MAIN GEAR AND DOORS - DESCRIPTION / OPERATION

1. General (Figures 1 and 2)

The main landing gear installation consists of a right and a left main landing gear assembly. The gear is hydraulically retracted outward into the strut and wheel well, under the wing. The gear is locked in the up position by means of a lock assembly located in each wheel well. In the down position the gear is locked and braced by side brace assemblies and jury brace assemblies. Hydraulic connecting lines are fed through the inboard access plate on the aft main gear support. In the event of aircraft hydraulic failure, the gear can be extended pneumatically.

2. Main Gear

The main landing gear assembly consists of two main gears, one on each wing, with a side brace assembly, a jury brace assembly, two actuating cylinders, an unlock cylinder assembly, three microswitches, (uplock, downlock and ground contact) and attaching hardware.

Each main gear includes the strut main body, piston assembly, fork and axle assembly, anti-rotation adjustable scissors and associated parts. The upper end of the strut main body is hinged between forward and aft main gear supports, within the wing structure, by means of trunnion pins.

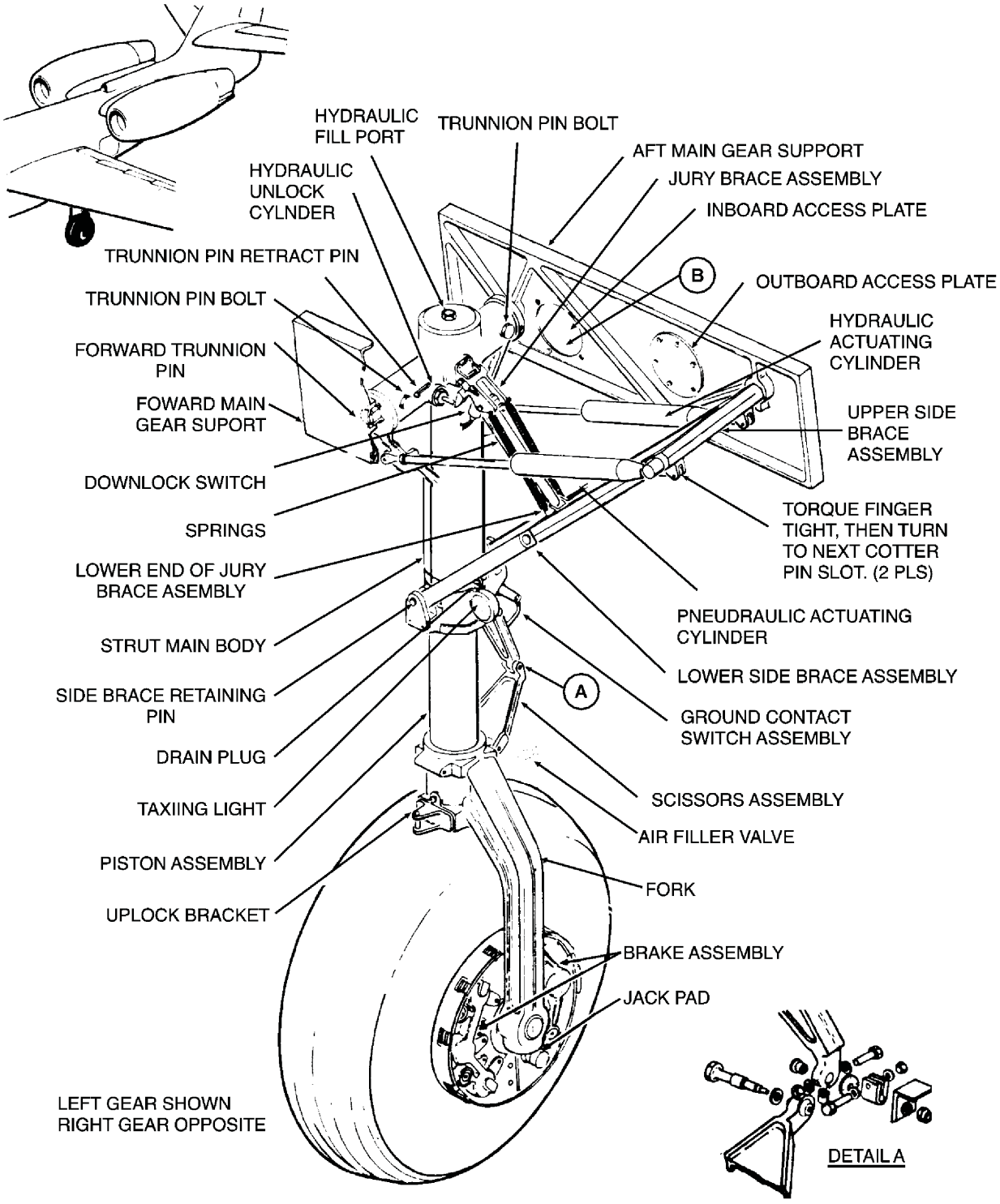
Landing gear struts absorb shock forces generated during landing and taxiing. The upper portion of the strut is filled with hydraulic fluid (MIL-H-5606) and the lower portion is serviced with nitrogen gas. When the strut is in a static loaded condition, a spring loaded snubber plate located in the upper portion of the strut bears against an orifice plate and partially closes four metering ports in the snubber. Shock forces exerted on the landing gear cause the strut piston to travel upward through hydraulic fluid in the upper strut. The volume of the upper chamber of the shock absorber is decreased, thus forcing fluid to flow down, acting upon the floating piston and compressing the nitrogen gas. This forces the snubber plate away from the orifice plate to expose the four metering ports. This decreases the resistance of the hydraulic fluid to strut piston movement and diminishes landing gear shock loads. As the strut reaches the upper limits of travel and starts to extend under influence of nitrogen gas pressure, the snubber spring reseats the snubber plate against the orifice plate restricting further hydraulic fluid flow through the orifice. This slows the piston extension, aiding control of strut rebound. During taxiing, shocks are absorbed largely by compression of nitrogen gas within the strut.

3. The upper and lower side brace assemblies are hinged together, to the forward and aft main gear supports and lower end of the strut main body, by means of pins. The upper and lower jury brace assemblies are also hinged together.

The two actuating cylinders are connected between the strut main body and the upper end of the side brace assembly.

4. Doors

The main landing gear door assembly covers the strut well when the landing gear is retracted. The door assembly is hinged on the inboard end of the wing structure. It is secured to the lower end of the strut main body by means of rod assemblies which actuate the door during retraction and extension.


HYDRAULIC FILL PORT
TRUNNION PIN BOLT
AFT MAIN GEAR SUPPORT
HYDRAULIC UNLOCK CYLNDER
JURY BRACE ASSEMBLY
INBOARD ACCESS PLATE
TRUNNION PIN RETRACT PIN
B
OUTBOARD ACCESS PLATE
TRUNNION PIN BOLT
HYDRAULIC ACTUATING CYLINDER
FORWARD TRUNNION PIN
FOWARD MAIN GEAR SUPORT
UPPER SIDE BRACE ASSEMBLY
DOWNLOCK SWITCH
TORQUE FINGER TIGHT, THEN TURN TO NEXT COTTER PIN SLOT. (2 PLS)
SPRINGS
LOWER END OF JURY BRACE ASEMBLY
PNEUDRAULIC ACTUATING CYLINDER
STRUT MAIN BODY
LOWER SIDE BRACE ASSEMBLY
A
SIDE BRACE RETAINING PIN
GROUND CONTACT SWITCH ASSEMBLY
DRAIN PLUG
SCISSORS ASSEMBLY
TAXIING LIGHT
AIR FILLER VALVE
PISTON ASSEMBLY
FORK
UPLOCK BRACKET
BRAKE ASSEMBLY
JACK PAD
LEFT GEAR SHOWN
RIGHT GEAR OPPOSITE
DETAIL A

SIDE AND JURY BRACE - ADJUSTMENT / TEST

1. General

[redacted] After completion of preload procedure, cycle landing gear several times, checking for proper operation.

Give special attention to locking of the jury brace assembly and correct operation of landing gear unlock cylinder.

2. [redacted]

A. Adjustment

(1) Jack entire aircraft. Refer to 7-10-00, Jacking - Maintenance Practices.

(2) Release main hydraulic system pressure. Refer to 12-10-03, Hydraulic System Servicing - Maintenance Practices.

(3) Release hydraulic reservoir air pressure. Refer to 12-10-03, Hydraulic System Servicing - Maintenance Practices.

(4) Place landing gear control lever in DOWN position.

(5) Disconnect landing gear door rod ends from strut main body.

(6) Remove bolts securing both actuator rod ends to main strut body. Refer to 32-10-00, Main Gear and Doors - Description / Operation (Figure 1, Sheet 1).

NOTE: If actuating cylinder attach bolts were difficult to remove, inspect actuating cylinder attach point strut body lug holes for evidence of corrosion. If corrosion is evident, refer to 32-10-01, Main Landing Gear - Approved Repairs.

(7) Connect external hydraulic power source to aircraft. Refer to 12-10-03, Hydraulic System Servicing - Maintenance Practices.

(8) Connect external electrical power to aircraft.

(9) Place landing gear control lever in UP position.

CAUTION: ENSURE NOSE GEAR SCISSORS ARE CONNECTED AND PIT PIN IS INSTALLED.

CLEAR AREA AROUND ALL LANDING GEAR, AS NOSE AND OPPOSITE MAIN GEAR WILL RETRACT WHEN HYDRAULIC PRESSURE IS APPLIED.

WARNING: KEEP HANDS CLEAR OF JURY BRACE ASSEMBLY, AS UNLOCK CYLINDER PISTON WILL EXTEND AND PUSH JURY BRACE TOWARDS UNLOCK. THIS WILL CAUSE GEAR BEING ADJUSTED TO MOVE SLIGHTLY.

(10) Slowly increase hydraulic pressure and retract each actuating cylinder until piston bottoms. When actuator pistons are bottomed, apply full system hydraulic pressure (1800 psi).

(11) Mark each piston in full retract position at cylinder.

(12) Release hydraulic pressure.

WARNING: CLEAR AREA AROUND ALL LANDING GEAR BEFORE MOVING LANDING GEAR CONTROL LEVER.

CAUTION: ENSURE ACTUATOR PISTON ROD ENDS WILL NOT STRIKE ANY STRUCTURE DURING EXTENSION.

WARNING: KEEP HANDS CLEAR OF JURY BRACE ASSEMBLY, AS UNLOCK CYLINDER PISTON WILL RETRACT, CAUSING JURY BRACE TO MOVE OVER CENTER AND GEAR TO MOVE SLIGHTLY.

(13) Place landing gear control lever in DOWN position

(14) Ensure jury brace has locked over center and green down and locked indicating light is ON.

(15) Slowly apply hydraulic pressure and extend both actuating cylinders until pistons bottom.

NOTE: Only rear cylinder is hydraulically double action operated. Pull out forward cylinder piston by hand.

(16) Adjust actuator rod end until attaching bolt slides freely through rod end and strut body.

(17) Remove bolt. Adjust actuator rod end out 2-1/2 turns.

NOTE: This adjustment should ensure piston does not bottom in either direction of cylinder travel.

(18) Tighten rod end check nut against piston and safety wire nut to rod end locking key.

(19) Attach main gear actuating cylinder rod end to strut main body. Refer to 32-30-03, Main Gear Actuating Cylinder - Removal / Installation.

(20) Repeat adjustment procedure on second actuating cylinder.

(21) Check clearance is approximately 1/8 inch between piston plunger end of landing gear unlock cylinder and unlock tang on back of upper jury brace assembly.

(22) Place landing gear control lever in UP position.

(23) Pressurize main hydraulic system and slowly retract landing gear.

(24) Ensure actuating cylinders do not bottom by checking bottomed refer to mark is not against cylinder housing. Check main gear is in fully retracted and locked position.

(25) Extend landing gear and ensure all three gear are locked down and left, nose and right green indicating lights come ON. Cycle gear several times to ensure correct operation.

(26) Connect strut door rod ends to strut main body and secure with nut and washers. Ensure two (2) washers are positioned between rod end bearing and main strut body.

(27) Disconnect external hydraulic power from aircraft. Refer to 12-10-03, Hydraulic System Servicing - Maintenance Practices.

CAUTION: BEFORE REMOVING AIRCRAFT FROM JACKS, ENSURE LANDING GEAR CONTROL LEVER IS IN DOWN POSITION, LANDING GEAR IS LOCKED DOWN AND ALL THREE GREEN DOWN AND LOCKED INDICATING LIGHTS ARE ON.

(28) Lower aircraft from jacks. Refer to 7-10-00, Jacking - Maintenance Practices.