-14
      (2) Crowfoot Wrench - F70312-36, -47
   B. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 32-00-20/201, Landing Gear Downlocks
      (3) AMM 32-12-04/401, Main Gear Strut Door
      (4) AMM 32-45-01/401, Main Gear Wheel and Tire
   C. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

   D. Prepare to Remove the Torsion Links

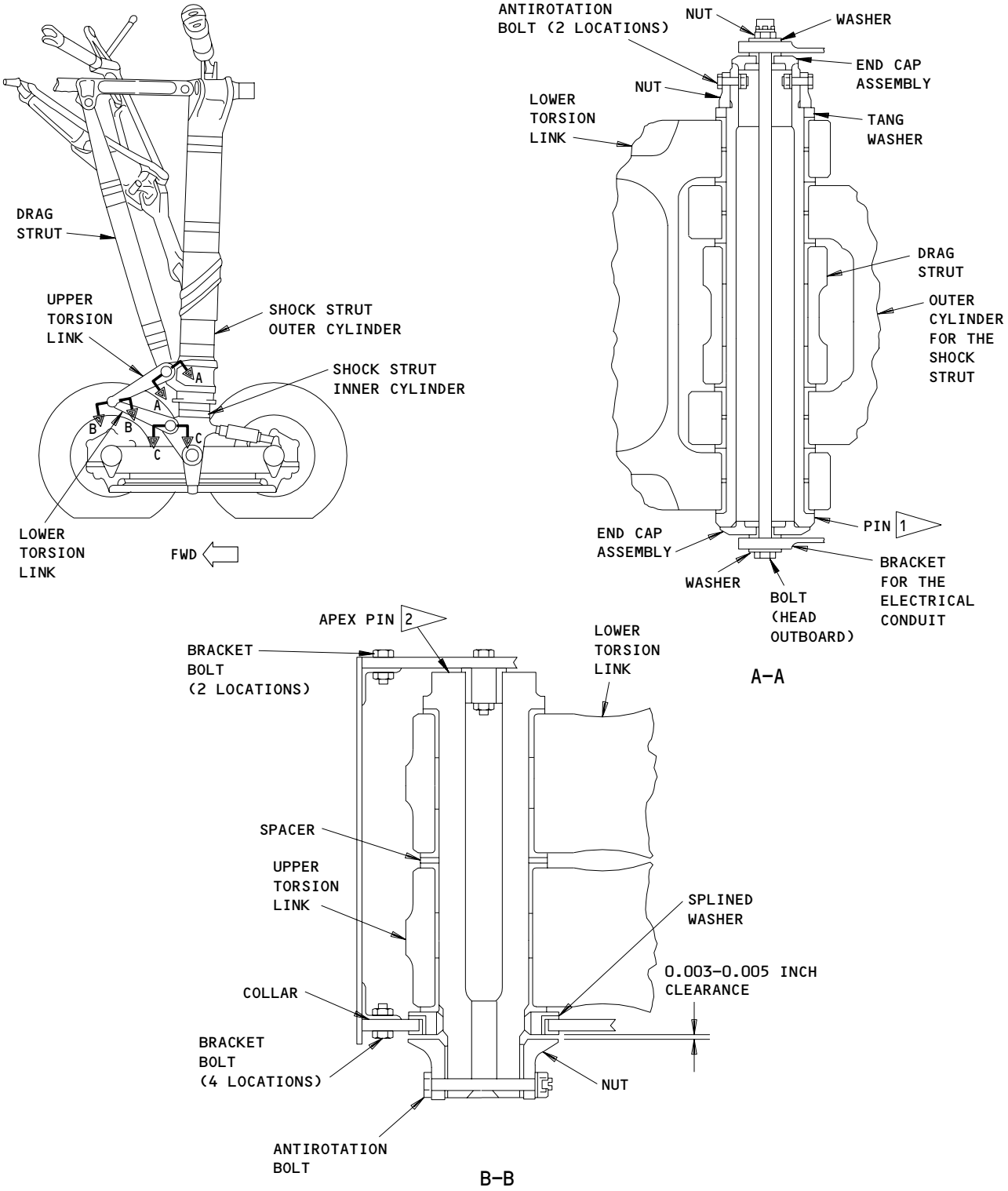
S 494-029

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.

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

S 864-002

(2) Put the control lever for the landing gear in the OFF position. Attach a DO-NOT-OPERATE tag.



Torsion Links Installation for the Main Landing Gear
Figure 401 (Sheet 1)

S 014-034
(3) Remove the strut door (AMM 32-12-04/401).

S 584-003
(4) Lift the airplane (AMM 07-11-01/201).

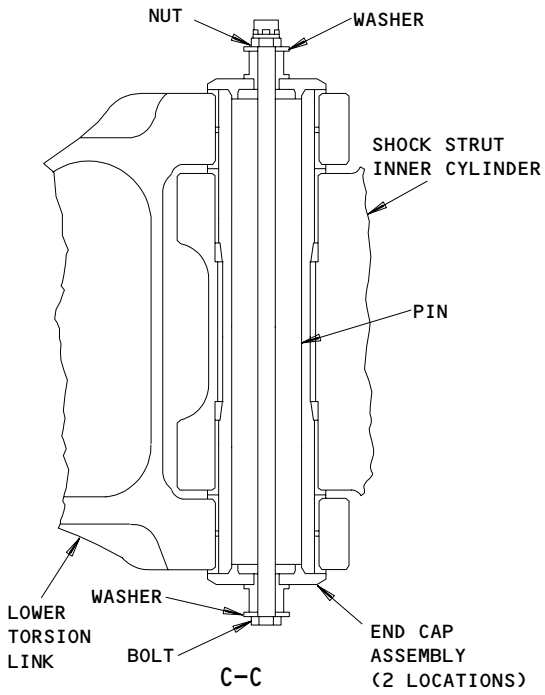
S 014-004
(5) Remove the forward wheels and the tires (AMM 32-45-01/401).

E. Remove the Torsion Links

S 014-005
(1) Remove the support bracket(s) for the electrical and the hydraulic lines from the upper torsion link.

S 864-030
(2) Hold the torsion links.

S 034-007
(3) Remove the bracket bolts that are near the nut on the apex pin. This will disconnect the support bracket from the collar.



1 INSTALL THE PIN WITH THE HEAD OUTBOARD

2 INSTALL THE PIN ON THE LEFT MAIN LANDING GEAR WITH THE HEAD INBOARD
INSTALL THE PIN ON THE RIGHT MAIN LANDING GEAR WITH THE HEAD OUTBOARD

Torsion Links Installation for the Main Landing Gear
Figure 401 (Sheet 2)

S 034-008

(4) Pull the support bracket away from the head of the apex pin. This will disconnect the bracket from the torsion link (View B-B).

S 034-009

(5) Remove the nut with the crowfoot wrench. Install the thread protector. Remove the apex pin to disconnect the upper and lower torsion links.

S 034-010

(6) Remove the pin to disconnect the lower torsion link from the inner cylinder of the shock strut (View C-C).

S 024-011

(7) Remove the lower link.

S 034-012

(8) Remove the nut with the crowfoot wrench. Install the thread protector. Remove the pin to disconnect the upper torsion link from the outer cylinder of the shock strut (View A-A).

S 024-013

(9) Remove the upper link.

NOTE: Removal of the pin from the upper torsion link will release the lower end of the drag strut. Hold the drag strut out of the work area.

TASK 32-11-16-404-014

3. Install the Torsion Links for the Main Landing Gear (Fig. 401)

A. Equipment

(1) Thread Protector Set, MLG - B32011-14

(2) Crowfoot Wrench - F70312-36, -47

B. Consumable Materials
   (1) C00174 Compound - Corrosion Prevention, MIL-C-16173 grade 4
   (2) D00633 Grease - BMS 3-33 (Recommended)
   (3) D00013 Grease - MIL-G-23827 (Alternative)

C. References
   (1) AMM 07-11-01/201, Jacking Airplane
   (2) AMM 32-00-20/201, Landing Gear Downlocks
   (3) AMM 32-12-04/401, Main Gear Strut Door
   (4) 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 Oleo Doors

E. Install the Torsion Links

S 624-015
   (1) Apply the corrosion prevention compound to the inner diameter of the pins.

S 414-017
   (2) Apply grease to the pin, the end cap assemblies, the bolt, the washers, the nut, and the cotter pin. Install these parts to connect the lower torsion link to shock strut inner cylinder of the shock strut. Tighten the nut to 150-250 pound-inches. Loosen to the nearest lock position to install the cotter pin (View C-C).

S 414-018
   (3) Install the thread protector. Apply grease to the pin, the tang washer, the antirotation bolts, and the nut. Install the pin, the tang washer, the nut and the antirotation bolts to connect the upper torsion link and the drag strut to the outer cylinder of the shock strut. Tighten the nut with the crowfoot wrench to 70-90 pound-feet. If it is necessary, loosen the nut to the nearest lock position to install the antirotation bolts (View A-A). A zero torque condition in this position is acceptable.

S 644-032
   (4) Apply grease to the bolt, the bracket for the hydraulic lines, the end cap assemblies, the washers, the nut, and the cotter pin. Install these parts to connect the bracket to the torsion link. Make sure the head of the bolt is outboard. Tighten the nut to 150-200 pound-inches. If it is necessary, loosen the nut to the nearest lock position to install the cotter pin (View A-A).

S 424-021
(5) Install the thread protector. Apply grease to the apex pin, the spacer, the collar, the antirotation bolt, the washers, and the nuts. Install these parts to connect the upper and the lower torsion links. Tighten the nut with the crowfoot wrench to 150-200 pound-feet. Loosen the nut, then tighten to 5-10 pound-feet for the clearance. Loosen to the nearest lock position to install the antirotation bolt.

S 434-022
(6) Push the support bracket into the head of the apex pin as shown on Fig. 401 (View B-B).

S 434-023
(7) Attach the support bracket to the collar with the bracket bolts.

F. Put the Airplane Back to Its Usual Condition

S 434-024
(1) Connect the support bracket(s) for the electrical lines and the hydraulic lines to the upper torsion link.

S 644-025
(2) Lubricate the links at the grease fittings.

S 414-026
(3) Install the wheels and tires on the main landing gear (AMM 32-45-01/401).

S 864-031
(4) Remove the DO-NOT-OPERATE tag and put the control lever for the landing gear to the DN position.

S 584-027
(5) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 414-035

(6) Install the strut door (AMM 32-12-04/401).

MAIN GEAR TORSION LINKS - INSPECTION/CHECK

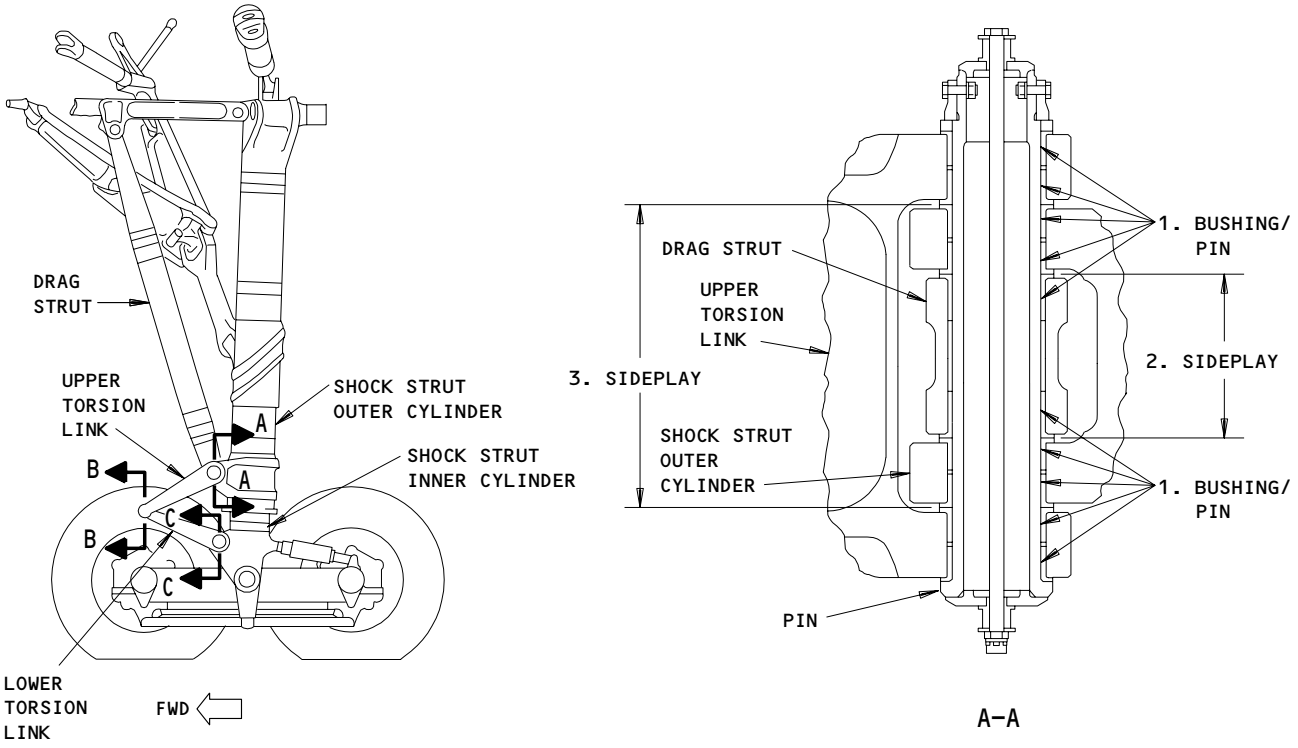
1. General
   A. This procedure only has an illustration and a wear limit table which shows the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Gear Torsion Links - Removal/Installation for procedures to do these tasks.

TASK 32-11-16-206-002

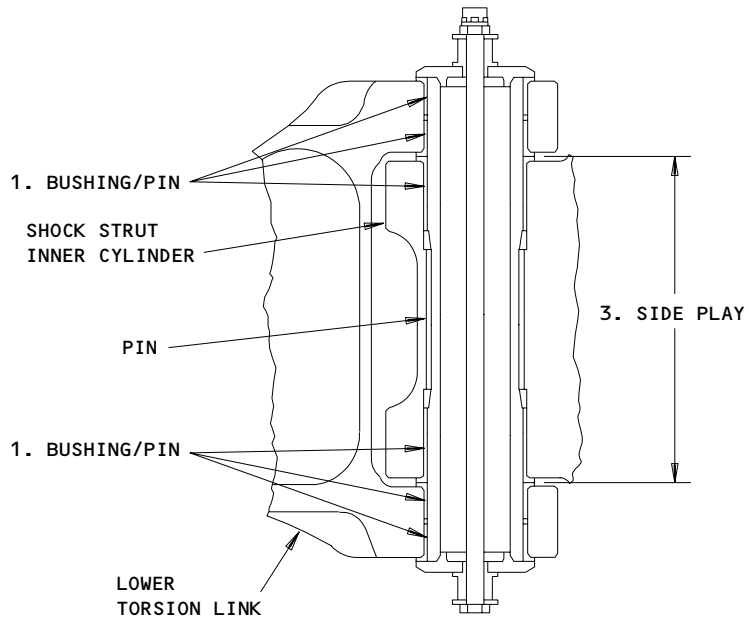
2. Wear Limits for the Torsion Links of the Main Landing Gear (Fig. 601)
   A. Wear Limits for the Torsion Links

S 226-001

(1) Refer to Fig. 601 for the inspection points and the wear limits table.



Main Landing Gear Torsion Links Wear Limits
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	BUSHING	ID	2.7500	2.7510	2.7560	0.007	X		
	PIN	OD	2.7480	2.7490	2.7450			X	1
2	DRAG STRUT BUSHING	2	4.996	4.998	4.9930	0.016 AXIAL	X		
	SHOCK STRUT BUSHING	3	5.001		5.004		X		
3	TORSION LINK BUSHING	3	9.2500	9.2520	9.2570	0.016 AXIAL	X	4	
	SHOCK STRUT BUSHING	2		9.249	9.244		X	4	
4	BUSHING	ID	1.8750	1.8760	1.880	0.006	X		
	PIN	OD	1.8730	1.8740	1.870			X	1

1 THE PART IS REPAIRABLE; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE REPAIR INSTRUCTIONS.

2 DISTANCE ACROSS BUSHING FLANGES

3 DISTANCE BETWEEN BUSHING FLANGES

4 THE PART IS REPAIRABLE; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR SPECIAL SHIM AND REPAIR INSTRUCTIONS.

Main Landing Gear Torsion Links Wear Limits
Figure 601 (Sheet 2)

MAIN GEAR TRUCK ASSEMBLY - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the truck assembly for the main landing gear. The second task installs the truck assembly for the main landing gear.

TASK 32-11-17-004-001

2. Remove the Truck Assembly from the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Thread Protector Set, MLG - B32011-14
      (2) Shock Strut Lock Equipment, MLG - B32028-1
      (3) Crowfoot Wrench - F70312-22
   B. References
      (1) AMM 07-11-01/201, Jacking Airplane
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-20/201, Landing Gear Downlocks
      (4) AMM 32-11-19/401, Main Gear Brake Rod
      (5) AMM 32-12-04/401, Main Gear Strut Door
      (6) AMM 32-41-10/401, Main Gear Wheel Brake
      (7) AMM 32-42-06/401, Antiskid Transducer
      (8) AMM 32-45-01/401, Main Gear Wheel and Tire
   C. Access
      (1) Location Zones

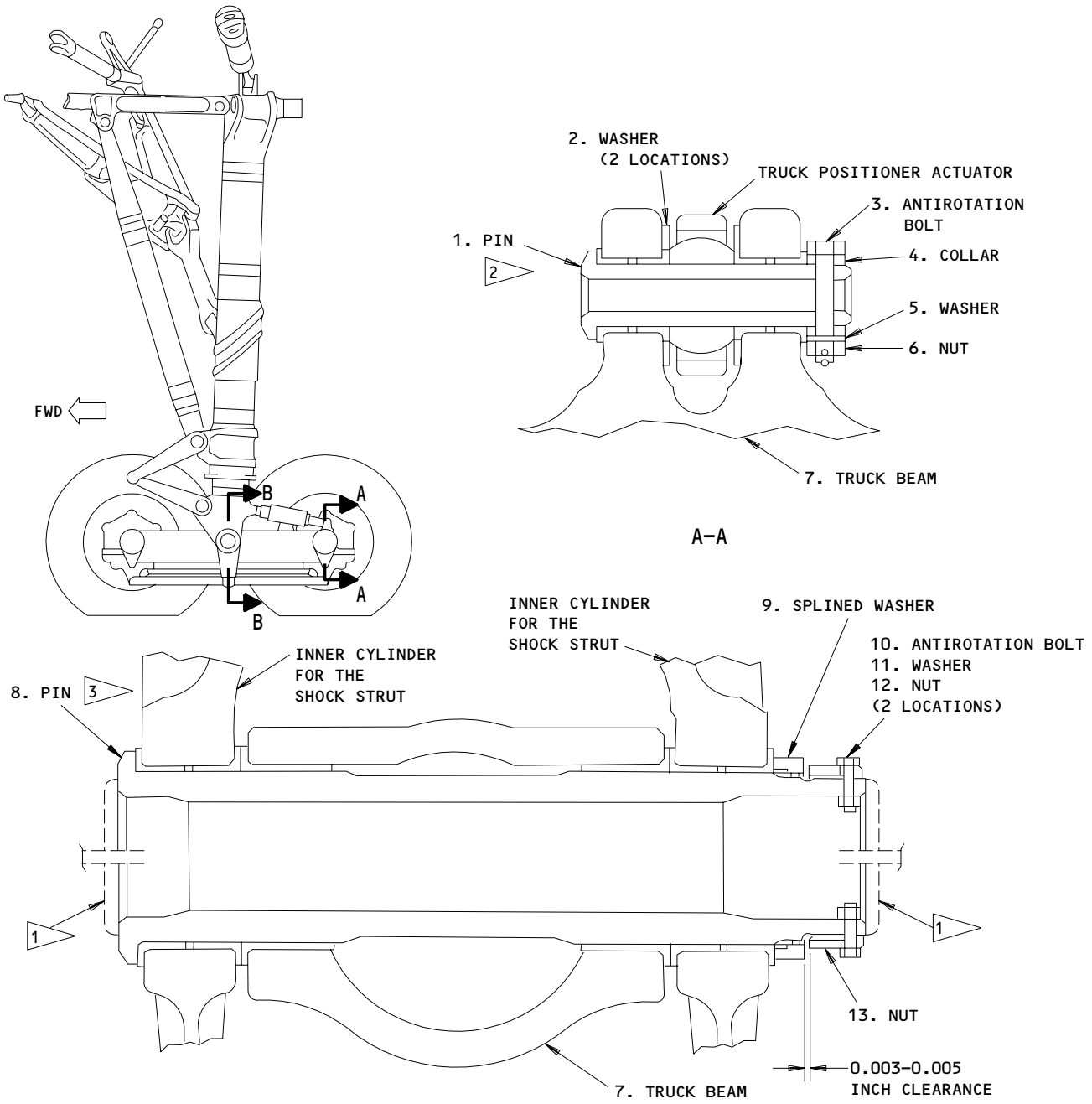
211/212	Control Cabin
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

   D. Prepare for the Removal of the Truck Assembly

S 844-002
(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 left hydraulic system and reservoir (AMM 29-11-00/201).

S 864-004
(3) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
(a) 11S18, LDG GEAR ANTISKID 1-5

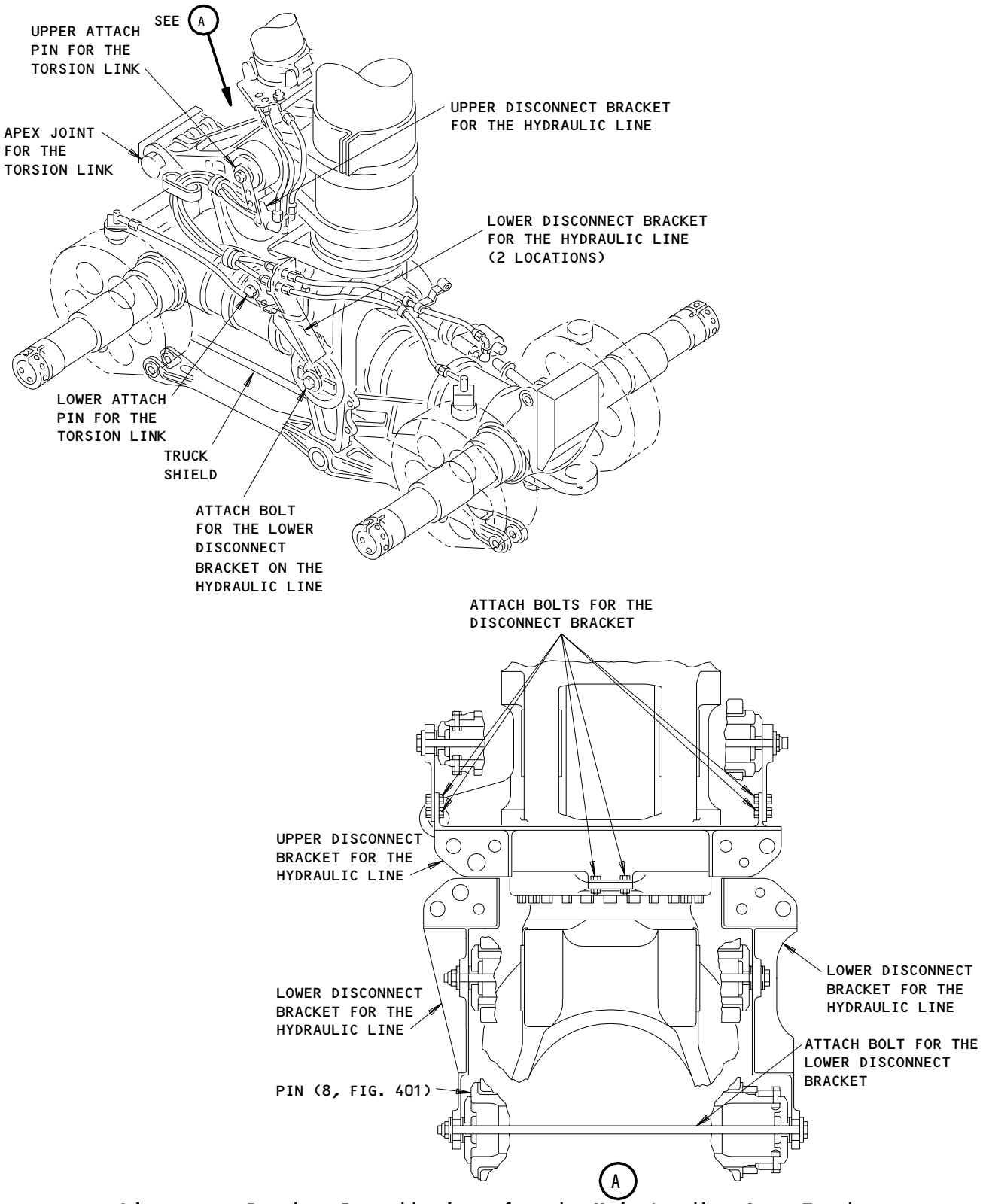


1 HYDRAULIC DISCONNECT BRACKET INSTALLATION. SEE FIG. 402

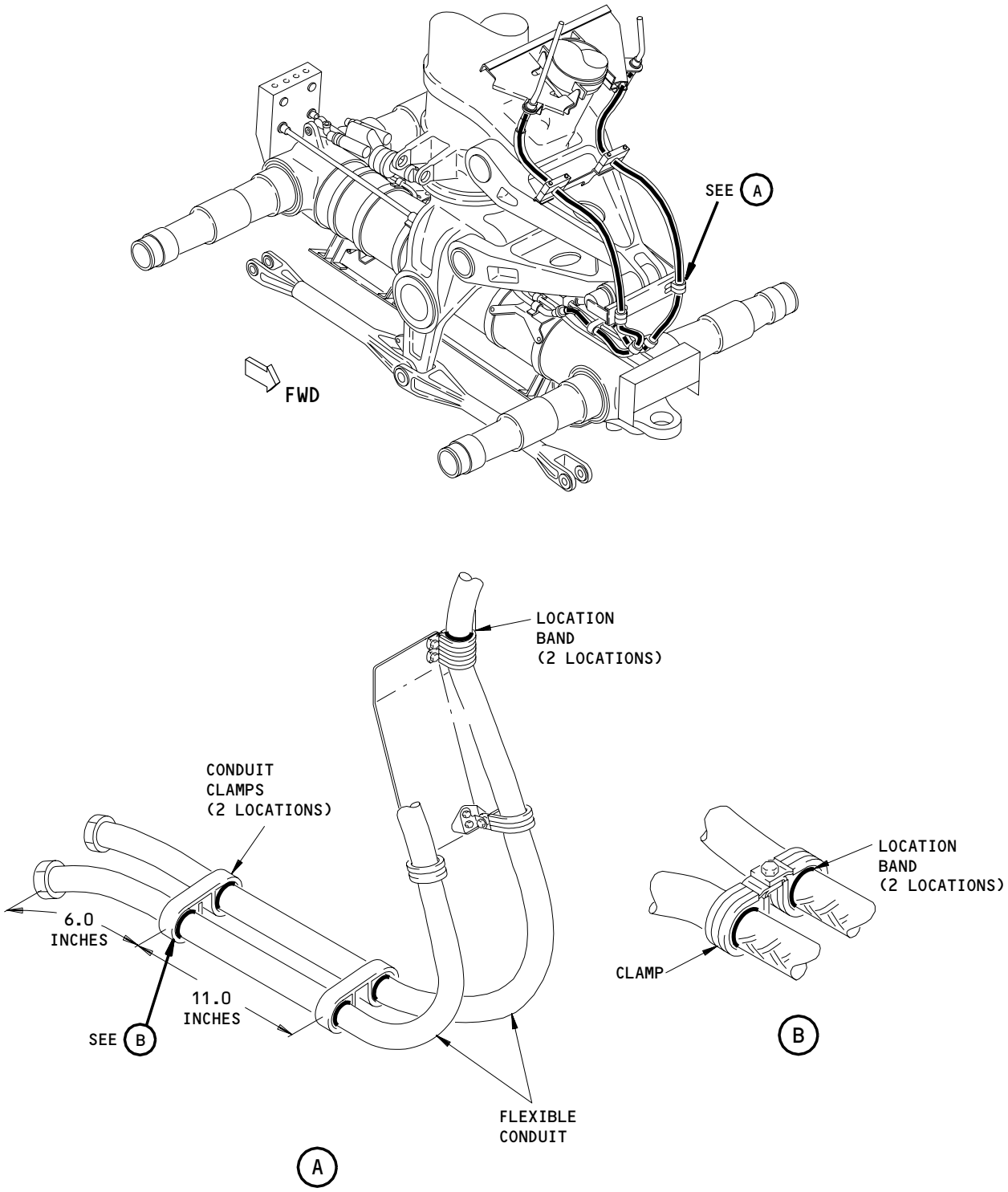
2 INSTALL THE PIN HEAD ON THE OUTBOARD SIDE FOR THE LEFT GEAR. FOR THE RIGHT GEAR, INSTALL THE PIN HEAD ON THE INBOARD SIDE.

3 INSTALL TRUCK PIVOT PIN WITH HEAD INBOARD FOR LEFT AND RIGHT GEAR.

Truck Assembly Installation for the Main Landing Gear
Figure 401



Disconnect Bracket Installations for the Main Landing Gear Truck
Figure 402



Electrical Conduit Installation for the Main Landing Gear Truck
Figure 403

(b) 11C31, ANTISKID 2-6 (Left Gear)
(c) 11C32, ANTISKID 3-7 (Right Gear)
(d) 11S22, ANTISKID 4-8 (Right Gear)
(e) AIRPLANES WITH BRAKE TEMPERATURE MONITORING SYSTEM;
11S16, BRAKE TEMP

S 864-056

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.

S 034-059
(5) If you will use the shock strut lock, remove the shock strut door (AMM 32-12-04/401).

S 864-037
(6) Lock the strut in the compressed position with the shock strut lock. Use the instructions supplied with the tool.

S 864-006
(7) Deflate the shock strut and install the shock strut lock as follows:

NOTE: It is not mandatory to deflate the strut and lock it in the compressed position with the shock strut lock. The airplane must be lifted to let the inner cylinder extend fully and for the tires to be above the ground.

(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 OUT AND CAN CAUSE INJURY TO PERSONS.

(b) Loosen the air valve nut two turns. Let the shock strut deflate fully. Install a flexible hose on the valve. Put the other end of the hose in a drain bucket to catch the hydraulic fluid.
(c) Loosen the air valve nut fully.
(d) Disconnect the disconnect brackets for the hydraulic lines. The brackets attach to the inner and outer cylinders at the upper and lower torsion link attach points.
(e) Disconnect the upper and lower attach brackets (Fig. 402).
(f) Move the hoses to permit installation of the shock strut lock equipment.
(g) Remove the upper and the lower attach pins for the torsion link.

(h) Install the strut lock equipment and lock the strut in the compressed position. Use the instructions supplied with the tool.

S 584-007

(8) Lift the airplane until the tires are above the ground (AMM 07-11-01/201).

E. Remove the Truck Assembly

S 014-008

(1) Remove the wheels and the tires (AMM 32-45-01/401).

S 014-009

(2) Remove the antiskid transducers (AMM 32-42-06/401). Pull the antiskid wires out of the axles and tag them.

S 014-010

(3) Remove the brake rods (AMM 32-11-19/401).

S 034-072

(4) AIRPLANES WITH BRAKE TEMPERATURE MONITORING SYSTEM; Disconnect the electrical lines from the brake temperature sensors.

S 014-012

(5) Remove the wheel brakes (AMM 32-41-10/401).

S 034-013

(6) Disconnect the hydraulic lines and the electrical lines from the brackets on the side of the truck beam.

S 034-014

(7) Seal the hydraulic fittings and cap the electrical connectors.

S 034-057

(8) Disconnect the electrical lines from the junction box at each end of the truck beam.

S 014-016

(9) Remove the junction boxes.

S 034-017

(10) Cap the electrical connectors.

S 034-020
(11) Disconnect the clamps and remove the truck shield from the truck beam.

S 034-021
(12) Disconnect the proximity sensors for the truck tilt. Hold the sensors out of the way.

S 014-022
(13) Remove the pin (1) to disconnect the rod end of the truck positioner actuator from the truck beam (View A-A). Hold the actuator out of the way.

S 844-023
(14) Use a rope or a sling to hold the truck.

S 014-024
(15) Remove the shock strut lock and slowly lower the truck on a transportation dolly.

S 844-025
(16) Wind a rope around the fork of the inner cylinder. Lift the inner cylinder to release the pressure on the pivot pin for the truck.

S 014-026
(17) Remove the nut (13) with the crowfoot wrench. Install the thread protector.

S 014-027
(18) Remove the pin (8) to disconnect the truck assembly from the inner cylinder of the shock strut (View B-B).

S 584-028
(19) Lift the inner cylinder until it is clear.

S 024-029
(20) Remove the truck assembly (7) from the area.

TASK 32-11-17-404-030

3. Install the Truck Assembly for the Main Landing Gear (Fig. 401)

A. Equipment
(1) Thread Protector Set, MLG - B32011-14
(2) Shock Strut Lock Equipment, MLG - B32028-1
(3) Crowfoot Wrench - F70312-22

B. Consumable Materials
(1) C00174 Compound - Corrosion Prevention, MIL-C-16173 grade 4

(2) D00633 Grease - BMS 3-33 (Recommended)
(3) D00013 Grease - MIL-G-23827 (Alternative)
(4) D00528 Lubricant - ROYCO 11MS

C. Parts

MM		NOMENCLATURE	IPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	7	Truck Assembly	32-11-17	01	45

D. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 07-11-03/201, Jacking Airplane Axles
(3) AMM 12-21-14/301, Main Gear and Actuating Mechanisms
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 32-09-07/201, Main Gear Truck Tilt Sensors
(6) AMM 32-11-19/401, Main Gear Brake Rod
(7) AMM 32-12-04/401, Main Gear Strut Door
(8) AMM 32-41-10/401, Main Gear Wheel Brake
(9) AMM 32-42-06/401, Antiskid Transducer
(10) AMM 32-45-01/401, Main Gear Wheel and Tire

E. Access
(1) Location Zones
211/212 Control Cabin
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Oleo Doors

F. Install the Truck Assembly

S 844-031
(1) Put the truck assembly in the correct position under the shock strut.

S 584-032
(2) Lower the inner cylinder to align the holes for the pivot pin.

S 624-033
(3) Apply the corrosion prevention compound to the inner diameter of the pins (1, 8).

S 424-034
(4) Install the thread protector. Apply Royco 11MS lubricant to the pin (8), the washer (9) and the nut (13). Install these parts to connect the truck assembly (7) to the inner cylinder of the shock strut. Tighten the nut (13) to 150-200 pound-feet. Loosen the nut, then tighten to 5-10 pound-feet until there is clearance between the washer and the nut. Loosen to the nearest lock position to install the antirotation bolts (View B-B).

S 414-035
(5) Install the antirotation bolts (10), the washers (11), and the nuts (12).

S 844-036
(6) Put the axle jacks under the truck. Lift the truck beam with the jacks until there is clearance for the installation of the wheels and the tires (AMM 07-11-03/201).

S 434-037
(7) Apply grease (BMS 3-33) to the pin (1), antirotation bolt (3), collar (4), washers (2, 5), nut (6), and the cotter pin. Install these parts to connect the rod end of the truck positioner actuator to the truck beam (View A-A).

S 434-038
(8) Connect the proximity sensors for the truck tilt.

S 414-039
(9) Install and tighten the clamps to install the shield to the truck beam.

S 414-040
(10) Install the junction boxes on each end of the truck beam. Connect the electrical lines.
   (a) AIRPLANES WITH ELECTRICAL CONDUIT THAT HAVE LOCATION BANDS; Make sure the clamps on the flexible electrical conduit are installed just below or just aft of the location band on the conduit(s) (Fig. 403).

S 414-042
(11) Install the disconnect brackets for the hydraulic line (with hoses attached) to the main landing gear (Fig. 402).

S 844-043
(12) Make sure the pressure is removed from the left hydraulic system (AMM 29-11-00/201). Connect the hydraulic lines and the electrical lines to the brackets on the side of the truck beam.

S 414-044
(13) Install the wheel brakes (AMM 32-41-10/401).

S 434-044
(14) AIRPLANES WITH BRAKE TEMPERATURE MONITORING SYSTEM; connect the electrical lines to brake temperature sensors.

S 414-046
(15) Install the brake rods (AMM 32-11-19/401).

S 844-083

CAUTION: DO NOT TWIST THE WIRING HARNESS WHEN YOU INSTALL THE TRANSDUCER. CAREFULLY INSTALL THE ANTI-SKID TRANSDUCER WIRING OR WIRING DAMAGE MAY OCCUR.

(16) Push the antiskid wires through the axles. Install the antiskid transducers (AMM 32-42-06/401).

S 414-048
(17) Install the wheels and the tires (AMM 32-45-01/401).

S 434-060
(18) Install the strut door if it was removed (AMM 32-12-04/401).

G. Put the Airplane Back to Its Usual Condition

S 494-049
(1) Remove the axle jacks (AMM 07-11-03/201).

S 644-050
(2) Lubricate the truck at the grease fittings (AMM 12-21-14/301).

S 584-051
(3) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 714-041
(4) Do the test of the truck tilt sensors with the deactuator test tool (AMM 32-09-07/201).

S 864-052
(5) Close these circuit breakers on the overhead circuit breaker panel, P11:
(a) 11S18, LDG GEAR ANTISKID 1-5

(b) 11C31, ANTISKID 2-6 (Left Gear)
(c) 11C32, ANTISKID 3-7 (Right Gear)
(d) 11S22, ANTISKID 4-8 (Right Gear)
(e) AIRPLANES WITH TEMPERATURE MONITORING SYSTEM;
11S16, BRAKE TEMP

S 714-039
(6) Do the test of antiskid operation for the antiskid transducers that were disconnected (AMM 32-42-06/401).

MAIN GEAR TRUCK ASSEMBLY - INSPECTION/CHECK

1. General
   A. This procedure contains two tasks. The first task consists of only an illustration, and a 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 Gear Truck Assembly - Removal/Installation for the procedures to do these tasks. The second task gives instruction to inspect and clear the drain hole in the aft section of the truck beam.
      (1) The first task consists of only an illustration, and a 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 Gear Truck Assembly - Removal/Installation for the procedures to do these tasks.
      (2) The second task gives instruction to inspect and clear the drain hole in the aft section of the truck beam.

TASK 32-11-17-206-002

2. Wear Limits for the Truck Assembly of the Main Landing Gear (Fig. 601)
   A. Wear Limits for the Truck Assembly

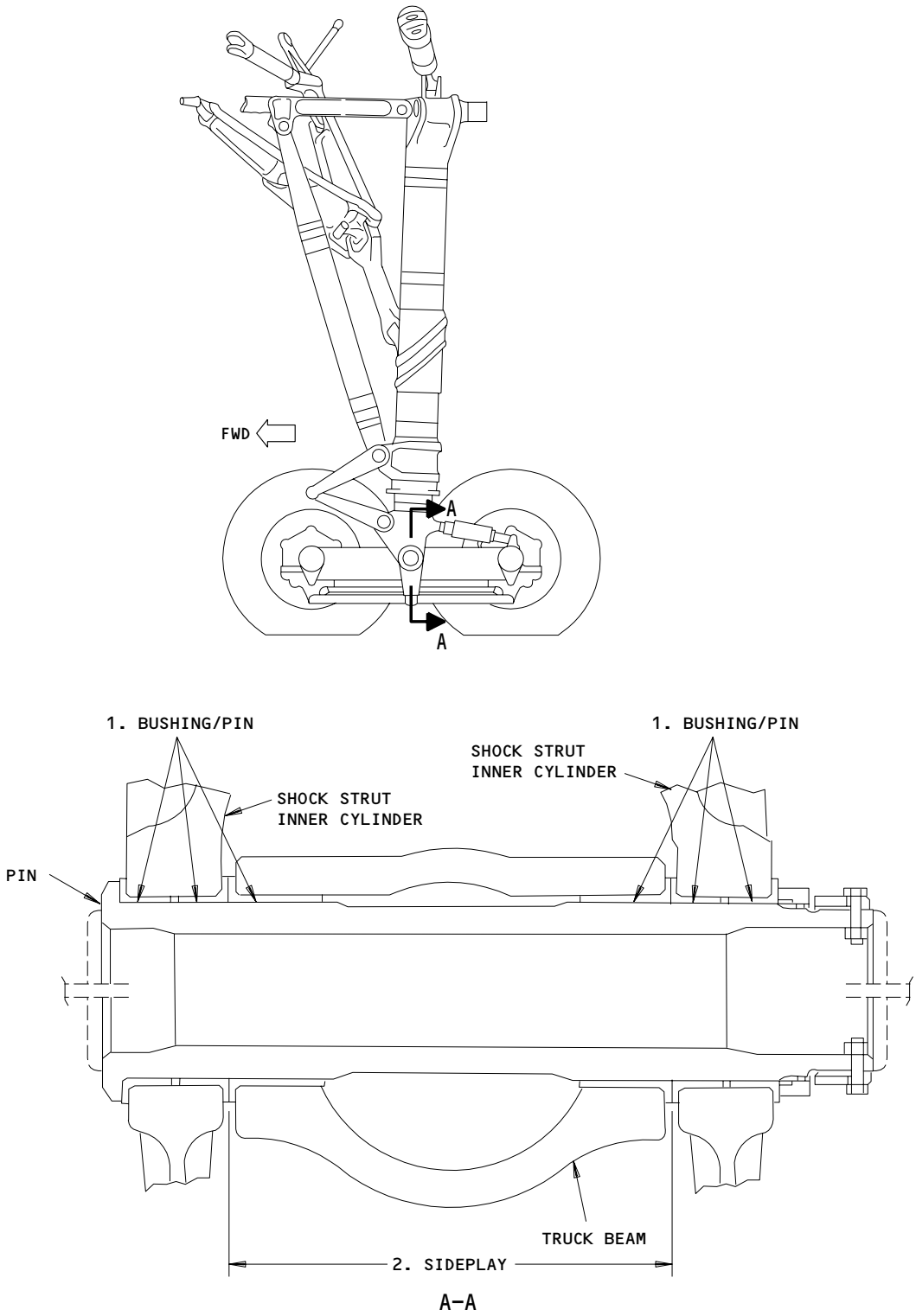
      S 226-001
      (1) Refer to Fig. 601 for the inspection points and the wear limits table.

TASK 32-11-17-206-009

3. Inspect the Drain Hole in the Aft Section of the Truck Beam (Fig. 602)
   A. Special Tools and Equipment
      (1) Wooden Rod 1/8 inch (0.3 cm) in diameter, more than 1 foot (30 cm) long. Commercially available.
   B. References
      (1) AMM 32-00-20/201 Landing Gear Downlocks
   C. Access
      (1) Location Zones
          731/741 Main Landing Gear (MLG)
   D. Prepare for the Inspection

      S 486-005
      (1) Install the ground lockpins for the landing gear (AMM 32-00-20/201).

      S 586-006
      (2) Put chocks around the wheels.



Main Landing Gear Truck Assembly 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 DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	3.7500	3.7510	3.7559	0.0069	X		
	PIN	OD	3.7480	3.7490	3.7441			X	1
2	TRUCK BEAM		9.2500	9.2510	9.2550	2 0.020			

PIVOT BUSHINGS WITH SPIRAL GROOVES

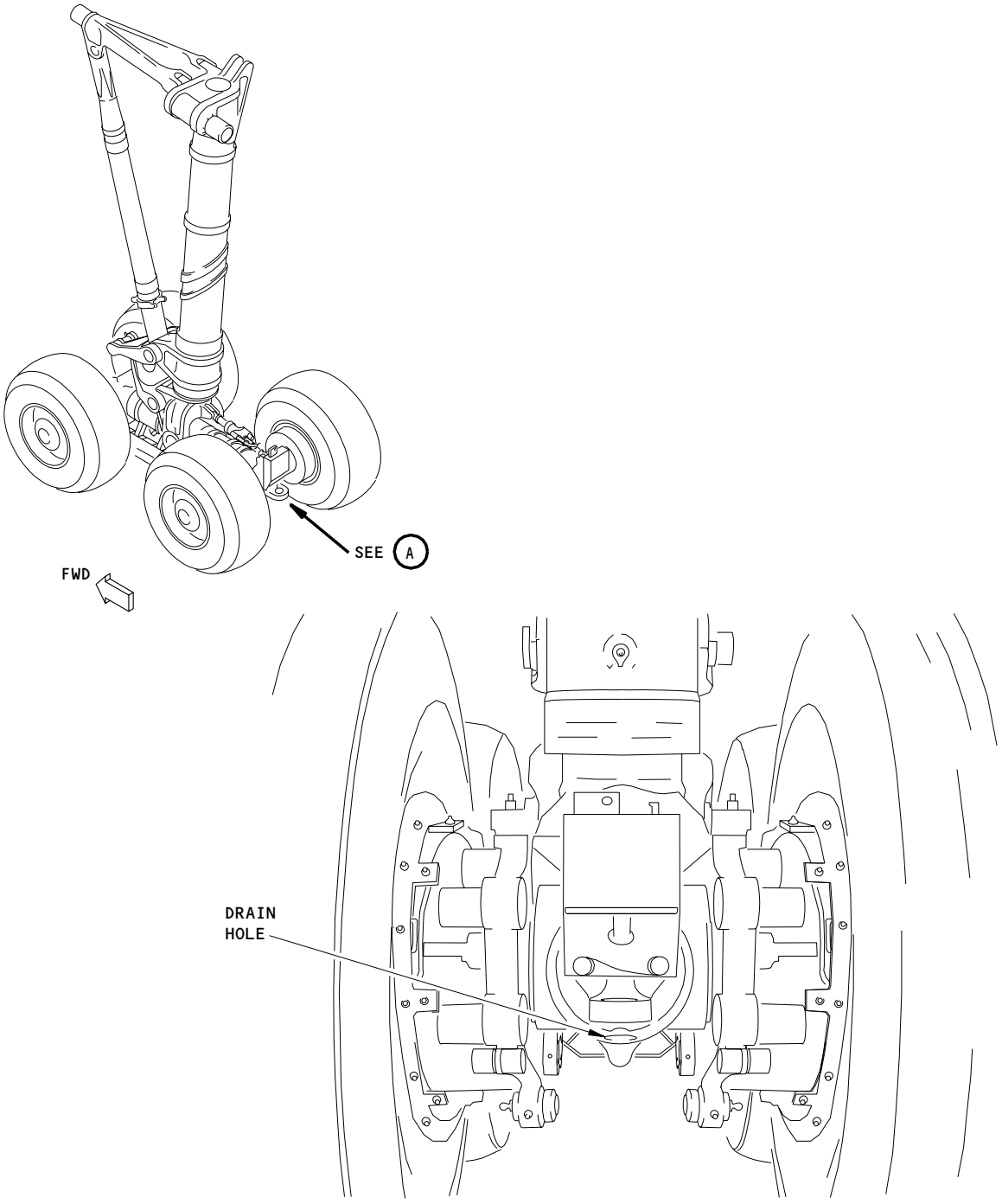
INDEX NO.	PART NAME	DIM.	DESIGN LIMITS DIAMETER MIN	DESIGN LIMITS DIAMETER MAX	WEAR LIMITS PERMITTED WEAR DIM.	WEAR LIMITS MAX DIA CLEARANCE	REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
1	BUSHING	ID	3.755	3.756	3.761	0.012	X		
	PIN	OD	3.7480	3.7490	3.744			X	1
2	TRUCK BEAM		9.2500	9.2510	9.2550	2 0.020			

PIVOT BUSHINGS WITH LADDER - TYPE GROOVES

1 THE PART IS REPAIRABLE; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE REPAIR INSTRUCTIONS.

2 SIDEPLAY

Main Landing Gear Truck Assembly Wear Limits
Figure 601 (Sheet 2)



Aft Drain Hole in the Truck Beam
Figure 602

E. Inspection

S 216-007

(1) Make sure the drain hole is open and not blocked with grease, paint, or any other material.

NOTE: There is only one drain hole in the landing gear truck, it is located in the bottom rear of the truck beam. The front of the truck is sealed. The drain hole allows water to leave the truck beam when it tilts during take off and landing.

S 146-008

CAUTION: DO NOT USE ANY TYPE OF METAL TOOL TO CLEAR THE DRAIN HOLE. METAL CAN SCRATCH THE PROTECTIVE COATINGS ON THE TRUCK. ONLY USE TOOLS MADE OF MATERIALS THAT WILL NOT SCRATCH. WOOD IS THE PREFERRED MATERIAL.

(2) Clear the drain hole with the wooden rod if it is blocked.

NOTE: Tongue Depressors may be used in place of wooden rods.

(a) Insert the rod into the drain hole about 8 inches (20 cm). Move the rod around in the hole to clear a drain path for the water.

NOTE: The hole is clear when no material is blocking the drain path. It might be necessary to pull loose grease out of the truck interior.

F. Put the Airplane Back to the Usual Condition.

S 586-010

(1) Remove the chocks if necessary.

MAIN GEAR BRAKE ROD - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the brake rod for the main landing gear. The second task installs the brake rod for the main landing gear.

TASK 32-11-19-004-001

2. Remove the Brake Rod for the Main Landing Gear (Fig. 401)
   A. References
      (1) AMM 07-11-03/201, Jacking Airplane Axles
      (2) AMM 32-00-20/201, Landing Gear Downlocks
      (3) AMM 32-45-01/401, Main Gear Wheel and Tire
   B. Access
      (1) Location Zones

211/212	Control Cabin
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

   C. Prepare for the Removal of the Brake Rod

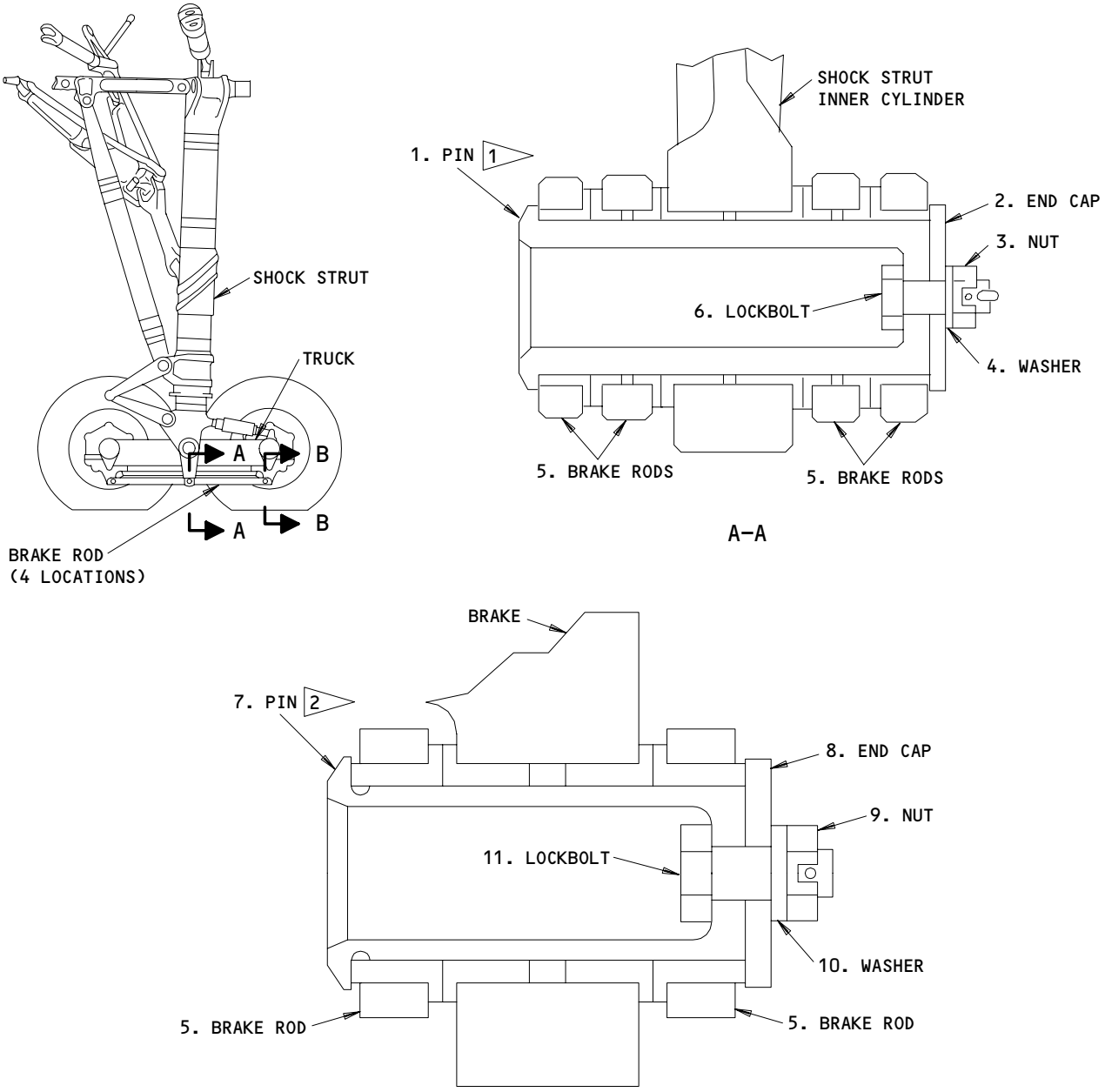
S 494-022

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.

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

S 844-003

(2) Put the control lever for the landing gear in the OFF position. Attach a DO-NOT-OPERATE tag to the lever.



1 INSTALL THE PIN WITH THE HEAD INBOARD

2 INSTALL THE PIN WITH THE HEAD ON THE TRUCK SIDE (PREFERRED)
INSTALL THE PIN WITH THE HEAD ON THE BRAKE SIDE (OPTIONAL)

Main Landing Gear Brake Rod Installation
Figure 401

D. Remove the Brake Rod

S 034-004
(1) If the lockbolt (11) is on the truck side of the pin, do the step that follows:

CAUTION: MAKE SURE YOU REMOVE THE LOCKBOLT AND THE NUT BEFORE YOU LIFT THE TRUCK. IF THESE PARTS ARE NOT REMOVED, DAMAGE CAN OCCUR TO THE LOCKBOLT THREADS.

(a) Remove the cotter pin, the lockbolt (11), the nut (9), and the end cap (8) which hold the pin (7) in position.

NOTE: Lockbolt (11) can be removed with a 9/16-inch deep socket tool. Insert the tool in the recess for pin (7).

S 584-005
(2) Lift the axle for the main landing gear (AMM 07-11-03/201).

S 034-006
(3) If the pin (7) is installed with its head on the brake side, do the step that follows:
(a) Remove the pin (7) while you hold the brake rod (5).

S 034-007
(4) If the pin (7) is installed with its head on the truck side, do the steps that follow:
(a) Pull pin (7) about half way out of the fitting on the brake assembly.
(b) Lower the main landing gear with the jack until the airplane weight is on the tires.
(c) Remove the jack if necessary for clearance to remove the pin (7).
(d) Remove the pin (7) while you hold the brake rod (5).

S 584-008
(5) Lift the axle nearest to the brake rod to be removed (AMM 07-11-03/201).

S 014-009
(6) Remove the wheel and the tire adjacent to the brake rod to be removed (AMM 32-45-01/401).

S 034-010
(7) Remove the pin (1) to disconnect the brake rods from the inner cylinder of the shock strut.

S 024-011
(8) Remove the brake rod (5).

TASK 32-11-19-404-012

3. Install the Brake Rod for the Main Landing Gear (Fig. 401)

A. Consumable Materials
(1) C00174 Compound - Corrosion Prevention, MIL-C-16173 grade 4
(2) D00528 Grease - Royco 11MS

B. Parts

MM		NOMENCLATURE	IPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	5	Brake Rod	32-11-19	01	50

C. References
(1) AMM 07-11-03/201, Jacking Airplane Axles
(2) AMM 12-21-14/301, Main Gear and Actuating Mechanisms
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 32-45-01/401, Main Gear Wheel and Tire

D. Access
(1) Location Zones
211/212 Control Cabin
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Oleo Doors

E. Install the Brake Rods

S 624-013
(1) Apply corrosion prevention compound to the inner diameter of the pins.

S 434-014
(2) Apply Royco 11MS grease to the pin (1), the end cap (2), the lockbolt (6), the washer (4), and the nut (3). Install the parts to connect the brake rod to the inner cylinder of the shock strut.
(a) Tighten the nut (3) to 100-200 pound-inches (View A-A).
(b) Install the cotter pin through the nut (3).

S 424-015
(3) Install the wheel and the tire on the main landing gear (AMM 32-45-01/401).

S 844-016
(4) Make sure the brake rod (5) does not touch the ground as the main landing gear is lowered to the ground.

S 584-017
(5) Lower the main landing gear and remove the jack (AMM 07-11-03/201).

S 424-018
(6) Connect the brake rod (5) to the brake by the subsequent steps:
(a) Apply Royco 11MS grease to the pin (7), end cap (8), lockbolt (11), washer (10), nut (9), and the cotter pin.
(b) Insert the pin (7) through the brake rod (5) and the brake assembly joint as shown on Fig. 401.
(c) Insert the lockbolt (11) through the hole at the bottom of the recess in pin (7).
(d) Insert the end cap (8) over the threaded end of the bolt (11).
(e) Install the lockbolt (11) and the end cap (8) with the washer (10), and the nut (9) to the pin (7).
1) Tighten the nut (9) to 100-200 pound-inches (View B-B).
2) Install the cotter pin through the nut (9).

F. Put the Airplane Back to Its Usual Condition

S 644-019
(1) Lubricate the brake rods at the grease fittings (AMM 12-21-14/301).

S 844-020

(2) Remove the DO-NOT-OPERATE tag from the control lever for the landing gear.

S 844-021

(3) Move the control lever for the landing gear to the DN position.

MAIN GEAR BRAKE ROD - INSPECTION/CHECK

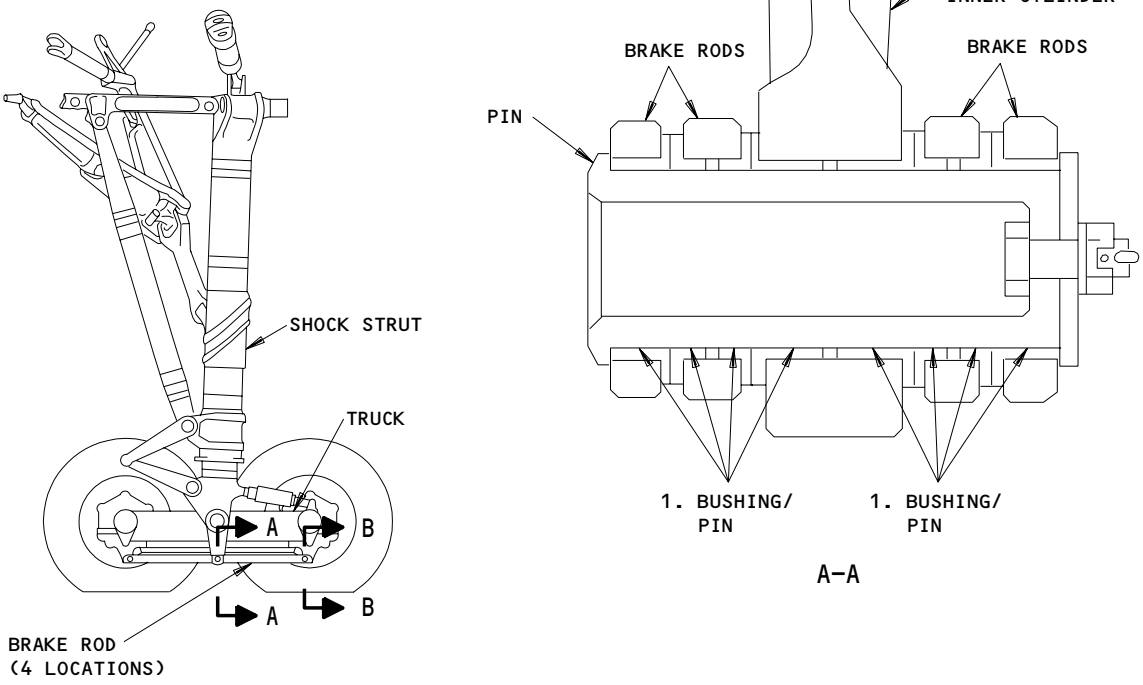
1. General
   A. This procedure only has an illustration, and a wear limit table which shows the data for wear limits. There are no procedures for access, removal or installation of the parts. Refer to the Main Gear Brake Rod - Removal/Installation for the procedures to do these tasks.

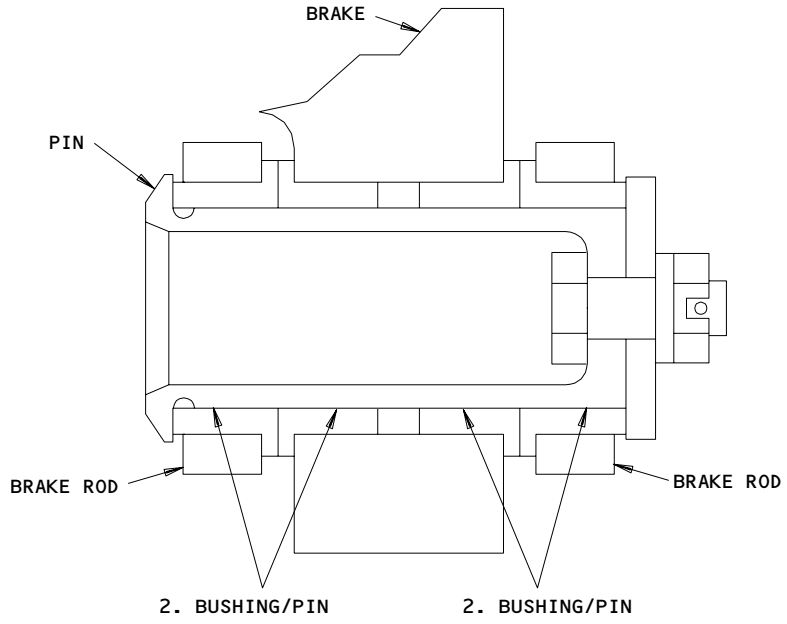
TASK 32-11-19-206-002

2. Wear Limits for the Brake Rod of the Main Landing Gear (Fig. 601)
   A. Wear Limits for the Brake rod

S 226-001

(1) Refer to Fig. 601 for the inspection points and the wear limits table.





Main Landing Gear Brake Rod 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	BUSHING	ID	1.6250	1.6260	1.6295	0.0055	X		
	PIN	OD	1.6230	1.6240	1.6205			X	1
2	BUSHING	ID	1.1870	1.1880	1.1912	0.0052	X		
	PIN	OD	1.1850	1.1860	1.1828			X	1

1 THE PART IS REPAIRABLE; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE REPAIR INSTRUCTIONS.

Main Landing Gear Brake Rod Wear Limits
Figure 601 (Sheet 2)

MAIN GEAR DOWNLOCK SPRINGS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the downlock springs on the main landing gear. The second task installs the downlock springs on the main landing gear.

TASK 32-11-22-004-015

2. Remove the Downlock Springs for the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Downlock Spring Extender, MLG and NLG - B32002-1
   B. References
      (1) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones

211/212	Control Cabin
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

   D. Prepare for the Removal of the Downlock Springs

S 494-019

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.

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

S 844-001

(2) Put the control lever for the landing gear in the OFF position and attach a DO-NOT-OPERATE tag.

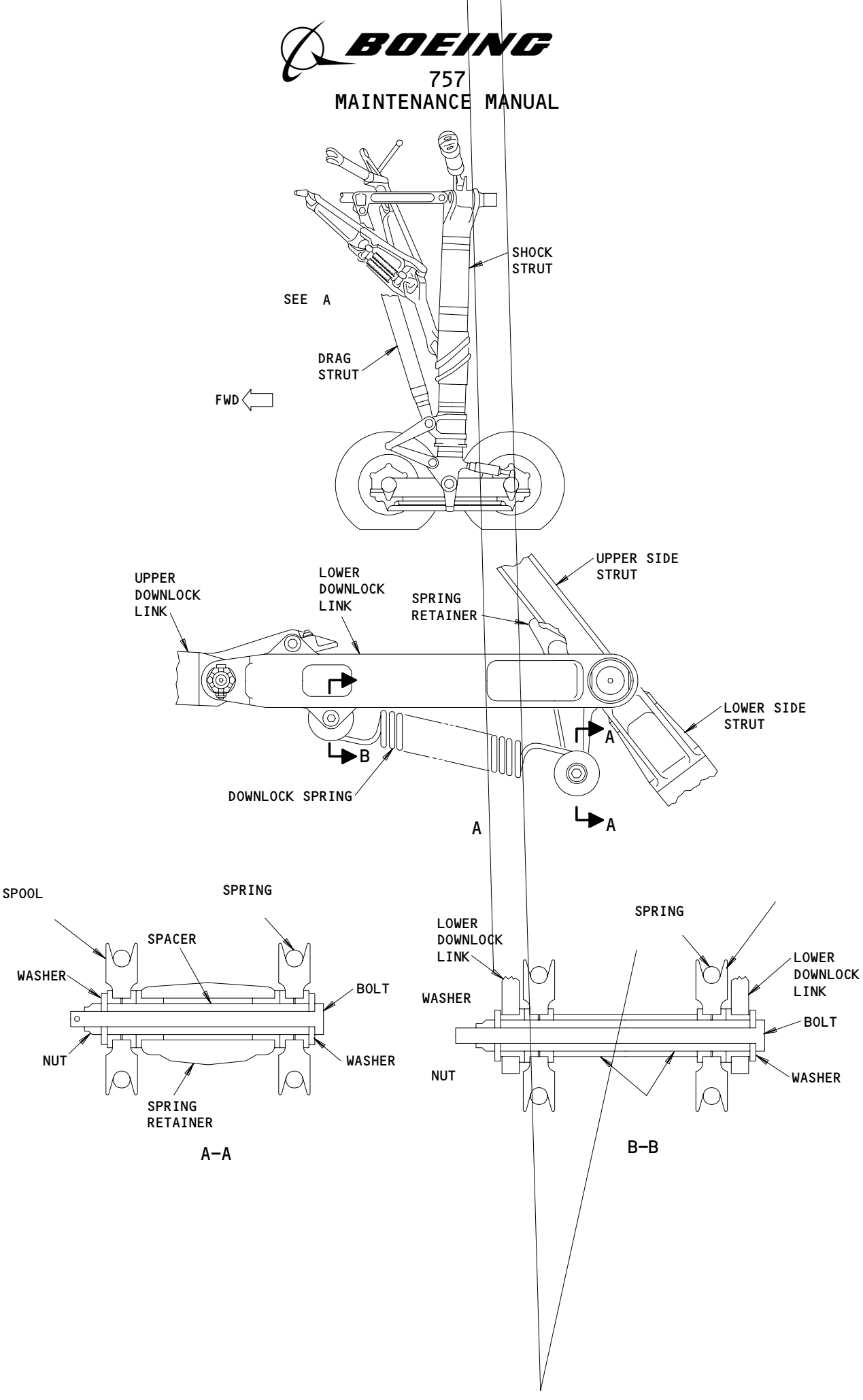
   E. Remove the Downlock Springs

S 494-002

(1) Install the spring extender. Use the instructions supplied with the tool.

S 864-003

(2) Extend the springs to release the pressure on the attach bolts.


SHOCK STRUT
SEE A
DRAG STRUT
FWD
UPPER DOWNLOCK LINK
LOWER DOWNLOCK LINK
SPRING RETAINER
UPPER SIDE STRUT
LOWER SIDE STRUT
B
A
DOWNLOCK SPRING
A
A
SPOOL
SPRING
SPACER
WASHER
BOLT
NUT
WASHER
SPRING RETAINER
A–A
SPRING
LOWER DOWNLOCK LINK
LOWER DOWNLOCK LINK
WASHER
BOLT
NUT
WASHER
B–B

S 034-004
(3) Remove the bolt to disconnect the springs and the spools from the spring retainer (View A-A).

S 864-017
(4) Release the tension on the springs.

S 094-018
(5) Remove the spring extender.

S 034-005
(6) Remove the bolt to disconnect the springs and the spools from the lower downlock link (View B-B).

S 024-006
(7) Remove the downlock springs.

TASK 32-11-22-404-007

3. Install the Downlock Springs for the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Downlock Spring Extender, MLG and NLG - B32002-1
   B. References
      (1) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones

211/212	Control Cabin
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

   D. Install the Downlock Springs

S 434-008
(1) Install the bolt, the washers, the spacers, the nut, and the cotter pin to connect the springs and the spools to the lower downlock link (View B-B).

S 494-009
(2) Install the spring extender on the springs and the spools. Use the instructions supplied with the tool.

S 864-010
(3) Extend the springs. Put the springs in the correct position on the downlock links.

S 424-011
(4) Install the bolt, the spacer, the washers, the nut, and the cotter pin to connect the springs and the spools to the spring retainer (View A-A).

E. Put the Airplane Back to Its Usual Condition.

S 094-012
(1) Remove the spring extender from the springs.

S 094-016
(2) Remove the downlocks on the nose and main landing gear (AMM 32-00-20/201).

S 844-013
(3) Remove the DO-NOT-OPERATE tag from the control lever for the landing gear. Return the lever to DN.

MAIN GEAR DOWNLOCK SPRINGS - INSPECTION/CHECK

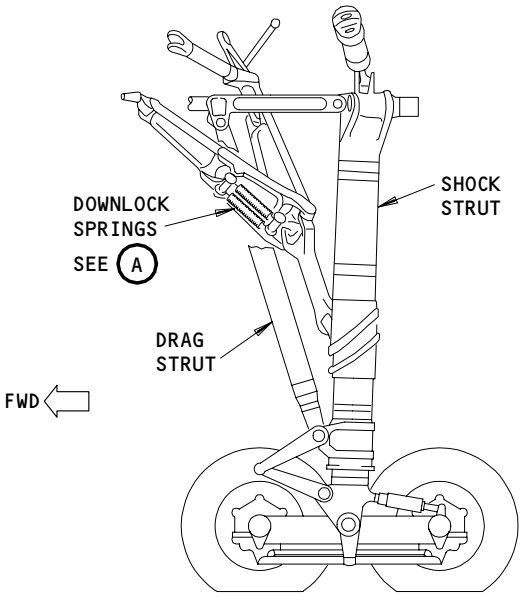
1. General
   A. This procedure has only an illustration, and a wear limit table which shows the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Gear Downlock Springs - Removal/Installation for the procedures to do these tasks.

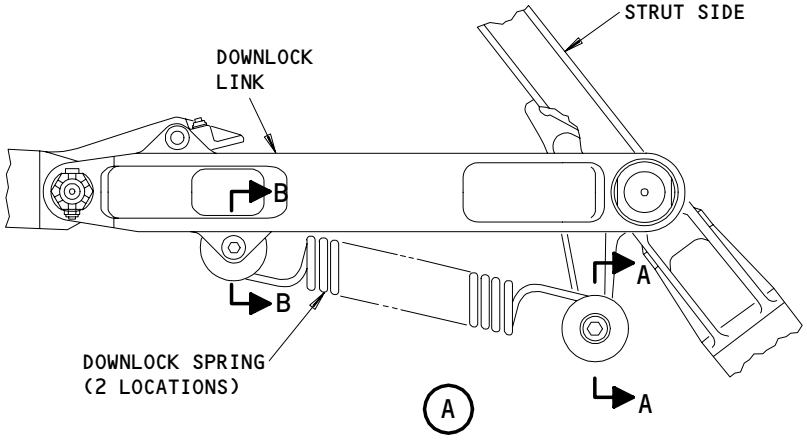
TASK 32-11-22-206-002

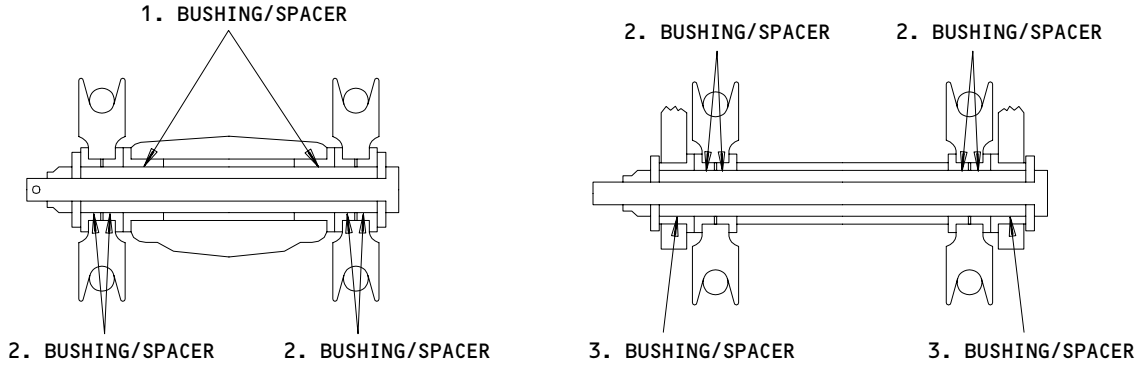
2. Wear Limits for the Downlock Springs of the Main Landing Gear (Fig. 601)
   A. Wear Limits for the Downlock Springs

S 226-001

(1) Refer to Fig. 601 for the inspection points and the wear limits table.







A–A B–B

Main Landing Gear Downlock Springs 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	BUSHING	ID	0.5000	0.5010	0.5034	0.0039	X		
	SPACER	OD	0.4985	0.4995	0.4971		X		
2	BUSHING	ID	0.5005	0.5015	0.5039	0.0044	X		
	SPACER	OD	0.4985	0.4995	0.4961		X		
3	BUSHING	ID	0.5000	0.5007	0.5039	0.0036	X		
	SPACER	OD	0.4985	0.4995	0.4971		X		

Main Landing Gear Downlock Springs Wear Limits
Figure 601 (Sheet 2)

MLG 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 height necessary to do this can be at least 54 inches.

A. This procedure contains two tasks. The first task removes the MLG inner cylinder. Task two installs the MLG inner cylinder.

TASK 32-11-24-404-001

2. MLG Inner Cylinder Removal

A. Equipment
   (1) Spanner Wrench, MLG - A32045-83
   (2) Shock Strut Drain Equipment, MLG/NLG - A32066-1
   (3) Shock Strut Positioner Link - B32006-13
   (4) Thread Protector - B32011-14
   (5) Lower Bearing Seal Retainer Puller Equipment, MLG - B32025-75
   (6) Shock Strut Lock Equipment, MLG - B32028-1
   (7) Crowfoot Wrench - F70312-38

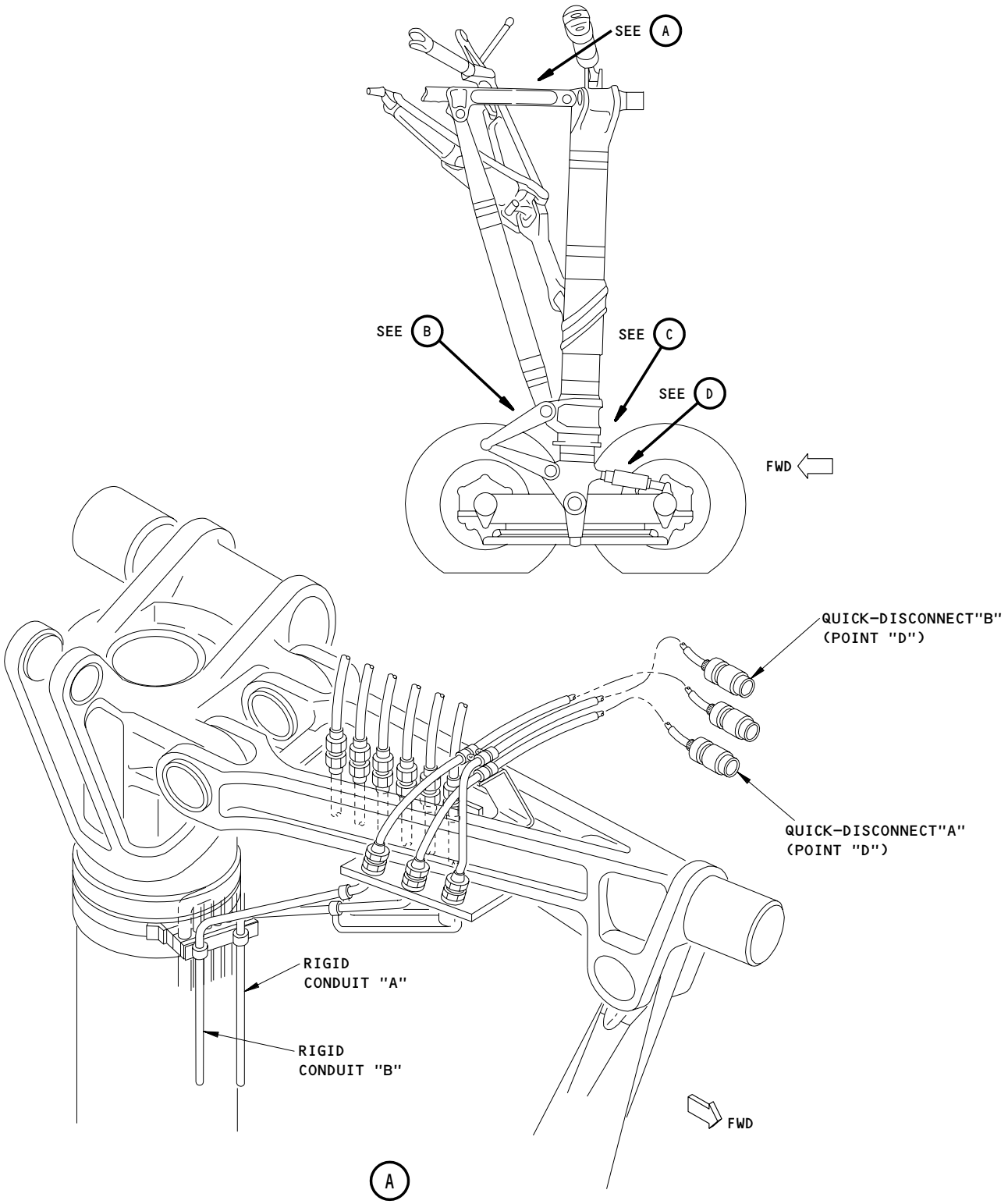
B. References
   (1) AMM 07-11-01/201, Jacking Airplane
   (2) AMM 24-22-00/201, Electrical Power - Control
   (3) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
   (4) AMM 32-00-15/201, Landing Gear Doorlocks
   (5) AMM 32-00-20/201, Landing Gear Downlocks
   (6) AMM 32-11-16/401, Main Gear Torsion Links
   (7) AMM 32-11-17/401, Main Gear Truck Assembly
   (8) AMM 32-11-19/401, Main Gear Brake Rod
   (9) AMM 32-32-15/401, Main Gear Truck Positioner Actuator

C. Access
   (1) Location Zones

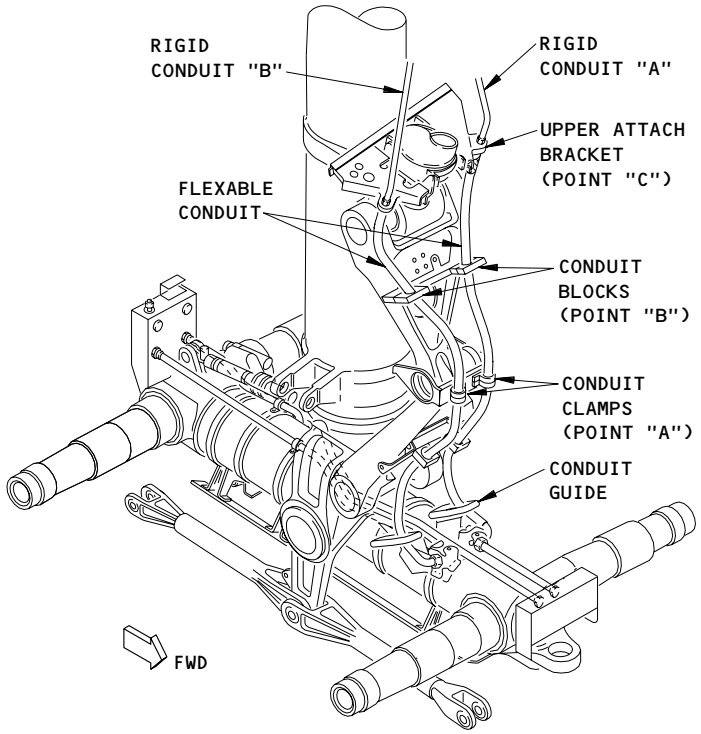
211/212	Control Cabin
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

D. Prepare for the Removal of the Inner Cylinder

S 494-002
   (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

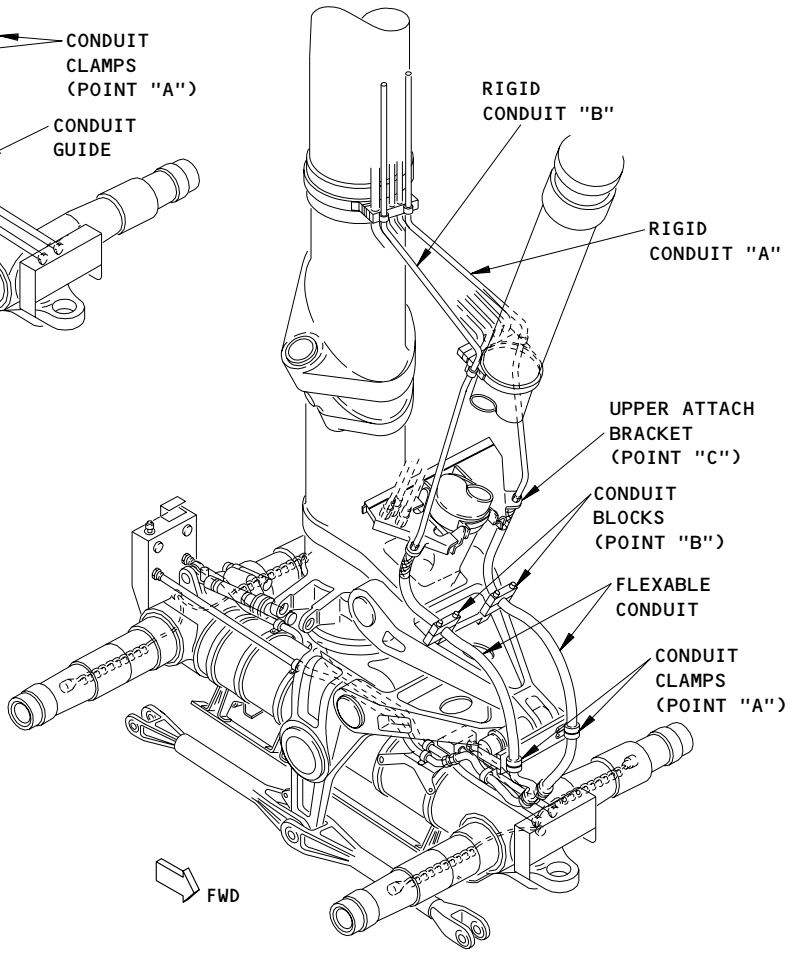


Inner Cylinder Installation for the Main Landing Gear
Figure 401 (Sheet 1)



(AIRPLANES WITH
CONDUIT GUIDES)

B

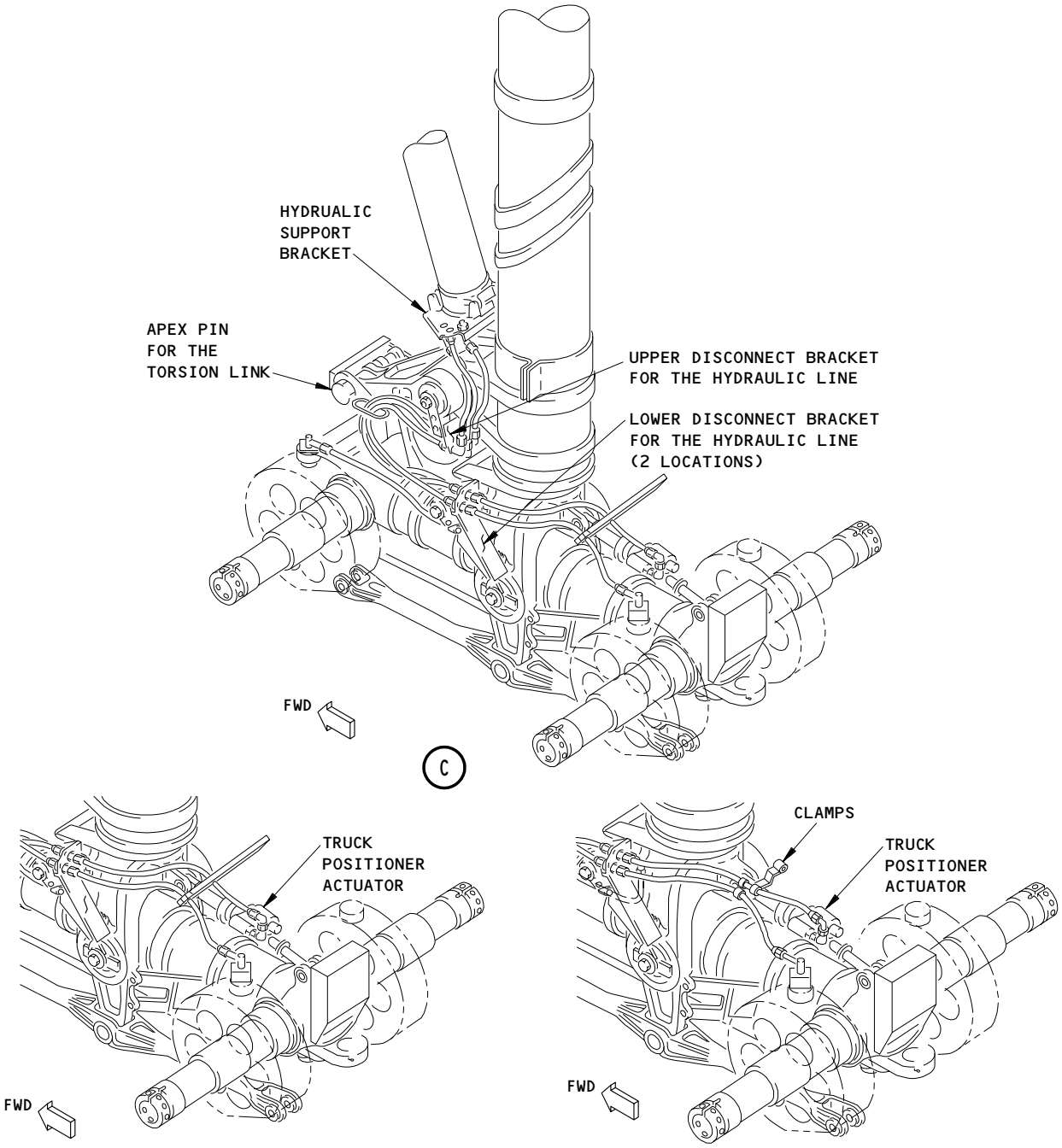


(AIRPLANES WITHOUT
CONDUIT GUIDES)

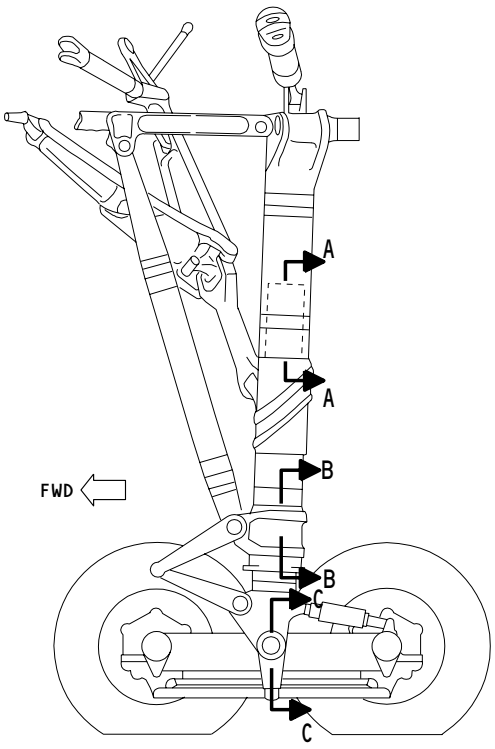
B

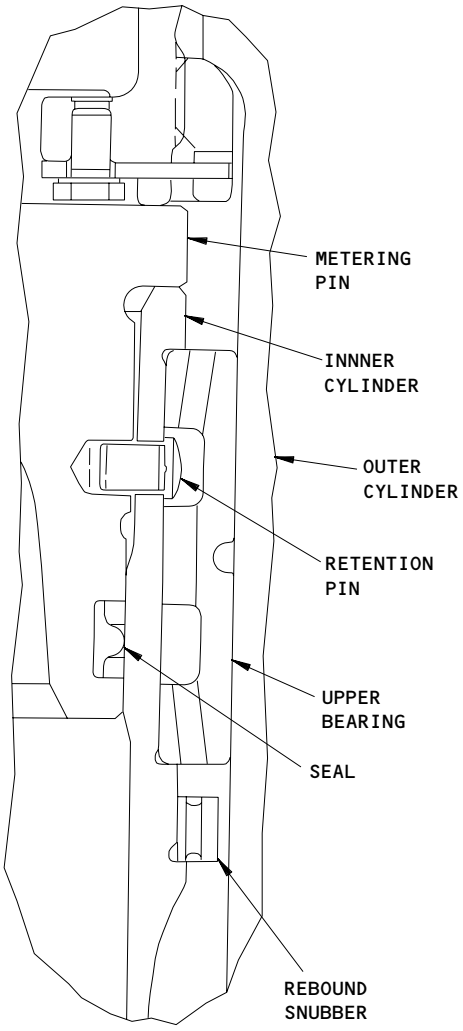
Inner Cylinder Installation for the Main Landing Gear
Figure 401 (Sheet 2)

411787



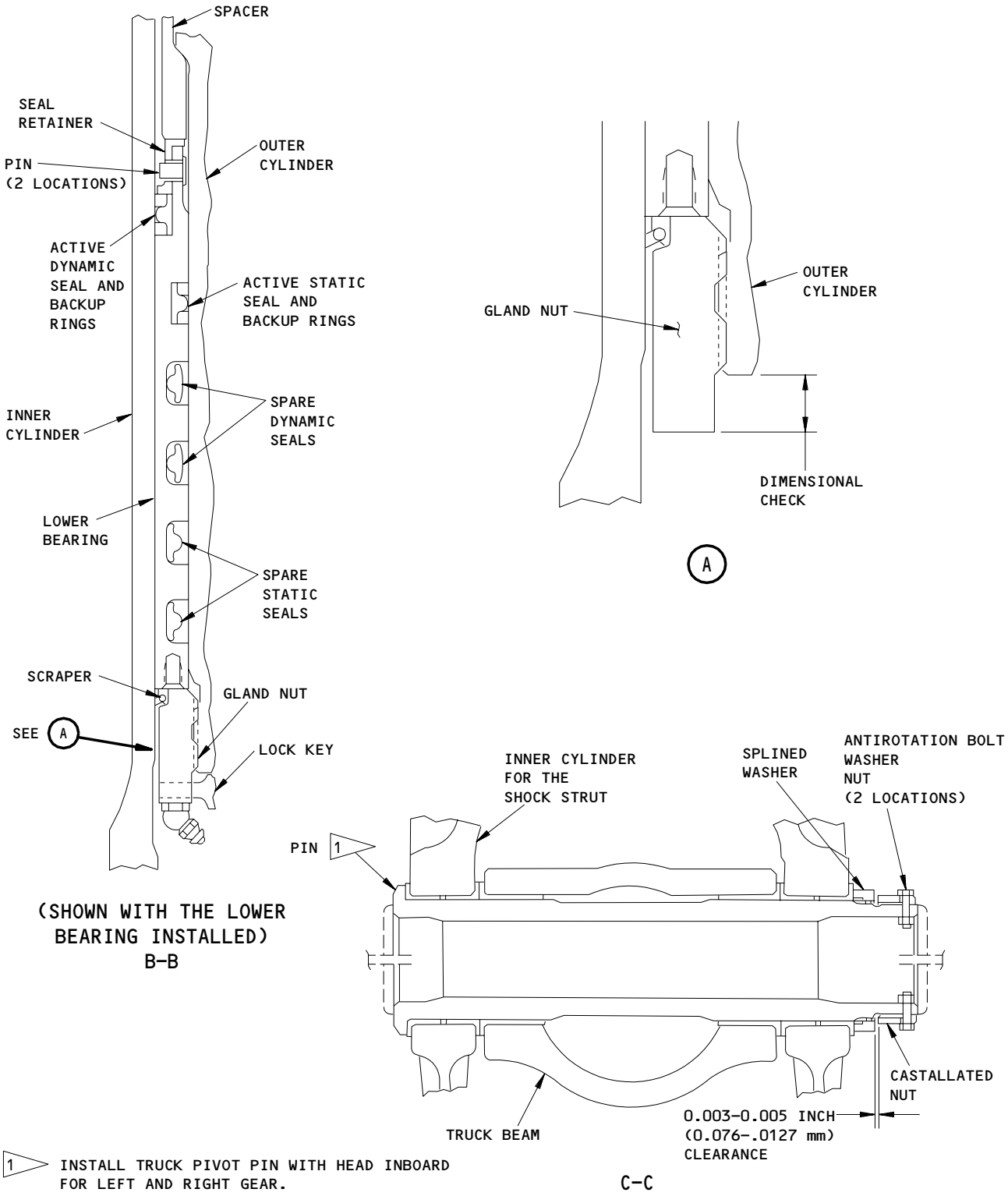
Inner Cylinder Installation for the Main Landing Gear
Figure 401 (Sheet 3)



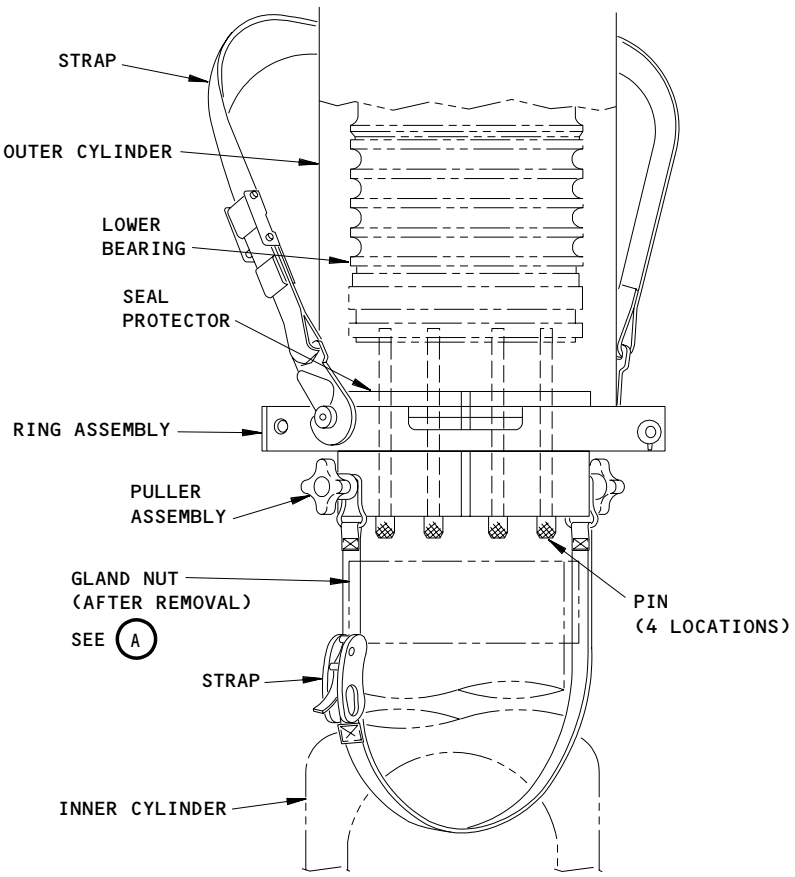


A-A

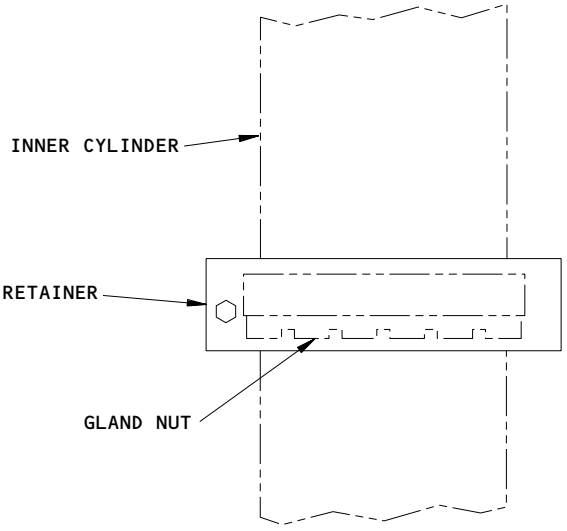
Inner Cylinder Assembly for the Main Landing Gear
Figure 402 (Sheet 1)



Inner Cylinder Assembly for the Main Landing Gear
Figure 402 (Sheet 2)



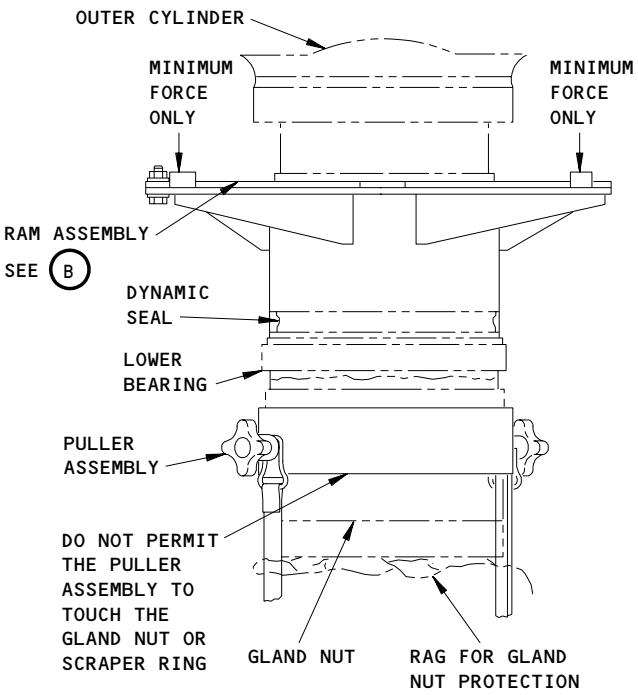
BEARING PULLER



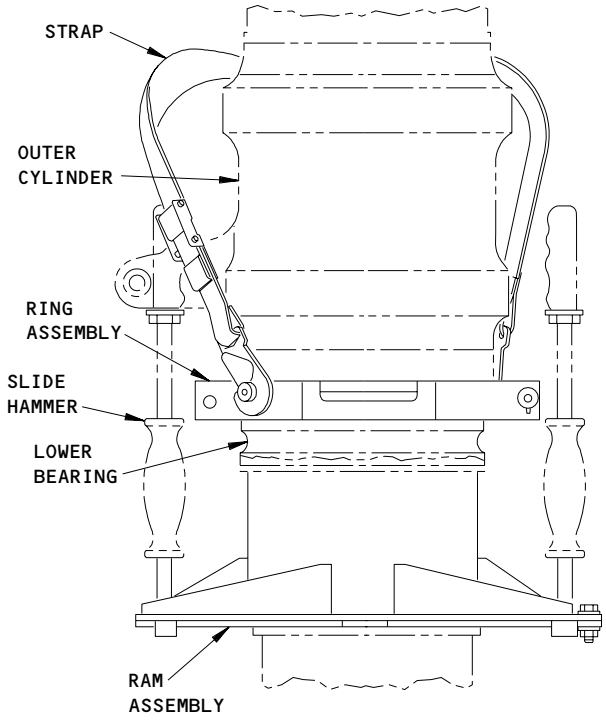
GLAND NUT RETAINER

A

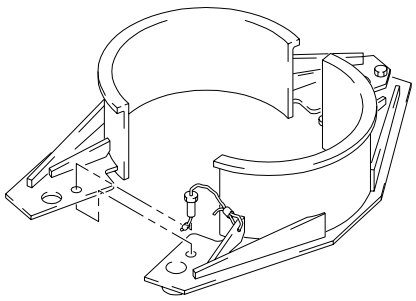
MLG Lower Bearing Puller Equipment
Figure 403 (Sheet 1)



DYNAMIC SEAL INSTALLATION

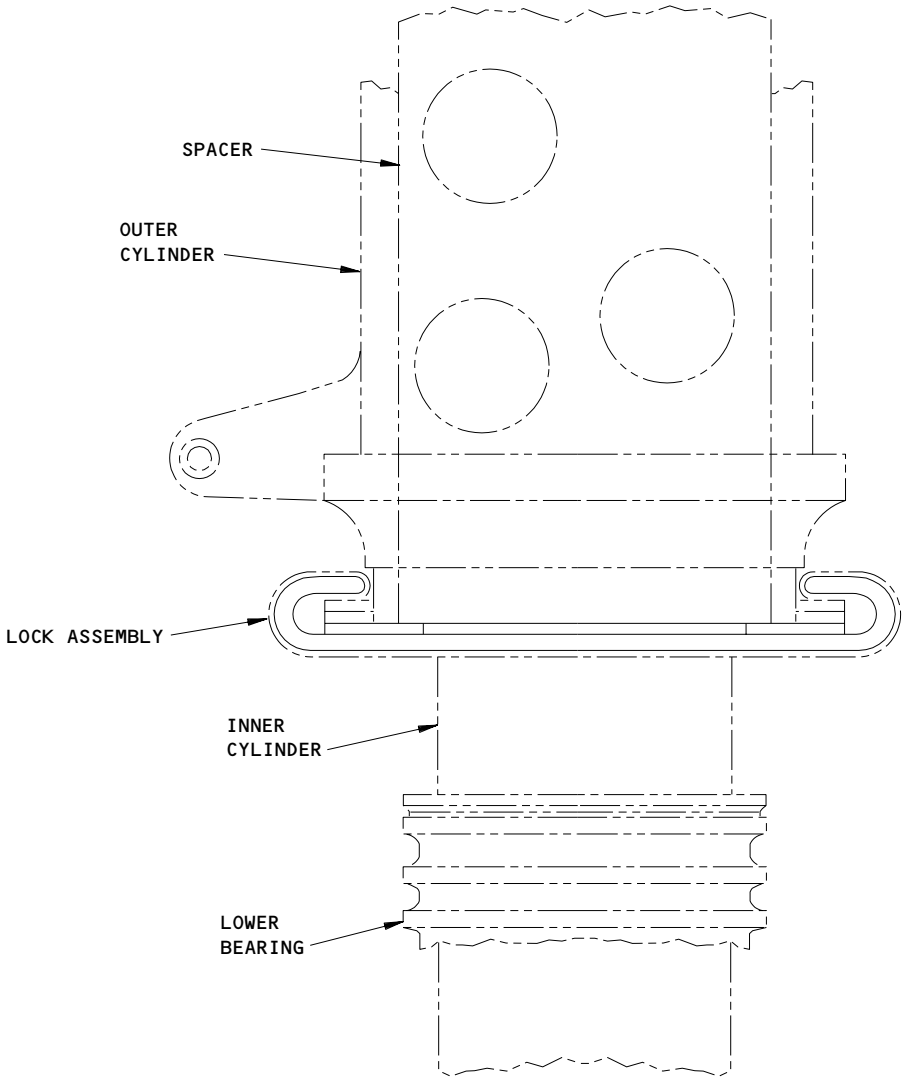


LOWER BEARING INSTALLATION



RAM
(B)

MLG Lower Bearing Puller Equipment
Figure 403 (Sheet 2)



LOCK ASSEMBLY FOR SPACER
AND SEAL RETAINER

MLG Lower Bearing Puller Equipment
Figure 403 (Sheet 3)

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 left hydraulic system (AMM 29-11-00/201).

S 864-005

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

S 864-006

(5) Make sure this circuit breaker on the main power distribution panel, P6, is closed:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV

S 874-007

(6) Push the two brake pedals fully and release. Push the pedals six times to bleed the hydraulic pressure from the parking brake lines. Make sure the PARK BRAKE indicator light on the quadrant stand panel, P10, is off.

S 864-008

(7) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
(a) 11S15, LANDING GEAR AIR/GND SYS1
(b) 11S19, LANDING GEAR AIR/GND SYS2
(c) 11S18, LDG GEAR ANTISKID 1-5
(d) 11C31, ANTISKID 2-6 (Left Gear)
(e) 11C32, ANTISKID 3-7 (Right Gear)
(f) 11S22, ANTISKID 4-8 (Right Gear)

S 864-009

WARNING: CLEAR THE AREA BELOW THE WING BEFORE YOU DEFLATE ONE SHOCK STRUT. THE WING TIP CAN MOVE DOWN AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) 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 CAN CAUSE INJURY TO PERSONS.

(b) Loosen the nut for the air valve, two turns.
(c) Let the shock strut deflate fully.
(d) Remove the air valve nut.

S 844-010
(9) Use a drip tray to catch the hydraulic fluid when you open the oil charging valve.

S 494-011

CAUTION: CLEAN ALL THE LEAKED HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY. THE FLUID CAN CAUSE DAMAGE TO THE TIRES.

(10) Install the drain equipment on the oil charging valve.

S 094-012
(11) Remove the drain equipment when all the oil has drained from the shock strut.

E. Remove the Inner Cylinder

S 024-079
(1) Remove the clamps for the flexible conduit at Point "A".

S 024-080
(2) Remove the flexible conduit from the conduit blocks at Point "B".

S 024-081
(3) Do these steps, to remove the wires from the rigid conduit "A":
(a) Unpin the wires from the quick-disconnects located at the top of the landing gear, Point "D".

NOTE: Apply a mark or label to indentify each wire and the wire's pin location on the connector.

(b) Attach a string to the wiring of quick-disconnect "A".

NOTE: The string must be longer then the length of the rigid conduit.

(c) Pull the wiring through the rigid conduit "A" until you can see the string, then secure the string at both ends of the conduit.

NOTE: Do not remove the string, it will be used to re-install the wires.

S 024-082
(4) Do the previous step again to remove the wires from rigid conduit "B".

S 984-083
(5) Use a rope to hold the wiring and flexible conduits on the truck beam, away from the work area.

S 024-084
(6) Disconnect the hydraulic lines from the aft brakes (2 locations).

S 024-085
(7) Remove the truck positioner actuator (AMM 32-32-15/401).

NOTE: Do not remove the hydraulic lines from the actuator.

S 494-086
(8) Install the shock strut positioner link.

NOTE: Before you install the link, make sure that you adjust the rod to the centerline markings.

S 984-087
(9) Use a rope to hold the truck positioner actuator on the shock strut positioner link.

S 494-088
(10) Place a drip pan below the lower disconnect bracket (Detail C).

NOTE: The disconnect brackets attach to the upper and lower torsion link attach points.

S 034-015
(11) Disconnect the hydraulic lines from the forward side of the lower disconnect bracket, allow the fluid to completely drain from the line, then disconnect the hydraulic lines from the forward side of the upper disconnect bracket. Do this step on both sides of the landing gear.

S 984-089
(12) Use a rope to hold the upper torsion link in position.

S 034-017
(13) Remove the apex pin and bracket assembly from the torsion links (AMM 32-11-16/401).

S 984-090
(14) Move the hydraulic lines, apex pin and bracket assembly away from the work area.

S 584-019
(15) Lift the airplane on jacks until you can see approximately 9 inches of chrome on the inner cylinder (AMM 07-11-01/201).

S 224-020
(16) Measure and record the distance that the lower surface of the gland nut (22) 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 844-021
(17) Wind a cloth pad around the inner cylinder.

NOTE: This will prevent damage to the surface of the cylinder if the gland nut moves down.

S 034-091
(18) Remove the lock key for the gland nut.

S 024-092
(19) Use a spanner wrench to remove the gland nut.

S 494-024
(20) Install the retainer assembly on the gland nut.

S 844-025
(21) Move the retainer with gland nut, and the scraper, to the bottom of the inner cylinder.

S 844-093
(22) Wind a cloth around the gland nut and the scraper to protect them.

S 494-026
(23) Install the seal protector strip and ring assembly around the inner cylinder. Move it up into the outer cylinder and hold it there with the strap.

S 494-094
(24) Put the puller assembly around the inner cylinder.

S 494-028
(25) Install the puller pins in the lower bearing.

S 494-095
(26) Tighten the puller assembly.

S 494-030
(27) Install a strap between the forks of the inner cylinder and tightly attached to the puller assembly.

S 584-032

CAUTION: MAKE SURE YOU USE THE JACK UNDER THE AFT FUSELAGE STABILIZING POINT AFTER YOU LIFT THE AIRPLANE TO THIS HEIGHT. IF YOU DO NOT INSTALL A JACK AT THE STABILIZING POINT AFTER THE PRIMARY JACKS ARE IN THEIR FINAL POSITION, DAMAGE TO EQUIPMENT CAN OCCUR.

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.

(28) Roll the truck assembly forward and aft, as needed to keep the inner cylinder in the center of the outer cylinder, as you lift the airplane with jacks. Continue to lift the airplane with jacks until the upper bearing assembly is 2 inches (appox) below the outer cylinder (AMM 07-11-01/201).

NOTE: The height necessary to do this can be as much as 54 inches.

S 024-096
(29) Remove the upper bearing halves from the inner cylinders.

NOTE: the bearing halves are a matched set, do not combine with bearing halves from other gears.

S 024-098
(30) Do these steps, if you want to minimize the height required to clear the inner cylinder from the outer cylinder:
(a) Remove the retainer pins for the metering pin.
(b) Hold the metering pin in the outer cylinder.

S 584-099
(31) Lift the airplane on jacks until the inner cylinder is clear of the outer cylinder.

S 984-033
(32) Move the inner cylinder and truck assembly away from the wheel well area.

S 024-100
(33) Remove the metering pin.

S 024-101
(34) Remove the rebound snubber from the inner cylinder.

S 024-102
(35) Remove the spacer, lower bearing assembly, scraper and gland nut from the inner cylinder (Detail B-B).

S 024-135
(36) Disassemble the lower bearing assembly and discard the seals.

S 214-136
(37) Examine the scraper for damage and discard if necessary.

S 984-103
(38) Use an axle jack to lift the forward truck assembly until the forward tires do not touch the ground.

S 024-104
(39) Remove the front wheels from the truck (AMM 32-45-01/401).

S 024-105
(40) Remove the lower hydraulic connection brackets from both sides of the inner cylinder (AMM 32-11-17/401).

S 024-106
(41) Remove the lower torsion link from the inner cylinder (AMM 32-11-16/401).

S 034-034
(42) Disconnect the brake rods from the forks of the inner cylinder (AMM 32-11-19/401).

S 024-107
(43) Remove the truck tilt sensor target bracket from the shock strut inner cylinder (AMM 32-09-10/401).

S 034-110
(44) Remove the retention bolts, washers and nuts from the castellated nut for the pivot pin.

S 034-109
(45) Remove the castellated nut and splined washer from the pivot pin.

NOTE: Use a crowfoot wrench to loosen the castellated nut.

S 494-111
(46) Install the thread protector on the pivot pin.

S 024-112

CAUTION: MAKE SURE YOU USE ADEQUATE SUPPORT TO HOLD THE INNER CYLINDER IN AN UPRIGHT POSITION. REMOVAL OF THE POSITONER LINK WILL ALLOW THE INNER CYLINDER TO ROTATE DOWN, IF NOT HELD IN POSITION. IF YOU ALLOW THE INNER CYLINDER TO MOVE IT MAY CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(47) Wind a strap around the fork and the chrome surface of the inner cylinder. Attach the strap to a hoist to provide support for the inner cylinder. Disconnect the shock strut positioner link from the inner cylinder.

S 984-036

(48) Lift the inner cylinder to release the pressure on the pivot pin for the truck.

S 034-037

(49) Remove the pivot pin to disconnect the truck assembly from the inner cylinder (AMM 32-11-17/401).

S 024-038

(50) Lift the inner cylinder until it is clear of the truck.

TASK 32-11-24-404-039

3. MLG Inner Cylinder Installation

A. Equipment

(1) Spanner Wrench - A32045-83
(2) Shock Strut Drain Equipment, MLG/NLG - A32066-1
(3) Thread Protector - B32011-14
(4) Lower Bearing Seal Retainer Puller Equipment, MLG - B32025-75
(5) Shock Strut Lock Equipment, MLG - B32028-1
(6) Crowfoot Wrench - F70312-38

B. Consumable Materials

(1) D00633 Grease - BMS 3-33 (Recommended)

(2) D00013 Grease - MIL-G-23827 (Alternative)
(3) D00528 Grease - ROYCO 11MS
(4) D00913 Corrosion Preventative Compound - BMS 3-27 (Recommended)
(5) C50056 Compound - Non-drying Corrosion Inhibiting Resin Mix, BMS 3-38 (Alternative)
(6) G50136 Paste - Corrosion Inhibiting Non-drying, BMS 3-38 (Alternative)
(7) G50237 Compound - Corrosion Inhibiting Non-drying Cor-Ban 27L, BMS 3-38 (Alternative)

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 12-15-01/301, Main Gear Shock Strut
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
(5) AMM 32-00-15/201, Landing Gear Doorlocks
(6) AMM 32-00-20/201, Landing Gear Downlocks
(7) AMM 32-11-16/401, Main Gear Torsion Links
(8) AMM 32-11-17/401, Main Gear Truck Assembly
(9) AMM 32-11-19/401, Main Gear Brake Rod
(10) AMM 32-32-00/501, Main Gear Extension and Retraction
(11) AMM 32-32-15/401, Main Gear Truck Positioner Actuator
(12) AMM 32-41-00/201, Hydraulic Brake System
(13) AMM 32-42-00/501, Antiskid/Autobrake System

D. Access
(1) Location Zones

211/212	Control Cabin
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

E. Install the Inner Cylinder

S 424-115
(1) Do these steps, to assemble the lower bearing assembly:
(a) Make sure all parts are dry and clean before assembly.
(b) Install the spare dynamic and static seals in their grooves on the lower bearing.
(c) Apply a thin layer of fluid to the active dynamic and static seals, then install the seals in their grooves.
(d) Apply a thin layer of fluid to the back-up rings, then install the back-up rings for the active static and dynamic seals.

NOTE: Make sure the scarf cuts in the rings are 180 degrees apart when stacked.

(e) Put the seal retainer on top of the lower bearing and install the pins to hold the seal retainer on the lower bearing. Make sure the seal retainer is flush against the lower bearing. If it is not flush then the dynamic seal is not installed correctly.

NOTE: You may use petrolatum to hold the pins in place.

S 984-040
(2) Use the hoist to hold the inner cylinder in position on the truck assembly.

S 434-041
(3) Put the thread protector on the pin and install the pin to attach the inner cylinder to the truck assembly (AMM 32-11-17/401).

S 494-116
(4) Install the shock strut positioner link on the inner cylinder and the truck.

S 434-117
(5) Install the splined washer, castellated nut and retention bolts to the pivot pin (AMM 32-11-17/401).

S 434-118
(6) Install the truck tilt sensor target bracket to the shock strut inner cylinder (AMM 32-09-10/401).

S 434-119
(7) Connect the brake rods to the forks of the inner cylinder (AMM 32-11-19/401).

S 434-120
(8) Connect the lower torsion link to the inner cylinder (AMM 32-11-16/401).

S 434-121
(9) Install the lower hydraulic connection brackets on both sides of the inner cylinder (AMM 32-11-17/401).

S 424-122
(10) Install the front wheels on the truck (AMM 32-45-01/401).

S 984-123
(11) Lower the forward truck assembly to the ground and remove the axle jack.

S 214-124
(12) Examine the scraper for damage and replace, if needed.

S 434-125
(13) Put the gland nut and scraper on the inner cylinder and move them down to the lower end of the chrome on the inner cylinder.

S 494-126
(14) Wrap a clean cloth around the inner cylinder that is above the gland nut and scraper.

S 644-127
(15) Apply a thin layer of fluid to the chrome surface of the inner cylinder.

S 434-043
(16) Put the lower bearing assembly on the inner cylinder and move the bearing down until it touches the cloth above the gland nut.

S 494-050
(17) Install the ram assembly below the lower bearing assembly.

S 434-128
(18) Install the spacer and rebound snubber on the inner cylinder.

S 434-137
(19) Apply a thin layer of fluid on the new seal for the metering pin, then install the seal on the metering pin.

S 984-129
(20) Hold the metering pin in position inside the outer cylinder.

S 494-044
(21) Install the seal protector into the outer cylinder.

S 494-138
(22) Position the greased plates on the floor under the gear where the tires will be when the shock strut is positioned under the outer cylinder.

NOTE: The grease is applied to the fay surfaces of the plates.

S 984-045
(23) Move the inner cylinder and truck assembly into position under the outer cylinder and align the inner cylinder to the outer cylinder.

S 984-046
(24) Move the metering pin into position on the inner cylinder.

S 434-130
(25) Install the retention pins to hold the metering pin on the inner cylinder.

S 434-131
(26) Put the upper bearing halves on the inner cylinder, use tape to hold them in position.

S 434-047

CAUTION: MAKE SURE YOU KEEP THE INNER CYLINDER IN THE CENTER OF THE OUTER CYLINDER AS THE AIRPLANE 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.

(27) Carefully lower the airplane (AMM 07-11-01/201). Make sure the fore-and-aft and the inboard-outboard axes stay aligned as the airplane 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 airplane is lowered.

S 094-132
(28) When the upper bearing begins to enter the outer cylinder, remove the tape.

S 584-048
(29) Lower the airplane so the lower bearing assembly, on the inner cylinder, is still outside the outer cylinder.
(a) Attach the slide hammers, if needed.

S 584-052
(30) Move the ram assembly up to push the lower bearing assembly into the outer cylinder.

S 094-053
(31) Remove the ram assembly.

S 094-054
(32) Remove the seal protector and strip from the outer cylinder.

S 094-055
(33) Remove the retainer from the gland nut.

S 644-057
(34) GLAND NUTS WITH LUBE FITTINGS;
Lubricate the threads of the gland nut (22) with grease.

S 624-058
(35) GLAND NUTS WITHOUT LUBE FITTINGS;
Apply BMS 3-27 (preferred) or BMS 3-38 (alternate), Corrosion Preventative Compound, to the threads of the gland nut (22).

S 844-059
(36) Move the gland nut and the scraper up the inner cylinder to the correct position.

S 434-060
(37) Use a spanner wrench to tighten the gland nut.

S 434-061
(38) Tighten the gland nut to 140-165 pound-feet.

S 034-062
(39) If it is necessary, loosen the gland nut to align the slot with the lock key.

S 224-063
(40) Measure the distance that the lower surface of the gland nut (22) 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
(41) Install the lock key for the gland nut.

S 434-066
(42) Install the apex pin and bracket assembly to connect the upper and lower torsion links (AMM 32-11-16/401).

S 094-133
(43) Remove the rope from the upper torsion link.

S 434-068
(44) Connect the hydraulic lines to the forward side of the upper and lower connection brackets. Do this step on both sides of the strut.

S 434-069
(45) Do these steps, to install the wires for rigid conduit "A":
(a) At the bottom of rigid conduit "A" attach the string to the wires for quick-disconnect "A".
(b) Pull the wires through rigid conduit "A" so that you can connect the wires to the quick-disconnect.
(c) Pin the wires to the quick-disconnect "A", in the order that you recorded when the wires were unpinned, then connect the connector.
(d) Put the flexible conduit in the conduit block, point "B", and tighten the block.
(e) Put the flexible conduit in the clamp, point "A", and tighten the clamp.

S 434-134
(46) Do the previous step again to install the wires for rigid conduit "B".

S 094-067
(47) Lower the airplane, but leave the jacks in place (AMM 07-11-01/201).

S 434-070
(48) Install the truck positioner actuator (AMM 32-32-15/401).

S 434-114
(49) Connect the hydraulic lines to the aft brakes.

F. Put the Airplane Back to Its Usual Condition.

S 644-139
(1) Lubricate the lower end of the Main Landing Gear (AMM 12-21-14/301, Fig. 302).

S 614-071
(2) Do this task: "Servicing of the shock strut with fluid and nitrogen" (AMM 12-15-01/301).

S 214-140
(3) Check the gap for the truck tilt sensor and adjust, if needed (AMM 32-09-07/201).

S 864-073
(4) Close these circuit breakers on the overhead circuit breaker panel, P11:

(a) 11S15, LANDING GEAR AIR/GND SYS1
(b) 11S19, LANDING GEAR AIR/GND SYS2
(c) 11S18, LDG GEAR ANTISKID 1-5
(d) 11C31, ANTISKID 2-6 (Left Gear)
(e) 11C32, ANTISKID 3-7 (Right Gear)
(f) 11S22, ANTISKID 4-8 (Right Gear)

S 864-141
(5) Supply electrical power (AMM 24-22-00/201).

S 724-142
(6) Do this task, "Do the Test for the Truck Tilt Sensor" (AMM 32-09-07/201).

S 864-074
(7) Lift the airplane on jacks to a height sufficient for landing gear retraction (AMM 07-11-01/201).

NOTE: Make sure you have a minimum of 4 inches of clearance between the tires and the ground surface.

S 714-075

(8) Do an operational test of the main landing gear (AMM 32-32-00/501).

S 084-076

(9) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 714-077

(10) Do the checks on the brake system as follows:
  (a) Bleed the brake system (AMM 32-41-00/201).
  (b) Do the procedures for the normal and alternate antiskid system (AMM 32-41-00/201).
  (c) Do these tests:
    1) Operational test of the brakes and antiskid system (AMM 32-42-00/501).
    2) Brake Application Test for the Antiskid Valve
    3) Spin-Up Test for the Antiskid Transducer.

S 094-078

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.

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

MAIN GEAR SHOCK STRUT SEALS - MAINTENANCE PRACTICES

1. General
   A. This procedure contains four tasks. The first task does a check of the strut for serviceability. The other tasks replace the seals on the shock strut of the main landing gear. Task two replaces the seals with the spare seals. Two sets of spare seals are in the gland nut of the shock strut. Task three replaces the active seals and the spare seals. Task three is used when the two sets of spare seals have been used. Task four is an optional procedure that replaces the active seals and the spare seals from the top of the inner cylinder.

TASK 32-11-25-202-091

2. 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.
   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
   C. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

   D. Leak Check Procedure

      S 862-092
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 792-093
      (2) Inspect the shock struts for leakage.

S 792-094

(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 15 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 15 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 15 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 15 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 15 minute measurements.

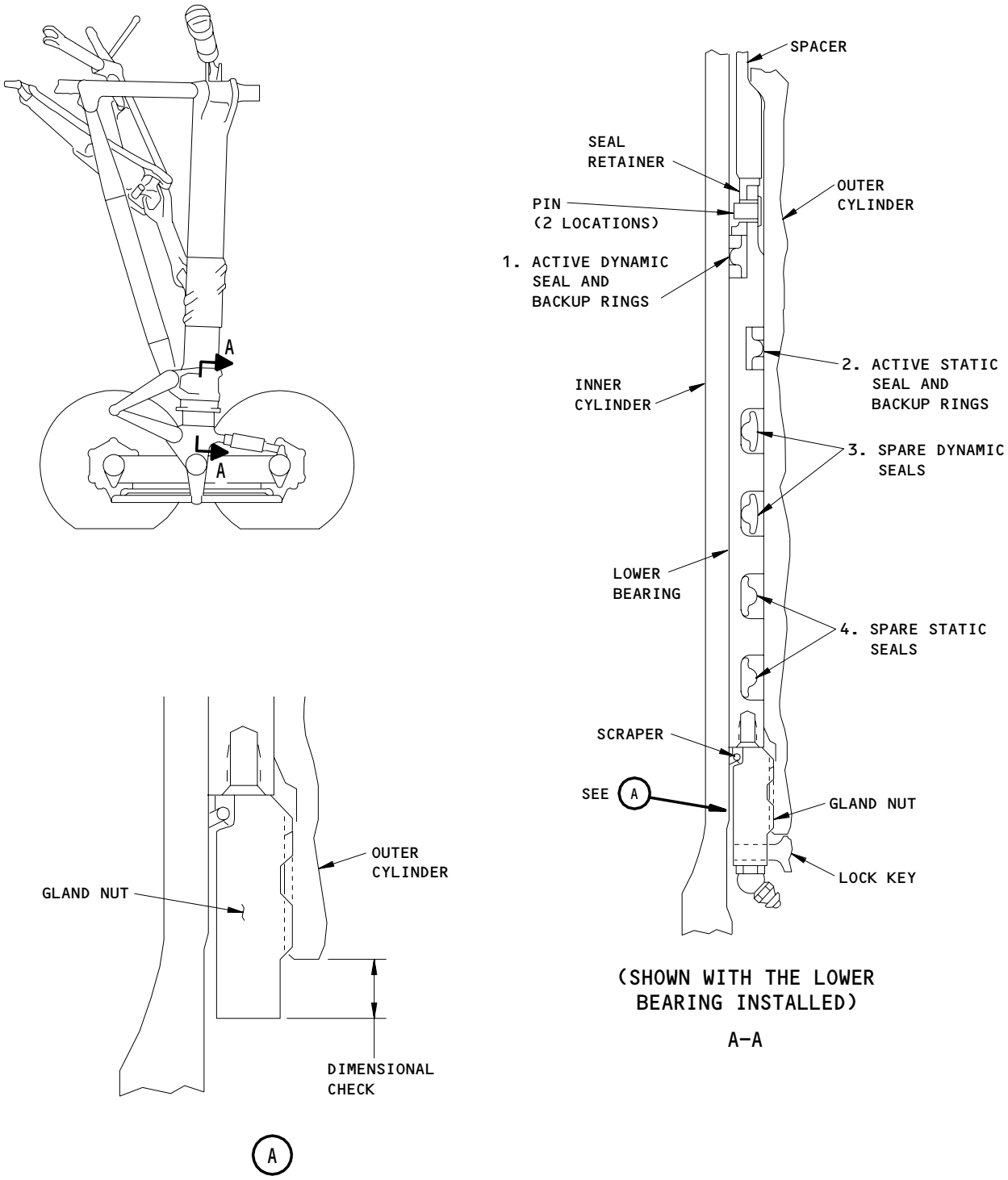
NOTE: If the average is less than 30 drops during the 15 minutes time, the shock strut is serviceable. If the leakage flows continuously or is greater than 30 drops during the 15 minutes time, the shock strut is not serviceable.

S 212-095

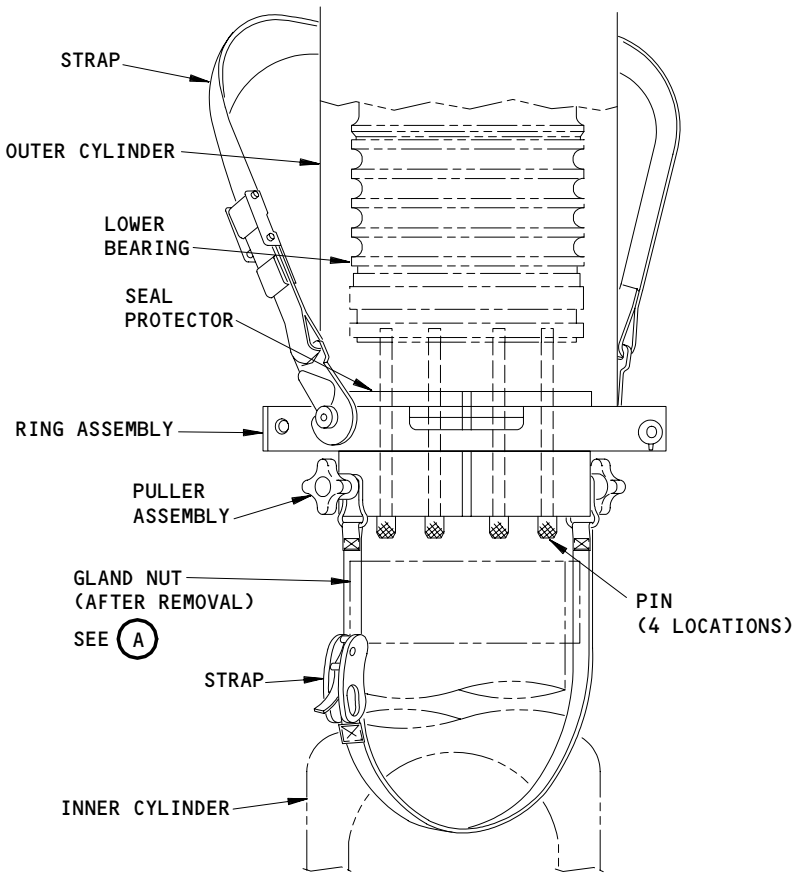
(4) If the leakage stopped, do the steps that follow:

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.

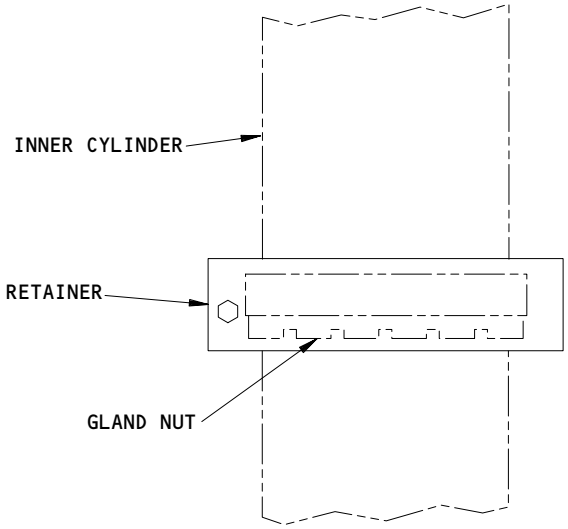
(a) Continue to monitor the strut for leakage on subsequent landings. If you see more signs of leakage, do the entire leak check procedure again.



Main Landing Gear Shock Strut Seals Replacement
Figure 201



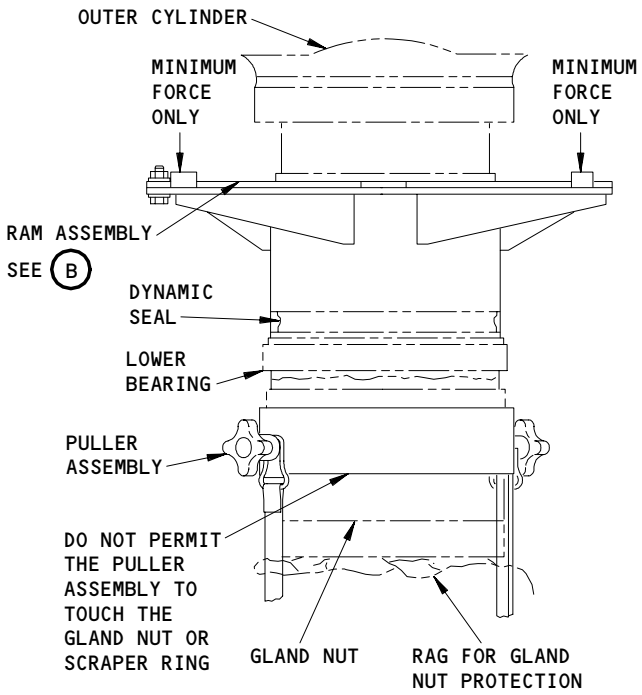
BEARING PULLER



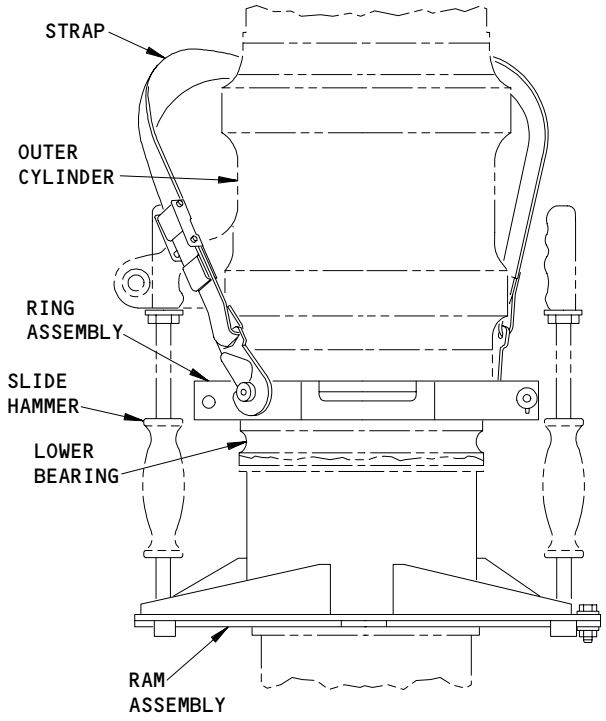
GLAND NUT RETAINER

A

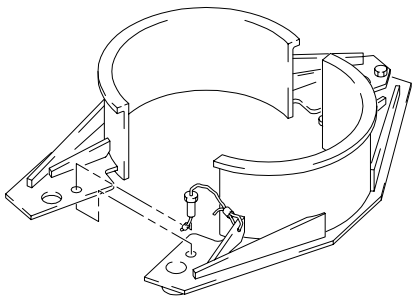
MLG Lower Bearing Puller Equipment
Figure 202 (Sheet 1)



DYNAMIC SEAL INSTALLATION

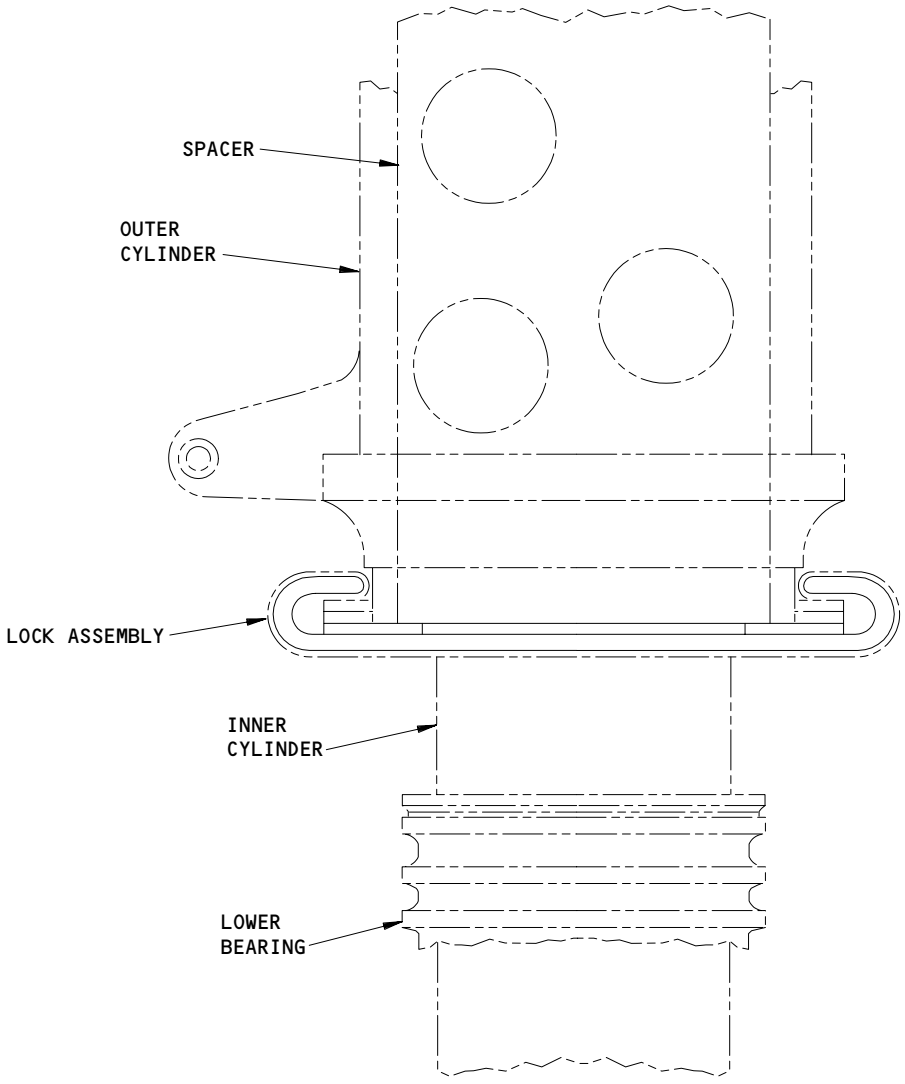


LOWER BEARING INSTALLATION



RAM
(B)

MLG Lower Bearing Puller Equipment
Figure 202 (Sheet 2)



LOCK ASSEMBLY FOR SPACER
AND SEAL RETAINER

MLG Lower Bearing Puller Equipment
Figure 202 (Sheet 3)

S 212-096

(5) If there was leakage between 1 and 15 drops during the 15 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. After 10 days service the shock strut with nitrogen and make sure the "x" dimension in the servicing chart is correct (AMM 12-15-01/301).
(b) After 20 days deflate the strut and add oil until it is completely full. Then service the shock strut with nitrogen (AMM 12-15-01/301).
(c) Do the 10 and 20 day servicing steps again until you change the seals.

S 212-097

(6) If there was leakage between 16 and 30 drops during the 15 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. After 5 days service the shock strut with nitrogen and make sure the "x" dimension in the servicing chart is correct (AMM 12-15-01/301).
(b) After 10 days deflate the shock strut and add oil until it is completely full. Then service the strut with nitrogen (AMM 12-15-01/301).
(c) Do the 5 and 10 day servicing steps again until you change the seals.

S 212-098

(7) If the leakage was more than 30 drops during the 15 minute period, the shock strut is not serviceable. You must replace the seals.

TASK 32-11-25-962-001

3. Active Seal Replacement with the Spare Seals

NOTE: The truck or the inner cylinder of the shock strut do not have to be moved to do this task.

A. Equipment
   (1) Lower Bearing Seal Retainer Puller Equipment, MLG - B32025-75
   (2) Shock Strut Drain Equipment, MLG/NLG - A32066-1
   (3) Spanner Wrench, MLG - A32045-83

B. Consumable Materials
   (1) C00913 Compound - BMS3-27 (Recommended)
   (2) C50056 Compound - Non-drying Corrosion Inhibiting Resin Mix, BMS BMS 3-38 (Alternative)
   (3) G50136 Paste - Corrosion Inhibiting Non-drying, BMS 3-38 (Alternative)
   (4) G50237 Compound - Corrosion Inhibiting Non-drying Cor-Ban 27L, BMS 3-38 (Alternative)
   (5) D00212 Hydraulic Fluid - MIL-H-5606 or MIL-H-6083 (optional)
   (6) D00467 Fluid, Landing gear shock strut - BMS32-32, Type II
   (7) D00128 Lubricant, Petrolatum - VV-P-236
   (8) D00633 Grease - BMS 3-33 (Recommended)
   (9) D00013 Grease - MIL-G-23827 (Alternative)

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, 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 32-11-16/401, Main Gear Torsion Links

D. Access
   (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

E. Prepare to Replace the Seals

S 492-007
   (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 landing gear and install the door locks (AMM 32-00-15/201).

S 862-008

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

S 862-009

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.
   (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 deflate fully.
   (d) Install a flexible hose on the valve. Put the other end of the hose in a drain bucket to catch the hydraulic fluid.
   (e) Loosen the air valve nut fully.

S 842-010

(5) Use a drip tray to catch the hydraulic fluid when you open the oil charging valve and remove the gland nut.

S 492-011

CAUTION: 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 092-012

(7) Remove the drain equipment when all the oil has drained from the shock strut.

S 012-013

(8) Disconnect the torsion links at the apex (AMM 32-11-16/401).
   (a) Keep the torsion links away from the work area. They could cause damage to the surface of the inner cylinder.

S 582-014

(9) Lift the airplane until you see approximately 18 inches of chrome on the inner cylinder (AMM 07-11-01/201).

S 842-015

(10) Wind a cloth pad around the inner cylinder. This will prevent damage to the surface of the cylinder if the gland nut moves down.

S 032-016

(11) Remove the lock key for the gland nut.

S 032-017

(12) Use a spanner wrench to remove the gland nut.

S 492-073

(13) Attach the gland nut retainer assembly to the gland nut.

S 842-018

(14) Move the retainer with the gland nut, and the scraper, to the bottom of the inner cylinder.
   (a) Wind a cloth around the gland nut and the scraper to protect them.

S 492-074
(15) Put the seal protector strip and the ring assembly on the inner cylinder. Move it up into the outer cylinder and hold it there with the strap.

S 842-019
(16) Put the puller assembly around the inner cylinder.

S 492-131
(17) Loosely install the puller pins in the lower bearing.

NOTE: The puller assembly must be loose to let the inner cylinder move freely when you lift the axle on jacks.

S 862-020
(18) Put axle jacks below the two ends of the truck beam.

S 582-021
(19) Lift the inner cylinder to decrease the exposed chrome length on the inner cylinder by 7.0 inches (AMM 07-11-03/201).

S 432-022
(20) Tighten the puller assembly around the inner cylinder.

S 492-023
(21) Install a strap tightly around the fork of the inner cylinder.

S 582-132
(22) Lower the axle jacks (AMM 07-11-03/201).

S 012-250

WARNING: KEEP YOUR HANDS AWAY FROM THE THE GAP BETWEEN THE LOWER BEARING AND THE GLAND NUT WHEN YOU PULL THE LOWER BEARING FROM THE OUTER CYLINDER. THE LOWER BEARING CAN MOVE DOWN QUICKLY AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(23) Pull the lower bearing out of the outer cylinder.

S 092-025
(24) Remove the axle jacks.

S 092-026
(25) Remove the puller pins from the lower bearing.

S 862-027
(26) Let the lower bearing move down and stay on the puller assembly.

F. Replace the Active Static Seal

S 012-028
(1) Remove the backup rings from the groove for the static seal.

S 212-029
(2) Examine the backup rings.
(a) Replace the backup rings if it is necessary.

S 032-030

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 the static seal. Use a plastic tool and backup strip to prevent damage to the groove.

S 012-031
(4) Remove the seal from the outer groove in the lower bearing.

S 142-251
(5) Use a lint free cloth to clean the lower bearing and hydraulic fluid.

S 842-032
(6) Move the spare static seal out of the spare seal groove.

S 642-033
(7) Apply a thin layer of hydraulic fluid and petrolatum to the seal and backup rings.

S 842-034
(8) Move the spare static seal and the backup rings in the outer groove in the lower bearing.

NOTE: Do not extend the seal more than necessary for the installation.

G. Replace the Active Dynamic Seal

S 012-035
(1) Remove the pins to disconnect the seal retainer from the lower bearing.

S 492-075
(2) Install the lock assembly to hold the spacer and seal retainer inside the outer cylinder.

S 842-036
(3) Move the lower bearing up and then down to show the dynamic seal.

S 842-037
(4) Move the backup rings away from the dynamic seal.

S 212-038
(5) Examine the backup rings.
(a) Replace the backup rings if it is necessary.

S 032-039

CAUTION: BE CAREFUL NOT TO CAUSE DAMAGE TO THE INNER CYLINDER. DAMAGE ON THE SURFACE OF THE CYLINDER CAN CAUSE DAMAGE TO THE SEALS.

(6) Cut the active dynamic seal. Use a plastic tool and backup strip to prevent damage to the inner cylinder.

S 012-040
(7) Remove the seal from the inner cylinder.

S 842-041
(8) Move the spare dynamic seal out of the spare seal groove.

S 642-042
(9) Apply a thin layer of hydraulic fluid and petrolatum to the seal and backup rings.

S 842-043
(10) Move the spare dynamic seal on top of the lower bearing.

S 842-044
(11) Put the seal and backup rings in position for the installation.

NOTE: Do not extend the seal more than necessary for the installation.

S 432-045
(12) Install the ram assembly on the inner cylinder between the dynamic seal and the seal retainer.

S 842-046
(13) Move the ram assembly down to push the dynamic seal in position in the lower bearing.

S 032-047
(14) Remove the ram assembly.

S 092-076
(15) Remove the seal retainer lock assembly.

S 842-233
(16) Move the seal retainer down.

S 432-049
(17) Install the pins to connect the seal retainer to the lower bearing.

NOTE: Make sure the pins are installed in the correct orientation as shown in Fig. 201. Make sure the pins stay in position when you move the lower bearing up into the outer cylinder.

H. Put the Airplane Back to Its Usual Condition

S 092-050
(1) Hold the lower bearing and remove the puller assembly and the strap.

S 432-051
(2) Install the ram assembly below the lower bearing.
(a) Attach the slide hammers, if it is necessary.

S 842-052
(3) Move the ram assembly up to push the lower bearing in the outer cylinder.

S 032-053
(4) Remove the ram assembly.

S 092-077
(5) Remove the seal protector strip and ring assembly from the outer cylinder.

S 092-078
(6) Remove the retainer assembly from the gland nut.

S 642-054
(7) Apply a thin layer of hydraulic fluid and petrolatum on the scraper.

S 642-240
(8) GLAND NUTS WITH LUBE FITTINGS;
Apply Grease (BMS 3-33) to the threads of the gland nut (22).

S 622-241
(9) ON GLAND NUTS WITHOUT LUBE FITTINGS;
Apply BMS 3-27 (preferred) or BMS 3-38 (alternate), Corrosion Preventative Compound, to the threads of the gland nut (22).

S 842-056
(10) Move the gland nut up the inner cylinder to the correct position.

S 432-057
(11) Use a spanner wrench to tighten the gland nut to 140-165 pound-feet.

S 432-058
(12) Install the lock key for the gland nut.

S 582-059
(13) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 412-060
(14) Connect the torsion links at the apex (AMM 32-11-16/401).

S 612-061

(15) Do the servicing of the shock strut for the main landing gear (AMM 12-15-01/301).

S 792-252

(16) Do a Shock Strut Seal Leak Inspection.

S 492-004

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 the landing gear doors and close the doors (AMM 32-00-15/201).

TASK 32-11-25-962-062

4. Active and Spare Seal Replacement (Fig. 201)

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 bottom of the inner cylinder. The seals can be damaged when you do this. It can also cause a permanent deformation of the seals that will make them difficult to install in the seal carrier.

A. Equipment
   (1) Shock Strut Drain Equipment, MLG/NLG - A32066-1
   (2) Shock Strut Lock Equipment, MLG - B32028-1
B. Consumable Materials
   (1) C00913 Compound - BMS3-27 (Recommended)
   (2) C50056 Compound - Non-drying Corrosion Inhibiting Resin Mix, BMS BMS 3-38 (Alternative)

(3) G50136 Paste - Corrosion Inhibiting Non-drying, BMS 3-38 (Alternative)
(4) G50237 Compound - Corrosion Inhibiting Non-drying Cor-Ban 27L, BMS 3-38 (Alternative)
(5) D00633 Grease - BMS 3-33 (Recommended)
(6) D00013 Grease - MIL-G-23827 (Alternative)
(7) D00070 Hydraulic Oil - MIL-H-5606
(8) D00129 Petrolatum
(9) D00062 Grease - MIL-G-4343

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
201	1	Active Dynamic Seal and Backup Rings	32-11-25	01	20
	2	Active Static Seal and Backup Rings			30
	3	Spare Dynamic Seal			25
	4	Spare Static Seal			35

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 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(5) AMM 32-00-15/201, Landing Gear Doorlocks
(6) AMM 32-00-20/201, Landing Gear Downlocks
(7) AMM 32-09-07/201, Main Gear Truck Tilt Sensor
(8) AMM 32-09-10/401, Main Gear Tilt Sensor Target Support Bracket
(9) AMM 32-11-16/401, Main Gear Torsion Links
(10) AMM 32-11-17/401, Main Gear Truck Assembly
(11) AMM 32-32-00/501 Main Gear Extension and Retraction
(12) AMM 32-32-15/401, Main Gear Truck Positioner Actuator

E. Access
(1) Location Zones
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Oleo Doors

F. Prepare for the Seal Replacement

S 492-063
(1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

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.

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

S 862-064

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

S 862-065

WARNING: CLEAR THE AREA BELOW THE WING BEFORE 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.
   (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 CAN CAUSE INJURY TO PERSONS.

   (b) Loosen the nut for the air valve, two turns.
   (c) Let the shock strut deflate fully.
   (d) Remove the air valve nut.

S 842-066

(5) Use a drip tray to catch the hydraulic fluid when you open the oil charging valve.

S 492-067

CAUTION: 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 092-068

(7) Remove the drain equipment when all the oil has drained from the shock strut.

S 032-069

(8) Disconnect the head end of the truck positioner actuator from the inner cylinder, do not disconnect the hydraulic hoses (AMM 32-32-15/401).

S 862-070
(9) Attach the actuator to the truck.

S 492-071
(10) Install the lock for the shock strut. Use the instructions supplied with the tool.

S 012-072
(11) Disconnect the truck assembly from the inner cylinder (AMM 32-11-17/401).

S 012-073
(12) Disconnect the target bracket for the truck tilt sensor from the inner cylinder (AMM 32-09-10/401).

S 582-074
(13) Lift the airplane approximately 18 inches (AMM 07-11-01/201).

S 642-075
(14) Lubricate the new seals with MIL-H-5606, to help you extend them over the fork of the inner cylinder, make sure the inner cylinder is very clean or the seals can be contaminated.

NOTE: You can wrap the fork of the inner cylinder with a thin sheet of plastic to protect the seals. You can pull the plastic up from the bottom to help roll the new seals up the inner cylinder.

S 862-076
(15) In the sequence that follows, extend the new seals around the fork of the inner cylinder:
(a) One active dynamic seal (1)
(b) One active static seal (2)
(c) Two spare dynamic seals (3)
(d) Two spare static seals (4)

S 842-234
(16) Move the seals above the attach hole for the truck assembly.

S 492-077

CAUTION: USE A ROPE TO HOLD THE LOWER END OF THE INNER CYLINDER AFTER YOU REMOVE THE SHOCK STRUT LOCK. DAMAGE CAN OCCUR TO THE INNER CYLINDER OR THE TRUCK ASSEMBLY IF THEY ARE NOT HELD.

(17) Remove the shock strut lock and lower the end of the inner cylinder.

S 822-078
(18) Align the attach holes of the truck beam to the attach holes of the inner cylinder.

S 412-078
(19) Connect the truck assembly to the inner cylinder (AMM 32-11-17/401).

S 012-079
(20) Disconnect the lower torsion link from the shock strut (AMM 32-11-16/401).

S 842-080
(21) Keep the links away from the work area. They could cause damage to the surface of the inner cylinder.

S 862-081
(22) Put axle jacks below the truck.

S 682-083
(23) Lift with the jacks until you can see approximately 9 inches of chrome on the inner cylinder (AMM 07-11-03/201).

S 842-082
(24) Wind a cloth pad around the inner cylinder. This will prevent damage to the surface of the cylinder if the gland nut moves down.

S 092-084
(25) Remove the lock key for the gland nut.

S 012-085
(26) Use a spanner wrench to remove the gland nut.

S 492-079
(27) Install the gland nut retainer assembly.

S 842-086
(28) Move retainer with the gland nut, and the scraper, to the bottom of the inner cylinder.
(a) Wind a cloth around the gland nut and the scraper to protect them.

S 492-080
(29) Install the seal protector strip and ring assembly around the inner cylinder. Move it up into the outer cylinder and hold it there with the strap.

S 842-087
(30) Put the puller assembly around the inner cylinder.

S 492-088
(31) Install the puller pins in the lower bearing.

S 432-089
(32) Tighten the puller assembly.

S 492-090
(33) Install a strap tightly around the fork of the inner cylinder.

S 862-079
(34) Lower the axle jacks (Ref 07-11-03).

S 012-091
(35) Pull the lower bearing out of the outer cylinder.

S 092-092
(36) Remove the axle jacks.

S 092-093
(37) Remove the strap from the puller assembly and the fork of the inner cylinder.

S 012-094
(38) Remove the puller pins from the lower bearing.

S 842-095
(39) Let the lower bearing move down and stay on the puller assembly.

G. Replace the Active and the Spare Seals

S 012-096
(1) Remove the pins to disconnect the seal retainer from the lower bearing.

S 492-089
(2) Install the lock assembly to hold the spacer and seal retainer inside the outer cylinder.

S 842-097
(3) Move the lower bearing up and then down to show the dynamic seal (1).

S 842-098
(4) Move the backup rings away from the dynamic seal (1).

S 842-099
(5) Move the backup rings out of the groove for the static seal.

S 212-100
(6) Examine the backup rings.
(a) Replace the backup rings if it is necessary.

S 032-101

CAUTION: BE CAREFUL NOT TO CAUSE DAMAGE TO THE INNER CYLINDER. DAMAGE OF THE SURFACE OF THE INNER CYLINDER CAN CAUSE DAMAGE TO THE SEALS.

(7) Cut the static (2) and the dynamic (1) seals. Use a plastic tool and backup strip to prevent damage to the surface of inner cylinder and the lower bearing groove.

S 012-102
(8) Remove the seals from the inner cylinder.

S 642-103
(9) Apply a thin layer of hydraulic fluid and petrolatum to the new dynamic seal and backup rings (1).

S 842-104
(10) Move the dynamic seal (1) on top of the lower bearing.

S 862-105
(11) Put the seal and backup rings (1) in position for the installation.

NOTE: Do not extend the seals more than necessary for the installation.

S 432-106
(12) Install the ram assembly on the inner cylinder between the dynamic seal and the seal retainer.

S 842-107
(13) Move the ram assembly down to push the dynamic seal (1) in position in the lower bearing.

S 032-108
(14) Remove the ram assembly.

S 092-090
(15) Remove the seal retainer lock assembly.

S 842-109
(16) Move the seal retainer down.

S 412-133
(17) Install the pins to connect the seal retainer to the lower bearing.

NOTE: Make sure the pins are installed in the correct orientation as shown in Fig. 201. Make sure the pins stay in position when you move the lower bearing up into the outer cyclinder.

S 642-111
(18) Apply a thin layer of hydraulic fluid and petrolatum to the new static seal and backup rings (2).

S 842-112
(19) Move the static seal (2) up the inner cylinder and in the outer groove in the lower bearing.

S 842-113
(20) Move the backup rings in the correct position, adjacent to the seal.

S 642-114
(21) Fill the grooves for the spare seal with MIL-G-4343 grease.

S 842-115
(22) Move the spare seals (3 and 4) up the inner cylinder.
(a) Put the spare seals in the correct grooves in the lower bearing.

H. Put the Airplane Back to Its Usual Condition

S 092-116
(1) Hold the lower bearing and remove the puller assembly.

S 432-117
(2) Install the ram assembly below the lower bearing.
(a) Attach the slide hammers, if it is necessary.

S 842-118
(3) Move the ram assembly up to push the lower bearing in the outer cylinder.

S 032-119
(4) Remove the ram assembly.

S 092-081
(5) Remove the seal protector strip and ring assembly.

S 492-082
(6) Remove the retainer assembly from the gland nut.

S 642-120
(7) Apply a thin layer of hydraulic fluid and petrolatum to the scraper.

S 642-242
(8) GLAND NUTS WITH LUBE FITTINGS;
apply grease (BMS 3-33) to the threads of the gland nut (22).

S 622-243
(9) GLAND NUTS WITHOUT LUBE FITTINGS;
apply Compound, to the threads of the gland nut (22).

S 842-122
(10) Move the gland nut and the scraper up the inner cylinder to the correct position.

S 432-123
(11) Use a spanner wrench to tighten the gland nut.

S 432-124
(12) Install the lock key for the gland nut.

S 432-125
(13) Connect the lower torsion link to the inner cylinder (Ref 32-11-16).

S 432-126
(14) Install the target bracket for the truck tilt sensor on the inner cylinder of the shock strut (AMM 32-09-10/401).

S 582-127
(15) Lower the airplane but leave the jacks in place (AMM 07-11-01/201).

S 432-128
(16) Connect the head end of the truck positioner actuator to the inner cylinder (AMM 32-32-15/401).

S 202-129
(17) Do a check of the distance for the tilt sensor on the truck of the main landing gear (AMM 32-09-07/201).

S 612-130
(18) Do the servicing of the shock strut (AMM 12-15-01/301).

S 492-005

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.

(19) Remove the door locks from the landing gear doors and close the doors (AMM32-00-15/201).

S 712-253
(20) If needed, you may do an operational test of the extention and retraction (AMM 32-32-00/501).

NOTE: The operational test will help you validate the assembly of the landing gear.

S 082-258
(21) Remove the jacks (AMM 07-11-01/201).

S 792-257
(22) Do a Shock Strut Seal Leak Inspection.

TASK 32-11-25-402-070

5. Active and Spare Seal Replacement - Optional Procedure (Fig. 201)

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 height necessary to do this can be at least 54 inches.

A. Equipment
(1) Shock Strut Drain Equipment, MLG/NLG - A32066-1
(2) Shock Strut Lock Equipment, MLG - B32028-1

B. Consumable Materials
(1) C00913 Compound - BMS3-27 (Recommended)
(2) C50056 Compound - Non-drying Corrosion Inhibiting Resin Mix, BMS 3-38 (Alternative)
(3) G50136 Paste - Corrosion Inhibiting Non-drying, BMS 3-38 (Alternative)
(4) G50237 Compound - Corrosion Inhibiting Non-drying Cor-Ban 27L, BMS 3-38 (Alternative)
(5) D00633 Grease - BMS 3-33 (Recommended)
(6) D00013 Grease - MIL-G-23827 (Alternative)
(7) D00070 Hydraulic Oil - MIL-H-5606
(8) D00129 Petrolatum
(9) D00062 Grease - MIL-G-4343

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
201	1	Active Dynamic Seal and Backup Rings	32-11-01	10	335
	2	Active Static Seal and Backup Rings			345
	3	Spare Dynamic Seal			340
	4	Spare Static Seal			347

D. 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, Main (Left, Right, and Center) Hydraulic Systems
(4) AMM 32-00-15/201, Landing Gear Doorlocks
(5) AMM 32-00-20/201, Landing Gear Downlocks
(6) AMM 32-11-16/401, Main Gear Torsion Links
(7) AMM 32-32-00/501, Main Gear Extension and Retraction
(8) AMM 32-32-15/401, Main Gear Truck Positioner Actuator
(9) AMM 32-42-00/501, Antiskid/Autobrake System

E. Access
(1) Location Zones
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Oleo Doors

F. Prepare for the Seal Replacement

S 492-031
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 492-032

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 862-033
(3) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).

S 862-034

WARNING: CLEAR THE AREA BELOW THE WING BEFORE YOU DEFLATE ONE SHOCK STRUT. THE WING TIP CAN MOVE DOWN AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) 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 CAN CAUSE INJURY TO PERSONS.

(b) Loosen the nut for the air valve, two turns.
(c) Let the shock strut deflate fully.
(d) Remove the air valve nut.

S 842-035
(5) Use a drip tray to catch the hydraulic fluid when you open the oil charging valve.

S 492-036

CAUTION: 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 092-037
(7) Remove the drain equipment when all the oil has drained from the shock strut.

S 032-038
(8) Disconnect the head end of the truck positioner actuator from the inner cylinder, do not disconnect the hydraulic hoses (AMM 32-32-15/401).

S 862-039
(9) Attach the actuator to the truck.

S 032-040
(10) Disconnect the brackets that hold the disconnects for the hydraulic lines.

NOTE: The brackets attach to the inner and outer cylinders at the upper and lower torsion link attach points.

S 032-041
(11) Disconnect the upper and lower attach brackets.

S 032-042
(12) Remove the upper and lower attach pins for the torsion link.

S 032-043
(13) Disconnect the hydraulic lines and the electrical lines from the brackets on the side of the truck beam.

S 582-044
(14) Lift the airplane on jacks until you can see approximately 9 inches of chrome on the inner cylinder (AMM 07-11-01/201).

S 222-260
(15) Measure and record the distance that the lower surface of the gland nut (22) extends below the lower surface of the outer cylinder (Fig. 201, Detail A).

NOTE: The recorded measurement will be used to compare to the 2nd measurement made when the shock strut is assembled.

S 842-045
(16) Wind a cloth pad around the inner cylinder.

NOTE: This will prevent damage to the surface of the cylinder if the gland nut moves down.

S 092-046
(17) Remove the lock key for the gland nut.

S 012-047
(18) Use a spanner wrench to remove the gland nut.

S 492-083
(19) Install the retainer assembly on the gland nut.

S 842-235
(20) Move the retainer with gland nut, and the scraper, to the bottom of the inner cylinder.
(a) Wind a cloth around the gland nut and the scraper to protect them.

S 492-084
(21) Install the seal protector strip and ring assembly around the inner cylinder. Move it up into the outer cylinder and hold it there with the strap.

S 842-236
(22) Put the puller assembly around the inner cylinder.

S 492-237
(23) Install the puller pins in the lower bearing.

S 432-008
(24) Tighten the puller assembly.

S 492-009
(25) Install a strap tightly around the fork of the inner cylinder.

S 582-049

CAUTION: MAKE SURE YOU USE THE JACK UNDER THE AFT FUSELAGE STABILIZING POINT AFTER YOU LIFT THE AIRPLANE TO THIS HEIGHT. IF YOU DO NOT INSTALL A JACK AT THE STABILIZING POINT AFTER THE PRIMARY JACKS ARE IN THEIR FINAL POSITION, DAMAGE TO EQUIPMENT CAN OCCUR.

(26) Lift the airplane on jacks to the height that is necessary to permit you to install the new seals over the top of the inner cylinder (AMM 07-11-01/201).

NOTE: The height necessary to do this can be as much as 54 inches with the metering pin removed.

S 032-071
(27) Remove the metering pin from the top of the inner cylinder and secure it inside the outer cylinder.

S 862-011
(28) In the sequence that follows, install the new seals on the inner cylinder:
(a) Two spare static seals (1)
(b) Two spare dynamic seals (2)
(c) One active static seal (3)
(d) One active dynamic seal (4)

S 432-072
(29) Install the metering pin in the top of the inner cylinder.

S 582-050
(30) Lower the airplane so the lower bearing on the inner cylinder is still outside the outer cylinder.

S 092-051
(31) Remove the strap from the puller assembly and the fork of the inner cylinder.

S 012-010
(32) Remove the puller pins from the lower bearing.

G. Replace the Active and the Spare Seals

S 642-012
(1) Fill the grooves for the spare seals with MIL-G-4343 grease.

S 842-013
(2) Move the spare seals (3 and 4) down the inner cylinder.
(a) Put the spare seals in the correct grooves in the lower bearing.

S 012-014
(3) Remove the pins to disconnect the seal retainer from the lower bearing.

S 492-085
(4) Install the lock assembly to hold the spacer and seal retainer inside the outer cylinder.

S 842-238
(5) Move the lower bearing up and then down to show the dynamic seal (1).

S 842-016
(6) Move the backup rings away from the dynamic seal (1).

S 842-017
(7) Move the backup rings out of the groove for the static seal (2).

S 212-018
(8) Examine the backup rings.
(a) Replace the backup rings if it is necessary.

S 032-052

CAUTION: BE CAREFUL NOT TO CAUSE DAMAGE TO THE INNER CYLINDER. DAMAGE OF THE SURFACE OF THE INNER CYLINDER CAN CAUSE DAMAGE TO THE SEALS.

(9) Cut the static (2) and the dynamic (1) seals. Use a plastic tool and backup strip to prevent damage to the surface of inner cylinder and the lower bearing groove.

S 012-019
(10) Remove the seals from the inner cylinder.

S 642-020
(11) Apply a thin layer of hydraulic fluid and petrolatum to the new static seal and backup rings (2).

S 842-021
(12) Move the static seal (2) down the inner cylinder and in the outer groove in the lower bearing.

S 842-022
(13) Move the backup rings in the correct position, adjacent to the seal.

S 642-023
(14) Apply a thin layer of hydraulic fluid and petrolatum to the new dynamic seal and backup rings (1).

S 842-024
(15) Move the dynamic seal (1) on top of the lower bearing.

S 862-025
(16) Put the seal and backup rings (1) in position for the installation.

NOTE: Do not extend the seals more than necessary for the installation.

S 432-026
(17) Install the ram assembly on the inner cylinder between the dynamic seal and the seal retainer.

S 842-027
(18) Move the ram assembly down to push the dynamic seal (1) in position in the lower bearing.

S 032-028
(19) Remove the ram assembly.

S 092-086
(20) Remove the seal retainer lock assembly.

S 842-029
(21) Move the seal retainer down.

S 412-030
(22) Install the pins to connect the seal retainer to the lower bearing.

NOTE: Make sure the pins are installed in the correct orientaion as shown in Fig. 201. Make sure the pins stay in position when you move the lower bearing up into the outer cylinder.

H. Put the Airplane Back to Its Usual Condition

S 092-053
(1) Hold the lower bearing and remove the puller assembly.

S 492-054
(2) Install the ram assembly below the lower bearing.
(a) Attach the slide hammers, if it is necessary.

S 582-055
(3) Lower the airplane so the lower bearing on the inner cylinder goes into the outer cylinder.

S 582-056
(4) Move the ram assembly up to push the lower bearing in the outer cylinder, if it is necessary, as you continue to lower the airplane.

S 092-057
(5) Remove the ram assembly.

S 092-087
(6) Remove the seal protector and strip from the outer cylinder.

S 092-088
(7) Remove the retainer from the gland nut.

S 642-058
(8) Apply a thin layer of hydraulic fluid and petrolatum to the scraper.

S 642-244
(9) GLAND NUTS WITH LUBE FITTINGS;
apply grease (BMS 3-33) to the threads of the gland nut (22) .

S 622-245
(10) GLAND NUTS WITHOUT LUBE FITTINGS;
apply Compound to the threads of the gland nut (22).

S 842-060
(11) Move the gland nut and the scraper up the inner cylinder to the correct position.

S 432-061
(12) Use a spanner wrench to tighten the gland nut.

S 432-247
(13) Tighten the gland nut to 140-165 pound-feet.

S 032-248
(14) If it is necessary, loosen the gland nut to align the slot with the lock key.

S 222-261
(15) Measure the distance that the lower surface of the gland nut (22) extends below the lower surface of the outer cylinder (Fig. 201, Detail A).

NOTE: The distance measured must be equal to the distance recorded prior to gland nut removal, within +0.02 inch.

S 432-062
(16) Install the lock key for the gland nut.

S 432-063
(17) Install the upper and lower attach pins for the torsion link (AMM 32-11-16/401).

S 582-064
(18) Lower the airplane but leave the jacks in place (AMM 07-11-01/201).

S 432-065
(19) Connect the hydraulic lines and the electrical lines to the brackets on the side of the truck beam.

S 432-066
(20) Connect the brackets that hold the disconnects for the hydraulic lines.

S 432-067
(21) Connect the head end of the truck positioner actuator to the inner cylinder (AMM 32-32-15/401).

S 612-068
(22) Do the servicing of the shock strut (AMM 12-15-01/301).

S 722-254
(23) 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 092-069

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.

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

S 712-255
(25) If needed, you may do an operational test of the extention and retraction (AMM 32-32-00/501).

NOTE: The operational test will help you validate the assembly of the landing gear.

S 082-259
(26) Remove the jacks (AMM 07-11-01/201).

S 792-256
(27) Do a Shock Strut Seal Leak Inspection.

MAIN GEAR AXLE - INSPECTION/CHECK

1. General
   A. This procedure only has an illustration, and a 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 Gear Truck Assembly - Removal/Installation for the procedures to do these tasks.

TASK 32-11-26-206-001

2. Wear Limits Inspection/Check for the Axles of the Main Landing Gear
   A. References
      (1) AMM 32-00-20/201, Landing Gear Downlocks
      (2) AMM 32-11-17/401, Main Gear Truck Assembly
      (3) AMM 32-41-10/401, Main Gear Wheel Brakes
      (4) AMM 32-45-01/401, Main Gear Wheel and Tire
   B. Prepare for the Wear Limits Check

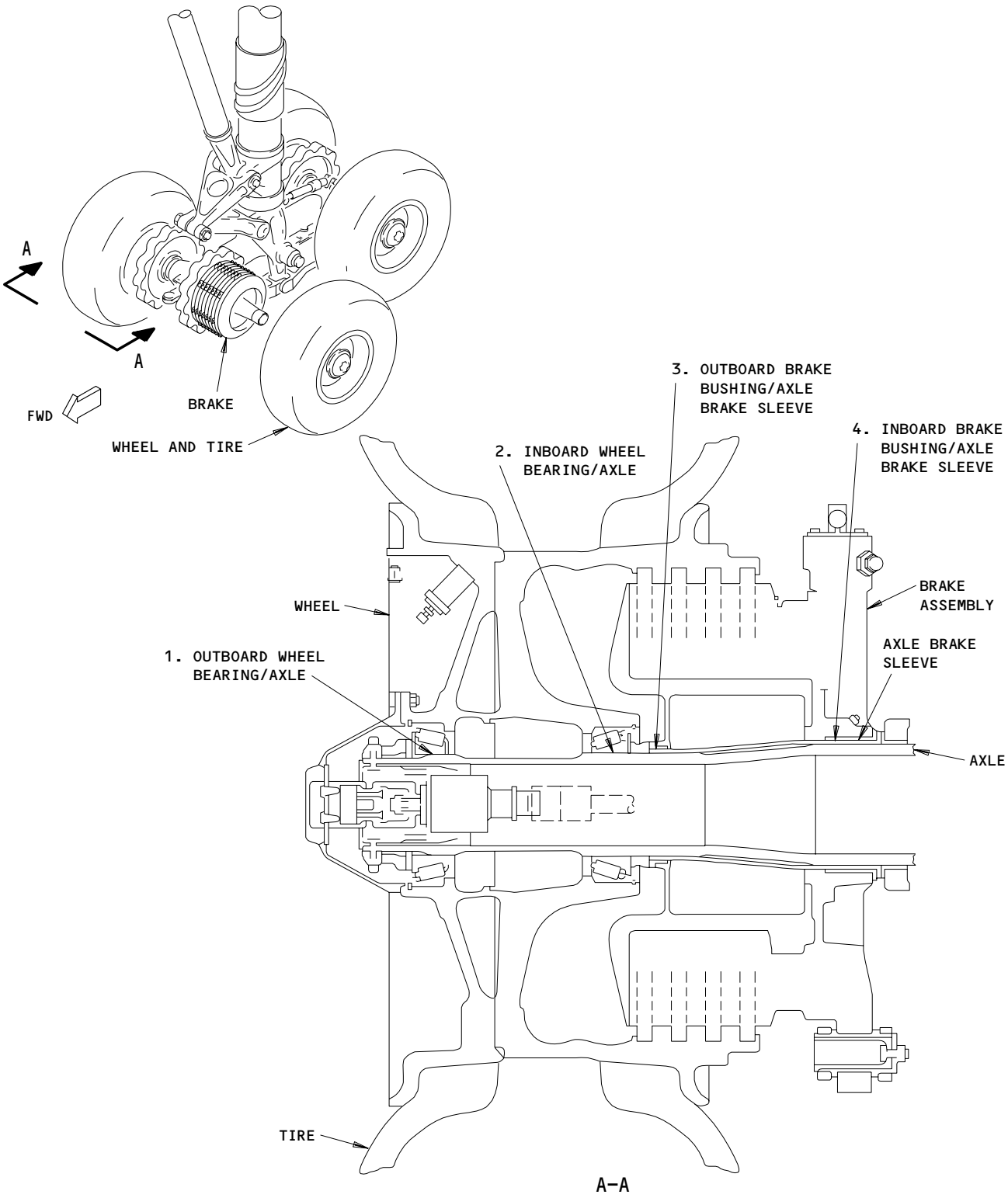
      S 496-004
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 036-005
      (2) Remove the wheel and tire from the main landing gear (AMM 32-45-01/401).

      S 036-006
      (3) Remove the brake for the main landing gear (AMM 32-41-10/401) to inspect the brake sleeve area.
   C. Wear Limits for the Axle

      S 226-007
      (1) Refer to Fig. 601 for the inspection points and Fig. 602 for the wear limit table.
   D. Put the Airplane Back to Its Usual Condition

      S 436-002
      (1) Install the brake for the main landing gear (AMM 32-41-10/401).



Main Landing Gear Axle Inspection
Figure 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	BEARING	ID	3.6210	3.6220	3.6273	0.0068	X		1
	AXLE	OD	3.6190	3.6205	3.6152		X		2
2	BEARING	ID	3.7500	3.7510	3.7564	0.0069	X		1
	AXLE	OD	3.7480	3.7495	3.7441		X		2
3	BUSHING	ID	3	3	4.008	0.0120	X		1
	AXLE BRAKE SLEEVE	OD	3.9960	3.9985	3.9920		X		2
4	BUSHING	ID	3	3	4.758	0.0124	X		1
	AXLE BRAKE SLEEVE	OD	4.7460	4.7485	4.7416		X		2

DIMENSIONS IN INCHES

1 GET A REPLACEMENT PART. REFER TO THE CMM FOR THE ASSEMBLY INSTRUCTIONS.

2 THE PART (OR ASSEMBLY) IS REPAIRABLE. REFER TO THE CMM FOR THE REPAIR DATA.

3 REFER TO APPLICABLE BRAKE CMM

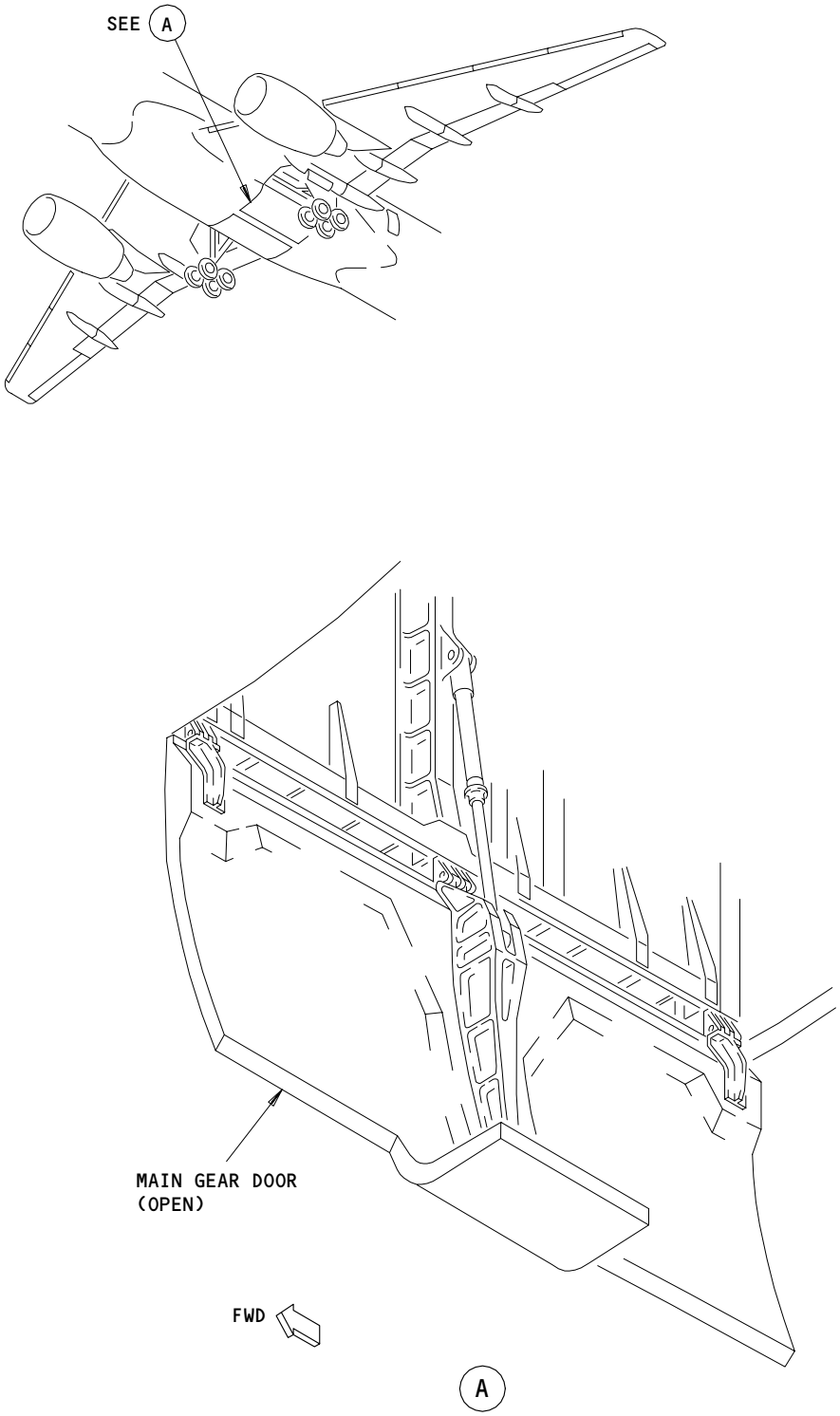
Main Landing Gear Axle Wear Table
Figure 602

S 436-003

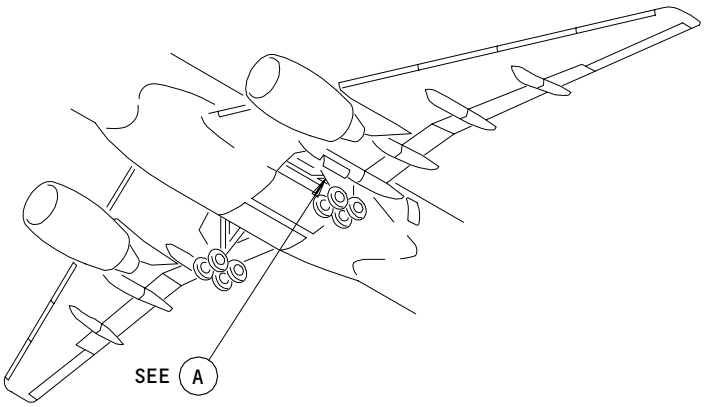
(2) Install the wheel and tires on the main landing gear (AMM 32-45-01/401).

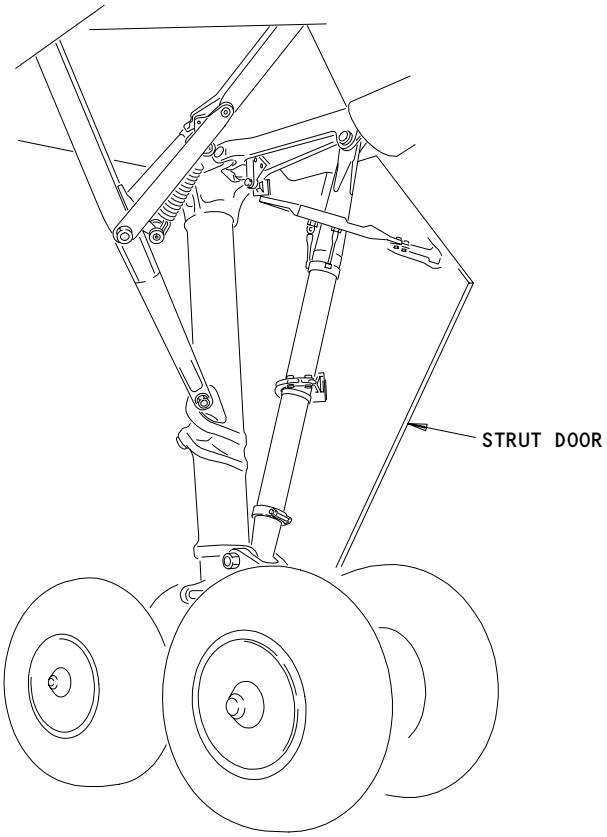
MAIN GEAR DOORS - DESCRIPTION AND OPERATION

1. General
   A. The main gear doors consist of a main gear door, a strut door, and a trunnion fairing door. These doors cover the retracted main gear during flight and fair into the contour of the airplane body to reduce aerodynamic drag.
2. Component Details
   A. Main Gear Door (Fig. 1)
      (1) The main gear door is the largest of the three doors and is the only one which is hydraulically operated. The door is a composite structure which is strengthened by a center hinge support beam, which also provides attachment for the door actuator. The door is mounted on three hinges attached to the wheel well keel beam. When the gear is either fully retracted or fully extended, the door closes to cover the wheel well area. During normal operation, the door is open only when the gear is in transit. During alternate extension, the door opens and remains open. The main gear door can also be opened by ground release for access to the wheel well for maintenance.
   B. Strut Door (Fig. 2)
      (1) The strut door is mounted on the drag strut and trunnion link of the gear and moves as part of the gear. When the gear is retracted, the strut door covers the shock strut and drag strut in the wing cavity. This door is a composite structure also and is strengthened by a support beam which attaches the door to the drag strut.
   C. Trunnion Fairing Door (Fig. 3)
      (1) The trunnion fairing door is a curved, composite structure which forms the center section of the main gear trunnion fairing. The door is mounted on two hinges attached to the trunnion fairing support and is linked to and operated by the strut door. When the gear is retracted, the door covers the trunnion link and the upper end of the shock strut.



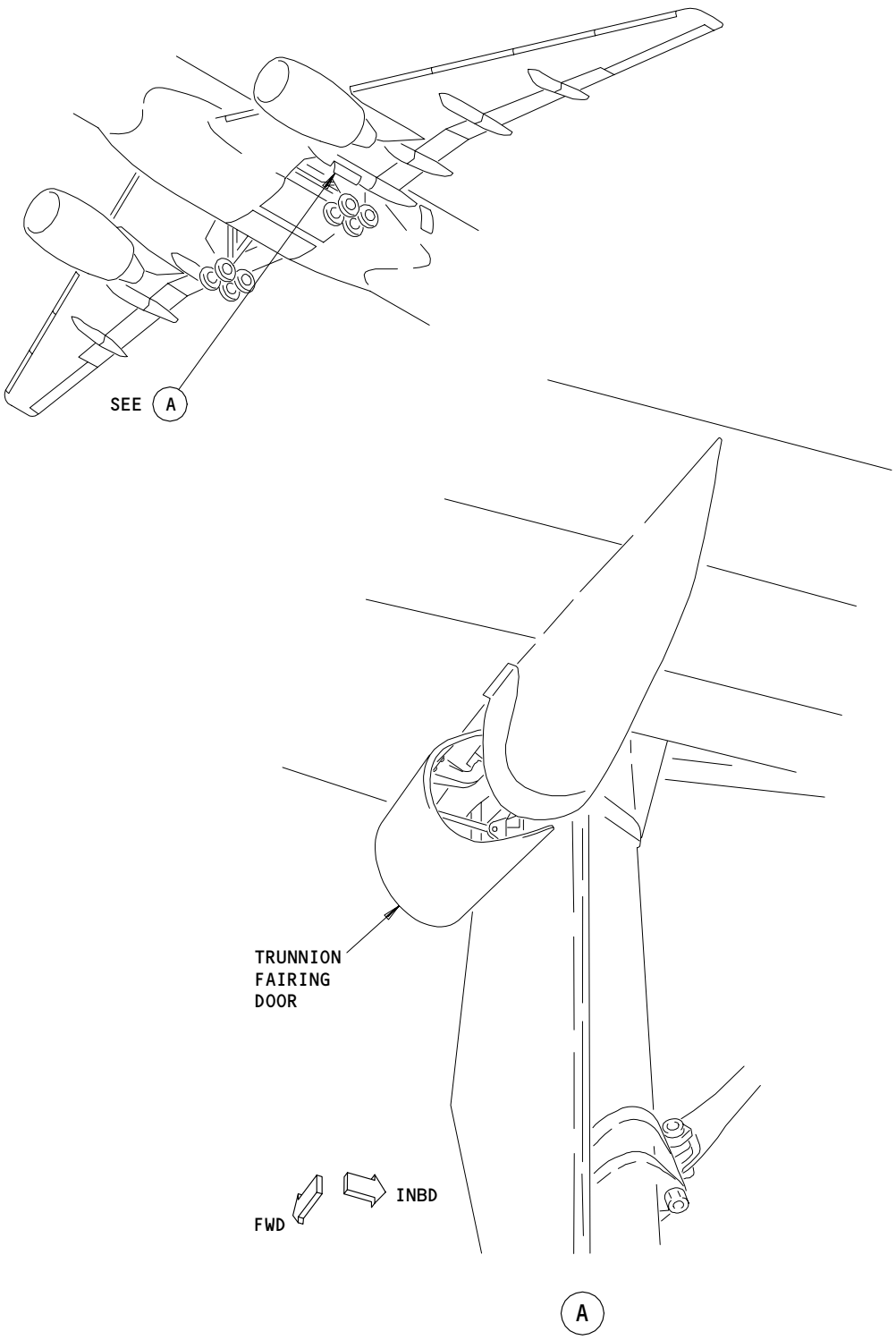
Main Gear Door
Figure 1





A

Strut Door
Figure 2



Trunnion Fairing Door
Figure 3

MAIN GEAR DOORS - ADJUSTMENT/TEST

1. General
   A. This procedure contains three tasks to adjust the main landing gear door. The first task adjusts the main landing gear door. The second task adjusts the strut door. The third task adjusts the trunnion fairing door. The doors can be adjusted independently or together.

TASK 32-12-00-825-113

2. Adjustment - Main Landing Gear Door (Fig. 501)
   A. General
      (1) This procedure gives the instructions to adjust the main landing gear door and the door actuator.
   B. Equipment
      (1) Door Locks, Landing Gear - (AMM 32-00-15/201)
      (2) Cart - Portable Hydraulic, System Test, 3000 PSI, 50 GPM
   C. 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 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   D. Access
      (1) Location Zones

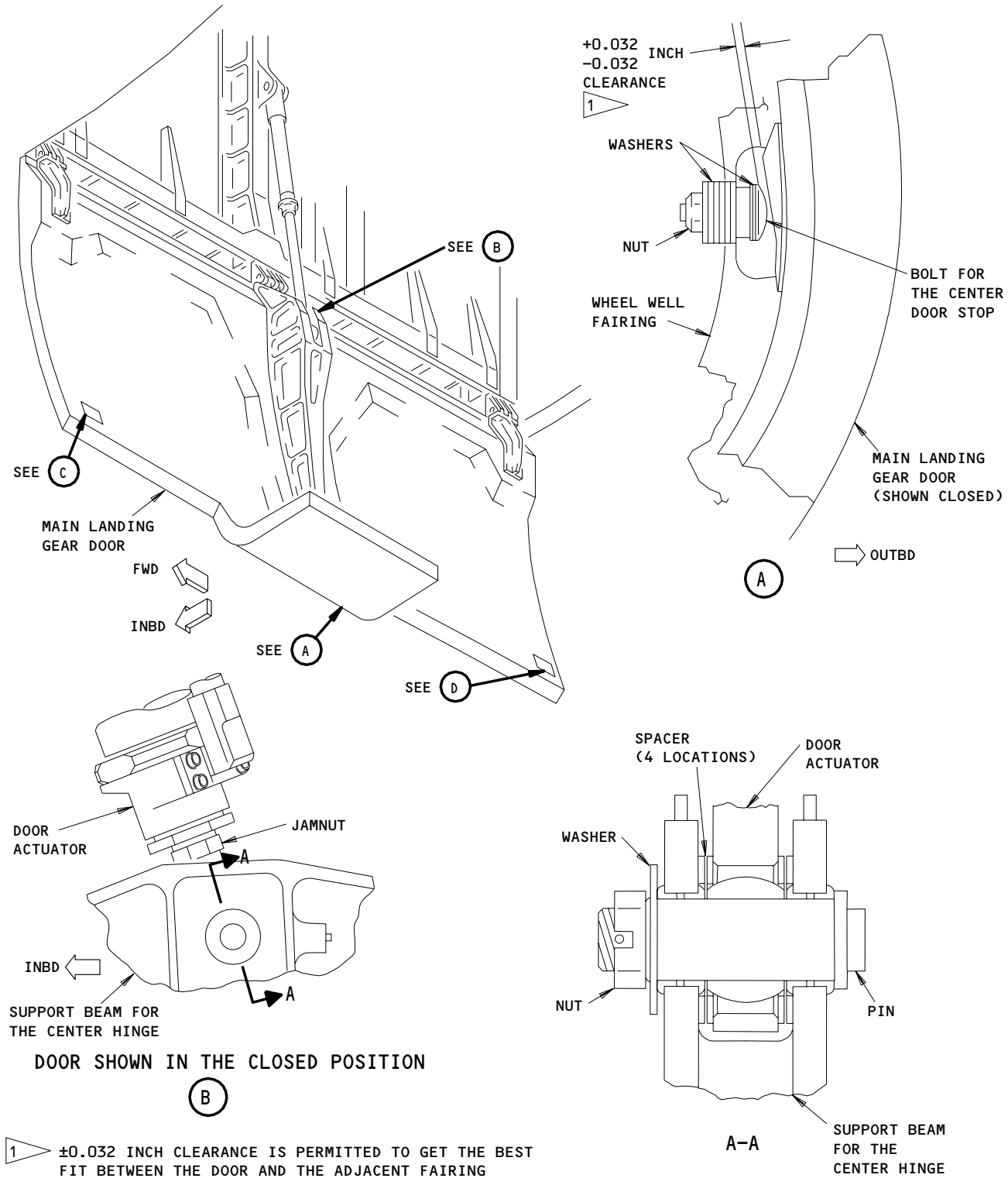
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Door

   E. Prepare for the Adjustment

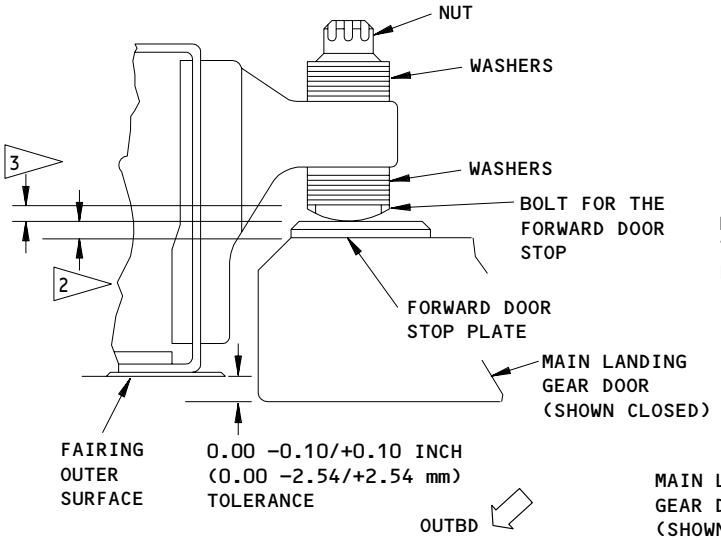
S 495-085

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.

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

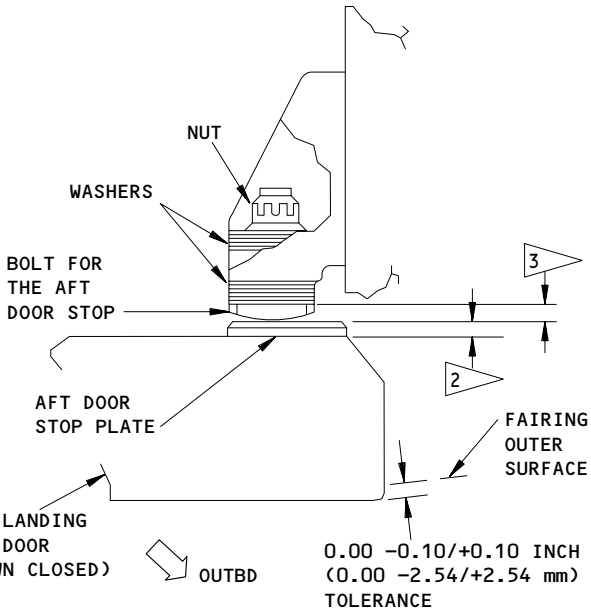


Main Langing Gear Door Adjustment
Figure 501 (Sheet 1)



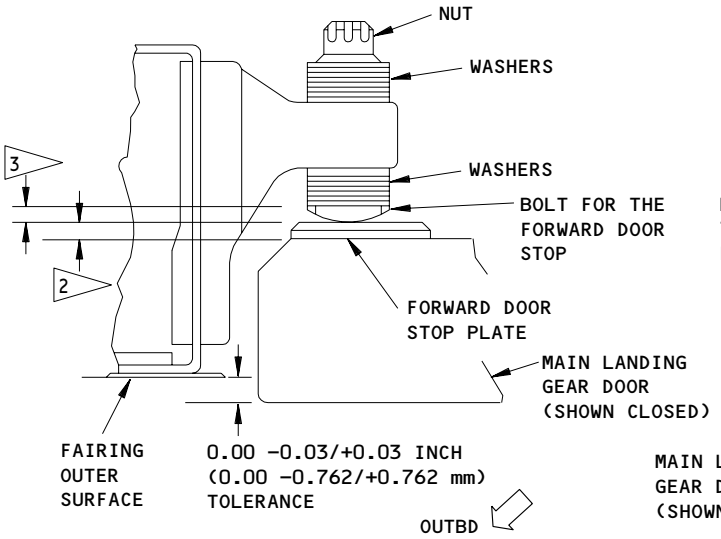
TWO-PIECE MAIN LANDING GEAR DOOR

C



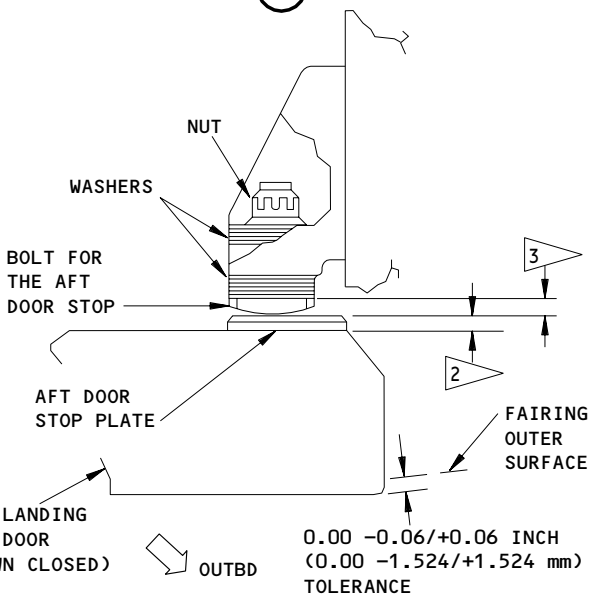
TWO-PIECE MAIN LANDING GEAR DOOR

D



ONE-PIECE MAIN LANDING GEAR DOOR

C



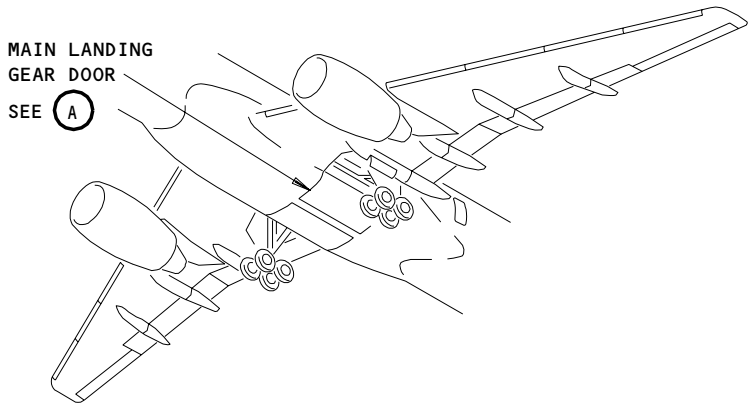
ONE-PIECE MAIN LANDING GEAR DOOR

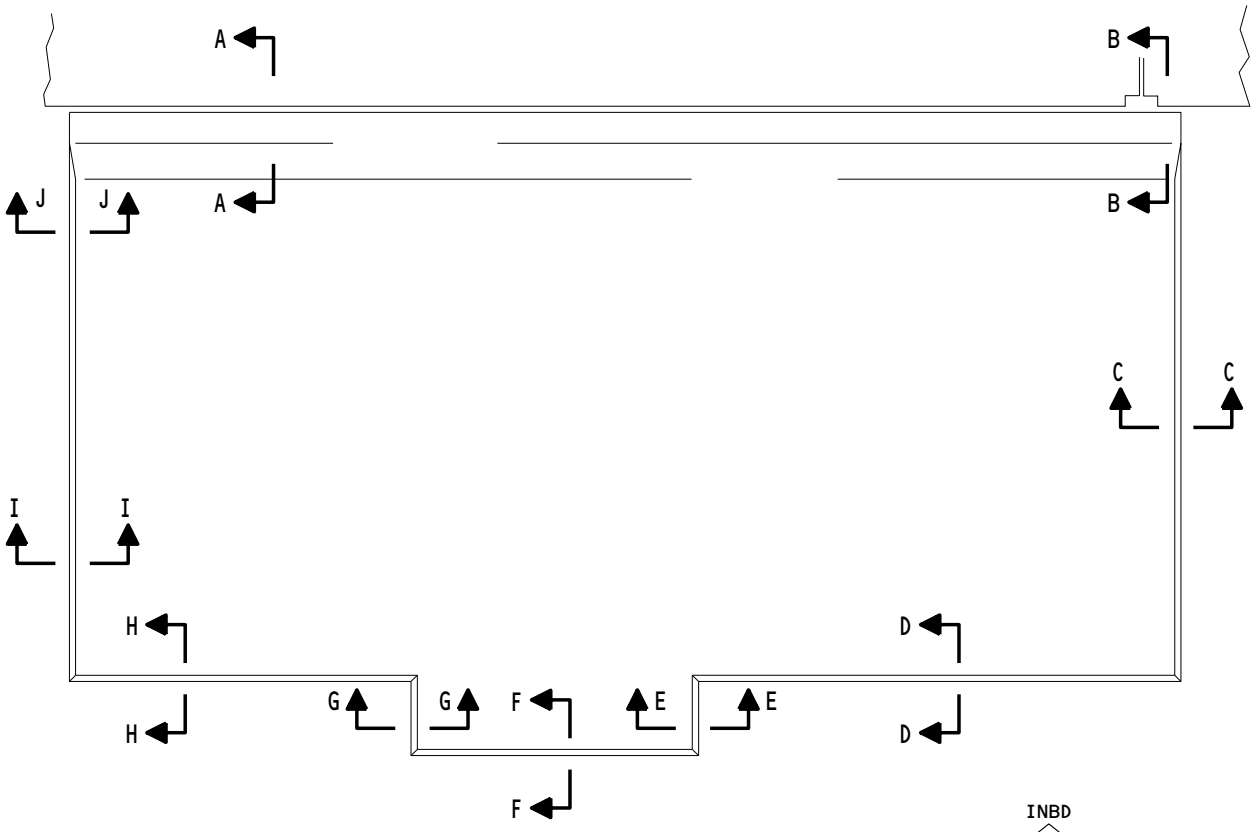
D

2 THE MINIMUM THICKNESS FOR THE DOOR STOP PLATE IS 0.078 INCH (1.981 mm) FOR THE FORWARD STOP PLATE AND 0.118 INCH (3.0 mm) FOR THE AFT STOP PLATE. SEE THE COMPONENT MAINTENANCE MANUAL FOR REPLACEMENT INSTRUCTIONS.

3 THE MINIMUM THICKNESS FOR THE HEAD OF THE BOLT IS 0.035 INCH (0.889 mm).

Main Landing Gear Door Adjustment
Figure 501 (Sheet 2)



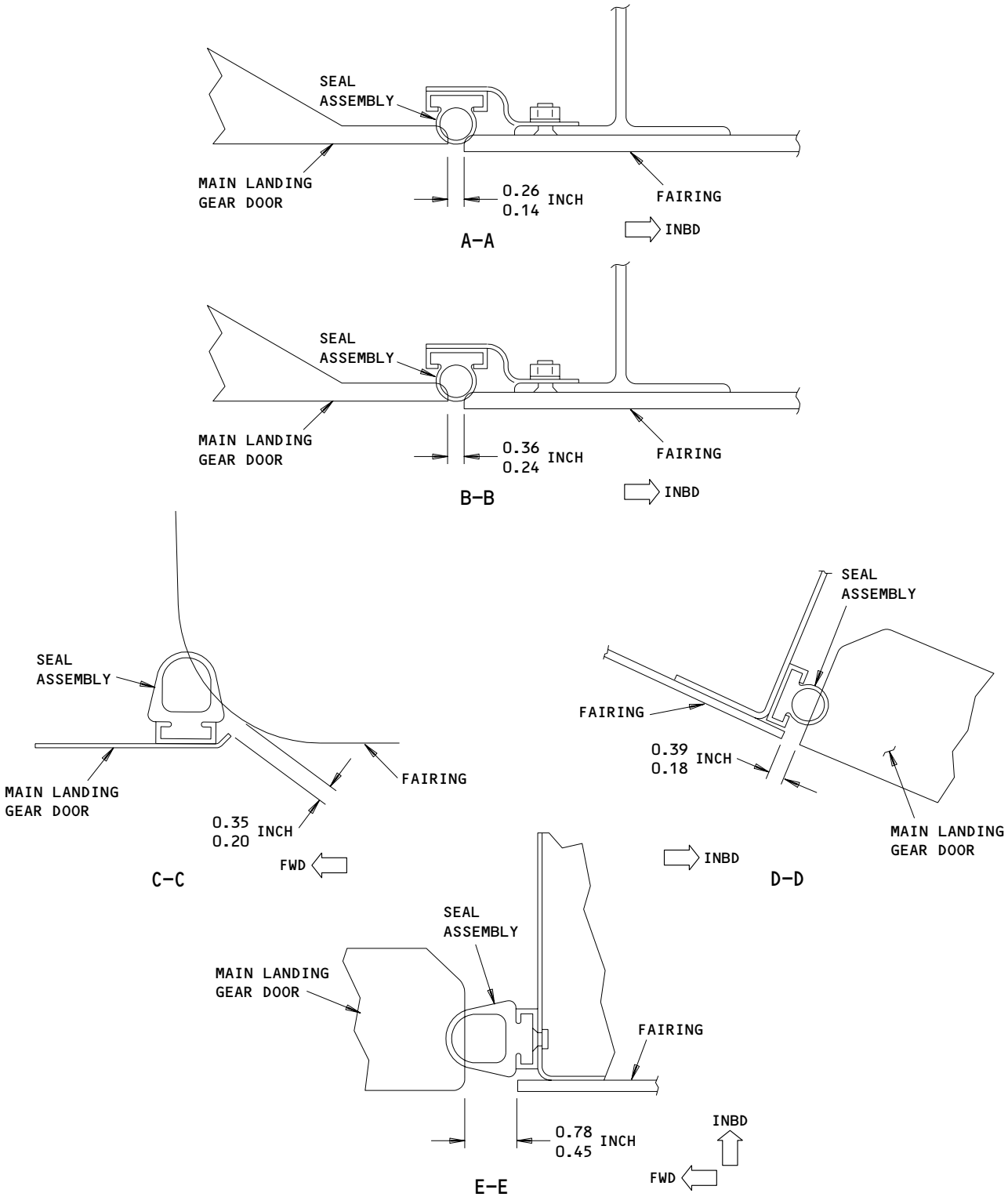


MAIN LANDING GEAR DOOR

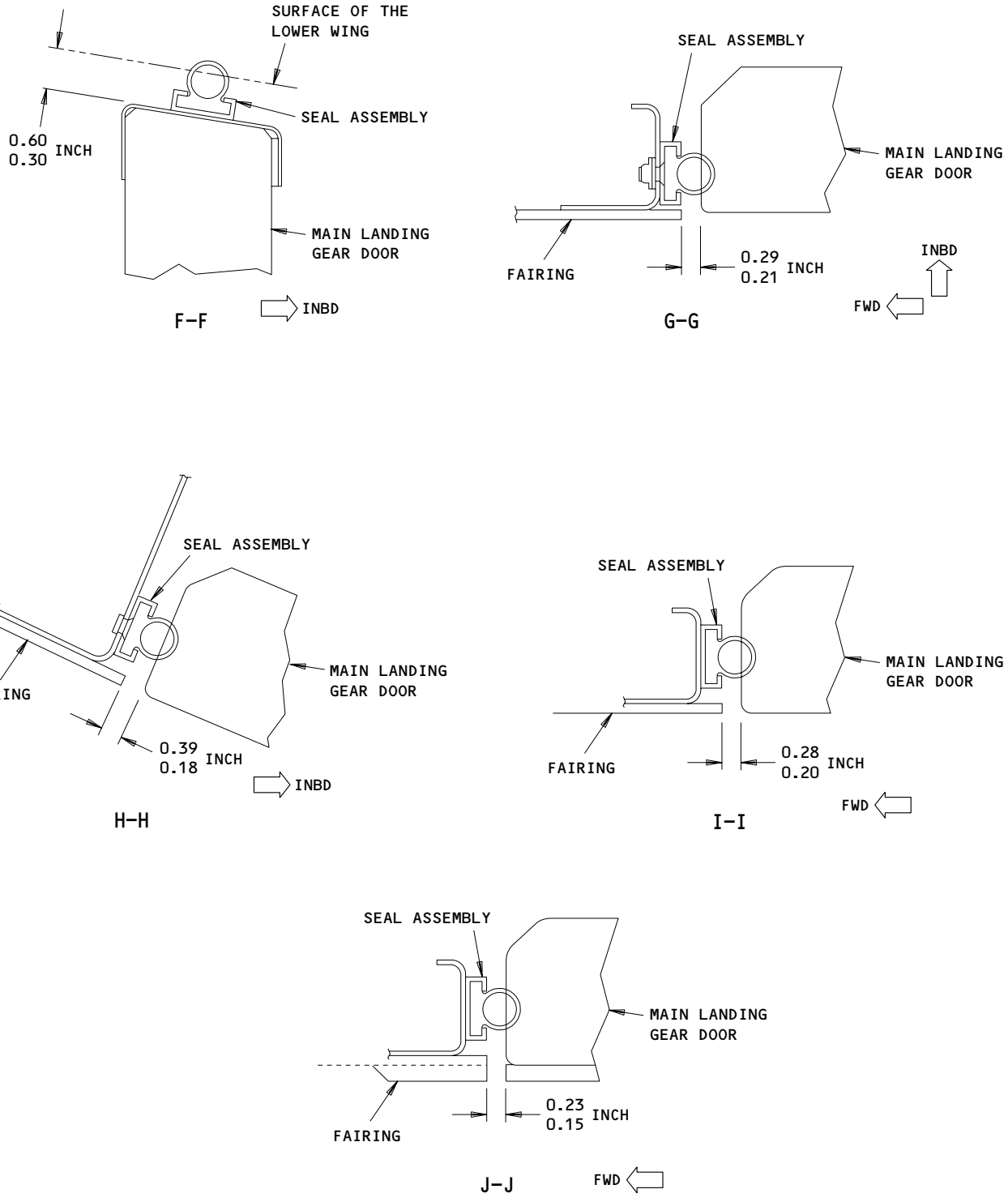
A

Tolerances of the Main Landing Gear Doors
Figure 501A (Sheet 1)

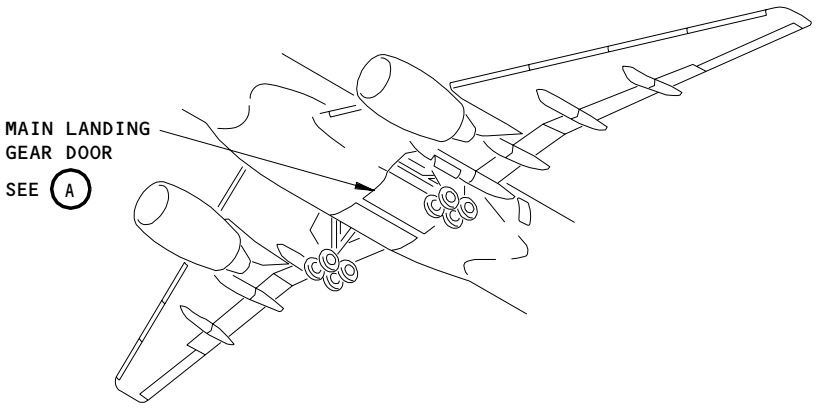
783664

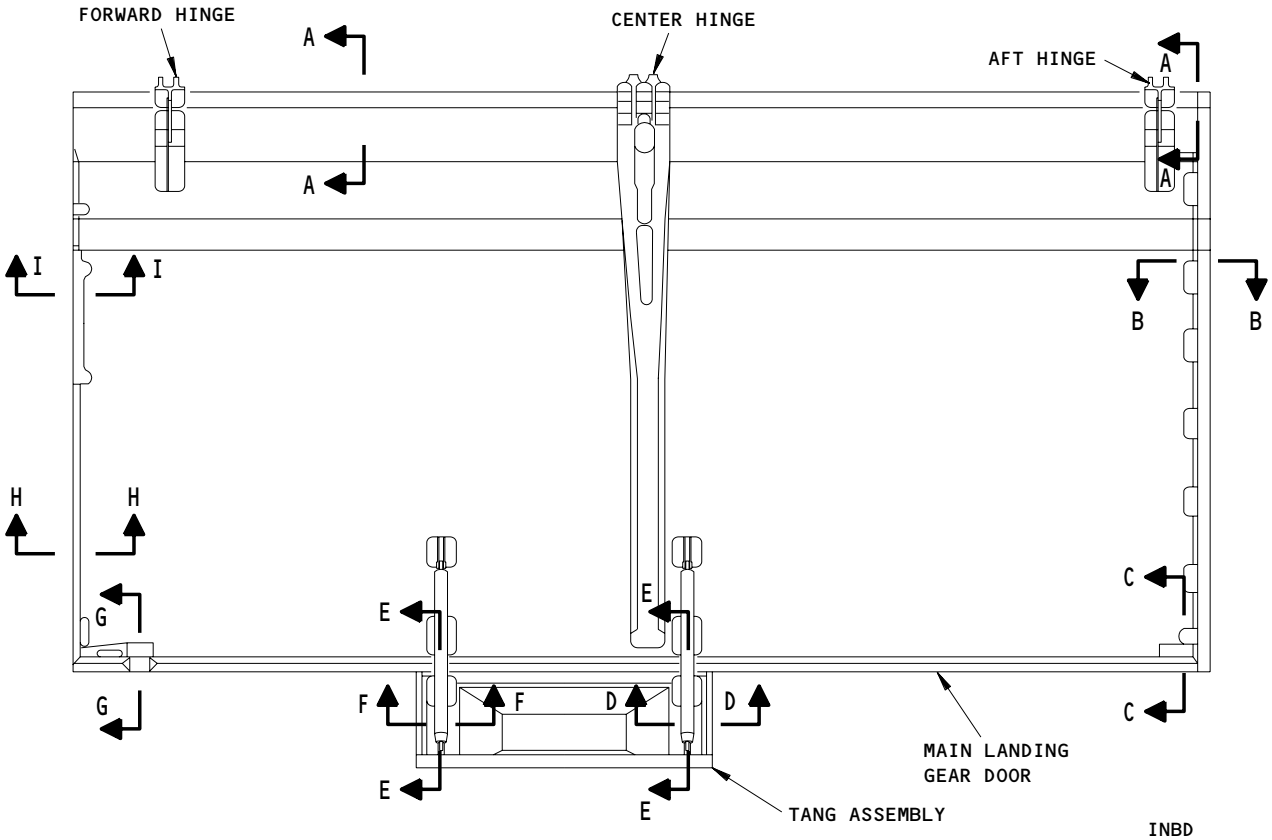


Tolerances of the Main Landing Gear Doors
Figure 501A (Sheet 2)



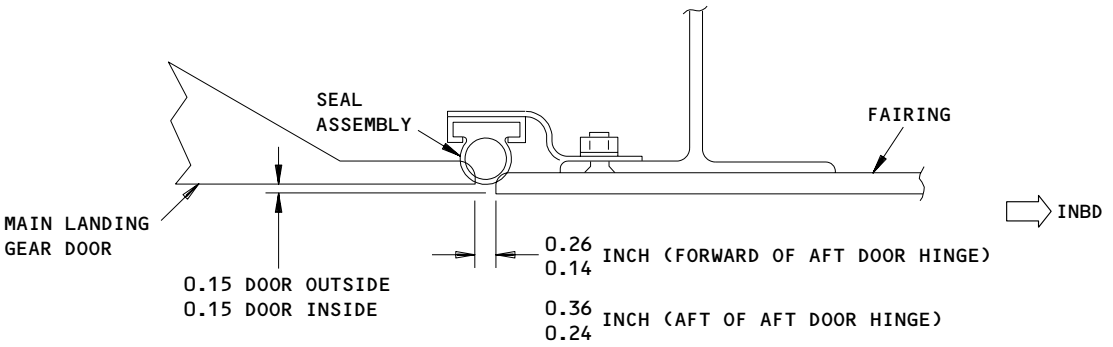
Tolerances of the Main Landing Gear Doors
Figure 501A (Sheet 3)



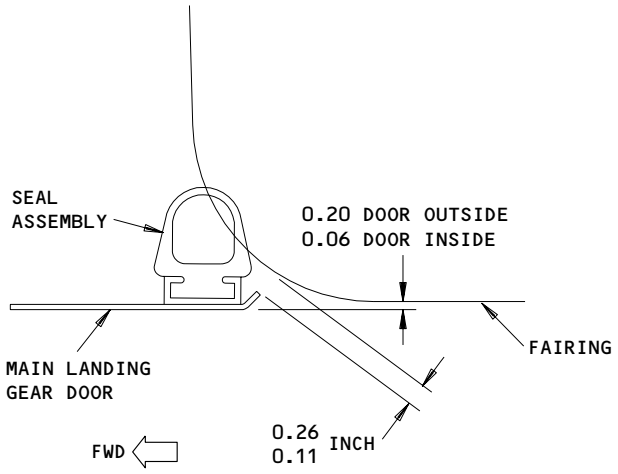


MAIN LANDING GEAR DOOR
A

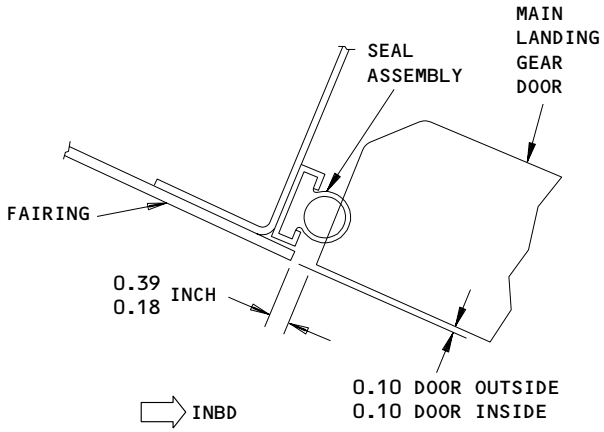
Tolerances of the Main Landing Gear Doors
Figure 501B (Sheet 1)



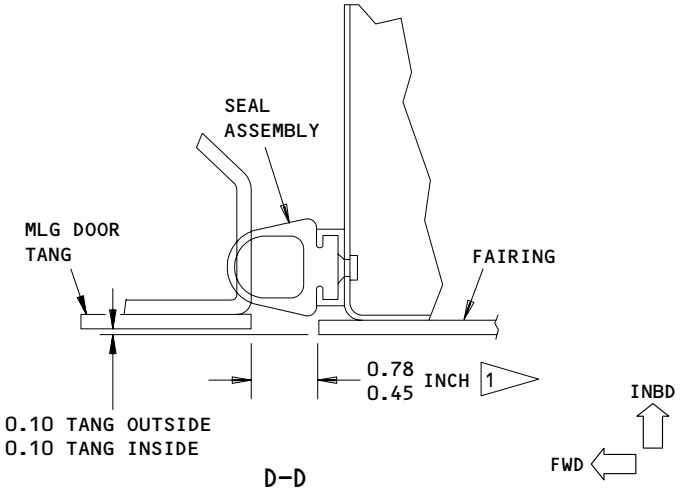
A–A



B–B



C–C

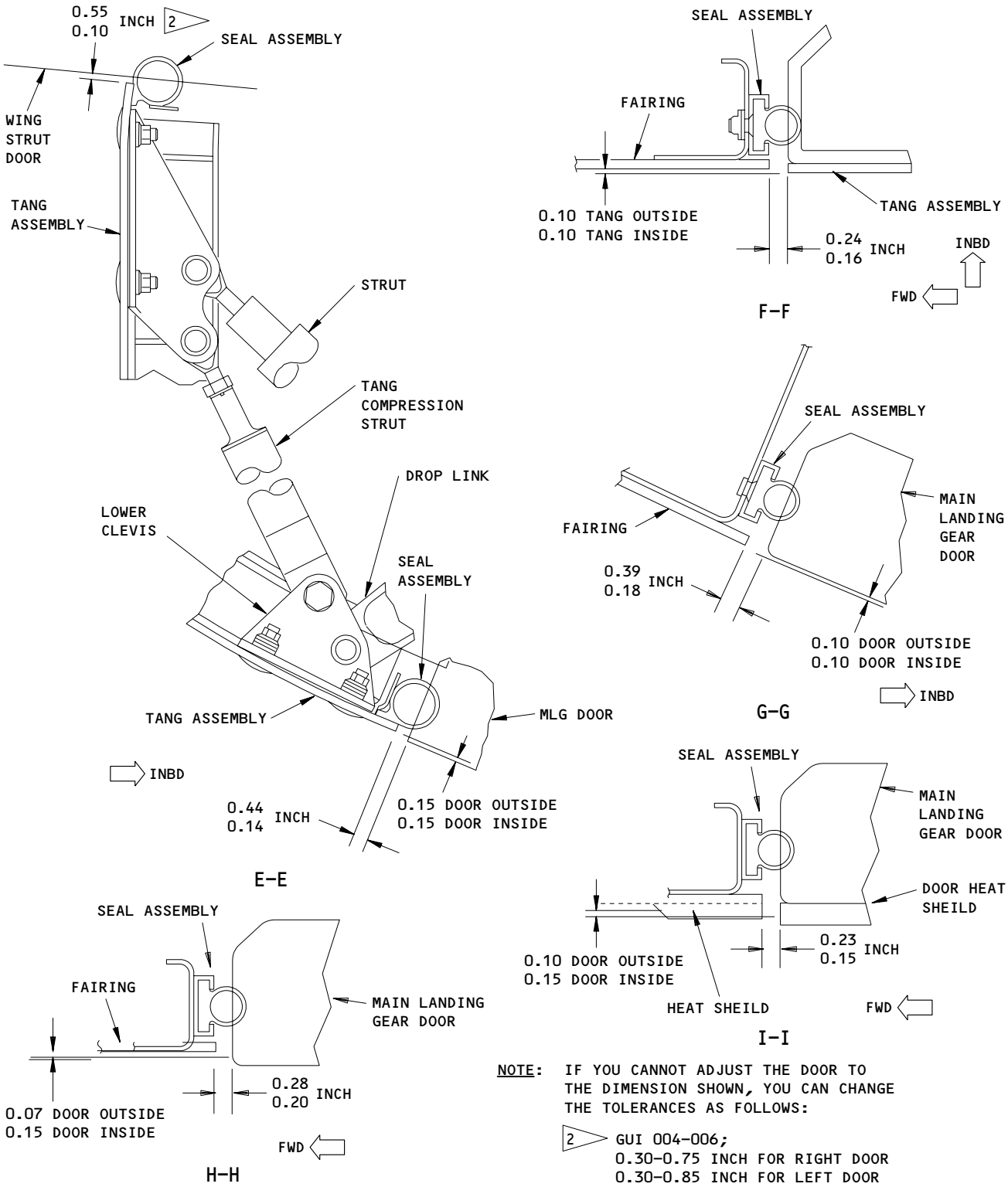


D–D

NOTE: IF YOU CANNOT ADJUST THE DOOR TO THE DIMENSION SHOWN, YOU CAN CHANGE THE TOLERANCE AS FOLLOWS:

1 GUI 004–006; 0.45–0.95 INCH FOR RIGHT DOOR

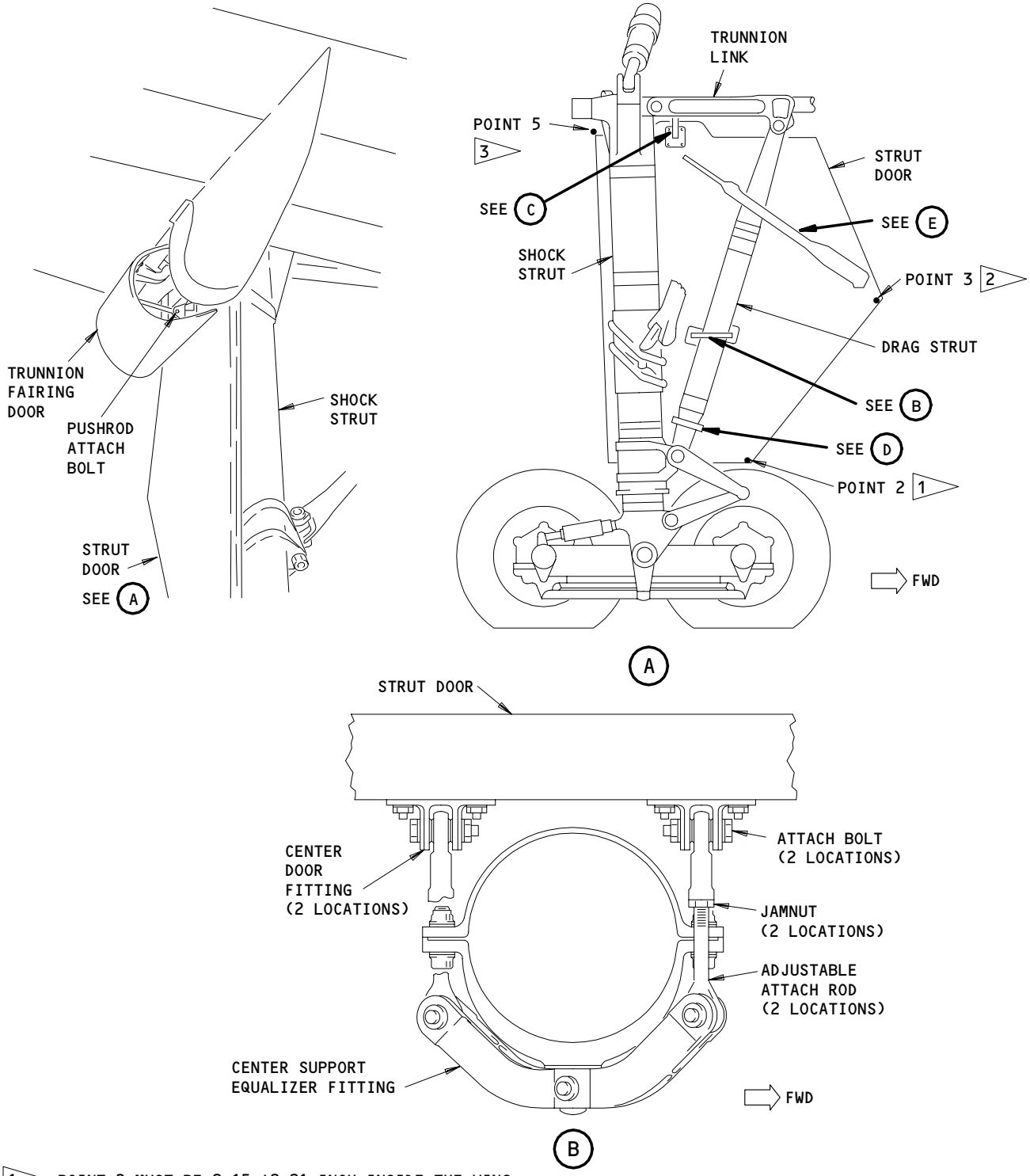
Tolerances of the Main Landing Gear Doors
Figure 501B (Sheet 2)



NOTE: IF YOU CANNOT ADJUST THE DOOR TO THE DIMENSION SHOWN, YOU CAN CHANGE THE TOLERANCES AS FOLLOWS:

2 GUI 004-006;
0.30-0.75 INCH FOR RIGHT DOOR
0.30-0.85 INCH FOR LEFT DOOR

Tolerances of the Main Landing Gear Doors
Figure 501B (Sheet 3)

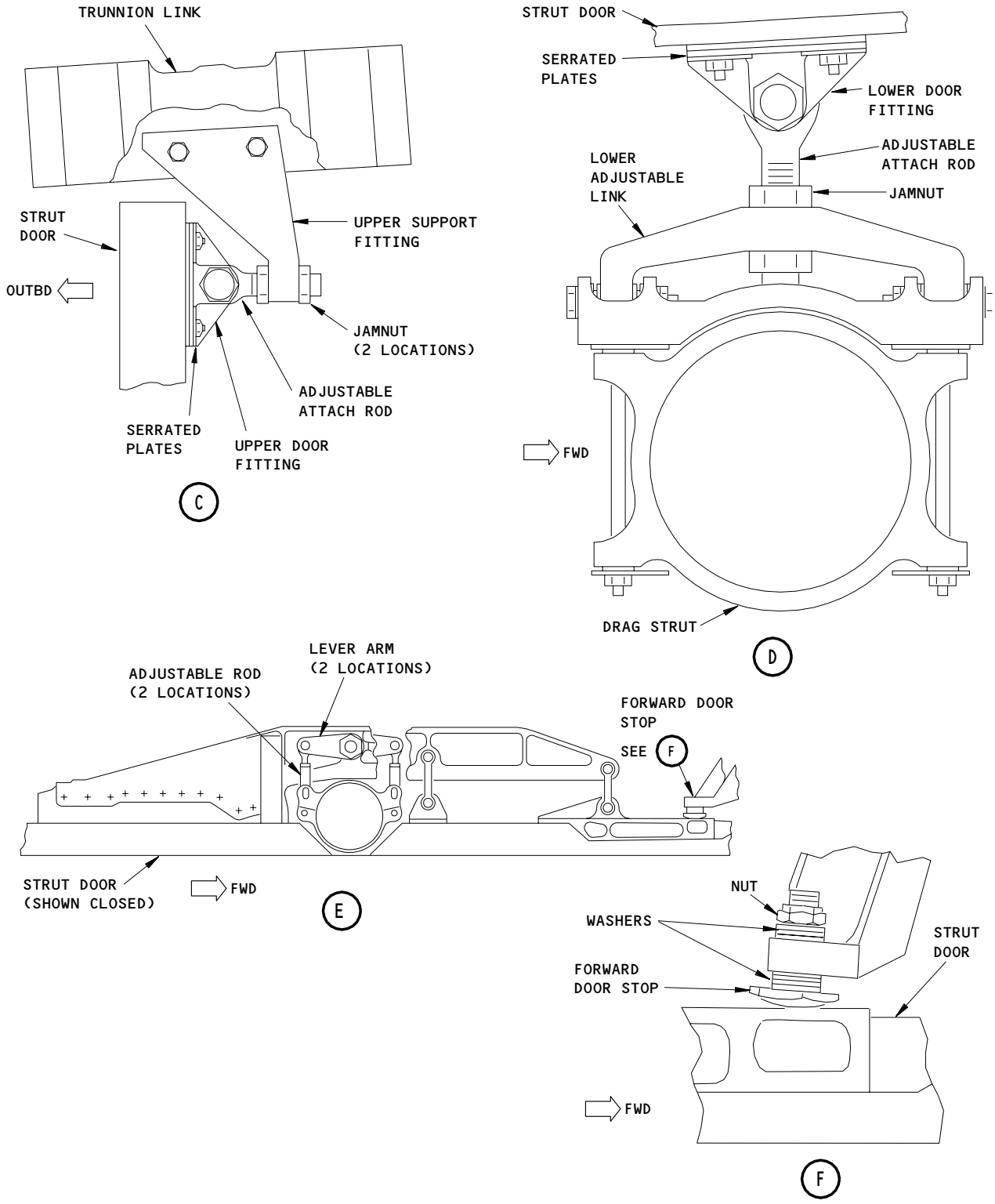


1 POINT 2 MUST BE 0.15 ±0.01 INCH INSIDE THE WING

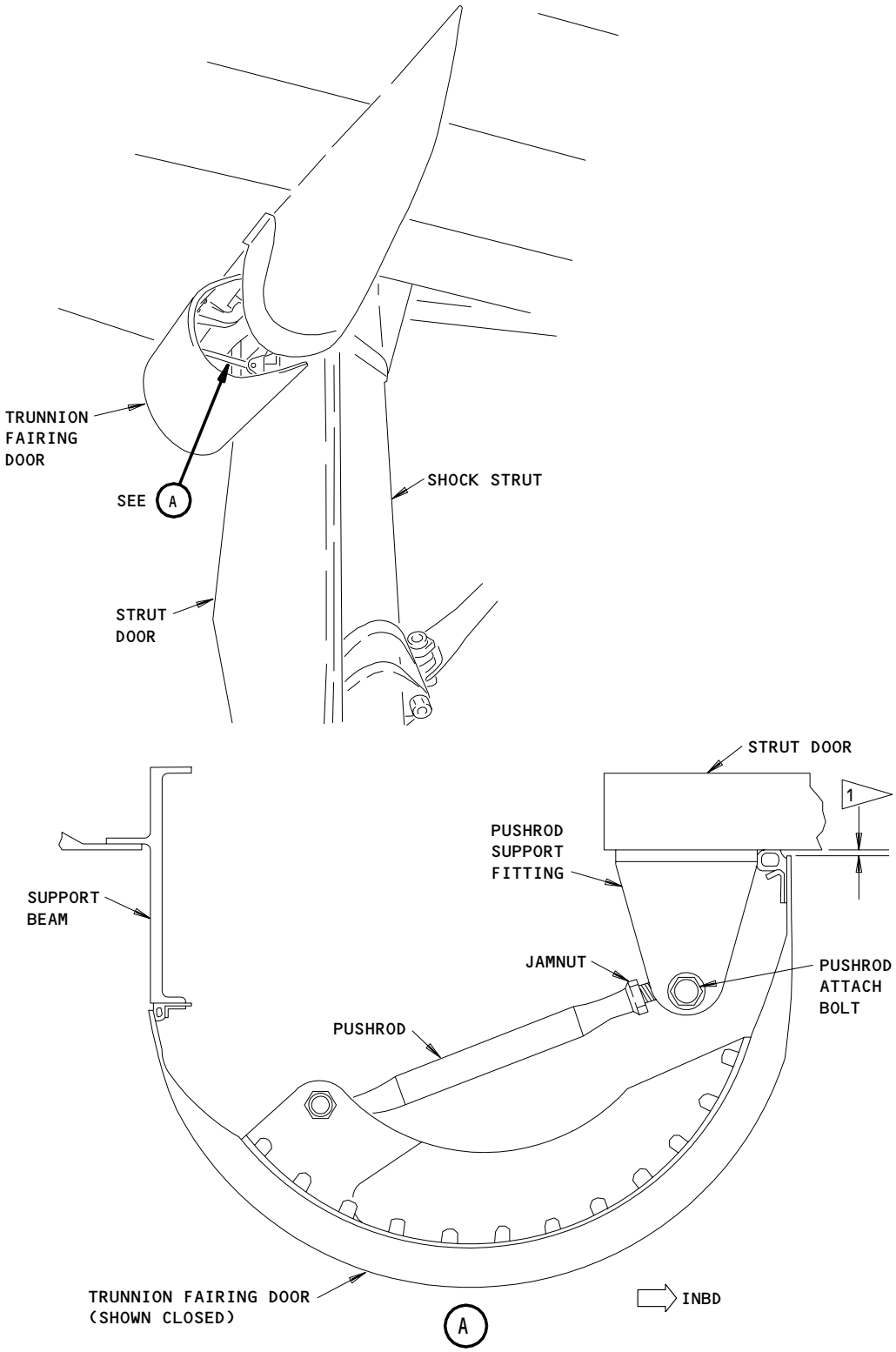
2 POINT 3 MUST BE 0.20 ±0.01 INCH INSIDE THE WING

3 POINT 5 MUST BE 0.04 ±0.02 INCH OUTSIDE THE WING

Main Landing Gear Strut Door Adjustment
Figure 502 (Sheet 1)



Main Landing Gear Strut Door Adjustment
Figure 502 (Sheet 2)



Main Landing Gear Trunnion Fairing Door Adjustment
Figure 503

S 495-003

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).

S 865-004

(3) Remove the pressure from the left hydraulic system and reservoir (AMM 29-11-00/201).

F. Adjust the Main Landing Gear Door (One-Piece Door)

S 035-005

(1) Loosen the bolt for the center door stop.

S 845-006

(2) Put the washers which are behind the head of the bolt below the nut (Detail A).

S 035-007

(3) Disconnect the hydraulic lines from the door actuator.

S 485-126

(4) Connect the Portable Hydraulic Cart to the door actuator.

S 485-127

(5) Put a plug on the hydraulic lines.

S 215-128

(6) Make sure the hoses from the Portable Hydraulic Cart are clear of the door when the door closes.

S 035-008

(7) Remove the door lock (AMM 32-00-15/201).

S 865-009

WARNING: DO NOT USE A RETRACT PRESSURE MORE THAN 1400 PSI WHEN YOU ADJUST THE DOOR ACTUATOR. RETRACT PRESSURE MORE THAN 1400 PSI CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Slowly apply hydraulic pressure to the retract side of the actuator.

S 975-010
(9) Monitor the pressure at which the actuator retracts and locks.

NOTE: The actuator is locked when the main landing gear door does not open when you remove the hydraulic pressure.

(a) If the actuator locks between 1000 psi and 1400 psi, the actuator is adjusted correctly.
(b) If the actuator locks at a pressure less than 1000 psi, the actuator rod is too long.
(c) If the actuator does not lock before you get a pressure of 1400 psi, the actuator rod is too short.

S 975-011
(10) Measure the gap between the door and the fairing at the forward and aft door stops (Details C and D).
(a) Make sure the stop plates and bolt heads are not worn.
(b) Move the washers on the door stops if it is necessary to get the correct clearance.

NOTE: When the door is adjusted correctly, the aft door stop will touch the plate on the door.

(c) If removed from the stop bolt, tighten the nut until you have a snug fit of the washers and nut, then back off the nut 1/6 of a turn (appox) and install the cotter pin.

S 865-012
(11) Apply hydraulic pressure to the extend side of the actuator to open the main landing gear door.

S 865-087
(12) Remove the hydraulic power (AMM 29-11-00/201).

S 825-013
(13) Adjust the length of the actuator rod, if it is necessary.
(a) Remove the attach pin from the rod end of the actuator (View A-A).
(b) Remove the lockwire.
(c) Loosen the jamnut from the rod end (Detail B).
(d) Increase or decrease the length of the rod, if it is necessary.
(e) Tighten the jamnut.
(f) Put in the attach pin.

S 845-086
(14) Do not let the pin come out of the hole.

S 865-014
(15) Do this procedure until the actuator is adjusted and the clearance at the forward and aft door stops is correct.

S 435-015
(16) Tighten the jamnut to 75-80 pound feet (Detail B).

S 435-016
(17) Install the lockwire.

NOTE: Make sure you align the rod end lock with the slot in the end of the piston rod.

S 435-017
(18) Install the parts that follow to connect the rod end of the actuator to the door beam (View A-A):
(a) Pin
(b) Spacers
(c) Washer
(d) Nut
(e) Cotter pin

S 035-018
(19) Remove the equipment, for the Portable Hydraulic Cart, from the actuator.

S 865-019
(20) Make sure the pressure is removed from the left hydraulic system and reservoir (AMM 29-11-00/201).

S 435-020
(21) Connect the hydraulic lines to the door actuator.

S 865-021
(22) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 865-022
(23) Supply electrical power (AMM 24-22-00/201).

S 865-023

WARNING: MAKE SURE THE AREA AROUND THE MAIN LANDING GEAR DOOR IS CLEAR OF PERSONS AND EQUIPMENT BEFORE YOU CLOSE THE DOOR. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(24) Make sure the landing gear control lever is in the DN position.

S 845-024
(25) Move the MAIN GEAR DOOR CLOSE switch on the main W/W electrical service panel, P72, to the DOOR CLOSE position. This closes the main landing gear door.

S 845-025
(26) Move the washers at the center door stop to get the correct clearance between the door and the door stop bolt (Detail A).

S 095-087

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.

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

S 225-085
(28) Make sure the doors of the main landing gear are in tolerance (Fig. 501A).

G. Adjust the Main Landing Gear Door (Two-Piece Door)

S 865-111

CAUTION: DO NOT USE MORE THAN 1650 PSI HYDRAULIC PRESSURE IN THE DOOR ACTUATOR WHEN YOU DO THE DOOR ADJUST PROCEDURE THAT FOLLOWS. TOO MUCH HYDRAULIC PRESSURE CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Make sure the forward, aft, and tang door stops are installed.

S 035-090
(2) Remove the cotter pins from the forward, aft, and tang door stops.

S 035-091
(3) Disconnect the hydraulic lines from the door actuator.

S 485-123
(4) Connect the Portable Hydraulic Cart to the door actuator.

S 485-124
(5) Put a plug in the hydraulic lines.

S 215-125
(6) Make sure the hoses from the Portable Hydraulic Cart are clear of the door when the door closes.

S 095-092
(7) Remove the door lock (AMM 32-00-15/201).

S 985-093

CAUTION: DO NOT USE A RETRACT PRESSURE MORE THAN 1650 PSI WHEN YOU ADJUST THE DOOR ACTUATOR. RETRACT PRESSURE MORE THAN 1650 PSI CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Slowly apply hydraulic pressure to the retract side of the actuator.

S 975-094

(9) Monitor the pressure at which the actuator retracts and locks.

NOTE: The actuator is locked when the main landing gear door does not open when you remove the hydraulic pressure.

(a) If the actuator locks between 1250 psi and 1550 psi, the actuator is adjusted correctly.
(b) If the actuator locks at a pressure less than 1250 psi, the actuator rod is too long.
(c) If the actuator does not lock before you get a pressure of 1550 psi, the actuator rod is too short.

S 985-095

(10) Apply hydraulic pressure to the extend side of the actuator to open the main landing gear door.

S 865-096

(11) Remove the hydraulic power (AMM 29-11-00/201).

S 825-097

(12) Do these steps if it is necessary to adjust the length of the actuator rod:
(a) Remove the attach pin from the rod end of the actuator (View A-A).
(b) Remove the lockwire.
(c) Loosen the jamnut from the rod end (Detail B).
(d) Turn the rod end into or out of the piston rod of the actuator to decrease or increase the length of the rod.
(e) Tighten the jamnut.
(f) Install the attach pin.

S 825-098

(13) Do the previous step to monitor the pressure at which the actuator retracts and locks and adjust the forward and aft door stops until the conditions that follow occur:
(a) The actuator closes the door and locks at a pressure between 1250 psi and 1550 psi.

(b) The forward and aft door stops touch the stop pads on the main landing gear door.
(c) The door has the correct tolerances for the edge clearances and permitted misfairs.
1) Measure the gap between the door and the fairing at the forward and aft door stops (Details C and D).
2) Make sure the stop plates and bolt heads are not worn.
3) Move the washers on the door stops if it is necessary to get the correct clearance.

NOTE: When the door is adjusted correctly, the aft door stop will touch the plate on the door.

4) If removed from the stop bolt, tighten the nut until you have a snug fit of the washers and nut, then back off the nut 1/6 of a turn (appox) and install the cotter pin.

S 435-099
(14) Tighten the jamnut to 57-80 pound feet (Detail B).

S 435-100
(15) Install the lockwire.

NOTE: Make sure you align the rod end lock with the slot in the end of the piston rod.

S 435-101
(16) Install the parts that follow to connect the rod end of the actuator to the door beam (View A-A).
(a) Pin
(b) Spacers
(c) Washer
(d) Nut
(e) Cotter pin

S 435-102
(17) Install the cotter pins in the forward and aft door stops.

S 825-103
(18) Do the steps that follow to adjust the tang assembly (View F-F):

S 825-109
(19) ON A TANG ASSEMBLY WITH AN AFT TWO-PIECE DROP LINK;
do the steps that follow to adjust the tang assembly (View F-F):
(a) Remove the lockwire from the jamnuts on the skid bars.
(b) Adjust the length of the skid bars to get the tang inside the tolerances.
(c) Measure the clearances and the misfairs on the forward and aft edges of the tang assembly.

(d) If the tang misfairs outside the door add shims (3 maximum) under the attach clevis on the door.
(e) If the tang misfairs on the inside install shims (3 maximum) under the attach clevis on the tang.
(f) Make sure the drop link on the door does not touch the sides of the attach clevises with the door both open and closed.

NOTE: This will make sure there is not too much preload on the drop link.

(g) If it is necessary to decrease the preload in the drop link, or to adjust the clearances at the forward and aft edges of the tang, add or remove washers between the door drop link and the lower attach clevises on the tang.
(h) Install the lockwire on the skid bars and compression struts.

S 825-110
(20) TANG ASSEMBLY WITH AN AFT ONE-PIECE DROP LINK;
do the steps that follow to adjust the tang assembly (View F-F):
(a) Remove the lockwire from the jamnuts on the skid bars.
(b) Adjust the length of the skid bars to get the tang inside the tolerances.
(c) Measure the clearances and the misfairs on the forward and aft edges of the tang assembly.
(d) If the tang misfairs outside the door add shims (3 maximum) under the attach clevis on the door.
(e) If the tang misfairs on the inside install shims (3 maximum) under the attach clevis on the tang.
(f) If it is necessary, remove the lockwire from the jam nuts on the tang compression strut to shorten it.
(g) Adjust the tang forward or aft and inboard or outboard to get the correct clearances at the forward and aft edges of the tang. To do this, move the single-piece drop link in the two directions permitted by the serrations between the fitting and the door. Then adjust the forward link to align it with the position of the aft link. When you adjust the forward link make sure it does not touch the tang clevis when the door is open or closed.

NOTE: The forward link is free to move forward and aft where it is attached to the tang as the door closes . Therefore, it is important that it does not touch the tang clevis when the door is open or closed.

(h) Install the lockwire on the skid bars and compression struts.

S 435-104

(21) Install the cotter pins of the tang door stops.

S 225-106

(22) Make sure the doors of the main landing gear are in tolerance (Fig. 501B).

TASK 32-12-00-825-027

3. Adjustment - Strut Door for the Main Landing Gear (Fig. 502)

A. General

(1) This procedure gives the instructions to adjust the strut door.

B. Equipment

(1) Door Lock, Landing Gear - (AMM 32-00-15/201)
(2) Downlocks, MLG and NLG - B32001-4

C. References

(1) 06-44-00/201, Wing Access Doors and Panels
(2) 07-11-01/201, Jacking Airplane
(3) 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
(4) 32-00-15/201, Landing Gear Door Locks
(5) 32-00-20/201, Landing Gear Downlocks

D. Access

(1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Door

(2) Access Panels

551BB	Left Wing Access Panel
651BB	Right Wing Access Panel

E. Prepare for the Adjustment

S 495-028

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

S 495-029

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 585-031

(3) Lift the airplane to a sufficient height to permit the landing gear to retract (AMM 07-11-01/201).

S 865-030
(4) Use a service cart to pressurize the left hydraulic system (AMM 29-11-00/201).

NOTE: Be careful as the door reaches the closed position.

F. Adjust the Strut Door

S 035-032
(1) Loosen the stop bolt for the forward door (Detail E).

S 845-033
(2) Put the washers which are behind the stop bolt below the nut (Detail F).

S 035-034
(3) Remove the attach bolts to disconnect the door from the equalizer fitting at the center door fitting of the drag strut (Detail B).

S 035-035
(4) Remove the bolt to disconnect the pushrod for the trunnion fairing door from the strut door.

S 865-036
(5) Make sure the landing gear control lever is in the DN position.

S 095-037
(6) Remove the downlock from the main landing gear which is to be adjusted.

S 865-038

WARNING: MAKE SURE THE RETRACTION PATH OF THE MAIN LANDING GEAR IS CLEAR OF PERSONS AND EQUIPMENT BEFORE IT IS RETRACTED. RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(7) Move the landing gear control lever to the UP position, to retract the landing gear.

S 845-039
(8) Put the landing gear control lever to the OFF position.

S 975-040
(9) Make sure the gap between the door and the wing is the same on all sides.

S 825-041
(10) If the gap is not the same, do the steps that follow:
(a) Move the control lever to the DN position,to extend the landing gear.
(b) Install the downlock.
(c) To make the gap the same, use serrated plates below the upper and lower door fittings to adjust the door laterally (Details C and D).
(d) Remove the downlock.
(e) Move the control lever to the UP position, to retract the landing gear.
(f) Put the control lever to the OFF position.
(g) Measure the gap between the door and the wing.
(h) If the gap is not the same all around, do the procedure again.

S 975-042
(11) With the landing gear up-and-locked, measure the clearances between the door and the wing at points 2, 3, and 5 (Detail A).

S 825-043
(12) If the clearances are not in tolerance, do the steps that follow:
(a) Move the control lever to the DN position, to extend the landing gear.
(b) Install the downlock.
(c) Adjust the rods at the upper and lower door fittings and at the door support beam to adjust the door (Details C, D, and E).
(d) Remove the downlock.
(e) Move the control lever to the UP position, to retract the landing gear.
(f) Put the control lever to the OFF position.
(g) Measure the clearances at points 2, 3, and 5.
(h) If clearances are not in tolerance, do the procedure again.

S 845-044
(13) Move the control lever to the DN position, to extend the landing gear.

S 495-045
(14) Install the downlock.

S 435-046
(15) Install the attach bolts to connect the door to the equalizer fitting at the center door fitting of the drag strut (Detail B).

S 825-047
(16) Adjust the length of rods until there is no load on them.

S 435-048
(17) Tighten the nuts to 160-240 pound-inches (Detail B).

S 825-049
(18) Adjust the washers at the forward door stop until the door is aligned with the wing at point 3 (Detail E).

S 095-050
(19) Remove the downlock.

S 825-051
(20) Move the control lever to the UP position, to retract the landing gear.

S 975-052
(21) Measure the clearance at point 3.

S 825-053
(22) If the door is not aligned with the wing at point 3, do the steps that follow:
  (a) Move the control lever to the DN position,to extend the landing gear.
  (b) Install the downlock.
  (c) Move the washers at the forward door stop (Detail F).
  (d) Move the control lever to the UP position, to retract the landing gear.
  (e) Put the control lever OFF.
  (f) Measure the clearance at point 3.
  (g) If the door and the wing are not aligned, do the procedure again.

S 035-054
(23) Remove the wing access panel 571BB, left (671BB, right) for access to the pushrod for the trunnion fairing door (AMM 06-44-00/201).

S 825-055
(24) Adjust the pushrod for the trunnion fairing door (see the procedure Adjustment - Trunnion Fairing Door for the Main Landing Gear).

S 845-056
(25) Move the control lever to the DN position, to extend the landing gear.

S 495-057
(26) Install the downlock (AMM 32-00-15/201).

S 585-058
(27) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 095-088

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 doors (AMM 32-00-15/201).

TASK 32-12-00-825-060

4. Adjustment - Trunnion Fairing Door for the Main Landing Gear (Fig. 503)
   A. General
      (1) This procedure gives the instructions to adjust the trunnion fairing door.
   B. Equipment
      (1) Door Lock, Landing Gear - (AMM 32-00-15/201)
      (2) Downlock, MLG and NLG - B32001-1
   C. Consumable Materials
      (1) A00247 Sealant, Chromate - BMS 5-95
   D. References
      (1) 06-44-00/201, Wing Access Doors and Panels
      (2) 07-11-01/201, Jacking Airplane
      (3) 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
      (4) 32-00-15/201, Landing Gear Door Locks
      (5) 32-00-20/201, Landing Gear Downlocks
   E. Access
      (1) Location Zones
          731/741 Main Landing Gear (MLG)
          732/742 MLG Body Doors
          733/743 MLG Oleo Door

      (2) Access Panels
          551BB Left Wing Access Panel
          651BB Right Wing Access Panel

F. Prepare for the Adjustment

S 495-061
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 495-062

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).

S 585-064
(3) Lift the airplane to a sufficient height to permit the landing gear to retract (AMM 07-11-01/201).

S 865-063
(4) Use a service cart to pressurize the left hydraulic system (AMM 29-11-00/201).

NOTE: Be careful as the door reaches the closed position.

G. Adjust the Trunnion Fairing Door

S 035-065
(1) Remove the bolt to disconnect the pushrod for the trunnion fairing door from the strut door (Detail A).

S 845-066
(2) Make sure the landing gear control lever is in the DN position.

S 095-067
(3) Remove the downlock from the main landing gear which is to be adjusted.

S 865-068

WARNING: MAKE SURE THE RETRACTION PATH OF THE MAIN LANDING GEAR IS CLEAR OF PERSONS AND EQUIPMENT BEFORE IT IS RETRACTED. RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Move the control lever to the UP position, to retract the landing gear.

S 845-069
(5) Return the lever to the OFF position.

H. Adjust the Trunnion Fairing Door

S 435-070
(1) Manually close the trunnion fairing door.

S 845-071
(2) Make sure the door edges align with the support beam and the fixed fairing ends.

S 825-072
(3) If the door is not aligned, add or remove 0.03 inch laminated shims below the door hinges.

S 395-073
(4) Seal the surfaces that have an overlap on the two sides of the shims.

S 035-074
(5) Remove the wing access panel, 571BB, left (671BB, right) for access to the pushrod for the trunnion fairing (AMM 06-44-00/201).

S 435-075
(6) Close the door.

S 435-076
(7) Install the bolt to connect the pushrod for the trunnion fairing door to the strut door (Detail A).

S 975-077
(8) Measure the clearance between the trunnion fairing door and the strut door.

S 825-078
(9) If the clearance is not in tolerance, do the steps that follow:
  (a) Remove the attach bolt.
  (b) Remove the lockwire.
  (c) Loosen the jamnut for the pushrod.
  (d) Increase or decrease the length of the pushrod, if it is necessary.
  (e) Tighten the jamnut.
  (f) Install the attach bolt.
  (g) Measure the clearance between the trunnion fairing door and the strut door.
  (h) If the clearance is not in tolerance, do the procedure again.
  (i) Tighten the jamnut.
  (j) Install the lockwire.

S 435-079
(10) Install the nut, the washers, and the bushing on the bolt to connect the pushrod to the strut door.

S 435-080

(11) Install the wing access panel, 571BB, left (671BB, right) (AMM 06-44-00/201).

S 845-081

(12) Move the landing gear control lever to the DN position, to extend the landing gear.

S 495-082

(13) Install the downlock (AMM 32-00-20/201).

S 585-083

(14) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 095-086

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).

MAIN GEAR DOORS - INSPECTION/CHECK

1. General
   A. This procedure has the tasks for inspection of the MLG door stop bolts, stop plates, and MLG door closed sensors when LDG GEAR MONITOR shows with GEAR DOORS on the EICAS display:
      (1) An inspection of the MLG door stop bolts for wear or damage
      (2) An inspection of the MLG door stop plates for wear or damage
   B. An inspection of the MLG door closed sensors (S10241, S10242, S10072, S10076) for damage and security

   TASK 32-12-00-736-122

2. Inspection - MLG Door Stop Bolt, Stop Plate, and Sensor
   A. Equipment
      (1) Door Locks, Landing Gear
      (2) Depth Gage
   B. References
      (1) AMM 29-11-00/201, Main (Left, Right, and Center) 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

143/144	MLG Wheel Well
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors

   D. Prepare for Inspection

      S 496-002

      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.

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

S 496-003

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).

S 866-005

(3) Remove the pressure from the left hydraulic system and reservoir (AMM 29-11-00/201).

E. MLG Door Stop Bolt Inspection

S 216-123

(1) Check the 4 MLG door stop bolts for condition and security. There are 2 stop bolts to be checked for each MLG door, one forward and one aft.

S 226-124

(2) Measure the thickness of the 4 MLG door stop bolt heads (Fig. 601).

S 966-125

(3) If stop bolt head wear is not within limits specified (Fig. 601), replace the bolt, and adjust stop bolt washers, if and as necessary, to meet MLG door fair on the forward and/or aft side (Fig. 601).

S 286-127

(4) If the stop bolt wear is within limits (Fig. 601), restack washers on the stop bolt head side from the nut side, if and as necessary, to account for stop bolt wear, to meet the door fair forward and/or aft side requirements (Fig. 601), prior to any adjustment of the door close sensors. Include any stop plate wear with the stop bolt wear when you determe the total adjustment for wear. Reinstall the stop bolt snugly and loosen 1/6 turn maximum to install cotter pin. Install cotter pin as necessary. Do a check of the fit and fair. Readjust the washers as necessary (Fig. 601).

F. MLG Door Stop Plates Inspection

S 736-128

(1) Check the 4 MLG Door Stop Plates for condition and security. There are 2 stop plates to check for each MLG door, one forward, and one aft.

S 736-129

(2) Measure the thickness of the 4 MLG door stop plates (Fig. 601).

S 966-130

(3) If the stop plates are not within limits specified (Fig. 601) replace worn parts, and adjust stop bolt washers, if and as required, to meet MLG door fair on the forward and/or aft side (Fig. 601).

S 286-132

(4) If the stop plate wear is within limits (Fig. 601), restack washers on the stop bolt head side from the nut side, if and as necessary, to account for stop plate wear, to meet the door fair forward and /or aft side requirements (Fig. 601), prior to any adjustment of the door close sensors. Include any stop plate wear with stop bolt wear when you determe the total adjustment for wear. Reinstall stop bolt nut snugly and loosen 1/6 turn maximum to install cotter pin. Install cotter pin as necessary. Do a check of the fit and fair. Readjust the washers as necessary (Fig. 601).

G. MLG Door Closed Sensors (S10241, S10242, S10072, S10076) Inspection

S 766-133

(1) Do an inspection of the 4 MLG Door Closed Sensors and targets for damage and security.

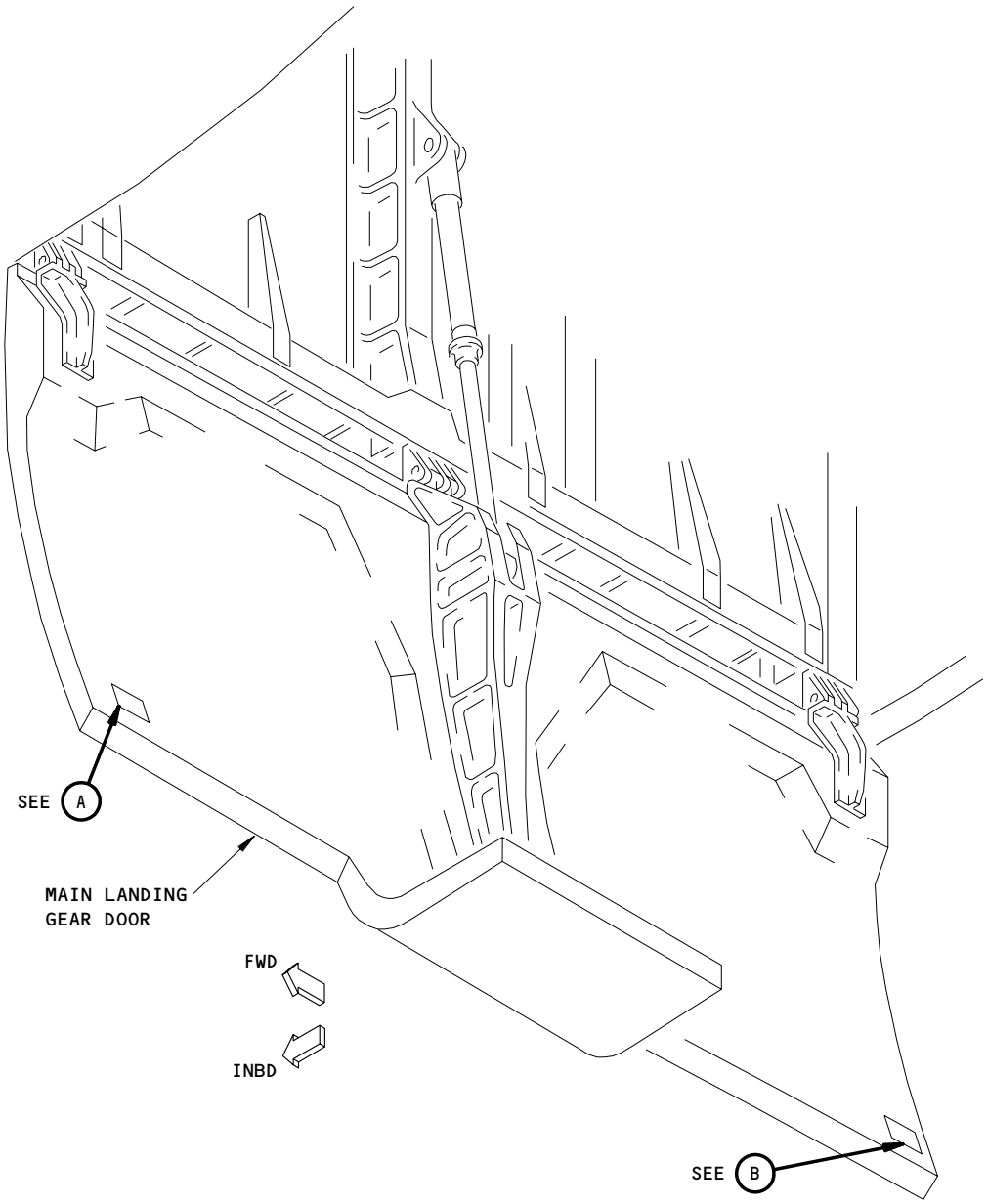
S 216-134

(2) Make sure that the sensor face has no cracks or damage.
(a) Replace the sensor if there is damage (AMM 32-61-02/201).

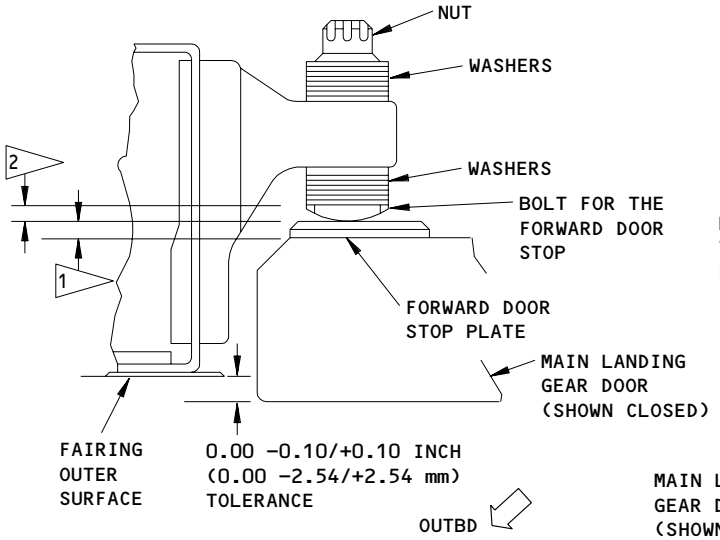
S 826-136

(3) If the sensors and targets are not damaged, adjust the sensor gap (AMM 32-61-02/201).

NOTE: Proximity sensor damage is typically a result of the MLG door target retention hardware impacting the sensor due to insufficient clearances. If sensor is damaged, ensure all clearance problems are resolved prior to replacement, to prevent damage to replacement sensor.

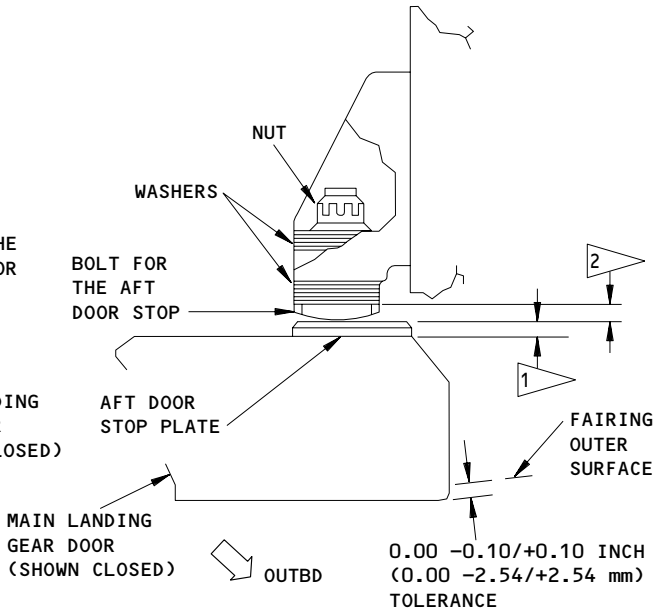


Main Langing Gear Door Inspection
Figure 601 (Sheet 1)



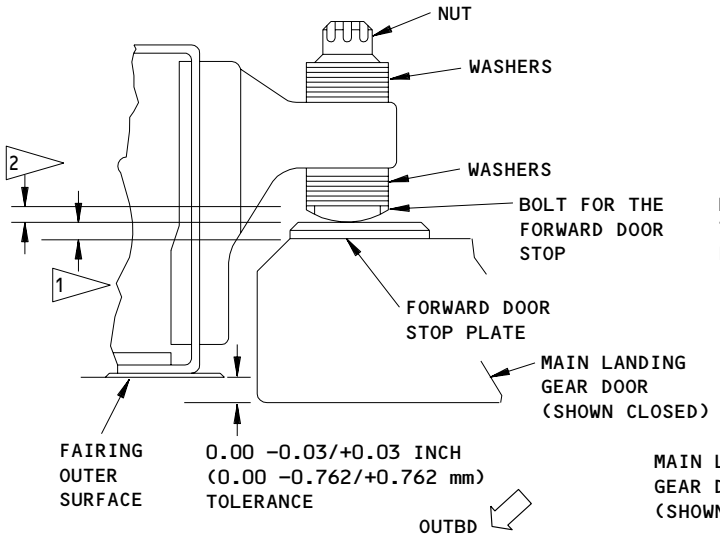
TWO−PIECE MAIN LANDING GEAR DOOR

A



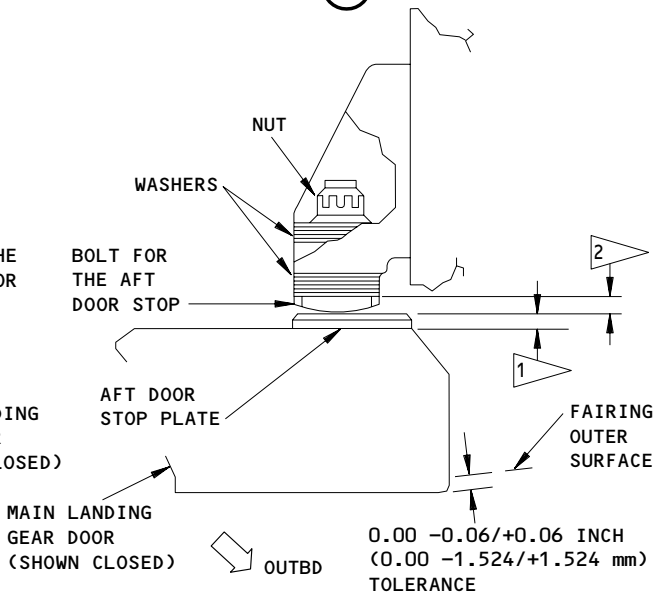
TWO−PIECE MAIN LANDING GEAR DOOR

B



ONE−PIECE MAIN LANDING GEAR DOOR

A



ONE−PIECE MAIN LANDING GEAR DOOR

B

1 THE MINIMUM THICKNESS FOR THE DOOR STOP PLATE IS 0.078 INCH (1.981 mm) FOR THE FORWARD STOP PLATE AND 0.118 INCH (3.0 mm) FOR THE AFT STOP PLATE. SEE THE COMPONENT MAINTENANCE MANUAL FOR REPLACEMENT INSTRUCTIONS.

2 THE MINIMUM THICKNESS FOR THE HEAD OF THE BOLT IS 0.035 INCH (0.889 mm).

Main Landing Gear Door Inspection
Figure 601 (Sheet 2)

MAIN GEAR DOOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the door for the main landing gear. The second task installs the door for the main landing gear.

TASK 32-12-01-004-021

2. Remove the Door for the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Handling Equipment, MLG Door and AC Door - B32043-1
      (2) Lift Fixture, Engine Accessory - A71015-87
   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 Oleo Doors

   D. Prepare for the removal of the door.

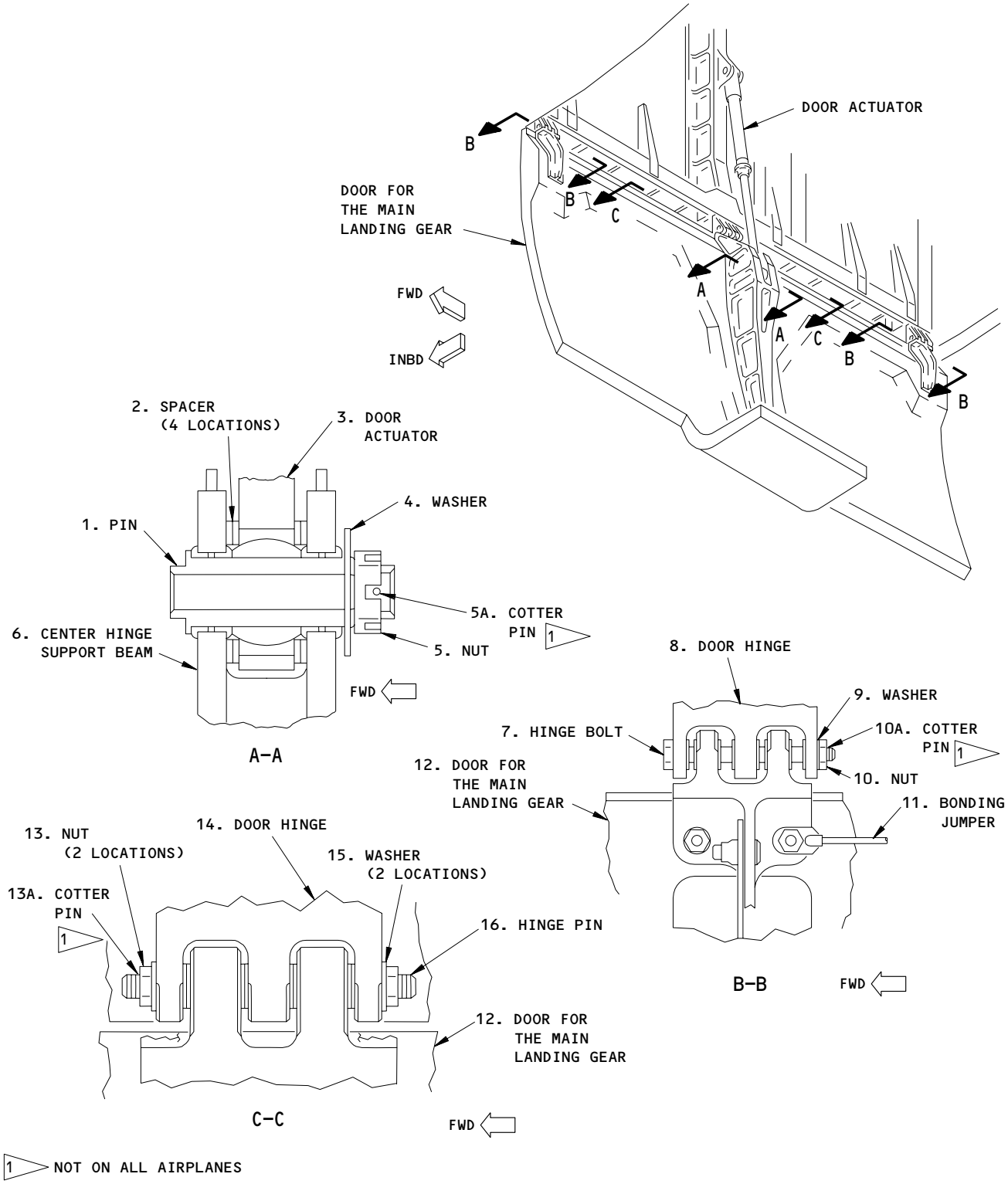
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-022

      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.

      (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 left hydraulic system (AMM 29-11-00/201).



Installation of the Main Landing Gear Door
Figure 401

E. Remove the door.

S 014-005
(1) Remove the pin (1) to disconnect the rod end of the door actuator (3) from the door beam (6) (View A-A).
(a) Hold the actuator out of the area with a rope.

S 014-006
(2) Position the lift fixture and attach the door to the handling equipment. Use the instructions supplied with the tools.

S 864-023
(3) Lift the fixture to support the door for the main landing gear.

S 034-008
(4) Disconnect the bonding jumpers (11) from the door.

S 014-009
(5) Remove the hinge bolts (7) to disconnect the door (12) from the forward and the aft hinges (8) (View B-B).

S 014-010
(6) Remove the hinge pin (16) to disconnect the door (12) from the center hinge (14) (View C-C).

S 024-011
(7) Lower the door and remove it.

TASK 32-12-01-404-012

3. Install the Door for the Main Landing Gear (Fig. 401)
A. Equipment
(1) Handling Equipment, MLG Door and AC Door - B32043-1
(2) Lift Fixture, Engine Accessory - A71015-87
B. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	03	Door Actuator	32-32-12	01	1
	5A	Pin, cotter		01	8
	10A	Pin, cotter	32-12-01	01	7
401	12	Door Assy - MLG, LH		01	85
	10A	Pin, Cotter	32-12-01	02	8
	13A	Pin, Cotter		02	25

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
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Oleo Doors

E. Install the door

S 864-024
(1) Lower the handling equipment.

S 864-025
(2) Lift the fixture to move the door into position for the installation.

S 414-014
(3) Install the hinge pin (16), the washers (15), the nuts (13), and the cotter pins to connect the door (12) to the forward and aft hinge (8) (View C-C).
(a) Tighten the nuts. Do not apply a torque to the nut. Loosen it a maximum of 1/6 of a turn to install the cotter pin.

S 414-015
(4) Install the hinge bolts (7), the washers (9), the nuts (10), and the cotter pins to connect the door (12) to the forward and aft hinge (8) (View B-B).
(a) Tighten the nuts. Do not apply a torque to the nut. Loosen it a maximum of 1/6 of a turn to install the cotter pin.

F. Put the Airplane Back to Its Usual Condition

S 094-016

(1) Remove the handling equipment and the lift fixture.

S 434-017

(2) Attach the bonding jumpers (11) to the door hinges (8).

S 434-018

(3) Install the pin (1) to connect the rod end of the door actuator (3) to the door beam (6).
   (a) Do not permit the pin (1) to come out of the hole.
   (b) Do not install the nut (5) until the actuator adjustment is completed.

S 824-026

(4) Adjust the door for the main landing gear and adjust the door actuator (AMM 32-12-00/501).

S 094-027

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).

MAIN GEAR DOOR TANG - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the door tang from the main landing gear door. The second task installs the door tang on the main landing gear door.

TASK 32-12-02-004-001-001

2. Remove the Door Tang from the Main Landing Gear Door (Fig. 401)
   A. Equipment
      (1) Lift Fixture, Engine Accessory - A71015-87
   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 Oleo Doors

   D. Prepare for the Removal of the Door Tang

      S 494-002-001
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

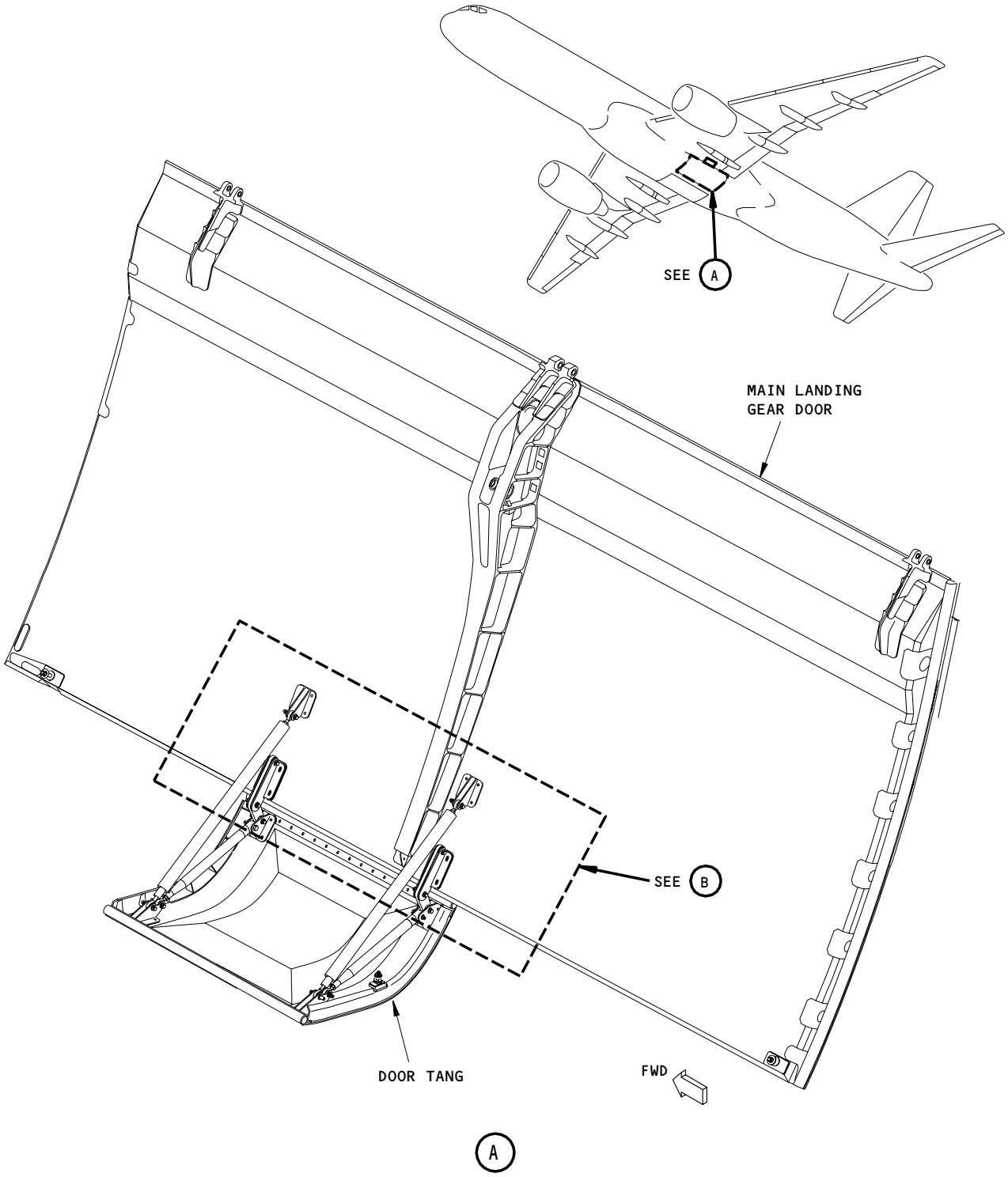
      S 494-003-001

      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.

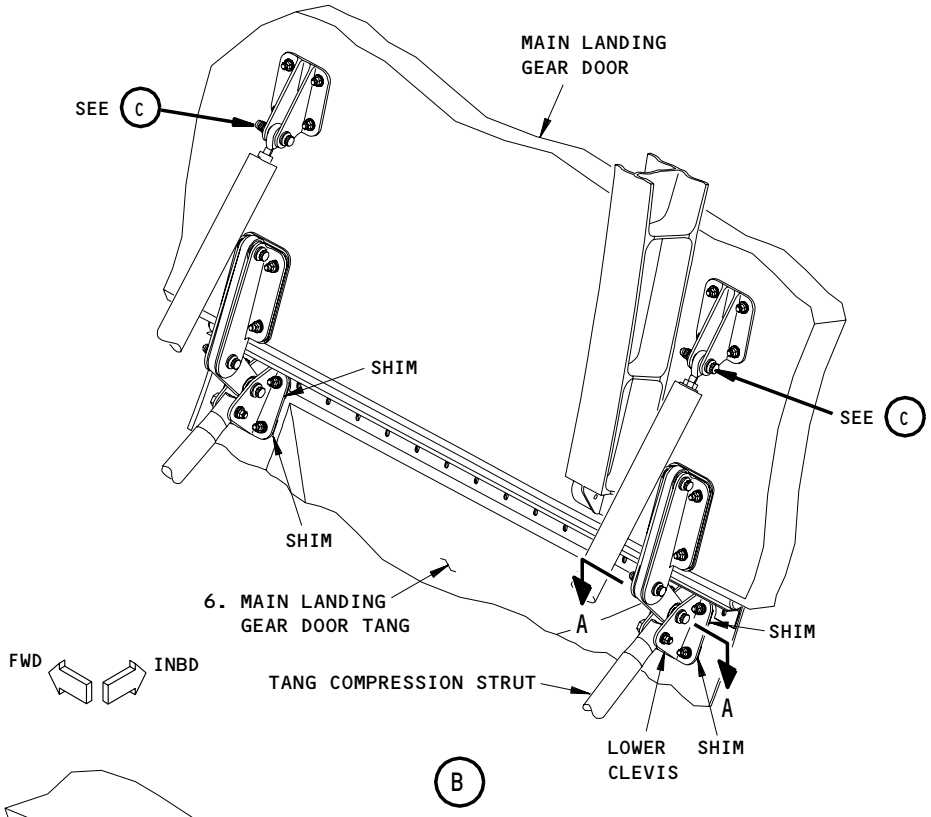
      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

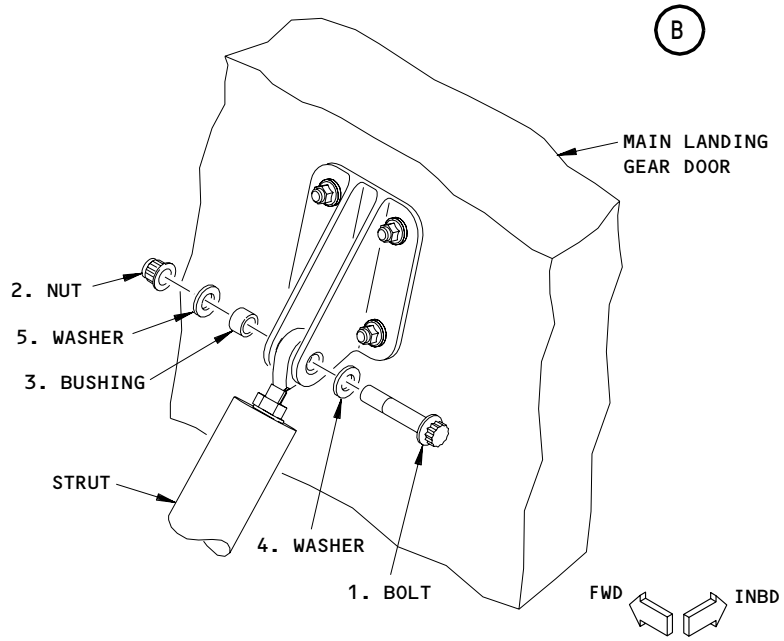
      S 864-004-001
      (3) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).
   E. Remove the Door Tang

      S 014-005-001
      (1) Remove the nut (2), washers (4, 5), bushing (3) and bolt (1) to disconnect the forward and aft struts from the door tang (6).
          (a) Support the door tang (6) with the lift fixture.



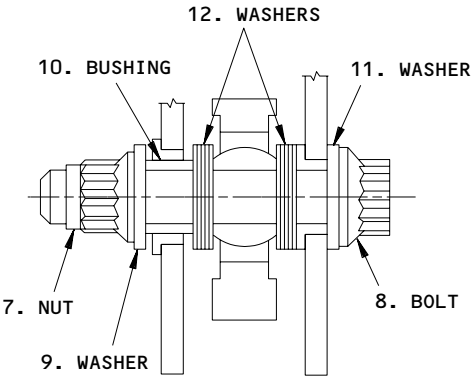
Installation of the Door Tang on the Main Landing Gear Door
Figure 401 (Sheet 1)





FORWARD AND AFT STRUT-TO-MAIN
LANDING GEAR DOOR ATTACHMENT

C



A-A

Installation of the Door Tang on the Main Landing Gear Door
Figure 401 (Sheet 2)

S 014-006-001
(2) Remove the nut (7), washers (9, 11, 12), bushing (10) and bolt (8) to disconnect the door tang (6) from the forward and aft drop link.

S 034-007-001
(3) Remove the door tang (6) from the main landing gear door.

TASK 32-12-02-404-008-001

3. Install the Door Tang on the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Lift Fixture, Engine Accessory - A71015-87
   B. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	6	Tang Assy (Main Landing Gear Door Tang)	32-12-01	02	110 450

   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
          731/741 Main Landing Gear (MLG)
          732/742 MLG Body Doors
          733/743 MLG Oleo Doors

   E. Install the Door Tang

S 864-009-001
(1) Lower the handling equipment.

S 864-010-001

(2) Lift the fixture to move the door tang (6) into position for the installation.

S 434-018-001

(3) Install the bushing (3), bolt (1), washers (4, 5) and nut (2) to attach the tang (6) to the forward and aft strut.

NOTE: The bolt (1), washers (4, 5) and nut (2) can be installed in either direction to prevent contact between parts during assembly.

S 434-019-001

(4) Install the bolt (8), the washers (9, 11, 12), the nut (7) to connect the tang (6) to the forward and aft drop link on the main landing gear door.

NOTE: The bolt (8), washers (9, 11) and nut (7) can be installed in either direction to prevent contact between parts during assembly.

(a) You can move washers (12) from one side of the drop link to the other to satisfy these conditions during installation:
  1) To prevent the application force between the drop link and the clevis on the tang (6) when the door is closed (a minimum of .005 inch gap is necessary between the drop link and the clevis on the tang when the door is closed).
  2) To adjust the clearances at the forward and aft edges of the tang (6).

(b) Use approximately 10 to 12 washers (12) to get the minimum clearance of .005 inch between the drop link and the clevis on the tang (6).

F. Put the Airplane Back to Its Usual Condition

S 094-013-001

(1) Remove the handling equipment and the lift fixture.

S 824-016-001

(2) Adjust the door for the main landing gear and adjust the door tang (AMM 32-12-00/501).

S 094-017-001

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.

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

MAIN GEAR DOOR TANG - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the door tang from the main landing gear door. The second task installs the door tang on the main landing gear door.

TASK 32-12-02-004-001-002

2. Remove the Door Tang from the Main Landing Gear Door (Fig. 401)
   A. Equipment
      (1) Lift Fixture, Engine Accessory - A71015-87
   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 Oleo Doors

   D. Prepare for the Removal of the Door Tang

S 494-002-002

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

S 494-003-002

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.

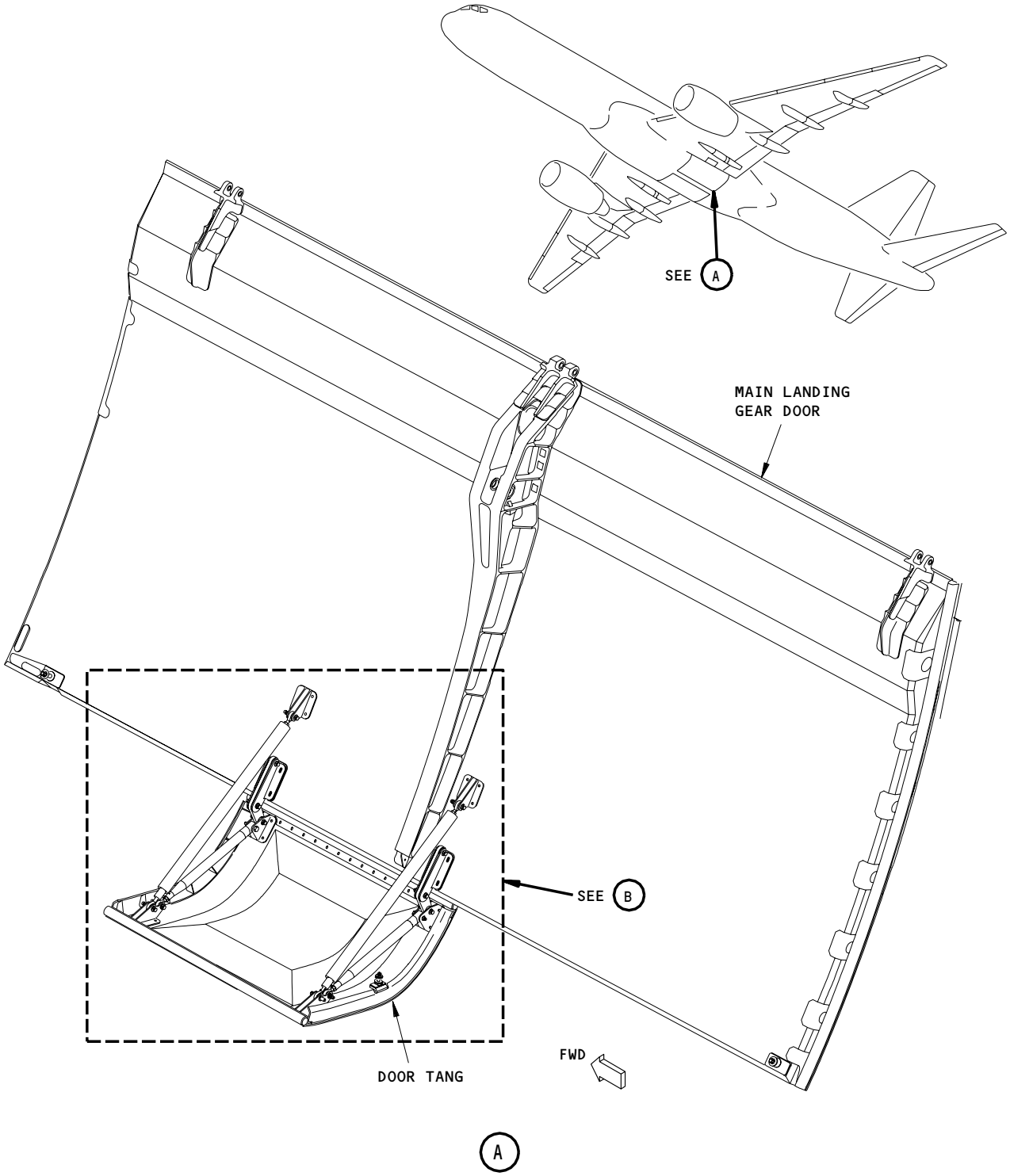
      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

S 864-004-002

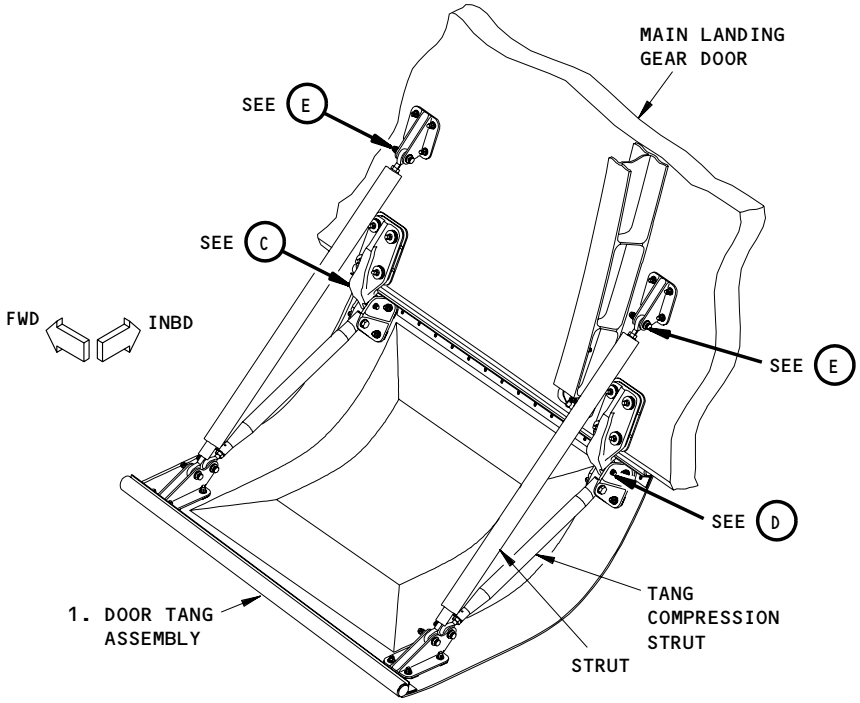
      (3) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).
   E. Remove the Door Tang

S 014-005-002

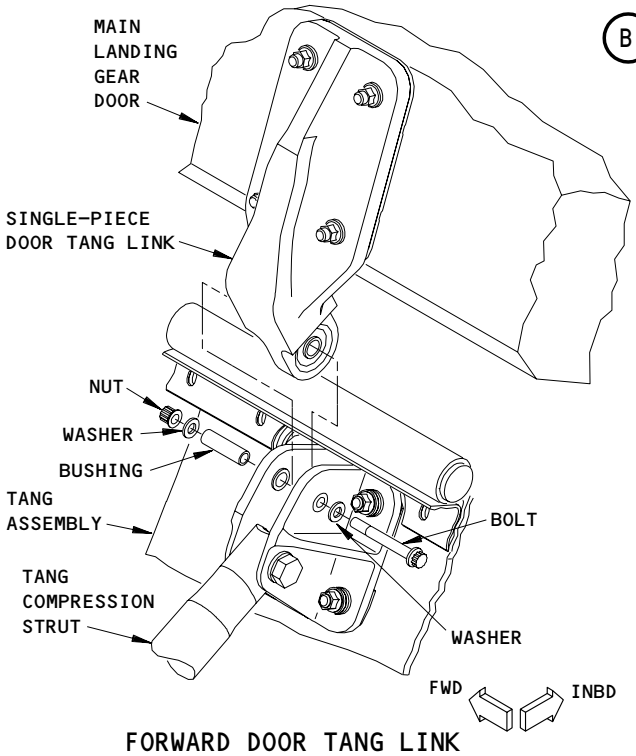
      (1) Remove the nut, washers, bushing and bolt to disconnect the forward and aft struts from the door tang.
         (a) Support the door tang with the lift fixture.



Installation of the Door Tang on the Main Landing Gear Door
Figure 401 (Sheet 1)

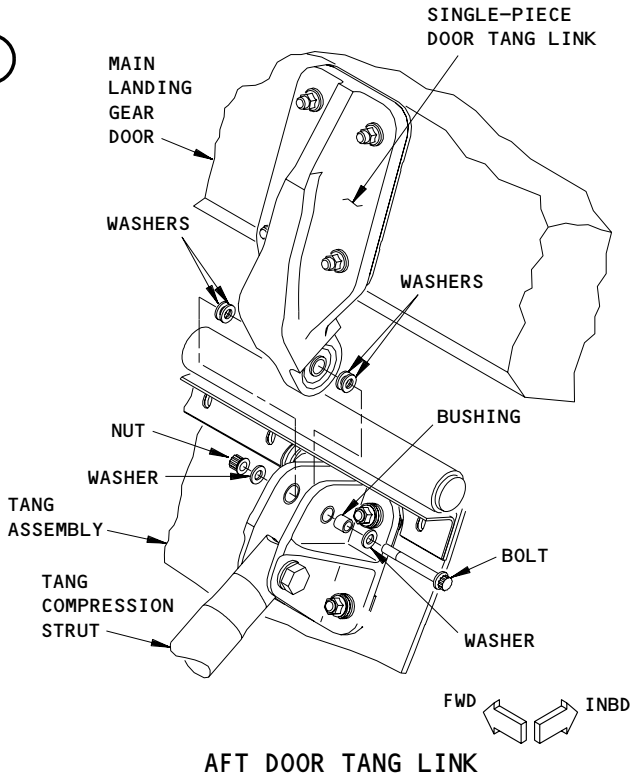


B



FORWARD DOOR TANG LINK

C



AFT DOOR TANG LINK

D

Installation of the Door Tang on the Main Landing Gear Door
Figure 401 (Sheet 2)

EFFECTIVITY
AIRPLANES WITH ONE-PIECE TANG ATTACHMENT DROP LINK (POST-SB/52-61 OR PRR 4530-81)

E86207

S 014-006-002

(2) Remove the nut, washers, bushing and bolt to disconnect the door tang from the forward drop link.

S 014-018-002

(3) Remove the nut, washers, bushing and bolt to disconnect the door tang from the aft drop link.

S 034-007-002

(4) Remove the door tang from the main landing gear door.

TASK 32-12-02-404-008-002

3. Install the Door Tang on the Main Landing Gear (Fig. 401)

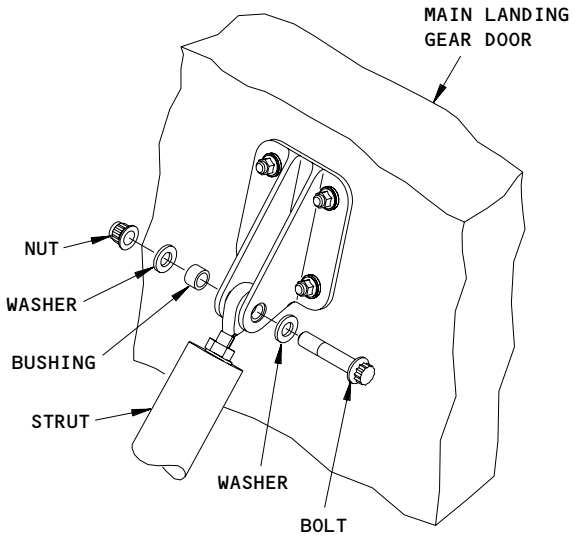
A. References

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

(2) AMM 32-12-00/501, Main Gear Doors

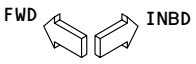
B. Equipment

(1) Lift Fixture, Engine Accessory - A71015-87



FORWARD AND AFT STRUT-TO-MAIN
LANDING GEAR DOOR ATTACHMENT

E



Installation of the Door Tang on the Main Landing Gear Door
Figure 401 (Sheet 3)

MM		NOMENCLATURE	IPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Tang Assy (Door Tang Assembly)	32-12-02	01	110 450

C. Access

(1) Location Zones

731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Oleo Doors

D. Install the Door Tang

S 864-009-002

(1) Lower the handling equipment.

S 864-010-002

(2) Lift the fixture to move the door tang into position for the installation.

S 434-019-002

(3) Install the bushing, bolt, washers and nut to attach the tang to the forward and aft strut.

NOTE: The bolt, washers and nut can be installed in either direction to prevent contact between parts during assembly.

S 434-020-002

(4) Install the bolt, the washers, and the nut to connect the tang to the forward drop link on the main landing gear door. There must be a minimum of .005 inch clearance between the drop link and the tang clevis when the door is in the closed position.

NOTE: The bolt, washers and nut can be installed in either direction to prevent contact between parts during assembly.

(a) You can install a longer bushing if it is necessary to prevent the application of force between the drop link and the clevis on the tang (6) when the door is closed (a minimum of .005 inch gap is necessary between the drop link and the clevis on the tang when the door is closed).

S 434-021-002

(5) Install the bolt, the washers, and the nut to connect the tang to the aft drop link on the main landing gear door. There must be a minimum of .005 inch clearance between the drop link and the tang clevis when the door is in the closed position.

NOTE: The bolt, washers and nut can be installed in either direction to prevent contact between parts during assembly.

E. Put the Airplane Back to Its Usual Condition

S 094-013-002

(1) Remove the handling equipment and the lift fixture.

S 824-016-002

(2) Adjust the door for the main landing gear and adjust the door tang (AMM 32-12-00/501).

S 094-017-002

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.

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

MAIN GEAR STRUT DOOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the strut door for the main landing gear. The second task installs the strut door for the main landing gear.

   TASK 32-12-04-004-001

2. Remove the Strut Door 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 Downlocks
   B. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

   C. Prepare for the Removal of the Strut Door

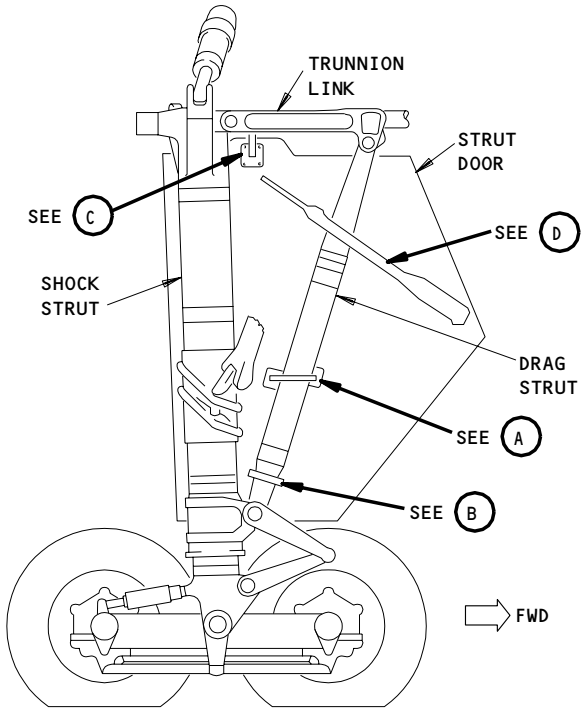
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

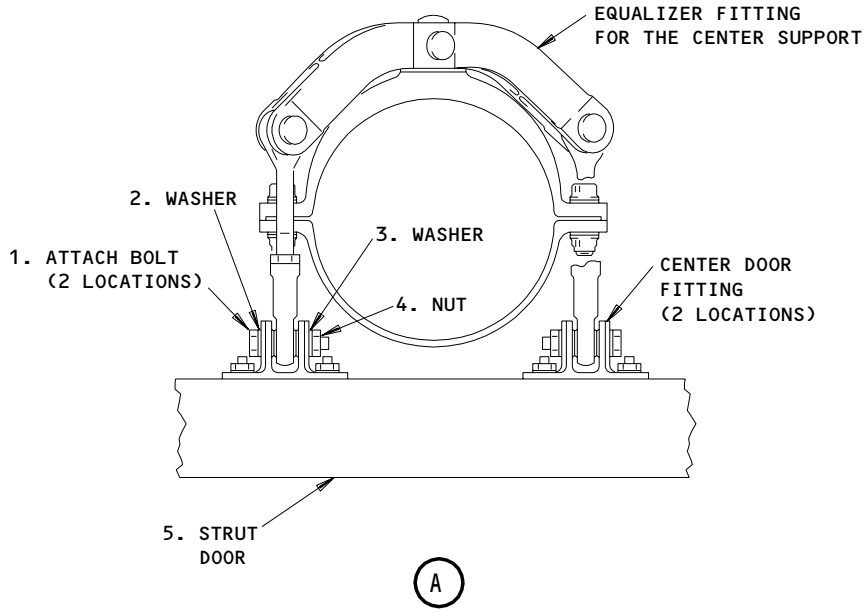
      S 494-021

      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.

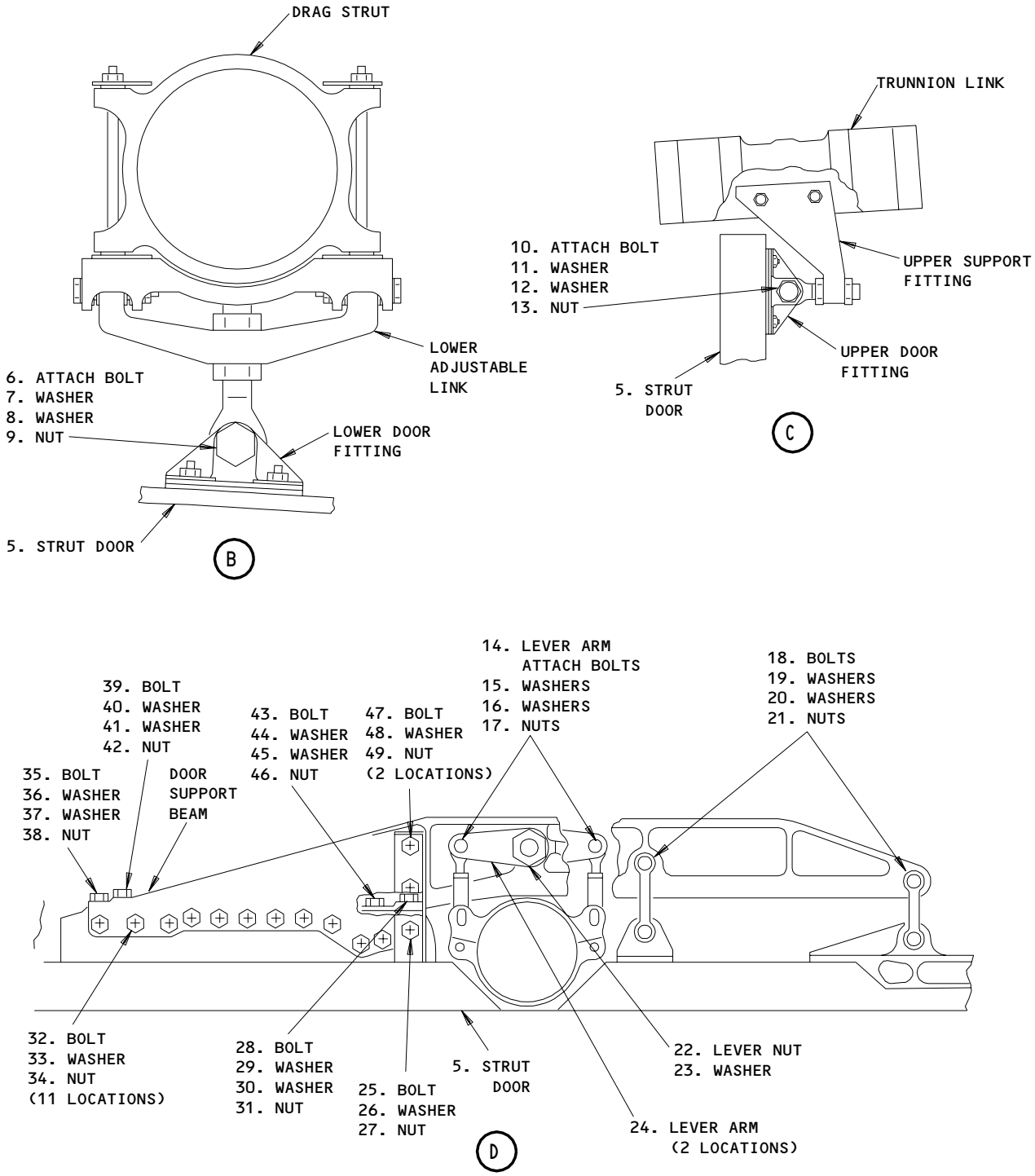
      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).
   D. Remove the Strut Door

      S 844-004
      (1) Hold the strut door.





Strut Door Installation for the Main Landing Gear
Figure 401 (Sheet 1)



Strut Door Installation for the Main Landing Gear
Figure 401 (Sheet 2)

S 014-005
(2) Remove the bolt to disconnect the pushrod for the trunnion door from the attach fitting on the strut door.

S 014-006
(3) Remove the attach bolt (6) to disconnect the strut door at its lower fitting from the lower adjustable link (Detail B).

S 014-007
(4) Remove the attach bolts (1) to disconnect the strut door from the center support equalizer fitting on the drag strut center fitting (Detail A).

S 014-008
(5) Remove the attach bolts (14, 18, 25, 28, 32, 35, 39, 43, and 47) for the beam and the lever arm. This disassembles the support beam for the door from the door (Detail D).

S 014-009
(6) Remove the attach bolt (10) to disconnect the strut door from the upper support fitting at the trunnion link (Detail C).

S 024-010
(7) Remove the strut door (5).

S 034-011
(8) Remove the nut (22) to disconnect the lever arms (24) from the support beam. Keep the lever arms to use on the installation of the new strut door.

NOTE: This is an interference fit and it may be necessary to use a vise and a puller.

TASK 32-12-04-404-012

3. Install the Strut Door for the Main Landing Gear (Fig. 401)

A. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	5	Door Assy (Strut Door)	32-12-04	02	495, 496

B. References
(1) AMM 32-00-15/201, Landing Gear Door Locks
(2) AMM 32-12-00/501, Main Gear Doors

C. Access
(1) Location Zones
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Oleo Doors

D. Install the Strut Door

S 014-013
(1) Remove the attach bolts for the beam (18, 25, 28, 32, 35, 39, 43, and 47) if attached. This disassembles the support beam for the door from the door (Detail D).

S 414-014
(2) Install the nut (22), the washer (23), and the cotter pin to connect the lever arms (24) for the door to the support beam. Tighten the nut to 1500-3300 pound-inches (Detail D).

NOTE: This is an interference fit and it may be necessary to use a vise.

S 844-015
(3) Hold the strut door.

S 414-016
(4) Install the parts that follow to connect the support beam for the door to the door:
(a) Attach bolts for the lever arm (14)
(b) Washers (15)
(c) Nuts (17)
1) Tighten the nuts to 160-240 pound-inches

(d) Attach bolts for the beam (18, 25, 28, 32, 35, 39, 43, 47)
(e) Washers (19, 20, 26, 29, 30, 33, 36, 37, 40, 44, 45, 48)
(f) Nuts (21, 27, 31, 34, 38, 42, 46, 49)
1) Tighten the nuts (21) to 290-510 pound-inches
2) Tighten the nuts (27, 31, 34, 38, 42, 46, 49) to the standard torque.

S 414-017

(5) Install the parts that follow to connect the strut door to the upper support fitting at the trunnion link (Detail C):
(a) Attach bolt (10)
(b) Washers (11, 12)
(c) Nut (13)
1) Install the washers under the bolthead and the nut
2) Tighten the nut to 660-980 pound-inches

S 414-018

(6) Install the parts that follow to connect the strut door to the lower adjustable link on the lower fitting of the strut door:
(a) Bolt (6)
(b) Washers (7, 8)
(c) Nut (9)
1) Tighten the nut to 660-980 pound-inches

E. Put the Airplane Back to Its Usual Condition

S 824-027

(1) Adjust the strut door for the main landing gear (AMM 32-12-00/501).

NOTE: Adjustment of the strut door is not necessary if the same door, attaching hardware and adjustment rods that were removed are reinstalled and the jamnuts on the adjustment rods are not loosened.

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.

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

MAIN GEAR STRUT DOOR - INSPECTION/CHECK

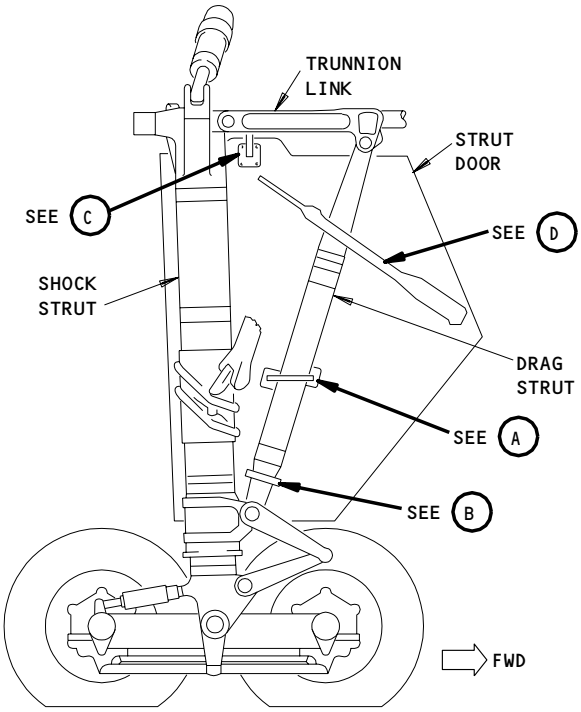
1. General
   A. This procedure only has illustrations, and wear limit tables which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Gear Strut Door - Removal/Installation for procedures to do these tasks.

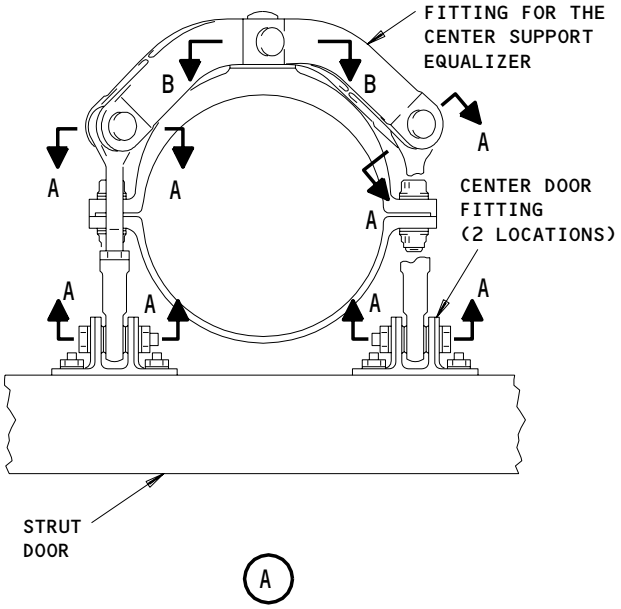
TASK 32-12-04-206-001

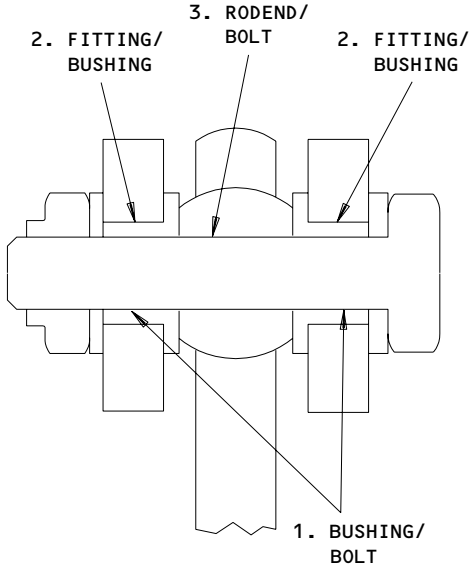
2. Wear Limits for the Strut Door of the Main Landing Gear (Fig. 601)
   A. Wear Limits for the Strut Door

S 226-002

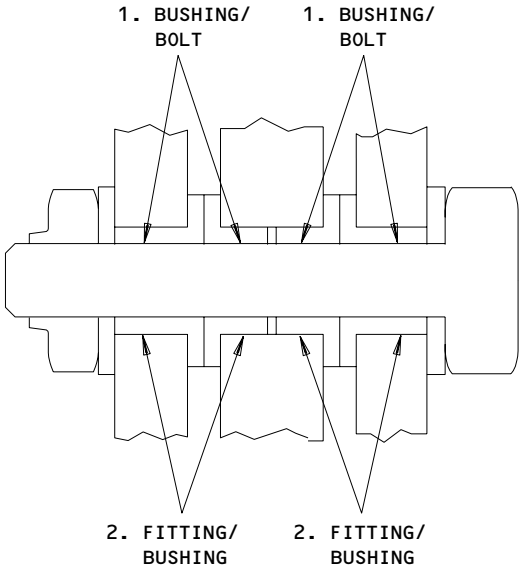
(1) Refer to Fig. 601 for the inspection points and the wear limits tables.





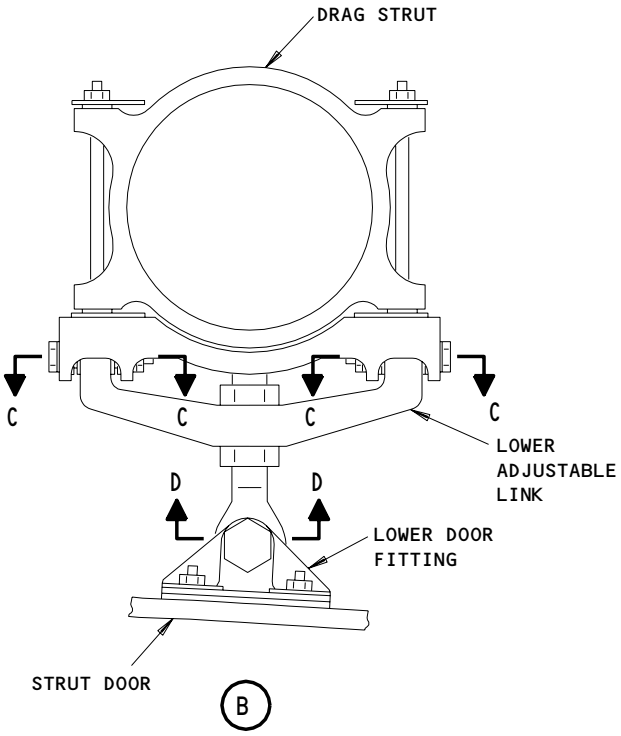


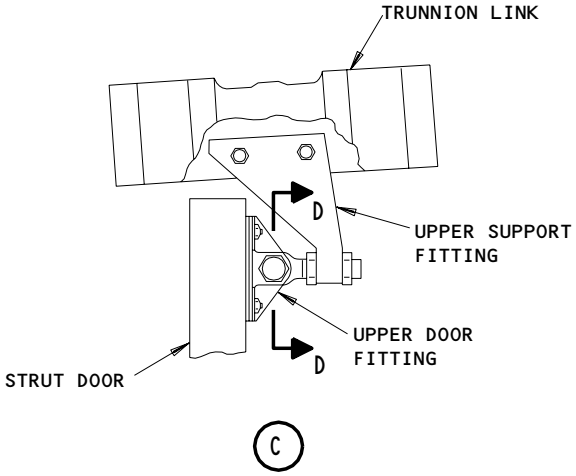
A–A

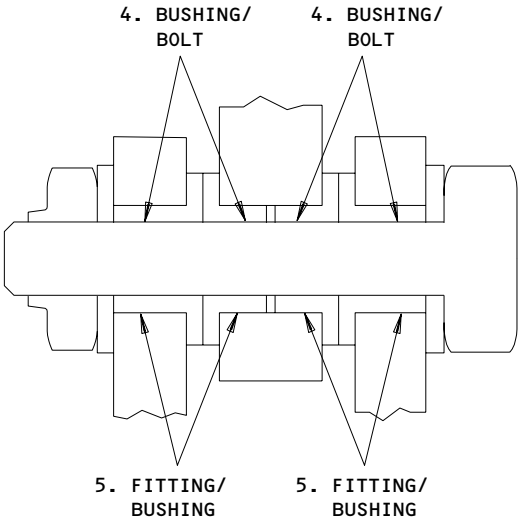


B–B

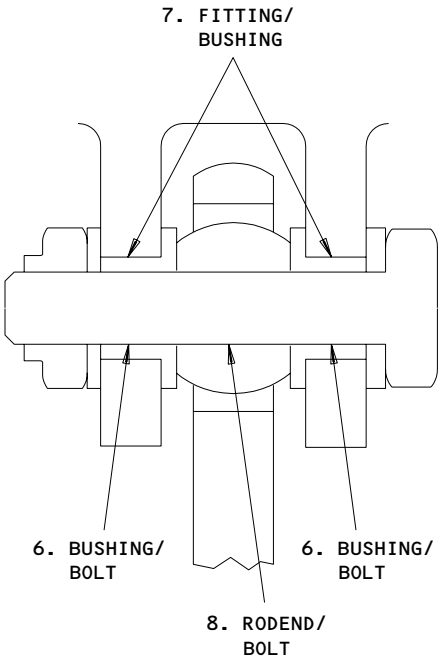
Main Landing Gear Strut Door Wear Limits
Figure 601 (Sheet 1)





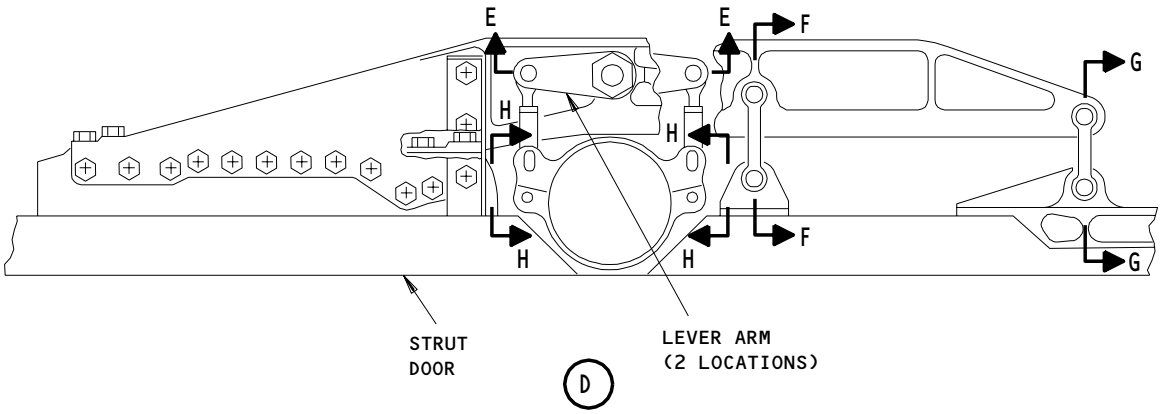


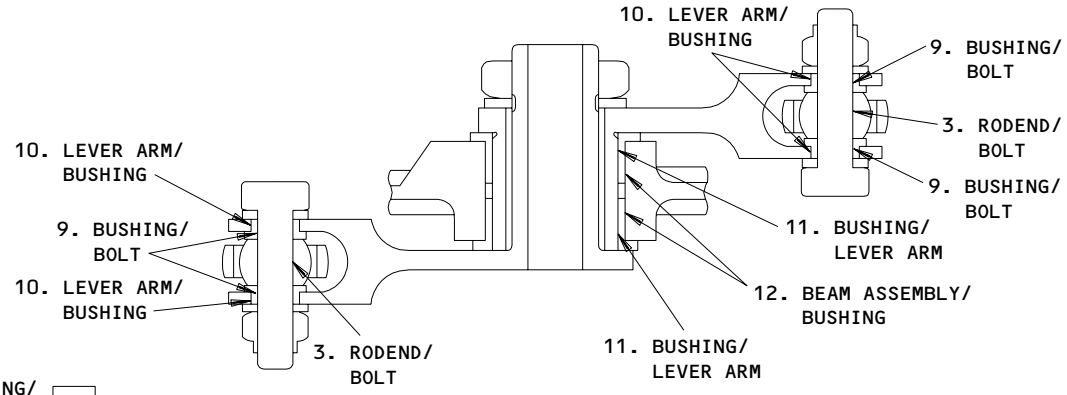
C–C

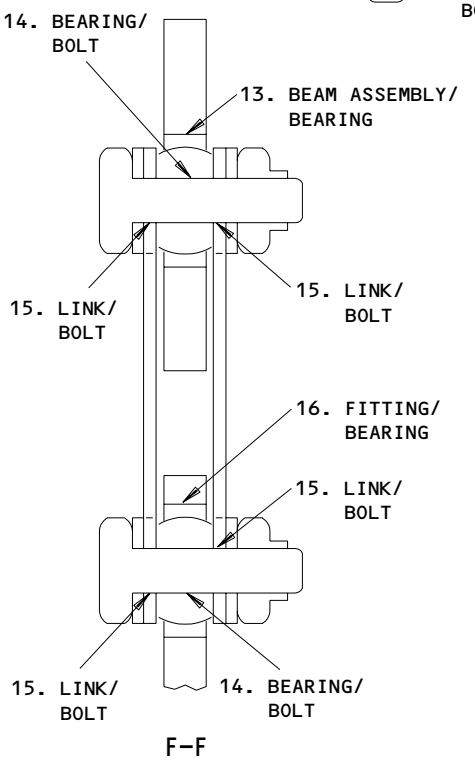


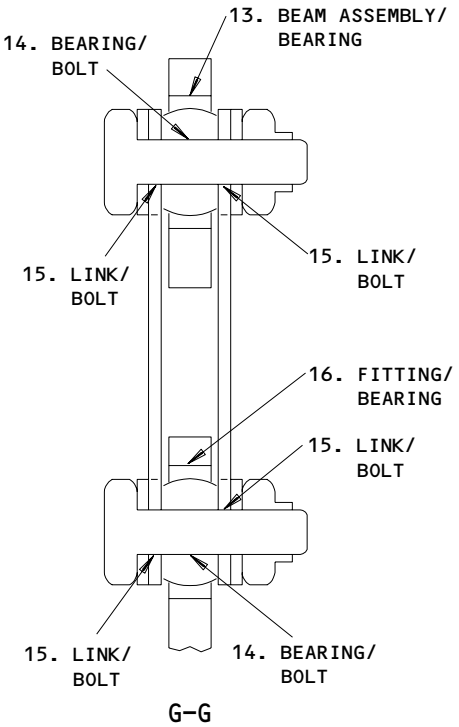
D–D

Main Landing Gear Strut Door Wear Limits
Figure 601 (Sheet 2)

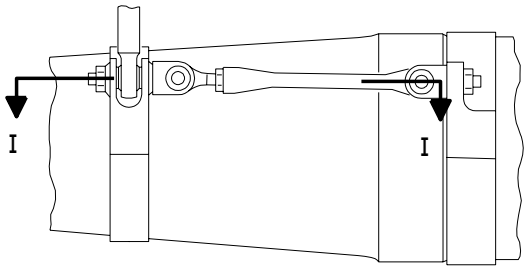




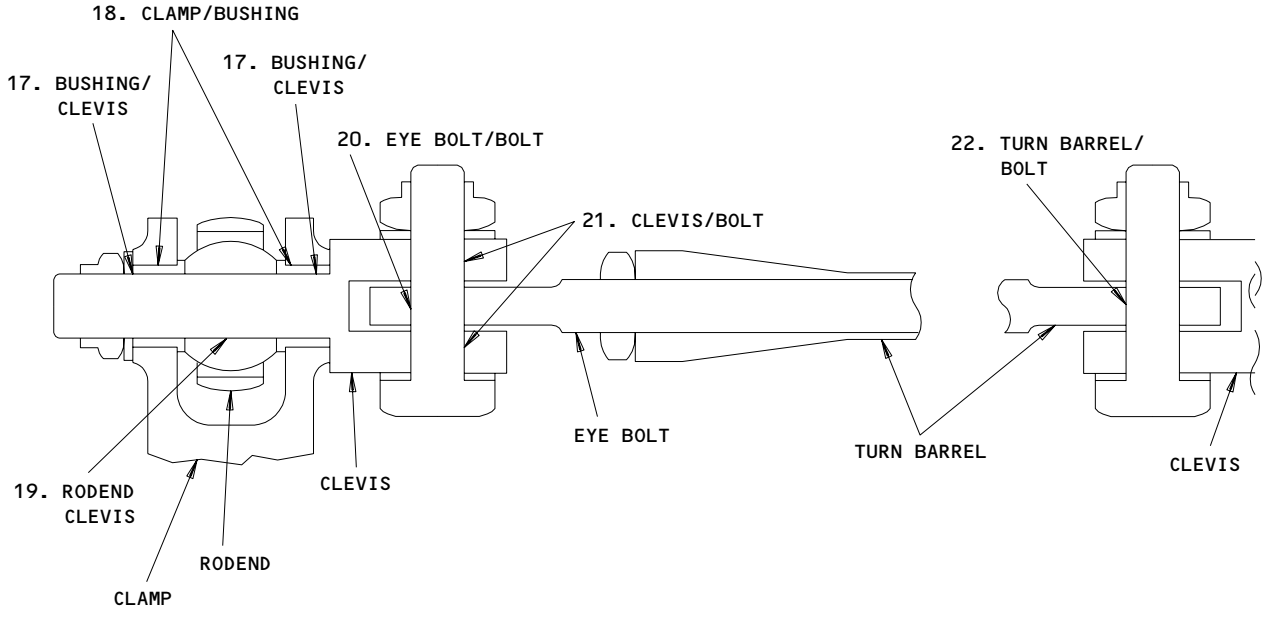




Main Landing Gear Strut Door Wear Limits
Figure 601 (Sheet 3)



H-H



I-I

Main Landing Gear Strut Door Wear Limits
Figure 601 (Sheet 4)

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	0.3752	0.3757	0.3795	0.0050	X		
	BOLT	OD	0.3735	0.3745	0.3707		X		
2	FITTING	ID	0.5002	0.5008	0.5016	1		X	2
	BUSHING	OD	0.5010	0.5016	0.5002		X		
3	ROD END	ID	0.3745	0.3750	0.3795	0.0050	X		
	BOLT	OD	0.3735	0.3745	0.3700		X		
4	BUSHING	ID	0.3125	0.3130	0.3170	0.0050	X		
	BOLT	OD	0.3110	0.3120	0.3080		X		
5	FITTING	ID	0.4375	0.4381	0.4390	1		X	2
	BUSHING	OD	0.4384	0.4390	0.4375		X		
6	BUSHING	ID	0.6245	0.6250	0.6247	0.0070	X		
	BOLT	OD	0.6230	0.6240	0.6243		X		
7	FITTING	ID	0.7504	0.7508	0.7516	1		X	2
	BUSHING	OD	0.7512	0.7516	0.7504		X		
8	ROD END	ID	0.6245	0.6250	0.6247	0.0070	X		
	BOLT	OD	0.6230	0.6240	0.6243		X		
9	BUSHING	ID	0.3750	0.3756	0.3795	0.0050	X		
	BOLT	OD	0.3735	0.3745	0.3706		X		
10	LEVER ARM	ID	0.5000	0.5006	0.5016	1		X	2
	BUSHING	OD	0.5010	0.5016	0.5000		X		
11	BUSHING	ID	1.2495	1.2505	1.2570	0.0080	X		
	LEVER ARM	OD	1.2480	1.2490	1.2425			X	2

1 INTERFERENCE FIT.

2 THE PART IS REPAIRABLE; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE REPAIR INSTRUCTIONS.

Main Landing Gear Strut Door Wear Limits
Figure 601 (Sheet 5)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
			DIAMETER		PER-MITTED WEAR DIM.	MAX DIAM CLEAR-ANCE			
			MIN	MAX					
12	BEAM ASSEMBLY	ID	1.4500	1.4508	1.4523	1		X	2
	BUSHING	OD	1.4515	1.4523	1.4500		X		
13	BEAM ASSEMBLY	ID	1.0010	1.0020	1.0100	0.0100		X	2
	BEARING	OD	0.9995	1.0000	0.9920		X		
14	BEARING	ID	0.4995	0.5000	0.5055	0.0060	X		
	BOLT	OD	0.4985	0.4995	0.4940		X		
15	LINK	ID	0.5050	0.5150	0.5045	0.0050	X		
	BOLT	OD	0.4985	0.4995	0.5100		X		
16	FITTING	ID	1.0010	1.0020	1.0100	0.0100		X	2
	BEARING	OD	0.9995	1.0000	0.9920		X		
17	BUSHING	ID	0.3752	0.3737	0.3795	0.0050	X		
	CLEVIS	OD	0.3735	0.3745	0.3707		X		
18	CLAMP	ID	0.5002	0.5008	0.5016	1	X		
	BUSHING	OD	0.5010	0.5016	0.5002		X		
19	ROD END	ID	0.3745	0.3750	0.3795	0.0050	X		
	CLEVIS	OD	0.3735	0.3745	0.3700		X		
20	EYEBOLT	ID	0.3130	0.3160	0.3170	0.0050	X		
	BOLT	OD	0.3110	0.3120	0.3110		X		
21	CLEVIS	ID	0.3130	0.3160	0.3170	0.0050	X		
	BOLT	OD	0.3110	0.3120	0.3110		X		
22	TURN BARREL	ID	0.3130	0.3160	0.3170	0.0050	X		
	BOLT	OD	0.3110	0.3120	0.3110		X		

Main Landing Gear Strut Door Wear Limits
Figure 601 (Sheet 6)

MAIN GEAR TRUNNION FAIRING DOOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the trunnion fairing door. The first task also includes steps to remove the pushrod if you do not need to remove the trunnion fairing door. The second task installs the trunnion fairing door and also includes steps for installation of the pushrod.

TASK 32-12-10-004-001

2. Remove the Trunnion Fairing Door for the Main Landing Gear (Fig. 401)
   A. References
      (1) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones

211/212	Control Cabin
731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

   C. Prepare for the Removal of the Trunnion Fairing Door

S 494-014

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.

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

S 864-003

      (2) Put the control lever for the landing gear in the OFF position. Attach a DO-NOT-OPERATE tag to the control lever.
   D. Remove the Trunnion Fairing Door

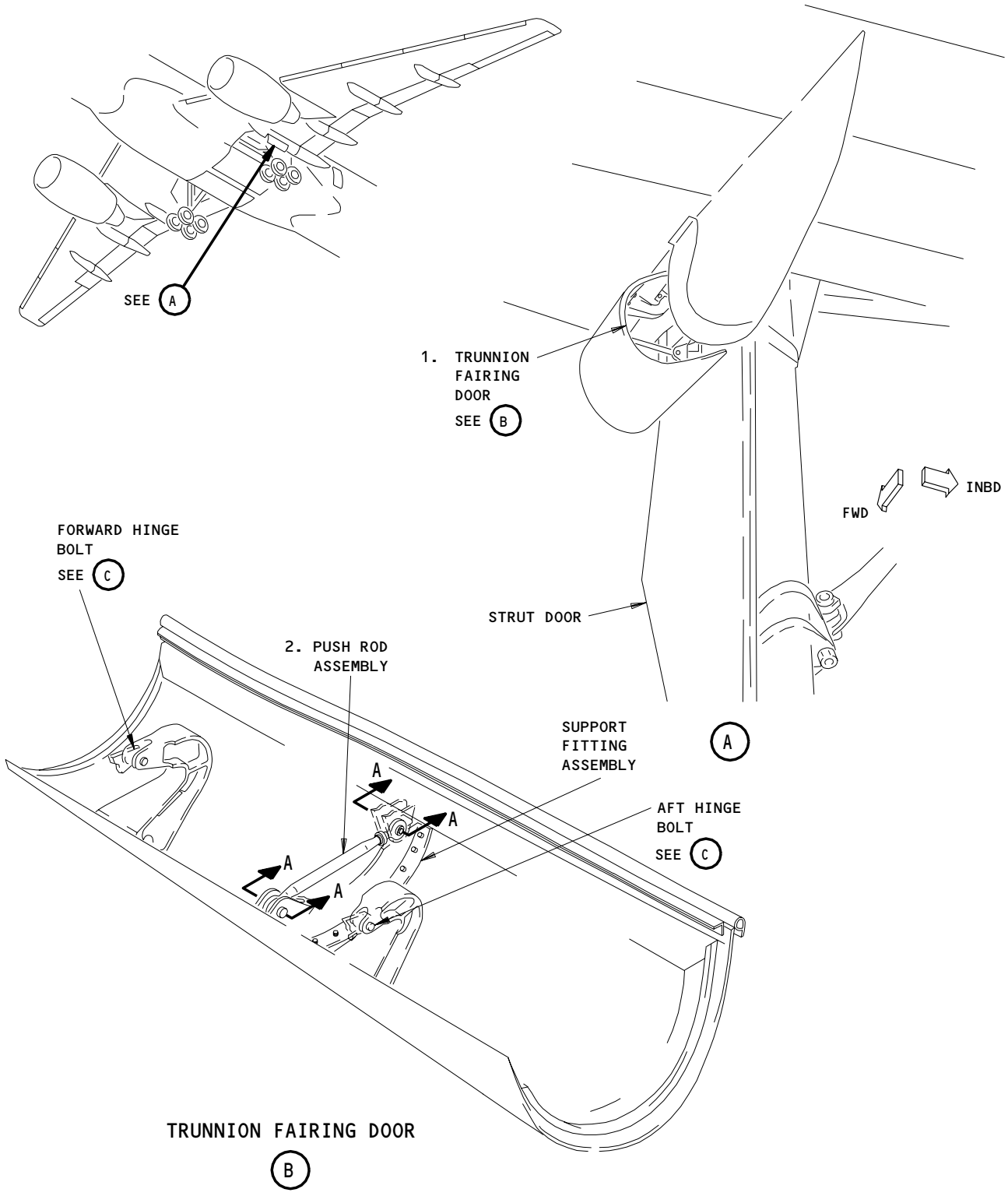
S 844-004

      (1) Hold the trunnion fairing door.

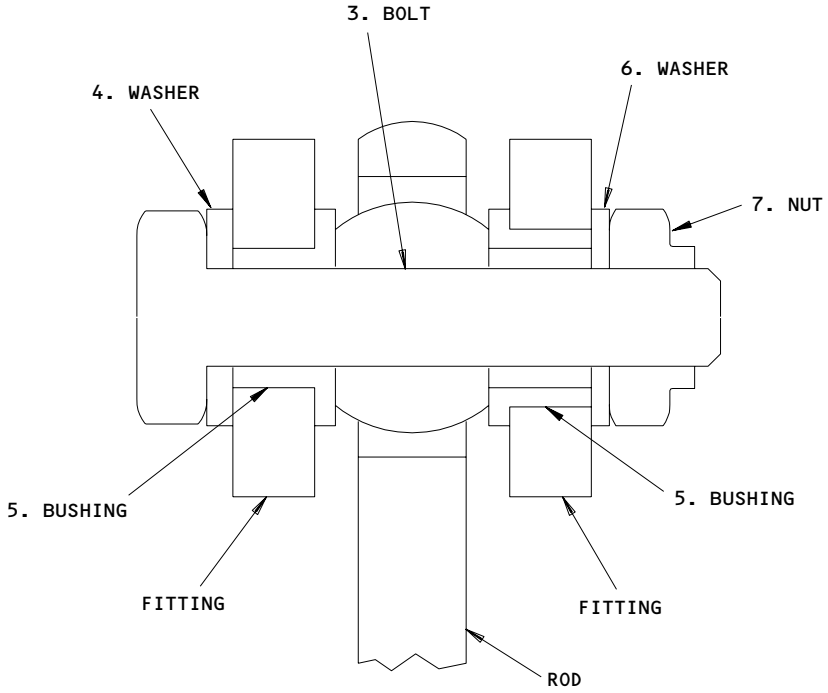
S 014-005

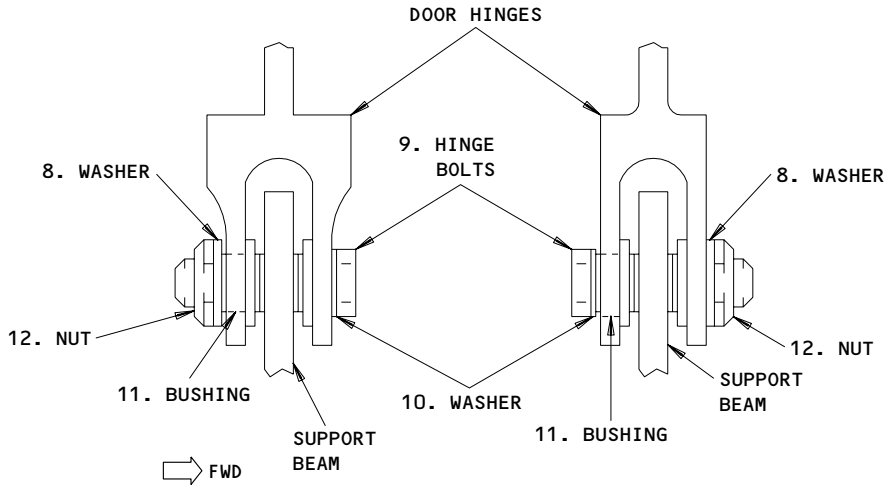
      (2) Remove the nuts (7), washers (4,6), bushings (5), and bolts (3) to disconnect the pushrod from the strut door and the trunnion door.

NOTE: Do not loosen the jamnuts on the ends of the pushrod. It is important to keep the bearing locations relative to each other the same. This will permit you to use the old rod for a reference to adjust the new rod.



Trunnion Fairing Door Installtion for the Main Landing Gear
Figure 401 (Sheet 1)





C

Trunnion Fairing Door Installation for the Main Landing Gear
Figure 401 (Sheet 2)

S 014-006

(3) Remove the hinge bolts (9) to disconnect the door hinges from the support beam (Detail B).

S 024-007

(4) Remove the trunnion fairing door (1).

TASK 32-12-10-404-008

3. Install the Trunnion Fairing Door for the Main Landing Gear (Fig. 401)

A. Equipment

(1) Tramco T930-0063 Pushrod Adjust Tool
Tramco, Inc.
Paine Field - Everett
Everett, Washington

B. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Door Assy (Trunnion Fairing Door)	32-12-10	01	270

C. References

(1) AMM 32-00-20/201, Landing Gear Downlocks
(2) AMM 32-12-00/501, Main Gear Doors

D. Access

(1) Location Zones

211/212 Control Cabin
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Oleo Doors

E. Install the Trunnion Fairing Door

S 424-009

(1) Install the hinge bolts (9), the washers (8 and 10), the bushings (11), and the nuts (12) to connect the door hinges to the support beam. Tighten the nuts to 95-100 pound-inches (Detail B).

S 824-015

(2) If you will install a new operating rod, do the steps that follow to adjust the length of the rod:
   (a) Loosen the adjust bolts on the pushrod adjust tool so that the slotted plates can move freely
   (b) Install the rod ends of the old rod on the pins on the slotted plates
   (c) Tighten the adjust bolts so that the slotted plates cannot move
   (d) Remove the old rod from the pushrod adjust tool
   (e) Adjust the length of the new operating rod to match the two pin locations on the pushrod adjust tool. The fit of the new rod on the pins of the adjust tool should be tight.
   (f) Tighten the jamnut on the new rod
   (g) Install lockwire on the jamnut
   (h) Remove the new pushrod from the pushrod adjust tool.

S 434-013

(3) Install the bolts (3), the washers (4 and 6), the bushings (5) and the nuts (7) to connect the pushrod (2) to the strut door and the fairing door.

F. Put the Airplane Back to Its Usual Condition

S 094-012

(1) Remove the downlocks on the nose and main landing gear (AMM 32-00-20/201).

S 864-010

(2) Remove the DO-NOT-OPERATE tag from the control lever for the landing gear.

S 824-011

(3) If you replaced the door or changed the rigged length of the pushrod, then do the task "Adjust the Trunnion Fairing Door" (AMM 32-12-00/501).

S 824-020

(4) Adjust the trunnion fairing door (AMM 32-12-00/501).

NOTE: Adjustment of the trunnion fairing door is not necessary if the same door and attaching hardware are reinstalled and that the rigged length of the new or same pushrod is not altered.

MAIN GEAR TRUNNION FAIRING DOOR - INSPECTION/CHECK

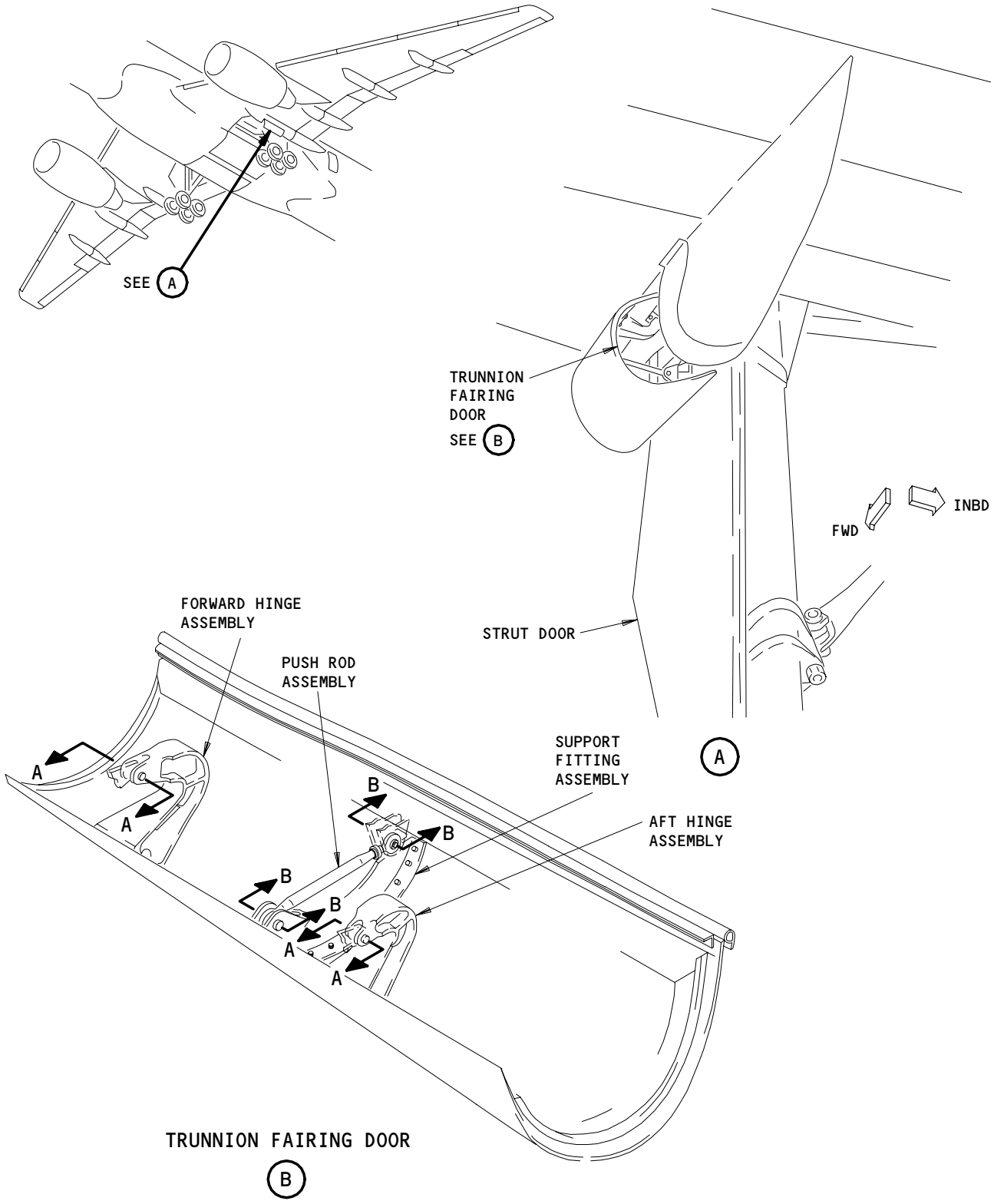
1. General
   A. This procedure only has illustrations, and a wear limit table which shows the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Main Gear Trunnion Fairing Door - Removal/Installation for the procedures to do these tasks.

TASK 32-12-10-206-001

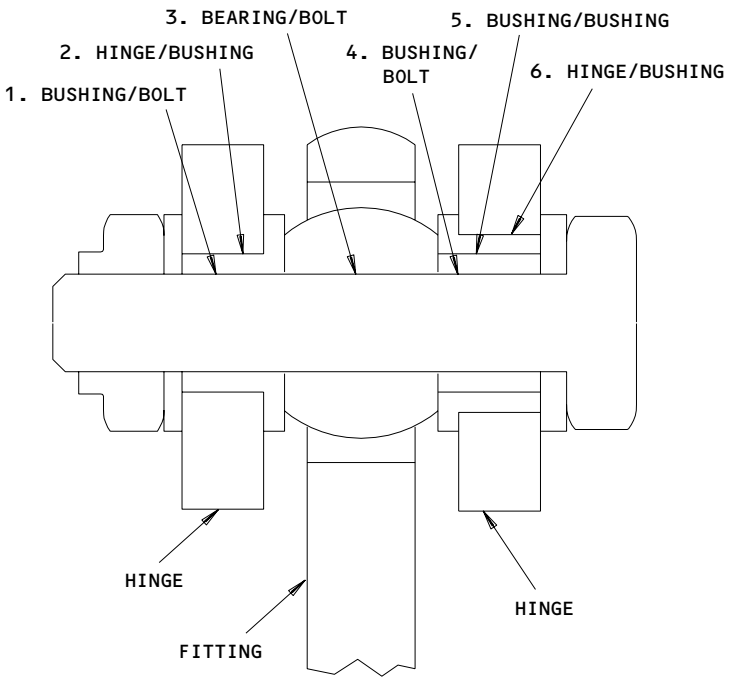
2. Wear Limits for the Trunnion Fairing Door of the Main Landing Gear (Fig. 601)
   A. Wear Limits for the Trunnion Fairing Door

S 226-002

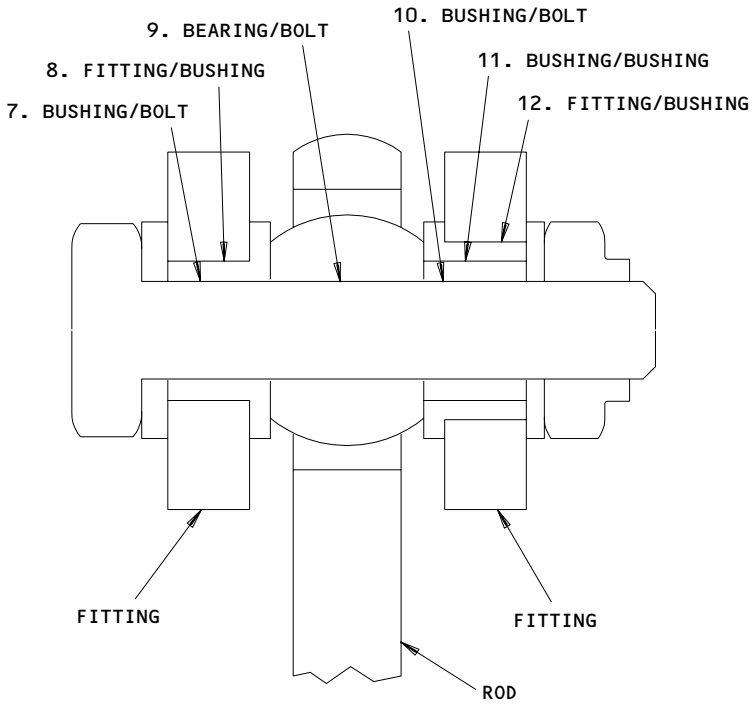
   (1) Refer to Fig. 601 for the inspection points and the wear limits table.



Main Landing Gear Trunnion Fairing Door Wear Limits
Figure 601 (Sheet 1)



A-A



B-B

Main Landing Gear Trunnion Fairing Door 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 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	0.3705		X		
2	HINGE	ID	0.5000	0.5006	0.5016	1 0.0000	X		
	BUSHING	OD	0.5010	0.5016	0.5000		X		
3	BEARING	ID	0.3745	0.3750	0.3795	0.0050	X		
	BOLT	OD	0.3735	0.3745	0.3700		X		
4	BUSHING	ID	0.3750	0.3755	0.3795	0.0050	X		
	BOLT	OD	0.3735	0.3745	0.3705		X		
5	BUSHING	ID	0.5620	0.5630	0.5665	0.0050	X		
	BUSHING	OD	0.5610	0.5615	0.5580		X		
6	HINGE	ID	0.6875	0.6882	0.6893	1 0.0000	X		
	BUSHING	OD	0.6887	0.6893	0.6875		X		
7	BUSHING	ID	0.4995	0.5005	0.5055	0.0060	X		
	BOLT	OD	0.4985	0.4995	0.4945		X		
8	FITTING	ID	0.6250	0.6256	0.6267	1 0.0000	X		
	BUSHING	OD	0.6261	0.6267	0.6250		X		
9	BEARING	ID	0.4995	0.5000	0.5045	0.0050	X		
	BOLT	OD	0.4985	0.4995	0.4950		X		
10	BUSHING	ID	0.5000	0.5005	0.5045	0.0050	X		
	BOLT	OD	0.4985	0.4995	0.4955		X		
11	BUSHING	ID	0.6870	0.6875	0.6810	0.0050	X		
	BUSHING	OD	0.6860	0.6865	0.6825		X		
12	FITTING	ID	0.8125	0.8132	0.8144	1 0.0000	X		
	BUSHING	OD	0.8137	0.8144	0.8125		X		

1 INTERFERENCE FIT.

Main Landing Gear Trunnion Fairing Door Wear Limits
Figure 601 (Sheet 3)

MAIN GEAR DOOR SEALS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the seals for the doors of the main landing gear. The second task installs the seals for the doors of the main landing gear.

TASK 32-12-51-004-001

2. Remove the Seals on the Doors for the Main Landing Gear (Fig. 401)
   A. General
      (1) The seals for the doors of the main landing gear are installed around the outer edge of the door openings and on the doors. Move the bulb-type seals along the retainer tracks to assemble. Lubricate the seals and the tracks with vaseline to ease the installation.
   B. Access
      (1) Location Zones

731/741	Main Landing Gear (MLG)
732/742	MLG Body Doors
733/743	MLG Oleo Doors

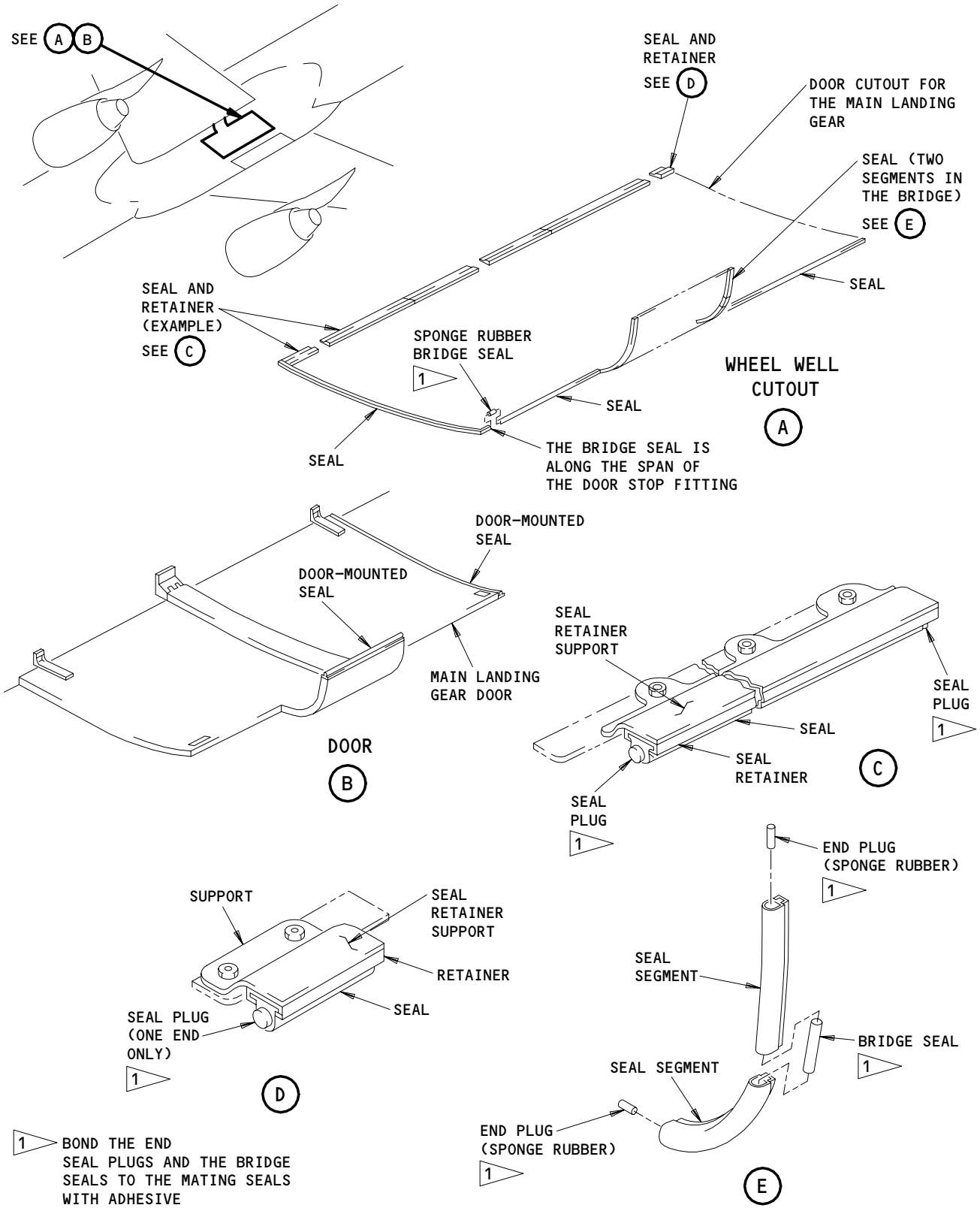
   C. Remove the Seals

      S 034-002
      (1) Remove the bolts which hold the seal and the seal retainer to the fuselage skin along the inboard edge of the door (Detail C). Remove the seal from the seal retainer.

      S 034-003
      (2) To remove the seals at the other locations, pull the seal out of the retainer. Badly damaged seals can be cut to make removal easier.

TASK 32-12-51-404-004

3. Install the Seals on the Doors for the Main Landing Gear (Fig. 401)
   A. Consumable Materials
      (1) D00301 Petroleum Jelly - Vaseline



Installation of the Door Seal for the Main Landing Gear
Figure 401

(2) A01077 Adhesive - Silicone Rubber, RTV 102 (BAC5010 Type 60) (Recommended)
(3) A00027 Adhesive - Silicone, RTV 174 (BAC5010 Type 60) (Alternate)

B. Access
(1) Location Zones
731/741 Main Landing Gear (MLG)
732/742 MLG Body Doors
733/743 MLG Oleo Doors

C. Install the Seals

S 644-005
(1) Apply vaseline to the bottom of the seal and to the retainer track.

S 434-006
(2) Put the seal in the retainer track. Pull the seal along the track until the seal is fully in the track.

S 434-007
(3) Lockwire the seal to the retainer at each end of the seal.

S 434-008
(4) Install the seal plugs in the ends of the seal unless it is an area where the bridge seals are installed.

S 844-009
(5) Use adhesive to bond the plugs to the mating segment.

S 434-010
(6) Install the seal and the retainer assembly segments along the inboard edge of the door openings. Use bolts to seal the supports for the retainer assembly (Detail C).

NOTE: The aft seal segment (Detail D) has a plug seal only at the forward end.

S 434-011
(7) Install the seals in the track which connects to the tongue on the aft edge of the main landing gear door (Detail E).
(a) Pull the upper seal into the track from the top.
(b) Pull the lower seal into the track from the bottom.
(c) Install the bridge seal between the upper and lower seals. Put the ends of the bridge seal into the ends of the upper and lower seals.

(d) Apply adhesive to the bridge seal where it connects to the upper and lower seals.

NOTE: Install the upper seal from the bottom if the overlap of the wing panel causes a problem. You may have to remove the lower seal to allow the upper seal to be put into the track.

S 434-012

(8) Install the bridge seal which spans the stop fitting for the forward door (Detail A). Put the ends of the bridge seal into the ends of the seals on each side. Apply adhesive to the two joints.

NOSE LANDING GEAR AND DOORS - DESCRIPTION AND OPERATION

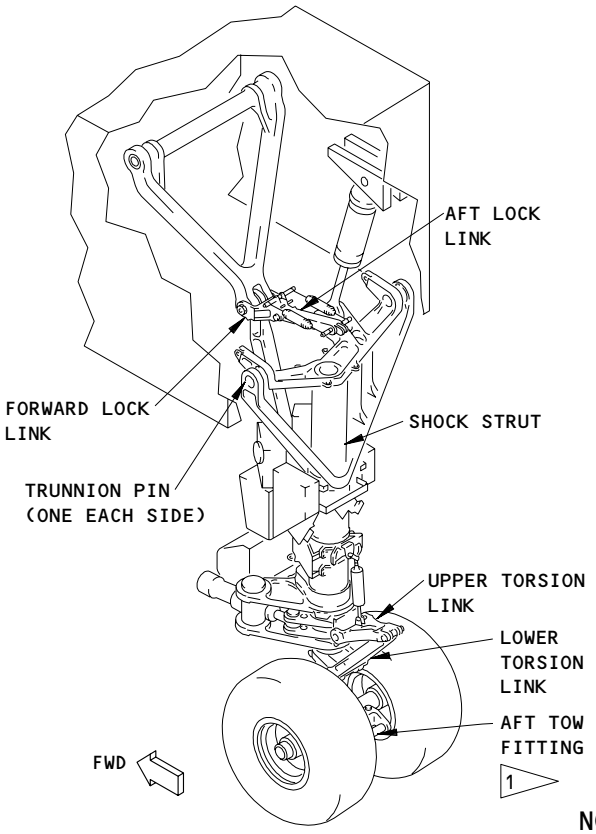
1. General
   A. The nose gear supports the forward end of the fuselage and provides directional control while the airplane is on the ground. The gear retracts forward and up into the wheel well during flight. The gear retracts or extends when the landing gear control lever is moved to UP or DN (AMM 32-21-00/001).
   B. The nose gear doors consist of forward doors and aft doors. The aft doors are slaved to the nose gear and the forward doors are hydraulically operated when the landing gear control lever is moved to UP or DN (AMM 32-22-00/001).

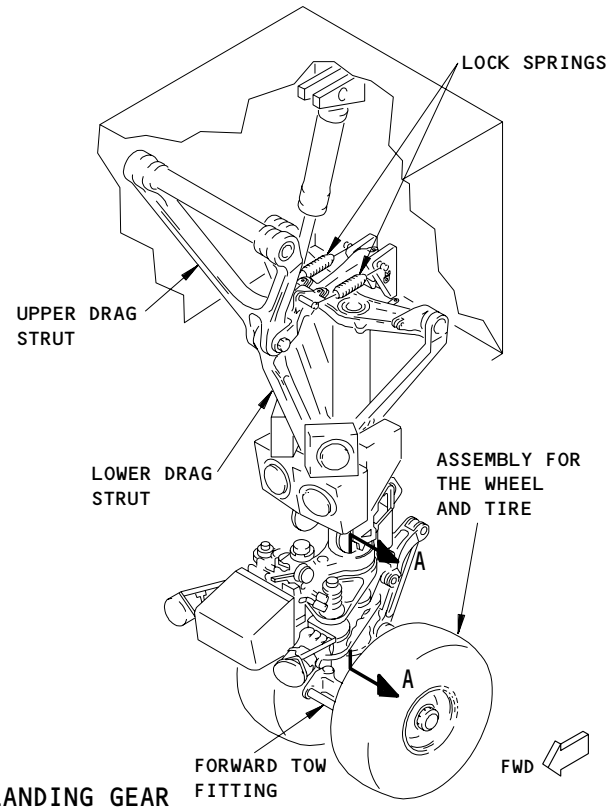
NOSE LANDING GEAR AND DOORS

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
DOOR – NOSE GEAR AFT	2	2	NOSE WHEEL WELL	32-22-03
DOOR – NOSE GEAR FORWARD	2	2	NOSE WHEEL WELL	32-22-01
FITTING – NOSE GEAR AFT TOW 1	1	1	NOSE LANDING GEAR	32-21-13
FITTING – NOSE GEAR FORWARD TOW	1	1	NOSE LANDING GEAR	32-21-13
GEAR – NOSE	1	1	NOSE LANDING GEAR	32-21-01
LINK – NOSE GEAR AFT LOCK	1	1	NOSE WHEEL WELL	32-21-06
LINK – NOSE GEAR FORWARD LOCK	1	1	NOSE WHEEL WELL	32-21-06
LINK – NOSE GEAR LOWER TORSION	1	1	NOSE LANDING GEAR	32-21-09
LINK – NOSE GEAR UPPER TORSION	1	1	NOSE LANDING GEAR	32-21-09
MECHANISM – NOSE GEAR AFT DOOR OPERATING	2	2	NOSE WHEEL WELL	32-22-05
MECHANISM – NOSE GEAR FORWARD DOOR OPERATING	2	1	NOSE WHEEL WELL	32-22-02
PIN – NOSE GEAR TRUNNION	1	2	NOSE WHEEL WELL	32-21-12
SEALS – NOSE GEAR SHOCK STRUT	1	6	NOSE LANDING GEAR, SHOCK STRUT	32-21-25
SPRING – NOSE GEAR LOCK	1	2	NOSE WHEEL WELL	32-21-15
STRUT – NOSE GEAR LOWER DRAG	1	1	NOSE LANDING GEAR	32-21-04
STRUT – NOSE GEAR SHOCK	1	1	NOSE LANDING GEAR	32-21-00
STRUT – NOSE GEAR UPPER DRAG	1	1	NOSE LANDING GEAR	32-21-04
WHEEL/TIRE ASSEMBLY	1	2	NOSE LANDING GEAR	32-45-02

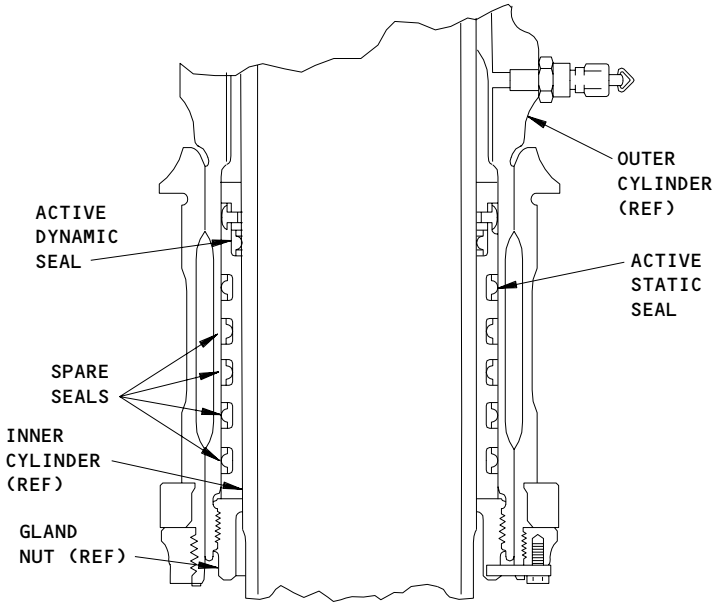
1 IF INSTALLED

Nose Landing Gear and Doors – Component Index
Figure 101





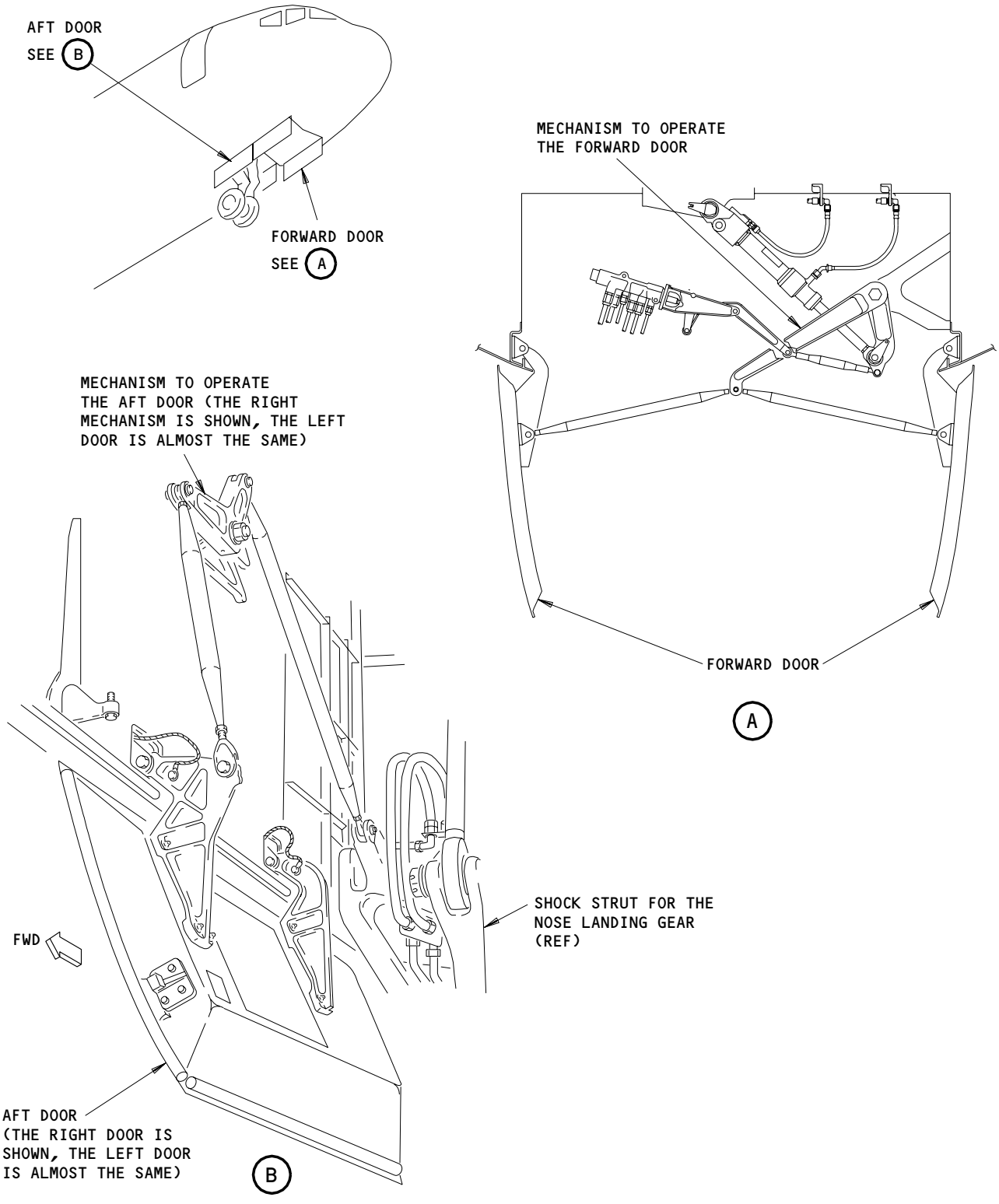
NOSE LANDING GEAR



SHOCK STRUT SEALS FOR THE NOSE LANDING GEAR
A-A

1 IF INSTALLED

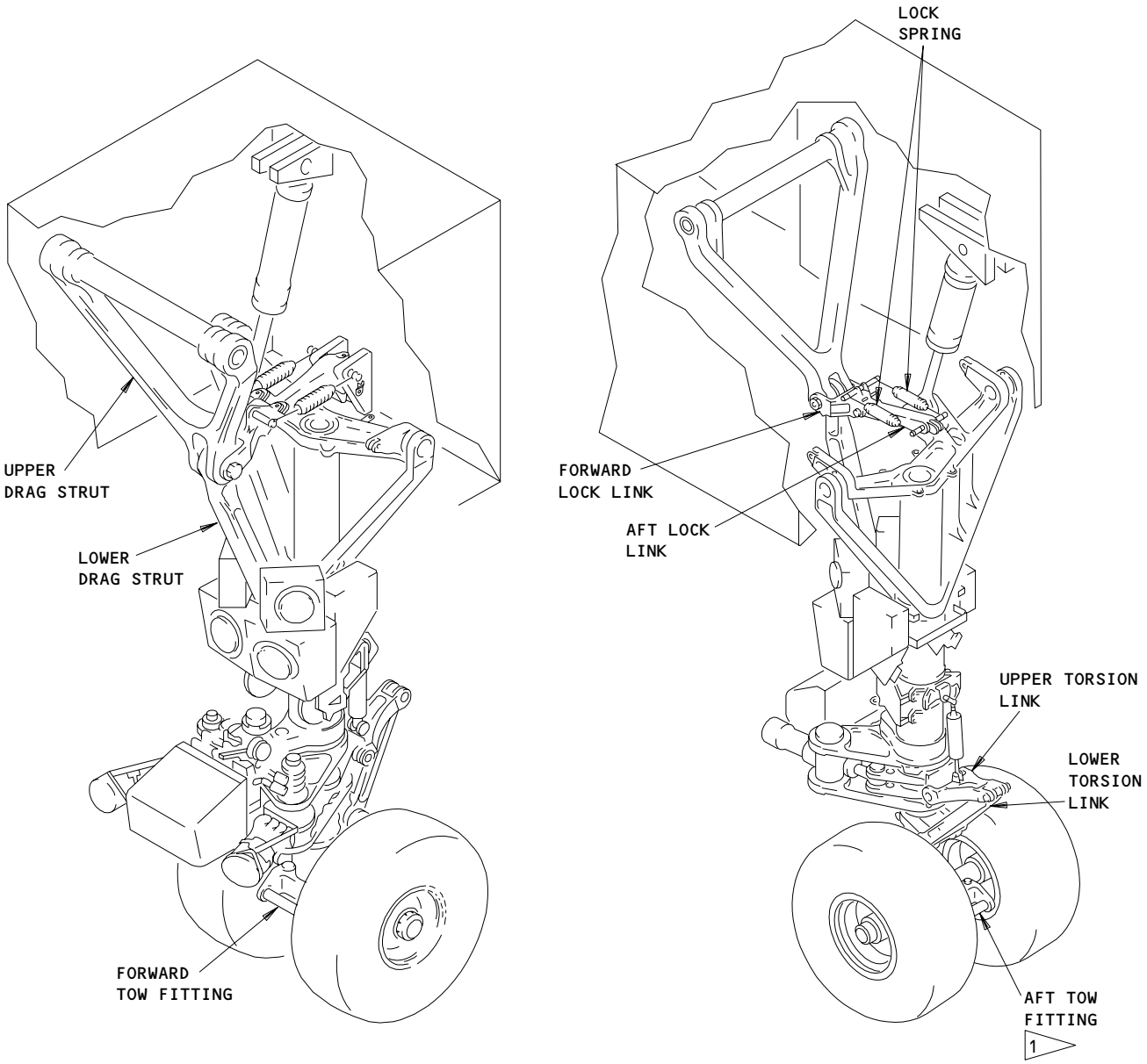
Nose landing Gear and Doors - Component Location
Figure 102 (Sheet 1)



Nose Landing Gear and Doors - Component Location
Figure 102 (Sheet 2)

NOSE GEAR - DESCRIPTION AND OPERATION

1. General (Fig. 1)
   A. The nose gear provides directional control and supports the forward end of the airplane while on the ground. The nose gear consists of a shock strut, drag strut, lock link, lock springs, torsion link, and tow fitting.
2. Component Details
   A. Drag Strut (Fig. 1)
      (1) The drag strut carries forward and aft loads and stabilizes the shock strut. The drag strut is hinged in the middle and consists of an upper and a lower strut. The upper strut attaches to the wheel well side walls and the lower strut attaches to the shock strut outer cylinder. During retraction the drag strut folds in the middle.
   B. Lock Link (Fig. 1)
      (1) The lock link consists of a forward lock link, and an aft lock link. The forward end connects at the hinge point of the drag strut and the aft end attaches to the wheel well aft wall. The links lock in an overcenter position to keep the nose gear extended or retracted until the lock actuator (Ref 32-34-00) unlocks it.
   C. Lock Spring (Fig. 1)
      (1) The lock springs attach to the aft lock link and to the forward lock link. The springs keep the lock link in the overcenter position until the lock actuator supplies a force to stretch the springs out of the locked position.
   D. Shock Strut (Fig. 2)
      (1) The nose gear shock strut is the main supporting member of the nose gear. The shock strut consists of an inner cylinder and an outer cylinder. The outer cylinder is connected to the wheel well side walls with trunnion pins and the inner cylinder slides within the outer cylinder.
      (2) Two active seals, one static and one dynamic, keep an air-oil mixture within the cylinders. Two sets of spare seals are stored in the shock strut to aid active seal replacement.
      (3) The shock strut is divided by the orifice plate into upper, middle, and lower chambers. The upper chamber contains oil and nitrogen, the middle and lower chambers contain oil.
      (4) During shock strut compression the tapered metering pin adjusts the flow of oil from the middle chamber into the upper chamber to control the absorbtion of impact loads. At the same time some oil will flow from the middle chamber through holes in the upper bearing into the lower chamber.
      (5) During strut extension the rebound restrictor decreases the flow of oil from the lower chamber into the middle chamber to control the rate of strut extension.



Nose Gear
Figure 1

(6) Upper and lower centering cams between the inner and outer cylinders assist in aligning the nose gear in the forward position during retraction.

(7) The shock strut includes lugs for the attachment of the retract actuator, steering actuators, torsion links, drag strut, forward tow fitting, aft door operating mechanism, and the one-piece axle.

E. Torsion Link (Fig. 1)

(1) The torsion link consists of an upper and lower link connected to the aft side of the shock strut. The upper link is attached to the outer cylinder and the lower link is attached to the inner cylinder. The two links are connected together to allow for vertical extension and compression of the shock strut while preventing rotation between the inner and outer cylinders except while steering.

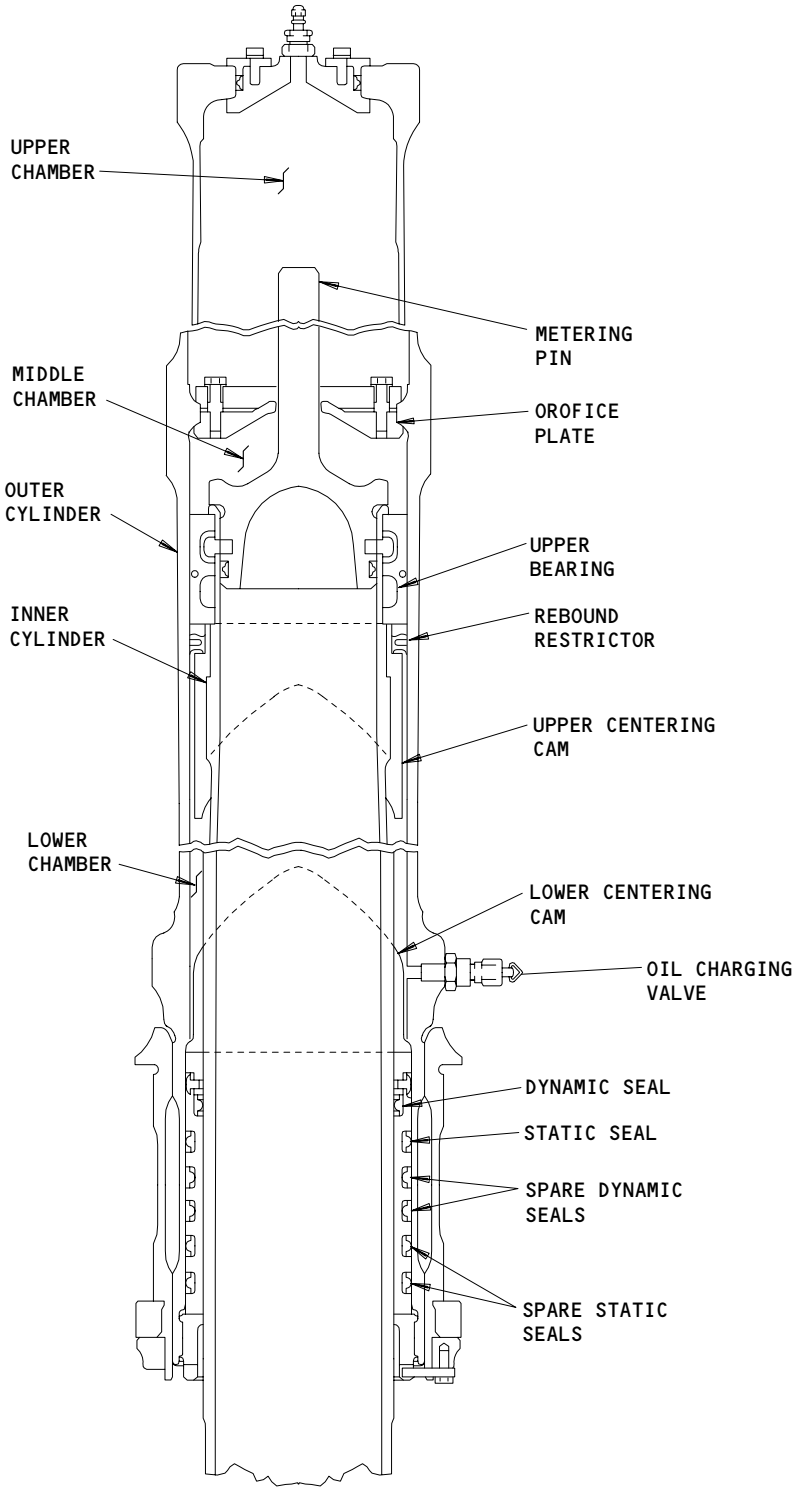
CAUTION: DO NOT USE UPPER TORSION LINK AS A STEP WHEN DISCONNECTED FROM LOWER LINK. TARGET FOR NOSE GEAR NOT COMPRESSED PROXIMITY SENSOR WILL BE CONTACTED AND DEFLECTION OF TARGET MAY OCCUR.

(2) The torsion links are disconnected from each other to allow the cylinders to rotate to angles larger than normal steering limits for towing purposes. When the links are disconnected from each other, the upper link should never be used as a step while preforming maintenance, as any excessive force on the link could damage the air/ground sensor targets on the sides of the link.

F. Tow Fitting (Fig. 1)

(1) A forward tow fitting is attached to the shock-strut inner-cylinder. The tow fitting is used to tow the airplane in the forward or the aft direction.

(2) ON SOME AIRPLANES;
an aft tow fitting is attached to the shock-strut inner-cylinder. The tow fitting is used to tow the airplane in the aft direction.



Shock Strut
Figure 2

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.

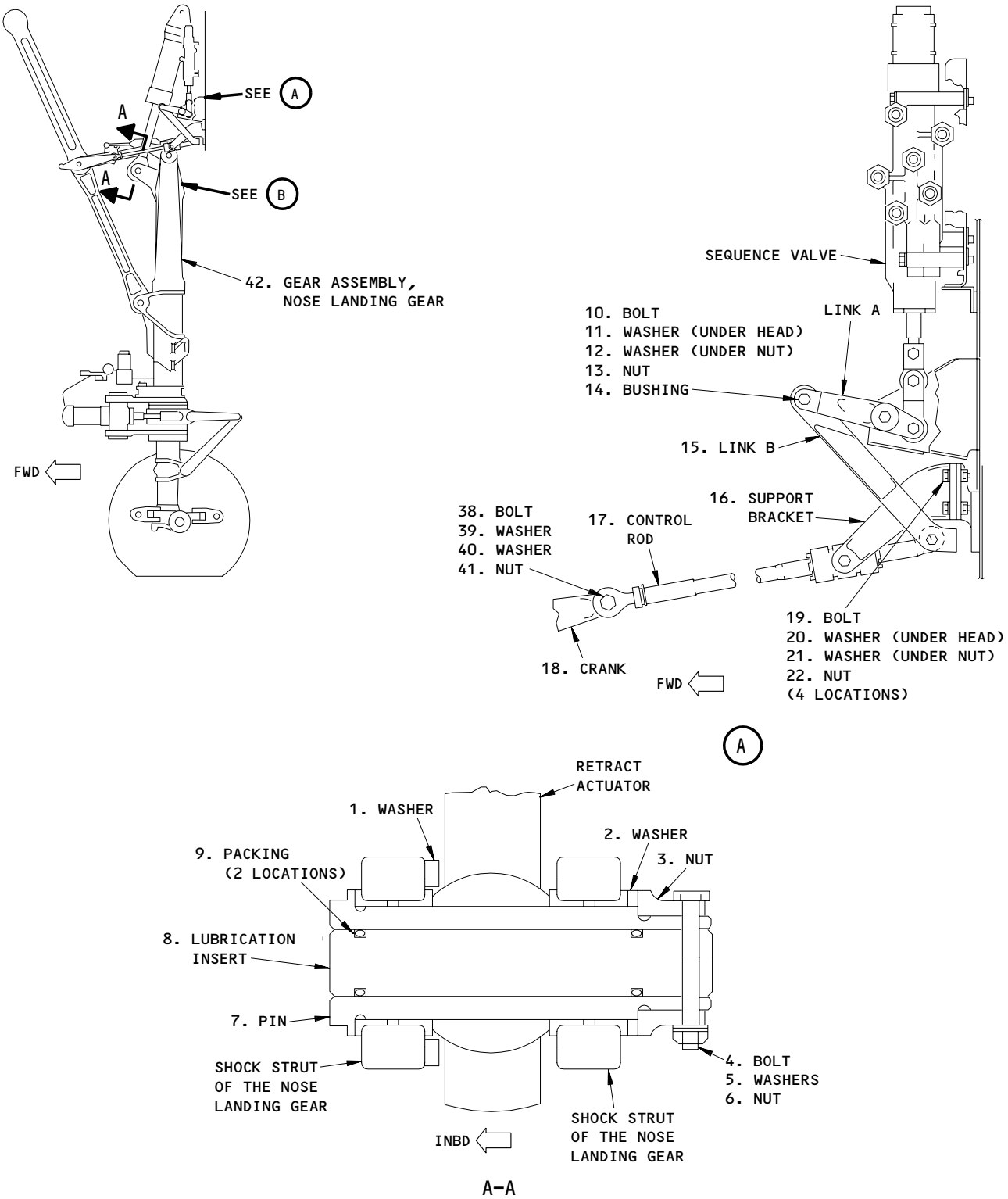
TASK 32-21-01-004-001

2. Remove the Nose Landing Gear (Fig. 401)
   A. Equipment
      (1) Nose Gear Towing Lever Lockpin - A09003-1
      (2) Rig Pins from Set B20003-XX (AMM 20-10-24/201):
          (a) Rig Pin - NS1
          (b) Rig Pin - NS2
          (c) Rig Pin - NS4
      (3) Nose Landing Gear Transportation Dolly - A32038-23
      (4) Nose Landing Gear Shock Strut Lock - B32019-1
      (5) Nose Landing Gear Overhead Removal/Installation Equipment - B32005-68
      (6) Fishpole Hoist - Commercially Available
      (7) Trunnion Pin Puller - B32003-1
   B. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 07-11-02/201, Jacking Airplane Nose
      (3) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
      (4) AMM 32-00-15/201, Landing Gear Door Locks
      (5) AMM 32-00-20/201, Landing Gear Downlocks
      (6) AMM 32-21-06/401, Nose Gear Lock Link Assembly
      (7) AMM 32-21-12/401, Nose Gear Trunnion Pin
      (8) AMM 32-22-03/401, Nose Gear Aft Door
      (9) AMM 32-51-00/501, Nose Wheel Steering System
      (10) AMM 32-51-14/401, Nose Wheel Steering Upper Pulley Support Bracket
   C. Access
      (1) Location Zones

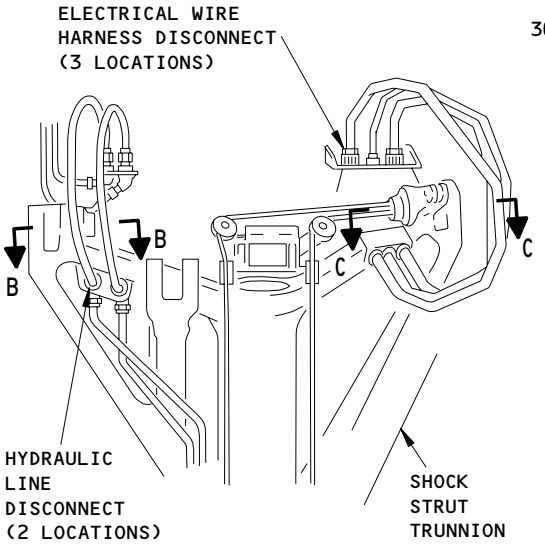
119/120	Main Equipment Center
211/212	Control Cabin
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door

      (2) Access Panel

119BL	Main Equipment Center

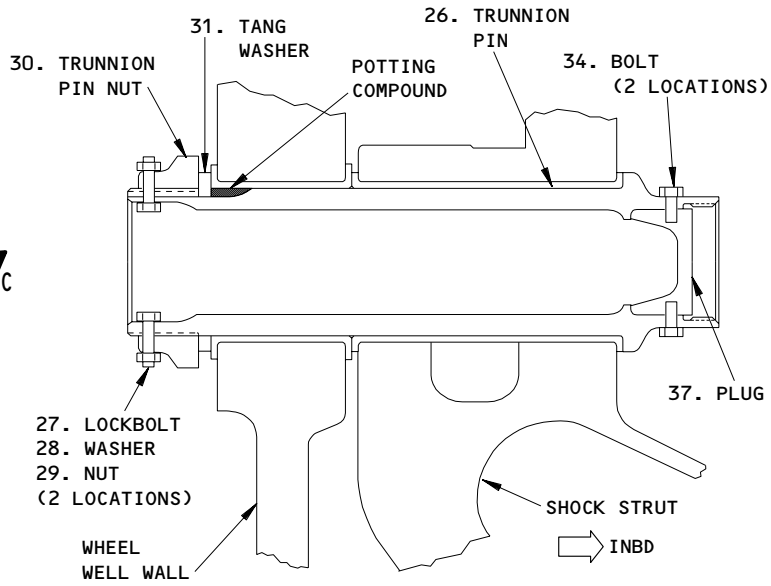


Nose Landing Gear Installation
Figure 401 (Sheet 1)

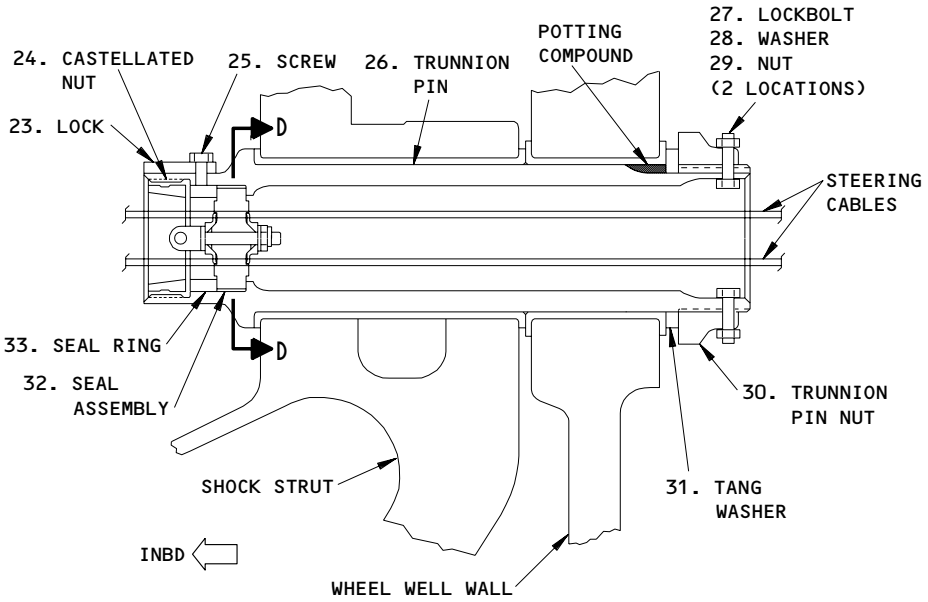


(VIEW IN THE AFT DIRECTION)

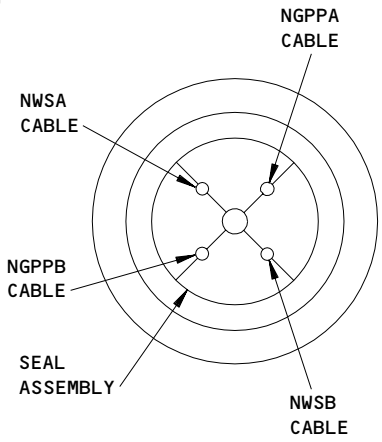
B



RIGHT TRUNNION PIN
B-B



LEFT TRUNNION PIN
C-C



D-D

Nose Landing Gear Installation
Figure 401 (Sheet 2)

D. Prepare for the Removal of the Nose Landing Gear

S 494-052

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

S 494-053

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 864-003

(3) Remove the pressure from the left hydraulic system and reservoir (AMM 29-11-00/201).

S 864-004

(4) Open these circuit breakers and attach DO-NOT-CLOSE tags:
  (a) On the main power distribution panel, P6:
    1) 6G1, FIRE EXT APU or FIRE EXT 1
  (b) On the overhead panel, P11:
    1) 11B33, APU REMOTE FIRE IND
    2) 11C23, INTERPHONE CABIN SERVICE
    3) 11C25, INTERPHONE FLT AMPL
    4) 11C26, INTERPHONE ASP 2 BAT PWR or INTERPHONE F/O OBS
    5) 11D25, PARK BRAKE GND IND
    6) 11C30, LDG GEAR POS SYS 1
    7) 11G29, INTERPHONE CAPT FLT AMPL PWR
    8) 11G30, INTERPHONE PWR
    9) 11H31, GND CALL
    10) 11M3, LEFT LANDING NOSE GR PWR
    11) 11M6, RUNWAY TURNOFF LEFT
    12) 11M30, RIGHT LANDING NOSE GR PWR

13) 11M33, RUNWAY TURNOFF R
14) 11N35, EMERGENCY CHARGER L
15) 11N36, EMERGENCY CHARGER R
16) 11S15, AIR/GND SYS 1
17) 11S19, AIR/GND SYS 2
18) 11S23, POS SYS 2

(c) On the APU/external power panel, P34:
1) 34G1, LIGHTS NOSE WHL WELL

S 014-005

(5) Remove the aft doors for the nose landing gear (AMM 32-22-03/401).

S 864-006

(6) Remove the pressure from the shock strut.
(a) Remove the cap for the air valve from the air valve on the top of the shock strut.

WARNING: LOOSEN THE SWIVEL NUT A MAXIMUM OF TWO TURNS. AIR PRESSURE CAN BLOW THE VALVE OUT AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(b) Loosen the swivel nut a maximum of two turns.
(c) When the shock strut is fully deflated, loosen the swivel nut to open the valve fully.

S 494-075

(7) Move the towing lever on the metering valve for the nose wheel steering to the TOWING position. Install the lockpin for the towing lever.

S 494-055

WARNING: DO NOT INSTALL THE SHOCK STRUT LOCK ON A PRESSURIZED SHOCK STRUT. AIR PRESSURE CAN BLOW THE LOCK OFF AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Lock the inner cylinder to the outer cylinder with the shock strut lock. Use the instructions supplied with the tool.

S 584-007

(9) Lift the airplane nose approximately 12 inches (AMM 07-11-02/201).

E. Remove the Nose Landing Gear.

S 034-008

(1) Disconnect the hydraulic lines from the top of the shock strut (View B). Put a cap on the ports and put a plug in the lines.

S 034-009

(2) Disconnect the electrical connectors from the aft wall of the wheel well (View B). Tie the electrical connectors to the trunnion on the nose landing gear.

S 034-010

(3) Do the steps "Disconnect the nose wheel steering cables" (AMM 32-21-12/401).

S 014-012

(4) Remove the control rod and the support bracket for the gear-operated sequence valve (View A).
   (a) Remove the bolt (38), washers (39 and 40), and nut (41) to disconnect the control rod (17) from the crank (18) (View A).

   NOTE: Do not disconnect the control rod from link B, unless it is necessary.

   (b) Remove the bolt (10) to disconnect the link A from the link B (15) (View A).
   (c) Remove the four bolts (19) to disconnect the support bracket (16) from the aft wall of the wheel well (View A).
   (d) Remove the control rod (17), the support bracket (16), and the link B (15) from the wheel well.

S 014-011

(5) Remove the assembly for the lock link (AMM 32-21-06/401).

NOTE: The proximity sensors and the wires do not need to be removed from the lock link. Remove the crank (18) and leave the upper and lower drag struts disconnected.

S 014-014

(6) Remove the pin (7) and the lubrication insert (8) to disconnect the rod end of the retract actuator from the shock strut (View A-A).

S 864-056

(7) Move the rod end of the retract actuator into the up position. Tie the actuator to the upper drag strut.

S 494-013

(8) Install the removal/installation equipment for the nose landing gear (B32005-68).
   (a) Attach the Lower Drag Strut Support Assembly to the shock strut through the retraction actuator link. Move the lower drag strut up toward the shock strut, lock the drag strut into the Lower Drag Strut Support Assembly.
   (b) Install the Support Assembly to the lower end of the upper drag strut. Raise the upper drag stut toward the rear of the wheelwell until the Support Assembly aligns with the wall fittings for the Lock Link Assembly. Connect the Support Assembly to the wall fittings.
   (c) Connect the rear of the Track Assembly to the Support Assembly. Connect the front of the Track Assembly to crossbar of the Upper Drag Strut.
   (d) Connect the Lift Lug Assembly to the upper end of the Lower Drag Strut.

S 414-076

(9) Remove the trunnion pins (AMM 32-21-12/401).

S 864-059

(10) Move the nose landing gear 90 degrees to clear the side walls of the wheel well.

S 034-060

(11) Install the landing nose gear on the transportation dolly. Use the instructions supplied with the tool.

S 094-024

(12) Remove the nose landing gear removal/installation equipment from the shock strut.

TASK 32-21-01-404-025

3. Install the Nose Landing Gear (Fig. 401)

A. Equipment

(1) Nose Landing Gear Transportation Dolly - A32038-23

(2) Nose Landing Gear Shock Strut Lock - B32019-1

(3) Nose Landing Gear Overhead Removal/Installation Equipment - B32005-68

(4) Fishpole Hoist - Commercially Available

B. Consumable Materials

(1) A00247 Sealant, Chromate - BMS 5-95, Class B

(2) D00633 Grease - BMS 3-33 (Recommended)

(3) D00013 Grease - MIL-G-23827 (Alternative)

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	9	Packing (O-Ring)	32-21-00	01	45
				01B	50
				01C	50
	32	Seal Assembly	53-13-55	01	25
	33	Ring - Seal (Seal Ring)		01	20
401	42	Gear Assy-NLG (Nose Landing Gear)	32-21-00	01	500, 505
					510, 530
					535, 540
					545, 550
					555, 560
				01B	300, 305
					310, 315
					320, 325
					330, 335
					340, 345
					350, 360
					365, 370
					375, 380
				01C	295

D. References
(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 07-11-02/201, Jacking Airplane Nose
(3) AMM 12-15-02/301, Nose Gear Shock Strut
(4) AMM 23-43-00/501, Ground Crew Call System
(5) AMM 26-15-00/501, APU Fire Detection System
(6) AMM 26-22-00/501, APU Fire Extiguishing System
(7) AMM 32-00-15/201, Landing Gear Door Locks
(8) AMM 32-00-20/201, Landing Gear Downlocks
(9) AMM 32-21-06/401, Nose Gear Lock Link Assembly
(10) AMM 32-21-12/401, Nose Gear Trunnion Pin
(11) AMM 32-21-12/401, Nose Gear Trunnion Pin
(12) AMM 32-22-03/401, Nose Gear Aft Door
(13) AMM 32-34-00/501, Nose Gear Extension and Retraction
(14) AMM 32-34-01/401, Nose Gear Retract Actuator
(15) AMM 32-35-00/501, Alternate Extension System
(16) AMM 32-51-00/501, Nose Wheel Steering System
(17) AMM 32-51-14/401, Nose Wheel Steering Upper Pulley Support Bracket
(18) AMM 33-42-00/501, Landing, Runway Turnoff and Taxiway Lights

E. Access
(1) Location Zones

119/120	Main Equipment Center
211/212	Control Cabin
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door

(2) Access Panel

119BL	Main Equipment Center

F. Prepare for the Installation of the Nose Landing Gear

S 494-061

WARNING: DO NOT INSTALL THE SHOCK STRUT LOCK ON A PRESSURIZED SHOCK STRUT. AIR PRESSURE CAN BLOW THE LOCK OFF AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Make sure the shock strut lock is installed on the replacement gear.

S 864-062
(2) Put the nose landing gear into position in the wheel well.

S 494-028
(3) Install the removal/installation tool for the nose landing gear on the shock strut.
  (a) Attach the Lower Drag Strut Support Assembly to the shock strut through the retraction actuator link. Move the lower drag strut up toward the shock strut, lock the drag strut into the Lower Drag Strut Support Assembly.
  (b) Install the Support Assembly to the lower end of the upper drag strut. Raise the upper drag stut toward the rear of the wheelwell until the Support Assembly aligns with the wall fittings for the Lock Link Assembly. Connect the Support Assembly to the wall fittings.
  (c) Connect the rear of the Track Assembly to the Support Assembly. Connect the front of the Track Assembly to crossbar of the Upper Drag Strut.
  (d) Connect the Lift Lug Assembly to the upper end of the Lower Drag Strut.

S 844-029
(4) Move the nose landing gear 90 degrees to clear the side walls of the wheel well.

S 844-030
(5) Lift the nose landing gear and move it into position for installation.

S 414-031
(6) Install the trunnion pins (AMM 32-21-12/401).

S 094-033
(7) Remove the removal/installation equipment for the nose landing gear.

S 414-035
(8) Install the assembly for the lock link (AMM 32-21-06/401).

S 414-034
(9) Install the control rod and the support bracket for the gear-operated sequence valve (View A).
  (a) Install the bolts (19), the nuts (22), and the washers (20 and 21) to connect the support bracket to the aft wall of the wheel well.
  (b) Install the bolt (10), the nut (13), the washers (11 and 12), and the bushing (14) to connect the link A to the link B (15).
  (c) Install the bolt (38), washers (39 and 40) and nut (41) to connect the control rod to the crank (View A).

S 414-036
(10) Do the steps that follow to connect the rod end of the retract actuator to the shock strut (View A-A):
  (a) Install the packings (9) on the lubrication insert (8).
  (b) Put the insert (8) in the pin (7).
  (c) Align the lock boltholes (View A-A).
  (d) Install the pin (7), the lubrication insert (8), the washers (1 and 2), and the nut (3) to connect the retract actuator to the shock strut.
  (e) Tighten the nut (3) to 90-125 pound-inches, then loosen to the nearest lock position to install the lockbolt (4).
  (f) Install the lockbolt (4), washer (5), and nut (6).

S 414-038
(11) Install the support bracket for the upper pulley on the shock strut trunnion (AMM 32-51-14/401).

S 434-039
(12) Do the steps to "Connect the nose wheel steering cables" (AMM 32-21-12/401).

G. Put the Airplane Back to Its Usual Condition

S 434-041
(1) Connect the hydraulic lines to the nose landing gear (View B).

S 434-042
(2) Connect the electrical connectors to the aft wall of the wheel well (View B).

S 864-064
(3) Lift the inner cylinder with the axle jack to release the load on the lock tool for the shock strut. Remove the tool. Lower the axle jack and remove it.

S 584-044
(4) Lift the airplane nose until the wheels are above the ground (AMM 07-11-02/201).

S 864-045
(5) Remove the DO-NOT-CLOSE tags and close the circuit breakers that follow:
(a) On the main power distribution panel, P6:
1) 6G1, FIRE EXT APU
(b) On the overhead panel, P11:
1) 11B33, APU REMOVE FIRE IND
2) 11C23, INTERPHONE CABIN SERVICE
3) 11C25, INTERPHONE FLT AMPL
4) 11C26, INTERPHONE ASP 2 BAT PWR or INTERPHONE F/O OBS
5) 11D25, PARK BRAKE GND IND
6) 11C30, LDG GEAR POS SYS 1
7) 11G29, INTERPHONE FLT AMPL
8) 11G30, INTERPHONE PWR
9) 11H31, GND CALL
10) 11M3, LEFT LANDING NOSE GR PWR
11) 11M6, RUNWAY TURNOFF L

12) 11M30, RIGHT LANDING NOSE GR PWR
13) 11M33, RUNWAY TURNOFF R
14) 11N35, EMERGENCY CHARGER L
15) 11N36, EMERGENCY CHARGER R
16) 11S15, AIR/GND SYS 1
17) 11S19, AIR/GND SYS 2
18) 11S23, POS SYS 2

(c) On the APU/external power panel, P34:
1) 34G1, LIGHTS NOSE WHL WELL

S 714-067

(6) Do the operational test of the ground crew call system (AMM 23-43-00/501).

S 714-068

(7) Do the Test of the Remote Fire Warning Horn Interrupt that is in the Operational Test of the APU Fire Detection System (AMM 26-15-00/501).

NOTE: Make sure you do all of the steps in the Prepare for Test section when you do the procedure.

S 714-069

(8) Do the Test of the Extinguisher Bottle Squib Discharge in the System Test of the APU Fire Extinguishing System (AMM 26-22-00/501).

S 714-070

(9) Do the operational test of the nose gear landing lights (AMM 33-42-00/501).

S 414-046

(10) Install the aft doors for the nose landing gear (AMM 32-22-03/401). Adjust the doors.

S 824-047

(11) Adjust the steering system for the nose wheel (AMM 32-51-00/501).

S 614-048

(12) Fill the shock strut with dry nitrogen to 200 psig to allow for the extension and retraction test.

S 714-049
(13) Do a test of the nose landing gear extension and retraction (AMM 32-34-00/501).

S 714-050
(14) Do a test on the alternate extension system for the nose landing gear (AMM 32-35-00/501). Do a check on the system for slow estension and failure to lock.

NOTE: A condition where the nose landing gear binds will not always show up with the usual extension test. The condition can be seen with the alternate extension test and the failure to lock check.

S 614-072
(15) Do the servicing of the shock strut for the nose landing gear (AMM 12-15-02/301).

S 614-074
(16) Do the lurbication the for the nose landing gear (AMM 12-21-12/301).

S 094-065

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 the landing gear and close the doors (AMM 32-00-15/201).

NOSE GEAR - APPROVED REPAIRS

1. General
   A. This procedure contains two tasks. Task one gives the approved procedure to remove the service placard for the nose landing gear. Task two installs the service placard for the nose landing gear.

TASK 32-21-01-008-009

2. Remove the Service Placard from the Right Aft Door of the Nose Landing Gear (Fig. 801)
   A. Equipment
      (1) Landing Gear Door Locks, (AMM 32-00-15/201)
   B. Consumable Materials
      (1) B00148 Solvent - Methyl Ethyl Ketone (MEK), TT-M-261
   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

711	Nose Landing Gear (NLG)
713/714	NLG Door Forward
715/716	NLG Door Aft

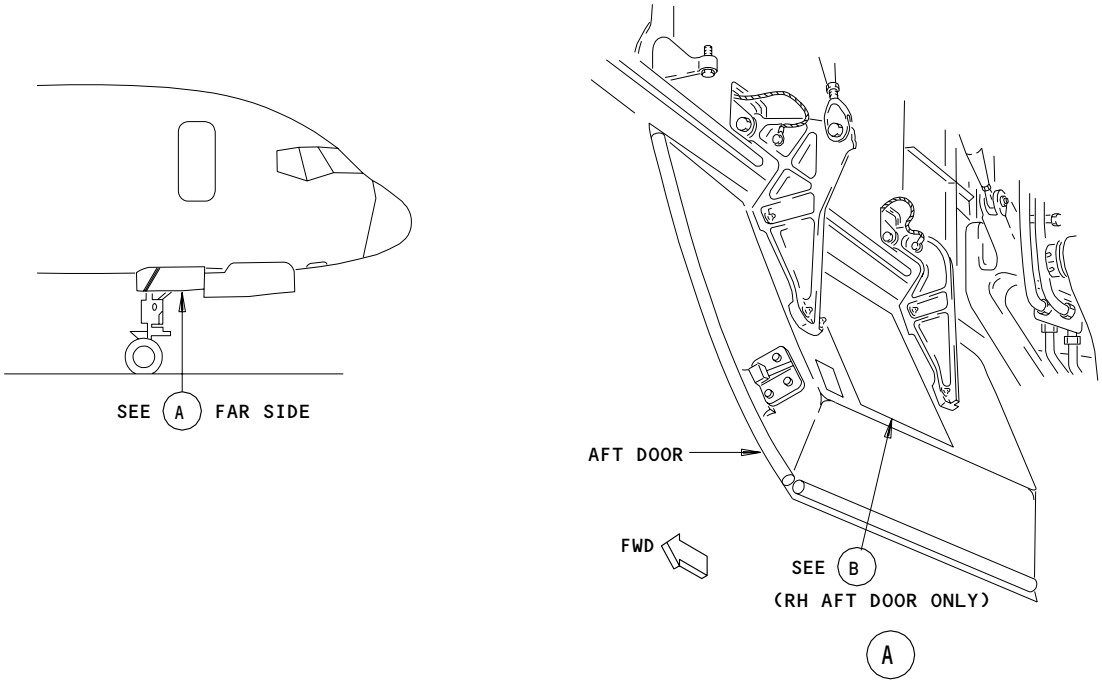
   E. Prepare to Remove the Service Placard

      S 498-001
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

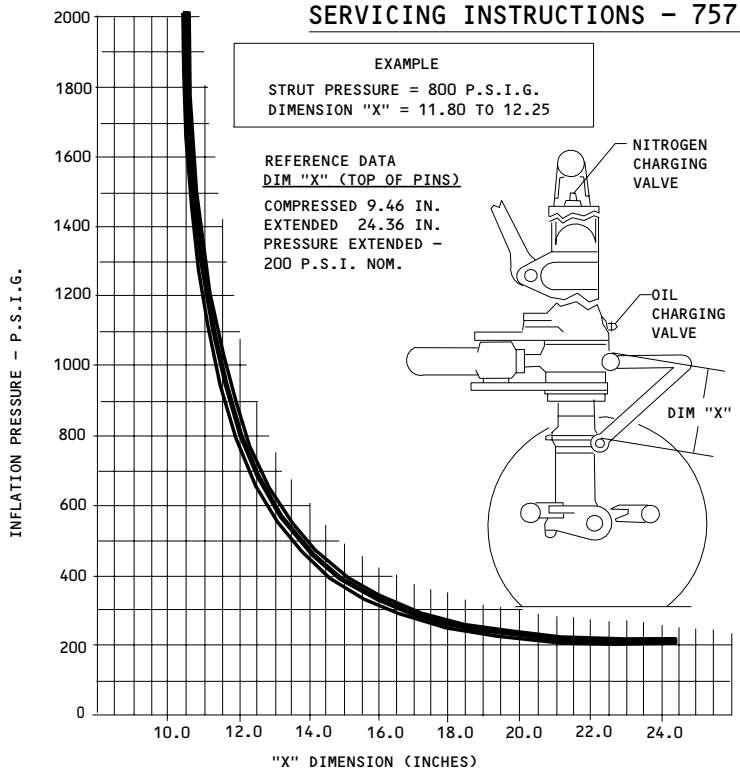
      S 498-012

      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).
   F. Remove the service placard from the aft door for the nose landing gear.



SERVICING INSTRUCTIONS – 757 N.L.G. SHOCK STRUT



SERVICING INSTRUCTIONS

NITROGEN SERVICING ONLY.

1. WITH APL WEIGHT ON GEAR DETERMINE STRUT PRESSURE WITH GAUGE.
2. DETERMINE CORRESPONDING "X" DIMENSION FOR THIS PRESSURE FROM SERVICING CHART.
3. ADD OR RELEASE DRY NITROGEN TO OBTAIN THE CORRECT "X" DIMENSION WITHIN THE SERVICING BAND.

OIL AND NITROGEN SERVICING

4. OPEN NITROGEN VALVE & DEFLATE STRUT COMPLETELY.
5. FILL WITH MIL–H–5606 FLUID THRU OIL CHARGING VALVE UNTIL OIL FLOWS BUBBLE FREE OUT OF NITROGEN VALVE PORT. FOR EACH COMPLETE REFILL OF OIL ADD 9 FLUID OUNCES OF LUBRIZOL 1395 CLOSE OIL CHARGING VALVE.
6. WITH APL WEIGHT ON GEAR INFLATE STRUT APPROXIMATELY ONE INCH AND DETERMINE STRUT PRESSURE WITH GAUGE AND THE CORRESPONDING "X" DIMENSION FOR THIS PRESSURE FROM SERVICING CHART.
7. IMPORTANT. FOR INITIAL NITROGEN SERVICING INFLATE THE STRUT TO THE "X" DIMENSION OBTAINED IN STEP 6 PLUS 1.0 INCHES CLOSE NITROGEN VALVE AFTER SEVERAL LANDINGS PROCEED TO STEP 8.
8. AFTER SEVERAL LANDINGS RESERVICE WITH DRY NITROGEN PER STEPS 1,2 & 3 ABOVE.

NOTE: IF THE STRUT HAS BEEN COMPLETELY DEFLATED FOR ANY REASON, SERVICE WITH OIL AND NITROGEN PER STEPS 4 THRU 8. PERIODIC OIL SERVICING SHOULD BE PERFORMED PER SECTION 12 OF THE BOEING MAINTENANCE MANUAL.

BAC27NLG0010

B

Nose Gear Servicing Placard Installation
Figure 801

S 118-016

WARNING: DON NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

(1) Use solvent, Series 83 (AMM 20-30-83), to do the steps that follow:
  (a) Remove the service placard from the door.
  (b) Remove the adhesive from the surface of the door.

TASK 32-21-01-408-011

3. Install the Service Placard on the Right Aft Door of the Nose Landing Gear (Fig. 801)

A. Equipment
  (1) Landing Gear Door Locks, (AMM 32-00-15/201).

B. Consumable Materials
  (1) B00148 Solvent - Methyl Ethyl Ketone (MEK), TT-M-261
  (2) A00247 Sealant, Chromate - BMS 5-95
  (3) C00843 Coating, Special Purpose - BAC 5710, Type 41

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

D. Access
  (1) Location Zones

711	Nose Landing Gear (NLG)
713/714	NLG Door Forward
715/716	NLG Door Aft

E. Install the Service Placard

S 038-004
(1) Use solvent, Series 92 (AMM 20-30-92) to remove the adhesive from the new placard.

S 848-005
(2) Use an abrasive material on the aft side of the placard and on the placard location on the door.

S 398-006
(3) Apply sealant to the surface of the door where the placard will touch.

S 848-007
(4) Put the placard on the door.

S 398-008

(5) Apply the special purpose coating to the surface of the placard and the filleted areas. Put the sealant 0.25 inch around the outer edge of the placard.

F. Put the Airplane Back to Its Usual Condition

S 098-014

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.

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

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 32-21-03-004-001

2. Remove the Drag Strut Assembly for the Nose Landing Gear (Fig. 401)
   A. Equipment
      (1) Boom Hoist - A20001-79
      (2) Nose Gear Drag Strut Hoist - B32004-1
   B. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 07-11-02/201, Jacking Airplane Nose
      (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 32-21-15/401, Nose Gear Lock Spring
      (7) AMM 32-51-13/401, Nose Wheel Steering Lower Pulley Support Bracket
      (8) AMM 32-61-03/201, Nose Gear Proximity Sensor
      (9) AMM 33-42-04/401, Nose Gear Landing and Runway Turnoff Lights, P62, and P63 Panels
   C. Access
      (1) Location Zones

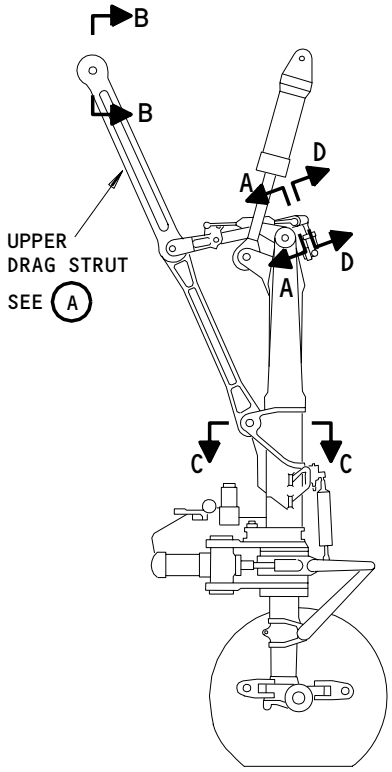
119/120	Main Equipment Center
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door

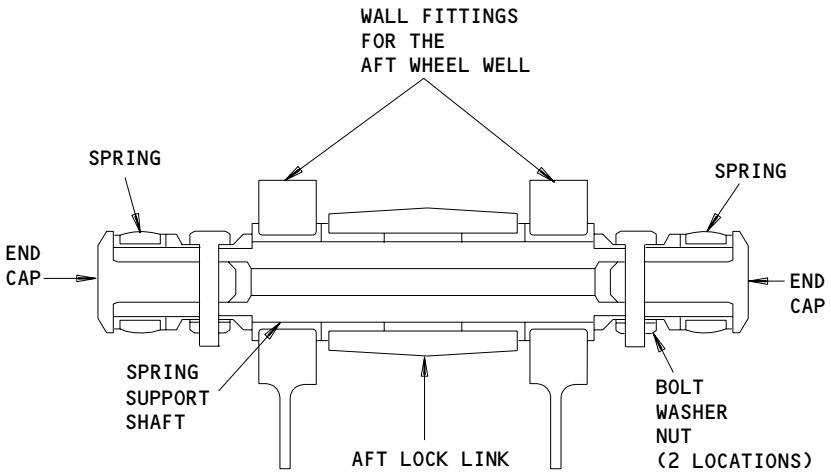
      (2) Access Panel

119BL	Main Equipment Center

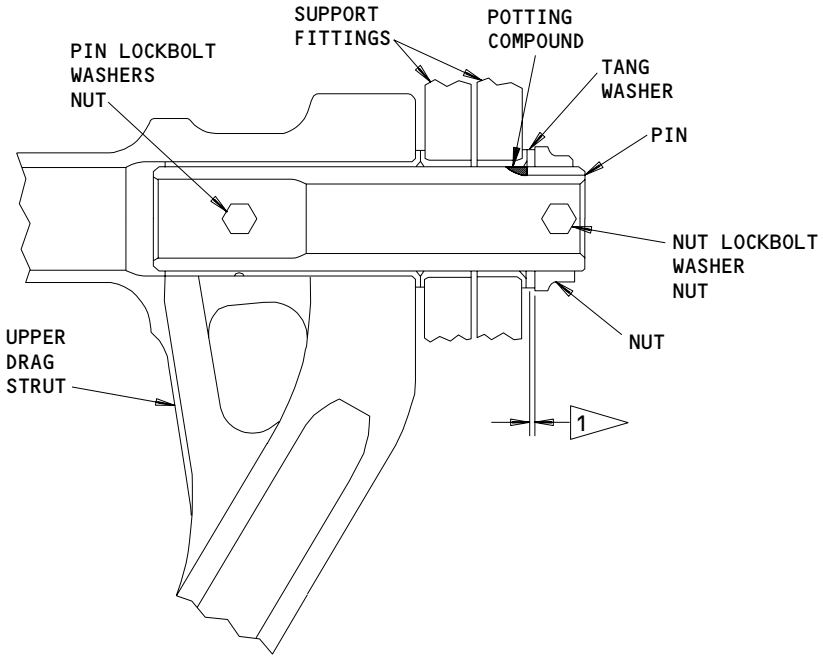
   D. Prepare for the Removal of the Drag Strut Assembly

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).





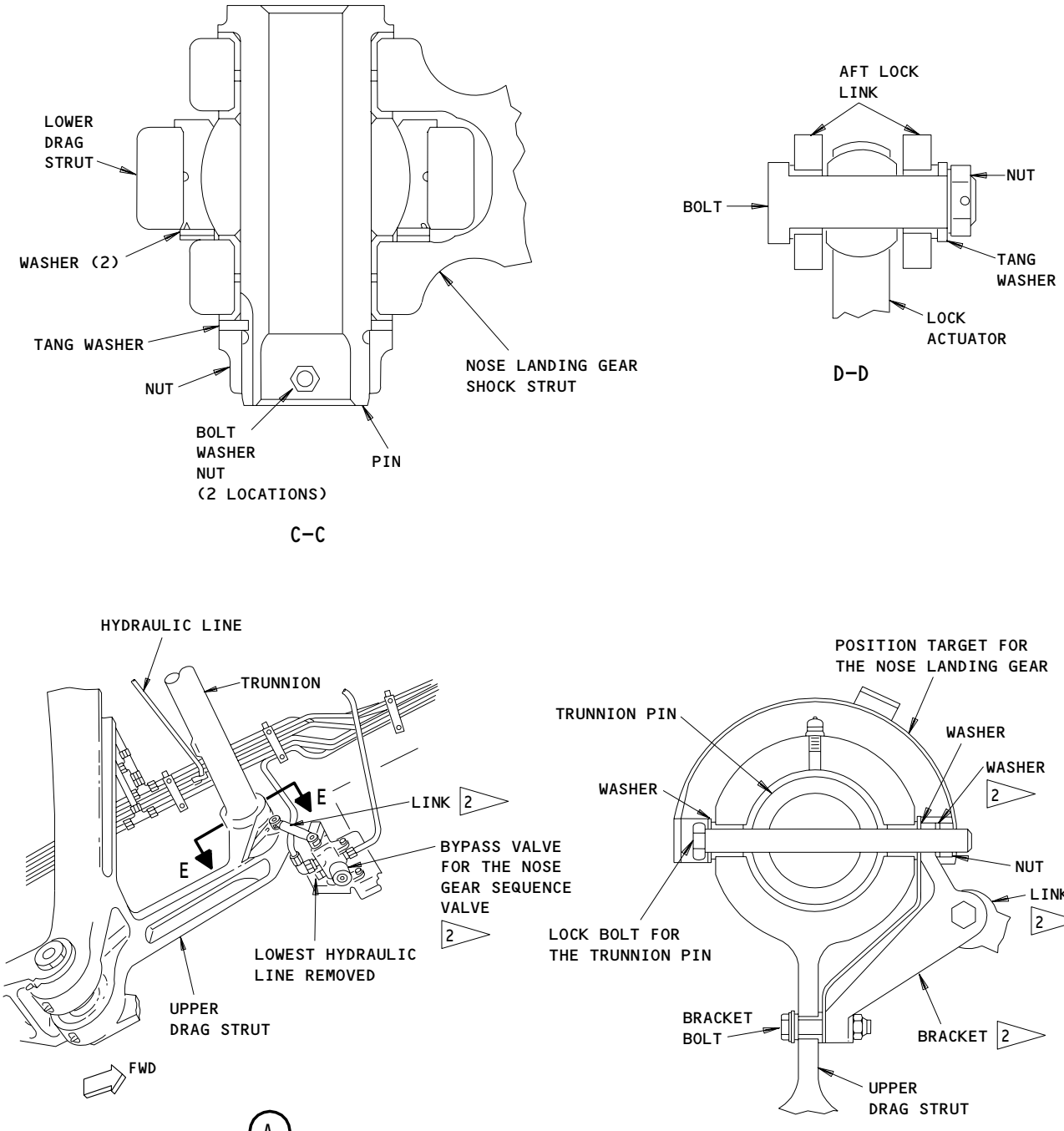
(SHOWN WITH THE SPRINGS INSTALLED)
A-A



B-B

1 KEEP A MINIMUM GAP OF 0.005 INCHES

Drag Strut Assembly Installation for the Nose Landing Gear
Figure 401 (Sheet 1)



Drag Strut Assembly Installation for the Nose Landing Gear
Figure 401 (Sheet 2)

S 494-012

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 nose landing gear and install the door locks (AMM 32-00-15/201).

S 864-004

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

S 584-005

(4) Lift the nose of the airplane until the wheels are above the ground (AMM 07-11-02/201).

S 014-006

(5) Remove the nose landing gear locked sensor (AMM 32-61-03/201).

S 014-007

(6) Remove the lock springs for the nose landing gear (AMM 32-21-15/401).

E. Remove the Drag Strut Assembly.

S 014-008

(1) Remove the lowest hydraulic line from the bypass valve for the nose landing gear sequence valve (Detail A). Seal the fittings with a plug.

S 014-009

(2) Remove the hydraulic line that is near the trunnion (Detail A). Seal the fittings with a plug.

S 494-010

(3) Do the steps that follow to install the hoist equipment on the upper drag strut:
(a) Install the drag strut hoist on the end of the boom hoist.

(b) Lift the drag strut hoist with the boom hoist until the drag strut hoist is around the trunnion.
(c) Install the strap around the trunnion. Tighten the strap.

S 034-011
(4) Disconnect the upper end of the lock actuator from the aft lock link (View D-D).

S 014-012
(5) Remove the spring support shaft to disconnect the aft lock link from the wall of the wheel well (View A-A). Move the lock link up and tie it to the upper drag strut with a nylon web or other applicable device.

S 014-013
(6) Remove the landing and the runway turnoff lights, P62 and P63 panels from the shock strut of the nose landing gear (AMM 33-42-04/401).

NOTE: It is not necessary to remove the harnesses for the electrical wires and the clamps from the shock strut. Disconnect the panels and pull out sufficiently to allow access to the pin for the lower drag strut. Tie the panels to the shock strut.

S 014-014
(7) Remove the lower pulley support bracket for the steering cables (AMM 32-51-13/401).

S 014-015
(8) Remove the pin to disconnect the lower drag strut from the shock strut (View C-C).

S 014-016
(9) Do the steps that follow for each of the two upper drag strut pins (View B-B):
(a) Use the door for the main equipment center, 119BL, to get access to the trunnion pins.

(b) Remove the nut lockbolt.
(c) Remove the nut on the trunnion pin.

S 014-017
(10) Do the steps that follow for each side of the upper drag strut (View E-E):
(a) Remove the lockbolt for the trunnion pin.
(b) Remove the bracket bolt from the position target for the nose landing gear.
(c) Keep the position target, the bolts, and the washers for installation on the new drag strut assembly.

S 844-018
(11) Temporarily attach the bracket, and the link (Detail A) away from the upper drag strut.

S 844-019
(12) Get access to the trunnion pins through the door for the main equipment center 119BL.

S 014-020
(13) Pull each trunnion pin outboard to release the drag strut assembly.

S 214-053
(14) Examine the keyway on the trunnion pin.
(a) Make sure the potting compound is intact.
(b) If the potting compound is not intact, look for a buildup of too much grease on the side of the wheel well wall where the trunnion pin nut is installed.

S 844-021
(15) Lower the drag strut assembly with the boom hoist.

TASK 32-21-03-404-022

3. Install the Assembly for the Drag Strut on the Nose Landing Gear (Fig. 401)
A. Equipment
(1) Boom Hoist - A20001-79
(2) Nose Gear Drag Strut Hoist - B32004-1
B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)

(2) D00013 Grease - MIL-G-23827
(Optional to BMS 3-33)

C. References

(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 07-11-02/201, Jacking Airplane Nose
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 32-21-15/401, Nose Gear Lock Spring
(6) AMM 32-34-00/501, Nose Gear Extension and Retraction
(7) AMM 32-51-13/401, Nose Wheel Steering Lower Pulley Support Bracket
(8) AMM 32-61-03/201, Nose Gear Proximity Sensor
(9) AMM 33-42-04/401, Nose Gear Landing and Runway Turnoff Lights, P62, and P63 Panels

D. Access

(1) Location Zones

119/120	Main Equipment Center
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door

(2) Access Panel

119BL	Main Equipment Center

E. Install the Drag Strut Assembly.

S 414-023
(1) Remove the lock springs for the nose landing gear (AMM 32-21-15/401).

S 844-024
(2) Tie the lock link to the upper drag strut.

S 494-025
(3) Install the drag strut hoist and the boom hoist on the upper drag strut.

S 844-026
(4) Lift the upper drag strut into the wheel well. Position it between the wall of the wheel well and the support fittings.

S 214-054
(5) Examine the keyway on the trunnion pins.
  (a) Make sure the potting compound is intact.
  (b) If the potting compound is not intact, replace the pin with a trunnion pin that has the potting compound intact. This will prevent seepage of grease out of the keyway and into the trunnion pin nut side of the wheel well wall.

S 644-027
(6) Apply grease to the trunnion pins, bolts, and the washers.

S 414-028
(7) Do the steps that follow to install the trunnion pins into the trunnion (View B-B):
  (a) Get access through the door to the main equipment center, 119BL, to install the trunnion pins.
  (b) Push the trunnion pins into position.

    NOTE: Do not install the nut at this time.

  (c) Align the holes of the lockbolt for the trunnion pin with the holes in the trunnion.

S 414-029
(8) Do the steps that follow to install the sensor targets on the trunnion (View E-E):

  NOTE: The bracket from the bypass valve which connects to the link is installed on the left side only.

  (a) Put the sensor target into position.
  (b) Put the bracket into position on the left side of the trunnion.
  (c) Install the bolt for the bracket.
  (d) Install the lockbolt for the trunnion pin.

S 414-030
(9) Install the hydraulic line that is near the trunnion.

S 414-031
(10) Install the hydraulic line that attaches to the bypass valve.

S 414-032
(11) Install the washer and the nut on the end of trunnion pin. Tighten the nut to 500-600 pound-inches. Loosen the nut to get a minimum gap of 0.005 inch. Loosen to the nearest lock position and install the lockbolt.

S 414-033
(12) Install the nut lockbolt.

S 844-034
(13) Release the lock link from the upper drag strut.

S 844-035
(14) Position the aft lock link between the fittings on the wall of the wheel well.

S 494-036
(15) Install the spring support shaft to connect the aft lock link to fittings (View A-A).

S 424-037
(16) Position the lower drag strut between the lugs for the shock strut. Tighten the nut to 70-80 pound-feet. Loosen to the nearest lock position and install the lockbolt.

S 424-038
(17) Install the pin to connect the lower drag strut to the shock strut (View C-C).

S 094-039
(18) Remove the drag strut hoist and the boom hoist.

S 414-040
(19) Install the lower pulley support bracket for the steering cables (AMM 32-51-13/401).

S 414-041
(20) Install the landing and the runway turnoff lights, P62 and P63 panels (AMM 33-42-04/401).

S 494-042
(21) Install the downlock for the nose landing gear (AMM 32-00-20/201).

S 414-043
(22) Install the lock springs for the nose landing gear (AMM 32-21-15/401).

F. Put the Airplane Back to Its Usual Condition.

S 824-044
(1) Adjust the position target (AMM 32-61-03/201).

S 094-045
(2) Remove the drag strut hoist and the boom hoist.

S 414-046
(3) Install the bolt to connect the upper end of the lock actuator to the aft lock link (View D-D).

S 414-047
(4) Install the nose landing gear locked sensor (AMM 32-61-03/201).

S 824-048
(5) Adjust the nose landing gear locked sensor (AMM 32-61-03/201).

S 714-049
(6) Do the extension and retraction test for the nose landing gear (AMM 32-34-00/501).

S 584-050
(7) Lower the nose of the airplane (AMM 07-11-02/201).

S 644-051
(8) Lubricate the struts and the links at the grease fittings.

S 094-013

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.

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

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 32-21-04-004-001

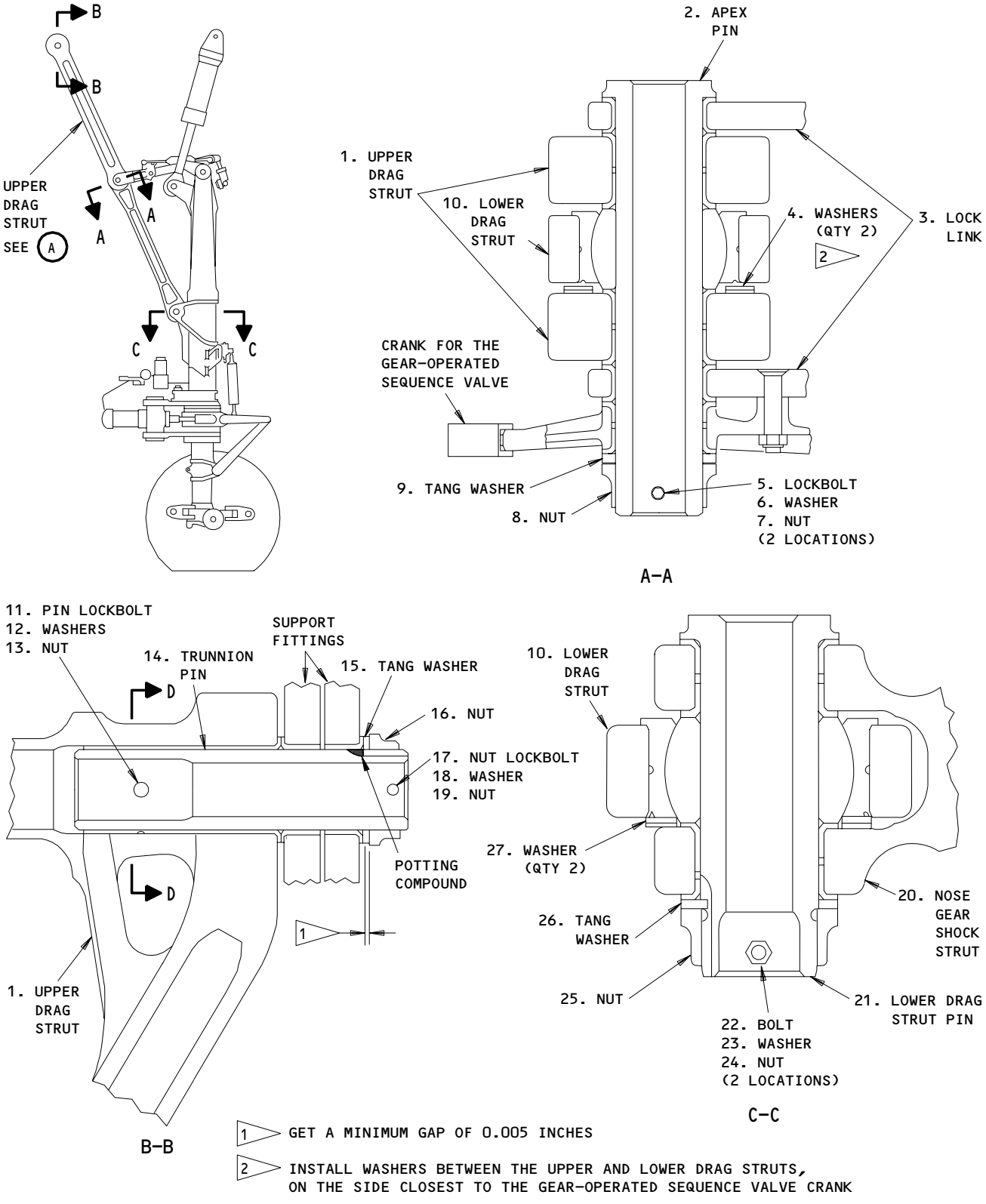
2. Remove the Upper Drag Strut for the Nose Landing Gear (Fig. 401)
   A. Equipment
      (1) Boom Hoist - A20001-79
      (2) Nose Gear Drag Strut Hoist - B32004-1
   B. References
      (1) AMM 07-11-02/201, Jacking Airplane Nose
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-21-15/401, Nose Gear Lock Spring
   C. Access
      (1) Location Zones

119/120	Main Equipment Center
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door
730/740	Main Landing Gear and Doors

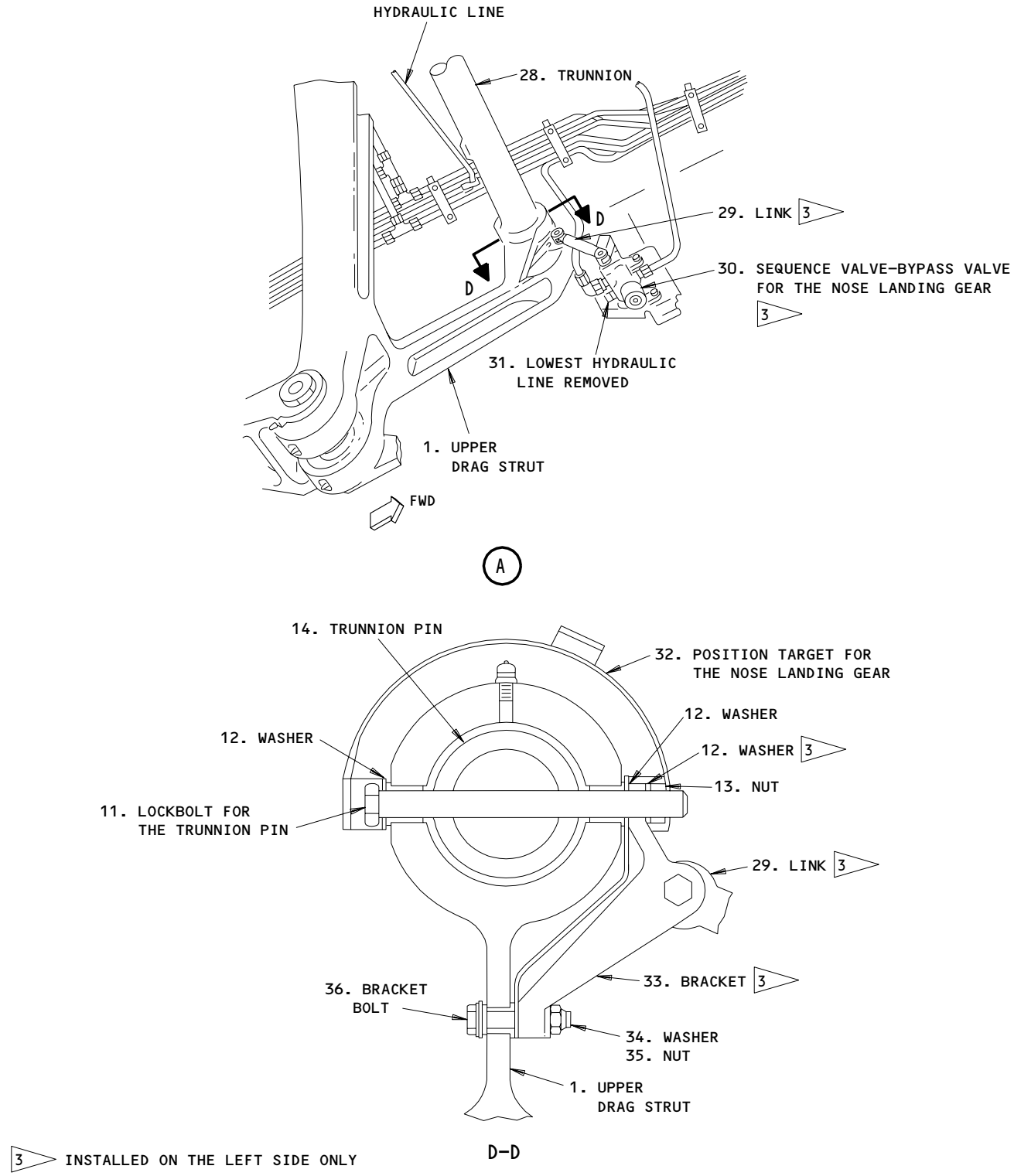
      (2) Access Panel
          119BL

   D. Prepare for the Removal of the Upper Drag Strut

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).



Installation of the Drag Strut Assembly for the Nose Landing Gear
Figure 401 (Sheet 1)



Installation of the Drag Strut Assembly for the Nose Landing Gear
Figure 401 (Sheet 2)

S 494-061

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

S 584-004

(3) Lift the nose of the airplane until the wheels are above the ground (AMM 07-11-02/201).

S 864-005

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

S 014-056

(5) Remove the lock springs for the nose landing gear (AMM 32-21-15/401).

E. Remove the Upper Drag Strut

S 014-006

(1) Remove the lowest hydraulic line (31) from the sequence valve-bypass valve (30) for the nose landing gear (Detail A). Seal the fittings with a plug.

S 014-007

(2) Remove the hydraulic line that is near the trunnion (Detail A). Seal the fittings with a plug.

S 494-008

(3) Do the steps that follow to install the hoist equipment on the upper drag strut:
   (a) Install the drag strut hoist on the end of the boom hoist.
   (b) Lift the drag strut hoist with the boom hoist until the drag strut hoist is around the trunnion.
   (c) Install the strap around the trunnion. Tighten the strap.

S 014-009

(4) Remove the apex pin (2) (View A-A).

S 034-010

(5) Release the upper drag strut (1).

S 414-062
(6) Connect the lower drag strut (10) to the lock link (3) with the apex pin (2).

S 014-012
(7) Do the steps that follow for each of the two trunnion pins (View B-B):
  (a) Use the door for the main equipment center, 119BL, to get access to the trunnion pins.
  (b) Remove the nut lockbolt (17), the washer (18), and the nut (19).
  (c) Remove the nut (16) and the washer (15) on the trunnion pin (14).

S 014-013
(8) Do the steps that follow for each side of the upper drag strut (View D-D):
  (a) Remove the lockbolt (11), the washers (12) and the nut (13) for the trunnion pin (14).
  (b) Remove the bracket bolt (36), the washers (34) and the nut (35) from the position target (32) for the nose landing gear.
  (c) Keep the position targets for the nose landing gear, the bolts, and the washers for installation on the new upper drag strut.

S 864-063
(9) Temporarily attach the bracket (33) and the link (29) (Detail A) away from the upper drag strut.

S 014-064
(10) Get access to the trunnion pins through the door for the main equipment center, 119BL.

S 024-016
(11) Pull each trunnion pin (14) outboard to release the upper drag strut.

S 214-076

(12) Examine the keyway on the trunnion pin.
  (a) Make sure the potting compound is intact.
  (b) If the potting compound is not intact, look for a buildup of too much grease on the side of the wheel well wall where the trunnion pin nut is installed.

S 864-065

(13) Lower the upper drag strut (1) with the boom hoist.

TASK 32-21-04-404-017

3. Install the Upper Drag Strut for the Nose Landing Gear (Fig. 401)

A. Equipment
  (1) Boom Hoist - A20001-79
  (2) Nose Gear Drag Strut Hoist - B32004-1

B. Consumable Materials
  (1) D00013 Grease - MIL-G23827

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Strut Assy (Upper Drag Strut)	32-21-03	01	67, 290 292

D. References
  (1) AMM 07-11-02/201, Jacking Airplane Nose
  (2) AMM 32-00-15/201, Landing Gear Door Locks
  (3) AMM 32-00-20/201, Landing Gear Downlocks
  (4) AMM 32-21-15/401, Nose Gear Lock Spring
  (5) AMM 32-34-00/501, Nose Gear Extension and Retraction

(6) AMM 32-61-03/201, Nose Gear Proximity Sensor

E. Access

(1) Location Zones

119/120	Main Equipment Center
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door
730/740	Main Landing Gear and Doors

(2) Access Panel
119BL

F. Install the Upper Drag Strut

S 494-018
(1) Install the drag strut hoist and the boom hoist on the upper drag strut.

S 864-066
(2) Lift the upper drag strut (1) into the wheel well. Position it between the support fittings for the wheel well wall.

S 214-077
(3) Examine the keyway on the trunnion pin.
(a) Make sure the potting compound is intact.
(b) If the potting compound is not intact, remove the trunion pin and replace with the one that has been repaired with the potting compound intact. This will prevent seepage of grease out of the keyway and into the trunnion pin nut side of the wheel well wall.

S 644-020
(4) Apply grease to the pins, the bolts, and the washers before installation.

S 414-021
(5) Do the steps that follow to install the trunnion pins (14) into the trunnion (28) (View B-B):
(a) Get access through the door to the main equipment center, 119BL, to install the trunnion pins.
(b) Push the trunnion pins (14) into position.

NOTE: Do not install the nut at this time.

(c) Align the holes of the lockbolt for the trunnion pin (11) with the holes in the trunnion.

S 414-057
(6) Do the steps that follow to install the sensor targets on the trunnion (View D-D):

NOTE: The bracket that connects to the link (29) from the sequence valve-bypass valve (30) is installed on the left side only.

(a) Put the sensor target (32) into position.
(b) Put the bracket (33) into position on the left side of the trunnion.
(c) Install the bracket bolt (36), the washers (34) and the nut (35).
(d) Install the lockbolt (11), the washers (12) and the nut (13) for the trunnion pin.

S 414-022
(7) Install the hydraulic line that is near the trunnion.

S 414-023
(8) Install the hydraulic line (31) that attaches to the sequence valve-bypass valve (30).

S 414-024
(9) Install the washer (15) and the nut (16) on the end of trunnion pin.
(a) Tighten the nut to 500-600 pound-inches. Loosen the nut to get a minimum of 0.005 inch gap. Loosen to the nearest lock position (View B-B).

S 414-025
(10) Install the nut lockbolt (17), the washers (18) and the nut (19).

S 034-026
(11) Disconnect the apex pin (2) from the lower drag strut (10) and the lock link (3).

S 824-058
(12) Align the upper drag strut (1), the lower drag strut (10), and the lock link (3) (View A-A).
(a) Install two washers (4) between the upper and lower drag struts, both washers go on the same side (side opposite of bearing flange).

S 424-027
(13) Install the apex pin (2), the washer (9) and the nut (8).
(a) Tighten to 70-80 pound-feet. Loosen to the nearest lock position and install the lockbolts.

G. Put the Airplane Back to Its Usual Condition

S 094-028
(1) Remove the drag strut hoist and the boom hoist.

S 414-029
(2) Install the lock springs for the nose landing gear (AMM 32-21-15/401).

S 824-030
(3) Adjust the position target for the nose landing gear (AMM 32-61-03/201).

S 714-031
(4) Do the extension and retraction test for the nose landing gear (AMM 32-34-00/501).

S 584-032
(5) Lower the nose of the airplane and remove the jack (AMM 07-11-02/201).

S 644-033
(6) Lubricate the strut at the grease fittings.

S 094-067

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 32-21-04-004-059

4. Remove the Lower Drag Strut for the Nose Landing Gear (Fig. 401).
   A. Equipment
      (1) Boom Hoist - A20001-79
      (2) Nose Gear Drag Strut Hoist - B32004-1
   B. References
      (1) 07-11-02/201, Jacking Airplane Nose
      (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
      (5) 32-21-15/401, Nose Gear Lock Spring
      (6) 32-51-13/401, Nose Wheel Steering Lower Pulley Support Bracket
      (7) 33-42-04/401, Nose Gear Landing and Runway Turnoff Lights, P62, and P63 Panels
   C. Access
      (1) Location Zones

119/120	Main Equipment Center
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door
730/740	Main Landing Gear and Doors

(2) Access Panel
119BL

D. Prepare for the Removal of the Lower Drag Strut

S 494-035
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 494-068

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

S 864-037
(3) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).

S 584-038
(4) Lift the nose of the airplane until the wheels are above the ground (AMM 07-11-02/201).

S 014-039
(5) Remove the lock springs for the nose landing gear (AMM 32-21-15/401).

E. Remove the Lower Drag Strut

S 014-040
(1) Remove the landing and the runway turnoff lights, P62 and P63 panels, from the nose landing gear (Ref 33-42-04).

NOTE: It is not necessary to remove the harnesses for the electrical wires and the clamps from the shock strut. Disconnect the panels and pull them out sufficiently to access the pin for the lower drag strut. Tie the panels to the shock strut.

S 014-041
(2) Remove the lower pulley support bracket for the steering cables (AMM 32-51-13/401).

S 014-042
(3) Hold the upper and lower drag strut.
(a) Remove the apex pin (2) to disconnect the lower drag strut (10) from the upper drag strut (1) and the lock link (3) (View A-A).

(b) Put the pin through the upper drag strut (2) and the lock link (3) to hold it in position.

S 024-043

(4) Hold the lower drag strut.

NOTE: The lower drag strut weighs approximately 40 pounds.

(a) Remove the pin from the lower drag strut (21), the nut (25), and the washer (26) to disconnect the lower drag strut (10) from the shock strut (20) (View C-C).

TASK 32-21-04-404-044

5. Install the Lower Drag Strut for the Nose Landing Gear (Fig. 401)

A. Equipment
(1) Boom Hoist - A20001-79
(2) Nose Gear Drag Strut Hoist - B32004-1

B. Consumable Materials
(1) D00013 Grease - MIL-G23827

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	10	Strut Assy (Lower Drag Strut)		01	37, 590 591

D. References
(1) 07-11-02/201, Jacking Airplane Nose
(2) 32-00-15/201, Landing Gear Door Locks
(3) 32-00-20/201, Landing Gear Downlocks
(4) 32-21-15/401, Nose Gear Lock Spring
(5) 32-34-00/501, Nose Gear Extension and Retraction
(6) 32-51-13/401, Nose Wheel Steering Lower Pulley Support Bracket

(7) 33-42-04/401, Nose Gear Landing and Runway Turnoff Lights, P62, and P63 Panels

E. Access

(1) Location Zones

119/120	Main Equipment Center
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door
730/740	Main Landing Gear and Doors

(2) Access Panel
119BL

F. Install the Lower Drag Strut

S 644-045
(1) Apply grease to the pins, the bolts, and the washers before installation.

S 014-046
(2) Hold the upper drag strut (1) and the lock link (3).

S 014-069
(3) Remove the apex pin (2).

S 864-070
(4) Position the lower lock link (3) between the apex of the drag strut and the shock strut.
(a) Install two washers (4) between the upper and lower drag struts, both washers go on the same side (side opposite of bearing flange).

S 414-071
(5) Install the apex pin (2), the nut (8), and the washer (9) to connect the lower drag strut (10) to the upper drag strut (1) and the lock link (3) (View A-A).
(a) Tighten to 70-80 pound feet. Loosen to the nearest lock position and install the lockbolt (5), the washer (6) and the nut (7).

S 424-048
(6) Install the pin for the lower drag strut (21), the nut (25) and the washer (26) to connect the lower drag strut to the shock strut.
(a) Install two washers (27) between the lower drag strut and the shock strut, both washers go on the same side (side opposite of the bearing flange).
(b) Tighten to 70-89 pound-feet. Loosen to the nearest lock position and install the lockbolt (22), the washer (23) and the nut (24) (View C-C).

S 414-049
(7) Install the lower pulley support bracket for the steering cables (AMM 32-51-13/401).

S 414-050
(8) Install the landing and the runway turnoff lights, P62 and P63 panels, on the nose landing gear (AMM 33-42-04/401).

G. Put the Airplane Back to Its Usual Condition

S 414-051
(1) Install the lock springs for the nose landing gear (AMM 32-21-15/401).

S 714-052
(2) Do the extension and retraction test on the nose landing gear (AMM 32-34-00/501).

S 484-053
(3) Lower the nose of the airplane and remove the jack (AMM 07-11-02/201).

S 644-054
(4) Lubricate the strut at the grease fittings.

S 094-072

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).

NOSE GEAR UPPER AND LOWER DRAG STRUTS - INSPECTION/CHECK

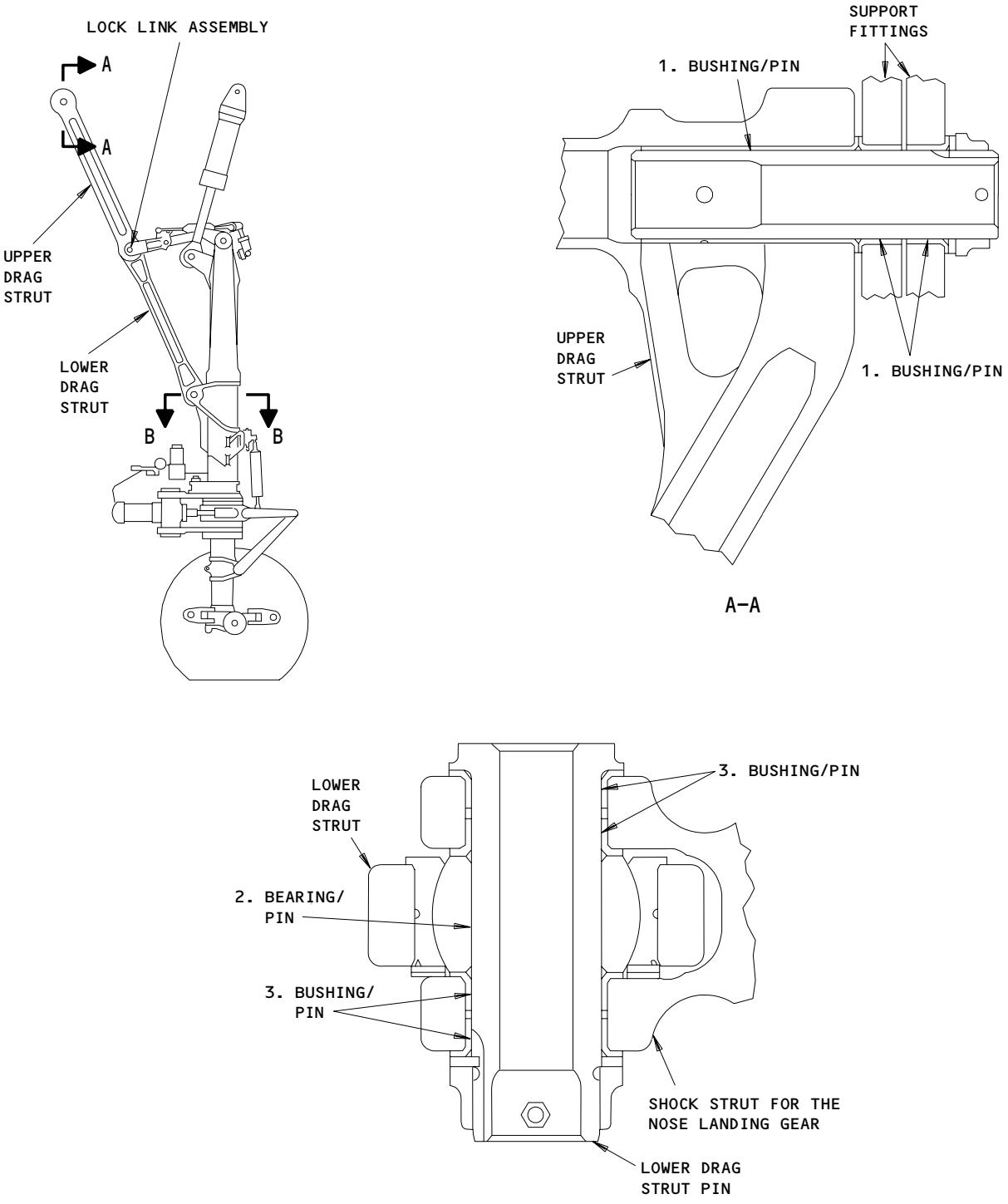
1. General
   A. This procedure only has an illustration, and a wear limit table which shows the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Nose Gear Upper and Lower Drag Strut - Removal/Installation for the procedures to do these tasks.

TASK 32-21-04-206-001

2. Wear Limits for the Upper and Lower Drag Strut of the Nose Landing Gear (Fig. 601)
   A. Wear Limits for the Upper and Lower Drag Strut

S 226-002

   (1) Refer to Fig. 601 for the inspection points and the wear limit table.



Nose Landing Gear Upper and Lower Drag Strut 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	BUSHING	ID	2.3010	2.3015	2.3055	0.0055	X		
	PIN	OD	2.2990	2.3000	2.2959			X	1
2	BEARING	ID	2.0000	2.0010	2.0050	0.0062	X		
	PIN	OD	1.9976	1.9988	1.9947			X	1
3	BUSHING	ID	2.0000	2.0010	2.0050	0.0062	X		
	PIN	OD	1.9976	1.9988	1.9947			X	1

1 THE PART IS REPAIRABLE; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE REPAIR INSTRUCTIONS.

Nose Landing Gear Upper and Lower Drag Strut Wear Limits
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 for the nose landing gear. The second task installs the lock link assembly for the nose landing gear.

TASK 32-21-06-004-001

2. Remove the Lock Link Assembly for the Nose Landing Gear
   A. Equipment
      (1) Downlock, NLG - B32001-4
      (2) Door Lock, Landing Gear - (AMM 32-00-15/201)
   B. References
      (1) AMM 07-11-02/201, Jacking Airplane Nose
      (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 32-21-15/401, Nose Gear Lock Springs
      (6) AMM 32-61-03/201, Nose Gear Proximity Sensor
   C. Access
      (1) Location Zones

711	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors
730/740	Main Landing Gear and Doors

   D. Prepare for the Removal of 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).

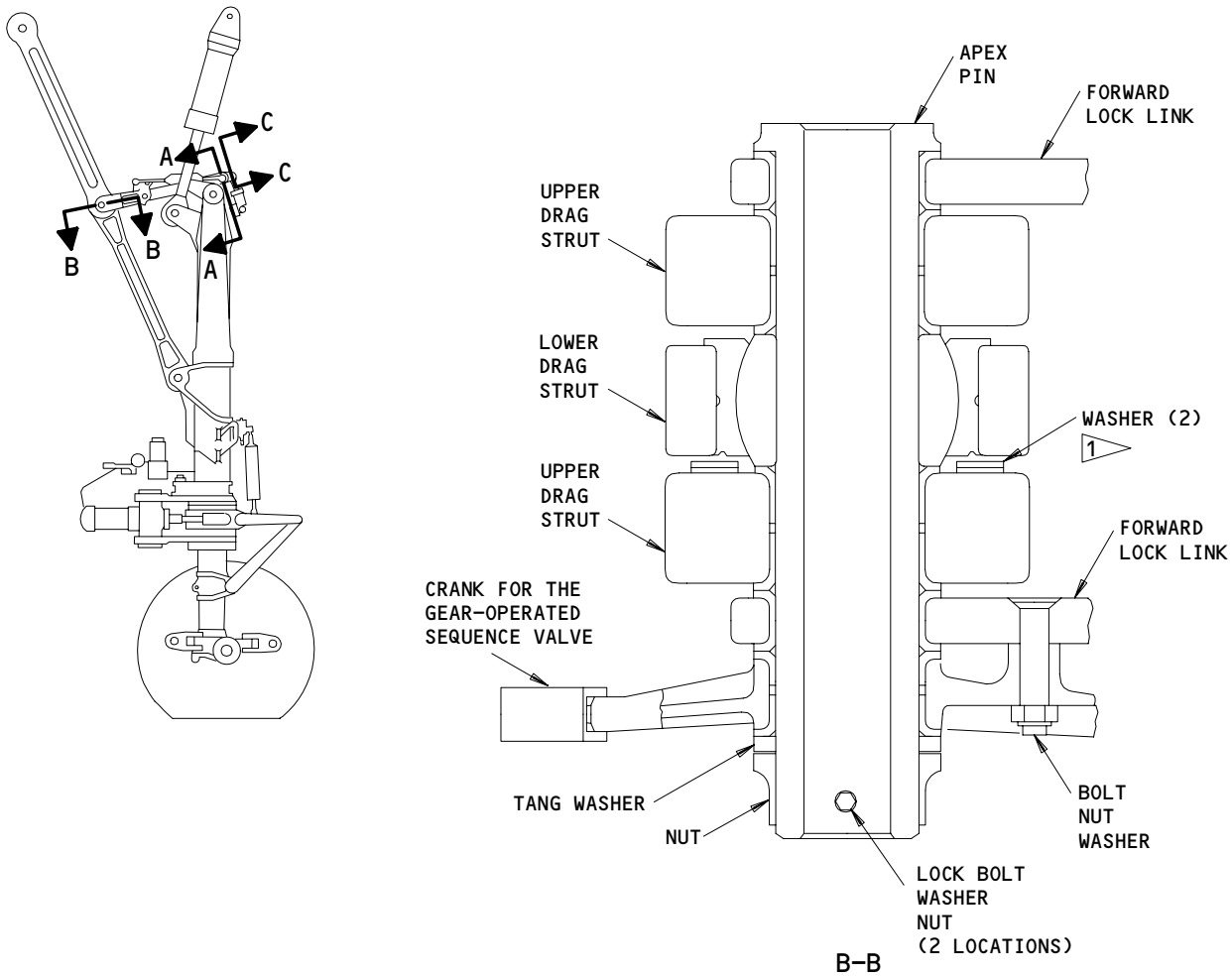
S 944-003

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).

S 864-004

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



1 INSTALL WASHERS BETWEEN THE UPPER AND LOWER DRAG STRUTS, ON THE SIDE CLOSEST TO THE CRANK FOR THE GEAR-OPERATED SEQUENCE VALVE

Lock Link Assembly Installation for the Nose Landing Gear
Figure 401

S 584-005
(4) Lift the nose of the airplane until the wheels are above the ground (AMM 07-11-02/201).

E. Remove the Lock Link Assembly

S 014-006
(1) Remove the bolt to disconnect the upper end of the lock actuator from the aft lock link (View C-C).

S 014-007
(2) Remove the lock springs for the nose landing gear (AMM 32-21-15/401).

S 014-008
(3) Remove the proximity sensor and the wire harness for the nose landing gear from the lock link (AMM 32-61-03/201).

S 014-009
(4) Remove the spring support shaft to disconnect the aft lock link from the wall fittings of the aft wheel well (View A-A).

S 014-010
(5) Hold the upper and the lower drag strut. Remove the apex pin to disconnect the forward lock link from the drag strut (View B-B). Insert the pin through the upper and the lower drag strut to hold the strut in position.

S 024-011
(6) Remove the bolt to disconnect the lock link from the control rod for the gear-operated sequence valve.

TASK 32-21-06-404-012

3. Install the Lock Link Assembly for the Nose Landing Gear (Fig. 401)
   A. Equipment
      (1) Downlock, NLG - B32001-4
      (2) Door Lock, Landing Gear - (AMM 32-00-15/201)
   B. Consumable Materials
      (1) D00633 Grease - BMS 3-33 (Recommended)
      (2) D00013 Grease - MIL-G-23827 (Alternative)
   C. References
      (1) 07-11-02/201, Jacking Airplane Nose

(2) 12-21-12/301, Nose Gear and Actuating Mechanisms
(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) 32-21-15/401, Nose Gear Lock Springs
(7) 32-34-00/501, Nose Gear Extension and Retraction
(8) 32-61-03/201, Nose Gear Proximity Sensor

D. Access

(1) Location Zones

711	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors
730/740	Main Landing Gear and Doors

E. Install the Lock Link Assembly

S 644-013
(1) Apply grease to the bolts, the pins, the washers, and the bushing surfaces before installation.

S 414-014
(2) Put the spring support shaft through the aft lock link and the wall fittings for the aft wheel well (View A-A).

S 414-015
(3) Install the bolt to connect the forward lock link to the control rod for the gear-operated sequence valve (View B-B).

S 414-016
(4) Hold the upper and the lower drag strut. Remove the apex pin. Put the forward lock link in position and install the apex pin. Tighten the nut to 70-80 pound-feet. Loosen the nut to the nearest lock position and install the lockbolt (View B-B).

S 424-017
(5) Install the bolt to connect the upper end of the lock actuator to the aft lock link (View C-C).

F. Put the Airplane Back to Its Usual Condition

S 414-018
(1) Install the proximity sensor and the wire harness for the nose landing gear on the lock link (AMM 32-61-03/201).

S 414-019
(2) Install the lock springs for the nose landing gear (AMM 32-21-15/401).

S 714-020

(3) Do the extension and retraction test for the nose landing gear (AMM 32-34-00/501).

S 494-021

(4) Install the downlock for the nose landing gear (AMM 32-00-20/201).

S 584-022

(5) Lower the airplane and remove the jack (AMM 07-11-02/201).

S 644-023

(6) Lubricate the lock link assembly at the grease fittings (AMM 12-21-12/301).

S 944-024

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).

NOSE GEAR TORSION LINKS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains four tasks. The first task removes the upper torsion link from 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 32-21-09-004-077

2. Remove the Upper Torsion Link for the Nose Landing Gear (Fig. 401, 401A)
   A. References
      (1) AMM 09-11-00/201, Towing
      (2) AMM 32-00-20/201, Landing Gear Downlocks
      (3) AMM 32-09-08/201, Nose Gear Not Compressed Sensors
   B. Access
      (1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors

   C. Prepare for the Removal of the Upper Torsion Link

S 494-055

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.

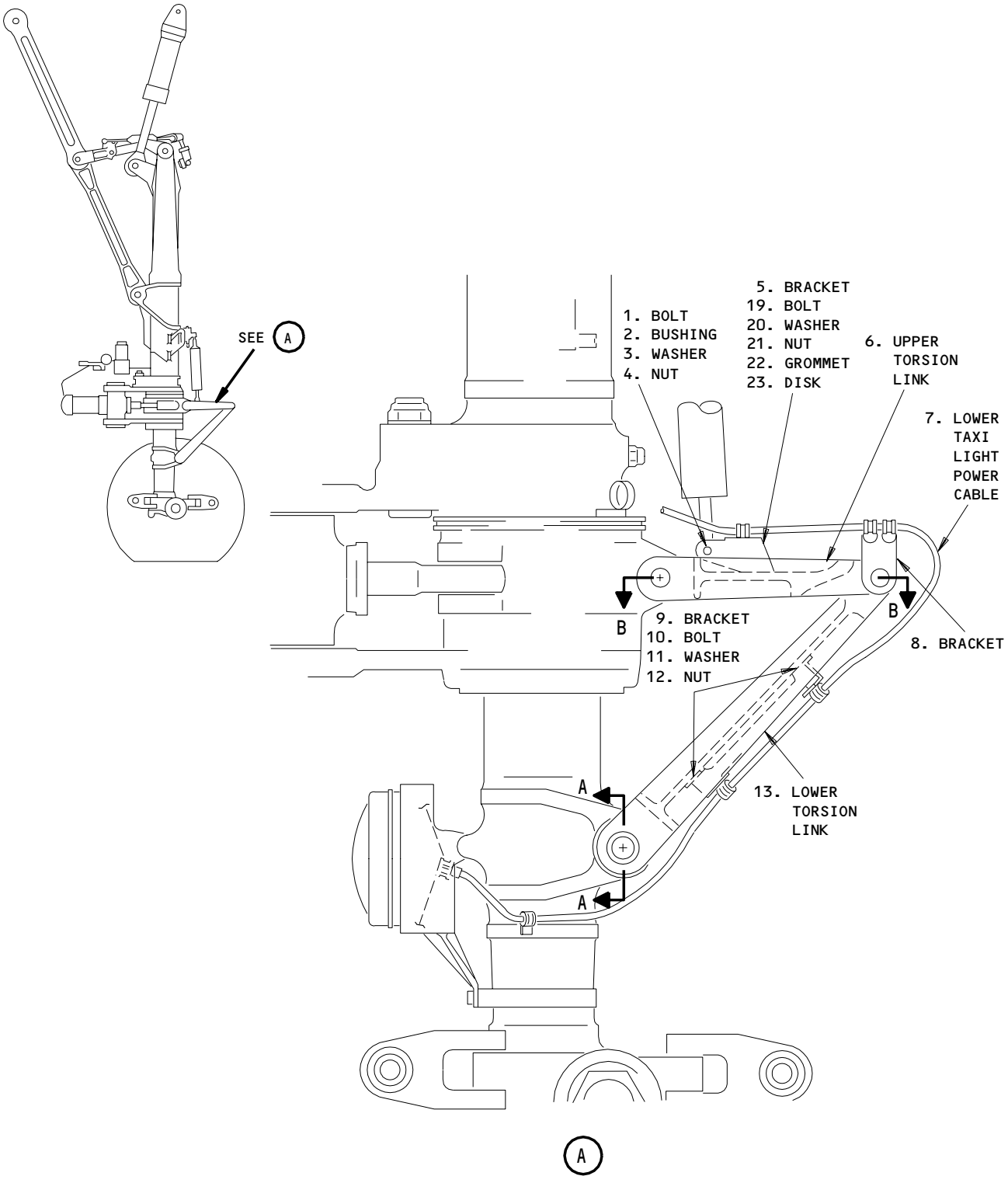
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 494-003

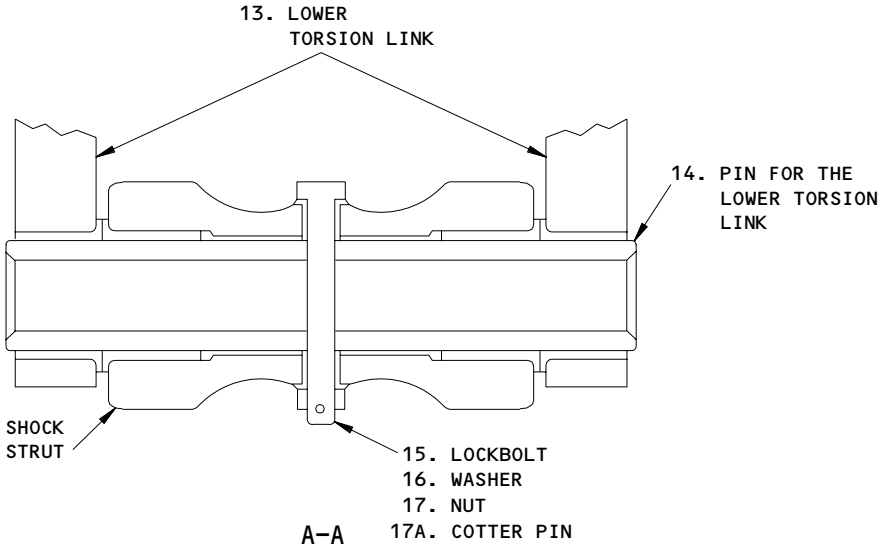
(2) Disable the nose wheel steering (AMM 09-11-00/201).

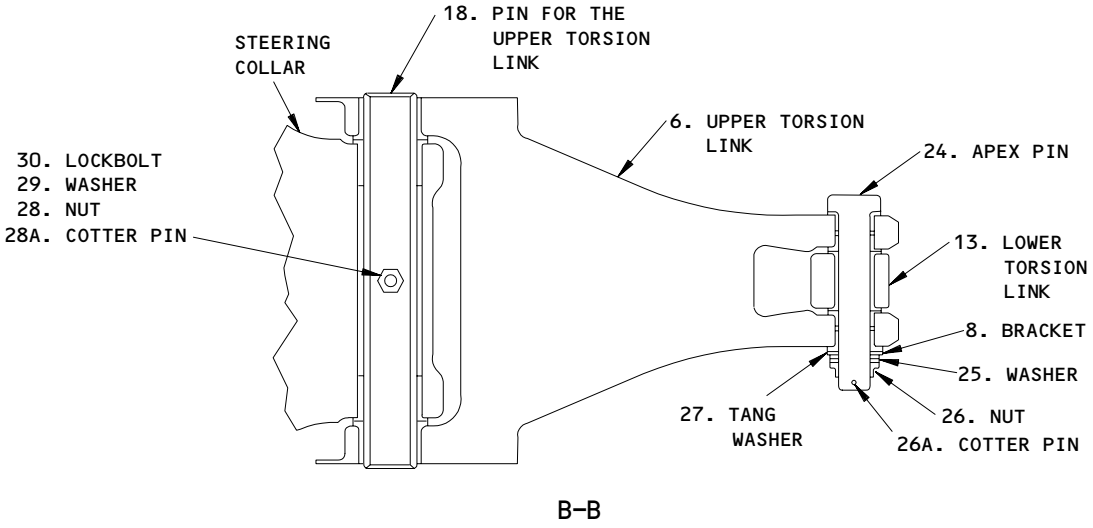
S 864-056

(3) Move the control lever for the landing gear to the OFF position and attach a DO-NOT-OPERATE tag.

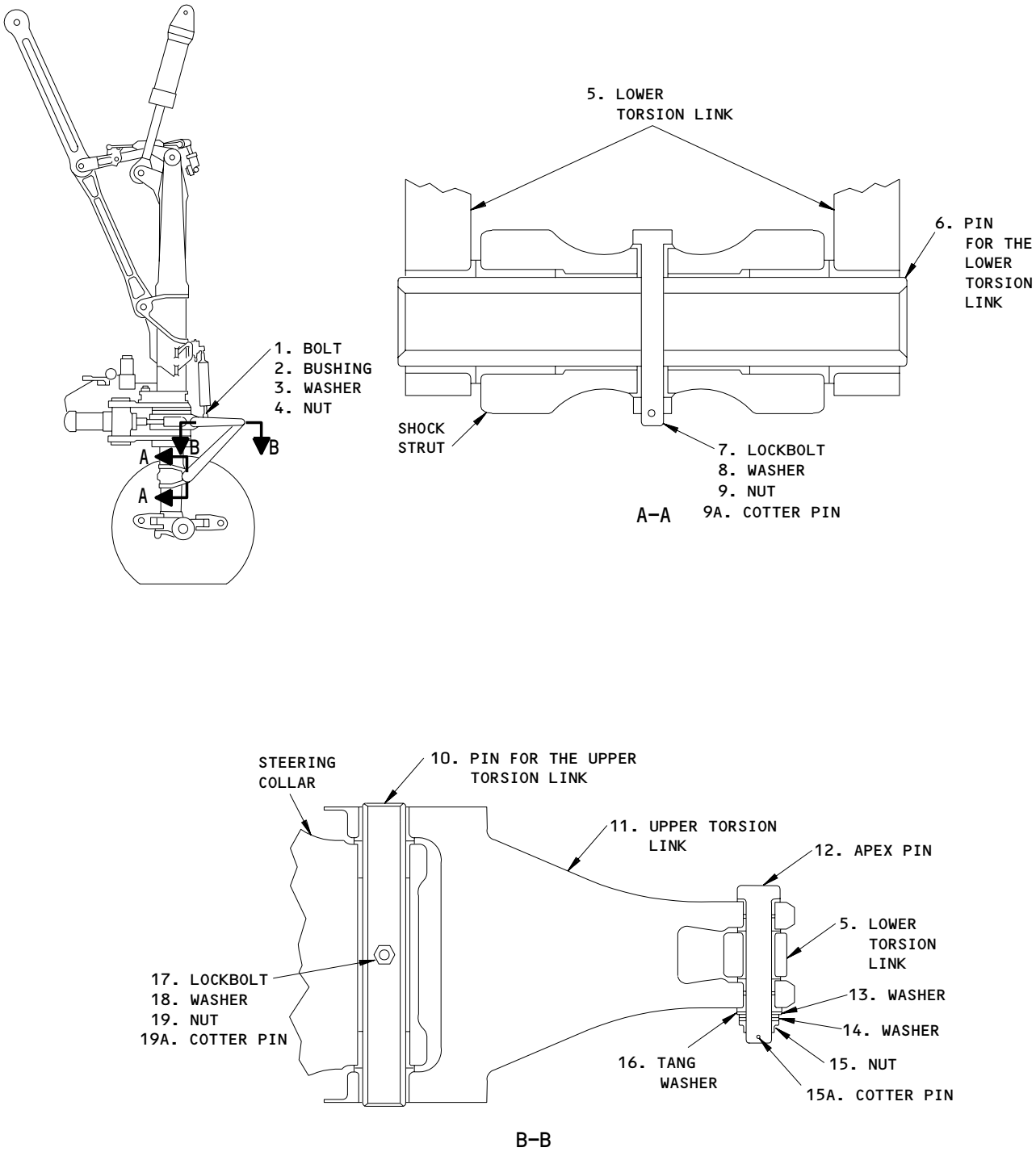


Nose Gear Torsion Links Installation
Figure 401 (Sheet 1)





Torsion Links Installation for the Nose Landing Gear
Figure 401 (Sheet 2)



Torsion Links Installation for the Nose Landing Gear
Figure 401A

D. GUI 115;
Remove the Upper Torsion Link

S 034-057

WARNING: BE CAREFUL WHEN YOU DISCONNECT THE TORSION LINKS. THE TORSION LINK MOVES QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Hold the upper (11) and the lower (5) torsion links.

S 034-067
(2) Remove the parts that follow to disconnect the upper and the lower links (View B-B).
(a) Apex Pin (12)
(b) Washers (13, 14, and 16)
(c) Nut (15)
(d) Cotter Pin

S 014-007
(3) Remove the parts that follow to disconnect the lower end of the spring cartridge for the nose wheel steering from the upper torsion link.
(a) Bolt (1)
(b) Bushing (2)
(c) Washer (3)
(d) Nut (4)

S 014-009
(4) Remove the lockbolt (17) from the pin for the upper torsion link.

S 034-066
(5) Remove the parts that follow to disconnect the upper torsion link from the steering collar (View B-B).
(a) Pin (10)
(b) Washer (18)
(c) Nut (19)
(d) Cotter Pin

S 024-008
(6) Remove the upper torsion link (11).

E. ALL EXCEPT GUI 115;
Remove the Upper Torsion Link

S 034-106

WARNING: BE CAREFUL WHEN YOU DISCONNECT THE TORSION LINKS. THE TORSION LINK MOVES QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the bolt (19) to disconnect the bracket (5) from the upper torsion link (6).

S 014-073

(2) Hold the upper (6) and the lower (13) torsion links. Remove the apex pin (24) to disconnect the upper and lower links (View B-B).

S 014-074

(3) Remove the parts that follow to disconnect the lower end of the spring cartridge for the nose wheel steering from the upper torsion link.
   (a) Bolt (1)
   (b) Bushing (2)
   (c) Washer (3)
   (d) Nut (4)

S 014-075

(4) Remove the lockbolt (17) from the upper torsion link pin (18). Remove the pin (10) to disconnect the upper torsion link (6) from the steering collar (View B-B).

S 024-076

(5) Remove the upper torsion link (6).

TASK 32-21-09-004-015

3. Install the Upper Torsion Link for the Nose Landing Gear

A. Consumable Materials
   (1) D00633 Grease - BMS 3-33 (Recommended)
   (2) D00013 Grease - MIL-G-23827 (Alternative)

B. Parts
(1) GUI 115;
Refer to the table that follows:

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401A	5	Lower Torsion Link	32-21-09	01	140
				03	145, 190
				04	110, 150
				05	145, 185
				06	145, 190
				10	145
				10A	165
				11	145
	9A	Pin	32-21-09	01	215
				03	125
				04	205
				05	125
				06	125
	11	Upper Torsion Link	32-21-09	01	60
				03	75
				04	65
				05	75
				06	75
				10	75
				10A	75
				11	75
	15A	Pin	32-21-09	03	45
				05	45
				06	45
				10	45
				10A	25
	16	Tang Washer	32-21-09	03	55
				05	55
				06	55
				10	15
				10A	35
	19A	Pin	32-21-09	01	4
				03	15
				04	195
				05	20
				06	15

(2) ALL EXCEPT GUI 115;
Refer to the table that follows:

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	6	Upper Torsion Link	32-21-09	01	60
				03	75
				04	65
				05	75
				06	75
				10	75
				10A	75
				11	75
401	13	Lower Torsion Link	32-21-09	01	140
				03	145, 190
				04	110, 150
				05	145, 185
				06	145, 190
				10	145
				10A	165
				11	145
	17A	Pin	32-21-09	01	215
				03	125
				04	205
				05	125
				06	125
	26A	Pin	32-21-09	03	45
				05	45
				06	45
				10	45
				10A	25
	27	Tang Washer	32-21-09	03	55
				05	55
				06	55
				10	15
				10A	35
	28A	Pin	32-21-09	01	4
				03	15
				04	195
				05	20
				06	15

C. References
(1) AMM 09-11-00/201, Towing
(2) AMM 32-00-20/201, Landing Gear Downlocks

(3) AMM 32-09-08/201, Nose Gear Not Compressed Sensors

D. Access

(1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors

E. GUI 115;
Install the upper torsion link.

S 414-017

(1) Apply grease to, and install, the parts that follow to connect the upper torsion link (11) to the shock strut (View B-B).
(a) Pin (10)
(b) Lockbolt (17)
(c) Washer (18)
(d) Nut (19)
1) Tighten the nut to 90-125 pound-inches.

NOTE: If necessary, you can loosen the nut to the nearest lock position to install the cotter pin.

(e) Cotter Pin

S 414-020

(2) Install these parts to connect the lower end of the spring cartridge for the nose wheel steering to the upper torsion link (11):
(a) Bolt (1)
(b) Bushing (2)
(c) Washer (3)
(d) Nut (4)

S 424-022

(3) Apply grease to, and install, the parts that follow to connect the upper torsion link (11) to the lower torsion link (5) (View B-B).
(a) Apex Pin (12)
(b) Washers (13, 14, and 16)

(c) Nut (15)
1) Tighten the nut to 200-250 pound-inches.
(d) Cotter Pin

F. ALL EXCEPT GUI 115;
Install the upper torsion link.

S 414-068
(1) Apply grease to, and install, the parts that follow to connect the upper torsion link (6) to the shock strut (View B-B).
(a) Pin (18)
(b) Lockbolt (30)
(c) Washer (29)
(d) Nut (28)
1) Tighten the nut to 90-125 pound-inches.

NOTE: If necessary, you can loosen the nut to the nearest lock position to install the cotter pin.

(e) Cotter Pin

S 414-069
(2) Install these parts to connect the lower end of the spring cartridge for the nose wheel steering to the upper torsion link (6):
(a) Bolt (1)
(b) Bushing (2)
(c) Washer (3)
(d) Nut (4)

S 424-070
(3) Apply grease to, and install, these parts to connect the upper torsion links (6) to the lower torsion links (13) (View B-B):
(a) Apex Pin (24)
(b) Washer (27)
(c) Bracket (8)
(d) Washer (25)
(e) Nut (26)
1) Tighten the nut to 200-250 pound-inches.
(f) Cotter Pin

S 414-071
(4) With these items, install the bracket (5) to the upper torsion link (6):
(a) Bolt (19)
(b) Disk (23)
(c) Grommet (22)
(d) Washer (20)
(e) Nut (21)

S 444-124
(5) Restore the nose wheel steering (AMM 09-11-00/201).

G. Put the Airplane Back to Its Usual Condition

S 864-060
(1) Remove the DO-NOT-OPERATE tags from the control lever for the landing gear. Put the lever in the DN position.

S 644-027
(2) Lubricate the torsion link at the grease fittings.

S 824-028
(3) Do this task "Measure/Adjust the Clearance for the Nose Landing Gear Not Compressed Sensor" (AMM 32-09-08/201), if you did one of the tasks that follow:
(a) You replaced a torsion link bushing(s).
(b) You installed a new upper/lower torsion link.
(c) You installed a new sensor/target.
(d) You moved or damaged the sensor/target bracket.

S 714-029
(4) Do the test for the Nose Gear Not Compressed Sensor procedure (AMM 32-09-08/201). Make sure the nose gear not compressed sensor operates correctly.

TASK 32-21-09-004-084

4. Remove the Lower Torsion Link for the Nose Landing Gear (Fig. 401, 401A)

A. References
(1) AMM 07-11-03/201, Jacking Airplane Axles
(2) AMM 09-11-00/201, Towing
(3) AMM 32-09-08/201, Nose Gear Not Compressed Sensors
(4) AMM 32-45-02/401, Nose Gear Wheels and Tires

B. Access
(1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors

C. Prepare for the Removal of the Lower Torsion Link

S 494-061

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.

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

S 494-032

(2) Disable the nose wheel steering.

S 864-062

(3) Move the control lever for the landing gear to the OFF position and attach a DO-NOT-OPERATE tag.

S 584-034

(4) Lift the axle on the nose landing gear (AMM 07-11-03/201).

S 014-035

(5) Remove one of the two nose wheels and tires (AMM 32-45-02/401).

D. GUI 115;
Remove the Lower Torsion Link

S 034-063

WARNING: BE CAREFUL WHEN YOU DISCONNECT THE TORSION LINKS. THE TORSION LINK MOVES QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Hold the upper torsion link (11) and the lower torsion link (5). Remove the apex pin (12) to disconnect the upper and lower links (View B-B).

S 014-040

(2) Remove the lockbolt (7) from the pin for the lower torsion link. Remove the pin (6) to disconnect the lower torsion link from the shock strut (View A-A).

S 024-039

(3) Remove the lower torsion link (5).

E. ALL EXCEPT GUI 115;
Remove the Lower Torsion Link

S 034-083

WARNING: BE CAREFUL WHEN YOU DISCONNECT THE TORSION LINKS. THE TORSION LINK MOVES QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Disconnect the bracket (9) from the lower torsion link (13).

S 014-081

(2) Hold the upper torsion link (6) and the lower torsion link (13). Remove the apex pin (24) to disconnect the upper and lower links (View B-B).

S 014-080

(3) Remove the lockbolt (15) from the pin for the lower torsion link (14).

S 014-079

(4) Remove the pin (14) to disconnect the lower torsion link (13) from the shock strut (View A-A).

S 024-078

(5) Remove the lower torsion link (13).

TASK 32-21-09-004-044

5. Install the Lower Torsion Link for the Nose Landing Gear

A. Consumable Materials

(1) D00633 Grease - BMS 3-33 (Recommended)

(2) D00013 Grease - MIL-G23827 (Alternative)

B. Parts
(1) GUI 115;
Refer to the table that follows:

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401A	5	Lower Torsion Link	32-21-09	01	140
				03	145, 190
				04	110, 150
				05	145, 185
				06	145, 190
				10	145
				10A	165
				11	145
	9A	Pin	32-21-09	01	215
				03	125
				04	205
				05	125
				06	125
	11	Upper Torsion Link	32-21-09	01	60
				03	75
				04	65
				05	75
				06	75
				10	75
				10A	75
				11	75
	15A	Pin	32-21-09	03	45
				05	45
				06	45
				10	45
				10A	25
	16	Tang Washer	32-21-09	03	55
				05	55
				06	55
				10	15
				10A	35
	19A	Pin	32-21-09	01	4
				03	15
				04	195
				05	20
				06	15

(2) ALL EXCEPT GUI 115;
Refer to the table that follows:

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	6	Upper Torsion Link	32-21-09	01	60
				03	75
				04	65
				05	75
				06	75
				10	75
				10A	75
				11	75
401	13	Lower Torsion Link	32-21-09	01	140
				03	145, 190
				04	110, 150
				05	145, 185
				06	145, 190
				10	145
				10A	165
				11	145
	17A	Pin	32-21-09	01	215
				03	125
				04	205
				05	125
				06	125
	26A	Pin	32-21-09	03	45
				05	45
				06	45
				10	45
				10A	25
	26A	Pin	32-21-09	03	45
				05	45
				06	45
				10	45
				10A	25
	27	Tang Washer	32-21-09	03	55
				05	55
				06	55
				10	15
				10A	35
	28A	Pin	32-21-09	01	4
				03	15
				04	195
				05	20
				06	15

C. References
(1) AMM 07-11-03/201, Jacking Airplane Axles
(2) AMM 09-11-00/201, Towing
(3) AMM 32-00-20/201, Landing Gear Downlocks
(4) AMM 32-45-02/401, Nose Gear Wheels and Tires

D. Access
(1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors

E. GUI 115;
Install the lower torsion link.

S 414-045
(1) Apply grease to, and install, the parts that follow to connect the lower torsion link (5) to the shock strut (View A-A):
(a) Pin (6)
(b) Lockbolt (7)
(c) Washer (8)
(d) Nut (9)
1) Tighten the nut to 150-200 pound-inches.

NOTE: If necessary, you can loosen the nut to the nearest lock position to install the cotter pin.

(e) Cotter Pin

S 424-047
(2) Apply grease to, then install, these parts to connect the upper torsion link (11) to the lower torsion link (5) (View B-B):
(a) Apex Pin (12)
(b) Washer (13, 14, and 16)
(c) Nut (15)
1) Tighten the nut to 200-250 pound-inches.
(d) Cotter Pin

F. ALL EXCEPT GUI 115;
Install the lower torsion link.

S 414-087
(1) Apply grease to, and install, the parts that follow to connect the lower torsion link (13) to the shock strut (View A-A):
(a) Pin (14)

(b) Lockbolt (15)
(c) Washer (16)
(d) Nut (17)
1) Tighten to 150-200 pound-inches.

NOTE: If necessary, you can loosen the nut to the nearest lock position to install the cotter pin.

(e) Cotter Pin

S 424-086
(2) Apply grease to, then install, the parts that follow to connect the upper torsion link (6) to the lower torsion link 913) (View B-B):
(a) Apex Pin (24)
(b) Washer (27)
(c) Bracket (8)
(d) Washer (25)
(e) Nut (26)
1) Tighten the nut to 200-250 pound-inches.
(f) Cotter Pin

S 414-085
(3) Install the bracket (9) with these items at each bracket hole:
(a) Bolt (10)
(b) Washer (11)
(c) Nut (12).

S 444-125
(4) Restore the nose wheel steering (AMM 09-11-00/201).

G. Put the Airplane Back to Its Usual Condition.

S 414-051
(1) Install the wheel and the tire on the nose landing gear (AMM 32-45-02/401).

S 584-052
(2) Lower the axle of the nose landing gear and remove the axle jack (AMM 07-11-03/201).

S 864-065
(3) Remove the DO-NOT-OPERATE tags from the control lever for the landing gear. Put the lever on the DN position.

S 644-054

(4) Lubricate the torsion link at the grease fittings.

S 824-119

(5) Do this task "Measure/Adjust the Clearance for the Nose Landing Gear Not Compressed Sensor" (AMM 32-09-08/201), if you did one of the tasks that follow:
   (a) You replaced a torsion link bushing(s).
   (b) You installed a new upper/lower torsion link.
   (c) You installed a new sensor/target.
   (d) You moved or damaged the sensor/target bracket.

NOSE GEAR TORSION LINKS - INSPECTION/CHECK

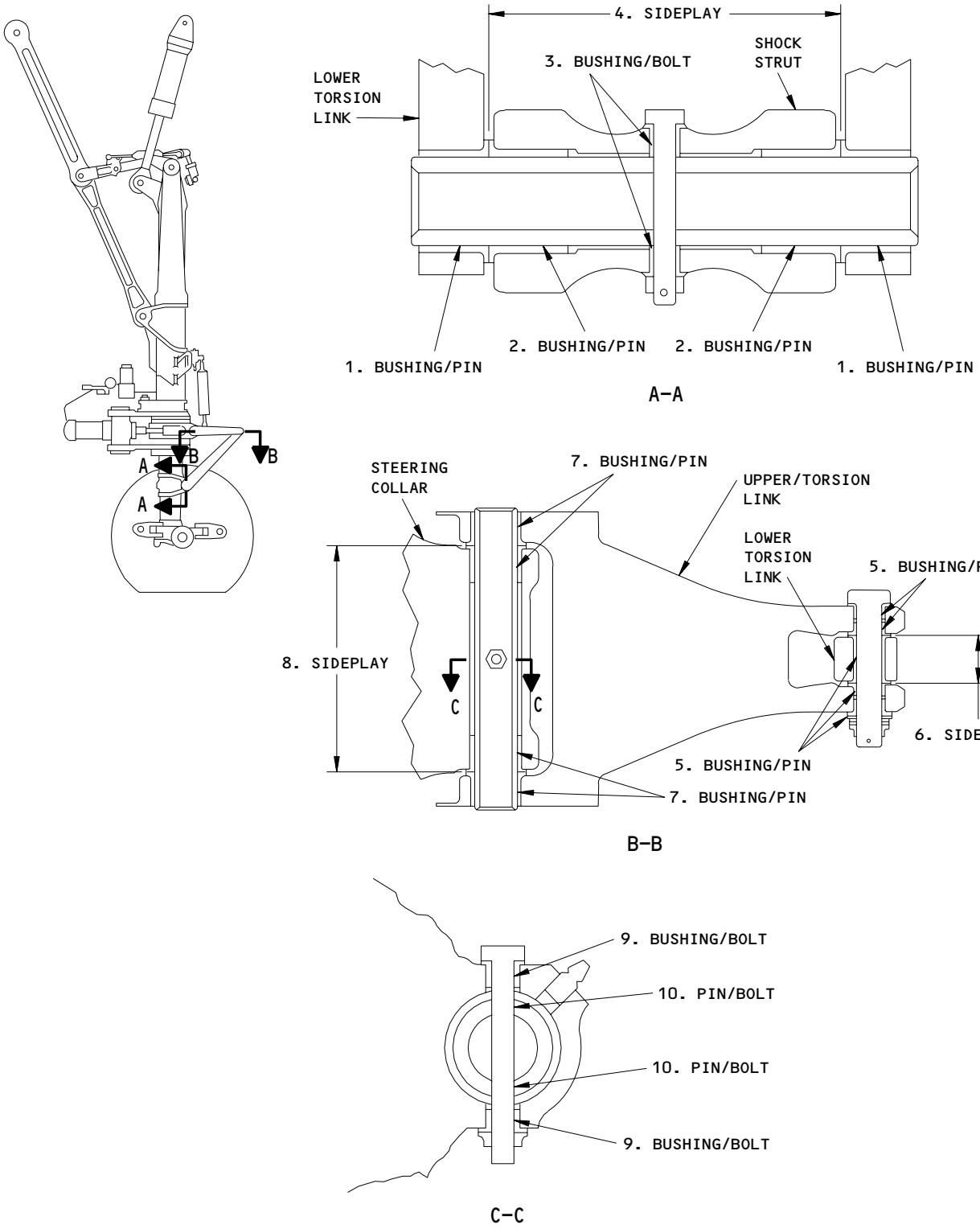
1. General
   A. This procedure only has an illustration, and a wear limit table which shows the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Nose Gear Torsion Links - Removal/Installation for the procedure to do these tasks.

TASK 32-21-09-206-001

2. Wear Limits for the Torsion Links of the Nose Landing Gear (Fig. 601)
   A. Wear Limits for the Torsion Links

S 226-002

(1) Refer to Fig. 601 for the inspection points and the wear limits table.



Nose Landing Gear Torsion Links Wear Limits
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	1.5000 (38.100)	1.5010 (38.125)	1.5040 (38.201)	0.0050 (0.127)	X		
	PIN	OD	1.4980 (38.049)	1.4990 (38.074)	1.4960 (37.998)			X	1
2	BUSHING	ID	1.5000 (38.100)	1.5010 (38.125)	1.5044 (38.211)	0.0054 (0.137)	X		
	PIN	OD	1.4980 (38.049)	1.4990 (38.076)	1.4956 (37.988)			X	1
3	BUSHING	ID	0.3750 (9.525)	0.3790 (9.626)	0.3812 (9.682)	0.0047 (0.119)	X		
	BOLT	OD	0.3735 (9.486)	0.3745 (9.512)	0.3723 (9.456)		X		
4	LOWER LINK/ SHOCK STRUT		5.9330 (150.698)	5.9390 (150.850)	5.9770 (151.815)	0.0380 (0.965) 2	3		
5	BUSHING	ID	0.7500 (19.050)	0.7510 (19.075)	0.7537 (19.143)	0.0047 (0.119)	X		
	PIN	OD	0.7480 (18.999)	0.7490 (19.024)	0.7463 (18.956)		X		
6 4	UPPER LINK	7	1.6200 (41.148)	1.6220 (41.199)	1.6328 (41.473)	0.0188 (0.4775) AXIAL 9	3		
	LOWER LINK	8	1.6140 (40.996)	1.6180 (41.097)	1.6137 (40.988)				
6 5	UPPER LINK	7	1.7484 (44.409)	1.7534 (44.536)	1.7534 (44.536)				
	LOWER LINK	8	1.7346 (44.059)	1.7410 (44.221)	1.7343 (44.051)				
6 6	UPPER LINK	7	1.7420 (44.247)	1.7440 (44.298)	1.7534 (44.536)				
	LOWER LINK	8	1.7346 (44.059)	1.7410 (44.221)	1.7343 (44.051)				
7	BUSHING	ID	1.2500 (31.750)	1.2510 (31.775)	1.2540 (31.851)	0.0050 (0.127)	X		
	PIN	OD	1.2480 (31.699)	1.2490 (31.724)	1.2460 (31.648)			X	1

Nose Landing Gear Torsion Links 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 (mm)	MAXIMUM DIAMETER CLEARANCE INCHES (mm)			
			MINIMUM INCHES (mm)	MAXIMUM INCHES (mm)					
8	UPPER LINK/ STEER COLLAR		6.5970 (167.563)	6.5990 (167.614)	6.6090 (167.868)	0.0100 (0.254) ▷2◁	▷3◁		
9	BUSHING	ID	0.3125 (7.937)	0.3140 (7.975)	0.3161 (8.026)	0.0041 (0.104)	X		
	BOLT	OD	0.3110 (7.899)	0.3120 (7.924)	0.3099 (7.871)		X		
10	PIN	ID	0.3120 (7.924)	0.3150 (8.001)	0.3171 (8.054)	0.0051 (0.129)	X		
	BOLT	OD	0.3110 (7.899)	0.3120 (7.924)	0.3099 (7.871)		X		

▷1◁ WORN PART CAN BE REPAIRED
▷2◁ MAXIMUM PERMITTED SIDEPLAY.
▷3◁ REPLACE THE WORN PARTS.
▷4◁ AIRPLANES WITH 162N1132-1, -3 (UPPER TORSION LINK) AND 162N1134-1, -3 (LOWER TORSION LINK)
▷5◁ AIRPLANES WITH 162N1132-5 (UPPER TORSION LINK) AND 162N1134-5 (LOWER TORSION LINK) (QUICK-DISCONNECT)
▷6◁ AIRPLANES WITH 162N1132-7 (UPPER TORSION LINK) AND 162N1134-7 (LOWER TORSION LINK)
▷7◁ DIMENSION BETWEEN BUSHING FLANGES
▷8◁ DIMENSION ACROSS BUSHING FLANGES
▷9◁ DIMENSION FOR IN-SERVICE CHECK ONLY.

Nose Landing Gear Torsion Links Wear Limits
Figure 601 (Sheet 3)

NOSE GEAR TRUNNION PIN - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the trunnion pin for the nose landing gear. The second task installs the trunnion pin for the nose landing gear.

   TASK 32-21-12-004-001

2. Remove the Trunnion Pin for the Nose Landing Gear
   A. Equipment
      (1) Trunnion Pin Puller - B32003-1
      (2) Shock Strut Lock, NLG - B32019-1
      (3) Nose Gear Towing Lever Lockpin - A09003-1
      (4) Rig Pins from Set B20003-XX (Ref 20-10-24/201):
          (a) Rig Pin - NS1
          (b) Rig Pin - NS2
          (c) Rig Pin - NS4
      (5) Automotive-type Axle Jack - Commercially Available
   B. References
      (1) AMM 07-11-02/201, Jacking Airplane Nose
      (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

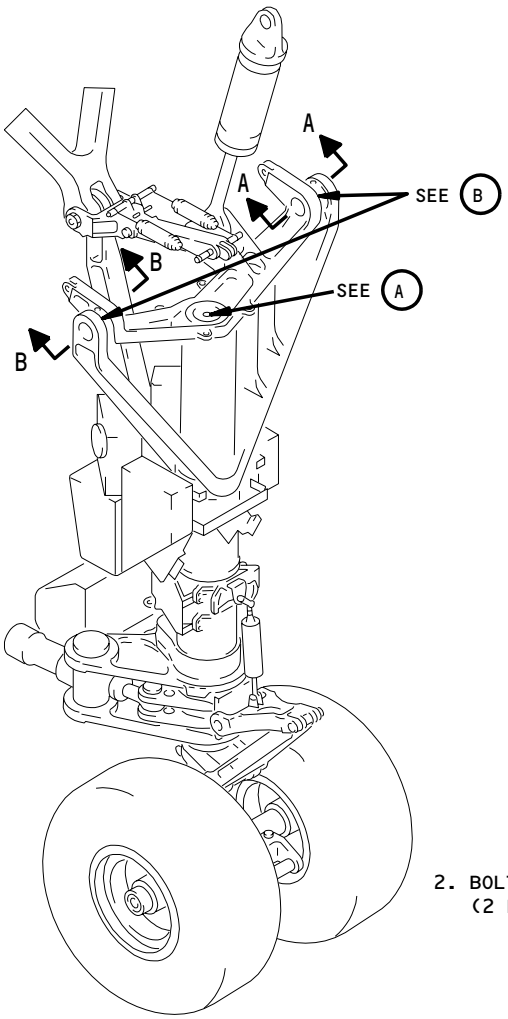
119/120	Main Equipment Center
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door
730/740	Main Landing Gear and Doors

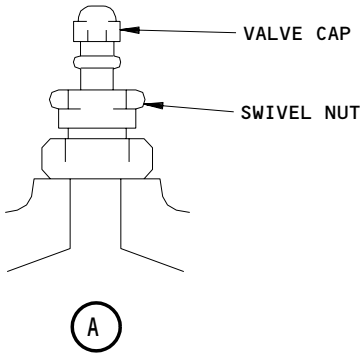
      (2) Access Panels

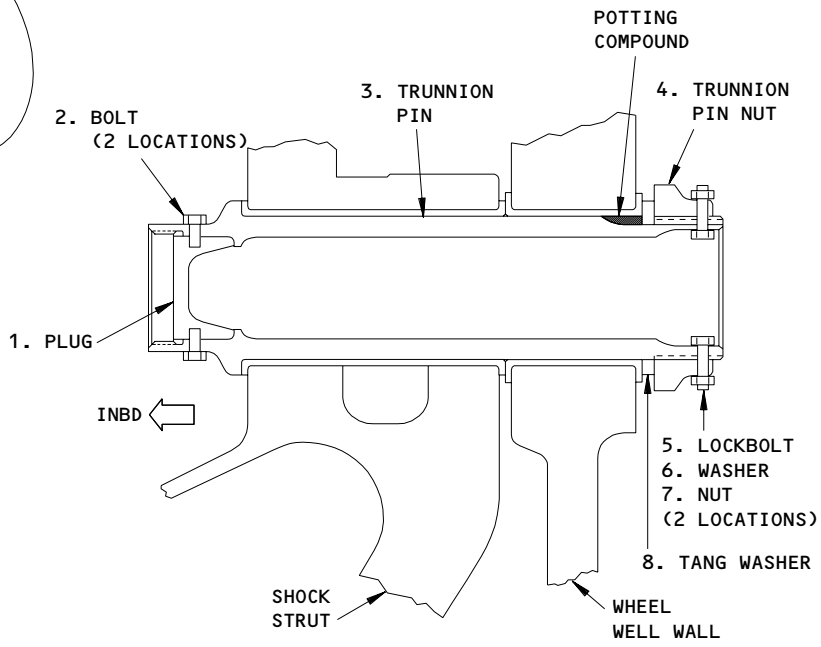
119BL	Main Equipment Center

   D. Prepare for the Removal of the Trunnion Pin

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

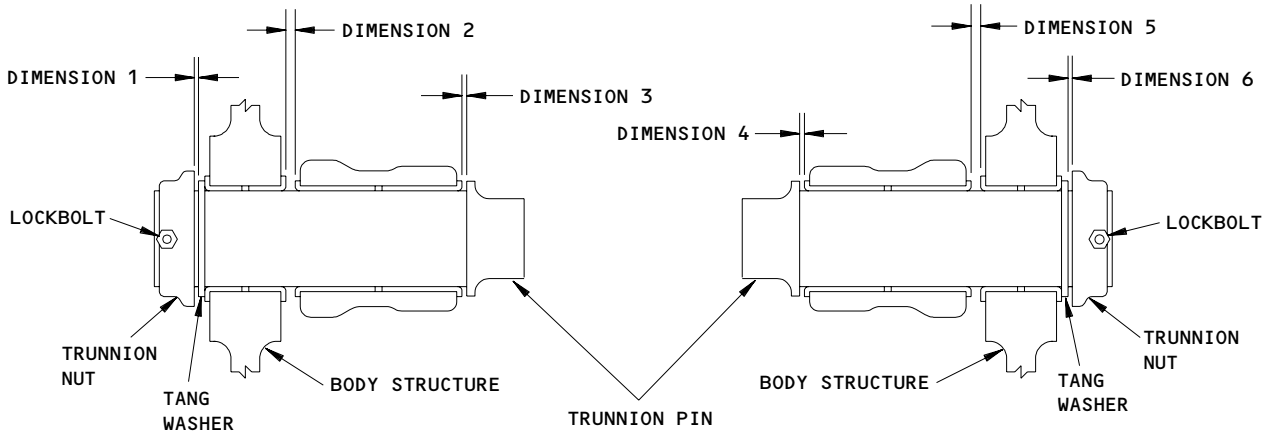


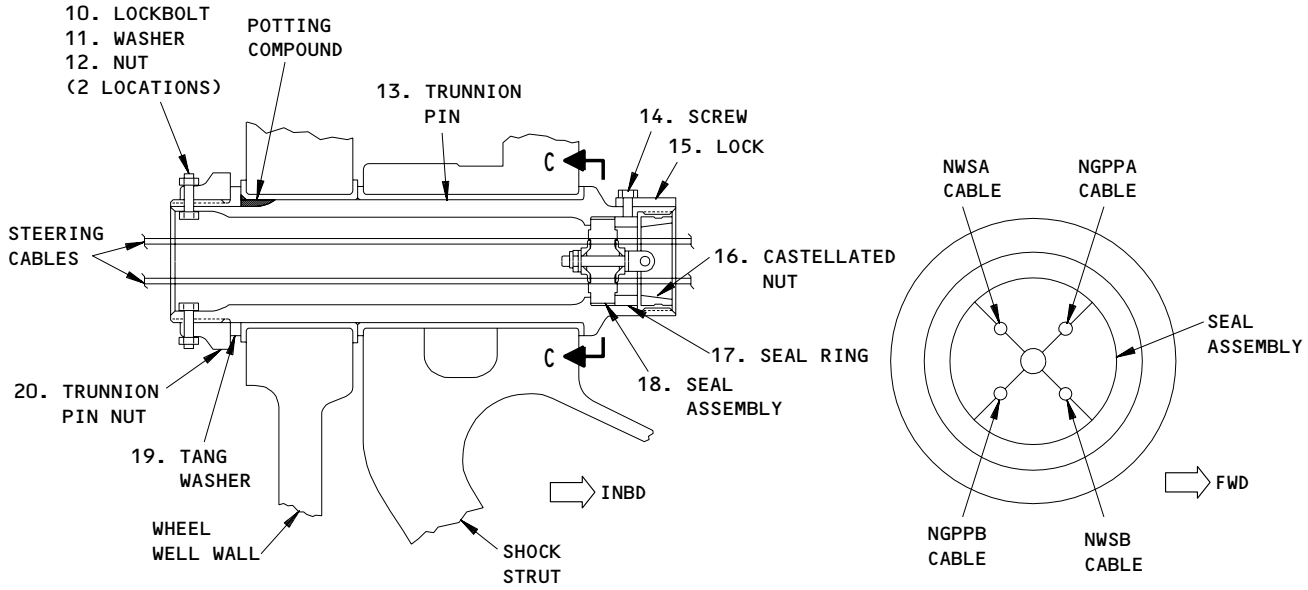




RIGHT TRUNNION PIN
A-A

Trunnion Pin Installation for the Nose Landing Gear
Figure 401 (Sheet 1)





LEFT TRUNNION PIN
B-B

C-C

Trunnion Pin Installation for the Nose Landing Gear
Figure 401 (Sheet 2)

S 494-025

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 left hydraulic system (AMM 29-11-00/201).

S 864-005

(4) Deflate the shock strut (Detail A).
   (a) Remove the cap from the air valve on top of the outer cylinder of the shock strut.

   WARNING: LOOSEN THE SWIVEL NUT A MAXIMUM OF TWO TURNS. AIR PRESSURE CAN BLOW THE VALVE OUT AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

   (b) Loosen the swivel nut a maximum of two turns.
   (c) When the shock strut is fully deflated, open the swivel nut fully.

S 494-007

(5) Move the towing lever on the metering valve for the nose wheel steering to the TOWING position. Install the lockpin for the towing lever.

S 494-008

(6) Install the shock strut lock. Use the instructions supplied with the tool.

S 584-009

(7) Lift the airplane nose approximately 12 inches (AMM 07-11-02/201).

E. Remove the Trunnion Pin

S 034-028

(1) Disconnect the nose wheel steering cables, do the steps that follow:

NOTE: To remove the trunnion pin (13) on the left hand side, you must remove the steering cables.

(a) Put the system for the nose wheel steering in the center position. Move the wheel assembly to put the alignment mark less than 1/4 degree from the scale center on the upper support plate. The alignment mark is located on the steering collar.
(b) Install the rig pins NS-1 and NS-2 in the captain's and the first officers's forward quadrants.
(c) Install the rig pin NS-4 in the control valve input lever.
(d) Remove the screw (14), lock (15), castellated nut (16), and the seal ring (17) (View B-B).
(e) Attach tags to the NWSA, the NWSB, the NGPPA, and the NGPPB cables.
(f) Disconnect the cables at the turnbuckles.

NOTE: The turnbuckles are located above the pulley brackets on the lower left hand side of the main equipment center, access door 119BL (AMM 06-41-00).

(g) Move the seal assembly (18) and the cables out of the trunnion pin (13). Stow the seal assembly and the cables away from movable surfaces and equipment.

S 034-041

(2) To remove the trunnion pin (3), left-hand side, do this step:
(a) Remove the lockbolts (10) washers (11), nuts (12), trunnion pin nut (20) and tang washer (19) from the trunnion pin (13) (View B-B).

NOTE: The parts are accessable in the main equipment center, access door 119BL.

S 034-042

(3) To remove the trunnion pin (3), right-hand side, do these steps:
(a) Remove the bolts (2) and plug (1) from the trunnion pin (3).
(b) Remove the lockbolts (5) washers (6), nuts (7), trunnion pin nut (4) and tang washer (8) from the trunnion pin (3) (Views A-A).

NOTE: The parts are accessable in the main equipment center, access door 119BL.

S 584-037

(4) Use an axle jack to lift the shock strut until there is no weight on the trunnion pins.

NOTE: If installed, use the removal/installation equipment (B32005) to lift the shock strut.

S 024-012

(5) Remove the trunnion pin with the trunnion pin puller.

NOTE: Use the instructions supplied with the tool.

S 214-034

(6) Examine the keyway on the trunnion pin.
  (a) Make sure the potting compound is intact.
  (b) If the potting compound is not intact, look for a buildup of too much grease on the side of the wheel well wall where the trunnion pin nut is installed.

TASK 32-21-12-404-013

3. Install the Trunnion Pin for the Nose Landing Gear (Fig. 401)

A. Equipment
  (1) Shock Strut Restraint, NLG - B32019-1
  (2) Nose Gear Towing Lever Lockpin - A09003-1
  (3) Rig Pins from set B20003-XX
    (a) Rig Pin - NS1 (Ref 20-10-24)
    (b) Rig Pin - NS2 (Ref 20-10-24)
    (c) Rig Pin - NS4 (Ref 20-10-24)
  (4) Automotive-type axle jack - commercially available

B. Consumable Materials
  (1) D00633 Grease - BMS 3-33 (Recommended)
  (2) D00013 Grease - MIL-G-23827 (Alternative)

C. References
  (1) AMM 07-11-02/201, Jacking Airplane Nose
  (2) AMM 12-15-02/301, Nose Gear Shock Strut
  (3) AMM 32-00-15/201, Landing Gear Door Locks
  (4) AMM 32-51-00/501, Nose Wheel Steering System

D. Access
  (1) Location Zones

119/120	Main Equipment Center
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door
730/740	Main Landing Gear and Doors

  (2) Access Panels

119BL	Main Equipment Center

E. Install the Trunnion Pin

S 214-035

(1) Examine the keyway on the trunnion pins (3,13).
  (a) Make sure the potting compound is intact.
  (b) If the potting compound is not intact, replace the pin with a trunnion pin that has the potting compound intact. This will prevent seepage of grease out of the keyway and into the trunnion pin nut side of the wheel well wall.

S 644-031

(2) Apply grease to the parts that follow:
  (a) Trunnion pin (3,13)
  (b) Trunnion pin nut (4,20)
  (c) Tang washer (8,18)
  (d) Shank and threads of the lockbolt (5,10)
  (e) Castellated nut (16)

S 844-014

(3) Move the trunnion pins (3,13) into position.

S 844-015

(4) Get access to the main equipment center thru access door 119BL.

S 414-016

(5) Install the tang washers (8,18) and the trunnion pin nuts (4,20) (views A-A, B-B).

NOTE: Engage the nut four or five turns onto the trunnion pin, do not tighten the nut.

S 824-032

(6) Adjust the clearance for the trunnion (Detail B).
  (a) Do the steps that follow to adjust the clearance for the trunnion:
    1) Push the nose landing gear all the way to the left until dimension 2 is 0 inches.
    2) Install the trunnion pin nut (20) for the left side.
      a) Tighten the trunnion pin nut to 500-600 inch-pounds.
      b) Make sure dimension 3 is 0 inches.
      c) If dimension 3 is not 0 inches, loosen the trunnion pin nut.
      d) Tighten the trunnion pin nut again until dimension 3 is 0 inches.
      e) Loosen the trunnion pin nut to 0 pound-inches.
      f) Put a 0.005 inch feeler gage at dimension 1.
      g) Turn the trunnion pin nut (20) until it touches the feeler gage.
      h) Make sure there is 0 inches between the inboard face of the tang washer (19) and the body structure.

i) Install the lockbolts (10), washers (11) and nuts (12).

NOTE: If needed, loosen the trunnion pin nut (20) to the subsequent lock position.

j) Remove the feeler gage.
k) Make sure the dimension 1 is not greater than 0.019 inches.

3) Push the nose landing gear all the way to the right until dimension 1 or dimension 5 is 0 inches.
4) Install the trunnion pin nut (4) for the right side.
a) Tighten the trunnion pin nut to 500-600 inch-pounds.
b) Make sure dimension 4 is 0 inches.
c) If dimension 4 is not 0 inches, loosen the trunnion pin nut.
d) Tighten the trunnion pin nut again until dimension 4 is 0 inches.
e) Loosen the trunnion pin nut to 0 pound-inches.
f) Put a 0.005 inch feeler gage at dimension 6.
g) Turn the trunnion pin nut (4) until it touches the feeler gage.
h) Make sure there is 0 inches between the inboard face of the tang washer (8) and the body structure.
i) Install the lockbolts (5), washers (6) and nuts (7).

NOTE: If needed, loosen the trunnion pin nut (4) to the subsequent lock position.

j) Remove the feeler gage.
k) Make sure dimension 6 is not greater than 0.019 inches.

(b) Make sure the sum of dimensions 1, 3, 4, and 6 is between 0.005 and 0.019 inches. It is not, do the adjustment again until the sum is between 0.005 and 0.019 inches.

S 414-038

(7) Install the plug (1) and bolts (2).

S 414-039
(8) Tighten the bolts (2) until the bolts bottom out in the groove of the nylon plug (1), 10 inch-pounds (max).

S 414-040
(9) Safety the bolts (2) with wire.

S 414-017
(10) Connect the nose wheel steering cables, if removed, as follows:
(a) Move the seal assembly, with the cables attached, into position (View C-C).
(b) Position the cables thru the pulley brackets and connect the cables at the turnbuckles.

NOTE: The pulley brakets are located in the lower left hand side of the main equipment center, thru access door 119BL.

(c) Remove the rig pins NS-1, NS-2, and NS-4.
(d) Install the seal ring (17) and castellated nut (16).
(e) Tighten the castellated nut to 100-150 inch-pounds.
(f) Install the lock (15) and Screw (14).

NOTE: You may loosen the castellated nut (16), as needed, to install the lock (15).

(g) Make sure the seal assembly (18) can move freely for 100 degrees (appox).

F. Put the Airplane Back to Its Usual Condition

S 094-018
(1) Remove the axle jack.

S 584-019
(2) Lower the airplane and remove the jacks (AMM 07-11-02/201).

S 094-020
(3) Remove the shock strut lock.

S 614-021
(4) Do the servicing on the shock strut (AMM 12-15-02/301).

S 644-022
(5) Lubricate the trunnion pin at the grease fittings.

S 094-023
(6) Remove the lock pin from the towing lever. Make sure the lever moves back to the NORMAL position by itself.

S 094-029

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.

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

NOSE GEAR TRUNNION PIN - INSPECTION/CHECK

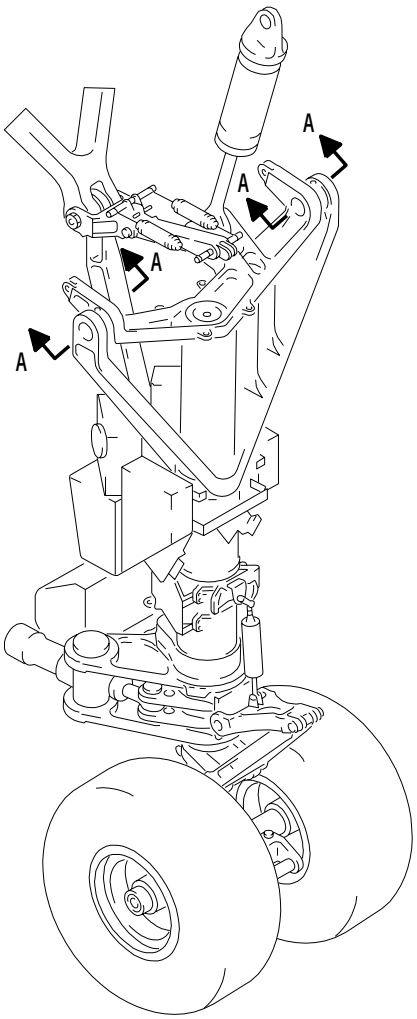
1. General
   A. This procedure only has an illustration, and a wear limit table which shows the data for the wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Nose Gear Trunnion Pin - Removal/Installation for the procedures to do these tasks.

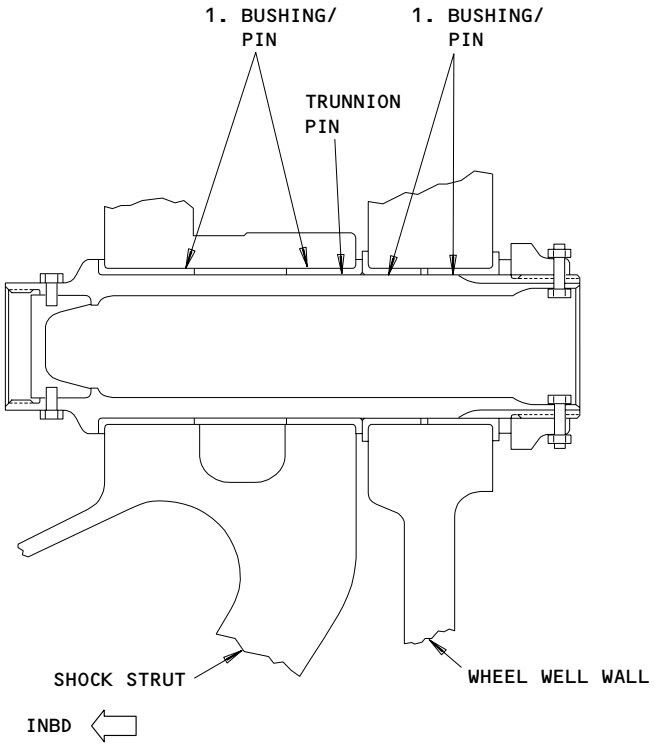
TASK 32-21-12-206-001

2. Wear Limits for the Trunnion Pin of the Nose Landing Gear (Fig. 601)
   A. Wear Limits for the Trunnion Pin

S 226-002

(1) Refer to Fig. 601 for the inspection points and the wear limits table.





EXAMPLE - 2 LOCATIONS
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 DIAM CLEAR-ANCE			
			MIN	MAX					
1	BUSHING	ID	2.5000	2.5015	2.5057	0.0067	X		
	PIN	OD	2.4980	2.4990	2.4948			X	1

1 THE PART IS REPAIRABLE; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE REPAIR INSTRUCTIONS.

Nose Landing Gear Trunnion Pin Wear Limits
Figure 601

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 32-21-13-004-002

2. Remove the Tow Fitting on the Nose Landing Gear (Fig. 401)
   A. References
      (1) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear (NLG)
713/714	Forward NLG
715/716	Aft NLG
730/740	Main Landing Gear and Doors

   C. Prepare for the Removal of the Tow Fitting

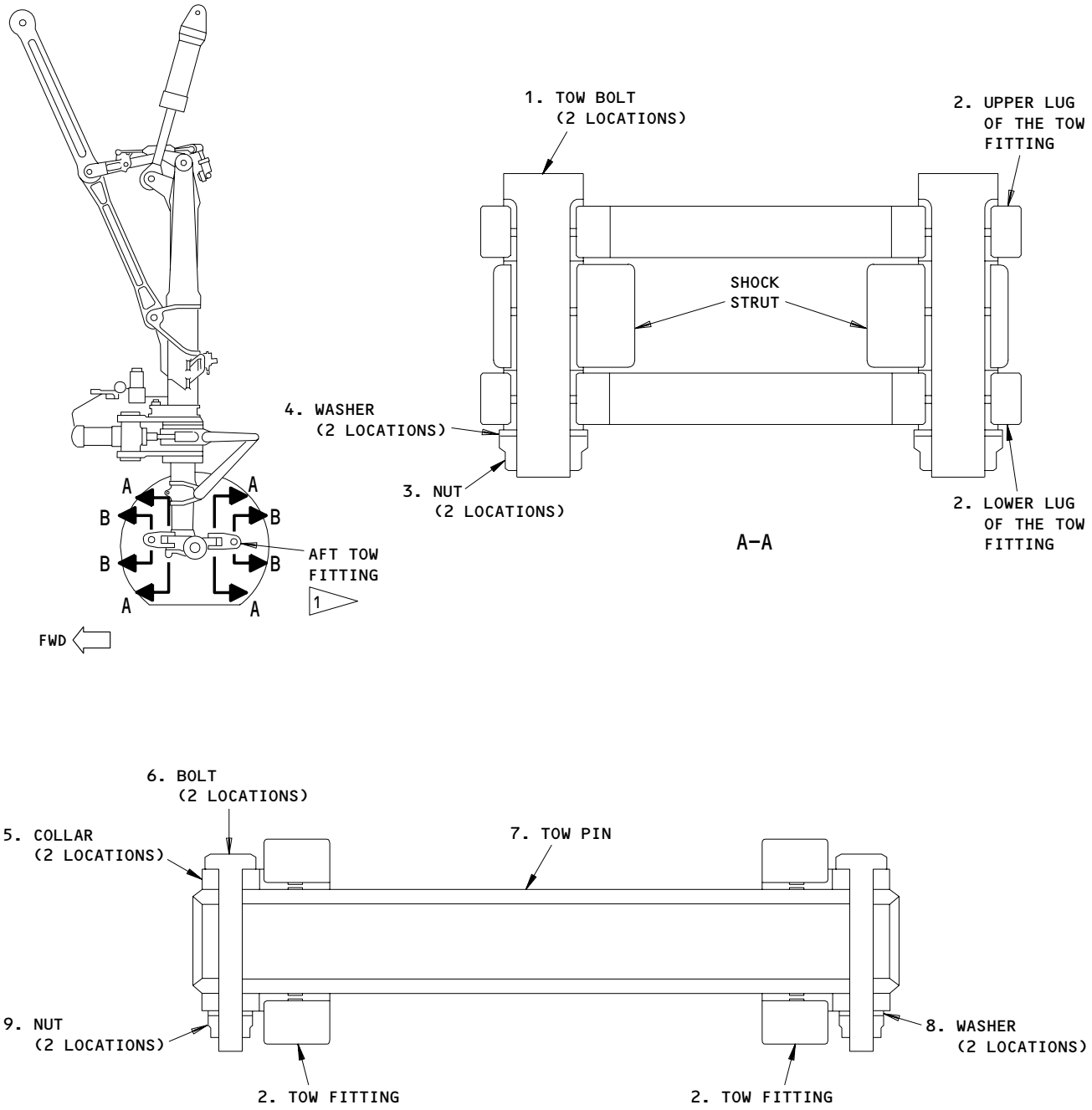
S 494-012

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.

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

S 494-003

(2) Make sure the control lever for the landing gear, on the panel P3, is in the OFF position. Attach a DO-NOT-OPERATE tag.



Tow Fitting Installation for the Nose Landing Gear
Figure 401

D. Remove the Tow Fitting

S 024-004

(1) Remove the tow bolts (1) to disconnect the tow fitting (2) from the shock strut (View A-A).

S 034-013

(2) If a replacement for the tow pin is necessary, continue as follows:
(a) Remove the bolts (6) and the collars (5) from the tow pin (7).
(b) Remove the tow pin (7) from the tow fitting (2) (View B-B).

TASK 32-21-13-404-006

3. Install the Tow Fitting for the Nose Landing Gear (Fig. 401)

A. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Recommended)
(2) D00013 Grease - MIL-G-23827 (Alternative)

B. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	2	Tow Fitting Assy	32-21-13	01	75
				01A	65
				01B	75
				01C	65
				01D	50
				10	85, 90
				10A	75
				10A	45

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

D. Access
(1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear (NLG)
713/714	Forward NLG
715/716	Aft NLG
730/740	Main Landing Gear and Doors

E. Install the Tow Fitting

S 644-007

(1) Apply grease to the bolts (1) and the washers (4) before installation.

S 414-008

(2) If the tow pin installation is necessary, continue as follows:
    (a) Insert the tow pin (7) into the tow fitting (2).
    (b) Install the collars (5), the bolts (6), the washers (8), and the nuts (9) to connect the tow pin (7) to the tow fitting (2) (View B-B).

S 424-009

(3) Install the tow bolts (1), the washers (4), and the nuts (3) to connect the tow fitting (2) to the shock strut. Tighten the nuts (3) to 50-75 pound-inches more than the run-on torque (View A-A).

F. Put the Airplane Back to Its Usual Condition

S 644-010

(1) Lubricate the tow fitting (2) at the grease fittings.

S 844-011

(2) Remove the DO-NOT-OPERATE tag from the control lever for the landing gear. Put the control lever to the DN position.

NOSE GEAR TOW FITTING - INSPECTION/CHECK

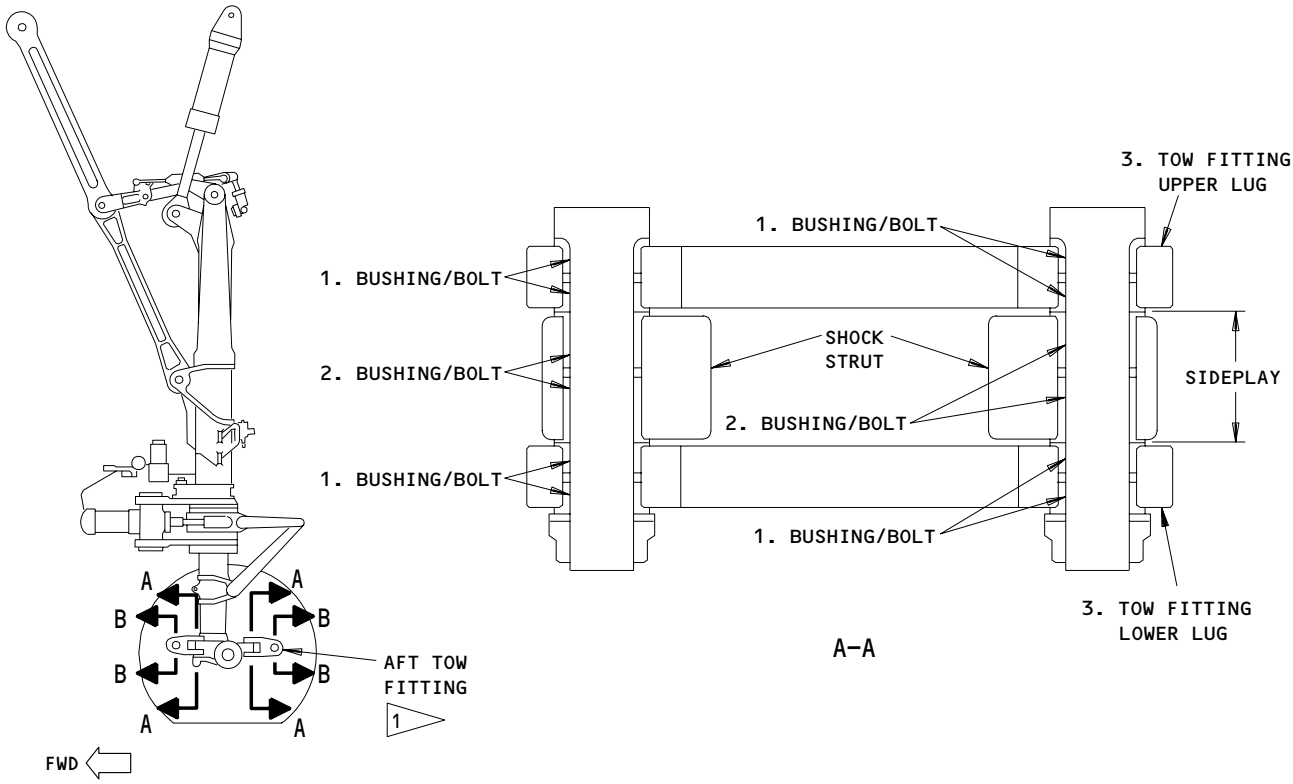
1. General
   A. This procedure only has illustrations, and wear limit tables which show the data for wear limits. There are no procedures for access, removal or installation of the parts. Refer to the Nose Gear Tow Fitting - Removal/Installation for the procedures to do these tasks.

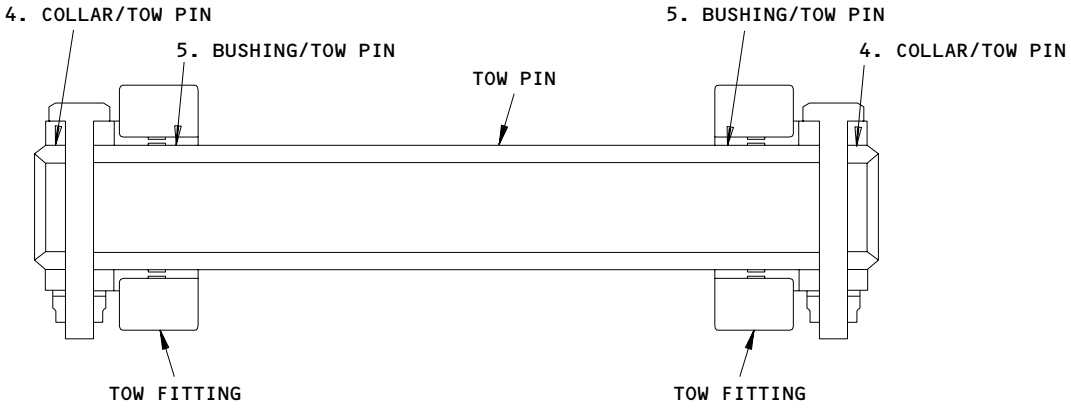
TASK 32-21-13-206-001

2. Wear Limits for the Tow Fitting of 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.





1 IF INSTALLED

Nose Landing Gear Tow Fitting 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	BUSHING	ID	0.8750	0.8760	0.8790	0.0050	X		
	BOLT	OD	0.8730	0.8740	0.8710		X		
2	BUSHING	ID	0.8750	0.8770	0.8799	0.0059	X		
	BOLT	OD	0.8730	0.8740	0.8711		X		
3		ID	1.7210	1.7250	1.7510	0.0030	2		
	TOW FITTING	OD	1.7100	1.7210	1.6950	1			
4	COLLAR	ID	1.5000	1.5020	1.4980	0.0080	X		
	TOW PIN	OD	1.4960	1.4980	1.4940			X	3
5	BUSHING	ID	1.5000	1.5015	1.5059	0.0079	X		
	TOW PIN	OD	1.4960	1.4980	1.4936			X	3

1 MAXIMUM PERMITTED SIDEPLAY

2 REPLACE THE WORN BUSHINGS

3 THE PART IS REPAIRABLE; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE REPAIR INSTRUCTIONS.

Nose Landing Gear Tow Fitting Wear Limits
Figure 601 (Sheet 2)

NOSE GEAR LOCK SPRING - REMOVAL/INSTALLATION

TASK 32-21-15-004-001

1. Remove the Gear Lock Spring for the Nose Landing Gear (Fig. 401)

A. Equipment

(1) Downlock Spring Extender, MLG AND NLG - B32002-1

B. 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

C. Access

(1) Location Zones

711	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors
730/740	Main Landing Gear and Doors

D. Prepare for the Removal of the Lock Spring

S 494-002

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

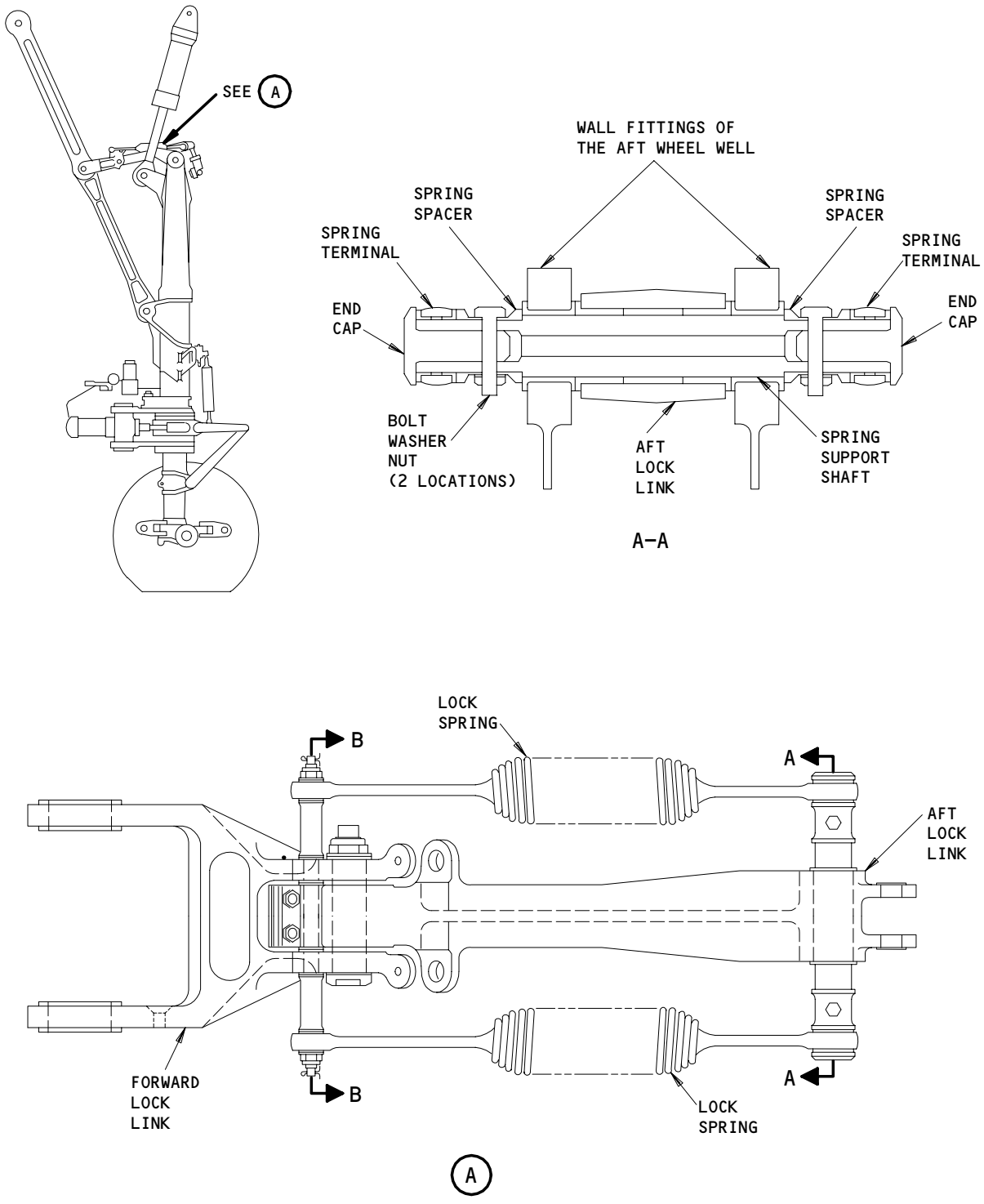
S 494-018

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).

S 864-004

(3) Remove the pressure from the left hydraulic system (Ref 29-11-00).

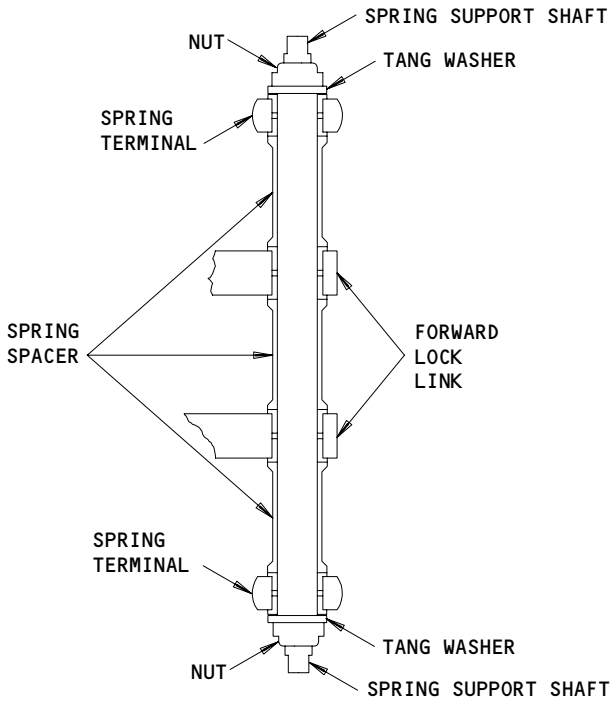


Lock Spring Installation for the Nose Landing Gear
Figure 401 (Sheet 1)

E. Remove the Lock Spring

S 014-005
(1) Remove the bolt from the spring spacer at the aft end of the spring. Remove the end cap (View A-A).

S 014-006
(2) Remove the nut and the tang washer from the forward end of the spring (View B-B).



B-B

Lock Spring Installation for the Nose Landing Gear
Figure 401 (Sheet 2)

S 494-007
(3) Install the spring extender on the spring. Use the instructions supplied with the tool.

S 024-008
(4) Remove the spring from the support shaft of the lock spring.

TASK 32-21-15-404-009

2. Install the Lock Spring for the Nose Landing Gear (Fig. 401)
   A. Equipment
      (1) Downlock Spring Extender, MLG AND NLG - B32002-1
   B. Consumable Materials
      (1) D00633 Grease - BMS 3-33 (Recommended)
      (2) D00013 Grease - MIL-G-23827 (Alternative)
   C. References
      (1) 32-00-15/201, Landing Gear Door Locks
   D. Access
      (1) Location Zones

711	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors
730/740	Main Landing Gear and Doors

   E. Install the Lock Spring

S 644-010
(1) Apply grease to the bolts, the washers, the spacers, and the shaft before you install them.

S 494-012
(2) Install the spring extender on the spring. Use the instructions supplied with the tool.

S 844-013
(3) Make sure the spring spacers are in the correct position (Views A-A and B-B).

S 014-014
(4) Move the spring on the support shafts for the spring.
(a) Remove the spring extender.

S 414-015
(5) Install the end cap on the support shaft for the aft spring.
(a) Install the bolt, the washer, and the nut (View A-A).

S 414-016

(6) Install the tang washer and the nut on the support shaft for the forward spring (View B-B).

(a) Install the cotter pin.

F. Put the Airplane Back to Its Usual Condition

S 094-019

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 landing gear and close the doors (Ref 32-00-15).

NLG SHOCK STRUT INNER CYLINDER - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first removes the NLG inner cylinder. Task two installs the NLG inner cylinder.

   TASK 32-21-24-794-001

2. NLG Inner Cylinder Removal (Fig. 401)
   A. Equipment
      (1) Axle Jack - automotive type (Commercially available)
      (2) Lower Bearing Seal Retainer Puller Equipment, NLG - B32024-82
      (3) Gland Nut Wrench Adapter, NLG - A32045-19
      (4) Drain Equipment - MLG/NLG Shock Strut, A32066-1
      (5) Container
   B. References
      (1) AMM 07-11-02/201, Jacking Airplane Nose
      (2) AMM 29-11-00/201, Main Hydraulic Systems
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-21-09/401, Nose Gear Torsion Links
   C. Access
      (1) Location Zones

711	Nose Landing Gear (NLG)
713/714	NLG Door Forward
715/716	NLG Door Aft

   D. Prepare to Remove the Inner Cylinder

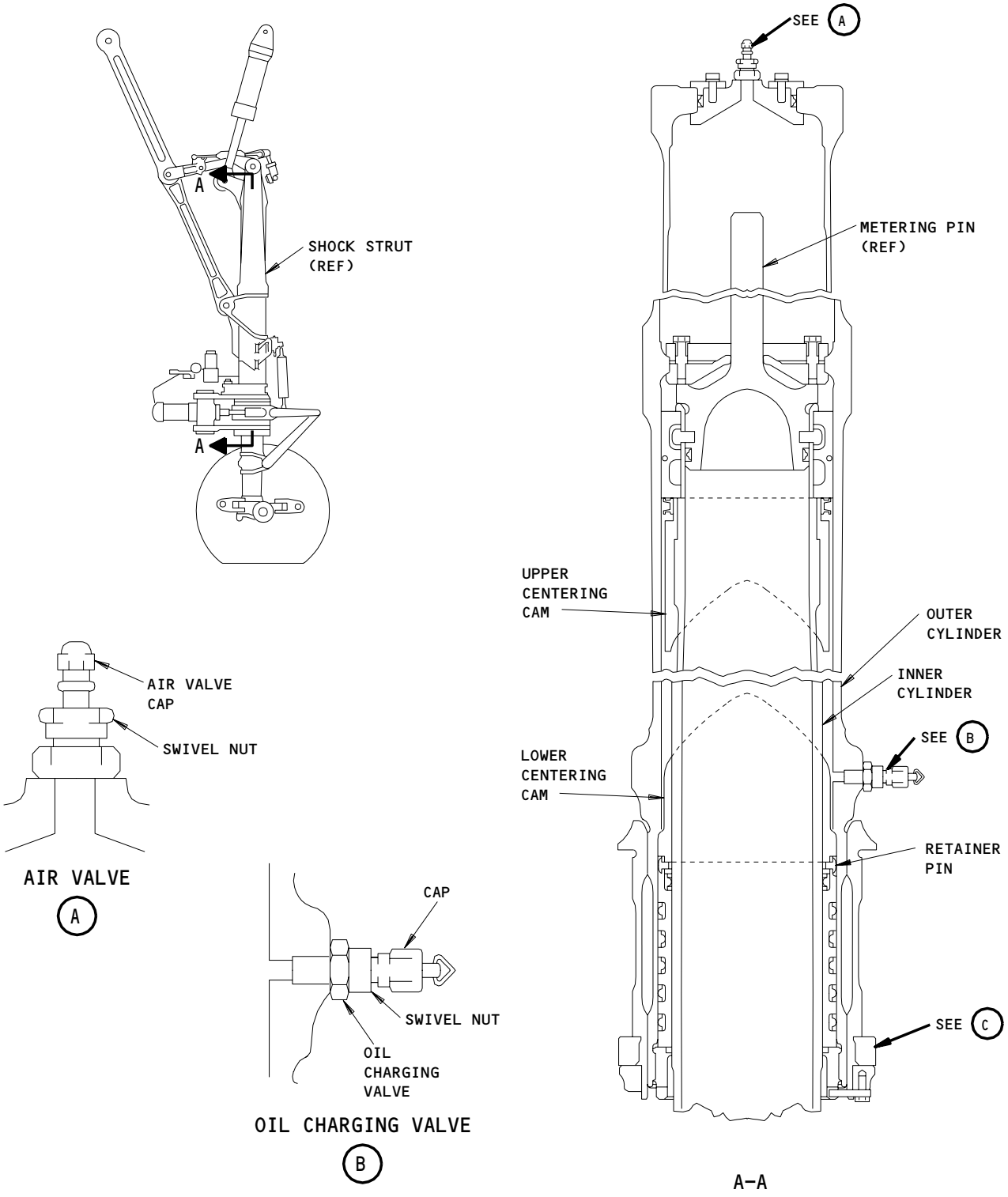
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-003

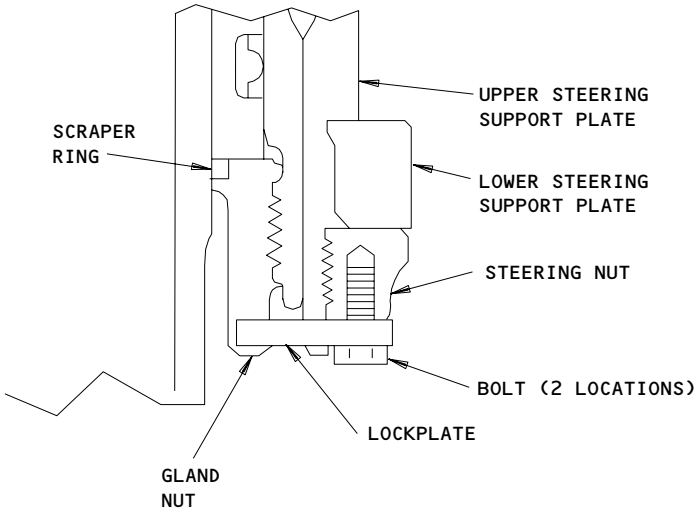
      WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

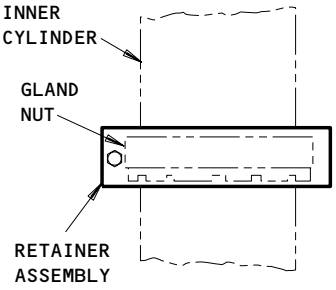
      (2) Open the doors for the nose landing gear and install the door locks (AMM 32-00-15/201).

      S 864-005
      (3) Remove the pressure from the left hydraulic system reservoir (AMM 29-11-00/201).



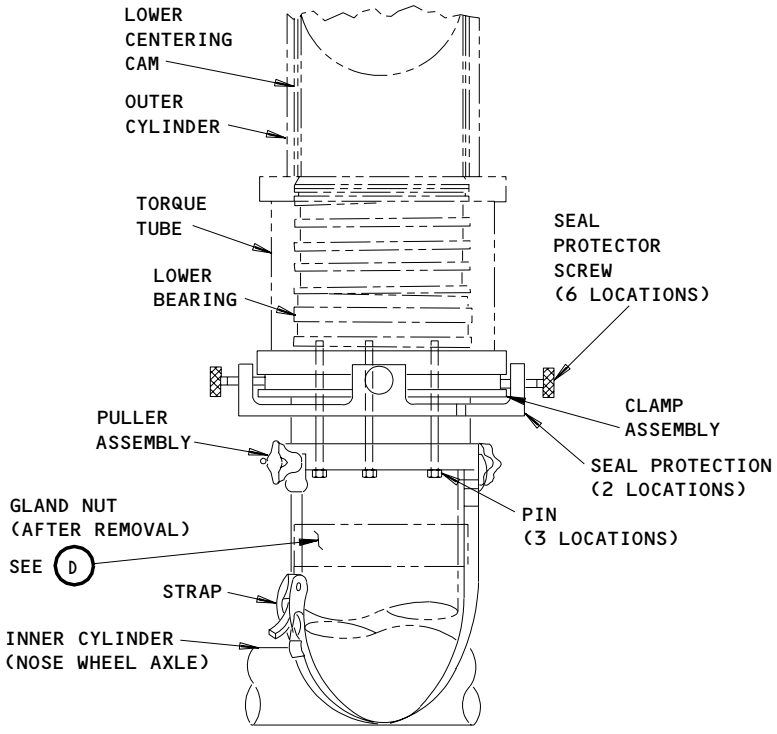
Nose Landing Gear Shock Strut Inner Cylinder - Removal
Figure 401 (Sheet 1)





RETAINER

(D)



BEARING PULLER

Nose Landing Gear Shock Inner Cylinder – Removal
Figure 401 (Sheet 2)

S 864-006
(4) Deflate the shock strut for the nose landing gear.
(a) Remove the air valve cap at the top of the shock strut.

WARNING: LOOSEN THE SWIVEL NUT A MAXIMUM OF TWO TURNS. AIR PRESSURE CAN BLOW THE VALVE OUT AND CAN CAUSE INJURY TO PERSONS.

(b) Loosen the swivel nut a maximum of two turns.
(c) When all of the pressure in the shock strut is removed, loosen the swivel nut fully.

S 844-007
(5) Wind a cloth around the inner cylinder of the shock strut below the gland nut. This will prevent damage to the inner cylinder if the gland nut moves down.

S 034-008
(6) Put a container in position to catch the hydraulic fluid when the swivel nut is loosened.

S 034-072
(7) Remove the oil charging valve cap.

S 034-009

CAUTION: CLEAN ALL THE LEAKED HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY. THE FLUID CAN CAUSE DAMAGE TO THE TIRES.

(8) Loosen the swivel nut on the oil charging valve to drain the oil from the shock strut.

E. Remove the Inner Cylinder

S 034-010

WARNING: BE CAREFUL WHEN YOU DISCONNECT THE TORSION LINKS. THE SPRING CARTRIDGE FOR THE NOSE WHEEL STEERING CAN MOVE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Disconnect the lower torsion link from the inner cylinder of the shock strut (AMM 32-21-09/401). Attach it to the outer cylinder.

S 034-012
(2) Remove the bolts, and the lockplate from the gland nut.

S 034-013
(3) Use the wrench adapter for the gland nut to remove the gland nut.

S 844-014

CAUTION: DO NOT LET THE EDGES OF THE GLAND NUT TOUCH THE INNER CYLINDER WHEN YOU MOVE THE GLAND NUT DOWN. THE EDGES OF THE GLAND NUT CAN CAUSE SCRATCHES ON THE INNER CYLINDER WHICH CAN CAUSE DAMAGE TO THE SEALS.

(4) Move the gland nut down the inner cylinder.

S 494-015
(5) Install the retainer assembly on the gland nut.

NOTE: The lower bearing pushes on the retainer when you install the dynamic seal.

S 494-016
(6) Install the clamp assembly on the steering nut.

S 434-017
(7) Tighten the nut on the clamp assembly.

S 844-018
(8) Carefully push the flange of each seal protector between the outer cylinder and the inner cylinder.

S 434-019
(9) Tighten the seal protector screws to hold the seal protector to the outer cylinder.

S 584-020
(10) Lift the nose of the airplane until you can install the puller assembly tool (AMM 07-11-02/201).

S 494-021
(11) Loosely install the puller assembly around the inner cylinder.

NOTE: Do not tighten puller assembly.

S 494-022
(12) Tighten the three pins into the lower bearing with your hand.

S 864-023
(13) Lift the nose landing gear with an axle jack until the gland nut is approximately 0.5 inch from the pins.

S 494-024
(14) Tighten the puller assembly.

S 494-025
(15) Install the strap around the axle.

S 864-026
(16) Lower the axle jack. The lower bearing will move out of the recess between the inner cylinder and the outer cylinder.

NOTE: After the lower bearing and the retainer bearing move from behind the outer cylinder the lower centering cam comes out.

S 094-027
(17) Remove the retainer pin.

S 094-028
(18) Remove the puller assembly, and the strap.

S 094-029
(19) Remove the downlock for the nose landing gear (AMM 32-00-20/201).

S 034-030

WARNING: DO NOT PUT A PLUG IN THE OPENINGS OF THE RETRACT ACTUATOR. THE HYDRAULIC LINES CAN BREAK AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(20) Disconnect the hydraulic lines from the retract actuator.

S 034-031
(21) Put a cap on the hydraulic lines.

S 844-032
(22) Push up on the lock link to move it from the locked overcenter position.

S 014-033
(23) Connect the hydraulic pump to the retract actuator.

NOTE: The pressure line from the pump must be connected to the pressure opening of the actuator. The return line to the pump must be connected to the return opening of the actuator.

S 014-034

WARNING: HOLD THE INNER CYLINDER WITH ROPE BEFORE YOU REMOVE THE INNER CYLINDER FROM THE OUTER CYLINDER. THE INNER CYLINDER IS HEAVY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

CAUTION: BE CAREFUL NOT TO CAUSE DAMAGE TO THE INNER CYLINDER OR THE METERING PIN. DAMAGE TO THESE PARTS CAN CAUSE DAMAGE TO THE SEALS.

(24) To remove the inner cylinder from the outer cylinder, slowly apply pressure to the retract actuator. This will move the nose landing gear forward.

S 024-035
(25) Remove the inner cylinder.

TASK 32-21-24-404-036

3. NLG Inner Cylinder Installation (Fig. 402)

A. Equipment

(1) Axle Jack - automotive type (Commercially available)
(2) Lower Bearing Seal Retainer Puller Equipment, NLG - B32024-82
(3) Gland Nut Wrench Adapter, NLG - A32045-19
(4) Drain Equipment - MLG/NLG Shock Strut, A32066-1
(5) Container

B. Consumable Materials

(1) D00913 Corrosion Preventative Compound - BMS 3-27 (Recommended)
(2) C50056 Compound - Non-drying Corrosion Inhibiting Resin Mix, BMS 38 (Alternative)
(3) G50136 Paste - Corrosion Inhibiting Non-drying, BMS 3-38 (Alternative)
(4) G50237 Compound - Corrosion Inhibiting Non-drying Cor-Ban 27L, BMS 3-38 (Alternative)
(5) D00633 Grease - BMS 3-33 (Recommended)
(6) D00013 Grease - MIL-G-23827 (Alternative)

C. References

(1) AMM 07-11-02/201, Jacking Airplane Nose
(2) AMM 12-15-02/301, Nose Gear Shock Strut
(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 32-21-09/401, Nose Gear Torsion Links

D. Access

(1) Location Zones

711	Nose Landing Gear (NLG)
713/714	NLG Door Forward
715/716	NLG Door Aft

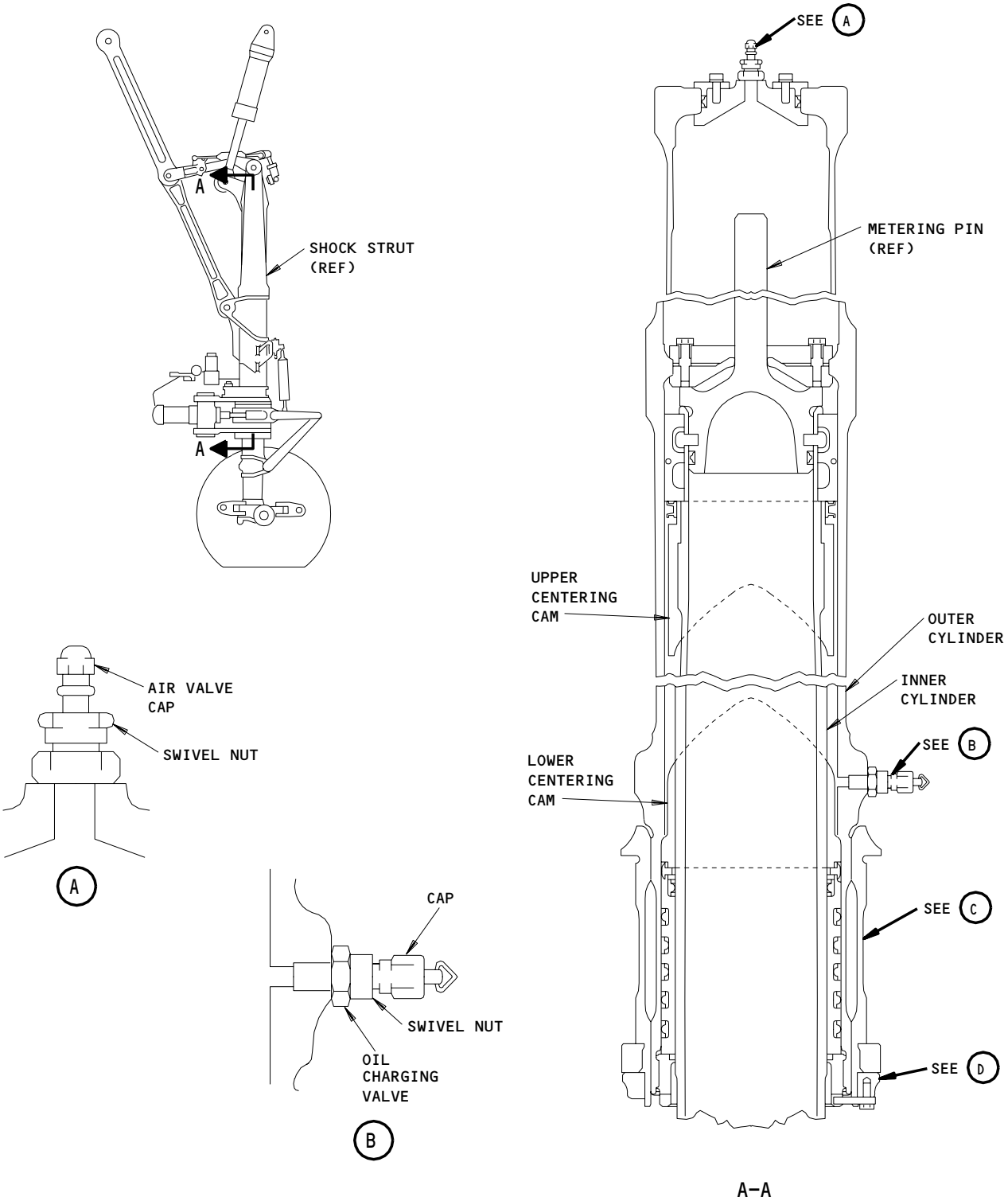
E. Install the Inner Cylinder

S 864-037
(1) Put the inner cylinder in position to install in the outer cylinder.

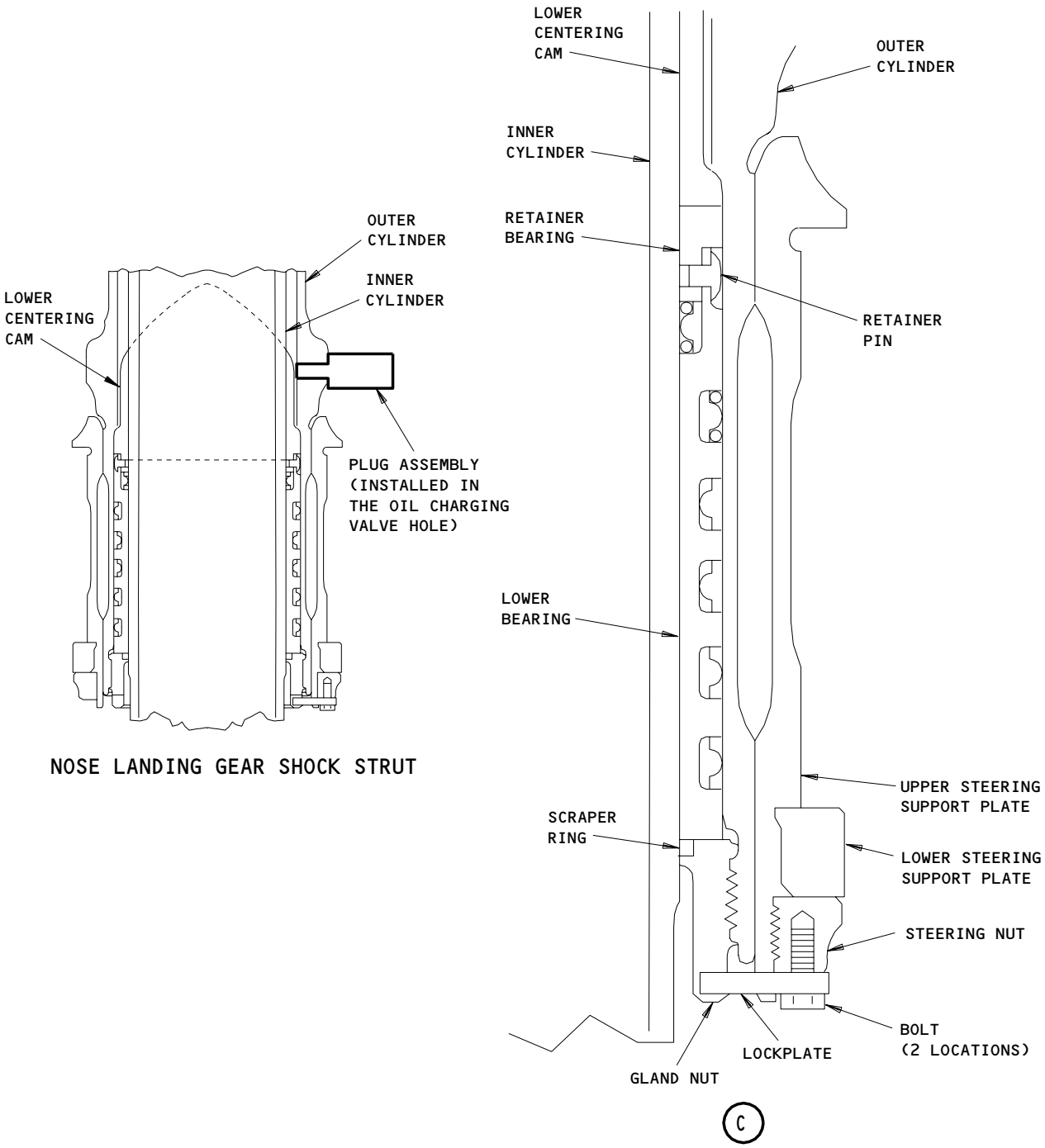
S 844-038
(2) Move the retainer bearing down the inner cylinder until it is against the lower bearing.

S 434-039
(3) Install the retainer pin.

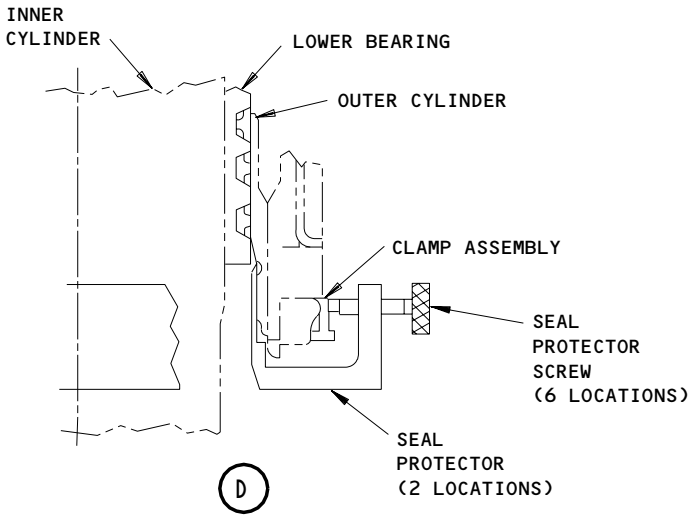
S 864-040
(4) Make sure the pressure is removed from the left hydraulic system and reservoir (AMM 29-11-00/201).

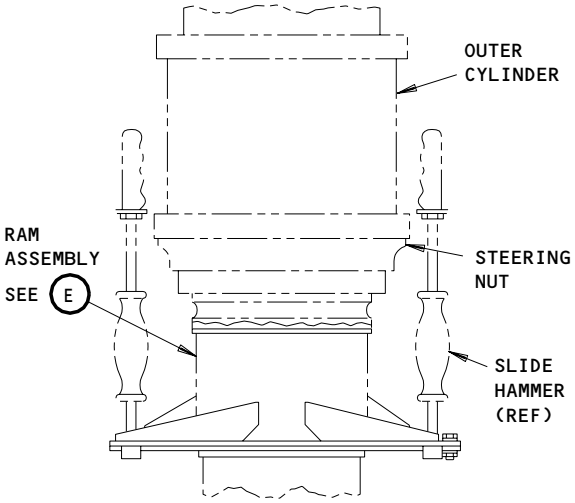


Nose Landing Gear Shock Strut Inner Cylinder - Installation
Figure 402 (Sheet 1)

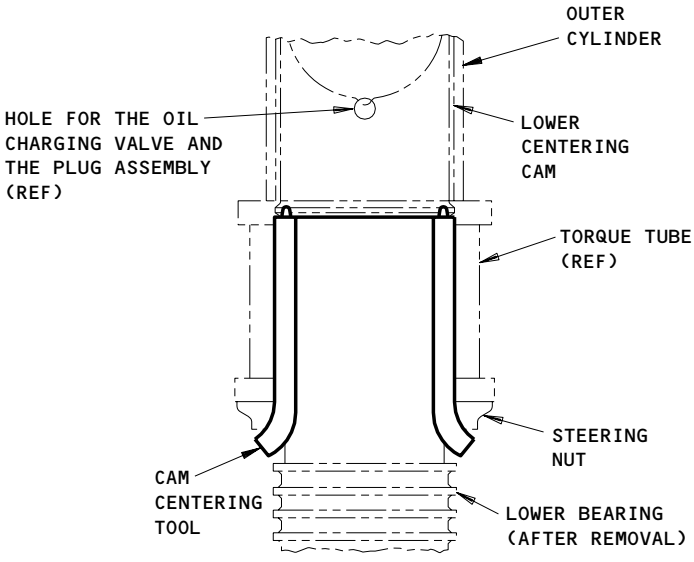


Nose Landing Gear Shock Strut Inner Cylinder - Installation
Figure 402 (Sheet 2)

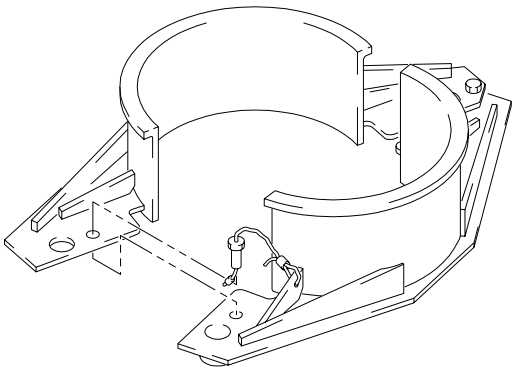




LOWER BEARING INSTALLATION



CENTERING CAM POSITIONER



RAM
E

Nose Landing Gear Shock Strut Inner Cylinder – Installation
Figure 402 (Sheet 3)

S 014-041
(5) Disconnect the hydraulic pump from the retract actuator.

S 034-042
(6) Connect the hydraulic lines.

S 844-043
(7) Move the nose landing gear aft while you put the inner cylinder into the outer cylinder.

S 494-044
(8) Install the downlock on the nose landing gear (AMM 32-00-20/201).

S 844-045
(9) Use the cam centering tool to move the lower centering cam up the inner cylinder into the correct position.

NOTE: The notch in the lower centering cam shows through the hole for the oil charging valve.

S 844-046
(10) Use the plug assembly to hold the lower centering cam in position.

S 844-047

WARNING: KEEP YOUR HANDS AWAY FROM THE TOP OF THE RETAINER BEARING AND THE LOWER BEARING. THE LOWER CENTERING CAM CAN MOVE DOWN QUICKLY AND CAN CAUSE INJURY TO PERSONS.

(11) Move the lower bearing up the inner cylinder into the outer cylinder.

NOTE: If you cannot move the lower bearing with your hand, use the ram assembly to move it into position. If the lower centering cam has moved out of position, use the cam centering tool to put it into position.

S 034-048
(12) Loosen the seal protector screws.

S 844-049
(13) Carefully move the seal protectors down.

S 094-050
(14) Remove the seal protectors.

S 094-051
(15) Remove the clamp assembly.

S 644-077
(16) GLAND NUTS WITH LUBE FITTINGS;
apply grease (BMS 3-33) to the threads of the gland nut (22) .

S 644-078
(17) GLAND NUTS WITHOUT LUBE FITTINGS;
Apply Compound (BMS 3-27 or BMS 3-38) to the threads of the gland nut.

S 034-053
(18) Install the gland nut.

S 434-054
(19) Use the wrench adapter for the gland nut to tighten the nut to 125-150 pound-feet. Loosen the nut to align the slots.

S 824-055
(20) Align the slots in the gland nut with the slots in the steering nut.

S 644-056
(21) Lubricate the lockplate with BMS 3-33 grease.

S 434-057
(22) Install the lockplate with the bolts.

S 434-058
(23) Tighten the bolts for the lockplate to 25-50 pound-inches.

S 434-059
(24) Install a lockwire on the bolts.

S 094-060
(25) Remove the plug assembly.

S 434-061
(26) Install the oil charging valve.

S 434-062
(27) Tighten the valve to 20-25 pound-feet.

S 434-063
(28) Tighten the swivel nut on the oil charging valve to 5-7 pound-feet.

S 434-074
(29) Install the oil charging valve cap.

S 434-064

(30) Connect the lower torsion link to the inner cylinder of the shock strut (AMM 32-21-09/401).

S 614-069

(31) Do the servicing for the shock strut (AMM 12-15-02/301).

S 584-070

(32) Lower the airplane and remove the jacks (AMM 07-11-02/201).

S 094-071

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.

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

NOSE GEAR SHOCK STRUT SEALS - MAINTENANCE PRACTICES

1. General
   A. This procedure contains three tasks. Task one is an inspection for seal leaks. Task two replaces the seals with spare seals which are stored in grooves in the lower bearing of the shock strut. To do this procedure, it is not necessary to disassemble the shock strut. Task three replaces the seals and the spare seals. To do task three it is necessary to remove the shock strut inner cylinder (AMM 32-21-24/401).

   TASK 32-21-25-792-134

2. 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.
   B. References
      (1) AMM 05-51-01/201, Hard Landing or High Drag/Side Load Landing
      (2) AMM 09-11-00/201, Towing
      (3) AMM 12-15-02/301, Nose Gear Shock Strut
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones

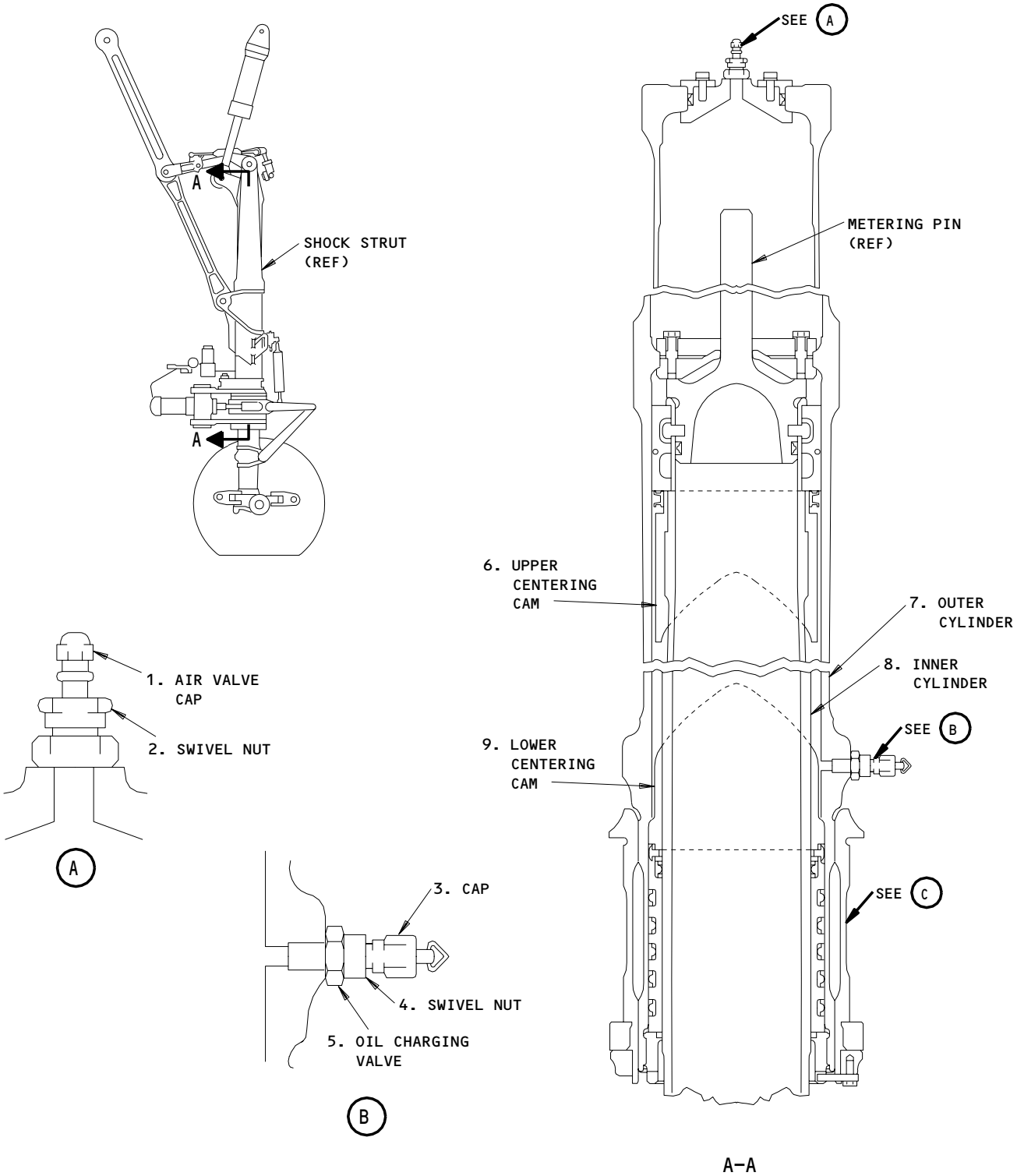
711	Nose Landing Gear (NLG)
713/714	NLG Door Forward
715/716	NLG Door Aft

   D. Leak Check Procedure

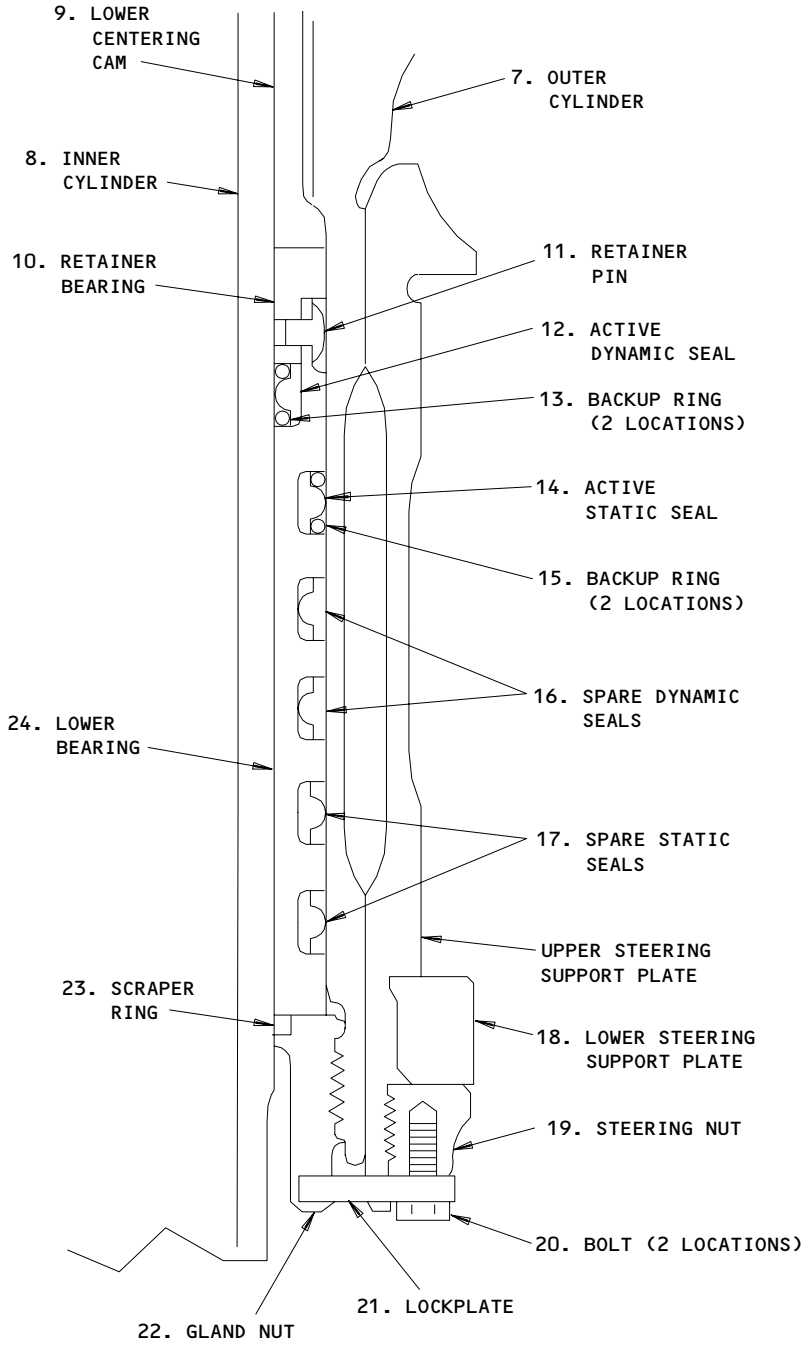
      S 492-135
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 792-136
      (2) Inspect the shock struts for leakage.

      S 792-137
      (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.



Nose Landing Gear Shock Strut Seals
Figure 201 (Sheet 1)



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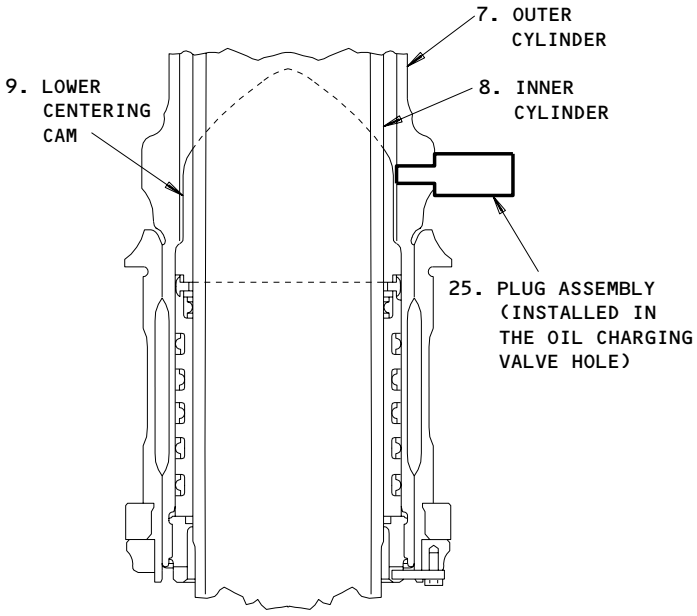
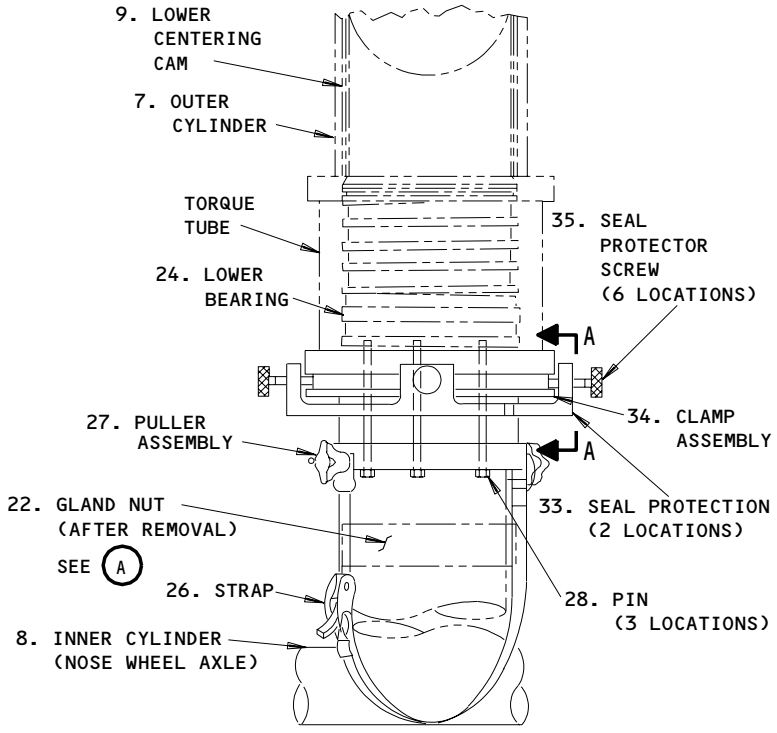
Nose Landing Gear Shock Strut Seals
Figure 201 (Sheet 2)

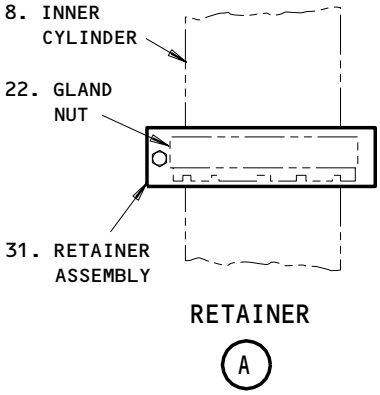


NOSE LANDING GEAR SHOCK STRUT

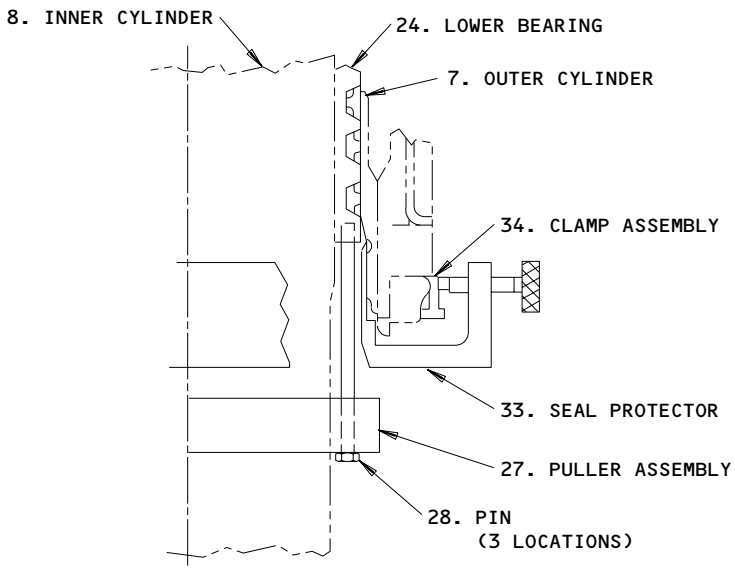


BEARING PULLER

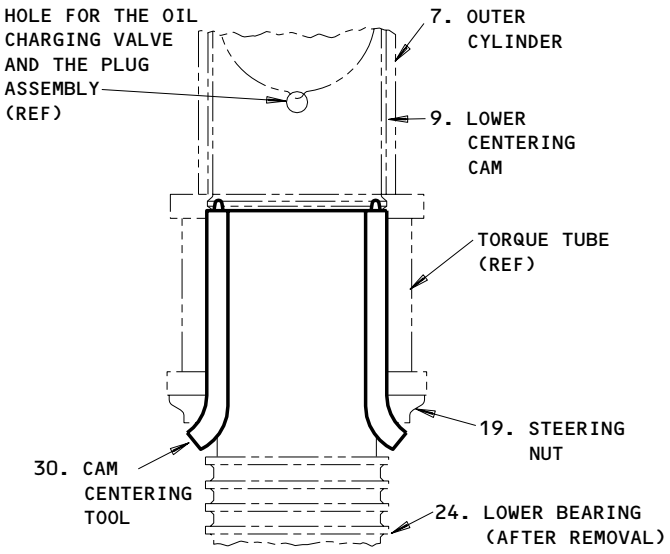
NLG Lower Bearing Puller Equipment
Figure 202 (Sheet 1)



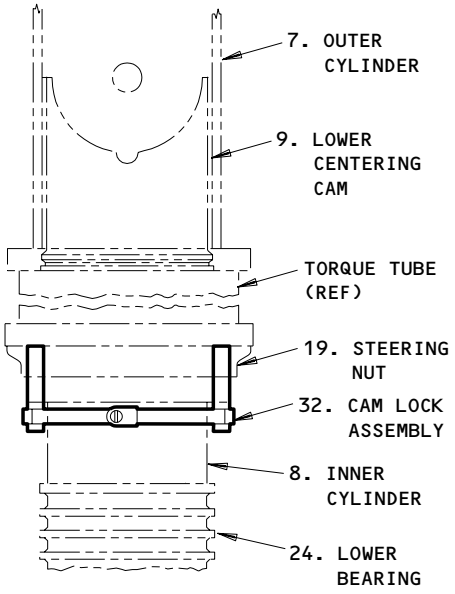
RETAINER
A



SEAL PROTECTOR
A-A

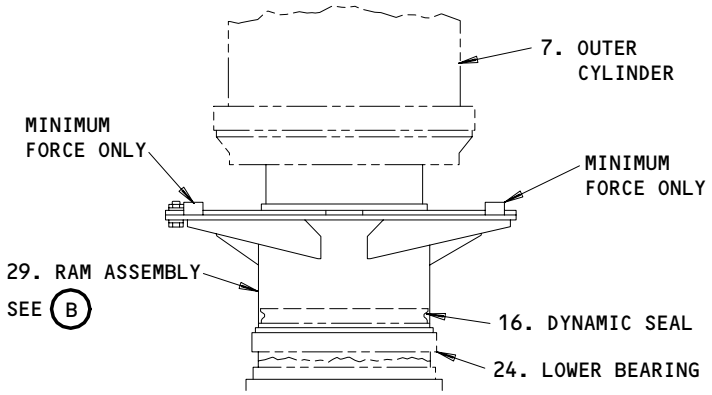


CENTERING CAM POSITIONER

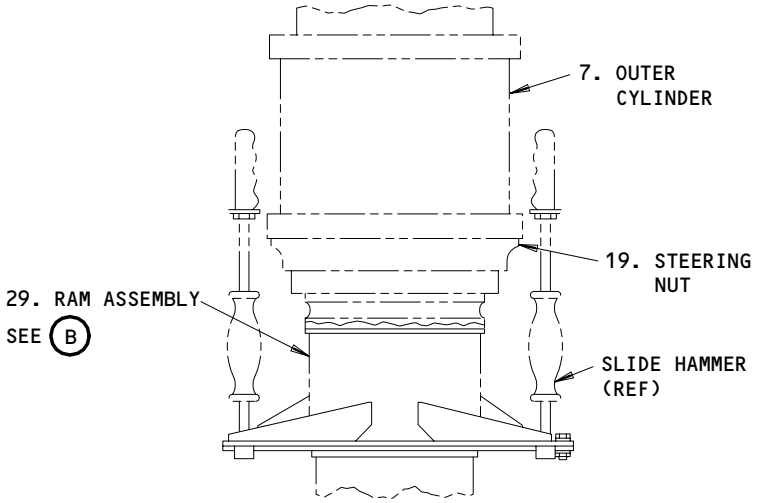


CAM LOCK

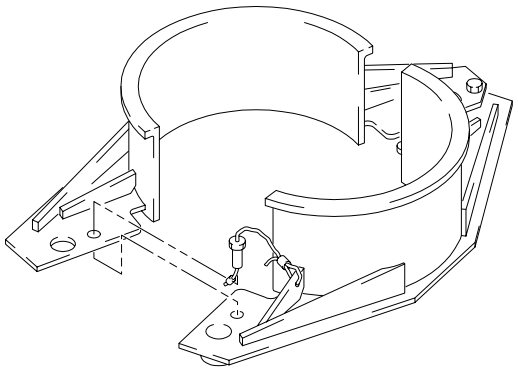
NLG Lower Bearing Puller Equipment
Figure 202 (Sheet 2)



DYNAMIC SEAL INSTALLATION



LOWER BEARING INSTALLATION



RAM

(B)

NLG Lower Bearing Puller Equipment
Figure 202 (Sheet 3)

(b) Monitor the inner cylinder where it meets the outer cylinder for 15 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 15 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 15 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 15 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 15 minute measurements.

NOTE: If the average is 30 drops or less during the 15 minutes time, the shock strut is serviceable. If the leakage flows continuously or is greater than 30 drops during the 15 minutes time, the shock strut is not serviceable.

S 792-138
(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.

S 792-139
(5) If there was leakage between 1 and 5 drops during the 15 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. After 10 days service the shock strut with nitrogen and make sure the "x" dimension in the servicing chart is correct (AMM 12-15-02/301).
(b) After 20 days deflate the shock strut and add oil until it is completely full. Then service the strut with nitrogen (AMM 12-15-02/301).
(c) Do the 10 and 20 day servicing steps again until you change the seals.

S 212-142

(6) If there was leakage between 6 and 10 drops during the 15 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. After 5 days service the shock strut with nitrogen and make sure the "x" dimension in the servicing chart is correct (AMM 12-15-02/301).
(b) After 10 days deflate the shock strut and add oil until it is completely full. Then service the strut with nitrogen (AMM 12-15-02/301).
(c) Do the 5 and 10 day servicing steps again until you change the seals.

S 212-143

(7) If there was leakage between 11 and 30 drops during the 15 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. After 2 days service the shock strut with nitrogen and make sure the "x" dimension in the servicing chart is correct (AMM 12-15-02/301).
(b) After 4 days deflate the shock strut and add oil until it is completely full. Then service the strut with nitrogen (AMM 12-15-02/301).
(c) Do the 2 and 4 day servicing steps again until you change the seals.

S 212-144
(8) If the leakage was more than 30 drops during the 15 minute period, the shock strut is not serviceable. You must replace the seals.

TASK 32-21-25-962-001

3. Active Seal Replacement With the Spare Seals (Figs. 201, 202)
A. Equipment
(1) Axle Jack - automotive type (Commercially available)
(2) Lower Bearing Seal Retainer Puller Equipment, NLG - B32024-82
(3) Gland Nut Wrench Adapter, NLG - A32045-19
(4) Drain Equipment - MLG/NLG Shock Strut, A32066-1
(5) Container
B. Consumable Materials
(1) C00913 Compound - BMS3-27 (Recommended)
(2) C50056 Compound - Non-drying Corrosion Inhibiting Resin Mix, BMS 3-38 (Alternative)

(3) G50136 Paste - Corrosion Inhibiting Non-drying, BMS 3-38 (Alternative)
(4) G50237 Compound - Corrosion Inhibiting Non-drying Cor-Ban 27L, BMS 3-38 (Alternative)
(5) D00151 Lubricant - Petrolatum VV-P-236
(6) D00062 Grease - MIL-G-4343
(7) D00633 Grease - BMS 3-33 (Recommended)
(8) D00013 Grease - MIL-G-23827 (Alternative)
(9) D00070 Lubricant - Hydraulic Fluid MIL-H-5606

C. References
(1) AMM 07-11-02/201, Jacking Airplane Nose
(2) AMM 12-15-02/301, Nose Gear Shock Strut
(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

D. Access
(1) Location Zones

711	Nose Landing Gear (NLG)
713/714	NLG Door Forward
715/716	NLG Door Aft

E. Prepare to Replace the Active Seals

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

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 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 left hydraulic system (AMM 29-11-00/201).

S 862-005
(4) Deflate the shock strut for the nose landing gear (Detail A).
(a) Remove the cap (1) on the air valve which is at the top of the shock strut.

WARNING: LOOSEN THE SWIVEL NUT A MAXIMUM OF TWO TURNS. AIR PRESSURE CAN BLOW THE VALVE OFF AND CAN CAUSE INJURY TO PERSONS.

(b) Loosen the swivel nut (2) a maximum of two turns.

(c) When all of the pressure in the shock strut is removed, loosen the swivel nut (2) fully.

S 032-006

(5) Disconnect the upper torsion link from the lower torsion link (AMM 32-21-09/401) .

S 582-008

(6) Lift the nose of the airplane until you see approximately 12 inches of chrome on the inner cylinder of the shock strut (AMM 07-11-02/201).

S 842-009

(7) Wind a cloth around the inner cylinder (8) of the shock strut below the gland nut (22). This will prevent damage to the inner cylinder (8) if the gland nut (22) moves down.

S 012-010

(8) Remove the cap (3) from the oil charging valve (5).

S 492-011

(9) Install the drain equipment on the oil charging valve (5).

S 492-012

(10) Put a container in position to catch the hydraulic fluid when the swivel nut (4) is loosened.

S 032-015

CAUTION: CLEAN ALL THE LEAKED HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY. THE FLUID CAN CAUSE DAMAGE TO THE TIRES.

(11) Loosen the swivel nut (4) on the oil charging valve (5) to drain the oil from the shock strut.

S 012-013

(12) Remove the oil charging valve (5).

S 432-014

CAUTION: TIGHTEN THE PLUG WITH YOUR HAND. THE PLUG CAN CAUSE DAMAGE TO THE CENTERING CAM IF THE PLUG IS TOO TIGHT.

(13) Install the plug (25) in the hole (Fig. 202, Detail A).

NOTE: The plug holds the lower cam in position when the lower bearing is removed.

S 012-016
(14) Remove the bolts (20), and the lockplate (21) (Fig. 201, Detail C).

S 012-017
(15) Use the wrench adapter for the gland nut to remove the gland nut (22).

S 842-018

CAUTION: DO NOT LET THE EDGES OF THE GLAND NUT TOUCH THE INNER CYLINDER WHEN YOU MOVE THE GLAND NUT DOWN. THE EDGES OF THE GLAND NUT CAN CAUSE SCRATCHES ON THE INNER CYLINDER WHICH CAN CAUSE DAMAGE TO THE SEALS.

(16) Move the gland nut (22) down the inner cylinder (8).

S 432-019
(17) Install the retainer (31) on the gland nut (22) (Fig. 202).

NOTE: The lower bearing pushes on the retainer when you install the dynamic seal.

S 432-020
(18) Install the clamp assembly (34) on the steering nut (19).

S 432-021
(19) Tighten the nut on the clamp assembly (34).

S 842-022
(20) Carefully push the flange of each seal protector (33) between the outer cylinder (7) and the inner cylinder (8).

S 432-023
(21) Tighten the seal protector screws (35) to hold the seal protector (33) to the outer cylinder (7).

S 492-024
(22) Loosely install the puller assembly (27) around the inner cylinder (8).

NOTE: Do not tighten the puller assembly.

S 492-025
(23) Tighten the three pins (28) into the lower bearing (24) with your hand.

S 582-026
(24) Lift the nose landing gear with an axle jack until the gland nut (22) is approximately 0.5 inch from the pins (28).

S 492-027
(25) Tighten the puller assembly (27).

S 492-028
(26) Install the strap (26) around the axle.

S 862-029
(27) Lower the axle jack. The lower bearing (24) will move out of the recess between the inner cylinder (8), and the outer cylinder (7).

NOTE: Pull the lower bearing (24) out only as far as necessary to remove the retainer pin (11).

S 032-030
(28) Remove the retainer pin (11).

S 862-031

WARNING: KEEP YOUR HANDS AWAY FROM THE TOP OF THE RETAINER BEARING AND THE LOWER BEARING. THE LOWER CENTERING CAM CAN MOVE DOWN QUICKLY AND CAN CAUSE INJURY TO PERSONS.

(29) Lower the axle jack. This divides the retainer bearing (10) from the lower bearing (24).

S 492-032

WARNING: INSTALL THE CAM LOCK ASSEMBLY BEFORE YOU DO WORK ON THE SEALS. THE LOWER CENTERING CAM CAN MOVE DOWN AND CAN CAUSE INJURY TO PERSONS.

(30) Install the cam lock assembly (32).

S 092-033

(31) Remove the puller assembly (27) and the strap (26).

F. Replace the Active Static Seal (View C, Fig. 201).

S 032-034

(1) Remove the two backup rings (15) from around the active static seal (14).

NOTE: Install the backup rings with the new active static seal if the backup rings are serviceable.

S 032-035

CAUTION: BE CAREFUL NOT TO CAUSE DAMAGE TO THE INNER CYLINDER. DAMAGE ON THE SURFACE OF THE CYLINDER CAN CAUSE DAMAGE TO THE SEALS.

(2) Use the plastic tool with the backup strip to cut the active static seal (14) from the outer groove of the cylinder.

S 842-036

(3) Move the spare static seal (17) out of the spare seal groove.

S 642-037

(4) Apply a thin layer of hydraulic fluid and petrolatum to the spare static seal (17).

S 432-038

(5) Install the spare static seal (17) and the backup rings (15) in the top, outer groove.

G. Replace the Active Dynamic Seal (View C, Fig. 201).

S 032-039

CAUTION: BE CAREFUL NOT TO CAUSE DAMAGE TO THE INNER CYLINDER. DAMAGE ON THE SURFACE OF THE CYLINDER CAN CAUSE DAMAGE TO THE SEALS.

(1) Remove the active dynamic seal (12) and the two backup rings (13) from the inner groove.

NOTE: Install the backup rings with the new active dynamic seals if the backup rings are serviceable.

S 032-040

(2) Use the plastic tool, and the backup strip to cut the active dynamic seal (12) from the inner cylinder (8).

S 842-041

(3) Move one of the spare dynamic seals (16) out of the outer groove.

S 642-042

(4) Apply a thin layer of hydraulic fluid and petrolatum to the spare dynamic seal (16).

S 842-043

(5) Put the backup rings (13) around the spare dynamic seal.

S 432-044

(6) Install the spare dynamic seal (16) as shown on Fig. 201, Detail C.

NOTE: Use the ram assembly (29) as shown on Fig. 202 to install the spare dynamic seal (16) if it is necessary.

H. Put the Airplane Back to Its Usual Condition

S 842-045

(1) Move the retainer bearing (10) down the inner cylinder (8) until it is against the lower bearing (24).

S 432-046

(2) Install the retainer pin (11).

S 092-047

WARNING: KEEP YOUR HANDS AWAY FROM THE TOP OF THE RETAINER BEARING AND THE LOWER BEARING. THE LOWER CENTERING CAM CAN MOVE DOWN QUICKLY AND CAN CAUSE INJURY TO PERSONS.

(3) Remove the cam lock assembly (32).

S 842-048
(4) Move the lower bearing (24) up the inner cylinder (8) into the outer cylinder (7).

NOTE: If you cannot move the lower bearing with your hand, use the ram assembly (29) to move it into position. If the lower centering cam (9) has moved out of position, use the cam centering tool (30) to put it into position.

S 092-049
(5) Loosen the seal protector screws (35).

S 842-050
(6) Carefully move the seal protectors (33) down.

S 092-051
(7) Remove the seal protectors (33).

S 092-052
(8) Remove the clamp assembly (34).

S 642-053
(9) GLAND NUTS WITH LUBE FITTINGS;
apply grease (BMS 3-33) to the threads of the gland nut (22) .

S 622-155
(10) GLAND NUTS WITHOUT LUBE FITTINGS;
apply Compound to the threads of the gland nut (22).

S 432-054
(11) Install the gland nut.

S 432-055
(12) Use the wrench adapter for the gland nut to tighten the nut (22) to 125-150 pound-feet. Loosen the nut to align the slots.

S 822-056
(13) Align the slots in the gland nut (22) with the slots in the steering nut (19).

S 642-057
(14) Apply grease (BMS 3-33) to the lockplate.

S 432-058
(15) Install the lockplate (21) with the bolts (20).

S 432-059
(16) Tighten the bolts (20) to 25-50 pound-inches.

S 432-060
(17) Install a lockwire on the bolts (20).

S 582-061
(18) Lower the airplane and remove the jacks (Ref 07-11-02).

S 432-062
(19) Connect the lower torsion link to the upper torsion link (AMM 32-21-09/401).

S 612-066
(20) Do the servicing of the shock strut (AMM 12-15-02/301).

S 092-131

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

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

TASK 32-21-25-962-067

4. Active and Spare Seal Replacement (Fig. 201, 202)
   A. Consumable Materials
      (1) D00151 Lubricant - Petrolatum VV-P-236
      (2) D00070 Lubricant - Hydraulic Fluid MIL-H-5606
   B. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
201	--	NLG Strut Assembly	32-21-01	20	-
	12, 16	Dynamic seal			155
	13	Backup ring (dynamic seal)			165
	14, 17	Static seal			170
	15	Backup ring (static seal)			180
	23	Scaper ring			190

C. References
(1) AMM 32-21-24/401, NLG Shock Strut Inner Cylinder
D. Access
(1) Location Zones

711	Nose Landing Gear (NLG)
713/714	NLG Door Forward
715/716	NLG Door Aft

E. Prepare to Replace the Active and Spare Seals

S 022-153
(1) Remove the shock strut inner cylinder (AMM 32-21-24/401).
F. Replace the Active and the Spare Seals

NOTE: If the spare seals are installed and serviceable, they do not need to be replaced.

S 032-096

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.

(1) Remove the backup rings (13, 15) from the lower bearing.

S 032-098
(2) Cut the seals (12, 14, 16, 17) from the lower bearing with the plastic tool and the backup strip.

S 642-099
(3) Apply a thin layer of hydraulic fluid and petrolatum to the new seals (12, 14, 16, 17).

S 842-100
(4) Move the new seals (12, 14, 16, 17) and the new backup rings (13, 15) down the inner cylinder (8) into the lower bearing (24) as follows:
(a) Two spare static seals (17).

(b) Two spare dynamic seals (16).
(c) One active static seal (14).
(d) Two backup rings (15).
(e) One backup ring (13).
(f) One active dynamic seal (12).
(g) One backup ring (13).

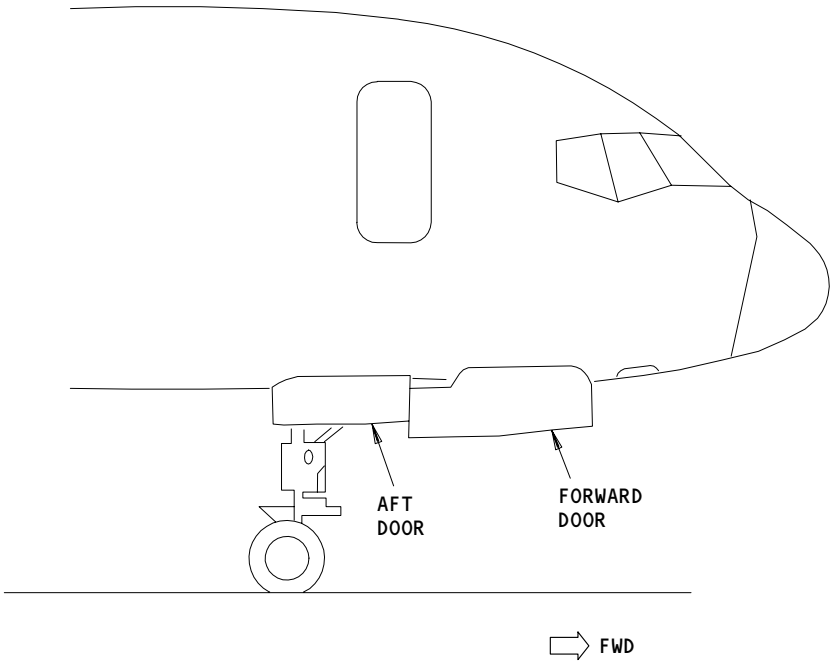
G. Put the Airplane Back to Its Usual Condition

S 422-152

(1) Install the shock strut inner cylinder (AMM 32-21-24/401).

NOSE GEAR DOORS - DESCRIPTION AND OPERATION

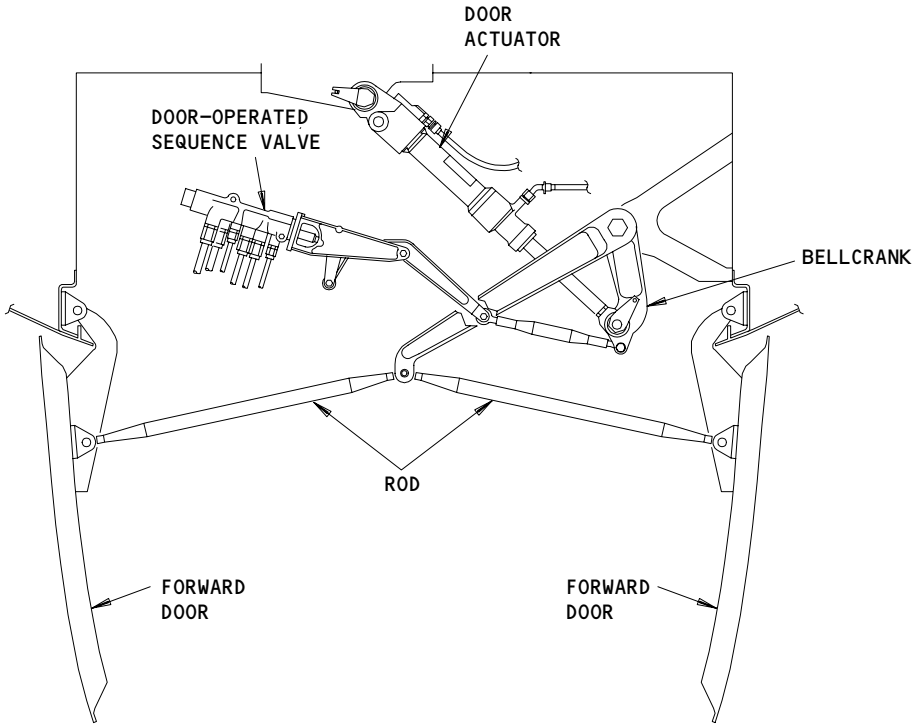
1. General (Fig. 1)
   A. The nose gear doors consist of forward and aft doors. The doors close over the wheel well to provide aerodynamic smoothness during flight.
2. Component Details
   A. Forward Doors
      (1) The forward doors are hydraulically operated and close when the gear is retracted or extended. The doors are of clamshell type and include a left and right door.
   B. Forward Door Operating Mechanism (Fig. 2)
      (1) The mechanism consists of a bellcrank and rods. The bellcrank is connected to the door actuator and the rods are connected to the bellcrank and forward doors. The mechanism is a mechanical link from the door actuator to the doors.
   C. Aft Doors
      (1) The aft doors are mechanically connected to the gear and only close when the gear is retracted. The doors are of clamshell type and include a left and right door.



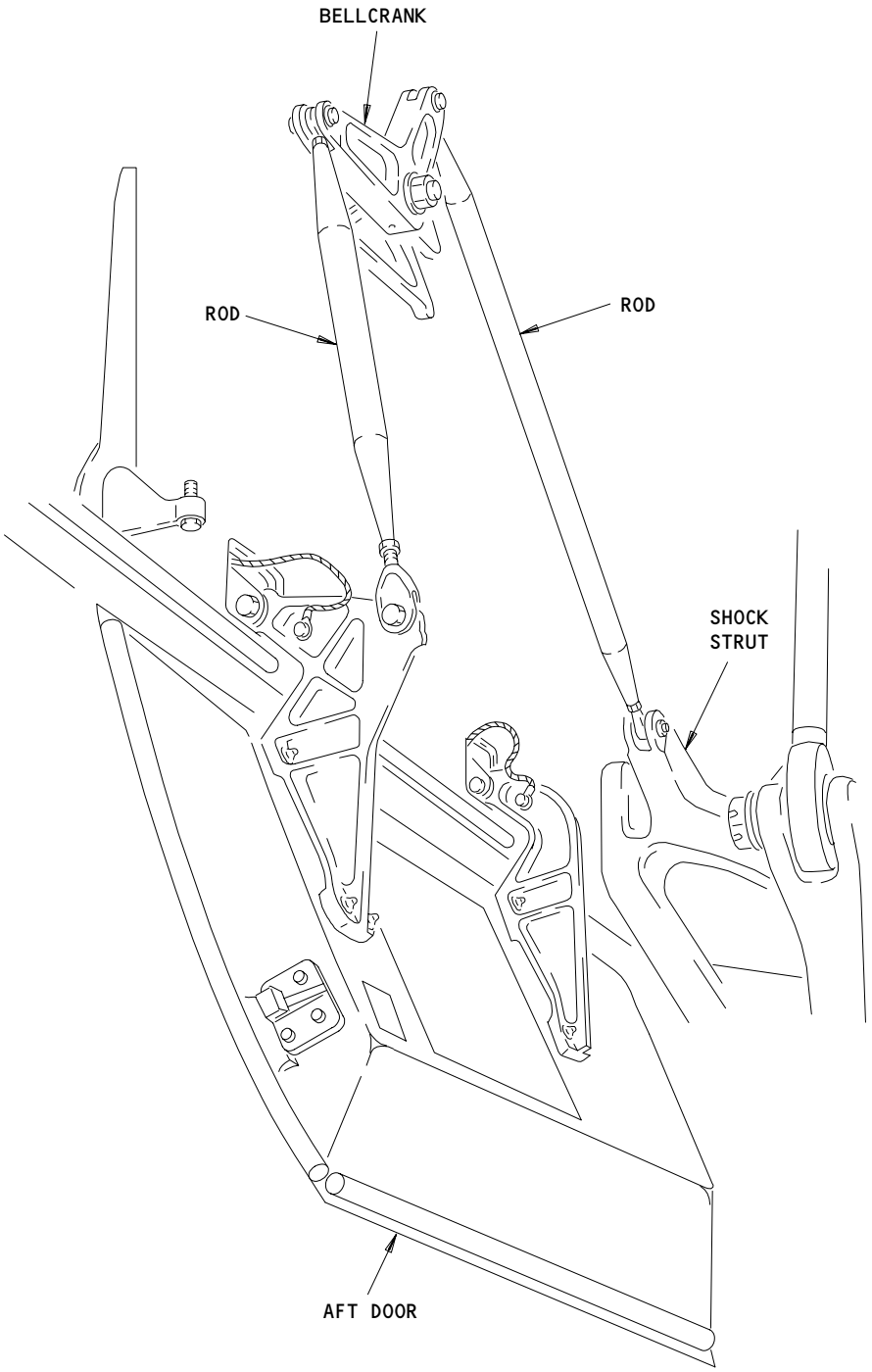
Nose Gear Doors
Figure 1

D. Aft Door Operating Mechanism (Fig. 3)

(1) The mechanism consists of two rods and a bellcrank. The aft rod is connected to the shock strut and bellcrank, the forward rod is connected to the bellcrank and the aft door. A left mechanism controls the left door and a right mechanism controls the right door.



Forward Door Operating Mechanism
Figure 2



Aft Door Operating Mechanism
Figure 3

NOSE GEAR DOORS - ADJUSTMENT/TEST

1. General
   A. This procedure contains one task. This task adjusts the forward and aft doors of the nose landing gear. The aft doors must be adjusted before you adjust the forward doors.

   TASK 32-22-00-825-095

2. Adjustment - Nose Landing Gear Doors
   A. Equipment
      (1) Spring Scale (0-200 pounds) - Commercially Available
      (2) Scale (0-32 inches) - Commercially Available
      (3) Door Rigging Contour Template, NLG - B32053-1
   B. Consumable Materials
      (1) C00308 Compound, Corrosion Preventive - BMS 3-23 TYPE II
      (2) D00633 Grease - BMS 3-33 (Recommended)
      (3) D00013 Grease - MIL-G-23827 (Alternative)
   C. References
      (1) 07-11-02/201, Jacking Airplane Nose
      (2) 24-22-00/201, Electrical Power Control
      (3) 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
      (4) 32-00-15/201, Landing Gear Door Locks
      (5) 32-00-20/201, Landing Gear Downlocks
   D. Access
      (1) Location Zones

211/212	Control Cabin
711	Nose Landing Gear (NLG)
713/714	Forward NLG Door
715/716	Aft NLG Door

   E. Adjust the Aft Doors (Fig. 501)

      S 495-083

      WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON THE 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.

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

S 495-084

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 035-009

(3) Remove the left and right operating rods (2,12) which attach the bellcrank to the door.

S 585-010

(4) Lift the nose of the airplane until the wheels are a minimum of 3 inches above the ground (AMM 07-11-02/201).

S 865-011

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

S 865-012

(6) Supply power to the left hydraulic system (AMM 29-11-00/201).

S 095-013

(7) Remove the downlock from the nose landing gear (AMM 32-00-20/201).

NOTE: Do not remove the downlocks from the main landing gear.

S 865-085

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT AROUND THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER. THE LANDING GEAR WILL RETRACT AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

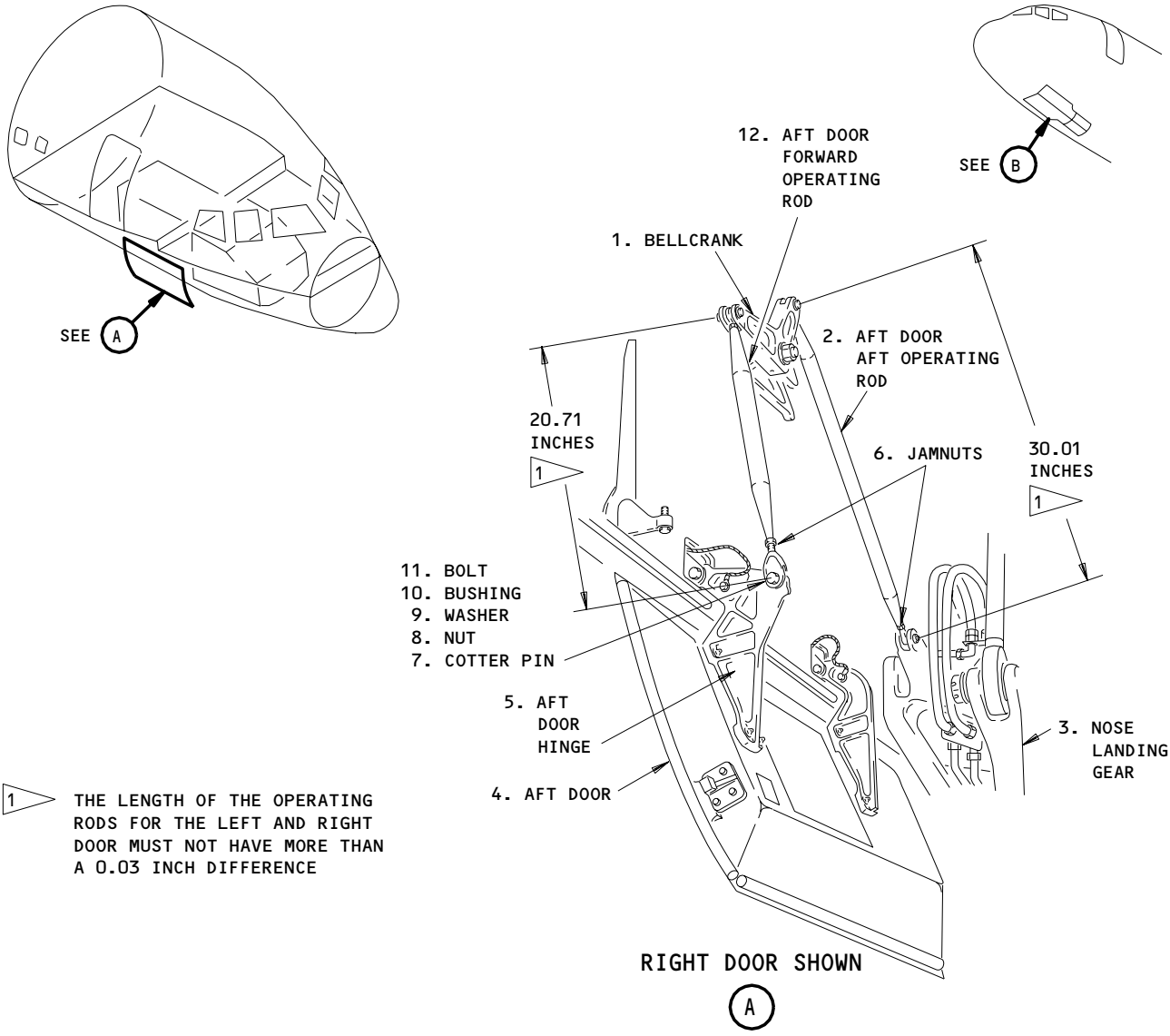
(8) Move the control lever for the landing gear to the UP position to retract the nose landing gear.

S 865-015

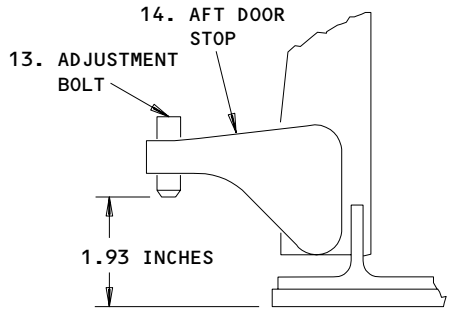
(9) Return the control lever to OFF and attach a DO-NOT-OPERATE tag.

S 225-082

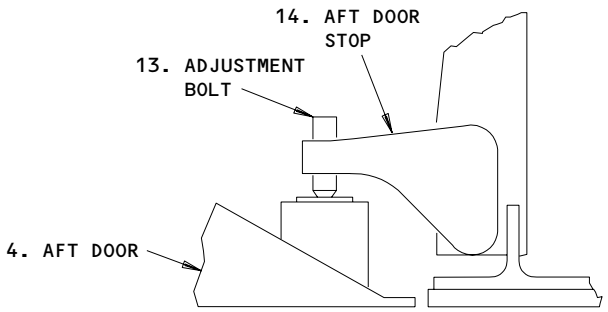
(10) Measure the clearance at the aft door stops (14) (View A-A).



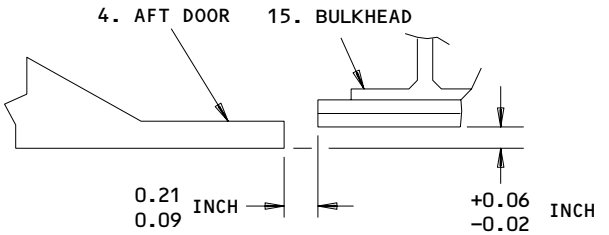
Nose Landing Gear Aft Door Adjustment
Figure 501 (Sheet 1)



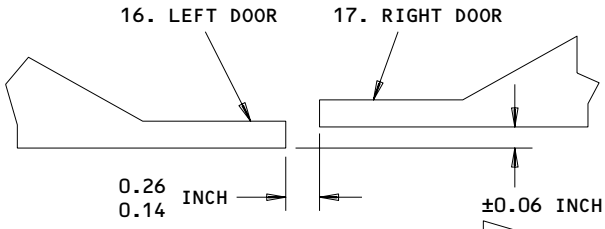
(DOORS SHOWN IN OPEN POSITION)
A–A



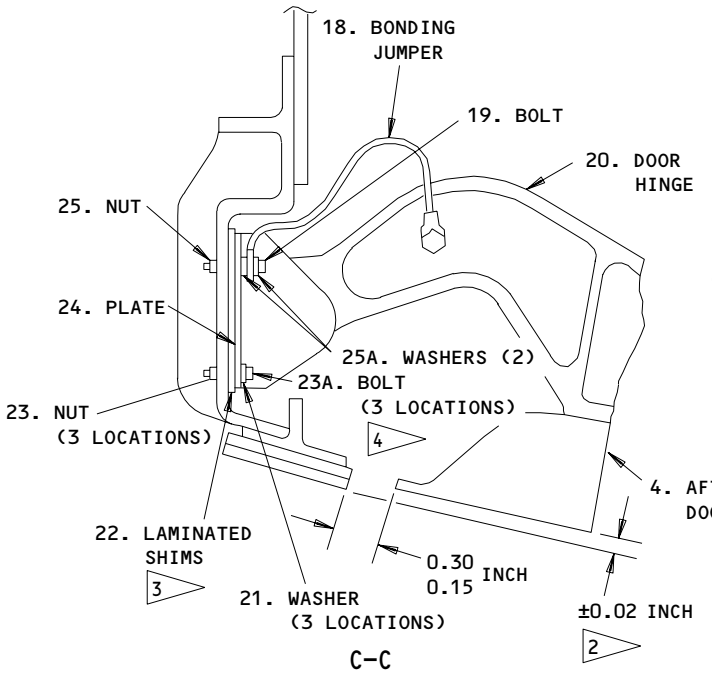
(DOORS SHOWN IN CLOSED POSITION)
A–A



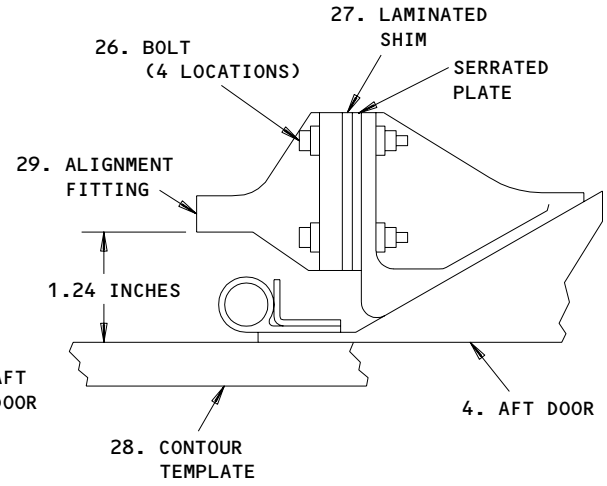
B–B



D–D



C–C



E–E

2 A POSITIVE TOLERANCE INDICATES THE DOOR IS OUTSIDE OF THE BODY CONTOUR A NEGATIVE TOLERANCE INDICATES THE DOOR IS INSIDE OF THE BODY CONTOUR

3 DO NOT APPLY MORE THAN 0.062 INCH SHIM

4 APPLY THE CORROSION PREVENTIVE COMPOUND TO THE HOLE, IMMEDIATELY INSTALL THE BOLT

5 GUI 002 IS PERMITTED +0.10 INCH, RIGHT DOOR ONLY

Nose Landing Gear Aft Door Adjustment
Figure 501 (Sheet 2)

S 225-016
(11) Measure the length of the operating rods (2,12) for the aft door (Detail A).
  (a) Loosen the jamnuts (5) to adjust the length of the rods if it is necessary.

S 845-017
(12) Make sure the rod ends can be seen through the inspection holes.

S 625-018
(13) Apply the corrosion preventive compound to the inner surfaces of the bellcrank (1) hole and the ends of the operating rods (2,12).

S 645-002
(14) Immediately apply grease to and install these parts to connect the operating rods to the bellcrank (1):
  (a) Bolts
  (b) Bushing
  (c) Washer
  (d) Nut
  (e) Cotter Pin

S 865-019
(15) Adjust the left aft door (16).
  (a) Manually close the left aft door (16).
  (b) Put the contour template (28) at the forward edge of the aft doors (16, 17).
  (c) Loosen the jamnuts (6) on the operating rods (2, 12).
  (d) Adjust the length of the operating rods until you can attach the operating rod (12) to the door hinge (5).
    1) Increase or decrease the length of the operating rods to get this adjustment.
  (e) Make sure the ends of the rod can be seen through inspection holes.
    1) Adjust the length of the trunnion-to-bellcrank and the bellcrank-to-door rods the same quantity.
  (f) Adjust the aft door stop (14) (View A-A).
  (g) Get the clearances and tolerances shown on Views B-B and C-C.
    1) Add or remove shims (22) at the fittings for the door hinge (20) (View C-C) if it is necessary.

(h) Make sure a 60-80 pound load is necessary to pull the door off the aft door stop (14).

NOTE: Use a nylon webbing, or wind a rope around the door at the aft door stop, to attach the spring scale.

(i) Tighten the jamnuts (6) on the rods which have been adjusted.
(j) Install a lockwire to connect the lockwasher and jamnut.
(k) Align the nearest keyway in the adjustment bolt (13) for the aft door stop.
(l) Install the lock spring.
(m) Loosen the bolts (26) on the alignment fitting (29) (View E-E).
(n) Adjust the alignment fitting (29) until you get the dimension shown.
(o) Tighten the bolts.
(p) Remove the contour template (28).
(q) Remove the bolt (11) to disconnect the operating rod (12) for the left door from the door hinge (5).
(r) Lower the door (4) until it is free to hang.

S 825-020

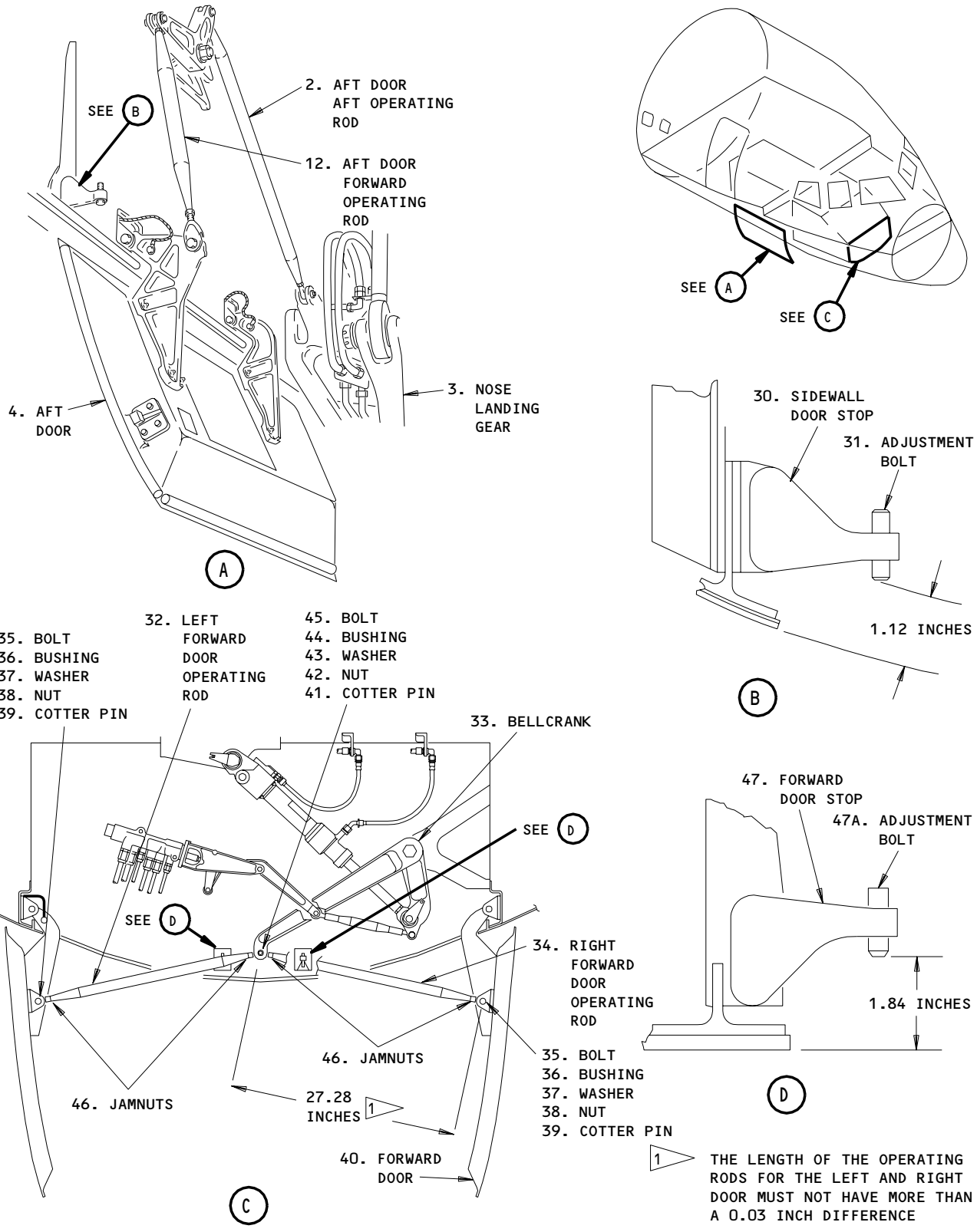
(16) Adjust the right aft door, do the previous steps "Adjust the left aft door" again on the right aft door.

S 625-021

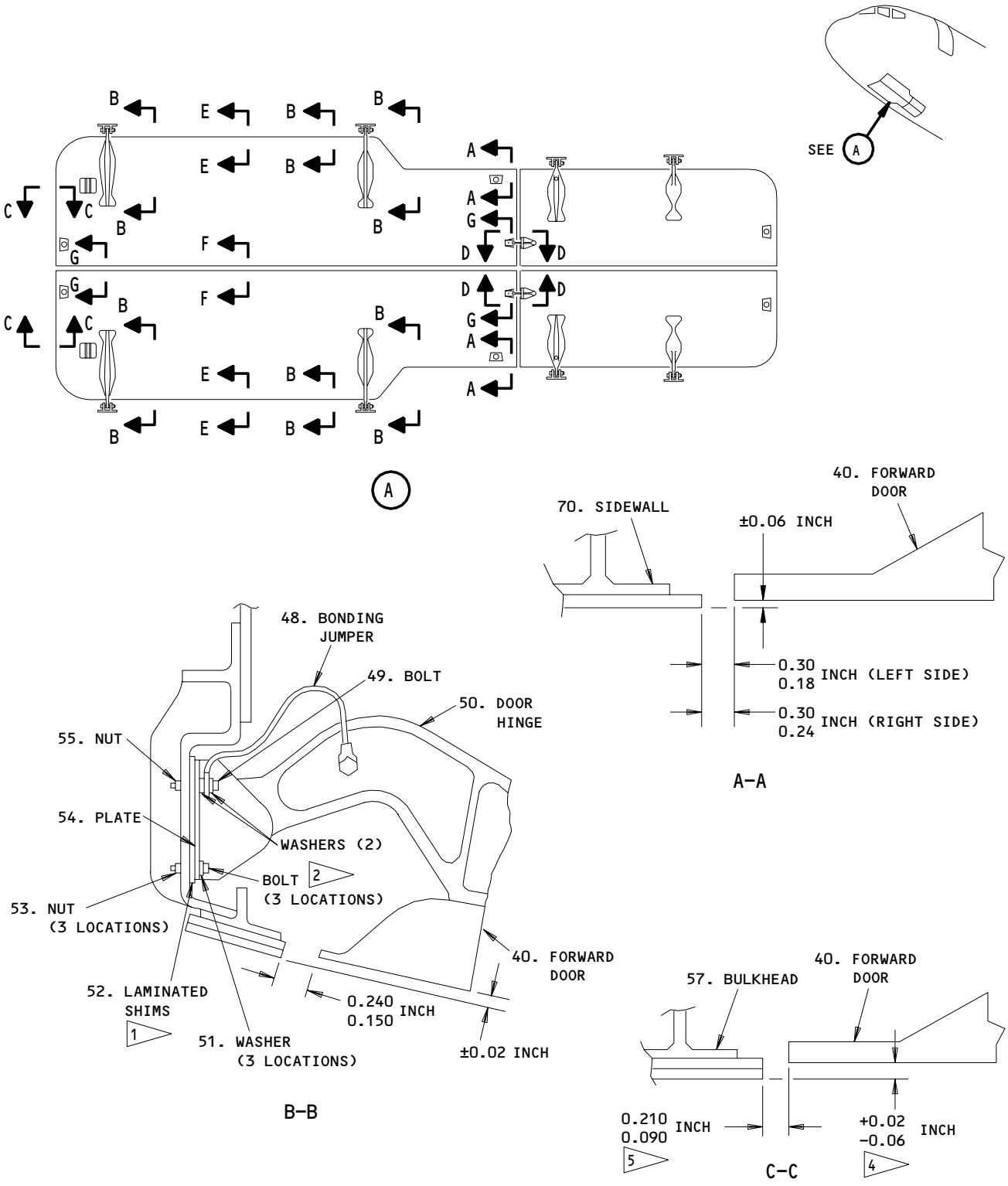
(17) Apply corrosion preventive compound to the inner surfaces of the door hinge (5) attachment hole and the end of the operating rod.

S 645-003

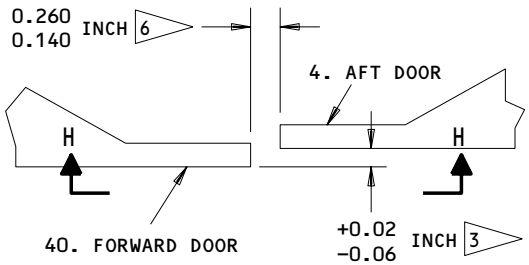
(18) Immediately apply grease to and install these parts to connect the operating rod (12) to the left door hinge (5):
(a) Bolt (11)
(b) Bushing (10)
(c) Washer (9)
(d) Nut (8)
(e) Cotter Pin (7)
(f) Do the steps again for the right aft door.



Nose Landing Gear Forward Door Operating Rods and Door Stops Adjustment
Figure 502

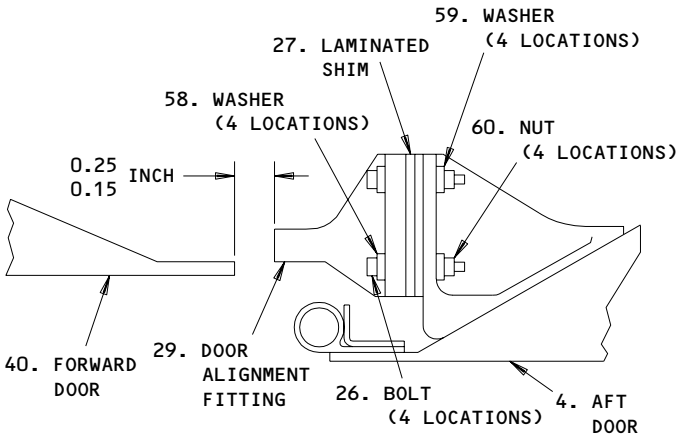


Nose Landing Gear Forward Door Adjustment
Figure 503 (Sheet 1)



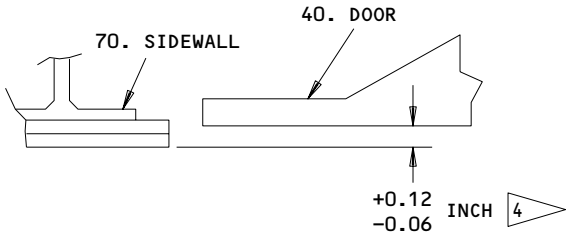
(DOORS SHOWN IN CLOSED POSITION)

D–D

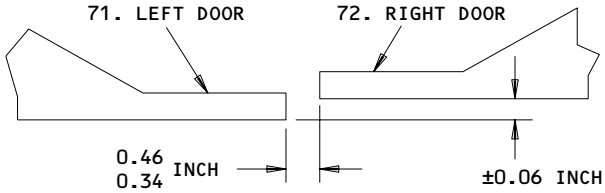


(DOORS SHOWN IN OPEN POSITION)

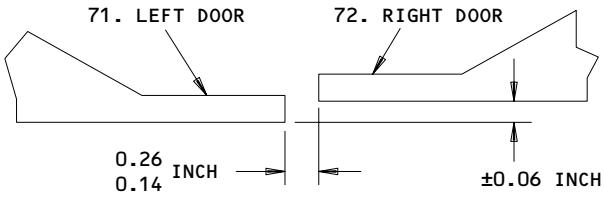
D–D



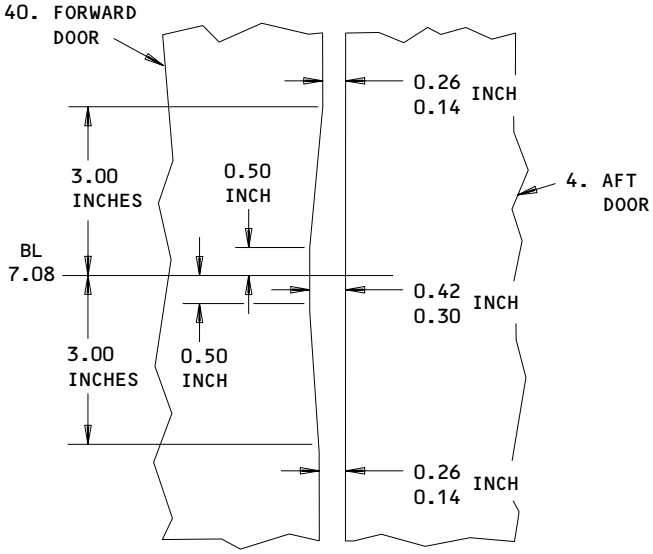
E–E



F–F



G–G



H–H

1. DO NOT APPLY MORE THAN 0.062 INCH SHIM
2. APPLY THE CORROSION PREVENTIVE COMPOUND TO THE HOLE, IMMEDIATELY INSTALL THE BOLT
3. A POSITIVE TOLERANCE INDICATES THE AFT DOOR IS OUTSIDE THE FORWARD DOOR A NEGATIVE TOLERANCE INDICATES THE AFT DOOR IS INSIDE THE FORWARD DOOR
4. A POSITIVE TOLERANCE INDICATES THE DOOR IS OUTSIDE THE BODY CONTOUR A NEGATIVE TOLERANCE INDICATES THE DOOR IS INSIDE THE BODY CONTOUR
5. GUI 002 IS PERMITTED 0.030–0.210 INCH, RIGHT DOOR ONLY
6. GUI 002 IS PERMITTED 0.100–0.260 INCH LEFT DOOR ONLY, AND 0.140–0.280 INCH RIGHT DOOR ONLY.

Nose Landing Gear Forward Door Adjustment
Figure 503 (Sheet 2)

S 225-022
(19) Measure the clearances and tolerances between the left (16) and right (17) doors and between the doors and structure (View B-B, C-C and D-D).

F. Adjust the Forward Doors (Fig. 502, 503).

NOTE: Aft doors must be in the closed position. They must be adjusted before you adjust the forward doors.

S 035-023
(1) Remove the left and right operating rods (32, 34) for the forward door.

S 865-024
(2) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).

S 095-025
(3) Remove the door lock for the nose landing gear (AMM 32-00-15/201).

S 865-026
(4) Make sure the control lever for the landing gear is in OFF.

S 865-027
(5) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 865-028
(6) Move the control lever for the landing gear to UP to retract the door actuator for the nose landing gear.

S 865-086

WARNING: PUT THE CONTROL LEVER FOR THE LANDING GEAR TO OFF BEFORE YOU DO WORK IN THE WHEEL WELL. MOVEMENT OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(7) Put the control lever to OFF.
(a) Attach a DO-NOT-OPERATE tag.

S 225-030
(8) Measure the clearance at the forward and sidewall door stops (30). (Fig. 502, Details B and D).

S 225-031
(9) Measure the length of the operating rods (32, 34) for the forward door (Detail A).

S 035-032
(10) Loosen the jamnuts (46) and adjust the length of rods (32, 34) if it is necessary.

S 845-033
(11) Make sure the ends of the rod can be seen through the inspection holes.

S 435-034
(12) Install these parts to connect the operating rod (32) for the left door to the bellcrank (33):
(a) Bolt (45)
(b) Bushings (44)
(c) Washer (43)
(d) Nut (42)
(e) Cotter Pin (41)

S 825-087

CAUTION: DO NOT APPLY MORE THAN A 200 POUND LOAD AT THE FORWARD DOOR STOP WHEN YOU ADJUST THE DOOR. LOADS MORE THAN 200 POUNDS CAN CAUSE DAMAGE TO THE DOOR.

(13) Adjust the left forward door.
(a) Manually close the door until the door touches the door stops.
(b) Lubricate with grease and install the parts that follow to connect the door operating rod (32, 34) to the door hinge (50).
1) Bolt (35)
2) Bushing (36)
3) Washer (37)
4) Nut (38)
5) Cotter Pin (39)

(c) Adjust door stops (30, 47) (Fig. 502, Details B, and D) to get the clearances and tolerances shown (Fig. 503, Views A-A, B-B, C-C).
(d) Add or remove shims (52) at the door hinges (50) (View B-B, Fig. 503).
1) Adjust the length of the operating rod for the door to get the clearance.
(e) Make sure the rod ends can be seen through the inspection holes.
(f) Tighten the jamnuts (46) to set the length of the operating rod.
(g) Install the lockwire on the lockwasher and jamnut.
(h) Make sure a 170-200 pound load is necessary to pull the door off the forward door stop.

NOTE: Use a nylon webbing or rope wound around the door at the forward door stop to attach the spring scale.

(i) Align the nearest keyway in the adjustment bolts for the door stop.
(j) Install the lock springs.
(k) Remove the bolt (45) to disconnect the operating rod (32) for the left door from the bellcrank (33).
(l) Lower the door until it hangs free.

S 825-037
(14) Adjust the right forward door, do the previous steps "Adjust the left forward door" again on the right forward door.

S 865-038
(15) Remove the DO-NOT-OPERATE tag.

S 845-054
(16) Move the control lever to DN to open the forward door.

S 845-055
(17) Put the control lever to OFF.

S 865-039
(18) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).

S 645-040
(19) Apply grease to and install the parts that follow to connect the operating rods for the doors to the bellcrank:
(a) Bolt (45)
(b) Bushings (44)
(c) Washer (43)
(d) Nut (42)
(e) Cotter Pin (41)

S 865-041
(20) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 865-042
(21) Move the control lever to UP to close the forward doors.

S 845-056
(22) Attach a DO-NOT-OPERATE tag.

S 225-043
(23) Make sure the doors and structures (Fig. 501, Views B-B, C-C, D-D) have the correct clearances and tolerances shown (Fig. 503, Views A-A, B-B, C-C, D-D, E-E, F-F, G-G, H-H).

S 845-109
(24) If you removed or adjusted the aft doors or the aft door mechanisms, to accomplish the previous step "to have the correct clearances and tolerances", then do these steps:
(a) Put the contour template (28) at the forward edge of the aft door (4).
(b) Make sure the gap between the aft door and the contour template is less than the middle section (0.269-0.273 inch) of the contour plate Go-No-Go gage.

NOTE: If the gap (between the aft door and the contour template) is equal to or greater than the middle section of the contour plate Go-No-Go gage, then adjust the forward hinge of the aft door at the body side attach location (Fig. 501, View C-C).

S 865-088

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT AROUND THE NOSE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. THE NOSE LANDING GEAR CAN MOVE AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(25) Remove the DO-NOT-OPERATE tag from the control lever for the landing gear.

S 865-006

(26) Move the control lever for the landing gear to DN.

S 495-044

(27) Install the downlock on the nose landing gear (AMM 32-00-20/201).

S 495-090

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.

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

S 035-046

(29) Remove the bolts (35) to disconnect the operating rods (32, 34) for the forward door from the door hinges.

S 845-047

(30) Close the left forward door manually.

S 225-048

(31) Measure the clearance between the alignment fitting (29) for the aft door (40) (Fig. 503, View D-D).

S 225-049

(32) Do the steps again to measure the clearances and tolerances for the alignment fitting and the right forward door.

S 645-007

(33) Apply grease to the parts and install them to connect the operating rods for the forward door (32, 34) to the forward door hinge (50):
(a) Bolts (35)
(b) Bushings (36)
(c) Washers (37)
(d) Nuts (38)
(e) Cotter Pins (39)

G. Put the Airplane Back to Its Usual Condition

S 585-050

(1) Lower the airplane and remove the jacks (AMM 07-11-02/201).

S 095-089

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 and close the doors (AMM 32-00-15/201).

S 865-052

(3) Remove the power from the left hydraulic system (AMM 29-11-00/201).

S 865-053

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

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 doors of the nose landing gear.

TASK 32-22-01-004-001

2. Remove the Forward Door of the Nose Landing Gear (Fig. 401)
   A. References
      (1) 32-00-15/201, Landing Gear Door Locks
      (2) 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones

711	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors
730/740	Main Landing Gear and Doors

   C. Prepare for the Removal of the Forward Doors

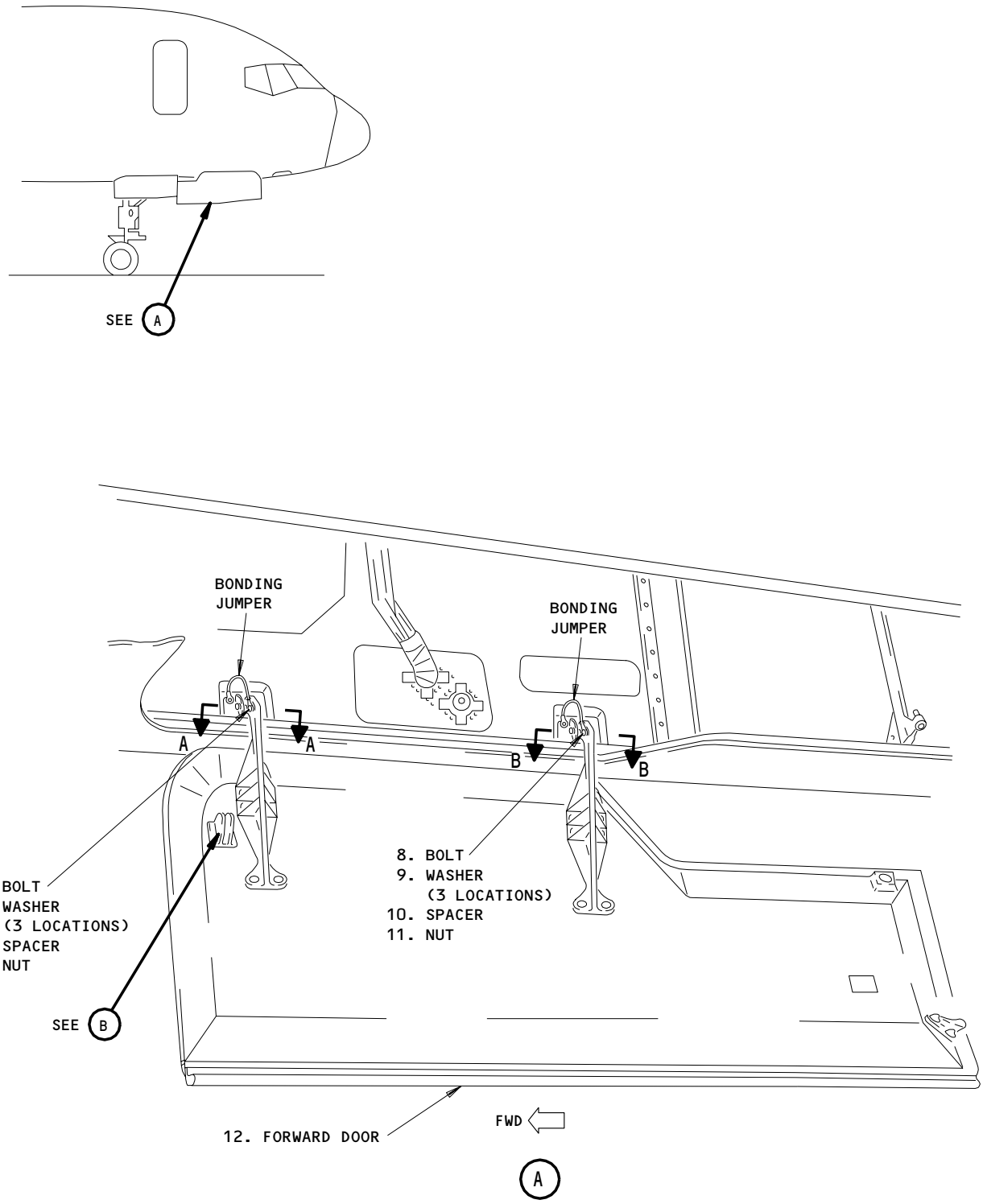
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

      S 494-015

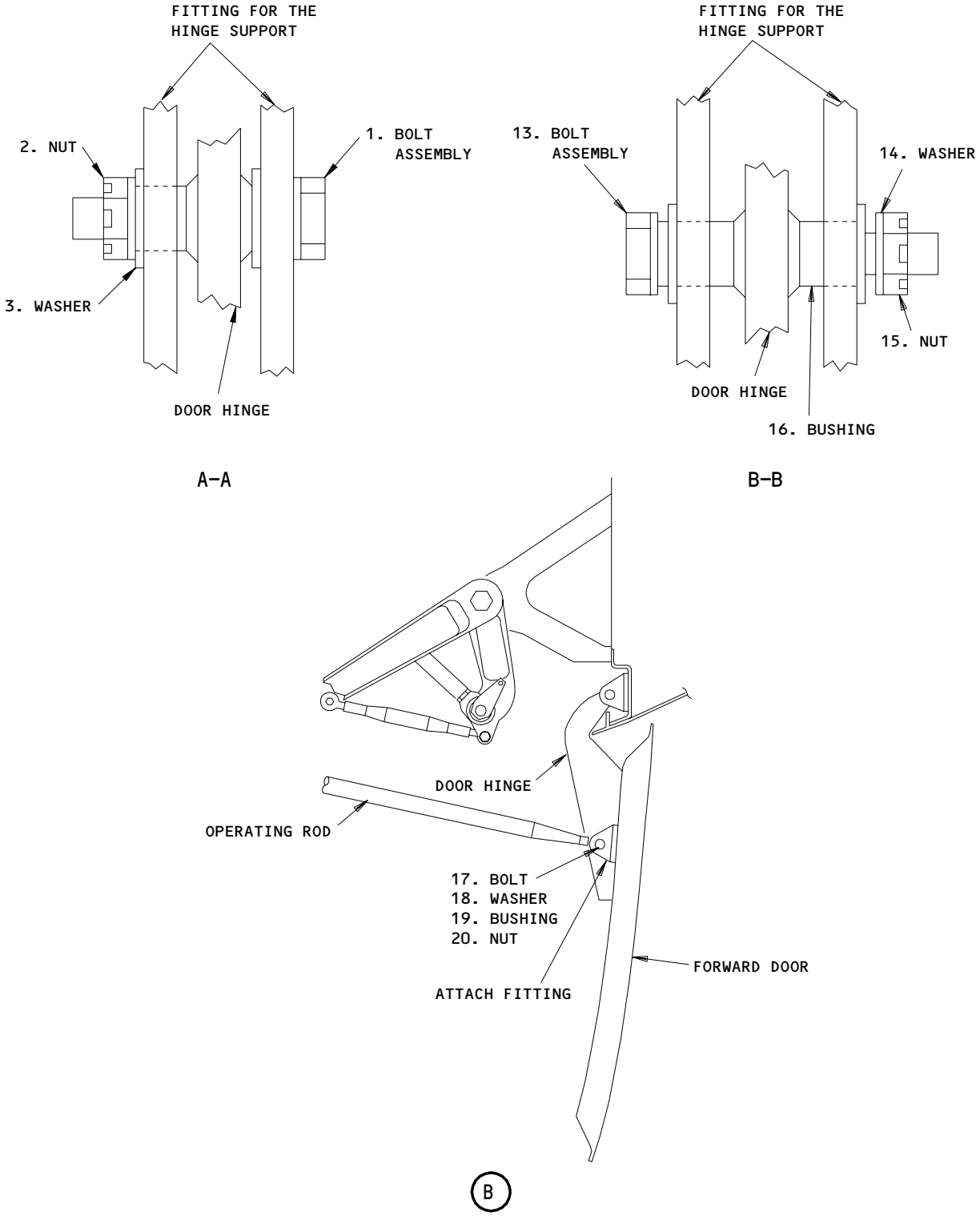
      WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

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

      S 014-004
      (1) Remove the bolts (4 and 8) to disconnect the bonding jumpers from the door hinges.



Forward Door Installation for the Nose Landing Gear
Figure 401 (Sheet 1)



Forward Door Installation for the Nose Landing Gear
Figure 401 (Sheet 2)

S 014-005
(2) Remove the bolt (17) to disconnect the operating rod for the door from the attach fitting.

S 024-006
(3) Hold the door.
(a) Remove the bolts (1 and 13) to disconnect the door hinges from the support fittings on the wall of the wheel well.

TASK 32-22-01-404-007

3. Install the Forward Door of the Nose Landing Gear (Fig. 401)

A. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Recommended)
(2) D00013 Grease - MIL-G-23827 (Alternative)

B. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	12	Forward Door	32-22-01	01	40,45

C. References
(1) 12-21-13/301, Nose Gear Doors and Actuating Mechanisms
(2) 32-00-15/201, Landing Gear Door Locks
(3) 32-00-20/201, Landing Gear Downlocks
(4) 32-22-00/501, Nose Gear Doors

D. Access
(1) Location Zones
711 Nose Landing Gear (NLG)
713/714 Forward NLG Doors
715/716 Aft NLG Doors
730/740 Main Landing Gear and Doors

E. Install the Forward Doors

S 414-008

(1) Install these parts to connect the forward hinge to the support fitting on the wall of the wheel well:
(a) Bolt Assembly (1)
(b) Washer (3)
(c) Nut (2)
(d) Cotter Pin

S 414-009

(2) Install these parts to connect the aft hinge to the support fitting on the wall of the wheel well:
(a) Bolt Assembly (13)
(b) Washer (14)
(c) Bushing (16)
(d) Nut (15)
(e) Cotter Pin

S 414-010

(3) Install these parts to connect the operating rod for the door to the attach fitting:
(a) Bolt (17)
(b) Bushing (19)
(c) Washer (18)
(d) Nut (20)
(e) Cotter Pin

S 414-011

(4) Install these parts to connect the bonding jumpers to the hinges:
(a) Bolts (4 and 8)
(b) Spacers (6 and 10)
(c) Washers (5 and 9)
(d) Nuts (7 and 11)

F. Put the Airplane Back to Its Usual Condition

S 824-012

(1) Make sure the forward door is adjusted correctly (Ref 32-22-00).

S 824-022

(2) Make sure the forward door is adjusted correctly (AMM 32-22-00/501).

NOTE: Adjustment of the forward doors is not necessary if the aft doors do not require adjustment, and the same doors, attaching hardware and adjustment rods that were removed are reinstalled and the jamnuts on the adjustment rods are not loosened.

S 644-013

(3) Lubricate the hinges for the forward door at the grease fittings (Ref 12-21-13).

S 094-016

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 landing gear and close the doors (Ref 32-00-15).

NOSE GEAR FORWARD DOOR OPERATING MECHANISM - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the operating mechanism for the forward door of the nose landing gear. Task two installs the operating mechanism for the forward door of the nose landing gear.

TASK 32-22-02-004-001

2. Remove the Operating Mechanism for the Forward Door of the Nose Landing Gear (Fig. 401)
   A. References
      (1) 06-41-00/201, Fuselage (Major Zones 100 and 200) 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

711	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors
730/740	Main Landing Gear and Doors

      (2) Access Panel

113AL	Forward Access Panels

   C. Pepare for the Removal for the Operating Mechanism

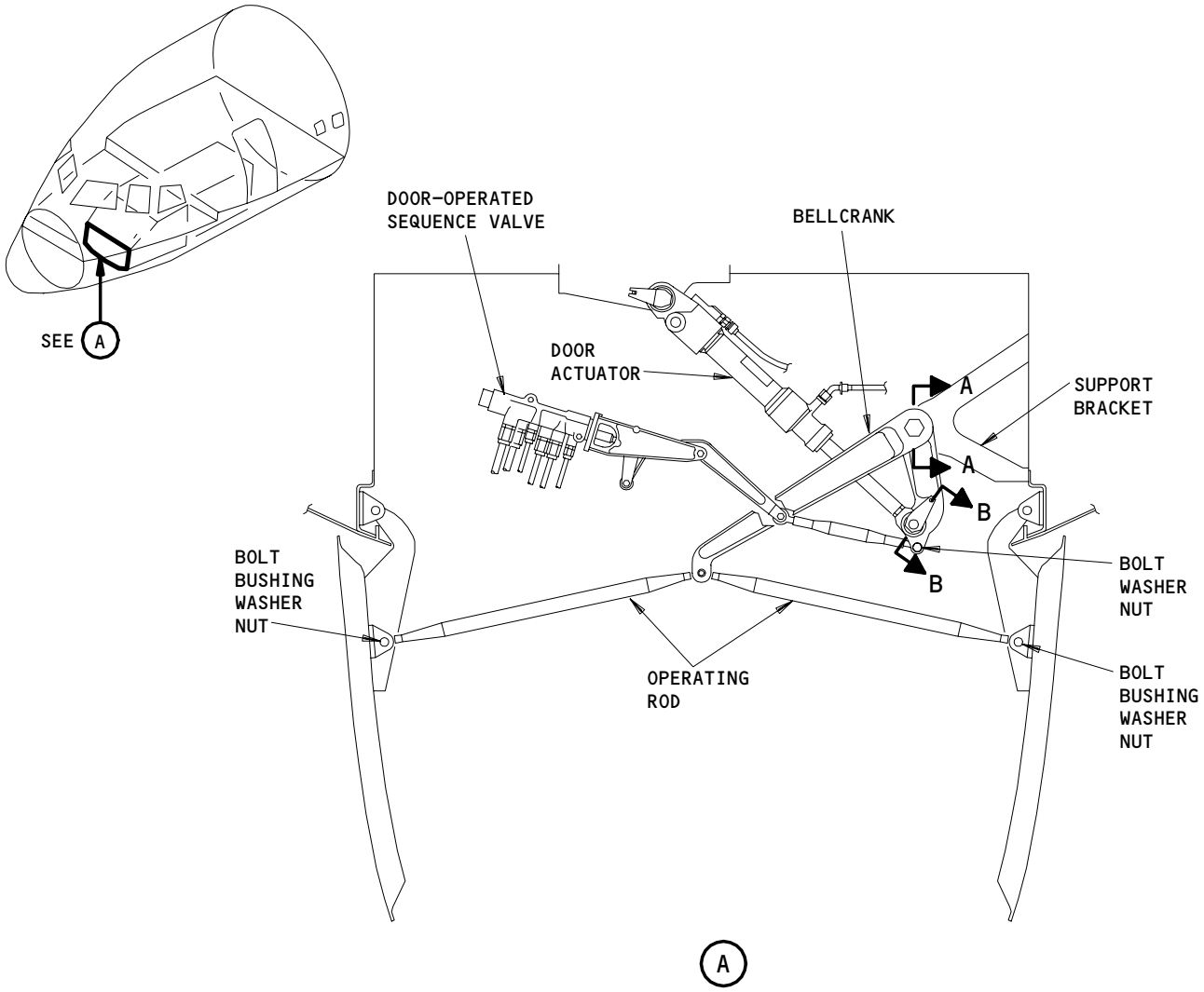
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

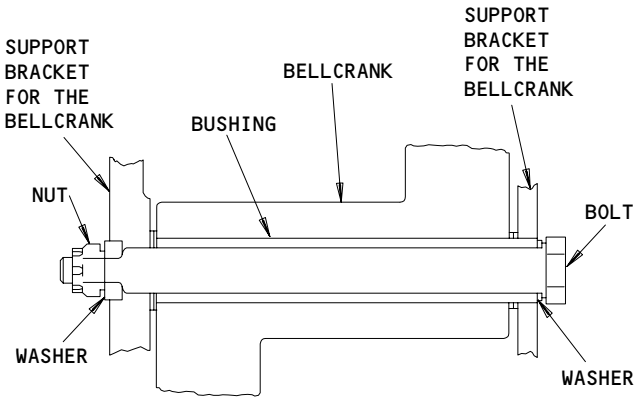
      S 494-019

      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.

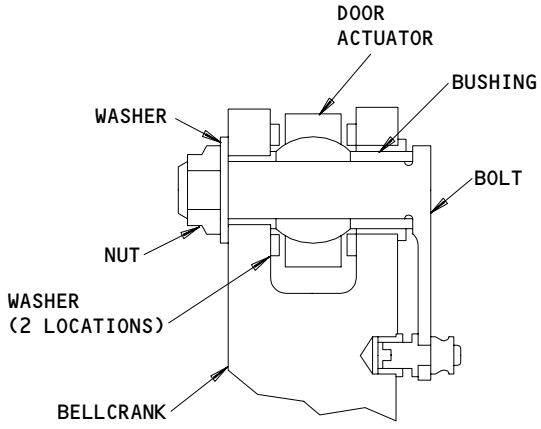
      (2) Open the doors for the landing gear and install the door locks (Ref 32-00-15).

      S 864-004
      (3) Remove the pressure from the left hydraulic system (Ref 29-11-00).





A-A



B-B

Operating Mechanism Installation for the Forward Door of the Nose Landing Gear
Figure 401

D. Remove the Operating Mechanism

S 014-005
(1) Remove the bolts to disconnect the operating rods for the door from the door hinges (Detail A).

S 014-006
(2) Hold the door actuator. Remove the bolt to disconnect the door actuator from the bellcrank (View B-B).

S 014-007
(3) Remove the bolt to disconnect the rod for the door-operated sequence valve from the bellcrank (Detail A).

S 844-008
(4) Get access through the forward access door, panel 113AL (Ref 06-41-00).

S 014-009
(5) Remove the washer and the nut from the bolt (View A-A).

S 014-010
(6) Hold the bellcrank. Remove the bolt to disconnect the bellcrank from the support bracket.

TASK 32-22-02-404-011

3. Install the Operating Mechanism for the Forward Door of the Nose Landing Gear (Fig. 401)

A. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Recommended)
(2) D00013 Grease - MIL-G-23827 (Alternative)

B. References
(1) 32-00-15/201, Landing Gear Door Locks
(2) 32-00-20/201, Landing Gear Downlocks
(3) 32-22-00/501, Nose Gear Doors

C. Access
(1) Location Zones

711	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors
730/740	Main Landing Gear and Doors

(2) Access Panel

113AL	Forward Access Panels

D. Install the Operating Mechanism

S 414-012

(1) Install the bushing, the bolt, the washers, the nut, and the cotter pin to connect the bellcrank to the support bracket (View A-A). Tighten the bolt to 1080-1320 pound-inches.

S 414-013

(2) Install the bolt, the washers, the bushing, and the nut to connect the door actuator to the bellcrank (View B-B).

S 414-014

(3) Install the bolt, the washers, the bushings, and the nut to connect the rod for the door-operated sequence valve to the bellcrank (Detail A).

S 414-015

(4) Install the bushings, the bolts, the washers, the nuts, and the cotter pins to connect the operating rods for the door to the door hinges.

S 824-016

(5) Do a check of the forward doors for the correct adjustment (Ref 32-22-00).

E. Put the Airplane Back to Its Usual Condition

S 644-017

(1) Lubricate the operating mechanism at the grease fittings.

S 094-020

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 and close the doors (Ref 32-00-15).

NOSE GEAR AFT DOOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the aft door of the nose landing gear. The second task installs the aft door of the nose landing gear.

TASK 32-22-03-004-001

2. Remove the Aft Door of the Nose Landing Gear (Fig. 401)
   A. References
      (1) 32-00-15/201, Landing Gear Door Locks
      (2) 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones

711	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors
730/740	Main Landing Gear and Doors

   C. Prepare for the Removal of the Aft Doors

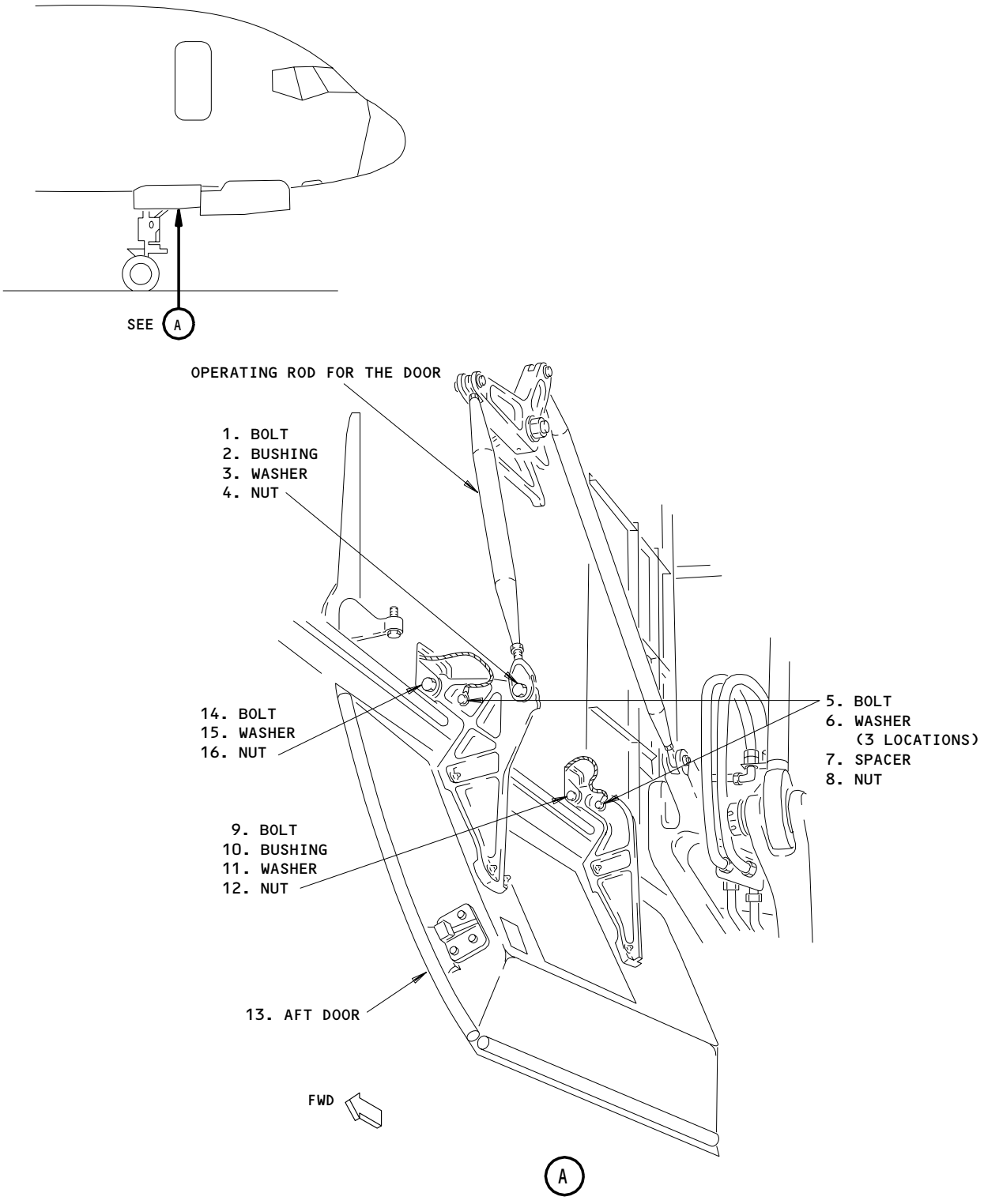
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

      S 494-014

      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).
   D. Remove the Aft Door.

      S 014-004
      (1) Remove the bolts (5) to disconnect the bonding jumpers from the door hinges (Detail A).



Aft Door Installation for the Nose Landing Gear
Figure 401

S 014-005
(2) Remove the bolt (1) to disconnect the operating rod for the door from the door hinge.

S 014-006
(3) Hold the door (13).
(a) Remove the bolts (9 and 14) to disconnect the door hinges from the wall of the wheel well.

TASK 32-22-03-404-007

3. Install the Aft Door of the Nose Landing Gear (Fig. 401)

A. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Recommended)
(2) D00013 Grease - MIL-G-23827 (Alternative)

B. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	13	Aft Door	32-22-01	01	110,115

C. References
(1) 32-00-15/201, Landing Gear Door Locks
(2) 32-22-00/501, Nose Gear Doors

D. Access
(1) Location Zones
711 Nose Landing Gear (NLG)
713/714 Forward NLG Doors
715/716 Aft NLG Doors
730/740 Main Landing Gear and Doors

E. Install the Aft Door

S 414-011
(1) Install these parts to connect the hinge for the aft door to the wall of the wheel well (Detail A):
(a) Bolt (14)
(b) Washer (15)
(c) Nut (16)
(d) Cotter Pin

S 414-012
(2) Install these parts to connect the hinge for the aft door to the wall of the wheel well:
(a) Bolt (9)
(b) Bushing (10)
(c) Washer (11)
(d) Nut (12)
(e) Cotter Pin

S 414-013
(3) Install these parts to connect the operating rod for the door to the hinge of the aft door:
(a) Bushing (2)
(b) Bolt (1)
(c) Washer (3)
(d) Nut (4)
(e) Cotter Pin

S 414-016
(4) Install these parts to connect the bonding jumpers to the door hinges:
(a) Bolts (5)
(b) Washers (6)
(c) Spacers (7)
(d) Nuts (8)

F. Put the Airplane Back to Its Usual Condition

S 824-008

(1) Deleted.

S 824-021

(2) Make sure the aft door is adjusted correctly (AMM 32-22-00/501).

NOTE: Adjustment of the aft doors is not necessary if the same doors, attaching hardware and adjustment rods that were removed are reinstalled and the jamnuts on the adjustment rods are not loosened.

S 644-009

(3) Lubricate the aft door at the grease fittings.

S 094-015

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 for the landing gear and close the doors (Ref 32-00-15).

NOSE GEAR AFT DOOR OPERATING MECHANISM - REMOVAL/INSTALLATION

1. General
   A. This procedure contains the two tasks that follow:
      (1) The first task removes the operating mechanism for the aft door of the nose landing gear. It contains steps to disconnect the operating rods from the door hinge and the shock strut and remove the bellcrank. This task also contains steps to disconnect the operating rods from the bellcrank and remove the rods individually.
      (2) The second task installs the operating mechanism or the operating rods on the bellcrank for the aft door of the nose landing gear.

TASK 32-22-05-004-001

2. Remove the Operating Mechanism for the Aft Door of the Nose Landing Gear (Fig. 401)
   A. References
      (1) 32-00-15/201, Landing Gear Door Locks
      (2) 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones

711	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors
730/740	Main Landing Gear and Doors

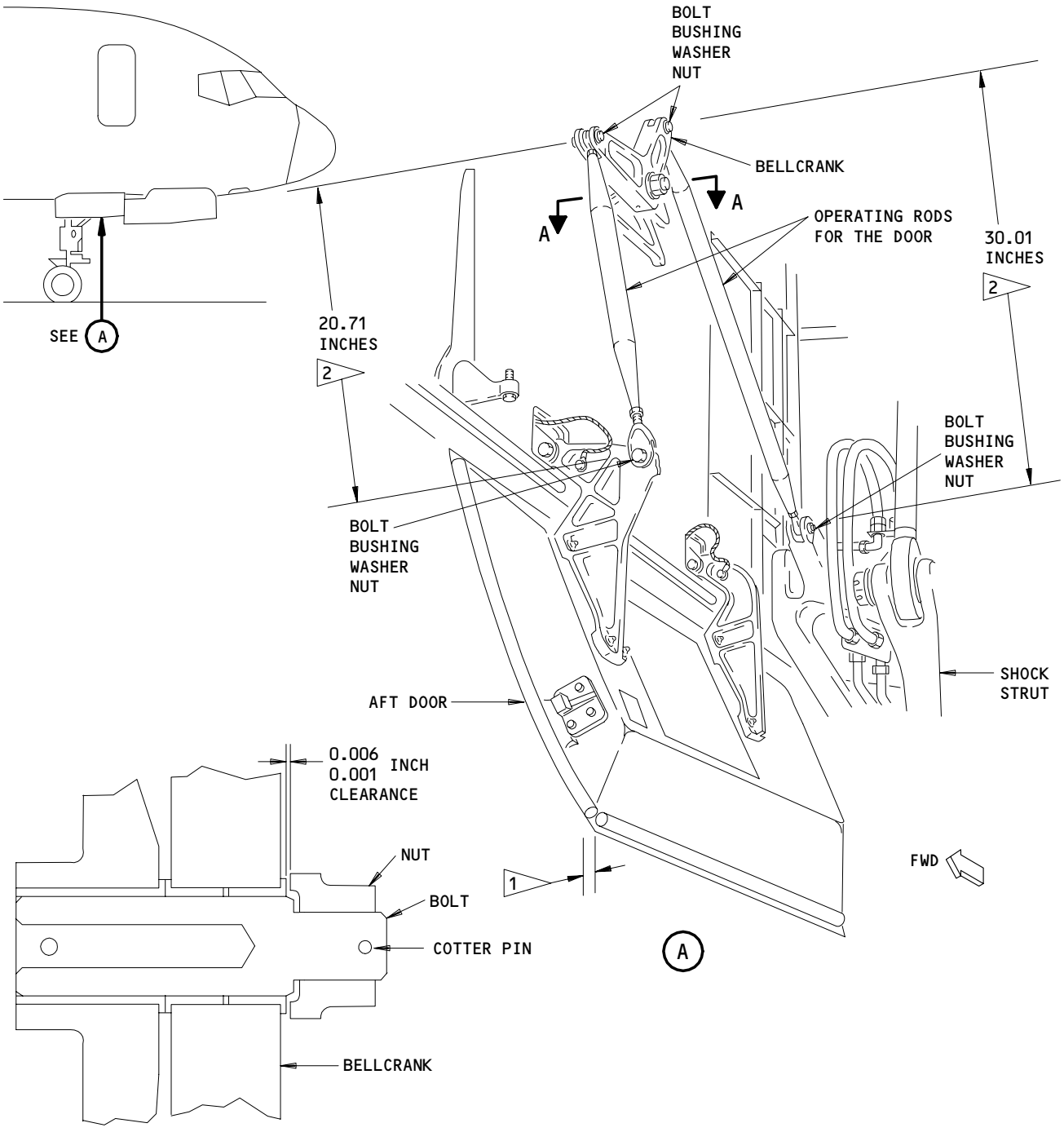
   C. Prepare for the Removal of the Operating Mechanism

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-012

      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 MAXIMUM PERMITTED DOOR SIDE-TO-SIDE MOVEMENT:
0.27 INCHES AT THE BOTTOM EDGE OF THE DOORS

2 THE LENGTH OF THE OPERATING RODS FOR THE LEFT AND RIGHT
DOOR MUST NOT HAVE MORE THAN A 0.03 INCH DIFFERENCE

Operating Mechanism Installation for the Aft Door of the Nose Landing Gear
Figure 401

S 864-017

(3) Put the control lever for the landing gear in the OFF position. Attach a DO-NOT-OPERATE tag to the control lever.

D. Remove the Operating Mechanism

S 014-004

(1) Remove the nuts, washers, and bolts to disconnect the operating rods from the shock strut and the door hinge.

S 014-014

(2) Do the steps that follow if it is necessary to remove an operating rod from the bellcrank:
   (a) Remove the nut, washer, and bolt to disconnect the operating rod from the bellcrank.
   (b) Remove the operating rod.

NOTE: Do not loosen the jamnuts on the ends of the operating rods. It is important to keep the bearing locations relative to each other the same. This will permit you to use the old rod for a reference to adjust the new rod.

   (c) Measure the length of the operating rod that was removed. If the length is not within the range shown on Fig. 401 do the aft door adjustment (AMM 32-22-00/501) after you replace the rod.

S 014-005

(3) Remove the nut from the bellcrank (View A-A).
   (a) Move the bellcrank off of the bolt.
   (b) Remove the operating mechanism.

TASK 32-22-05-404-006

3. Install the Operating Mechanism for the Aft Door of the Nose Landing Gear (Fig. 401)

A. Equipment
   (1) Pushrod Adjust Tool -
   Tramco T930-0063

B. Consumable Materials
   (1) D00633 Grease - BMS 3-33 (Recommended)
   (2) D00013 Grease - MIL-G-23827 (Alternative)
   (3) C00308 Compound, Corrosion Preventive -
   MIL-C-11796, Class 3

C. References
   (1) 32-00-15/201, Landing Gear Door Locks
   (2) 32-22-00/501, Nose Gear Doors

D. Access

(1) Location Zones

711	Nose Landing Gear (NLG)
713/714	Forward NLG Doors
715/716	Aft NLG Doors
730/740	Main Landing Gear and Doors

E. Install the Operating Mechanism

S 414-007

(1) Put the bellcrank on the bolt.
   (a) Apply the compound to the inner surface of the nut (View A-A).
   (b) Immediately install the nut on the bolt.
   (c) Tighten the nut until there is a 0.001-0.006 inch clearance between the bellcrank and the nut.
   (d) Install the cotter pin.

S 824-016

(2) If you will install a new operating rod, do the steps that follow to adjust the length of the rod:
   (a) Loosen the adjust bolts on the pushrod adjust tool so that the slotted plates can move freely
   (b) Install the rod ends of the old rod on the pins on the slotted plates
   (c) Tighten the adjust bolts so that the slotted plates cannot move
   (d) Remove the old rod from the pushrod adjust tool
   (e) Adjust the length of the new operating rod to match the two pin locations on the pushrod adjust tool. The fit of the new rod on the pins of the adjust tool should be tight.
   (f) Tighten the jamnut on the new rod
   (g) Install lockwire on the jamnut
   (h) Remove the new pushrod from the pushrod adjust tool.

S 414-015

(3) Do the steps that follow to connect the operating rod to the bellcrank:
   (a) Apply the compound to the inner surfaces of the bushing, the washer, and the nut.
   (b) Immediately install the bolt, bushing, washer, and nut to connect the operating rod to the bellcrank.

S 414-008

(4) Do the steps that follow to connect the operating rods to the door hinge and the shock strut:
   (a) Apply compound to the inner surfaces of the bushings, the washers, and the nuts.
   (b) Immediately install the bolts, bushings, washers, and nuts to connect the operating rods of the door to the door hinge and to the shock strut:

F. Put the Airplane Back to Its Usual Condition

S 824-009
(1) Make sure the aft door is adjusted correctly (AMM 32-22-00/501).

S 644-010
(2) Lubricate the operating mechanism at the grease fittings.

S 864-018
(3) Remove the DO-NOT-OPERATE tag from the control lever for the landing gear.

S 094-013

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

NOSE GEAR AFT DOOR OPERATING MECHANISM - INSPECTION/CHECK

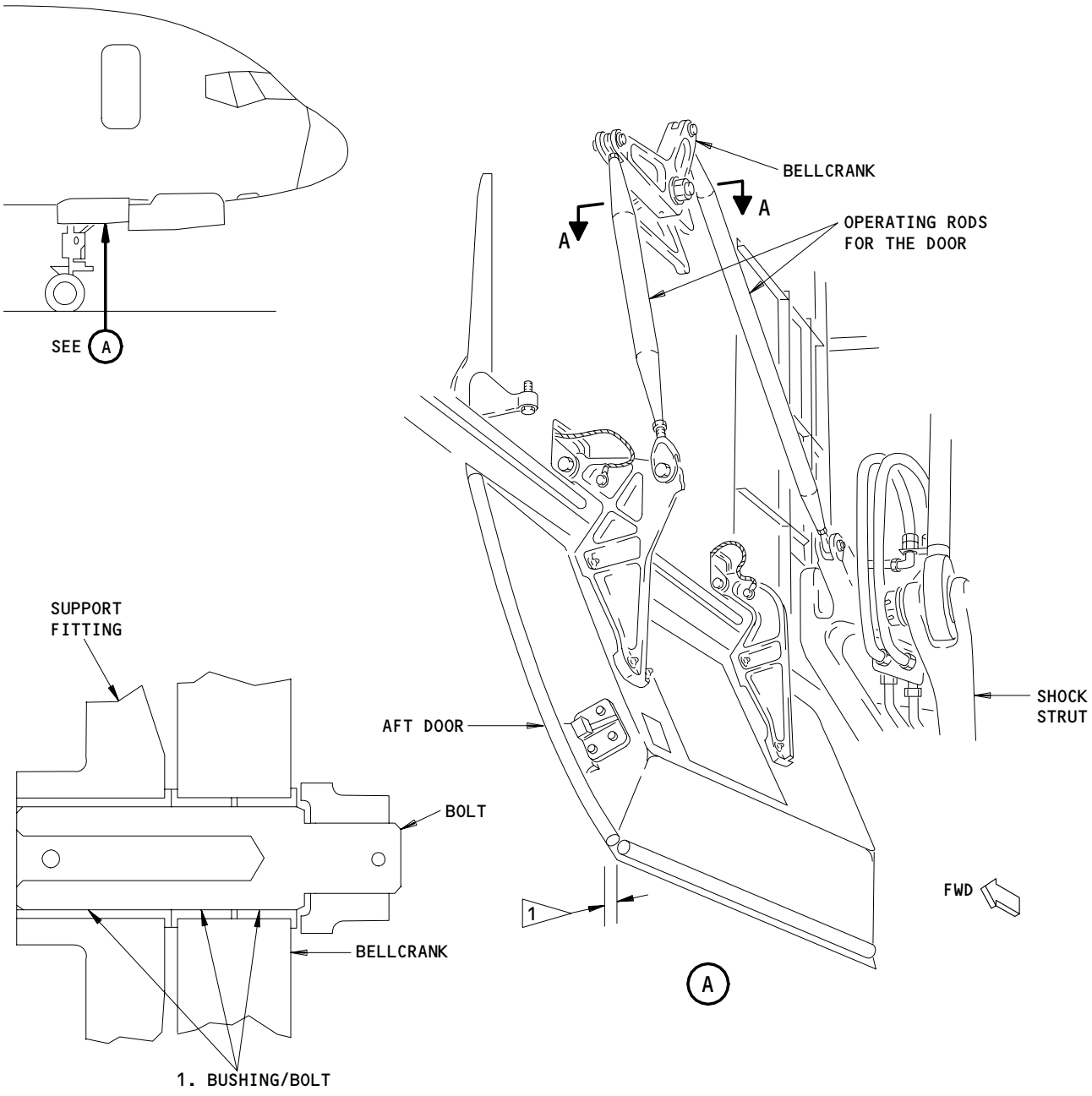
1. General
   A. This procedure only has an illustration, and a wear limit table which shows the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to the Nose Gear Aft Door Operating Mechanism - Removal/Installation for the procedure to do these tasks.

TASK 32-22-05-206-001

2. Wear Limits for the Aft Door Operating Mechanism (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.



1 MAXIMUM PERMITTED DOOR SIDE-TO-SIDE MOVEMENT:
0.27 INCHES AT THE BOTTOM EDGE OF THE DOORS

Operating Mechanism for the Aft Door Wear Limits
Figure 601 (Sheet 1)

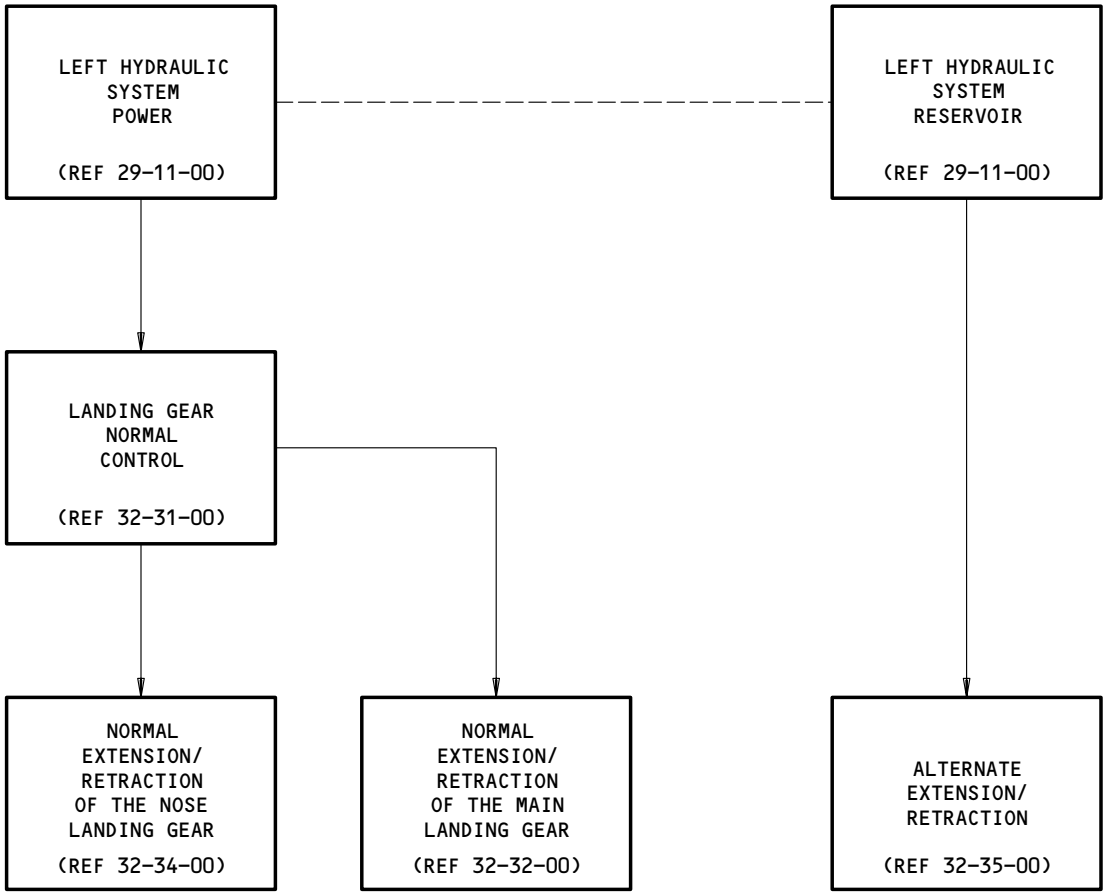
INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
			DIAMETER		PER-MITTED WEAR DIM.	MAX DIA CLEAR-ANCE			
			MIN	MAX					
1	BUSHING	ID	1.1227	1.1232	1.1252	0.0052	X		
	BOLT	OD	1.1220	1.1225	1.1200		X		

Operating Mechanism for the Aft Door Wear Limits
Figure 601 (Sheet 2)

E26981

EXTENSION AND RETRACTION - DESCRIPTION AND OPERATION

1. General
   A. The extension and retraction system does the control and operation for all landing gear movement. The extension and retraction system includes the systems that follow:
      (1) Extension and retraction system for the main landing gear
      (2) Extension and retraction system for the nose landing gear
      (3) A control system
      (4) Alternate extension system.
2. Component Details
   A. Landing Gear Control (AMM 32-31-00/001)
      (1) The control system for the landing gear includes a control lever and a hydraulic valve. These components mechanically supply hydraulic pressure to the extension and retraction systems for the main and nose landing gear.
   B. Extension and Retraction of the Main Landing Gear (AMM 32-32-00/001)
      (1) The extension and retraction system for the main landing gear includes hydraulic actuators and valves. These components give the sequence and operate the movement of the main landing gear and the doors for the main landing gear.
   C. Extension and Retraction of the Nose Landing Gear (AMM 32-34-00/001)
      (1) The extension and retraction system for the nose landing gear includes hydraulic actuators and valves. These components give the sequence and operate the movement of the nose landing gear and the forward doors for the nose landing gear.
   D. Landing Gear Alternate Extension (AMM 32-35-00/001)
      (1) The alternate extension system for the landing gear includes hydraulic actuators, valves, and a pump. These components release the uplocks on the landing gear, open the doors, and let the landing gear extend when the normal extension system does not operate. The alternate extension system is also used to open the landing gear doors from the ground to get access to the wheel wells for maintenance.



Landing Gear Extension and Retraction Schematic
Figure 1

EXTENSION AND RETRACTION

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
ACTUATOR – MAIN GEAR ALTERNATE UPLOCK RELEASE	2	2	LEFT & RIGHT MAIN WHEEL WELLS	32-35-01
ACTUATOR – MAIN GEAR DOOR	3	2	LEFT & RIGHT MAIN WHEEL WELLS	32-32-12
ACTUATOR – MAIN GEAR DOOR LOCK RELEASE	3	2	LEFT & RIGHT MAIN WHEEL WELLS	32-35-03
ACTUATOR – MAIN GEAR DOOR RELEASE INTERLOCK, M10279, M10280	3	2	LEFT & RIGHT MAIN WHEEL WELLS	32-35-06
ACTUATOR – MAIN GEAR DOWNLOCK	7	2	LEFT & RIGHT MAIN GEAR	32-32-02
ACTUATOR – MAIN GEAR RETRACT	7	2	551BB, 651BB WING ACCESS PANELS	32-32-01
ACTUATOR – MAIN GEAR TRUCK POSITIONER	7	2	LEFT & RIGHT MAIN GEAR	32-32-15
ACTUATOR – MAIN GEAR UPLOCK	2	2	LEFT & RIGHT MAIN WHEEL WELLS	32-32-04
ACTUATOR – NOSE GEAR ALTERNATE UPLOCK RELEASE	8	1	NOSE WHEEL WELL	32-35-21
ACTUATOR – NOSE GEAR DOOR	8	1	NOSE WHEEL WELL	32-34-03
ACTUATOR – NOSE GEAR DOOR LOCK RELEASE	8	1	NOSE WHEEL WELL	32-35-22
ACTUATOR – NOSE GEAR DOOR RELEASE INTERLOCK, M10281	8	1	NOSE WHEEL WELL	32-35-24
ACTUATOR – NOSE GEAR LOCK	8	1	NOSE WHEEL WELL	32-34-02
ACTUATOR – NOSE GEAR RETRACT	11	1	NOSE WHEEL WELL	32-34-01
CABLES – LANDING GEAR EXTENSION AND RETRACTION CONTROL	13	4	FROM CONTROL LEVER QUADRANT, AFT TO SELECTOR VALVE IN RIGHT MAIN WHEEL WELL	32-00-05
CIRCUIT BREAKERS	1		FLT COMPT, P6, P11	
LANDING GEAR ALTN EXT CONT, C4177		1	6F5	*
LANDING GEAR ALTN EXT MOTOR, C4248		1	6F6	*
DOORS CLOSE GROUND ACCESS, C4178		1	11S17	*
LEVER LOCK, C1174		1	11S20	*
LIGHT – MAIN GEAR DOOR UNSAFE, L490, L505	3	2	LEFT & RIGHT MAIN WHEEL WELLS	*
LIGHT – NOSE GEAR DOOR UNSAFE, L489	8	1	NOSE WHEEL WELL	*
MODULE – LANDING GEAR CONTROL LEVER, M937	1	1	FLT COMPT, P3	32-31-01
POWER PACK – ALTERNATE EXTENSION SYSTEM, M10231	5	1	RIGHT MAIN WHEEL WELL	32-35-10
RELAY – (FIM 31-01-36/101)				
ALTN EXT CONT, K10369				
ALTN EXT CONT LATCH, K10370				
RELAY – (FIM 32-09-00/101)				
SYS NO. 2 AIR/GND, K209				
RESISTOR – (FIM 31-01-36/101)				
ALTN EXT SYS, R10266				
ALTN EXT SYS, R10267				
SOLENOID – LANDING GEAR LEVER, L1	1	1	FLT COMPT, P3, CONTROL LEVER MODULE	*
SWITCH – ALL DOORS OPEN, S10190	12	1	198PR, LANDING GEAR DOOR GROUND CONTROL ACCESS PANEL, P72	*
SWITCH – ALL DOORS OPEN ARM, S10191	12	1	198PR, LANDING GEAR DOOR GROUND CONTROL ACCESS PANEL, P72	*
SWITCH – ALTN GEAR EXTENSION, S10260	1	1	FLT COMPT, P3	*
SWITCH – GEAR TILT PRESSURE, S452, S453	6	2	LEFT & RIGHT MAIN WHEEL WELLS, TRUCK POSITIONER SHUTTLE VALVE	*
SWITCH – HYDRAULIC PRESSURE, S10366	8	1	NOSE WHEEL WELL	*
SWITCH – (FIM 32-61-00/101)				
LANDING GEAR LEVER UP, S1				

* SEE THE WDM EQUIPMENT LIST

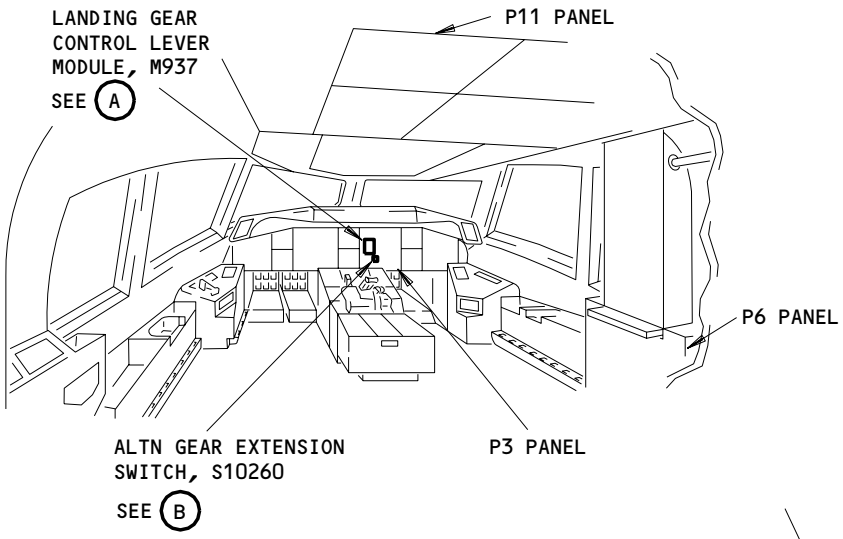
Extension and Retraction – Component Index
Figure 101 (Sheet 1)

683287

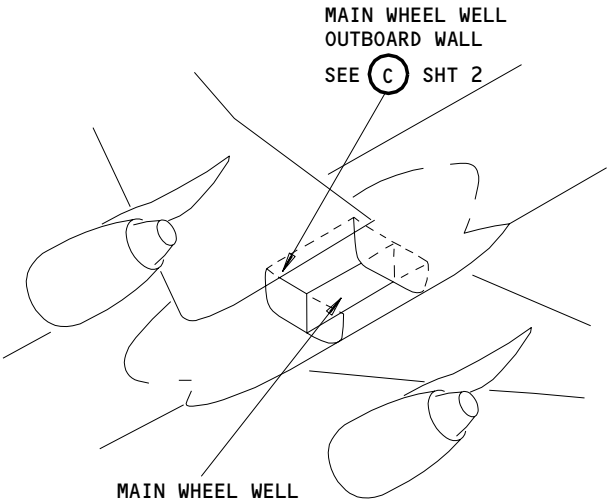
COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
SWITCH – MAIN GEAR DOOR CLOSE, S10192	12	1	198PR, LANDING GEAR DOOR GROUND CONTROL ACCESS PANEL, P72	*
SWITCH – MAIN GEAR DOOR CLOSED, S10370,S10371	2	2	LEFT & RIGHT MAIN WHEEL WELLS	*
SWITCH – MAIN GEAR DOOR LOCKED, S10363,S10364	4	2	LEFT & RIGHT MAIN WHEEL WELLS	*
SWITCH – MAIN GEAR DOOR UNSAFE LT PTT, S10365	12	1	198PR, LANDING GEAR DOOR GROUND CONTROL ACCESS PANEL, P72	*
SWITCH – NOSE GEAR DOOR CLOSE, S10193	11	1	NOSE GEAR, P63	*
SWITCH – NOSE GEAR DOOR CLOSED, S10372	8	1	NOSE WHEEL WELL	*
SWITCH – NOSE GEAR DOOR LOCKED, S10362	9	1	NOSE WHEEL WELL	*
SWITCH – NOSE GEAR DOOR UNSAFE LT PTT, S10361	11	1	NOSE GEAR, P63	*
UPLOCK ASSEMBLY – MAIN GEAR	2	2	LEFT & RIGHT MAIN WHEEL WELLS	32-32-16
VALVE – LANDING GEAR ALTERNATE EXTENSION SHUTTLE	14	1	RIGHT MAIN WHEEL WELL	32-35-27
VALVE – LANDING GEAR SELECTOR	5	1	RIGHT MAIN WHEEL WELL	32-31-02
VALVE – MAIN GEAR DOOR SAFETY	3	2	LEFT & RIGHT MAIN WHEEL WELLS	32-35-05
VALVE – MAIN GEAR DOOR-OPERATED GEAR SEQUENCE	3	2	LEFT & RIGHT MAIN WHEEL WELLS	32-32-05
VALVE – MAIN GEAR DOWNLOCK-OPERATED DOOR SEQUENCE	6	2	LEFT & RIGHT MAIN WHEEL WELLS	32-32-07
VALVE – MAIN GEAR TRUCK POSITIONER SHUTTLE	6	2	LEFT & RIGHT MAIN WHEEL WELLS	32-32-17
VALVE – MAIN GEAR UPLOCK-OPERATED SEQUENCE	2	2	LEFT & RIGHT MAIN WHEEL WELLS	32-32-09
VALVE – NOSE GEAR DOOR FLOW CONTROL	8	1	NOSE WHEEL WELL	32-34-00
VALVE – NOSE GEAR DOOR SAFETY	8	1	NOSE WHEEL WELL	32-35-23
VALVE – NOSE GEAR DOOR-OPERATED SEQUENCE	8	1	NOSE WHEEL WELL	32-34-05
VALVE – NOSE GEAR GEAR SEQUENCE VALVE BYPASS	8	1	NOSE WHEEL WELL	32-34-04
VALVE – NOSE GEAR GEAR-OPERATED SEQUENCE	8	1	NOSE WHEEL WELL	32-34-06

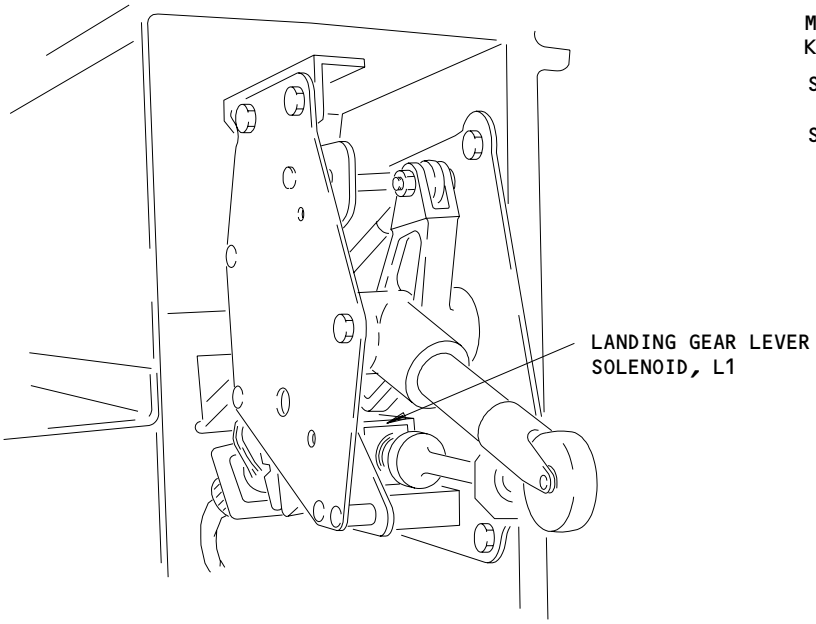
* SEE WM EQUIPMENT LIST

Component Index
Figure 101 (Sheet 2)



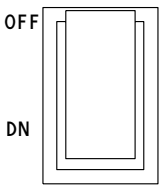
FLIGHT COMPARTMENT





LANDING GEAR CONTROL LEVER MODULE, M937

A

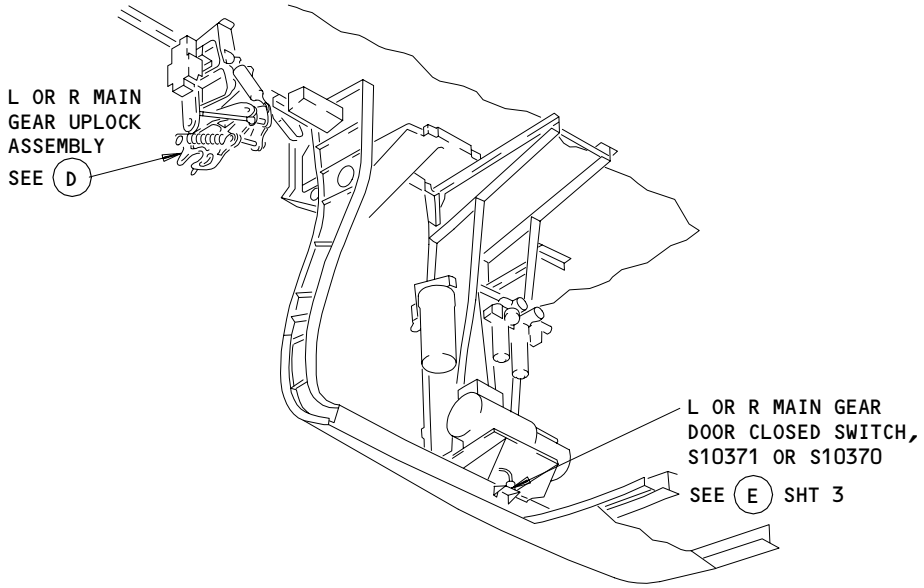


ALTN GEAR
EXTENSION SWITCH, S10260

B

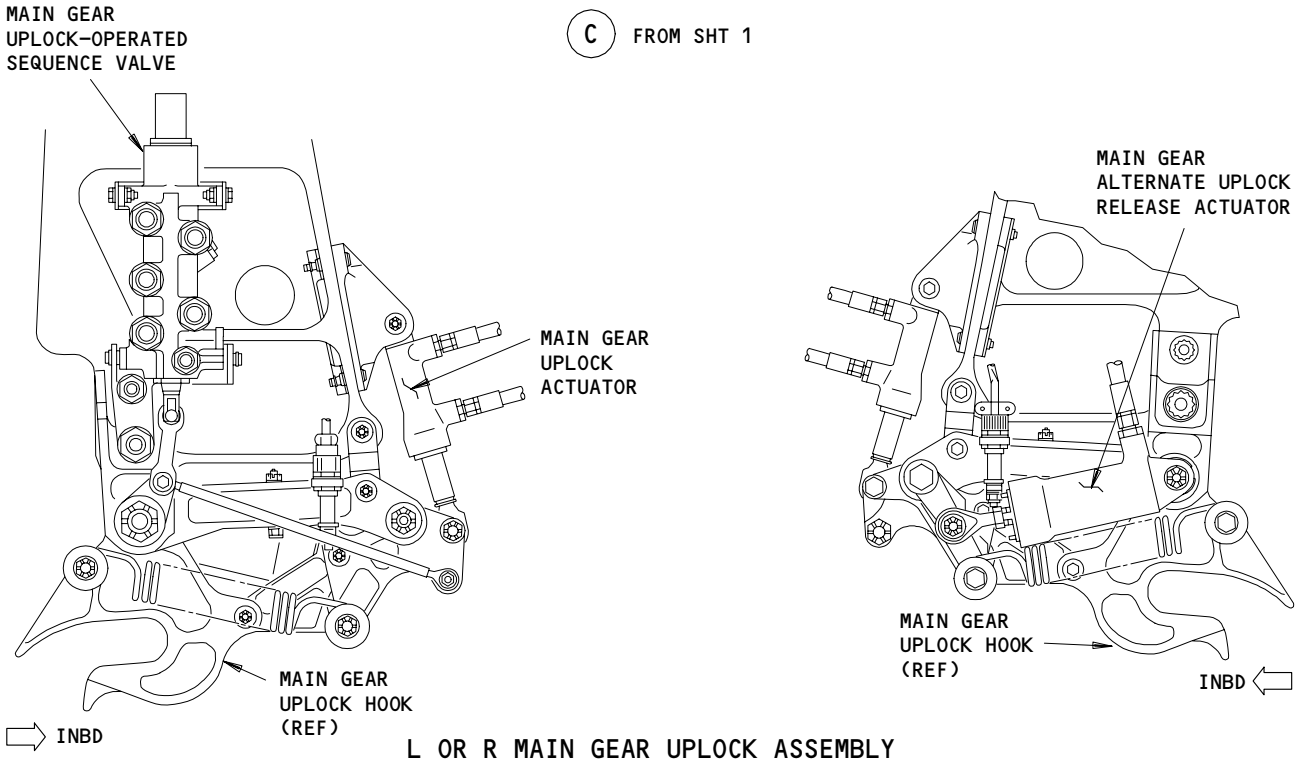
Component Location
Figure 102 (Sheet 1)

G39358



LEFT MAIN
WHEEL WELL OUTBOARD WALL
(RIGHT SIMILAR)

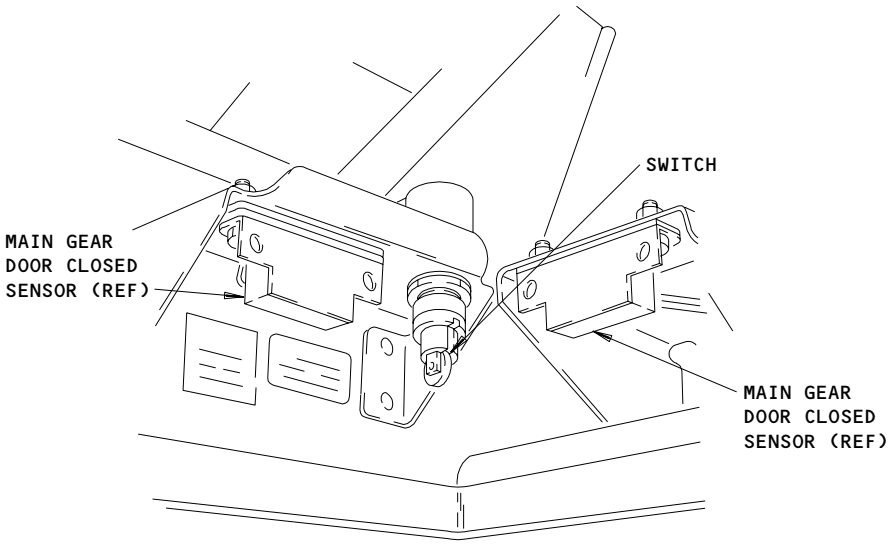
C FROM SHT 1



L OR R MAIN GEAR UPLOCK ASSEMBLY

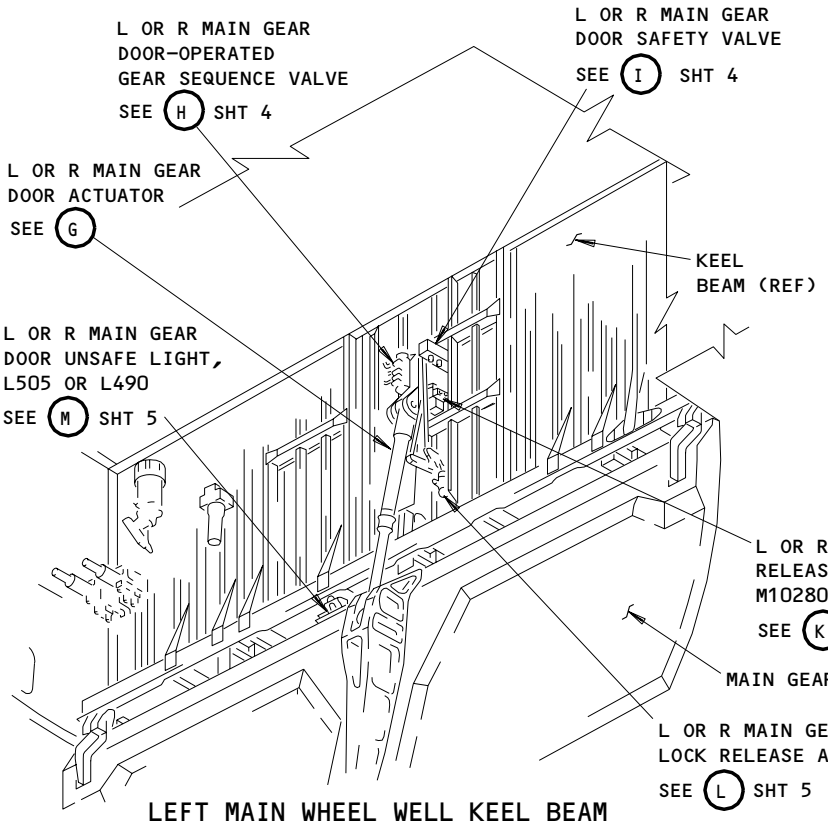
D

Component Location
Figure 102 (Sheet 2)



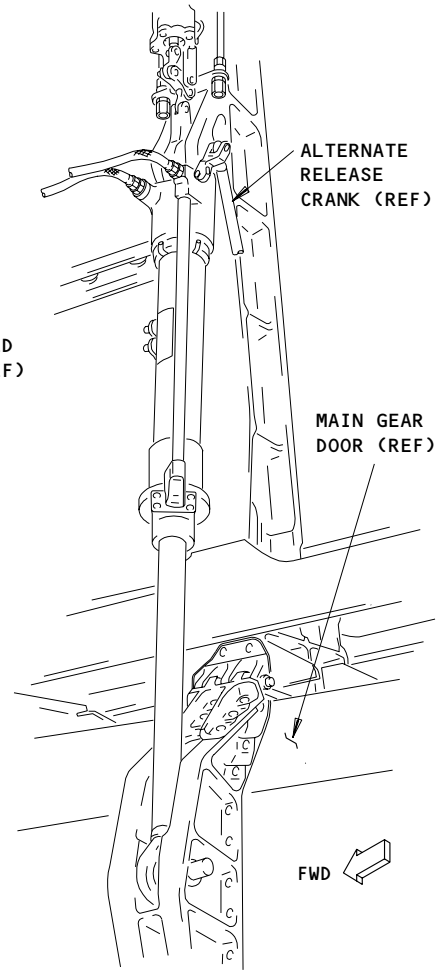
L OR R MAIN GEAR DOOR CLOSED
SWITCH, S10371 OR S10370

(E) FROM SHT 2



LEFT MAIN WHEEL WELL KEEL BEAM
(RIGHT SIMILAR)

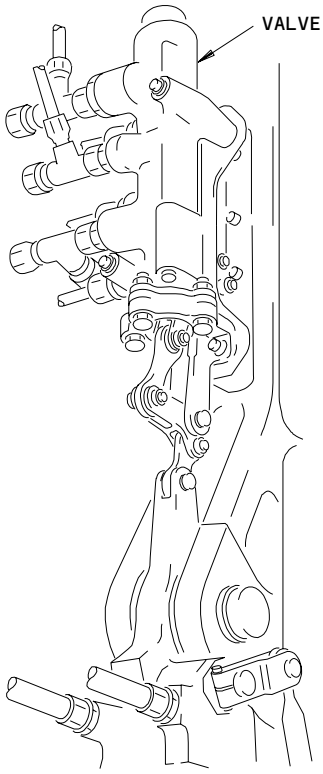
(F) FROM SHT 1



L OR R MAIN GEAR DOOR ACTUATOR

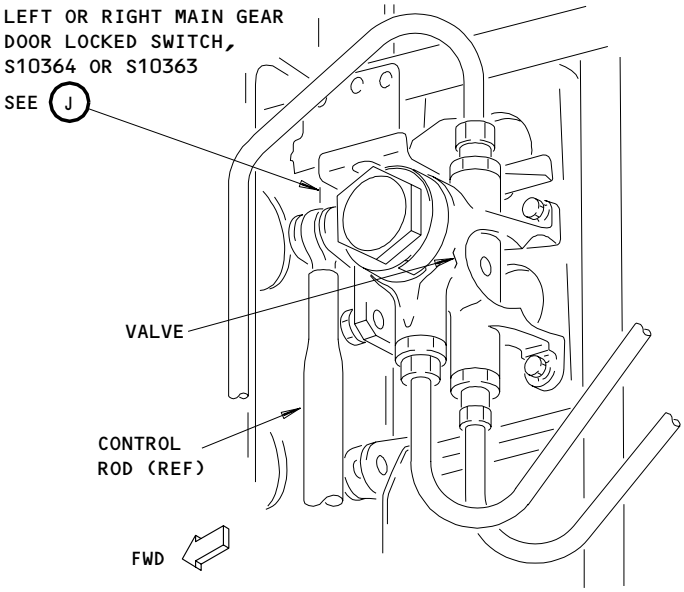
(G)

Component Location
Figure 102 (Sheet 3)



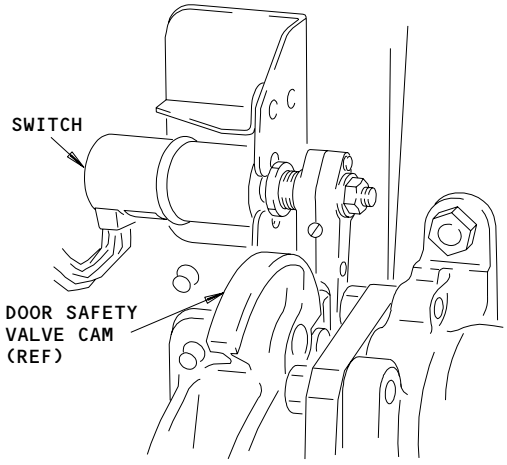
LEFT OR RIGHT MAIN GEAR DOOR-OPERATED GEAR SEQUENCE VALVE

H FROM SHT 3



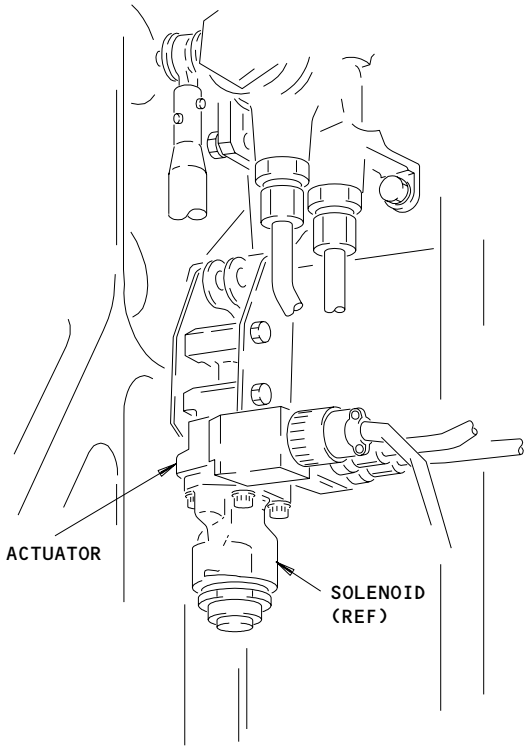
LEFT OR RIGHT MAIN GEAR DOOR SAFETY VALVE

I FROM SHT 3



LEFT OR RIGHT MAIN GEAR DOOR LOCKED SWITCH, S10364 OR S10363

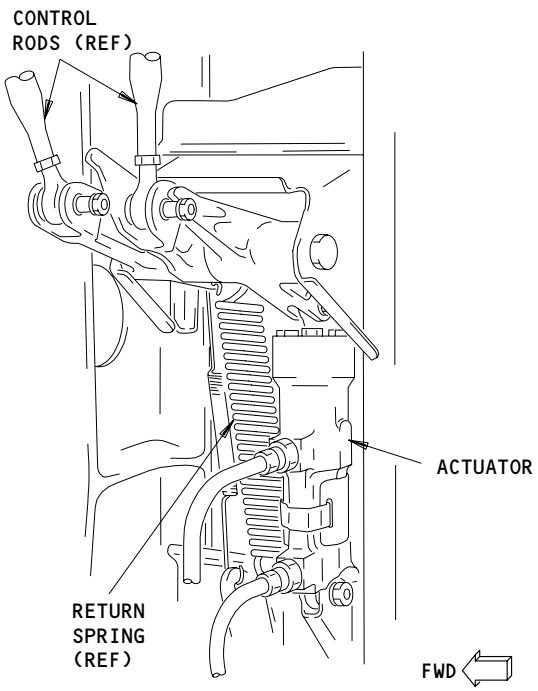
J



LEFT OR RIGHT MAIN GEAR DOOR RELEASE INTERLOCK ACTUATOR

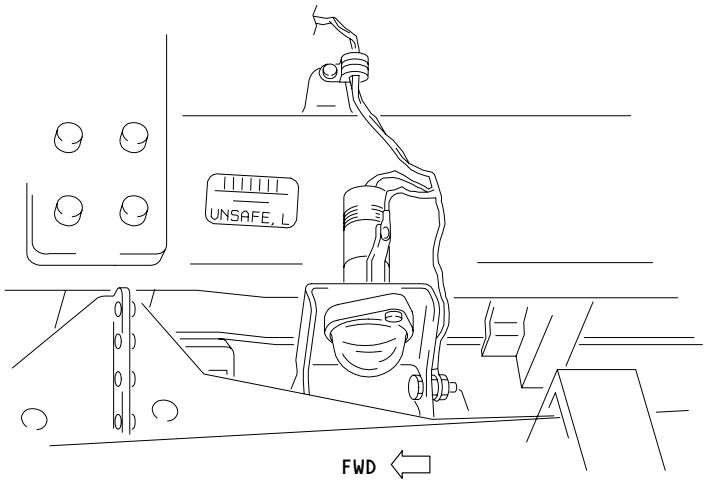
K FROM SHT 3

Extension and Retraction - Component Location
Figure 102 (Sheet 4)



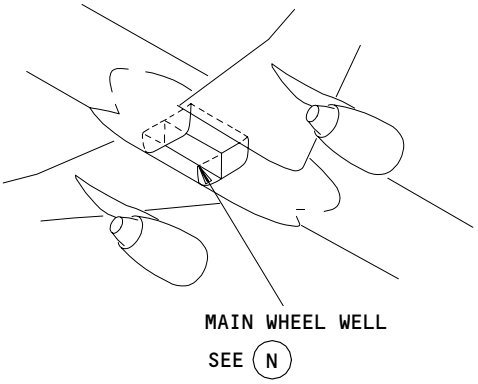
L OR R MAIN GEAR DOOR LOCK
RELEASE ACTUATOR

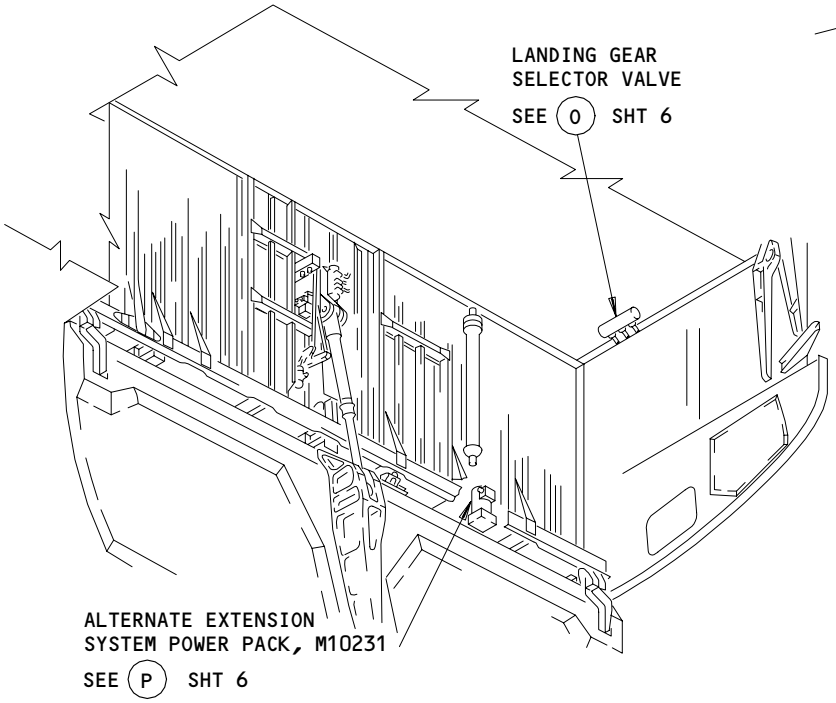
(L) FROM SHT 3



L OR R MAIN GEAR
DOOR UNSAFE LIGHT, L505 OR L490

(M) FROM SHT 3



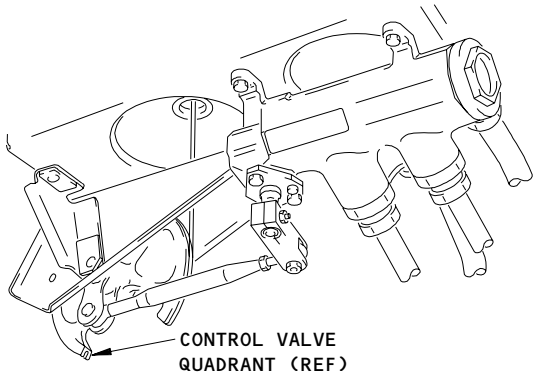


RIGHT MAIN WHEEL WELL (ONLY)

(N)

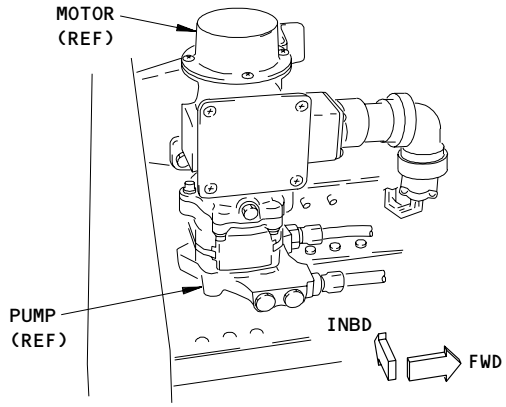
Component Location
Figure 102 (Sheet 5)

99388



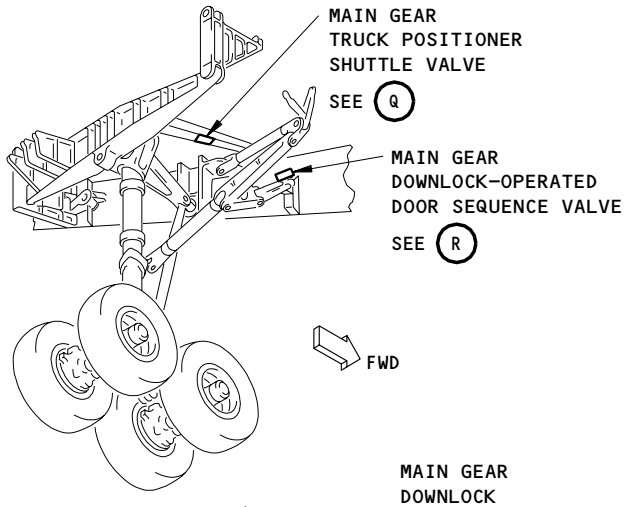
LANDING GEAR SELECTOR VALVE

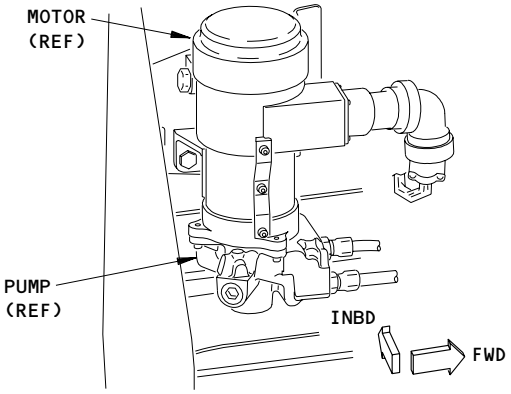
(O) FROM SHT 5



FRISBY ALTERNATE EXTENSION SYSTEM POWER PACK, M10231

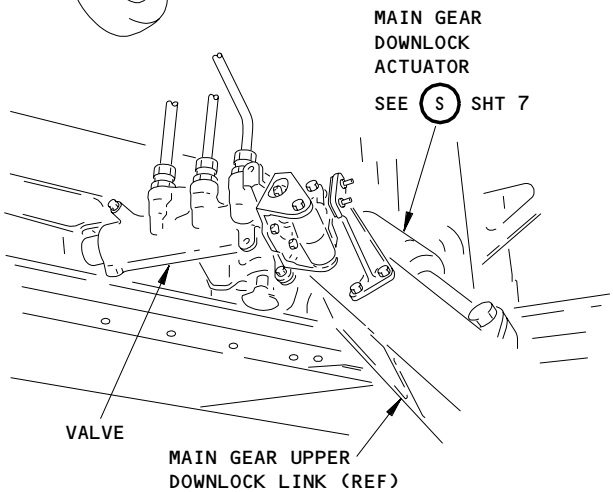
(P) FROM SHT 5





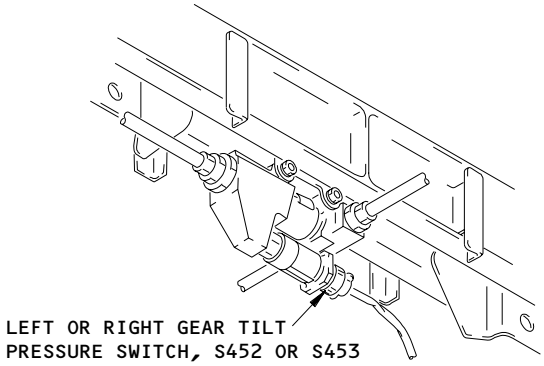
DOWTY ROTAL ALTERNATE EXTENSION SYSTEM POWER PACK, M10231

(P) FROM SHT 5



LEFT OR RIGHT MAIN GEAR DOWNLOCK–OPERATED DOOR SEQUENCE VALVE

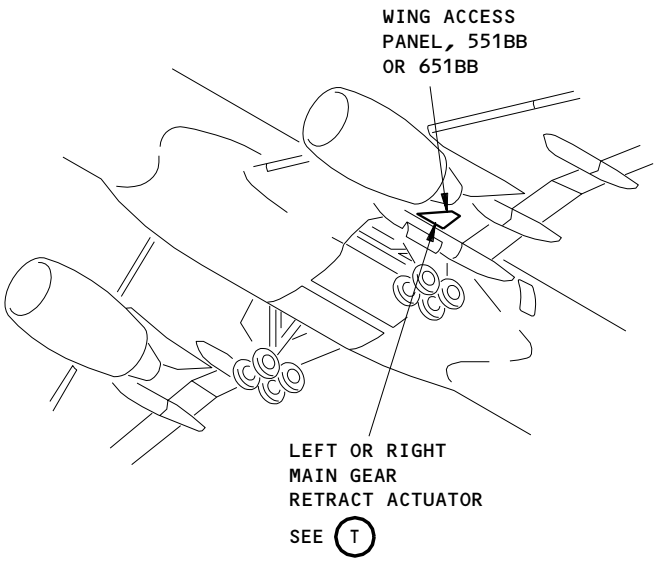
(R)

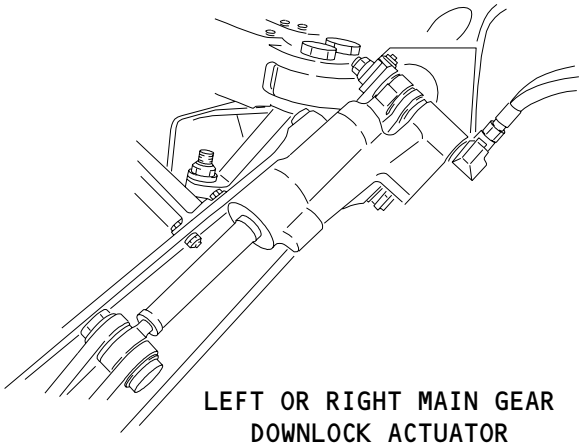


LEFT OR RIGHT MAIN GEAR TRUCK POSITIONER SHUTTLE VALVE

(Q)

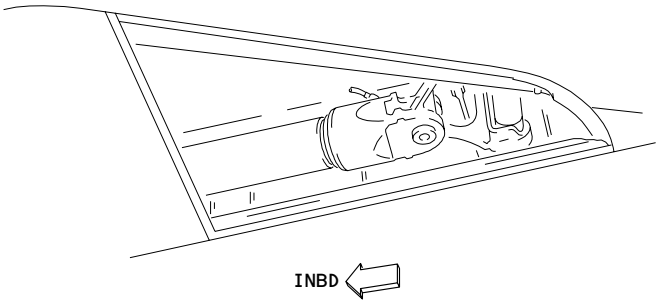
Extension and Retraction – Component Location
Figure 102 (Sheet 6)





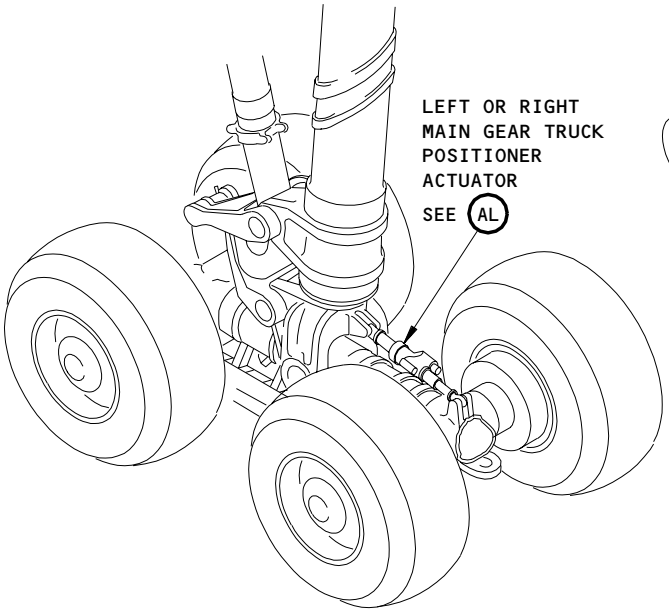
LEFT OR RIGHT MAIN GEAR
DOWNLOCK ACTUATOR

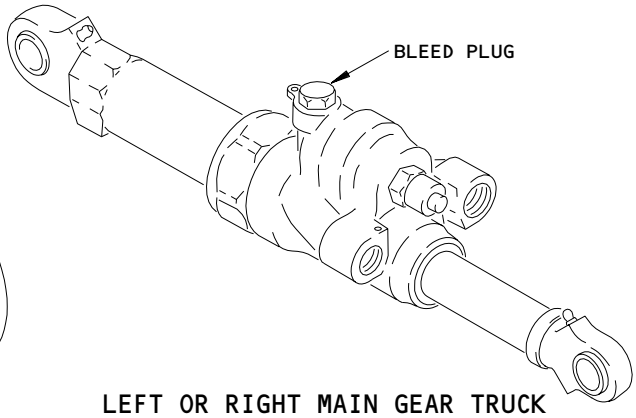
(S) FROM SHT 6



LEFT OR RIGHT MAIN GEAR RETRACT ACTUATOR

(T)



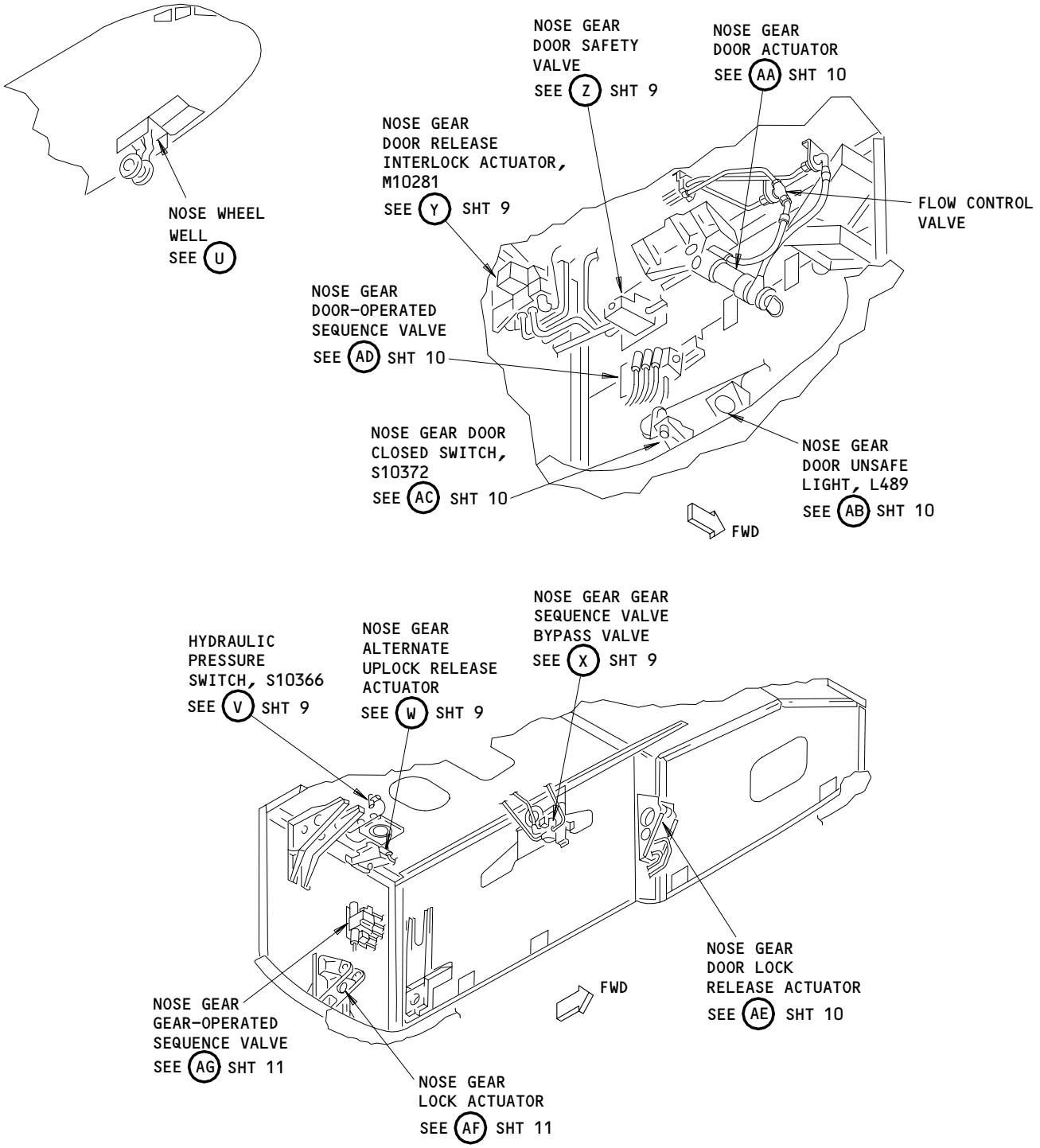


LEFT OR RIGHT MAIN GEAR TRUCK
POSITIONER ACTUATOR

(AL)

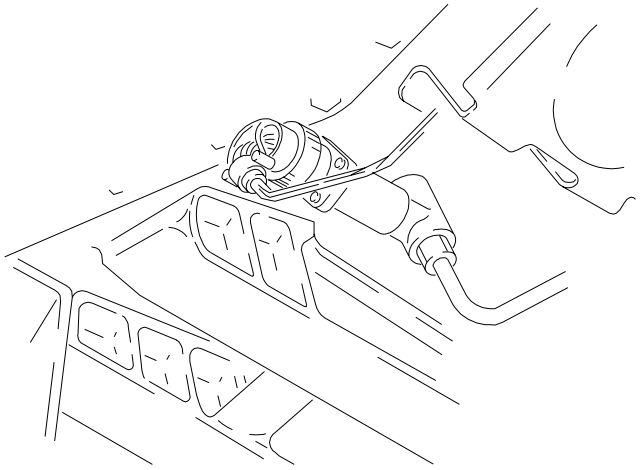
Extension and Retraction - Component Location
Figure 102 (Sheet 7)

107945



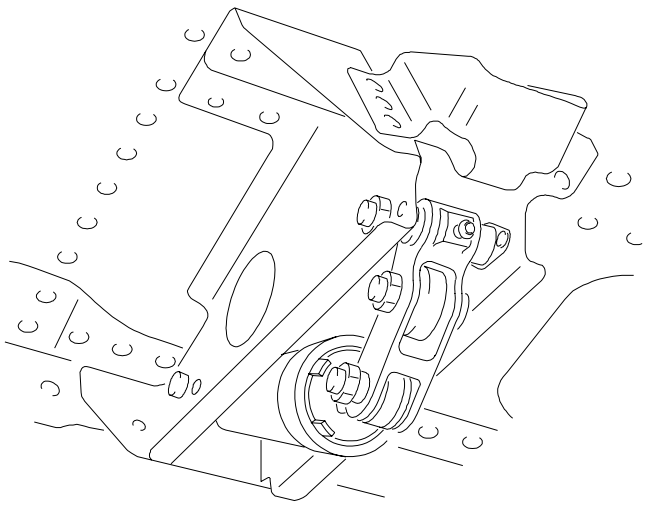
NOSE WHEEL WELL
U

Component Location
Figure 102 (Sheet 8)



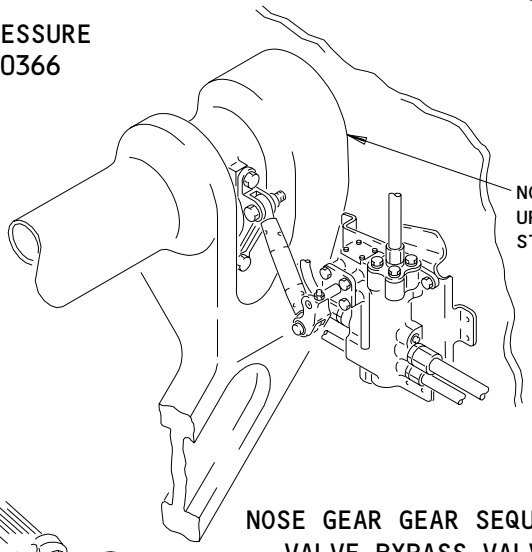
HYDRAULIC PRESSURE SWITCH, S10366

V



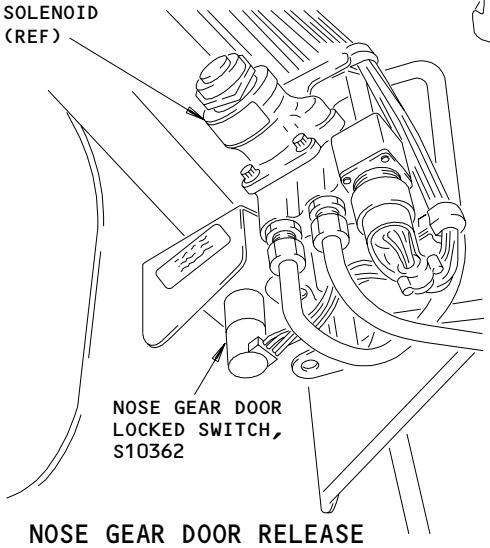
NOSE GEAR ALTERNATE UPLOCK RELEASE ACTUATOR

W



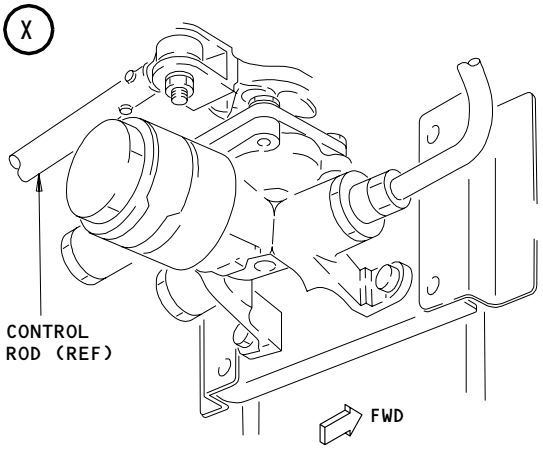
NOSE GEAR GEAR SEQUENCE VALVE BYPASS VALVE

X



NOSE GEAR DOOR RELEASE INTERLOCK ACTUATOR

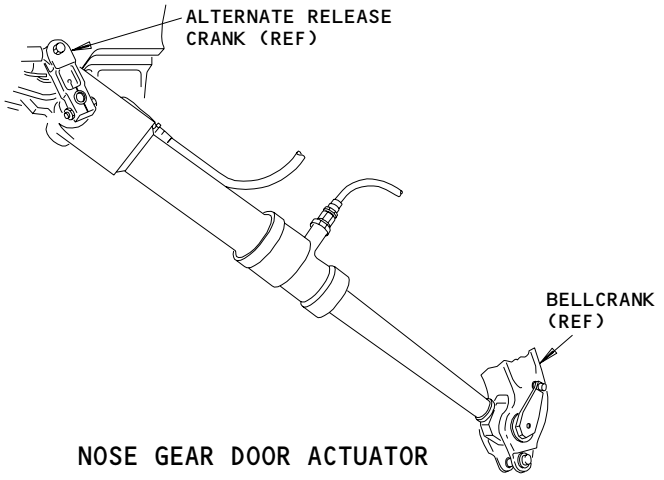
Y



NOSE GEAR DOOR SAFETY VALVE

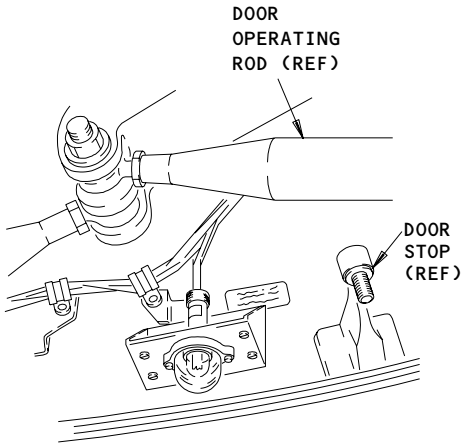
Z

Extension and Retraction - Component Location (Details from Sheet 8)
Figure 102 (Sheet 9)



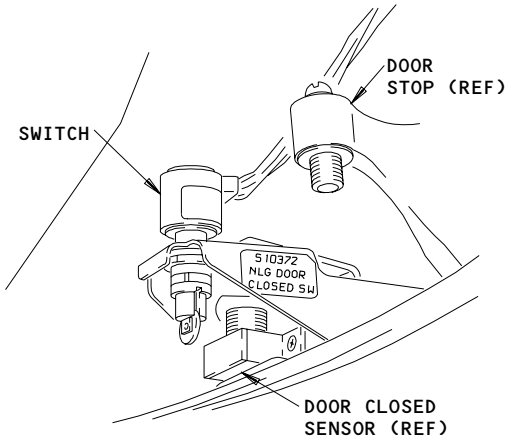
NOSE GEAR DOOR ACTUATOR

AA



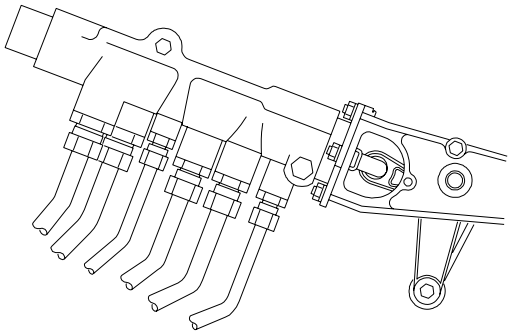
NOSE GEAR DOOR UNSAFE LIGHT, L489

AB



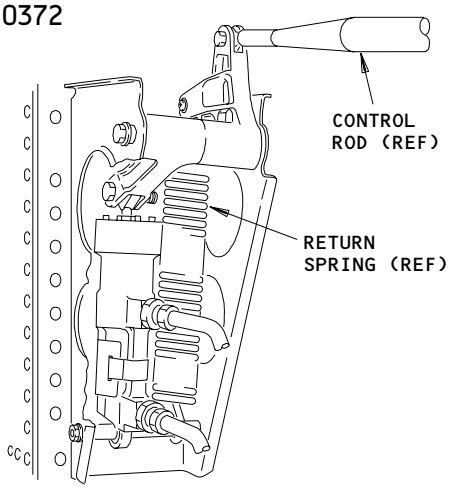
NOSE GEAR DOOR CLOSED SWITCH, S10372

AC



NOSE GEAR DOOR-OPERATED SEQUENCE VALVE

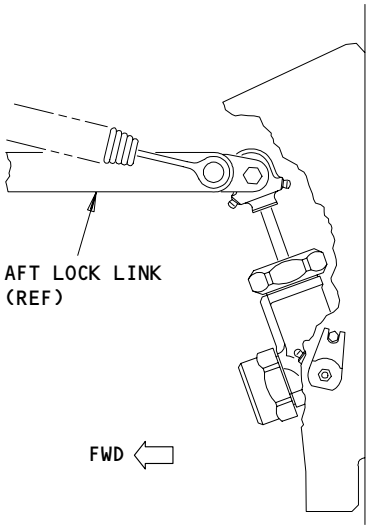
AD



NOSE GEAR DOOR LOCK RELEASE ACTUATOR

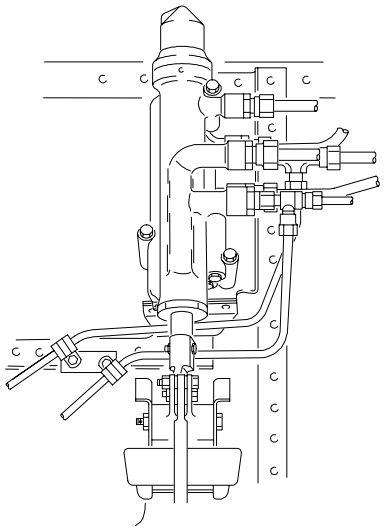
AE

Component Location (Details From Sht 8)
Figure 102 (Sheet 10)



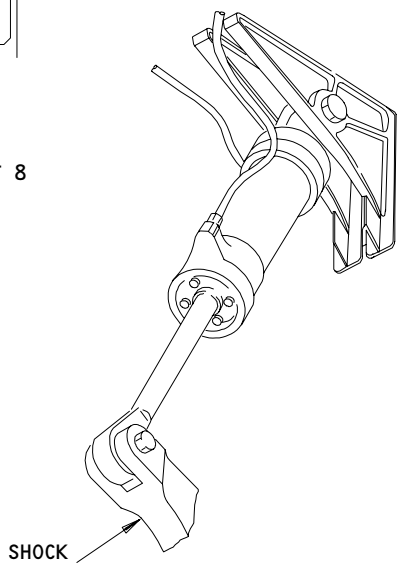
NOSE GEAR
LOCK ACTUATOR

(AF) FROM SHT 8



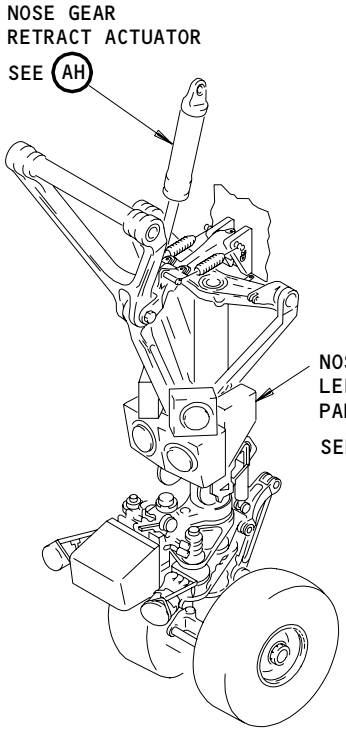
NOSE GEAR
GEAR-OPERATED SEQUENCE VALVE

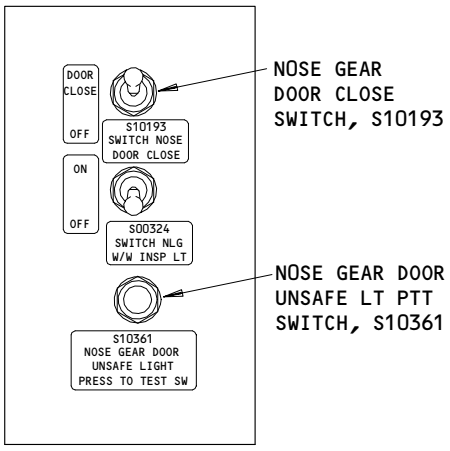
(AG) FROM SHT 8



NOSE GEAR
RETRACT ACTUATOR

(AH)

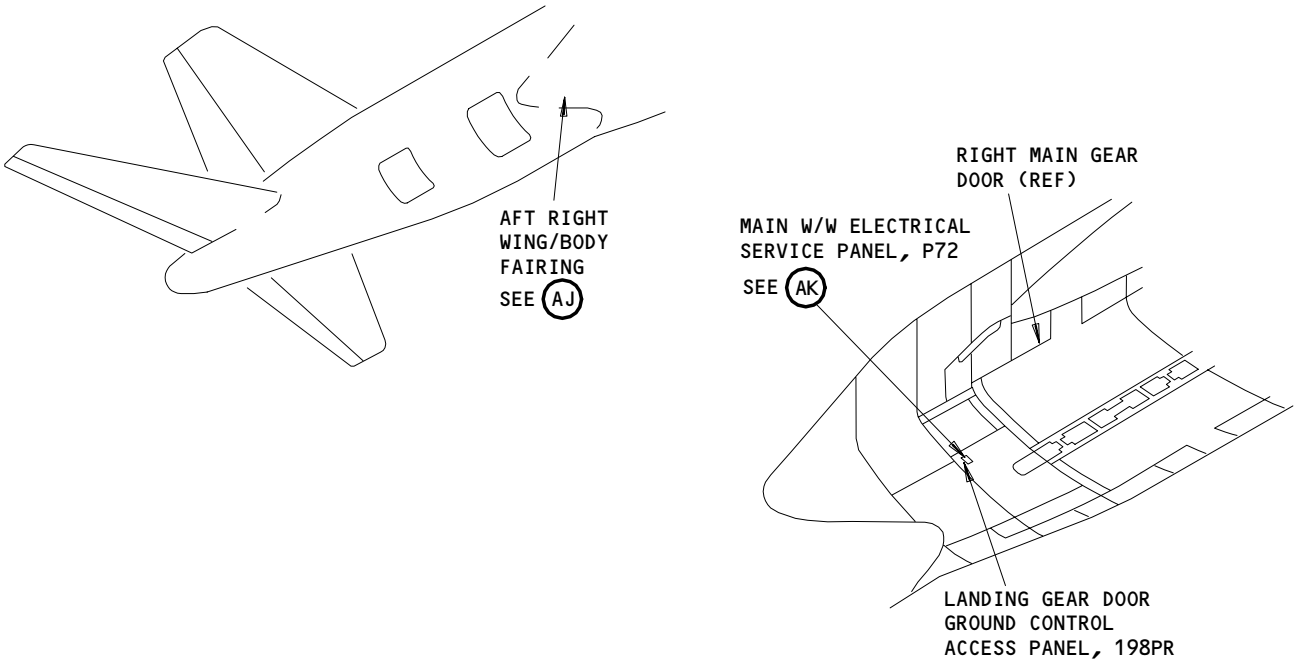




NOSE GEAR LEFT
EQUIPMENT PANEL, P63

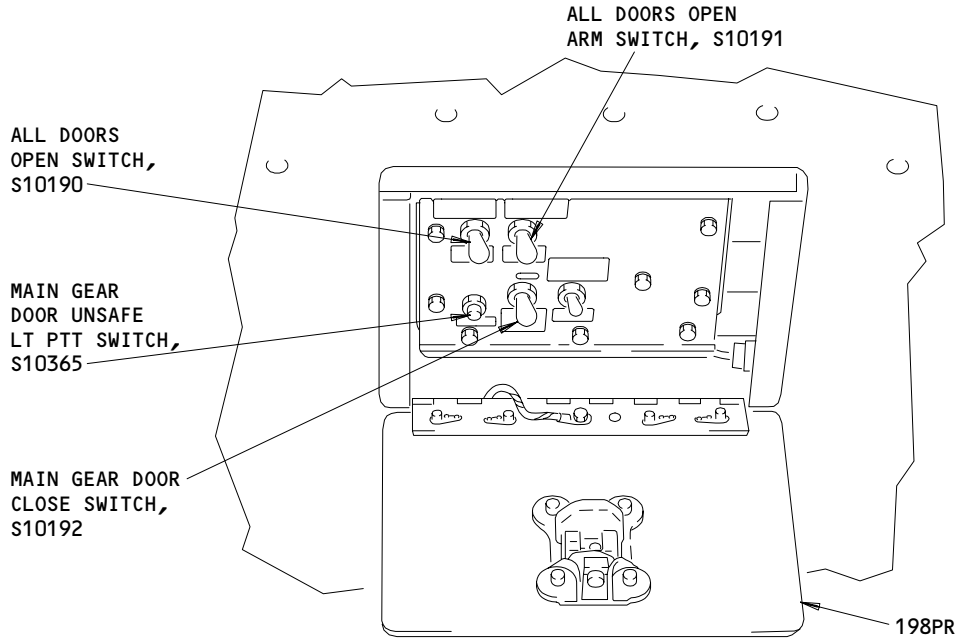
(AI)

Component Location
Figure 102 (Sheet 11)



AFT RIGHT WING/BODY FAIRING

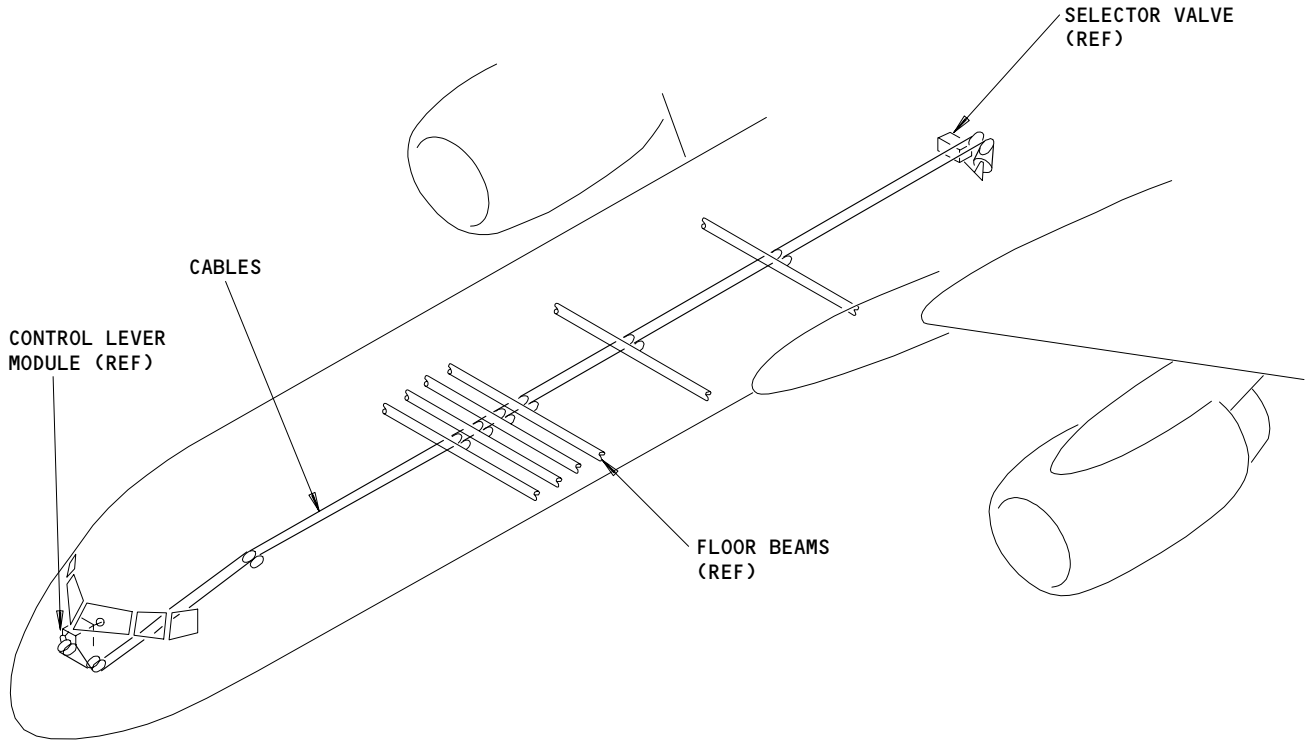
AJ



MAIN W/W ELECTRICAL SERVICE PANEL, P72

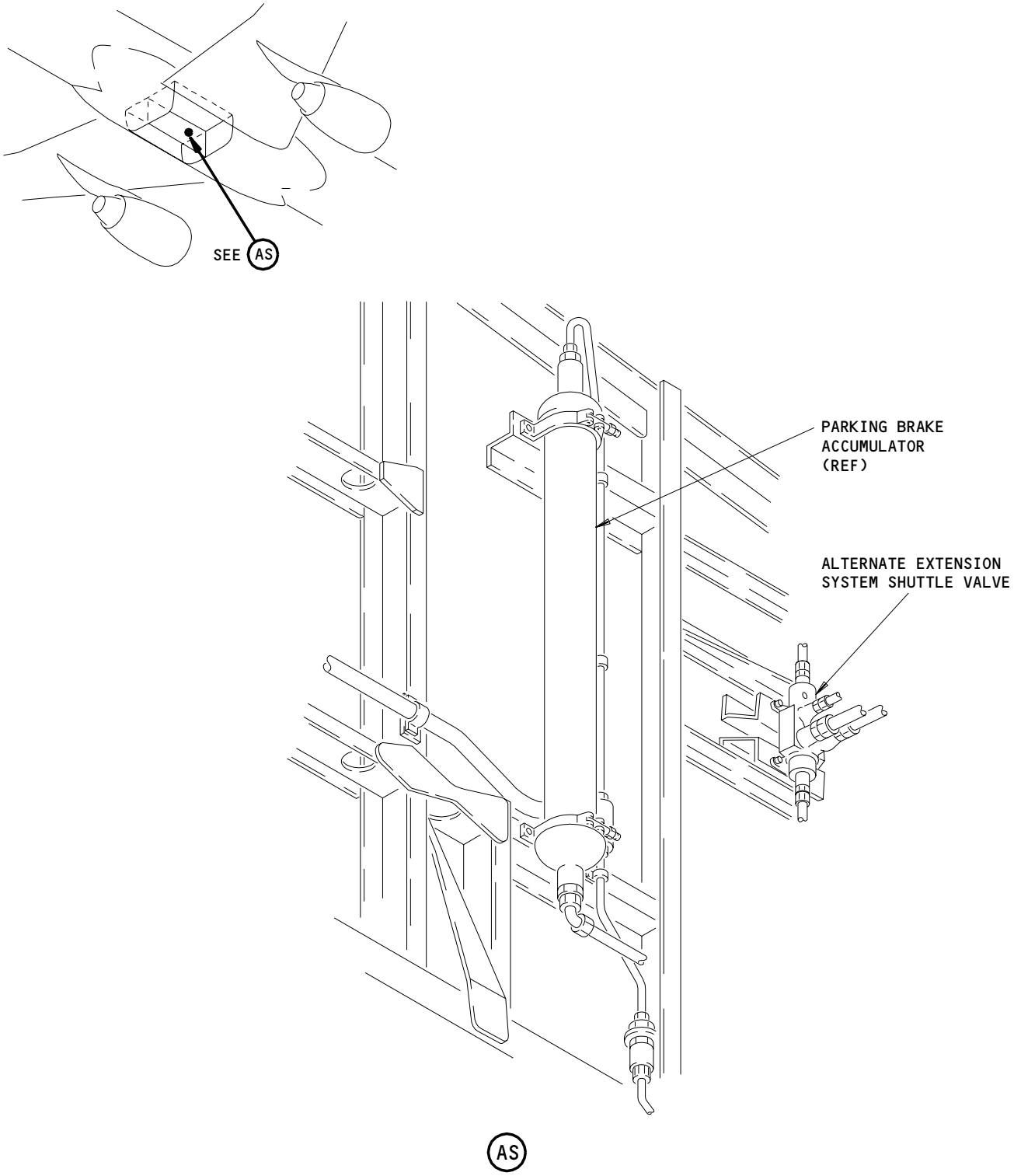
AK

Component Location
Figure 102 (Sheet 12)



LANDING GEAR EXTENSION AND
RETRACTION CONTROL CABLES

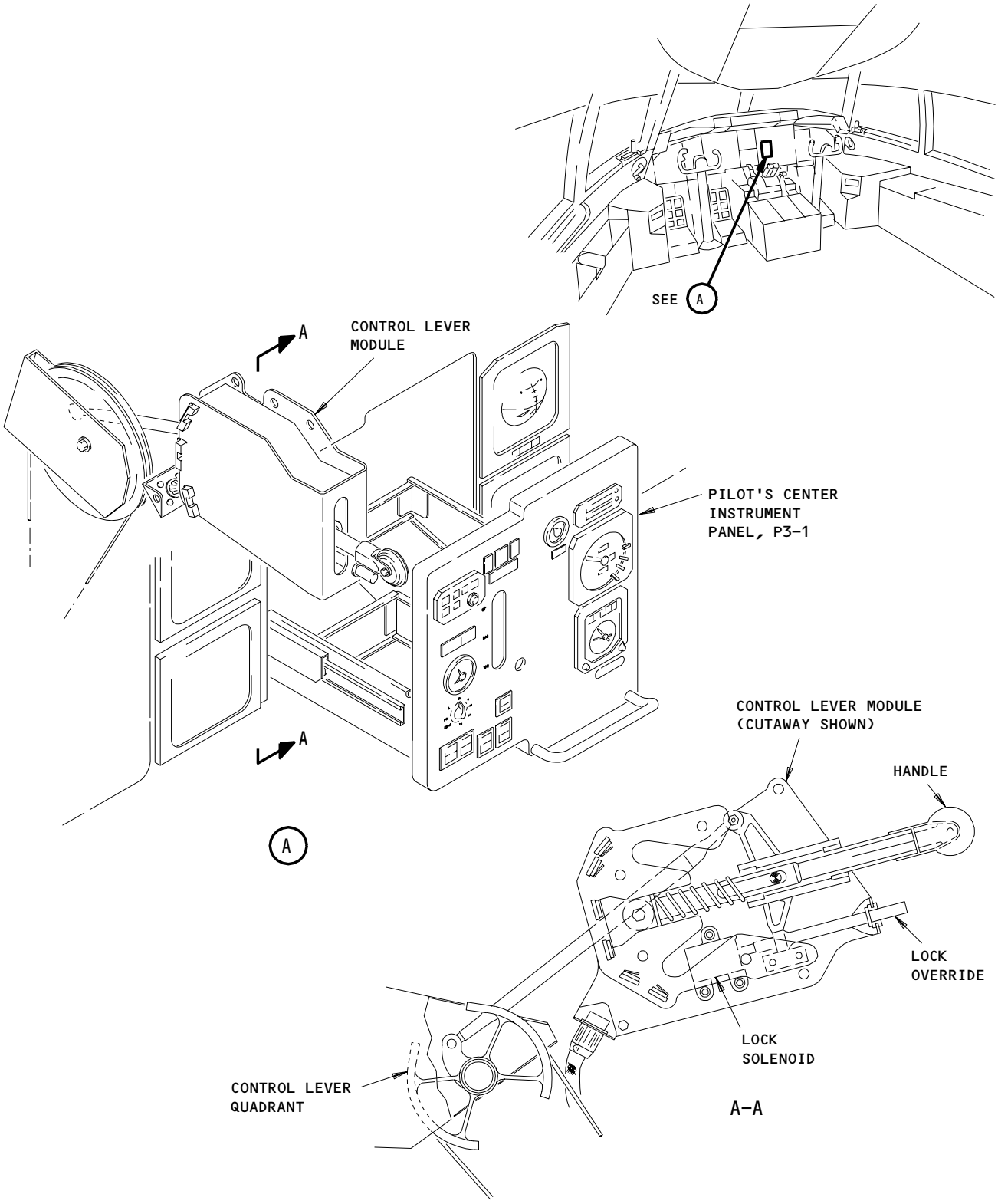
Component Location
Figure 102 (Sheet 13)



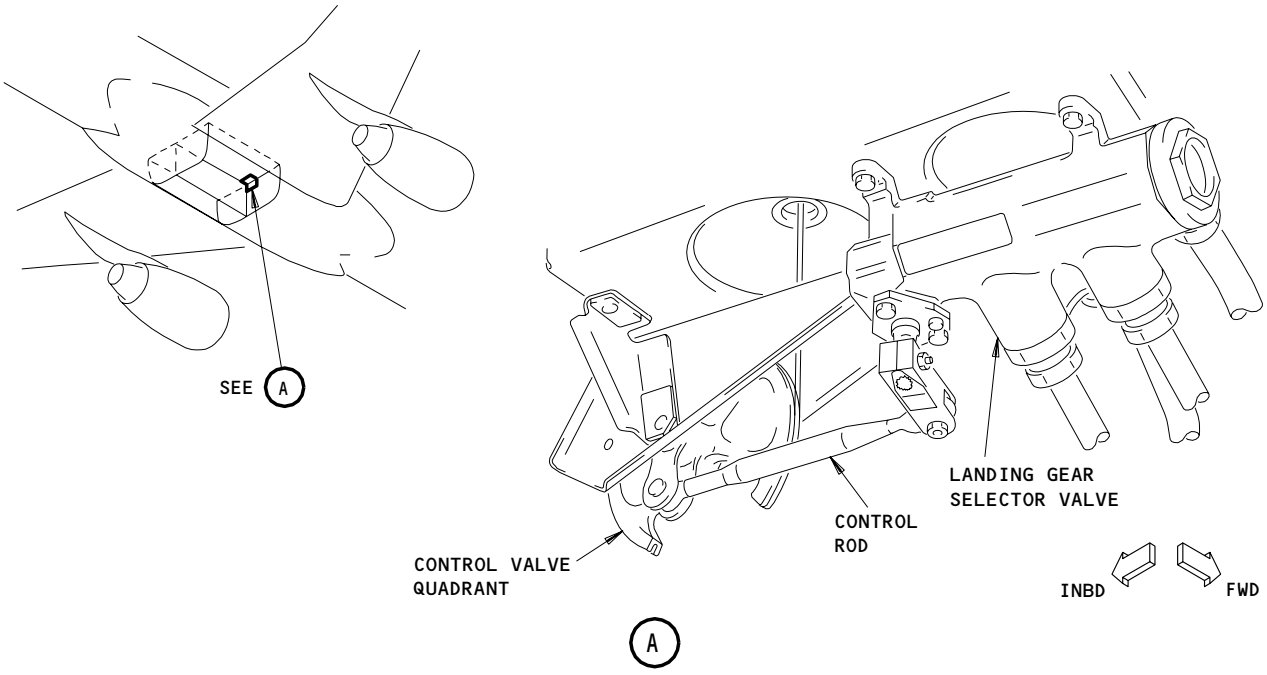
Component Location
Figure 102 (Sheet 14)

LANDING GEAR CONTROL - DESCRIPTION AND OPERATION

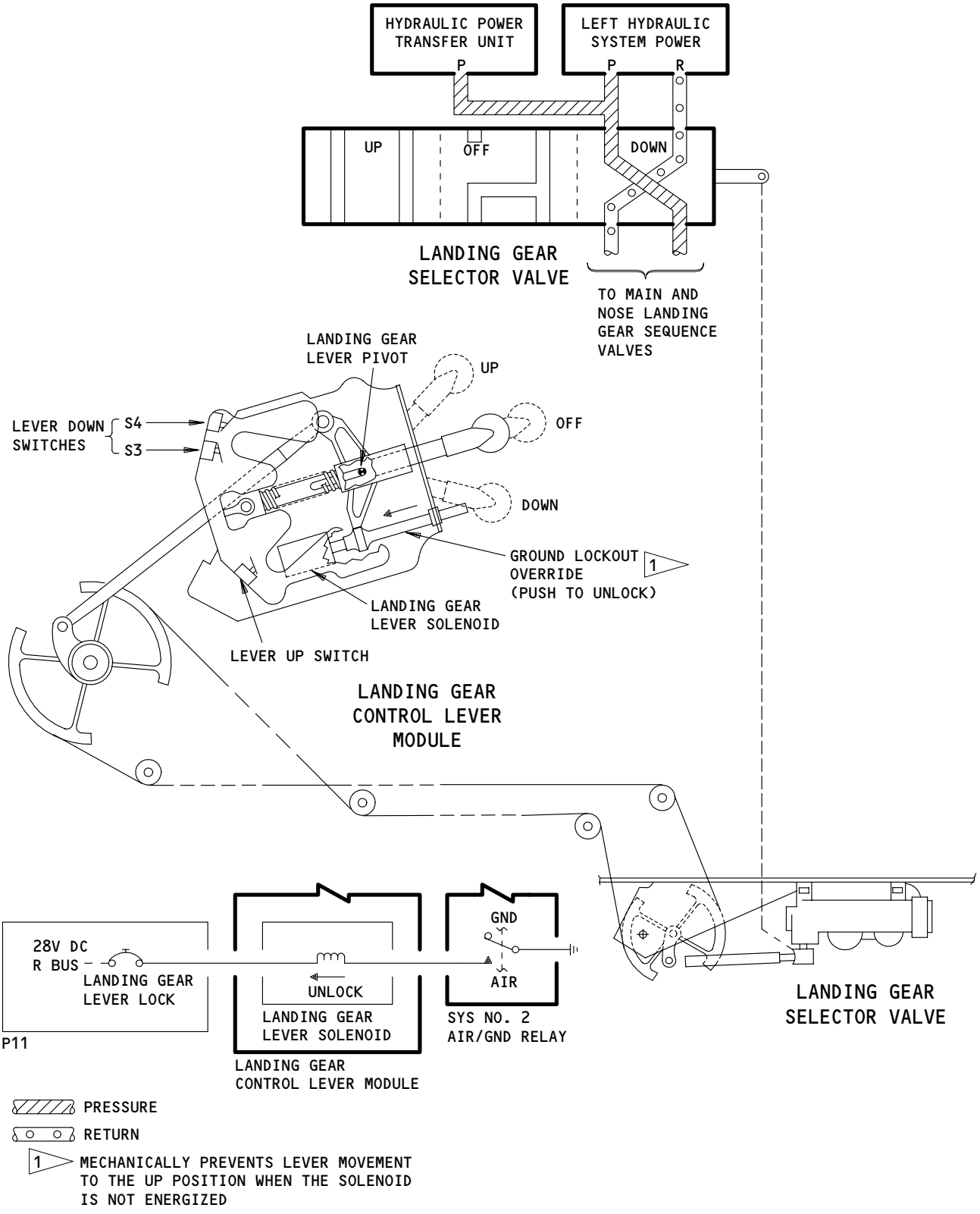
1. General
   A. The control system for the landing gear controls the operation of the extension and retraction systems for the nose and main landing gear. The control system includes a control lever, a selector valve, and a system of quadrants and cables.
2. Component Details
   A. Control Lever Module (Fig. 1)
      (1) The control lever is the mechanism which starts landing gear extension and retraction. The lever is contained in a three-position module which is installed behind the pilot's center instrument panel. The lever moves in a guide which has three detents (UP, OFF, and DN) and is spring-loaded to stay in the detent that is set.
      (2) A lever lock solenoid is included in the module for safety. This electrical solenoid moves to structurally stop movement of the lever to the UP detent when a ground mode signal is received from the air/ground relay system. This prevents retraction of the landing gear when the airplane is on the ground. A manual override rod mechanically moves the solenoid when there is a failure in the system which causes the solenoid not to be energized.
   B. Selector Valve (Fig. 2)
      (1) The selector valve sends hydraulic fluid from the left hydraulic system reservoir to the actuators and valves in the extension and retraction systems for the main and nose landing gear. The valve has three positions which agree with the positions of the control lever. The selector valve and the control lever are connected by quadrants and cables. Movement of the control lever moves the selector valve into the position that agrees with the control lever. The selector valve is installed in the wheel well for the right main landing gear. It can be found in the top, forward, inboard corner of the wheel well.
3. Operation (Fig. 3)
   A. Functional Description
      (1) Landing gear control starts with movement of the control lever. The lever is pulled out of detent and moved up for landing gear retraction or down for extension. This movement is transmitted to the control cables through a link and quadrant behind the control lever module. The cables transmit the movement to the selector valve through another link and quadrant. The selector valve moves to the position that agrees with the position of the control lever. This supplies hydraulic pressure to the extension and retraction hydraulic lines for the landing gear.



Landing Gear Control Lever Module
Figure 1



Landing Gear Selector Valve
Figure 2



Landing Gear Control Operation Schematic
Figure 3

LANDING GEAR CONTROL - ADJUSTMENT/TEST

1. General
   A. This procedure contains two tasks. The first task is an operational test and the second task is a system adjustment for the landing gear control system.

TASK 32-31-00-705-001

2. Operational Test - Landing Gear Control (Fig. 501)
   A. General
      (1) This test is used to make sure the landing gear control system is serviceable.
   B. Equipment
      (1) Force Gage Equipment - P/N G32021-18
      (2) Spring Scale - 0 to 20 pound capacity
          (Optional to Force Gage Equipment)
   C. References
      (1) AMM 24-22-00/201, Electrical Power - Control
      (2) AMM 27-61-00/201, Spoiler/Speedbrake Control System
      (3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-09-02/201, Air/Ground Relays
   D. Access
      (1) Location Zones
          211 Control Cabin (Left)
          212 Control Cabin (Right)

   E. Prepare for the Operational Test

      S 495-002

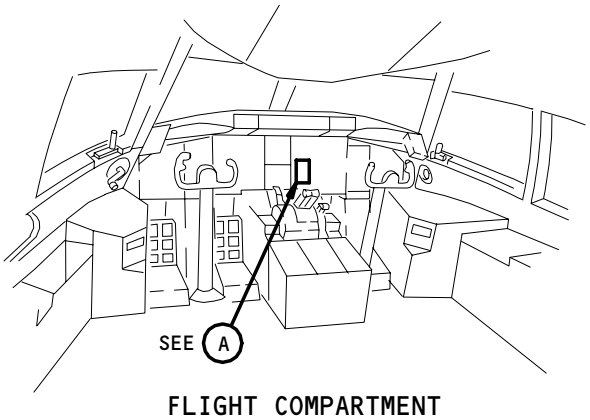
      WARNING: MAKE SURE THE MAIN AND NOSE LANDING GEAR AREAS ARE CLEAR OF PERSONS BEFORE YOU DO THIS TEST. THE LANDING GEAR DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

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

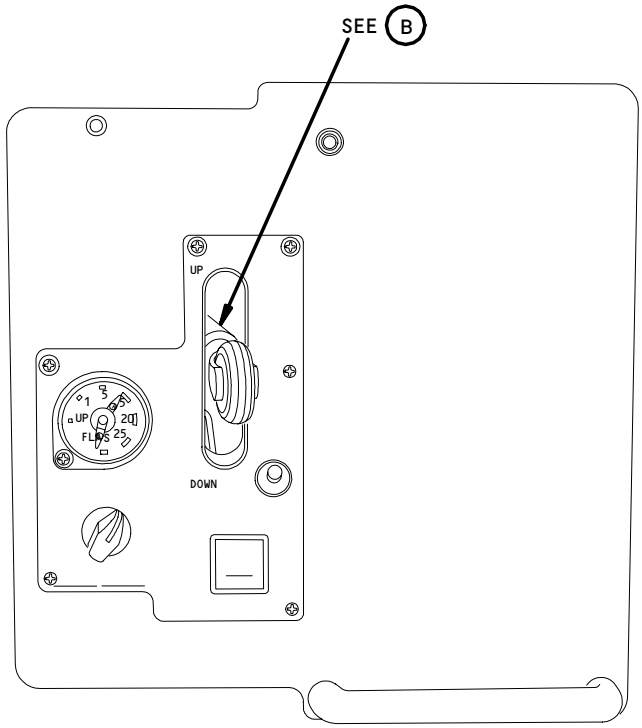
      S 865-003
      (2) Make sure the control lever for the landing gear is in the OFF position.

      S 865-004
      (3) Make sure each green NOSE, LEFT and RIGHT light is on.

      S 865-005
      (4) Pressurize the left hydraulic system (AMM 29-11-00/201).

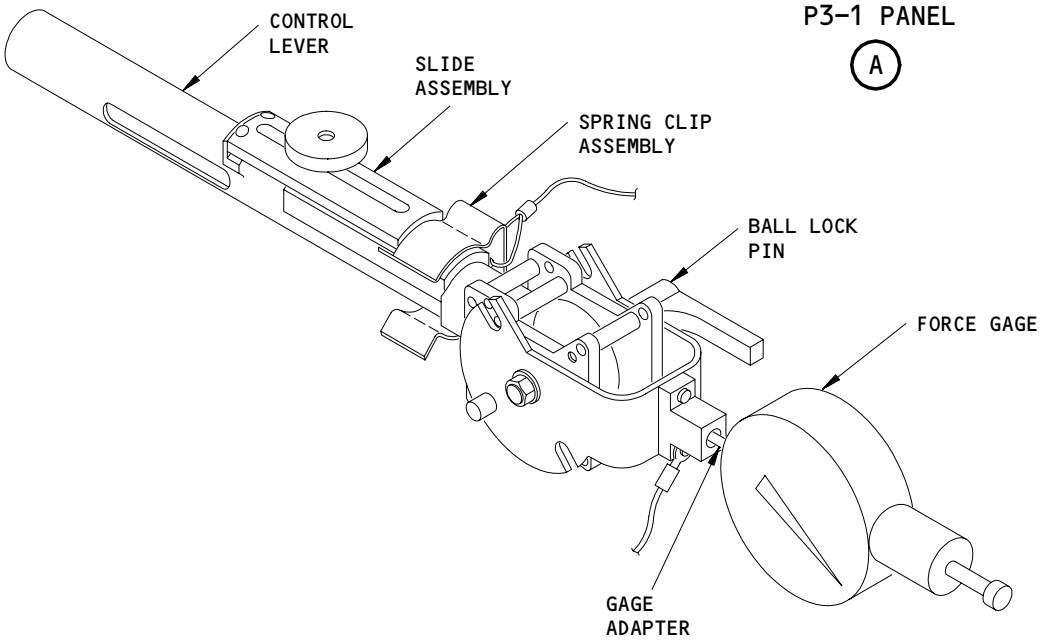


FLIGHT COMPARTMENT



P3-1 PANEL

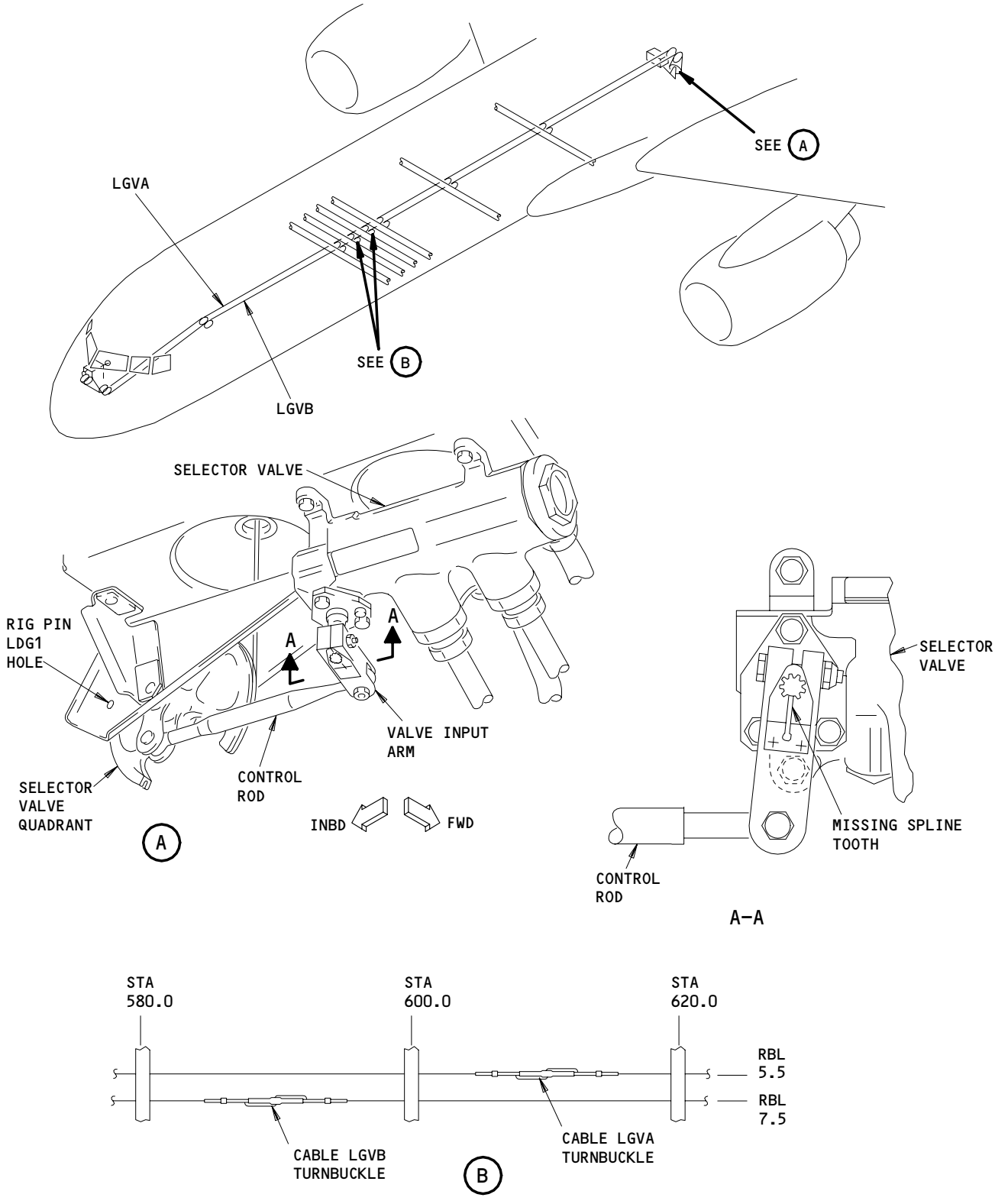
A



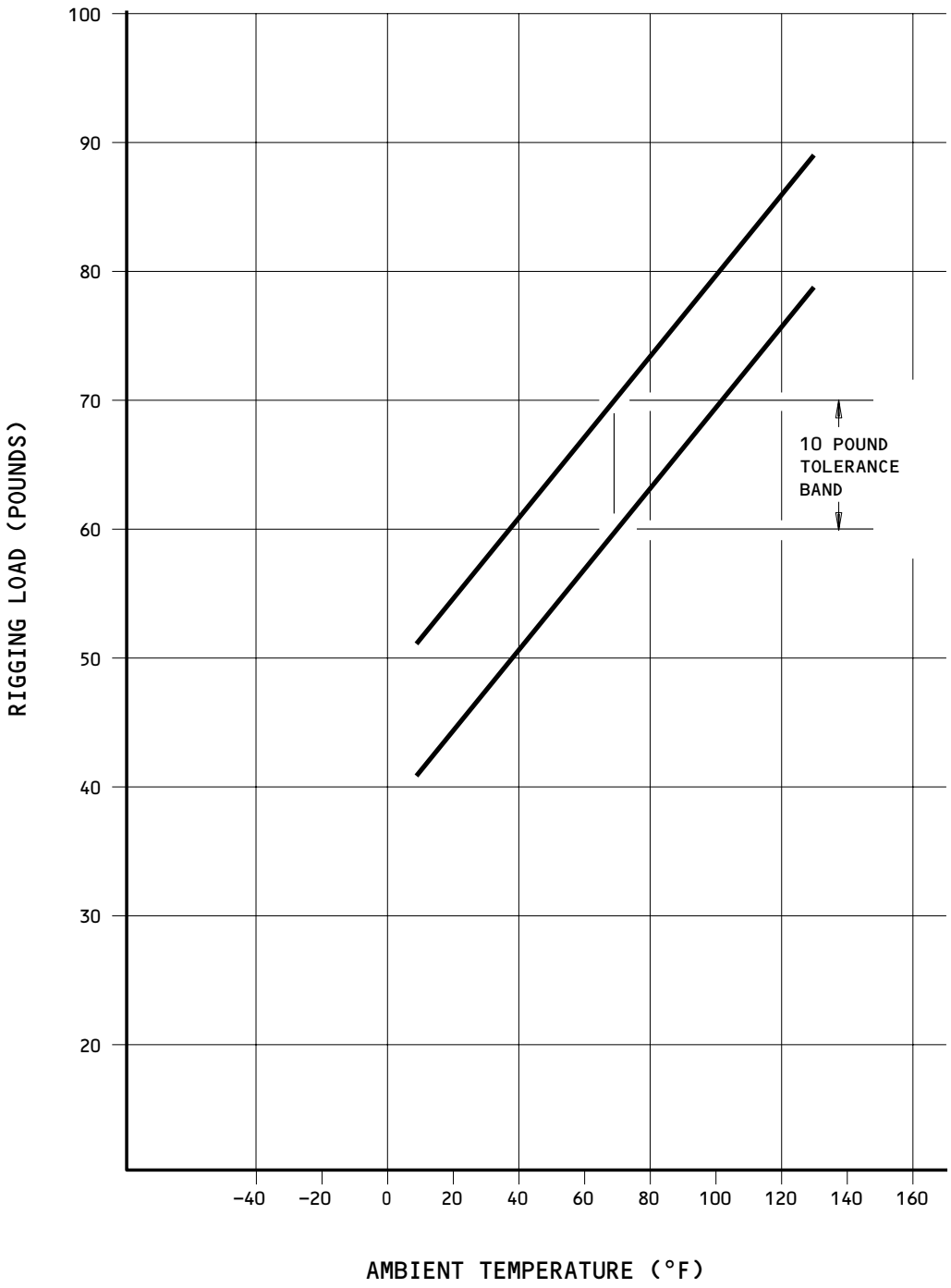
FORCE GAGE EQUIPMENT INSTALLED ON CONTROL LEVER

B

Landing Gear Control Lever Module Installation
Figure 501



Landing Gear Control Cables and Selector Valve Adjustment
Figure 502



Landing Gear Control Cable Rigging Load vs. Ambient Temperature
Figure 503

S 865-006

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

(5) Do the deactivation procedure for the spoilers (AMM 27-61-00/201) or move all persons and equipment away from the spoilers.

S 865-007

WARNING: MAKE SURE YOU DO THE FLIGHT MODE SIMULATION CORRECTLY. IF THE PROCEDURE IS NOT DONE CORRECTLY INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(6) Do the Flight Mode Simulation procedure (AMM 32-09-02/201).

S 865-008

(7) Make sure these circuit breakers on the overhead circuit breaker panel P11 are closed:
(a) 11C30, LANDING GEAR POS SYS 1
(b) 11S23, LANDING GEAR POS SYS 2
(c) 11A35, IND LIGHTS 4
(d) 11P28, R IND LTS 1
(e) 11S20, LEVER LOCK

S 865-009

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

F. Do the Landing Gear Control Operational Test

S 495-010

(1) Install the force gage equipment on the control lever (Fig. 501).

NOTE: If the force gage equipment is not available, use a spring scale to measure the force on the control lever.

S 715-011

(2) Pull the control lever out of the detent and make sure the force necessary is not more than 11 pounds.

S 715-012

(3) Slowly move the control lever from DN to UP and make sure the tangential force necessary is not more than 7 pounds.

S 715-013

(4) Slowly move the control lever from UP to DN and make sure the tangential force necessary is not more than 7 pounds.

S 095-038
(5) Remove the force gage equipment, or the spring scale, from the control lever.

S 865-014
(6) Move the control lever to OFF.

S 715-015
(7) Make sure the amber GEAR light is on.

S 715-016
(8) Make sure the control lever moves into each detent fully by the action of its spring.

S 865-017
(9) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE identifier:
(a) 11S20, LEVER LOCK

S 715-018
(10) Make sure the control lever will not move to UP without lock override operation.

S 715-019
(11) Operate the lock override and make sure the control lever can be moved to UP.

S 865-020
(12) Make sure this circuit breaker on the overhead circuit breaker panel, P11, is closed.
11S20, LEVER LOCK

S 865-021
(13) Move the control lever to DN.

S 865-022
(14) Make sure the amber GEAR and DOORS lights go out and that the lock override button releases.

S 865-023
(15) Remove electrical power if it is not necessary (AMM 24-22-00/201).

S 865-024
(16) Remove the pressure from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-025
(17) Put the airplane back to the ground mode (AMM 32-09-02/201).

S 865-026
(18) Do the activation procedure for the spoilers if you did the deactivation procedure (AMM 27-61-00/201).

TASK 32-31-00-825-027

3. Adjustment - Landing Gear Control (Fig. 502)
   A. General
      (1) Use this procedure to adjust the landing gear extension and retraction control cables to their proper serviceable condition. Internal and external aircraft temperatures must be equal to within 5°F when you do this procedure. The temperatures must be stable for one hour before you do this procedure.
   B. Equipment
      (1) Cable Tensiometer - 0 to 150 pound capacity for 3/32 inch diameter cable (commercially available)
      (2) Rig Pin LDG1 - P/N B20003-18, part of kit B20003-XX (AMM 20-10-24/201).
   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
   D. Access
      (1) Location Zones
          122 Forward Cargo Compartment (Right)
          144 Main Landing Gear Wheel Well (Right)
          211 Control Cabin (Left)
          212 Control Cabin (Right)

E. Prepare for Adjustment

S 495-028

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

S 485-039

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

S 865-029

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

F. Do the Landing Gear Control Cable Adjustment

S 865-030

(1) Make sure the landing gear control lever is in OFF.

S 495-031

(2) Put the rig pin LDG1 into the selector valve quadrant (Detail A).

S 825-032

(3) To adjust new control cables, do the steps that follow to preload and excercise the cables:
   (a) Tighten the cables LGVA and LGVB to 120 ± 10 pounds. Adjust the cables so that rig pin LDG1 moves freely when it is put into or removed from the rig pin hole.
   (b) Remove the rig pin LDG1.
   (c) Move the landing gear control lever from UP to DN 25 times to cycle the system to maximum travel limits. Return the lever to OFF.
   (d) Put the rig pin LDG1 into the selector valve quadrant again.

S 825-033

(4) Tighten cables LGVA and LGVB to a value within the tolerance band of Fig. 503. Adjust the cable turnbuckles so the rig pin LDG1 moves freely when it is put into or removed from the rig pin hole (Detail B).

S 825-034

(5) Make sure that no more than two threads show at the end of turnbuckles when the adjustment is completed.

S 095-035

(6) Remove rig pin LDG1.

S 825-036

(7) Move the landing gear control lever from UP to DN several times while you make sure the conditions that follow occur:
   (a) The Cables do not touch the contact pulley flanges for the total cable travel.
   (b) The cables are within two degrees of the plane of the pulley.
   (c) The cables are installed through the grommets and the air pressure seals in the structure as necessary.
   (d) The cables are not moved from the rigged or normal serviceable position by fairleads, rub strips, or grommets.
   (e) The cables are lubricated over the full length.
   (f) The pulleys rotate freely with no interference with the guards.
   (g) The pushrods and levers do not rub against the structure.

S 095-037

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 and close the landing gear doors (AMM 32-00-15/201).

LANDING GEAR CONTROL LEVER MODULE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task is for removal of the control lever module for the landing gear. The second task is for installation of the control lever module.
   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)

TASK 32-31-01-004-001

2. Remove the Control Lever Module for the Landing Gear (Fig. 401)
   A. 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).

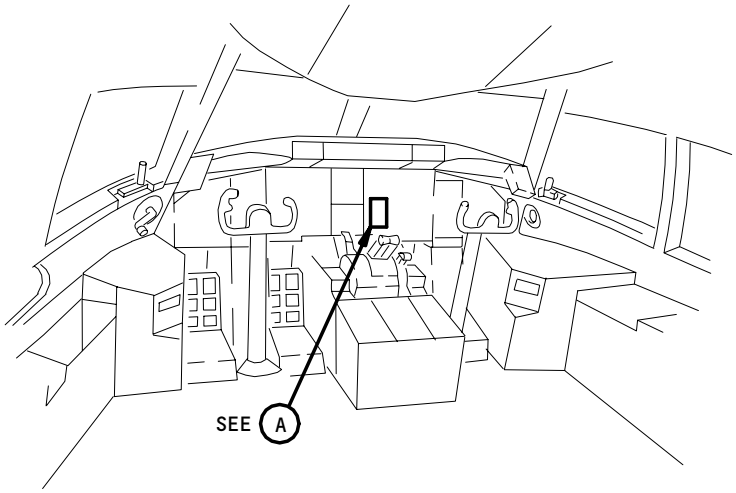
      S 864-003
      (2) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).

      S 864-004
      (3) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
          (a) 11S20, LEVER LOCK
   B. Procedure

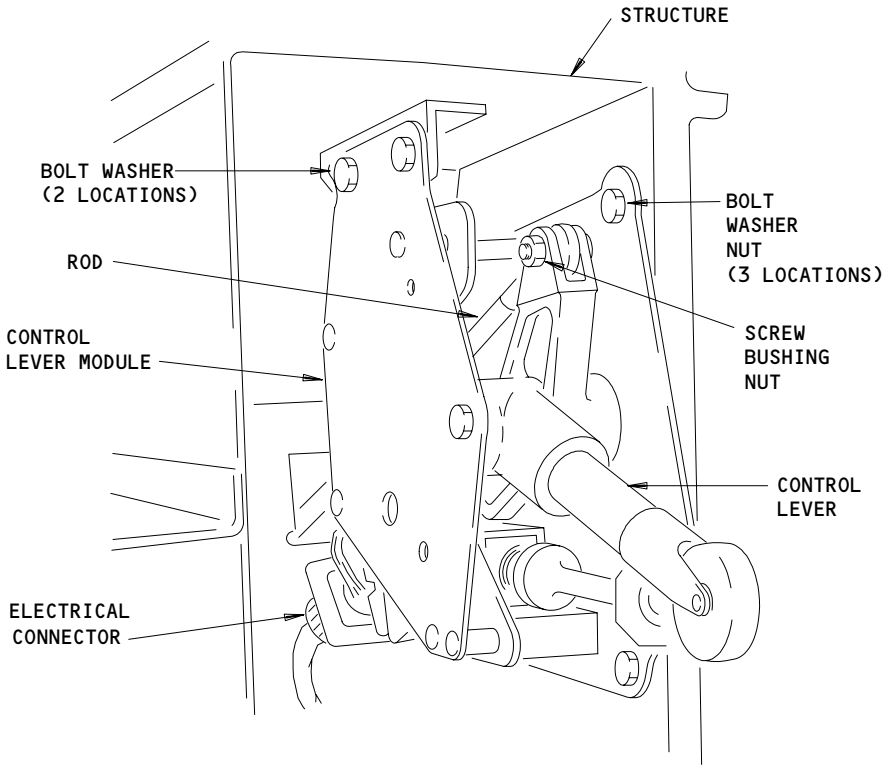
      S 864-005
      (1) Make sure the control lever for the landing gear is in the OFF position.

      S 034-006
      (2) Remove the screws to disconnect the pilot's center instrument panel, P3-1, from the airplane structure.

      S 034-007
      (3) Move the panel out on the track for access to the lever module.



FLIGHT COMPARTMENT



(SHOWN WITH THE P3-1 PANEL PULLED OUT)

A

Landing Gear Control Lever Module Installation
Figure 401

S 034-008
(4) Disconnect the electrical connector from the rear of the module and cap the connector.

S 034-009
(5) Remove the screw to disconnect the lever rod from the handle (Detail A).

S 024-010
(6) Remove the attach bolts to disconnect the module from the structure and remove the module.

TASK 32-31-01-404-011

3. Install the Control Lever Module for the Landing Gear (Fig. 401)

A. Consumable Materials
(1) C00308 Compound, Corrosion Preventive - MIL-C-11796, Class III

B. References
(1) AMM 32-31-00/501, Landing Gear Control

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

D. Procedure

S 424-012
(1) Install the bolts, washers, and nuts to connect the lever module to the structure (Detail A).

S 864-013
(2) Move the landing gear control lever to the OFF position.

S 624-014
(3) Apply a layer of corrosion preventive compound to the bore of the control rod bearing.

S 434-015
(4) Install the screw, bushing, and nut to connect the lever rod to the handle.

S 864-020
(5) Move the landing gear control lever to the DN position.

S 434-016
(6) Connect the electrical connector to the rear of the lever module.

S 434-017
(7) Move the pilot's center instrument panel, P3-1, into place. Install the screws to connect the panel to the airplane structure.

S 864-018
(8) Close this circuit breaker on the overhead circuit breaker panel, P11, and remove the DO-NOT-CLOSE identifier:
(a) 11S20, LEVER LOCK

S 714-025
(9) 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 left 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 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) Remove the pressure from the left hydraulic system if it is no longer necessary (AMM 29-11-00/201).
(m) Remove electrical power if it is no longer necessary (AMM 24-22-00/201).

S 714-019

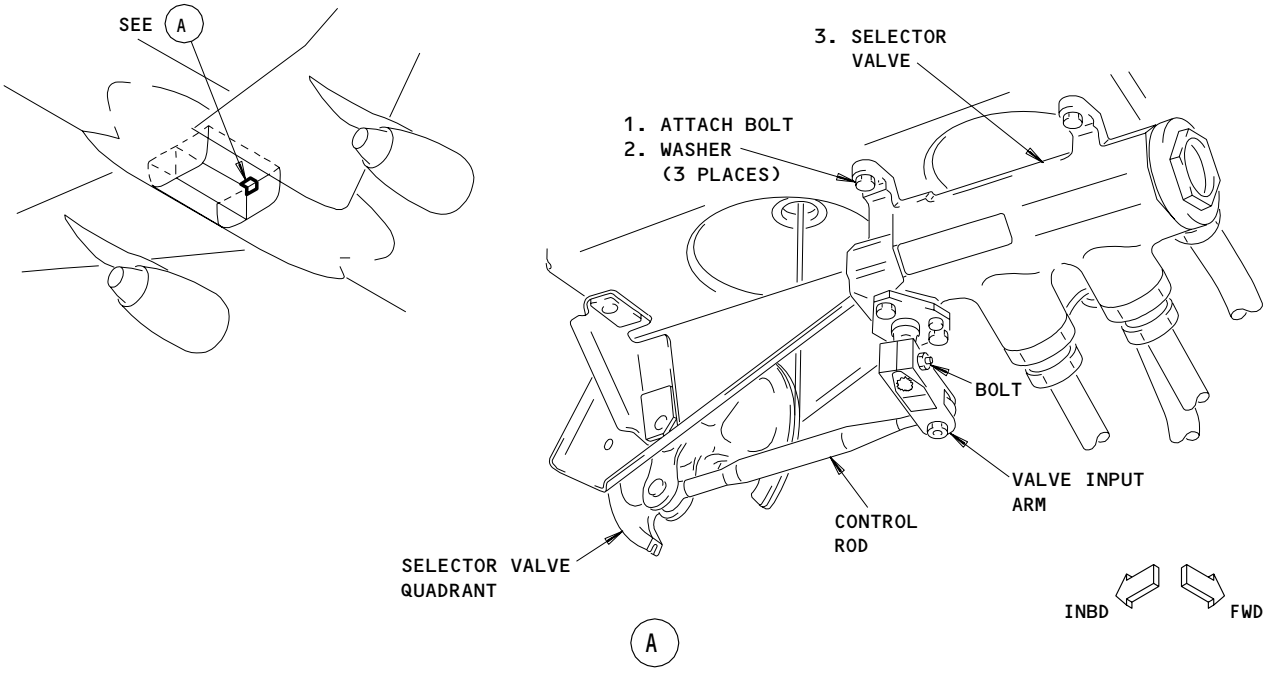
(10) Adjust the control system (AMM 32-31-00/501).

LANDING GEAR SELECTOR VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks, one for removal and one for installation of the landing gear selector valve.

   TASK 32-31-02-004-001

2. Remove the Landing Gear Selector Valve (Fig. 401)
   A. Equipment
      (1) Door Lock, Landing Gear - (AMM 32-00-15/201)
   B. Consumable Materials
      (1) D00148 Fluid, Hydraulic - BMS 3-11 , Type IV, Class 1 (AMM 20-30-04/201)
   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 Zone
          144 Main Landing Gear Wheel Well (RH)
          731 Main Landing Gear (LH)
          741 Main Landing Gear (RH)



Landing Gear Selector Valve Installation
Figure 401

E. 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 WHEN THEY CLOSE COULD CAUSE INJURY OR DAMAGE.

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

S 864-004
(3) Remove the pressure from the left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

F. Remove the Landing Gear Selector Valve

S 034-005
(1) Disconnect hydraulic lines from the valve. Install a plug in the lines and fittings.

S 034-006
(2) Loosen the bolt and move the valve input arm from the valve (Detail A).

S 024-007
(3) Remove the attach bolts (1) and washers (2) to disconnect the valve from the structure. Remove the valve (3).

TASK 32-31-02-404-008

3. Install the Landing Gear Selector Valve (Fig. 401)

A. Equipment
(1) Door Lock, Landing Gear - (AMM 32-00-15/201)

B. Consumable Materials
(1) D00148 Fluid, Hydraulic - BMS 3-11 , Type IV, Class 1 (AMM 20-30-04/201)

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	3	Selector Valve	32-31-02	01	100

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, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks

E. Access
(1) Location zone
144 Main Landing Gear Wheel Well (RH)
731 Main Landing Gear (LH)
741 Main Landing Gear (RH)

F. Procedure to Install the Landing Gear Selector Valve

S 614-009
(1) Fill the valve with hydraulic fluid. Install a plug in the hydraulic fittings.

S 434-010
(2) Install the attach bolts (1) and washers (2) to connect the valve to the structure (Detail A).

S 434-011
(3) Move the input arm onto the gear on the side of the valve and tighten the nut.

S 864-011

(4) Make sure that pressure is removed from the left hydraulic system and the hydraulic reservoir.

S 434-012

(5) Connect the hydraulic lines to the valve.

S 714-013

(6) Make sure the valve is installed correctly.
   (a) Pressurize the left hydraulic system.

   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 INJURE PERSONNEL AND/OR DAMAGE EQUIPMENT.

   (b) Move the landing gear control lever from DN to UP several times. Return the lever to DN.
   (c) Make sure hydraulic fluid does not leak from the valve.

S 864-014

(7) Look to see that the hydraulic reservoir is at the correct level. Fill if required (AMM 12-12-01/301).

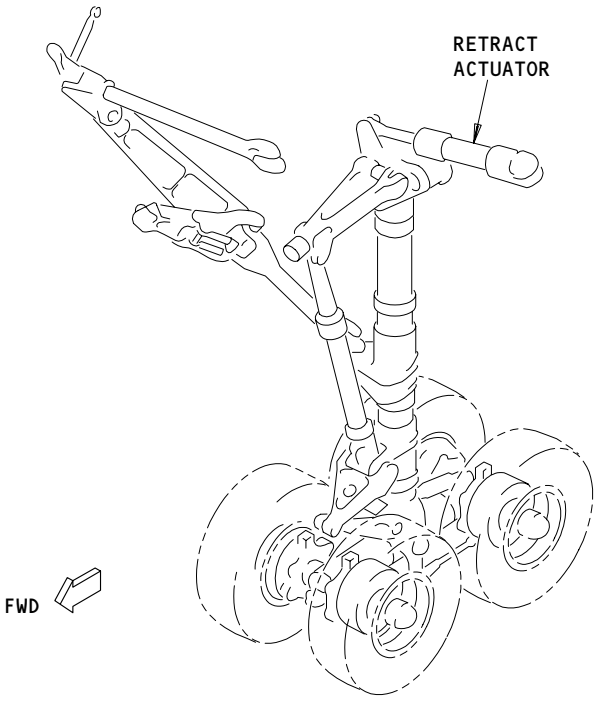
S 094-015

WARNING: MAKE SURE YOU REFER TO AMM 32-00-15/201 FOR THE DOOR LOCK REMOVAL PROCEDURE. FAST MOVEMENT OF THE DOORS WHEN THEY CLOSE COULD CAUSE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

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

MAIN GEAR EXTENSION AND RETRACTION - DESCRIPTION AND OPERATION

1. General
   A. The extension and retraction system for the main landing gear includes valves and actuators which retract and extend the main landing gear and operate the doors for the main landing gear. The components of the system are as follows:
      (1) Retract actuator
      (2) Door actuator
      (3) Downlock actuator
      (4) Uplock actuator
      (5) Door-operated landing gear sequence valve
      (6) Downlock-operated door sequence valve
      (7) Uplock-operated sequence valve
      (8) Truck positioner actuator
      (9) Truck positioner shuttle valve
      (10) Uplock assembly.
2. Component Details
   A. Retract Actuator (Fig. 1)



Retract Actuator
Figure 1

(1) The retract actuator is a hydraulic piston-type actuator that operates hydraulically in two directions. The actuator snubs internally at each end of the piston travel. This actuator applies the force to retract and extend the landing gear. The actuator is installed in the wing, outboard of the landing gear. The head end attaches to the beam that holds the main landing gear. The rod end of the actuator attaches to the upper end of the shock strut.

B. Door Actuator (Fig. 2)

(1) The door actuator is also a hydraulic piston-type actuator that operates hydraulically in two directions. This actuator snubs internally at each end of the piston travel. The door actuator applies the force to open and close the door for the main landing gear. An internal mechanical lock in the head end of the actuator locks the door when it is closed. Hydraulic pressure that is applied to the actuator to open the door releases the mechanical lock. The actuator is installed near the center of the keel beam in the wheel well for the main landing gear. The head end attaches to a fitting on the keel beam. The rod end attaches to the beam that holds the center hinge on the door for the main landing gear.

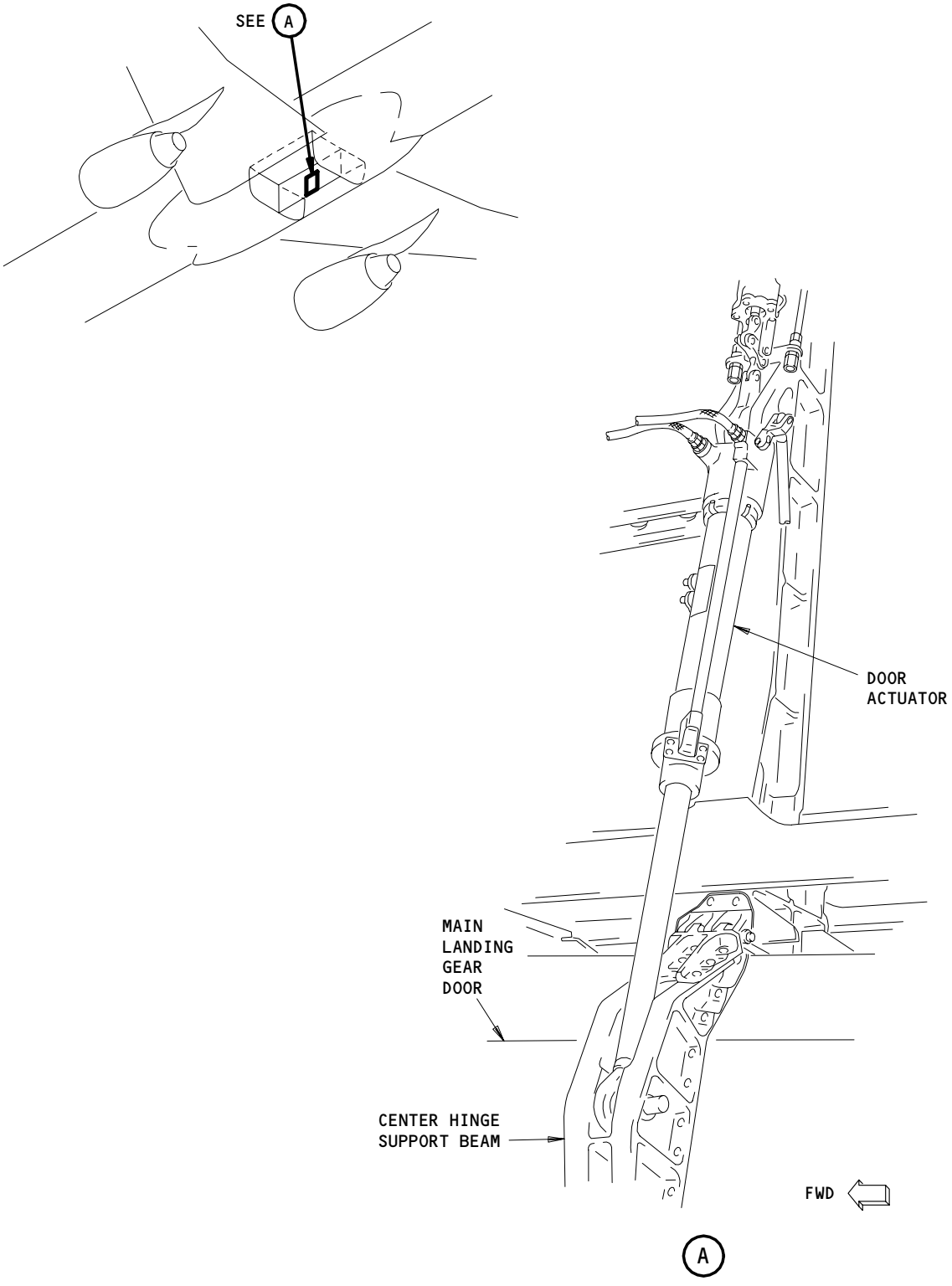
C. Downlock Actuator (Fig. 3)

(1) The downlock actuator is also a hydraulic piston-type actuator that operates hydraulically in two directions. This actuator does not snub internally. The downlock actuator moves the downlock links to let the landing gear retract and also helps the downlock springs lock the downlock links when the landing gear extends. The actuator is installed on the upper downlock link. The head end attaches to the downlock spindle, and the rod end attaches to the upper downlock link near the apex of the downlock links.

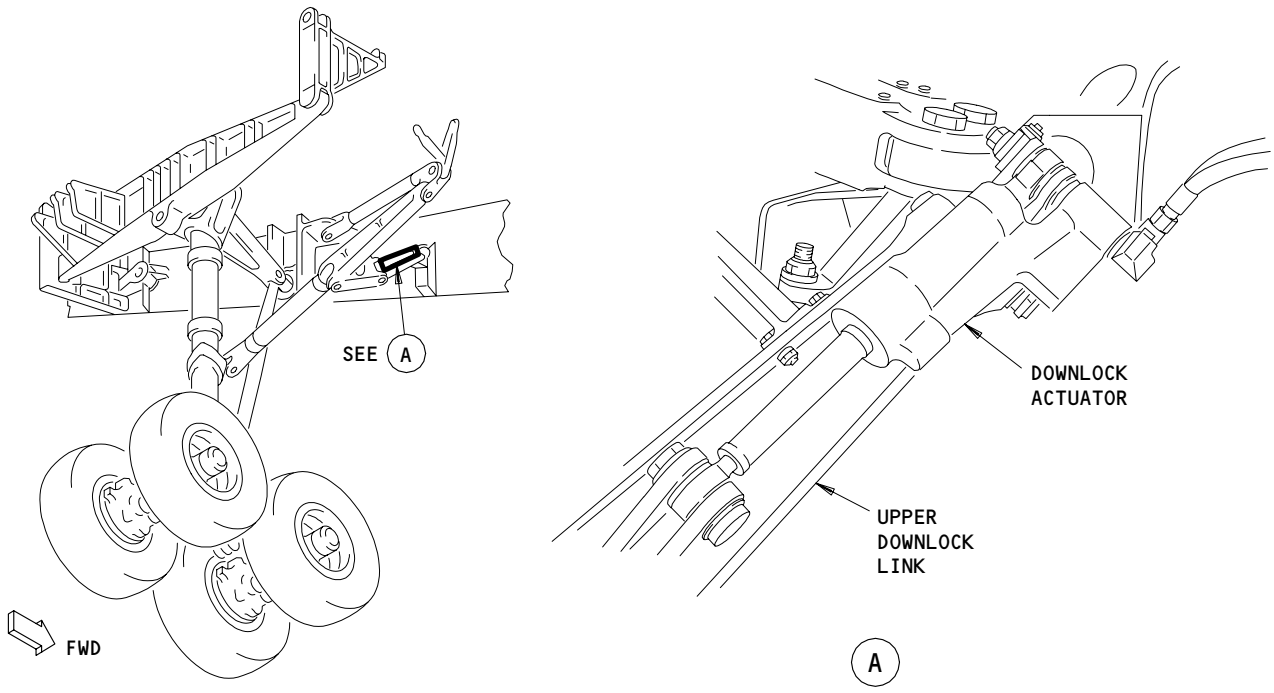
D. Uplock Actuator (Fig. 4)

(1) The uplock actuator is a hydraulic piston-type actuator that operates hydraulically in one direction. This actuator applies the force to move the uplock hook to release the main landing gear and let it extend. The actuator is installed on the uplock assembly on the outboard fairing of the wheel well for the main landing gear.

E. Door-Operated Gear Sequence Valve (Fig. 5)



Door Actuator
Figure 2

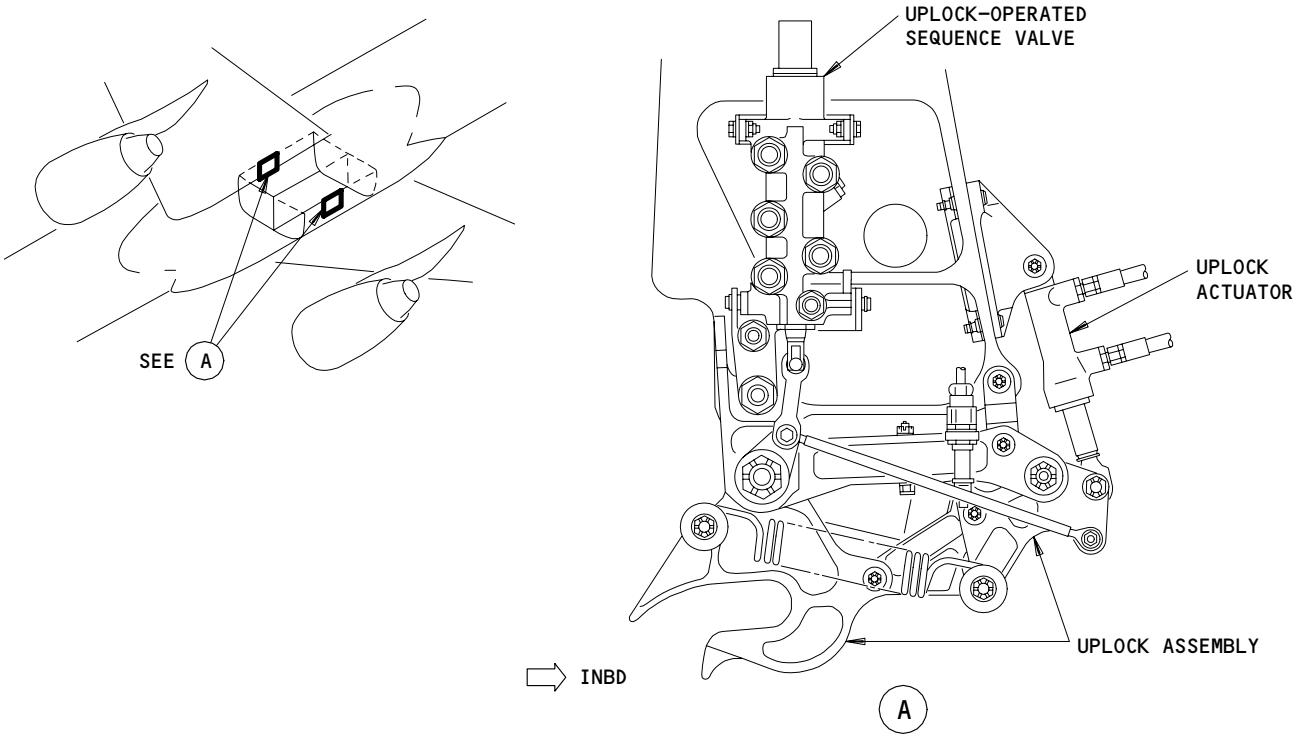


Downlock Actuator
Figure 3

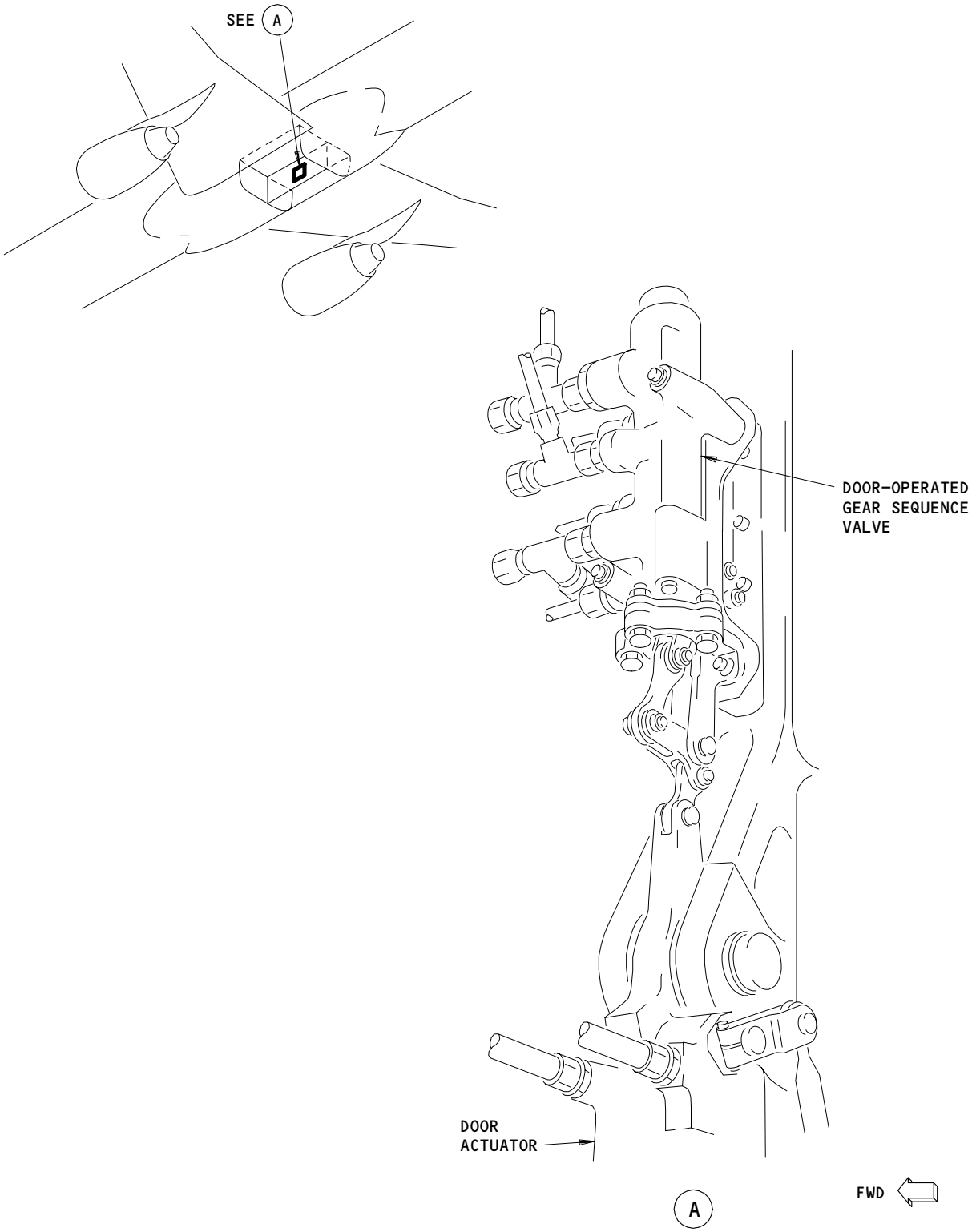
(1) The door-operated gear sequence valve is a three-position valve. The valve controls the flow of hydraulic fluid to the downlock, uplock, and retract actuators. This valve controls the sequence of landing gear movement in relation to door position for the landing gear. The valve is connected to and operated by the door actuator. The valve is installed above the door actuator on the keel beam in the wheel well for the main landing gear.

F. Downlock-Operated Door Sequence Valve (Fig. 6)

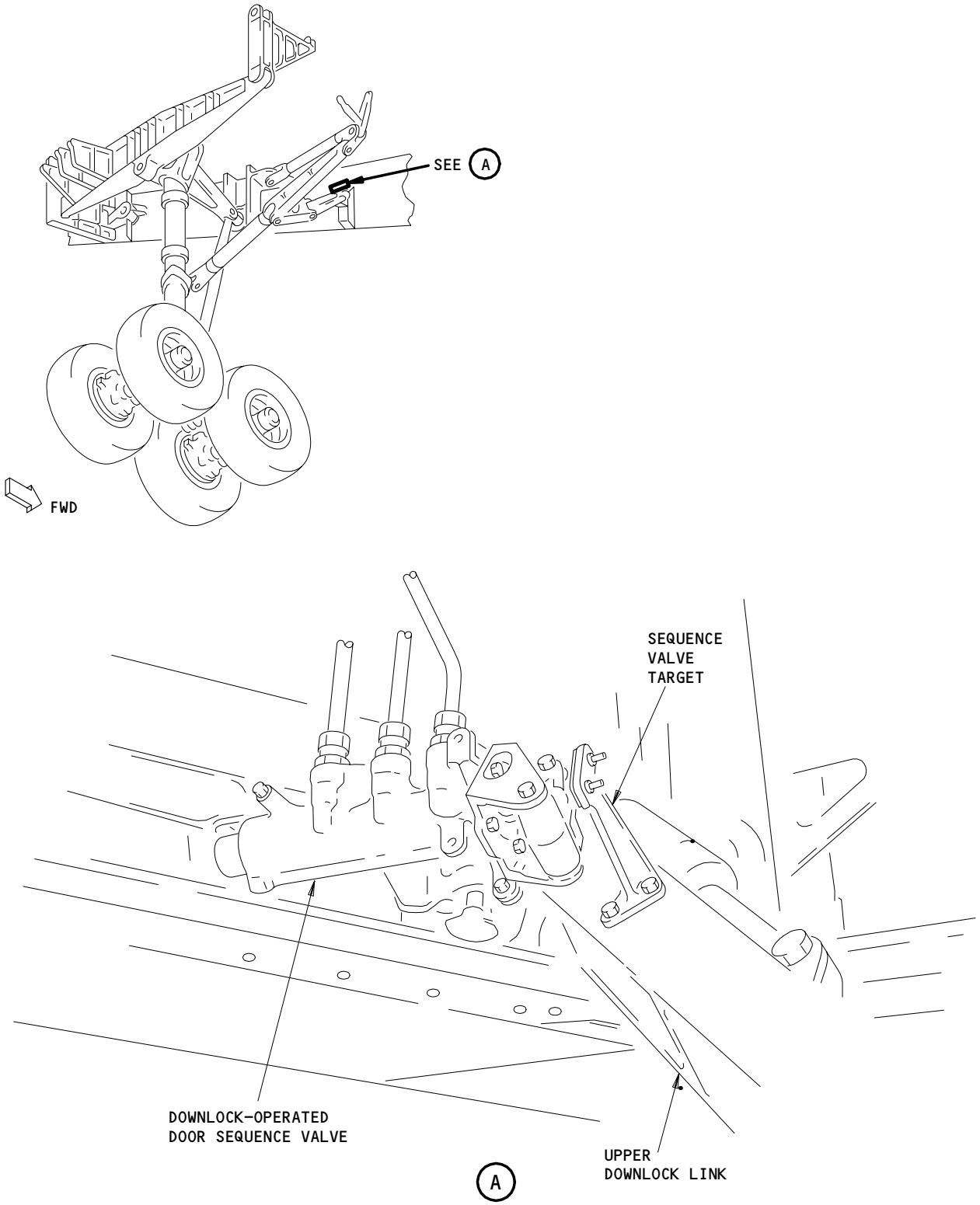
(1) The downlock-operated door sequence valve is a two-position valve. The valve controls the flow of hydraulic fluid to the door actuator. This valve is hydraulically connected to the uplock-operated sequence valve. The valve's primary function is to supply hydraulic pressure to the door actuator to close the door when the main landing gear is down and locked. The valve is installed on the jury brace, which is attached to the rear wing spar, just outboard of the upper downlock link. Valve position is operated by a target on the upper downlock link which engages a roller on the valve when the landing gear is down and locked.



Uplock Mechanism
Figure 4



Door-Operated Gear Sequence Valve
Figure 5

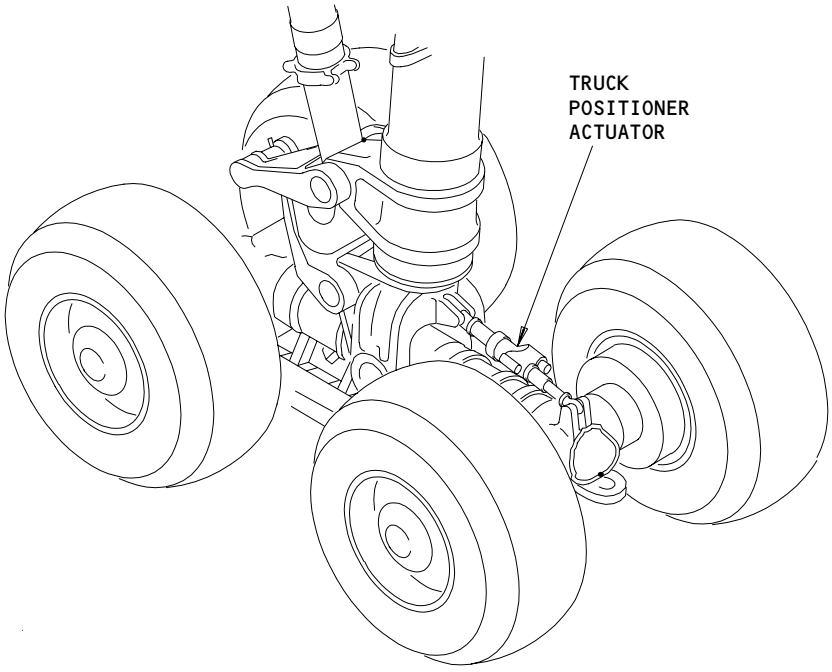


Downlock-Operated Door Sequence Valve
Figure 6

G. Uplock-Operated Sequence Valve (Fig. 4)

(1) The uplock-operated sequence valve is a two-position valve. It controls the flow of hydraulic fluid to the door actuator. This valve is hydraulically connected to the downlock-operated door sequence valve. Its primary function is to supply hydraulic pressure to the door actuator to open or close the door when the main landing gear is up and locked. A restrictor check valve installed in the hydraulic fitting in the line that connects this valve and the downlock-operated door sequence valve decreases the speed at which the door closes for safety. The uplock-operated sequence valve is installed on the uplock assembly on the outboard fairing of the wheel well for the main landing gear. The valve is connected, but not directly, to the uplock actuator and movement of the uplock actuator operates the valve position.

H. Truck Positioner Actuator (Fig. 7)



Truck Positioner Actuator
Figure 7

(1) The truck positioner actuator is a hydraulic piston-type actuator. It operates hydraulically in one direction. This actuator applies the force to put the truck assembly at an angle to permit clearance with the structure when the landing gear moves to the extended or retracted position. The actuator is installed on the aft side of the shock strut near the truck assembly. The head end attaches to the shock strut inner cylinder, and the rod end attaches to the truck beam.

I. Truck Positioner Shuttle Valve (Fig. 8)

(1) The left truck positioner shuttle valve is a flow-limited control valve. Normally, this valve permits free flow of hydraulic fluid to the truck positioner actuator. If a low pressure input is received from the lines between the valve and the actuator, fluid flow to the actuator is blocked. This is done with a hydraulic fuse.

(2) The extension and retraction system for the right main landing gear has two hydraulic fuses installed. There is one fuse installed in the the landing gear up and one installed in the landing gear down control lines. On these airplanes the right truck positioner shuttle valve fuse is not installed. If a low pressure input is received, the related fuse will stop flow to the full system. This will prevent the loss of the other airplane systems supplied by the left hydraulic system because of a break or a leak.

J. Uplock Assembly (Fig. 4)

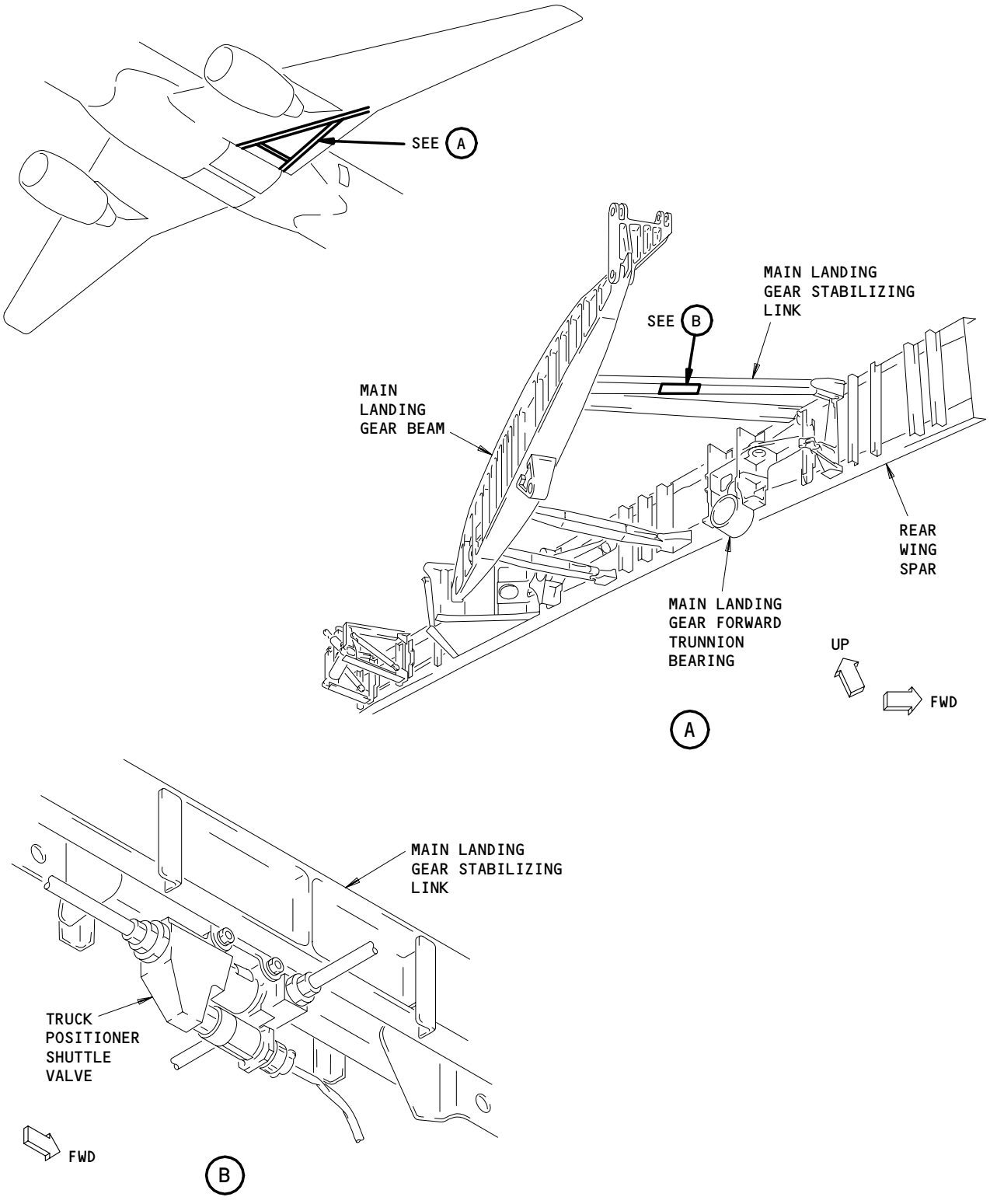
(1) The uplock assembly is a spring-loaded hook and linkage mechanism. This assembly locks the landing gear up in the wheel well after it is retracted. The uplock hook engages in the uplock roller which is installed on the shock strut. The mechanism is operated by the uplock actuator. The uplock assembly is installed on the outboard fairing of the wheel well for the main landing gear.

3. Operation (Fig. 9)

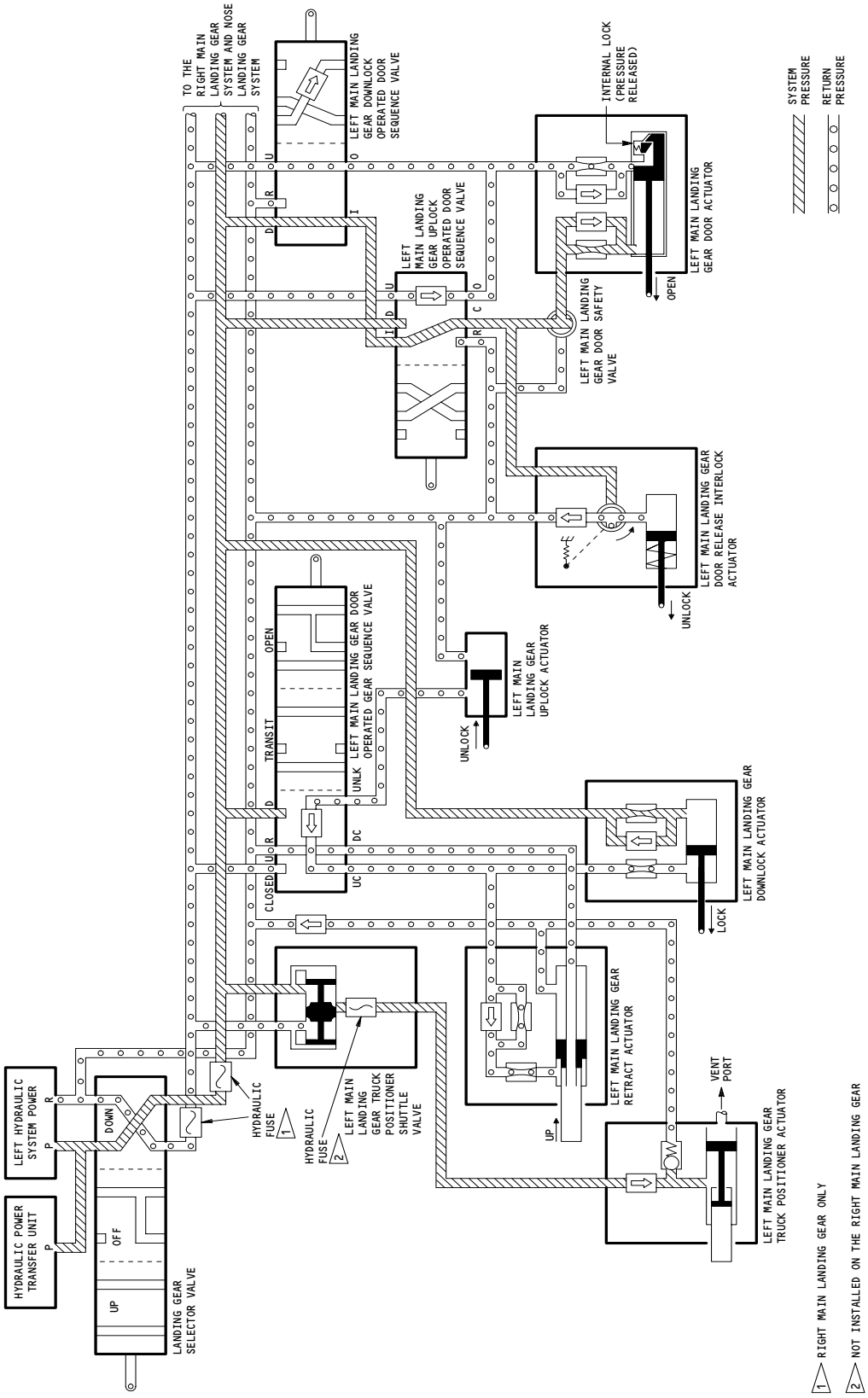
A. Functional Description

(1) Landing Gear Retraction

(a) The retraction cycle starts with the landing gear down and locked and the main landing gear door closed and locked. With the control lever in UP, hydraulic fluid flows through the selector valve to pressurize the hydraulic lines for landing gear retraction.



Truck Positioner Shuttle Valve
Figure 8



Main Landing Gear Extension and Retraction Operation Schematic
(Left System Shown, Right System Equivalent)
Figure 9

(b) Hydraulic fluid flows through the truck positioner shuttle valve to the truck positioner actuator. The actuator extends to put the truck the at an angle for entry into the wheel well.

(c) Hydraulic fluid flows through the uplock-operated and downlock-operated sequence valves to the door actuator. The mechanical lock in the door actuator is released. Then the door actuator extends to open the main landing gear door.

(d) When the door is approximately 90 per cent open, the door-operated sequence valve sends hydraulic fluid to the downlock and retract actuators. The downlock actuator retracts to move the downlock links out of the locked position. Then, the retract actuator retracts to retract the landing gear.

(e) The landing gear continues to retract and the door continues to open until the landing gear is up and latched in the uplock assembly. Then, the uplock-operated sequence valve again sends fluid to the door actuator. The door actuator retracts to close the door until the actuator locks the door closed.

(f) When the door is fully closed and locked, the control lever is moved to OFF. This changes the position of the selector valve to prevent the supply of hydraulic pressure to the landing gear system. The hydraulic lines are opened to return, which completes the retraction cycle.

(2) Landing Gear Extension

(a) The extension cycle starts with the landing gear up and locked and the main landing gear door closed and locked. With the control lever in DN, hydraulic fluid flows through the selector valve to pressurize the hydraulic lines for landing gear extension.

(b) Hydraulic fluid flows through the truck positioner shuttle valve to the truck positioner actuator. The actuator is pressurized to hold the truck at an angle as it moves out of the wheel well.

(c) Hydraulic fluid flows through the uplock-operated and downlock-operated sequence valves to the door actuator. The mechanical lock in the door actuator is released and the actuator extends to open the main landing gear door. Hydraulic fluid also flows to the downlock actuator which applies pressure to extend the actuator and lock the downlock links. But, at this time, the links cannot move since the landing gear is still locked.

(d) When the door is approximately 90 percent open, the door-operated sequence valve sends hydraulic fluid to the uplock actuator. The uplock actuator retracts to move the uplock hook from the latched position. This releases the landing gear from the uplock assembly.

(e) When the door is approximately 95 percent open, the door-operated sequence valve sends hydraulic fluid to the retract actuator. The retract actuator extends to lower the landing gear.

(f) The door opens fully. The landing gear continues to lower until it is down and the pressure applied to the downlock actuator extends the actuator to move the downlock links overcenter to the locked position. Then, the downlock-operated sequence valve again sends hydraulic fluid to the door actuator. The door actuator retracts to close the door until the actuator locks the door closed.

(g) When the door is fully closed and locked, the extension cycle is complete.

B. Control

(1) The extension and retraction system for the main landing gear is controlled by the landing gear control system (AMM 32-31-00/001).

MAIN GEAR EXTENSION AND RETRACTION - ADJUSTMENT/TEST

1. General
   A. This test is used to make sure that main gear extension and retraction operates satisfactorily. In this test, however, the nose gear is also cycled. This test does not contain the data for a complete landing gear extension and retraction system test or any adjustments.
   B. The times for gear retraction in the operational test depend on the hydraulic flow rate. The retraction times given in this procedure are based on a minimum flow rate of 37 gpm at a hydraulic system pressure of 3000 + -150 psi. Hydraulic pressure can be supplied by a hydraulic test bench or the engine driven pumps to give this minimum flow rate.
   C. The electric motor driven pump (EMDP) can be used for the component replacement test. When you use the EMDP operate only one Landing gear at a time. The EMDP provides a hydraulic flow rate of approximately 6 gpm. This lower rate causes slower landing gear operation, especially if you operate more than one gear at the same time. Do not use the EMDP to measure extension/retraction times.

TASK 32-32-00-705-003

2. Operational Test - Main Landing Gear Extension and Retraction
   A. Equipment
      (1) Stop Watch
   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. Access
      (1) Location Zones
          212 Control Cabin (Right)
          730 Main Landing Gear and Doors (Left)
          740 Main Landing Gear and Doors (Right)

   D. Prepare for the Operational Test

      S 865-021

      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 landing gear doors and close the landing gear doors (AMM 32-00-15/201).

      S 495-004
      (2) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

S 865-005

(3) Lift the airplane on jacks to a height sufficient for landing gear retraction (AMM 07-11-01/201).

S 865-006

(4) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:
(a) 11S15, AIR/GND SYS 1
(b) 11S19, AIR/GND SYS 2
(c) 11S20, LEVER LOCK
(d) 11P29, R IND LTS 2

S 865-007

(5) Make sure the control lever for the landing gear is in the DN position.

S 095-008

(6) Remove the downlocks from the nose and main landing gear (AMM 32-00-20/201).

S 865-009

(7) Pressurize the left hydraulic system to 3000 psi (2800 minimum to 3150 maximum) (AMM 29-11-00/201).

S 865-010

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

S 865-001

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE MAIN AND NOSE LANDING GEAR. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN RESULT.

(9) Retract and extend the landing gear at least three times before you do the test that will measure the landing gear extension and retraction times. This will remove air from the system.

NOTE: Do not use the lock override during the operational test.

S 865-002

(10) Make sure the control lever for the landing gear is in the DN position.

E. Do a Test of the Main Landing Gear Time to Operate and Reversal

S 715-022

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE MAIN AND NOSE LANDING GEAR. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN RESULT.

(1) Measure the time it takes to retract the gear.
   (a) Start the time when the control lever is moved to UP.

      NOTE: Do not use the lock override.

   (b) Move the control lever from DN to UP in 2 ± 1 seconds.
   (c) Make sure the amber DOORS light comes on while the gears move from down to up, and then goes off.
   (d) Stop the time when the amber DOORS light goes off.
   (e) Write down the retraction time.

S 715-012
(2) Do a check of gear reversal.
   (a) Move the control lever from UP to DN. When gear extension is approximately 50 percent complete, move the control lever back to UP at a constant rate in 3 ± 1 seconds.
   (b) Make sure the landing gear changes direction with no hydraulic leakage or damage to parts.
   (c) Move the control lever to OFF.
   (d) Make sure the landing gear doors stay in the closed position.

S 715-013
(3) Measure the time it takes to extend the gear.
   (a) Put one person outside the airplane near the main landing gear to monitor gear extension time. Supply interphone communication to the flight deck.
   (b) Start the time when the control lever is moved to DN.
   (c) Stop the time when the main landing gears are down and locked and the doors close.
   (d) Write down the extension time.

S 715-014
(4) Do a check of gear reversal.
   (a) Move the control lever from DN to UP. Do not use the lock override. When retraction is approximately 50 percent complete, move the control lever back to DN at a constant rate in 3 ± 1 seconds.
   (b) Make sure the landing gear changes direction with no hydraulic leakage or damage to parts.

S 715-015
(5) Compare the time it takes to operate the gear to the limits shown below:

NOTE: Use the times below as an aid only; the actual times may be slightly different.

MAXIMUM TIME TO OPERATE AT 37 GPM HYDRAULIC FLUID FLOW *[1]		
	RETRACTION	EXTENSION
DOORS CLOSED (cycle complete)	20 sec	32 sec

*[1] These values are approximate times that start with control lever movement

F. Put the Airplane Back to Its Usual Condition

S 865-016
(1) Remove the power from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-017
(2) Remove electrical power if it is not necessary (AMM 24-22-00/201).

S 495-018
(3) Install the downlocks for the nose and main landing gear (AMM 32-00-20/201).

S 495-019
(4) Lower the airplane and remove the jacks (AMM 07-11-01/201).

MAIN GEAR RETRACT ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure provides two tasks. The first task removes the main gear retract actuator. The second task installs the main gear retract actuator.

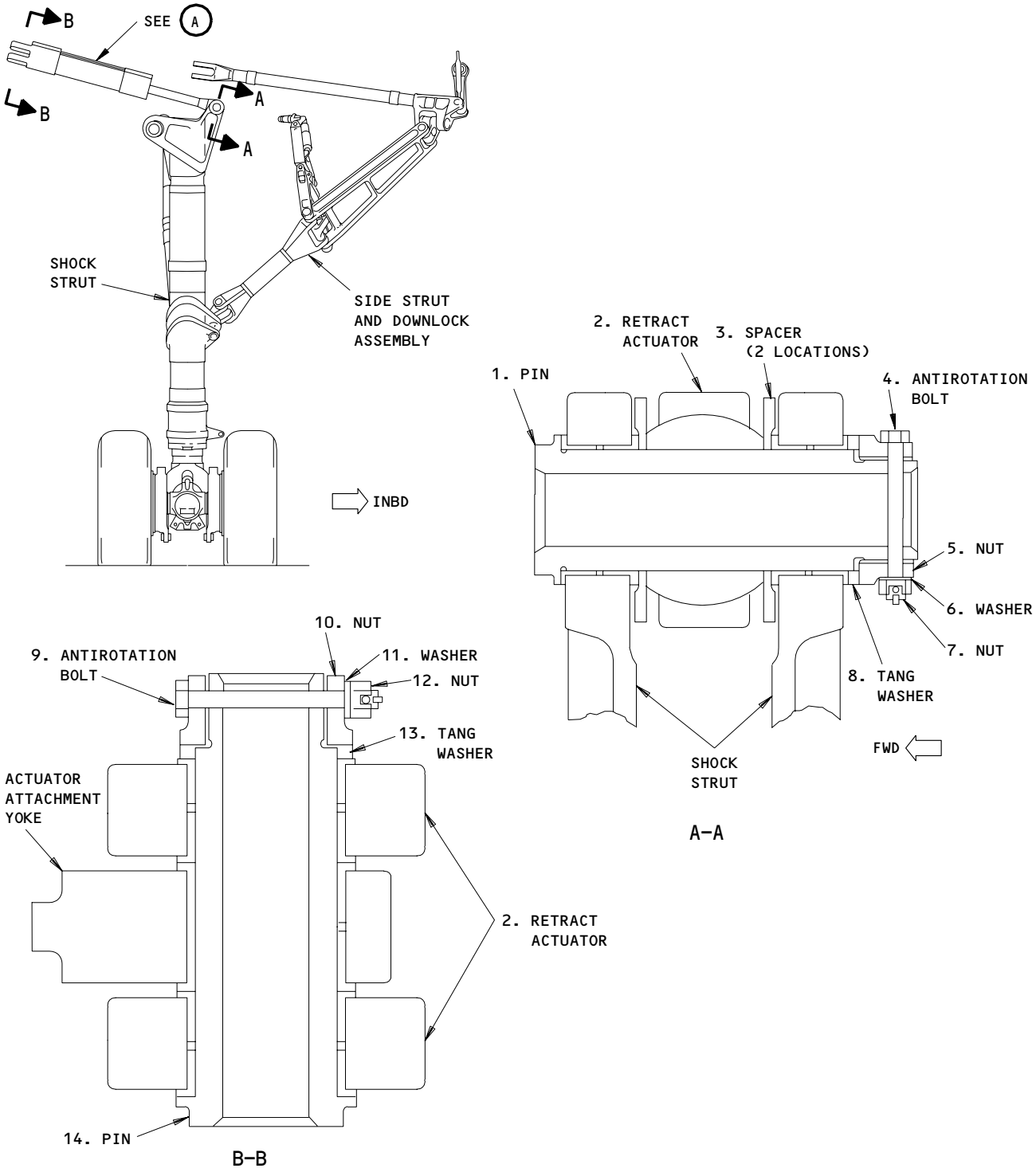
TASK 32-32-01-004-001

2. Remove the Main Gear Retract Actuator (Fig. 401)
   A. References
      (1) AMM 06-44-00/201, Wing 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 32-00-20/201, Landing Gear Downlocks
   B. Equipment
      (1) Retract Actuator Hoist Adapter, MLG - B32008-1
      (2) Thread Protector Set, MLG - B32011-1
      (3) Retract Actuator Retraction/Extension Pump, MLG - A32027-53, -90, -153 (As Applicable)
      (4) Boom Hoist - A20001-79
      (5) Crowfoot Wrench - F70312-38
   C. Consumable Materials
      (1) D00633 Grease - BMS 3-33 (Recommended)
      (2) D00013 Grease - MIL-G-23827 (Alternative)
      (3) D00148 Fluid, Hydraulic - BMS 3-11, Type IV, Class 1
   D. Access
      (1) Location Zones
          551 Rear Spar to MLG Support Beam (Left)
          651 Rear Spar to MLG Support Beam (Right)

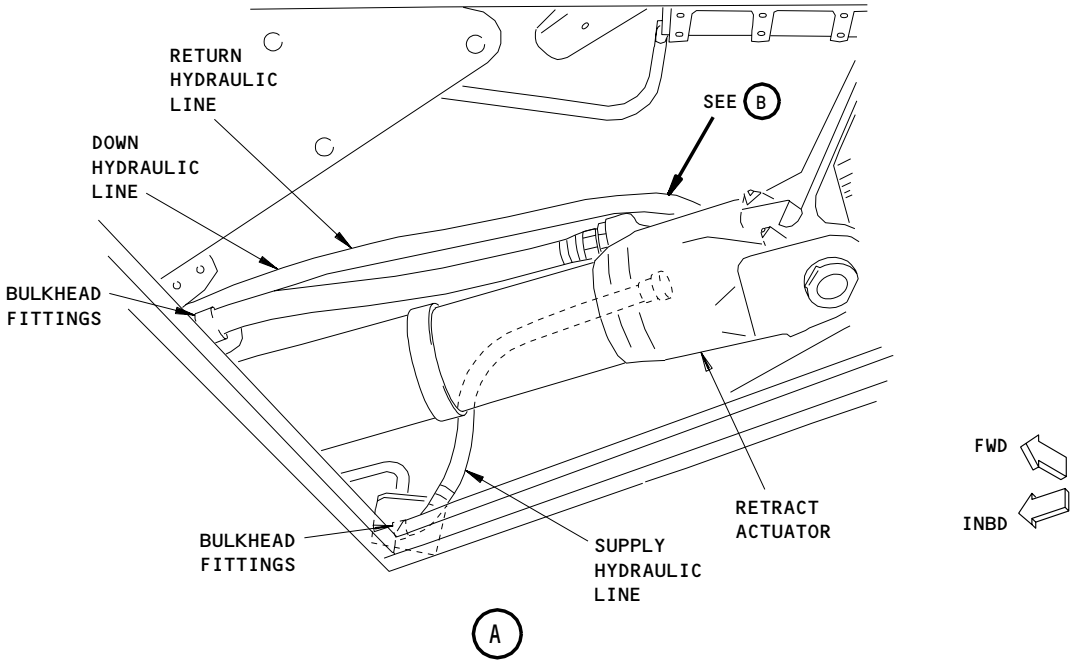
      (2) Access Panels
          551BB Wing Access Panel (Left)
          551CT Wing Access Panel (Left)
          651BB Wing Access Panel (Right)
          651CT Wing Access Panel (Right)
   E. Prepare for Removal

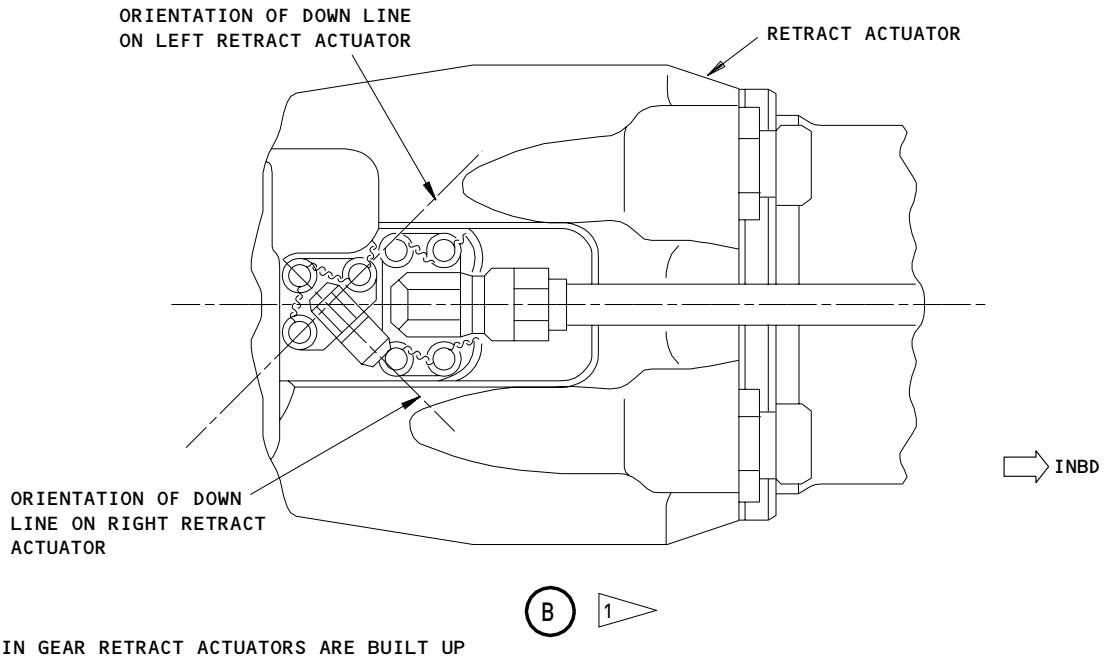
      S 494-002
      (1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

      S 864-003
      (2) Remove the pressure from the left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).



Main Gear Retract Actuator Installation
Figure 401 (Sheet 1)





1 MAIN GEAR RETRACT ACTUATORS ARE BUILT UP FOR SPECIFIC POSITIONS (LEFT OR RIGHT SIDE), THE DIFFERENCE IS THE ORIENTATION OF THE DOWN LINE FITTING. IF THE CORRECT POSITION ASSEMBLY IS UNAVAILABLE THE DOWN LINE FITTING CAN BE REPOSITIONED AND THE OFFSIDE RETRACT ACTUATOR MAY BE USED.

Main Gear Retract Actuator Installation
Figure 401 (Sheet 2)

S 014-004
(3) Remove the wing access panels 551BB-left (651BB-right) below the retract actuator, and 551CT-left (651CT-right), above the retract actuator (AMM 06-44-00/201).

F. Procedure to Remove the Main Gear Retract Actuator

S 494-005
(1) Use the instructions supplied with the tool to install the hoist adapter onto actuator, then attach to the hoist. Lift the hoist to decrease the pressure on the attach pins.

S 034-006
(2) Remove nut (5) using a crowfoot wrench.

S 034-007
(3) Install the thread protector and remove pin (1) to disconnect the rod end of the actuator from the shock strut (View A-A).

S 034-008
(4) Disconnect the hydraulic lines (UP, RETURN and DN) from the bulkhead fittings. Install a plug on the lines and fittings.

S 494-009
(5) Use the instructions supplied with the tool to install the pump on the hydraulic lines from the actuator. Retract the piston.

S 094-010
(6) Remove the pump from the hydraulic lines.

S 034-011
(7) Remove nut (10) using a crowfoot wrench. Install the thread protector and remove pin (14) to disconnect the head end of actuator from the yoke (View B-B).

S 024-012
(8) Lower the actuator (2) and help it through the access hole. Remove the actuator.

S 094-013
(9) Remove the hoist adapter from the actuator.

S 034-014
(10) Disconnect the hydraulic lines from the actuator. Install plugs on the lines and fittings and hold them to install later.

S 224-036

(11) Perform a detailed inspection of the main landing gear actuator yoke fitting and pivot shaft to check for cracks, corrosion, worn bushings, unusual wear, and deteriorated finish.

NOTE: Disassembly of the pivot shaft is not required to perform this inspection.

TASK 32-32-01-404-015

3. Install the Main Gear Retract Actuator (Fig. 401)

NOTE: Wear Limits for the component that is installed with this procedure are provided in AMM 32-32-01/601.

A. References
(1) AMM 06-44-00/201, Wing 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 32-00-20/201, Landing Gear Downlocks

B. Equipment
(1) Retract Actuator Hoist Adapter, MLG - B32008-1
(2) Thread Protector Set, MLG - B32011-1
(3) Retract Actuator Retraction/Extension Pump, MLG - A32027-53, -90, -153 (As Applicable)
(4) Boom Hoist - A20001-79
(5) Crowfoot Wrench - F70312-38
(6) Torque Wrench - commercially available (For torque ranges, Ref Fig. 401)

C. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Recommended)
(2) D00013 Grease - MIL-G-23827 (Alternative)
(3) D00148 Fluid, Hydraulic - BMS 3-11, Type IV, Class 1

D. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	2	Retract Actuator	32-32-01	01 02 03 03A	19,21 10,35 15,40 10,40 15,45 10,40 15,45

E. Access

(1) Location Zones

551 Rear Spar to MLG Support Beam (Left)
651 Rear Spar to MLG Support Beam (Right)

(2) Access Panels

551BB Wing Access Panel (Left)
551CT Wing Access Panel (Left)
651BB Wing Access Panel (Right)
651CT Wing Access Panel (Right)

F. Procedure to Install the Main Gear Retract Actuator

S 434-035

CAUTION: USE FIG. 401 TO MAKE SURE THE HYDRAULIC FITTING FOR THE DOWN LINE IS INSTALLED IN THE CORRECT DIRECTION ON THE ACTUATOR BEFORE YOU CONNECT THE HYDRAULIC LINE. IF THE FITTING IS NOT IN THE CORRECT DIRECTION, THE LINE CAN BE DAMAGED AND CAUSE LOSS OF HYDRAULIC FLUID.

(1) Connect the hydraulic lines to the actuator.

NOTE: The main landing gear retract actuators are built up for specific positions (left or right side), the difference is the orientation of the down line fitting. If the correct position assembly is not available, you can change the orientation of the fitting such that you can use the actuator on the opposite side.

S 614-017

(2) Fill the actuator and lines with hydraulic fluid. Install a plug in the lines.

S 494-018

(3) Use the instructions supplied with the tool to install the hoist adapter onto the actuator, then attach to the hoist. Lift the actuator into position in the wing.

S 434-019

(4) Do the steps that follow to connect the head end of the actuator to the yoke:

(a) Install thread protector.
(b) Put grease on pin (14) and install.
(c) Install the tang washer (13) and the nut (10). Use a crowfoot wrench to tighten the nut (10) to 70-90 pound-feet (94.9-122.0 newton-meters). Loosen the nut (10), then tighten it again to 5-10 pound-feet (6.8-13.6 newton-meters). If it is necessary, loosen the nut (10) to the nearest possible lock position to install the antirotation bolt (9). It is acceptable to have a zero torque condition on the nut (10) when you install the antirotation bolt (9).

(d) Install antirotation bolt (9), washer (11), nut (12), and cotter pin.

S 494-020

(5) Use the instructions supplied with the tool to install the pump. Extend the actuator piston to align the rod end attach hole.

S 094-021

(6) Remove the pump from the hydraulic lines. Install a plug in the lines.

S 434-022

(7) Do the steps that follow to connect the rod end of the actuator (2) to the shock strut (View A-A):
(a) Install thread protector.
(b) Put grease on pin (1).
(c) Install the pin (1) and the spacers (3).
(d) Install the tang washer (8) and the nut (5). Use a crowfoot wrench to tighten the nut (5) to 70-90 pound-feet (94.9-122.0 newton-meters). Loosen the nut (5), then tighten it again to 5-10 pound-feet (6.8-13.6 newton-meters). If it is necessary, loosen the nut (5) to the nearest possible lock position to install the antirotation bolt (4). It is acceptable to have a zero torque condition on the nut (5) when you install the antirotation bolt (4).
(e) Install antirotation bolt (4), washer (6), nut (7), and cotter pin.

S 644-023

(8) Lubricate the actuator at grease fittings.

S 864-024

(9) Make sure pressure is removed from the left hydraulic system and hydraulic reservoir.

S 434-025

(10) Connect the hydraulic lines to the bulkhead fittings.

S 214-026

WARNING: IF YOU DO NOT INSTALL THE HYDRAULIC LINES PROPERLY, THE LINES COULD RUB AGAINST THE MAIN LANDING GEAR. THIS COULD RESULT IN THE LOSS OF HYDRAULIC FLUID.

(11) Make sure the hydraulic lines do not rub against the landing gear.

S 094-027

(12) Remove the hoist adapter from the actuator.

S 714-028

(13) Do a check of the actuator to be sure it is installed properly.
  (a) Pressurize the left hydraulic system.
  (b) Move the landing gear control lever from DN to UP several times. Return the lever to DN.
  (c) Visually inspect the actuator and hydraulic lines for hydraulic leaks.
  (d) Remove hydraulic power (AMM 29-11-00/201) if it is not necessary.

S 864-029

(14) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 414-030

(15) Install the wing access panels 551BB-left (651BB-right), below the retract actuator, and 551CT-left (651CT-right), above the retract actuator (AMM 06-44-00/201).

MAIN GEAR RETRACT ACTUATOR - INSPECTION/CHECK

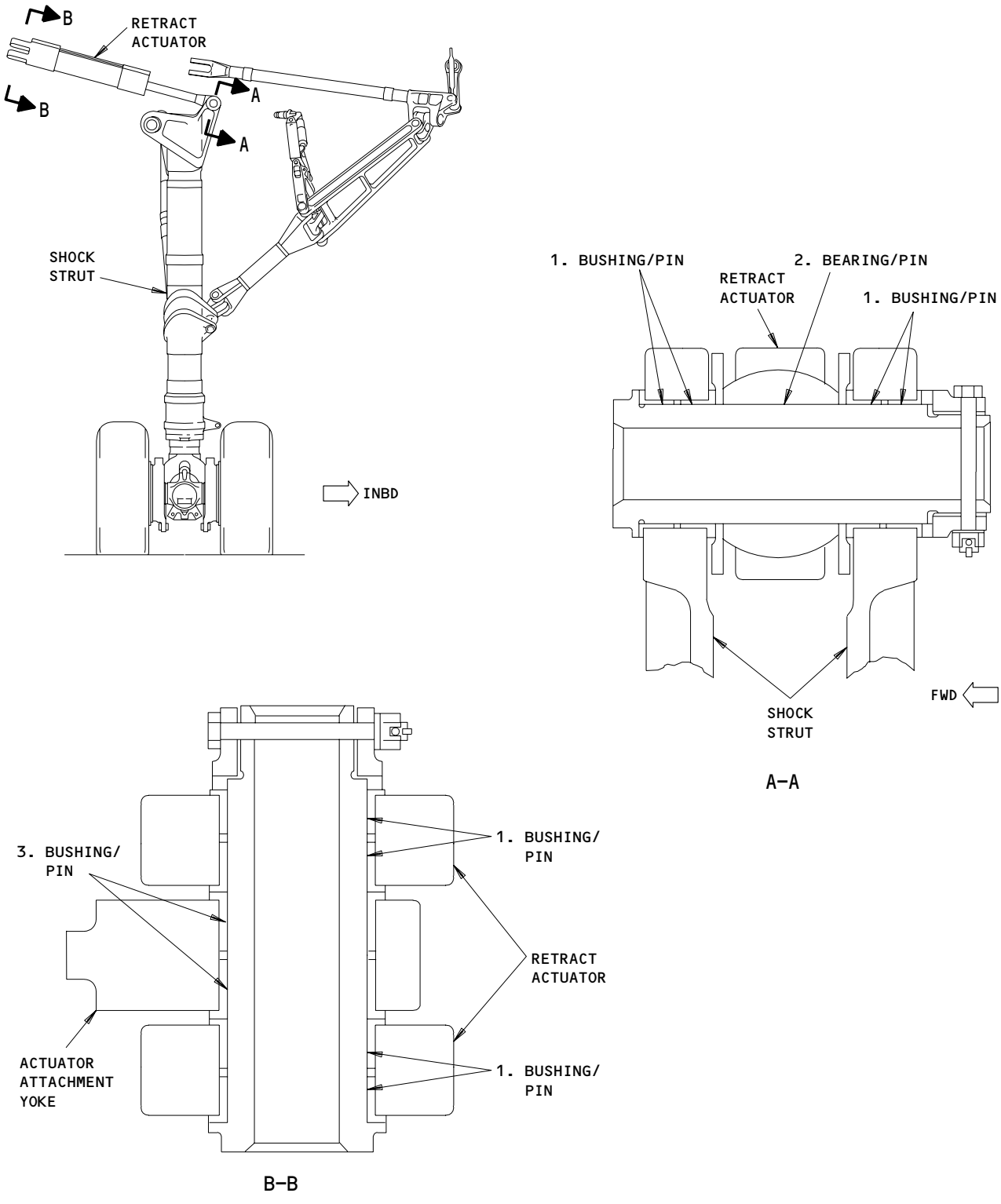
1. General
   A. This procedure only has illustrations and a wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Main Gear Retract Actuator - Removal/Installation for procedures to do these tasks.

TASK 32-32-01-206-001

2. Wear Limits for the Retract Actuator on the Main Landing Gear (Fig. 601)

   NOTE: Wear limits for the other components that are connected to the Retract Actuator are not in this procedure. They are included in the applicable Maintenance Manual subject for those components.

   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 Retract Actuator - Removal/Installation for procedures to do these tasks.



Main Landing Gear Retract Actuator 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	BUSHING	ID	2.0000	2.0010	2.0048	0.0058	X		
	PIN	OD	1.9980	1.9990	1.9952			X	1
2	BEARING	ID	2.0000	2.0005	2.0043	0.0053	X		
	PIN	OD	1.9980	1.9990	1.9952			X	1
3	BUSHING	ID	2.0020	2.0040	2.0070	0.0080	X		
	PIN	OD	1.9980	1.9990	1.9952			X	1

1 YOU CAN REPAIR THE PART; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS

Main Landing Gear Retract Actuator Wear Limits
Figure 601 (Sheet 2)

MAIN GEAR DOWNLOCK ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure provides two tasks . The first task removes the main gear downlock actuator. The second task installs the main gear downlock actuator.

TASK 32-32-02-004-001

2. Remove the Main Gear Downlock Actuator (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. Consumable Materials
      (1) D00153 Hydraulic Fluid - Fire resistant, BMS 3-11
      (2) D00633 Grease - BMS3-33 (Preferred)
      (3) D00013 Grease - MIL-G-23827 (Alternative)
      (4) D00054 Lubricant, Hydraulic Systems - MCS-352B
   C. Access
      (1) Location Zone
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

   D. Prepare for Removal

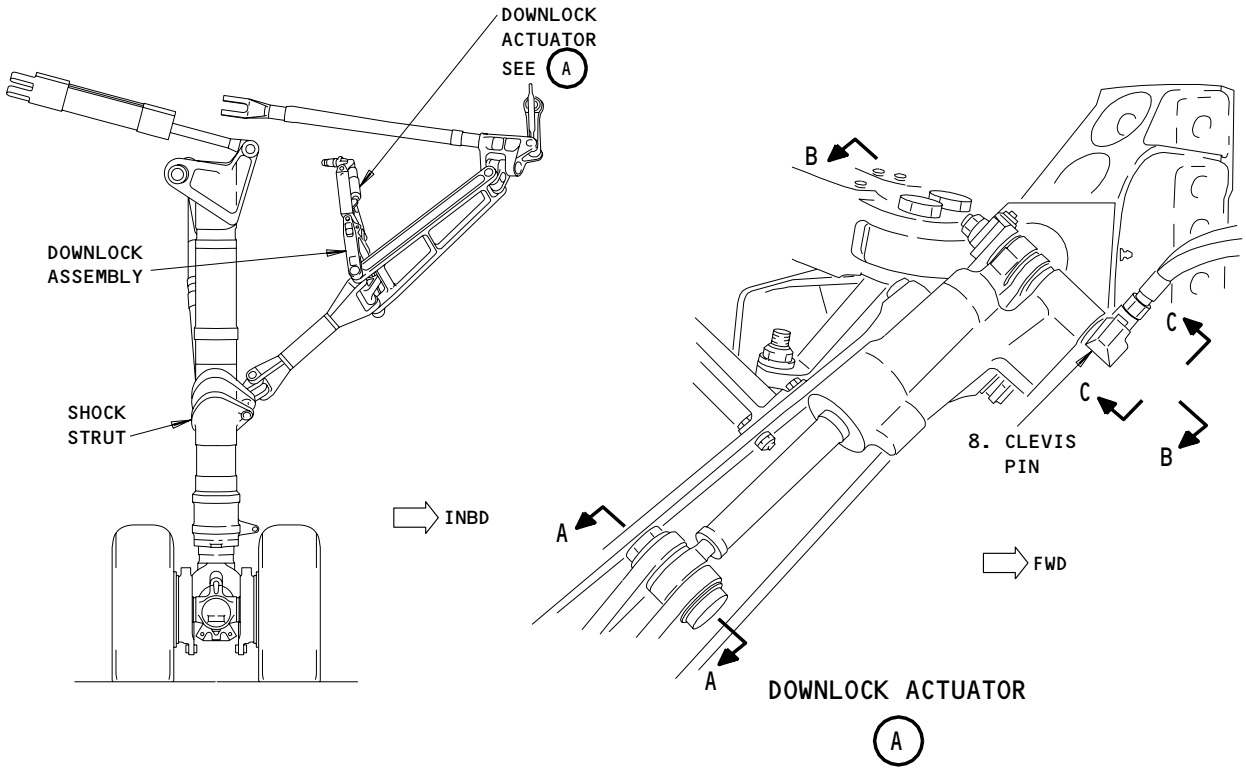
      S 494-002
      (1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

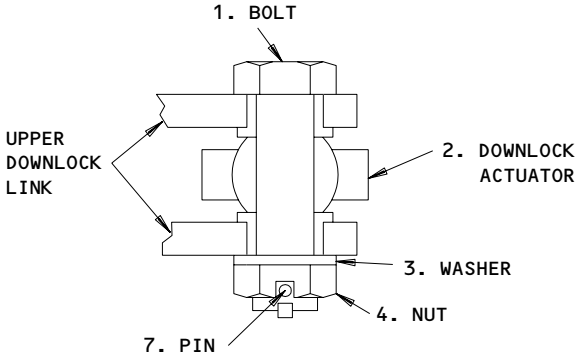
      S 864-003
      (2) Remove the pressure from the left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).
   E. Procedure to Remove the Main Gear Downlock Actuator

      S 034-004
      (1) Disconnect the hydraulic lines from the actuator clevis pin.

      S 434-005
      (2) Put a plug in the hydraulic lines and the actuator fittings.

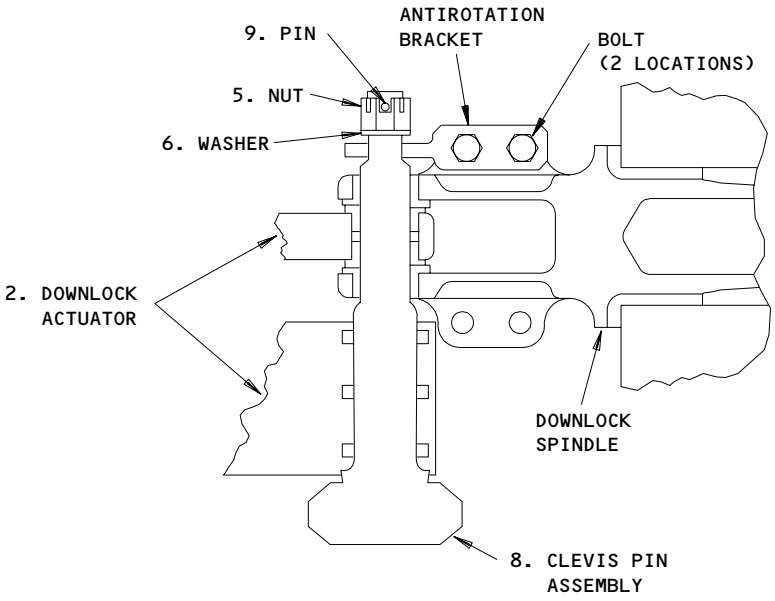
      S 034-006
      (3) Remove the bolt (1) to disconnect the rod end of the actuator from the upper downlock link (Fig. 401, View A-A).



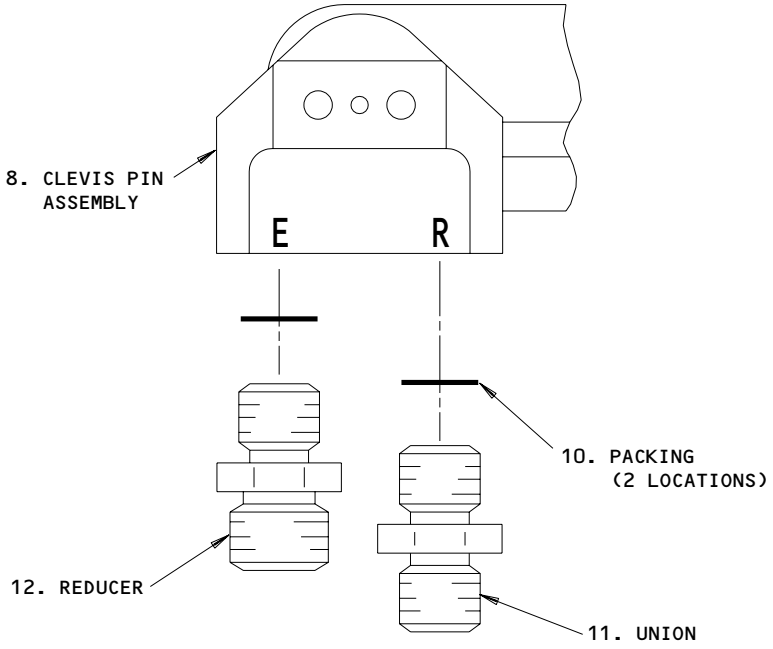


A–A

Main Gear Downlock Actuator Installation
Figure 401 (Sheet 1)



B–B



C–C

Main Gear Downlock Actuator Installation
Figure 401 (Sheet 2)

S 034-025

(4) Remove the pin (9), nut (5), and washer (6) from the clevis pin (8) at the head end of the actuator (Fig. 401, View B-B).

S 034-022

(5) Remove the bolts to disconnect the antirotation bracket from the downlock spindle (View B-B).

S 034-007

(6) Remove the actuator clevis pin assembly (8) to disconnect the head end of the actuator from the downlock spindle (Fig. 401, View B-B).

S 024-008

(7) Remove the downlock actuator (2).

S 034-009

(8) If the downlock actuator that will be installed does not have hydraulic fittings installed in its ports, do the steps that follow:
   (a) Remove the union (11) and the reducer (12) from the actuator which was removed from the airplane.
   (b) Identify the union (11) and reducer (12) with a label to make sure they are installed in the correct location on the new actuator.
   (c) Discard the packing (10).

TASK 32-32-02-404-010

3. Install the Main Gear Downlock Actuator (Fig. 401)

A. References
   (1) AMM 12-12-01/301, Hydraulic Systems
   (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

B. Consumable Materials
   (1) D00153 Hydraulic Fluid - Fire resistant, BMS 3-11
   (2) D00633 Grease - BMS3-33 (Preferred)
   (3) D00013 Grease - MIL-G-23827 (Alternative)
   (4) D00054 Lubricant, Hydraulic Systems - MCS-352B

C. Parts

MM			IPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Downlock Actuator	32-32-02	01 02 02A	65,67 45 45
	10	Packing (O-Ring)		01 02 02A	80 55 55

D. Access
(1) Location Zone
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

E. Procedure to Install the Main Gear Downlock Actuator

S 434-011
(1) If the downlock actuator does not have hydraulic fittings installed in its ports, do the steps that follow:
(a) Lubricate the new packing (10), union (11) , and reducer (12) with hydraulic fluid.

CAUTION: MAKE SURE THAT THE REDUCER AND UNION ARE INSTALLED IN THE CORRECT PORTS ON THE DOWNLOCK ACTUATOR. INCORRECT INSTALLATION OF THE FITTINGS WILL CAUSE THE HYDRAULIC LINES TO BE CROSSED AND SUBSEQUENT MALFUCTION OF THE EXTENSION/RETRACTION SYSTEM.

(b) Install the packing (10) and union (11) in the RETRACT port of the actuator.
(c) Install the packing (10) and reducer (12) in the EXTEND port of the actuator.

S 614-012
(2) Fill the actuator with hydraulic fluid.

S 434-013
(3) Put a plug in the hydraulic fittings.

S 644-023
(4) Apply grease to the bolts, washers, and nuts for the antirotation bracket.

S 434-024
(5) Install the bolts, the washers, and the nuts to connect the anitrotation bracket to the downlock spindle. Install one washer behind each nut.

S 424-014
(6) Install the head end of the actuator.

CAUTION: USE EXTREME CARE WNEN YOU INSTALL THE ACTUATOR CLEVIS PIN TO PREVENT CONTAMINATION OF THE HYDRAULIC PORTS OR SEALS.

(a) Apply lubricant to the clevis pin assembly (8).
(b) Put the head end of the actuator in position on the downlock assembly and install the clevis pin assembly (8).
(c) Apply grease to the washer (6) and nut (5), and install them on the clevis pin assembly (8).
(d) Tighten the nut (5) to 100-200 pound-inches (11.3-22.6 newton-meters).
(e) Install the pin (9) through nut (5).

S 424-016
(7) Install the rod end of the actuator.
(a) Apply grease to the bolt (1), washer (3), and nut (4).
(b) Install the bolt (1), washer (3), and nut (4) to connect the rod end of the actuator to the downlock assembly.
(c) Tighten the nut (4). Use the minimum torque required to bring the nut (4) and washer (3) against the upper downlock link without a load applied to the actuator lugs. After you do this, increase the torque 10-20 pound-inches (1.1-2.2 newton-meters). If it is necessary, loosen the nut to the nearest lock position to allow installation of the pin (7).
(d) Install the pin (7) through the nut (4).

S 644-017
(8) Lubricate the actuator at the grease fittings with grease.

NOTE: If the actuator has two grease fittings at the head end, lubricate only one grease fitting.

S 864-018
(9) Remove the pressure from the left hydraulic system and the hydraulic reservoir.

S 434-019
(10) Connect the hydraulic lines to the actuator clevis pin.

S 214-020
(11) Do a check of the actuator to make sure it is installed properly.
(a) Pressurize the left hydraulic system (AMM 29-11-00/201).

WARNING: MAKE SURE THAT 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 INJURE PERSONNEL AND/OR DAMAGE EQUIPMENT.

(b) Move the landing-gear-control lever from DN to UP and back to DN several times. Keep the control lever in each position for approximately one minute.
(c) Make sure the actuator or the hydraulic connections show no hydraulic leaks when the landing-gear-control lever is in both the UP and the DN positions.
(d) Make sure the landing-gear-control lever is in the DN position, then do the steps that follow:
1) Make sure the downlock assembly stays in the locked position.
2) Look for the indications that follow on the pilot's center instrument panel:
a) The amber GEAR light is off.
b) The green LEFT and RIGHT gear down lights are on.
(e) Remove hydraulic power if it is not necessary (AMM 29-11-00/201).

S 864-021
(12) Make sure the hydraulic reservoir is at the correct level.
(a) Fill the hydraulic system if it is necessary (AMM 12-12-01/301).

MAIN GEAR UPLOCK ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first task is for removal of the uplock actuator for the main landing gear. The second task is for installation of the uplock actuator.

TASK 32-32-04-004-001

2. Remove the Uplock Actuator for 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, Landing 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 Removal

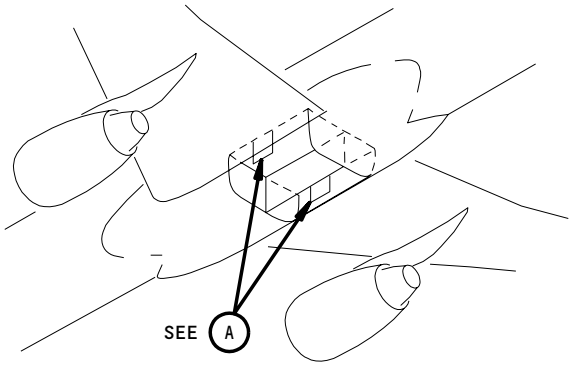
      S 494-002
      (1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

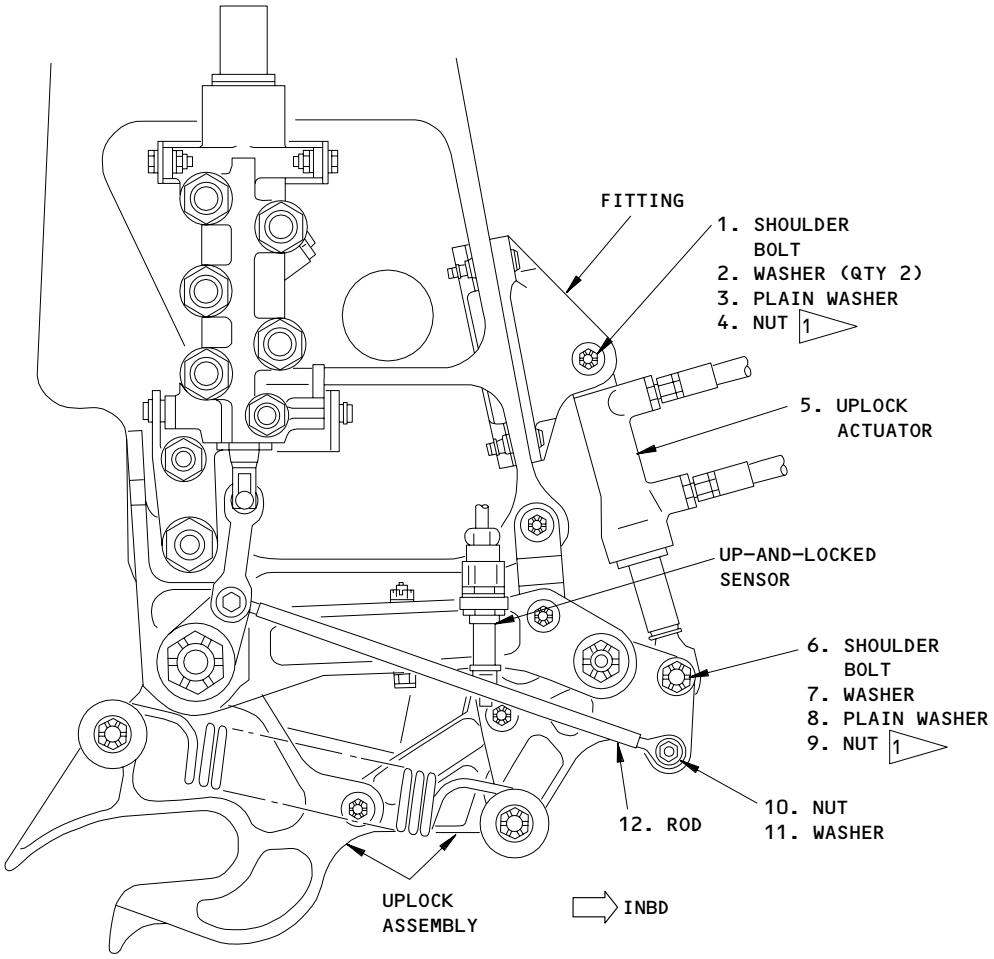
      S 494-003

      WARNING: 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 landing gear doors and install the door locks (AMM 32-00-15/201).

      S 864-004
      (3) Remove the pressure from the left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).





1 INSTALL THE BOLT HEAD FORWARD ON THE LEFT HAND INSTALLATION.
INSTALL THE BOLT HEAD AFT ON THE RIGHT HAND INSTALLATION

Main Landing Gear Uplock Actuator Installation
Figure 401

D. Procedure

S 034-005
(1) Disconnect the hydraulic lines from the actuator. Put plugs in the lines and fittings.

S 034-025
(2) Remove the nut (10) and washer (11) from the rod (12) and disconnect the rod (12) from the uplock assembly (Detail A).

NOTE: This is necessary for both, the left hand and right hand gear.

S 984-006
(3) Apply force to the uplock hook to manually put the uplock assembly in the closed position.

S 034-007
(4) Remove the shoulder bolt (6) to disconnect the rod end of the actuator from the uplock assembly (Detail A).

S 024-008
(5) Remove the shoulder bolt (1) to disconnect the head end of the actuator from the fitting, and remove the actuator (5).

TASK 32-32-04-404-009

3. Install the Uplock Actuator for 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, Landing Gear Door Locks

B. Consumable Materials
(1) D00633 Grease - BMS3-33 (Preferred)
(2) D00013 Grease - MIL-G-23827 (Alternative)
(3) D00148 Fluid, Hydraulic - BMS 3-11, Type IV, Class 1

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	5	Uplock Actuator	32-32-04 16	01 01	90 250

D. Access
(1) Location Zones
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)

E. Procedure

S 614-010
(1) Fill the actuator with hydraulic fluid. Put a plug in the hydraulic fittings.

S 434-011
(2) Put grease on the shoulder bolt (1). Install the shoulder bolt (1), washers (2 and 3), nut (4), and cotter pin to connect the head end of the actuator to the fitting. Make sure you put the two washers (2) behind the bolt head and one plain washer (3) behind the nut. Tighten the nut to 30-75 pound-inches (3.4-8.5 newton-meters) and install the cotter pin.

S 434-012
(3) Put grease on the shoulder bolt (6). Install the shoulder bolt (6), washers (7 and 8), nut (9), and cotter pin to connect the rod end of the actuator to the uplock assembly. Install with one washer (7) behind the bolt head and one plain washer (8) behind the nut. Tighten the nut to 30-75 pound-inches (3.4-8.5 newton-meters) and install the cotter pin.

S 864-013
(4) Make sure the pressure is removed from the left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

S 434-014
(5) Connect the hydraulic lines to the actuator.

S 644-015
(6) Lubricate the actuator at the grease fittings.

F. Do a Check of the Actuator for Correct Installation.

S 864-017
(1) Make sure the control lever for the landing gear is in the DN position.

S 494-022
(2) Make sure the door locks are installed.

S 864-016
(3) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 714-023
(4) Make sure the uplock assembly moves suddenly to the open position.

S 794-018
(5) Examine the actuator for hydraulic leaks.

G. Put the Airplane Back to Its Usual Condition

S 344-026
(1) Connect the rod (12) to the uplock assembly (Detail A) with washer (11) and nut (10).

S 614-019
(2) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 094-020

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

S 864-021
(4) Remove the pressure from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

MAIN GEAR DOOR-OPERATED GEAR SEQUENCE VALVE - REMOVAL/INSTALLATION

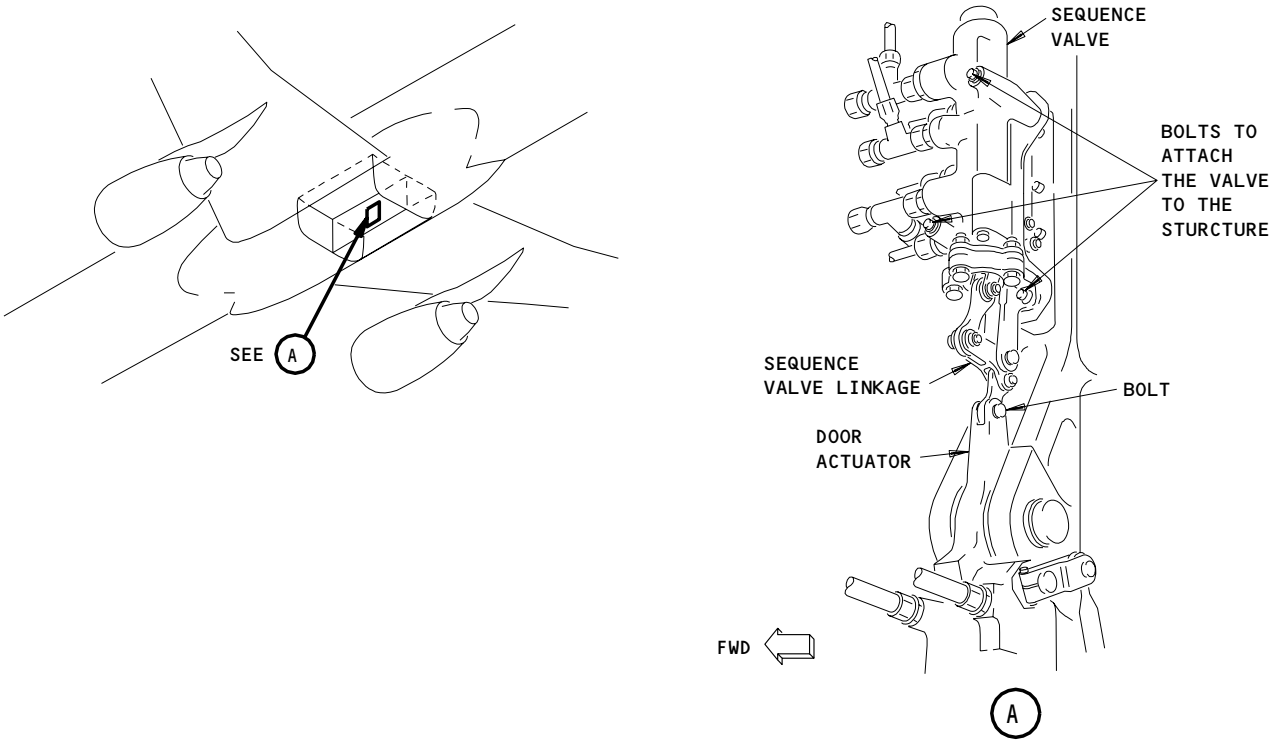
1. General
   A. This procedure contains two tasks. The first task is for removal of the door-operated gear sequence valve for the main landing gear. The second task is for installation of the door-operated gear sequence valve.

TASK 32-32-05-004-001

2. Remove the Door-Operated Sequence Valve 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 Zone
          143 Main Landing Gear Wheel Well

   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).



Main Landing Gear Door-Operated Gear Sequence Valve Installation
Figure 401

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 left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

D. Remove the Door-Operated Sequence Valve

S 034-005

(1) Disconnect the hydraulic lines from the sequence valve.

S 494-006

(2) Install plugs in the lines and fittings.

S 024-021

(3) Remove the bolt to disconnect the valve linkage from the door actuator (Detail A).

NOTE: Make a record of the orientation of the bolt before you remove it. The bolt must be installed in the same direction during the installation. If it is installed in the opposite direction it can cause interference during door operation.

S 024-008

(4) Remove the bolts that attach the sequence valve to the structure. Remove the valve and linkage assembly.

TASK 32-32-05-404-009

3. Install the Door-Operated Gear Sequence Valve for 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, Landing Gear Door Locks

B. Access

(1) Location Zone

143 Main Landing Gear Wheel Well

C. Procedure

S 424-010

(1) Install the bolts, washers, and nuts to attach the sequence valve and linkage assembly to the structure (Detail A). Install washers behind both the bolt heads and the nuts.

S 424-022

(2) Install the bolt, washers, bushing, and nut to connect the valve linkage to the door actuator.

NOTE: Make sure you install the bolt in the same direction it was in before you removed it. If the bolt is installed in the opposite direction it can cause interference during door operation.

S 434-012

(3) Make sure the pressure is removed from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201). Connect the hydraulic lines to the sequence valve.

D. Do a Check of the Sequence Valve for Correct Installation

S 864-017

(1) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 494-024

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.

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

S 714-013

(3) Move the control lever for the landing gear from DN to UP three or four times. Put the lever to the OFF position.

S 794-014

(4) Examine the sequence valve for hydraulic leaks.

E. Put the Airplane Back to Its Initial Condition

S 614-015

(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 094-018

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 and close the doors (AMM 32-00-15/201).

S 864-019

(3) Put the control lever for the landing gear to the DN position.

S 864-016

(4) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).

MAIN GEAR DOWNLOCK-OPERATED DOOR SEQUENCE VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first task is for removal of the downlock-operated door sequence valve for the main landing gear. The other task is for installation of the door sequence valve.

TASK 32-32-07-004-001

2. Remove the Downlock-Operated Door Sequence Valve 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
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

   C. Prepare for Removal

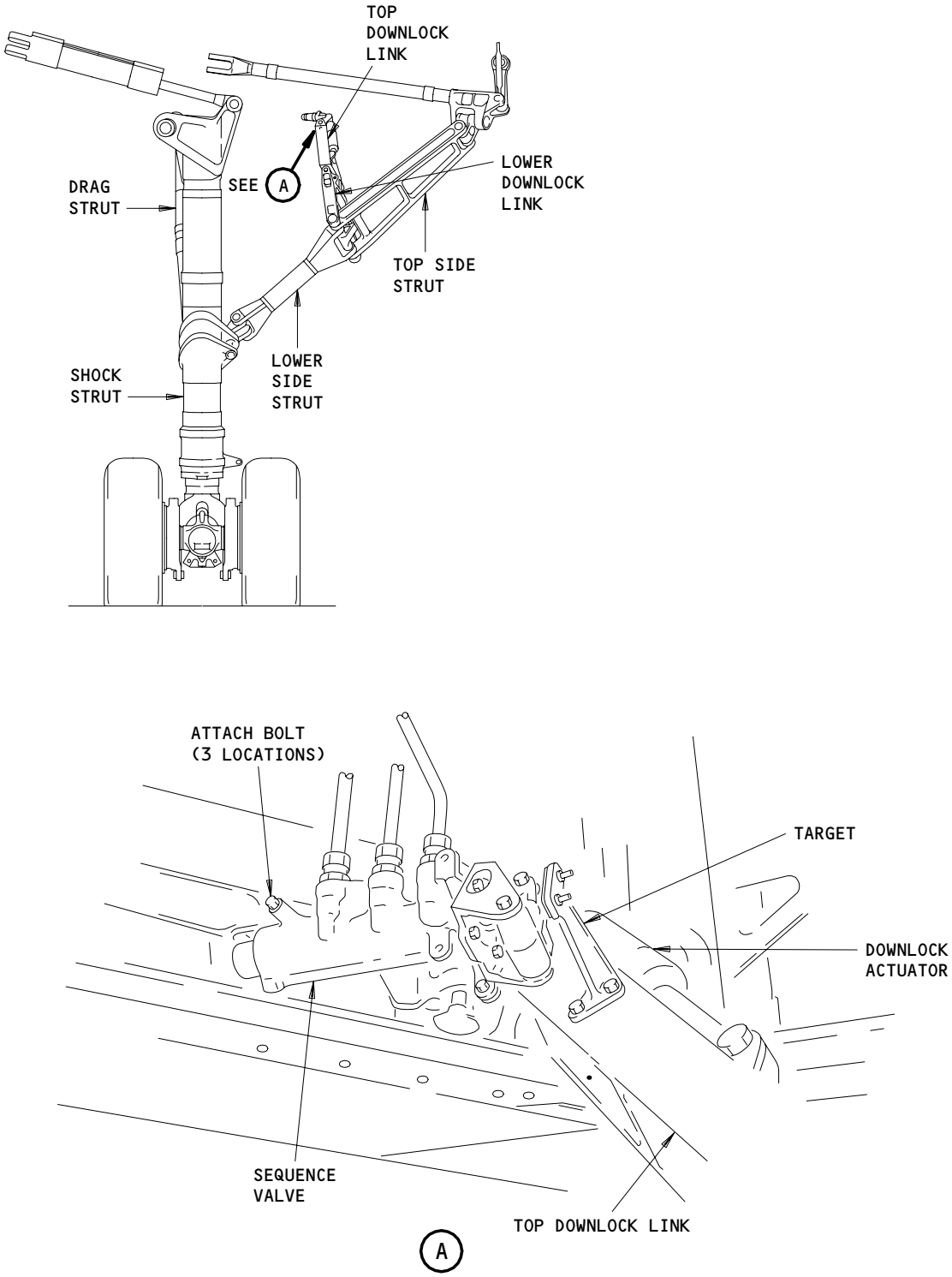
      S 214-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 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 left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).



Main Landing Gear Downlock-Operated Door Sequence Valve Installation
Figure 401

D. Remove the Door Sequence Valve (Fig. 401)

S 034-005
(1) Disconnect the hydraulic lines from the sequence valve.

S 494-006
(2) Install plugs in the lines and fittings.

S 434-007

CAUTION: ATTACH THE ROLLER MECHANISM TO THE SEQUENCE VALVE BEFORE YOU REMOVE THE VALVE. THE ROLLER MECHANISM IS SPRING-LOADED AND CAN CAUSE DAMAGE TO PARTS IF IT IS NOT ATTACHED TO THE VALVE.

(3) Attach the roller mechanism to the valve.

S 034-008
(4) Remove the bolts that attach the valve to the frame on the wing rear spar.

S 024-009
(5) Remove the sequence valve (Detail A).

TASK 32-32-07-404-010

3. Install the Sequence Valve for 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, Landing Gear Door Locks
B. Access
(1) Location Zones
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

C. Procedure to Install the Sequence Valve

S 434-011

CAUTION: ATTACH THE ROLLER MECHANISM TO THE SEQUENCE VALVE BEFORE YOU INSTALL THE VALVE. THE ROLLER MECHANISM IS SPRING-LOADED AND CAN CAUSE DAMAGE TO PARTS IF IT IS NOT ATTACHED TO THE VALVE.

(1) Attach the roller mechanism to the valve.

S 424-012

(2) Install the bolts, washers, and nuts to connect the valve to the frame on the wing rear spar (Detail A). Install a washer behind both the bolt heads and the nuts.

S 034-013

(3) Release the roller mechansim and let the roller touch the target.

S 864-014

(4) Make sure the pressure is removed from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 434-015

(5) Connect the hydraulic lines to the valve.

D. Do a Check of the Sequence Valve For Correct Installation.

S 864-016

(1) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 864-017

(2) Move the control lever for the landing gear from OFF to DN three or four times. Return the lever to OFF.

S 794-018

(3) Make sure the valve does not have any hydraulic leaks.

E. Put the Airplane Back to Its Usual Condition

S 614-019

(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 094-020

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 and close the doors (AMM 32-00-15/201).

S 864-020

(3) Put the control lever for the landing gear to the DN position.

S 864-021

(4) Remove the power from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

MAIN GEAR UPLOCK-OPERATED SEQUENCE VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first task is for removal of the uplock-operated door sequence valve for the main landing gear. The other task is for installation of the door sequence valve.

TASK 32-32-09-004-001

2. Remove the Uplock-Operated Door Sequence Valve 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 MLG Wheel Well (Left)
          144 MLG Wheel Well (Right)

   C. Prepare for Removal

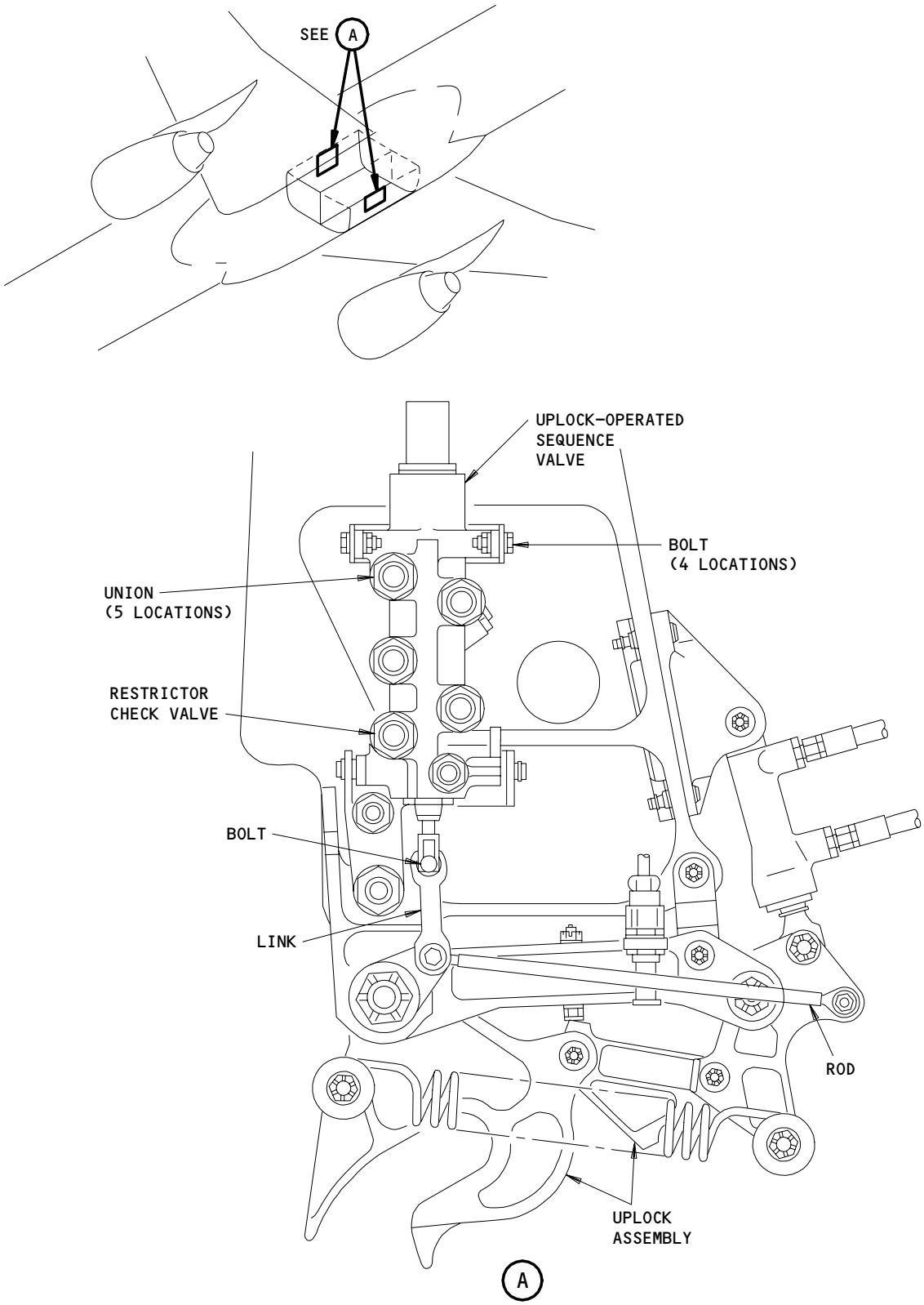
      S 214-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 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 left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).



Main Landing Gear Uplock–Operated Sequence Valve Installation
Figure 401

D. Remove the Door Sequence Valve

S 034-005
(1) Disconnect the hydraulic lines from the sequence valve.

S 494-006
(2) Install plugs in the lines and fittings.

S 034-007
(3) Remove the bolt to disconnect the link from the sequence valve (Detail A).

S 034-008
(4) Remove the bolts that attach the sequence valve to the uplock assembly and bracket.

S 024-009
(5) Remove the sequence valve.

TASK 32-32-09-404-020

3. Install the Sequence Valve for the Main Landing Gear (Fig. 401)

A. Consumable Materials
(1) D00148 Hydraulic Fluid - BMS 3-11, Type IV, Class 1
(2) D00054 Hydraulic Lubricant - MCS 352B

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, Landing Gear Door Locks

C. Access
(1) Location Zones
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right

D. Procedure to Install the Sequence Valve

S 434-021
(1) If the unions, restrictor, and packing are not installed in the valve, do the steps that follow:
(a) Apply a thin layer of BMS 3-11 fluid or MCS 352B lubricant to the unions, restrictor, and packing.
(b) Install the unions, restrictor, and packing in the valve ports.

S 424-010

(2) Install the bolts, washers, bushing, and nuts to attach the sequence valve to the uplock assembly and bracket (Detail A). Install with the bolt head away from the valve. Install the washers behind both the bolt head and the nut.

NOTE: Install the bushing with the bottom right bolt only.

S 434-011

(3) Install the bolt, washers, and nut to connect the link to the sequence valve. Install washers behind both the bolt head and the nut.

NOTE: For the left side installation, install the bolt head aft. For the right side installation, install the bolt head forward.

S 864-013

(4) Make sure the pressure is removed from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 434-012

(5) Connect the hydraulic lines to the sequence valve.

E. Do a Check of the Sequence Valve for Correct Installation.

S 864-014

(1) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 864-015

(2) Move the control lever for the landing gear from UP to DN three or four times. Return the lever to OFF.

S 794-016

(3) Make sure the sequence valve does not have any hydraulic leaks.

F. Put the Airplane Back to Its Usual Condition

S 614-017

(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 094-018

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 DAMGE TO EQUIPMENT.

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

S 864-018

(3) Put the control lever for the landing gear to the DN position.

S 864-019

(4) Remove the power from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

MAIN GEAR DOOR ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first task is for removal of the door actuator for the main landing gear. The other task is for installation of the door actuator.

TASK 32-32-12-004-001

2. Remove the Door Actuator for the Main Landing Gear (Fig. 401)
   A. Equipment
      (1) Door Hold-Open Strut, MLG - B32017-1
   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
          143 MLG Wheel Well (Left)
          144 MLG Wheel Well (Right)

   D. Prepare for the Removal

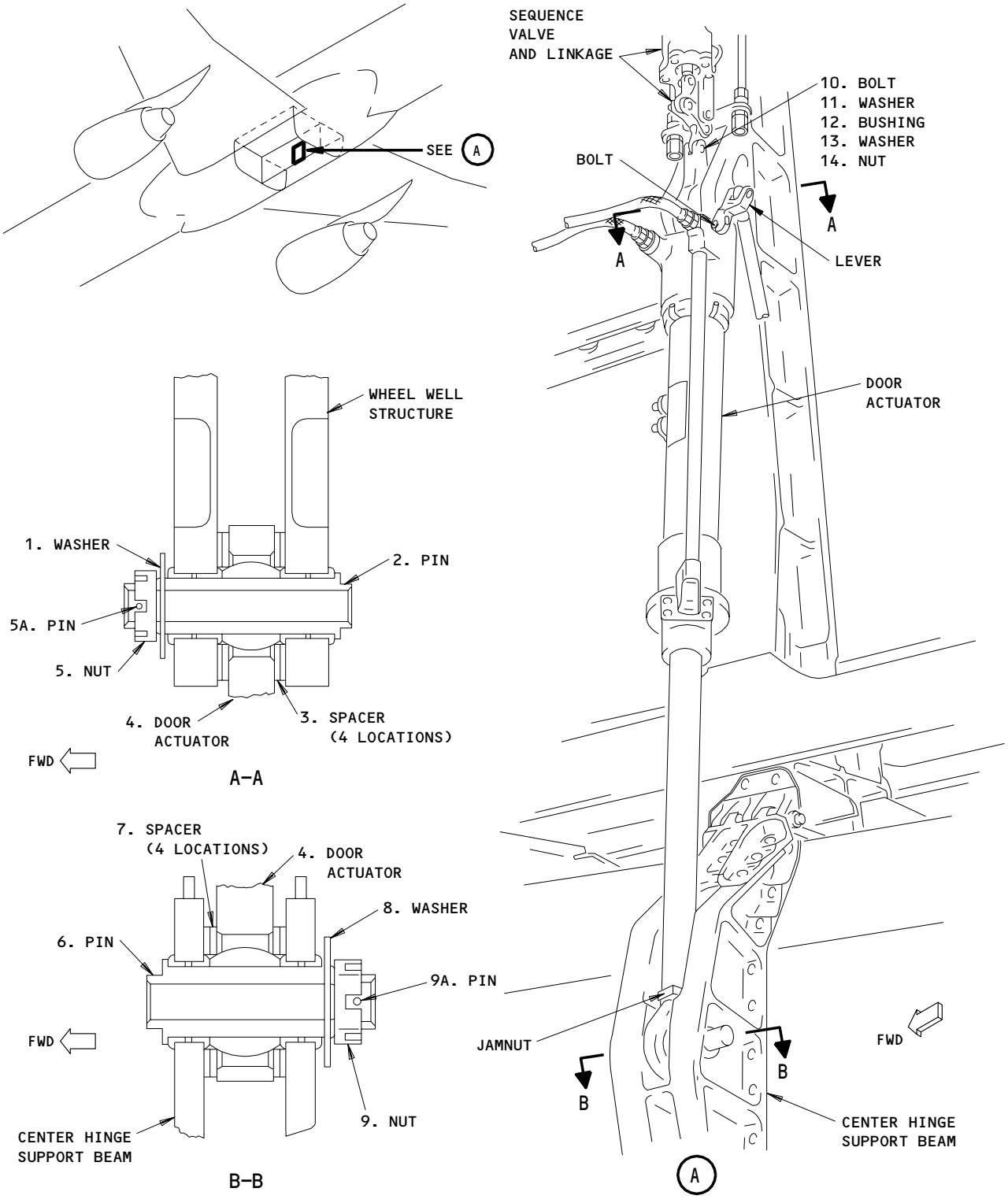
      S 214-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 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 left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).



Main Landing Gear Door Actuator Installation
Figure 401

E. Remove the Door Actuator

S 034-005
(1) Disconnect the hydraulic lines from the actuator.

S 494-044
(2) Install plugs in the lines and fittings.

S 024-048
(3) Loosen the bolt and move the lever from the splined shaft on the side of the actuator (Detail A).

S 034-007
(4) Remove the bolt (10) to disconnect the sequence valve linkage from the actuator.

S 034-008
(5) Remove the pin (6) to disconnect the rod end of the actuator from the door beam (View B-B).

S 034-045
(6) Remove the pin (2) to disconnect the head end of the actuator from the wheel well structure (View A-A).

S 024-043
(7) Remove the actuator (4).

S 214-047
(8) If the actuator will be replaced, make a record of the number of threads in view on the rod end with the jam nut tightened.

S 494-009
(9) Install the door hold-open strut. Use the instructions supplied with tool.

TASK 32-32-12-404-010

3. Install the Door Actuator (Fig. 401)
   A. Equipment
      (1) Door Hold-Open Strut, MLG - B32017-1
   B. Consumable Materials
      (1) D00148 Hydraulic Fluid - BMS 3-11, Type IV, Class 1

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	4	Door Actuator	32-32-12	01	30,55
	5A	Pin			9
	9A	Pin			8

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, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 32-12-00/501, Main Gear Doors
(6) AMM 32-35-00/501, Landing Gear Alternate Extension

E. Access
(1) Location Zones
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)

F. Procedure

S 824-011
(1) Adjust the length of the replacement actuator to the same length as the actuator that was removed. Do the steps that follow (this is an alternative adjustment to the door and actuator adjustment of par. 8):
(a) Loosen the rod end jamnut on the replacement actuator.
(b) Adjust the rod end on the replacement door actuator to the same length as the actuator that was removed. Do the steps that follow to adjust the actuator length:
1) Adjust the rod end of the replacement actuator so that the number of threads in view with the jamnut tightened correctly is the same as on the actuator that was removed. The allowance is plus or minus one thread.

2) Tighten the rod end jamnut to 70-80 pound-feet and install lockwire.

S 614-012
(2) Fill the actuator with hydraulic fluid.

S 494-013
(3) Install plugs in the hydraulic fittings.

S 094-014
(4) Remove the door hold-open strut.

S 424-015
(5) Install the pin (2), washer (1), spacers (3), nut (5), and pin (5A) to connect the head end of the actuator to the wheel well structure (View A-A).

S 434-016
(6) Install the pin (6) to connect the rod end of the actuator to the door beam. Do not install the nut (9), but keep the pin in the hole.

S 434-017
(7) Install the bolt (10), washers (11 and 13), bushing (12), and nut (14) to connect the sequence valve linkage to the door actuator. Install the bushing behind the nut. Install washers behind both the bolt head and the nut.

S 824-018
(8) Adjust the main gear door and door actuator (Ref 32-12-00), unless you did the actuator adjustment per par. 1.

S 434-019
(9) Install the pin (6), washer (8), spacers (7), nut (9), and pin (9A) to connect the rod end of the actuator to the door beam (View B-B).

S 424-049
(10) Move the lever onto the splined shaft on the side of the actuator. Tighten the bolt.

S 824-021
(11) Adjust the door lock release mechanism for the main landing gear (AMM 32-35-00/501).

S 864-022
(12) Make sure the pressure is removed from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 434-023
(13) Connect the hydraulic lines to the actuator.

S 644-024
(14) Lubricate the actuator at the grease fittings.

S 864-025
(15) Make sure the fluid in the hydraulic reservoir 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 DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

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

S 824-025
(17) Make sure the door for the main landing gear is fully aligned with the structure. Adjust the door if it is necessary (AMM 32-12-00/501).

G. Do the test that follows to make sure the door operates correctly.

S 864-027
(1) Make sure the control lever for the landing gear is in the OFF position.

S 864-028
(2) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 864-029
(3) Push the manual lock override and move the control lever to UP.

S 714-030
(4) Make sure the doors for the main landing gear open.

S 864-031
(5) Move the control lever to DOWN.

S 714-032
(6) Make sure the doors close.

S 864-033
(7) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).

S 714-034
(8) Make sure the doors stay closed.

S 864-035
(9) Move and hold for two seconds the ALL DOORS OPEN and ALL DOORS ARM switches on the P72 electric service panel to their OPEN and ARM positions.

S 714-036
(10) Make sure the doors for the main landing gear open.

S 864-037
(11) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 864-038
(12) Move the DOORS CLOSE switch on the P72 panel to the DOORS CLOSE position.

S 714-039
(13) Make sure the doors close.

S 864-041
(14) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).

S 714-040
(15) Make sure the doors for the main landing gear stay closed.

S 864-042
(16) 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 TRUCK POSITIONER ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure provides two tasks. The first task removes the main gear truck positioner actuator. The second task installs the main gear truck positioner actuator.

   TASK 32-32-15-004-001

2. Remove the Main Landing Gear Truck Positioner Actuator
   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 32-09-02/201, Prepare the Safety-Sensitive Systems for Air Mode Simulation
   B. Equipment
      (1) Pin Insertion/Extraction Tool
      Part on Crimp Tool Kit - DMC 567
      Daniels Manufacturing Corp.
      526 Thorpe Road
      Orlando, Forida 32824
   C. Access
      (1) Location Zones
      731 Main Landing Gear, LH
      741 Main Landing Gear, RH

   D. Prepare for Removal

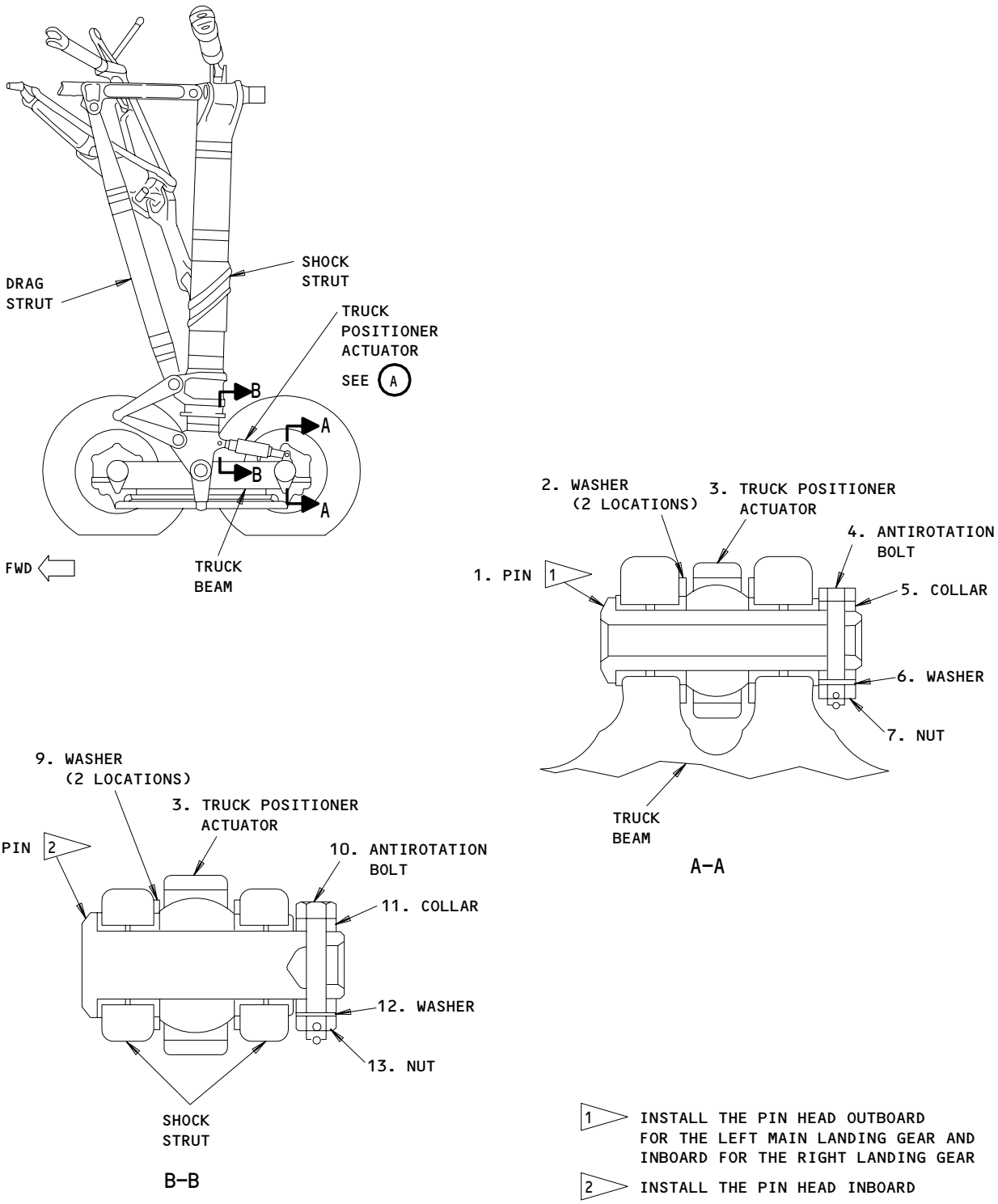
      S 494-002
      (1) Make sure the downlocks for the nose and main landing gear are installed (AMM 32-00-20/201).

      S 864-029

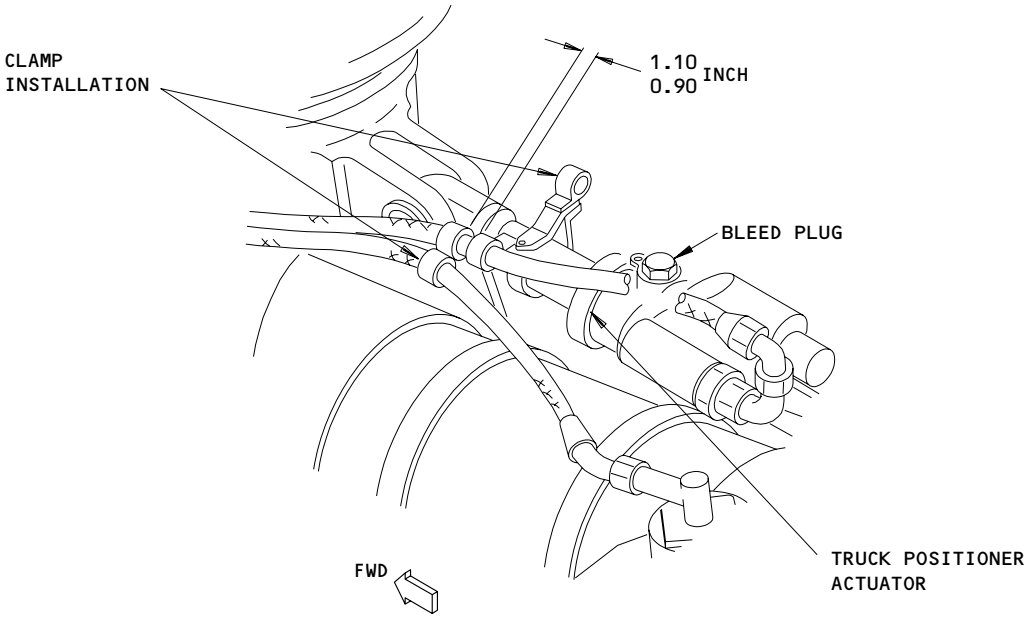
      WARNING: MAKE SURE YOU DO THE STEPS TO PREPARE THE SYSTEMS FOR AIR MODE CORRECTLY. IF YOU DO NOT FOLLOW THESE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

      (2) Do the task to prepare the safety-sensitive systems for air mode simulation (AMM 32-09-02/201).

      S 864-003
      (3) Remove the pressure from the left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

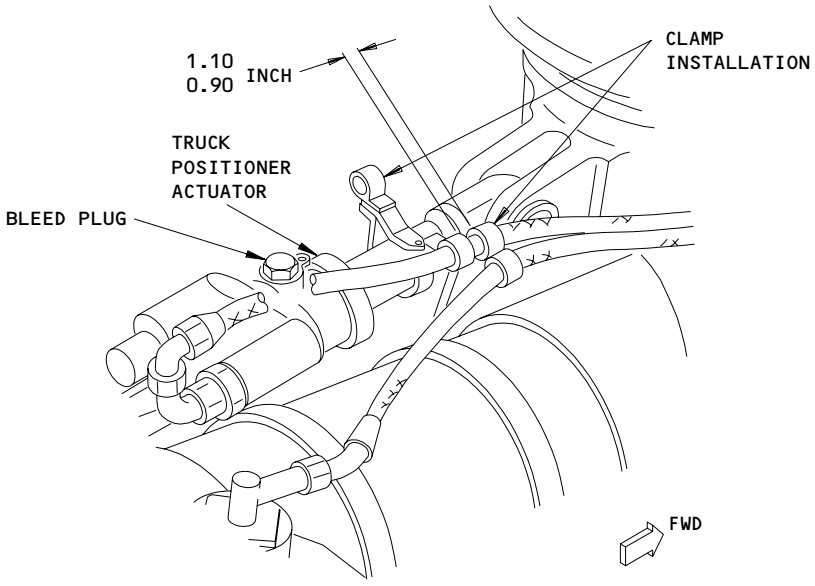


Main Landing Gear Truck Positioner Actuator Installation
Figure 401 (Sheet 1)



LEFT GEAR OUTBOARD SHOWN
(RIGHT GEAR INBOARD QUIVALENT)

A



LEFT GEAR INBOARD SHOWN
(RIGHT GEAR OUTBOARD EQUIVALENT)

A

Main Landing Gear Truck Positioner Actuator Installation
Figure 401 (Sheet 2)

S 864-028
(4) Remove electrical power (AMM 24-22-00/201).

E. Procedure to Remove the Main Landing Gear Truck Positioner Actuator

S 034-023
(1) Remove the clamp that holds the hydraulic lines from the positioner actuator.

S 034-004
(2) Disconnect the hydraulic lines from the actuator. Install plugs in the lines and fittings.

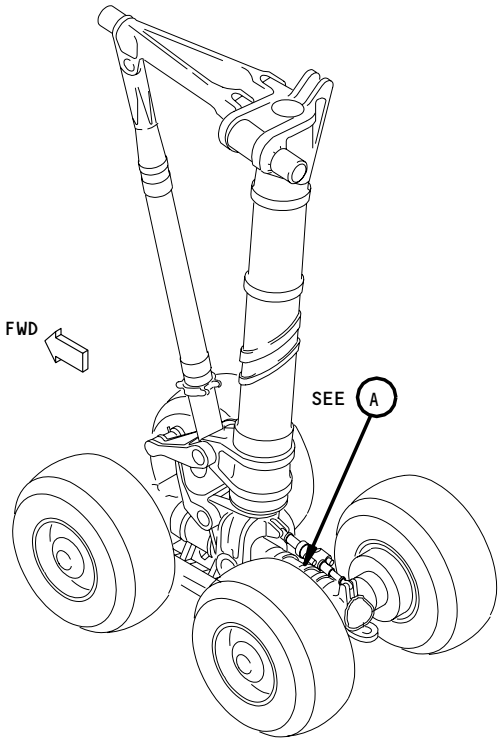
S 014-030
(3) Do these steps to permit removal of the pin from the rod end of the actuator (Fig. 402):
(a) Remove the bolts which hold the cover to the J-1 junction box

NOTE: The junction box is on the aft end of the truck beam of the main gear.

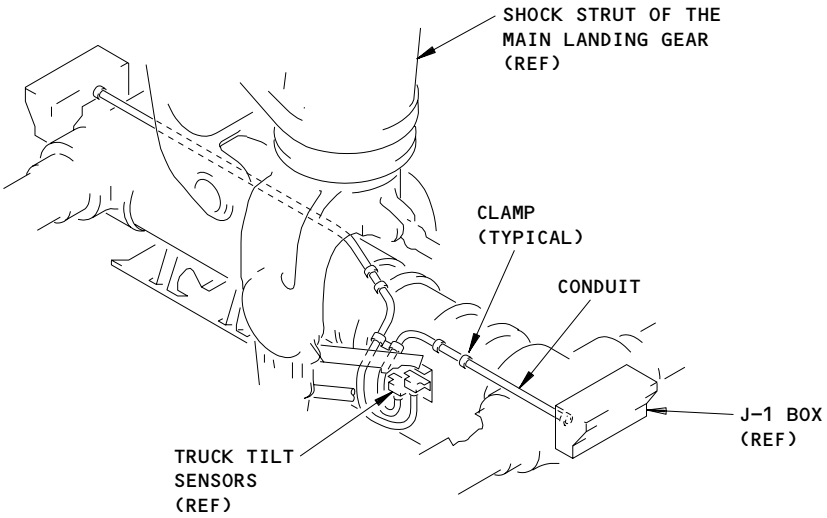
(b) Put a tag with the color code and the pin locations on the sensor wires
(c) Use a pin extraction tool, to remove the sensor wire from the terminal block in the junction box
(d) Put a line on the sensor wires to make the installation easier
(e) Disconnect the conduit coupling nut from the junction box
(f) Remove or loosen the clamp that attaches the conduit to the truck beam
(g) Move the conduit to permit removal of the pin.

S 034-005
(4) Remove pin (1) to disconnect the rod end of the actuator from the truck beam (View A-A).

NOTE: If it is necessary, open the actuator bleed plug to decrease the load on the attach pin.



MAIN LANDING GEAR



TRUCK TILT SENSORS FOR THE LEFT MAIN LANDING GEAR SHOWN

A

Truck Tilt Sensor for the Main Landing Gear
Figure 402

S 034-006

(5) Remove pin (8) to disconnect the head end of the actuator from the shock strut (View B-B), and remove the actuator (3).

TASK 32-32-15-404-007

3. Install the Main Landing Gear Truck Positioner Actuator (Fig. 401, 402)

A. 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 32-09-07/201, Main Gear Truck Tilt Sensor

B. Consumable Materials

(1) A00679 Sealant - BMS5-95, Type I, Class B
(2) D00633 Grease - BMS3-33 (Preferred)
(3) D00013 Grease - MIL-G-23827 (Alternative)
(4) D00148 Fluid, Hydraulic - BMS 3-11, Type IV, Class 1

C. Parts

MM		NOMENCLATURE	IPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	3	Truck Positioner Actuator	32-32-15	01 02	18,20,25 10

D. Equipment

(1) Pin Insertion/Extraction Tool
Part on Crimp Tool Kit - DMC 567
Daniels Manufacturing Corp.
526 Thorpe Road
Orlando, Forida 32824

E. Access
(1) Location Zones
731 Main Landing Gear, LH
741 Main Landing Gear, RH

F. Prepare for the Installation

S 864-010
(1) Make sure the pressure is removed from the left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

S 864-032
(2) Remove electrical power (AMM 24-22-00/201).

G. Installation of the Main Landing Gear Truck Positioner Actuator

S 644-008
(1) Put grease on the pin (8).

S 434-009
(2) Install the pin (8), antirotation bolt (10), collar (11), washers (9 and 12), nut (13), and cotter pin to connect the head end of the actuator to the shock strut (View B-B).

S 434-026
(3) Install the clamp that holds the hydraulic lines on the positioner actuator. Make sure you have the dimensions shown on Fig. 401.

S 434-011
(4) Connect the hydraulic lines to the actuator.

S 644-012
(5) Lubricate the actuator at the grease fittings.

S 714-013
(6) Do the steps that follow to make sure the actuator is installed correctly:
(a) Put the landing gear control lever in OFF.

(b) Make sure the actuator is held in position tightly.
(c) Make sure the actuator rod end will be clear of the structure around it and other equipment when the rod end extends.
(d) Pressurize the left hydraulic system (AMM 29-11-00/201).
(e) Move the landing gear control lever from OFF to DN.
(f) Make sure the rod end extends when the landing gear control lever is moved.
(g) Examine the actuator for hydraulic leaks.

S 864-022
(7) Remove the pressure from the left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

S 034-014
(8) Open the actuator bleed plug.

S 984-015
(9) Manually retract the rod end so that it is possible to connect it to the truck beam.

S 644-016
(10) Put grease on pin (1).

S 434-017
(11) Install the pin (1), antirotation bolt (4), collar (5), washers (2 and 6), nut (7), and cotter pin to connect the rod end of the actuator to the truck beam (View A-A).

S 434-018
(12) Close the actuator bleed plug.
(a) Install the bleed plug
(b) Install lockwire
(c) Apply BMS5-95 sealant around the bleed plug. Clean the area where you will apply the sealant.

S 414-031
(13) Do these steps to install the conduit to the J-1 junction box (Fig. 402):
(a) Put the wires that you disconnected back into the J-1 junction box

(b) Put the conduit in the correct position on the truck and install the clamp that attaches it to the truck beam
(c) Install the conduit coupling nut at the junction box
(d) Remove the tags from the sensor wires and install the wires into the terminal block in the junction box

NOTE: Use the pin insertion tool.

(e) Do The Test for the Truck Tilt Sensor of the Main Landing Gear with the deactuator tool (AMM 32-09-07/201)
(f) Use the bolts to install the cover on the J-1 junction box.

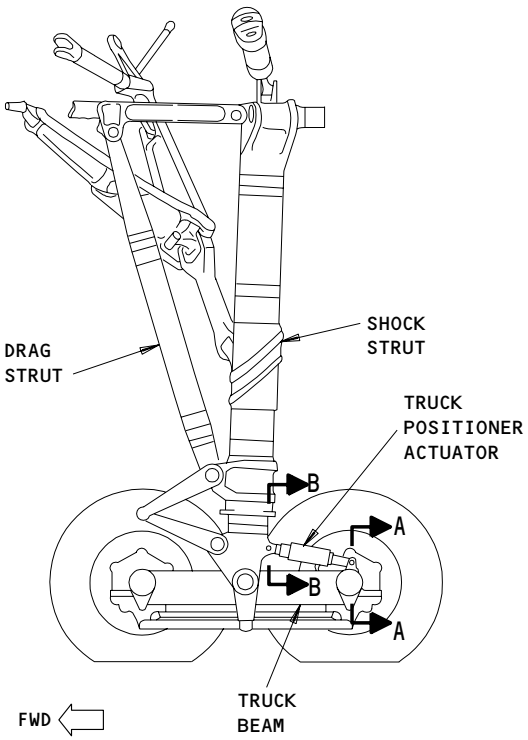
S 864-019
(14) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

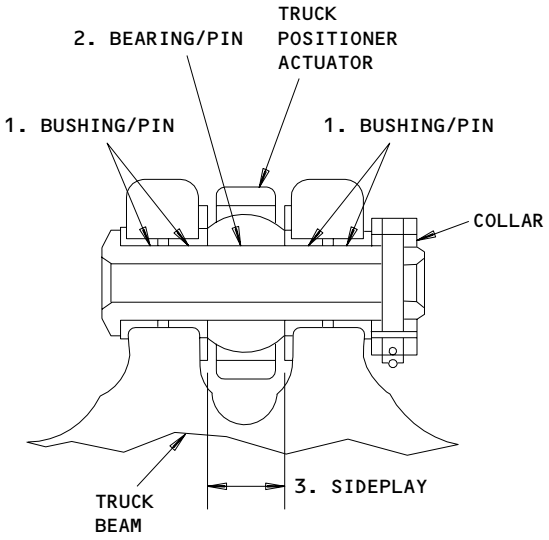
MAIN GEAR TRUCK POSITIONER ACTUATOR - INSPECTION/CHECK

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 the Main Gear Truck Positioner Actuator - Removal/Installation for procedures to do these tasks.

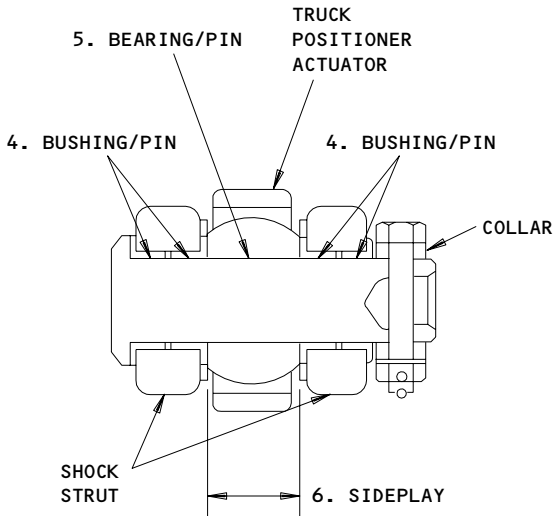
TASK 32-32-15-226-001

2. Main Landing Gear Truck Positioner 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 the Main Gear Truck Positioner Actuator - Removal/Installation for procedures to do these tasks.





A–A



B–B

Main Landing Gear Truck Positioner 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		PERMITTED WEAR DIM.	MAX DIAM CLEAR-ANCE			
			MIN	MAX					
1	BUSHING	ID	0.7500	0.7510	0.7537	0.0047	X		
	PIN	OD	0.7480	0.7490	0.7463		X		
2	BEARING	ID	0.7495	0.7500	0.7527	0.0037	X		
	PIN	OD	0.7480	0.7490	0.7463		X		
3	ACTUATOR ROD END		0.7500	0.7505	0.7540	1 0.0040	2		
4	BUSHING	ID	0.8750	0.8760	0.8789	0.0049	X		
	PIN	OD	0.8730	0.8740	0.8711		X		
5	BEARING	ID	0.8745	0.8750	0.8779	0.0039	X		
	PIN	OD	0.8730	0.8740	0.8711		X		
6	ACTUATOR HEAD END		0.9660	0.9710	0.9970	1 0.0260	2		

1 MAXIMUM PERMITTED PLAY SIDE-TO-SIDE.

2 REPLACE THE WORN BUSHINGS.

Main Landing Gear Truck Positioner Actuator Wear Limits
Figure 601 (Sheet 2)

MAIN GEAR UPLOCK ASSEMBLY - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first task is for removal of the uplock assembly for the main landing gear. The other task is for installation of the uplock assembly.

TASK 32-32-16-004-001

2. Remove the Uplock Assembly 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
      (4) AMM 32-32-16/401, Main Gear Uplock-Operated Sequence Valve
      (5) AMM 32-61-02/201, Main Gear Proximity Sensors
   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 494-003

      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.

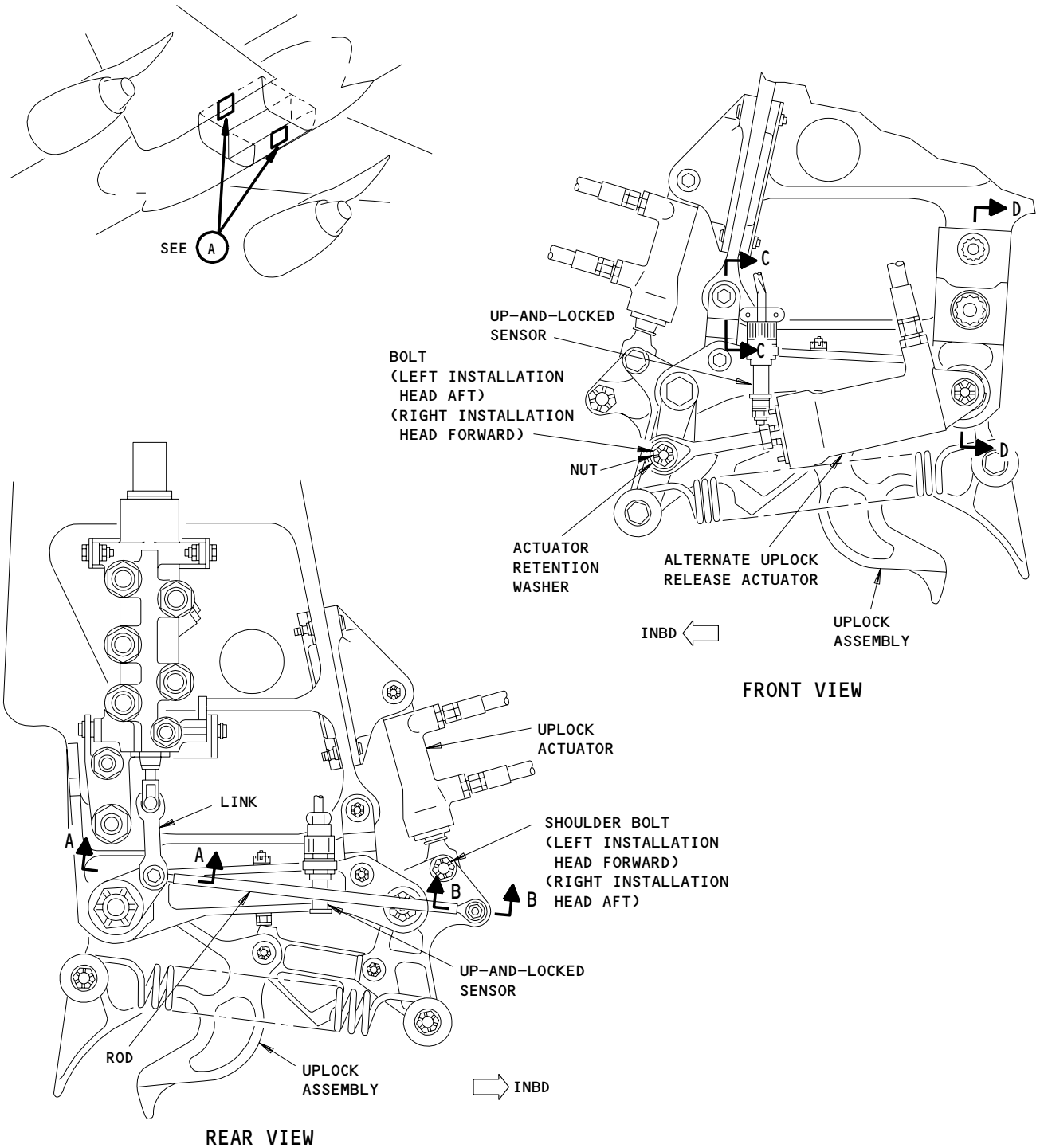
      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

      S 864-036
      (3) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).
   D. Remove the Uplock Assembly

      S 034-004
      (1) Remove the uplock springs.

      S 034-005
      (2) Remove the bolt to disconnect the rod end of the alternate uplock release actuator from the uplock assembly (Detail A).

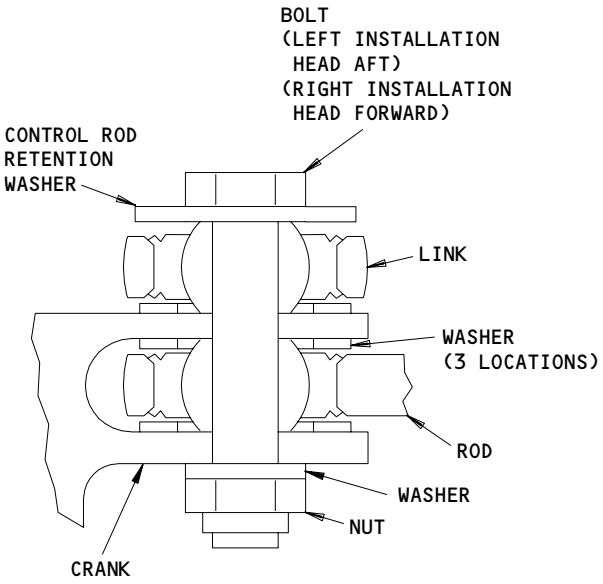
      S 034-006
      (3) Remove the nut to disconnect the head end of the alternate actuator from the uplock assembly (View D-D). Move the actuator out of the way and attach it there.



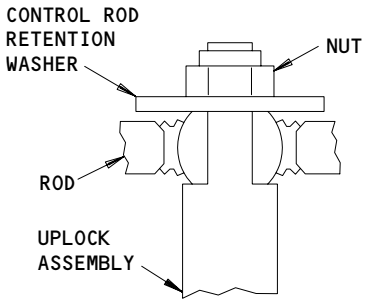
(LEFT UPLOCK ASSEMBLY SHOWN)

A

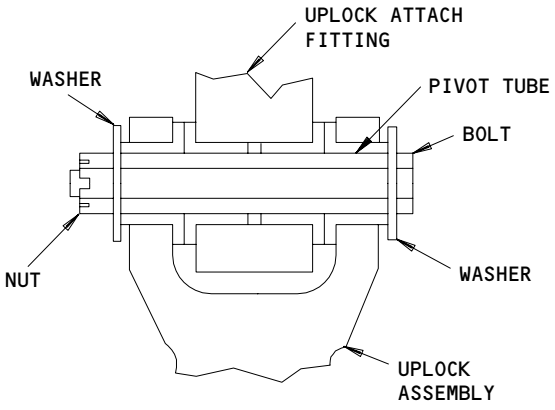
Main Landing Gear Uplock Assembly Installation
Figure 401 (Sheet 1)



A–A

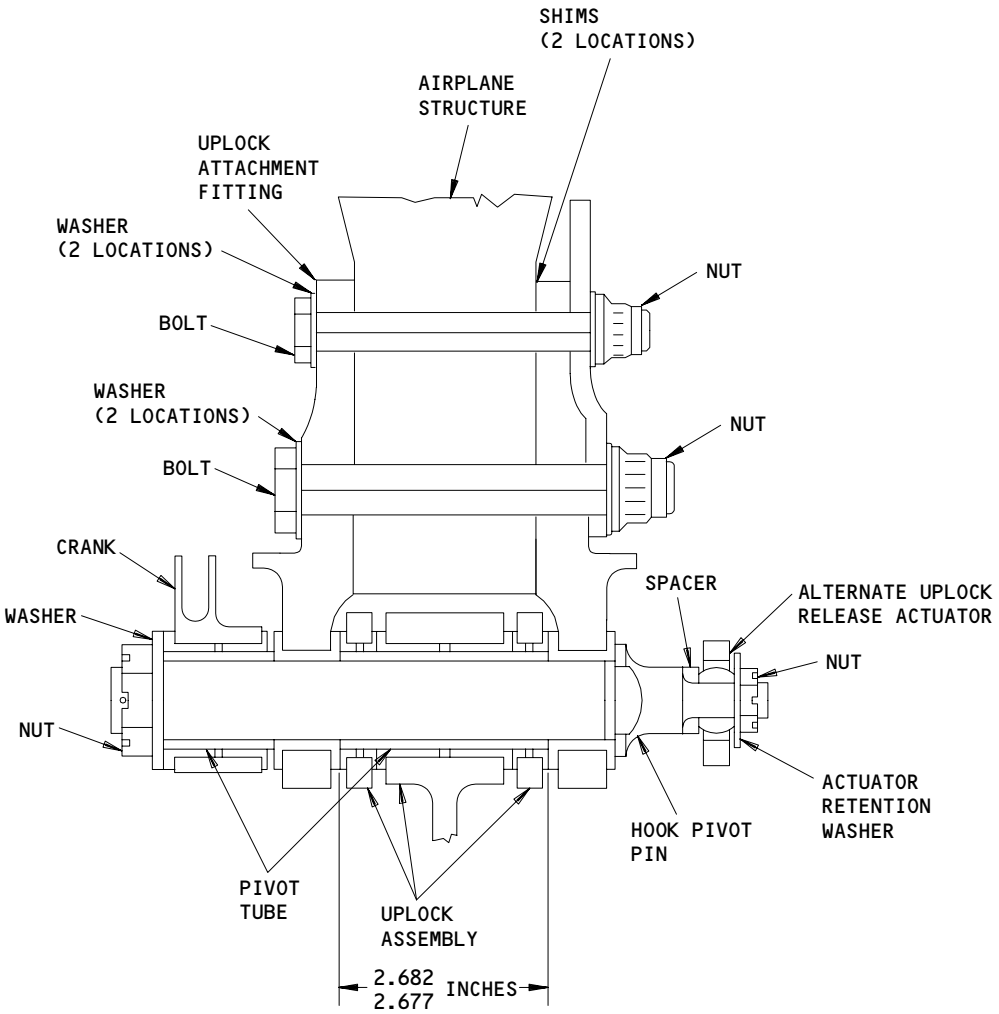


B–B



C–C

Main Landing Gear Uplock Assembly Installation
Figure 401 (Sheet 2)



D–D

Main Landing Gear Uplock Assembly Installation
Figure 401 (Sheet 3)

S 034-007
(4) Remove the shoulder bolt to disconnect the rod end of the uplock actuator from the uplock assembly. Move the actuator out of the way and attach it there.

S 034-008
(5) Remove the bolt to disconnect the rod and link from the uplock crank (View A-A).

S 034-009
(6) Remove the nut to disconnect the rod from the uplock assembly (View B-B), and remove the rod.

S 034-010
(7) Remove the up-and-locked sensors for the main landing gear (AMM 32-61-02/201).

S 034-011
(8) Remove the bolt and pivot tube to disconnect the uplock assembly from the uplock attach fitting (View C-C).

S 034-012
(9) Remove the hook pivot pin and the pivot tube to disconnect the uplock assembly from the uplock attach fitting (View D-D).

S 024-013
(10) Remove the uplock assembly.

S 224-038
(11) Make sure the dimension between the uplock attachment fittings is as shown on Fig. 401 (View D-D). If it is not, do the steps that follow:
  (a) Remove the nuts, bolts and washers that attach the uplock attach fittings to the airplane structure.

(b) Remove the Uplock-Operated Door Sequence Valve (AMM 32-32-09/401).
(c) Remove the uplock-operated sequence valve bracket from the uplock attach fitting.
(d) Install or remove shims as necessary to get the dimension shown.
(e) Install the uplock-operated sequence valve bracket on the uplock attach fitting.
(f) Install the Uplock-Operated Door Sequence Valve (AMM 32-32-09/401).
(g) Install the nuts, bolts and washers that attach the uplock attach fittings to the airplane structure. Tighten the top nut to 500-575 pound-inches. Tighten the bottom nut to 1350-1650 pound-inches.

TASK 32-32-16-404-014

3. Install the Uplock Assembly for the Main Landing Gear (Fig. 401)

A. References
(1) AMM 32-00-15/201, Landing Gear Door Locks
(2) AMM 32-61-02/201, Main Gear Proximity Sensors

B. Equipment
(1) Uplock Adapter, MLG - B32054-1
(2) Hydraulic Test Bench - 1500 psi capability

C. Consumable Materials
(1) D00633 Grease - BMS3-33 (Preferred)
(2) D00013 Grease - MIL-G-23827 (Alternative)

D. Access
(1) Location Zones
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)

E. Procedure

S 034-037

WARNING: BE CAREFUL WHEN YOU REMOVE THE SPRINGS FROM THE UPLOCK ASSEMBLY. THEY CAN COME LOOSE AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Remove the springs from the uplock assembly, if they are installed.

S 434-016
(2) Lubricate and install the hook pivot pin, pivot tube, washer, nut, and cotter pin to connect the uplock assembly to the uplock attach fitting (View D-D). Tighten the nut to 75-200 pound-inches.

S 434-017
(3) Lubricate and install the bolt, pivot tube, washers, nut, and cotter pin to connect the uplock assembly to the uplock attach fitting (View C-C). Tighten the nut to 30-75 pound-inches.

S 434-018
(4) Install the bolt, washers, and nut to connect the rod and link to the uplock crank (View A-A).

S 434-019
(5) Install the washer and nut to connect the rod to the uplock assembly (View B-B).

S 434-020
(6) Lubricate and install the shoulder bolt, washers, nut, and cotter pin to connect the rod end of the uplock actuator to the uplock assembly. Install a washer behind both the bolt head and the nut (Detail A). Tighten the nut to 30-75 pound-inches (3.4-8.5 newton-meters).

S 434-021
(7) Lubricate and install the nut, retaining washer, and cotter pin to connect the head end of the alternate actuator to the uplock assembly (View D-D). Tighten the nut to 200-600 pound-inches (22.6-67.8 newton-meters).

S 434-022
(8) Lubricate and install the bolt, retaining washer, nut, and cotter pin to connect the rod end of the alternate actuator to the uplock assembly (Detail A). Install the retaining washer behind the nut only. Tighten the nut to 75-200 pound-inches (8.5-22.6 newton-meters).

S 434-023
(9) Install the uplock springs.

F. Do the steps that follow to make sure the uplock assembly operates correctly:

S 494-024
(1) Install the hydraulic test bench to the uplock actuator with the pressure connected to the retract port.

S 724-025
(2) Supply hydraulic pressure to the actuator until the uplock assembly moves suddenly into the open position.

S 724-026
(3) Look to see that the pressure is not more than 1400 psig.

S 984-027
(4) Use the uplock adapter to manually move the uplock into the closed position.

S 094-028
(5) Remove the hydraulic test bench from the uplock actuator.

S 494-029
(6) Install the hydraulic test bench on the alternate uplock release actuator.

S 724-030
(7) Supply hydraulic pressure to the actuator until the uplock assembly again moves suddenly into the open position.

S 724-031
(8) Look to see that the pressure is not more than 550 psig.

S 094-032
(9) Remove the hydraulic test bench.

S 434-033
(10) Install the hydraulic lines on the actuators.

G. Put the Airplane Back in Its Usual Condition

S 434-034
(1) Install and adjust the up-and-locked sensors (AMM 32-61-02/201).

S 094-035

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.

(2) Remove the door locks (AMM 32-00-15/201).

MAIN GEAR TRUCK POSITIONER SHUTTLE VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first task is for removal of the truck positioner shuttle valve for the main landing gear. The other task is for installation of the shuttle valve.

TASK 32-32-17-004-001

2. Remove the Truck Positioner Shuttle Valve for 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
          551 Wing Trailing Edge (Left)
          651 Wing Trailing Edge (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).

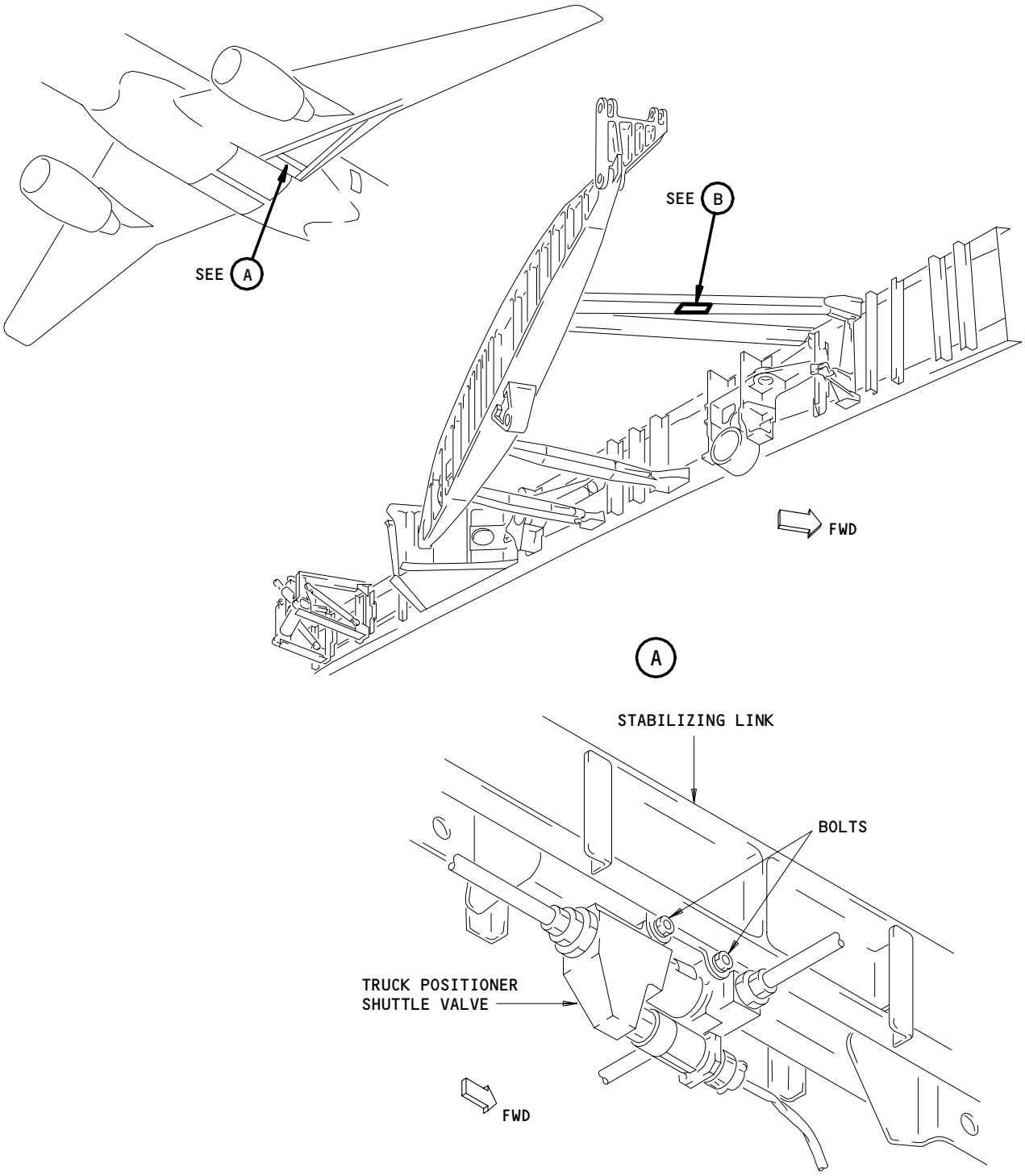
      S 494-003

      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) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
          (a) 11G11, AUTO SPEEDBRAKE

      S 864-005
      (4) Remove the pressure from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).



Main Landing Gear Truck Positioner Shuttle Valve Installation
Figure 401

D. Remove the Shuttle Valve.

S 034-006
(1) Disconnect the electrical connector from the valve.

S 434-007
(2) Install a cap on the connector.

S 034-008
(3) Disconnect the hydraulic lines from the valve.

S 434-009
(4) Install plugs in the lines and fittings.

S 034-010
(5) Remove the bolts that attach the valve to the bracket (Detail B).

S 024-011
(6) Remove the valve.

TASK 32-32-17-404-012

3. Install the Shuttle Valve (Fig. 401)

A. 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 32-00-15/201, Landing Gear Door Locks

B. Access
(1) Location Zones
551 Wing Trailing Edge (Left)
651 Wing Trailing Edge (Right)

C. Procedure to Install the Shuttle Valve

S 424-013
(1) Install the bolts, washers, and nuts to connect the valve to the bracket (Detail B). Install both of the bolts before you tighten them. Install a washer behind both the boltheads and the nuts.

S 864-014
(2) Make sure that pressure is removed from the left hydraulic system and the reservoir (AMM 29-11-00/201).

S 434-015
(3) Connect the hydraulic lines to the valve.

S 434-016
(4) Connect the electrical connector to the valve.

S 864-017
(5) Close this circuit breaker on the overhead circuit breaker panel, P11:
(a) 11G11, AUTO SPEEDBRAKE

D. Do the steps that follow to make sure the valve is installed correctly:

S 864-018
(1) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 864-019
(2) Supply electrical power (AMM 24-22-00/201).

S 864-030
(3) AIRPLANES WITH YSM AND IRS;
Make sure that the Inertial Reference System operates (aligned and in NAV mode) (AMM 34-21-00/201).

S 864-020
(4) Put the speedbrake lever in ARMED.

S 214-021
(5) Make sure the AUTO SPDBRK light on the pilots' overhead panel, P5, is off.

S 864-022
(6) Move the control lever for the landing gear from OFF to DN.

S 214-023
(7) Make sure the valve does not have any hydraulic leaks.

E. Put the Airplane Back to Its Usual Condition

S 864-024

(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 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.

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

S 864-026

(3) Remove the pressure from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-027

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

MAIN GEAR TRUCK POSITIONER SHUTTLE VALVE - ADJUSTMENT/TEST

1. General
   A. This procedure has a task to do a leak check of the truck positioner shuttle valve for the main landing gear.

TASK 32-32-17-795-028

2. Leak Check of the Truck Positioner Shuttle Valve (Fig. 501, 502)
   A. 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 32-00-15/201, Landing Gear Door Locks
      (5) AMM 32-00-20/201, Landing Gear Downlocks
      (6) AMM 32-32-15/401, Truck Positioner Actuator
      (7) AMM 32-32-17/401, Truck Positioner Shuttle Valve
   B. Access
      (1) Location Zones
          211 Control Cabin (Left)
          212 Control Cabin (Right)
          551 Wing Trailing Edge (Left)
          651 Wing Trailing Edge (Right)

   C. Prepare for Leak Check

      S 485-029

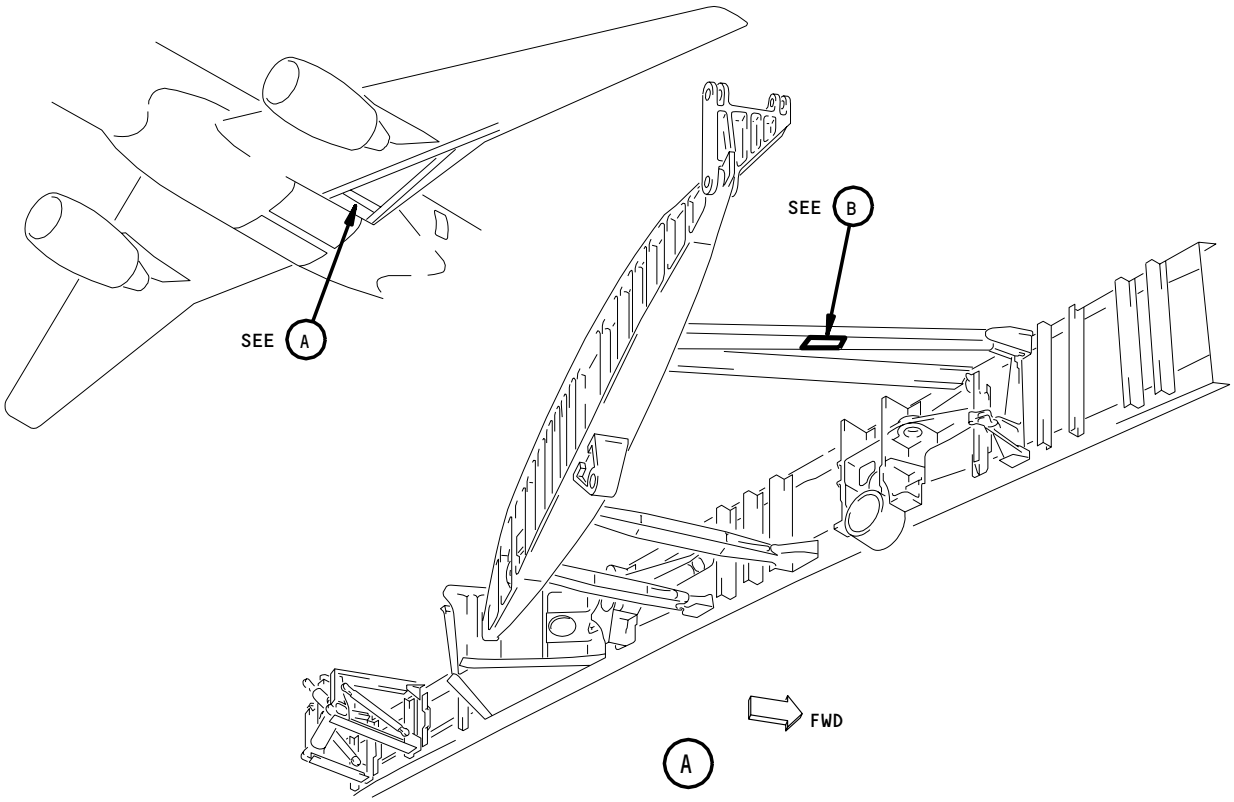
      WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED IN ALL THE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER. WITHOUT THE DOWNLOCKS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO TO PERSONS AND DAMAGE TO EQUIPMENT.

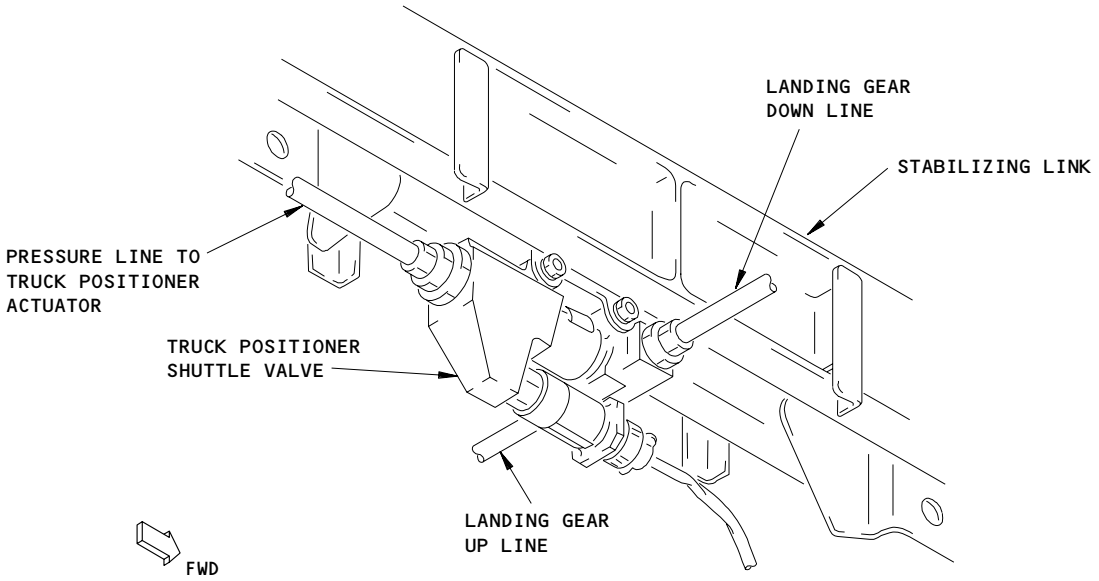
      (1) Make sure the downlocks are installed in the nose and main landing gear (AMM 32-00-20/201).

      S 485-030

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

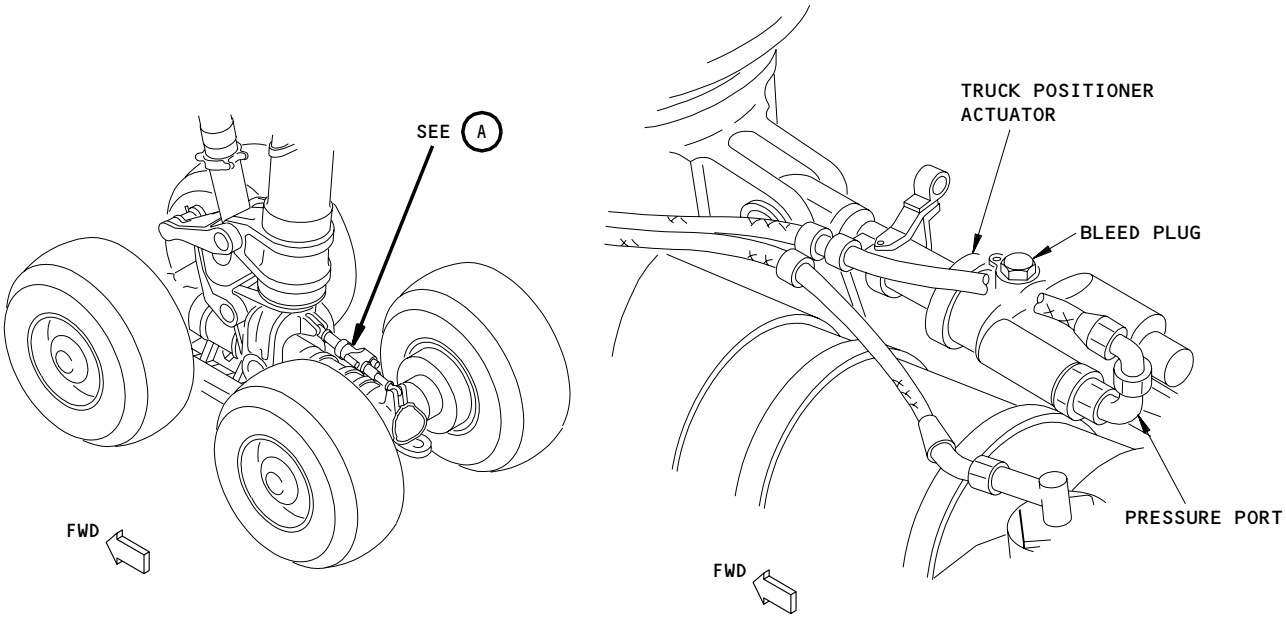




LEFT TRUCK POSITIONER SHUTTLE VALVE
(RIGHT TRUCK POSITIONER SHUTTLE VALVE IS OPPOSITE)

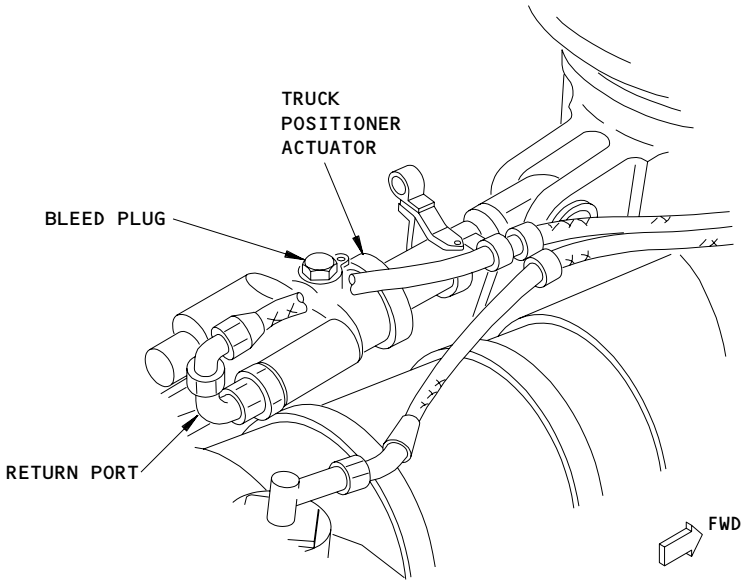
B

Main Landing Gear Truck Positioner Shuttle Valve
Figure 501



LEFT GEAR OUTBOARD
(RIGHT GEAR INBOARD IS EQUIVALENT)

A



LEFT GEAR INBOARD
(RIGHT GEAR OUTBOARD IS EQUIVALENT)

A

Truck Positioner Actuator
Figure 502

S 865-004

(3) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
(a) 11G11, AUTO SPEEDBRAKE

S 865-005

(4) Remove the pressure from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

D. Do the Leak Check of the Shuttle Valve.

S 865-031

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

S 025-046

WARNING: DO NOT LET HYDRAULIC FLUID GET ON YOU. PUT ON GOGGLES AND OTHER EQUIPMENT FOR PROTECTION. HYDRAULIC FLUID CAN CAUSE INJURIES TO PERSONS.

CAUTION: DO NOT LET HYDRAULIC FLUID GET ON THE TIRES. IMMEDIATELY CLEAN THE TIRES IF HYDRAULIC FLUID GETS ON THEM. HYDRAULIC FLUID CAN CAUSE DAMAGE TO TIRES.

(2) Disconnect the hydraulic RETURN line at the truck positioner actuator.

S 425-033

(3) Install a plug in the hydraulic line. Leave the port on the actuator open.

S 025-034

(4) Disconnect the UP line at the port on the truck positioner shuttle valve.

S 425-035

(5) Install a plug in the hydraulic line. Leave the port on the shuttle valve open.

S 865-036

(6) Move the control lever for the landing gear to the DN position.

S 795-037
(7) Use the Alternating Current Motor Pumps (ACMP) to slowly increase the hydraulic pressure to 3000 psi.
(a) If a leak occurs, remove the hydraulic pressure.

S 215-038
(8) Look for leakage at the UP port on the truck positioner shuttle valve.
(a) If leakage occurs at the UP port of the shuttle valve, the valve has internal leakage.
(b) Replace the shuttle valve (AMM 32-32-17/401).

S 215-039
(9) Look for leakage at the RETURN port for the truck positioner actuator.
(a) If leakage occurs at the RETURN port of the truck positioner actuator, the pressure relief valve in the actuator has internal leakage.
(b) Replace the truck positioner actuator (AMM 32-32-15/401).

S 865-040
(10) Put the control lever for the landing gear to the OFF position.

S 025-041
(11) Remove the plug from the UP line at the truck positioner shuttle valve.

S 425-042
(12) Connect the UP line to the truck positioner shuttle valve.

S 025-043
(13) Remove the plug from the RETURN line that was disconnected at the truck positioner actuator.

S 425-044
(14) Connect the RETURN line to the port on the truck positioner actuator.

S 865-017
(15) Close this circuit breaker on the overhead circuit breaker panel, P11:
(a) 11G11, AUTO SPEEDBRAKE

S 865-019
(16) Supply electrical power (AMM 24-22-00/201).

S 865-020
(17) Put the speedbrake lever in ARMED.

S 215-021
(18) Make sure the AUTO SPDBRK light on the pilots' overhead panel, P5, is off.

S 865-022
(19) Move the control lever for the landing gear from OFF to DN.

S 215-023
(20) Make sure the valve does not have any hydraulic leaks.

E. Put the Airplane Back to Its Usual Condition

S 865-024
(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 085-047

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.

(2) Remove the door locks (AMM 32-00-15/201).

S 865-026
(3) Remove the pressure from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-027
(4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

MAIN GEAR TRUCK POSITIONER SHUTTLE VALVE PRESSURE SWITCH - REMOVAL/INSTALLATION

1. General
   A. This procedure has two tasks. The first task is for removal of the pressure switch on the truck positioner shuttle valve for the main landing gear. The other task is for installation of the pressure switch.

   TASK 32-32-18-004-001

2. Remove the Pressure Switch on the Truck Positioner Shuttle Valve (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 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          551 Wing Trailing Edge (Left)
          651 Wing Trailing Edge (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 494-003

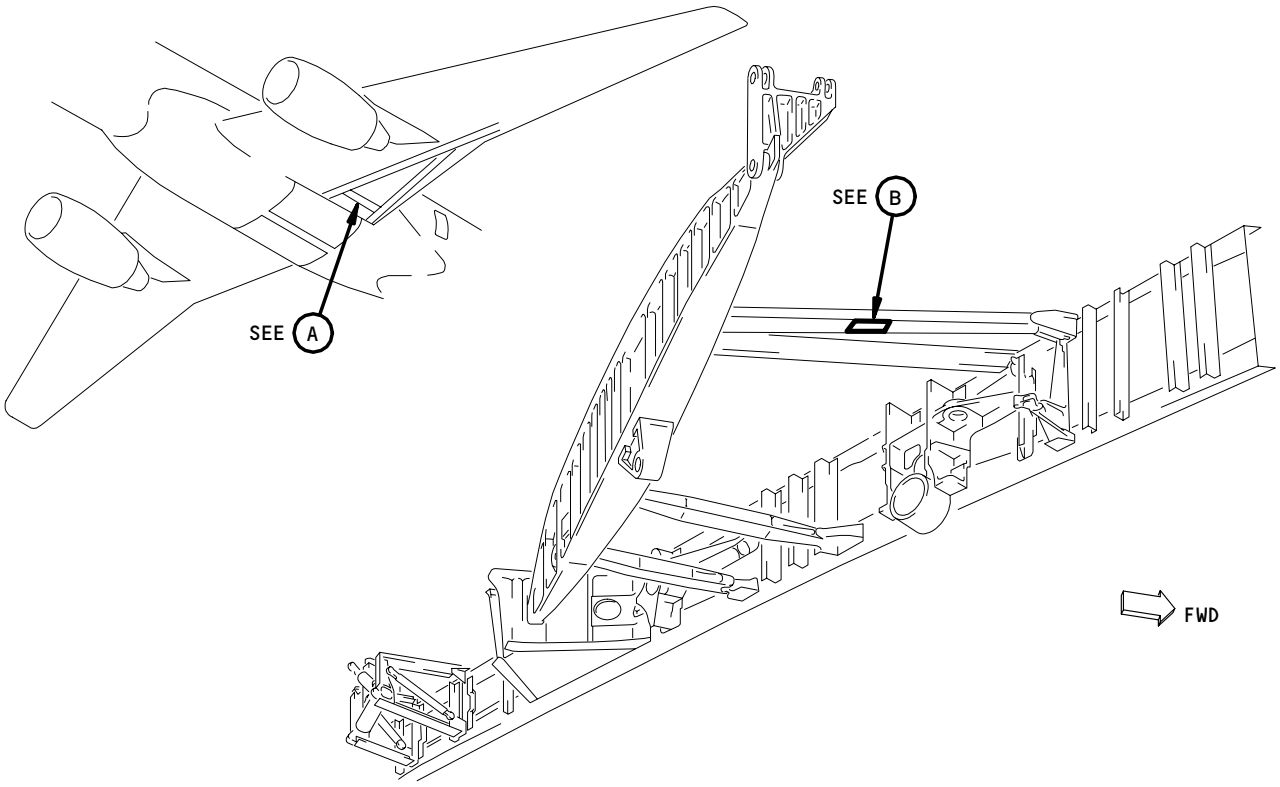
      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

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

      S 864-004
      (3) Open this circuit breaker on the overhead circuit breaker panel P11, and attach a DO-NOT-CLOSE tag:
          (a) 11G11, AUTO SPEED BRAKE

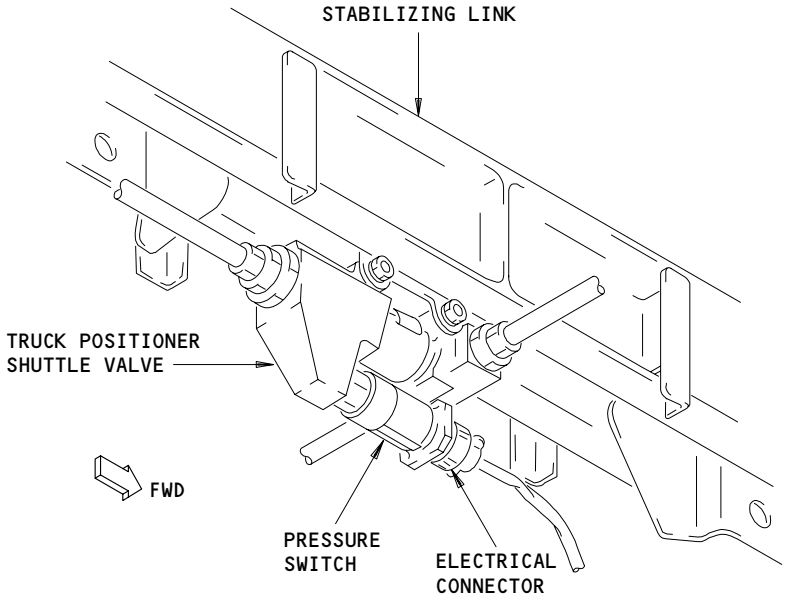
      S 864-005
      (4) Supply electrical power (AMM 24-22-00/201).

      S 864-006
      (5) Remove the pressure from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).



TRUNNION SUPPORT STRUCTURE FOR THE MAIN LANDING GEAR
(MAIN LANDING GEAR NOT SHOWN)

A



(LEFT INSTALLATION SHOWN – RIGHT OPPOSITE)

B

Main Landing Gear Truck Positioner Shuttle Valve Pressure Switch Installation
Figure 401

D. Remove the Pressure Switch

S 034-007
(1) Disconnect the electrical connector from the pressure switch.

S 024-008
(2) Remove the pressure switch from the shuttle valve.

S 494-009
(3) Install a plug in the valve.

TASK 32-32-18-404-023

3. Install the Pressure Switch in the Truck Positioner Shuttle Valve (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 32-00-15/201, Landing Gear Door Locks

B. Access
(1) Location Zones
551 Wing Trailing Edge (Left)
651 Wing Trailing Edge (Right)

C. Procedure to Remove the Pressure Switch

S 094-010
(1) Remove the plug from the shuttle valve.

S 434-011
(2) Install packing on the pressure switch.

S 424-012
(3) Install the pressure switch in the shuttle valve and tighten.

S 894-013
(4) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the overhead circuit breaker panel, P11:
(a) 11G11, AUTO SPEED BRAKE

D. Do the steps that follow to make sure the pressure switch operates correctly:

S 864-014
(1) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 864-016
(2) Make sure the control lever for the landing gear lever is in the OFF position.

S 864-015
(3) Put the speed brake lever on the center control stand in ARMED.

S 214-016
(4) Make sure the AUTO SPDBRK light on the pilots' overhead panel, P5, is off.

S 714-017
(5) Move the control lever for the landing gear from OFF to DN.

S 214-018
(6) Make sure the shuttle valve and pressure switch do not have any leaks.

E. Put the Airplane Back to Its Usual Condition

S 864-019
(1) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is neccessary (AMM 12-12-01/301).

S 094-020

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 and close the doors (AMM 32-00-15/201).

S 864-021
(3) Remove the pressure from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-022
(4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

MAIN GEAR EXTENSION/RETRACTION HYDRAULIC FLOW FUSES - MAINTENANCE PRACTICES

1. General
   A. This procedure has the tasks that follow:
      (1) Removal of the hydraulic fuse from the truck positioner shuttle valve on the main landing gear
      (2) Removal of the extension/retraction hydraulic fuses for the main landing gear
      (3) Installation of the hydraulic fuse on the truck positioner shuttle valve
      (4) Check of the hydraulic fuse on the truck positioner shuttle valve
      (5) Installation of the extension/retraction hydraulic fuses
      (6) Check of the extension/retraction hydraulic fuses. Hydraulic flow fuse reset
   B. A hydraulic flow fuse is installed in the truck positioner shuttle valve module for the left main landing gear. For the right main landing gear, there are two hydraulic flow fuses. One is in the gear up circuit and the other is in the gear down circuit. They are located on the keel beam in the right wheel well next to the door actuator or on the ceiling of the wheel well.

TASK 32-32-19-002-001

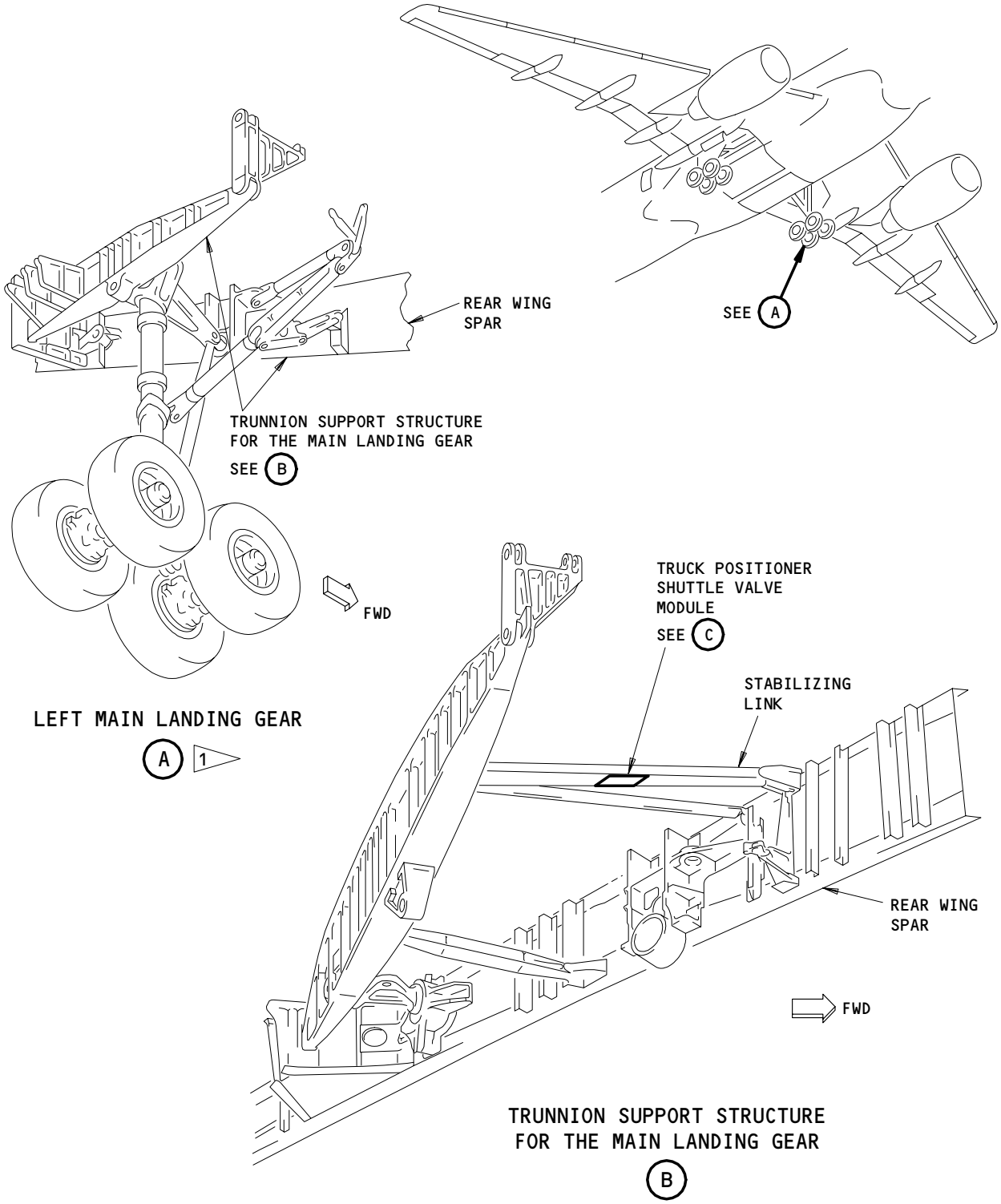
2. Remove the Hydraulic Fuse from the Truck Positioner Shuttle Valve on the Main Landing Gear (Fig. 201)

   NOTE: There are two options to remove the fuse. Remove the fuse from the shuttle valve module (Option 1), or remove the fuse with the shuttle valve module as a unit (Option 2).

   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 32-32-17/401, Main Gear Truck Positioner Shuttle Valve
   B. Access
      (1) Location Zones
          551 Wing Trailing Edge (Left)
          651 Wing Trailing Edge (Right)

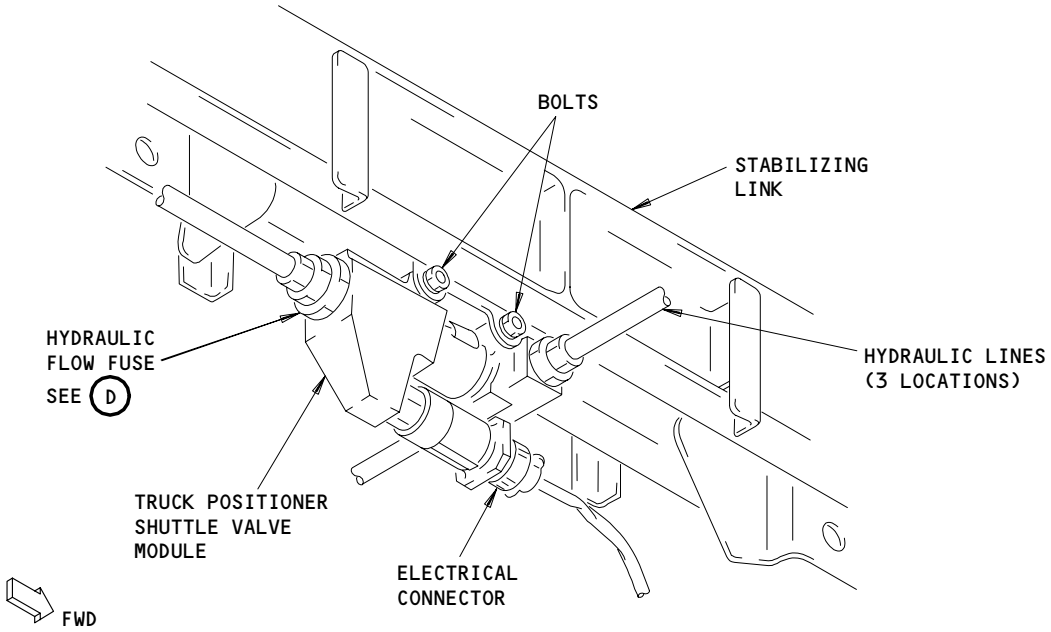
   C. Prepare for Removal

      S 212-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).



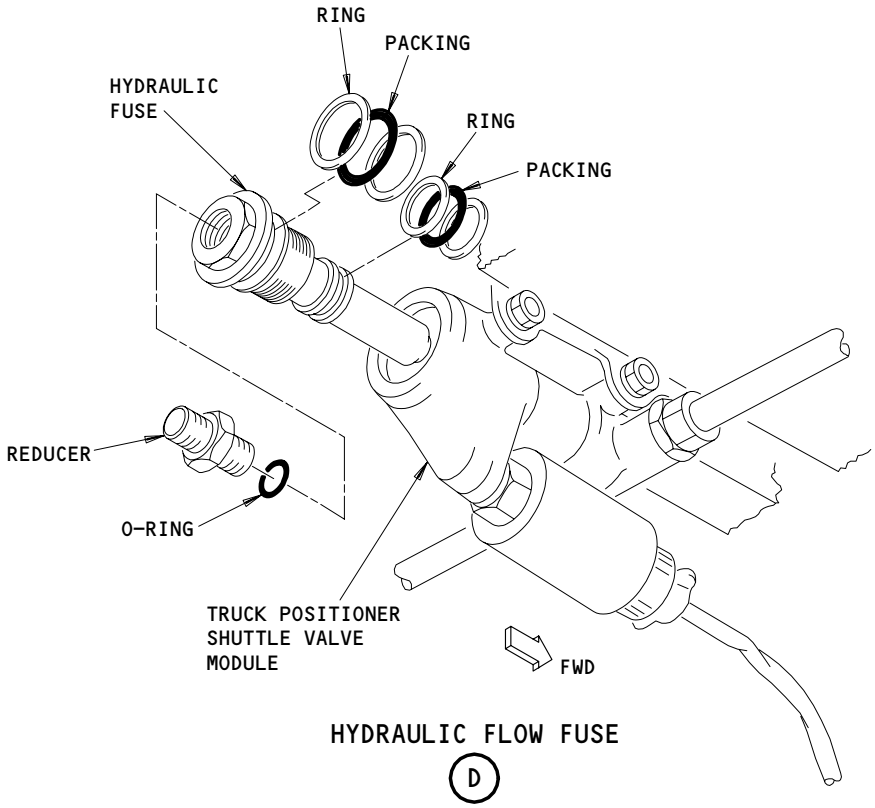
1 FUSE INSTALLED ONLY IN THE TRUCK POSITIONER SHUTTLE VALVE MODULE FOR THE LEFT MAIN LANDING GEAR

Truck Positioner Fuse Installation for the Main Landing Gear
Figure 201 (Sheet 1)



TRUCK POSITIONER SHUTTLE VALVE MODULE

C 1

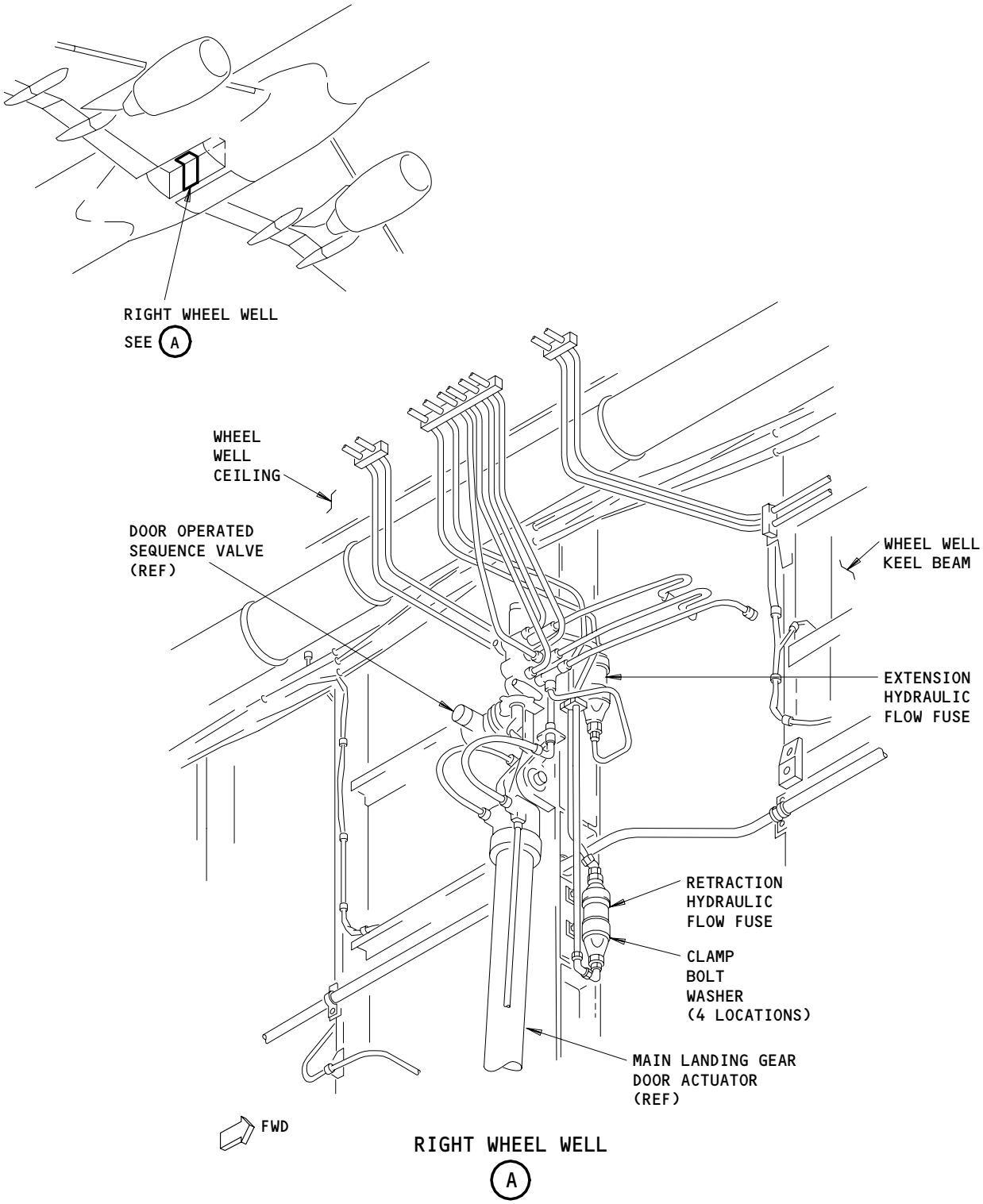


HYDRAULIC FLOW FUSE

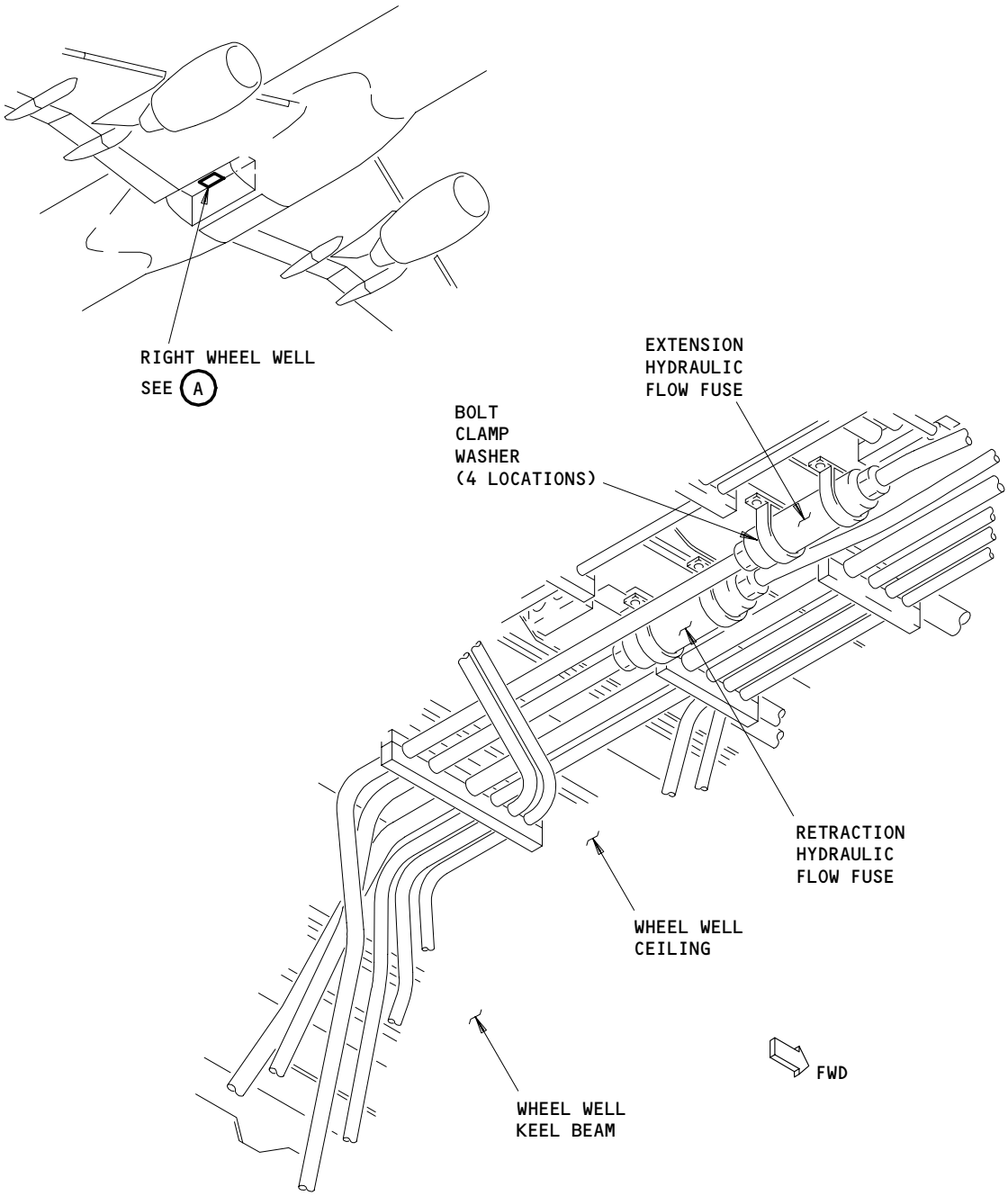
D

Truck Positioner Fuse Installation for the Main Landing Gear
Figure 201 (Sheet 2)

239441



Main Landing Gear Extension/Retraction Hydraulic Flow Fuse Installation
(Right Wheel Well)
Figure 202 (Sheet 1)



RIGHT WHEEL WELL
A

Main Landing Gear Extension/Retraction Hydraulic Flow Fuse Installation
(Right Wheel Well)
Figure 202 (Sheet 2)

S 492-003

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).

S 862-004

(3) Remove the pressure from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

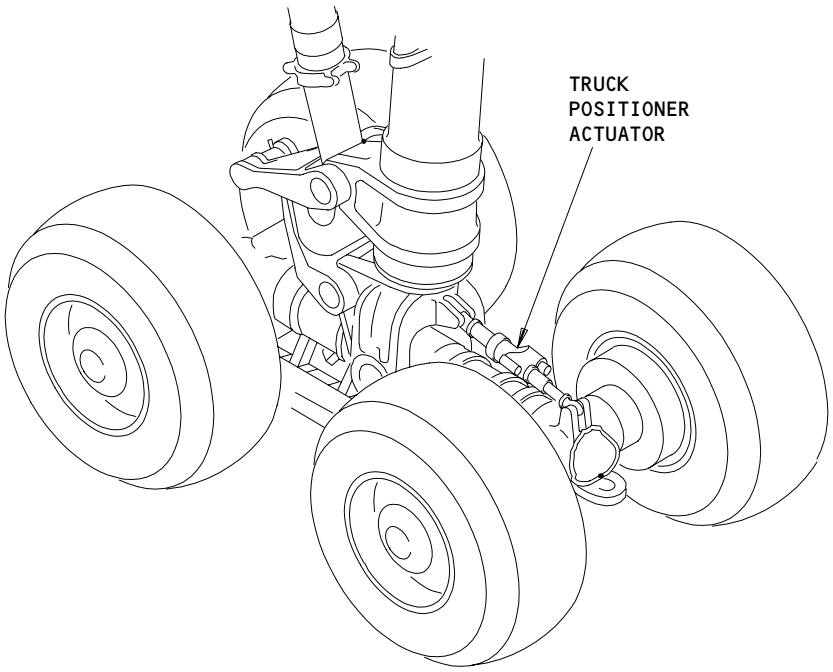
D. Remove the Fuse (Option 1)

S 032-005

(1) Disconnect the hydraulic line from the fuse port.

S 432-006

(2) Install a plug in the line and the fitting.



MAIN GEAR TRUCK POSITIONER ACTUATOR

Hydraulic Flow Fuse Reset
Figure 203

S 022-007
(3) Remove the fuse from the shuttle valve module.

NOTE: It may be necessary to remove sealant from around the edge of the fuse and the shuttle valve module to loosen the fuse.

E. Remove the Fuse (Option 2)

S 022-025
(1) Remove the truck positioner shuttle valve for the main landing gear (AMM 32-32-17/401).

TASK 32-32-19-402-054

3. Install the Hydraulic Fuse from the Truck Positioner Shuttle Valve (Fig. 201)

NOTE: There are two options to install the fuse. Use Option 1 if you removed the fuse from the shuttle valve module. Use Option 2 if you removed the fuse with the shuttle valve module as a unit.

A. Equipment
(1) Hydraulic Service Cart, 0 to 3000 psi, with hydraulic fluid, fire resistant, BMS 3-11 (for fuse removal, option 1)
B. Consumable Materials
(1) D00153 Hydraulic Fluid, Fire Resistant - BMS 3-11
(2) A00247 Sealant - BMS 5-95
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, Main (Left, Right, and Center) Hydraulic Systems
(4) AMM 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-32-17/401, Main Gear Truck Positioner Shuttle Valve
D. Access
(1) Location Zones
551 Wing Trailing Edge (Left)
651 Wing Trailing Edge (Right)

E. Install the Fuse (Option 1)

S 642-008
(1) Lightly lubricate the rings and packing with hydraulic fluid.

S 432-009
(2) Install the rings and packing on the fuse.

S 422-010
(3) Install the fuse in the shuttle valve module. Tighten to 120-160 pound-inches.

S 432-011
(4) Apply sealant around the edge of the fuse and the shuttle valve module.

S 432-012
(5) Install lockwire between the fuse and the shuttle valve module.

F. With the hydraulic line to the fuse port disconnected, do the steps that follow to make sure the fuse operates correctly:

NOTE: If the hydraulic fuse on the shuttle valve module successfully passed a "set" bench test, then the following steps (1) through (6) are not required.

S 212-013
(1) Make sure the control lever for the landing gear on the P3 panel is in the DN position.

S 492-014
(2) 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 862-057
(3) Supply 25 psi to the left hydraulic system with a hydraulic ground cart (AMM 29-11-00/201).

S 712-015

WARNING: KEEP PERSONS CLEAR OF THE OPEN FUSE PORT WHILE THE HYDRAULIC LINE IS DISCONNECTED FROM THE PORT AND THE LEFT HYDRAULIC SYSTEM IS PRESSURIZED. HIGH PRESSURE HYDRAULIC FLUID CAN CAUSE INJURY TO PERSONS.

(4) When the fuse closes, increase the applied pressure to 3000 psi and hold it for 5 minutes.

S 712-016
(5) Make sure that leakage from the fuse port is not more than one drop per minute for the last 3 minutes.

S 862-017
(6) Remove the power from the left hydraulic system (AMM 29-11-00/201).

G. Continue to Install the Fuse (Option 1)

S 642-018
(1) Lightly lubricate the O-ring with hydraulic fluid.

S 432-019
(2) Install the hydraulic line in the fuse port.

S 822-020
(3) Do the steps in the Set the Hydraulic Flow Fuse paragraph.

S 862-097
(4) Do the steps that follow to make sure the valve is installed correctly:
(a) Pressurize the left hydraulic system (AMM 29-11-00/201).
(b) Supply electrical power (AMM 24-22-00/201).
(c) Put the speedbrake lever in ARMED.
(d) Make sure the AUTO SPDBRK light on the pilots' overhead panel, P5, is off.
(e) Move the control lever for the landing gear from OFF to DN.
(f) Make sure the valve does not have any hydraulic leaks.

H. Put the Airplane Back to Its Usual Condition

S 862-021
(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 092-022

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 862-023
(3) Remove the pressure from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 862-024
(4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

I. Install the Fuse (Option 2)

S 422-056
(1) Install the truck positioner shuttle valve for the main landing gear (AMM 32-32-17/401).

TASK 32-32-19-722-058

4. Check of the Hydraulic Fuse from the Truck Positioner Shuttle Valve (Fig. 201)

A. Equipment
(1) Hydraulic Service Cart, 0 to 3000 psi, with hydraulic fluid, fire resistant, BMS 3-11

B. Consumable Materials
(1) D00153 Hydraulic Fluid, Fire Resistant - BMS 3-11

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, Main (Left, Right, and Center) Hydraulic Systems
(4) AMM 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-00-20/201, Landing Gear Downlocks

D. Prepare for Check

S 862-086
(1) Supply electrical power (AMM 24-22-00/201).

S 862-059
(2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 492-060

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 862-061
(4) Remove the pressure from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 032-062
(5) Disconnect the hydraulic line from the fuse port.

S 432-063
(6) Install a plug in the line and the fitting.

E. With the hydraulic line to the fuse port disconnected, do the steps that follow to make sure the fuse operates correctly:

S 862-064
(1) Make sure the control lever for the landing gear on the P3 panel is in the DN position.

S 722-065
(2) 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 722-087
(3) If you attach a flexible hose to the connection on the fuse, then put the open end in a suitable fluid container.

S 722-067

WARNING: KEEP PERSONS CLEAR OF THE OPEN FUSE PORT WHILE THE HYDRAULIC LINE IS DISCONNECTED FROM THE PORT AND THE LEFT HYDRAULIC SYSTEM IS PRESSURIZED. HIGH PRESSURE HYDRAULIC FLUID CAN CAUSE INJURY TO PERSONS.

(4) Supply 25 psi to the left hydraulic system with a hydraulic ground cart (AMM 29-11-00/201).

S 722-088
(5) When the fuse closes, increase the applied pressure to 3000 psi and hold it for 5 minutes.

S 792-068
(6) Make sure that leakage from the fuse port is not more than one drop per minute for the last 3 minutes.

S 862-069
(7) Remove the power from the left hydraulic system (AMM 29-11-00/201).

F. Put the Airplane Back to Its Usual Condition

S 422-092
(1) Connect the hydraulic line to the fuse port.

S 862-093
(2) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 092-071

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.

(3) Remove the door locks (AMM 32-00-15/201).

S 862-072
(4) Remove the pressure from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 862-073
(5) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-32-19-002-026

5. Remove the Extension/Retraction Flow Fuses for the Main Landing Gear (Fig. 202)

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 Zone
       144 MLG Wheel Well (Right)

C. Prepare for Removal

S 212-027
   (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 492-028

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

S 862-029
   (3) Remove the pressure from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

D. Remove the Fuse (Fig. 202)

S 032-030
   (1) Disconnect the hydraulic lines from the flow fuse.

S 492-031
   (2) Install a plug in the lines and fittings.

S 032-032
   (3) Remove the bolts from the clamps that attach the flow fuse to the bracket.

S 022-033
   (4) Remove the flow fuse.

TASK 32-32-19-402-098

6. Install the Extension/Retraction Flow Fuses (Fig. 202)
   A. References
      (1) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
   B. Access
      (1) Location Zone
          144 MLG Wheel Well (Right)

   C. Install the Fuse

      S 422-055
      (1) LARGE OLD-STYLE FUSE (273N2021-3);
      Install the bolts and clamps to connect the fuse to the bracket.

      S 422-094
      (2) SMALL NEW-STYLE FUSE (271N6444-7);
      Do these steps:
      (a) Install the bracket assembly:
          1) Use the holes that were used to install the original clamps
          2) Put the bracket assembly in position so that the inside 4-hole pattern (with the nutplates) is above the outside 4-hole location pattern
          3) Install the bolts to attach the bracket to the structure.
      (b) Install the saddle clamps on the bracket, but do not tighten the bolts
      (c) Attach the tube assembly to the swivel end of the fuse
      (d) Install the fuse and tube assembly into the saddle clamps with the fuse flow arrow in the UP direction
      (e) Connect the hydraulic lines to the fuse and tube assembly
      (f) Tighten the bolts on the saddle clamps to hold the fuse tightly.

      S 862-036
      (3) Make sure that pressure is removed from the left hydraulic system and the reservoir (AMM 29-11-00/201).

      S 432-037
      (4) Connect the hydraulic line to the fuse.

      S 822-038
      (5) Do the steps in the Check of the Hydraulic Flow Fuse paragraph.

TASK 32-32-19-822-039

7. Check of the Hydraulic Flow Fuses (Fig. 202)
   A. References
      (1) AMM 12-12-01/301, Hydraulic Systems
      (2) AMM 24-22-00/201, Electrical Power Control
      (3) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
      (4) AMM 32-00-15/201, Landing Gear Door Locks
      (5) AMM 32-00-20/201, Landing Gear Downlocks

B. Access
(1) Location Zones
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)

C. Check the Hydraulic Flow Fuses

NOTE: If the hydraulic flow fuses successfully passed a "set" bench test, then the following steps (4) through (13) are not required.

S 862-040
(1) Supply electrical power (AMM 24-22-00/201).

S 212-041
(2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 492-042

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 862-043
(4) Remove the pressure from the left hydraulic system and reservoir (AMM 29-11-00/201).

NOTE: Make sure the reservoir pressure is zero.

S 862-044
(5) Put the control lever for the landing gear on the First Officers' instrument panel, P3, in the OFF position.

S 032-074
(6) Disconnect the hydraulic line directly downstream of the fuse(s) and attach a temporary hydraulic hose to drain the fluid. Install a plug in the end of each disconnected tube.

S 722-075
(7) Put the end of the flexible hose in a suitable fluid container.

S 722-077

WARNING: KEEP PERSONS CLEAR OF THE OPEN FUSE PORT WHILE THE HYDRAULIC LINE IS DISCONNECTED FROM THE PORT AND THE LEFT HYDRAULIC SYSTEM IS PRESSURIZED. HIGH PRESSURE HYDRAULIC FLUID CAN CAUSE INJURY TO PERSONS.

(8) Supply 100 +/-25 psi to the left hydraulic system with a hydraulic ground cart (AMM 29-11-00/201).

S 722-089

(9) For the retract fuse, put the control lever for the landing gear on the First Officers' instrument panel, P3, in the UP position to set the fuse.
   (a) After the fuse sets, or closes, increase the applied pressure to 3000 psi and hold it for 5 minutes.
   (b) Make sure the leakage from the fuse port is not more than one drop per minute for the last 3 minutes.
   (c) Reduce hydraulic pressure to 100 +/- 25 psi in the left hydraulic system.

S 722-079

(10) For the extend fuse, put the control lever for the landing gear on the First Officers' instrument panel, P3, in the DN position to set the fuse.
   (a) After the fuse sets, or closes, increase the applied pressure to 3000 psi and hold it for 5 minutes.
   (b) Make sure the leakage from the fuse port is not more than one drop per minute for the last 3 minutes.

S 862-082

(11) Put the control lever for the landing gear on the First Officers' instrument panel, P3, in the OFF position.

S 862-083

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

S 422-096

(13) Disconnect the temporary hydraulic hose and connect the hydraulic line.

S 862-045

(14) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 712-046

(15) Move the control lever to the DN position and monitor the hydraulic lines as follows:

(a) Make sure the flexible hydraulic lines connected to the truck positioner actuator move when the control lever is moved to DN (Fig. 203).

(b) Make sure that the fuses do not have any hydraulic leaks.

D. Do these Steps to Make sure the Fuse in the Gear Retraction Circuit in the Right Wheel Well is not closed:

S 862-047

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 712-048

(2) Move the control lever to the UP position and monitor the hydraulic lines as follows:

(a) Make sure the flexible hydraulic lines connected to the downlock actuator for the right main landing gear move when the control lever is moved to UP.

(b) Make sure that the fuses do not have any hydraulic leaks.

S 862-049

(3) Move the control lever to the DN position.

E. Put the Airplane Back to Its Usual Condition

S 862-050

(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 092-051

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 862-052

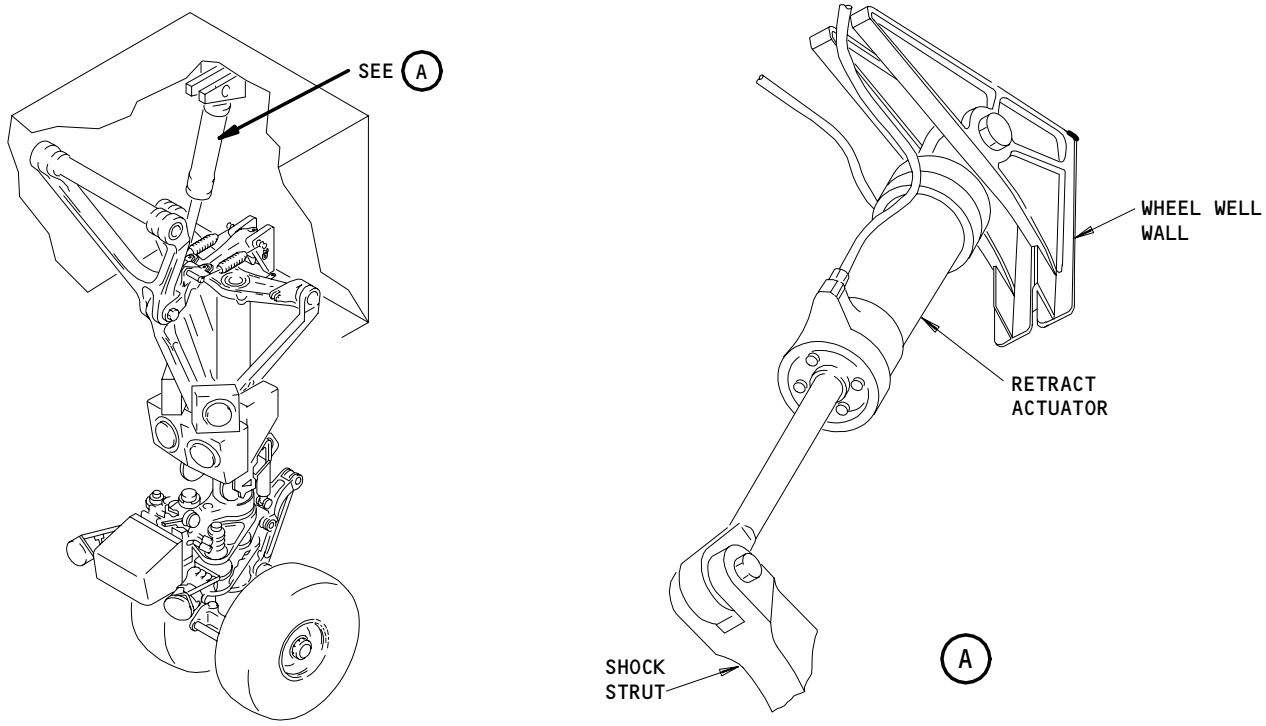
(3) Remove the pressure from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 862-053

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

NOSE GEAR EXTENSION AND RETRACTION - DESCRIPTION AND OPERATION

1. General
   A. The extension and retraction system for the nose landing gear hydraulically retracts and extends the nose landing gear. Pressure is supplied by the left hydraulic system.
2. Component Details
   A. Retract Actuator (Fig. 1)
      (1) The actuator is attached to the aft wall of the wheel well for the nose landing gear and to the shock strut trunnion. The actuator hydraulically retracts to retract the landing gear. Hydraulic pressure is supplied to the retract actuator only during landing gear retraction.
   B. Lock Actuator (Fig. 2)
      (1) The lock actuator hydraulically pushes the lock links into the overcenter position. This locks the nose landing gear in the extended or retracted position. The actuator also hydraulically pushes the lock links out of the overcenter position when the extension and retraction cycles start.
      (2) The actuator extends during landing gear extension to lock the lock link. The actuator retracts during landing gear retraction to move the lock link from the locked position. The actuator is connected to the aft wall of the wheel well and the aft lock link.

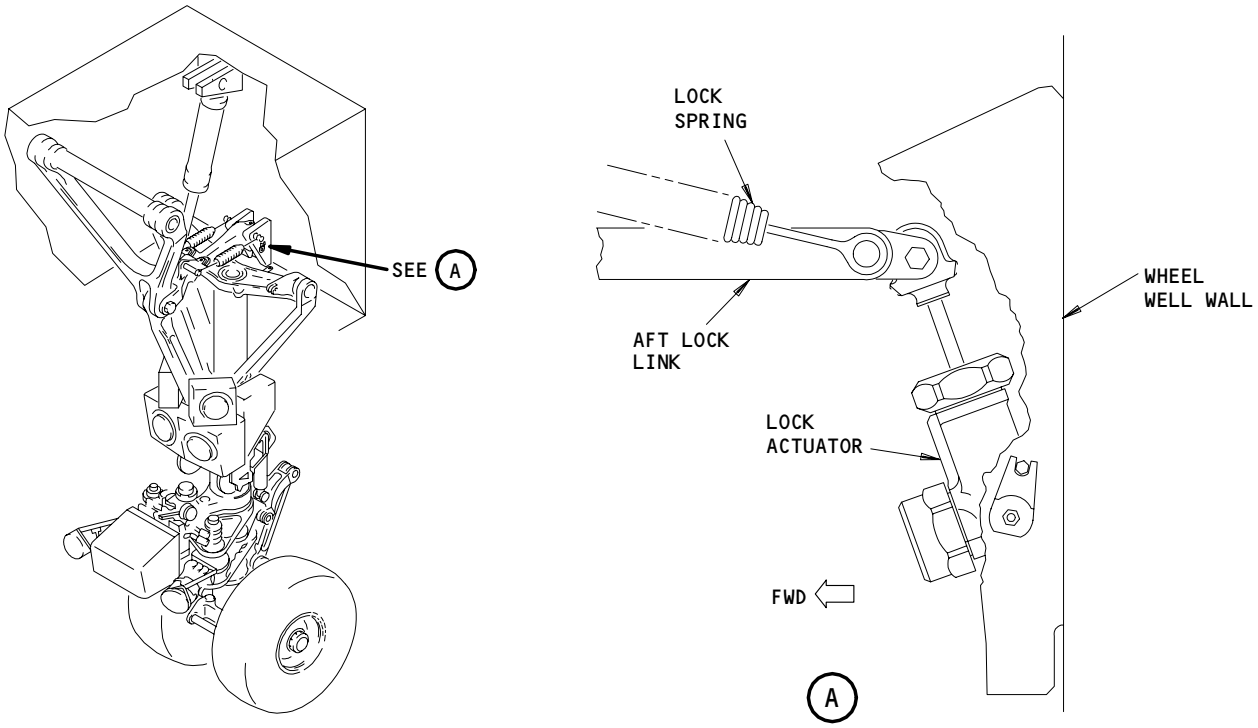


Retract Actuator
Figure 1

C. Gear-Operated Sequence Valve (Fig. 3)
   (1) The gear-operated sequence valve makes sure that the nose landing gear is fully extended or retracted before the doors close. The valve is mechanically connected to the drag strut assembly. It is installed on the aft wall of the wheel well. The valve sends hydraulic fluid to the lock actuator and the door actuator.

D. Door-Operated Sequence Valve (Fig. 4)
   (1) The door-operated sequence valve is attached to the forward wall of the wheel well. The valve is connected to the door actuator with rods and cranks. The valve makes sure that the doors are open before the landing gear extends or retracts. Hydraulic fluid flows through the valve to the lock actuator and the gear sequence valve bypass valve.

E. Gear Sequence Valve Bypass Valve (Fig. 5)
   (1) The gear sequence valve bypass valve receives a mechanical input from the drag strut. This permits hydraulic fluid to flow to the retract actuator, around the door-operated sequence valve, as the nose landing gear gets near the retracted position. The module is installed on the left wall of the wheel well.



Lock Actuator
Figure 2

F. Door Actuator

(1) The door actuator opens and closes the forward doors for the nose landing gear during landing gear extension and retraction. The actuator contains an internal mechanical lock to keep the doors in the closed position. The actuator is installed on the forward wall of the wheel well. It is connected to the doors and the door-operated sequence valve by rods and cranks.

G. Flow Control Valve

(1) The flow control valve is a pressure-operated, two-position, in-line valve. It controls hydraulic fluid flow to and from the extend pressure side of the door actuator. The valve also limits fluid flow to return from the door actuator when the landing gear is down and locked and the doors are not fully closed. This function slows the speed at which the door close. This is for safety when the landing gear doors are opened or closed for ground maintenance. At all other times, the fluid flow is not limited.

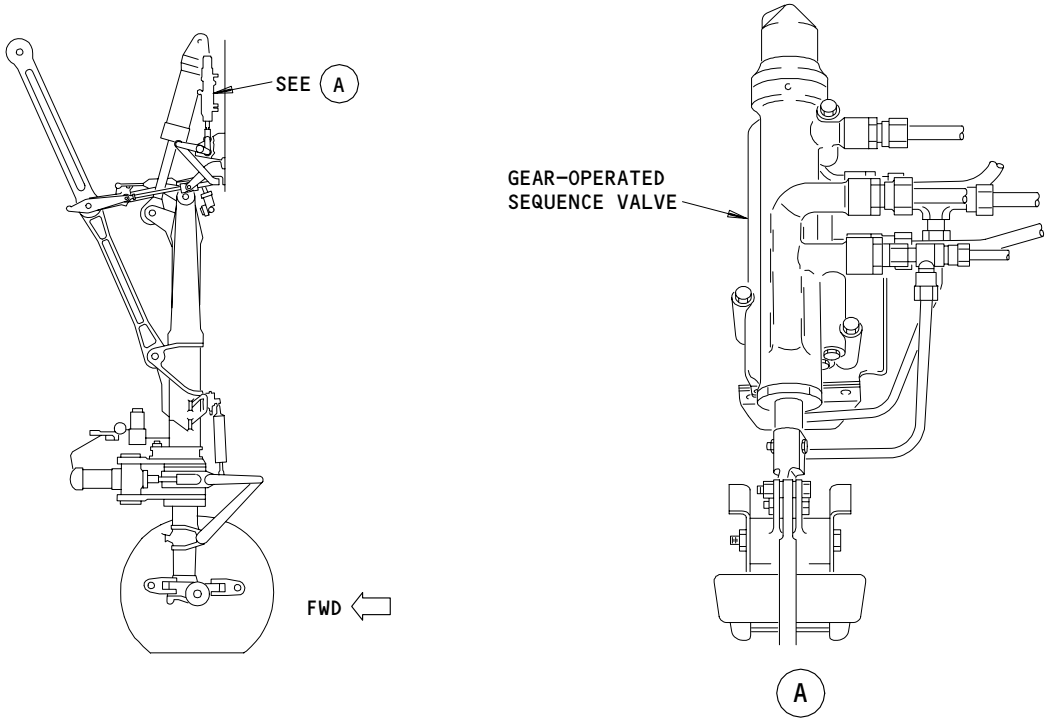
(2) The flow control valve is installed in the hydraulic lines in the wheel well for the nose landing gear.

3. Operation (Fig. 6)

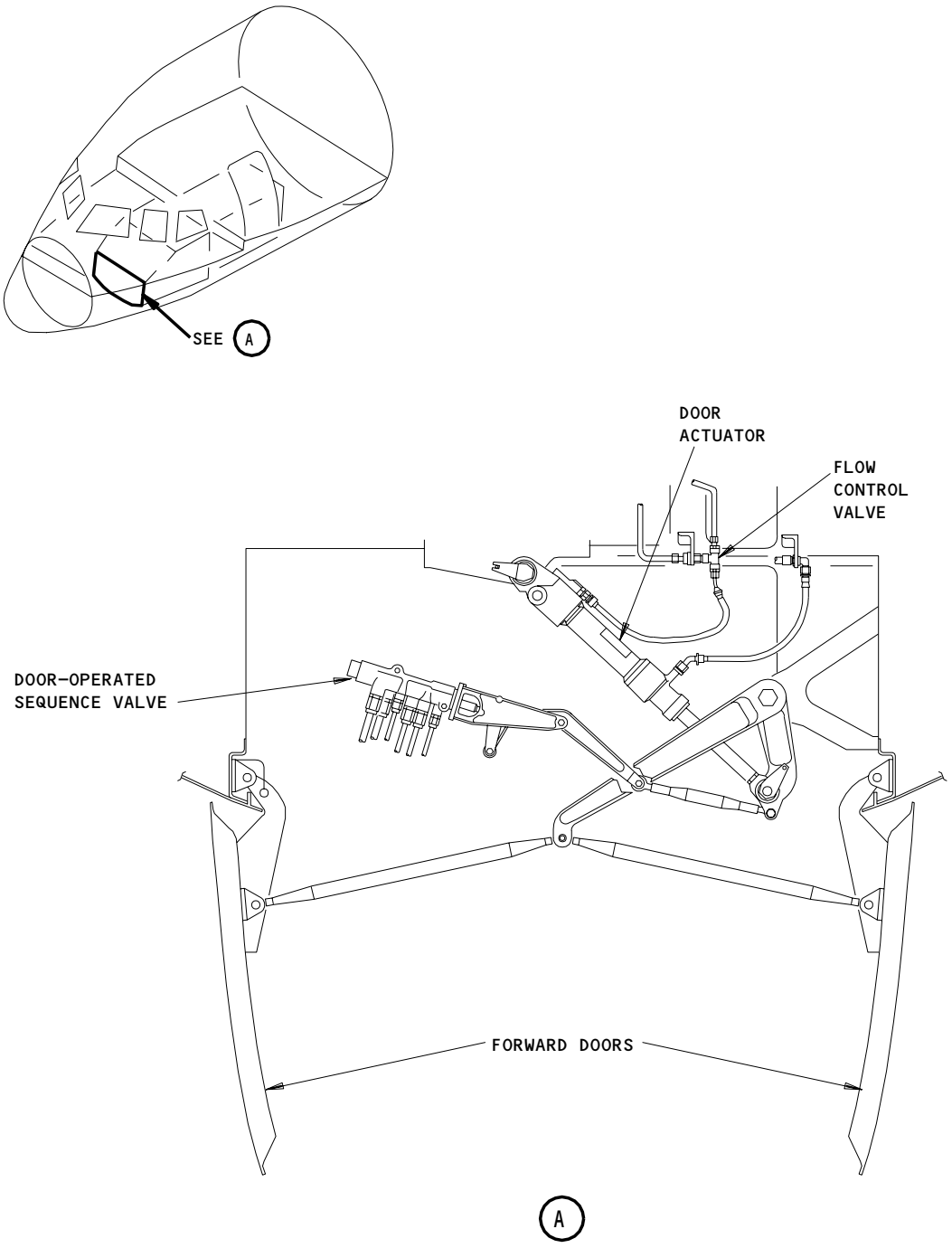
A. Functional Description

(1) Landing Gear Retraction

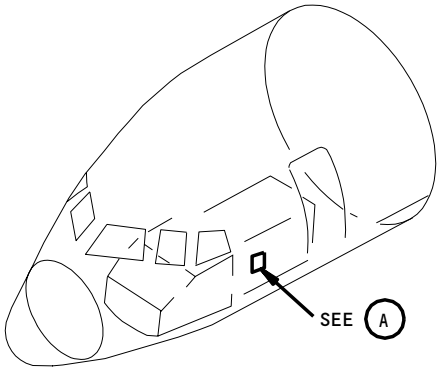
(a) Hydraulic pressure changes the position of the flow control valve. This permits the flow of fluid to and from the door actuator with no limit.

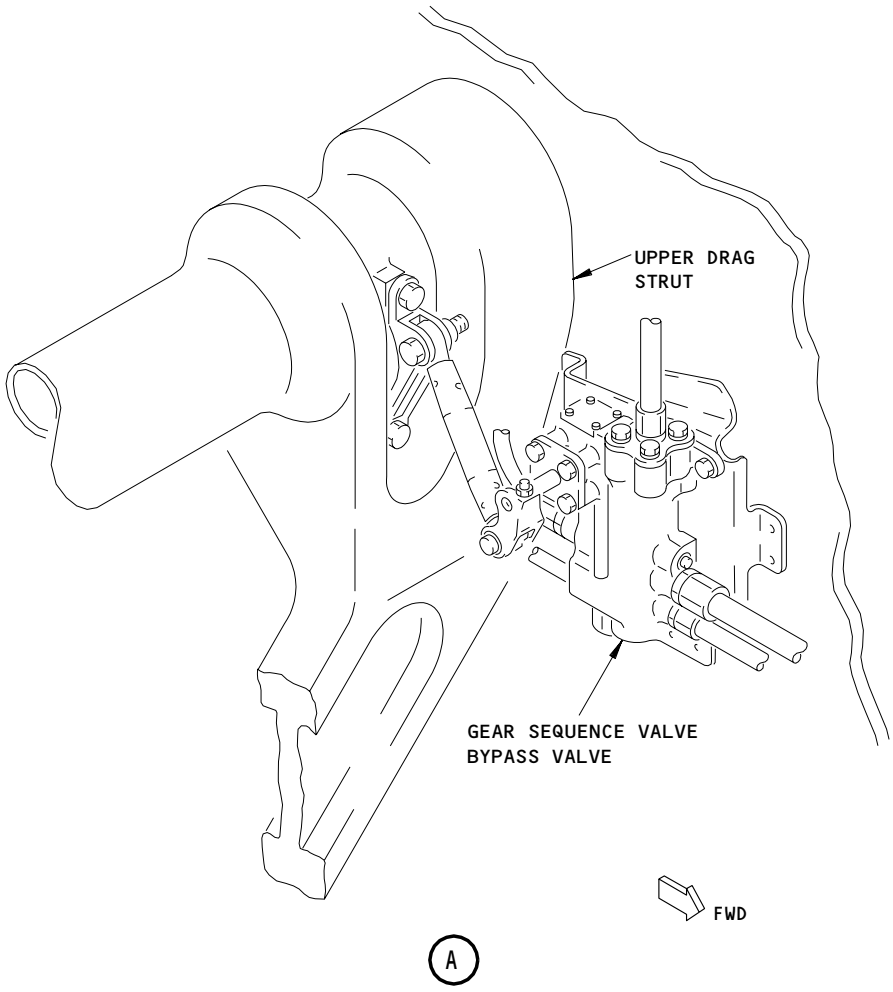


Gear-Operated Sequence Valve
Figure 3

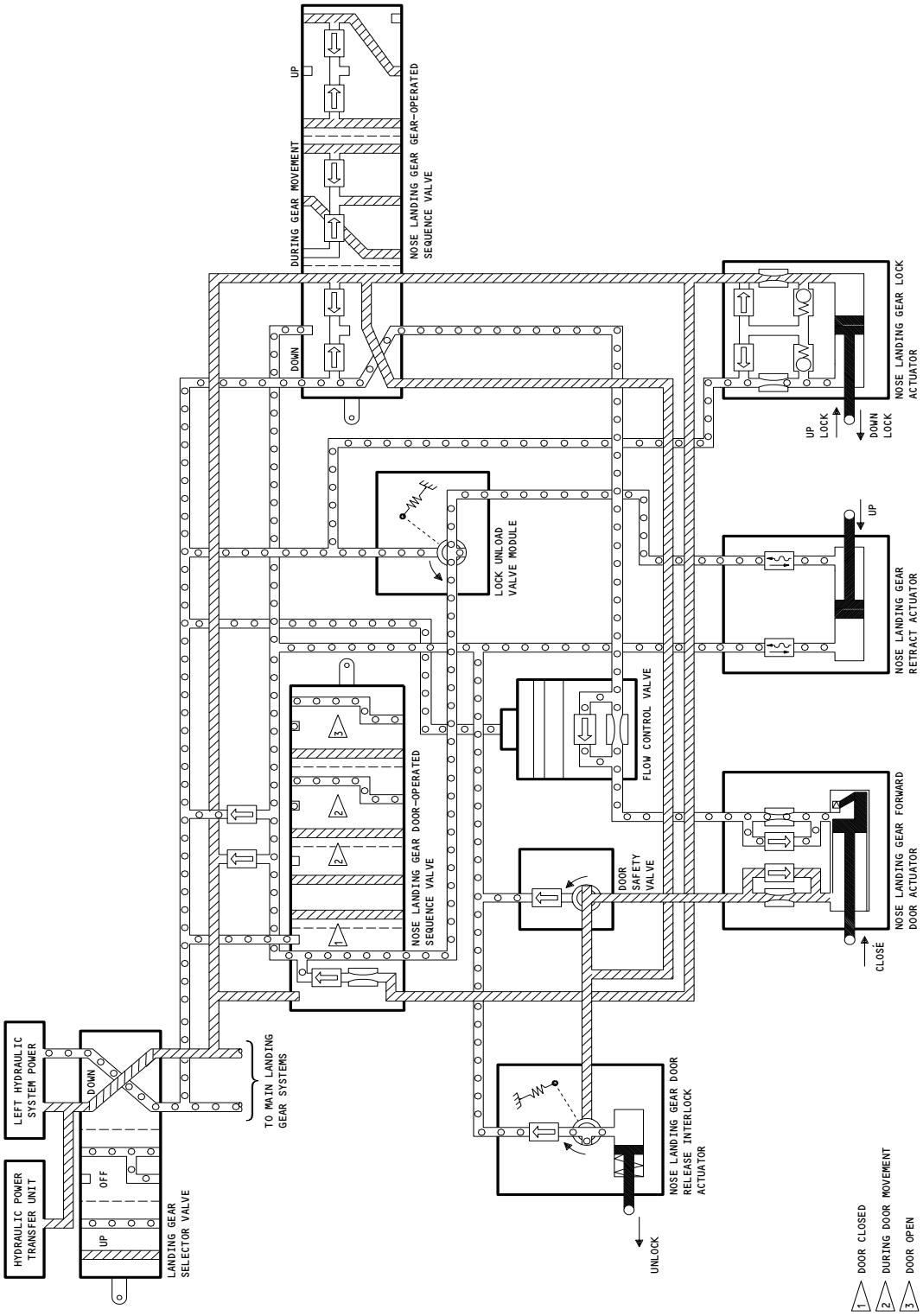


Door-Operated Sequence Valve, Door Actuator, and Flow Control Valve
Figure 4





Gear Sequence Valve Bypass Valve
Figure 5



Nose Landing Gear Extension and Retraction Operation Schematic
Figure 6

(b) Hydraulic fluid flows through the gear-operated sequence valve and the flow control valve. This pressurizes the door actuator to extend and the doors start to open.

(c) Before the doors are fully open, hydraulic fluid pressurizes the lock actuator to retract. The lock actuator pulls the lock links from the overcenter position and releases the landing gear from the down and locked position.

(d) When the doors are almost fully open, hydraulic fluid flows through the door-operated sequence valve and the gear sequence valve bypass valve to pressurize the retract actuator. The retract actuator retracts to retract the nose landing gear forward and up into the wheel well.

(e) While the gear retracts, the gear-operated sequence valve keeps pressure on the door actuator to make sure that the doors stay open. During gear retraction, movement of the lock link causes the lock actuator to extend. Hydraulic pressure is still applied to retract the actuator but this does not prevent lock actuator extension.

(f) When the gear is fully retracted, the lock actuator retracts, again. This pulls the lock links back overcenter to lock the landing gear up.

(g) The position of the gear sequence valve bypass valve is now changed to pressurize the retract actuator as the doors close.

(h) The gear-operated sequence valve again sends hydraulic fluid through the door safety valve. This pressurizes the door actuator to retract to close the doors.

(2) Landing Gear Extension

(a) Hydraulic fluid flows through the gear-operated sequence valve and the flow control valve. This pressurizes the door actuator to extend and the doors start to open.

(b) As the doors open, hydraulic fluid flows through the door-operated sequence valve to pressurize the lock actuator to extend. The lock actuator pushes the lock links from the overcenter position and releases the landing gear from the up and locked position.

(c) As the doors open, the landing gear extends because of its weight. During landing gear extension, movement of the lock link causes the lock actuator to retract. Hydraulic pressure is still applied to extend the actuator, but this does not prevent lock actuator retractioin.

(d) When the landing gear is fully extended, the lock actuator extends again. This pushes the lock links back overcenter to lock the landing gear down.

(e) The gear-operated sequence valve again sends hydraulic fluid through the door safety valve. This pressurizes the door actuator to retract to close the doors. Fluid from the door actuator that flows to return goes through the flow control valve, where the flow is limited. This decreases the speed at which the door closes.

NOSE GEAR EXTENSION AND RETRACTION - ADJUSTMENT/TEST

TASK 32-34-00-715-017

1. 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.
      (2) The times for gear retraction in the operational test depend on the hydraulic flow rate. The retraction times given in this procedure are based on a minimum flow rate of 37 gpm at a hydraulic system pressure of 3000 + -150 psi. Hydraulic pressure can be supplied by a hydraulic test bench or the engine driven pumps to give this minimum flow rate.
      (3) The electric motor driven pump (EMDP) can be used for the component replacement test. When you use the EMDP operate only one Landing gear at a time. The EMDP provides a hydraulic flow rate of approximately 6 gpm. This lower rate causes slower landing gear operation, especially if you operate more than one gear at the same time. Do not use the EMDP to measure extension/retraction times.
   B. Equipment
      (1) Stop Watch
   C. References
      (1) 07-11-02/201, Jacking Airplane Nose
      (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
   D. Prepare for the Test

      S 865-018

      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.

      (1) Remove the door locks from the nose landing gear doors and close the nose landing gear doors (Ref 32-00-15/201).

      S 215-001
      (2) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20/201).

      S 865-003
      (3) Lift the airplane nose with jacks (Ref 07-11-02/201).

S 865-019
(4) Make sure these circuit breakers on the overhead circuit breaker panel, P11, are closed:
(a) 11S15, AIR/GND SYS 1
(b) 11S19, AIR/GND SYS 2
(c) 11S20, LEVER LOCK
(d) 11P29, R IND LTS 2

S 215-002
(5) Make sure the control lever for the landing gear is in DN.

S 095-004
(6) Remove the downlock from the nose landing gear (Ref 32-00-20/201).

NOTE: The downlock for the nose landing gear does not have to be put away.

S 865-005
(7) Pressurize the left hydraulic system (Ref 29-11-00/201).

S 865-006
(8) Supply electrical power (Ref 24-22-00/201).

E. Do the Operational Test of the Extension and Retraction System for the Nose Landing Gear

S 845-016
(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 landing gear extension and retraction. Supply interphone communication between the two persons.

S 715-007
(2) Do the steps that follow to measure the retraction time of the landing gear:

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON THE MAIN LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER. 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 THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE RETRACTION PATH OF THE NOSE LANDING GEAR. EXTENSION AND RETRACTION OF THE NOSE LANDING GEAR CAN CAUSE INJURY TO PERSONS OF DAMAGE TO EQUIPMENT IF THE AREA IS NOT CLEAR. MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE DOOR AREA FOR THE MAIN LANDING GEAR. MOVEMENT OF THE DOORS WHEN THE CONTROL LEVER IS CYCLED CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT IF THE AREA IS NOT CLEAR.

(a) Start to measure the time when the control lever is moved to UP.
(b) Move the control lever from DN to UP in 2 ±1 seconds.

NOTE: The override button for the control lever must be pushed in to move the control lever to UP.

(c) Stop the time when the nose landing gear is retracted and the doors are closed.
(d) Write down the retraction time.

S 715-008

(3) Do the steps that follow to do a check of landing gear reversal:
(a) Move the control lever from UP to DN. When landing gear extension is approximately one half complete, move the control lever back to UP at a constant rate in 3 ±1 seconds.
(b) Make sure the nose landing gear changes direction with no hydraulic leakage or damage to parts.
(c) Move the control lever to OFF.

S 715-009

(4) Do the steps that follow to measure landing gear extension time.
(a) Start to measure the time when the control lever is moved to DN.
(b) Move the control lever from OFF to DN in 2 ±1 seconds.
(c) Stop the time when the nose landing gear is down and locked, and the forward doors for the nose landing gear are closed.
(d) Write down the extension time.

S 715-010

(5) Do the steps that follow to do a check of landing gear reversal:

WARNING: MAKE SURE THE DOWNLOCKS ARE INSTALLED ON THE MAIN LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER. 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

(a) Move the control lever from DN to UP. When retraction is approximately one half complete, move the control lever back to DN in 3 ±1 seconds.

NOTE: The override button for the control lever must be pushed in to move the control lever to UP.

(b) Make sure the nose landing gear changes direction with no hydraulic leakage or damage to parts.

S 975-015

(6) Compare the landing gear times for operation to the limits shown below:

MAXIMUM OPERATING TIME AT 37 GPM HYDRAULIC FLUID FLOW *[1]		
	RETRACTION	EXTENSION
DOORS CLOSED (cycle complete)	20 sec	32 sec

*[1] These values are approximate elapsed times from control lever movement

S 865-012

(7) Remove the hydraulic power if it is not necessary (Ref 29-11-00/201).

S 865-011

(8) Remove the electrical power if it is not necessary (Ref 24-22-00/201).

S 495-013

(9) Install the downlock on the nose landing gear (Ref 32-00-20/201).

S 095-014

(10) Lower the airplane and remove the jacks (Ref 07-11-02/201).

NOSE GEAR RETRACT ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task is for removal of the retract actuator for the nose landing gear. The second task is for installation of the retract actuator.

TASK 32-34-01-004-025

2. Remove the Retract Actuator for the Nose Landing Gear (Fig. 401, 402)
   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. Equipment
      (1) Fishpole Hoist - Commercially Available
      (2) Actuator Extension/Retraction Pump, Landing Gear - A32007-53, -90, -153 (As Applicable)
      (3) Nose Gear Retract Actuator Sling - B32007-1
   C. Access
      (1) Location Zone
          711 Nose Landing Gear

   D. Prepare for the Removal

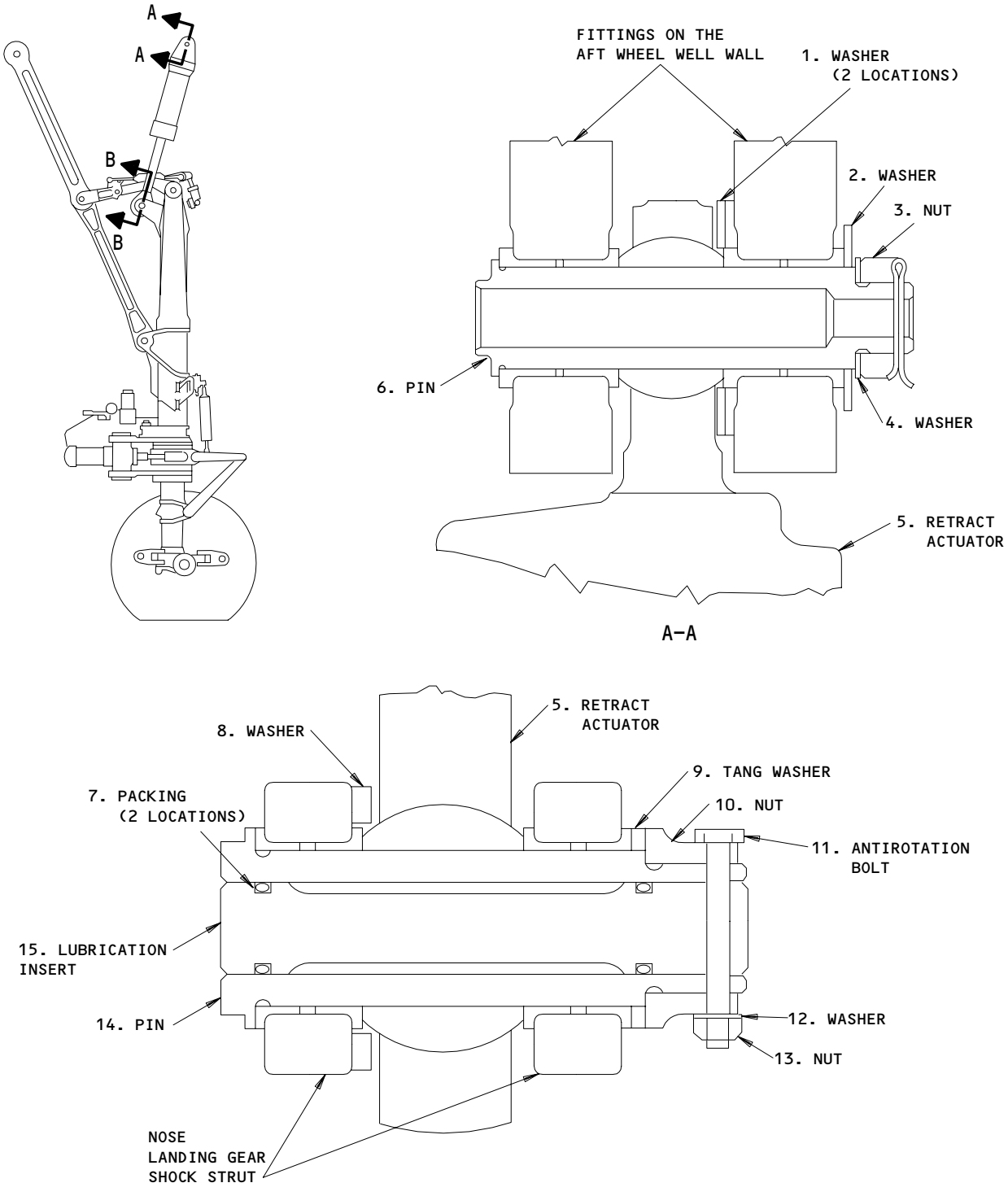
      S 494-001
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-027

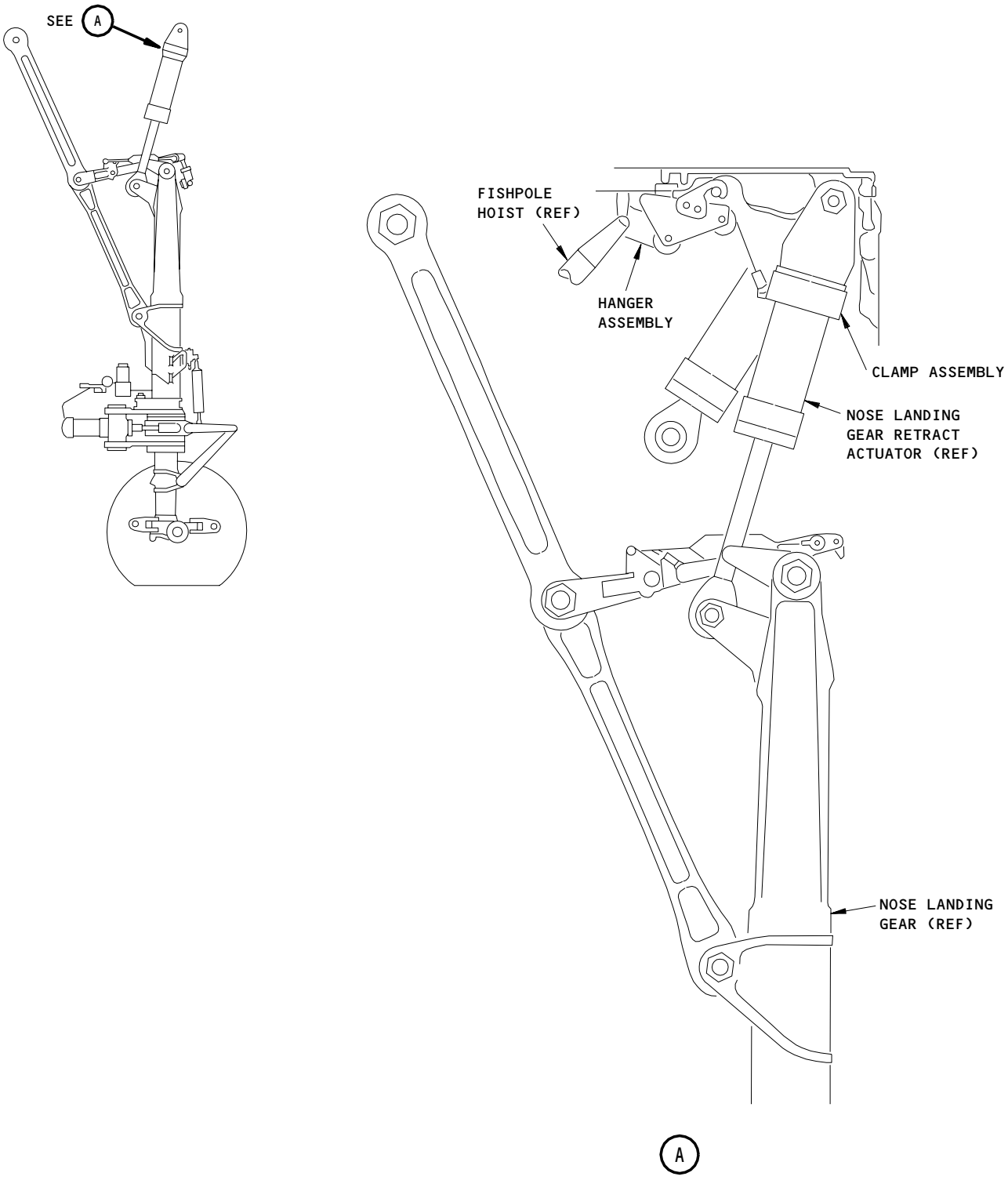
      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

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

      S 864-002
      (3) Remove the pressure from the left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).



Nose Landing Gear Retract Actuator Installation
Figure 401



Sling Equipment for the Nose Landing Gear Retract Actuator
Figure 402

E. Remove the Retract Actuator

S 034-003
(1) Disconnect the hydraulic lines from the retract actuator.

S 494-004
(2) Install caps in the ports and plugs in the lines.

S 484-049
(3) Install the hanger assembly and the clamp assembly parts of the retract actuator sling equipment (Fig. 402).

S 034-026
(4) Remove the pin (14) and insert (15) to disconnect the rod end of actuator from the shock strut (Fig. 401, View B-B).

S 484-048
(5) Install the pump on the actuator and retract the rod end.

S 034-006
(6) Remove the pin (6) to disconnect the head end of the actuator from the fittings on the aft wheel well wall.

S 984-007
(7) Use the fishpole hoist to lower the actuator (5) from the wheel well.

TASK 32-34-01-404-008

3. Install the Retract Actuator for the Nose Landing Gear (Fig. 401, 402)
   A. 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 32-34-00/501, Nose Gear Extension and Retraction
   B. Equipment
      (1) Fishpole Hoist - Commercially Available

(2) Actuator Extension/Retraction Pump, Landing Gear - A32007-53, -90, -153 (As Applicable)
(3) Nose Gear Retract Actuator Sling - B32007-1

C. Consumable Materials
(1) D00153 Fluid, Hydraulic - BMS 3-11, Type IV
(2) D00633 Grease - BMS3-33 (Preferred)
(3) D00013 Grease - MIL-G-23827 (Alternative)

D. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	5	Retract Actuator	32-21-00	01	81
				01B	95
				01C	95
			32-34-01	01	35,70
				01A	35,70
	7	Packing	32-21-00	01	45
				01B	50
				01C	50
				02	125
				02A	60

E. Access
(1) Location Zone
711 Nose Landing Gear

F. Procedure

S 614-009
(1) Fill the actuator with hydraulic fluid.

S 494-010
(2) Put the actuator (5) in the sling (Fig. 402).

S 984-011
(3) Hoist the actuator into the wheel well between the wall fittings of the aft wheel well and the shock strut lugs.

S 644-012
(4) Apply grease to the pins, bolts and washers before you install them.

S 434-013

(5) Install the pin (6), washers (1, 2, and 4), and nut (3) to connect the retract actuator to the wall fittings on the aft wheel well (Fig. 401, View A-A). Do the steps that follow to tighten the nut (3):
   (a) Do a check of the nut (3) for self-locking torque. Measure it in pound-inches and write it down
   (b) Add 90-125 pound-inches (10.2-14.1 newton-meters) to the self-locking torque that you measured
   (c) Tighten the nut (3) to the torque range you calculated
   (d) Loosen the nut (3) to the nearest locking position. Install the cotter pin.

S 864-042

(6) Make sure the pressure is removed from the left hydraulic system (AMM 29-11-00/201).

S 434-040

(7) Connect the hydraulic lines to the actuator.

S 584-041

(8) Make sure the actuator is supported. Make sure the rod end is free to move so the rod end will not hit anything when it extends as the actuator is operated.

NOTE: The actuator retracted length is 25.13 inches (638.3 millimeters). The extended length of the actuator is 37.77 inches (959.4 millimeters) for a stroke of 12.64 inches (321.1 millimeters).

S 864-043

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.

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

S 864-045
(10) Move the control lever for the landing gear to the OFF position.

S 864-044
(11) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 864-046
(12) Move the control lever for the landing gear to the DN position.

S 434-038
(13) If the airplane is on jacks do the steps that follow:
(a) Install the packings (7) on the lubrication insert (15). Put in the pin (14) to align the locking bolt holes.
(b) Install the pin (14) and insert (15), washers (8 and 9), and nut (10) to connect the retract actuator to the shock strut lugs (Fig. 401, View B-B). Tighten the nut (10) to 90-125 pound-inches (10.2-14.1 newton-meters), then loosen to the nearest lock position to install the antirotation bolt (11). Install the antirotation bolt (11), washer (12), and nut (13).
(c) Remove the sling equipment and the hoist.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE LANDING GEAR DOORS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(d) Do the extension and retraction test for the nose landing gear (AMM 32-34-00/501).
(e) Remove the power from the hydraulic system if it is not necessary (AMM 29-11-00/201).
(f) Examine the actuator for hydraulic leaks.

S 434-039
(14) If the airplane is not on jacks do the steps that follow:
(a) Remove the sling equipment and the hoist.

(b) 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 (this will show that the hoses are correctly connected and that there is no leakage):
1) The actuator rod retracts when the control lever is put in the UP position. You can extend the actuator rod when the control lever is put in the DN position.
2) There are no hydraulic leaks at the fittings.
(c) Put the control lever in the DN position.
(d) Install the packings (7) on the lubrication insert (15). Put in the pin to align the locking bolt holes.
(e) Install the pin (14) and insert (15), washers (8 and 9), and nut (10) to connect the retract actuator to the shock strut lugs (Fig. 401, View B-B). Tighten the nut (10) to 90-125 pound-inches (10.2-14.1 newton-meters), then loosen to the nearest lock position to install the antirotation bolt (11).
(f) Install the antirotation bolt (11), washer (12), and nut (13).

G. Put the Airplane Back to Its Usual Condition

S 614-022

(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 644-023

(2) Lubricate the actuator at the grease fittings.

S 094-024

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 and close the doors (AMM 32-00-15/201).

NOSE GEAR RETRACT ACTUATOR - INSPECTION/CHECK

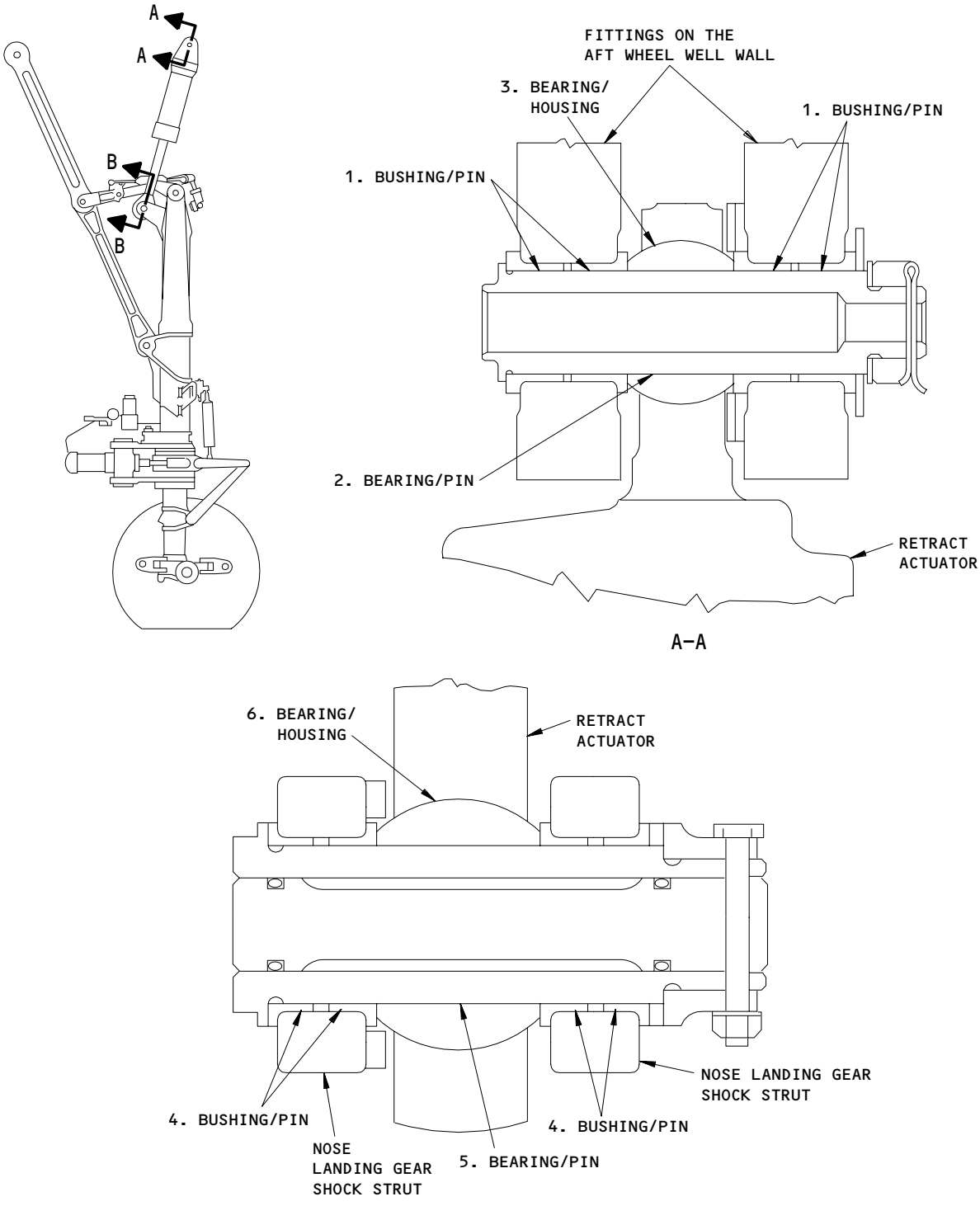
1. General
   A. This procedure only has illustrations and a wear limit table which show the data for wear limits. There are no procedures for access, removal, or installation of the parts. Refer to Nose Gear Retract Actuator - Removal/Installation for procedures to do these tasks.

TASK 32-34-01-206-001

2. Wear Limits for the Retract Actuator on the Nose Landing Gear (Fig. 601)

   NOTE: Wear limits for the other components that are connected to the Retract Actuator are not in this procedure. They are included in the applicable Maintenance Manual subject for those components.

   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 Nose Gear Retract Actuator - Removal/Installation for procedures to do these tasks.



Nose Landing 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		PER-MITTED WEAR DIM.	MAX DIAM CLEAR-ANCE			
			MIN	MAX					
1	BUSHING	ID	1.7500	1.7495	1.7530	0.005 (2)	X		
	PIN	OD	1.7490	1.7475	1.7450			X	(1)
2	BEARING	ID	1.7500	1.7495	1.7525	0.005 (2)	X		
	PIN	OD	1.7490	1.7475	1.7450			X	(1)
3	HOUSING	ID	2.7530	2.7545	2.7565	0.007 (2)	X		
	BEARING	OD	2.7495	2.7500	2.7470		X		(1)
4	BUSHING	ID	1.7515	1.7500	1.7530	0.005 (3)	X		
	PIN	OD	1.7490	1.7480	1.7450			X	(1)
5	BEARING	ID	1.7500	1.7495	1.7525	0.005 (3)	X		
	PIN	OD	1.7490	1.7480	1.7450			X	(1)
6	HOUSING	ID	2.7530	2.7545	2.7565	0.007 (3)	X		
	BEARING	OD	2.7495	2.7500	2.7470		X		(1)

(1) YOU CAN REPAIR THE PART; REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE INSTRUCTIONS
(2) THE SUM OF THE MAX DIAM. CLEARANCE MUST NOT EXCEED 0.010.
(3) THE SUM OF THE MAX DIAM. CLEARANCE MUST NOT EXCEED 0.010.

Nose Landing Gear Retract Actuator Wear Limits
Figure 601 (Sheet 2)

H88046

NOSE GEAR LOCK ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task is for removal of the lock actuator for the nose landing gear. The second task is for installation of the lock actuator.

TASK 32-34-02-004-022

2. Remove the Lock Actuator for the Nose Landing Gear (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressure/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
          115 Nose Landing Gear Wheel Well (Left)
          116 Nose Landing Gear Wheel Well (Right)
          711 Nose Landing Gear

   C. Prepare for Removal

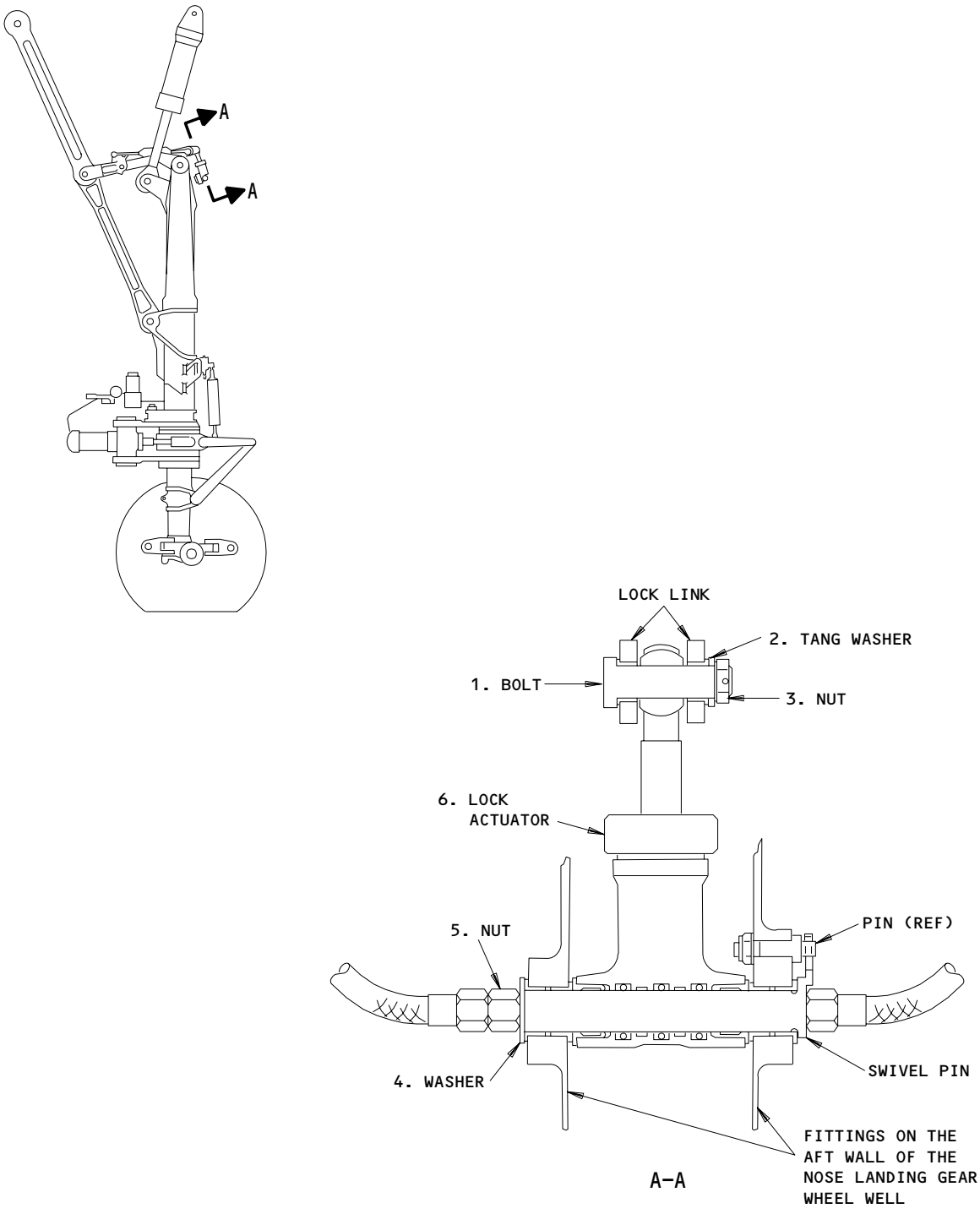
      S 494-001
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

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

      S 864-004
      (3) Remove the pressure from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).



Nose Landing Gear Lock Actuator Installation
Figure 401

D. Remove the Lock Actuator

S 034-005
(1) Disconnect the hydraulic lines from the actuator.

S 494-006
(2) Install caps on the ports and the hoses. Move the lines out of the work area.

S 034-007
(3) Remove the bolt (1) to disconnect the upper end of the lock actuator (6) from the lock link (Section A-A).

S 024-008
(4) Remove the nut (5) from the end of the swivel pin. Pull the pin from the lower end of the acuator to disconnect the actuator (6) from the aft wall fittings.

TASK 32-34-02-404-009

3. Install the Lock Actuator for the Nose Landing Gear (Fig. 401)

A. References
(1) AMM 12-12-01/301, Hydraulic Systems
(2) AMM 29-11-00/201, Pressure/Depressurize Main Hydraulic System
(3) AMM 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-34-00/501, Nose Gear Extension and Retraction

B. Consumable Materials
(1) D00633 Grease - BMS3-33 (Preferred)
(2) D00013 Grease - MIL-G-23827 (Alternative)
(3) D00153 Fluid, Hydraulic - BMS 3-11, Type IV

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	6	Lock Actuator	32-21-00	01 01B 01C	130 145 145
			32-34-02	01	30

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 644-010
(1) Apply grease to the nuts, bolts, washers, and bushing surfaces before you install them.

S 614-011
(2) Fill the actuator with hydraulic fluid.

S 494-012
(3) Install caps on the ports.

S 984-013
(4) Put the actuator in position (6) between the lock link and the fitting on the aft wall of the wheel well.

S 434-014

CAUTION: MAKE SURE THERE IS NO DUST AND GRIT ON THE SWIVEL PIN SHAFT. DUST AND GRIT CAN CAUSE DAMAGE TO THE SEALS AND CAUSE ACTUATOR LEAKS.

(5) Put the swivel pin through the fittings on the aft wall of the wheel well and the lower end of the actuator (6). Make sure the slot is aligned with the pin. Install the washer (4) and nut (5).

S 434-015
(6) Install the bolt (1), washer (2), and nut (3) to connect the actuator to the lock link.

S 644-016
(7) Lubricate the actuator at the grease fittings.

S 094-023
(8) Remove the caps from the actuator ports and the hydraulic lines.

S 434-024
(9) Connect the hydraulic lines to the actuator.

F. Do a Check of the Actuator for Correct Installation

S 714-017
(1) Do the extension and retraction test for the nose landing gear (AMM 32-34-00/501).

S 864-018

(2) Remove the power from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 794-019

(3) Examine the actuator for hydraulic leaks.

G. Put the Airplane Back to Its Usual Condition

S 614-020

(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 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.

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

NOSE GEAR DOOR ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task is for removal of the actuator for the nose landing gear door. The second task is for installation of the door actuator.

   TASK 32-34-03-004-037

2. Remove the Door Actuator for the Nose Landing Gear (Fig. 401)
   A. Equipment
      (1) Door Hold-Open Strut, NLG - B32009-1
   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
          115 Nose Landing Gear Wheel Well (Left)
          116 Nose Landing Gear Wheel Well (Right)

   D. Prepare for Removal

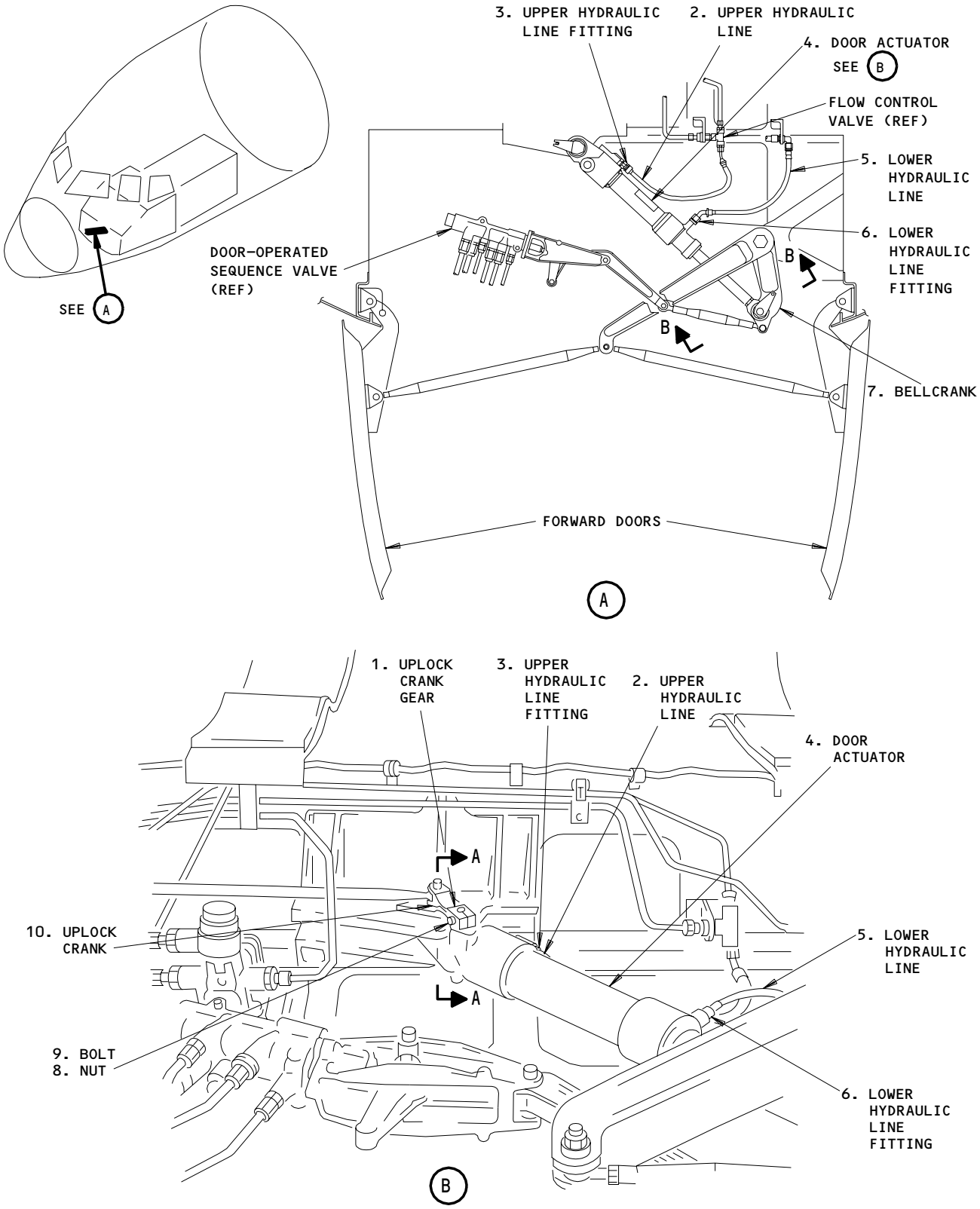
      S 494-001
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-055

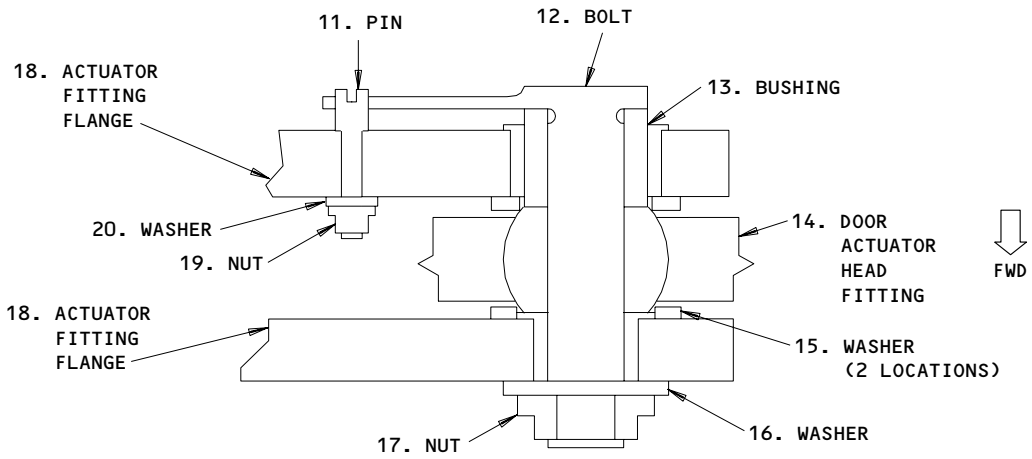
      WARNING: USE THE PROCEDURE AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

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

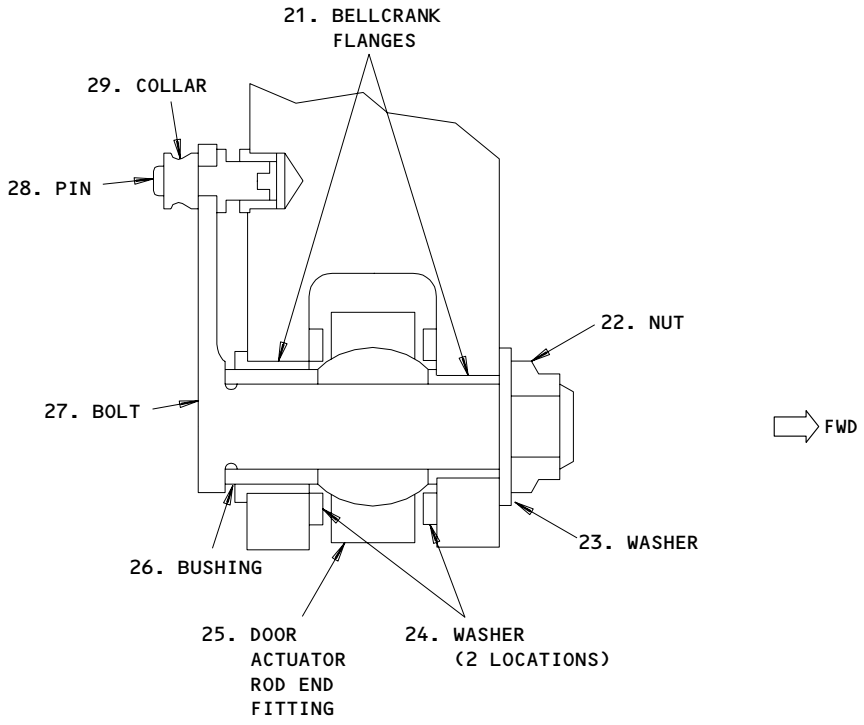
      S 864-003
      (3) Remove the pressure from the left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).



Nose Landing Gear Door Actuator Installation
Figure 401 (Sheet 1)

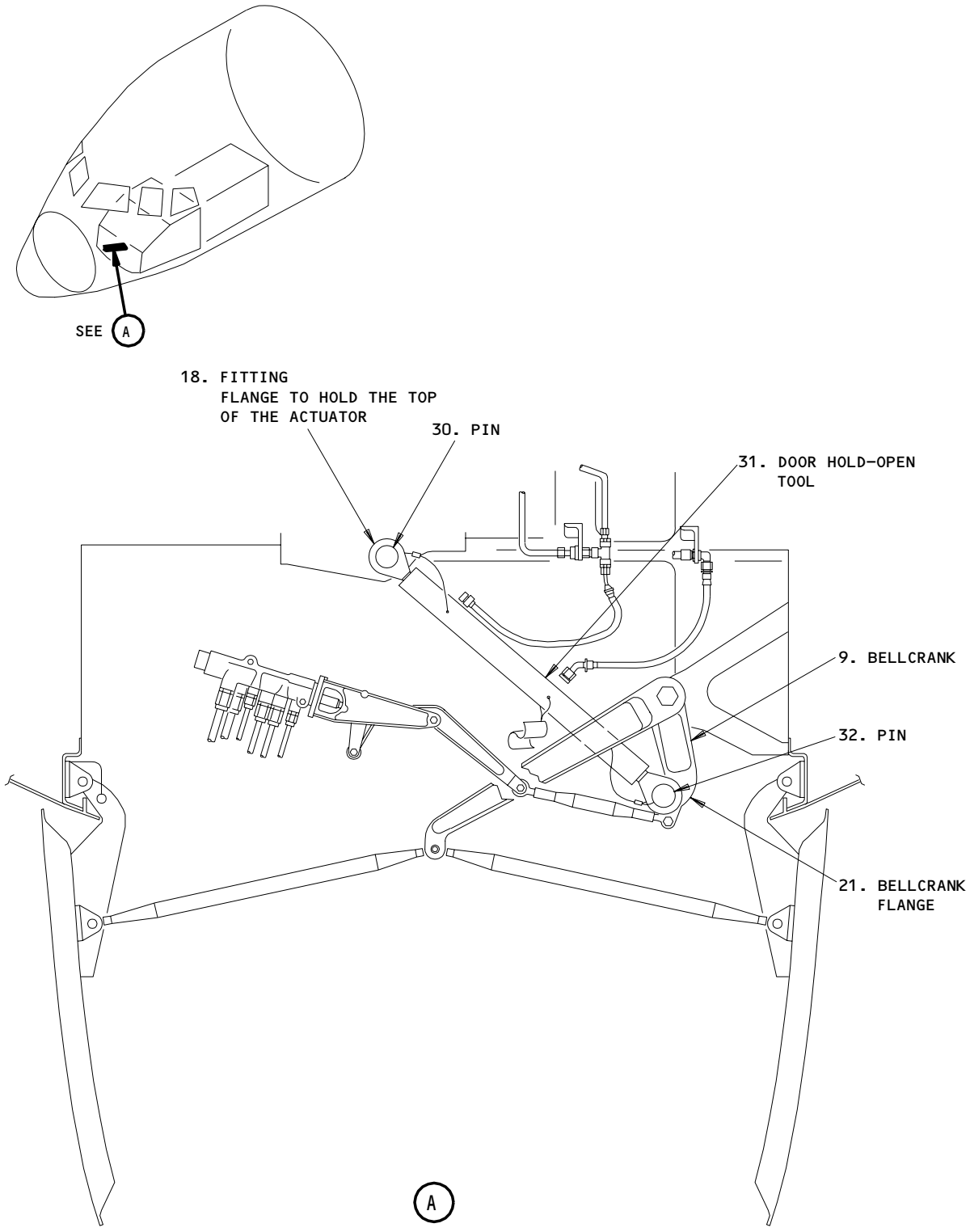


A–A



B–B

Nose Landing Gear Door Actuator Installation
Figure 401 (Sheet 2)



Hold-Open Tool Installation for the Doors on the Nose Landing Gear
Figure 402

E. Remove the Door Actuator

S 034-004
(1) Disconnect the hydraulic lines (2, 5) from the actuator.

S 494-005
(2) Install the plugs in the hydraulic line (2, 5) and fittings (3, 6).

S 034-006
(3) Remove the collar (29) from the pin (28).

S 034-035
(4) Remove the nut (22) and washer (23), then remove the bolt (27) from the bellcrank (21) (View B-B).

S 034-036
(5) Move the actuator rod end (25) out from between the bellcrank flanges (21).

S 034-007
(6) Loosen the nut (8) and bolt (9) on the uplock crank (10) (Detail B). Move the crank (10) off the gear on the head end of the retract actuator (1).

S 024-008
(7) While you hold up the actuator, remove the bolt (12) at the head end of the actuator (4) (View A-A). Remove the actuator from the airplane.

S 494-009
(8) Do the steps that follow to install the door hold-open tool (31) (Fig. 402).
(a) Put the tool rod end between the flanges (18) on the upper actuator fitting.
(b) Put the pin (18) through the flanges (18) on the actuator fitting and the tool rod end.
(c) Put the forward doors in position so you can put the tool rod end between the bell crank flanges (21).
(d) Put the pin (32) through the bellcrank flanges (21) and the tool rod end.

TASK 32-34-03-404-010

3. Install the Door Actuator for the Nose Landing Gear (Fig. 401)
A. Equipment
(1) Door Hold-Open Strut, NLG - B32009-1

(2) Crowfoot Wrench, F70312-51

B. Consumable Materials
(1) D00153 Fluid, Hydraulic - BMS 3-11, Type IV

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	4	Door Actuator Assembly	32-34-03	01	60,85

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 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-22-00/501, Nose Gear Doors
(6) AMM 32-35-00/501, Landing Gear Alternate Extension

E. Access
(1) Location Zones
115 Nose Landing Gear Wheel Well (Left)
116 Nose Landing Gear Wheel Well (Right)

F. Procedure to Install the Actuator

S 614-011
(1) Fill the actuator (4) with hydraulic fluid.

S 494-012
(2) Install caps on the hydraulic fittings (3, 6).

S 094-013
(3) Do the steps that follow to remove the door hold-open tool (31):
(a) While you hold the door in the open position, remove the pin (32) that connects the tool rod end to the bellcrank flanges (21).

(b) Remove the pin (30) that connects the tool rod end to the actuator fitting flange (18). Remove the tool (30) from the airplane.

S 434-014

(4) Install the bushing (13) in the actuator fitting (18).

S 434-015

(5) Do the steps that follow to connect the actuator head (14) to the fitting flange (18):
   (a) Align the slot in the bolt (12) with the alignment pin (11).
   (b) Install (in sequence) the bolt (12), fitting (18), washer (15), actuator (4), washer (15), fitting (18), washer (16), and nut (17).
   (c) Tighten the nut (17). Use a torque wrench and crowfoot wrench to make sure the run-on torque is not less than 90 pound-inches. Tighten the nut to final torque of 1650 ±350 pound-inches.

S 434-016

(6) Install the bushing (26) in the bellcrank flange (21).

S 434-017

(7) Do the steps that follow to connect the rod end fitting (25) of the actuator to the bellcrank flange (21).
   (a) Align the slot in the bolt (27) with the alignment pin (28).
   (b) Install (in sequence) the bolt (27), flange (21), washer (24), actuator fitting (25), washer (24), flange (21), washer (23), and nut (22).
   (c) Tighten the nut (22). Use a torque wrench and crowfoot wrench to make sure the run-on torque is not less than 90 pound-inches. Tighten the nut to a final torque of 1650 ±350 pound-inches.

S 434-018

(8) Put the uplock crank (10) in position on the uplock crank gear (1). Tighten the nut (8) (Detail A).

S 864-019
(9) Make sure the pressure is removed from the left hydraulic system (AMM 29-11-00/201).

S 094-020
(10) Remove the caps from the hydraulic lines (2,5) and fittings (3,6).

S 434-021
(11) Connect the hydraulic lines (2,5) to the actuator fittings (3,6). Tighten the fittings.

S 824-022
(12) Adjust the doors for the nose landing gear (AMM 32-22-00/501).

S 824-023
(13) Adjust the door lock release mechanism for the nose landing gear (AMM 32-35-00/501).

S 864-024
(14) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 094-025

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

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

S 494-026

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.

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

S 874-027

(17) Move the control lever for the landing gear from DN to UP three or four times. Return the lever to OFF.

NOTE: When you operate the control lever for the landing gear the door actuator operates. This will bleed the remaining air from the system.

S 494-028

WARNING: USE THIS 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.

(18) Open the doors for the nose landing gear (10) and install the door locks (AMM 32-00-15/201).

NOTE: The doors for the nose and main landing gear open at the same time by ground release.

S 794-029

(19) Examine the actuator (4) and hydraulic lines (2,5) for hydraulic leaks.

S 614-030

(20) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 094-031

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.

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

S 864-056
(22) Put the control lever for the landing gear to the DN position.

S 864-033
(23) Remove the power from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-034
(24) Remove the electrical power if it is not necessary (AMM 24-22-00/201).

NOSE GEAR SEQUENCE VALVE BYPASS VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task is for removal of the sequence valve bypass valve for the nose landing gear. The second task is for installation of the sequence valve bypass valve.

TASK 32-34-04-004-002

2. Remove the Sequence Valve Bypass Valve (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
      (4) 32-34-00/501, Nose Gear Extension and Retraction
   B. Access
      (1) Location Zone
          115 Nose Landing Gear Wheel Well (Left)

   C. Prepare for Removal

      S 494-003
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 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 OR DAMAGE TO EQUIPMENT.

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

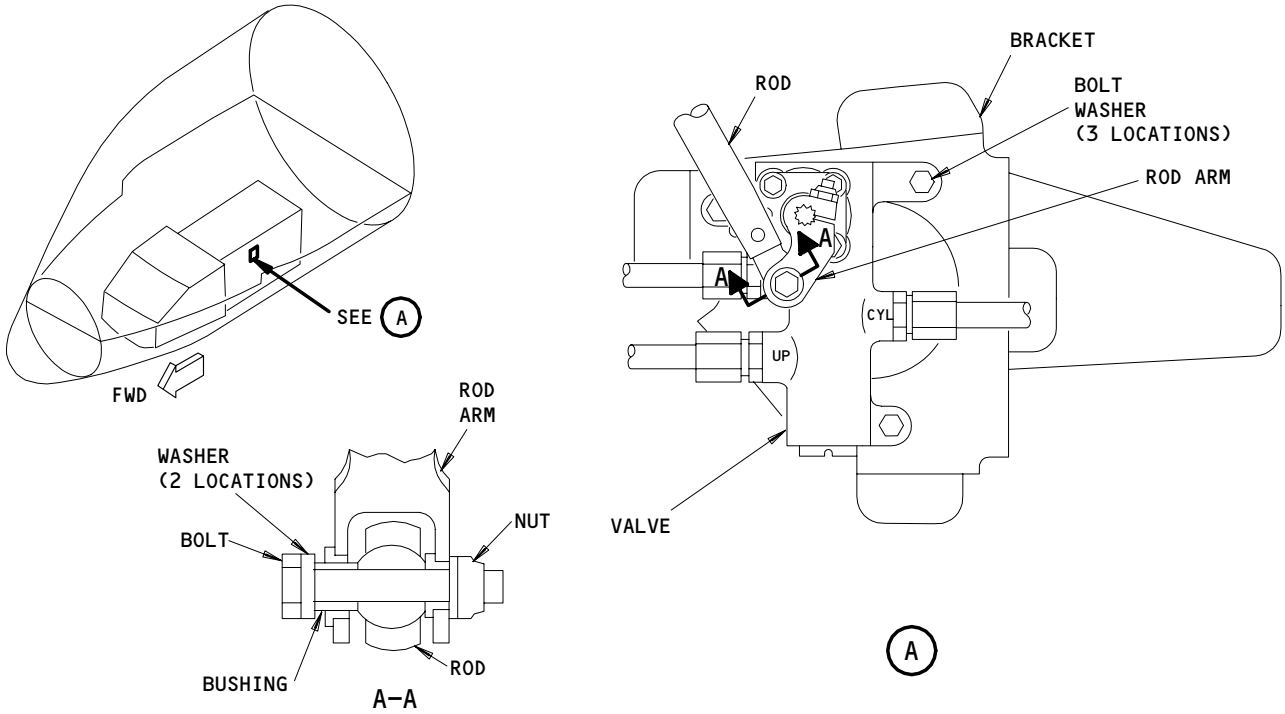
      S 864-005
      (3) Remove the pressure from the left hydraulic system and hydraulic reservoir (Ref 29-11-00).
   D. Remove the Valve

      S 034-006
      (1) Disconnect the hydraulic lines from the valve.

S 494-007
(2) Install plugs in the hydraulic lines and fittings.

S 034-008
(3) Remove the bolt to disconnect the rod from the rod arm (View A-A).

S 024-009
(4) Remove the bolts to disconnect the valve from the bracket.



Nose Landing Gear Gear Sequence Valve Bypass Valve Installation
Figure 401

TASK 32-34-04-404-019

3. Install the Sequence Valve Bypass Valve (Fig. 401)

A. References

(1) 12-12-01/301, Hydraulic Systems

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

(3) 32-00-15/201, Landing Gear Door Locks

B. Access

(1) Location Zone

115 Nose Landing Gear Wheel Well (Left)

C. Procedure

S 424-011

(1) Install the bolts and washers to connect the valve to the bracket (Detail A).

S 434-012

(2) Install the bolt, bushing, washers, and nut to connect the rod to the rod arm (View A-A).

S 434-013

(3) Make sure the pressure is removed from the left hydraulic system and reservoir. Connect the hydraulic lines to the valve.

S 864-014

(4) Pressurize the left hydraulic system (Ref 29-11-00).

S 714-020

(5) Do the extension and retraction test for the nose landing gear (Ref 32-34-00).

S 794-015

(6) Examine the valve for hydraulic leaks.

S 614-016

(7) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill if it is necessary (Ref 12-12-01).

S 094-017

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 the landing gear doors and close the doors (Ref 32-00-15).

S 864-018

(9) Remove the power from the left hydraulic system if it is not necessary (Ref 29-11-00).

NOSE GEAR DOOR-OPERATED SEQUENCE VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task is for removal of the door-operated sequence valve for the nose landing gear. The second task is for installation of the door-operated sequence valve.

TASK 32-34-05-004-001

2. Remove the Door-Operated Sequence Valve for the Nose Landing Gear (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) 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)

   C. Prepare for Removal

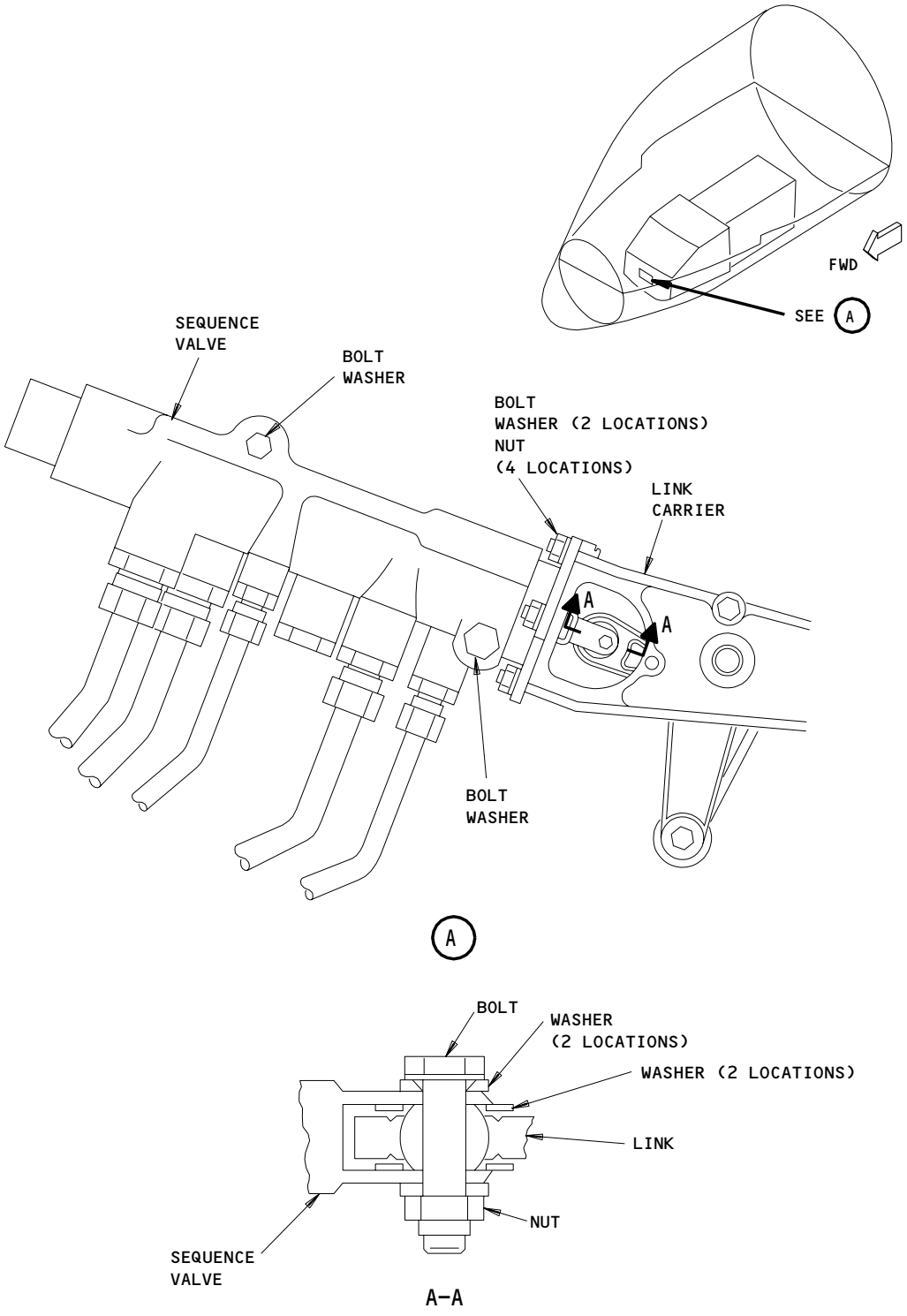
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 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 left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).



Nose Landing Gear Door-Operated Sequence Valve Installation
Figure 401

D. Remove the Valve

S 034-005
(1) Disconnect the hydraulic lines from the valve.

S 494-006
(2) Install plugs in the hydraulic lines and fittings.

S 034-007
(3) Disconnect the valve from the link (View A-A).

S 034-008
(4) Disconnect the valve from the link carrier (Detail A).

S 024-009
(5) Remove the two bolts and washers to disconnect the valve from the wheel well structure.

TASK 32-34-05-404-010

3. Install the Door-Operated Sequence Valve for the Nose 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, Landing Gear Door Locks
(4) AMM 32-34-00/501, Nose Gear Extension and Retraction

B. Access
(1) Location Zones
115 Nose Landing Gear Wheel Well (Left)
116 Nose Landing Gear Wheel Well (Right)

C. Procedure

S 424-011
(1) Install the bolts and washers to connect the valve to the wheel well structure.

S 434-012
(2) Install the bolts, washers, and nuts to connect the valve to the link carrier.

S 434-013

(3) Install the bolt, washers, and nut to connect the valve to the link (View A-A).

S 434-014

(4) Make sure the pressure is removed from the left hydraulic system and reservoir (AMM 29-11-00/201). Connect the hydraulic lines to the valve.

S 094-015

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 doors (AMM 32-00-15/201).

S 864-016

(6) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 714-022

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LANDING GEAR AREAS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(7) Do the extension and retraction test for the nose landing gear (AMM 32-34-00/501).

S 494-018

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.

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

S 794-019

(9) Examine the valve for hydraulic leaks.

S 614-020

(10) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 094-021

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

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

NOSE GEAR GEAR-OPERATED SEQUENCE VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task is for removal of the gear-operated sequence valve for the nose landing gear. The second task is for installation of the sequence valve.

TASK 32-34-06-004-001

2. Remove the Gear-Operated Sequence 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
          115 Nose Landing Gear Wheel Well (Left)
          116 Nose Landing Gear Wheel Well (Right)
          711 Nose Landing Gear

   C. Prepare for Removal

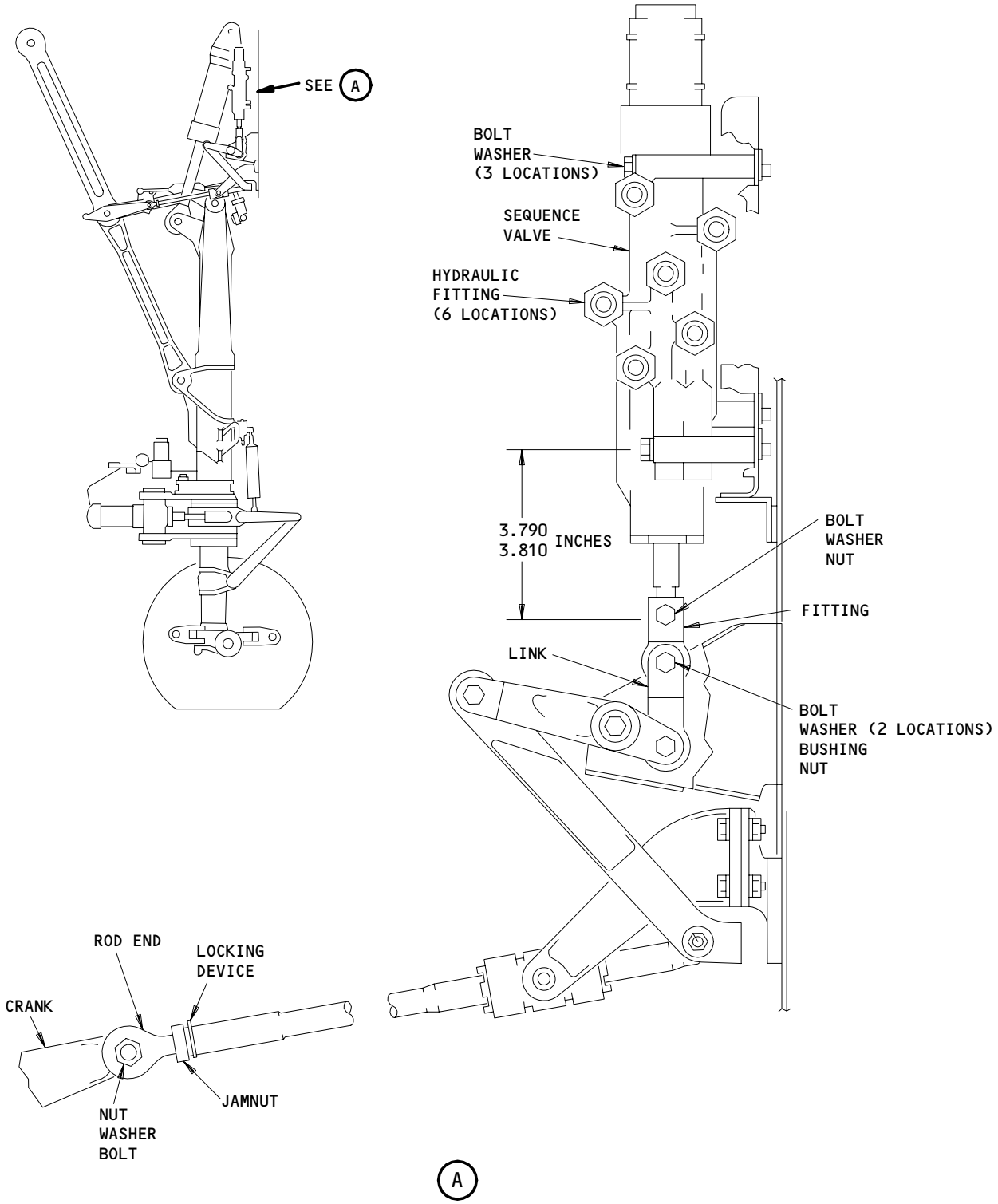
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 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 left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).



Nose Landing Gear Gear-Operated Sequence Valve Installation
Figure 401

D. Remove the Sequence Valve

S 034-005
(1) Disconnect the hydraulic lines from the sequence valve.

S 494-006
(2) Install caps on the ports and hoses.

S 034-007
(3) Remove the bolt to disconnect the link from the fitting (Detail A).

S 024-008
(4) Remove the 3 bolts to remove the sequence valve.

S 034-009
(5) Remove the fitting from the sequence valve and keep for the installation of the new sequence valve.

TASK 32-34-06-404-010

3. Install the Gear-Operated Sequence Valve (Fig. 401)

A. Equipment
(1) Gear-Operated Sequence Valve Locating Fixture, NLG - B32045-1

B. Consumable Materials
(1) A00247 Sealant, Chromate Type - BMS 5-95
(2) D00153 Fluid, Hydraulic - BMS 3-11, Type IV
(3) D00054 Lubricant, Hydraulic Systems - MCS 352B

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 32-34-00/501, Nose Gear Extension and Retraction

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 644-011
(1) If they are not installed, lightly lubricate the hydraulic fittings and packing with BMS 3-11 or MCS 352B. Install them in the actuator ports (Detail A).

S 424-012
(2) Install the 2 bolts and washers to connect the sequence valve to the wheel well wall. Install the locating fixture in the other mounting hole in the valve.

S 494-013
(3) Put the locating fixture pin through the fitting and the rod end of the valve. This will hold the fitting 3.790 to 3.810 inches from the mounting bolt for the sequence valve.

S 824-014
(4) If possible, install the bolt, washers, bushing, and nut to connect the fitting to the link. If the fitting cannot be connected to the link, do these steps:
(a) Remove the bolt to disconnect the rod end from the crank.
(b) Connect the fitting to the link.
(c) Loosen the jamnut.
(d) Adjust the rod end until you can install the nut, washer, and bolt to connect the rod end to the crank.
(e) Tighten the jamnut to 220 to 280 pound-inches.
(f) Install lockwire on the jamnut and the locking device.
(g) Apply sealant to both sides of the locking device and jamnut.
(h) Apply sealant to all the areas of the keyway in the rod end that are in the open.

S 094-015
(5) Remove the locating fixture from the valve.

S 434-016
(6) Install the bolt, washer, and nut to connect the fitting to the rod end of the sequence valve.

S 434-017
(7) Install the bolt and washer to connect the valve to the wheel well wall.

S 434-018

(8) Connect the hydraulic lines to the sequence valve.

F. Do a Check of the Valve for Correct Installation

S 864-019

(1) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 714-020

(2) Do the extension and retraction test for the nose landing gear (AMM 32-34-00/501).

S 864-021

(3) Remove the power from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 794-022

(4) Examine the sequence valve for hydraulic leaks.

G. Put the Airplane Back to Its Usual Condition

S 614-023

(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 094-024

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. 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).

NOSE GEAR GEAR-OPERATED SEQUENCE VALVE LINKAGE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task is for removal of the linkage for the gear-operated sequence valve for the nose landing gear. The second task is for installation of the linkage.

TASK 32-34-07-004-001

2. Remove the Linkage For the Gear-Operated Sequence 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
          115 Nose Landing Gear Wheel Well (Left)
          116 Nose Landing Gear Wheel Well (Right)
          711 Nose Landing Gear

   C. Prepare for Removal

      S 484-043

      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).

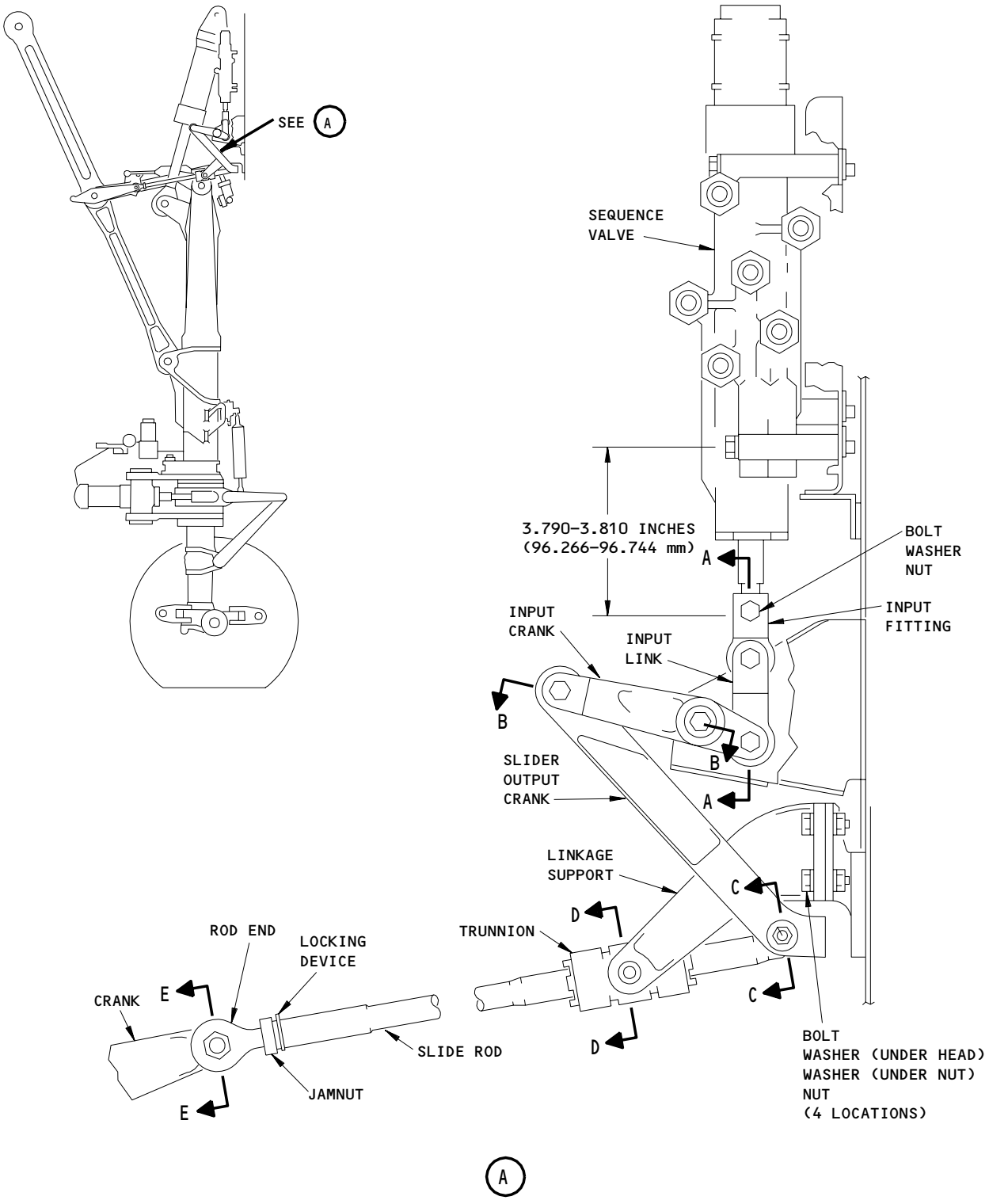
      S 484-036

      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.

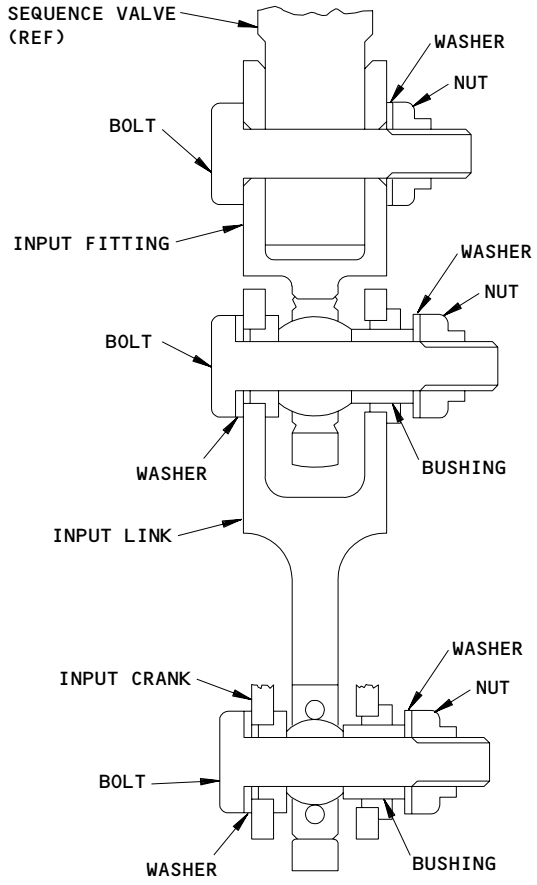
      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

      S 864-004

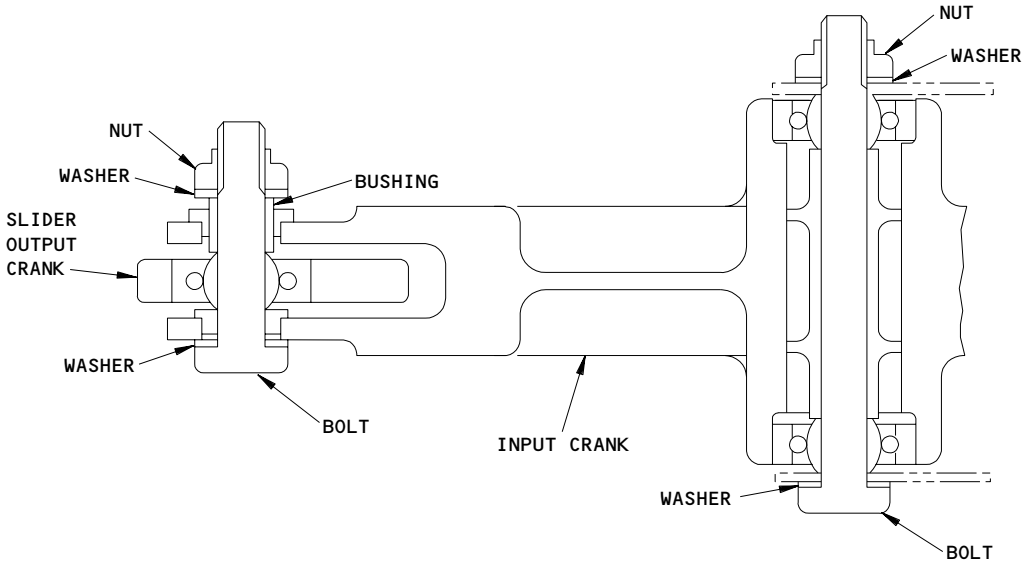
      (3) Remove the pressure from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).



Nose Gear Gear-Operated Sequence Valve Linkage Installation
Figure 401 (Sheet 1)

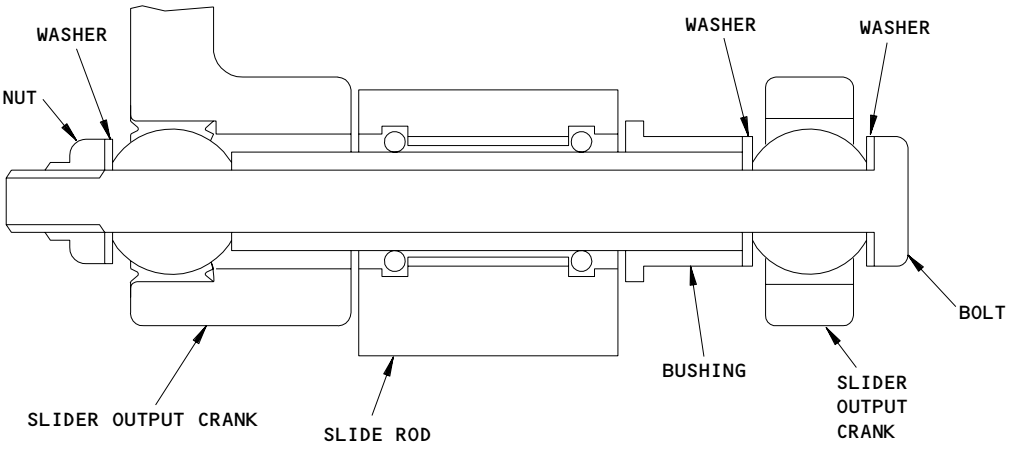


A–A

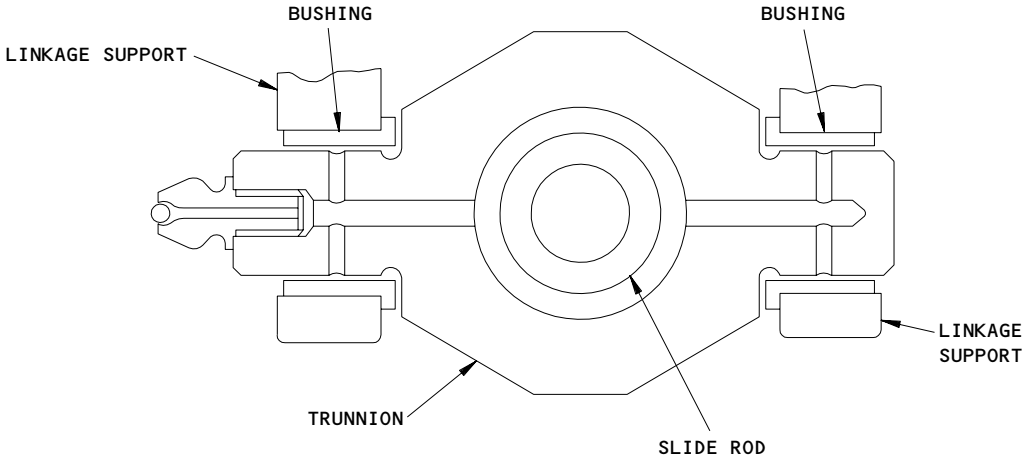


B–B

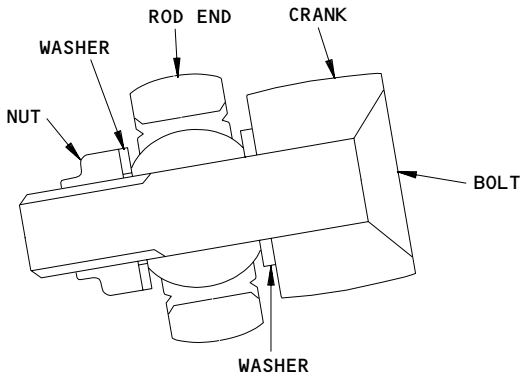
Nose Gear Gear–Operated Sequence Valve Linkage Installation
Figure 401 (Sheet 2)



C–C



D–D



E–E

Nose Gear Gear–Operated Sequence Valve Linkage Installation
Figure 401 (Sheet 3)

D. Remove the Linkage

S 014-025
(1) Remove the bolt, washers, and nut to disconnect the rod end of the slide rod from the crank (View E-E).

NOTE: Do not disconnect the slide rod from the slider output crank, unless it is necessary.

S 024-026
(2) Remove the bolt, washers, and nut to disconnect the slider output crank from the input crank (View B-B).

S 024-027
(3) Remove the four bolts, washers, and nuts to disconnect the linkage support from the aft wall of the wheel well (Detail A).

S 024-008
(4) Remove the slide rod, the linkage support, and the slider output crank from the wheel well.

TASK 32-34-07-404-010

3. Install the Linkage For the Gear-Operated Sequence 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 32-34-00/501, Nose Gear Extension and Retraction
   B. Equipment
      (1) Gear-Operated Sequence Valve Locating Fixture, NLG - B32045-1
   C. Consumable Materials
      (1) A00247 Sealant, Chromate Type - BMS 5-95
   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 424-030
(1) Install the bolts, nuts, and washers to connect the linkage support to the aft wall of the wheel well (Detail A).

NOTE: Install the countersunk washer under the head of the bolt and the plain washer under the nut.

S 424-037
(2) If the slide rod was disconnected from the slider output crank then do the steps that follow (View C-C):
(a) Make sure the offset attachment hole on the aft end of the slide rod is installed with the offset above the centerline of the rod
(b) Install the bolt, washers, bushing, and nut to connect the slide rod to the slider output crank

S 424-031
(3) Install the bolt, washers, bushing, and nut to connect input crank to the slider output crank (View B-B).

NOTE: Install the countersunk washer under the head of the bolt and the plain washer under the nut.

S 024-028
(4) Remove the lower bolt and washer that connects the sequence valve to the wheel well wall.

S 024-038
(5) Remove the nut, washer, and bolt that connects the rod end of the sequence valve to the input fitting (View A-A).

S 484-029
(6) Install the locating fixture in the mounting hole in the valve.

S 484-039
(7) Put the locating fixture pin through the input fitting and the rod end of the valve. This will hold the input fitting 3.790 to 3.810 inches (96.266 to 96.744 millimeters) from the mounting bolt for the sequence valve.

S 824-040

CAUTION: DO NOT CYCLE THE LANDING GEAR WITH THE LINKAGE CONNECTED TO THE CRANK ON THE LANDING GEAR UNTIL THE RIGGING FOR THE SEQUENCE VAVLE IS COMPLETED. IF THE RIGGING IS NOT COMPLETED THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(8) If possible, install the bolt, washers, and nut to connect the slide rod to the crank (View E-E). If the rod end of the slide rod cannot be connected to the crank, do these steps:
(a) Loosen the jamnut.
(b) Adjust the rod end until you can install the nut, washers, and bolt to connect the rod end to the crank.

NOTE: Use washers between the rod end and the crank to get a clearance between the rod end and the crank that will give the same movement inboard and outboard within 0.020 inches (0.508 millimeters).

(c) Tighten the jamnut to 220 to 280 pound-inches (24.86 to 31.64 newton-meters).
(d) Install lockwire on the jamnut and the locking device.
(e) Apply sealant to both sides of the locking device and jamnut.
(f) Apply sealant to all the areas of the keyway in the rod end that are in the open.

S 084-032
(9) Remove the locating fixture from the valve.

S 424-033
(10) Install the bolt, washer, and nut to connect the fitting to the rod end of the sequence valve (View A-A).

S 424-034
(11) Install the bolt and washer to connect the valve to the wheel well wall (Detail A).

F. Do a Check of the Linkage for Correct Installation

S 864-019
(1) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 714-020
(2) Do the operational test for the nose landing gear (AMM 32-34-00/501).

S 864-021

(3) Remove the power from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 214-041

(4) Examine the sequence valve linkage for visible indications of damage or lack of clearance.

G. Put the Airplane Back to Its Usual Condition

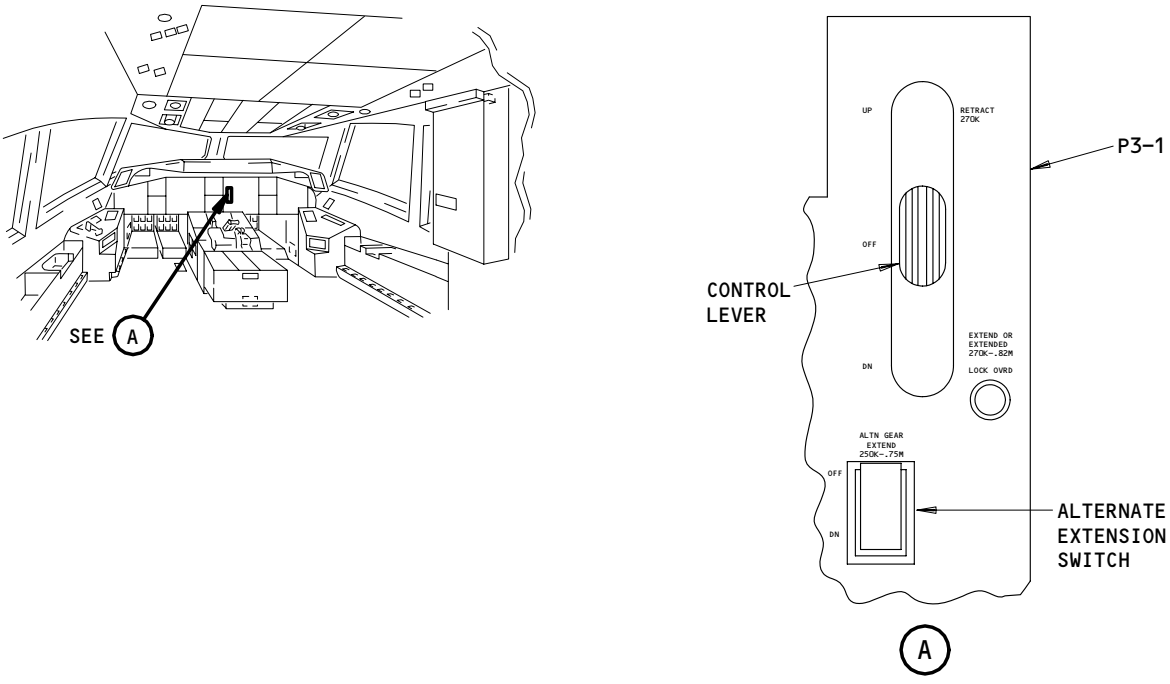
S 084-042

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 (AMM 32-00-15/201).

LANDING GEAR ALTERNATE EXTENSION - DESCRIPTION AND OPERATION

1. General
   A. Landing gear alternate extension is done by an electrical/hydraulic/mechanical system that operates independently from the normal extension and retraction system. This system releases the locks on the landing gear and doors when the normal hydraulic system does not work. This system is also used to open the landing gear doors for maintenance procedures in or near the wheel well areas.
   B. The alternate extension system has the components that follow:
      (1) Alternate extension switch
      (2) Power pack
      (3) Door lock release actuators
      (4) Alternate uplock release actuators
      (5) Door safety valves
      (6) Hydraulic pressure switch.
   C. The door ground operations system has these components (minus the alternate extension switch) plus those that follow:
      (1) Door release interlock actuators
      (2) Door closed switches
      (3) Door locked switches
      (4) Door unsafe lights
      (5) Door ground control switches.
2. Component Details
   A. Alternate Extension Switch (Fig. 1)



Alternate Extension Switch
Figure 1

(1) The alternate extension select switch is a toggle switch which has a guard to prevent accidental operation. The switch is installed below the control lever for the landing gear on the pilots' center instrument panel, P3.

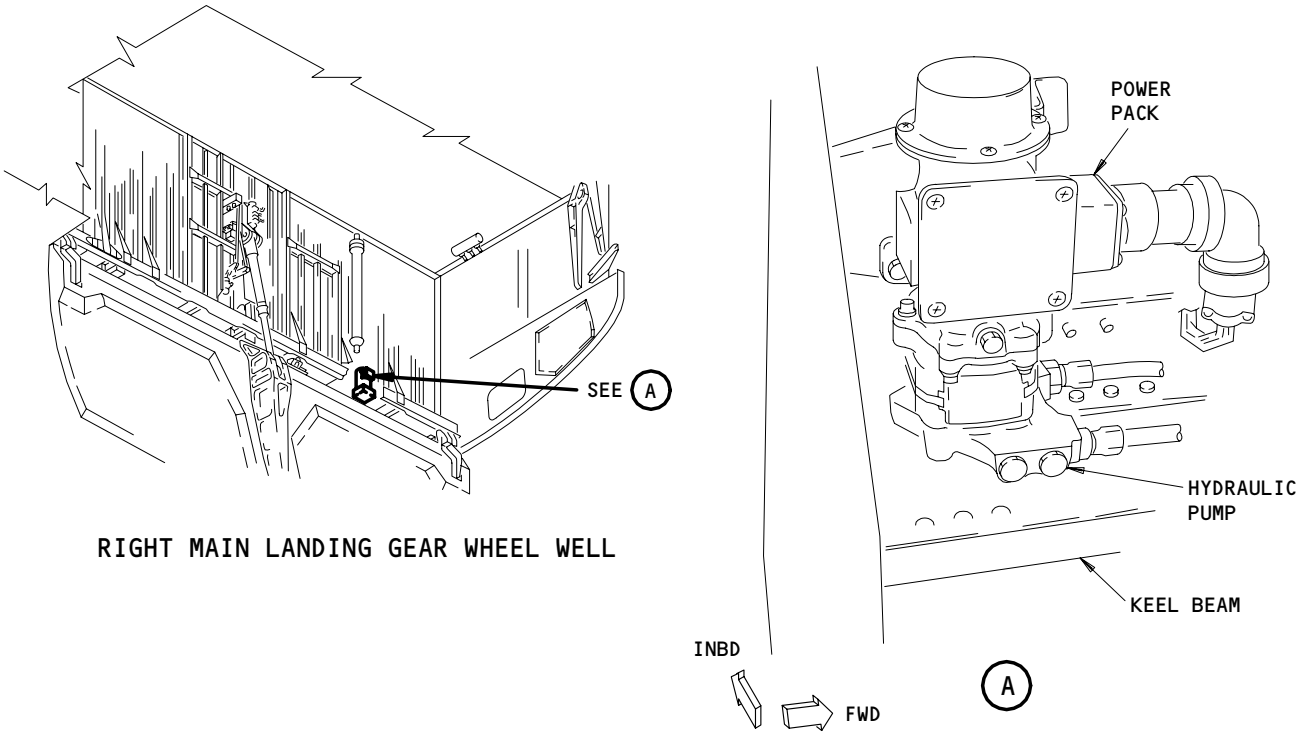
(2) This switch starts the alternate extension cycle. When the switch is moved to DN, electrical power is supplied to the alternate extend actuator.

B. Power Pack (Fig. 2)

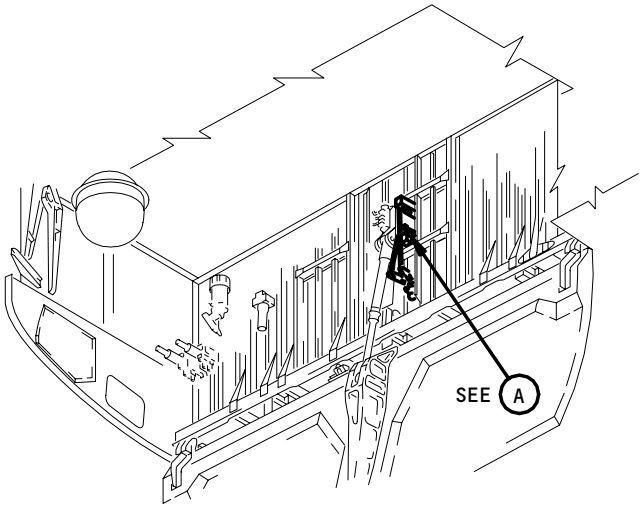
(1) The power pack is an electrically-operated hydraulic pump. The power pack supplies a specified volume of hydraulic fluid from the left system reservoir to the actuators and valves in the alternate extension system. The power pack is installed on the keel beam in the right wheel well for the main landing gear. The location is forward of the door actuator for the main landing gear.

C. Door Lock Release Actuator (Fig. 3 and 4)

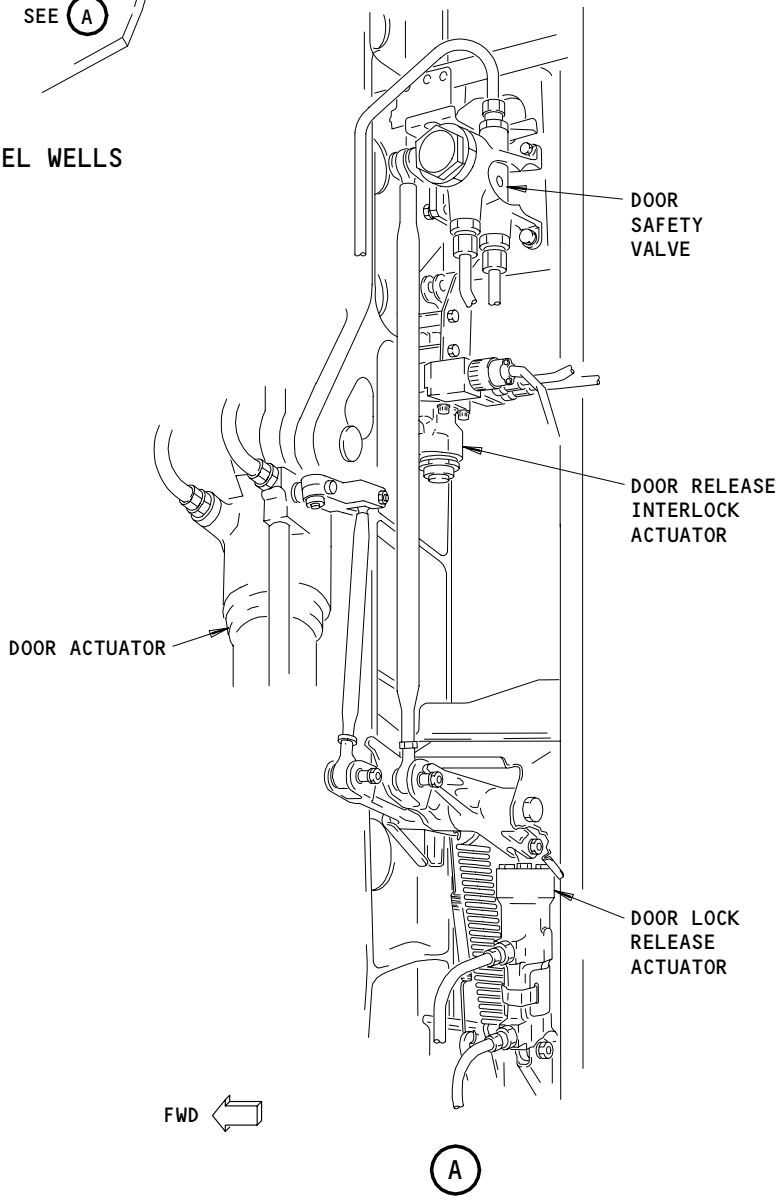
(1) The door lock release actuator is a piston-type actuator that operates hydraulically in one direction. An internal valve sends hydraulic fluid out of the actuator when the piston is fully extended. The valve is spring-loaded to go back to the normally retracted position when hydraulic pressure is removed. The actuator supplies the force to mechanically release the internal lock in the door actuator.



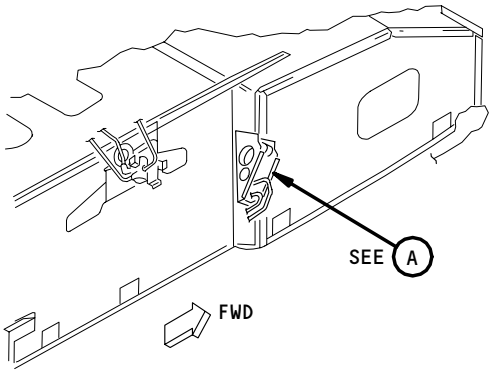
Alternate Extension System Power Pack
Figure 2



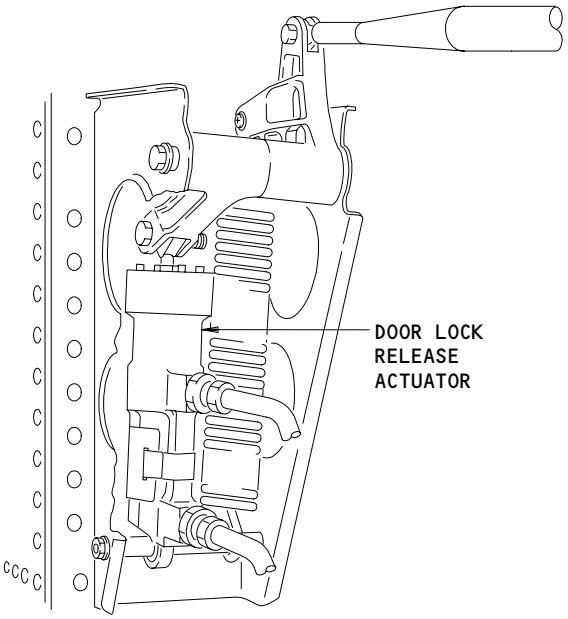
MAIN LANDING GEAR WHEEL WELLS
(KEEL BEAM)

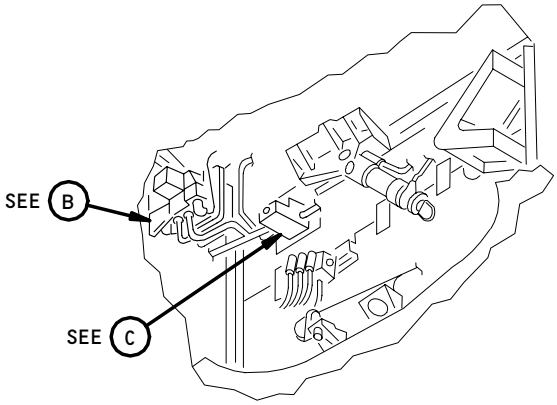


Main Landing Gear Door Lock Release Mechanism
Figure 3

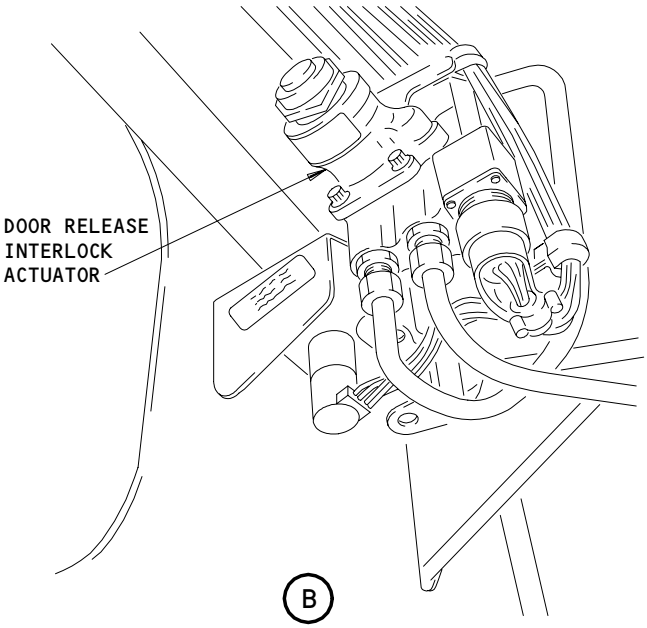


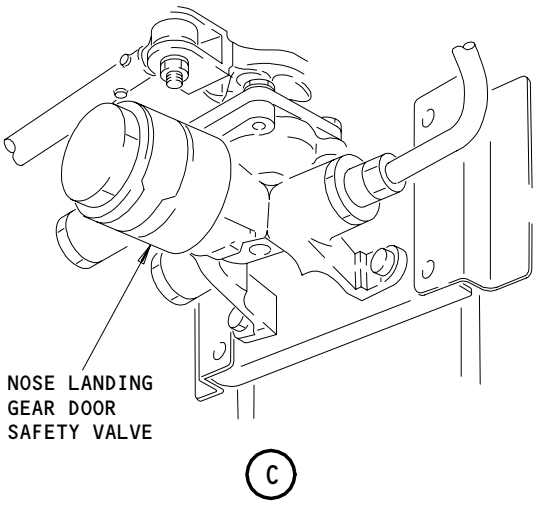
NOSE LANDING GEAR WHEEL WELL
(LEFT WALL)





NOSE LANDING GEAR WHEEL WELL
(FORWARD WALL)





Nose Landing Gear Door Lock Release Mechanism
Figure 4

(2) A door lock release actuator is supplied for each landing gear. Each actuator for the main landing gear is installed immediately aft of the door actuator, on the keel beam in the wheel well for the main landing gear. The actuator for the nose landing gear is installed on the left wall of the wheel well for the nose landing gear.

D. Door Safety Valve (Fig. 3 and 4)

(1) The door safety valve is a two-position valve which is installed in the door close line. It makes sure the landing gear door does not accidentally close. The valve permits free flow of hydraulic fluid to the door actuator during normal extension. During alternate extension, the valve is mechanically set in position and locked to do the functions that follow:

(a) Prevent hydraulic flow through the door close line that goes from the sequence valve to the door actuator

(b) Open the line from the door actuator retract port to return.

The valve is set in this position to make sure that no hydraulic fluid will be caught in the hydraulic line to cause resistance when you try to open the door. It also prevents supply of hydraulic pressure to the door actuator to arm the door to close without the door actually moved to the closed position.

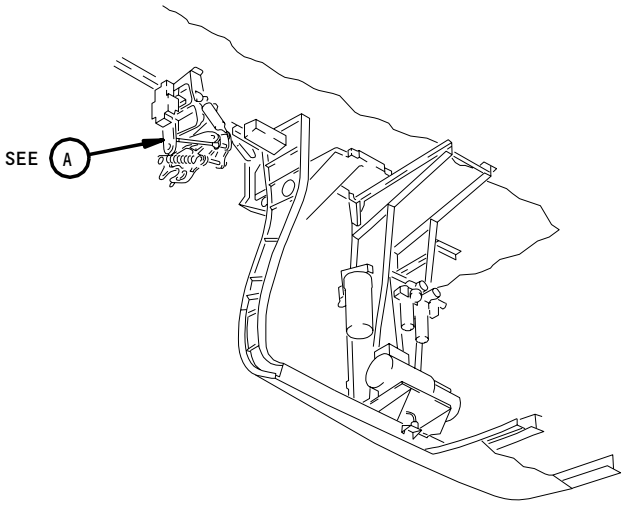
(2) There is one door safety valve for each landing gear. Each main landing gear valve is installed on the keel beam in the wheel well for the main landing gear. The valve can be found immediately aft of the door actuator. The nose landing gear valve is installed near the top of the forward wall of the wheel well for the nose landing gear.

E. Door Release Interlock Actuator (Fig. 3 and 4)

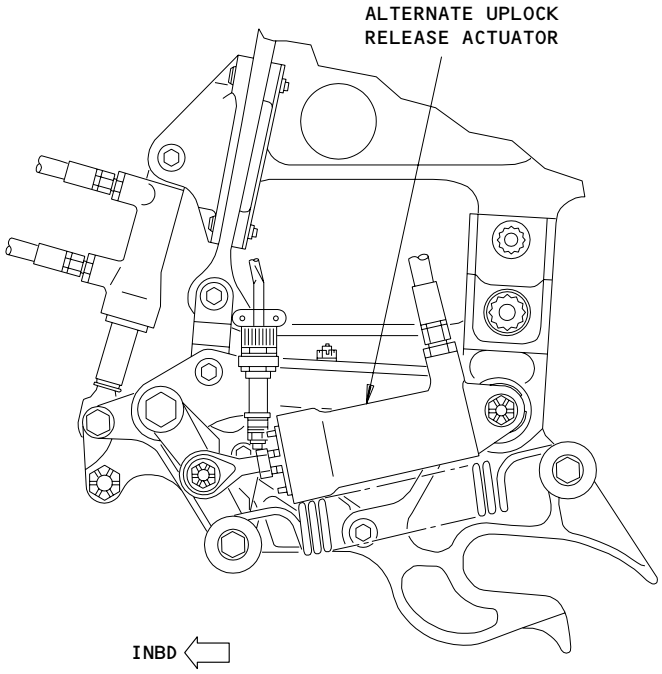
(1) The door release interlock actuator has a hydraulic piston-type actuator and a solenoid valve assembly. This assembly releases the lock from the door safety valve to permit the landing gear door to be closed. To operate, an electrical input to the assembly and normal hydraulic pressure are necessary. The electrical signal causes the solenoid valve to move and supply hydraulic pressure to the actuator. The actuator supplies the force to change the position of the door safety valve to remove the lock.

(2) There is one door release interlock actuator for each landing gear. Each main landing gear actuator is installed immediately aft of the door actuator, on the keel beam in the wheel well for the main landing gear. The nose landing gear actuator is installed at the forward end of the left wall of the wheel well for the nose landing gear.

F. Alternate Uplock Release Actuator (Fig. 5 and 6)



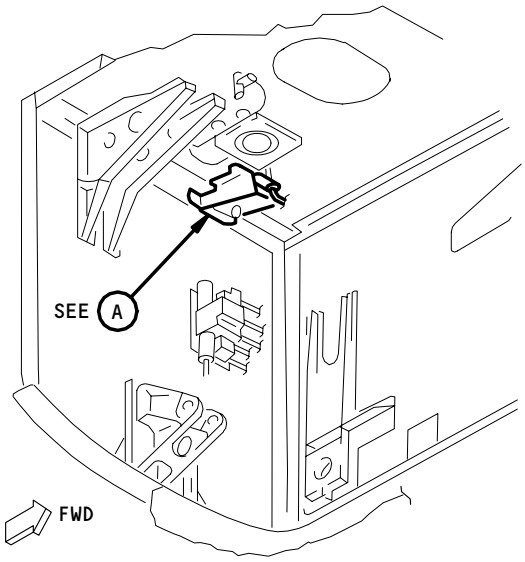
MAIN LANDING GEAR WHEEL WELLS
(OUTBOARD WALL)



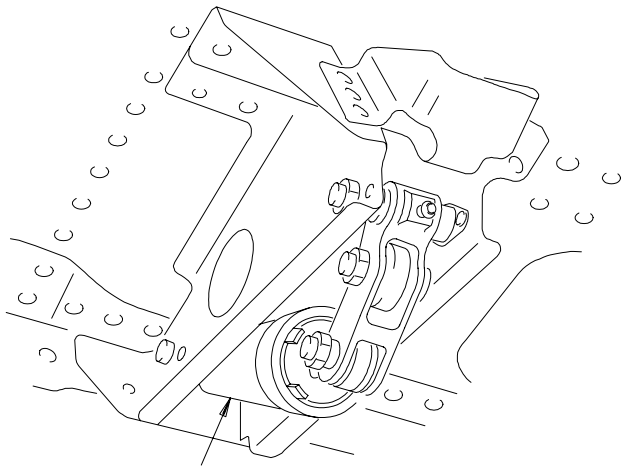
Main Landing Gear Alternate Uplock Release Actuator
Figure 5

(1) The alternate uplock release actuator is a piston-type actuator that operates hydraulically in one direction. The piston is spring-loaded to go back to the normally retracted position when hydraulic pressure is removed. The main landing gear actuator supplies the force to move the uplock hook to release the landing gear from the up and locked position. The nose landing gear actuator supplies the force to move the lock links from the overcenter position. This releases the nose landing gear from the up and locked position.

(2) There is one alternate uplock release actuator for each landing gear. Each main landing gear actuator is installed on the uplock assembly. The uplock assembly is found on the outboard fairing of the wheel well for the main landing gear. The nose landing gear actuator is installed on the ceiling of the wheel well for the nose landing gear above the landing gear trunnion.



NOSE LANDING GEAR WHEEL WELL
(AFT WALL)



A

Nose Landing Gear Alternate Uplock Release Actuator
Figure 6

G. Alternate Extension Hydraulic Shuttle Valve (Fig. 6A)

(1) The alternate-extension-hydraulic-shuttle valve (Fig. 6A) is a two-position shuttle valve. It is installed in the landing gear "up" line between the landing gear selector valve and the normal extension system mechanisms. The valve position during normal system operation permits the flow of fluid in the landing gear retraction "up" line. When alternate extension is started, hydraulic pressure for alternate extension changes the position of the shuttle valve. This the sends normal system "up" line fluid to return. This permits alternate extension to occur without the hydraulic system pressure removed. This condition occurs when the position of the landing gear selector valve cannot be changed from the "up to the "down" position. When the position of the valve is changed the higher (3,000) psig normal system up pressure is removed from the normal system uplock mechanisms. This permits the lower (2250) psig alternate extension pressure to operate the landing gear doors and landing gear through the alternate extension release mechanism.

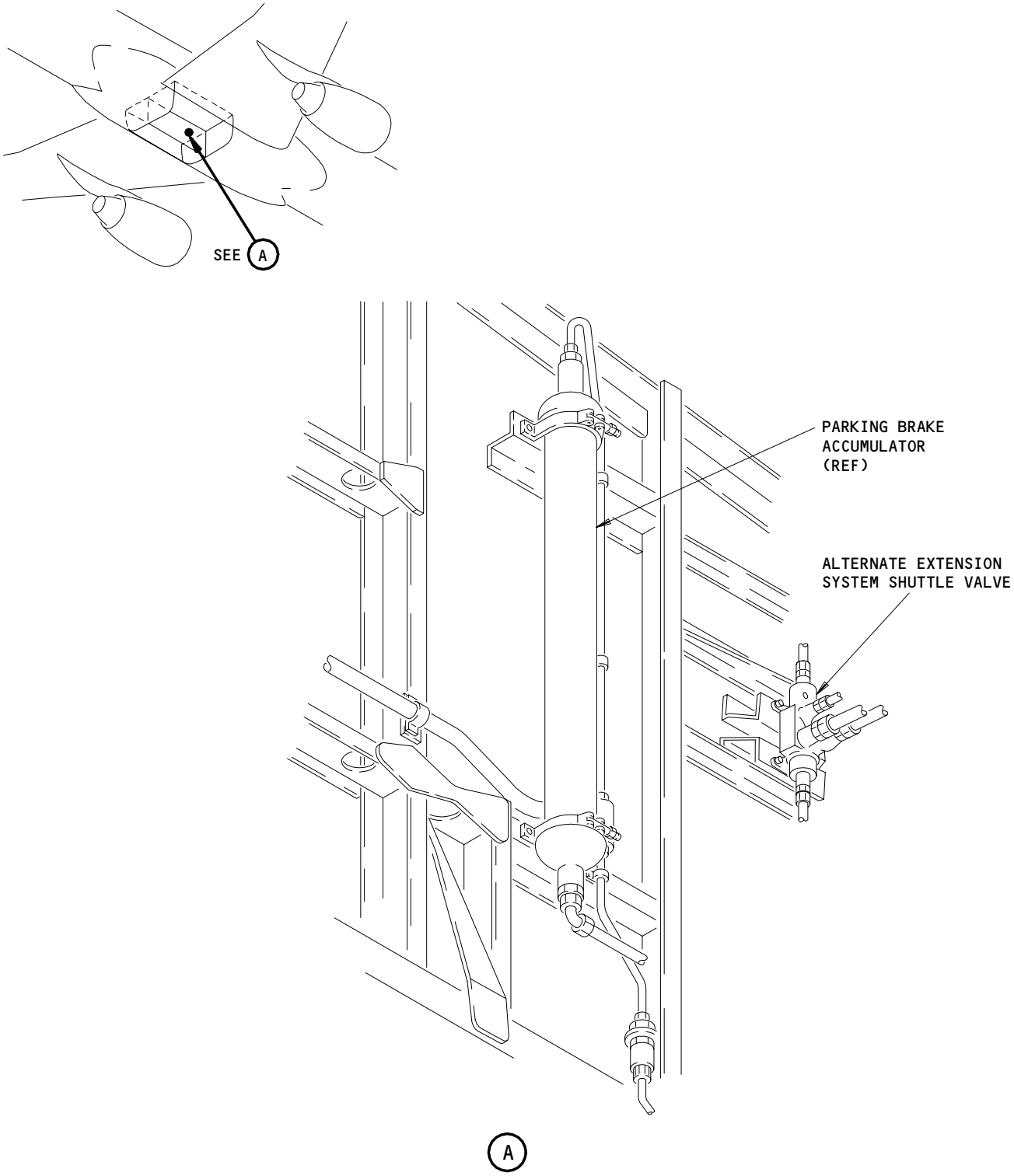
H. Hydraulic Pressure Switch (Fig. 7)

(1) A pressure switch is installed in the hydraulic line for the alternate extension system. The switch is used to control the time of operation for the power pack in the alternate extension system. After hydraulic pressure has extended the door lock release and the alternate uplock release actuators, the landing gear and doors are released. When this occurs the pressure in the system starts to increase. When the pressure switch receives an input of 1700-2200 psi, the switch operates to remove electrical power from the power pack. If the system does not stop in 30 seconds, a LDG GEAR MONITOR message will show on EICAS.

(2) The pressure switch is installed on a bracket at the top of the wheel well for the nose landing gear.

I. Door Closed and Locked Switches (Fig. 8 and 9)

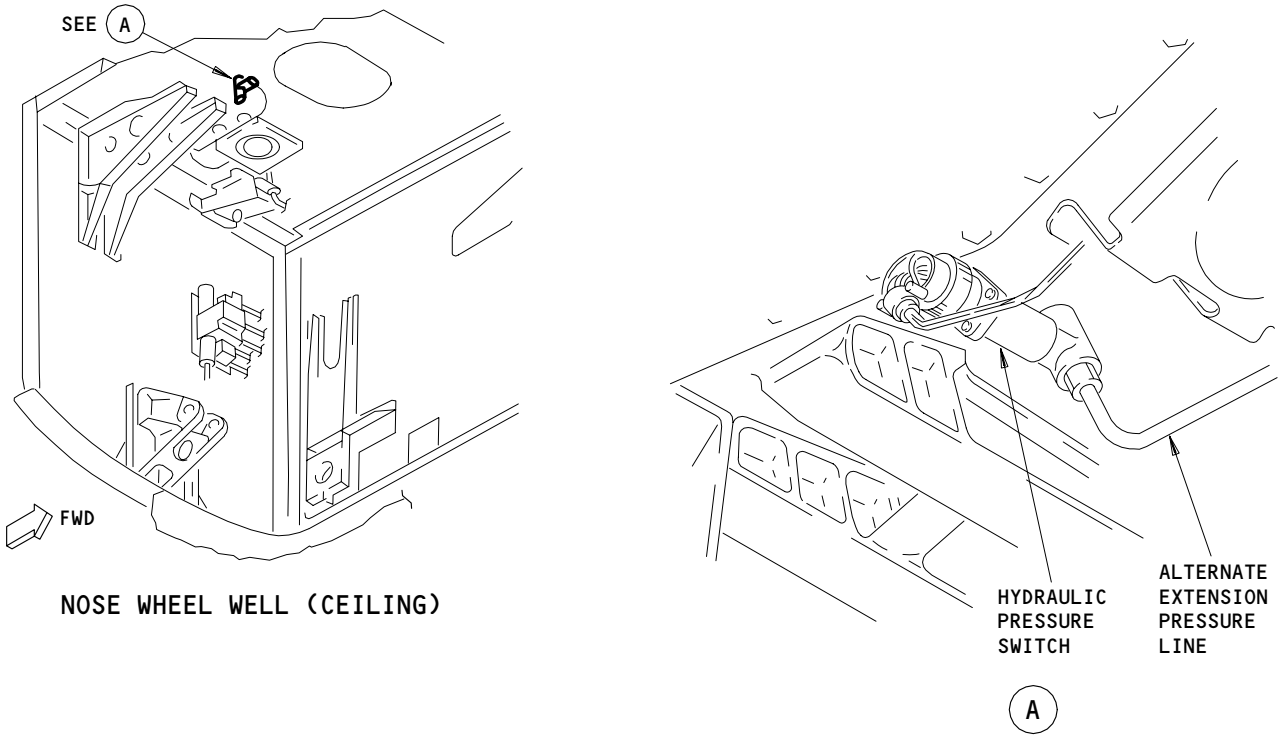
(1) The door closed switch is a mechanical plunger-type switch. It is used to supply an input when the landing gear door is open. The switch operates directly by movement of the door. When the door opens, the plunger extends and the switch turns on a red door not safe light. This light is used to tell persons that the door is not in a safe condition. There is one switch for each landing gear door. The door switch for the main landing gear is installed near the forward end of the outboard wall of the wheel well for the main landing gear. The door switch for the nose landing gear is installed on the forward wall of the wheel well for the nose landing gear.



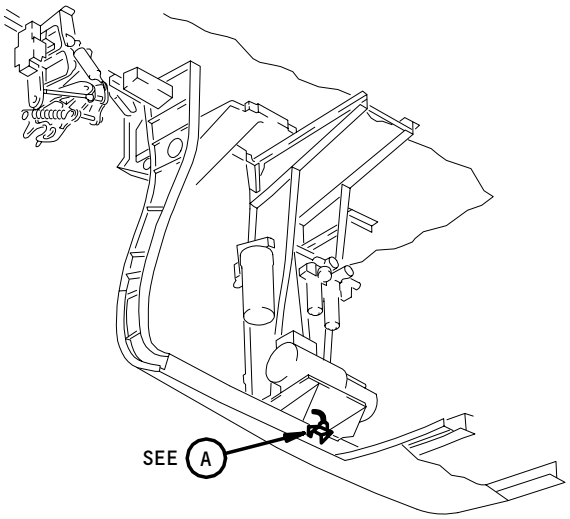
Alternate Extension System Shuttle Valve
Figure 6A

(2) The door locked switch is a mechanical rotary-type switch. It is used to supply an input when the door safety valve is turned and locked in the OFF (safety) position. The switch operates when its roller touches the safety valve cam. When the safety valve is locked in the safety position, the door is hydraulically safe. The locked switch will then make the red door not safe light go off. The door switch for the main landing gear is installed behind the door safety valve in the wheel well for the main landing gear. The door switch for the nose landing gear is installed below the door release interlock actuator in the wheel well for the nose landing gear.

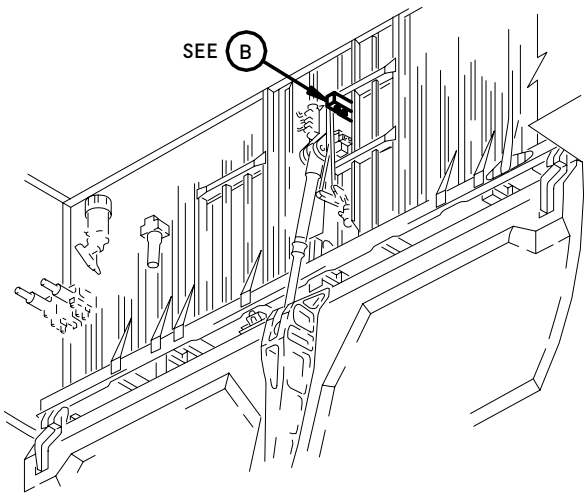
J. Door Ground Control Switches (Fig. 10)



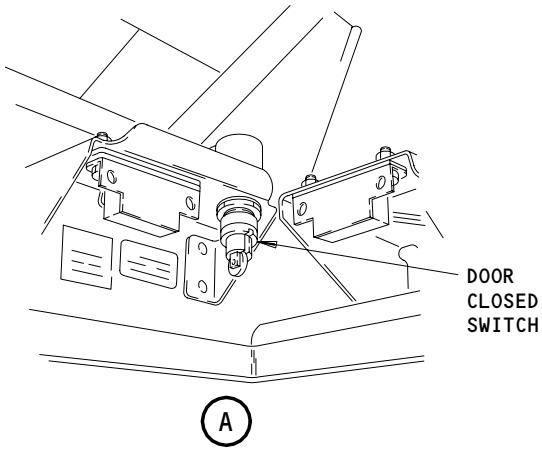
Hydraulic Pressure Switch
Figure 7

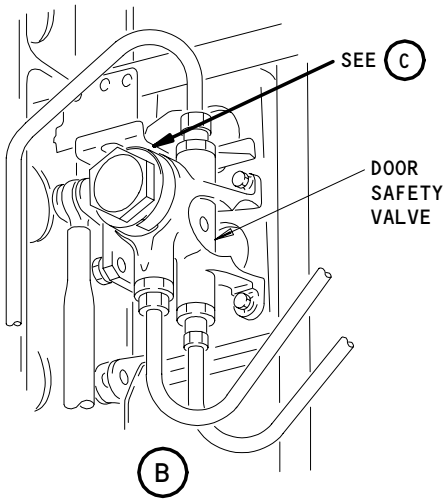


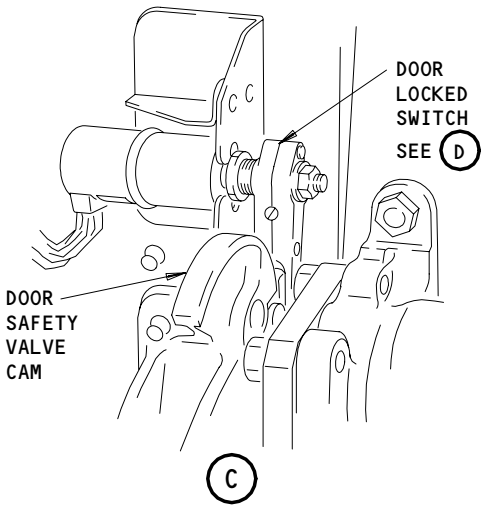
MAIN LANDING GEAR WHEEL WELLS
(OUTBOARD WALL)

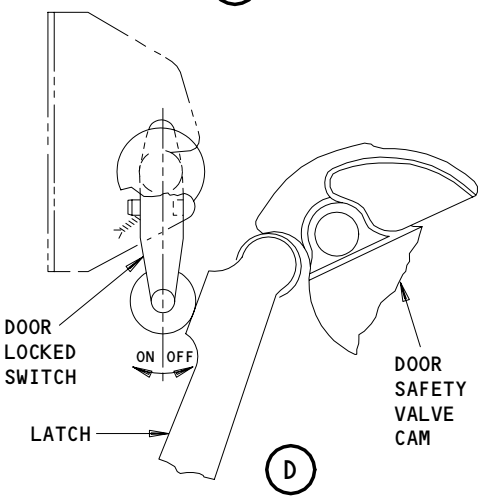


MAIN LANDING GEAR WHEEL WELLS
(KEEL BEAM)

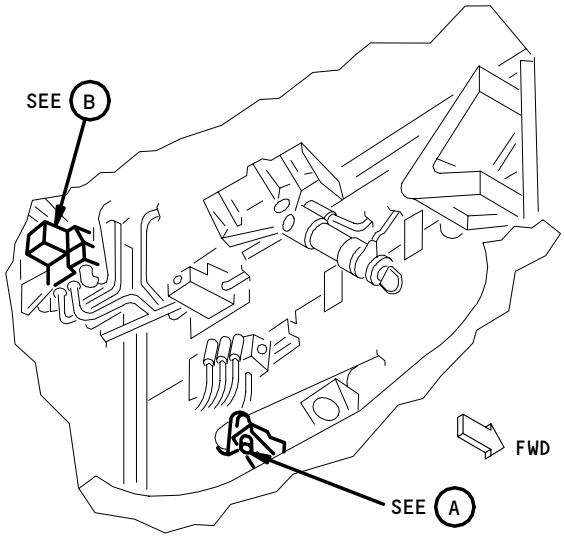




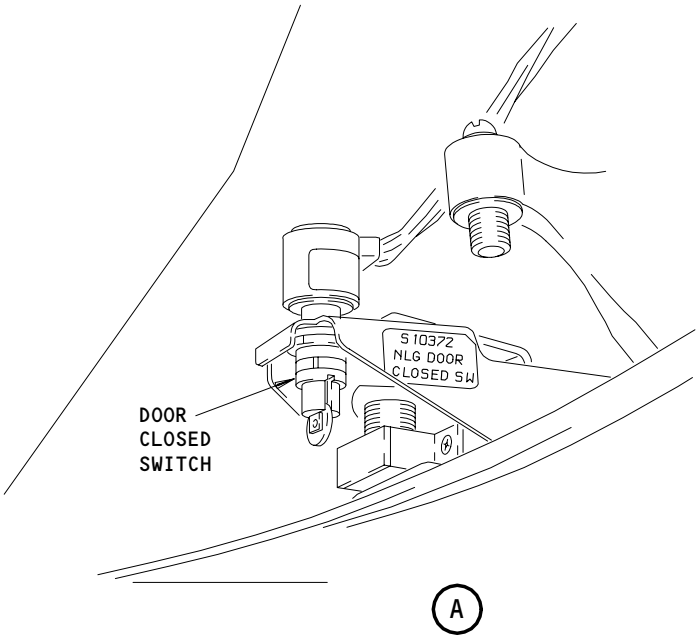


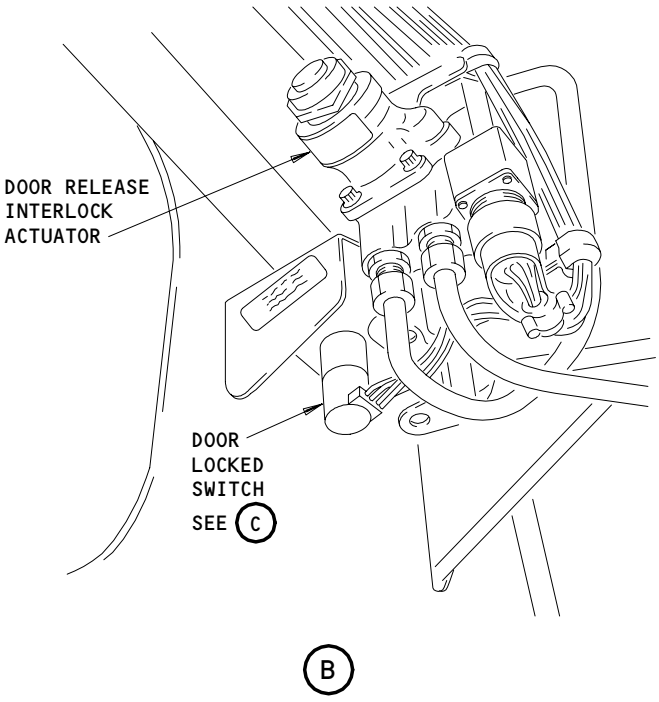


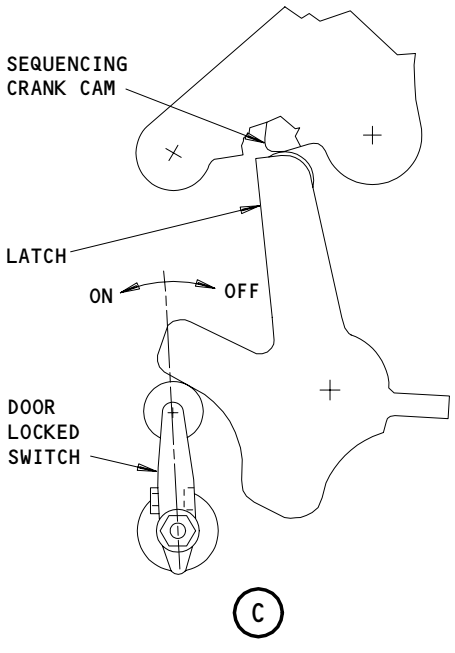
Main Landing Gear Door Closed and Locked Switches
Figure 8



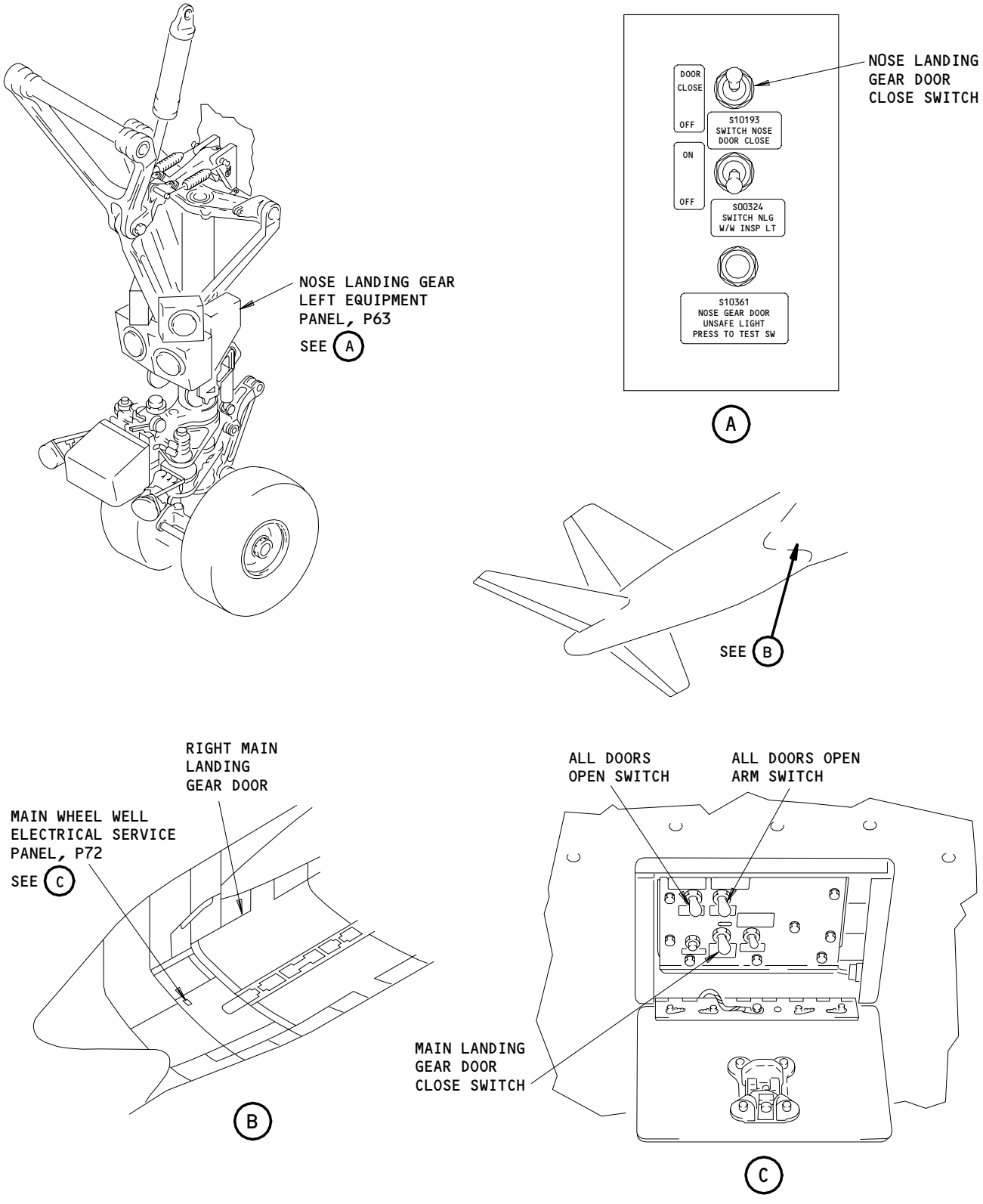
NOSE LANDING GEAR WHEEL WELL
(FORWARD WALL)







Nose Landing Gear Door Closed and Locked Switches
Figure 9



Door Ground Control Switches
Figure 10

(1) The door ground control switches are used to open and close the landing gear doors to get access to the wheel wells. There are two switches, the ALL DOORS OPEN ARM and the ALL DOORS OPEN switches. They are operated at the same time to open all three landing gear doors together. These switches are momentary toggle switches which supply electrical power to the power pack the same as the ALTN EXTENSION switch. There is a switch to close the doors for the nose landing gear and a switch to close the doors for the two main landing gear. They operate independently. With hydraulic power supplied and the control lever for the landing gear in DN, the MAIN or NOSE GEAR DOOR CLOSE switch is operated to close the related doors. These switches are also momentary toggle switches. They supply electrical power to the door-release-interlock-actuator solenoid.

(2) The two (door open) switches and the main landing gear (door close) switch are found on the electrical service panel for the MLG wheel wells, P72. This panel is found on the bottom of the fuselage immediately aft of the doors for the main landing gear. The nose landing gear (door close) switch is found on the left equipment panel for the nose landing gear, P63. This panel can be found on the shock strut for the nose landing gear.

3. Operation

A. Functional Description

(1) Landing Gear Alternate Extension

(a) When the ALTN EXTENSION switch is pushed, two alternate extension control relays on the MISC ELEC EQUIP panel, P36, are energized. The power to energize these relays is supplied by the 28 VDC BAT. BUS through the LANDING GEAR ALTN EXT CONT circuit breaker. The circuit breaker is installed on the main power distribution panel, P6.

(b) The ALTN EXT CONT LATCH relay supplies a latching circuit. This circuit continues to supply electrical power to keep the relays energized after the ALTN EXTENSION switch has turned off. The ALTN EXT CONT relay sends electrical power to the power pack. Electrical power is supplied to the power pack by the 28 VDC HOT BAT. BUS through the LANDING GEAR ALTN EXT MOTOR circuit breaker, also on the P6 panel.

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(c) The power pack removes fluid from the left hydraulic system reservoir. It supplies the hydraulic fluid to the door lock release actuators for the nose and main landing gear and the hydraulic pressure switch. These actuators extend and mechanically release the internal locks in the door actuators. The safety valves are also turned into the OFF (safety) position. With the door actuators not locked, the landing gear doors now start to free fall open. Hydraulic fluid is also sent to the alternate extension shuttle valve. This prevents fluid flow through the normal system "up" lines. Retraction pressure is then removed if the landing gear selector valve is in the "up" position when alternate extension is used.

(d) When the door lock release actuators are fully extended, internal valves send the hydraulic fluid through the actuator to the alternate uplock release actuators for the nose and main landing gear . These actuators extend and mechanically release the locks for the landing gears. The landing gears now start to free fall to the down-and-locked position.

(e) After the alternate uplock release actuators extend, the hydraulic fluid is caught in the system. The pressure then starts to increase. When the pressure gets to the range of 1700 to 2200 psi, the hydraulic pressure switch removes electrical power to the control relays. This stops operation of the power pack.

(f) This completes the alternate extension cycle. The time for operation is approximately 10 seconds.

(2) Door Ground Operations

(a) Open the Doors

1) The alternate extension system, above, is used to open the landing gear doors for ground maintenance. But, the system is not controlled from the flight compartment. The system is operated by movement of the ALL DOORS OPEN ARM switch to ARM and the ALL DOORS OPEN switch to ON at the same time. The ALL DOORS OPEN switch does not operate when the landing gear doors are open.

2) Also, the red DOOR UNSAFE lights warn persons of conditions that are not safe in the landing gear wheel wells. Electrical power is supplied to the lights by the 28 VDC BAT. BUS. The LANDING GEAR ALTN EXT CONT circuit breaker on the P6 panel controls the power supply.

3) The DOOR CLOSED and DOOR LOCKED switches supply inputs for the door not safe condition. When this happens, the switches supply the electrical power to the lights. When the locks on the doors are released and the doors start to open, the DOOR CLOSED switches make the red lights come on. When the door safety valves have turned and locked into the OFF (safety) position, the DOOR LOCKED switches then make the red lights go off.

(b) Close the Doors

1) The landing gear doors are closed with the normal extension and retraction system (i.e. with the left hydraulic system pressurized and the control lever for the landing gear moved to DN). But, after the doors are opened by the door ground release (or alternate extension), the safety valves are locked to stop the supply of hydraulic pressure to the door actuators. To release the safety valve lock, the MAIN GEAR and NOSE GEAR DOOR CLOSE switches are operated.
2) The DOOR CLOSE switches supply electrical power to the solenoids on the door release interlock actuator. This electrical power is supplied by the 28 VDC L BUS. The power supply is controlled by the DOOR CLOSE GROUND ACCESS circuit breaker on the overhead circuit breaker panel, P11.
3) When the solenoids are energized, hydraulic pressure is internally supplied to extend the actuator pistons. The actuators release the lock on the safety valves. This permits the safety valves to return to the OFF (normal) position which opens hydraulic pressure to the door actuators.

(3) Fault Indication

(a) Alternate extend system faults are shown by an EICAS LDG GEAR MONITOR status message and a R GEAR DOWN maintenance message.
(b) The ALT EXT CONT LATCH RELAY and the hydraulic pressure switch control the time that the power pack operates. When the power pack has been started, it will not stop until the conditions that follow have occurred:
(c) Output from the PSEU (Proximity Switch Electronics Unit), right main gear, system 2, down and locked signal is sent through the normally closed contact of the latch relay to the EICAS computer. When the latch relay is energized, (power pack in operation), the PSEU signal cannot get to the EICAS computer.
(d) EICAS compares system 1 and system 2 signals from the PSEU to see if they agree. If the right gear down and locked signal does not agree for more than 30 seconds and the landing gear is down and locked, EICAS LDG GEAR MONITOR status message and R GEAR DOWN maintenance message will be shown.
(e) Normally only about 10 seconds or less is necessary for the power pack to put out the pressure that is necessary to open the hydraulic pressure switch. Thus, the EICAS LDG GEAR MONITOR or R GEAR DOWN messages will not be shown during normal power pack operation.

(4) For more details on the Landing Gear Extension and Retraction System, refer to these wiring diagrams and functional schematics:
   (a) WDM 32-12-11: Ground Acces Only, Gear Doors Open System
   (b) WDM 32-12-12: Ground Access only, Gear Doors Close System
   (c) WDM 32-35-11: Alternate Landing Gear Extension System
   (d) SSM 32-30-01: Landing Gear Extension and Retraction

LANDING GEAR ALTERNATE EXTENSION - MAINTENANCE PRACTICES

1. General
   A. This procedure contains the following tasks:
      (1) Instructions to open and lock the landing gear doors. It is used for ground maintenance when the alternate extension system does not operate.
      (2) Fill and bleed procedure for the alternate extension system.

TASK 32-35-00-862-001

2. Open the Landing Gear Doors (Fig. 201, 202)
   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. Prepare to Open the Doors

      S 862-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 862-003
      (2) Pressurize the left hydraulic system (AMM 29-11-00/201).
   C. Open the Doors

      S 862-004

      WARNING: MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE MAIN AND NOSE LANDING GEAR AREAS. THE DOORS WILL OPEN QUICKLY WHEN THE CONTROL LEVER FOR THE LANDING GEAR IS MOVED AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

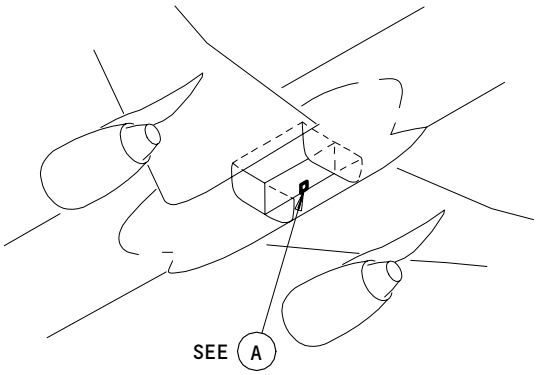
      (1) Push the lock override and momentarily move the control lever to UP to release the lock on the landing gear doors.

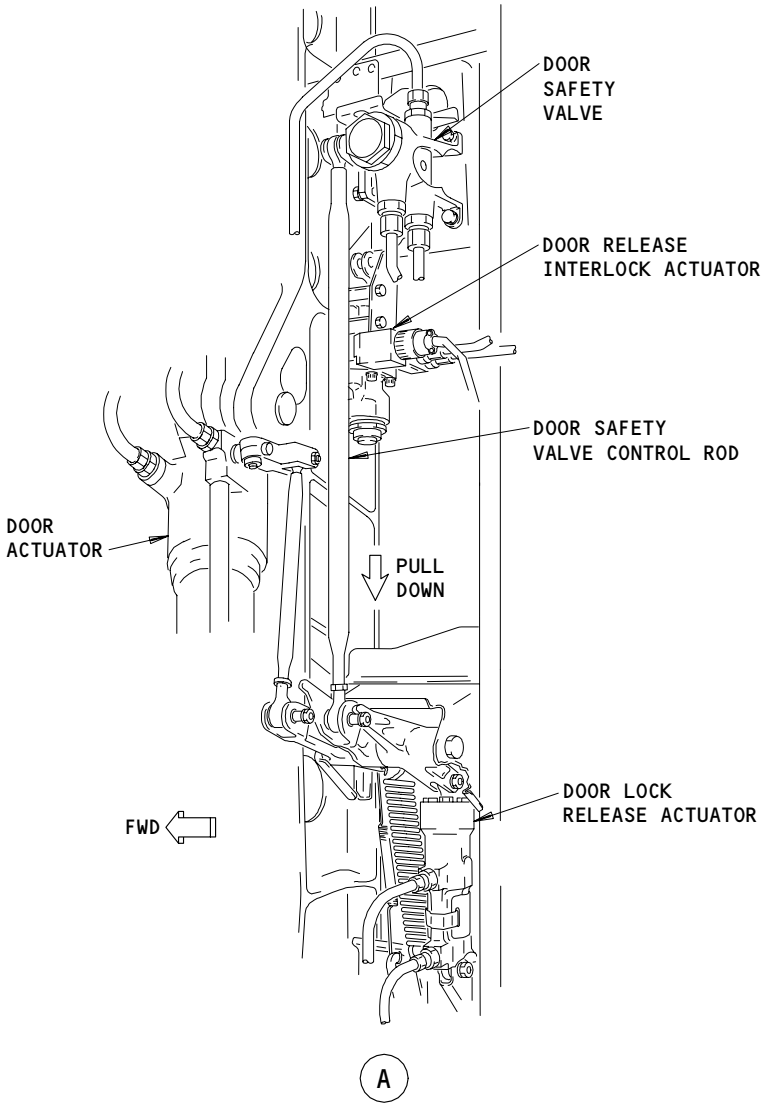
      S 862-005

      WARNING: DO NOT MOVE THE CONTROL LEVER TO DN. THE DOORS ARE NOT IN A SAFE CONDITION. THEY WERE OPENED WITH THE NORMAL SYSTEM AND NOT BY THE DOOR GROUND RELEASE. THE DOORS WILL CLOSE QUICKLY IF THE LEVER IS MOVED TO DN AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

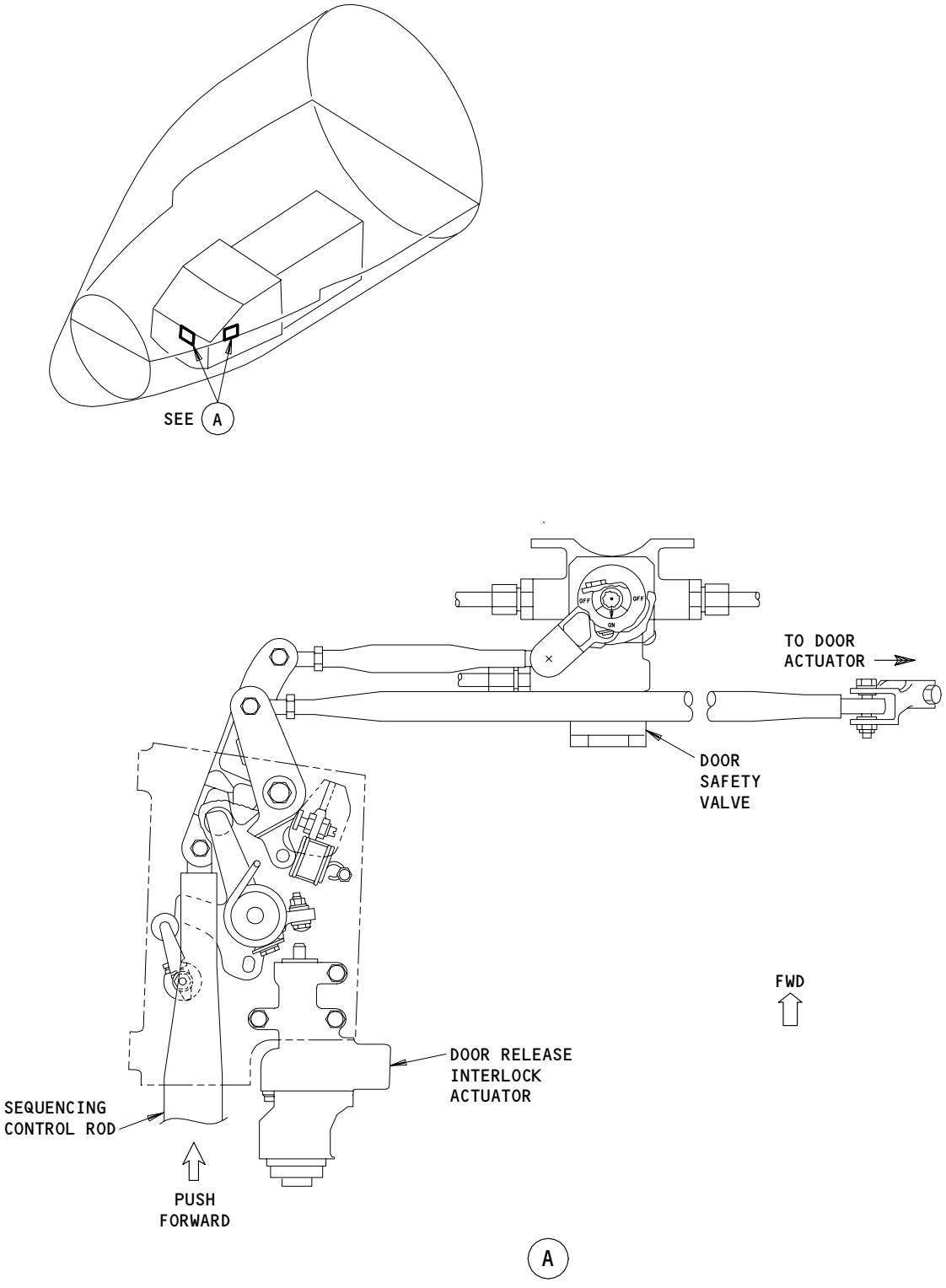
      (2) Move the control lever to OFF and attach a DO-NOT-OPERATE tag.

      S 862-006
      (3) Remove the pressure from the left and right hydraulic systems (AMM 29-11-00/201).





Main Gear Door Lock Release Mechanism
Figure 201



Nose Gear Door Lock Release Mechanism
Figure 202

S 862-007

(4) Do the steps that follow to close the safety valve:

(a) For the main landing gear doors, manually pull the safety valve control rod down until the safety valve cam turns and latches.

(b) For the nose landing gear doors, manually push forward on the sequencing control rod. Do this until the safety valve turns and the sequencing crank cam latches.

(c) Make sure the red NOSE, L and R MAIN GEAR DOOR UNSAFE lights are off.

(d) Look at the indicators on the safety valves and make sure the valves are in the off position.

S 862-008

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) Install the door locks (AMM 32-00-15/201).

TASK 32-35-00-872-010

3. Alternate Extend System Fill and Bleed (Fig. 203)

A. References

(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) 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, Main Gear Door Locks

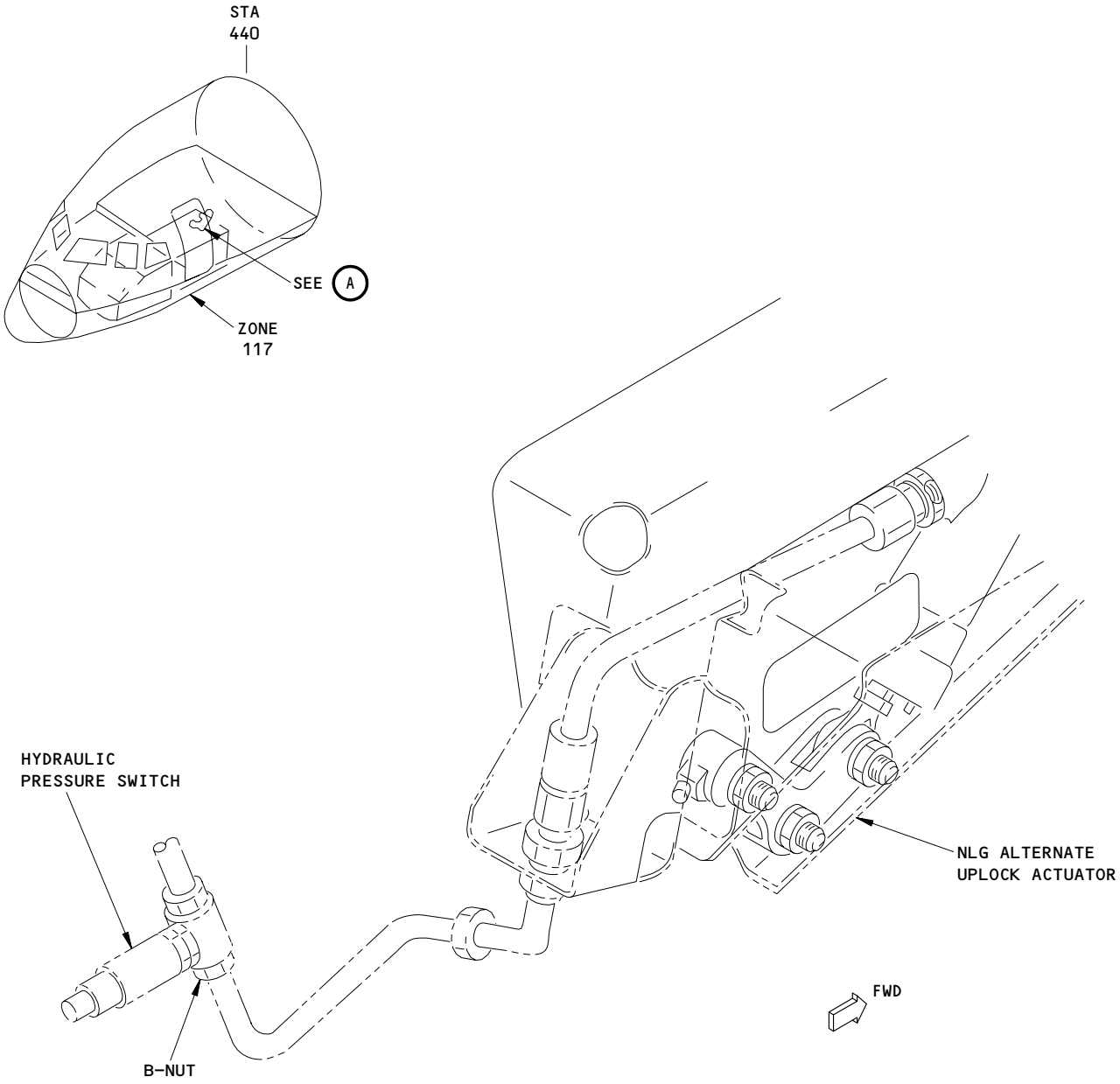
(6) AMM 32-00-20/201, Landing Gear Downlocks

B. Equipment

(1) STD-1055 Container - Oil-Resistant, 5 gallon (19 l) (commercially available)

C. Consumable Materials

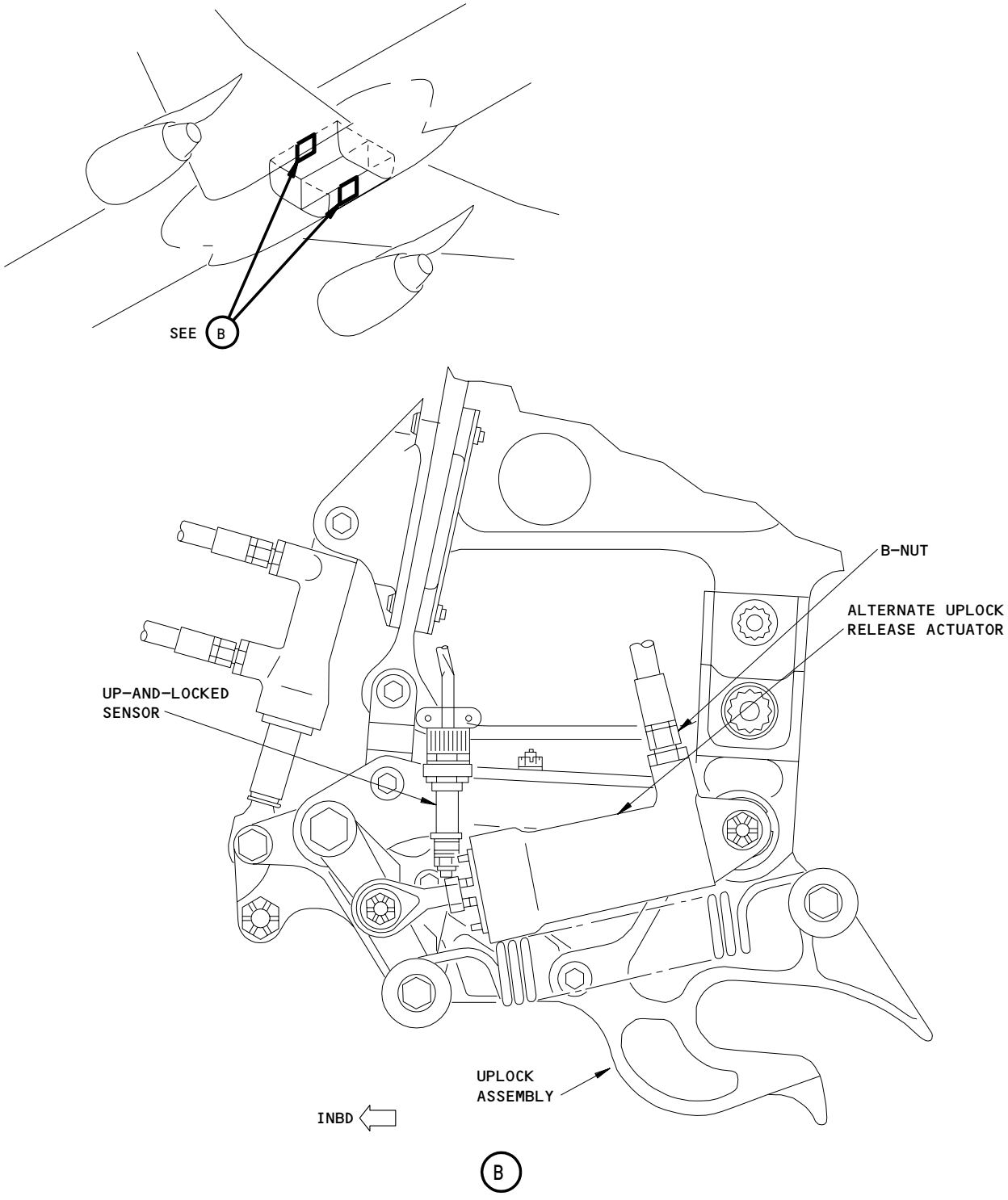
(1) D00153 Fluid, Hydraulic - BMS 3-11, Type IV



NLG ALTERNATE UPLOCK RELEASE ACTUATOR

A

Landing Gear Alternate Extension System Bleeding
Figure 203 (Sheet 1)



Landing Gear Alternate Extension System Bleeding
Figure 203 (Sheet 2)

D. Access

(1) Location Zones

115 Nose Landing Gear Wheel Well (Left)
211 Nose Landing Gear Wheel Well (Right)
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)
197 Wing to Body Fairing (Left)
198 Wing to Body Fairing (Right)
212 Control Cabin (Right)
119/120 Main Equipment Center

(2) Access Panel

198PR Door - Landing Gear Ground Control (right)

E. Prepare for the Fill and Bleed

S 862-011

(1) Make sure pressure is removed from the left hydraulic system (AMM 29-11-00/201).

S 482-012

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 downlocks are installed in the nose and main landing gear (AMM 32-00-20/201).

S 482-013

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.

(3) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201). Make sure the door open safety pins are installed in the main gear door safety valve modules.

S 012-014

(4) Open the access door for ground control of the landing gear doors, 198PR (AMM 06-41-00/201). Find the electrical service panel for the main wheel well, P72.

S 862-015

(5) Make sure the control lever for the landing gear is in the DN position.

S 862-016

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

S 862-017

(7) Make sure these circuit breakers are closed:

(a) On the main power distribution panel, P6-1:

1) 6F5, LDG GR ALTN EXT CTRL

2) 6F6, LDG GR ALTN EXT MOT

(b) On the overhead panel, P11:

1) 11C30, LANDING GEAR POS SYS 1

2) 11S15, AIR/GND SYS 1

3) 11S17, DOOR CLOSE GROUND ACCESS

4) 11S19, AIR/GND SYS 2

5) 11S23, LANDING GEAR POS SYS 2

F. Landing Gear Alternate Extend System Bleed and Fill

NOTE: The EICAS displays will show ALTN GEAR EXTEND during this test. You can ignore it.

NOTE: When you command the main landing gear doors to open with the ground release system, the alternate extend power pack will operate.

NOTE: The power pack will stay ON until you open the LDG GR ALTN EXT LDG CONTROL circuit breaker (the pressure switch that usually stops the power pack cannot operate while you bleed the system).

S 862-019

(1) Make sure the level of the left hydraulic system reservoir is between 80% and full at all times.

NOTE: You can use the sight glass on the reservoir to do a check of the reservoir fluid level if the normal indication is not available. The fluid level must be between REFILL and OVERFILL at all times.

S 872-020

(2) Do the steps that follow to bleed air out of the alternate extension system at the nose landing gear alternate uplock release actuator (Fig. 203):

NOTE: Very small air bubbles within the fluid are permitted.

(a) Put an oil-resistant container, STD-1055, below the bleed location to catch the hydraulic fluid.

(b) Loosen the B-nut that is at the T-fitting (It is connected to the tube that comes from the uplock release actuator).
1) If more fluid needs to be bled through the alternate system, you can disconnect the hydraulic line at the T-fitting and bleed directly out.
a) After you connect the line, you must do these steps again, and bleed through the B-nut to complete the task.

CAUTION: DO NOT OPERATE THE ALTERNATE EXTEND POWER PACK FOR MORE THAN FIVE MINUTES. THE POWER PACK CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(c) Momentarily and at the same time move the ALL DOORS OPEN ARM switch to ARM and the ALL DOORS OPEN switch to OPEN. The switches are on the P72 panel.

NOTE: Do not operate the alternate extend power pack more than five minutes continuously.

1) If the air is not fully out of the line in less than five minutes, open and close this circuit breaker to stop the alternate extend power pack:
a) 6F5, LDG GR ALTN EXT CTL

WARNING: DO NOT TOUCH THE POWER PACK MOTOR AFTER EXTENDED OPERATION. A HOT MOTOR CAN CAUSE INJURY.

2) Let the surface of the power pack motor to become cool (less than 120°F before you operate it again). If you cannot measure the temperature of the motor, let the motor become cool for 45 minutes or until you can hold your hand on it.

NOTE: You can decrease the time with a fan. The surface temperature must be less than 120°F before you operate it again. Measure the temperature with a thermocouple or other applicable equipment.

3) Do the preceding bleeding steps until all of the air has been bled out of the system.

(d) Open and close this circuit breaker to stop the power pack:
1) 6F5, LDG GR ALTN EXT CTRL

(e) Tighten the B-nut that connects the hydraulic line for the alternate extend uplock release actuator to the tee fitting.

(f) Make sure that the fluid in the hydraulic reservoirs is at the correct level.
1) Fill it if that is necessary (AMM 12-12-01/301).

S 872-021

(3) Do these steps to remove the air from the alternate extension system at the right and left main landing gear alternate uplock release actuators (Fig. 203):

NOTE: Very small air bubbles in the fluid are permitted.

(a) Place an oil resistant container (5 Gal)(19 Liters), STD-1055 (19 liter) beneath the bleed location to catch the hydraulic fluid that you will bleed out of the system.

(b) Loosen the B-nut for the MLG alternate uplock release actuator.
1) If more fluid needs to be bled through the alternate system, it is permissible to remove the MLG alternate uplock release actuator hose and bleed directly out. After you connect the hose, you must repeat these steps and bleed through the B-nut to complete this task.

CAUTION: DO NOT OPERATE THE ALTERNATE EXTEND POWER PACK FOR MORE THAN FIVE MINUTES. THE POWER PACK CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(c) Momentarily and at the same time move the ALL DOORS OPEN ARM switch to ARM and the ALL DOORS OPEN switch to OPEN. (The switches are on the P72 panel).

NOTE: Do not operate the alternate extend power pack more than five minutes continuously.

1) If the air is not fully out of the line in less than five minutes, open and close this circuit breaker to stop the alternate extend power pack:
a) 6F5, LDG GR ALTN EXT CTL

WARNING: DO NOT TOUCH THE POWER PACK MOTOR AFTER EXTENDED OPERATION. A HOT MOTOR CAN CAUSE INJURY.

2) Let the surface of the power pack motor to become cool (less than 120°F before you operate it again). If you cannot measure the temperature of the motor, let the motor become cool for 45 minutes or until you can hold your hand on it.

NOTE: You can decrease the time with a fan. The surface temperature must be less than 120°F before you operate it again. Measure the temperature with a thermocouple or other applicable equipment.

3) Continue to do the steps until all of the air is out of the system.

(d) Open and close this circuit breaker to stop the power pack: 6F5, LDG GR ALTN EXT CTRL.

(e) Tighten the B-nut that connects the hydraulic line to the alternate extend uplock release actuator.

(f) Make sure the fluid in the hydraulic reservoirs 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 862-022

(1) Make sure this circuit breaker is closed:

(a) On the main power distribution panel, P6:

1) 6F5, LDG GR ALTN EXT CTRL

S 862-023

(2) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 082-024

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 EQUIPMENT.

(3) Remove the door locks (AMM 32-00-15/201).

S 862-025

(4) Remove the power from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 612-026

(5) Make sure the fluid level in the left hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

LANDING GEAR ALTERNATE EXTENSION - ADJUSTMENT/TEST

1. General
   A. This procedure contains the tasks that follow:
      (1) Operational test of the alternate extension system for the landing gear.
      (2) Inflight operational test of the alternate extension system.
      (3) Operational test of the ground operation of the landing gear doors.
      (4) Adjustment of the alternate extension system.
      (5) System test of the ground release of the landing gear doors.
      (6) System test of the alternate extension system.
      (7) Dielectric Test of the Alternate Extension System Power Pack

          NOTE: This test is applicable to the P/N S273N401-7 (Frisby/P/N/1FA13017-1) power pack only.

TASK 32-35-00-715-185

2. Operational Test - Landing Gear Alternate Extension (Fig. 501A, 503, 504)

   A. General
      (1) This procedure does an operational check of the alternate extension system. This includes the door lock-release actuators for the nose and main landing gear. It also includes the power pack for the alternate extension system.
   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, Main (Left, Right, and Center) Hydraulic Systems
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          144 Main Landing Gear Wheel Well (Right)
          211 Control Cabin (Left)
          212 Control Cabin (Right)
          711 Nose Landing Gear
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

      (2) Access Panel
          198PR Door - Landing Gear Ground Control (Right)

D. Operational Test of the Alternate Extension System

S 495-183

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

S 865-182

(2) Remove the pressure from the left and right hydraulic systems (AMM 29-11-00/201).

S 865-181

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

S 715-180

(4) Move the control lever for the landing gear to the OFF position.

S 845-179

(5) Put an observer(s) near the nose and main landing gear areas.

S 715-178

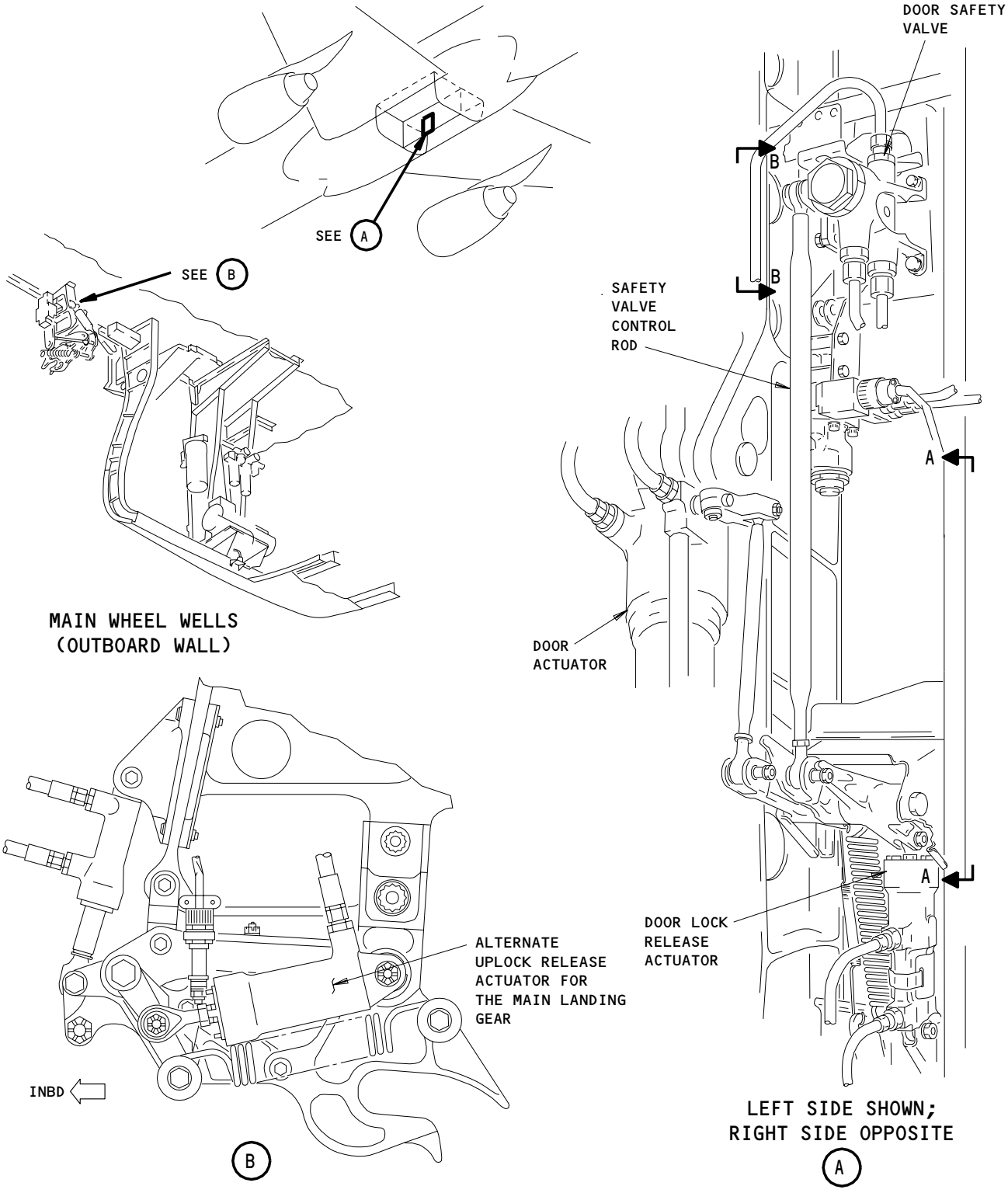
WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE DOORS FOR THE NOSE AND MAIN LANDING GEAR. THE DOORS OPEN QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT

CAUTION: DO NOT HOLD THE "ALTN GEAR EXTENSION" SWITCH IN FOR MORE THAN TWO SECONDS. IF YOU HOLD THE SWITCH IN FOR MORE THAN TWO SECONDS THE POWER PACK CAN BECOME TOO HOT. THE ALTERNATE EXTENSION SYSTEM WILL NOT OPERATE IF THIS OCCURS.

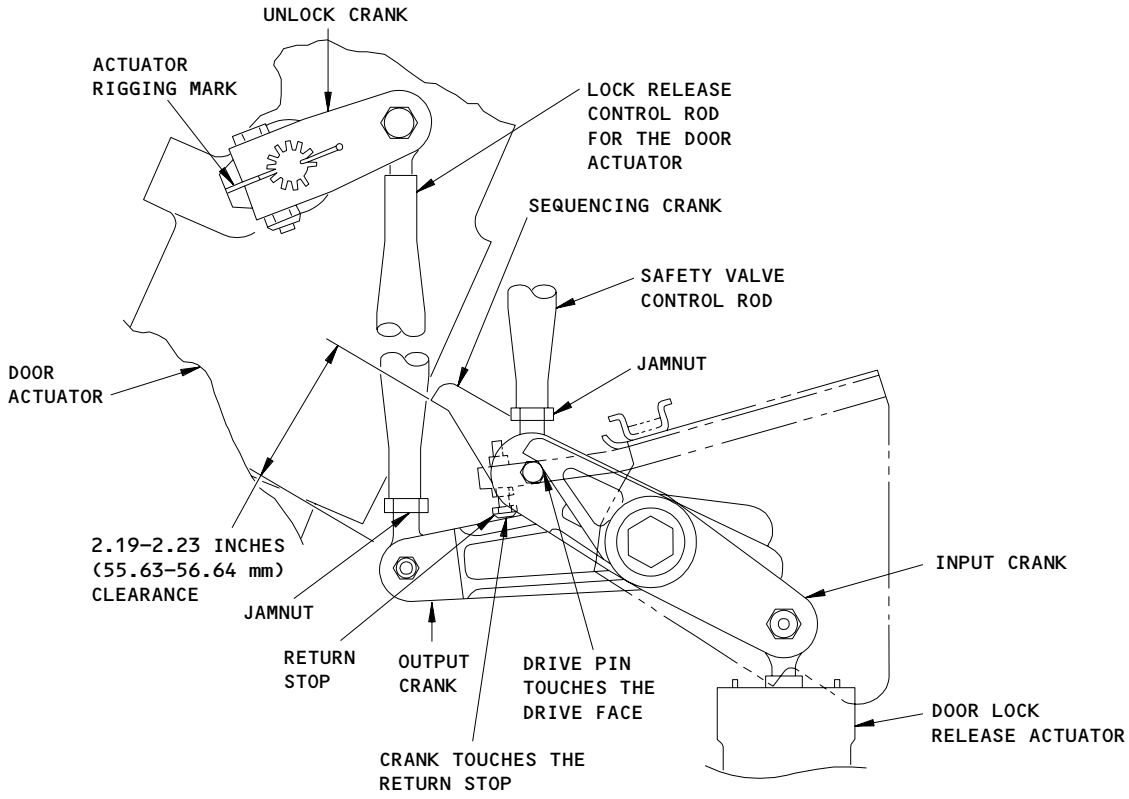
(6) Push the ALTN GEAR EXTENSION switch and hold it for approximately 2 seconds.

S 885-299

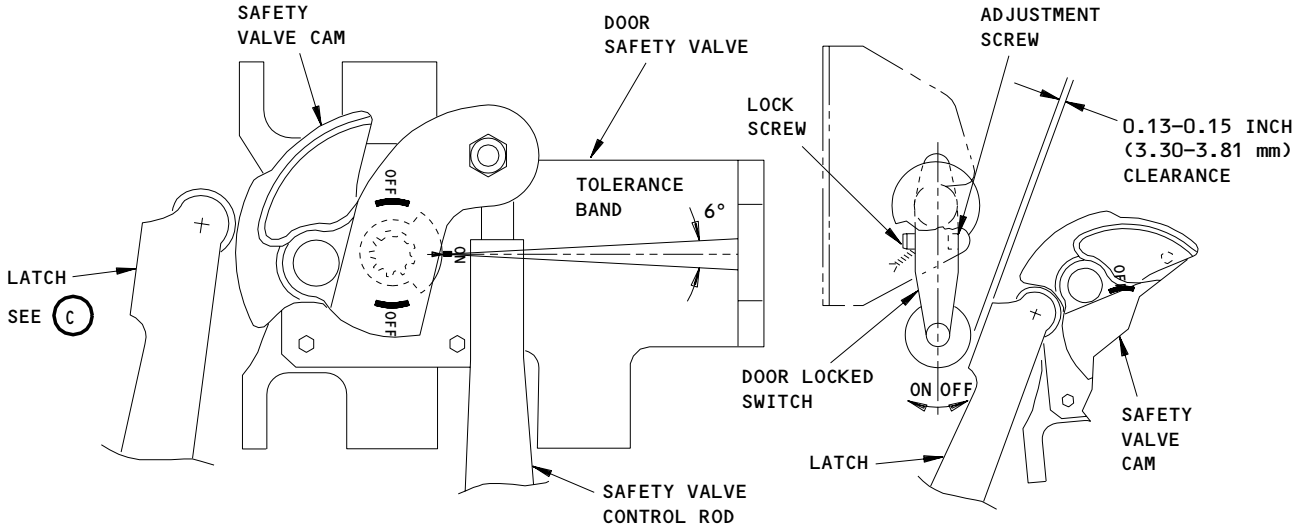
CAUTION: DO NOT OPERATE THE ALTERNATE EXTEND POWER PACK FOR MORE THAN FIVE MINUTES. IF YOU OPERATE IT FOR MORE THAN FIVE MINUTES, THE POWER PACK CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO EQUIPMENT.



Main Landing Gear Door Actuator Lock Release Mechanism Adjustment
Figure 501 (Sheet 1)



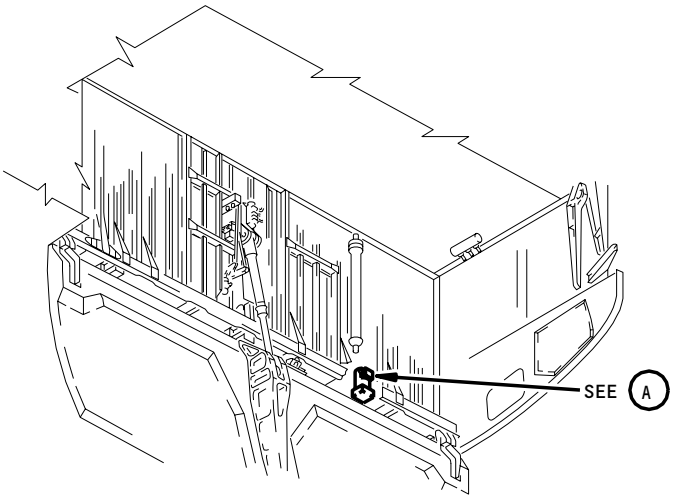
SAFETY VALVE ON POSITION
A–A



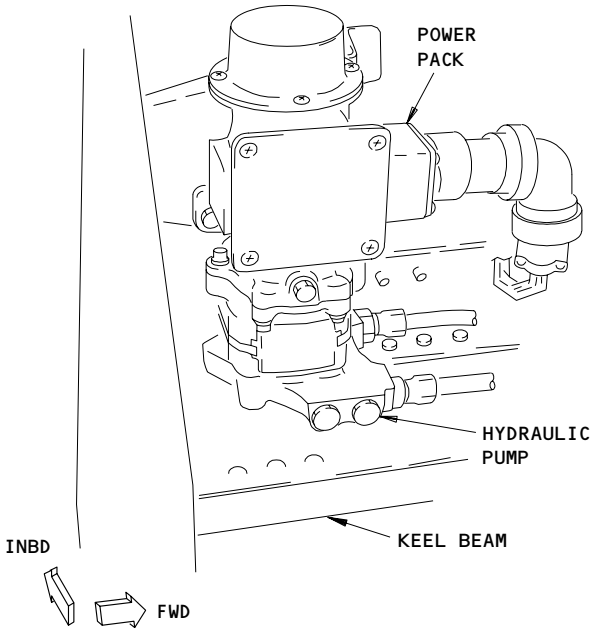
SAFETY VALVE ON POSITION
B–B

SAFETY VALVE OFF POSITION
C

Main Landing Gear Door Actuator Lock Release Mechanism Adjustment
Figure 501 (Sheet 2)

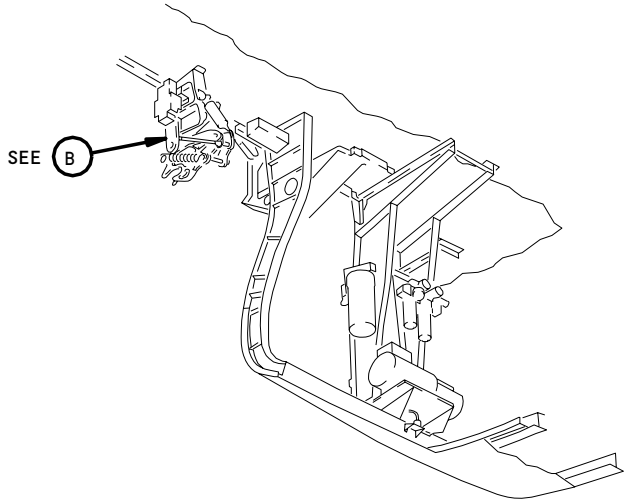


RIGHT MAIN WHEEL WELL

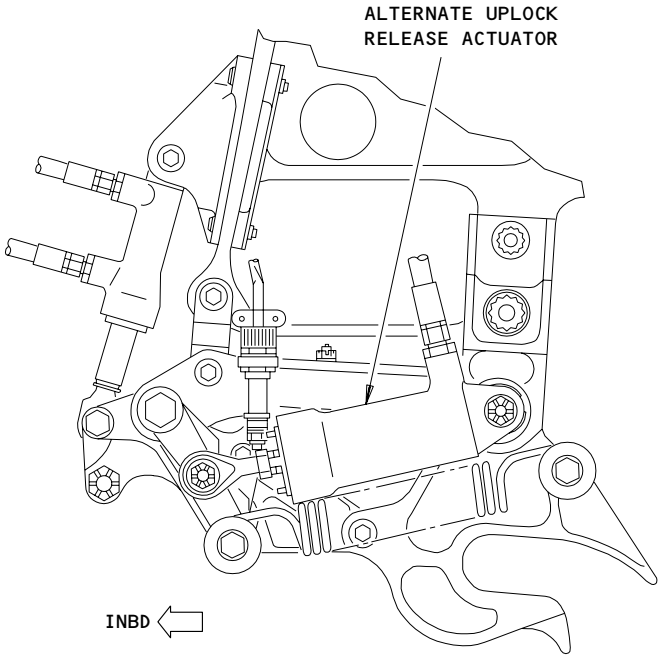


ALTERNATE EXTENSION
POWER PACK

A



MAIN LANDING GEAR WHEEL WELLS
(OUTBOARD WALL)



B

Alternate Extension System
Figure 501A

(7) Let the surface of the power pack motor become cool (less than 120° F) before you operate it for another five minute interval.
   (a) If you cannot measure the temperature of the motor, let the motor become cool for 45 minutes, or until you can hold your hand on it.

      NOTE: Use air from a fan on the power pack to decrease the time for it to become cool. Do not operate the pack motor until its temperature is less than 120° F. Measure the temperature with a thermocouple or other applicable equipment.

S 715-176

(8) The observer will make sure that these conditions occur:
   (a) The locks on the doors for the nose and main landing gear release and the doors open.
   (b) The alternate uplock-release actuator for the nose landing gear extends.
   (c) The alternate uplock-release actuators for the main landing gear extend.
   (d) The power pack for the alternate extension system (which is in the wheel well for the right main landing gear), does not operate for more than 30 seconds. You can hear the power pack motor operate.

S 865-175

(9) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 715-174

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND ALL THE LANDING GEAR. THE DOORS CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

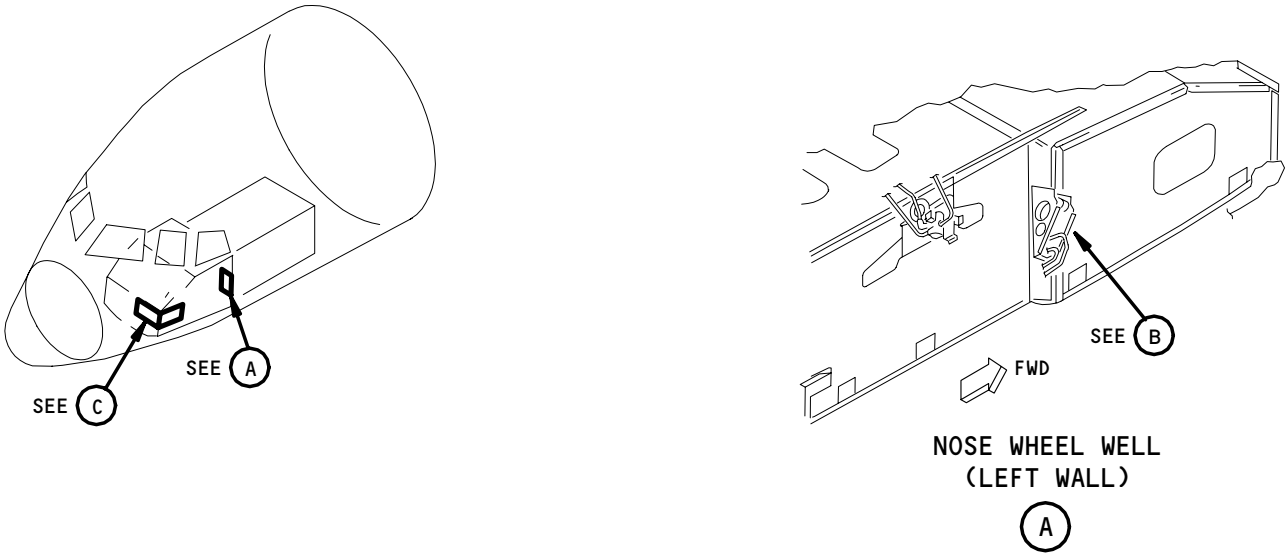
(10) Move the control lever for the landing gear to the DN position.

S 015-173

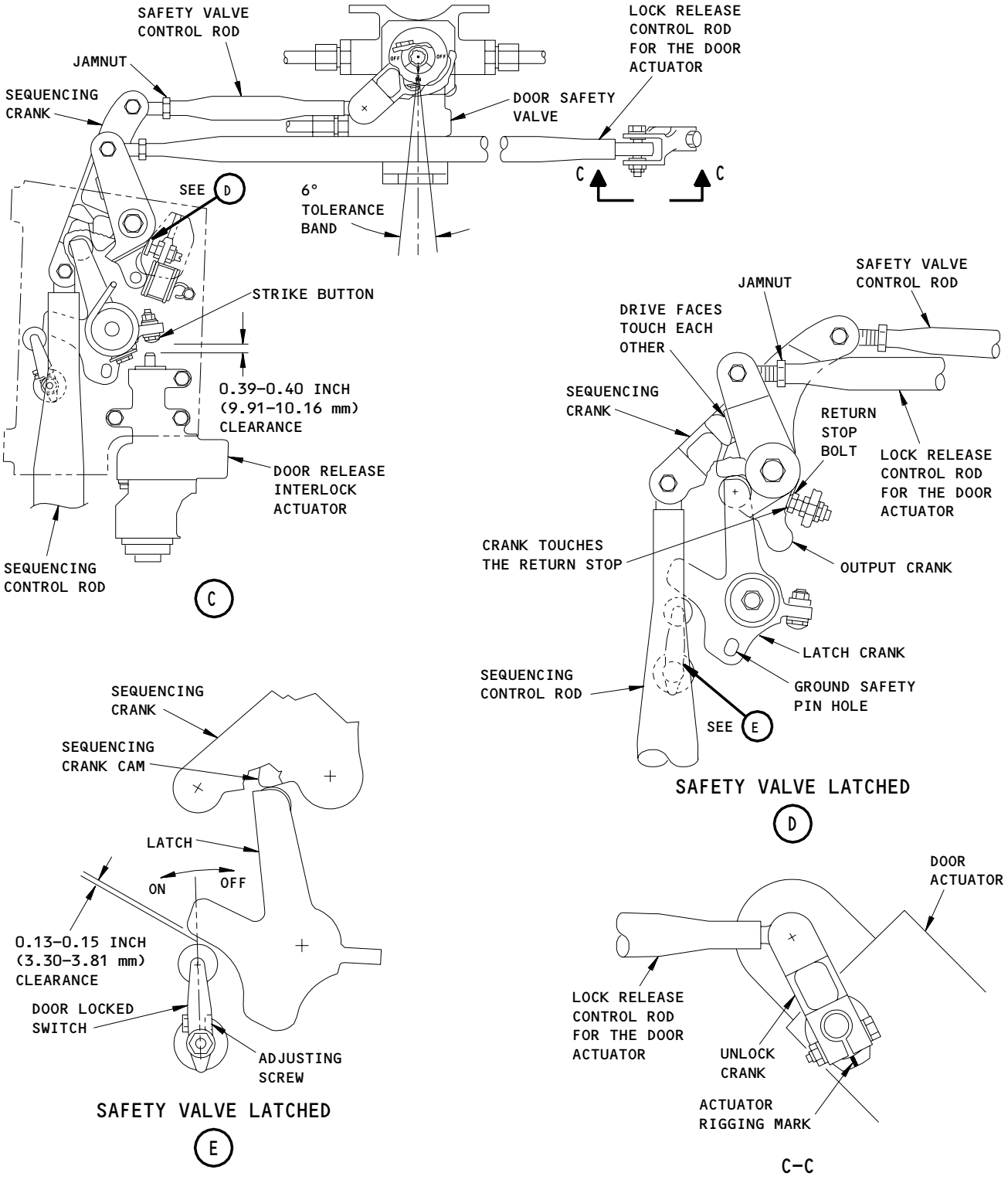
(11) Open the access door for ground control of the landing gear doors, 198PR (AMM 06-41-00/201).

S 865-184

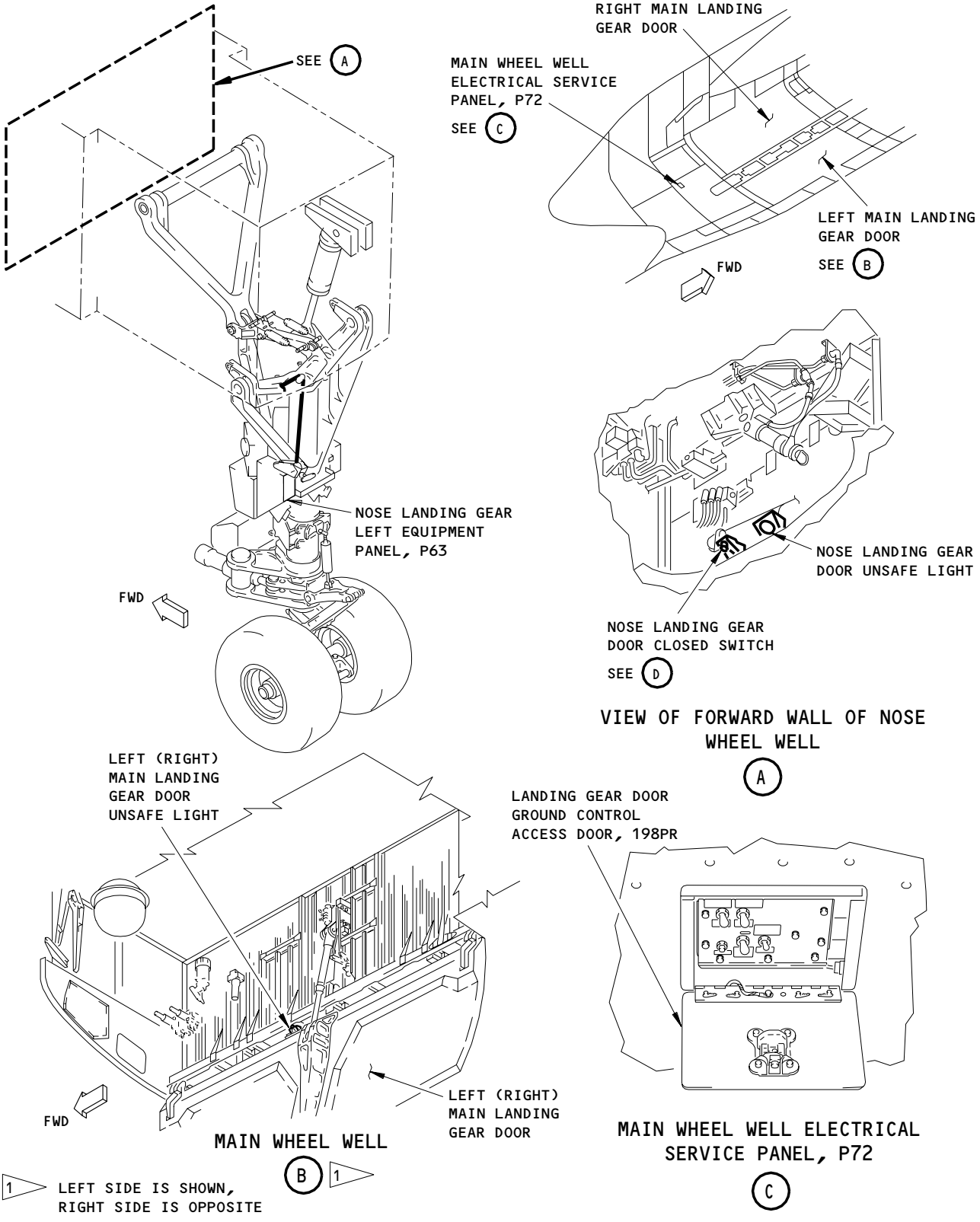
(12) Find the electrical panel, P72, in the MLG wheel well.



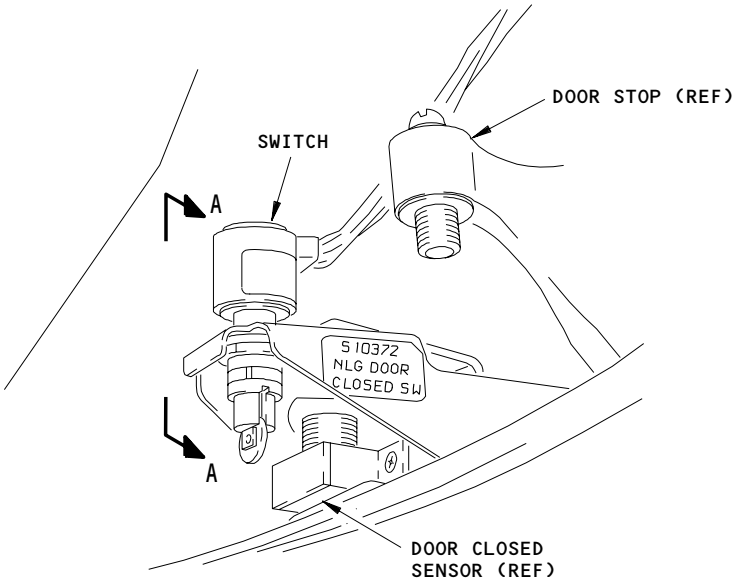
Nose Landing Gear Door Actuator Lock Release Mechanism Adjustment
Figure 502 (Sheet 1)



Nose Landing Gear Door Actuator Lock Release Mechanism Adjustment
Figure 502 (Sheet 2)

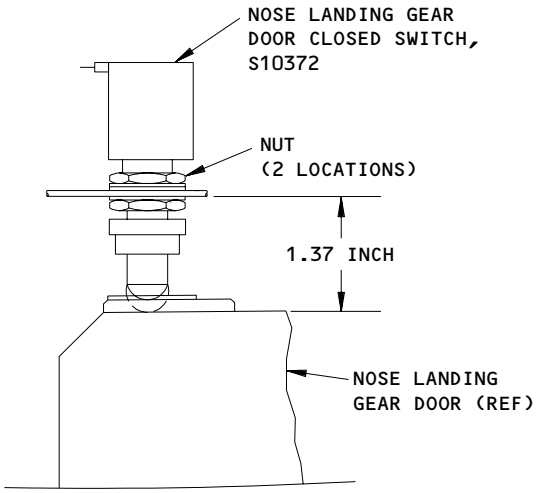


Door Ground Control Switches
Figure 503 (Sheet 1)



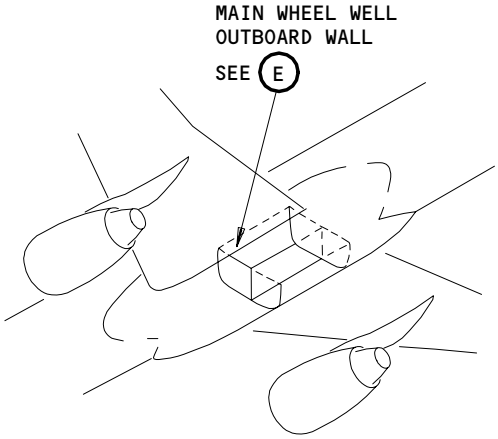
NOSE GEAR DOOR CLOSED SWITCH, S10372

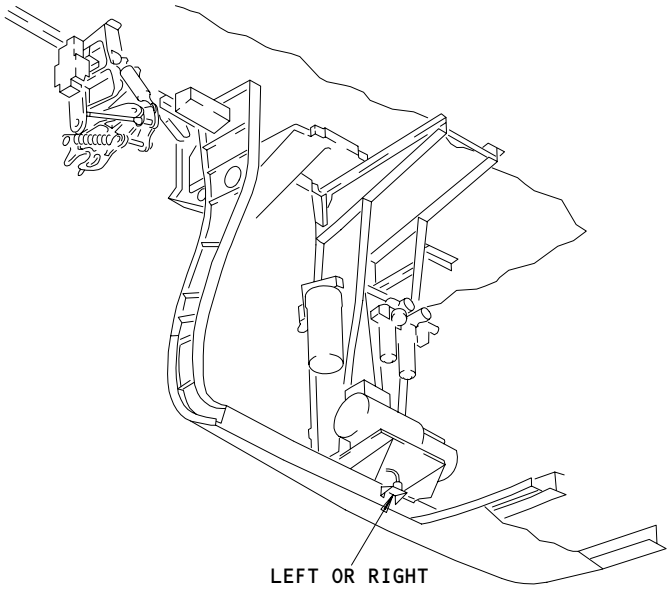
(D)



SWITCH PLUNGER EXTENDED
(DOOR OPEN)
A-A

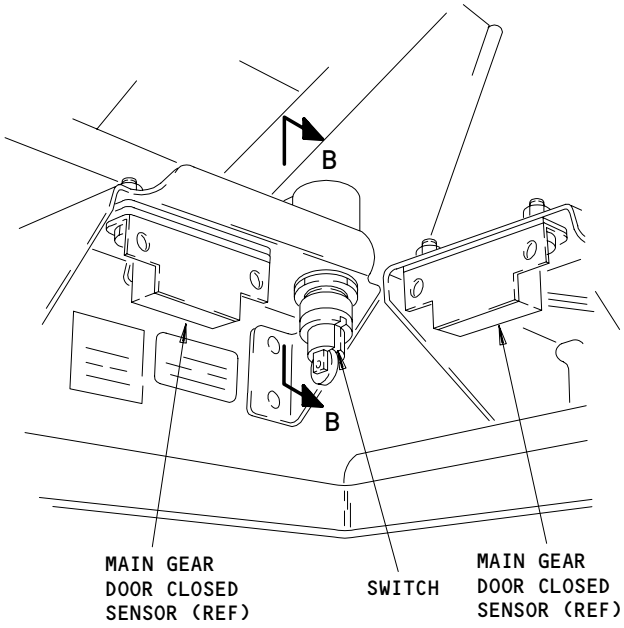
Door Ground Control Switches
Figure 503 (Sheet 2)





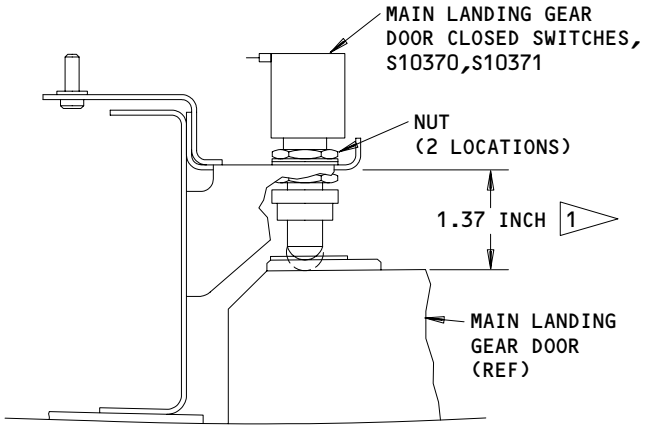
LEFT MAIN WHEEL WELL OUTBOARD WALL
(RIGHT SIMILAR)

E



LEFT OR RIGHT MAIN GEAR DOOR CLOSED
SWITCH, S10371 OR S10370

F



B–B

1 SWITCH PLUNGER EXTENDED (DOOR OPEN)

Door Ground Control Switches
Figure 503 (Sheet 3)

S 715-171

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE AND MAIN LANDING GEAR DOORS. THE DOORS CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OF DAMAGE TO EQUIPMENT.

(13) Operate the MAIN GEAR DOOR CLOSE switch to close the doors for the main landing gear.

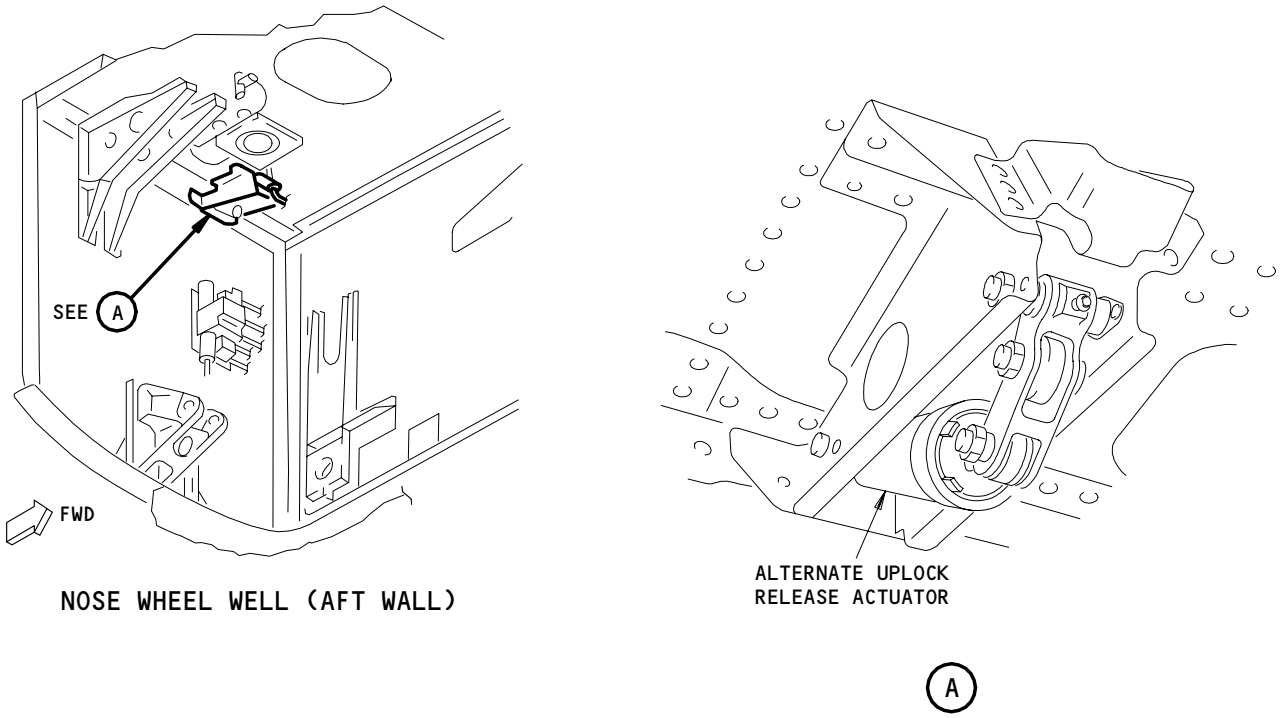
S 715-170

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE AND MAIN LANDING GEAR. THE DOORS CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

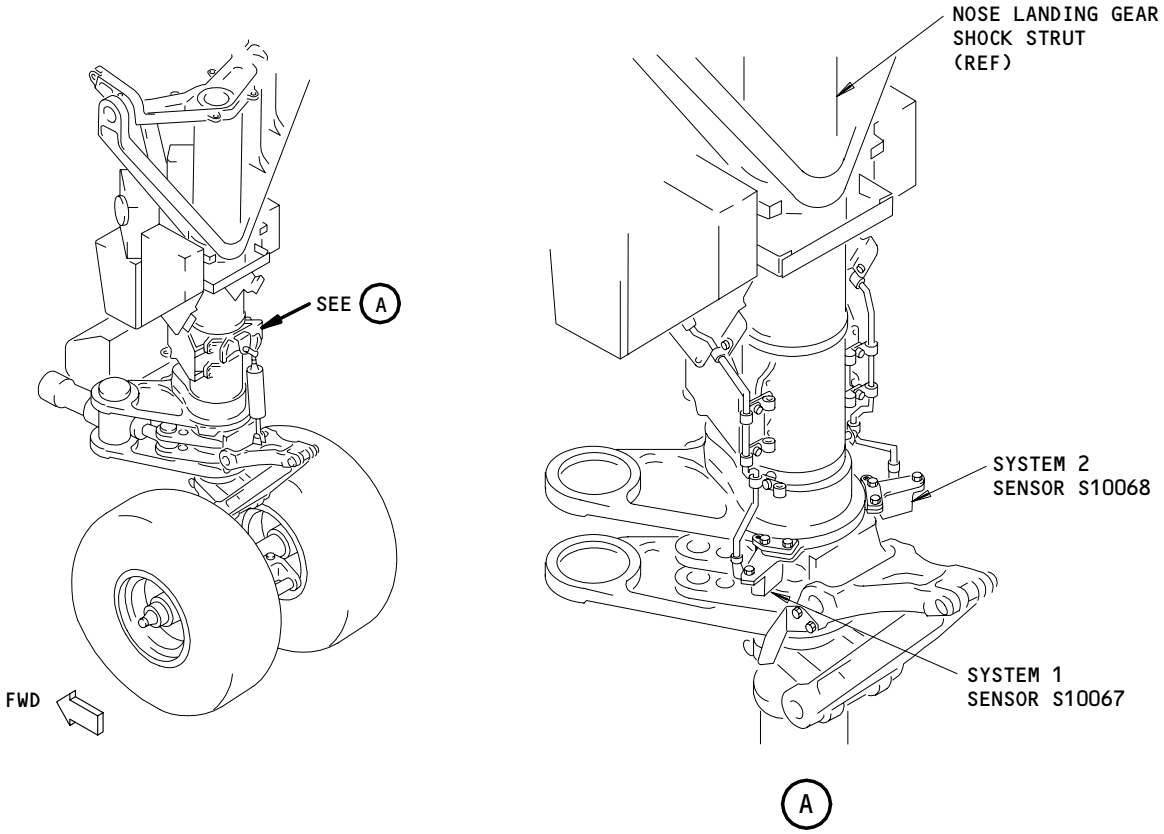
(14) Find the left equipment panel, P63, on the nose landing gear. Operate the NOSE GEAR DOOR CLOSE switch on the P63 panel to close the doors.

S 865-169

(15) Remove the power from the hydraulic system if it is not necessary (AMM 29-11-00/201).



Nose Landing Gear Alternate Uplock Release Actuator
Figure 504



Sensor Location – Air/Ground Relays Ground Mode Simulation
Figure 505

S 865-168
(16) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-35-00-705-225

3. Operational Test - Inflight Alternate Extension

A. General

NOTE: It is not recommended that you do this test on a revenue flight.

(1) This test is an inflight alternative to the operational test that is done on the ground or the system test that requires lifting the airplane on jacks.

B. References

(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic System

C. Access

(1) Location Zones
211 Control Cabin (Left)
212 Control Cabin (Right)

D. Prepare for the Inflight Test of Alternate Extension System

S 865-200
(1) Make sure these circuit breakers on the main power distribution panel, P6, are closed:
(a) 6F5, LANDING GEAR ALTN EXT CONT
(b) 6F6, LANDING GEAR ALTN EXT MOTOR

S 865-201
(2) Make sure these circuit breakers on the overhead panel, P11, are closed:
(a) 11C30, LANDING GEAR POS SYS 1
(b) 11S15, AIR/GND SYS 1
(c) 11S17, DOORS CLOSE GROUND ACCESS
(d) 11S19, AIR/GND SYS 2
(e) 11S23, POS SYS 2

S 735-230

CAUTION: MAKE SURE YOU OBSERVE THE PLACARD SPEEDS FOR THE LANDING GEAR.

(3) Move the control lever for the landing gear to the DN position.

S 735-203
(4) Make sure the landing gear is down and locked and the doors are closed and locked.

S 735-204
(5) Move the control lever for the landing gear to the UP position to retract the landing gear.

S 735-205
(6) Move the control lever to OFF when the landing gear are up and locked with the doors closed.

S 865-227
(7) Open this circuit breaker on the overhead panel, P11:
(a) 11D31, HYDR PTU CONT

S 735-206
(8) Remove the pressure from the left hydraulic system (AMM 29-11-00/201). Make sure the pressure is less than 200 psig.

S 735-207
(9) Make sure the landing gear doors stay closed and locked.

S 735-208
(10) Move the control lever to the DN position.

S 735-209
(11) Make sure the landing gear doors stay in the locked position.

S 735-210
(12) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 735-231
(13) Make sure the landing gear extends.

S 735-232
(14) Move the control lever to the up position.

S 735-233
(15) Make sure the landing gear retracts.

E. Inflight Test of the Alternate Extension System

S 715-211
(1) Do a Test of Alternate Extension with the Control Lever in the OFF position.
(a) Move the control lever to the OFF position.

CAUTION: MAKE SURE YOU OBSERVE THE PLACARD SPEEDS WHEN YOU DO THE ALTERNATE EXTENSION.

(b) Put the ALT GEAR EXTEND switch to the DN position.

(c) Make sure the landing gear doors open and the landing gear extend to the down and locked position.
1) Monitor the time between operation of the switch and when the green DOWN lights (left, right, and nose) come on. Make sure it is less than 20 seconds.
2) Make sure the amber DOORS light is on.
(d) Move the control lever to the DN position. Make sure the amber DOORS light stays on.

S 715-212
(2) Do a Test of Alternate Extension with the Control Lever in the UP Position.
(a) Move the control lever for the landing gear to the UP position.
(b) Make sure these lights show that the landing gear and doors are in the up and locked position:
LEFT green DOWN light off
RIGHT green DOWN light off
NOSE green DOWN light off
GEARS amber caution light off
DOORS amber caution light off
(c) Move the control lever to the OFF position. Make sure the green DOWN and amber GEARS and DOORS lights do not come on.
(d) Move the control lever to the UP position.
(e) Make sure the green DOWN and amber GEARS and DOORS lights do not come on.

CAUTION: MAKE SURE YOU OBSERVE THE PLACARD SPEEDS FOR THE LANDING GEAR WHEN YOU DO THE ALTERNATE EXTENSION.

(f) Put the ALT GEAR EXTEND switch to the DN position.
(g) Make sure the landing gear extends to the down and locked position with all doors open.
(h) Make sure the amber DOORS light is on.
(i) Make sure the LEFT, RIGHT and NOSE green DOWN lights are on.
(j) Move the control lever to the DN position.

(k) Move the control lever to the UP position.
(l) Make sure the LEFT, RIGHT and NOSE green DOWN lights and the amber GEAR and DOORS lights are off.

S 865-226
(3) Close this circuit breaker on the overhead panel, P11:
(a) 11D31, HYDR PTU CONT

TASK 32-35-00-715-190

4. Operational Test of the Ground Operation of the Landing Gear Doors

A. General
(1) This procedure does an operational check of the ground operation to open and close the landing gear doors. It also does a check of the operation of the UNSAFE light. You can do all of the operational tests independently.

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, Main (Left, Right, and Center) Hydraulic Systems
(4) AMM 32-00-20/201, Landing Gear Downlocks

C. Access
(1) Location Zones

144	Main Landing Gear Wheel Well (Right)
211	Control Cabin (Left)
212	Control Cabin (Right)
711	Nose Landing Gear
731	Main Landing Gear (Left)
741	Main Landing Gear (Right)

(2) Access Panel

198PR	Door - Landing Gear Ground Control (Right)

D. Test of the Open and Close Ground Operation of the Landing Gear Doors

S 015-167
(1) Open the access door for ground control of the landing gear doors, 198PR (AMM 06-41-00/201). Find the electrical service panel in the main wheel well, P72.

S 865-165

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

S 865-160

(3) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 865-294

WARNING: DO NOT TOUCH THE POWER PACK MOTOR WHEN IT IS HOT. A HOT MOTOR CAN CAUSE INJURIES TO PERSONNEL.

CAUTION: IF THE NLG DOOR LOCK TOOL IS INSTALLED AND THE MLG DOORS ARE CLOSED, DO NOT OPEN THE MLG DOORS UNTIL THE NLG DOOR LOCK TOOL IS REMOVED. IF YOU DO NOT REMOVE THE DOOR LOCK TOOL BEFORE YOU OPEN THE MLG DOORS, THE POWER PACK WILL NOT GO OFF. IT WILL BECOME TOO HOT. IF THE POWER PACK BECOMES TOO HOT, THE ALTERNATE EXTENSION SYSTEM WILL NOT OPERATE.

(4) Make sure that the NLG and MLG door locks are removed (AMM 32-00-15/201).

S 715-159

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE AND MAIN LANDING GEAR. THE DOORS OPEN QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) At the same time, move the ALL DOORS OPEN ARM switch to ARM and the ALL DOORS OPEN switch to OPEN. Hold them for 2 seconds. The switches are located on the P72 panel.

S 885-300

CAUTION: DO NOT OPERATE THE ALTERNATE EXTEND POWER PACK FOR MORE THAN FIVE MINUTES. IF YOU OPERATE IT FOR MORE THAN FIVE MINUTES, THE POWER PACK CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(6) Let the surface of the power pack motor become cool (less than 120° F) before you operate it for another five minute interval.
   (a) If you cannot measure the temperature of the motor, let the motor become cool for 45 minutes, or until you can hold your hand on it.

      NOTE: Use air from a fan on the power pack to decrease the time for it to become cool. Do not operate the pack motor until its temperature is less than 120° F. Measure the temperature with a thermocouple or other applicable equipment.

S 715-157
(7) Make sure all the landing gear doors open.

   NOTE: The doors for the main and nose landing gear doors will fall because of their own weight. You can manually help them to the fully open position.

S 715-156
(8) Make sure the UNSAFE, L; UNSAFE, R; and NOSE GEAR DOOR UNSAFE lights are not on.

S 715-155
(9) Make sure the power pack for the alternate extension system does not operate for more than 30 seconds. This time is measured from when you moved the ALL DOORS OPEN switch, on P72. The power pack is in the right wheel well.

   NOTE: You can hear the power pack motor operate.

S 715-164
(10) Push the MLG DR UNSAFE LT PRESS TO TEST switch. The switch is on the electrical service panel for the main wheel well, P72. Hold it for 2 seconds.

S 715-163

(11) Make sure the UNSAFE, L and UNSAFE, R lights come on in the left and right wheel well.

S 715-162

(12) Push the NOSE GEAR DOOR UNSAFE LIGHT PRESS TO TEST switch and hold it for 2 seconds. The switch is on the left equipment panel on the nose landing gear, P63.

S 715-161

(13) Make sure the NOSE GEAR DOOR UNSAFE light comes on in the wheel well for the nose landing gear.

S 715-154

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE MAIN LANDING GEAR. THE DOORS CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(14) Move the MLG DR CLOSE SW on the P72 panel to DOOR CLOSE and hold for 2 seconds.

S 715-153

(15) Make sure the doors for the main landing gear close.

S 715-149

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE LANDING GEAR. THE DOORS CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(16) Move the NOSE DOOR CLOSE switch on the P63 panel to ON for 2 seconds.

S 715-148

(17) Make sure the doors for the nose landing gear close.

S 415-147
(18) Close the access door for ground control of the landing gear doors, 198PR (AMM 06-41-00/201).

S 865-145
(19) Remove the power from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-144
(20) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-35-00-825-187

5. Adjustment - Landing Gear Alternate Extension (Fig. 501, 502, 503)
   A. General
      (1) Use this procedure to adjust the mechanisms that release the locks for the alternate extension of the nose and main landing gear door actuators to their correct operation condition.
   B. Equipment
      (1) Door Lock Release Actuator Spring Extender, MLG & NLG - B32051-1
      (2) Torque Wrench - commercially available (For torque ranges, Fig. 502 and 503)
   C. Consumable Materials
      (1) C00259 Primer - BMS 10-11, Type 1
      (2) D00002 Antiseize, Compound - AMS 3080
   D. References
      (1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
      (2) AMM 20-10-23/401, Lockwire
      (3) AMM 24-22-00/201, Electrical Power - Control
      (4) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
      (5) AMM 32-00-20/201, Landing Gear Downlocks
   E. Access
      (1) Location Zones
          115 Nose Landing Gear Wheel Well (Left)
          116 Nose Landing Gear Wheel Well (Right)
          143 Main Landing Gear Wheel Well (Left)
          144 Main Landing Gear Wheel Well (Right)
          211 Control Cabin (Left)
          212 Control Cabin (Right)
          711 Nose Landing Gear
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

      (2) Access Panel
          198PR Door - Landing Gear Ground Control (Right)

F. Prepare for the Adjustment

S 495-123
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 865-199
(2) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 865-118

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE AND MAIN LANDING GEAR. THE DOORS OPEN AT THE SAME TIME AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Push the lock override and momentarily move the control lever for the landing gear to the UP position to release the lock on the landing gear doors.

S 865-196

CAUTION: DO NOT MOVE THE CONTROL LEVER TO "DN." THE DOORS ARE NOT IN A SAFE CONDITION. THEY WERE OPENED WITH THE NORMAL SYSTEM AND NOT BY THE DOOR GROUND RELEASE. THE DOORS WILL CLOSE QUICKLY IF THE LEVER IS MOVED TO "DN." THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Move the control lever to OFF and attach a DO-NOT-OPERATE tag.

S 865-194
(5) Remove the pressure from the left and right hydraulic systems (AMM 29-11-00/201).

S 865-115
(6) Open these circuit breakers on the main power distribution panel, P6, and attach DO-NOT-CLOSE tags:
(a) 6F5, LANDING GEAR ALTN EXT CONT
(b) 6F6, LANDING GEAR ALTN EXT MOTOR

S 865-114
(7) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
(a) 11S17, DOORS CLOSE GROUND ACCESS

G. Adjust the Lock-Release Mechanism for the Actuator on the Main Landing Gear Door (Fig. 501, 503)

S 825-113
(1) Make sure the door lock-release actuator is fully retracted.

S 825-111

(2) Move the control rod for the safety valve up until the drive pin on the sequencing crank touches the drive face on the input crank (View A-A).

S 825-110

(3) Adjust the length of the control rod for the safety valve. Adjust it until the door safety valve is in the ON position in the tolerance range (View B-B).
   (a) Loosen the jamnut on the control rod.
   (b) Increase or decrease the length of the control rod if necessary. Make the adjustment to put the ON indicator mark at the limit of the counter-clockwise edge of the tolerance range. Increase the length of the control rod by 1/2 turn.
   (c) Make sure you can see threads on the rod end that cover at least one-half of the inspection hole.
   (d) Tighten the jamnut to 50-75 pound-inches (View A-A).
   (e) Apply antiseize compound to the threads that are in the open.

S 825-108

(4) Adjust the return stop for the output crank such that the conditions that follow occur (View A-A):
   (a) The door lock release actuator is fully retracted.
   (b) The drive pin on the sequencing crank touches the drive face on the input crank.
   (c) The output crank touches the return stop for the output crank.
   (d) Adjust the return stop. Make it so that the clearance between the drive face on the sequencing crank and the drive pin on the output crank is between 2.19-2.23 inches (55.63-56.64 millimeters).

S 825-106

(5) Adjust the length of the lock-release control rod for the door actuator. Align the centerline of the slot on the unlock crank for the door actuator with the centerline of the actuator rigging mark. The slot and the rigging mark should be less than 0.01 inch apart.
   (a) Loosen the jamnut.
   (b) Increase or decrease the length of the control rod if it is necessary.
   (c) Make sure you can see threads on the rod end that cover at least one-half of the inspection hole.
   (d) Tighten the jamnut to 50-75 pound-inches.
   (e) Apply antiseize compound to the threads that are in the open.

S 865-105

(6) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P6 panel:
   (a) 6F5, LANDING GEAR ALTN EXT CONT

S 985-104
(7) Pull the control rod for the safety valve down to turn the safety valve. Turn the safety valve to the latched position and engage the latch in the cam (Detail B).

S 825-103
(8) Make sure the roller on the door locked switch touches the latch roller face.

S 825-102
(9) Adjust the screw on the door locked switch until the conditions that follow occur:
(a) The latch touches the safety valve cam.
(b) The red DOOR UNSAFE light stays off when the clearance between the latch and the roller for the door locked switch is set between 0.13-0.15 inch (3.30-3.81 millimeters) (Detail C).

S 825-188
(10) Make sure the adjustment for the door closed switch is as shown in Figure 503. If it is necessary, use the two nuts to get the correct dimension for switch actuation.

S 865-101
(11) Open this circuit breaker on the P6 panel and attach a DO-NOT-CLOSE tag:
(a) 6F5, LANDING GEAR ALTN EXT CONT

S 825-100
(12) Do a check of all the adjustments again.

S 435-099
(13) Install lockwire on the jamnuts for the output crank return stop (AMM 20-10-23/401).

S 435-098
(14) Tighten the locking screw on the door locked switch to hold the adjustment screw in position. Install lockwire (AMM 20-10-23/401).

S 825-095
(15) Do the procedure again for the lock-release mechanism for the door actuator on the other main landing gear.

H. Adjust the Lock-Release Mechanism for the Actuator on the Door for the Nose Landing Gear (Fig. 502, 503)

NOTE: Make sure that you do the Prepare for Adjustment procedure (paragraph 5.F.) before you continue with this adjustment procedure.

S 985-094

(1) Use the spring extender to extend and disengage the return spring from the output crank (Detail B).

S 015-093

(2) Remove the access cover from the bracket above the door lock release actuator (Detail B).

S 825-090

(3) Move the sequencing control rod aft until the drive faces on the input and output cranks touch (View A-A).

S 825-092

(4) Make sure the door lock release actuator is fully retracted.

S 825-089

(5) Increase or decrease the length of the safety valve control rod, as necessary, to put the ON indicator mark at the 6 degree limit of the counter-clockwise edge of the tolerance range (Detail C). Increase the length of the control rod further by 1/2 turn.
   (a) Loosen the jamnut.
   (b) Increase or decrease the length of the control rod if it is necessary.
   (c) Make sure you can see the threads on the rod end through the inspection hole. At least one-half of what you see through the inspection hole should be threads.
   (d) Tighten the jamnut to 50-75 pound-inches.
   (e) Apply antiseize compound to the threads that are in the open.

S 825-088

(6) Move the sequencing control rod forward to engage the latch in the cam on the sequencing crank. Put the ground safety pin through the door lock holes in the latch crank and bracket (Detail D).

S 825-087

(7) Move the door actuator lock release control rod to the left until the drive faces on the sequencing and output cranks touch (Detail D).

S 825-086
(8) Adjust the length of the door actuator lock release control rod. Align the centerline of the slot in the door actuator unlock crank with the centerline of the rigging mark on the door actuator unlock lever. The slot and the rigging mark must be less than 0.01 inch apart (View C-C).
(a) Loosen the jamnut (Detail D).
(b) Increase or decrease the length of the control rod if it is necessary.
(c) Make sure you can see threads on the end of the control rod through the inspection hole. At least half of what you see through the inspection hole must be threads.
(d) Tighten the jamnut to 50-75 pound-inches.
(e) Apply an antiseize compound to the threads that are in the open.

S 825-085
(9) Adjust the return stop bolt so that the bolt touches the output crank (Detail D).

S 495-084
(10) Remove the pin from the door lock hole.

S 865-083
(11) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P6 panel:
(a) 6F5, LANDING GEAR ALTN EXT CONT

S 825-082
(12) Make sure the roller on the door locked switch touches the latch roller face (Detail E).

S 825-081
(13) Adjust the screw on the door locked switch until the conditions that follow occur (Detail E):
(a) The latch touches the cam on the sequencing crank.
(b) The red DOOR UNSAFE light stays off when the clearance between the door locked switch and the latch is 0.13-0.15 inch (3.30-3.81 millimeters) (Detail E).

S 825-189
(14) Make sure the adjustment for the door closed switch is as shown in Figure 503. If it is necessary, use the two nuts to get the correct dimension for switch actuation.

S 865-080
(15) Open this circuit breaker on the P6 panel and attach a DO-NOT-CLOSE tag:
(a) 6F5, LANDING GEAR ALTN EXT CONT

S 825-078
(16) Do a check of all the adjustments again.

S 435-077
(17) Install lockwire on the jamnuts for the output crank return stop and the adjustment screw on the door locked switch (AMM 20-10-23/401).

S 825-076
(18) Manually release the latch from the cam on the sequencing crank.

S 825-075
(19) Adjust the washers below the strike button on the latch. Do this to get the necessary dimension between the bolt and the piston for the door release interlock actuator as shown (Detail C). Apply primer to the washers.

S 415-074
(20) Install the access cover on the bracket.

S 435-079
(21) Connect the return spring to the output crank (Detail B).

I. Put the Airplane Back to Its Initial Condition

S 865-066
(1) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 865-065
(2) Supply electrical power (AMM 24-22-00/201).

S 865-195

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE AND MAIN LANDING GEAR. THE DOORS CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Remove the DO-NOT-OPERATE tag from the control lever for the landing gear and move it to the DN position.

S 865-063
(4) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P6 panel:
(a) 6F5, LANDING GEAR ALTN EXT CONT
(b) 6F6, LANDING GEAR ALTN EXT MOTOR

S 865-062
(5) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11S17, DOORS CLOSE GROUND ACCESS

S 865-053
(6) Remove the pressure from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-052
(7) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-35-00-705-051

6. System Test - Ground Release of the Landing Gear Doors (Fig. 503)
   A. General
      (1) This test contains a check of the ground release of the landing gear doors.
   B. References
      (1) AMM 06-41-00/201, Fuselage (Major Zone 100 and 200) Access Doors and Panels
      (2) AMM 24-22-00/201, Electrical Power - Control
      (3) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
   C. Access
      (1) Location Zones
          144 Main Landing Gear Wheel Well (Right)
          211 Control Cabin (Left)
          212 Control Cabin (Right)
          711 Nose Landing Gear
          731 Main Landing Gear (Left)
          741 Main Landing Gear (Right)

      (2) Access Panel
          198PR Door - Landing Gear Ground Control (Right)

   D. Do the Test of the Ground Release System for the Landing Gear Doors

S 495-050
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 865-049
(2) Make sure these circuit breakers on the main power distribution panel, P6, are closed:
(a) 6F5, LANDING GEAR ALTN EXT CONT
(b) 6F6, LANDING GEAR ALTN EXT MOTOR

S 865-048
(3) Make sure this circuit breaker on the overhead circuit breaker panel, P11, is closed:
(a) 11S17, DOORS CLOSE GROUND ACCESS

S 865-047
(4) Supply electrical power (AMM 24-22-00/201).

S 735-046

(5) Make sure the control lever for the landing gear is in the OFF position.

S 015-045

(6) Open the access door for ground control of the landing gear doors, 198PR (AMM 06-41-00/201). Find the electrical service panel for the main wheel well, P72.

S 865-295

CAUTION: IF THE NLG DOOR LOCK TOOL IS INSTALLED AND THE MLG DOORS ARE CLOSED, DO NOT OPEN THE MLG DOORS UNTIL THE NLG DOOR LOCK TOOL IS REMOVED. IF YOU DO NOT REMOVE THE DOOR LOCK TOOL BEFORE OPENING THE MLG DOORS, THE POWER PACK MAY NOT TURN OFF AND WILL BECOME TOO HOT. IF THE POWER PACK BECOMES TOO HOT, THE ALTERNATE EXTENSION SYSTEM MAY NOT OPERATE.

(7) Make sure that the NLG and MLG door locks are removed (AMM 32-00-15/201).

S 735-043

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE AND MAIN LANDING GEAR. THE DOORS OPEN QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) At the same time move the ALL DOORS OPEN ARM switch to ARM and the ALL DOORS OPEN switch to OPEN. Hold them for 2 seconds. The switches are on the P72 panel.

S 885-301

CAUTION: MAKE SURE YOU DO NOT RUN THE ALTERNATE EXTEND POWER PACK FOR MORE THAN FIVE MINUTES. IF YOU RUN THE POWER PACK FOR MORE THAN FIVE MINUTES, THE POWER PACK CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(9) Wait for the power pack motor surface temperature to cool below 120 degrees F prior to operating it for another five minute interval. If you are unable to determine the temperature of the motor, let the motor cool for 45 minutes or until you can hold your hand on it.

NOTE: The cooling time can be decreased by directing a fan onto the power pack. The surface temperature of the power pack motor must be cooled to 120 degrees F or less before the power pack can be turned on again. Check the temperature often using a thermocouple or other suitable temperature measurement equipment.

S 735-039

(10) Make sure the doors for the nose and main landing gear open.

NOTE: The doors will fall because of their weight. You can manually help them to the fully open position if it is necessary.

S 735-038

(11) Make sure the L and R MAIN GEAR DOOR UNSAFE lights in the main wheel wells are off. Make sure the NOSE GEAR DOOR UNSAFE light in the nose wheel well is off.

S 735-037

(12) Push the MAIN GEAR DOOR UNSAFE LT PTT switch on the electrical service panel for the main wheel well, P72. Make sure the L and R MAIN GEAR DOOR UNSAFE lights come on.

S 735-035

(13) Push the NOSE GEAR DOOR UNSAFE LT PTT switch on the left equipment panel on the nose landing gear, P63. Make sure the NOSE GEAR DOOR UNSAFE light comes on.

S 865-034
(14) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 735-033
(15) Move the control lever for the landing gear to the DN position.

S 735-032

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE MAIN LANDING GEAR. THE DOORS CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(16) Move the MAIN GEAR DOOR CLOSE switch to DOOR CLOSE. The switch is on the electrical service panel for the main wheel wells, P72.

S 735-029
(17) Make sure doors for the main landing gear close and lock.

S 015-025
(18) Close the access door 198PR (AMM 06-41-00/201).

S 735-023

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE LANDING GEAR. THE DOORS FOR THE NOSE LANDING GEAR WILL CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(19) Move the NOSE GEAR DOOR CLOSE switch to DOOR CLOSE. The switch is on the left equipment panel on the nose landing gear, P63.

S 735-021
(20) Make sure the forward doors for the nose landing gear close and lock.

S 865-019
(21) Remove the power from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-018
(22) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-35-00-705-191

7. System Test - Landing Gear Alternate Extension (Fig. 501A, 503, 505)

A. General

(1) This test does a check of the mechanical, electrical, and hydraulic functions of the landing gear alternate extension system.

B. References

(1) AMM 06-41-00/201, Fuselage (Major Zone 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 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
(5) AMM 32-00-20/201, Landing Gear Downlocks

C. Access

(1) Location Zones

144 Main Landing Gear Wheel Well (Right)
211 Control Cabin (Left)
212 Control Cabin (Right)
711 Nose Landing Gear
731 Main Landing Gear (Left)
741 Main Landing Gear (Right)

(2) Access Panel

198PR Door - Landing Gear Ground Control (Right)

D. Do the Test of the Landing Gear Alternate Extension

S 865-017

(1) Prepare for the Alternate Extension Test
(a) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).
(b) Lift the airplane on jacks sufficiently for the landing gear to retract (AMM 07-11-01/201).
(c) Supply electrical power (AMM 24-22-00/201).

(d) Move the control lever for the landing gear to the OFF position.
(e) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).
(f) Make sure these circuit breakers on the main power distribution panel, P6, are closed:
1) 6F5, LANDING GEAR ALTN EXT CONT
2) 6F6, LANDING GEAR ALTN EXT MOTOR
(g) Make sure these circuit breakers on the overhead panel, P11, are closed:
1) 11C30, LANDING GEAR POS SYS 1
2) 11S15, AIR/GND SYS 1
3) 11S17, DOORS CLOSE GROUND ACCESS
4) 11S19, AIR/GND SYS 2
5) 11S23, POS SYS 2
6) 11P1, L IND LTS 1
7) 11P2, L IND LTS 2
8) 11P28, R IND LTS 1
9) 11P29, R IND LTS 2
10) 11P5, IND LTS DIM CONT
11) 11A32, IND LTS 1
12) 11A33, IND LTS 2
13) 11A34, IND LTS 3
14) 11A35, IND LTS 4
15) 11A31, IND LTS TEST
(h) Remove the downlocks on the nose and main landing gear (AMM 32-00-20/201).
(i) Pressurize the left hydraulic system to 2800-3150 psig (AMM 29-11-00/201).

S 735-016
(2) Do a Test of Alternate Extension with the Control Lever in the OFF Position:
(a) Do the steps in the Prepare for Alternate Extension Test paragraph.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE AND MAIN LANDING GEAR. THE DOORS AND THE LANDING GEAR MOVE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(b) Move the control lever for the landing gear to the UP position to retract the landing gear.
1) Move the control lever to OFF when the landing gear are up and locked.

(c) Remove the pressure from the left hydraulic system (AMM 29-11-00/201). Make sure the pressure is less than 200 psig.

NOTE: You can operate the flight controls to make sure that hydraulic pressure is less than 200 psig.

(d) Make sure the landing gear doors stayed closed and locked.
(e) Move the control lever to the DN position.
(f) Make sure the landing gear doors stay in the locked position.
(g) Move the control lever to the OFF position.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE AND MAIN LANDING GEAR. THE LANDING GEAR AND DOORS MOVE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

CAUTION: DO NOT HOLD THE "ALTN GEAR EXTENSION" SWITCH IN FOR MORE THAN TWO SECONDS. IF YOU HOLD THE SWITCH IN FOR MORE THAN TWO SECONDS, THE POWER PACK CAN BECOME TOO HOT. THE ALTERNATE EXTENSION SYSTEM WILL NOT OPERATE IF THIS OCCURS.

(h) Open this circuit breaker on the main power distribution panel, P6:
1) 6F5, LANDING GEAR ALTN EXT CONT
(i) Operate the ALTN GEAR EXTENSION switch, that is found below the control lever.
(j) Make sure that the landing gear doors and the landing gear do not move.
(k) Close this circuit breaker on the main power distribution panel, P6:
1) 6F5, LANDING GEAR ALTN EXT CONT
(l) Operate the ALTN GEAR EXTENSION switch, that is found below the control lever. Hold it for approximately 2 seconds.

CAUTION: DO NOT OPERATE THE ALTERNATE EXTEND POWER PACK FOR MORE THAN FIVE MINUTES. IF YOU OPERATE THE POWER PACK FOR MORE THAN FIVE MINUTES, THE POWER PACK CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(m) Wait for the power pack motor surface temperature to cool below 120° F before you operate it for another five minute interval. If you cannot measure the temperature of the motor, let the motor become cool for 45 minutes or until you can hold your hand on it.

NOTE: The cooling time can be decreased by directing a fan onto the power pack. The surface temperature of the power pack motor must be cooled to 120 degrees F or less before the power pack can be turned on again. Check the temperature often using a thermocouple or other suitable temperature measurement equipment.

(n) AIRPLANES WITH THE ALTN LIGHT ON THE ALTN EXTENSION SWITCH; make sure the ALTN white light comes on after you release the switch for not more than 30 seconds.

(o) Make sure the landing gear doors open and the landing gear extend to the down and locked position.

NOTE: The landing gear tires can touch the doors during the steps that follow.

1) Monitor the time between operation of the switch and when the green DOWN lights (left and right) come on. Make sure it is less than 30 seconds. The lights are on the P3-1 panel.
2) Make sure the nose landing gear extends to the down and locked position. Apply less than 50 pounds force to the tires to help it into the down and locked position.

3) Make sure the nose green DOWN light on the P3-1 panel comes on.
4) Make sure the amber DOORS light on the P3-1 panel is on.

NOTE: The DOORS light shows that the door position disagrees with the position of the landing gear control lever.

(p) At the same time, move the ALL DOORS OPEN ARM switch to ARM and the ALL DOORS OPEN switch to OPEN. Hold them for approximately 2 seconds. The switches are on the P72 panel.
(q) Make sure the EICAS message, LDG GEAR MONITOR, does not show on the bottom display after 30 seconds.
1) Make sure the power pack for the alternate extension system does not operate.
(r) Pressurize the left hydraulic system (AMM 29-11-00/201).
(s) Move the control lever for the landing gear to the DN position.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE MAIN LANDING GEAR. THE DOORS CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(t) Prepare to measure the time to close the doors for the left and right main landing gear.
(u) Make sure you wait at least 2 minutes after the landing gear extends before you try to close the landing gear doors.
(v) Move the L and R MAIN GEAR DOOR CLOSE switch to the DOOR CLOSE position and hold for approximately 2 seconds. This will close the doors for the left and right main landing gear.
(w) Make sure it takes at least 5 seconds for the main landing gear doors to close.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE LANDING GEAR. THE DOORS CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(x) Prepare to measure the time to close the doors for the nose landing gear.
(y) Move the NOSE GEAR DOOR CLOSE switch to the DOOR CLOSE position and hold for approximately 2 seconds. This will close the forward doors for the nose landing gear. The switch is on the left equipment panel on the nose landing gear, P63.
(z) Make sure it takes at least 5 seconds for the nose landing gear doors to close.
(aa) Open this circuit breaker on the circuit breaker panel, P6:
1) 6F5, LANDING GEAR ALTN EXT CONT
(ab) At the same time, move the ALL DOORS OPEN ARM switch to ARM and the ALL DOORS OPEN switch to OPEN. Hold them for approximately 2 seconds. The switches are on the P72 panel.
(ac) Make sure the landing gear doors do not move.

(ad) Close this circuit breaker on the circuit breaker panel, P6:
1) 6F5, LANDING GEAR ALTN EXT CONT
(ae) Make sure the landing gear doors do not move.
(af) Move the ALL DOORS OPEN ARM switch to ARM.
(ag) Make sure the landing gear doors do not move.
(ah) Move the ALL DOORS OPEN switch to OPEN.
(ai) Make sure the landing gear doors do not move.
(aj) At the same time, move the ALL DOORS OPEN ARM switch to ARM and the ALL DOORS OPEN switch to OPEN. Hold them for approximately 2 seconds.
(ak) Make sure all the landing gear doors open.
(al) Make sure the L and R MAIN GEAR DOOR UNSAFE lights in the main wheel wells are off. Make sure the NOSE GEAR DOOR UNSAFE light in the nose wheel well is off.
(am) Select L COMPUTER on the EICAS Display Select Panel on the P9 panel.
(an) At the same time, move the ALL DOORS OPEN ARM switch to ARM and the ALL DOORS OPEN switch to OPEN. Hold them for approximately 2 seconds.
(ao) Make sure the Alternate Landing Gear Extend Motor does not operate.
(ap) Make sure the EICAS status message, LDG GEAR MONITOR, does not show on the bottom display after 30 seconds.
(aq) Select R COMPUTER on the EICAS Display Select Panel on the P9 panel.
(ar) Make sure the EICAS status message, LDG GEAR MONITOR, does not show on the bottom display after 30 seconds.
(as) Make sure you wait at least 2 minutes after the landing gear doors opened before you try to close the landing gear doors.
(at) Move the L and R MAIN GEAR DOOR CLOSE switch to the DOOR CLOSE position and hold for approximately 2 seconds. This will close the doors for the left and right main landing gear.
(au) Move the NOSE GEAR DOOR CLOSE switch to the DOOR CLOSE position and hold for approximately 2 seconds. This will close the forward doors for the nose landing gear. The switch is on the left equipment panel on the nose landing gear, P63.

(av) Make sure all the landing gear doors close.
(aw) Open this circuit breaker on the circuit breaker panel, P6:
1) 6F6, LANDING GEAR ALTN EXT MOTOR
(ax) At the same time, move the ALL DOORS OPEN ARM switch to ARM and the ALL DOORS OPEN switch to OPEN. Hold them for approximately 2 seconds.
(ay) Make sure the R EICAS status message, LDG GEAR MONITOR, shows on the bottom display after 30 seconds.
(az) Select L COMPUTER on the EICAS Display Select Panel on the P9 panel.
(ba) Make sure the EICAS status message, LDG GEAR MONITOR, shows on the bottom display.
(bb) Close this circuit breaker on the circuit breaker panel, P6:

NOTE: All of the landing gear doors will open.

1) 6F6, LANDING GEAR ALTN EXT MOTOR

S 735-007
(3) Do a Test of Alternate Extension with the Control Lever in Up the Position.
(a) Do the steps in the Prepare for the Alternate Extension Test paragraph.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE AND MAIN LANDING GEAR. THE LANDING GEAR AND DOORS MOVE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(b) Move the control lever for the landing gear to the UP position.
(c) Make sure these lights show that the landing gear and doors are in the up and locked position (the lights are on the pilot's panel, P3-1):
LEFT green DOWN light off
RIGHT green DOWN light off
NOSE green DOWN light off
GEARS amber caution light off
DOORS amber caution light off

(d) Move the control lever for the landing gear to the OFF position.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE AND MAIN LANDING GEAR. THE LANDING GEAR AND DOORS MOVE QUICKLY AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(e) Move control lever for the landing gear to the UP position.
(f) Make sure the landing gear stays retracted and the doors are closed.
(g) Push the ALTN GEAR EXTENSION button that is below the control lever for the landing gear. Hold it for approximately 2 seconds.

CAUTION: MAKE SURE YOU DO NOT RUN THE ALTERNATE EXTEND POWER PACK FOR MORE THAN FIVE MINUTES. IF YOU RUN THE POWER PACK FOR MORE THAN FIVE MINUTES, THE POWER PACK CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(h) Wait for the power pack motor surface temperature to cool below 120 degrees F prior to operating it for another five minute interval. If you are unable to determine the temperature of the motor, let the motor cool for 45 minutes or until you can hold your hand on it.

NOTE: The cooling time can be decreased by directing a fan onto the power pack. The surface temperature of the power pack motor must be cooled to 120 degrees F or less before the power pack can be turned on again. Check the temperature often using a thermocouple or other suitable temperature measurement equipment.

(i) Make sure the landing gear extends to the down and locked position with all the doors open.

NOTE: The landing gear tires can possibly touch the doors.

(j) Make sure these lights show that the landing gear are down and locked and the doors are open (the lights are on the pilot's panel, P3-1):
LEFT green DOWN light on
RIGHT green DOWN light on
NOSE green DOWN light on
GEARS amber caution light on
DOORS amber caution light on
(k) Move the control lever for the landing gear to the DN position. After 5 seconds, continue.
(l) Move the MAIN GEAR DOOR CLOSE switch on the P72 panel to DOOR CLOSE. Hold it for approximately 2 seconds. The main gear doors should close.

(m) Move the NOSE GEAR DOOR CLOSE switch on the P63 panel to DOOR CLOSE. Hold it for approximately 2 seconds. The nose gear doors should close.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE AND MAIN LANDING GEAR. THE LANDING GEAR AND DOORS MOVE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(n) Move the control lever for the landing gear to the UP position.

CAUTION: MAKE SURE YOU DO NOT RUN THE ALTERNATE EXTEND POWER PACK FOR MORE THAN FIVE MINUTES. IF YOU RUN THE POWER PACK FOR MORE THAN FIVE MINUTES, THE POWER PACK CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(o) Wait for the power pack motor surface temperature to cool below 120 degrees F prior to operating it for another five minute interval. If you are unable to determine the temperature of the motor, let the motor cool for 45 minutes or until you can hold your hand on it.

NOTE: The cooling time can be decreased by directing a fan onto the power pack. The surface temperature of the power pack motor must be cooled to 120 degrees F or less before the power pack can be turned on again. Check the temperature often using a thermocouple or other suitable temperature measurement equipment.

(p) Make sure the landing gear retract.
(q) Move the control lever for the landing gear to the DN position.
(r) Make sure that all the landing gear are down and locked.

S 945-006

(4) Lower the airplane and remove the jacks (AMM 07-11-01/201).

S 495-005
(5) Install the downlocks on the nose and main landing gear (AMM 32-00-20/201).

S 415-004
(6) Close the access door 198PR (AMM 06-41-00/201).

S 865-002
(7) Remove the power from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-001
(8) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-35-00-765-267

8. Alternate Extension System Power Pack Dielectric Test

NOTE: This test is applicable to the P/N S273N401-7 (Frisby P/N 1FA13017-1) power pack only.

A. References
(1) AMM 12-12-01/301, Hydraulic Systems
(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 32-35-00/501, Landing Gear Alternate Extension
(7) AMM 32-35-10/401, Alternate Extension System Power Pack

B. Equipment
(1) Megohmmeter - Insulation Resistance Tester, Biddle Megger BM11, AEMC 1045, (or equivalent)

C. Access
(1) Location Zones

144	Main Landing Gear Wheel Well (Right)
211	Control Cabin (Left)
212	Control Cabin (Right)

D. Prepare for the Test

S 485-268

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 485-269

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 865-271

(3) Make sure the control lever for the landing gear is in the DN position.

S 865-272

(4) Open this circuit breaker on the main power distribution panel, P6-1, and attach a DO-NOT-CLOSE tag:
(a) 6F6, LANDING GEAR ALTN EXT MOTOR

S 865-274

(5) Remove the pressure from the center hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

E. Dielectric Test for the Alternate Extension System Power Pack

S 025-275

(1) Disconnect the electrical connector from the power pack.

S 765-276

(2) With the megohmmeter set at 500 VDC, measure the resistance between pin A of the connector and the connector housing.
   (a) If the resistance is less than 10 megohms, replace the alternate extension system power pack (AMM 32-35-10/401).
   (b) If the resistance is greater than 10 megohms, then continue and put the airplane back to its usual condition.

S 425-277

(3) Connect the electrical connector.

S 865-278

(4) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the main power distribution panel, P6-1 :
   (a) 6F6, LANDING GEAR ALTN EXT MOTOR

F. Check of the Power Pack for the Correct Installation

S 865-279

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

S 865-282

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

S 085-283

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 715-292

CAUTION: DO NOT OPERATE THE ALTERNATE EXTENSION SYSTEM WITH THE DOOR LOCK INSTALLED ON THE NOSE LANDING GEAR. THIS CAN CAUSE DAMAGE TO THE POWER PACK FOR THE ALTERNATE EXTENSION SYSTEM.

(4) Do the operational test of the alternate extension system for the landing gear (AMM 32-35-00/501).

G. Put the Airplane Back to Its Usual Condition

S 865-281
(1) Make sure the level of the center hydraulic system reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 865-290
(2) Remove the power from the center hydraulic system if it is not necessary (AMM 29-11-00/201).

S 865-293
(3) Remove electrical power if it is not necessary (AMM 24-22-00/201).

MAIN GEAR ALTERNATE UPLOCK RELEASE ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the alternate uplock release actuator for the main landing gear. The second task installs the alternate uplock release actuator.

TASK 32-35-01-004-001

2. Remove the Alternate Uplock Release 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 Zone
          143 MLG Wheel Well (Left)
          144 MLG Wheel Well (Right)
          211 Control Cabin (Left Side)
          212 Control Cabin (Right Side)

   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: 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.

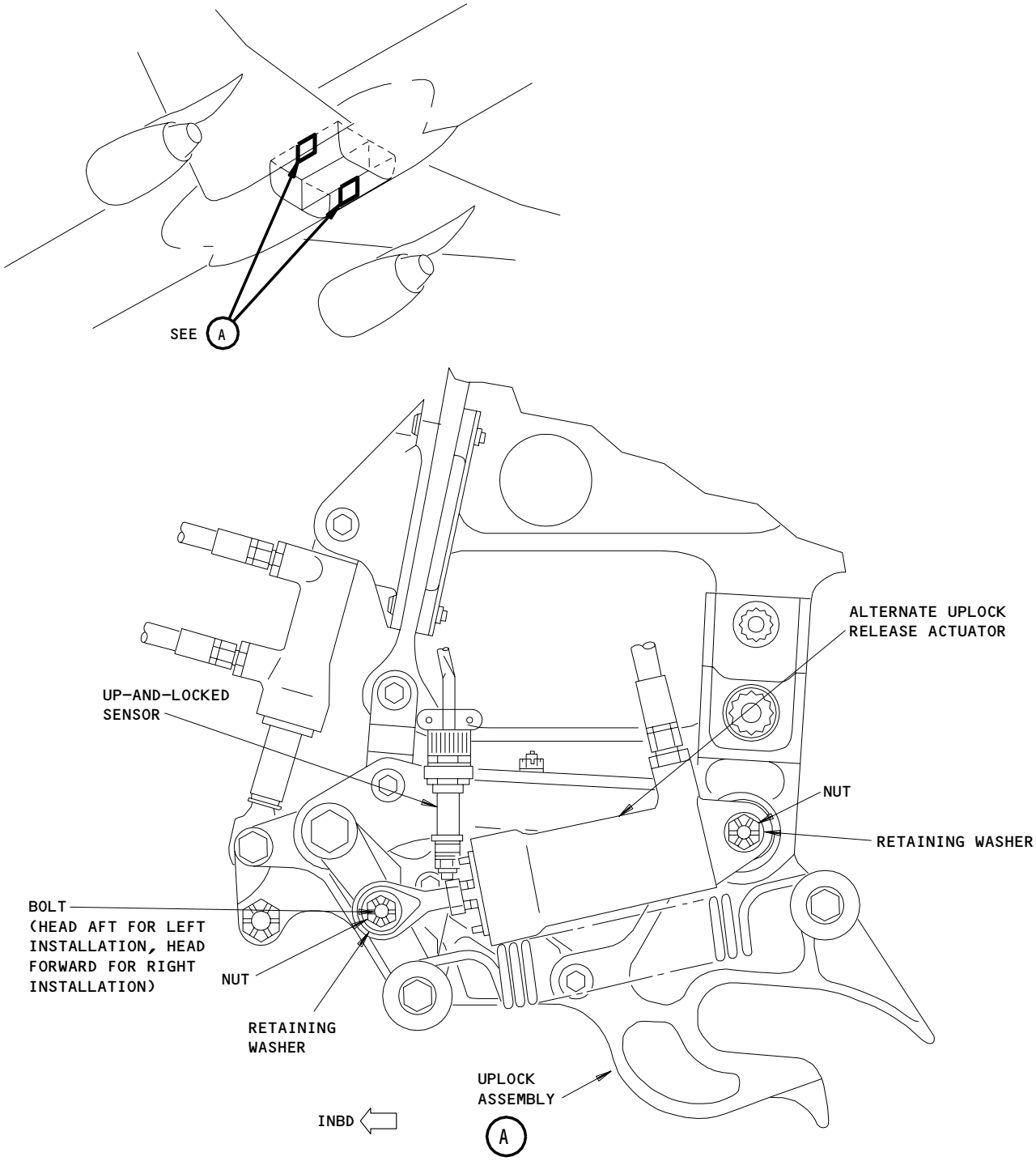
      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

      S 864-004
      (3) Remove the pressure from the left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).
   D. Procedure to Remove the Actuator

      S 034-005
      (1) Disconnect the hydraulic line from the actuator.

      S 494-006
      (2) Install a plug in the line and fitting.

      S 984-007
      (3) Apply a force to the uplock hook to manually put the uplock assembly into the closed position.



Main Landing Gear Alternate Uplock Release Actuator Installation
Figure 401

S 034-008
(4) Remove the bolt to disconnect the rod end of the actuator from the uplock assembly (Detail A).

S 024-009
(5) Remove the nut to disconnect the head end of the actuator from the uplock assembly and remove the actuator.

TASK 32-35-01-404-010

3. Install the Alternate Uplock Release Actuator for 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, Landing Gear Door Locks

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-G-23827
(Optional to BMS 3-33)
(3) D00148 Fluid, Hydraulic - BMS 3-11, Type IV, Class 1

C. Access
(1) Location Zone
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)
211 Control Cabin (Left Side)
212 Control Cabin (Right Side)

D. Procedure to Install the Actuator

S 614-011
(1) Fill the actuator with hydraulic fluid.

S 494-012
(2) Install a plug in the hydraulic fitting.

S 424-014
(3) Apply grease and install the nut, retaining washer, and cotter pin to connect the head end of the actuator to the uplock assembly. Torque the nut to 75-200 pound-inches (8.47-22.60 newton-meters).

S 424-024
(4) Apply grease and install the bolt, retaining washer, nut, and cotter pin to connect the rod end of the actuator to the uplock assembly. Install the washer behind the nut only. Torque the nut to 75-200 pound-inches (8.47-22.60 newton-meters).

S 864-015
(5) Make sure the pressure is removed from the left hydraulic system and reservoir (AMM 29-11-00/201).

S 434-016
(6) Connect the hydraulic line to the actuator port.

S 644-017
(7) Lubricate the grease fittings.

E. Do a Check of the Actuator for Hydraulic Leaks

S 714-018

CAUTION: DO NOT HOLD THE "ALL DOORS OPEN" SWITCHES IN THE "ARM" AND "OPEN" POSITIONS MORE THAN TWO (2) SECONDS. IF YOU HOLD THE SWITCHES MORE THAN TWO (2) SECONDS THIS CAN CAUSE THE POWER PACK TO BECOME TOO HOT, AND THE ALTERNATE EXTENSION SYSTEM WILL NOT OPERATE.
DO NOT OPERATE THE POWER PACK (ALTERNATE EXTEND) FOR MORE THAN FIVE MINUTES. IT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE MOTOR.

(1) At the same time, move the ALL DOORS OPEN ARM switch to ARM and the ALL DOORS OPEN switch to OPEN. The switches are on the electrical service panel for the main wheel well, P72.

S 714-019
(2) Make sure the alternate actuator extends and moves the uplock assembly suddenly open.

S 794-019
(3) Examine the actuator for hydraulic leaks.

F. Put the Airplane Back to Its Initial Condition

S 614-020
(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 094-021

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).

MAIN GEAR DOOR LOCK RELEASE ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains these four tasks:
      (1) A procedure to remove the actuator that releases the door lock for the main landing gear.
      (2) A procedure to install the actuator.
      (3) A procedure to remove the sequencing cranks for the main landing gear door lock release.
      (4) A procedure to install the sequencing cranks.

   TASK 32-35-03-004-021

2. Remove the Actuator that Releases the Door Lock on 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
      (4) AMM 32-35-00/201, Landing Gear Alternate Extension
   B. Access
      (1) Location Zone
          143 MLG Wheel Well (Left)
          144 MLG Wheel Well (Right)
          211 Control Cabin (Left)
          212 Control Cabin (Right)
          731 Main Landing Gear (Left)
          732 MLG Body Door
          741 Main Landing Gear (Right)
          742 MLG Body Door

   C. Prepare for the Removal

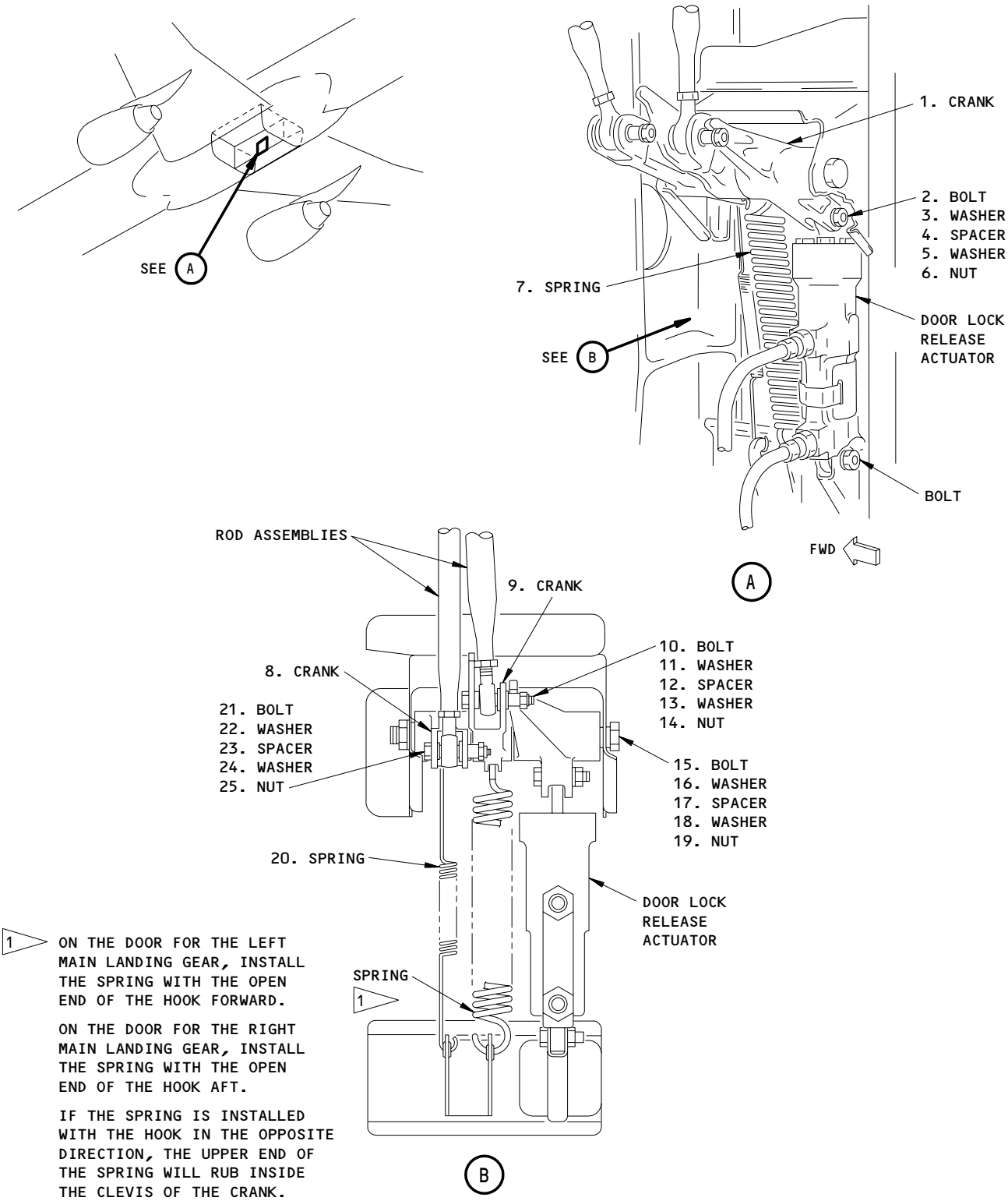
      S 494-022
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-023
      (2) If will remove an actuator that does not operate, open the landing gear doors (AMM 32-35-00/201).

      S 494-024

      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).



Main Landing Gear Door Lock Release Actuator Installation
Figure 401

S 864-025
(4) Open this circuit breaker on the main power distribution panel, P6-1, and attach a DO-NOT-CLOSE tag:
(a) 6F6, LANDING GEAR ALTN EXT MOTOR

S 864-026
(5) Remove the pressure from the left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

D. Remove the Actuator

S 034-027
(1) Disconnect the hydraulic lines from the actuator.

S 494-028
(2) Install plugs in the lines and fittings.

S 034-029
(3) Remove the bolt to disconnect the rod end of the actuator from the crank (Detail A).

S 024-030
(4) Remove the bolt to disconnect the head end of the actuator from the support, and remove the actuator.

TASK 32-35-03-404-020

3. Install the Actuator that Releases the Door Lock for the Main Landing Gear (Fig. 401)

A. Consumable Materials
(1) D00148 Fluid, Hydraulic - BMS 3-11, Type IV, Class 1

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 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-35-00/501, Landing Gear Alternate Extension

C. Access
(1) Location Zone

143	MLG Wheel Well (Left)
144	MLG Wheel Well (Right)
211	Control Cabin (Left)
212	Control Cabin (Right)
731	Main Landing Gear (Left)
732	MLG Body Door
741	Main Landing Gear (Right)
742	MLG Body Door

D. Procedure

S 614-019
(1) Fill the actuator with hydraulic fluid.

S 494-018
(2) Install plugs in the hydraulic fittings.

S 434-017
(3) Install the bolt, washers, spacer, and nut to connect the head end of the actuator to the structure. Put the plain washer behind the nut, and the countersink washer behind the head of the bolt with the countersink to the head (Detail A).

S 434-016
(4) Install the bolt, washers, bushing, and nut to connect the rod end of the actuator to the crank. Put the plain washer behind the nut, and the countersink washer behind the head of the bolt with the countersink to the head.

S 864-015
(5) Make sure the pressure is removed from the left hydraulic system and hydraulic reservoir.

S 434-014
(6) Connect the hydraulic lines to the actuator.

S 864-013
(7) Close this circuit breaker on the main power distribution panel, P6-1:
6F6, LANDING GEAR ALTN EXT MOTOR

E. Do a Check of the Actuator for the Correct Installation

S 864-012
(1) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 864-011
(2) Supply electrical power (AMM 24-22-00/201).

S 094-010

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

NOTE: Only the door lock in the wheel well where you replaced the actuator must be removed.

S 494-009

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.

(4) Open the door for the landing gear and install door lock (AMM 32-00-15/201).

S 794-008

(5) Examine the actuator for hydraulic leaks.

S 824-006

(6) Do a check of the adjustment of the mechanism that releases the door lock (AMM 32-35-00/501).

S 434-005

(7) Make sure the spring is installed with the end hook as shown in Fig. 401.

F. Put the Airplane Back to Its Initial Condition

S 614-004

(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 094-003

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 864-002

(3) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-001

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

TASK 32-35-03-004-061

4. Remove the Sequencing Cranks for the Main Landing Gear Door Lock Release

A. Equipment

(1) Spring Extender - B32051-1

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 Zone

143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)
211 Control Cabin (Left)
212 Control Cabin (Right)
732 MLG Body Doors (Left)
742 MLG Body Doors (Right)

D. Prepare for the Removal

S 494-041

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

S 494-042

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 864-044

(3) Open this ciruit breaker on the main power distribution panel, P6-1, and attach a DO-NOT-CLOSE tag:
(a) 6F6, LANDING GEAR ALTN EXT MOTOR

S 864-045

(4) Remove the pressure from the left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

E. Procedure

S 024-046

(1) Use the spring extender (or equivalent) to remove spring (7) from the crank (9).

S 024-047

(2) Remove spring (20) from crank (8).

S 024-048
(3) Remove the bolt (2), washer (3), spacer (4), washer (5), and nut (6) to disconnect the crank (1) from the door lock release actuator.

S 024-049
(4) Remove the bolt (10), washer (11), spacer (12), washer (13), and nut (14) to disconnect the crank (9) from the rod assembly.

S 024-050
(5) Remove the bolt (21), washer (22), spacer (23), washer (24), and nut (25) to disconnect the crank (8) from the rod assembly.

S 024-051
(6) Remove the bolt (15), washer (16), spacer (17), washer (18), and nut (19) to disconnect the crank (9) from the rod assembly.
(a) Remove the cranks (1,8,9).

TASK 32-35-03-404-062

5. Install the Sequencing Cranks for the Main Landing Gear Door

A. References
(1) AMM 29-11-00/201, Pressureize/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
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)
211 Control Cabin (Left)
212 Control Cabin (Right)
732 MLG Body Doors (Left)
742 MLG Body Doors (Right)

C. Procedure

S 424-053
(1) Put the cranks (1,8,9) in their position.

S 424-054
(2) Install bolt (15), washer (16), spacer (17), washer (18), and nut (19) to attach the cranks (1,8,9) to the structure.

S 424-055
(3) Install the bolt (21), washer (22), spacer (23), washer (24), and nut (25) to connect teh crank (8) to the rod assembly.

S 424-056
(4) Install the bolt (10), washer (11), spacer (12), washer (13), and nut (14) to connect the crank (9) to the rod assembly.

S 424-057
(5) Install the bolt (2), washer (3), spacer (4), washer (5), and nut (6) to connect the crank (1) to the door lock release actuator.

S 424-058
(6) Install the spring (20) onto the crank (8).

S 424-059
(7) Use the spring extender (or equivalent) to install the spring (7) onto the crankk (9).
(a) Make sure the spring (7) is installed with the end hook as shown in Fig. 401.

S 424-060
(8) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the main power distribution panel P6-1:
(a) 6F6, LANDING GEAR ALTN EXT MOTOR

S 824-039
(9) Do the adjustment of the main landing gear door actuator release mechanism (AMM 32-35-00/501).

S 714-038
(10) Do the operational test of the main landing gear doors (AMM 32-35-00/501).

D. Put the Airplane Back to Its Initial Condiditon

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.

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

S 864-035
(2) Remove the pressure from the hydraulic system (AMM 29-11-00/201).

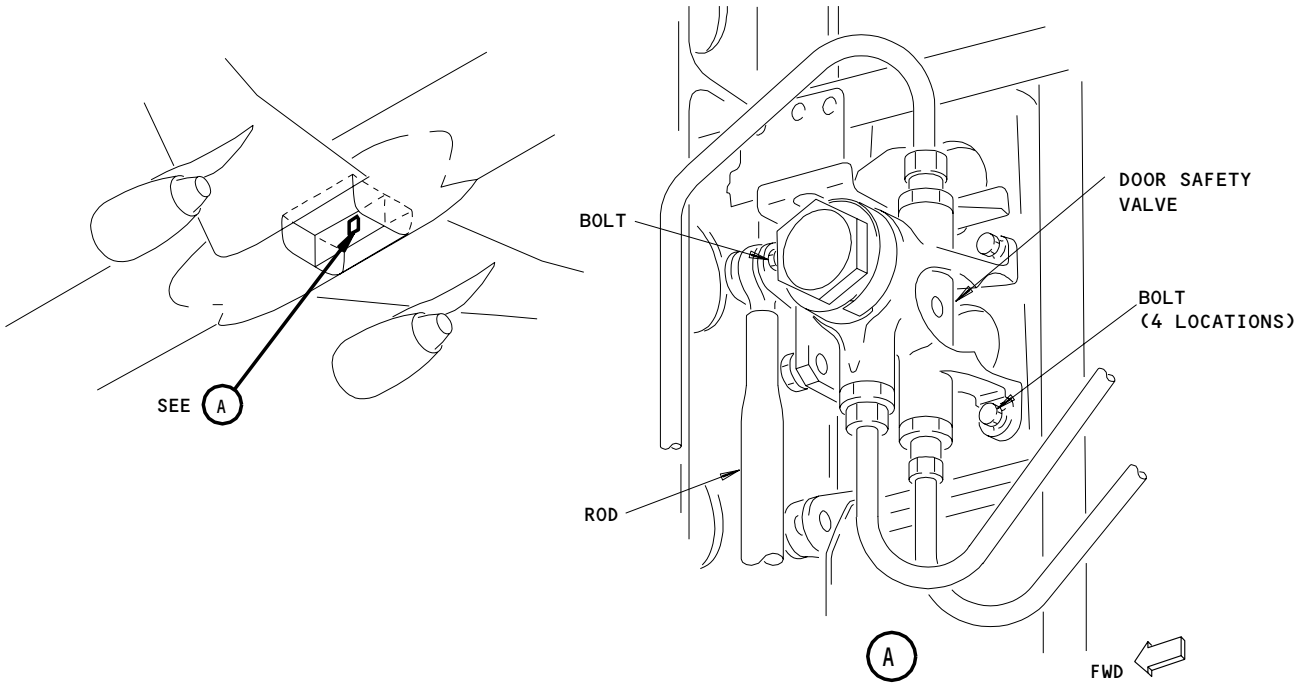
S 864-034
(3) Remove electrical power if it is not necessary (AMM 24-22-00/201).

MAIN GEAR DOOR SAFETY VALVE - REMOVAL/INSTALLATION

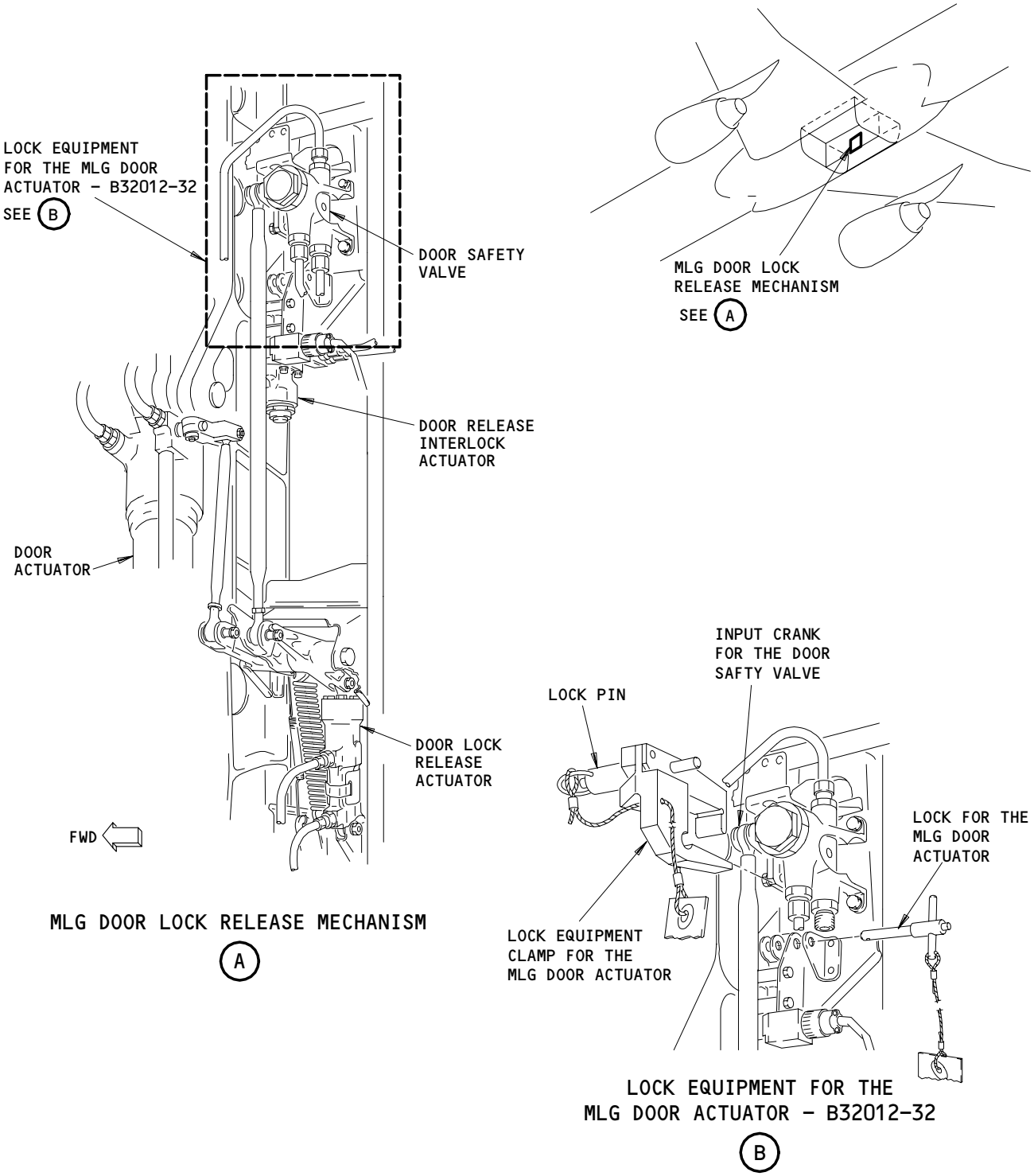
1. General
   A. This procedure contains two tasks. The first task removes the door safety valve for the main landing gear. The second task installs the door safety valve.

   TASK 32-35-05-004-001

2. Remove the Door Safety Valve for the Main Landing Gear (Fig. 401, 402)
   A. Equipment
      (1) Door Actuator Lock Equipment, MLG-B32012-32
   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 Zone
          143 MLG Wheel Well (Left)
          144 MLG Wheel Well (Right)
          211 Control Cabin (Left)
          212 Control Cabin (Right)
          732 MLG Body Doors (Left)
          742 MLG Body Doors (Right)



Main Landing Gear Door Safety Valve Installation
Figure 401



MLG DOOR LOCK RELEASE MECHANISM

(A)

LOCK EQUIPMENT FOR THE
MLG DOOR ACTUATOR - B32012-32

(B)

Main Landing Gear Door Actuator Lock Equipment Installation
Figure 402

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 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) Open this circuit breaker on the main power distribution panel, P6-1, and attach a DO-NOT-CLOSE tag:
(a) 6F6, LANDING GEAR ALTN EXT MOTOR

S 864-005
(4) Remove the pressure from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

E. Procedure to Remove the Valve

S 034-006
(1) Disconnect the hydraulic lines from the valve.

S 494-007
(2) Install plugs in the lines and fittings.

S 094-008
(3) Remove the lockpin from the top half of the lock equipment clamp for the door actuator on the main landing gear (Fig. 402).

S 094-009
(4) Remove the equipment clamp from the safety valve.

S 034-010

(5) Remove the bolt to disconnect the top end of the rod from the lever on the safety valve (Detail A).

S 024-011

(6) Remove the bolts that attach the valve to the structure, and remove the valve.

TASK 32-35-05-404-012

3. Install the Door Safety Valve for the Main Landing Gear (Fig. 401, 402)

A. Equipment

(1) Door Actuator Lock Equipment, MLG-B32012-32

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 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-35-00/501, Landing Gear Alternate Extension

C. Access

(1) Location Zone

143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)
211 Control Cabin (Left)
212 Control Cabin (Right)
732 MLG Body Doors (Left)
742 MLG Body Doors (Right)

D. Procedure to Install the Valve

S 424-013

(1) Install the bolts and washers to attach the valve to the support. Put the countersunk washer behind the head of the bolt with the countersink to the head (Detail A).

S 434-014

(2) Install the bolt, washers, bushing, and nut to connect the rod to the lever on the side of the valve. Put the plain washer behind the nut. Put the countersunk washer behind the head of the bolt with the countersink to the head.

S 494-015

(3) Do the steps that follow to install the lock equipment clamp for the door actuator on the safety valve (Fig. 402).
   (a) Remove the lockpin from the equipment clamp.
   (b) Move the top and lower half of the clamp apart and install it on the input crank of the safety valve.
   (c) Install the lockpin through the each half of the equipment clamp.

S 864-016

(4) Make sure the pressure is removed from the left hydraulic system and reservoir (amm 29-11-00/201).

S 434-017

(5) Connect the hydraulic lines to the valve.

S 864-018

(6) Close this circuit breaker on the main power distribution panel, P6-1:
   6F6, LANDING GEAR ALTN EXT MOTOR

E. Do a Check of the Valve for the Correct Installation

S 864-019

(1) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 864-020

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

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.

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

   NOTE: It is only necessary to remove the door lock in the wheel where you replaced the valve.

S 494-022

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.

(4) Open the door for the landing gear and install the door lock (AMM 32-00-15/201).

S 794-023

(5) Examine the valve for hydraulic leaks.

F. Put the Airplane Back to Its Initial Condition

S 614-024

(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 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.

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

S 864-026

(3) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-027

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

MAIN GEAR DOOR RELEASE INTERLOCK ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure has these tasks:
      (1) A door release interlock actuator removal
      (2) An actuator installation
      (3) A door alternate extension latch removal
      (4) A latch installation

   TASK 32-35-06-004-001

2. Remove the Door Release Interlock 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 Zone
          143 MLG Wheel Well (Left)
          144 MLG Wheel Well (Right)
          211 Control Cabin (Left)
          212 Control Cabin (Right)
          732 MLG Body Doors (Left)
          742 MLG Body Doors (Right)

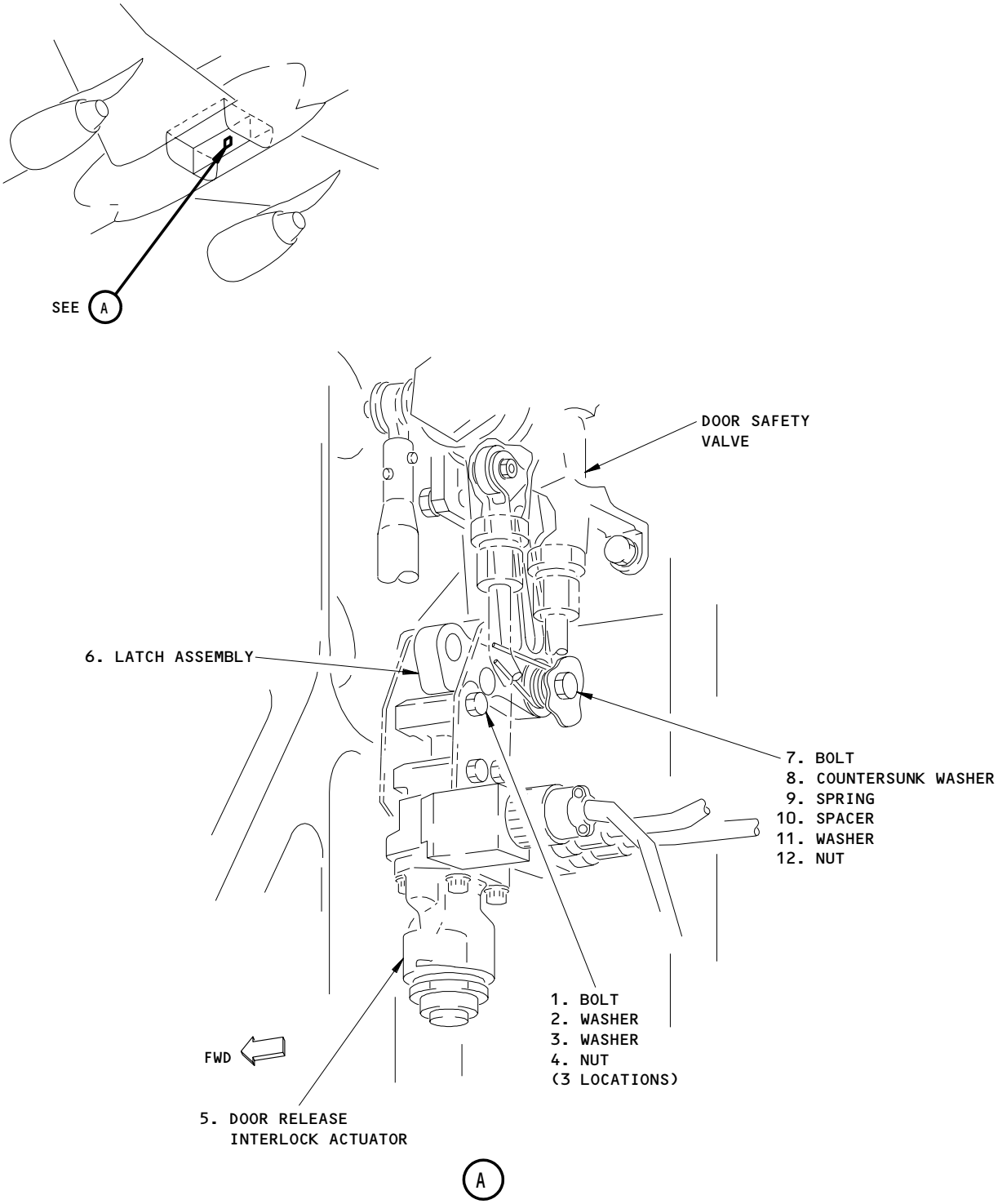
   C. Prepare for the Removal

      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).



Main Landing Gear Door Interlock Release Actuator Installation
Figure 401

S 864-004
(3) Open this circuit breaker on the overhead circuit breaker panel, P11-3, and attach a DO-NOT-CLOSE tag:
(a) 11S17, DOORS CLOSE GROUND ACCESS

S 864-005
(4) Remove the pressure from the left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

D. Procedure to Remove the Actuator

S 034-006
(1) Disconnect the hydraulic lines from the actuator.

S 494-007
(2) Install plugs in the lines and fittings.

S 034-008
(3) Disconnect the electrical connector from the actuator.

S 494-009
(4) Put a cap on the electrical connector.

S 024-010
(5) Remove the bolts (1) to disconnect the actuator from the structure (Detail A), and remove the actuator (5).

TASK 32-35-06-404-011

3. Install the Door Release Interlock Actuator for the Main Landing Gear (Fig. 401)

A. Consumable Materials
(1) D00148 Fluid, Hydraulic - BMS 3-11, Type IV, Class 1

B. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	5	Door Release Interlock Actuator	32-35-03	01	325

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 System
(4) AMM 32-00-15/201, Landing Gear Door Locks

D. Access

(1) Location Zone

143	MLG Wheel Well (Left)
144	MLG Wheel Well (Right)
211	Control Cabin (Left)
212	Control Cabin (Right)
732	MLG Body Doors (Left)
742	MLG Body Doors (Right)

E. Procedure to Install the Actuator

S 614-012

(1) Fill the actuator with hydraulic fluid.

S 494-013

(2) Install plugs in the hydraulic fittings.

S 424-014

(3) Install the bolts (1), washers (2 and 3), and nuts (4) to connect the actuator (5) to the structure (Detail A). Put the plain washer (3) behind the nut. Put the countersunk washer (2) behind the head of the bolt with the countersink to the head.

S 864-015

(4) Make sure the pressure is removed from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 434-016

(5) Connect the hydraulic lines to the actuator.

S 434-017

(6) Connect the electrical connector to the actuator.

S 864-018

(7) Close this circuit breaker on the overhead circuit breaker panel, P11-3:
11S17, DOORS CLOSE GROUND ACCESS

F. Do a Check of the Actuator for the Correct Installation

S 864-020

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

S 864-019

(2) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 714-021

(3) Move the control lever for the landing gear to the DN position.

S 714-022

(4) Move the MAIN GEAR DOOR CLOSE switch to the DOOR CLOSE position.

S 714-023
(5) Make sure the actuator piston moves.

S 794-024
(6) Examine the actuator for hydraulic leaks.

G. Put the Airplane Back to Its Initial Condition

S 614-025
(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 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.

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

S 864-027
(3) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-028
(4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-35-06-004-037

4. Door Alternate Extension Latch Removal

A. References
(1) AMM 29-11-00/201, Pressureize/Depressurize Main Hydarulic 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
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)
211 Control Cabin (Left)
212 Control Cabin (Right)
732 MLG Body Doors (Left)
742 MLG Body Doors (Right)

C. Prepare for the Removal

S 494-031
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 494-030

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

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

S 864-032

(3) Open this circuit breaker on the overhead circuit breaker panel, P11-3, and attach a DO-NOT-CLOSE tag:
(a) 11S17, DOORS CLOSE GROUND ACCESS

S 864-033

(4) Remove the pressure from the left hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

D. Procedure to Remove the the gear alternate extension latch.

S 024-034

(1) Remove the bolt (7), washer (8,11), spring (9), spacer (10), and nut (12) to disconnect the latch (6) from the structure.

S 024-035

(2) Remove the latch (6) from the structure.

TASK 32-35-06-404-036

5. Door Alternate Extension Latch Installation

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 32-35-00/501, Landing Gear Alternate Extension

B. Access
(1) Location Zone
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)
211 Control Cabin (Left)
212 Control Cabin (Right)
732 MLG Body Doors (Left)
742 MLG Body Doors (Right)

C. Procedure to Install the Latch

S 424-039

(1) Put the latch (6) into position on the structure.

S 424-038
(2) Install the bolt (7), washer (8,11), spring (9), spacer (10), and nut (12) to attach the latch to the structure.

NOTE: Install the countersunk washer (8) under the head of the bolt (7), with the countersink towards the bolt head.

S 864-040
(3) Close this circuit breaker on the overhead circuit breaker panel, P11-3:
(a) 11S17, DOORS CLOSE GROUND ACCESS

S 824-041
(4) Do the adjustment of the main landing gear door actuator release mechanism (AMM 32-35-00/501).

S 714-042
(5) Do the operational test of the main landing gear doors (AMM 32-35-00/501).

D. Put the Airplane Back to Its Initial Condition

S 094-043

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

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

S 864-044
(2) Remove the pressure from the hydraulic system (AMM 29-11-00/201).

S 864-045
(3) Remove electrical power if it is not necessary (AMM 24-22-00/201).

ALTERNATE EXTENSION SYSTEM POWER PACK - REMOVAL/INSTALLATION

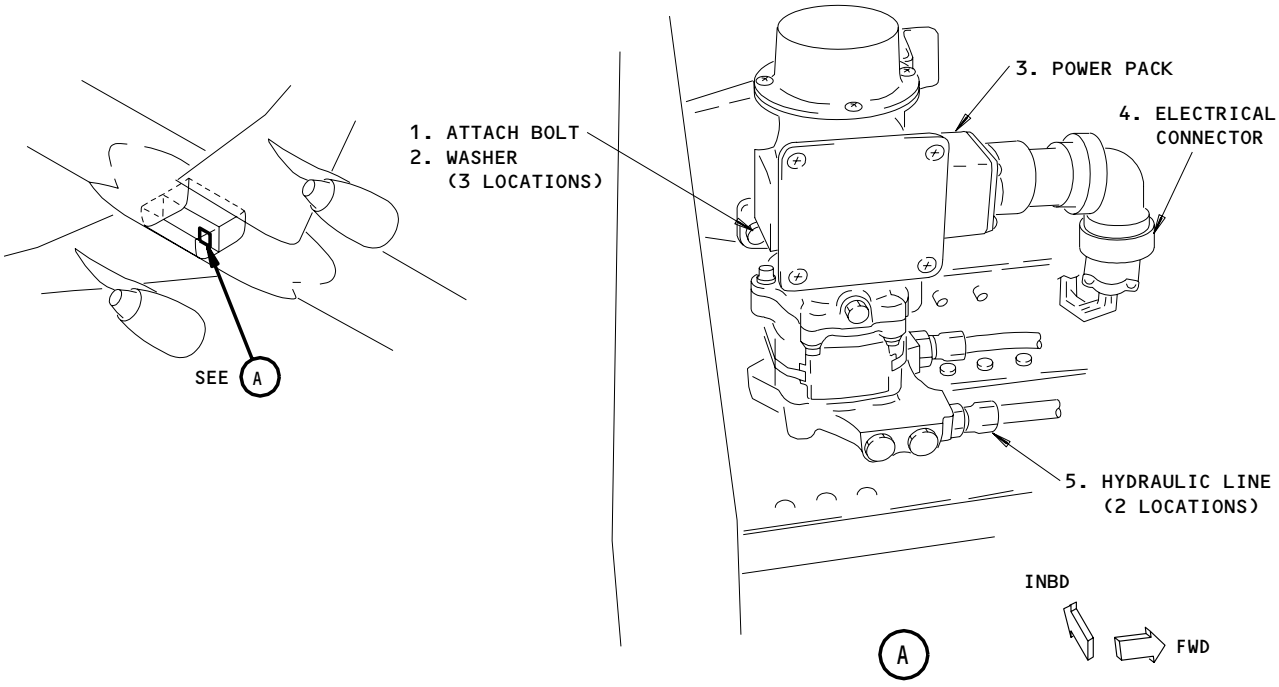
1. General
   A. This procedure contains two tasks. The first task removes the power pack for the alternate extension system. The second task installs the power pack for the alternate extension system.

   TASK 32-35-10-004-003

2. Remove the Power Pack for the Alternate Extension System (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
      (4) AMM 32-35-00/201, Landing Gear Alternate Extension
   B. Access
      (1) Location Zone
          144 Main Landing Gear Wheel Well (Right)

   C. Prepare for the Removal

      S 494-001
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).



Alternate Extension System Power Pack Installation
Figure 401

S 864-002
(2) If the power pack does not operate, use the procedure in AMM 32-35-00/201 to open the landing gear doors.

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

S 864-005
(4) Remove the pressure from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

S 864-006
(5) Open this circuit breaker on the main power distribution panel, P6-1, and attach a DO-NOT-CLOSE tag:
(a) 6F6, LANDING GEAR ALTN EXT MOTOR

D. Procedure to Remove the Power Pack

S 034-007
(1) Disconnect the electrical connector (4) from the power pack (3).

S 494-025
(2) Install a plug on the electrical connector.

S 034-008

CAUTION: INSTALL THE PLUGS QUICKLY IN THE HYDRAULIC LINES TO THE POWER PACK. THE POWER PACK IS CONNECTED DIRECTLY TO THE HYDRAULIC RESERVOIR. THE LEAKAGE OF TOO MUCH FLUID WILL OCCUR IF YOU DO NOT INSTALL THE PLUGS QUICKLY.

(3) Disconnect the hydraulic lines (5) from the power pack (3).

S 494-026
(4) Install plugs in the hydraulic fittings.

S 034-009
(5) Remove the bolts (1) that attach the power pack to the structural support (Detail A).

S 024-010
(6) Remove the power pack (3).

TASK 32-35-10-404-010

3. Install the Power Pack for the Alternate Extension System (Fig. 401)
   A. Consumable Materials
      (1) D00054 Lubricant, Hydraulic Systems - MCS 352B
      (2) D00148 Fluid, Hydraulic - BMS 3-11, Type IV, Class 1
   B. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	3	Power Pack	32-35-10	01	10,45 200

   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 System
      (4) AMM 32-00-15/201, Landing Gear Door Locks
      (5) AMM 32-35-00/501, Landing Gear Alternate Extension
   D. Access
      (1) Location Zone
          144 Main Landing Gear Wheel Well (Right)

   E. Procedure to Install the Power Pack

S 984-011
(1) Put the power pack (3) in position.

S 434-012
(2) Install the bolts (1) and washers (2) (put one washer behind each bolt head) to attach the power pack to the structural support (Detail A).

S 434-013

CAUTION: INSTALL THE PLUGS QUICKLY IN THE HYDRAULIC LINES TO THE POWER PACK. THE POWER PACK IS CONNECTED DIRECTLY TO THE HYDRAULIC RESERVOIR. THE LEAKAGE OF TOO MUCH FLUID WILL OCCUR IF YOU DO NOT INSTALL THE PLUGS QUICKLY.

(3) Make sure the pressure is removed from the left hydraulic system and hydraulic reservoir.

S 434-014

(4) Connect the hydraulic lines (5) to the power pack.

S 434-015

(5) Connect the electrical connector (4) to the power pack.

S 864-014

(6) Close this circuit breaker on the main power distribution panel, P6-1:
6F6, LANDING GEAR ALTN EXT MOTOR

F. Check of the Power Pack for the Correct Installation

S 864-015

(1) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 864-028

CAUTION: DO NOT OPERATE THE POWER PACK (ALTERNATE EXTEND) FOR MORE THAN FIVE MINUTES. IT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE MOTOR.

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

S 094-017

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

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

S 714-018

CAUTION: DO NOT OPERATE THE ALTERNATE EXTENSION SYSTEM WITH THE DOOR LOCK INSTALLED ON THE NOSE LANDING GEAR. THIS CAN CAUSE DAMAGE TO THE POWER PACK FOR THE ALTERNATE EXTENSION SYSTEM.

(4) Do the operational test of the alternate extension system for the landing gear (AMM 32-35-00/501).

S 494-019

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY ANC 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 794-020

(6) Examine the power pack for leaks.

G. Put the Airplane Back to Its Usual Condition

S 614-021

(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 094-022

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOORS MOVE 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 864-023

(3) Remove the power from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-024

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

NOSE GEAR ALTERNATE UPLOCK RELEASE ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the alternate uplock release actuator for the nose landing gear. The second task installs the alternate uplock release actuator.

TASK 32-35-21-004-002

2. Remove the Alternate Uplock Release Actuator for the Nose 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
          115 NLG Wheel Well (Left)
          116 NLG Wheel Well (Right)
          211 Control Cabin (Left)
          212 Control Cabin (Right)

   C. Prepare for the Removal

      S 494-003
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20/201).

      S 494-004

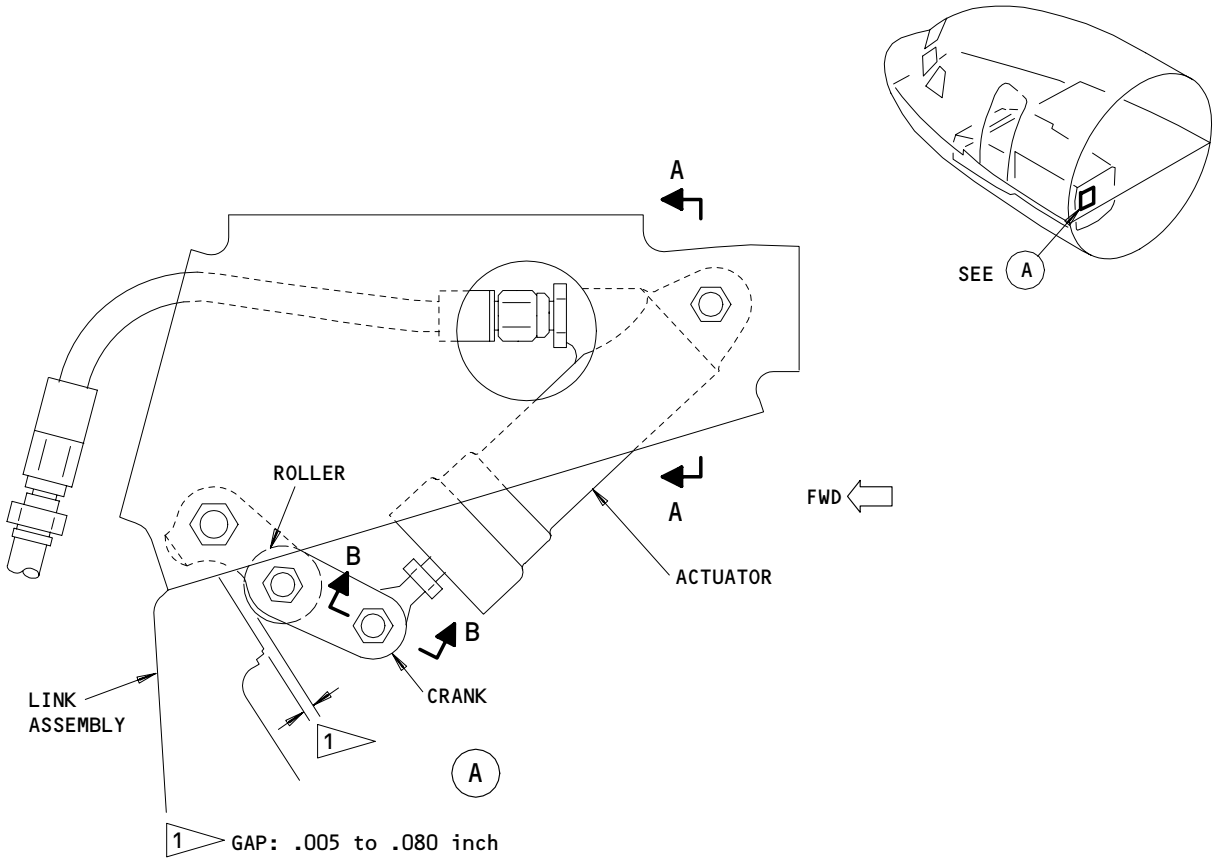
      WARNING: USE THE PROCEDURE AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

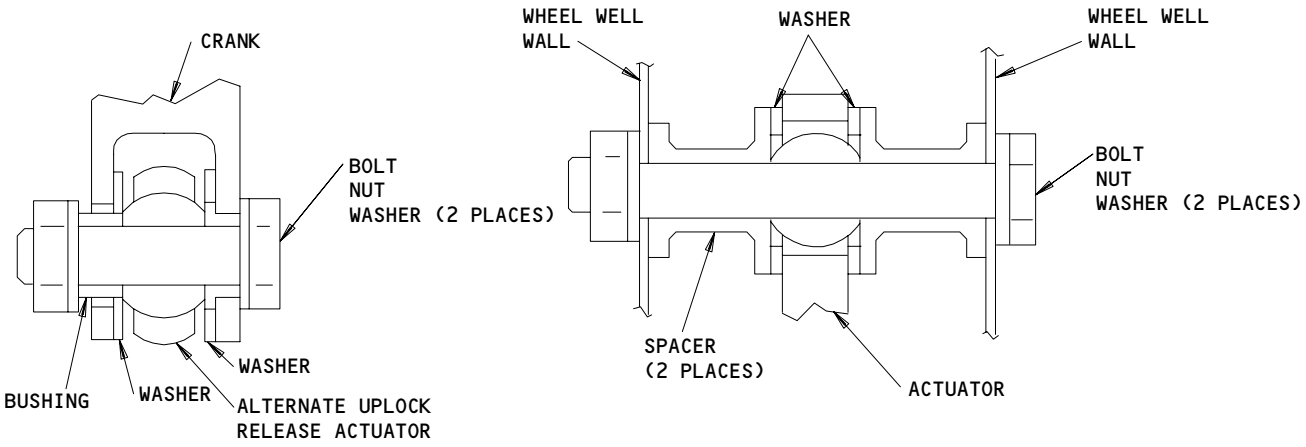
      (2) Open the landing gear doors and install the door locks (Ref 32-00-15/201).

      S 864-005
      (3) Remove the pressure from the left hydraulic system (Ref 29-11-00/201).
   D. Procedure to Remove the Actuator

      S 034-006
      (1) Disconnect the hydraulic line from the actuator.

      S 494-007
      (2) Install plugs in the hydraulic line and the fitting.





B–B A–A

Nose Gear Alternate Uplock Release Actuator Installation
Figure 401

S 034-008
(3) Remove the bolt to disconnect the rod end of the actuator from the crank (Section B-B).

S 024-009
(4) Remove the bolt to disconnect the head end of the actuator from the wheel well wall (View A-A).

TASK 32-35-21-404-010

3. Install the Alternate Uplock Release Actuator for the Nose Landing Gear (Fig. 401)

A. References
(1) AMM 07-11-02/201, Jacking Airplane Nose
(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
(6) AMM 32-22-05/401, Nose Gear Aft Door Operating Mechanism

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-G-23827 (Alternative)
(3) D00153 Fluid, Hydraulic - BMS 3-11, Type IV
(4) A00247 Sealant, Chromate Type - BMS 5-95

C. Access
(1) Location Zone
115 NLG Wheel Well (Left)
116 NLG Wheel Well (Right)
211 Control Cabin (Left)
212 Control Cabin (Right)

D. Procedure

S 614-011
(1) Fill the actuator with hydraulic fluid.

S 494-012
(2) Install a plug in the hydraulic fitting.

S 424-013
(3) Install the bolt, spacers, washers, and nut to connect the head end of the actuator to the wheel well wall (View A-A).

S 434-014
(4) Install the bolt, bushing, washers, and nut to connect the rod end of the actuator to the crank assembly (View B-B).

S 034-015
(5) Remove the operating rod from the left aft door (AMM 32-22-05/401).

S 094-016
(6) Remove the downlock from the nose landing gear (AMM 32-00-20/201).

S 584-017
(7) Lift the nose of the airplane until the wheels are clear of the ground (AMM 07-11-02/201).

S 864-018
(8) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 864-019

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE LANDING GEAR. THE DOORS MOVE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(9) Move the control lever for the landing gear to the UP position to retract the nose landing gear.

S 864-020
(10) Put the control lever to the OFF position.

S 864-021
(11) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).

S 494-022
(12) Install the downlock on the nose landing gear (AMM 32-00-20/201).

S 434-023
(13) Connect the hydraulic line to the actuator.

S 824-024
(14) If the clearance between the link assembly and the roller assembly is not as shown in Detail A, then do the steps that follow:
(a) Remove the lockwire.
(b) Loosen the actuator nut.
(c) Adjust the length of the actuator rod.
(d) Tighten the nut, apply the sealant, and install the lockwire.

S 094-025
(15) Remove the downlock from the nose landing gear (AMM 32-00-20/201).

S 864-026

(16) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 864-027

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE LANDING GEAR. THE DOORS MOVE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

CAUTION: DO NOT HOLD THE "ALTN GEAR EXTENSION" SWITCH IN FOR MORE THAN TWO (2) SECONDS. IF YOU HOLD THE SWITCH IN FOR MORE THAN TWO (2) SECONDS THE POWER PACK WILL BECOME TOO HOT, AND THE ALTERNATE EXTENSION SYSTEM WILL NOT OPERATE.

DO NOT OPERATE THE POWER PACK (ALTERNATE EXTEND) FOR MORE THAN FIVE MINUTES. IT CAN BECOME HOT. THIS CAN DAMAGE THE MOTOR.

(17) Engage the alternate extension switch on the panel P3 to extend the nose landing gear.

S 494-028

(18) Install the downlock on the nose landing gear (AMM 32-00-20/201).

S 434-029

(19) Install the operating rod for the left aft door (AMM 32-22-05/401).

S 584-030

(20) Lower the airplane and remove the jack (AMM 07-11-02/201).

S 794-031

(21) Examine the actuator for hydraulic leaks.

S 614-032

(22) Make sure the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 094-033

WARNING: USE THE PROCEDURE 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.

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

NOSE GEAR DOOR LOCK RELEASE ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the door lock release actuator for the nose landing gear. The second task installs the door lock release actuator.

   TASK 32-35-22-004-001

2. Remove the Lock Release Actuator (Fig. 401)
   A. Equipment
      (1) Spring Extender for the Door Lock Release Actuator, NLG - B32051-1
   B. 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
      (4) 32-35-00/201, Landing Gear Alternate Extension
   C. Access
      (1) Location Zones
          115 NLG Wheel Well (Left)
          116 NLG Wheel Well (Right)

   D. Prepare for the Removal

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

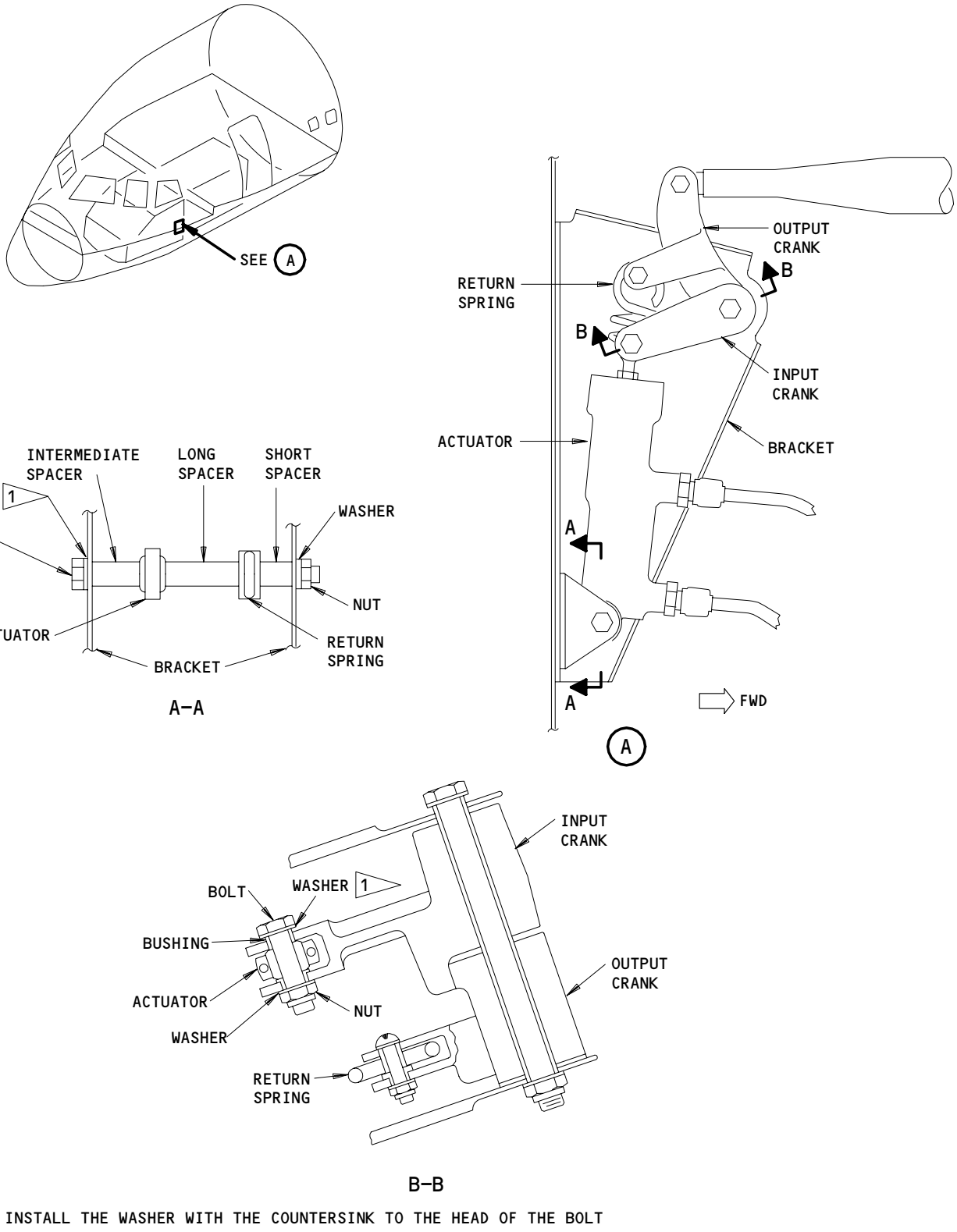
      S 864-003
      (2) If you will remove an actuator that does not operate, use the procedure in 32-35-00/201 to open the landing gear doors.

      S 494-004

      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 864-005
      (4) Remove the pressure from the left hydraulic system (Ref 29-11-00).



1 INSTALL THE WASHER WITH THE COUNTERSINK TO THE HEAD OF THE BOLT

Nose Landing Gear Door Lock Release Actuator Installation
Figure 401

E. Procedure to Remove the Actuator

S 034-006
(1) Disconnect the hydraulic lines from the actuator.

S 494-007
(2) Install plugs in the hydraulic lines and fittings.

S 494-008
(3) Install the spring extender and extend the spring.

S 034-009
(4) Remove the bolt to disconnect the rod end of the actuator from the input crank (View B-B).

S 034-010
(5) Remove the bolt to disconnect the return spring and the head end of the actuator from the bracket (View A-A).

S 024-025
(6) Remove the actuator.

TASK 32-35-22-404-011

3. Install the Lock Release Actuator (Fig. 401)

A. Equipment
(1) Spring Extender for the Door Lock Release Actuator, NLG - B32051-1

B. Consumable Materials
(1) D00153 Fluid, Hydraulic - BMS 3-11, Type IV

C. References
(1) 12-12-01/301, Hydraulic Systems
(2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) 32-00-15/201, Landing Gear Door Locks
(4) 32-35-00/201, Landing Gear Alternate Extension
(5) 32-35-00/501, Landing Gear Alternate Extension

D. Access
(1) Location Zones
115 NLG Wheel Well (Left)
116 NLG Wheel Well (Right)

E. Procedure

S 614-012
(1) Fill the actuator with hydraulic fluid.

S 434-013

(2) Install the bolt, bushing, washers, and nut to connect the rod end of the actuator to the input crank (View A-A).

S 424-014

(3) Install the bolt, spacers, washers, and nut to connect the return spring and the head end of the actuator to the bracket (View A-A).

S 094-015

(4) Remove the spring extender from the return spring.

S 434-016

(5) Connect the hydraulic lines to the actuator.

S 824-018

(6) Adjust the alternate extension system for the nose landing gear (Ref 32-35-00/501).

S 864-019

(7) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 094-020

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

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

S 494-021

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 AND DAMAGE TO EQUIPMENT.

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

S 794-022

(10) Examine the actuator for hydraulic leaks.

S 614-023

(11) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill if it is necessary (Ref 12-12-01).

S 094-024

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

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

NOSE GEAR DOOR SAFETY VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the door safety valve for the nose landing gear. The second task installs the door safety valve.

   TASK 32-35-23-004-001

2. Remove the Door Safety Valve for the Nose Landing Gear (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-15/201, Landing Gear Door Locks
      (3) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          115 NLG Wheel Well (Left)
          116 NLG Wheel Well (Right)
          211 Control Cabin (Left)
          212 Control Cabin (Right)
          711 Nose Landing Gear (NLG)

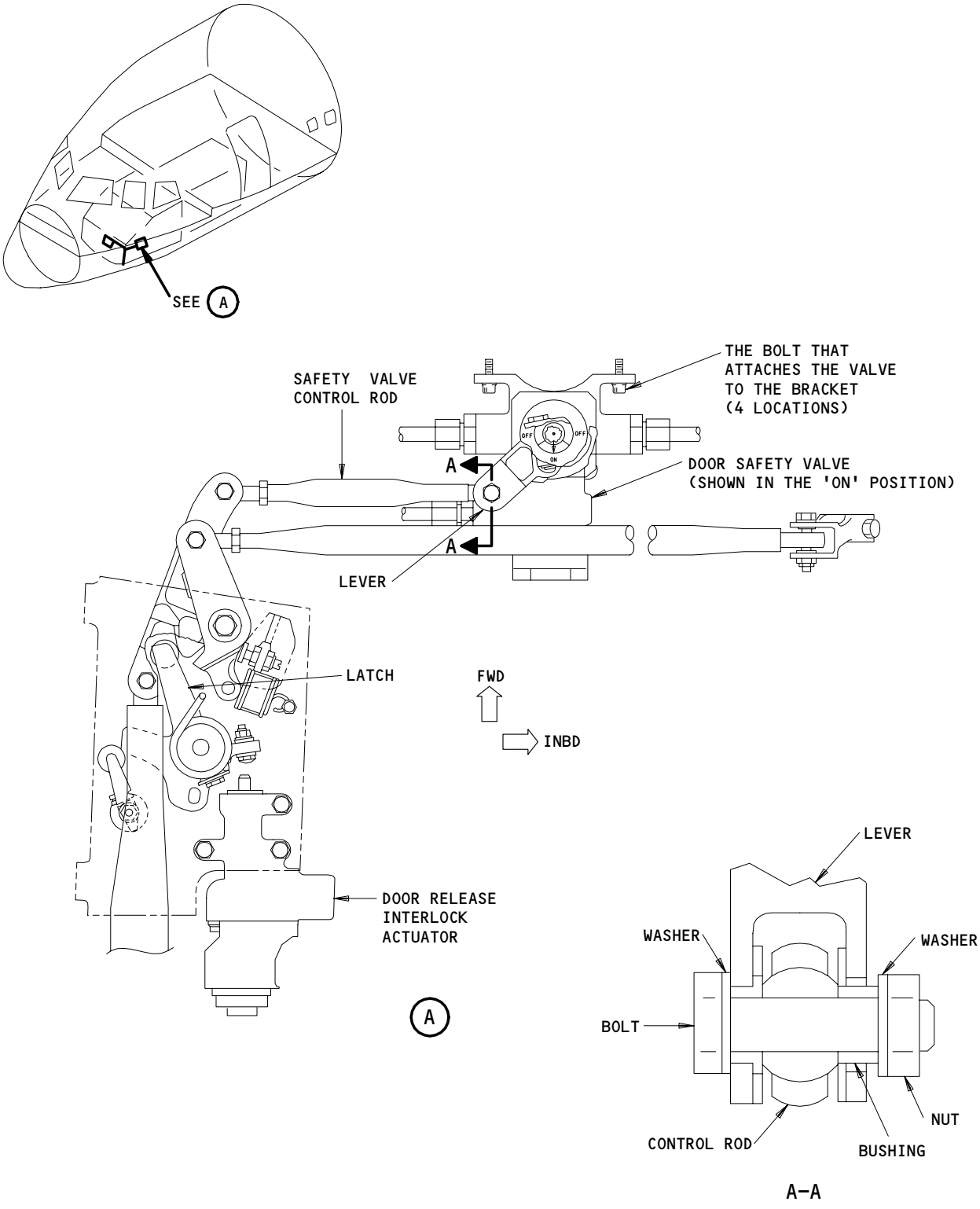
   C. Prepare for the Removal

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-003
      (2) Remove the pressure from the left hydraulic system and hydraulic reservoir (AMM 29-11-00/201).

      S 864-004

      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 AND DAMAGE TO EQUIPMENT.
      (3) Open the doors for the nose landing gear (AMM 32-00-15/201).



Nose Landing Gear Door Safety Valve Installation
Figure 401

D. Procedure to Remove the Door Safety Valve

S 034-006
(1) Remove the bolt to disconnect the rod from the lever (View A-A).

S 034-007
(2) Disconnect the hydraulic lines from the valve.

S 494-008
(3) Install plugs in the hydraulic lines and fittings.

S 024-009
(4) Remove the bolts that attach the valve to the wheel well wall, and remove the valve.

TASK 32-35-23-404-010

3. Install the Door Safety Valve for the Nose 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, Landing Gear Door Locks
(4) AMM 32-35-00/501, Landing Gear Alternate Extension

C. Access
(1) Location Zones
115 NLG Wheel Well (Left)
116 NLG Wheel Well (Right)
211 Control Cabin (Left)
212 Control Cabin (Right)
711 Nose Landing Gear (NLG)

D. Procedure

S 424-011
(1) Install the bolts and washers to connect the valve to the wheel well wall (Detail B).

NOTE: Install the washers with the countersink to the head of the bolts.

S 864-012
(2) Make sure the pressure is removed from the left hydraulic system and reservoir (AMM 29-11-00/201).

S 434-013
(3) Connect the hydraulic lines to the valve.

S 434-014
(4) Install the bolt, washers, bushing, and nut to connect the rod to the lever (View A-A).

NOTE: Install the countersunk washer adjacent to the head of the bolt with the countersink to the head.

S 824-015
(5) Adjust the valve (AMM 32-35-00/501).

S 864-016

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE LANDING GEAR DURING THE CHECK OF THE SAFETY VALVE. THE DOORS MOVE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(6) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 864-017
(7) Move the control lever for the landing gear to the DN position.

S 714-018
(8) Move the NOSE GEAR DOORS CLOSE switch to the ON position to close the doors for the nose landing gear. The switch is on the left equipment panel for the nose landing gear, P63.

S 714-019

CAUTION: DO NOT HOLD THE "ALL DOORS OPEN" SWITCHES IN THE "ARM" AND "OPEN" POSITION FOR MORE THAN TWO (2) SECONDS. IF YOU HOLD THE SWITCHES FOR MORE THAN TWO (2) SECONDS THE POWER PACK CAN BECOME TOO HOT AND CAUSE THE ALTERNATE EXTENSION SYSTEM TO NOT OPERATE. THE POWER PACK RELEASES THE DOOR LOCKS BUT DOES NOT MOVE THE DOORS TO THE OPEN POSITION.

DO NOT OPERATE THE POWER PACK (ALTERNATE EXTEND) FOR MORE THAN FIVE MINUTES. IT CAN BECOME HOT. THIS CAN CAUSE DAMAGE TO THE MOTOR.

(9) At the same time, move the ALL DOORS OPEN ARM switch to ARM and the ALL DOORS OPEN switch to OPEN. The switches are on electrical service panel for the main wheel well, P72.

NOTE: The doors for the nose and main landing gear will fall because of their weight. Help the doors to the fully open position if it is necessary.

S 494-020

(10) Install the door lock for the nose landing gear.

S 794-021

(11) Examine the valve for hydraulic leaks.

S 614-022

(12) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 094-023

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

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

NOSE GEAR DOOR RELEASE INTERLOCK ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains these four two tasks:
      (1) A removal of the door release interlock actuator for the nose landing gear.
      (2) An installation of the door release interlock actuator for the nose landing gear.
      (3) A removal of the lever assembly and the sequencing cranks for the door lock release.
      (4) An installation of the lever assembly and the sequencing cranks for the door lock release.

TASK 32-35-24-004-001

2. Remove the Door Release Interlock Actuator for the Nose 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
          115 NLG Wheel Well (Left)
          116 NLG Wheel Well (Right)
          711 Nose Landing Gear (NLG)

   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).

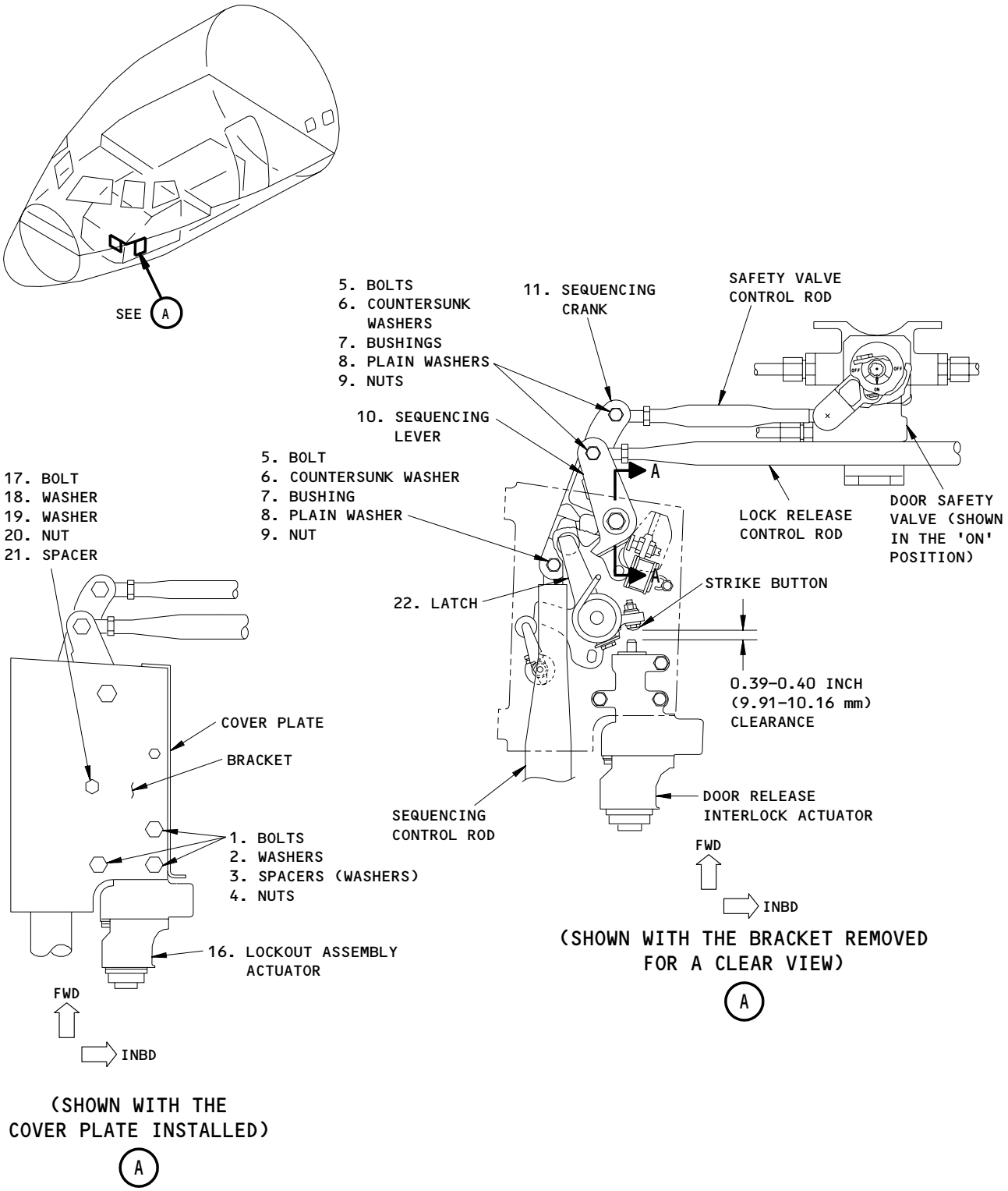
      S 494-003

      WARNING: USE 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.

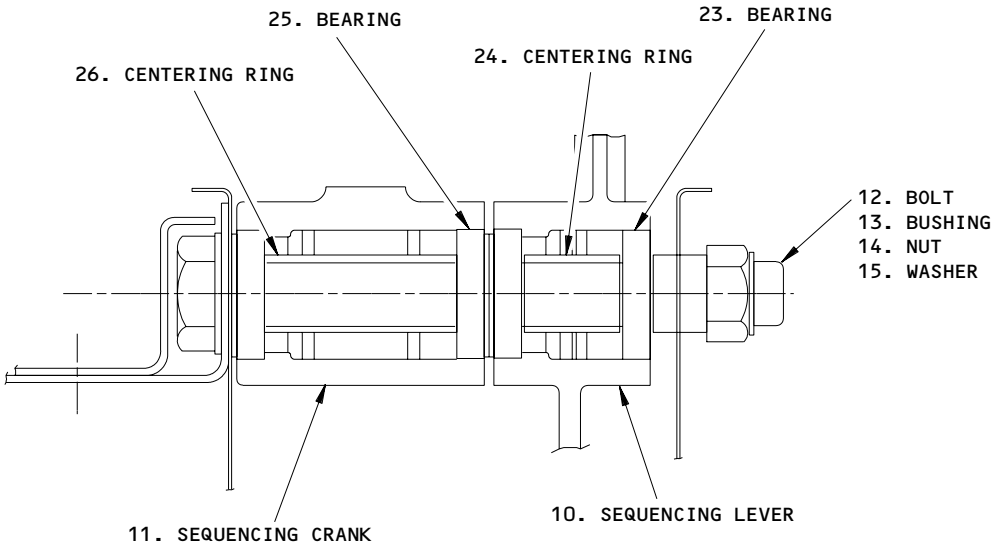
      (2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

      S 864-004
      (3) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach a DO-NOT-CLOSE tag:
          (a) 11S17, DOORS CLOSE GROUND ACCESS

      S 864-005
      (4) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).



Nose Landing Gear Door Release Interlock Actuator Installation
Figure 401 (Sheet 1)



A-A

Nose Landing Gear Door Release Interlock Actuator Installation
Figure 401 (Sheet 2)

D. Procedure to Remove the Actuator

S 034-006
(1) Disconnect the electrical connector from the actuator.

S 494-007
(2) Install a cap on the connector.

S 034-008
(3) Disconnect the hydraulic lines from the actuator.

S 494-009
(4) Install plugs in the hydraulic lines and fittings.

S 034-010
(5) Remove the access cover from the side of the actuator bracket.

S 024-011
(6) Remove the bolts (1) that attach the actuator (16) to the bracket (Detail A), and remove the actuator (16).

TASK 32-35-24-404-012

3. Install the Door Release Interlock Actuator for the Nose Landing Gear (Fig. 401)

A. Consumable Materials
(1) D00153 Fluid, Hydraulic - BMS 3-11, Type IV
(2) C00259 Primer - BMS 10-11, Type I

B. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	16	Lockout Actuator Assembly	32-35-51	01	310

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

D. Access
(1) Location Zones
115 NLG Wheel Well (Left)
116 NLG Wheel Well (Right)
711 Nose Landing Gear (NLG)

E. Procedure

S 424-013
(1) Install the bolts (1), washers (2), spacers (washers) (3), and nuts (4) to connect the actuator (16) to the bracket (Detail A).

S 864-014
(2) Move the control lever for the landing gear to the OFF position and attach a DO-NOT-OPERATE tag.

S 094-015
(3) Remove the door lock from the nose landing gear.

S 984-016
(4) Turn the latch counterclockwise to disengage the latch.

S 864-017
(5) Turn the safety valve to ON.

S 824-018
(6) If it is necessary, add or remove washers below the strike button to get the clearance as shown (Detail A).

NOTE: Apply a thin layer of BMS 10-11 primer to the washers.

S 434-019
(7) Install the access cover.

S 864-020
(8) Make sure the pressure is removed from the left hydraulic system (AMM 29-11-00/201).

S 434-021
(9) Connect the hydraulic lines to the actuator.

S 434-022
(10) Connect the electrical connector to the actuator.

S 864-023
(11) Close this circuit breaker on the overhead circuit breaker panel, P11:
11S17, DOORS CLOSE GROUND ACCESS

S 864-024
(12) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 864-025

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE LANDING GEAR WHEN YOU OPERATE THE DOORS. THE DOORS MOVE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

CAUTION: DO NOT HOLD THE "ALL DOORS OPEN" SWITCHES IN THE "ARM" AND "OPEN" POSITIONS FOR MORE THAN TWO (2) SECONDS. IF YOU HOLD THE SWITCHES FOR MORE THAN TWO (2) SECONDS THE POWER PACK CAN BECOME TOO HOT AND THE ALTERNATE EXTENSION SYSTEM WILL NOT OPERATE.

DO NOT OPERATE THE POWER PACK (ALTERNATE EXTENSION) FOR MORE THAN FIVE MINUTES. IT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(13) At the same time, move the ALL DOORS OPEN ARM switch to ARM and the ALL DOORS OPEN switch to OPEN. The switches are on the electrical service panel for the main wheel well, P72.

NOTE: If the doors for the nose landing gear are open, you must still do this step.

S 714-026

(14) Remove the DO-NOT-OPERATE tag from the control lever for the landing gear, and move the lever to DN.

S 714-032

(15) Make sure the doors do not close.

S 714-027

(16) Move the NOSE GEAR DOOR CLOSE switch to DOOR CLOSE to close the doors for the nose landing gear. The switch is on the left equipment panel for the nose landing gear, P63.

S 494-028

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.

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

S 794-029

(18) Examine the actuator for hydraulic leaks.

S 614-030

(19) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

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.

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

TASK 32-35-24-024-034

4. Remove the Lever Assembly and the Sequencing Cranks for the Door Lock Release (Fig. 401)

A. Equipment

(1) Spring Extender for the Door Lock Release Actuator, NLG - B32051-1

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
(4) AMM 32-35-22/401, Nose Gear Door Lock Release Actuator

C. Access

(1) Location Zones

115 NLG Wheel Well (Left)
116 NLG Wheel Well (Right)
711 Nose Landing Gear (NLG)

D. Prepare for the Removal

S 484-055

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 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 864-037
(3) Open these circuit breakers on the main power distribution panel, P6, and attach a DO-NOT-CLOSE tag:
(a) 6F5, LANDING GEAR ALTN EXT CONT
(b) 6F6, LANDING GEAR ALTN EXT MOTOR

S 864-038
(4) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).

E. Procedure to Remove the Lever Assembly and Sequencing Cranks

S 024-039
(1) Use the spring extender (or equivalent) to remove the return spring adjacent to the nose gear door lock release actuator (AMM 32-35-22/401).

S 014-041
(2) Remove the cover plate from the side of the actuator bracket.

S 024-042
(3) Remove the bolts (5), washers (6,8), bushings (7), and nuts (9) to disconnect the control rods from the sequencing cranks (10,11).

S 024-043
(4) Remove the nut (14), washer (15), bushing (13), and bolt (12), bearings (23,25) and centering rings (24,26) to disconnect the sequencing crank (11) and sequencing lever (10).

S 024-056
(5) Remove the bolt (17), washer (18,19), nut (20), and spacer (21) to disconnect the lever assembly (22) from the bracket.

S 024-044
(6) Remove the sequencing crank (11), sequencing lever (10), and latch assembly (22) from the lock release mechanism.

TASK 32-35-24-404-045

5. Install the Lever Assembly and the Sequencing Cranks for the Door Lock Release

(Fig. 401)

A. Equipment
(1) Spring Extender for the Door Lock Release Actuator, NLG - B32051-1

B. References
(1) AMM 32-00-15/201, Landing Gear Door Locks
(2) AMM 32-35-00/501, Landing Gear Alternate Extension
(3) AMM 32-35-22/401, Nose Gear Door Lock Release Actuator

C. Access

(1) Location Zones

115 NLG Wheel Well (Left)
116 NLG Wheel Well (Right)
711 Nose Landing Gear (NLG)

D. Procedure

S 424-047

(1) Put the sequencing crank (11), the sequencing lever (10) , and the lever assembly (22) in their position.

S 424-046

(2) Install the bolts (5), bushings (7), washers (6,8), and nuts (9) to attach the control rods to the sequencing crank (11) and sequencing lever (10).

NOTE: Install the countersunk washer under the head of the bolt with the countersink towards the bolt head.

S 424-054

(3) Install the centering rings (24,26), bearings (23,25), bolt (12), bushing (13), washers (15), and nut (14) to attach the sequencing crank (11) and sequencing lever (10) to the structure.

NOTE: Install the countersunk washer under the head of the bolt with the countersink towards the bolt head.

S 424-057

(4) Install the bolt (17), the countersunk washer (18), the washer (19), the spacer (21) and the nut (20) to attach the lever assembly (22) to the structure.

NOTE: Install the countersunk washer under the head of the bolt with the countersink towards the bolt head.

S 424-049

(5) Use the spring extender (or equivalent) to install the return spring adjacent to the nose gear door lock release actuator (AMM 32-35-22/401).

S 864-050

(6) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the main power distribution panel, P6:
(a) 6F5, LANDING GEAR ALTN EXT CONT
(b) 6F6, LANDING GEAR ALTN EXT MOTOR

S 824-051
(7) Do the adjustment of the nose landing gear door actuator release mechanism (AMM 32-35-00/501).

S 714-052
(8) Do the operational test of the nose landing gear doors (AMM 32-35-00/501).

S 424-048
(9) Install the cover plate on the lock release mechanism.

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.

(10) Remove the door locks (AMM 32-00-15/201).

ALTERNATE EXTENSION SYSTEM SHUTTLE VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the shuttle valve for the alternate extension system. The second task installs the shuttle valve.

TASK 32-35-27-004-001

2. Remove the Shuttle Valve for the Alternate Extension System (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 Zone
          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 (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.

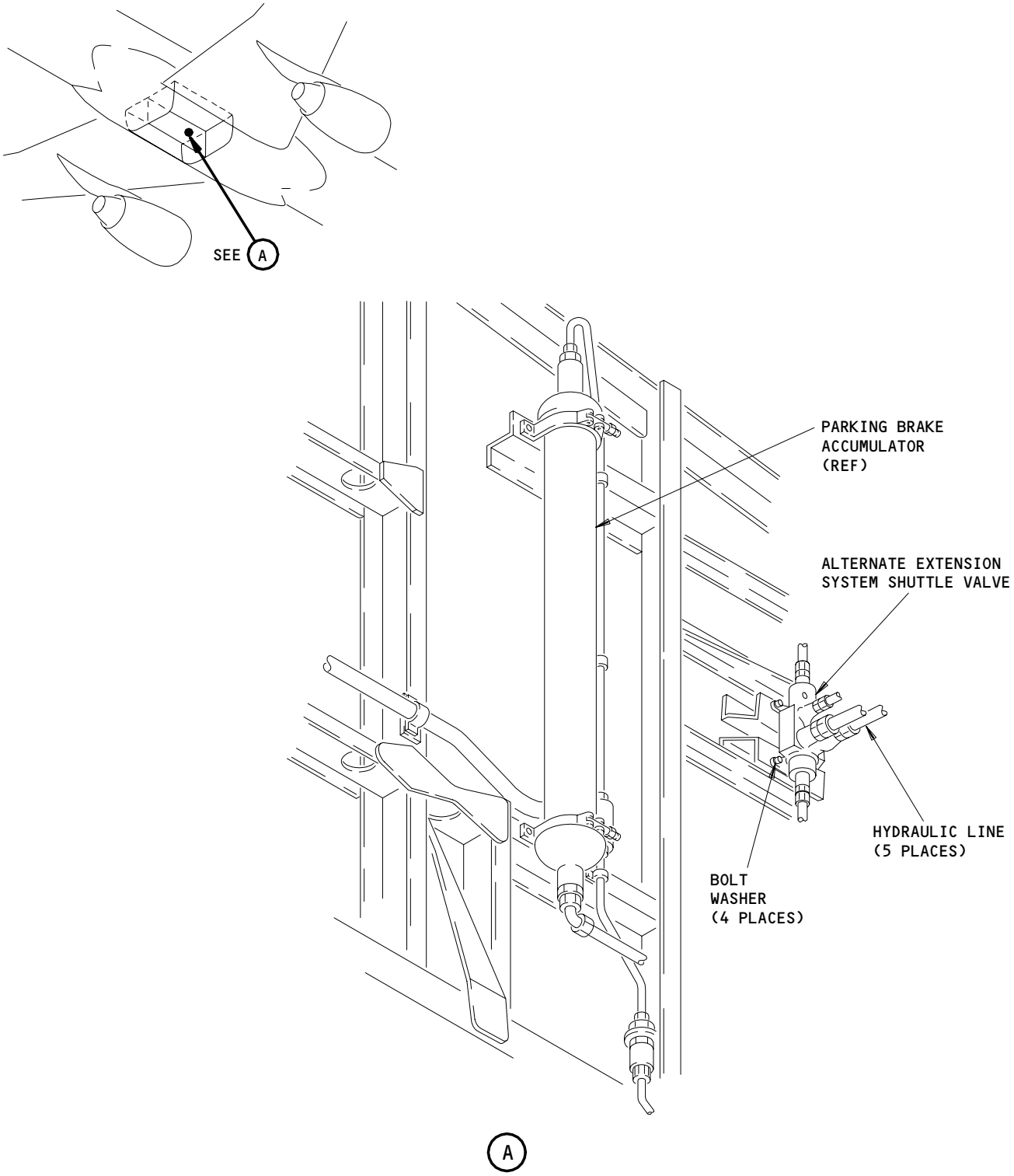
      (2) Open the doors for the landing gear and install the door locks (Ref 32-00-15).

      S 864-004
      (3) Open this circuit breaker on the main power distribution panel, P6-1, and attach a DO-NOT-CLOSE tag:
          (a) 6F6, LANDING GEAR ALTN EXT MOTOR

      S 864-005
      (4) Remove the pressure from the left and right hydraulic system and the hydraulic reservoirs (Ref 29-11-00).
   D. Procedure to Remove the Valve

      S 034-006
      (1) Disconnect the hydraulic lines from the valve.

      S 494-007
      (2) Install plugs in the lines and fittings.



Alternate Extension System Shuttle Valve Installation
Figure 401

S 024-008
(3) Remove the bolts that attach the valve to the structure, and remove the valve.

TASK 32-35-27-404-009
3. Install the Shuttle Valve for the Alternate Extension System (Fig. 401)
A. References
(1) 12-12-01/301, Hydraulic Systems
(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) 32-35-00/501, Landing Gear Alternate Extension
B. Access
(1) Location Zone
144 MLG Wheel Well (Right)

C. Procedure

S 424-010
(1) Install the bolts and washers to attach the valve to the support.

S 864-011
(2) Make sure the pressure is removed from the left and right hydraulic systems and hydraulic reservoirs (Ref 29-11-00).

S 434-012
(3) Connect the hydraulic lines to the valve.

S 864-013
(4) Close this circuit breaker on the main power distribution panel, P6-1:
6F6, LANDING GEAR ALTN EXT MOTOR

S 714-014
(5) Do the steps that follow to make sure the valve is installed correctly:
(a) Pressurize the left and right hydraulic systems (Ref 29-11-00).
(b) Supply electrical power (Ref 24-22-00).
(c) Examine the valve for hydraulic leaks.

S 094-015

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 landing gear doors and close the doors (Ref 32-00-15).

S 614-016
(7) Make sure the fluid in the hydraulic reservoirs is at the correct level. Fill if it is necessary (Ref 12-12-01).

S 714-017
(8) Do a check of the alternate extension system for the correct operation (Ref 32-35-00).

S 864-018
(9) Remove the pressure from the hydraulic system if it is not necessary (Ref 29-11-00).

S 864-019
(10) Remove electrical power if it is not necessary (Ref 24-22-00).

ALTERNATE GEAR EXTENSION HYDRAULIC PRESSURE SWITCH - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the hydraulic pressure switch for alternate extension of the landing gear. The second task installs the pressure switch.

   TASK 32-35-51-004-004

2. Remove the Hydraulic Pressure Switch (Fig. 401)
   A. References
      (1) AMM 06-41-00/201, Fuselage 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
   B. Access
      (1) Location Zones
          115 NLG Wheel Well (Left)
          116 NLG Wheel Well (Right)

   C. Prepare for the Removal

      S 484-017

      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.

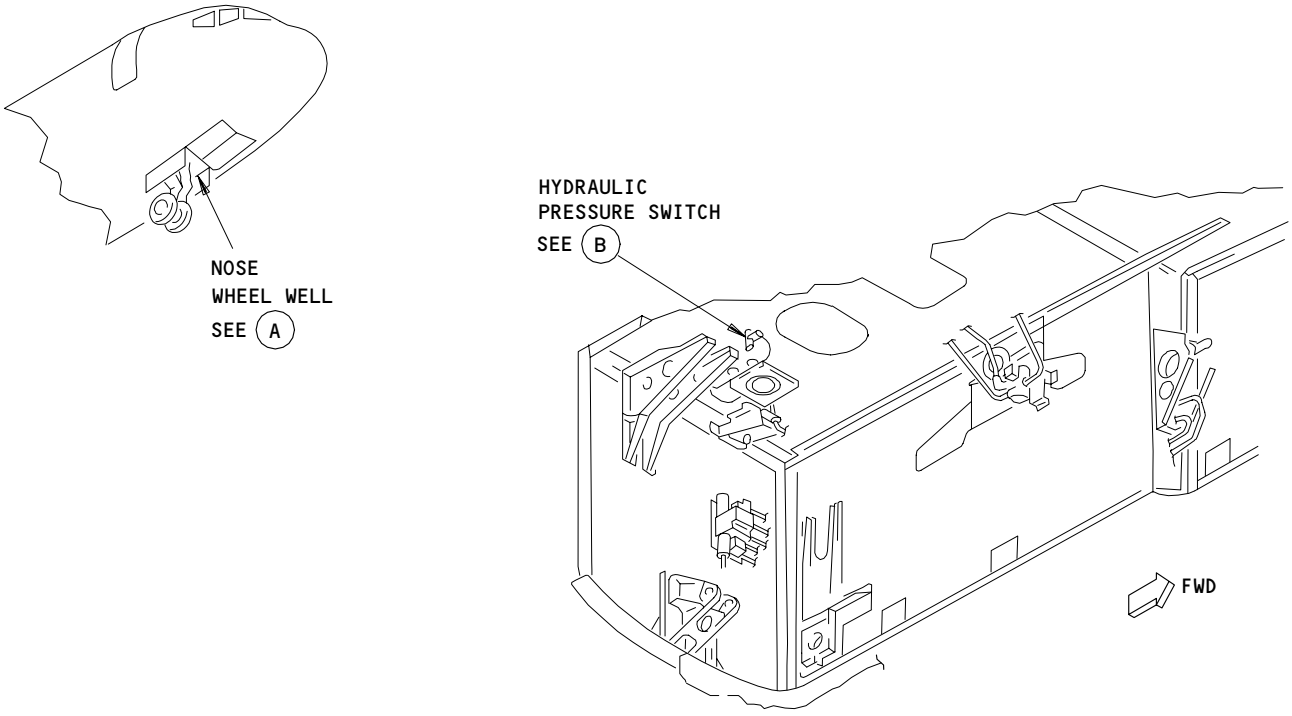
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 494-006

      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.

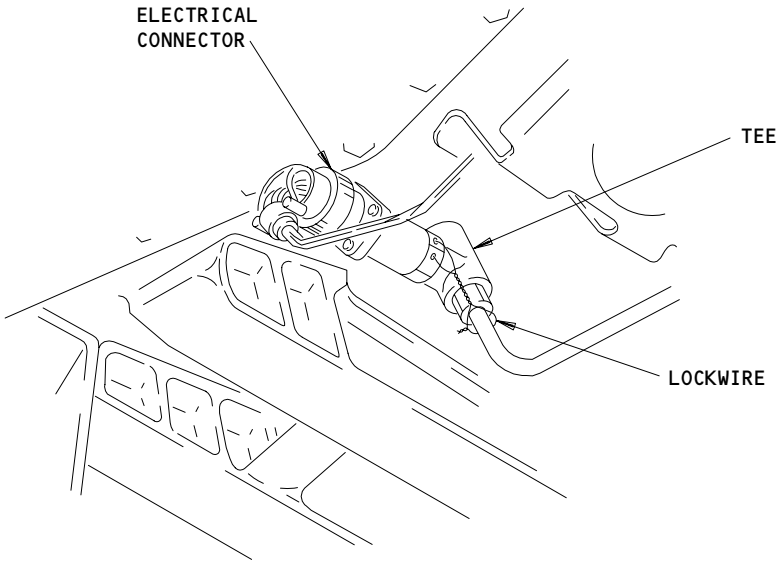
      (2) Open the doors for the nose landing gear and install the door locks (AMM 32-00-15/201).

      S 864-007
      (3) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).



NOSE WHEEL WELL

A



HYDRAULIC PRESSURE SWITCH

B

Alternate Gear Extension Hydraulic Pressure Switch Installation
Figure 401

D. Procedure to Remove the Switch

S 034-008
(1) Disconnect the electrical connector from the hydraulic pressure switch.

S 024-009
(2) Loosen the pressure switch and remove it from the tee.

TASK 32-35-51-404-010

3. Install the Hydraulic Pressure Switch (Fig. 401)

A. References
(1) AMM 24-22-00/201, Electric 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

B. Access
(1) Location Zones
115 NLG Wheel Well (Left)
116 NLG Wheel Well (Right)

C. Procedure

S 434-011
(1) Install a new O-ring in the port of the tee.

S 024-012
(2) Install the hydraulic pressure switch in the tee.

S 034-013
(3) Install the lockwire between the hydraulic pressure switch and the tee.

S 034-014
(4) Connect the electrical connector to the hydraulic pressure switch.

S 714-015
(5) Do the steps that follow to make sure the switch operates correctly:
(a) Supply electrical power (Ref 24-22-00).

(b) Make sure this circuit breaker on the P6 panel is closed:
1) 6F5, LANDING GEAR ALTN EXT CONT
(c) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

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.

(d) Open the doors for the main landing gear and install the doorlocks (AMM 32-00-15/201).
(e) Push the ALT EXT switch on the first officer's panel, P3.

CAUTION: IF THE ALTERNATE EXTENSION SYSTEM MOTOR DOES NOT SHUTOFF AFTER 30 SECONDS, OPEN THE LANDING GEAR ALTN EXT CONT (6F5) CIRCUIT BREAKER ON THE P6 PANEL. THIS WILL PREVENT DAMAGE TO THE POWER PACK.

DO NOT OPERATE THE POWER PACK (ALTERNATE EXTENSION) FOR MORE THAN FIVE MINUTES. IT CAN BECOME TOO HOT AND THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(f) Make sure the alternate extension system motor operates when you push the ALTN EXT switch, then stops within 30 seconds. The motor is on the keel beam of the right MLG wheel well.

NOTE: Hydraulic pressure operates the shutoff function. Operating pressure should be reached within 30 seconds. After 30 seconds an EICAS message will display to alert the flight crew to monitor the Landing Gear Extend function.

(g) Make sure there are no hydraulic leaks at the hydraulic pressure switch.

S 094-003
(6) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).

S 864-002
(7) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-001
(8) Remove electrical power if it is not necessary (AMM 24-22-00/201).

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 32-41-00/001).
      (2) Antiskid/autobrake system (AMM 32-42-00/001).
      (3) Parking brake system (AMM 32-44-00/001).
      (4) Tires and wheels (AMM 32-45-00/001).
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 actuated hydraulically by manual brake 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 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 autobrake 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 airplane 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).

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 (Ref 32-42-00). 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, parking brake pressure accumulator, check valves, wheel brake (de-spin) actuator, hydraulic lines and pilot's brake system indications.
      (1) The carbon 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 cables running aft through the floor beams. Two sets of cables are installed, one on each side, and are connected to the respective left or right metering valve module.
      (3) The brake hydraulic system is normally powered by the right hydraulic system, however, if right system pressure is lost, the left 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 left hydraulic systems occurs. A limited number of brake applications (1 to 2) 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 right hydraulic system used for brakes.
      (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 (Ref 31-41-00).
   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 (Ref 32-44-00).

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 (Ref 32-42-00).

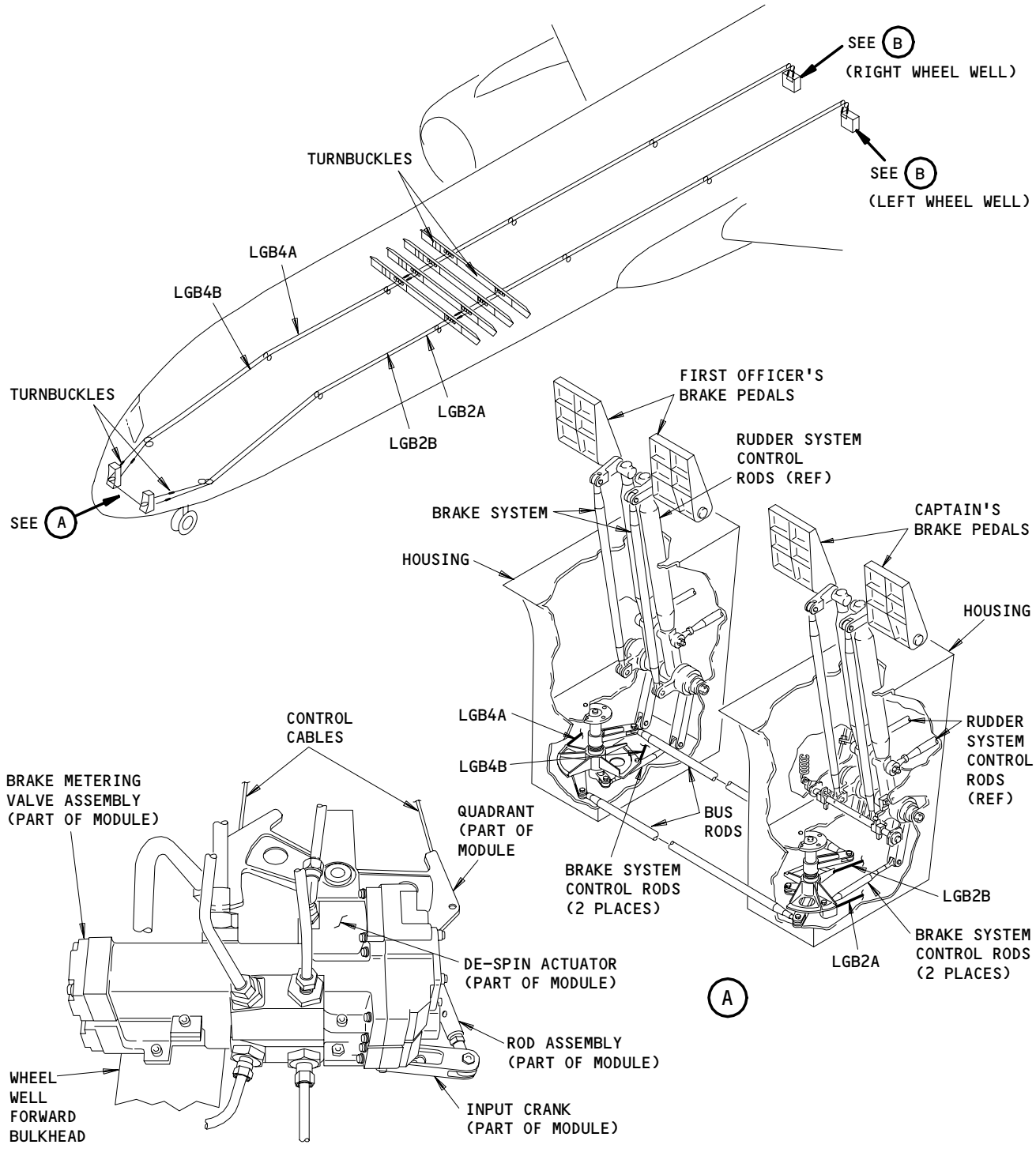
E. Gear retract braking, to stop the wheels from spinning prior to them entering the wheel well after take off, is accomplished from the gear-up hydraulic pressure line. This pressure actuates the autobrake (de-spin) actuators on the left and right alternate brake metering valves which in turn actuates 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 16 degrees.

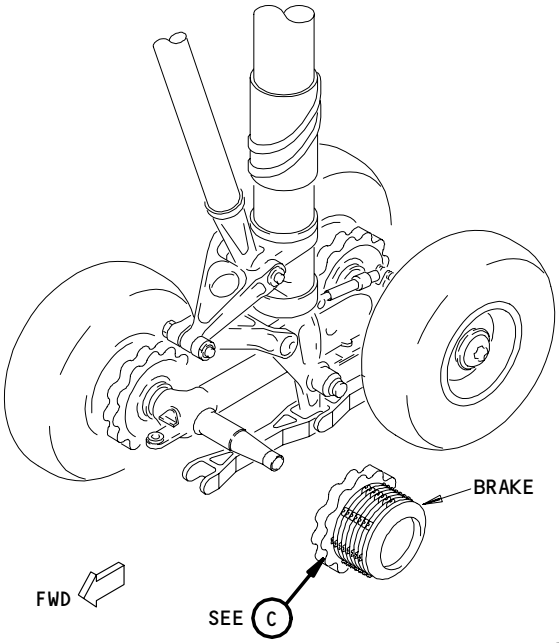
(2) The left brake cable loop is driven by a quadrant connected by a short shaft to the captain's left brake bellcrank. Similarly the right brake cable loop is driven by a quadrant connected by a short shaft to the first officer's right brake bellcrank. The captain's right brake bellcrank is mounted 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.



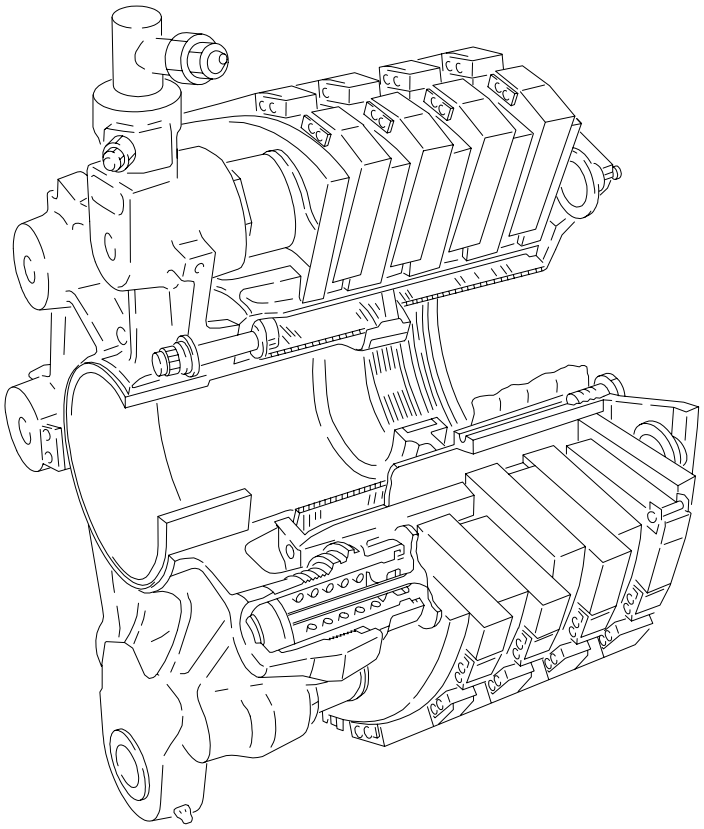
BRAKE METERING VALVE ASSEMBLY
(LEFT SIDE INSTALLATION SHOWN;
RIGHT SIDE INSTALLATION SIMILAR)

B

Hydraulic Brake System Component Location
Figure 1 (Sheet 1)



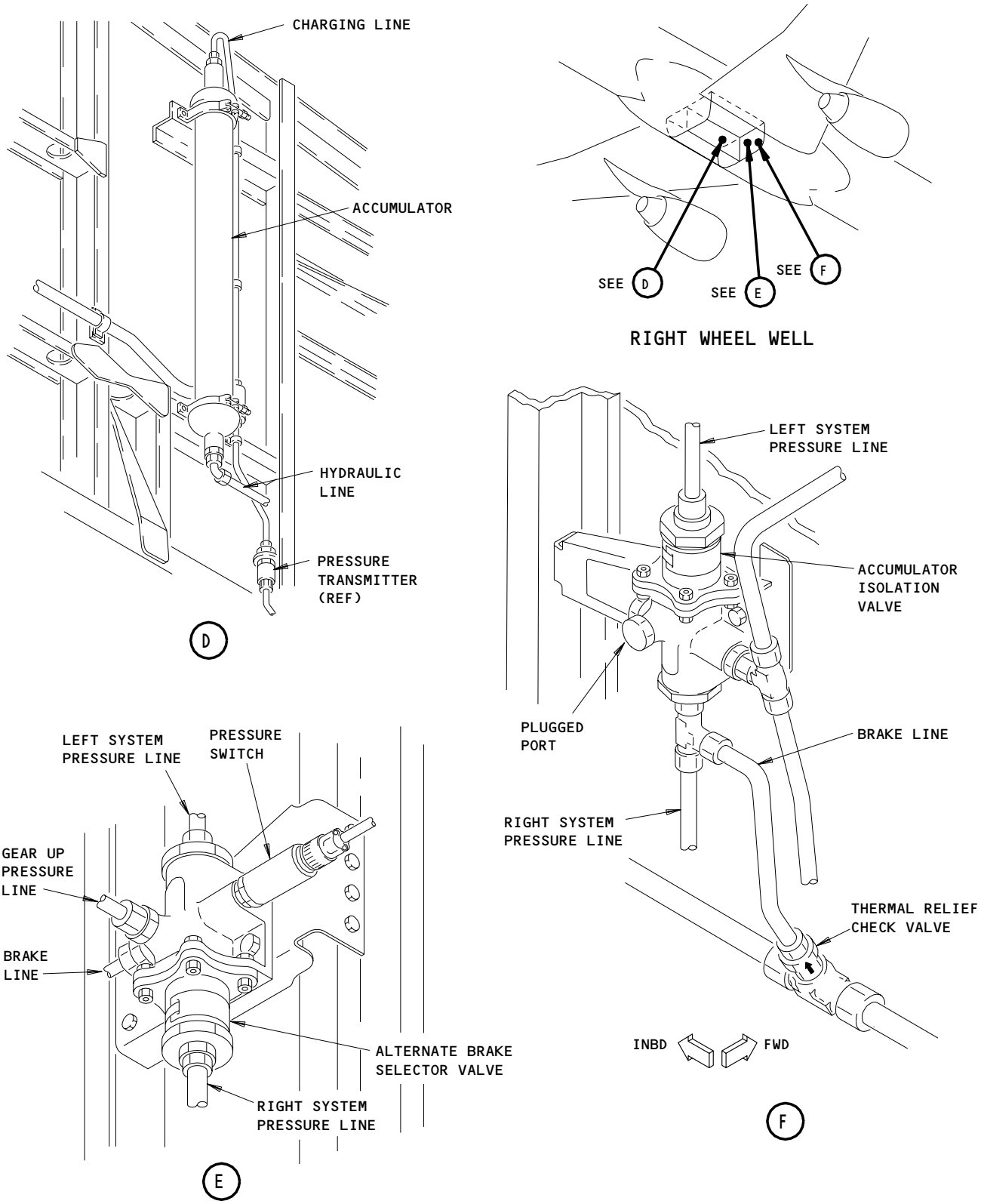
MAIN LANDING GEAR



BRAKE ASSEMBLY

C

Hydraulic Brake System Component Location
Figure 1 (Sheet 2)



Hydraulic Brake System Component Location
Figure 1 (Sheet 3)

B. Cable Linkage (Fig. 1)

(1) The cable system transmits pilot's brake pedal input from the pedal and quadrant linkage to the brake metering valve module quadrant assembly. The metered brake pressure is a function of valve slide displacement as the cable operated quadrant rotates the metering valve input shaft. 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 mounted on the corresponding metering valve module. Similarly the other set drives the opposite side brake metering valve module. The cables operate a quadrant and linkage on each module which drives both metering valves through a single input shaft.

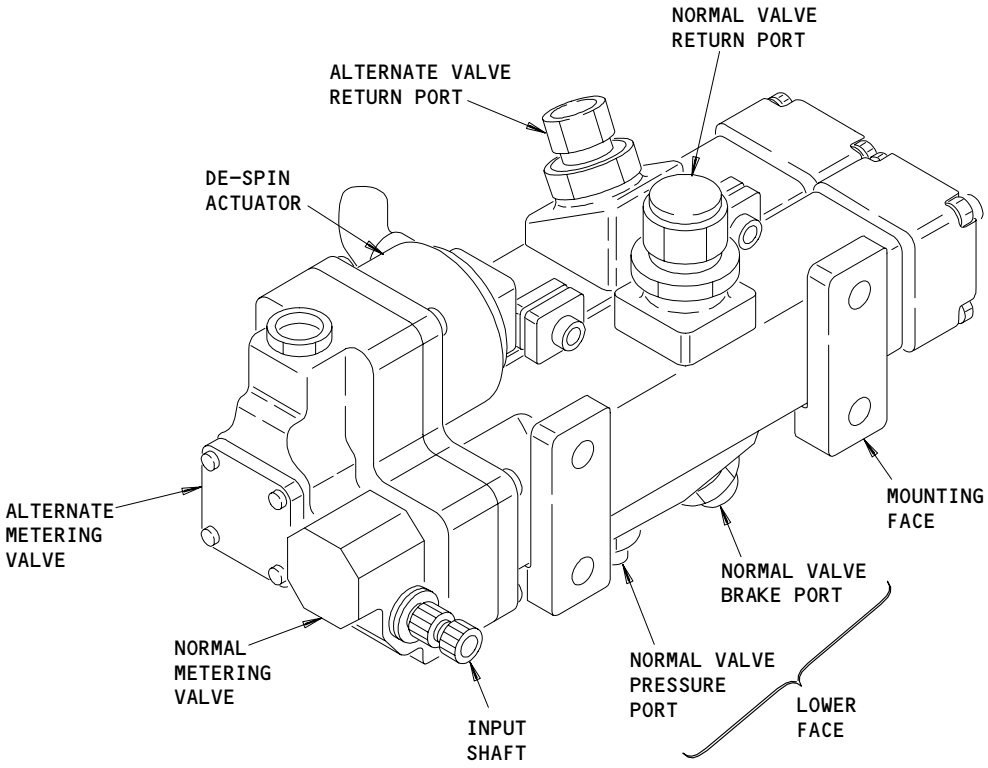
(4) The cables leave the pressurized portion of the body at the upper forward section of the wheel well. Turnbuckles join forward and aft segments of each cable run.

C. Brake Metering Valve Module Assembly (Fig. 1, 2)

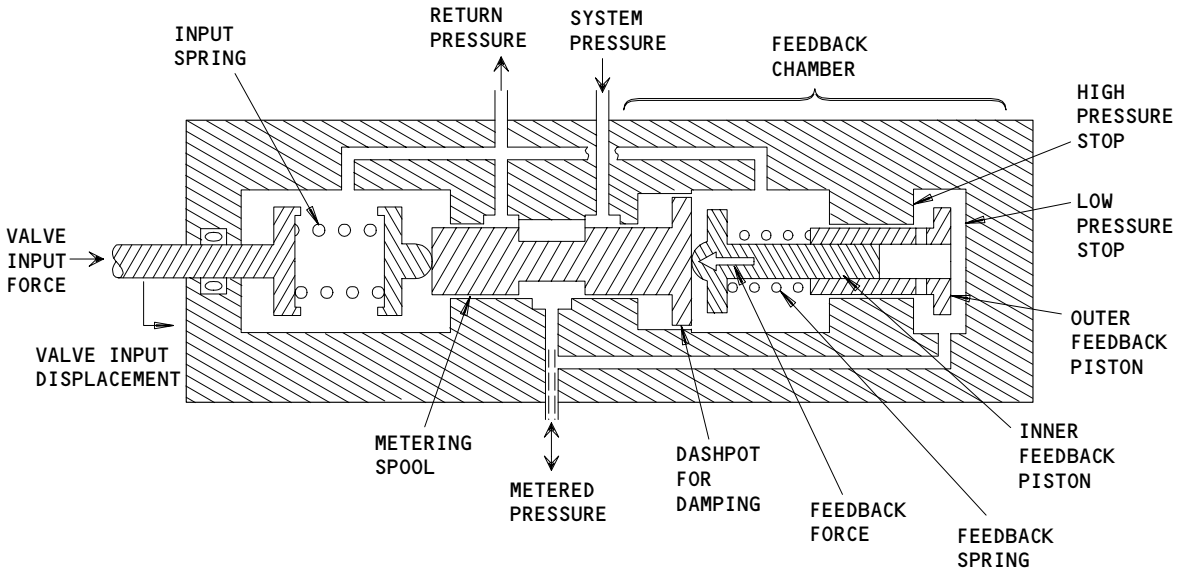
(1) There are two brake metering valve module assemblies, one in the left wheel well, and one in the right wheel well that provide metered hydraulic actuation of the main landing gear wheel brakes.

(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.

(3) 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 systems. Only one of the metering valves is pressurised 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

(4) 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.

(5) 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 (Fig. 1, Detail D)

(1) The brake accumulator provides a passive pressure source for approximately 1 to 2 brake applications when left and right hydraulic systems are not available. The accumulator is also used to extend parking brake holding time (Ref 32-44-00) 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.

(3) The accumulator is located in the right wheel well on the main fore-aft bulkhead.

E. Alternate Brake Selector Valve (ABSV) (Fig. 1, Detail E)

(1) The ABSV is located on the right wheel well forward bulkhead.

(2) The ABSV isolates left hydraulic system source from the alternate brake system. When the right hydraulic (normal) system source is depressurized, the ABSV cycles to allow the left hydraulic (alternate) system source to provide brake pressurization. ABSV value cycling takes place when control pressure drops to approximately 48 percent or less in the normal pressurized system.

F. Accumulator Isolation Valve (AIV) (Fig. 1, Detail F)

(1) The AIV is located on the right wheel well forward bulkhead, just outboard of the ABSV.

(2) The AIV is normally open. The AIV cycles closed to isolate the brake system accumulator when the left (alternate) hydraulic system reaches 48 percent or more of accumulator pressure. The AIV cycles to the open position when the left hydraulic (alternate) system drops to 48 percent or less of accumulator pressure to provide a backup system (accumulator) of brake pressurization.

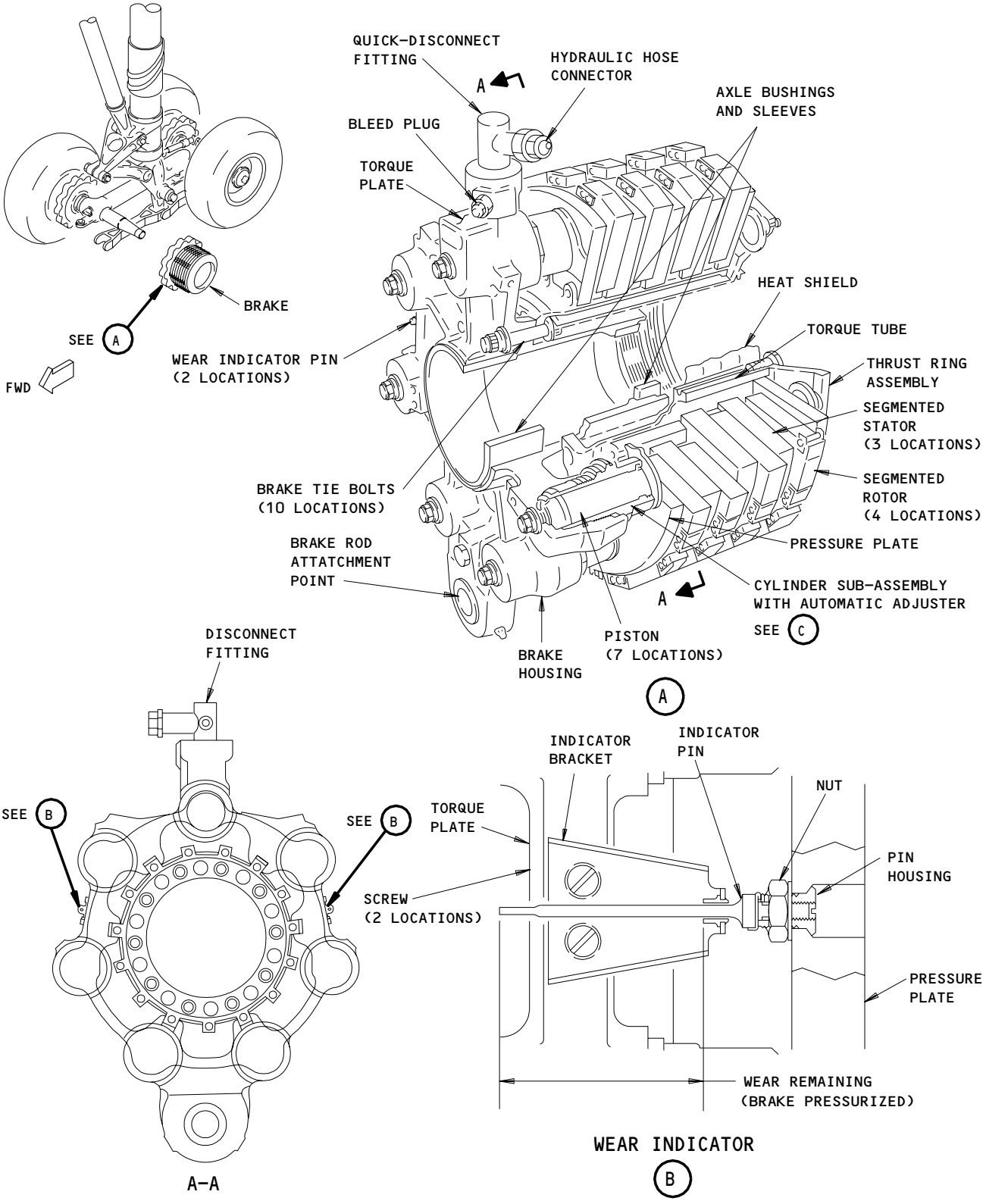
(3) The AIV and ABSV utilize the same basic valve unit. Ports connect to the brake system in a different manner to suit the different valve functions.

G. Hydraulic Brake Assembly (Dunlop Carbon Brake) (Fig. 3)

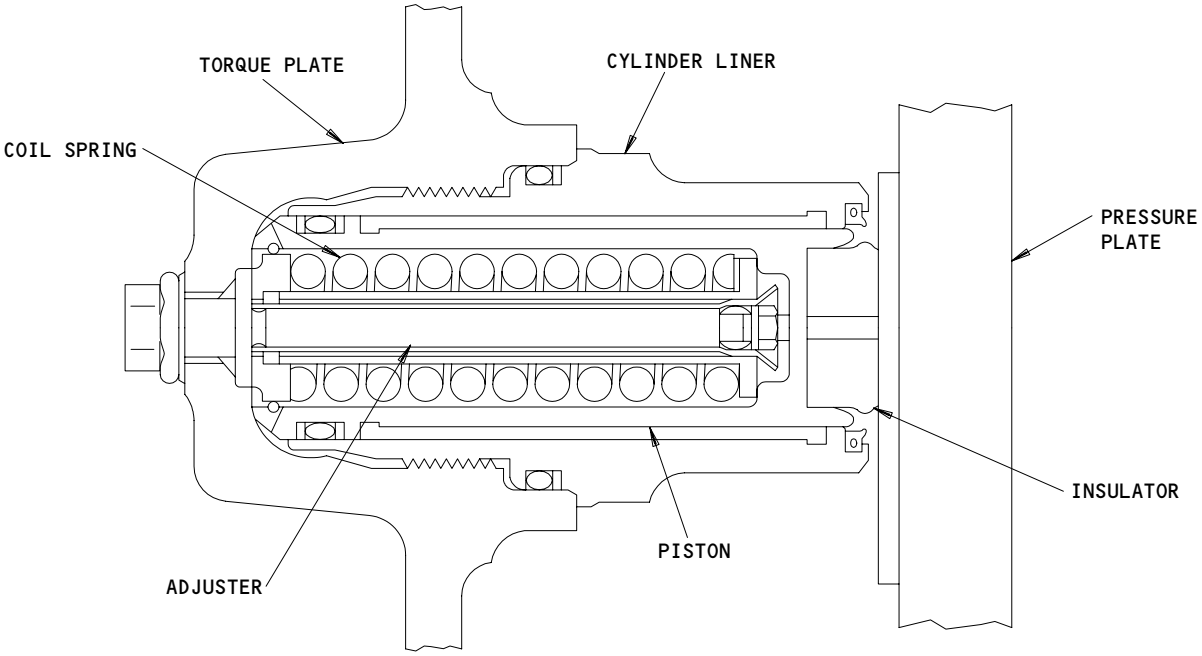
(1) The brake assembly is a conventional rotor-stator multiple disc unit. The brake housing is mounted on bushings which ride on main landing gear axle sleeves. A brake rod (torque arm) attaches between the lower brake housing, at a pin joint, and the yoke of the shock strut. The brake is thus allowed to rotate on the axle with corresponding landing gear truck position changes. Lubrication fittings are provided for brake rod and axle bearing joints.

(2) Each brake has seven cylinder sub-assemblies. The cylinder sub-assemblies include a cylinder liner, a piston, and an automatic adjuster. Brake pressure is applied hydraulically through the 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, the brake adjuster springs pull the pressure plate back from contact with the rotor-stator stack.

(3) The automatic brake adjusters are installed in each cylinder sub-assembly to automatically keep a constant pre-set clearance between the brake piston and the brake discs (rotors and stators) as wear occurs in the discs.
On some brake assemblies (See Fig. 3 for effectivity), the adjuster mechanism uses a spring bushing and spacer to automatically adjust the clearance as the brake discs wear.
On other brake assemblies (see Fig. 3 for effectivity) the adjuster causes a pin and ball mechanism to deform a circular tube to automatically hold the necessary clearance as the brake discs wear.

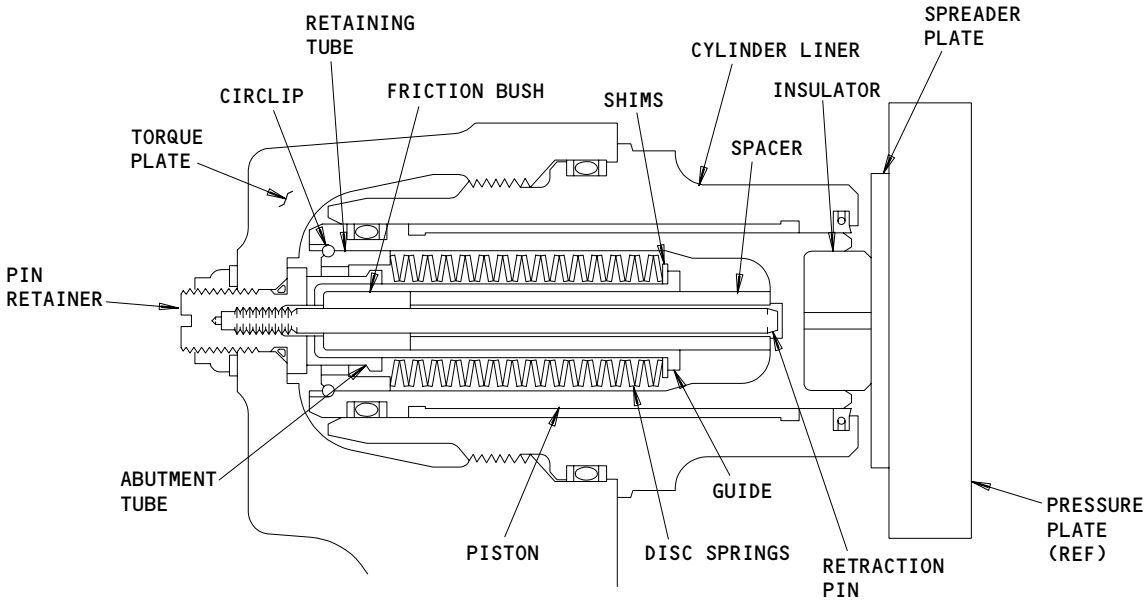


Hydraulic Brake Assembly
Figure 3 (Sheet 1)



CYLINDER SUB-ASSEMBLY WITH AUTOMATIC ADJUSTER
(USED ON BRAKES WITH BOEING PART NO. S160N020-14)

C



CYLINDER SUB-ASSEMBLY WITH AUTOMATIC ADJUSTER
(USED ON BRAKES WITH BOEING PART NO. S160N020-1,-5,AND-8)

C

Hydraulic Brake Assembly
Figure 3 (Sheet 2)

(4) Two wear pins are installed in each brake assembly which indicate when brakes require replacement. The pins attach to the pressure plate by screwed housing, passing through indicator brackets which are secured to the torque plate by two screws.

(5) The approximate brake wear remaining is indicated by the amount the end face of pin protrudes through tube in the bracket when brake is applied.

(6) 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 will eliminate hydraulic line bleeding requirements after brake replacement.

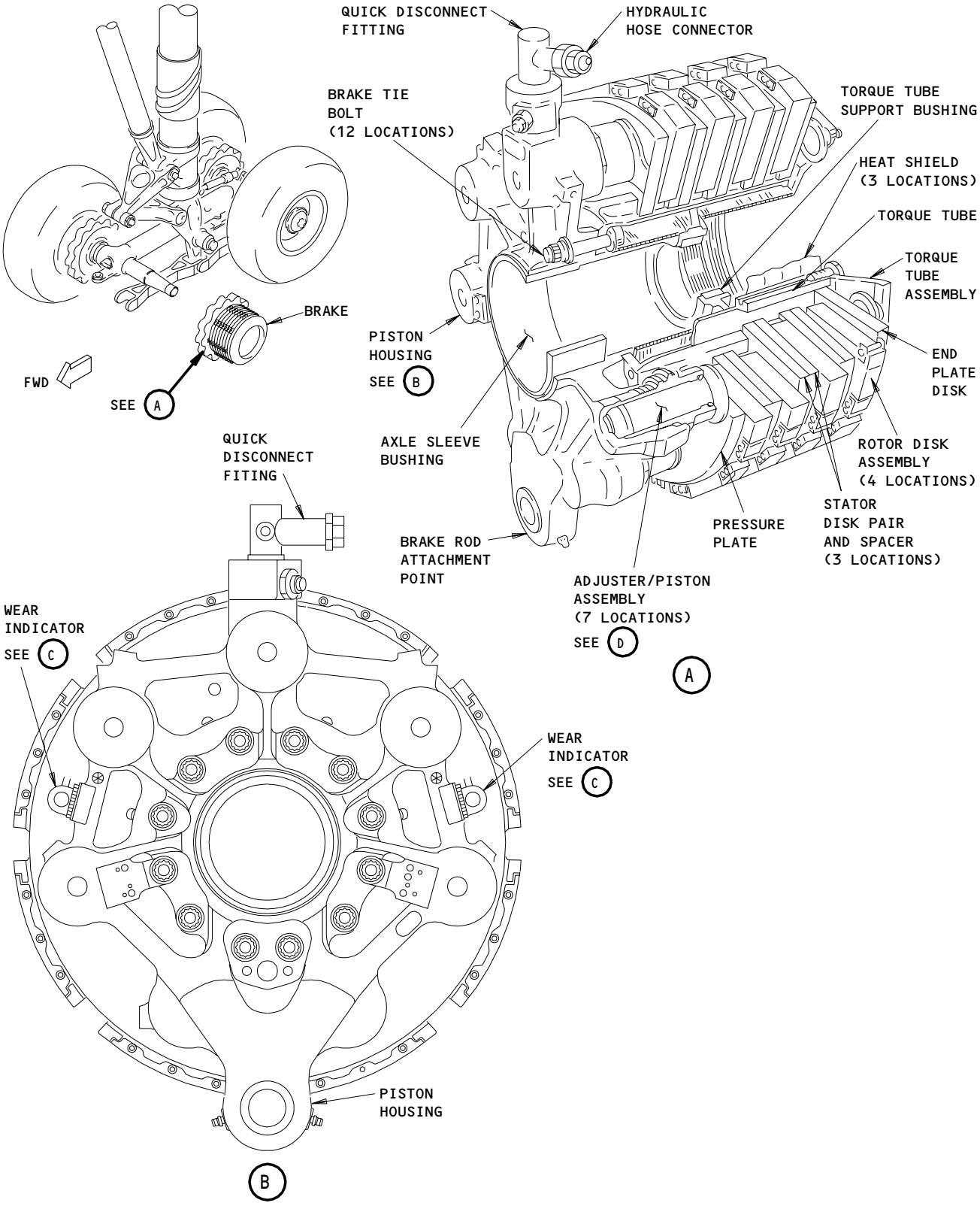
(7) A bleed plug is installed at the top of the brake assembly, adjacent to the disconnect fitting. The plug can be used to bleed air from the hydraulic brakes.

H. Hydraulic Brake Assembly (BF Goodrich Carbon Brake) (Fig. 3A)

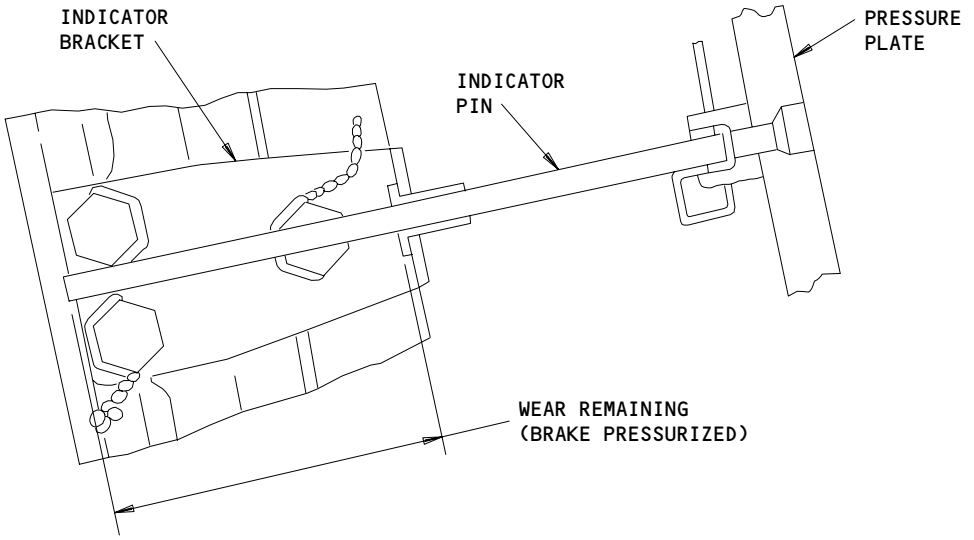
(1) The hydraulic brake assembly is a piston-operated multiple disk brake and operates from the airplanes hydraulic system. The brake has four major components: the piston housing and related parts, the pressure plate assembly, the carbon heat sink stack, and the torque plate and lining assembly.

(2) The forged aluminum piston housing contains seven adjuster/piston assemblies, an inlet port and a bleeder port with attaching hardware. The piston housing and its components are attached to the torque plate assembly by twelve unequally spaced bolts. The piston housing assembly and the torque plate bushings mate with journals on the axle. Lubrication fittings in the piston housing are for lubricating the bushings. The piston housing transmits torque during braking action to the landing gear brake rod assembly which transmits the torque to the landing gear.

(3) Each adjuster bore is a hydraulic enclosure for the the adjuster assembly. The adjuster is an assembly of a sleeve and the subsequent items contained by the sleeve: a spring, spring guide tube and ball assembly, piston, piston insulator, packings, and packing retainers.

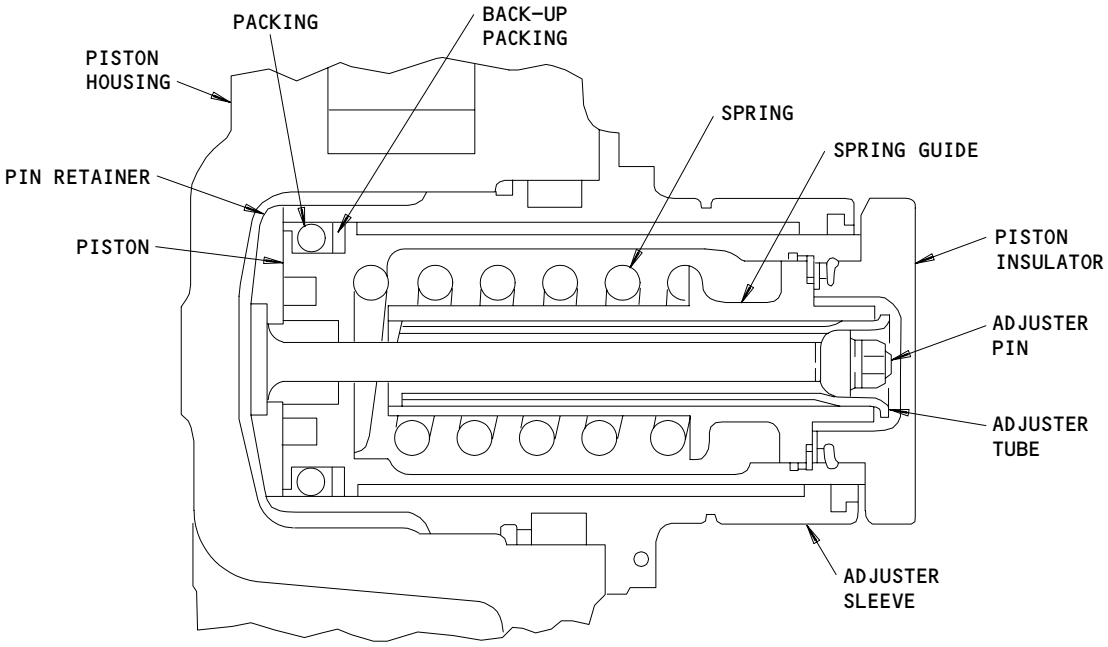


Hydraulic Brake Assembly
Figure 3A (Sheet 1)



BRAKE WEAR INDICATOR

C



PISTON/ADJUSTER ASSEMBLY

D

Hydraulic Brake Assembly
Figure 3A (Sheet 2)

(4) The bleeder screw assembly consists of a screw, washers, bleeder valve, adapter and packings.
(5) Two wear indicator pins are attached to the pressure plate and pass through indicator brackets attached to the piston housing. The indicator pins give a visual means of determining brake wear.
(6) The carbon composite heat stack includes all the components that have friction surfaces, which, when pressed together, cause braking. These components include the subsequent parts: pressure plate assembly, four rotor disk assemblies, six stator disks, three spacers and an end plate. The six stator disks are assembled in pairs (three total) with each pair including a spacer, also of carbon composite material. The end plate is attached to torque buttons that are mounted on the steel torque tube assembly. Steel clips fastened to the rotors protect the carbon from damage.
(7) The heat stack is mounted on a one piece torque tube assembly which contains fourteen equally spaced lugs that engage mating slots on the stator disks. The torque tube also has heat shields and a bushing that engages an axle journal.
(8) The following events occur when the brake is operated:
    (a) Pressurized hydraulic fluid forces the piston insulators against the pressure plate assembly.
    (b) As the pistons and pressure plate continue to move, the four rotor assemblies and three stator and spacer asemblies are forced together and held between the pressure plate assembly and torque tube assembly. The friction the rotors caused by the stators causes the braking action.

        NOTE: The preceding paragraphs explain only the effect of brake application on the heat stack. The subsequent paragraphs describe the simultaneous effect of braking on the adjusters.

    (c) During brake actuation, pressurized hydraulic fluid forces the piston forward. The piston pushes the pressure plate forward and pulls the adjuster pin, ball, and tube, compressing the adjuster spring. The spring retainer will bottom, holding the tube. Any further motion of the pressure plate required for the disks to contact each other (caused by lining wear) will pull the pin and ball deeper into the tube where it will be held. When pressure is released, the adjuster springs will pull the pistons back a distance equal to the travel of the adjuster spring from bottom to original position. This gives a constant running clearance after each brake release. The distance that the ball is pulled into the tube compensates for lining wear.

I. GUI 002;
Hydraulic Brake Assembly (BF Goodrich Steel Brake) (Fig. 3A)

(1) The brake assembly is a conventional rotor-stator multiple disc unit. The brake housing is mounted on bushings which ride on main landing gear axle sleeves. A brake rod (torque arm) attaches between the lower brake housing, at a pin joint, and the yoke of the shock strut. The brake is thus allowed to rotate on the axle with corresponding landing gear truck position changes. Lubrication fittings are provided for brake rod and axle bearing joints.

(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 six 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 at grommet locations. The wear pins on new brakes initially protrudes 1 3/8 inch past the grommets with brakes applied and when brakes need replacing the protrusion will be zero.

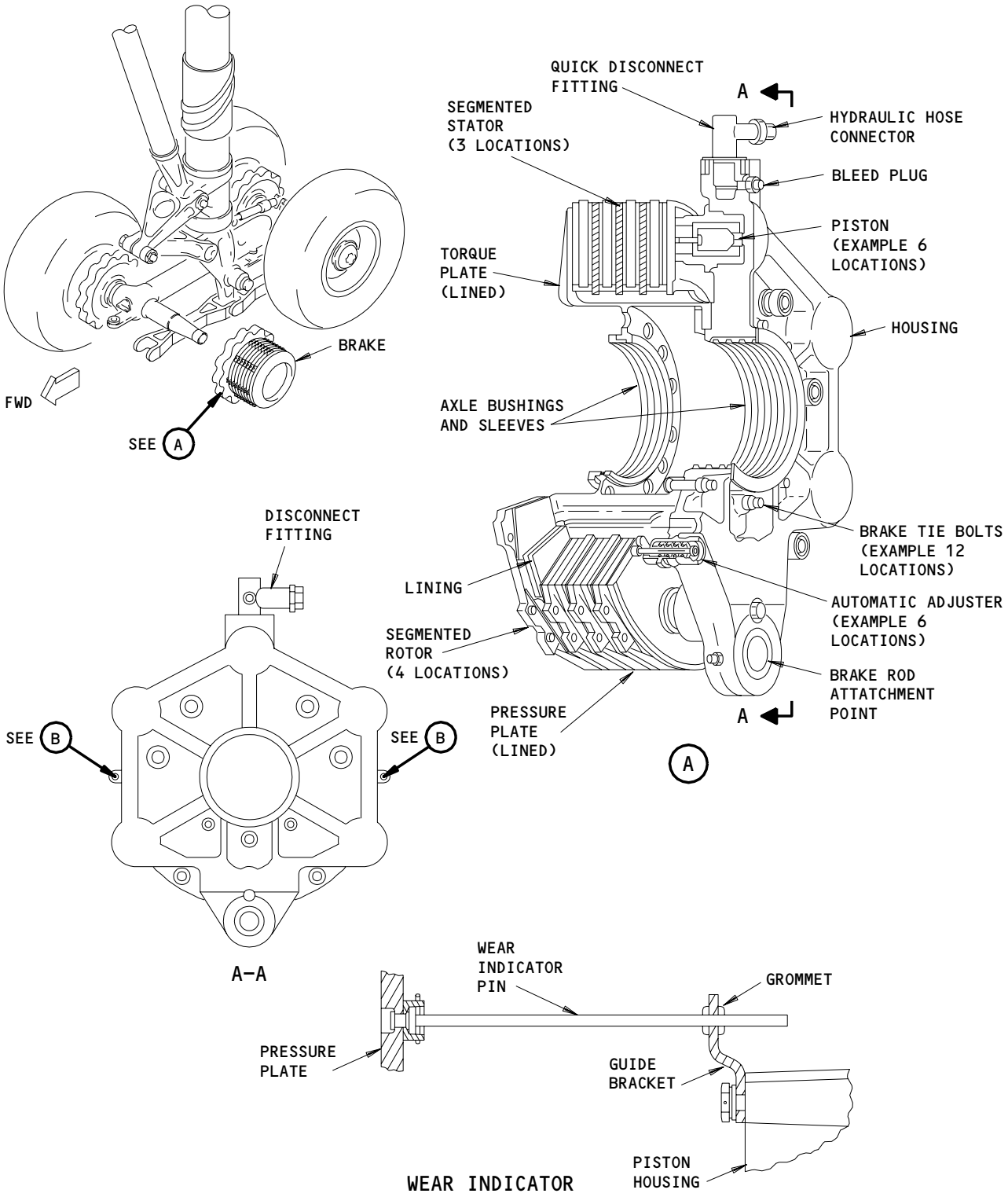
J. Indication (Fig. 4)

(1) A BRAKE SOURCE amber indication light (Detail A) is installed on the pilot's P1 panel. The BRAKE SOURCE indication illuminates when both the right (normal) hydraulic system and left (alternate) hydraulic system are approximately 48 percent or less of normal system pressure.

(2) The RESERVE BRAKES panel (Detail A) includes a selector switch with a white ON indicator light. The ON light indicates when RESERVE BRAKES source is selected.

(3) Two accumulator pressure gages are provided. One direct reading pressure gage is installed at the accumulator charging valve location in the lower fuselage (Ref 12-15-04). The other indirect reading pressure gage is installed in the pilots P3 panel (Fig. 3), Detail B). The gages indicate the brake system nitrogen precharge pressure in the accumulator. The pressure signal for the P3 panel gage originates at a transducer adjacent to accumulator and is sent to the brake pressure sensing indicator and gage in the flight compartment.

(4) In addition to the above indicators the brake system interfaces with the Engine Indicating and Crew Alerting System (EICAS) (Detail C) to provide various caution messages. These messages include BRAKE SOURCE for low left and right hydraulic system pressure.



Hydraulic Brake Assembly
Figure 3B

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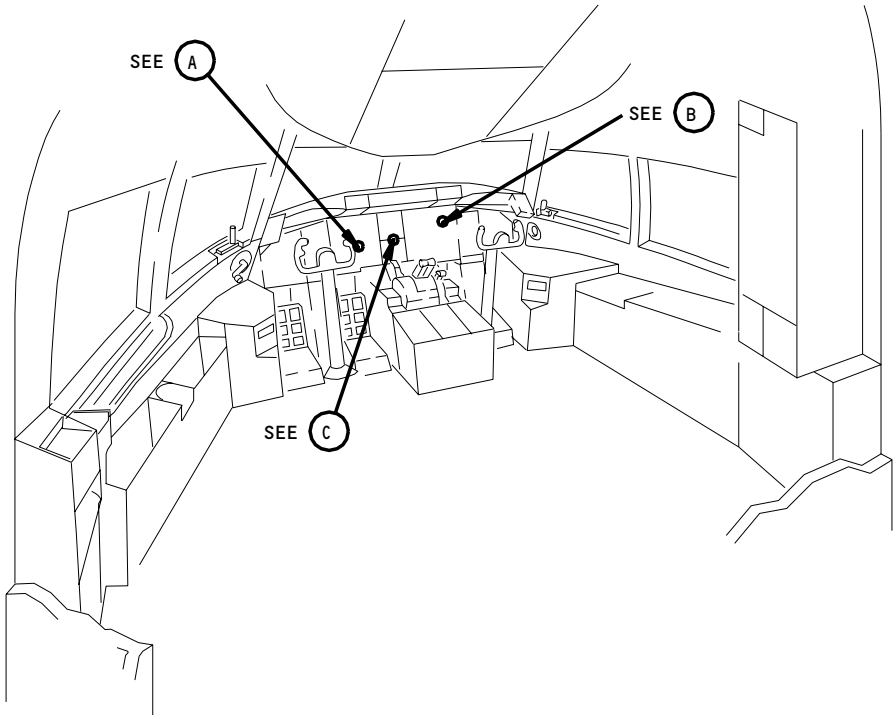
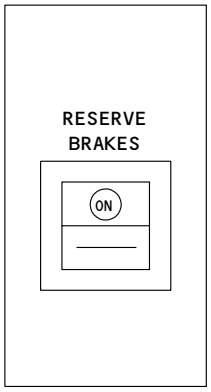
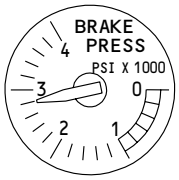
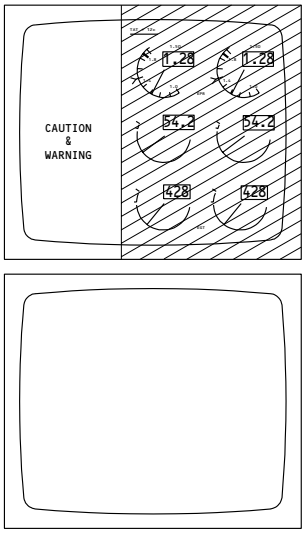








Hydraulic Brake System Indication
Figure 4

3. Operation

A. Brake Hydraulic System Functional Description (Fig. 5, 6)

(1) The normal brake system is powered from the right hydraulic system and the alternate system is powered from the left hydraulic system. The brake system accumulator (passive source) in the right hydraulic system provides pressure after the active brake pressure sources are lost. Left hydraulic system pressure is automatically selected on loss of right hydraulic system pressure (48 percent or less of normal pressure). The brake accumulator is selected automatically after loss of right and left hydraulic systems (48 percent or less of normal pressure in both systems).

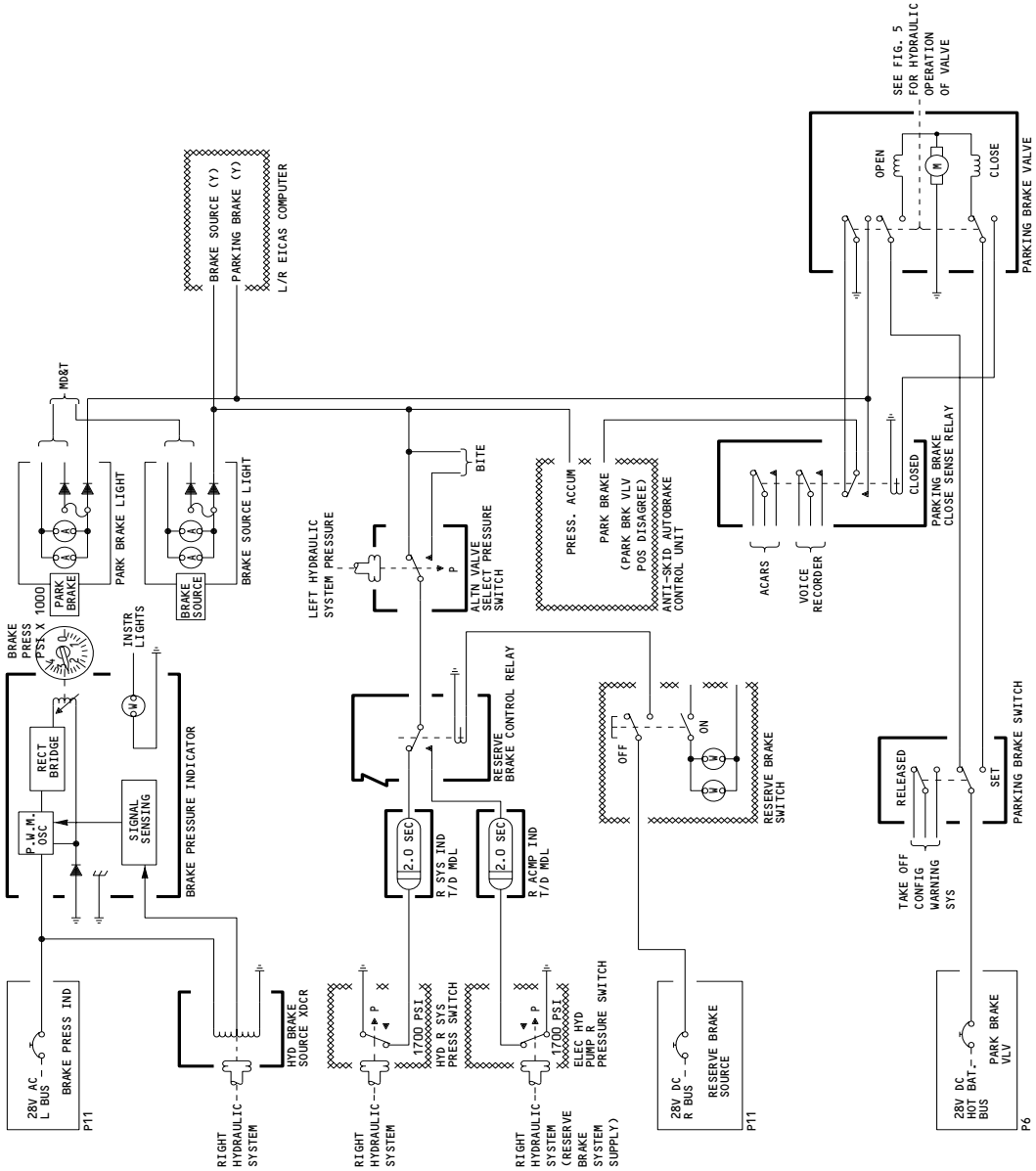
(2) A reserve brake power source may be manually selected if the above sources are unavailable. Pressing the RESERVE BRAKES switch on the flight compartment P1 panel provides a dedicated supply of hydraulic fluid from the right hydraulic system reservoir to hydraulic brake system supply lines. The dedicated supply of hydraulic fluid is obtained by opening of a standpipe selector valve to the right hydraulic system reservoir. The brake lines are isolated from other hydraulic loads in the right system and an electric motor-driven hydraulic pump is energized.

(3) Metered pressure to the brakes is supplied either manually, through the brake metering valves, or automatically, through the autobrake valve.

(4) Gear retraction braking pressure is supplied through the alternate system and is controlled by left and right gear autobrake (de-spin) actuators mounted on the brake metering valves. Gear-up pressure is channelled directly to the actuators to stop wheel spin prior to their entry into the wheel well.

(5) The normal and alternate hydraulic pressure lines to the brakes are protected by quantity measuring fuses downstream of the antiskid valves. The proper hydraulic source is automatically selected by antiskid shuttle valves downstream of the fuses, in order to use a common brake line running down the strut to the brakes (Ref 32-42-00).

(6) Restrictor-check valves are installed in each brake line to limit the pressure application rate at the brake, but do not restrict flow out of the brake for antiskid release.



Hydraulic Brake System Control and Indication Schematic
Figure 5

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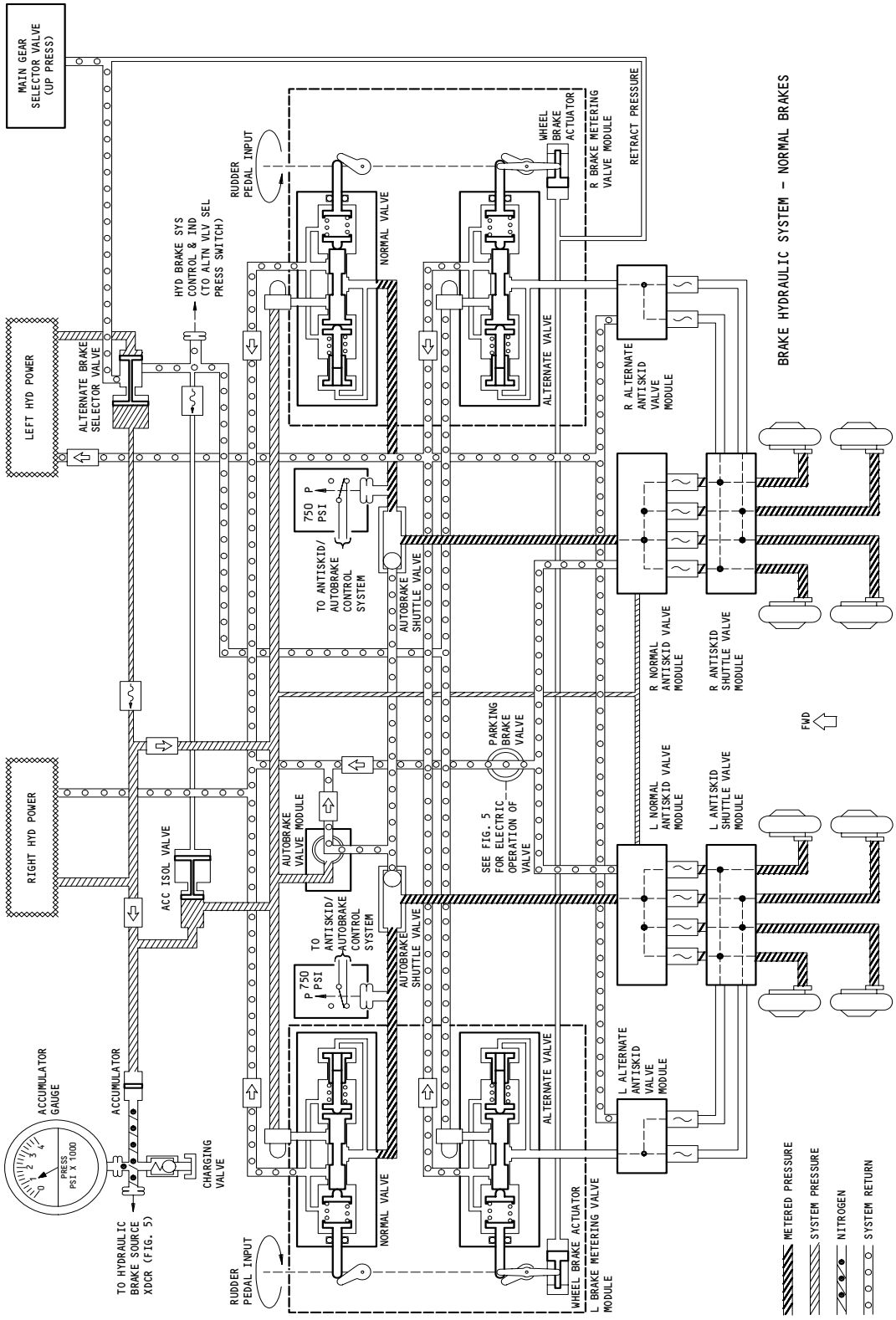


BRAKE HYDRAULIC SYSTEM - NORMAL BRAKES

Hydraulic Brake System Simplified Hydraulic Schematic
Figure 6

(7) Check valves are installed in the return lines of the brake system to prevent return line pressure surges external to the brake system from causing the brakes to drag.

B. Metered Brake Pressure Control Functional Description

(1) Controlling pressure at the brakes is accomplished automatically through the autobrake control module or manually using the rudder-brake pedals. During manual operation using the alternate system, the brake metering valves port metered pressure to the brakes. During manual operation using the normal system, the brake metering valves port metered pressure to the brake pressure control valves which port metered pressure to the brakes. A total of four brake metering valves (two per brake metering valve module).

(2) In the automatic mode, a single autobrake pressure control valve is used to apply and maintain brake pressure in the normal system only at the level commanded by the autobrake control unit (Ref 32-42-00).

(3) Brake pressure for stopping wheel spin during gear retract is controlled by gear up pressure to the gear retract braking actuators mounted on the alternate brake metering valves.

C. Control (Fig. 5, 6)

(1) Provide electrical power (Ref 24-22-00).

(2) Pressurize main right and left hydraulic systems (Ref 29-11-00).

(3) Check that RESERVE HYD SOURCE and BRAKE PRESS circuit breakers on P11 panel are closed.

(4) For manual control of brakes, apply pressure at pilot's brake pedals (left and/or right), as required.

(5) For automatic control of brakes set autobrake switch position, as required (Ref 32-42-00).

(6) To activate the reserve hydraulic pressure source for brakes, press the RESERVE BRAKE switch on the pilots P1 panel to ON position.

HYDRAULIC BRAKE SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
ACCUMULATOR - (REF 32-44-00, FIG. 101)				
PARKING BRAKE	1	2	L/R MLG WHEEL WELL ON ALTERNATE METERING VALVE	32-41-09
BRAKE - HYDRAULIC	3	8	MAIN LANDING GEAR	32-41-10
CABLES - BRAKE CONTROL	1	8	821, FWD CARGO COMPT CLG AREA	32-00-05
CHECK VALVE - (REF 32-44-00, FIG. 101)				
THERMAL RELIEF				
CIRCUIT BREAKERS	3		FLT COMPT, P6,P11	
BRAKE PRESS IND, C1180		1	11S13	*
PARKING BRAKE VLV, C1179		1	6F4	*
HYDRAULICS RESERVE BRAKE SOURCE, C4292		1	11K22	*
COMPUTER - (REF 31-41-00, FIG. 101)				
EICAS, L, M10181				
EICAS, R, M10182				
CONTROL UNIT - (REF 32-42-00, FIG. 101)				
ANTISKID AUTOBRAKE, M102				
DISCONNECT - BRAKE	3	8	MAIN LANDING GEAR	32-41-08
GAGE - (REF 32-44-00, FIG. 101)				
PNEUMATIC PRESSURE				
INDICATOR - BRAKE PRESS., N10	3	1	FLT COMPT, P3	*
LIGHT - BRAKE SOURCE, L491	3	1	FLT COMPT, P1	*
LIGHT - (REF 32-44-00, FIG. 101)				
PARK BRAKE, L413				
MECHANISM, BRAKE PEDAL BUS	1	1	113AL, FWD EQUIP COMPT	32-41-01
MODULE - (REF 32-42-00, FIG. 101)				
ALTERNATE ANTISKID CONTROL VALVE, L&R				
ANTISKID SHUTTLE VALVE, L&R				
MODULE - (REF 32-42-00, FIG. 101)				
AUTOBRAKE VALVE, M239			L&R MAIN GEAR WHEEL WELLS, FWD BULKHD	32-41-02
NORMAL ANTISKID VALVE, L&R				
PEDALS - BRAKE (CAPTAIN'S AND FIRST OFFICER'S)	1	4	FLT COMPT	32-41-00
		4	FLT COMPT	32-41-00
RELAY - (REF 32-44-00, FIG. 101)				
PARK BRAKE CLOSE SENSE, K419				
RELAY - (REF 29-11-00, FIG. 101)				
RESERVE BRAKE CONTROL, K10426				
SWITCH - ALTERNATE SOURCE SELECT VALVE PRESS, S415	2	1	R MAIN GEAR WHEEL WELL	32-41-04
SWITCH - (REF 32-42-00, FIG. 101)				
BRAKE, LH, S82				
BRAKE, RH, S83				

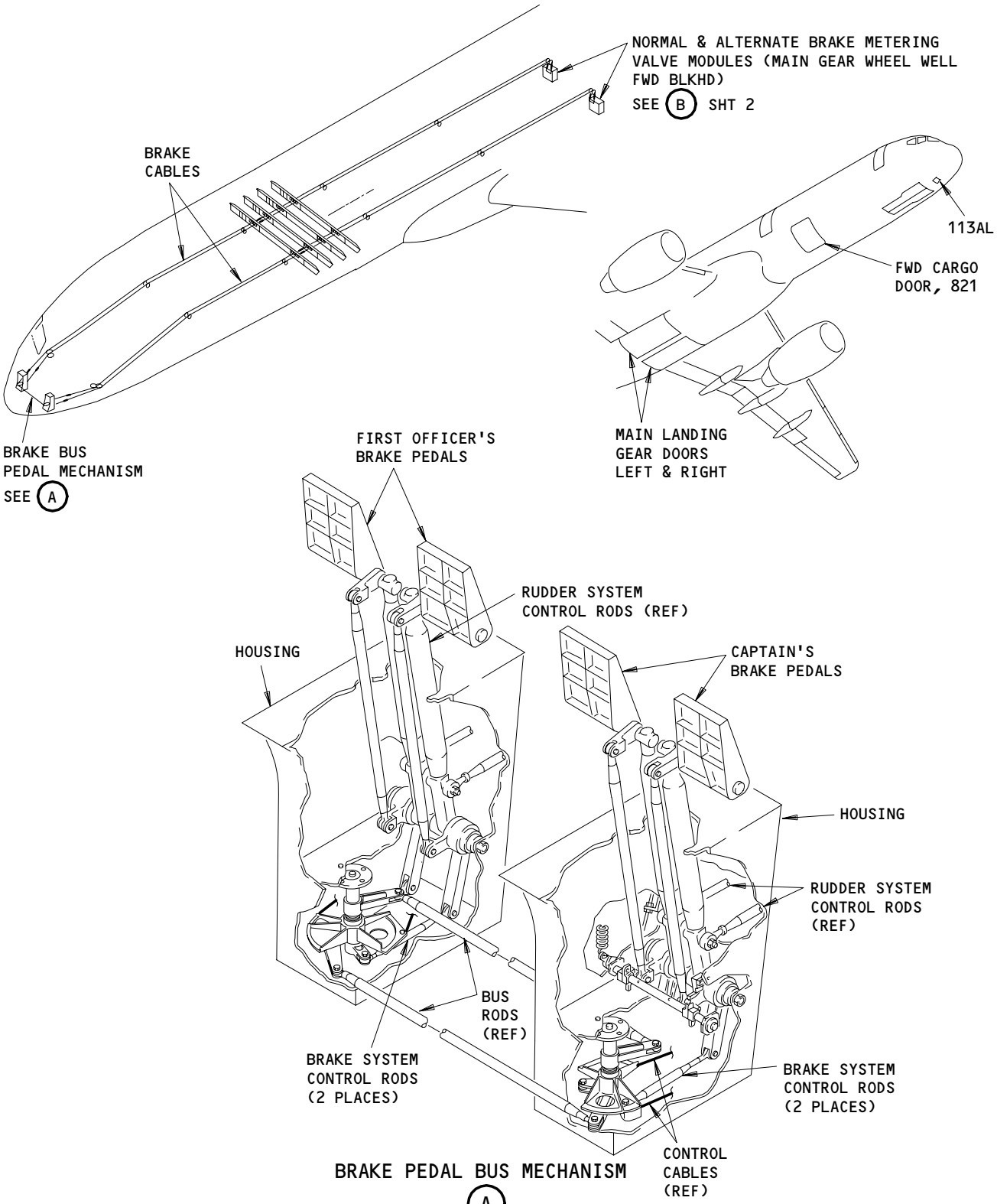
* SEE WM EQUIPMENT LIST

Component Index
Figure 101 (Sheet 1)

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
SWITCH - SYS R ACMP PRESS, S30 (REF 29-31-00, FIG. 101) SWITCH - SYS R PRESS, S32 (REF 29-31-00, FIG. 101) SWITCH - RESERVE BRAKE, S10390 (REF 29-11-00, FIG. 101) SWITCH - PARK BRAKE, S459 (REF 32-44-00, FIG. 101) TRANSDUCER, HYD BRAKE SOURCE, TS90 VALVE, AUTOBRAKE SHUTTLE, L&R (REF 32-42-00, FIG. 101) VALVE, MAIN GEAR SELECTOR (REF 32-30-00, FIG. 101) VALVE - ACCUMULATOR ISOLATION (REF 32-44-00, FIG. 101)	2	1	R MAIN GEAR WHEEL WELL	32-41-00
VALVE - ALTERNATE BRAKE SELECTOR VALVE AND MOTOR - PARKING BRAKE, V41 (REF 32-44-00, FIG. 101) VALVE - STANDPIPE SELECTOR, V10117 (REF 29-11-00, FIG. 101) VALVE - SYSTEM ISOLATION, M10118 (REF 29-11-00, FIG. 101)	2	1	R MAIN GEAR WHEEL WELL	32-41-04
VALVE ASSEMBLY - BRAKE METERING	2	2	L (R) MAIN GEAR WHEEL WELL, FWD BULKHEAD	32-41-03

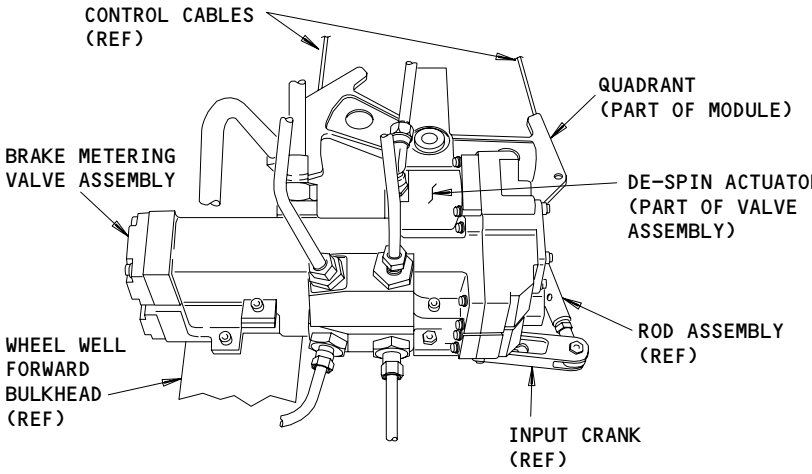
* SEE WM EQUIPMENT LIST

Component Index
Figure 101 (Sheet 2)

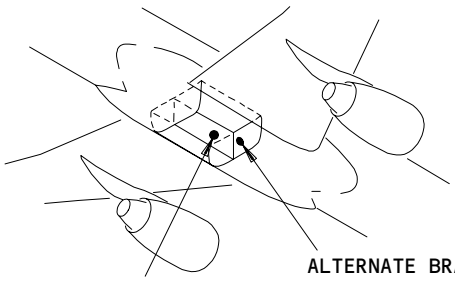


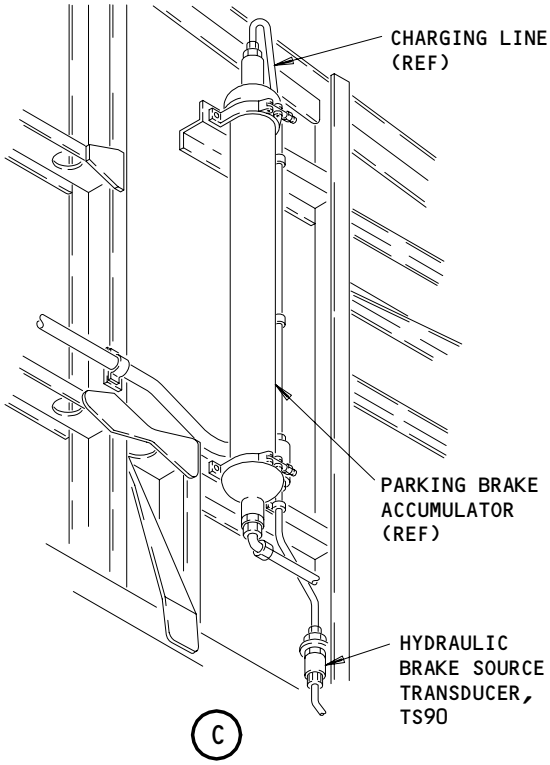
BRAKE PEDAL BUS MECHANISM
(A)

Component Location
Figure 102 (Sheet 1)

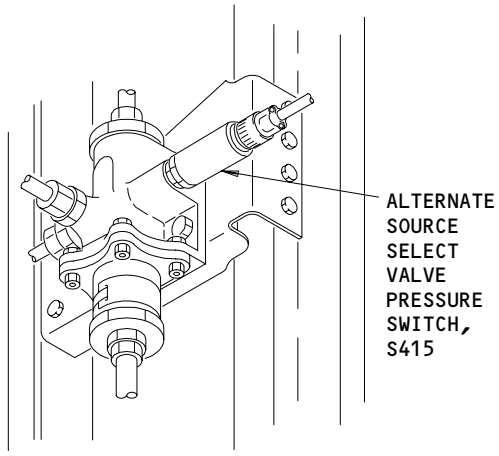


BRAKE METERING VALVE ASSEMBLY
(LEFT SIDE INSTALLATION SHOWN;
RIGHT SIDE INSTALLATION SIMILAR)
B



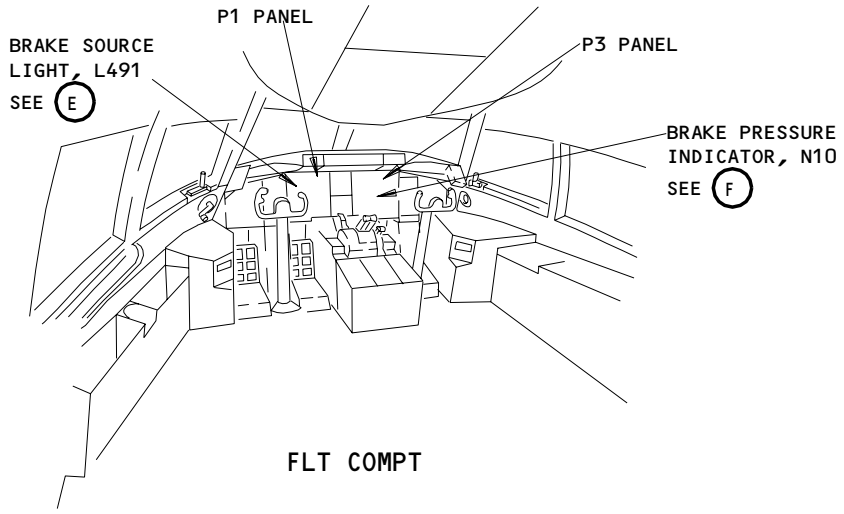


C

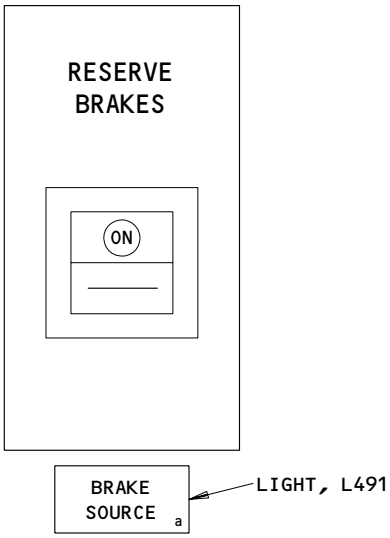


ALTERNATE BRAKE SELECTOR VALVE
D

Component Location
Figure 102 (Sheet 2)

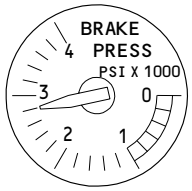


FLT COMPT



BRAKE SOURCE LIGHT, L491

E



BRAKE PRESSURE INDICATOR, N10

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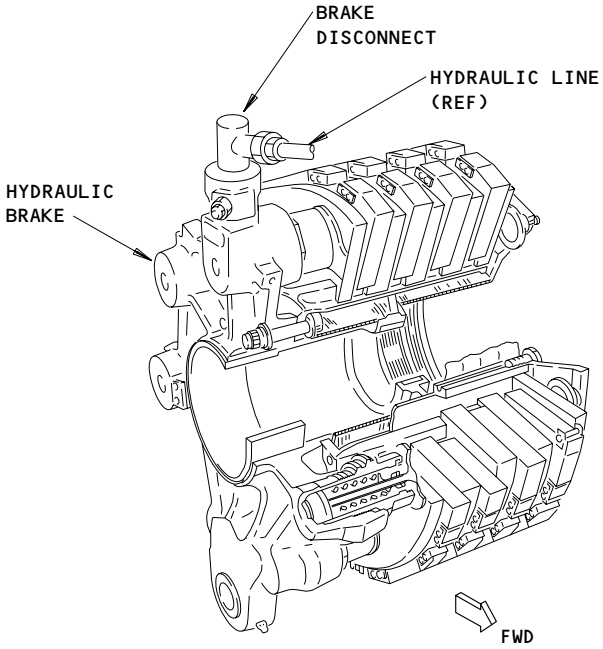
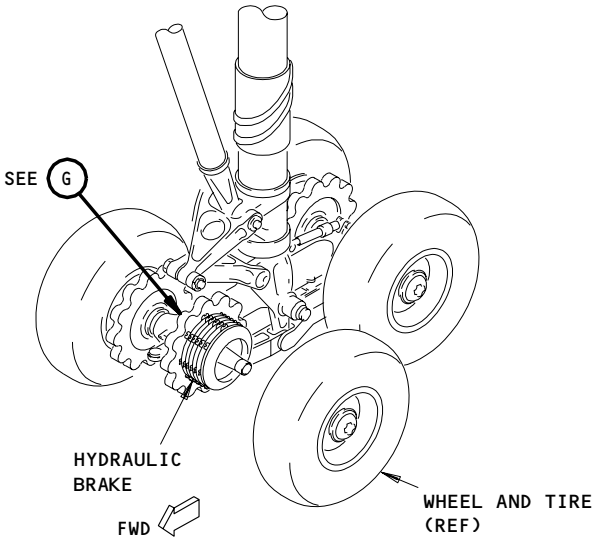


BRAKE DISCONNECT

G



Component Location
Figure 102 (Sheet 3)

HYDRAULIC BRAKE SYSTEM - MAINTENANCE PRACTICES

1. General
   A. This procedure contains two tasks. The first task is a procedure to bleed the main gear landing brakes. The second task is a test for proper operation of the antiskid module hydraulic fuses.

TASK 32-41-00-872-001

2. Procedure to Bleed the Main Landing Gear Wheel Brake System
   A. General

      (1) When a brake assembly is replaced, the new brake should be prefilled before installation on the airplane and it is not necessary to bleed the brakes.

   B. Consumable Materials
      (1) D00153 Hydraulic Fluid - BMS 3-11, Type IV
   C. References
      (1) AMM 12-12-01/301, Hydraulic Systems Servicing (Reservoir Replenishing)
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Doorlocks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   D. Prepare to Bleed the Brakes

      S 492-003
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

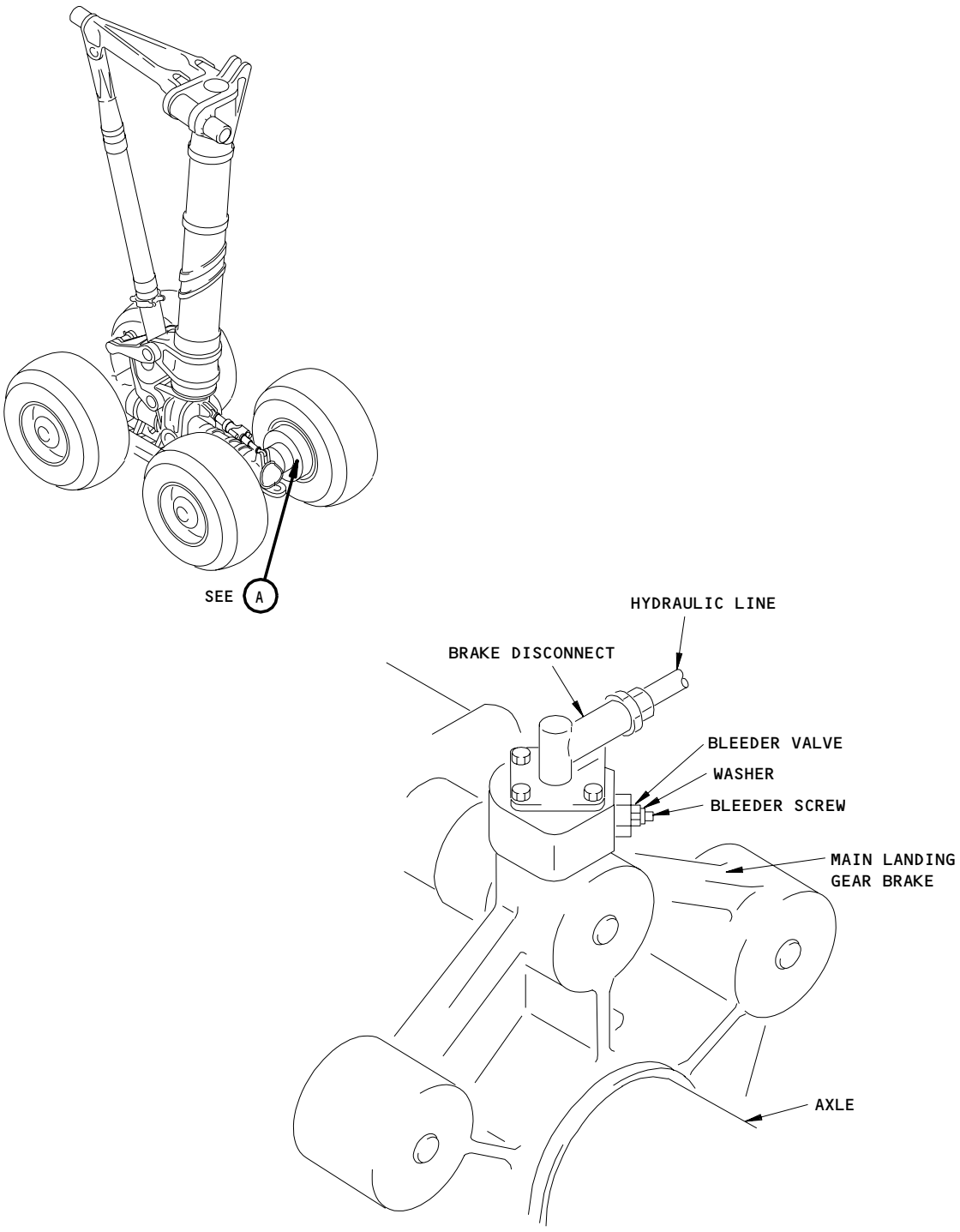
      S 492-004

      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOOR LOCKS 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 862-005
      (3) Release the parking brake.
   E. Bleed the Brakes (Fig. 201)

      S 842-002
      (1) Prepare the bleed port for one of the eight brakes.
         (a) Remove the screw and washer from the end of the bleeder valve.



(EXAMPLE - EACH BRAKE)

A

Hydraulic Brake Bleed Port Location
Figure 201

(b) Install a hose on the end of the bleeder valve.
(c) Put a container below the brake bleeder port so that fluid can go from the hose into the container.

S 862-006
(2) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 872-007
(3) Bleed the brakes (normal system).
(a) Slowly push in the Captain's brake pedals approximately one-half the normal travel and slowly release them. Do this six times to cause separation of the air from the fluid in the lines.
(b) Fully push in and release both brake pedals six times.
(c) Put on goggles for eye protection.
(d) 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: Fluid can flow out of the hose very quickly and intermittently. Be sure that the flow goes into the container.

If fluid flow stops while the bleed fitting is open, the brake fuse has closed.

(e) 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. Hold 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.
(f) Close the bleeder valve.
(g) Remove the bleed hose and install the screw with washer in the end of the bleeder valve.
(h) Do again the steps to prepare the bleed port, bleed the brake, and close the bleed port for each of the other seven brakes.

S 612-008
(4) Do the servicing procedure for the right hydraulic system reservoir as necessary (AMM 12-12-01/301).

S 862-009
(5) Depressurize right hydraulic system and reservoir, and pressurize left hydraulic system and reservoir (AMM 29-11-00/201).

S 872-010
(6) Bleed the brakes (alternate system).
(a) Do the seven steps under "Bleed the brakes (normal system)".

S 432-011
(7) If you will not do the antiskid fuse capacity test that follows, tighten the bleeder valve as follows:
(a) Tighten the bleeder valve on the B.F. Goodrich brakes to 35-55 pound-inches.
(b) Tighten the bleeder valve on the Dunlop brakes to 8 pound-feet.

S 862-012
(8) Set the parking brake.

S 862-013
(9) Remove the power from the left hydraulic system (AMM 29-11-00/201).

S 942-014
(10) Remove the wheel chocks.

TASK 32-41-00-702-022

3. Antiskid Module Hydraulic Brake Fuse Test

A. General
(1) The normal and alternate brake systems have hydraulic fuses to decrease the loss of system fluid of the brake lines break downstream of the fuse.
(2) This task is a test to make sure that the fuse operates to limit the quantity of fluid loss from the hydraulic system when leakage occurs. The test is repeated for each fuse in the system.

B. Equipment
(1) Container - 3 U.S. gallon capacity

C. Consumable Materials
(1) D00153 Hydraulic Fluid - BMS 3-11, Type IV

D. References
(1) AMM 12-12-01/301, Hydraulic System
(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 32-44-00/001, Parking Brake System

E. Access
(1) Location Zones
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)
731 Left Main Landing Gear (MLG)
741 Right Main Landing Gear (MLG)

F. Prepare to Test the Brake System Fuses

S 492-015

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

S 492-016

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO REMOVE THE DOOR LOCKS. THE DOOR LOCKS 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 862-023

(3) Make sure that the parking brake is released.

G. Test of Brake Fuses Capacity

S 722-017

(1) Do a test of normal brake system fuses capacity.
   (a) Remove the screw from the end of the bleeder valve and install a bleed hose on the end of the bleeder valve.
   (b) Put a container with a minimum capacity of 3 U.S. gallons near the brake bleeder valve so that fluid goes directly into the container.
   (c) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).
   (d) Push the brake pedals all the way in and hold.

NOTE: The parking brake may be used to hold the brake pedals fully pushed in for fuse check.

   (e) While you apply full brake pressure, open the brake bleeder valve one-half turn. Let the fluid flow into the container until the flow stops. This shows that the fuse has closed.

NOTE: Fluid can flow out of the hose very quickly and intermittently. Be sure that the flow goes into the container.

   (f) When the flow stops, check that the quantity collected in the container is 0.28-0.36 gallon.
   (g) Reset the fuse. Hold the fuse knob in the bypass position for 5 seconds minimum to make sure that the fuse resets.
   (h) Remove the bleed hose and install the screw and washer in the end of the bleeder valve.

(i) Do the above test again for each fuse at each of the eight brake positions.

NOTE: The hydraulic reservoir quantity should be monitored carefully. The normal brake system test series will use approximately 2.8 gallons of hydraulic fluid.

Check that the quantity collected does not exceed 3 gallons total from all brakes (8 locations).

S 612-018

(2) Do the servicing procedure for the right hydraulic system reservoir (AMM 12-12-01/301).

S 432-019

(3) Tighten the bleeder valve if you will not do the alternate brake system fuse capacity test now. Tighten as follows:
(a) Tighten the bleeder valve on B.F. Goodrich brakes to 35-55 pound-inches.
(b) Tighten the bleeder valve on Dunlop brakes to 8 pound-feet.

S 722-024

(4) Do a test of alternate brake system fuses capacity.
(a) Remove the screw from the end of the bleeder valve and install the bleed hose on the end of the bleeder valve.
(b) Place a container with a minimum capacity of 3 U.S. gallons near the brake bleed fitting so that fluid can flow directly into the container.
(c) Depressurize right hydraulic system and reservoir and pressurize left hydraulic system and reservoir (AMM 29-11-00/201).
(d) Push the brake pedals all the way in and hold.

NOTE: The parking brake may be used to hold the brake pedals fully pushed in for fuse checks.

(e) While you apply full brake pressure, open the bleeder valve one-half turn. Allow the fluid to flow into the container until the flow stops. This shows that the fuse has closed.

NOTE: Fluid can flow out of the hose very quickly and intermittently. Be sure that the flow goes into the container.

(f) Check that the quantity collected does not exceed 1.5 gallons total from each of the four axle set of brakes.
(g) Reset the fuse. Hold the fuse knob in bypass position for 5 seconds minimum to make sure that the fuse resets.
(h) Remove the bleed hose and install the screw and washer in end of the bleeder valve.

(i) Do the above test again for each fuse.

NOTE: The hydraulic reservoir quantity should be monitored closely. The alternate brake system test series will use approximately 1.4 gallons of hydraulic fluid.

In the alternate brake system, one fuse is shared by two side by side brakes on an axle, therefore bleeding at only four bleed plug locations is required.

S 612-020

(5) Do the servicing procedure for the left hydraulic system reservoir (AMM 12-12-01/301).

H. Put the airplane back to its usual condition.

S 432-021

(1) Tighten the bleeder valve as follows:
(a) Tighten the bleeder valve on the B.F. Goodrich brakes to 35-55 pound-inches.
(b) Tighten the bleeder valve on the Dunlop brakes to 8 pound-feet.

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. You can do these tests in a minimum of time with only the equipment installed in the airplane. Do not use these tests when you should do a system test or to do a check for correct system adjustments.
      (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 will make sure that the system and its components operate correctly and the system adjustments are correect.

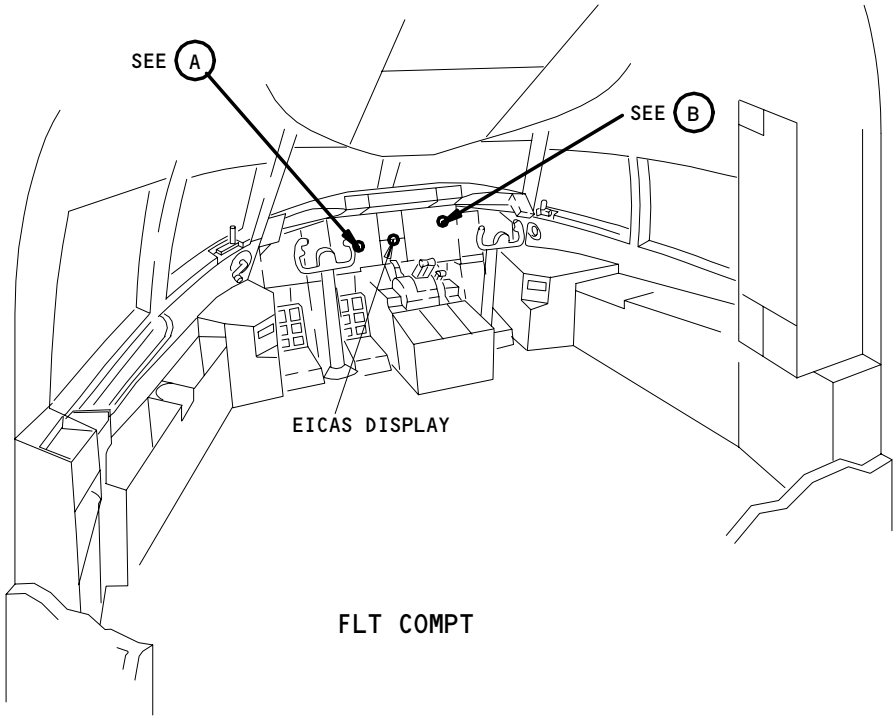
TASK 32-41-00-845-086

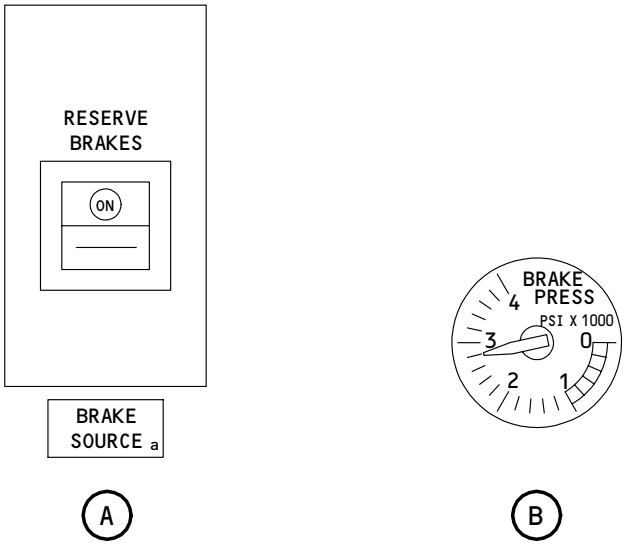
2. Prepare for the Operational Tests of the Hydraulic Brake System (Fig. 501)
   A. References
      (1) AMM 24-22-00/201, Electrical Power - Control
      (2) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
      (5) AMM 32-41-00/201, Hydraulic Brake System
   B. Access
      (1) Location Zones
          211 Control Cabin, Left
          212 Control Cabin, Right
          731 Landing Gear Left
          741 Landing Gear Right

   C. Procedure

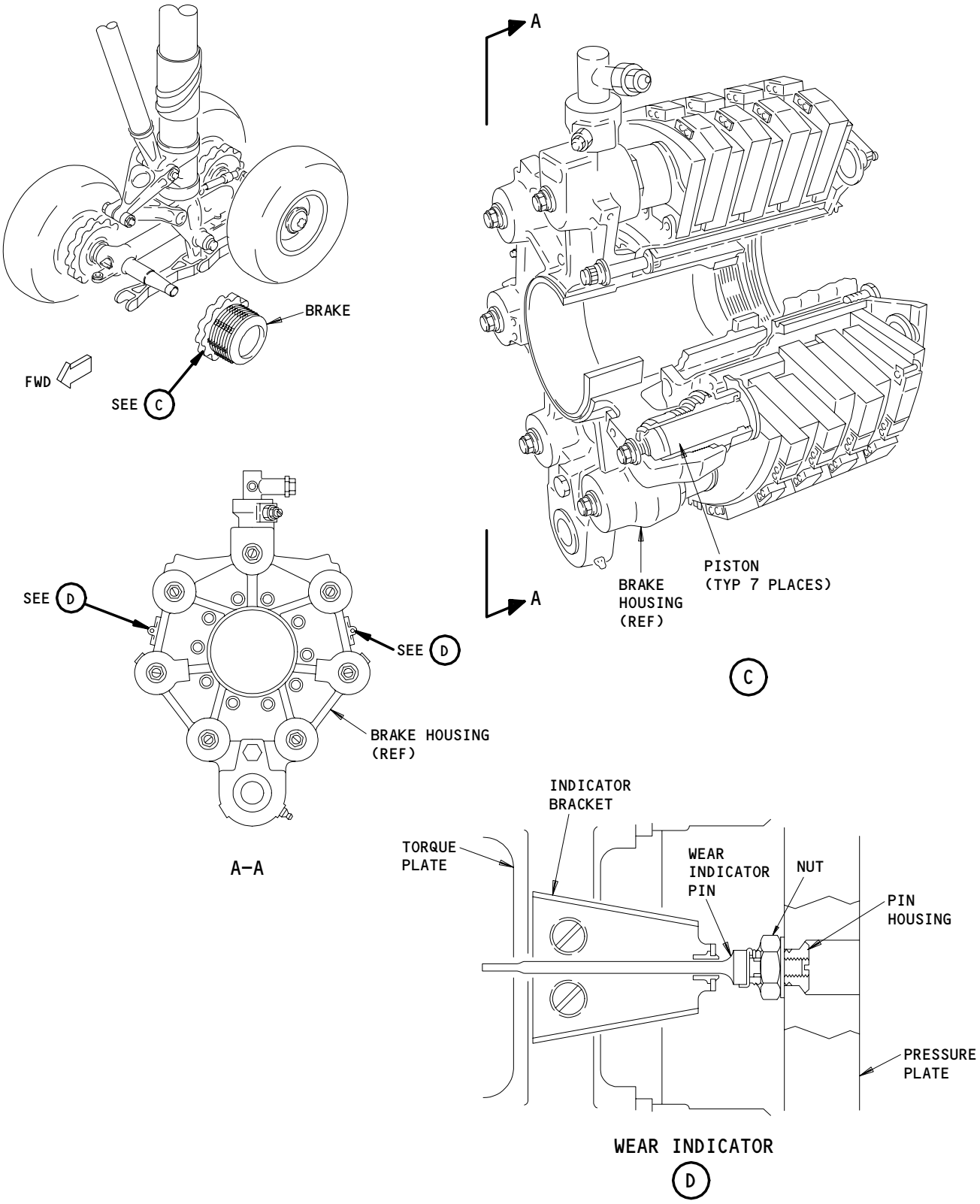
      S 865-001
      (1) Supply electrical power (AMM 24-22-00/201).

      S 865-002
      (2) Make sure that this circuit breaker on the main power distribution panel, P6, is closed:
          (a) 6F4, LANDING GEAR PARKING BRAKE VLV

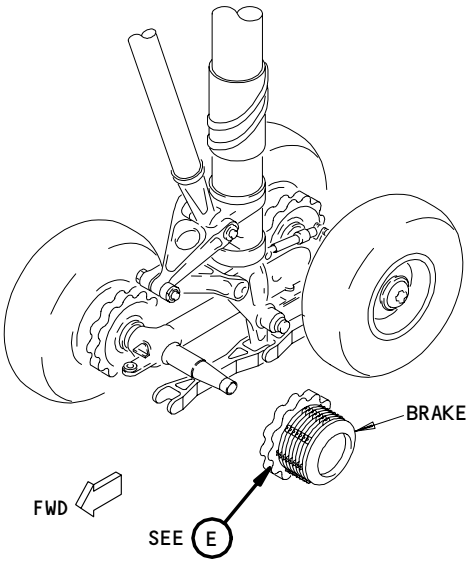


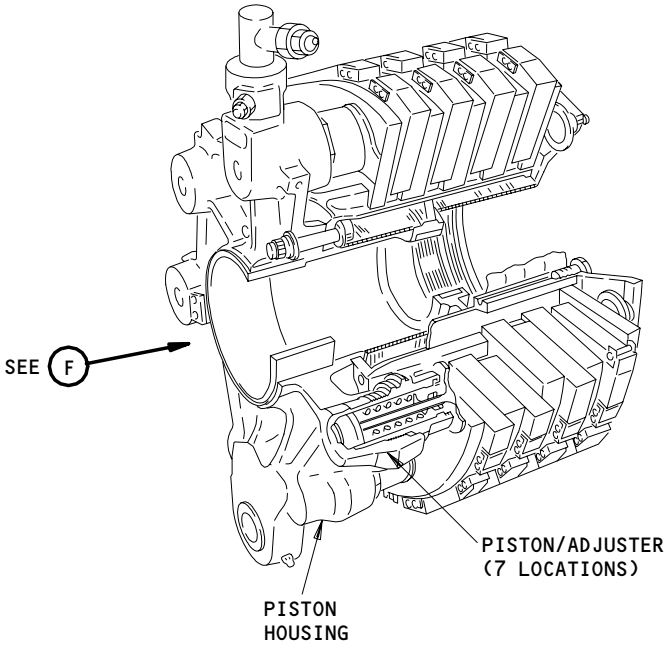


Hydraulic Brake Operation Test
Figure 501 (Sheet 1)



Hydraulic Brake Operation Test
Figure 501 (Sheet 2)





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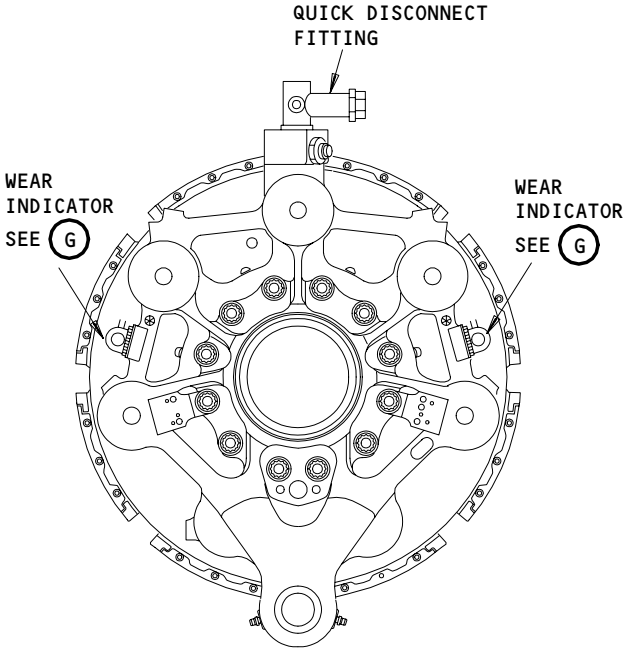

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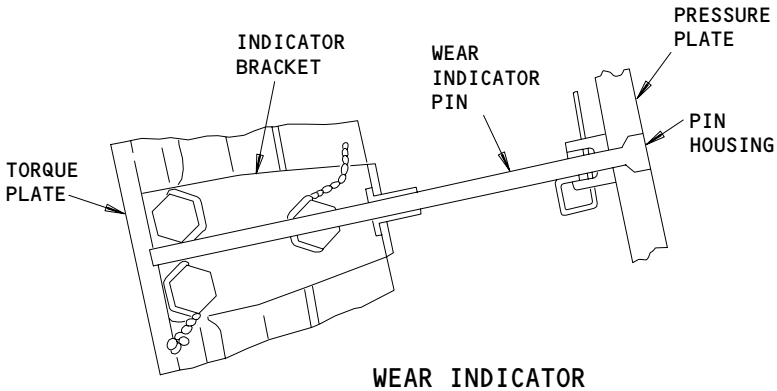
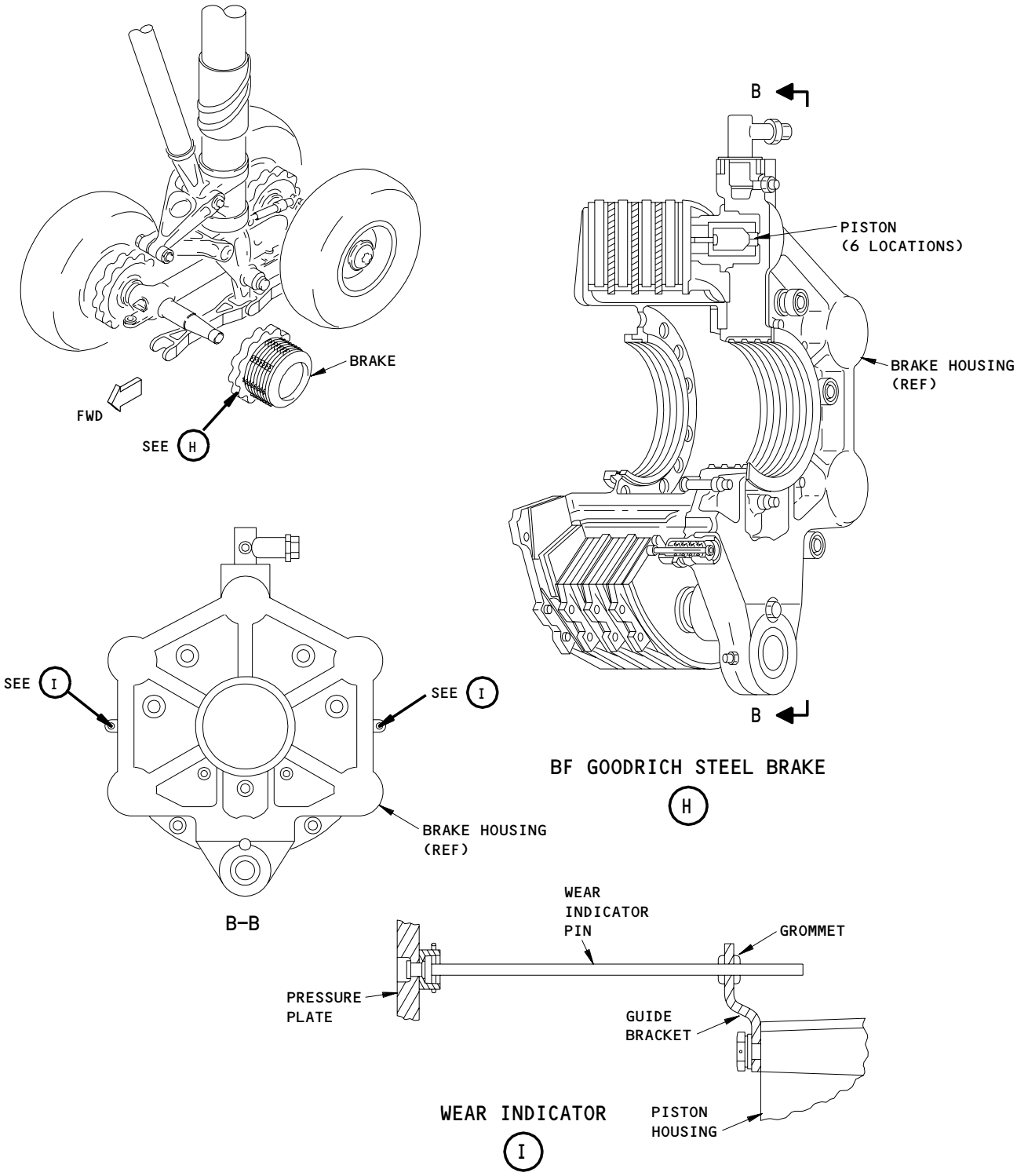


WEAR INDICATOR

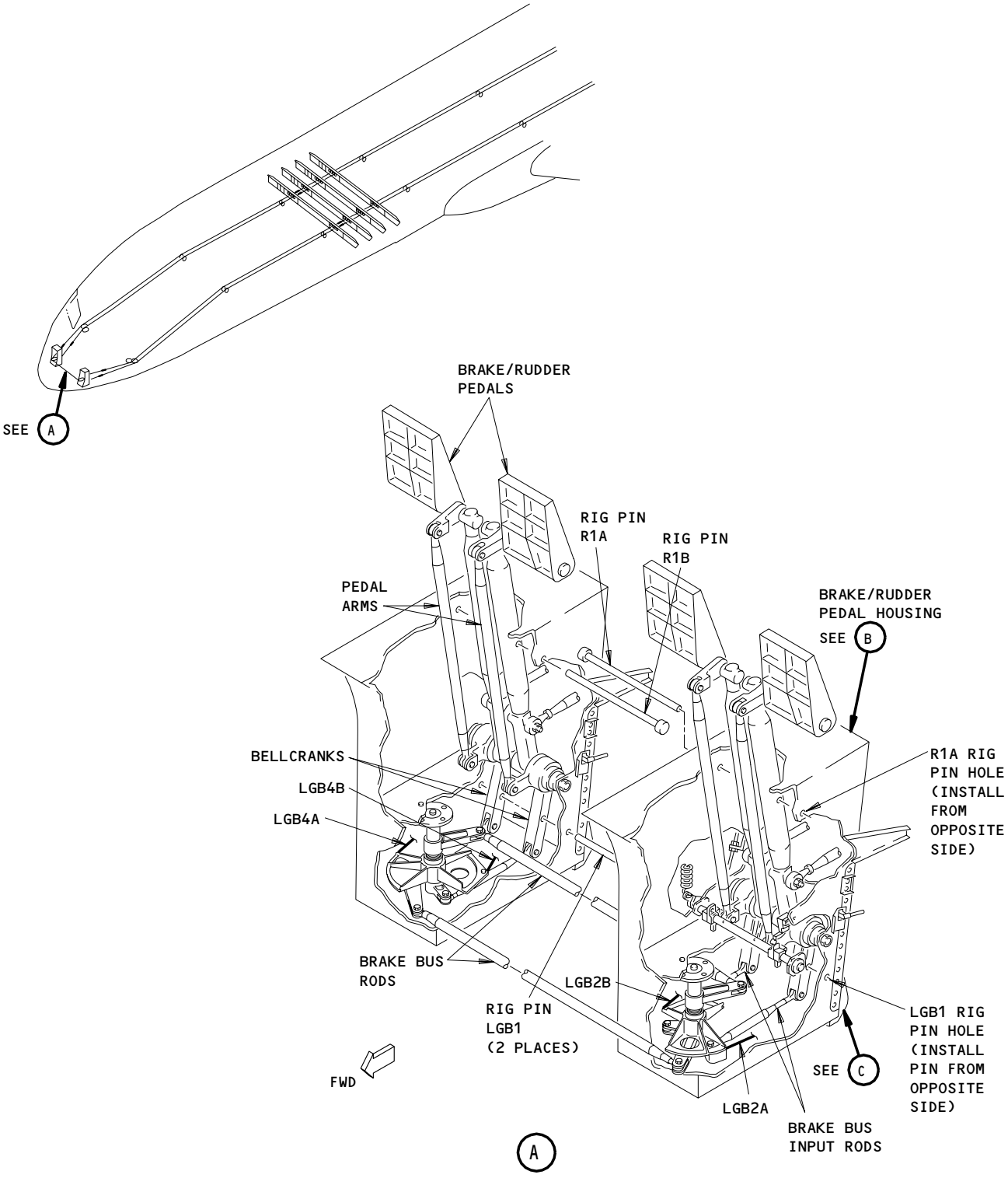
G

Hydraulic Brake Operation Test
Figure 501 (Sheet 3)

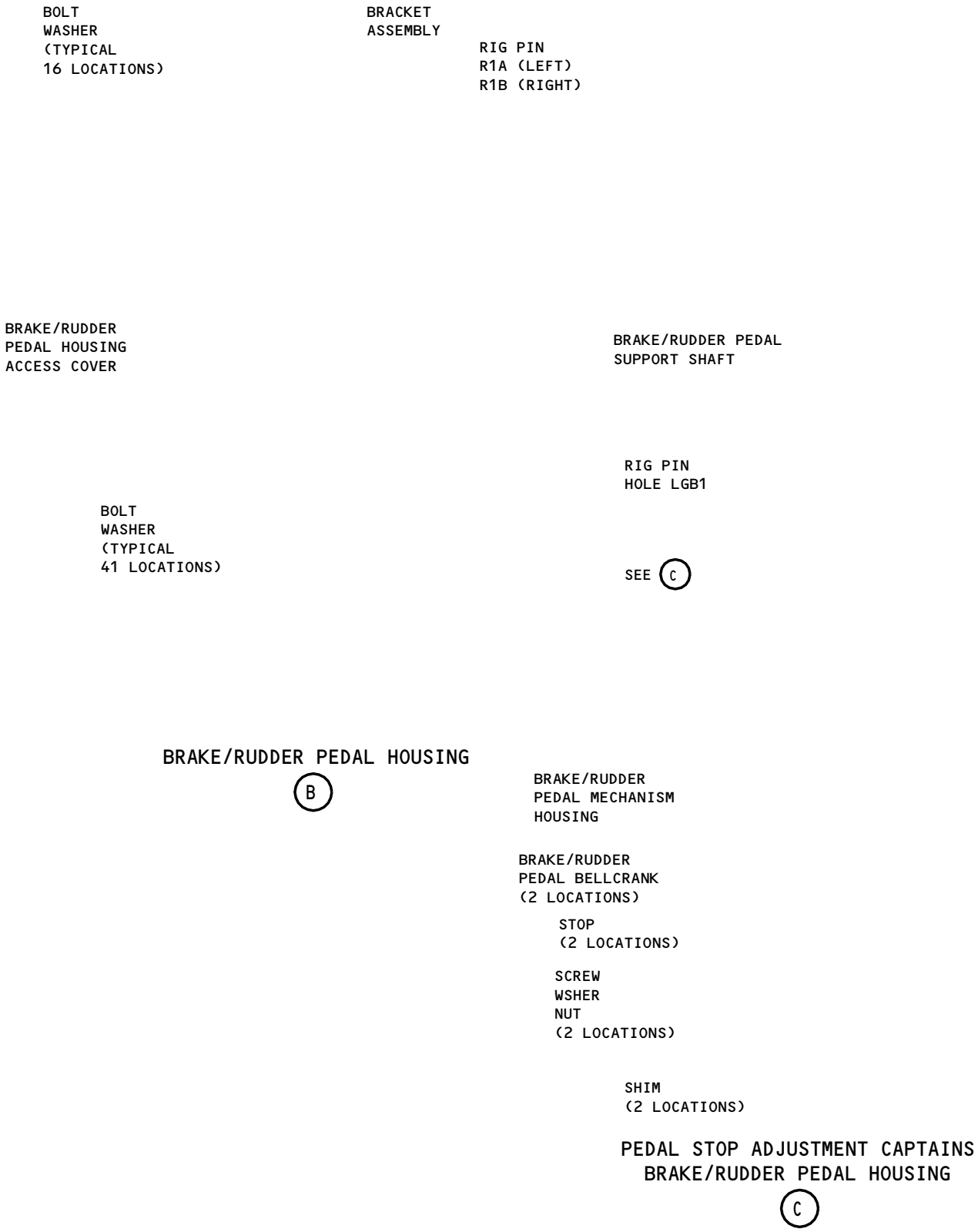
277481



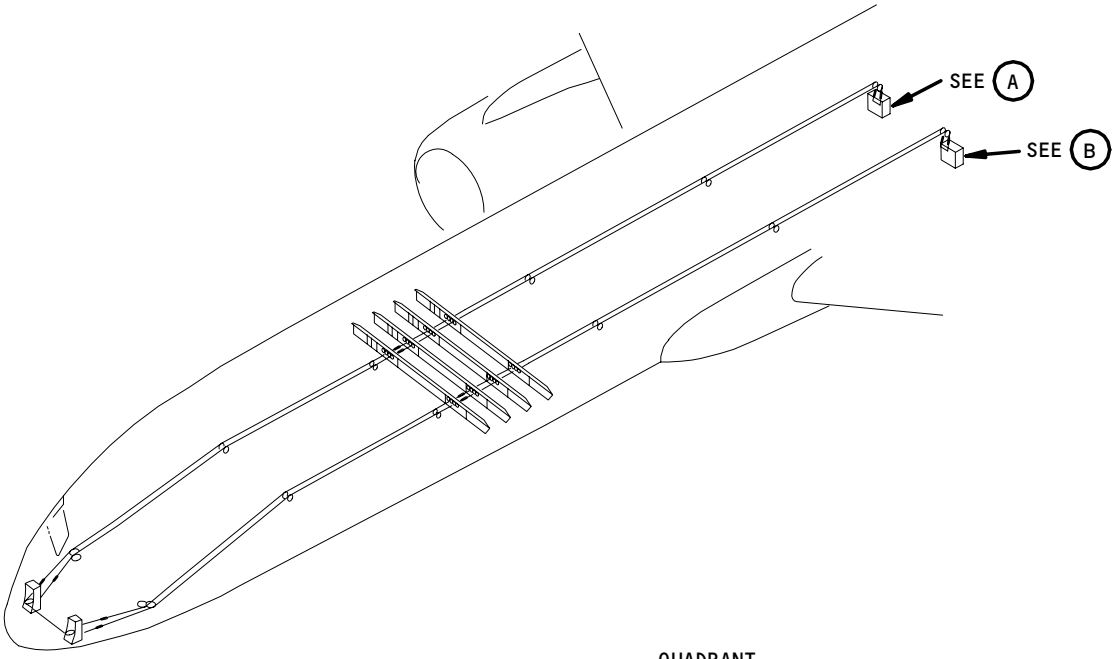
Hydraulic Brake Operation Test
Figure 501 (Sheet 4)

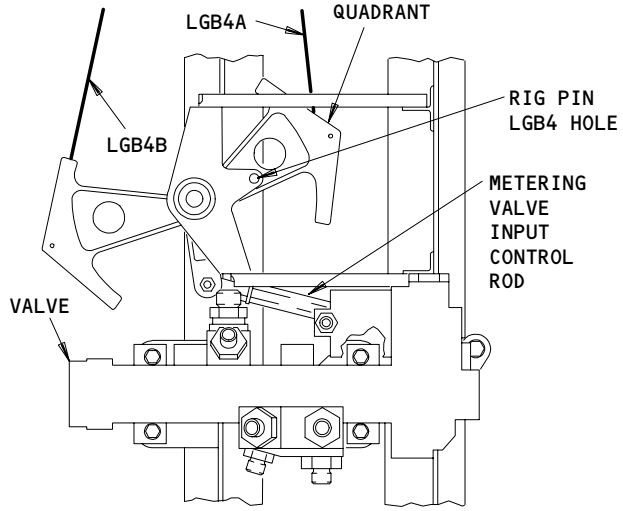


Hydraulic Brake System – Adjustment
Figure 502 (Sheet 1)

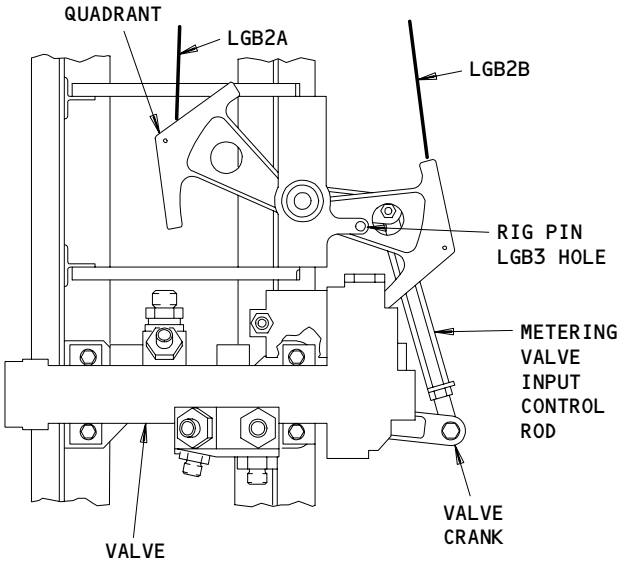


Hydraulic Brake System – Adjustment
Figure 502 (Sheet 2)





RIGHT WHEEL WELL
METERING VALVE MODULE
A



LEFT WHEEL WELL
METERING VALVE MODULE
B

Brake Metering Valve Module Adjustment
Figure 503

S 865-003
(3) Make sure that these circuit breakers on the overhead panel, P11, are closed:
(a) 11A32, INDICATOR LTS 1
(b) 11K15, ELEC PUMP C1
(c) 11K16, ELEC PUMP RIGHT
(d) 11K24, ELEC PUMP C2
(e) 11K25, ELEC PUMP LEFT
(f) 11S20, LEVER LOCK

S 865-004
(4) Make sure that these circuit breakers on the P11 overhead panel are open:
(a) 11S21, AUTO BK ANTISKID TEST IND 2
(b) 11S18, ANTI SKID 1-5
(c) 11S22, ANTI SKID 4-8
(d) 11C31, LANDING GEAR ANTISKID 2-6
(e) 11C32, LANDING GEAR ANTISKID 3-7

TASK 32-41-00-715-085
3. Hydraulic Brake System Operational Test - Normal System (Fig. 501)
A. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
B. Access
(1) Location Zones
211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right

C. Procedure

S 865-078
(1) Prepare for the Operational Tests of the Hydraulic Brake System.

S 865-005
(2) Pressurize the right and left hydraulic system and reservoirs (AMM 29-11-00/201).

S 865-006
(3) Push in and release the brake pedals slowly and fully 6 times to bleed air from the brake lines.

NOTE: Wait a minimum of 5 seconds between each time that you push in and release the brake pedals.

S 865-007
(4) Remove the pressure from the left hydraulic system and reservoir (AMM 29-11-00/201).

S 715-008
(5) Do the steps that follow to do the test:
(a) Push in the Captain's brake pedals fully and hold.
(b) Look at the wear indicator on each brake to make sure that hydraulic pressure is applied (brake has set).
(c) Release the brake pedals and look at the wear indicator on each brake to make sure that the brake has released.
(d) Do the steps again with the First Officer's brake pedals.

S 865-092
(6) Remove electrical power if it is not necessary (AMM 24-22-00/201).

S 865-091
(7) Remove the pressure from the right hydraulic system if it is not necessary (AMM 29-11-00/201).

TASK 32-41-00-715-079

4. Hydraulic Brake System Operational Test - Alternate System (Fig. 501)

A. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems

B. Access
(1) Location Zones
211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right

C. Procedure

S 865-011
(1) Pressurize the hydraulic system reservoirs (AMM 29-11-00/201).

S 865-010
(2) Pressurize the right and left hydraulic systems with the ACMP (AMM 29-11-00/201).

S 715-009
(3) Do the steps that follow to do the test:
(a) Push in the brake pedals slowly and fully and release 6 times to bleed air from the brakes.

NOTE: Wait a minimum of 5 seconds between each time that you push in and release the brake pedals.

(b) Make sure that the BRAKE SOURCE light on the flight compartment P1-3 panel is off.
(c) Turn off the right hydraulic system ACMP (AMM 29-11-00/201).
(d) Make sure that the BRAKE SOURCE light stays off.
(e) Push in the Captain's brake pedals fully and hold. Look at the movement of the brake wear indicator pins to make sure that the brakes operate.
(f) Release the brake pedals. Look at the brake wear pin movement to make sure that the brakes operate.
(g) Push in the First Officer's brake pedals and hold.
(h) Look at the movement of the brake wear pins to make sure that the brakes operate.
(i) Release the brake pedals.
(j) Look at the brake wear pins to make sure that the brakes release.
(k) Turn off the left hydraulic system ACMP (AMM 29-11-00/201).
(l) Make sure that the brake source light comes on again.

S 865-082

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

S 865-083

(5) Remove the pressure from the left and right hydraulic systems (AMM 29-11-00/201).

TASK 32-41-00-715-084

5. Automatic Gear Retraction Brake Operational Test (Fig. 501)

A. 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 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks

B. Access
(1) Location Zones
211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right

C. Procedure

S 495-074

WARNING: MAKE SURE THAT THE DOWNLOCKS ARE INSTALLED IN 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.

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

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.

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

S 715-072

(3) Do the steps that follow to do the test:
  (a) Put chocks on the wheels.
  (b) Release the parking brake.
  (c) Turn on the left hydraulic system ACMP (AMM 29-11-00/201).
  (d) Push the manual override button on the landing gear control panel and move the landing gear handle to the UP position.
  (e) Look at the wear indicator on each brake to make sure that hydraulic pressure has applied (brake has set).
  (f) Move the landing gear control handle to the DN position.
  (g) Look at the wear indicators on each brake to make sure that the brakes have released.
  (h) Turn off the left hydraulic system ACMP (AMM 29-11-00/201).

S 865-012

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

S 865-013

(5) Remove the pressure from the left and right hydraulic systems (AMM 29-11-00/201).

TASK 32-41-00-825-014

6. Adjustment - Hydraulic Brake System (Fig. 502)
  A. General
    (1) This procedure gives instructions to adjust the hydraulic system to its proper operating condition.
  B. Equipment
    (1) Rig Pins from Set B20003-XX (AMM 20-10-24/201):
      (a) LGB1 - P/N B20003-28
      (b) LGB2 - P/N B20003-28
      (c) LGB3 - P/N B20003-TBD

(d) LGB3 - P/N B20003-28.
(e) LGB4 - P/N B20003-XX
(f) R1A - P/N B20003-26
(g) R1B - P/N B20003-26

(2) Protractor, A27021-29 or 4MIT65B80307-1
(3) Cable Tensiometer - 0 to 250 pounds

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

D. Access
(1) Location Zones
211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right

E. Procedure

S 865-015
(1) Make sure that internal and external airplane temperatures are within ±10°F while you rig the cables, and are stable for a period of one hour before you rig the cables.

S 495-076
(2) Make sure that the downlocks are installed in the nose and main landing gear (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.

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

S 865-016
(4) Release the parking brake.

S 865-017
(5) Remove the pressure from the left and right hydraulic system and reservoirs (AMM 29-11-00/201).

S 825-019
(6) Adjust the brake system mechanism linkage.
(a) Install rig pins R1A, R1B (Detail C).

NOTE: Install the rig pins through both pedal arms and both sides of the brake/rudder pedal housing.

(b) Remove the access cover from the aft face of the Captain's and First Officer's brake/rudder pedal housing (Fig. 502).
(c) Remove the brake bus input rods (4 locations) from the Captain's and First Officer's brake/rudder pedal mechanism.
(d) Remove the input control rods to the brake metering valve at the left and right metering valves.
(e) Adjust two of the four brake bus input rods to a length of 10.41 ±0.03 inch between the rod end centers.
(f) Install the two rods that you have adjusted between the bus mechanism and the brake pedal mechanism cranks on the Captain's installation.
(g) Insert rig pin LBG1 through the Captain's brake/rudder pedal housing and brake bellcranks.
(h) Insert rig pin LGB2 through the First Officer's brake/rudder pedal housing and brake bellcranks.
(i) Connect the First Officer's brake bus input rods to the brake pedal mechanism cranks and the brake bus cranks. Adjust the length of the rods, if necessary, so that the bolts can be installed easily.

S 825-020
(7) Adjust the cables.
(a) Install rig pins LGB3 and LGB4 through the metering valve quadrants and the support structure (Details A and B, Fig. 503).
(b) If new cables have been installed, adjust the tension in the new cables as follows before you tighten the cables to the final tension.

CAUTION: WHEN YOU ADJUST THE CABLE PAIRS, NEVER ALLOW THE TENSION IN ONE CABLE OF THE CABLE PAIR TO EXCEED TENSION IN THE OTHER CABLE OF THE PAIR BY MORE THAN 50 POUNDS. TOO MUCH TENSION IN ONE CABLE MAY BEND THE RIG PINS.

1) Adjust the turnbuckles at the same time on the cable pairs that follow to obtain a tension of 190-210 pounds. Adjust the cable pairs in the sequence listed.
a) LGB2A and LGB2B
b) LGB4A and LGB4B
2) Remove rig pins LGB1, LGB2, LGB3 and LGB4.
3) Check the cable installation for the conditions that follow while you operate the brake pedals through 25 full cycles:
a) The cables do not contact the pulley flanges for total cable travel. The cable must lie within 2 degrees of the pulley.
b) The cables are not deflected from the rigged or normal position by fairleads, rubstrips, or grommets.
c) The pulleys rotate freely without cable guard interference.

d) The cables are installed through the grommets and the air pressure seals in the structure.
e) The pushrods and levers do not rub against the structure.

4) Install rig pins LGB1, LGB2, LGB3 and LGB4.

CAUTION: WHEN YOU ADJUST THE CABLE PAIRS, NEVER ALLOW THE TENSION IN ONE CABLE OF THE CABLE PAIR TO EXCEED THE TENSION IN THE OTHER CABLE OF THE PAIR BY MORE THAN 50 POUNDS. TOO MUCH TENSION IN ONE CABLE MAY BEND THE RIG PINS.

(c) Adjust the cables to the tension shown in Table 1 as follows:
1) Adjust the cable pairs in this sequence:
- LGB2A and LBG2B
- LGB4A and LGB4B

2) Adjust the turnbuckles simultaneously on each cable pair.
3) Make sure that the rig pins LGB1 and LGB2 can be turned easily in the rig pin holes.

TABLE 1 *[1]

BRAKE CABLE RIGGING LOADS

TEMP °F ±5°F	LGB2A, LGB2B, LGB4A, LGB4B TENSION IN POUNDS ± 5 LBS
140	123
120	116
100	107
70	95
50	87
30	80
10	72
-6	66

*[1] The cable tension values will not be valid when temperature differences greater than 5°F exist anywhere along the cable run. Aircraft/ambient temperatures should be stable for one hour before rigging.

(d) Make sure that a maximum of 2 threads are exposed on the turnbuckles when rigging is complete.
(e) Remove rig pins LGB1, LGB2, LGB3 and LGB4.
(f) Operate the brake pedals through one full cycle and do a check of the cable tension again.
(g) Install turnbuckle locking clips on the turnbuckles adjusted in this procedure.
(h) Remove rig pins R1A and R1B.

S 825-021

(8) Adjust the brake metering valve linkage.

(a) Manually rotate the input lever crank of the brake metering valves until the levers will not rotate any further and hold.

NOTE: This makes sure that the lever has turned the input shaft till it has contacted the BRAKE OFF stop on the valve.

(b) Install rig pins LGB3 and LGB4 through the metering valve quadrants and support structure (Details A and B, Fig. 503).

(c) Adjust the metering valve control rods for length and install.

(d) Remove rig pins LGB3 and LGB4.

S 825-022

(9) Do a check of the parking brake adjustment (AMM 32-44-00/501).

S 825-023

(10) Do a check of the Brake Pedal Stop Adjustment (Hydraulic Pressure Off).

(a) Install a protractor on the Captain's brake/rudder pedal housing.

(b) Push the brake pedals until they are at an angle of 18.5 to 19.5 degrees.

(c) Make sure the Captain's brake pedal bellcranks touch the pedal stops (Fig. 502, Detail C).

(d) If one or both of the brake pedal bellcranks do not touch the pedal stop(s), do the steps that follow:

1) Remove the stop(s) that do not touch the bellcrank.

2) Replace the shim with a new shim. Adjust the shim so that the bellcrank touches the shim and stop combination when you push the brake pedals in 18.5 to 19.5 degrees.

3) Install the stop and shim with a bolt, nut and washer.

(e) Install the access cover on the aft face of the Captain's and First Officer's brake/rudder pedal housing (Fig 502).

TASK 32-41-00-705-087

7. System Test - Hydraulic Brake System

A. General

(1) This test gives a check of the hydraulic brake system and includes all system adjustment specifications and tolerances necessary to give the best system performance.

B. Equipment

(1) Brake Pressure Gage Set, F72977-62 - 0-4000 psig - one per brake

(2) Brake Pedal Measuring Equipment - J32001-46 Preferred, J32001-43 Alternate

NOTE: This equipmemnt can be used instead of the protractor assembly and spring scale to measure brake pedal forces and brake pedal angles.

(3) Spring Scale - 0-100 pounds - commercially available
(4) Protractor, A27021-29 or 4MIT65B80307-1
(5) Door Lock, Landing Gear - (AMM 32-00-15/201)

C. References
(1) AMM 06-41-00/201, Fuselage (Major Zones 100 and 200) Access Doors and Panels
(2) AMM 12-12-01/301, Hydraulic Systems
(3) AMM 12-15-04/301, Parking Brake Accumulator
(4) AMM 24-22-00/201, Electrical Power - Control
(5) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(6) AMM 29-11-00/501, Main (Left, Right and Center) Hydraulic Systems
(7) AMM 32-00-15/201, Landing Gear Door Locks
(8) AMM 32-00-20/201, Landing Gear Downlocks
(9) 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 495-078
(1) Make sure that landing the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 495-079

WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. 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 845-024
(3) Put chocks on the landing gear wheels.

S 485-025
(4) Install a 0-4000 psig pressure gage in each of the eight brake bleed fittings.

S 865-026
(5) Move the landing gear control lever, on panel P3-1, to DN and attach a DO-NOT-OPERATE tag.

S 865-027
(6) Supply electrical power (AMM 24-22-00/201).

S 865-028
(7) Release the parking brake on panel P10.

S 865-029
(8) Make sure that the AUTO BRAKES switch, on panel P1-3, is OFF.

S 865-030
(9) Make sure that the 4 electrical drive hydraulic pumps are turned OFF on the pilot's overhead panel, P5.

S 865-073
(10) Make sure that these circuit breakers on the overhead panel P11, are open and attach DO-NOT-CLOSE tags:
(a) 11S21, AUTO BK ANTISKID TEST IND 2
(b) 11S18, ANTI SKID 1-5
(c) 11S22, ANTI SKID 4-8
(d) 11C31, LANDING GEAR ANTISKID 2-6
(e) 11C32, LANDING GEAR ANTISKID 3-7

S 865-089
(11) Make sure that this circuit breaker on the main power distribution panel P6 is closed:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV

S 865-031
(12) Make sure that these circuit breakers on the overhead panel P11 are closed:
(a) 11K15, ELEC PUMP C1
(b) 11K16, ELEC PUMP R
(c) 11K16, ELEC PUMP RIGHT
(d) 11K6, ELEC PUMP C2
(e) 11K25, ELEC PUMP L
(f) 11K25, ELEC PUMP LEFT
(g) 11S20, LEVER LOCK

S 615-032
(13) Make sure that the parking brake accumulator is fully charged with nitrogen (AMM 12-15-04/301).

S 865-033
(14) Pressurize the left hydraulic system and reservoir (AMM 29-11-00/501).

S 865-034
(15) Slowly push in the brake pedals part of the way and release 6 times and then push in the pedals fully and release 6 times.

S 615-035
(16) Make sure the hydraulic reservoir is at the correct level and add hydraulic fluid if it is necessary (AMM 12-12-01/301).

S 865-036
(17) Remove the pressure from the left hydraulic system and reservoir (AMM 29-11-00/501).

S 865-037
(18) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 865-038
(19) Slowly push in the brake pedals part of the way and release 6 times and then push in the brake pedals fully and release 6 times.

S 615-039
(20) Make sure the hydraulic reservoir is at the correct level and add hydraulic fluid if it is necessary (AMM 12-12-01/301).

F. Test of the Hydraulic Brake System

S 865-041
(1) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 735-040
(2) Do a test of the Normal Brake Hydraulic Indication
  (a) Make sure that the right system pressure on the EICAS maintenance page increases to 2850 to 3150 psig.
  (b) Make sure that the right SYS PRESS light on panel P5 is off.
  (c) Make sure that the left SYS PRESS light on panel P5 is on.
  (d) Make sure that the BRAKE PRESS gage on panel P3-1 is within 200 psig of the right system pressure indication on the EICAS maintenance page.
  (e) Open this circuit breaker on P11 overhead panel:
    1) 11S13, BRAKE PRESS IND
  (f) Make sure that the brake pressure gage shows a loss of pressure.
  (g) Close this circuit breaker on the overhead panel P11:
    1) 11S13, BRAKE PRESS IND
  (h) Make sure that the BRAKE SOURCE light on panel P1-3 is off.
  (i) Make sure that the pressure at each wheel brake gage is not more than 75 psig.
  (j) Remove the pressure from the right hydraulic system (AMM 29-11-00/501).

(k) Make sure that the BRAKE SOURCE light comes on in 10 seconds or less.
(l) Make sure that the BRAKE SOURCE message is shown on the EICAS operation page.
(m) Make sure that the BRAKE PRESS gage on panel P3 shows ±100 psig of the pressure recorded in step (d).
(n) Make sure that the left and right SYS PRESS lights are on.
(o) Make sure that the left and right pressures on the EICAS maintenance page is less than 200 psig.

S 865-090
(3) Pressurize the left hydraulic system and reservoir (AMM 29-11-00/501).

S 735-042
(4) Do a test of the Alternate Brake Hydraulic Indication
(a) Make sure that the left system pressure shown on the EICAS maintenance page increases to 2850 to 3150 psig.
(b) Make sure that the right system pressure shown on the EICAS maintenance page is less than 200 psig.
(c) Make sure that the LEFT SYS PRESS light is off.
(d) Make sure that the RIGHT SYS PRESS light is on.
(e) Make sure that the BRAKE SOURCE light on P3 panel is off.
(f) Make sure that the pressure at each wheel brake is not more than 75 psig.
(g) Remove the pressure from the left hydraulic system and reservoir (AMM 29-11-00/501).
(h) Make sure that the LEFT SYS PRESS and RIGHT SYS PRESS lights are on.
(i) Make sure that the left and right pressure on the EICAS maintenance pages is less than 200 psig.
(j) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 735-045
(5) Do a test of the Normal System Braking
(a) Measure the brake pedal force and travel for each brake pedal. Make sure that each pedal meets the requirements in Table 2.
1) Attach a protractor to the brake pedal to measure the travel (position).
2) Attach a spring scale to the brake pedal to measure the pedal forces.

Table 2				
	*[1]			*[2]
Pedals	Brake Pedal Travel (DEG)	Brake Pedal Force (LBS)	Brake Pressure (PSIG)	Brake Pedal Force (LBS)
Captain's, First Officer's	5 Maximum	34 (±4)	500 (±50)	51 (±6)
Captain's, First Officer's	12 Maximum	75 (±10)	2800 (±50)	113 (±15)

*[1] The pedal force must be measured by the load applied perpendicular to the tip of the pedal, 8.4 inches from the pivot. The brake pressure is the value shown at each wheel brake gage.
*[2] The brake pedal force measured using the J32001-46 equipment. The load on the J32001 is located 5.58 inches from the pedal pivot.

(b) Make sure that each wheel brake pressure is not more than 75 psig after you release the brake.
(c) Fully push in and hold the Captain's brake pedals against the stops.
(d) Make sure that the brake pressure at each wheel brake is within ±100 psi of the system supplied pressure as shown on the brake pressure gage.
(e) Look at the wear indicator pin on each brake to make sure that each brake has set.
(f) Release the brake pedals.
(g) Make sure that the pressure at each brake is not more than 75 psig.
(h) Look at the wear indicator pin on each brake to make sure that each brake has released correctly.
(i) Repeat above steps (c) thru (h) with the First Officer's pedals.

S 865-047
(6) Make sure that the parking brake accumulator is fully charged per the placard instruction (AMM 12-15-04/301).

S 865-048
(7) Pressurize right hydraulic system and reservoir (AMM 29-11-00/201).

S 865-049
(8) When the parking brake accumulator pressure becomes stable, remove the right system hydraulic power (AMM 29-11-00/201).

NOTE: The accumulator pressure is stable when the pressure shown on the accumulator pressure gage has not changed in 2 minutes.

S 735-046

(9) Do a test of the Accumulator Braking

(a) Make sure that the BRAKE PRESS gage indication is at least 2800 psig.

(b) Push both brake pedals to the stops, 2 times.

NOTE: Push the pedals to the stops in 1 second, hold in for 1 second, and release in 1 second. Wait 5 seconds seconds between each time that you push in and release the brake pedals.

(c) Make sure that the BRAKE PRESS gage indication is at least 1200 psig.

S 735-050

(10) Do a test of the Alternate System Braking

(a) Push in and release brake pedals a minimum of 6 times until the pressure shows on the BRAKE PRESS gage does not decrease any more with brake pedal operation.

(b) Pressurize the left hydraulic system and reservoir (AMM 29-11-00/201).

(c) Measure the brake pedal force and travel for each brake pedal. Make sure that each pedal meets the requirements in Table 3.

1) Attach a protractor to the brake pedal to measure the travel.

2) Attach a spring scale to the brake pedal to measure the pedal force.

Table 3

	*[1]			*[2]
Pedals	Brake Pedal Travel (DEG)	Brake Pedal Force (LBS)	Brake Pressure (PSIG)	Brake Pedal Force (LBS)
Captain's, First Officer's	5 Maximum	29 (±3)	500 (±50)	43.6 (±4.6)
Captain's, First Officer's	12 Maximum	64 (±4)	2800 (±50)	96 (±6)

*[1] The pedal force must be measured by the load applied perpendicular to the tip of the pedal, 8.4 inches from the pivot. The brake pressure is the value shown at each wheel brake gage.

*[2] The brake pedal force measured using the J32001-46 equipment. The load on the J32001 is located 5.58 inches from the pedal pivot.

(d) Make sure that the pressure indication at each wheel brake is not more than 75 psig after you release the brake.

(e) Push in and hold the Captain's brake pedals against the stops.

(f) Make sure that the brake pressure shown at each wheel brake gage is within 200 psig of the system supplied pressure (2850 to 3150 psig).
(g) Look at the wear indicator pin on each brake to make sure that each brake has set.
(h) Release the brake pedals.
(i) Make sure that the pressure at each brake is not more than 75 psig.
(j) Look at the wear indicator pin on each brake to make sure that each brake has released correctly.
(k) Repeat steps (d) thru (i) with the First Officer's brake pedals.

S 735-053

(11) Do a test of the Automatic Wheel Brake (Gear Retraction Braking) Operation

S 495-082

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.

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

S 325-094

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

(13) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).
(a) Put chocks on the wheels.

S 865-054

(14) Pressurize the left and right hydraulic systems and reservoirs (AMM 29-11-00/201).

S 735-055

(15) Continue the test.
(a) Push the manual override button on the landing gear control panel and move the landing gear control handle to the UP position.
(b) Make sure that the pressure at each wheel brake gage is 450 to 880 psig.
(c) Move the landing gear control handle to the DN position.

S 735-057
(16) Do a test of the Brake Alternate Hydraulic Systems Operation
(a) Remove the pressure from the left and right hydraulic systems and reservoirs (AMM 29-11-00/501).
(b) Make sure that the parking brake accumulator is fully charged (AMM 12-15-04/301).
(c) Pressurize the left and right hydraulic systems and reservoirs (AMM 29-11-00/201).
(d) Make sure the left and right SYS PRESS and BRAKE SOURCE lights are on.
(e) Make sure that the left and right system pressures shown on the EICAS maintenance page increases to 2850 to 3150 psig.
(f) Make sure that the BRAKE PRESS gage indication is 2850 to 3150 psig.
(g) Make sure that the left and right SYS PRESS and BRAKE SOURCE lights are off.
(h) Push in the brake pedals, hold for 2-3 seconds, then release.
(i) Make sure that the right system pressure on EICAS maintenance page and brake pressure gage momentarily decrease.
(j) Remove the pressure from the right hydraulic system and reservoir (AMM 29-11-00/501).
(k) Make sure that the left system pressure indication is 2850 to 3150 psig and the right system pressure indication is less than 75 psig.
(l) Push in the brake pedals, hold for 2-3 seconds, then release. Do this 5 times.
(m) Make sure that the left system pressure shown on the EICAS maintenance page momentarily decreases after each time that you push in and release the brake.

S 865-062
(17) Remove the pressure from the left hydraulic system (AMM 29-11-00) while you make sure that the BRAKE SOURCE light comes on in 10 seconds or less.

S 735-063
(18) Continue the test.
(a) Make sure that the BRAKE PRESS gage indication is within ±300 psig of the original right system pressure, as much as 5 minutes after pressure is removed.
(b) Push in the brake pedals, hold for 2-3 seconds, then release. Do this 6 more times until the BRAKE PRESS gage decreases to the accumulator precharge pressure. Make sure that the gage shows reduced pressure after each time that you push in and release the brake pedals.

S 735-064
(19) Do a test of the Reserve System Braking (AMM 29-11-00/201).

G. Put the Airplane Back to Its Usual Condition

S 085-065
(1) If pressure gages are installed on the brake bleed fittings, do the steps that follow:
(a) Make sure that the parking brake is released and that the brakes are not applied.
(b) Remove the pressure gages from each brake bleed fitting.

S 865-066
(2) Pressurize the right hydraulic system (AMM 29-11-00/201) if it is not already pressurized.

S 865-067
(3) Operate the brake pedals several times to bleed any trapped air from the brake lines.

S 865-068
(4) Set the parking brakes.

S 095-069

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

S 865-070
(6) Remove the pressure from the right and center hydraulic systems if it is no longer necessary (AMM 29-11-00/201).

S 865-071
(7) Remove electrical power if it is no longer necessary (AMM 24-22-00/201).

BRAKE-PEDAL BUS MECHANISM - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the brake-pedal bus mechanism. The second task installs the brake-pedal bus mechanism.

TASK 32-41-01-004-001

2. Remove the Brake-Pedal Bus Mechanism (Fig. 401)
   A. Equipment
      (1) Rig Pins from Set B20003-XX (AMM 20-10-24/201):
         (a) LGB1 - P/N B20003-28
         (b) LGB2 - P/N B20003-28
         (c) R1A - P/N B20003-26
         (d) R1B - P/N B20003-26
   B. References
      (1) AMM 06-41-00/201, Access Doors and Panels
      (2) AMM 20-10-24/201, Rig Pins
      (3) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones

211/212	Control Cabin
113/114	Area forward of NLG wheel well
821	Forward Cargo Compartment

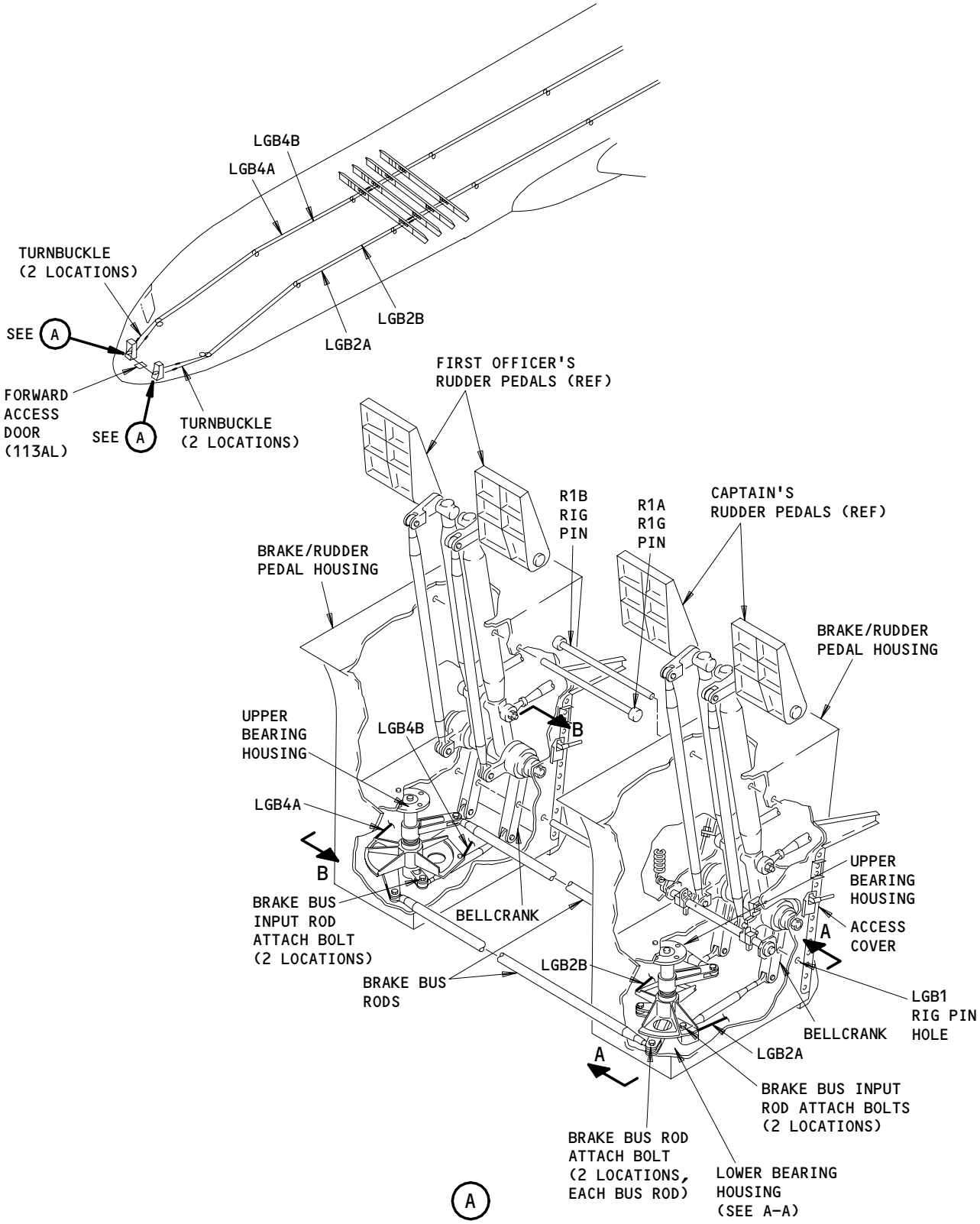
      (2) Access Panel

113AL	Flight/Landing Gear/Engine Control Components

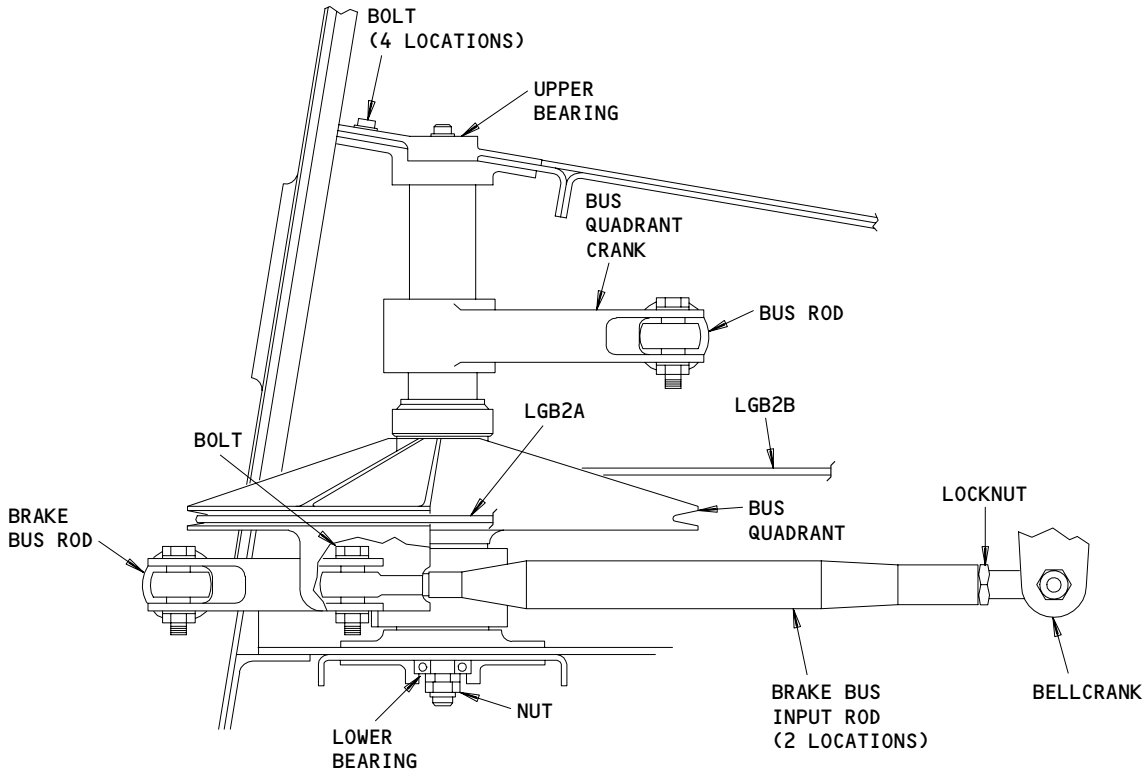
   D. Prepare for Removal

      S 494-002
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

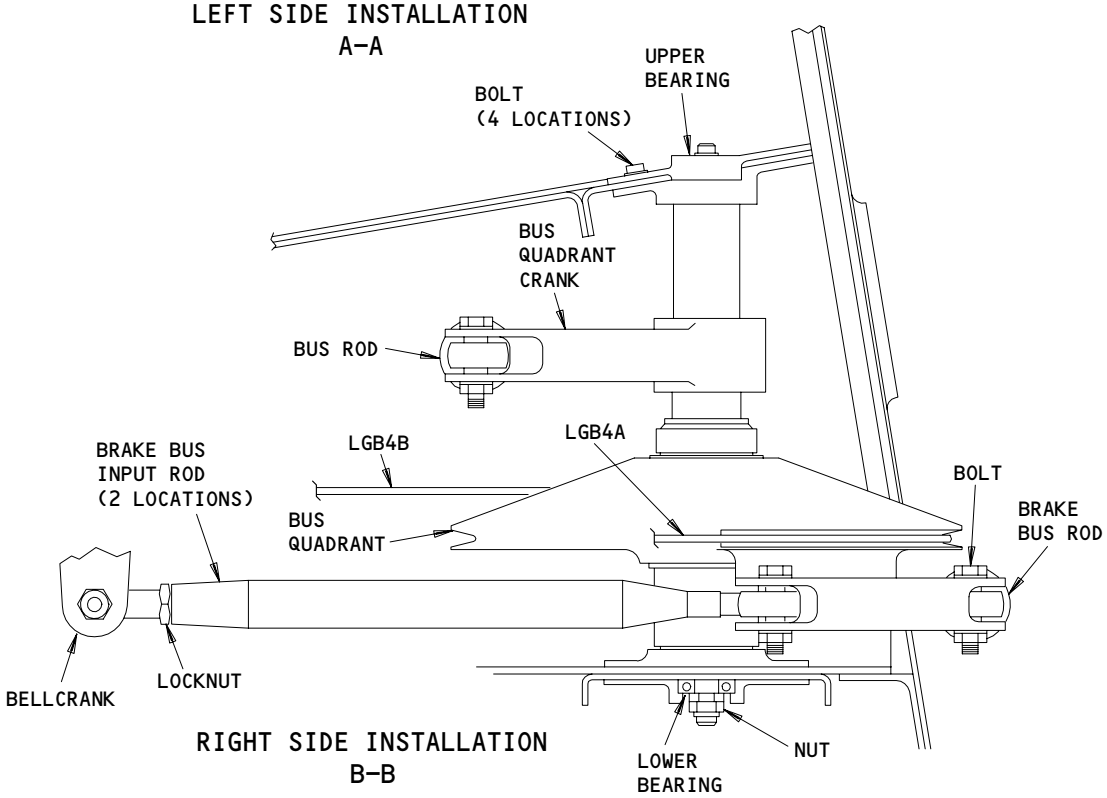
      S 494-003
      (2) Put chocks on the wheels.



Brake Pedal Bus Mechanism Installation
Figure 401 (Sheet 1)



LEFT SIDE INSTALLATION
A–A



RIGHT SIDE INSTALLATION
B–B

Brake Pedal Bus Mechanism Installation
Figure 401 (Sheet 2)

S 864-004
(3) Release the parking brake and attach a DO-NOT-OPERATE tag to the parking brake handle.

S 864-005
(4) Remove the pressure from the right and left hydraulic systems and reservoirs (AMM 29-11-00/201).

S 864-006
(5) Push in the two captain's pedals fully seven times to remove hydraulic pressure from the accumulator.

NOTE: Stop five seconds or more between each time that you apply the brake.

S 014-007
(6) Get access to the brake-pedal bus mechanism through the forward access door 113AL (AMM 06-41-00/201).

S 014-008
(7) Remove the access covers from the aft and bottom sides of the rudder pedal housing in the forward equipment bay.

S 484-009
(8) Put the two rudder pedals in the neutral position and install rig pin(s) R1A or R1B as necessary (Fig. 401).

S 484-010
(9) Install hydraulic brake system rig pin(s) LGB1 or LGB2 to keep the brake pedals in the OFF position.

NOTE: Make sure that the rig pin is installed through the two pedal arms and the two sides of the pedal support housing.

E. Procedure to Remove the Brake-Pedal Bus Mechanism

S 034-048
(1) If you will remove the Captain's bus mechanism, loosen the turnbuckles on cables LGB2A and LGB2B.

S 034-037
(2) If you will remove the First Officer's bus mechanism, loosen the turnbuckles on cables LGB4A and LGB4B.

S 034-036
(3) Disconnect the cables from the quadrants, and attach identification tags to the cables.

S 024-039
(4) Disconnect the two pushrods and the two bus rods from the bus cranks on the brake bus mechanism (Detail A and Section A-A or Section B-B).

S 024-013
(5) Remove the bolts (four locations) that attach the top bearing housing to the brake/rudder pedal housing.

S 024-014
(6) Remove the bolts (three locations) that attach the lower bearing housing to the rudder pedal housing while you hold the bus mechanism.

S 024-055
(7) Remove the bus mechanism through the access hole in the pedal housing.

TASK 32-41-01-404-015

3. Install the Brake-Pedal Bus Mechanism (Fig. 401)
   A. Equipment
      (1) Rig Pins from Set B20003-XX (AMM 20-10-24/201):
         (a) LGB1 - P/N B20003-28
         (b) LGB2 - P/N B20003-28
         (c) R1A - P/N B20003-26
         (d) R1B - P/N B20003-26
   B. Consumable Materials
      (1) A00247 Sealant, Chromate Type - BMS 5-95
   C. References
      (1) AMM 06-41-00/201, Access Doors and Panels

(2) AMM 12-15-04/301, Parking Brake Accumulator
(3) AMM 20-10-24/201, Rig Pins

(4) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
(5) AMM 32-00-20/201, Landing Gear Downlocks
(6) AMM 32-41-00/501, Hydraulic Brake System

D. Access

(1) Location Zones

211/212	Control Cabin
113/114	Area forward of NLG wheel well
821	Forward Cargo Compartment

(2) Access Panel

113AL	Flight/Landing Gear/Engine Control Components

E. Procedure

S 494-016
(1) Make sure that rig pins R1A and LGB1 or R1B and LGB2 are installed as shown in the Prepare for Removal procedure.

S 424-040
(2) Put the bus mechanism in the housing and hold so that the top and bottom ends of the crankshaft are aligned for installation through the bearing housings.

S 424-041
(3) Install the lower bearing housing on the crank shaft and attach the assembly with three bolts to the rudder pedal housing.

S 424-042
(4) Install the top bearing housing on the crank shaft and attach with four bolts to the rudder pedal housing.

S 394-043
(5) Apply sealant only to the outer diameters of the rod bushings.

S 424-044
(6) Connect the two brake bus input rods and the two bus rods to the bus crank.

S 434-046
(7) Remove the tags from the cables and connect the cables to the cable quadrants on the bus crank mechanism (AMM 32-41-00/501).

S 834-045
(8) Adjust the cable tension at the turnbuckles (AMM 32-41-00/501).

S 614-047
(9) Charge the parking brake accumulator if it is necessary (AMM 12-15-04/301).

S 864-052
(10) Pressurize the right and left hydraulic systems and reservoirs (AMM 29-11-00/201).

S 734-017
(11) Do a system test of the normal and the alternate hydraulic brake systems (AMM 32-41-00/501).

S 414-049
(12) Install the access covers on the aft and the bottom sides of the rudder pedal housing.

S 414-050
(13) Set the parking brake.

S 864-051
(14) Remove the pressure from the right and left hydraulic systems if it is not necessary (AMM 29-11-00/201).

BRAKE METERING VALVE ASSEMBLY - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the brake metering valve assembly in the left or right wheel well. The second task installs the brake metering valve assembly in the left or right wheel well.

TASK 32-41-03-004-001

2. Remove the Brake Metering Valve Assembly (Fig. 401)
   A. Equipment
      (1) Rig pins from Set B20003-XX (Ref 20-10-24)
         (a) LGB4 - P/N B20003-20
         (b) LGB5 - P/N B20003-20
   B. References
      (1) 20-10-24/201, Rig Pins
      (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
      (5) 32-41-00/201, Hydraulic Brake System
      (6) 32-41-00/501, Hydraulic Brake System
   C. Access
      (1) Location Zones
         143 Left MLG Wheel Well
         144 Right MLG Wheel Well

   D. Prepare for Removal

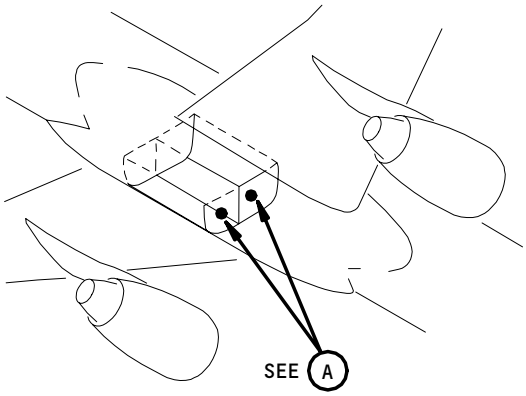
      S 494-002
      (1) Make sure the landing gear downlocks are installed (Ref 32-00-20).

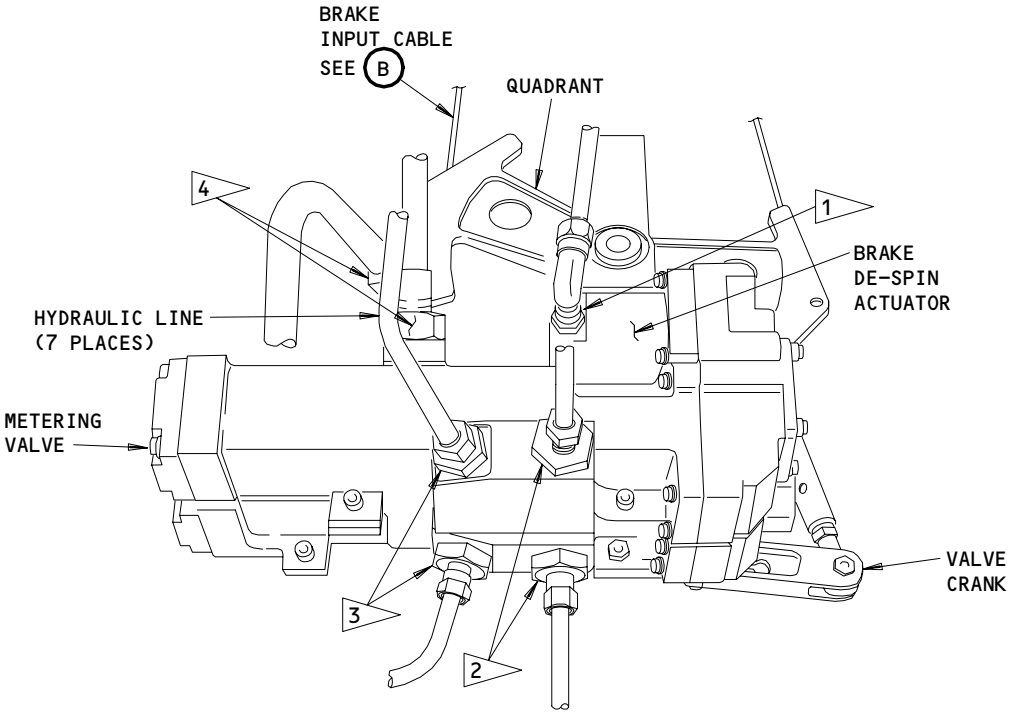
      S 494-003

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

      S 494-004
      (3) Put chocks on the wheels.



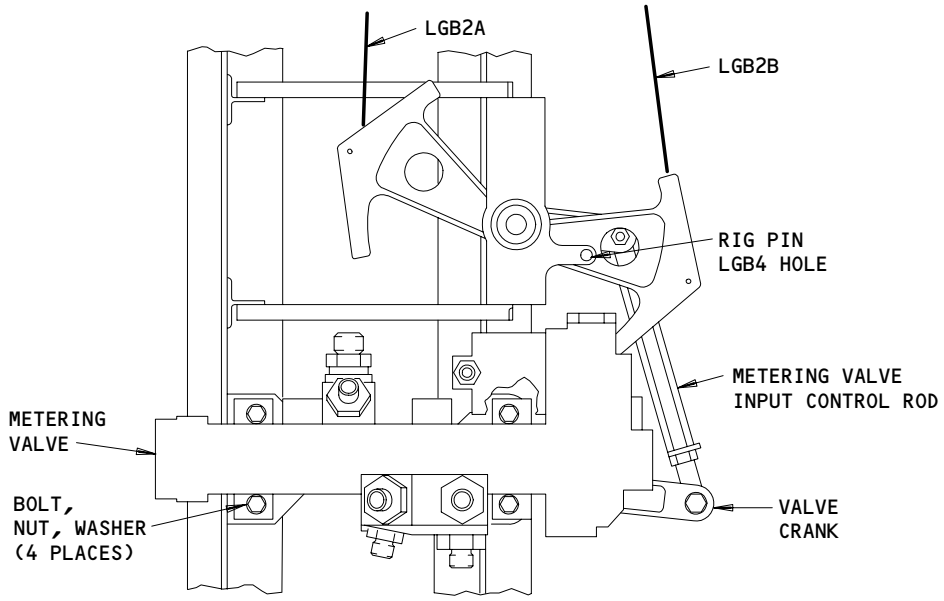


LEFT WHEEL WELL BRAKE METERING VALVE
(RIGHT WHEEL WELL VALVE OPPOSITE)

A

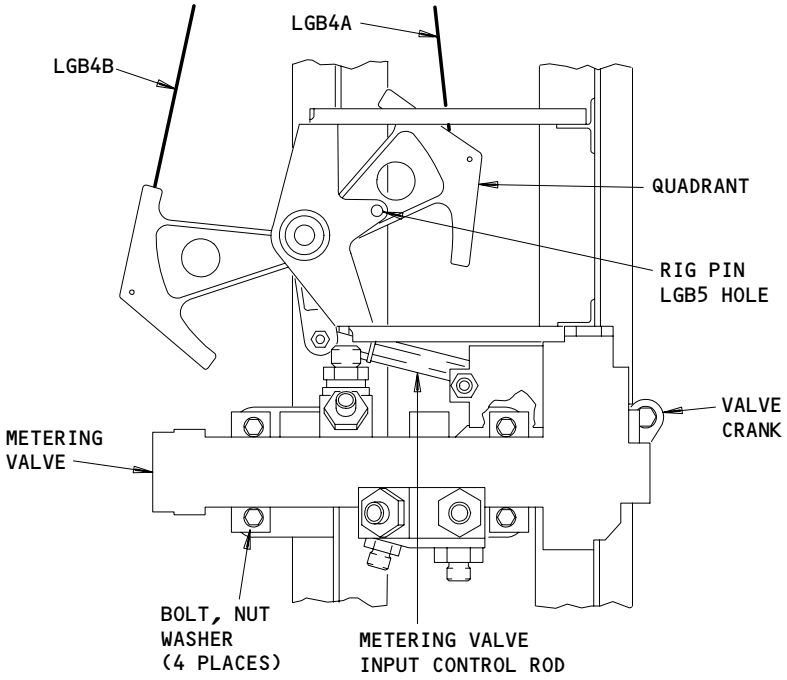
1 UNION, O-RING
2 FILTERED REDUCER, O-RING
3 REDUCER, O-RING
4 CHECK VALVE, O-RING

Brake Metering Valve Installation
Figure 401 (Sheet 1)



LEFT WHEEL WELL METERING VALVE

B



RIGHT WHEEL WELL METERING VALVE

B

Brake Metering Valve Installation
Figure 401 (Sheet 2)

S 864-005
(4) Release the parking brake.

S 864-006
(5) Remove the pressure from the left and right hydraulic systems and reservoirs (Ref 29-11-00).

S 864-007
(6) Push in and release the brake pedals fully seven times to remove hydraulic pressure from the brake accumulator.

NOTE: The brake metering valve installation in the left and right wheel wells is almost the same. The valve crank and control rod configurations for the metering valves in the left and right wheel wells are different.

S 484-008
(7) Install rig pin LGB4/LGB5 (Detail A).

NOTE: This puts the metering valve in the spring-loaded OFF position.

S 034-009
(8) Disconnect the hydraulic lines (Detail A), seven locations from the metering valve.

S 494-010
(9) Install a cap or plug on all open lines and ports.

S 034-011

CAUTION: DO NOT CHANGE THE CONTROL ROD ADJUSTMENT. IF YOU CHANGE THE ADJUSTMENT, THE SYSTEM MAY NOT OPERATE PROPERLY.

(10) Disconnect the valve crank from the control rod.

S 024-036
(11) Disconnect the valve crank from the valve spindle.

S 024-013
(12) Hold the valve and remove the four bolts that attach the valve to the valve support and remove the valve.

S 034-014
(13) Remove the hydraulic fittings and O-rings from the valve, seven locations (Fig. 401). Discard the O-rings.

S 494-015
(14) Install plugs in the ports in the metering valve.

TASK 32-41-03-404-016
3. Install the Brake Metering Valve Assembly (Fig. 401)

NOTE: The brake metering valve is the same on left and right wheel wells. The valve cranks and the control rods for the metering valves are different for the valve installations in the left and right wheel well.

A. Equipment
(1) Rig pins from Set B20003-XX (Ref 20-10-24)
(a) LGB4 - P/N B20003-20
(b) LGB5 - P/N B20003-20
B. Consumable Materials
(1) B00054 Lubricant, Hydraulic System Fittings - MCS 352
C. References
(1) 20-10-24/201, Rig Pins
(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
(5) 32-41-00/201, Hydraulic Brake System
(6) 32-41-00/501, Hydraulic Brake System
D. Access
(1) Location Zones
143 Left MLG Wheel Well
144 Right MLG Wheel Well

E. Procedure

S 214-017
(1) Examine the filler screens in the filtered reducers for contamination.

S 644-018
(2) Lubricate the new O-rings and hydraulic fittings.

S 434-019
(3) Assemble the O-rings and hydraulic fittings and install in the metering valve ports.

S 614-020
(4) Fill the metering valve with hydraulic fluid and put caps on the fittings at the hydraulic ports.

S 424-021
(5) Hold the metering valve assembly to the metering valve support and install the bolts.

S 424-037
(6) Connect the valve crank to the valve spindle.

S 434-023
(7) Connect the valve crank to the control rod.

S 094-024
(8) Remove the caps on the valve hydrualic ports and the hydraulic lines.

S 434-025
(9) Connect the hydraulic lines to the valve ports (7 locations).

S 084-026
(10) Remove rig pin LGB4/LGB5.

S 864-027
(11) Pressurize the right and left hydraulic systems and reservoirs (Ref 29-11-00).

S 874-028
(12) Bleed the brake system (Ref 32-41-00).

S 794-029

(13) Do a check for leaks at the hydraulic line connections.

S 714-030

(14) Do an operational test of the hydraulic brake system (Ref 32-41-00).

F. Put the Airplane Back to Its Usual Condition

S 864-031

(1) Remove the DO-NOT-OPERATE tag from the parking brake handle and set the parking brake.

S 864-032

(2) Remove electrical power if it is not necessary (Ref 24-22-00).

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 landing gear doors and close the doors (Ref 32-00-15).

ALTERNATE BRAKE SELECTOR VALVE - REMOVAL/INSTALLATION

1. General
   A. There are two tasks in this procedure. There is a task for the removal and a task for the installation of the alternate brake selector valve.

TASK 32-41-04-004-001

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
          211 Control Cabin, Left
          212 Control Cabin, Right
          731 Landing Gear Left
          741 Landing Gear Right

   C. Procedure

      S 864-002
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

      S 484-029

      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 OR EQUIPMENT.

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

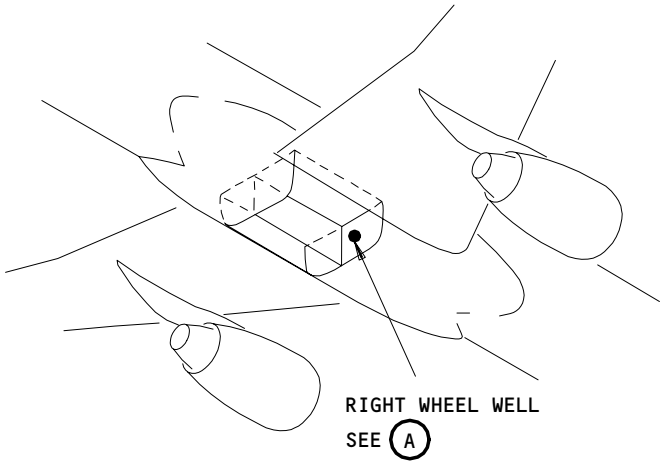
          NOTE: Both nose and main gear doors open at same time by ground release.

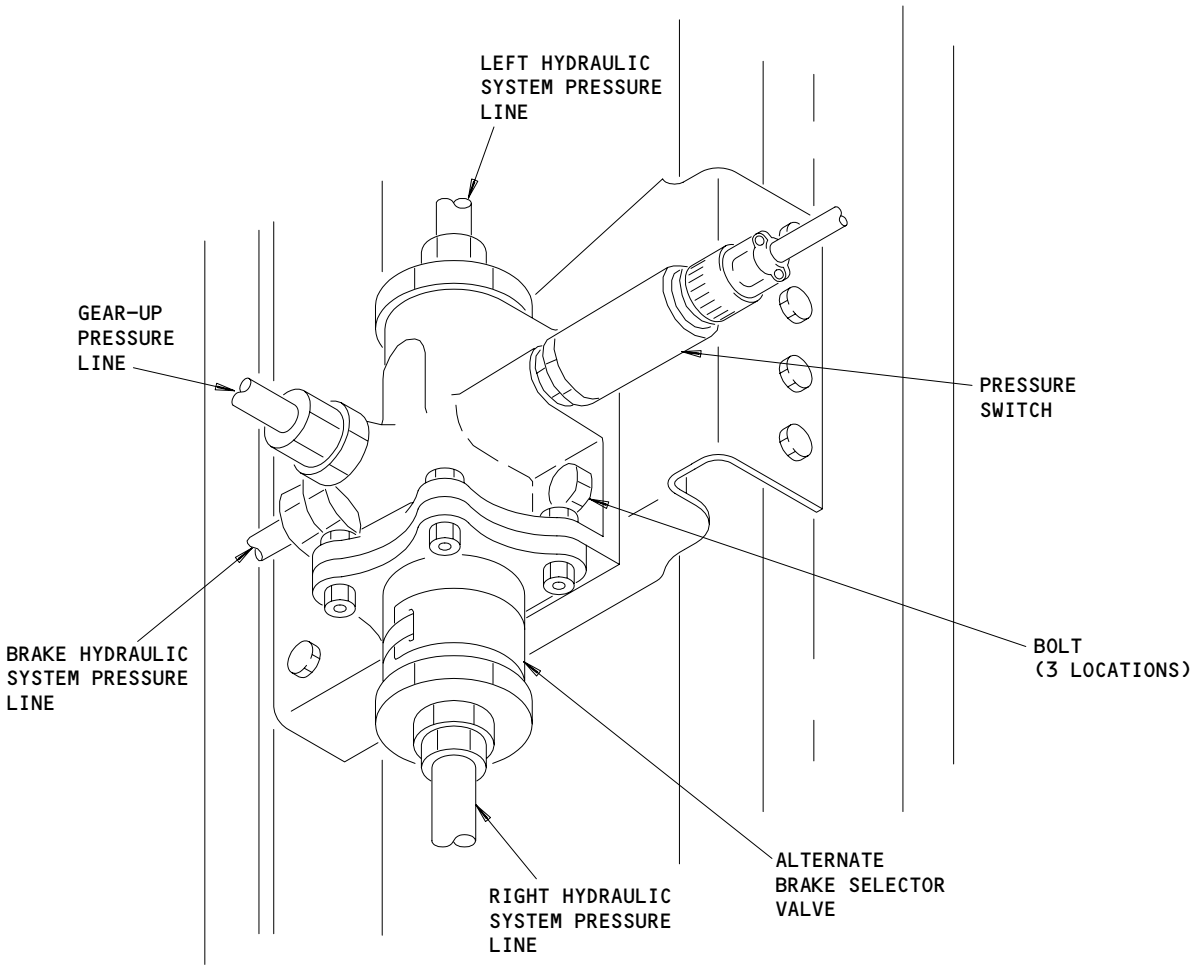
      S 864-004
      (3) Make sure that the right and left hydraulic systems and reservoirs are depressurized (AMM 29-11-00/201).

      S 864-005
      (4) Release the parking brakes.

      S 864-006
      (5) Push the brake pedals fully seven times to release hydraulic pressure from the brake accumulator.

          NOTE: Pause a minimum of 5 seconds between each brake application.





RIGHT WHEEL WELL

(A)

Alternate-Brake Selector Valve Installation
Figure 401

S 864-007
(6) Open the circuit breaker and attach the DO-NOT-REMOVE tag:
(a) P11, Overhead Circuit Breaker Panel
1) 11S13, BRAKE PRESS IND

S 024-008
(7) Disconnect the electrical connector from the pressure switch.

S 024-009
(8) Disconnect the hydraulic lines from the selector valve (Detail A), Cap lines.

S 024-010
(9) Remove unions from ports of valve. Discard O-rings and backup rings. Plug ports.

S 024-011
(10) Remove 3 bolts to remove the selector valve.

TASK 32-41-04-404-012

3. Install the Alternate Brake Selector Valve (Fig. 401)

A. Consumable Materials
(1) D00153 Fluid - Hydraulic, BMS 3-11
(2) D00054 Lubricant - Hydraulic System Fittings, MCS 352B

B. References
(1) AMM 24-22-00/201, Electrical Powere - 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 Zones
211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right

D. Procedure

S 164-013
(1) Clean the selector valve and the mating surfaces of the mounting bracket.

S 424-014
(2) Install 3 bolts to attach the selector valve to the mounting bracket (Detail A).

S 644-015
(3) Lightly apply hydraulic fluid or lubricant to the unions, backup rings, and O-rings.

S 424-016
(4) Install the unions in the valve ports.

S 424-031
(5) Install new O-rings and backup rings on the valve unions.

S 424-017
(6) Connect hydraulic lines to the valve.

S 424-018
(7) Attach electrical connector to the valve.

S 864-019
(8) Remove the DO-NOT-CLOSE tag and close the circuit breaker:
(a) P11, Overhead Circuit Breaker Panel
1) 11S13, BRAKE PRESS IND

S 864-020
(9) Supply electrical power (AMM 24-22-00/201).

S 864-021
(10) Supply right and left systems hydraulic power (AMM 29-11-00/201).

S 874-022
(11) Slowly push on the brake pedals fully six times to bleed the system.

NOTE: Pause a minimum of 5 seconds between each brake application.

S 714-023
(12) Do an operational test on the alternate brake selector valve (right hydraulic system).
(a) Apply and release brakes several times by depressing brake pedals.
(b) Check brake stacks movement to verify that brake is operating properly.

S 714-024
(13) Do an operation test on the alternate brake selector valve (left hydraulic system).
(a) Remove right system hydraulic power.

(b) Apply and release the brakes SLOWLY.
(c) Check brake stacks movement to verify that brake is operating properly.
(d) Check that BRAKE PRESS indicator gage on P3-1 panel indicates 3000 (±100) psi and remains steady during brake applications.

NOTE: If you push in the brake pedals fast, it will cause a sudden pressure demand from the pump which is unable to respond quickly. As a result, a pressure decrease occurs in the system which causes the accumulator isolation valve to shift for less than a second or till pressure recovers. While this happens, the accumulator pressure bleeds down, Therefore, a 3000 psi indication on the gage may not hold. To prevent this, you must APPLY THE BRAKES SLOWLY.

S 794-025
(14) Do a check for leaks after 5 to 10 minutes.

S 714-026
(15) Do an operational test on the alternate brake selector valve (right and left systems hydraulic power removed).
(a) Remove left system hydraulic power.
(b) Check that BRAKE SOURCE indicator light on pilot's center instrument panel illuminates.

S 084-030

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.

(16) Remove the landing gear door locks (AMM 32-00-15/201).

S 864-028
(17) Remove electrical power (AMM 24-22-00/201).

BRAKE HYDRAULIC-DISCONNECT - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the brake hydraulic-disconnect. The second task installs the brake hydraulic-disconnect.
   B. The brake hydraulic-disconnect assembly contains two halves. The outer half is connected to the hydraulic line, and the inner half is installed in the brake. This procedure has steps for removal and installation of both of the brake hydraulic-disconnect halves.

TASK 32-41-08-024-021

2. Remove the Brake Hydraulic-Disconnect (Fig. 401)
   A. Equipment
      (1) Torque Wrench - Commercially Available (For torque ranges, Ref Fig. 401)
      (2) Socket Equipment - Brake Disconnect Valve - C32011-7 or equivalent
   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 Left Main Landing Gear
          741 Right Main Landing Gear

   D. Procedure

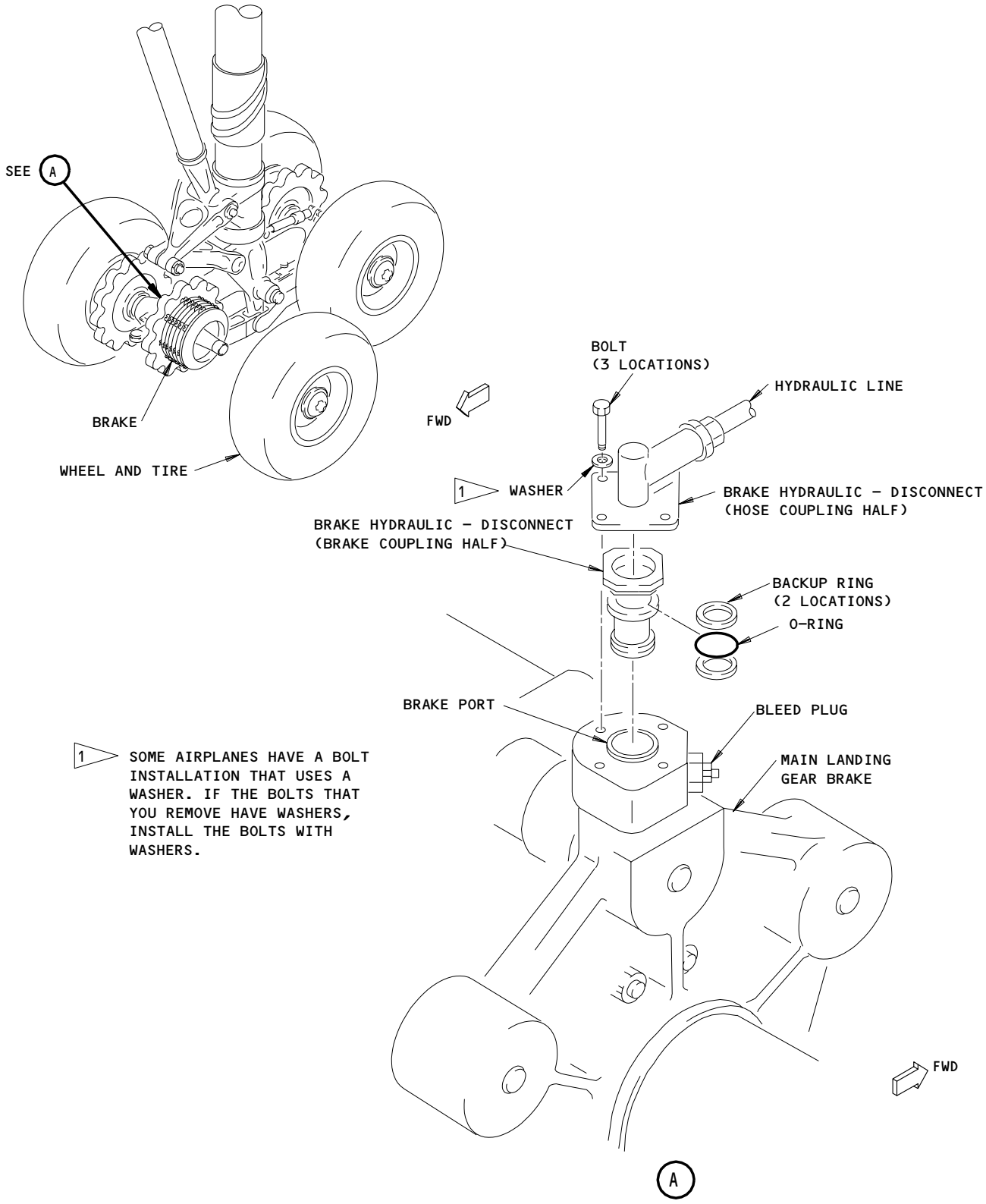
      S 494-001
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

      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 OR 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 right and left hydraulic systems and reservoirs (AMM 29-11-00/201).



1 SOME AIRPLANES HAVE A BOLT INSTALLATION THAT USES A WASHER. IF THE BOLTS THAT YOU REMOVE HAVE WASHERS, INSTALL THE BOLTS WITH WASHERS.

Brake Hydraulic – Disconnect Installation
Figure 401

S 864-004
(4) Release the parking brake.

S 864-005
(5) Push in the brake pedals fully and release them six times to decrease hydraulic pressure from the brake accumulator.

NOTE: Pause a minimum of 5 seconds between each time that you apply the brakes.

S 034-006
(6) Disconnect the hydraulic line from the brake disconnect hose coupling half (Detail A).

S 024-009
(7) Remove the three bolts that attach the hose coupling half of the hydraulic-disconnect to the brake and remove the hose coupling half.

S 024-008
(8) Use a wrench and the brake diconnect valve socket equipment to remove the brake coupling half of the hydraulic-disconnect from the brake. Remove the O-ring and the backup rings. Discard the O-ring.

NOTE: When you remove the hose coupling half and the brake coupling half, do not spill hydraulic fluid on the brake or adjacent structures.

TASK 32-41-08-424-022
3. Install the Brake Hydraulic-Disconnect (Fig. 401, 402).
A. Equipment
(1) Torque Wrench - Commercially Available (For torque ranges, Ref Fig. 401)
(2) Socket Equipment - Brake Disconnect Valve - C32011-7 or equivalent
B. Consumable Materials
(1) D00153 Fluid - Hydraulic - BMS 3-11

(2) D50025 Grease - BATCO X8401-2

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

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

E. Procedure

S 864-010
(1) Make sure that the pressure is removed from left and right hydraulic systems and reservoirs (AMM 29-11-00/201).

S 644-011
(2) Lightly lubricate the O-ring and the backup rings with hydraulic fluid.

S 644-026
(3) Apply a light coating of BATCO X8401-2 grease on the brake half of the brake disconnect, from the diametrical surface above the upper retaining ring to the top of the brake half.

S 424-012
(4) Install the brake coupling half of the hydraulic-disconnect into the brake as follows (Detail A):
(a) Install the brake coupling half of the brake hydraulic - disconnect in the brake pressure port with the backup rings and the O-ring.
(b) Put the socket of the brake disconnect valve socket equipment over the flange of the brake disconnect - brake coupling half and install two screws to hold the socket equipment on the brake port boss.
(c) Apply a torque wrench at the socket and tighten the brake disconnect coupling half to 20-25 foot pounds.

S 644-027
(5) Before installing the hose half of the disconnect, apply a light coating of BATCO X8401-2 grease on the underside of the mounting flange of the hose half.

S 424-013
(6) Install the hose coupling half of the hydraulic-disconnect to the brake as follows:
(a) Put the hose coupling half on the brake so that the hose port points towards the shock strut in a fore-aft direction.
(b) Apply a light coating of BATCO X8401-2 grease to the threads and shanks of the three mounting bolts.

(c) Install the hose coupling half to the brake with three bolts. Tighten the bolts to 72 to 82 pound-inches.

NOTE: Some bolt installations use a washer. If the bolt that you removed has a washer, make sure that you install the washer.

(d) Lockwire the bolts.

S 434-014

(7) Connect the brake hydraulic line to the hydraulic-disconnect.

S 864-015

(8) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 874-016

(9) Fully push in and release the brake pedals six times to bleed the brake lines.

NOTE: Pause a minimum of 5 seconds between each brake application.

S 794-017

(10) After 5 to 10 minutes, make sure that there are no leaks.

S 714-018

(11) 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.

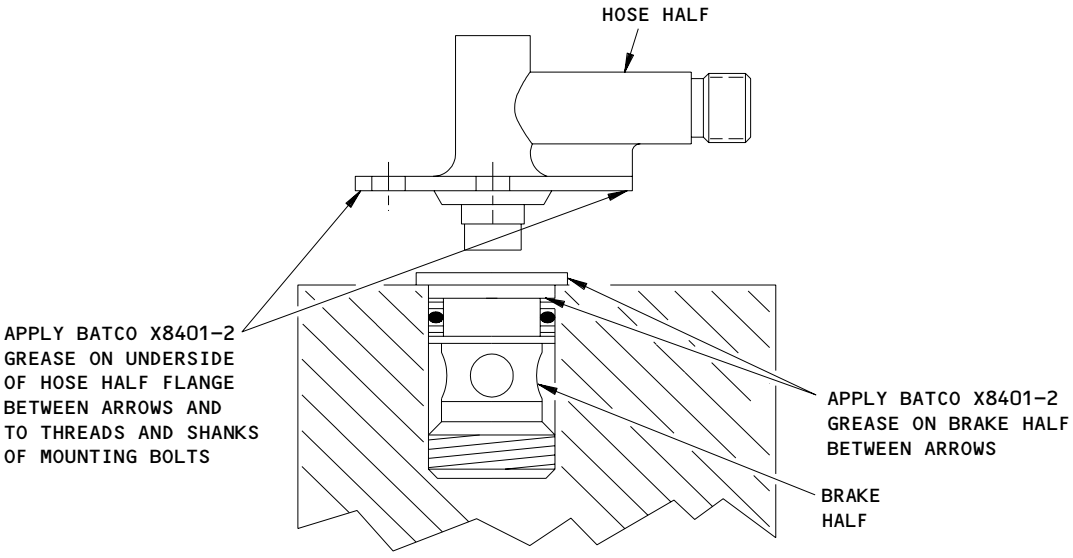
S 864-019

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

S 094-020

WARNING: 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 landing gear doors and close the doors (AMM 32-00-15/201).



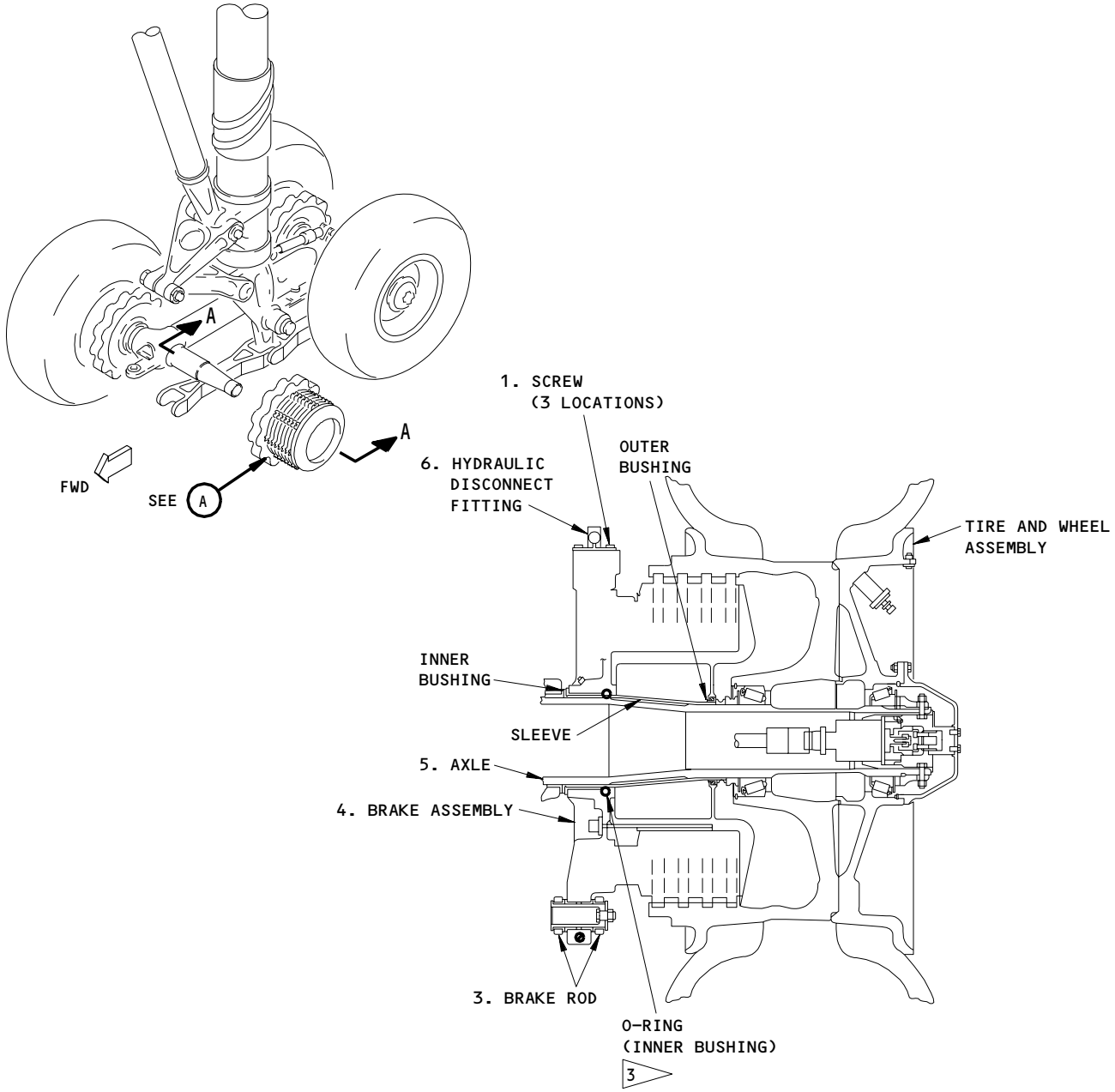
Brake Hydraulic Disconnect
Figure 402

MAIN GEAR WHEEL BRAKE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the main gear wheel brake from the axle. The second task installs the main gear wheel to the axle.

TASK 32-41-10-004-001

2. Remove the Main Gear Wheel Brake
   A. Equipment
      (1) Sling, Nylon - MLG (use steel cable for removal of a hot brake)
      (2) Protector (Sleeve and Cap), Axle MLG - B32010-15 (Preferred), B32015-2 (Optional)
      (3) Brake Puller - B32016-13
      (4) Brake Cradle (Clyde Machines Model BC 300 or equivalent) - Commercially available.
      (5) Dolly, Wheel/Brake (Clyde Machines Model TB 900) - Commercially Available.
      (6) Torque Wrench - Commercially Available (For torque ranges, Ref Fig. 401)
      (7) 9/16-Inch Deep Socket Wrench - Commercially Available
   B. References
      (1) AMM 07-11-03/201, Jacking Airplane Axles
      (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
      (5) AMM 32-41-00/501, Hydraulic Brake System
      (6) AMM 32-41-08/401, Brake Disconnect Valve
      (7) AMM 32-44-00/001, Parking Brake System
      (8) AMM 32-45-01/401, Main Gear Wheel and Tire
   C. Access
      (1) Location Zones
          731 Left Main Landing Gear
          741 Right Main Landing Gear



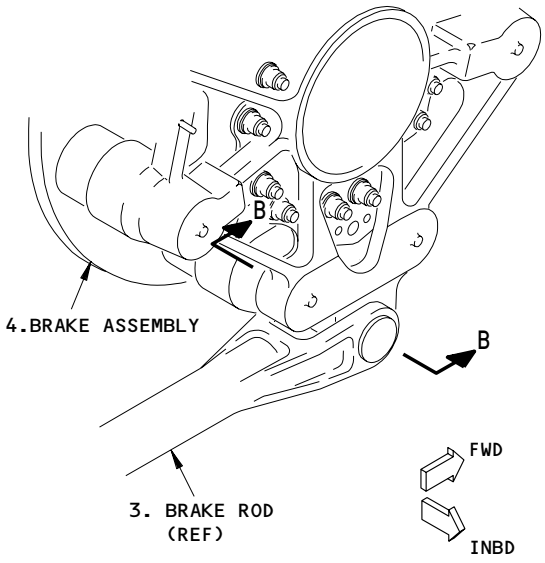
BRAKE ASSEMBLY
(SHOWN WITH THE WHEEL INSTALLED)
A-A

1 TIGHTEN TO 100-200 POUND-INCHES

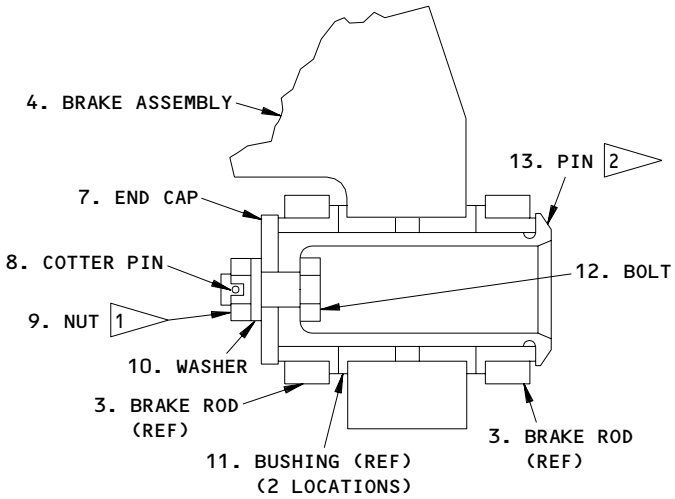
2 INSTALL THE PIN WITH THE HEAD ON THE TRUCK SIDE AS SHOWN (PREFERRED)
INSTALL THE PIN WITH THE HEAD ON THE BRAKE SIDE (OPTIONAL, NOT SHOWN)

3 B.F. GOODRICH BRAKES

Main Gear Wheel Brake Installation
Figure 401 (Sheet 1)

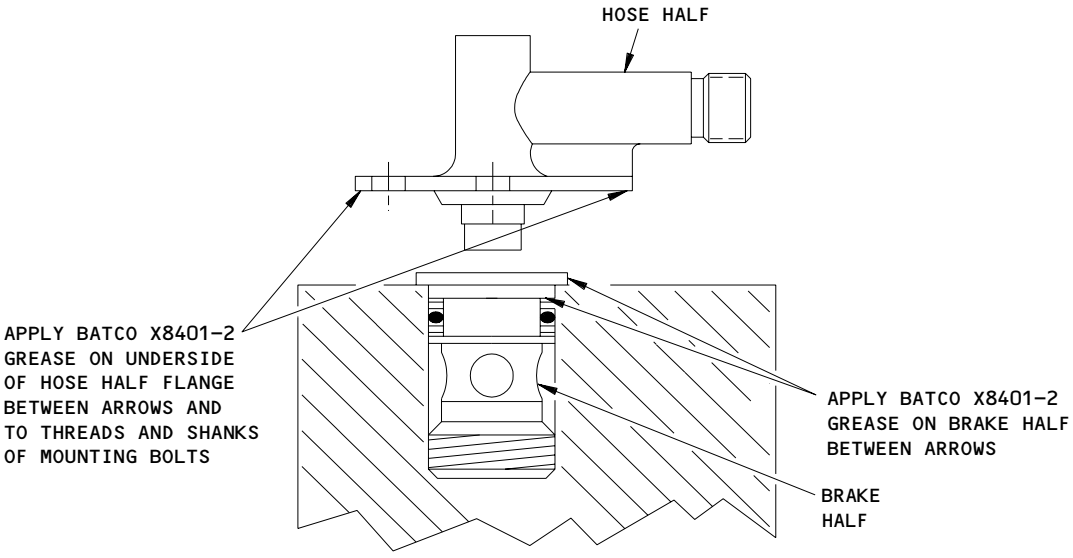


A



B-B

Main Gear Wheel Brake Installation
Figure 401 (Sheet 2)



Brake Hydraulic Disconnect
Figure 402

D. Prepare for Removal

S 494-002
(1) Make sure the landing gear downlocks are installed (AMM 32-00-20/201).

S 034-004
(2) Look at the brake rod to brake connection. If the the pin retainer bolt is on the truck side of the pin, do the step that follows:

CAUTION: THE PIN RETAINER BOLT (12) SHOULD BE REMOVED BEFORE JACKING TO AVOID DAMAGE DUE TO POSSIBLE INTERFERENCE BETWEEN THE JACK AND BOLT (12).

(a) Remove the cotter pin (8), bolt (12), and nut (9) that hold the retainer pin (13) in position.

NOTE: You can remove the retainer bolt (12) with a 9/16-inch deep socket tool that you insert into the pin (13) recess.

S 584-005
(3) Jack the main gear axle(s) (AMM 07-11-03/201).

S 024-052
(4) If the pin (13) was installed with its head on the brake side, do the step that follows:
(a) Remove the pin (13) while you support the brake rod (3).

S 034-006
(5) If the pin (13) was installed with the head on the truck side, do the steps that follow:
(a) Remove the cotter pin (8), bolt (12), and nut (9) that hold the retainer pin (13).

NOTE: You can remove the retainer bolt (12) with a 9/16-inch deep socket tool that you insert into the pin (13) recess.

(b) Pull the pin (13) about half way out of the fitting on the brake assembly (4).
(c) Lower the landing gear with the jack until the airplane weight is on the tires.
(d) Remove the jack if necessary for clearance to remove the pin (13).
(e) Remove the pin (13) while you support the brake rod (3).
(f) Jack the main gear axle(s) again (AMM 07-11-03/201).

S 014-007
(6) Remove the main gear wheel and tire (AMM 32-45-01/401).

S 864-008
(7) Remove pressure from the main hydraulic system and the hydraulic reservoir (AMM 29-11-00/201).

S 864-009
(8) Release the parking brake (AMM 32-44-00/001).

S 864-010
(9) Release hydraulic pressure from the brake accumulator by the step that follows:
(a) Push in on the brake pedals fully 6 times.

NOTE: Pause a minimum of 5 seconds after each application before the next application.

S 494-011
(10) Make sure the axle protector (cap and sleeve) is installed.

S 034-012
(11) Disconnect the brake hydraulic line from the brake at the brake hydraulic disconnect (6) (AMM 32-41-08/401).

NOTE: The brake disconnect (6) automatically seals the hydraulic lines to prevent fluid leakage. The brake coupling half of the brake disconnect, which is installed in the brake, seals the brake to prevent leakage of fluid in the brake. It also permits the brakes to be filled and bled in the workshop.

(a) Remove the brake coupling half from the brake.

NOTE: It is not necessary to do this step if this brake will be installed again or if the new brake already has the brake coupling half installed.

(b) Put the brake coupling half in a clean container and keep it for installation in the new brake.

E. Remove the Main Gear Wheel Brake

S 484-051

WARNING: USE EXTREME CARE WHEN YOU REMOVE THE BRAKE ASSEMBLY FROM THE TRUCK AXLE BECAUSE THE BRAKE ASSEMBLY MAY BE HOT

CAUTION: SUPPORT THE BRAKE ASSEMBLY SECURELY WITH THE SLING AND HOIST EQUIPMENT BECAUSE IT WEIGHS APPROXIMATELY 218 POUNDS (STEEL BRAKES OR 145 POUNDS (CARBON BRAKES).

(1) Install a nylon sling on the brake (4) for support during removal. If the brake (4) is hot, use a steel cable instead of the nylon sling.

S 024-016

(2) Remove the brake (4) with the brake puller tool.

TASK 32-41-10-404-017

3. Install the Main Gear Wheel Brake (Fig. 401)

A. Equipment

(1) Alignment Equipment - Brake Rotor - AA 1364
Dunlop Limited, Aviation Division
Foleshill, Coventry CV6 4AA

NOTE: The alignment equipment is for Dunlop carbon brakes only.

(2) Sling, nylon - MLG (use steel cable for removing hot brake)
(3) Protector (Sleeve and Cap) - Axle MLG - B32010-15 (Preferred), B32015-2 (Optional)
(4) Torque Wrench - Commercially Available (For torque ranges, Ref Fig. 401)
(5) 9/16-Inch Deep Socket Wrench - Commercially Available

B. Consumable Materials

(1) D00528 Grease - Royco 11-MS
(2) D00153 Fluid, Hydraulic - BMS 3-11
(3) D00378 Grease, Wheel Bearing -
Aeroshell 22
Mobilgrease 28
(4) D50005 Grease, Wheel Bearing -
Mobil Aviation Grease SHC 100
(5) D00388 Grease, Wheel Bearing -
MIL-G-3545 Aeroshell 5 (Optional)

(6) D00571 Grease, (Seal-In Lubricant) -
BATCO X8401-2

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Screw	32-41-10	01	407
	4	Brake Assembly			7
		Packing (O-ring) in Bushing *[1]			
		Packing (O-ring) in Torque Tube			
	6	Brake Disconnect Fitting			415
		Brake Valve Coupling			420
		Backup Ring			425
		Packing (O-ring)			430
	7	Cap - End	32-11-01	10	140
	8	Cotter Pin			122
	9	Nut			125
	10	Washer			124
	11	Bushing	32-41-10	01	375
	12	Bolt	32-11-01	10	123
	13	Pin			145

*[1] B.F. Goodrich brake only

D. References
(1) AMM 07-11-03/201, Jacking Airplane Axles
(2) AMM 12-21-14/301, Main Gear and Actuating Mechanisms
(3) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
(4) AMM 32-11-26/601, Main Gear Axle
(5) AMM 32-41-00/501, Hydraulic Brake System
(6) AMM 32-41-08/401, Brake Disconnect Valve
(7) AMM 32-44-00/001, Parking Brake System
(8) AMM 32-45-01/401, Main Gear Wheel and Tire

E. Access
(1) Location Zones
731 Left Main Landing Gear
741 Right Main Landing Gear

F. Prepare for Installation

S 864-020
(1) Make sure that hydraulic pressure was removed from the left, right, and center hydraulic systems (AMM 29-11-00/201).

S 214-021
(2) Examine the part of the axle (5) that you can see for scoring, galling, or corrosion.

NOTE: The wear limits for the main gear axles are in AMM 32-11-26/601.

S 494-023
(3) Make sure that the axle protector (cap and sleeve) is installed.

S 644-024

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 and to the axle bushings on the brake assembly.

S 434-044
(5) AIRPLANES WITH B.F. GOODRICH BRAKES;
Make sure the O-ring (packing) is installed in the inner bushing.

S 614-045
(6) Make sure that the brake (4) that you will install is filled with hydraulic fluid and bled (AMM 32-41-00/201).

NOTE: The brake valve coupling (zero leak type) which is installed in the brake, allows the brake to be pre-filled and bled before it is installed on the airplane.

G. Install the Main Gear Wheel Brake (Fig. 401, 402))

S 424-046

CAUTION: BE SURE THAT SLING AND HOIST EQUIPMENT WILL HOLD THE WEIGHT OF EQUIPMENT BECAUSE IT WEIGHS APPROXIMATELY 218 POUNDS (STEEL BRAKES OR 145 POUNDS (CARBON BRAKES).

(1) Use the brake sling and position the brake (4) on the axle (5).

S 434-028
(2) Install the brake hydraulic line disconnect (6) to the brake (4). (AMM 32-41-08/401).
(a) Apply a light coating of BATCO X8401-2 grease on the brake half of the brake disconnect, from the diametrical surface above the upper retaining ring to the top of the brake half.

(b) Before installing the hose half of the disconnect, apply a light coating of BATCO X8401-2 grease on the underside of the mounting flange of the hose half.
(c) Make sure that the brake coupling half of the brake disconnect (6), is installed in the brake before you install the hose half of the brake disconnect. If the brake coupling half is removed from the brake, check that the backup rings and the O-ring are installed. Then inspect the condition of the backup rings and the O-ring prior to installing the brake coupling half in the brake.
(d) Before installing the three bolts that attach the hose half of the brake disconnect to the brake, apply a light coating of BATCO X8401-2 grease to the threads and shanks of the three mounting bolts.
(e) Make sure that the three bolts that attach the hose coupling half of the brake disconnect (6) to the brake are tightened to 72 to 82 pound-inches.

S 414-032

(3) Install the main gear wheel and tire (AMM 32-45-01/401).

NOTE: DUNLOP CARBON BRAKES;
If the slots in the brake rotors are not aligned, you can use the brake rotor alignment tool for alignment. Proper slot alignment is necessary for installation of the wheel and tire assembly to the brake and axle. Usually, the use of this tool is not necessary .

S 584-050

CAUTION: MAKE SURE THAT THE BRAKE ROD DOES NOT TOUCH THE GROUND WHEN THE MAIN GEAR IS LOWERED TO THE GROUND.

(4) Lower the main gear and the remove jack (AMM 07-11-03/201).

S 434-034

(5) Connect the brake rod (3) to the brake (4):
(a) Apply Royco 11-MS grease to the pin (13), end cap (7), lockbolt (12), washer (10), nut (9), and cotter pin (8).

(b) Insert the pin (13) through the brake rod (3) and brake assembly (4) joint as shown on Fig. 401.
(c) Insert the bolt (12) through the hole at the bottom of the recess in the pin (13).
(d) Insert the end cap (7) over the threaded end of the bolt (12).
(e) Install the bolt (12) and end cap (7) to the pin (13) with the washer (10), and nut (9).
1) Tighten the nut (9) to 100 - 200 pound-inches.
2) Install the cotter pin through nut (9).

S 714-036

(6) Do a test of the hydraulic brake operation (AMM 32-41-00/501).

NOTE: It is not necessary to bleed the brakes again for this test.

S 584-037

(7) Remove the axle jack(s) from the airplane (AMM 07-11-03/201).

MAIN GEAR WHEEL BRAKE - INSPECTION/CHECK

1. General
   A. This procedure contains two tasks. The first task is an inspection of the landing gear brakes with the wheel installed. The second task is an inspection of the landing gear brakes with the wheel removed.
   B. This procedure gives instructions to do a check of the landing gear brakes for these conditions:
      hydraulic fluid leaks.
      adjuster and pressure plate movement.
      brake lining wear.
      missing wear pins.
   C. Some BF Goodrich brakes have plastic tags that show "ALTERNATE WORN BRAKE RTO COMPLIANCE". These tags are near the brake wear pins. The tags are put on brakes that comply with FAA worn brake requirements. You can ignore these tags during this procedure.

TASK 32-41-10-946-003

2. Prepare for the Inspection
   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
          731 Left Main Landing Gear
          741 Right Main Landing Gear

   C. Procedure

      S 496-020
      (1) Make sure that the downlocks are installed on the nose and main landing gear (Ref 32-00-20).

      S 496-001

      WARNING: USE THE PROCEDURE IN AMM 32-00-15 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 (Ref 32-00-15).

      S 866-002
      (3) Release the parking brake.

TASK 32-41-10-616-004

3. Landing Gear Wheel Brake Inspection (With the Wheel Installed)

A. Procedure

S 946-005

(1) Do the Prepare for Inspection Procedure (Ref par. 2).

S 796-021

CAUTION: DO NOT LET BRAKE FLUID GET ON THE BRAKE LININGS. IF BRAKE FLUID GETS ON THE BRAKE LININGS, THE BRAKES WILL NOT OPERATE CORRECTLY.

(2) Do a check of the brake(s) for hydraulic fluid leaks as follows:
   (a) Remove the pressure from the main hydraulic system (Ref 29-11-00).
   (b) Do a check of the brakes for leaks at these locations:
      1) All hydraulic line connections.
      2) Bleed ports.
      3) Inlet ports.
      4) Ports that drain hydraulic fluid.
      5) Plugs in the piston housing.
      6) Pistons.
   (c) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).
   (d) Fully apply and release the left and right captain's or first officer's brake pedals five times.
   (e) With the brake pedals not applied, do a check of the brakes for fluid leaks at these loctions:
      1) Brake pistons.
      2) Brake housing ports.
      3) Inlet and drain ports.
      4) Bleed ports.
   (f) If the total leakage per brake at the above locations is greater than 1 drop/minute with the brake pedals not applied, repair the leak(s) or replace (or deactivate if applicable) the brake prior to dispatch.

(g) Slowly apply the brake pedals to the stops, the parking brake may be set.
(h) While you apply the brake pedals, do a check of the brakes for fluid leaks at the same locations as in Step (e) above.
(i) If the total leakage per brake at the above locations is greater than 5 drops/minute while the brakes are being applied, repair the leak(s) or replace (or deactivate if applicable) the brake prior to dispach.
(j) 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 require.
(k) The brake must be removed, inspected, and cleaned in accordance wth the brake supplier component maintenance manual if it is suspected that a brake has been exposed to significant levels of contamination. Signs of contamination include a wet or oily appearance, buildup of charred residue, or heavy smoke after landing.

S 716-007

(3) Do the check that follows to make sure that the brakes operate:
(a) Apply the brakes and hold them.
(b) Look at the rotors and stators on the brakes to make sure that they engage.
(c) Release the brakes.
(d) Look at the rotors and stators on the brake to make sure that they disengage.

S 216-024

(4) AIRPLANES WITH BF GOODRICH STEEL BRAKES;
do a check of each brake for missing brake adjusters and do the steps that follow if one or more brake adjusters are missing:

NOTE: Each brake has six brake adjusters.

(a) Replace the brake if two or more brake adjusters are missing.
(b) You can continue the brake in service if a maximum of one brake adjuster is missing if you do the steps that follow:
1) Do a check of the differential pressure indicator on the right and left hydraulic system return filters as shown in 29-11-00/601.
2) Replace the brake at the next maintenance stop where brakes are available.

S 216-027
(5) Do a check for missing brake wear indicator pins.

NOTE: Each brake has two brake wear indicator pins.

(a) If two brake 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 wear pin operation is satisfactory.

S 216-010
(6) Do a check for permitted brake wear as follows:
(a) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).
(b) Push the brake pedals fully forward and hold them in this position.
(c) Measure the dimension "L" (Fig. 601 and Fig. 601A)) at the two indicator pin locations on each brake.
(d) Replace the brake if a "L" dimension is zero (flush) or less.

TASK 32-41-10-216-011
4. Landing Gear Brake Inspection (With the Wheel Removed)
A. Procedure

S 216-012
(1) Do the Prepare for Inspection procedure (Ref Par. 2).

S 216-013
(2) Examine the brake assembly for these types of damage that can cause leaks or a malfunction of the brake:
(a) Cracks that you can see.
(b) Parts that are broken.
(c) Parts that have much wear.

S 716-014
(3) Do the checks that follow while you operate the brakes as follows:
(a) Apply and release the brakes fully a minimum of five times and do these checks for each cycle of the brake:
1) Make sure that the brake operates and the pressure plate moves freely while the brake operates.
2) Make sure that the pressure plate goes to the initial position after each time that you apply the brake.
3) Make sure that the adjuster pins go to their initial position after each time that you apply and release the brake.

(b) Do a check to make sure that the brake clearance is not less than 0.060 inch at four locations around the perimeter of the brake.

1) Measure this clearance between the pressure plate assembly and the adjacent rotor at four locations that are an equal distance apart.

NOTE: The minimum clearance can be 0.050 inch for a brake that is in service.

TASK 32-41-10-866-022

5. Put the Airplane Back to Its Usual Condition

A. References

(1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

(2) 32-00-15/201, Landing Gear Door Locks

B. Access

(1) Location Zones

731 Left Main Landing Gear

741 Right Main Landing Gear

C. Procedure

S 866-017

(1) Set the parking brake.

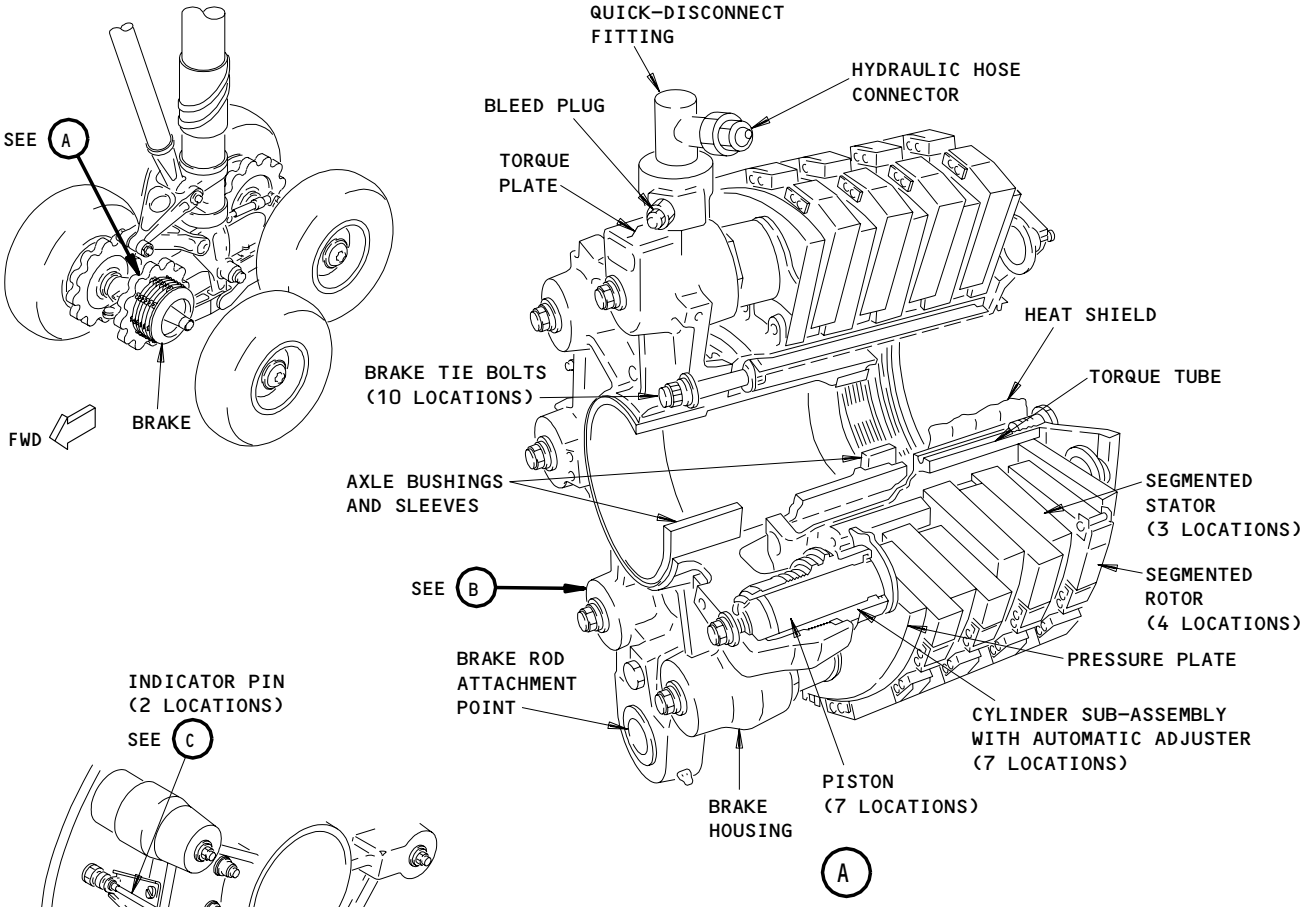
S 866-018

(2) Remove the power from the right hydraulic system if it is not necessary (Ref 29-11-00).

S 096-019

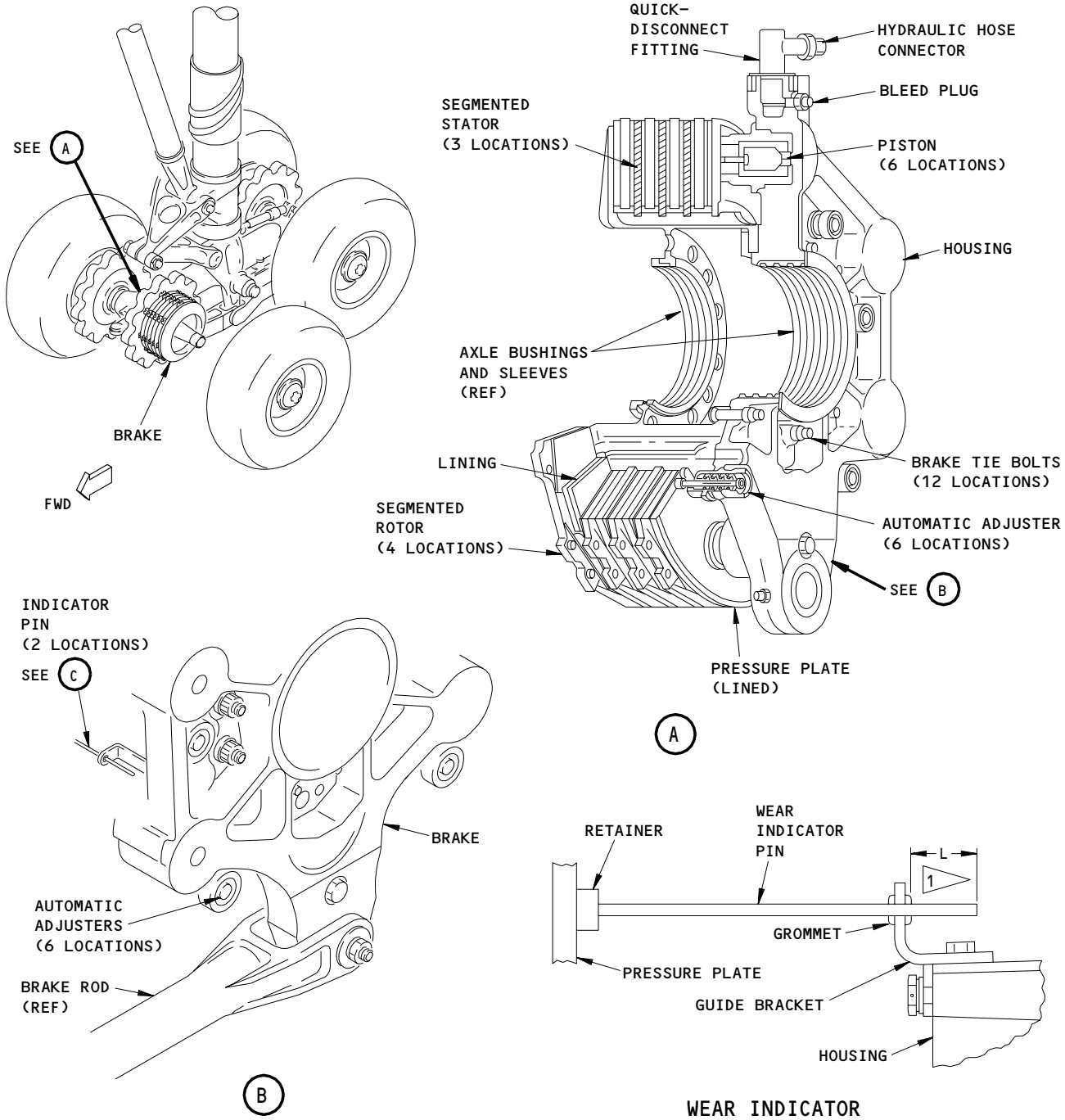
WARNING: USE THE PROCEDURE IN AMM 32-00-15 TO REMOVE THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Remove the locks from the landing gear doors and close the doors (Ref 32-00-15).



1 DIMENSION "L" IS AN INDICATION OF HOW MUCH MORE THE BRAKE CAN WEAR BEFORE IT MUST BE REPLACED. WHEN DIMENSION "L" IS ZERO (WEAR INDICATOR PIN DOES NOT COME OUT OF THE PIN SUPPORT TUBE) THE BRAKE MUST BE REPLACED

Brake Wear Check
Figure 601



1 DIMENSION "L" IS AN INDICATION OF HOW MUCH MORE THE BRAKE CAN WEAR BEFORE IT MUST BE REPLACED. WHEN DIMENSION "L" IS ZERO (WEAR INDICATOR PIN DOES NOT COME OUT OF THE GROMMET ON THE GUIDE BRACKET) THE BRAKE MUST BE REPLACED

Brake Wear Check
Figure 601A

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 32-41-14-004-001

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 494-002
      (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 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.

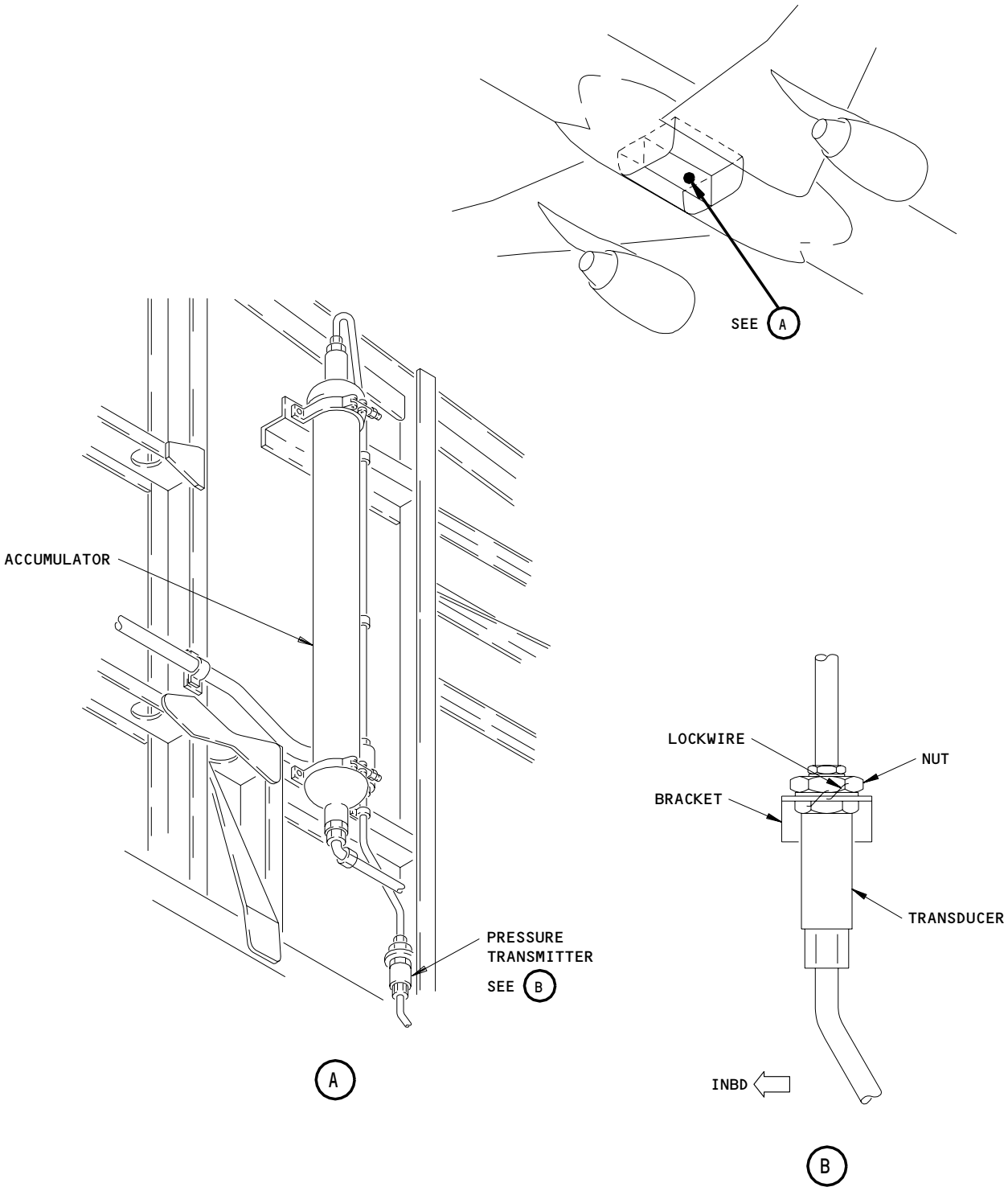
      (2) Open the doors for the main landing gear and install the door locks (AMM 32-00-15/201).

      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 left and right hydraulic systems (AMM 29-11-00/201).

      S 864-007
      (6) Fully push the brake pedals down a minimum of seven times to remove the pressure from the accumulator.



Accumulator Pressure Transducer Installation
Figure 401

S 864-008
(7) Open this circuit breaker on the overhead panel, P11, and attach DO-NOT-CLOSE tag:
(a) 1180, BRAKE PRESS

S 034-009
(8) 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.

(9) 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 034-011
(1) Disconnect the electrical connector from the transducer.

S 024-012
(2) Disconnect the tube from the top of the transducer.

S 034-013
(3) Remove the union and packing.

S 964-014
(4) Discard the packing.

S 024-016
(5) Remove the lockwire, the nut and the 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 644-018
(1) Lubricate the new packing.

S 434-019
(2) Install the new packing and union into the transducer.

S 424-020
(3) Install the transducer and nut into the bracket.

S 434-021
(4) Install lockwire on the nut.

S 434-023
(5) Connect the tube to the top of the transducer.

S 424-024
(6) Connect the electrical connector to the transducer.

S 864-025
(7) Pressurize the accumulator (AMM 12-15-04/301).

S 434-026
(8) Install the cap on the charging valve.

S 214-027
(9) Use a soap solution at the tube connection to examine for leaks.

F. Do a Check of Transducer Operation

S 724-028
(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 724-029

(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 864-030

(1) Pressurize the left and right hydraulic systems (AMM 29-11-00/201).

S 864-031

(2) Set the parking brakes (AMM 10-11-01/201).

S 414-032

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.

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

S 864-033

(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 has these tasks:
      (1) A removal of the hydraulic brake pressure indicator (flight compartment).
      (2) An installation of the hydraulic brake pressure indicator (flight compartment).
   B. In this procedure, the hydraulic brake pressure indicator is referred to as the pressure indicator.

TASK 32-41-15-004-001

2. Hydraulic Brake Pressure Indicator (Flight Compartment) Removal
   A. Access
      (1) Location Zone
          212 Control Cabin, RH

   B. Prepare for the Removal

      S 844-002
      (1) Open this circuit breaker on the overhead panel, P11, and attach a DO-NOT-CLOSE tag:
          (a) C1180, LANDING GEAR BRAKE PRESS IND
   C. Procedure

      S 014-003
      (1) Do these steps to remove the pressure indicator:
          (a) Loosen the four quick-release fasteners that hold the P3-1 panel to the airplane.
          (b) Pull the P3-1 panel away from the main panel.
          (c) Disconnect the electrical connector (2) from the pressure indicator (1).
          (d) Loosen the clamp that holds the pressure indicator (1).

              NOTE: The clamp has two bolts, the bolt on the right holds the clamp to the P3-1 panel, the bolt on the left loosens the clamp.

              1) Loosen the bolt on the left side of the pressure indicator (1) until the pressure indicator (1) can be removed from the P3-1 panel.

                 NOTE: Do not loosen the bolt on the right side of the pressure indicator (1).

          (e) Remove the indicator (1) from the P3-1 panel.

TASK 32-41-15-404-004

3. Hydraulic Brake Pressure Indicator (Flight Compartment) Installation

A. 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 32-00-15/201, Landing Gear Door Locks
(4) AMM 32-00-20/201, Landing Gear Downlocks

B. Access

(1) Location Zone
212 Control Cabin, RH

C. Hydraulic Brake Pressure Indicator Installation

S 424-005

(1) Do these steps to install the indicator:
(a) Hold the pressure indicator (1) on the P3-1 panel.
(b) Tighten the clamp that holds the pressure indicator (1).

NOTE: The clamp has two bolts, the bolt on the right holds the clamp to the P3-1 panel, the bolt on the left tightens the clamp.

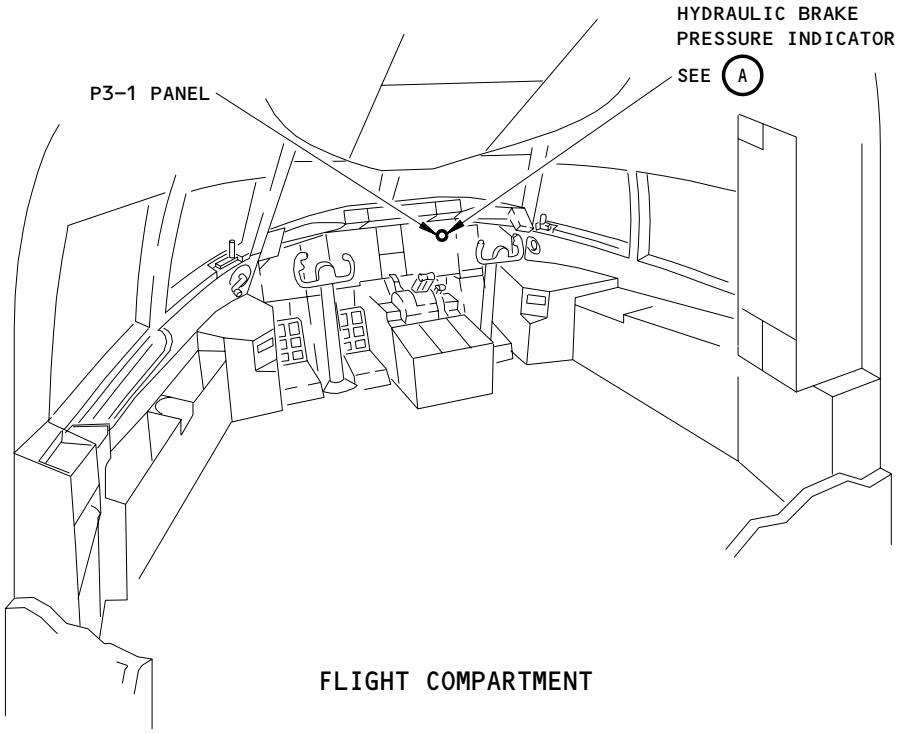
1) Make sure the bolt on the right side of the pressure indicator (1) is tight.
2) Tighten the bolt on the left side of the pressure indicator until the pressure indicator (1) is firmly held to the P3-1 panel.

(c) Connect the electrical connector (2) to the pressure indicator (1).
(d) Hold the P3-1 panel on the right forward panel.
(e) Tighten the quick-release fasteners which hold the P3-1 panel to the airplane.
(f) Close the circuit breaker on the overhead panel, P11, and remove the DO-NOT-CLOSE tag.
1) C1180, LANDING GEAR BRAKE PRESS IND

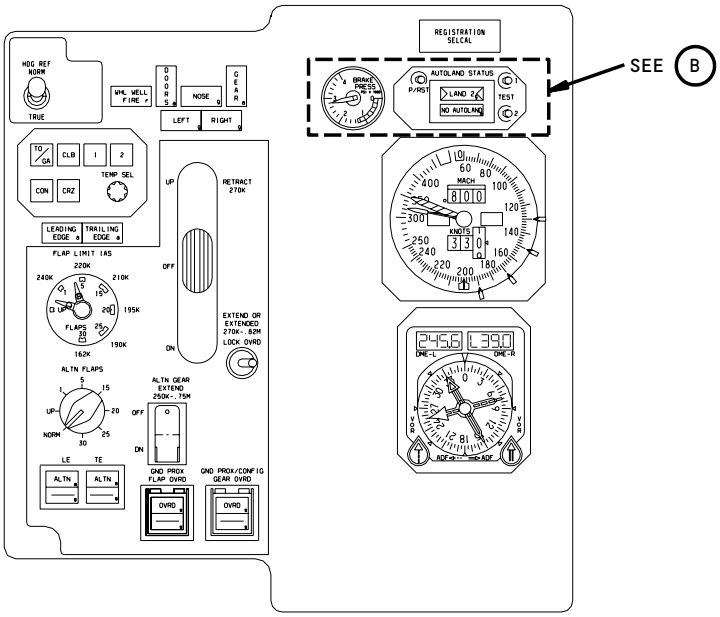
D. Hydraulic Brake Pressure Indicator Installation Test

S 844-006

(1) Prepare for the test:
(a) Make sure the downlocks are installed on the main and nose landing gear (AMM 32-00-20/201).
(b) Install the door locks (AMM 32-00-15/201).



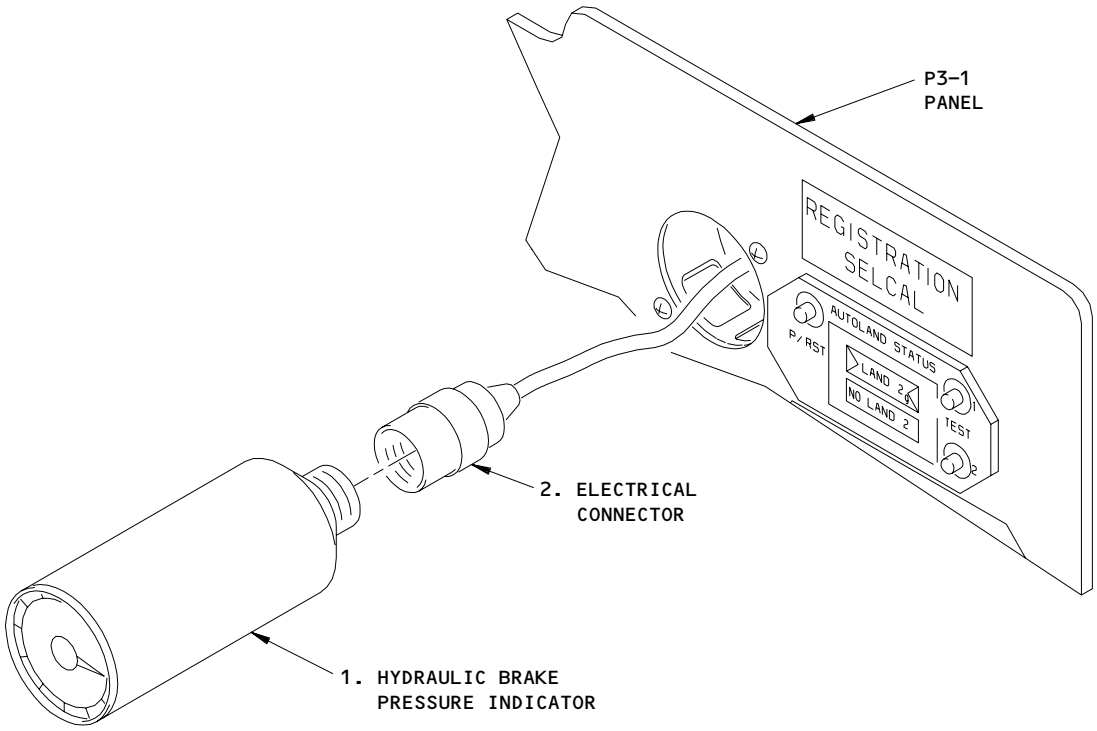
FLIGHT COMPARTMENT



P3-1 PANEL
(EXAMPLE)

A

Hydraulic Brake Pressure Indicator Installation
Figure 401 (Sheet 1)



HYDRAULIC BRAKE PRESSURE INDICATOR (P3-1)

(B)

Hyrdaulic Brake Pressure Indicator Installation
Figure 401 (Sheet 2)

(c) In the installation test, for each pressure reading, compare the pressure measured by the brake accumulator pressure gage in the flight compartment with the brake accumulator pressure gage in the wheel well. Make sure the compared pressure values are approximately the same.
(d) Supply electrical power (AMM 24-22-00/201).

S 714-007
(2) Do these steps to make sure it operates correctly.

WARNING: KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Pressurize the right hydraulic system (AMM 29-11-00/201).
(b) Make sure the pressure indicator (1) shows approximately 3000 psig.
(c) Remove the pressure from the right hydraulic system (AMM 29-11-00/201).
(d) Make sure the tires have chocks around them.
(e) Release the parking brake.
(f) Fully push the captain's brake pedals 12 times to remove the pressure from the brake accumulator.
(g) Make sure the brake pressure indicator gage (flight compartment) shows approximately 1000 psig.

E. Put the Airplane Back to the Usual Condition

S 864-008
(1) Set the parking brake.

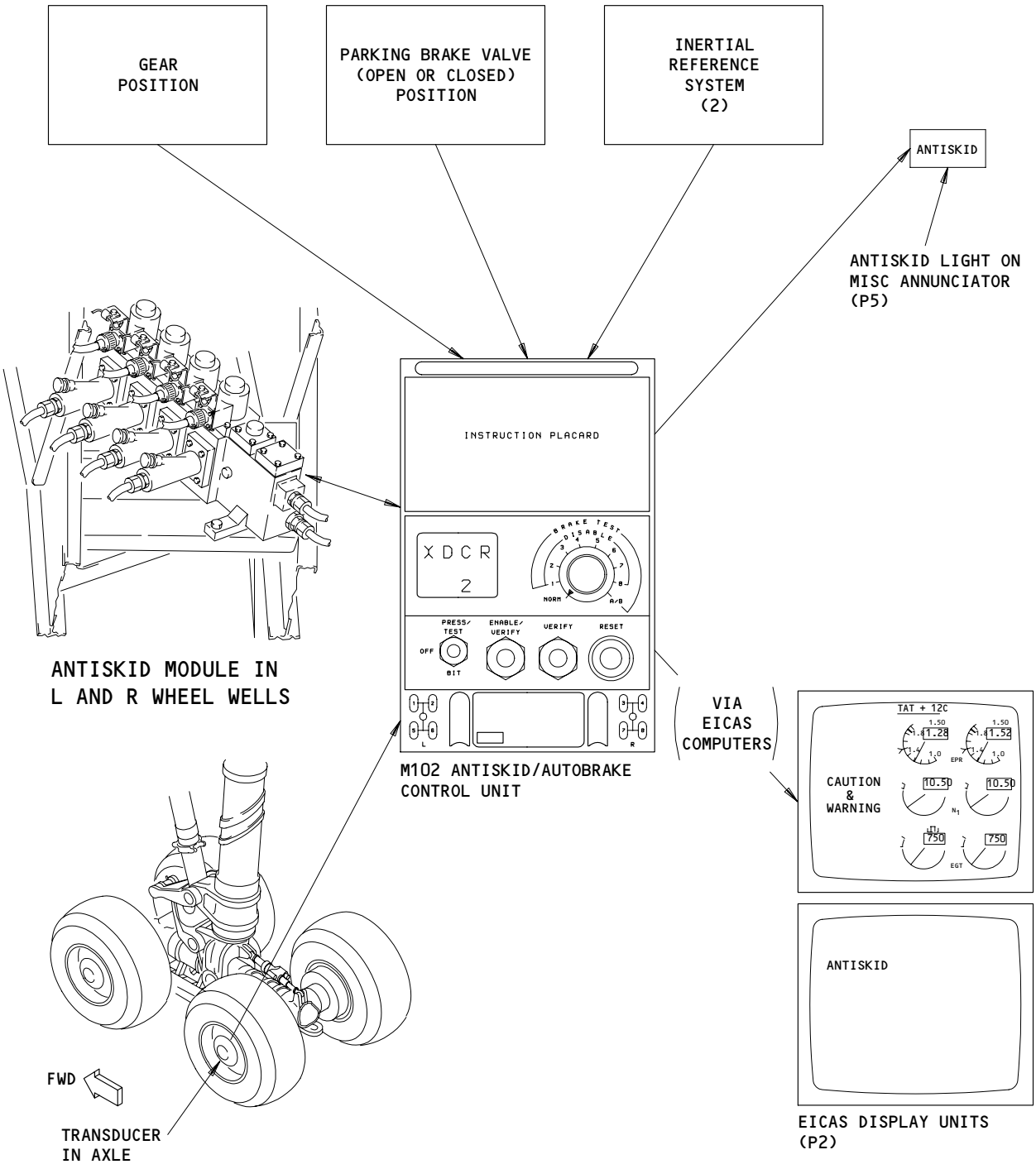
S 864-009
(2) Remove the chocks from the wheels.

S 864-010
(3) Remove the door locks from the landing gear doors (AMM 32-00-15/201).

S 864-011
(4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

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 the 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.
   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 ANTISKID fault light on pilots' overhead panel (P5) illuminates. The Engine Indication and Crew Alerting System (EICAS) display on pilots' center instrument panel will show the ANTISKID advisory message (Ref 31-41-00).
      (5) The system requires the following airplane interface inputs:
         (a) Inertial Reference System (IRS) speed data (Ref 34-21-00)
         (b) Landing gear position (down and locked or not down and locked) signal (Ref 32-61-00)



Antiskid System
Figure 1

(c) Parking brake valve position signal (Ref 32-44-00)

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.

(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 system. The RTO mode on takeoff can be deactivated by placing the AUTOBRAKES selector switch to OFF or by operating brake pedals for > 750 psi brake metered pressure.

(4) The AUTOBRKS/ANTISKID TEST/IND 1 and AUTOBRKS/ANTISKID TEST/IND 2 circuit breakers on panel P11 simultaneously provide 28 v dc power to the system. When power fails, an AUTOBRAKES light on pilots' center instrument panel illuminates. The EICAS display will show the AUTOBRAKES advisory message. Both AUTOBK ANTISKID TEST IND 1 and AUTOBK ANTISKID TEST IND 2 circuit breakers provide power for testing the system.

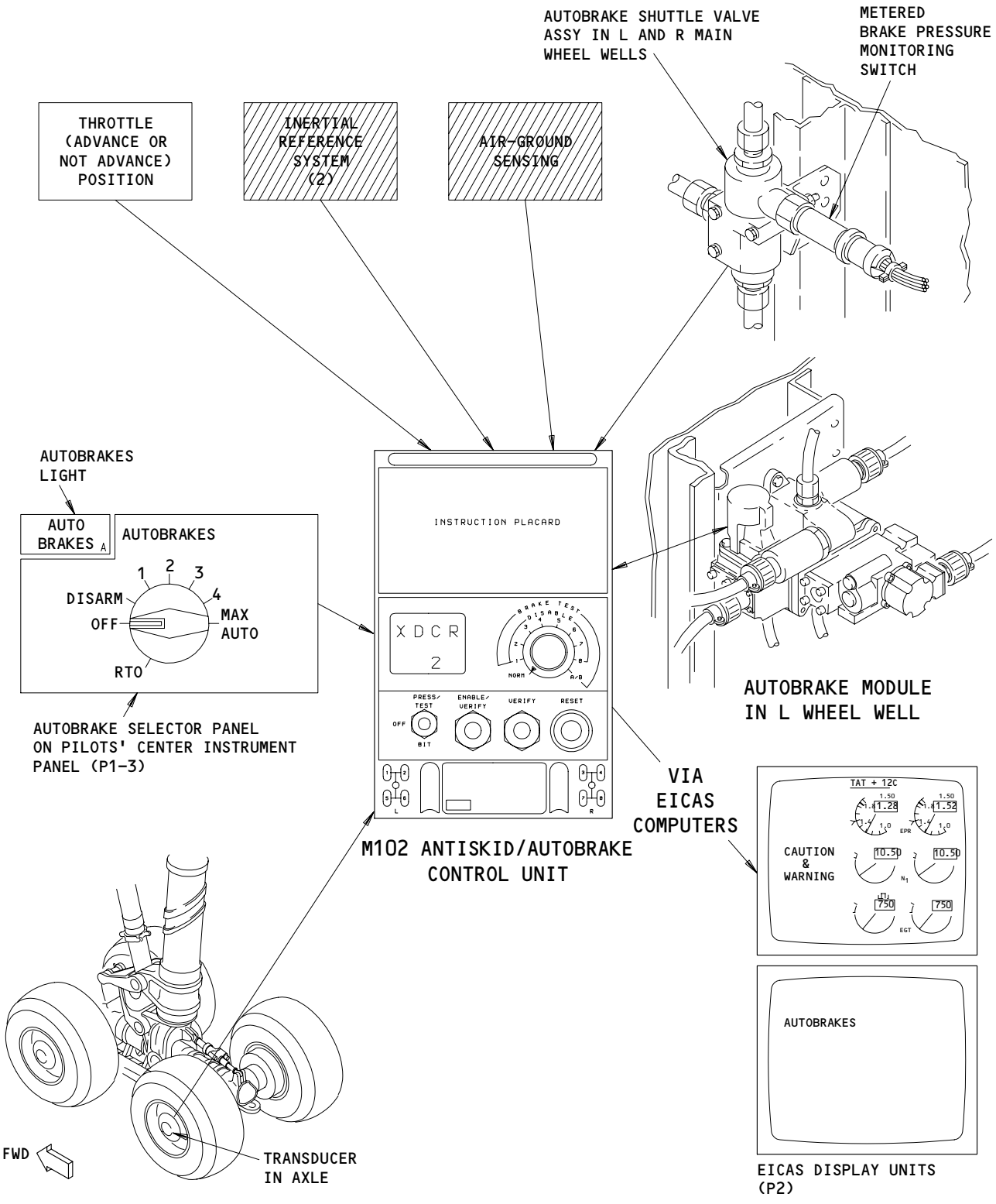
(5) The system requires the following airplane interface inputs:

(a) An operational (no fault) antiskid system.

(b) IRS data

(c) Landing gear air/ground signal (Ref 32-09-02)

(d) Thrust levers position (advanced or not advanced) signal (Ref 76-11-00)



Autobrake System
Figure 2

(e) Spoiler handle position (fully extended or not fully extended) signal (Ref 27-61-00)

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):
(1) Transducer (8)
(2) Antiskid module, normal system (2)
(3) Antiskid module, alternate system (2)
(4) ANTISKID fault light on P5 (1)
(5) Antiskid shuttle valve module (2)
(6) Antiskid/autobrake control unit, M102 (1)
(7) Autobrake selector switch on P1-3 (1)
(8) Autobrake module (1)
(9) Autobrake shuttle valve assembly (2)
(10) AUTOBRAKES light on P1-3 (1)

2. Component Details

A. Antiskid/Autobrake Crew Control Panels and Annunciators (Fig. 1, Fig. 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 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 instrument panel P1-3, is a rotary, magnetic-latching eight position switch. The switch performs the following functions:

1) Provide 28 v dc power to the antiskid/autobrake control unit.
2) Select 1, 2, 3, 4 or MAX AUTO airplane deceleration level, or 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 selector 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: The light only comes on if RTO is initiated and a failure exists.

(b) When the selector switch is at 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)

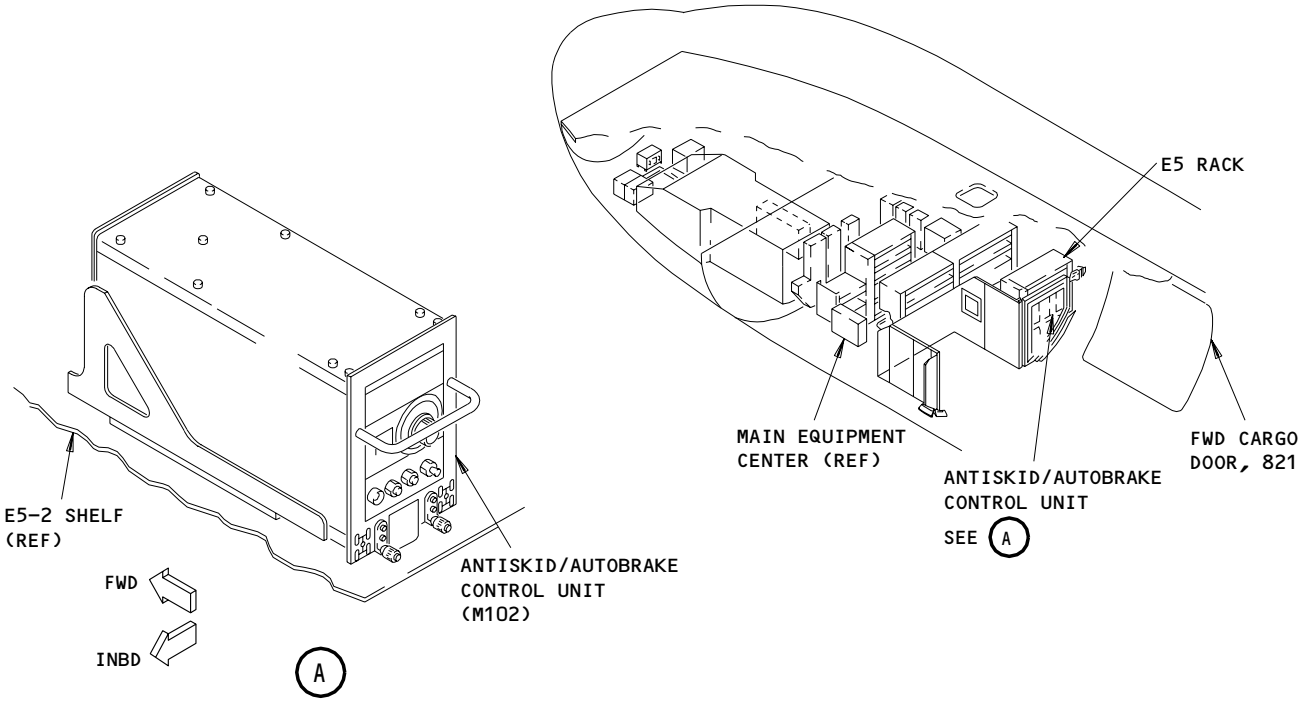
(1) The control unit (M102) compares each wheel speed with the IRS ground speed for touchdown and hydroplane protection. A change in speed causes a change in control signal to increase or decrease hydraulic pressure to the brakes.

(2) The unit, located in the E5 rack of the main equipment center, contains the following:

(a) Four identical dual main wheel cards.

(b) One autobrake card.

(c) One BITE card.



Antiskid/Autobrake Control Unit
Figure 3

(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.

(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.

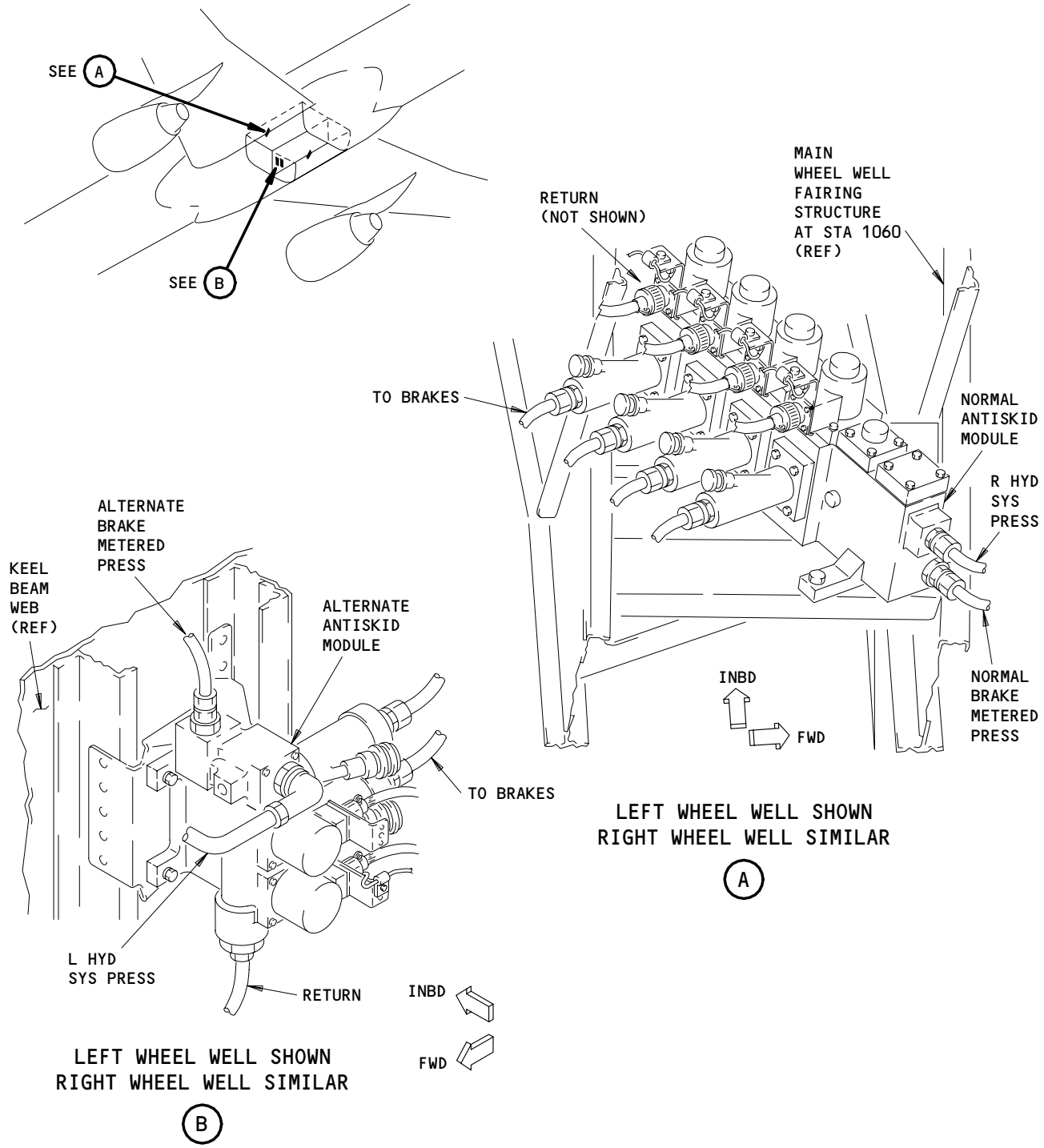
(6) The autobrake card performs all autobrake functions, including control, logic, interface and BITE. The card shares with wheel cards for wheel speed and system test information. A driver circuit in the card provides signal to the AUTOBRAKES light and the EICAS computers when autobrake system fails.

(7) Both wheel cards and autobrake card contain self test and status circuits. The circuits check the system for fault and provide status to the 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)



Antiskid Module Installation
Figure 4

(1) Two 4-valve antiskid modules are used in the normal brake system. The modules are located in the left and right main wheel well fairing structure, near the wheel well ceiling, just aft of the left and right hydraulic system reservoirs. 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 and the fuses, shutoff valve, and inlet filters are separate component LRUs. The valves and filters can be removed for inspection without disconnecting hydraulic lines.

D. Antiskid Module (Alternate) (Fig. 4)

(1) Two 2-valve antiskid modules are used in the alternate brake system. The modules are located at the keel beam web on a mounting support bracket in left and right main wheel wells. 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 which positions the armature between two nozzles, pressure and return.

(c) The second stage 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 both the normal and alternate hydraulic systems 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 through out the braking range, independent of applied brake pressure.

(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

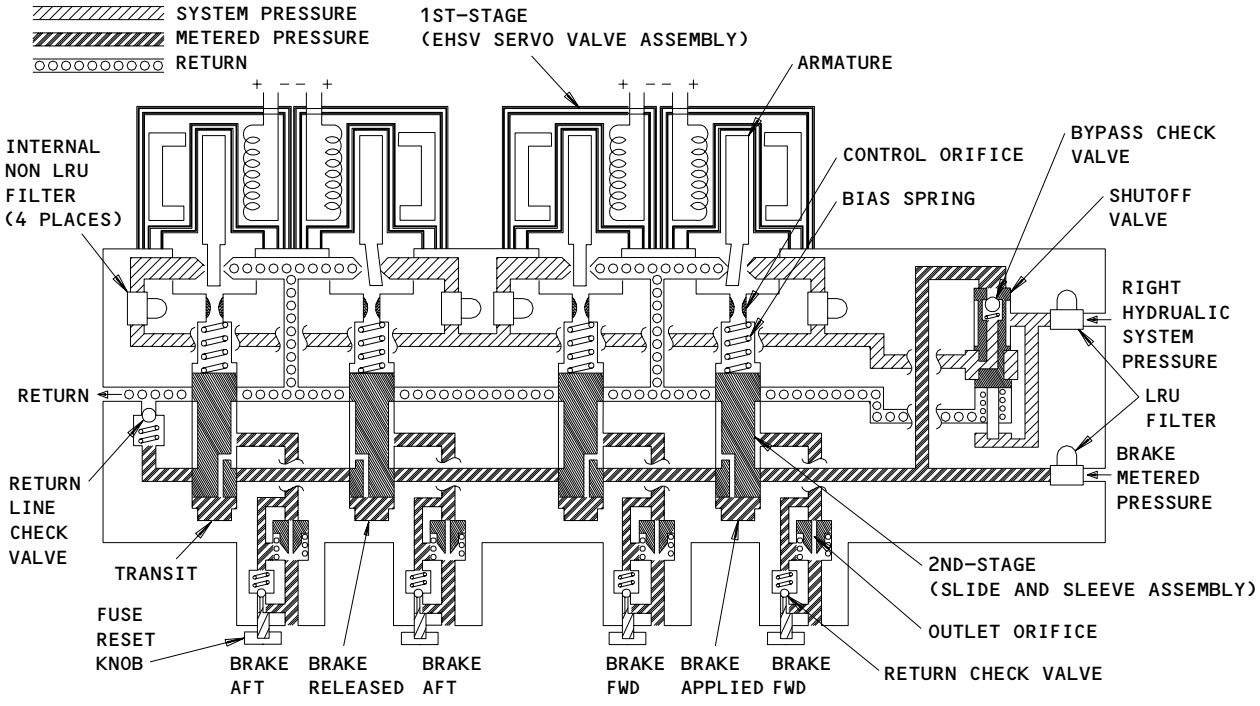
(a) A module return line check valve provides free flow from the metered pressure port to the antiskid valve via the shutoff valve, and prevents residual pressure in the brake return line.

(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)

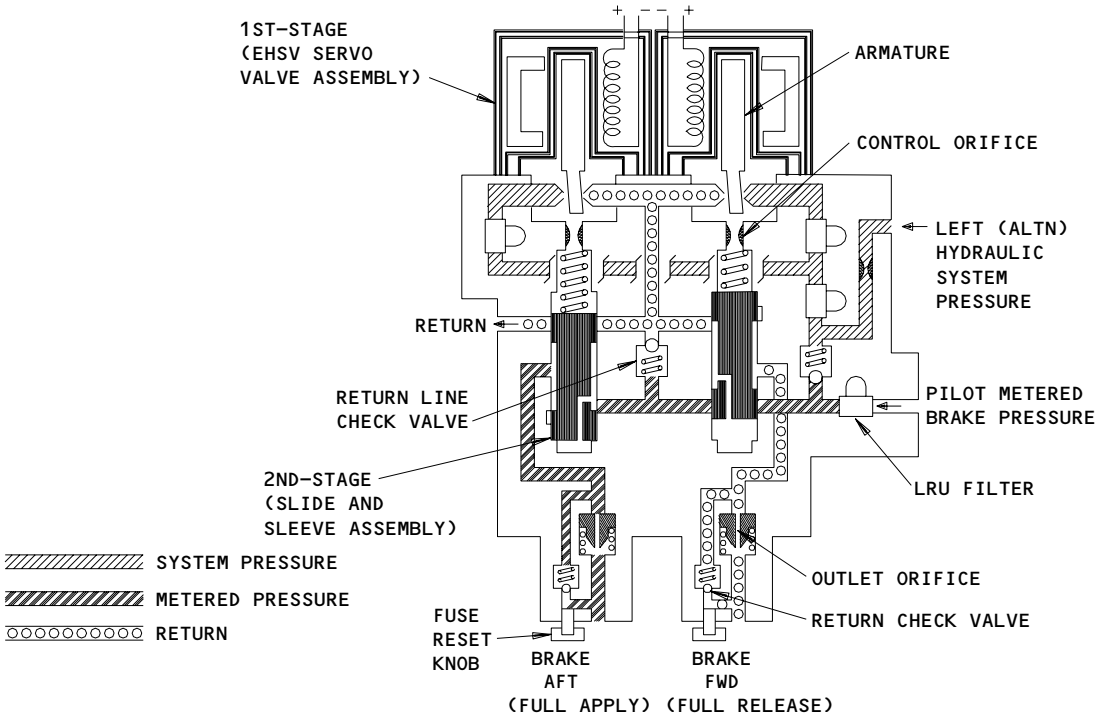
(1) The torque motor armature in the first stage of the antiskid valve (servo valve assembly) sits itself between two nozzles as a function of input current. One nozzle is supplied with system pressure and the other is connected to return. With no command applied, the motor moves the armature against the return nozzle and control pressure equals supply pressure. With full current supplied, the motor moves the 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)



Antiskid Module (Alternate) Functional Schematic
Figure 6

(1) The alternate module functions the same as the normal module except that the module requires no shutoff valve or restrictor in its operation.

H. Antiskid Shuttle Valves (Fig. 7)

(1) The module contains four identical valves. Each valve is independent and pressure operated. Two modules are located one each at left and right main wheel well ceiling, just forward of the main gear uplock assembly. Each valve shuttles pressure between normal and alternate systems.

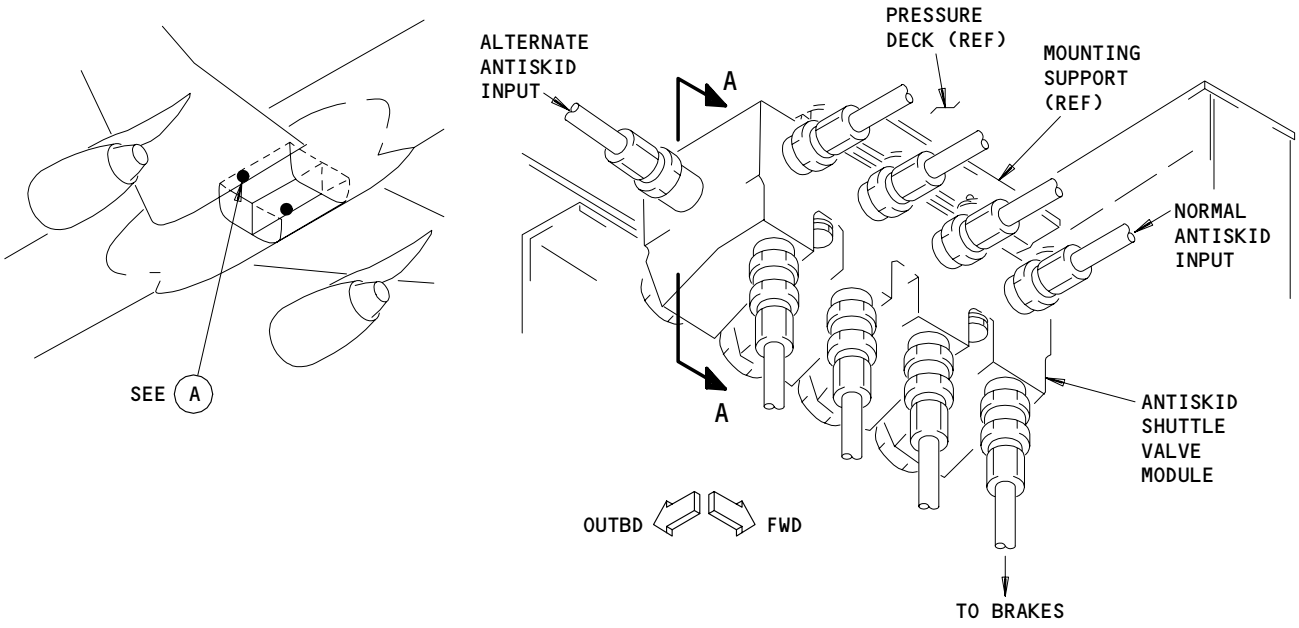
(2) The valve consists of an LRU valve assembly and an LRU filter. The valve has a manual override plug feature. The filter prevents system from contamination.

(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 with a ring to allow an indicator tag to be tied to it while being used.

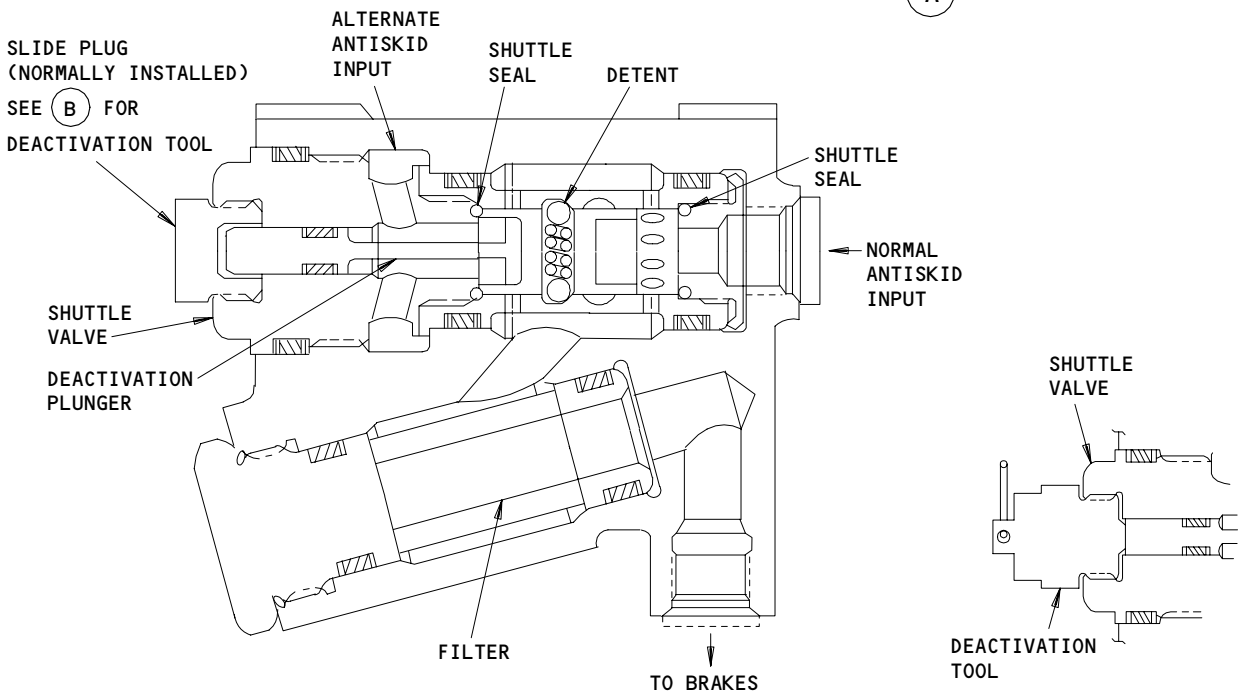
I. Antiskid Wheel Speed Transducers (Fig. 8)

(1) 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 rotar 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.



LEFT WHEEL WELL SHOWN
RIGHT WHEEL WELL SIMILAR

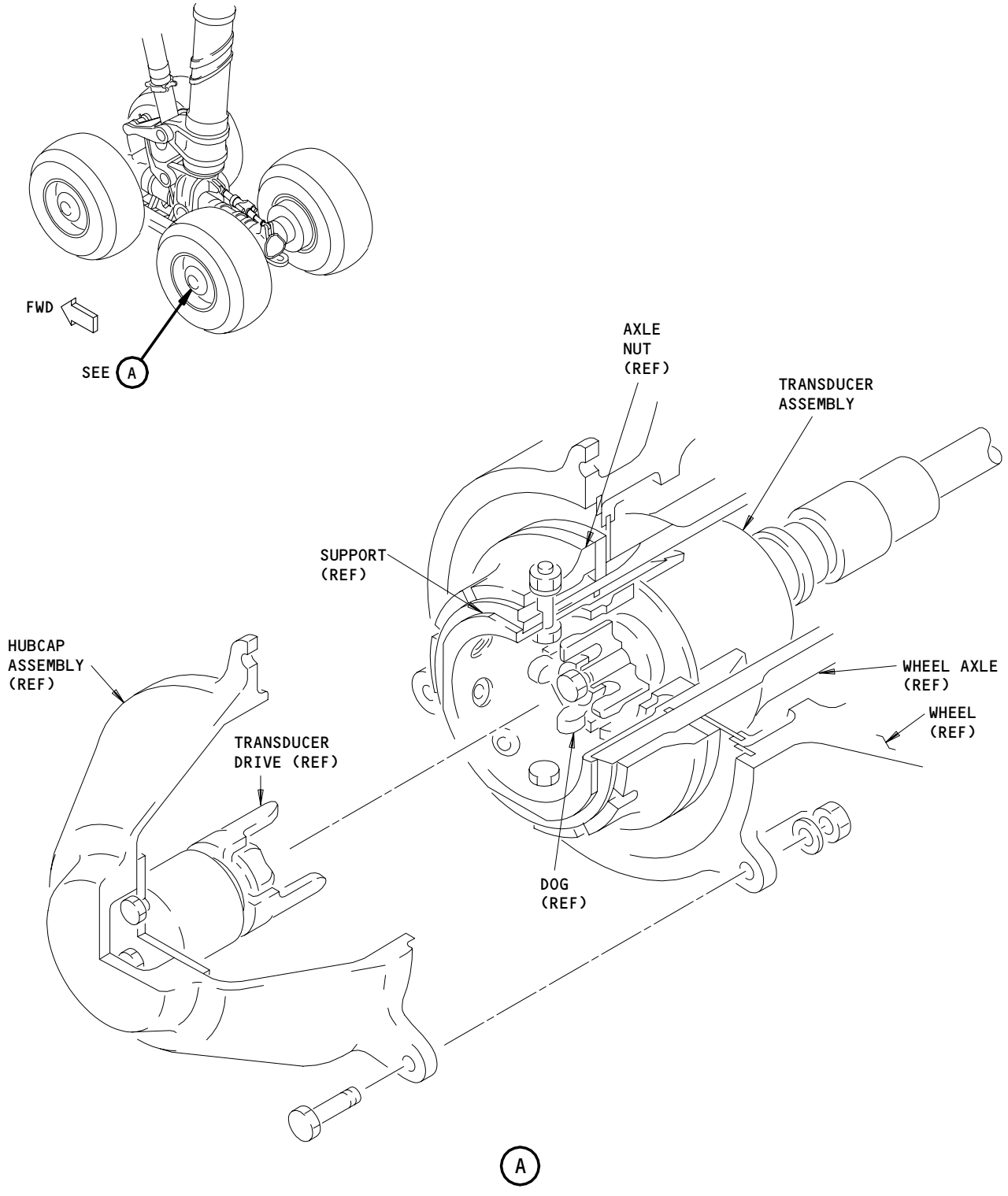
A



A-A

B

Antiskid Shuttle Valve
Figure 7

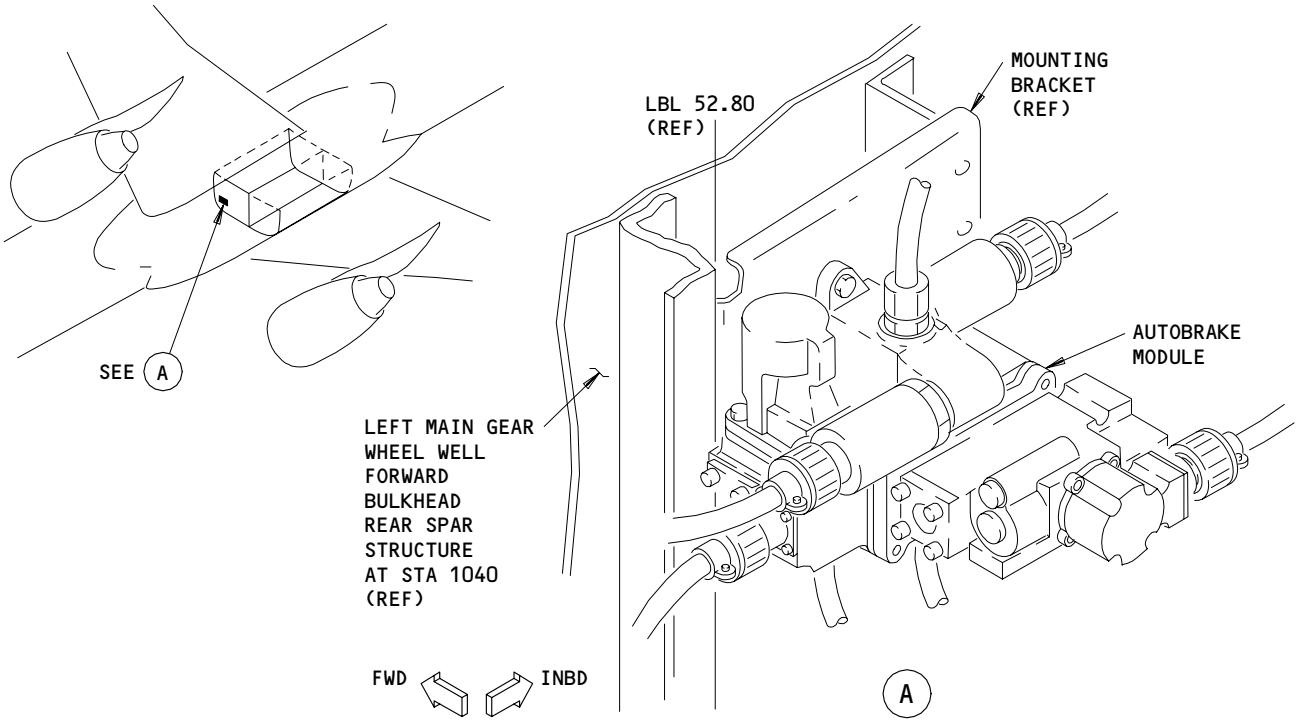


Antiskid Wheel Speed Transducer
Figure 8

(2) 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)

(1) The autobrake module is connected to the normal brake lines, and is located on the forward bulkhead of the left main gear wheel well. The module contains an electric hydraulic pressure control servo valve (EHSV) (hereinafter called the pressure control valve), an upstream three-way solenoid shutoff valve (hereinafter 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.



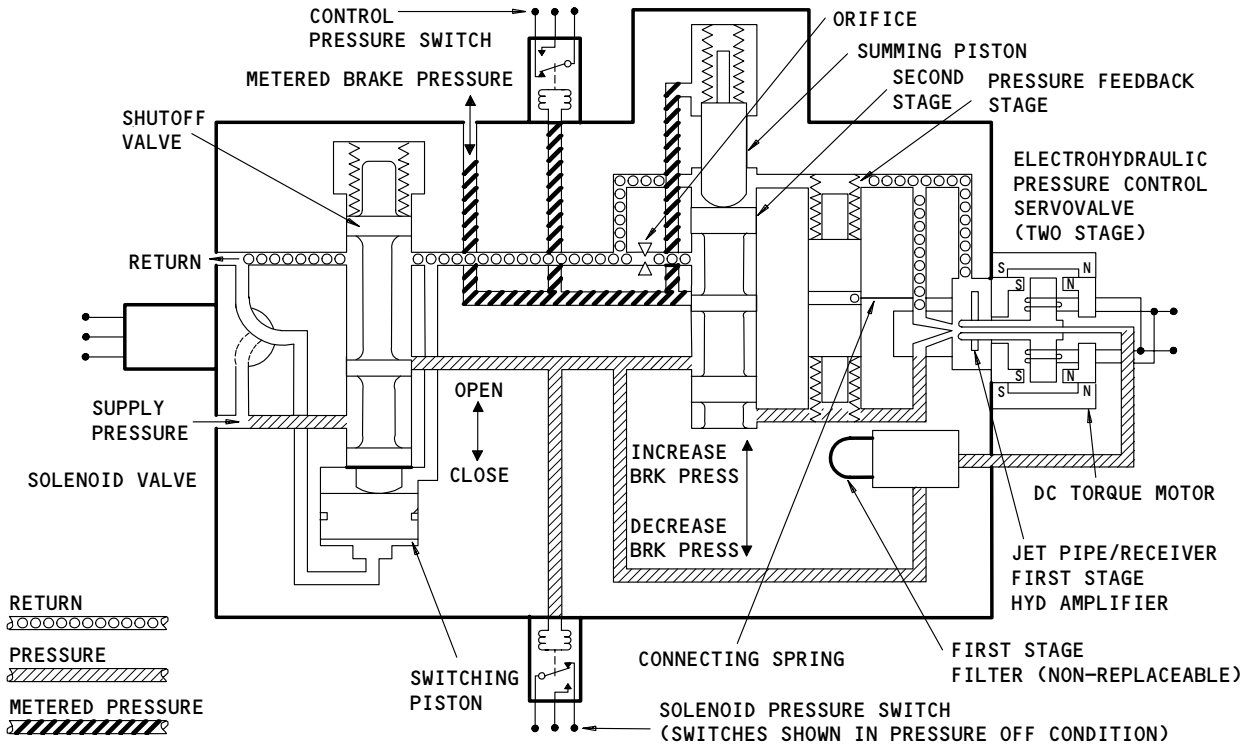
Autobrake Module
Figure 9

(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)

(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 1000 psi) pressure. If the selector switch is at OFF and the solenoid pressure switch shows high pressure, the AUTOBRAKES light will come on.



Autobrake Module Schematic
Figure 10

(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 pressure control 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 a 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 on left and right wheel well forward bulkhead. 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.

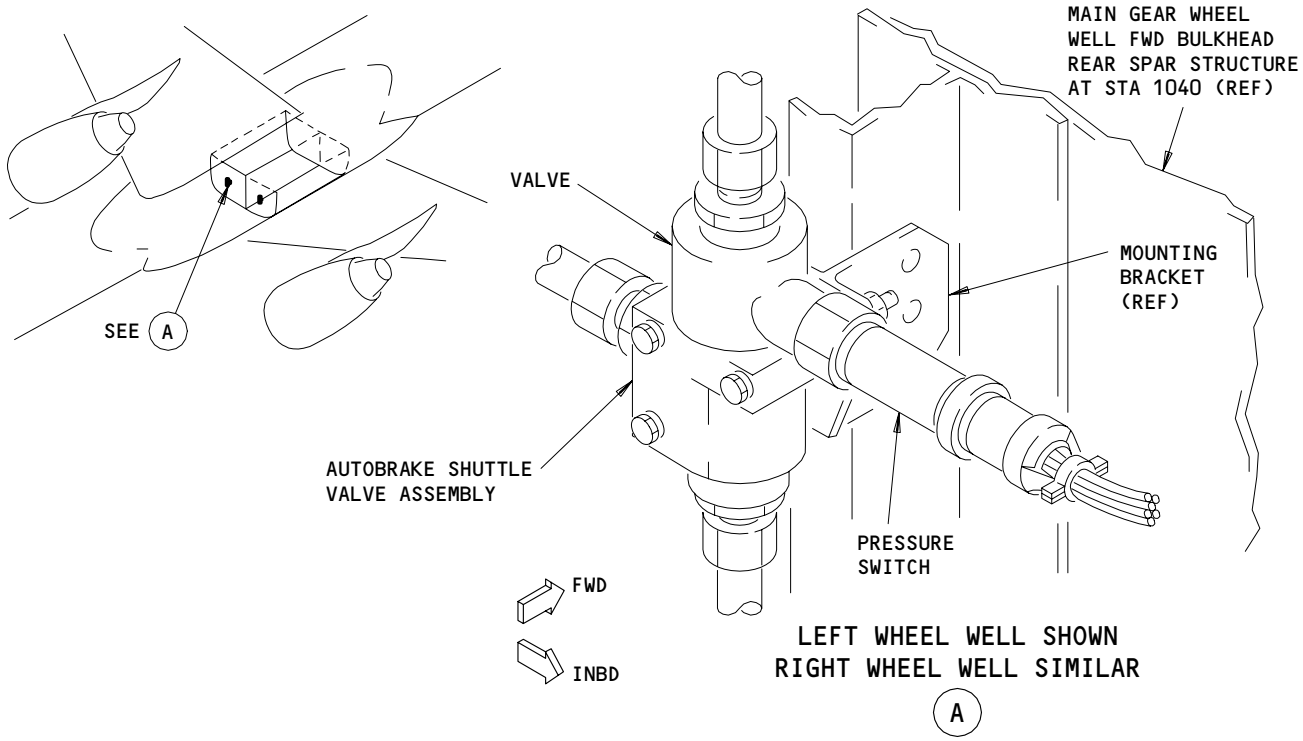
(3) The pressure switch, connected to the normal input port, checks pressure downstream of the normal brake metering valves. When manual braking effort exceeds 750 psi on either the left or right pedal, the switch opens to provide an input to the control unit to disarm the system.

3. Operation

A. Functional Description

(1) Antiskid system simplified

(a) Four circuit breakers (ANTISKID 1-5, 2-6, 3-7, 4-8) on P11 provide 28 v dc power to the control unit. Four main wheel cards in the unit compare IRS speed data inputs with wheel speed. 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.



Autobrake Shuttle Valve Assembly
Figure 11

(b) The AUTOBK ANTISKID TEST IND 1 and AUTOBK 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 antiskid functions include IRS speed data, and landing gear and parking brake lever position signals. The parking brake valve is checked for open to ensure antiskid function.

(2) Antiskid electrical power and system inputs

(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 AUTOBK ANTISKID TEST IND 1 and AUTOBK 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 L or R IRS select relay to energize to provide the alternate IRS speed data from the center IRS system.

(c) The PSEU (Proximity Switch Electronics Unit) provides gear down signal to all wheel cards for antiskid system operation.

(3) Antiskid control schematic

(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.

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 speed compares 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 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 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. 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) The gear up signal (when the left and right landing gears are not down and locked) inhibits the alternate valve drivers for 12.5 ±0.5 seconds. This is to allow the alternate system brake pressure (left system pressure) stops the wheels before gear is retracted into 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
   (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 flow thru the fuses to the shuttle valve module and then on to the brakes.
   (b) Wheel speed signal from transducer provides the required data input to the control unit. The unit compares the wheel speed with the airplane ground speed to provide a control signal to the normal and alternate valves. The valves limit the pressure to the brakes. System for right and left landing gear is similar.
(5) Autobrake system simplified
   (a) The AUTOBK ANTISKID TEST IND 1 and AUTOBK 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 > 750 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) Both AUTOBK ANTISKID TEST IND 1 and AUTOBK ANTISKID TEST IND 2 circuit breakers on P11 simultaneously 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

(a) Autobrake system inputs

1) The AUTOBK ANTISKID TEST IND 1 and AUTOBK 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 full pressure (3000 psi) 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) The autobrake system automatically applies brake pressure selected by the pilot:

Autobrake Selector Switch At	Brake Pressure (psi)	Decel Level (ft/sec/sec)
1	1500	4.5
2	1750	5.0
3	2000	6.3
4	2400	8.5
MAX AUTO	3000	11.0
RTO	3000	*[1]

*[1] Decel rate not controlled in RTO mode, max system pressure applied without on-ramp

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, MAX AUTO or RTO) has been selected
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. Brake pressure switches (both left and right) show low pressure
7. When conditions 1. thru 6. are met, hydraulic pressure is metered to the brakes, establising an initial low pressure level.
   The system then holds the brake pressure at this level until the pitch angle of the airplane is reduced to approximately one degree, as measured by the IRS. As the airplane derotates through the one degree reference attitude, brake pressure is increased to achieve the deceleration value which corresponds to the chosen autobrake setting.

   If airplane derotation is delayed, the system will still command brake application. However, the system will pause before before trasnsition to the selected deceleration rate. For the lower autobrake settings, the system will transition to selected deceleration rate after 4 to 5 seconds have elapsed, independant of airplane pitch attitude. With the higher autobrake settings, transition to the selected decelerayion rate will commence when 8.0 seconds have elapsed from main gear touchdown. In either case, the preceding time delays will be overriden when the pitch attitude reaches one degree.

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 control servo valve as required when:
      1. Autobrake is armed.
      2. All thrust lever switches are not advanced.
      3. Airplane on the ground, indicated by one air/ground signal continuously for 0.2 second.
      4. Wheel spin-up circuit activated.
   b) Loss of conditions 3. or 4. above after autobrake application causes autobraking to be 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) The autobrake removes the power from the solenoid and control servo valve drivers and from the selector switch latch when:
      1. System is selected off.
      2. Either left or right metered pressure switch indicates pressure (manual brake application) 750 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) The arming provides power to RTO control and RTO selector switch latch within 300 milliseconds when:
      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 fully open when:
      1. RTO autobrake armed.
      2. All thrust lever signals indicate idle thrust.
      3. RTO wheel spin-up circuit latched.

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 disarm removes power from the RTO latch without indication when either air/ground signal indicates air mode or that RTO is turned off. If the RTO has been applied, it will disarm same as the other five autobrake settings except that loss of IRS will not disarm the RTO. The RTO turns on the AUTOBRAKES light without removing power from the RTO latch when the RTO is on and the autobrake output pressure is not high. When the autobrake RTO function is disarmed, the autobrake selector switch remains in RTO position, but the RTO function is deactivated as indicated by illumination of the AUTOBRAKE light.

(7) Autobrake hydraulic operation

(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 pressure control valve. The servo 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 paragraph.

(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.

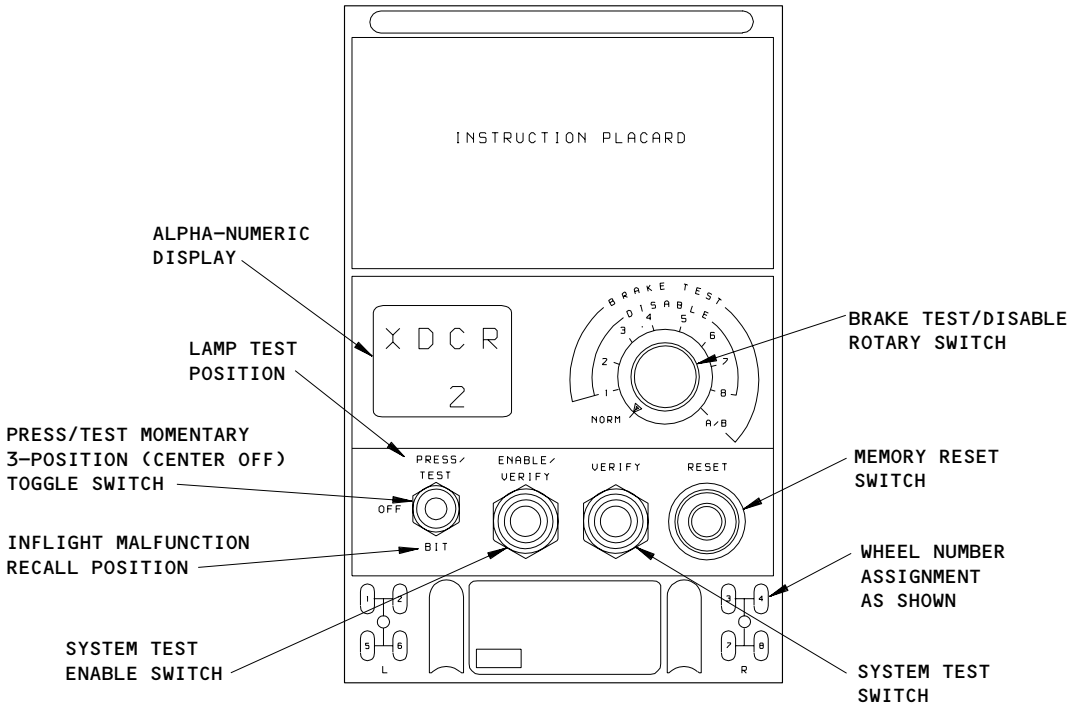
(c) Brake pressure output from the autobrake module positions the two autobrake shuttle valves to allow fluid flow via the normal antiskid modules to the brakes. Two pressure switches on the metered pressure port of the shuttle valves monitor manual brake pressure downstream of the brake metering valves. When manual braking effort exceeds 750 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. 12)

(1) Extensive BITE on the control unit provides the system for both in-flight and on-ground testings. 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.



BITE CONTROL AND DISPLAY PANEL

Antiskid/Autobrake Control Unit BITE
Figure 12

(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.

(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 transducers 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 left 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 memory can store data for at least 250 hours without power.
   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 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
(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

(a) Display card power and annunciation

1) 28 v dc power is provided through the AUTOBK ANTISKID TEST IND 1 and AUTOBK 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.

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 responses 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:
Gear position switch - up/down
Transducer interface - operable/nonoperable
Digital check sum - active check with memory
Wheel velocity - transducer continuity and impedance
Valve current bias - electrical response to valves
Failure light drivers - continuous operation of light drivers
Digital parity - check digital work 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:

a) Deceleration selection - a deceleration selected
b) Solenoid and servo valves - continuity and impedance
c) Failure light drivers - continuous operation of light drivers
d) Digital parity - check digital word parity for correctness
e) Digital checksum - active location check
f) Throttle switch - continuity
g) 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. The system turns off when the circuit breakers are open. Antiskid system off is shown by the illumination of ANTISKID light on P5.

(b) When normal (right) hydraulic system power is removed, the alternate (left) hydraulic system activates automatically. The left system provides hydraulic power to the alternate antiskid system.

(c) The front face of the control unit (Fig. 12) contains BITE switches. These switches are used for checking out transducer, valve and skid circuits on each wheel. A complete antiskid system test can also be performed with the BITE switches.

(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.
3) Depress either or both brake pedals.
4) Observe that selector switch trips to OFF without indication, and the autobrake system turns off.

(3) For more information on the Antiskid/Autobrake System, refer to these wiring diagrams and functional schematics:

(a) WDM 32-42-11 ANTISKID SYSTEM
(b) WDM 32-42-12 AUTOBRAKE SYSTEM
(c) SSM 32-42-00 ANTISKID/AUTOBRAKE SYSTEM - SIMPLIFIED
(d) SSM 32-42-01 ANTISKID SYSTEM
(e) SSM 32-42-03 AUTOBRAKE SYSTEM
(f) SSM 32-42-04 ANTISKID/AUTOBRAKE - BITE

ANTISKID/AUTOBRAKE SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
CARD - AUTOBRAKE CIRCUIT	6	1	821, FWD CARGO COMPT, E5, ANTI-SKID/AUTOBRAKE CONTROL UNIT, M102	32-42-01
CARD - BITE CIRCUIT	6	1	821, FWD CARGO COMPT, E5, ANTI-SKID/AUTOBRAKE CONTROL UNIT, M102	32-42-01
CARD - INTERFACE/DISPLAY CIRCUIT	6	1	821, FWD CARGO COMPT, E5, ANTI-SKID/AUTOBRAKE CONTROL UNIT, M102	32-42-01
CARD - MAIN WHEEL CIRCUIT	6	4	821, FWD CARGO COMPT, E5, ANTI-SKID/AUTOBRAKE CONTROL UNIT, M102	32-42-01
CIRCUIT BREAKERS	1		FLT COMPT, P11	
ANTI-SKID 1-5, C1171		1	11S18	*
ANTI-SKID 4-8, C1172		1	11S22	*
AUTOBK ANTISKID TEST IND 1, C1176		1	11S21	*
AUTOBK ANTISKID TEST IND 2, C1173		1	11S14	*
LANDING GEAR ANTI-SKID 2-6, C1183		1	11C31	*
LANDING GEAR ANTI-SKID 3-7, C1184		1	11C32	*
COMPUTER - (REF 31-41-00, FIG. 101)				
EICAS L, M10181				
EICAS R, M10182				
DIODES -				
R217,R218,R10279		3	FLT COMPT	*
DRIVE - ANTISKID TRANSDUCER	5	8	MAIN WHEEL HUBCAP	32-42-04
FILTER - ALTERNATE ANTISKID MODULE INLET	3	2	L MAIN WHL WELL KEEL BEAM FWD, R MAIN WHL WELL KEEL BEAM FWD, ALT ANTISKID MODULE	32-42-03
FILTER - ALTERNATE ANTISKID MODULE SCREEN	3	2	L MAIN WHL WELL KEEL BEAM FWD, R MAIN WHL WELL KEEL BEAM FWD, ALT ANTISKID MODULE	32-42-03
FILTER - ANTISKID SHUTTLE VALVE MODULE	3	8	L MAIN WHL WELL CEILING FWD, R MAIN WHL WELL CEILING FWD, ANTISKID SHUTTLE VALVE MODULE	32-42-07
FILTER - NORMAL ANTISKID MODULE INLET	2	2	L MAIN WHL WELL FAIRING, R MAIN WHL WELL FAIRING, NORMAL ANTI-SKID MODULE	32-42-03
FILTER - NORMAL ANTISKID MODULE SCREEN	2	2	L MAIN WHL WELL FAIRING, R MAIN WHL WELL FAIRING, NORMAL ANTI-SKID MODULE	32-42-03
FUSE - ALTERNATE ANTISKID MODULE	3	4	L MAIN WHL WELL KEEL BEAM FWD, R MAIN WHL WELL KEEL BEAM FWD, ALT ANTISKID MODULE	32-42-03
FUSE - NORMAL ANTISKID MODULE	2	8	L MAIN WHL WELL FAIRING, R MAIN WHL WELL FAIRING, NORMAL ANTI-SKID MODULE	32-42-03

* SEE WM EQUIPMENT LIST

Component Index
Figure 101 (Sheet 1)

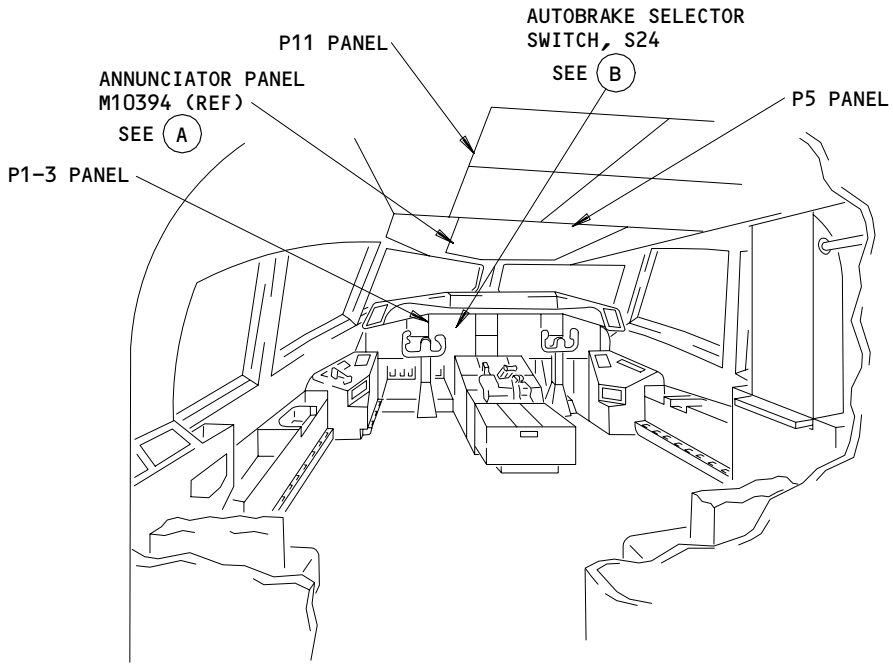
COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
LIGHT – ANTISKID, YNELO19	1	1	FLT COMPT, P5, ANNUNCIATOR PANEL M10394	*
LIGHT – AUTOBRAKES, L24	1	1	FLT COMPT, P1	*
MODULE – AUTOBRAKE, M239	4	1	L MAIN WHL WELL FWD BULKHEAD	32-42-09
MODULE – LEFT ANTISKID SHUTTLE VALVE	3	1	L MAIN WHL WELL CEILING FWD	32-42-07
MODULE – LEFT ANTISKID (ALTERNATE)	2	1	L MAIN WHL WELL KEEL BEAM FWD	32-42-02
MODULE – LEFT ANTISKID (NORMAL)	2	1	L MAIN WHL WELL FAIRING	32-42-02
MODULE – RIGHT ANTISKID SHUTTLE VALVE	3	1	R MAIN WHL WELL CEILING FWD	32-42-07
MODULE – RIGHT ANTISKID (ALTERNATE)	2	1	R MAIN WHL WELL KEEL BEAM FWD	32-42-02
MODULE – RIGHT ANTISKID (NORMAL)	2	1	R MAIN WHL WELL FAIRING	32-42-02
PACK – (REF 22-32-00, FIG. 101) AUTOTHROTTLE MICROSWITCH, M966				
PANEL – (REF 30-31-00, FIG. 101) ANNUNCIATOR, M10394				
PLUG – FLIGHT DISPATCH DISCONNECT	3	1	L OR R MAIN WHL WELL CEILING FWD, ANTISKID SHUTTLE VALVE OR FLYAWAY STORAGE BOX	32-42-00
RELAY – (REF 31-01-36, FIG. 101) ANTISKID 1 & 5 FAILED, K10229 ANTISKID 2 & 6 FAILED, K10231 ANTISKID 3 & 7 FAILED, K10232 ANTISKID 4 & 8 FAILED, K10230 ANTISKID ALTERNATE FAIL, K10233 LEFT IRS SELECT, K511 PARK BRAKE CLOSE SENSE, K419 SYS 1 AIR/GROUND, K10388				
RELAY – (REF 31-01-37, FIG. 101) RIGHT IRS SELECT, K510 SYS 2 AIR/GROUND, K10258				
SWITCH – (REF 32-41-00, FIG. 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 WHL WELL FWD BULKHEAD, AUTOBRAKE MODULE, M239	32-42-09
SWITCH – AUTOBRAKE SOLENOID VALVE PRESSURE, YAAS2	4	1	R MAIN WHL WELL FWD BULKHEAD, AUTOBRAKE MODULE, M239	32-42-09
SWITCH – (REF 34-22-00, FIG. 101) L IRS INSTR SOURCE SEL, S4 R IRS INSTR SOURCE SEL, S12				
SWITCH – LEFT METERED PRESSURE, S82	4	1	L MAIN WHL WELL FWD BULKHEAD, AUTOBRAKE SHUTTLE VALVE ASSY	32-42-10
SWITCH – RIGHT METERED PRESSURE, S83	4	1	R MAIN WHL WELL FWD BULKHEAD, AUTOBRAKE SHUTTLE VALVE ASSY	32-42-10
SWITCH – (REF 31-51-00, FIG. 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

* SEE WM EQUIPMENT LIST

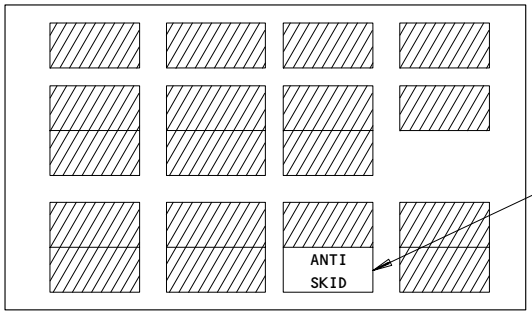
Component Index
Figure 101 (Sheet 2)

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
TRANSDUCER - ANTISKID	5	8	HUBCAP, MAIN WHL AXLE	32-42-06
WHEEL 1, TS82			L FWD OUTBD WHL	
WHEEL 2, TS83			L FWD INBD WHL	
WHEEL 3, TS86			R FWD INBD WHL	
WHEEL 4, TS87			R FWD OUTBD WHL	
WHEEL 5, TS84			L AFT OUTBD WHL	
WHEEL 6, TS85			L AFT INBD WHL	
WHEEL 7, TS88			R AFT INBD WHL	
WHEEL 8, TS89			R AFT OUTBD WHL	
UNIT - ANTISKID/AUTOBRAKE CONTROL, M102	6	1	821, FWD CARGO COMPT, E5 RACK ACCESS PANEL	32-42-01
UNIT - (REF 34-21-00, FIG. 101)				
CENTER INERTIAL REFERENCE, M160				
LEFT INERTIAL REFERENCE, M159				
RIGHT INERTIAL REFERENCE, M161				
UNIT - (REF 32-09-03, FIG. 101)				
PROXIMITY SWITCH ELECTRONICS UNIT, M162				
VALVE - ANTISKID SHUTOFF	2	2	L MAIN WHL WELL FAIRING, R MAIN WHL WELL FAIRING, NORMAL ANTISKID MODULE	32-42-03
VALVE - ANTISKID SHUTTLE	3	8	L MAIN WHL WELL CEILING FWD, R MAIN WHL WELL CEILING FWD, ANTISKID SHUTTLE VALVE MODULE	32-42-07
VALVE - AUTOBRAKE SERVO, YAAV2	4	1	L MAIN WHL WELL FWD BULKHEAD, AUTOBRAKE MODULE, M239	32-42-09
VALVE - AUTOBRAKE SHUTTLE	4	2	L MAIN WHL WELL FWD BULKHEAD, R MAIN WHL WELL FWD BULKHEAD	32-42-10
VALVE - AUTOBRAKE SOLENOID SHUTOFF, YAAV1	4	1	L MAIN WHL WELL FWD BULKHEAD, AUTOBRAKE MODULE, M239	32-42-09
VALVE - LEFT ALTERNATE ANTISKID	2	2	L MAIN WHL WELL KEEL BEAM FWD, ALTERNATE ANTISKID MODULE	32-42-03
WHEELS NO. 1 & NO. 2, V38				
WHEELS NO. 5 & NO. 6, V37				
VALVE - LEFT NORMAL ANTISKID	2	4	L MAIN WHL WELL FAIRING, NORMAL ANTISKID MODULE	32-42-03
WHEEL NO. 1, V30				
WHEEL NO. 2, V29				
WHEEL NO. 5, V32				
WHEEL NO. 6, V31				32-42-03
VALVE - RIGHT ALTERNATE ANTISKID	2	2	R MAIN WHL WELL KEEL BEAM FWD, ALTERNATE ANTISKID MODULE	
WHEELS NO. 3 & NO. 4, V39				
WHEELS NO. 7 & NO. 8, V40				
VALVE - RIGHT NORMAL ANTISKID	2	4	R MAIN WHL WELL FAIRING, NORMAL ANTISKID MODULE	32-42-03
WHEEL NO. 3, V33				
WHEEL NO. 4, V34				
WHEEL NO. 7, V35				
WHEEL NO. 8, V36				

Component Index
Figure 101 (Sheet 3)

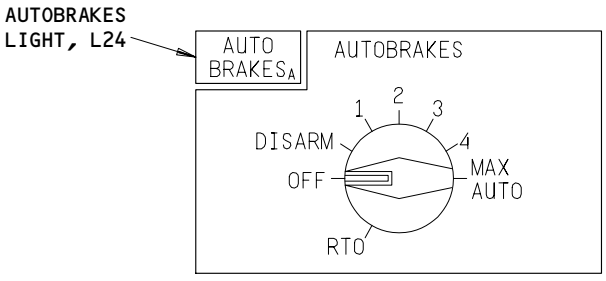


FLT COMPT



ANNUNCIATOR PANEL, M10394 (REF)

A

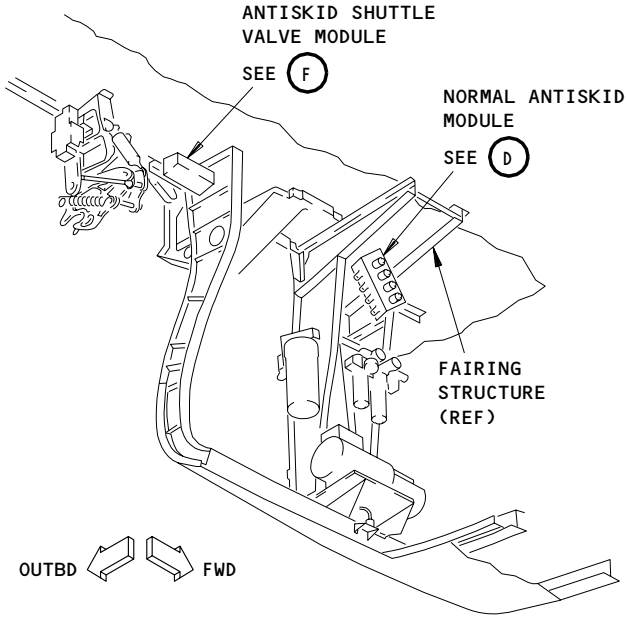


AUTOBRAKES SELECTOR SWITCH, S24

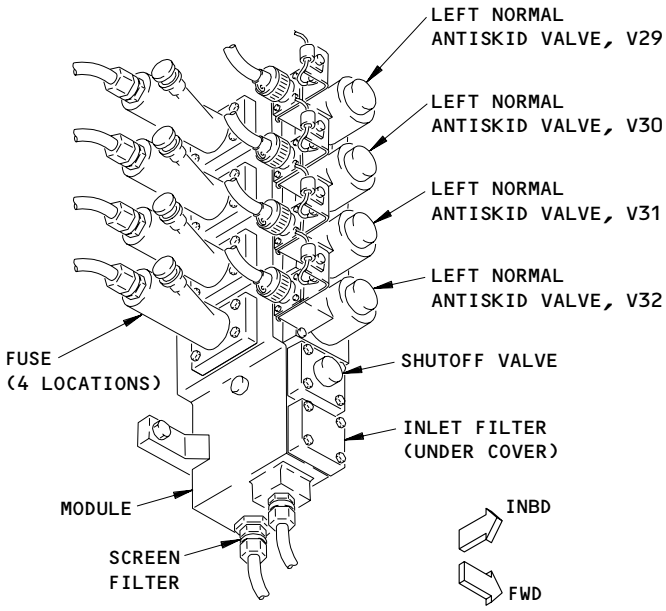
B

NOTE: DETAIL C NOT USED

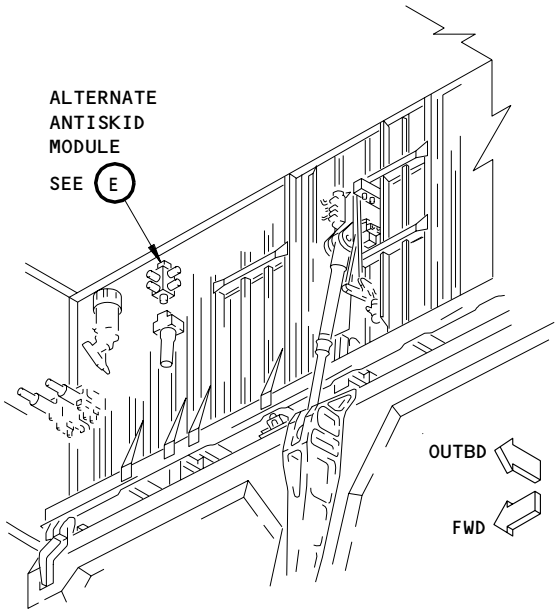
Component Location
Figure 102 (Sheet 1)



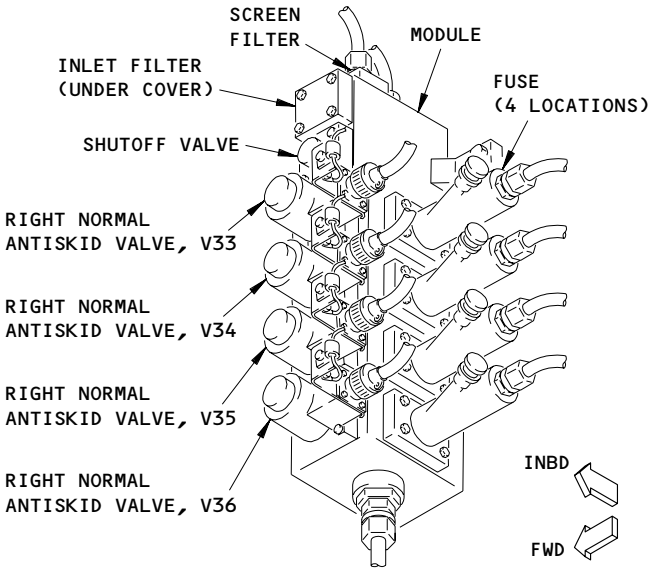
LEFT WHEEL WELL
(RIGHT WHEEL WELL IS EQUIVALENT)



NORMAL ANTISKID MODULE,
LEFT WHEEL WELL
D

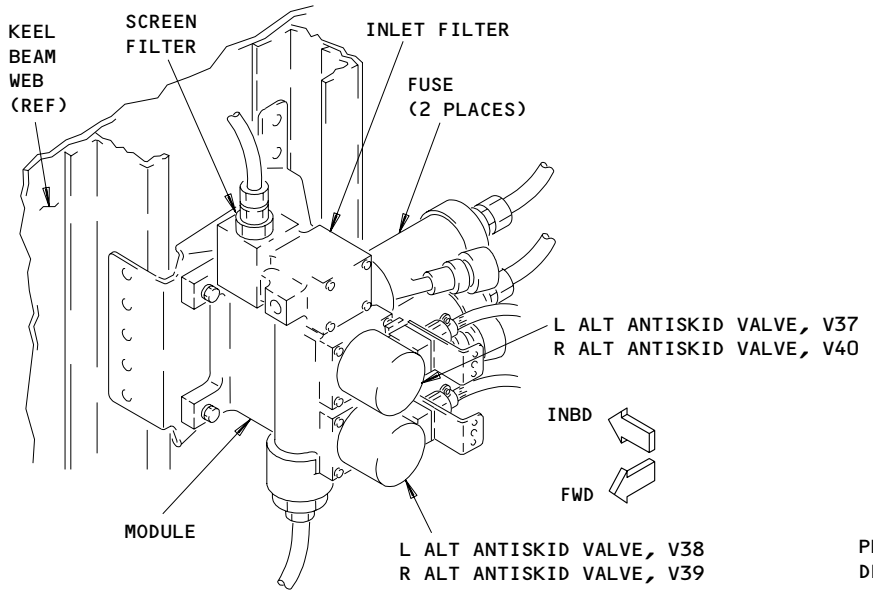


LEFT WHEEL WELL
(LEFT SYSTEM IS SHOWN)



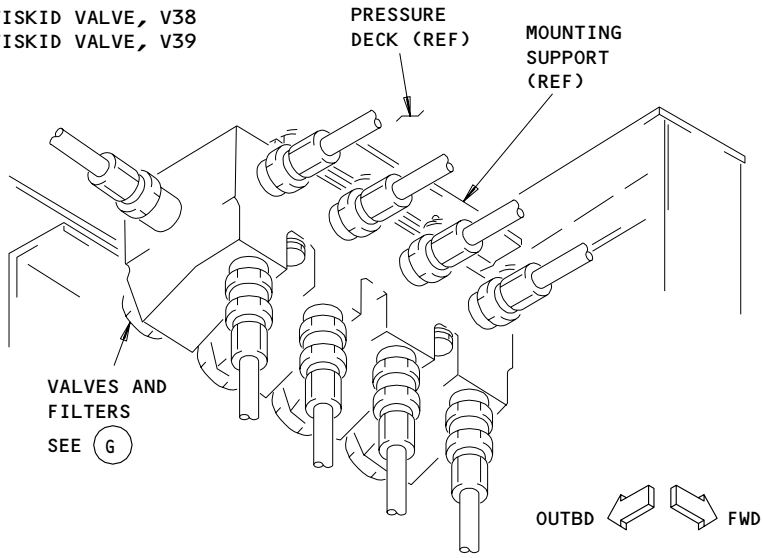
NORMAL ANTISKID MODULE,
RIGHT WHEEL WELL
D

Antiskid/Antibrake System – Component Location
Figure 102 (Sheet 2)



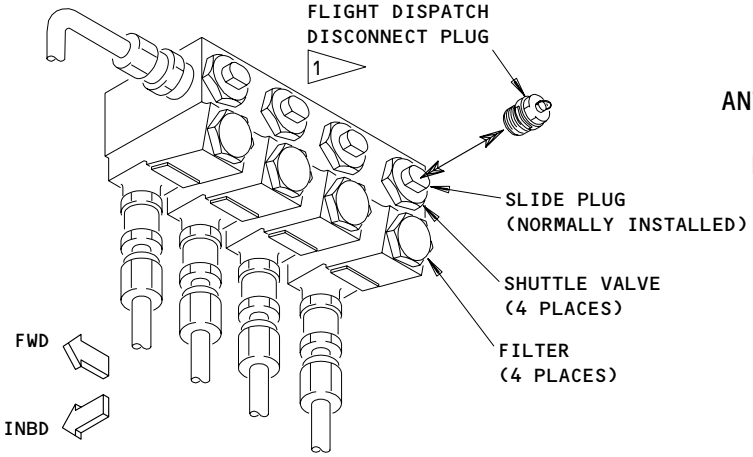
ALTERNATE ANTISKID MODULE
(LEFT WHEEL WELL SHOWN,
RIGHT WHEEL WELL SIMILAR)

E



ANTISKID SHUTTLE VALVE MODULE
(LEFT WHEEL WELL SHOWN,
RIGHT WHEEL WELL SIMILAR)

F

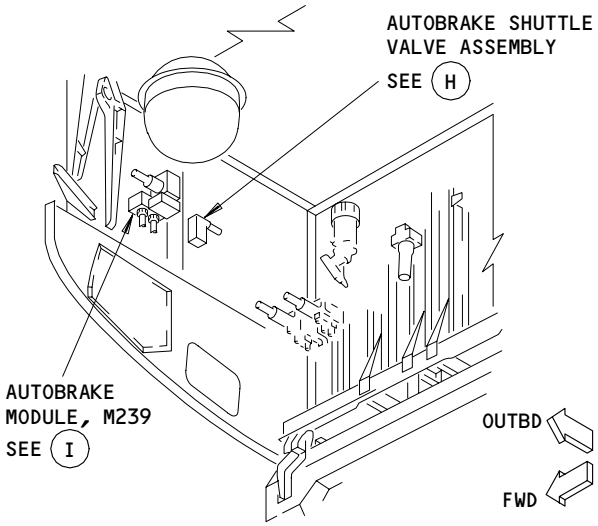


VALVES AND FILTERS

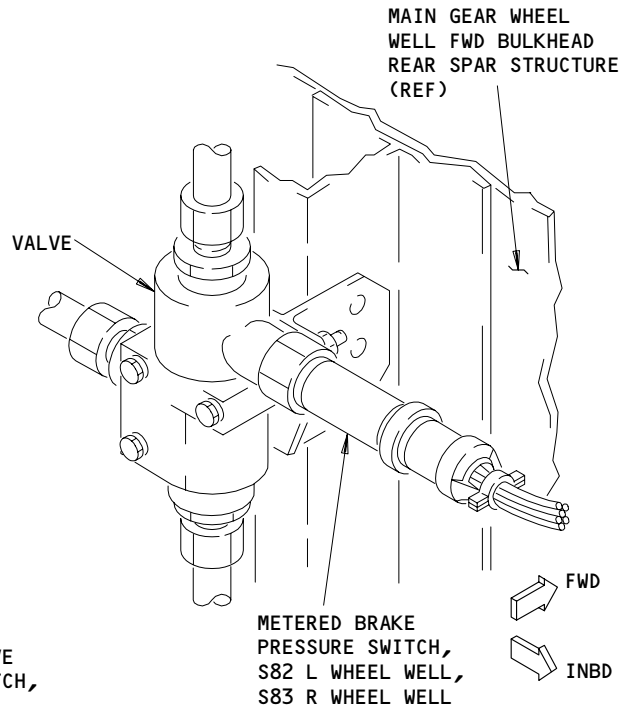
G

1 NORMALLY STORED IN LANDING GEAR DOWNLOCK PIN BOX AS PART OF FLYAWAY EQUIPMENT WHEN NOT USED

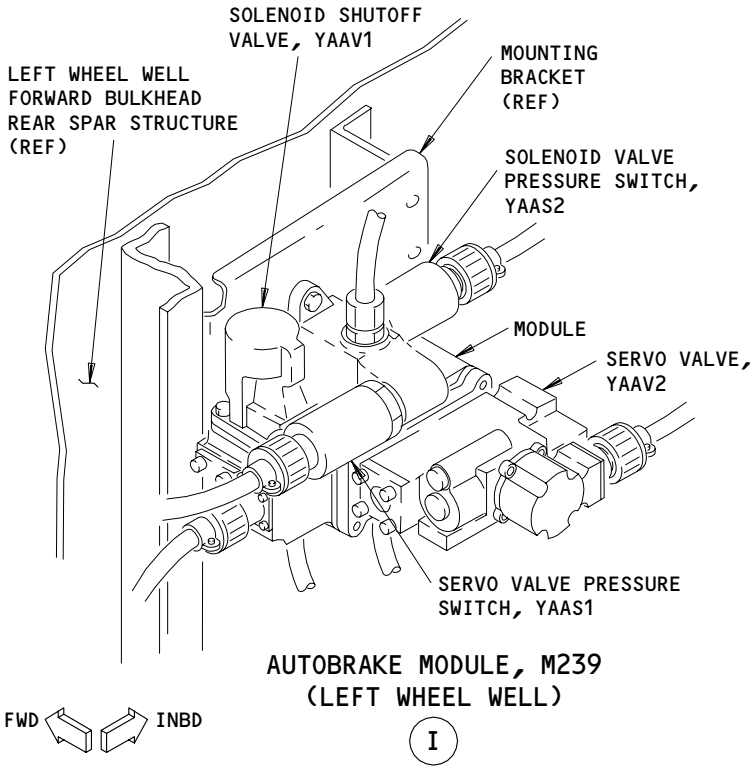
Component Location
Figure 102 (Sheet 3)



LEFT WHEEL WELL

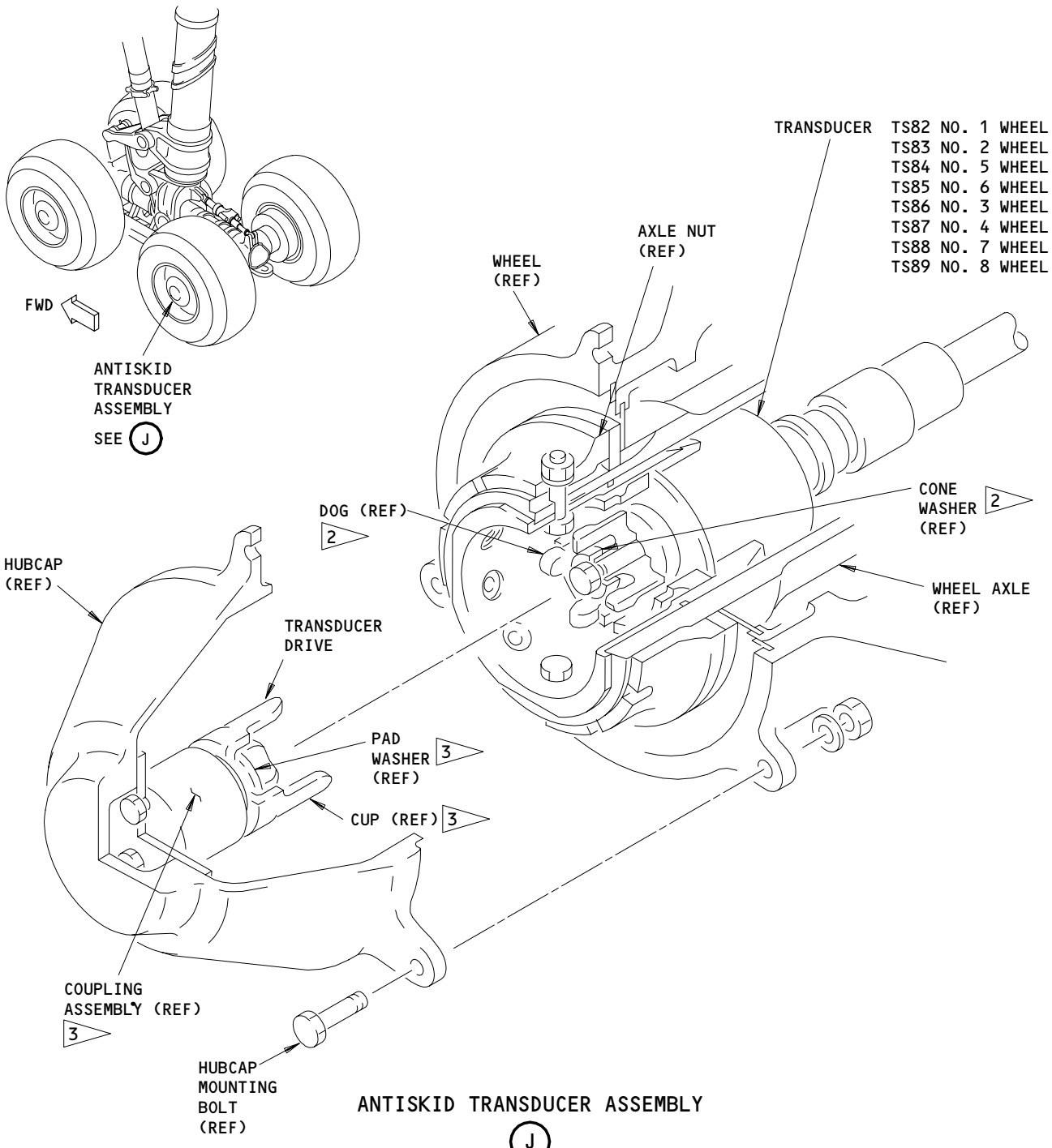


AUTOBRAKE SHUTTLE VALVE ASSEMBLY
(LEFT WHEEL WELL SHOWN,
RIGHT WHEEL WELL SIMILAR)
(H)



AUTOBRAKE MODULE, M239
(LEFT WHEEL WELL)
(I)

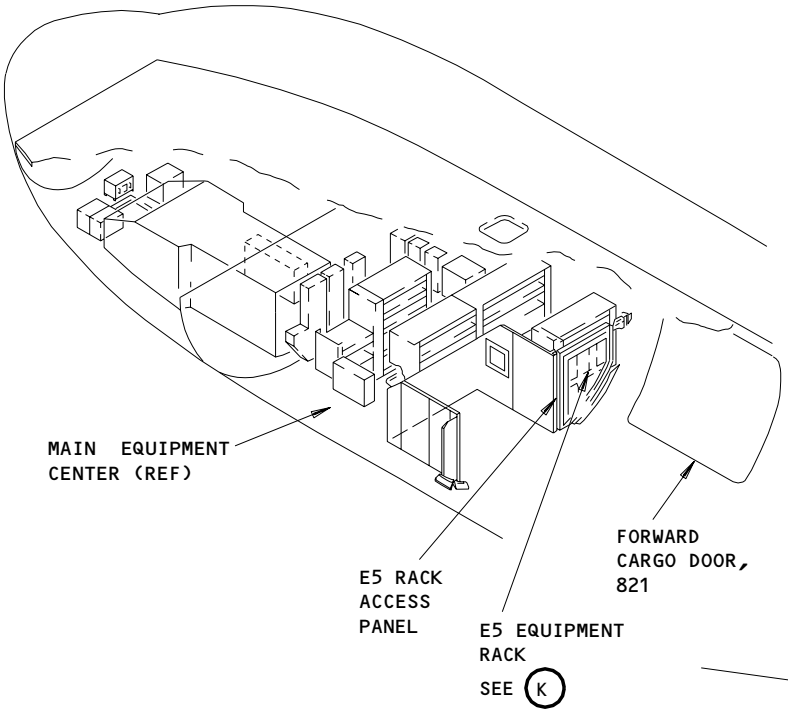
Component Location
Figure 102 (Sheet 4)

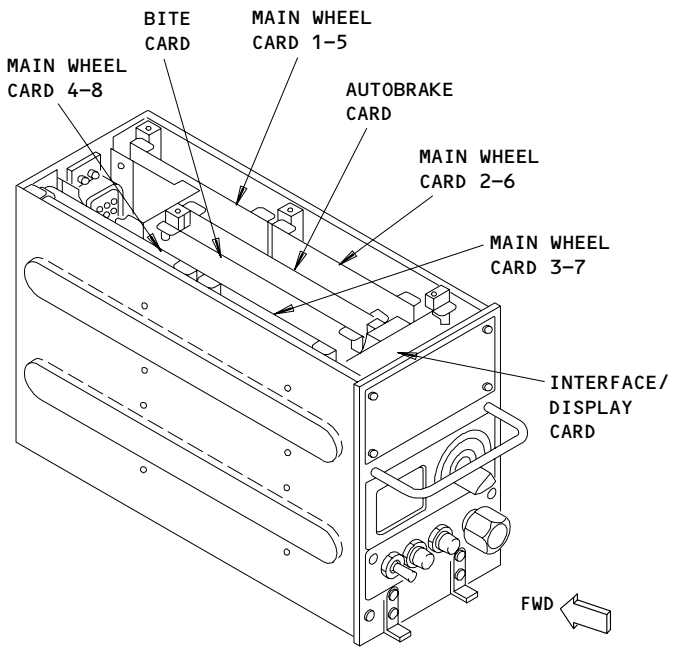


ANTISKID TRANSDUCER ASSEMBLY
(J)

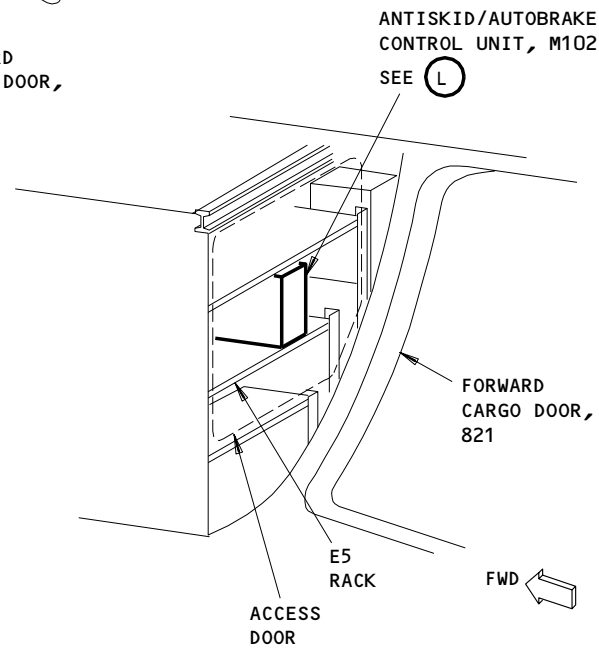
2 TRANSDUCER ASSEMBLY COMPONENT
3 TRANSDUCER DRIVE COMPONENT

Component Location
Figure 102 (Sheet 5)



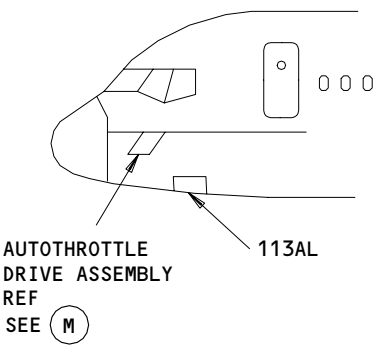


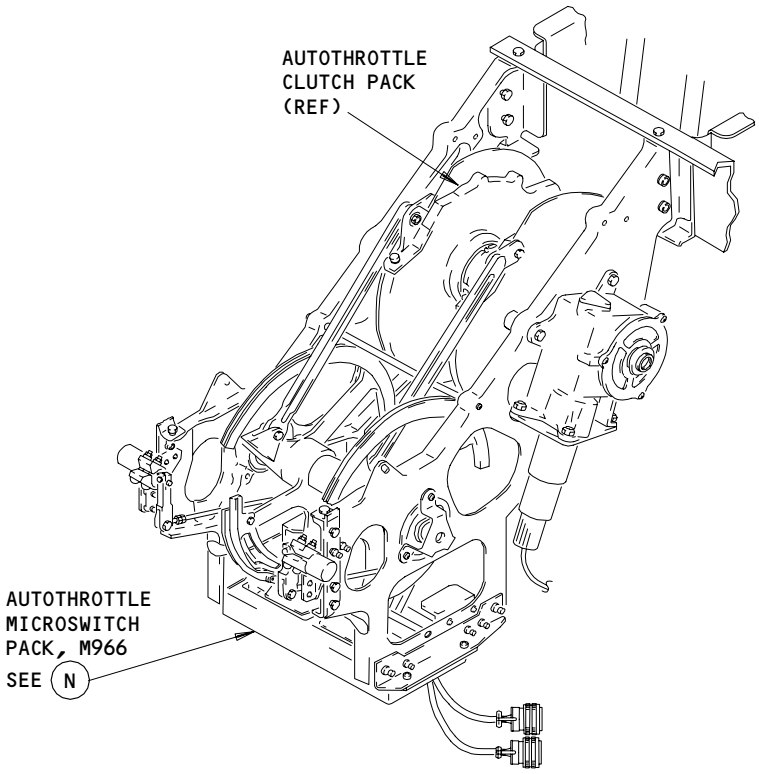
ANTISKID/AUTOBRAKE CONTROL UNIT, M102
(COVER REMOVED)
(L)



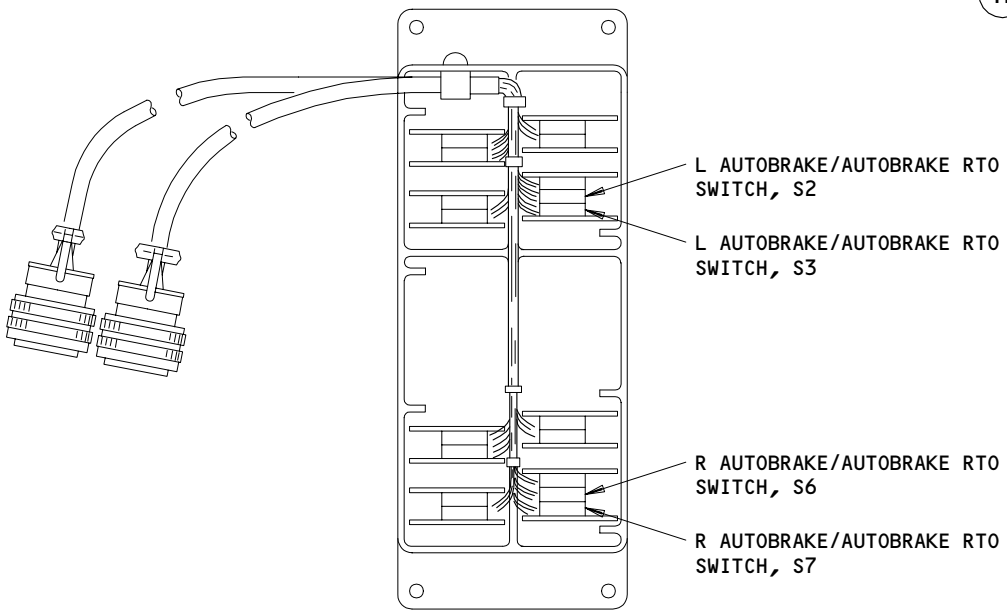
E5 EQUIPMENT RACK
(K)

Component Location
Figure 102 (Sheet 6)





AUTOTHROTTLE DRIVE ASSEMBLY (REF)
(M)



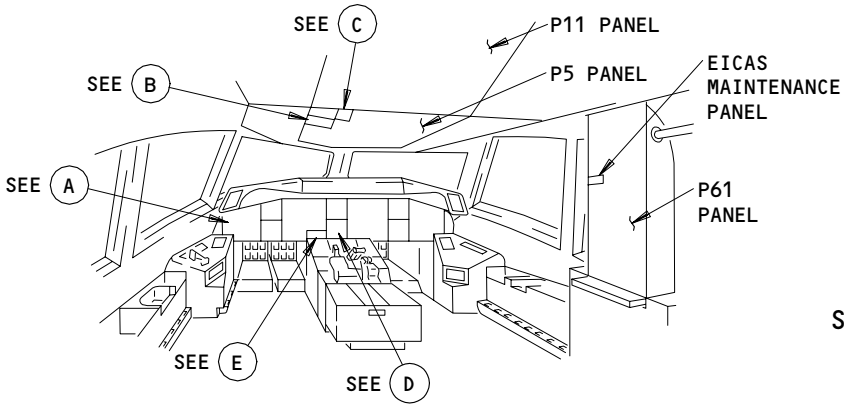
AUTOTHROTTLE MICROSWITCH PACK, M966
(N)

Component Location
Figure 102 (Sheet 7)

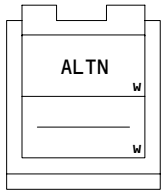
ANTISKID/AUTOBRAKE SYSTEM - ADJUSTMENT/TEST

1. General
   A. This procedure contains the following tasks:
      (1) Antiskid System Operational Test - Power Distribution and Indication
      (2) Antiskid System Operational Test - Brake Application
      (3) Antiskid System Operational Test - Transducer Spinup
      (4) Autobrake System Operational Test - Control, Speedbrake Switch, Landing Gear Down and Locked
      (5) Autobrake System Operational Test - Autobrake Application
      (6) Autobrake System Operational Test - RTO (Refused Take Off)
   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. It is necessary to operate test switches on the Antiskid/Autobrake Control Unit (M102) in the Main Equipment Center to do this test. You can get access to the control unit through the electronics access door, 119AL (AMM 06-41-00).
   D. These indicator lights and EICAS displays give fault indications for the system:
      (1) An ANTISKID light on the pilot's overhead panel P5.
      (2) An AUTOBRAKES light on the pilot's center instrument panel (P1-3).
      (3) Two EICAS display units on panel P2 to give the caution and advisory message, and the status and maintenance formats.

   TASK 32-42-00-945-213
2. Prepare for the Tests
   A. References
      (1) AMM 06-46-00/201, Entry, Service, and Cargo Doors (Major Zone 800) Access Doors and Panels
      (2) AMM 24-22-00/201, Electrical Power - Control
      (3) AMM 25-50-03/401, Bulkhead Lining
      (4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (5) AMM 32-00-20/201, Landing Gear Down Locks
      (6) AMM 34-21-00/501, Inertial Reference System

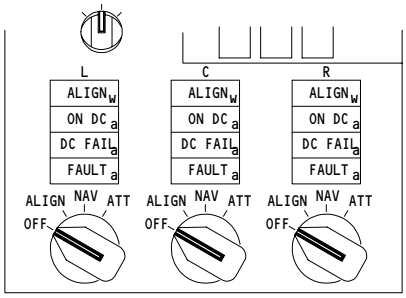


FLT COMPT



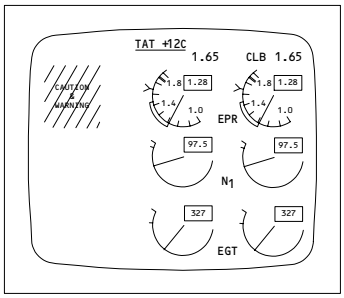
IRS INSTR SOURCE
SEL SWITCH ON P1-1, AND P3-3

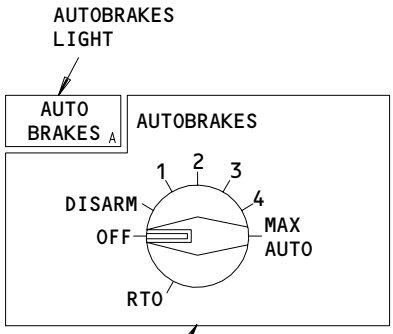
A



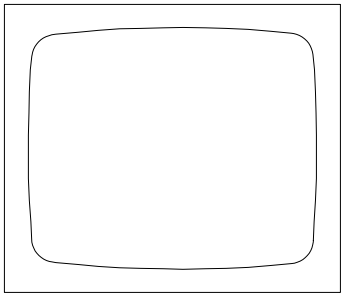
IRS MODE SELECT
SWITCH ON P5

B



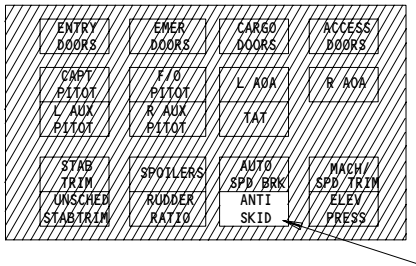


E



EICAS DISPLAY UNITS ON P2

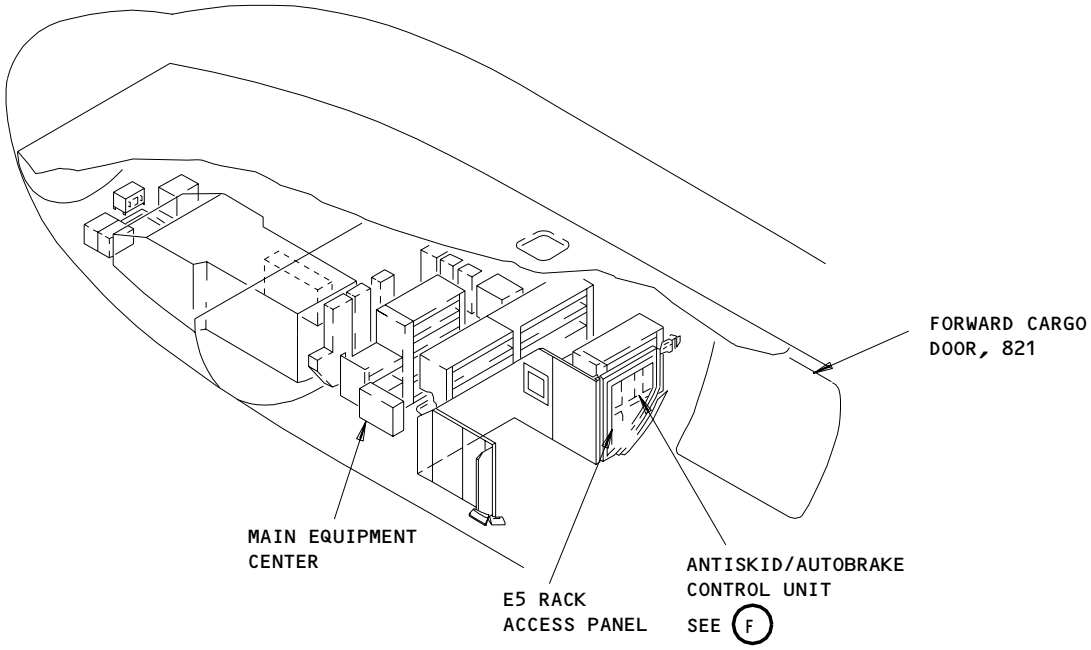
D

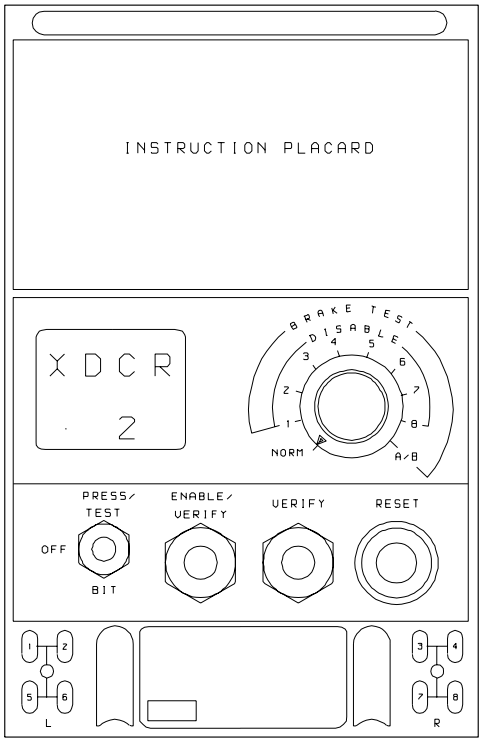


MISC ANNUNCIATOR ON P5

C

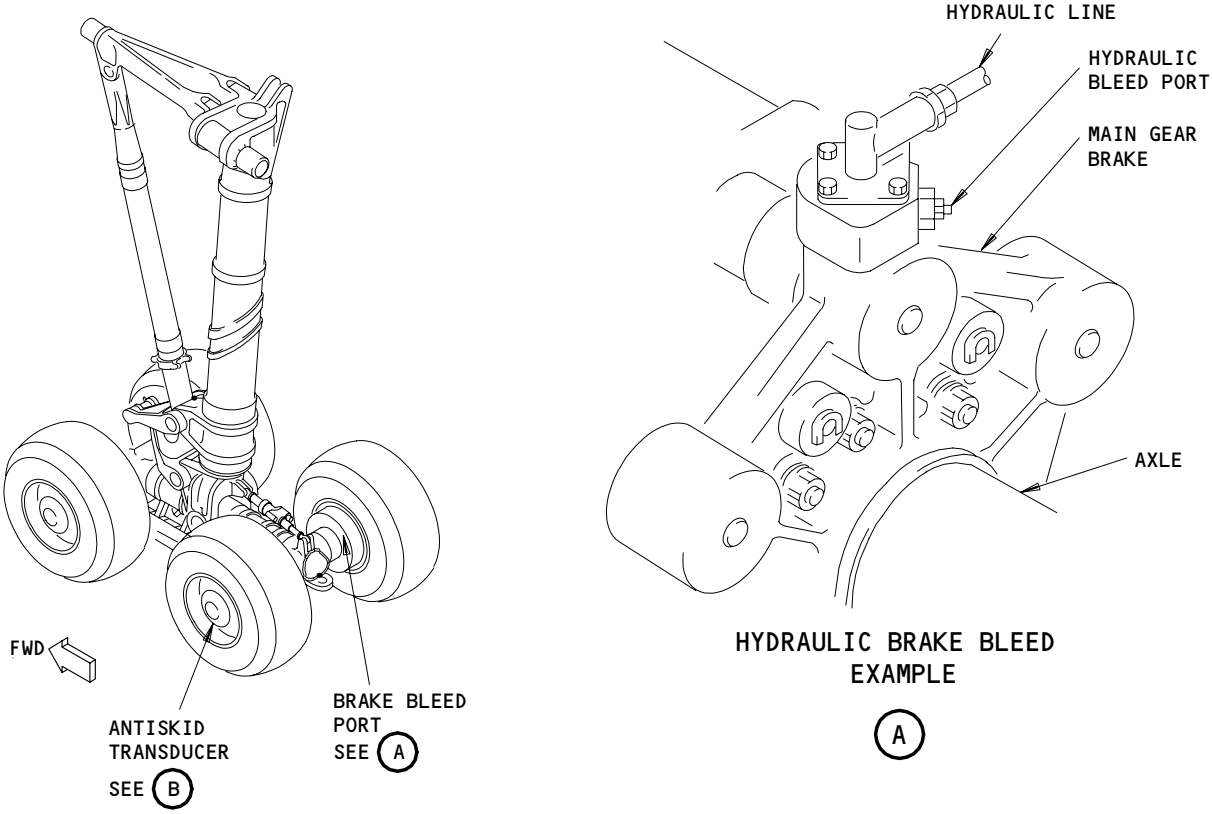
Antiskid/Autobrake System Adjustment/Test
Figure 501 (Sheet 1)





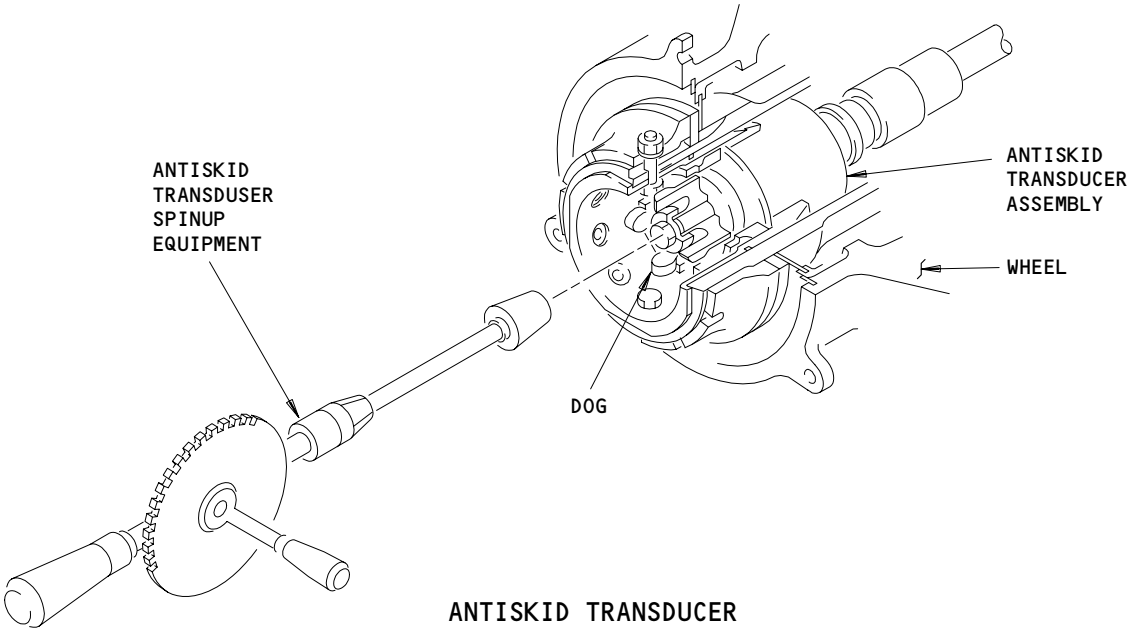
ANTISKID/AUTOBRAKE CONTROL UNIT, M102
CONTROL PANEL
(F)

Antiskid/Autobrake System Adjustment/Test
Figure 501 (Sheet 2)



HYDRAULIC BRAKE BLEED EXAMPLE

A



ANTISKID TRANSDUCER
AND SPIN-UP EQUIPMENT

B

Brake Bleed Ports and Antiskid Transducer
Figure 502

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 865-215

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

S 865-244

(2) Make sure that these circuit breakers on the overhead circuit breaker panel, P11, are closed:
   (a) 11A33, INDICATOR LIGHTS 2
   (b) 11C31, ANTI-SKID 2-6
   (c) 11C32, ANTI-SKID 3-7
   (d) 11J2, EICAS CMPTR LEFT
   (e) 11J3, EICAS UPPER DISPLAY
   (f) 11J29, EICAS CMPTR RIGHT
   (g) 11J30, EICAS LOWER DISPLAY
   (h) 11J31, EICAS DISPLAY SW
   (i) 11J32, EICAS DISPLAY SELECT
   (j) 11P28, R IND LTS 1
   (k) 11P29, R IND LTS 2
   (l) 11S14, AUTOBK ANTISKID TEST IND 1
   (m) 11S15, AIR/GND SYS 1
   (n) 11S18, ANTI-SKID 1-5
   (o) 11S19, AIR/GND SYS 2
   (p) 11S21, AUTOBK ANTISKID TEST IND 2
   (q) 11S22, ANTI-SKID 4-8

S 865-217

(3) Make sure that this circuit breaker on the main power distribution panel, P6, is closed:
   (a) 6F4, LANDING GEAR PARKING BRAKE VLV

Do the steps that follow:
(b) Open the forward cargo door, 821 (AMM 06-46-00/201).

TASK 32-42-00-715-001

3. Power Distribution and Indication Test

A. General

(1) For this test, you open and close circuit breakers to do these checks:
(a) Checks to make sure that power is supplied correctly to the system
(b) Checks to make sure that the system indicator lights and the EICAS displays give the correct indications and messages.

B. Prepare for the Test

S 865-383

(1) Put the L, R and C IRUs in the NAV mode (AMM 34-21-00).

NOTE: The IRUs must be aligned.

S 815-384

(2) Pressurize the right and left hydraulic systems and reservoirs (AMM 29-11-00).

S 945-253

WARNING: THE PARKING BRAKE IS RELEASED IN THIS TEST. 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.

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

S 495-254

(4) Make sure that chocks are installed on the wheels.

S 865-252

(5) Release the parking brake.

S 715-004

(6) Push the STATUS DISPLAY switch on the forward electrical control stand panel, P9.

C. Procedure to do the Antiskid System Indication Test

S 715-214

(1) Do the steps that follow for each of the steps listed in Table 1:

(a) Release the parking brake for the tests 1 thru 7 in Table 1.

NOTE: Set the parking brake before you do the step 8 test in Table 1.

(b) Open the circuit breaker and verify indication per Table 1, then do steps (c) thru (e).

(c) Do this BITE test on the Antiskid/Autobrake Control Unit (M102) for each test step in Table 1.

1) Push in and hold the ENABLE/VERIFY switch.
2) Push in the VERIFY switch.
3) Release the ENABLE/VERIFY and VERIFY switches.
4) Make sure that the indication on the M102 display is as shown.

(d) Close the circuit breaker.

(e) Make sure that the indications go out.

(f) Repeat steps (b) thru (e) for each step in Table 1.

TABLE 1

Step	Circuit Breaker(s)	Indication	Location	M102 Display
1	11S18, ANTI-SKID 1-5	ANTISKID light comes on ANTISKID NORM ANTISKID ALTN ANTISKID ANTISKID/ AUTOBRK	Misc annunciator on P5 EICAS Advisory Display EICAS Status Display EICAS Status Display EICAS Maintenance Display	PWR 1-5
2	11C31, ANTI-SKID 2-6	ANTISKID light comes on ANTISKID NORM ANTISKID ALTN ANTISKID ANTISKID/ AUTOBRK	Misc annunciator on P5 EICAS Advisory Display EICAS Status Display EICAS Status Display EICAS Maintenance Display	PWR 2-6
3	11C32, ANTI-SKID 3-7	ANTISKID light comes on ANTISKID NORM ANTISKID ALTN ANTISKID ANTISKID/ AUTOBRK	Misc annunciator on P5 EICAS Advisory Display EICAS Status Display EICAS Status Display EICAS Maintenance Display	PWR 3-7
4	11S22, ANTI-SKID 4-8	ANTISKID light comes on ANTISKID NORM ANTISKID ALTN ANTISKID ANTISKID/ AUTOBRK	Misc annunciator on P5 EICAS Advisory Display EICAS Status Display EICAS Status Display EICAS Maintenance Display	PWR 4-8
5	11S14, AUTOBK ANTISKID TEST IND 1	NONE	NONE	(BITE test not required)

Continued On Next Page

TABLE 1 (Continued)				
6	11S21, AUTOBK ANTISKID TEST IND 2	NONE	NONE	(BITE test not required)
7	11S14, AUTOBK ANTISKID TEST IND 1 11S21, AUTOBK ANTISKID TEST IND 2	ALTN ANTISKID ANTISKID/ AUTOBRK	EICAS Status Display EICAS Maintenance Display	(BITE test not required)
8	6F4, LANDING GEAR PARKING BRAKE VLV (Set park brake before the step 8 test)	ANTISKID light comes on ANTISKID NORM ANTISKID	Misc annunciator on P5 EICAS Advisory Display EICAS Status Display	(BITE test not required)
NOTE: There is a three-second delay before the indicators come on after you pull the LANDING GEAR PARKING BRAKE (6F4) circuit breaker.				

TASK 32-42-00-405-007

4. Antiskid System Operational Tests - Brake Application

A. General

(1) This is a test to make sure that the brakes apply and release with the antiskid systen controls.

(2) You can monitor brake adjuster indicator pin movement on the brake to see that the brakes apply and release. 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.

B. Prepare for the Test

S 715-239

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 downlocks are installed on the main and nose landing gear (AMM 32-00-20).

S 495-009
(2) Make sure that chocks are installed on the wheels.

S 945-010
(3) Do the Prepare for the Tests Task (Ref Par. 2).

S 865-011
(4) Release the parking brake.

C. Do a Brake Application Test with the Normal Antiskid System

S 865-012
(1) Pressurize the right hydraulic system and reservoir (AMM 29-11-00).

S 865-013
(2) Open this circuit breaker on the P6 panel and attach a DO-NOT-CLOSE tag:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV

S 865-014
(3) Set the parking brake.

S 865-015
(4) Put the thrust levers in the idle position.

S 865-016
(5) Retract the spoilers.

S 865-017
(6) Put the L, R and C IRUs in the NAV mode (AMM 34-21-00).

NOTE: The IRUs must be aligned.

S 715-020
(7) Push in the RESET button on the M102 unit and stop 5 ±3 seconds (the display will show MEM CLR during this time).

S 715-021
(8) Make sure that you have these indication(s):
(a) The ANTISKID light on the P5 panel is off and the EICAS message ANTISKID is out of view.

S 715-022
(9) Do the test steps in Table 2. Put the BRAKE TEST rotary switch on the M102 unit front panel in the position shown and do the steps that follow:
(a) On the M102 unit front panel, push in and hold the ENABLE/VERIFY switch and then push in the VERIFY switch. Release the two switches at the same time.

(b) Make sure that the brake shown in Table 2, column A, releases for 5 ±3 seconds and then applies again.

NOTE: You can see the brakes apply and release if you watch the brake wear pins move.

(c) Make sure that the ANTISKID light on the P5 panel is on and the ANTISKID message appears on the EICAS advisory page.

TABLE 2

Step	BRAKE TEST Rotary Switch Position	A	B
1	BRAKE TEST 1	1	1-2
2	BRAKE TEST 5	5	5-6
3	BRAKE TEST 2	2	
4	BRAKE TEST 6	6	
5	BRAKE TEST 3	3	3-4
6	BRAKE TEST 7	7	7-8
7	BRAKE TEST 4	4	
8	BRAKE TEST 8	8	

D. Do a Test of Brake Application with the Alternate Antiskid System

S 865-024
(1) Pressurize the left hydraulic system and reservoir (AMM 29-11-00).

S 865-025
(2) Depressurize the right hydraulic system and reservoir (AMM 29-11-00).

S 745-026
(3) Do steps 1, 2, 5 and 6 of Table again. Make sure that the brake pairs shown in column B apply and release.

S 865-023

(4) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P6 panel:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV

S 945-027

(5) Do the steps in the Put the Airplane Back to Its Usual Condition if it is not necessary to do more maintenance.

TASK 32-42-00-705-028

5. Antiskid Transducer Spin-Up Test (Fig. 502)

A. General

(1) This is a test to make sure that the 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

C. Prepare for the Test

S 945-240

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) Prepare for the Tests.

S 495-030

(2) Make sure that the landing gear downlocks are installed (AMM 32-00-20).

S 495-031

(3) Make sure that chocks are installed on the wheels.

S 865-032

(4) Release the parking brake.

D. Do the Antiskid Transducers 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 865-033
(1) Pressurize the right hydraulic system and reservoir (AMM 29-11-00).

S 865-034
(2) Open this circuit breaker on the P6 panel and attach a DO-NOT-CLOSE tag:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV

S 865-035
(3) Set the parking brake.

S 035-036
(4) Remove the hubcaps from all the main gear wheels.

S 215-037
(5) Examine the transducer drive components on the hubcap for damage. Replace any parts that are damaged.

S 715-038
(6) Turn the transducer for wheel 1 at 600-1000 RPM and make sure that the tandem brake (wheel 5) releases.

S 715-039
(7) Stop the movement of the transducer as quickly as it is possible. Make sure that the brake on wheel 5 applies again.

S 715-040
(8) Turn the transducer on wheel 1 again and then stop its movement quickly. Make sure that the brake on wheel 1 releases and then applies again.

S 715-041
(9) Do the four steps above again for the wheels shown in Table 3.

Table 3	
Wheel	Tandem Wheel
2	6
5	1
6	2
3	7
4	8
7	3
8	4

S 865-042

(10) Install the hubcaps on all the wheels.

S 865-043

(11) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P6 panel:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV

S 945-237

(12) Do the steps in the Put the Airplane Back to Its Usual Condition task if it is not necessary to do any additional maintenance.

TASK 32-42-00-715-044

6. Autobrake Control Test, Speedbrake Switch Test, and Landing Gear Down and Locked Test

A. General

(1) The autobrake control test (par. D.) does a check to make sure that the autobrake arm/disarm circuit operates correctly. This test will also find a defective channel on the Antiskid/Autobrake Control Unit, M102, display.

(2) It is necessary to operate the spoiler handle to do the speedbrake switch test. The test makes sure that the position input signal is sent from the handle to the M102 unit to disarm the autobrake function.

(3) It is necessary to use proximity sensor deactuators to simulate landing gear position for the landing gear down and locked test. The test makes sure that there is a correct input signal for the gear down-and -locked position for air or ground mode operation.

B. Equipment

(1) Proximity Switch Actuator/Deactuator Set - A27092-84 (4 Rectangular sensor deactuators are necessary).

C. Prepare for the Test.

S 945-045
(1) Do the Prepare for the Tests task.

S 495-238
(2) Make sure that the landing gear downlocks are installed (AMM 32-00-20).

S 495-046
(3) Make sure that chocks are installed on the wheels.

S 865-047
(4) Release the parking brake.

S 865-048
(5) Put the two thrust levers in the idle position.

S 865-052
(6) Pressurize the right and left hydraulic systems and reservoirs (AMM 29-11-00).

S 865-053
(7) Retract the spoilers.

S 865-054
(8) Put the L, R and C IRUs in the NAV Mode (AMM 34-21-00).

NOTE: IRUs must be aligned.

D. Do a Test of Autobrake Control

S 865-055
(1) Push in and release the RESET button on the M102 unit. Wait for 5 ±3 seconds (the M102 display will show MEM CLR).

S 715-056
(2) Put the AUTOBRAKES selector switch on the P1-3 panel in position 1. Make sure that it arms and that the AUTOBRAKES light is off.

S 715-057
(3) Push the ENABLE/VERIFY switch and hold, and then push the VERIFY switch. Release the two switches at the same time.

S 715-058
(4) Make sure that you have these indications:
(a) The M102 unit display flashes WAIT four times and shows TEST END after 15 ±5 seconds, and then goes off after 5 ±3 seconds.
(b) The AUTOBRAKES selector switch moves to DISARM and the AUTOBRAKES light on the P1-3 panel comes on.
(c) The AUTOBRAKES message appears on the EICAS advisory display.

S 715-059
(5) Put the AUTOBRAKES selector switch in position 1. Make sure that it arms.

S 715-060
(6) Make sure that the AUTOBRAKES light and the AUTOBRAKES advisory message go off.

S 865-061
(7) Open this circuit breaker on the P11 panel:
(a) 11S21, AUTOBK ANTISKID TEST IND 2

S 715-062
(8) Make sure that the AUTOBRAKES selector switch stays armed, the AUTOBRAKES light goes off, and the AUTOBRAKES advisory message does not appear on the EICAS display.

S 865-063
(9) Close this circuit breaker on the P11 panel:
(a) 11S21, AUTOBK ANTISKID TEST IND 2

S 865-064
(10) Open this circuit breaker on the P11 panel:
(a) 11S14, AUTOBK ANTISKID TEST IND 1

S 715-065
(11) Make sure that the AUTOBRAKES selector switch stays armed, the AUTOBRAKES light goes off, and the AUTOBRAKES advisory message does not appear on the EICAS display.

S 865-066
(12) Open this circuit breaker on the P11 panel:
(a) 11S21, AUTOBK ANTISKID TEST IND 2

S 715-067
(13) Make sure that the AUTOBRAKES selector switch goes to DISARM, the AUTOBRAKES light comes on, and the AUTOBRAKES advisory message appears on the EICAS display.

S 865-068
(14) Close these circuit breakers on the P11 panel:
(a) 11S14, AUTOBK ANTISKID TEST IND 1
(b) 11S21, AUTOBK ANTISKID TEST IND 2

S 715-069
(15) Put the AUTOBRAKES selector switch to position 1. Make sure that the switch arms, the AUTOBRAKES light goes off and the AUTOBRAKES message goes out of view.

S 865-070
(16) Push in and hold the pilots' right brake pedal.

S 715-071
(17) Make sure that the AUTOBRAKES selector switch moves to DISARM, the AUTOBRAKES light come on and AUTOBRAKES advisory message appears on the EICAS display.

S 715-072
(18) Push and hold the ENABLE/VERIFY switch and then push the VERIFY switch. Release the two switches at the same time.

S 715-073
(19) Make sure that the M102 unit display shows PRES R.

S 865-074
(20) Release the pilots' right brake pedal.

S 715-075
(21) Put the AUTOBRAKES selector switch in position 1. Make sure that it arms, the AUTOBRAKES light goes off and the AUTOBRAKES message goes out of view.

S 715-076
(22) Push in and hold the pilots' left brake pedal.

S 715-077
(23) Make sure that the AUTOBRAKES selector switch moves to the DISARM position, the AUTOBRAKES light comes on and the AUTOBRAKES message appears on the EICAS advisory display.

S 715-078
(24) Push and hold the ENABLE/VERIFY switchd, and then push the VERIFY switch. Release the switches at the same time.

S 715-079
(25) Make sure that the M102 unit display shows PRES L.

S 715-080
(26) Release the pilots' left brake pedal.

S 715-081
(27) Put the AUTOBRAKES selector switch in the MAX AUTO position. Make sure that the switch arms, the AUTOBRAKES light goes off and the AUTOBRAKES message goes out of view.

S 715-082
(28) Hold the AUTOBRAKES selector switch in the MAX AUTO position.

S 715-083
(29) Move the right thrust lever forward from the idle position.

S 715-084
(30) Make sure that the AUTOBRAKES light comes on and the AUTOBRAKES advisory message appears on the EICAS display.

S 715-085
(31) Push and hold the ENABLE/VERIFY switch, and then push the VERIFY switch. Release the two switches at the same time.

S 715-086
(32) Make sure that the M102 unit display shows THR R1.

S 715-087
(33) Push and release the VERIFY switch. Make sure that the M102 unit display shows THR R2.

S 715-088
(34) Release the AUTOBRAKES selector switch and make sure that it moves to the DISARM position.

S 715-089
(35) Put the right thrust lever in the idle position.

S 715-090
(36) Push and release the RESET button on the M102 unit and stop 5 ±3 seconds. Make sure that the M102 display shows MEM CLR.

S 715-091
(37) Put the AUTOBRAKES selector switch in the MAX AUTO position. Make sure that the switch arms, the AUTOBRAKES light goes off and the AUTOBRAKES message goes out of view.

S 715-092
(38) Hold the AUTOBRAKES selector switch in the MAX AUTO position.

S 715-093
(39) Move the left thrust lever forward from the idle position.

S 715-094
(40) Make sure that the AUTOBRAKES light comes on and the AUTOBRAKES message appears on the EICAS advisory display.

S 715-095
(41) Push in the ENABLE/VERIFY switch and hold it.

S 715-096
(42) Push the VERIFY switch. Release the ENABLE/VERIFY switch and the VERIFY switch.

S 715-097
(43) Make sure that the M102 unit display shows THR L1.

S 715-098
(44) Push and release the VERIFY switch. Make sure that the M102 unit display shows THR L2.

S 715-099
(45) Release the AUTOBRAKES selector switch and make sure that it moves to the DISARM position.

S 865-100
(46) Put the left thrust lever in the idle position.

S 715-101
(47) Push and release the RESET button on the M102 unit and wait 5 ±3 seconds. Make sure that the M102 display shows MEM CLR.

E. Do a Test of the Speedbrake Switch.

S 715-212
(1) Put the AUTOBRAKES selector switch in position 1. Make sure that the switch arms, the AUTOBRAKES light goes off, and the AUTOBRAKES advisory message goes out of view on the EICAS display.

S 865-102

WARNING: MAKE SURE THAT THE WING UPPER SURFACES ARE CLEAR BEFORE YOU MOVE THE SPEEDBRAKE HANDLE. MOVEMENT OF THE SPOILERS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT IF THE WING UPPER SURFACES ARE NOT CLEAR.

(2) Put the speedbrake handle in the UP position.

S 715-103
(3) Push the ENABLE/VERIFY switch and hold, and then push the VERIFY switch. Release the two switches at the same time.

S 715-104
(4) Make sure that the M102 unit display shows SPLR HDL.

S 715-105
(5) Put the speedbrake handle in the DOWN position.

S 715-106
(6) Make sure that the AUTOBRAKES selector switch moves to the DISARM position, the AUTOBRAKES light comes on, and the AUTOBRAKES message appears on the EICAS advisory display.

F. Do a Test for the Landing Gear Down-and-Locked condition.

S 715-107
(1) Put the AUTOBRAKES selector switch in the OFF position.

S 715-108
(2) Make sure that the AUTOBRAKES light goes off and the AUTOBRAKES message goes out of view.

S 715-109
(3) Hold the proximity switch deactuators adjacent to these proximity sensors:

Sensor No.	Name	Location
S10061	Down and locked (LH, System 1)	On upper lock link apex, left gear
S10074	Down and locked (LH, System 2)	On upper lock link apex, left gear

S 715-110
(4) Push and hold the the ENABLE/VERIFY switch, and then push the VERIFY switch. Release the two switches at the same time.

S 715-111
(5) Make sure that the M102 unit display shows GEAR SW 1.

S 715-112
(6) Push and release the VERIFY switch. Make sure that the M102 unit shows GEAR SW 2.

S 715-113
(7) Remove the proximity switch deactuators.

S 715-114
(8) Put the proximity switch deactuators adjacent to these proximity sensors.

Sensor No.	Name	Location
S10062	Truck tilt (LH, System 1)	On left gear truck beam
S10060	Truck tilt (RH, System 1)	On right gear truck beam

S 715-115
(9) Put the AUTOBRAKES selector switch in the MAX AUTO position.

S 715-117
(10) Push and hold the ENABLE/VERIFY switch, and then push the VERIFY switch. Release the two switches at the same time.

S 715-118
(11) Make sure that the M102 unit display shows A/G 1.

S 715-120
(12) Remove the proximity switch deactuators.

S 715-121
(13) Put the proximity switch deactuators adjacent to these proximity sensors.

Sensor No.	Name	Location
S10064	Truck tilt (LH, System 2)	On the left gear truck beam
S10059	Truck tilt (RH, System 2)	On the right gear truck beam

S 715-123
(14) Push and hold the ENABLE/VERIFY switch, and then push the VERIFY switch. Release the two switches at the same time.

S 715-124
(15) Make sure that the M102 unit display shows A/G 2.

S 715-125
(16) Put the AUTOBRAKES selector switch in the OFF position.

S 715-126
(17) Keep the deactuators adjacent to the sensors S10064 and S10059. Put deactuators on sensors S10062 and S10060.

S 715-127
(18) Move the thrust levers forward from the idle position.

S 715-128
(19) Put the AUTOBRAKES selector switch in position 1. Make sure that it arms and stays armed for a minimum of 5 seconds.

S 865-129
(20) Put the two thrust levers in the idle position.

S 865-130
(21) Put the AUTOBRAKES selector switch in the OFF position.

S 095-131
(22) Remove all the proximity switch deactuators.

S 865-132
(23) Push and release the RESET button on the M102 unit. Stop for 5 ±3 seconds. Make sure that the M102 display shows MEM CLR.

S 945-241
(24) Do the steps in the procedure to Put the Airplane Back to Its Usual Condition if it is not necessary to do more maintenance.

TASK 32-42-00-715-133

7. Autobrake Application Test

A. General
(1) This test does a check for the correct autobrake pressure for the selected autobrake application position. You will install a brake pressure gage at each brake to monitor the brake pressure.
(2) It is necessary to use the Antiskid/Autobrake Control Unit, M102 BITE for this test.

B. Equipment
(1) Brake Pressure Gage Set, F72977-62 - 0-4000 psig, for BMS 3-11 hydraulic fluid (eight gages are necessary).

C. Prepare for the Test.

S 495-134

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 landing gear downlocks are installed on the main and nose landing gear (AMM 32-00-20).

S 495-243
(2) Make sure that chocks are installed on the landing gear wheels.

S 715-135
(3) Do the Prepare for the Tests task.

S 865-136
(4) Release the parking brake.

S 485-137
(5) Install a 0-4000 psig pressure gage in each of the eight brake bleed fittings.

S 865-139
(6) Pressurize the right and left hydraulic systems and reservoirs (AMM 29-11-00).

S 865-138
(7) Put the two thrust levers in the idle position.

S 865-140
(8) Retract the spoilers.

S 865-141
(9) Put the L, R and C IRUs in the NAV mode (AMM 34-21-00).

NOTE: The IRUs must be aligned.

D. Do the Autobrake Application Test.

S 865-144
(1) Turn the BRAKE TEST rotary switch on the M102 unit to the A/B position.

S 865-145
(2) Make sure that this circuit breaker on the P6 panel is closed:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV

S 715-146
(3) Put the AUTOBRAKES selector switch in position 1. Make sure that it arms.

S 715-147
(4) Push in the ENABLE/VERIFY switch and hold, and then push in the VERIFY switch. Release the two switches at the same time.

S 715-148
(5) Make sure that you have these indications:
(a) The M102 unit display shows BRK A/B 1.
(b) The AUTOBRAKES light comes on, the AUTOBRAKES selector switch disarms, and the EICAS message, AUTOBRAKES, is shown.
(c) The hydraulic pressure at all brakes increases to 1500 ±250 psi for 10 ±5 seconds and then goes back to 300 ±200 psi for 5 ±3 seconds.

S 715-149
(6) Repeat for the AUTOBRAKES selector switch positions 2, 3, 4 and MAX AUTO. Make sure that the pressure and the display message are as shown in Table 4, the pressure goes back to 300 ±250 psi, and the switch disarms.

TABLE 4		
Autobrake Sel Position	Display Message (M102)	Brake Pressure (psi)
2 3 4 MAX AUTO	BRK A/B 2 BRK A/B 3 BRK A/B 4 BRK A/B 5	1750 ±250 2000 ±250 2400 ±250 3000 ±250

S 715-150
(7) Put the BRAKE TEST rotary switch in the NORM position.

S 865-151
(8) Remove the power from the right and left hydraulic systems (AMM 29-11-00).

S 715-152
(9) Push in the ENABLE/VERIFY switch and hold, and then push in the VERIFY switch. Release the two switches at the same time.

S 715-153
(10) Make sure that the M102 display shows PRES ACC.

S 865-154
(11) Push in and release the RESET button on the M102 unit.

S 945-242
(12) Do the steps in the task to Put the Airplane Back to Its Usual Condition if it is not necessary to do any more maintenance.

TASK 32-42-00-715-155

8. Autobrake RTO (Refused Take Off) Test

A. General

(1) The autobrake RTO system automatically applies full system pressure (3000 psi) to the brakes for the RTO test. The system is armed at the autobrakes selector switch on the pilots center instrument panel, P1-3.

B. Equipment

(1) Pressure gages - 0-4000 psi, for BMS 3-11 hydraulic fluid

C. Prepare for the Test

S 495-160
(1) Make sure that downlocks are installed on the main and nose landing gear (AMM 32-00-20).

S 715-165
(2) Prepare for the Test.

S 865-161
(3) Release the parking brake.

S 865-162
(4) Put the thrust levers in the idle position.

S 865-163
(5) Retract the spoilers.

S 865-164
(6) Put the L, R and C IRUs in the NAV mode (AMM 34-21-00).

NOTE: The IRUs must be aligned.

D. Do the Test of Autobrake RTO Power Distribution and Indication

S 715-167
(1) Put the Autobrake Selector Switch on panel P1-3 to the RTO position and make sure that it stays in that position.

S 865-168
(2) Open these circuit breakers on the P11 panel:
(a) 11S14, AUTOBK ANTISKID TEST IND 1
(b) 11S21, AUTOBK ANTISKID TEST IND 2

S 715-169
(3) Make sure that the autobrake selector switch goes to the OFF position.

S 865-170
(4) Close these circuit breaker on the P11 panel:
(a) 11S14, AUTOBK ANTISKID TEST IND 1
(b) 11S21, AUTOBK ANTISKID TEST IND 2

E. Do the Autobrake RTO Operational Test

S 495-171

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 chocks are installed on the airplane wheels.

S 865-172
(2) Make sure that hydraulic power has been removed from the right and the left hydraulic systems (AMM 29-11-00).

S 485-174
(3) Install a brake pressure gage assembly in the bleed port of the number 1 wheel brake.

S 865-173
(4) Pressurize the right hydraulic system and reservoir (AMM 29-11-00).

S 715-175
(5) Put the autobrake selector switch on panel P1-3 to the RTO position and make sure that it stays in that position.

S 715-176
(6) Put the brake test switch on the Antiskid/Autobrake Control Unit, M102, to the A/B position.

S 715-177
(7) Push in and hold the ENABLE/VERIFY switch.

S 715-178
(8) Push in the VERIFY switch and release the ENABLE/VERIFY and VERIFY switches.

S 715-179
(9) Make sure that you have these indications:
  (a) The M102 display shows BRK RTO.
  (b) Pressure indication on the brake pressure gage for wheel No. 1 brake goes to 2,900 ±100 psi for approximately 15 seconds, and then decreases to less than 100 psi.
  (c) The autobrake selector switch on the P1-3 panel goes to the OFF position.

S 715-180
(10) Put the brake test rotary switch on the M102 to the NORM position.

S 715-181
(11) Push in and release the RESET button on the M102.

S 715-182
(12) Remove power from the right and left hydraulic system (AMM 29-11-00).

S 715-183
(13) Remove the brake pressure gage from wheel number 1 and put the brake bleed port back to the normal configuration.

TASK 32-42-00-945-184

9. Put the Airplane Back to Its Usual Condition

A. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 06-46-00/201, Entry, Service, and Cargo Doors (Major Zone 800) Access Doors and Panels
(3) AMM 25-50-03/401, Bulkhead
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

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

(2) Access Panel
119AL Main Equipment Center

C. Procedure

S 865-185
(1) Put the L, R and C IRUs to the OFF position.

S 865-186
(2) Remove the power from the left and right hydraulic systems (AMM 29-11-00).

S 085-187
(3) Remove the brake pressure gages, if installed, and put the brake bleed port back to its usual condition.

S 865-188
(4) Pressurize the right hydraulic system and reservoir (AMM 29-11-00).

S 865-189
(5) Set the parking brake.

S 865-190
(6) Push in the RESET button on the Antiskid/Autobrake Control Unit, M102 to clear the memory (the display will show MEM CLR).

S 415-201
(7) AIRPLANES WITH ANTISKID/AUTO BRAKE CONTROL UNIT OF THE E5 RACK (FIG. 501);
Do the steps that follows:
(a) On the forward bulkhead in the forward cargo compartment, install the access panel for the E5 rack (AMM 25-50-03/401).
(b) Close the forward cargo door, 821.

S 865-210
(8) Remove the power from the right hydraulic system if it is not necessary (AMM 29-11-00).

S 865-211
(9) Remove the electrical power if it is not necessary (AMM 24-22-00).

ANTISKID/AUTOBRAKE SYSTEM - INSPECTION/CHECK

1. General
   A. This section contains these tasks:
      (1) An operational test of the thrust lever switch for a Refused Takeoff (RTO) configuration.
      (2) A test for correct operation and indications for part of the antiskid/autobrake system as follows:
         (a) Operation of the autobrake solenoid valve and the valve relay.
         (b) Indications for the operation of the solenoid valve.
   B. It is necessary to use the Built-In-Test Equipment (BITE) for the Antiskid/Autobrake Control Unit to do this test.

TASK 32-42-00-716-005

2. Thrust Lever Switch Operation for RTO Condition - Test
   A. References
      (1) AMM 06-46-00/201, Entry, Service, and Cargo Doors
      (2) AMM 24-22-00/201, Electrical Power - Control
      (3) AMM 25-50-03/401, Bulkhead Lining
      (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
      (7) AMM 34-21-00/501, Inertial Reference System
   B. Access
      (1) Location Zones

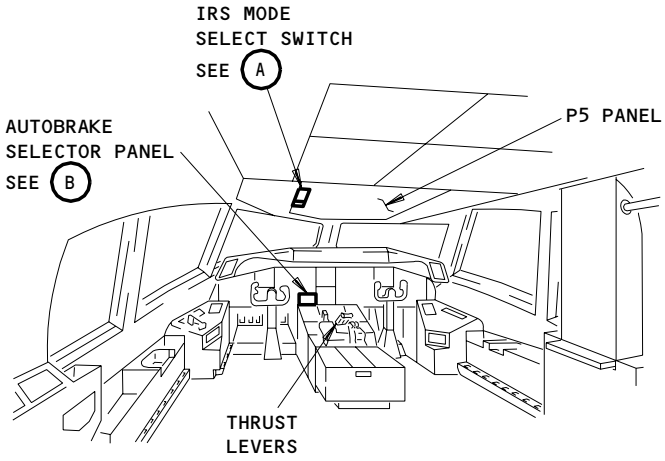
143/144	MLG Wheel Well
211/212	Control Cabin
731/741	Landing Gear
120	Main Equipment Center

      (2) Access Panel

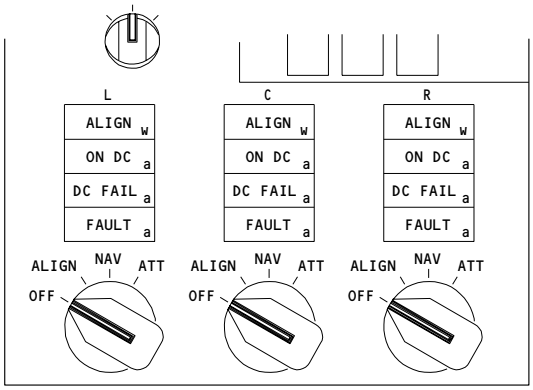
119AL	Main Equipment Center

   C. Procedure

      S 496-006
      (1) Make sure that chocks are installed on the wheels.

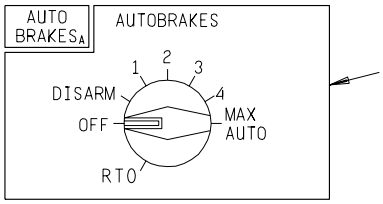


FLIGHT COMPARTMENT



IRS MODE SELECT SWITCH

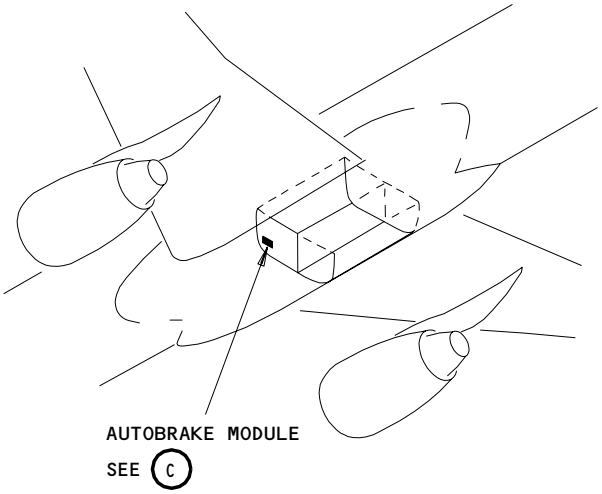
A

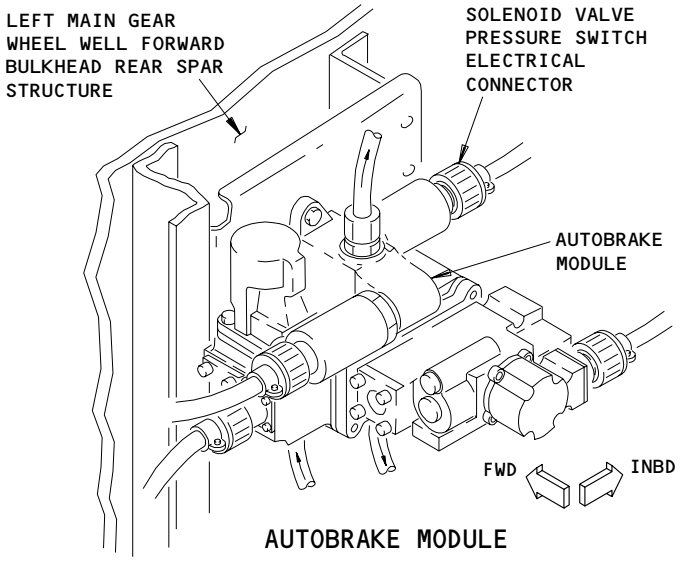


AUTOBRAKE SELECTOR PANEL ON PILOT'S CENTER INSTRUMENT PANEL (P1-3)

(TYPICAL)

B

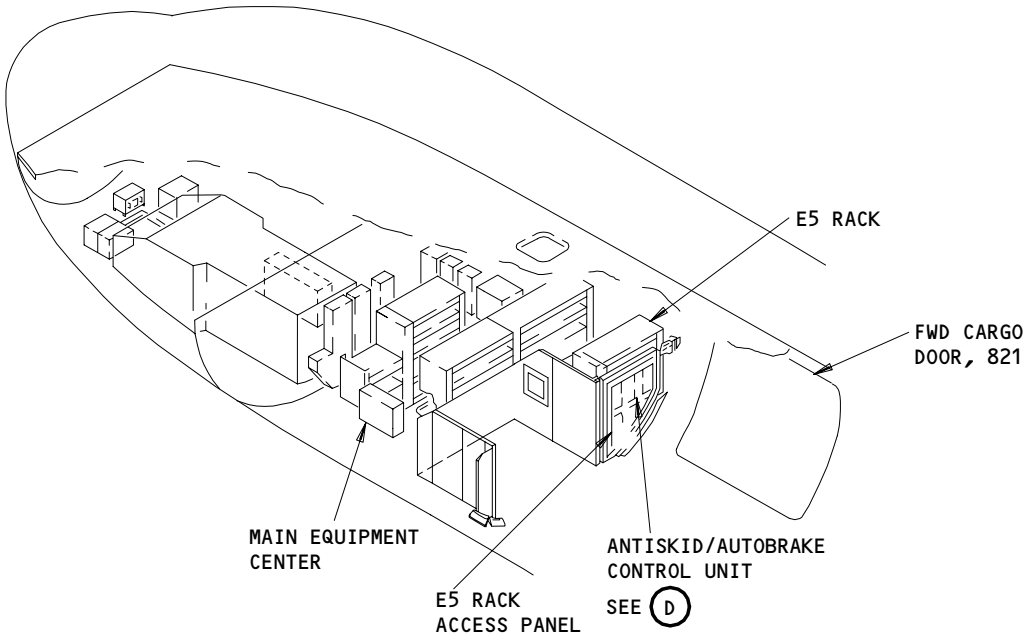




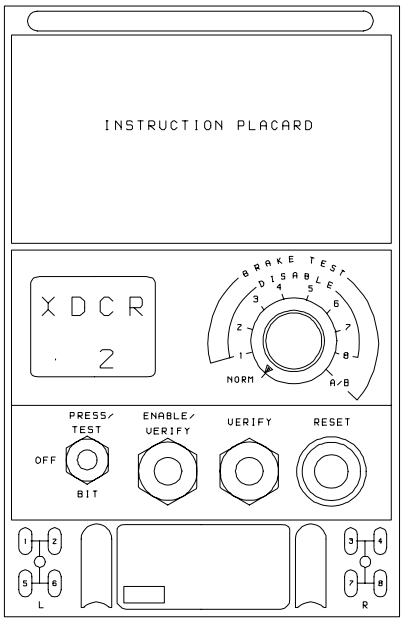
AUTOBRAKE MODULE

C

Antiskid/Autobrake System Inspection/Check
Figure 601 (Sheet 1)



ANTISKID/AUTOBRAKE CONTROL
UNIT LOCATION



ANTISKID/AUTOBRAKE CONTROL UNIT
FRONT FACE

(D)

Antiskid/Autobrake System Inspection/Check
Figure 601 (Sheet 2)

S 866-007
(2) Supply electrical power (AMM 24-22-00/201).

S 866-008
(3) Release the parking brake.

S 866-009
(4) Make sure that the thrust levers are in the idle position.

S 866-010
(5) Put the spoiler/speedbrake handle on the center control stand in the down-and-locked detent.

S 866-011
(6) Put the L, R, and C IRUs in the NAV mode (AMM 34-21-00/501).

NOTE: The IRUs must be aligned.

S 866-012
(7) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 866-013
(8) Make sure that the AUTOBRAKES selector switch is in the OFF position.

S 716-016
(9) Put the AUTOBRAKES selector switch on the P1-3 panel in the RTO position and make sure that it stays in this position.

S 016-026
(10) Open the forward cargo door, 821 (AMM 06-46-00/201).

S 016-027
(11) Remove the access panel for the E5 rack on the bulkhead of the forward cargo compartment (AMM 25-50-03/401).

S 016-141
(12) Find the Antiskid/Autobrake Control Unit on the E5 rack.

S 716-028
(13) Push and hold the ENABLE/VERIFY switch, and then push the VERIFY switch. Release the two switches at the same time.
(a) Make sure that the unit display flashes WAIT four times while the test operates and do the steps that follow:
(b) Make sure that THR L1, THR R1, THR L2, and THR R2 do not show on the unit display. Ignore other indications.
(c) Push the VERIFY switch when the display tells you to continue the test.
(d) Continue the test until TEST END shows on the display.

S 716-031
(14) Move the thrust levers forward from the idle position.

S 716-032
(15) Push and hold the ENABLE/VERIFY switch and then push the VERIFY switch. Release the two switches at the same time.
(a) Make sure that THR L1, THR R1, THR L2, and THR R2 show on the unit display. Ignore other indications.

NOTE: If the message "A/B SYS" appears during the test as a result of the RTO mode being simulated, no further trouble-shooting is required.

(b) Push the VERIFY switch when the display tells you to continue the test.
(c) Make sure that the unit display flashes WAIT four times while the test continues.
(d) The message TEST END will then show on the display.

D. Put the Airplane Back to Its Usual Condition

S 866-035
(1) Put the AUTOBRAKES selector switch to the OFF position.

S 866-036
(2) Put the thrust levers in the idle position.

S 866-037
(3) Put the L, R, and C IRUs to the OFF position.

S 416-047
(4) Install the access panel for the E5 rack on the forward bulkhead of the forward cargo compartment (AMM 25-50-03/401).

S 416-048
(5) Close the forward cargo door, 821.

S 866-049
(6) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-42-00-716-050

3. Autobrake Solenoid Valve, Valve Indication, and Valve Relay Operation - Test

A. References
(1) AMM 06-46-00/201, Entry, Service, and Cargo Doors
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 25-50-03/401, Bulkhead Lining
(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
(7) 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
120	Main Equipment Center

(2) Access Panel

119AL	Main Equipment Center

C. Prepare for the test.

S 496-051
(1) Make sure that chocks are installed on the airplane wheels.

S 496-052
(2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 866-053
(3) Supply electrical power (AMM 24-22-00/201).

S 866-054

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

S 866-055
(5) Release the parking brake.

S 866-056
(6) Make sure that the thrust levers are in the idle position.

S 866-057
(7) Put the spoiler/speedbrake handle on the center control stand in the down-and-locked detent.

S 866-058
(8) Put the L, R, and C IRUs in the NAV mode (AMM 34-21-00/501).

NOTE: The IRUs must be aligned.

S 866-059
(9) Pressurize the right hydraulic system and reservoir.

S 866-060
(10) Make sure that the AUTOBRAKES selector switch is in the OFF position.

D. Do an Indication Test for Solenoid Valve Operation

S 866-066
(1) Disconnect the electrical connector, D2674, from the pressure switch for the solenoid valve on the autobrake module M239.

S 486-065
(2) Connect a jumper between pins 1 and 2 of the connector, D2674.

S 716-064
(3) Make sure that you have these indications:
(a) The AUTOBRAKES light on the P1-3 panel comes on.
(b) The EICAS message AUTOBRAKES shows.

S 096-067
(4) Remove the jumper.

S 716-068
(5) Make sure that the AUTOBRAKES light goes off and the EICAS message AUTOBRAKES goes out of view.

S 866-069
(6) Install the electrical connector, D2674, to the pressure switch for the solenoid valve.

E. Do an Operational Test of the Solenoid Valve and the Solenoid Valve Relay

S 866-063
(1) Place the AUTOBRAKES selector switch on the P1-3 panel in position 1.

S 016-137
(2) Open the forward cargo door, 821 (AMM 06-46-00/201).

S 016-138
(3) Remove the access panel for the E5 rack on the forward bulkhead of the cargo compartment (AMM 25-50-03/401).

S 866-088
(4) Find the Antiskid/Autobrake Control Unit on the E5 rack.

S 866-139
(5) Make sure that the BRAKE TEST switch on the Antiskid/Autobrake Control Unit is in the NORM position.

S 716-090
(6) Push and hold the ENABLE/VERIFY switch, and then push the VERIFY switch. Release the two switches.

S 716-091
(7) Make sure that the unit display flashes WAIT four times while the test operates and shows TEST END after the test stops.

S 716-140
(8) If a failure indication shows on the display, continue to push the VERIFY switch until TEST END shows on the display.

S 866-092
(9) Put the AUTOBRAKES selector switch in the OFF position.

S 866-093
(10) Put the L, R, and C IRUs to the OFF position.

F. Put the Airplane Back to Its Usual Condition

S 866-094
(1) Set the parking brake.

S 096-095

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).

S 866-096
(3) Remove power from the right hydraulic system if it is not necessary (AMM 29-11-00/201).

S 416-114
(4) Install the access panel for the E5 rack on the forward bulkhead of the forward cargo compartment (AMM 25-50-03/401).

S 416-115
(5) Close the forward cargo door, 821.

S 866-116
(6) 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 procedure contains four tasks. The first task is a procedure to remove the Antiskid/Autobrake Control Unit. The second task is a procedure to install the Antiskid/Autobrake Control Unit. The third task is a procedure to remove a circuit card from the Control Unit. The fourth task is a procedure to install a circuit card in the Control Unit.
   B. The Antiskid/Autobrake Control Unit (M102) is installed to a tray with two hold down extractors (self-locking mechanism). No tools are necessary for the removal or the installation (AMM 20-10-01/401).
   C. The unit contains static sensitive devices. Refer to AMM 20-41-01/201 for procedures to handle the unit.

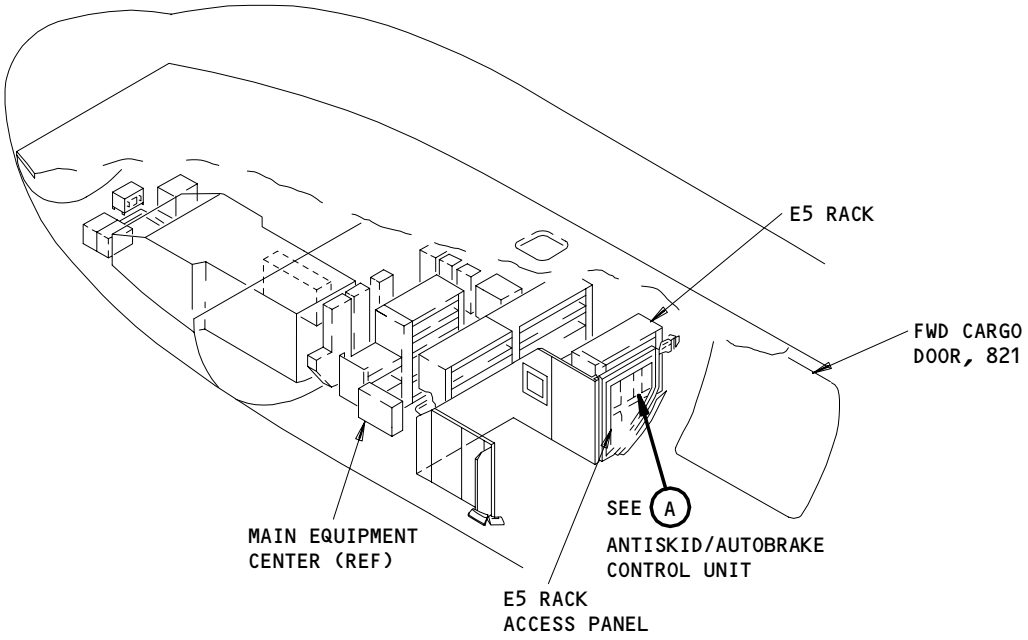
TASK 32-42-01-024-069

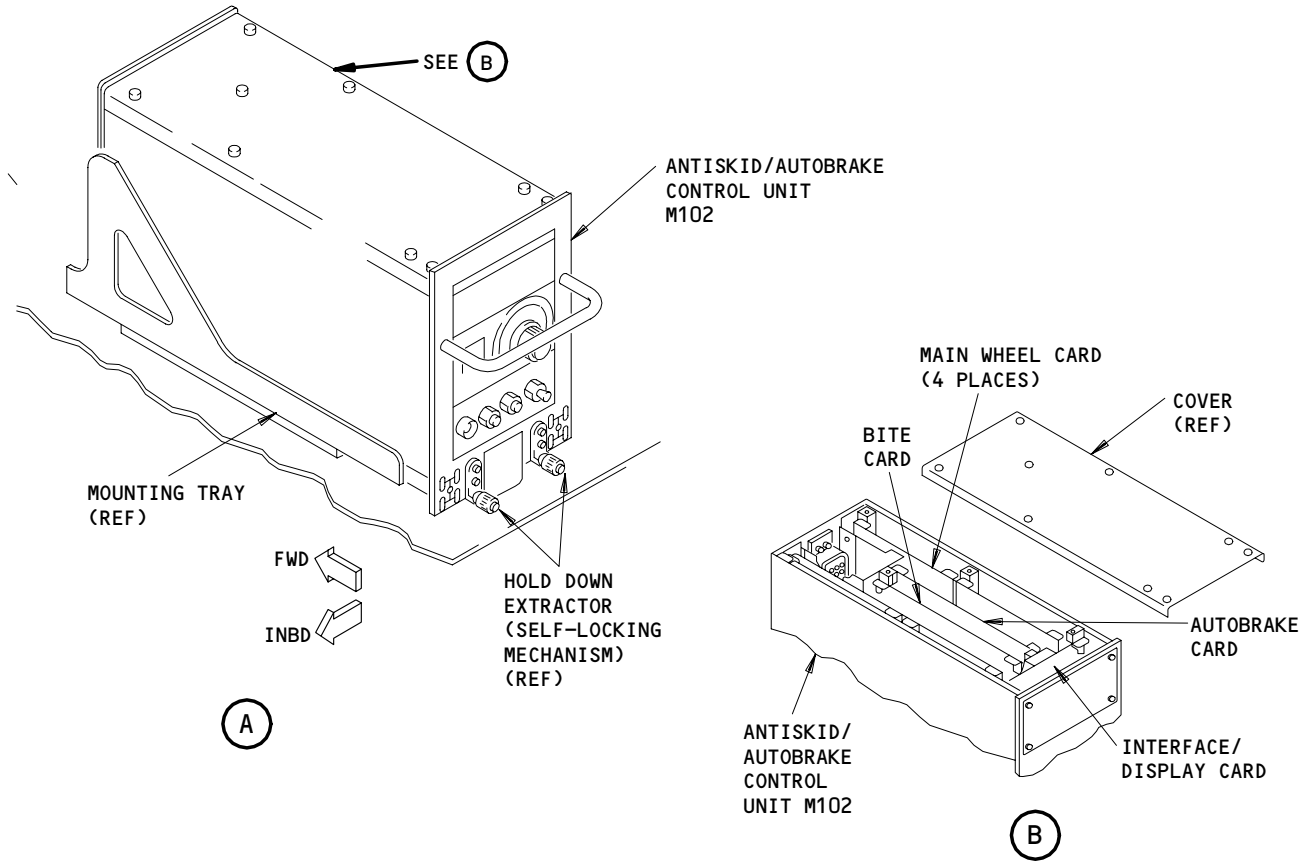
2. Antiskid /Autobrake Control Unit - Removal (Fig. 401)
   A. References
      (1) AMM 06-46-00/201, Entry, Service, and Cargo Doors (Major Zone 800) Access Doors and Panels
      (2) AMM 20-10-01/401, E/E Rack-Mounted Components
      (3) AMM 20-41-01/201, Electrostatic Sensitive Devices
      (4) AMM 24-22-00/201, Electrical Power - Control
      (5) AMM 25-50-03/401, Bulkhead Lining
      (6) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
      (7) AMM 34-21-00/501, Inertial Reference System
   B. Access
      (1) Location Zones
          211 Control Cabin, Left
          212 Control Cabin, Right
          821 Forward Cargo Door

   C. Procedure

      S 864-070
      (1) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
          (a) 11C31, ANTI-SKID 2-6
          (b) 11C32, ANTI-SKID 3-7
          (c) 11S14, AUTOBK ANTISKID TEST IND 1
          (d) 11S18, ANTI-SKID 1-5
          (e) 11S21, AUTOBK ANTISKID TEST IND 2
          (f) 11S22, ANTI-SKID 4-8

      S 014-027
      (2) Open the forward cargo door, 821 (AMM 06-46-00/201).





Antiskid/Autobrake Control Unit and Circuit Card Installation
Figure 401

S 014-022

(3) Remove the access panel from the E5 rack

NOTE: The access panel is on the forward bulkhead of the forward cargo compartment, just forward of the forward cargo door, 821.

S 014-023

(4) Find the antiskid/autobrake control unit on the E5 rack.

S 914-013

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.

(5) Do the procedure for devices that are sensitive to electrostatic discharge (AMM 20-41-01/201).

S 024-018

(6) Remove the unit (AMM 20-10-01/401) from the E5 rack.

TASK 32-42-01-404-021

3. Antiskid/Autobrake Control Unit - Installation (Fig. 401)

A. References

(1) AMM 20-10-01/401, E/E Rack-Mounted Components
(2) AMM 20-41-01/201, Electrostatic Sensitive Devices
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(5) AMM 34-21-00/501, Inertial Reference System

B. Access

(1) Location Zones

211 Control Cabin, Left
212 Control Cabin, Right
821 Forward Cargo Door

C. Procedure

S 914-019

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 424-083
(2) Install the unit on the E-5 rack (AMM 20-10-01/401).

S 864-062
(3) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
(a) 11C31, ANTI-SKID 2-6
(b) 11C32, ANTI-SKID 3-7
(c) 11S14, AUTOBK ANTISKID TEST IND 1
(d) 11S18, ANTI-SKID 1-5
(e) 11S21, AUTOBK ANTISKID TEST IND 2
(f) 11S22, ANTI-SKID 4-8

S 714-028
(4) Do the test that follows to make sure that the Antiskid/Autobrake Control Unit operates properly:

NOTE: Make sure that the Antiskid/Autobrake Control Unit M102 rotary selector switch is in the NORM position.

(a) Prepare for the test.
1) Supply electrical power (AMM 24-22-00/201).
2) Put chocks on the wheels.
3) Release the parking brake.
4) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).
5) Put the thrust levers in the idle position.
6) Retract the spoilers.
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.

(b) Do the test.
1) Push in the RESET button on the control unit and wait 5 ±3 seconds. Make sure that the unit display shows MEM CLR.
2) Put the AUTOBRAKES selector switch in position 1.
3) Push in the ENABLE/VERIFY switch and hold, and then push in the VERIFY switch and release both of them at the same time.
4) Make sure that you have the indications that follow:
a) The control unit display flashes WAIT four times and shows TEST END after 15 ±5 seconds.
b) The AUTOBRAKES selector switch disarms.
c) The AUTOBRAKES message shows on the EICAS and the AUTOBRAKES light on the P1 panel comes on.
5) Put the AUTOBRAKES selector switch in the OFF position.
6) Make sure that the ANTISKID/AUTOBRK message on the EICAS maintenance page is not on.
7) Push in the RESET button on the control unit.

8) Put the L, R and C IRU's to the OFF position..

S 944-064

(5) Put the airplane back to its usual condition (Ref Par. 6).

TASK 32-42-01-004-052

4. Antiskid/Autobrake Control Unit Circuit Card - Removal (Fig. 401)

A. Procedure

S 024-053

(1) Remove the Antiskid/Autobrake Control Unit (Ref Par. 2).

S 034-054

(2) Remove the top cover of the unit to get access to the card.

S 914-055

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 024-056

(4) Remove the circuit card or cards that need to be replaced.

TASK 32-42-01-424-057

5. Antiskid/Autobrake Control Unit Circuit Card - Installation (Fig. 401)

A. References

(1) AMM 20-10-01/401, E/E Rack-Mounted Components
(2) AMM 20-41-01/201, Electrostatic Sensitive Devices
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(5) AMM 34-21-00/501, Inertial Reference System

B. Access

(1) Location Zones

211 Control Cabin, Left
212 Control Cabin, Right
821 Forward Cargo Door

C. Procedure

S 914-058

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 424-059
(2) Install the card or cards in the control unit in the correct location.

S 414-060
(3) Install the cover on the control unit.

S 424-061
(4) Install the Antiskid/Autobrake Control Unit (Ref Par. 3)

S 944-063
(5) Put the airplane back to its usual comdition (Ref Par. 6).

TASK 32-42-01-944-029

6. Put the Airplane Back To Its Usual Condition

A. Procedure

S 864-030
(1) Set the parking brakes.

S 864-031
(2) Remove the power from the right hydraulic system if it is not necessary (AMM 29-11-00/201).

S 414-049
(3) Install the E5 rack access panel on the forward bulkhead of the forward cargo compartment (AMM 25-50-03/401).

S 414-050
(4) Close the forward cargo door, 821.

S 864-051
(5) Remove electrical power if it is not necessary (AMM 24-22-00/201).

ANTISKID MODULE (NORMAL AND ALTERNATE SYSTEMS) - REMOVAL/INSTALLATION

TASK 32-42-02-004-091

1. Remove the Antiskid Module (Fig. 401)

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. Access

(1) Location Zones
143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well

C. Prepare for Removal

S 494-028
(1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

S 494-029
(2) Make sure that chocks are installed on the wheels.

S 864-030
(3) Supply electrical power (AMM 24-22-00/201).

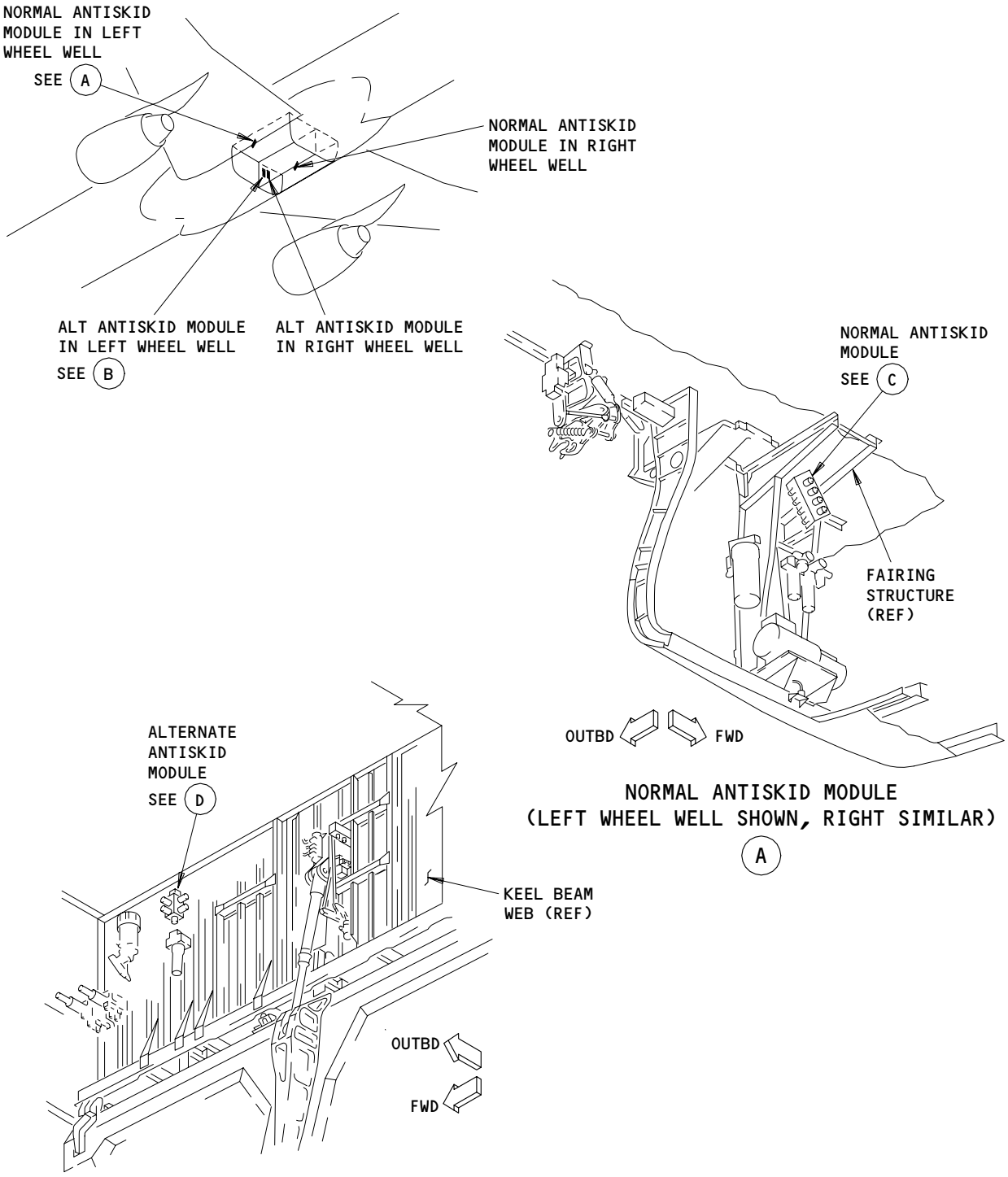
S 494-031

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.

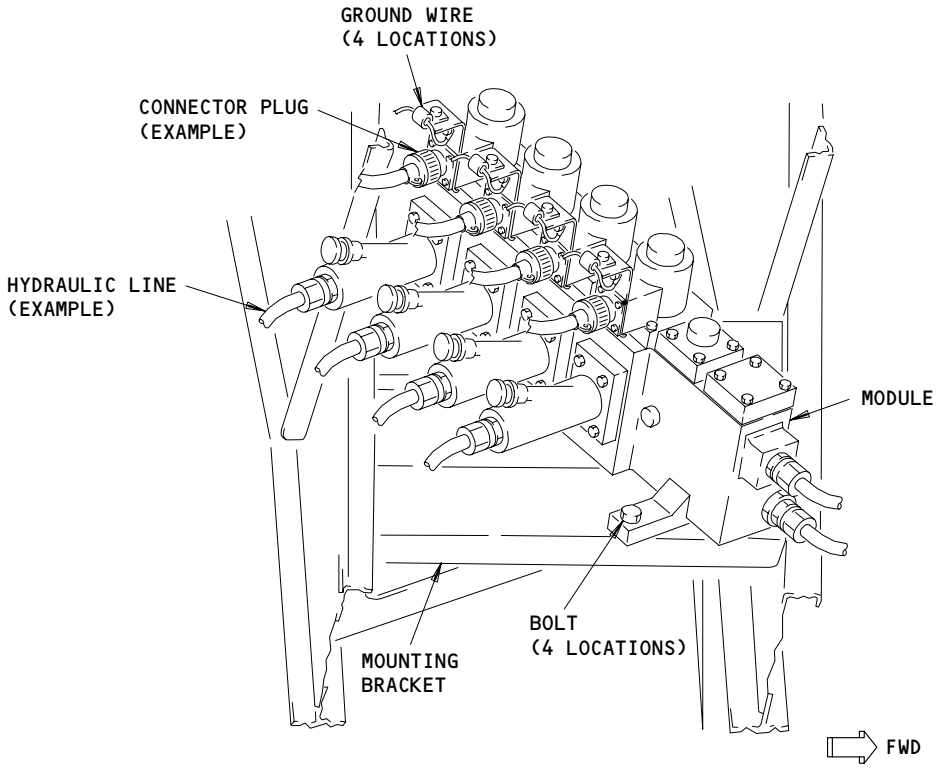
(4) Open the landing gear doors and install the door locks (AMM 32-00-15/201).

S 864-032
(5) Remove the pressure from the right and left hydraulic systems and reservoirs (AMM 29-11-00/201).

S 864-033
(6) For the normal antiskid module, do the steps that follow:
(a) Release the parking brake.
(b) Push in the brake pedals seven to eight times to remove the hydraulic pressure from the brake accumulator.

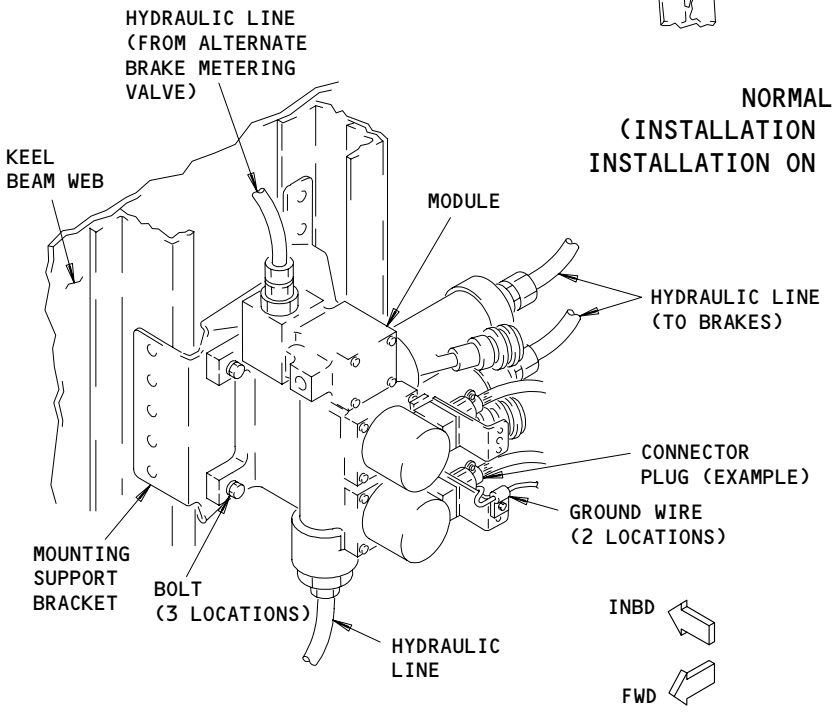


Normal and Alternate Antiskid Module Installation
Figure 401 (Sheet 1)



NORMAL ANTISKID MODULE
(INSTALLATION ON LEFT WHEEL WELL SHOWN
INSTALLATION ON RIGHT WHEEL WELL OPPOSITE)

C



ALTERNATE ANTISKID MODULE
(INSTALLATION ON LEFT WHEEL WELL SHOWN
INSTALLATION ON RIGHT WHEEL WELL OPPOSITE)

D

Normal and Alternate Antiskid Modules Installation
Figure 401 (Sheet 2)

S 864-034
(7) Open these circuit breakers on the the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
(a) 11C31, ANTI-SKID 2-6
(b) 11C32, ANTI-SKID 3-7
(c) 11S18, ANTI-SKID 1-5
(d) 11S22, ANTI-SKID 4-8

D. Procedure to Remove the Antiskid Module

S 034-035
(1) Disconnect the electrical connectors and the ground wires from the module. Put a cap on the connectors and receptacles.

S 034-036
(2) Disconnect the hydraulic lines from the module.

S 034-037
(3) Put plugs in the hydraulic lines and the module hydraulic fittings.

S 024-038
(4) Hold the module and remove the attach bolts.

S 024-039
(5) On the left normal antiskid module, identify the bolts with tags to identify the installation locations.

NOTE: The bolts on the left normal antiskid module have different lengths.

S 034-040
(6) If the antiskid module that you will install does not have hydraulic fittings installed in the ports, do the steps that follow:
(a) Remove all the hydraulic fittings from the module and install plugs in the ports.
(b) Put tags on the fittings to identify the port locations for installation in the new module.
(c) Discard all of the O-rings.

TASK 32-42-02-424-041

2. Install the Antiskid Module (Fig. 401)
A. Equipment
(1) Explosion Proof Bonding Meter - Microhm Bridge, Type a Bonding Meter (Avtron Model T477W, Avtron Manufacturing Inc., Cleveland, Ohio)
B. Consumable Materials
(1) D00153 Hydraulic Fluid - BMS 3-11
C. References
(1) AMM 06-46-00/201, Entry, Service and Cargo Doors

(2) AMM 20-10-21/401, Electrical Bonding
(3) AMM 24-22-00/201, Electrical Power - Control
(4) AMM 25-50-03/401, Bulkhead Lining
(5) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(6) AMM 32-00-15/201, Landing Gear Door Locks
(7) AMM 32-00-20/201, Landing Gear Downlocks
(8) AMM 34-21-00/501, Inertial Reference System

D. Access

(1) Location Zones
143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well

E. Procedure to Install the Antiskid Module

S 434-042

(1) If the normal or alternate antiskid module that you will install does not have hydraulic fittings installed in its ports, do the steps that follow:
(a) Lubricate the module ports with hydraulic fluid.
(b) Lubricate the fittings and new O-rings with hydraulic fluid.
(c) Install the O-rings and fittings in the antiskid module.

CAUTION: MAKE SURE THAT THE CHECK VALVE IS INSTALLED IN THE CORRECT PORT ON THE ALTERNATE ANTISKID MODULE. IF THE CHECK VALVE IS NOT INSTALLED IN THE CORRECT PORT, HYDRAULIC FLUID CAN TRANSFER BETWEEN SYSTEMS.

(d) Install the the check valve and O-ring in the return port of the module.

S 424-044

(2) Install the module with bolts, washers and nuts.

NOTE: On the left normal antiskid module, the bolt nearest to the NORMAL BRAKE ANTISKID MODULE foil marker is shorter than the other three bolts.

S 434-045

CAUTION: MAKE SURE THAT YOU CONNECT THE HYDRAULIC LINES TO THE CORRECT PORTS ON THE MODULE. IF YOU CONNECT THEM TO THE WRONG PORTS, IT WILL CAUSE INCORRECT BRAKE SYSTEM ACTUATION.

(3) Connect the hydraulic lines to the module.

S 864-046
(4) Install the electrical connectors and the ground wires to the module.

S 864-047
(5) For the normal antiskid module, pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 864-048
(6) For the alternate antiskid module, pressurize the left hydraulic system and reservoir (AMM 29-11-00/201).

S 864-049
(7) Push in the brake pedals fully at least four times.

S 794-050
(8) After five minutes, do a check for leaks at the hydraulic fittings.

S 764-051
(9) Do a check of bonding resistance to make sure the resistance between the module and the structure is not more than 0.008 ohm (AMM 20-10-21/401).

S 864-052
(10) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
(a) 11C31, ANTI-SKID 2-6
(b) 11C32, ANTI-SKID 3-7
(c) 11S18, ANTI-SKID 1-5
(d) 11S22, ANTI-SKID 4-8

S 714-053
(11) Do a test of the module with the Antiskid/Autobrake Control Unit built-in-test equipment (BITE).

S 864-054
(12) Release the parking brake.

S 864-055
(13) Open this circuit breaker on the P6 panel and attach a DO-NOT-CLOSE tag:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV

S 864-056
(14) Set the parking brake.

NOTE: With the hydraulic system pressurized, this will give continuous pressure to the brakes so that you will not have to hold the brake pedals in for the brake application test that follows.

S 864-057
(15) Put both the thrust levers in the idle position.

S 864-058
(16) Retract the spoilers.

S 864-061
(17) 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 034-080
(18) Open the forward cargo door, 821 (AMM 06-46-00/201).

S 034-081
(19) Remove the E5 rack access panel on the forward bulkhead of the cargo compartment, just forward of the cargo door (AMM 25-50-03/401).

S 034-082
(20) Find the Antiskid/Autobrake Control Unit.

S 714-083

WARNING: MAKE SURE THAT THE AREA NEAR THE BRAKES IS CLEAR, AND CHOCKS ARE INSTALLED ON THE WHEELS BEFORE THE BRAKES ARE APPLIED. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR IF THE AREA IS NOT CLEAR.

(21) For the normal antiskid module,
do a test of normal brake application for the left or right main gear truck as follows:
(a) Do the test steps in Table 1 and do a check for the results as shown:
1) Put the BRAKE TEST rotary switch in the position shown.

NOTE: Wheel numbers are 1, 2, 5 and 6 for the left main gear truck, and 3, 4, 7 and 8 for the right main gear truck.

2) Press the ENABLE/VERIFY switch and the VERIFY switch at the same time. Make sure that the brake shown in Column A releases for five seconds and then applies again. Make sure that the unit display messages are as shown for the brake cycle.

NOTE: Brake cycles (release and application of brakes) can be seen if you look at the brake piston (brake pistons extend when the brake is applied and retract when the brake is released). The ANTISKID light on pilots' overhead panel P5 will illuminate intermittently when this test operates.

Table 1

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 714-084

WARNING: MAKE SURE THAT THE AREA NEAR THE BRAKES IS CLEAR, AND CHOCKS ARE INSTALLED ON THE WHEELS BEFORE THE BRAKES ARE APPLIED. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR IF THE AREA IS NOT CLEAR.

(22) For the alternate antiskid module, do a test of alternate brake application for the left or right main gear as follows:
(a) Remove the hydraulic pressurize from the right and left hydraulic system and reservoirs (AMM 29-11-00/201).

NOTE: Do not operate the brake pedals.

(b) Make sure that the BRAKE SOURCE light on the pilots' center instrument panel (P3-1) comes on.
(c) Put the BRAKE TEST rotary switch in the NORM position.
(d) Push in the ENABLE/VERIFY switch and hold, then push in the VERIFY switch and release both of them at the same time.
(e) Make sure that the display shows PRESS L.

(f) Push in the VERIFY switch and make sure that the display shows PRESS R.
(g) Push in the VERIFY switch and make sure that the display shows PRESS ACC.
(h) Push in the VERIFY switch and make sure that the display shows PWR A/B.
(i) Push in the VERIFY switch and make sure that the display shows TEST END.
(j) Pressurize the left hydraulic system and reservoir (AMM 29-11-00/201).
(k) Push in the RESET button on the control unit.
(l) Do steps 1 thru 8 of Table 1 again. Make sure that the alternate brake pairs shown in column B go through a cycle as before.
(m) Remove DO-NOT-CLOSE tag and close this circuit breaker on the P6 panel:
1) 6F4, LANDING GEAR PARKING BRAKE VLV
(n) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

NOTE: Left system hydraulic power is not necessary.

(o) Release the parking brake.
(p) Put the BRAKE TEST rotary switch to the NORM position.
(q) Put the L, R and C IRU's to the OFF position.

S 944-085
(23) Put the Airplane Back to its Usual Condition.
(a) Set the parking brake.

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.

(b) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).
(c) Remove power from the right hydraulic system if it is not necessary (AMM 29-11-00/201).

(d) Install the E5 rack access panel on the forward bulkhead of the forward cargo compartment (AMM 25-50-03/401).
(e) Close the forward cargo door, 821.
(f) 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 contains the tasks that follow:
      -- Antiskid Valve - Removal
      -- Antiskid Valve - Installation
      -- Antiskid Module Hydraulic Fuse - Removal
      -- Antiskid Module Hydraulic Fuse - Installation
      -- Antiskid Module Filter - Removal
      -- Antiskid Module Filter - Installation
      -- Antiskid Module Shutoff Valve - Removal
      -- Antiskid Module Shutoff Valve - Installation

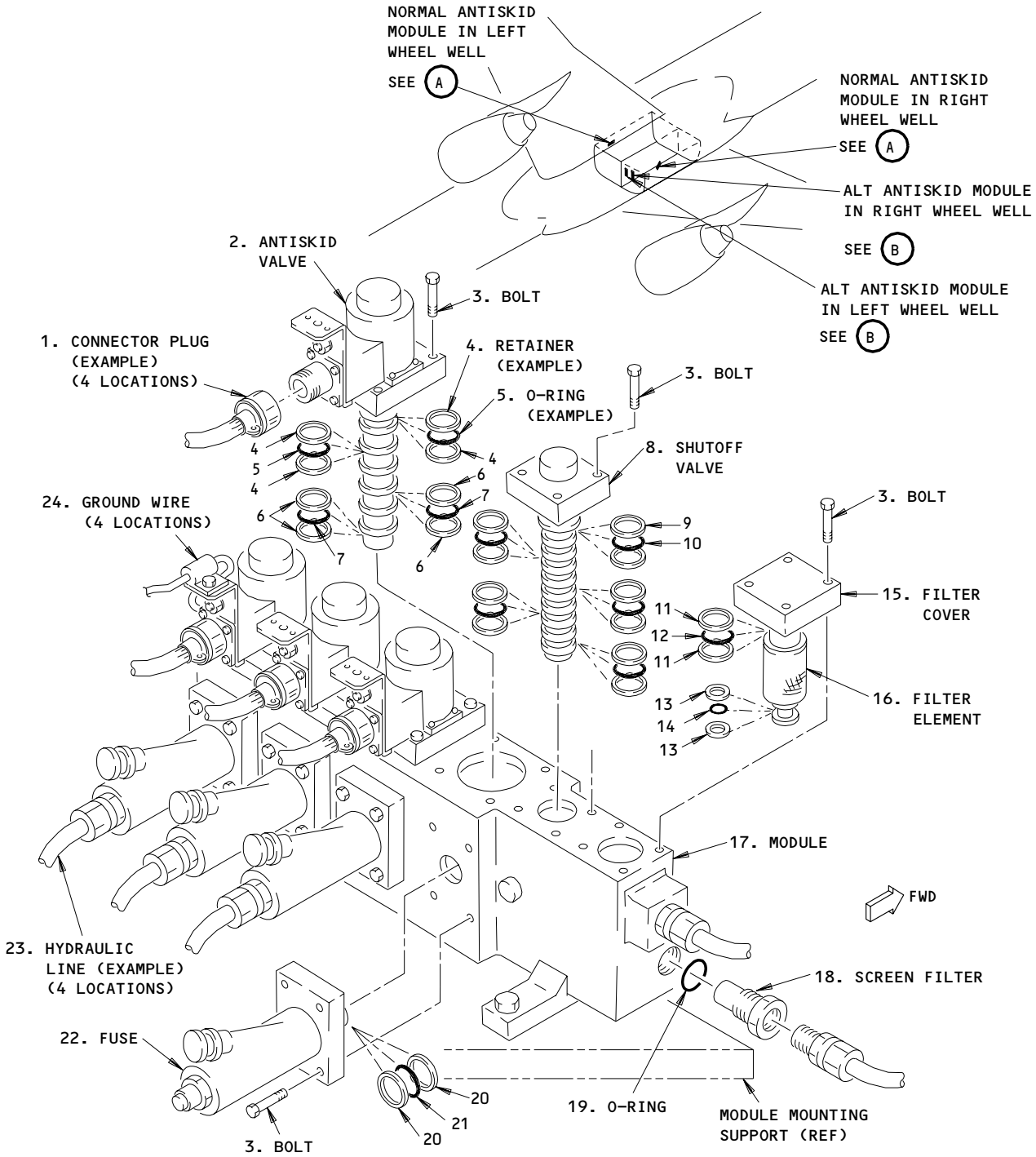
   TASK 32-42-03-944-112
2. Prepare for Removal
   A. References
      (1) AMM 24-22-00/201, Electrical Power - Control
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          143 Left Main Landing Gear Wheel Well
          144 Right Main Landing Gear Wheel Well

   C. Procedure

      S 864-001
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

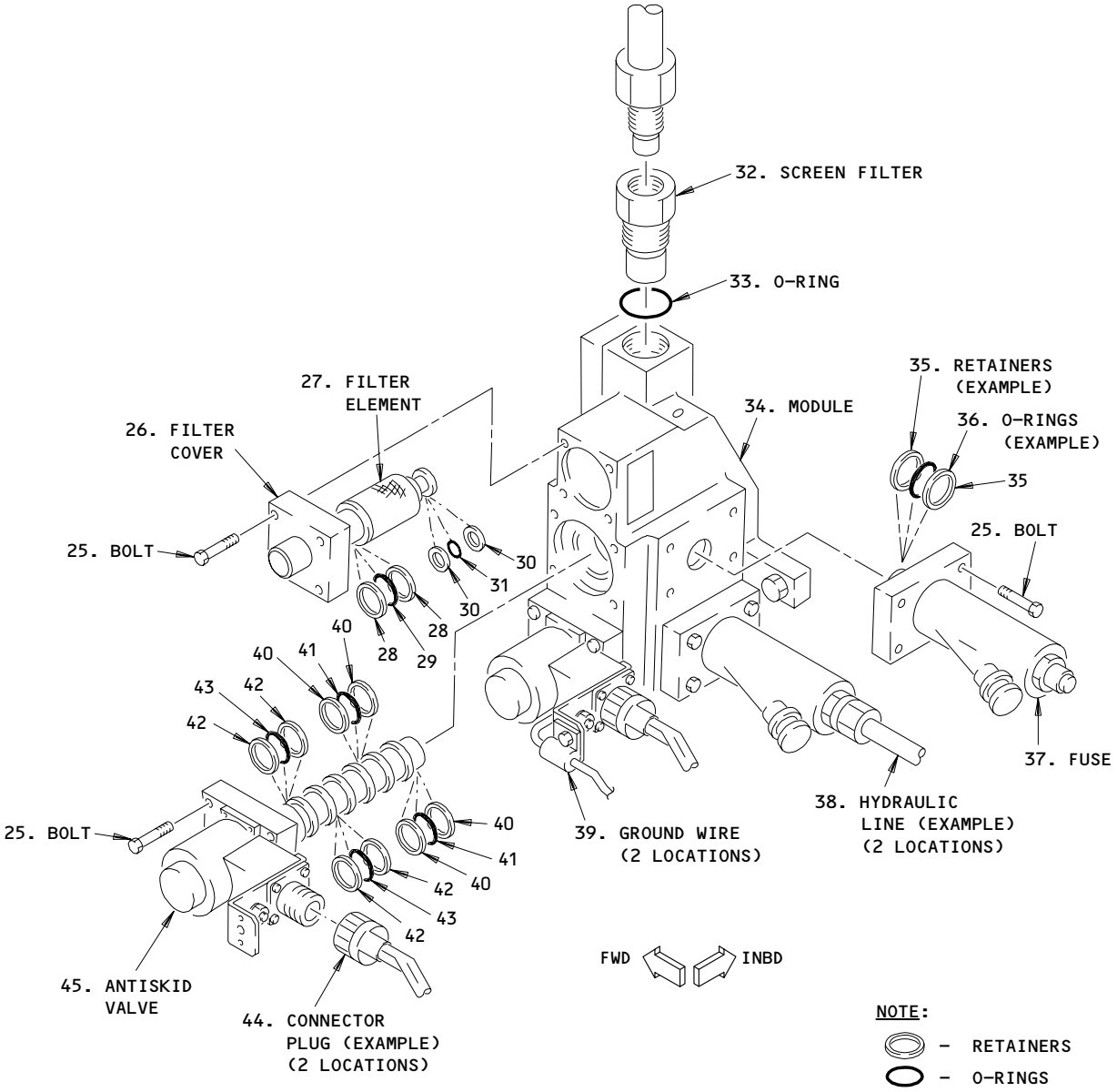
      S 494-002
      (2) Make sure that chocks are installed on the wheels.

      S 864-003
      (3) Supply electrical power (AMM 24-22-00/201).



NORMAL ANTISKID MODULE COMPONENTS
A

Antiskid Module Components Installation
Figure 401 (Sheet 1)



ALTERNATE ANTISKID MODULE COMPONENTS

(B)

Antiskid Module Components 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 OR DAMAGE TO EQUIPMENT.

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

S 864-005

(5) Remove the pressure from the right and left hydraulic systems and reservoirs (AMM 29-11-00/201).

S 864-006

(6) For the normal antiskid module, release the parking brake.

NOTE: Attach a "DO NOT OPERATE" tag to the parking brake when removing an antiskid valve.

S 864-007

(7) For the alternate antiskid module, push in the brake pedals seven to eight times to release pressure from the brake accumulator.

TASK 32-42-03-004-008

3. Antiskid Valve - Removal (Fig. 401)

A. Procedure

S 944-009

(1) Do the Prepare for Removal task (Ref Par. 2).

S 864-010

(2) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
(a) 11C31, ANTI-SKID 2-6
(b) 11C32, ANTI-SKID 3-7
(c) 11S18, ANTI-SKID 1-5
(d) 11S22, ANTI-SKID 4-8

S 034-011

(3) Remove the connector plug (1 or 44) and the ground wire (24 or 39) from the valve that you will replace. Put caps on the plugs and receptacles.

NOTE: Put tags on the electrical connectors to identify the valve that you will connect them to.

S 024-012

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.

(4) Remove four bolts (3 or 25) and lift the valve (2 or 45) from the module (17 or 34).

S 024-013

(5) Remove the retainers (4, 6 or 40, 42) and the O-rings (5, 7 or 41, 43) from the valve. Discard the O-rings and retainers.

TASK 32-42-03-404-014

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

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	2	Valve Assy-Control (Normal)	32-42-02	01	130
	5	Packing (O-Ring)			145
	7	Packing (O-Ring)			140
	41	Packing (O-Ring)		02	75
	43	Packing (O-Ring)			77
	45	Valve Assy - Control (Alternate)			67

D. References

(1) AMM 06-46-00/201, Entry, Service, and Cargo Doors
(2) AMM 24-22-00/201, Electrical Power - Control
(3) AMM 25-50-03/401, Bulkhead Lining
(4) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(5) AMM 34-21-00/501, Inertial Reference System

E. Access
(1) Location Zones
143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well

F. Procedure

S 434-015
(1) Lubricate the O-rings (5, 7 or 41, 43) (new) and the retainers (4, 6 or 40, 42) (new) with hydraulic fluid.

S 424-109
(2) Use the valve installation tool to install the O-rings (5, 7 or 41, 43) and the retainers (4, 6 or 40, 42) on the valve.

S 424-016

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 to the module with four bolts (3 or 25) and tighten the bolts to 100-110 pound-inches.

S 434-017

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 plug (1 or 44) and the ground wire (24 or 39) to the valve (2 or 45).

S 864-018
(5) For the normal antiskid module, pressurize the right hydraulic system and reservoir (Ref 29-11-00).

S 864-019
(6) For the alternate antiskid module, pressurize the left hydraulic system and reservoir (Ref 29-11-00).

S 864-020
(7) Push in the brake pedals fully four or more times.

S 894-021
(8) After five minutes, do a check of the valve installation for leaks.

S 864-022

(9) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
(a) 11C31, ANTI-SKID 2-6
(b) 11C32, ANTI-SKID 3-7
(c) 11S18, ANTI-SKID 1-5
(d) 11S22, ANTI-SKID 4-8

S 714-023

(10) Do a test of the valve with the aid of Antiskid/Autobrake Control Unit Built In Test Equipment (BITE) as follows:
(a) Prepare for the test.
1) Supply electrical power (AMM 24-22-00/201).
2) Release the parking brake.
3) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).
4) Put the thrust levers in the idle position.
5) Retract the spoilers.
6) Put the L, R and C IRU's in the NAV mode (AMM 34-21-00/501).

NOTE: The IRU's must be aligned.

7) Close this circuit breaker on the P6 panel:
a) 6F4, LANDING GEAR PARKING BRAKE VLV
8) Open the forward cargo door, 821 (AMM 06-46-00/201).
9) Remove the E5 rack access panel on the forward bulkhead that is forward of the cargo door (AMM 25-50-03/401) and find the Antiskid/Autobrake Control Unit.
10) Make sure that the BRAKE TEST rotary switch on the unit (M102) is in the NORM position.
11) Push in the RESET button on the control unit. Make sure that the unit display shows MEM CLR for approximately five seconds.
(b) Do a test to make sure that antiskid/autobrake control operation is correct as follows:
1) Put the AUTOBRAKES selector switch on the P1-3 panel to position 1.
2) Push in the ENABLE/VERIFY switch on the unit and hold, and then push in the VERIFY switch and then release them at the same time.

NOTE: The dislay will flash WAIT four times while the test operates.

3) Make sure the unit message TEST END or a fault message shows after 15 ± 5 seconds. If a fault message shows, push in the VERIFY switch to continue the test until the message TEST END shows.

4) Push in the RESET button.

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.

(c) For the normal antiskid valve, do this normal antiskid brake test:
1) Release the parking brake.
2) Open this circuit breaker on the P6 panel and attach a DO-NOT-CLOSE tag:
a) 6F4, LANDING GEAR PARKING BRAKE VLV
3) Set the parking brake.

NOTE: With the parking brake set and hydraulic pressure on there will be continuous pressure at the brakes for the test that follows.

4) Put the BRAKE TEST rotary switch in the position as shown for each test step in Table 1.
5) For each test step in Table 1, do the test as follows:
a) Push in the ENABLE/VERIFY switch and hold, and then push in the VERIFY switch and release them at the same time.
b) Make sure that the brake shown in column A releases for five seconds and then applies again:

NOTE: You can see the brakes apply and release if you look at brake piston movement. The brake pistons extend when the brake is applied and retract when the brake is released.

c) Make sure that the unit message display for the brake cycle is as shown in Table 1.

Table 1

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

(d) For the alternate antiskid valve,
do this alternate antiskid brake test.
1) Remove the pressure from the right hydraulic system
(AMM 29-11-00/201).
2) Pressurize the left hydraulic system and reservoir
(AMM 29-11-00/201).
3) Make sure that the parking brake is set.
4) Put the BRAKE TEST rotary switch in the position as shown
for each test step in Table 1.
5) Do each test step in Table 1 as followows:
a) Push in the ENABLE/VERIFY switch and hold, and then
push in the VERIFY switch and then release both
switches at the same time.
b) Make sure that the brake pairs shown in column B
release for five seconds and then apply again.
c) Make sure that the unit message display is as shown in
Table 1 while the brake releases and applies.
6) Release the parking brake.
7) Remove the DO-NOT-CLOSE tag and close this circuit breaker
on the P6 panel:
a) 6F4, LANDING GEAR PARKING BRAKE VLV
8) Put the BRAKE TEST rotary switch in the NORM position.
9) Remove the pressure from the left hydraulic system
(AMM 29-11-00/201).
10) Put the L, R and C IRU's in the OFF position.

S 944-024
(11) Do the steps in the Return the Airplane to Its Usual Condition
paragraph if more maintenance is not necessary.

TASK 32-42-03-004-025

5. Antiskid Module Hydraulic Fuse - Removal (Fig. 401)

A. Procedure

S 944-026

(1) Do the Prepare for Removal procedure (Ref Par. 2)

S 034-027

(2) Disconnect the hydraulic line (23 or 38) from the fuse (22 or 37) and put a cap on the hydraulic line. Remove the hydraulic fitting from the fuse and discard the O-ring.

S 024-028

CAUTION: DO NOT LET DIRT OR OTHER UNWANTED MATERIAL GET INTO THE PORTS OF THE FUSE. IF THIS OCCURS, THE SYSTEM CAN MALFUNCTION.

(3) Remove the bolts (3 or 25) and pull the fuse from the module (17 or 34). Put a plug in the port.

S 034-029

(4) Remove the retainers (20 or 35) and the O-ring (21 or 36) from the fuse (22 or 37). Discard the O-ring.

TASK 32-42-03-424-030

6. Antiskid Module Hydraulic Fuse - Installation (Fig. 401)

A. Consumable Materials

(1) D00153 Hydraulic Fluid - BMS 3-11

B. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	21	Packing (O-Ring)	32-42-02	01	170
	22	Valve Assy - Self Resetting Fuse			160
	36	Packing (O-Ring)		02	86
	37	Valve Assy - Self Resetting Fuse			80

C. References

(1) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

D. Access

(1) Location Zones

143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well

E. Procedure

S 434-031

CAUTION: DO NOT LET DIRT OR OTHER UNWANTED MATERIAL GET IN THE PORTS OF THE FUSE. THIS CAN CAUSE THE MALFUNCTION OF THE UNIT.

(1) Lightly lubricate a new O-ring with hydraulic fluid. Install the hydraulic fitting with the new O-ring in the fuse (22 or 37).

S 424-032

(2) Install the fuse with a new O-ring (21 or 36) and retainers (20 or 35) in the module. Lubricate the O-ring and the retainers with hydraulic fluid before you install them.

S 424-033

(3) Install the bolts (3 or 25) and tighten to a torque value of 100-110 pound-inches. Install lockwire.

S 424-034

(4) Connect the hydraulic line (23 or 38) to the fuse (22 or 37).

S 864-035

(5) For the normal antiskid module,
pressurize the right system hydraulic system and reservoir
(AMM 29-11-00/201).

S 864-036

(6) For the alternate antiskid module,
pressurize the left hydraulic system and reservoir
(AMM 29-11-00/201).

S 864-037

(7) Push in the brake pedals fully four or more times.

S 794-038

(8) After five minutes, look at the fuse installation to make sure that there are no hydraulic leaks.

S 714-113

(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 944-040

(10) Do the Return the Airplane to Its Usual Condition paragraph if it is not necessary to do more maintenance.

TASK 32-42-03-004-041

7. Antiskid Module Filter - Removal (Fig. 401)

A. Procedure

S 944-042

(1) Do the Prepare for Removal procedure (Ref Par. 2).

S 024-050

(2) Remove the bolts (3 or 25) and the filter cover (15 or 26).

S 024-052

(3) Remove the retainers (11 or 28) and the O-ring (12 or 29) from the filter cover (15 or 26). Discard the O-ring and retainers.

S 034-053

CAUTION: DO NOT LET DIRT OR UNWANTED MATERIAL GET IN THE FILTER. THIS CAN CAUSE THE UNIT TO MALFUNCTION.

(4) Remove the filter (16 or 27) from the module (17 or 34). Put a plug in the module port.

S 034-054

(5) Remove the retainers (13 or 30) and the O-ring (14 or 31) from the filter (16 or 27). Discard the O-ring and the retainers.

TASK 32-42-03-404-055

8. Antiskid Module Filter - Installation (Fig. 401)

A. Consumable Materials

(1) D00153 Hydraulic Fluid - BMS 3-11

B. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	12	Packing (O-Ring)	32-42-02	01	200
	14	Packing (O-Ring)			195
	19	Packing (O-Ring)			220
	29	Packing (O-Ring)		02	97
	31	Packing (O-Ring)			95
	33	Packing (O-Ring)			110

C. References
(1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System

D. Access
(1) Location Zones
143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well

E. Procedure

S 424-056

CAUTION: DO NOT ALLOW DIRT OR OTHER UNWANTED MATERIAL TO ENTER THE FILTER. CONTAMINATION OF THE FILTER CAN CAUSE A MALFUNCTION OF THE SYSTEM.

(1) Install the filter (16 or 27) with a new O-ring (14 or 31) and new retainers (13 or 30) in the module (17 or 34). Lubricate the O-ring and retainers with hydraulid fluid before you install them.

S 424-057
(2) Install the filter cover (15 or 26) with a new O-ring (12 or 29) and new retainers (12 or 29). Lubricate the O-ring and retainers with hydraulic fluid before you install them.

S 424-059
(3) Install the filter cover (15 or 26) to the module (17 or 34) with the bolts (3 or 25). Tighten the bolts (3 or 25) to 100-110 pound-inches. Install lockwire.

S 164-068
(4) Clean the screen filter (18 or 32)

NOTE: You must remove and clean the screen filter (18 or 32) when you replace the filter element (16 or 27).

(a) Disconnect the hydraulic line to the filter (18 or 32) and put a cap on the line.

(b) Remove the screen filter (18 or 32) and discard the O-ring (19 or 33).
(c) Clean the screen filter (18 or 32).
(d) Lubricate the new O-ring (19 or 33) with hydraulic fluid and install it on the screen filter (18 or 32).
(e) Install the assembly of the screen filter (18 or 32) and the O-ring (19 or 33) on the valve module (17 or 34). Install a lockwire.
(f) Connect the hydraulic line.

S 864-069
(5) For the normal antiskid module, pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 864-070
(6) For the alternate antiskid module, pressurize the left hydraulic system and reservoir (AMM 29-11-00/201).

S 864-071
(7) Push in the brake pedals fully four or more times.

S 794-072
(8) After five minutes, do a check of the filter installation for leaks.

S 714-116
(9) Do a check of the operation of the brake that gets hydraulic pressure through the hydraulic line with the filter 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 944-074
(10) Do the steps in the Return the Airplane to Its Usual Condition paragraph if it is not necesary to do more maintenance.

TASK 32-42-03-424-115

9. Antiskid Module Shutoff Valve - Removal (Fig. 401)
   A. Equipment
      (1) T63577 - Removal and Installation Tool
          Hydro-Aire Division, Crane Co.
          Burbank, CA 91510 USA
   B. Procedure

S 944-108
(1) Do the Prepare for Removal procedure (Ref Par. 2).

S 024-075
(2) Remove the bolts (3) from the valve.

S 024-076

CAUTION: DO NOT LET DIRT OR CONTAMINATION GET IN THE VALVE. THIS CAN CAUSE A MALFUNCTION OF THE UNIT.

(3) Use the removal and installation tool to remove the valve (8) from the module (17). Put a plug in the module port.

S 034-077
(4) Remove the retainers (9) and the O-rings (10) from the valve (8). Discard the O-rings.

TASK 32-42-03-404-078

10. Equipment Antiskid Shutoff Valve - Installation (Fig. 401)
    A. Equipment
       (1) T63577 - Removal and Installation Tool
           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	8 10	Valve Assy - Shutoff Packing (O-Ring)	32-42-02	01	235 225

D. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 25-50-03/401, Bulkhead Lining
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(4) AMM 32-00-15/201, Landing Gear Door Locks

E. Access
(1) Location Zones
143 Left Main Landing Gear Wheel Well
144 Right Main Landing Gear Wheel Well

F. Procedure

S 644-124
(1) Lubricate the new O-rings (10) and the new retainers (10) with hydraulic fluid before you install them on the valve.

S 424-079

CAUTION: DO NOT LET DIRT OR CONTAMINATION GET IN THE VALVE. THIS CAN CAUSE A MALFUNCTION OF THE VALVE.

(2) Install the new O-rings (10) and the new retainers (10) on the shutoff valve (8)

S 484-125
(3) Use the removal and installation tool to install the shutoff valve (8) in the antiskid module (17).

S 424-080
(4) Install the bolts (3) and tighten the bolts to 100-110 pound-inches. Install lockwire.

S 864-081
(5) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 864-082
(6) Push in the brake pedals fully four or more times.

S 794-083
(7) After five minutes do a visual check of the valve installation for leaks.

S 714-106
(8) Do a check for correct brake operation as follows:
(a) Push in the brake pedals fully and release them while you watch the brakes operate.
(b) Look to see that the brake pistons move (The brake pistons will extend when the brake is applied and will retract when the brake is released).

S 944-107
(9) Do the steps in the Restore Airplane to Normal paragraph if more maintenance is not necessary.

TASK 32-42-03-944-084

11. Return the Airplane 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 25-50-03/401, Bulkhead Lining
(4) 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
211/212	Control Cabin

C. Procedure

S 864-134
(1) Remove the "Do Not Operate" tag from the parking brake.

S 864-085
(2) Set the parking brake.

S 864-086
(3) Remove the pressure from the right and left hydraulic systems if it is not necessary (AMM 29-11-00/201).

S 094-087

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 doors and close the doors (AMM 32-00-15/201).

S 414-103

(5) Install the access panel on the E5 rack that is located on the forward bulkhead of the forward cargo compartment (AMM 25-50-03/401).

S 414-104

(6) Close the forward cargo door, 821.

S 864-105

(7) Remove electrical power if it is not necessary (AMM 24-22-00/201).

ANTISKID TRANSDUCER DRIVE - REMOVAL/INSTALLATION

1. General
   A. The antiskid transducer drive has a coupling assembly, mounting plate, cup and a pad washer. All the components of the antiskid transducer drive (this does not include the dog and cone washer) are installed in the hubcap of each main landing gear wheel. The dog and the cone washer (part of the transducer assembly) are installed on the transducer rotor shaft.
   B. This procedure contains two tasks. The first task removes the antiskid transducer drive. The second task installs the antiskid transducer drive.

TASK 32-42-04-004-001

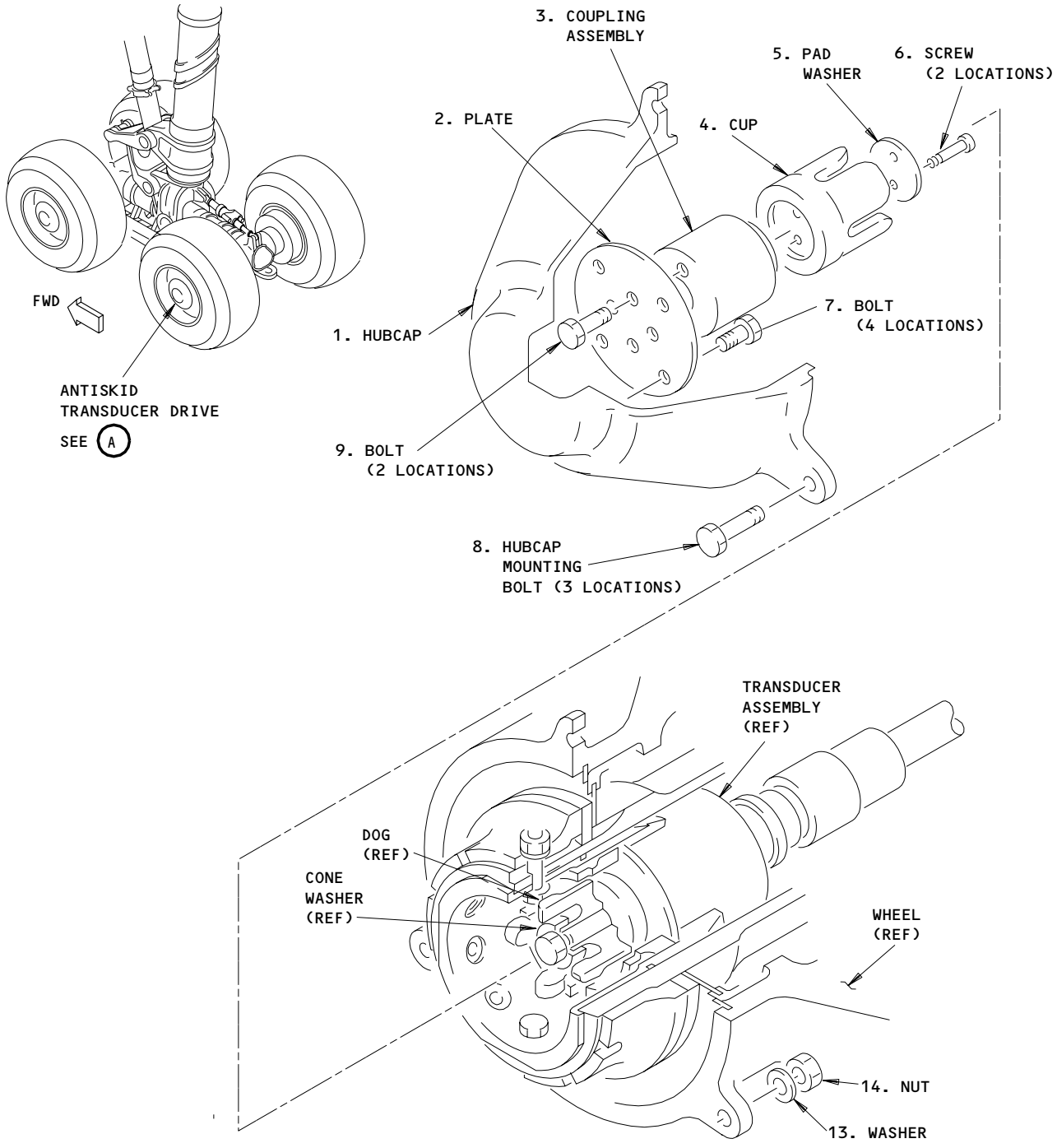
2. Remove the Antiskid Transducer Drive (Fig. 401)
   A. References
      (1) 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          731 Main Landing Gear (MLG) (Left)
          741 Main Landing Gear (MLG) (Right)

   C. Procedure

      S 214-008
      (1) Make sure the downlocks are installed on the nose and main landing gear (Ref 32-00-15).

      S 214-009
      (2) Make sure there are chocks on the wheels.

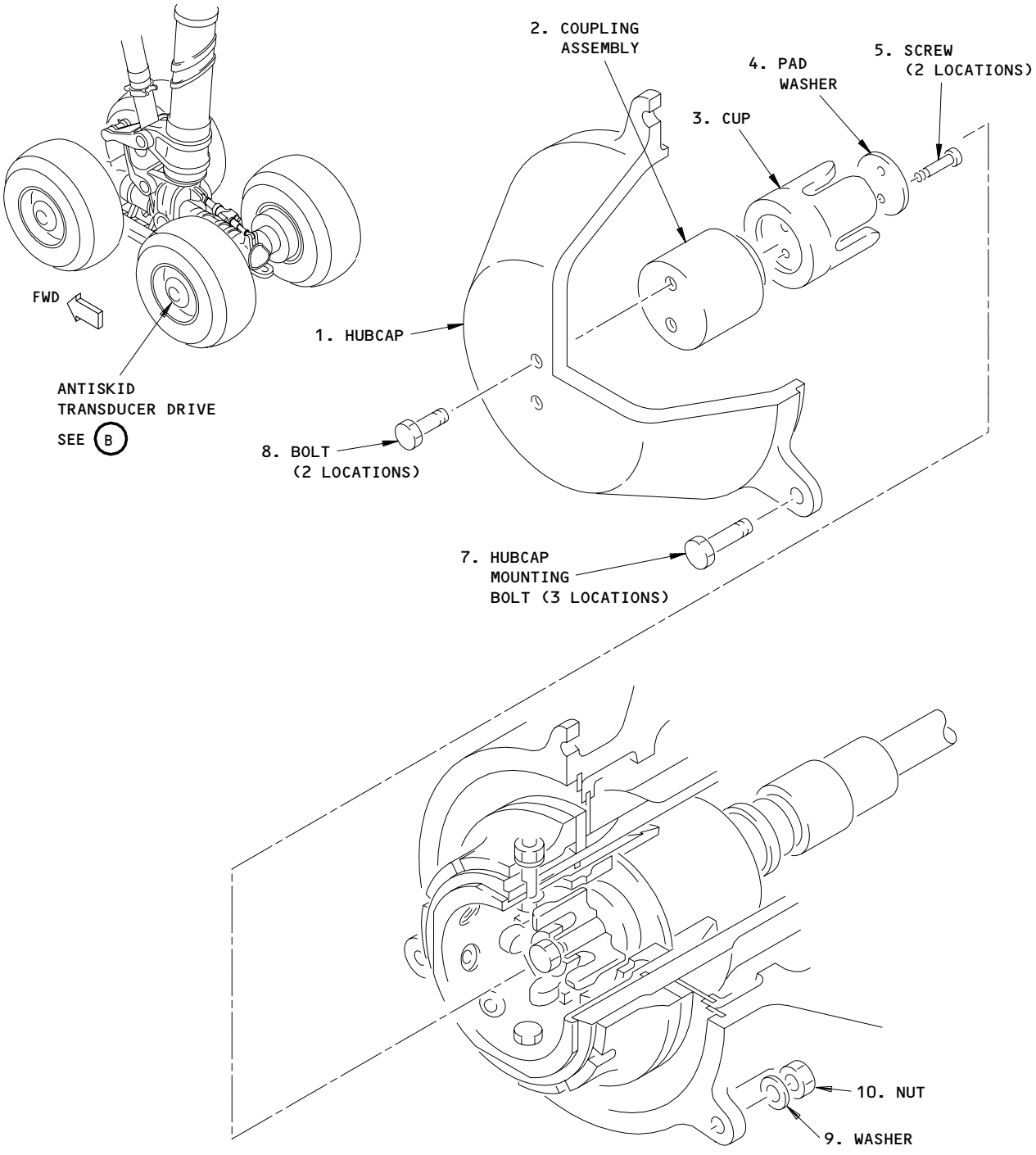
      S 024-023
      (3) Remove the antiskid transducer drive on airplanes with metal hubcaps as follows:
          (a) Remove the three hubcap mounting bolts (8), washers (13) and nuts (14).



ANTISKID TRANSDUCER DRIVE

(A)

Transducer Drive Components Installation
Figure 401 (Sheet 1)



ANTISKID TRANSDUCER DRIVE

(B)

Transducer Drive Components Installation
Figure 401 (Sheet 2)

(b) Remove the hubcap (1) with the components of the antiskid transducer drive (coupling assembly (3), cup (4) and pad washer (5)) attached.
(c) Remove the four bolts (7) to disconnect the components of the antiskid transducer drive from the hubcap (1).
(d) Remove the two screws (6) to disconnect the cup (4) and the pad washer (5) from the coupling assembly (3).
(e) Remove the two bolts (9) to disconnect the coupling assembly (3) from the plate (2).

S 024-025
(4) Remove the antiskid transducer drive on airplanes with plastic hubcaps as follows:
(a) Remove the three hubcap mounting bolts (7), washers (9) and nuts (10).
(b) Remove the hubcap (1) with the components of the antiskid transducer drive (coupling assembly (2), cup (3) and pad washer (4)) attached.
(c) Remove the two bolts (8) to disconnect the components of the antiskid transducer drive from the hubcap (1).
(d) Remove the two screws (5) to disconnect the cup (3) and the pad washer (4) from the coupling assembly (2).

TASK 32-42-04-404-004
3. Install the Antiskid Transducer Drive (Fig. 401)
A. Access
(1) Location Zones
731 Main Landing Gear (MLG) (Left)
741 Main Landing Gear (MLG) (Right)

B. AIRPLANES WITH METAL HUBCAP;
Procedure

S 424-005
(1) Install the two bolts (9) to attach the coupling assembly (3) to the plate (2).

S 434-013
(2) Tighten the bolts (9) to 20-25 pound-inches.

S 434-014
(3) Install the lockwire on the bolts (9).

S 424-006
(4) Install the cup (4) and the pad washer (5) on the coupling assembly (3) with the two screws (6) as follows:
(a) Tighten and safety the two screws (6) as follows:
1) If the coupling assembly (3) does not have a threaded insert (all part number couplings except S161T102-5), tighten the screws (6) to 15-17 pound-inches.
a) Install lockwire.
2) If the coupling assembly (3) is a S160T102-5 coupling (with self-locking inserts) that has been in service, tighten the screws (6) and safety as follows:
a) Measure the torque required to turn the attach screws (6) in the threads when you install the cup (4) and the pad washer (5).
b) If the torque is 1.5 pound-inches or greater, tighten the screws (8) to the final torque of 15-17 pound-inches.

NOTE: You can install lockwire, but it is not necessary.

c) If the torque necessary to turn the screws (6) is less than 1.5 pound-inches, do one of the two steps that follow:
- Tighten the screws (6) to 15 to 17 pound-inches and install lockwire.
- Replace the coupling (3) with a new coupling (3) and tighten the screws (6) as shown in step 3).
3) If you install the cup (4) and the washer (5) on a new coupling, S160T102-5, tighten the screws (6) to 15 to 17 pound-inches.

NOTE: You can install lockwire, but it is not necessary.

S 424-007
(5) Install the four bolts (7) to attach the coupling assembly (3) (with cup (4) and pad washer (5) attached) to the hubcap (1).

S 434-017
(6) Tighten the bolts (7) to 20-25 pound-inches.

S 434-018
(7) Install the lockwire on the bolts (7).

S 424-019
(8) Put the hubcap (1) in its position.

S 434-020
(9) Install the three hubcap mounting bolts (8), washers (13) and nuts (14). Tighten the bolts to 50-80 inch-pounds.

S 864-021
(10) Keep the downlocks installed on the nose and main landing gear until you operate the airplane.

C. AIRPLANES WITH PLASTIC HUBCAP;
Procedure

S 434-024
(1) Install the cup (3) and the pad washer (4) on the coupling assembly (2) with the two screws (5) as follows:
(a) Tighten and safety the two screws (5) as follows:
1) If the coupling assembly (2) does not have a threaded insert (all part number couplings except S161T102-5), tighten the screws (5) to 15-17 pound-inches.
a) Install lockwire.
2) If the coupling assembly (2) is a S160T102-5 coupling (with self-locking inserts) that has been in service, tighten the screws (5) and safety as follows:
a) Measure the torque required to turn the attach screws (5) in the threads when you install the cup (3) and the pad washer (4).

b) If the torque is 1.5 pound-inches or greater, tighten the screws (5) to the final torque of 15-17 pound-inches.

NOTE: You can install lockwire, but it is not necessary.

c) If the torque necessary to turn the screws (5) is less than 1.5 pound-inches, do one of the two steps that follow:
- Tighten the screws (5) to 15 to 17 pound-inches and install lockwire.
- Replace the coupling (2) with a new coupling (2) and tighten the screws (5) as shown in step 3).

3) If you install the cup (3) and the washer (4) on a new coupling, S160T102-5, tighten the screws (5) to 15 to 17 pound-inches.

NOTE: You can install lockwire, but it is not necessary.

S 424-028
(2) Install the two bolts (8) to attach the coupling assembly (2) (with cup (3) and pad washer (4) attached) to the hubcap (1).

S 424-029
(3) Tighten the bolts (8) to 20-25 pound-inches.

S 424-030
(4) Install the lockwire on the bolts (8).

S 424-031
(5) Put the hubcap (1) in its position.

S 424-026
(6) Install the three hubcap mounting bolts (7), washers (9) and nuts (10). Tighten the bolts to 50-80 inch-pounds.

S 864-027
(7) Keep the downlocks installed on the nose and main landing gear until you operate the airplane.

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 transducer is installed on a support in the wheel axle. The support is attached to the axle with two axle nut bolts. It is easier to remove and install the transducer with the mounting support attached.

TASK 32-42-06-004-023

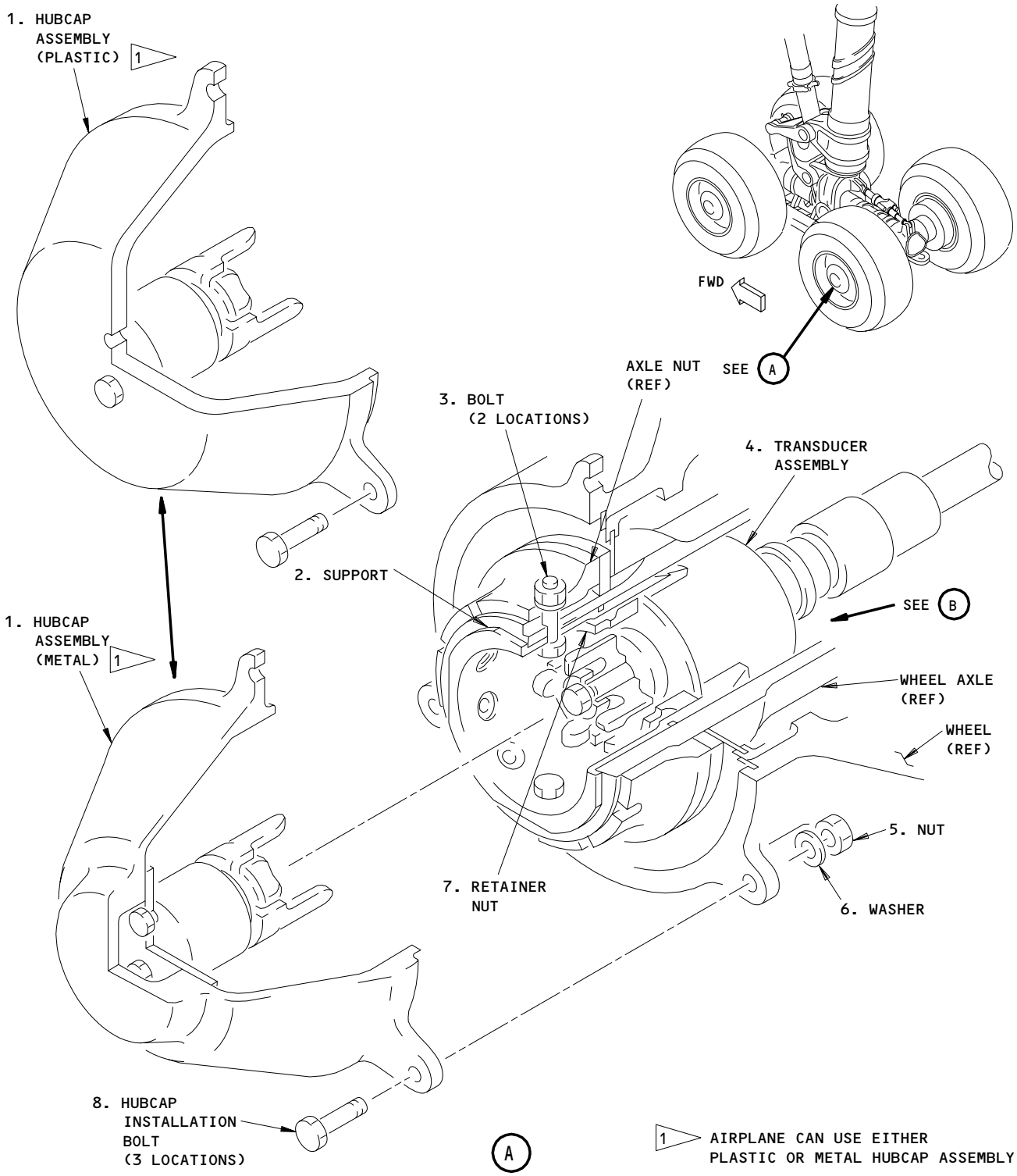
2. Antiskid Transducer - Removal (Fig. 401)
   A. Equipment
      (1) Antiskid Transducer Retainer Nut Removal/Installation Tool - B32035-10

      NOTE: This tool consists of two adapters.
      The -6 adapter assembly is used to remove and install the transducer support.
      The -8 adapter assembly is used to remove and install the retainer nut.

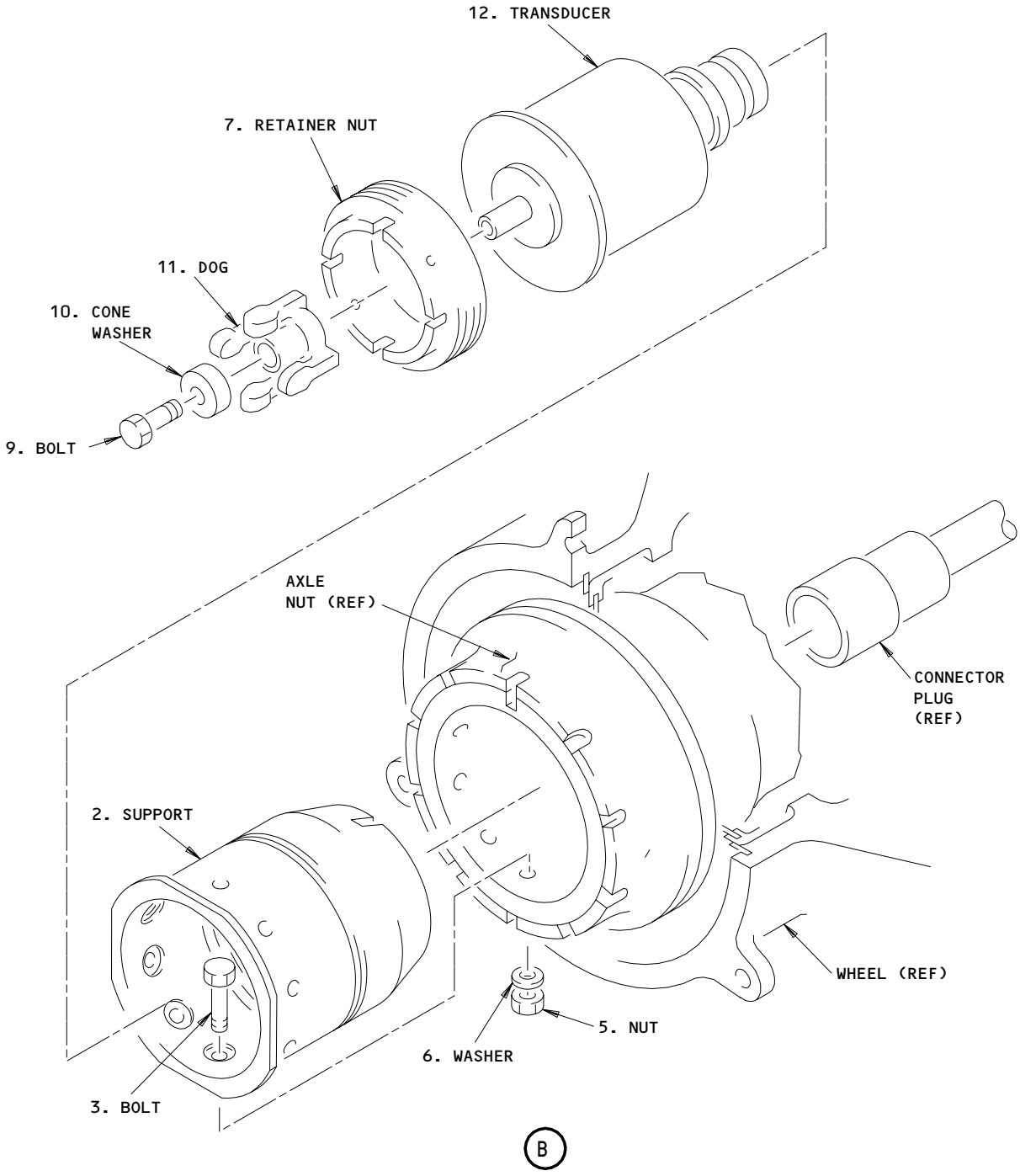
   B. References
      (1) 24-22-00/201, Electrical Power - Control
      (2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (3) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          731 Left Main Landing Gear
          741 Right Main Landing Gear

   D. Prepare for Removal

      S 494-001
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).



Antiskid Transducer Installation
Figure 401 (Sheet 1)



Antiskid Transducer Installation
Figure 401 (Sheet 2)

S 494-027

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) Open these circuit breakers on overhead circuit breaker panel P11 and attach DO-NOT-CLOSE tags:
(a) 11C31, ANTI-SKID 2-6
(b) 11C32, ANTI-SKID 3-7
(c) 11S18, ANTI-SKID 1-5
(d) 11S22, ANTI-SKID 4-8

E. Procedure

S 024-004

(1) Remove three bolts (8) and remove the hubcap assembly (1).

S 024-005

(2) Remove two axle nut bolts (3) but do not move the axle nut.

S 024-006

CAUTION: DO NOT TWIST THE WIRING HARNESS WHEN YOU REMOVE THE TRANSDUCER. IF THE WIRING HARNESS IS TWISTED, EQUIPMENT DAMAGE CAN OCCUR.

(3) Pull the assembly of the support (2) and the transducer assembly (4) out from the axle and disconnect the electrical connector.

NOTE: If you use the adapter, B32035-6 it will simplify removal of the support.

S 024-007

(4) Remove the retainer nut (7).

NOTE: Use of retainer nut adapter, B32035-8 will simplify removal of the nut.

S 024-008

(5) Remove the transducer assembly (4).

S 024-009

(6) Remove the cone washers (10) and the dog (11) from the transducer assembly (4).

TASK 32-42-06-404-010

3. Install the Antiskid Transducer (Fig. 401)

A. Equipment

(1) Antiskid Transducer Retainer Nut Removal/Installation Tool - B32035-10

NOTE: This tool consists of two adapters. The -6 adapter assembly removes/installs the transducer support. The -8 adapter assembly removes/installs the retainer nut.

(2) Adapter-Antiskid Transducer Spin-Up
- A32075-1 (Optional),
- A32075-9 (Optional),
- A32075-10 (Preferred)

(3) Drill - capable of 500 to 1000 RPM to be used with transducer spin-up adapter. Recommended drill: Chicago Pneumatic Part No. CP-9289-9.

B. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	4	Transducer Assembly-Antiskid	32-42-06	01	120,122 123,275

C. References

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

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

D. Access

(1) Location Zones

731 Left Main Landing Gear

741 Right Main Landing Gear

E. Procedure

S 214-011

(1) Examine the antiskid transducer connector for broken wires or other damage. Replace the connector if necessary. Refer to Chapter 20, Wiring Diagram Manual, for connector replacement information.

S 424-012

(2) Put the dog (11) on the transducer rotor shaft and install the cone washer (10) with the bolt (9). Tighten the bolt (9) to 20-25 pound-inches.

S 424-024

(3) Install lockwire.

S 434-013

CAUTION: DO NOT TWIST THE WIRE HARNESS WHEN YOU REMOVE OR INSTALL THE TRANSDUCER. IF THE WIRE HARNESS IS TWISTED, EQUIPMENT DAMAGE CAN OCCUR.

(4) Connect the electrical connector to the transducer (12).

S 424-014

(5) Install the transducer assembly (4) in the support (2).

NOTE: An alignment lug on the transducer aligns with a notch in the support (2)

S 424-029

(6) Install the retainer nut (7) as follows to hold the transducer assembly (4) in the support (2):
(a) Tighten the retainer nut (7) to 40-60 pound-feet.
(b) Then fully loosen the (7).

(c) Tighten the nut (7) to 30 pound feet.
(d) If lockwire holes in nut (7) and mating support housing (2) do not align, turn the nut until the lockwire holes align, but do not exceed 100 pound-feet torque.

S 424-025
(7) Install lockwire.

S 424-015
(8) Install the support (2) with the two axle nut bolts (3), the washers (6) and the nuts (5).

S 214-016
(9) Examine the transducer drive components in the hubcap to make sure that they are not damaged or loose. If the transducer drive components can be turned, replace them.

S 714-017
(10) Do a check to make sure that the transducer drive on the hubcap assembly will engage the antiskid transducer properly as follows:
(a) Hold the hubcap assembly (1) in position against the transducer so that the transducer drive engages the dog on the transducer assembly (4).
(b) Turn the transducer quickly with the hubcap to make sure that the transducer will rotate freely.
(c) Do a visual check to make sure that the the transducer drive engages the dog on the transducer tightly.

S 864-018
(11) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
(a) 11C31, ANTI-SKID 2-6
(b) 11C32, ANTI-SKID 3-7
(c) 11S18, ANTI-SKID 1-5
(d) 11S22, ANTI-SKID 4-8

S 864-019
(12) Supply electrical power (AMM 24-22-00/201).

S 714-020
(13) Do a test of transducer operation.

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 (AMM 29-11-00/201).
(b) Release the parking brake.

(c) Open this circuit breaker on the main power distribution panel, P6, and attach a DO-NOT-CLOSE tag:
1) 6F4, LANDING GEAR PARKING BRAKE VLV
(d) Set the parking brake.

NOTE: If you set the parking brake with the hydraulic system pressurized you will not have to hold the brake pedals for the brake application test that follows.

(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 rapidly 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 as quickly as possible. Make sure that the brake for that wheel releases and then applies again. Make sure that the tandem brake also applies again.
(g) Remove power from the right hydraulic system if it is not necessary (AMM 29-11-00/201).
(h) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P6 panel:
1) 6F4, LANDING GEAR PARKING BRAKE VLV

S 434-021
(14) Install the hubcap (1) with three mounting bolts (8), the washers (6) and the nuts (5). Tighten the bolts to 50-80 inch-pounds.

S 864-022
(15) Remove electrical power if it is not necessary (AMM 24-22-00/201).

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 the shuttle valves or the filters from the module.

TASK 32-42-07-844-059

2. Prepare for Removal
   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
      (4) 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. Procedure

      S 494-042
      (1) Make sure that chocks are installed on the wheels.

      S 494-043
      (2) Make sure that the landing gear downlocks are installed (Ref 32-00-20).

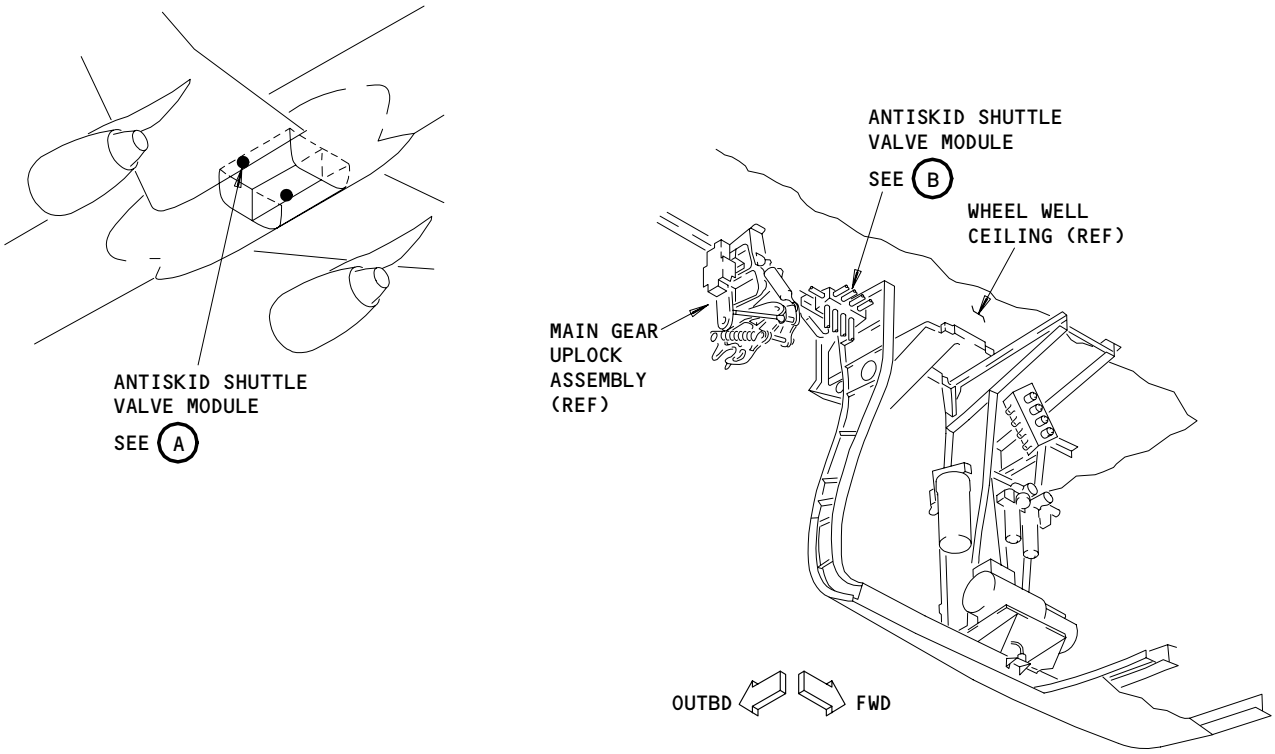
      S 494-044

      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 (Ref 32-00-15).

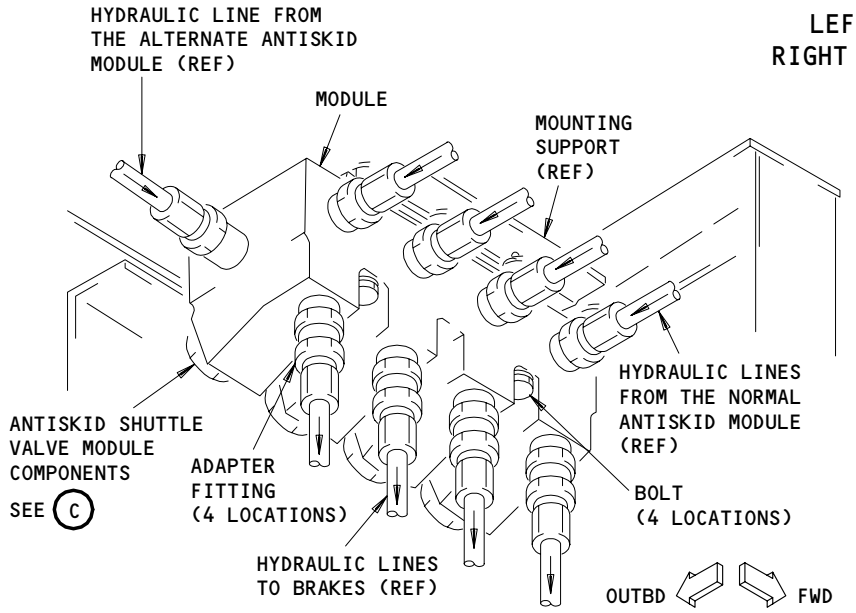
      S 864-045
      (4) Supply electrical power (Ref 24-22-00).

      S 864-046
      (5) Release the parking brake.



LEFT WHEEL WELL SHOWN,
RIGHT WHEEL WELL EQUIVALENT

A

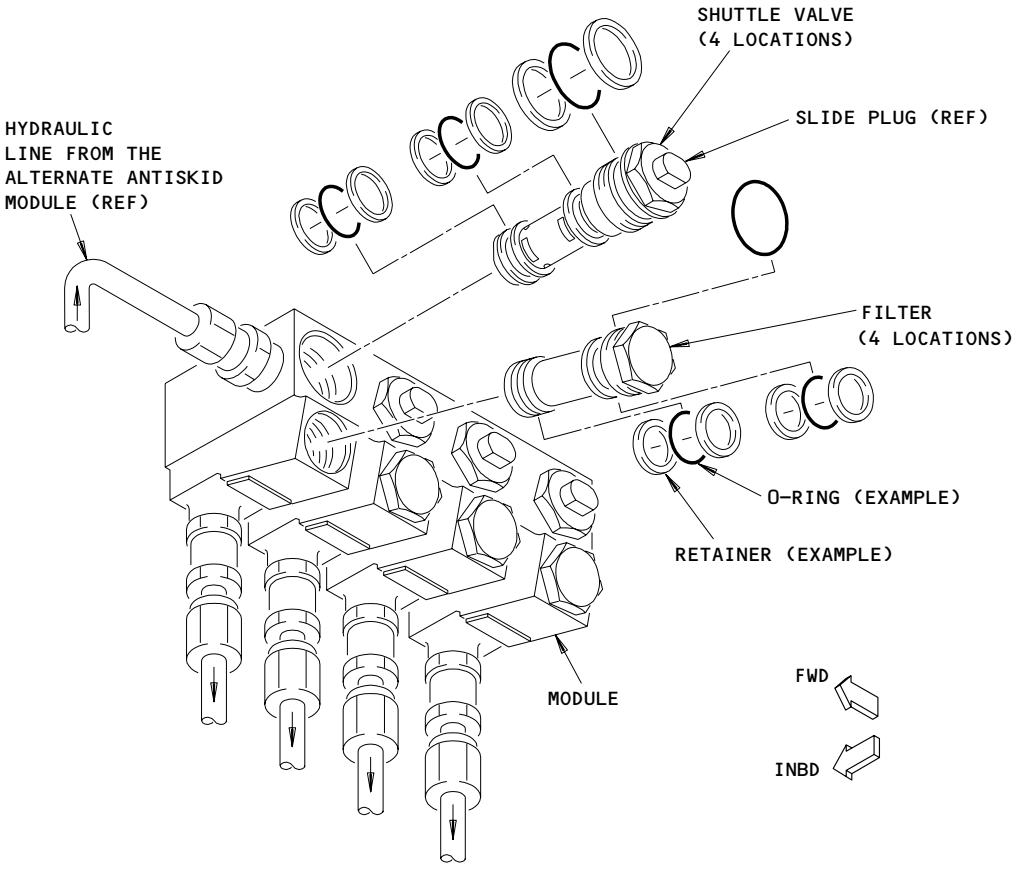


ANTISKID SHUTTLE VALVE MODULE INSTALLATION
ON LEFT WHEEL WELL SHOWN
INSTALLATION FOR RIGHT WHEEL WELL EQUIVALENT

B

Antiskid Shuttle Valve Module/Component Installation
Figure 401 (Sheet 1)

25214



ANTISKID SHUTTLE VALVE
MODULE COMPONENTS

(C)

Antiskid Shuttle Valve Module/Component Installation
Figure 401 (Sheet 2)

S 864-047
(6) Remove the pressure from the right and left hydraulic systems and reservoirs (Ref 29-11-00).

S 864-048
(7) Push in the brake pedals seven times to release the pressure from the brake accumulator.

TASK 32-42-07-024-061
3. Antiskid Shuttle Valve Module - Removal (Fig. 401)
A. Procedure

S 944-001
(1) Do the Prepare for Removal procedure (Ref par. 2).

S 034-002
(2) Disconnect the hydraulic lines from the module and install caps on the lines.

S 024-003
(3) Remove the module attach bolts and remove the module.

S 034-004
(4) Remove the hydraulic fittings (four locations) from the ports for the brake hydraulic lines on the module and discard the O-rings.

S 034-005
(5) Remove the hydraulic fittings (six locations) from the ports on the module for the hydraulic lines that connect to the normal and alternate antiskid valves.

TASK 32-42-07-404-006
4. Antiskid Shuttle Valve Module - Installation (Fig. 401)
A. Consumable Materials
(1) D00153 Hydraulic Fluid - BMS 3-11
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 644-067

CAUTION: IF THE AIRPLANE IS HAVING RIGHT TO LEFT SYSTEM HYDRAULIC FLUID TRANSFER PROBLEMS, IT IS RECOMMENDED THAT YOU INSTALL ANTISKID SHUTTLE VALVE MODULE PART NUMBER 2-8051 OR 2-8051-1MOD ON BOTH SIDES OF THE AIRPLANE. THE 2-8051 OR 2-8051-1MOD MODULES ARE DESIGNED TO DECREASE OR PREVENT RIGHT TO LEFT SYSTEM HYDRAULIC FLUID TRANSFER. IF THE 2-8051 OR 2-8051-1MOD VALVE MODULE IS MIXED WITH A 2-7460-3 OR 2-7460-4 VALVE, FLUID TRANSER MAY NOT BE STOPPED.

(1) Lubricate the O-rings and the hydraulic fittings before you install them in the module.

S 434-008
(2) Install the hydraulic fittings (four locations) to the brake ports on the module with new O-rings.

S 434-009
(3) Install the hydraulic unions (six locations) in the ports for the hydraulic lines that connect to the antiskid valve with new O-rings.

S 424-010
(4) Install the module with four bolts, washers and nuts (four locations).

S 424-063
(5) Connect the hydraulic lines to the module.

S 864-013
(6) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).

S 864-014
(7) Push in the brake pedals fully four or more times.

S 794-015
(8) After five minutes, do a check for leaks at the hydraulic tube connections

S 714-016
(9) Do a test to make sure that the module operates properly as follows:
(a) Push in and release the brake pedals and look to make sure that the brake wear pins for each of the four brakes extend and retract.

NOTE: This check is to make sure that brake pressure is applied through the module to operate the brakes on the side of the airplane for the module that you replaced.

(b) Remove the pressure from the right hydraulic system (Ref 29-11-00).
(c) Pressurize the left hydraulic system and reservoir (Ref 29-11-00).
(d) Push in the brake pedals fully again and look at the brakes to make sure that the brake on each of the four wheels operates.

S 864-021
(10) Remove the pressure from the left hydraulic system (Ref 29-11-00).

S 944-022
(11) Do the steps in the Return the Airplane to Its Usual Condition if more maintenance is not necessary.

TASK 32-42-07-004-023
5. Antiskid Shuttle Valve - Removal (Fig. 401)
A. Procedure

S 944-060

CAUTION: DO NOT LET DIRT OR OTHER CONTAMINATION GET IN THE PORTS OF THE MODULE. THIS CAN CAUSE A MALFUNCTION OF THE UNIT.

(1) Do the Prepare for Removal procedure (Ref Par. 2)

S 024-024
(2) Turn the valve until the threads on the valve do not engage the mating threads in the module and remove the valve.

S 034-025
(3) Remove the retainers and the O-rings from the valve. Discard the O-rings.

TASK 32-42-07-404-049
6. Antiskid Shuttle Valve - Installation (Fig. 401)
A. Consumable Materials
(1) D00153 Hydraulic Fluid - BMS 3-11
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 434-028

CAUTION: RUBBER AND TEFLON O-RINGS ARE NOT INTERCHANGEABLE. FAILURE TO INSTALL TEFLON O-RINGS CAN CAUSE TRANSFER OF HYDRAULIC FLUID FROM THE NORMAL BRAKE SYSTEM TO THE ALTERNATE BRAKE SYSTEM.

(1) Lubricate the O-rings (new) and the retainers with hydraulic fluid and install them on the valve.

S 424-050

(2) Install the valve in the module, tighten to 300 pound-inches and install a lockwire.

S 864-051

(3) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).

S 794-052

(4) After five minutes, do a check of the valve installation for leaks.

S 714-053

(5) Do an operational test of the valve as follows:
(a) Do the test in Par. 4.D.(9). again but only do a check to make sure that the brake operates that gets pressure through the hydraulic line from the valve that you replaced.

S 944-054

(6) Do the steps in the Return the Airplane to Its Usual Condition procedure if more maintenance is not necessary.

TASK 32-42-07-004-031

7. Antiskid Shuttle Valve Filter - Removal (Fig. 401)

A. Procedure

S 864-062

(1) Do the Prepare for Removal procedure (Ref Par. 2)

S 424-055

CAUTION: DO NOT LET DIRT OR OTHER UNWANTED MATERIAL GET IN THE PORTS OF THE FILTER. IF THIS HAPPENS, A MALFUNCTION OF THE VALVE CAN OCCUR.

(2) Turn the filter counterclockwise until you can remove it from the module.

S 434-030

(3) Remove the retainers and the O-rings from the filter. Discard the O-ring.

TASK 32-42-07-404-032

8. Antiskid Shuttle Valve Filter - Installation (Fig. 401)
   A. Consumable Materials
      (1) D00153 Hydraulic Fluid - BMS 3-11
   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 644-033
      (1) Lubricate the O-rings (new) and the retainers with hydraulic fluid and install them on the filter.

      S 424-034
      (2) Install the filter in the module, tighten to 300 pound-inches and install a lockwire.

      S 864-056
      (3) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).

      S 794-035
      (4) After five minutes, do a check of the filter installation for leaks.

      S 944-057
      (5) Do the steps in the Return the Airplane to Its Usual Condition paragraph if more maintenance is not necessary.

TASK 32-42-07-944-058

9. Return the Airplane to Its Usual Condition
   A. Procedure

      S 864-036
      (1) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).

      S 864-037
      (2) Set the parking brake.

      S 094-041

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

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

S 864-039

(4) Remove electrical power if it is not necessary (Ref 24-22-00).

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) Autobrake Module Solenoid Valve - Removal
      (4) Autobrake Module Solenoid Valve - Installation
      (5) Autobrake Module Servo valve - Removal
      (6) Autobrake Module Servo Valve - Installation
      (7) Autobrake Module Pressure Switch - Removal
      (8) Autobrake Module Pressure Switch - Installation
   B. The autobrake module is attached to the forward bulkhead of the left wheel well, below the hydraulic reservoir.

TASK 32-42-09-944-001

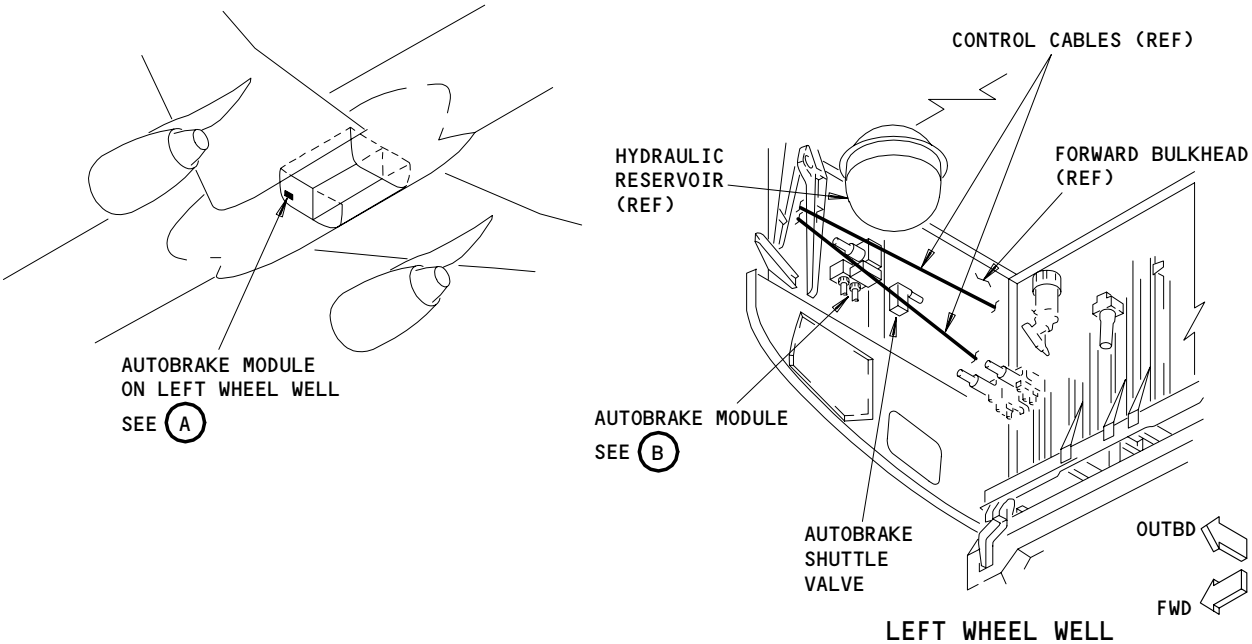
2. Prepare for Removal
   A. References
      (1) AMM 24-22-00/201, Electrical Power - Control
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
      (3) AMM 32-00-15/201, Landing Gear Door Locks
      (4) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones

143	Right Main Landing Gear Wheel Well
144	Left Main Landing Gear Wheel Well
211/212	Control Cabin
120	Main Equipment Center Right

   C. Procedure

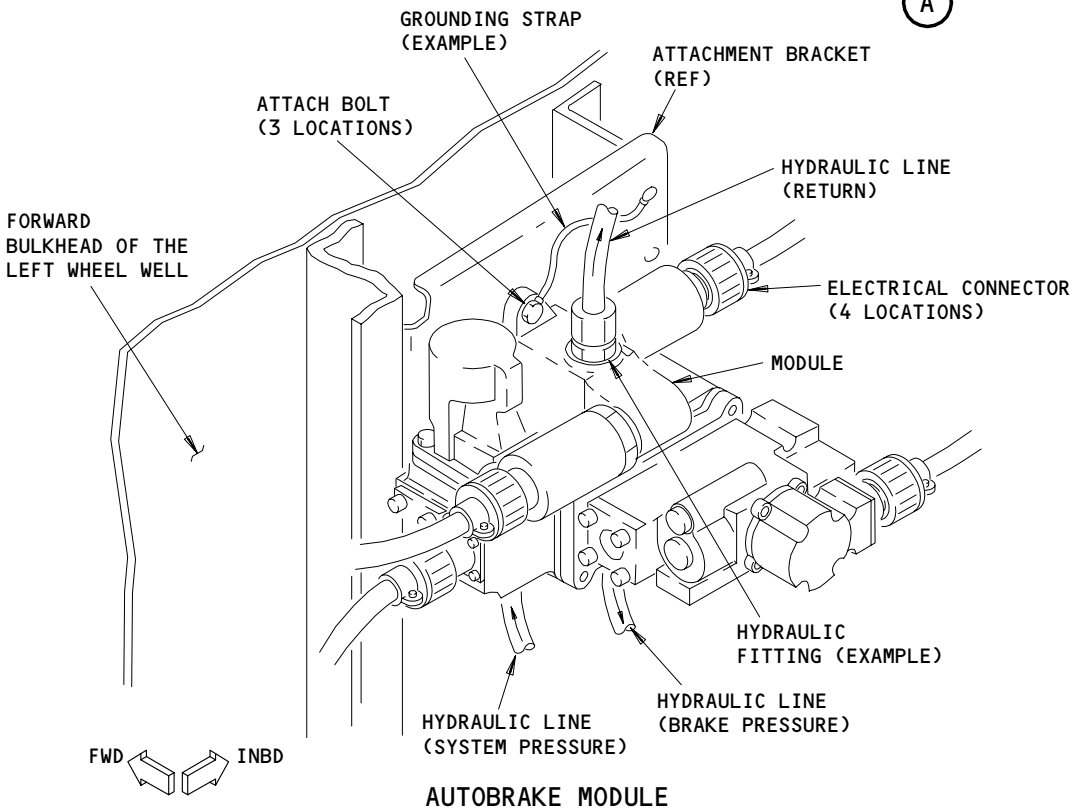
      S 494-002
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

      S 494-003
      (2) Make sure that chocks are installed on the wheels.



LEFT WHEEL WELL

A

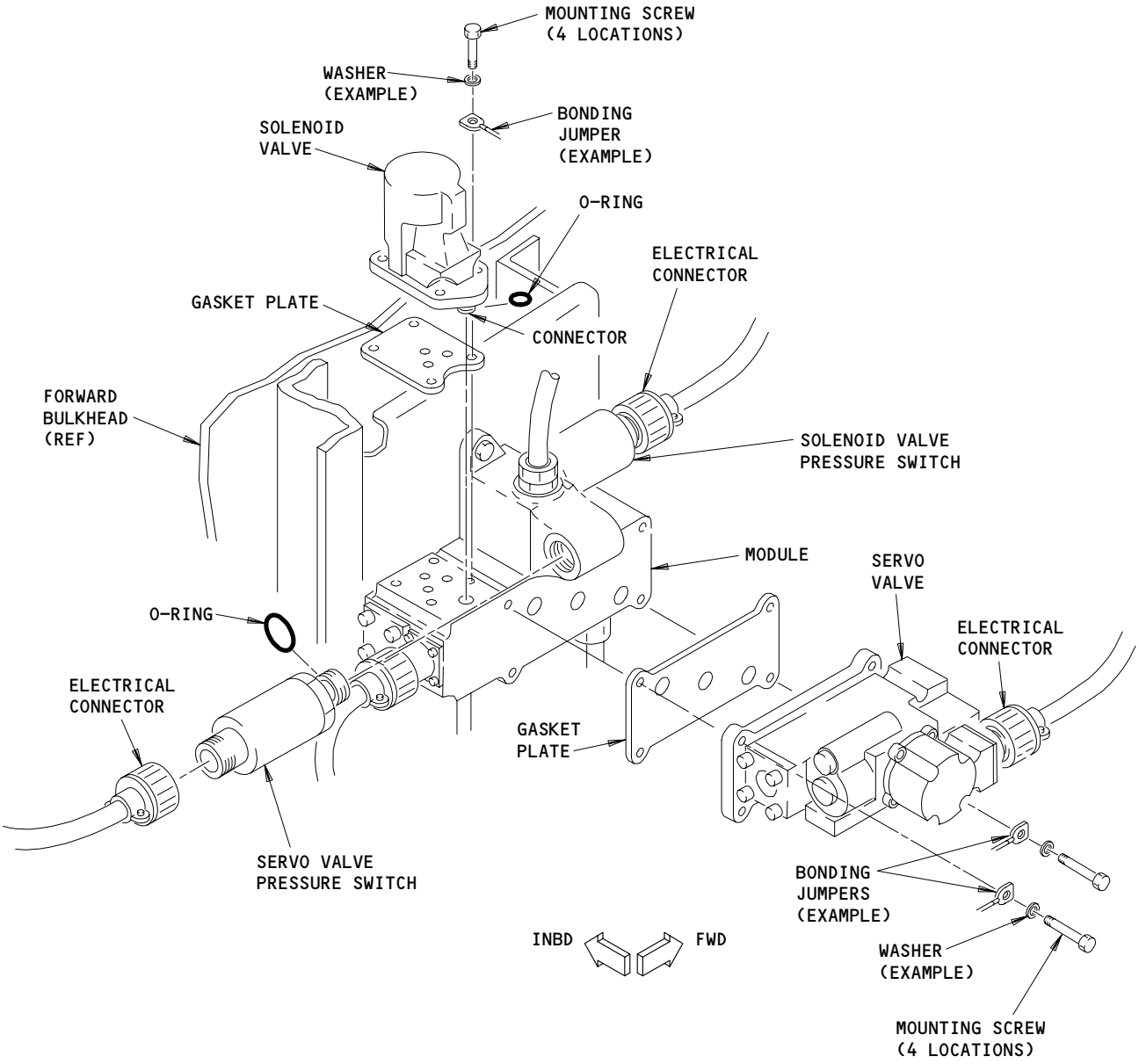


AUTOBRAKE MODULE
(SEE SHT 2 FOR COMPONENTS)

B

Autobrake Module and Components Installation
Figure 401 (Sheet 1)

25376



AUTOBRAKE MODULE COMPONENTS

(B)

Autobrake Module and Components Installation
Figure 401 (Sheet 2)

S 864-004
(3) Supply electrical power (AMM 24-22-00/201).

S 494-005

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

S 864-006
(5) Open these circuit breakers on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tags:
(a) 11S14, AUTOBK ANTISKID TEST IND 1
(b) 11S21, AUTOBK ANTISKID TEST IND 2

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 to eight times to release the 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 line for system return pressure from the module.

S 034-013
(3) Disconnect the hydraulic line for brake pressure from the module.

S 034-014
(4) Disconnect the hydraulic line for brake pressure from the tee fitting on the autobrake shuttle valve and remove the line.

S 034-015
(5) Disconnect the hydraulic line for system pressure from the module.

S 034-016
(6) Loosen the hydraulic line for system pressure at the other end of the line segment. Turn the line at the fitting to get clearance to remove the module.

S 034-017
(7) Put caps on the hydraulic lines and plugs in the ports of the module.

S 864-018
(8) Disconnect the electrical connectors (4 locations) from the module. Put caps on the electrical connectors and the electrical receptacles.

S 024-019
(9) Remove the module attach bolts and the ground straps while you hold the module.

S 024-020
(10) Remove the module.

TASK 32-42-09-404-021

4. Autobrake Module - Installation

A. Consumable Materials
(1) D00153 Hydraulic Fluid - BMS 3-11

B. References
(1) AMM 06-46-00/201, Entry, Service and Cargo Doors
(2) AMM 20-10-21/601, Electrical Bonding
(3) AMM 20-10-22/701, Metal Surfaces
(4) AMM 25-50-03/401, Bulkhead Lining
(5) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(6) AMM 34-21-00/501, Inertial Reference System

C. Access
(1) Location Zones

143	Right Main Landing Gear Wheel Well
144	Left Main Landing Gear Wheel Well
211/212	Control Cabin

D. Procedure to Install the Module

S 114-110
(1) Clean the surfaces that will touch when you install the module to make sure that there is a good electrical bond (AMM 20-10-22/701).

S 424-022
(2) Hold the module on the attachment bracket and align the installation holes on the module and the bracket.

S 424-023
(3) Install the bolt, washer, ground strap (2 locations), washer, and nut (3 locations).

S 764-024
(4) Measure the bonding resistance for 0.0025 ohm maximum resistance between the module and the attachment bracket (AMM 20-10-21/601).

S 644-025
(5) Lubricate the new O-rings with hydraulic fluid and install them on the hydraulic fittings.

S 434-026
(6) Connect the hydraulic line for system return pressure to the module.

S 434-027
(7) Connect the hydraulic line for brake pressure to the tee fitting on the autobrake shuttle valve.

S 434-028
(8) Install the hydraulic line for brake pressure to the module.

S 434-029
(9) Install the hydraulic line for system pressure to the module.

S 434-030
(10) Install the electrical connectors to the electrical receptacles on the module.

S 864-031
(11) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
  (a) 11S14, AUTOBK ANTISKID TEST IND 1
  (b) 11S21, AUTOBK ANTISKID TEST IND 2

S 714-032
(12) Prepare for the test.
  (a) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).
  (b) Put the engine thrust levers in the idle position.
  (c) Put the spoiler/speedbrake handle on the control stand in the down-and-locked detent.

(d) Put the L, R, and C IRUs in the NAV mode (AMM 34-21-00/501).

NOTE: IRUs must be aligned.

(e) Open the forward cargo door, 821 (AMM 06-46-00/201).
(f) Remove the access panel for the E5 rack on the forward bulkhead of the forward cargo compartment (AMM 25-50-03/401).
(g) Find the antiskid/autobrake control unit on the E5 rack.

S 714-033

(13) Do the test that follows:
(a) Put the AUTOBRAKES selector switch on panel P1 to 1.
(b) Push in the ENABLE/VERIFY switch on the Antiskid/Autobrake Control Unit and hold, and then push in the VERIFY switch. Release the two switches at the same time.

NOTE: Make sure that the display on the unit flashes WAIT while the test operates.

(c) Make sure that TEST END shows on the display. If a fault message shows on the display, push in the VERIFY switch to continue until TEST END shows on the display.
(d) Push the RESET button on the control unit.

S 714-111

WARNING: MAKE SURE THAT THE AREA AROUND THE BRAKES IS CLEAR AND THAT CHOCKS ARE INSTALLED ON THE AIRPLANE WHEELS. THE TEST THAT FOLLOWS APPLIES AND RELEASES THE BRAKES AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(14) Do an autobrake application test.
(a) Move the AUTOBRAKES selector switch on panel P1 to 1. Make sure that the selector switch stays at 1.
(b) Put the BRAKE TEST switch on the antiskid/autobrake control in the A/B position.
(c) Push and hold the ENABLE/VERIFY switch, and push the VERIFY switch. Release the two switches at the same time.
1) Make sure that the unit display shows BRK A/B 1.
(d) Make sure that the EICAS message AUTOBRAKES shows, and the AUTOBRAKES light on the P1 panel comes on.
(e) Make sure that all the brakes apply for approximately 15 seconds and, after that, they release.

NOTE: Look to see that the brake wear indicators move to make sure that the brakes apply and release.

(f) Make sure that the AUTOBRAKES selector switch on the P1 panel moves to the DISARM position.

NOTE: The switch will move to the OFF position if you set the RTO position.

(g) Do the autobrake application test again for the other positions of the AUTOBRAKE selector switch (See Table 1):

TABLE 1

Autobrake Sel Position	Display Message (M102)
2	BRK A/B 2
3	BRK A/B 3
4	BRK A/B 4
MAX AUTO	BRK A/B 5

S 714-036

(15) Put the AUTOBRAKES selector switch on the P1 panel in the OFF position.

S 714-037

(16) Put the BRAKE TEST switch on the antiskid/autobrake control unit in the NORM position.

S 714-038

(17) Push the RESET button on the control unit.

S 714-039

(18) Put the L, R, and C IRUs in the OFF position.

S 794-040

(19) Do a check of the module installation for leaks.

S 944-041

(20) Do the procedure to Put the Airplane Back to Its Usual Position if it is not necessary to do more maintenance.

TASK 32-42-09-004-042

5. Autobrake Module Solenoid Valve Removal (Fig. 401)

A. Procedure

S 944-043

(1) Do the Prepare for Removal Procedure (Par 2).

S 024-112

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 034-045

(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 024-046

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 32-42-09-004-048

6. Autobrake Solenoid Valve - Installation (Fig. 401)

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

C. Procedure

S 644-049

(1) Lubricate a new O-ring with hydraulic fluid and install it on the connector at the bottom of the solenoid valve.

S 424-050

(2) Put a new gasket plate on the installation surface for the solenoid valve on the module.

S 424-051

(3) Put the solenoid valve on the gasket plate on the module.

S 424-052

(4) Install the screw, the washer, and the bonding jumper (four locations). Tighten the screws to 55-60 pound-inches.

S 424-053
(5) Install lockwire.

S 624-054
(6) Apply sealant to the heads of the screws.

S 864-055
(7) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
(a) 11S14, AUTOBK ANTISKID TEST IND 1
(b) 11S21, AUTOBK ANTISKID TEST IND 2

S 714-056
(8) Do the test of the autobrake module that is part of the autobrake module installation.

S 944-057
(9) Do the task to Put the Airplane Back to Its Usual Condition if it is not necessary to do more maintenance.

TASK 32-42-09-004-058
7. Autobrake Module Servo Valve - Removal (Fig. 401)
A. Procedure

S 944-059
(1) Do the Prepare for Removal task (Ref Par. 2).

S 864-060
(2) Disconnect the electrical connector from the valve. Put caps on the electrical connector and the electrical receptacle.

S 024-113

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 024-062
(4) Remove the gasket plate from the module and discard it.

TASK 32-42-09-404-063
8. Autobrake Module Servo Valve - Installation (Fig. 401)
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 424-108

(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 424-066

(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 424-067

(3) Install lockwire.

S 394-068

(4) Apply sealant to the screw heads.

S 864-069

(5) Install the electrical connector to the valve.

S 864-070

(6) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
   (a) 11S14, AUTOBK ANTISKID TEST IND 1
   (b) 11S21, AUTOBK ANTISKID TEST IND 2

S 714-071

(7) Do the autobrake module test that is in the task to install the autobrake module.

S 944-072

(8) Do the task to Put the Airplane Back to Its Usual Condition if it is not necessary to do more maintenance.

TASK 32-42-09-004-073

9. Pressure Switch for the Solenoid Valve of the Autobrake Module or the Pressure Switch for the Servo Valve - Removal (Fig. 401)

A. Procedure

S 944-074

(1) Do the Prepare for Removal Task (Ref Par. 2).

S 864-075

(2) Disconnect the electrical connector from the pressure switch. Put caps on the electrical connector and the electrical receptacle.

S 024-076

(3) Turn the pressure switch counterclockwise to remove it. Put a plug in the port on the module.

TASK 32-42-09-404-114

10. Pressure Switch for the Solenoid Valve of the Autobrake Module or the Pressure Switch for the Servo Valve - Installation (Fig. 401)

A. Consumable Materials

(1) D00153 Hydraulic Fluid - BMS 3-11

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 644-078

(1) Lubricate a new O-ring with hydraulic fluid and install it on the pressure switch.

S 424-079

(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 424-080

(3) Install lockwire between the two pressure switches on the module.

S 434-081

(4) Install the electrical connector.

S 864-082

(5) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:

(a) 11S14, AUTOBK ANTISKID TEST IND 1

(b) 11S21, AUTOBK ANTISKID TEST IND 2

S 714-083
(6) Do the autobrake module test that is in the autobrake installation task.

S 944-084
(7) Do the task to Put the Airplane Back to Its Usual Condition if it is not necessary to do more maintenance.

TASK 32-42-09-944-085

11. Put the Airplane Back to Its Usual Condition

A. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 25-50-03/401, Bulkhead Lining
(3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(4) AMM 32-00-15/201, Landing Gear Door Locks

B. Access
(1) Location Zones

143	Right Main Landing Gear Wheel Well
144	Left Main Landing Gear Wheel Well
211/212	Control Cabin

C. Prepare to put the airplane to its usual condition

S 864-086
(1) Set the parking brake.

S 494-109

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).

D. Procedure

S 414-104
(1) Install the access panel for the E5 rack on the forward bulkhead of the forward cargo compartment (AMM 25-50-03/401).

S 414-105
(2) Close the forward cargo door, 821.

S 864-106
(3) Remove the power from the right hydraulic system if it is not necessary (AMM 29-11-00/201).

S 864-107
(4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

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

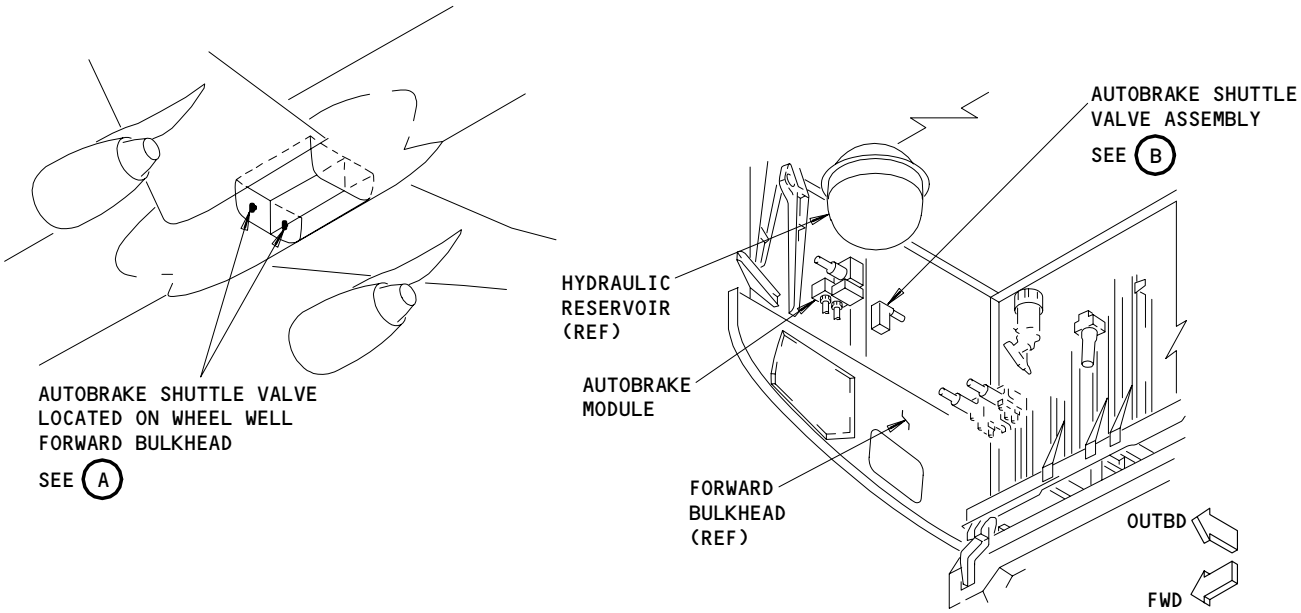
TASK 32-42-10-944-001

2. Prepare for Removal
   A. References
      (1) 06-46-00/201, Entry, Service and Cargo Doors
      (2) 24-22-00/201, Electrical Power - Control
      (3) 25-50-03/401, Bulkhead Lining
      (4) 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
      (5) 32-00-15/201, Landing Gear Door Locks
      (6) 32-00-20/201, Landing Gear Downlocks
      (7) 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
          120 Main Equipment Center, Right

TASK 32-42-10-024-002

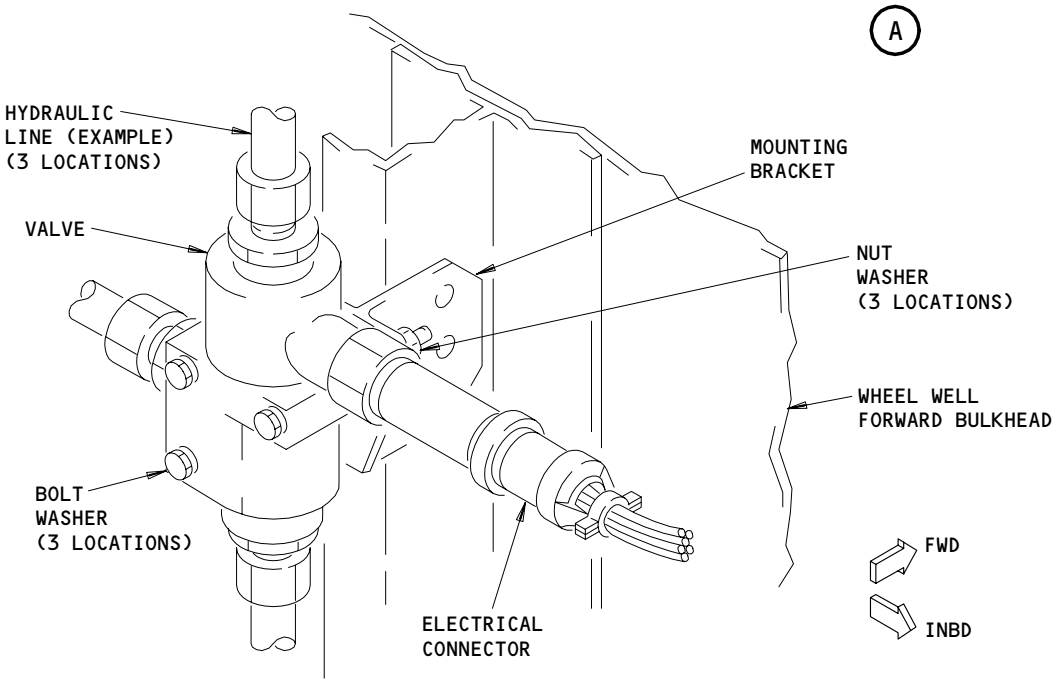
3. Autobtrake Shuttle Valve Module - Removal

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



LEFT WHEEL WELL SHOWN,
RIGHT WHEEL WELL EQUIVALENT

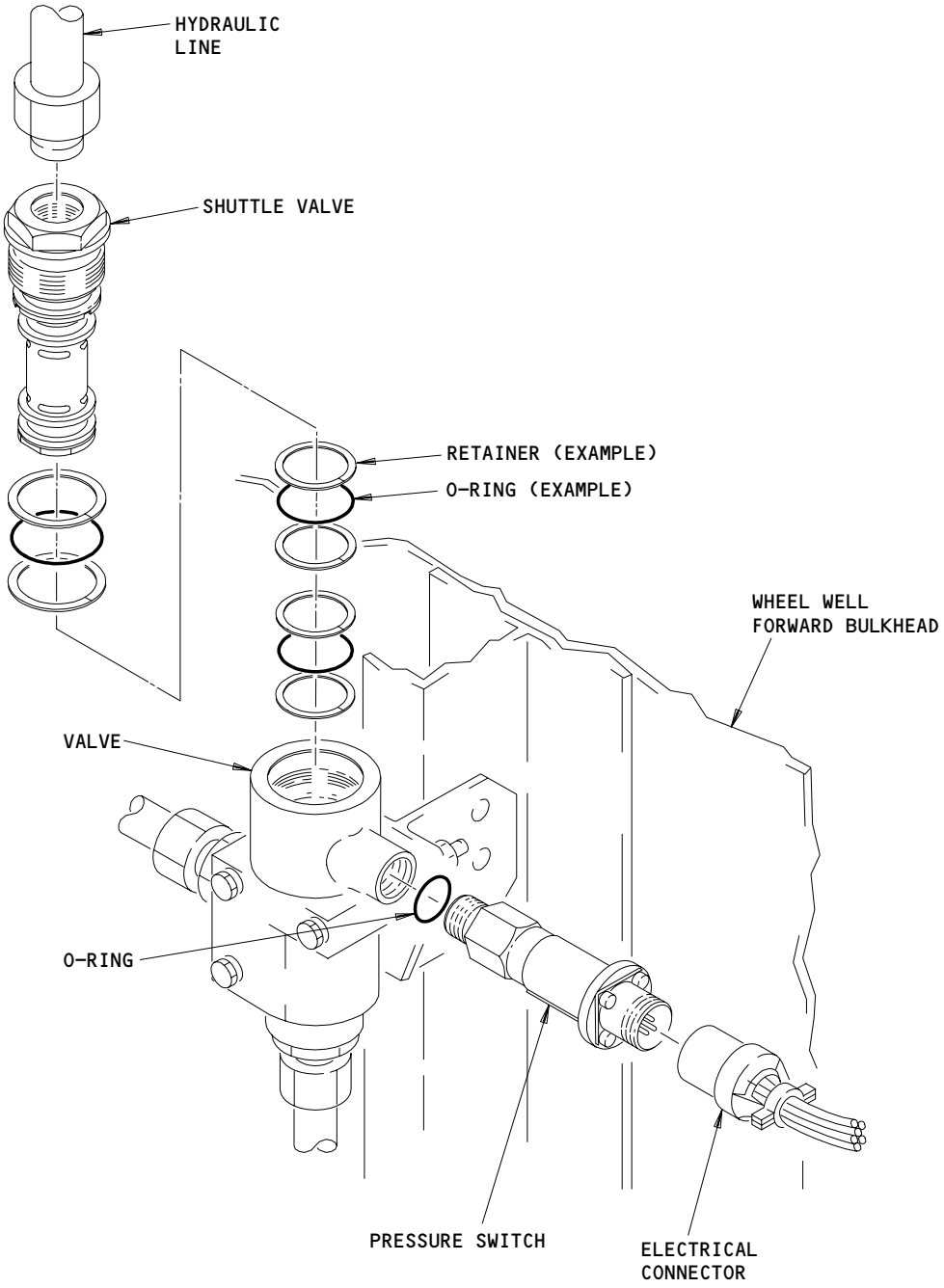
(A)



LEFT AUTOBRAKE SHUTTLE VALVE ASSEMBLY INSTALLATION SHOWN
RIGHT AUTOBRAKE SHUTTLE VALVE ASSEMBLY INSTALLATION EQUIVALENT
(SEE SHT 2 FOR COMPONENTS)

(B)

Autobrake Shuttle Valve Module/Component Installation
Figure 401 (Sheet 1)



AUTOBRAKE SHUTTLE VALVE - MODULE COMPONENTS

(B)

Autobrake Shuttle Valve Module/Components Installation
Figure 401 (Sheet 2)

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. Prepare for Removal

S 494-003

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

S 494-004

(2) Make sure that chocks are installed on the wheels.

S 864-005

(3) Supply electrical power (Ref 24-22-00).

S 494-006

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 AND DAMAGE TO EQUIPMENT.

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

S 864-007

(5) Open these circuit breakers on the overhead circuit breaker panel P11 and attach DO-NOT-CLOSE tags:
(a) 11S14, AUTOBK ANTISKID TEST IND 1
(b) 11S21, AUTOBK ANTISKID TEST IND 2

S 864-008

(6) Release the parking brake.

S 864-009

(7) Depressurize the right hydraulic system and reservoir (Ref 29-11-00).

S 864-010

(8) Push in the brake pedals slowly and fully at least seven times to release the hydraulic pressure from the brake accumulator.

D. Procedure to Remove the Shuttle Valve Module

S 034-011

(1) Disconnect the hydraulic lines from the valve and put caps on the lines.

S 034-012
(2) Disconnect the electrical connector and put caps on the electrical connector and the receptacle.

S 024-013
(3) Remove three bolts and remove the valve module.

TASK 32-42-10-404-014

4. Autobrake Shuttle Valve Module - Installation

A. Equipment
(1) Explosion proof 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) 06-46-00/201, Entry, Service and Cargo Doors
(2) 20-10-22/701, Metal Surfaces
(3) 24-22-00/201, Electrical Power - Control
(4) 25-50-03/401, Bulkhead Lining
(5) 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(6) 32-00-15/201, Landing Gear Door Locks
(7) 32-00-20/201, Landing Gear Downlocks
(8) 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
120 Main Equipment Center, Right

E. Procedure to Install the Shuttle Valve Module

S 114-015
(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 644-016
(2) Lightly lubricate the O-rings and the hydraulic fittings on the valve assembly with hydraulic fluid.

S 424-017
(3) Install the valve module to the support bracket with three bolts.

S 434-019
(4) Install the hydraulic lines and the electrical connector to the valve.

S 764-020
(5) Measure the bonding resistance between the valve and the support bracket. Make sure that it is 0.0025 ohm maximum.

S 864-021
(6) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P11 panel:
(a) 11S14, AUTOBK ANTISKID TEST IND 1
(b) 11S21, AUTOBK ANTISKID TEST IND 2

F. Do an operational test of the shuttle valve assembly.

NOTE: The Built-in-Test Equipment (BITE) of the Antiskid/Autobrake Control Unit are used to do this test. The BITE test switches and the test instruction placard are on the front panel of the control unit.

S 714-023
(1) Prepare for the test.
(a) Supply electrical power (Ref 24-22-00)..
(b) Release the parking brake.
(c) Pressurize the right hydraulic system and reservoir (Ref 29-11-00).
(d) Put the thrust levers in the idle position.
(e) Retract the spoilers.
(f) Put the L, R, and C IRU's in the NAV mode (Ref 34-21-00).

NOTE: The IRU's must be aligned.

(g) Open the forward cargo door, 821 (Ref 06-46-00).
(h) Remove the E5 rack access panel on the forward bulkhead of the forward cargo compartment cargo (Ref 25-50-03).
(i) Find the antiskid/autobrake control unit on the E5 rack.

S 714-024
(2) Do the operational test of the shuttle valve.
(a) Put the AUTOBRAKES selector switch on the P1-3 panel in position 1.
(b) Push in the ENABLE/VERIFY switch on the control unit and hold, and then push in the VERIFY switch and release the two switches at the same time.

NOTE: The display flashes WAIT while the test operates.

(c) Make sure that the indication TEST END or a fault indication is shown on the display. If a fault is shown, push in the VERIFY switch to continue the test until TEST END is shown on the display.
(d) Push in the RESET button on the control unit.

S 714-063

WARNING: THIS TEST APPLIES AND RELEASES 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.

(3) Do the autobrake application test.
  (a) Put the AUTOBRAKES selector switch on the P1-3 panel in position 1 and make sure that it arms.
  (b) Do these steps with the controls on the Antiskid/Autobrake Control Unit:
    1) Turn the BRAKE TEST rotary switch to the A/B position.
    2) Push in the ENABLE/VERIFY switch and hold it, and then push in the VERIFY switch. Release the two switches at the same time.
    3) Make sure that the unit display shows BRK A/B 1.
  (c) Make sure that the EICAS message AUTOBRAKES message appears # , and the AUTOBRAKES light illuminates.
  (d) Make sure that all the brakes apply for about 15 seconds and then release.

S 864-026
(4) Put the AUTOBRAKES selector switch in the OFF position.

S 864-027
(5) Put the the BRAKE TEST rotary switch in the NORM position.

S 864-028
(6) Push in the RESET button on the control unit.

S 864-029
(7) Put the L, R, and C IRUs to the OFF position..

S 794-030
(8) Do a check of the installation for leaks.

S 944-031
(9) Do the steps in in the procedure to Put the Airplane Back to Its Usual Condition if it is not necessary to do more maintenance.

TASK 32-42-10-004-032

5. Autobrake Shuttle Valve - Removal (Fig. 401)
   A. 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

   B. Procedure to Remove the Valve

      S 034-033
      (1) Disconnect the hydraulic line that is connected to the top of the valve module.

      S 024-084
      (2) Remove the valve from the module.

      S 034-035
      (3) Remove the retainers and the O-rings from the valve. Discard the O-rings.

TASK 32-42-10-404-036

6. Autobrake Shuttle Valve - Installation (Fig. 401)
   A. Consumable Materials
      (1) D00153 Hydraulic Fluid - BMS 3-11
   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 to Install the Valve

      S 644-038

      CAUTION: RUBBER AND TEFLON O-RINGS ARE NOT INTERCHANGEABLE. IF YOU DO NOT INSTALL TEFLON O-RINGS, HYDRAULIC FLUID CAN TRANSFER FROM THE NORMAL BRAKE SYSTEM TO THE ALTERNATE BRAKE SYSTEM AND CAUSE DAMAGE TO THE SYSTEM.

      (1) Lubricate the O-rings and the retainers with hydraulic fluid and install them on the valve.

      S 424-039
      (2) Install the valve in the module and tighten to 300 pound-inches.

S 424-040
(3) Install lockwire.

S 434-041
(4) Install the hydraulic line.

S 714-042
(5) Do the same test of shuttle valve operation that you do after you install the autobrake shuttle valve module (Ref Par. 4).

S 944-043
(6) Do the steps in the procedure to Put the Airplane Back to Its Usual Condition of it is not necessary to do any more maintenance.

TASK 32-42-10-004-044

7. Autobrake Shuttle Valve Pressure Switch - Removal (Fig. 401)

A. 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

B. Procedure to Remove the Pressure Switch

S 864-045
(1) Disconnect the electrical connector and put caps on the electrical connector and the receptacle.

S 024-046
(2) Remove the pressure switch and discard the O-ring. Put a plug in the valve port.

TASK 32-42-10-404-047

8. 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
120	Main Equipment Center, Right

B. Procedure to Install the Pressure Switch

S 644-048
(1) Lubricate the O-ring with hydraulic fluid.

S 424-049
(2) Install the pressure switch with new O-rings in the valve port. Tighten the switch to 170 pound-inches.

S 434-050
(3) Install lockwire.

S 434-051
(4) Install the electrical connector.

S 714-052
(5) Do the same test of shuttle valve operation that you do after you install the autobrake shuttle valve module (Ref Par. 4).

S 944-053
(6) Do the procedure to Put the Airplane Back to Its Usual Condition if it is not necessary to do any more maintenance.

TASK 32-42-10-944-054

9. Put the Airplane Back to Its Usual Condition

A. 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

B. Procedure

S 864-055
(1) Set the parking brake.

S 094-056

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS 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 864-057
(3) Remove the power from the right system hydraulic power if it is not necessary (Ref 29-11-00)..

S 414-059
(4) Install E5 rack access panel on forward cargo compartment forward bulkhead (Ref 25-50-03).

S 414-060
(5) Close the forward cargo door, 821.

S 864-061
(6) Remove electrical power if it is not necessary.

AUTOBRAKE SELECTOR SWITCH (S24) - REMOVAL/INSTALLATION

1. General
   A. The Autobrake Selector Switch (S24) is installed on the P1-3 panel.
   B. This procedure contains the following tasks:
      (1) Autobrake Selector Switch - Removal
      (2) Autobrake Selector Switch - Installation
      (3) Autobrake Selector Switch - Test

TASK 32-42-11-004-001

2. Autobrake Selector Switch - Removal (Fig. 401)
   A. Equipment
      (1) Circuit Breaker Lockout Clip - 1012LC-R
   B. Reference
      (1) AMM 24-22-00/201, Electrical Power - Control
   C. Access
      (1) Location Zones
          211/212 Flight Compartment

   D. Prepare for Removal

      S 864-020
      (1) Open the following circuit breakers on the P11 overhead panel and attach DO NOT CLOSE tags:
          (a) 11S14, AUTOBRAKES/ANTISKID TEST IND 1
          (b) 11S21, AUTOBRAKES/ANTISKID TEST IND 2
   E. Procedure

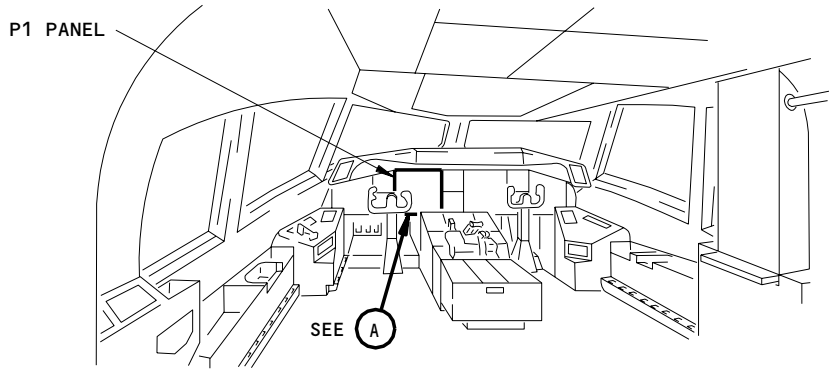
      S 024-003
      (1) Remove the knob (5) from the autobrake selector switch (2).

      S 024-004
      (2) Unfasten the two screws and remove the lightplate (4).

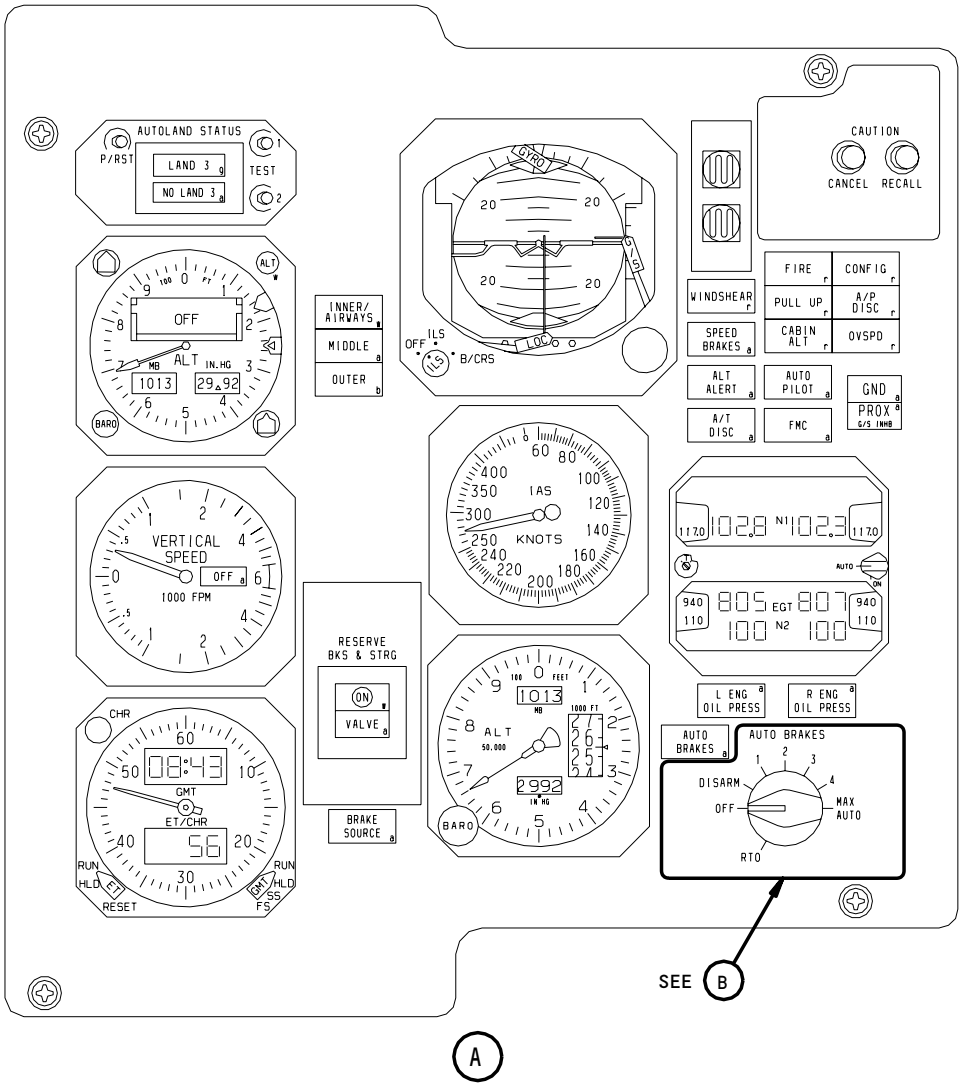
      S 024-005
      (3) Release the P1-3 instrument panel.

      S 864-006
      (4) Disconnect the electrical connector (D2374) (1) from the back of the autobrake selector switch (2).

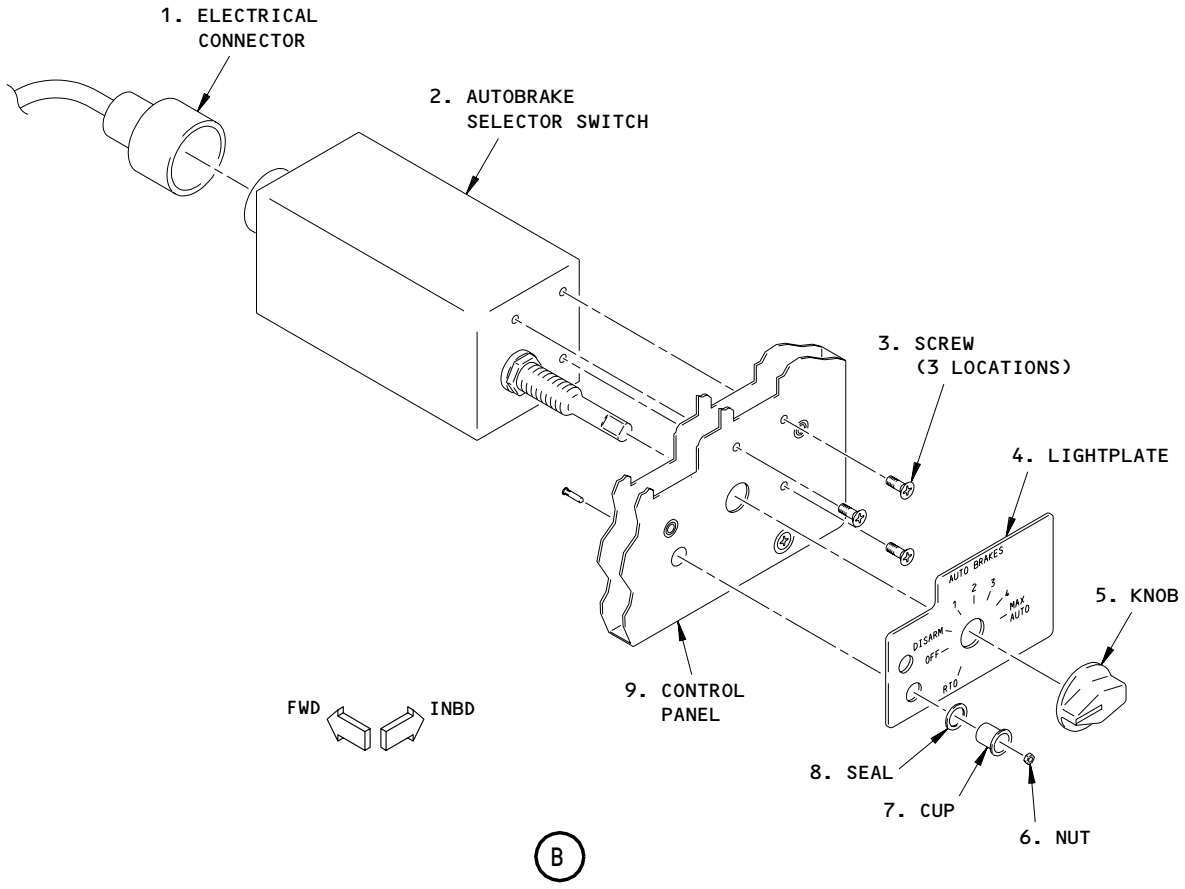
      S 024-007
      (5) Remove the three screws (3) and withdraw the autobrake selector switch (2).



FLIGHT COMPARTMENT



Autobrake Selector Switch Installation
Figure 401 (Sheet 1)



Autobrake Selector Switch Installation
Figure 401 (Sheet 2)

TASK 32-42-11-404-008

3. Autobrake Selector Switch - Installation

A. Reference

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

B. Access

(1) Location Zones

211/212 Flight Compartment

C. Procedure

S 864-009

(1) Ensure the following circuit breakers on the P11 overhead panel are open:

(a) 11S14, AUTOBRAKES/ANTISKID TEST IND 1

(b) 11S21, AUTOBRAKES/ANTISKID TEST IND 2

S 424-010

(2) Install the autobrake selector switch (2) and secure the three screws (3).

S 424-011

(3) Install the lightplate (4) and secure with two screws.

S 864-012

(4) Connect the electrical connector (D2374) (1) to the autobrake selector switch (2).

S 424-013

(5) Install the autobrake selector switch knob (5).

S 864-014

(6) Remove the DO NOT CLOSE tags and close the following circuit breakers on the P11 panel:

(a) 11S14, AUTOBRAKES/ANTISKID TEST IND 1

(b) 11S21, AUTOBRAKES/ANTISKID TEST IND 2

TASK 32-42-11-704-015

4. Autobrake Selector Switch - Test

A. Prepare for Test

S 864-024

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

S 484-025
(2) Make sure the landing gear downlocks are installed on the main and nose landing gear (AMM 32-00-20).

S 484-026
(3) Make sure that chocks are installed on the landing gear wheels.

S 864-027
(4) Release the parking brake.

S 864-028
(5) Pressurize the right and left hydraulic systems and reservoirs (29-11-00).

S 864-029
(6) Put the thrust levers in the idle position.

S 864-030
(7) Retract the spoilers.

S 864-031
(8) Put the L, R and C IRUs in the NAV mode (AMM 32-21-00).

NOTE: The IRUs must be aligned.

B. Autobrake Selector Switch Installation Test.

S 864-032
(1) Turn the BRAKE TEST rotory switch on the M102 unit to the A/B position.
(a) The Antiskid/Autobrake Control Unit (M102) is in the Main Equipment Center. You can get accesss to the control unit through the electronics access door, 119AL (AMM 06-41-00).

S 864-033
(2) Make sure that this circuit breaker on the P6 panel is closed:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV.

S 714-034
(3) Put the AUTOBRAKES selector switch in position 1. Make sure that it arms.

S 714-035
(4) Push in the ENABLE/VERIFY switch and hold, and then push in the VERIFY switch. Release the two switches at the same time.

S 714-036
(5) Make sure that you have these indications:
  (a) The M102 unit display shows BRK A/B 1.
  (b) The AUTOBRAKES light comes on, the AUTOBRAKES selector switch disarms, and the EICAS message AUTOBRAKES, is shown.

S 714-037
(6) Repeat for the AUTOBRAKES selector switch positions 2, 3, 4 and MAX AUTO. Make sure the display messages are as shown in Table 1 and the switch disarms.

S 714-038
(7) Put the BRAKE TEST rotary switch in the NORM position.

S 864-039
(8) Remove the power from the right and left hydraulic systems (AMM29-11-00).

S 714-040
(9) Push the ENABLE/VERIFY switch and hold, and then push in the VERIFY switch. Release the two switches at the same time.

S 714-041
(10) Make sure that the M102 display shows PRES ACC.

S 864-042
(11) Push in and release the RESET button on the M102 unit.

S 864-022
(12) Pressurize the right hydraulic system and reservoir (AMM 290-11-00).

S 714-021
(13) Put the autobrake selector switch on the P1-3 panel to the RTO position and make sure that it stays in that position.
  (a) Put the brake test switch on the Antiskid/Autobrake Control Unit, M102, to the A/B position.
  (b) Push in and hold the ENABLE/VERIFY switch.
  (c) Push in the VERIFY switch and release the ENABLE/VERIFY and VERIFY switches.
  (d) Make sure you have these indications:
    1) The M102 display shows BRK RTO.
    2) The autobrake selector switch on the P1-3 panel goes to the OFF position.
  (e) Put the brake test rotory switch on the M102 to the NORM position.
  (f) Push in and release the RESET button on the M102.

C. Put the airplane back to its usual condition.

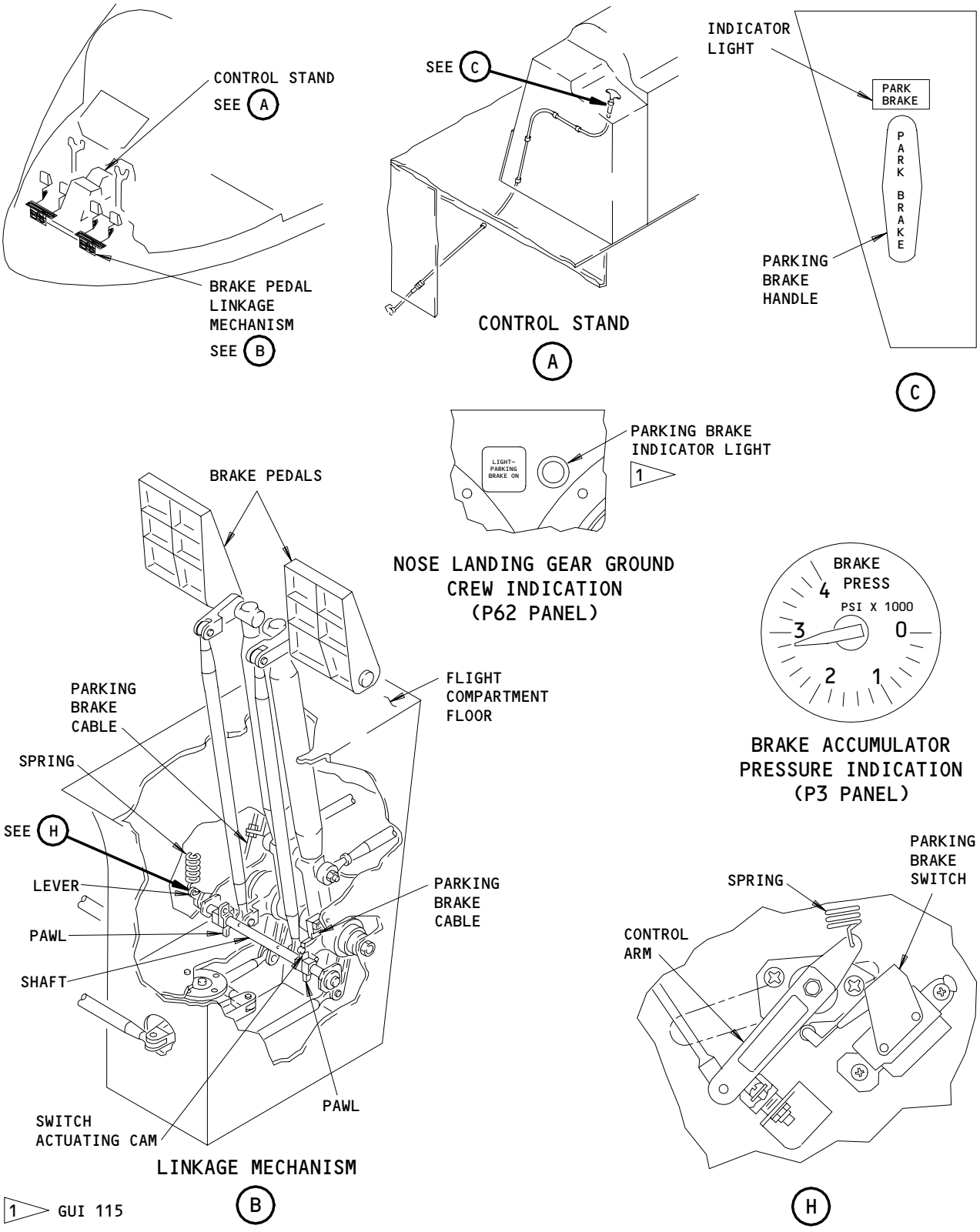
S 864-023

(1) Remove the power from the left and right hydraulic systems (AMM 29-11-00).

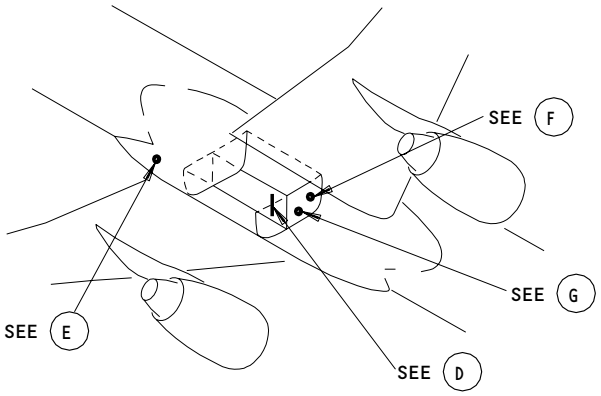
PARKING BRAKE SYSTEM - DESCRIPTION AND OPERATION

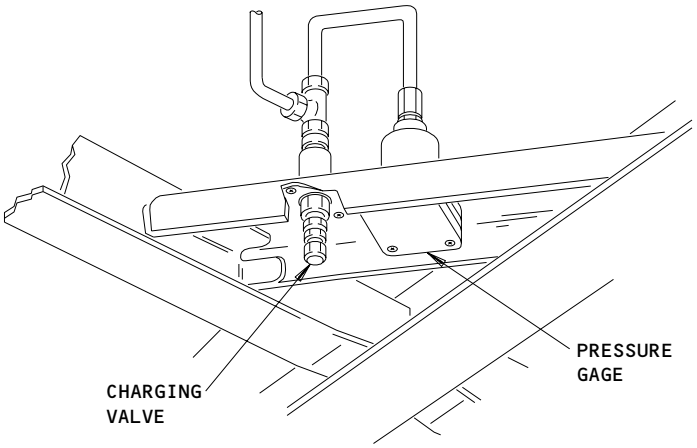
1. General
   A. The parking brake is used in conjunction with the hydraulic brake system (AMM 32-41-00/001) to apply the main landing gear wheel brakes when the airplane is on the ground and in a stationary mode.
   B. The parking brake utilizes either right hydraulic system pressure (if system is pressurized), left hydraulic system pressure (if left system is pressurized and right is not), or pressure from an accumulator. Accumulator pressure is channeled through the normal brake system components to set the brakes for parking. A mechanism connected to the captain's brake pedals sets the parking brake.
   C. Indication is provided in the flight compartment when the parking brake is set. A PARKING BRAKE message is displayed on the EICAS (Engine Indicating and Crew Alerting System) on P2 panel, and a PARK BRAKE light on the control stand, above the parking brake handle, comes on.
   D. Indication is provided in the flight compartment and on the nose landing gear. A PARKING BRAKE message is displayed on the EICAS (Engine Indicating and Crew Alerting System) on P2 panel, and a PARK BRAKE light on the control stand, above the parking brake handle, comes on.
   E. AIRPLANES WITH PARKING LIGHT ON NOSE LANDING GEAR;
   There is also a parking brake ON light on P62 panel on the nose landing gear shock strut that comes on.
   F. The parking brake keeps brakes set for up to 12 hours when normal brake system pressure is removed or indefinitely when the normal brake system pressure is available.
   G. The parking brake accumulator serves as a backup pressure source for the normal brake system pressure providing a pressure source for one brake application when normal (right hydraulic system) or alternate (left hydraulic system) pressure is not available.
   H. The parking brake is set by depressing the captain's brake pedals and latching them in this position by pulling the parking brake handle. This keeps the brake pedals depressed, and closes the parking brake valve to block leakage of brake pressure to return.
   I. The parking brake system comprises the following components:
      (1) Parking brake lever/cable
      (2) Parking brake linkage mechanism
      (3) Parking brake valve
      (4) Accumulator
      (5) Accumulator isolation valve
      (6) Parking brake close sense relay
      (7) Parking brake switch
      (8) Indicators
      (9) Accumulator charging valve and gage

2. Component Details (Fig. 1)
   A. Parking Brake Lever/Cable
      (1) The parking brake actuator lever is located in the flight compartment on the left side of the P10 control stand. The lever is connected by a cable to the linkage mechanism.
   B. Parking Brake Linkage Mechanism
      (1) The parking brake cable attaches to a control arm. When the parking brake is set, the control arm rotates a spring loaded shaft. Which moves two shaft-mounted lockout pawls into position against the captain's brake pedal linkage. The pawls keep the brake pedals depressed. A cam which is mounted on the shaft actuates the parking brake switch to close the parking brake valve.
   C. Parking Brake Valve
      (1) The parking valve closes to prevent brake pressure return from the brakes, and extend parking brake holding time. The valve is a two-position, motor-operated, ball type valve. The valve closes (POSITION 2) when the parking brake is engaged, and opens (POSITION 1) when the parking brake is released. The valve operates through a gear train, and requires 28 Vdc power from the parking brake switch to actuate. The valve remains in the selected position when power is removed.
      (2) A manual override handle allows the valve to be set manually in either POSITION 1 (open) or POSITION 2 (closed). However, subsequent application of power will drive the valve to the electrically commanded position.
      (3) An external position indicator (manual handle) is provided.
      (4) The motor includes two limit switches to shut off power when the valve reaches the commanded position. A third limit switch in the valve is used to indicate the valve position.
      (5) The valve is located on the forward wall of the right landing gear wheel well.
   D. Parking Brake Accumulator/Pressure Transmitter
      (1) The accumulator is precharged with nitrogen to provide backup hydraulic pressure for operation of the brake system and parking brake when normal (right) or alternate (left) hydraulic system pressure are not available. The accumulator is continuously pressurized through a one-way check valve whenever the right system is pressurized. Nitrogen and hydraulic fluid are separated by a floating piston inside the accumulator.



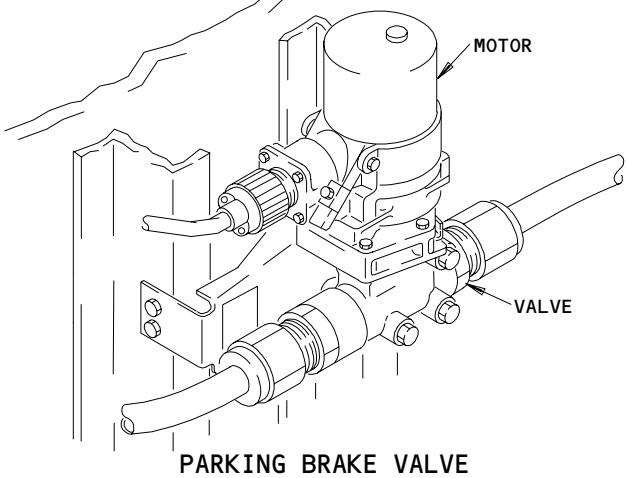
Parking Brake System – Component Location
Figure 1 (Sheet 1)





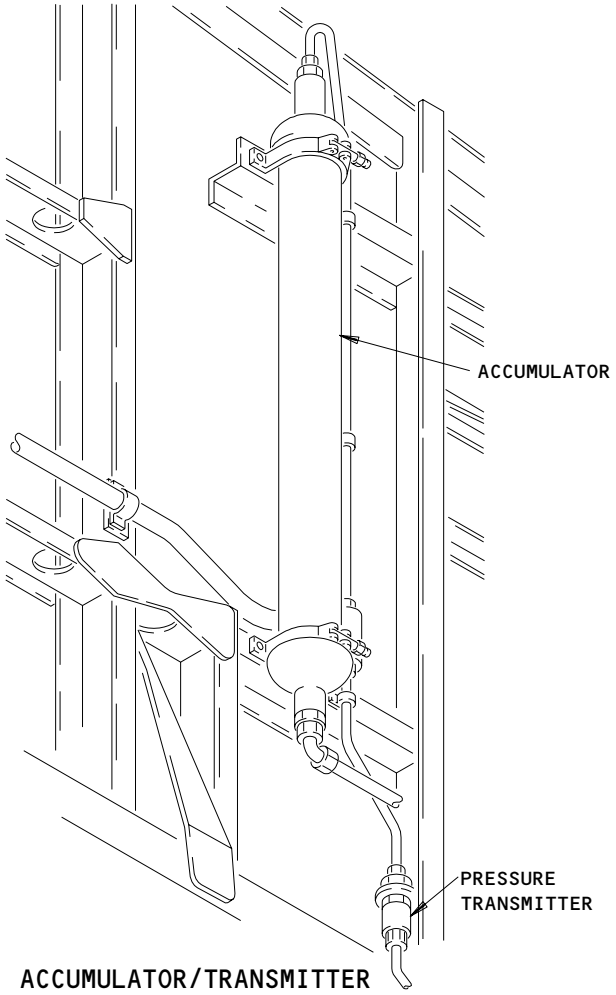
CHARGING VALVE/GAGE

E



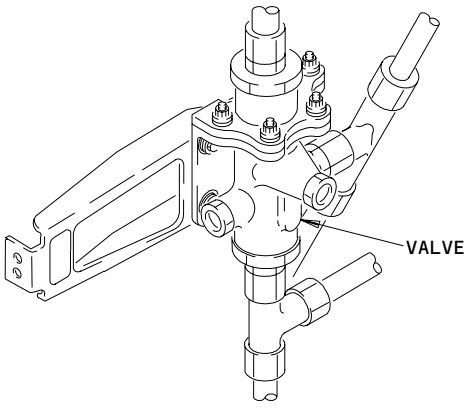
PARKING BRAKE VALVE

F



ACCUMULATOR/TRANSMITTER

D



ACCUMULATOR ISOLATION VALVE

G

Parking Brake System Component Location
Figure 1 (Sheet 2)

(2) A pressure transmitter is installed next to the accumulator in the RH wheel well. The transmitter provides a pressure signal to the brake accumulator pressure guage on P3 panel in the flight compartment.

E. Accumulator Isolation Valve

(1) The accumulator isolation valve is a two-position valve which opens when the right hydraulic system is depressurized, and closes when the right hydraulic system is pressurized. When the isolation valve is open, the accumulator supplies pressure for the parking brakes. The accumulator is isolated from the depressurized right hydraulic system by a one-way check valve.

F. Close Sense Relay

(1) The close sense relay is energized when the parking brake valve is closed. Closed contacts provide signal logic to the antiskid/autobrake control unit. Two other switch contacts interface with the Voice Recorder System (AMM 23-71-00/001). The relay is located on the P36 miscellaneous relay panel in the Main E/E Compartment.

G. Parking Brake Switch

(1) The parking brake switch is a two position switch which is positioned by a mechanism link on the parking brake mechanism (See Fig. 1 for effectivity). When the parking brake is set the link moves the switch to the set position. When the parking brake is released, the switch moves to w the released position. When in the set position , the switch provides 28 vdc power from the hot battery bus to CLOSE the parking brake valve. When in the released position, the switch provides 28v dc power to open the valve.

(2) Another switch contact provides interface with the CAUTION AND WARNING system (AMM 31-51-00/001). A siren sounds to provide unsafe takeoff configuration warning if the parking brake is engaged, the airplane is on the ground, and takeoff thrust is applied.

(3) The parking brake switch is located adjacent to the parking brake mechanism below the flight compartment floor.

H. Parking Brake Accumulator Charging Valve/Gage

(1) The charging valve and gage are located in the hydraulic equipment compartment aft of the left main gear wheel well. A servicing chart is provided next to the valve which indicates precharge pressure versus outside ambient air temperature. (AMM 12-15-04/301) for system servicing.

I. Indicators

(1) A brake accumulator pressure gage is provided on both the pilots P3 panel and adjacent to the charging valve in the aft body fairing hydraulic equipment compartment. The gages measure accumulator precharge pressure.

(2) A PARK BRAKE indicator is provided on the P10 panel on the control stand, and on the P2 EICAS panel when the parking brake is engaged.

(3) AIRPLANES WITH PARKING BRAKE LIGHT ON NOSE LANDING GEAR;
A parking brake ON light is installed on the nose gear P62 panel. The light has a push-to-test feature.
(4) The ANTISKID indicator light on panel P5 will illuminate and EICAS (AMM 31-41-00/001) message ANTISKID will appear in the event that the parking brake valve is not fully open when the parking brake is released (AMM 32-42-00/001).

3. Operation

A. Functional Description

(1) The parking brake is mechanically actuated from the flight compartment by depressing both left and right captain's or first officer's brake pedals and pulling up on the PARK BRAKE handle on the P10 panel of the control stand.
(2) The parking brake handle is connected by cable to a mechanism which holds the brake pedals depressed. The mechanism has two shaft mounted pawls which rotate into position to hold the brake pedals in the engaged position.
(3) The parking brake linkage control arm actuates the parking brake switch. The engaged switch provides 28 Vdc power to the parking brake valve motor which closes the valve.
(4) Closing of the parking brake valve blocks return of hydraulic fluid from the brakes, energizes the brake close sense relay, and provides PARK BRAKE indication to the flight compartment.
(5) AIRPLANES WITH A PARKING BRAKE ON LIGHT ON THE NOSE LANDING GEAR;
This light on the nose gear P62 panel comes on.
(6) The parking brake system is hydraulically powered from the right hydraulic system (AMM 29-00-00/001). When the right hydraulic system is depressurized, the accumulator supplies hydraulic pressure through the accumulator isolation valve.
(7) The accumulator is serviced with nitrogen at the charging valve located in the lower aft body fairing hydraulic service compartment.
(8) The parking brake is disengaged by depressing and releasing the captain's or first officer's right and left brake pedals . The spring-loaded parking brake mechanism pulls the parking brake handle down against the control stand, and disengages the parking brake switch.

(9) 28 Vdc power is provided to open the parking brake valve. The close sense relay is de-energized, and the flight compartment PARK BRAKE indicator extinguishes.
(10) AIRPLANES WITH PARKING BRAKE ON LIGHT ON THE NOSE LANDING GEAR; This light on the nose gear P62 panel goes off.

B. Control
(1) Set parking brakes.
(a) Provide electrical power (AMM 24-22-00/201).
(b) Provide right hydrualic system pressure (AMM 29-11-00/201), or ensure that parking brake accumulator is pressurized.
(c) Close LANDING GEAR PARK BRAKING VLV circuit breaker on P6 panel.
(d) AIRPLANES WITH PARKING BRAKE ON LIGHT ON THE NOSE LANDING GEAR; Close the BATTERY PARK BRAKE POWER GND IND circuit breaker on the P11 panel.
(e) Depress captain's or first officer's left and right brake pedals fully.

CAUTION: PARKING BRAKE HANDLE SHALL BE PULLED STRAIGHT OUTWARD FROM P10 PANEL WITHOUT TWISITNG WHEN SETTING BRAKE. FAILURE TO COMPLY WILL CAUSE DAMAGE TO HANDLE LINKAGE.

(f) Lift up on parking brake handle on P10 quadrant stand. Release brake pedals, then release parking brake handle.
(g) Check that handle remains extended and the PARK BRAKE indication illuminates on P10 Quadrant stand, after a few seconds.
(h) AIRPLANES WITH A PARKING BRAKE LIGHT ON THE NOSE LANDING GEAR; Make sure that this light on the nose gear P62 panel comes on.
(2) Release parking brakes

CAUTION: PARKING BRAKE HANDLE NEED NOT BE MANIPULATED TO RELEASE PARKING BRAKE. PUSHING OR TWISTING PRESSURE ON HANDLE WILL CAUSE DAMAGE TO HANDLE LINKAGE.

(a) Depress captain's or first officer's brake pedals fully, then release them.

(b) Check that the parking brake handle moves down against P10 quadrant stand, and that PARK BRAKE light is extinguished in a few seconds.
(c) Depressurize right hydraulic system if no longer required.
(d) Remove electrical power if no longer required.

C. For more details on the Parking Brake System, refer to these wiring diagrams and functional schematics:
WDM 32-44-11: Parking Brake System
SSM 32-41-01: Hydraulic Brake System

PARKING BRAKE SYSTEM

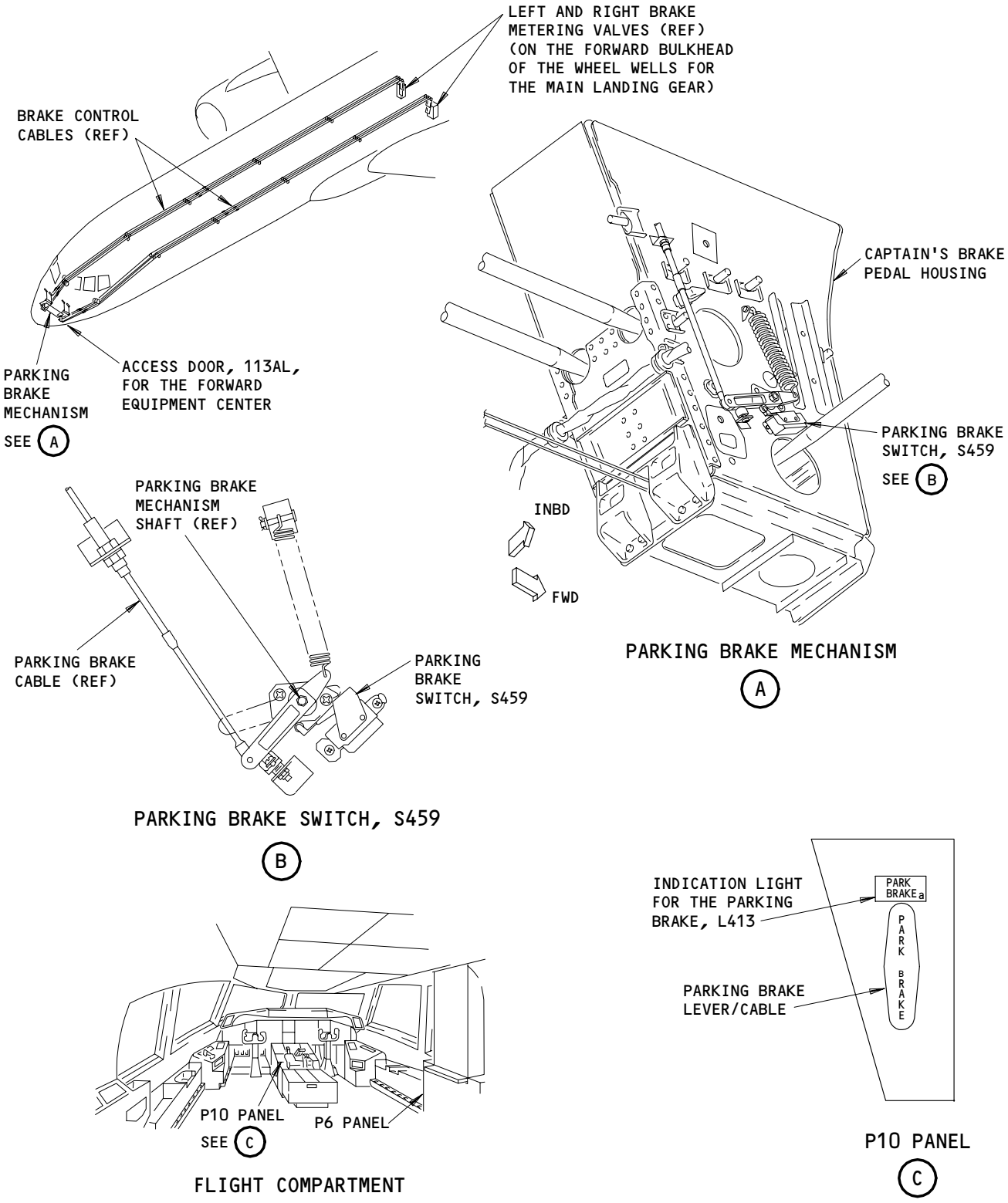
COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
ACCUMULATOR - PARKING BRAKE	2	1	WHEEL WELL FOR THE RIGHT MAIN LANDING GEAR	32-44-05
BRAKE HYDRAULIC - (32-41-00/101)				
CABLES - (32-41-00/101)				
BRAKE CONTROL				
CIRCUIT BREAKERS -	1		FLIGHT COMPARTMENT, P6,P11	
BRAKE PRESS IND, C1180		1	11S13	*
PARKING BRAKE VLV, C1179		1	6F4	*
CHECK VALVE - THERMAL RELIEF	2	1	WHEEL WELL FOR THE RIGHT MAIN LANDING GEAR	32-44-00
COMPUTERS - (31-41-00/101)				
EICAS, L, M10181				
EICAS, R, M10182				
GAGE - PNEUMATIC PRESSURE	2	1	197KL, L AFT WING/BODY FAIRING	32-44-00
LEVER/CABLE - PARKING BRAKE	1	1	FLIGHT COMPARTMENT, P10	32-44-01
INDICATOR - (32-41-00/101)				
BRAKE PRESS, N10				
LIGHT - (32-41-00/101)				
BRAKE SOURCE, L491				
LIGHT - PARK BRAKE INDICATION, L413	1	1	FLIGHT COMPARTMENT, P10	*
LIGHT - PARKING BRAKE ON INDICATION, L456 1	4	1	NOSE LANDING GEAR	*
MECHANISM - (32-41-00/101)				
BRAKE PEDAL BUS				
MODULES - (32-41-00/101)				
ALTERNATE BRAKE METERING VALVE, L&R				
NORMAL BRAKE METERING VALVE, L&R				
PEDALS - (32-41-00/101)				
BRAKE (CAPTAIN'S AND FIRST OFFICER'S)				
RELAY - (31-01-36/101)				
PARK BRAKE CLOSE SENSE, K419				
SWITCH - PARK BRAKE, S459	1	1	113AL, FWD EQUIP COMPT, BRAKE PEDAL BUS MECHANISM (REF)	32-44-08
TRANSDUCER - (32-41-00/101)				
PRESSURE				
VALVE - (32-41-00/101)				
ALTERNATE BRAKE SELECTOR				
VALVE - ACCUMULATOR ISOLATION	2	1	WHEEL WELL FOR THE RIGHT MAIN LANDING GEAR	32-44-06
VALVE - CHARGING			197KL, L AFT WING/BODY FAIRING	32-44-10
VALVE AND MOTOR - PARKING BRAKE, V41	2	1	WHEEL WELL FOR THE RIGHT MAIN	32-44-03
	2	1	LANDING GEAR	

* SEE THE WDM EQUIPMENT LIST

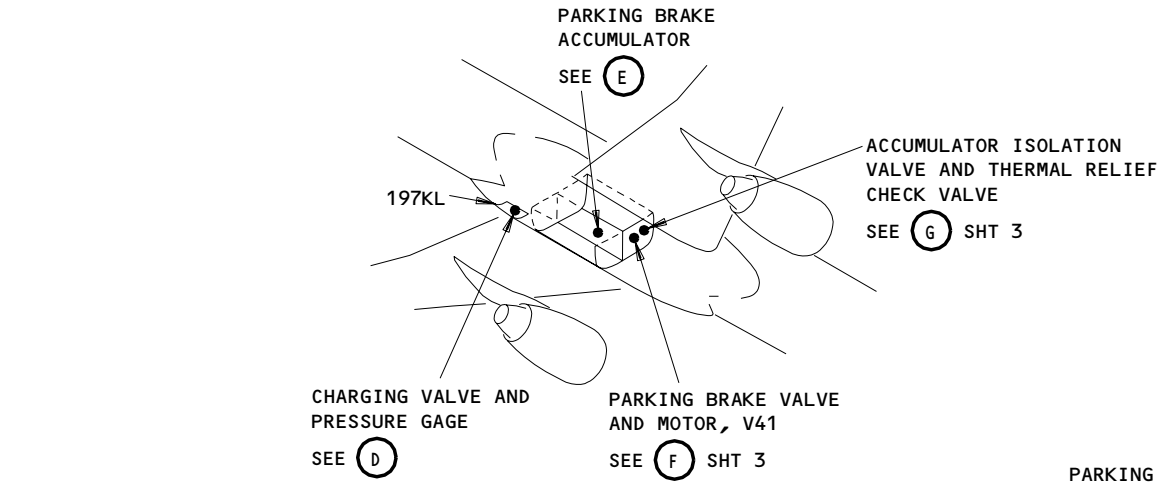
1 GUI 115

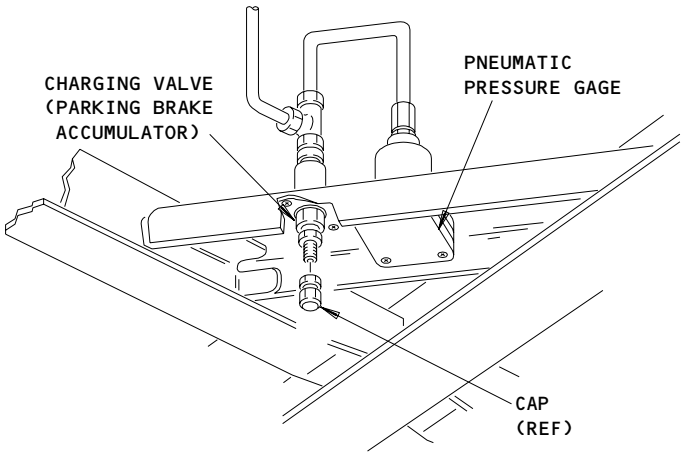
Parking Brake System - Component Index
Figure 101

A73884



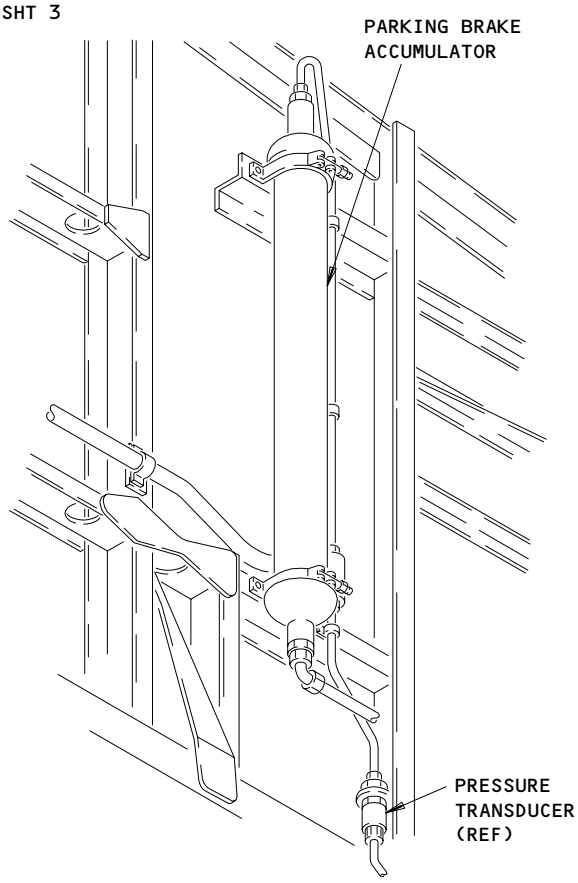
Parking Brake System - Component Location
Figure 102 (Sheet 1)





CHARGING VALVE AND PRESSURE GAGE
(AFT WING/BODY FAIRING)

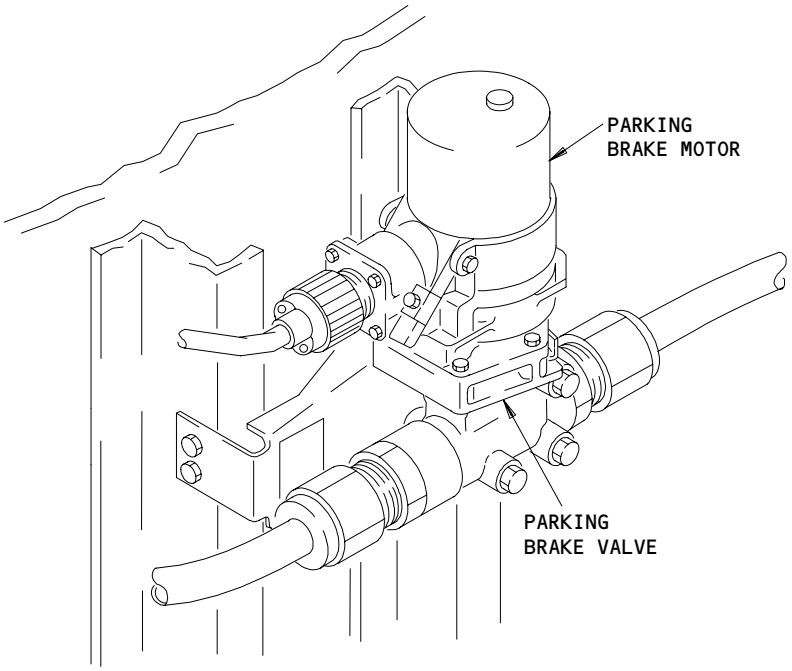
D



PARKING BRAKE ACCUMULATOR

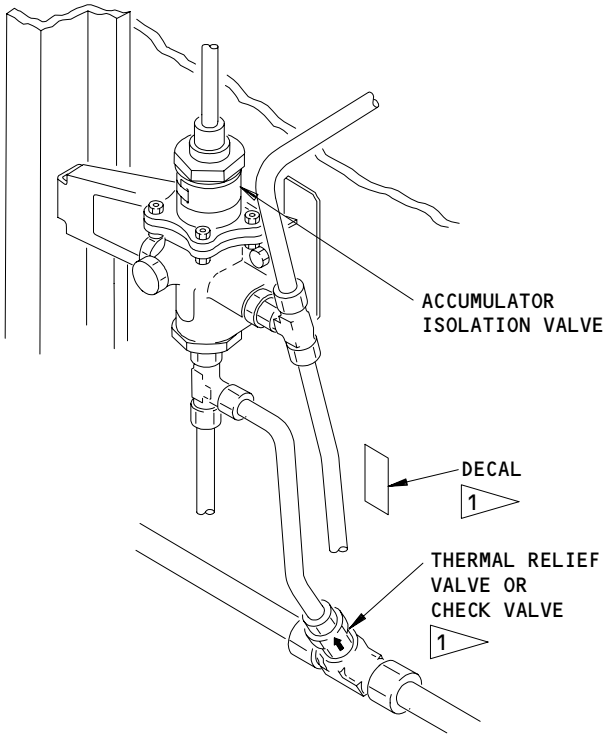
E

Parking Brake System – Component Location
Figure 102 (Sheet 2)



PARKING BRAKE VALVE AND MOTOR, V41

(F)



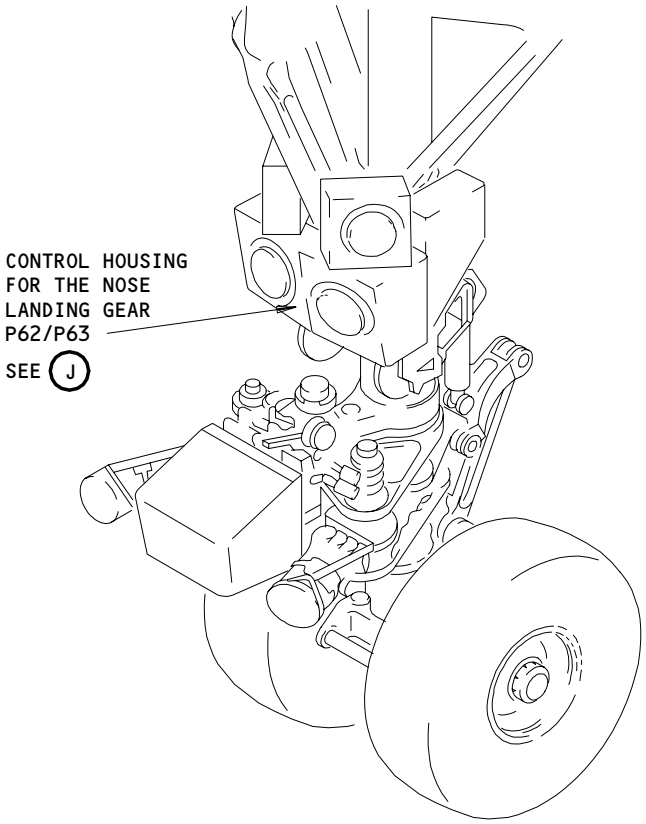
ACCUMULATOR ISOLATION VALVE
AND THERMAL RELIEF CHECK VALVE

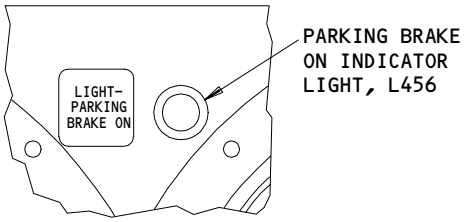
(G)

1 SEE DECAL TO SEE IF CHECK VALVE OR THERMAL RELIEF VALVE IS INSTALLED

Parking Brake System – Component Location (Details from sht 2)
Figure 102 (Sheet 3)

60086





CONTROL HOUSING FOR THE NOSE LANDING GEAR
P62/P63

J

Parking Brake System – Component Location
Figure 102 (Sheet 4)

PARKING BRAKE SYSTEM - ADJUSTMENT/TEST

TASK 32-44-00-825-001

1. Adjust the Parking Brake System

A. General

(1) The adjustment of the parking brake system contains the adjustment of the linkage mechanism. The adjustment of the linkage mechanism sets the contacts for the parking brake to engage and disengage correctly. This procedure also sets the electrical switch for the parking brake in the correct position to operate.

B. Equipment

(1) Rig Pins: Kit B20003-XX (Ref 20-10-24)
  (a) R1A - P/N B20003-26
  (b) LGB1 - P/N B20003-28
(2) Ohmmeter - commercially available

C. References

(1) 20-10-24/201, Rig Pins
(2) 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) 32-41-00/501, Hydraulic Brake System

D. Access

(1) Location Zones
  119/120 Main Equipment Center
  211/212 Control Cabin

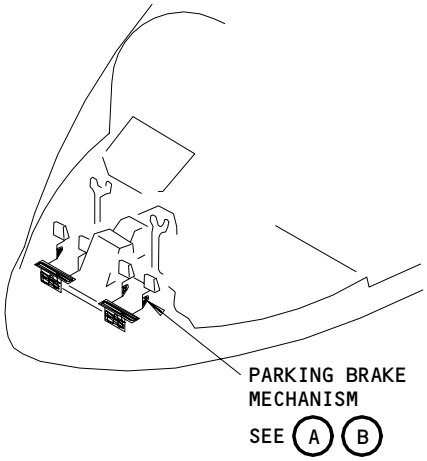
(2) Access Panel
  119BL Main Equipment Center

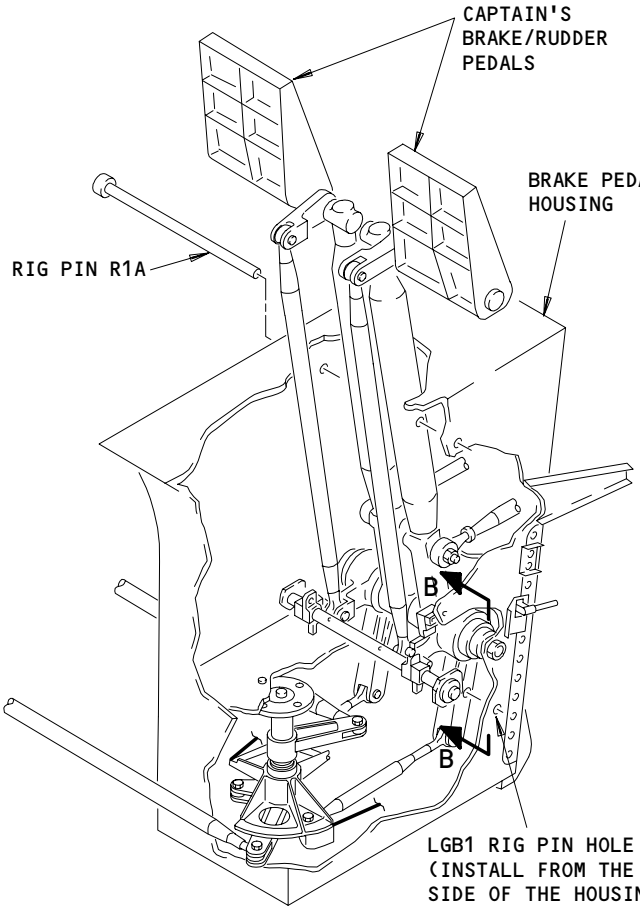
E. Prepare to Adjust the Linkage for the Parking Brake

S 495-145
(1) Put the chocks below the wheels.

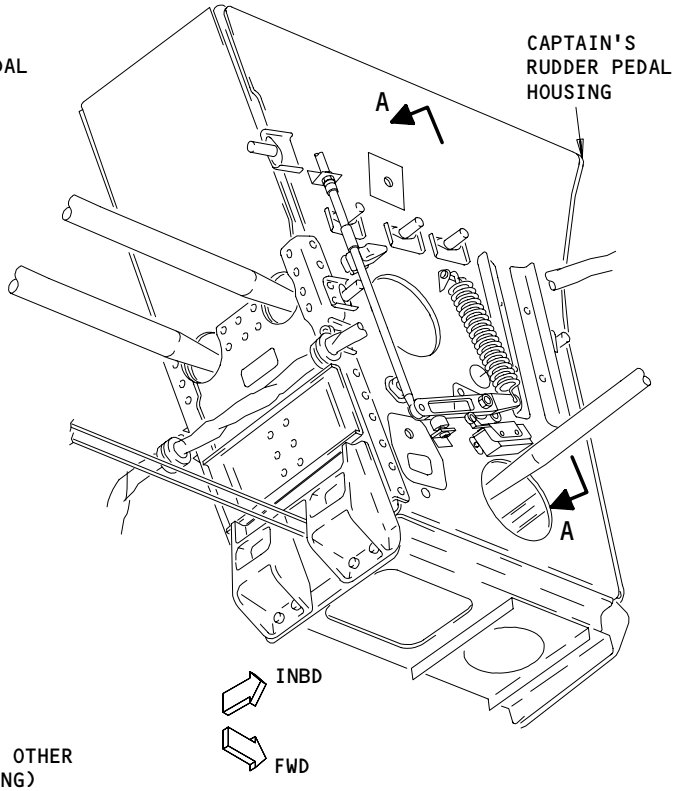
S 865-004
(2) Remove the pressure from the main hydraulic system (Ref 29-11-00).

S 865-005
(3) Open this circuit breaker on the main power distribution panel, P6, and attach a DO-NOT-CLOSE tag:
  (a) 6F4, LANDING GEAR PARKING BRAKE VLV



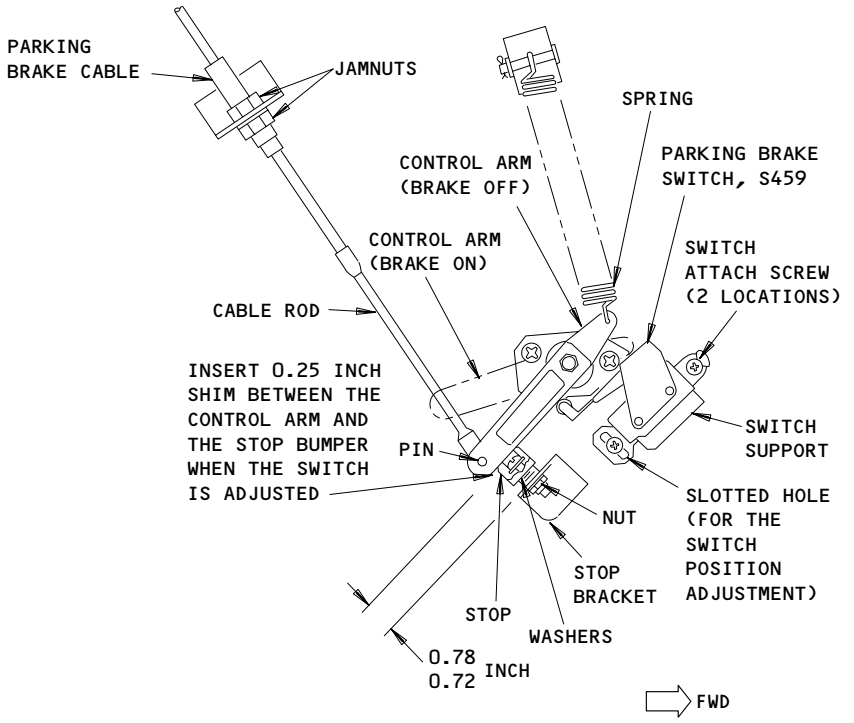


PARKING BRAKE MECHANISM
A

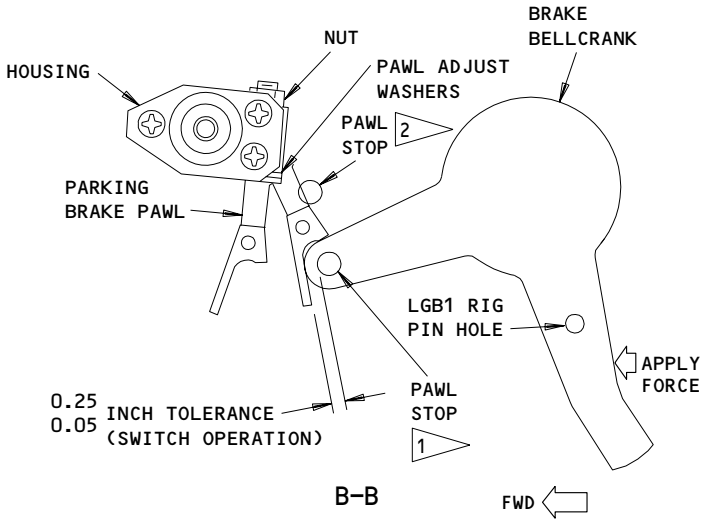


PARKING BRAKE MECHANISM
B

Parking Brake System Adjustment
Figure 501 (Sheet 1)



A-A



B-B

1 THE PAWL STOP IS SHOWN IN THE BRAKE "ON" POSITION BUT THE PAWL IS NOT ENGAGED

2 THE PAWL STOP IS SHOWN IN THE BRAKE "OFF" POSITION

Parking Brake System Adjustment
Figure 501 (Sheet 2)

F. Adjust the Linkage for the Parking Brake (Fig. 501)

S 435-006

(1) Install the rudder rig pin, R1A, through the two arms and the structure of the captain's rudder pedal (Detail A).
   (a) If it is necessary to install the rig pin, move the arms to align the holes.

S 825-007

(2) Adjust the stop for the control arm and the cable position.
   (a) Disconnect the rod for the parking brake cable from the control arm (View A-A).
   (b) Add or remove washers below the stop until the dimension between the control arm and stop bracket is as specified (View A-A).
   (c) Push and hold down the handle for the parking brake against the quadrant control stand panel, P10.
   (d) Hold the control arm against the stop.
   (e) Adjust the jamnuts until the cable rod can be connected to the control arm.
   (f) Make sure the pin can go freely through the control arm and the cable rod.
   (g) Install the cable rod on the control arm with the pin, washer, and cotter pin.
   (h) Tighten the jamnuts.

S 825-027

(3) Adjust the parking brake pawl as follows:
   (a) With the brake pedals released, put the rig pin, LGB1, through the housing of the Captain's brake pedal and the bellcrank.
   (b) Find the angular position of the brake pedal about the pivot point. This is the BRAKES OFF position.
   (c) Remove the rig pin, LGB1.
   (d) Fully push the Captain's pedals and pull the parking brake lever.
   (e) Release the pedals until the pawl pin is engaged fully in the pawl.
   (f) Make sure the pedals are 13.5 ±1 degrees from the BRAKES OFF position.
      1) Add or remove washers to the pawl to get the specified pedal position.
   (g) Release the parking brake.

(h) Push and hold the Captain's pedals to the full BRAKE ON position.
(i) Make sure the pawl and pawl pin do not touch when the parking brake is set and released.
(j) Release the Captain's pedals.
(k) Do steps (a) thru (j) with the First Officer's brake pedals.

S 825-041
(4) Adjust the parking brake switch as follows:
(a) Push and hold the left and right brake pedals against the brakes full-on stops.
(b) Pull slowly on the parking brake handle.
(c) Install a 0.30 to 0.32 inch shim between the pawl stop and the pawl arm (Sheet 2, View B-B).
(d) Loosen the actuator screws for the switch support.
(e) Install the ohmmeter across the C and NC terminals on the switch.
(f) Rotate the switch support until their is continuity through the C and NC terminals when the switch operates.
(g) Rotate the switch support back until the circuit is open between the C and NC terminals.
(h) Tighten the attach screws for the switch support.
(i) Remove the shim.
(j) Release the parking brake handle.
(k) Release the brake pedals.

S 715-146
(5) Do the test of the parking brake switch.

G. Put the Airplane Back to Its Usual Condition.

S 865-114
(1) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P6 panel:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV

S 865-147
(2) Set the parking brake.

TASK 32-44-00-715-052

2. System Test for the Parking Brake System

A. General

(1) The test for the parking brake system contains procedures to make sure the system operates correctly.

B. References

(1) 12-15-04/301, Parking Brake Accumulator Servicing
(2) 20-10-09/401, Installation of Flareless Fittings
(3) 24-22-00/201, Electrical Power - Control
(4) 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
(5) 32-00-15/201, Landing Gear Door Locks
(6) 32-00-20/201, Landing Gear Downlocks

C. Access

(1) Location Zones

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

(2) Access Panel

119BL	Main Equipment Center

D. Prepare to Do a Test of the Parking Brake System

S 495-054

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

S 495-055

WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOOR CAN CAUSE INJURY 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 865-056

(3) Supply electrical power (Ref 24-22-00/201).

S 615-057
(4) If it is necessary, do the servicing for the parking brake acccumulator (Ref 12-15-04/301).

S 495-058
(5) Put the chocks below the wheels.

S 865-060
(6) Pressurize the right hydraulic system (Ref 29-11-00/201).

E. Do the Test of the Parking Brake System

S 865-140
(1) Pull up on the parking brake handle and hold it.

NOTE: Do not operate the brake pedals.

S 215-141
(2) Make sure that the parking brake light on the P10 panel does not come on.

S 865-142
(3) Release the parking brake handle.

S 865-143

CAUTION: DO NOT TWIST THE PARKING BRAKE HANDLE OR USE TOO MUCH FORCE. IF THE HANDLE IS TWISTED OR PULLED WITH TOO MUCH FORCE, IT CAN CAUSE DAMAGE TO THE HANDLE LINKAGE.

(4) Push the right brake pedal for the Captain or the First Officer.
(a) Pull up on the parking brake handle.
(b) Make sure the parking brakes cannot set.
(c) Do these steps again with the left brake pedal for the Captain or the First Officer.

NOTE: There are two indications to look for to see if the parking brake is not set. First, the brake pedals will go to their neutral position. Second the PARK BRAKE indicator light on the quadrant control stand panel, P10, will not come on.

S 865-061

CAUTION: DO NOT TWIST THE PARKING BRAKE HANDLE OR USE TOO MUCH FORCE. IF THE HANDLE IS TWISTED OR PULLED WITH TOO MUCH FORCE, IT CAN CAUSE DAMAGE TO THE HANDLE LINKAGE.

(5) Push fully the left and right brake pedals for the Captain or First Officer.

S 865-118

(6) Pull the parking brake handle up.

S 865-119

(7) Release the brake pedals.

S 215-132

(8) Make sure the parking brake is set.

NOTE: There are two indications to look for to show that the parking brake is set. The brake pedals will stay pushed in. The PARK BRAKE indicator light on the quadrant control stand panel, P10, will come on.

S 215-133

(9) Make sure the pressure shown on the gage for the brake accumulator is between 2800 and 3200 psi.

S 215-131

(10) Make sure the override lever on the parking brake valve is at the POS 2 (closed) position.

NOTE: The valve is on the forward wall of the right wheel well.

S 865-115

(11) If it is pressurized, remove the pressure from the left hydraulic system (Ref 29-11-00/201).

S 865-116

(12) After it has been pressurized for at least 10 minutes, remove the pressure from the right hydraulic system (Ref 29-11-00/201).

NOTE: It is necessary to operate the pumps for at least 10 minutes to let the accumulator temperature become stable.

S 215-137

(13) Make sure the accumulator pressure is not less than 2800 psi.

S 735-118
(14) Write down the accumulator (brake) pressure.

S 735-119
(15) Do a check of the brake pressure after one of the time periods that follow. If the necessary pressure drop for one time period is not within the limits, you can use the next time period.
(a) After 10 minutes, the pressure drop must be less than 200 psi.
(b) After 30 minutes, the pressure drop must be less than 350 psi.
(c) After 1 hour, the pressure drop must be less than 650 psi.
(d) After 12 hours, the brake pressure that remains must be more than 1300 psi.

NOTE: You can read the brake pressure from the brake pressure gage in the flight deck, or the gage on the parking brake accumulator.

S 735-120
(16) If the pressure drop is more than permitted, maintenance is not necessary until the next maintenance period if you have the conditions that follow:
(a) With the parking brake set, the pressure drop for the parking brake accumulator is less than 800 psi in the first 30 minutes.
(b) With the parking brake released, the pressure drop for the parking brake accumulator must be less than 300 psi in the first 30 minutes.
(c) If the pressure drop is more than permitted and maintenance is necessary, do the steps that follow:
1) With the parking brake set, make sure that the nitrogen precharge gas lines for the parking brake accumulator do not leak. Do a check for leaks as follows:
a) Use a soapy water solution to find leaks at all the fittings, from the precharge fill port to the parking brake accumulator.

b) If the fittings on the one inch nitrogen parking brake line leak, do steps 2) through 8).

2) Deparessurize the right hydraulic system.
3) Release the parking brake.
4) Push in the brake pedals seven to eight times to release the pressure from the parking brake acccumulator.

CAUTION: DO NOT LOOSEN THE CHARGING VALVE. INTERNAL PRESSURE COULD BLOW THE VALVE OUT. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

5) Loosen the fitting one turn on the one inch compressed gas line that leaks and release the accumulator gas prechanrge.
6) Tighten the leaking fitting on the one inch compressed gas line per the instructions for tightening flareless tubing fittings in AMM 20-10-09/401, Installation of Flareless Fittings in Pressurized Areas, Struts, Fuel Tanks, or Cargo Areas.

NOTE: Make sure that you apply the applicable thread compound to the flarelesss tubing fitting threads as specified in 20-10-09 before you tighten the fittings as specified in 20-10-09.

7) Service the accumulator (AMM 12-15-04/301).
8) Do the leak test again.
9) Do the Parking Brake System Test again.

S 865-121
(17) Fully push the two brake pedals and release them to disengage the parking brake.

S 215-134
(18) Make sure the PARK BRAKE light, on the P10 panel, goes off.

S 865-146
(19) Make sure that the parking brake handle has returned freely to the OFF position.

S 215-135
(20) Make sure the parking brake ON light on the control housing panel, P62, goes off.

S 215-136
(21) Observe that the brakes release by observing brake wear indicator pins or movement.

F. Put the Airplane Back to Its Usual Condition

S 865-150

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

S 495-112

WARNING: OBEY THE REMOVAL PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY. THE MOVEMENT OF THE DOORS 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 865-113

(3) Remove electrical power if it is not necessary (Ref 24-22-00/201).

PARKING BRAKE LEVER/CABLE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the lever and the cable assembly for the parking brake. The second task installs the lever and the cable assembly for the parking brake.

TASK 32-44-01-004-001

2. Remove the Lever and the Cable Assembly for the Parking Brake (Fig. 401)
   A. References
      (1) AMM 06-41-00/201, Fuselage Access Doors and Panels
   B. Access
      (1) Location Zones
          113/114 Area Forward of NLG Wheel Well
          211/212 Control Cabin

      (2) Access Panel
          113AL Flight Control Components

   C. Prepare to Remove the Lever and the Cable

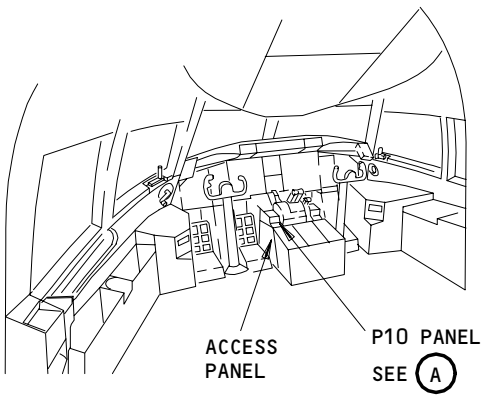
      S 494-003
      (1) Make sure the chocks are below the wheels.

      S 844-002
      (2) Release the parking brake.
   D. Remove the Lever and Cable Asembly

      S 014-005
      (1) Remove the quadrant control stand panel, P10, to get access to the lever and cable assembly for the parking brake.

      S 034-006
      (2) Remove the three cable retention clamps which are in the quadrant control stand (Details B and D).

      S 034-008
      (3) Loosen the set screws.



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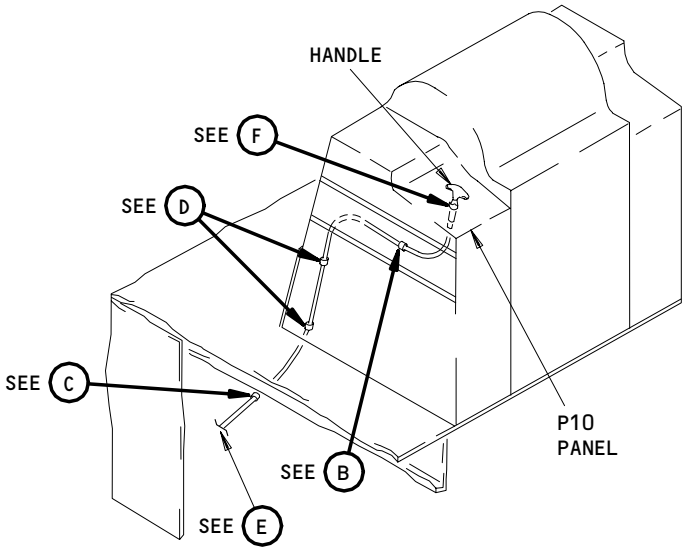
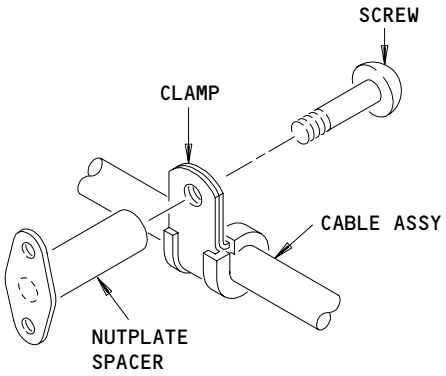


QUADRANT CONTROL STAND

A



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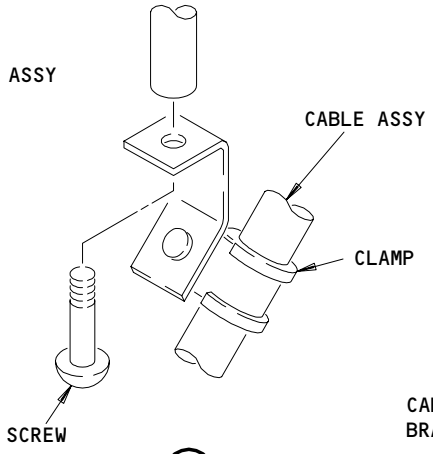

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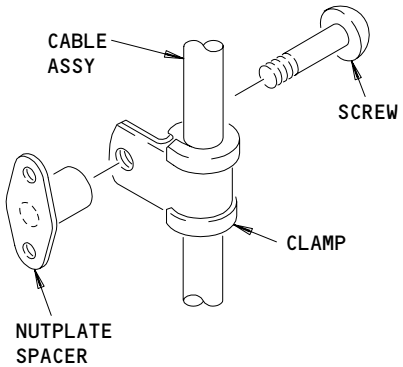

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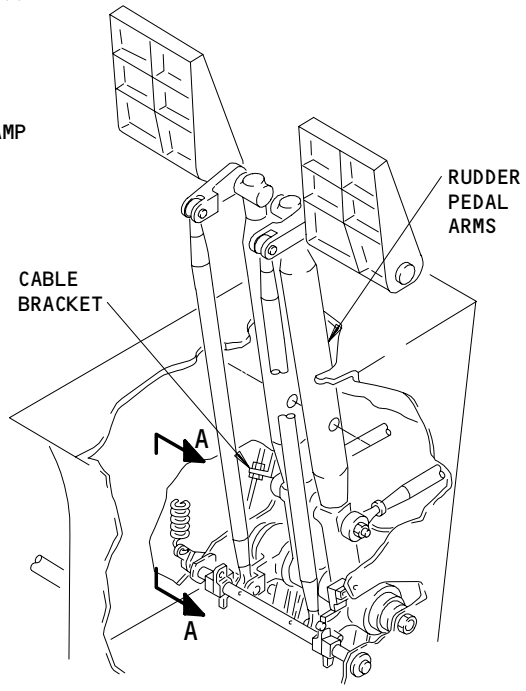
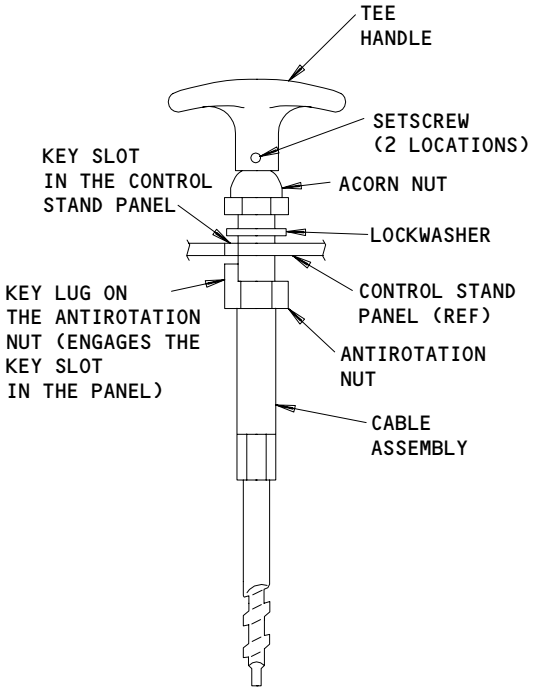


CAPTAIN'S RUDDER PEDAL HOUSING

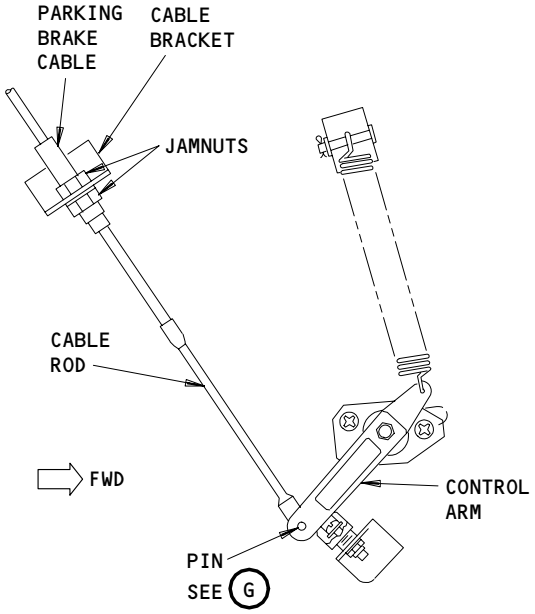
E

Parking Brake Lever/Cable Installation
Figure 401 (Sheet 1)

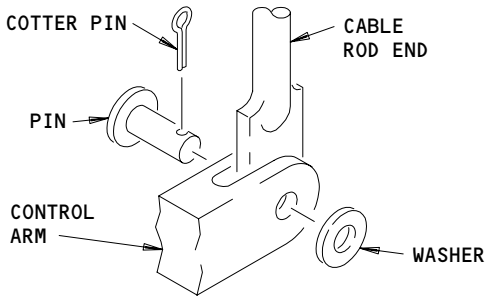


ANTIROTATION NUT
INSTALLATION

F



A–A



G

Parking Brake Lever/Cable Installation
Figure 401 (Sheet 2)

S 024-009
(4) Remove the lever for the parking brake.

S 034-010
(5) Remove the acorn nut which holds the end fitting for the cable to the quadrant control stand.

S 014-011
(6) Open the forward access door, 113AL (AMM 06-41-00/201).

S 844-012
(7) Find the cable for the parking brake. The cable is on the inboard side of the housing for the Captain's rudder pedal.

S 034-013
(8) Remove the pin which holds the cable end of the control arm (Detail G).

S 034-014
(9) Remove the clamp which holds the cable assembly to the support structure (Detail C).

S 034-015
(10) Remove the lower jamnut which holds the cable to the bracket.

S 024-016
(11) Remove the cable assembly.

TASK 32-44-01-404-017

3. Install the Lever and the Cable Assembly for the Parking Brake

A. References
(1) AMM 06-41-00/201, Fuselage Access Doors and Panels
(2) AMM 32-44-00/501, Parking Brake System Adjustment

B. Access
(1) Location Zones

113/114	Area Forward of NLG Wheel Well
211/212	Control Cabin

(2) Access Panels
113AL Flight Control Components

C. Install the Lever and Cable Assembly

S 034-018
(1) Remove the lever and the acorn nut from the top of the cable assembly.

S 034-019
(2) Remove the bottom jamnut from the lower end of the cable assembly.

S 844-020
(3) Put the cable adjacent to the support structure.

S 434-021
(4) Install the clamps at five locations (Details B, C, and D).

S 844-022
(5) Push the top end fitting of the cable through the hole in the top surface of the quadrant control stand.

S 034-025
(6) Engage the key lug on the antirotation nut with the key slot in the quadrant control stand.

S 034-026
(7) Install the acorn nut.

S 844-029
(8) Put the lever handle at the top end of the cable.

S 424-030
(9) Install the lever with the two set screws.

S 434-031
(10) Install the lower jamnut on the cable.

D. Put the Airplane Back to Its Usual Condition

S 824-032
(1) Adjust the lower cable and linkage mechanism (AMM 32-44-00/501).

S 414-033
(2) Install the quadrant control stand panel, P10.

S 414-035
(3) Close the forward access door (113AL).

S 414-036
(4) Do a test for the parking brake operation (AMM 32-44-00/501).

S 844-037
(5) Set the parking brake.

PARKING BRAKE MECHANISM - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the parking brake mechanism. The second task installs the parking brake mechanism.
   B. The parking brake mechanism is attached adjacent to the mechanism for the captain's rudder pedal. The mechanism is in the forward equipment bay.

TASK 32-44-02-004-005

2. Remove the Parking Brake Mechanism (Fig. 401)
   A. References
      (1) 32-44-08/201, Parking Brake Switch
   B. Access
      (1) Location Zones
          113/114 Area Forward of the Nose Landing Gear Wheel Well
          211/212 Control Cabin

   C. Prepare to Remove the Mechanism

      S 494-003
      (1) Put the chocks below the wheels.

      S 844-004
      (2) Release the parking brake.

   D. Remove the Mechanism

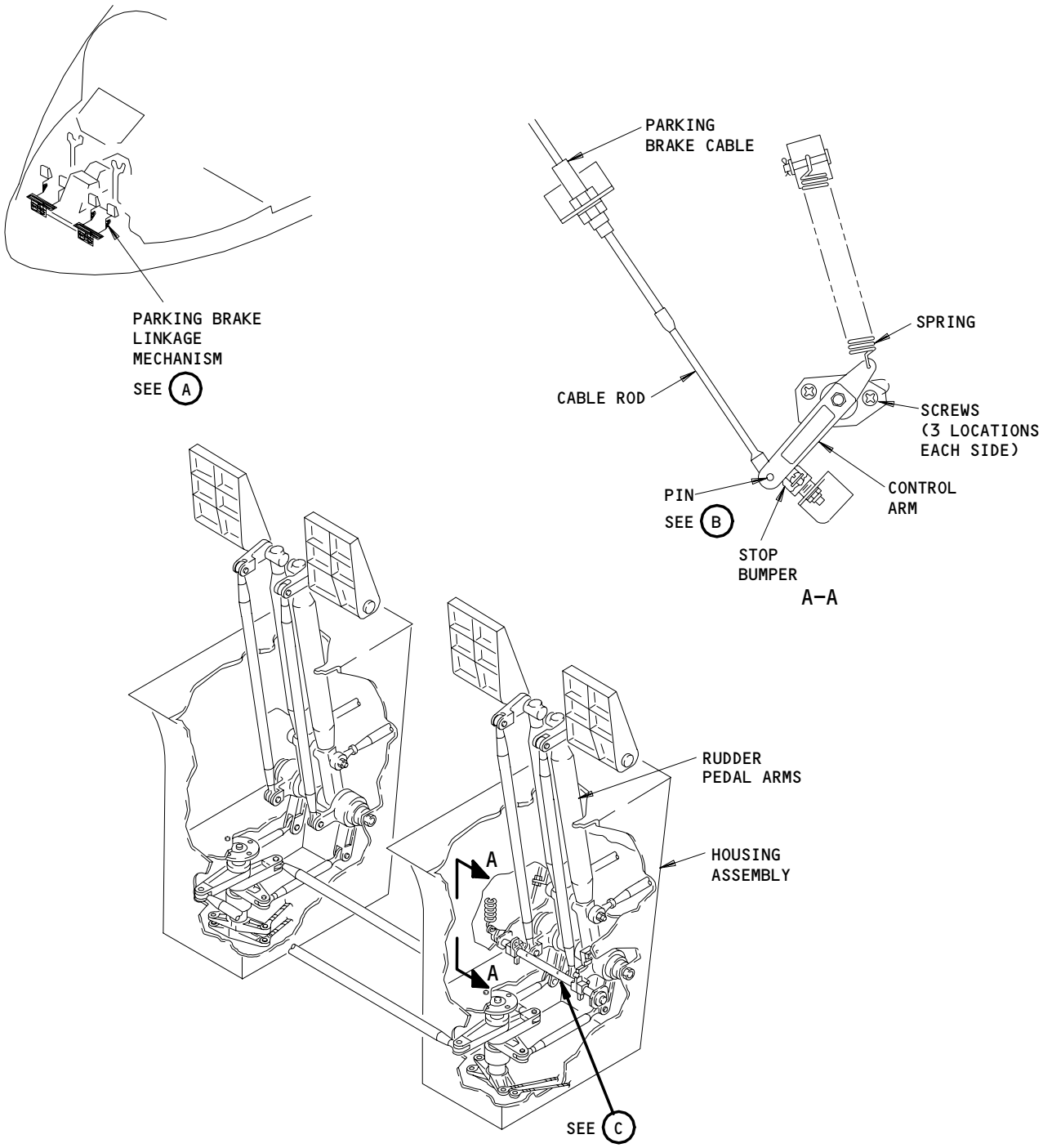
      S 034-005
      (1) Remove the fastener which holds the attach fitting for the lower cable rod to the control arm (Detail B).

      S 034-006
      (2) Disconnect the spring from the control arm. Let the spring hang from the upper attach point (View A-A).

      S 034-007
      (3) Remove the nut and washers which hold the control arm to the shaft (Detail C).

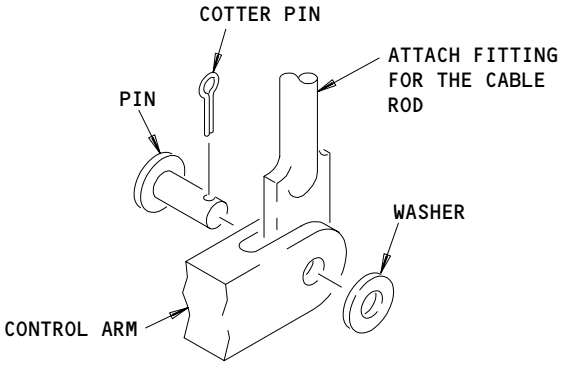
      S 014-008
      (4) Remove the aft access panel for the housing assembly, if it is necessary.

      S 034-009
      (5) Remove the screws which hold the two bearing housings to the housing assembly.



PARKING BRAKE LINKAGE MECHANISM
A

Parking Brake Mechanism Installation
Figure 401 (Sheet 1)



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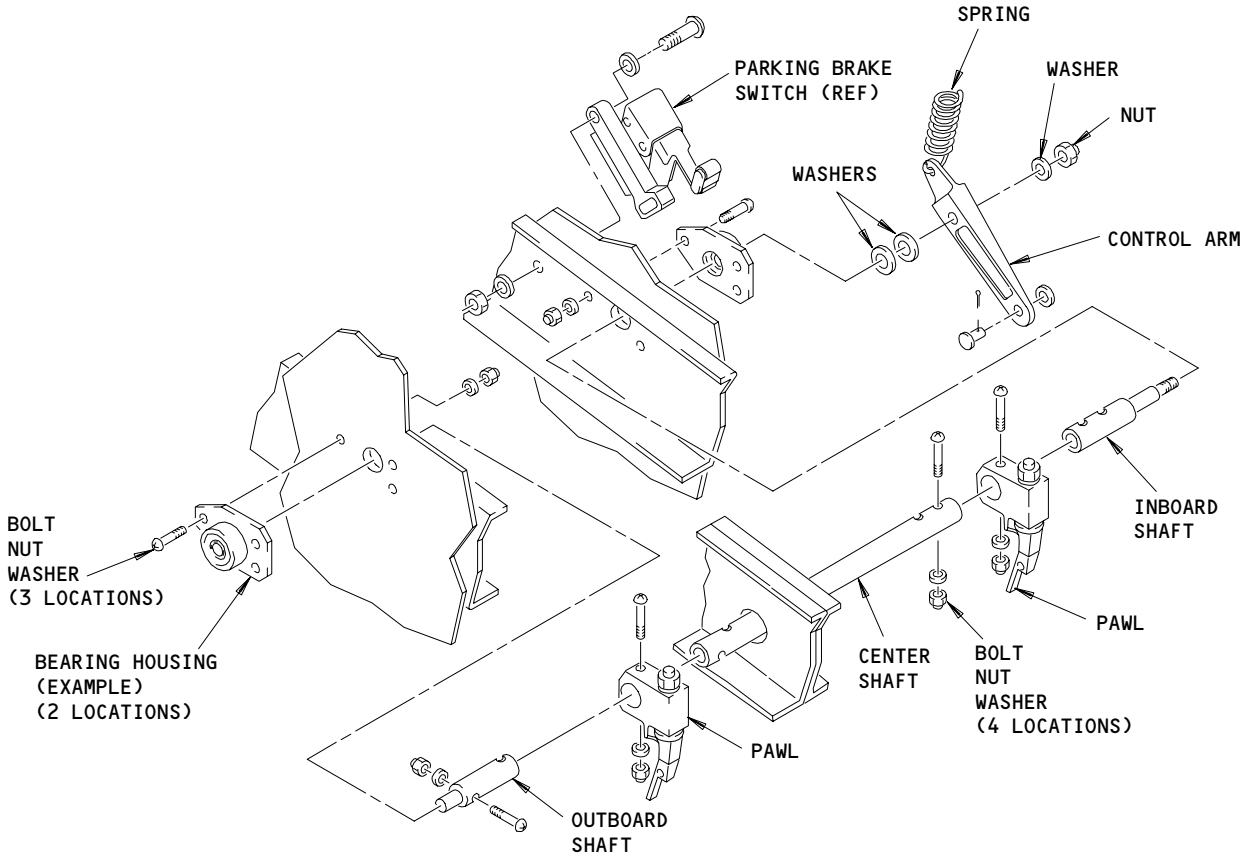


C

Parking Brake Mechanism Installation
Figure 401 (Sheet 2)

S 034-010
(6) Remove the two fasteners which hold the outboard shaft to the center shaft (Detail C).

S 034-011
(7) Remove the two pawls.

S 034-012
(8) Remove the shaft assembly.

S 034-013
(9) Remove the two housing assemblies for the bearings (Detail C).

S 034-014
(10) Remove the switch assembly if it is necessary (Ref 32-44-08).

S 034-015
(11) Remove the control arm stop bumper if it is worn.

TASK 32-44-02-404-016

3. Install the Parking Brake Linkage Mechanism

A. Consumable Materials
(1) C00259 BMS 10-11, Type I Primer

B. References
(1) 32-44-00/501, Parking Brake Adjustment
(2) 32-44-08/201, Parking Brake Switch

C. Access
(1) Location Zones
113/114 Area Forward of the Nose Landing Gear Wheel Well
211/212 Control Cabin

D. Procedure

S 434-018
(1) Install the stop bumper if it was removed.

S 434-019
(2) Install the parking brake switch if it was removed (Detail C).

S 624-020
(3) Apply primer to the surfaces of the center shaft which connects with the inboard and outboard shafts.

S 864-023
(4) Put the center shaft through the hole in the structural web.

NOTE: The structural web is in the brake pedal housing at the shaft installation centerline.

S 034-024
(5) Install the inboard and outboard pawls on the center shaft.

S 034-025
(6) Install the inboard and the outboard shafts on the center shaft.

S 624-045
(7) Apply the primer to the mating surfaces of the shaft and bearings.

S 864-026
(8) Put the shaft and bearings adjacent to the support structure.

S 034-027
(9) Install and tighten the fasteners which hold the bearing housing assemblies to the support structure.

NOTE: There are three fasteners on each side.

S 034-028
(10) Install the fasteners which hold the outboard shaft to the center shaft.

S 034-029
(11) Install the nut and the washers which hold the control arm to the shaft (Detail C).

S 034-030
(12) Connect the attach fitting for the lower cable rod to the control arm (Detail B).

S 034-031
(13) Install the cotter pin.

S 034-032
(14) Attach the spring to the control arm (View A-A).

E. Put the Airplane Back to Its Usual Condition

S 824-033
(1) Adjust the parking brake mechanism (Ref 32-44-00).

S 824-004
(2) Adjust parking brake switch (Ref 32-44-08)

S 844-034
(3) Set the parking brake.

S 094-035
(4) Remove the chocks from the wheels.

PARKING BRAKE VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the parking brake valve. The second task installs the parking brake valve.

TASK 32-44-03-004-001

2. Remove the Parking Brake Valve (Fig. 401)
   A. Equipment
      (1) Main Gear Door Locks - (AMM 32-00-15/201).
   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 Zones

211/212	Control Cabin
710	Nose Landing Gear and Doors
730/740	Main Landing Gear and Doors

   D. Prepare to Remove the Parking Brake Valve

      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

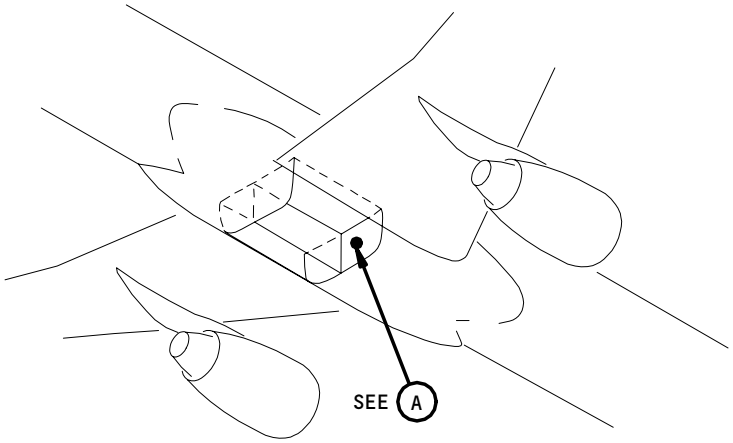
      S 944-008

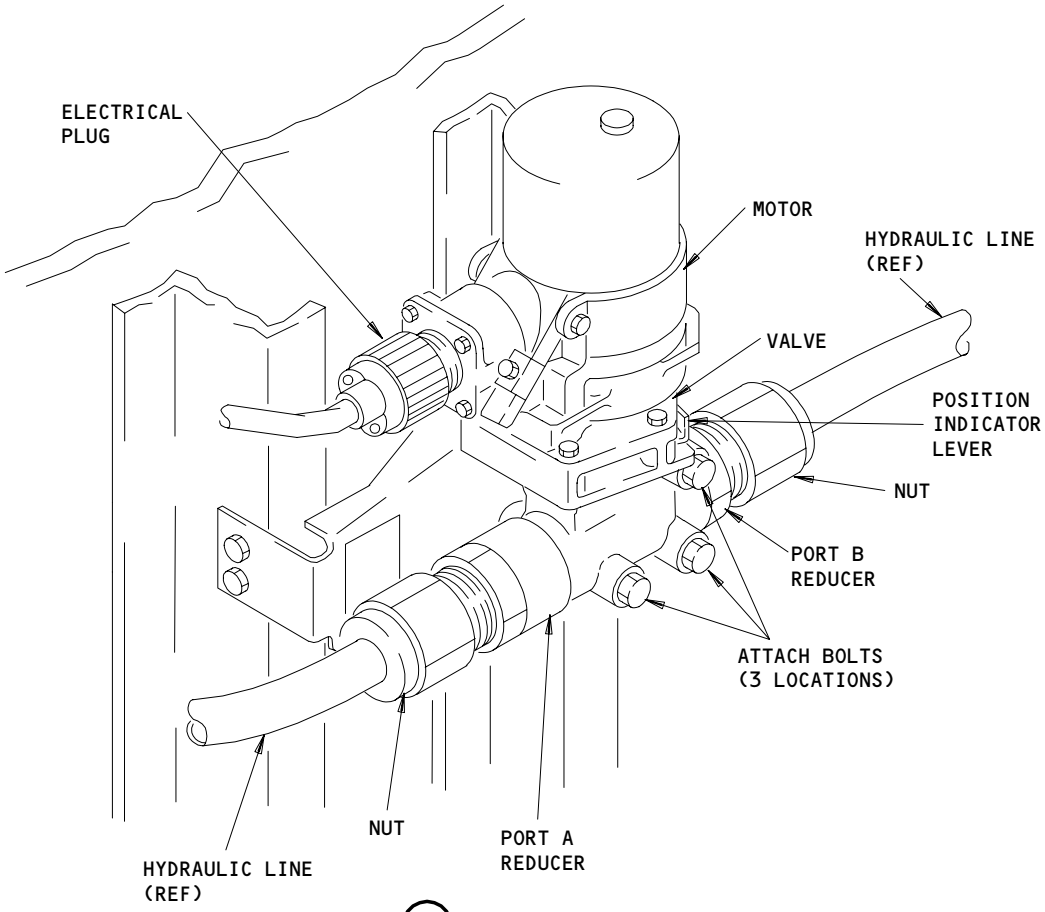
      WARNING: USE THE PROCEDURE IN AMM 32-00-15/201 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

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

      S 864-003
      (3) Remove the pressure from the left and right hydraulic systems reservoirs (AMM 29-11-00/201).

      S 864-004
      (4) Supply electrical power (AMM 24-22-00/201).





Parking Brake Valve/Motor Installation
Figure 401

S 864-005
(5) Make sure this circuit breaker on the main power distribution panel, P6, is closed:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV

S 944-006

CAUTION: DO NOT MOVE THE HANDLE FOR THE PARKING BRAKE. IF YOU PUSH OR TWIST THE HANDLE, YOU CAN CAUSE DAMAGE TO THE HANDLE LINKAGE.

(6) Push the two brake pedals fully down then release them to release the parking brakes.

S 844-007
(7) Do the step that follows to make sure the parking brake valve is open.
(a) Look to see that the PARK BRAKE indication light on the quadrant control stand panel, P10, is off.

S 864-009
(8) Open this circuit breaker on the main distribution panel, P6, and attach a DO-NOT-CLOSE tag:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV

S 864-010
(9) Push and release the brake pedals fully a minimum of seven times to remove the pressure from the parking brake accumulator.

S 844-011
(10) Look at the parking brake valve to make sure the valve lever is in the open position (position 1).

S 034-012
(11) Disconnect the electrical connector from the parking brake valve.

S 034-013
(12) Put a cap on the plug and receptacle.

S 034-014
(13) Disconnect the two hydraulic lines from the valve.

S 034-040
(14) Remove the hydraulic fittings from the valve.

S 844-018
(15) Discard the O-rings from the reducers.

S 034-015
(16) Put a cap on the lines and put a plug in the openings.

S 034-016
(17) Remove the three bolts.

S 024-017
(18) Remove the parking brake valve and motor.

TASK 32-44-03-404-019

3. Install the Parking Brake Valve (Fig. 401)
   A. Equipment
      (1) Main Gear Door Locks - (AMM 32-00-15/201)
   B. Consumable Materials
      (1) D00153 Fluid-Hydraulic - BMS 3-11
      (2) D00054 Lubricant - Hydraulic System Fittings
          MCS 352B
      (3) B00138 Aluminum Oxide Abrasive Cloth - P-C-451
      (4) Sealant - DC 4
   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
   D. Access
      (1) Location Zones
          144 Right Main Landing Gear Wheel Well
          211/212 Control Cabin
          710 Nose Landing Gear and Doors
          730/740 Main Landing Gear and Doors

E. Install the Parking Brake Valve

S 644-021
(1) Apply a thin layer of hydraulic fluid or lubricant to the new O-rings and valve reducers.

S 434-020
(2) Install the new O-rings on the reducers.

S 414-022
(3) Install the reducers on the valve.

S 124-023
(4) Where the valve and bracket have an overlap, lightly use an abrasive material on the metal.
(a) Use a solvent and a cloth to clean and dry the surfaces.
(b) Apply approximately a 1/16 inch thick layer of sealant to the two surfaces where they have an overlap.

S 434-024
(5) Install the valve on the mounting bracket with the three bolts.

S 824-025
(6) Make sure the maximum resistance between the valve body and the attach bracket is 0.0025 ohm.

S 844-026
(7) Make sure the valve is in the open position (position 1).

S 434-027
(8) Connect the hydraulic lines to the valve.

S 434-028
(9) Install the electrical connector to the valve connector.

S 864-029
(10) Pressurize the right and left hydraulic system and reservoirs (AMM 29-11-00/201).

S 864-030

(11) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the main power distribution panel, P6:
  (a) 6F4, LANDING GEAR PARKING BRAKE VLV

S 714-031

(12) Do a test of the parking brake valve operation.
  (a) Fully push and release the brake pedals a minimum of four times.
  (b) After 5 to 10 minutes, make sure there are no leaks.

S 844-041

CAUTION: DO NOT TWIST THE HANDLE OF THE PARKING BRAKE WHEN YOU SET THE BRAKE. IF THE HANDLE IS TWISTED, IT CAN CAUSE DAMAGE TO THE HANDLE LINKAGE.

(13) To set the parking brakes, do the steps that follow:
  (a) Push the two brake pedals down fully.
  (b) Pull the handle for the parking brake.
  (c) Release the two brake pedals.
  (d) Make sure the PARK BRAKE indicator light on the quadrant control stand panel, P10, is on.

S 844-042

(14) Look at the parking brake valve to make sure the valve lever is in the closed position (position 2).

S 944-033

CAUTION: DO NOT MOVE THE HANDLE FOR THE PARKING BRAKE. IF YOU TWIST THE HANDLE, YOU CAN CAUSE DAMAGE TO THE HANDLE LINKAGE.

(15) Push the two brake pedals fully down then release them to release the parking brake.

S 844-034

(16) Make sure the parking brake valve has moved to the open position (position 1).

S 844-035

(17) Make sure the PARK BRAKE indicator light on the quadrant control stand panel, P10, is off.

F. Put the Airplane Back to Its Usual Condition

S 864-037

(1) Remove the pressure from the right and left hydraulic systems and reservoirs (AMM 29-11-00/201).

S 844-038

(2) Set the parking brakes.

S 094-043

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).

S 864-039

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

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 32-44-05-004-001

2. Remove the Parking Brake Accumulator (Fig. 401)

   A. References
      (1) AMM 12-15-04/301, Parking Brake Accumulator
      (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
   B. Access
      (1) Location Zone
          144 Right Main Landing Gear Wheel Well

   C. Prepare to Remove the Accumulator

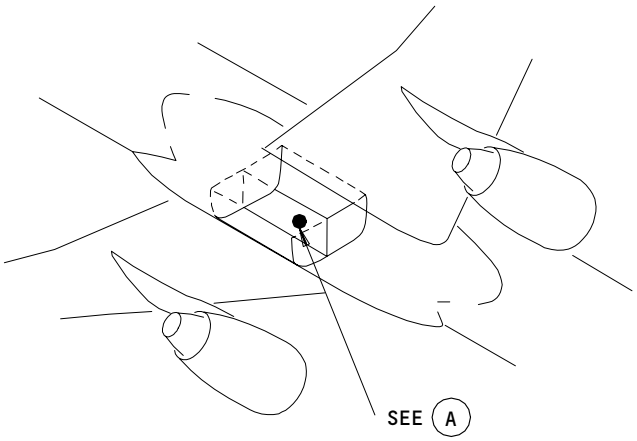
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

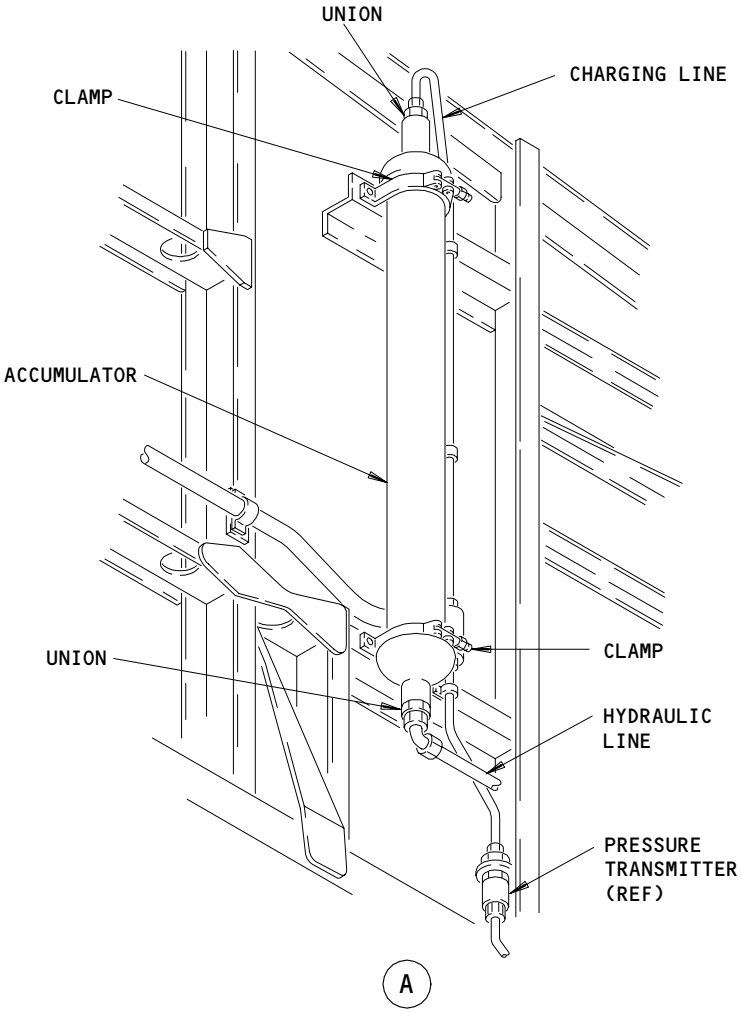
      S 494-038

      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 844-004
      (3) Put the chocks below the wheels.





Parking Brake Accumulator Installation
Figure 401

S 844-005
(4) Release the parking brake.

S 864-006
(5) Remove the pressure from the left and right hydraulic systems (AMM 29-11-00/201).

S 864-007
(6) Fully push down the two brake pedals a minimum of seven times to remove the pressure from the accumulator.

S 844-008
(7) Remove the dust cap from the nitrogen charging valve of the accumulator.

D. Remove the Accumulator

S 944-009

WARNING: DO NOT LOOSEN THE MANIFOLD NUT. PRESSURE IN THE CHARGING VALVE CAN BLOW THE VALVE OFF AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Loosen the swivel nut at the charging valve to release the pressure from the accumulator (AMM 12-15-04/301).

S 034-010
(2) Disconnect the charging line from the top of the accumulator.

S 034-012
(3) Disconnect the hydraulic line from the lower end of the accumulator.

S 034-013
(4) Put a cap on the hydraulic line.

S 034-015
(5) Loosen the nuts and open the clamps.

S 024-016
(6) Remove the accumulator.

S 034-017
(7) Remove the unions on the two ends of the accumulator.

S 844-040
(8) Discard the O-rings on the unions.

S 034-018
(9) Put a plug in the accumulator openings.

TASK 32-44-05-404-037

3. Install the Parking Brake Accumulator (Fig. 401)

A. Consumable Materials
(1) D00153 Fluid, Hydraulic - BMS 3-11
(2) D00054 Lubricant, Hydraulic System Fittings - MCS 352B

B. References
(1) AMM 12-15-04/301, Parking Brake Accumulator
(2) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
(3) AMM 32-00-15/201, Landing Gear Door Locks

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

D. Install the Accumulator

S 644-019
(1) Put a thin layer of hydraulic fluid or lubricant on the new O-rings.

S 434-020
(2) Install the O-rings on the unions.

S 434-021
(3) Install the unions on the accumulator.

S 034-022
(4) Replace the accumulator support clamps if they are damaged.

S 844-023
(5) Put the accumulator in position to align the pressure gage line and the hydraulic line with the accumulator unions.

S 434-024
(6) Tighten the clamps.

S 434-025
(7) Connect the charging line to the top end of the accumulator.

S 434-026
(8) Connect the hydraulic line to the lower union of the accumulator.

S 864-027
(9) Pressurize the accumulator at the nitrogen charging valve (AMM 12-15-04/301).

S 864-028
(10) Supply power to the right hydraulic system (AMM 29-11-00/201).

S 864-029
(11) After a minimum of 3 minutes, remove the pressure from the right hydraulic system (AMM 29-11-00/201).

S 214-030
(12) Examine the accumulator for hydraulic leaks.

S 864-031
(13) Fully push down and release the brakes a minimum of six times to bleed the accumulator.

E. Put the Airplane Back to the Usual Condition

S 864-032
(1) Pressurize the left and right hydraulic systems (AMM 29-11-00/201).

S 844-033
(2) Set the parking brakes.

S 844-034
(3) Remove the chocks from the wheels.

S 094-039

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 doors and close the doors (AMM 32-00-15/201).

S 864-036

(5) Remove the power from the right hydraulic system if it is not necessary (AMM 29-11-00/201).

ACCUMULATOR ISOLATION VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the accumulator isolation valve from the parking brake. The second task installs the accumulator isolation valve on the parking brake.

TASK 32-44-06-004-001

2. Remove the Accumulator Isolation Valve from the Parking Brake (Fig. 401)
   A. Equipment
      (1) Landing 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 32-44-00/001, Parking Brake System
   C. Access
      (1) Location Zones

144	Right Main Lainding Gear Wheel Well
211/212	Control Cabin

   D. Prepare to Remove the Accumulator Isolation Valve

S 494-002

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

S 494-034

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.

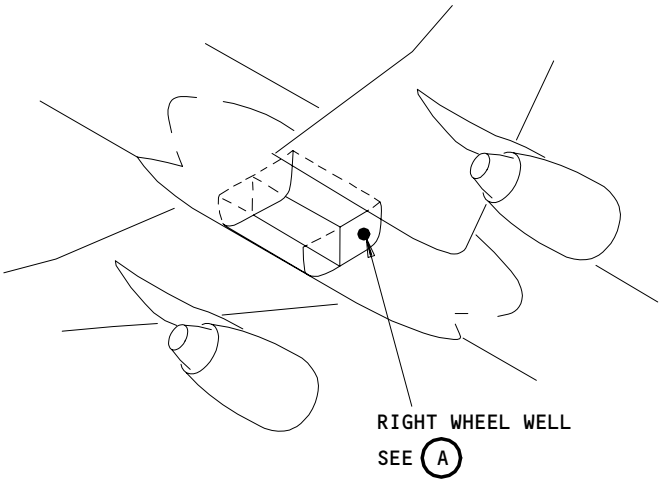
(2) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).

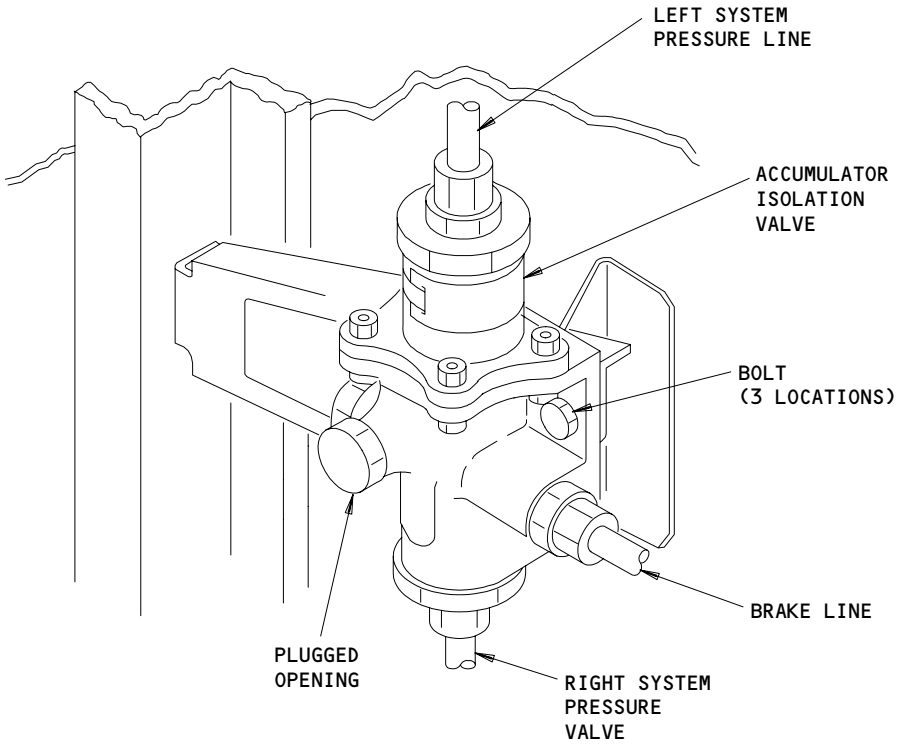
S 864-004

(3) Remove the pressure from the right and left hydraulic systems and reservoirs (AMM 29-11-00/201).

S 844-005

(4) Put the chocks below the wheels.





RIGHT WHEEL WELL
A

Accumulator Isolation Valve Installation
Figure 401

E. Remove the Accumulator Isolation Valve

S 844-006
(1) Release the parking brakes (AMM 32-44-00/501).

S 864-007
(2) Push the brake pedals down fully seven times to remove the hydraulic pressure from the brake accumulator.

NOTE: There must be a miminum of 5 seconds between each time you push down the brakes.

S 034-008
(3) Disconnect the hydraulic lines from the isolation valve (Detail A).

S 034-009
(4) Put a cap on the hydraulic lines.

S 014-010
(5) Remove the hydraulic unions from the isolation valve.

S 034-011
(6) Discard the O-rings.

S 034-012
(7) Put a plug in the openings.

S 034-013
(8) Remove the 3 bolts to remove the isolation valve.

S 024-032
(9) Remove the isolation valve.

TASK 32-44-06-404-014

3. Install the Accumulator Isolation Valve on the Parking Brake (Fig. 401)
   A. Equipment
      (1) Landing Gear Door Locks, (AMM 32-00-15/201)
   B. Consumable Materials
      (1) D00153 Fluid, Hydraulic - BMS 3-11
      (2) D00054 Lubricant, Hydraulic System Fittings - MCS 352B
   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 32-44-00/501, Parking Brake System

D. Access
(1) Location Zones
144 Right Main Lainding Gear Wheel Well
211/212 Control Cabin

E. Install the Accumulator Isolation Valve

S 164-015
(1) Clean the mating surfaces of the isolation valve and the mounting bracket.

S 424-016
(2) Attach the isolation valve to the mounting bracket with the 3 bolts (Detail A).

S 644-017
(3) Apply a thin layer of hydraulic fluid or lubricant to the O-rings.

S 434-018
(4) Install the O-rings on the unions.

S 434-019
(5) Connect the hydraulic lines to the isolation valve.

S 864-020
(6) Pressurize the right and left hydraulic systems (AMM 29-11-00/201).

S 844-021
(7) Slowly and fully, push and release the brake pedals six times to bleed the system.

NOTE: There must be a minimum of 5 seconds between each time you push down and release the brakes.

S 864-022
(8) Remove the pressure from the right hydraulic system (AMM 29-11-00/201).

S 844-023
(9) Operate the brake pedals a minimum of seven times.

S 844-024
(10) Make sure the accumulator pressure, on the pressure gage in the flight compartment, is stable.

S 864-025
(11) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).

S 844-026
(12) Operate the brake pedals a minimum of seven times.

S 844-027
(13) Make sure the accumulator pressure goes down.

F. Put the Airplane Back to Its Usual Condition

S 864-028
(1) Pressurize the right hydraulic system to pressurize the parking brake accumulator (AMM 29-11-00/201).

S 844-029
(2) Set the parking brakes (AMM 32-44-00/501).

S 844-030
(3) Remove the wheel chocks from the wheels.

S 094-035

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 doors and close the doors (AMM 32-00-15/201).

S 864-031
(5) 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 parking brake switch. The second task installs the parking brake switch. The third task adjusts the parking brake switch. The fourth task is a procedure to test the parking brake switch.

   TASK 32-44-08-002-001
2. Remove the Parking Brake Switch (Fig. 201)
   A. Access
      (1) Location Zones
          119/120 Main Equipment Center
          211/212 Control Cabin

      (2) Access Panel
          119B1 Main Equipment Center

   B. Prepare to Remove the Parking Brake Switch

      S 492-101
      (1) Put the chocks below the wheels.

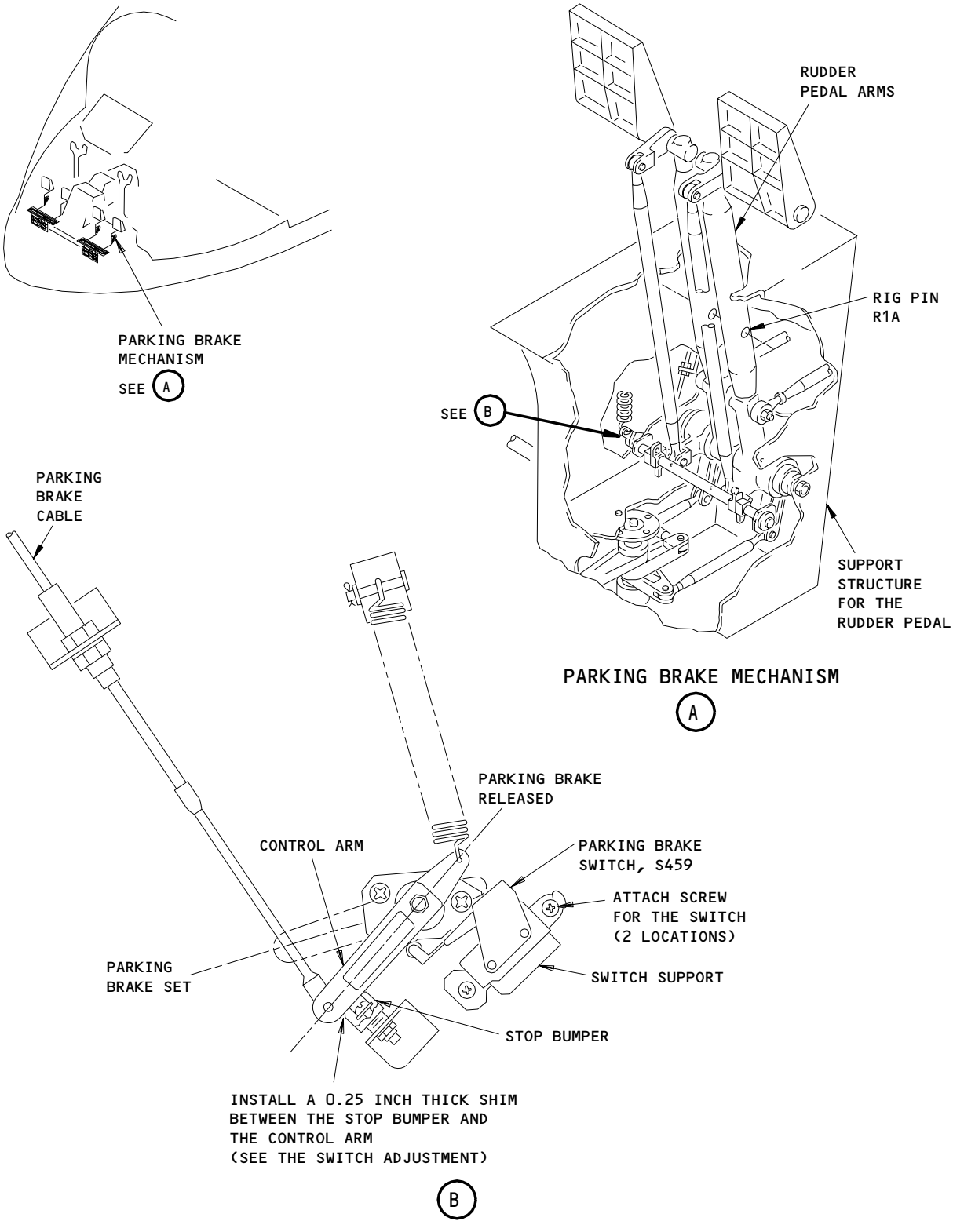
      S 842-004

      CAUTION: DO NOT USE THE PARKING BRAKE HANDLE TO RELEASE THE PARKING BRAKE. IF YOU PUSH OR TWIST THE HANDLE, IT CAN CAUSE DAMAGE TO THE HANDLE LINKAGE.

      (2) Push and release the two brake pedals to release the parking brake.

      S 862-006
      (3) Open this circuit breaker on the main power distribution panel, P6, and attach DO-NOT-CLOSE tag:
          (a) 6F4, LANDING GEAR PARKING BRAKE VLV
   C. Remove the Parking Brake Switch

      S 842-007
      (1) Get access to the switch in the forward equipment bay which is below the control cabin.



Parking Brake Switch Installation
Figure 201

S 032-008
(2) Disconnect the electrical wires from the switch.

S 032-009
(3) Remove the two bolts which hold the switch to the structure for the rudder pedal.

S 032-010
(4) Remove the switch assembly.

TASK 32-44-08-402-023
3. Install the Parking Brake Switch (Fig. 201)
A. Access
(1) Location Zones
119/120 Main Equipment Center
211/212 Control Cabin

(2) Access Panel
119B1 Main Equipment Center

B. Install the switch.

S 842-024
(1) Make sure the parking brake handle is released.

S 432-034
(2) Install the switch assembly as follows:
(a) Put the switch assembly at the two attach holes in the support housing for the rudder pedal.
(b) Loosely install two screws through the switch assembly and the mating holes in the housing for the rudder pedal.

NOTE: The aft attach hole in the switch support fitting has a slot to permit the switch assembly to move down.

(c) Move the switch assembly down until the attach screw is at the bottom of the slot.
(d) Do not tighten the screws until the switch adjustment is done.

S 822-041
(3) Adjust the parking brake switch (AMM 32-44-00/501).

TASK 32-44-08-022-042

4. Adjust the Parking Brake Switch (Fig. 201)

A. Equipment
(1) Ohmmeter - Commercially Available
(2) Rig pin R1A-P/N B20003-26, part of kit B20003-70 (AMM 20-10-24/201).
(3) Rig pin R1A-P/N B20003-26, part of kit B20003-XX (AMM 20-10-24/201).

B. References
(1) AMM 32-44-00/501, Parking Brake System
(2) WDM 32-44-11, Parking Brake System

C. Access
(1) Location Zones
119/120 Main Equipment Center
211/212 Control Cabin

(2) Access Panel
119B1 Main Equipment Center

D. Procedure

S 822-122
(1) Adjust the switch (AMM 32-44-00/501).

TASK 32-44-08-702-062

5. Test the Parking Brake Switch

A. References
(1) AMM 24-22-00/201, Electrical Power - Control
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-44-00/501, Parking Brake System

B. Access
(1) Location Zones
119/120 Main Equipment Center
211/212 Control Cabin

(2) Access Panel
119B1 Main Equipment Center

C. Prepare to Test the Parking Brake Switch

S 862-063
(1) Supply electrical power (AMM 24-22-00/201).

S 862-067
(2) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P6 panel:
(a) 6F4, LANDING GEAR PARKING BRAKE VLV

D. Test the Switch

S 842-064
(1) Push and hold the brake pedals to the stops.

S 842-065

CAUTION: DO NOT TWIST THE PARKING BRAKE HANDLE WHEN YOU SET THE PARKING BRAKE. IF THE HANDLE IS TWISTED, IT CAN CAUSE DAMAGE TO THE HANDLE LINKAGE.

(2) Pull the parking brake handle on the quadrant control stand panel, P10.

S 842-067
(3) Release the brake pedals to set the parking brake.

S 842-068
(4) Make sure the PARK BRAKE indicator light on the quadrant control stand panel, P10, comes on and stays on.

S 862-121
(5) Pull up on the parking brake handle and hold it.

S 862-106
(6) Release the parking brake.

S 212-120
(7) Make sure that the PARK BRAKE indicator light on the quadrant control stand panel, P10, does not come on.

NOTE: There is no continuity between the C and NC terminals on the parking brake switch when the circuit is open.

E. Put the Airplane Back to Its Usual Condition

S 862-102
(1) Supply pressure to the right hydraulic system (AMM 29-11-00/201).

S 862-103
(2) Set the parking brake.

S 862-104
(3) Remove the pressure from the right hydraulic system, if it is not necessary (AMM 29-11-00/201).

S 862-069
(4) Remove the electrical power, if it is not necessary (AMM 24-22-00/201).

PARKING BRAKE ACCUMULATOR CHARGING VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the accumulator charging valve for the parking brake. The second task installs the accumulator charging valve for the parking brake.

TASK 32-44-10-004-001

2. Remove the Accumulator Charging Valve for the Parking Brake (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   B. Access
      (1) Location Zones
          197 Wing-to-Body Aft Lower Half (Left)

      (2) Access Panels
          197KL Central Hydraulic Service Center

   C. Prepare for the Removal of the Accumulator Charging Valve

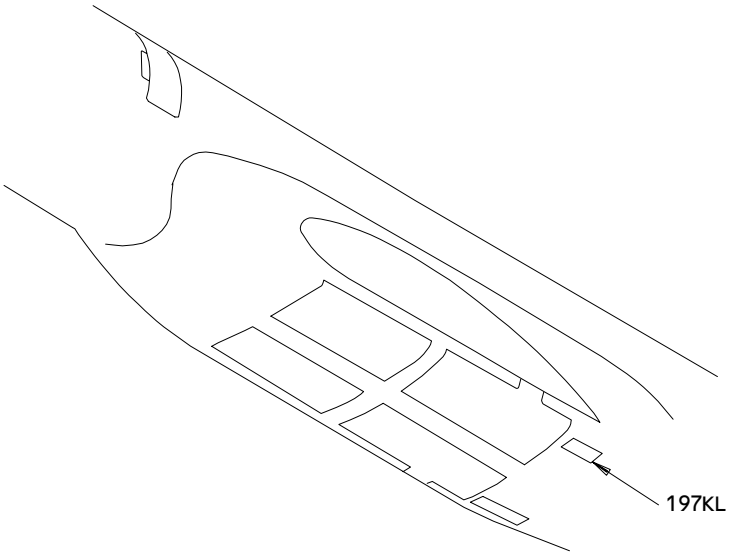
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

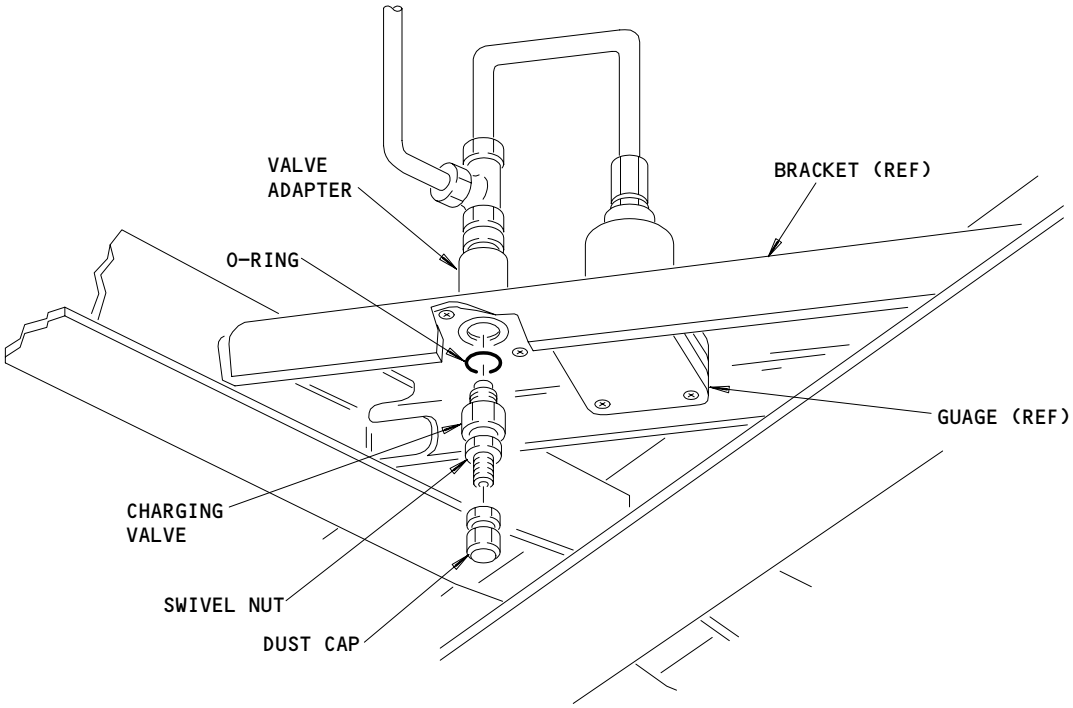
      S 844-003
      (2) Open the service center door, 197KL , for the center hydraulics system.

      S 844-004
      (3) Put the chocks below the wheels.

      S 844-005
      (4) Release the parking brakes.

      S 864-006
      (5) Remove the pressure from the left and right hydraulic systems and reservoirs (AMM 29-11-00/201).





A

Parking Brake Accumulator Charging Valve Installation
Figure 401

D. Remove the Accumulator Charging Valve

S 864-007
(1) Fully push the brake pedals down a minimum of seven times to remove the pressure from the accumulator charging valve.

S 844-008
(2) Remove the dust cap from the accumulator charging valve (Detail A).

S 864-025

WARNING: DO NOT LOOSEN THE ACCUMULATOR CHARGING VALVE. PRESSURE IN THE VALVE CAN BLOW THE VALVE OUT AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Loosen the swivel nut on the accumulator charging valve to release the charge pressure.

S 034-010
(4) Loosen the valve body.

S 024-011
(5) Remove the valve body from the valve/plug adapter in the manifold.

S 034-012
(6) Discard the O-ring from the accumulator charging valve.

TASK 32-44-10-404-013

3. Install the Accumulator Charging Valve on the Parking Brake (Fig. 401)
   A. Consumable Materials
      (1) D00054 Lubricant - Hydraulic System Fittings
          MCS 352B
   B. References
      (1) AMM 12-15-04/301, Parking Brake Accumulator
      (2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
   C. Access
      (1) Location Zones
          197 Wing-to-Body Aft Lower Half (Left)

      (2) Access Panels
          197KL Central Hydraulic Service Center

D. Install the Accumulator Charging Valve

S 644-014
(1) Apply a thin layer of lubricant to the new O-ring and the threads of the accumulator charging valve.

S 434-015
(2) Install the new O-ring on the accumulator charging valve.

S 424-016
(3) Install the valve body in the adapter on the support bracket.

S 864-017
(4) Pressurize the accumulator at the charging valve (AMM 12-15-04/301).

S 844-018
(5) Install the dust cap on the accumulator charging valve.

S 864-019
(6) Pressurize the right hydraulic system and reservoir (AMM 29-11-00/201).

S 844-020
(7) Make sure there are no leaks on the accumulator charging valve.

E. Put the Airplane Back to Its Usual Condition

S 844-021
(1) Set the parking brakes.

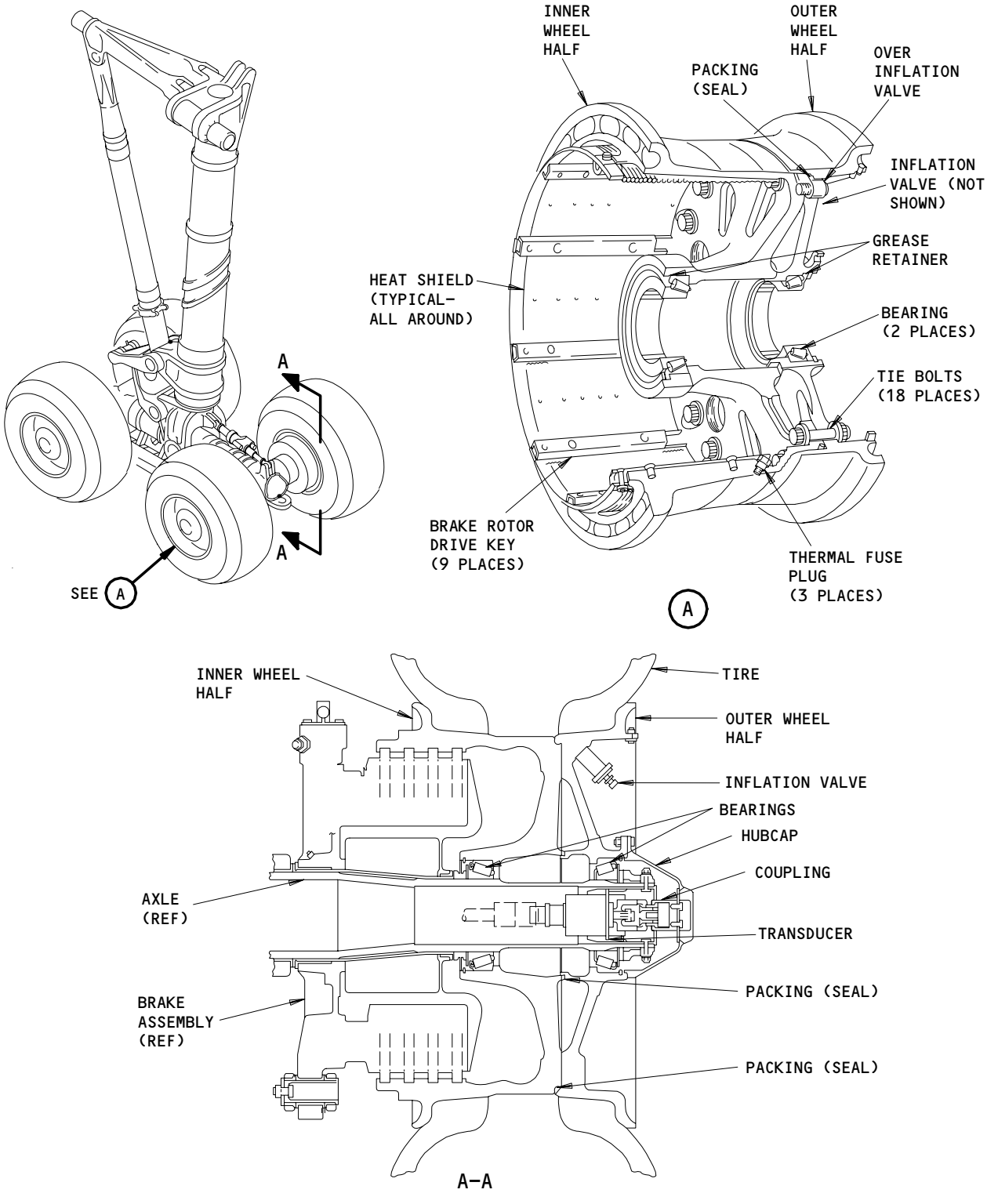
S 094-022
(2) Remove the chocks from the wheels.

S 844-023
(3) Close the service center Door, 197KL, for the center hydraulics system.

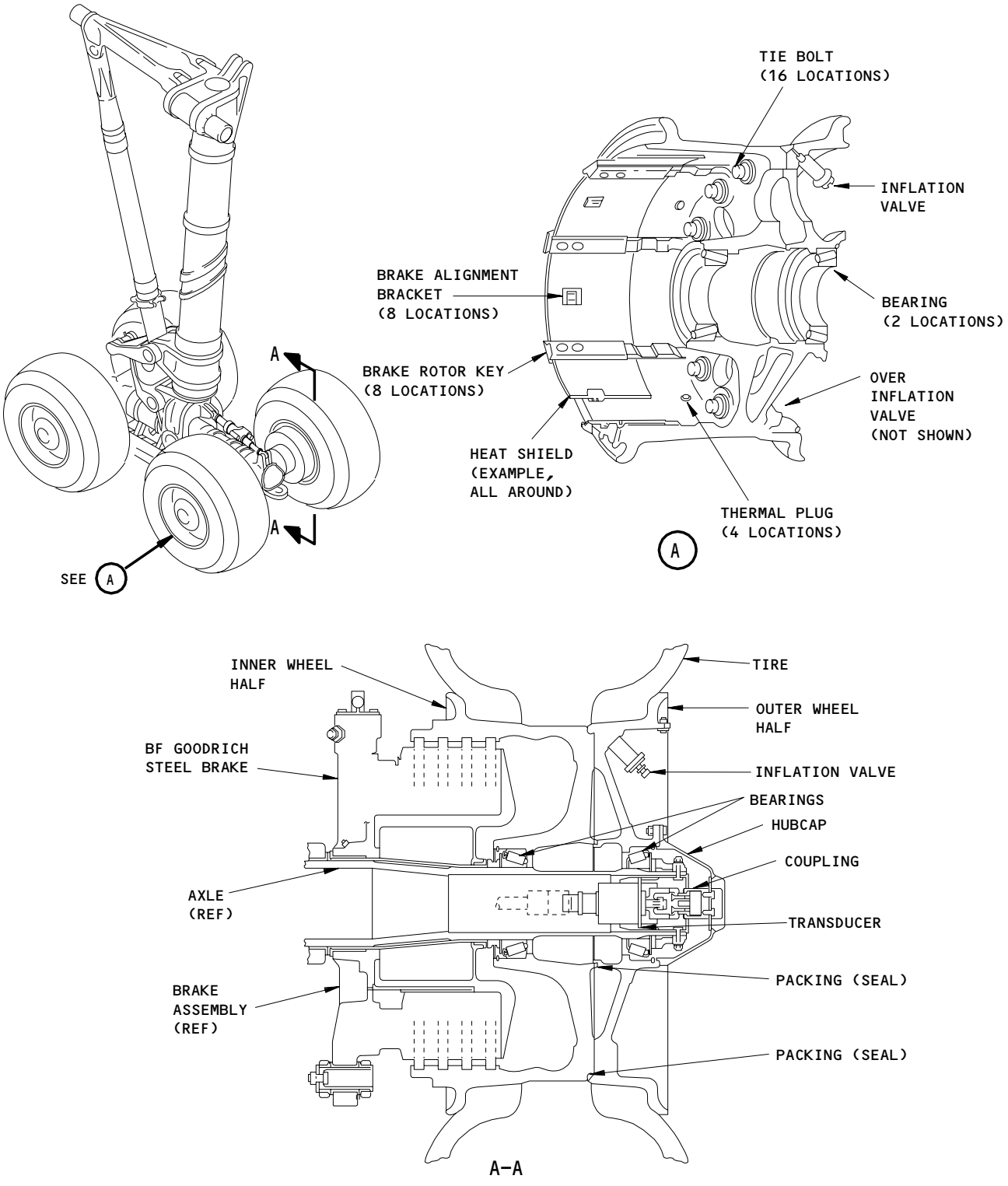
S 864-024
(4) Remove the pressure from the right hydraulic system if it is not necessary (AMM 29-11-00/201).

TIRES AND WHEELS - DESCRIPTION AND OPERATION

1. General
   A. The airplane is supported by 10 wheel and tire assemblies; two on the nose landing gear, and four on each main landing gear truck.
   B. Two spin brakes stop spinning of the nose wheels on retraction.
2. Component Details
   A. Main Gear Wheels (Fig. 1)
      (1) On Dunlop wheels, the main landing gear wheels are made from forged aluminum and are a split wheel assembly to ease tire mounting. The inner surface of the rim of each wheel half is the sealing surface against which the tire bead rests. The inner and outer wheel halves are mated and fastened together with 18 equally spaced tie bolts, secured with washers and nuts. Leakage of air from the tire through the wheel half mating surfaces is prevented by a packing mounted on the surface of the inner wheel half. Another packing mounted on the inner surface of the inner wheel half seals the hub area of the wheel against dirt and moisture. Nine rotor drive keys that are installed in the inner wheel half rotate the brake rotors as the wheel turns. Stainless steel heat shields mounted underneath and between the inserts, keep excessive brake generated heat from the wheel and tire.
      (2) BF Goodrich wheels for steel brakes, the main landing gear wheels are made from forged aluminum and are a split wheel assembly for ease in mounting tires. The inner surface of the rim of each wheel half is the sealing surface against which the tire bead rests. The inner and outer wheel halves are mated and fastened together with 16 equally spaced tie bolts, secured with washers and nuts. Leakage of air from the tire through the wheel half mating surfaces is prevented by a packing mounted on the surface of the inner wheel half. Another packing mounted on the inner surface of the inner wheel half seals the hub area of the wheel against dirt and moisture. Eight inserts (keys) installed over bosses in the inner wheel half rotate the brake rotors as the wheel turns. Stainless steel heat shields mounted underneath and between the inserts, keep excessive brake generated heat from the wheel and tire.
      (3) A tire inflation valve is installed in each outer wheel segment. An over-inflation valve is installed in each outer wheel half to relieve pressure at 375-450 psig to prevent excess pressure build-up.
      (4) Two tapered roller bearings are installed in the hub of each wheel.
      (5) Three thermal relief plugs in each inner wheel half prevent tire blowouts due to excess brake heat. The plugs will melt to release tire pressure at approximately 390°F (199°C).
   B. Nose Gear Wheels (Fig. 2)



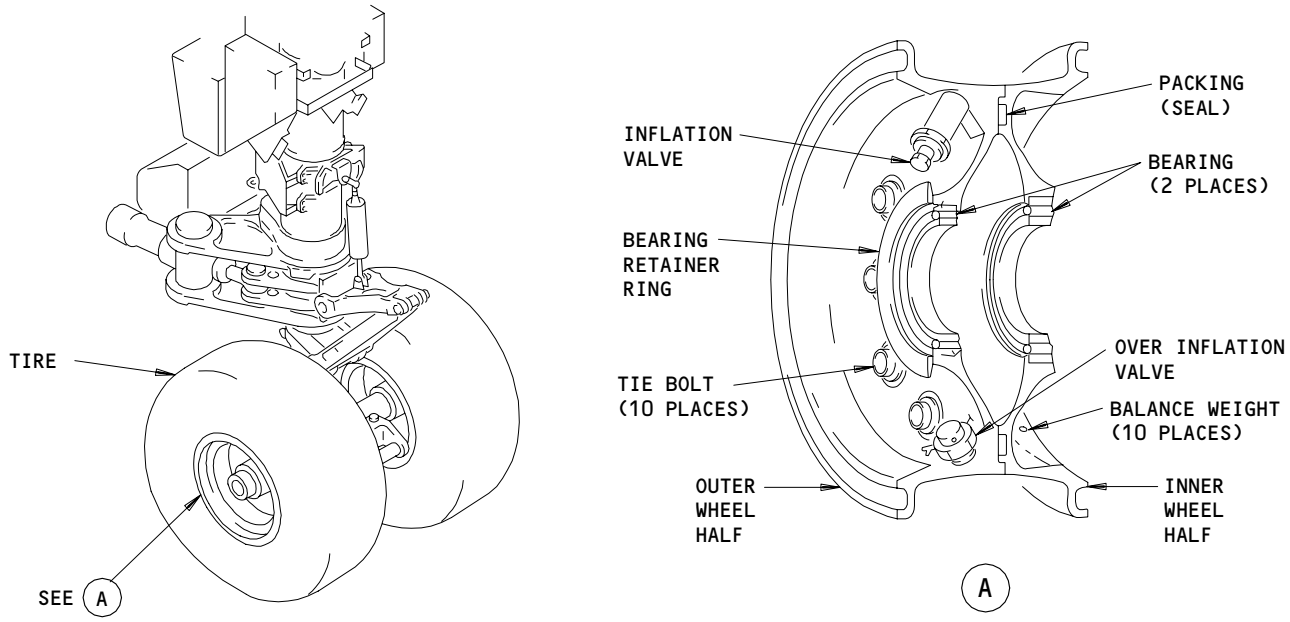
Main Gear Tire and Wheel Assembly (Dunlop Wheel)
Figure 1 (Sheet 1)



Main Gear Tire and Wheel Assembly (BF Goodrich Wheel)
Figure 1 (Sheet 2)

(1) The nose landing gear wheel assembly is made from forged aluminum and is a split wheel assembly for ease in mounting tires. The inner surface of the rim of each wheel half is the sealing surface against which the tire bead rests. The inner and outer wheel half assemblies are mated and fastened together with 10 equally spaced tie bolts, secured with washers and nuts. Leakage of air from the tire through the wheel half mating surfaces is prevented by a packing mounted on the surface of the inner wheel half. Retaining rings installed in the hub of the inner and outer wheel halves hold the bearing grease seals and bearing cones in place. These seals retain the bearing lubricant and keep out dirt and moisture.

(2) A tire inflation valve is installed in the outer wheel segment. An over-inflation valve is installed in each outer wheel half to relieve at 375-450 psig to prevent excess pressure build-up.



Nose Gear Tire and Wheel Assembly
Figure 2

(3) Two tapered roller bearings are installed in the hub of each wheel.

C. Main and Nose Gear Tires (Figs. 1 and 2)

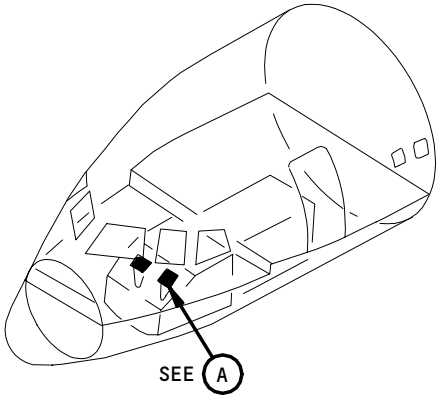
(1) The main and nose gear tires are identified by the tire size, speed rating and ply rating.

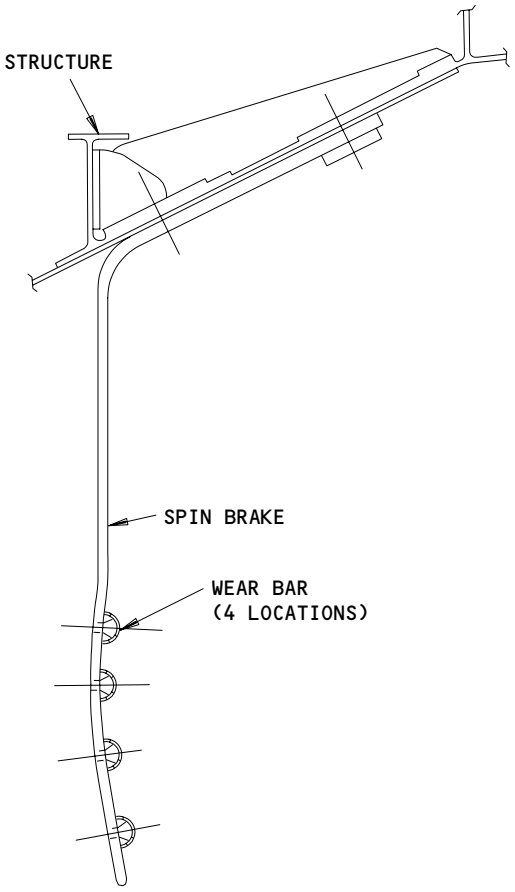
(2) Refer to servicing section of maintenance manual for proper main and nose gear tire inflation pressure (Ref 12-15-03).

D. Nose Wheel Spin Brake (Fig. 3)

(1) Two wheel spin brakes, attached to the nose wheel well ceiling, stop the nose wheels from spinning after takeoff and gear retraction. The brake pads are installed on the contact surfaces of the spin brakes to provide good frictional contact.

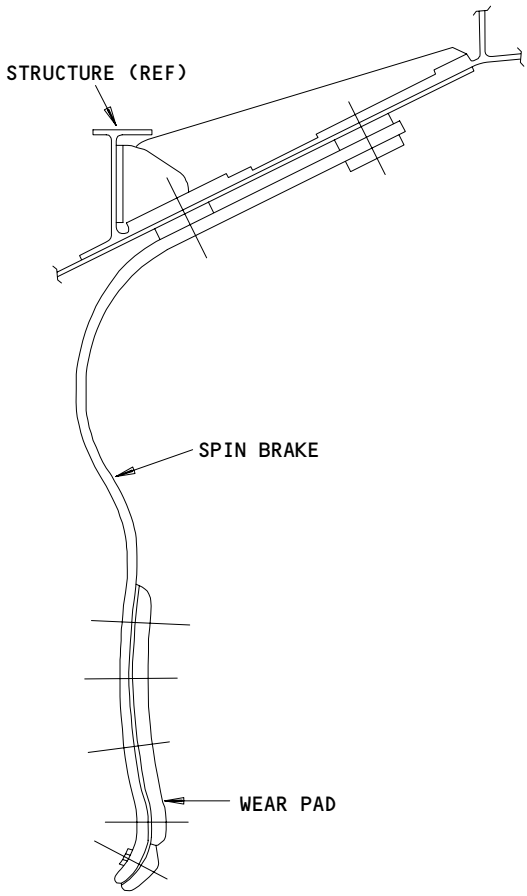
(2) Some airplanes have spin brake assemblies that have a spring arm with a brake wear pad made of a composite material. An improved spin brake assembly that is installed on subsequent airplanes has a spring arm with replaceable aluminum wear bars.





SPIN BRAKE WITH ALUMINUM WEAR BARS

A



SPIN BRAKE WITH BRAKE PAD
MAKE OF COMPOSITE MATERIAL

A

Nose Wheel Spin Brake
Figure 3

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.

TASK 32-45-01-004-001

2. Remove the Main Gear Wheel and Tire (Fig. 401)
   A. Equipment
      (1) Dolly - Wheel Change - Malabar 175
      (2) Wheel Equipment - B32010-14 (Preferred):
          Includes B32010-16 or -23 wrench assembly
          B32010-3 thread protector
          Wheel Equipment - B32010-1 (Optional)
          Includes B32010-4 wrench assembly
          B32010-3 thread protector
      (3) Tool - Tire Deflation - Safe-Cor, No. 968RB
      (4) Protector - MLG Axle Thread B32010-3
      (5) Protective Cover - Inner Wheel Surface - BTA-72032, Bill Thomas Assoc. Inc., 7405 Woodley Ave., Van Nuys, California
   B. References
      (1) AMM 07-11-03/201, Jacking Airplane Axles
      (2) AMM 24-22-00/201, Electrical Power, Control
      (3) AMM 32-00-20/201, Landing Gear Downlocks
      (4) AMM 32-45-04/601, Tires-Inspection/Check
   C. Access
      (1) Location Zones
          211 Control Cabin, Left
          212 Control Cabin, Right
          731 Landing Gear Left
          741 Landing Gear Right

   D. Procedure

      S 864-002
      (1) Supply electrical power (AMM 24-22-00/201).

      S 494-003
      (2) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

S 034-075

(3) Look at the brake rod to brake connection. If the the pin retainer bolt is on the truck side of the pin, do the step that follows:

CAUTION: THE PIN RETAINER BOLT (12) SHOULD BE REMOVED BEFORE JACKING TO AVOID DAMAGE DUE TO POSSIBLE INTERFERENCE BETWEEN THE JACK AND BOLT (12).

(a) Remove the cotter pin (14), bolt (12), and nut (15) that hold the retainer pin (13) in position.

NOTE: You can remove the retainer bolt (12) with a 9/16-inch deep socket tool that you insert into the pin (13) recess.

S 494-053

(4) Lift the axle with a jack until there is clearance between the tire and the ground (AMM 07-11-03/201).

S 864-005

(5) Set the parking brake to keep the brake rotor disks aligned.

S 864-006

(6) Make sure the PARK BRAKE indicator light on the quadrant control stand panel, P10, comes on and stays on.

S 864-059

WARNING: BEFORE YOU REMOVE THE WHEEL AND TIRE ASSEMBLY YOU MUST DEFLATE THE TIRE OR EXAMINE THE WHEEL AND TIRE ASSEMBLY TO MAKE SURE THAT IT IS SAFE TO REMOVE IT WITHOUT TIRE DEFLATION. DO THE EXAMINATION OF THE WHEEL AND TIRE OR DEFLATE THE TIRE AS GIVEN IN THE PROCEDURE THAT FOLLOWS. 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.

(7) Do step (a) to examine the wheel and tire assembly to see if it is safe to remove the assembly without tire deflation or do step (b) to deflate the tire.

NOTE: If you will not install the same wheel and tire assembly, deflate the tire to prevent transporting an inflated tire.

(a) Examine the wheel and tire assembly and, if you have the conditions that follow, it is not necessary to deflate the tire:
1) The tire is not worn too much (AMM 32-45-04/601)

2) The tire is cool enough to be comfortably touched with the bare hand.
3) There is no evidence of wheel damage, including cracked or missing tie bolts or tie nuts, or cracks in the wheel.
4) If you do not meet the conditions in the preceding steps, deflate the tire as shown in step (b).

(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:

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.

a) Turn the valve assembly slowly in a counterclockwise direction until air begins to leak through the boss.
b) At the same time, push lightly on the valve assembly.
c) Remove the valve assembly from the tire after all the pressure in the tire has been released.

2) Remove the pressure from the tire with the tire deflation tool.

S 034-047

CAUTION: BE CAREFUL THAT YOU DO NOT HIT THE HUBCAP OR THE ANTISKID TRANSDUCER ASSEMBLY WHILE YOU REMOVE THE HUBCAP. THE TRANSDUCER DRIVE ON THE INSIDE OF THE HUBCAP ASSEMBLY DISENGAGES FROM THE ANTISKID TRANSDUCER IN THE AXLE WHEN YOU REMOVE THE HUBCAP. IF UNWANTED FORCE IS APPLIED TO THESE PARTS WHEN THEY ARE PARTLY DISENGAGED, THEY CAN BE DAMAGED.

(8) Remove the three hubcap attachment bolts (5).

S 034-010

(9) Pull the hubcap assembly (4) away from the axle while you hold it level, to disengage the transducer drive on the hubcap assembly from the coupling on the transducer.

S 024-012

CAUTION: BE CAREFUL THAT YOU DO NOT HIT THE ANTISKID TRANSDUCER AFTER YOU REMOVE THE WHEEL RETENTION NUT LOCKBOLTS. THE TRANSDUCER CAN TURN FREELY IN THE AXLE WHEN THE LOCKBOLTS ARE NOT INSTALLED. DAMAGE CAN OCCUOR IF IT IS HIT OR SHAKEN.

(10) Remove the two lockbolts for the wheel retention nut (8).

S 024-013

(11) Remove the wheel retention nut (3) with the wheel nut wrench.

S 024-014

(12) Remove the washer (2).

S 494-015

(13) Install the thread protector on the axle.

S 024-016

CAUTION: BE CAREFUL WHEN YOU MOVE THE WHEEL AND TIRE ASSEMBLY. BECAUSE THE ASSEMBLY WEIGHS APPROXIMATELY 242 POUNDS (STEEL BRAKE) OR 275 POUNDS (CARBON BRAKE), INJURY CAN OCCUR.

(14) Put the wheel change dolly below the wheel.

S 024-050

(15) Remove the wheel and tire assembly.
(a) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

S 494-018

(16) Install the protective cover on the inner wheel surface.

S 024-019

(17) Remove the wheel spacer (11).

TASK 32-45-01-404-020

3. Install the Main Gear Wheel and Tire (Fig. 401)

A. Equipment

(1) Dolly - Wheel Change - Malabar 175

(2) Wheel Equipment - B32010-14 (Preferred):
Includes B32010-16 or -23 wrench assembly
B32010-3 thread protector
Wheel Equipment - B32010-1 (Optional)
Includes B32010-4 wrench assembly
B32010-3 thread protector
(3) Protective Cover - Inner Wheel Surface - BTA-72032, Bill Thomas Assoc. Inc., 7405 Woodley Ave., Van Nuys, California

B. Consumable Materials
(1) D00378 Grease, Wheel Bearing -
Aeroshell 22
Mobilgrease 28
(2) D50005 Grease, Wheel Bearing -
Mobil Aviation Grease SHC 100
(3) D00388 Grease, Wheel Bearing -
MIL-G-3545 Aeroshell 5 (Optional)

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1 4	Wheel and Tire Hubcap Assembly	32-45-01	01 01	23,24,25 21

D. References
(1) AMM 07-11-03/201, Jacking Airplane Axles
(2) AMM 12-15-03/301, Landing Gear Tire
(3) AMM 12-21-14/301, Main Gear and Actuating Mechanisms - Servicing
(4) AMM 24-22-00/201, Electrical Power, Control
(5) AMM 32-11-26/601, Main Gear Axle
(6) AMM 32-45-03/601, Wheels
(7) AMM 32-45-04/601, Tires

E. Access
(1) Location Zones
211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right

F. Procedure

S 214-021
(1) Examine all the components that are part of the installation for unwanted material and clean them if it is necessary.

S 214-022
(2) Examine the wheel and tire before you install it on the airplane (AMM 32-45-03/601, AMM 32-45-04/601).

S 214-066
(3) AIRPLANES WITH CARBON BRAKES;
Follow this procedure.

WARNING: THE BRAKES MAY BE HOT. WEAR HEAT-RESISTANT GLOVES TO AVOID BURNS WHEN YOU INSPECT THE BRAKES.

(a) Examine the brake stator drive slots and brake rotors for damage or excessive wear.
1) Examine the brake and surrounding area for unusual carbon debris.
2) Examine the brake for bent or missing wear indicator pins. This may be an indication of excessive wear on the stator drives.
3) Make sure that all rotor assemblies can be rotated without to much effort.
4) With one hand at the 6 o'clock position and the other hand at the 12 o'clock position, rotate each stator individually on the torque tube. Verify the rotated stator does not move more than 0.25 inch maximum on the stator periphery.
5) Repeat step 4), but with one hand at the 3 o'clock position and the other hand at the 9 o'clock position.

NOTE: Some brakes may be configured with "worn stator indicators". If this is the case, the indicators may be used to perform the above inspection.

S 214-074
(4) Lubricate the main landing gear brake assembly (AMM 12-21-14/301).

S 214-023
(5) Look at the part of the axle that you can see for signs of scoring, galling, or corrosion.

NOTE: Wear limits for the main gear axles are given in AMM 32-11-26/601.

S 644-055
(6) Lubricate the grease fitting on the brake rod (AMM 12-21-14/301).

S 494-024
(7) Make sure the thread protector is installed on the axle.

S 644-025
(8) Lubricate the wheel spacer (11) with grease.

S 424-062

CAUTION: IF THE WHEEL SPACER IS NOT INSTALLED ON THE AXLE, THE WHEEL AND BRAKE WILL BIND AND CAUSE DAMAGE.

MAKE SURE THE SPACER IS CORRECTLY INSTALLED ON THE AXLE. THE SPACER MAY MOVE WHEN THE WHEEL AND TIRE ASSEMBLY IS REMOVED. IF IT IS NOT IN ITS CORRECT POSITION, THE WHEEL AND TIRE ASSEMBLY WILL NOT INSTALL CORRECTLY. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(9) Install the spacer (11) on the axle (Detail A).

S 644-027
(10) Put a thin layer of grease on the axle in the area that touches the wheel bearings.

NOTE: Do not put grease on the surface of the axle between the wheel bearings.

S 644-028
(11) Lubricate the wheel bearings with grease.

S 094-029
(12) Remove the protective cover (if it is installed) from the inner surface of the wheel assembly.

S 424-030
(13) Put the wheel and tire on the dolly and put it into position on the axle.

S 824-031
(14) Make sure that the brake rotors are aligned with the keys on the wheel (Detail B).

S 864-070
(15) Release the parking brake.

S 094-032
(16) Remove the thread protector from the axle.

S 644-033
(17) Lubricate the axle threads, washer (2), and retention nut (3) with grease.

S 424-034
(18) Put the washer (2) on the axle.

S 424-035
(19) Put the retention nut (3) on the axle and tighten it by hand.

S 424-036
(20) Use the procedure that follows to tighten the wheel (3) retention nut to the necessary torque:
(a) While you turn the wheel, tighten the nut to 235-260 pound-feet.
(b) Stop the wheel.
(c) Loosen the nut to 10-50 pound-feet.
(d) While you turn the wheel again, tighten the nut to 110 pound-feet.
(e) If the holes in the axle for the lockbolt are not aligned with the slots in the nut, do these steps:
1) Tighten the nut more, if necessary, to align the lockbolt holes. Do not tighten the nut to more than 160 pound-feet.
2) Do not loosen the nut to align the lockbolt holes. If the lockbolt holes are not aligned at the maximum permitted torque, fully loosen the nut and do steps (a) thru (d) again.

S 424-037
(21) Install the two lockbolts (8) through the retention nut (3), the axle, and the antiskid transducer support and attach with the washers (7) and the nuts (6).

S 424-038
(22) Install the bolts (8) with the heads of the bolts on the inside of the axle.

S 424-039
(23) Tighten the bolts (8) to 75-85 pound-inches, above run-on torque.

NOTE: Check the self locking nut (AMM 20-11-01/201).

S 434-040
(24) Install the hubcap (4) and the antiskid transducer drive.

S 824-041
(25) Make sure the coupling halves for the antikid transducer are aligned.

S 434-065

CAUTION: DO NOT OVERTIGHTEN THE HUBCAP BOLTS. IF THE BOLTS ARE OVERTIGHTENED, IT WILL CAUSE DAMAGE TO THE BOLTS AND THE HUBCAP. MAKE SURE THE HUBCAP IS SEATED PROPERLY BEFORE TORQUING THE BOLTS.

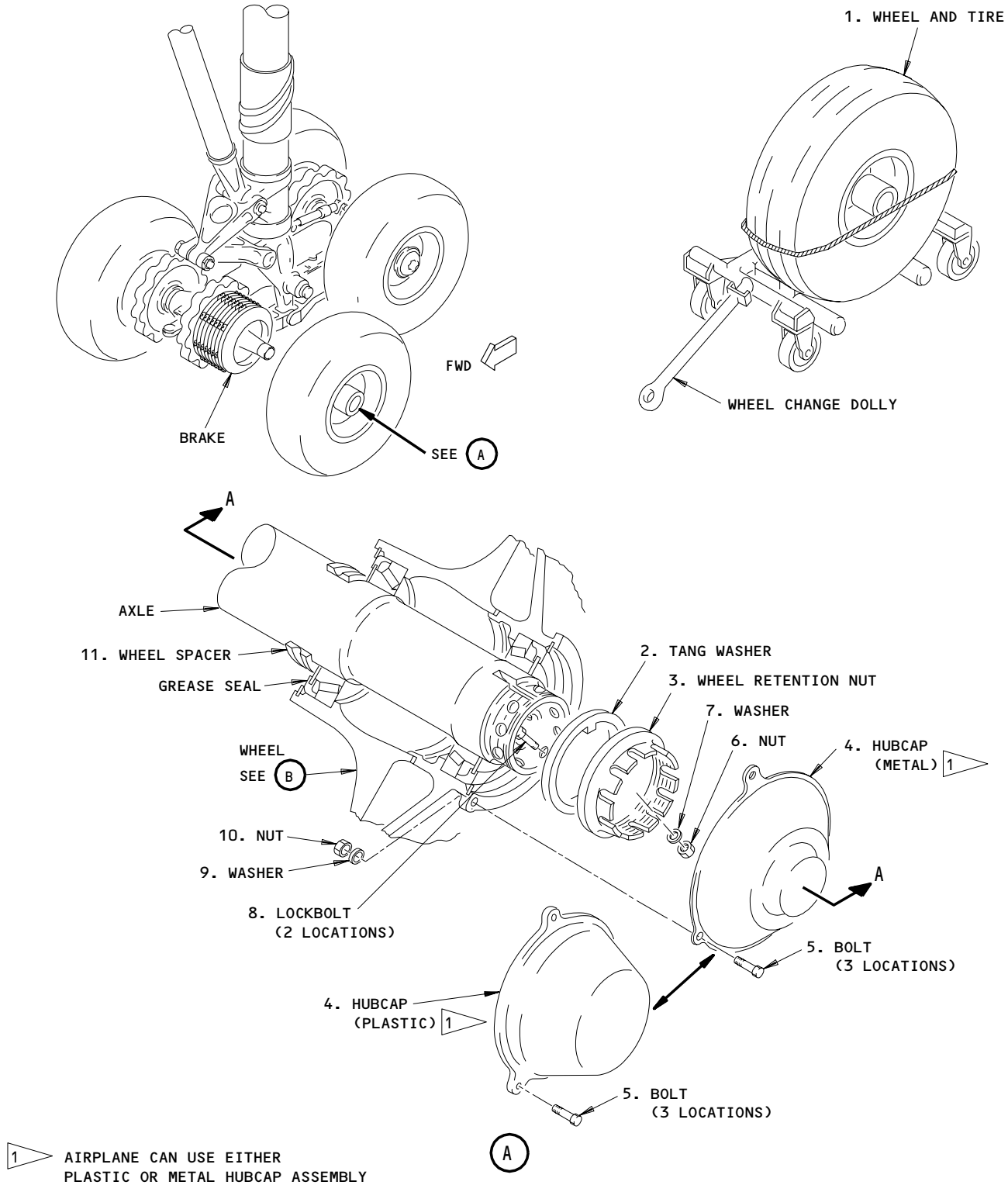
(26) Install the hubcap (4) with the bolts (5), the washers (9), and the nuts (10). Tighten the bolts to 50-80 inch-pounds.

S 614-043
(27) Do a check for correct tire pressure and inflate the tire to the correct pressure if it is necessary (AMM 12-15-03/301).

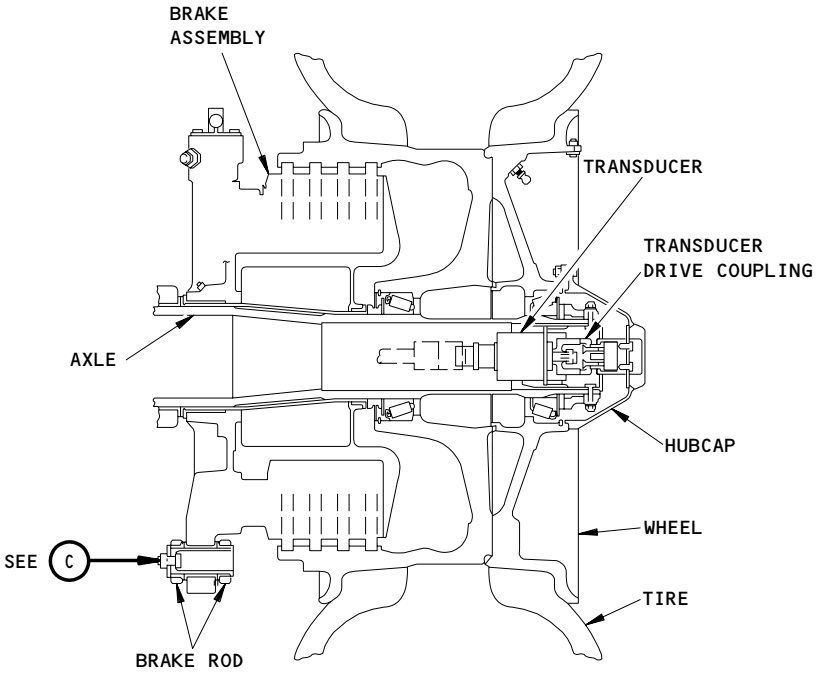
S 584-044
(28) Lower the main gear with the jack (AMM 07-11-03/201).

S 584-045
(29) Remove the jack (AMM 07-11-03/201).
If the brake rod pin retainer, nut and cotter pin were removed, install them by the steps that follow:
(a) Insert the bolt through the hole at the bottom of the recess in the pin.
(b) Insert the end cap over the threaded end of the bolt.
(c) Install the bolt and end cap to the pin with the washer and nut.
(d) Tighten the nut to 100-200 pound-inches (136-271 N-M).
(e) Install the cotter pin through the nut.

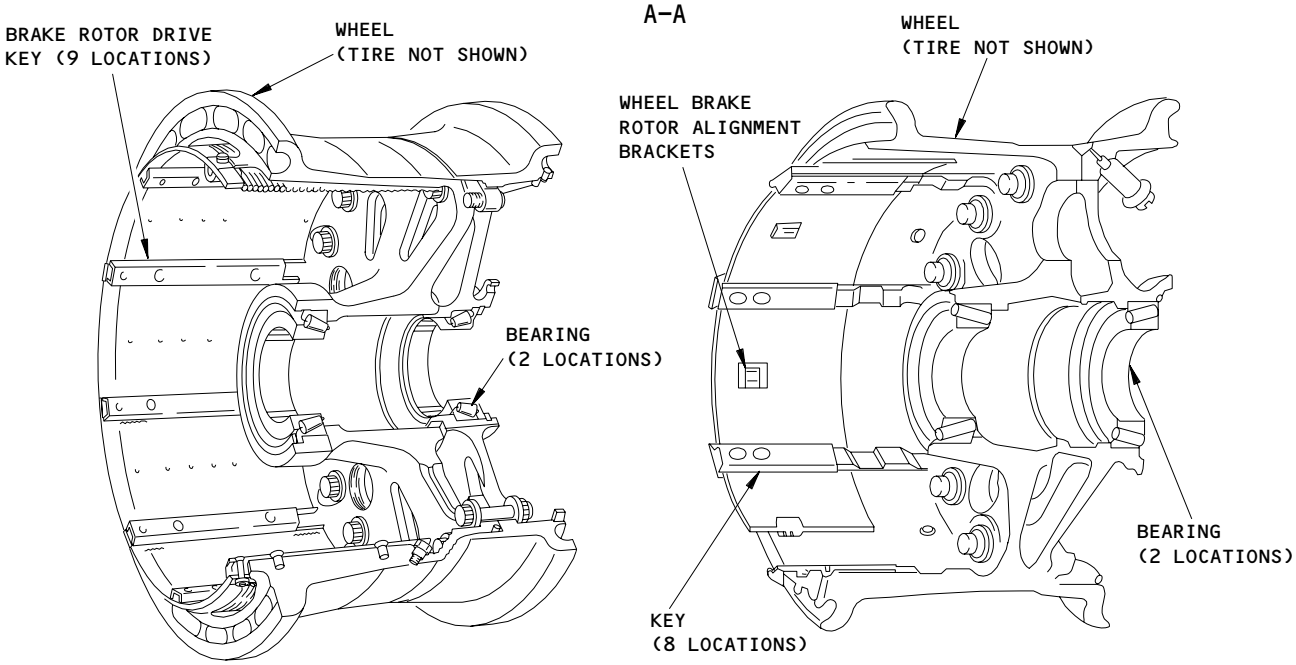
S 844-064
(30) Remove electrical power if it is no longer necessary (AMM 24-22-00/201).



Main Gear Wheel and Tire Installation
Figure 401 (Sheet 1)



A–A



DUNLOP WHEEL

B

BF GOODRICH WHEEL

B

Main Gear Wheel and Tire Installation
Figure 401 (Sheet 2)

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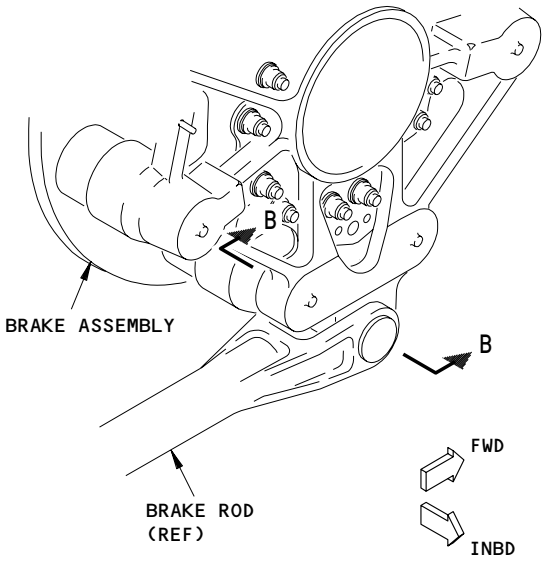

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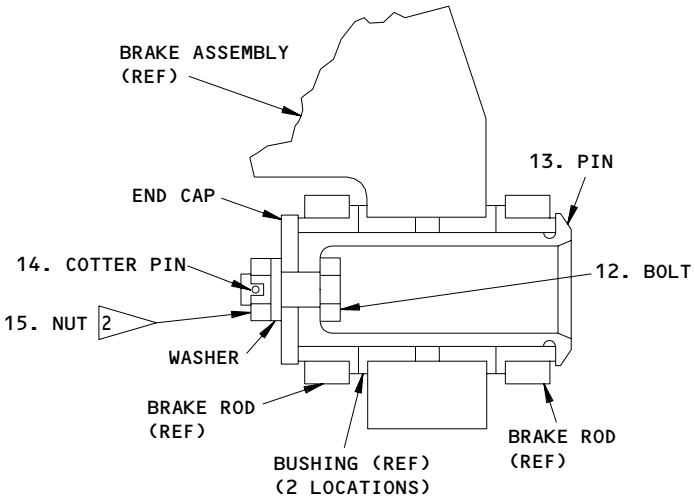


B-B

2 TIGHTEN TO 100-200 POUND-INCHES (136-271 Nm)

Main Gear Wheel and Brake Installation
Figure 401 (Sheet 3)

NOSE GEAR WHEEL AND TIRE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task is a removal of the wheel and tire assembly for the nose gear. The second task is an installation of the wheel and tire asembly for the nose gear.
   B. When you replace a nose wheel and tire assembly, you can replace the wheel and tire assembly on the other side. Differences in the diameter between new and worn tires can contribute to nose landing gear vibration. You can decrease this if you install tires that have equal pressures, nearly the same inflated diameters, and matching supplier part numbers.

TASK 32-45-02-024-001

2. Remove the Nose Gear Wheel and Tire (Fig. 401)
   A. Equipment
      (1) Dolly - Wheel Change - commercially available
      (2) Protector - Nose Landing Gear Axle - B32021-1
      (3) Wrench - NLG Wheel Retaining Nut - (Commercially Available)
      (4) Tool - Tire Deflation - Safe-Cor, No. 968RB
   B. References
      (1) AMM 07-11-03/201, Jacking Airplane Axles
      (2) AMM 12-15-03/301, Landing Gear Tire
      (3) AMM 32-00-20/201, Landing Gear Downlocks
      (4) AMM 32-45-04/601, Tires-Inspection/Check
   C. Access
      (1) Location Zone
          711 Nose Landing Gear (NLG)

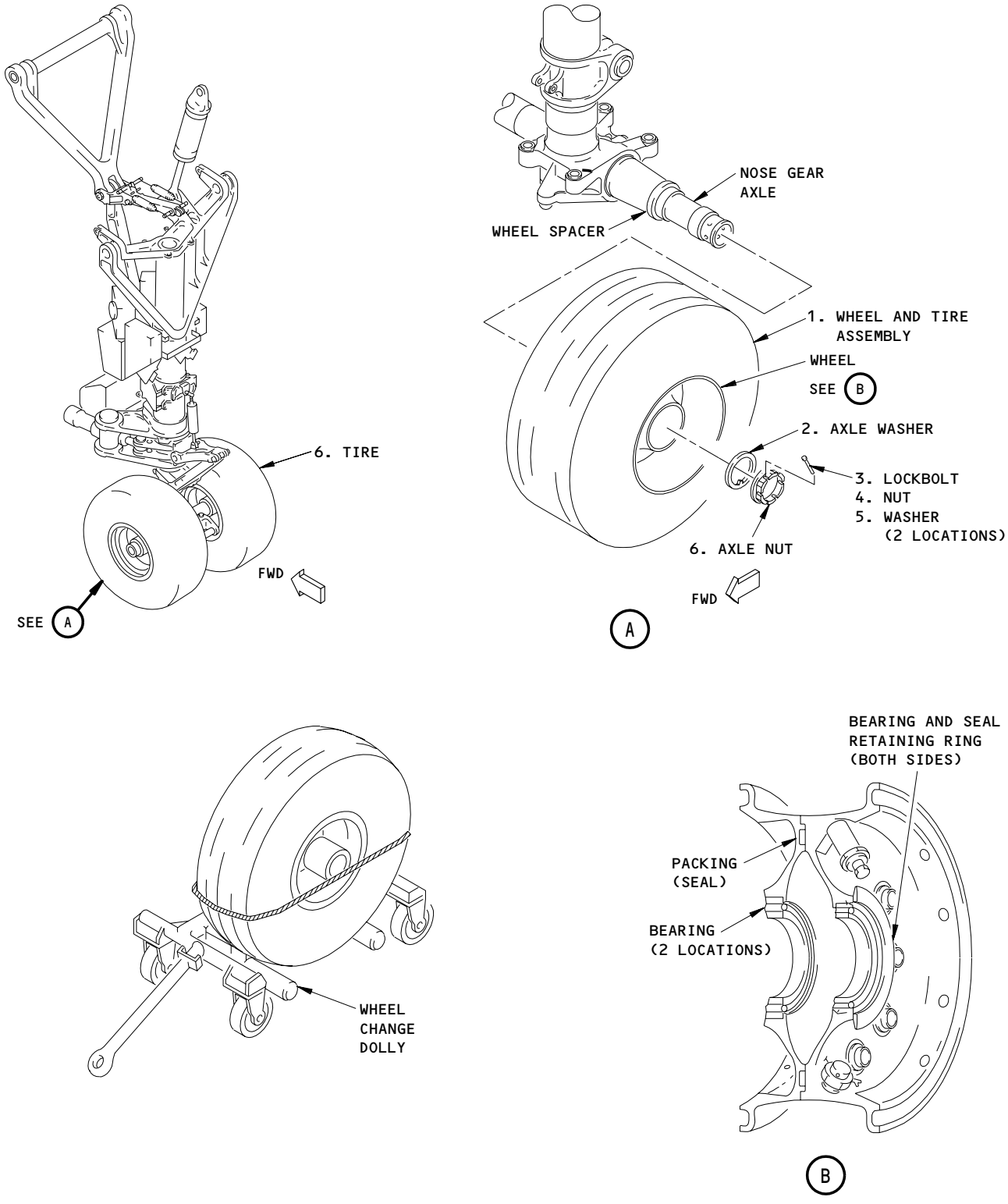
   D. Procedure

      S 494-002
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

      S 584-003

      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) Lift the axle with a jack until there is clearance between the tire and the ground (AMM 07-11-03/201).



Nose Gear and Tire Installation
Figure 401

S 864-002

WARNING: BEFORE YOU REMOVE THE WHEEL AND TIRE ASSEMBLY YOU MUST DEFLATE THE TIRE OR DO AN EXAMINATION OF THE WHEEL AND TIRE ASSEMBLY TO MAKE SURE THAT IT IS SAFE TO REMOVE WITHOUT DEFLATION. DO THE INSPECTION OF THE WHEEL AND TIRE ASSEMBLY OR DEFLATE THE TIRE AS GIVEN IN THE PROCEDURE THAT FOLLOWS. 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 step (a) to inspect the wheel and tire assembly to see if it is safe to remove without tire deflation or do step (b) to deflate the tire.

NOTE: If you will not install the same wheel and tire assembly, deflate the tire to prevent transporting an inflated tire.

(a) Examine the wheel and tire assembly and, if you have the conditions that follow, it is not necessary to deflate the tire:
1) The tire is not worn too much (AMM 32-45-04/601)
2) The tire does not have damage (AMM 32-45-04/601).
3) The tire is cool enough to be comfortably touched with your bare hand.
4) There is no evidence of wheel damage, including cracked or missing tie bolts or tie nuts, or cracks in the wheel.
5) If you do not meet the conditions in the preceding steps, deflate the tire as shown in step (b).

(b) Deflate the tire with the tire deflation tool.
1) 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:

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.

a) Turn the valve assembly slowly in a counterclockwise direction until there is gas leakage through the boss.

b) At the same time, push lightly on the valve assembly.
c) Remove the valve assembly from the tire after all the pressure in the tire has been released.

S 024-005
(4) Remove the two wheel retainer nut lockbolts (3).

S 024-006
(5) Remove the axle nut (6) with the retaining nut wrench.

S 024-007
(6) Remove the axle washer (2).

S 024-009
(7) Put the wheel change dolly under the wheel and remove the wheel and tire assembly (1).

S 494-008
(8) Install the nose landing gear axle protector.

NOTE: The axle protector is used to protect the axle after a wheel assembly has been removed from the axle. If you will install a wheel and tire assembly immediately, it is not necessary to use the axle protector.

S 934-041
(9) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

TASK 32-45-02-404-010

3. Install the Nose Gear Wheel and Tire (Fig. 401)
   A. Equipment
      (1) Dolly - Wheel Change - commercially available
      (2) Protector - Nose Landing Gear Axle - B32021-1
      (3) Wrench - NLG Wheel Retaining Nut - (Commercially Available)
   B. Consumable Materials
      (1) D00378 Grease, Wheel Bearing
          Aeroshell 22
          Mobilgrease 28

(2) D50005 Grease, Wheel Bearing -
Mobil Aviation Grease SHC 100.
(3) D00388 Grease, Wheel Bearing
MIL-G-3545 Aeroshell 5 (Optional)

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Wheel and Tire Assembly	32-45-02	02 02A	20 21 25 10

D. References
(1) AMM 07-11-03/201, Jacking Airplane Axles
(2) AMM 12-15-03/301, Landing Gear Tire
(3) AMM 32-00-20/201, Landing Gear Downlocks

E. Access
(1) Location Zone
711 Nose Landing Gear (NLG)

F. Procedure

S 094-024
(1) Remove the nose landing gear axle protector, if installed.

S 214-035
(2) Examine the wheel and tire before you install it on the airplane (AMM 32-45-03/601, AMM 32-45-04/601).

S 214-011
(3) Look at the part of the axle that you can see and do a check for scoring, galling, or corrosion.

S 024-012

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.

MAKE SURE THE WHEEL SPACER IS INSTALLED CORRECTLY ON THE AXLE. THE SPACER MAY MOVE WHEN THE WHEEL AND TIRE ASSEMBLY IS REMOVED. IF IT IS NOT IN ITS CORRECT POSITION, THE WHEEL AND TIRE ASSEMBLY WILL NOT INSTALL CORRECTLY. THIS CAN CAUSE DAMAGE AND WHEEL FAILURE.

(4) Make sure that the spacer is installed on the axle.

S 644-013

(5) Lubricate the axle with grease in the area where the wheel bearings touch the axle.

NOTE: Do not lubricate the axle surfaces between the wheel bearings.

S 644-014

(6) Lubricate the wheel bearings with grease.

S 424-015

(7) Put the wheel and tire assembly (1) on the dolly and slide it on the axle.

S 424-036

CAUTION: ENSURE THAT THE WASHER IS SNUG AGAINST THE WHEEL BEARING. IF THE WASHER IS TIGHTENED AGAINST THE THREAD RUN-OUT INSTEAD OF THE WHEEL BEARING, THE BEARING WILL FAIL.

(8) Align the tang and put the axle washer (2) on the axle.

S 644-018

(9) Lubricate the axle threads with grease.

S 424-019

(10) Use the procedure that follows to install and tighten the axle nut (6):
- (a) Put the nut (6) on the axle and tighten it by hand until you can not turn it.
- (b) While you turn the wheel, tighten the axle nut to 235-260 pound-feet.
- (c) Stop the wheel.
- (d) Loosen the nut to 10-20 pound-feet.

(e) While you turn the wheel again, tighten the nut to 65 pound-feet minimum.
(f) Continue to tighten the nut as necessary to align the lockbolt holes, but do not exceed 115 pound-feet.

S 424-037

CAUTION: SHAKE THE TIRE TO ENSURE THE PROPER INSTALLATION. A LOOSE TIRE MAY INDICATE THE WASHER IS NOT AGAINST THE WHEEL BEARING OR THAT THE WASHER IS MISSING.

(11) Install the two lockbolts (3) through the axle nut (6), the axle, and the axle bushing. Tighten the lockbolts (3) to 75-85 pound-inches, above run-on torque.

NOTE: Check the self locking nut (AMM 20-11-01/201).

S 614-021
(12) Make sure that the tire is inflated to the correct pressure (AMM 12-15-03/301).

S 584-022
(13) Lower the nose gear with the jack (AMM 07-11-03/201).

S 584-023
(14) Remove the jack (AMM 07-11-03/201).

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
   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 (Ref 32-00-20/201).

      S 496-003
      (2) Make sure that chocks are installed on the wheels.

      S 216-004
      (3) Examine the wheels for cracks, flaked paint and corrosion.

      S 216-005
      (4) Examine the main gear wheels for evidence that they have overheated.

S 216-006
(5) 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.
(b) When a tire is turned when it is flat, all tires on that axle must be removed.
(c) 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 216-007
(6) Examine the hubcaps for loose retainer bolts. Tighten or replace the bolts as necessary.

S 216-008
(7) Examine the tiebolt installations for:
(a) Loose tiebolts and tiebolt nuts
(b) Damaged tiebolts
(c) Tiebolt locations that do not have tiebolts.

S 026-009
(8) If you found a loose or damaged tiebolt or a tiebolt location without a tiebolt, remove the wheel (Ref 32-45-01/401, Main Wheel--32-45-02/401, Nose Wheel).

S 216-010
(9) If you removed the wheel, do the steps to examine the wheel with the wheel removed from the airplane.

NOTE: Carefully examine the wheel for damage and broken parts.

S 216-011
(10) If you removed a main wheel, examine the brake for damage and broken parts.

S 216-012
(11) Do a check to make sure that the rotor drive keys are firmly attached. Tighten the nuts as necessary.

TASK 32-45-03-216-013

3. Examine the Wheels (Wheel Removed from Airplane) (Fig. 601)

A. References

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

B. Access

(1) Location Zones

711 Nose Landing Gear
731 Landing Gear Left
741 Landing Gear Right

C. Procedure

S 216-014

(1) Examine the metal parts of the wheel for the types of damage that follow:
breaks,
cracks,
nicks,
scratches,
scoring,
stripped or crossed thread,
corrosion,
distortion,
worn plating,
gouging
other damage

S 216-015

(2) Examine the seal retainers for cracks, distortion, or surface damage.

S 216-016

(3) Examine the grease seals for nicks or gouges and evidence that they have overheated.

S 216-017

(4) Examine the bearing and the bearing surfaces for distortion, flat spots and sufficient lubrication.

S 216-018

(5) Examine the brake keyway inserts for wear and signs that they have been hit repeatedly.

S 216-019

(6) Examine the tiebolt installations for:
(a) Loose tiebolts and tiebolt nuts
(b) Damaged tiebolts
(c) Tiebolt locations that do not have tiebolts.

S 356-020
(7) If you found a loose or damaged tiebolt or a tiebolt location without a tiebolt, do the steps that follow:

NOTE: Refer to the Component Maintenance Manual for the wheel for the procedure to lubricate and install the tiebolts. The torque values for the tiebolt nuts are for a wheel with a tire that is deflated.

WARNING: DEFLATE THE TIRE BEFORE YOU REMOVE ANY TIEBOLTS. IF PRESSURE IS NOT RELEASED FROM THE TIRES AND THE WHEEL HALVES COME APART, THEY CAN HIT YOU WITH FORCE AND CAUSE INJURY.

(a) Deflate the tire.
(b) Remove damaged or loose tiebolts.
(c) Remove the tiebolts on the two sides of tiebolt locations that had damaged or loose tiebolts.
(d) Remove the tiebolts on the two sides of tiebolt locations that did not have tiebolts.
(e) Discard the tiebolts and tiebolt nuts that you removed.
(f) Lubricate the new tiebolts and tiebolt nuts.

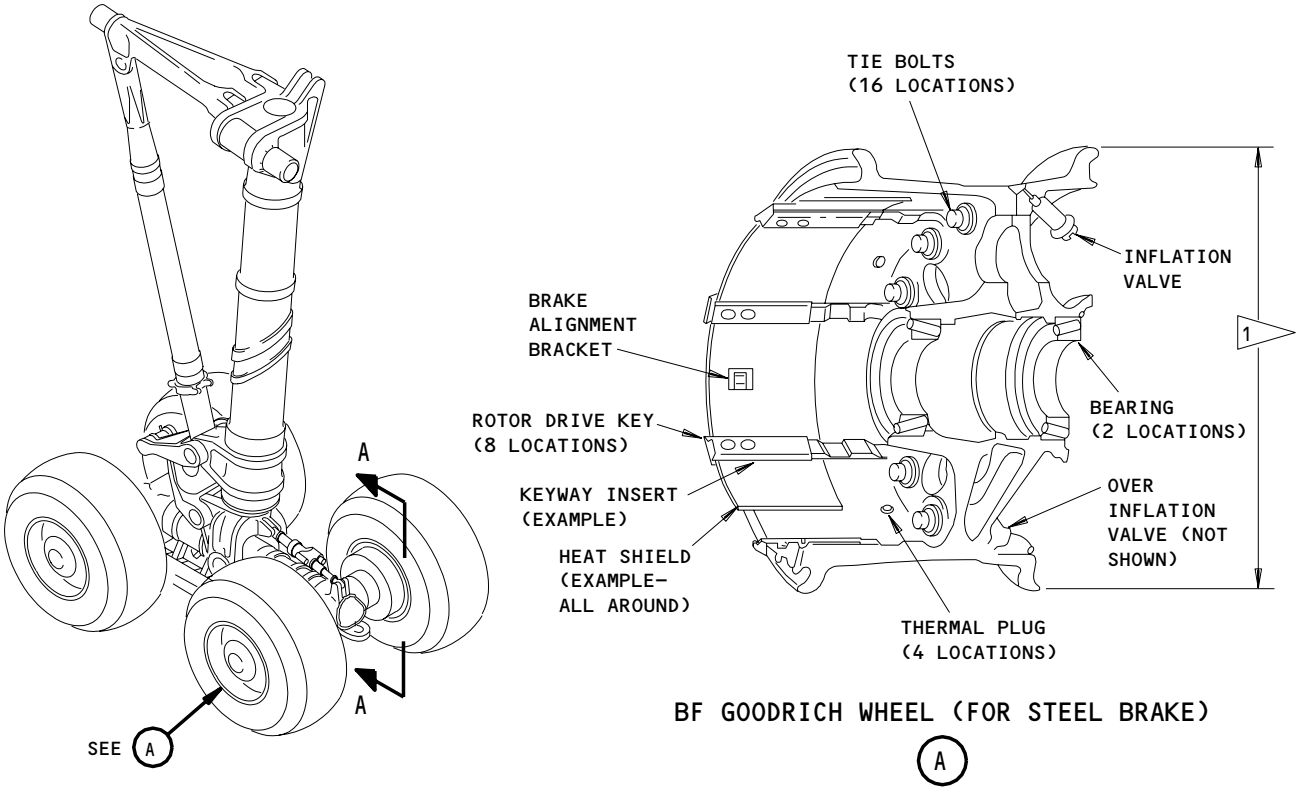
S 216-021
(8) Examine the wheels for melted thermal fuses and put tags on wheels that have melted thermal fuses to show that they require special attention.

S 216-022
(9) Examine a wheel that has overheated or has a melted thermal fuse that is still in the wheel for out-of-round condition as follows:
(a) Measure the largest and smallest outer diameters on each wheel half (Detail A).
(b) Make sure that the diameter difference does not exceed 0.020 inch.

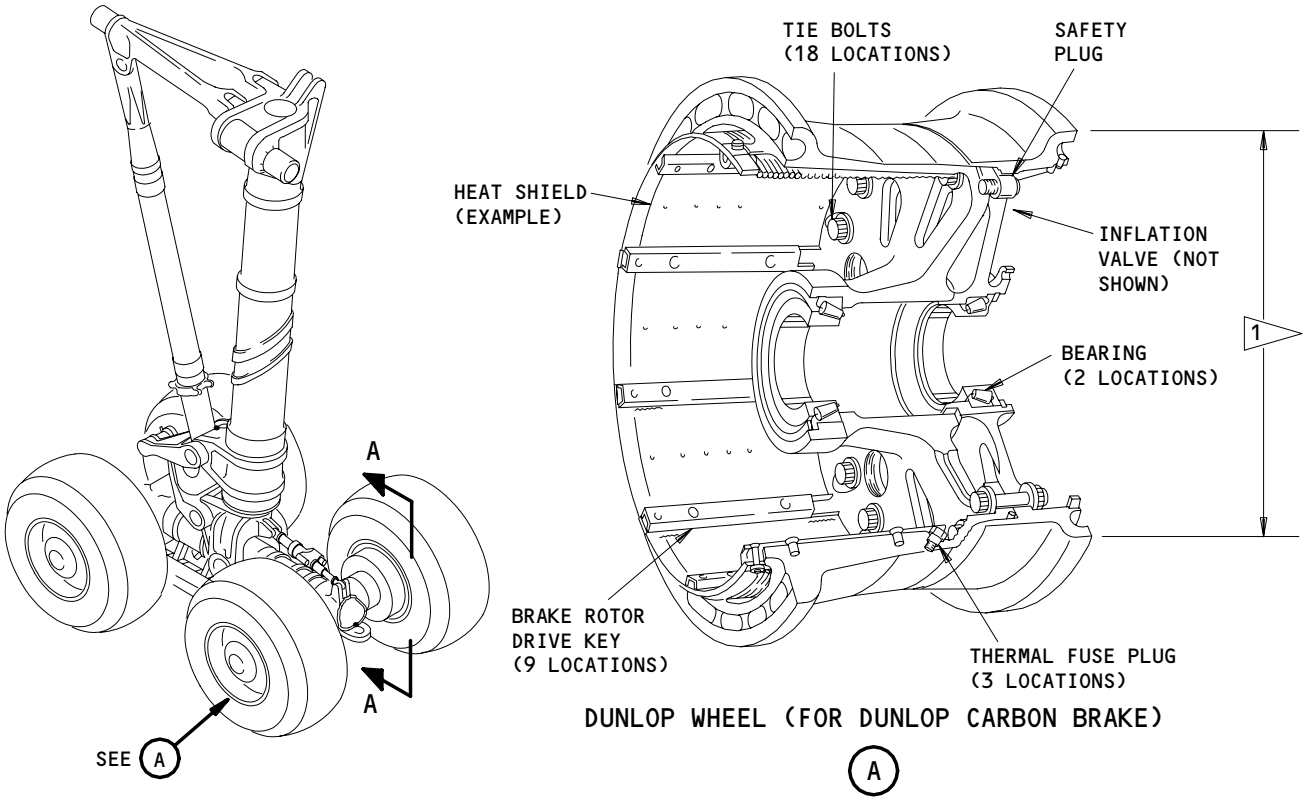
S 216-023
(10) Examine the thermal fuse retainer to make sure that it is tightly attached, and tighten it if it is necessary.

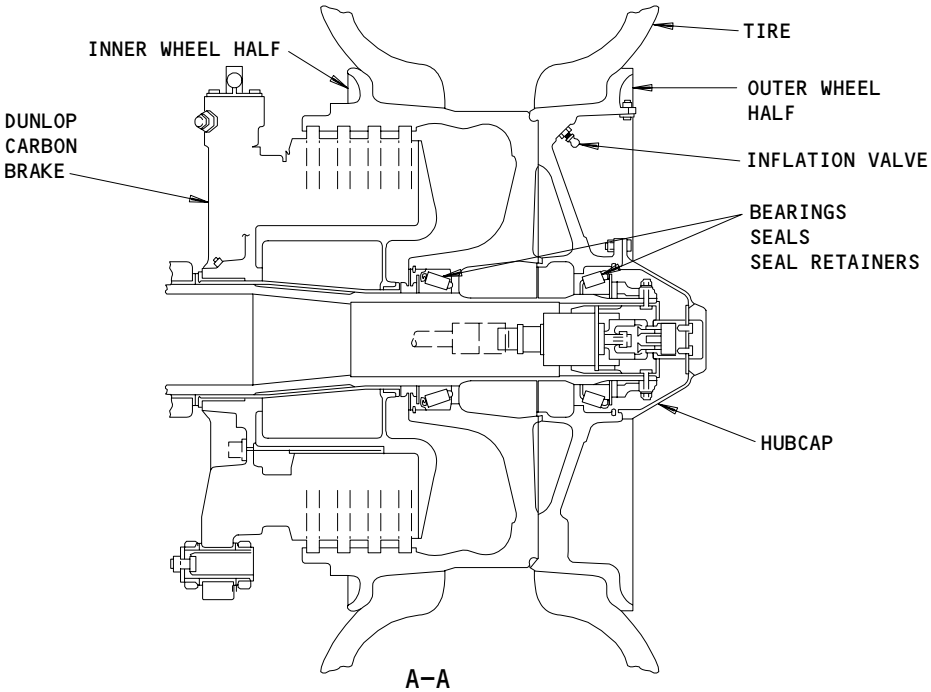
S 216-024
(11) Examine the balance weights to make sure that they are tightly attached.

S 216-025
(12) Examine the axle sleeve and the inboard and outboard bearings for wear.



Main Gear Wheel Check
Figure 601

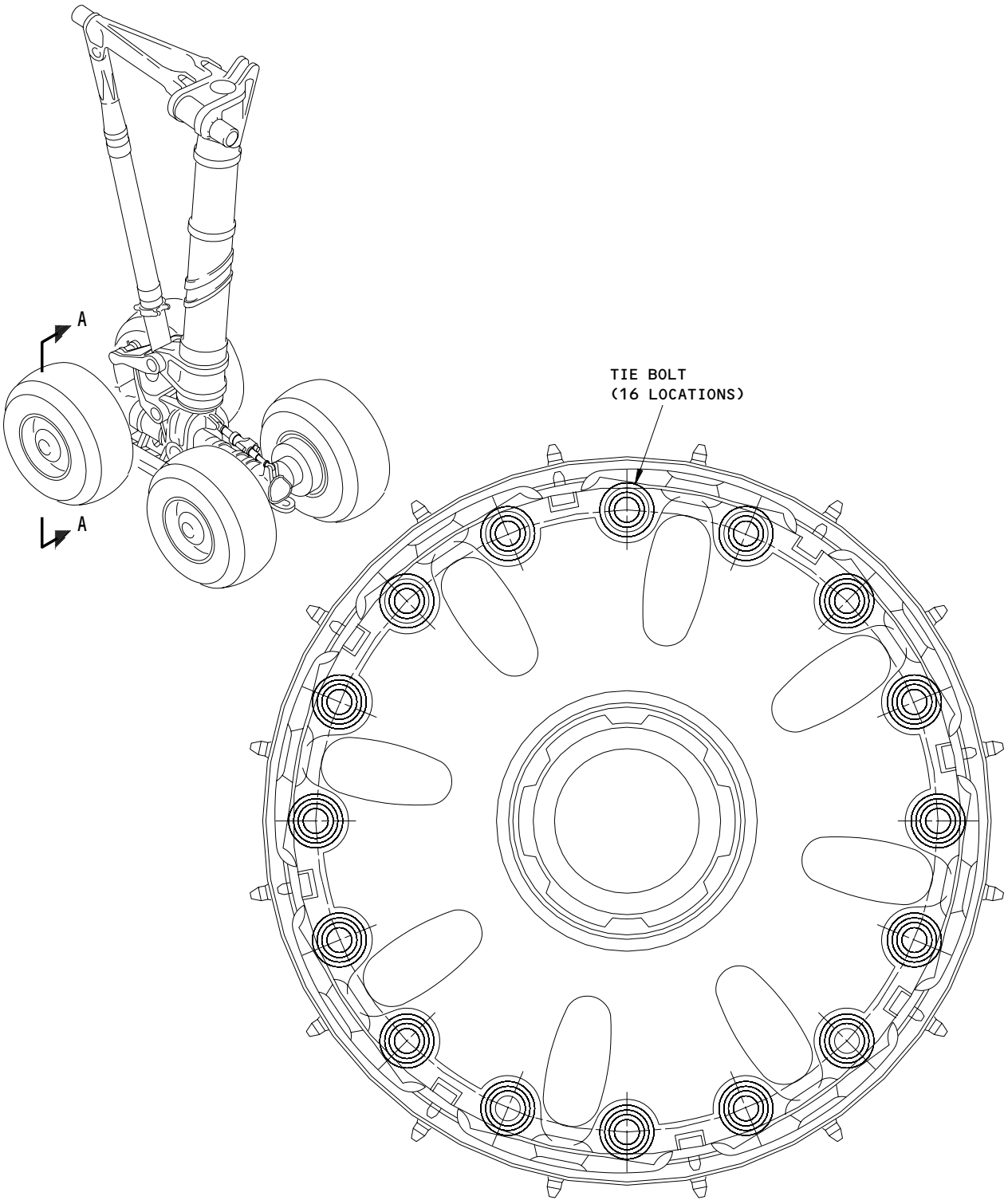




1 MEASURE THE DIAMETER OF EACH WHEEL HALF AT THE OUTER EDGE OF THE WHEEL FLANGE

Main Gear Wheel Check
Figure 601A

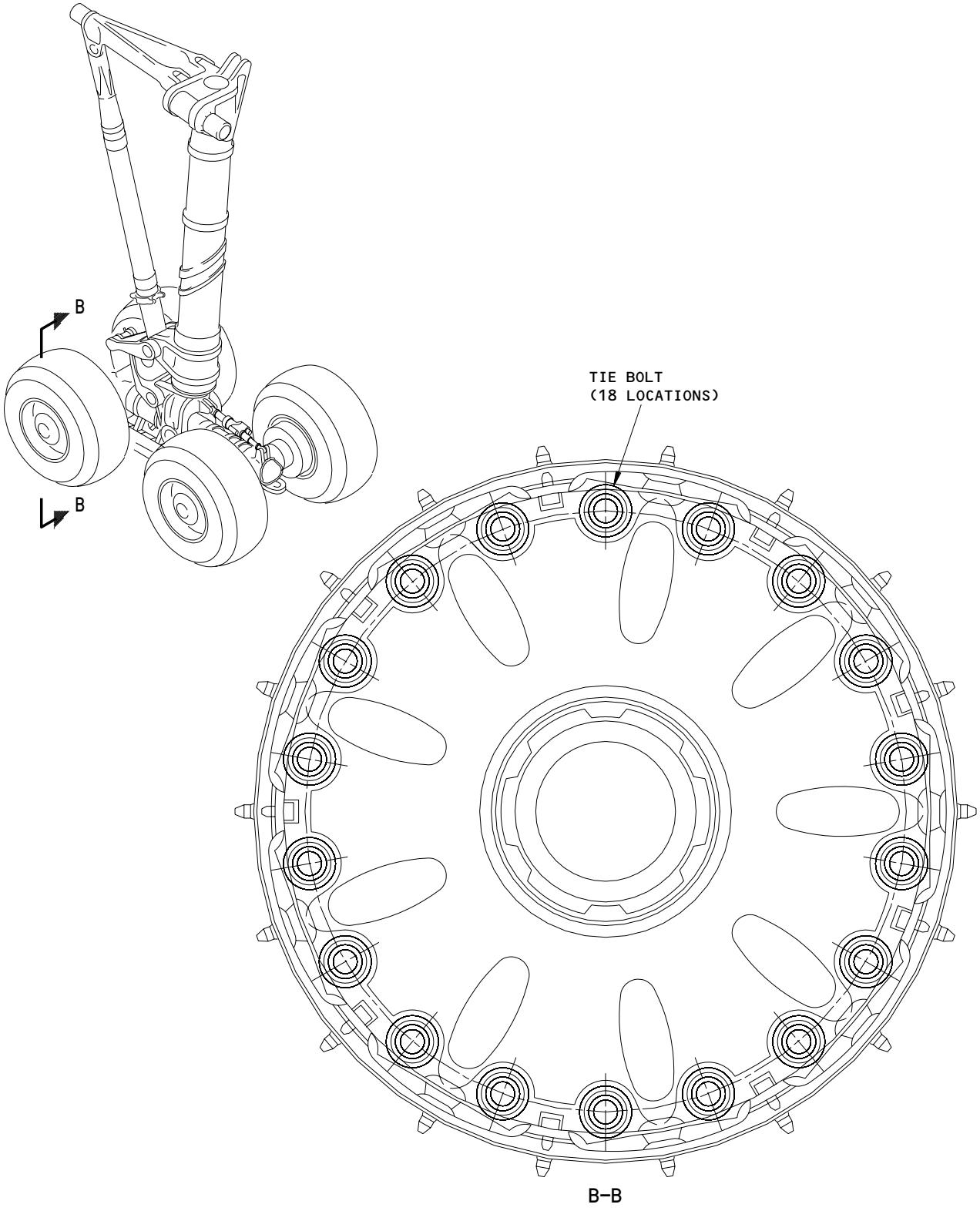
A09155



A-A

Main Gear Wheel Tie Bolt Check
Figure 602 (Sheet 1)

1304424



Main Gear Wheel Tie Bolt Check
Figure 602 (Sheet 2)

TIRES - INSPECTION/CHECK

1. General
   A. This section gives the procedures for an inspection of the landing gear tires when they are installed on the airplane. The data that follows is to be used to add life to the tires, and to decrease maintenance time.
   B. When 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. Tire Inspection
   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. Access
      (1) Location Zones
          711 Nose Landing Gear
          731 Landing Gear Left
          741 Landing Gear Right

   C. Prepare for the Tire Inspection

      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.
   D. Tire Pressure Check

      S 616-004
      (1) Make sure the tire pressure is at the specified limits (AMM 12-15-03/301).
          (a) When a tire is turned when it is flat, all tires on that axle must be removed.
          (b) When a tire is turned at 30 percent or more below the specified pressure, all tires on that axle must be removed.
          (c) When the 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).
   E. Examine the Tires

      S 216-013
      (1) Examine the tires for the presence of contaminants.
          (a) Keep the tires clean of contaminants such as oils, fuels, hydraulic fluids, aircraft cleaning agents, and greases. Cover the tires if these or other potentially harmful chemicals spill or drip on the tires.

(b) Wipe off the tire with a soapy solution if the tire becomes contaminated.
(c) 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 in the tire.

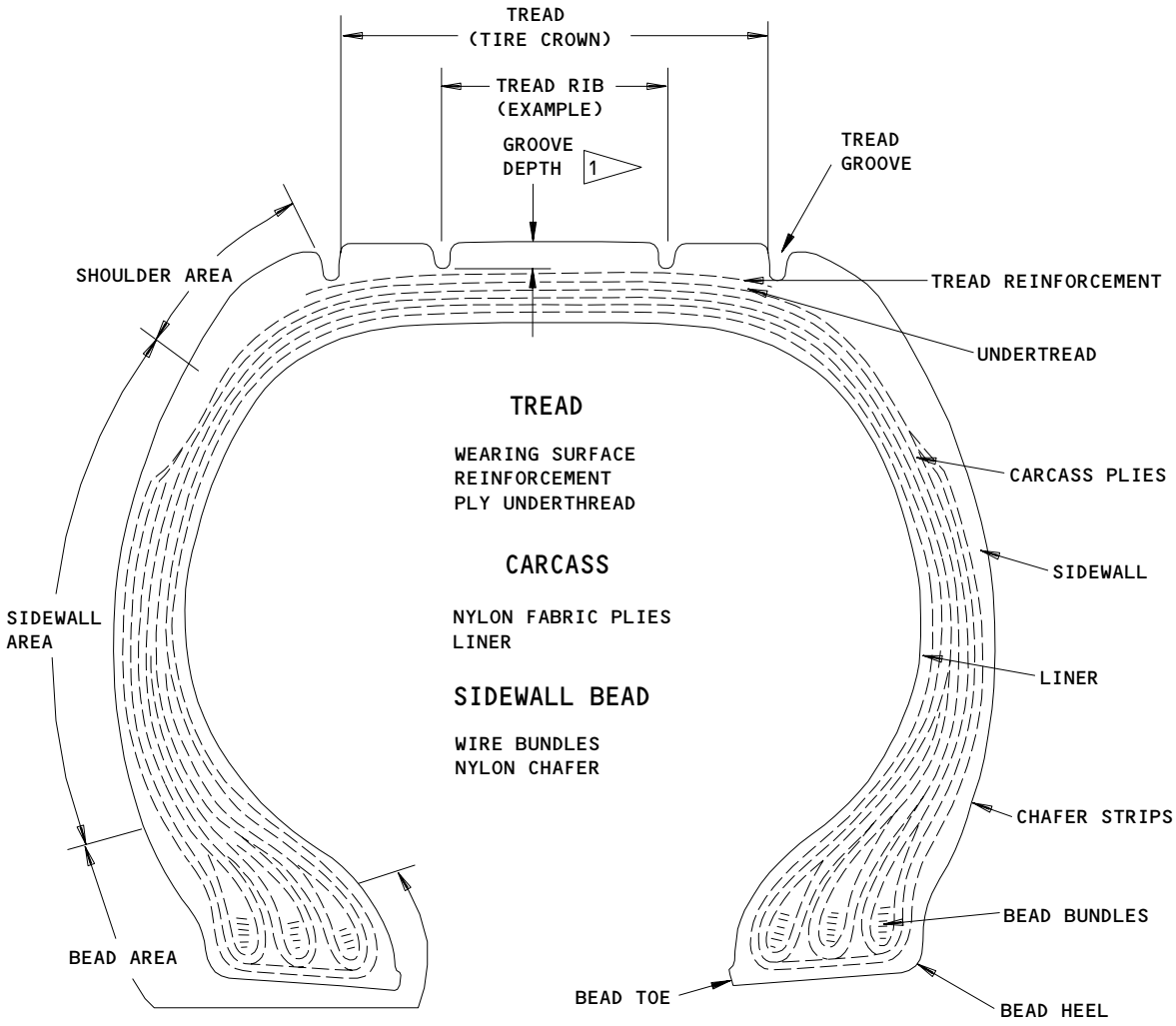
S 216-010
(2) Examine the tires for the wear and damage conditions shown in Fig. 602 and replace the tires that exceed the limits.

NOTE: Refer to Fig. 601 for tire nomenclature and tire construction details.

(a) Examine the tires for air leaks, abrasions, unusual worn areas, cuts and flat spots.
(b) Remove tires that have the conditions that follow:
1) Cuts or weather cracks in the grooves, the tread, shoulders or sidewalls that exceed the limits in Figure 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 tread reinforcement ply (bias) or cut protector (radial).

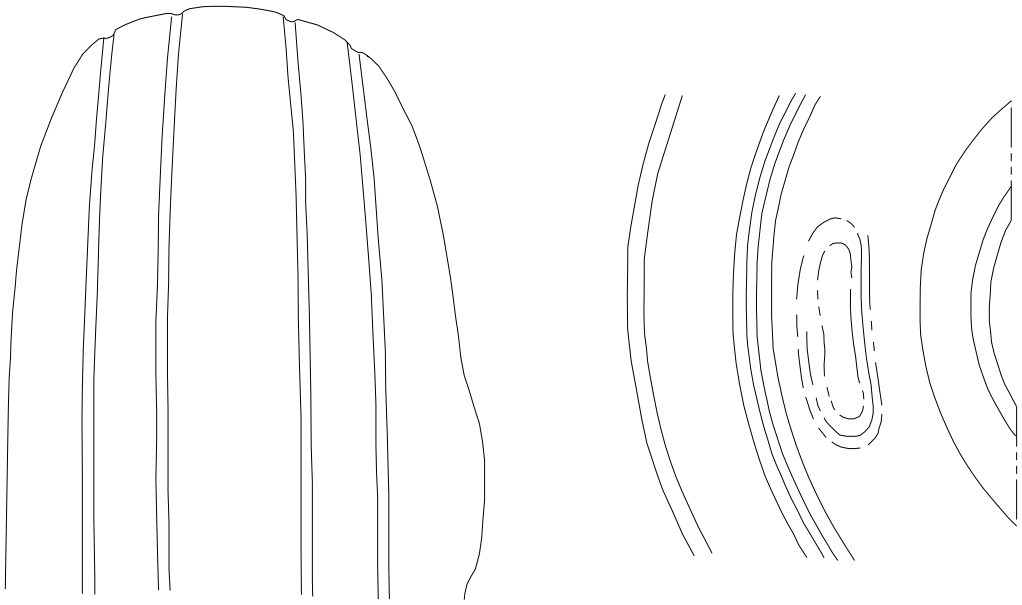
NOTE: If the cut protector (radial) or tread reinforcement ply (bias) shows, the tire should be replaced as soon as possible. If necessary, the tire may be used for a small number of landings until it is replaced. However, you may not be able to retread the tire if you leave the tire in service too long with this condition.

4) Other types of damage that can cause tire problems.
(c) 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.



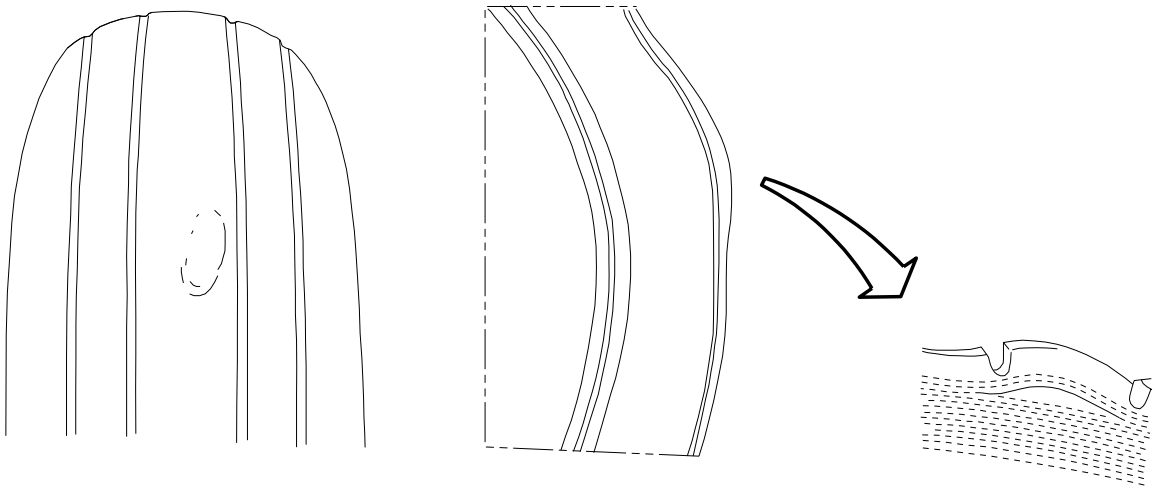
1 MEASURE AT THE CENTER GROOVE(S)
(MOLD SKID DEPTH)

Tire Nomenclature (Example)
Figure 601



SIDEWALL SEPARATION

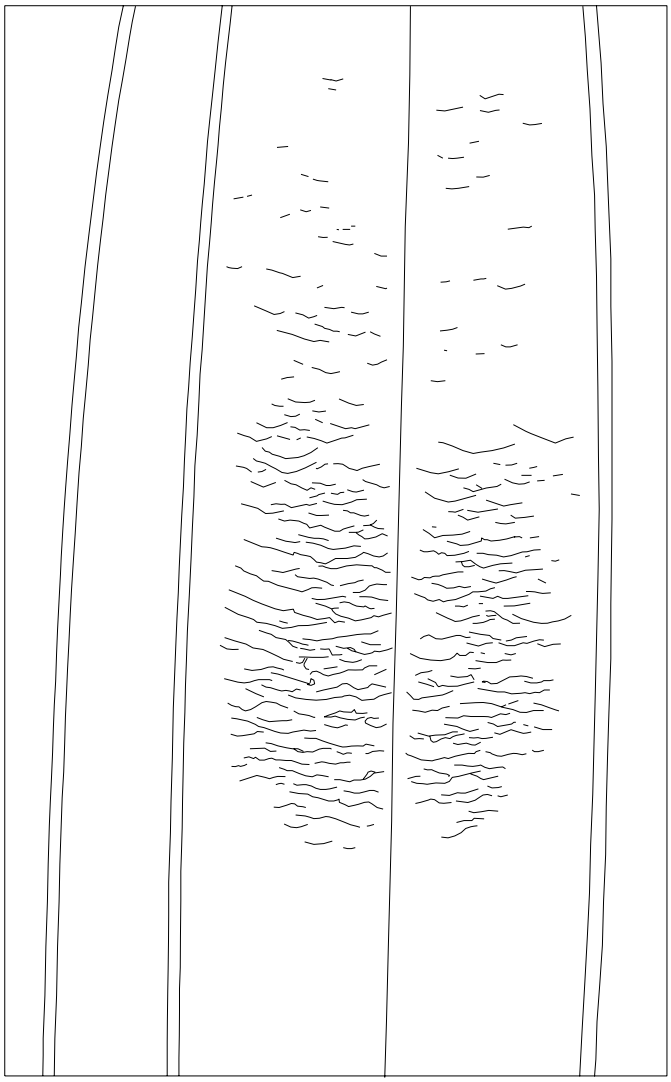
TIRES WITH BLISTERS OR BULGES IN THE SIDEWALL ARE NOT SERVICEABLE.
REMOVE TIRE IMMEDIATELY.



TREAD SEPARATION

TIRES WITH BLISTERS OR BULGES IN THE TREAD ARE NOT SERVICEABLE.
REMOVE TIRE IMMEDIATELY.

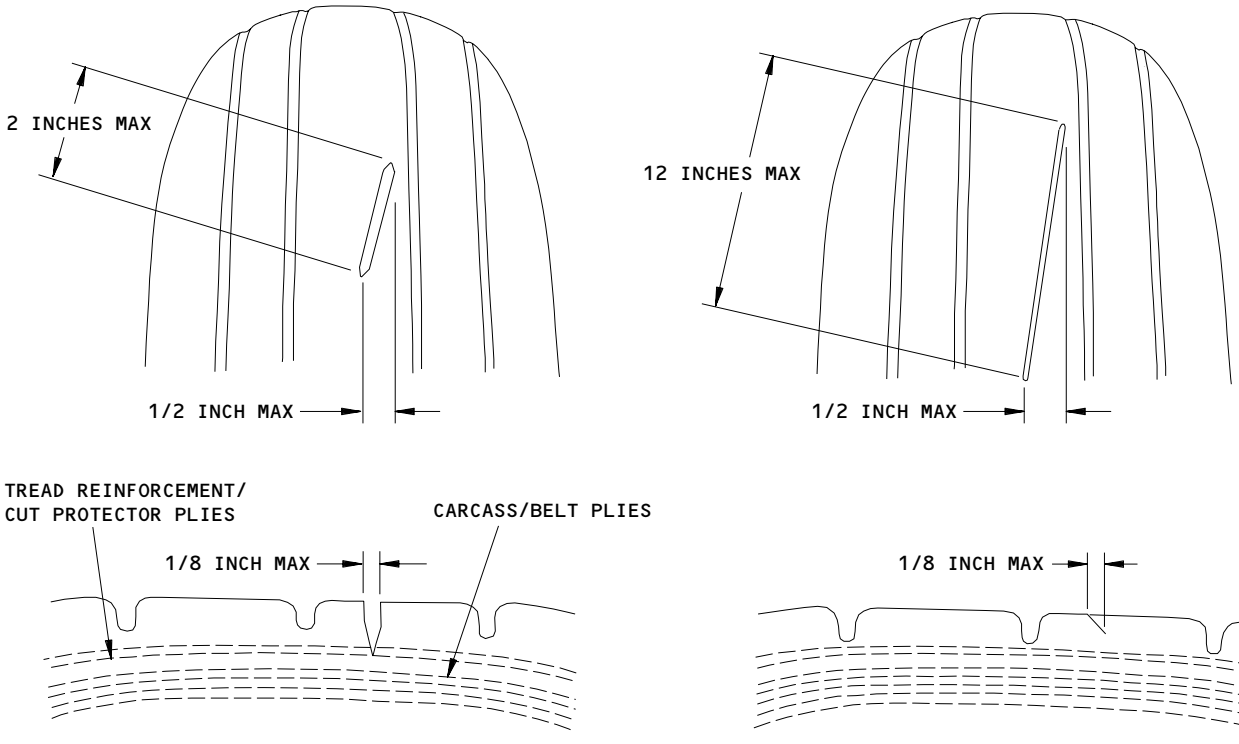
Tire Damage/Wear Conditions
Figure 602 (Sheet 1)



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)

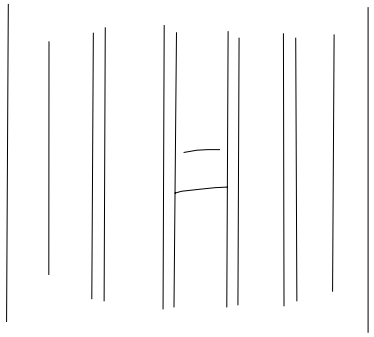


CIRCUMFERENTIAL CUTS

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.

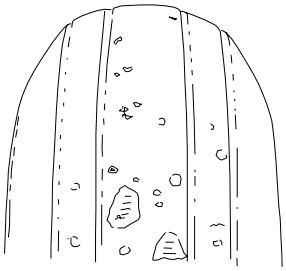


TRANSVERSE CUTS

(A) TRANSVERSE CUTS THAT ARE CONTAINED WITHIN A RIB AND PENETRATE INTO THE CARCASS PLIES (BIAS) OR BELT PLIES (RADIAL) ARE NOT SERVICEABLE.

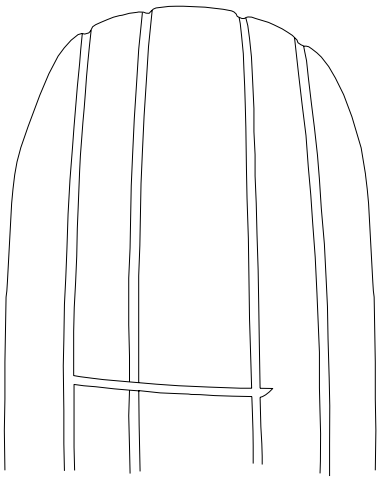
(B) CUTS THAT EXTEND ACROSS A RIB FROM GROOVE TO GROOVE WHICH ARE DEEPER THAN THE GROOVE ARE NOT SERVICEABLE.

Tire Damage/Wear Conditions
Figure 602 (Sheet 3)



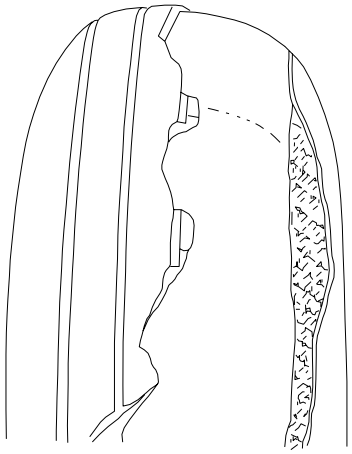
TREAD FLAKING, CHIPPING OR CHUNKING

TIRES WITH FLAKING, CHIPPING OR CHUNKING TREADS ARE NOT SERVICEABLE IF ANY FABRIC IS EXPOSED.



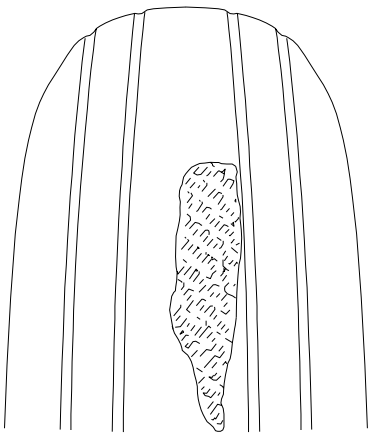
OPEN TREAD SPLICE

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

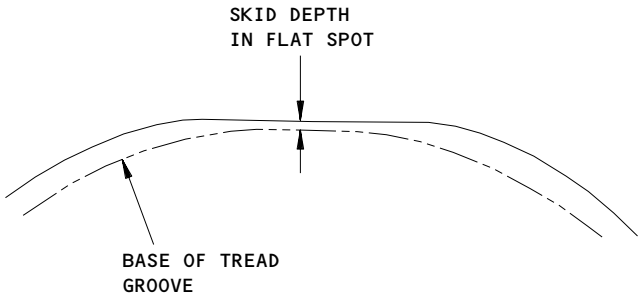
TIRES WITH THROWN TREADS ARE NOT SERVICEABLE.



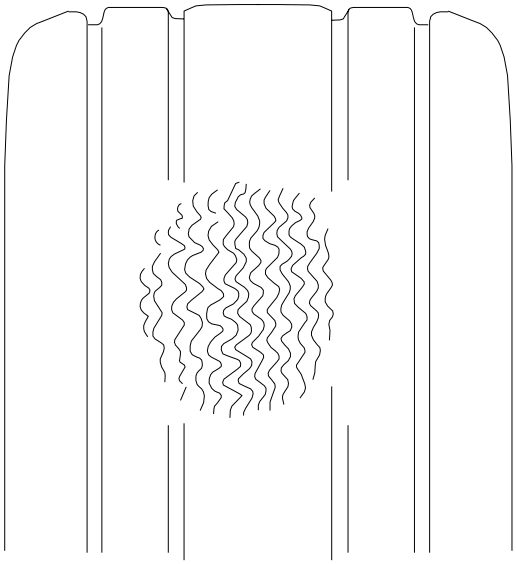
PEELED RIB

TIRES WITH PEELED RIBS ARE NOT SERVICEABLE.

Tire Damage/Wear Conditions
Figure 602 (Sheet 4)

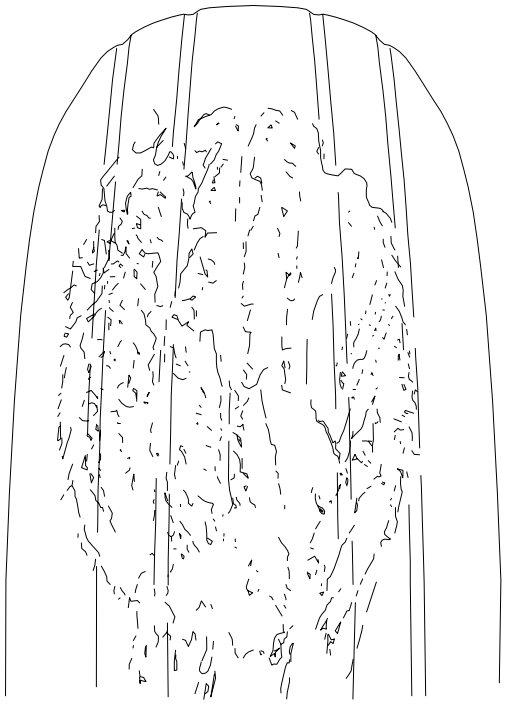


TREAD FLAT SPOTS



FLAT SPOT

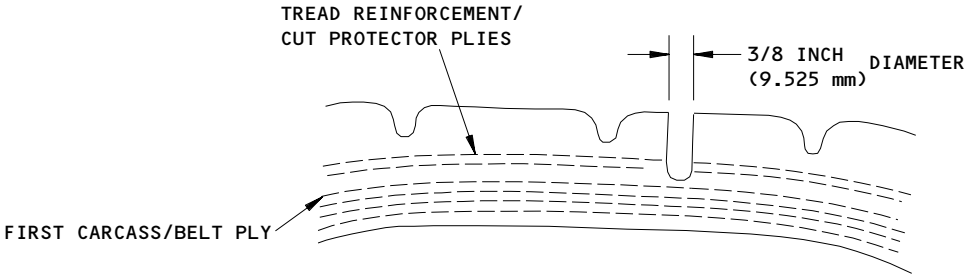
TIRES WITH FLAT SPOTS ARE NOT SERVICEABLE IF THE FLAT SPOT EXPOSES THE TREAD REINFORCEMENT OR CUT PROTECTOR PLIES OR TIRE BALANCE AFFECTED.



ICE SKID BURN/TREAD RUBBER REVERSION

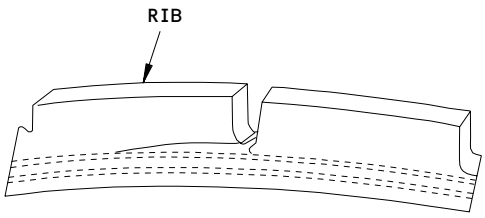
TIRES WITH ICE BURN/TREAD RUBBER REVERSION ARE NOT SERVICEABLE IF THE DAMAGE EXPOSES THE TREAD REINFORCEMENT OR CUT PROTECTOR PLIES OR TIRE BALANCE IS AFFECTED.

Tire Damage/Wear Conditions
Figure 602 (Sheet 5)



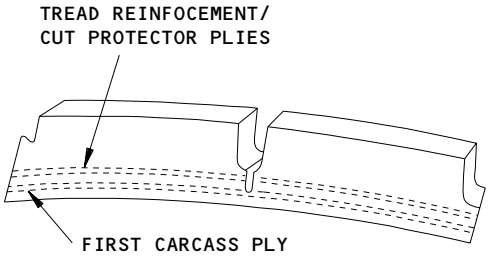
PUNCTURE

TIRES WITH HOLES LARGER THAN 3/8 INCH (9.525 mm) DIAMETER OR HOLES THAT PENETRATE INTO THE CARCASS PLIES (BIAS) OR BELT PLIES (RADIAL) ARE NOT SERVICEABLE.



RIB UNDERCUTS

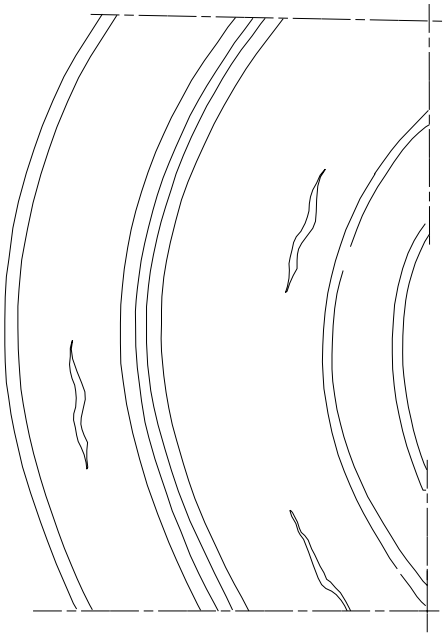
TIRES WITH A CRACK THAT EXTENDS BELOW A TREAD RIB ARE NOT SERVICEABLE.



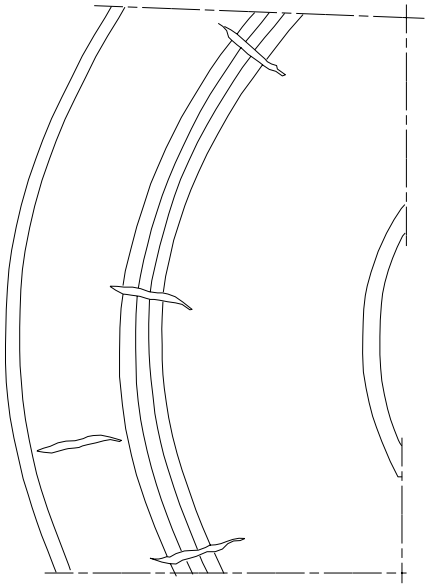
GROOVE CRACKS

TIRES WITH CIRCUMFERENTIAL CRACKS AT THE BOTTOM OF THE GROOVES ARE NOT SERVICEABLE IF THE CRACKS EXPOSE ANY FABRIC.

Tire Damage/Wear Conditions
Figure 602 (Sheet 6)

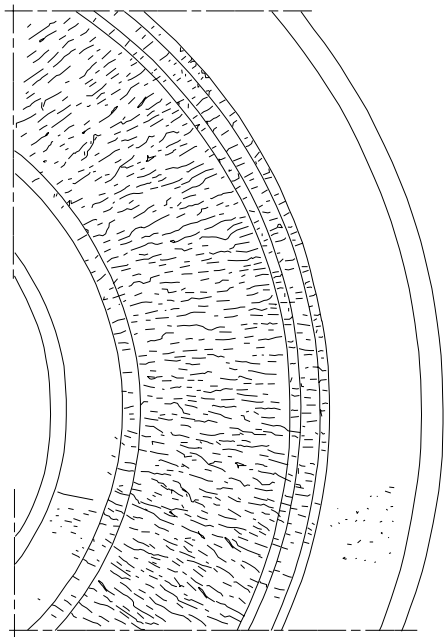


CIRCUMFERENTIAL SIDEWALL CRACKS OR CUTS



RADIAL SIDEWALL CRACKS OR CUTS

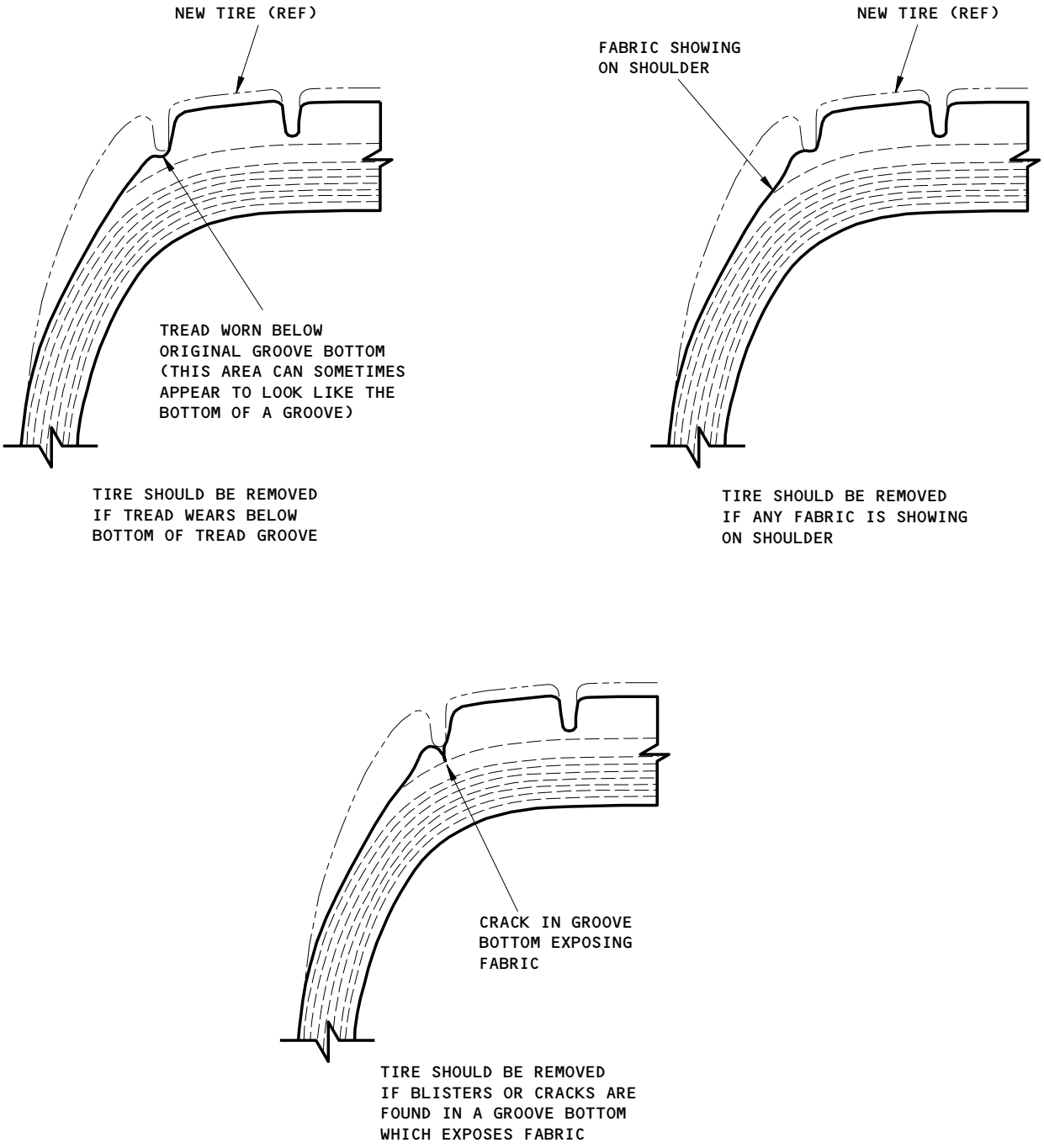
TIRES WITH CIRCUMFERENTIAL OR RADIAL CRACKS OR CUTS IN THE SIDEWALL OR SHOULDER AREA THAT EXPOSE THE FABRIC ARE NOT SERVICEABLE.



OZONE AND/OR WEATHER CRACKS OR CUTS

TIRES WITH CRACKS 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)

3) If the tread belt ply (radial) or carcass ply (bias) shows at any location, the tire is not serviceable and must be replaced.
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.

TASK 32-45-04-216-008

3. Thermal Fuse Inspection

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

B. Access
(1) Location Zones
711 Nose Landing Gear
731 Landing Gear Left
741 Landing Gear Right

C. Examine the Thermal Fuse

S 216-007

(1) The steps that follow are the specifications for the thermal fuse conditions:
(a) When there is a decrease in the pressure because the wheel thermal fuse melted or extruded, remove the tire because it is not serviceable.

NOTE: Also, examine all other main gear tire-wheels for signs of melted, extruded, or leaking thermal fuses (specially at the tire-wheel positions with hot brakes).

(b) When an inspection shows that a wheel thermal fuse is not fully melted (extruded) but it does not leak, do the step that follows:
1) Examine the wheel for leaks before each flight until the tire/wheel assembly is not serviceable and is removed.
(c) When you remove a tire/wheel assembly because of the steps that follow, put a tag on the assembly and tell why it was removed:
1) The wheel turned on the runway without a tire
2) Each tire on the same axle is a flat tire, and the tires were turned on a runway

3) The wheel shows signs of a melted, an extruded, or a wheel thermal fuse that leaks.

NOSE WHEEL SPIN BRAKE - MAINTENANCE PRACTICES

1. General
   A. This procedure contains three tasks. The first task removes the nose wheel spin brake. The second task installs the nose wheel spin brake. The third task is an inspection for allowable wear of the brake pad and the toe piece on the spin brake and for cracks in aluminum spring arms on aluminum spin brake assemblies.

TASK 32-45-05-002-001

2. Nose Wheel Spin Brake - Removal (Fig. 201, Fig. 202)
   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
          115 NLG Wheel Well (Left)
          116 NLG Wheel Well (Right)

   C. Procedure

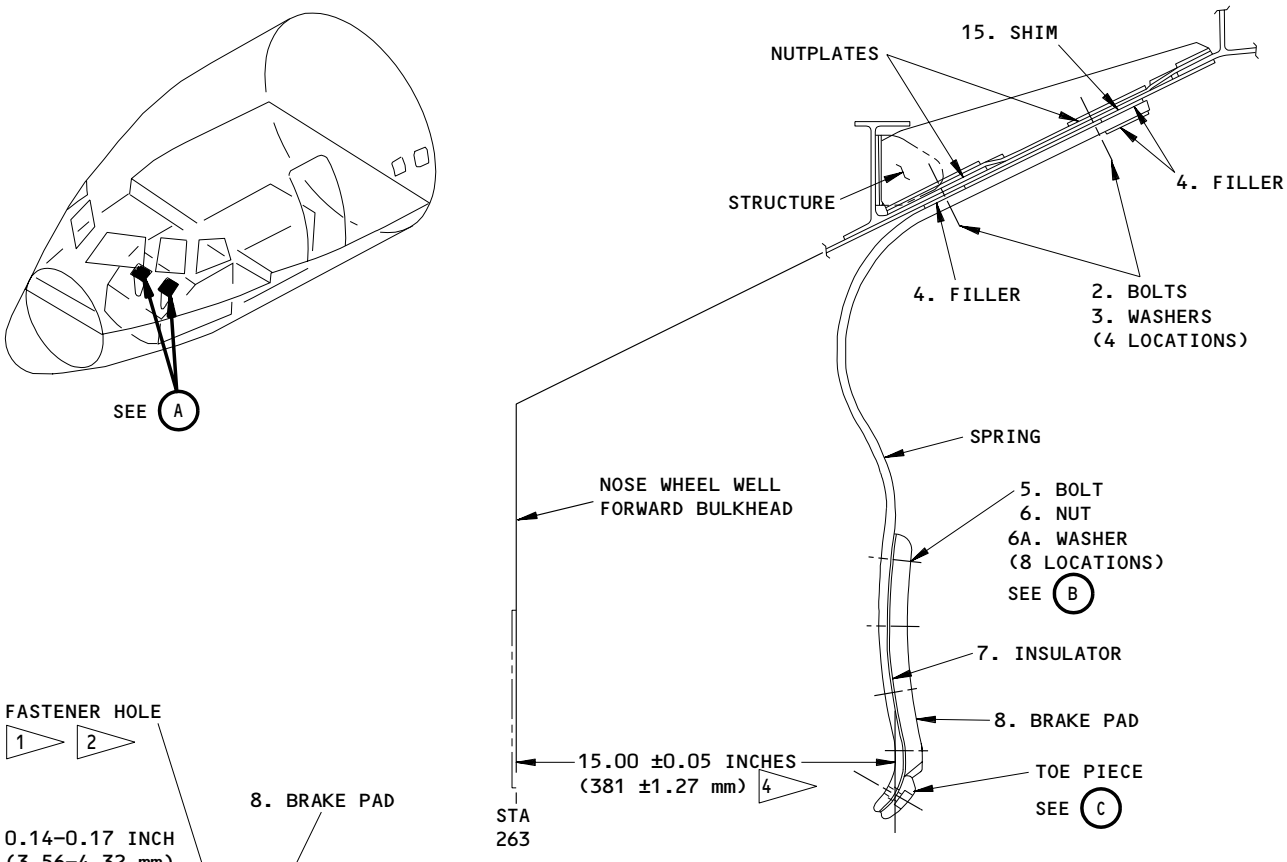
      S 492-003
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

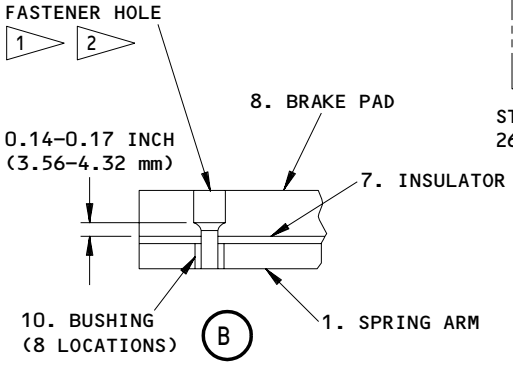
      S 492-004

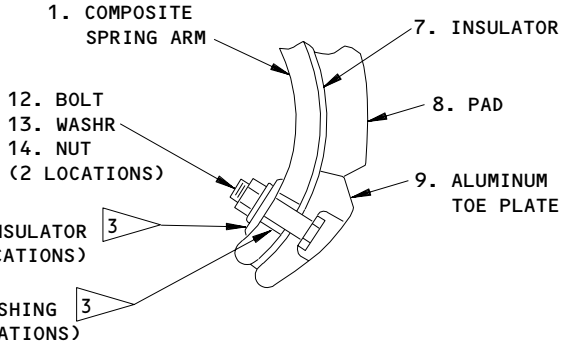
      WARNING: OBEY THE INSTALLATION PROCEDURE FOR THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

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

      S 012-005
      (3) Find the spin brake on the top surface of the nose gear wheel well.







1 DRILL A 0.203–0.207 INCH (5.256–5.258 mm) DIAMETER HOLE (8 LOCATIONS) THROUGH THE BRAKE PAD. USE THE HOLES IN THE SPRING ARM AS GUIDES. CLAMP UP THE PARTS WITHIN 0.06 INCH (1.524 mm) PRIOR TO DRILLING THE HOLES.

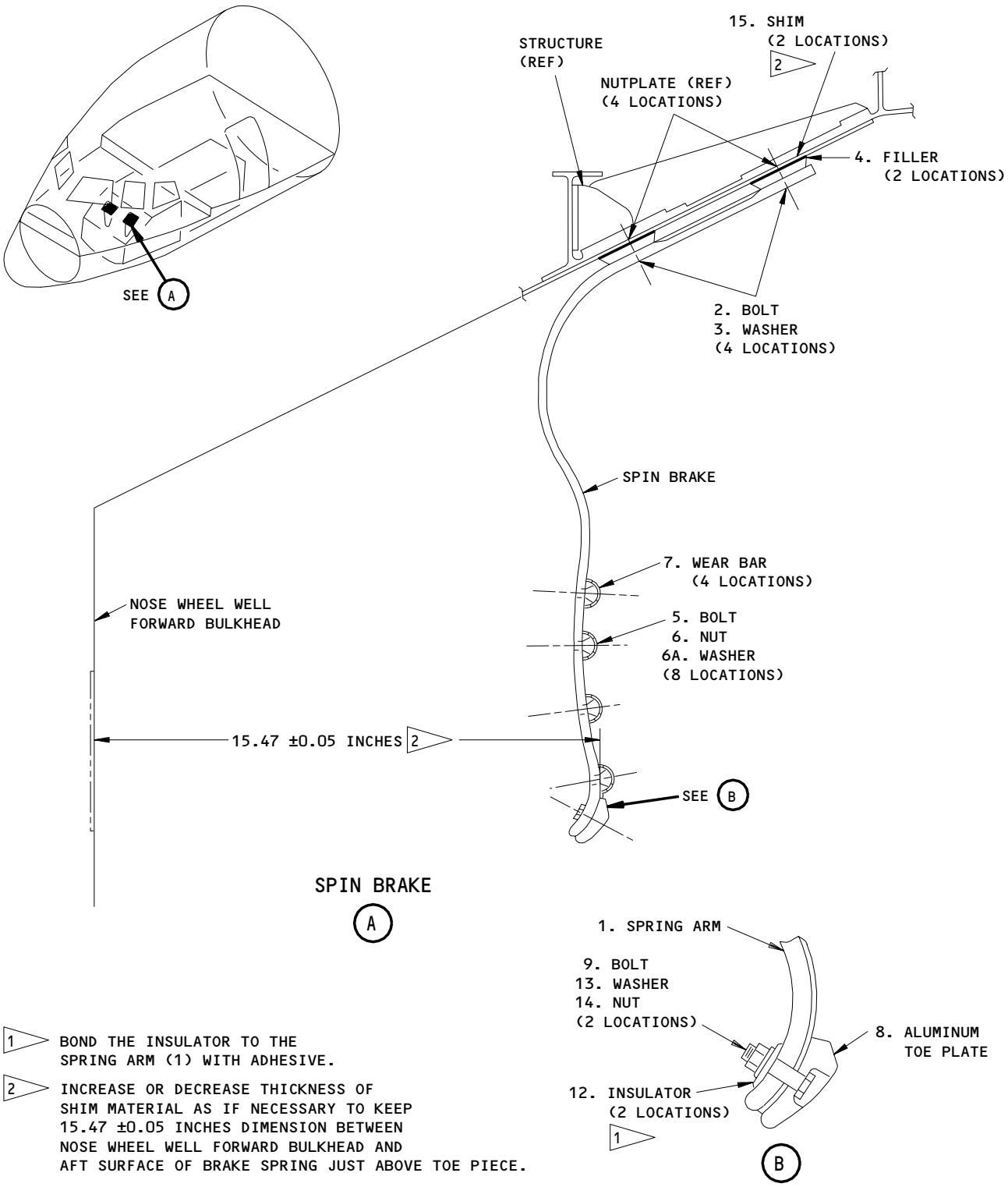
2 COUNTERBORE AND COUNTERSINK (8 LOCATIONS) IN THE PAD 0.375 INCH (9.525 mm) DIAMETER TO THE DEPTH SHOWN. COUNTERSINK 100 DEGREES

3 BOND THE INSULATOR TO THE COMPOSITE SPRING ARM (1) WITH ADHESIVE.

4 INCREASE OR DECREASE THICKNESS OF SHIM MATERIAL AS NECESSARY TO KEEP 15.00 ±0.05 INCHES (381 ±1.27 mm) DIMENSION BETWEEN NOSE WHEEL WELL FORWARD BULKHEAD AT STA 263.00 AND AFT SURFACE OF BRAKE SPRING JUST ABOVE TOE PIECE.

Composite Nose Wheel Spin Brake Installation
Figure 201

55602



Nose Wheel Spin Brake Installation
Figure 202

S 022-006

(4) Remove the four bolts that attach the spring brake to the top surface of the wheel well and remove the spin brake.

S 022-007

(5) If you removed the spin brake to replace the wear pad/bars, or the toe piece, do these steps:
   (a) Do a check of the wear pad/bars, and the toe piece for permitted wear.
   (b) Remove the fasteners and remove the toe piece if the wear exceeds the permitted limits.
   (c) Remove the fasteners and remove the wear pad/bars, if the wear exceeds the permitted limits.

TASK 32-45-05-402-008

3. Nose Wheel Spin Brake - Installation
   A. Consumable Materials
      (1) A120047 Sealant, BMS 5-95
      (2) A00027 Adhesive - BAC5010, Type 60
   B. Parts
      (1) SPIN BRAKES WITH BRAKE PADS MADE OF COMPOSITE MATERIAL; Use the table that follows:

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
201	1	Composite Spring Arm	32-45-05	01	15

*[1] Items 55j and 60j insulator and brake pad are spares replacements for items 55 and 60. The 60j brake pad installed on follow-on airplanes is made of non-asbestos material which is preferred.

(2) SPIN BRAKES WITH ALUMINUM WEAR BARS;
Use the table that follows:

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
202	1	CRES & Aluminum Spring Arms	32-45-05	01A	15

*[1] BACB30NM5K16

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
115 NLG Wheel Well (Left)
116 NLG Wheel Well (Right)

E. Procedure

S 422-009

WARNING: YOU MUST WEAR PROTECTIVE TYPE RESPIRATORS WHEN YOU DO MAINTENANCE ON THE SPIN BRAKES OR WHEN YOU ARE NEAR TO WHERE MAINTENANCE IS DONE ON THE SPIN BRAKES. ON SPIN BRAKES THAT HAVE BRAKE PADS MADE OF COMPOSITE MATERIAL, THE BRAKE PADS POSSIBLY CONTAIN ASBESTOS FIBERS OR DUST WHICH CAN BE DANGEROUS IF IT IS INHALED.

(1) AIRPLANES WITH BRAKE PADS MADE OF COMPOSITE MATERIAL;
If the brake pad was removed from the spring arm, install a replacement pad with countersunk fasteners (Fig. 201).

S 422-011
(2) AIRPLANES WITH ALUMINUM WEAR BARS ON ALUMINUM OR CRES BRAKE;
If you removed one or more wear bars, install each new wear bar with fasteners (two locations) as shown in Fig. 202.

S 422-017
(3) AIRPLANES WITH ALUMINUM WEAR BARS ON ALUMINUM OR CRES BRAKE;
If you removed the toe piece from the spring arm, install the new toe piece as shown in Fig. 202, Detail B.

S 422-013
(4) SPIN BRAKES WITH COMPOSITE MATERIAL BRAKE PADS;
Install the spin brake as follows (Fig. 201):
(a) Loosely install the four bolts (2) and washers (3) to hold the spin brake in the installed position.

(b) See if the aft surface of the spin brake is 14.95 to 15.05 inches to STA 263 as shown in Fig. 202.
(c) If you do not have this dimension, remove shim material necessary to get this dimension.
1) Apply wet sealant to the surfaces of the shim material that touch.
2) Install the filler to the bottom of the shim.
(d) Remove the bolts (2) (four locations).
(e) Apply sealant to the bolts (2).
(f) Apply a faying surface seal with sealant on the surfaces of the composite spring arm (1) that touch the structure and the fillers.
(g) Install the bolts (2) and washers (3), four locations.
(h) Apply wet sealant to the bolt heads and the washers.

S 422-018
(5) CRES AND ALUMINUM SPIN BRAKES WITH ALUMINUM WEAR BARS;
Install the spin brake as follows (Fig. 202):
(a) Loosely install the four bolts (2) and washers (3) to hold the spin brake in the installed position.
(b) See if the aft surface of the spin brake is 15.42 to 15.52 inches from the nose wheel well forward bulkhead as shown in Fig. 202.
(c) If you do not have this dimension remove shim material (15) or add shim material (15) as necessary to get this dimension.
1) Apply wet sealant to the surfaces of the shim material that touch.
2) Install the filler (4) to the bottom of the shim (15).
(d) Remove the bolts (2) (four locations).
(e) Apply sealant to the bolts (2).
(f) Apply a faying surface seal with sealant on the surfaces of the spring arm (1) that touch the structure and the fillers (4).
(g) Install the bolts (2) and washers (3), four locations.
(h) Apply wet sealant to the bolt heads and the washers.

TASK 32-45-05-212-014
4. Nose Wheel Spin Brake - Inspection (Fig. 201)
A. Access
(1) Location Zones
115 NLG Wheel Well (Left)
116 NLG Wheel Well (Right)

B. Procedure

S 212-015
(1) SPIN BRAKES WITH COMPOSITE MATERIAL WEAR PAD;
Examine the wear pad for wear and replace it the upper surface of the pad is 1/32 inch or less above the countersunk fastener head. Examine the toe piece for wear and replace it if the upper surface of the toe piece is 1/32 inch or less above the countersunk fastener head.

S 212-016

(2) CRES AND ALUMINUM SPIN BRAKES WITH ALUMINUM WEAR BARS;
Examine the wear bars for wear and replace them if the upper surface of the wear bar is 1/32 inch or less above the bolt head.
Examine the toe piece for wear and replace it if the upper surface of the toe piece is 1/32 inch or less above the countersunk fastener head.

S 212-028

CAUTION: MAKE SURE YOU REPLACE ANY ALUMINUM SPRING ARM THAT HAS A CRACK IN A ALUMINUM SPIN BRAKE ASSEMBLY. A CRACK IN AN ALUMINUM SPRING ARM CAN CAUSE A SEPARATION OF THE ALUMINUM SPRING ARM FROM THE AIRPLANE.

(3) ALUMINUM SPIN BRAKES WITH ALUMINUM SPRING ARM;
For a aluminum spin brake assembly with an aluminum spring arm, do the following inspection:
(a) Inspect the aluminum spring arm for any cracks.
(b) Replace an aluminum spring arm that has any cracks with a CRES spring arm or a new aluminum spring arm.

NOTE: The CRES spring arm is recommended as the replacement for the aluminum spring arm that has any cracks.

(c) A new composite spring brake assembly can be used to replace an aluminum spin brake assembly.

NOTE: The composite spin brake assembly produces flight deck noise and a aluminum spin brake assembly with a CRES spring arm is recommended.

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.

TASK 32-45-08-004-001

2. Remove the Tire Inflation Valve (Fig. 401)
   A. Equipment
      (1) Tire Deflation Tool - Saf-Cor, No. 968RB
   B. References
      (1) 07-11-03/201, Jack Airplane Axle
      (2) 12-15-03/301, Tires - Servicing
      (3) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          711 Nose Landing Gear
          731 Landing Gear Left
          741 Landing Gear Right

   D. Procedure

      S 494-002
      (1) Make sure that the landing gear downlocks are installed (Ref 32-00-20).

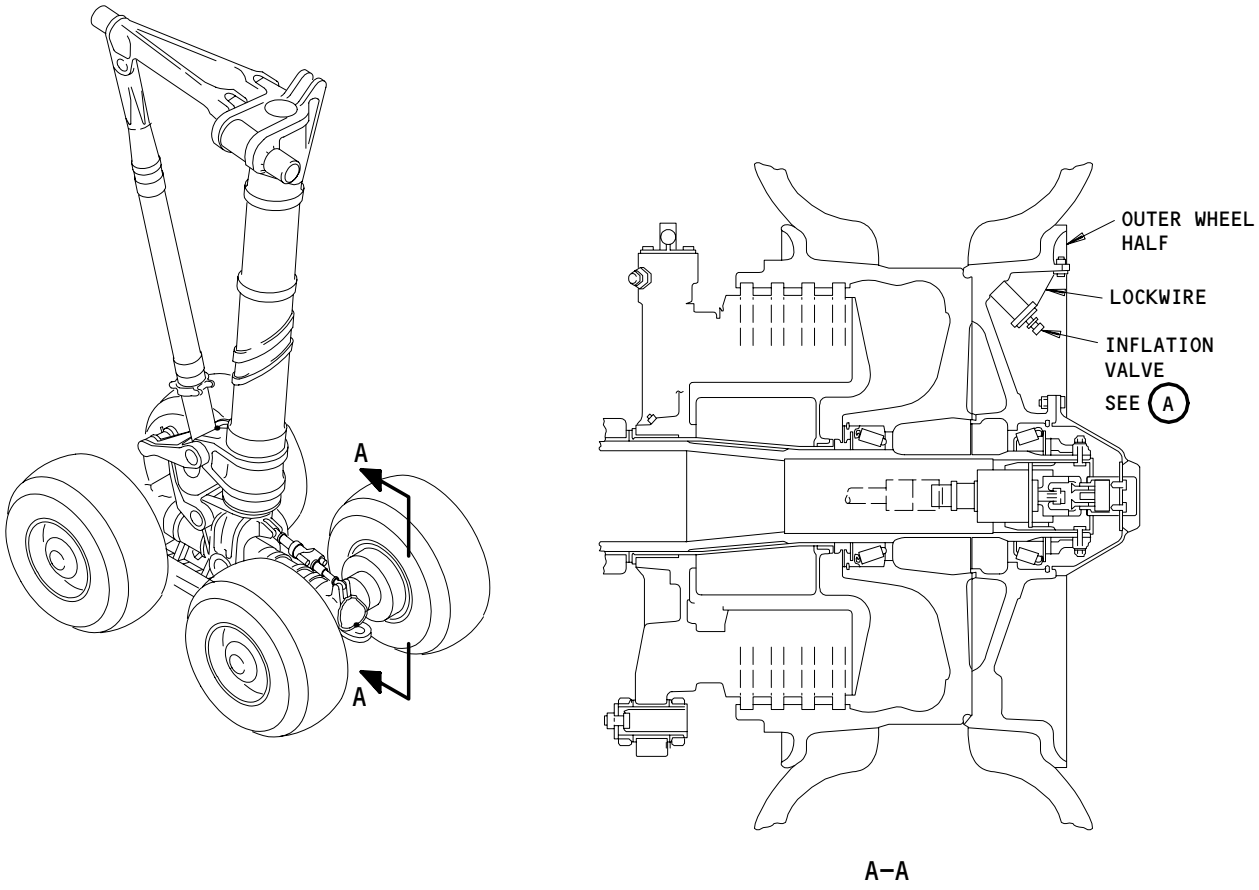
      S 494-003
      (2) Make sure that chocks are installed on the wheels.

      S 584-004
      (3) Raise the axle on a jack so that there is clearance between the wheel and tire assembly and the ground (Ref 07-11-03).

      S 034-005

      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.

      (4) Deflate the tire.



Tire Inflation Valve Installation
Figure 401

S 034-006
(5) Remove lockwire from the valve.

S 024-007
(6) Turn the valve counterclockwise until the threads are disengaged from the wheel and remove the valve.

TASK 32-45-08-404-008

3. Install the Tire Inflation Valve (Fig. 401)
   A. Consumable Materials
      (1) D00011 Silicone Compound - VV-D-1078
   B. References
      (1) 07-11-03/201, Jack Airplane Axle
      (2) 12-15-03/301, Tires - Servicing
      (3) 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          711 Nose Landing Gear
          731 Landing Gear Left
          741 Landing Gear Right

   D. Procedure

S 644-009
(1) Lightly lubricate a new packing with silicone compound.

S 424-012
(2) Install the packing on the valve stem.

S 424-011
(3) Install the inflation valve in the wheel and tighten to 150-200 pound-inches.

S 424-013
(4) Install lockwire between the valve and the balance weight fastener.

S 614-014
(5) Inflate the tire (Ref 12-15-03).

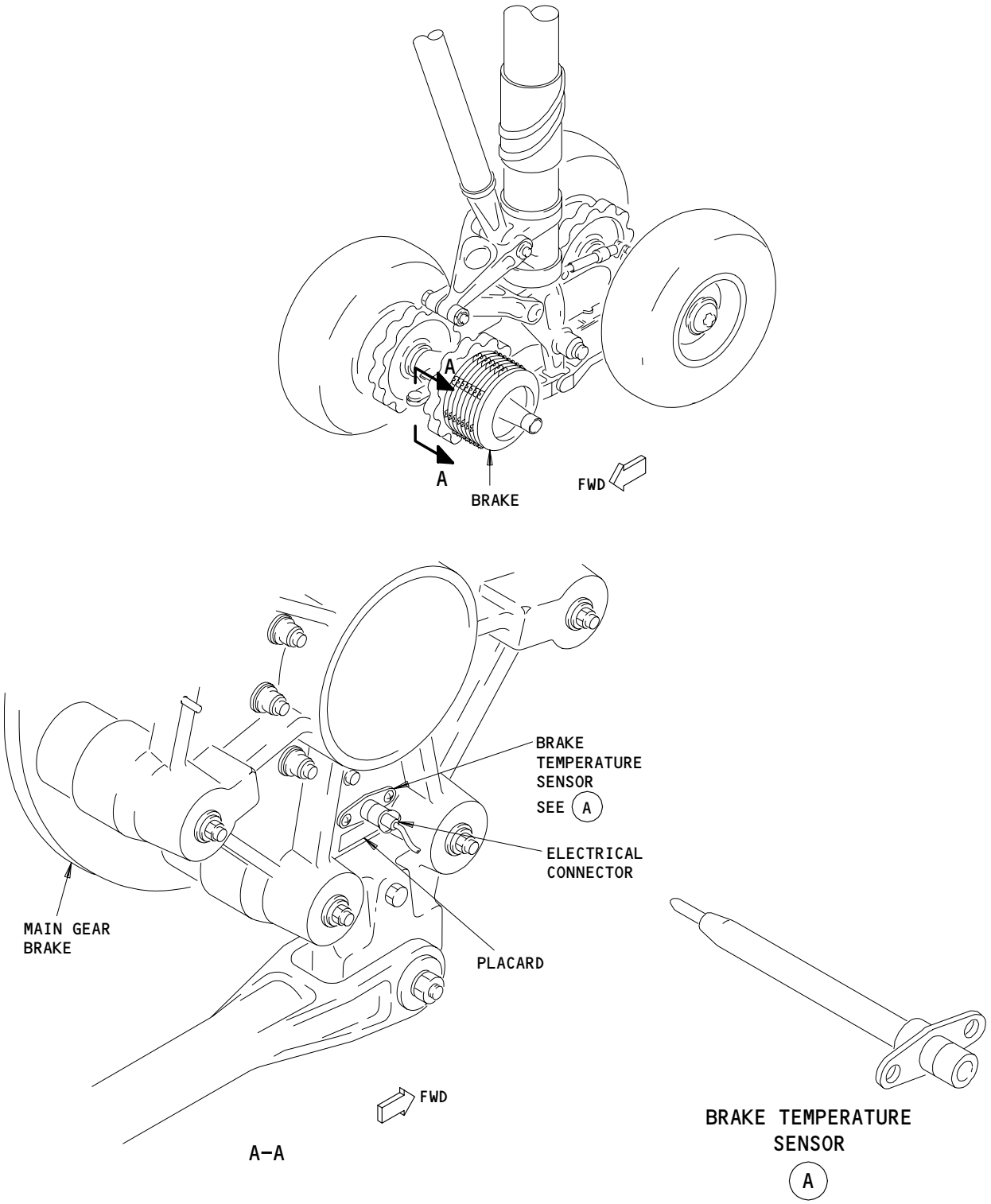
S 794-015
(6) Do a check of the valve installation for gas leaks.

S 584-016
(7) Lower the wheel on the jack (Ref 07-11-03).

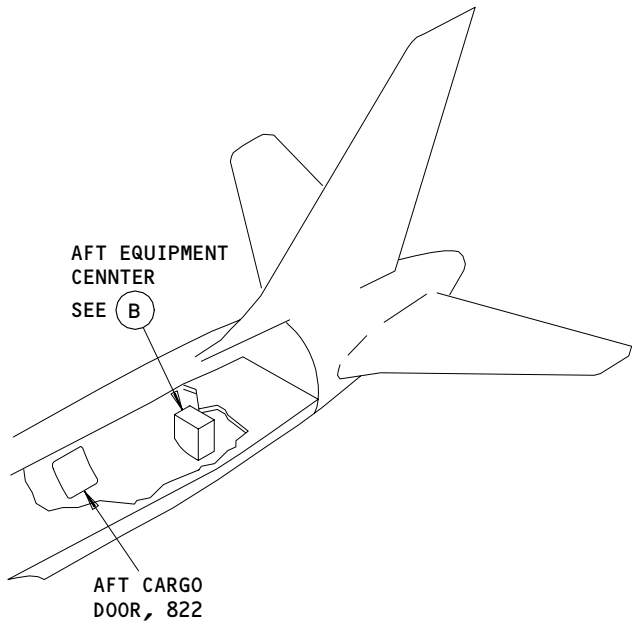
S 584-017
(8) Remove the jack (Ref 07-11-03).

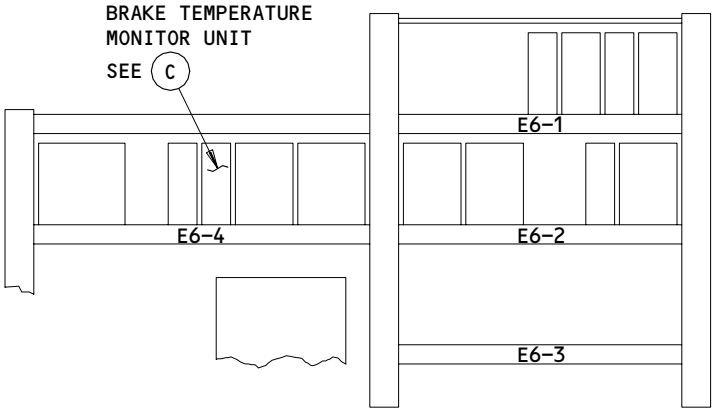
BRAKE TEMPERATURE MONITORING SYSTEM - DESCRIPTION AND OPERATION

1. General
   A. The brake temperature monitoring system indicates to the captain and first officer the actual temperatures 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. The two computers are connected in parallel for redundancy.
   C. The individual brake temperatures are displayed 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 BITE features. The unit also compensates for ambient temperature, at the negative input of the sensor.
2. Component Details
   A. Brake Sensors (Fig. 1)
      (1) One sensor is installed in each of the 8 main landing gear brakes. 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 receptacles 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. 1)
      (1) The monitor unit is located in the E6 Aft Equipment Center. 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.
      (2) The monitor unit senses brake temperature signals from the sensors, and produces outputs which activate various temperature indicators on the airplane.
         (a) Continuous brake temperature signals are provided to the EICAS system for display on the flight compartment P2 panel.
            1) Temperature values range from 0 to 9 on the display, corresponding to a brake temperature range of 111 to 866°C (232 to 1591°F).

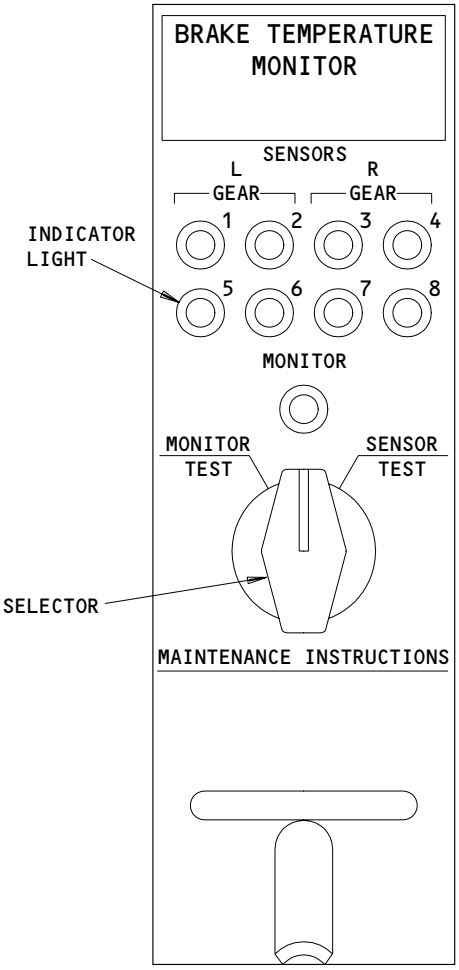


Brake Temperature System Component Location
Figure 1 (Sheet 1)





AFT EQUIPMENT CENTER
(E6 RACK)
B



BRAKE TEMPERATURE
MONITOR UNIT
C

Brake Temperature Monitoring System Component Location
Figure 1 (Sheet 2)

2) The indicated numbers are displayed with a surrounding box. Either or both the digits and boxes can be shown in blue or white color, dependent on the temperature condition. The color blue indicates a normal condition and white either a threshold or high temperature condition.

(b) If the temperature rises above 482°C (900°F), the monitor energizes the 'BRAKE TEMP' light in the flight compartment (Fig. 2). This indication will clear when the brake temperature reduces to 404°C (759°F) or below.

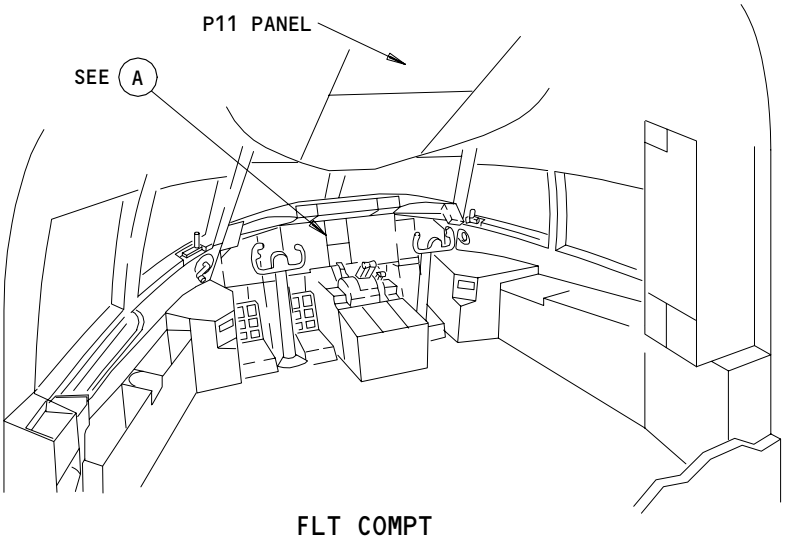
(3) The monitor unit has its own Built-In Test Equipment (BITE) circuits self contained for testing the brake temperature system. A monitor test and sensor test are included and are defined as follows:

(a) By selecting the MONITOR TEST position with the selector switch of the monitor unit (Fig. 1), 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 indicator will illuminate. In this test the sensors themselves are not a part of the circuit that is tested.

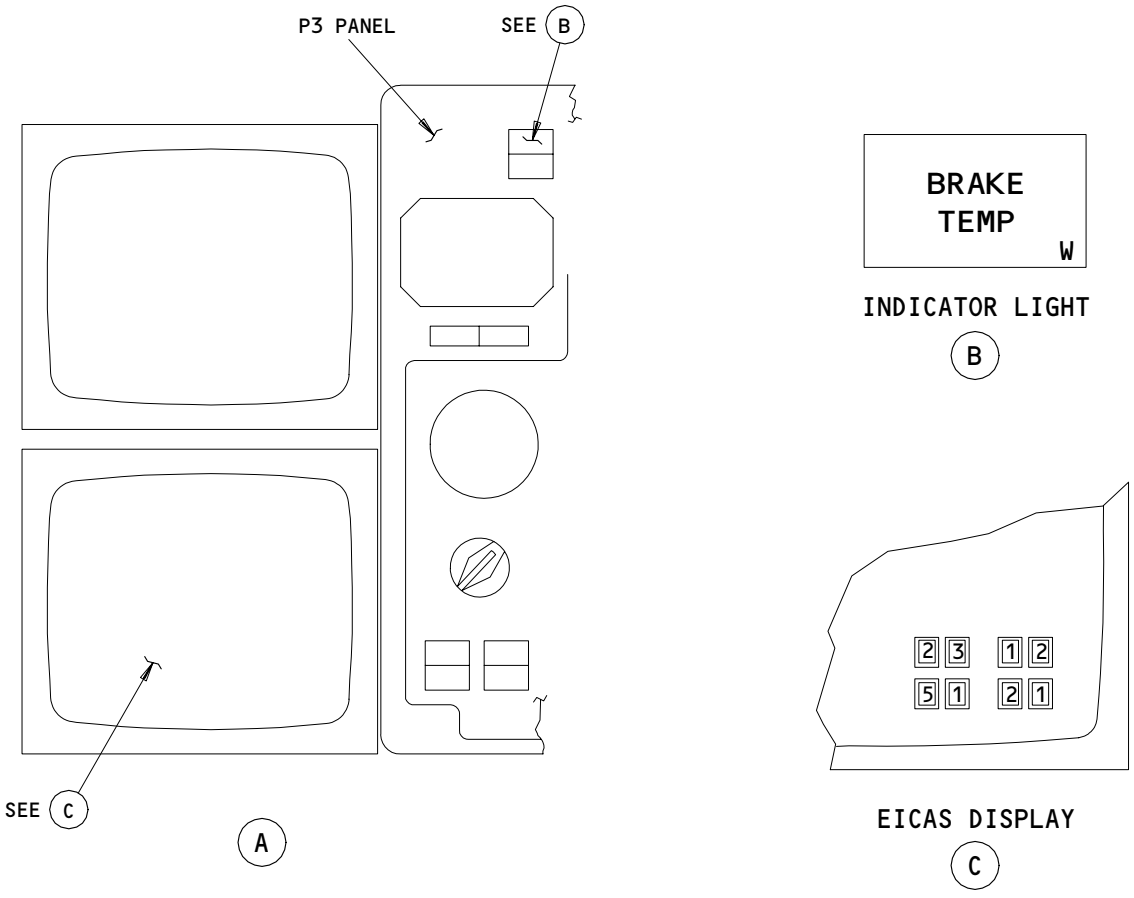
(b) By selecting the SENSOR TEST position with selector switch, a simulated signal is applied across each of the eight brake sensor thermocouples. If either the sensor or its cabling is open or shorted to ground the simulated signal will not be received by the monitor unit. The loss of signal in any of the sensors will be indicated by a dark LED for that sensor and the monitor unit. Normally, all eight sensor LED's will be illuminated in the sensor test and the monitor LED will also remain illuminated.

C. EICAS Computers and Display Units (Fig. 1 and 3)

(1) Two EICAS computers are connected in parallel to provide system redundancy. A 0 to 5 volt signal corresponding to a 111 to 866°C (232 to 1591°F) brake temperature is provided to the EICAS computer(s) for each of the sensors. The EICAS system then displays unit values of 0 to 9 on the corresponding to these brake temperatures.



FLT COMPT



Brake Temperature Monitoring System Indication
Figure 2

(2) 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 (Increasing)	BRAKE TEMPERATURE (Decreasing)
0	Up to 164° C	Below 134°C
1	165 to 239	209 to 134
2	240 to 315	285 to 210
3	316 to 390	360 to 286
4	391 to 466	436 to 361
5	467 to 541	511 to 437
6	542 to 617	587 to 512
7	618 to 692	662 to 588
8	693 to 768	738 to 663
9	Over 768	Down to 739

(3) The indications are grouped by the left and right trucks.
(4) Displayed temperature values and surrounding boxes may be displayed in either a white or blue (cyan) color in 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.

(5) Refer to 31-41-00 description and operation for information on the internal logic and function of EICAS.

3. Operation

A. Functional Description (Fig. 3)

(1) 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.

(2) Thermocouple sensors installed at each of the eight main-gear-wheel brake locations supply a compensated (ambient adjusted) input signal corresponding to the sensed brake temperature, to the monitor unit.

(3) The monitor unit provides a 0 to 5 volt output signal to the EICAS computers corresponding to the brake temperature signal from each brake.

(4) The EICAS system then displays the brake temperatures, in numerals ranging from 0 to 9, corresponding to the brake temperature range of each brake.

(5) 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.

(6) If any brake temperature value should exceed 5 (above 482°C, 900°F) a BRAKE TEMP light on the flight compartment P3 panel will illuminate. This indication will extinguish when the actual brake temperature falls below 404°C (759°F).

B. 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.

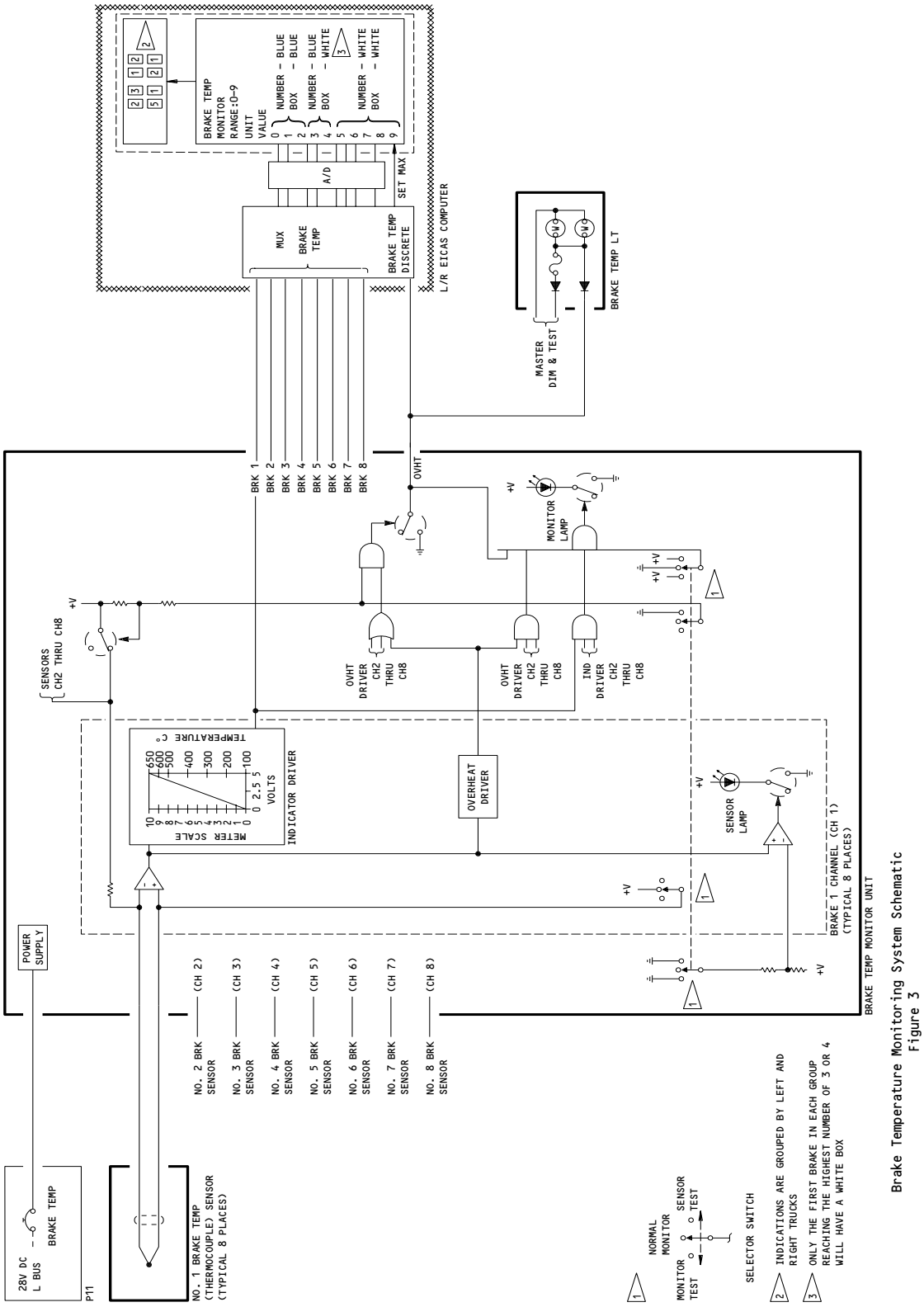
1) When the selector is held in the MONITOR position, the monitoring and test logic circuits are checked. All nine LED indicator lights should illuminate.

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.



Brake Temperature Monitoring System Schematic
Figure 3

(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.

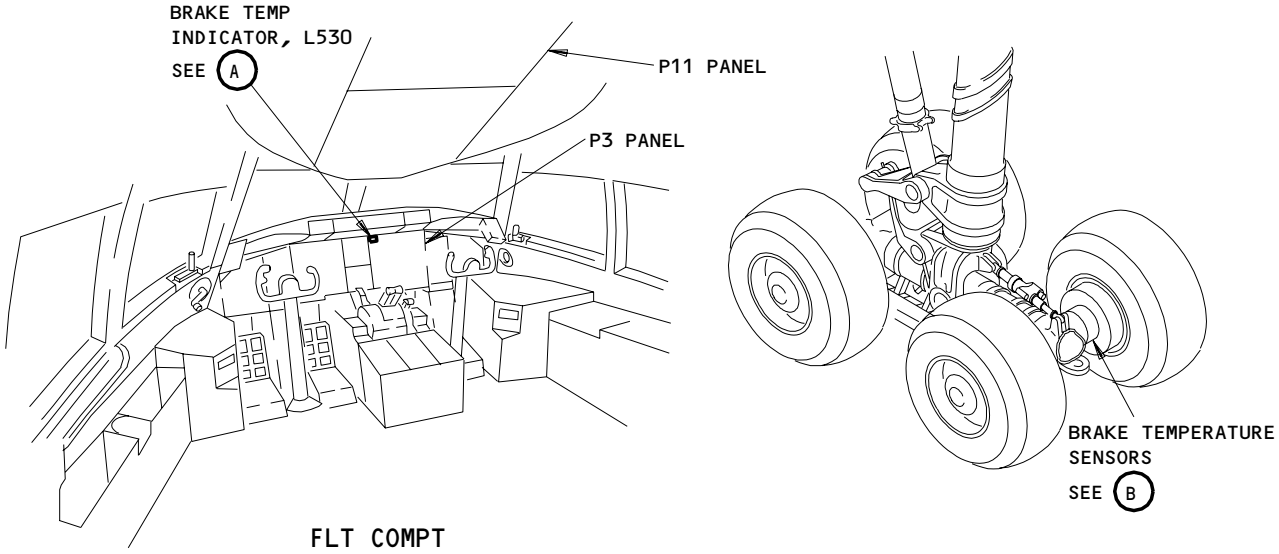
C. Control
(1) Provide electrical power (Ref 24-22-00).
(2) Energize the EICAS system (Ref 31-41-00).
(3) Close BRAKE TEMP circuit breaker on the flight compartment P11 panel.

BRAKE TEMPERATURE MONITORING SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
BRAKE ASSEMBLY (REF 32-41-00, FIG. 101)				
CIRCUIT BREAKER			FLT COMPT, P11	
BRAKE TEMP, C1181	-	1	11S16	*
COMPUTER - EICAS L, M10181 (REF 31-41-00, FIG. 101)				
COMPUTER - EICAS R, M10182 (REF 31-41-00, FIG. 101)				
LIGHT - BRAKE TEMP INDICATOR, L530	1	1	FLT COMPT, P3	
SENSOR - BRAKE TEMP				
NO. 1 BRAKE SENSOR, TS91	1	1	MAIN LANDING GEAR BRAKE	32-46-03
NO. 2 BRAKE SENSOR, TS92	1	1	MAIN LANDING GEAR BRAKE	32-46-03
NO. 3 BRAKE SENSOR, TS95	1	1	MAIN LANDING GEAR BRAKE	32-46-03
NO. 4 BRAKE SENSOR, TS96	1	1	MAIN LANDING GEAR BRAKE	32-46-03
NO. 5 BRAKE SENSOR, TS93	1	1	MAIN LANDING GEAR BRAKE	32-46-03
NO. 6 BRAKE SENSOR, TS94	1	1	MAIN LANDING GEAR BRAKE	32-46-03
NO. 7 BRAKE SENSOR, TS97	1	1	MAIN LANDING GEAR BRAKE	32-46-03
NO. 8 BRAKE SENSOR, TS98	1	1	MAIN LANDING GEAR BRAKE	32-46-03
UNIT - BRAKE TEMP MONITOR, M115	2	1	822, AFT CARGO COMPT, E6	32-46-01

* SEE WM EQUIPMENT LIST

Component Index
Figure 101

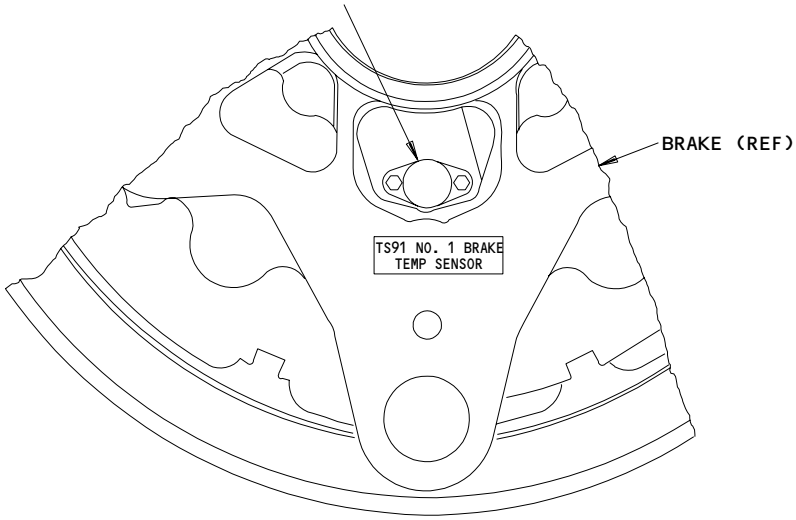


BRAKE TEMPERATURE SENSOR
BRAKE NO. 1, TS91
BRAKE NO. 2, TS92
BRAKE NO. 3, TS95
BRAKE NO. 4, TS96
BRAKE NO. 5, TS93
BRAKE NO. 6, TS94
BRAKE NO. 7, TS97
BRAKE NO. 8, TS98
(BRAKE NO. 1 SENSOR SHOWN, OTHERS SIMILAR)

BRAKE
TEMP
W

BRAKE TEMP INDICATOR, L530

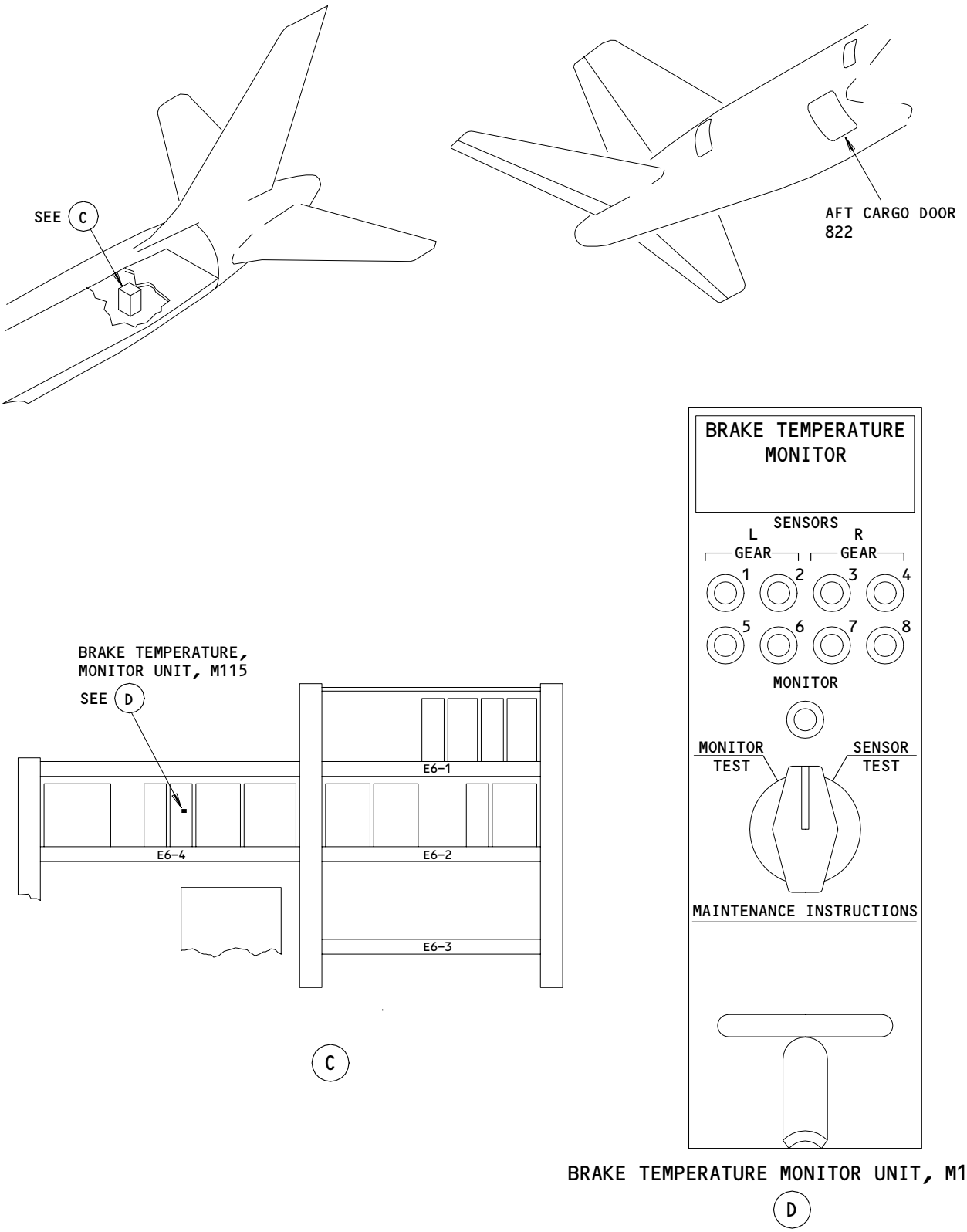
A



BRAKE TEMPERATURE SENSOR(S)

B

Component Location
Figure 102 (Sheet 1)



Component Location
Figure 102 (Sheet 2)

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 a test to make sure that each brake temperature sensor is connected to the correct wheel.
   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 is a test of operation of the monitor unit and the electrical circuits that show the brake temperature indications.
      (2) The sensor test is a test of the electrical circuit between the monitor unit and the sensors, and the electrical circuit of the sensors.
   C. This procedure also has a test to make sure that each brake temperature sensor operates. The test is only necessary when the main gear or the truck assembly for the main gear has been replaced.

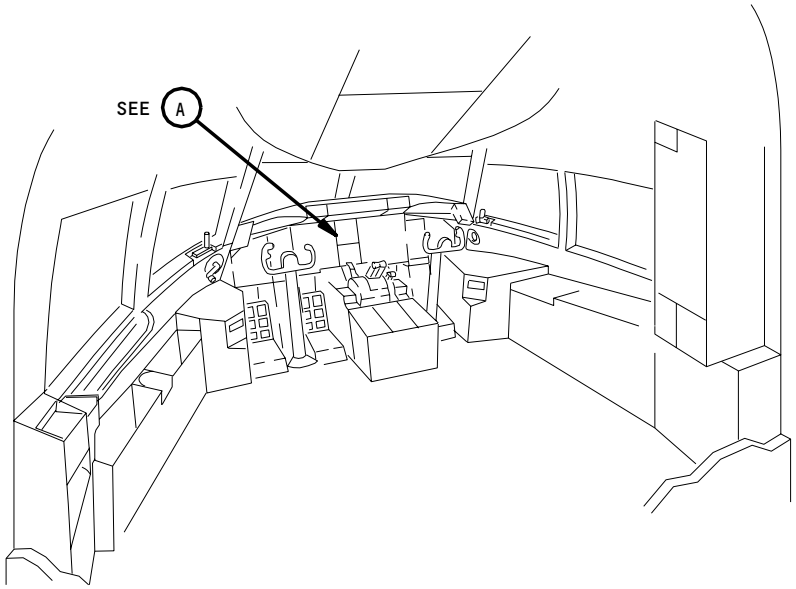
TASK 32-46-00-715-001

2. Do the Brake Temperature Monitoring System Test (Fig. 501)
   A. References
      (1) AMM 06-46-00/201, Entry, Service, and Cargo Doors
      (2) AMM 24-22-00/201, Electrical Power - Control
      (3) AMM 31-41-00/501, Engine Indicating and Crew Alerting System (EICAS)
   B. Prepare to Do the Test

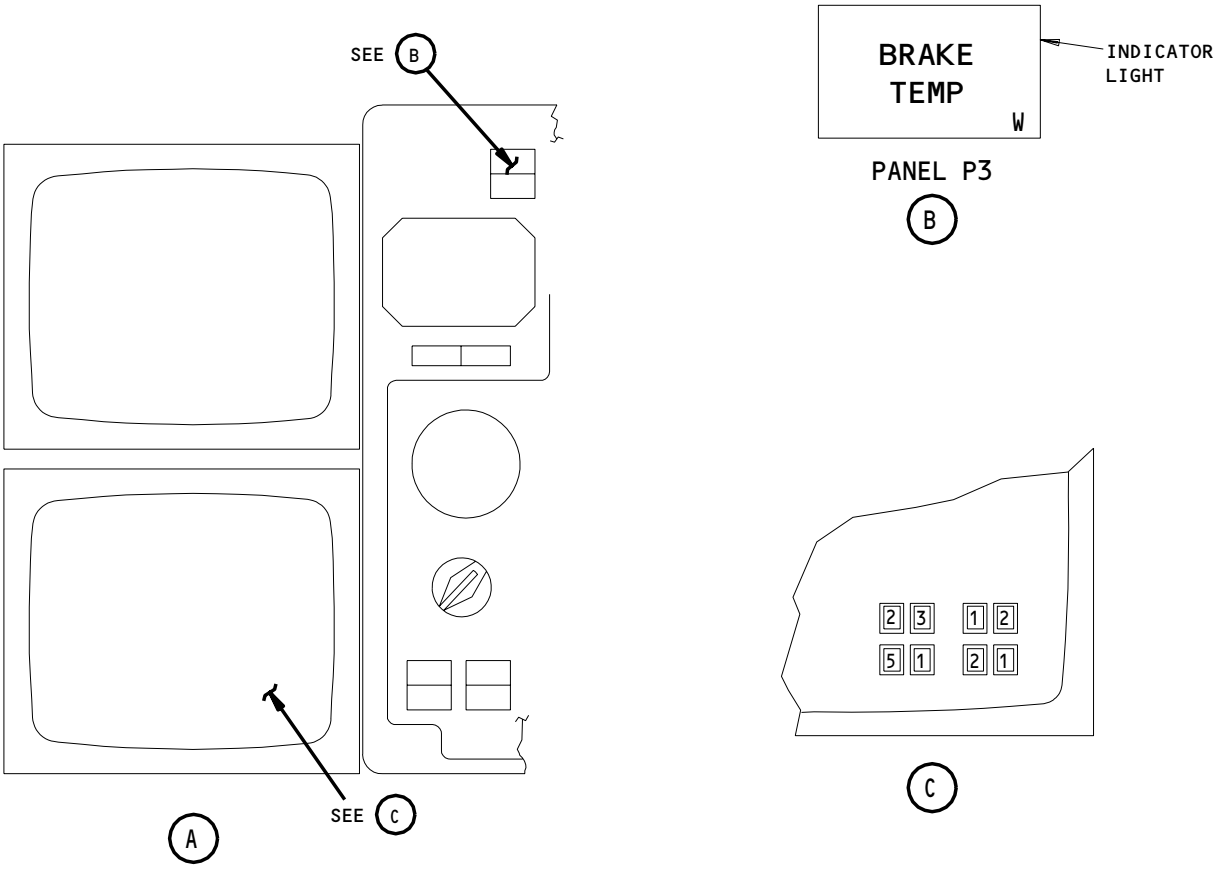
      S 865-002
      (1) Supply electrical power (AMM 24-22-00/201).

      S 865-003
      (2) Make sure these circuit breakers on the overhead circuit breaker panel (P11) are closed:
         (a) 11S16, BRAKE TEMP
         (b) EICAS circuit breakers (6 locations).

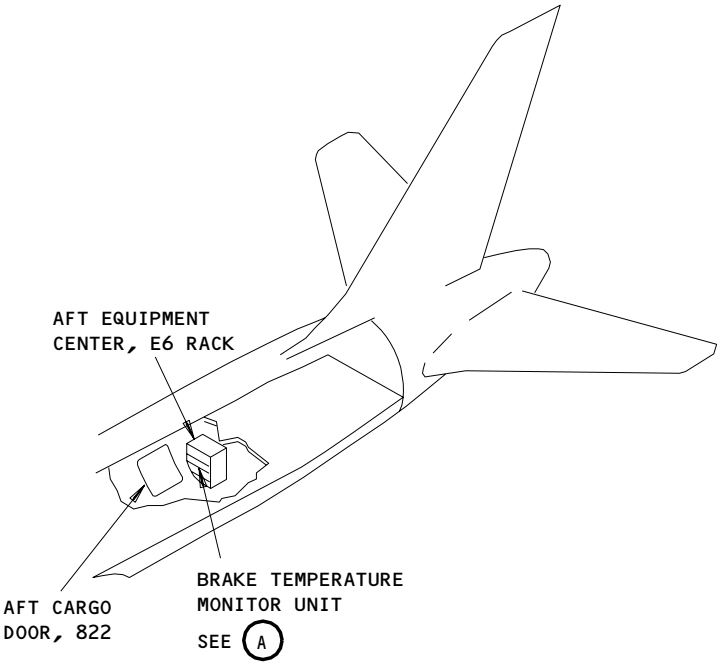
      S 015-004
      (3) Open the cargo door (AMM 06-46-00/201).



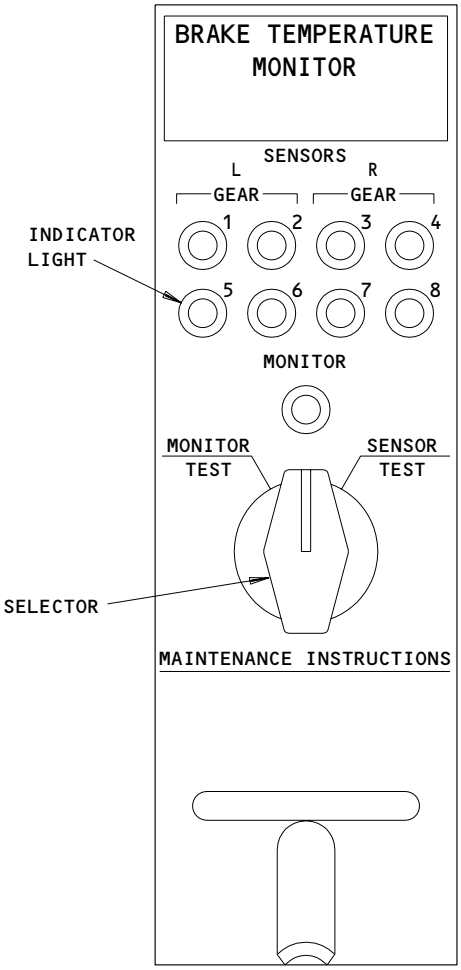
FLIGHT COMPARTMENT



Brake Temperature Monitoring System Test
Figure 501



BRAKE TEMPERATURE
MONITOR UNIT LOCATION



BRAKE TEMPERATURE
MONITOR UNIT
A

Brake Temperature Monitor System Test
Figure 502

S 015-005

(4) Locate the brake temperature monitor unit (Fig. 502).

C. Do the Monitor Test

S 715-020

(1) Move the selector switch on the brake temperature monitor unit to the MONITOR TEST position:

(a) Make sure that all nine indicator lights on the face of monitor unit come on.

(b) Make sure that all boxes on the brake temperature display on EICAS, show a number 7 or greater.

(c) Make sure that the indications for each brake on the brake temperature display on the EICAS show a number 7 or larger.

(d) 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.

S 715-021

(2) Release the selector.

(a) Make sure that all the lights on the control unit go out.

(b) Make sure that the BRAKE TEMP light goes out.

NOTE: The brake temperature must be below 212°F (100°C) for this test.

(c) Make sure that the number 0 shows for each of the brakes on the EICAS brake temperature display.

NOTE: This test assumes that the brakes are below 212°F (100°C) in temperature.

D. Do the Sensor Test

S 715-022

(1) Put the monitor selector in the SENSOR TEST position and hold it there.
  (a) Make sure that all the sensor indicator lights on the face of the 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 on the flight deck for the sensor test.

S 715-023

(2) Release the selector.
  (a) Make sure that all indicator lights on the monitor unit go out.

TASK 32-46-00-715-043

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 715-044

(1) Do the Test of the Brake Temperature Monitoring System

S 035-024

(2) Disconnect the electrical connector from the brake temperature sensor on wheel No. 1.

S 715-026

(3) Hold the monitor selector in the SENSOR TEST position.
  (a) Make sure that all lights on the monitor come on, but not the one for sensor No. 1.
  (b) Make sure that the brake temperature display on EICAS shows a 7 or more in each box, but not for brake No. 1. The box for that brake should show a 0.

S 865-027

(4) Release the selector.

S 435-028

(5) Connect the electrical connector to the sensor on wheel No. 1.

S 715-029
(6) Repeat the test for each of the wheels, No. 2 thru No. 8.

S 715-030
(7) After you do the test for all the sensors and connect 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.

B. Put the Airplane Back to Its Usual Condition

S 865-042
(1) Remove electrical power (AMM 24-22-00/201), if it is not necessary.

BRAKE TEMPERATURE MONITOR UNIT - REMOVAL/INSTALLATION

1. General
   A. The first task removes the brake temperature monitor unit. The second task installs the brake temperature monitor unit.

TASK 32-46-01-004-001

2. Remove the Brake Temperature Monitor Unit (Fig. 401)
   A. References
      (1) AMM 06-46-00/201, Entry, Service, and Cargo Doors
      (2) AMM 20-10-01/401, E/E Rack-Mounted Components
      (3) AMM 24-22-00/201, Electrical Power - Control
      (4) AMM 32-46-00/501, Brake Temperature Monitor System Test
   B. Access
      (1) Location Zones
          211 Control Cabin, Left
          212 Control Cabin, Right
          822 Aft Cargo Door

   C. Procedure

      S 864-002
      (1) Open this circuit breaker on the overhead panel P11, and attach a DO-NOT-CLOSE tag:
          (a) 11S26, BRAKE TEMP

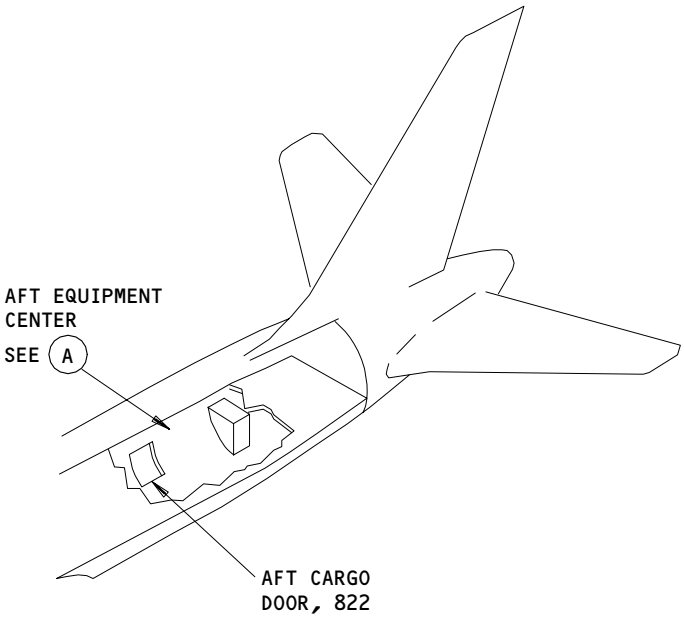
      S 014-003
      (2) Open the aft cargo door, 822 (AMM 06-46-00/201).

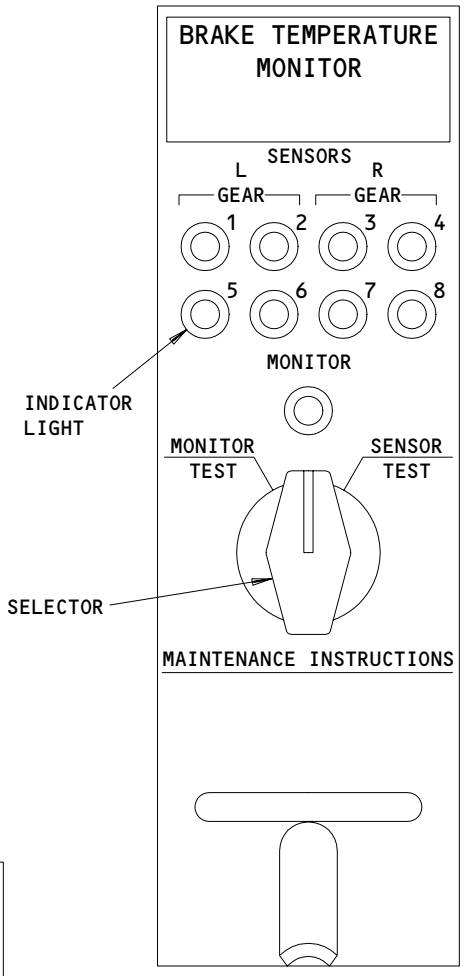
      S 014-004
      (3) Find the brake temperature monitor unit on the E6 rack of the aft equipment center.

      S 024-021
      (4) Remove the brake temperature monitor unit from the rack (AMM 20-10-01/401).

TASK 32-46-01-404-022

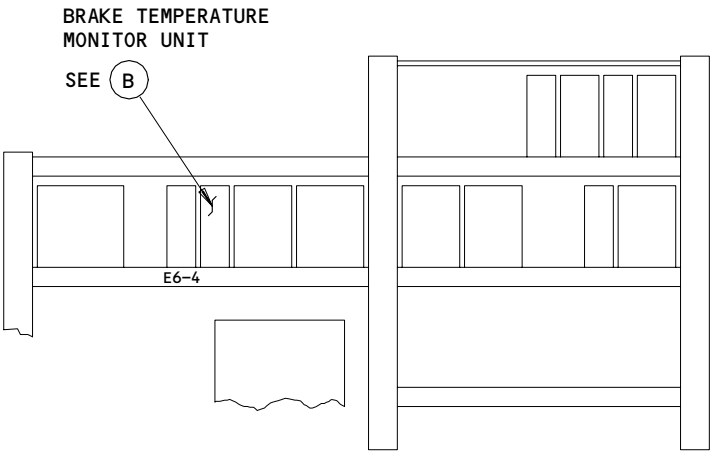
3. Install the Brake Temperature Monitor Unit (Fig. 401)
   A. References
      (1) AMM 06-46-00/201, Entry, Service, and Cargo Doors
      (2) AMM 20-10-01/401, E/E Rack-Mounted Components
      (3) AMM 24-22-00/201, Electrical Power - Control
      (4) AMM 25-50-03/401, Bulkhead Lining
      (5) AMM 32-46-00/501, Brake Temperature Monitor System Test





BRAKE TEMPERATURE MONITOR UNIT

B



AFT EQUIPMENT CENTER (E6 RACK)

A

Brake Temperature Monitor Unit Installation
Figure 401

B. Access
(1) Location Zones
211 Control Cabin, Left
212 Control Cabin, Right
822 Aft Cargo Door

C. Procedure

S 424-023
(1) Install the brake temperature monitor unit in the E6 rack (AMM 20-10-01/401).

S 864-026
(2) Remove the DO-NOT-CLOSE tags and close this circuit breaker on the P11 panel:
(a) 11S26, BRAKE TEMP

S 864-027
(3) Supply electrical power (AMM 24-22-00/201).

S 714-028
(4) Do a test of the brake temperature monitor unit (AMM 32-46-00/501).

S 414-029
(5) Close the aft cargo door, 822.

S 864-042
(6) 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 32-46-03-004-014

2. Remove the Brake Temperature Sensor (Fig. 401)
   A. References
      (1) AMM 32-00-20/201, Landing Gear Downlocks
      (2) AMM 32-41-10/401, Main Gear Wheel Brake
   B. Access
      (1) Location Zones
          211 Control Cabin, Left
          212 Control Cabin, Right
          731 Landing Gear Left
          741 Landing Gear Right

   C. Procedure

      S 494-007
      (1) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

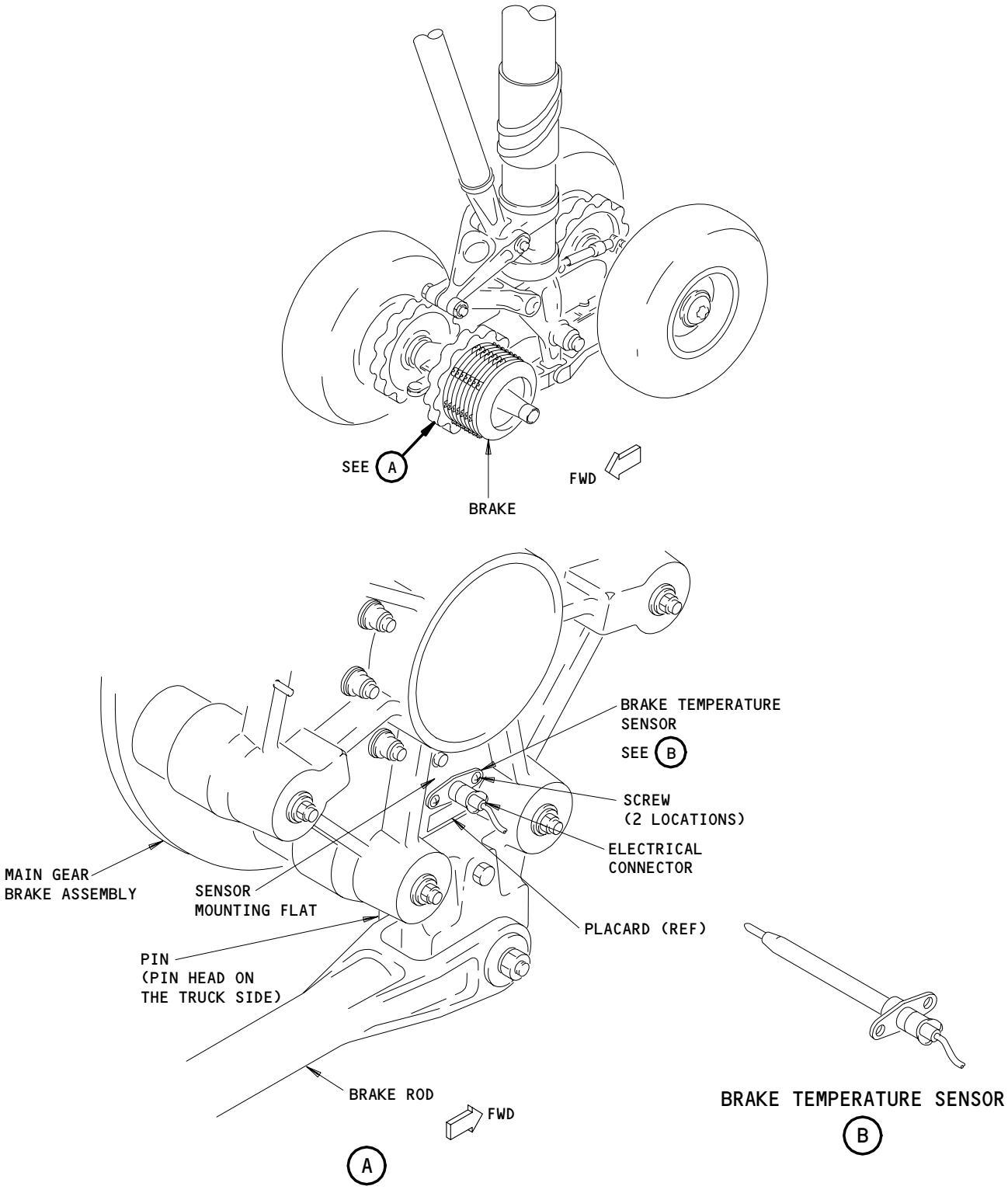
      S 864-008
      (2) Open this circuit breaker on the overhead circuit breaker panel P11 and attach a DO-NOT-CLOSE tag:
          (a) 11S16, BRAKE TEMP

      S 034-009
      (3) Disconnect the electrical connector from the temperature sensor (Detail A).

      S 034-010
      (4) Remove the pin that attaches the brake rod to the brake assembly (AMM 32-41-10/401).

      S 014-011
      (5) Rotate the brake assembly approximately 45 degrees in the direction away from the brake rod to get access to the sensor attachment screws.

      S 024-012
      (6) Remove the two screws and remove the sensor from the brake.



Brake Temperature Sensor Installation
Figure 401

TASK 32-46-03-404-013

3. Install the Brake Temperature Sensor (Fig. 401)

A. References

(1) AMM 32-41-10/401, Main Gear Wheel Brake

(2) AMM 32-46-00/501, Brake Temperature Monitor System Test

B. Access

(1) Location Zones

211 Control Cabin, Left
212 Control Cabin, Right
731 Landing Gear Left
741 Landing Gear Right

C. Procedure

S 424-001

(1) Attach the sensor to the brake with two screws (Detail A).

S 424-002

(2) Install lockwire.

S 434-003

(3) Connect the electrical connector to the sensor.

(a) Tighten the electrical connector hand tight. Then turn it until you hear 3 or 4 clicks or 2/3 turns.

(b) The color band on the base of the connector should not be visible, or at least barely visible when it is sufficently tight.

S 434-004

(4) Connect the brake rod to the brake assembly (AMM 32-41-10/401).

S 864-005

(5) Remove the DO-NOT-CLOSE tag and close this circuit breaker on panel P11:

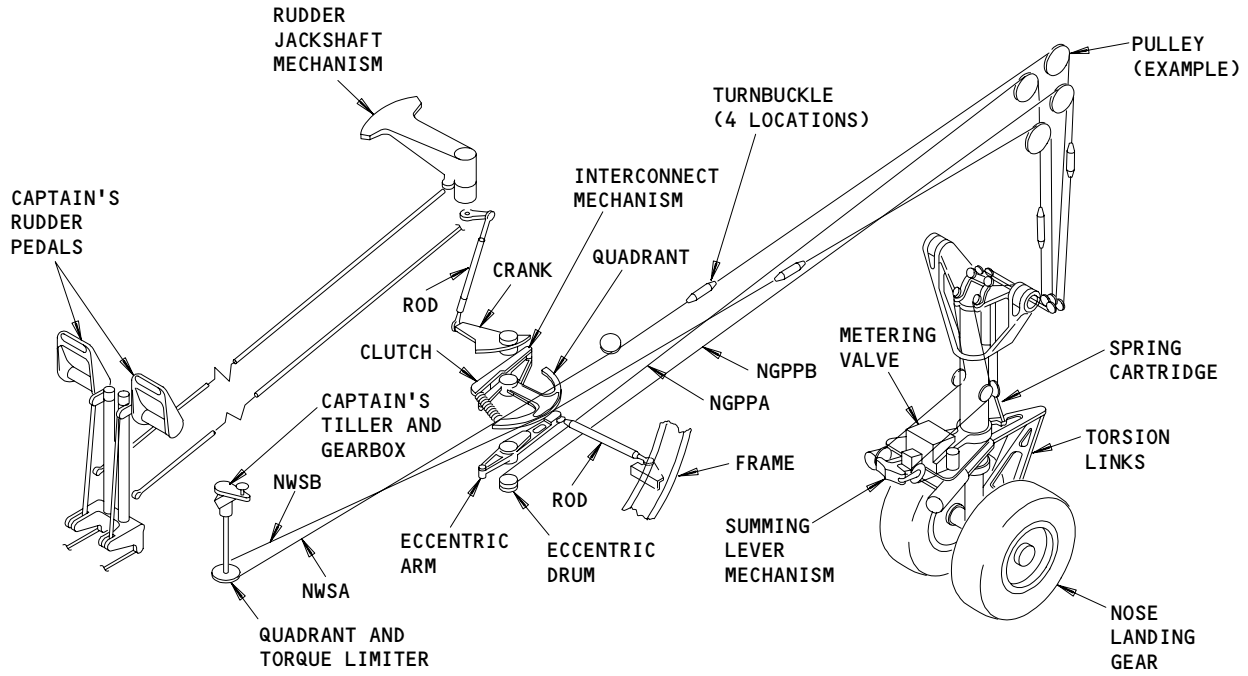
(a) 11S16, BRAKE TEMP

S 714-006

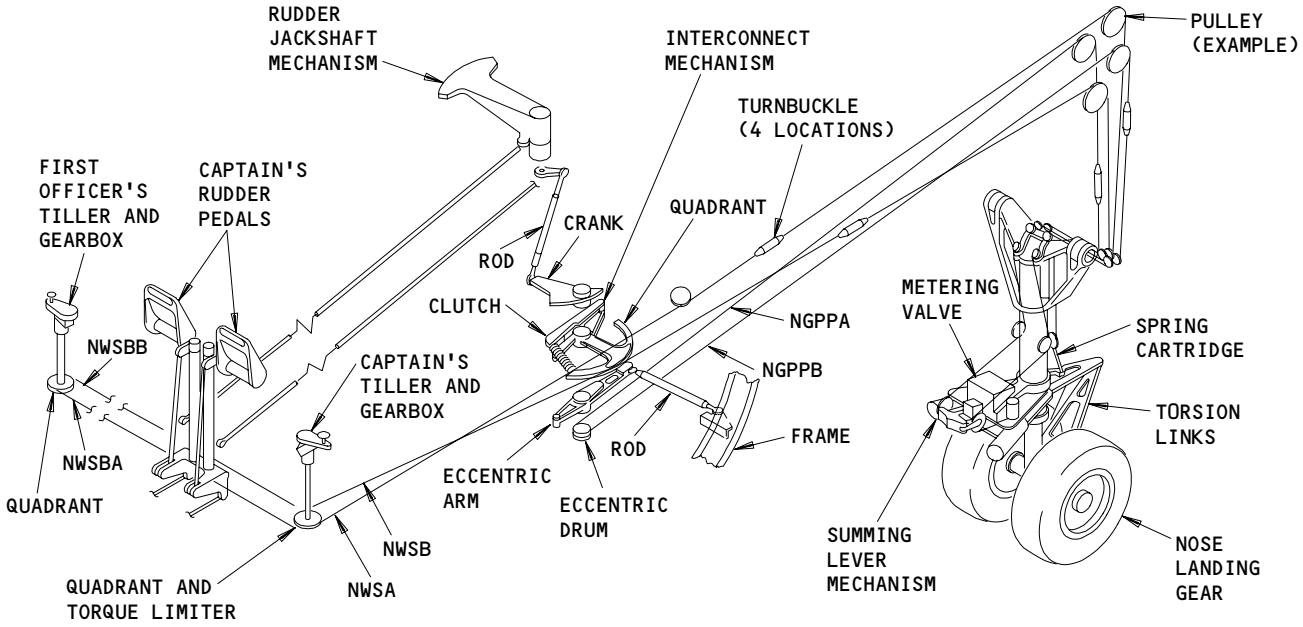
(6) Do a test of the brake temperature sensor (AMM 32-46-00/501).

NOSE WHEEL STEERING SYSTEM - DESCRIPTION AND OPERATION

1. General (Fig. 1, Fig. 2)
   A. The nose wheel steering system is hydraulically powered by the 'gear down' lines of the left hydraulic system. As a backup hydraulic power source, the right system can input hydraulic power through a power transfer unit interface when the left system is unavailable (AMM 29-00-00/001). Hydraulic steering pressure is removed when the landing gear handle is not in the down position.
   B. The nose wheel steering system is controlled by two means:
      (1) ALL EXCEPT GUI 115;
      The captain's sidewall mounted tiller can be used to turn the nose wheels 65 degrees left or right of center for ground maneuvering.
      (2) GUI 115;
      The captain's and/or first officer's sidewall mounted tiller(s) can be used to turn the nose wheels 65 degrees left or right of center.
      (3) The rudder pedals provide limited steering control of 5 degrees left or right of center, when the nose gear is compressed, for takeoff and landing roll steering.
   C. The tiller is connected by control cables to a summing bar mechanism on the nose landing gear strut which functions to input mechanical signals through a metering valve. The metering valve then provides hydraulic power to two steering actuators which connect to a steering collar. The steering collar in turn connects to the lower steerable position of the shock strut by torsion links.
   D. Any relative movement of the control cables from either the tiller or rudder pedals will displace the summing bar which mechanically signals a deviation between the commanded and actual wheel position. This deviation signal moves the metering valve slide to pressurize the steering actuators in the proper direction to correct the condition. When the lower steerable strut position matches the commanded (tiller or rudder pedal) position, the summing bar is again centered which also centers the metering valve.
   E. Rudder pedal steering is provided by an interconnect mechanism which working along with a piston position system and its cables, drives an eccentric arm to engage or disengage rudder pedal input into the nose wheel steering system. This mechanism also isolates the rudder pedals from the tiller controlled steering system when the nose gear is unloaded and the shock strut is extended.



NOSE WHEEL STEERING SYSTEM WITH CAPTAIN'S TILLER ONLY 1

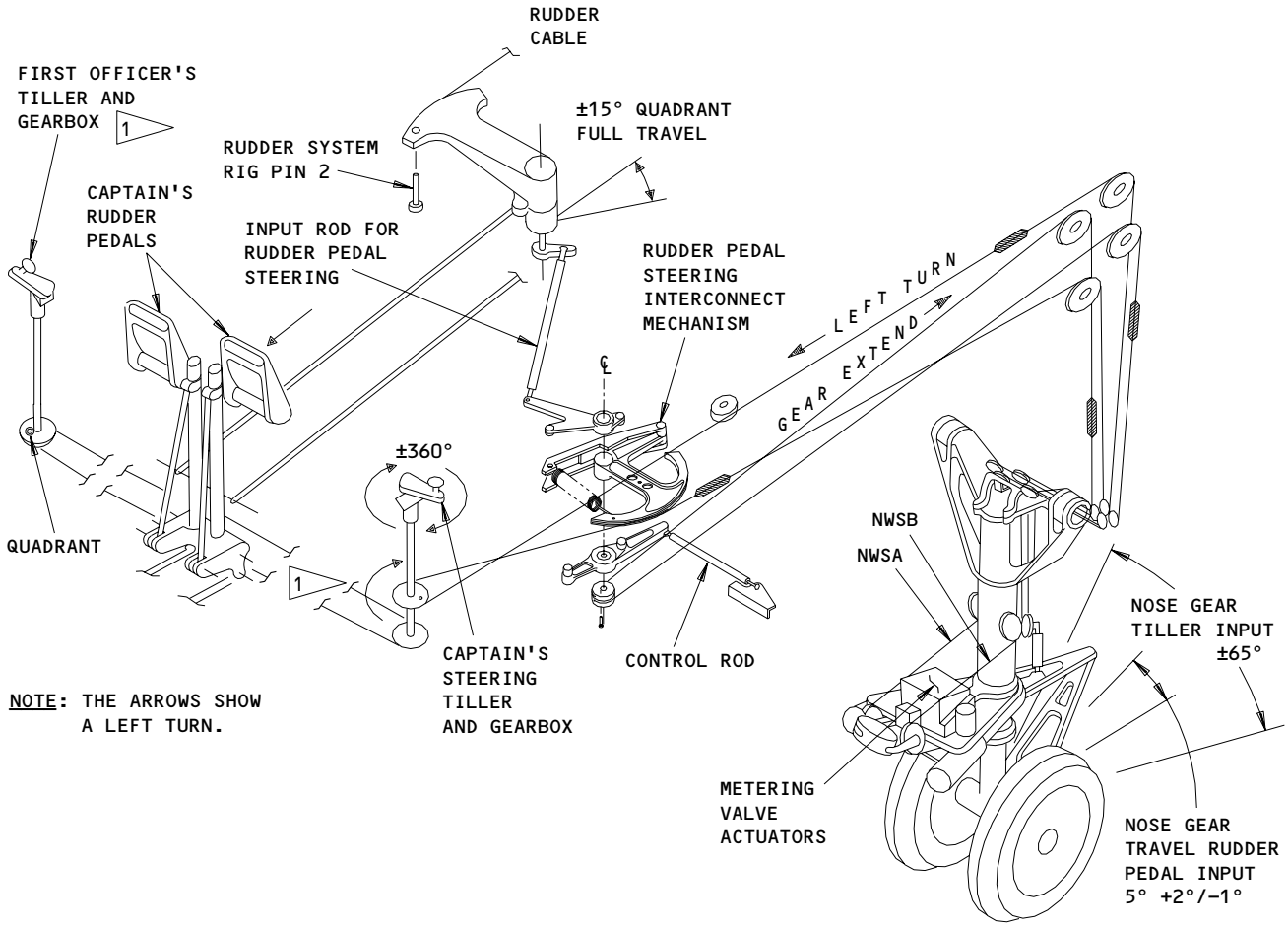


NOSE WHEEL STEERING SYSTEM WITH CAPTAIN'S AND FIRST OFFICER'S TILLER 2

1 ALL EXCEPT GUI 115

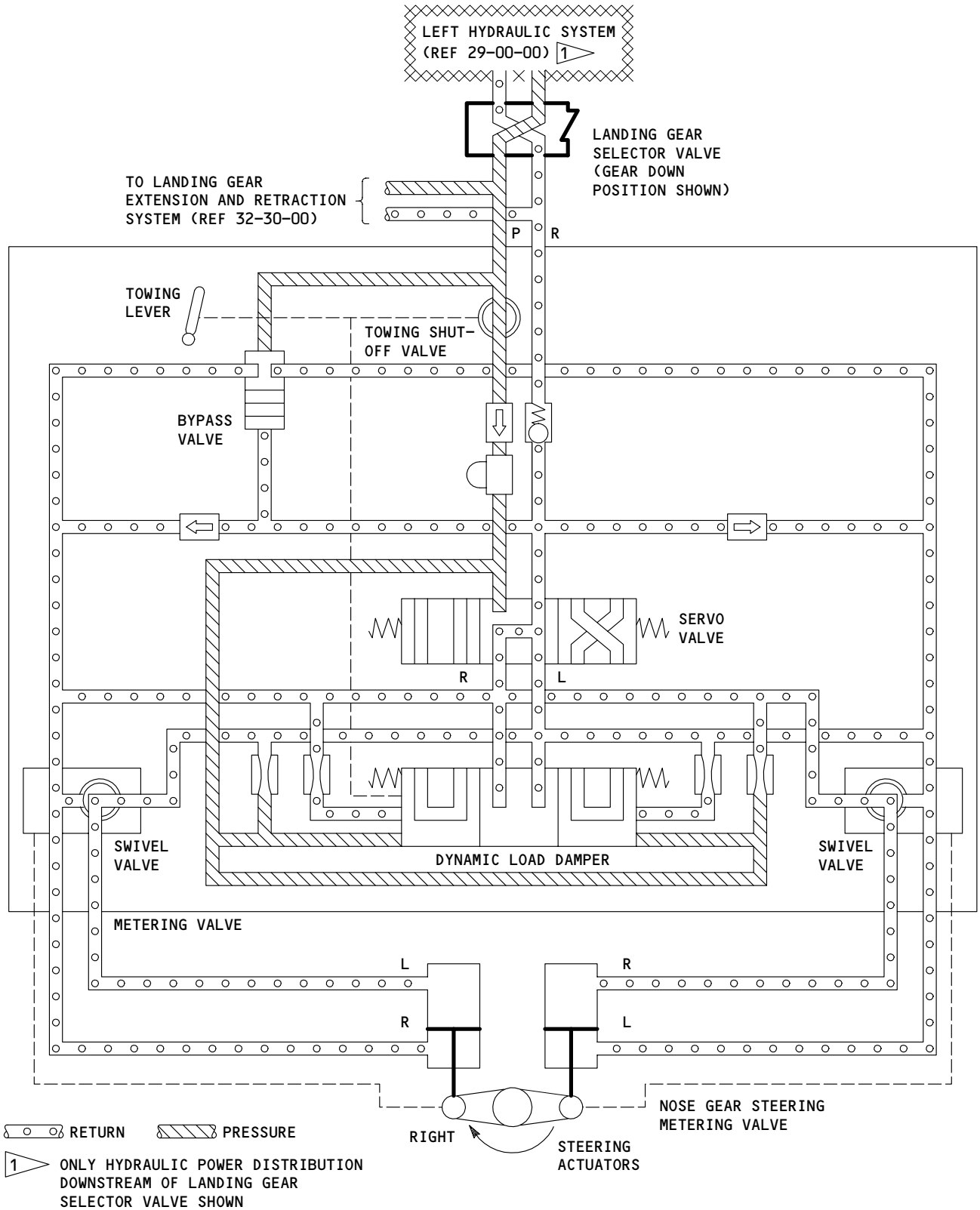
2 GUI 115

Nose Wheel Steering System Component Location
Figure 1



1 GUI 115

Nose Wheel Steering System
Figure 2 (Sheet 1)



Nose Wheel Steering System
Figure 2 (Sheet 2)

F. The two system centering springs keep the nose gear centered when there is no control input force. The springs also return the steering mechanism to neutral control position whenever the control input force is removed from the tiller.

G. A towing lever on the steering metering valve module permits towing without physically disconnecting the shock strut torsion links.

H. The nose gear steering system is automatically deactivated when the nose gear is retracted by removing hydraulic pressure from the system.

I. Cams internal to the nose gear shock strut are provided to hold the gear centered if hydraulic power is not available. The cam is disengaged upon landing when the nose gear strut is compressed 3.0 inches or more.

2. Component Details

A. ALL EXCEPT GUI 115;
Tiller, Gearbox, and Torque Limiter (Fig. 3)

B. GUI 115;
Tillers, Gearboxes, and Torque Limiter (Fig. 3)

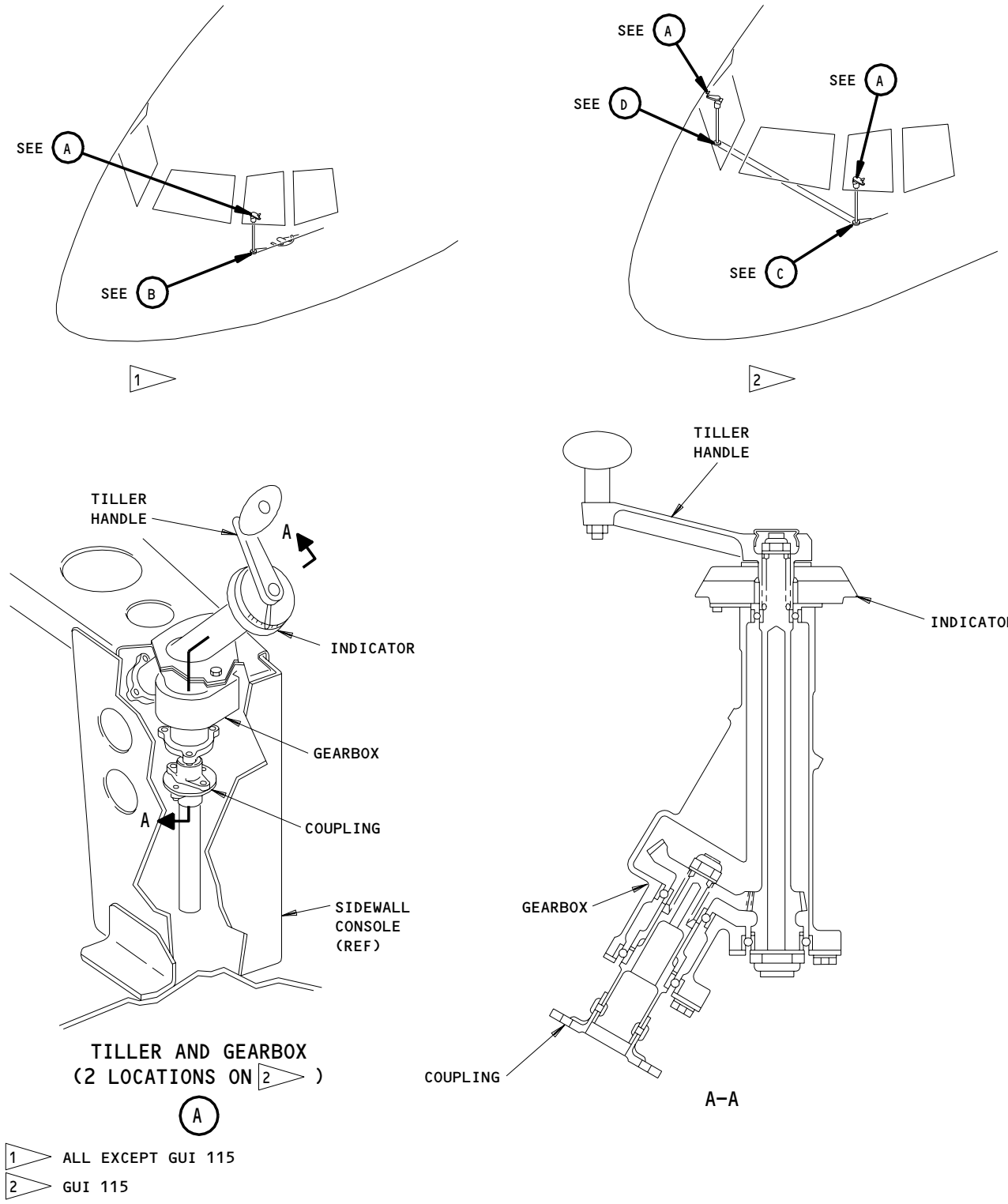
(1) ALL EXCEPT GUI 115;
The steering tiller allows the captain to manually steer the airplane (Details A and B, Fig. 3).

(2) GUI 115;
The steering tillers allow the captain and/or first officer to manually steer the airplane (Details A, C and D, Fig. 3).

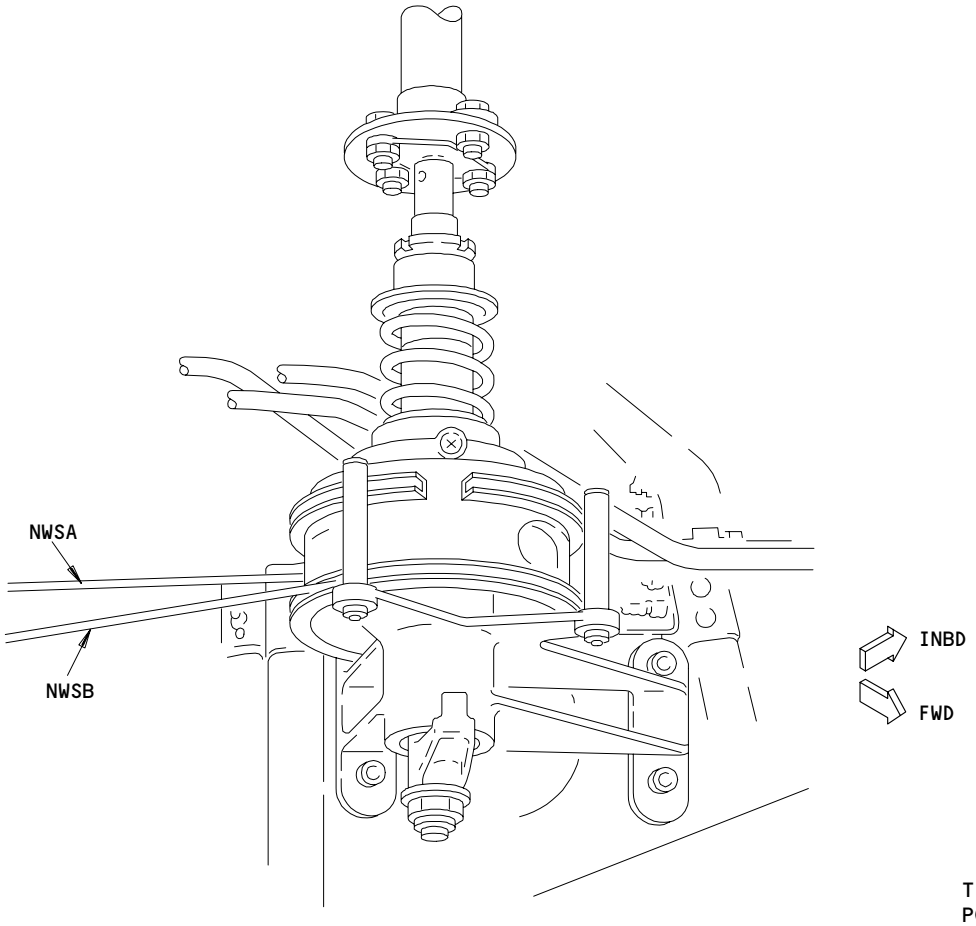
(3) The tiller handle can be turned 360 degrees (maximum) in either direction from center. A geared nose wheel position indicator is installed at the base of the tiller handle to show the angle of the nose wheels from center.

(4) A gearbox provides a 2.7 to 1 reduction ratio which in effect raises the input torque to the cable loop by the same ratio (Section A-A, Fig. 3)

(5) The cable loop is protected from high input forces from the pilot by a torque limiter that limits tiller lever input to 40 pounds maximum. The torque limiter transmits torque through spring loaded rollers that engage a cam mounted to the forward cable drum. See Fig. 3 torque limiter schematic. If the system cable load exceeds the torque limit, the rollers will come out of the detents in the cam. The rollers will only re-engage when the tiller is restored to its proper relationship with the forward cable drum.

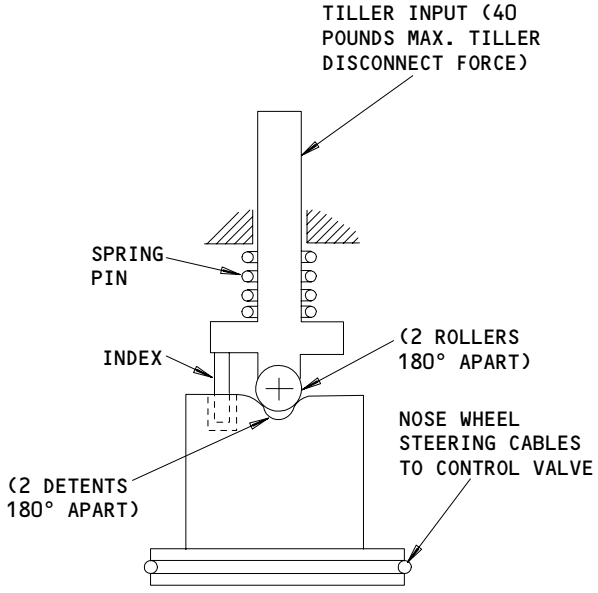


Tiller, Gearbox, Torque Limiter Mechanism
Figure 3 (Sheet 1)



QUADRANT AND LOAD LIMITER

B



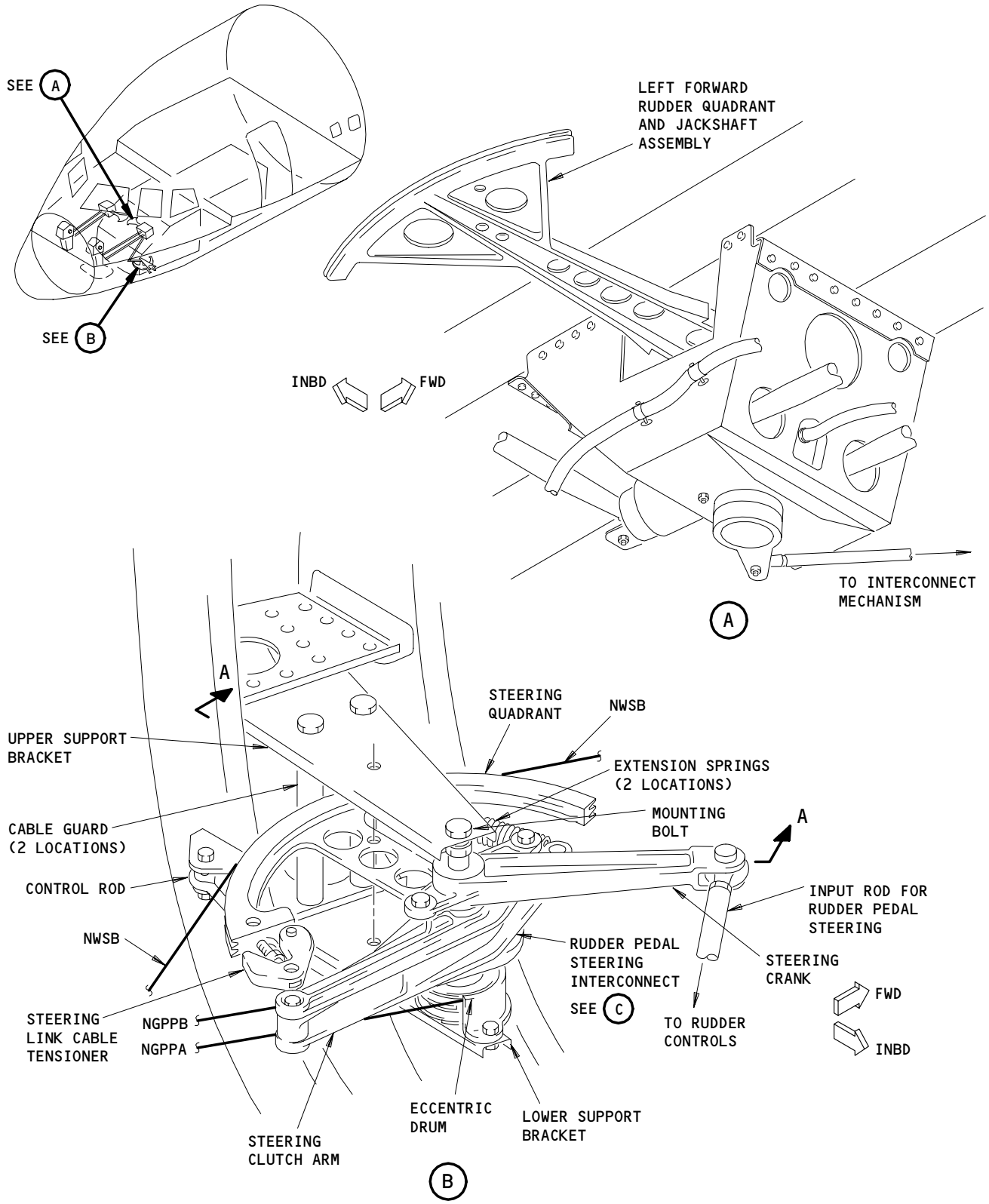
TORQUE LIMITER SCHEMATIC

Tiller, Gearbox and Torque Limiter Mechanism
Figure 3 (Sheet 2)

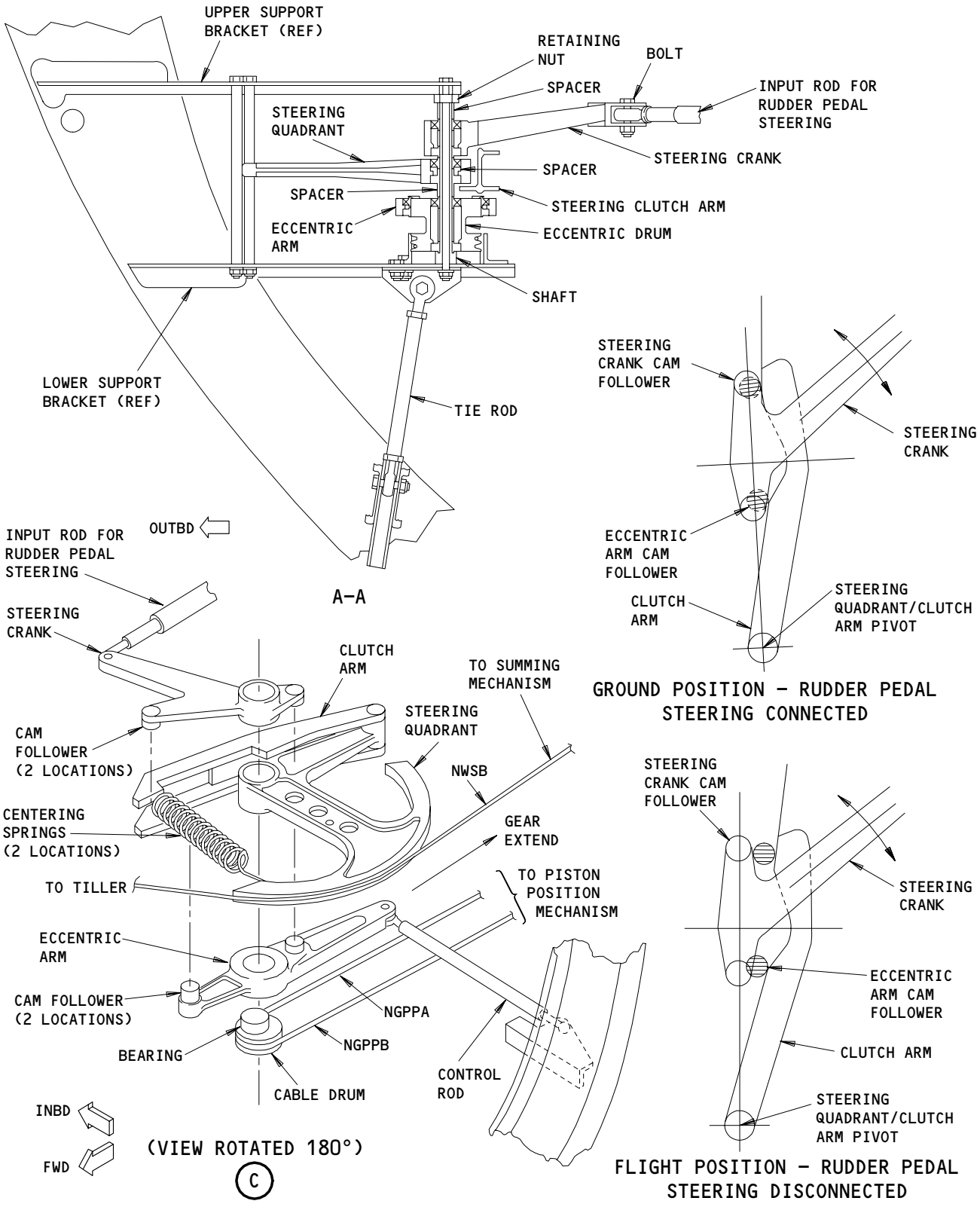
(6) GUI 115;
The first officer's tiller (Details A, B and C; Fig. 3) is similar to the captain's tiller except a torque limiter is not installed on the tiller shaft. The first officer's tiller is connected by a separate cable loop in parallel with the captains tiller and transmits motion to the main steering system cable loop through the captain's tiller torque limiter.

C. Rudder Pedal Steering Interconnect Mechanism (Fig. 4)
(1) The rudder pedal steering interconnect mechanism consists of a rudder pedal steering crank, a clutch arm, a cable drum, an eccentric arm and a rudder pedal steering quadrant.
(2) This mechanism connects the rudder pedals to the nose wheel steering system and is engaged by the piston position system when the nose gear is compressed. Conversely it is disengaged when the nose gear shock strut is extended at lift off.
(3) The nose gear shock strut compression movement is transmitted by piston position linkage and a separate cable loop to move the cable drum and reposition the eccentric arm to allow the clutch cam stops to contact the steering crank. In this position, any movement of the rudder pedal is transmitted from the steering crank to the rudder pedal steering quadrant through the centering spring. This quadrant is connected to the nose wheel steering cables and is free to move the main steering system cables whenever nose wheel steering tiller is used, or drives the cables when positioned by the rudder pedal steering mechanism.
(4) When the nose gear shock strut is extended (on lift-off), the piston position system rotates the cable drum to move the stops mounted on the eccentric arm to disengage the clutch arm from the steering arm stops. This disconnects the rudder pedal system from the steering system.

D. Control Cables (Fig. 1)
(1) The nose wheel steering cable system consists of two sets of 3/32 inch diameter carbon steel cables with corrosion resistant steel terminal fittings. Corrosion resistant steel (CRES) cables are installed on the lower nose gear part of the cable loop.
(a) The first set of cables (NWS) is used to activate the steering metering valve by turning the steering tiller and/or moving the rudder pedals (when engaged).



Rudder Pedal Steering Interconnect Mechanism
Figure 4 (Sheet 1)



Rudder Pedal Steering Interconnect Mechanism
Figure 4 (Sheet 2)

(b) The second set of cables (NGPP) is used to engage and disengage rudder pedal steering system.

E. Spring Cartridge and Piston Position Quadrant (Fig. 5)

(1) The spring cartridge attaches between the upper torsion link and the shock strut mounted piston position quadrant. The spring cartridge moves the piston position quadrant into either of two positions depending on whether the gear is compressed or extended.

(2) The piston position quadrant moves through an angular displacement of approximately 23 degrees between preset steps in the quadrant attach bracket on the shock strut.

(3) When the gear is extended the spring cartridge moves downward to rotate the quadrant clockwise 23 degrees. This action disengages rudder pedal steering. When the gear is compressed the spring cartridge moves upward to rotate 23 degrees. This action engages the rudder pedal steering system through the interconnect mechanism.

F. Summing Mechanism and Broken Cable Compensator (Fig. 6)

(1) The summing mechanism consists of two lever assemblies, left and right, a valve input lever, a splined shaft and a valve input rod.

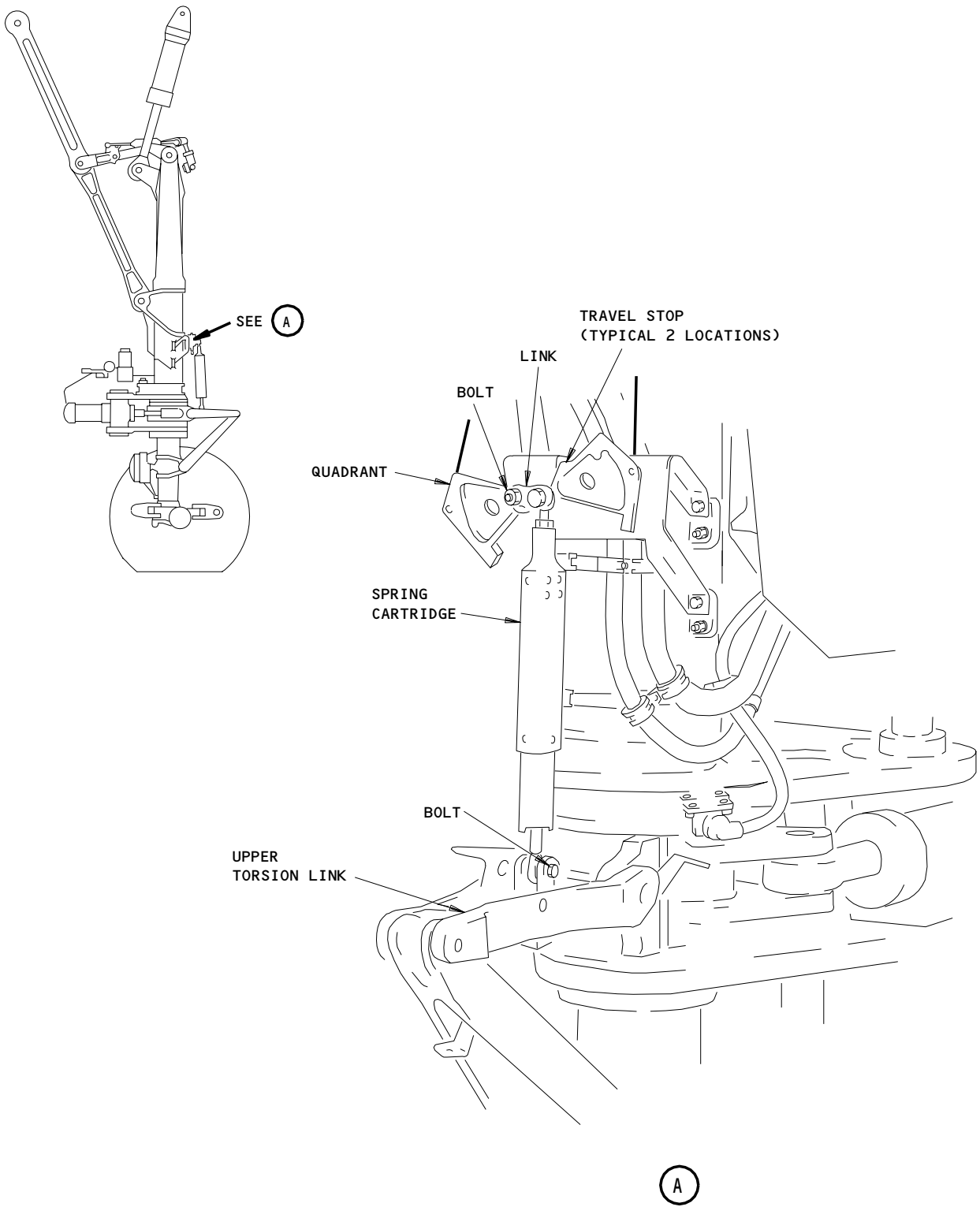
(2) Under normal conditions, any steering command is transmitted by the steering cable (NWS) to the lever assembly and associated force link which drives the input roller and cam. The cam and valve input lever are splined on the common shaft and as a result the valve input rod is driven by the input lever.

(3) The broken cable compensator consists of two force links, left and right, and a roller and a cam which work in conjunction with the summing mechanism.

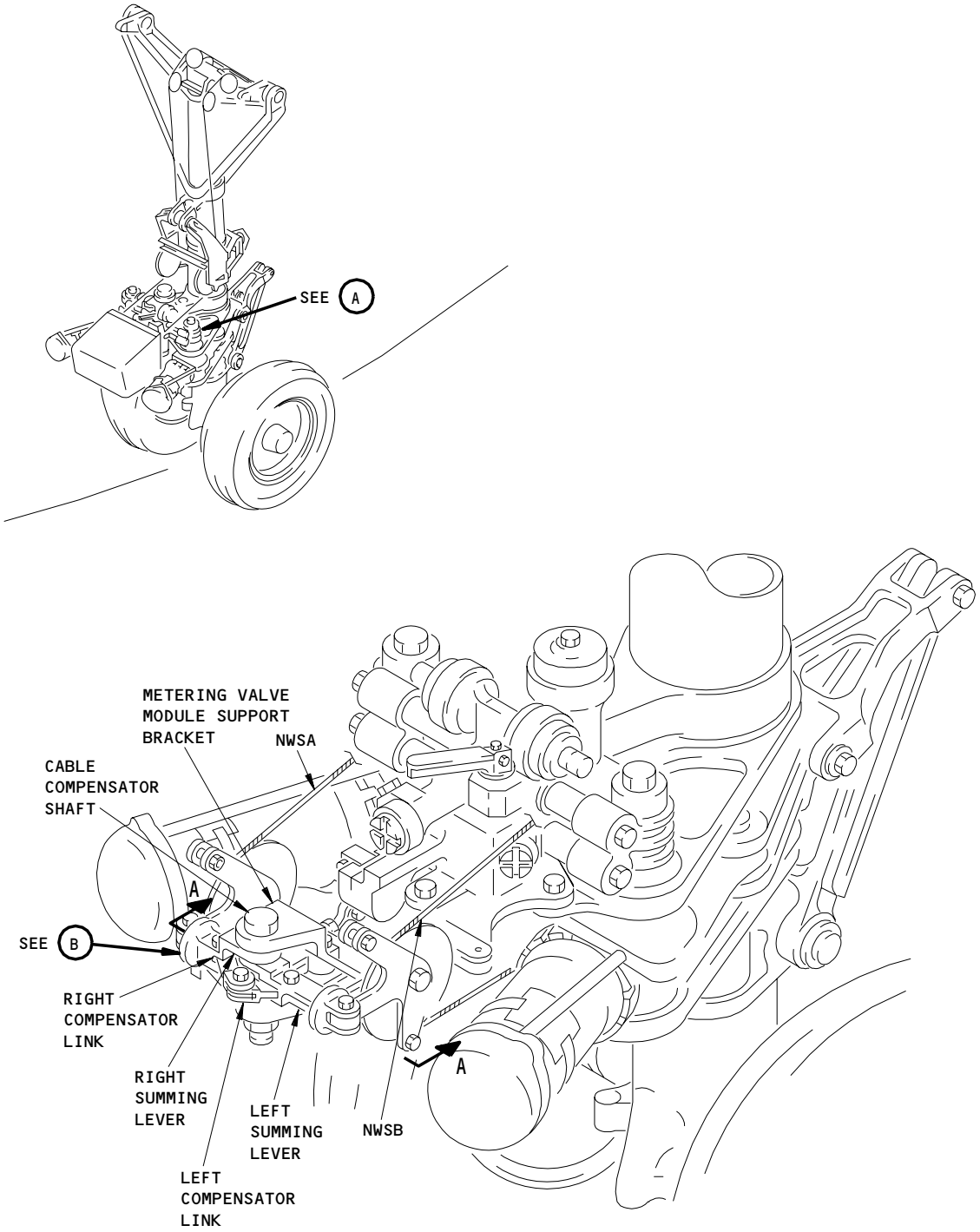
(4) The broken cable compensator is connected to the steering valve input lever and prevents cable tension to cause a sustained input to the steering system if the left or right cable looses tension. As long as tension exists in both cables the force links keep the roller engaged in the mating cam detent. When tension is lost in one cable the force links disengage the roller from the cam detent, losing any sustained unbalanced steering force capability.

G. Steering Metering Valve Module and Actuators (Fig. 2, Fig. 7)

(1) The steering metering valve is attached to the upper steering plate on the nose gear shock strut and its function is to control the amount of hydraulic fluid provided to the two steering actuators.



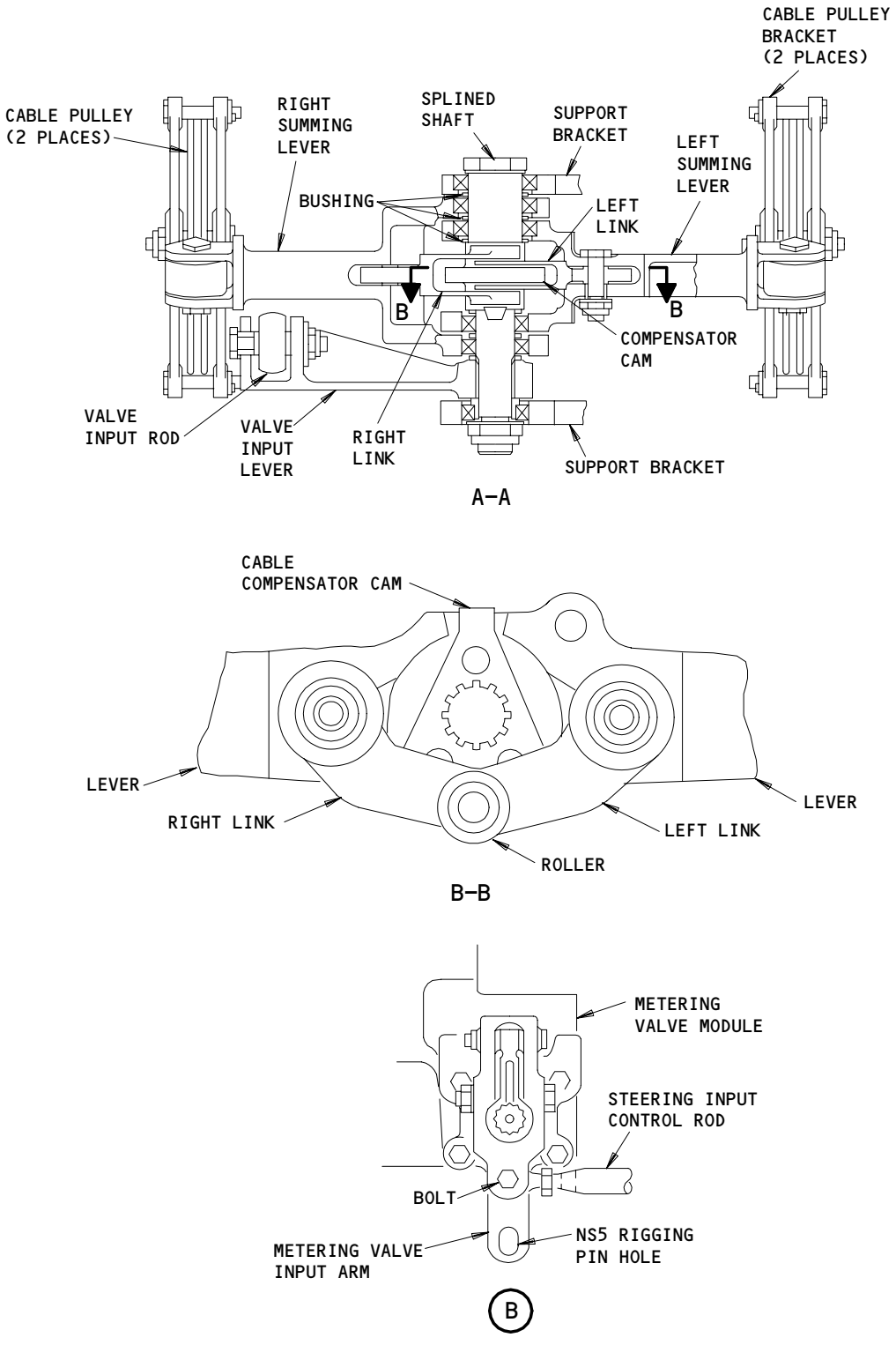
Spring Cartridge and Piston Position Quadrant Mechanism
Figure 5



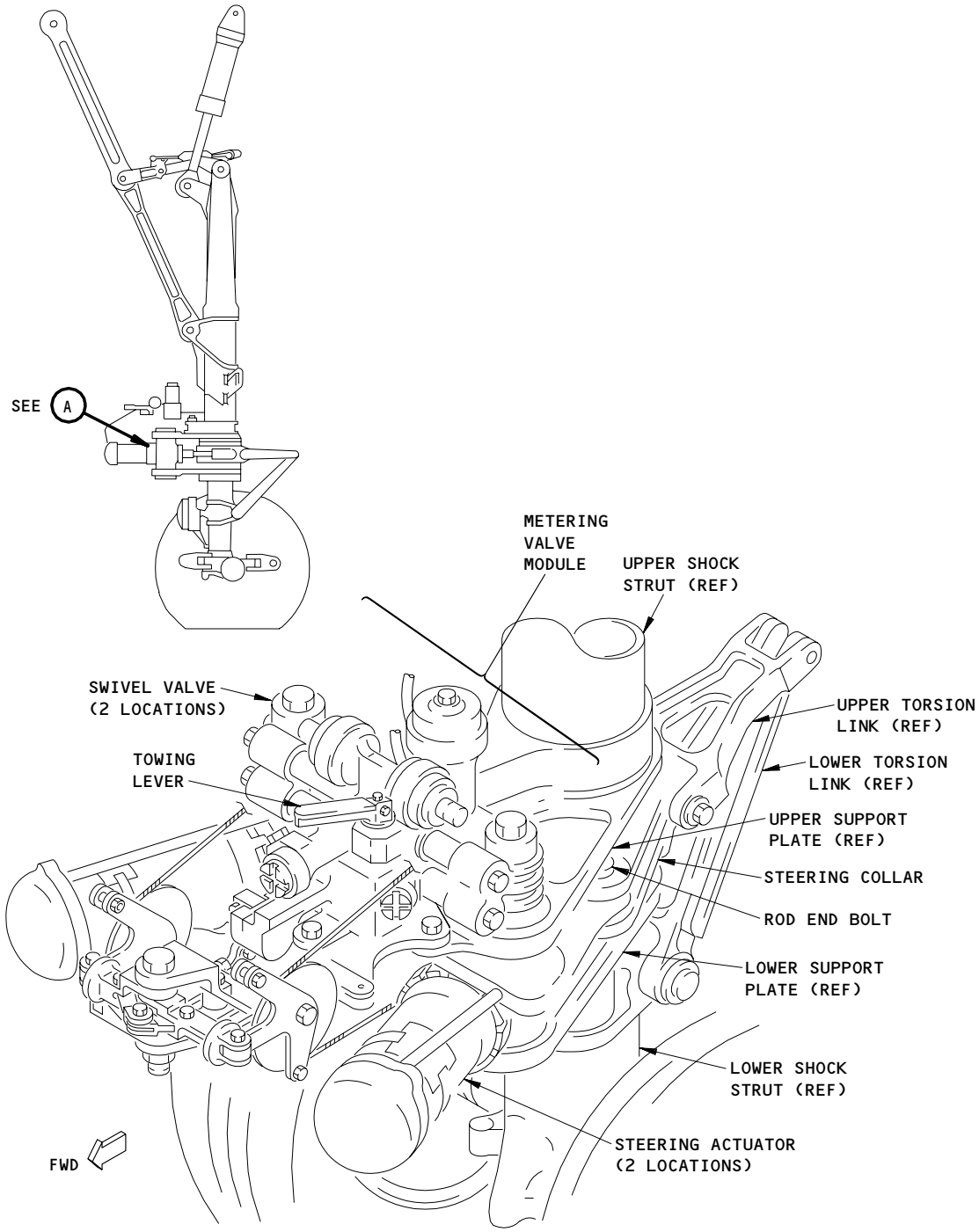
(WITH COVER REMOVED)

A

Summing and Broken Cable Compensator Mechanism
Figure 6 (Sheet 1)



Summing and Broken Cable Compensator Mechanism
Figure 6 (Sheet 2)

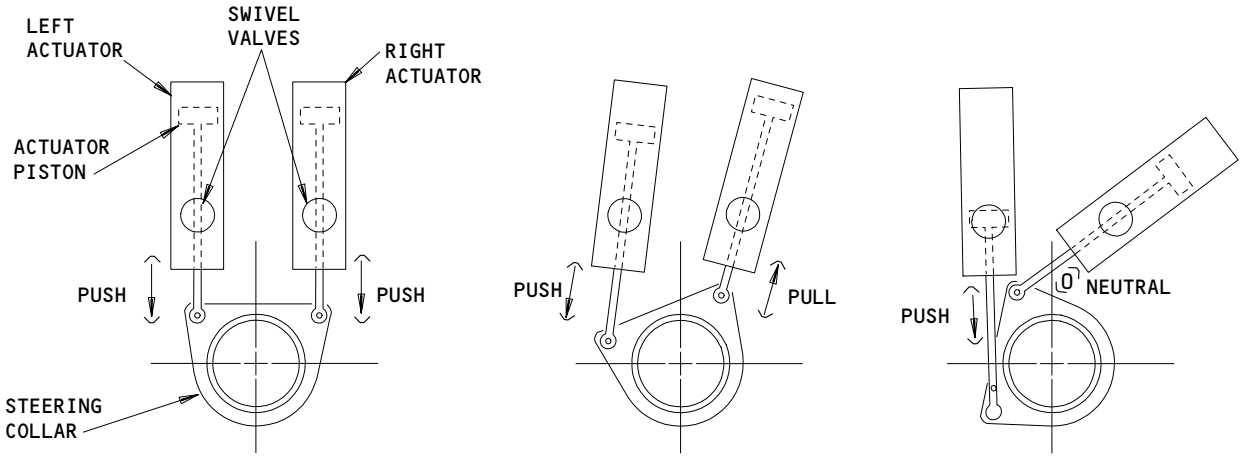


(SHOWN WITH SUMMING MECHANISM COVER REMOVED)

A

Steering Metering Valve Module and Actuator Mechanism
Figure 7 (Sheet 1)

(2) The metering valve is mechanically controlled by linkage from the summing bar which detects any error angle between the steering collar on the nose gear shock strut and tiller position.
(3) Valve centering springs ensure that the valve spool remains centered when tension is lost in the control cables.
(4) The swivel valves channel hydraulic fluid to the actuator. The swivel valves function to prevent one actuator from working against the other when it passes over center at a steering angle of greater than 30 degrees.
(5) The metering valve module has a bypass valve which interconnects the two actuator chambers when inlet pressure is removed or when pressure at either cylinder port exceeds 3900 psi with the inlet pressure at 2900 psi. The bypass valve is a conventional pressure operated shuttle valve with large operating forces. A spring loaded compensator maintains 250 psi back pressure on the steering system. This prevents cavitation in the actuators in the event of shimmy and provides fluid for a hydraulic power off landing.



STEERING ACTUATOR OPERATION SCHEMATIC

Steering Metering Valve Module and Actuator Mechanism
Figure 7 (Sheet 2)

(6) A shimmy damping valve, called a dynamic load damper (DLD) is an integral part of the steering metering valve. The valve is a combination of orifices, oil volumes, and spring which provides a dynamic filter circuit for spool motion to reject low frequency actuator pressure variations, but to recognize high frequency pressure variations which will occur if any shimmy conditions exists. The valve will then meter damping flow across the actuators. Bleed orifices from supply to the dynamic load damper (DLD) provide continuous purging flow and fill the compensator with fluid when the gear is extended.

(7) A towing lever is provided on top of the valve package. Pulling the towing lever will first move the shut-off valve to block supply pressure to the valve package and then shift the DLD spool to port fluid across the steering actuators. The lever is spring loaded and must be held in towing position with a pin type tool.

H. Steering Collar and Torsion Links (Detail A, Fig. 7)

(1) The nose gear steering collar is mounted on the shock strut outer cylinder and is retained by the actuator lower trunnion support plate.

(2) Both steering actuator rod ends are connected to the steering collar, which in turn is connected to the upper end of the upper torsion link. When force is applied to the steering collar by either or both actuators, the collar rotates on the shock strut and also imparts motion through the torsion links to turn the shock strut inner cylinder and nose gear wheels.

3. Operation

A. Functional Description (Fig. 2)

(1) The landing gear control lever must be in the DOWN position to make hydraulic pressure available from the landing gear down line to the steering valve.

(2) Tiller steering operation.

(a) When the tiller is rotated the steering cables (NWS) move and displace the steering metering valve piston.

(b) Hydraulic fluid is directed by the metering valve through swivel valves to the steering actuators.

(c) The steering actuators provide a turning movement on the steering collar which is transmitted to the wheels by the torsion links.

(d) Continued movement of the metering valve piston combined with the steering actuator swivel valves produces a maximum of 65 degrees of wheel turn for 360 degrees of tiller rotation.

(e) During the turn, the metering valve slide is displaced until the required angle of nose wheel turning is reached and is then returned to the center position by follow-up action of the cable.

(3) Rudder pedal steering operation.

(a) Rudder pedal steering is activated by the piston position system when the nose gear is compressed 3 inches or more.

(b) The compression movement is transmitted by linkage (cables and spring cartridge) to move the interconnect mechanism cable drum and reposition the eccentric arm allowing the clutch arm to contact stops mounted on the steering crank.
(c) In this position, any movement of the rudder pedals is transmitted from the steering arm to the quadrant.
(d) The quadrant moves the nose wheel steering cables displacing the steering metering valve slide for the required turn.
(e) Rudder pedal steering will cause the tiller to be back driven an equivalent amount, however the tiller can override the rudder pedal command at any point in its travel.

(4) Hydraulic actuator operation
(a) At the start of a turn, hydraulic fluid is directed by the metering valve module to the head end of one actuator and the rod end of the other actuator. Refer to Fig. 7, Steering Actuator Operation Schematic.
(b) When a turn of approximately 30 degrees is reached, the actuator with rod end pressure has contracted to its minimum length and the turning motion of its trunnion mounting moves the swivel valve to supply pressure to both ends causing the rod cross section to be the effective area. This allows the actuator to extend to the maximum steering angle helping the other actuator which pushes through the full 65 degrees.
(c) Coming out of a turn, the actuator which has crossed over center now has only return pressure at both ends, so the other actuator does all the work from 65 degrees to 30 degrees.
(d) As the angle gets less than 30 degrees, the swivel valve in the actuator approaching dead center opens up pressure to its head end and both actuators again are in a push-pull attitude.

NOSE WHEEL STEERING SYSTEM

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
ACTUATOR – STEERING	3	2	NOSE LANDING GEAR	32-51-11
CABLES – STEERING	2	4	113AL, FWD EQUIP COMPT, NOSE LANDING GEAR	32-00-05
COLLAR – STEERING	3	1	NOSE LANDING GEAR	32-51-00
CARTRIDGE – SPRING	3	1	NOSE LANDING GEAR	32-51-08
DRUM AND LINK – STEERING CONTROL	3	1	NOSE LANDING GEAR	32-51-06
DRUM – TORQUE LIMITER	2	1	113AL, FWD EQUIP COMPT, L SIDE	32-51-02
MECHANISM – RUDDER PEDAL STEERING INTERCONNECT	3	1	113AL, FWD EQUIP COMPT	32-51-05
MECHANISM – SUMMING	3	1	NOSE LANDING GEAR	32-51-09
MODULE – METERING VALVE	3	1	NOSE LANDING GEAR	32-51-12
TILLER AND GEARBOX	2	1	113AL, FWD EQUIP COMPT, FLT COMPT, P13	32-51-01

* SEE THE WDM EQUIPMENT LIST

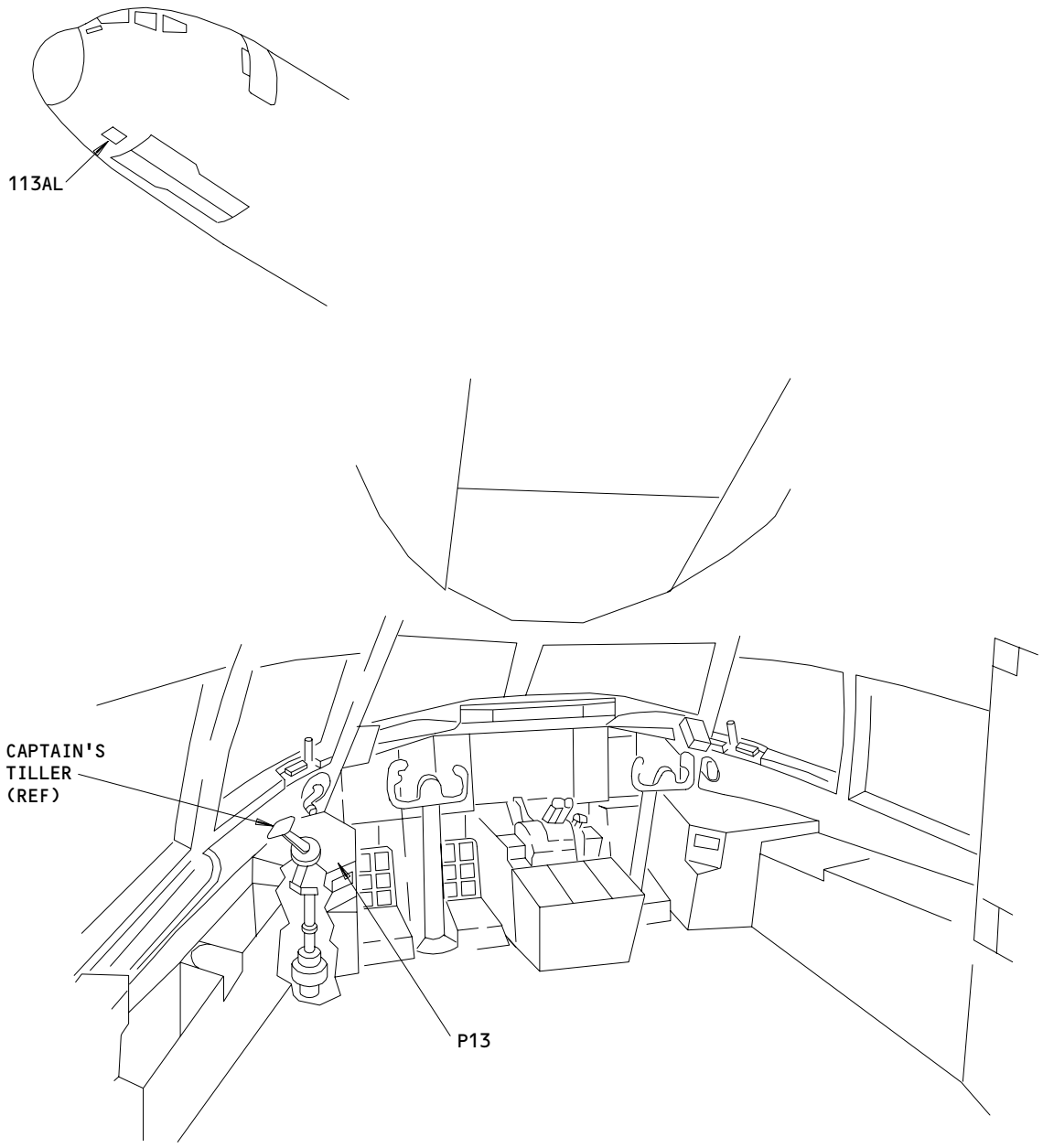
Nose Wheel Steering System – Component Index
Figure 101

788390

NOSE WHEEL STEERING SYSTEM

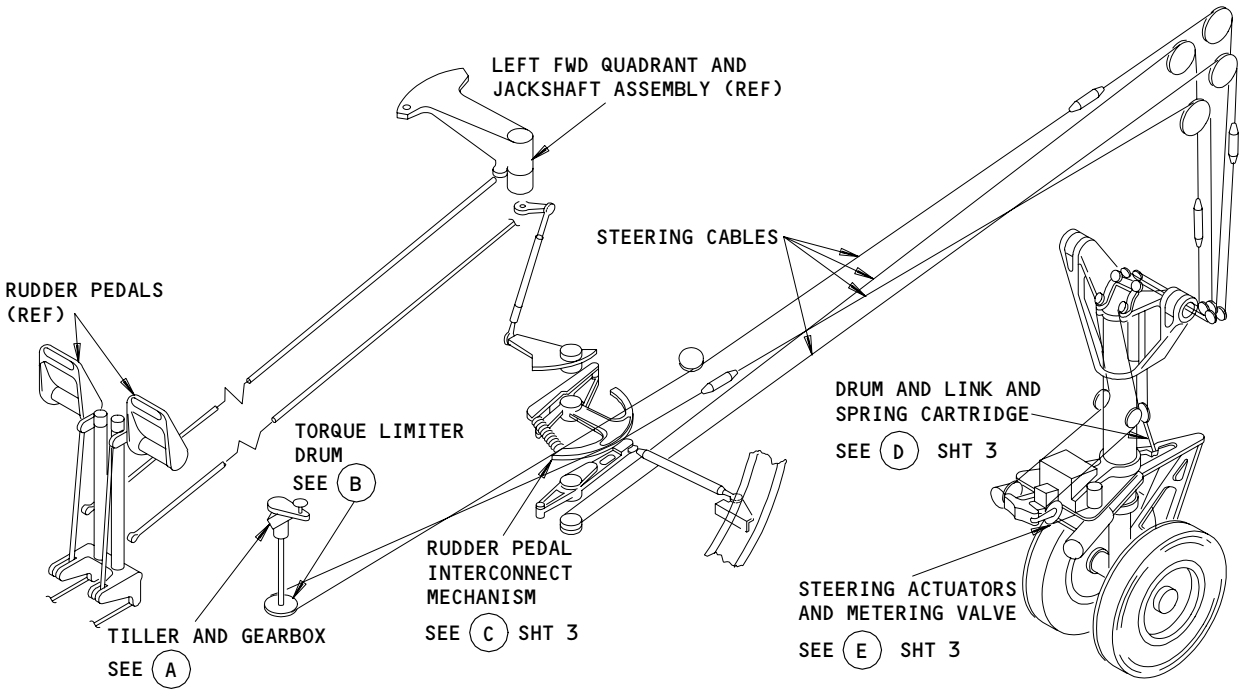
COMPONENT	FIG. 102A SHT	QTY	ACCESS/AREA	AMM REFERENCE
ACTUATOR - STEERING	3	2	NOSE LANDING GEAR	32-51-11
CABLES - STEERING	2	4	113AL, FWD EQUIP COMPT, NOSE LANDING GEAR	32-00-05
COLLAR - STEERING	3	1	NOSE LANDING GEAR	32-51-00
CARTRIDGE - SPRING	3	1	NOSE LANDING GEAR	32-51-08
DRUM AND LINK - STEERING CONTROL	3	1	NOSE LANDING GEAR	32-51-06
DRUM - TORQUE LIMITER	2	1	113AL, FWD EQUIP COMPT, L SIDE	32-51-02
MECHANISM - RUDDER PEDAL STEERING INTERCONNECT	3	1	113AL, FWD EQUIP COMPT	32-51-05
MECHANISM - SUMMING	3	1	NOSE LANDING GEAR	32-51-09
MODULE - METERING VALVE	3	1	NOSE LANDING GEAR	32-51-12
QUADRANT - FORWARD, FIRST OFFICER'S STEERING	2	1	113AL, FWD EQUIP COMPT	32-51-00
TILLER AND GEARBOX	2	2	113AL, FWD EQUIP COMPT, FLT COMPT, P13,P14	32-51-01

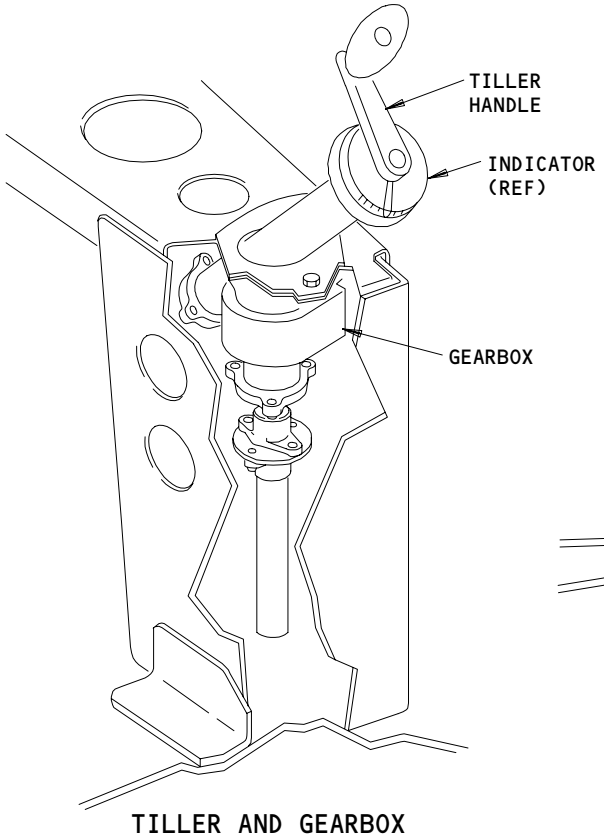
Nose Wheel Steering System - Component Index
Figure 101A



FLIGHT COMPARTMENT

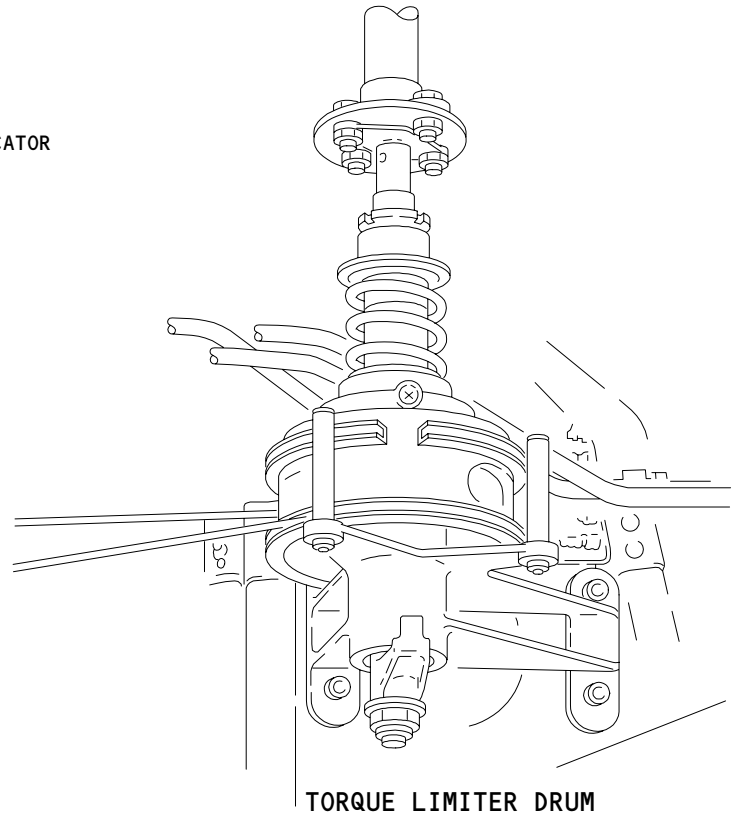
Nose Wheel Steering System - Component Location
Figure 102 (Sheet 1)





TILLER AND GEARBOX

A

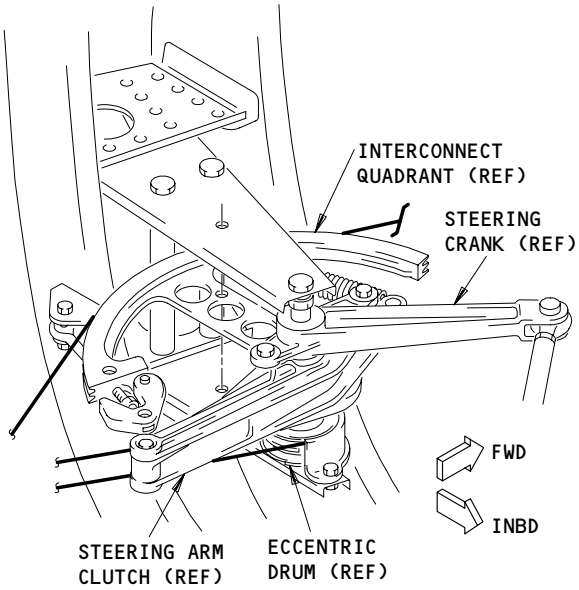


TORQUE LIMITER DRUM

B

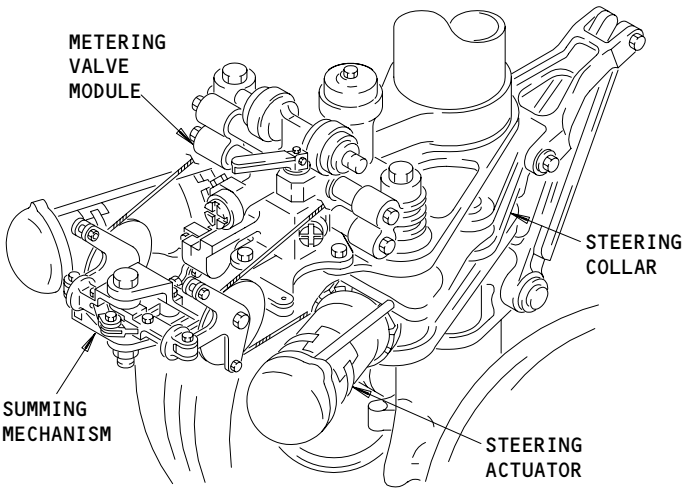
Component Location
Figure 102 (Sheet 2)

55522



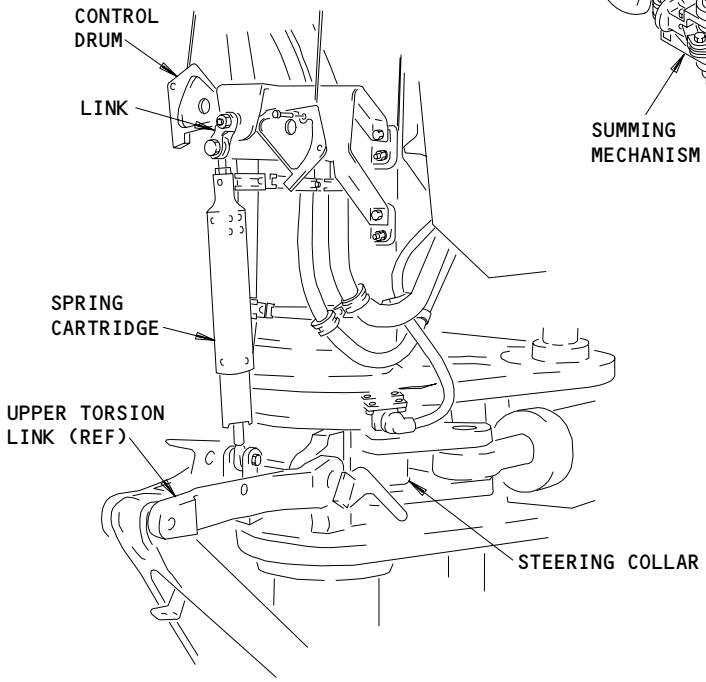
RUDDER PEDAL STEERING INTERCONNECT MECHANISM

C



STEERING ACTUATORS AND METERING VALVE

D

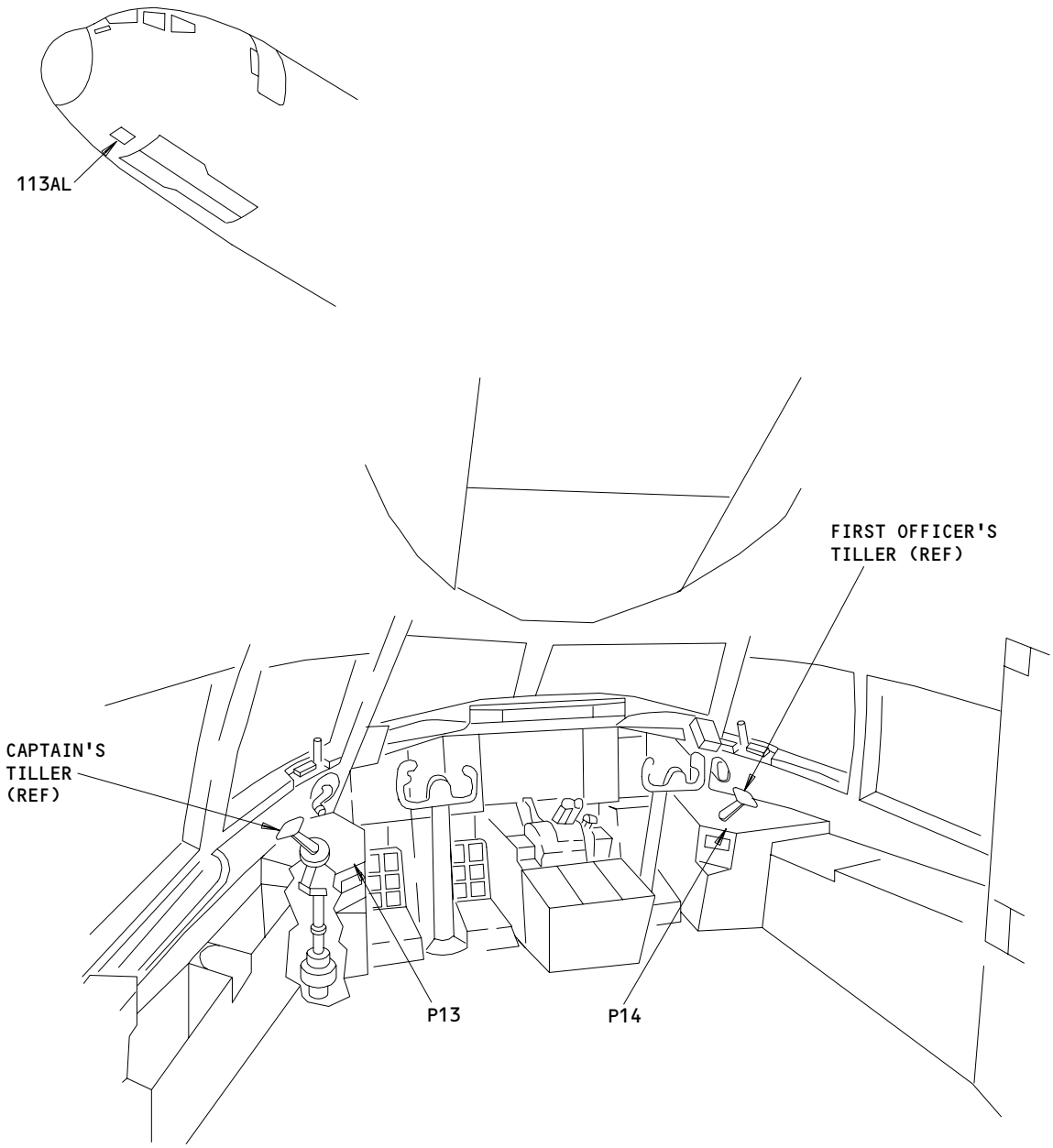


CONTROL DRUM AND LINK AND SPRING CARTRIDGE

E

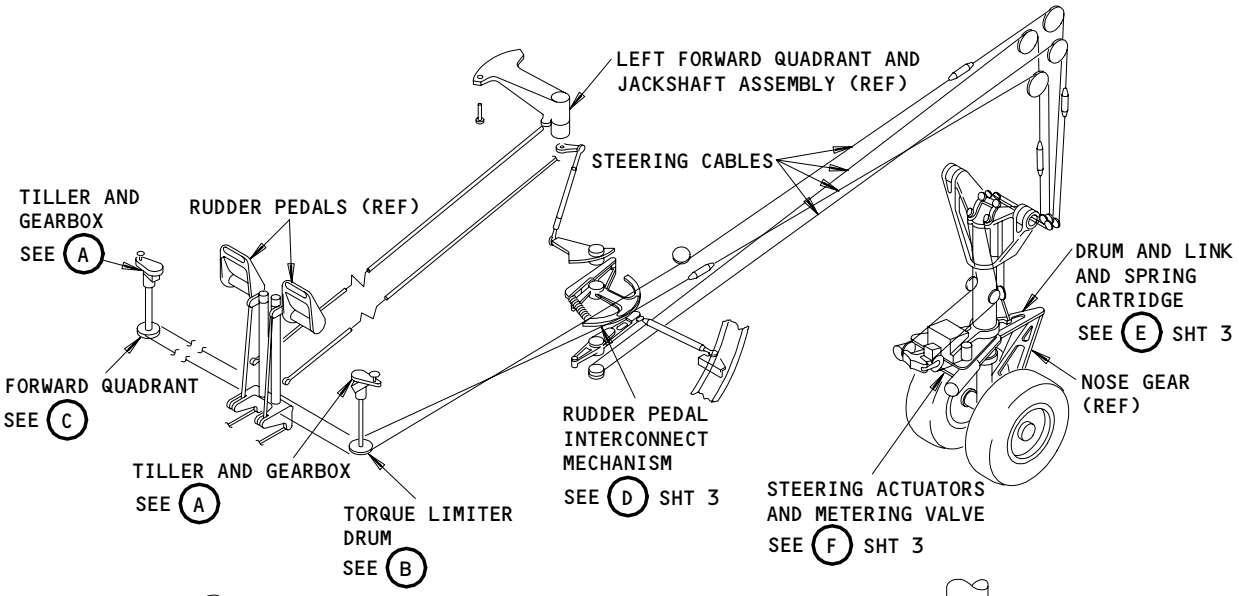
Component Location
Figure 102 (Sheet 3)

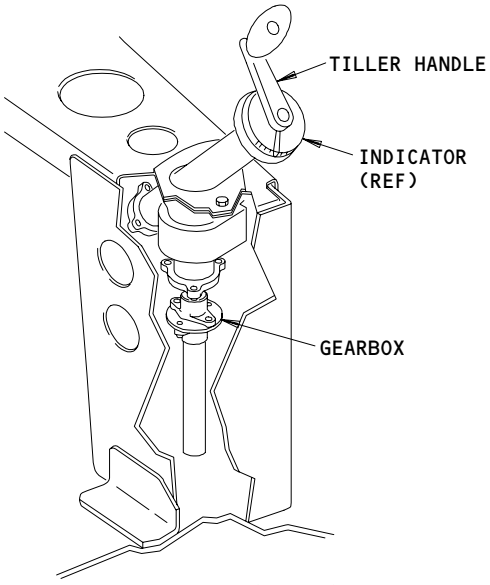
55726



FLIGHT COMPARTMENT

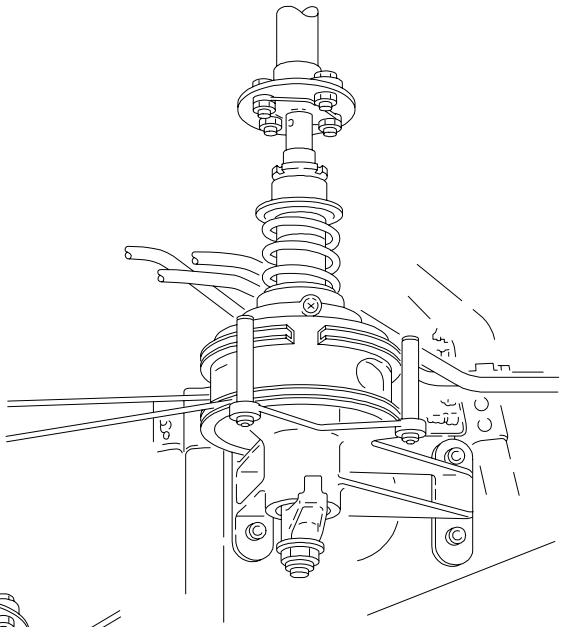
Nose Wheel Steering System - Component Location
Figure 102A (Sheet 1)





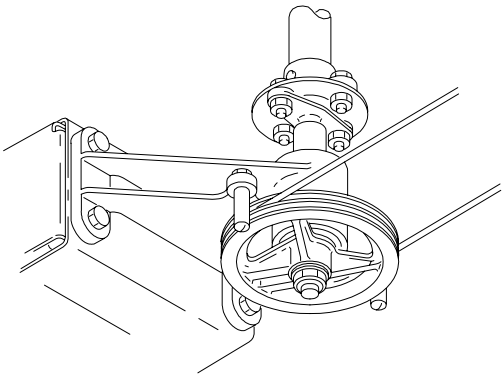
TILLER AND GEARBOX

A



TORQUE LIMITER DRUM

B

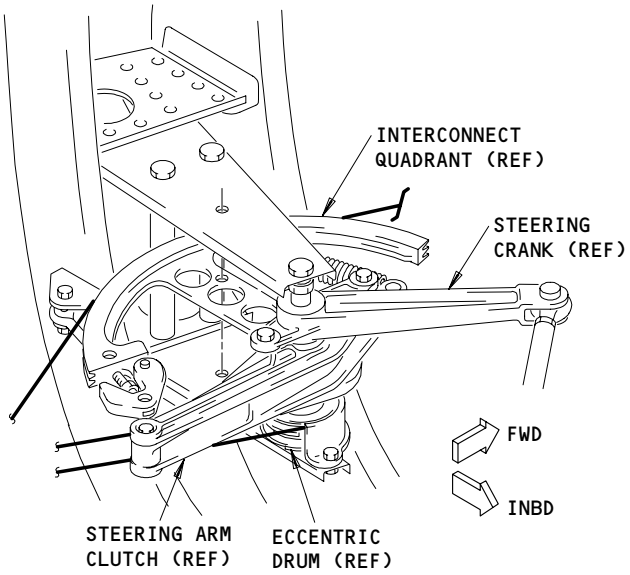


FORWARD QUADRANT
(FIRST OFFICER'S)

C

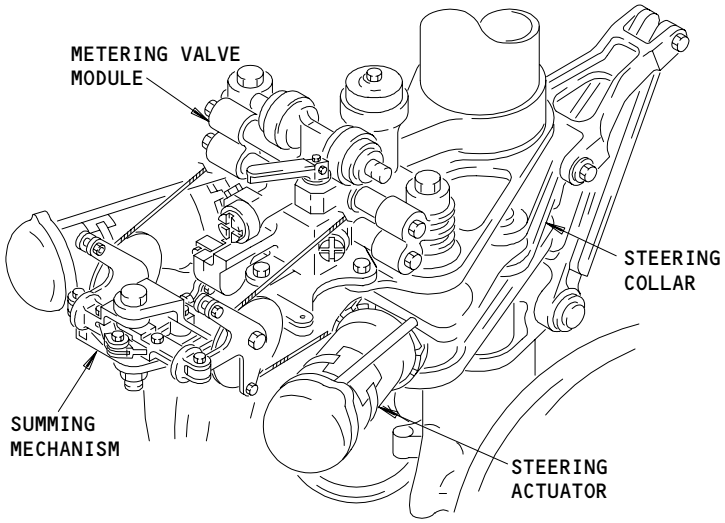
Nose Wheel Steering System – Component Location
Figure 102A (Sheet 2)

787285



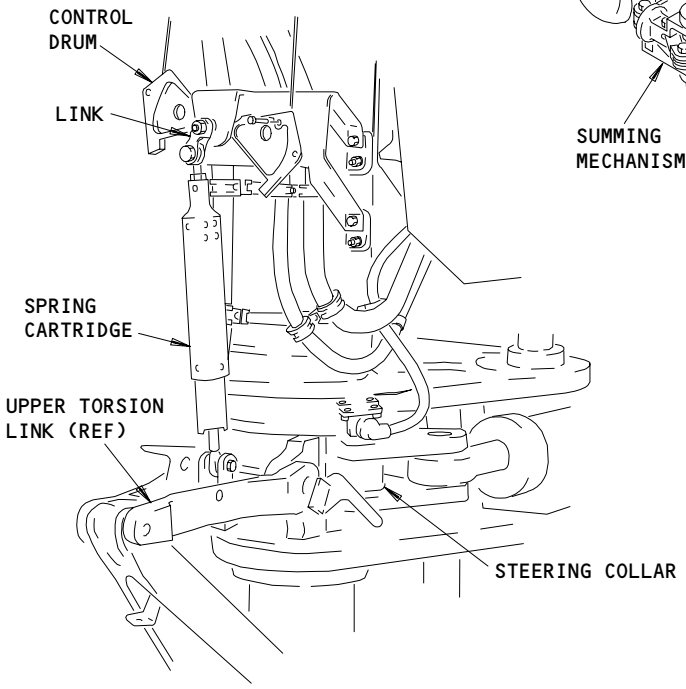
RUDDER PEDAL STEERING INTERCONNECT MECHANISM

(D)



STEERING ACTUATORS AND METERING VALVE

(E)



CONTROL DRUM AND LINK AND SPRING CARTRIDGE

(F)

Nose Wheel Steering System - Component Location
Figure 102A (Sheet 3)

NOSE WHEEL STEERING SYSTEM - ADJUSTMENT/TEST

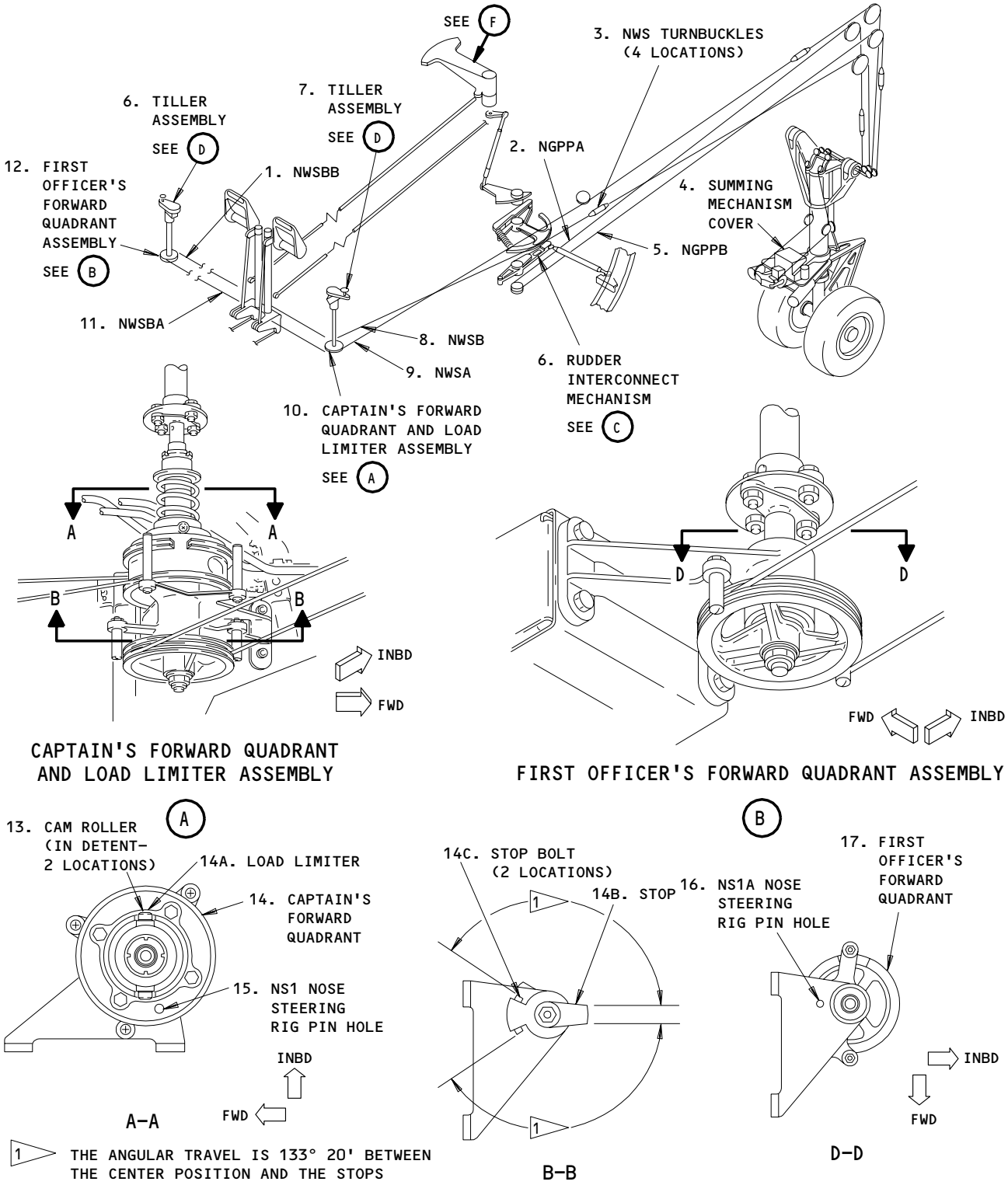
1. General
   A. This procedure contains two tasks. The first task is the adjustment of the system for nose wheel steering. The second task is the system test for the nose wheel steering.

TASK 32-51-00-825-001

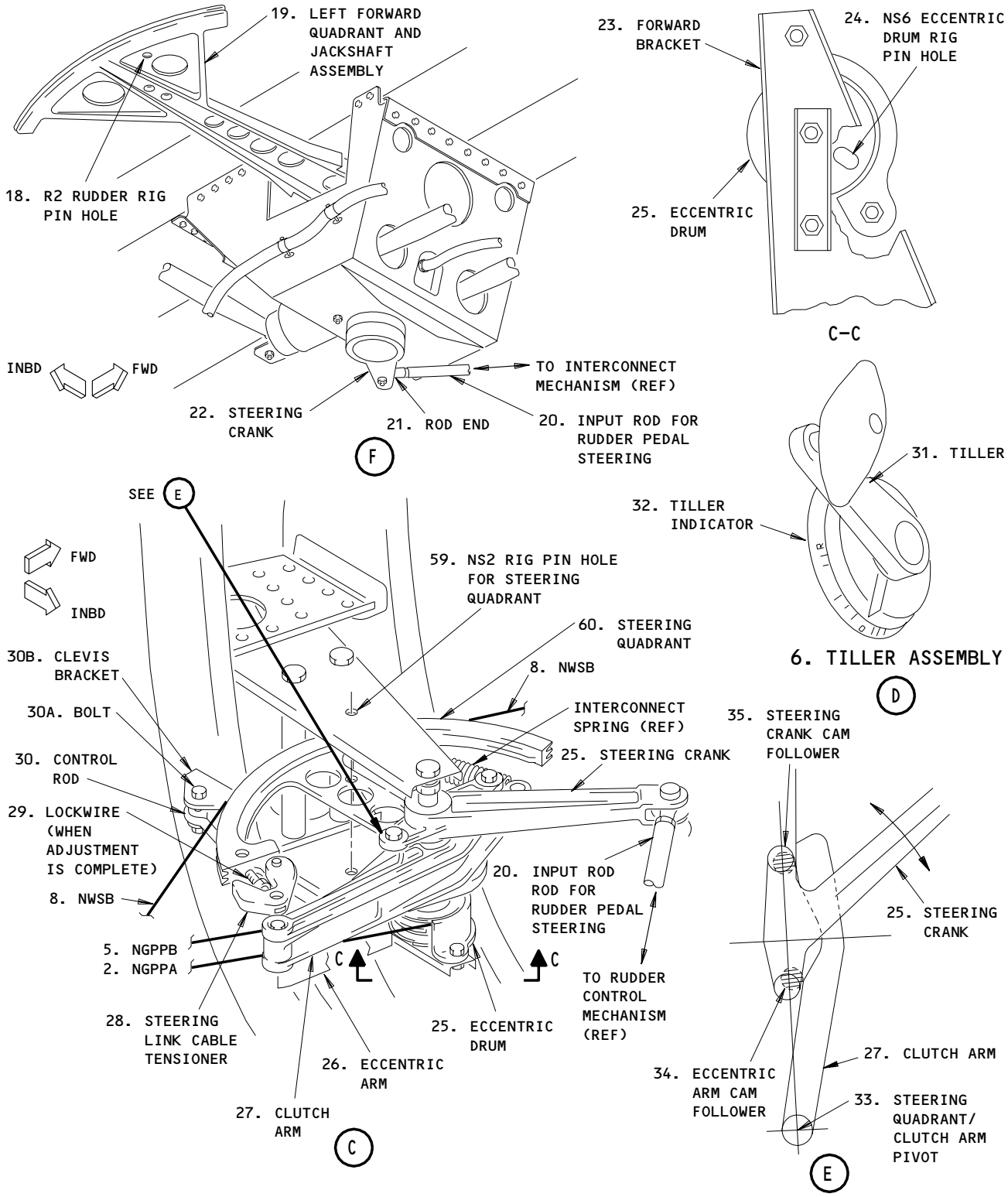
2. Adjustment - Nose Wheel Steering
   A. General
      (1) The adjustment of the control system for the nose wheel steering has three parts:
         (a) A check of the adjustment of the system for nose wheel steering.
         (b) Adjustment of the piston position/rudder interconnect system for the nose landing gear.
         (c) Adjustment of the system for nose wheel steering.
      (2) The system for nose wheel steering is correctly adjusted if the conditions that follow occur:
         (a) You can use the Captain's tiller handle to operate the nose wheel steering through the full travel of 65 ±1 degrees left and right. It is necessary to have the hydraulic power on.
         (b) The rudder pedal steering has the correct maximum travel of 4 to 7 degrees left and right. Use the Captain's rudder pedals with the hydraulic power on and the rudder pedal steering engaged.
         (c) The rudder pedal steering will not operate when the piston position/rudder interconnect disengages the rudder pedal steering. The hydraulic power must be on.
         (d) The nose wheels go to a position that is less than ±1-1/2 degrees from the center when you release the tiller handle from the full left and right steering travel. The shock strut must be fully serviced and the hydraulic power must be on.
         (e) All the rig pins can be installed easily (this does not include NS6 which can be tight because of the load on the interconnect springs) with the nose wheels less than ±1/4 degree from the center (hydraulic power off). To do a check of the free fit of the rig pins NS6 and NS7 turn the piston position/rudder interconnect system to the air mode (rudder pedal steering disengaged). To do a check of the free fit of all the other rig pins turn the piston position/rudder interconnect system to the ground mode (rudder pedal steering engaged).

            NOTE: The rig pins have a free fit if you can install or remove them with two fingers. Some resistance is permitted.

         (f) The piston position/rudder interconnect for the nose landing gear has the correct tension (do the check with the hydraulic power off).

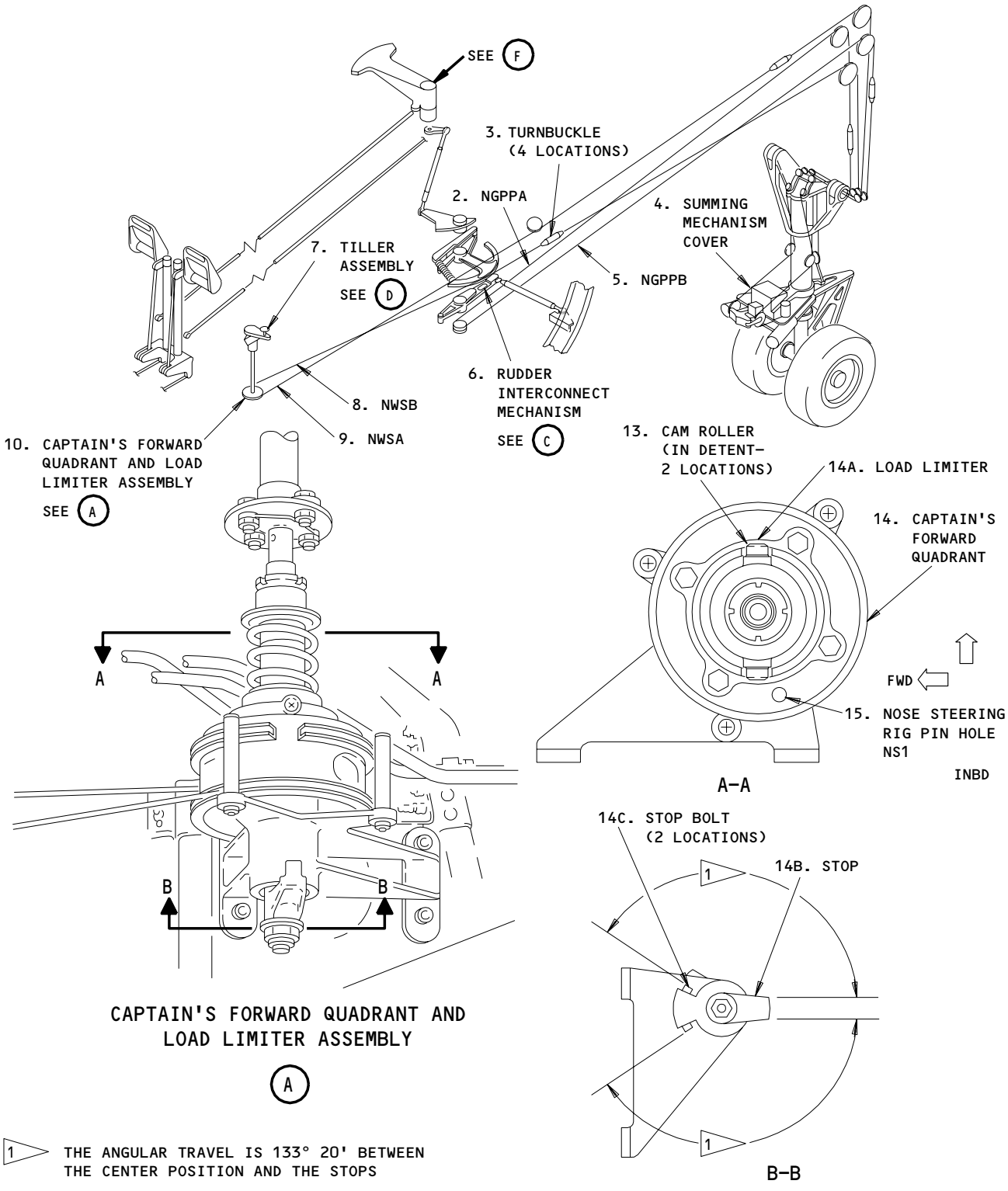


Nose Wheel Steering System Body Mounted Compartments
Figure 501 (Sheet 1)

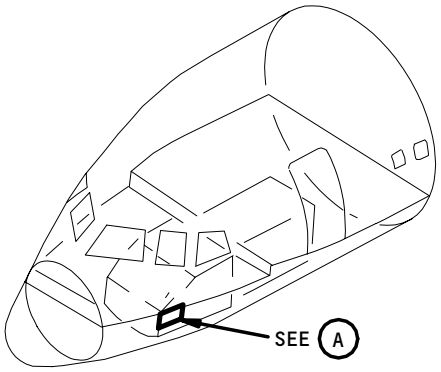


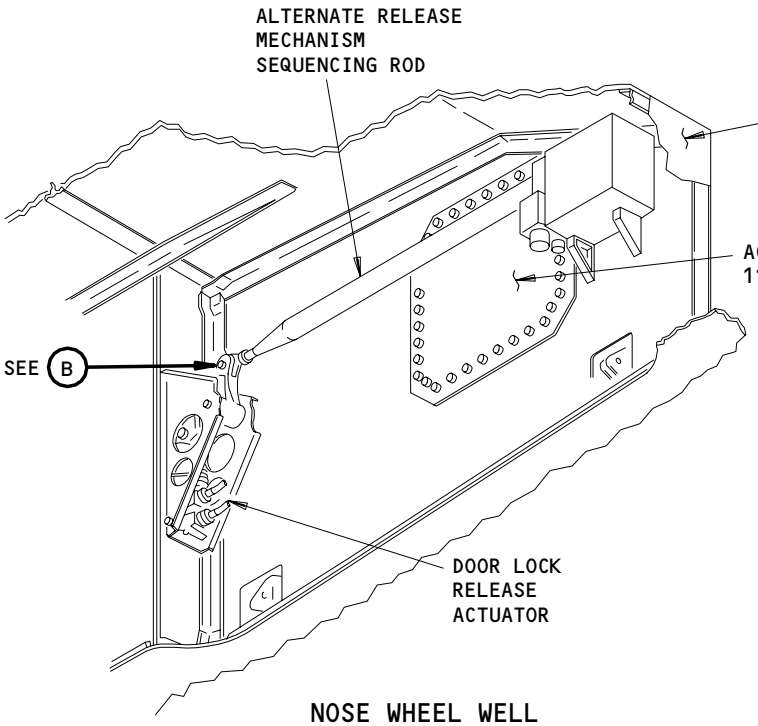
Nose Wheel Steering Components Installed in the Body
Figure 501 (Sheet 2)

55485



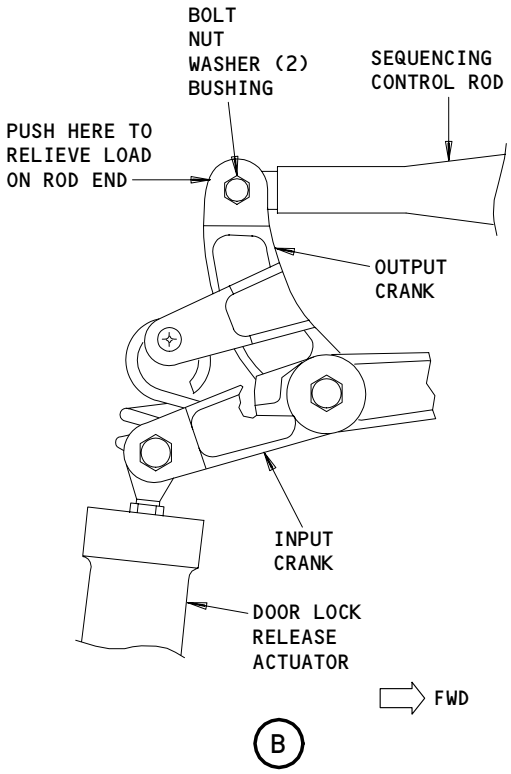
Nose Wheel Steering System Body Mounted Component Adjustment
Figure 501 (Sheet 3)





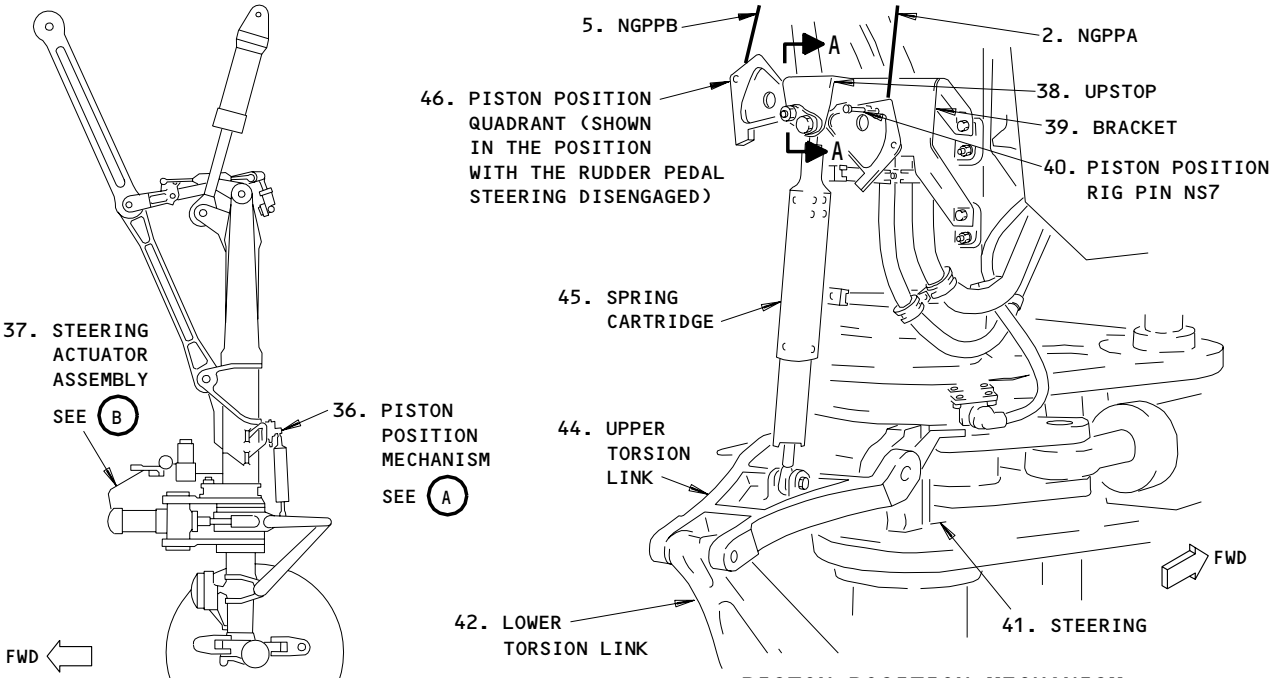
NOSE WHEEL WELL
(LEFT WALL)

A



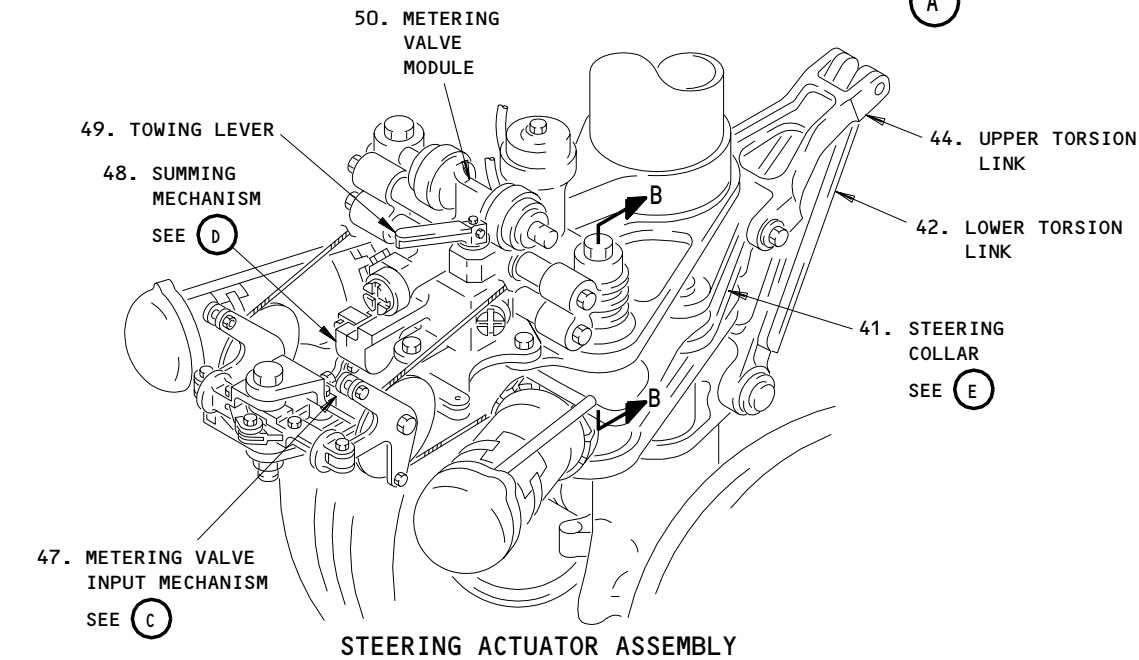
B

Nose Wheel Steering System Cable Turnbuckle Access
Figure 501A



PISTON POSITION MECHANISM
(SHOCK STRUT SHOWN IN THE EXTENDED POSITION)

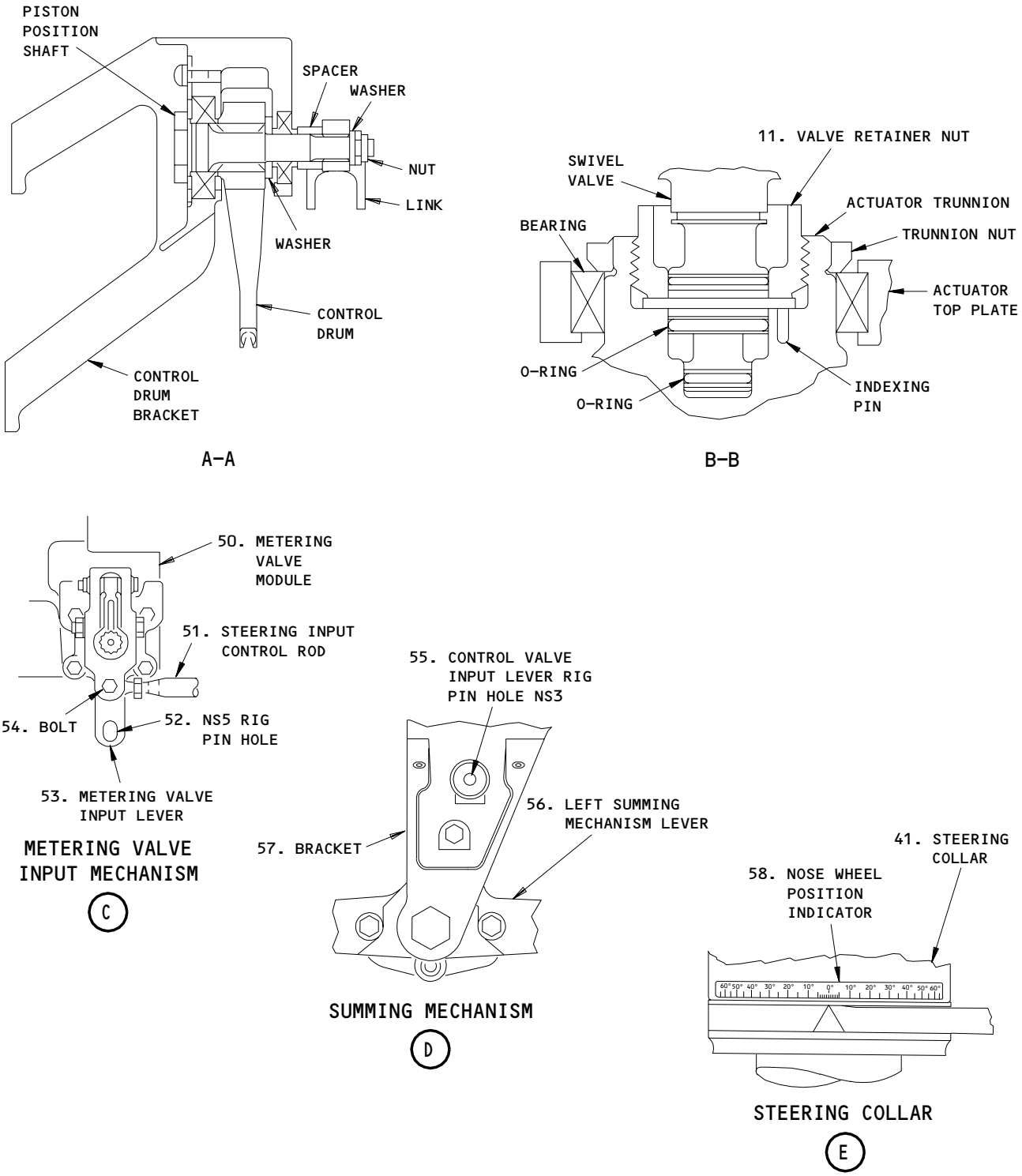
A



STEERING ACTUATOR ASSEMBLY
(SHOWN WITH THE COVER REMOVED)

B

Nose Wheel Steering System Adjustment for Components on the Landing Gear
Figure 502 (Sheet 1)



Nose Wheel Steering System Adjustment for Components on the Landing Gear
Figure 502 (Sheet 2)

(g) The cables of the system for the nose wheel steering have the correct tension (do the check with the hydraulic power off).

(3) Do the adjustment with the torsion links disconnected. (If the indicator decal on the steering collar for the nose wheel is not there you can lift the airplane nose on jacks to put the nose landing gear in the center position). Hold the top torsion link to be clear of the hardware on the nose landing gear during the adjustment. When you adjust the piston position/rudder interconnect system, it is necessary to turn the torsion link down to be clear of the piston position cartridge. This will permit you to measure the free length of the spring cartridge.

(4) 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.

B. Equipment

(1) Rig Pins from Set B20003-XX (Ref 20-10-24/201):
(a) NS1 - P/N B20003-20
(b) AIRPLANES WITH DUAL NWS TILLER;
NS1A - P/N B20003-20
(c) NS2 - P/N B20003-24
(d) NS3 - P/N B20003-5
(e) NS5 - P/N B20003-5
(f) NS6 - P/N B20003-5
(g) NS7 - P/N B20003-15
(h) R2 - P/N B20003-22

(2) Cable Tensiometer, 0 to 200 pound range for 3/32 inch diameter cable - Commercially Available

(3) Line to hold the NLG Top Torsion Link (Rope or Cord)

C. Consumable Materials

(1) C00308 Compound, Corrosion Preventive - MIL-C-11796

(2) D50180 Grease - BMS 3-33 (Preferred)

(3) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)

D. References

(1) AMM 06-41-00/201, Fuselage Access Doors and Panels
(2) AMM 07-11-02/201, Jacking Airplane Nose
(3) AMM 20-10-24/201, Rig Pins
(4) AMM 24-22-00/201, Electrical Power - Control
(5) AMM 27-21-00/501, Rudder Control System
(6) AMM 29-11-00/201, Main (Left, Right, and Center) Hydraulic Systems
(7) AMM 32-00-15/201, Landing Gear Door Locks
(8) AMM 32-00-20/201, Landing Gear Downlocks

(9) AMM 32-21-09/401, Nose Gear Torsion Links

E. 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)
711 Nose Landing Gear (NLG)

(2) Access Panel

115AL Panel - NLG Wheel Well (Left)

F. Prepare for the Adjustment

S 015-002

(1) Do the steps that follow to get access to the steering cables for the nose wheel to do the adjustment:

CAUTION: DO NOT PERMIT THE ROD TO HANG FROM THE DISCONNECTED FRONT END. THE LOAD ON THE ROD END THAT IS ATTACHED CAN CAUSE DAMAGE TO THE ROD END BEARING.

(a) Turn the output lever on the lock release mechanism for the door actuator of the nose landing gear (Fig. 501A) slightly forward. This removes the spring load from the rod and permits the removal of the rod end bolt.
(b) Remove the bolt that attaches the rod end. Hold up the control rod while you do this. This will not permit the rod end to hang down and put too much load on the rod end bearing at the end of the rod that is attached.
(c) Move the disconnected end of the rod up to be clear of the access panel 115AL (AMM 06-41-00/201).
(d) Make sure the rod is held in this position.
(e) Remove the access panel 115AL.

G. Do the Check of the Adjustment of the System for Nose Wheel Steering

S 825-003

(1) Make sure the conditions of the adjustment check that follow are satisfactory. If they are not, it will be necessary to adjust the system for nose wheel steering and/or the piston position/rudder interconnect system.

S 495-004

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

S 865-005

WARNING: MAKE SURE YOU REMOVE THE HYDRAULIC PRESSURE TO THE SYSTEM FOR THE NOSE WHEEL STEERING BEFORE YOU DO THE ADJUSTMENT. 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.

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

S 865-006

(4) Look at the indicator (58) on the steering collar (Detail E, Fig. 502) to make sure the nose wheels are less than 1/4 degree from the center.

S 585-007

(5) If the indicator (58) is not there, lift the airplane nose on jacks (AMM 07-11-02/201) to put the nose wheels in the center.

NOTE: The nose wheels and the steering collar will go to the center when the shock strut is fully extended. The centering cams in the shock strut will do this automatically. It is possible that it will be necessary to manually put the nose wheels in the center. If the wheels are not in the detent for the center, you can feel when the wheels are manually turned and go into the detent.

S 035-008

CAUTION: HOLD THE TOP TORSION LINK IN THE HORIZONTAL POSITION. IF THE TORSION LINK IS NOT HELD IN THE HORIZONTAL POSITION, IT CAN CAUSE DAMAGE TO THE PROXIMITY SENSORS OR TARGETS FOR THE NOSE LANDING GEAR NOT COMPRESSED.

(6) If they are not disconnected, disconnect the torsion links (42 and 44, Fig. 502) (AMM 32-21-09/401).

NOTE: When the landing gear is extended with the torsion links connected, you cannot install the rig pin NS7.

(a) Disconnect the lower end of the spring cartridge (4) from the top torsion link (44).
(b) Hold the top torsion link (44) to be clear of the cables and other components.

S 865-009
(7) Make sure the tiller pointer (31) is on the zero mark of the tiller indicator (32) (Detail D, Fig. 501).

S 835-010
(8) Make sure you can install the rig pin NS6 through the rig pin hole (24, Fig. 501) in the forward bracket (23) and the eccentric drum (25). The piston position quadrant (46) must be in the position for rudder steering disengaged that is shown in Detail A, Fig. 502. Turn the quadrant (46) if it is necessary.

NOTE: The fit of the rig pin NS6 can be tight because of the load on the interconnect springs.

S 825-320
(9) Make sure the rig pin NS7 (40, Fig. 502) can be installed easily when the spring cartridge (45, Fig. 502,) does not have a load (held at the free length position of 17.20±0.01 inches for the 275N2059-1 and -2 spring cartridges and 16.51±0.01 inches for the 275N2059-3 spring cartridge). Measure the free length as follows:
(a) Measure the length of the spring cartridge (45) between the rod end centerlines when the cartridge piston hangs free.

S 095-013
(10) Remove the rig pins NS6 and NS7.

S 825-213
(11) AIRPLANES WITH SINGLE NWS TILLER;
Make sure the tension in the cables NWSA (9), NWSB (8), NGPPA (2) and NGPPB (5) is in tolerance (Tables 501 and 502). Use the cable tensiometer.

S 825-214
(12) AIRPLANES WITH DUAL NWS TILLER;
Make sure the tension in the cables NWSA (9), NWSB (8), NGPPA (2), NGPPB (5), NWSBA (11), and NWSBB (1) is in tolerance (Tables 501 and 502). Use the cable tensiometer.

S 995-016
(13) AIRPLANES WITH SINGLE NWS TILLER;
Use this table:

Table 501		
CABLE	TEMPERATURE (°F) (±5°F)	CABLE TENSION (LB.) (±5LB.)
NWSA (9) NWSB (8)	130 110 90 70 50 30 10 -10 -30 -40	75 70 65 60 55 50 45 40 36 34

S 995-019

(14) AIRPLANES WITH DUAL NWS TILLER;
Use this table:

Table 501		
CABLE	TEMPERATURE (°F) (±5°F)	CABLE TENSION (LB.) (±5LB.)
NWSA (9) NWSB (8) NWSBA (11) NWSBB (1)	130 110 90 70 50 30 10 -10 -30 -40	75 70 65 60 55 50 45 40 36 34

Table 502		
CABLE	TEMPERATURE (°F) (±5°F)	CABLE TENSION (LB.) (±5LB.)
NGPPA (2) NGPPB (5)	130 110 90 70 50 30 10 -10 -30 -40	54 49 45 40 36 31 27 22 18 15

S 435-018

(15) Examine all of the adjustable rod ends in the system for the nose wheel steering to make sure the threads are engaged correctly. You must see the end of the rod in at least half of the inspection holes for the rod end.

S 015-019

(16) Remove the cover from the summing mechanism for the metering valve (4, Fig. 501).

S 035-020

(17) Make sure the top and the lower torsion links (42 and 44, Detail A, Fig. 502) are disconnected.

S 035-021

(18) Make sure the lower end of the spring cartridge (45) is disconnected from the top torsion link (44).

S 865-022

(19) Do the step that follows to get the position for rudder steering engaged (ground mode):
   (a) Turn the quadrant (46) for piston position control counterclockwise against the upstop (38) on the bracket (39).

S 495-023

(20) Make sure the rig pins that follow can be installed easily when the nose wheel steering is no more than ±1/4 degree from the center:

NOTE: The rig pins have the correct fit when they can be installed or removed with two fingers. It is possible that they will be lightly resistant.

(a) NS1 (Fig. 501)
(b) NS1A (Fig. 501)
(c) NS2 (Fig. 501)
(d) NS3 (Fig. 502)
(e) NS5 (Fig. 502)

S 095-024
(21) Remove the rig pins.

S 715-025
(22) Do the steps that follow to do a check of the travel and the operation of the nose wheel to the center with the hydraulic power on:
(a) Connect the spring cartridge (45) to the top torsion link (44) and the lower torsion link. This will extend the spring cartridge (45) to turn the piston position quadrant (46) to the position that disengages the rudder pedal steering (air mode).

WARNING: BEFORE YOU PRESSURIZE THE HYDRAULIC SYSTEM FOR THIS PROCEDURE THE CONTROL HANDLE FOR THE LANDING GEAR MUST BE IN THE DOWN POSITION AND THE TORSION LINKS FOR THE NOSE LANDING GEAR MUST BE DISCONNECTED. THIS WILL PREVENT ACCIDENTAL OPERATION OF THE LANDING GEAR AND THE NOSE WHEEL STEERING WHICH CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(b) Make sure the control handle for the landing gear is in the down position.
(c) Makes sure the torsion links (42 and 44, Detail A, Fig. 502) for the nose landing gear are disconnected.

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM MOVABLE SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER TO THE NOSE WHEEL STEERING SYSTEM. WHEN YOU SUPPLY HYDRAULIC POWER TO THE SYSTEM FOR NOSE WHEEL STEERING SOME OF THE SURFACES CAN MOVE AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(d) Pressurize the left hydraulic system (AMM 29-11-00/201).

(e) Push the Captain's left rudder pedal, then the right rudder pedal fully.
(f) Make sure the steering collar (41, Detail E, Fig. 502) does not turn.
(g) Push the First Officer's left and the right rudder pedals fully.
(h) Make sure the steering collar (41, Fig. 502) does not turn.
(i) Turn the Captain's tiller handle (31) clockwise from the center to the stop.
(j) Hold the Captain's tiller (31) against the stop and make sure the angular movement of the steering collar (41) is 65 ±1 degrees clockwise.
(k) Release the Captain's tiller (31) and let it go back to the center without manual aid.
(l) Make sure the tiller goes back to the center in less than 4 seconds.
(m) Make sure the steering collar (41) is not more than ±1 1/2 degree from the center.
(n) Do the five steps before this again, but turn the Captain's tiller handle counterclockwise.
(o) Remove the pressure from the left hydraulic system (Ref 29-11-00).

H. Adjust the Piston Position/Rudder Interconnect System on the Nose Landing Gear

S 585-026

(1) Lift the airplane nose on jacks (AMM 07-11-02/201).

S 035-027

CAUTION: HOLD THE TOP TORSION LINK IN THE HORIZONTAL POSITION. IF THE TORSION LINK IS NOT HELD IN THE HORIZONTAL POSITION, IT CAN CAUSE DAMAGE TO THE PROXIMITY SENSORS OR TARGETS FOR THE NOSE LANDING GEAR NOT COMPRESSED.

(2) If they are not disconnected, disconnect the torsion links (42 and 44, Fig. 502) (AMM 32-21-09/401).

NOTE: When the landing gear is extended with the torsion links connected, you cannot install the rig pin NS7.

(a) Hold the top torsion link (44) to be clear of the cables and other components.

S 035-028
(3) Disconnect the input rod for the rudder pedal steering (20, Detail B, Fig. 501) from the steering crank (22).

S 035-029
(4) Disconnect the control rod (30) from the clevis bracket (30A).

S 495-030
(5) Install the rig pins NS2 (59, Detail C, Fig. 501), NS6 (24, Fig. 501) and NS7 (40, Detail A, Fig. 502).
   (a) If the rig pin NS6 is not installed and you loosen the cables, the eccentric drum (25) will turn because of the movement of the clutch arm (24) that is spring-loaded. If you have this condition, pull the clutch arm (24) clear of the eccentric drum (25). Put the drum (25) in its the correct position for rig pin installation. Then install the rig pin NS6.

S 825-032
(6) If new cables NGPPA (2) and NGPPB (5) were installed, do the steps that follow to pull the new cables:
   (a) Tighten the new cables to 80 ±10 pounds of tension (at 70°F), but do not lock the turnbuckles.
   (b) Remove the rig pins NS6 and NS7.
   (c) Operate the piston position system through 25 full cycles. With the top torsion link (44) disconnected, manually lift and lower it, to do this.
   (d) Install the rig pins NS6 and NS7 again.

S 825-033
(7) Adjust the cable NGPPA (2) and NGPPB (5) to the correct tension (Table II).

S 495-034
(8) Make sure the rig pins NS2 (59, Detail C, Fig. 501) and NS7 (40, Detail A, Fig. 502) have a free fit when the conditions that follow occur (the rig pin NS6 can be tight because of a load on the interconnect springs):
   (a) The spring cartridge (45) is at the free length (not loaded) position (disconnected from the torsion link, 44).

(b) The spring cartridge hangs vertically from the attachment of the top rod end.

S 825-035

(9) Make sure the free length position is 17.20+/-0.01 inches for -1 and -2 cartridges, or 16.51+/-0.01 inches for -3 cartridges. Measure between the centerlines of the rod ends of the spring cartridge (45). If it is necessary, use the procedure in AMM 32-51-08/401 to adjust the free length of the spring cartridge.

S 825-036

(10) Adjust the rod end of the control rod (30) until you can put the attach bolt (30A) freely through the rod end and the clevis bracket (30B).

S 435-037

(11) Tighten the adjustment nut for the rod end and install the bolt (30A).

S 095-038

(12) Remove the rig pins NS2, NS6 and NS7.

S 435-039

(13) Install the turnbuckle lock clips for the cables NGPPA (2) and NGPPB (5).

I. Adjust the System for the Nose Wheel Steering

S 585-040

(1) Lift the airplane nose on jacks (AMM 07-11-02/201).

S 035-041

(2) Disconnect the lower end of the spring cartridge (45, Fig. 502, Detail A) from the torsion link (44).

S 865-042

(3) Turn the piston position quadrant (40) counterclockwise against the upstop (38) on the bracket (39). This will put the system for the nose wheel steering in the position to engage the rudder pedal steering (ground mode).

S 035-043
(4) Disconnect the control rod for the steering input (51, View C, Fig. 502) from the input lever for the metering valve (53).

S 035-044
(5) Remove the lockwire from the tensioner for the steering link cable (28, View C, Fig. 501).

S 495-045
(6) Put the rig pin NS3 in the rig pin hole (55, View D, Fig. 502) in the summing mechanism (View D, Fig. 502).

S 495-046
(7) Put the rig pin NS5 in the rig pin hole (52) in the metering valve module (50).

S 495-300
(8) Put the rig pin NS1 in the rig pin hole (15) in the Captain's forward quadrant (14, Fig. 501, View A-A).

S 495-309
(9) AIRPLANES WITH DUAL NWS TILLER;
Put the rig pin NS1A in the rig pin hole (16) in the First Officer's quadrant (17).

S 865-052
(10) Make sure the pointer on the tiller indicator (32) is in the center.

S 495-053
(11) Put the rig pin for the rudder R2 in the rig pin hole (18, View B, Fig. 502) in the left forward quadrant (19).

S 495-054
(12) Put the rig pin NS2 in the rig pin hole (59, Detail C) in the interconnect quadrant (60).

S 865-055
(13) Make sure the steering collar (41, Detail E, Fig. 502) is less than 1/4-degree from the center.

S 825-056
(14) Adjust and install the input rod for the rudder pedal steering (20, Detail B, Fig. 501) to align it with the middle hole on the rudder steering crank (22). Adjust the length of the rod (20) if it is necessary to permit a loose fit of the fasteners. Tighten the nut for rod end adjustment to 150-200 pound-inches. Make sure the rollers on the steering crank for the interconnect mechanism (25, Fig. 501) touch the clutch arm (27) with the rudder pedal steering engaged (step (1)).

NOTE: This will give you 7 degrees of rudder pedal steering.

S 495-058
(15) Make sure the rig pins NS2 and R2 can be installed with a loose fit.

S 865-059
(16) Adjust the length of the input control rod (51, Fig. 502, Detail C). Align the rod end hole with the installation hole in the input lever for the metering valve (53) on the input mechanism (Fig. 502, Detail C).

S 435-060
(17) Make sure the bolt (54) can be freely installed and install the bolt (54).

S 435-061
(18) Tighten the rod end jamnuts to 150-200 pound-inches.

S 435-062
(19) Install lockwire.

S 435-063
(20) Tighten the bolt (54).

S 495-064
(21) Make sure the rig pins NS3 and NS5 have a free fit.

S 825-217
(22) AIRPLANES WITH SINGLE NWS TILLER;
If you installed the new cables NWSA (9) and NWSB (8), do the steps that follow to pull the new cables:

S 825-218
(23) AIRPLANES WITH DUAL NWS TILLER;
If you installed the new cables NWSA (9), NWSB (8), NWSBA (11), and NWSBB (1), do the steps that follow to pull the new cables:
(a) Tighten the new cables to 120 ±10 pounds (at 70°F) but do not lock the turnbuckles. When you tighten NWSB (8), use the cable tensioner for the steering link (28, Detail C) and the turnbuckle (3).

NOTE: Make sure the cam roller (13, Fig. 501) is in the detent position on the load limiter (14A).

S 825-310
(24) AIRPLANES WITH SINGLE NWS TILLER;
Make sure the rig pins NS1, NS2, NS3 and NS5 have a free fit.

S 825-311
(25) AIRPLANES WITH DUAL NWS TILLER;
Make sure the rig pins NS1, NS1A, NS2, NS3 and NS5 have a free fit.
(a) Remove the rig pins.

WARNING: BEFORE PRESSURIZATION, MAKE SURE THE CONTROL LEVER FOR THE LANDING GEAR IS IN THE DOWN POSITION WITH THE DOWNLOCKS INSTALLED. THIS PREVENTS OPERATION OF THE LANDING GEAR WHICH CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

THE TORSION LINKS FOR THE NOSE LANDING GEAR MUST BE DISCONNECTED. IF YOU TRY TO ADJUST THE SYSTEM WITH THE TORSION LINKS CONNECTED, INJURY TO PERSONS CAN OCCUR WHEN THE NOSE WHEELS TURN QUICKLY.

(b) Make sure the control lever for the landing gear is in the down position. Make sure the torsion links for the nose landing gear (42 and 44, Fig. 501) are disconnected and the top torsion link (44) cannot move.

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE SYSTEM FOR NOSE WHEEL STEERING BEFORE YOU SUPPLY HYDRAULIC POWER TO THE SYSTEM. PARTS OF THE SYSTEM FOR THE NOSE WHEEL STEERING CAN TURN AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(c) Pressurize the left hydraulic system (AMM 29-11-00/201).
(d) Turn the tiller handle (31, View D, Fig. 501), ±360 degrees through the full travel of the tiller handle for 25 full cycles.
(e) Put the tiller indicator (32) in the center position.
(f) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).
(g) Make sure the steering collar (41, Detail E, Fig. 502) is less than 1/4-degree from the center.

S 825-312
(26) AIRPLANES WITH SINGLE NWS TILLER;
Install the rig pins NS1, NS2, NS3, and NS5 again.

S 825-313
(27) AIRPLANES WITH DUAL NWS TILLER;
Install the rig pins NS1, NS1A, NS2, NS3, and NS5 again.

S 825-236
(28) AIRPLANES WITH SINGLE NWS TILLER;
Adjust the tension of the cables NWSA (9) and NWSB (8) (use Table 501). Use the cable tensioner for the steering link (28) and the turnbuckle (3) when you adjust NWSB (8).
Adjust the tension of the cables NWSA (9), NWSB (8), NWSBA (11), and NWSBB (1) (use Table 501). Use the turnbuckle (3) and the cable tensioner for the steering link (28) to adjust NWSB (8). Use the tensioner (28) as little as possible to adjust the cable. This will permit adjustment at a later date.

S 495-073
(29) Make sure all rig pins have a free fit.

S 095-074
(30) Remove all rig pins.

S 865-075

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE SYSTEM FOR THE NOSE WHEEL STEERING BEFORE YOU SUPPLY HYDRAULIC POWER TO THE SYSTEM. PARTS OF THE SYSTEM FOR THE NOSE WHEEL STEERING CAN TURN AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(31) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 715-076

(32) Use the captain's tiller (31, Detail D, Fig. 501) to apply full travel for a left turn. Turn the handle until the stop (14B) touches the stop bolt (14C) on the captain's forward quadrant (Detail A).

S 825-077

(33) Add or remove washers below the stop bolt (14C) to adjust the stop bolt (14C) set point. Do this until the steering collar (41, Detail E, Fig. 502) turns 65±1 degrees from the center.

S 825-080

(34) Apply full right travel with the tiller, and use the step before this to adjust the right turn stop bolt (14C).

S 985-221

(35) AIRPLANES WITH SINGLE NWS TILLER;
Turn the tiller handle (31, View D, Fig. 501), ±360 degree full travel to operate the system through 3 cycles.

S 985-222

(36) AIRPLANES WITH DUAL NWS TILLR;
Turn the tiller handle for the first officer (31, View D, Fig. 501) ±360 degrees full travel to operate the system through 3 cycles.

S 865-085

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

S 825-086

(38) Make sure all the cables for the nose wheel steering have the correct tension (Table 501).

S 825-087

(39) Do the test that follows if it is necessary to adjust the cable tension:

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE SYSTEM FOR THE NOSE WHEEL STEERING BEFORE YOU SUPPLY HYDRAULIC POWER TO THE SYSTEM. PARTS OF THE SYSTEM FOR THE NOSE WHEEL STEERING CAN TURN AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Pressurize the left hydraulic system (AMM 29-11-00/201).
(b) Turn the captain's tiller handle (31) clockwise from the center until you touch the stop. Hold the tiller against the stop and make sure the angular movement of the steering collar (41, View E, Fig. 502) is 65 ±1 degrees clockwise.
(c) Release the captain's tiller (31) and let it go to the center without manual aid.
(d) Make sure the tiller goes to the center in less than 4 seconds.
(e) Make sure the steering collar (41) is less than ±1 1/2 degrees from the center.
(f) If the nose landing gear does not go to a position that is less than ±1-1/2 degrees from the center, do the steps that follow:
    1) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).
    2) Adjust the tension in the cables NWSA (9) and NWSB (8) until the nose landing gear is less than ± 1-1/2 degrees from the center (the tension of the cables must be in the limits shown in Table 501).

        NOTE: Adjust one cable, then the other, in small increments.

    3) Put the nose landing gear less than ±1/4 degree from the center position.

4) Make sure the rig pins NS1, NS1A, NS2, NS3, and NS5 have a free fit.
5) Pressurize the left hydraulic system (AMM 29-11-00/201).

(g) If you adjusted the cables make sure the rig pins NS1 through NS5 have a free fit. The nose landing gear must be less than ±1/4 degrees from the center position when you do this.

NOTE: The rig pins have a free fit if you can remove and install them with two fingers. There can be some resistance.

S 715-089

(40) Repeat the test for full travel, but turn the captain's tiller handle counterclockwise.

S 825-091

(41) Turn the captain's tiller handle clockwise until the stop (14B, Fig. 501) touches the stop bolt (14C). Make sure the maximum torque is not more than 30 pound-inches.

S 825-223

(42) AIRPLANES WITH DUAL NWS TILLER;
Do the steps that follow:
(a) Turn the tiller handle for the first officer (31) clockwise from the center until you touch the stop.
(b) Hold the tiller against the stop.
(c) Make sure the angular movement of the steering collar (41, View E, Fig. 502) is 65 ±1 degrees clockwise.
(d) Release the first officer's tiller and let it go to the center without manual aid.
(e) Make sure the tiller goes to the center in less than 4 seconds.
(f) Make sure the steering collar (41) is less than ±1 1/2 degrees from the center.
(g) Adjust the cables NWSA and NWSB if it is necessary.

S 435-101

(43) Connect the lower end of the spring cartridge (45, Detail A) to the torsion link (44).

S 435-317

(44) Connect the upper and lower torsion links (42 and 44, Fig. 502) for the nose gear (AMM 32-21-09/401).

TASK 32-51-00-735-104

3. System Test - Nose Wheel Steering

A. General

(1) The system test for the nose wheel steering has the five tests that follow:

(a) System clearance, valve binding, and centering

(b) Tiller handle steering

(c) Rudder pedal steering

(d) Towing provisions

(e) Rudder pedal disconnect and the strut centering cam.

(2) In this test, rig pins have a free fit if you can remove the rig pins with two fingers. It is possible you will feel some resistance.

B. Equipment

(1) Rig Pins from Set B20003-XX (Ref 20-10-24):

(a) NS1 - P/N B20003-20

(b) NS2 - P/N B20003-24

(c) NS3 - P/N B20003-5

(d) NS5 - P/N B20003-5

(2) Stop watch - commercially available

(3) Dial indicator torque wrench - commercially available

(4) Adaptor - B32067-1

(5) Towing Lever Lockpin - A09003-1

C. Consumable Materials

(1) D50180 Grease - 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 24-22-00/201, Electrical Power - Control

(3) AMM 27-21-00/501, Rudder Control System

(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 32-21-09/401, Nose Gear Torsion Links

E. Prepare for the Test

S 495-105

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

S 495-210

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 865-107

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

S 865-108

(4) Make sure the rudder pedals are in the neutral position.

S 865-109

(5) Make sure the rudder trim indicator is at the zero position.

S 825-110

(6) Make sure the rudder control system is correctly adjusted (AMM 27-21-00/501).

S 865-111

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

S 585-265

CAUTION: DO NOT MAKE A STEERING INPUT GREATER THAN 45 DEGREES WITH THE UPPER TORSION LINKS LOWERED (AIR MODE). THIS CAN CAUSE DAMAGE TO THE AIRPLANE.

(8) Lift the airplane nose on jacks (AMM 07-11-02/201).

S 865-113

(9) Make sure the centering cam for the shock strut moved the nose wheels to a position less than 1/4-degrees from the center with the shock strut fully extended (use the decal for reference).

NOTE: You can manually help the cam to make sure it is in the center.

F. Do the Steering System Clearance, Valve Binding, and Centering Test

S 865-114

(1) Make sure the pressure is removed from the left, right and center hydraulic system (AMM 29-11-00/201).

S 865-314
(2) Hold up the nose landing gear at the axle.

S 035-315
(3) Disconnect the torsion links (42 and 44, Fig. 502) (AMM 32-21-09/401).

S 985-118
(4) Lift the top torsion link (44) to simulate the ground mode position for the nose landing gear. Hold up the torsion link (44) in the position to make the piston position quadrant (46) touch the upstop (38) and to make the upper link parallel to the ground. This will engage the rudder steering interconnect.

S 865-266

CAUTION: DO NOT MAKE A STEERING INPUT GREATER THAN 45 DEGREES WITH THE UPPER TORSION LINKS LOWERED (AIR MODE). THIS CAN CAUSE DAMAGE TO THE AIRPLANE.

(5) Put the towing lever on the metering valve module for the nose wheel steering (50) to the TOW position.

S 495-120
(6) Install the towing lever lockpin.

S 985-121
(7) Use the top torsion link (44) to manually turn the steering collar (41) clockwise until the steering actuators get to the bottom of their travel. Make sure the conditions that follow occur:

NOTE: When you do this, the steering tiller will move.

(a) The angular movement of the steering collar (41) is not less than 67 degrees clockwise from the center.
(b) The mechanical linkage is free to move when you manually turn the steering collar to operate the system.

S 985-122
(8) Do the step before this again, but turn the steering collar (41) counterclockwise.

S 985-123
(9) Put the steering collar (41) back to the center.

S 865-124

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE SYSTEM FOR THE NOSE WHEEL STEERING BEFORE YOU SUPPLY HYDRAULIC POWER TO THE SYSTEM. PARTS OF THE SYSTEM FOR THE NOSE WHEEL STEERING CAN TURN AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(10) Pressurize the left hydraulic system to 2850 to 3150 psig (AMM 29-11-00/201).

S 095-125

WARNING: MAKE SURE THE STEERING COLLAR IS IN THE CENTER BEFORE YOU REMOVE THE TOWING LEVER LOCKPIN. WHEN YOU REMOVE THE TOWING LEVER LOCKPIN, THE TOP TORSION LINK AND THE STEERING COLLAR WILL TURN QUICKLY TO THE CENTER AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(11) Remove the towing lever lockpin.

S 735-267

CAUTION: DO NOT MAKE A STEERING INPUT GREATER THAN 45 DEGREES WITH THE UPPER TORSION LINKS LOWERED (AIR MODE). THIS CAN CAUSE DAMAGE TO THE AIRPLANE.

(12) Manually push the left summing mechanism lever (56, Detail D, Fig. 502) full travel, and move the input lever for the metering valve (53) forward. Hold the lever (56) in this position until the steering collar (41) moves to a minimum of 10 degrees. Make sure the angular movement of the steering collar is at least 10 degrees, then do the steps that follow:
   (a) Slowly release the summing mechanism lever (56). Make sure the input lever for the metering valve (53) automatically goes back to the center.
   (b) Install the rig pin NS5 in the input lever for the metering valve (53). Make sure the rig pin moves freely. Remove the rig pin.

S 735-268

CAUTION: DO NOT MAKE A STEERING INPUT GREATER THAN 45 DEGREES WITH THE UPPER TORSION LINKS LOWERED (AIR MODE). THIS CAN CAUSE DAMAGE TO THE AIRPLANE.

(13) Do the step before this again. This time, move the input lever for the metering valve (53) aft until the steering collar moves to a minimum of 10 degrees.

S 495-269

(14) Install the towing lever lockpin.

S 495-129

(15) Install the rig pins NS1, NS2, and NS3. Make sure they move freely.

S 095-130

(16) Remove the rig pins NS1, NS2 and NS3.

S 865-131

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

S 865-132

(18) Put the airplane back to its initial condition.

G. Do the Test of the Tiller Handle Steering

S 035-133

(1) Make sure the torsion links for the nose landing gear (42 and 44, Detail A, Fig. 501) are disconnected.

S 985-134

(2) Make sure the top torsion link (44) is held in a position that is parallel to the ground.

S 495-211
(3) Put the rig pin NS1 into the rig pin hole (15, Fig. 501) in the captain's forward quadrant.

S 495-263
(4) Install the dial indicator torque wrench and adaptor on the Captain's tiller handle.

S 735-139
(5) Use the dial indicator torque wrench to turn the Captains' tiller handle (31, View D, Fig. 501) to the right (clockwise). Turn it until it moves the cam roller (13, View A-A) from the detent in the load limiter (18).
   (a) Make sure the measured torque is 108 to 160 pound-inches (12.2 to 18.1 newton-meters).

S 735-301
(6) Use the dial indicator torque wrench to turn the Captains' tiller handle (31, View D, Fig. 501) to the left (counterclockwise). Turn it until it moves the cam roller (13, View A-A) from the detent in the load limiter (18).
   (a) Make sure the measured torque is 108 to 160 pound-inches (12.2 to 18.1 newton-meters).

S 735-226
(7) AIRPLANES WITH DUAL NWS TILLER;
Do the steps that follow:
   (a) Install the dial indicator torque wrench and adaptor on the tiller handle for the First Officer.
   (b) Use the dial indicator torque wrench to turn the tiller handle for the First Officer (31, View D, Fig. 501) to the right (clockwise). Turn it until the cam roller (13, View A-A) is moved from the detent in the load limiter (18).
      1) Make sure the minimum measured torque is 108 to 160 pound-inches.
   (c) Use the dial indicator torque wrench to turn the tiller handle for the First Officer (31, View D, Fig. 501) to the left (counterclockwise). Turn it until the cam roller (13, View A-A) is moved from the detent in the load limiter (18).
      1) Make sure the minimum measured torque is 108 to 160 pound-inches.

S 095-147
(8) Remove the rig pin NS1 from the captain's forward quadrant (14, Fig. 501)

S 865-150

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE SYSTEM FOR THE NOSE WHEEL STEERING BEFORE YOU SUPPLY HYDRAULIC POWER TO THE SYSTEM. PARTS OF THE SYSTEM FOR THE NOSE WHEEL STEERING CAN TURN AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(9) Pressurize the left hydraulic system to 2850 to 3150 psig (AMM 29-11-00/201).

S 735-270

CAUTION: DO NOT MAKE A STEERING INPUT GREATER THAN 45 DEGREES WITH THE UPPER TORSION LINKS LOWERED (AIR MODE). THIS CAN CAUSE DAMAGE TO THE AIRPLANE.

(10) Turn the captain's tiller handle (31) clockwise from the center until it touches the stop. Hold it against the stop and make sure the angular movement of the steering collar (41, Detail E, Fig. 502) is 65 ±1 degrees clockwise.

S 735-152

(11) Release the captain's tiller (3) and let it go to the center without manual aid. Make sure the conditions that follow occur:
   (a) The tiller goes to the center in less than 4 seconds.
   (b) The steering collar (41) is less than ±1 1/2 degrees from the center.
   (c) If the nose landing gear is more than ±1-1/2 degrees from the center, do the steps that follow:
      1) Adjust the tension in the cables NWSA and NWSB until the nose landing gear is less than ± 1-1/2 degrees from the center (the tension of the cables must be in the limits shown in Table 501).

         NOTE: Adjust one cable, then the other, in small increments.

      2) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).
      3) Put the nose landing gear to a position less than ±1/4 degrees from the center. Make sure the rig pins NS1, NS1A, NS2, NS3, and NS5 have a free fit.
      4) Pressurize the left hydraulic system (AMM 29-11-00/201).

(d) If you adjusted the cables with step (a), make sure the rig pins NS1 through NS5 have a free fit. The nose landing gear must be less than ±1/4 degree from the center when you do this.

NOTE: The rig pins have a free fit if you can remove and install them with two fingers. There can be some resistance.

S 735-271

CAUTION: DO NOT MAKE A STEERING INPUT GREATER THAN 45 DEGREES WITH THE UPPER TORSION LINKS LOWERED (AIR MODE). THIS CAN CAUSE DAMAGE TO THE AIRPLANE.

(12) Turn the captain's tiller handle clockwise until the tiller stop (14B, Fig. 501) touches the stop bolt (14C). Make sure the maximum torque is not more than 30 pound-inches.

S 735-272

CAUTION: DO NOT MAKE A STEERING INPUT GREATER THAN 45 DEGREES WITH THE UPPER TORSION LINKS LOWERED (AIR MODE). THIS CAN CAUSE DAMAGE TO THE AIRPLANE.

(13) Turn the captain's tiller handle counterclockwise until the tiller stop (14B) touches the stop bolt (14C). Make sure the maximum torque is not more than 30 pound-inches.
(a) Make sure the maximum torque is not more than 30 pound-inches.

S 735-318

(14) AIRPLANES WITH DUAL NWS TILLERS;
Do these steps:
(a) Turn the tiller handle for the first officer (31) clockwise from the center until it touches the stop.
1) Hold it against the stop.
2) Make sure the angular movement of the steering collar (41, Detail E, Fig. 502) is 65 ±1 degrees clockwise.
(b) Release the first officer's tiller and let it go back to the center without manual aid.
1) Make sure the tiller goes to the center in less than 4 seconds.
(c) Make sure the steering collar (41) is not more than ±1 1/2 degrees from the center.
1) Adjust the cables NWSA and NWSB if it is necessary.

(d) Repeat the tests, but turn the tiller handle for the first officer counterclockwise.
(e) Turn the tiller handle for the first officer clockwise until it touches the tiller stop. Make sure the maximum torque is not more than 30 pound-inches.
(f) Turn the tiller handle for the first officer counterclockwise until it touches the tiller stop. Make sure the maximum torque is not more than 30 pound-inches.

S 865-165
(15) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).

S 865-166
(16) Put the airplane back to its initial condition if the tests are completed.

H. Do the Test of the Rudder Pedal Steering

S 035-167
(1) Make sure the torsion links for the nose landing gear (42 and 44, View A, Fig. 501) are disconnected.

S 985-168
(2) Make sure the top torsion link (44) is held in a position to be clear of the nose wheel tires during movement.

S 865-169

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE SYSTEM FOR THE NOSE WHEEL STEERING BEFORE YOU SUPPLY HYDRAULIC POWER TO THE SYSTEM. PARTS OF THE SYSTEM FOR THE NOSE WHEEL STEERING CAN TURN AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Pressurize the left hydraulic system to 2850 to 3150 psig (AMM 29-11-00/201).

S 735-232
(4) AIRPLANES WITH SINGLE NWS TILLER;
Make sure the captain's tiller handle is in the center, then do the steps that follow:
(a) Push and hold the right rudder pedal on the captain's side.
(b) Make sure the steering collar turns 5 +2/-1 degrees clockwise.

S 735-233
(5) AIRPLANES WITH DUAL NWS TILLER;
Make sure the tiller handles for the captain and the first officer are in the center, then do the steps that follow:
(a) Push and hold the right rudder pedal on the captain's side.
(b) Make sure the steering collar turns 5 +2/-1 degrees clockwise.

S 735-174
(6) Release the captain's rudder pedal and let the steering collar go back to the center without manual aid.
(a) Make sure the steering collar is not more than ±1 1/2 degrees from the center.

S 735-175
(7) Repeat but push the left rudder pedal on the captain's side.

S 865-176
(8) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).

I. Do the Test of the Towing Provisions

S 035-212
(1) Make sure the torsion links for the nose landing gear (42 and 44, Detail A, Fig. 501) are disconnected.

S 985-178
(2) Make sure the top torsion link (44) is held in a position to be clear of the nose wheel tires during movement.

S 865-000

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE SYSTEM FOR THE NOSE WHEEL STEERING BEFORE YOU SUPPLY HYDRAULIC POWER TO THE SYSTEM. PARTS OF THE SYSTEM FOR THE NOSE WHEEL STEERING CAN TURN AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Pressurize the left hydraulic system to 2850 to 3150 psig (AMM 29-11-00).

S 735-180
(4) Move the towing lever on the metering valve module to the TOW position.

S 495-181
(5) Install the towing lever lockpin.

S 985-234

(6) AIRPLANES WITH SINGLE NWS TILLER;
Use the top torque link and manually turn the steering collar clockwise and counter-clockwise from the center 0 ±10 degrees. Make sure the captain's tiller is free to turn.

NOTE: Steering collar input of greater than 12 degrees can cause continued uncommanded movement to 35 or 50 degrees.

S 985-235

(7) AIRPLANES WITH DUAL NWS TILLER;
Use the top torque link and manually turn the steering collar clockwise and counter-clockwise from the center 0 ±10 degrees. Make sure the captain's and first officer's tillers are free to turn.

NOTE: Steering collar input of greater than 12 degrees can cause continued uncommanded movement to 35 or 50 degrees.

S 735-186

(8) Make sure there is no resistance against the steering collar that is not because of the usual system friction.

S 985-187

(9) Turn the steering collar to the center.

S 095-188

WARNING: MAKE SURE THE STEERING COLLAR IS IN THE CENTER BEFORE YOU REMOVE THE TOWING LEVER LOCKPIN. WHEN YOU REMOVE THE TOWING LEVER LOCKPIN, THE TOP TORSION LINK AND THE STEERING COLLAR WILL TURN QUICKLY TO THE CENTER AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(10) Remove the towing lever lockpin.

S 735-189

(11) Make sure the towing lever on the metering valve automatically goes back to the NORMAL POSITION.

S 865-190

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

S 865-191

(13) Put the airplane back to its initial condition if the tests are completed.

J. Do the Test of the Rudder Pedal Disconnect and the Strut Centering Cam

S 435-319

(1) Connect the upper and lower torsion links for the nose gear (AMM 32-21-09/401)

S 865-194

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE SYSTEM FOR THE NOSE WHEEL STEERING BEFORE YOU SUPPLY HYDRAULIC POWER TO THE SYSTEM. PARTS OF THE SYSTEM FOR THE NOSE WHEEL STEERING CAN TURN AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Pressurize the left hydraulic system to 2850 to 3150 psig (AMM 29-11-00/201).

S 735-195

(3) Fully push the right rudder pedal on the captain's side and hold. Make sure that no movement was put to the steering system.

S 735-196

(4) Release the right rudder pedal on the captain's side.

S 735-197

(5) Do the two steps before this again, but push the left rudder pedal on the captain's side.

S 735-273

CAUTION: DO NOT MAKE A STEERING INPUT GREATER THAN 45 DEGREES WITH THE UPPER TORSION LINKS LOWERED (AIR MODE). THIS CAN CAUSE DAMAGE TO THE AIRPLANE.

(6) Turn the captain's tiller clockwise up to 45 degrees maximum.
(a) Make sure the nose landing gear turns right.

S 735-199

(7) Release the captain's tiller handle and make sure the nose landing gear goes back to less than ±1 1/2 degrees from the center.

S 735-274

CAUTION: DO NOT MAKE A STEERING INPUT GREATER THAN 45 DEGREES WITH THE UPPER TORSION LINKS LOWERED (AIR MODE). THIS CAN CAUSE DAMAGE TO THE AIRPLANE.

(8) Do the two steps before this again, but move the captain's tiller counterclockwise.

S 865-201
(9) Remove the pressure from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 435-202
(10) Install the lock clips for the cable turnbuckle (4, Fig. 501).

S 435-203
(11) Install lockwire (29, Detail C, Fig.501) on the cable tensioner (28) nut on the interconnect mechanism.

S 415-204
(12) Install the access panel 115AL (AMM 06-41-00/201)

S 435-205
(13) Install the control rod for the alternate extension sequence to the output crank with the bolt, nut, bushings, and washers (2).

K. Put the Airplane Back to Its Initial Condition

S 865-206
(1) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).

S 585-207
(2) Lower the airplane and remove the jacks (AMM 07-11-02/201).

S 095-208

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).

S 865-209
(4) Remove electrical power if it is not necessary (AMM 24-22-00/201).

NOSE WHEEL STEERING TILLER AND GEARBOX - REMOVAL/INSTALLATION

1. General
   A. AIRPLANES WITH SINGLE NWS TILLER;
      This procedure includes the steps for the removal of the tiller and gearbox mechanism assembly. The tiller and gearbox assembly are on the left side console in the flight compartment.
   B. AIRPLANES WITH DUAL NWS TILLER;
      This procedure includes the steps for the removal of the captain's or the first officer's tiller and gearbox mechanism assemblies. The captain's tiller and gearbox assembly is on the left side console. The first officer's is on the right side console.

TASK 32-51-01-004-001

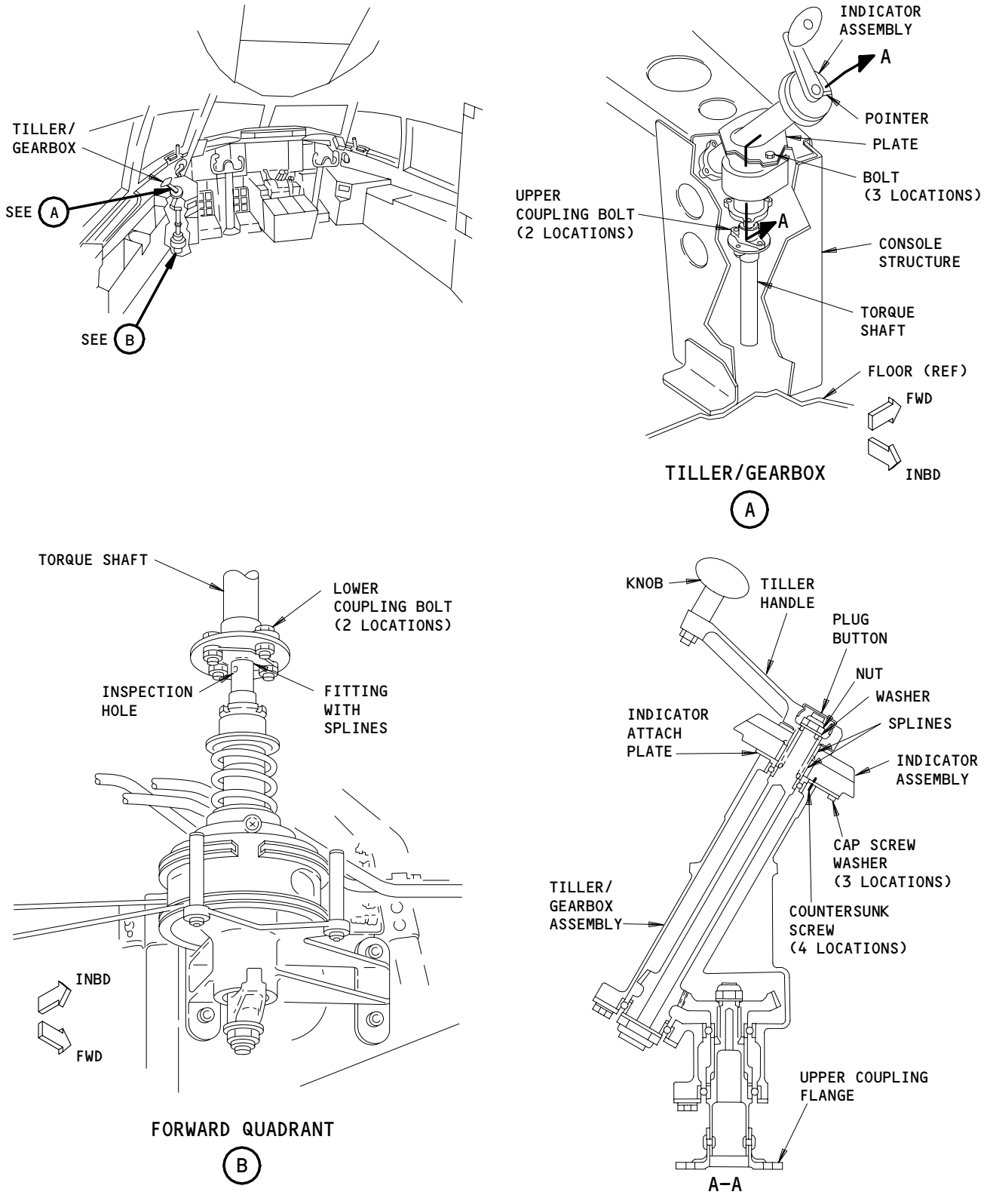
2. Remove the Tiller/Gearbox Assembly (Fig. 401)
   A. References
      (1) AMM 32-51-00/501, Nose Wheel Steering System Test
   B. Equipment
      (1) Rig Pins: Kit B20003-XX (AMM 20-10-24/201).
          (a) NS1 - P/N B20003-20
          (b) AIRPLANES WITH DUAL NWS TILLER;
              NS1A - P/N B20003-20
      (2) Towing Lever Lockpin - A09003-1
   C. Access
      (1) Location Zones
          211 Control Cabin (Left Side)
          212 Control Cabin (Right Side)

   D. Procedure to Remove the Tiller/Gearbox Assembly

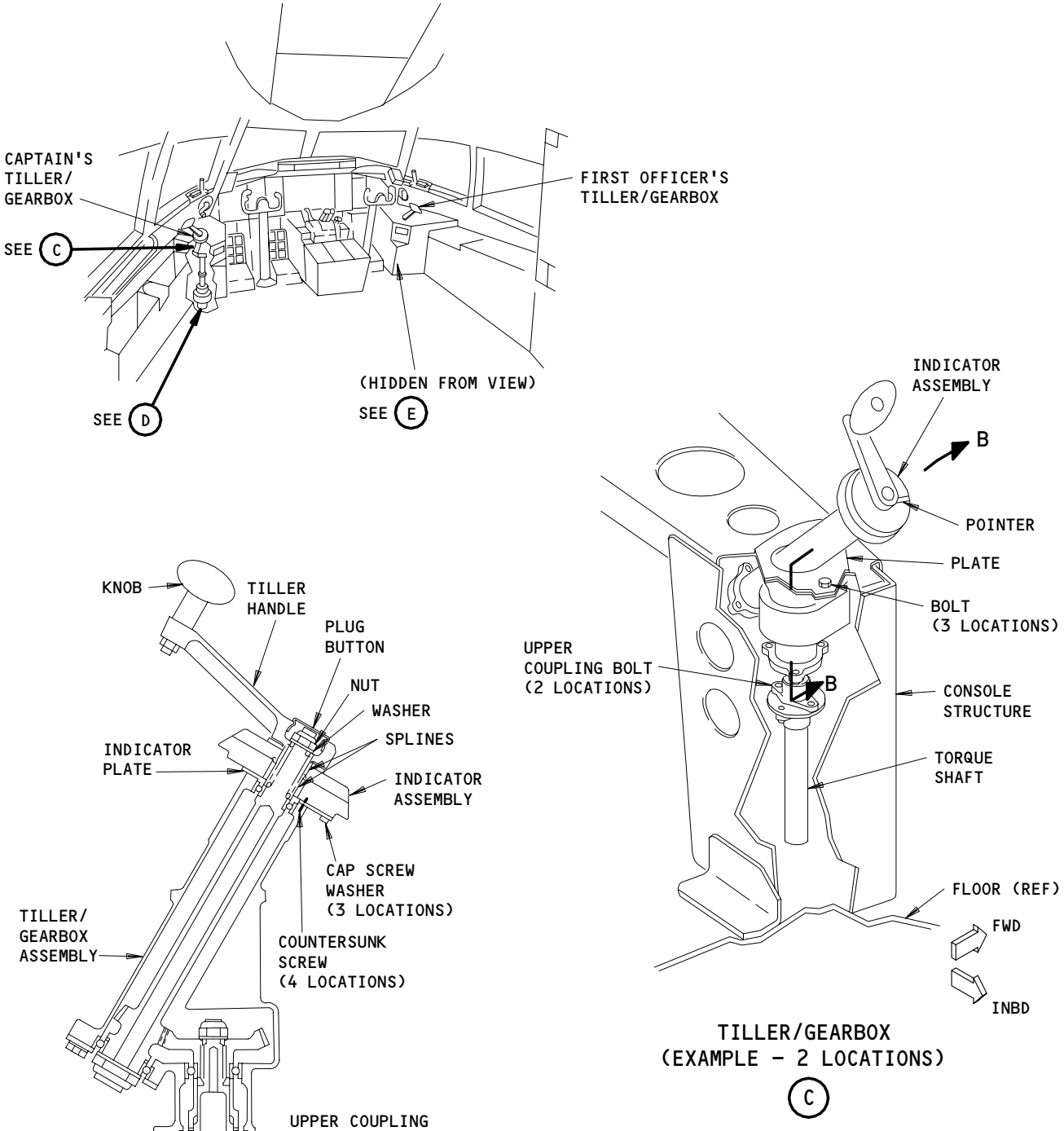
      S 864-003
      (1) Make sure the steering collar for the nose landing gear is in the center.

      S 864-004
      (2) Move the towing lever for the nose wheel steering to the TOWING position.

      S 494-005
      (3) Install the towing lever lockpin.



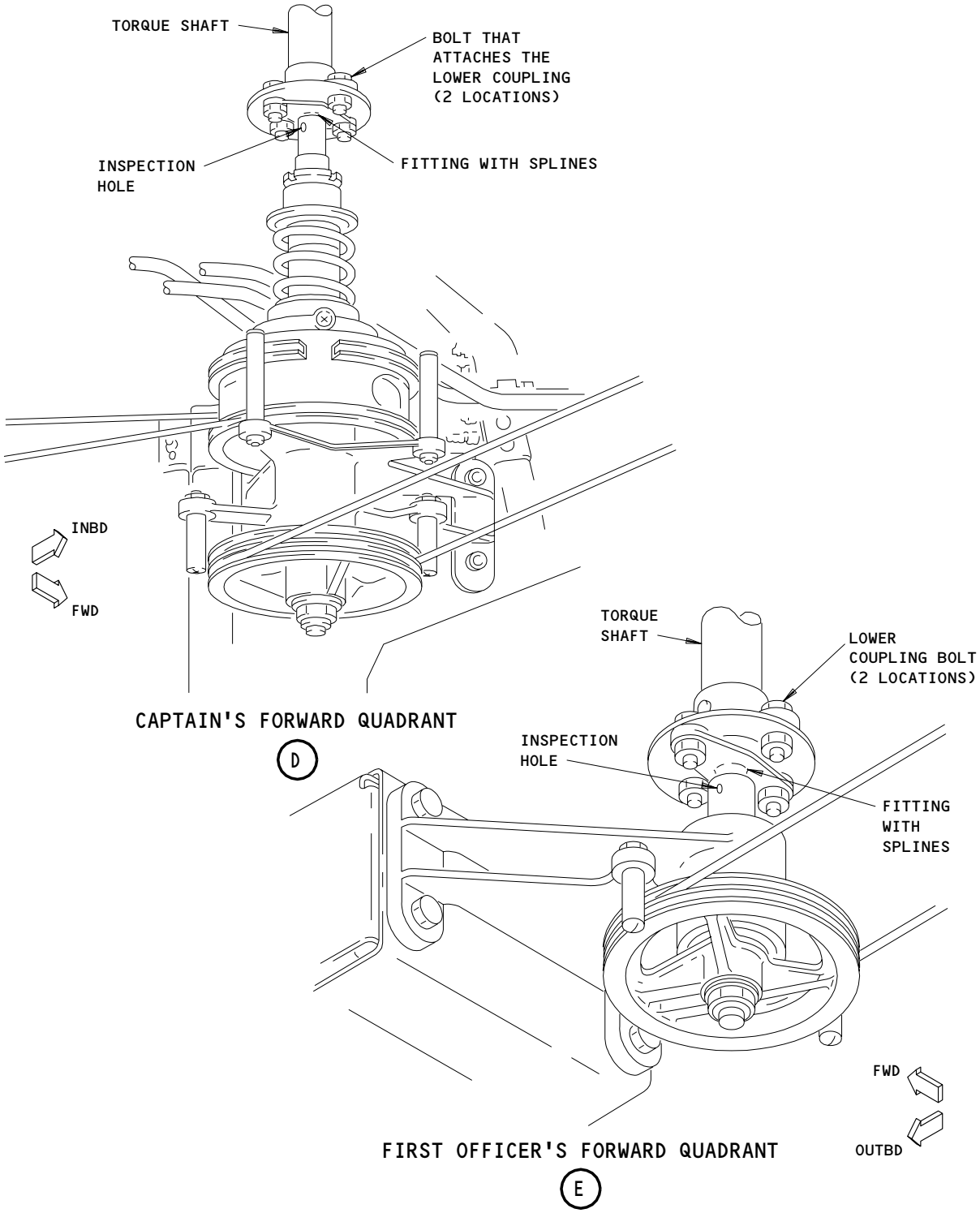
Nose Wheel Steering Tiller/Gearbox Installation
Figure 401 (Sheet 1)



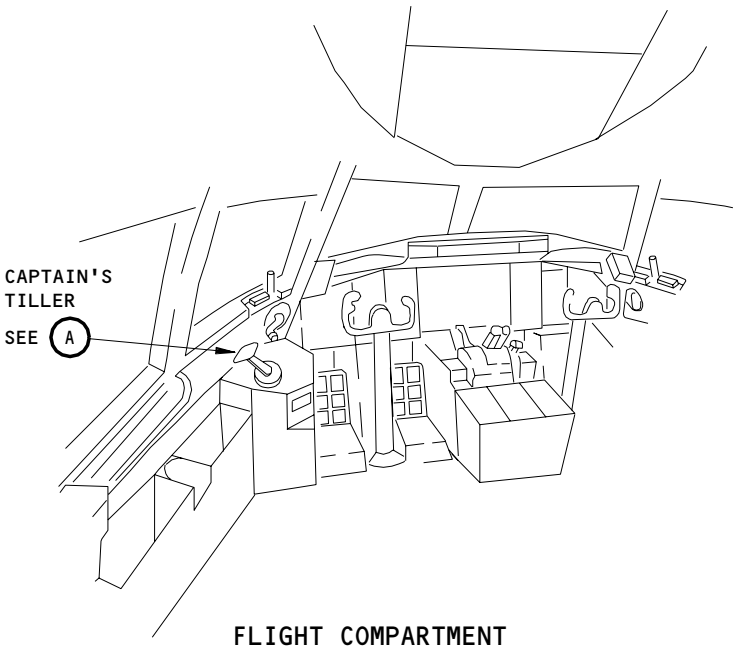
Nose Wheel Steering Tiller/Gearbox Installation
Figure 401 (Sheet 2)

EFFECTIVITY
AIRPLANES WITH DUAL NWS TILLER

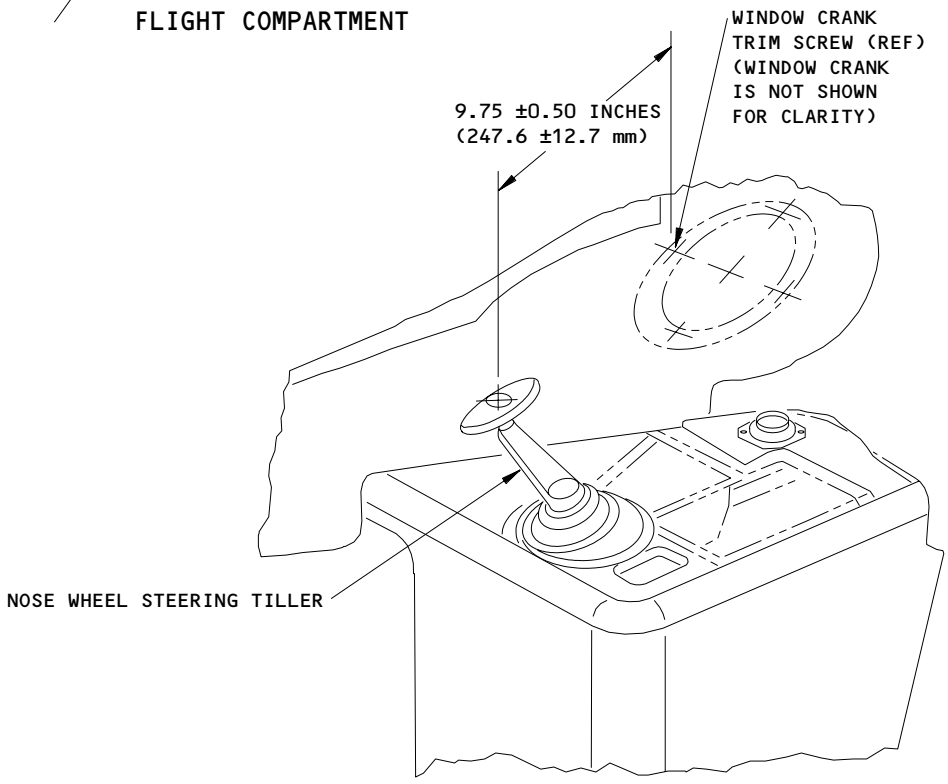
787653



Nose Wheel Steering Tiller/Gearbox Installation
Figure 401 (Sheet 3)



FLIGHT COMPARTMENT



CAPTAIN'S TILLER

A

NOTE: CAPTAIN'S TILLER IS SHOWN,
FIRST OFFICER'S TILLER (IF APPLICABLE) IS EQUIVALENT.

Nose Wheel Steering Tiller Handle Installation
Figure 402

S 494-007
(4) Install the rig pin NS1 in the captain's forward quadrant or the rig pin NS-1A in the first officer's forward quadrant, as applicable (AMM 32-51-00/501).

S 014-008
(5) Remove the access cover in the sidewall console lining to get access to the tiller/gearbox assembly.

S 034-009
(6) Do the steps that follow to remove the tiller handle:
(a) Remove the plug button from the tiller handle.
(b) Remove the retainer nut and washer.

S 034-010
(7) Remove the three cap screws that hold the turn indicator to the plate, and remove the indicator.

S 034-011
(8) Remove the four countersunk head screws that hold the indicator attach plate to the tiller assembly.

S 034-038
(9) Remove the plate.

S 034-012
(10) Remove the two bolts from the top coupling of the torque shaft. They are behind the sidewall console.

S 034-013
(11) Remove the two bolts from the lower coupling of the torque shaft. They are below the flight compartment floor.

NOTE: Get access to the lower coupling through the forward access door in the lower fuselage.

S 034-014
(12) Remove the torque shaft you loosened. This will make the path for removal of the tiller/gearbox clear.

S 034-015
(13) Remove the three bolts that hold the tiller/gearbox to the surface attach plate on the top of the console.

S 024-016
(14) Lower and remove the tiller/gearbox assembly.

TASK 32-51-01-404-017

3. Install the Tiller/Gearbox Assembly (Fig. 401, 402)

A. 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 32-00-15/201, Landing Gear Door Ground Operations and Locking Procedure
(4) AMM 32-00-20/201, Landing Gear Downlocks
(5) AMM 32-51-00/501, Nose Wheel Steering System Test

B. Equipment
(1) Rig Pins: Kit B20003-XX (AMM 20-10-24/201).
(a) NS1 - P/N B20003-20
(b) AIRPLANES WITH DUAL NWS TILLER;
NS1A - P/N B20003-20
(2) Towing Lever Lockpin - A09003-1

C. Consumable Materials
(1) D50180 Grease - BMS 3-33 (Preferred)
(2) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)

D. Access
(1) Location Zones
211 Control Cabin (Left Side)
212 Control Cabin (Right Side)

E. Procedure

S 494-019
(1) Make sure the rig pins that follow are installed, if they are applicable (AMM 32-51-00/501).
(a) Rig pin NS1 in the captain's forward quadrant.
(b) Rig pin NS1A in the forward quadrant for the first officer.

S 034-020
(2) Remove the part of the lower coupling with splines from the mating shaft.

S 644-021
(3) Butter lubricate the splines of the coupling and put it into the mating shaft.

S 034-022
(4) Make sure the tiller handle, indicator and attach plate for the indicator are removed from the tiller/gearbox assembly before the installation.

S 984-023
(5) Put the tiller/gearbox assembly in its position at the hole in the sidewall console. Put it up through the hole from the inner side of the console.

S 424-024
(6) Install the three bolts, washers, and nuts to hold the tiller/gearbox assembly to the attach plate at the surface of the top of the console.

S 434-025
(7) Put the torque shaft in the correct position to align the holes at the top and lower couplings.

S 434-026
(8) Hold the torque shaft in the correct position with two bolts at the top coupling and two bolts at the lower coupling.

S 824-027
(9) Make sure the coupling with the splines is in at least half of the shaft inspection hole.

S 434-028
(10) Install the four screws with countersunk heads to hold the indicator attach plate to the tiller assembly.

S 434-078
(11) Tighten the nut (BACN10JC6) to 160-240 pound-inches (18.067-27.100 N>M>).

S 434-079
(12) Install the plug on the tiller handle.

S 424-077
(13) Do the steps that follow to install the indicator:

NOTE: If the tiller handle does not operate smoothly when you move it from the center position, this can be the result of the causes that follow:
- Washers are not installed with the screws that hold the indicator. This can cause the indicator to go to the center incorrectly and the tiller handle possibly will not operate smoothly.
- A tight fit between the tiller handle shaft and the indicator bearing.

NOTE: 757-SL-32-12 installs the washers and/or installs a new handle shaft with a smaller outer diameter, on applicable airplanes.

(a) Align the arrow on the indicator assembly with the 0 degree indication.
(b) Butter lubricate the the splines.

(c) Install the indicator on the shaft of the tiller/gearbox assembly that has splines. Make sure the arrow on the indicator is in the forward direction.
(d) Install the three cap screws and washers to hold the indicator in its position. If the washers were not installed before, install one AN960-4 washer with each screw.

S 644-031
(14) Butter lubricate the splines on the tiller handle.

S 434-032
(15) Install the tiller handle with the knob of the handle in the farthest outboard position.

NOTE: The farthest outboard position is approximately 9.75 +/-.5 inches (247.6 +/-12.7 millimeters) between the center of the knob on the tiller handle and the center of the farthest aft trim screw of the window crank installation.

S 824-033
(16) Do the steps that follow to do the last adjustment of the indicator:
(a) Loosen the three cap screws that attach the indicator.
(b) Use the slots in the mounting plate to turn the bottom of the indicator.
(c) Tighten the screws.

S 094-035
(17) Remove the rig pin NS1 from the captains' forward quadrant, or the rig pin NS1A from the first officer's forward quadrant, if it is applicable.

S 414-036
(18) Install the access cover in the sidewall lining.

S 734-037
(19) Do the test of the tiller handle operation for the nose wheel steering system (AMM 32-51-00/501).

S 714-080
(20) If you only replaced the tiller handle, then do the steps that follow:
(a) Make sure that the landing gear downlocks are installed (AMM 32-00-20/201).

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

(b) Open the landing gear doors and install door locks (AMM 32-00-15/201).
(c) Supply electrical power (AMM 24-22-00/201).

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM MOVABLE SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER TO THE NOSE WHEEL STEERING SYSTEM. WHEN YOU SUPPLY HYDRAULIC POWER TO THE SYSTEM FOR NOSE STEERING SOME OF THE SURFACES CAN MOVE AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(d) Pressurize the left hydraulic system to 2850 to 3150 PSIG (AMM 29-11-00/201).

CAUTION: DO NOT MAKE A STEERING INPUT GREATER THAN 45 DEGREES WITH THE UPPER TORSION LINK LOWERED (AIR MODE). THIS CAN CAUSE DAMAGE TO THE AIRPLANE.

(e) Disconnect the nose gear torsion link. Make sure the upper link is restrained to clear the nose wheel tires during travel.

CAUTION: MAKE SURE THAT THE UPPER TORSION LINK IS IN THE GROUND MODE POSITION BEFORE YOU DO THE STEERING OPERATIONAL CHECK. FAILURE TO DO SO COULD RESULT IN DAMAGE TO THE PISTON POSITION SYSTEM OR OTHER COMPONENTS.

(f) Rotate the Captain's Tiller Handle clockwise until tiller stop is contacted. At full stop, make sure that the indicator on the Steering Collar reads 65 +/- 1 degrees. Release the tiller and allow it to return, without manual aid, to zero degrees. Make sure the the indicator on the steering collar reads zero +/- 1.5 degrees.

(g) Rotate Captain's Tiller Handle counter-clockwise until tiller stop is contacted. At full stop, ensure that the indicator on the Steering Collar reads 65 +/- 1 degrees. Release Tiller and allow to return, without manual aid, to zero degrees. Ensure that the indicator on the Steering Collar reads zero +/- 1.5 degrees.
(h) If the First Officer's tiller is installed, do the two previous steps with the First Officer's tiller.
(i) Depressurize the hydraulic system.
(j) Connect the torsion links.
(k) Restore airplane to back to normal.

NOSE WHEEL STEERING TORQUE LIMITER DRUM - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the torque limiter/drum assembly as one unit. The second task installs the torque limiter/drum assembly.

TASK 32-51-02-004-001

2. Remove the Torque Limiter/Drum Assembly (Fig. 401)
   A. References
      (1) AMM 32-51-00/501, Nose Wheel Steering System Adjustment/Test
   B. Equipment
      (1) Rig Pins from Set B20003-XX (AMM 20-10-24/201):
          (a) NS1 - P/N B20003-20
          (b) AIRPLANES WITH DUAL NWS TILLER;
              NS1A - P/N B20003-20
          (c) NS2 - P/N B20003-24
          (d) NS3 - P/N B20003-5
          (e) NS5 - P/N B20003-5
      (2) Cable Tensiometer - 0 to 200 pound range for 3/32 inch diameter cable (commercially available).
      (3) Towing Lever Lockpin - A09003-1
   C. Access
      (1) Location Zones
          211 Control Cabin (Left Side)
          117 Area Outboard and Above the NLG Wheel Well (Left Side)

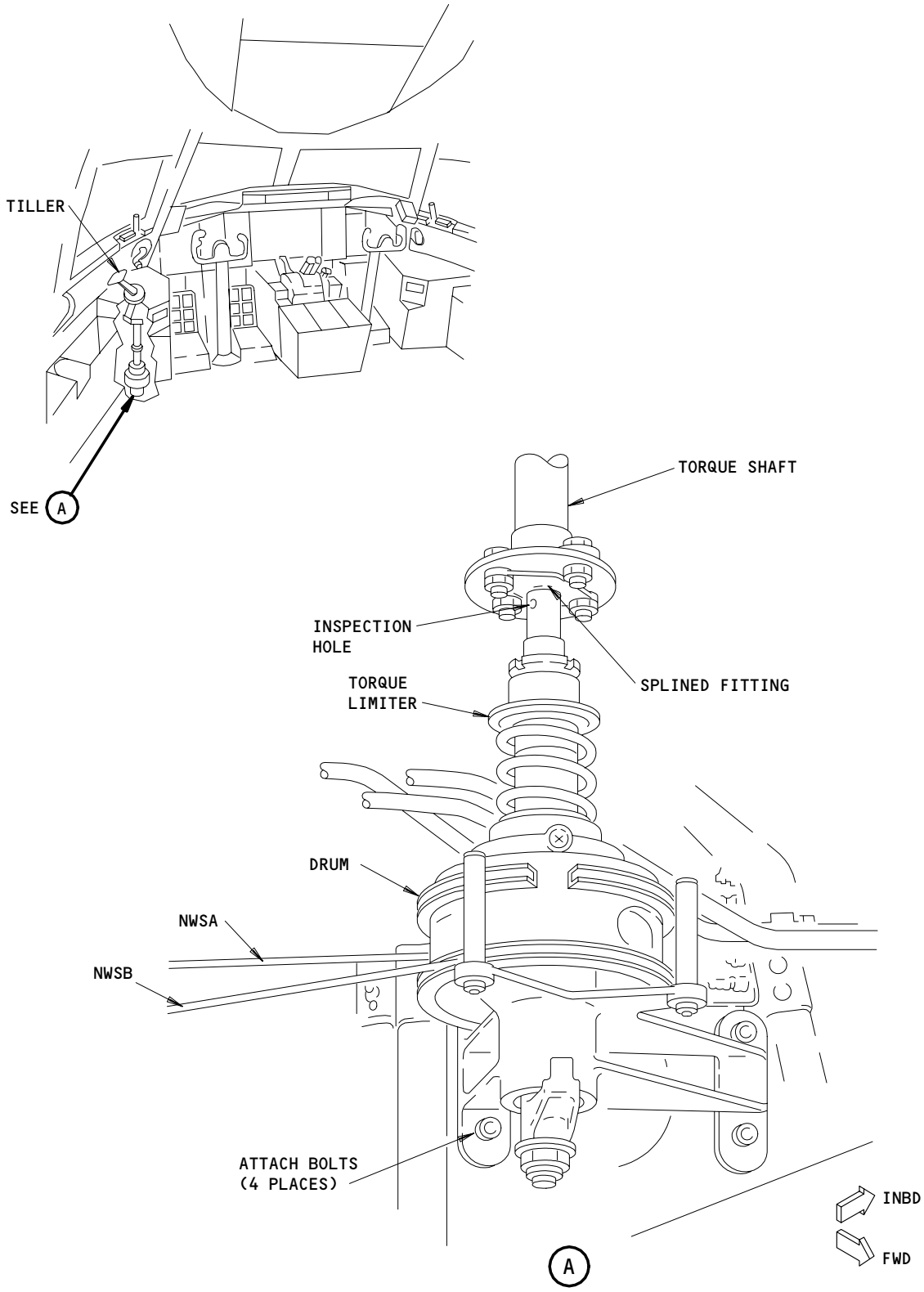
   D. Procedure

      S 864-002
      (1) Put the wheels for the nose landing gear so the steering collar is in the center.

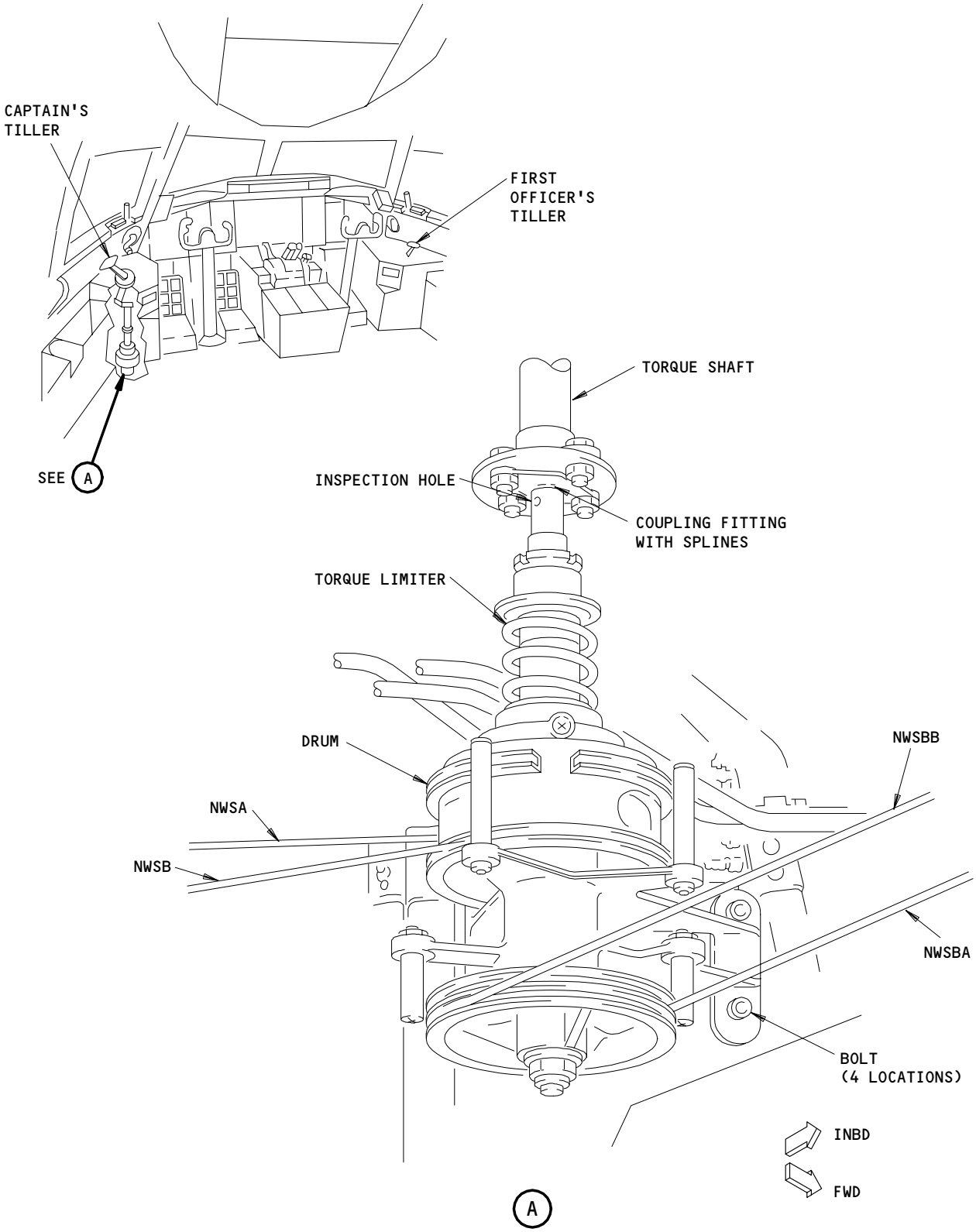
      S 864-003
      (2) Move the towing lever for the nose wheel steering to the TOWING POSITION.

      S 494-004
      (3) Install the towing lever lockpin.

      S 014-005
      (4) Remove the summing mechanism cover.



Nose Wheel Steering Torque Limiter Drum Installation
Figure 401



Nose Wheel Steering Torque Limiter Drum Installation
Figure 401A

S 494-076
(5) AIRPLANES WITH SINGLE NWS TILLER;
Install the rig pins NS2, NS3 and NS5 (AMM 32-51-00/501).

S 494-077
(6) AIRPLANES WITH DUAL NWS TILLER;
Install the rig pins NS-1a, NS2, NS3 and NS5 (AMM 32-51-00/501).

S 034-079
(7) AIRPLANES WITH SINGLE NWS TILLER;
On the cables NWSA and NWSB, do the steps that follow:

S 034-080
(8) AIRPLANES WITH DUAL NWS TILLER;
On the cables NWSA, NWSB, NWSBA and NWSBB, do the steps that follow:
(a) Loosen the turnbuckles and the cable tensioner on the interconnect quadrant.
(b) Remove the cotter pins from the ends of the retaining cables in the drum (View A).
(c) Discard the cotter pins.

S 034-011
(9) Identify the cables and remove them from the drum.

S 024-012
(10) Remove the four bolts that hold the torque limiter/drum assembly to the structure.

S 024-013
(11) Move the assembly down to move apart the coupling linkage of the torque shaft with splines, and remove the assembly.

TASK 32-51-02-404-014
3. Install Torque Limiter/Drum Assembly (Fig. 401)
A. References
(1) AMM 32-51-00/501, Nose Wheel Steering System Adjustment/Test
B. Equipment
(1) Rig Pins from Set B20003-XX (AMM 20-10-24/201):
(a) NS1 - P/N B20003-20
(b) AIRPLANES WITH DUAL NWS TILLER;
NS1A - P/N B20003-20

(c) NS2 - P/N B20003-24
(d) NS3 - P/N B20003-5
(e) NS5 - P/N B20003-5

(2) Cable Tensiometer - 0 to 200 pound range for 3/32 inch diameter cable (commercially available).

(3) Towing Lever Lockpin - A09003-1

C. Consumable Material

(1) D50180 Grease - BMS 3-33 (Preferred)

(2) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)

D. Access

(1) Location Zones

211 Control Cabin (Left Side)
117 Area Outboard and Above the NLG Wheel Well (Left Side)

E. Procedure

S 494-081

(1) AIRPLANES WITH SINGLE NWS TILLER;
Make sure the rig pins NS2, NS3 and NS5 are installed (AMM 32-51-00/501).

S 494-082

(2) AIRPLANES WITH DUAL NWS TILLER;
Make sure the rig pins NS1a, NS2, NS3 and NS5 are installed (AMM 32-51-00/501).

S 494-017

(3) Install the rig pin NS1 in the torque limiter/drum assembly you will install.

S 644-018

(4) Butter lubricate the splines of lower coupling of the torque shaft.

S 424-019

(5) Move the assembly up into its position to engage the coupling splines.

S 424-020
(6) Align the assembly with the four holes in the adjacent structure (Detail A).

S 824-021
(7) Make sure that the splines on the shaft show in not less than half of the inspection hole. This will make sure that the coupling is engaged sufficiently.

S 424-022
(8) Hold the assembly in its position with the four bolts.

S 434-083
(9) AIRPLANES WITH SINGLE NWS TILLER;
Attach the ends of cables NWSA and NWSB on the drum and install new cotter pins to hold them (View A).

S 434-084
(10) AIRPLANES WITH DUAL NWS TILLER;
Attach the ends of cables NWSA, NWSB, NWSBA and NWSBB on the quadrant drum and install new cotter pins to hold them (View A).

S 434-085
(11) AIRPLANES WITH SINGLE NWS TILLER;
Tighten the cables NWSA and NWSB (AMM 32-51-00/501, Table I). Use the turnbuckles and the cable tensioner on the interconnect mechanism quadrant to do the procedure.

S 434-086
(12) AIRPLANES WITH DUAL NWS TILLER;
Tighten the cables NWSA, NWSB, NWSBA and NWSBB (AMM 32-51-00/501, Table I). Use the turnbuckles and the cable tensioner on the interconnect mechanism quadrant to do the procedure.

S 094-027
(13) Make sure that you can install all the rig pins easily, and remove them if the fit is satisfactory.

S 834-028
(14) If you cannot install the rig pins easily, adjust the nose wheel steering system (AMM 32-51-00/501).

S 434-029
(15) Install the turnbuckle locking clip(s) on the interconnect mechanism quadrant.

S 434-030
(16) Install the lockwire on the cable tensioner on the interconnect mechanism quadrant.

S 714-031
(17) Do the test for tiller handle steering in the system test for nose wheel steering (AMM 32-51-00/501).

S 414-032
(18) Install the summing mechanism cover.

S 094-033

WARNING: MAKE SURE THE STEERING COLLAR IS ACCURATELY IN THE CENTER BEFORE YOU REMOVE THE TOWING LEVER LOCKPIN. THE UPPER TORSION LINK AND STEERING COLLAR WILL TURN QUICKLY TO THE CENTER WHEN YOU REMOVE THE TOWING LEVER LOCKPIN, IF THE STEERING COLLAR WAS NOT PUT IN THE CENTER CORRECTLY. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN RESULT.

(19) With the steering collar accurately in the center, remove the towing lever lockpin.

S 864-034
(20) Make sure the towing lever moves to the NORMAL position.

RUDDER PEDAL STEERING INTERCONNECT - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the interconnect mechanism assembly. The second task installs the interconnect mechanism assembly.
   B. The interconnect mechanism assembly has the components that follow:
      (1) A rudder pedal steering crank
      (2) A steering quadrant
      (3) A clutch arm
      (4) An eccentric arm and eccentric drum connected by a concentric shaft.
   C. The interconnect mechanism assembly can be disassembled to replace components after you remove it from the airplane. This can be done as a bench operation.

TASK 32-51-05-004-018

2. Remove the Rudder Pedal Steering Interconnect
   A. Reference
      (1) AMM 32-51-00/501, Nose Wheel Steering System
   B. Equipment
      (1) Rig Pins: Kit B20003-XX (AMM 20-10-24/201)
         (a) NS1 - P/N B20003-20
         (b) NS2 - P/N B20003-24
         (c) NS3 - P/N B20003-5
         (d) NS5 - P/N B20003-5
         (e) NS6 - P/N B20003-5
         (f) NS7 - P/N B20003-15
         (g) R2 - P/N B20003-22
      (2) Cable Tensiometer - 0 to 200 pound range for 3/32 inch diameter cable (commercially available)
      (3) Towing Lever Lockpin - A09003-1
   C. Access
      (1) Location Zone
         113 Area Forward of NLG Wheel Well (Left)
         114 Area Forward of NLG Wheel Well (Right)
         211 Control Cabin (Left)
         212 Control Cabin (Right)
         711 Nose Landing Gear (NLG)

D. Procedure

S 864-001
(1) Put the steering collar for the nose wheels in the center.

S 864-002
(2) Move the towing lever for the nose wheel steering to the TOWING position.

S 494-003
(3) Install the towing lever lockpin.

S 014-004
(4) Remove the summing mechanism cover to give access for the rig pins.

S 494-005
(5) Install the rig pins R2, NS1, NS2, NS3 and NS5 (AMM 32-51-00/501).

S 034-006
(6) Remove the lower end of the spring cartridge from the top torsion link (Detail A, Fig. 402).

S 984-007
(7) Move the piston position quadrant to the gear extended position.

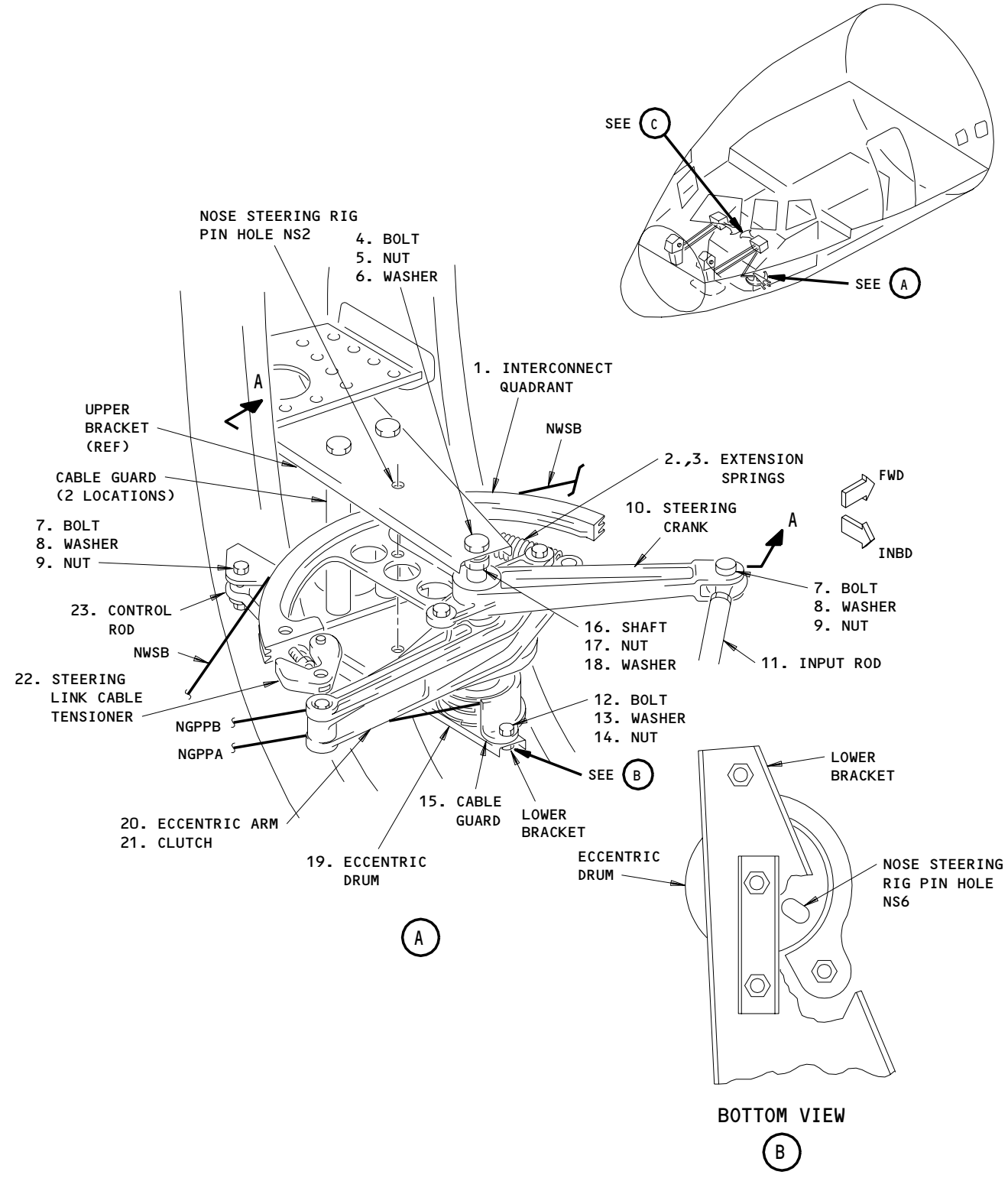
S 494-008
(8) Install the rig pins NS6 and NS7 (AMM 32-51-00/501).

S 034-009
(9) On the cables NWSA, NWSB, NGPPA and NGPPB, do the steps that follow:
  (a) Loosen the turnbuckles and the cable tensioner on the steering quadrant equally to decrease the tension.
  (b) Disconnect the cables from the steering quadrant and the eccentric drum (Detail A, Figure 401).
  (c) Put identifier tags on the cables.
  (d) Discard the used cotter pin retainers.

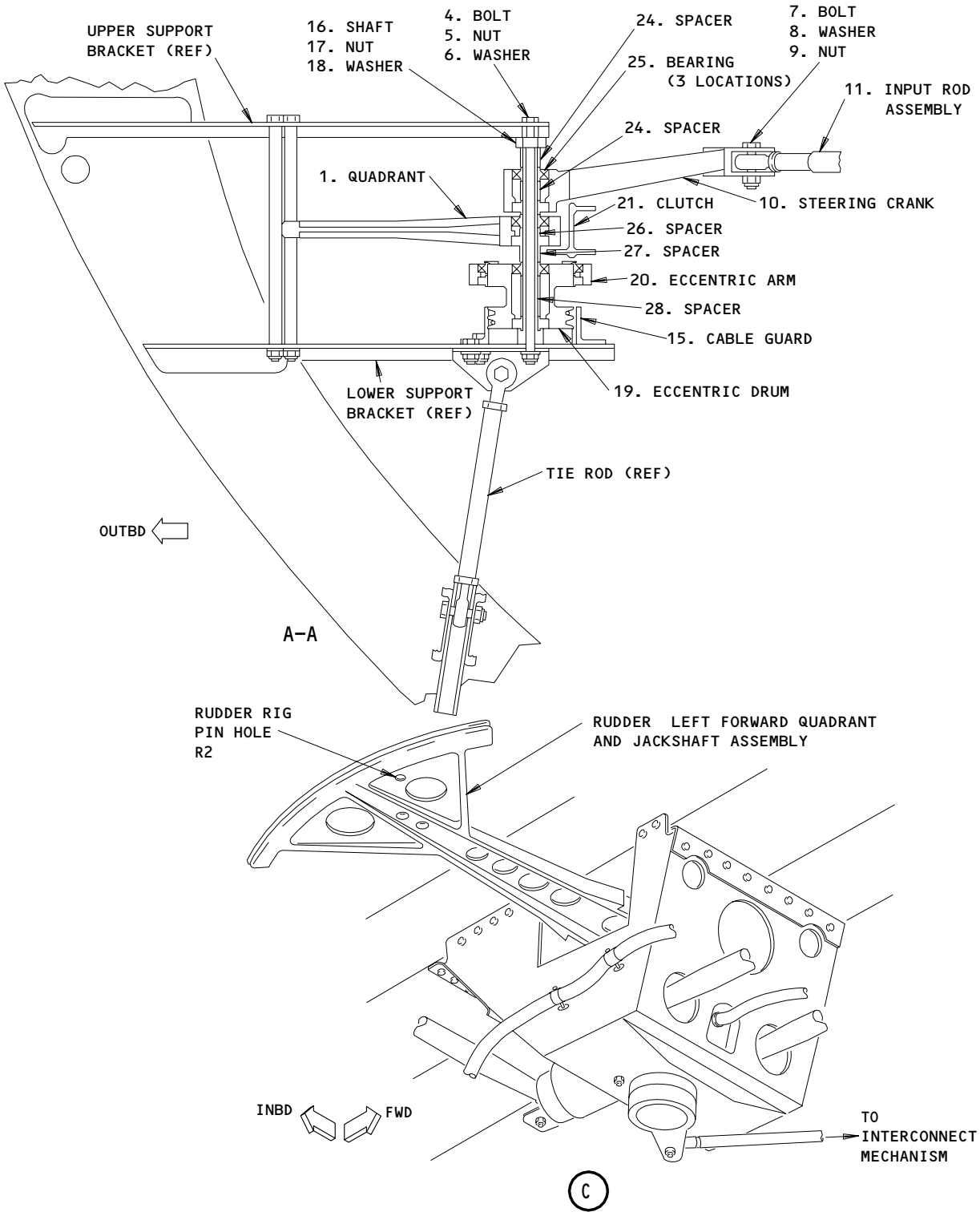
S 034-010
(10) Disconnect the control rod from the eccentric arm.

S 034-011
(11) Disconnect the rudder input rod from the steering crank.

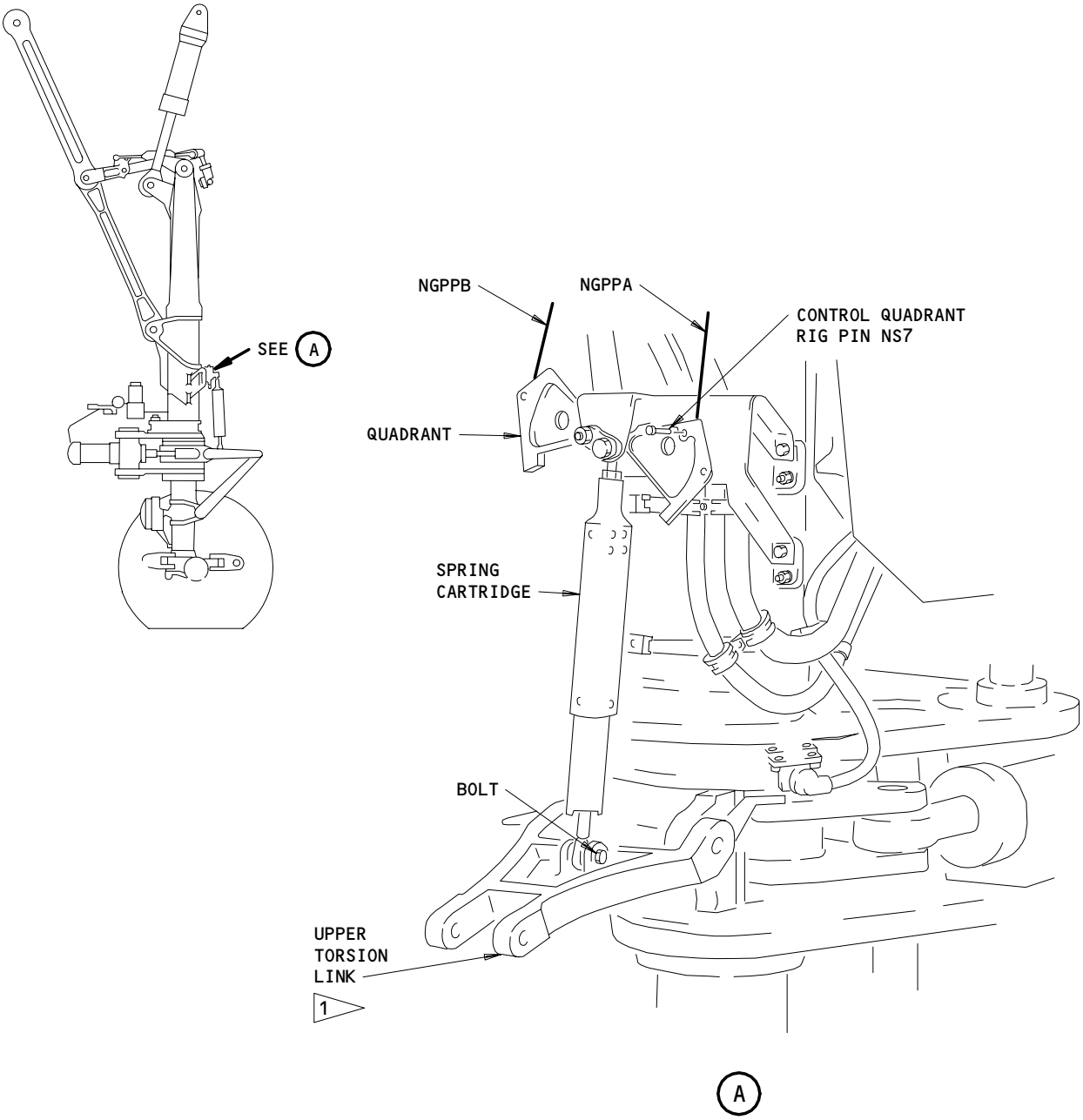
S 034-012
(12) Remove the two bolts that hold the cable guard for the eccentric drum to the lower support bracket (Detail A, Fig. 401).



Rudder Pedal Steering Interconnect Installation
Figure 401 (Sheet 1)



Rudder Pedal Steering Interconnect Installation
Figure 401 (Sheet 2)



1 LOWER TORSION LINK DISCONNECTED

Nose Wheel Steering Spring Cartridge Installation
Figure 402

S 034-013
(13) Remove the cable guard.

S 034-014
(14) Remove the mounting bolt for the interconnect installation of the rudder pedal steering.

S 024-015
(15) Remove the interconnect mechanism assembly for the rudder pedal steering.

S 034-016
(16) You can remove the top shaft retaining nut and lockwasher (View AA, Fig. 401) if it is necessary to disassemble the interconnect mechanism on the bench.

TASK 32-51-05-404-017

3. Install Rudder Pedal Steering Interconnect

A. Equipment

(1) Rig Pins: Kit B20003-XX (AMM 20-10-24/201)
  (a) NS1 - P/N B20003-20
  (b) NS2 - P/N B20003-24
  (c) NS3 - P/N B20003-5
  (d) NS5 - P/N B20003-5
  (e) NS6 - P/N B20003-5
  (f) NS7 - P/N B20003-15
  (g) R2 - P/N B20003-22

(2) Cable Tensiometer - 0 to 200 pound range for 3/32 inch diameter cable (commercially available)

(3) Towing Lever Lockpin - A09003-1

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Quadrant - Steering	32-51-05	01	345
	2	Spring - Extension, Inner			100
	3	Spring - Extension, Outer			105
	4	Bolt			155
	5	Nut			205
	6	Washer			165
	7	Bolt			5
	8	Washer			10
	9	Nut			15
	10	Crank - Steering			250
	11	Input Rod Assembly			20
	12	Bolt			445
	13	Washer			450
	14	Nut			455
	15	Guard - Cable			440
	16	Shaft			220
	17	Nut			210
	18	Washer			170
	19	Drum - Eccentric			435
	20	Arm, Eccentric			415
	21	Clutch			290
	22	Tensioner, Steering Link Cable			325
	23	Control Rod Assembly			145
	24	Spacer			180
	25	Bearing			215
	26	Spacer			185
	27	Spacer			190
	28	Spacer			195

B. References
(1) AMM 32-51-00/501, Nose Wheel Steering System

C. Access
(1) Location Zone
113 Area Forward of NLG Wheel Well (Left)
114 Area Forward of NLG Wheel Well (Right)
211 Control Cabin (Left)
212 Control Cabin (Right)
711 Nose Landing Gear (NLG)

D. Procedure

S 494-019
(1) Make sure the rig pins R2, NS1, NS3, NS5 and NS7 are installed (AMM 32-51-00/501).

S 434-020
(2) On the bench, assemble the interconnect mechanism assembly. It has the parts that follow (View AA, Fig. 401):
(a) The shaft
(b) The eccentric drum
(c) The eccentric arm
(d) The steering quadrant
(e) The clutch arm
(f) Springs
(g) Spacers
(h) A retaining nut
(i) A lock washer.

S 424-021
(3) Put the steering interconnect assembly between the top and lower brackets that hold it, and install the bolt through the center (Detail A, Fig. 401).

S 494-022
(4) Install the rig pin NS2 into the top bracket and the steering quadrant (Detail A, Figure 401).

S 494-023
(5) Install the rig pin NS6 into the eccentric drum (Detail B, Figure 401).

S 434-024
(6) Connect the steering cables NGPPA and NGPPB to the eccentric drum but do not tighten.

S 434-025
(7) Install new cotter pins to hold the cable and retainers in their positions.

S 434-026
(8) Attach the cable guard for the eccentric drum to the lower bracket with the two bolts (Detail A, Fig. 401).

S 434-027
(9) Connect the ends of the NWSB steering cable to the steering quadrant but do not tighten.

S 434-028
(10) Install new cotter pins to hold the cable and retainers in their positions.

S 434-029
(11) Connect the steering arm to the left forward quadrant and the jackshaft assembly.

S 824-030
(12) Adjust the steering arm until the rigging pins R2 and NS2 are loose.

S 434-031
(13) Connect the control rod to the eccentric arm.

S 824-032
(14) Adjust the control rod with the rigging pins NS2, R2, and NS6 installed. The pins must be free to move. This does not include NS6. Possibly NS6 will be tight because there is a load on the springs.

S 434-033
(15) Use the turnbuckles to tighten the cables NGPPA and NGPPB to the tension shown in Table II (AMM 32-51-00/501).

S 494-034
(16) Make sure you can remove the rig pins NS6 and NS7 easily with the conditions that follow:
(a) Tension on the cables
(b) The piston position quadrant against the "gear extended" stop.

S 434-035
(17) Tighten the cables NWSA and NWSB to the tension shown in Table I (AMM 32-51-00/501). Use the turnbuckles and the cable tensioner on the interconnect mechanism assembly to do this.

S 494-036
(18) Make sure you can remove the rig pins R2, NS1, NS2, NS3 and NS5 easily with tension on the cables.

S 094-037
(19) Remove all the rig pins.

S 434-038
(20) Install the lock clips for the cable turnbuckles.

S 434-039
(21) Install lockwire on the cable tensioner on the interconnect mechanism quadrant.

S 434-040
(22) Connect the spring cartridge to the top torsion link (Detail A, Fig. 402).

S 734-041
(23) Do a test of the nose wheel steering (AMM 32-51-00/501).

S 434-042
(24) After the system test, make sure the cable tension is correct and has not changed, and tighten again if it is necessary.

S 494-043
(25) If you tighten the cables again, make sure the fit of the rig pins has not changed.

S 414-044
(26) Install the summing mechanism cover.

S 094-045

WARNING: MAKE SURE THE NOSE WHEELS ARE IN THE CENTER POSITION BEFORE YOU REMOVE THE TOWING LEVER LOCKPIN. THE MECHANISM MOVES QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(27) With the steering collar for the nose wheels in the center, remove the towing lever lockpin.

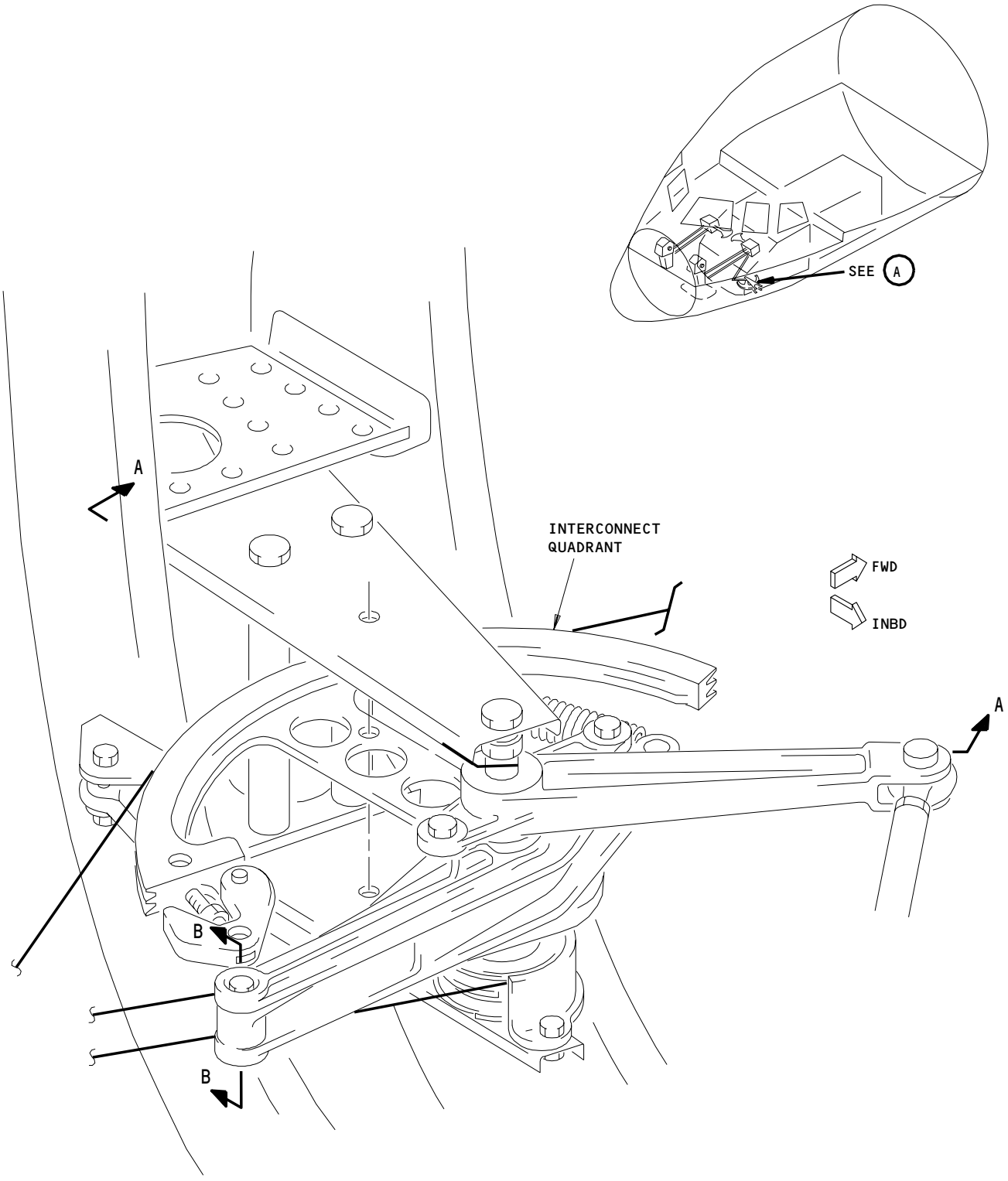
S 864-046
(28) Make sure the towing lever moves to the NORMAL position.

RUDDER PEDAL STEERING INTERCONNECT - 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 Rudder Pedal Steering Interconnect - Removal/Installation for procedures to do these tasks.

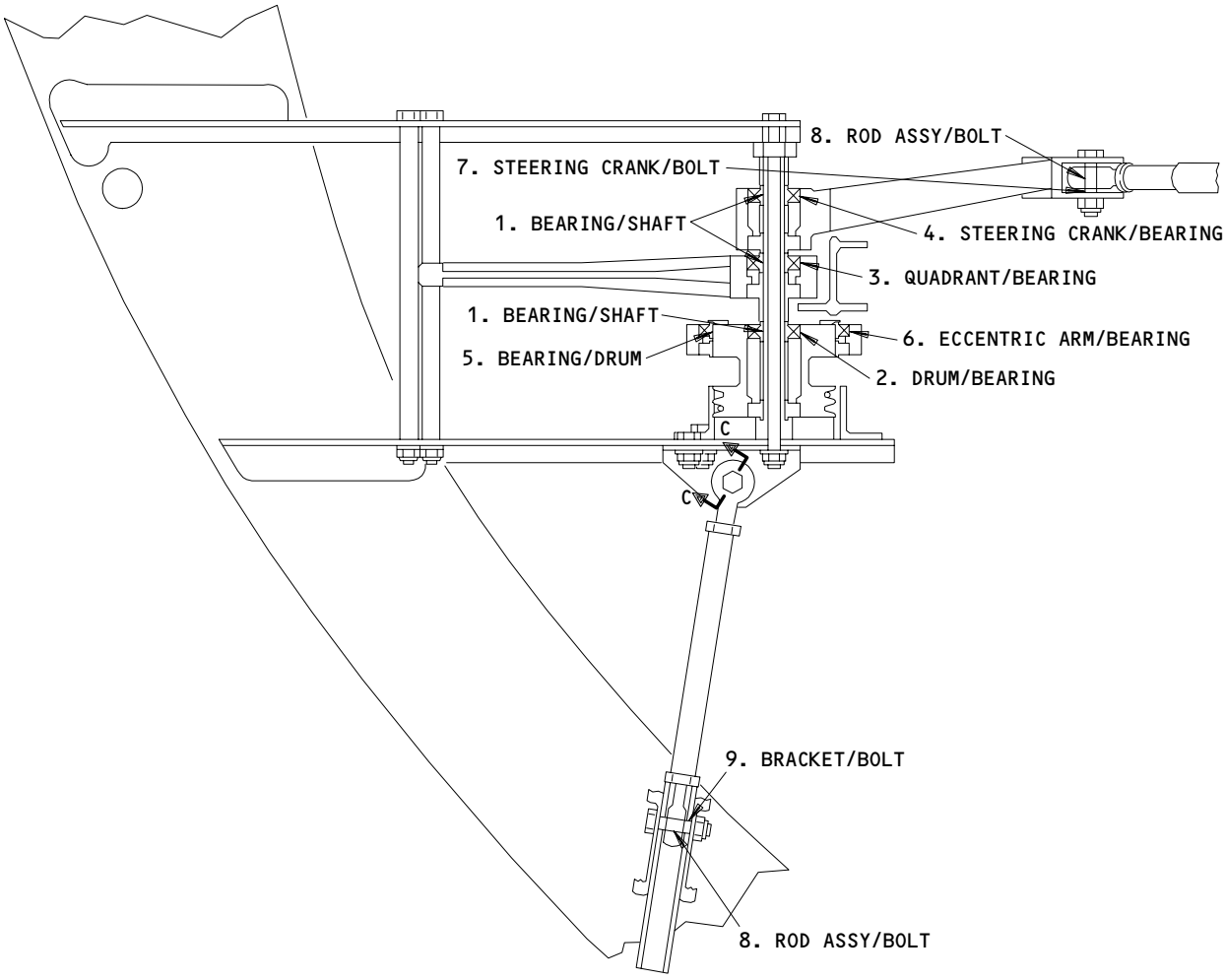
TASK 32-51-05-206-001

2. Wear Limits for the Interconnect of Rudder Pedal 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 the Rudder Pedal Steering Interconnect - Removal/Installation for procedures to do these tasks.

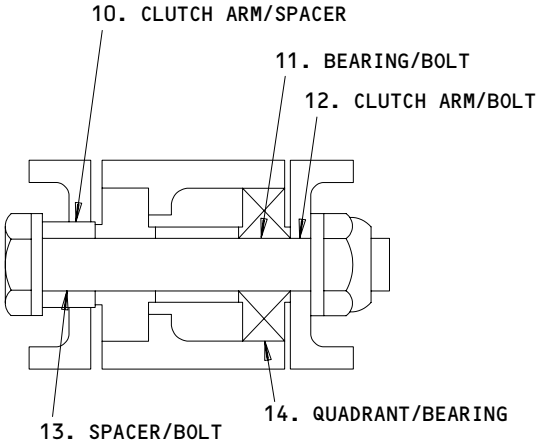


A

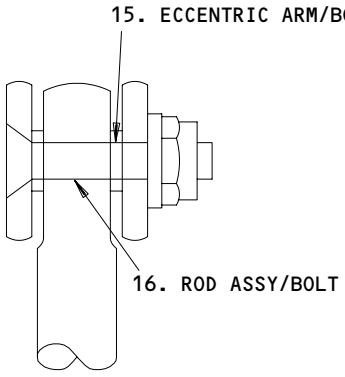
Rudder Pedal Steering Interconnect Wear Limits
Figure 601 (Sheet 1)



A–A



B–B



C–C

Rudder Pedal Steering Interconnect 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	BEARING	ID	0.4995	0.5000	0.5015	0.0020	X		
	SHAFT	OD	0.4990	0.4995	0.4975			X	1
2	DRUM	ID	1.1238	1.1243	1.1245	0.0000	X		
	BEARING	OD	1.1245	1.1250	1.1238		X		
3	QUADRANT	ID	1.1238	1.1243	1.1245	0.0000		X	1
	BEARING	OD	1.1245	1.1250	1.1238		X		
4	STEERING CRANK	ID	1.1238	1.1243	1.1245	0.0000		X	1
	BEARING	OD	1.1245	1.1250	1.1238		X		
5	BEARING	ID	2.3115	2.3135	2.3175	0.0060	X		
	DRUM	OD	2.3105	2.3115	2.3055		X		
6	ECCENTRIC ARM	ID	2.8750	2.8760	2.8800	0.0050		X	1
	BEARING	OD	2.8735	2.8750	2.8700		X		
7	STEERING CRANK	ID	0.2500	0.2540	0.2605	0.0110		X	1
	BOLT	OD	0.2485	0.2495	0.2390		X		
8	ROD ASSY	ID	0.2497	0.2500	0.2525	0.0030	X		
	BOLT	OD	0.2485	0.2495	0.2467		X		
9	BRACKET	ID	0.2500	0.2540	0.2605	0.0110	X		
	BOLT	OD	0.2485	0.2495	0.2390		X		
10	CLUTCH ARM	ID	0.4370	0.4420	0.4505	0.0150		X	1
	SPACER	OD	0.4345	0.4355	0.4270		X		
11	BEARING	ID	0.2495	0.2500	0.2525	0.0030	X		
	BOLT	OD	0.2485	0.2495	0.2465		X		
12	CLUTCH ARM	ID	0.2500	0.2540	0.2605	0.0110		X	1
	BOLT	OD	0.2485	0.2495	0.2390		X		
13	SPACER	ID	0.2495	0.2510	0.2545	0.0050	X		
	BOLT	OD	0.2485	0.2495	0.2390		X		
14	QUADRANT	ID	0.7488	0.7493	0.7500	0.0000		X	1
	BEARING	OD	0.7495	0.7500	0.7488		X		

Rudder Pedal Steering Interconnect Wear Limits
Figure 601 (Sheet 3)

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
15	ECCENTRIC ARM	ID	0.1900	0.1940	0.2005	0.0110		X	1
	BOLT	OD	0.1885	0.1895	0.1790		X		
16	ROD ASSY	ID	0.1897	0.1900	0.1925	0.0030	X		
	BOLT	OD	0.1885	0.1895	0.1867		X		

1 YOU CAN REPAIR THE PART; REFER TO COMPONENT MAINTENANCE MANUAL FOR PROCEDURES TO DO THE TASK

Rudder Pedal Steering Interconnect Wear Limits
Figure 601 (Sheet 4)

NOSE WHEEL STEERING CONTROL DRUM AND LINK - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the control drum and link for the nose wheel steering. The second task installs the control drum and link.

TASK 32-51-06-004-001

2. Remove the Control Drum and Link for the Nose Wheel Steering (Fig. 401)
   A. References
      (1) AMM 32-00-20/201, Landing Gear Downlocks
      (2) AMM 32-51-00/501, Nose Wheel Steering System
   B. Equipment
      (1) Rig pins: Kit B20003-XX (AMM 20-10-24/201).
         (a) NS6 - P/N B20003-5
         (b) NS7 - P/N B20003-15
      (2) Towing Lever Lockpin - A09003-1
   C. Access
      (1) Location Zone
         711 Nose Landing Gear (NLG)

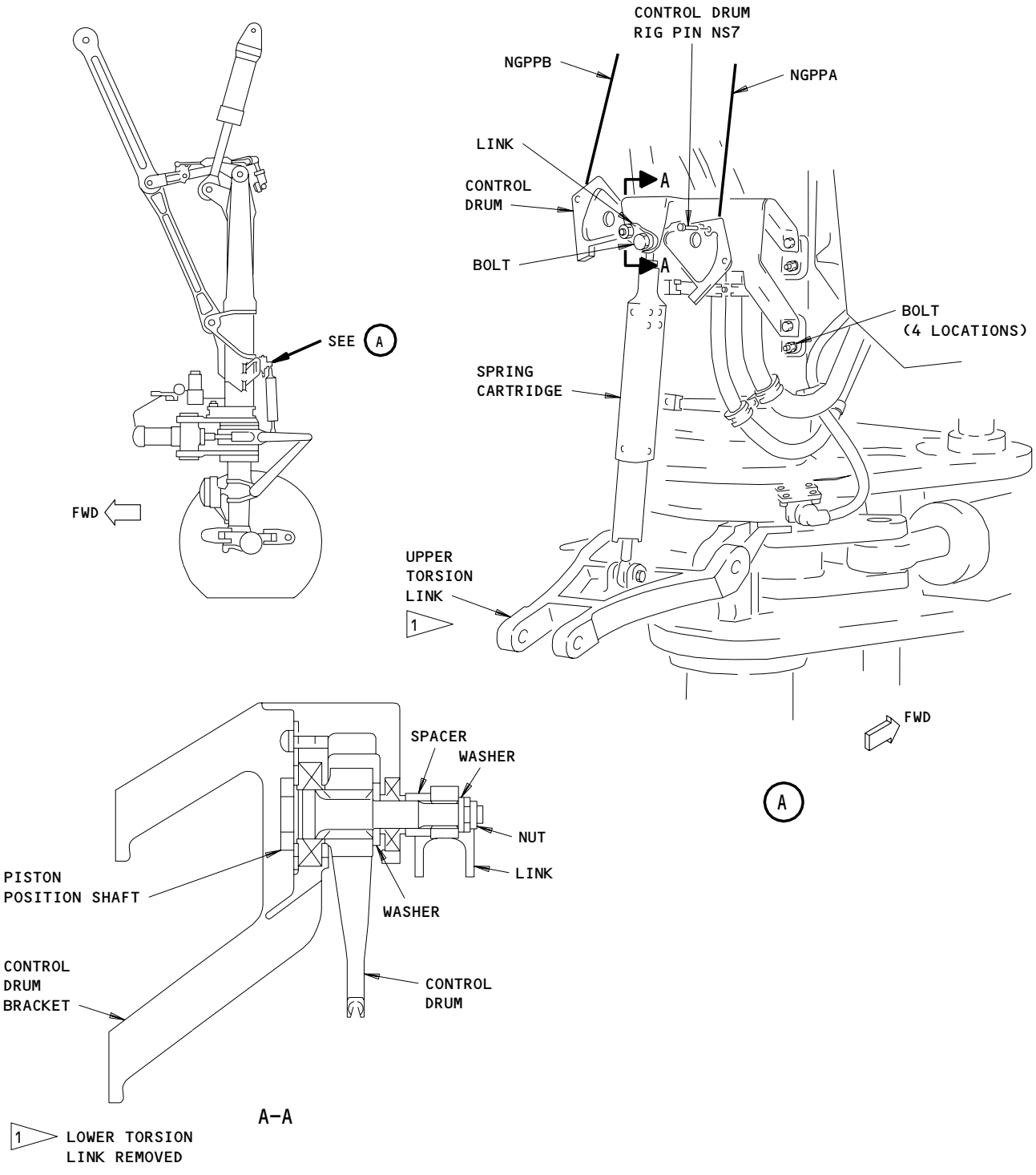
   D. Prepare for the Removal

      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) Make sure the steering collar for the nose wheels is in the center.

      S 864-004
      (3) Put the towing lever in the TOWING position.

      S 494-005
      (4) Install the towing lever lockpin.
   E. Procedure to Remove the Control Drum and Link



Nose Wheel Steering Control Drum and Link Installation
Figure 401

S 034-038

CAUTION: DO NOT LET THE TORSION LINKS FALL FREELY WHEN YOU DISCONNECT THE TORSION LINKS. DAMAGE TO THE TORSION LINKS OR THE PROXIMITY SENSORS AND TARGETS CAN OCCUR.

(1) Disconnect the torsion links at the apex joint (AMM 32-21-09/401).

S 984-008

(2) Hold the top torsion link in landing gear extended position.

S 494-009

(3) Install the rig pin NS-6 in the eccentric drum in the interconnect mechanism (AMM 32-51-00/501).

S 034-010

(4) Do the steps that follow to disconnect the cables from the control drum (Detail A):
   (a) Loosen the NGPPA and NGPPB cables equally at the turnbuckles to decrease the tension.
   (b) Disconnect the cables at the control drum (Detail A).
   (c) Put an identification tag on the cables.
   (d) Discard the used cotter pin retainers.

S 034-011

(5) Remove the bolt that holds the top end of the spring cartridge to the piston position link (Detail A).

S 034-012

(6) Remove the four bolts that hold the quadrant and the bracket assembly to the shock strut.

S 024-013

(7) Remove the quadrant, link and bracket as a unit.

S 034-014

(8) Do the steps that follow to disassemble the control drum, link and bracket assembly, if it is necessary:
   (a) Remove the nut and washer from the piston position link.
   (b) Remove the link and the spacer.
   (c) Remove the piston position shaft, washer, and control drum.

TASK 32-51-06-404-015

3. Install the Control Drum and Link for the Nose Wheel Steering (Fig. 401)

A. Equipment

(1) Rig pins: Kit B20003-XX (AMM 20-10-24/201).
   (a) NS6 - P/N B20003-5
   (b) NS7 - P/N B20003-15

(2) Towing Lever Lockpin - A09003-1

B. References

(1) AMM 32-21-09/401, Nose Gear Torsion Links

(2) AMM 32-51-00/501, Nose Wheel Steering System

C. Access

(1) Location Zone

711 Nose Landing Gear (NLG)

D. Procedure

S 494-016

(1) Make sure the rig pin NS6 is installed in the interconnect mechanism (AMM 32-51-00/501).

S 434-017

(2) Assemble the bracket, control drum and link with the shaft, spacer, washers and nut if it is necessary (View A-A). Tighten the nut.

S 424-018

(3) Put the control drum assembly in its position adjacent to the four holes on the aft side of the shock strut.

S 424-019

(4) Install and tighten the four bolts (Detail A) to hold the assembly to the shock strut.

S 494-020

(5) Put the rig pin NS7 through the control drum and the bracket (Detail A).

S 434-021

(6) Connect the steering cables NGPPA and NGPPB to the control drum.

S 434-022

(7) Install new cotter pin retainers on the cable ends.

S 434-023

(8) Use the turnbuckles to tighten the cables to the tension shown in Table II (AMM 32-51-00/501).

S 094-024

(9) Make sure you can move the rig pins NS6 and NS7 easily, then remove them.

S 434-025

(10) Connect the spring cartridge to the link.

S 824-040
(11) Make sure the free length position is 17.20+/-0.01 inches for -1 and -2 cartridges, or 16.51+/-0.01 inches for -3 cartridges. Measure between the centerlines of the rod ends of the spring cartridge. If it is necessary, use the procedure in (AMM 32-51-08/401) to adjust the free length of the spring cartridge.

S 434-027
(12) Examine the rod end to make sure it is engaged correctly.

S 434-028
(13) Tighten the lock nut for the spring cartridge to 175 ±25 pound-inches.

S 434-029
(14) Install the lockwire.

S 714-030
(15) Do a test of the operation of the rudder pedal disconnect for the nose wheel steering system (AMM 32-51-00/501).

S 824-031
(16) Make sure the cable tension is not changed and tighten the cables if it is necessary.

S 434-032
(17) Install the lock clips on the cable turnbuckle.

S 434-048
(18) Connect the upper to the lower torsion links at the apex joint (AMM 32-21-09/401)

S 094-035

CAUTION: MAKE SURE THE STEERING COLLAR IS ACCURATELY IN THE CENTER BEFORE YOU REMOVE THE TOWING LEVER LOCKPIN. THE TOP TORSION LINK AND STEERING COLLAR WILL TURN QUICKLY TO THE CENTER WHEN YOU REMOVE THE TOWING LEVER LOCKPIN, IF THE STEERING COLLAR WAS NOT PUT IN THE CENTER CORRECTLY. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN RESULT.

(19) With the steering collar in the center position, remove the towing lever lockpin.

S 864-036
(20) Make sure the towing lever moves to the NORMAL position.

NOSE WHEEL STEERING SPRING CARTRIDGE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task is for the removal of the spring cartridge for the nose wheel steering. The second task installs the spring cartridge.

TASK 32-51-08-004-001

2. Remove the Spring Cartridge for the Nose Wheel Steering (Fig. 401)
   A. Equipment
      (1) Towing Lever Lockpin - A09003-1
      (2) Rig Pin NS7 - P/N B20003-15, part of kit B20003-70 (AMM 20-10-24/201).
      (3) Rig Pin NS7 - P/N B20003-15, part of kit B20003-XX (AMM 20-10-24/201).
   B. References
      (1) AMM 32-00-20/201, Landing Gear Downlocks
      (2) AMM 32-21-09/401, Nose Gear Torsion Links
   C. Access
      (1) Location Zone
          711 Nose Landing Gear (NLG)

   D. Procedure

      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 steering collar is in the center.

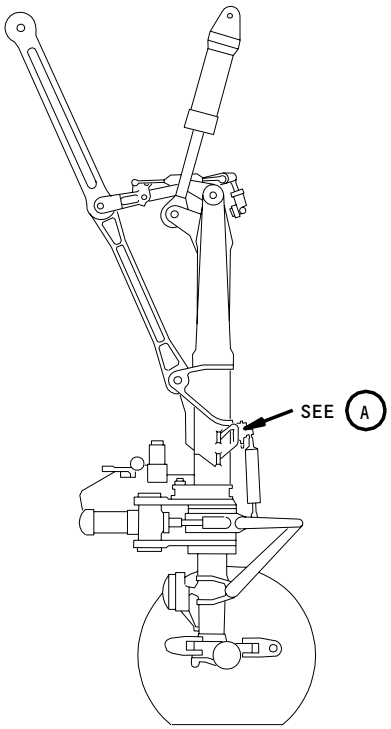
      S 864-004
      (3) Put the towing lever in the TOWING position.

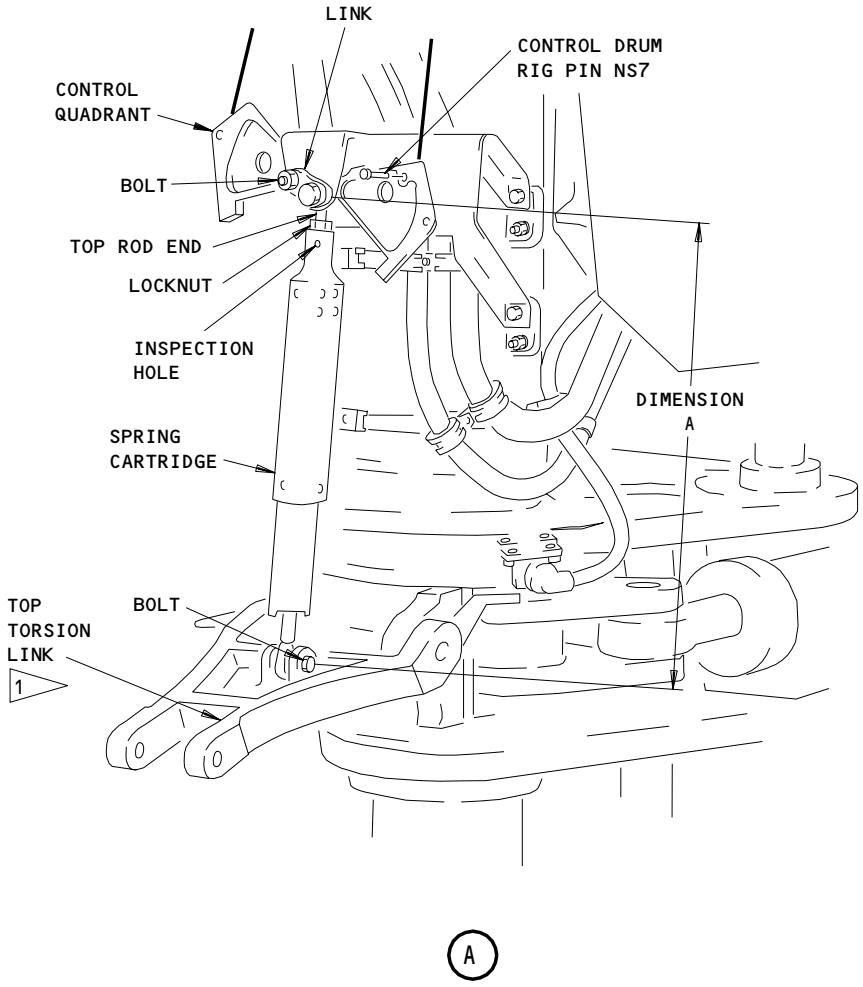
      S 494-005
      (4) Install the towing lever lockpin.

      S 034-031

      CAUTION: DO NOT LET THE TORSION LINKS FALL FREELY WHEN YOU DISCONNECT THE TORSION LINKS. DAMAGE TO THE TORSION LINKS OR THE PROXIMITY SENSORS AND TARGETS CAN OCCUR.

      (5) Disconnect the nose gear torsion links at the apex joint (AMM 32-21-09/401).





1 LOWER TORSION LINK DISCONNECTED

Nose Wheel Steering Spring Cartridge Installation
Figure 401

S 864-009
(6) Put the steering collar for the nose wheel in the center, not more than 1/4 degree off of the center.

S 984-010
(7) Put the upper torsion link in the position for landing gear extended.

S 494-011
(8) Install the rig pin NS7.

S 034-012
(9) Remove the bolt to disconnect the spring cartridge from the top torsion link.

S 034-013
(10) Remove the bolt which connects the spring cartridge to the control drum link.

S 024-014
(11) Remove the cartridge.

TASK 32-51-08-404-015

3. Install the Spring Cartridge for the Nose Wheel Steering (Fig. 401)

A. Equipment
(1) Rig Pin NS7 - P/N B20003-15, part of kit B20003-70 (AMM 20-10-24/201).
(2) Rig Pin NS7 - P/N B20003-15, part of kit B20003-XX (AMM 20-10-24/201).
(3) Towing Lever Lockpin - A09003-1

B. References
(1) AMM 32-21-09/401, Nose Gear Torsion Links
(2) AMM 32-51-00/501, Nose Wheel Steering System Test

C. Access
(1) Location Zone
711 Nose Landing Gear (NLG)

D. Procedure

S 824-016
(1) If you will install a 275N2059-1 or -2 spring cartridge then adjust the top rod end of the spring cartridge to get 17.20 +/-0.01 inches for Dimension A shown in Fig. 401. If you will install a 275N2059-3 spring cartridge adjust the top rod end to get 16.51 +/-0.01 inches for Dimension A. Do not move the spring cartridge when you do the adjustment.

S 824-017
(2) Look in the inspection hole to make sure the threads are correctly engaged. You must see threads in at least half of the hole.

S 434-018
(3) Tighten the rod end locknut.

S 434-019
(4) Install lockwire on the rod end locknut.

S 424-020
(5) Connect the lower end of the spring cartridge to the top torsion link with the bolt.

S 434-021
(6) Connect the spring cartridge to the control quadrant link with the bolt.

S 494-022
(7) Make sure you can install the rig pin NS7 easily with the spring cartridge installed.

S 094-023
(8) Remove the rig pin NS7.

S 714-024
(9) Do a test of the operation of the rudder pedal disconnect part of the nose wheel steering (AMM 32-51-00/501).

S 434-044
(10) Connect the upper torsion link to the lower torsion link at the apex joint (AMM 32-21-09/401).

S 094-027

CAUTION: MAKE SURE THE STEERING COLLAR IS ACCURATELY IN THE CENTER BEFORE YOU REMOVE THE TOWING LEVER LOCKPIN. THE UPPER TORSION LINK AND STEERING COLLAR WILL MOVE QUICKLY TO THE CENTER WHEN YOU REMOVE THE TOWING LEVER LOCKPIN, IF THE STEERING COLLAR WAS NOT PUT IN THE CENTER CORRECTLY. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(11) Make sure the steering collar is accurately in the center.

S 094-028
(12) Remove the towing lever lockpin.

S 864-029
(13) Make sure the towing lever moves to the NORMAL position.

NOSE WHEEL STEERING SUMMING MECHANISM - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the summing mechanism for the nose wheel steering. The second task installs the summing mechanism.

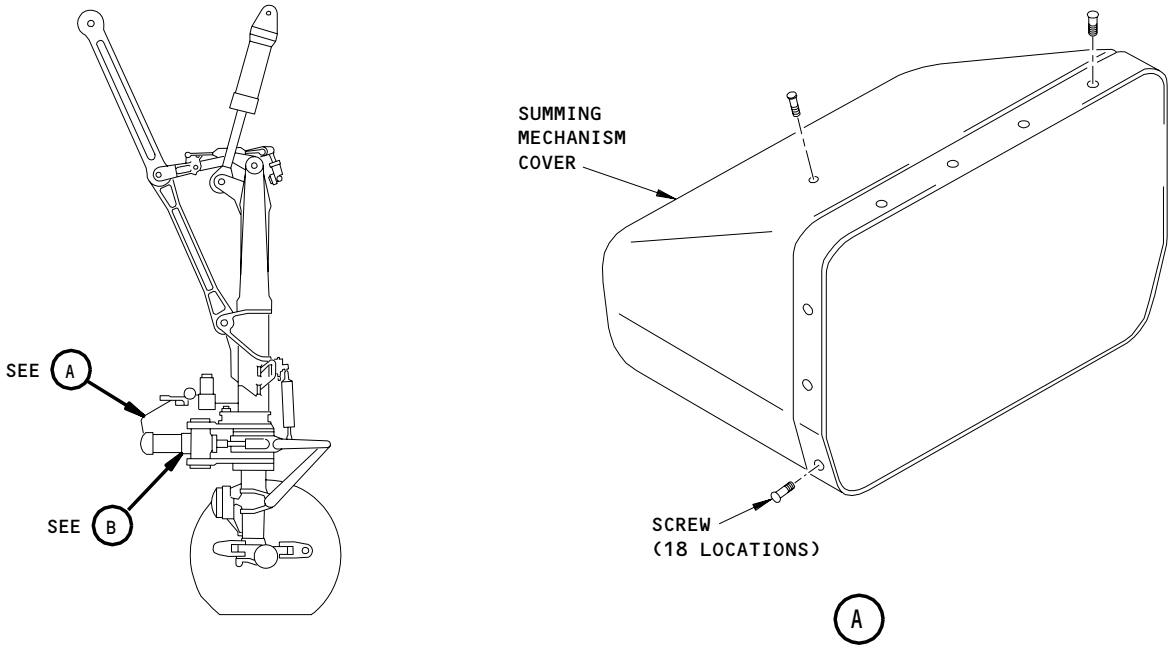
TASK 32-51-09-004-001

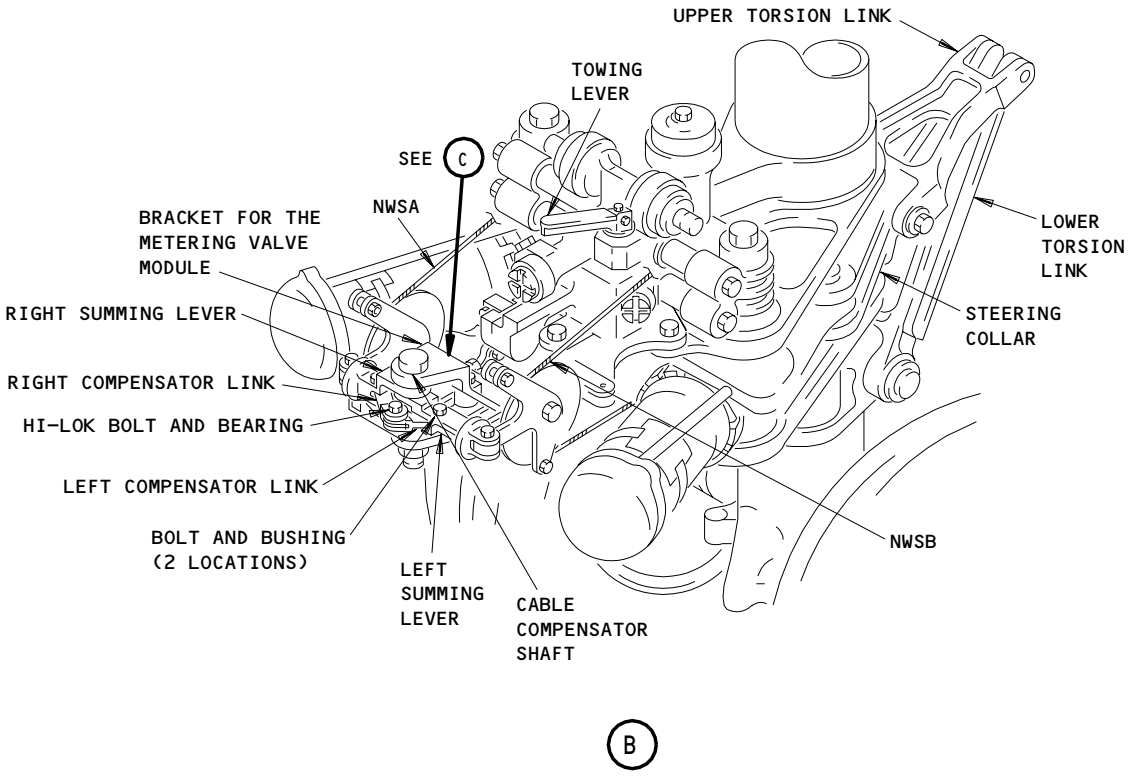
2. Remove the Summing Mechanism for the Nose Wheel Steering (Fig. 401)
   A. Equipment
      (1) Towing Lever Lockpin - A09003-1
      (2) Rig Pins: Kit B20003-XX (AMM 20-10-24/201).
          (a) NS1 - P/N B20003-20
          (b) NS2 - P/N B20003-24
   B. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
      (2) AMM 32-00-20/201, Landing Gear Downlocks
      (3) AMM 32-21-09/401, Nose Gear Torsion Links
      (4) AMM 32-51-00/501, Nose Wheel Steering System
      (5) AMM 32-51-12/401, Nose Wheel Steering Metering Valve
   C. Access
      (1) Location Zone
          711 Nose Landing Gear (NLG)

   D. Equipment
      (1) Towing Lever Lockpin - A09003-1
      (2) Rig Pins: Kit B20003-XX (AMM 20-10-24/201).
          (a) NS1 - P/N B20003-20
          (b) NS2 - P/N B20003-24
   E. Prepare for the Removal

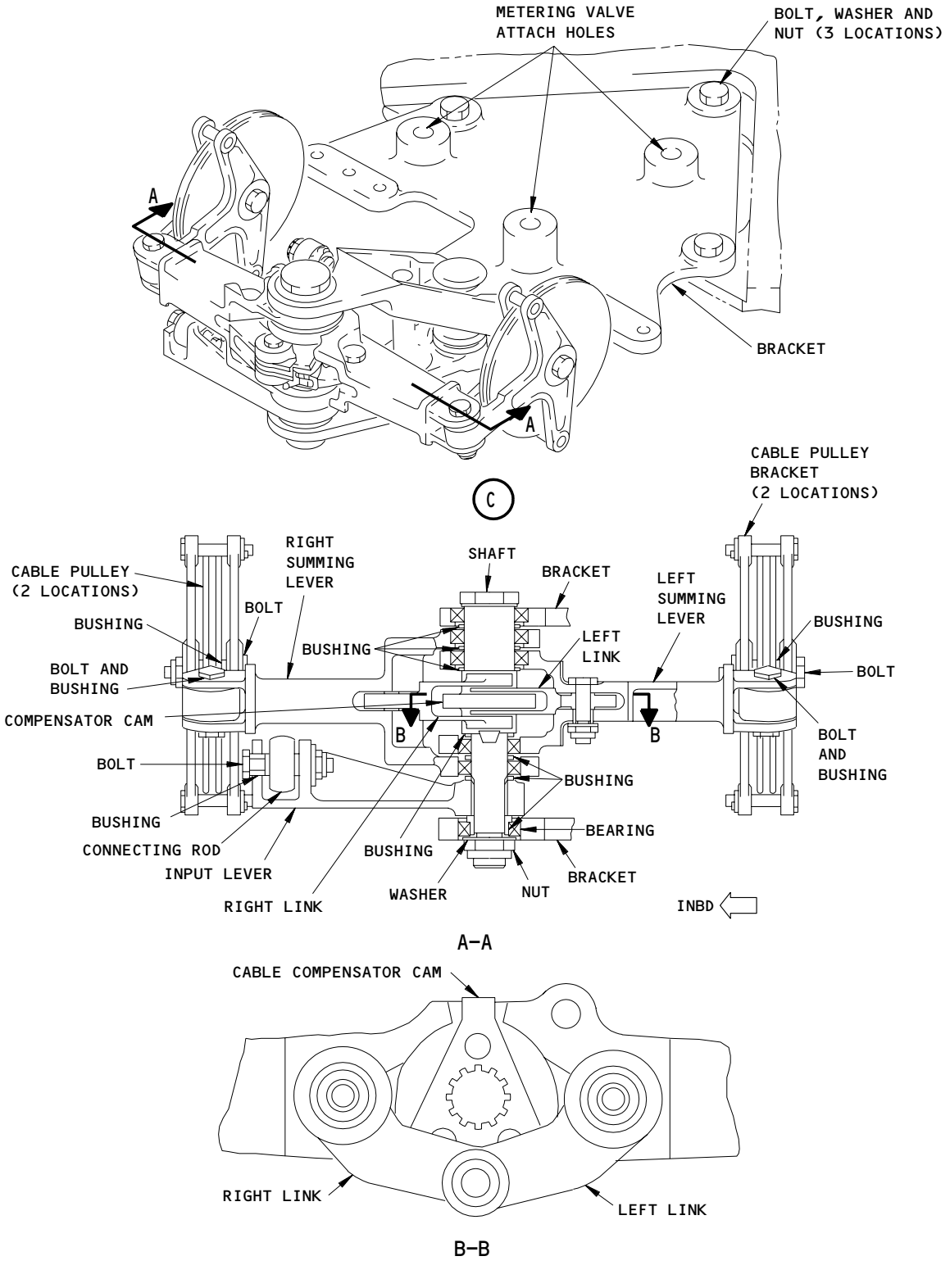
      S 494-003
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-004
      (2) Make sure the pressure is removed from the left hydraulic system and reservoir (AMM 29-11-00/201).





Nose Wheel Steering Summing Mechanism and Cable Compensator Installation
Figure 401 (Sheet 1)



Nose Wheel Steering Summing Mechanism and Cable Compensator Installation
Figure 401 (Sheet 2)

F. Procedure to Remove the Summing Mechanism

S 034-034

CAUTION: DO NOT LET THE TORSION LINKS FALL FREELY WHEN YOU DISCONNECT THE TORSION LINKS. DAMAGE TO THE TORSION LINKS OR THE PROXIMITY SENSORS AND TARGETS CAN OCCUR.

(1) Disconnect the nose gear torsion links at the apex joint (AMM 32-21-09/401).

S 864-008

(2) Put the steering collar for the nose landing gear in the center, not more than 1/4 degree from the center.

S 494-009

(3) Install the rig pins NS1 and NS2 in the captain's forward quadrant and the interconnect mechanism (AMM 32-51-00/501).

S 034-010

(4) Remove the cover of the summing mechanism (Detail A).

S 024-011

(5) Remove the metering valve for the nose wheel steering (AMM 32-51-12/401).

S 034-012

(6) Remove the fasteners (6) that attach the cover brackets to the bracket for the summing mechanism.

S 034-013

(7) Loosen the turnbuckles for the NWSA and NWSB cables.

S 034-014

(8) Remove the pulley center bolts.

S 034-015

(9) Remove the three bolts that hold the bracket for the summing mechanism to the plate that holds the lower steering collar (Detail C).

S 024-016

(10) Remove the summing mechanism and bracket as a unit.

S 034-017

(11) Do the steps that follow to disassemble the mechanism, if it is necessary:

(a) Remove the bolts that connect the brackets for the left and right control cable pulleys to the left and right summing control levers (View A-A).

(b) Remove the cable compensator shaft (Views A-A and B-B).

(c) Remove the summing levers, cable compensator, and the input lever (Views A-A and B-B).

TASK 32-51-09-404-002

3. Install the Summing Mechanism for the Nose Wheel Steering (Fig. 401)

A. Equipment

(1) Towing Lever Lockpin - A09003-1

(2) Rig Pins: Kit B20003-XX (AMM 20-10-24/201).

(a) NS1 - P/N B20003-20

(b) NS2 - P/N B20003-24

(c) NS3 - P/N B20003-5

(d) NS5 - P/N B20003-5

B. References

(1) AMM 32-21-09/401, Nose Gear Torsion Links

(2) AMM 32-51-00/501, Nose Wheel Steering System

(3) AMM 32-51-12/401, Nose Wheel Steering Metering Valve

C. Access

(1) Location Zone

711 Nose Landing Gear (NLG)

D. Procedure

S 434-018

(1) If you disassembled the summing mechanism, do the steps that follow to assemble the summing mechanism, pulleys and bracket as a unit:

(a) Put the right and left summing levers, the cable compensator, and the input lever in their positions between the bracket arms.

(b) Install the cable compensator shaft (Views A-A and B-B).
(c) Install the nut to hold the assembly.
(d) Connect the brackets for the left and right cable pulleys to the left and right summing control levers.
(e) Tighten the bolts.

S 424-019
(2) Put the summing mechanism, pulley and bracket assembly against the plate that holds the lower steering collar.

S 434-020
(3) Apply the sealant to the holes and install the three bolts with the wet sealant (Detail C).

S 434-021
(4) Attach the cover brackets to the bracket that holds the summing mechanism.

S 434-022
(5) Connect the left and right cable pulleys (with the cables wound around them) to the pulley brackets with the pivot bolts bolt heads facing outboard per Figure 401 (Sheet 2), view C, A-A.

S 424-023
(6) Install the metering valve for the nose wheel steering (AMM 32-51-12/401).

S 494-024
(7) Install the rig pins NS1, NS2, NS3 and NS5 (AMM 32-51-00/501).

S 434-025
(8) Tighten the cables NWSA and NWSB at the turnbuckles.

S 824-026
(9) Make sure you can put the rig pins in easily (Ref Table I of AMM 32-51-00/501 Adjustment/Test for cable tensions).

S 094-027
(10) Remove the rig pins NS1, NS2, NS3, NS5, and NS6.

S 714-028
(11) Do the test of the tiller operation for the nose wheel steering (AMM 32-51-00/501).

S 864-029
(12) Remove the pressure from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 434-041
(13) Connect the nose gear torsion links at the apex joint (AMM 32-21-09/401).

S 434-032
(14) Install the cover for the summing mechanism (Detail A).

NOSE WHEEL STEERING ACTUATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the actuator for the nose wheel steering. The second task installs the actuator for the nose wheel steering.

TASK 32-51-11-004-001

2. Remove the Actuator 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
      (3) AMM 32-21-09/401, Nose Gear Torsion Links
   B. Equipment
      (1) Wrench-Adapter-Steering Nut, NLG - A32045-85
      (2) Spanner Wrench - F72959-35
      (3) Wrench-Steering Actuator, NLG - A32035-1
      (4) Rope-commercially available
   C. Access
      (1) Location Zones
          211 Control Cabin (Left)
          212 Control Cabin (Right)
          711 Nose Landing Gear (NLG)

   D. Prepare for the Removal

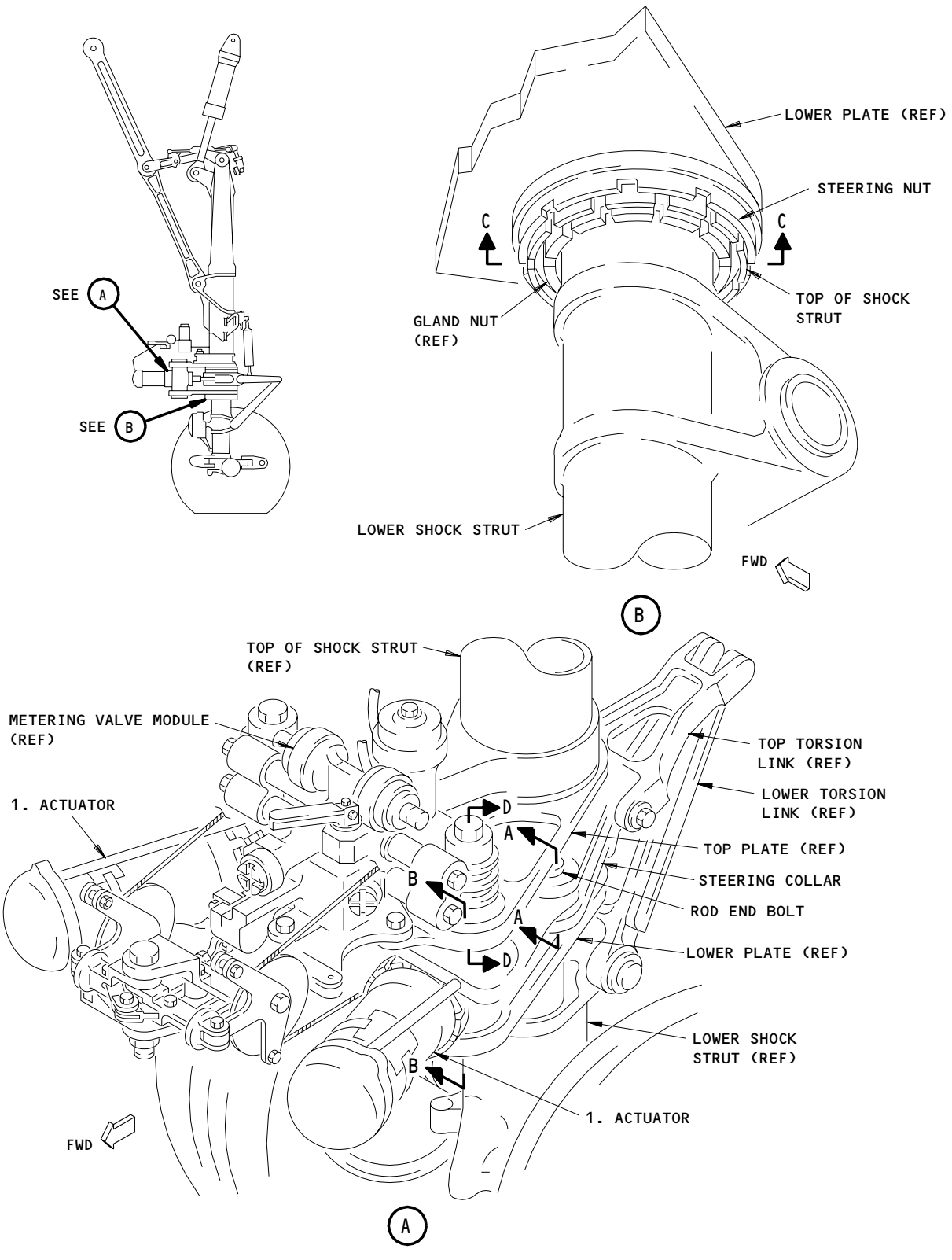
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-003
      (2) Make sure the pressure is removed from the left hydraulic system and reservoir (AMM 29-11-00/201).

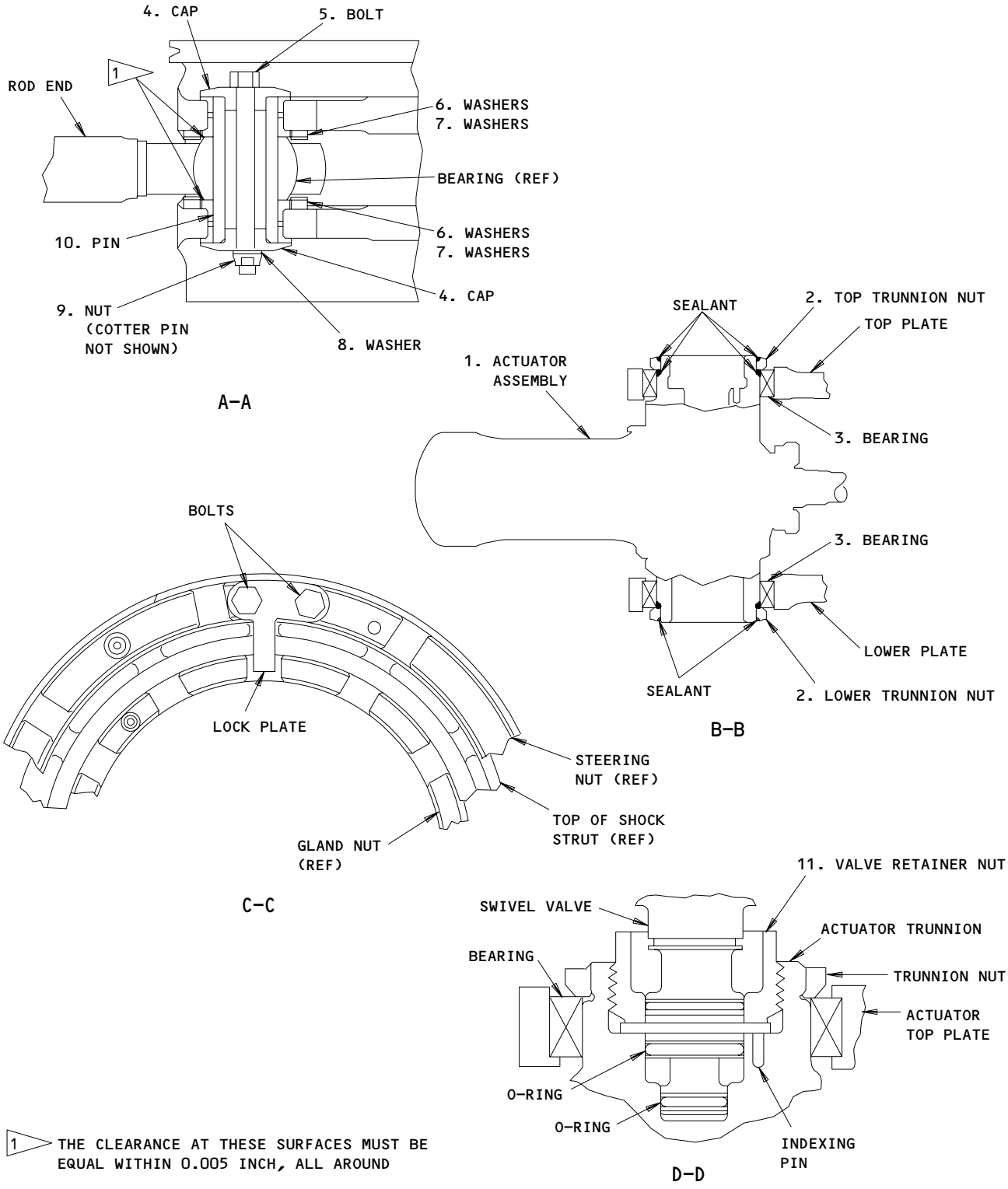
      S 034-055

      CAUTION: DO NOT LET THE TORSION LINKS FALL FREELY WHEN YOU DISCONNECT THE TORSION LINKS. DAMAGE TO THE TORSION LINKS OR THE PROXIMITY SENSORS AND TARGETS CAN OCCUR.

      (3) Disconnect the upper and lower torsion links at the apex joint (AMM 32-21-09/401).



Nose Wheel Steering Actuator Installation
Figure 401 (Sheet 1)



Nose Wheel Steering Actuator Installation
Figure 401 (Sheet 2)

S 984-006
(4) Attach the steering collar to the top shock strut to make sure it will not move off the support torque tube.

E. Procedure

S 034-007
(1) Remove the bolts and the lock plate from the lower end of the lower plate (View C-C).

S 034-008
(2) Remove the steering nut from the top shock strut with the wrench adapter to release the lower plate.

S 034-009
(3) Use the spanner wrench to remove the retainer nut for the swivel valve at the top trunnion (View D-D).

S 034-010
(4) Use the steering actuator wrench to remove the nuts on the lower actuator trunnion. The nuts attach the left and right actuators to the lower plate (View B-B).

S 034-011
(5) Move the lower plate from the top plate (View B-B).

S 034-012
(6) Loosen the top trunnion nut on the actuator that you will remove.

S 984-013
(7) Turn the upper torsion link to turn the steering collar to get the clearance to remove the end bolt of the actuator rod.

S 034-014
(8) Disconnect the actuator rod from the collar (View A-A).

S 024-015

CAUTION: DO NOT CAUSE DAMAGE TO THE TRUNNION BEARINGS WHEN YOU REMOVE THE ACTUATOR. THE ACTUATOR WEIGHS APPROXIMATELY 45 POUNDS.

(9) Hold the actuator up while you remove the top trunnion nut with the actuator wrench.

S 024-016

(10) Remove the actuator from the airplane.

TASK 32-51-11-424-057

3. Install the Actuator for the Nose Wheel Steering (Fig. 401)

A. References

(1) AMM 12-12-01/301, Hydraulic System Reservoir Servicing
(2) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
(3) AMM 32-21-09/401, Nose Gear Torsion Links
(4) AMM 32-51-00/501, Nose Wheel Steering System Test

B. Equipment

(1) Wrench-Adapter-Steering Nut, NLG - A32045-85
(2) Spanner Wrench - F72959-35
(3) Wrench-Steering Actuator, NLG - A32035-1

C. Consumable Materials

(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-G-23827 (Alternative)
(3) C00308 Compound - Corrosion Preventive - MIL-C-11796
(4) D00153 Fluid-Hydraulic-BMS3-11
(5) A00247 Sealant - Chromate Type-BMS5-95

D. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Actuator Assembly - NLG Steering	32-51-11	01 01A	65 40

E. Access

(1) Location Zones

211 Control Cabin (Left)
212 Control Cabin (Right)
711 Nose Landing Gear (NLG)

F. Procedure

S 864-018
(1) Make sure the pressure is removed from the left hydraulic system and reservoir (AMM 29-11-00/201).

S 984-019
(2) Make sure the steering collar is held against the top plate.

S 624-020
(3) Apply corrosion preventive compound to the top and lower actuator trunnion journals and bearings in the top and lower plates.

S 434-021

CAUTION: THE TRUNNION BEARINGS ARE PRECISION BEARINGS. DO NOT USE A HAMMER ON THEM OR SHAKE THEM WHEN YOU INSTALL THE ACTUATOR. MAKE SURE THE BEARINGS ARE ALIGNED DURING INSTALLATION.

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.

(4) Do the steps that follow to install the top trunnion nut:
   (a) Carefully put the actuator trunnion into the bearing of the top plate and the swivel valve (View D-D).
   (b) Make sure you align the index pin on the swivel valve.
   (c) Hold the free end of the actuator up to make sure the bearing will be aligned.
   (d) Install the top trunnion nut with the wrench to make sure the nut and the bearing just touch.

S 644-022
(5) Apply hydraulic fluid to the threads on the retainer nut for the metering valve.

S 434-023
(6) Use a spanner wrench to install the retainer nut for the swivel valve (View D-D) and tighten the nut.

S 394-024
(7) Apply fillet seal between the retainer nut for the swivel valve and the actuator top trunnion.

S 644-025
(8) Butter lubricate the top shock strut and the mating threads of the steering nut with grease (Detail B).

S 034-026
(9) Remove the left and right trunnion bearings (View B-B).

S 984-027
(10) Lift the lower plate into its position against the steering collar (View B-B).

S 434-028
(11) Install the steering nut on the top shock strut.

S 434-029
(12) Tighten the steering nut with the wrench adapter only until the lower plate seats against the shoulder of the steering collar.

S 434-030
(13) Tighten the steering nut (Detail B).

S 984-017
(14) Release the collar support and make sure the collar turns freely.

S 434-031
(15) Do the steps that follow to install the lockplate (View C-C):
(a) Put the lockplate on two of the three alignment holes in the steering nut. Do not attach the lockplate to the steering nut.

(b) Turn the lockplate on the other side and change the alignment holes to permit four different positions for the lockplate key.
(c) Use the wrench adapter to loosen the steering nut.
(d) Align the key with the nearest slot on the plate.
(e) Butter lubricate the mating surfaces on the lockplate and steering nut with grease.
(f) Lubricate the lockplate bolts with grease.
(g) Attach the lockplate to the steering nut.
(h) Lubricate the steering nut with grease at the fitting.
(i) Tighten the lockplate bolts (View C-C).
(j) Install lockwire on the bolts.

S 434-032

(16) Install the lower trunnion bearings and use the trunnion nuts to help seat the bearings.

S 034-033

(17) Remove the top and lower trunnion nuts.

S 394-034

(18) Apply sealant to the threads on the top and lower actuator trunnion (View B-B).

S 984-035

(19) Use the upper torsion link to turn the collar until the holes in the actuator rod and collar align (View A-A). Do not install the pin in this step.

S 434-036

CAUTION: DO NOT TIGHTEN THE TRUNNION NUTS TOO MUCH. DO NOT TURN THE NUT MORE THAN 8 DEGREES THROUGH THE POINT WHERE THE SURFACES FIRST TOUCH. THIS WILL PREVENT DAMAGE TO THE BEARINGS. WHEN YOU TIGHTEN THE NUTS, DO NOT PERMIT THE NUTS TO TOUCH THE BEARING SEALS OR SHIELDS.

(20) Make sure the conditions that follow occur when you use the wrench to install and tighten the top and lower trunnion nuts:
(a) The threads that come out of the top and lower ends are equal (View B-B).

(b) The clearance between the faces of the rod end bearings and the faces of the clevis bushings on the steering collar have less than 0.005 inch difference (View A-A). If these two conditions do not occur you must seat the bearings again.

S 434-037

(21) Tighten the lower trunnion nut last until it touches the inner races of the trunnion bearings.

S 394-038

(22) Make sure the space between the trunnion nuts and the threads is full of sealant (View B-B).

S 394-039

(23) Apply fillet seals between the bearings and the nuts at the top and lower trunnion bearings.

S 434-040

(24) Install the actuator rod end to the steering collar with the pin, caps and bolt (View A-A).

S 434-041

(25) Tighten the nut on the bolt (View A-A).

S 034-042

(26) Loosen the nut to the nearest lock position.

S 434-043

(27) Install the cotter pin.

S 644-044

(28) Use the grease fitting to lubricate the actuator rod end with grease.

S 984-045

(29) Align the top and lower torsion links.

S 434-047

(30) Connect the upper to the lower torsion links at the apex joint (AMM 32-21-09/401).

S 714-051

(31) Do the steps that follow to bleed the system and to make sure it operates correctly:

(a) Pressurize the left hydraulic system (AMM 29-11-00/201).

(b) Operate the steering tiller through its cycle three or four times to bleed the steering system.

(c) Do a test of the tiller operation for nose wheel steering (AMM 32-51-00/501).

(d) Make sure there are no hydraulic leaks.

G. Put the Airplane Back to Its Usual Condition

S 864-052

(1) Remove the pressure from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

S 614-053

(2) Make sure the fluid in the hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

NOSE WHEEL STEERING METERING VALVE - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the metering valve for the nose wheel steering. The second task installs the metering valve.

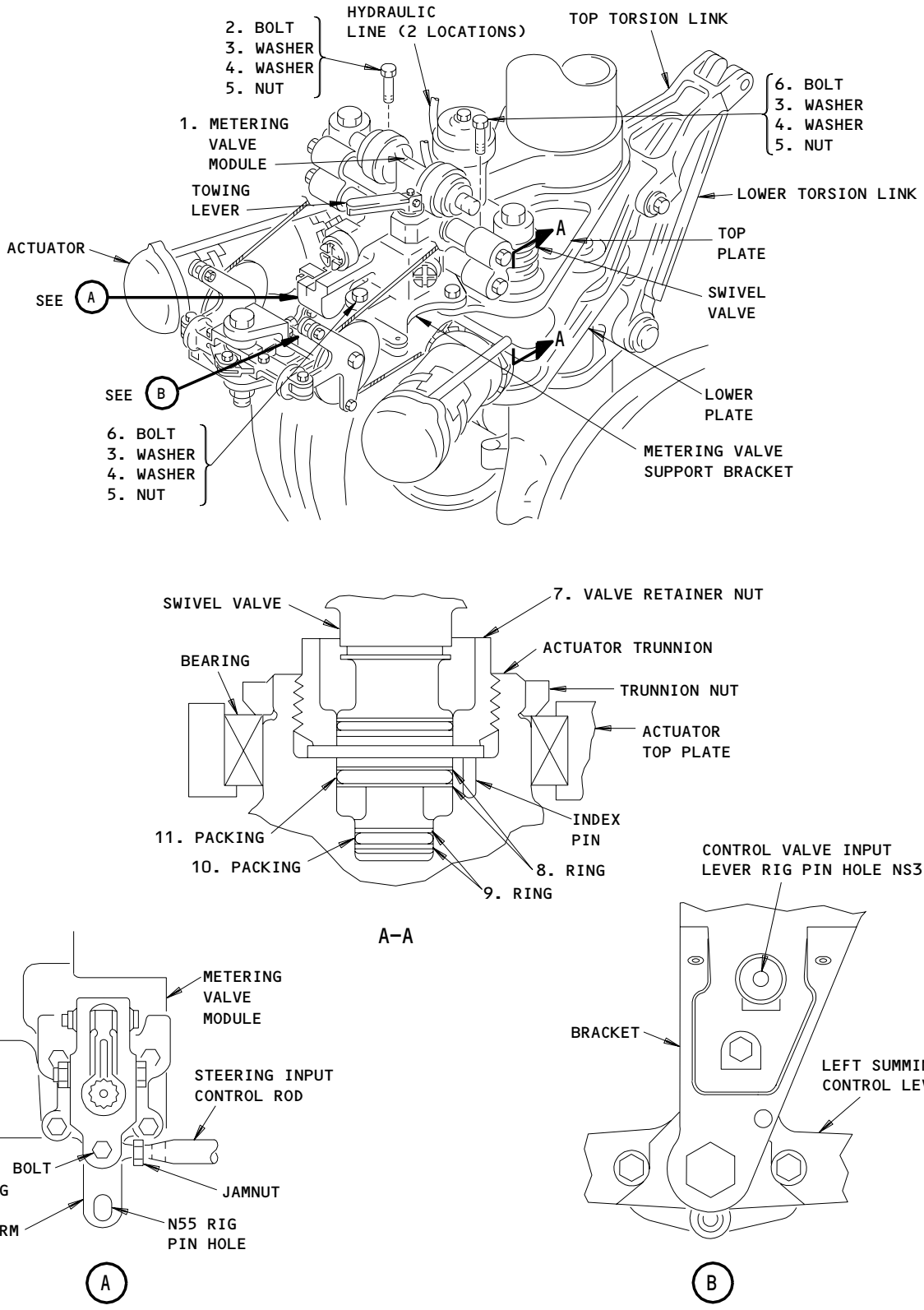
TASK 32-51-12-004-001

2. Remove the Metering Valve for the Nose Wheel Steering (Fig. 401)
   A. References
      (1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
      (2) AMM 32-00-20/201, Landing Gear Downlocks
      (3) AMM 32-21-09/401, Nose Gear Torsion Links
      (4) AMM 32-51-00/501, Nose Wheel Steering System
   B. Equipment
      (1) Rig Pins from Set B20003-XX (AMM 20-10-24/201).
         (a) NS1 - P/N B20003-20
         (b) NS2 - P/N B20003-24
         (c) NS3 - P/N B20003-5
         (d) NS5 - P/N B20003-5
      (2) Spanner Wrench - F72959-35
      (3) Trunnion Nut Wrench - A32035-1
      (4) Towing Lever Lockpin - A09003-1
   C. Access
      (1) Location Zones

115	NLG Wheel Well (Left)
116	NLG Wheel Well (Right)
211	Control Cabin (Left Side)
212	Control Cabin (Right Side)
711	Nose Landing Gear (NLG)

   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).



Nose Wheel Steering Metering Valve Module Installation
Figure 401

S 864-003
(2) Make sure the pressure is removed from the left hydraulic system and reservoir (AMM 29-11-00/201).

S 864-004
(3) Move the towing lever on the metering valve to the TOWING POSITION.

S 494-005
(4) Install the towing lever lockpin.

E. Remove the Metering Valve

S 024-055

CAUTION: DO NOT LET THE TORSION LINKS FALL FREELY WHEN YOU DISCONNECT THE TORSION LINKS. DAMAGE TO THE TORSION LINKS OR THE PROXIMITY SENSORS AND TARGETS CAN OCCUR.

(1) Disconnect the torsion links at the apex joint (AMM 32-21-09/401).

S 984-009
(2) Turn the top torsion link to align the steering collar and the support plate with the zero position on the indicator scale. Make sure they are less than 1/4 degree from the zero position.

S 014-010
(3) Remove the cover for the summing mechanism.

S 034-011
(4) Remove the brackets.

S 494-012
(5) Install the rig pins NS1 and NS2 in the captain's forward quadrant and the interconnect mechanism (AMM 32-51-00/501).

S 034-013
(6) Loosen and disconnect the steering cables NWSA and NWSB at the turnbuckles (AMM 32-51-00/501).

NOTE: The turnbuckles are behind the access hole cover in the wheel well for the nose landing gear.

S 034-014
(7) Disconnect the input control rod from the metering valve (Detail A).

S 034-015
(8) Disconnect the hydraulic lines from the metering valve.

S 494-016
(9) Install caps in the lines and plugs in the ports.

S 034-017
(10) Remove the three bolts that hold the metering valve to the bracket for the control valve.

S 024-018

CAUTION: MAKE SURE THE SWIVEL VALVES AT EACH END OF THE METERING VALVE MOVE EQUALLY DURING REMOVAL. YOU CAN CAUSE DAMAGE TO THE VALVE TUBE IF THE SWIVEL VALVES ARE NOT REMOVED EQUALLY.

(11) Remove the sealant and use the spanner wrench to loosen the retainer nuts for the swivel valve. Loosen them equally at each end of the metering valve. Be careful when you remove the metering valve to prevent contamination of the open hydraulic ports (View A-A).

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 494-019
(12) Install caps in the open hydraulic ports for the swivel valve and actuator in the actuator trunnions.

S 034-020
(13) Remove the hydraulic fittings from the metering valve.

S 494-021
(14) Install plugs in the ports.

TASK 32-51-12-404-022

3. Install the Metering Valve for the Nose Wheel Steering (Fig. 401)
   A. Equipment
      (1) Rig Pins from Set B20003-XX (AMM 20-10-24/201).
         (a) NS1 - P/N B20003-20
         (b) NS2 - P/N B20003-24
         (c) NS3 - P/N B20003-5

(d) NS5 - P/N B20003-5
(2) Spanner Wrench - F72959-35
(3) Trunnion Nut Wrench - A32035-1
(4) Towing Lever Lockpin - A09003-1

B. Consumable Materials
(1) D00153 Fluid-Hydraulic - BMS 3-11
(2) D50180 Grease - BMS 3-33 (Preferred)
(3) D00015 Grease, Corrosion Preventive - BMS 3-24 (Alternate)
(4) A00247 Sealant-Chromate Type - BMS 5-95

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Module - NLG Steering Metering Valve	32-51-12 32-51-12	01 01A	55 60
	10	Packing	32-51-11 32-51-12	01A 01 01A	20
	11	Packing	32-51-11 32-51-12	01A 01 01A	30

D. References
(1) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic Systems
(2) AMM 32-00-20/201, Landing Gear Downlocks
(3) AMM 32-21-09/401, Nose Gear Torsion Links
(4) AMM 32-51-00/501, Nose Wheel Steering System

E. Access
(1) Location Zones
115 NLG Wheel Well (Left)
116 NLG Wheel Well (Right)
211 Control Cabin (Left Side)
212 Control Cabin (Right Side)
711 Nose Landing Gear (NLG)

F. Procedure

S 494-023
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 864-024
(2) Make sure the pressure is removed from the left hydraulic system and reservoir (AMM 29-11-00/201).

S 434-025
(3) Install new packings and ring on the swivel valve.

S 644-026
(4) Lubricate the fittings, packings, and seals on the metering valve with hydraulic fluid.

S 614-027
(5) Fill the metering valve with hydraulic fluid until it is full.

S 424-028

CAUTION: MAKE SURE THE INDEX PINS ON THE SWIVEL VALVES ARE CORRECTLY ALIGNED WITH THE MATING HOLES IN THE ACTUATOR TRUNNION. IF THEY ARE NOT ALIGNED CORRECTLY, IT IS POSSIBLE THE STEERING SYSTEM WILL NOT OPERATE CORRECTLY OR YOU CAN CAUSE DAMAGE TO THE STEERING SYSTEM.

(6) 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 644-029
(7) Apply hydraulic fluid to the threads on the left and right retainer nuts for the metering valve.

S 434-030

CAUTION: TIGHTEN THE RETAINER NUTS FOR THE METERING VALVE EQUALLY DURING INSTALLATION. IF YOU DO NOT TIGHTEN THE RETAINER NUTS EQUALLY, THIS CAN CAUSE DAMAGE TO THE VALVE ASSEMBLY TUBE.

(8) Tighten the retainer nuts for the metering valve equally on each side with the spanner wrench.

S 394-031
(9) Apply a fillet seal between the retainer nuts for the swivel valve and the actuator top trunnions.

S 434-032
(10) Attach the metering valve to the bracket with the three bolts.

S 434-033
(11) Install the brackets for the metering valve cover.

S 434-034
(12) Connect the hydraulic lines for RETURN and SUPPLY to the metering valve. Tighten the connectors.

S 494-035
(13) Make sure the rig pins NS1 and NS2 are installed in the captain's forward quadrant and the interconnect mechanism (AMM 32-51-00/501).

S 494-036
(14) Install the rig pins NS3 in the input lever for the control valve and NS-5 in the input arm for the metering valve (Details A and B).

S 434-037
(15) Install and tighten the control cables NWSA and NWSB to the correct tension at the turnbuckles (AMM 32-51-00/501).

S 494-038
(16) Make sure the rig pins NS1 and NS2 can be easily installed.

S 434-039
(17) Install the turnbuckle lock clips.

S 414-040
(18) Install the access cover for the nose wheel well.

S 434-041
(19) Apply grease to the fastener and connect the input control rod to the input arm for the metering valve.

S 434-042
(20) Tighten the fastener.

S 824-043
(21) Adjust the length of the input control rod until you can install the rig pins NS3 and NS5 easily in the holes.

S 434-044
(22) Tighten the rod end jamnuts.

S 094-045
(23) Remove the rig pins NS1, NS2, NS3 and NS5.

S 714-046
(24) Do the test of the tiller steering system for the correct operation (AMM 32-51-00/501). Adjust the system if it is necessary.
(a) Examine the metering valve module for leakage.
(b) Connect the upper torsion link to the lower torsion link at the apex joint (AMM 32-21-09/401).

S 414-047
(25) Install the summing mechanism cover.

S 864-048
(26) Remove the pressure from the left hydraulic system if it is not necessary (AMM 29-11-00/201).

NOSE WHEEL STEERING LOWER PULLEY SUPPORT BRACKET - REMOVAL/INSTALLATION

1. General
   A. The bracket that holds the lower pulley for the nose wheel steering is below panel(s) for the landing and runway turnoff lights, P62/P63. The panels are on the shock strut of the nose landing gear.
   B. This procedure contains two tasks. The first task removes the bracket that holds the lower pulley for the nose wheel steering. The second task installs the bracket.

TASK 32-51-13-004-001

2. Remove the Bracket for the Lower Pulley
   A. Equipment
      (1) Towing Lever Lockpin - A09003-1
   B. References
      (1) AMM 32-00-05/201, Landing Gear Control Cables
      (2) AMM 32-00-20/201, Landing Gear Downlocks
      (3) AMM 32-51-06/401, Nose Landing Gear Control Drum and Link
      (4) AMM 32-51-08/401, Nose Landing Gear Spring Cartridge
      (5) AMM 33-42-04/401, Nose Gear Landing and Runway Turnoff Lights
   C. Access
      (1) Location Zone
          711 Nose Landing Gear (NLG)

   D. Prepare for the Removal

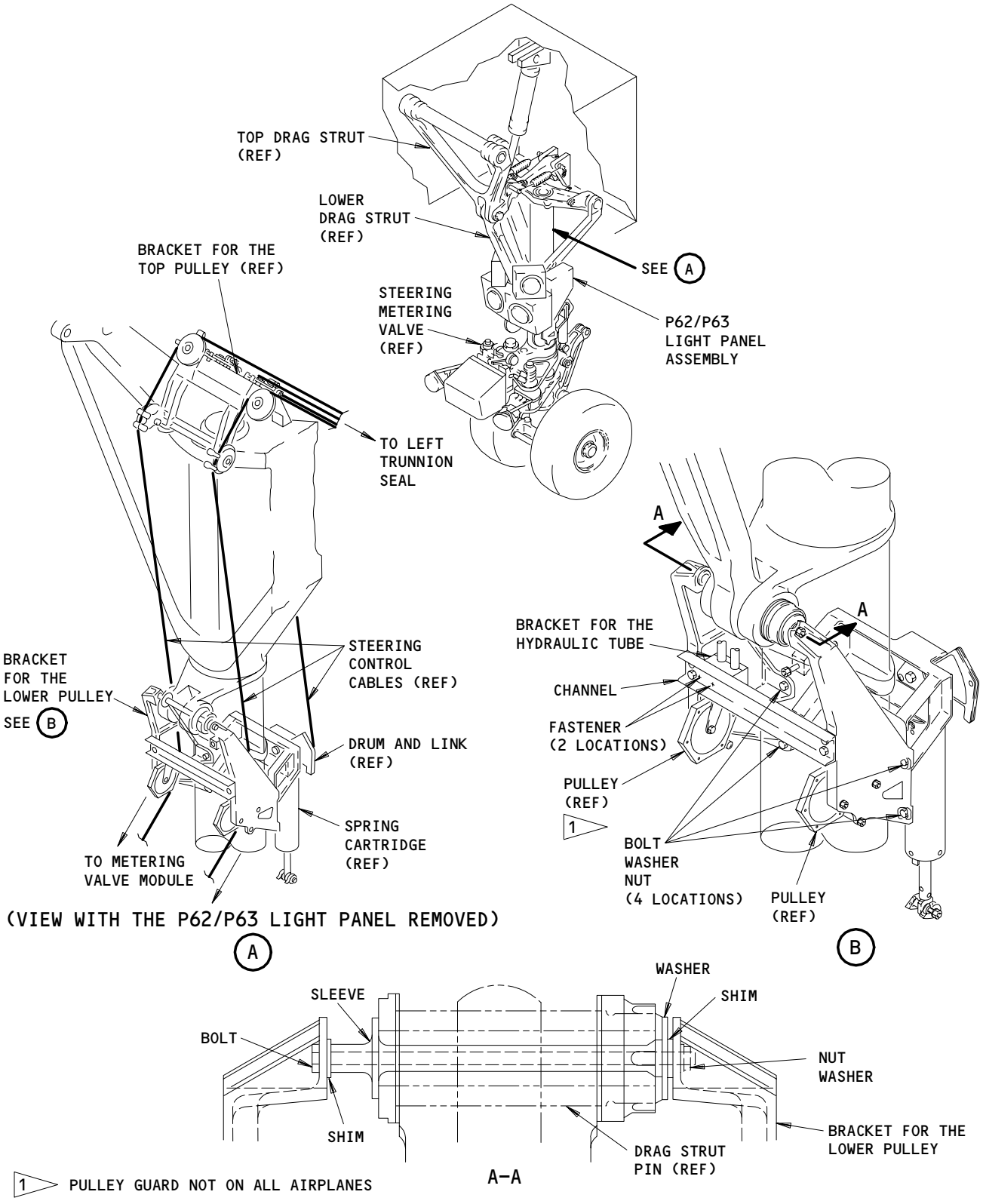
      S 494-003
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-004
      (2) Put the towing lever in the TOW position.

      S 494-005
      (3) Install the towing lever lockpin.
   E. Procedure to Remove the Bracket

      S 034-006
      (1) At the splice location in the fuselage, disconnect the two cables for nose wheel steering that go to the metering valve; move them away from the bracket assembly for the lower pulley (AMM 32-00-05/201).

      S 014-007
      (2) Remove the panel(s) for the landing and runway turnoff lights on the nose landing gear, P62/P63 (AMM 33-42-04/401).



Nose Wheel Steering Lower Pulley Support Bracket Installation
Figure 401

S 034-008
(3) Remove the top end of the spring cartridge for nose wheel steering from the drum and link (AMM 32-51-08/401).

S 034-009
(4) Loosen the control cables at two locations.

S 034-010
(5) Remove the drum and link assembly for nose wheel steering from the bracket that holds the lower pulley (AMM 32-51-06/401).

S 034-011
(6) Remove the fastener that holds the bracket to the attach pin location on the lower drag strut for the nose landing gear (View A-A). Keep the sleeve shims and washer for installation.

S 034-012
(7) Remove the two fasteners that hold the hydraulic lines to the bracket channel.

S 034-013
(8) Remove the four fasteners that hold the bracket for the lower pulley to the shock strut.

S 024-014
(9) Remove the bracket.

TASK 32-51-13-404-002

3. Install the Bracket for the Lower Pulley

A. Equipment
(1) Towing Lever Lockpin - A09003-1

B. Consumable Materials
(1) A00247 Sealant - BMS 5-95, Type 1, Class B-1/2

C. References
(1) AMM 32-00-05/201, Landing Gear Control Cables
(2) AMM 32-51-00/501, Nose Landing Gear Steering System
(3) AMM 32-51-06/401, Nose Landing Gear Control Drum and Link
(4) AMM 32-51-08/401, Nose Landing Gear Spring Cartridge

(5) AMM 33-42-04/401, Nose Gear Landing and Runway Turnoff Lights

D. Access

(1) Location Zone

711 Nose Landing Gear (NLG)

E. Procedure

S 424-015

(1) Put the bracket in its position at the attach points on the shock strut for the nose landing gear.

S 394-016

(2) Fay seal the bracket at the attach points on the shock strut.

S 434-017

(3) Use the four fasteners to install the bracket. Install the fasteners wet with sealant.

S 434-018

(4) Install the fastener, sleeve, shims and washers (View A-A) which hold the bracket to the attach pin location on the lower drag strut for the nose landing gear.

S 434-019

(5) Use the two fasteners to install the bracket that holds the hydraulic tube to the support channel.

S 434-020

(6) Install the drum and link assembly for the nose wheel steering to the bracket that holds the lower pulley (AMM 32-51-06/401).

S 434-021

(7) Connect the spring cartridge to the drum and link assembly (AMM 32-51-08/401).

S 414-022

(8) Install the panel(s) for the landing and runway turnoff lights, P62/P63 (AMM 33-42-04/401).

S 434-023
(9) Put the cables for the nose wheel steering through the applicable pulleys (AMM 32-00-05/201).

S 434-024
(10) Connect the cables loosely at the cable splice in the fuselage (AMM 32-00-05/201).

S 434-025
(11) Tighten the cables to get the correct tension (AMM 32-51-00/501).

S 714-026
(12) Do a test of the nose wheel steering for the correct operation (AMM 32-51-00/501).

F. Put the Airplane Back to Its Initial Condition

S 434-027
(1) Make sure the torsion links for the nose wheel steering are connected.

S 094-028
(2) Remove the towing lever lockpin.

S 864-029
(3) Make sure the towing lever moves to the NORMAL position.

NOSE WHEEL STEERING UPPER PULLEY SUPPORT BRACKET - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the bracket for the top pulley of the nose wheel steering. The second task installs the bracket.
   B. The bracket for the top pulley of the nose wheel steering is installed at the top of the shock strut for the nose landing gear.

TASK 32-51-14-004-001

2. Remove the Bracket for the Top Pulley of the Nose Wheel Steering (Fig. 401)
   A. Equipment
      (1) Towing Lever Lockpin - A09003-1
   B. References
      (1) AMM 32-00-05/201, Landing Gear Control Cables
      (2) AMM 32-00-20/201, Landing Gear Downlocks
   C. Access
      (1) Location Zones
          115 NLG Wheel Well (Left)
          116 NLG Wheel Well (Right)
          117 Area Outboard and Above NLG Wheel Well (Left)
          118 Area Outboard and Above NLG Wheel Well (Right)
          711 Nose Landing Gear (NLG)

   D. Prepare for the Removal

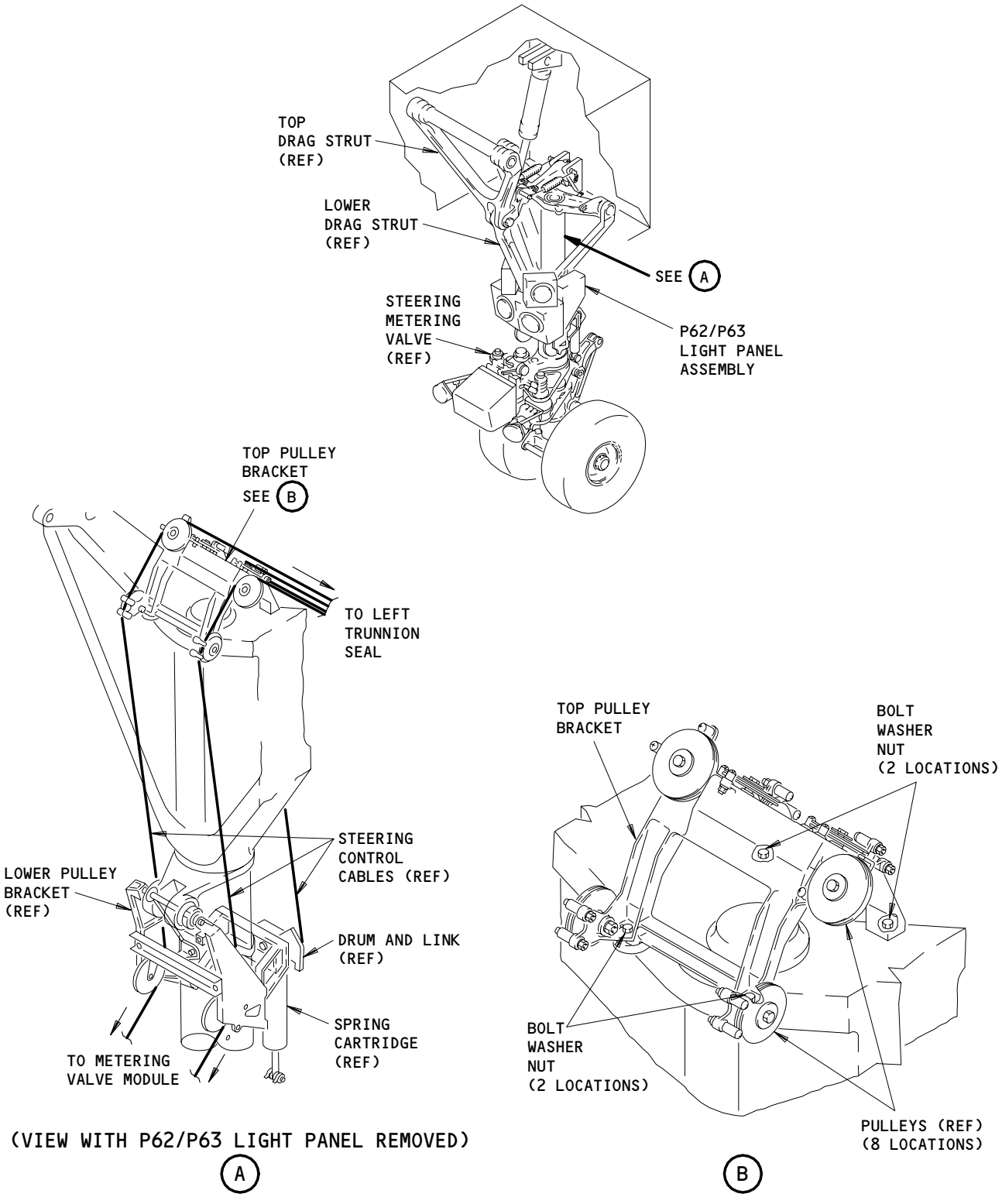
      S 494-002
      (1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

      S 864-003
      (2) Put the towing lever in the TOW POSITION.

      S 494-004
      (3) Install the towing lever lockpin.
   E. Remove the Bracket

      S 034-005
      (1) Disconnect the four cables for the nose wheel steering at the splice in the fuselage (AMM 32-00-05/201).

      S 014-006
      (2) Move the cables away from the top bracket assembly.



Nose Wheel Steering Upper Pulley Bracket Installation
Figure 401

S 024-007
(3) Remove the four fasteners and remove the top bracket assembly from the shock strut for the nose landing gear.

TASK 32-51-14-404-008

3. Install the Bracket for the Top Pulley of the Nose Wheel Steering (Fig. 401)

A. Equipment
(1) Towing Lever Lockpin - A09003-1

B. Consumable Materials
(1) A00247 Sealant, BMS 5-95, Type 1, Class B-1/2

C. References
(1) AMM 32-00-05/201, Landing Gear Control Cables
(2) AMM 32-51-00/501, Nose Landing Gear Steering System Adjustment/Test

D. Access
(1) Location Zones
115 NLG Wheel Well (Left)
116 NLG Wheel Well (Right)
117 Area Outboard and Above NLG Wheel Well (Left)
118 Area Outboard and Above NLG Wheel Well (Right)
711 Nose Landing Gear (NLG)

E. Install the Bracket

S 424-009
(1) Put the top pulley bracket at the top end of the shock strut.

S 394-010
(2) Fay seal the bracket.

S 434-011
(3) Use the four fasteners to install the bracket. Use wet sealant with the fasteners.

S 434-012
(4) Put the cables for the nose wheel steering into the applicable pulleys. Loosely connect them at the splice in the fuselage (AMM 32-00-05/201).

S 434-013
(5) Tighten the cables to get the correct tension (AMM 32-51-00/501).

S 714-014
(6) Do a test of the system for nose wheel steering to make sure it operates correctly (AMM 32-51-00/501).

F. Put the Airplane Back to Its Usual Condition

S 434-015
(1) Make sure the torsion links for the nose wheel steering are connected.

S 094-016
(2) Remove the towing lever lockpin.

S 864-017
(3) Make sure the towing lever goes back to the NORMAL POSITION.

NOSE WHEEL STEERING METERING VALVE COMPENSATOR - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task removes the compensator on the metering valve of the nose wheel steering. The second task installs the compensator.

   TASK 32-51-15-004-001

2. Remove the Compensator on the Metering Valve 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 Control Cabin (Left)
          212 Control Cabin (Right)
          711 Nose Landing Gear (NLG)

   D. Prepare for the Removal

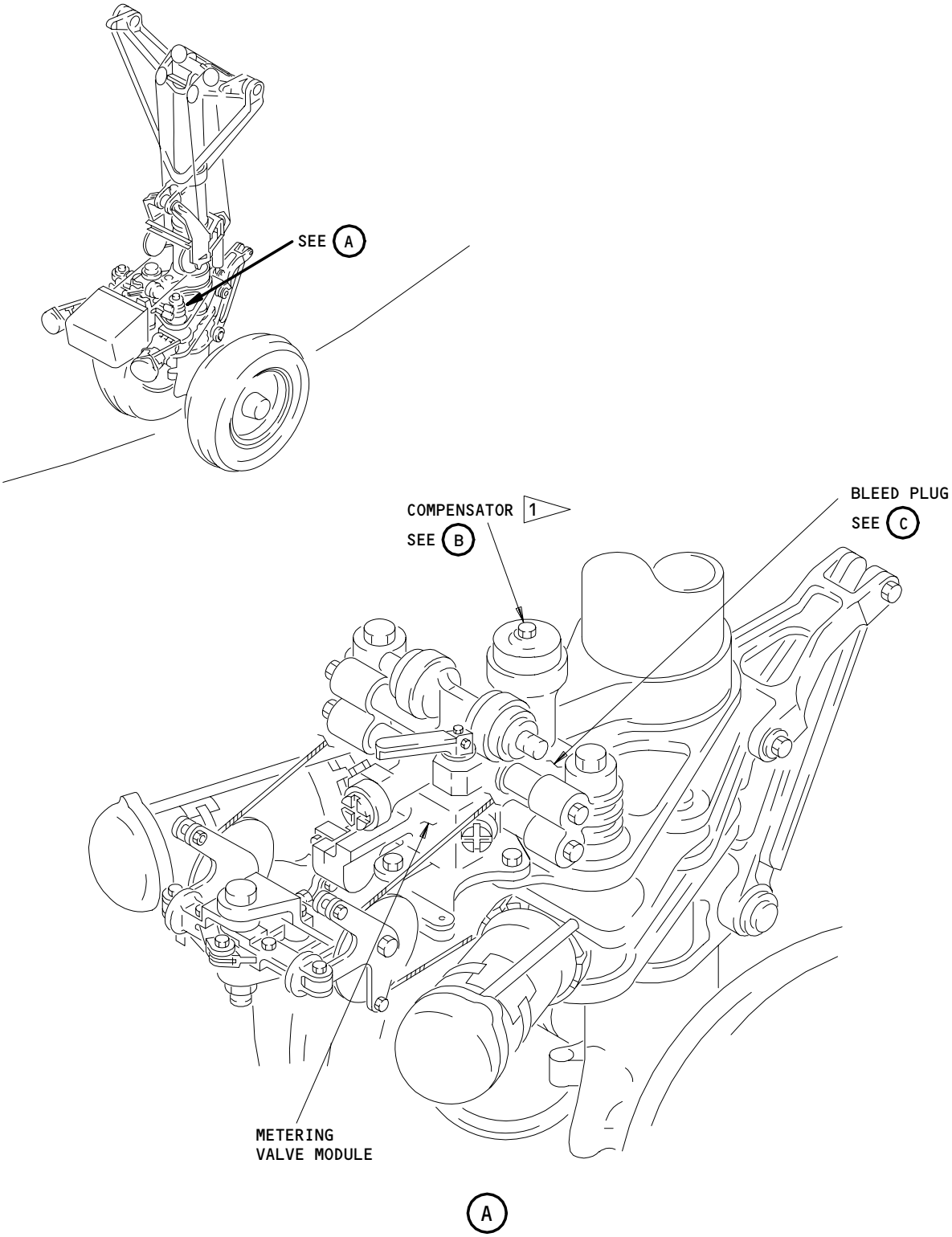
      S 864-002
      (1) Remove the pressure from the left hydraulic system and reservoir (AMM 29-11-00/201).

      S 494-003
      (2) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).
   E. Remove the Compensator

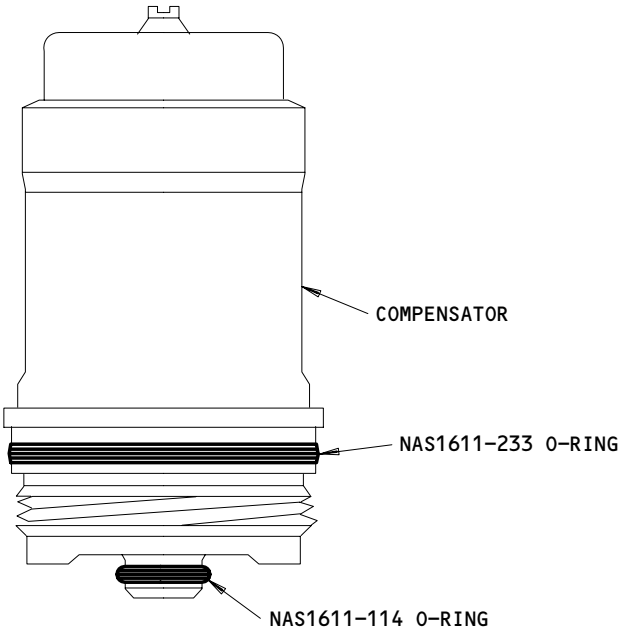
      S 874-004

      WARNING: BLEED THE PRESSURE IN THE COMPENSATOR BEFORE YOU REMOVE IT. THERE ARE APPROXIMATELY 5 CUBIC INCHES OF HYDRAULIC FLUID CAUGHT IN THE COMPENSATOR AT 250 PSI TO 290 PSI. IF YOU DO NOT BLEED THIS PRESSURE BEFORE YOU REMOVE THE COMPENSATOR, THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (1) Loosen the bleed plug (Detail C, Fig. 401) to bleed the hydraulic pressure that is caught in the compensator.

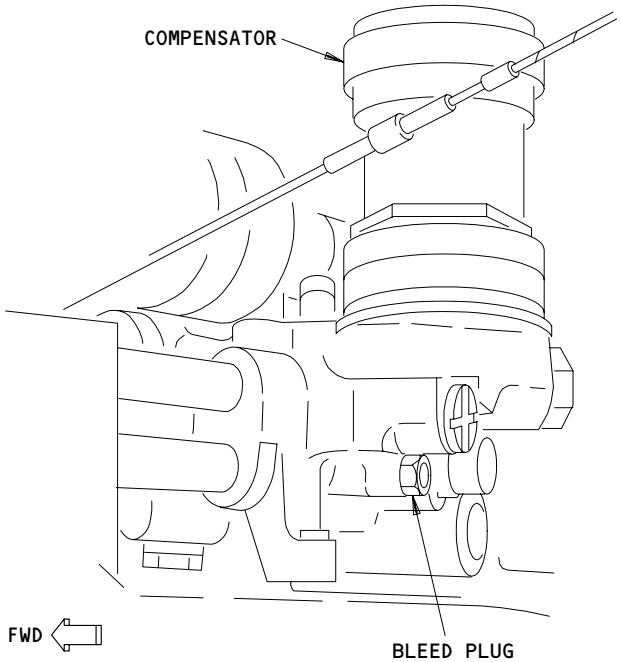


Nose Wheel Steering Metering Valve Compensator Installation
Figure 401 (Sheet 1)



COMPENSATOR O-RING INSTALLATION

B



C

Nose Wheel Steering Metering Valve Compensator Installation
Figure 401 (Sheet 2)

S 024-005
(2) Use a crowfoot wrench to remove the compensator from the module.

S 024-006
(3) Remove the compensator and the O-rings from the boss.

S 434-007
(4) Tighten the bleed plug per Fig. 401.

TASK 32-51-15-404-008

3. Install the Compensator on the Metering Valve for the Nose Wheel Steering (Fig. 401)

A. Equipment
(1) Crowfoot Wrench, 3-inch - commercially available

B. Consumable Materials
(1) A00251 Sealant - BMS 5-26, Type II Class B-2
(2) D00153 Fluid, Hydraulic - BMS 3-11

C. References
(1) AMM 12-12-01/301, Hydraulic System Servicing
(2) AMM 20-10-23/401, Standard Practices Lockwire
(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 32-21-09/401, Nose Gear Torsion Links

D. Access
(1) Location Zones
211 Control Cabin (Left)
212 Control Cabin (Right)
711 Nose Landing Gear (NLG)

E. Procedure

S 494-009
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 864-010
(2) Make sure the pressure is removed from the left hydraulic system and reservoir (AMM 29-11-00/201).

S 434-011
(3) Install the two O-rings on the compensator as shown in Detail B, Fig. 401.

S 394-012
(4) Apply a thin layer of sealing compound to the threads of the compensator.

S 424-013
(5) Install the compensator in the boss. Use the crowfoot wrench to tighten the compensator to 275-300 pound-inches.

S 434-014
(6) Install lockwire on the compensator.

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 NOSE WHEEL STEERING SYSTEM BEFORE YOU SUPPLY HYDRAULIC POWER TO THE SYSTEM. PARTS OF THE NOSE WHEEL SYSTEM CAN TURN AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Pressurize the left hydraulic system (AMM 29-11-00/201).

S 034-017

CAUTION: MAKE SURE THE TOP TORSION LINK IS HELD IN THE HORIZONTAL POSITION (AT A RIGHT ANGLE TO THE OUTER CYLINDER OF THE SHOCK STRUT) WHEN YOU DISCONNECT IT. 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.

(9) Disconnect the torsion links for the nose landing gear at the apex joint (AMM 32-21-09/401).

S 394-018
(10) Turn the steering tiller to operate the nose wheel steering through the maximum left and right steering. Do this a minimum of six times to bleed air from the system.

S 714-019

(11) Do the steps that follow to make sure the tiller handle steering operates correctly:

(a) Turn the tiller handle from the center position in the clockwise direction until the adjustable stop bolt on the trunnion drum touches the stop that does not move. Hold the tiller in this position.

(b) Make sure that the angular movement of the steering collar is 65 ±1 degrees.

(c) Release the tiller.

1) Make sure the tiller goes back to the center position without help, in 4 seconds.

2) Make sure that the steering collar goes to ±1 1/2 degrees of the center position.

(d) Do the five steps before this again, but turn the tiller handle counterclockwise.

(e) Make sure there are no hydraulic leaks at the metering valve compensator.

F. Put the Airplane Back to Its Initial Condition

S 864-020

(1) Remove the pressure from the left hydraulic system (AMM 29-11-00/201) if it is not necessary.

S 614-021

(2) Make sure the fluid in the left hydraulic reservoir is at the correct level. Fill if it is necessary (AMM 12-12-01/301).

S 864-022

(3) Remove electrical power (AMM 24-22-00/201) if it is not necessary.

S 434-023

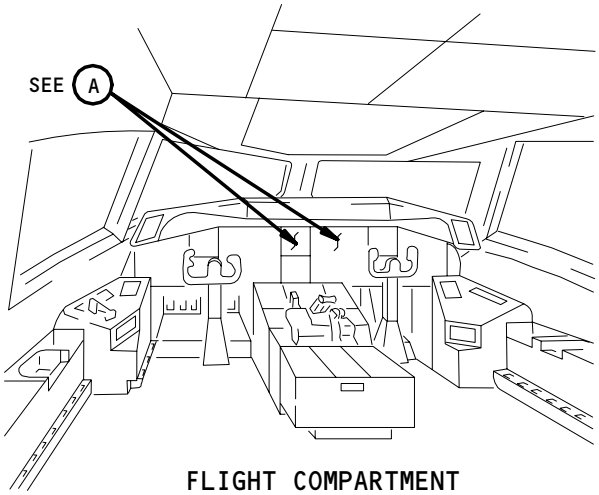
(4) Connect the torsion links for the nose landing gear (AMM 32-21-09/401).

S 864-024

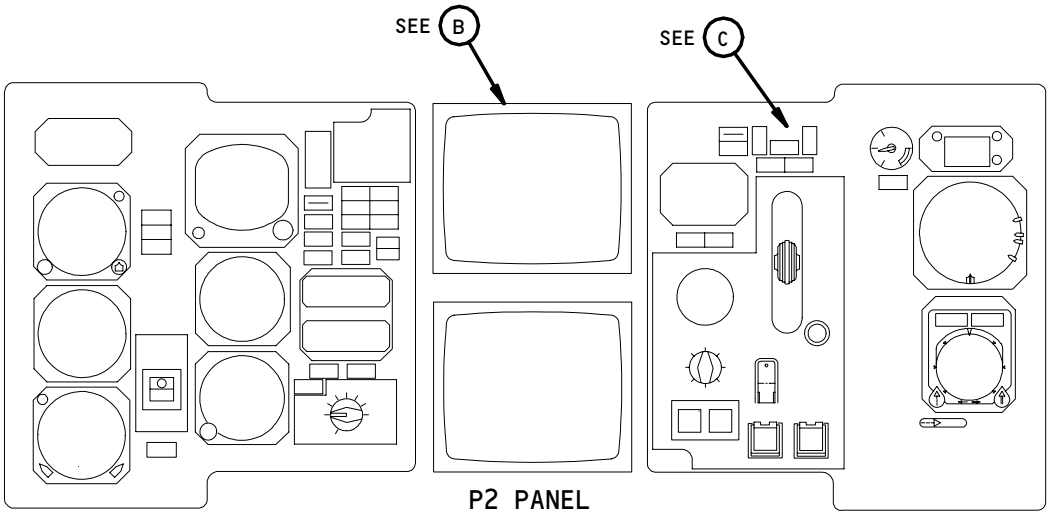
(5) Make sure the not compressed sensors and targets for the nose landing gear are not damaged.

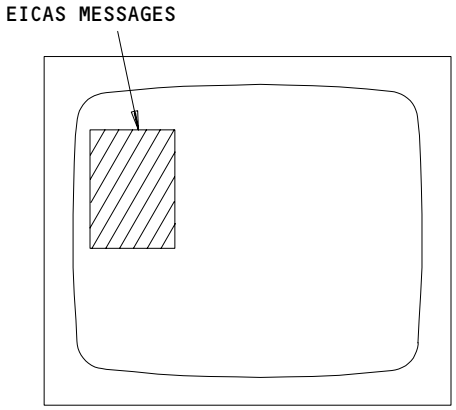
LANDING GEAR POSITION INDICATING AND WARNING SYSTEM - DESCRIPTION AND OPERATION

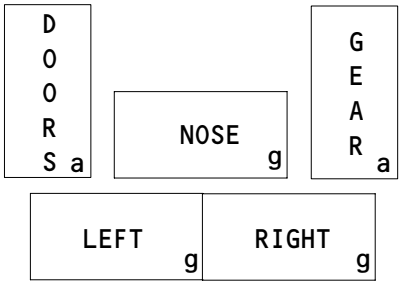
1. General
   A. The system shows status of landing gear and gear doors to the pilots. Two independent landing gear subsystems are used to provide redundant control to indication lights and EICAS (Engine Indication and Crew Alerting System) messages.
   B. The system also provides inputs to the aural warning system, landing configuration warning module (Ref 31-51-00).
   C. The system consists of indication lights on the pilots center instrument panel P3 and EICAS messages on the upper EICAS display. The system receives gear position signals from the PSEU (Proximity Switch Electronic Unit) to turn on or off the indicator lights and EICAS messages. Proximity sensors which provide landing gear and door position signals to the PSEU are part of the proximity switch system (Ref 32-09-03).
2. Component Details
   A. Indicator Lights (Fig. 1)
      (1) Five landing gear indication lights, one amber GEAR disagreement 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) Landing gear indicator lights have dual light bulbs with independent power sources to reduce the possibility of indicator lights failing to illuminate as a result of power failure.
      (3) The amber GEAR light illuminates when the gear is in transit, or when the gear position does not agree with the gear lever position. The GEAR light will be off when all gears are down and locked and control lever is down, or all gears are up and locked and control lever is not down.
      (4) The amber DOORS light illuminates when any landing gear door is not completely closed and locked. When all the landing gear doors are completely closed and locked the DOORS light will be off.
      (5) The green NOSE light illuminates when the nose gear is down and locked. When the nose landing gear is not down and locked the NOSE light is off.



FLIGHT COMPARTMENT







LANDING GEAR POSITION
INDICATOR LIGHTS

Main Landing Gear - Position and Warning
Figure 1

(6) The green LEFT light illuminates when the left main gear is down and locked. When the left main landing gear is not down and locked the LEFT light is off.
(7) The green RIGHT light illuminates when the right main gear is down and locked. When the right main landing gear is not down and locked the RIGHT light is off.

B. EICAS Display (Fig. 1)
(1) The landing gear indication for EICAS is on the EICAS display on the pilot's center instrument panel P3. The EICAS messages for landing gear position are as follows:

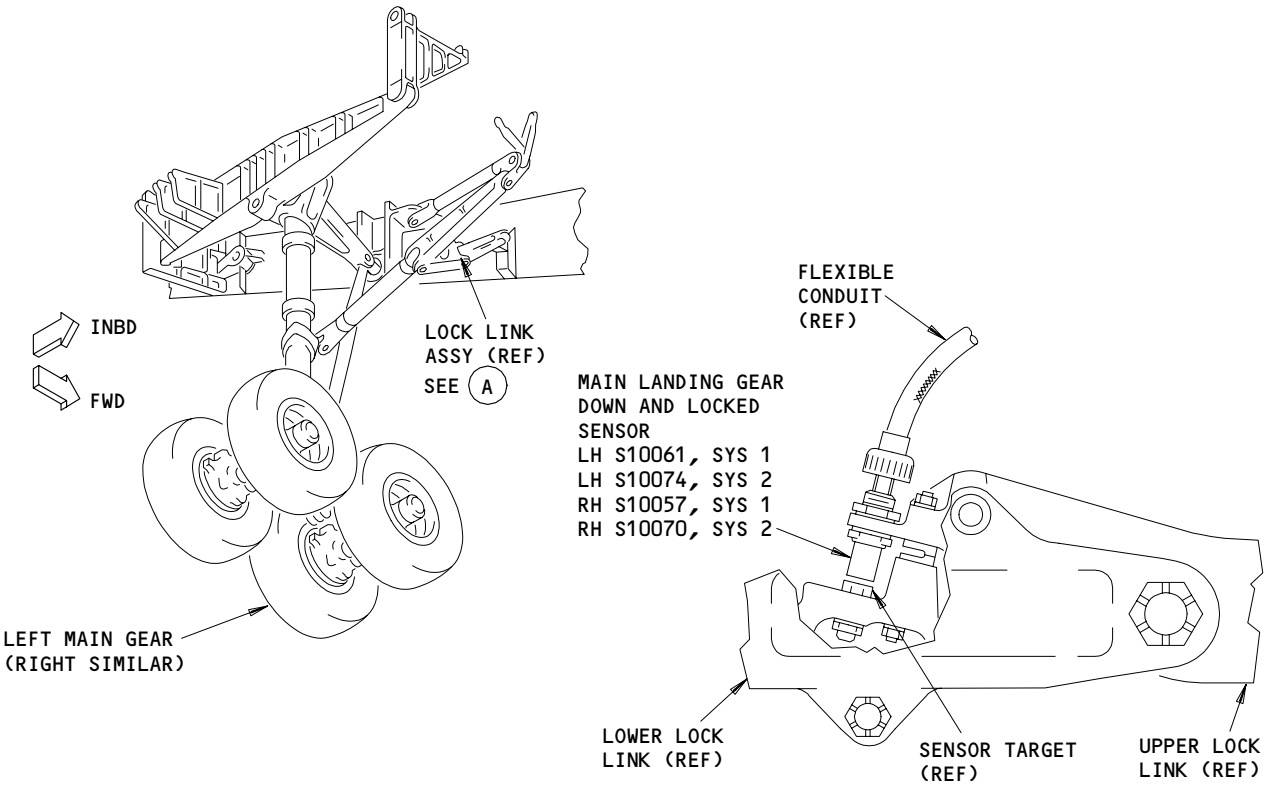
One amber GEAR DISAGREE
One amber GEAR DOORS
One white LDG GEAR MONITOR
One white PSEU BITE

During normal operation system 1 and 2 provide redundant control of EICAS. All amber EICAS messages have time delay varying from 25 to 35 seconds. The white EICAS messages have time delays varying from 2 to 10 second delays.
(2) The amber GEAR DISAGREE message is displayed on EICAS when the gear is not in selected gear handle position within 25 seconds.
(3) The amber GEAR DOORS message is displayed on EICAS when any landing gear door is not closed and locked within 35 seconds after moving the gear handle.
(4) The white LDG GEAR MONITOR or PSEU BITE message appears on EICAS when separate and parallel inputs from systems 1 and 2 to the EICAS computer disagree. LDG GEAR MONITOR message appears when disagreement is indicated with gear commanded down, while PSEU BITE message appears when disagreement is indicated with gear commanded up or door closed inputs do not agree between system 1 and system 2.
(5) These maintenance level messages help fault isolation for the LDG GEAR MONITOR status level message. Each of the messages are stored in EICAS non-volatile memory (NVM). The messages are as follows:
(a) GEAR DISAGREE: System 1 and 2 landing gear indicators disagree in down position.
(b) NOSE GEAR DOWN: System 1 and 2 nose gear down indications disagree.

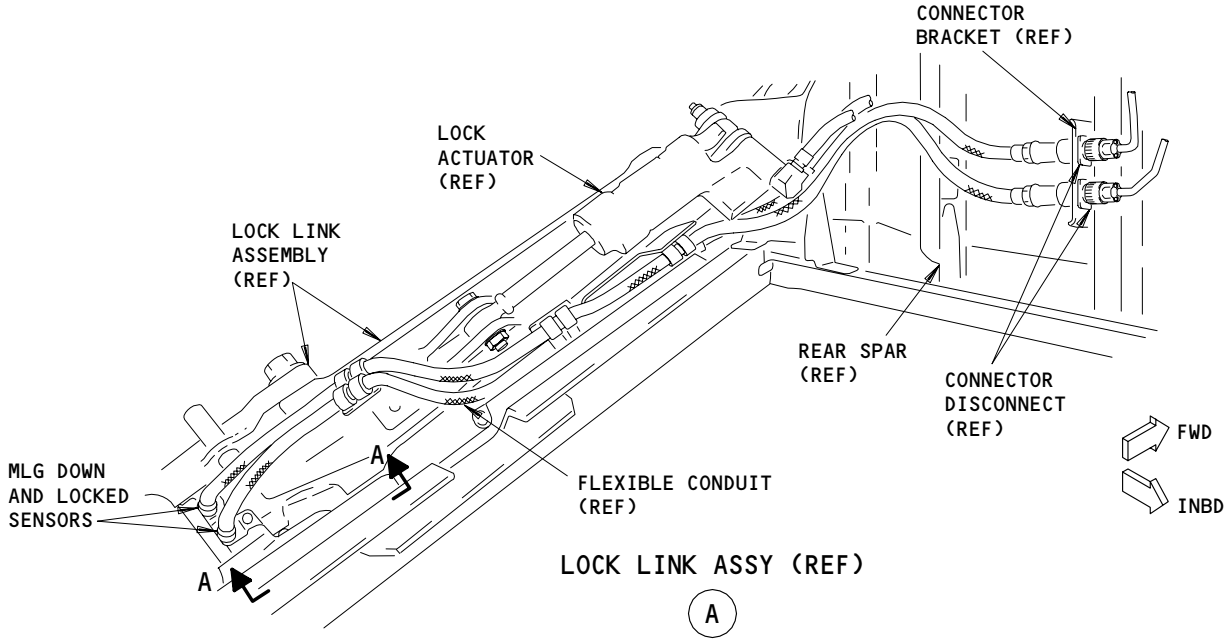
(c) NOSE GEAR LOCKED: System 1 and 2 nose gear locked indications disagree.
(d) ALL GEAR DOWN: Landing gear system indicates all gear down and locked to the landing configuration warning system when nose gear is up.
(e) GEAR LEVER: System 1 and 2 gear lever indications disagree.
(f) L GEAR DOWN: System 1 and 2 left main gear down and locked indications disagree.
(g) R GEAR DOWN: System 1 and 2 right main gear down and locked indications disagree or alternate extend power pack fails to produce 2200 psi within 30 seconds during alternate extension or on-ground door operation.
(h) GEAR DOORS: System 1 and 2 gear door indications disagree.
(i) LDG GEAR MONITOR: A LDG GEAR MONITOR status message will appear whenever one or more of the above maintenance messges are enabled. The maintenance messages have time delays varying from 2 to 60 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.

C. Sensors
(1) Main landing gear down and locked sensors (Fig. 2)
(a) Sensors S10061 (left) and S10057 (right) for system 1, and S10074 (left) and S10070 (right) for system 2, are located on the main gear down lock links at the apex. The sensors provide logic signals for the GEAR, LEFT, and RIGHT lights and EICAS messages GEAR DISAGREE and LDG GEAR MONITOR.
(2) Main landing gear up and locked sensor (Fig. 3)
(a) Sensors S10240 (left) and S10239 (right) for system 1, and S10064 (left) and S10059 (right) for system 2, are located on the uplock assembly in the outboard fairing of the main wheel well. The sensors provide logic signals for the GEAR light and EICAS messages GEAR DISAGREE and PSEU BITE.



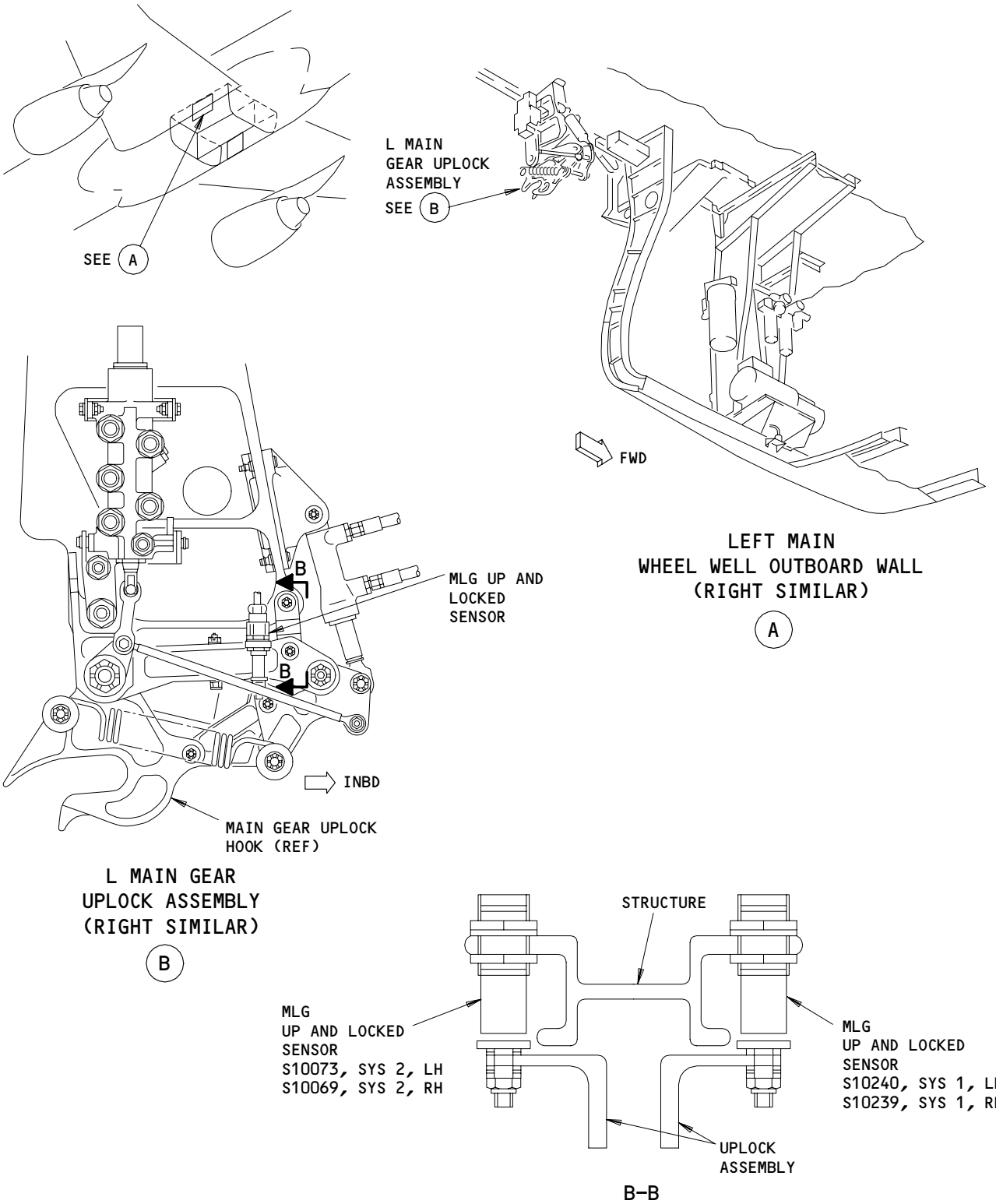
MLG DOWN AND LOCKED SENSORS
A-A



LOCK LINK ASSY (REF)
A

Main Landing Gear Proximity Sensors
Figure 2

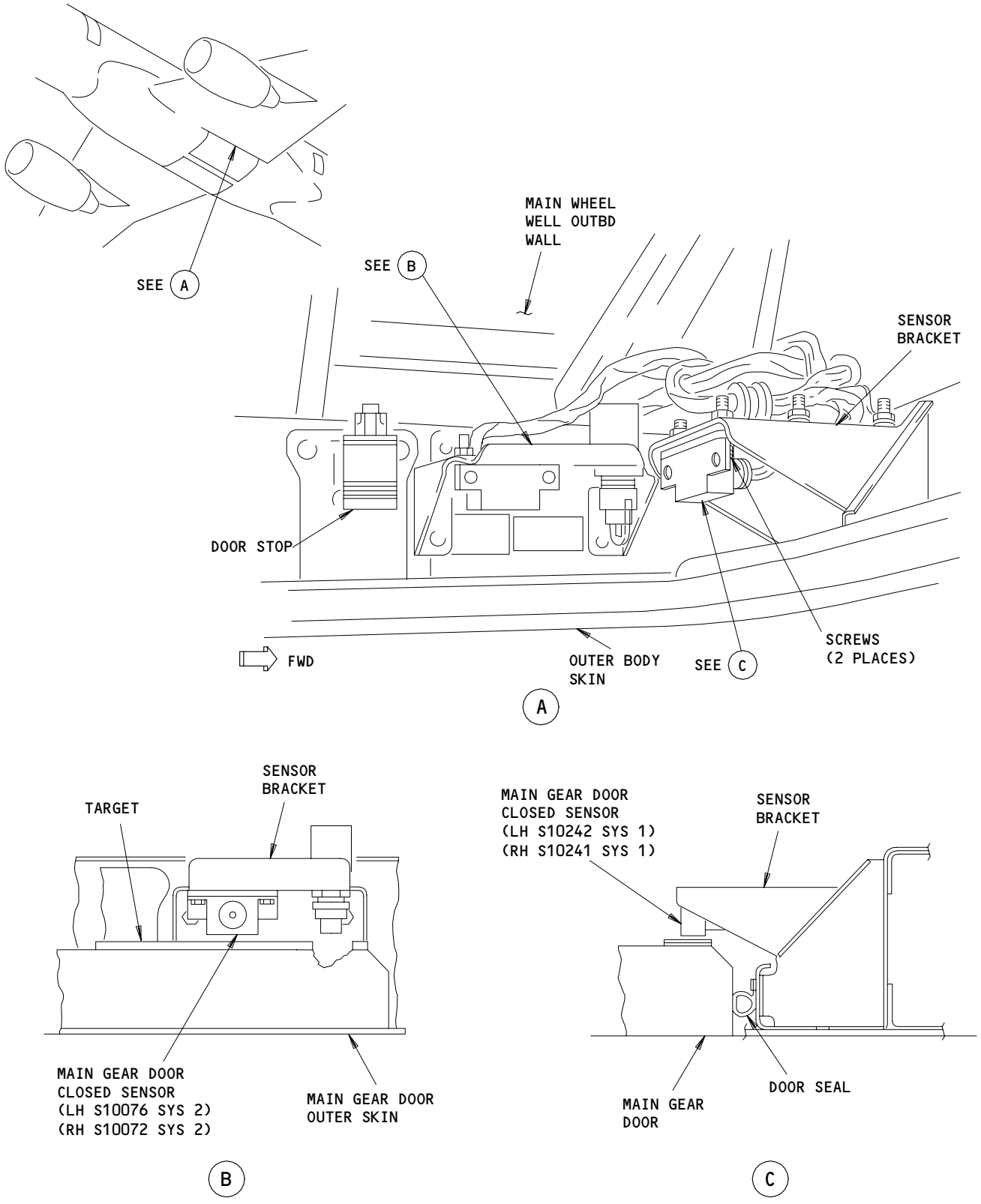
43266



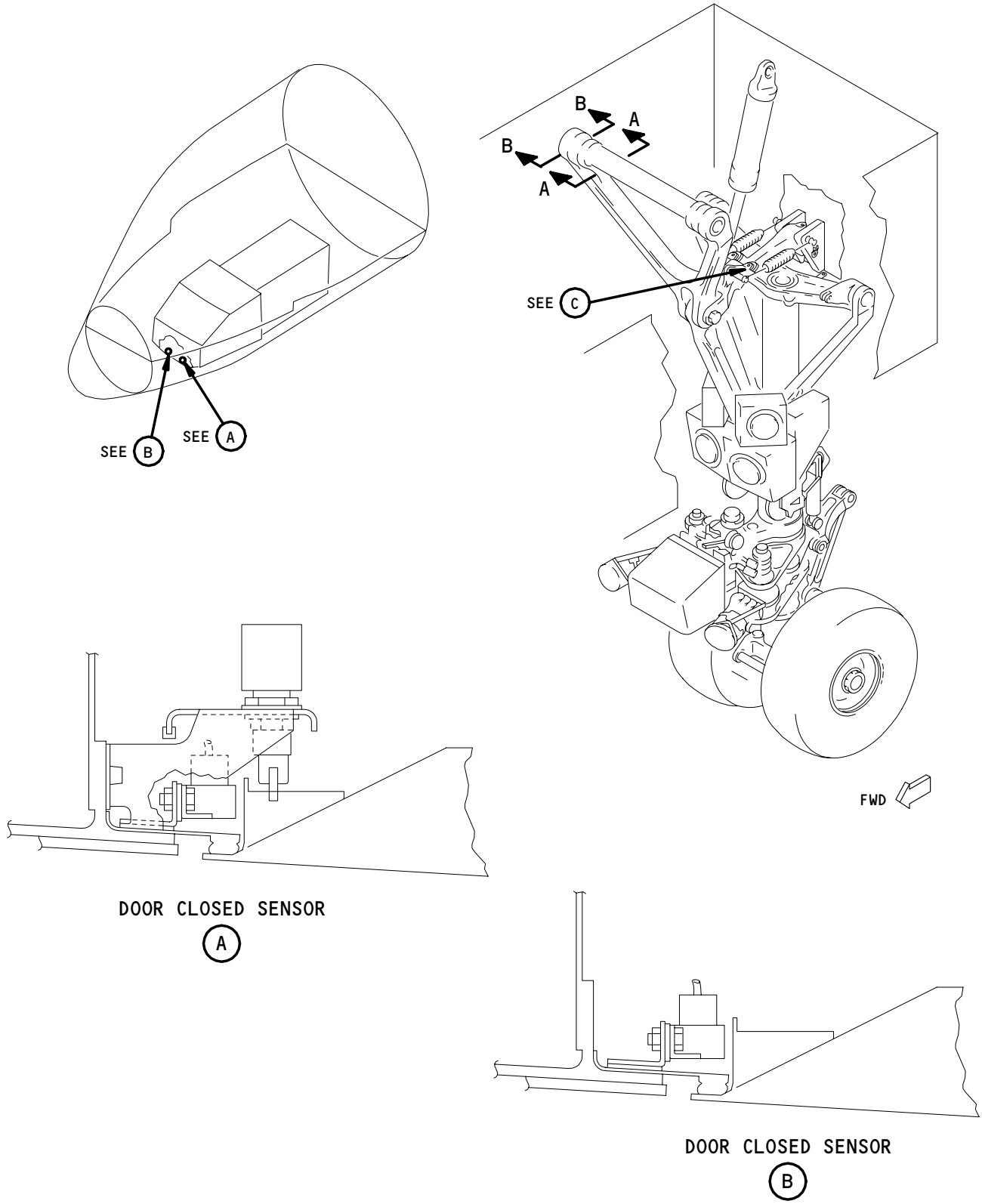
MLG Up and Locked Proximity Sensors
Figure 3

(3) Main landing gear door closed sensors (Fig. 4)
  (a) Sensors S10242 (left) and S10241 (right) for system 1, and S10076 (left) and S10072 (right) for system 2, are located on the forward outboard main wheel well gear door opening. The sensors provide logic signals for EICAS messages GEAR DOORS and PSEU BITE.
(4) Nose gear locked sensors (Fig. 5)
  (a) Sensors S10065 for system 1 and S10078 for system 2 are located on the nose gear lock link at the apex. The sensors provide logic signals for NOSE and GEAR lights and EICAS messages GEAR DISAGREE and PSEU BITE.
(5) Nose gear up position sensors (Fig. 5)
  (a) Sensors S10238 for system 1 and S10077 for system 2 are located above the upper drag brace on the nose wheel well ceiling. The sensors provide logic signals for GEAR light and EICAS messages GEAR DISAGREE and LDG GEAR MONITOR.
(6) Nose gear down position sensors (Fig. 5)
  (a) Sensors S10066 for system 1 and S10079 for system 2 are located above the upper drag brace on nose wheel well ceiling. The sensors provide logic signals for the GEAR light and EICAS messages GEAR DISAGREE and LDG GEAR MONITOR.
(7) Nose gear door closed sensor (Fig. 5)
  (a) Sensors S10243 for system 1 and S10081 for system 2 are located near the center of the nose gear wheel well sill. The sensors provide logic signals for the DOORS light and EICAS message GEAR DOORS

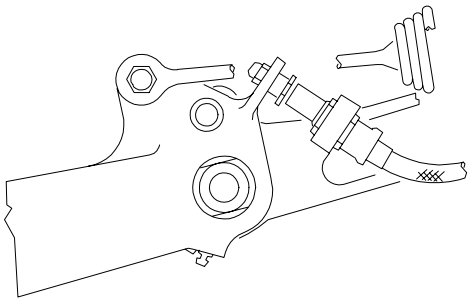
3. Operation
A. Functional Description (Fig. 6)
(1) Landing gear systems 1 and 2 sensors, through sensing of targets near or far, provide landing gear and gear door position signals to the PSEU. The PSEU processes these signals for indication lights and EICAS messages functions.
(2) When a target is in proximity (NEAR) to its sensor, a logic 0 output produced in the PSEU prox 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 light and EICAS message. Power of 28v dc supply for the light comes from the master dim and test circuit (Ref 33-16-00)



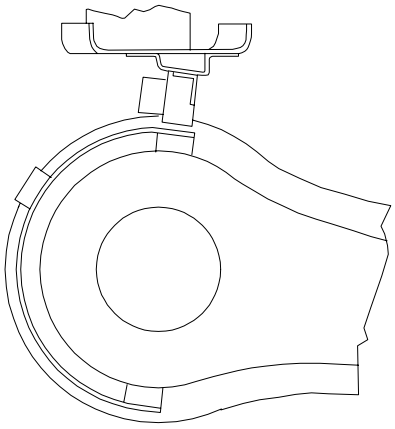
MLG Door Proximity Sensors
Figure 4



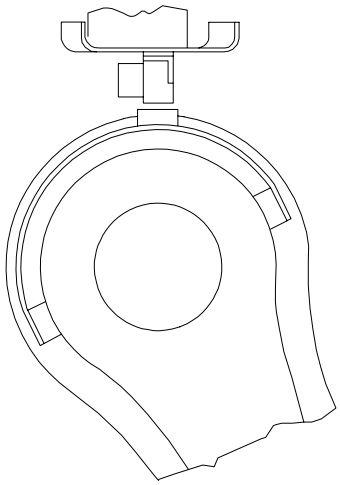
Nose Gear Proximity Sensors
Figure 5 (Sheet 1)



NOSE GEAR LOCKED UP/DOWN SENSOR
C

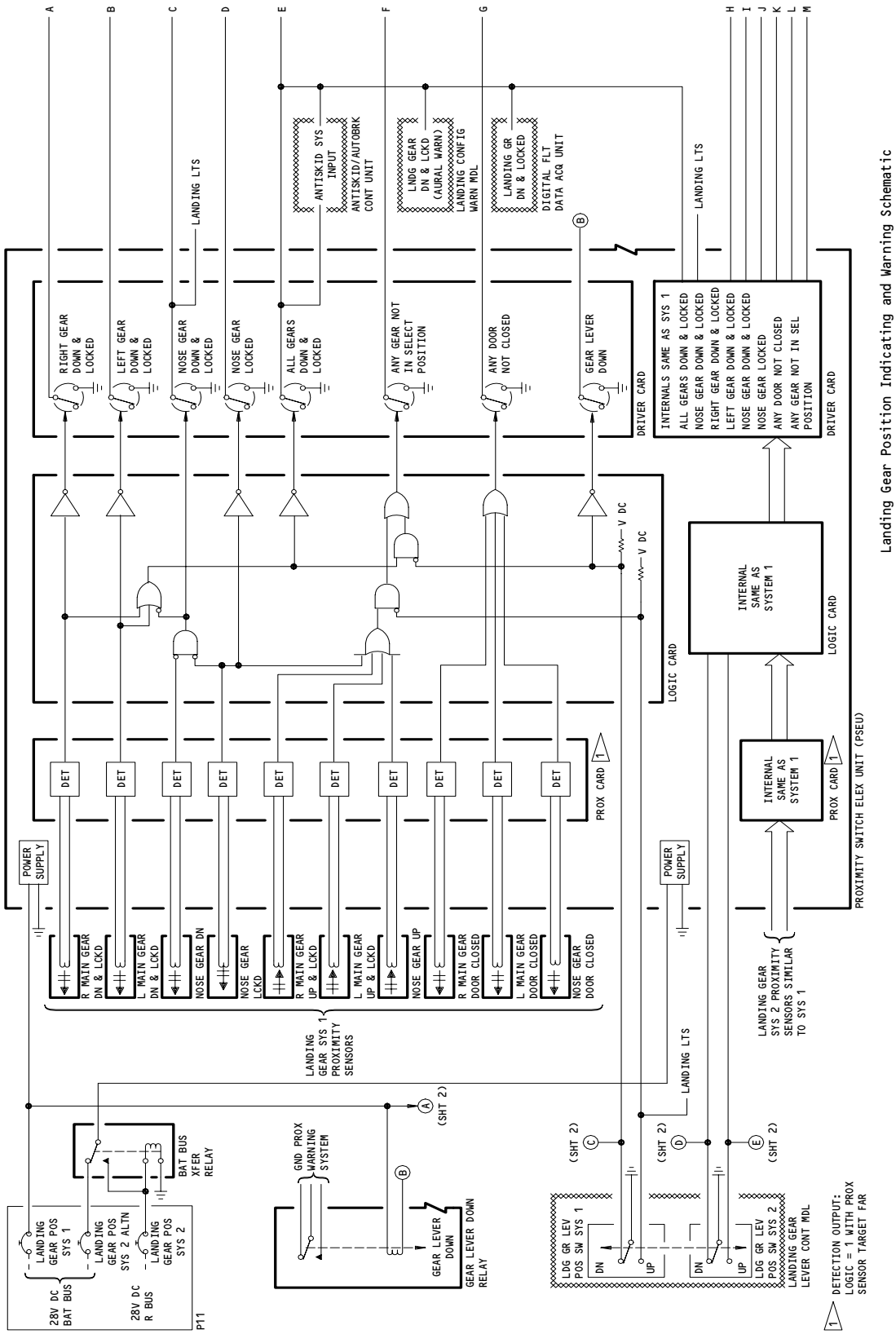


NOSE GEAR UP SENSOR
(UP POSITION SHOWN)
A–A

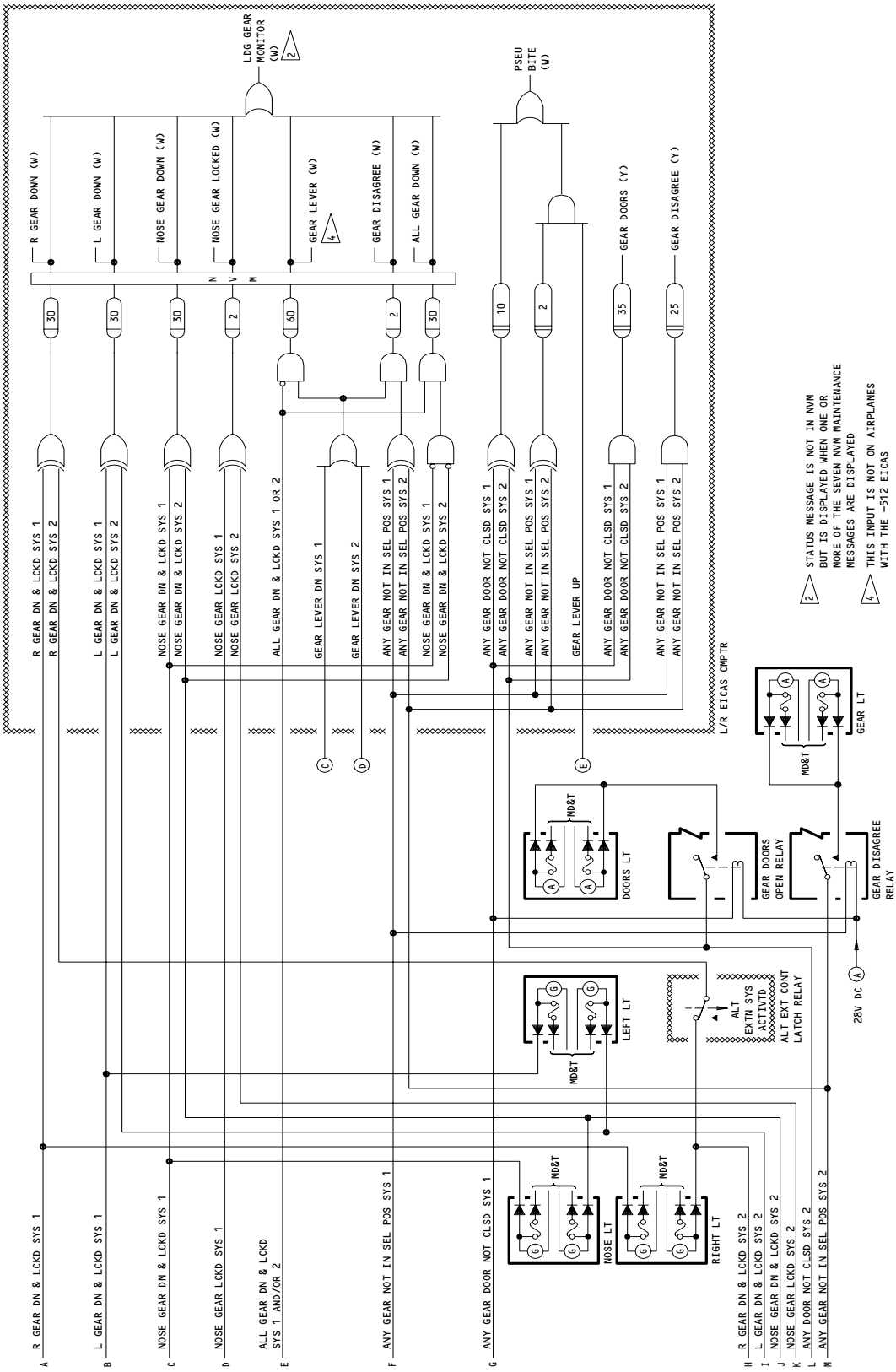


NOSE GEAR DOWN SENSOR
(DOWN POSITION SHOWN)
B–B

Nose Gear Proximity Sensors
Figure 5 (Sheet 2)



Landing Gear Position Indicating and Warning Schematic
Figure 6 (Sheet 1)



Landing Gear Position Indicating and Warning Schematic
Figure 6 (Sheet 2)

214924

(3) The sensor and logic circuits perform three essentially 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. They turn on three green NOSE, LEFT and RIGHT lights when all gears are down and locked. They turn on the amber GEAR light (and EICAS messages) when the gear is in transit, or there is disagreement between gear positions or between gear and lever positons. Lever position (down or not down) signal comes from two MICRO switches on the gear lever. The amber DOORS light and GEAR DOORS EICAS message come on when any gear door is open. 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:
   (a) LEFT light
   (b) RIGHT light
   (c) DOORS light
   (d) GEAR light
   (e) GEAR DISAGREE message
   (f) GEAR DOORS message
   (g) LDG GEAR MONITOR message
   (h) PSEU BITE message

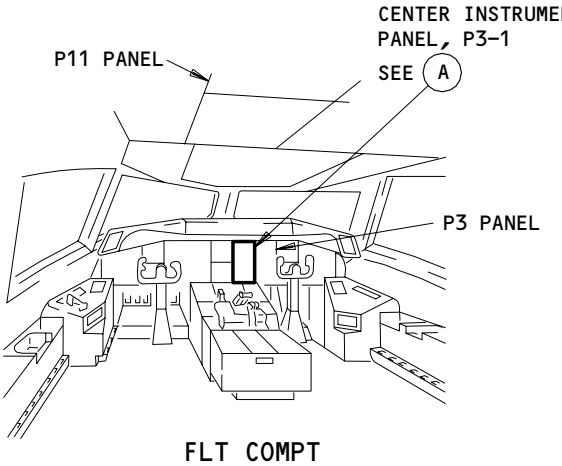
(4) For more details on the Landing Gear Position Indicating and Warning System, refer to these wiring diagrams and functional schematics:
   (a) WDM 32-61-11: Landing Gear Indication
   (b) WDM 32-61-12: Landing Gear Indication - Down and Locked
   (c) WDM 32-61-21: Landing Gear Indication - Down and Locked Lights
   (d) WDM 32-61-22: Landing Gear Indication - Down and Locked Sensors
   (e) SSM 32-61-01: Landing Gear Position Indicating and Warning

LANDING GEAR POSITION INDICATION AND WARNING SYSTEM

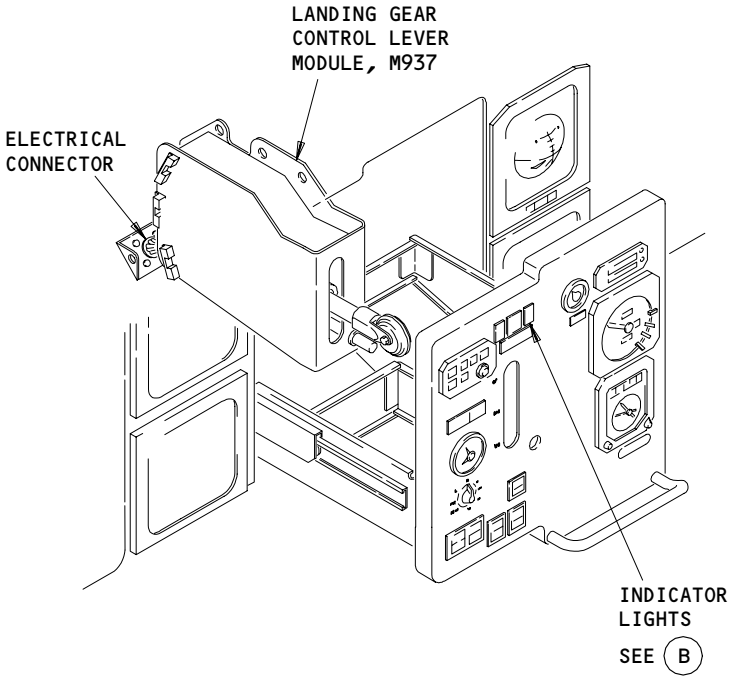
COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
CIRCUIT BREAKERS –	1		FLT COMPT, P11	
LANDING GEAR POS SYS 1, C1175		1	11C30	*
LANDING GEAR POS SYS 2, C4279		1	11S23	*
LANDING GEAR POS SYS 2 ALTN, C4478		1	11C19	*
COMPUTERS – (31-41-00/101)				
EICAS L, M10181				
EICAS R, M10182				
LIGHTS – INDICATION, DOORS, L396	1	1	FLT COMPT, P3	*
LIGHTS – INDICATION, GEAR, L397	1	1	FLT COMPT, P3	*
LIGHTS – INDICATION LEFT, L400	1	1	FLT COMPT, P3	*
LIGHTS – INDICATION, MOSE, L398	1	1	FLT COMPT, P3	*
LIGHTS – INDICATION, RIGHT, L399	1	1	FLT COMPT, P3	*
MODULE – (31-51-00/101)				
LDG CONFIGURATION WARNING, M983				
MODULE – (32-30-00/101)				
LDG GEAR CONTROL LEVER, M937				
RELAY – (31-01-36/101)				
GEAR LEVER DOWN, K10240				
RELAYS – (31-01-37/101)				
GEAR DISAGREE, K10266				
GEAR DOORS OPEN, K10267				
SENSOR – L MLG DOOR CLOSED, SYS 1, S10242	6	1	L MLG WHEEL WELL, OUTBD EDGE	32-61-02
SENSOR – L MLG DOOR CLOSED, SYS 2, S10076	6	1	L MLG WHEEL WELL, OUTBD EDGE	32-61-02
SENSOR – L MLG DOWN AND LOCKED, SYS 1, S10061	4	1	L MLG LOCK LINK	32-61-02
SENSOR – L MLG DOWN AND LOCKED, SYS 2, S10074	4	1	L MLG LOCK LINK	32-61-02
SENSOR – L MLG UP AND LOCKED, SYS 1, S10240	5	1	L MLG WHEEL WELL, UPLOCK AREA	32-61-02
SENSOR – L MLG UP AND LOCKED, SYS 2, S10073	5	1	L MLG WHEEL WELL, UPLOCK AREA	32-61-02
SENSOR – NOSE GEAR DOOR CLOSED, SYS 1, S10243	3	1	NOSE GEAR WHEEL WELL, FWD BLKHD	32-61-03
SENSOR – NOSE GEAR DOOR CLOSED, SYS 2, S10081	3	1	NOSE GEAR WHEEL WELL, FWD BLKHD	32-61-03
SENSOR – NOSE GEAR DOWN, SYS 1, S10066	2	1	NOSE GEAR WHEEL WELL, TRUNNION AREA	32-61-03
SENSOR – NOSE GEAR DOWN, SYS 2, S10079	2	1	NOSE GEAR WHEEL WELL, TRUNNION AREA	32-61-03
SENSOR – NOSE GEAR LOCKED, SYS 1, S10065	2	1	NOSE GEAR LOCK LINK	32-61-03
SENSOR – NOSE GEAR LOCKED, SYS 2, S10078	2	1	NOSE GEAR LOCK LINK	32-61-03
SENSOR – NOSE GEAR UP, SYS 1, S10238	2	1	NOSE GEAR WHEEL WELL, TRUNNION AREA	32-61-03
SENSOR – NOSE GEAR UP, SYS 2, S10077	2	1	NOSE GEAR WHEEL WELL, TRUNNION AREA	32-61-03
SENSOR – R MLG DOOR CLOSED, SYS 1, S10241	6	1	R MLG WHEEL WELL, OUTBD EDGE	32-61-02
SENSOR – R MLG DOOR CLOSED, SYS 2, S10072	6	1	R MLG WHEEL WELL, OUTBD EDGE	32-61-02
SENSOR – R MLG DOWN AND LOCKED, SYS 1, S10057	4	1	R MLG LOCK LINK	32-61-02
SENSOR – R MLG DOWN AND LOCKED, SYS 2, S10070	4	1	R MLG LOCK LINK	32-61-02
SENSOR – R MLG UP AND LOCKED, SYS 1, S10239	5	1	R MLG WHEEL WELL, UPLOCK AREA	32-61-02
SENSOR – R MLG UP AND LOCKED, SYS 2, S10069	5	1	R MLG WHEEL WELL, UPLOCK AREA	32-61-02
UNIT – (32-09-03/101)				
PROXIMITY SWITCH ELECTRONICS (PSEU), M162				

* SEE THE WDM EQUIPMENT LIST

Landing Gear Position Indication and Warning System – Component Index
Figure 101

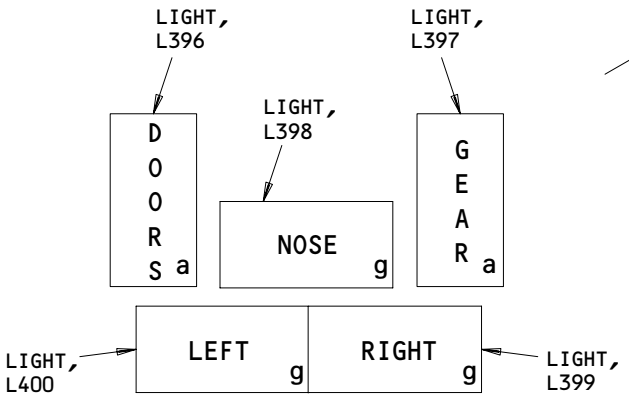


FLT COMPT



CENTER INSTRUMENT PANEL, P3-1

A

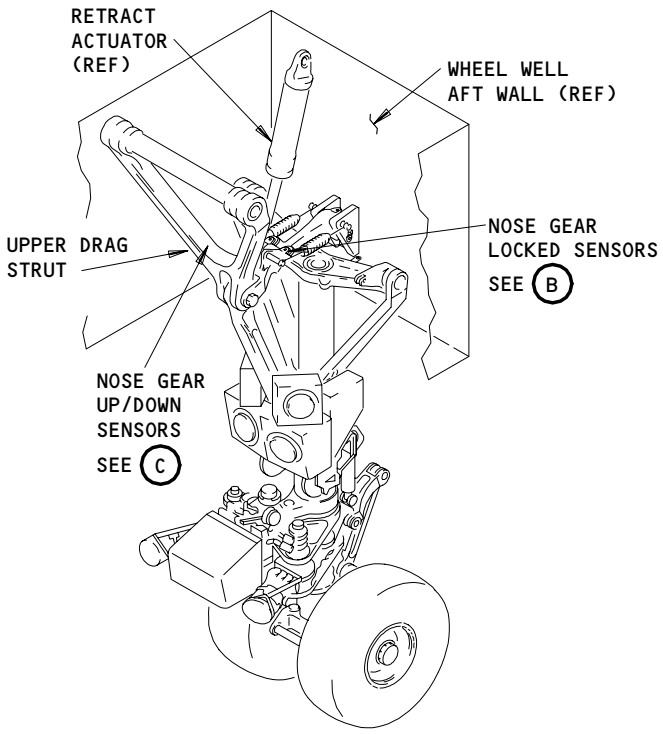


INDICATOR LIGHTS

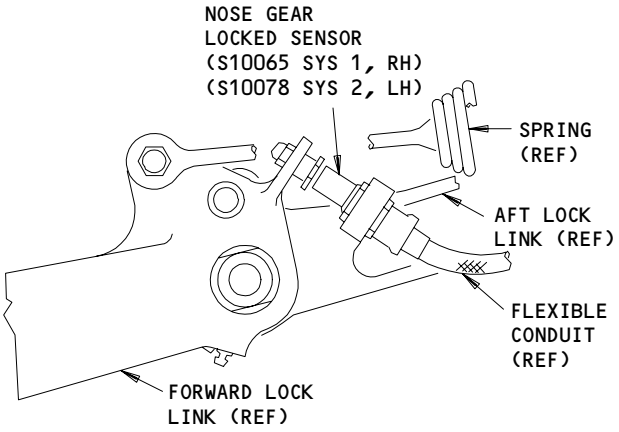
B

Component Location
Figure 102 (Sheet 1)

98734

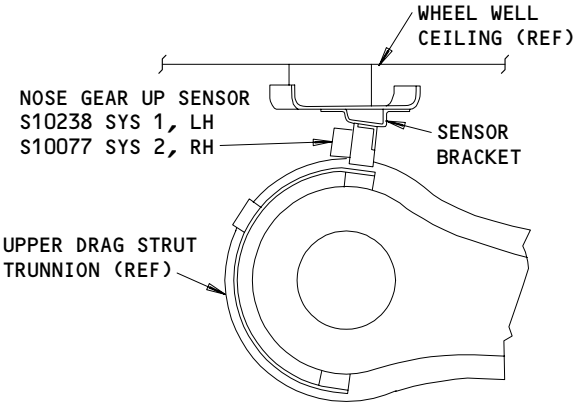


NOSE LANDING GEAR

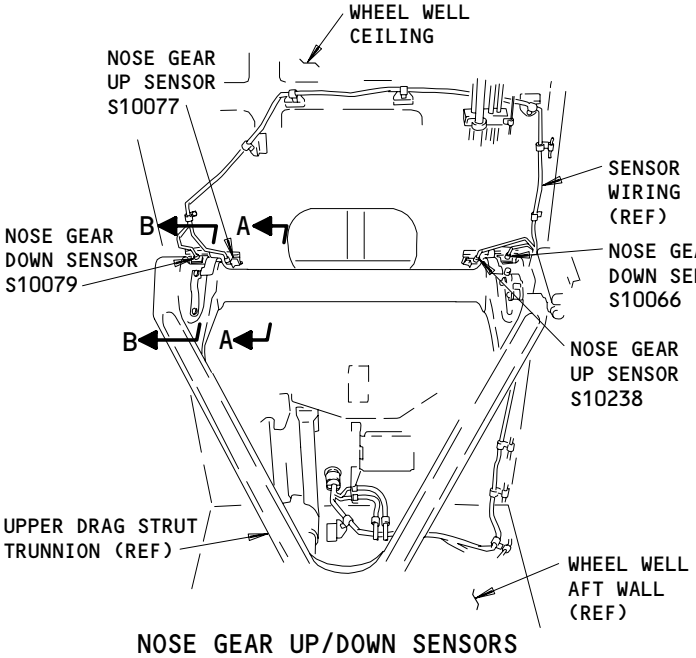


NOSE GEAR LOCKED SENSORS

B

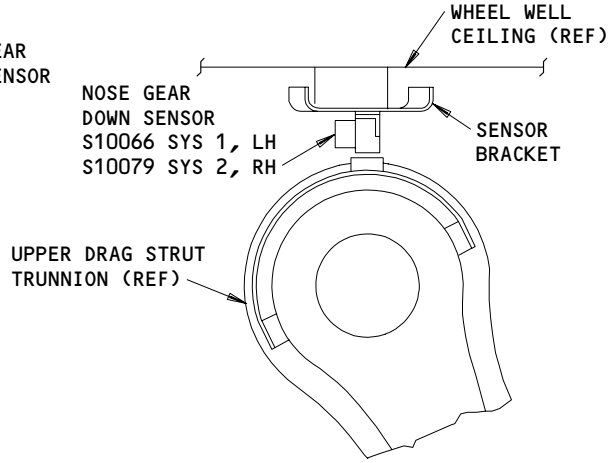


(GEAR SHOWN IN UP ATTITUDE)
A–A



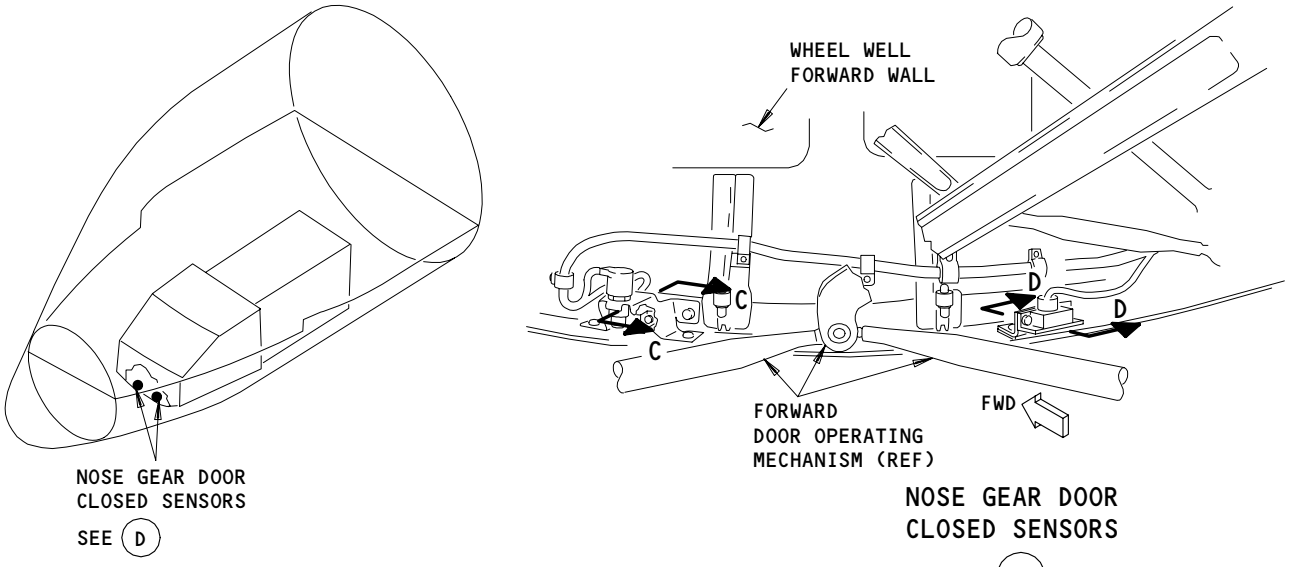
NOSE GEAR UP/DOWN SENSORS

C

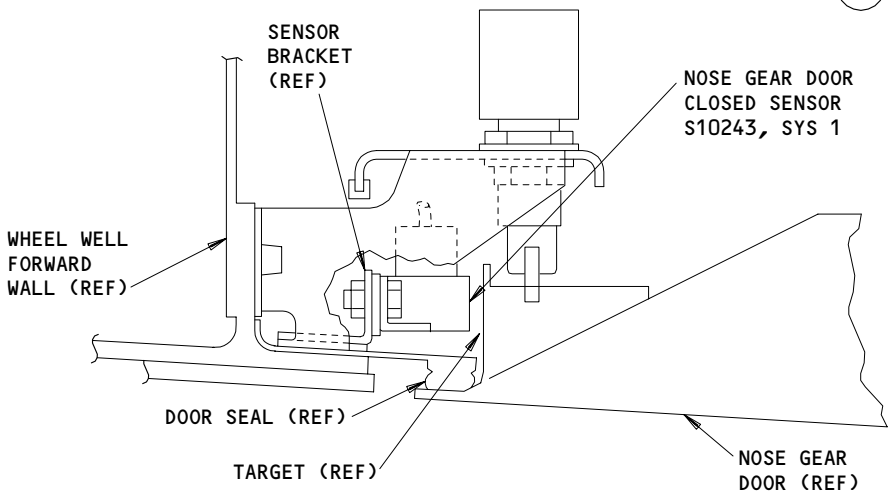


(GEAR SHOWN IN DOWN ATTITUDE)
B–B

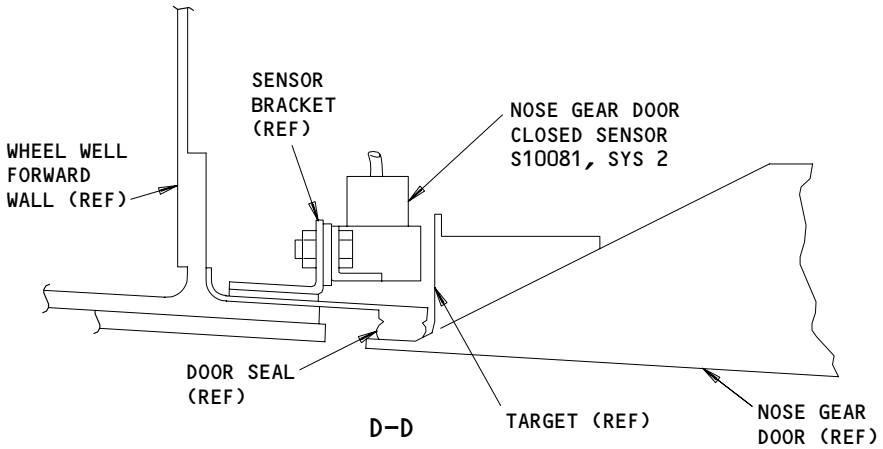
Component Location
Figure 102 (Sheet 2)



NOSE GEAR DOOR
CLOSED SENSORS
(D)

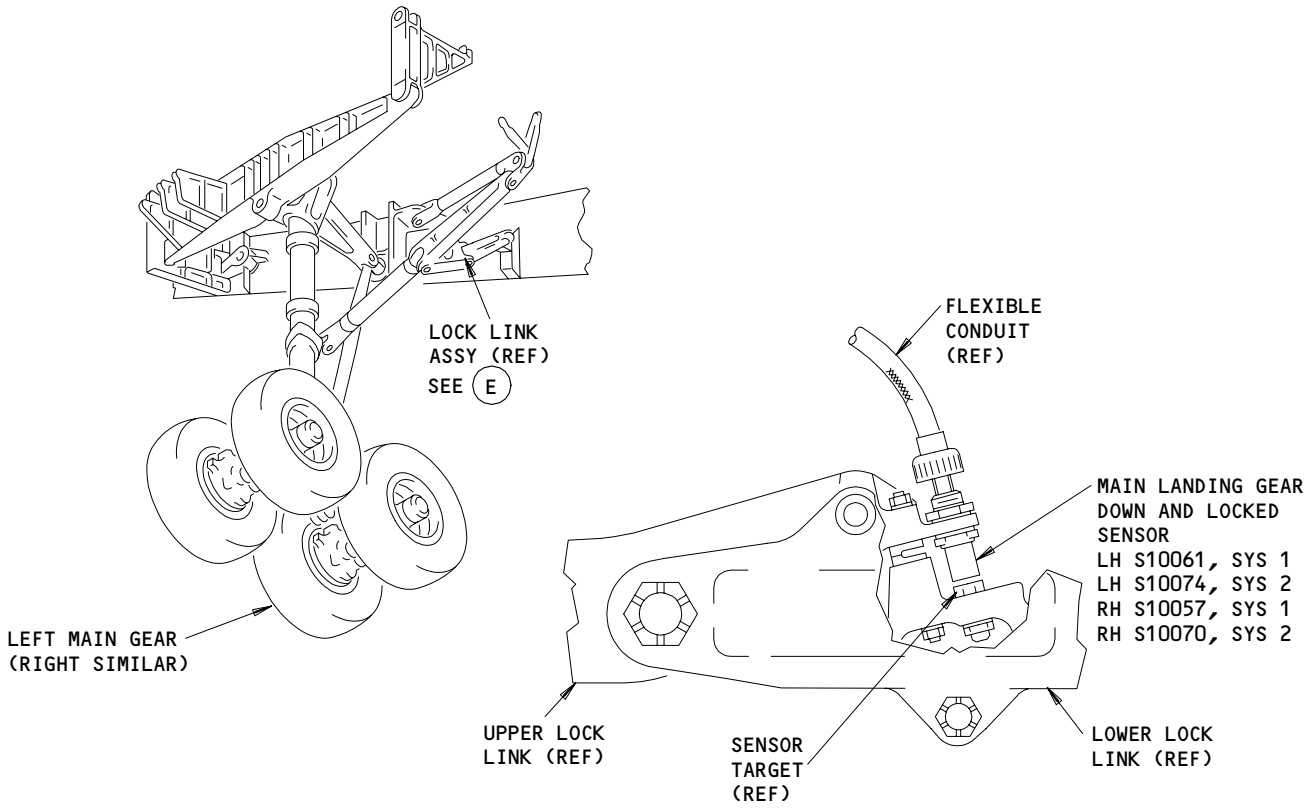


C–C



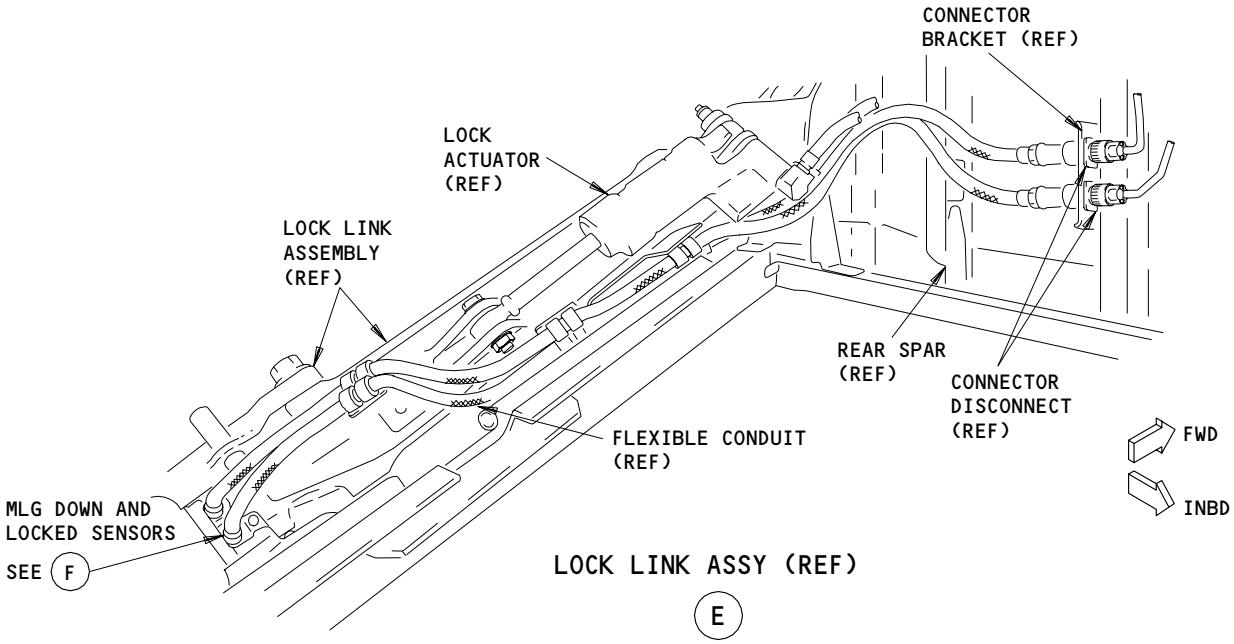
D–D

Component Location
Figure 102 (Sheet 3)



MLG DOWN AND LOCKED SENSORS

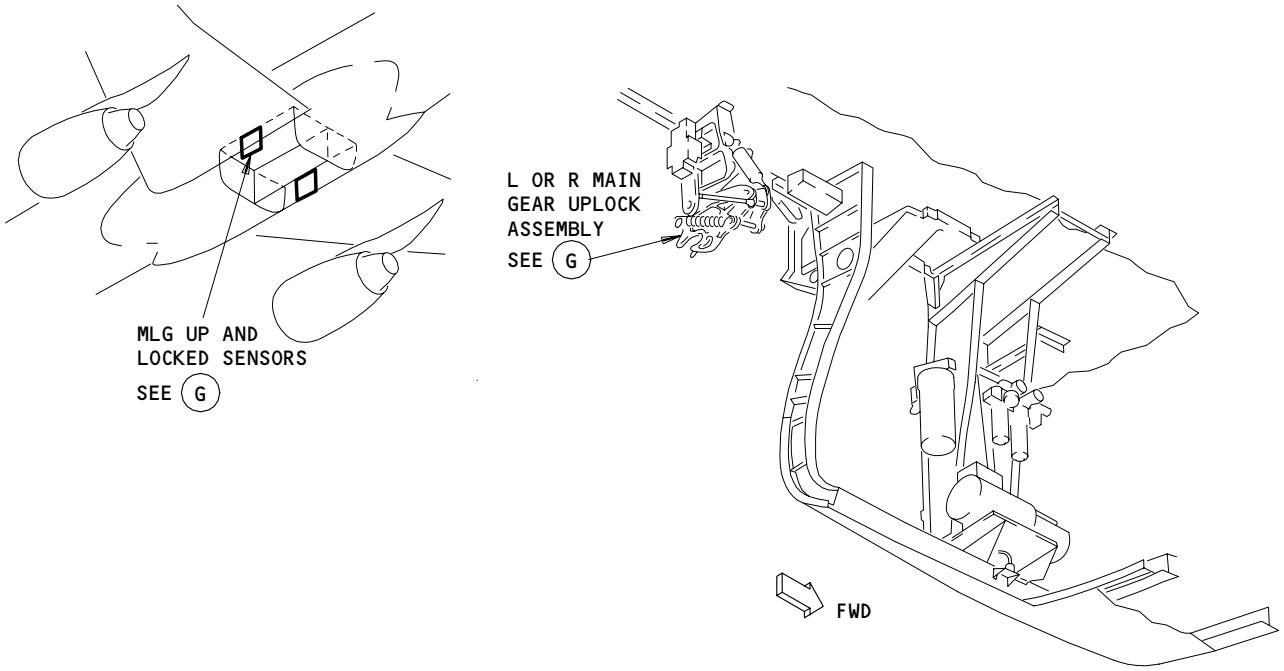
F



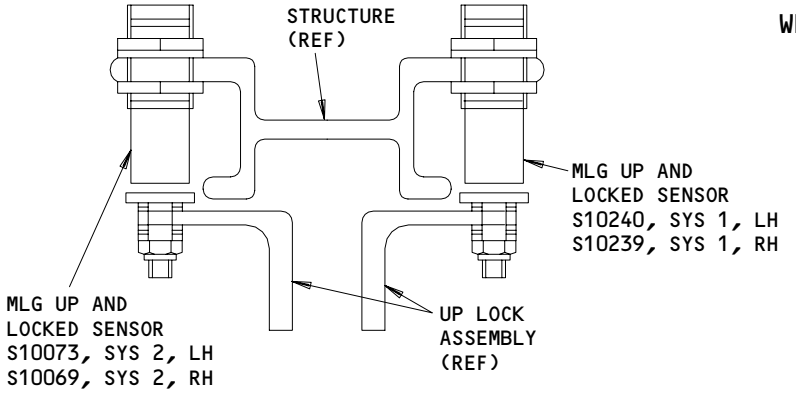
LOCK LINK ASSY (REF)

E

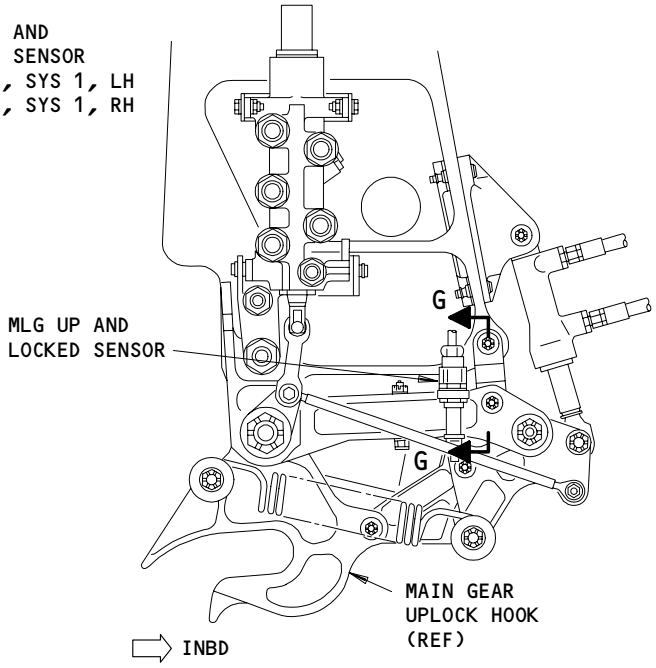
Component Location
Figure 102 (Sheet 4)



LEFT MAIN
WHEEL WELL OUTBOARD WALL
(RIGHT SIMILAR)

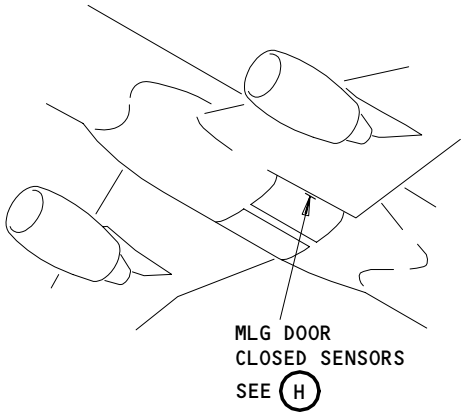


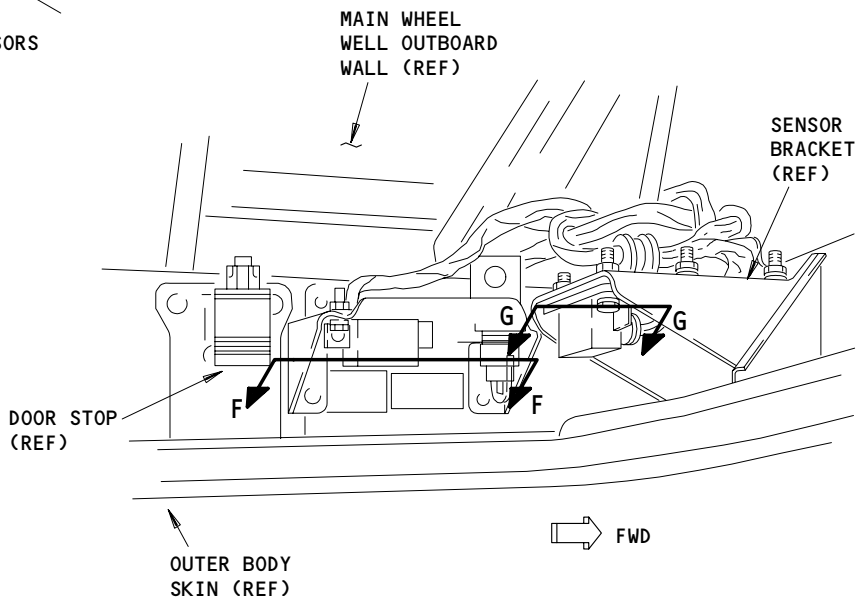
LEFT SHOWN, RIGHT OPPOSITE
G–G



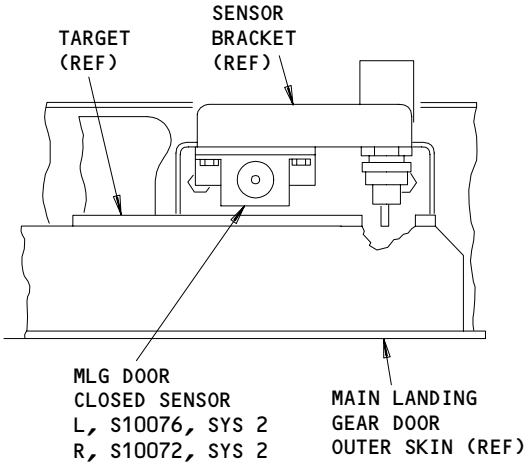
L MAIN GEAR UPLOCK ASSEMBLY (RIGHT SIMILAR)
G

Component Location
Figure 102 (Sheet 5)

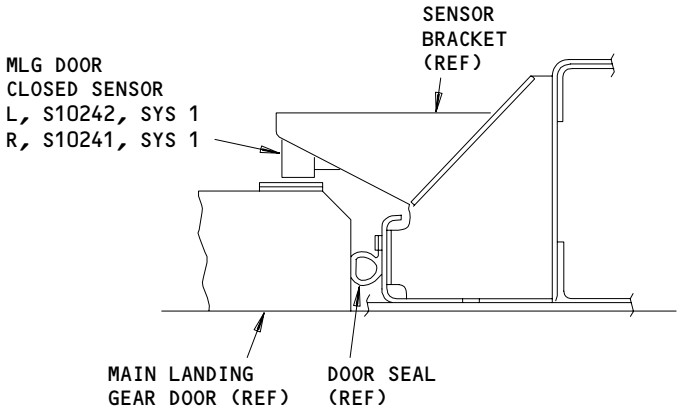




MLG DOOR CLOSED SENSORS
(LEFT SHOWN, RIGHT OPPOSITE)
(H)



F–F



G–G

Component Location
Figure 102 (Sheet 6)

LANDING GEAR POSITION INDICATING AND WARNING SYSTEM - ADJUSTMENT/TEST

1. General
   A. The procedure has two tasks:
      (1) System Test of the Landing Gear Position Indication System
      (2) Inductance and Resistance Test of the Proximity Sensors
         (a) This task electrically tests the sensors. This test measures sensor resistance and inductance to identify a bad sensor.
   B. Adjustment of the position indication proximity sensors is given in the procedures that follow:
      (1) Main Gear Proximity Sensors (AMM 32-61-02/201).
      (2) Nose Gear Proximity Sensors (AMM 32-61-03/201).

TASK 32-61-00-705-001

2. System Test - Landing Gear Position Indication System (Fig. 501)
   A. General
      (1) The airplane may be on its landing gear or on jacks for this test.
      (2) Use the procedures in the Air/Ground Relay System (Ref 32-09-02) to do a test of the truck tilt proximity sensors for the main landing gear and the proximity sensors for nose landing gear compressed.
      (3) You do not need to retract the landing gear to do this test. Proximity sensor actuators and deactuators are used to change the landing gear position.
      (4) The position indication and warning system has two parallel logic systems. A test of system 1 is done first, with system 2 isolated, then a test of system 2 is done with system 1 isolated.
      (5) Proximity sensors, actuators and deactuators are used to change the indications.
      (6) The actuators are put adjacent to the face of the sensor to operate the proximity sensors. The maximum gaps for operation are 0.125 inches for rectangular sensors and 0.075 inch for round sensors. The actuator can touch the surface of the sensors.
      (7) The deactuators are put between the sensor face and the target to give a target far condition. The deactuator can touch either the sensor or the target or both.
   B. Equipment
      (1) Proximity Sensor Actuator/Deactuator Set - A27092-106
         (6 cylindrical sensor deactuators, 2 rectangular sensor deactuators, 3 rectangular sensor actuators and 2 cylindrical sensor actuators 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 32-09-02/201, Air/Ground Relays

D. Access

(1) Location Zones

115	NLG Wheel Well (Left)
116	NLG Whell Well (Right)
143	MLG Wheel Well (Left)
144	MLG Wheel Well (Right)
211	Control Cabin (Left)
212	Control Cabin (Right)
710	Nose Landing Gear and Doors
730	Main Landing Gear and Doors (Left)
740	Main Landing Gear and Doors (Right)

E. Prepare For the System Test

S 865-002

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

S 865-003

WARNING: USE THE PROCEDURE AMM 32-00-15/201 TO INSTALL THE DOOR. 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).

NOTE: The nose and main landing gear doors open at the same time by the ground release.

S 045-190

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.

(3) Prepare the safety-sensitive systems for air mode simulation (AMM 32-09-02/201).

S 865-006

(4) Make sure the control lever for the landing gear on the main instrument panel P3 is in the DN position.

S 865-004
(5) Remove the pressure from the left hydraulic system (AMM 29-11-00/201).

S 865-007
(6) Make sure these circuit breakers on the overhead circuit breaker panel P11 are closed:
(a) 11A35, IND LTS 4
(b) 11C19, LANDING GEAR POS SYS 2 ALTN
(c) 11C30, LANDING (or LDG) GEAR POS SYS 1
(d) 11J2, EICAS CMPTR LEFT (or L)
(e) 11J3, EICAS UPPER DISPLAY (or IND)
(f) 11J29, EICAS CMPTR RIGHT (or R)
(g) 11J30, EICAS LOWER DISPLAY (or IND)
(h) 11J31, EICAS DISPLAY (or DSPL) SW
(i) 11J32, EICAS DISPLAY (or DSP) SELECT
(j) 11P28, R IND LTS 1
(k) 11S23, LANDING GEAR POS SYS 2

S 865-008
(7) Supply electrical power (AMM 24-22-00/201).

F. Do a Test of the Power Distribution and Indication

S 865-009
(1) Move the landing gear control lever to the OFF position.

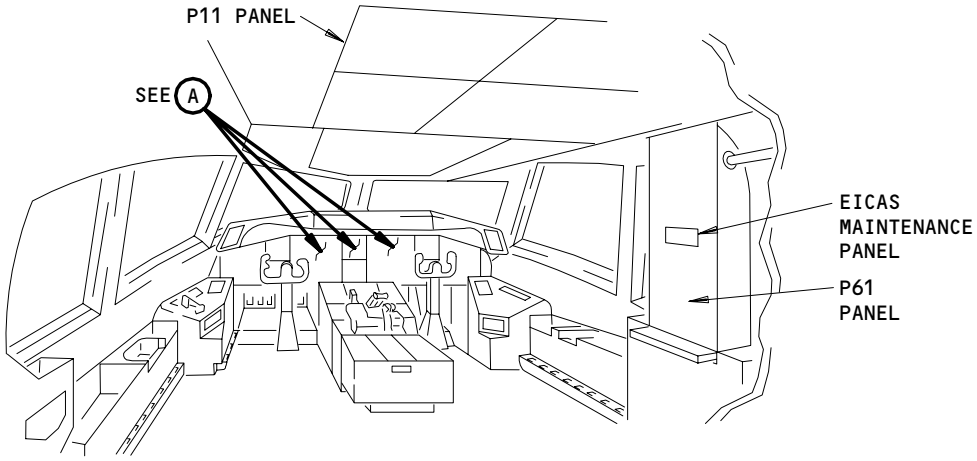
S 715-010
(2) Make sure the two halves of each green NOSE, LEFT, and RIGHT light and each amber GEAR and DOORS light are on.

S 865-011
(3) Open this circuit breaker on the overhead panel P11:
(a) 11P28, R IND LTS 1

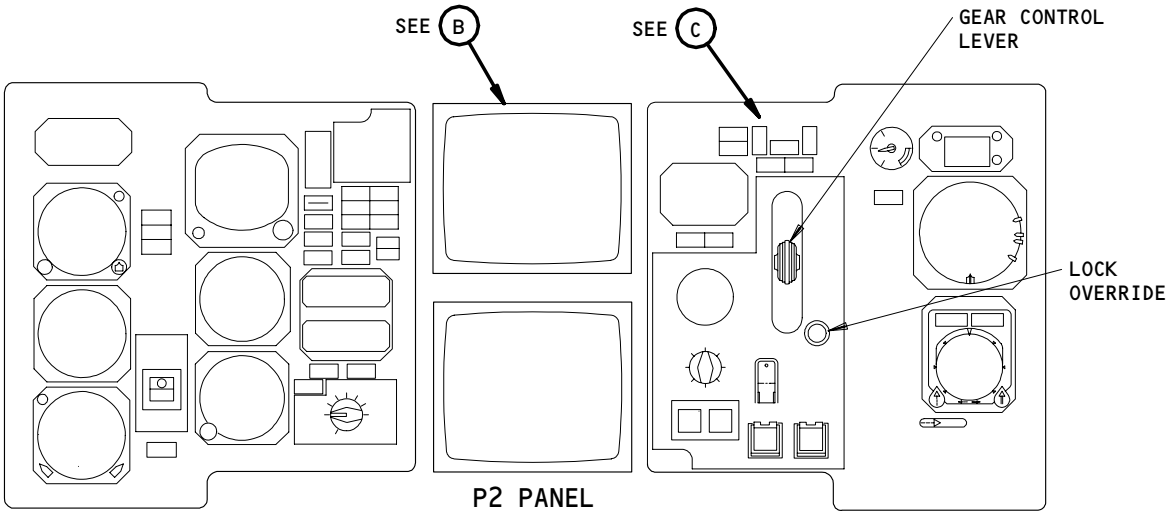
S 715-012
(4) Make sure only one half of each NOSE, LEFT, RIGHT, GEAR, and DOORS light is on.

S 865-013
(5) Open this circuit breaker on the overhead panel P11:
(a) 11A35, IND LTS 4

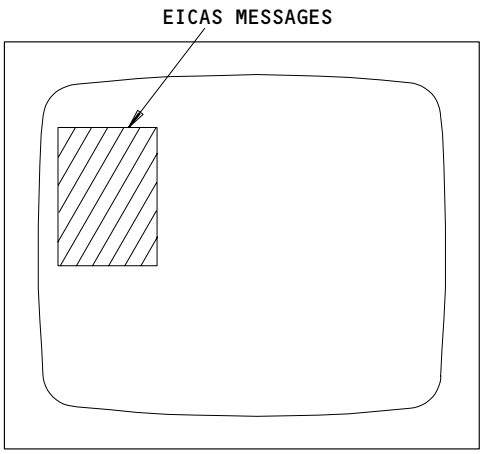
S 715-014
(6) Make sure the NOSE, LEFT, RIGHT, GEAR, and DOORS lights are out.



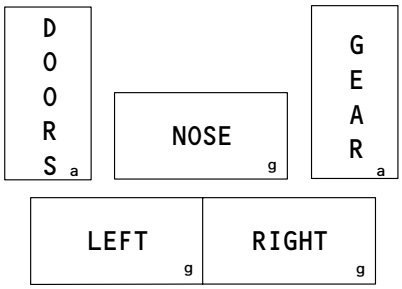
FLIGHT COMPARTMENT



A



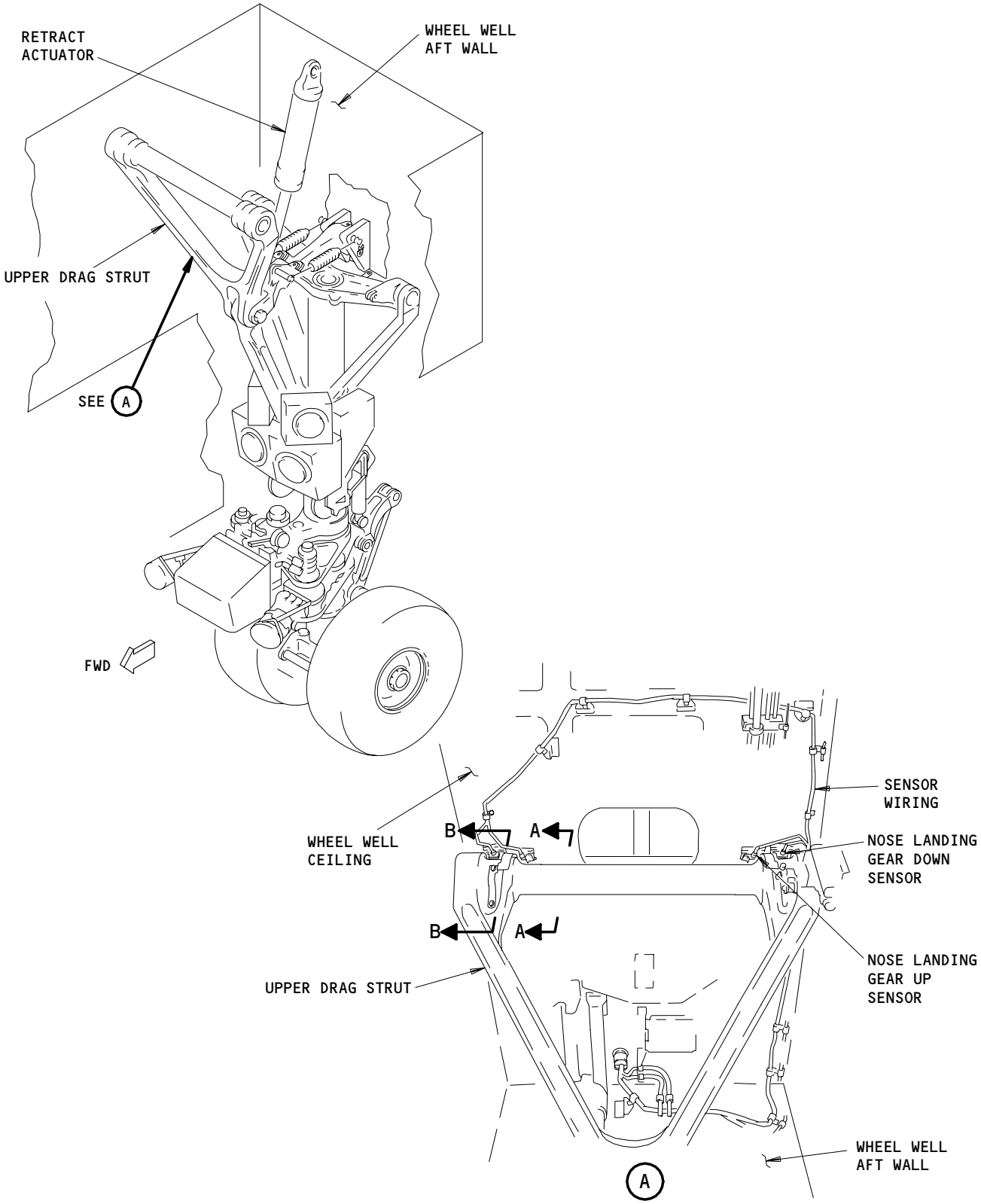
B



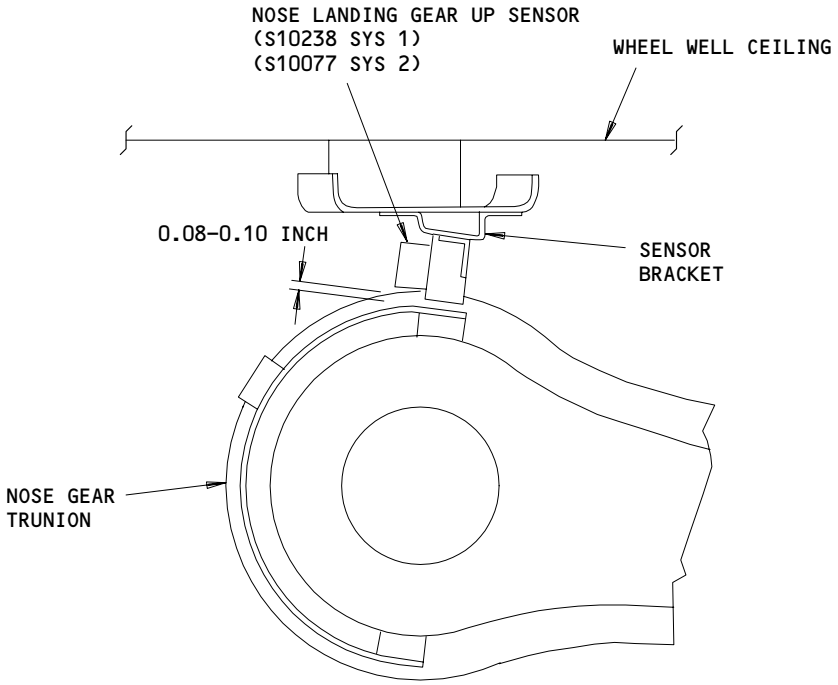
LANDING GEAR POSITION INDICATOR LIGHTS

C

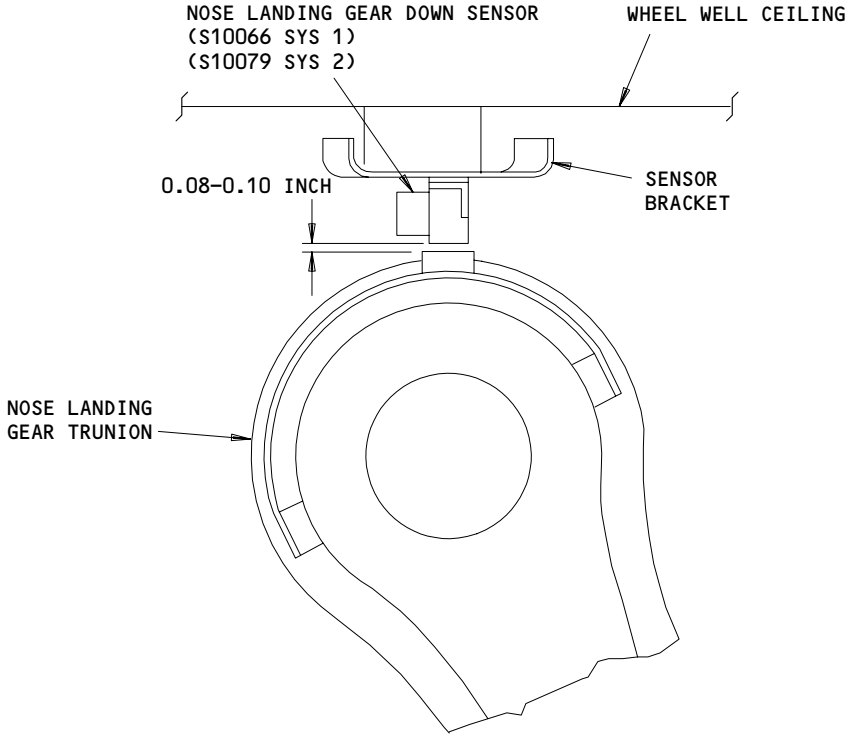
Main Landing Gear - Position and Warning
Figure 501



Nose Landing Gear Up and Down Position Sensors
Figure 502 (Sheet 1)

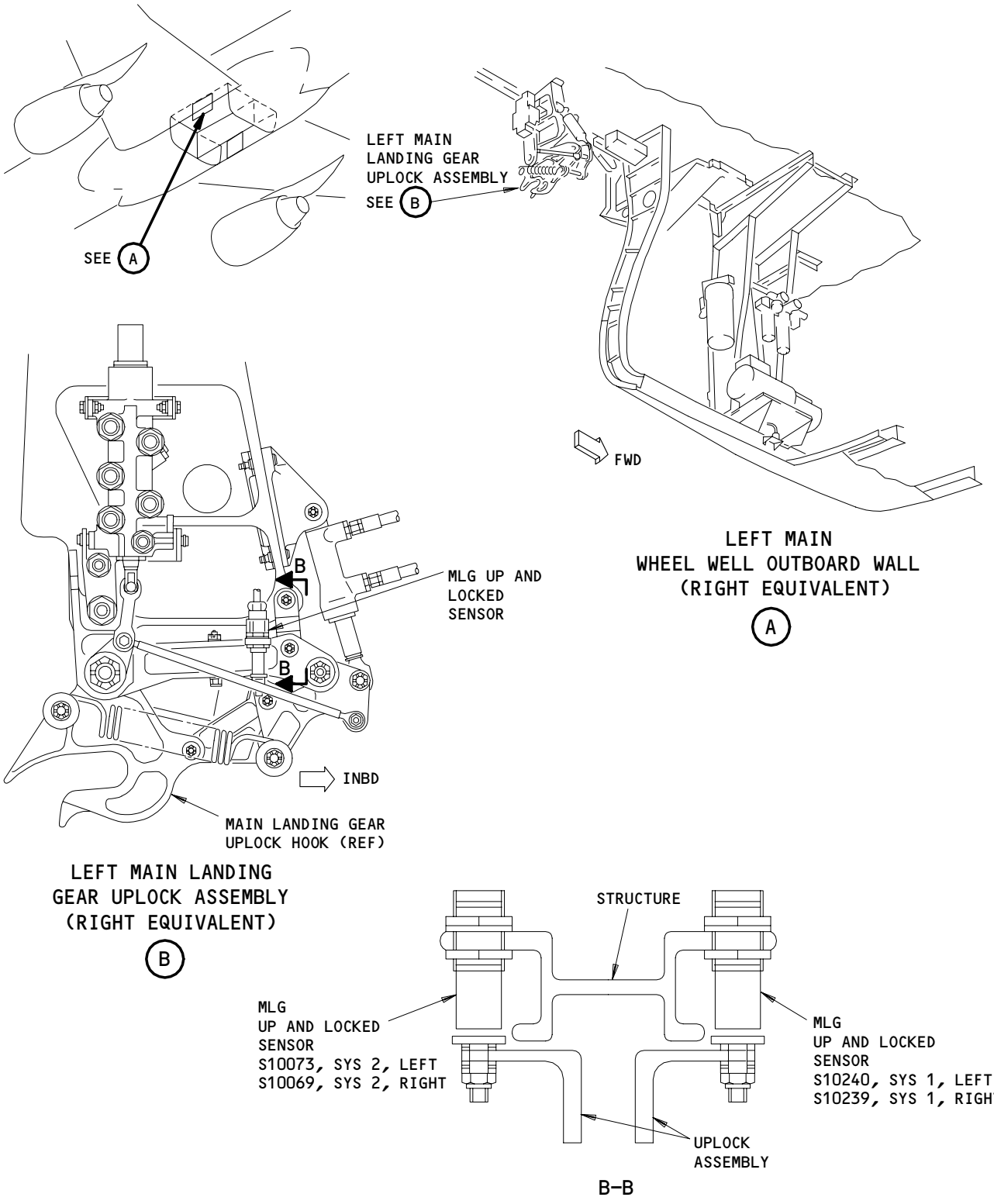


A-A

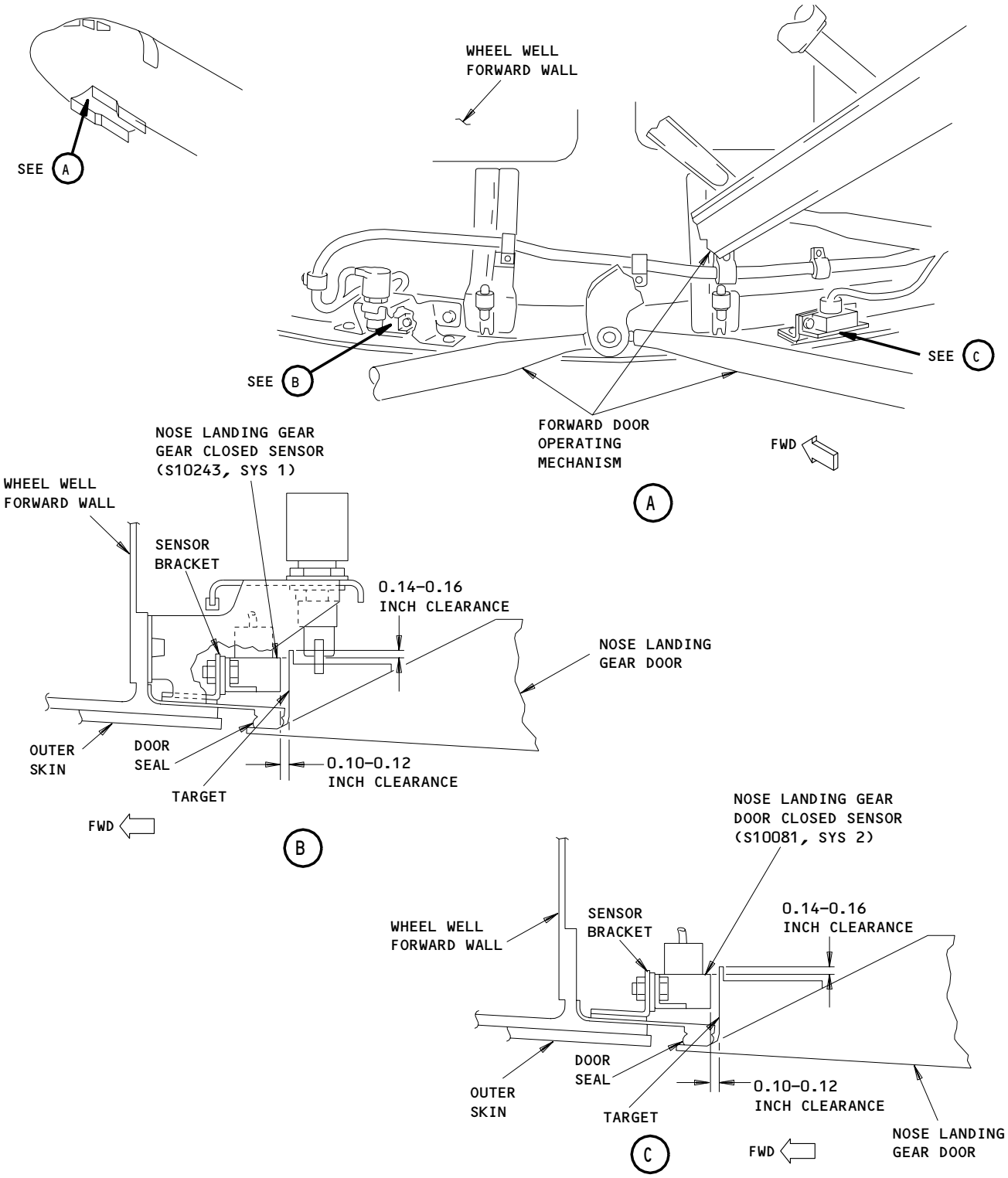


B-B

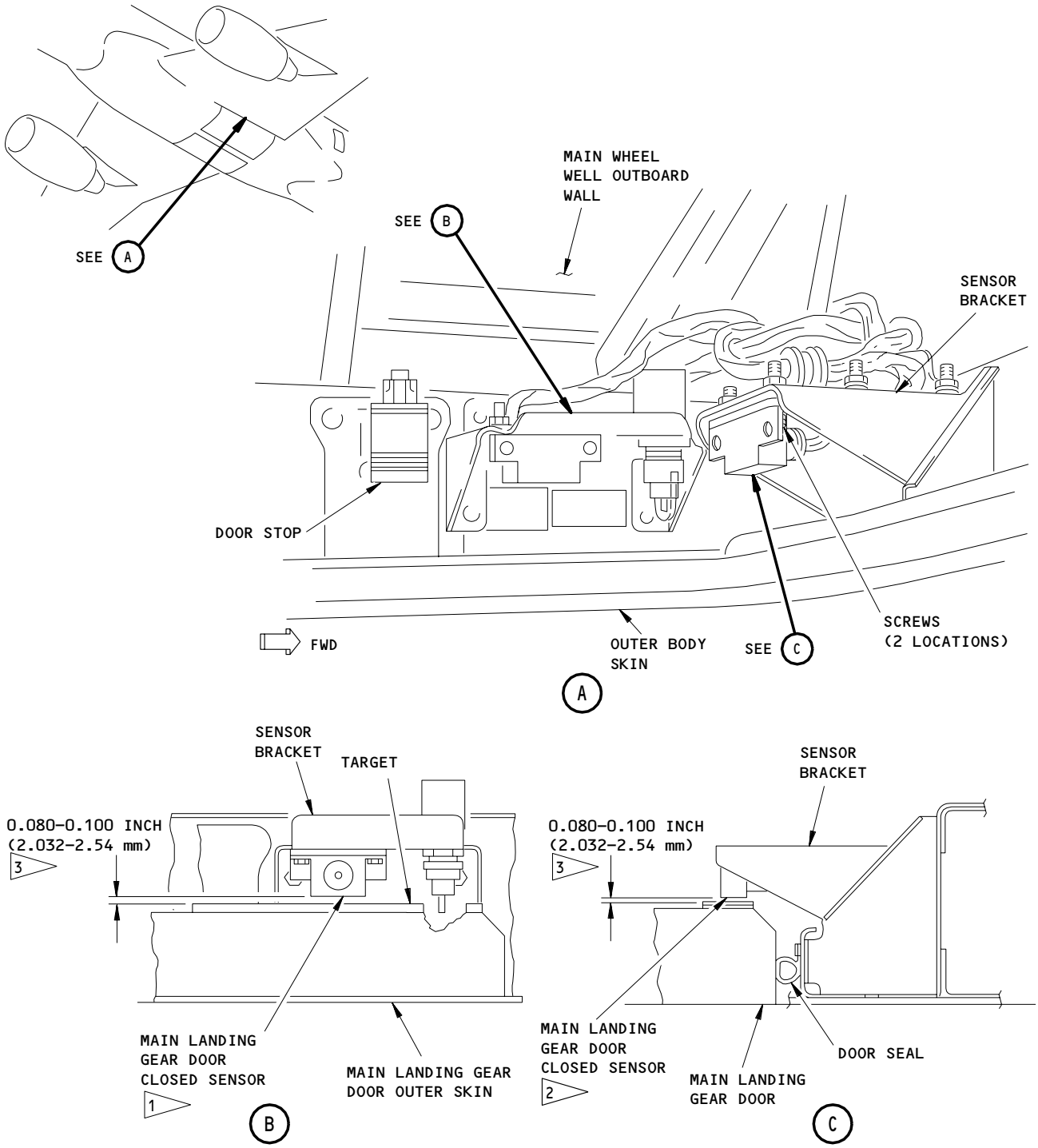
Nose Landing Gear Up and Down Position Sensors
Figure 502 (Sheet 2)



MLG Up and Locked Proximity Sensors
Figure 503



Nose Landing Gear – Door Closed Sensors
Figure 504

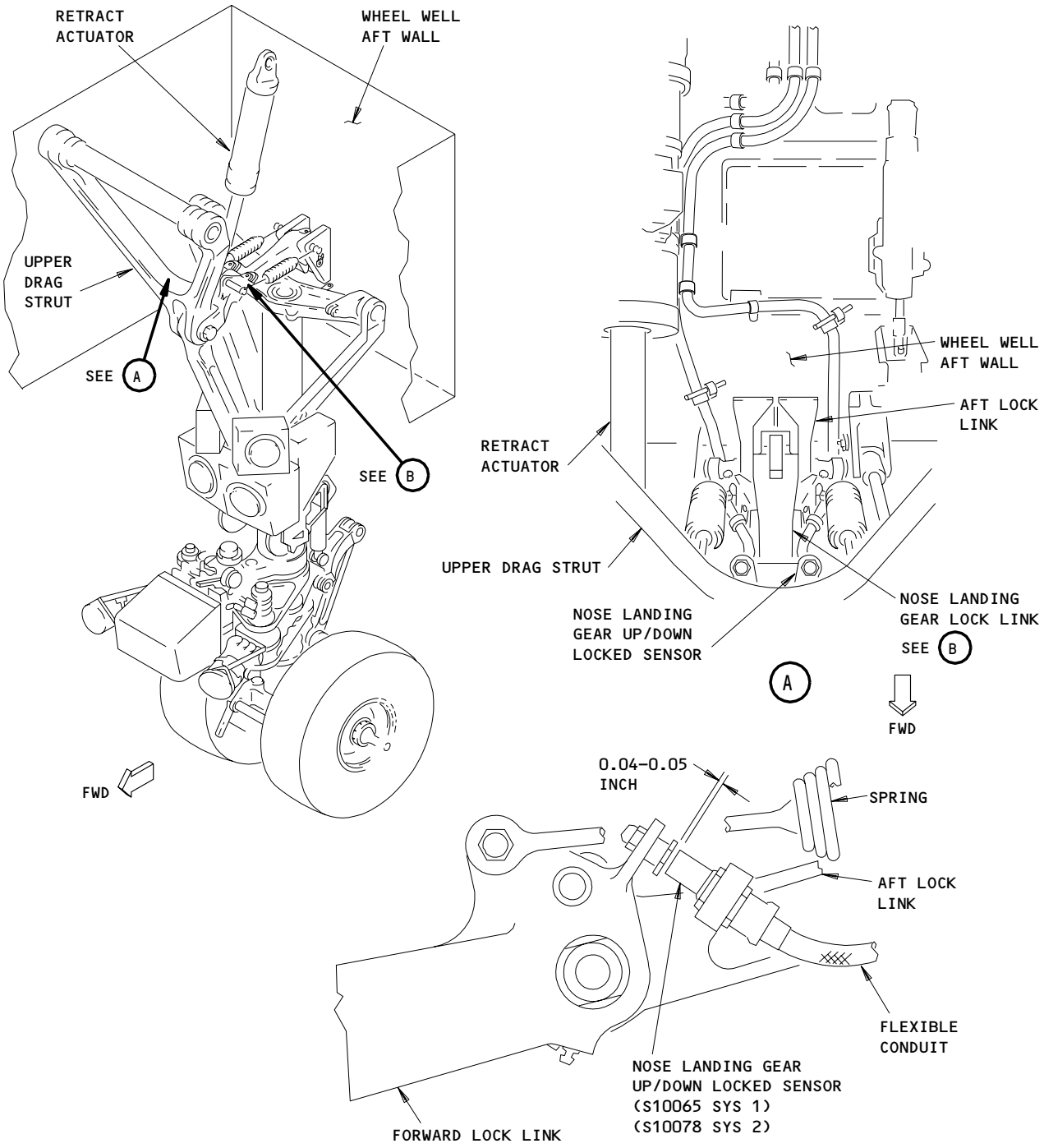


1 LEFT S10076 SYSTEM 2, RIGHT S10072 SYSTEM 2

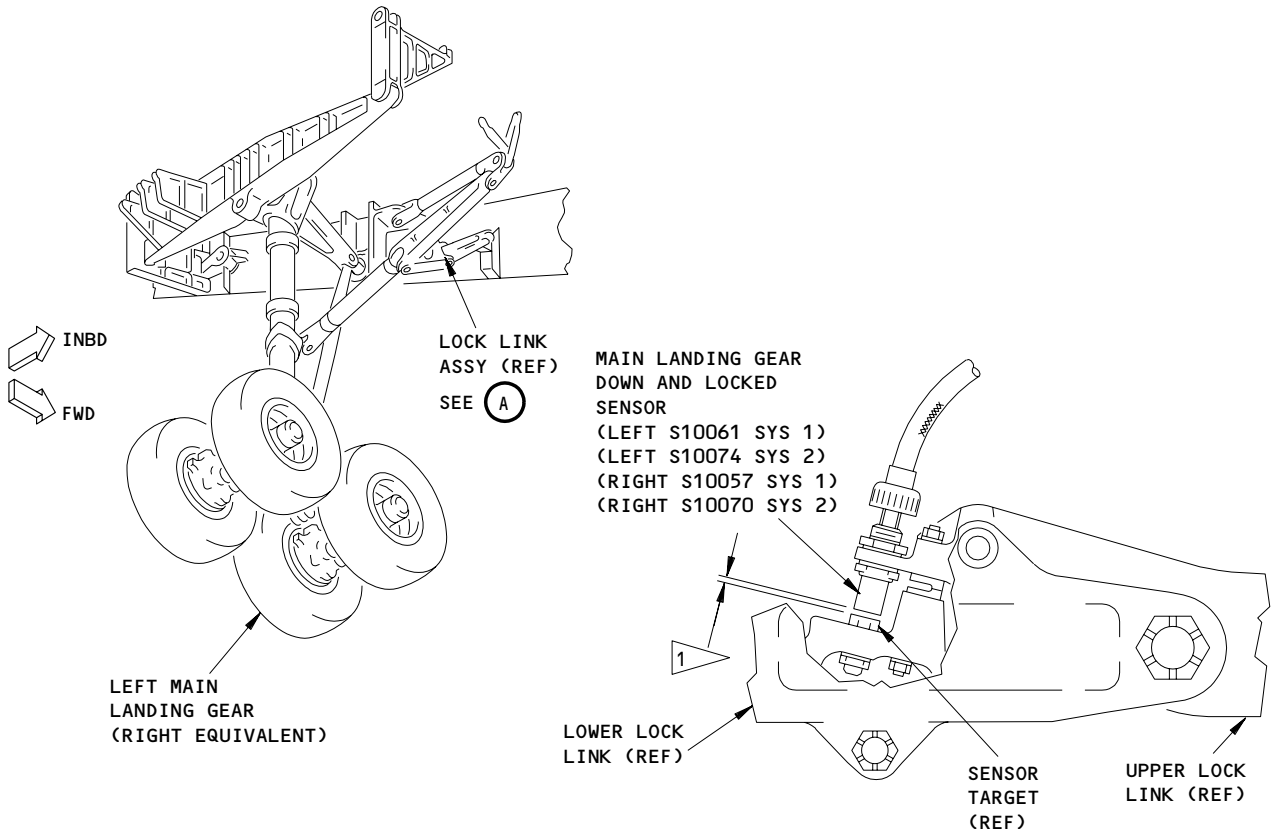
2 LEFT S10242 SYSTEM 1, RIGHT S10241 SYSTEM 1

3 IF THE SENSOR GAP CAN NOT BE MET, THEN MAKE SURE THE FORWARD AND AFT DOOR STOP ADJUSTMENTS ARE CORRECT (AMM 32–12–00/501)(FIGURE 501), AND ADJUST THE SENSOR GAP AGAIN.

Main Landing Gear Door Closed Sensors
Figure 505



Nose Landing Gear Up/Down Locked Sensors
Figure 506



Main Landing Gear Down and Locked Sensor
Figure 507

57114

S 865-015
(7) Close this circuit breaker on the P11 panel:
(a) 11A35, IND LTS 4

S 715-192
(8) Make sure only one half of each NOSE, LEFT, RIGHT, GEAR, and DOORS light is on.

S 865-184
(9) Close this circuit breaker on the P11 panel:
(a) 11P28, R IND LTS 1

S 715-016
(10) Make sure the two halves of the green NOSE, RIGHT, and LEFT lights and each amber GEAR and DOORS light are on.

S 865-017
(11) Open this circuit breaker on the P11 panel:
(a) 11C30, LANDING GEAR POS SYS 1

S 715-018
(12) Make sure only one half of each green NOSE, LEFT, and RIGHT lights is on and each amber GEAR and DOORS light is off.

S 865-019
(13) Close this circuit breaker on the P11 panel:
(a) 11C30, LDG GEAR POS SYS 1

S 865-193
(14) Look at the overhead circuit breaker panel, P11 at grid location 11C19 and identify the circuit breaker name that is at this location.

S 865-020
(15) Open these circuit breakers on the P11 panel:
(a) ON AIRPLANES WITH THE "LANDING GEAR POS SYS 2 ALTN" CIRCUIT BREAKER INSTALLED AT PANEL GRID LOCATION 11C19:
1) 11C19, LANDING GEAR POS SYS 2 ALTN
2) 11S23, LDG GEAR POS SYS 2

(b) ON AIRPLANES WITHOUT THE "LANDING GEAR POS SYS 2 ALTN" CIRCUIT BREAKER INSTALLED AT PANEL GRID LOCATION 11C19:
1) 11S23, LANDING GEAR POS SYS 2

S 715-021
(16) Make sure only one half of each green NOSE, RIGHT, and LEFT lights is on, and each amber GEAR light is on, and the DOORS lights are off.

S 865-022
(17) Close these circuit breakers on the P11 panel:
(a) ON AIRPLANES WITH THE "LANDING GEAR POS 2 ALTN" CIRCUIT BREAKER INSTALLED AT PANEL GRID LOCATION 11C19:
1) 11C19, LANDING GEAR POS 2 ALTN
2) 11S23, LDG GEAR POS SYS 2
(b) ON AIRPLANES WITHOUT THE "LANDING GEAR POS 2 ALTN" CIRCUIT BREAKER INSTALLED AT PANEL GRID LOCATION 11C19:
1) 11S23, LANDING GEAR POS SYS 2

S 715-023
(18) Make sure the two halves of each green NOSE, LEFT, and RIGHT light and each amber GEAR and DOORS light are on.

S 865-024
(19) Move the control lever for the landing gear to the DN position.

G. Do a test of the Landing Gear Position Indication and Warning System No. 1 (Fig. 501)

S 865-194
(1) Use the tables that follow to help you find the sensors on the figures.

NOTE: Sensors that operate in System No. 1 and 2 are given in Tables 501 and 502. The sensor locations are shown in Fig. 502 thru Fig. 507.

Table 501 (System 1)		
Sensor	Description	Sensor Location Figure Ref
S10057 *[1]	R GEAR DOWN AND LOCKED	507
S10061 *[1]	L GEAR DOWN AND LOCKED	507
S10065 *[1]	NOSE GEAR LOCKED	506
S10066	NOSE GEAR DOWN	502
S10238	NOSE GEAR UP	502
S10239 *[1]	R GEAR UP AND LOCKED	503
S10240 *[1]	L GEAR UP AND LOCKED	503
S10241	R GEAR DOOR CLOSED	505
S10242	L GEAR DOOR CLOSED	505
S10243	NOSE GEAR DOOR CLOSED	504

*[1] Shows cylindrical sensors. All of the others are rectangular sensors.

Table 502 (System 2)		
Sensor	Description	Sensor Location Figure Ref
S10069 *[1]	R GEAR UP AND LOCKED	503
S10070 *[1]	R GEAR DOWN AND LOCKED	507
S10072	R GEAR DOOR CLOSED	505
S10073 *[1]	L GEAR UP AND LOCKED	503
S10074 *[1]	L GEAR DOWN AND LOCKED	507
S10076	L GEAR DOOR CLOSED	505
S10077	NOSE GEAR UP	502
S10078 *[1]	NOSE GEAR LOCKED	506
S10079	NOSE GEAR DOWN	502
S10081	NOSE GEAR DOOR CLOSED	504

*[1] Shows cylindrical sensors. All of the others are rectangular sensors.

S 865-029

(2) Do the steps that follow to erase the EICAS ECS MSG AUTO EVENT page:

NOTE: All the NVM EICAS maintenance messages will be erased after you erase the ECS MSG AUTO EVENT page.
You will use this procedure again during the test.

(a) Push the ECS/MSG switch.
(b) Push the AUTO EVENT READ switch.
(c) Make sure that AUTO EVENT shows at the bottom of the bottom display.
(d) Write down all the EICAS messages shown on the NVM EICAS message list.
(e) Push and hold the ERASE switch for 3 seconds.
(f) Do the last four steps again until all the EICAS memory has been erased.

S 865-030

(3) Put the COMPUTER switch on the EICAS DISPLAY select panel in the L position.

S 865-031
(4) Move the control lever for the landing gear to the OFF position.

S 495-032
(5) Install deactuators on the sensors in the list below:

SENSOR
S10070
S10074
S10078
S10079

S 735-033
(6) Make sure one half of each of the green NOSE, LEFT and RIGHT lights on the P3 panel are on.

S 735-034
(7) Make sure the two halves of each amber GEAR and DOORS lights on the P3 panel are on.

S 735-035
(8) Make sure this EICAS message GEAR DISAGREE shows on the top display after 25-seconds.

S 735-036
(9) Make sure this EICAS message GEAR DOORS shows on the top display after 35-seconds.

S 735-037
(10) Make sure this EICAS message LDG GEAR MONITOR shows on the bottom display after 30-seconds.

S 735-039
(11) Make sure these EICAS messages show on the bottom display:

L GEAR DOWN
R GEAR DOWN
NOSE GEAR DOWN
NOSE GEAR LOCKED

S 735-038
(12) Move the COMPUTER switch to the R position. Make sure the EICAS messages GEAR DISAGREE and GEAR DOORS show on the top display. Make sure the EICAS message LDG GEAR MONITOR shows on the bottom display.
(a) Make sure these EICAS messages show on the bottom display:

L GEAR DOWN
R GEAR DOWN
NOSE GEAR DOWN
NOSE GEAR LOCKED

S 735-040
(13) Move the control lever for the landing gear to the DN position. Make sure the EICAS message GEAR DISAGREE does not show on the top display. Make sure the GEARS light is off.

S 735-041
(14) Move the COMPUTER switch to the L position. Make sure the EICAS message GEAR DISAGREE does not show on the top display.

S 865-042
(15) Move the control lever for the landing gear to the OFF position.

S 495-043
(16) Install deactuators on the sensors that follow:

SENSOR
S10057
S10061
S10065
S10066

S 735-044
(17) Make sure the green NOSE, RIGHT and LEFT lights are off.

S 865-045
(18) Erase the EICAS ECS/MSG AUTO EVENT page.

S 735-046
(19) Make sure the EICAS message LDG GEAR MONITOR is not shown on the bottom display.

S 735-047
(20) Move the COMPUTER switch to the R position. Make sure the EICAS message LDG GEAR MONITOR is not shown on the bottom display.

S 495-185
(21) Install or remove the actuators or deactuator on the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10057	--	Remove
S10242	Install	--
S10243	Install	--

S 735-048
(22) Make sure the conditions that follow occur:
(a) The amber DOORS and GEAR lights are on.
(b) The green NOSE and LEFT lights are off.
(c) One half of the green RIGHT light is on.
(d) The EICAS message LDG GEAR MONITOR is shown on the bottom display, after 30 seconds.
(e) The EICAS message R GEAR DOWN shows on the bottom display.

S 735-049
(23) Move the COMPUTER switch to the L position. Make sure the EICAS message LDG GEAR MONITOR shows on the bottom display.
(a) Make sure the EICAS message R GEAR DOWN shows on the bottom display.

S 495-050
(24) Install or remove the actuator or deactuator on the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10242	Remove	--
S10057	--	Install

S 735-051
(25) Make sure the conditions that follow occur:
(a) The green NOSE, RIGHT and LEFT lights are off.
(b) The amber DOORS and GEAR lights are on.

S 865-052
(26) Erase the EICAS ECS/MSG AUTO EVENT page.

S 735-053
(27) Make sure the EICAS message LDG GEAR MONITOR is not shown on the bottom display.

S 495-054

(28) Install or remove the actuator or deactuator on the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10061	--	Remove
S10241	Install	--

S 735-055

(29) Make sure the conditions that follow occur:
(a) The amber DOORS, GEAR lights are on.
(b) The green NOSE and RIGHT lights are off.
(c) One half of the green LEFT light is on.
(d) The EICAS message LDG GEAR MONITOR shows on the bottom display after 30 seconds.
(e) The EICAS message L GEAR DOWN shows on the ECS/MSG page on the bottom display.
(f) Move the COMPUTER switch to the R positon. Make sure the EICAS message LDG GEAR MONITOR shows on the bottom display.
(g) Make sure the the EICAS message L GEAR DOWN shows on the bottom display.

S 495-056

(30) Install or remove the actuator or deactuator on the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10061	--	Install
S10243	Remove	--

S 735-057

(31) Make sure the conditions that follow occur:
(a) The green NOSE, RIGHT and LEFT lights are off.
(b) The amber DOORS and GEAR lights are on.

S 865-058

(32) Erase the EICAS ECS/MSG AUTO EVENT page.

S 735-186

(33) Make sure the EICAS message LDG GEAR MONITOR is not shown on the bottom display.

S 495-059
(34) Install or remove the actuator or deactuator on the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10065	--	Remove
S10242	Install	--

S 735-061
(35) Make sure the conditions that follow occur:
(a) The amber DOORS and GEAR lights are on
(b) The green NOSE, RIGHT and LEFT lights are off.
(c) The EICAS message LDG GEAR MONITOR is shown on the bottom display after 30 seconds.
(d) The EICAS message NOSE GEAR LOCKED shows on the bottom display.

S 735-062
(36) Move the COMPUTER switch to the L position. Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display.
(a) Make sure the EICAS message NOSE GEAR LOCKED shows on the bottom display.

S 095-063
(37) Remove the deactuator from sensor S10078.

S 865-064
(38) Erase the EICAS ECS/MSG AUTO EVENT page.

S 095-065
(39) Remove the deactuator from sensor S10066.

S 735-066
(40) Make sure the conditions that follow occur:
(a) The amber DOORS, GEAR lights are on.
(b) The green RIGHT and LEFT lights are off.
(c) One half of the green NOSE light is on.
(d) The EICAS message LDG GEAR MONITOR is shown on the bottom display after 30 seconds.
(e) The EICAS message NOSE GEAR DOWN shows on the bottom display.

S 735-067
(41) Move COMPUTER switch to the R position. Make sure the conditions that follow occur:
(a) The EICAS message LDG GEAR MONITOR is shown on the bottom display.
(b) The EICAS message NOSE GEAR DOWN shows on the bottom display.

S 735-068
(42) Install deactuators on the sensors S10065, S10066, and S10078. Make sure the indications that follow occur:
(a) The amber DOORS and GEAR lights are on.
(b) The green NOSE, RIGHT and LEFT lights are off.

S 865-069
(43) Erase the EICAS EGS/MSG AUTO EVENT page.

S 735-070
(44) Make sure the EICAS message LDG GEAR MONITOR is not shown on the bottom display.

S 495-071
(45) Install an actuator on sensor S10243.

S 865-072
(46) Move the COMPUTER switch to the L position.

S 735-073
(47) Make sure the conditions that follow occur:
(a) The amber DOORS light is off.
(b) The EICAS message GEAR DOORS is shown on the bottom display after 40 seconds. .
(c) The EICAS message LDG GEAR MONITOR is shown on the bottom display after 40 seconds.

S 735-074
(48) Move the COMPUTER switch to the R position. Make sure the EICAS message GEAR DOORS is not shown on the bottom display.

S 735-075
(49) Move the landing gear control lever to the DN position. Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display after 60 seconds.

S 215-213
(50) Make sure the EICAS message GEAR LEVER shows on the bottom display.

S 735-187
(51) Move the COMPUTER switch to the L position. Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display.

S 215-214
(52) Make sure the EICAS message GEAR LEVER shows on the bottom display.

S 865-077
(53) Move the control lever for the landing gear to the OFF position.

S 865-078
(54) Erase the EICAS ECS/MSG AUTO EVENT page.

S 735-079
(55) Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display after 40 seconds..

S 095-080
(56) Remove the deactuators from the sensors in the list below:

SENSOR	SENSOR
S10070	S10057
S10074	S10061
S10078	S10065
S10079	S10066

S 865-081
(57) Move the control lever for the landing gear to the DN position.

S 865-082
(58) Erase the EICAS ECS/MSG AUTO EVENT page.

S 865-083
(59) Open this circuit breaker on the overhead panel P11.
(a) 11C30, LANDING GEAR POS SYS 1

S 735-084
(60) Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display after 2 seconds.
(a) Make sure the EICAS messages in the list below show on the bottom display:
GEAR DISAGREE
NOSE GEAR DOWN
NOSE GEAR LOCKED
L GEAR DOWN
R GEAR DOWN

S 735-085

(61) Move the COMPUTER switch to the R position. Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display.

(a) Make sure the EICAS messages in the list below show on the bottom display:

GEAR DISAGREE
NOSE GEAR DOWN
NOSE GEAR LOCKED
L GEAR DOWN
R GEAR DOWN

S 865-086

(62) Close this circuit breaker on the overhead panel, P11.

(a) 11C30, LANDING GEAR POS SYS 1

S 495-087

(63) Install or remove the actuators or deactuators on the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10057	--	Install
S10061	--	Install
S10065	--	Install
S10066	--	Install
S10070	--	Install
S10074	--	Install
S10078	--	Install
S10079	--	Install
S10241	Remove	--
S10242	Remove	--
S10243	Remove	--

H. Do a Test of the No. 2 Position Indication and Warning System for the Landing Gear (Fig. 501)

NOTE: See Tables 1 and 2 for sensor descriptions and location reference.

S 495-088

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.

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

S 865-089

(2) Make sure the pressure is removed from the left hydraulic system (AMM 29-11-00/201).

S 735-090

(3) Use the OVRD button and move the landing gear control lever to the UP position. Make sure the GEARS and DOORS lights are on.

S 865-091

(4) Erase the EICAS ECS/MSG AUTO EVENT page.

S 495-092

(5) Install or remove the actuators or deactuator on the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10065	--	Remove
S10238	Install	--
S10239	Install	--
S10240	Install	--

S 735-093

(6) Make sure the GEARS light is off.
(a) Deleted.

S 735-094

(7) Move the COMPUTER switch to the L position.
(a) Deleted.

S 495-095
(8) Install a deactuator on sensor S10065.

S 735-096
(9) Make sure the amber GEAR light is on.

S 865-097
(10) Erase the EICAS ECS/MSG AUTO EVENT page.
(a) Deleted.

S 735-188
(11) Move the COMPUTER switch to the R position.
(a) Deleted.

S 495-099
(12) Install or remove the actuator or deactuator on the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10065	--	Remove
S10240	Remove	--

S 735-100
(13) Make sure the amber GEAR light is on.

S 495-101
(14) Install or remove the actuator on the sensors in the list below:

SENSOR	ACTUATOR
S10240	Install
S10239	Remove

S 735-102
(15) Make sure the amber GEAR light is on.

S 495-103
(16) Install or remove the actuator on the sensors in the list below:

SENSOR	ACTUATOR
S10239	Install
S10238	Remove

S 735-104
(17) Make sure the amber GEAR light is on.

S 495-105
(18) Install an actuator on sensor S10238.

S 865-106
(19) Move the control lever for the landing gear to the OFF position.
(a) Make sure the GEAR, RIGHT, LEFT, and NOSE lights are off.

S 495-108
(20) Install a deactuator on sensor S10065.

S 095-109
(21) Remove the actuators from sensors S10238, S10239 and S10240.

S 865-110
(22) Erase the EICAS ECS/MSG AUTO EVENT page.

S 095-111
(23) Remove the deactuators from sensors S10070, S10074, S10078 and S10079.

S 735-112
(24) Make sure the indications that follow occur:
(a) The amber DOORS and GEAR lights are on.
(b) One half of each of the green NOSE, LEFT and RIGHT lights are on.
(c) The EICAS message LDG GEAR MONITOR is shown on the bottom display after 2 to 20 seconds.
(d) Make sure the EICAS messages in the list below show on the bottom display:

NOSE GEAR DOWN
NOSE GEAR LOCKED
L GEAR DOWN
R GEAR DOWN

S 735-113
(25) Move the COMPUTER switch to the L position.
(a) Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display.
(b) Make sure the EICAS messages in the list below show on the bottom display:

NOSE GEAR DOWN
NOSE GEAR LOCKED
L GEAR DOWN
R GEAR DOWN

S 495-114
(26) Install deactuators on the sensors in the list below:

SENSOR
S10070
S10074
S10078
S10079

S 735-115
(27) Make sure the indications that follow occur:
(a) The green NOSE, RIGHT, and LEFT lights are off.
(b) The amber DOORS and GEAR lights are on.

S 865-116
(28) Erase the EICAS ECS/MSG AUTO EVENT page.
(a) Make sure the EICAS message LDG GEAR MONITOR is not shown on the bottom display.

S 495-118
(29) Install or remove the actuators or deactuator on the sensors in the list below:

SENSORS	ACTUATOR	DEACTUATOR
S10070	--	Remove
S10076	Install	--
S10081	Install	--

S 735-119
(30) Make sure the conditions that follow occur:
(a) The amber DOORS and GEAR lights are on.
(b) The green NOSE and LEFT lights are off.

(c) One half of the green RIGHT light is on.
(d) The EICAS message LDG GEAR MONITOR is shown on the bottom display after 30 seconds.
(e) Make sure the EICAS message R GEAR DOWN shows on the bottom display.
(f) Move the COMPUTER switch to the R position. Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display.
(g) Make sure the EICAS message R GEAR DOWN shows on the bottom display.

S 495-120
(31) Install or remove the actuator or deactuator on the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10070	--	Install
S10076	Remove	--

S 735-121
(32) Make sure the indications that follow occur:
(a) The green NOSE, RIGHT and LEFT lights are off.
(b) The amber DOORS and GEAR lights are on.

S 865-122
(33) Erase the EICAS ECS/MSG AUTO EVENT page.
(a) Make sure the EICAS message LDG GEAR MONITOR is not shown on the bottom display.

S 495-124
(34) Install or remove the actuator or deactuator on the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10074	--	Remove
S10072	Install	--

S 735-125

(35) Make sure the conditions that follow occur:
  (a) The amber DOORS and GEAR lights are on.
  (b) The green NOSE and RIGHT lights are off.
  (c) One half of the green LEFT light is on.
  (d) The EICAS message LDG GEAR MONITOR is shown on the bottom display after 30 seconds.
  (e) Make sure the EICAS message L GEAR DOWN shows on the bottom display.

S 735-126

(36) Move the COMPUTER switch to the L position.
  (a) Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display.
  (b) Make sure the EICAS message L GEAR DOWN shows on the bottom display.

S 495-127

(37) Install or remove the actuator or deactuator on the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10074	--	Install
S10081	Remove	--

S 735-128

(38) Make sure the indications that follow occur:
  (a) The green NOSE, RIGHT and LEFT lights are off.
  (b) The amber DOORS and GEAR lights are on.

S 495-129

(39) Install or remove the actuator or deactuator on the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10079	--	Remove
S10076	Install	--

S 735-130
(40) Make sure the indications that follow occur:
(a) The amber DOORS and GEAR lights are on.
(b) The green NOSE, RIGHT and LEFT lights are off.

S 865-131
(41) Erase the EICAS ECS/MSG AUTO EVENT page.
(a) Make sure the EICAS message LDG GEAR MONITOR is not shown on the bottom display.

S 095-133
(42) Remove deactuators from the sensors S10065 and S10078.

S 735-134
(43) Make sure the conditions that follow occur:
(a) The amber DOORS and GEAR lights are on.
(b) One half of the green NOSE light is on.
(c) The green RIGHT and LEFT lights are off.
(d) The EICAS message LDG GEAR MONITOR is shown on the bottom display after 30 seconds.
(e) Make sure the EICAS message NOSE GEAR DOWN shows on the bottom display.

S 735-135
(44) Move the COMPUTER switch to the R position.
(a) Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display.
(b) Make sure the EICAS message NOSE GEAR DOWN shows on the bottom display.

S 495-136
(45) Install a deactuator on the sensor S10079.

S 865-137
(46) Erase the EICAS ECS/MSG AUTO EVENT page.
(a) Make sure the EICAS message LDG GEAR MONITOR is not shown on the bottom display.

S 495-139
(47) Install a deactuator on the sensor S10065.

S 735-140
(48) Make sure the green NOSE light is off.
  (a) Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display after 2 seconds.
  (b) Make sure the EICAS message NOSE GEAR LOCKED shows on the bottom display.

S 735-141
(49) Move the COMPUTER switch to the L position.
  (a) Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display.
  (b) Make sure the EICAS message NOSE GEAR LOCKED shows on the bottom display.

S 495-142
(50) Install a deactuator on the sensor S10078.

S 735-143
(51) Make sure the indications that follow occur:
  (a) The amber DOORS and GEAR lights are on.
  (b) The green NOSE, RIGHT and LEFT lights are off.

S 495-144
(52) Install an actuator on the sensor S10081.

S 865-145
(53) Erase the EICAS ECS/MSG AUTO EVENT page.
  (a) Make sure the conditions that follow occur:
    1) The amber DOORS light is off.
    2) The EICAS message GEAR DOORS is not shown on the top display after 35 seconds.
  (b) Deleted.

S 735-148
(54) Move the COMPUTER switch to the R position.
  (a) Deleted.

S 735-149
(55) Move the control lever for the landing gear to the DN position.
  (a) Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display after 60 seconds.
  (b) Make sure the EICAS message GEAR LEVER shows on the bottom display.

S 735-150
(56) Move the COMPUTER switch to the L position.
  (a) Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display.
  (b) Make sure the EICAS message GEAR LEVER shows on the bottom display.

S 495-189

WARNING: MAKE SURE THE DOWLOCKS ARE INSTALLED ON THE NOSE AND MAIN LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR. IF THE LEVER IS MOVED WITHOUT THE DOWNLOCKS INSTALLED, THE LANDING GEAR CAN RETRACT AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

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

S 865-151
(58) Make sure the pressure is removed from the left hydraulic system (AMM 29-11-00/201).

S 865-152
(59) Use the OVRD button and and move the control lever for the landing gear to the UP position.

S 735-153
(60) Erase the EICAS ECS/MSG AUTO EVENT page.

S 495-239
(61) Install or remove the actuators or deactuator on the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10241	Install	--
S10242	Install	--
S10243	Install	--

S 865-154
(62) Make sure the EICAS message LDG GEAR MONITOR is not shown on the bottom display.

S 865-155
(63) Move the control lever for the landing gear to the DN position.

S 095-156
(64) Remove the actuators or deactuators on the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10057	--	Remove
S10061	--	Remove
S10065	--	Remove
S10066	--	Remove
S10070	--	Remove
S10072	Remove	--
S10074	--	Remove
S10078	--	Remove
S10079	--	Remove
S10076	Remove	--
S10081	Remove	--
S10241	Remove	--
S10242	Remove	--
S10243	Remove	--

S 865-157
(65) Erase the EICAS ECS/MSG AUTO EVENT page.

S 865-158
(66) Open these circuit breakers on the overhead panel, P11:
(a) 11S23, LANDING GEAR POS SYS 2

(b) 11C19, LANDING GEAR POS SYS 2 ALT

S 735-159

(67) Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display after 2 seconds.
(a) Make sure the EICAS messages in the list below show on the bottom display:

GEAR DISAGREE
NOSE GEAR DOWN
NOSE GEAR LOCKED
L GEAR DOWN
R GEAR DOWN

S 735-160

(68) Move the COMPUTER switch to the R position.
(a) Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display.
(b) Make sure the EICAS messages on the list below show on the bottom display:

GEAR DISAGREE
NOSE GEAR DOWN
NOSE GEAR LOCKED
L GEAR DOWN
R GEAR DOWN

S 865-161

(69) Close these circuit breakers on the overhead panel, P11:
(a) 11S23, LANDING GEAR POS SYS 2
(b) 11C19, LANDING GEAR POS SYS 2 ALT

S 495-162

(70) Install deactuators on the sensors in the list below:

SENSOR
S10057
S10061
S10065
S10066
S10070
S10074
S10078
S10079

S 865-163

(71) Move the control lever for the landing gear to the UP position.
(a) Make sure the amber GEAR light is on.

S 865-165
(72) Erase the EICAS ECS/MSG AUTO EVENT page.
(a) Make sure the EICAS message LDG GEAR MONITOR is shown on the bottom display.

S 495-167
(73) Install or remove the actuators or deactuator on the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10069	Install	--
S10073	Install	--
S10077	Install	--
S10078	---	Remove

S 735-168
(74) Make sure the amber GEARS light is off.
(a) Deleted.

S 735-169
(75) Move the COMPUTER switch to the L position.
(a) Deleted.

S 495-170
(76) Install a deactuator on the sensor S10078.

S 735-171
(77) Make sure the amber GEAR light is on.

S 095-172
(78) Remove the actuator or deactuator from the sensors in the list below:

SENSOR	ACTUATOR	DEACTUATOR
S10073	Remove	--
S10078	--	Remove

S 735-173
(79) Make sure the amber GEAR light is on.

S 495-174
(80) Install or remove an actuator on the sensors in the list below:

SENSOR	ACTUATOR
S10069	Remove
S10073	Install

S 735-175
(81) Make sure the amber GEAR light is on.

S 495-176
(82) Install or remove the actuators on the sensors in the list below:

SENSOR	ACTUATOR
S10069	Install
S10077	Remove

S 735-177
(83) Make sure the amber GEAR light is on.

S 865-178
(84) Move the control lever for the landing gear to the DN position.

S 865-179
(85) Erase the EICAS ECS/MSG AUTO EVENT page.

S 095-181

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

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

S 445-191
(87) Put the safety-sensitive systems back to their initial conditions (AMM 32-09-02/201).

S 865-183
(88) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-61-00-765-196

3. 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.

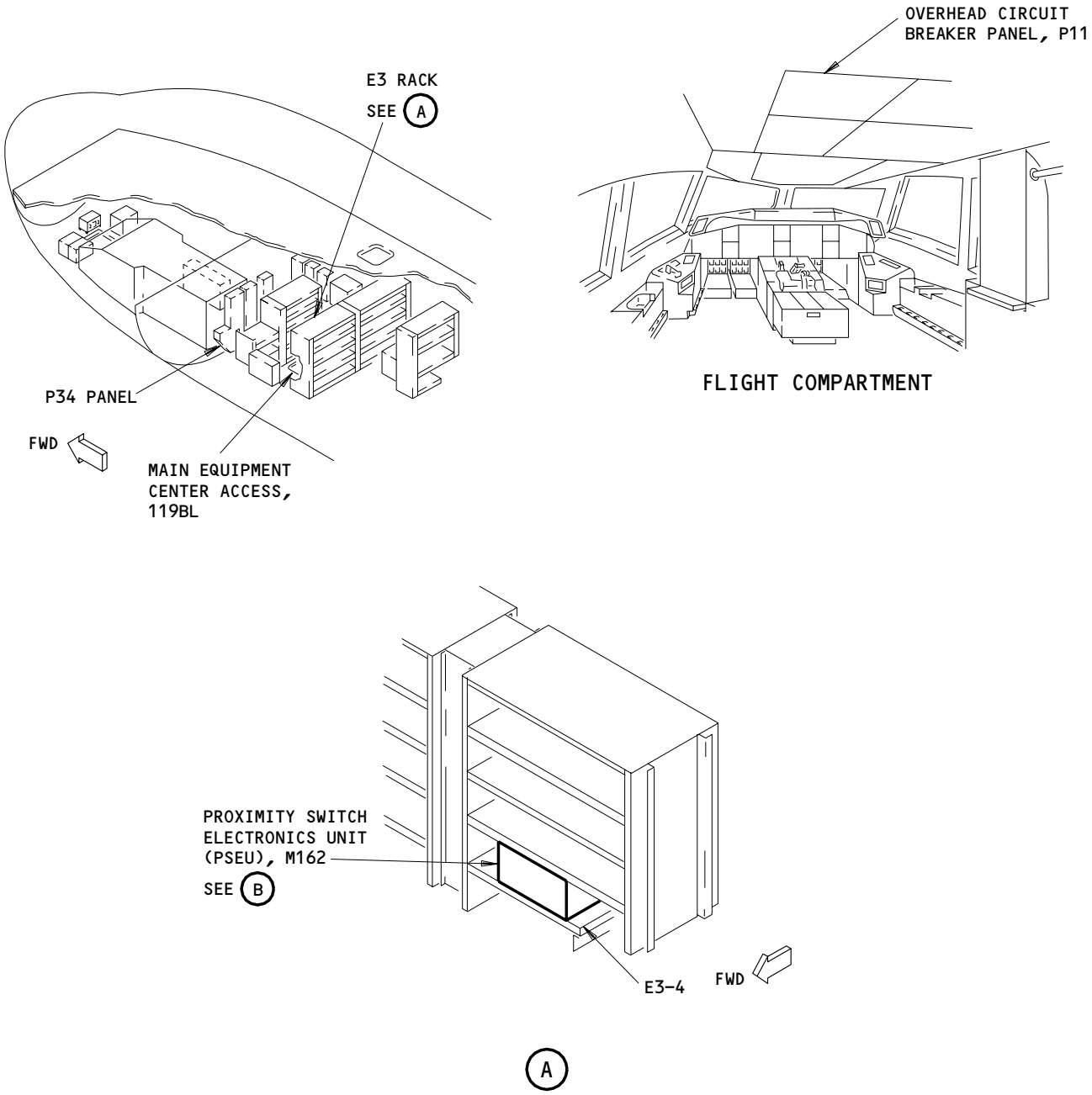
B. Reference
(1) AMM 07-11-01/201, Jack the airplane
(2) AMM 29-11-00/201 , Pressurize the Hydraulic System
(3) FIM 32-09-03/101, Proximity Switch System

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 025-197
(1) Do this task: Remove the PSEU, AMM 32-09-04/401



Proximity Switch System - Component Location
Figure 508

S 765-199

(2) Measure the resistance at the pins on the E3 rack for each main and nose gear sensor.

NOTE: Refer to WDM 32-61- for the position indication sensors. Refer to WDM 32-09- for the air/ground sensors.

(a) Use the resistance values in the Functional limits table to check the health of the specific sensor. Refer to FIM 32-09-03/101 to correct the problem.

S 765-201

(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 Functional Limits Table 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 045-226

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 865-204

(5) Move all three landing gears to the up position.

S 765-205

(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 does not agree with the values in the Functional Limits table below, then refer to FIM 32-09-03/101 to correct the problem.

NOTE: The left and right gear down sensor inductance in the near state may be lower than 5.2 millihenries. If there are no related EICAS messages or system anomalies, then readings between 5 and 5.2 millihenries are acceptable.

(b) If the sensor inductance for the target far state does not agree with the sensor values in the Functional Limits table below, refer to FIM 32-09-03/101 to correct the problem.

Functional Limits Table			
SENSOR PART NUMBER	TARGET NEAR	TARGET FAR	RESISTANCE (TARGET FAR)
8-344-01,-02	5.2 to 9mh	4.7 to 4.92mh	6 to 11 ohms
8-344-03	5.2 to 9mh	4.7 to 4.92mh	12 to 16 ohms
8-345-03	5.2 to 9mh	4.7 to 4.92mh	12 to 16 ohms
8-518-01	5.2 to 9mh	4.7 to 4.92mh	12 to 16 ohms
8-935-01	5.2 to 10mh	4.72 to 4.92mh	16 to 21 ohms

F. Put the airplane back to the normal condition.

S 585-211
(1) Lower the airplane from the jacks (AMM 07-11-01/201), if it is no longer necessary.

S 425-210
(2) Install the PSEU (AMM 32-09-04/401).

S 845-208
(3) Put the safety-sensitive systems back to their initial conditions (AMM 32-09-02/201).

S 845-209
(4) 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.

      NOTE: Refer to AMM 32-09-07/201 for the tasks for the truck tilt sensors on the main landing gear.

      (1) The first task is for the removal of the sensor.
      (2) The second task is for the installation of the sensor.
      (3) The third task does a test of the sensor.
      (4) The fourth task measures and adjusts the clearance between the sensor and its target.

   B. All of these tasks are for the proximity sensors that follow:
      (1) Landing gear down and locked sensors (S10057, S10070, S10061, S10074) (Fig. 201).
      (2) Landing gear up and locked sensors (S10239, S10069, S10240, S10073) (Fig. 202).
      (3) Door closed sensors for the main landing gear (S10241, S10242, S10072, S10076) (Fig. 203).

   C. Usually the sensors are installed with a wire harness or conduit attached to the sensors. This does not include the landing gear up and landing gear door sensors. Put the sensor wires through the conduit when you remove or install them. On the sensors for landing gear up and landing gear doors the wires do not go through a conduit.

TASK 32-61-02-002-001

2. Remove the Proximity Sensors for the Main Landing Gear
   A. Equipment
      (1) Pin Insertion/Extraction Tool - MIL-C-83723
   B. References
      (1) 24-22-00/201, Electrical Power - Control
      (2) 32-00-15/201, Landing Gear Door Locks
      (3) 32-00-20/201, Landing Gear Downlocks
      (4) Chapter 20, Wiring Diagram Manual

C. Access
(1) Location Zones
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)
731 Main Landing Gear (MLG) (Left)
741 Main Landing Gear (MLG) (Right)

D. Prepare for the Removal

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 installed on the wheels.

S 492-004

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).

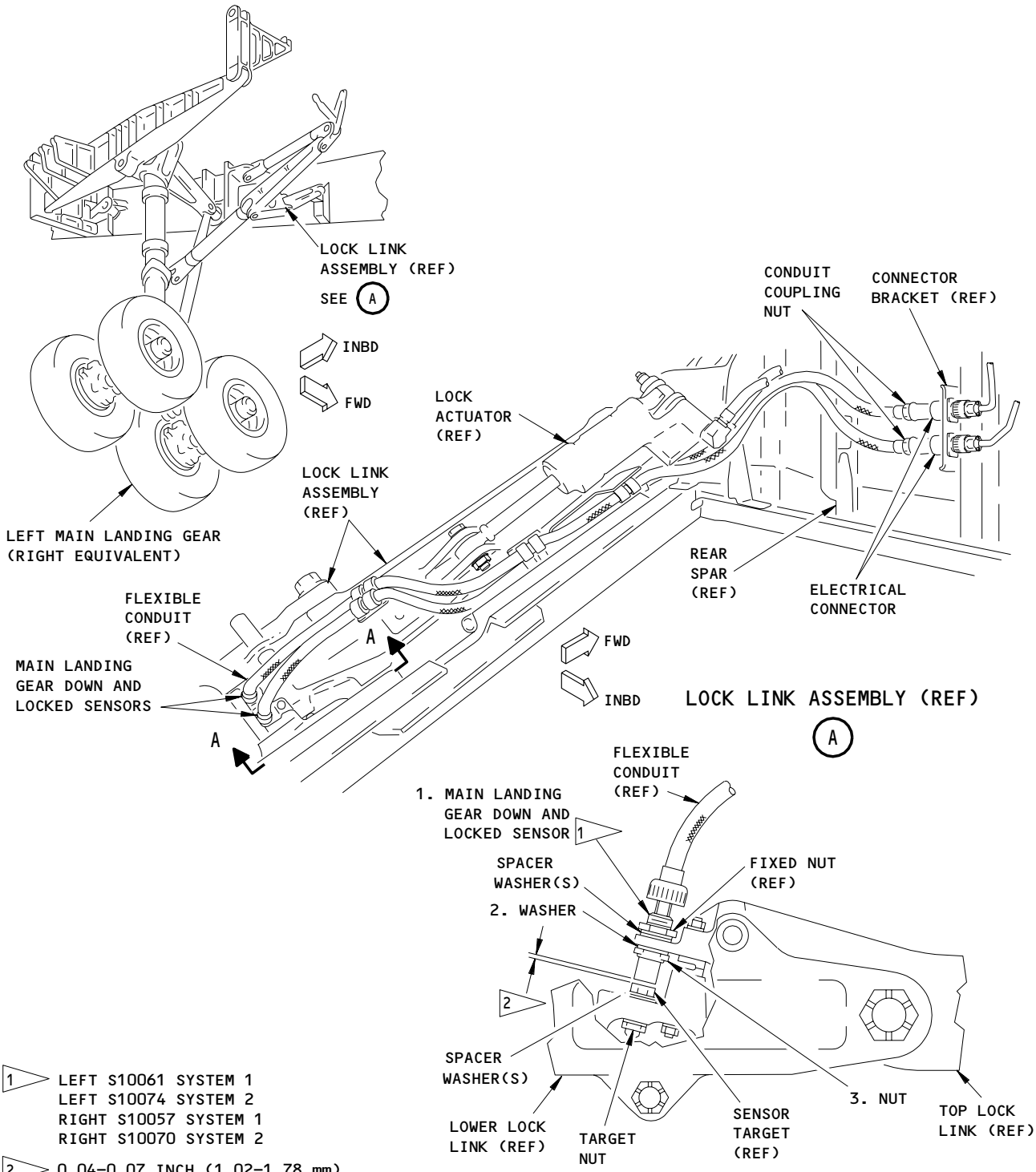
NOTE: The doors for the nose and the main landing gear open at the same time when you use the ground release.

S 862-005
(4) Make sure the electrical power is removed (AMM 24-22-00/201).

S 212-030
(5) Look at the sensor, its mounting bracket and the target for signs of damage.
(a) Make a record if the damage is found. This data will be used during the installation.

E. Remove the Proximity Sensor

S 022-006
(1) Do the steps that follow to remove the landing gear down and locked sensors (Fig. 201):
(a) Disconnect the conduit electrical connector from the bracket on the rear spar.



Main Landing Gear Down and Locked Sensors
Figure 201

CAUTION: WRITE DOWN THE WIRE COLOR CODE AND THE LOCATIONS OF THE PINS. THIS WILL PERMIT THE CORRECT INSTALLATION OF NEW SENSOR WIRES AND PREVENT THE MALFUNCTION OF THE POSITION INDICATION SYSTEM FOR THE LANDING GEAR.

(b) Put a tag with the color code and the locations of the pins on the wire for the installation.
(c) Use a pin extraction tool to remove the pins from the connector plug. Refer to Chapter 20, Wire Diagram Manual.
(d) Attach a line (approx 65 inches long) to the sensor wires. This will make the installation easier.
(e) Disconnect the conduit coupling nut from the sensor.
(f) Remove the locknut on the target side of the sensor.
(g) Remove the sensor from the bracket.
(h) Remove the remaining washers from the sensor.

NOTE: Keep the nut and washers. Write down the location of the washers to help when you install the sensor.

S 022-007

(2) Do the steps that follow to remove the landing gear up and locked sensors (Fig. 202):
(a) Remove the lower locknut and remove the sensor from the bracket.
(b) Remove the key washers from the sensor and the bracket. Write down the location and the number of key washers used. Keep the washers for when you install the sensor.
(c) Write down the color code for the wire, and cut the sensor wires above the splices that are there.

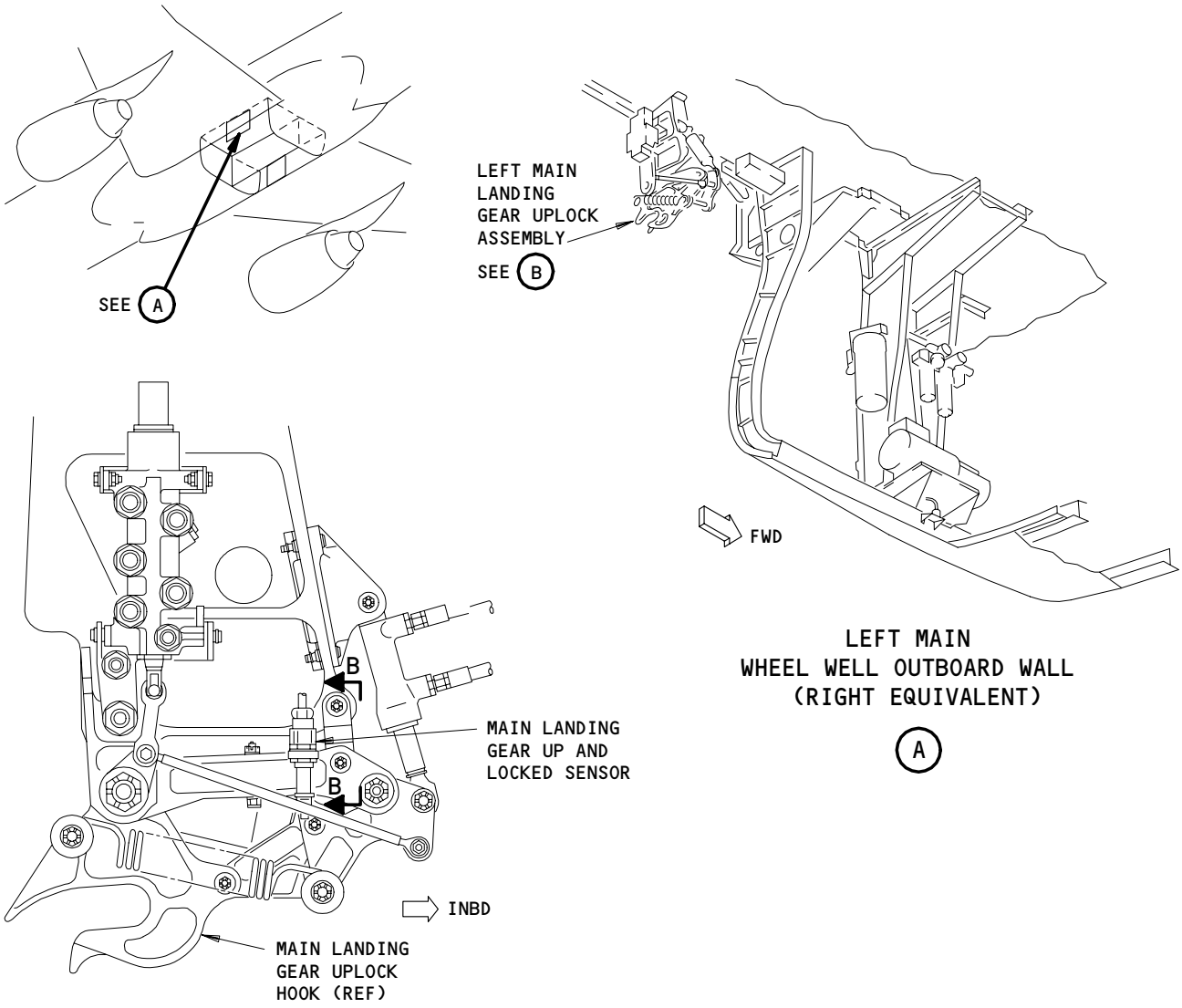
S 022-008

(3) Do the steps that follow to remove the door closed sensors for the landing gear (Fig. 203):

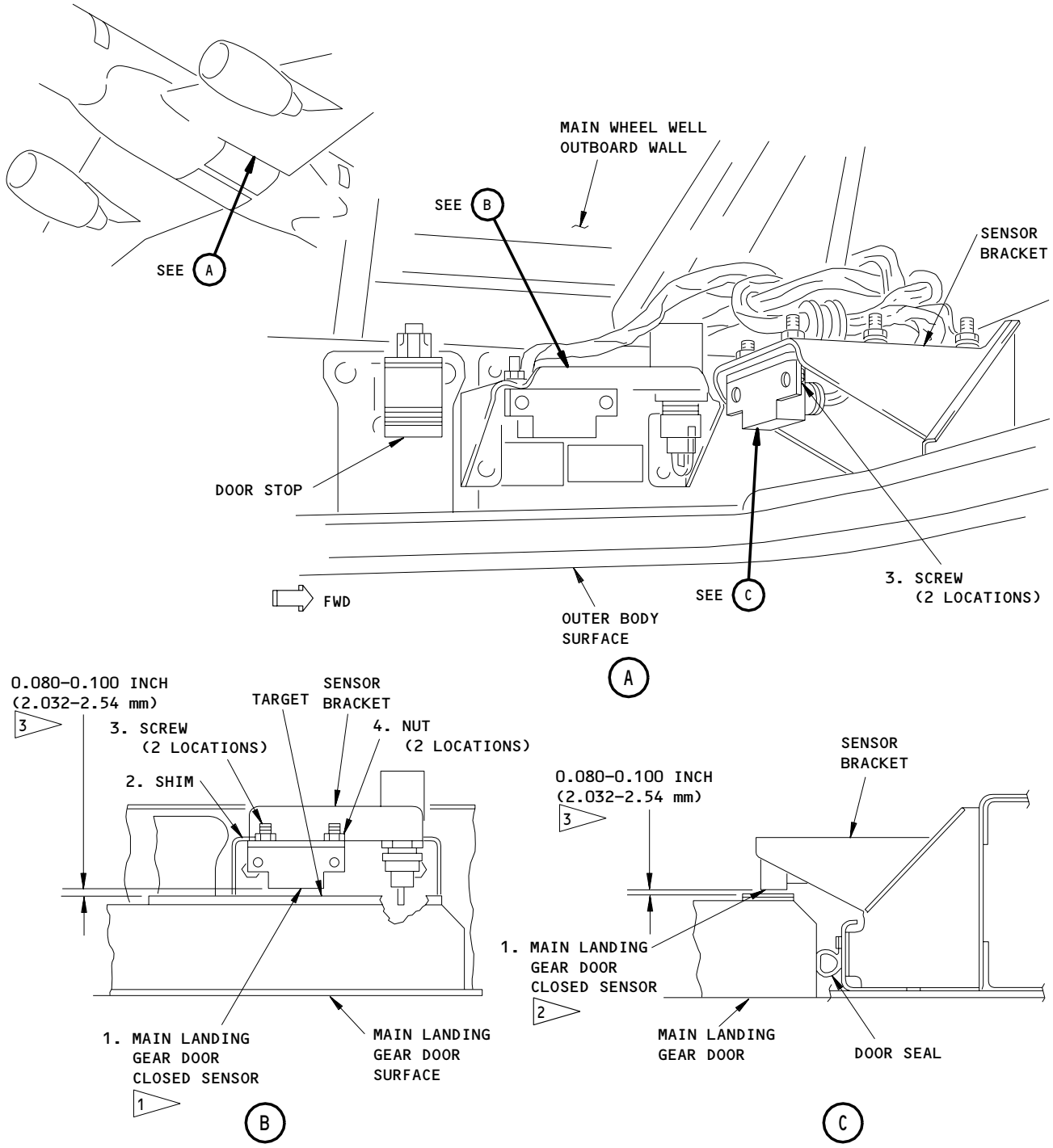
CAUTION: WRITE DOWN THE WIRE COLOR CODE AND THE LOCATIONS OF THE PINS. THIS WILL PERMIT THE CORRECT INSTALLATION OF NEW SENSOR WIRES AND PREVENT THE MALFUNCTION OF THE POSITION INDICATION SYSTEM FOR THE LANDING GEAR.

(a) Put a tag on the wire with the color code. This will help when you install the sensor.
(b) Cut the sensor wires above the splices that are there.
(c) Remove the screws that hold the sensor and remove the sensor.

NOTE: Keep the screws and shims for when you install the sensor.



Main Landing Gear Up and Locked Proximity Sensors
Figure 202



1 LEFT S10076 SYSTEM 2, RIGHT S10072 SYSTEM 2

2 LEFT S10242 SYSTEM 1, RIGHT S10241 SYSTEM 1

3 IF THE SENSOR GAP CAN NOT BE MET, THEN MAKE SURE THE FORWARD AND AFT DOOR STOP ADJUSTMENTS ARE CORRECT (AMM 32-12-00/501)(FIGURE 501), AND ADJUST THE SENSOR GAP AGAIN.

Main Landing Gear Door Closed Sensors
Figure 203

TASK 32-61-02-402-009

3. Install the Proximity Sensors for the Main Landing Gear

A. Equipment

(1) Pin Insertion/Extraction Tool - MIL-C-83723

B. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
201	1	Sensor-MLG Down and Locked	32-61-02	02	45
202	1	Sensor-MLG Up and Locked		05	35
203	1	Sensor-MLG Door Closed		01	30
					32
					33

C. Access

(1) Location Zones

143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)
731 Main Landing Gear (MLG) (Left)
741 Main Landing Gear (MLG) (Right)

D. Procedure

S 422-031

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 POSITION INDICATION SYSTEM FOR THE LANDING GEAR.

(1) Do the steps that follow to install the landing gear down and locked sensors (Fig. 201):

(a) If you will install a new sensor, attach a line to the sensor wires.

(b) Put the wires through the conduit until the sensor is almost into the conduit.

(c) Pull the sensor wire through the conduit to the point of the connection on the rear spar.

(d) Cut the wire, but keep sufficient wire to install the pins on the sensor wires.

(e) Remove the insulation from the wire and install the correct pins onto the wire.

(f) Install the pins into the connector.
(g) Install the connector plug on the conduit.
(h) Install the connector into the receptacle on the rear spar.
(i) 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 more than one inch away from all metal surfaces.

(j) Put the washers that were there before on the sensor and install it in the bracket.
(k) Install the locknut on the target side of the sensor.
(l) Tighten the locknut.
(m) Install the lockwire.
(n) Connect the conduit coupling nut to the sensor.
(o) Tighten the nut.
(p) Install the lockwire on the locknut.

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 POSITION INDICATION SYSTEM FOR THE LANDING GEAR.

(2) Do the steps that follow to install the landing gear up and locked sensors (Fig. 202):
(a) Install the key washers on the sensor and bracket the same as they were when the sensor was removed.
(b) Make sure the key of the washer is put in the hole in the bracket.
(c) Install the locknut on the sensor.
(d) Remove the insulation from the wire to the length that is necessary.
(e) Make a splice of the sensor wires and keep the color code for the wires the same as it was before.
(f) Do the test of the sensor with the actuator test tool.

NOTE: Refer to the task which does a test of the sensors.

(g) Tighten the locknut and install lockwire.

S 422-039

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 POSITION INDICATION SYSTEM FOR THE LANDING GEAR.

(3) Do the steps that follow to install the door closed sensors for the landing gear (Fig. 203):
   (a) Install the shims and the sensor with the screws.
   (b) ON AIRPLANES WITH ADJUSTABLE SENSORS;
   Align the sensor with the target on the door.

   NOTE: Adjustable sensors have slots at the attach point.

   1) Make sure the sensor fits between the fasteners that attach the target to the door.
   (c) Tighten the screws.
   (d) Cut the wire but keep a sufficient length to install splices.
   (e) Remove the insulation from the wires and install splices between the wire bundle and the sensor wires.
   1) Make sure the wire color code is correct.
   (f) Do the test of the sensor with the actuator test tool.

   NOTE: Refer to the task which does a test of the sensors.

TASK 32-61-02-702-040

4. Test the Proximity Sensors for the Main Landing Gear

A. General
   (1) A correctly installed sensor will have the necessary 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 E3-4 shelf (AMM 32-09-04/401) 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.
   (a) You can also do a test without the actuator test tool to find the current sensor target state (target near or target far).

B. Equipment
   (1) Proximity Sensor Actuator/Deactuator Set - A27092-106 (Round sensor deactuator is necessary)

(2) Proximity Sensor Actuator Test Set - A32102-35
(Rectangular and round sensor actuator is necessary)
or

KHT 8-750-01 Go Gauge (Rectangular Actuator)
KHT 8-752-00 Go Gauge (Circular Actuator)
Eldec Corporation Aircraft Systems Division
P.O. Box 3002, Bothel WA, 98041-3002
(Alternative)

NOTE: These tools makes sure the sensor operates to its specified limits.

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) 32-00-20/201, Landing Gear Downlocks
(5) 32-09-04/401, Proximity Switch Electronics Unit

D. Access
(1) Location Zones

119	Main Equipment Center
143	MLG Wheel Well (Left)
144	MLG Wheel Well (Right)
211	Control Cabin (Left)
212	Control Cabin (Right)
731	Main Landing Gear (MLG) (Left)
741	Main Landing Gear (MLG) (Right)

E. Prepare for the Test

S 492-043
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 492-032

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).

NOTE: The doors for the nose and main landing gear open at the same time by ground release.

S 862-033
(3) Make sure the pressure is removed from the left hydraulic system (AMM 29-11-00/201).

S 862-034
(4) Make sure the control lever for the landing gear is in the DN position.

S 862-035
(5) Make sure these circuit breakers on the overhead circuit breaker panel, P11 are closed:
(a) 11C19, LANDING GEAR POS SYS 2 ALTN
(b) 11C30, LANDING GEAR POS SYS 1
(c) 11R36, PROX SW TEST
(d) 11S23, POS SYS 2

S 862-044
(6) Supply electrical power (AMM 24-22-00/201).

S 012-045
(7) Open the access door for the main equipment center, 119BL (AMM 06-41-00/201) and find the PSEU on the E3-4 rack.

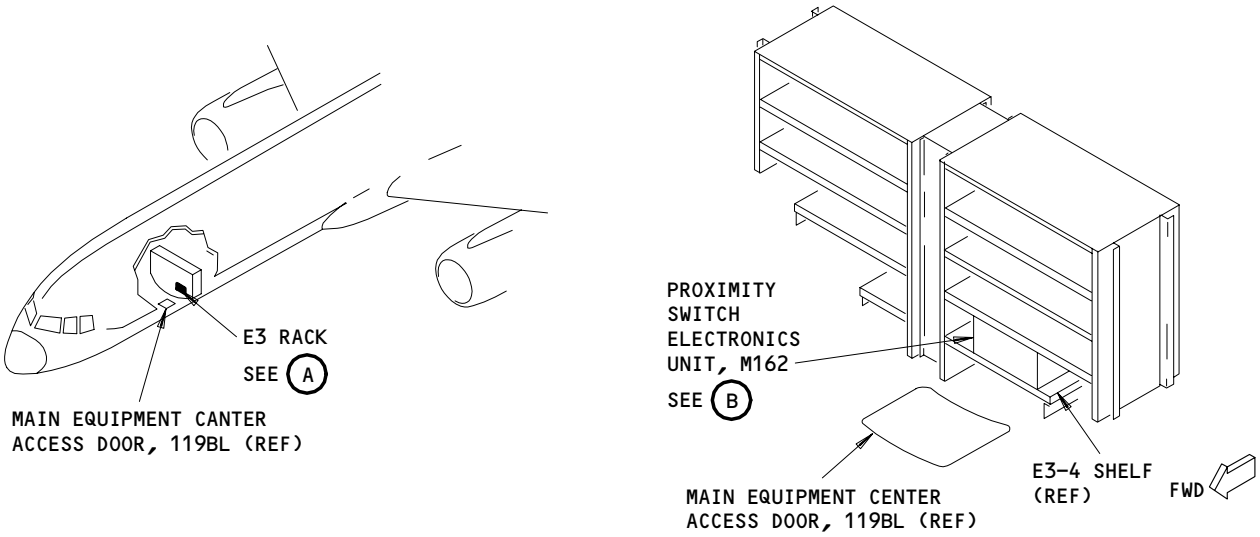
F. Do the Test of the Proximity Sensor for the Main Landing Gear (Fig. 204)

S 742-041
(1) Test of the Landing Gear Down and Locked Sensors (S10057, S10061, S10070, S10074):
(a) Use the PSEU to do a target position test to make sure the sensor operates 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.

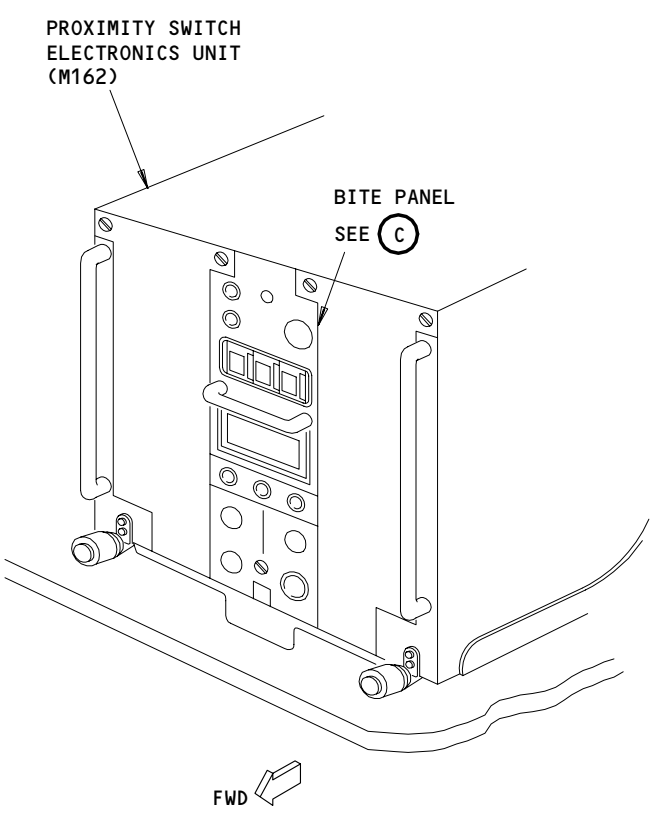
1) Push the PRESS/TEST switch. Make sure the number 888 and all five indicator lights on the PSEU are on until the switch is released.

Sensor Description	PSEU Code No.
Down and Locked, left gear, sys 1	061
Down and Locked, left gear, sys 2	074
Down and Locked, right gear, sys 1	057
Down and Locked, right gear, sys 2	070

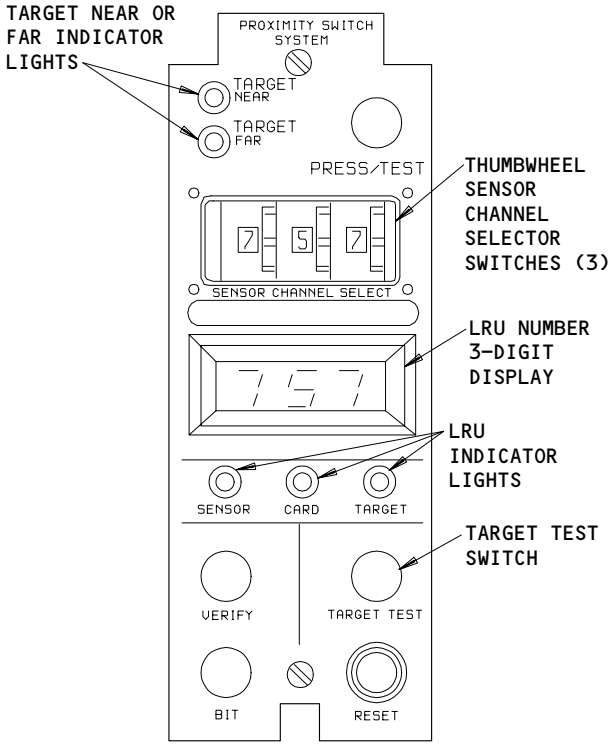


MAIN EQUIPMENT CENTER

A



B



BITE PANEL

C

Proximity Switch Electronics Unit Sensor Test
Figure 204

2) 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.

3) 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 with the sensor installed in its bracket.

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 742-042

(2) Test of the Up and Locked Sensors (S10069, S10073, S10239, S10240) and the Door Closed Sensors (S10072, S10076, S10242, S10241):
(a) Use the PSEU to do a target position test to make sure the sensor operates 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	PSEU Code No.
Up and Locked, left gear, sys 1	240
Up and Locked, left gear, sys 2	073
Up and Locked, right gear, sys 1	239
Up and Locked, right gear, sys 2	069
Door Closed, left gear, sys 1	242
Door Closed, left gear, sys 2	076
Door Closed, right gear, sys 1	241
Door Closed, right gear, sys 2	072

3) Do the test of the sensor with the actuator test tool.
   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.
   c) 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.

   d) Push the TARGET TEST switch and hold for one second.
   e) Make sure the correct sensor number is shown on the LED display, and, after four seconds, the TARGET NEAR light comes on.
   f) Remove the actuator from the sensor.

4) Do the test of the up and locked sensor with the uplock hook in the up and locked position.

   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 FAR light comes on.
   c) Manually apply force to the uplock hook to put the hook in the locked position.
   d) Push the TARGET TEST switch for one second.
   e) Make sure the sensor number is again shown and, after four seconds, the TARGET NEAR light comes on.

5) Do the test of the door sensor with the door closed.

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 correct sensor number is shown on the LED display, and after four seconds, the TARGET FAR light comes on.

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.

c) Remove the door locks 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.

G. Put the Airplane Back to Its Initial Condition

S 092-048

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).

S 862-047
(2) Remove electrical power (AMM 24-22-00/201) if it is not necessary.

S 412-049
(3) Close the access door for the main equipment center, 119BL.

TASK 32-61-02-822-013

5. Adjustment - Proximity Sensor for the Main Landing Gear

A. Consumable Materials
(1) G02020, Soft modeling clay
(2) G00961, Talcum powder

B. References
(1) 24-22-00/201, Electrical Power - Control
(2) 32-00-15/201, Landing Gear Downlocks

C. Access
(1) Location Zones
143 MLG Wheel Well (Left)
144 MLG Wheel Well (Right)
731 Main Landing Gear (MLG) (Left)
741 Main Landing Gear (MLG) (Right)

D. Procedure

S 822-014
(1) Do the steps that follow to adjust the landing gear down and locked sensors (Fig. 201):
(a) Make sure the clearance between the sensors and the targets is within the limits shown on Fig. 201.
1) If the clearance is in the limits, do the test of the sensors.
2) If the clearance is not in the limits, do the next step:
a) Add or remove washers from between the head of the target and the surface it is attached to.

NOTE: If more or less washers under the target does not give the correct adjustment, you can add or remove washers from between the nut attached to the sensor and the bracket on the lock link.

S 822-015
(2) Do the steps that follow to adjust the landing gear up and locked sensor (Fig. 202):
(a) Manually apply force to the uplock hook to put the hook in the locked position.
(b) Make sure the clearance between the sensor and the target is within the limits shown on Fig. 202.
1) If the clearance is is in the limits, do the test of the sensors.

2) If the clearance is not in the limits, do the steps that follow:
   a) Manually apply a force to the uplock hook to release the lock on the hook.
   b) Remove the nut that holds the target into the flange.
   c) Add or remove washers below the target head to get the correct clearance.
   d) Install the nut and washer(s) on the target and tighten the nut.
   e) Manually apply a force to the uplock to lock the hook.
   f) Make sure the clearance between the sensor and the target is correct (Fig. 202).
   g) If the clearance is not correct, adjust the sensor clearance again.
   h) Manually apply a force to the uplock and release the lock on the hook.

S 822-016

(3) Do the steps that follow to adjust the door closed sensor for the landing gear (Fig. 203):

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.

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

NOTE: The doors for the nose and main landing gear open at the same time by ground release.

(b) Apply a thin layer of talcum powder to the surface of the sensor that gets an input from the target.

CAUTION: DO NOT APPLY MORE THAN 1/8 INCH OF MODELING CLAY TO THE SURFACE OF THE TARGET. TOO MUCH CLAY WILL BEND THE SENSOR BRACKET WHEN THE DOORS FOR THE MAIN LANDING GEAR ARE CLOSED.

(c) Apply two strips of soft modeling clay that is 1/8-inch thick to the surface that gets an input from the the target.
   1) Put one strip at each end of the surface.
   2) Keep sufficient clearance to permit the clay to become larger.

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.

(d) Remove the door locks from the main landing gear and close the doors.

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.

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

(f) Cut away part of each clay impression and make sure the clay has a thickness that is within the limits shown on Fig. 203).

(g) Add or remove layers of the shim under the sensor to decrease or increase the clearance between the sensor and target.

NOTE: If you can not get the proper clearance then make sure the door stop plates and stop bolts are not worn (AMM 32-12-00/501).

1) If you replaced the door stop plates or door stop bolts, then do the above steps again.

E. Put the Airplane Back to Its Initial Condition

S 092-027

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).

S 862-028

(2) Remove electrical power if it is not necessary (AMM 24-22-00/201).

NOSE GEAR PROXIMITY SENSORS - MAINTENANCE PRACTICES

1. General
   A. This procedure contains five tasks for the proximity sensors for the nose landing gear. The first task is for the removal of the proximity sensor. The second task installs the proximity sensor. The third task adjusts the clearance between the sensor and target. The fourth task does a test of the proximity sensor. These first four tasks are for the proximity sensors that follow. The fifth task is an installation procedure for the nose gear target.
      (1) Up sensors for the nose landing gear (Sys 1), S10238
      (2) Up sensors for the nose landing gear (Sys 2), S10077
      (3) Down sensors for the nose landing gear (Sys 1), S10066
      (4) Down sensors for the nose landing gear (Sys 2), S10079
      (5) Locked sensors for the nose landing gear (Sys 1), S10065
      (6) Locked sensors for the nose landing gear (Sys 2), S10078
      (7) Door closed sensors for the nose landing gear (Sys 1), S10243
      (8) Door closed sensors for the nose landing gear (Sys 2), S10081

TASK 32-61-03-002-001

2. Remove the Proximity Sensor for the Nose Landing Gear
   A. References
      (1) AMM 32-00-15/201, Landing Gear Door Locks
      (2) AMM 32-00-20/201, Landing Gear Downlocks.
   B. Prepare for the Removal

      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 installed on the wheels.

      S 492-004

      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).

         NOTE: The doors for the nose and the main landing gear open at the same time when you use the ground release.

S 862-005
(4) Make sure the electrical power is removed (AMM 24-22-00/201).

C. Remove the Up, Down, and Door Closed Sensor for the Nose Landing Gear (Fig. 201 and 202)

S 022-006
(1) Remove the screws (2) that hold the sensor to the bracket, and remove the sensor (1).

S 032-007
(2) Loosen the clamps that hold the wire bundle.

S 932-008

CAUTION: WRITE DOWN THE WIRE COLOR CODE. THIS WILL PERMIT THE CORRECT INSTALLATION OF THE SENSOR WIRES AND PREVENT THE MALFUNCTION OF THE POSITION INDICATION SYSTEM FOR THE LANDING GEAR.

(3) Put a tag with the color code on the wire for the installation.

S 032-009
(4) Cut the sensor wires at the wire bundle splices.

S 032-010
(5) Remove the sensor wire from the wire bundle.

D. Remove the Locked Sensor for the Nose Landing Gear (Fig. 203)

S 942-011
(1) Find the wire bundle (3) near the conduit connect panel (1) at the top of the wheel well.

S 932-012

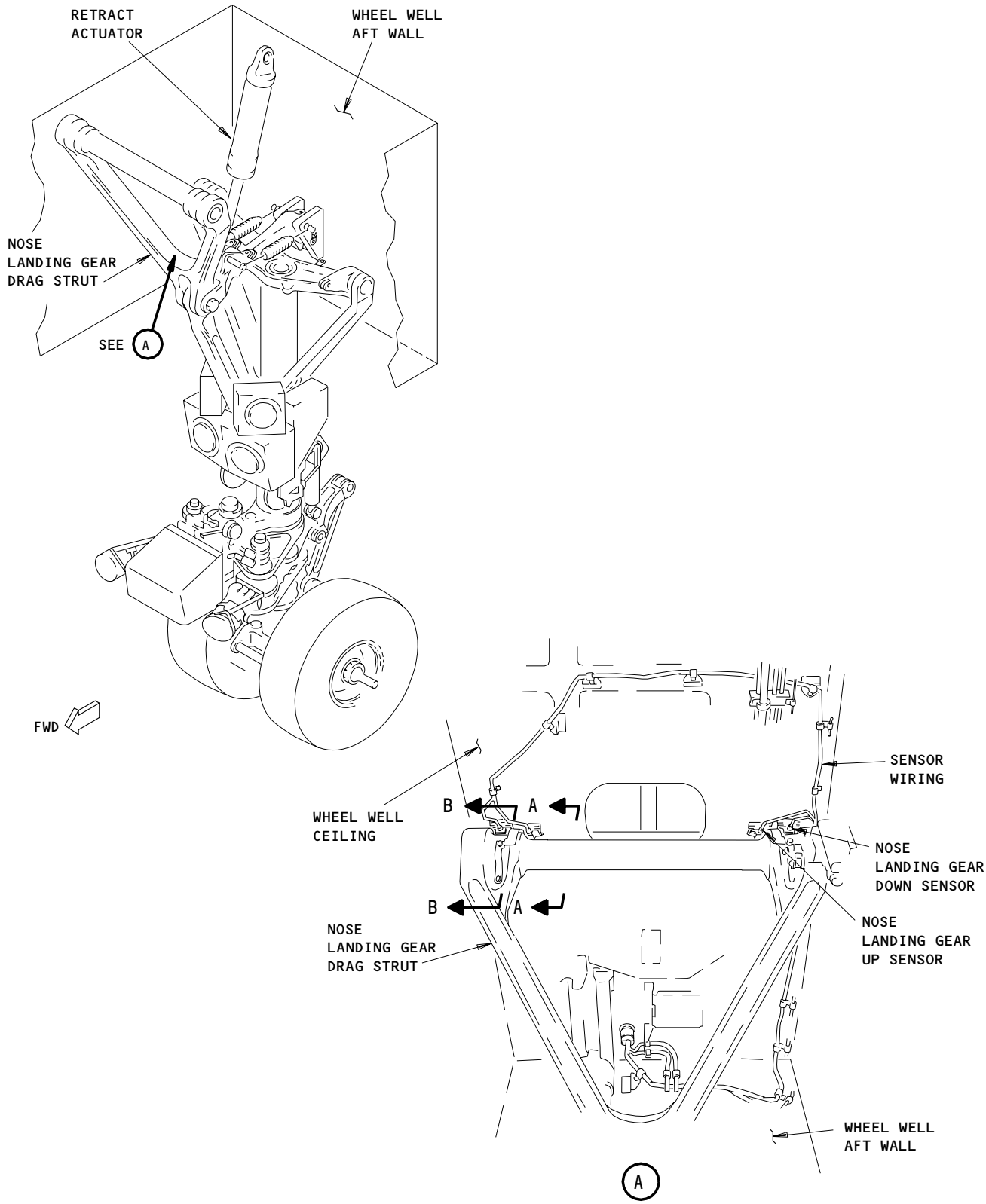
CAUTION: WRITE DOWN THE WIRE COLOR CODE. THIS WILL PERMIT THE CORRECT INSTALLATION OF THE SENSOR WIRES AND PREVENT THE MALFUNCTION OF THE POSITION INDICATION SYSTEM FOR THE LANDING GEAR.

(2) Put a tag with the color code on the wire for the installation.

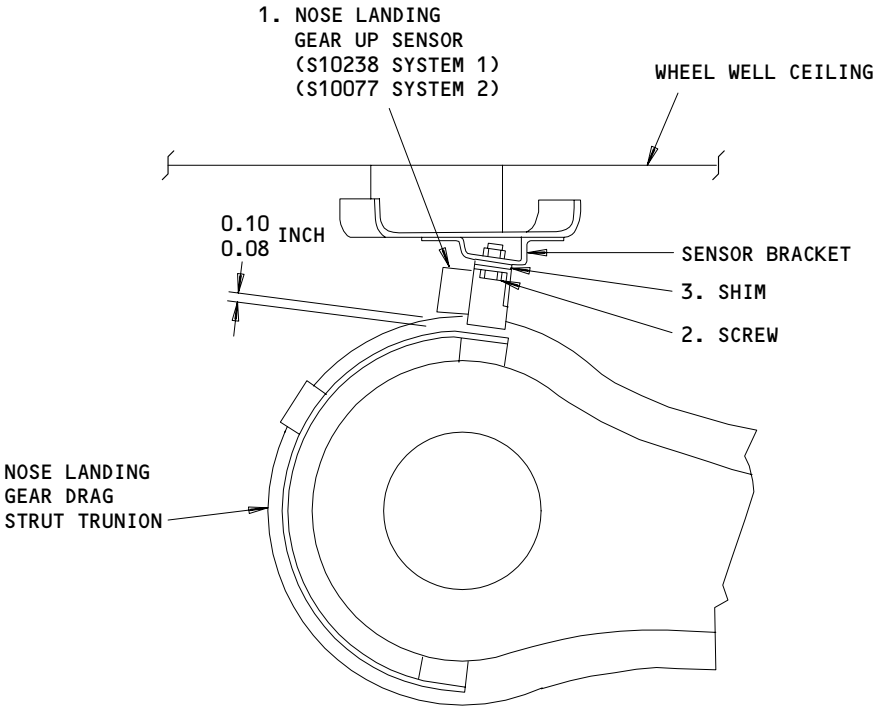
S 032-013
(3) Cut the sensor wires at the wire bundle splices.

NOTE: The wire bundle ties can be cut to make work on the wires easier.

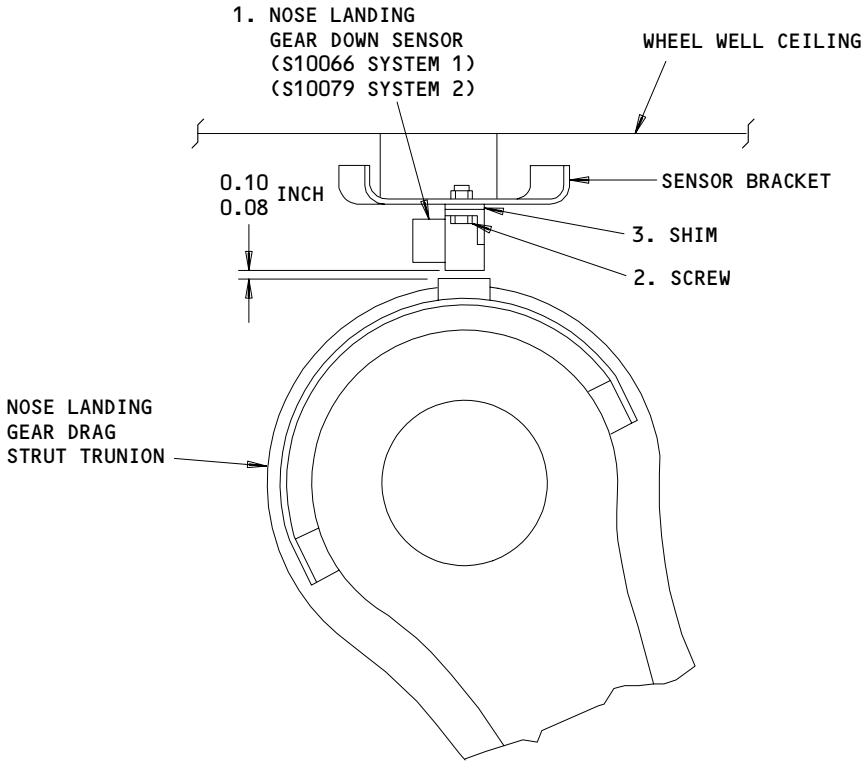
S 492-014
(4) Attach a line to the sensor wires.



Nose Landing Gear Up and Down Position Sensors
Figure 201 (Sheet 1)

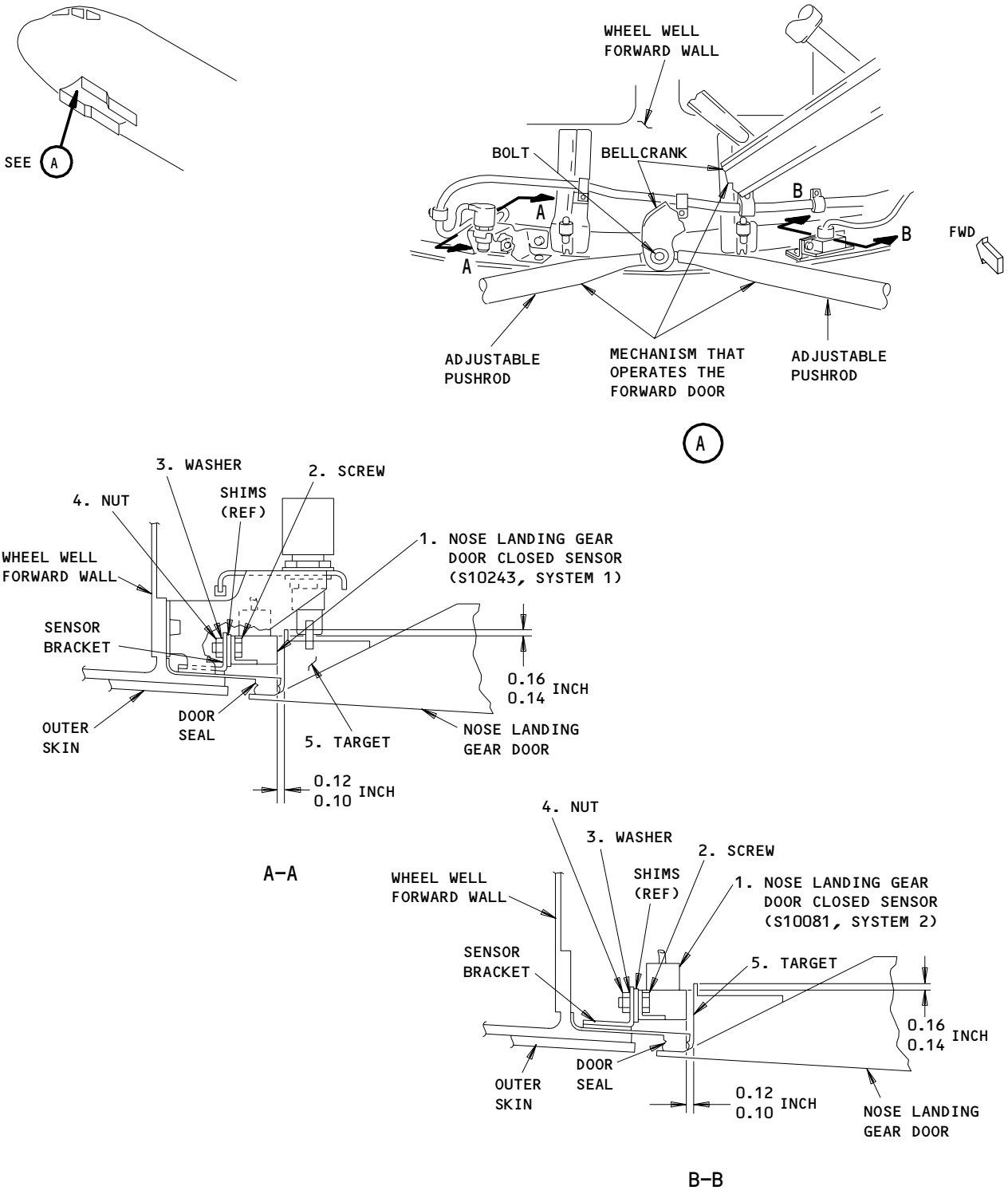


A–A

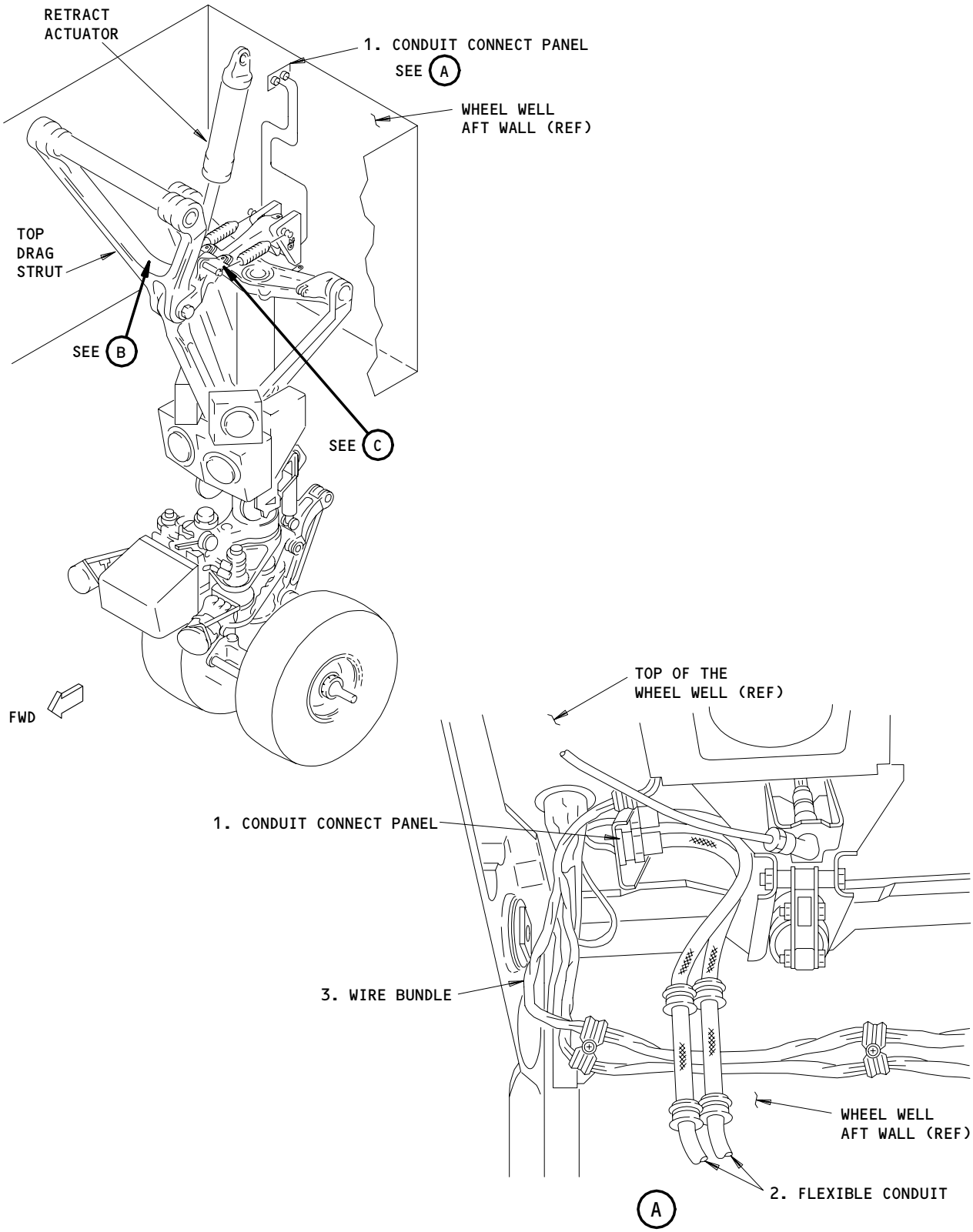


B–B

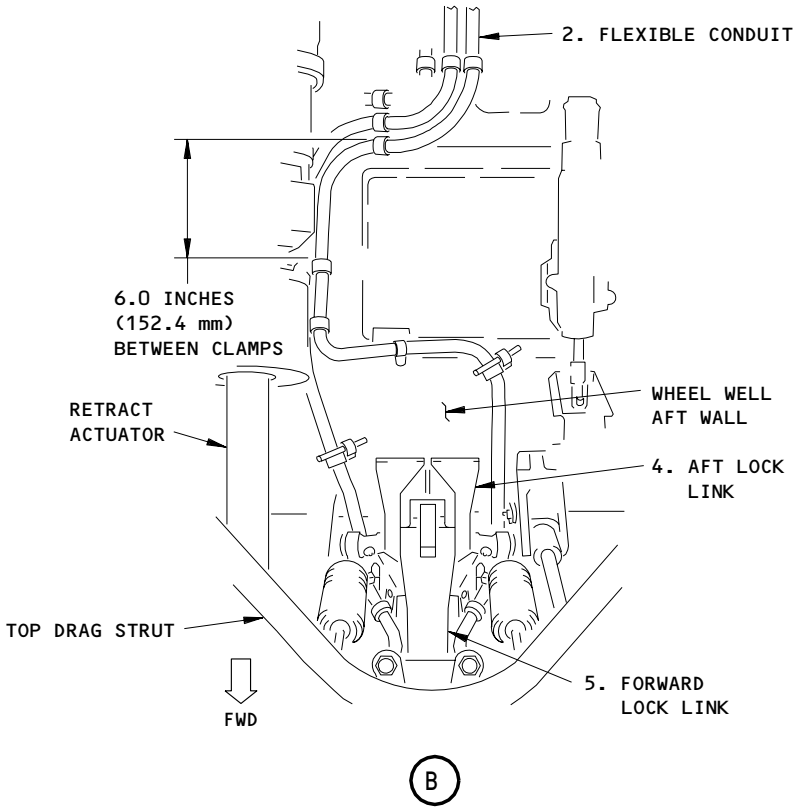
Nose Landing Gear Up and Down Position Sensor
Figure 201 (Sheet 2)



Nose Landing Gear Door Closed Sensors
Figure 202



Nose Landing Gear Locked Sensors
Figure 203 (Sheet 1)



Nose Landing Gear Locked Sensors
Figure 203 (Sheet 2)

S 032-015
(5) Remove the conduit (2) from the sensor (8) and use the line to pull the sensor wires through the conduit (2).

S 092-016
(6) Remove the line from the sensor wires. Keep the line in the conduit to help when you install the replacement sensor wire through the conduit.

S 032-017
(7) Remove the nut (7) and washer (8) from the sensor (9) on the target side of the sensor.

S 022-018
(8) Remove the sensor (9) from the aft lock link (4).

NOTE: Keep the nuts and washers and write down the location of the washer for the installation of the sensor.

S 022-094
(9) If required, use the following steps to remove the conduit.
(a) Disconnect conduit from bracket on aft wheelwell bulkhead.
(b) Remove all clamps from conduit.

TASK 32-61-03-402-019

3. Install the Proximity Sensor for the Nose Landing Gear

A. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
201	1	Sensor-NLG Up and Down Sensor	32-61-03	03	35
202	1	Sensor-NLG Door Closed Sensor		02	45
203	9	Sensor-NLG Locked Sensor		04	20

B. References
(1) AMM 32-00-15/201, Landing Gear Door Locks

C. Install the Up, Down, and Door Closed Sensor for the Nose Landing Gear (Fig. 201 and 202)

S 432-020
(1) Install the sensor wire in the wire bundle.

S 432-021
(2) Loosely install the clamps that hold the wire bundles.

S 422-022
(3) Put the sensor (1) in its position on the bracket, and install the screws (2).

S 432-023
(4) Pull the wires to the area of the splice.

S 432-024
(5) Connect the sensor wires to the wires in the wire bundle with a splice.

S 432-025
(6) Tighten the clamps of the wire bundle.

D. Install the Locked Sensor for the Nose Landing Gear (Fig. 203)

S 422-028
(1) Install the sensor (9) on the aft lock link (4).

S 432-029
(2) Install the washer (8) and nut (7) on the sensor.

S 432-030
(3) Tighten the nut and install the lockwire.

S 492-031
(4) Attach a line to the new sensor wires.

NOTE: Pull the line that you kept in the conduit when you removed the sensor.

S 422-095

(5) If the conduit was removed, use the following steps to install a new conduit.
   (a) Insert a line through the new conduit.
   (b) Attach the conduit to the bracket on the aft wheel well bulkhead.
   (c) Route and clamp conduit (Fig. 203).

NOTE: At two locations use specific radii for conduit routing.

S 432-032

(6) Pull the sensor wires through the conduit (2).

S 092-033

(7) Remove the line.

S 432-034

(8) Connect the flexible conduit to the sensor (1).

S 432-035

(9) Connect the sensor wires to the wire bundle with a splice.

S 432-036

(10) Install the wire bundle ties if you removed them.

S 092-037

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

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

TASK 32-61-03-822-038

4. Adjustment - Proximity Sensors for the Nose Landing Gear

A. General

(1) Most of the sensors are adjusted with the airplane on the ground, and not on jacks. Adjust the up sensors for the nose landing gear with the airplane nose on jacks.

B. References

(1) AMM 07-11-02/201, 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. Do the Adjustment of the Proximity Sensors

S 822-039

(1) Do the steps that follow to adjust the down sensors for the nose landing gear (Fig. 201):
(a) Make sure the clearance between the sensors and the targets is 0.08 - 0.10 inch. If the clearance is in the tolerance do the test of the sensors. If the clearance is not in the tolerance, do the next step.
(b) Add or remove shim layers from the sensor bracket to adjust the clearance.

S 822-040

(2) Do the steps that follow to adjust the up sensors for the nose landing gear (Fig. 201):
(a) Make sure the downlocks are installed on the main landing gear (AMM 32-00-20/201).
(b) Lift the airplane nose on jacks to permit retraction of the nose landing gear (AMM 07-11-02/201).

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.

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

NOTE: The doors for the nose and the main landing gear open at the same time when you use the ground release.

(d) Make sure the control lever for the landing gear is in the DN position.
(e) 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.

(f) Pressurize the left hydraulic system (AMM 29-11-00/201).
(g) Supply electrical power (AMM 24-22-00/201).

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE LANDING GEAR. THE MOVEMENT OF THE NOSE LANDING GEAR CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT IF THE AREA IS NOT CLEAR.

(h) Use the OVRD button and move the control lever for the landing gear to the UP position.
(i) After the nose landing gear is retracted, move the control lever to the OFF position.
(j) Install the downlock for the nose landing gear in the lock link assembly.
(k) Make sure the clearance between the up sensors for the nose landing gear and their targets is 0.08-0.10 inch. If the clearance is in the tolerance do the test of the sensors after you extend the nose landing gear. If the clearance is not in the tolerance, do the steps that follow to adjust the clearance.
(l) Add or remove shim layers from the sensor bracket to adjust the clearance.
(m) Remove the downlock for the nose landing gear from the lock link assembly.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE AREA AROUND THE NOSE LANDING GEAR. THE MOVEMENT OF THE NOSE LANDING GEAR CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT IF THE AREA IS NOT CLEAR.

(n) Move the control lever for the landing gear to the DN position.

(o) Install the downlock for the nose landing gear (AMM 32-00-20/201).
(p) Lower the airplane and remove the jacks (AMM 07-11-02/201).

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

(q) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).
(r) Remove the pressure from the hydraulic system if it is not necessary (AMM 29-11-00/201).
(s) Remove electrical power if it is not necessary (AMM 24-22-00/201).

S 822-041
(3) Do the steps that follow to adjust the door closed sensors for the nose landing gear (Fig. 202):

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 AND DAMAGE TO EQUIPMENT.

(a) Open the landing gear doors and install the door locks (AMM 32-00-15/201).
(b) Remove the bolt that holds the adjustable pushrods for the mechanism that operates the forward door to the bellcrank.
(c) Remove the top end of the adjustable pushrod on the left or right door from the bellcrank.

NOTE: Keep one of the forward doors connected. Then you can close it with the mechanism that operates the doors.

(d) Install the bolt on the bellcrank. Tighten the bolt.
(e) Turn the adjustable pushrod that is disconnected around the pivot on the door. This will keep it clear of the other door when it closes.

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.

(f) Remove the door locks from the landing gear doors and close the doors (AMM 32-00-15/201).
(g) Make sure the height of the sensor target is 0.14-0.16 inch above the sensor surface (Fig. 202). Add or remove shim layers between the sensor bracket and the bulkhead of the nose wheel well to decrease or increase the height.
(h) Make sure the clearance between the sensor and the target is 0.10-0.12 inch. Add or remove shim layers between the sensor bracket and the sensor to decrease or increase the clearance.

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.

(i) Open the doors for the landing gear and install the door locks (AMM 32-00-15/201).
(j) Remove the bolt that holds the adjustable pushrods for the mechanism that operates the forward door to the bellcrank.
(k) Do the steps (3)(c) through (3)(j) with the other door for the nose landing gear disconnected.
(l) Connect the two adjustable pushrods to the bellcrank.
(m) Install the bolt into the bellcrank and tighten.

S 822-042

(4) Do the steps that follow to adjust the locked sensors for the nose landing gear (Fig. 203):
(a) Make sure the clearance between the sensor and the target is 0.04 - 0.05 inch. If the clearance is in the tolerance do the test of the sensors. If the clearance is not in the tolerance, do the steps that follow to adjust the clearance.
(b) Loosen the lock nut (7) on the sensor (9) until the nut is almost removed from the sensor.
(c) Remove the nut (6) that holds the sensor target (10).
(d) Add or remove spacer washers (12) to the stud of the target to decrease or increase the clearance between the target and the sensor.

NOTE: Use shims with layers (11) if you cannot do the adjustment with the spacer washers alone. Remove 0.003 inch layers from the shims to get the clearance.

(e) Install the target (10) into the forward lock link (5).
(f) Install the nut (6) and tighten.
(g) Tighten the nut on the sensor.
(h) Make sure the clearance between the sensor and the target stayed correct.
(i) Install lockwire on the nut (8) when you complete the adjustment.

TASK 32-61-03-742-043

5. Test of the Proximity Sensors for the Nose Landing Gear

A. General

(1) Do the test of the proximity sensors with the airplane on the ground and not on jacks. On the Proximity Switch Electronics Unit (PSEU), you can do a target position test. This test will make sure the relation between the sensor and its target is correct.

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 32-00-15/201, Landing Gear Door Locks
(5) AMM 32-00-20/201, Landing Gear Downlocks

C. Prepare for the Test

S 492-044
(1) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20/201).

S 492-045

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).

NOTE: The doors for the nose and the main landing gear open at the same time when you use the ground release.

S 862-046
(3) Make sure the pressure is removed from the left hydraulic system (AMM 29-11-00/201).

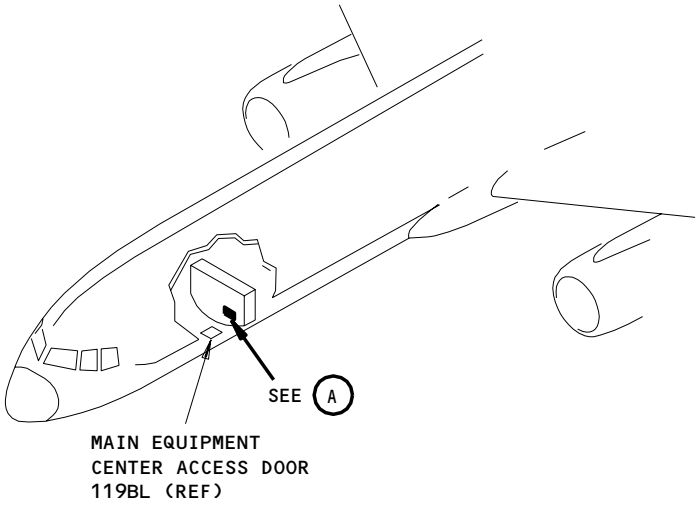
S 862-047
(4) Make sure the control lever for the landing gear is in the DN position.

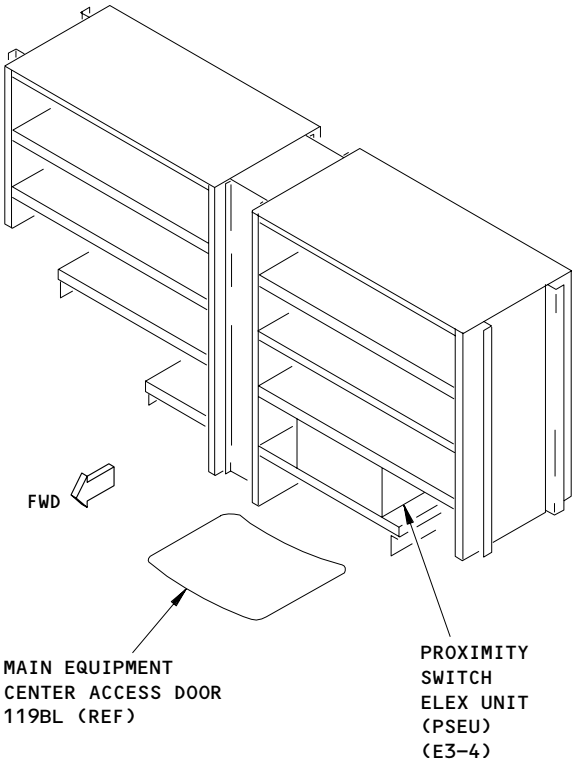
S 862-048
(5) Make sure these circuit breakers on the overhead panel P11 are closed:
(a) 11C19, LANDING GEAR POS SYS 2 ALTN
(b) 11C30, LANDING GEAR POS SYS 1
(c) 11R36, PROX SW TEST
(d) 11S23, POS SYS 2

S 862-049
(6) Supply electrical power (AMM 24-22-00/201).

D. Do the Test of the Proximity Sensors

S 012-050
(1) Open the access door 119BL for the main equipment center (AMM 06-41-00/201) and find the PSEU on the E3-4 shelf.





MAIN EQUIPMENT CENTER

A

PSEU BITE Target Test
Figure 204

S 742-051

(2) Use the table that follows to make sure the TARGET NEAR or FAR condition is correct:

SENSOR	TARGET LAMP	
	NEAR	FAR
S10065	X	
S10066	X	
S10077		X
S10078	X	
S10079	X	
S10238		X
S10243		X
S10081		X

S 742-052

(3) Put the last three numbers of the sensor number on the SENSOR CHANNEL SELECT.

S 742-053

(4) Push the TARGET TEST button and make sure the correct target indication shows on the BITE control panel.

NOTE: If the TARGET NEAR or TARGET FAR lamps do not come on, do a check of the TARGET lamp that shows the target condition that is not correct.

E. Put the Airplane Back to Its Initial Condition

S 092-054

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 landing gear doors and close the doors (AMM 32-00-15/201).

S 862-055
(2) Remove electrical power if it is not necessary (AMM 24-22-00/201).

TASK 32-61-03-422-069

6. Install the Target for the Nose Landing Gear Door Sensor

A. General
(1) The target installation task does not have a corresponding removal task. The target installation procedure is to repair a target that has broken free from the nose gear door.
(2) This procedure requires using an adhesive to bond the target to the nose door panel. Temperature control of the work area is better as this produces a faster curing time for the adhesive (see table 1, figure 205).

B. References
(1) AMM 32-00-15/201, Door Locks

C. Equipment
(1) Clamp, spring loaded (commercially availiable)
(2) Heat Lamp, 300 watts (commercially available)

D. Consumable Materials
(1) A00870 Adhesive, BMS 5-105 type II class 2
(2) A00283 Adhesive, BMS 5-92 type II class 2 (optional).
(3) B00786 Cleaner-Alcohol, Denatured Ethyl

E. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
202	5	Target	32-61-03	01	295
	5	Target	32-61-03	01	290

F. Access
(1) Location Zones
115 NLG Wheel Well, Left
116 NLG Wheel Well, Right
710 Nose Landing Gear and Doors

G. Prepare for the target installation which bonds the target to the nose door assembly.

S 862-078
(1) Disarm the open doors by installing the door locks (AMM 32-00-15/201).

S 162-070
(2) Clean both surfaces and then wipe clean with solvent.

S 342-071
(3) Prepare the adhesive (Fig. 205).

NOTE: You can choose the fast setup BMS 5-105 which will setup in as little as 2 hours with heat lamps, or rgw BMS 5-92 which will set in about 24 hours depending on ambient temperature. See Fig. 205 for a temperature to time table for BMS 5-105.

S 342-072
(4) Bond the target to the door (Fig. 202).

S 492-073
(5) Hold the target in place with a spring loaded clamp or other method.

S 342-074
(6) Make sure the adhesive is not pushed from the joint.

S 822-075
(7) Do this adjustment - Adjustment Proximity Sensors for the Nose Landing Gear, Door closed sensors.

S 712-076
(8) Do this test: Test of the proximity sensor for the nose landing gear for the door closed sensors.

S 942-079
(9) Put the airplane back to its usual condition.

TEMPERATURE ±10°F	CURE TIME IN HOURS	POT LIFE IN MINUTES
40	---	45
70	6	12
120	4	
160	2	

TABLE 1

BONDING NOTES:
1. BOND LINE THICKNESS MAXIMUM 0.020 INCH
2. USE LIGHT POSITIVE CLAMPING PRESSURE
3. USE A HEAT LAMP AND ENVIRONMENTALLY CONTROLLED WORK AREA TO ACHIEVE THE TEMPERATURES LISTED IN TABLE 1.

Nose Gear Door Target Adhesive Bonding Time
Figure 205