CHAPTER

32

LANDING GEAR

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LANDING GEAR - DESCRIPTION AND OPERATION

1. General (Ref. to Fig. 1)

   A. The landing gear is a retractable tricycle gear with nose wheel steering. The system is hydraulically operated and electrically controlled.

2. Main Gear and Doors (Refer to 32-10-00)

   A. The main gear is a single axle unit which attaches to mounting plates in the airplane fuselage. The gear has two hinge points connected by a shock absorber. The shock absorber absorbs vertical loads through the movement of a horizontal hinge. The second hinge (together with the main gear attachment pin) allows movement in the retraction plane.

   B. A kinematic linkage attached to the drag-stay rotation-pin of the gear retraction linkage operates the doors during retraction and extension.

   C. For unpaved runway operations a suitable gravel protection kit can be installed on the nose gear.

3. Nose Gear and Doors (Refer to 32-20-00)

   A. The nose landing gear is a twin axle unit which attaches to castings in the nose gear well. The unit is an oleo-pneumatic shock absorber with anti-rotation torque-links. The extension and retraction system retracts the gear forward around the attachment points. Attached to the leg is an electrohydraulic steering system linkage.

   B. One of the gear doors is attached to the leg. The L and R gear doors are attached to a cam and roller linkage on the gear attachment hinge.

4. Extension and Retraction (Refer to 32-30-00)

   A. The extension and retraction system has a hydraulic actuator and drag stay linkage for each gear. The selector on the landing gear control panel operates a selector valve on the hydraulic package (Refer to 29-10-00) to control the normal extension/retraction. A hand pump emergency extension system extends the gear if the main hydraulic system fails.

5. Wheels and Brakes (Refer to 32-40-00)

   A. The hydraulic normal and emergency braking system is operated by toe operated brake valves and a parking brake valve. The valves operate as hydraulic metering valves during normal operation and as master brake cylinders when hydraulic power is not available. Wear gages on the brake units show when the brake units are worn beyond limits.

   B. The wheel assemblies are split hub wheels with tubeless tires. The mainwheels are single units and the nosewheel is a twin unit.

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6. Steering (Refer to 32-50-00)

A. A control potentiometer operated by rudder pedal movement controls a hydraulic servo valve in a manifold on the nose gear. The manifold controls the movement of a steering actuator and linkage. An electrical feed back mechanism completes the closed loop control system.

B. Valves in the manifold control nosewheel movement when the steering is off.

7. Position and Warning (Refer to 32-60-00)

A. Switches on the landing gear control the function of the landing gear control system and also control certain functions in other systems.

B. Landing gear position lights on the switch panel in the flight compartment give an indication of landing gear position.

C. A 326 Hz GEAR WARNING acoustic tone will be generated when:

- the power on one or both of the engines is reduced below a setting sufficient to maintain flight while the landing gear is not locked down. The GEAR WARNING can be silenced by means of the GEAR MUTE switch located on the right power lever
- the flaps are lowered to the DN position and the landing gear is not locked down. The GEAR WARNING cannot be silenced and will continue until either the landing gear is extended or the flaps are retracted to the clean (UP) setting
- the flaps are in MID position, the landing gear is not locked down and the power levers are retarded approximately below the half travel position. The GEAR WARNING cannot be silenced and will continue until either the landing gear is extended or the flaps are retracted to the clean (UP) setting.

The correct operation of the landing gear indicating system can be checked selecting on the SYS TEST panel the LND GR position and pressing the central button: the UNSAFE red and the LOCKED DN green lights should come on while the GEAR WARNING tone should be generated.

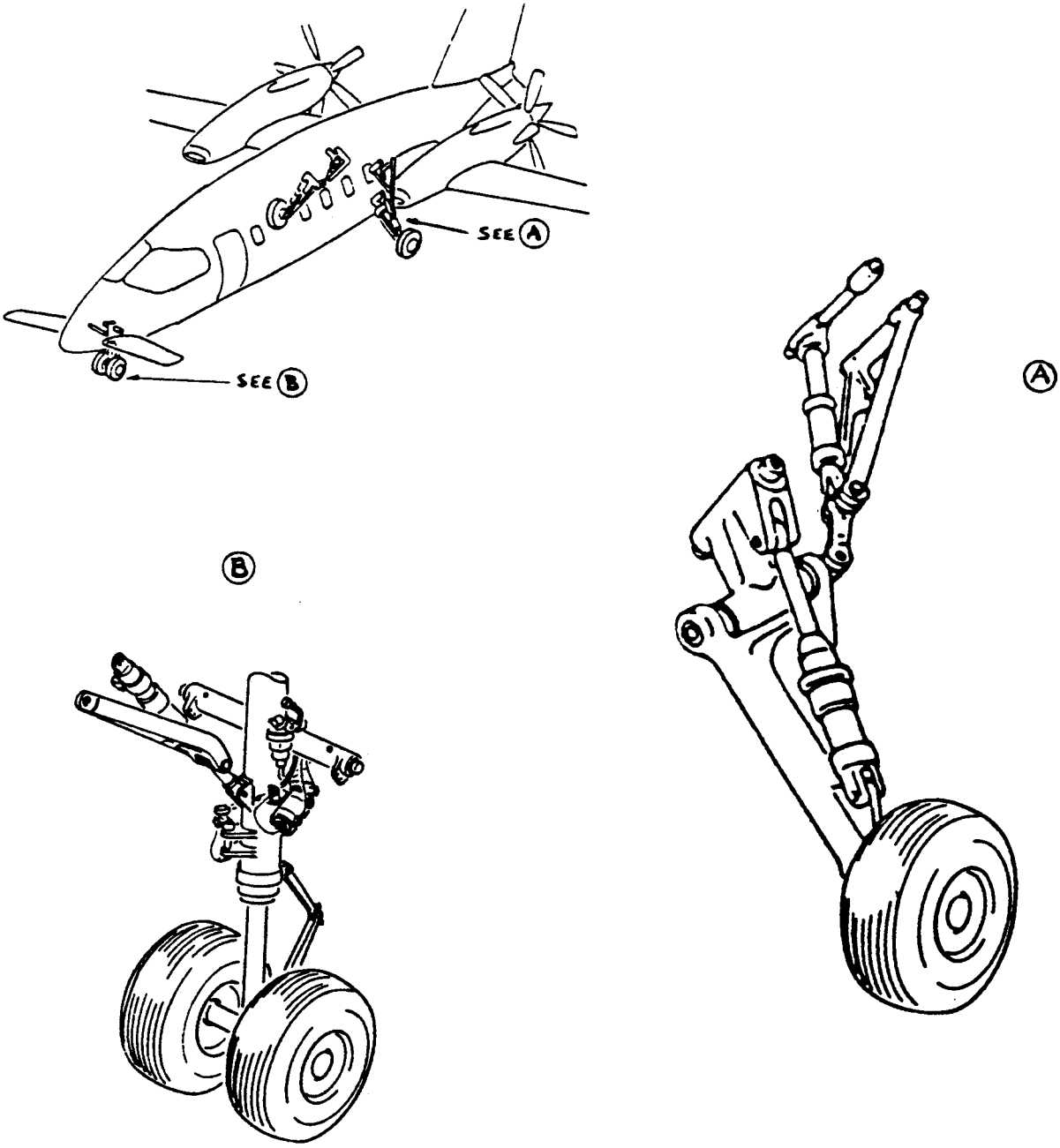

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Fig. 1 - Landing Gear - General

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LANDING GEAR - ADJUSTMENT/TEST

1. General

WARNING: WHEN YOU MAKE AN ADJUSTMENT TO THE LANDING GEAR OR DOORS YOU MUST USE THE HAND PUMP FOR THE INITIAL RETRACTION/EXTENSION. INJURY TO PERSONS AND/OR DAMAGE TO EQUIPMENT CAN OCCUR IF YOU USE THE MAIN HYDRAULIC SYSTEM DURING ADJUSTMENT.

WARNING: BE CAREFUL WHEN YOU OPERATE THE LANDING GEAR. MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE LANDING GEAR. INJURY TO PERSONS AND/OR DAMAGE TO EQUIPMENT CAN OCCUR.

2. Landing Gear - Handpump Operation

A. Materials

Lockwire	04-008
Lockwire	04-008E

B. Referenced Information

Maintenance Manual Chapter 07-10-00
Maintenance Manual Chapter 09-10-00
Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 29-00-00

C. Preparation

(1) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-10-00).
(2) Open, tag and safety this circuit breaker:

Pilot CB panel
HYDR CONT

(3) Remove the RH access panel from the control pedestal.
(4) Cut and remove the lockwire from the service selector valve.
(5) Make sure the external electrical power is available (Refer to 24-00-00).
(6) Depressurize the hydraulic system (Refer to 29-00-00).
(7) Make sure the nose wheel steering disconnect pin is installed (Refer to 09-10-00).

D. Landing Gear - Retract

(1) On the LANDING GEAR panel, set the landing gear selector to UP.
(2) On the left side of the control pedestal, pull (up) the EMERG LDG handle.
(3) Pull (up) the spindle of the service selector valve.

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(4) Operate the handpump until the landing gear is at the position required.

NOTE: The landing gear will stay in a partially retracted position for enough time to allow disconnection/connection of the doors.

(5) Operate the handpump until the landing gear is locked up.

E. Landing Gear - Extend

(1) Push (in) the spindle of the service selector valve.
(2) Make sure the EMERG LDG handle is pulled (up).

NOTE: The landing gear selector on the LANDING GEAR panel can be set to either UP or DN to extend the landing gear using the handpump.

(3) Operate the handpump until the landing gear is locked down (approximately 60 strokes).

F. Completion

(1) Push (in) the service selector valve and safety with lockwire (04-008).
(2) Install the RH access panel onto the control pedestal.
(3) Remove the safety tag and close this circuit breaker:

Pilot CB panel:
HYDR CONT

(4) Set the EMERG LDG handle to the normal (in) position and replace the telltale lockwire (04-008E).
(5) Do a normal retraction/extension of the landing gear (Refer to Para. 7).
(6) Depressurize the hydraulic system (Refer to 29-00-00).
(7) Remove the electrical power (Refer to 24-00-00).
(8) Lower the airplane to the ground and remove the jacks (Refer to 07-10-00).

3. Main Landing Gear - Adjustment (Ref. to Fig. 501)

A. Tools

MLG Drag-Brace Over-Center Travel-Board	80-909180-801

B. Materials

Lockwire	04-008

C. Referenced Information

Maintenance Manual Chapter 07-00-00

D. Procedure

(1) Raise the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(2) Remove the bolt (5) from the retaining nut (10).

(3) Remove the cotter pin (7) from the pin (8).
(4) Install the tool plate (11) with the cut out profile against the drag-brace pivot-bush.
(5) Install the tool bolt (9) through the pin (8) and secure with the tool nut (6).
(6) Install the tool bolt (4) through the retaining nut (10). Tighten the tool bolt (4) carefully and make sure the end pin of the bolt goes through the correct hole in the tool plate (11).

NOTE: The holes in the tool plate are marked LEFT and RIGHT to give the correct alignment of the left and right main landing gear.

(7) If the end pin of the tool bolt does not align in step (6) do the steps that follow:
  (a) Cut and remove the lockwire from the locknut (3).
  (b) Loosen the locknut (3) until the serrations of the locking device (2) are disengaged.
  (c) With a thin wrench on the flats of the actuator ram (1), turn the ram until the end pin of the tool bolt (4) aligns with the correct hole in the tool plate (11).

NOTE: This adjustment sets the overcenter dimension of the drag-brace linkage.

  (d) Tighten the locknut (3) and safety with lockwire.
  (e) Install the tool bolt (4). Make sure the end pin goes through the correct hole in the tool plate (11).
(8) Remove the tool bolts (4, 9) and tool plate (11).
(9) Install the bolt (5) to the retaining nut (10).
(10) Install a new cotter pin (7) through the pin (8).
(11) Do a normal extension/retraction test of the landing gear (Refer to Para. 7).
(12) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

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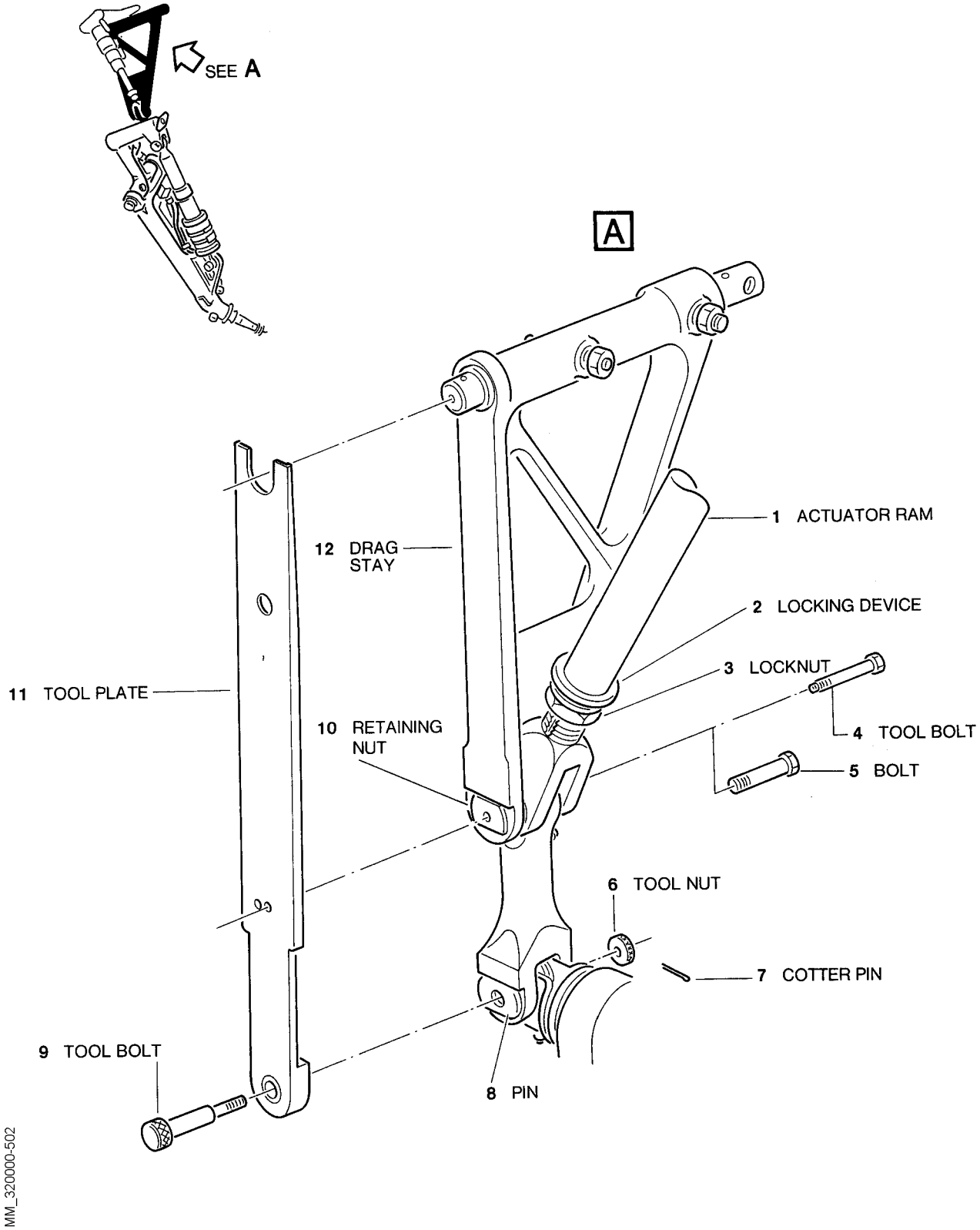

Fig. 501 - Main Landing Gear - Adjustment

4. Main Landing Gear Doors - Adjustment (Ref. to Fig. 502)

A. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 53-60-00
Maintenance Manual Chapter 52-82-00

B. Adjust the MLG rear door

(1) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(2) Remove the access panel 251 A (252 A) (Refer to 53-60-00).
(3) Open, tag and safety the HYD CONT circuit breaker on the pilot circuit breaker panel.
(4) Disconnect the MLG doors (Refer to 52-82-00).
(5) Loosen the locknut (5) and screw out the rod end (6) until it is at its maximum length but is still in safety.
(6) Connect the MLG doors (Refer to 52-82-00).
(7) With the landing gear extended measure the distance between the door and the airplane skin front and rear.
(8) Retract the landing gear and measure the distances at the same places as in step (7) above.
(9) If the distance measured in the up position are different to the distance in the down position do the steps that follow:
  (a) Loosen the locknuts (3) and (9) and adjust the adjuster bolts (2) and (8) until the distance measured is the same in the down and the up selection (Example - If the measurement with the LG down is 4 mm and with LG up 10 mm. Adjust the drive lever (7) until there is a distance of 7 mm in both positions).
  (b) Tighten the locknuts (3) and (9).
(10) Adjust the rod by ½ turn and make an operation of the gear. Repeat this adjustment until the door is completely closed in the up and the down selections.
(11) Do a functional test of the MLG rear door mechanism (Refer to 52-82-00).
(12) Tighten the locknut (5) and safety it with lockwire.
(13) Remove the safety tag and close the HYD CONT circuit breaker.
(14) Make a check of the door operation using hydraulic power.
(15) Install the access panel 251 A (252 A) (Refer to 53-60-00).
(16) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

C. Adjust the MLG forward door

(1) Disconnect the rod end (10) from the door.
(2) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(3) Loosen the locknut (11) and screw out the rod end (10) until the rod (12) is the maximum length possible but still in safety.
(4) Adjust the rod end (10) in ½ turn increments on consecutive retractions until the door is fully closed with the LG retracted.
(5) Tighten the locknut (11) and safety it with lockwire.
(6) Connect the door (Refer to 52-82-00).

Do a normal extension/retraction test and check the door operation.

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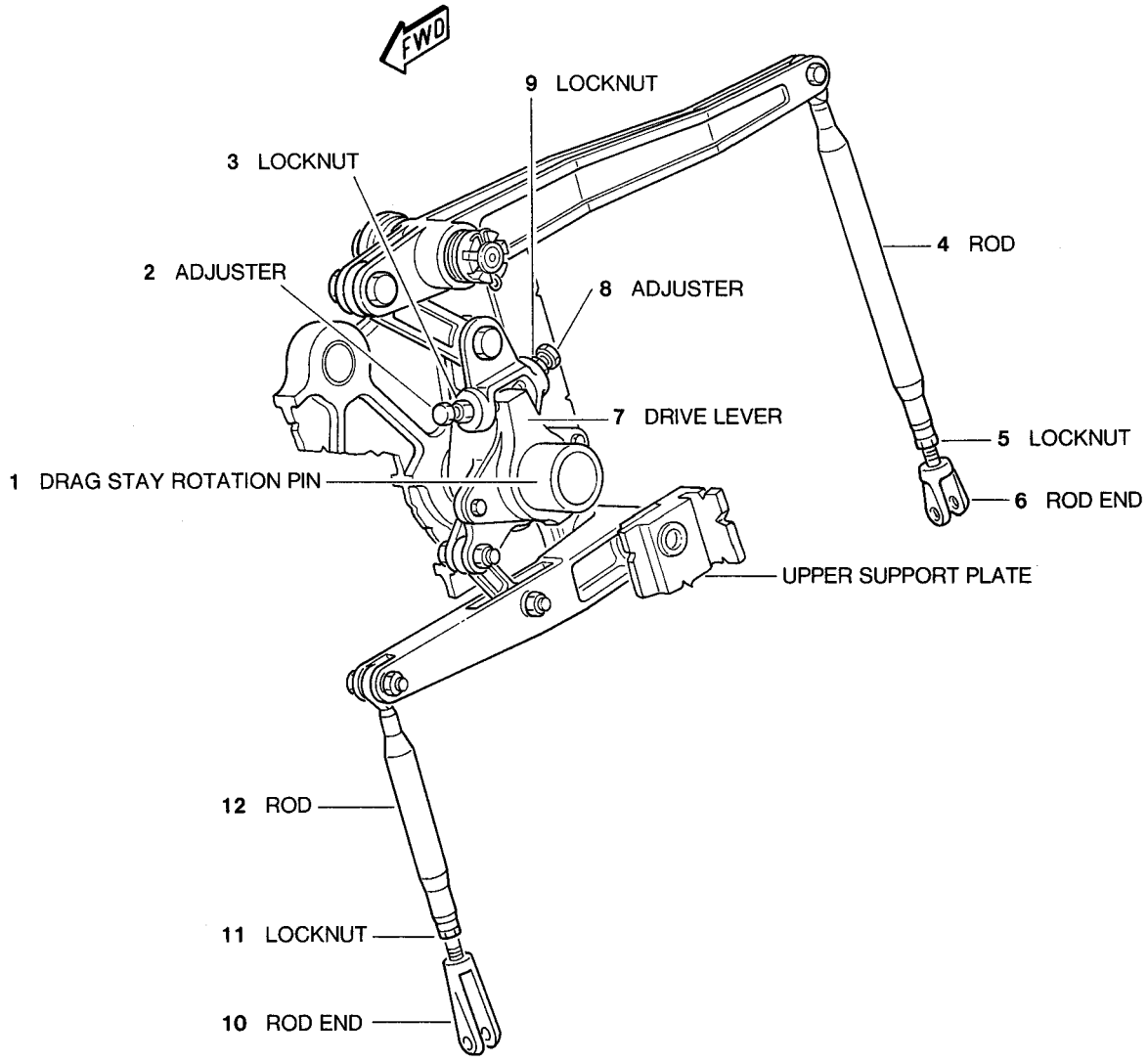

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Fig. 502 - Main Landing Gear Doors - Adjustment

5. Nose Landing Gear - Adjustment (Ref. to Fig. 503)

A. Tools

Inclinometer	Not Specified
Travel Board	Piaggio - P72399300

B. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 08-20-00
Maintenance Manual Chapter 52-81-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:

HYD CONT
LDG GEAR CONT
NOSE STRG.

(2) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(3) Level the airplane (Refer to 08-20-00).
(4) Disconnect the NLG doors (Refer to 52-81-00) and secure them in the full open position.
(5) Safety the door operating rods with temporary ties, or remove them to stop the fouling during retraction of the NLG.
(6) Remove the drag stay, upper link (3) and lower link (4) (Refer to 32-30-00 Para. 4.).
(7) Install the travel board as shown on Fig. 503 and connect it to points "A" and "C".
(8) With the actuator extended and locked connect the eye end (1) of the actuator (8) with the point "B" of the travel board. If necessary adjust the eye end as required and lock wire it.
(9) Put the inclinometer on the sliding part of the NLG leg and measure the angle of the NLG in relation to the vertical (angle T). The angle must be between 8.6 and 9.5 degrees forward of the vertical reference.
(10) Support and hold in position the NLG.
(11) Remove pins at points A, B, C and remove the travel board.
(12) Install the drag stay (upper link) (3) and connect it at point "A".
(13) Install the drag stay (lower link) (4) connecting it with the drag stay (upper link) and the eye end of the actuator at the point "B".
(14) Adjust (if necessary) the eye end (5) of the drag stay (lower link) (4) in such a way to connect it to the point "C" of the NLG leg.
(15) Connect the NLG doors (Refer to 52-81-00).
(16) Perform a landing gear retraction and extension using hand pump as per Para. 2 of this section.
(17) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

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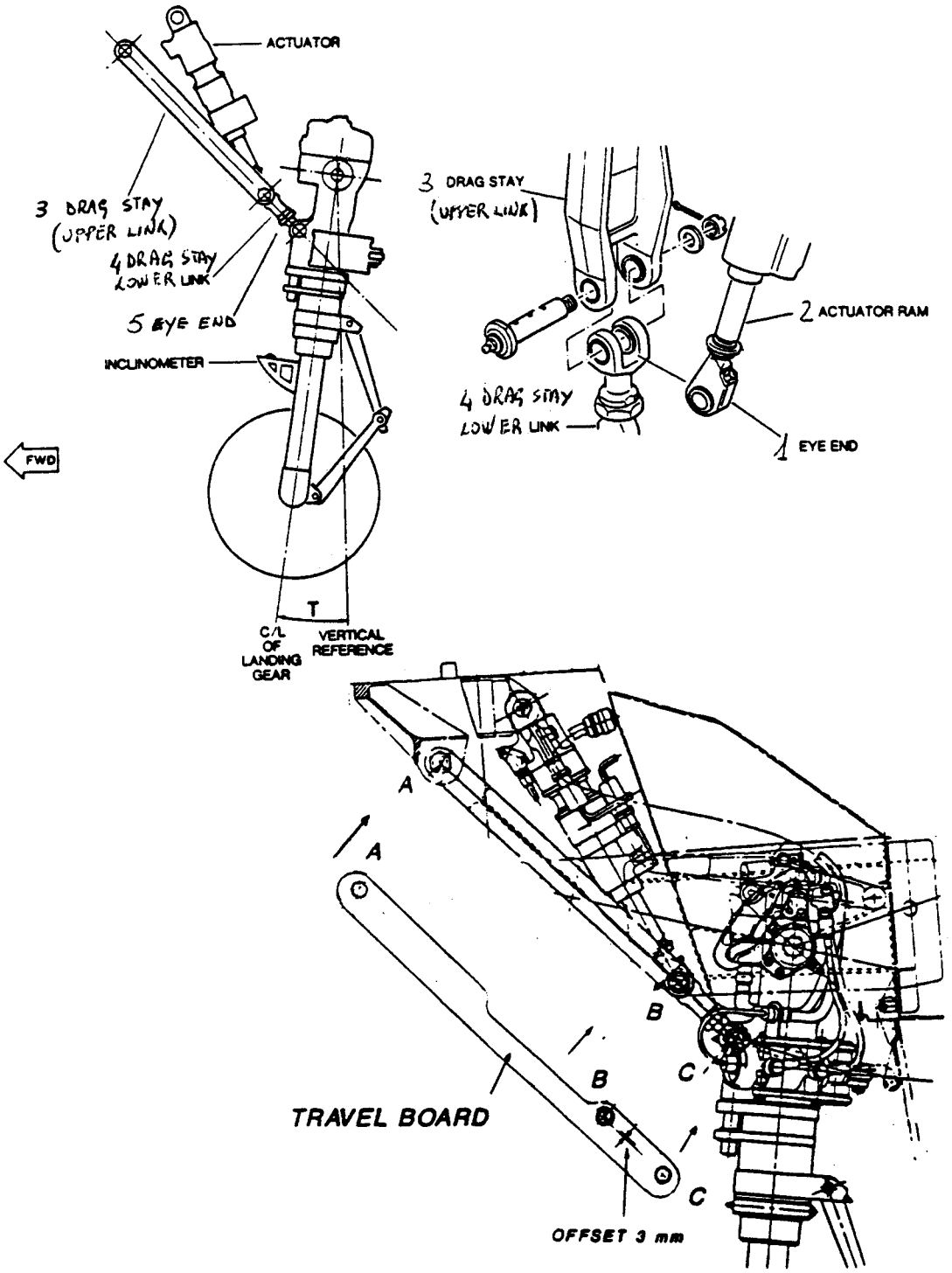

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Fig. 503 - Nose Landing Gear - Adjustment

(18) Remove the safety tags and close the following circuit breakers:

Pilot CB panel:

HYD CONT
LDG GEAR CONT
NOSE STRG.

6. Nose Landing Gear Doors - Adjustment (Ref. to Fig. 504)

A. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 52-81-00

B. Procedure

(1) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(2) Disconnect the NLG doors (Refer to 52-81-00).
(3) Loosen the two locknuts (3) on the LH/RH door operating rods (2).
(4) Loosen the locknut (6) on the rear door operating rod (7).
(5) Turn the rod (7) until the rod end (5) and the rod (7) are at the maximum length, but still in safety.
(6) Screw out the rod ends (4) until the rods (2) are at the maximum length.
(7) Connect the rods to the doors (Refer to 52-81-00).
(8) Use the handpump to retract the gear fully.
(9) Measure the gap between the doors and the fuselage profile (Measurement A).
(10) Extend the gear fully and measure the gap between the doors and the fuselage profile. This measurement must be the same as in step (9) above (Measurement A).

NOTE: If the two measurements in steps (9) and (10) above are not the same make a small adjustment to the nose landing gear (Refer to 3.C.(6) above).

(11) Disconnect the doors and screw each rod end in (to shorten) by one complete turn (360 degrees). Then connect the doors.
(12) Retract the gear.
(13) Measure the gap between the doors and the fuselage profile (Measurement B).

NOTE: Calculate the amount of movement in the doors for one complete turn of the rod ends. (Measurement A minus measurement B).

(14) Partially extend the landing gear and disconnect the doors.
(15) Use the calculation above to screw in the rod ends until the doors will be approximately one complete turn of the rod ends from the fully closed position.
(16) Connect the rods.
(17) Retract the gear fully and measure the remaining gaps.
(18) Extend the gear, adjust the rods one half turn and retract again.

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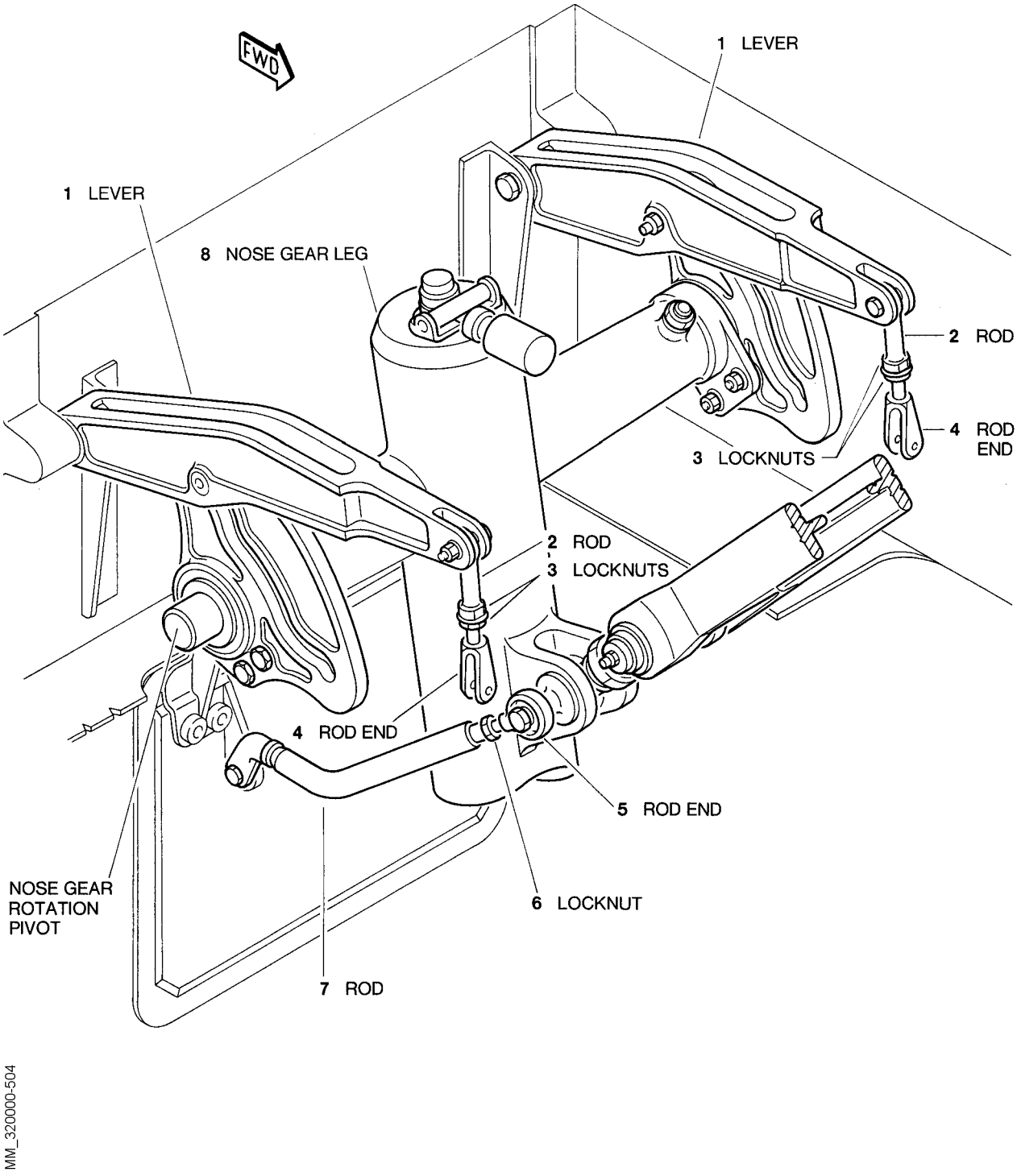

Fig. 504 - Nose Landing Gear Doors - Adjustment

(19) Measure the gaps and do steps (17) and (18) above again until the door profiles align with the fuselage profile.

(20) Screw in the rod ends one additional half turn and safety them with the locknuts (3) and (6).

(21) Connect the NLG doors (Refer to 52-81-00).

(22) Do a normal retraction/extension test (Refer to Para 7 below) and make a check of the aerodynamic smoothness of the doors.

7. Landing Gear - Test

NOTE: If the result is incorrect refer to trouble shooting (Page block 101) to identify the fault.

A. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 29-00-00

B. Procedure

(1) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).

(2) Make sure electrical power is available (Refer to 24-00-00).

(3) Pressurize the hydraulic system (Refer to 29-00-00).

(4) Do a normal extension retraction test:

	Action	Result
(a)	On the Pilot switch panel in the flight compartment set the LANDING GEAR selector to UP	The green LOCKED ON annunciator on the LANDING GEAR panel goes off. The red gear UNSAFE annunciators come on. The landing gear retracts. The UNSAFE lights go off after 5 to 7 seconds. The aural warning comes on. The hydraulic pressure goes to zero.
(b)	Move the engine power levers to MAX PWR.	The aural warning goes off.
(c)	Move the engine power levers to IDLE.	The aural warning comes on.
(d)	Operate the gear warning silence switch on the power levers.	The aural warning is muted.

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	Action	Result
(e)	Set the LANDING GEAR selector to DN.	The red gear UNSAFE annunciators comes ON. The gear extends. After 5 to 7 seconds the gear UNSAFE lights go off and the LOCKED ON lights come on. The aural warning goes off.

(5) Do the emergency gear extension test:

	Action	Result
(a)	Retract the landing gear.	
(b)	Depressurize the hydraulic system (Refer to 29-00-00).	
(c)	Set the LANDING GEAR selector to DN.	The gear remains locked up (No hydraulic pressure).
(d)	Pull the emergency landing gear selector on the center pedestal.	
(e)	Operate the hand pump.	You will feel a small resistance until the up locks operate. The gear UNSAFE lights come on. After approximately 60 strokes of the pump you will feel a small increase in resistance as the down locks operate. The UNSAFE lights go off and the LOCKED ON lights come on.

(6) Set the emergency landing gear selector to normal (pushed in) and replace the tell tale indicator wire.
(7) Do a normal retraction and extension to make sure the system is reset.
(8) Depressurize the hydraulic system (Refer to 29-00-00).
(9) Remove the electrical power (Refer to 24-00-00).
(10) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

8. Main and Nose Landing Gear - Play Check(Ref. to Fig. 505)

A. Tools

Plumb Line	Not Specified

B. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 08-20-00
Maintenance Manual Chapter 32-41-00
Maintenance Manual Chapter 52-81-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:

HYD CONT
LDG GEAR CONT
NOSE STRG.

NOTE: Following the instructions hereinafter to check le bushings (Leg , Actuator, drag brace) for general condition and security of installation.

NOTE: The procedures for main landing gear left and right side and nose landing gear are identical.

(2) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(3) Level the airplane (Refer to 08-20-00).
(4) Remove the landing gear wheel (Refer to 32-41-00).
(5) Lock the Landing Gear in down position.
(6) Place the Plumb Line to the Wheel Axis middle position.
(7) Connect a dynamometer to the wheel axis and apply a force of 25Kg toward flight direction.
(8) Mark the plumb line position (P1).
(9) Release the applied force.
(10) Apply a force of 25Kg opposite to flight direction.
(11) Mark the plumb line position (P2).
(12) Release the force applied.
(13) Disconnect the dynamometer and the plumb line from the wheel axis.
(14) Make the distance difference between the points P1 and P2.
(15) The value must be no more that 8mm.

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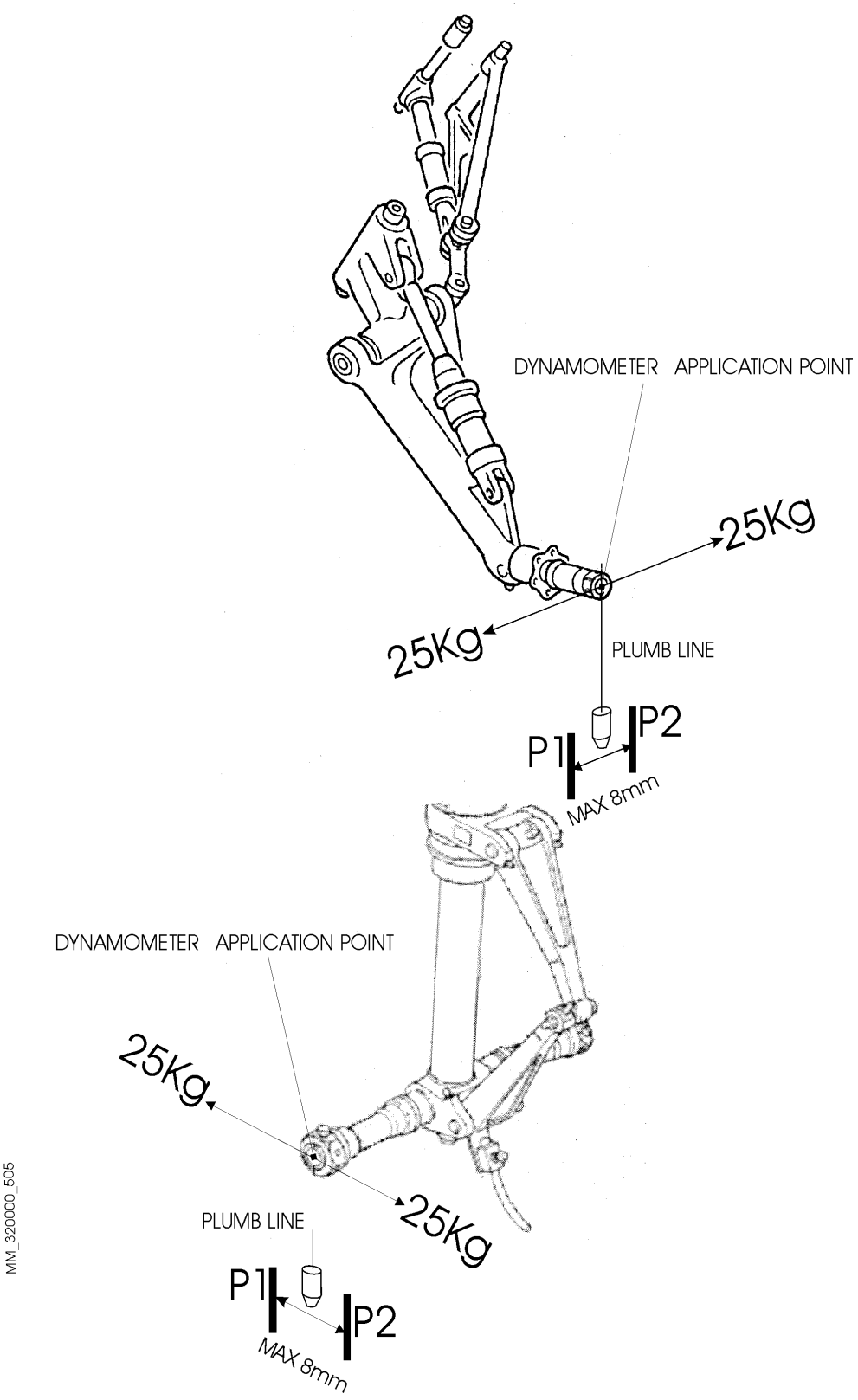

Fig. 505 - Main and Nose Landing Gear - Play Check

9. Landing Gear Limit Switches - Electrical Test and Cleaning

(Ref to Fig. 507)

A. Tools

Hyd. System Servicing Unit	Not Specified
Ground Power Unit (28 VDC)	Not Specified
Text Box	P/N TEM-326000-001
28 VDC Power Supply Device	Not Specified

B. Referenced Information

Maintenance Manual Chapter 07-10-00
Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 29-00-00
Maintenance Manual Chapter 32-00-00
Maintenance Manual Chapter 53-60-00

C. Procedure

WARNING: MAKE SURE THAT THE LDG AREA IS CLEARED DURING ACTUATOR RETRACTION OR EXTENSION OPERATIONS.

(1) Aircraft on the jacks, with the landing gears fully extended, (Refer to 07-10-00).
(2) Pressurize Hydraulic System (Refer to 29-00-00).
(3) Open the inspection panels located on the panel 251A (Refer to 53-60-00) and on the panel 252A (Refer to 53-60-00).

– **On nose Landing Gear Door**

(4) Partially retract the landing gear until the nose landing gear doors are fully open (Refer to 32-00-00).
(5) On both two forward doors, remove the nut (4), bolt (1) and washer (3) attaching the rod (2) to the hinge bracket (8) (Refer to 52-81-00 fig. 201).
(6) Attach temporary ties to safety the rods (2) in a position which will allow extension and retraction of the landing gear (Refer to 52-81-00 fig. 201).
(7) Attach temporary ties to fix the fwd doors in the full open (and blocked) position.
(8) Extend the landing gear (Refer to 32-00-00).

– **Left Main Landing Gear Actuator**

(9) Disconnect the two landing gear actuator limit switch connectors from the receptacles on the airframe (Ref. to Fig. 507 Sheet 1 of 5), gaining access through main landing gear compartment.

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Fig. 506 - Main Landing Gear Limit Switches - Electrical Test and Cleaning (Sheet 1 of 5)

(10) Route the bench test cable and the relevant connectors through the opened panel inspection.

(11) Connect both connectors to the correspondent connectors of the test box.

CAUTION: THE ROUTING OF THE TEST BOX CABLES SHALL NOT INTERFERE WITH MLG ASSY AND MLG ACTUATOR DURING RETRACTION/EXTENSION OPERATIONS. IT IS RECOMMENDED TO LET THE CABLES PASS UPPER THE TOP LANDING GEAR MOUNTING PLATE. (REF. TO FIG. 507 SHEET 2 OF 5)

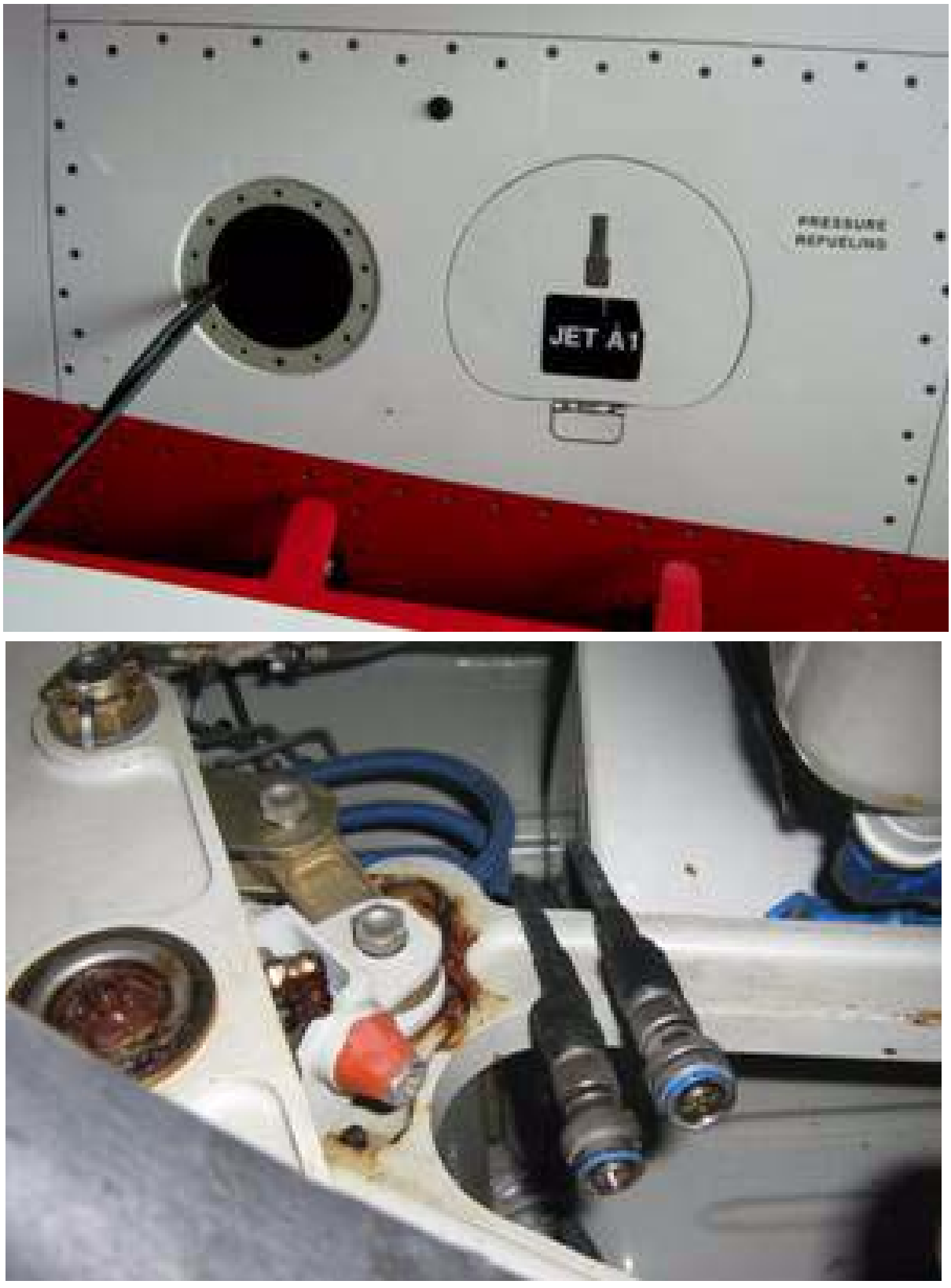

Fig. 507 - Main Landing Gear Limit Switches - Electrical Test and Cleaning (Sheet 2 of 5)

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(12) Make sure the external electrical power is available. (Refer to 24-00-00)
(13) Switch ON hydraulic power.
(14) Connect the 28 VDC electrical supply to the Test Box. Ensure that the lamp D7 is ON.
(15) Select position "EXT" on test box.
(16) Ensure that the lamps D1, D4, D2 and D5 are ON.
(17) Select Gear UP to perform the gear retraction.
- All the lamp should go OFF (except D7) as soon as gear starts to move.
- Then select position "RET" on test box: during the landing gears retraction movement the lamps D1 and D3 have to be ON.
- Lamps D4 and D6 should go ON as soon as the gear is in up-lock position.

(18) Select Gear DOWN to perform the gear extension.
- Lamps D4 and D6 should go OFF as soon as gear starts to move;
- Then select position "EXT" on test box: during the landing gears movement all the lamps have to be OFF (except D7).
- Lamps D1, D4, D2 and D5 should go ON as soon as the gear is in down-lock position.

(19) Repeat the procedure from point 15 to 18 five (5) times.
(20) Disconnect the 28 VDC electrical supply.
(21) Switch OFF hydraulic power.
(22) Disconnect the test box connectors from the receptacles.
(23) Connect the two landing gear limit switch connectors to the receptacles on the airframe. (Ref. to Fig. 507 Sheet 1 of 5)

CAUTION: DISCONNECT THE ELECTRICAL SUPPLY FROM THE TEST BOX EVERY TIME THE ACTIVITY IS COMPLETED TO AVOID THE POSSIBILITY OF OVERHEATING OF THE TEST BOX SURFACES.

– **Right Main Landing Gear Actuator**

(24) Repeat the procedure described at the "Left Main Landing Gear Actuator" on the right side.

– **Nose Landing Gear Actuator**

(25) Disconnect the two NLG actuator limit switch connectors from the receptacles on the airframe. (Ref. to Fig. 507 Sheet 3 of 5).

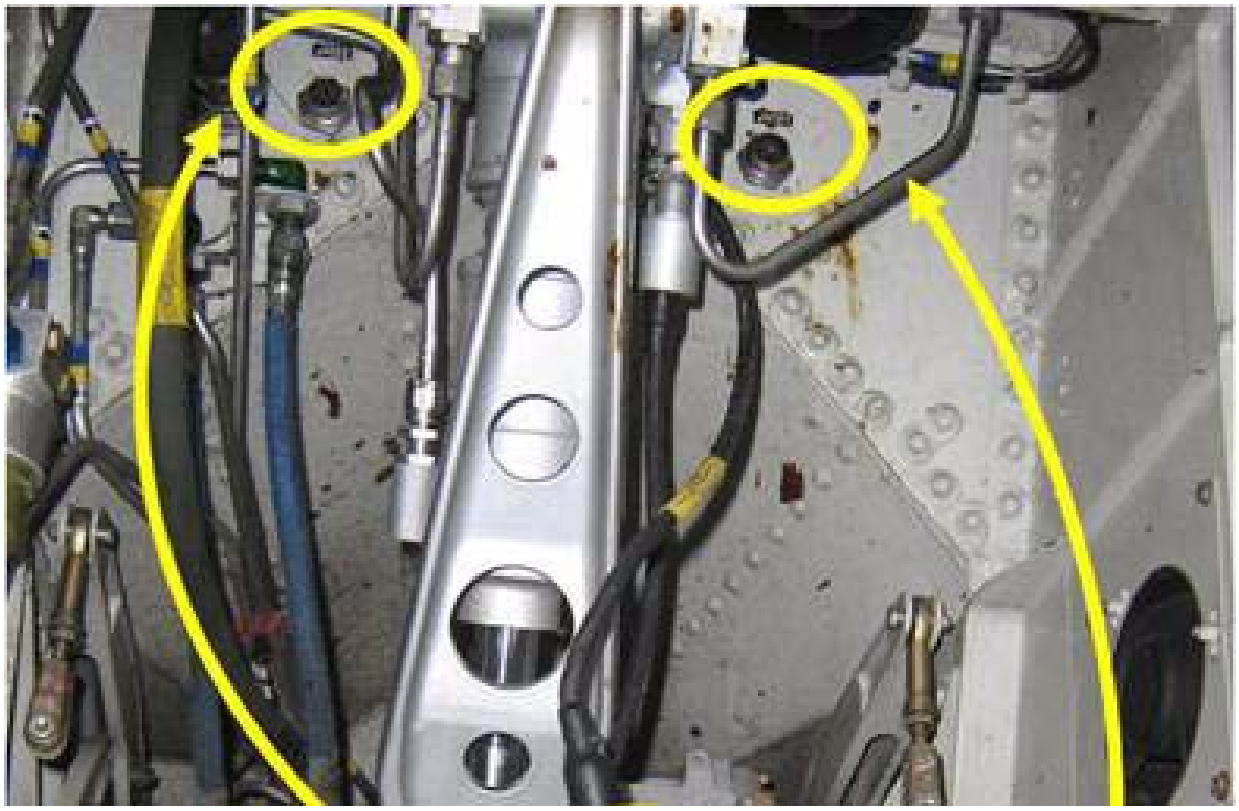

Fig. 507 - Nose Landing Gear Limit Switches - Electrical Test and Cleaning (Sheet 3 of 5)

(26) Connect both connectors to the correspondent connectors of the test box.

CAUTION: THE ROUTING OF THE TEST BOX CABLES SHALL NOT INTERFERE WITH NLG DURING RETRACTION/EXTENSION OPERATIONS. IT IS RECOMMENDED TO TEMPORARY ATTACH THE CABLES TO THE STEERING CUFF AND TO THE TORQUE LINK AS REPRESENTED IN THE FIGURE 507 SHEET 4 OF 5.

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Fig. 507 - Nose Landing Gear Limit Switches - Electrical Test and Cleaning (Sheet 4 of 5)

(27) Repeat the procedure described at the "Left Main Landing Gear Actuator" from point 12 to point 22.

(28) Connect the two NLG actuator limit switch connectors to the receptacles on the airframe. (Ref. to Fig. 507 Sheet 3 of 5).

– **Final Operations**

(29) On cockpit, check that three green lamps of landing gear down locked indication are ON.

– **On nose landing door** (Refer to 52-81-00)

(30) Partially retract the landing gear until the nose landing gear door operating mechanism is in the door open position (Refer to 32-00-00).

(31) Remove the temporary ties from the rods (2) (Refer to 52-81-000 fig. 201).

(32) On both forward doors, install the rod (2) to the hinge bracket (8) with the bolt (1), washer (3) and nut (4) (Refer to 52-81-00 fig. 201).

(33) Retract the landing gears (Refer to 32-00-00).

(34) On cockpit, check that three red lamps of landing gear unsafe position indication are ON during retraction and check that lamps and hydraulic power switch OFF at the end of retraction.

(35) Extend the landing gear (Refer to 32-00-00), checking again the correct sequence of the unsafe and safe position lights on cockpit.

(36) Depressurize the Hydraulic System (Refer to 29-00-00)

(37) Close the inspection panels located on the panel 251A (Refer to 53-60-00) and on the panel 252A (Refer to 53-60-00).

(38) Lower the airplane to the ground and remove the jacks (Refer to 07-10-00).

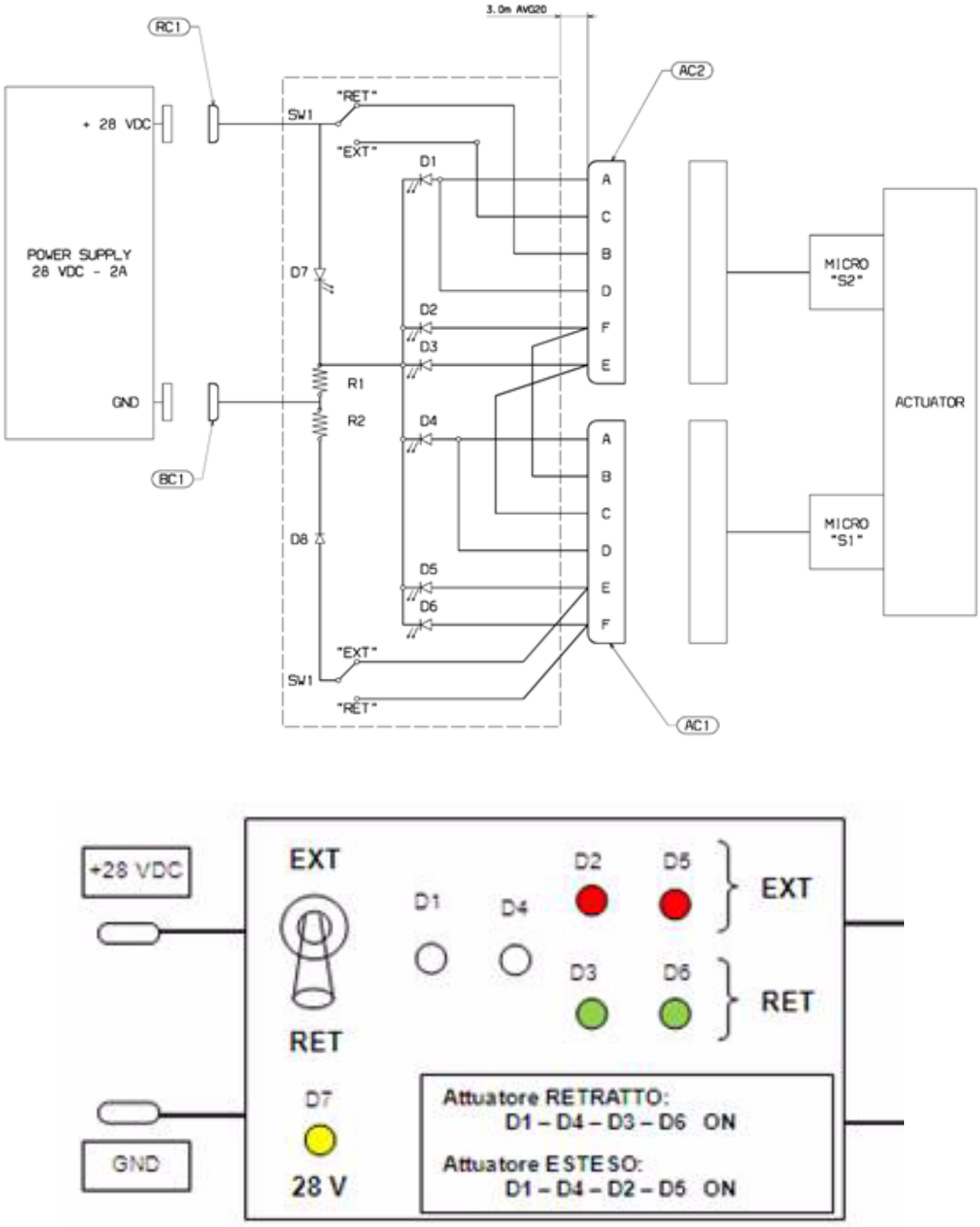

Fig. 507 - Test Box - P/N TEM-326000-001 (Sheet 5 of 5)

MAIN GEAR AND DOOR - DESCRIPTION AND OPERATION

1. General (Ref. to Fig. 1)

NOTE: Two identical systems are installed LH and RH. Only the description of the LH installation is given. Data specific to the RH installation is given between parentheses.

A. The main landing gear (MLG) is a cantilever single-axle unit with an oleo pneumatic shock absorber. It retracts to the rear into the fuselage wheel well.

B. The MLG has these components:

- A wheel lever sub-assembly
- A shock absorber
- A lever hinge fitting
- An electrical harness (Refer to 32-60-00)
- The wheel axle
- The pipes and fittings

The MLG also uses these sub-systems:

- The extension/retraction system (Refer to 32-30-00)
- The position and warning system (Refer to 32-60-00)
- The wheels and brakes system (Refer to 32-40-00)

C. The pintle pin attaches the MLG to two support plates in the fuselage in zone 251 (252) and gives a hinge point for extension and retraction (Refer to 53-00-00).

2. System Description (Ref. to Fig. 1)

A. Wheel lever sub assembly

(1) The wheel lever is attached to the support plates in zones 251 (252) by the lever hinge fitting and a horizontal hinge pin. An end fitting on the hinge pin attaches to the retraction extension linkage.

(2) The wheel lever is a machined casting which has these attachment fittings:

- The top, flanged bearing lugs for attachment to the lever hinge fitting (view B)
- A machined bore for the axle
- An attachment lug for the shock absorber
- A hydraulic pipe bracket and a clamp block.

(3) The assembly transfers vertical loads and acts as a shock absorption hinge.

B. Shock absorber

(1) The shock absorber connects the lug on the wheel lever assembly to an attachment on the lever hinge fitting.

(2) The shock absorber has these main components:

- A cylinder with an attachment fitting
- A piston rod with an attachment fitting
- A nitrogen charging valve

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(3) The shock absorber contains the hydraulic components necessary to control compression and recoil forces. The unit can be filled with nitrogen in service (Refer to 12-00-00) but for oil replenishment it must be removed for servicing in accordance with the component maintenance manual.

C. Lever hinge fitting

(1) The lever hinge fitting connects the wheel lever assembly to the fuselage mounting plates.
(2) The profile of the lever hinge fitting makes a hinge link in two planes. A pintle pin attaches the fitting to the mounting plates and forms the retraction hinge. A hinge pin attaches it to the wheel lever assy and to the linkage of the retraction system. An attachment fitting connects it to the shock absorber piston rod.
(3) The lever hinge fitting gives the landing gear movement in two planes.

D. The axle

(1) The axle is a mounting for the main wheel and brake assemblies.
(2) The axle is a machined casting with lands for the wheel bearings. A flange attaches the wheel brake assembly to the axle. The axle is attached to the bore in the wheel lever by a retaining pin. A threaded end for an axle nut provides an attachment for the wheel.
(3) The axle transmits the loads from the wheels and brakes to the MLG.

E. Hydraulic pipe bracket and clamp block

(1) The bracket and clamp block are on the wheel lever sub-assembly.
(2) The bracket and clamp block give support to the hydraulic pipes and fittings for the wheel brake assembly.

3. System Operation

A. Compression/Recoil

(1) The MLG transmits landing, taxiing and braking loads to the airframe support plates. Vertical loads on the MLG cause the gear to move around the horizontal hinge pin. The shock absorber compresses and the transfer of fluid through the hydraulic parts compresses the nitrogen which absorbs the impact forces.
(2) When the load is removed the compressed nitrogen causes the shock absorber to extend. The hydraulic parts inside the absorber restricts the fluid flow to dampen the recoil.

B. Retraction/Extension

(1) When hydraulic pressure is applied to retract or extend the MLG the movement is transmitted through the horizontal hinge pin. The gear turns around the pintle pin of the lever hinge fitting and retracts or extends. The MLG doors are operated by a linkage attached to the drag stay rotation pin of the extension retraction mechanism.

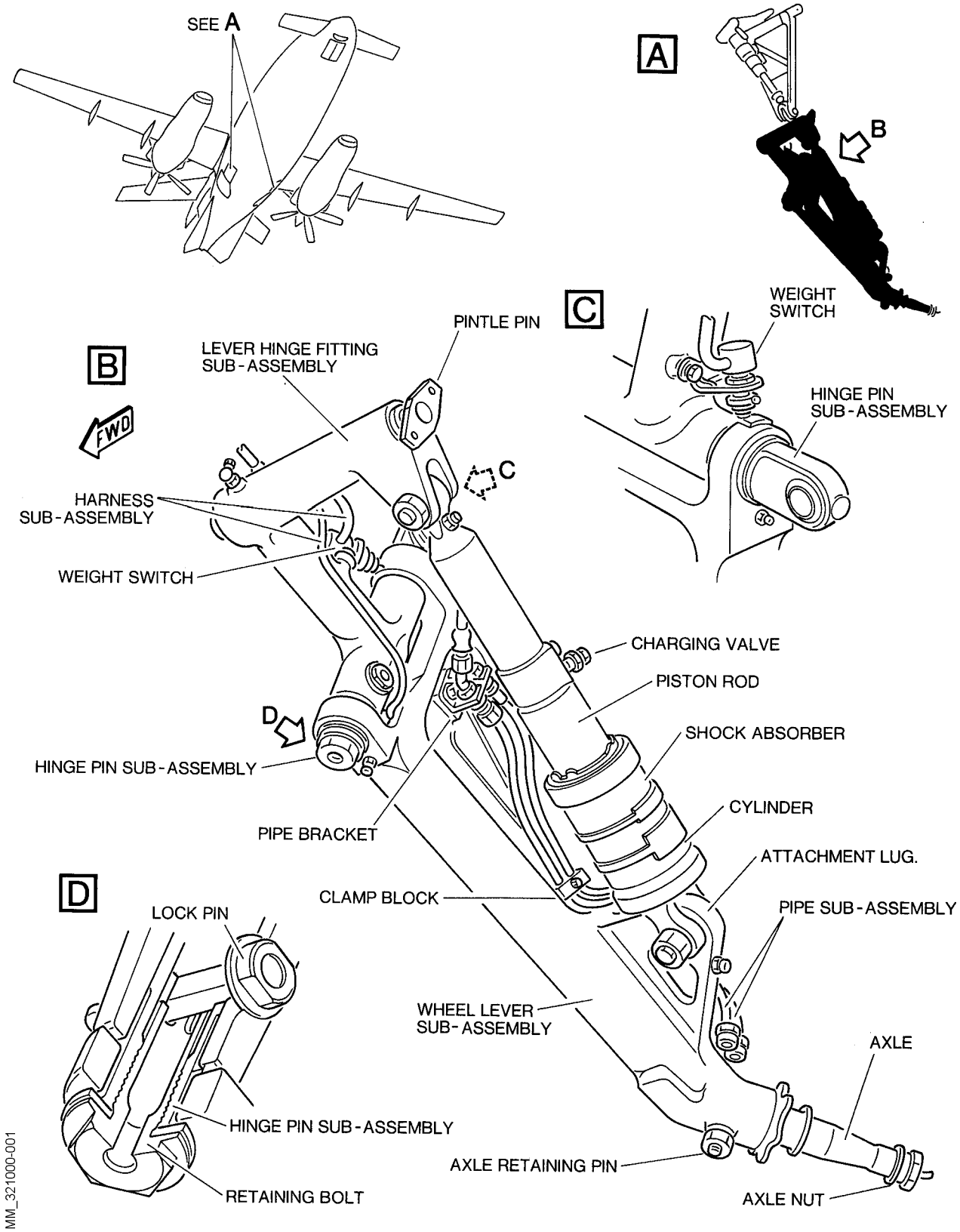

Fig. 1 - Main Gear and Doors - Component Recognition/Identification

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MAIN GEAR - MAINTENANCE PRACTICES

1. General

A. This page block contains the following maintenance practices:

- A removal/installation of the complete landing gear
- A removal/installation of the drag stay
- A removal/installation of the actuator
- A removal/installation of the shock absorber
- A removal/installation of the weight switch.

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIALS. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20.

2. Main Gear - Removal (Ref. to Fig. 201, 202)

A. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 28-12-00
Maintenance Manual Chapter 29-10-00
Maintenance Manual Chapter 32-41-00
Maintenance Manual Chapter 32-11-00
Maintenance Manual Chapter 52-82-00
Maintenance Manual Chapter 53-60-00

B. Procedure

(1) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(2) Remove the mainwheel (Refer to 32-41-00).
(3) Remove the access panel 251A (252A) (Refer to 53-60-00).
(4) Remove the landing gear doors (Refer to 52-82-00).
(5) Remove the auxiliary fuel tank (Refer to 28-12-00).
(6) Remove the hydraulic package (LH gear only) (Refer to 29-10-00).
(7) Remove the hydraulic control unit (LH gear only) (Refer to 29-10-00).
(8) Remove the kinematic linkage of the main landing gear control assembly (Refer to 32-11-00).
(9) Disconnect the following hydraulic line ends:
  - The normal brake line (23)
  - The emergency brake line (24)
  - The landing gear down line (19)
  - The landing gear up line (20)
  - The landing gear emergency line (21)
(10) Remove the structural box over the upper support plate (Refer to 53-60-00).

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(11) Put caps on the line ends and the adaptors.
(12) Disconnect the following electrical connectors from their respective receptacles:
- The weight switch connector (28)
- The landing gear up switch (16)
- The landing gear down switch (17)

(13) Put caps on the connectors and the receptacles.
(14) Remove the split pins (4) and (6).
(15) Remove the nuts (5) and (7) and the washers (3) and (8).
(16) Remove the bolts (1).
(17) Remove the lockwire (33) and the two bolts (26) and (27).
(18) Remove the nut (15) and the washer (14).

WARNING: BE CAREFUL WHEN YOU MOVE THE COMPONENT. THIS COMPONENT IS HEAVY. INCORRECT MOVEMENT CAN CAUSE INJURY TO PERSONS AND/OR DAMAGE TO EQUIPMENT.

(19) Give support to the landing gear to stop movement to the rear.
(20) Remove the bolt (15), the pin (16), sleeves (17) and (27) and the nut (26) (Refer to Fig. 202).
(21) Remove the pin (2) from the drag stay (9) and the upper and lower plate assemblies (29) and (30).
(22) Partially remove the bolt (12) and use it to pull the rotation pin (13) into the housing of the retraction cylinder.
(23) Lift the actuator until the trunnion sleeve is clear of the bottom mounting plate.
(24) Remove the actuator.
(25) Remove the pintle pin (25) from the landing gear (22) and the upper and lower plates (29) and (30).
(26) Lift the landing gear from the lower plate and remove it from between the two plates.

3. Main Gear - Installation (Ref. to Fig. 201, 202)

A. Materials

Lint free cloth	Not specified
Solvent - Trichloroethane	0-T-620
Grease	MIL-G-23287A
Lockwire	04-008

B. Fixtures, Test and Support Equipment

Source of Dry compressed air

C. Tools

Torque adapter	460006862
Torque wrench 88.50 - 110.61 lbf.in (10 - 12.5 Nm)	

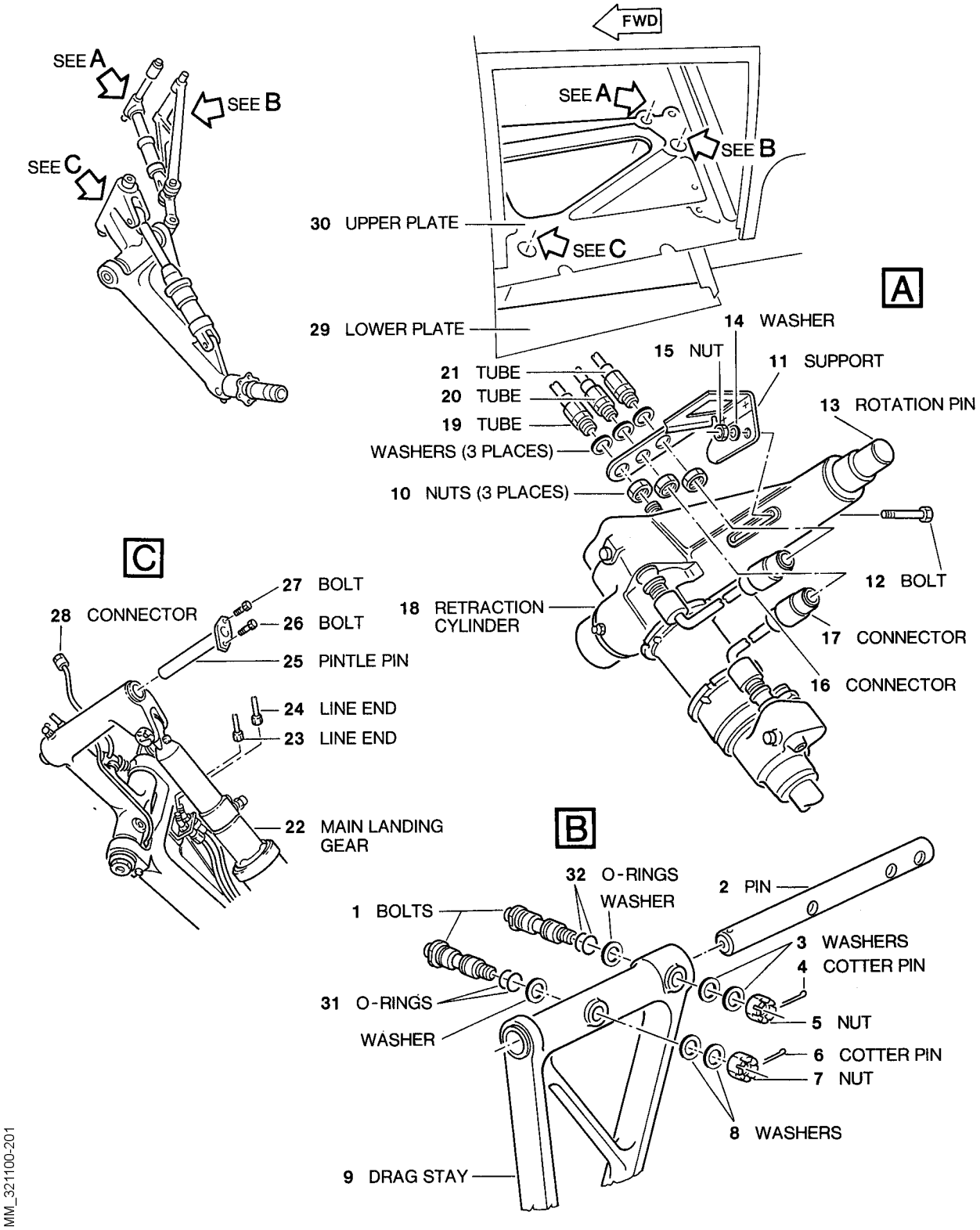

Fig. 201 - Main Gear - Removal/Installation

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D. Expendable Parts

Item	31. O-ring	MS28775-012
	32. O-ring	MS28775-014

E. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 12-00-00
Maintenance Manual Chapter 29-10-00
Maintenance Manual Chapter 32-00-00
Maintenance Manual Chapter 32-41-00
Maintenance Manual Chapter 32-11-00
Maintenance Manual Chapter 52-82-00
Maintenance Manual Chapter 53-60-00

F. Procedure

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE SAFETY PRECAUTIONS GIVEN IN CHAPTER 20.

(1) Clean the landing gear with solvent (0-T-620) and a lint-free cloth.
(2) Clean the main landing gear mounting plates with solvent (0-T-620) and a lint-free cloth.

WARNING: DO NOT POINT A COMPRESSED GAS OUTLET AT YOURSELF OR OTHER PERSONS. COMPRESSED GAS CAN CAUSE INJURY TO PERSONS.

(3) Use a clean, dry air source to dry the landing gear and the mounting plates.
(4) Examine the landing gear for obvious damage, corrosion or damage to the surface finish. Repair or replace as necessary.

WARNING: BE CAREFUL WHEN YOU MOVE THE COMPONENT. THIS COMPONENT IS HEAVY. INCORRECT MOVEMENT CAN CAUSE INJURY TO PERSONS AND/OR DAMAGE TO EQUIPMENT.

(5) Apply a coat of grease (MIL-G-23287A) to the pintle pin (25) and the drag stay pin (2) and the trunnion of the retraction cylinder.

NOTE: Make sure that the lower link (25) of the drag stay is installed on the landing gear hinge pin (Refer to Fig. 202).

(6) Lift the landing gear in position between the mounting plates, install the pintle pin (25) and align the lock bolt holes.
(7) Install and tighten the two bolts (26) and (27). Safety with lockwire (33).
(8) If necessary, install the support (11) over the hydraulic adaptors onto the retraction cylinder.
(9) Put the actuator in position between the mounting plates and engage the trunnion in the bottom plate.
(10) Use the bolt (12) to push out the rotation pin (13) into the bush in the upper plate (30) and align the bolt hole.

(11) Install the bolt (12) the washer (14) and the nut (15). Tighten the nut.
(12) Install the drag stay (9) between the mounting plates.
(13) Install the drag stay pin and align the grease-adaptor bolt holes.
(14) Install new O-rings (31) and (32) to the bolts (1) and install the bolts.
(15) Install the washer(s) (3) and (8) onto the bolts (1) and install the nuts (5) and (7).
(16) Use the torque adapter (Tool No. 460006862) to hold the bolts (1) and tighten the nuts to a torque of 88.50 - 110.61 lbf in (10 - 12.5 Nm).

NOTE: Use washers (3) and (8) up to a maximum of 3 each to align the split pin hole.

(17) Install new split pins (4) and (6).
(18) Align the fork end of the actuator, the end of the drag stay and the lower link and install the sleeves (17) and (27) and the pin (16) (Ref. Fig. 202).
(19) Install and tighten the bolt (15) and the retaining nut (26) (Ref. Fig. 202).
(20) Make a check of the main landing gear adjustment (Refer to 32-00-00 page block 501).
(21) Remove all caps from the line ends, adapters and electrical connectors.
(22) Connect and tighten the following line ends to their respective union and adapters.
(23) Connect and tighten the following hydraulic lines:
- The normal brake line (23)
- The emergency brake line (24)
- The landing gear down line (19)
- The landing gear up line (20)
- The landing gear emergency line (21).

(24) Connect the following electrical connectors:
- The weight switch connector (28)
- The landing gear up switch (16)
- The landing gear down switch (17).

(25) Install the kinematic linkage of the main landing gear control assembly (Refer to 32-12-00).
(26) Lubricate the landing gear (Refer to 12-00-00).
(27) Install the hydraulic package (Refer to 29-10-00) (LH gear only).
(28) Install the hydraulic control unit (Refer to 29-10-00) (LH gear only).
(29) Install the auxiliary fuel tank (Refer to 28-12-00).
(30) Install the mainwheel (Refer to 32-41-00).
(31) Install the main landing gear doors (Refer to 52-82-00).
(32) Do an adjustment/test of the landing gear (Refer to [1]).
(33) Install the access panel 251A (252A).
(34) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).
(35) Make a check of the oleo hydraulic and nitrogen levels (Refer to 12-00-00).
(36) Make a check of the tyre pressure (Refer to 12-00-00).

1.

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4. Drag Stay - Removal (Ref. to Fig. 202)

A. Tools

Torque adapter	460006862

B. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 28-12-00
Maintenance Manual Chapter 32-11-00
Maintenance Manual Chapter 53-60-00

C. Procedure

(1) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(2) Remove the access panel 251A (252A) (Refer to 53-60-00).
(3) Remove the auxiliary fuel tank (Refer to 28-12-00).
(4) Remove the hydraulic package (LH gear only) (Refer to 29-10-00).
(5) Remove the hydraulic control unit (LH gear only) (Refer to 29-10-00).
(6) Remove the kinematic linkage of the main landing gear door control assembly (Refer to 32-11-00).
(7) Remove and discard the split pin (19) and the nut (20), the washer (21) and the sleeve (22).
(8) Give support to the main gear to stop rearward movement and remove the pin (24) from the main gear hinge pin (23) and the link (25).
(9) Remove the bolt (15) and remove the retaining nut (26) and the sleeve (27).
(10) Give support to the actuation cylinder and the drag stay and link.
(11) Remove the pin (16) and the sleeve (17) and remove the drag stay (14) and the link (25).
(12) Remove the split pins (9) and (11).
(13) Remove the nuts (10) and (12) and the washers (8) and (13).
(14) Remove the bolts (2) and (4) and the washers (3) and (6).
(15) Support the drag stay and remove the pin (7) from the landing gear support plates and the drag stay and remove the drag stay.

5. Drag Stay - Installation (Ref. to Fig. 202)

A. Tools

Torque adapter	460006862
Torque wrench 88.50 - 110.61 lbf.in (10.0 - 12.5 Nm)	
Torque wrench 15.05 - 24.77 lbf.in (1.7 - 2.8 Nm)	
Torque wrench 40 - 80 lbf ft (54.2 - 108.4 Nm)	
Torque wrench 20.0 - 21.40 lbf ft (27.1 - 29 Nm)	

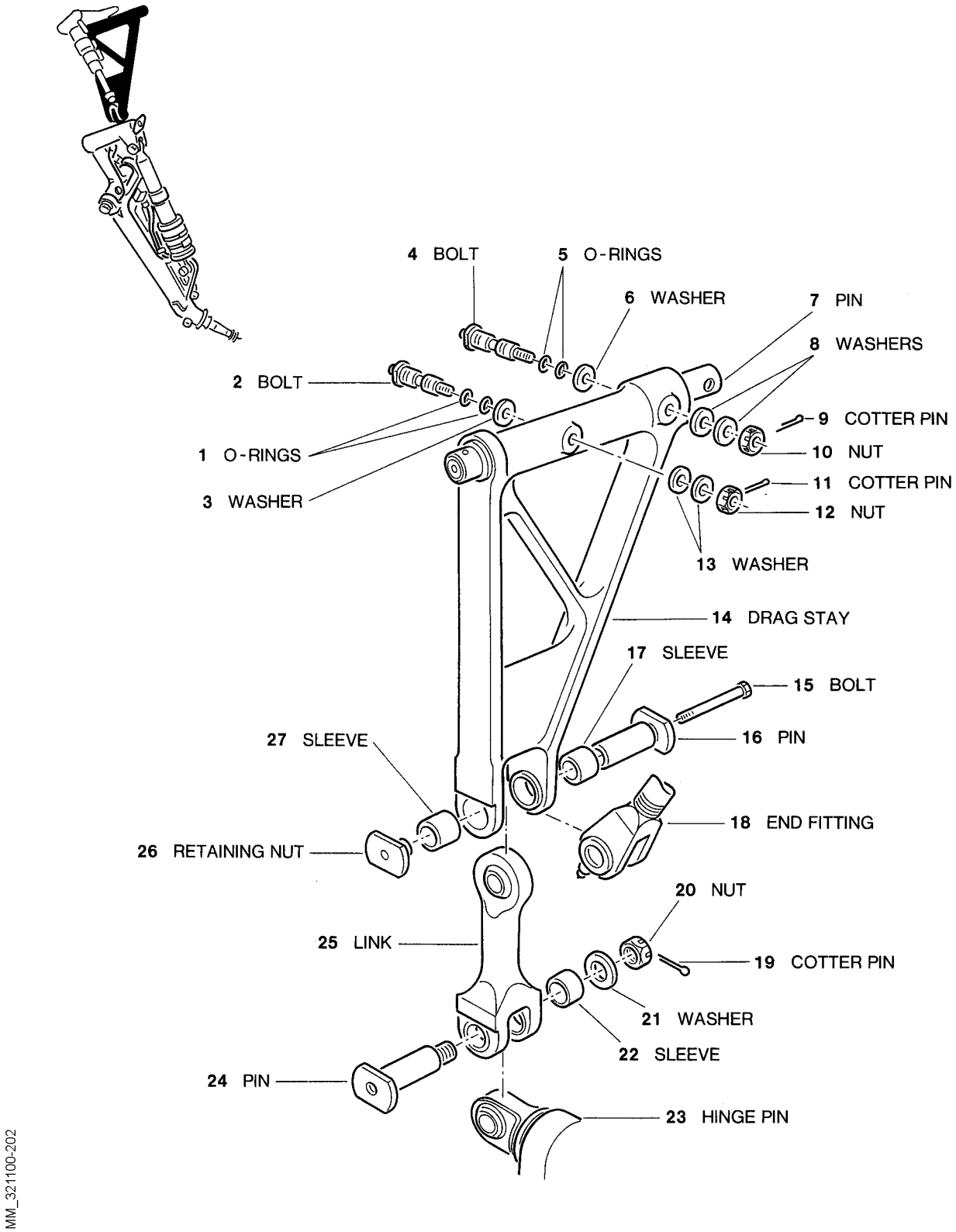

Fig. 202 - Drag Stay - Removal/Installation

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B. Materials

Grease	MIL-G-23287A
Solvent,Trichloroethane	0-T-620
Lint-free cloth	Not specified

C. Expendable Parts

Item	1. O-ring	Refer to Parts Catalog
	5. O-ring	Refer to Parts Catalog

D. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 12-00-00
Maintenance Manual Chapter 28-12-00
Maintenance Manual Chapter 32-00-00
Maintenance Manual Chapter 32-11-00
Maintenance Manual Chapter 53-60-00

E. Procedure

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE HEALTH AND SAFETY PRECAUTIONS GIVEN IN CHAPTER 20.

(1) Clean the drag stay, the link and the attachment fittings with solvent (MIL-G-23287A) and a lint-free cloth.

WARNING: DO NOT POINT A COMPRESSED GAS OUTLET AT YOURSELF OR OTHER PERSONS, COMPRESSED GAS CAN CAUSE INJURY TO PERSONS.

(2) Use a clean, dry air source to dry the components.
(3) Examine the components for obvious damage, corrosion or damage to the surface finish. Repair or replace as necessary.

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20.

(4) Apply grease to all the attaching parts by hand.
(5) Put the drag stay (14) in position between the landing gear support plates.
(6) Align the upper end of the drag stay and install the pin (7), align the bolt holes.
(7) Install new O-rings (1) and (5) to the bolts (2) and (4) and install the bolts through the drag stay.
(8) Install the washers (8) and (13) and the nuts (10) and (12).
(9) Use the torque adapter (Tool No. 460006862) to hold the bolt (4) and tighten the nut to a torque of 88.50 - 110.61 lbf.in. (10 - 12.5 Nm).

(10) Use the torque adapter (Tool No. 460006862) to hold the bolt (2) and tighten the nut to a torque of 15.05 - 24.77 lbf.in. (1.7 - 2.8 Nm).

NOTE: Use washers (8) and (13) up to a maximum of three each to align the split pin holes.

(11) Install the split pins (9) and (11).
(12) Align the link (25) with the hinge pin (23) and install the pin (24).
(13) Install the sleeve (22), the washer (21) and the nut (20).
(14) Tighten the nut (20) to a torque of 40 - 80 lbf.in. (54.2 - 108.4 Nm).
(15) Safety the nut with the split pin (19).
(16) Align the end fitting and the link (25) and install the sleeves (17) and (27) and the pin (16).
(17) Install the retaining nut (26) and the bolt (15).
(18) Tighten the bolt (15) to a torque of 20.0 - 21.4 lbf.ft. (27.1 and 29.0 Nm).
(19) Install the kinematic linkage of the main landing gear door control assembly (Refer to 32-11-00).
(20) Install the hydraulic package (LH gear only) (Refer to 29-10-00).
(21) Install the auxiliary fuel tank (Refer to 28-12-00).
(22) Install the hydraulic control unit (LH gear only) (Refer to 29-10-00).
(23) Do an adjustment/test of the landing gear (Refer to 32-00-00).
(24) Install the access panel 251A (252A) (Refer to 53-60-00).
(25) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

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6. Actuator - Removal (Ref. to Fig. 203)

A. Fixtures, Test and Support Equipment

Blanking caps	Not specified
Container, for hydraulic fluid	Not specified

B. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 28-12-00
Maintenance Manual Chapter 29-00-00
Maintenance Manual Chapter 52-82-00

C. Procedure

(1) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(2) Partially retract the M.L.G. and disconnect the rear door (Refer to 52-82-00).
(3) Depressurize the hydraulic system (Refer to 29-00-00).
(4) Open, tag and safety these circuit breakers on the pilot circuit breaker panel:
- LDG GEAR CONT.
- HYDR CONT.

(5) Disconnect the two landing gear limit switch connectors (11) and (12) from the receptacles on the gear well structure.
(6) Put caps on the connectors and the receptacles.
(7) Disconnect the up, down, and emergency hydraulic line ends (2), (3) and (4) from the union adaptors on the actuator.
(8) Put caps on the line ends and the adaptors.
(9) Give support to the main gear to stop it moving forward.
(10) Remove the bolt (17), the retaining nut (21) and the sleeve (22).
(11) Support the actuator (24) and remove the pin (18) and the sleeve (19).
(12) Remove the nut (10) and the washer (9) and remove the bolt (7).
(13) Use the bolt (7) to pull the pintle pin (8) clear of the top landing gear mounting plate.
(14) Lift the actuator (24) until the trunnion sleeve (1) is clear of the bottom mounting plate and let the main gear move forward until you have access to the retaining nut (21).
(15) Remove the actuator (24) from between the upper and the lower mounting plates.

7. Actuator - Installation (Ref. to Fig. 203)

A. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 12-00-00
Maintenance Manual Chapter 28-12-00
Maintenance Manual Chapter 32-00-00
Maintenance Manual Chapter 52-82-00

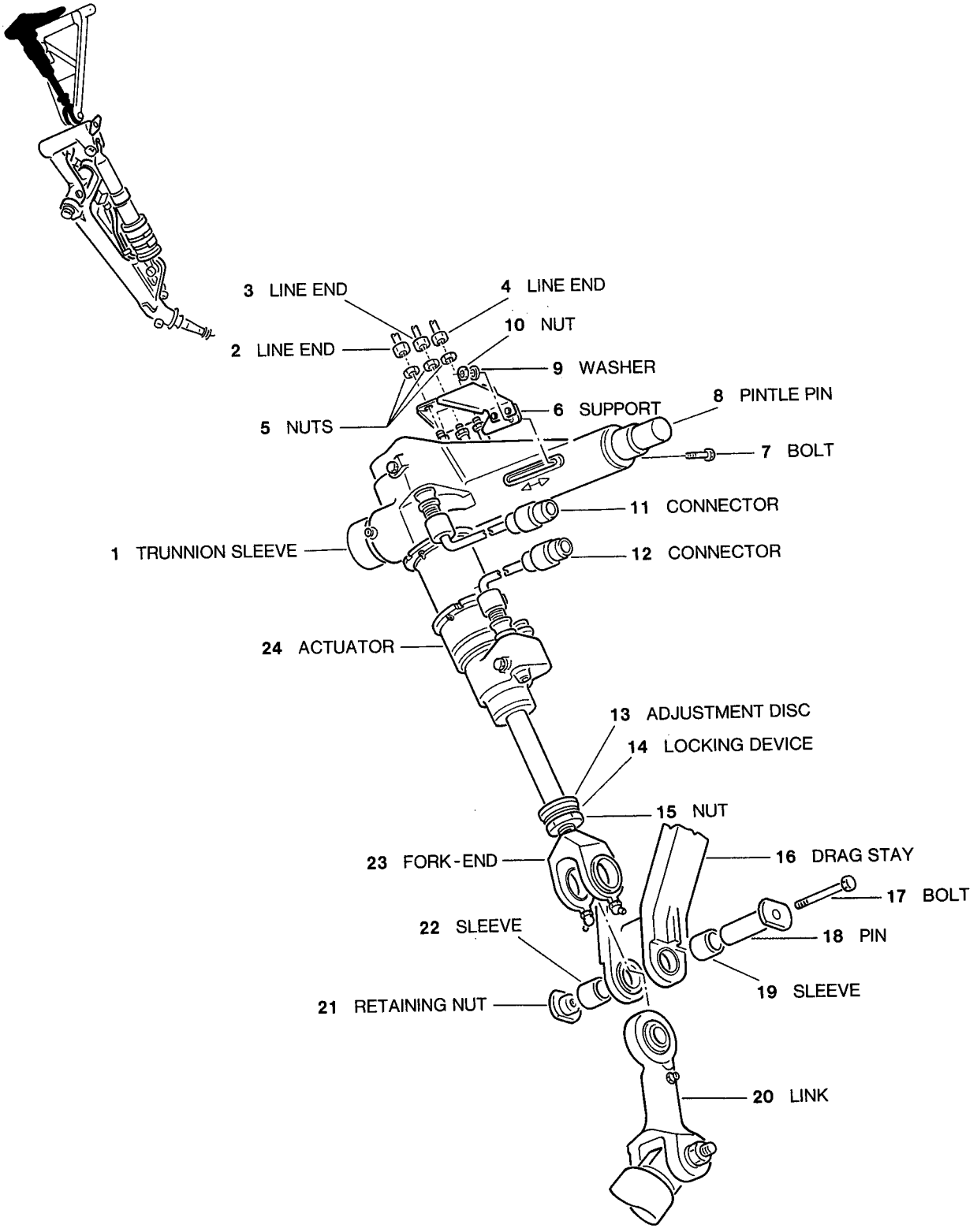

Fig. 203 - Actuator - Removal/Installation

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B. Procedure

(1) If a new actuator will be installed do the steps that follow:
  (a) Remove the three nuts (5) from the hydraulic adaptors and remove the support (6).
  (b) Remove the two hydraulic tubes and install them on the new actuator.
  (c) Install the support (6) over the hydraulic adaptors and install and tighten the nuts (5).
(2) If the actuator is to be installed again examine it for signs of damage, corrosion and damage to the surface finish. Repair or replace as necessary.
(3) Put the actuator in position between the mounting plates and engage the trunnion sleeve with the bottom plate.
(4) Use the bolt (7) to push the pintle pin (8) into the location bush in the top plate.
(5) Install the bolt (7), the washer (9) and the nut (10).
(6) Align the fork end (23), the drag stay (16) and the link (20).
(7) Install the sleeve (19) and the pin (18).
(8) Install the sleeve (22), the retaining nut (21) and the bolt (17). Temporarily tighten the bolt.
(9) Use a straight edge between the center of the lower bolt of the link (20) and the rotation pin of the drag stay to measure the overcenter dimension (A) of the drag brace (Ref. to Fig. 204).
(10) If the dimension is 0.15 ±0.010 in. (3.75 ±0.25 mm) continue with step (11).
(11) If the dimension (A) is incorrect do the steps that follow:
  (a) Disconnect the fork end (23).
  (b) Cut and remove the lockwire from the nut (15).
  (c) Loosen the nut (15) until the serrated locking device (14) is disengaged.
  (d) Screw the fork end in or out until the dimension (A) is correct.
  (e) Tighten the nut (15) against the locking device (14) and safety it with lockwire.
  (f) Connect the fork end again.
(12) Tighten the bolt (17) to a torque of 240 - 256 lbf.in. (27.1 - 29.0 Nm).
(13) Install the bolt (7), the washer (9) and the nut (10). Tighten the nut.
(14) Remove the caps from the line ends and hydraulic adaptors.
(15) Connect and tighten the line ends (2), (3) and (4).
(16) Remove the caps from the electrical connectors and the receptacles.
(17) Connect the electrical connectors (11) and (12) to the receptacles on the gear well structure.
(18) Connect the M.L.G. rear door (Refer to 52-82-00).
(19) Remove the safety tags and close these circuit breakers:
– LDG GEAR CONT
– HYDR CONT
(20) Do a landing gear retraction test (Refer to 32-00-00).
(21) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

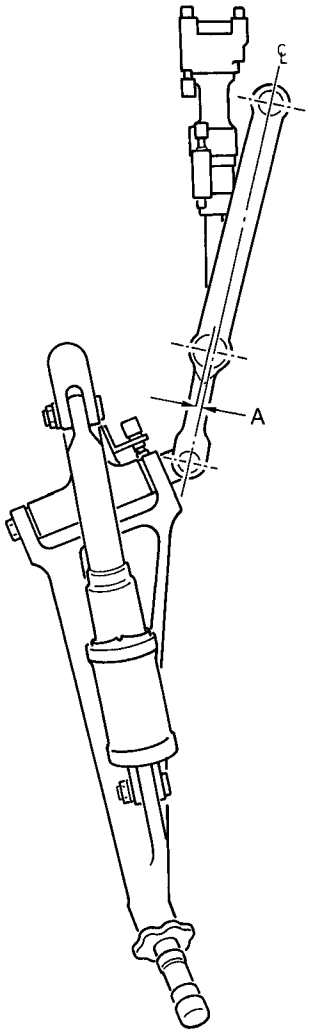

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Fig. 204 - Drag Stay - Overcenter Dimension

8. Shock Absorber - Removal (Ref. to Fig. 205)

A. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 12-00-00

B. Procedure

(1) Raise the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(2) Release the pressure from the shock absorber (Refer to 12-00-00).
(3) Remove the split pin (1), the nut (2) and the washer (3).
(4) Remove the pin (6) and the washer (5).
(5) Remove the split pin (10), the nut (11) and the washer (9).
(6) Support the shock absorber and remove the pin (7) and the washer (8).
(7) Remove the shock absorber.

9. Shock Absorber - Installation (Ref. to Fig. 205)

A. Tools

Torque Spanner Torque Wrench 51.6 - 59.0 lbf.ft. (70 - 80 Nm) Torque Wrench 95.9 - 125.4 lbf.ft. (130 - 170 Nm)	460006855
End Eyes Alignment Tool	P/N DRT68755 or Equ.

B. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 12-00-00

C. Procedure

(1) Check with the End Eye Alignment Tool P/N DRT68755 (or equ.) that the shock absorber ends eyes are aligned. If the eyes ends are not aligned discharge completely the shock absorber and align the eye ends and charge the shock absorber (Refer to 12-00-00).
(2) Position the shock absorber on the main landing gear.
(3) Align the top and bottom attachments and install the pin (6) and the washer (5) and the pin (7) and the washer (8).
(4) Install the washer (3) and the nut (2).
(5) Hold the pin (6) with the torque spanner (Tool No. 460006855) and tighten the nut to a torque of 51.6 - 59.0 lbf.ft. (70 - 80 Nm).
(6) Install the washer (2) and the nut (11).
(7) Hold the pin (7) with the torque spanner/Tool No 460006855) and tighten the nut to a torque of 95.9 - 125.4 lbf.ft. (130 - 170 Nm).
(8) Safety the nuts with the split pins (1) and (10).
(9) Charge the shock absorber with nitrogen (Refer to 12-00-00).
(10) Lubricate the shock absorber (Refer to 12-00-00).
(11) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

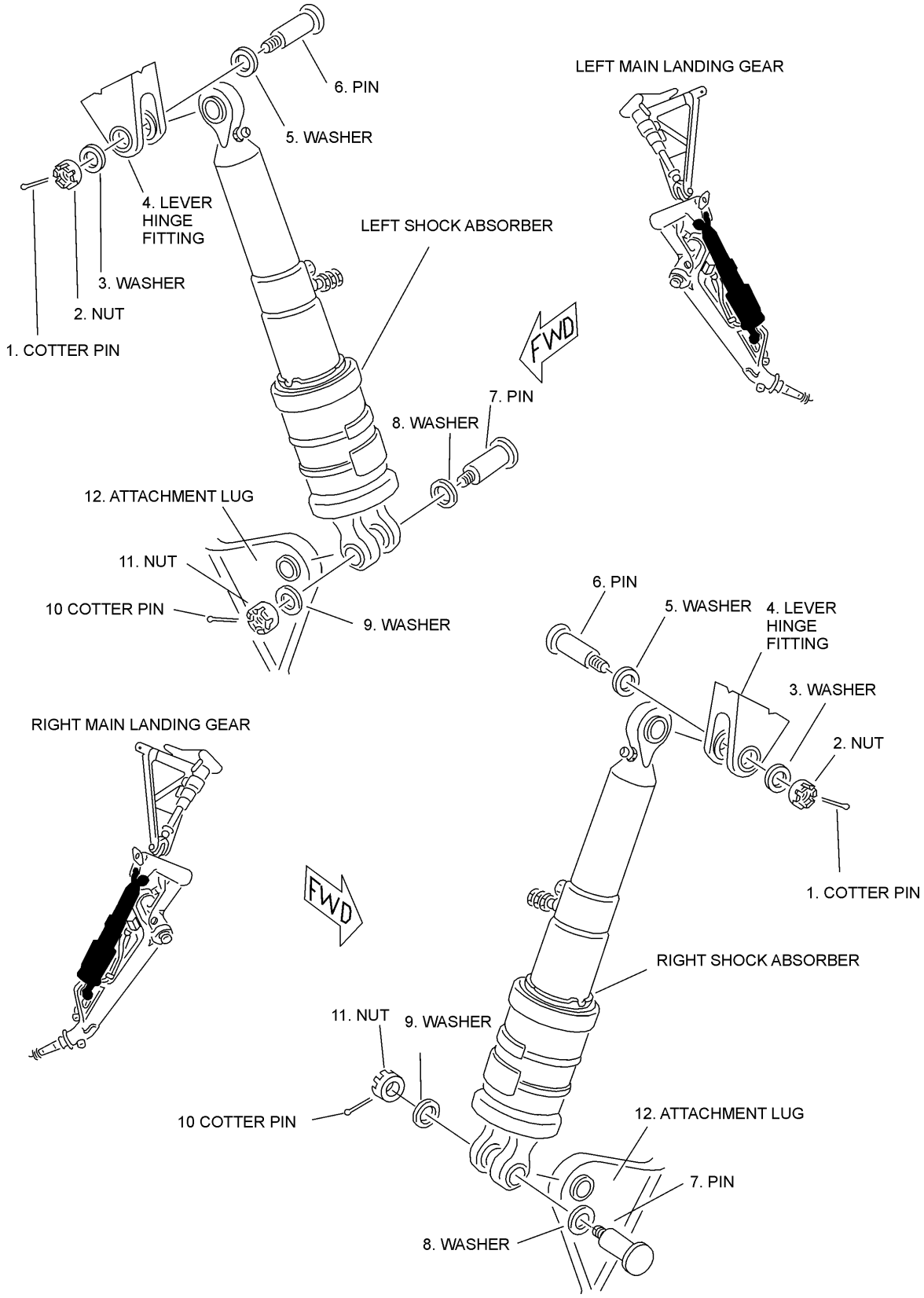

Fig. 205 - Shock Absorber - Removal/Installation

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NOSE GEAR AND DOORS - DESCRIPTION AND OPERATION

1. General (Ref. to Fig. 1)

   A. The nose landing gear (NLG) is a twin axle, forward retracting, oleo-pneumatic unit with nose wheel steering.

   B. The NLG has these main components:

   – A main fitting assembly
   – An electrical harness assembly
   – A steering mechanism
   – The torque links
   – A sliding tube assembly.

   The NLG also uses these subsystems:

   – The extension and retraction system
   – The wheels and brakes system
   – The steering system
   – The position and warning system

   C. Pintle pins attach the NLG to the airframe and act as a retraction/extension hinge point. The NLG transmits and absorbs landing, taxiing and parking to the airframe.

2. System Description

   A. Main Fitting assembly

   (1) Pintle pins attach the main fitting assembly to housings on the airframe in zone 710.
   (2) The main fitting assembly is a machined cylinder with a tubular cross beam at one end. The assembly has these attachments and fittings:
   – The attachment for the steering manifold
   – Bushings for the pintle pins
   – A tube and valve block
   – Drag stay attachment lugs
   – Steering mechanism attachment plates
   – The steering cuff.
   (3) The cylinder is machined internally to give an operationing bore for the sliding tube assembly.

   B. Steering mechanism

   (1) The steering mechanism connects the steering actuator to the sliding tube.
   (2) The steering mechanism has a steering link attached between the attachment plates on the main fitting assembly. A disconnect link and steering pin connect the link to lugs on the steering cuff.
   (3) The steering system operates the mechanism to turn the sliding tube. The steering pin is removed to disconnect the steering for towing.

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C. Torque links

(1) The torque links connect the steering cuff on the main fitting assembly to the axle on the sliding tube.

(2) Two triangular, bushed castings are attached to lugs on the axle and the steering cuff by special pins. A special bolt and a spacer connect the two links at the center. The spacer is machined on assembly to control the rotational tolerance.

(3) The torque links transmit turning forces.

D. Sliding tube

(1) The sliding tube moves inside the machined bore of the main fitting assembly and contains the hydraulic components of the shock absorber.

(2) The bottom of the sliding tube has the twin axles and axle nuts for attachment of the nosewheels. A nosewheel jacking dome enables the noseleg to be lifted on a special jack. The jacking dome attaches a ground bracket and ground cable to the sliding tube. A centering cam inside the unit ensures the centering of the nose gear when the leg is fully extended.

E. For unpaved runway operation a suitable gravel protection kit can be installed on the nose gear. (Ref. Fig. 2)

3. Operation

A. Compression

(1) When the nose leg compresses the action of the fluid flow through the hydraulic parts of the shock absorber compresses the nitrogen which absorbs the compressive load.

(2) The center tube of the shock absorber operates the rocker cam of the valve block subassembly which activates the weight switch.

B. Recoil

(1) When the compressive load is removed the compressed nitrogen extends the leg. The hydraulic fluid flow inside the leg during extension is restricted by the mechanism to dampen the rate of extension.

(2) At full extension the centering cam holds the wheels in alignment with the airplane center line.

(3) The operating cam of the weight switch is released and isolates the nose wheel steering system.

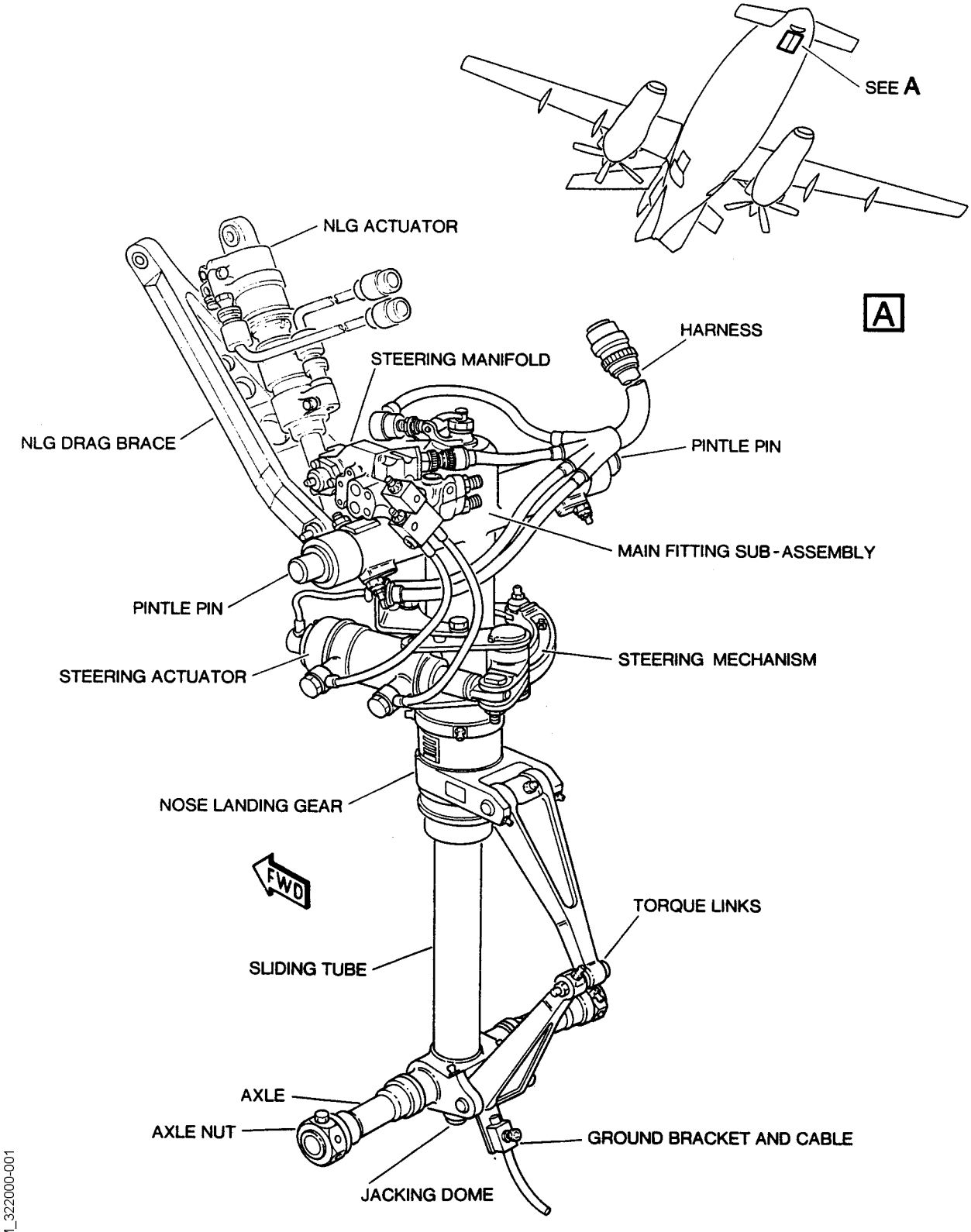

Fig. 1 - Nose Gear and Doors - Component Location/Identification

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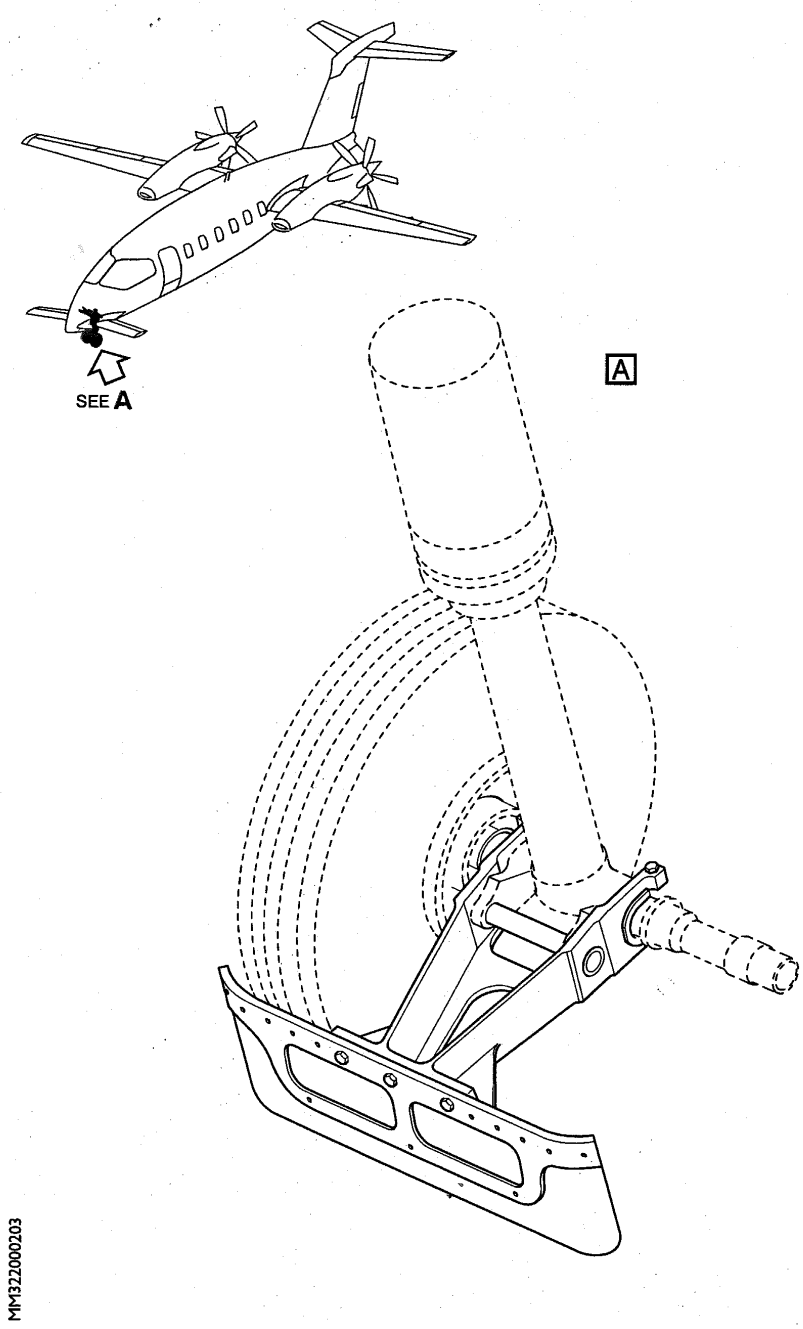

Fig. 2 - Nose Gear and Doors - Gravel Protection

NOSE GEAR AND DOORS - MAINTENANCE PRACTICES

1. General

A. This page block contains the following maintenance practices:

- The removal/installation of the nose landing gear and door control assembly.
- The inspection/check of the nose landing gear and door control assembly.
- The removal/installation of the torque-links.

2. Nose Gear - Removal (Ref. to Fig. 201)

A. Fixtures, Test and Support Equipment

Blanking caps	Not specified

B. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 29-00-00
Maintenance Manual Chapter 52-81-00
Maintenance Manual Chapter 32-41-00

C. Procedure

WARNING: BEFORE REMOVING ALL NOSE LANDING GEAR PIPES, MARK THE UNIONS AND CORRESPONDING PIPES POSITIONS IN SUCH A WAY TO PREVENT INCORRECT INSTALLATION.

(1) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(2) Remove the nose landing gear doors (Refer to 52-81-00).
(3) Depressurize the hydraulic system (Refer to 29-00-00).
(4) Open, tag and safety these circuit breakers on the pilot control panel:
- HYD CONT
- LDG GEAR CONT
- NOSE STRG.

(5) Disconnect the electrical connector (15) from the receptacle on the wheel well structure.
(6) Disconnect the line ends (16) and (17) from the steering manifold.
(7) Put caps on the line ends, adaptors, connectors and receptacles.
(8) Remove and discard the split pin (3).
(9) Remove the nut (5) and the washer (4) from the drag stay lower pin (1).
(10) Give support to the drag stay (2) and the retraction cylinder (6) and remove the pin (1) from the drag stay, the retraction cylinder and the link (7).
(11) Support the drag stay and the retraction cylinder clear of the landing gear with temporary ties.
(12) Remove the two bolts (10) and the bushes (9) from the LH and RH door actuation levers (8) and the brackets on the nose well structure.

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(13) Remove the nuts (14) and (22) and the washers (13) and (21) from the bolts (12) and (19).

WARNING: BE CAREFUL WHEN YOU MOVE THE COMPONENT. THIS COMPONENT IS HEAVY. INCORRECT MOVEMENT CAN CAUSE INJURY TO PERSONS AND/OR DAMAGE TO EQUIPMENT.

(14) Pull the bolts (12) and (19) clear of the pintle casting and into the pintle pins (20).
(15) Support the nose landing gear and use the bolts (12) and (19) to pull the pintle pins clear of the housings on the nose well structure.
(16) Lower the nose gear clear of the well and to the ground.

3. Nose Gear - Installation (Ref. to Fig. 201)

A. Materials

Solvent-Tricloroethane	0-T-620
Grease	MIL-G-81322
Jointing compound JC 5A	TBD
Lint-Free cloth	Not specified

B. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 12-00-00
Maintenance Manual Chapter 29-00-00
Maintenance Manual Chapter 32-00-00
Maintenance Manual Chapter 32-41-00
Maintenance Manual Chapter 32-50-00

C. Procedure

WARNING: DURING INSTALLATION REFER TO THE UNION AND PIPES MARKS TAKEN DURING REMOVAL PROCEDURE.

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20.

(1) Clean the landing gear with solvent (0-T-620) and a lint free cloth.

WARNING: DO NOT POINT A COMPRESSED AIR OUTLET AT YOURSELF OR OTHER PERSONS. COMPRESSED GAS CAN CAUSE INJURY TO PERSONS.

(2) Use a stream of dry compressed air to dry the landing gear.
(3) If a new landing gear is to be installed transfer all items of removable equipment from the unserviceable gear to the new gear (Refer to the applicable parts of this chapter).

WARNING: BE CAREFUL WHEN YOU MOVE THE COMPONENT. THIS COMPONENT IS HEAVY. INCORRECT MOVEMENT CAN

CAUSE INJURY TO PERSONS AND/OR DAMAGE TO EQUIPMENT.

(4) Check and note the distance between the bushes (23) located at the ends of the pintle casting.
(5) Check and note the distance between the bushes (24) located on the pintle pin housing on the nose landing gear compartment.
(6) The difference must be within 0.2 and 0.5 mm.
(7) This difference, if higher, must be reduced by installing between the pintle casting bushes and the pintle pins housing bushes one or more shim washers (P/N 80-393109-113) (25).

NOTE: The washers (P/N 80-393109-113) must be inserted either on one side or on both sides depending upon the need of centering the nose gear position as to the drag brace, and especially centering the position of the doors cam plates as to the operating levers.

(8) Lift the nose gear into position and align the pintle casting with the housings on the nose well structure.
(9) Use the bolts (12) to push the pintle pins (20) into the housings. Push the bolts through the pintle casing when the holes align.
(10) Install the washers (13) and (21) and the nuts (14) and (22). Tighten the nuts.
(11) Align the pivot point of the levers (8) LH and RH and install the bushes (9) and the bolts (10). Tighten the bolts.
(12) Remove the temporary ties and align the drag stay (2), the retraction cylinder (6) and the link (7).
(13) Install the pin (1), the washer (4) and the nut (5).
(14) Tighten the nut and safety it with a new split pin (3).
(15) Remove the caps from the line ends, adaptors, connectors and receptacles.
(16) Connect the line ends (16) and (17) to the steering manifold.
(17) Connect the connector (15) to the receptacle on the nose well structure.
(18) Install the wheels (Refer to 32-41-00).
(19) Service the landing gear leg and the nose wheels (Refer to 12-00-00).
(20) Install the landing gear doors (Refer to 52-81-00).
(21) Remove the safety tags and close the following circuit breakers on the pilot circuit breaker panel.
- HYD CONT
- LDG GEAR CONT
- NOSE STRG.

(22) Perform a Steering System bleeding (Refer to 32-50-00 Page block 200).
(23) Do an Adjustment/Test of the nose landing gear (Refer to 32-00-00 Page block 500).
(24) Do a Steering Adjustment/Test (Refer to 32-50-00 Page block 500).
(25) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

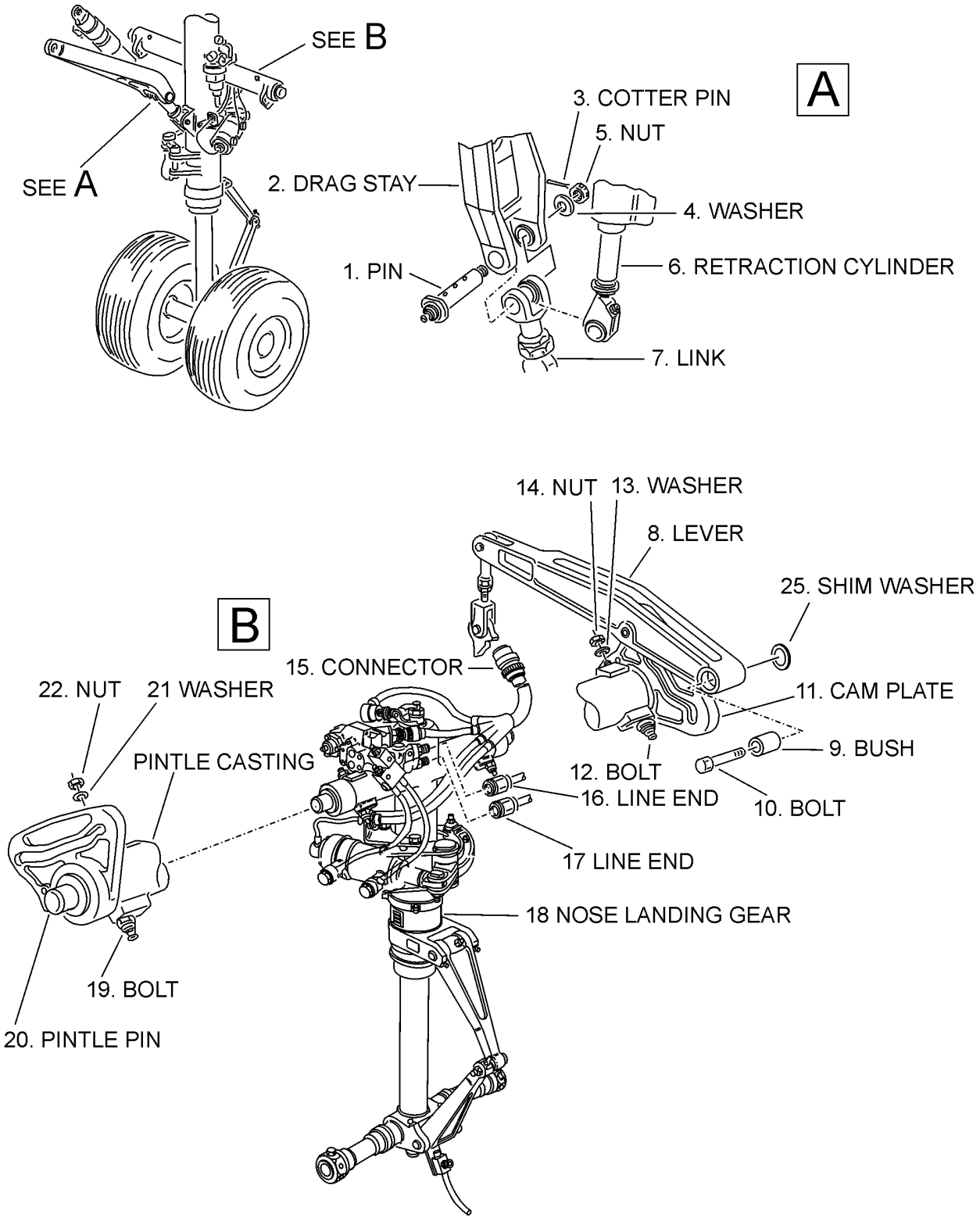

Fig. 201 - Nose Gear - Removal/Installation (Sheet 1 of 2)

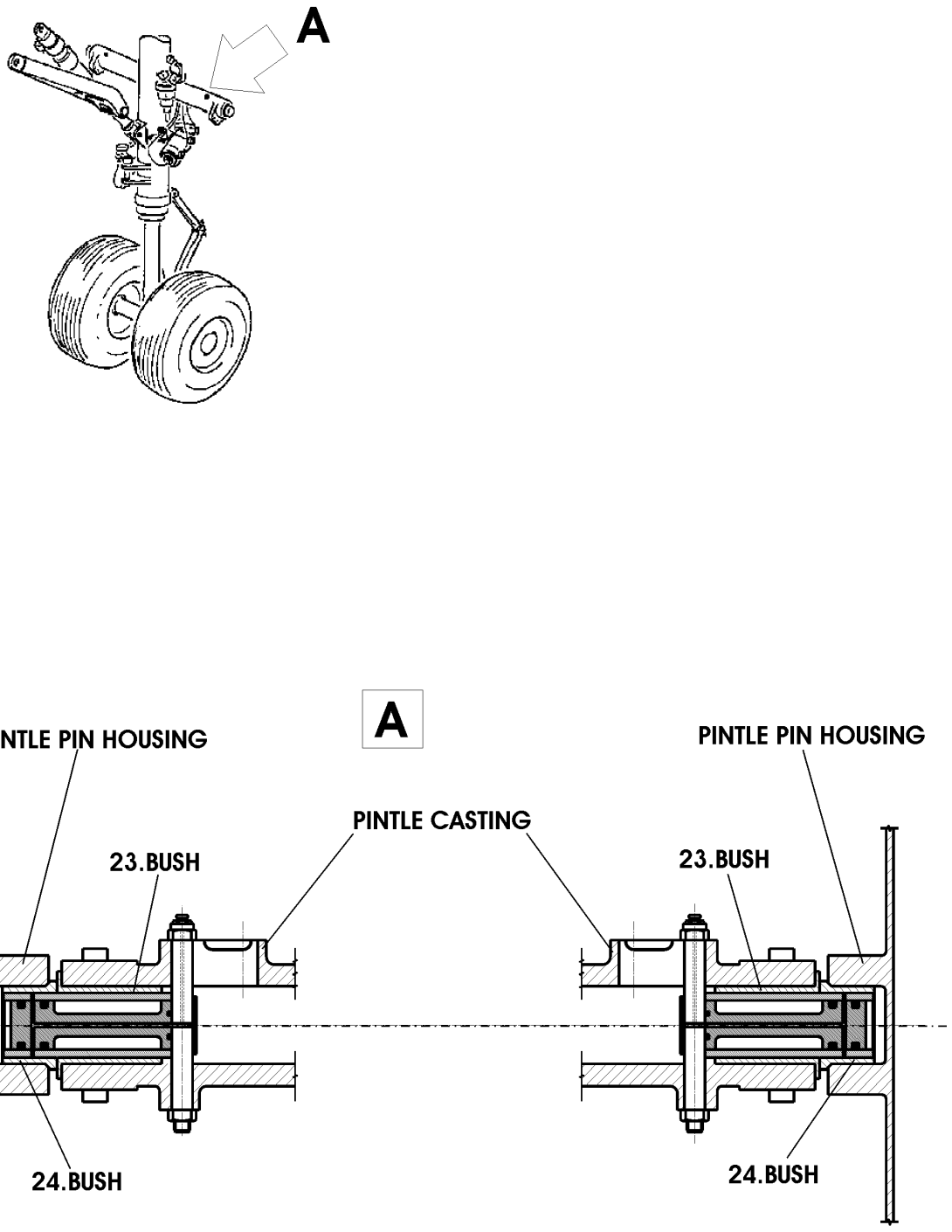

Fig. 201 - Nose Gear - Removal/Installation (Sheet 2 of 2)

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4. Nose Landing Gear and Door Control Assembly - Inspection/Check

A. Materials

Solvent, Trichloroethane	0-T-620
Lint-Free cloth	Not specified

B. Fixtures, Test and Support Equipment

Source of clean, dry compressed air	Not specified

C. Referenced Information

Maintenance Manual Chapter 51-00-00

D. Procedure

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE HEALTH AND SAFETY PRECAUTIONS GIVEN IN CHAPTER 20.

(1) Clean the landing gear and door control assembly with solvent (0-T-620) and a lint-free cloth.

WARNING: DO NOT POINT COMPRESSED AIR OUTLET AT YOURSELF OR OTHER PERSONS. COMPRESSED AIR CAN CAUSE INJURY TO PERSONS.

(2) Dry the assembly with a stream of clean, dry compressed air.
(3) Examine the locking devices for security of attachment and correct locking.
(4) Visually examine the assembly for signs of damage, corrosion and security of attachment.
(5) Examine the nose gear and the associated components for hydraulic leakage - there must be no leaks.
(6) Visually examine the paint finish for cracks, flaking or damage. Restore the finish as necessary (Refer to 51-00-00).
(7) Make sure that the steel wire earthing strap at the lower end of the nose gear is not corroded or frayed.
(8) Repairs or replace damaged components as necessary.

5. Torque Links - Removal (Ref. to Fig. 202)

A. Referenced Procedures

Maintenance Manual Chapter 07-00-00

B. Procedure

(1) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(2) Remove and discard the split pin (14).

(3) Remove the nut (12) and the washer (11) and remove the bolt (13) from the torque link (15) and the pin (10).
(4) Remove the pin (10).
(5) Remove the nut (21) and the bolt (20).
(6) Remove the split pin (17), the nut (18) and the washer (19).
(7) Remove the pin (8) and remove the lower link (15) from the sliding tube (16).

NOTE: Retain the spacer (9).

(8) Remove the split pin (6), the nut (5) and the washer (4).
(9) Remove the bolt (3).
(10) Hold the torque link (7) and remove the pin (2).
(11) Remove the torque link from the steering cuff (1).

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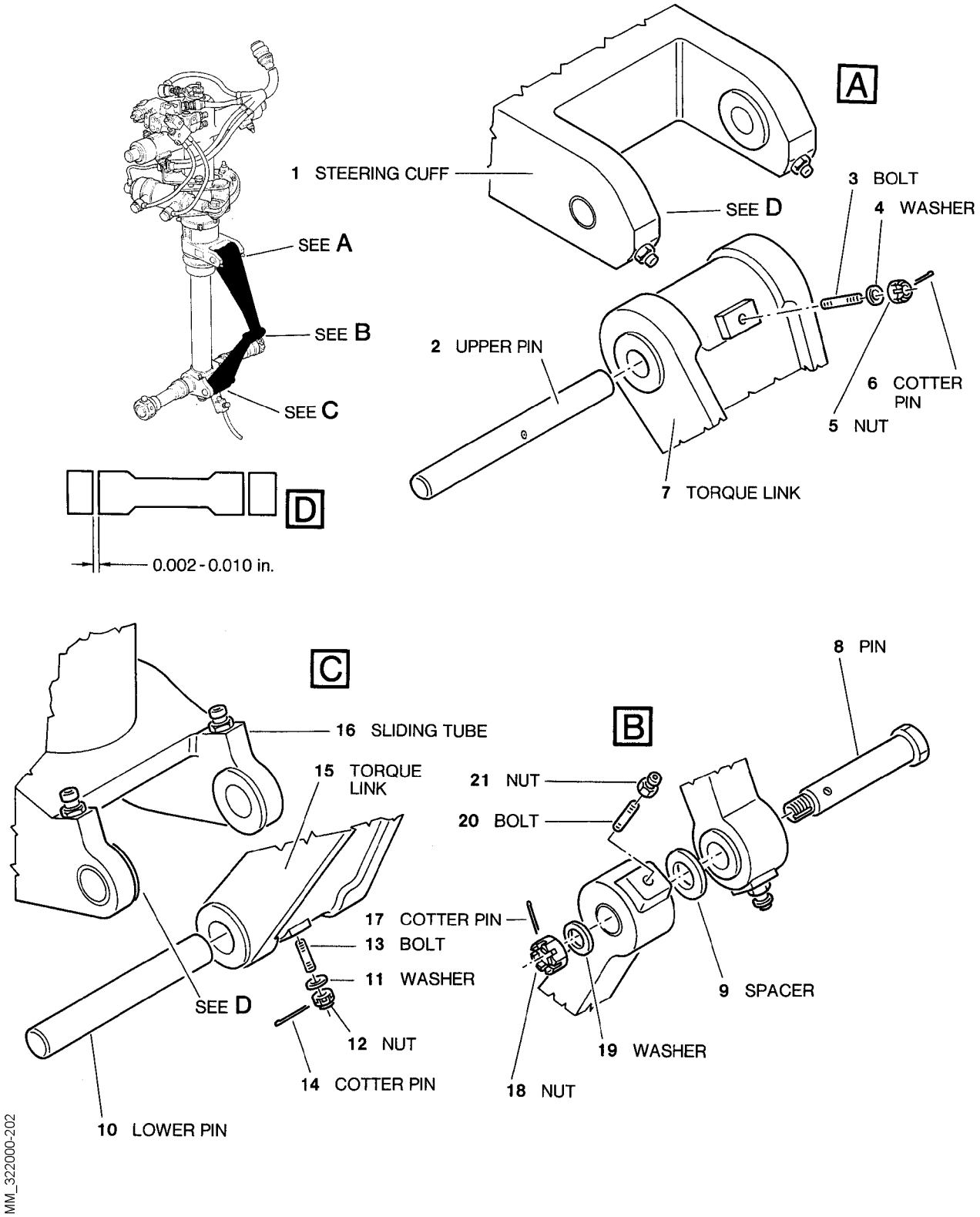

Fig. 202 - Torque Links - Removal/Installation

6. Torque Links - Installation and Check (Ref. to Fig. 202)

A. Fixtures, Test and Support Equipment

Source of dry compressed air	Not specified

B. Materials

Solvent, Trichloroethane	0-T-620
Lint-Free cloth	Not specified

C. Referenced Information

Maintenance Manual Chapter 07-00-00
Component Maintenance Manual Chapter 32

D. Procedure

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20.

(1) Clean the torque links and attaching parts with solvent (0-T-620) and a lint-free cloth.

WARNING: DO NOT POINT A COMPRESSED AIR SOURCE AT YOURSELF OR OTHER PERSONS. COMPRESSED GAS CAN CAUSE INJURY TO PERSONS.

(2) Dry the torque links with a stream of clean, dry air.
(3) Examine the torque links for damage, distortion and corrosion, repair or replace as necessary (Refer to CMM).
(4) Install the spacer (9) between the center joint of the links and install the pin (8).
(5) Install the washer (19) and the nut (18).
(6) Tighten the nut (18) until there is no free movement in the joint, but the joint will turn freely.
(7) Safety the nut with a new split pin (17).

NOTE: If the free movement in the center joint cannot be eliminated install a new spacer (9) and do steps (4) thru (7) again. If there is still free play replace the bushes in the torque links (Refer to CMM).

(8) Install the top and bottom links into the steering cup and sliding tube attachments.
(9) Install the pins (2) and (10).
(10) Measure the gap between the links and the bushes in the leg (top and bottom) (view D). The clearance must be between 0.002 and 0.010 in (0.05 and 0.25 mm).

NOTE: If the clearance is more than the limit in step (10) above replace the bushes in the leg (Refer to CMM).

(11) Install the bolts (3), (13) and 20.
(12) Install the washers (4) and (11) and the nuts (5), (12) and (21).
(13) Tighten the nuts and safety the nuts (5) and (12) with the split pins (6) and (14).

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EXTENSION AND RETRACTION - DESCRIPTION AND OPERATION

1. General (Ref. to Fig. 1)

   A. The extension and retraction system has the parts necessary to extend and retract the landing gear normally. It also has the components necessary to extend the gear in an emergency and to extend and retract the gear manually for maintenance.

   B. The extension/retraction system has these main components:

   – The NLG actuator
   – The NLG drag stay and link
   – The MLG actuator
   – The MLG drag stay and link
   – The landing gear control panel
   – The emergency landing gear selector
   – The hydraulic service valve.

   The system also uses these systems:

   – The position and warning system (Refer to 32-60-00)
   – The main hydraulic power system (Refer to 29-10-00)
   – The auxiliary hydraulic power system (Refer to 29-20-00).

   C. Because it is necessary to remove the MLG as a unit for access for other maintenance tasks the maintenance practices for the MLG actuator and the drag stay and link are given in 32-11-00 and not in this section.

2. System Description

   A. NLG actuator

   (1) The NLG actuator is attached to the wheel well attachment bracket at STA - 225 and to the drag stay and link in zone 110.
   (2) The actuator has a body with an eye and which attaches it to attachment bracket on the wheel well. The actuator piston has an eye end which attaches it to the drag stay and link. The unit contains internal hydraulic up and down locks. A housing at each end of the actuator body contains a switch mechanism and visual indicator for the limit switches. A valve block on the actuator body connects the actuator to the hydraulic system normal and emergency lines.
   (3) The actuator is extended for NLG extension and retracted for NLG retraction.

   B. NLG drag stay and link

   (1) The NLG drag stay is attached to the wheel well attachment bracket between STA - 225 and - 395. The adjustable link attaches the drag brace and the NLG actuator to the lug on the NLG leg main fitting assembly.
   (2) The drag stay and link operate together with the actuator to give geometric support to the NLG when the gear is extended. The stay linkage is used with the actuator to guide and support the NLG during retraction and extension.

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C. MLG actuator

(1) The MLG actuator is attached to the MLG Support plates in zone 251 (252) by a trunnion and sleeve and a sliding pintle pin. The other end of the actuator (the ram end) attaches to hinge pin of the MLG lever hinge fitting.
(2) The MLG is similar in construction to the NLG actuator with the exception of the attachments.
(3) The MLG actuator is extended for MLG extension and retracted for MLG retractions.

D. MLG drag stay and lin

(1) The MLG drag stay is attached to the upper and lower support plates in zone 251 (252) by a rotation pin. The rotation pin also operates the MLG door linkage.
(2) The link attaches the retraction cylinder to the drag stay and attaches the two assemblies to the hinge pin of the MLG lever hinge fitting.
(3) The drag stay and link together with the actuator control the MLG in retraction and extension. They give geometric support against drag loads when the gear is extended. The link is adjustable to give a geometric overcentre for landing gear locking.

E. MLG control panel

(1) The MLG control panel is on the pilot switch panel in zone 214. It is part of the hydraulic control panel.
(2) The control panel has the up and down landing gear selector, the red landing gear unsafe annunciator and the green landing gear down annunciator.

F. Emergency landing gear selector

(1) The emergency landing gear selector is in the center pedestal in zone 213.
(2) The valve has a body with four hydraulic ports connected to the following lines:
- Landing gear return line
- Service selector and landing gear up line
- Service selector and emergency line
- Hydraulic hand pump line.

A handle marked EMERG. LDG operates the valve.
(3) When operated the selector connects the hydraulic handpump line to the actuator down line through a shuttle valve on the actuator. It connects the landing gear up line to the hydraulic reservoir bypassing the normal landing gear selector.

G. Service selector valve

(1) The service selector valve is in the center pedestal in zone 213.
(2) The valve has a body with four hydraulic ports connected to the following lines:
- A line from the handpump and emergency valve
- The emergency line
- A line to the emergency valve and return line
- A line to the landing gear up line.

The valve is operated by hand to the normal or service positions.

(3) The valve, when selected connects the handpump line to the landing gear up line for service retraction tests. To retract the landing gear the normal landing gear control selector must be selected to up.

3. Operation

A. Normal retraction

(1) When the flight crew set the landing gear control switch to UP the directional control valve in the hydraulic package operates (energizes) to open the landing gear up line. At the same time the depressurizing valve de-energizes to give a hydraulic delivery pressure of 3,000 psi. The first pressure unlocks the internal locks of the actuator and the gear retracts.

(2) The landing gear UNSAFE annunciators on the landing gear panel come on while the landing gear is in motion. When the uplocks are engaged the annunciators go off. When the landing gear is up the uplocks close and the uplock limit switches operate. When the uplock limit switches operate the pump relay coil of the hydraulic pack de-energize and stops hydraulic power.

B. Normal extension

(1) When the flight crew set the landing gear control switch to ON the directional control valve in the hydraulic package is de-energized and the valve moves under spring pressure to open the gear down line. The depressurizing valve is de-energized to give a hydraulic delivery pressure of 3000 psi from the hydraulic package.

(2) First pressure unlocks the internal actuator up locks and the gear extends. The landing gear UNSAFE annunciators on the control panel come on until the gear is down and locked. The downlock limit switches operate and the UNSAFE annunciators go off and the green LOCKED ON annunciators come on.

(3) The depressurizing valve on the hydraulic package is energized and the pump delivery pressure reduces to 1000 psi and stays at 1000 psi until the hydswitch is set to off or another gear selection is made.

C. Emergency extension

(1) When the emergency selector is pulled out the auxiliary hydraulic (handpump) line is connected to the emergency down port on the valve block of each actuator. Operation of the handpump operates shuttle valves in the valve blocks to part hydraulic pressure to unlock and extend the gear.

D. Servicing operation

(1) For retraction of the landing gear with handpump pressure (for maintenance purposes), operation of the service valve connects the handpump pressure line to the landing gear up line.

(2) The landing gear normal-down line becomes the return line. The landing gear normal up selection must be made to close the directional control valve to enable pressurization of the up line.

(3) 28 Vdc from the ESSENTIAL BUS supplies electrical power to the landing gear through a 3 A LDG CONT circuit breaker.

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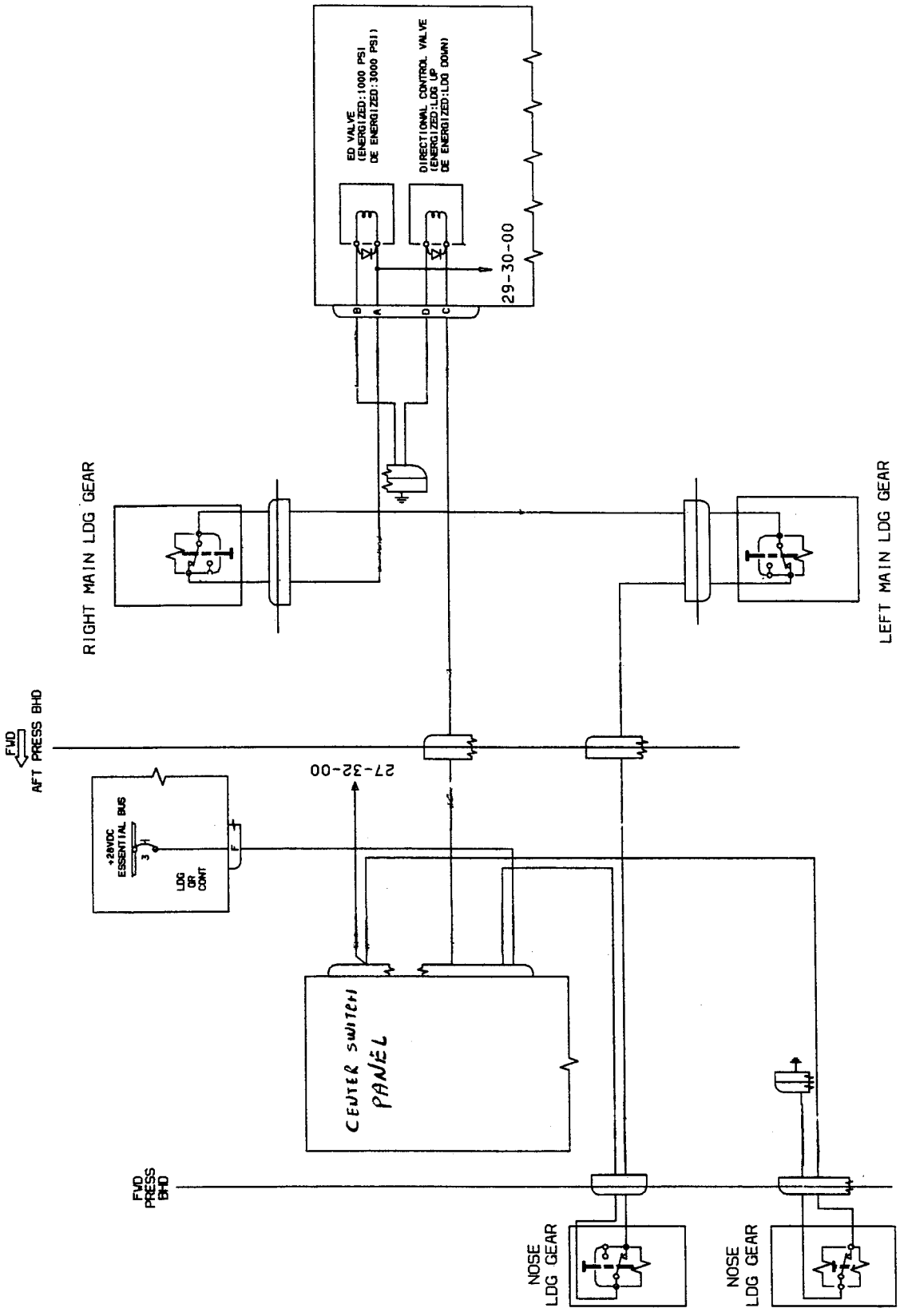

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Fig. 1 - Extension & Retraction - Schematic

EXTENSION AND RETRACTION - MAINTENANCE PRACTICES

1. General

A. This page block contains the following maintenance practices:

- The removal/installation of the nose landing gear actuator
- The removal/installation of the nose landing gear drag stay
- The removal/installation of the emergency selector
- The removal/installation of the service valve.

2. Nose Landing Gear Actuator - Removal (Ref. to Fig. 201)

WARNING: BE CAREFUL WHEN YOU USE THE HYDRAULIC FLUID. PUT ON PROTECTIVE CLOTHING. THE HYDRAULIC FLUID IS DANGEROUS. IT CAN CAUSE DAMAGE TO YOUR SKIN.

A. Fixtures, Test and Support Equipment

Container, for hydraulic oil	Not specified
Blanking caps	Not specified

B. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 52-81-00

C. Procedure

(1) Lift the airplane until the wheels are clear of the ground (Refer to 07-00-00).
(2) Disconnect the electrical connectors (13) and (14) from the receptacles on the gear well structure.
(3) Put caps on the connectors and the receptacles.
(4) Put the container below the hydraulic connections.
(5) Disconnect the hydraulic connectors (11), (12) and (15) from the adapters on the actuator.
(6) Put caps on the line ends and the adapters.
(7) Remove the split pin (18).
(8) Remove the nut (17) and the washer (16).
(9) Support the actuator and the drag stay and remove the pin (20).
(10) Remove the split pin (6).
(11) Remove the nut (5), the washer (7) and the pin (3) from the mounting (4) and the actuator.
(12) Remove the actuator.

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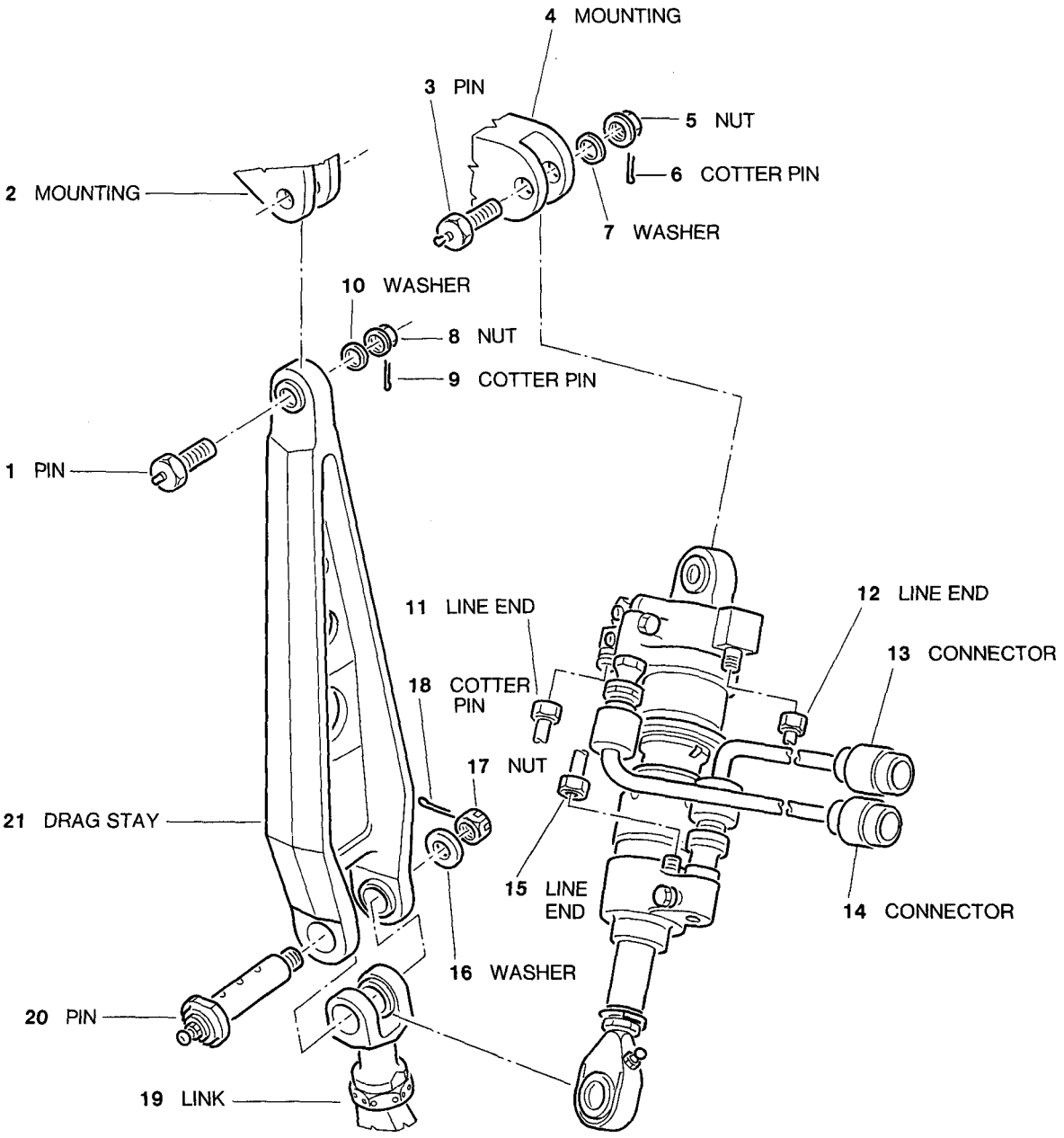

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Fig. 201 - Nose Landing Gear Actuator and Drag Stay - Removal/Installation

3. Nose Landing Gear Actuator - Installation (Ref. to Fig. 201)

WARNING: BE CAREFUL WHEN YOU USE THE HYDRAULIC FLUID. PUT ON PROTECTIVE CLOTHING. THE HYDRAULIC FLUID IS DANGEROUS. IT CAN CAUSE DAMAGE TO YOUR SKIN.

A. Materials

Solvent, Trichloroethane	0-T-620
Lint-free cloth	Not specified

B. Fixtures, Test and Support Equipment

Source of dry, clean compressed air	Not specified

C. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 52-81-00
Maintenance Manual Chapter 32-00-00

D. Procedure

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE HEALTH AND SAFETY PRECAUTIONS GIVEN IN CHAPTER 20.

(1) Clean the actuator with solvent (0-T-620) and a lint-free cloth.

WARNING: DO NOT POINT A COMPRESSED GAS OUTLET AT YOURSELF OR OTHER PERSONS. COMPRESSED GAS CAN CAUSE INJURY TO PERSONS.

(2) Use a stream of clean, dry compressed air to dry the actuator.
(3) Install the end fitting of the actuator in the mounting (4) and install the pin (3).
(4) Install the washer (7) and the nut (5).
(5) Tighten the nut (5) and safety it with a new split pin (6).
(6) Align the eye end of the actuator, the link (19) and the drag stay (21) and install the pin (20).
(7) Install the washer (16) and the nut (17) and torque the nut to 100 lbf.in (11.3 Nm).
(8) Safety the nut with a new split pin (18).
(9) Remove the caps from the hydraulic line ends and adaptors.
(10) Connect the hydraulic lines (11), (12) and (15) to the adaptors on the actuator.
(11) Remove the caps from the electrical connectors and the receptacles.
(12) Connect the electrical connectors (13) and (14) to the receptacles on the gear well structure.
(13) Connect the nose landing gear doors (Refer to 52-81-00).
(14) Do an adjustment and test of the nose landing gear (Refer to 32-00-00).
(15) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

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4. Nose Gear Drag Stay - Removal (Ref. to Fig. 201)

A. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 52-81-00

B. Procedure

(1) Lift the airplane on jacks until the wheels are clear of the ground.
(2) Disconnect the nose landing gear doors (Refer to 52-81-00).
(3) Open, tag and safety the LDG GEAR CONT circuit breaker on the pilot circuit breaker panel.
(4) Remove the split pin (18) and remove the nut (17) and the washer (16).
(5) Support the landing gear, the actuator and the drag stay and remove the pin (20).
(6) Remove the split pin (9) and remove the nut (8) and the washer (10).
(7) Remove the pin (1) and remove the drag stay from the mounting (2).

5. Nose Gear Drag Stay - Installation (Ref. to Fig. 201)

A. Materials

Solvent, Trichloroethane	0-T-620
Lint-free cloth	Not specified

B. Fixtures, Test and Support Equipment

Source of dry, clean compressed air	Not specified

C. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 32-00-00
Maintenance Manual Chapter 52-81-00

D. Procedure

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE SAFETY PRECAUTIONS GIVEN IN CHAPTER 20.

(1) Clean the drag stay with solvent (0-T-620) and a lint-free cloth.

WARNING: DO NOT POINT A COMPRESSED GAS OUTLET AT YOURSELF OR OTHER PERSONS. COMPRESSED GAS CAN CAUSE INJURY TO PERSONS.

(2) Use a stream of clean, dry compressed air to dry the drag stay.
(3) Install the drag stay (21) into the mounting (2) and install the pin (1).
(4) Install the washer (10) and the nut (8).
(5) Tighten the nut (8) and safety it with a new split pin (9).

(6) Align the eye end of the actuator, the link (19) and the drag stay and install the pin (20).
(7) Install the washer (16) and the nut (17).
(8) Tighten the nut (17) to a torque of 100 lbf.in (11.3 Nm) and safety it with a new split pin (18).
(9) Connect the nose landing gear doors (Refer to 52-81-00).
(10) Do an adjustment and test of the nose landing gear (Refer to 32-00-00).
(11) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

6. Check and Emergency Landing Gear Selector Valves - Removal (Ref. to Fig. 202)

A. Materials

Lint-free cloth	Not specified

B. Fixtures, Test and Support Equipment

Blanking caps	Not specified

C. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 29-00-00
Maintenance Manual Chapter 25-10-00

D. Procedure

(1) Make sure the airplane wheels are chocked.
(2) Depressurize the hydraulic system (Refer to 29-00-00).
(3) Remove the pedestal access panels RH and LH.
(4) Remove the co-pilot seat (Refer to 25-10-00).
(5) Remove the floor panel 212 BRF.
(6) Put cloths below the hydraulic connections of the valves (7, 19).
(7) Open, tag and safety the HYDR CONT circuit breaker on the pilot circuit breaker panel.
(8) Disconnect the hydraulic line ends (2), (5), (6) and (8).
(9) Put caps on the line ends and the adaptors.
(10) Remove the roll pin (1) from the handle (17) and remove the handle from the shaft of the selector (7).
(11) Remove the two bolts (3) and (4) that attach the valves (7, 19) to the pedestal structure (16).
(12) Remove the valves from the pedestal.
(13) Remove the check valve (19) from the emergency selector valve (7).

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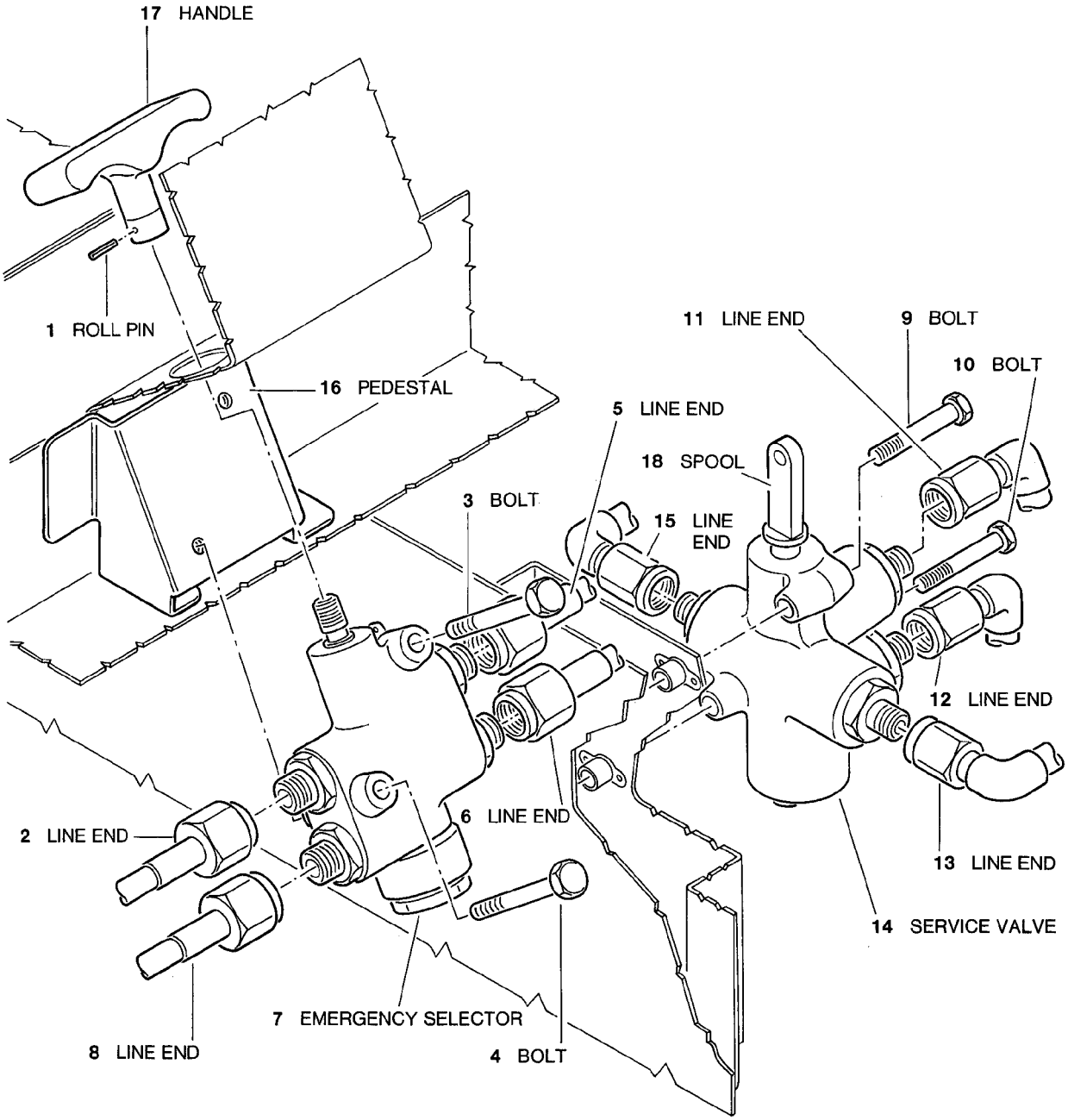

Fig. 202 - Check and Emergency Selector and Service Valves - Removal/Installation

7. Check and Emergency Landing Gear Selector Valves - Installation (Ref. to Fig. 202)

A. Materials

Lint-free cloth	Not specified
Solvent, Trichloroethane	0-T-620

B. Fixtures, Test and Support Equipment

Source of dry, clean compressed air

C. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 32-00-00
Maintenance Manual Chapter 25-10-00

D. Procedure

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE HEALTH AND SAFETY PRECAUTIONS GIVEN IN CHAPTER 20.

(1) Clean the area with solvent (0-T-620) and a lint-free cloth.

WARNING: DO NOT POINT A COMPRESSED GAS SOURCE AT YOURSELF OR OTHER PERSONS. COMPRESSED GAS CAN CAUSE INJURY.

(2) Install the check valve (19) to the emergency selector valve (7).
(3) Dry the area with a stream of dry, clean compressed air.
(4) Install the valves (7, 19) on the pedestal structure (16) and install the two attachment bolts (3) and (4).
(5) Tighten the bolts.
(6) Install the handle (17) and install the roll pin (1).
(7) Remove the caps from the hydraulic line ends and the adaptors.
(8) Connect the line ends (2), (5), (6) and (8) to the adaptors on the valves (7, 19).
(9) Remove the safety tag and close the HYDR CONT circuit breaker on the pilot circuit breaker panel.
(10) Do a normal and emergency retraction/extension test to bleed and test the system and check for leaks.
(11) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(12) Install the pedestal access panels.
(13) Install the floor panel 212 BRF.
(14) Install the co-pilot seat (Refer to 25-10-00).

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8. Service Valve - Removal (Ref. to Fig. 202)

A. Material

Lint-free cloth	Not specified

B. Fixtures, Test and Support Equipment

Blanking caps	Not specified

C. Referenced Information

Maintenance Manual Chapter 25-10-00
Maintenance Manual Chapter 29-00-00

D. Procedure

(1) Make sure the airplane wheels are chocked.
(2) Depressurize the hydraulic system (Refer to 29-00-00).
(3) Remove the pedestal panels LH and RH.
(4) Remove the co-pilot seat (Refer to 25-10-00).
(5) Remove the floor panel 212 BLF.
(6) Put cloths below the hydraulic connections of the valve.
(7) Cut and remove the lockwire from the valve spool (18) and the adjacent pedestal structure.
(8) Disconnect the hydraulic line ends (11), (12), (13) and (15) from the adapters on the service valve (14).
(9) Put caps on the line ends and the adaptors.
(10) Remove the bolts (9) and (10) from the valve (14) and the structure (16) and remove the valve from the pedestal.

9. Service Valve - Installation (Ref. to Fig. 202)

A. Materials

Lint-free cloth	Not specified
Solvent, Trichloroethane	0-T-620

B. Fixtures, Test and Support Equipment

Source o dry, clean compressed air	Not specified

C. Referenced Information

Maintenance Manual Chapter 25-10-00
Maintenance Manual Chapter 32-00-00

D. Procedure

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE HEALTH AND SAFETY PRECAUTIONS GIVEN IN CHAPTER 20.

(1) Clean the area with solvent (0-T-620) and a lint-free cloth.

WARNING: DO NOT POINT A COMPRESSED GAS SOURCE AT YOURSELF OR OTHER PERSONS. COMPRESSED GAS CAN CAUSE INJURY TO PERSONS.

(2) Dry the area with a source of dry compressed air.
(3) Install the valve (14) on the pedestal structure (16) and install the two bolts (9) and (10).
(4) Tighten the bolts.
(5) Remove the caps from the line ends and the adaptors.
(6) Connect and tighten the line ends (11), (12), (13) and (15) to the adaptors on the valve (14).
(7) Do a normal and emergency retraction/extension test to bleed and test the system and check for leaks.
(8) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(9) Install the floor panel 212 BLF.
(10) Install the pedestal panels LH and RH.
(11) Install the co-pilot seat (Refer to 25-10-00).

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WHEELS AND BRAKES - DESCRIPTION AND OPERATION

1. General (Ref. to Fig. 1)

   A. The wheels and brakes system has the components necessary to move the airplane on the ground and to bring the the airplane to a stop.

   B. The wheels and brakes system has these components:

   – The mainwheel assembly
   – The nosewheel assembly
   – The normal and emergency brake valves
   – The relief valves
   – The parking valve and three way valve
   – The wheelbrake assembly.

   The system also uses the main hydraulic power system (Refer to 29-00-00).

2. Description

   A. Main wheel assembly

   (1) The mainwheel assembly is on the landing gear axle in zone 720 (730).
   (2) The wheel assembly has these parts:
   – The tire (tubeless)
   – The split hub wheel assembly
   – Tapered roller bearings with grease seals and retaining rings
   – Brake inserts
   – A heat shield
   – Fusible metal plugs
   – The tire inflation valve.
   (3) An axle nut safetied by two lockbolts attach the wheel assembly to the main gear axle.

   B. Nose wheel assembly

   (1) The nose wheel assembly is on the nose gear axle in zone 710.
   (2) The wheel assembly is similar to the main wheel assembly, and has these parts.
   – The tire (tubeless)
   – The split hub wheel assembly
   – Tapered roller bearings with grease seals and retaining rings.
   – An inflation valve.
   (3) An axle nut safetied by a single lock bolt attaches the wheel assembly to the nose gear axle.

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C. The normal and emergency brake valve

(1) The brake valves are below the floor of the flight compartment in front of the pedestal in zone 213.

(2) The normal and emergency brake valve has a ported body which contains these components:

- A pressure regulator
- A master cylinder
- A normal/emergency selector valve
- A feel simulator

A kinematic linkage connects the brake valve to the toe levers of the rudder pedals.

(3) The valves use normal hydraulic pressure when available and meters the system pressure to operate the wheel brakes in proportion to toe lever movement. A hydraulic simulator in the valve gives a loading proportional to the braking force applied. When normal hydraulic pressure is not available the valves operate as hydraulic master cylinders to pump oil directly to the wheel brakes. The braking is reduced by half when the hydraulic system is depressurized.

D. The relief valves

(1) The relief valves are below the floor of the flight compartment, between STA. 19.56 and STA. 21.59 in zone 130.

(2) The spring loaded ball valves release excess pressure from the brake pressure line to the return line in the case of an overpressure situation.

E. The Parking Valve and three way valve

(1) The parking valve and three way valve are below the flight compartment floor in zone 120.

(2) The two lever-operated spool-valves are connected by a push rod. A cable connects the lever of the parking valve to the parking brake lever.

(3) When the hydraulic system is pressurized and the parking brake lever is set to on the three way valve lets pressurized fluid from the hydraulic system to the brake units through a non-return valve on the inlet port of the three way valve. If the hydraulic system depressurizes, the non-return valve keeps the brake pressure in the line until the selector is set to off. When there is no hydraulic pressure the parking brake can be applied by pushing the toe levers and setting the brake lever to on. The parking valve traps the pressure in the brake line until the lever is released.

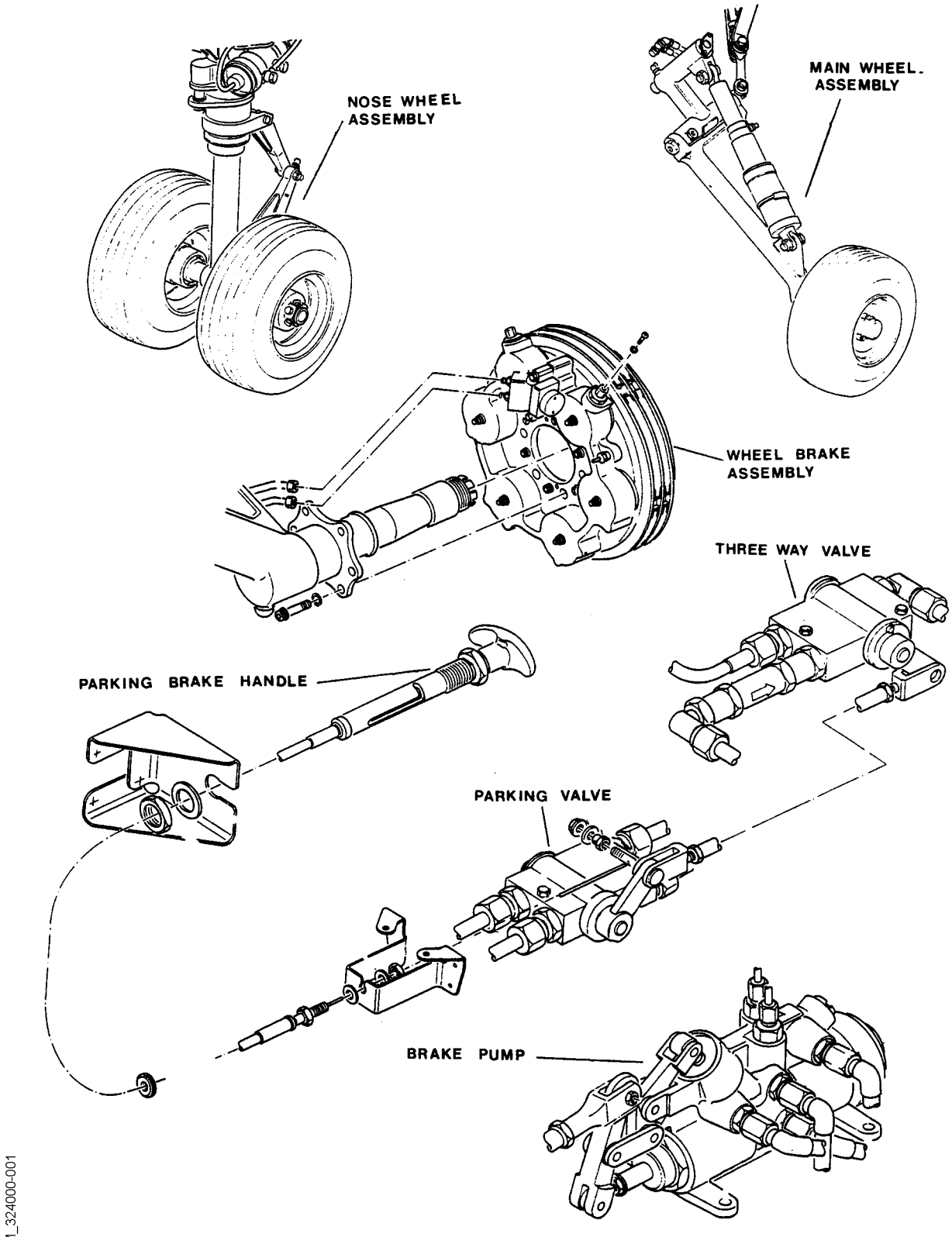

Fig. 1 - Wheels and Brakes - Component Location/Identification

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F. The wheel brake assembly

(1) The wheel brake assembly is attached to the flange on the MLG axle in zone 730 (720).

(2) The assembly is a two rotor carbon composite assembly driven by the main wheel assembly. Six self adjusting hydraulic pistons operate the unit when the brakes are applied. A shuttle valve on the brake assembly prevents leakage on the change-over from normal to emergency operations. A wear indicator (one per each wheel) show the wear condition of the brake assembly. When the pin of the wear indicator is level with the hexagonal body of the indicator the unit must be removed for overhaul.

3. Operation

A. Normal Operation

(1) With the hydraulic system pressurized operation of the toe levers of the rudder pedals operates the pressure regulator of the brake valve. The brake valve supplies metered pressure to the normal line of the shuttle valve on the brake unit. At the same time pressure from the master cylinder acting on the simulator gives a proportional feed back to the pilot to show the pilot the amount of braking force applied.

(2) With the parking brake applied pressurized fluid goes through the non-return valve of the three way valve to the normal part of the brake shuttle valve. The pressure is held in the brake line until the parking brake is released.

B. Emergency operation

(1) With the hydraulic system depressurized the normal/emergency selector in the brake valve operates to connect the master cylinder to the emergency brake line. Movement of the toe brake levers moves the master cylinder to pressurize the emergency part of the brake shuttle valve. The shuttle valve moves to close the normal part and let pressure into the brake unit.

(2) With the toe brakes applied operation of the parking lever operates the parking valve and traps the pressure in the line. The pressure stays trapped until the parking brake is released.

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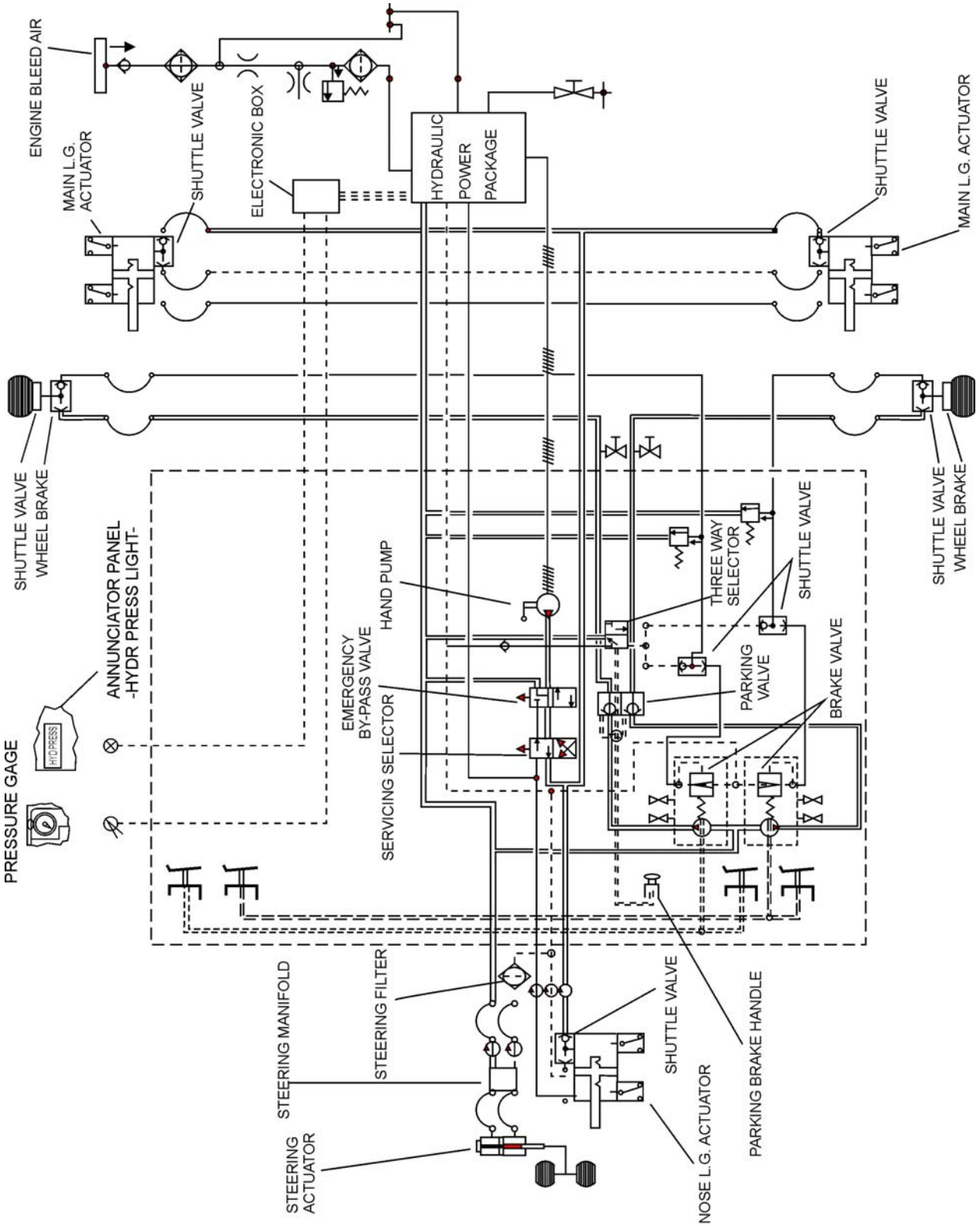

Fig. 2 - Wheels and Brakes - System Schematic

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WHEELS - MAINTENANCE PRACTICES

1. Wheels - Inspection/Check

NOTE: The inspection/check procedures given below are for standard airplane inspection periods. Refer to the component maintenance manual (CMM) for wheel disassembly and overhaul.

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIALS. OBEY THE MANUFACTURER'S HEALTH AND SAFETY INSTRUCTIONS.

WARNING: DO NOT POINT A COMPRESSED GAS OUTLET AT YOURSELF OR OTHER PERSONS. COMPRESSED GAS CAN CAUSE INJURY TO PERSONS.

CAUTION: WHEN YOU USE COMPRESSED AIR TO REMOVE GREASE OR SOLVENT FROM BEARINGS DO NOT LET THE BEARING TURN. IF THE BEARINGS TURN QUICKLY DAMAGE CAN OCCUR.

A. Examine the wheel assemblies - wheels installed

(1) Examine the tires for cuts, cracks, scuffing, break, wear and sidewall separation. If necessary, reverse the tires on the wheels or interchange them for even wear. All tires and wheels are balanced before original installation, and the relationship of tire, wheel and tube should be maintained upon reinstallation. If new components are installed, it may be necessary to rebalance the wheels with the tire mounted. Out-of-balance wheels can cause extreme vibration during takeoff and landing.

NOTE: If any damage is found that will allow the cords of the tire to show, reject the wheel for a tire replacement. If any other kind of damage is found refer to manufacturer applicable documentation.

(2) Examine the wheels, as far as possible without disassembly for general damage or loss of protective finish. Repair or replace as necessary.

(3) Examine the wheel hub for damaged or missing tie bolts. If tie bolts are damaged or missing return the wheel assembly to a maintenance facility for overhaul.

NOTE: Wheel that has been over-heat shall be inspected for hardness. Hardness check is only required on wheel that have been overheated. Overheated has occurred when thermal relief plug in the wheel have released. For more informations refer to BFgoodrich CMM Chapter 32-45-61.

(4) Examine the fuse plugs for obvious damage.

(5) Examine the axle-nut locking bolts for correct installation and safety locking.

(6) If there is evidence of disturbed locking devices do the steps that follow (Refer to page block 401):

(a) Remove and examine the locking bolts and examine them. Replace as necessary.

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(b) Make sure the axle nut is torqued correctly.
(c) Install the locking bolts and safety them with lockwire.

B. Examine the wheel assemblies - wheels removed (Ref. to Fig. 201)

(1) Fixtures, Test and Support Equipment

Container	Not specified
Source of dry compressed air	Not specified

(2) Materials

Solvent	02-001 or 02-006 or 02-017
Solvent	02-008 or 02-013 or 02-018
Grease	03-009
Lint-free cloth	04-013
Primer	05-009

(3) Procedure

(a) Do the examination in steps (1) through (6) of the "Examine the wheel assemblies - wheels installed" procedure.
(b) Remove the retaining ring (2) and the grease seal (3) and remove the bearing (4).
(c) Put the bearing (4) into a container of solvent (02-001) to soften the grease.
(d) Use the compressed air to remove the grease from the bearing.
(e) Clean the remaining grease from the bearing with solvent (02-008).
(f) Dry the bearing for 5 minutes in a flow of compressed air.
(g) Examine the bearing for corrosion, pitting, scoring, flaking and cracking of the roller cage.
(h) Examine the bearing for discoloration and overheating signs.

NOTE: Return the wheel assembly to a maintenance shop for bearing replacement if you find any faults in step (g) and (h) above.

(i) If the bearing is serviceable pack it with grease (03-009).
(j) Clean the bearing cup (6) with solvent (02-008) and a lint-free cloth and dry it with compressed air.
(k) Examine the bearing surfaces of the cup for damage.
(l) Examine the cup for discoloration.

NOTE: Some discoloration is acceptable, but bluing of the cup indicates overheating and is cause for rejection.

CAUTION: WHEEL HALVES THAT HAVE BEEN OVER-HEATED SHALL BE INSPECTED FOR BRINEL HARDNESS ON ENDS OF TORQUE LUG.
WHEEL HALVES WITH HARDNESS VALUES UNDER 120 BHN SHALL BE REJECTED.
OVERHEATING HAS OCCURED WHEN THE THERMAL RELIEF PLUGS IN THE WHEEL ASSEMBLY HAVE RELEASED.

(m) Return the wheel assembly to a maintenance shop for overhaul if you find any faults in steps (k) and (l) above.

(n) Examine the inserts (1) on the brake drive blocks for wear, damage or loosness (View A). If damage is detected, send the wheel to the maintenance shop.

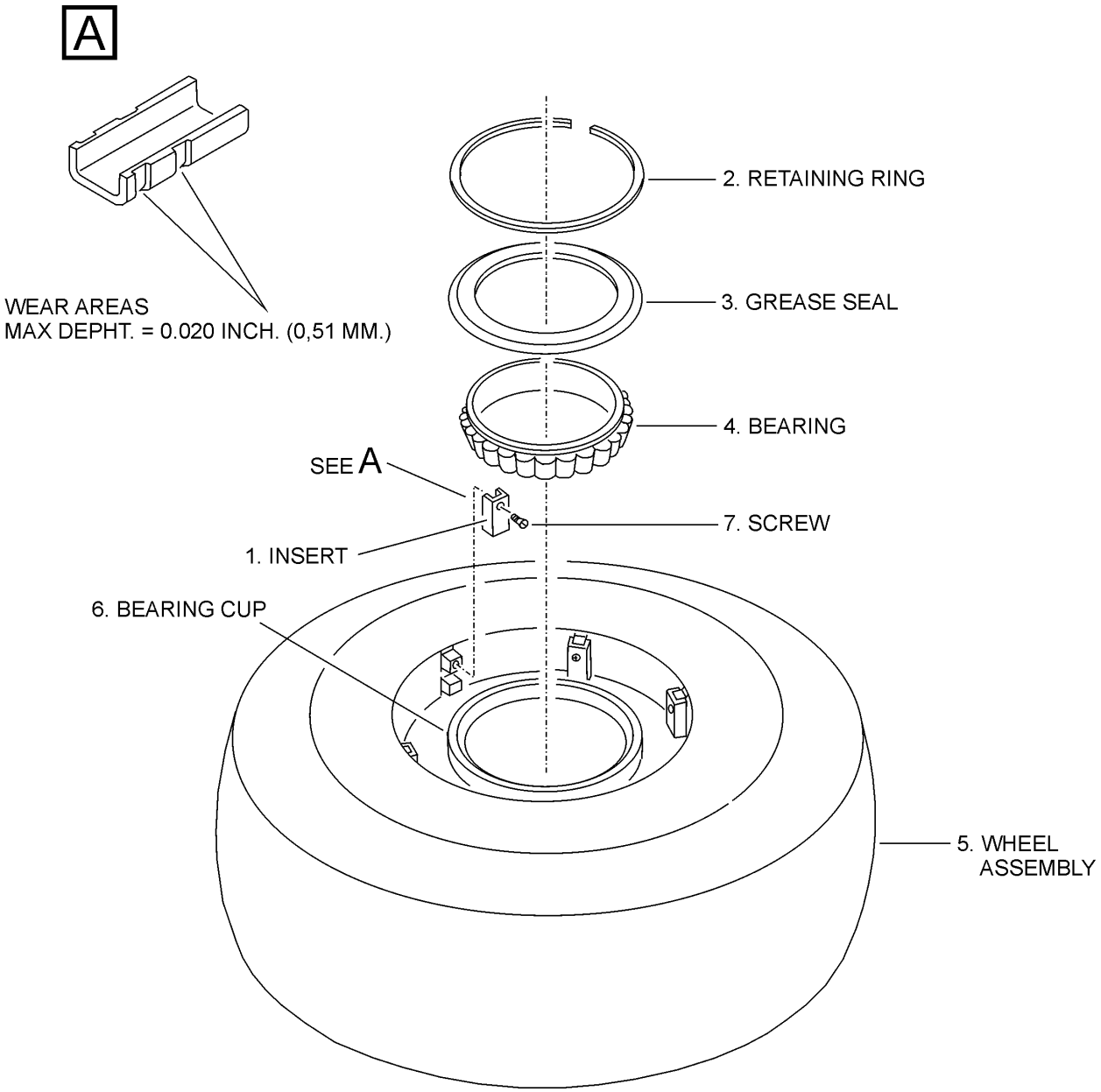

Fig. 201 - Wheels - Inspection/Check

WHEELS - REMOVAL/INSTALLATION

1. Mainwheel - Removal (Ref. to Fig. 401)

   A. Fixtures, Test and Support Equipment

Jack	80-909198-801

WARNING: MAKE SURE THE JACK CAN LIFT A WEIGHT OF 5500 LBS (2500 KG). DAMAGE TO EQUIPMENT AND/OR INJURY TO PERSONNEL CAN OCCUR.

   B. Procedure

   (1) Put the jack below the main gear jacking point (Para 9).
   (2) Make sure the nose wheel and the opposite mainwheel are chocked front and rear.
   (3) Release the parking brake.
   (4) Operate the jack until the wheel is clear of the ground.
   (5) Apply the parking brake.
   (6) Remove the three bolts (8) and washers (7) and remove the cover (1) from the wheel hub.
   (7) Cut and remove the lockwire from the bolts (4).
   (8) Remove the two bolts (4) and the washers (5).
   (9) Remove the axle nut (6).
   (10) Pull the mainwheel assembly clear of the brake unit and from the axle.

NOTE: Try to keep the wheel level when it is clear of the brake units to avoid damage to the bearings.

2. Mainwheel - Installation (Ref. to Fig. 401)

   A. Materials

Grease	03-009
Lockwire	04-008

   B. Tools

Torque wrench - 50 lbf ft (67.8 Nm)	Not specified
Torque wrench - 35.4 lbf in(4.75 Nm)	Not specified

   C. Procedure

   (1) Examine the axle of the landing gear for burrs, scratches and scores and repair them as necessary.
   (2) Apply a thin coating of grease to the axle and to the axle threads by hand.
   (3) Install the wheel assembly over the axle, align the brake drive blocks and push the wheel fully onto the axle.

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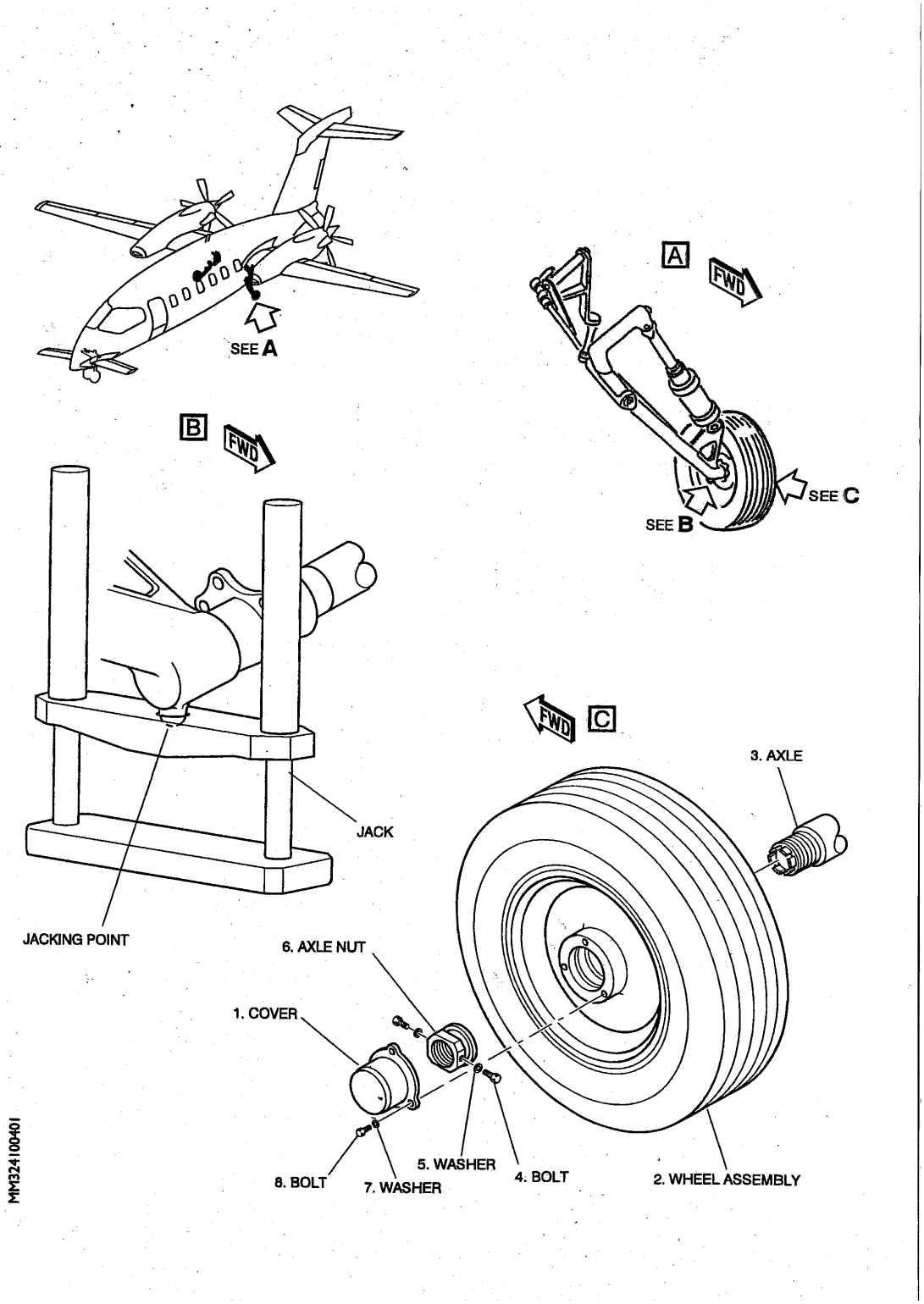

Fig. 401 - Mainwheel - Removal/Installation

(4) Install the axle nut (6) and tighten it by hand.
(5) Tighten the axle nut (6) to a torque of 30 lbf ft (40 Nm).

NOTE: Turn the wheel (2) by hand when you torque the nut to make sure that the wheel bearings turn freely.

(6) Loosen the nut until the torque loading is zero but the nut contact face is still in contact with the wheel bearing.
(7) Tighten the nut again to a torque of 15 lbf ft (20 Nm), make sure the wheel is free to move.
(8) Examine the locking holes to find the locking holes closest to alignment, if necessary tighten the nut to align the opposing holes.
(9) Install the washers (5) and bolts (4).
(10) Tighten the bolts to a torque of 35.4 lbf in (4.75 Nm).
(11) Safety the bolts with lockwire.
(12) Install the cover (1) with the three bolts (8) and washers (7).
(13) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(14) Make a check of the tire pressure (Refer to 12-00-00).
(15) Release the parking brake.
(16) Lower the airplane to the ground and remove the jack.
(17) Apply the parking brake and remove the nosewheel chocks.

3. Main Landing Gear Wheel Tire - Removal (Ref. to Fig. 402)

A. Fixtures, Test and Support Equipment

Torque Wrench
Bead Breaker
Lint-Free Cloth

B. Procedure

(1) Perform the procedure of Mainwheel - Removal (Para. 1).
(2) If tire is installed on wheel, remove cap (14) and inside valve (11) from valve stem and deflate tire.

WARNING: COMPLETE DEFLATE TIRE BEFORE DISASSEMBLING WHEEL.

(3) Remove valve stem (10) and grommet (9) from inner wheel half assembly.

CAUTION: DO NOT USE A PRYBAR OF ANY OTHER SHARP TOOL TO LOOSEN TIRE BEADS, AS WHEEL MAY BE DAMAGED. BREAK BEADS BEFORE LOOSENING TIE BOLTS (1) TO PREVENT DAMAGE TO REGISTER SURFACES.

(4) Use a bead breaker to loosen tire beads from both wheel halves (2, 3) flanges by applying pressure around entire circumference of each side wall.

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WARNING: TIRE MUST BE COMPLETELY DEFLATED BEFORE REMOVING BOLTS.

NOTE: Prior to removal of bolts (1), check for broken or missing bolts. Remove and discard any broken bolts and each adjacent bolt.

(5) Remove nuts (4), washers (5) and bolts (1). If an air wrench is used, hold bolts and turn off nuts.

(6) Separate wheel half assemblies (2, 3) and remove tire and packing (6).

4. Main Landing Gear Wheel Tire - Installation (Ref. to Fig. 402)

A. Materials

Petrolatum (vaseline)	(W-P-236)
Mobil Aviation Grease SHC 100	03-009

B. Fixtures, Test and Support Equipment

Lubtork	(MIL-T-5544)
Torque Wrench	Not Specified
Lint-Free Cloth	Not Specified

C. Referenced Information

Maintenance Manual Chapter 91-00-00

D. Procedure

CAUTION: CLEAN ALL PARTS TO ASSURE NO FOREIGN MATTER OR OLD LUBRICANT REMAINS ON THE MATING SURFACE.

CAUTION: INSPECT ALL NUTS AND BOLTS FOR DAMAGE, EVEN NEW ONES; THERE SHOULD BE NO NICKS, BURRS, DAMAGED OR MISSING THREADS WHICH CAN CAUSE FALSE TORQUE READINGS.

(1) Apply a light coat of petrolatum (vaseline) to packing (6) before assembly.

(2) Apply a light coat of petrolatum (vaseline) to seal (7) before assembly.

(3) Apply a light coat of lubtork, MIL-T-5544 anti-seize compound to threads of tie bolts (1) and bearing surfaces of the bolt heads, nuts (4) and washer (5) to ease lubtorquing of bolts.

CAUTION: COUNTERSUNK SIDE OF WASHERS (5) MUST BE AGAINST BOLT HEAD AND NUT. NON-COMPLIANCE MAY RESULT IN BOLT FAILURE (REF. FIG.403).

NOTE: MIL-T-5544 lubtork is cure dated: some separation may occur over a period of time. A new container should be thoroughly mixed when first opened and should be covered when not in use to prevent contamination. Mix every 60 days to prevent separation.

(4) Lay inner wheel half assembly (3) on clean, flat surface with mating surface up.

CAUTION: EXAMINE THE WHEELS FOR GENERAL CONDITION. REPLACE OR REPAIR AS NECESSARY.

(5) Install lubricated preformed packing (6) on packing groove of inner wheel half assembly (3).

(6) Carefully lay tire over inner wheel half assembly (3), making sure red dot (or mark) on tire bead is adjacent to inflation valve hole in mating surface of inner wheel half.

(7) Push toe of tire over onto inner wheel half to avoid catching toe between wheel halves when assembling.

(8) Carefully align outer wheel half (2) over inner wheel half assembly (3) making sure opening in outer half for inflation valve assembly (8) is correctly centred over inflation valve hole in mating surface of inner wheel half. Press outer wheel half (2) against inner wheel half (3).

(9) Install bolts (1) through washers (5). Lift wheel and tire assembly to vertical position and insert bolts through inner wheel half and out through outer wheel half.

(10) Install washers (5) and nuts (4) on tie bolts (1). Tighten in criss-cross sequence to approximately 75% 161 to 169 lb.in (18.1 to 19.1 Nm) of specified torque value.

(11) Final torque each nut in a clockwise sequence to the final torque to 215 to 225 lb.in (24.2 to 25.4 Nm).

(12) Install lubricated packing (9) in groove of valve stem (10) of valve assembly (8).

(13) Install valve assembly (8) in tapped hole in inner wheel half (3). Dry torque to 50 to 75 lb.in (5.6 to 8.5 Nm).

(14) Make sure inside valve (11) is installed and tightly seated inside valve stem (10).

WARNING: DO NOT INFLATE TIRE UNTIL ALL TIE BOLTS ARE INSTALLED AND PROPERLY TIGHTENED.

WARNING: IT IS RECOMMENDED THAT ALL MOUNTED TIRES BE INFLATED INSIDE A METAL CAGE TO AVOID POSSIBLE INJURY TO PERSONNEL.

(15) Before installing bearing cones (12) in wheel assembly pack with grease (Refer to Chapter 91-00-00). Wipe off excess grease. Install bearing cones (12). Grease seals (7) and retaining rings (13).

(16) Before installing valve cap (14) inflate tire to required pressure for service, or 20% of normal inflation pressure if wheel is to be stored.

(17) Perform the procedure of Mainwheel - Installation (Para. 2).

(18) For the tire inflation refer to Chapter 12-10-04 Para. 1.

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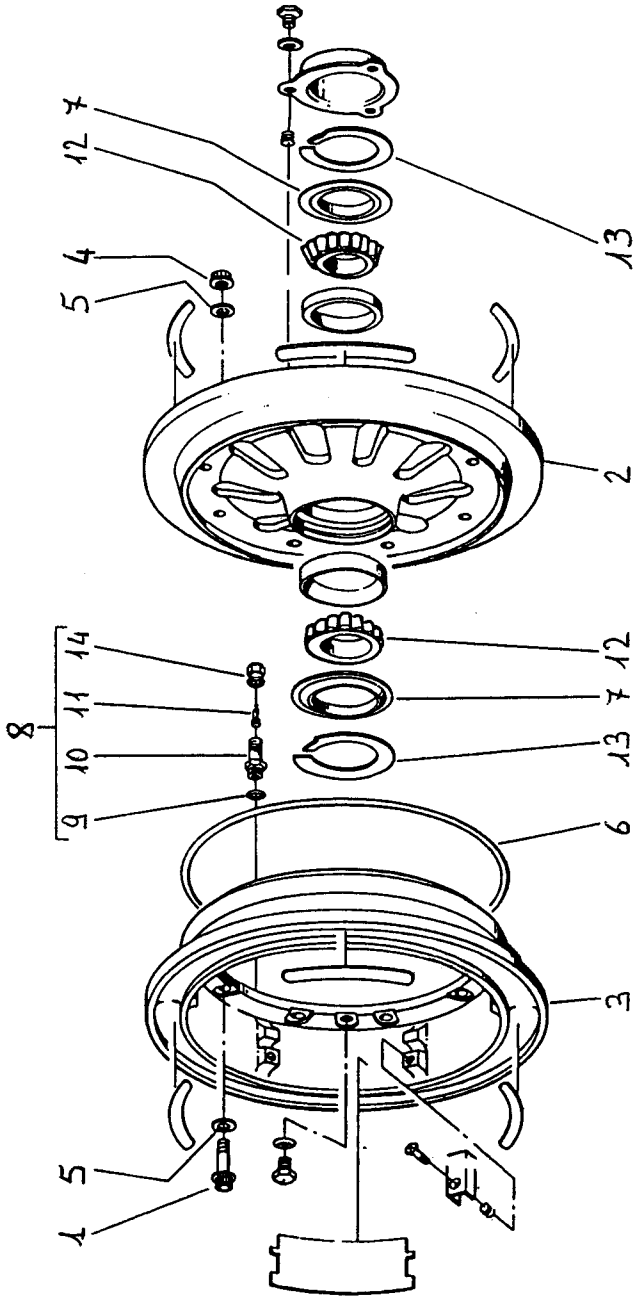

MM_324100-403

Fig. 402 - Main Landing Gear Wheel Tire - Removal/Installation

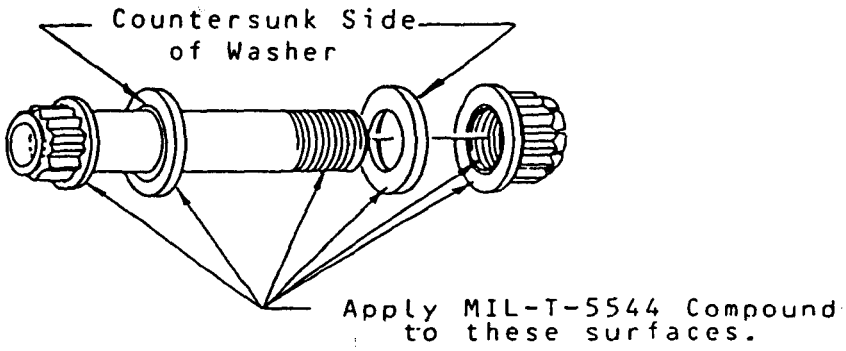

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Fig. 403 - Lubtork Application

5. Nosewheel - Removal (Ref. to Fig. 404)

A. Fixtures, Test and Support Equipment

Ramp (solid hardwood)	Not specified

B. Procedure

(1) Release the parking brake and tow the airplane on to the ramp so that the wheel to be removed is clear of the ground and the wheel to remain installed is on the ramp.
(2) Apply the parking brake.
(3) Cut and remove the lockwire from the bolt (5).
(4) Remove the bolt (5) and the washer (4) from the axle nut (3).
(5) Remove the axle nut (3).
(6) Pull the wheel assembly (1) clear of the axle (2).

6. Nosewheel - Installation (Ref. to Fig. 404)

A. Materials

Grease	03-009
Lockwire	04-008

B. Tools

Torque wrench - 25 lbf ft (33.9 Nm)	Not specified
Torque wrench - 12 lbf ft (16.3 Nm)	Not specified
Torque wrench - 25 lbf in (2.8 Nm)	Not specified

C. Referenced Information

Maintenance Manual Chapter 12-00-00
Maintenance Manual Chapter 91-00-00

D. Procedure

(1) Examine the axle of the nose gear for burrs, scratches and scores and repair them as necessary.
(2) Apply a thin coating of grease to the axle and the threads by hand.
(3) Install the wheel assembly over the axle and push it fully against the axle flange.
(4) Install the axle nut (3) onto the axle (2) and tighten it by hand.
(5) Tighten the nut (3) to a torque of 10 lbf ft (13.5 Nm).

NOTE: Turn the wheel (1) by hand when you torque the nut to make sure that the bearings turn freely.

(6) Loosen the nut until the torque loading is zero but the nut contact face is still in contact with the wheel bearing.
(7) Tighten the nut again to a torque of 5 lbf ft (6.8 Nm), make sure the wheel still turns freely.
(8) Examine the locking holes in the nut (3) and the axle (2) to find the hole that is in alignment. If necessary tighten the nut to align a hole.
(9) Install the bolt (5) and the washer (4).
(10) Tighten the bolt to 25 lbf in (2.8 Nm) and safety it with lockwire.
(11) Make a check of the tire pressure (Refer to 12-00-00).
(12) Release the parking brake and tow the airplane clear of the ramp.
(13) Apply the parking brake.
(14) Remove all tools, materials and equipment from the work area. Make sure the area is clean.

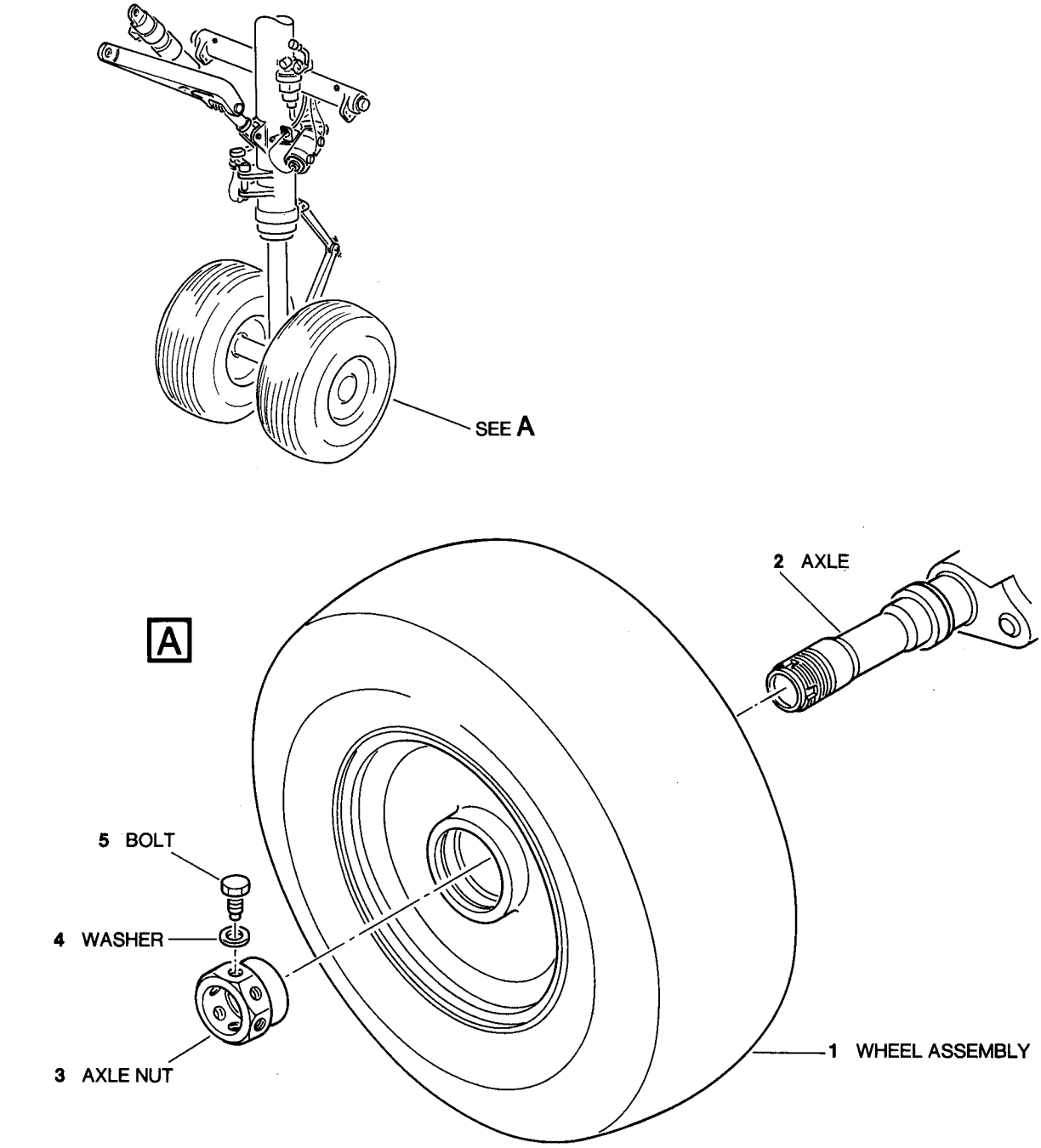

Fig. 404 - Nosewheel - Removal/Installation

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7. Nose Landing Gear Wheel Tire - Removal (Ref. to Fig. 406)

A. Fixtures, Test and Support Equipment

Torque Wrench
Bead Breaker
Lint-Free Cloth

B. Procedure

(1) Perform the procedure of Nosewheel - Removal (Para. 5)

(2) If tire is installed on wheel, remove cap (1) and inside valve (2) from valve stem and deflate tire.

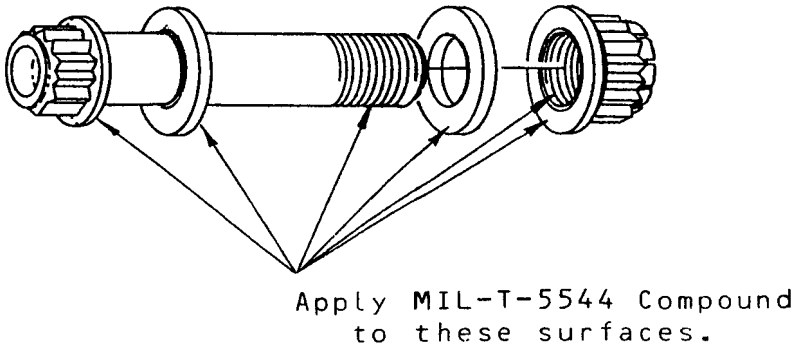
WARNING: COMPLETELY DEFLATE TIRE BEFORE DISASSEMBLING WHEEL.

(3) Remove the valve stem (3) and grommet (4) from outer wheel half assembly.

CAUTION: DO NOT USE A PRYBAR OR ANY OTHER SHARP TOOL TO LOOSEN TIRE BEADS, AS WHEEL MAY BE DAMAGED. BREAK BEADS BEFORE LOOSENING TIE BOLTS (5) TO PREVENT DAMAGE TO REGISTER SURFACES.

(4) Use a bead breaker to loosen tire beads from both wheel halves (6, 7) by applying pressure around entire circumference of each side wall.

NOTE: Prior to removal of bolts (5), check for broken or missing bolt. Remove and discard any broken bolts and each adjacent bolt.



MM_324100-405

Fig. 405 - Lubtork Application

WARNING: TIRE MUST BE COMPLETELY DEFLATED BEFORE REMOVING BOLTS.

(5) Remove nuts (8), washers (9) and bolts (5). If an air wrench is used, hold bolts and turn off nuts.

(6) Separate wheel half assemblies (6, 7) and remove tire and packing (10).

NOTE: No further disassembly is usually necessary. However, if bearing cups must be removed for cup replacement or repair of wheel bearing bore, proceed as follows.

(7) To remove bearing cups (11, 12) from wheel halves (6, 7) remove retaining rings (13) and grease seal assembly (14) from hub areas. Support wheel hub on arbor press table and use cup removal plate and arbor press or mallet to force bearing cup out of wheel hub.

8. Nose Landing Gear Wheel Tire - Installation (Ref. to Fig. 406)

A. Materials

Grease	03-009

B. Fixtures, Test and Support Equipment

Lubtork (MIL-T-5544)
Torque Wrenches
Lint-Free Cloth
Dow-Corning DC-4

C. Referenced Information

Maintenance Manual Chapter 91-00-00

BF GOODRICH Aerospace Component Maintenance Manual 3-1460

D. Procedure

(1) Apply a light coat of silicone compound (Dow-Corning DC-4 or equivalent) to packing (10) prior to installation on inner wheel half assembly.

(2) Apply MIL-T-5544 anti-seize compound to the threads of bolt (5), nut (8) and to bearing surfaces of the nuts (8) and washers (9) to facilitate torquing of bolts (Refer to Fig. 405).

NOTE: MIL-T-5544 lubtork is cure dated; some separation may occur over a period of time. A new container should be thoroughly mixed when first opened and should be covered when not in use to prevent contamination. Mix every 60 days to prevent separation.

(3) If bearing cups (11, 12) have been removed from outer (7) or inner (6) wheel halves, replace cups in accordance with the instructions in Repair, Bearing Cups.

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(4) Install lubricated packing (10) in O.D. register groove of inner wheel half assembly (6). Check to see that packing is not twisted and is properly seated.

(5) Mount tire on inner wheel half assembly (6) making sure red dot (or mark) in tire bead is asjacent to the tire inflation valve.

NOTE: Best balance is obtained if light sides (impression stamped "L") are 180° apart when wheel halves are assembled.

(6) Assemble inner (6) and outer (7) wheel half assemblies, making sure lightening holes are aligned. Install bolts (5), washers (9), nuts (8) and preliminary torque bolts to 16 to 20 lb.in (1.8 to 2.3 N.m) in criss-cross sequence. Final torque bolts to 20 to 25 lb.in (2.3 to 2.8 Nm) criss-cross sequence.

NOTE: Bolt threads, bearing surfaces of nuts, bolt heads, and washers must be lubricated with MIL-T-5544 anti-seize compound prior to installation (Refer to Fig. 404).

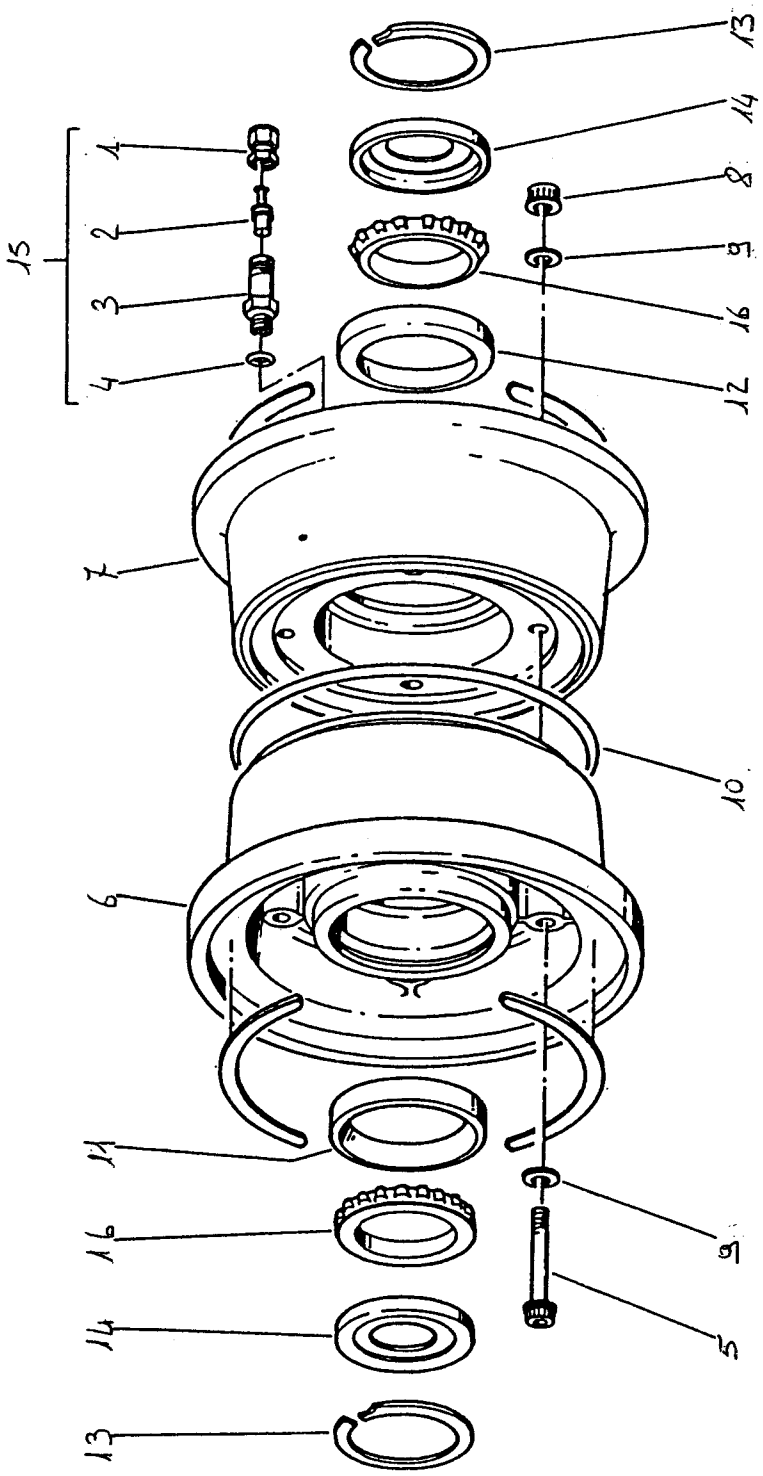
(7) Install tire valve assembly (15) in the valve hole of the outer wheel half assembly (7) making sure the grommet is properly seated before tightening valve stem. Dry torque to 50 to 75 lb.in (5.6 to 8.5 Nm).

(8) For correct wheel-tire balance, after torquing bolts (5) and before completing the assembly, check to see that the red dot (or mark) on the tire bead is adjacent to the tubeless tire valve assembly.

(9) Before installing valve cap, inflate tire to required pressure for service, or 20% of normal inflation pressure if wheel is to be stored.

WARNING: IT IS RECOMMENDED THAT ALL MOUNTED TIRES BE INFLATED INSIDE A METAL CAGE TO AVOID POSSIBLE INJURY TO PERSONNEL.

(10) Before installing bearing cones (16) in the wheel halves (6, 7), pack with grease 03-009 (Refer to chapter 91-00-00) . Wipe off excess grease, then install greased seals (14) and retaining rings (13).



MM_324100-406

Fig. 406 - Nose Landing Gear Wheel Tire - Removal/Installation

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9. Jack for Wheels Change - Installation (Ref. to Fig. 407)

A. Procedure

NOTE: The numbers in the circles indicates the location of the jack components inside the bag.

(1) Screw the inserts (8,9) to the hydraulic actuators (5,6).
(2) Screw the hydraulic actuators (5,6) to the actuator union plate (7)
(3) Connect the flexible hoses (2,3) to the hand pump (4).

CAUTION: THE BASE PLATE MUST BE PLACED WITH THE LARGER SIDE TOWARD THE AIRPLANE CENTERLINE

(4) Connect the flexible hoses (2,3) to the hydraulic actuators (5,6).

CAUTION: THE JACK MUST BE LIGHTLY INCLINED TOWARD THE WHEEL

(5) Refer to the hydraulic hand pump Instrucion Sheet and remove air from the hydraulic system, add oil if necessary.
(6) Place the base plate (1) in position under the jacking point (10).
(7) Insert the lower actuators terminal ends in the base plate (1) and at the same time adjust the actuator union plate (7) at the jacking point (10).
(8) Jack the landing gear leg slowly by the hand pump action.

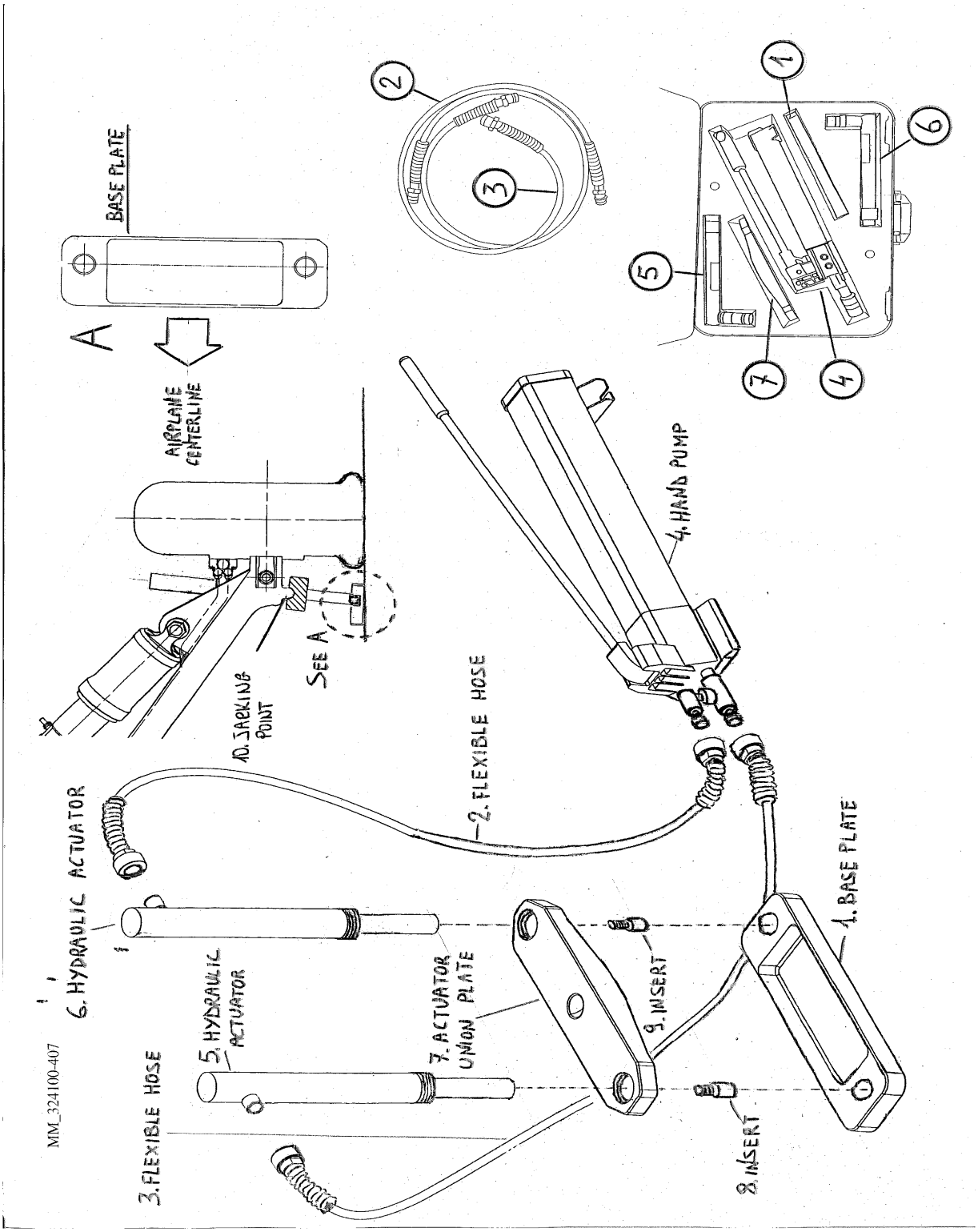

Fig. 407 - Wheels Jack - Installation

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BRAKES - MAINTENANCE PRACTICES

1. General

A. This page block contains the following maintenance practices:

- A bleeding procedure for the brakes
- A removal/installation of the mainwheel brake assemblies
- A removal/installation of the brake pumps
- A removal/installation of the parking brake valve
- A removal/installation of the three way valve
- A removal/installation of the parking brake cable
- An adjustment of the linkage of the parking brake valve.

WARNING: BE CAREFUL WITH THE HYDRAULIC SYSTEM IT IS PRESSURIZED

- PUT ON SAFETY GOGGLES AND PROTECTIVE CLOTHING.
- RELEASE THE PRESSURE SLOWLY.
- A SUDDEN RELEASE OF PRESSURE IS DANGEROUS AND CAN CAUSE INJURY TO PERSONS.

CAUTION: CHECK FOR MINIMUM HARDNESS OF 297 BHN (ROCKWELL C32).
HARDNESS CHECK IS ONLY REQUIRED ON BRAKES THAT HAVE OVERHEATED. OVERHEATING HAS OCCURRED WHEN THE THERMAL RELIEF PLUGS IN THE WHEEL ASSEMBLY HAVE RELEASED.

2. Brakes - Bleeding (Ref. to Fig. 201)

NOTE: Position a person in the flight compartment to operate the controls.

A. Fixtures, Test and Support Equipment

Clear plastic tube with adaptor (2 off)	Not specified
Container for hydraulic oil	Not specified

B. Referenced Information

Maintenance Manual Chapter 29-00-00
Maintenance Manual Chapter 12-00-00

C. Procedure

(1) Pressurize the hydraulic system (Refer to 29-00-00).
(2) Remove the two bleed screws (6) and the washers (5) from the bleed valves (7).
(3) Install the bleed tubes and adaptors into the bleed valves (7) and put the end of the tubes into the container.
(4) Set the parking brake to on.

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(5) Open each bleed valve in turn and let the hydraulic fluid flow until it is air-free, then close the valve.
(6) Depressurize the hydraulic system (Refer to 29-00-00).
(7) Operate the toe brakes to move the shuttle valve to the emergency position.
(8) Continue to operate the toe brakes and open each bleed valve in turn until the hydraulic fluid flow is free of air.
(9) Close the valves.
(10) Remove the bleed tubes and adaptors and the fluid container.
(11) Install and tighten the screw (6) and the washer (5).
(12) Replenish the hydraulic system (Refer to 12-00-00).

NOTE: If there is a further problem with air in the system, bleed the brake emergency line at the bleed valve installed on the intersection with the bulkhead STA. 6000 and the brake pumps (Refer to Para. 6). Do steps (1) through (12) above again.

3. Wheelbrake Assemblies - Removal (Ref. to Fig. 201)

A. Fixtures, Test and Support Equipment

Pressure blanks	Not specified
Blanking caps	Not specified
Warning signs "DO NOT OPERATE THE BRAKES"	

B. Referenced Information

Maintenance Manual Chapter 29-00-00
Maintenance Manual Chapter 32-41-00.

C. Procedure

(1) Remove the mainwheel assemblies (Refer to 32-41-00).
(2) Depressurize the hydraulic system (Refer to 29-00-00).
(3) Put up a warning sign in the flight compartment to tell personnel DO NOT OPERATE THE BRAKES.
(4) Open, tag and safety this circuit breaker on the Pilot panel, LDG GEAR CONT.
(5) Disconnect the line ends (1) and (2) from the adaptors (3) and (4) on the shuttle valve.
(6) Put caps on the adaptors (3) and (4).
(7) Put pressure blanks into the line ends (1) and (2).
(8) Remove the six bolts (13) and washers (12) from the brake unit (8) and the flange (11).
(9) Remove the brake unit.

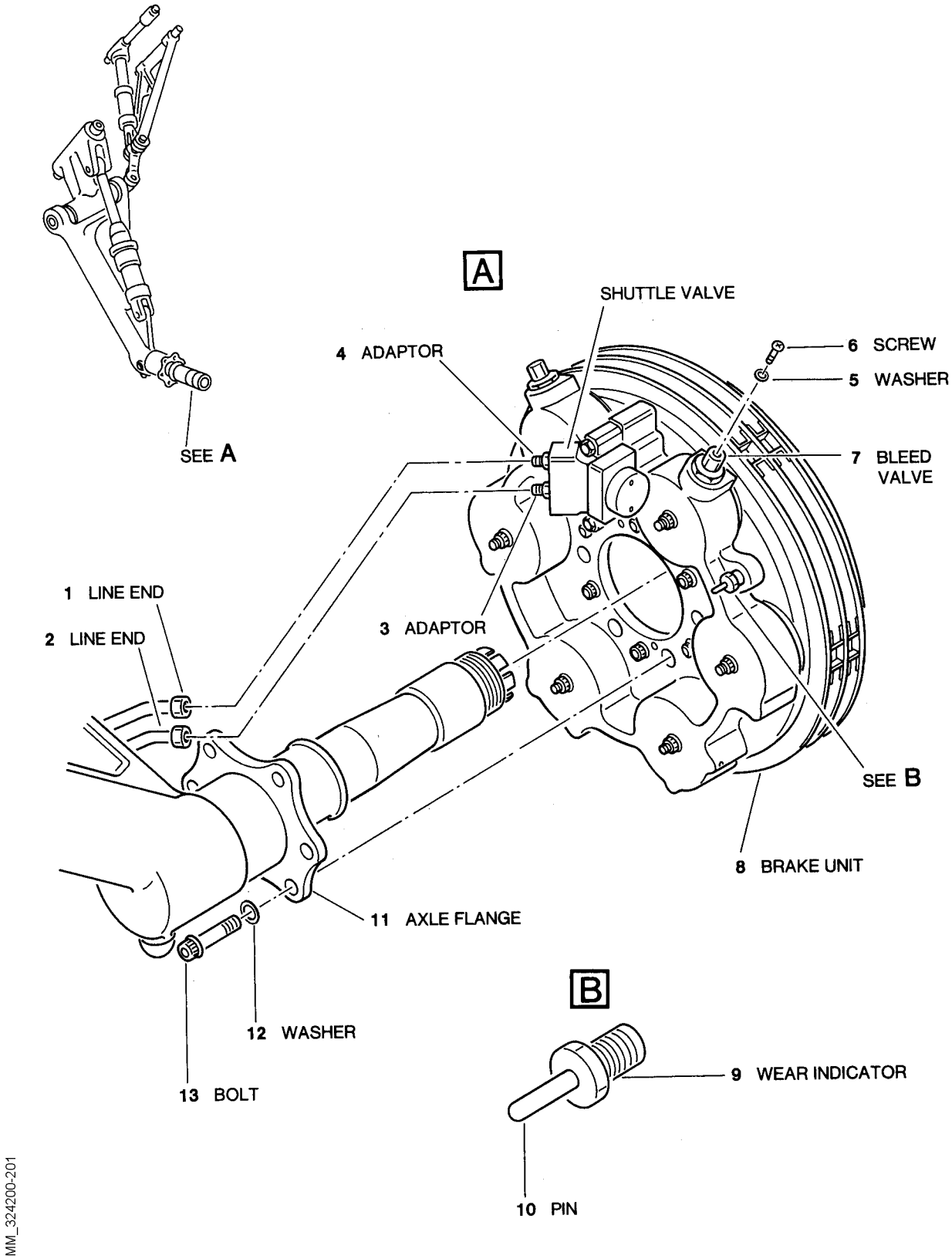

Fig. 201 - Brakes - Maintenance Practices

4. Wheelbrake Assemblies - Installation (Ref. to Fig. 201)

A. Tools

Torque wrench 410 - 420 lbf in (46.0 - 47.5)

B. Materials

Jointing compound (zinc chromate)	TBD
Solvent (MEK)	TT-M-261
Lint-free cloth	Not specified

C. Referenced Information

Maintenance Manual Chapter 32-41-00

D. Procedure

(1) Clean the joint face of the axle flange with solvent (TT-M-261) and a lint-free cloth.
(2) Apply a thin coat of jointing compound (TBD) to the face of the flange.
(3) Install the brake unit (8) on to the flange (11) and align the attachment holes.
(4) Install the washers (12) on the bolts (13) with the countersunk part towards the bolt head and install the bolts (13) through the flange (11) and into the brake unit.
(5) Tighten the bolts to a torque of between 410 and 420 lbf in (46.0 and 47.5 Nm).
(6) Remove the caps and the pressure blanks from the line-ends (1) and (2) and the adaptors (3) and (4).
(7) Connect and tighten the line end.
(8) Bleed the brakes (Refer to Para 2).
(9) Install the mainwheel assembly (Refer to 32-41-00).
(10) Remove the warning sign.

5. Brake Pumps - Removal (Ref. to Fig. 202)

A. Referenced Information

Maintenance Manual Chapter 25-10-00
Maintenance Manual Chapter 29-00-00

B. Fixtures, Test and Support Equipment

Blanking caps	Not specified
Lint-Free cloth	Not specified

C. Procedure

(1) Remove the pilot and co-pilot seats (Refer to 25-10-00).
(2) Make sure the airplane is chocked.
(3) Depressurize the hydraulic system (Refer to 29-00-00).
(4) Release the parking brake.
(5) Remove the access panels 211 BLF and 211 ALF.
(6) Remove the nut (14) and the washer (15) and remove the bolt (1) from the rod (16) and the lever (2).
(7) Put cloths below the brake pump.

(8) Disconnect the two bleed tube line ends (3) and (4) from the adaptors on the pump (13).
(9) Cap the line ends and the adaptors.
(10) Disconnect the line ends (9), (10), (11) and (12) from the adaptors of the pressure, return, normal and emergency ports on the pump (13). Put caps on the line ends and the adaptors.
(11) Remove the four bolts (8) from the attachment lugs of the pump (13) and the anchor nuts on the structure between FRA 9 and 10.
(12) Remove the pump.

6. Brake Pump - Installation (Ref. to Fig. 202)

A. Fixtures, Test and Support Equipment

Lint-free cloth	Not specified
Clear plastic tubes with bleed adaptors	Not specified
Container for hydraulic oil	Not specified

B. Referenced Information

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 25-10-00
Maintenance Manual Chapter 29-00-00

C. Procedure

(1) Remove the cloths from the work area and put dry cloths in their place.
(2) Put the pump (13) into position on the structure between FRA 9 and 10 and align the mounting holes.
(3) Install and tighten the four bolts (8).
(4) Remove the caps from the line ends (9), (10), (11) and (12) and the adaptors.
(5) Connect and tighten the line ends.
(6) Remove the caps from the line ends of the bleed lines (3) and (4) and the adaptors.
(7) Connect and tighten the line ends (3) and (4).
(8) Connect the rod (16) to the lever (2) with the bolt (1) the washer (2) and the nut (14).
(9) Tighten the nut.
(10) Remove the cloths from the work area and clean the area with new cloths.
(11) Do the steps that follow to remove air from the system:
  (a) Remove the bleed screws (5) and the washers (6) from the bleed valves (7).
  (b) Install the bleed tubes and adaptors into the bleed valves (7).
  (c) Put the ends of the bleed tubes into the container.
  (d) Pressurize the hydraulic system (Refer to 29-00-00).
  (e) Operate the toe brakes and open and close the bleed valves (7) until the fluid flows free of air.
  (f) Remove the bleed tubes and adaptors and the fluid container.
  (g) Install and tighten the bleed screws (5) and the washers (6).
(12) Install the access panels 211 ALF and 211 BLF.
(13) Install the pilot and co-pilot seats (Refer to 25-10-00).
(14) Check and if necessary bleed the mainwheel brakes (Refer to Para. 2).

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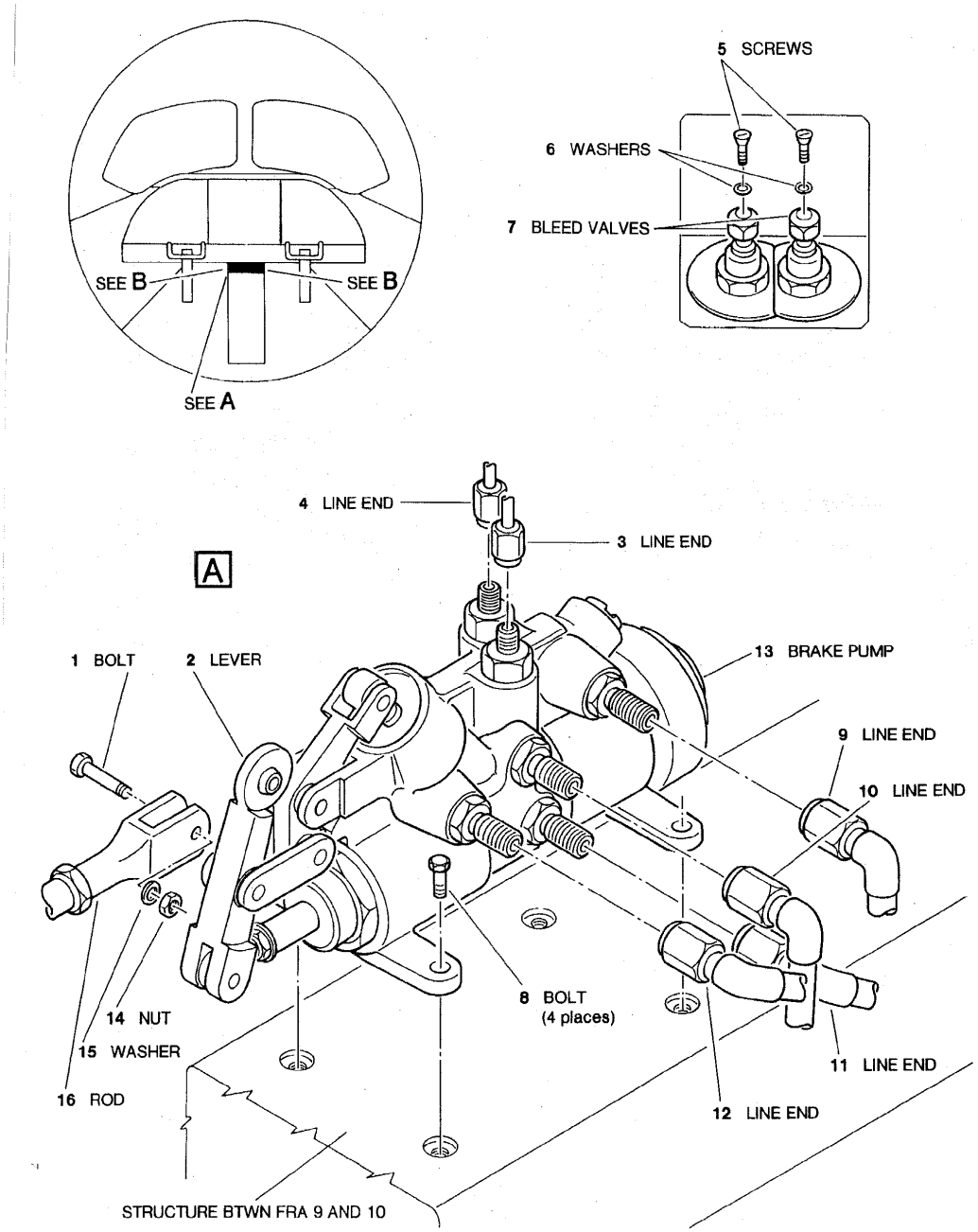

Fig. 202 - Brake Pump - Removal/Installation

7. Parking Brake Valve - Removal (Ref. to Fig. 203)

A. Fixtures, Test and Support Equipment

Blanking caps	Not specified
Lint-free cloth	Not specified

B. Referenced Information

Maintenance Manual Chapter 25-10-00
Maintenance Manual Chapter 29-00-00

C. Procedure

(1) Remove the co-pilot seat (Refer to 25-10-00).
(2) Remove the access panels 211 ELF and 211 GLF.
(3) Make sure the mainwheels are chocked.
(4) Put cloths below the parking brake valve connections.
(5) Remove the nut (4) and the washer (5) and pull the cable (34) from the cable retainer (6).
(6) Remove the cable retainer (6) and the pin (26) and move the rod (25) clear of the lever (27).
(7) Depressurize the hydraulic system (Refer to 29-00-00).
(8) Disconnect the line ends (31) and (32) from the adaptors (30) and (33).
(9) Put caps on the line ends and the adaptors.
(10) Disconnect the line ends (22) and (23) from the adaptors (3) and (24).
(11) Put caps on the line ends and the adaptors.
(12) Remove the two bolts (2) and the washers (1) from the valve (35) and mounting bracket on FRA 13.
(13) Remove the valve (35) and catch and retain the spacers (29).

8. Parking Brake Valve - Installation (Ref. to Fig. 203)

A. Referenced Information

Maintenance Manual Chapter 25-10-00
Maintenance Manual Chapter 32-40-00

B. Procedure

(1) Install the valve (34) in position on the bracket (28) and position the spacers (29).
(2) Install the bolts (2) and the washers (1) through the valve and the spacers into the anchor nuts on the mounting bracket (28).
(3) Tighten the bolts.
(4) Remove the caps from the line ends (22) and (23) and the adaptors (3) and (24).
(5) Connect the line ends and tighten them.
(6) Remove the caps from the line ends (31) and (32) and the adaptors (39) and (33).
(7) Connect the line ends and tighten them.
(8) Install the end of the rod (25) over the lever (27) and install the pin (26).
(9) Install the cable retainer (6) on to the pin (26) and align the cable retaining holes.

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(10) Install the washer (5) and the nut (4) to the pin (26).
(11) Make sure that the parking brake lever is in the off position.
(12) Pull the cable to remove any play and install it through the hole in the cable retainer. Tighten the nut (4).
(13) Bleed the wheel brakes (Refer to Para. 2) and check for leaks.
(14) Remove the cloths from below the valve and clean the work area.
(15) Install the access panels 211 ELF and 211 GLF.
(16) Install the co-pilot seat (Refer to 25-10-00).
(17) Do a functional check of the brakes (Refer to 32-40-00).

9. Three Way Valve - Removal (Ref. to Fig. 203)

A. Fixtures, Test and Support Equipment

Blanking caps	Not specified
Lint-free cloth	Not specified

B. Referenced Information

Maintenance Manual Chapter 25-10-00
Maintenance Manual Chapter 29-00-00

C. Procedure

(1) Remove the cloths from the work area and put dry cloths in their place.
(2) Put the pump (13) into position on the structure between FRA 9 and 10 and align the mounting holes.
(3) Install and tighten the four bolts (8).
(4) Remove the caps from the line ends (9), (10), (11) and (12) and the adaptors.
(5) Connect and tighten the line ends.
(6) Remove the caps from the line ends of the bleed lines (3) and (4) and the adaptors.
(7) Connect and tighten the line ends (3) and (4).
(8) Connect the rod (16) to the lever (2) with the bolt (1) the washer (2) and the nut (14).
(9) Tighten the nut.
(10) Remove the cloths from the work area and clean the area with new cloths.
(11) Do the steps that follow to remove air from the system:
  (a) Remove the bleed screws (5) and the washers (6) from the bleed valves (7).
  (b) Install the bleed tubes and adaptors into the bleed valves (7).
  (c) Put the ends of the bleed tubes into the container.
  (d) Pressurize the hydraulic system (Refer to 29-00-00).
  (e) Operate the toe brakes and open and close the bleed valves (7) until the fluid flows free of air.
  (f) Remove the bleed tubes and adaptors and the fluid container.
  (g) Install and tighten the bleed screws (5) and the washers (6).
(12) Install the access panels 211 ALF and 211 BLF.
(13) Install the pilot and co-pilot seats (Refer to 25-10-00).
(14) Check and if necessary bleed the mainwheel brakes (Refer to Para. 2).

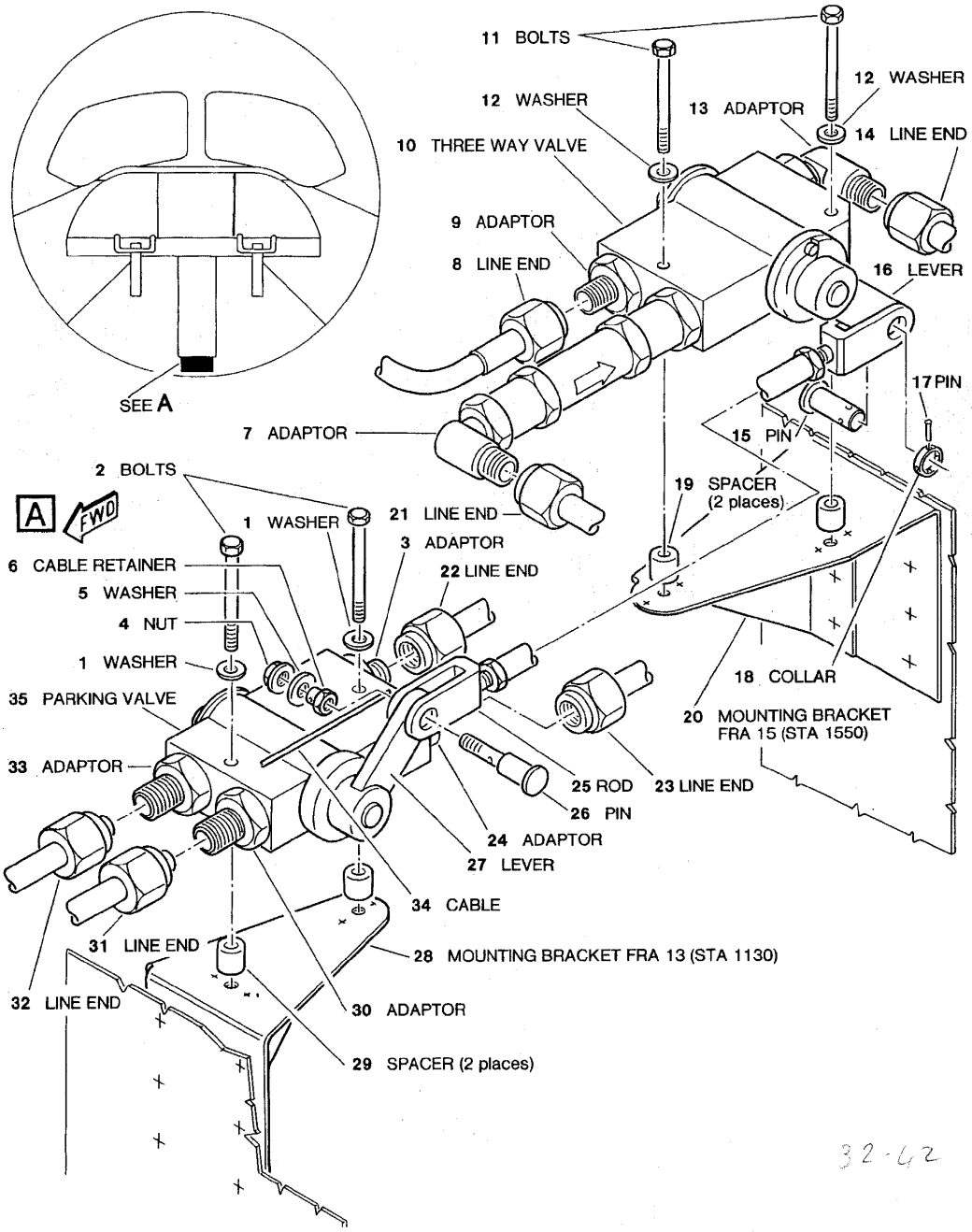

Fig. 203 - Three Way Valve and Parking Valve - Removal/Installation

10. Three Way Valve - Installation (Ref. to Fig. 203)

A. Referenced Information

Maintenance Manual Chapter 25-10-00
Maintenance Manual Chapter 32-40-00

B. Procedure

(1) Install the valve (10) in position on the bracket (20) and position the spacers (19) and attach it with the bolts (11) and the washers (12).
(2) Tighten the bolts.
(3) Remove the caps and connect the line end (14) to the adaptor (13).
(4) Remove the caps and connect the line ends (8) and (21) to the adaptors (9) and (7).
(5) Tighten all the line ends.
(6) Install the end of the rod (25) over the lever (16) and install the pin (15) through the rod-end and the lever.
(7) Install the collar (18) on the pin (15) and attach it with the pin (17).
(8) Bleed the mainwheel brakes (Ref. to Para 2) and check for leaks.
(9) Remove the cloths from the work area. Make sure the area is clean.
(10) Install the access panels 211 ELF and 211 GLF.
(11) Install the co-pilot seat (Refer to 25-10-00).
(12) Do a functional check of the brakes (Refer to 32-40-00).

11. Parking Brake Cable - Removal (Ref. to Fig. 204)

A. Referenced Information

Maintenance Manual Chapter 25-10-00

B. Procedure

(1) Remove the co-pilot seat (Refer to 25-10-00).
(2) Remove the access panels 211 ELF and 211 GLF.
(3) Make sure the mainwheels are chocked.
(4) Release the parking brake.
(5) Loosen the nut (4) and release the cable (12) from the cable retainer (6).
(6) Remove the nut (9) and the washer (10).
(7) Release the four grommets (15) from the structure.
(8) Loosen the nut (16) and pull the parking brake handle from the groove in the mounting bracket (1).
(9) Pull the conduit through the structure and remove it from the airplane.

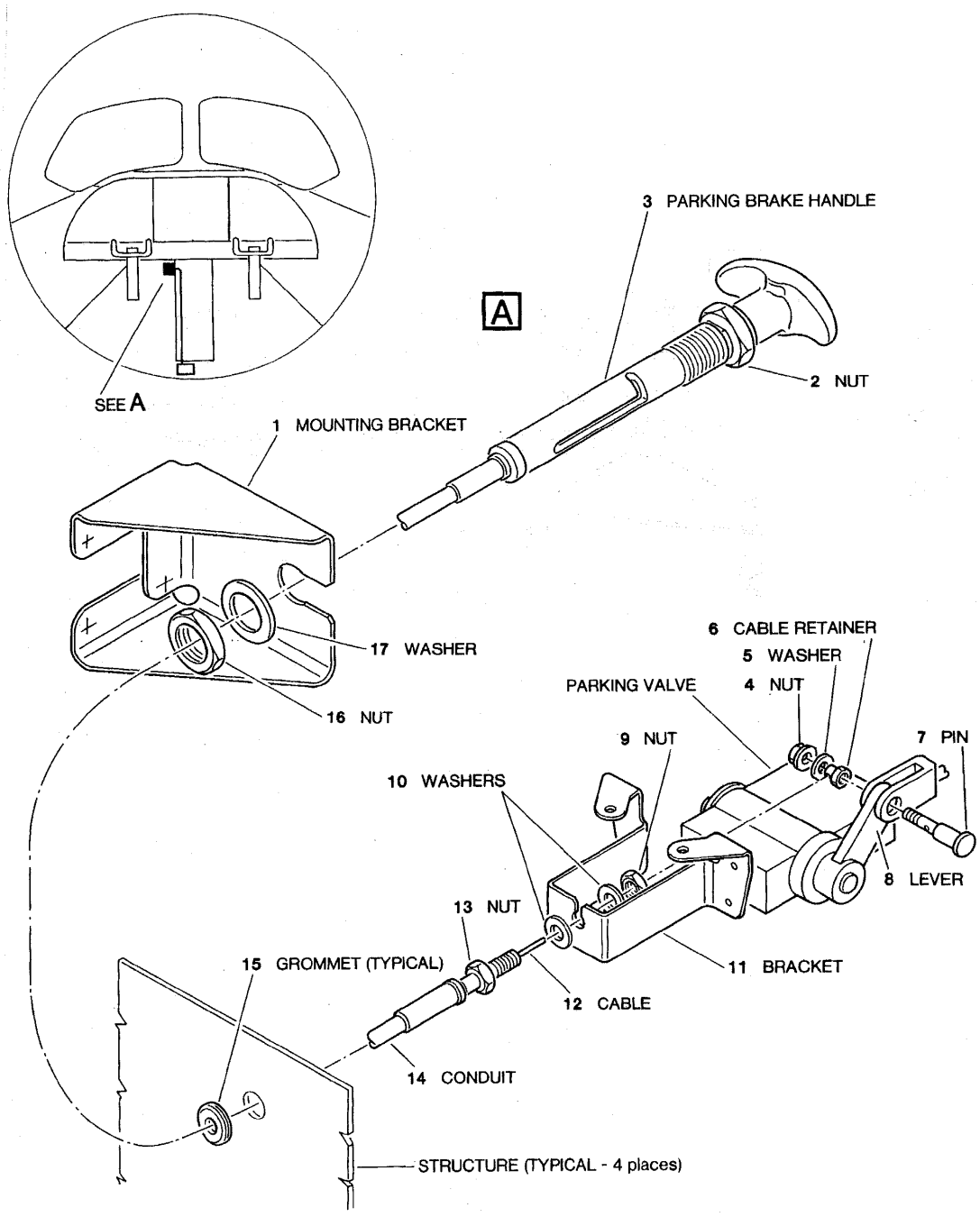

Fig. 204 - Parking Brake Cable - Removal/Installation

12. Parking Brake Cable - Installation (Ref. to Fig. 204)

A. Expendable Parts

Item	15 Grommet	Refer to Parts Catalog

B. Referenced Procedures

Maintenance Manual Chapter 25-10-00

C. Procedure

(1) Install the new grommets (15) on the conduit (14).
(2) Install the conduit (14) through the structure.
(3) Install the handle (3) into the mounting bracket (1) and tighten the nut (16) by hand.
(4) Install the conduit (14) through the bracket (11) and install the washer (10) and the nut (9). Tighten the nut by hand.
(5) Install the grommets (15) into the structure and set the conduit so that it has a smooth bend radius and does not touch any component or structural part.

NOTE: If necessary adjust the nuts (2) and (16) and the nuts (9) and (13) to get the correct conduit position.

(6) Tighten the nuts (9) and (16).
(7) Adjust and install the cable into the cable retainer (Refer to Para 13).
(8) Install the access panels 211 ELF and 211 GLF.
(9) Install the co-pilot seat (Refer to 25-10-00).

13. Parking Brake - Adjustment (Ref. to Fig. 204 and 205)

A. Referenced Information

Maintenance Manual Chapter 25-10-00

B. Procedure

(1) Remove the co-pilot seat (Refer to 25-10-00).
(2) Remove the access panels 211 ELF and 211 GLF.
(3) Make sure the mainwheels are chocked.
(4) Release the parking brake. (Refer to Fig. 204).
(5) Remove the nut (4), the washer (5) and disengage the cable (12) from the cable retainer (6) and the pin (7).
(6) Remove the cable retainer (6) and the pin (7). (Refer to Fig. 205).
(7) Loosen the two locknuts (3) and (5).
(8) Make sure that the levers (1) and (2) are detented at the parking brake off position.

NOTE: When the levers are moved by hand you will feel the internal balls in the valve go into the detent position in both on and off settings.

(9) Adjust the rod until the pin (7) goes freely through the rod end and the lever (8).
(10) Tighten the locknuts. (Refer to Fig. 204).

(11) Remove the pin (7). (Refer to Fig. 205).
(12) Set the levers to the parking brake on detent by hand. (Refer to Fig. 204).
(13) Make sure that the pin (7) goes freely through the rodend and the lever (8).
(14) Set the parking brake handle (3) to the on position.
(15) Install the cable retainer (6) on the pin (7) and align the cable hole.
(16) Pull the cable (12) to remove any play and push the cable end through the hole in the cable retainer and the pin.
(17) Keep the tension in the cable and install the washer (5) and the nut (4). Tighten the nut.
(18) Operate the parking brake handle several times to make sure the operation is correct and adjust again if necessary.

14. Brakes - Inspection Check (Ref. to Fig. 201 through 205)

A. Procedure

NOTE: Brake that have been over-heated shall be inspected for hardness. Hardness check is only required on brake that have overheated. Overheated has occurred when thermal relief plug in the wheel have released. For more informations refer to BFgoodrich CMM Chapter 32-46-61.

(1) With access panels removed examine the components of the brake system as far as possible for the defects that follow and repair or replace as necessary:
- Examine the line replaceable units for security of attachment obvious damage and leats.
- Examine the tube assemblies for chafing or damage.
- Examine the handbrake conduit for damage and interference with the surrounding structure.
- Examine the brake wear indicator.

NOTE: If the indicator pin is level with the face of the indicator with the parking brake on the brakes are worn to the maximum limit and must be replaced.

(2) Do a functional check of the brakes (Refer to 32-40-00).

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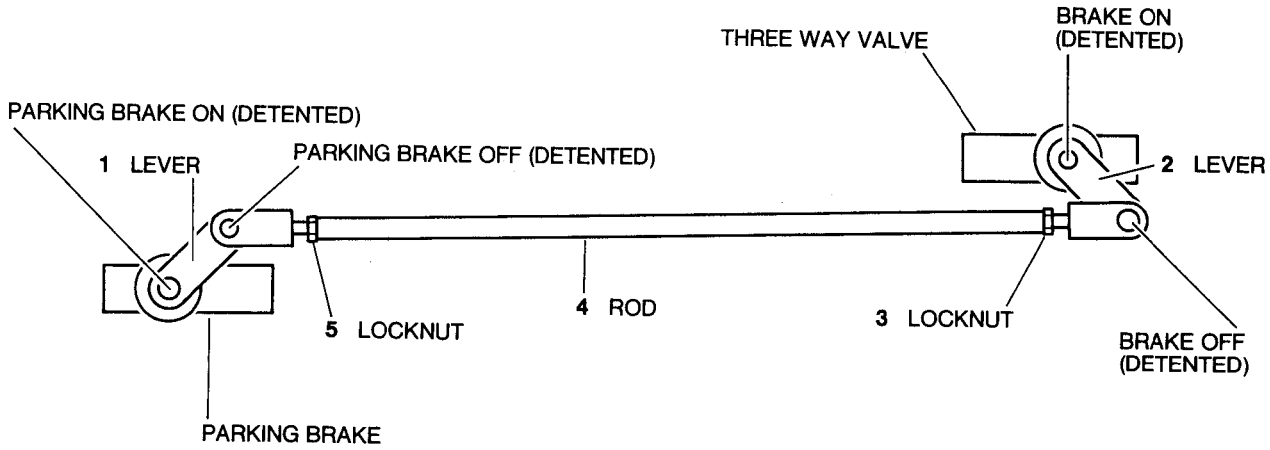

Fig. 205 - Parking Brake - Adjustment

15. Brakes Rods System - Inspection (Ref. to Fig.206)

A. Referenced Information

Maintenance Manual Chapter 06-00-00

Maintenance Manual Chapter 25-10-00

B. Procedure

(1) Remove the pilot and copilot seats (Refer to Chapter 25-10-00).

(2) Remove the 211 ALF and 212 ARF pilots compartment fllor panels (Refer to chapter 06-00-00).

(3) Inspect through the area of panels previously removed with a mirror the upper and lower rods (1) for deformation and security of installation. Replace the parts which have been found worn / bent / damaged.

(4) Inspect through the area of panels previously removed the rods (2, 3, 4) and the rods end attachment by inserting the mirror in the areas located at the left and at the right side of the control pedestal.

(5) Inspect the brakes valves and the connected tubings for general condition and security of installation. Replace the parts which have been found worn / damaged.

(6) Install the 211 ALF and 212 ARF pilots compartment floor panels.

(7) Install the pilot and copilot seats (Refer to Chapter 25-10-00).

(8) If any part (s) has (have) been replaced check and if necessary bleed the mainwheel brakes (See the procedures in this Section).

16. Brake Free Play - Check

A. Referenced Information

Maintenance Manual Chapter 12-10-01

Maintenance Manual Chapter 29-11-00

Maintenance Manual Chapter 32-41-00

B. Procedure

(1) Remove the MLG whells (Refer to 32-41-00).
(2) Pressurize the hyd system (Refer to 29-11-00, 12-10-01).
(3) Switch on the hydraulic system.
(4) Verify hydraulic pressure on the indicator: 1000 PSI
(5) Acting on pedals, activate brakes then release pedals.
(6) Switch off the hydraulic system.

WARNING: MAKE SURE BRAKES ARE NOT ACTIVATED WHEN PERFORMING THE FOLLOWING STEPS

(7) Verify that the first rotor can be rotated by hand (maximum admitted drag: 7 pound feet drag / 9.5 Nm).
(8) Depressurize the hydraulic system (refer to 29-11-00).
(9) Install the MLG wheels (Refer to 32-41-00).

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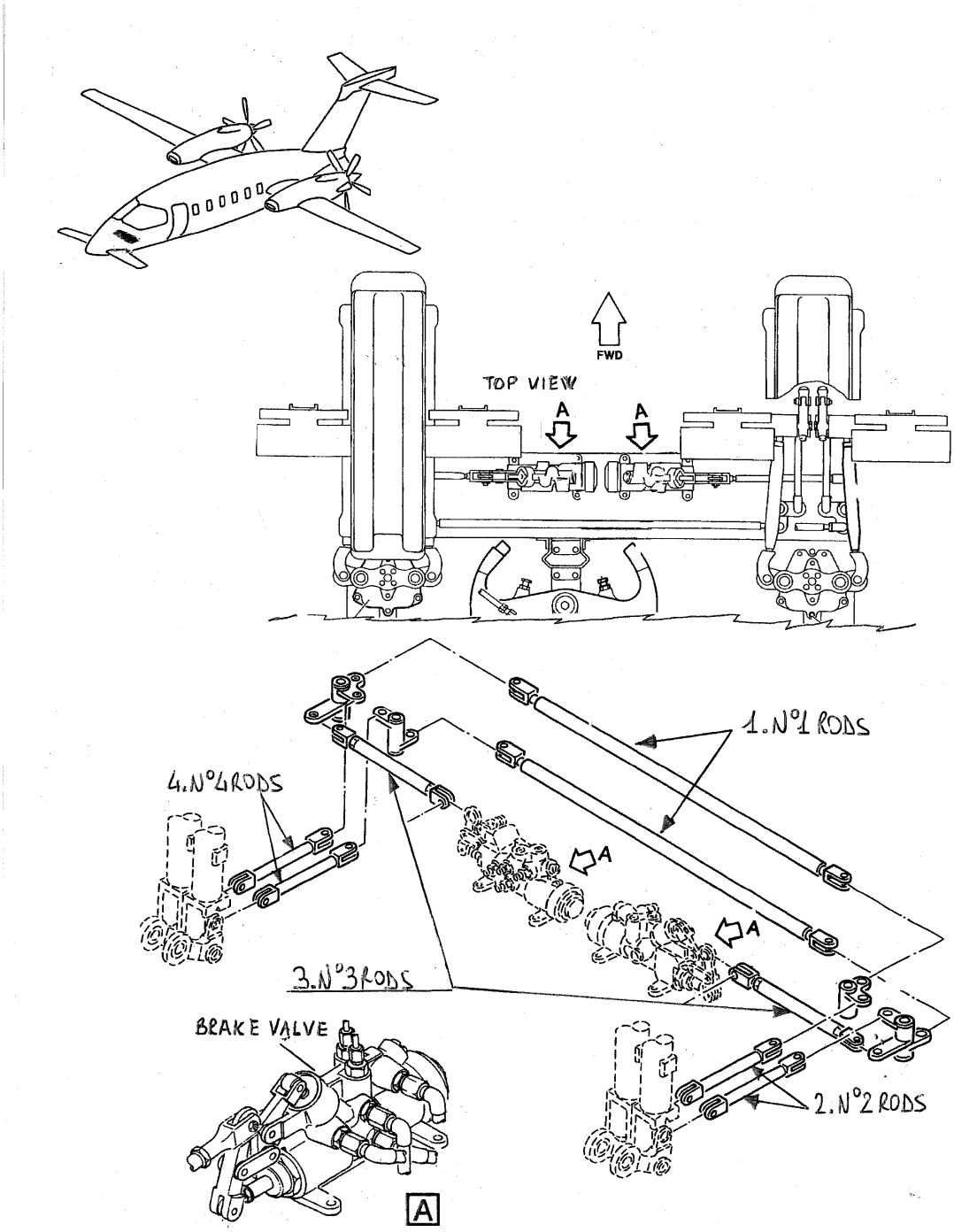

Fig. 206 - Brake Rods System - Inspection

BRAKES - ADJUSTMENT/TEST

1. General

A. This topic gives the Check/Test for the brake system as follows:

– Brakes / Brake System Functional Test, including
  – Brake main circuit test
  – Parking Brake circuit test
  – Brake Emergency circuit test
  – Brake Piston Dimensional Check
– Brake Operational Test

2. Brakes / Brake System - Functional Test(Ref. Fig. 501)

A. Fixtures, Test and Support Equipment

Fitting	P/N MS21902D4
O-ring	P/N M83485/1-904
Aluminum tube	Length of approx 10" to be connected to the fitting MS 21902D4 in one of its ends
Pressure Transducer (or manometer)	Reading from 0 to 1500 PSI
Caliper	Not specified

B. Referenced Information

Maintenance Manual 07-10-00
Maintenance Manual 24-00-00
Maintenance Manual 29-00-00
Maintenance Manual 32-41-00

NOTE: The following Check/Test requires the accomplishment of all the steps in sequence "C" to "G".

NOTE: This procedure must be performed by two people (one inside and one outside airplane).

C. Preparation

(1) Put the airplane on jacks (Refer to 07-10-00).
(2) Remove the main landing gear wheels (Refer to 32-41-00).
(3) Measure and record the gap between stator and rotor disks in correspondence of each brake piston.
(4) Perform the Brake Bleeding (Refer to 32-42-00).
(5) Remove one purge valve and fitting from the brake.

CAUTION: MAKE SURE THAT THE PURGE VALVE FITTING AND THE ALUMINUM PIPE ARE CLEANED.

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(6) Install the fitting P/N MS21902D4 with O-ring P/N M 83485/1-904 in lieu of the purge valve fitting.
(7) Prepare an aluminum tube with a lenght of approx. 10", to be connected to the fitting MS21902D4 in one of its ends and to a pressure transducer (or manometer) (reding from 0 to 1500 PSI).

D. Brake Main Circuit Test

(1) Presurize the Hydraulic System (Refer to 29-00-00)
(2) Switch ON the electrical power (Refer to 24-00-00) and the hydraulic package (Refer to 29-00-00)
(3) Check hydraulic pressure on the cabin gauge is 1000 ± 100 PSIG.
(4) Check hydraulic pressure on the manometer installed on the brake lines not exceed 35 / 40 PSI.
(5) Using only hand force, check that the Brake Rotor Disk is free to rotate.
(6) Perform 10 breaking cycles acting on pedals full stroke.
(7) Activate brake acting on pedal to full stroke.
(8) Check pressure at brakes, requested 1000 ± 100 PSIG.
(9) Release the pedals and check pressure at breakes not exceed 35 / 40 PSI.
(10) Keep pressure at brakes (1000 PSIG) for 1 minute approximately, and during this phase:
– Check that the pressure at brakes is stable (max 20 PSI decay).
– Check that no clearance exists between disks in correspondence of pistons.
– Check each piston stroke: no gap must be observed on any piston.
(11) Release brakes.

E. Parking Brake Circuit Test

(1) Activate parking brake.
(2) Check pressure at brakes, requested 1000 ± 100 PSIG.
(3) Keep pressure at brakes (1000 PSIG) for 1 minute approximately, and during this phase:
– Check that the pressure at brakes is stable (max 20 PSI decay).
– Check that no clearance exists between disks in correspondence of pistons.
– Check each piston stroke: no gap must be observed on any piston.
(4) Release parking brakes.
(5) Switch the hydraulic power OFF.

F. Brake Emergency Circuit Test

(1) Perform 10 braking cycles acting on pedals up to full stroke, in EMERGENCY mode.
(2) Activate brake acting on pedal to full stroke.
(3) Check the pressure at brakes, and record measured value (expected value is 490 ± 30 PSI).
(4) Release the pedals.

G. Restore Aircraft flyable status

(1) Install the Purge Valve with new O-ring (P/N M83485/1-904).
(2) Presurize the Hydraulic System (Refer to 29-00-00)
(3) Switch ON the Hydraulic System.
(4) Activate parking brake.
(5) Keep pressure brakes for 5 minutes approximately.
(6) Check no leakage from the purge valve.
(7) Switch OFF the Hydraulic System.
(8) Install the Main Landing Gear Wheels.

3. Brake Operational Test

(1) Lower the airplane on ground (Refer to 07-10-00).
(2) Make sure that the parking brake is inserted and the hydraulic package is active.
(3) Switch ON LH engine.
(4) Verify that no wheel rotation occurs up to maximum torque applied.
(5) Shut down the LH engine.
(6) Repeat steps (4) and (5) for RH engine and RH wheel.
(7) Shut down the hydraulic package and the RH engine

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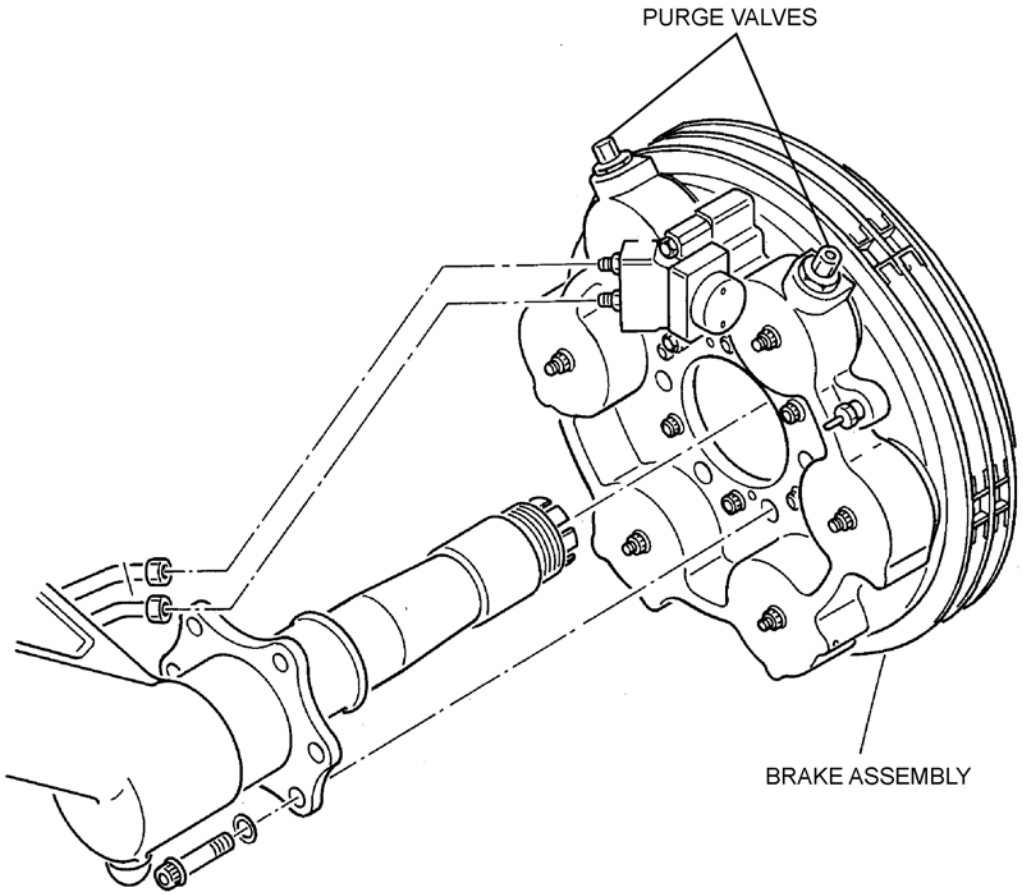

Fig. 501 - Brakes - Components locations

STEERING - DESCRIPTION AND OPERATION

1. General (Ref. to Fig. 1)

   A. The steering system controls the airplane direction on the ground in response to rudder pedal movement.

   B. The steering system has these main components:
   - The steering manifold
   - The steering actuator
   - The steering command potentiometer
   - The flexible hoses
   - The steering filter
   - The steer master switches on the control wheel.

   The system also uses these systems:
   - The hydraulic power system (Refer to 29-00-00).
   - The rudder control system (Refer to 27-20-00).
   - The steering mechanism on the nose landing gear (Refer to 32-20-00)
   - The system test panel (Refer to 31-00-00)
   - The position and warning system (Refer to 32-60-00).

   C. The system test panel gives a means to test the system electrically.

2. Description

   A. The steering manifold (Ref. to Fig. 4)

   (1) The steering manifold is on the main fitting assembly of the NLG in zone 710.

   (2) The manifold has a machined body with ports and drillings for these parts:
   - The select/bypass valve
   - A servo valve
   - Two restrictors
   - Two relief valves
   - Two non-return valves.

   (3) The function of the components of the manifold are as follows:
   - The select/bypass valve supplies pressure to the servo valve it also isolates the hydraulic supply and connects the actuator ports together to allow the nose wheel to castor when the steering is set to off.
   - The servo valve controls the direction of fluid flow in proportion to the electrical control input signal.
   - The restrictors give shimmy damping when the steering is off.
   - The relief valves protect the unit against pressure surges caused by external loads on the steering mechanism.
   - The non-return valves prevent cavitation in the steering lines.

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B. The steering actuator (Ref. to Fig. 1)

(1) The steering actuator is on the mounting plates of the steering mechanism on the nose gear leg in zone 710.

(2) The steering actuator has these main parts:

– The cylinder assembly
– The piston rod and eyeend assembly
– The linear feed back potentiometer.

(3) The function of the components are as follows:

– The cylinder assembly contains the sliding piston rod and the linear feed back potentiometer. It also has the hydraulic port connectors from the manifold and the hydraulic sealing required for piston operation. Trunnions on the cylinder assembly locate the actuator in the NLG mounting plates and give horizontal movement.
– The piston rod holds the moving parts of the linear feed back potentiometer. An eye end on the rod connects the actuator to the steering linkage of the NLG.
– The linear feed back potentiometer changes the electrical resistance of the steering circuit in relation to the position of the rod.

C. The steering command potentiometer (Ref. to Fig. 1)

(1) The command potentiometer is on a bracket below the floor in zone 213.

(2) The command potentiometer is a rotary potentiometer connected to the front rudder sector by a link.

(3) The potentiometer gives an electrical input to the servo valve of the manifold. The input is proportional to the direction and angle of the rudder movement. It contains all the control and fault circuits for the steering system.

D. The flexible hoses connect the steering manifold to the actuator.

E. The steering filter is on a bracket on the RH side of the NLG wheel well. It stops any normal contaminants in the hydraulic system from entering the steering system.

F. The steering master switches set the operational mode of the steering system. The two switches are on the LH horn of the control wheel. There is a red steering OFF switch and a black two position TAXI/STEER switch.

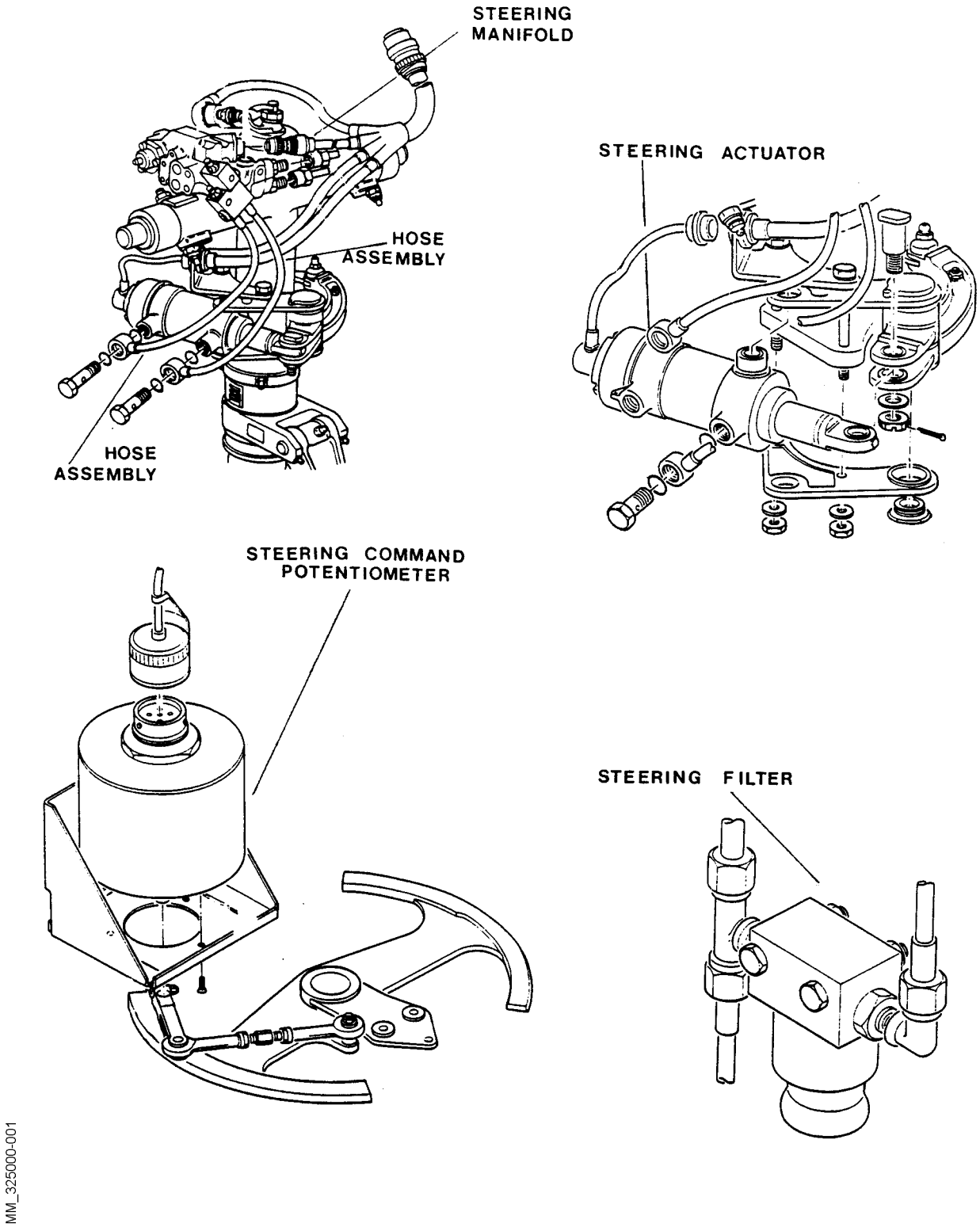

Fig. 1 - Steering Component Location/Identification

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3. Operation (Ref. to Fig. 2, 3 and 4)

A. Airplane on the ground - steering off

(1) The red steering off button on the LH horn of the control wheel is set to OFF. The solenoid of the select/bypass valve deenergises and the power supply to the torque motor of the servo valve stops.

(2) The steering actuator passages S1 and S2 are connected through the restrictors R1 and R2. The resultant, restricted fluid flow from one chamber of the actuator to the other lets the wheels castor without shimmy.

B. Airplane on the ground - steering in T/O

(1) With the hydraulic system on and the steering control switch set to T/O the steering command potentiometer is set to the low gain mode.
The solenoid of the select/bypass valve energises, closes the S1/S2 ports and opens the P2 port to the servo valve inlet. The white legend STEER T-O is displayed on the PFD (Primary Flight Display) lower right portion of the attitude display.

(2) Movement of the rudder pedals moves the input shaft of the command potentiometer. The potentiometer signals the servo valve to port fluid to extend or retract the steering actuator.
The feed-back potentiometer sends a movement signal to the command potentiometer and the input stops when the two signals are equal.

(3) In this mode the steering will not operate until the rudder deflection is more than 5 degrees (to allow rudder movement on take off with no steering action). After 5 degrees the steering operates in accordance with the measurements given in Table 1.

RUDDER ANGLE	STEERING ANGLE
5 degrees	Between 0 and 0.75 degrees
10 degrees	Between 3 and 5 degrees
15 degrees	Between 9 and 13 degrees
20 degrees	Between 18 and 22 degrees

Table 1 - T/O mode

C. Airplane on the ground - steering in TAXI

(1) With the hydraulic system on and the steering switch pushed half in (taxi position). The steering command potentiometer circuit is set to the high gain mode. The select/bypass valve closes the S1/S2 ports and opens the P2 port to the servo valve. The white legend STEER TAXI is displayed and flashes on the PFD (Primary Flight Display) lower right portion of the attitude display.

(2) Movement of the steering system operates as above but the angles are as shown in Table 2.

RUDDER ANGLE	STEERING ANGLE
5 degrees	Between 2 and 5 degrees
10 degrees	Between 11 and 15 degrees
15 degrees	Between 20 and 28 degrees
20 degrees	Between 40 and 50 degrees

Table 2 - TAXI mode

D. Airplane in Flight

(1) When the airplane is in flight the weight switch operates. The electrical power to the steering system is disconnected and the select/bypass valve de-energises. The internal centering cam in the nose leg centers the gear for retraction.

E. Fault indication

(1) The steering command potentiometer and the feed back potentiometer are twin track units.
Two signals are compared by a comparator circuit in the command potentiometer.
When a difference in the output of the two circuits is detected by the comparator the red STEER FAIL annunciator on the annunciator panel comes on.

(2) At the same time the light comes on the steering circuit disengages automatically.
The crew must then push in the red steering disconnect switch to make sure the steering circuit is isolated.

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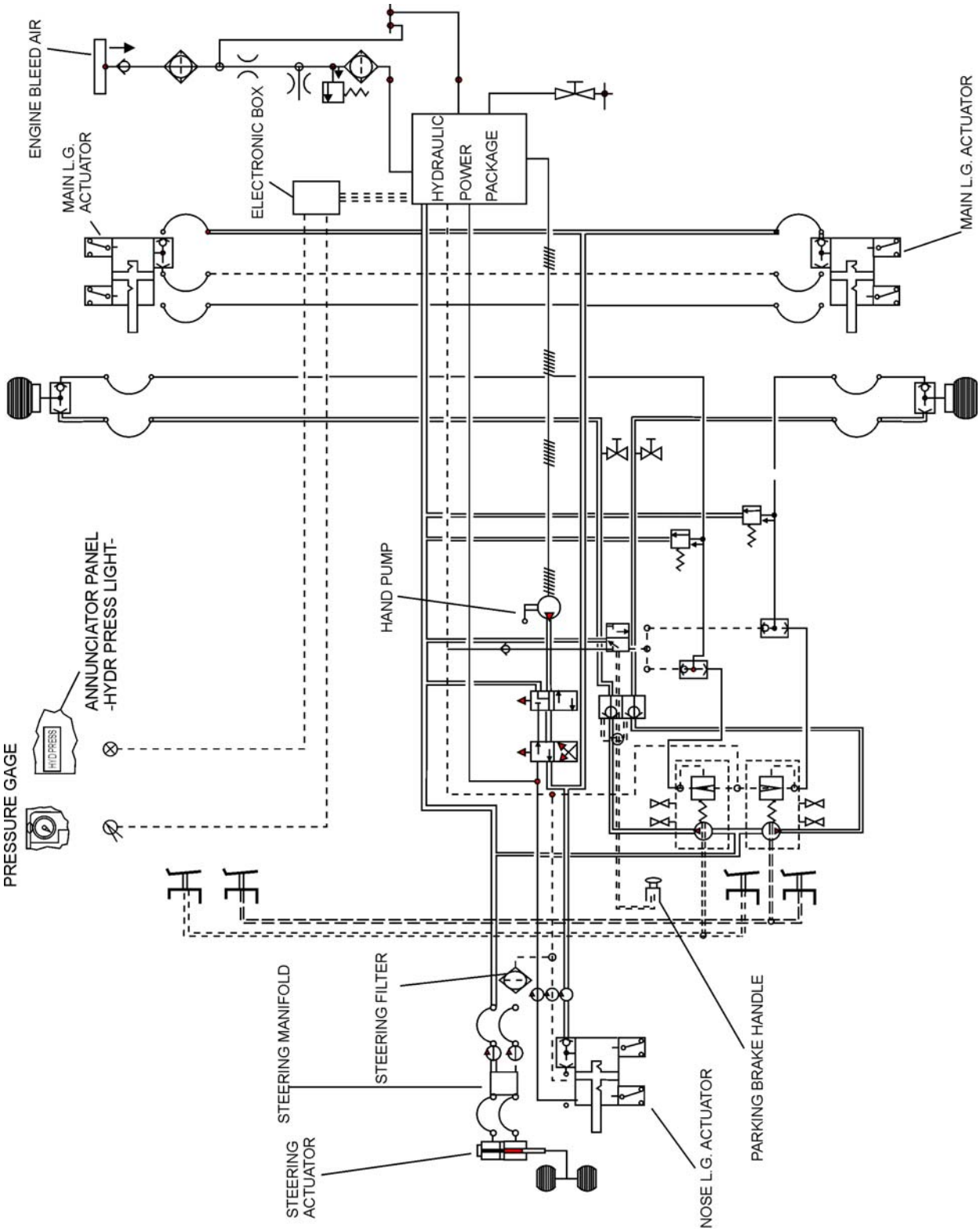

Fig. 2 - Nose Wheel Steering - Hydraulic Schematic

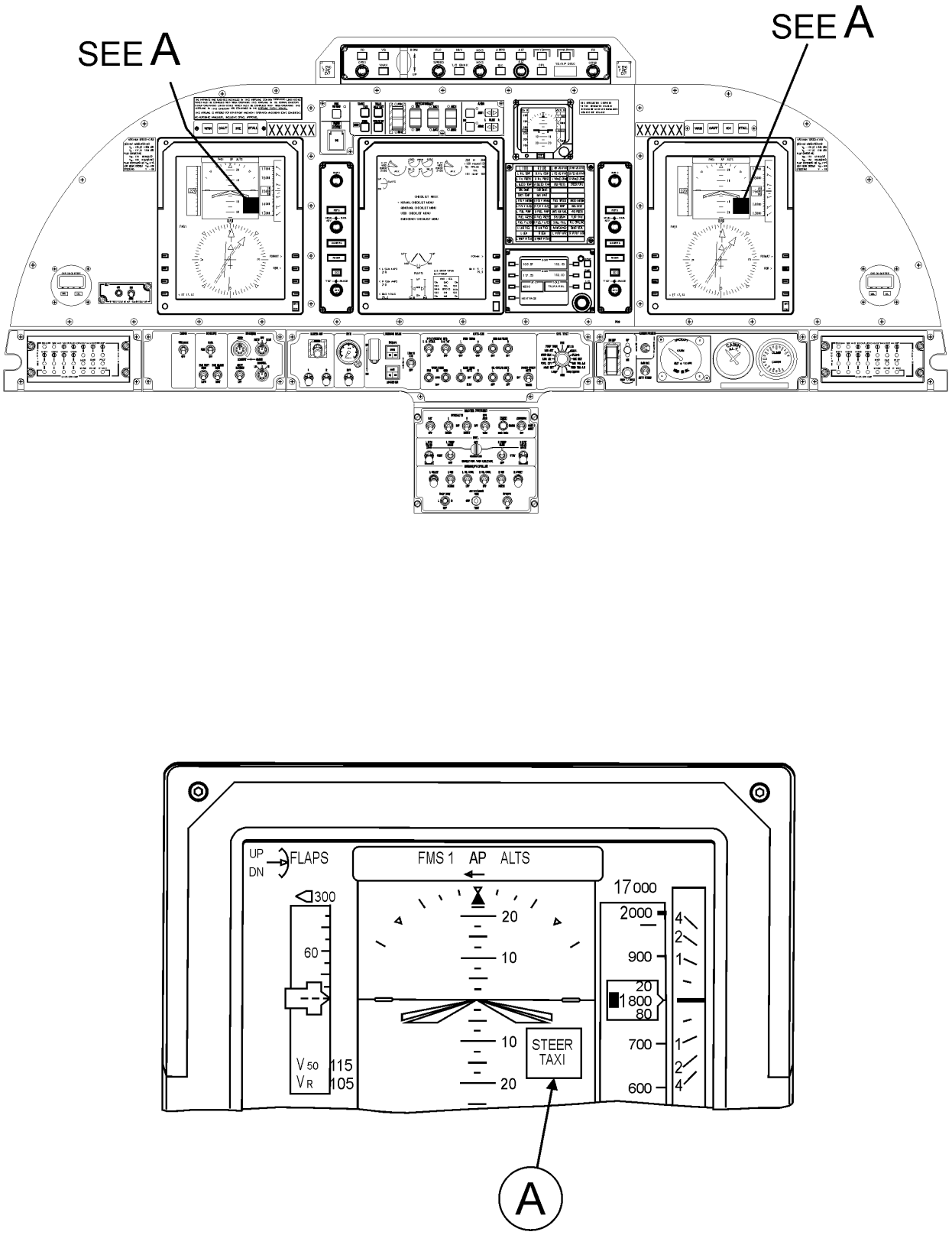

Fig. 3 - Nose Wheel Steering - STEER/TAXI Legend Location

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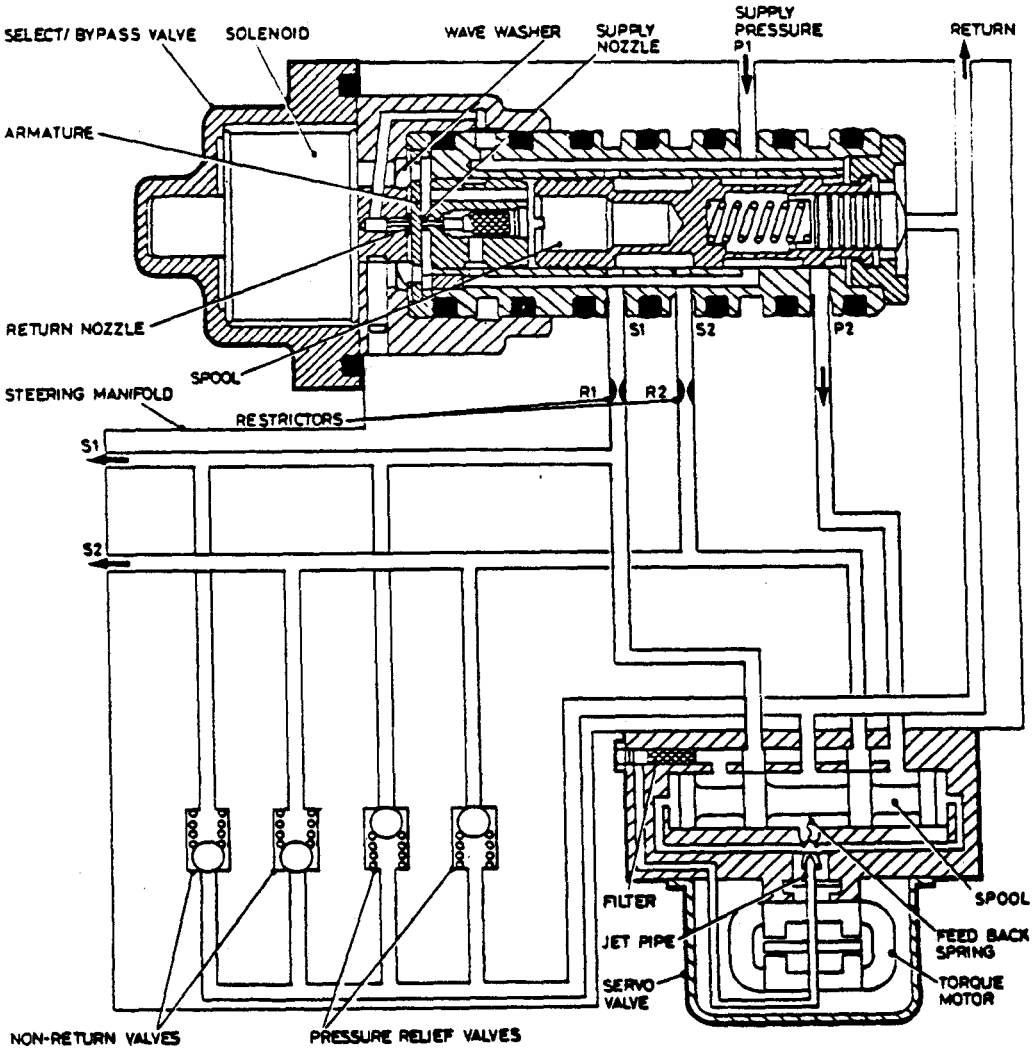

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Fig. 4 - Steering Manifold - Schematic

STEERING - MAINTENANCE PRACTICES

1. General

A. This page block contains the following maintenance practices:

- A removal/installation of the steering manifold
- A removal/installation of the steering actuator
- A removal/installation of the flexible hose assemblies
- A removal/installation of the steering command potentiometer
- A removal/installation of the steering filter
- An inspection/check of the nose wheel steering.

WARNING: BE CAREFUL WHEN YOU USE THE HYDRAULIC FLUID. PUT ON PROTECTIVE CLOTHING. THE HYDRAULIC FLUID IS DANGEROUS AND CAN CAUSE DAMAGE TO YOUR SKIN.

2. Steering Manifold - Removal (Ref. to Fig. 201)

A. Fixtures, Test and Support Equipment

Container for hydraulic oil	Not specified
Blanking caps	Not specified

B. Referenced Information

Maintenance Manual Chapter 29-00-00
Maintenance Manual Chapter 52-81-00

C. Procedure

WARNING: BEFORE REMOVING ALL NOSE LANDING GEAR PIPES, MARK THE UNIONS AND CORRESPONDING PIPES POSITIONS IN SUCH A WAY TO PREVENT INCORRECT INSTALLATION.

(1) Remove the Nose Landing Gear (Refer to 32-20-00 Page block 200).
(2) Put the container below the hydraulic lines.
(3) Disconnect the electrical connectors (1) and (4) from the receptacles on the manifold (13).
(4) Disconnect the aircraft pressure and return line ends (6) and (7) from the adaptors on the manifold (13).
(5) Put caps on the line ends and adaptors.
(6) Cut and remove the lockwire from the banjo bolts (9) and (10).
(7) Remove the banjo bolts (9) and (10), remove and discard the o-rings (8) and (11).
(8) Cut and remove the lockwire from the attachment bolts (3).
(9) Remove the bolts (3) and the washers (2) and remove the manifold (13) from the nose gear leg.

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3. Steering Manifold - Installation (Ref. to Fig. 201)

A. Tools

Torque wrench 25lbf in (2.83 Nm)
Torque wrench 100-100 lbf in (11-12 Nm).

B. Expendable parts

Item	8 O-ring	Refer to Parts Catalog
	11 O-ring	Refer to Parts Catalog

C. Referenced Information

Maintenance Manual Chapter 29-00-00
Maintenance Manual Chapter 32-50-00
Maintenance Manual Chapter 52-81-00

D. Procedure

WARNING: DURING INSTALLATION REFER TO THE UNION AND PIPES MARKS TAKEN DURING REMOVAL PROCEDURE.

NOTE: Make sure that the new manifold is compliant to SB-80-0236 Rev. 1 or later issues.

(1) If a new manifold is to be installed make sure it is compliant with applicable service bulletins.
(2) Install the manifold (13) on the nose gear leg and install the bolts (3) and the washers (2).
(3) Tighten the bolts (3) to a torque of 25 lbf in (2.83 Nm).
(4) Install new o-rings (8) and (11) to the banjo bolts (9) and (10) and connect the flexible hoses to the actuator (12).
(5) Tighten the bolts to a torque of 100-110 lbf in (11-12 Nm).
(6) Connect the hydraulic line ends (6) and (7) to the adaptors on the manifold (13).
(7) Connect the electrical connectors (1) and (4) to the receptacles on the manifold (13).
(8) Remove the container.
(9) Install the Nose Landing Gear (Refer to 32-20-00 Page block 200) .

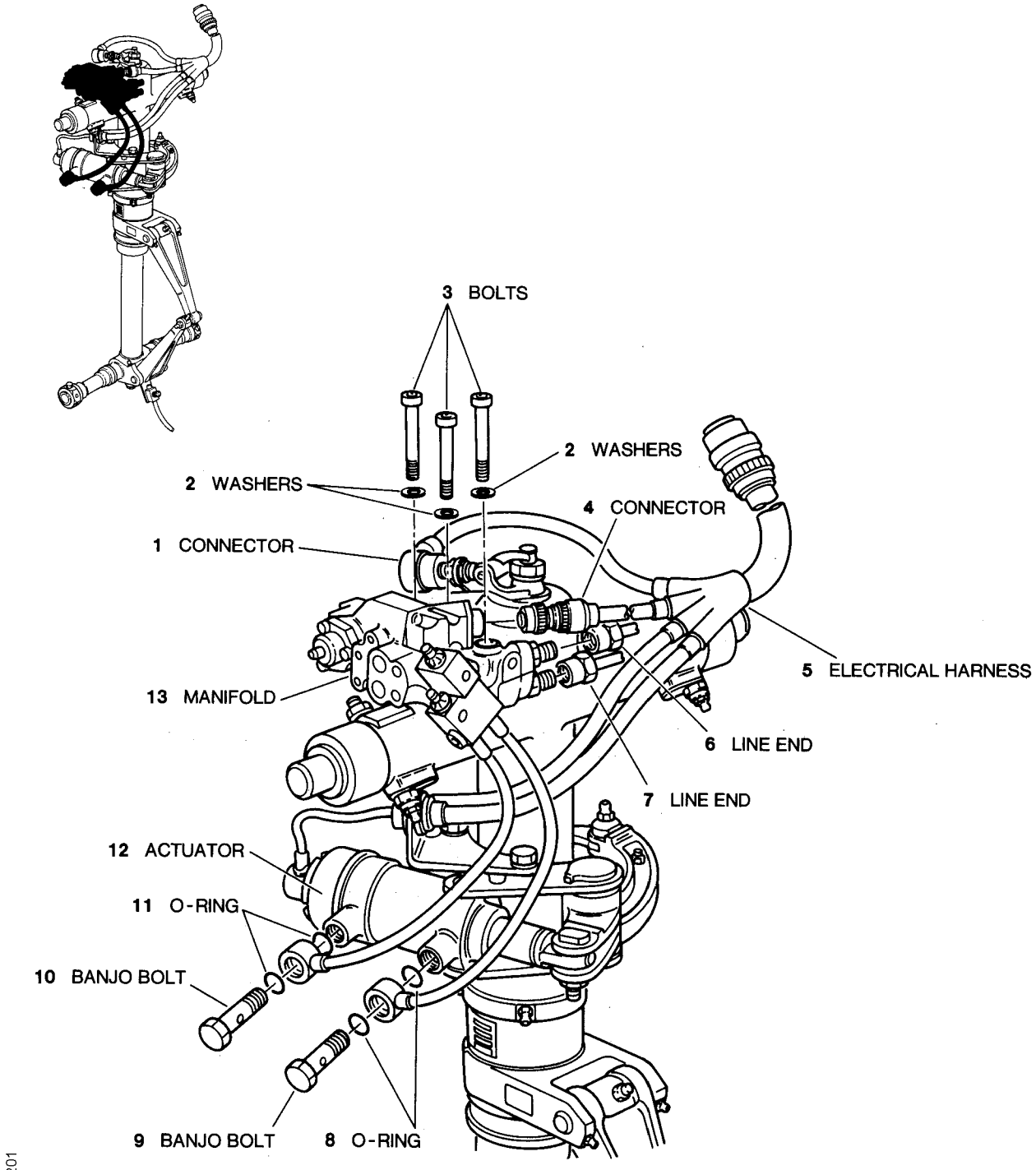

Fig. 201 - Steering Manifold - Removal/Installation

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4. Steering Actuator - Removal (Ref. to Fig. 202)

A. Fixtures, Test and Support Equipment

Container for hydraulic oil	Not specified
Blanking caps	Not specified

B. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 29-00-00

C. Procedure

WARNING: BEFORE REMOVING ALL NOSE LANDING GEAR PIPES, MARK THE UNIONS AND CORRESPONDING PIPES POSITIONS IN SUCH A WAY TO PREVENT INCORRECT INSTALLATION.

(1) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(2) Depressurize the hydraulic system (Refer to 29-00-00).
(3) Open, tag and safety the NOSE STRG circuit breaker on the pilot circuit breaker panel.
(4) Cut and remove the lockwire from the banjo bolts (17).
(5) Put the container in position below the hydraulic lines.
(6) Remove the banjo bolts (17) from the line ends (16) and the actuator (1), remove and discard the o-rings (18).
(7) Disconnect the connector (3) from the receptacle on the bracket (2).
(8) Remove the split pin (10), the nut (9), the washers (8) and the bolt (5) and move the eye end (11) clear of the steering link (7).
(9) Give support to the steering actuator (1).
(10) Cut and remove the lockwire from the end cap (12).
(11) Remove the end cap (12).
(12) Cut and remove the lockwire from the nuts (13).
(13) Remove the nuts (13) and the washers (14) and remove the lower plate (15).
(14) Remove the actuator (1).
(15) Put caps on the line ends, ports, connectors and receptacles.

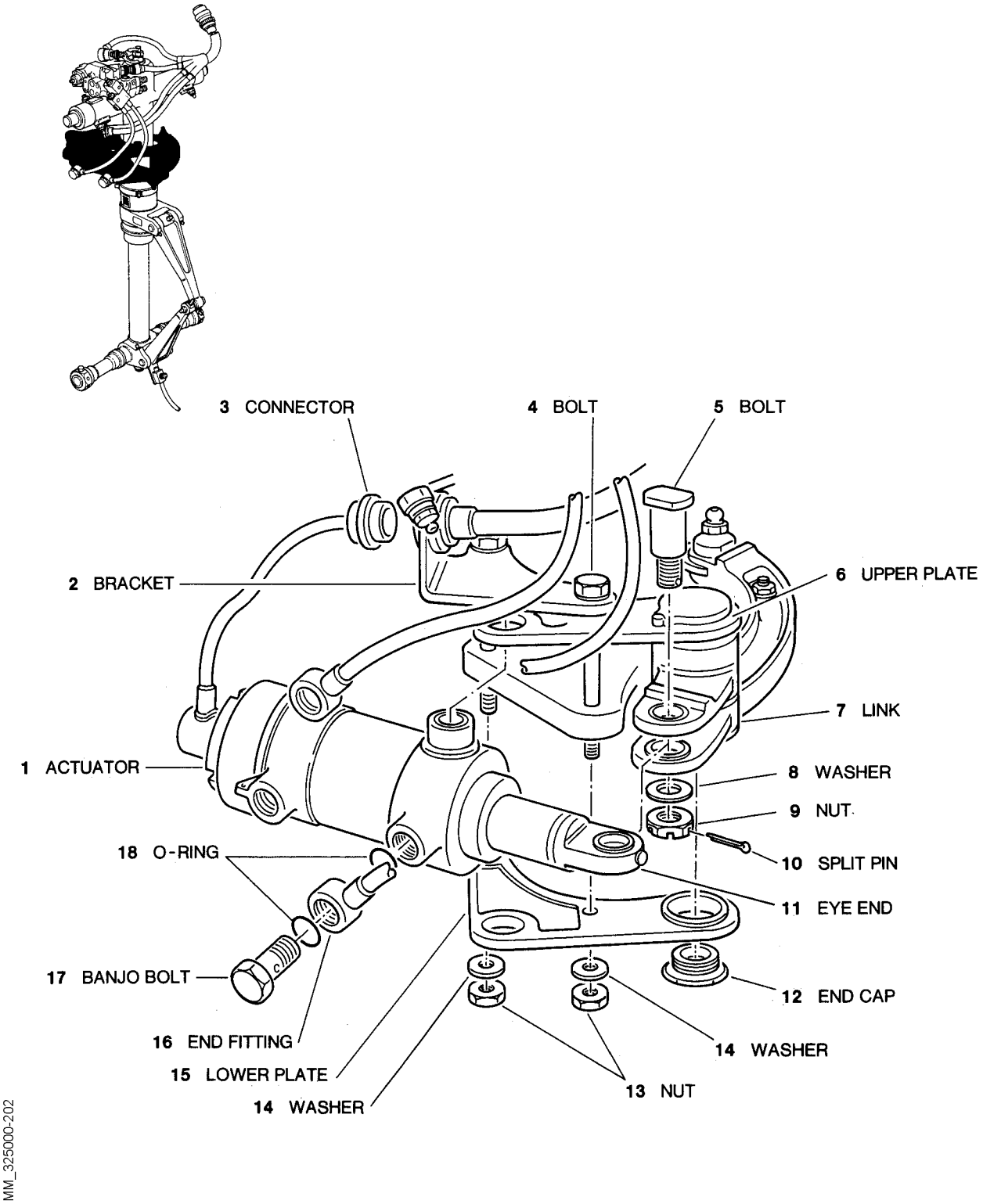

Fig. 202 - Steering Actuator - Removal/Installation

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5. Steering Actuator - Installation (Ref. to Fig. 202)

A. Tools

Torque wrench 5-25 lbf in (0.58 - 2.83 Nm)
Torque wrench 50 lbf in (5.65 Nm)
Torque wrench 13 lb in (1.5 Nm)
Torque wrench 100-110 lbf in (11 - 12 Nm)

B. Materials

Sealant PR 1422A - 2	MIL-S-8802D
Sealant	06-005

C. Expendable Parts

Item	18 O-ring (4 places)	IPC-CSN MS28778-4
	8 Washer (Max Qty 3)	AN960-716L

D. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 32-50-00
Maintenance Manual Chapter 51-00-00

E. Procedure

WARNING: DURING INSTALLATION REFER TO THE UNION AND PIPES MARKS TAKEN DURING REMOVAL PROCEDURE.

NOTE: Make sure that the new actuator is compliant to SB-80-0236 Rev. 1 or later issues.

(1) If a new actuator is to be installed make sure that it is compliant with applicable service bulletins.
(2) Remove the caps.

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE SAFETY PRECAUTIONS GIVEN IN 20-00-01

(3) Mix and apply sealant (MIL-S-8802D) to the mating face of the end cap (12) (Refer to 51-00-00).
(4) Put the actuator (1) in position with the upper trunnion in the upper plate assembly. Hold it in this position.
(5) Put the lower plate assembly (15) in position and engage it with the lower trunnion, the bolts (4) and the lever (7).
(6) Install the end cap (12).

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE SAFETY PRECAUTIONS GIVEN IN 20-00-01.

CAUTION: ENSURE THAT THE DRAIN HOLE IN THE STEERING ACTUATOR EYE END IS TOWARD DOWN.

(7) Mix and apply sealant (MIL-S-8802D) to the underside of the head of the bolt (5) and the mating faces of the washer (5) (8).

(8) Align the eye end (11) with the lever (7) and install the bolt (5), the washer(s) (8) and the nut (9).

(9) Tighten the nut to a torque of 5-25 lbf in (0.58-2.83 Nm) and align the split pin hole.

NOTE: You can use up to 3 washers (8) to correctly align the split pin hole.

(10) Safety the nut (9) with a new split pin (10).

(11) Tighten the end cap (12) to a torque of 50 lbf in (5.65 Nm).

(12) Safety the end cap with lockwire.

(13) Install the washers (14) and the nuts (13). Tighten the nuts to a torque of 13 lb in (1.5 Nm).

(14) Safety the nuts (13) together with lockwire.

(15) Safety the boltheads (4) with lockwire.

(16) Install new o-rings (18) to the banjo bolts (17) and install the bolts through the line ends (16).

(17) Install new o-rings (18) to the banjo bolts (17) and install the bolts into the ports of the actuator (1).

(18) Tighten the banjo bolts to a torque of 100-110 lbf in (11 - 12 Nm).

(19) Safety the bolts with lockwire.

(20) Connect the electrical connector (3) to the receptacle on the bracket (2).

(21) Perform a Steering System bleeding (Refer to 32-50-00 Page block 200).

(22) Do a Adjustment/Test of the nose wheel steering (Refer to 32-50-00 Page block 500).

(23) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

6. Flexible Hose Assemblies - Removal (Ref. to Fig. 203)

NOTE: The removal and installation of the two hose assemblies are similar. The procedure for one is given. The procedure is applicable also for the replacement of seals when leakage has occurred.

A. Fixtures, Test and Support Equipment

Blanking caps	Not specified
Container for hydraulic fluid	Not specified
Source of dry compressed air	Not specified

B. Materials

Lint-free cloth	Not specified
Solvent - Trichloroethane	O-T-620

C. Referenced Information

Maintenance Manual Chapter 29-00-00

D. Procedure

WARNING: BEFORE REMOVING ALL NOSE LANDING GEAR PIPES, MARK THE UNIONS AND CORRESPONDING PIPES POSITIONS IN SUCH A WAY TO PREVENT INCORRECT INSTALLATION.

(1) Depressurize the hydraulic system (Refer to 29-00-00).

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE SAFETY PRECAUTIONS GIVEN IN 20-00-01.

(2) Clean the end fittings of the flexible hoses with solvent (0-T-620) and a lint-free cloth.
(3) Put the container in position below the hydraulic lines.
(4) Cut and remove the lockwire from the banjo bolt (5).
(5) Remove the banjo bolt (5) and remove and discard the O-rings (6).
(6) Remove and discard the split pin (1).
(7) Remove the nut (2) and the washer (9).
(8) Remove the flexible hose assembly (3) from the manifold.
(9) Remove and discard the seals (8).
(10) Put caps on all line ends and ports.

7. Flexible Hose Assemblies - Installation (Ref. to Fig. 203)

A. Tools

Assembly post	460006827
Keep ring	460003180
Torque wrench 100-110 lbf.in. (11 - 12 Nm)	Not specified

B. Expendable Parts

Item	6 O-ring	MS28778-4
	8 Seal	MS-1605708

C. Referenced Information

Maintenance Manual Chapter 32-50-00

D. Procedure

WARNING: DURING INSTALLATION REFER TO THE UNION AND PIPES MARKS TAKEN DURING REMOVAL PROCEDURE.

(1) Use the assembly post (Tool No 460006827) to install the seals (8) into the seal grooves of the end fitting of the hose (3).
(2) Use the keep ring (Tool No 460003180/119) to seat the seals correctly.

(3) Install the end fitting of the hose assembly (3) through the valve block of the manifold.
(4) Install the washer (9) and the nut (2), tighten the nut to remove end float in the fitting, then loosen the nut to align the split pin hole.
(5) Safety the nut with a new split pin (1).
(6) Install a new o-ring (6) on the banjo bolt (5).
(7) Install the bolt (5) through the end fitting of the hose (3) and install the second o-ring (6) in the bolt.
(8) Install the bolt into the port of the actuator (7).
(9) Tighten the banjo bolt (5) to a torque of 100-110 lbf in (11 - 12 Nm).
(10) Safety the banjo bolt with lockwire.
(11) Perform a Steering System bleeding (Refer to 32-50-00 Page block 200).
(12) Do a Adjustment/Test of the nose wheel steering (Refer to 32-50-00 Page block 500).

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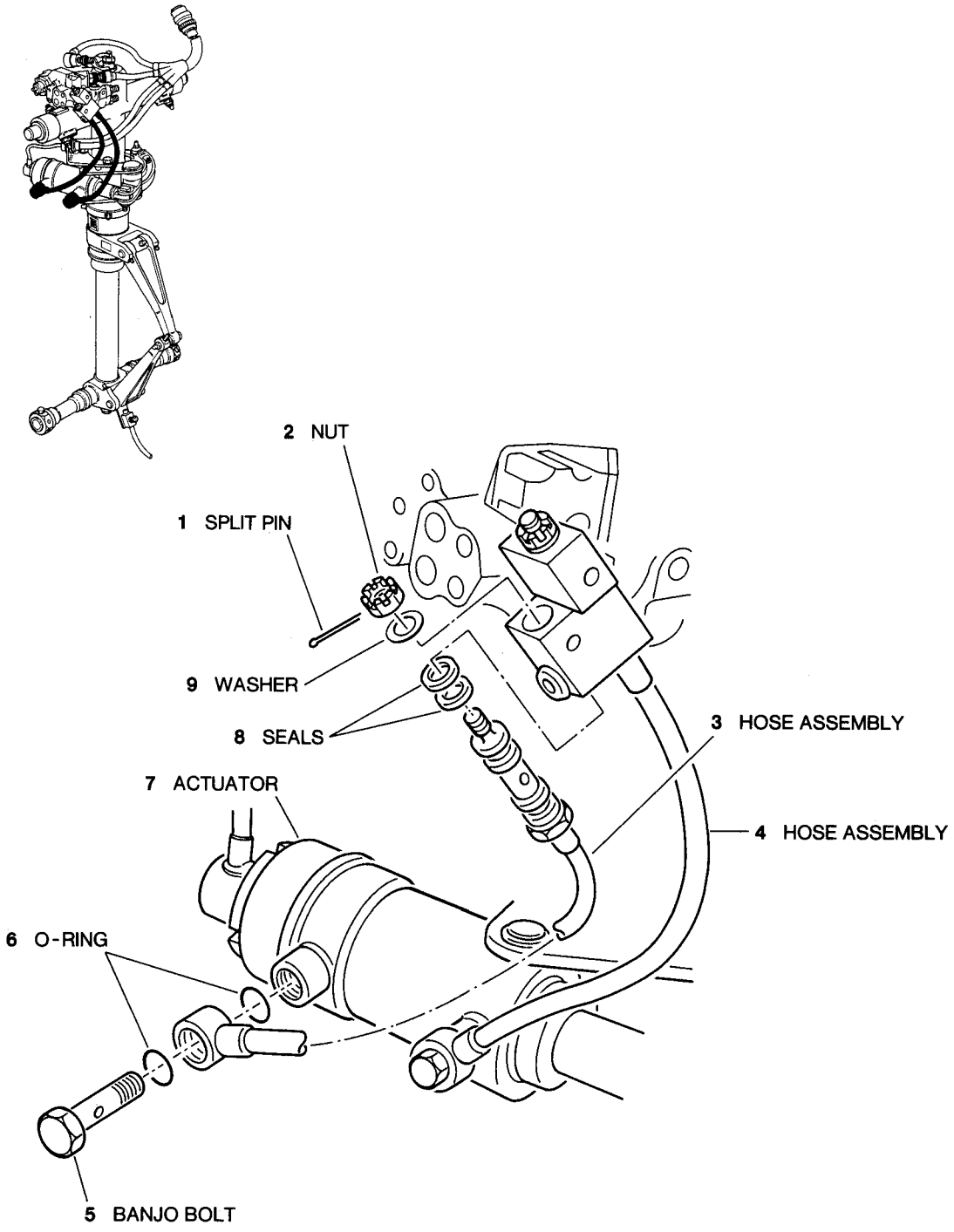

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Fig. 203 - Flexible Hose Assemblies - Removal/Installation

8. Steering Command Potentiometer - Removal (Ref. to Fig. 204)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not specified
Warning sign "DO NOT OPERATE THE FLIGHT CONTROLS"	

B. Referenced Information

Maintenance Manual Chapter 27-70-00

C. Procedure

(1) Install the gust locks (Refer to 27-70-00).
(2) Remove the access panel 211 CLF.
(3) Put up a warning sign in the flight compartment to tell personnel DO NOT OPERATE THE FLIGHT CONTROLS.
(4) Disconnect the electrical connector (1) from the receptacle (2) on the transducer (3).
(5) Put caps on the connector and the receptacle.
(6) Remove the nut (8) and disconnect the rod (9).
(7) Remove the four screws (10) and the mounting bracket (4).
(8) Remove the nut (11) and the screw (12) and disconnect the link (7).
(9) Mark the potentiometer position with a line between the bracket (4) and the transducer (3).
(10) Remove the three screws (5) and remove the transducer (3).

9. Steering Command Potentiometer - Installation (Ref. to Fig. 204)

A. Referenced Information

Maintenance Manual Chapter 27-70-00
Maintenance Manual Chapter 32-50-00

B. Procedure

(1) Place the transducer (3) onto the mounting bracket (4) whether making reference to the line marked on the transducer previously removed or to the reference hole on the potentiometer.
(2) Install and tighten the three screws (5).
(3) Connect the link (7) to the input shaft of the transducer (3), install the screws (12) and tighten the nut (11).
(4) Install the mounting bracket (4) with the four screws (10).
(5) Connect the rod (9) and tighten the nut (8).
(6) Remove the caps and connect the electrical connector (1) to the receptacle (2).
(7) Do a Steering Adjustment/Test (Refer to Page block 501).

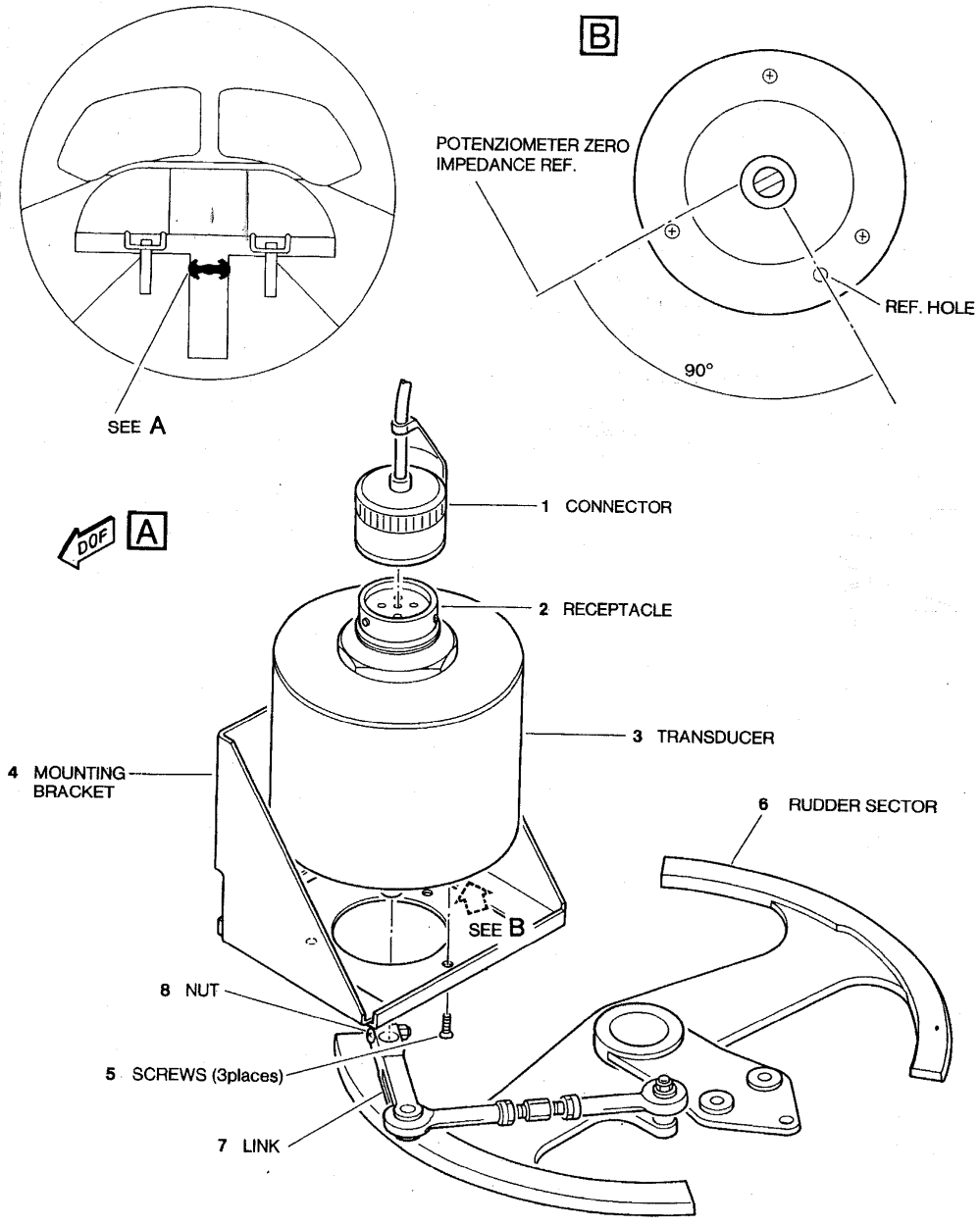

Fig. 204 - Steering Command Potentiometer - Removal/Installation

10. Steering Filter - Removal (Ref. to Fig. 205)

A. Consumable Materials

Solvent (MEK)	TT-M-261
Lint-free cloth	Not specified
Filter paper	Not specified

B. Referenced Information

Maintenance Manual Chapter 29-00-00
Maintenance Manual Chapter 52-81-00

C. Procedure

(1) Open, tag and safety the HYD CONT circuit breaker on the co-pilot circuit breaker panel.
(2) Depressurize the hydraulic system (Refer to 29-00-00).
(3) Disconnect the L and R nose gear doors (Refer to 52-81-00).
(4) Cut and remove the lockwire from the filter bowl (4).
(5) Remove the filter bowl (4).
(6) Empty the filter bowl into the filter paper to catch any particles of contaminant.

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE SAFETY PRECAUTIONS GIVEN IN 20-00-01.

(7) Wash the bowl with Solvent (MEK) and filter the fluid. Dry the bowl with a lint-free cloth.
(8) Remove the filter element (3) and remove and discard the o-ring (2).
(9) Wash the filter element with MEK into the filter paper. Discard the filter element.
(10) Do an analysis of the particles as described in 29-00-00.

11. Steering Filter - Installation (Ref. to Fig. 205)

A. Tools

Torque wrench 75.0 lbf in (8.4 Nm)	Not specified

B. Expendable Parts

Item	2 O-ring	Refer to Parts Catalog
	3 Filter element	Refer to Parts Catalog

C. Referenced Information

Maintenance Manual Chapter 29-00-00

D. Procedure

(1) Install a new o-ring (2) into the new filter element (3).
(2) Install the filter element (3) into the filter assembly (1).
(3) Install the filter bowl (4) into the filter assembly (1).
(4) Tighten the filter bowl to a torque of 75 lbf in. (8.4 Nm).

(5) Remove the safety tag and close the HYD CONT circuit breaker.
(6) Pressurize the hydraulic system (Refer to 29-00-00).
(7) Do a leak check of the filter bowl, if a leak occurs replace the packing inside the filter assembly (1) and do the check again.
(8) Connect the L and R nose gear doors (Refer to 29-00-00).

12. Steering - Inspection Check

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-01.

A. Fixtures, Test and Support Equipment

Dry, clean air source	Not specified

B. Materials

Solvent (Trichloroethane)	02-014
Lint-free cloth	Not specified

C. Referenced Information

Maintenance Manual Chapter 51-10-00

D. Procedure

(1) Examine the steering manifold and the actuator in the following way:
(a) Make sure the landing gear ground locks are in.
(b) Open, tag and safety the LDG GEAR CONT circuit breaker on the pilot circuit breaker panel.
(c) Clean the manifold and the steering actuator with Solvent and a lint-free cloth.
(d) Remove excess solvent with a steady flow of clean dry air.
(e) Examine the locking devices for security and signs of loss of torque
(f) Examine the manifold and actuator for damage, distortion, corrosion and security of attachment.
(g) Examine for signs of leakage, no leakage is permitted.
(h) Examine the external finish for damage, restore as necessary. (Refer to 51-10-00).
(i) Examine the flexible hose assemblies for damage, distortion and sign of blistering.
(j) Examine the swivel joints for leakage.
(k) Repair or replace suspect items as necessary.
(2) Examine the command potentiometer in the following way:
(a) Remove the access panel 211 CLF.
(b) Examine the potentiometer for security of attachment and obvious damage, replace as necessary.
(c) Install the access panel 211 CLF.
(3) Remove the safety tag and close the LDG GEAR CONT circuit breaker.
(4) Do a functional test of the nose wheel steering (Refer to Page block 501).

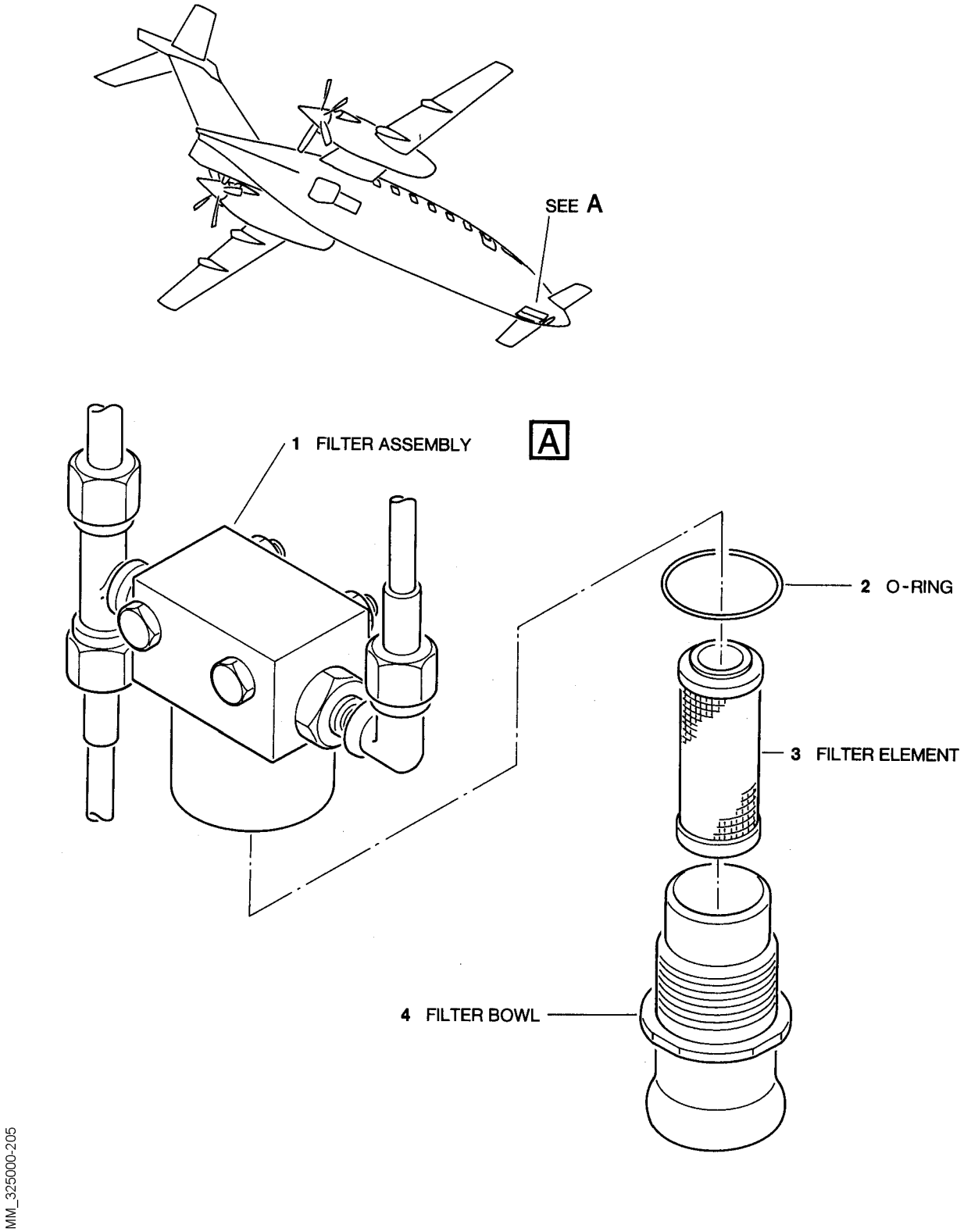

Fig. 205 - Steering Filter - Removal/Installation

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13. Steering- System Bleeding (Ref to Fig. 202)

NOTE: This procedure must be performed anytime the NLG or the steering actuator and/or the manifold are installed.

A. Referenced Information

Maintenance Manual Chapter 07-10-00

Maintenance Manual Chapter 12-00-00

Maintenance Manual Chapter 24-00-00

Maintenance Manual Chapter 29-00-00

B. Procedure

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIAL. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-01.

(1) Open, tag and safety the NOSE STRG circuit breaker on the pilot circuit breaker panel.
(2) Remove the split pin (10), the nut (9), the washers (8) and the bolt (5) and move the eye end (11) clear of the steering link (7).
(3) Give support to the steering actuator (1).
(4) Cut and remove the lockwire from the end cap (12).
(5) Remove the end cap (12).
(6) Cut and remove the lockwire from the nuts (13).
(7) Remove the nuts (13) and the washers (14) and remove the lower plate (15).
(8) Remove the actuator (1).
(9) Rotate the Steering Actuator 90° as to have the two hydraulic ports facing upward and hold it in position when perform following steps up to (19).
(10) Make sure the electrical power is available (Refer to 24-00-00).
(11) Remove the safety tag and close the NOSE STRG circuit breaker.
(12) Pressurize the hydraulic system (Refer to 29-00-00).
(13) Set the Hydraulic Power Switch to ON.
(14) Set the Steering Control Switch on the Pilot Control Wheel to the TAXI position.
(15) Operate, slowly, the rudder pedals fully to the left and fully to the right. Perform fifty cycles.
(16) Push (in) the Steering Disconnect Button on the Pilot Control Wheel.
(17) Set the Hydraulic Power Switch to OFF.
(18) Open, tag and safety the NOSE STRG circuit breaker.
(19) Depressurize the hydraulic system.
(20) Reinstall the Steering Actuator on the NLG as Follows:
(21) Mix and apply sealant (MIL-S-8802D) to the mating face of the end cap (12) (Refer to 51-00-00).
(22) Put the actuator (1) in position with the upper trunnion in the upper plate assembly. Hold it in this position.

(23) Put the lower plate assembly (15) in position and engage it with the lower trunnion, the bolts (4) and the lever (7).

(24) Install the end cap (12).

CAUTION: ENSURE THAT THE DRAIN HOLE IN THE STEERING ACTUATOR EYE END IS FACING DOWNWARD.

(25) Mix and apply sealant (MIL-S-8802D) to the underside of the head of the bolt (5) and the mating faces of the washer (5) (8).

(26) Align the eye end (11) with the lever (7) and install the bolt (5), the washer(s) (8) and the nut (9).

(27) Tighten the nut to a torque of 5-25 lbf in (0.58-2.83 Nm) and align the split pin hole.

NOTE: You can use up to 3 washers (8) to correctly align the split pin hole.

(28) Safety the nut (9) with a new split pin (10).

(29) Tighten the end cap (12) to a torque of 50 lbf in (5.65 Nm).

(30) Safety the end cap with lockwire.

(31) Install the washers (14) and the nuts (13). Tighten the nuts to a torque of 13 lb in (1.5 Nm).

(32) Safety the nuts (13) together with lockwire.

(33) Safety the boltheads (4) with lockwire.

(34) Remove the safety tag and close the NOSE STRG circuit breaker.

(35) Pressurize the hydraulic system (Refer to 29-00-00).

(36) Set the Hydraulic Power Switch to ON.

(37) Set the Steering Control Switch on the Pilot Control Wheel to the TAXI position.

(38) Operate, slowly, the rudder pedals fully to the left and fully to the right.

(39) Check that not steering warning light comes ON.

(40) Push (in) the Steering Disconnect Button on the Pilot Control Wheel.

(41) Set the Hydraulic Power Switch to OFF.

(42) Depressurize the hydraulic system.

(43) Remove the electrical power (Refer to 24-00-00).

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STEERING - ADJUSTMENT/TEST

1. General

A. This page block contains the following procedures:

- An operational test of the steering system
- An adjustment/test of the steering system

2. Steering - Operational Test

A. Referenced Information

Maintenance Manual Chapter 24-00-00

B. Procedure

(1) Make sure electrical power is available (Refer to 24-00-00).

(2) Do the test:

	Action	Result
(a)	On the SYS TEST panel on the instrument panel in the flight compartment set the rotary switch to STEER.	
(b)	Set the steering switch on the pilot control wheel to the take off or taxi position (one click or two).	The white legend STEER TAXI is displayed and flashes on the PFD (Primary Flight Display) lower right portion of the attitude display.
(c)	Push (in) and release the momentary hold test button in the center of the switch	On the instrument panel the master warning light comes on. On the annunciator panel the STEER FAIL warning light comes on.
(d)	Set the steering disconnect button on the control wheel to the disconnect position.	On the annunciator panel the STEER FAIL warning light goes off. The steering mode light on the switch panel goes off.
(e)	Push (in) the master warning annunciator switch.	The master warning annunciator light goes off.

(3) Remove the electrical power

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3. Steering - Adjustment/Test (Ref. to Fig. 501)

A. Tools

Special tool (pivot-block)	0-205-03-300
Rudder sector rigging pin	Not Specified
Rudder travel board	80-909166-401

B. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 12-00-00
Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 27-20-00
Maintenance Manual Chapter 29-00-00

C. Procedure

(1) Raise the airplane on jacks until the wheels are clear of the ground and the special tool (0-205-03-300) can be put in position below the NLG shock-strut jacking point (Refer to 07-10-00).
(2) Make sure the NLG shock-strut is correctly inflated (Refer to 12-00-00).
(3) Make sure there are no persons or heavy equipment in the baggage compartment.
(4) Carefully lower the airplane until the NLG shock-strut jacking point is in contact with the special tool (0-205-03-300).
(5) Make sure that the special tool (0-205-03-300) is vertical and the base securely positioned. Continue to lower the airplane until the NLG shock-strut is compressed by 3,0 in (76 mm).
(6) Install the rigging pin in the rudder-system front-sector (Refer to 27-20-00).
(7) Install the rudder travel board (tool no. 80-909166-401) (Refer to 27-20-00).
(8) Make sure the electrical power is available (Refer to 24-00-00).
(9) Position a person in the flight compartment to operate the controls.
(10) Check that the reference mark on the part of the NLG that turns is in line with the zero mark on the graduated plate on the fixed part of the NLG.
(11) Pressurize the hydraulic system (Refer to 27-20-00).

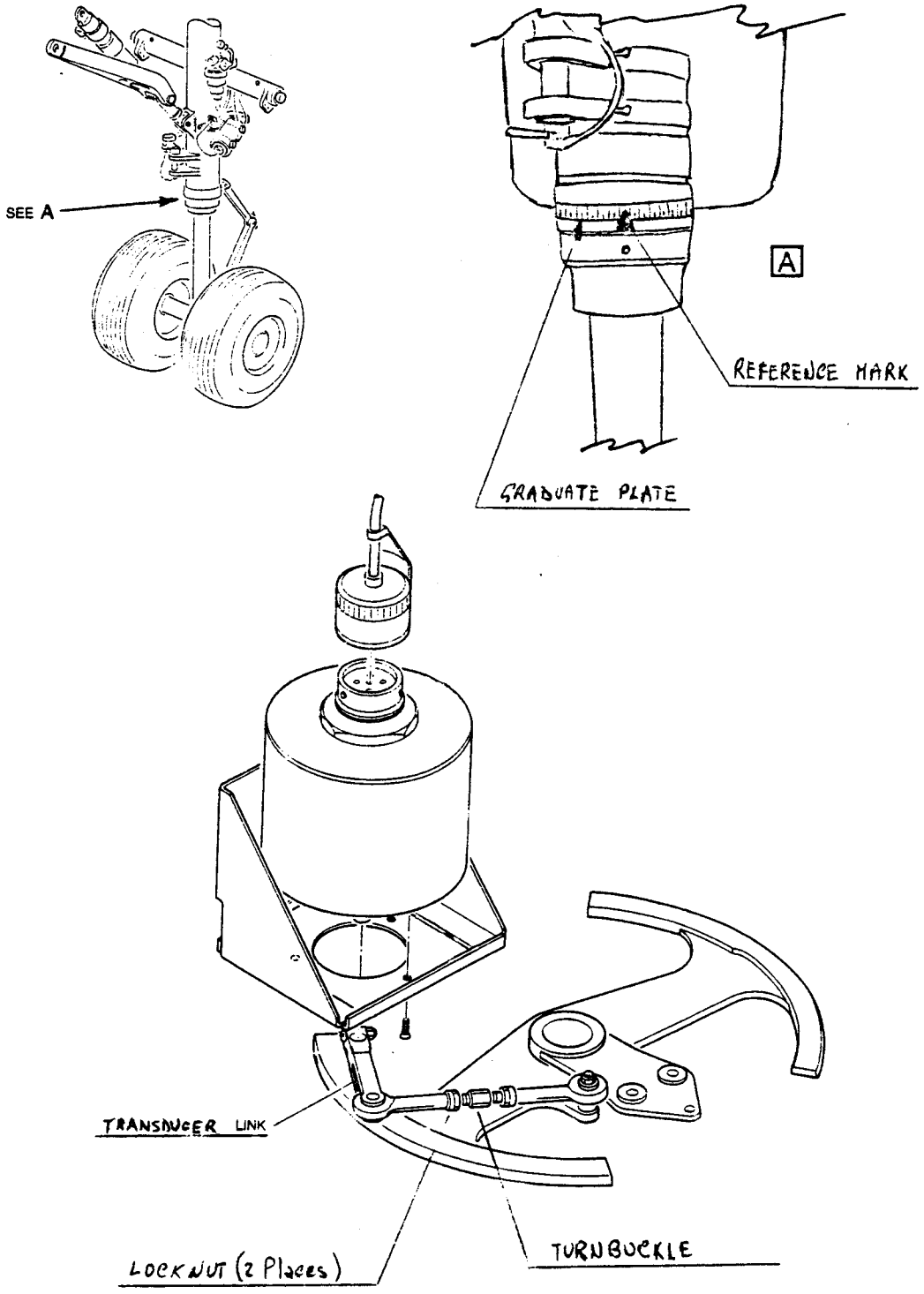

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Fig. 501 - Steering - Adjustment/Test

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(12) Do the test:

	Action	Result
(a)	Set the steering control switch on the pilot control wheel to the taxi position (second pressure)	The white legend STEER TAXI is displayed and flashes on the PFD (Primary Flight Display) lower right portion of the attitude display.

NOTE: If the STEER FAIL annunciator on the annunciator panel comes on refer to page block 101 for troubleshooting.

(b)	Set the steering control switch to the OFF and take off/taxi positions in turn.	The reference mark must stay aligned motionless with the zero mark onthe graduated plate.

(13) If the reference mark moves from the zero mark do the steps that follow:

(a) Set the control switch to the taxi position and verify that the white legend STEER TAXI is displayed and flashes on the PFD (Primary Flight Display) lower right portion of the attitude display.

(b) Remove the access panel 211 CLF.

(c) Cut and remove the lockwire from the turnbuckle between the rudder sector and the transducer link.

(d) Loosen the two locknuts and adjust the turnbuckle until the nose leg stays in the center position regardless of the steering control switch position.

(e) Tighten the two locknuts and safety the turnbuckle with lockwire.

(f) Do steps (12) and (13) again until there is no movement of the steering.

(g) Install the access panel 211 CLF.

(14) Make sure the steering control switch is in the taxi position.

(15) Remove the rigging pin from the rudder-system front-sector.

(16) Operate the rudder pedals fully to the left and fully to the right.

(17) Check the steering angles on the graduated scale, they must be inside the following limits:

- The steering must be smooth and free from hunting.
- The time taken from center to maximum steering angle L and R must be between 3 and 4 seconds.
- The steering angle at Max must be between 49 and 57 degrees at each limit.

(18) Operate the rudder pedals to the neutral position.

(19) Set the steering control switch to the take off position.

(20) Operate the rudder pedals fully to the left and fully to the right and check that the steering angles are inside the following limits:

- L steer 19 - 26 degrees
- R steer 19 - 26 degrees

(21) Check that the left and right steering angles and the rudder angles are inside the following limits:

(a) Taxi

RUDDER ANGLE	STEERING ANGLE
5 degrees	Between 2 and 5 degrees
10 degrees	Between 11 and 15 degrees
15 degrees	Between 20 and 28 degrees
20 degrees	Between 40 and 50 degrees

(b) Take off

RUDDER ANGLE	STEERING ANGLE
5 degrees	Between 0 and 0.75 degrees
10 degrees	Between 3 and 5 degrees
15 degrees	Between 9 and 13 degrees
20 degrees	Between 18 and 22 degrees

(22) Push (in) the steering disconnect button on the pilot control wheel.

(23) Depressurize the hydraulic system (Refer to 29-00-00).

(24) Remove the rudder travel board (Refer to 27-20-00).

(25) Raise the airplane on the jacks until the NLG shock-strut is extended and the special tool (0-205-03-300) can be removed.

(26) Lower the airplane to the ground and remove the jacks (Refer to 07-10-00).

(27) Remove the electrical power (Refer to 24-00-00).

4. Steering Actuator Resistance Test(Ref. to Fig. 502)

A. Referenced Information

Maintenance Manual Chapter 24-00-00

B. Procedure

(1) Remove the electrical power (Refer to 24-00-00).

(2) Disconnect the Feedback Potentiometer plug from the Nose Landing Gear receptacle.

(3) Using a suitable means, short together all the contacts of the Feedback Potentiometer plug with flying lead. Tool as shown on the sketch in figure 502 may be used.

(4) Connect the Low side of the Insulation Resistance Test Meter to the Steering Actuator sliding member (or if disassembled the feedback potentiometer shaft). Connect the High side of the Insulation Meter to the flying lead.

(5) Operate the Insulation Resistance Test Meter applying the 500 Vdc test voltage for sufficient time to obtain a steady reading.

(6) Using a suitable means, short together contacts (a), (b) anc (c) of the Feedback Potentiometer plug with flying lead and connect to the Low side of the

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Insulation Resistance Test Meter. Tool as shown on the sketch in figure 502 may be used.

(7) Using a suitable means, short together contacts (d), (e) and (f) of the Feedback Potentiometer plug with flying lead and connect to the High side of the Insulation Resistance Test Meter. Tool as shown on the sketch in figure 502 may be used.

(8) Operate the Insulation Resistance Test Meter applying the 500 Vdc test voltage for sufficient time to obtain a steady reading.

(9) The reading obtained should be greather than 10 Megaohms at 500 Vdc.

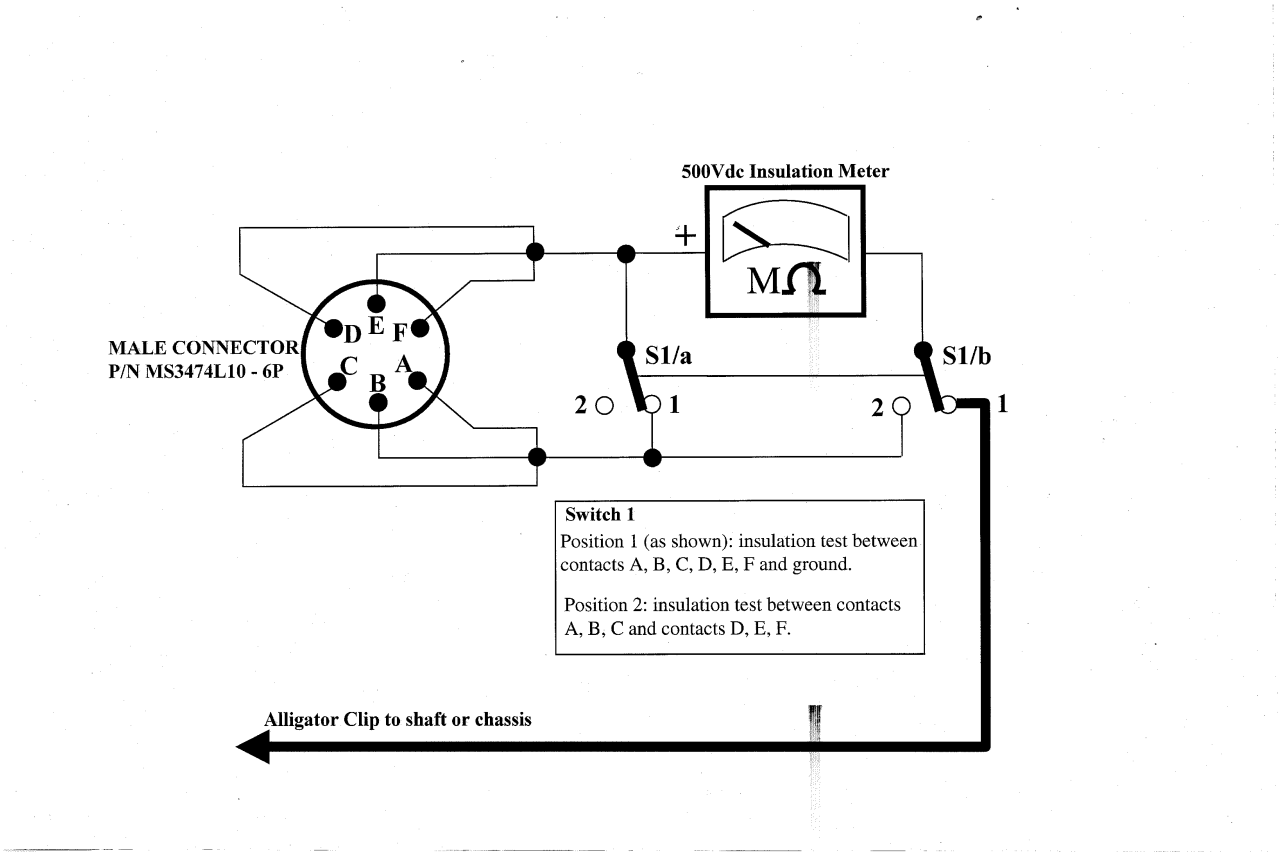

Fig. 502 - Feedback Potentiometer Insulation Test

POSITION AND WARNING - DESCRIPTION AND OPERATION

1. General (Ref. to Fig. 1)

   A. The position and warning system shows the flight crew the position and condition of the landing gear and associated systems.

   B. The position and warning system has these main components:

   – The nose gear harness subassembly
   – The landing gear limit switches
   – The weight switches
   – The landing gear control panel

   The system has a control function for these systems:

   – The hydraulic power system (Refer to 29-10-00)
   – The autofeather warning system (Refer to 61-00-00)
   – The autopilot system (Refer to 22-00-00)
   – The nose wheel steering system (Refer to 32-50-00)
   – The digital clock (Refer to 31-21-00)
   – The air data system (Refer to 34-12-00)
   – The wing anti-ice system (Refer to 30-10-00)
   – The pressurization system (Refer to 21-30-00)
   – The stall warning system (Refer to 27-30-00)
   – The DC generation system (Refer to 24-30-00).

2. System Description

   A. Nose gear harness subassembly

      (1) The harness subassembly connects the weight switch, the nose wheel steering servo valve, the steering select/bypass valve and, the steering feedback potentiometer to the airplane electrical system.
      (2) The cable has individual wires contained in a conduit connectors connect the wires to the applicable component and to the electrical system. The connectors are sealed with a heat shrink boot.

   B. Landing gear limit switches

      (1) The limit switches are two position plunger operated microswitches. They are attached to housings on the landing gear actuators.
      (2) When the actuators are fully extended or retracted a striker mechanism in the actuator operates the applicable switch.

   C. Weight switches

      (1) The weight switches (one for each gear) are two position multi contact microswitches. They operate when the airplane weight is on the ground.
      (2) The main gear switches are on brackets on the lever hinge fittings and are operated by cam plates on the wheel lever assemblies. The nose gear switch is on a bracket on the top of the nose gear main fitting. A striker, operated by the valve block assembly, operates the switch.

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3. System Operation

A. With the system locked down the downlock switches connect the position light circuit of the LOCKED ON annunciators to ground and the green annunciators come on.

B. With the system unlocked the down limit switch changes over and connects the unsafe lights to ground. The red UNSAFE annunciators come on.

C. With the system locked up the uplock limit switch changes over and open circuits the light circuit and no lights will show.

D. With the weight on wheels the weight switches change over. The change over causes system limitations on the systems listed in 1. above. For individual system operation refer to the chapters listed above.

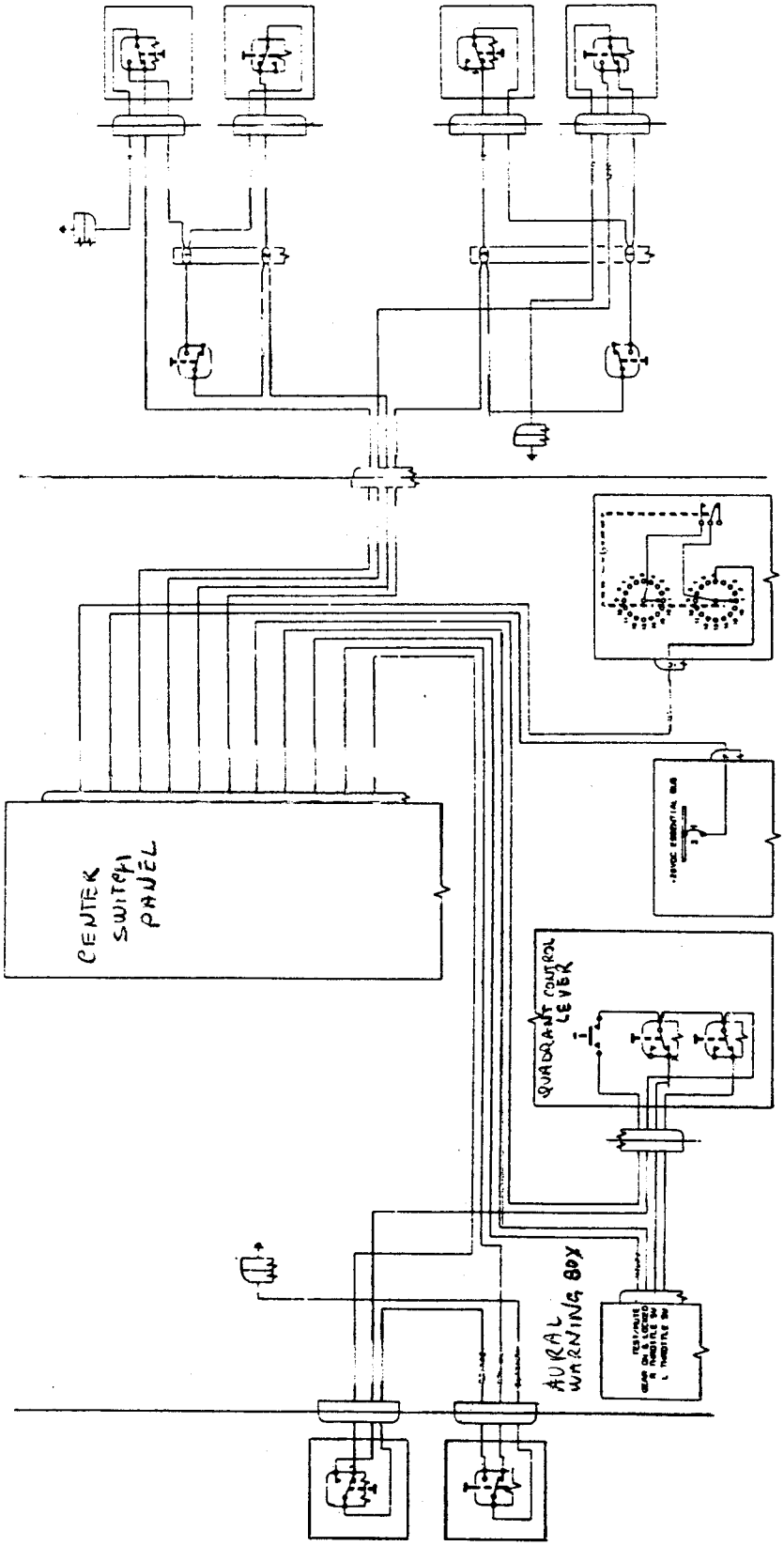

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Fig. 1 - Position and Warning - Electrical Schematic

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POSITION AND WARNING - MAINTENANCE PRACTICES

1. General

A. This page block contains the following maintenance practices:

- A removal/installation of the nose gear harness
- A removal/installation of the main landing gear (MLG) weight switch.
- A removal/installation of the nose landing gear (NLG) weight switch.

2. Nose Gear Harness - Removal (Ref. to Fig. 201)

A. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 52-81-00

B. Procedure

(1) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(2) Open, tag and safety the NOSE STRG circuit breaker on the pilot circuit breaker panel.
(3) Disconnect the NLG doors (Refer to 52-81-00).
(4) Disconnect the electrical connector (4) at the bulkhead STA 0.
(5) Disconnect the electrical connector of the servo valve cable (5) at the receptacle on the steering manifold (1).
(6) Disconnect the select/bypass valve connector (3) at the steering manifold (1).
(7) Disconnect the potentiometer connector (9) from the receptacle, on the bracket (8).
(8) Cut and remove the lockwire from the locknut of the potentiometer cable end (6) and remove the locknut from the receptacle on the cable end and the bracket (8).
(9) Cut and remove the lockwire from the locknuts on the weight switch (2).
(10) Remove one locknut to release the switch (2) from the NLG bracket and remove the switch (2) from the bracket.
(11) Cut and remove any cable wraps from the cable assembly and remove the assembly from the NLG well.

3. Nose Gear Harness - Installation (Ref. to Fig. 201)

A. Fixtures, Test and Support Equipment

Continuity tester	Not Specified
Nose wheel jack	02-0517-0132
Special platen with bearing	Not Specified

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B. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 32-50-00
Maintenance Manual Chapter 52-81-00

C. Procedure

(1) Put the harness assembly in position on the NLG.
(2) Install the receptacle of the linear feed back potentiometer cable (6) into the bracket (8) and attach it with the locknut.
(3) Safety the locknut with lockwire.
(4) Connect the potentiometer connector (9) to the receptacle on the bracket (8).
(5) Connect the servo valve connector for the cable (5) to the receptacle on the steering manifold (1).
(6) Connect the select/bypass valve connector (3) to the receptacle on the steering manifold (1).
(7) Install the weight switch (2) into the bracket on the NLG and attach it with the locknut.
(8) Put the jack and the platen below the jacking adapter on the NLG.

WARNING: MAKE SURE THE AIRPLANE DOES NOT LIFT OFF. THE AIRPLANE JACKS WHEN THE NOSE JACK COMPRESSES THE SHOCK ABSORBER. IF THE AIRPLANE FALLS OFF THE JACKS INJURY TO PERSONS AND/OR DAMAGE TO EQUIPMENT CAN OCCUR.

(9) Use the jack to compress the NLG strut 0.10 in (2.54 mm).
(10) Connect a continuity tester between pins F and G of the connector (4).
(11) Adjust the locknut of the weight switch (2) until the tester indicates continuity.
(12) Check that continuity exists between the following pins:
- F to G
- J to K
- M to N
- R to S

(13) Release the nose wheel jack pressure and remove the jack and the platen.
(14) Check that continuity exists between the following pins of the connector (4):
- F to H
- J to L
- M to P
- R to T

(15) If the checks in (12) and (14) are not correct refer to page block 101 for trouble shooting.
(16) Safety the locknuts with lockwire.
(17) Connect the connector (4) at bulkhead STA O.
(18) Do a test of the steering system (Refer to 32-50-00).
(19) Connect the NLG doors (Refer to 52-81-00).
(20) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

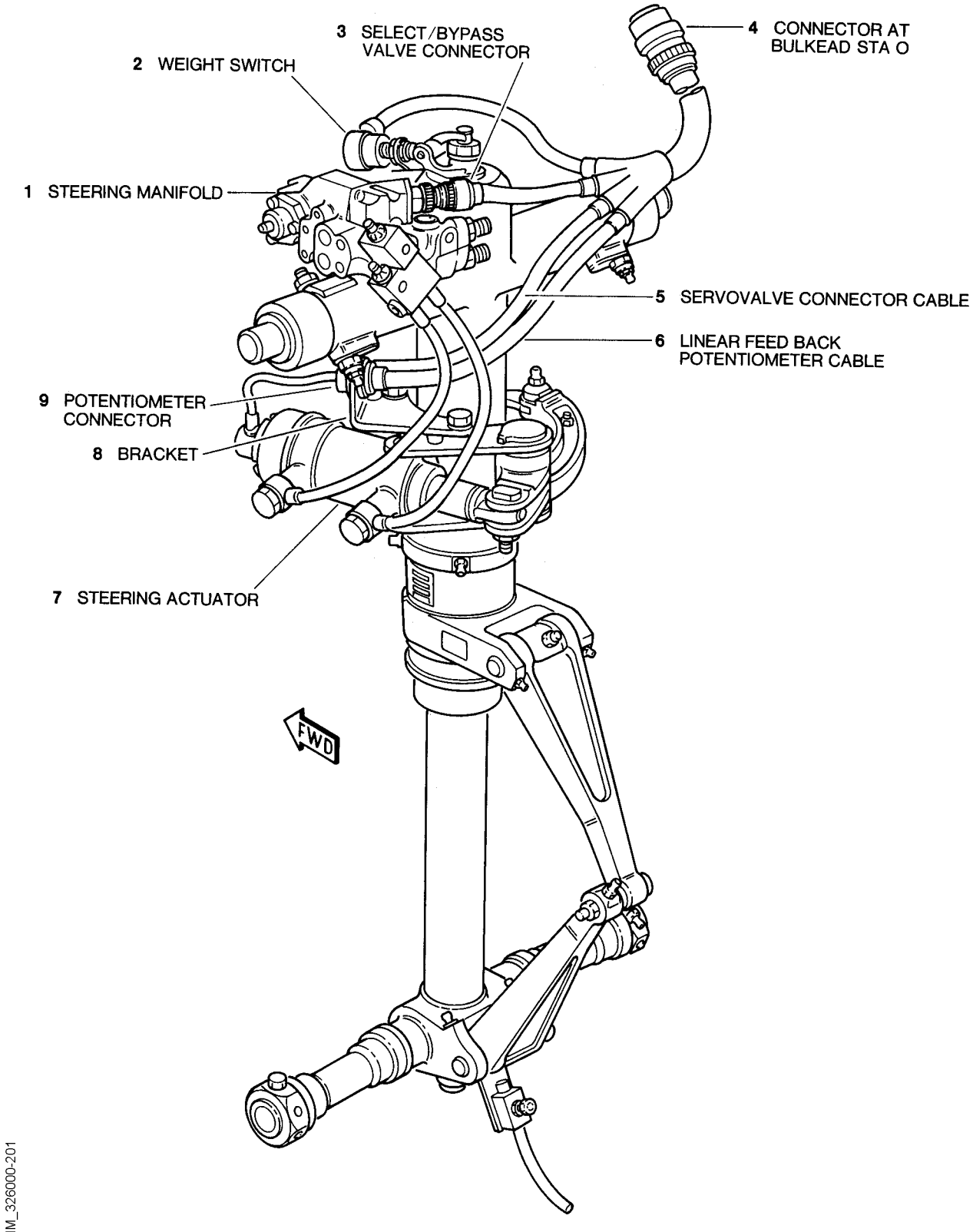

Fig. 201 - NLG Harness - Removal/Installation

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4. Limit Switches - Removal/Installation (Ref. to Fig. 202)

NOTE: For removal and installation of the NLG and MLG uplock and downlock limit switches refer to Dowty Maintenance Manual.

5. Limit Switches - Adjustment (Ref. to Fig. 202)

NOTE: For Adjustment of the NLG and MLG uplock and downlock limit switches refer to Dowty Maintenance Manual.

6. MLG Weight Switch - Removal (Ref. to Fig. 203)

A. Referenced Information

Maintenance Manual Chapter 07-00-00

B. Procedure

(1) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(2) Disconnect the electrical connector of the switch (1) from the receptacle on the bulkhead STA 6000.
(3) Remove the spring clip (6) and loosen the end cap (7).
(4) Remove the locknut (5) and the washer (4) and remove the switch (19 complete with the lockwasher (3) and the locknut (2) from the bracket (8).

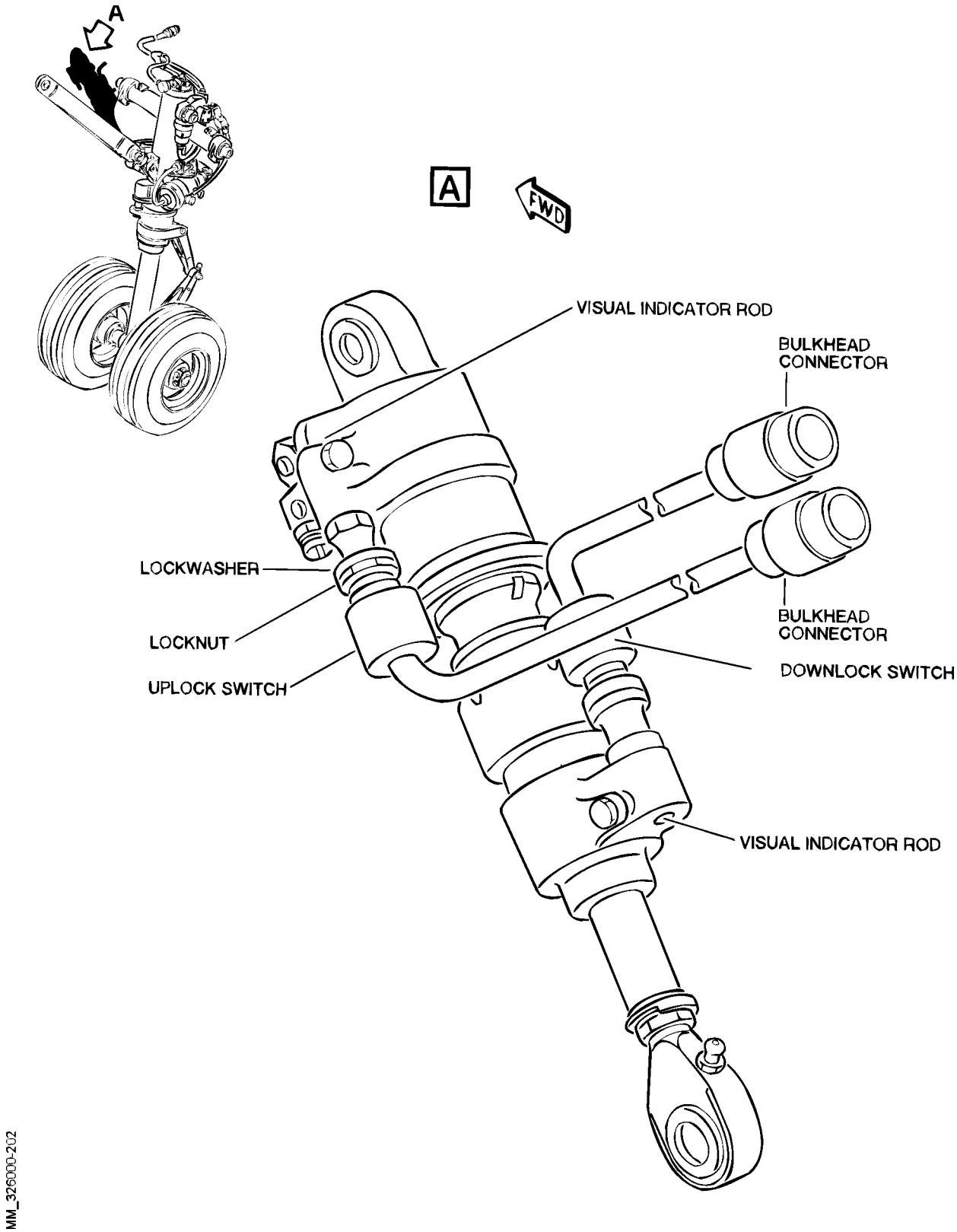

Fig. 202 - Limit Switches (Typical) - Location

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7. MLG Weight Switch - Installation (Ref. to Fig. 203)

A. Fixtures, Test and Support Equipment

Lamp Box	460001720

B. Referenced Information

Maintenance Manual Chapter 07-00-00

C. Procedure

(1) Install the switch (1) together with the locknut (2) and the lockwasher (3) into the bracket (8).
(2) Adjust the locknut (2) until the roller of the switch is in contact with the wheel lever subassembly.
(3) Install the second tab washer (4) the locknut (5) and the endcap (7).
(4) Connect the connector of the weight switch to the receptacle of the lamp box (Tool N° 460001720).
(5) Adjust the locknuts (2) and (5) until the switch operates (the light on the lamp box comes on).
(6) Adjust again until the lamp goes off and the roller of the switch is aligned with the cam plate.
(7) Tighten the locknuts.
(8) Tighten the end cap (7) and install the spring clip (6).
(9) Disconnect the connector of the switch from the lamp box and connect it to the airframe receptacle.
(10) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).
(11) Make sure the roller of the switch is in contact with the cam plate.

TEMPORARY REVISION NO. 129

To Chapter 32-60-00

This Temporary Revision is now considered a part of P. 180 Avanti II MAINTENANCE MANUAL

NOTE: Record the incorporation of this Temporary Revision on the RECORD OF TEMPORARY REVISIONS sheet at the front of the manual

Insert: MAINTENANCE MANUAL
Report: 180-MAN-0200-01105 Rev. B3 Sept.21/12
After Page 206

Reason for issue : **Main Landing Gear Door Switch - Removal/Installation**

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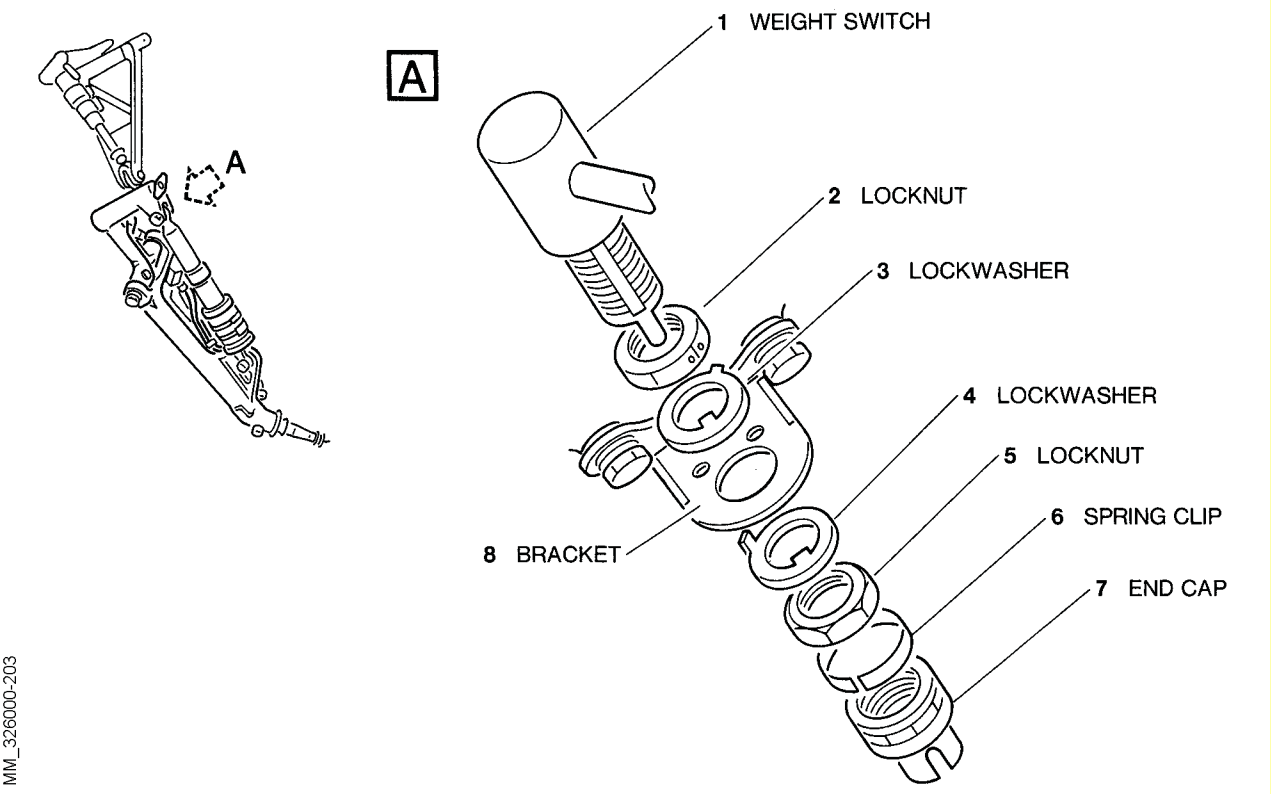

Fig. 203 - MLG Weight Switch - Removal/Installation

8. Main Landing Gear Door Switch - Removal (Ref. Fig. 204)

A. Fixtures, Test and Support Equipment

Blanking caps	Not specified
Warning Notices	Not specified

B. Materials

Not Applicable

C. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 32-00-00)
Maintenance Manual Chapter 29-00-00

D. Procedure

(1) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(2) Partially retract the MLG until the rear door are completely open (Refer to 32-00-00).
(3) Depressurize the hydraulic system (Refer to 29-00-00).

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(4) Open, tag and safety these circuit breakers:

Pilot CB panel:
LDG GEAR CONT.
HYDR CONT.

(5) Remove the electrical power (Refer to 24-00-00).
(6) Remove the protection cover, located on the switch case and disconnect the two electrical wires from the switch (4).
(7) Mark with a line the screw (1) position on the adjutment slots (6).
(8) Remove the two screws (1), nut (2) and washer (3) that secure the Main Landing Gear Door Switch (4) to the Main Landing Gear Door Support (5).
(9) Remove the Main Landing Gear Door Switch (4).
(10) Temporarely isolate the electrical wire eye terminal.

9. Main Landing Gear Door Switch - Installation (Ref. Fig. 204)

A. Fixtures, Test and Support Equipment

Blanking caps	Not specified
Warning Notices	Not specified

B. Materials

Not Applicable

C. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 32-00-00)
Maintenance Manual Chapter 29-00-00

D. Procedure

(1) Make sure, as necessary that:
- The applicable circuit breakers are open, tagged and safetied
- The Warning Notices are in position
- There is no electrical power on the airplane
- Access is available

(2) Taking in account the previously marked lines on the adjustment slots (6), place the Main Landing Gear Door Switch (1) on the Main Landing Gear Door Support (5).
(3) Secure the switch (4) by the screws (1), washers (3) and nut (2) on the support (5).
(4) Remove the electrical wire eye terminal isolation and connect the two electrical wire to the switch (4).
(5) Install the protection cover located on the switch case.

(6) Remove the safety tags and close the previously opened circuit breaker :

Pilot CB Panel:
LDG GEAR CONT.
HYDR CONT.

(7) Restore the Electrical Power.
(8) Perform a Main Landing Test - Normal extension / retraction test (Refer to 32-00-00).
(9) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).
(10) Remove the Warning Notice in the flight compartment.

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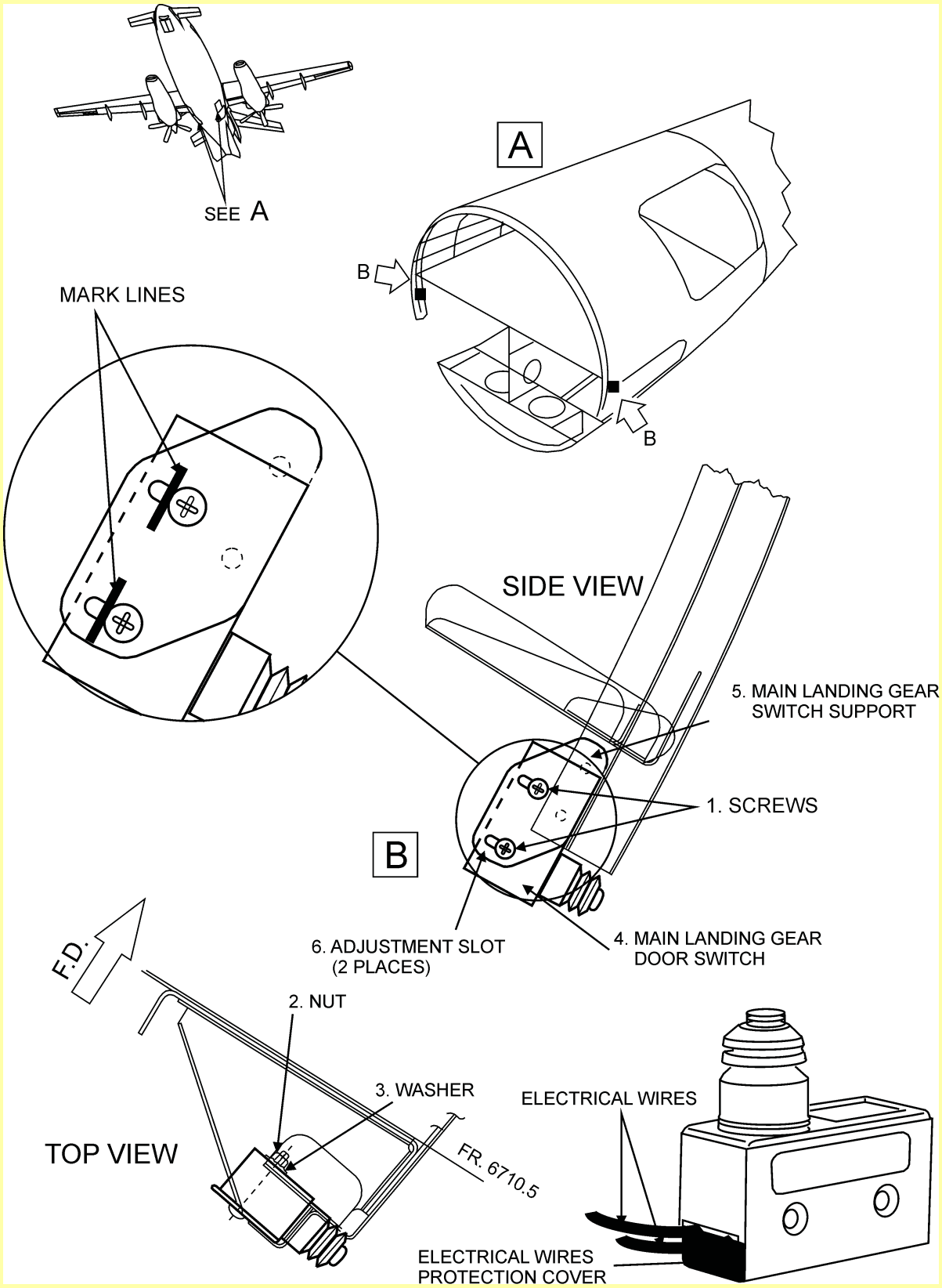

Fig. 204 - Main Landing Gear Door Switch - Removal/Installation

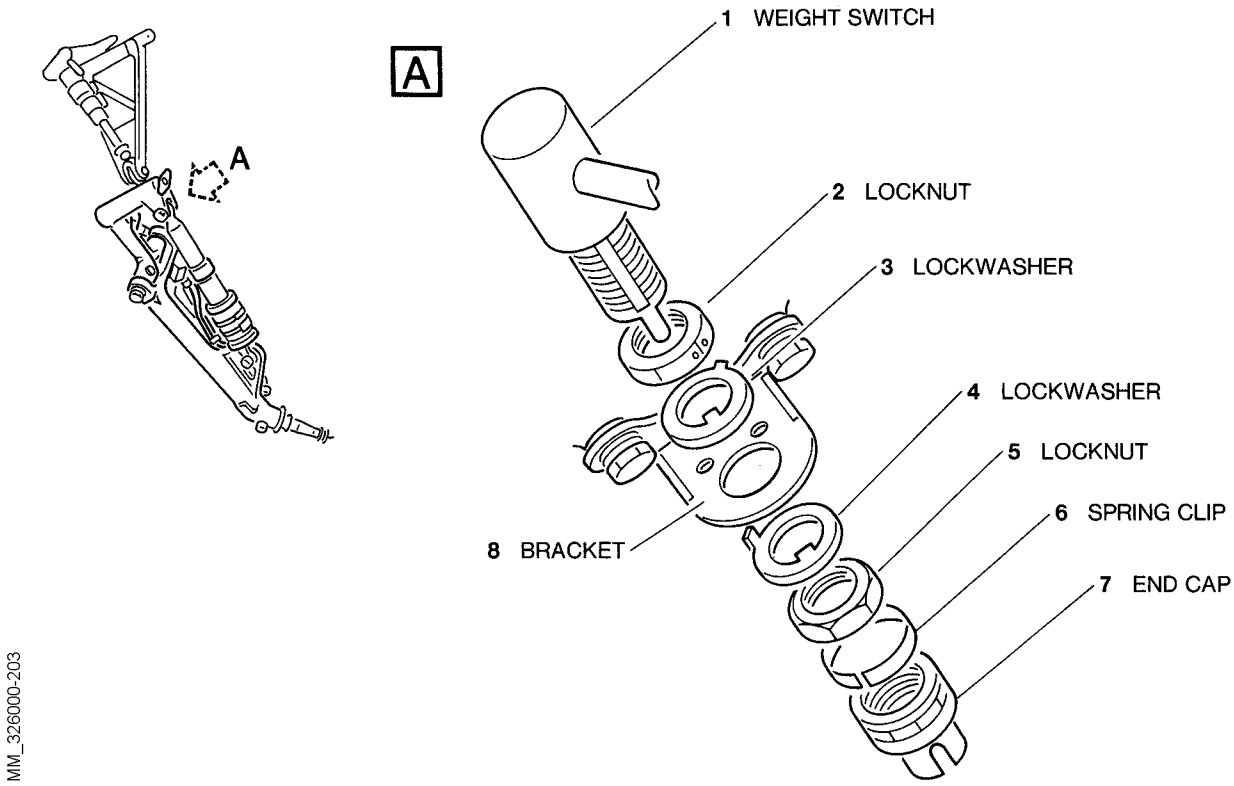

Fig. 203 - MLG Weight Switch - Removal/Installation

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NOTE: Please see the TEMPORARY REVISION that revises this page

POSITION AND WARNING - ADJUSTMENT/TEST

1. General

WARNING: BE CAREFUL WHEN YOU OPERATE THE LANDING GEAR. MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE LANDING GEAR. INJURY TO PERSONS AND/OR DAMAGE TO EQUIPMENT CAN OCCUR.

2. Landing Gear Warning Test (Ref. to Fig. 501)

NOTE: If the result is incorrect refer to trouble shooting (Page Block 101) to identify the fault.

A. Referenced Information

Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 29-00-00

B. Procedure

(1) Lift the airplane on jacks until the wheels are clear of the ground (Refer to 07-00-00).
(2) Make sure electrical power is available (Refer to 24-00-00).
(3) Pressurize the hydraulic system (Refer to 29-00-00).

NOTE: The landing gear control and the flap control lever are initially in the "DN" and "UP" respectively; the power levers must be advanced to the "MAX PWR" position.

(4) Do the test:

	Action	Result
(a)	Retard the LH power lever to G.I.	No sound shall be generated by the aural warning system.
(b)	Retard the RH power lever to G.I.	No sound shall be generated by the aural warning system.
(c)	Advance both power levers to MAX PWR.	
(d)	Set the flap control lever to MID.	No sound shall be generated by the aural warning system.
(e)	Set the flap control lever to UP.	

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	Action	Result
(f)	Retract the landing gear.	
(g)	Retard the LH power lever to the G.I. position.	A steady tone (326 Hz) shall be generated by the aural warning system.
(h)	Press the GEAR MUTE button on the LH power lever.	The aural warning shall be silenced.
(i)	Retard the RH power lever to the G.I. position.	A steady tone shall be generated by the aural warning system.
(j)	Press the GEAR MUTE button on the LH power lever.	The aural warning shall be silenced.
(k)	Advance both power levers to the MAX PWR position.	
(l)	Retard the RH power lever to the G.I. position.	A steady tone shall be generated by the aural warning system.
(m)	Extend the landing gear.	The aural warning shall be silenced.
(n)	Retract the landing gear and advance both power levers to MAX PWR.	
(o)	Set the flap control lever to MID.	No sound shall be generated by the aural warning system.
(p)	Retard the LH Power lever to F.I.	A steady tone shall be generated by the aural warning system.
(q)	Press the GEAR MUTE button on the LH power lever.	The sound shall be continued.
(r)	Extend the landing gear.	The aural warning shall be silenced.
(s)	Retract the landing gear.	No sound shall be generated.
(t)	Set the flap control lever to UP and advance both power levers toMAX PWR.	No sound shall be generated.

	Action	Result
(u)	Set the flap control lever to DN.	A steady tone shall be generated.
(v)	Extend the landing gear.	The aural warning shall be silenced.

(5) Depressurize the hydraulic system (Refer to 29-00-00).
(6) Remove the electrical power (Refer to 24-00-00).
(7) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

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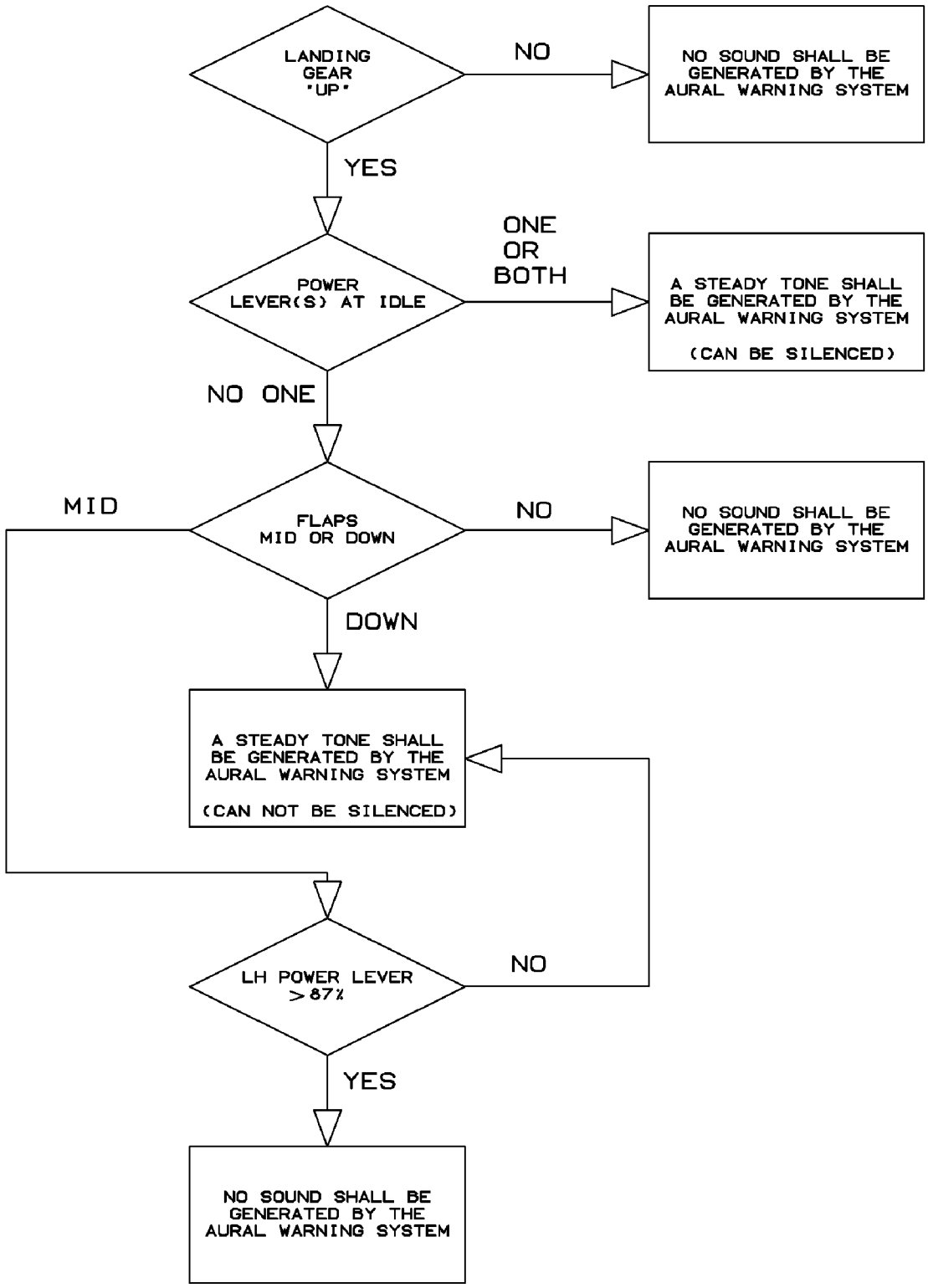

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Fig. 501 - Landing Gear Warning Diagram