CHAPTER

53

FUSELAGE

LEARJET 35/35A/36/36A
MAINTENANCE MANUAL

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Insert latest revised pages; destroy superseded or deleted pages.

* Asterisk indicates pages revised, added, or deleted by the current revision. The portion of the text affected by the current revision is indicated by a vertical line in the outer margin of the page.

Record of Temporary Revisions

Revision Number	Status	Date	Location	Insertion Date	Inserter's Initials	Removal Date	Removers Initials
53-1	Inactive	Mar 25/75		Mar 25/75	LJ	Oct 1/75 Rev 4	LJ
53-2	Inactive	Aug 17/01	53-20-02 Page 202	Aug 17/01	LJ	Jan11/02 Rev 71	LJ

FUSELAGE - DESCRIPTION AND OPERATION

1. DESCRIPTION

A. The fuselage is of semimonocoque construction consisting of stressed skin structure with transverse frames and longerons. Special attention has been paid to both fail-safe abilities and long fatigue life airframe.

B. The "Area Rule" type fuselage is comprised of four basic sections. The nose section extends from the radome aft to frame 5. The pressurized section extends from frame 5 to frame 22 on 35 aircraft and from frame 5 to frame 18 on 36 aircraft. The fuel section extends from frame 22 to frame 24 on 35 aircraft and from frame 18 to frame 24 on 36 aircraft. The tail-cone section extends from frame 24 aft to the stinger.

C. The area between frames 5 and 22 (35 aircraft) and frames 5 and 18 (36 aircraft) is pressurized and houses the crew, passenger, and baggage areas. Drilling, modification, or any type of work which creates a break in the pressure area is the responsibility of the owner or facility performing the work.

D. A two-piece passenger/crew door is located on the fuselage left side aft of frame 10. The fuselage incorporates plexiglass windows in the cabin area. The right rear window is contained within the emergency escape door.

MAIN FRAME - DESCRIPTION AND OPERATION

1. DESCRIPTION

A. The fuselage main frame is constructed of frames, stringers, keel beam, longerons, a forward and aft pressure bulkhead and frames around openings. (Refer to figures 1 and 2.)

B. Located between fuselage stations 107.38 and 613.24 are 43 transverse frames spaced approximately 3.5 to 17 inches apart. The tailcone contains 5 canted frames for attachment of the vertical stabilizer. Cutouts are located around the perimeter of the frames for stringer clearance. Frames 16 thru 21 terminate when the lower end meets a longeron where the wing passes through the fuselage. Frames 6 thru 8 terminate where they meet the windshield. Frame 11 terminates where it meets the passenger/crew door. Frame 3 terminates where it meets the nose compartment access door opening and the nose wheel well. Frames 2 and 4 terminate where they meet the nose wheel well.

C. Longitudinal stringers are located around the perimeter of the frames. A total of 41 stringers are spaced approximately 5 inches apart. Stringer No. 1 is located near the top centerline of the aircraft. Stringers on both sides of the aircraft are numbered 2 through 21 from the top of the aircraft to the bottom. The stringers are aluminum extrusions cut to various lengths.

D. The keel beam extends from frame 5 to frame 25. The forward keel beam (frame 5 to frame 15) and the aft keel beam (frame 22 to frame 25) are permanent parts of the fuselage. The underwing keel beam (see figure 2) is removable to detach the wing from the fuselage (refer to Chapter 57). The keel consists of two longitudinal webs extending up at RBL and LBL 6.10. The webs are attached to the fuselage skin with angles and are capped by the inboard seat rails and tee extrusions. The seat rail extends from frame 10 to frame 15 on the right side. The left inboard seat rail extends from frame 12 to frame 15 on aircraft with 24-inch-wide passenger/crew door and from frame 13 to frame 15 on aircraft with 36-inch-wide passenger/crew door. Tee extrusions cap the webs forward of the seat rails. Fuselage frames are interrupted at the keel and are continued through the keel by webs. The floorboards are secured on top of the keel and become part of the aircraft structure.

E. A longeron extends longitudinally down each side of the fuselage at the point where the fuselage and wing intersect. The longeron extends from frame 13B to frame 22.

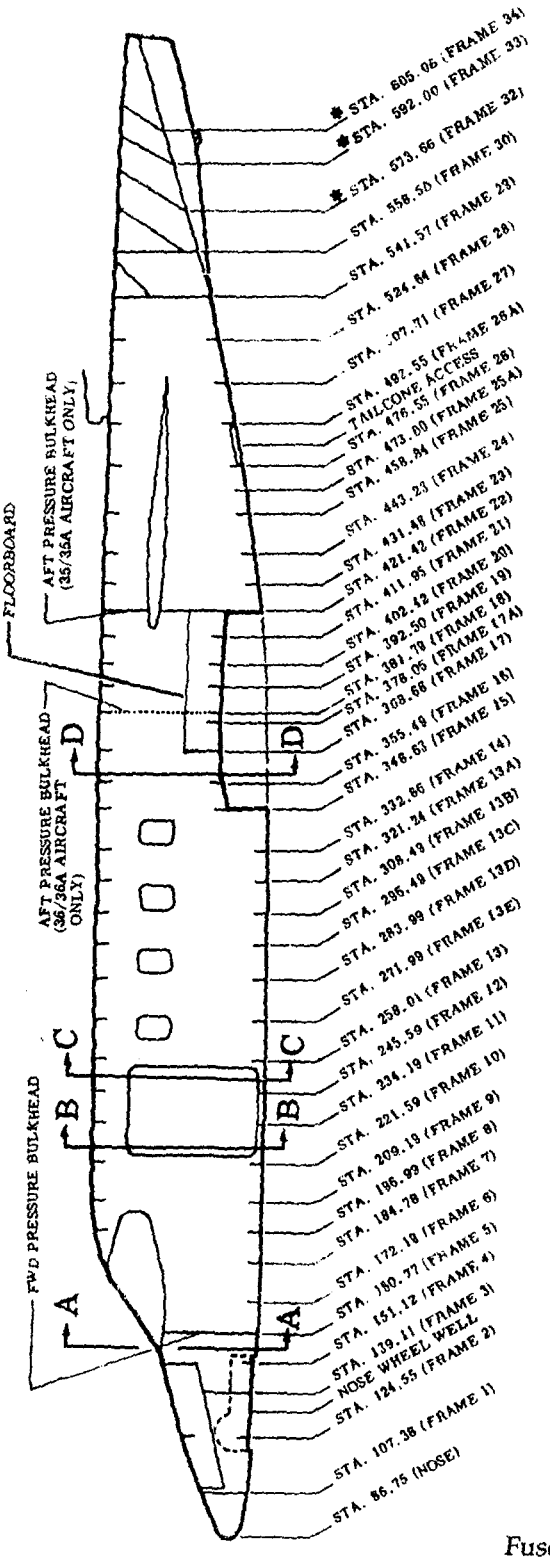
F. On *Model 35 aircraft*, pressure bulkheads are installed at frames 5 and 22. On *Model 36 aircraft*, pressure bulkheads are installed at frames 5 and 18.

G. The station numbers, which are listed with the frame numbers, are measured at three basic points. Station numbers for frames 21 and forward are measured at the IML (inside mold line) of the frame. Station numbers for frames 22 and aft are measured at the OML (outside mold line) of the frame. (See detail A, figure 1.)

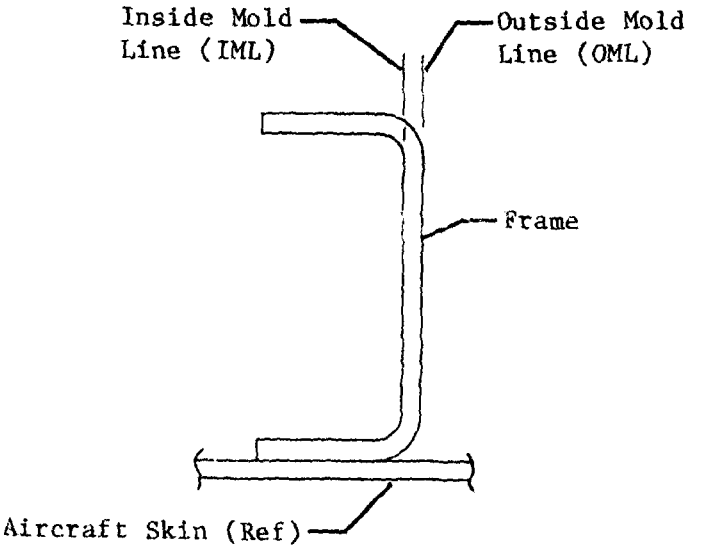
H. Exceptions to the method of locating station numbers are frames 16, 18, 20, 21, 24, and 25A. These particular frames are made up of double frames and the base for locating the station numbers is the centerline between these frames. (See detail B, figure 1.)

(1) Frame 16 station number is located 0.493 inch forward of the centerline between frames.
(2) Frame 18 station number is located on the centerline between frames.
(3) Frame 20 station number is located 0.236 inch forward of the centerline between frames.
(4) Frame 21 station number is located 0.91 inch aft of the centerline between frames.
(5) Frame 24 station number is located on the centerline between frames.
(6) Frame 25A station number is located on the centerline between frames.

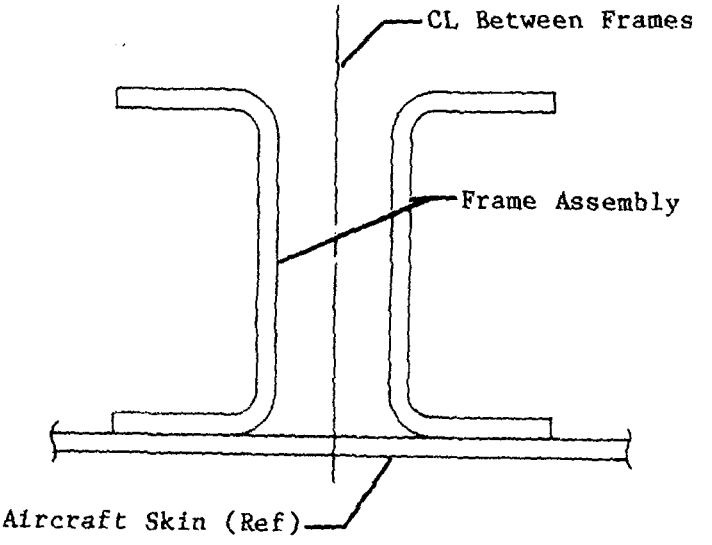
I. On *Aircraft 35-612 and 35-639 and Subsequent*, the fuselage incorporates insulation batting from frame 5 to frame 22. On *Aircraft 36-058 and Subsequent*, the fuselage incorporates insulation batting from frame 5 to frame 18. Foam padding is installed on the underside of the floorboards. Refer to Chapter 25 for further information on fuselage insulation.



*Measured at OML of Bulkhead Intersection with bottom of fuselage skin.

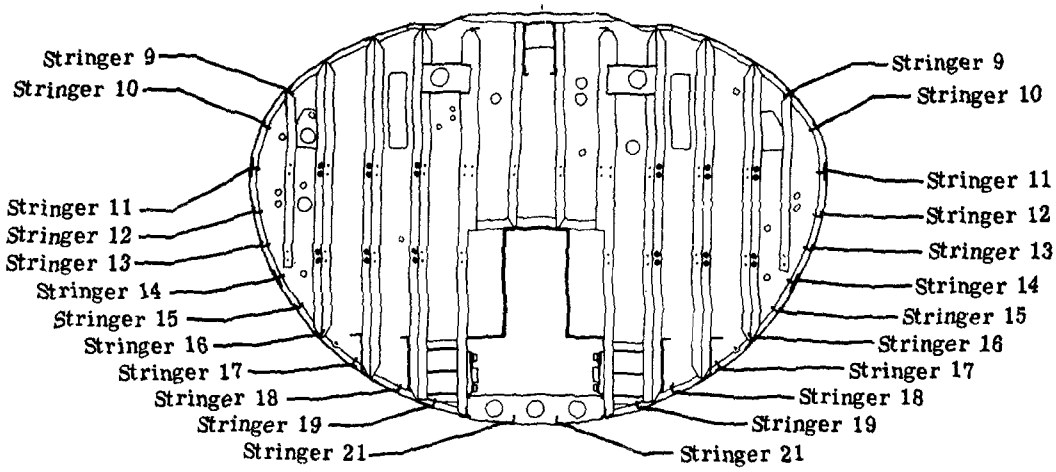


Detail A



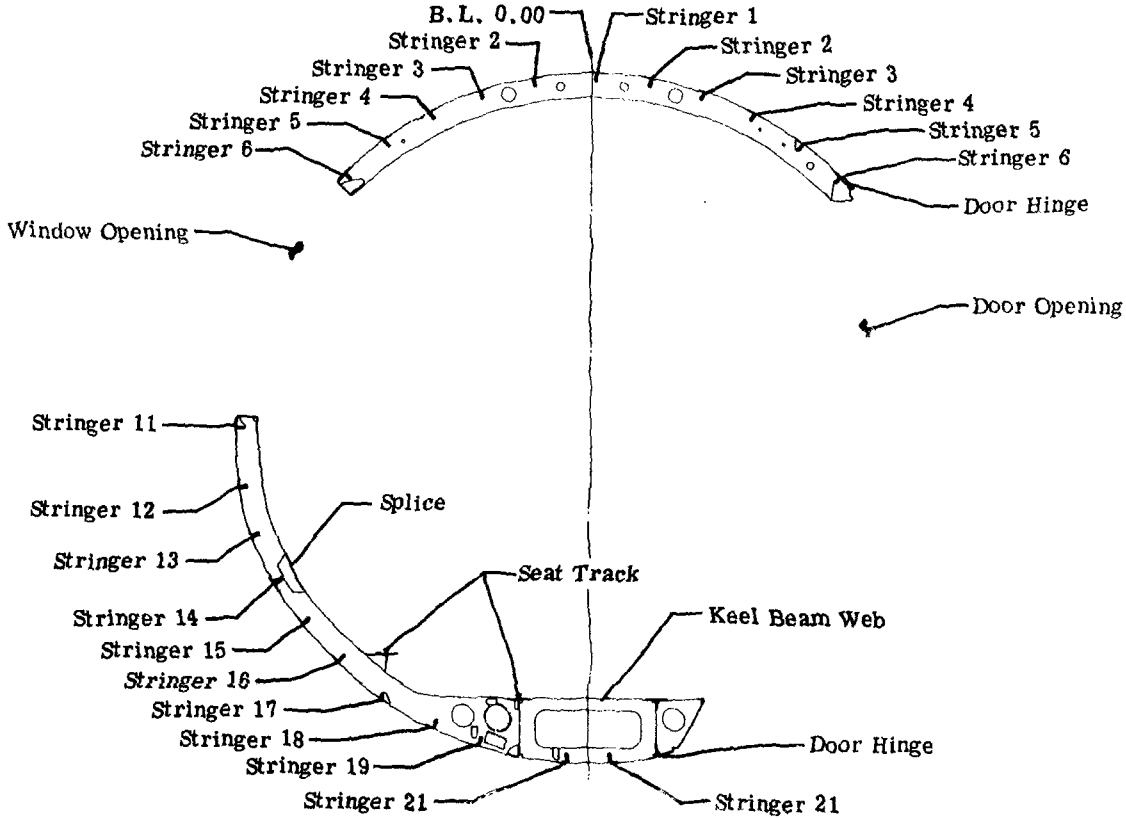
Detail B

Fuselage Assembly
Figure 1 (Sheet 1 of 3)



Frame 5 Looking Aft

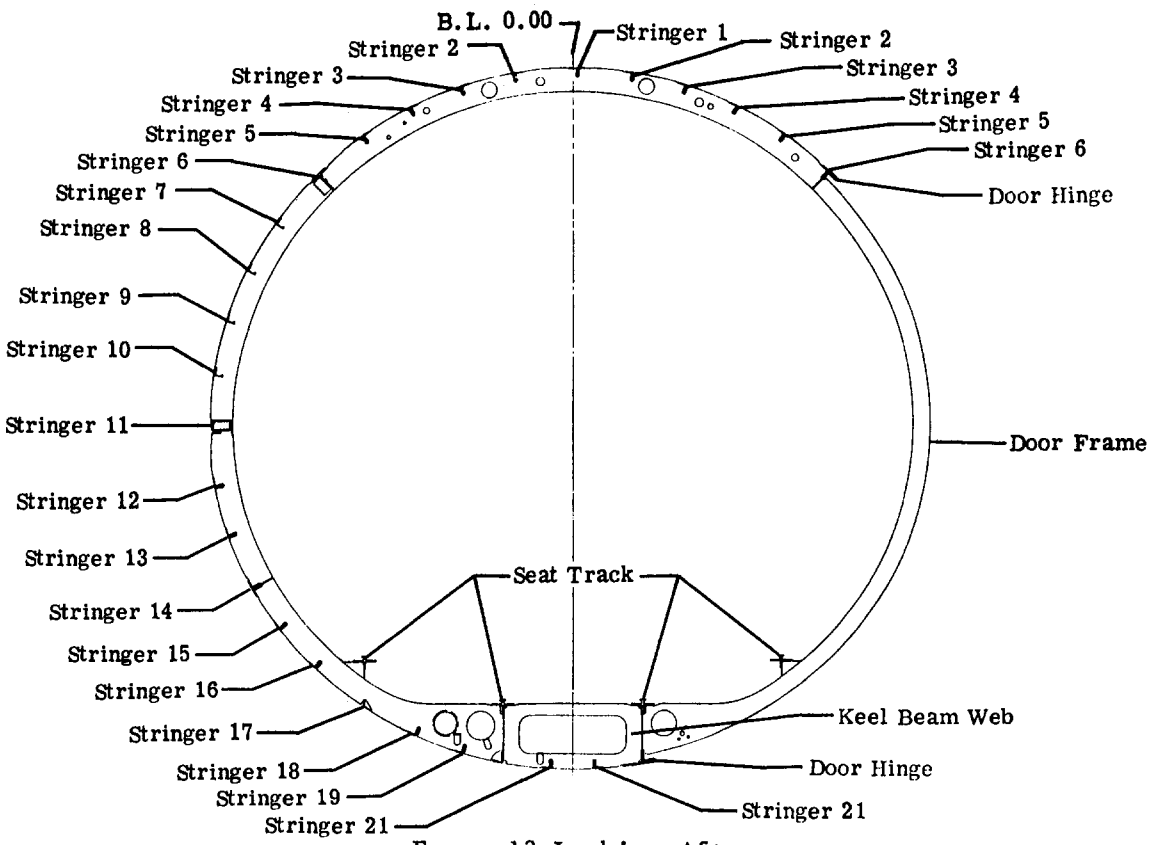
SECTION A-A



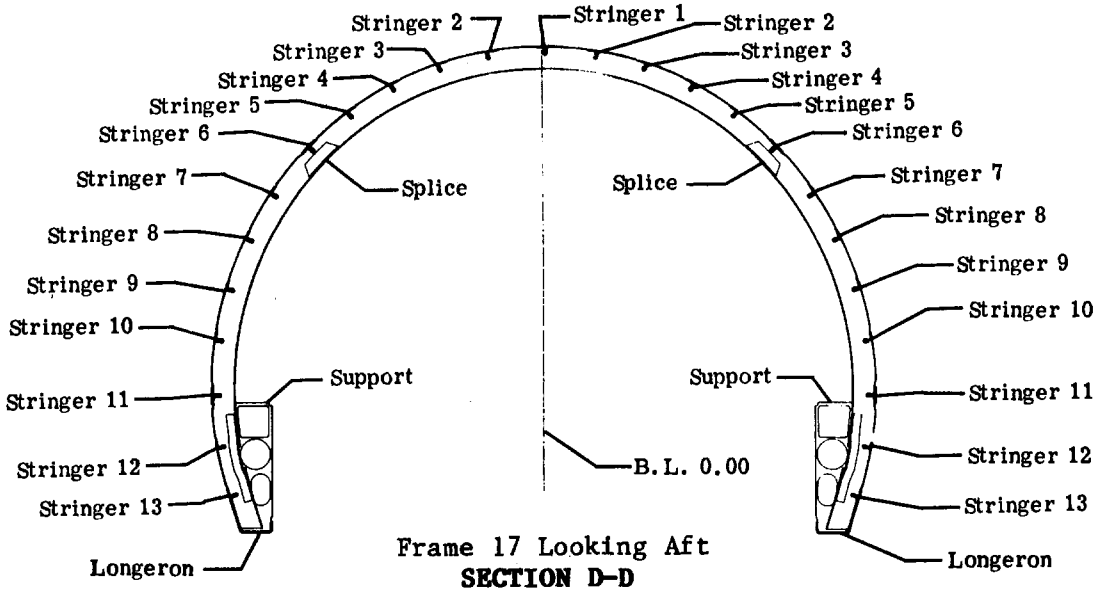
Frame 11 Looking Aft

SECTION B-B

Fuselage Assembly
Figure 1 (Sheet 2 of 3)

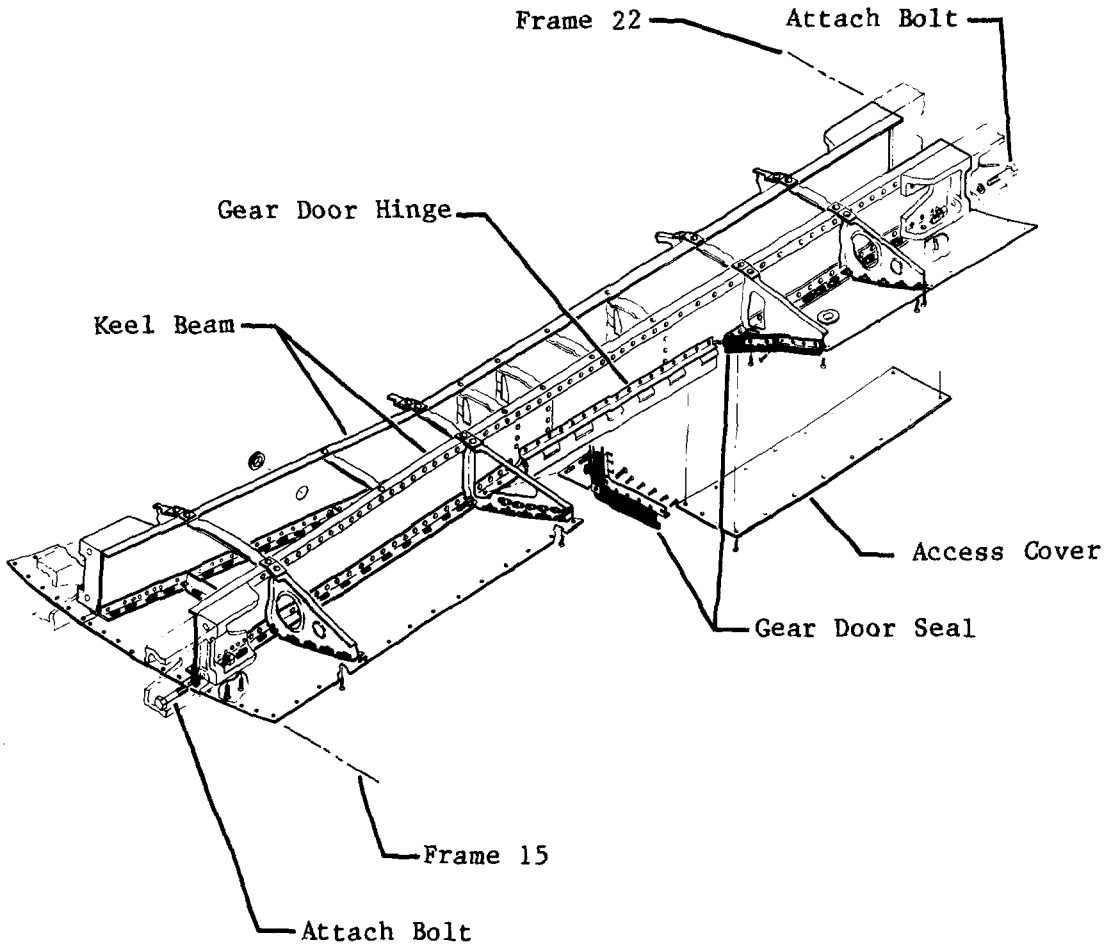


Frame 13 Looking Aft
SECTION C-C



Frame 17 Looking Aft
SECTION D-D

Fuselage Assembly
Figure 1 (Sheet 3 of 3)



4-10C

Underwing Keel Beam
Figure 2

RUMBLE - TROUBLESHOOTING

1. **Description**
   Use the following procedure for troubleshooting and repairing aircraft that have a rumble perceived by either sound or feel. If the source of the rumble is known, proceed to the appropriate repair section. A flight test for troubleshooting and pinpointing the noise source may be required. Repair procedures for "oil canning" are provided to add stiffeners in "canning" areas.

2. **Ground Troubleshooting**
   A. Review the configuration of the aircraft. Note any optional equipment that has been added which may be a source of the rumble. Check aircraft logs for any recent maintenance on flight controls, any structural repairs, or any work that would have resulted in fairing or engine cowling removal and reinstallation. Check all doors for security, fit and gap.
   B. With aircraft parked in an engine runup area and clear of buildings and other aircraft:
      (1) Run engines at varying power settings with engine sync off. Note any changes in the rumble magnitude and/or frequency.
      (2) Cycle inverters on and off individually. Note any changes in the rumble magnitude and/or frequency.
      (3) Cycle generators on and off individually. Note any changes in the rumble magnitude and/or frequency.
      (4) Cycle air conditioning on and off. Note any changes in the rumble magnitude and/or frequency.

      NOTE: A rumble that is present during flight may not be reproducible on the ground. The following troubleshooting procedures are provided to assist in isolating the noise source during flight.

3. **Flight Test Troubleshooting**
   A. Review the configuration of the aircraft to be flight tested. Note any optional equipment that has been added which may be a source of the rumble. Check aircraft logs for any recent work on flight controls, recent structural repairs, or any items that would have resulted in fairing or engine cowling removal and reinstallation.
   B. During flight, try several different power settings on each engine separately. Note any changes in the rumble magnitude and/or frequency. Observe engine instruments for any fluctuations or other abnormalities.

      NOTE: Varying engine power settings and aircraft attitude in different sequences can sometimes aid in determining if rumble is engine or airframe related.

   C. Turn off each generator separately to see if rumble ceases. Observe ampere and volt meters for any oscillations or other abnormalities. Ensure that with both generators on, the electrical load is evenly distributed.
   D. Individually vary airspeed, altitude, roll attitude, pitch attitude, yaw attitude, flap position, and spoiler position. Note any changes in the rumble magnitude and/or frequency.
   E. Observe the OAT (outside air temperature) when rumble is present. Note if changes in the OAT have an effect on rumble magnitude and/or frequency.
   F. Feel various structural components in the cockpit and cabin area during flight. Note any differences in rumble magnitude.
   G. Using a mechanics stethoscope, listen to sound vibrations in the various structural components in cockpit and cabin areas during flight. Note any differences in rumble magnitude.
   H. Describe the frequency of the rumble as well as possible. Landing gear doors have a tendency to produce a low pitch deep rumble whereas fairings tend to produce a high pitch buzz.

4. **Engine Rumble Repair**
   A. Check routing and clearances on all hydraulic lines, electrical lines, bleed air lines, fuel lines, and throttle cables, in the engine and pylon area. Ensure the lines are not in contact or in close enough proximity that they might make contact with other lines, engine components, or airframe structure. Ensure the throttle cable rigging is in accordance with Chapter 76.
   B. Check clearances on engine cowl. Ensure the cowl does not contact any lines, cables, or engine components. Look for signs of abnormal rub or chaffing on the cowl. Ensure the nacelle installation and adjustment is in accordance with Chapter 54.
   C. Inspect engine mounts for proper installation and security. (Refer to Chapter 71.)
   D. Check engine beam and pylon-to-fuselage attachments for security, fastener condition, deformation, and general condition.

5. **Generator Rumble Repair**
   A. Structural checks
      (1) Check for proper torque adjustment of the accessory gearbox support struts. Refer to the engine manufacturer's maintenance manual.
      (2) Check for proper installation of Q.A.D. clamp to accessory gearbox.
      (3) Check for proper installation of generator into the Q.A.D. clamp on the accessory gearbox. (Refer to Chapter 80.)
   B. Mechanical checks.
      (1) Spin the generator and check for rough or bad bearings.
      (2) Check generator quill shaft and friction clutch for proper alignment to engine generator drive.
      (3) Check that the generator rotor is properly balanced.
   C. Electrical checks.
      (1) Check resistance values at generator terminals for correct readings in accordance with Chapter 24.
      (2) Check voltage regulators for proper function.
         (a) Interchange left and right voltage regulator plugs to see if problem follows.
         (b) Check for 28 vdc aircraft system voltage. (Refer to Chapter 24.)
      (3) Check batteries for proper charge and servicing. (Refer to Chapter 12.)
      (4) Check circuit wiring and plugs at voltage regulators and generator control panel for loose sockets or pushed back pins.
      (5) Check equalizer bus circuit between voltage regulators through generator control panel. (Pin G of the right voltage regulator disconnect to pin G of the left voltage regulator disconnect.)
         (a) If the rumble can be duplicated on the ground, extract pin G contacts from both voltage regulator disconnects. Install a 20-gage jumper wire from pin G of the left voltage regulator to pin G of the right voltage regulator. This eliminates the aircraft's equalizer bus circuit. Check for rumble. If rumble is no longer present, the problem is in the equalizer bus circuit. Remove jumper wire and restore aircraft equalizer bus circuitry.
         (b) Replace Transzorbs and isolation diodes on equalizer bus circuit.
         (c) Check for corrosion or loose connection at fuse holder on equalizer bus circuit.
         (d) Check relays common to the equalizer bus circuit in the generator control panel for possible high resistance contacts.
      (6) Check 4-gage ground and power circuits of the electrical system.
         (a) Check battery connector terminal connections.
         (b) Check battery connector for tight fit to positive and negative terminals of batteries.
         (c) Check connection between the external power receptacle ground strap and the airframe for tightness and possible high resistance connections. Remove, clean, and reinstall. Ensure bonding is good. (Refer to Wiring Manual, Chapter 20.)

(d) Check connections to the external power receptacle ground strap for tightness and possible corrosion.
(e) Check power connections to the generator control panel for tightness and possible corrosion.
(f) Check terminals at generators and starters for tightness and possible corrosion.

6. **Airframe Rumble Repair**
   A. Horizontal Stabilizer Checks
      (1) Check stabilizer for security of attachment. There should be no looseness detectable in the pivot fitting.
      (2) Check upper and lower stabilizer skins for "cans". (Refer to "Canning" - Inspection And Repair, this section.)
      (3) Check the fairing between the horizontal and vertical stabilizers for security of attachment. Ensure there is no excessive gap between the vertical stabilizer and the fairing.
   B. Vertical Stabilizer Checks.
      (1) Check stabilizer for security of attachment. There should be no looseness detectable at the attach points.
      (2) Check left and right stabilizer skins for "cans". (Refer to "Canning" - Inspection And Repair, this section.)
   C. Engines and Pylons Checks
      (1) Check cowl fit and clearance.
      (2) Check engine attachment.
      (3) Check upper and lower pylon skins for "cans". (Refer to "Canning" - Inspection And Repair, this section.)
      (4) Check pylon-to-fuselage attachment (drag angles) for security. Ensure no gaps exist between the drag angles and the pylon or the fuselage.
   D. Fuselage Checks
      (1) Check all empennage skins for "cans". (Refer to "Canning" - Inspection And Repair, this section.)
      (2) Check security and fit of tailcone access door. Ensure latches engage properly and there is no excessive gap around the edges.
      (3) Inspect tailcone equipment bay. Ensure that all equipment is secure.
      (4) Check flight controls as follows:
         (a) Check routing and clearances on control cables and control system components in the tailcone area. Ensure cables are not in contact or in close enough proximity that they might make contact with other cables, components, or airframe structure.
         (b) Check rudder control rigging and cable tension. Ensure there is no excessive looseness or free play in the system. (Refer to Chapter 27.)
         (c) Check elevator control rigging and cable tension. Ensure there is no excessive looseness or free play in the system. (Refer to Chapter 27.)
      (5) Check dorsal ram air inlet duct and fairing for security and proper clamping.
      (6) Check security and fit of nose landing gear doors. Ensure there is no excessive gap around the edges. Adjust door fit as required to bring doors into contour with the fuselage. (Refer to Chapter 52.)
   E. Wing checks.
      (1) Check security and fit of main landing gear doors. Ensure there is no excessive gap around the edges. Adjust door fit as required to bring doors into contour with fuselage and wing. (Refer to Chapter 52.)
      (2) Check security of landing gear. Inspect gear for any loose lines or components. Ensure the gear retracts firmly into place.
      (3) Check the fairings between the fuselage and wings for security of attachment. Ensure there is no excessive gap between the fairings and fuselage and/or wing skins.
      (4) Check all fairings for "cans". (Refer to "Canning" - Inspection And Repair, this section.)

(5) Check flight controls.

(a) Check security and fit of spoilers, flaps, and ailerons. Ensure the spoilers and flaps retract firmly into place and that they are rigged correctly. Ensure the ailerons are rigged correctly with no excessive looseness or free play in the system. (Refer to Chapter 27.)

F. Antennas.

(1) Check ADF and HF antenna to ensure the antenna masts are mounted parallel to the aircraft slipstream. Ensure the antenna wire has proper tension.

7. "Canning" - Inspection and Repair (See Figure 1.)

A. Inspection criteria for "Cans"

(1) Apply light pressure to area. A click or pop will be heard as the surface is depressed.

(2) The following general rules will provide a method of regulating pressure applied:

(a) One panel at one point.

(b) No more pressure than can be applied with the thumb of one hand. Do not use shoulder, arm, or wrist pressure.

(c) Care must be taken, on skin panels, that checking for "cans" does not stretch or further loosen panels.

B. Repair procedure for "cans".

(1) Application: For use where excess sheet metal exists between structural members which produces a "can" or bulge.

(2) Limitation: One repair per bay. Flight control surfaces shall not be repaired without the approval of Learjet.

(3) Material Requirements:

(a) Preferred stiffener made from 0.032 inch, 2024-T4 rolled "J" section. Length sufficient to attach to structural member on two sides of the "can" area.

(b) Alternate type of stiffeners may be made by hand forming the part from the same material as the panel. The shape may be a channel or angle as required to fit repair area. Length should be sufficient to attach to structural member on two sides of the "can" area.

(c) Stiffeners may be "bowed" by forming "wrinkles" in the stiffener flange with wrinkle relief pliers.

(d) Clips to be fabricated from the same material as the stiffeners or from extruded sections of equal or greater thickness. Flanges of clips must be of a size to install two fasteners in each flange.

(4) Procedure:

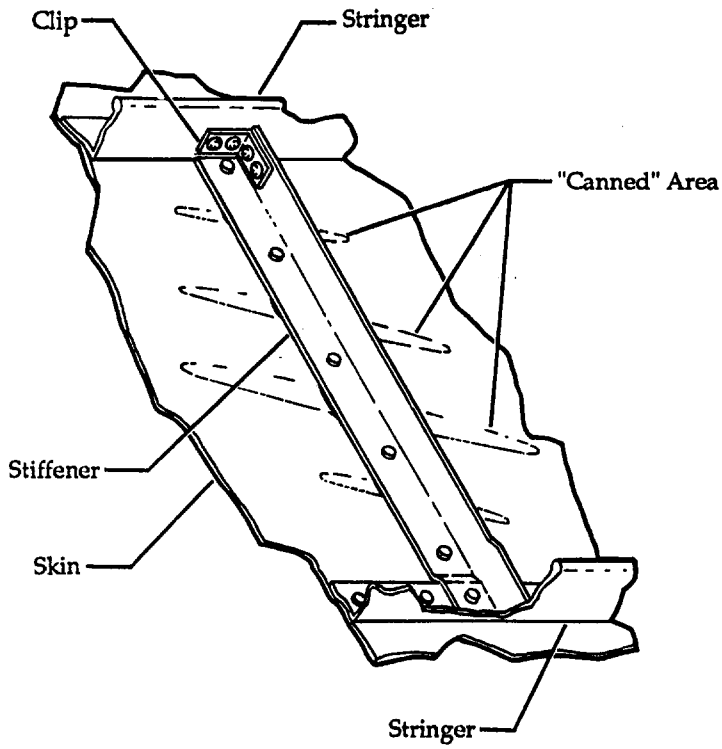
(a) Locate the stiffener across the area with the "can", securing the ends to structural members by one or more of the methods shown.

(b) End of stiffeners are to be joggled to clear structure members 0.040 or thicker, or fillers can be installed between stiffener and skin.

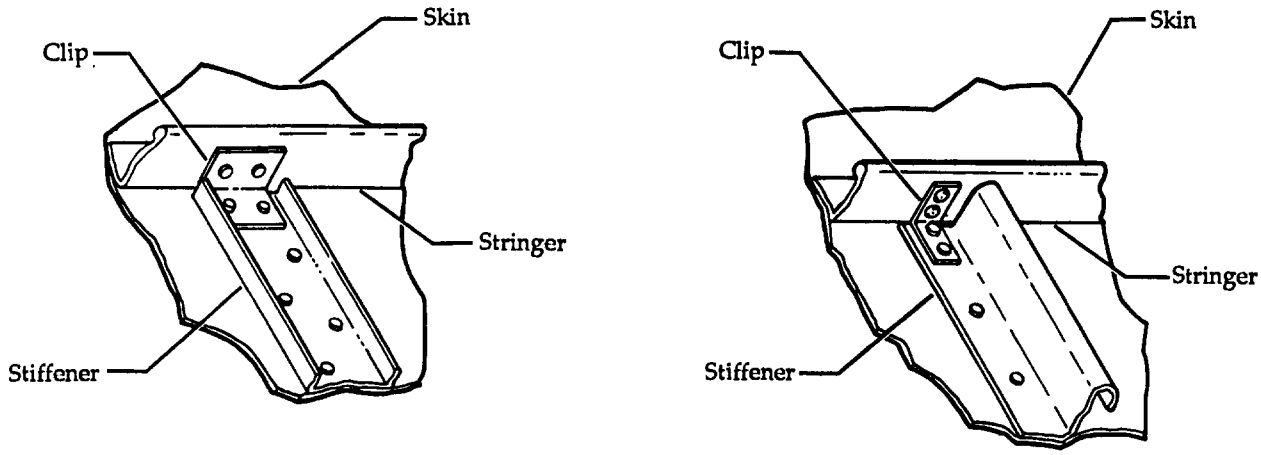
(c) One fastener through the end of the stiffener and the existing structure is acceptable but if the stiffener end is attached with a clip, the clip must have at least two fasteners in each flange.

(d) Attaching rivets should be the same type and size as exists in the area or as specified by the approving authority. Rivets are required through the skin and stiffener but are to be kept to a minimum with a preferred spacing of 2.0 to 3.0 inches with standard edge distance.

(e) Stiffeners may be bonded to the skin in place of riveting with Class II adhesive. (Refer to Chapter 20.) One rivet is required at each end of flange common to skin.



(STIFFENER INSTALLATION)



(ALTERNATE INSTALLATION METHODS)

14-226A

Skin "Can" Repairs
Figure 101

1. Adjustment/Test

NOTE: Refer to Table 1 for conditions requiring a maximum service pressure proof test or cabin proof pressure test.

To perform a cabin leak test, refer to Chapter 21.

A. Maximum Service Pressure Proof Test
(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Styrofoam Blocks		Commercially Available	Fill cabin.
Cabin Pressure Cart	15-7603-1000	Tronair Holland, OH	Pressurize cabin.
Safety Net	313227	Learjet Inc. Wichita, KS	Surround fuselage during pressure testing.

(2) Close cabin outflow valve by capping or plugging vacuum ports.

MAXIMUM SERVICE PRESSURE PROOF TEST	12.5 PSIG [86.2 kPa] CABIN PROOF PRESSURE TEST
Standard Cabin Window 1	Entry Door (Upper or Lower)
Standard Windshield 1	Emergency Exit Door
Minor Repair or Modification of Pressurized Cabin Structure	Major Repair or Modification of Pressurized Cabin Structure (Pressure bulkheads, Skins, Divan and Aft Baggage Floor)

1 Provided support structure not significantly modified due to attachment hole mismatch.

NOTE: Component replacements which do not significantly deviate from original aircraft production design or require unique fits/adjustments that could affect structural integrity shall require a maximum service pressure proof test. In those instances of major repairs/deviations/modifications, a 12.5 psig [86.2 kPa] cabin proof pressure test shall be required.

Cabin Proof Pressure Test
Table 1

WARNING: TO REDUCE THE BURST EXPLOSIVE POTENTIAL AND AVOID INJURY TO PERSONNEL, THE CABIN MUST BE FILLED WITH STYROFOAM BLOCKS DURING CABIN PRESSURIZATION TESTING.

(3) Fill cabin with styrofoam blocks or equivalent.
(4) Open tailcone access door.
(5) Connect cabin pressure cart to ground port on bleed air manifold assembly in tail cone. (See Figure 201.)
(6) Close all access openings except those used for pressure testing.

WARNING: TAKE ADEQUATE PRECAUTION TO AVOID INJURY TO PERSONNEL. SAFETY NET IS USED DURING CABIN PRESSURIZATION TESTING TO HELP CONTAIN THE BURST SHOULD THE STRUCTURE FAIL.

(7) Install safety net.

WARNING: PRESSURE CART AND PERSONNEL SHALL BE POSITIONED BEHIND AFT BULKHEAD, RATHER THAN ALONG THE PRESSURIZED CABIN SIDE(S). EXCEPTION, DURING INITIAL FUSELAGE PRESSURIZATION TO VERIFY NO AIRSPEED AND ALTIMETER INDICATOR MOVEMENT.

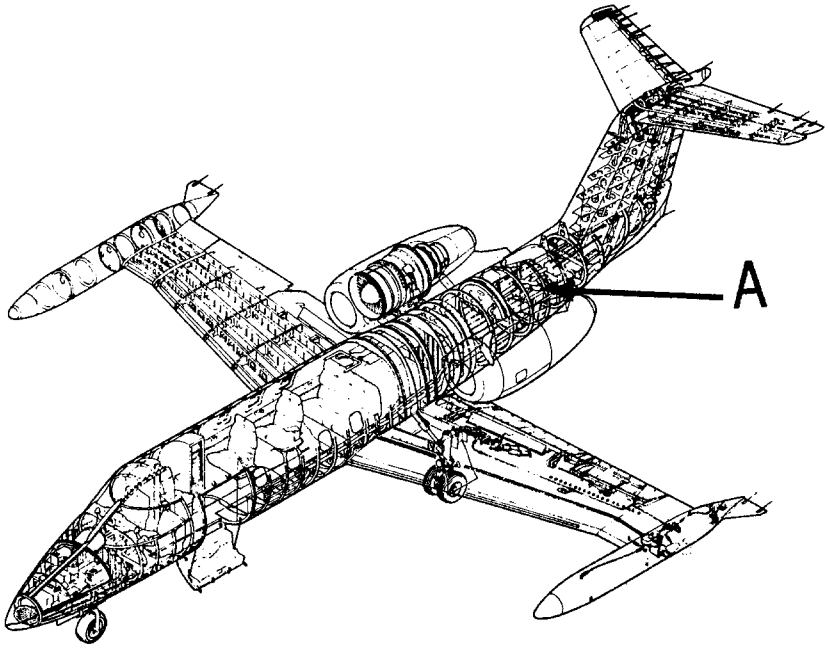
PERSONNEL SHALL MONITOR AIR HANDLING EQUIPMENT AT ALL TIMES TO ENSURE CABIN ALTITUDE DOES NOT CHANGE MORE THAN 2000 FEET PER MINUTE AND CABIN PRESSURE DOES NOT EXCEED TEST PRESSURE.

CAUTION: OBSERVE AIRSPEED INDICATOR AND ALTIMETER THROUGH WINDSHIELD DURING INITIAL FUSELAGE PRESSURIZATION TO VERIFY NO INDICATOR MOVEMENT. IF INDICATORS SHOW MOVEMENT, CAP OR PLUG PORTS.

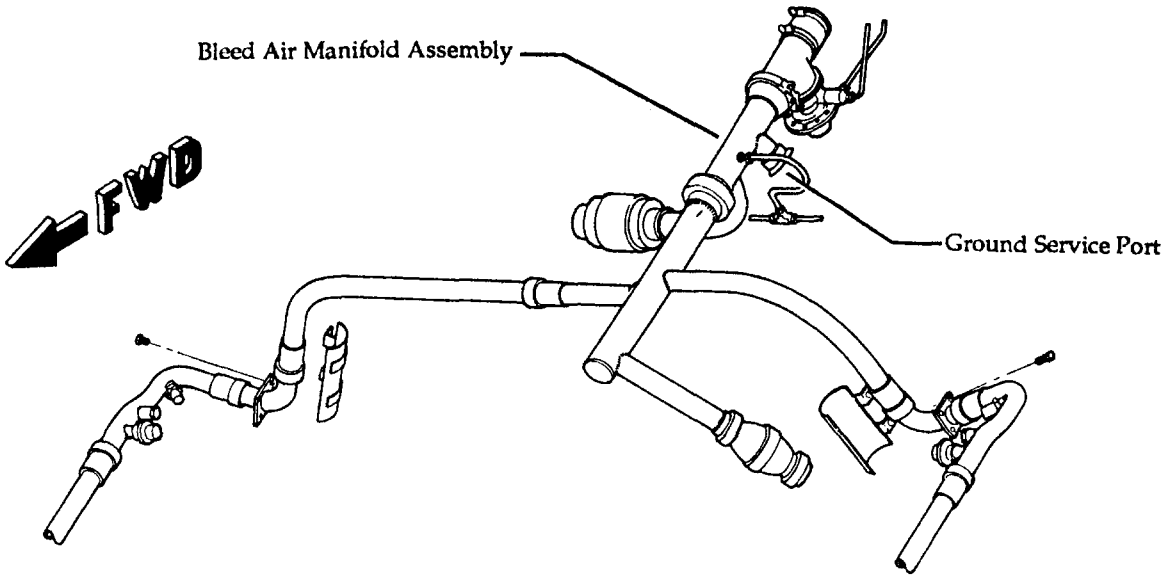
(8) Start cabin pressure cart and slowly increase pressure until cabin safety valve opens (approximately 9.2 to 9.7 psig [63.4 to 66.9 kPa]).

NOTE: Air will expel from safety valve when maximum test pressure is obtained.

(9) Decrease pressure slowly.
(10) After pressure has reached 0 psig [0 kPa], remove safety net.
(11) Open door and remove styrofoam blocks.
(12) Disconnect cabin pressure cart from ground port on bleed air manifold assembly in tail cone and cap ground port.
(13) Close tailcone access door.
(14) Open cabin outflow valve.

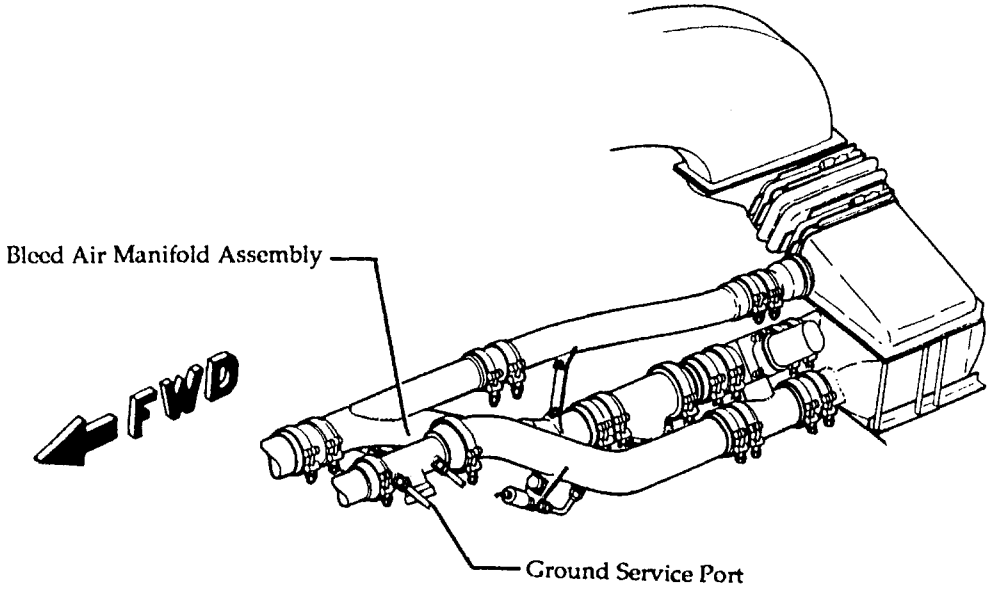


Cabin Proof Pressure Test
Figure 201 (Sheet 1 of 3)



13-80 C

(Aircraft 35-001 thru 35-086 except 35-082 and aircraft modified per AAK 76-7, 36-001 thru 36-022 except aircraft modified per AAK 76-7.)

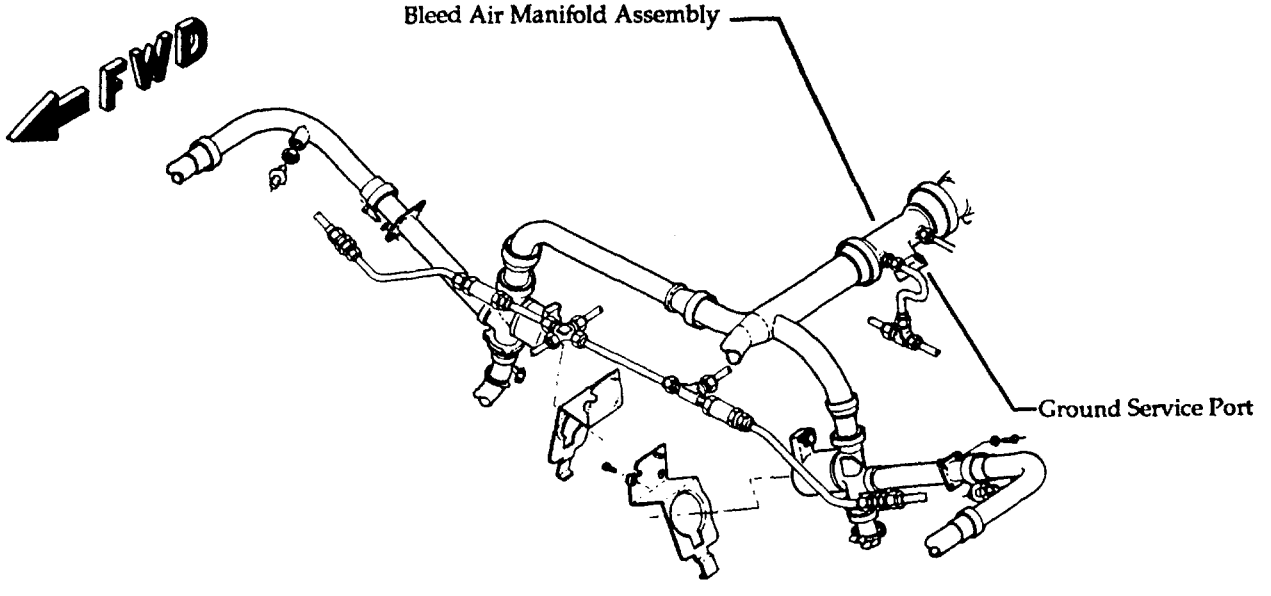


13-89 C

(Aircraft 35-082 and 35-087 thru 35-112 and previous aircraft modified per AAK 76-7 [except 35-107], Aircraft 36-023 thru 36-031 and previous aircraft modified per AAK 76-7.)

Detail A

Cabin Proof Pressure Test
Figure 201 (Sheet 2 of 3)



13-106C-1

(Aircraft 35-107, 35-113 and Subsequent, 36-032 and Subsequent)

Detail A

Cabin Proof Pressure Test
Figure 201 (Sheet 3 of 3)

EFFECTIVITY: AIRCRAFT 35-107, 35-113 AND SUBSEQUENT,
36-032 AND SUBSEQUENT

B. 12.5 PSIG Cabin Proof Pressure Test

NOTE: Perform cabin proof pressure test prior to applying new aircraft paint. Minor leaks at fasteners may damage freshly painted surfaces.

(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Styrofoam Blocks		Commercially Available	Fill cabin.
Cabin Pressure Cart 1	15-7603-1000	Tronair Holland, OH	Pressurize cabin.
Safety Net	313227	Learjet Inc. Wichita, KS	Surround fuselage during pressure testing.

1 Because of the large volume of air required for 12.5 psig [86.2 kPa] cabin proof pressure testing, the aircraft should be taken to a facility which has sufficient airflow capacity and control. The estimated delivery capacity is 12.5 psi @ 250 cfm [86.2 kPa]. Capacity may vary greatly depending on the aircraft leak rate and air source equipment installation.

(2) Close cabin outflow valve and cabin safety valve by capping or plugging vacuum ports.

WARNING: TO REDUCE THE BURST EXPLOSIVE POTENTIAL AND AVOID INJURY TO PERSONNEL, THE CABIN MUST BE FILLED WITH STYROFOAM BLOCKS DURING CABIN PRESSURIZATION TESTING.

(3) Fill cabin with styrofoam blocks or equivalent.
(4) Open tailcone access door.
(5) Connect cabin pressure cart to ground port on bleed air manifold assembly in tailcone. (See Figure 201.)
  (a) Release coupler and remove cap.
  (b) Couple pressure cart hose to ground port.
(6) Close all access openings except those used for pressure testing.

WARNING: TAKE ADEQUATE PRECAUTION TO AVOID INJURY TO PERSONNEL. SAFETY NET IS USED DURING CABIN PRESSURIZATION TESTING TO HELP CONTAIN THE BURST SHOULD THE STRUCTURE FAIL.

(7) Install safety net.

WARNING: ONLY THE TESTER OPERATOR AND THE INSPECTOR SHALL BE IN THE AREA WHEN THE FUSELAGE IS PRESSURIZED.

PERSONNEL SHALL MONITOR AIR HANDLING EQUIPMENT AT ALL TIMES TO ENSURE CABIN ALTITUDE DOES NOT CHANGE MORE THAN 2000 FEET [609 METERS] PER MINUTE AND CABIN PRESSURE DOES NOT EXCEED TEST PRESSURE.

CAUTION: OBSERVE AIRSPEED INDICATOR AND ALTIMETER THROUGH WINDSHIELD DURING INITIAL FUSELAGE PRESSURIZATION TO VERIFY NO INDICATOR MOVEMENT. IF INDICATORS SHOW MOVEMENT, CAP OR PLUG PORTS.

(8) Start cabin pressure cart and slowly increase pressure until 12.5 (± 0.1) psig [86.2 (± 0.7) kPa] is reached.
(9) Allow fuselage to remain pressurized at 12.5 (± 0.1) psig [86.2 (± 0.7) kPa] momentarily and then decrease pressure slowly.
(10) After pressure has reached 0 psig [0 kPa], remove safety net.
(11) Open door and remove styrofoam blocks.
(12) Disconnect cabin pressure cart from ground port on bleed air manifold assembly in the tailcone and cap ground port.
(13) Close tailcone access door.
(14) Open cabin outflow valve and cabin safety valve

KEELBEAM - MAINTENANCE PRACTICES

1. Removal/Installation

A. Removal of Underwing Keelbeam (See Figure 201.)

(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Keelbeam Support Dolly		Manufactured Locally or use Tip Tank Dolly	Support keel beam.
Wing Jack Adapter Kit	2572006-8	Learjet Inc. Wichita, KS	Provide safe lifting point for aircraft.
Wing Jack Adapter Kit	4507100101-003	Learjet Inc. Wichita, KS	Provide safe lifting point for aircraft.
Aircraft Jacks	02-0526-0100	Tronair Holland, OH	Lift aircraft.
Nose Jack Pad	2370102-4	Learjet Inc. Wichita, KS	Provide safe lifting point for aircraft.
Wing Jack Pads	2572006-11	Learjet Inc. Wichita, KS	Provide safe lifting point for aircraft.
Nose Jack Adapter Kit	4507100100-003	Learjet Inc. Wichita, KS	Provide safe lifting point for aircraft.
Drip Pans		Commercially Available	Catch fuel and hydraulic fluid.
Spreader Bar	2311600-500	Learjet Inc. Wichita, KS	Supports fuselage structure.

(2) Defuel aircraft. (Refer to Chapter 12.)
(3) Place aircraft on jacks. (Refer to Chapter 7.)
(4) Raise aircraft until main landing gear tires are clear of ground.
(5) Depressurize hydraulic system and drain reservoir. (Refer to Chapter 12.)
(6) Lower inboard main landing gear doors. (Refer to Chapter 32.)
(7) Disconnect the main gear inboard door actuators from the inboard doors. (Refer to Chapter 32.)
(8) Remove electrical power from aircraft.
(9) Remove access covers under the fuselage.
(10) Disconnect ADF antenna, if installed, and stow. (Refer to Chapter 34.)
(11) Remove lower VHF antenna, if necessary. (Refer to Chapter 23.)
(12) Remove ATC transponder antenna, if installed. (Refer to Chapter 34.)
(13) Disconnect plumbing fittings and electrical connectors as required at both ends of the keelbeam. Use drip pans to catch residual fuel and hydraulic fluid from plumbing. Cap fittings and connectors.

(14) Disconnect aileron cable turnbuckles at keelbeam. Pull the forward section of the aileron cable forward into the cabin and pull the aft section out of the way. Remove pulleys or cable guard pins as required and stow cables away from keelbeam.

NOTE: Attach pullstring or wire to flight control cable terminals before pulling cables through structure. Pull cables clear of keelbeam and secure string to structure. When reinstalling cables, use these pullstrings as a guide to prevent misrouting cables.

(15) Remove cabin seats from aircraft. (Refer to Chapter 25.)
(16) Remove aft pedestal assembly. (Refer to 53-20-02, Removal/Installation.)
(17) Remove center carpet and cabin floorboards. (Refer to 53-20-01, Removal/Installation.)

NOTE: The floorboards must be removed to allow access to forward keelbeam fitting at frame 15.

(18) Disconnect elevator control cable turnbuckles.
(19) Remove cable fairleads and control cable pressure seals at frame 15. (Refer to Chapter 27.) Pull cables through frame 15 into cabin. Stow cables.
(20) Disconnect rudder control cable turnbuckles aft of the pilot's pedestal and pull cables through to clear keelbeam. Stow cables.
(21) Disconnect drag chute control cable (if installed) and remove from aircraft. (Refer to Chapter 25.)

CAUTION: THROTTLE CABLE CAN BE DAMAGED WHEN IMPROPERLY HANDLED OR STORED. REFER TO CHAPTER 76 FOR INSTRUCTIONS ON HANDLING AND STORAGE OF ENGINE THROTTLE CABLES.

(22) Disconnect engine throttle cables and remove from aircraft. Store cables. (Refer to Chapter 76.)
(23) Support keelbeam and remove four bolts from the fittings at each end of the keelbeam.
(24) Check that all plumbing and electrical wiring is disconnected between the keelbeam and wing.
(25) Lower keelbeam and bring it out in a forward direction to allow clearance for two vent hoses at aft end of keelbeam.
(26) Remove keelbeam from aircraft and place on keelbeam support dolly.
(27) Install spreader bar in fuselage.

B. Installation of Underwing Keelbeam (See Figure 201.)

NOTE: Prior to installing keelbeam, perform a visual inspection of keelbeam attach fittings and apply epoxy primer on keelbeam fittings as required. Inspect keelbeam bolts for general condition.

(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Keelbeam Support Dolly		Manufactured Locally or use Tip Tank Dolly	Support keel beam.
Drip Pans		Commercially Available	Catch fuel and hydraulic fluid.
Torque Wrench		Commercially Available	Torque attaching parts.

(2) Remove spreader bar from fuselage.
(3) Position keelbeam under fuselage. Route vent tubes at aft end of keelbeam into fuselage.
(4) Position keelbeam between fittings and secure keelbeam using existing bolts, nuts, and washers. Torque nuts to 100 to 140 inch-pounds.

NOTE: Forward keelbeam attach bolts must be installed through frame 15. The forward keelbeam fitting is accessible forward of frame 15 under floorboard.

(5) Connect plumbing and electrical wiring between keelbeam and wing.

CAUTION: CAREFULLY CHECK FOR THE CORRECT ROUTING OF FLIGHT CONTROL CABLES; MISROUTING OF CABLES MAY RESULT IN WEAR OF COMPONENTS OR BINDING OF CABLES.

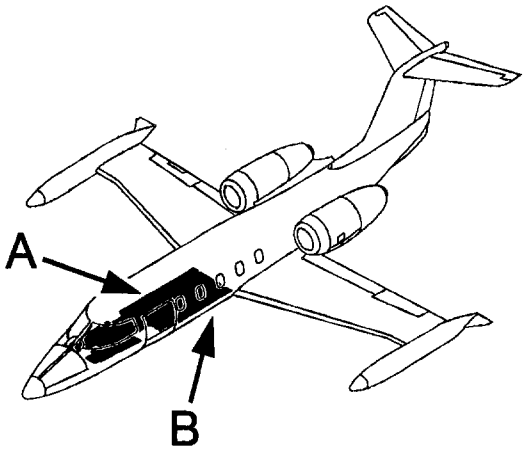
(6) Install engine throttle control cables. (Refer to Chapter 76.)
(7) Install drag chute control cable (if installed). (Refer to Chapter 25.)
(8) Route rudder control cables through keelbeam and connect turnbuckles aft of the pedestal. Rig rudder control cables. (Refer to Chapter 27.)
(9) Route elevator control cables through frame 15. Connect elevator control cable turnbuckles.
(10) Rig cables. (Refer to Chapter 27.)
(11) Install cable fairleads and control cable pressure seals at frame 15. (Refer to Chapter 27.)
(12) Install pulleys and cable guard pins as required. Route aileron cables and connect turnbuckles. Rig aileron cables. (Refer to Chapter 27.)
(13) Raise inboard gear doors and connect main gear inboard door actuators. (Refer to Chapter 32.)
(14) Perform flight controls operational check. (Refer to Chapter 27.)

CAUTION: CHECK THAT CONTROL CABLES ARE CORRECTLY ROUTED AND ARE NOT RUBBING OR BINDING.

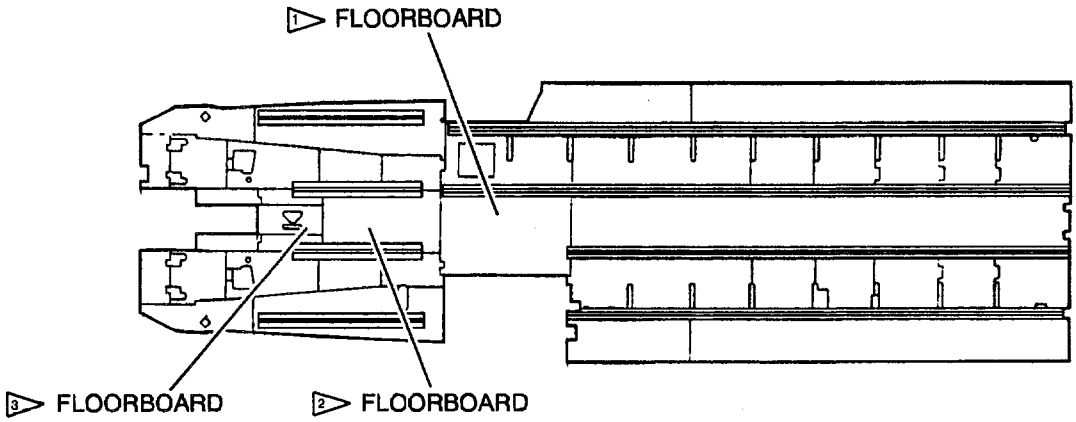
(15) Service hydraulic reservoir. (Refer to Chapter 12.)
(16) Apply pressure to hydraulic system and perform leak check.
(17) Perform extension and retraction system bleed test. (Refer to Chapter 32.)
(18) Perform landing gear retraction/extension operational check. (Refer to Chapter 32.)
(19) Perform operational check of main hydraulic system. (Refer to Chapter 29.)
(20) Perform functional test of emergency gear extension system. (Refer to Chapter 32.)
(21) Position landing gear to down-and-locked.

CAUTION: ENSURE THAT LANDING GEARS ARE DOWN-AND-LOCKED PRIOR TO PERFORMING THE NEXT STEP.

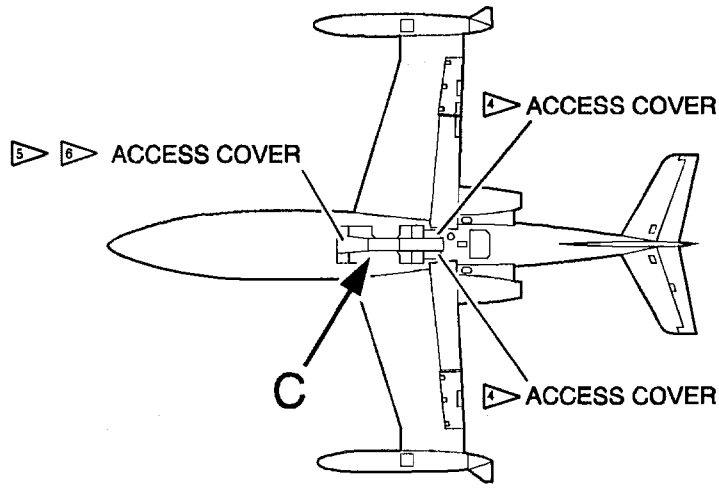
(22) Lower aircraft and remove jack and jack pads from aircraft. (Refer to Chapter 7.)
(23) Install center cabin floorboards and carpet. (Refer to 53-20-01, Removal/Installation.)
(24) Install aft pedestal assembly. (Refer to 53-20-02, Removal/Installation.)
(25) Install cabin seats, if removed.
(26) Refuel aircraft. (Refer to Chapter 12.)
(27) Perform leak check and fuel system operational check. (Refer to Chapter 28.)
(28) Install ADF antenna, if installed, under fuselage. (Refer to Chapter 34.)
(29) Install lower VHF COMM antenna, if necessary. (Refer to Chapter 23.)
(30) Install ATC transponder antenna, if installed. (Refer to Chapter 34.)
(31) Perform operational checks, as required, on all systems that were previously disconnected.
(32) Install access covers under fuselage.



1. FORWARD AILERON CONTROL CABLE LOCATED UNDER FLOORBOARDS
2. ELEVATOR CONTROL CABLES LOCATED UNDER FLOORBOARDS
3. RUDDER CONTROL CABLE TURNBUCKLE LOCATION
4. WING AILERON CONTROL CABLE TURNBUCKLE LOCATION
5. ELEVATOR CABLES AND TURNBUCKLES LOCATED BEHIND KEELBEAM ACCESS PANEL
6. FORWARD AILERON CONTROL CABLE TURNBUCKLE



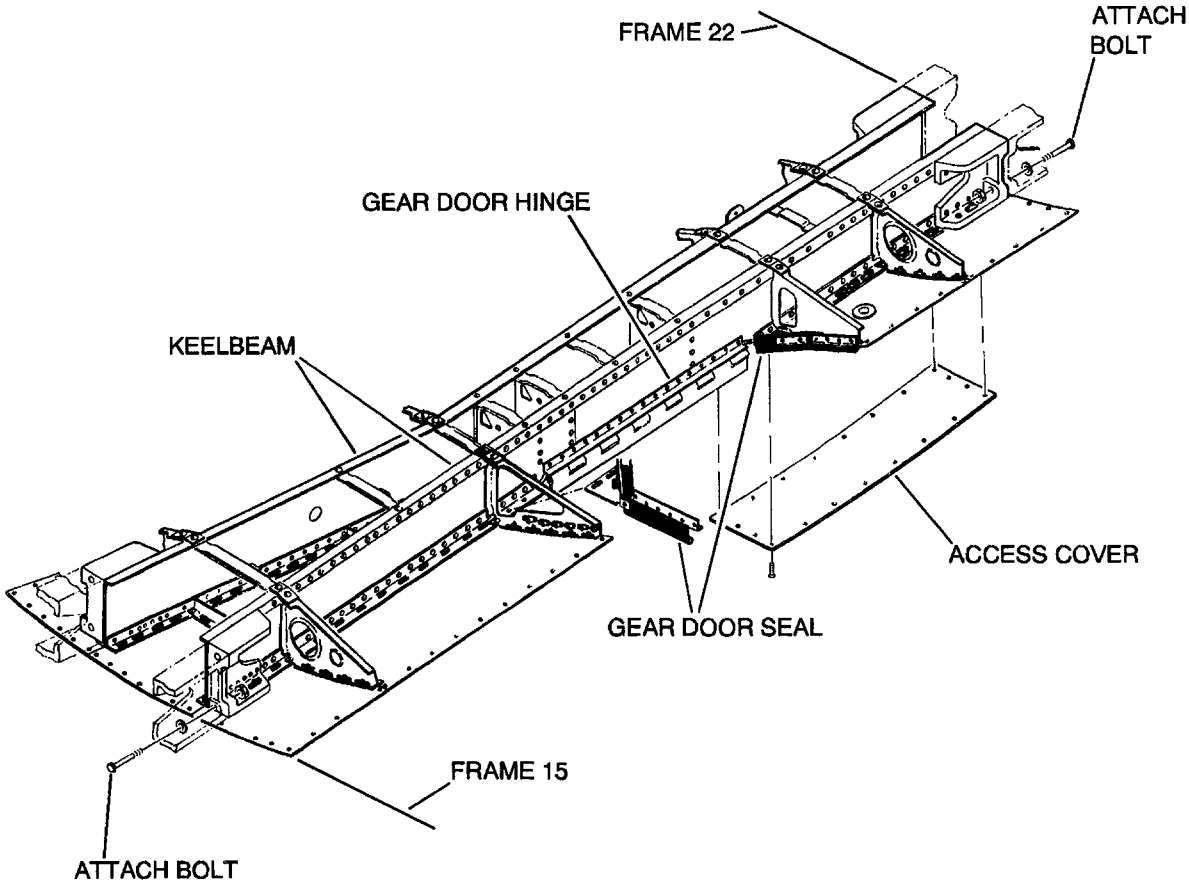
Detail A



Detail B

M35-531002-201-01

Underwing Keelbeam Installation
Figure 201 (Sheet 1 of 2)



Detail C

M35-531002-201-02

Underwing Keelbeam Installation
Figure 201 (Sheet 2 of 2)

2. Repairs

A. Keelbeam Bolt Replacement (See Figure 201.)

(1) Lower inboard main landing gear doors. (Refer to Chapter 52.)
(2) Disconnect the main gear inboard door actuators from the inboard doors. (Refer to Chapter 32.)
(3) Remove electrical power from aircraft.
(4) Remove access covers under the fuselage.
(5) Remove cabin seats from aircraft. (Refer to Chapter 25.)
(6) Remove center carpet and cabin floorboards. (Refer to 53-20-01, Removal/Installation.)

NOTE: The floorboards must be removed to allow access to forward keelbeam fitting at frame 15.

(7) Loosen and remove one keelbeam bolt. Install new keelbeam bolt, washer, and nut. Torque nut to 100 to 140 inch-pounds.
(8) Remove and install each remaining keelbeam bolt in like manner.
(9) Install cabin floorboards and center carpet previously removed. (Refer to 53-20-01, Removal/Installation.)
(10) Install cabin seats. (Refer to Chapter 25.)
(11) Install access covers previously removed.
(12) Connect main gear inboard door actuator to the inboard door. (Refer to Chapter 32.)
(13) Close inboard main landing gear doors.

AUXILIARY STRUCTURE - DESCRIPTION AND OPERATION

1. Description

A. The auxiliary structure consists of the floorboards and pedestal structure.

B. Removing various floorboards provides access to controls, hydraulic lines, air ducts, and electrical equipment and wiring. The floorboards are secured to the keel beam, frames and support angles and become part of the aircraft structure. Since the floorboards form part of the aircraft structure, the aircraft must not be flown without the floorboards installed.

C. Panels in the pedestal provide access to equipment and controls in and below the pedestal.

2. Cabin Area Cargo Loading

A. Proper cargo loading is essential. Otherwise, both flight safety and aircraft structural integrity is jeopardized. The following parameters shall be strictly adhered to.

(1) Cabin floor loading in excess of 50 lb/ft2 shall utilize a palletized arrangement to distribute vertical loads across seat rails.

(2) Divan seat floor and baggage floor, which are also pressure loaded, can sustain a 1.0 g load of 125 to 150 lb/ft2 loading in combination with required cabin pressure loads.

(3) Aircraft seat rails are used in many installations to secure cargo loading for various loading directions. Appropriate seat rail loads that shall be used are indicated here.

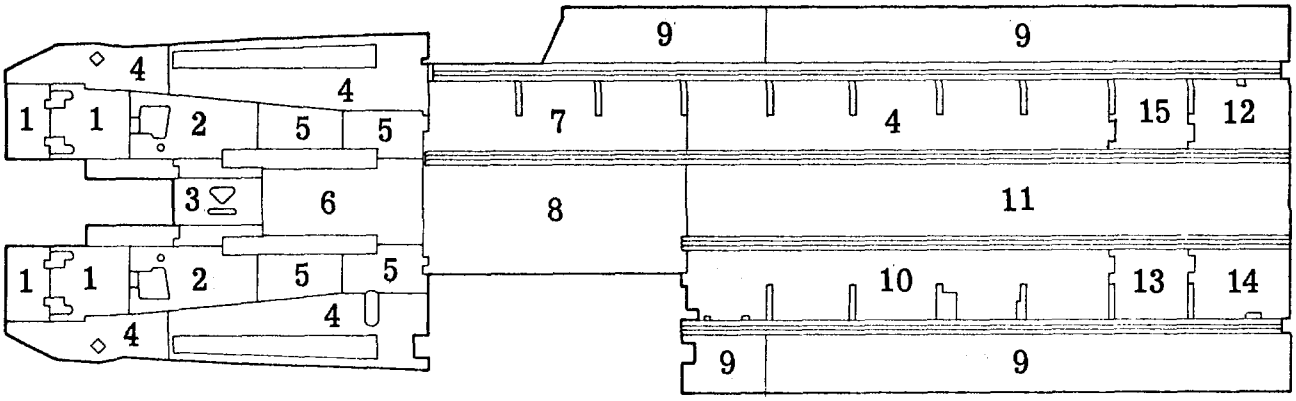
Loading Chart

Load Direction	Ultimate Load
Vertical	±4500 lb.
Longitudinal	±3000 lb.
Lateral	±1500 lb.

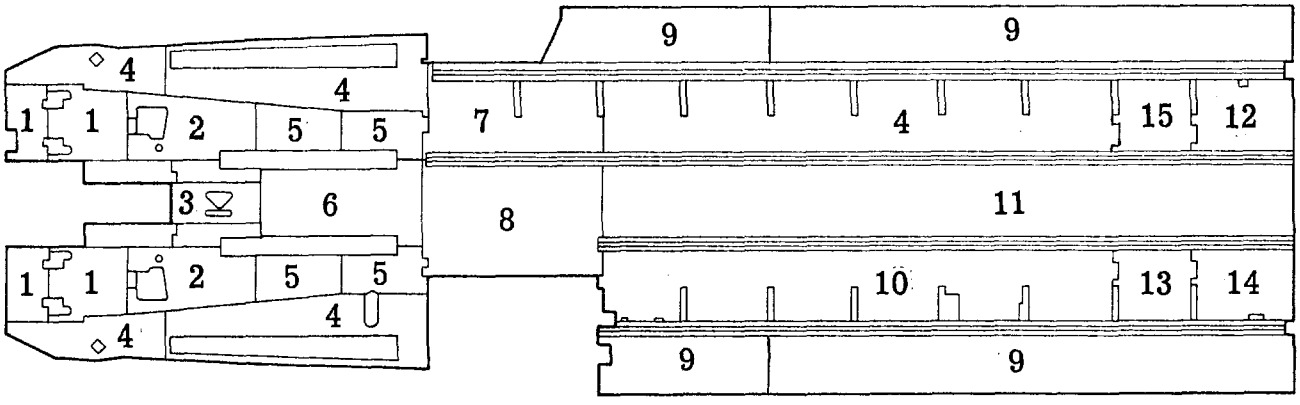
NOTE: A minimum of 9.0 g forward load capability shall be attained.

(4) Adequate restraint in all directions shall be achieved with cargo loading system.

(5) Adequate access to RH emergency exit/baggage door shall be maintained unless optional crew hatch is installed.



AIRCRAFT WITH 36 - INCH DOOR (Typical)



AIRCRAFT WITH 24 - INCH DOOR (Typical)

1. Brake Valve and Rudder Pedal Linkage
2. Control Cables, Pulleys, and Hydraulic Lines
3. Control Sector
4. Hydraulic Lines and Air Ducts
5. Brake System Shuttle Valves and Hydraulic Lines
6. Control Cables, Pulleys, and Roll Servo
7. Parking Brake Valves and Hydraulic Lines
8. Control Cables, Pulleys, Aileron Rudder Interconnect, and Parking Brake Valve
9. Cabin Air Distribution Ducts
10. Hydraulic Lines and Emergency Air Lines
11. Control Cables, Pulleys, and Anti-Collision Beacon
12. Aural Warning Control Unit (E25)
13. Mach Trim Computer
14. Spoiler Computer
15. Squat Switch Relay Panel

Floorboards
Figure 1

COCKPIT SEAT RAIL - MAINTENANCE PRACTICES

1. Removal/Installation

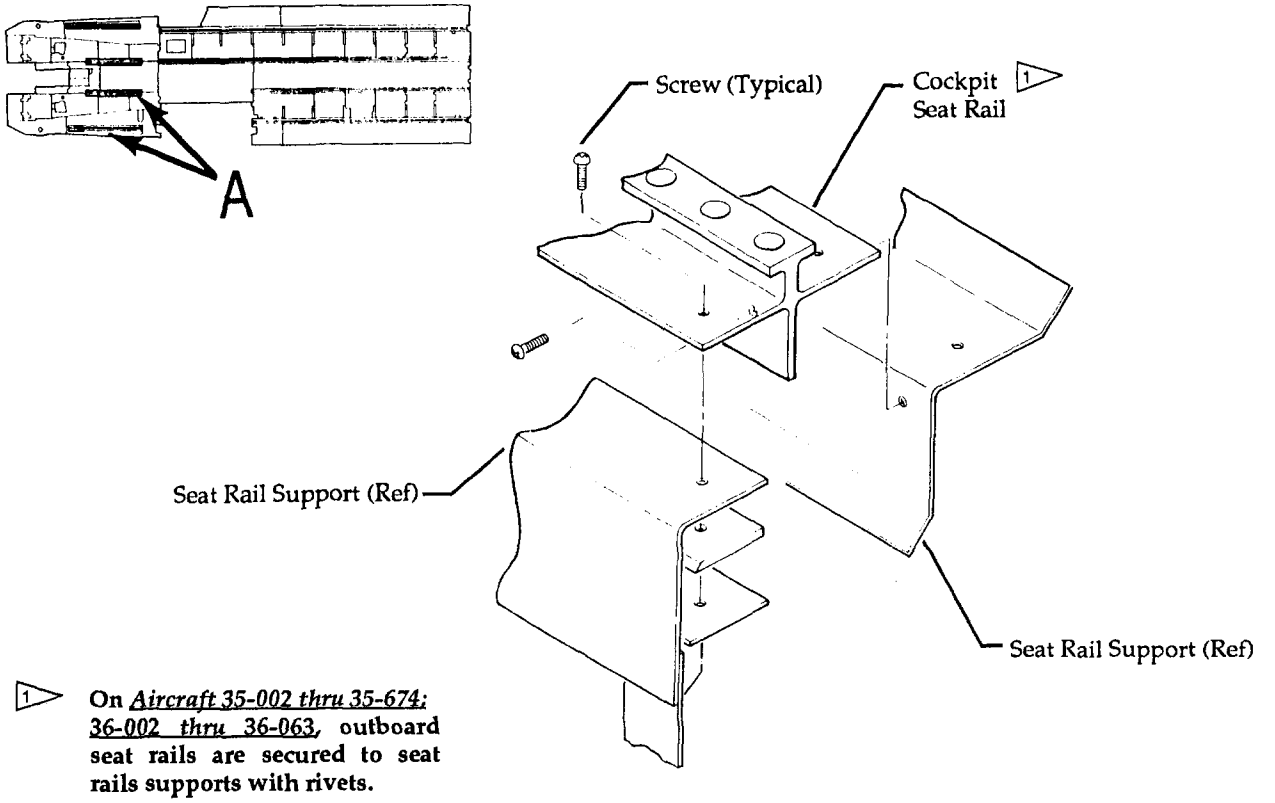
NOTE: On *Aircraft 35-002 thru 35-674; 36-002 thru 36-063*, the outboard seat rails are secured to seat rail supports with rivets.

A. Remove Cockpit Seat Rail (See Figure 201.)

NOTE: Removal and installation procedures for left and right cockpit seat rails are identical.

(1) Remove seat. (Refer to Chapter 25.)
(2) Remove floorboards.
(3) Remove attaching parts and seat rail from seat rail supports.
(4) Remove seat rail from aircraft.

B. Install Cockpit Seat Rail (See Figure 201.)
(1) Install outboard seat rail on seat rail supports and secure with attaching parts.
(2) Install floorboards.
(3) Install seat. (Refer to Chapter 25.)
(4) Return aircraft to normal.



1 **On *Aircraft 35-002 thru 35-674; 36-002 thru 36-063*, outboard seat rails are secured to seat rails supports with rivets.**

(LH COCKPIT SEAT RAIL SHOWN, RH TYPICAL)

Detail A

2-221A

Cockpit Seat Rail Installation
Figure 201

AFT PRESSURE BULKHEAD - MAINTENANCE PRACTICES

1. Removal/Installation

A. Removal of Aft Pressure Bulkhead (See Figure 201.)

(1) Remove electrical power from aircraft.

(2) Remove interior panels and equipment installed in aft cabin as required to gain access to aft pressure bulkhead. (Refer to appropriate chapter.)

(3) Remove electrical equipment mounted on aft pressure bulkhead. (Refer to appropriate chapter.)

(4) Remove sealant from bulkhead attaching bolts (perimeter and centerline), and fillet seal from around edge of bulkhead where it contacts frame 18.

CAUTION: USE CARE TO AVOID DAMAGE TO BULKHEAD DURING REMOVAL FROM FRAME 18.

(5) Remove bolts and washers securing pressure bulkhead to frame 18.

(6) Remove aft pressure bulkhead from aircraft.

B. IInstallation of Aft Pressure Bulkhead (See Figure 201.)

(1) Acquire the necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Sealant	Pro-Seal 890 (Class B)	Courtaulds Aerospace Glendale, CA	Seal bulkhead.
Teflon Tape	5840	3M Co. St. Paul, MN	Apply to bulkhead mating surface as a parting material.

(2) Inspect each bulkhead nutplate for condition of threads and security of mounting.

(3) Clean surfaces of bulkhead and frame 18.

NOTE: Refer to Chapter 20 for cleaning and sealant application procedures.

(4) Apply teflon tape to mating surface of bulkhead. Teflon tape shall not be overlapped. Do not leave gaps between the tape strips or ends.

(a) Using a sharp knife, score teflon tape 0.15 inch [3.8 mm] from outer edge of aft pressure bulkhead. Do not mark aluminum of aft pressure bulkhead with sharp knife. Remove excess tape

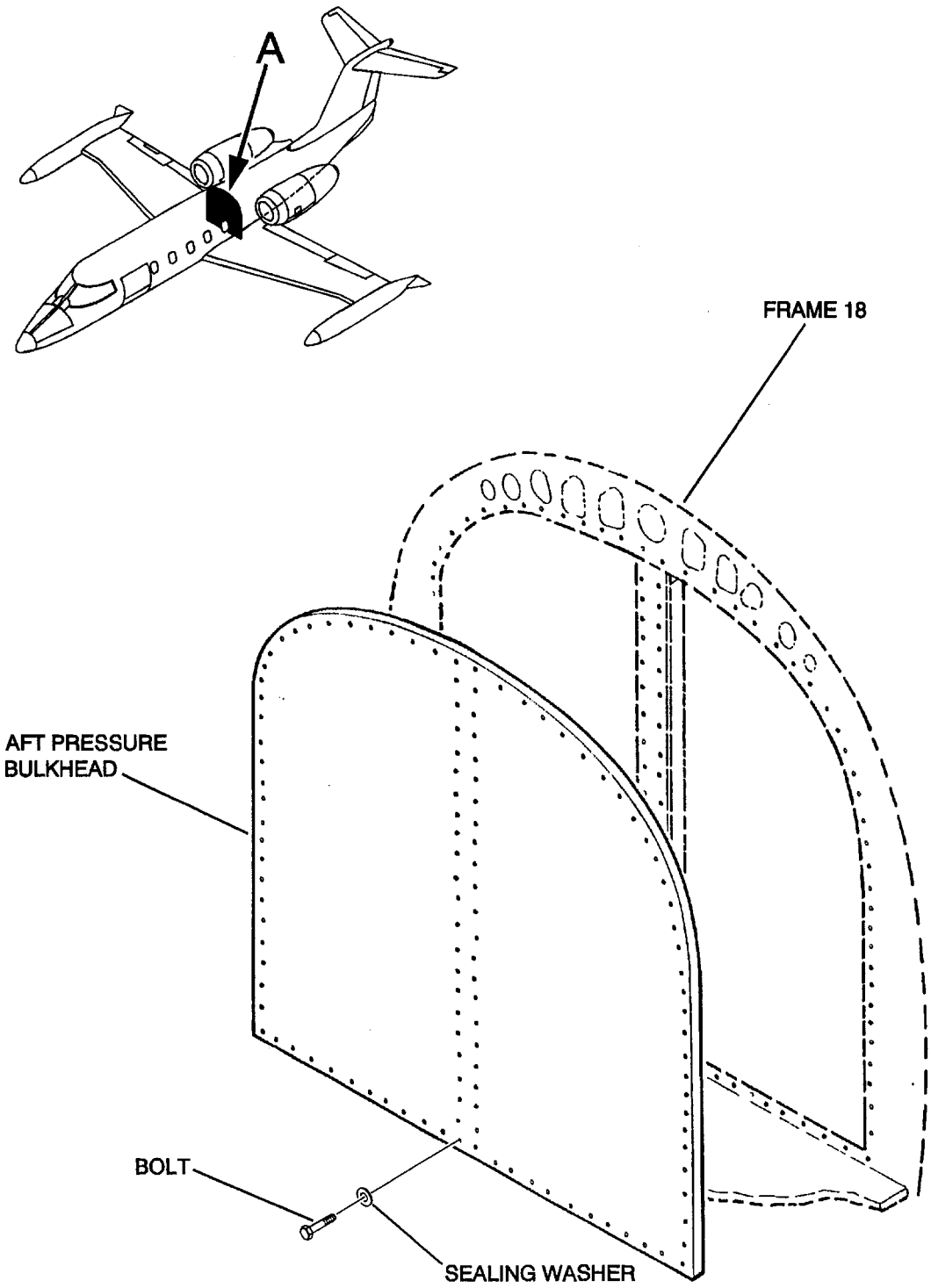
(b) Remove teflon tape covering screw holes.

(5) Apply a faying surface seal to the mating surface of frame 18. (Refer to Chapter 20.)

(6) Install pressure bulkhead using bolts and new sealing washers. Tighten bolts in a crisscross pattern.

(7) Apply Pro-Seal 890 to all bolt heads.

(8) Fillet seal around bulkhead where it contacts frame 18.
(9) After allowing sealant to cure, pressure test aircraft in accordance with Maximum Service Pressure Proof Test and check for leaks. (Refer to Adjustment/Test, 53-10-00.)
(10) Install electrical equipment on aft pressure bulkhead removed in step 1.A.(3).
(11) Install interior panels and equipment removed in step 1.A.(2).
(12) Restore electrical power to aircraft.



Detail A

M35-532002-201-01

Aft Pressure Bulkhead Installation
Figure 201

2. Inspection/Check

A. Inspection of Aft Pressure Bulkhead (Frame 22, FS 421.42.) (See Figure 202.) *(Aircraft 35-002 thru 35-611.)*

NOTE: Perform Inspection of Aft Pressure Bulkhead in accordance with the current intervals specified in Chapter 5.

(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Digital Ultrasonic Thickness Gauge	Nova 800	NDT Systems Huntington Beach, CA	Measure frame thickness.
Transducer	D11R	NDT Systems Huntington Beach, CA	Measure frame thickness.

(2) Remove divan. (Refer to 25-20-01.)
(3) Remove interior panels to gain access to aft pressure bulkhead.
(4) Locate wing anti-ice duct, left hand side.

CAUTION: DO NOT DAMAGE PRESSURE BULKHEAD. USE NON METALLIC TOOLS TO REMOVE FOAM.

(5) Remove sprayed on foam, on frame, between stringer 7 and 9. (See Figure 202.)

CAUTION: CAP ALL LINES AND COMPONENTS ON PRESSURIZATION SYSTEM TO PREVENT SYSTEM CONTAMINATION.

(6) On right hand side of frame, remove cabin differential pressure relief valve. (Refer to 21-30-03.)
(7) Disconnect plumbing from aft cabin altitude limiter. (Refer to 21-30-04.)
(8) Disconnect plumbing from the vacuum shutoff solenoid valve.
(9) Remove sprayed on foam, on frame, between stringer 7 and 9.
(10) After foam is removed on both sides, perform the following:
(a) Obtain measurement of frame thickness in area where foam was removed.

NOTE: Scanning index to be 0.25 inch [6.35 mm].

Nominal thickness of frame is 0.050 inches [1.27 mm].

(b) If thickness of the frame is less than 0.048 inch [1.22 mm], repair frame. (Refer to Learjet 20/30 series Structural Repair Manual.)

(11) Inspect for corrosion on frame.

NOTE: Pay close attention to area adjacent to anti-ice duct flanges.

(12) If corrosion if found, repair corrosion. (Refer to 20-71-10.)
(13) Prime all surfaces repaired or damaged during inspection. (Refer to 20-55-00.)
(14) Install plumbing on vacuum shutoff solenoid valve.
(15) Connect plumbing on cabin altitude limiter. (Refer to 21-30-04.)
(16) Install cabin differential pressure relief valve. (Refer to 21-30-03.)
(17) Perform Functional Test of the Cabin Pressurization System. (Refer to 21-30-00.)
(18) Install interior panel at aft pressure bulkhead.
(19) Install divan. (Refer to 25-20-01.)

B. Inspection of Aft Pressure Bulkhead (Frame 18, FS 381.79.) *(Aircraft 36-002 thru 36-057.)*

NOTE: Perform Inspection of Aft Pressure Bulkhead in accordance with the current intervals specified in Chapter 5.

Areas to be inspected are similar to that of the 35 models.

(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Digital Ultrasonic Thickness Gauge	Nova 800	NDT Systems Huntington Beach, CA	Measure frame thickness.
Transducer	D11R	NDT Systems Huntington Beach, CA	Measure frame thickness.

(2) Remove divan. (Refer to 25-20-01.)
(3) Remove interior panels to gain access to aft pressure bulkhead.
(4) Locate wing anti-ice duct, left hand side.

CAUTION: DO NOT DAMAGE PRESSURE BULKHEAD. USE NON METALLIC TOOLS TO REMOVE FOAM.

(5) Remove sprayed on foam, on frame, between stringer 7 and 9.
(6) On right hand side of frame, remove cabin safety valve. (Refer to 21-30-02.)
(7) Remove sprayed on foam, on frame, between stringer 7 and 9.
(8) After foam is removed on both sides, perform the following:

(a) Obtain measurement of frame thickness in area where foam was removed.

NOTE: Scanning index to be 0.25 inch [6.35 mm].

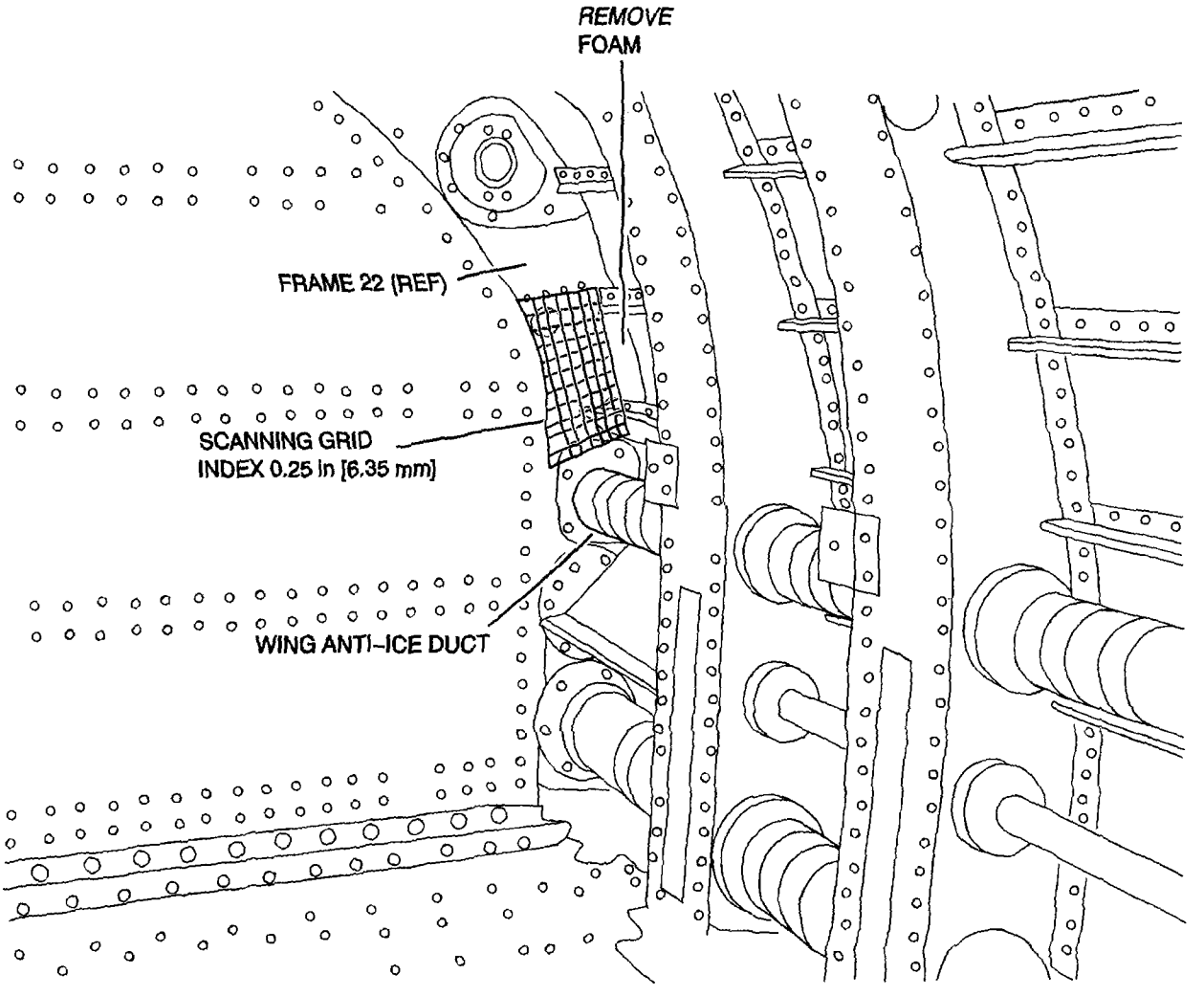
Nominal thickness of frame is 0.063 inches [1.60 mm].

(b) If thickness of the frame is less than 0.060 inch [1.52 mm], repair frame. (Refer to Learjet 20/30 series Structural Repair Manual.)

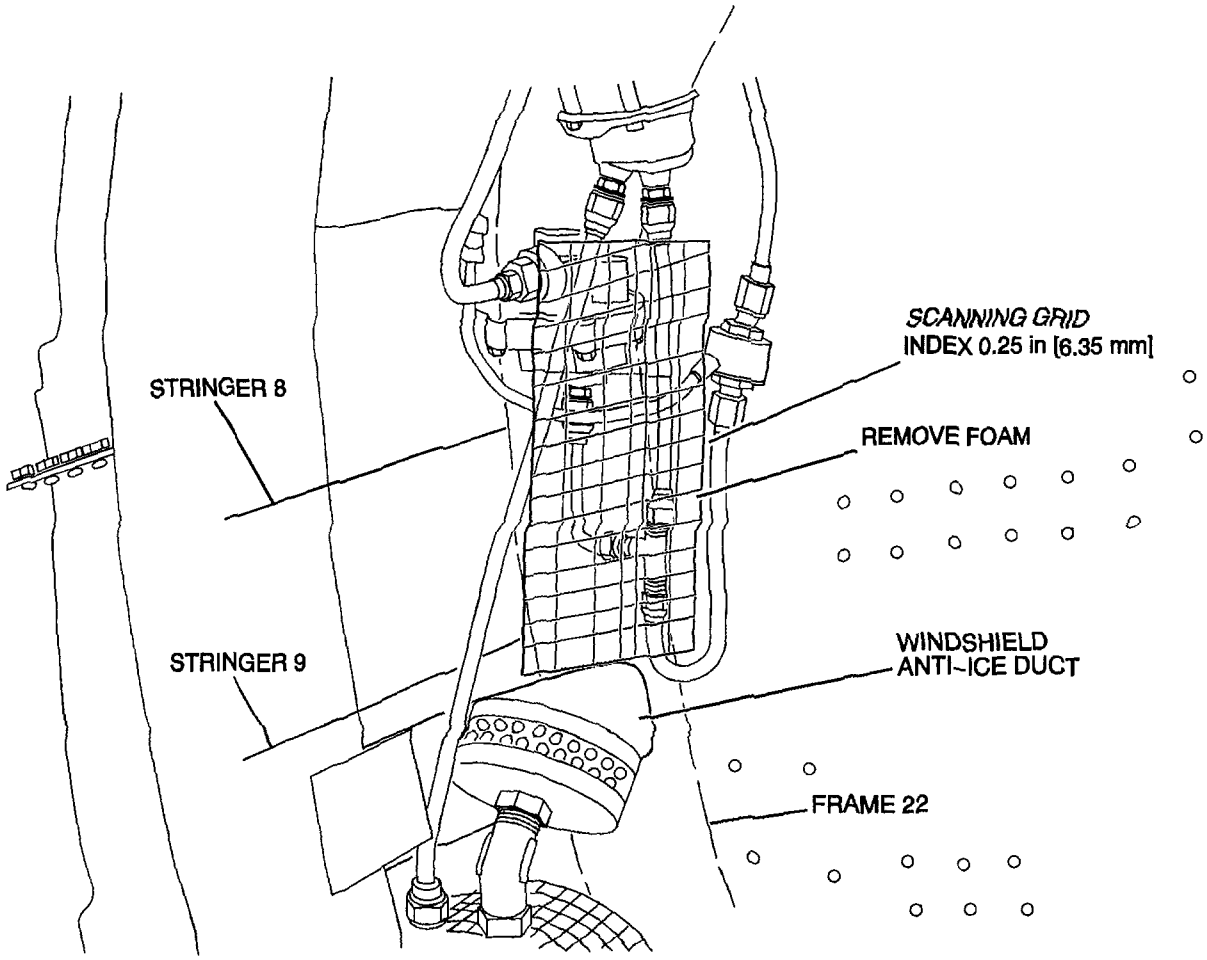
(9) Inspect for corrosion on frame.

NOTE: Pay close attention to area adjacent to anti-ice duct flanges.

(10) If corrosion if found, repair corrosion. (Refer to 20-71-10.)
(11) Prime all surfaces repaired or damaged during inspection. (Refer to 20-55-00.)
(12) Install cabin safety valve. (Refer to 21-30-02.)
(13) Perform Functional Test of the Cabin Safety Valve. (Refer to 21-30-02.)
(14) Install interior panels at aft pressure bulkhead.
(15) Install divan. (Refer to 25-20-01.)



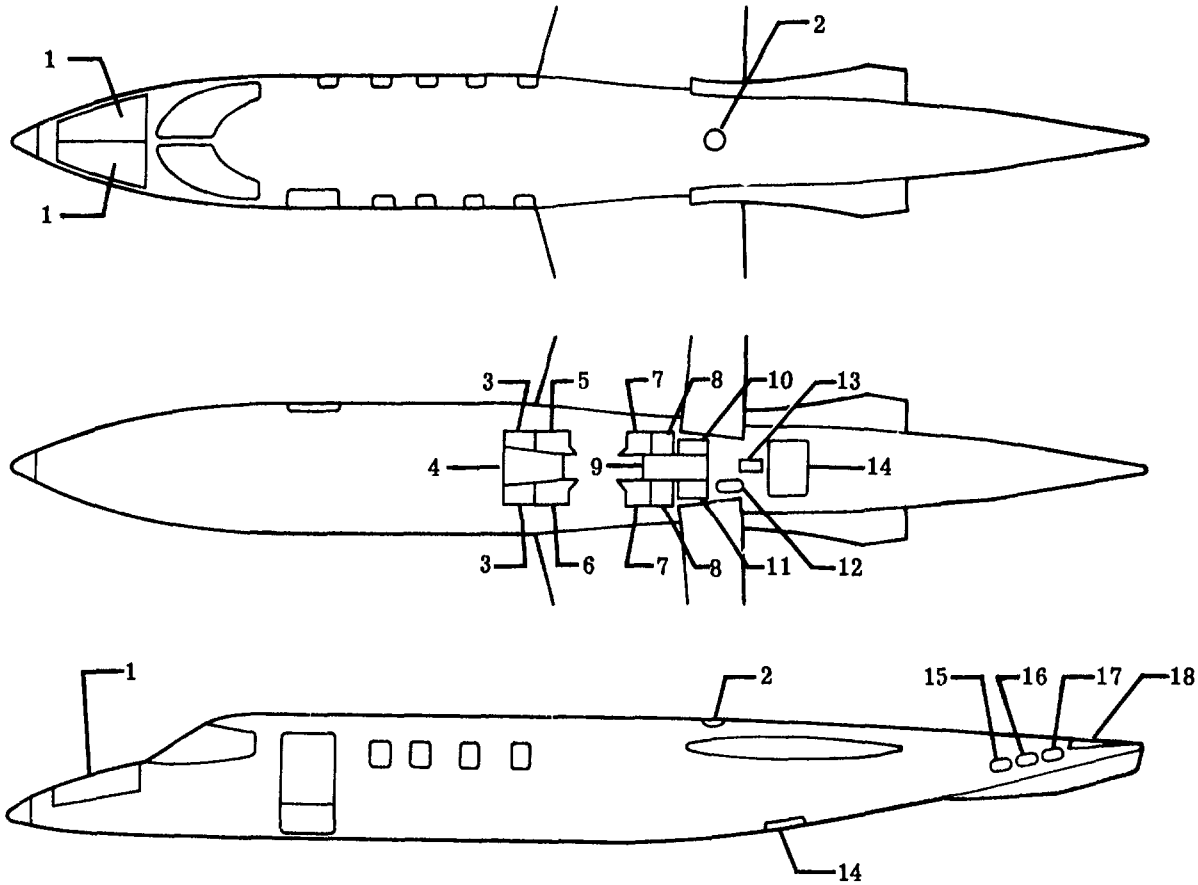
Aft Pressure Bulkhead Left Side
Figure 202 (Sheet 1 of 2)



Aft Pressure Bulkhead Right Side
Figure 202 (Sheet 2 of 2)

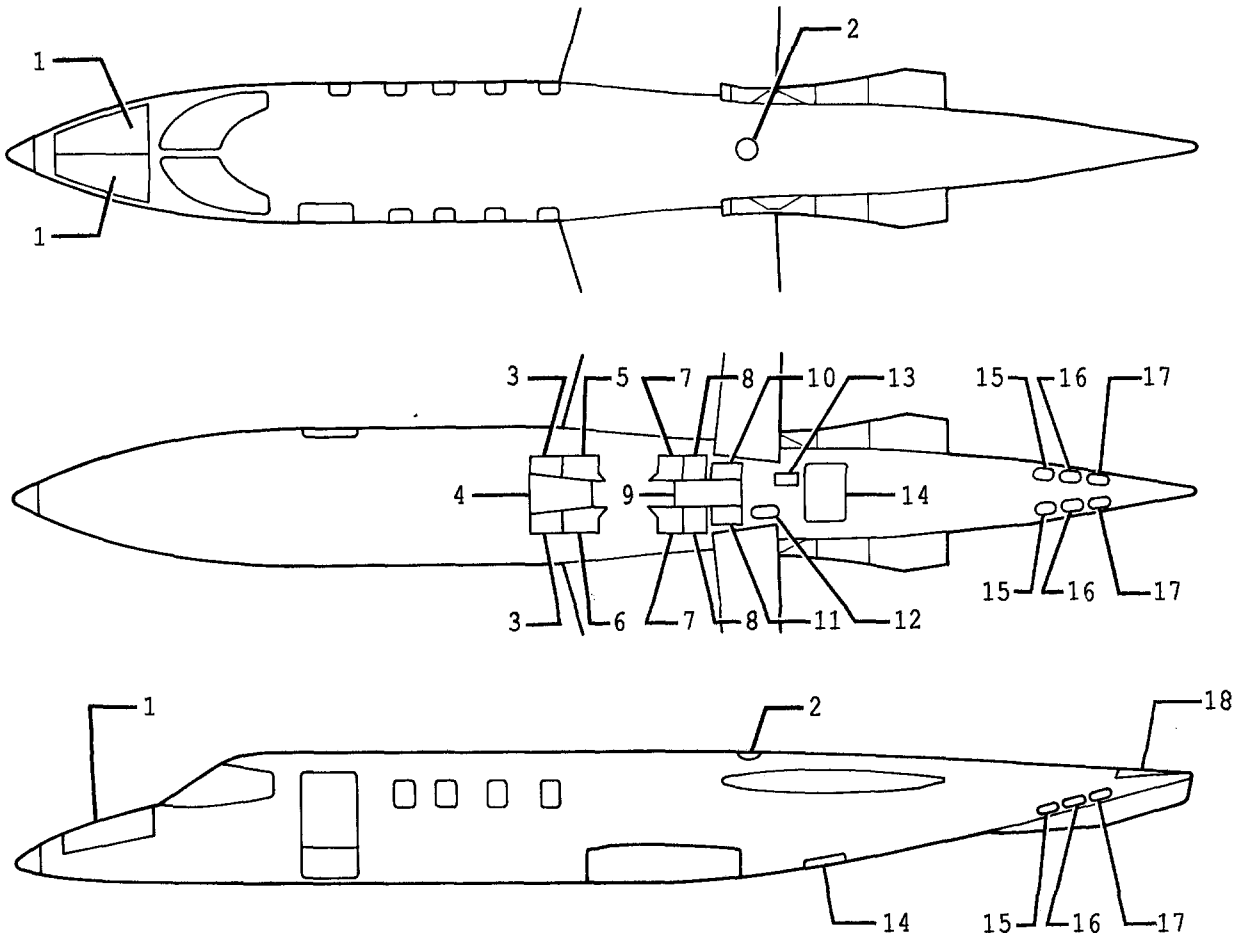
PLATES/SKIN - DESCRIPTION AND OPERATION

1. GENERAL
   A. The fuselage frame is covered with aluminum skin permanently fastened to the frames and stringers.
   B. Access covers are located in the fuselage exterior to provide for inspection and as an aid in removal and installation of various components of the aircraft.
   C. The nose compartment access doors provide access to the equipment in the nose compartment and the forward side of frame 5 pressure bulkhead.
   D. A hinged tailcone access door provides access to electrical, hydraulic, fuel, fire extinguishing, and air conditioning system and their related components.
   E. An access cover, located on top of the fuselage, is provided for removal and installation of the fuselage fuel tank probe.
   F. Access covers are located on the bottom of the fuselage where the wing passes through the fuselage. These access covers provide access to cables, drain valves, hydraulic lines, fuel plumbing and components, fuel vent plumbing, and pneumatic plumbing.
   G. When installing an access cover, ensure that it is replaced in the same location from which removed and that it is clocked the same as it was prior to removal.



14-109C

Fuselage Access Covers
Figure 1 (Sheet 1 of 3)



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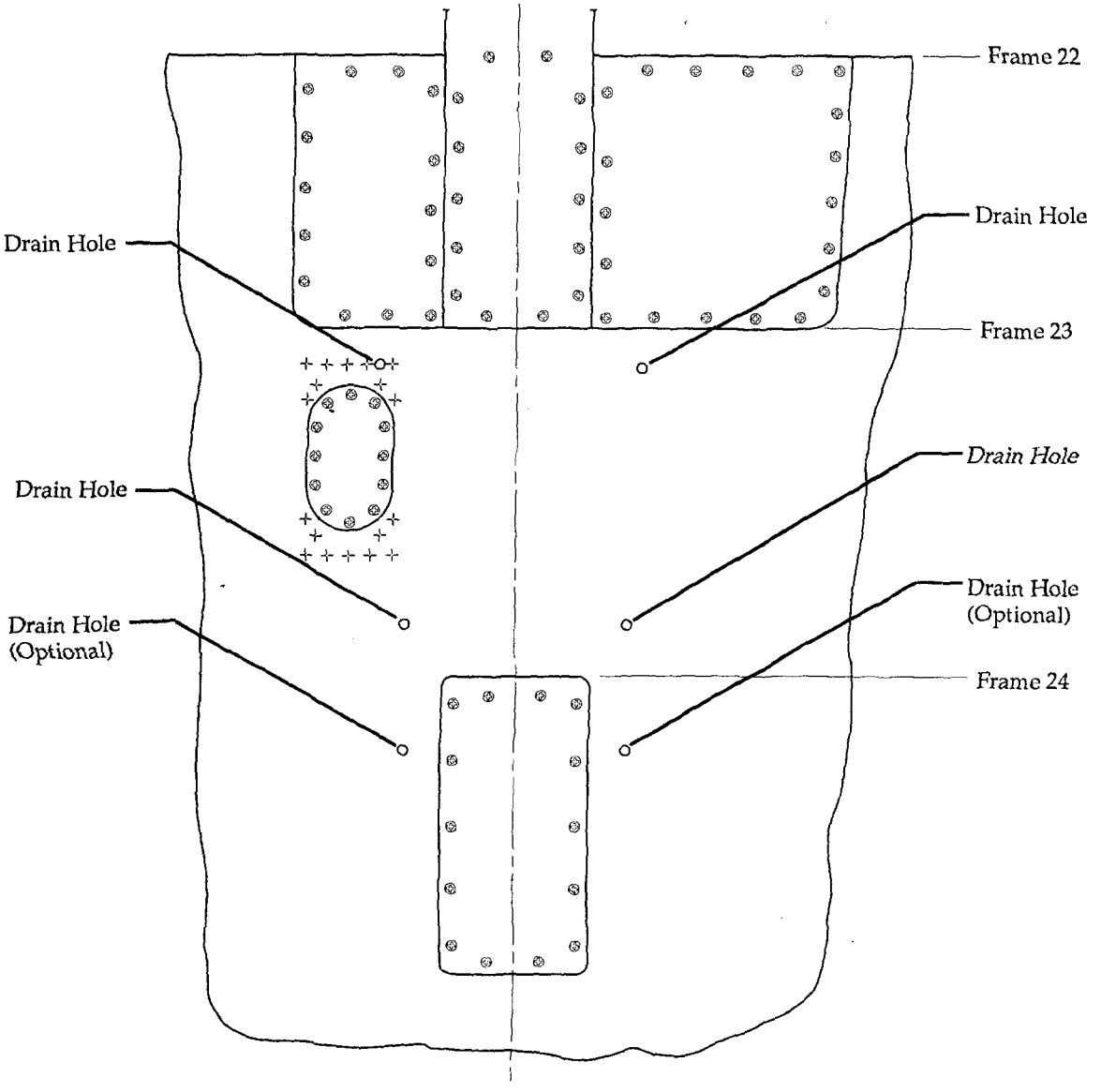
Fuselage Access Covers
Figure 1 (Sheet 2 of 3)

1. Electronic Equipment, Air Bottle, Oxygen Bottle and Anti-Ice Tank
2. Fuselage Fuel Tank Probe
3. Hydraulic Lines
4. Rudder and Elevator Cable Turnbuckles, Sump Drain Valve, Throttle Cables, and (if so equipped) Drag Chute Cable
5. Fuel Crossflow Shutoff Valve, Hydraulic Lines, Pneumatic Lines, Jet Pump, Fuel Check Valve, and Fuel Drain Valve
6. Fuel Plumbing, Hydraulic Lines, Wing Tank Drain, Drain Valve, and Defuel Valve
7. Fuel Lines, and on *Model 36 Aircraft*, Transfer Valve
8. Wing Fuel Pressure Switch, Fuel and Hydraulic Lines, Aileron Cable Turnbuckles, and on *Model 35 Aircraft*, Fuel Transfer Valve
9. Fuel Lines, Fuel Tank Drain Valve, Elevator, Aileron and Rudder Cables, Aileron Sector, Throttle Cables, and (if so equipped) Drag Chute Cable
10. Fuel Pump and Fuel Drain Valve
11. Fuel Drain Valve
12. Fuselage Fuel Tank Probe (Lower Fitting)
13. Fuel Vent Lines
14. Batteries, Electrical Components, Fuel Filters, Refrigeration Equipment, Hydraulic Components, Engine Fire Extinguishers, Secondary Yaw Servo, Throttle Cables
15. Rudder and Elevator Cables
16. Elevator Sector, Push-Pull Tubes, Elevator and Rudder Control Cables
17. Rudder Control Cables
18. Rudder Bellcrank, Primary Yaw Servo Sector, Bottom Rudder Hinge Point, Servo Sector Cables, and Rudder Cables

Fuselage Access Covers
Figure 1 (Sheet 3 of 3)

TAILCONE DRAINS - MAINTENANCE PRACTICES

1. **Inspection/Check**
   A. Inspect and ensure that tailcone drains are free from obstructions. If drain holes are missing, install drain holes per SB 35/36-53-7. (See Figure 201).



(VIEW LOOKING UP FROM BOTTOM OF AIRCRAFT)

Tailcone Drain Installation
Figure 201

TAILCONE ACCESS COVER - MAINTENANCE PRACTICES

1. **Removal/Installation**
   A. Removal of Tailcone Access Covers - General (See Figure 201.)
      (1) Remove attaching parts and access cover from aircraft tailcone.
         (a) Note clocking on a symmetrical access cover.
         (b) Note location of identically shaped access covers when removed.
   B. Installation of Tailcone Access Covers - General (See Figure 201.)
      (1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used for the following items.

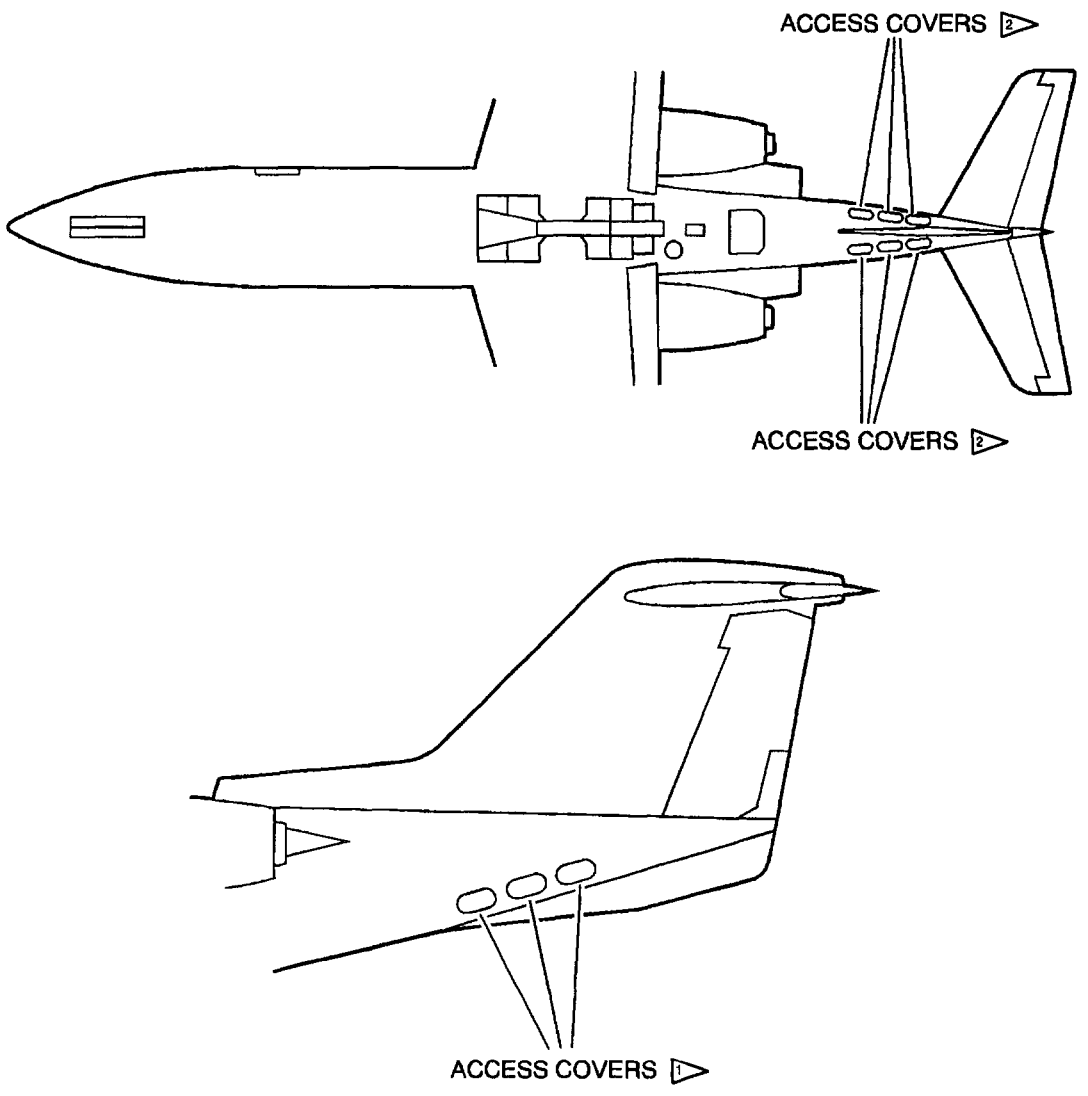
NAME	PART NUMBER	MANUFACTURER	USE
Sealant	Pro-Seal 890 Class C	Courtaulds Aerospace Glendale, CA	Fay sealing.
Parting Agent	Rezolin 8300 or 832A	Hexcel Corp. Chatsworth, CA	Allows removal of fay sealed access cover.
Methyl Ethyl Ketone (MEK)	TT-M-261	Commercially Available	Cleaning solvent.

      (2) Prepare faying surfaces of access cover and tailcone cover opening for sealing, removing any old sealant and cleaning with solvent.
      (3) Apply parting agent to mating surface of access cover.
      (4) Apply fay seal to mating surface of doubler surrounding opening for tailcone access cover.
      (5) Install access cover and secure with attaching parts within sealant work life.
         (a) Make sure a symmetrical access cover is clocked as removed.
         (b) Make sure an access cover identical with another removed access cover is placed in the location from which it was removed.
      (6) Fair out extruded sealant to leave a smooth fillet along joint.
   C. Removal of Tailcone Access Cover from Stinger (See Figure 201.)
      (1) Remove attaching parts and access cover from stinger.
   D. Installation of Tailcone Access Cover on Stinger (See Figure 201.)
      (1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used for the following items.

NAME	PART NUMBER	MANUFACTURER	USE
Sealant	Pro-Seal 890 Class C	Courtaulds Aerospace Glendale, CA	Fay sealing.
Parting Agent	Rezolin 8300 or 832A	Hexcel Corp. Chatsworth, CA	Allows removal of fay sealed access cover.
Methyl Ethyl Ketone (MEK)	TT-M-261	Commercially Available	Cleaning solvent.

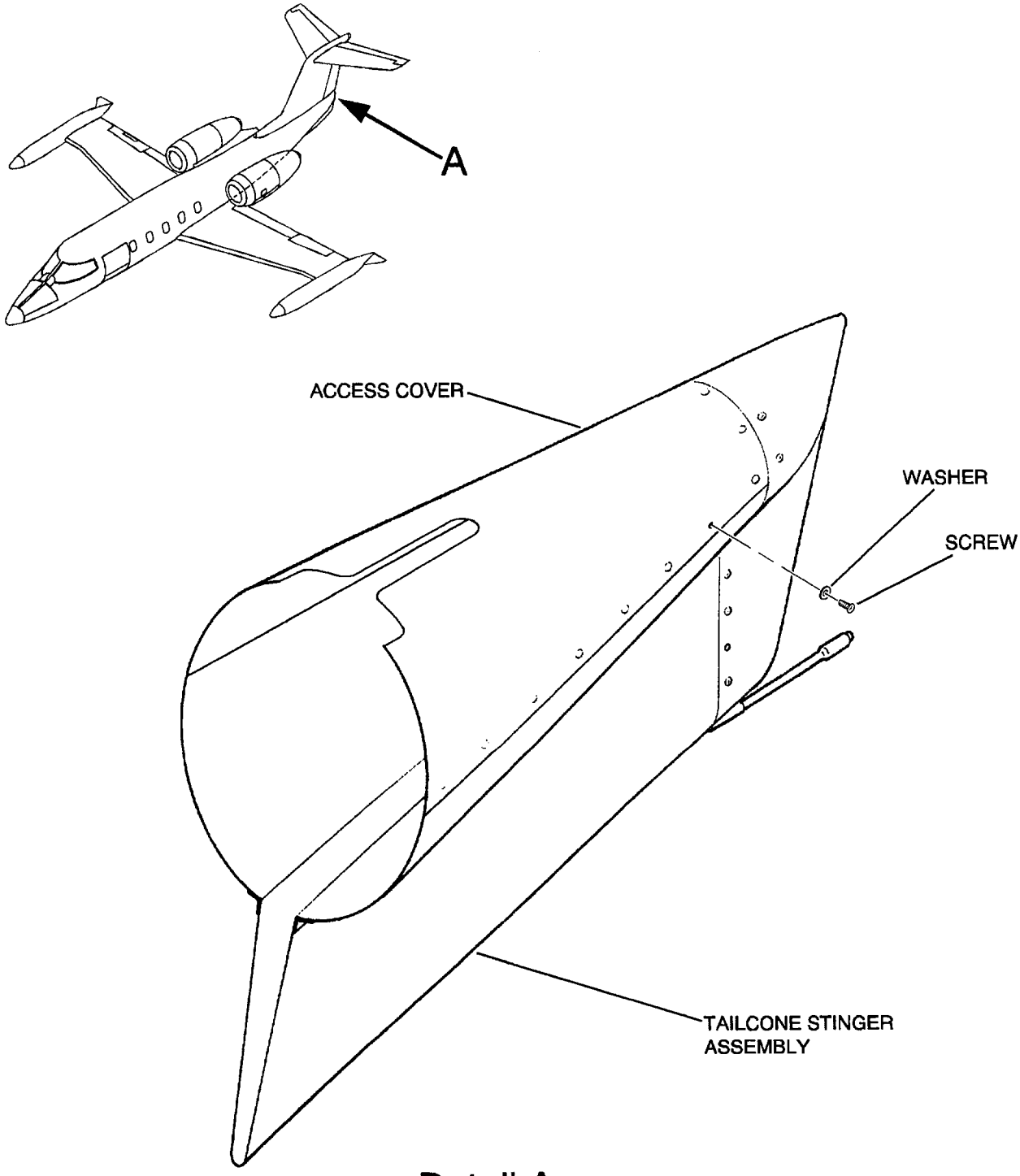
      (2) Prepare faying surfaces of access cover and tailcone stinger assembly for sealing, removing any old sealant and cleaning with solvent.



1 35-001 THRU 35-646, 36-001 THRU 36-058
2 35-647 AND SUBSEQUENT, 36-059 AND SUBSEQUENT

M35-533002-201-01

Tailcone Access Cover Installation
Figure 201 (Sheet 1 of 2)



Tailcone Access Cover Installation
Figure 201 (Sheet 2 of 2)

(3) Apply parting agent to mating surface of access cover except area of access cover that slips under cover forward of rudder torque tube.
(4) Apply parting agent to mating surface of cover forward of rudder torque tube.
(5) Apply fay seal to mating surface of aircraft structure to which access cover will be attached.
(6) Apply fay seal to mating surface of access cover that slips under cover forward of rudder torque tube.
(7) Install access cover on stinger and secure with attaching parts within sealant work life.
(8) Fair out extruded sealant to leave a smooth fillet along joint.

ATTACH FITTINGS - DESCRIPTION AND OPERATION

1. DESCRIPTION

A. Attach fittings are provided on the fuselage for attachment of the doors, nose gear, main gear door inboard actuators, wing, passenger and crew seats, engines, vertical stabilizer, and pulleys used in the flight controls systems.

B. Component Description

(1) Door attach fittings include piano-type hinges for the main cabin door, nose gear door, and main gear doors. (Refer to Chapter 52.)

(2) The nose gear is attached to the fuselage by two trunnion pin bearing plates in the nose wheel well. The nose gear actuator is attached to the upper forward side of frame 5. (Refer to Chapter 32.)

(3) The main gear inboard door actuators are connected at their inboard ends to an attach fitting installed at frame 18 and BL 0.0. Refer to Chapter 32.)

(4) The wing is attached to the fuselage at eight points (four on each side). The attach fittings extend from the longeron at the lower end of frames 16, 18, 20, and 21. Bolts secure the wing to the fuselage. (Refer to Chapter 57.)

(5) The passenger and crew seats are secured to the floor by seat tracks. Notches in the tracks provide easy removal of the seats. The seat tracks are secured to the fuselage structure by screws. (Refer to Chapter 25.)

(6) Engine beams at frames 24 and 25A extend outward and upward at 10°. The beams are constructed of channels and webs with engine attach fittings on the ends. The forward engine beam is the main beam and the engine yoke is attached to each end. The pylon main frame, constructed of angles, bulkheads, ribs, and stiffeners, forms an aerodynamic fairing enclosing the forward and aft engine beams where they extend from the fuselage. (Refer to Chapter 71.)

(7) The vertical stabilizer is attached to the fuselage tailcone section at five major points. Five canted bulkheads in the tailcone match the five spars in the vertical stabilizer. The spars are bolted to the bulkheads. (Refer to Chapter 55.)

AERODYNAMIC FAIRINGS - DESCRIPTION AND OPERATION

1. DESCRIPTION

A. Fuselage aerodynamic fairings include the wing/fuselage fairing, radome, dorsal inlet, and the tailcone stinger.

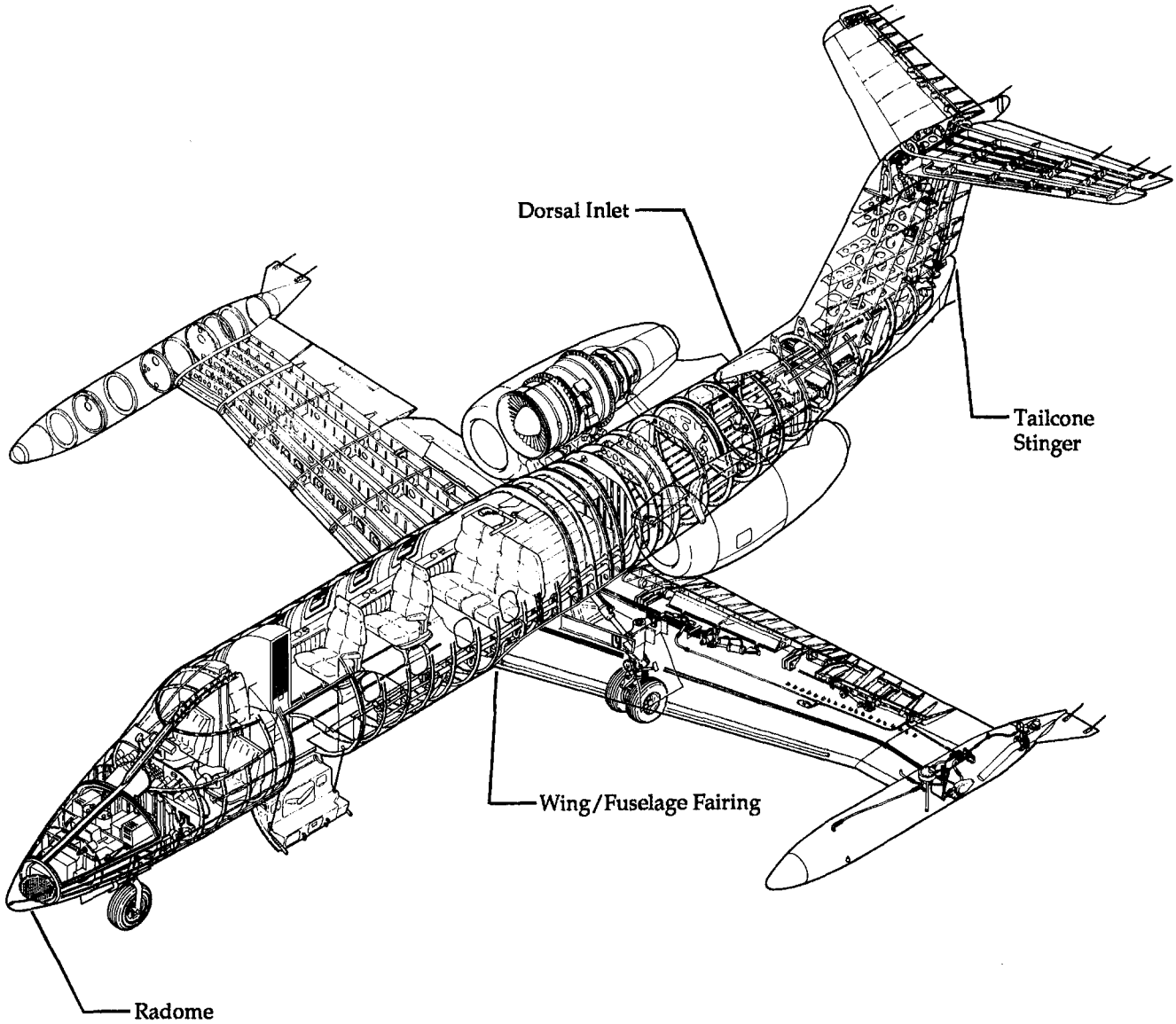
B. Component Description

(1) The wing/fuselage fairings are installed where the wing passes through the fuselage. The wing leading edge is also faired to the fuselage. The wing/fuselage fairing is removable for access to the wing attach fittings. (Refer to Chapter 57 for removal and installation of the wing/fuselage fairing.)

(2) The radome is constructed of a single sandwich honeycomb core in the area which is penetrated by radar. The radome is attached to frame 1 by screws. An erosion boot is bonded to the radome to prevent environmental erosion. Four lighting diverter strips are bonded to the radome to help prevent lighting damage to the radar.

(3) The dorsal inlet fairs the vertical stabilizer to the fuselage and permits entry of ram air for the heat exchanger. The dorsal inlet is constructed of 5-ply laminated fiberglass and is attached permanently to the fuselage and vertical stabilizer. Two bulkheads are riveted into the dorsal inlet and are secured to the fuselage with screws.

(4) The tailcone stinger is located at the aft most portion of the fuselage tailcone. An access cover is located on the upper side of the stinger (refer to 53-30-00 for approved repairs to the access cover). A removable cap is installed on the aft most portion of the stinger and ventral fin.



Fuselage Aerodynamic Fairings
Figure 1

RADOME - MAINTENANCE PRACTICES

1. Removal/Installation

A. Removal of Radome (See Figure 201.)

(1) Remove nose compartment access doors.
(2) Disconnect primary and secondary glideslope antenna coax leads by reaching into the radome through frame 1.
(3) Position radar antenna to allow access to alcohol tubing in front of radome.
(4) Disconnect alcohol tubing from diffuser.
(5) Pull tubing loose from clips and position out of the way.
(6) Remove radome and attaching screws from aircraft.
(7) Clean off old sealant. (Refer to Cleaning/Painting, this section.)

B. Installation of Radome (See Figure 201.)

NOTE: The following maintenance practice does not include the installation of a new radome since it requires locating and fitting of the radome to the fuselage. If a new radome is to be installed, install in accordance with Special Spare Kit No. SSK 911.

(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

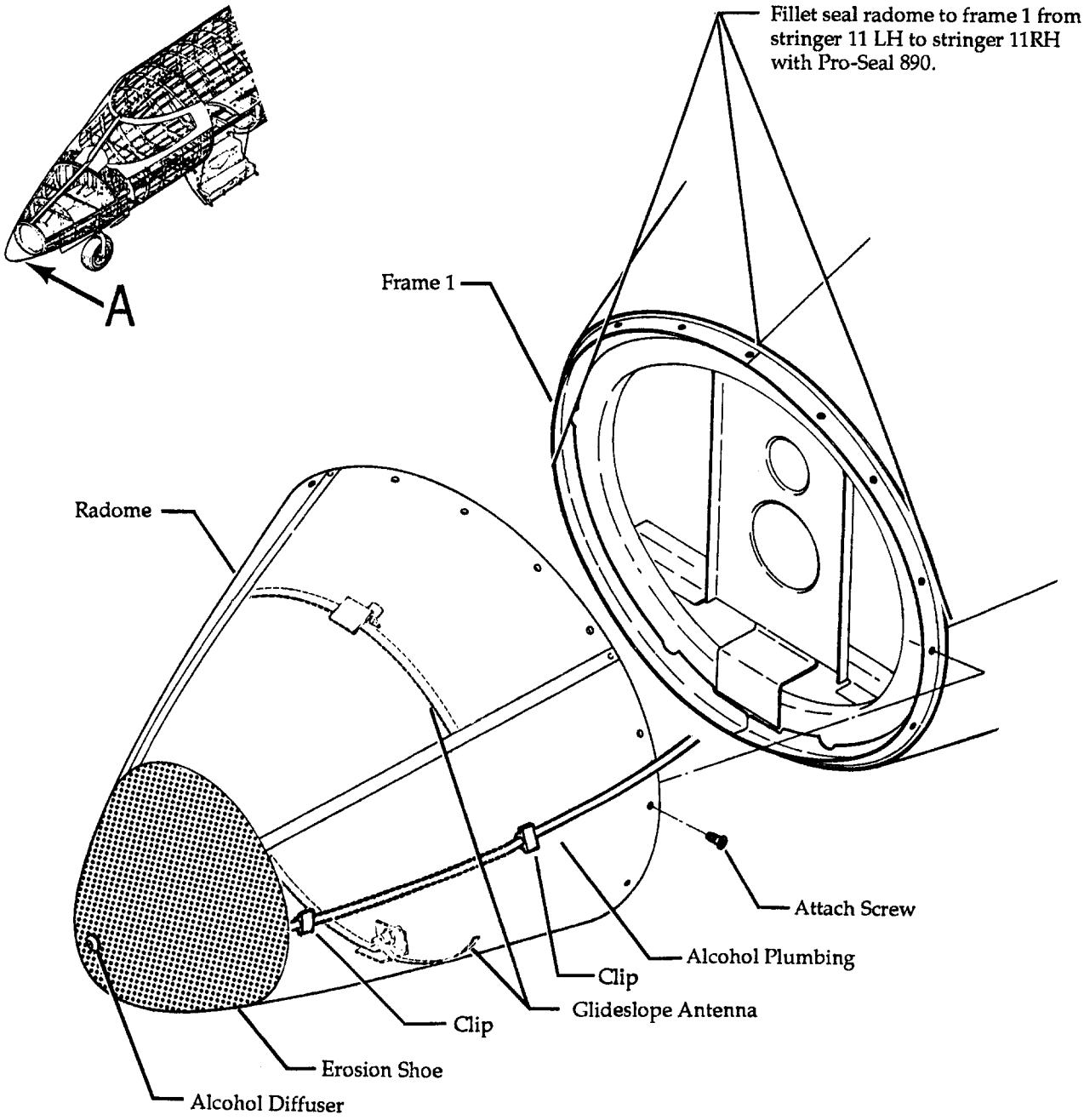
NAME	PART NUMBER	MANUFACTURER	USE
Sealant	Pro-Seal 890	Courtaulds Aerospace Glendale, CA.	Fillet seal radome.

(2) Inspect radome. (Refer to Inspection/Check, this section.)
(3) Position radome to aircraft and secure with attaching screws.
(4) Secure alcohol tubing to clips.
(5) Connect alcohol tubing to diffuser.
(6) Fillet seal radome to frame 1 from stringer 11 LH to stringer 11 RH using Pro-Seal 890 sealant.
(7) Connect primary and secondary glideslope antenna coax leads.
(8) Perform Operational Check of Alcohol Anti-Ice System. (Refer to Chapter 30.)
(9) Perform Operational Check of Flight Director to make sure antennas are properly connected per applicable vendor's maintenance manual.
(10) Install nose compartment access doors.

2. Inspection/Check

A. Inspection of Radome for Surface Defects and Damage

(1) Inspect exterior surface of radome for missing paint, scratches, pits, depressions, and loose or damaged erosion boot or diverter strip.
  (a) If exterior surface defects are found proceed to Cleaning/Painting, this section.
  (b) Repair erosion boot if loose or damaged. (Refer to 53-50-02, Removal/Installation.)
  (c) Repair diverter strip if loose or damaged. (Refer to 53-50-03, Removal/Installation.)
(2) Inspect interior surface of radome for scratches, pits, depressions, glideslope antenna mounting security, and secure glideslope antenna if loose. (Refer to Chapter 34.)
(3) Inspect radome for damage and enlarged mounting holes.
  (a) Repair radome if it falls within damage and repair limitations of Structural Repair Manual.
  (b) Replace radome if damage or repair exceeds limitations of Structural Repair Manual. (Refer to Special Spare Kit No. SSK 911 to replace radome.)



Detail A

Radome Installation
Figure 201

B. Inspection of Filler Surfacer for Pin Holes Using Guide Coat (1052, 1258AC)

NOTE: Guide coat is applied for the purpose of assisting the maintenance person in identifying and locating areas of unacceptable surface defects/porosity after application of filler putty.

Complete removal of this coating by sanding is required.

(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Guide Coat			
Gloss Black Topcoat (Urethane)	37038	Sherwin-Williams	Identifying and locating areas of un acceptable surface defects/porosity.
Base (High Solids)	830-038 (Component A)		
Hardener	830-081 (Component B)		
Activator	830-A18 (Component C)		
Reducer (Slow-Medium)	110-977		
Reducer (Fast)	110-978		
Gloss Black Lacquer (Spray Can)		Commercially Available	Identifying and locating areas of unacceptable surface defects/porosity.
Gram Balance Scale		Commercially Available	Mix materials.
Spray Gun		Commercially Available	Apply guide coat.
Abrasive Paper	220 Grit or Finer	Commercially Available	Sanding guide coat.
Cheesecloth or Cotton Cloth		Commercially Available	Cleaning.
Cleaning Solvent			
Acetone		Commercially Available	Cleaning.
or			
Methyl Ethyl Ketone (MEK)	Spec. TT-M-261	Commercially Available	Cleaning.

(2) If using a spray can of black lacquer, shake container thoroughly.
(3) If using high solids guide coat, mix as follows:
  (a) Mix one (1) part hardener into three (3) parts of thoroughly mixed base component A.
  (b) Mix one-half (0.5) part of activator into four (4) parts of hardener/base mixed material.
  (c) Stir thoroughly.

NOTE: This mixture should not need reducing. If reducing is required, a maximum of one-half (0.5) part reducer may be added to the mixed material. Stir thoroughly as reducer is added to mixed material.

(4) Prepare surface for application of guide coat as follows:
  (a) Make sure surface has been thoroughly and uniformly sanded using 220 grit or finer abrasive paper.

(b) Clean radome exterior surface. (Refer to Radome Cleaning During Finishing Procedures, this section.)
(c) If only a portion of the radome is to be inspected, mask off the rest of radome.

WARNING: ENSURE THAT THE SPRAYING AREA IS PROPERLY VENTILATED. OBSERVE ALL SAFETY PRECAUTIONS IN THE WORK AREA TO PRECLUDE FUME BUILD-UP AND EXPLOSIONS.

(5) Evenly apply (dust) guide coat to exterior surface.

NOTE: Desirable coating thickness shall be so thin that it will not have a measurable thickness.

Spraying equipment shall be clean and air for spraying shall be clean and dry. The finish area shall be above 65°F [18°C] and free of dust.

(6) Allow guide coat to cure.

NOTE: If properly mixed and applied, guide coat will normally be sandable in one (1) hour or less. To force cure mixed guide coat, allow 30 minutes minimum flash time, then oven bake at 140°F [60°C] or less.

Spray can lacquer will be normally sandable in one (1) hour or less at room temperature.

Guide coat is sufficiently cured when it can be sanded without "loading" the abrasive paper.

(7) Using 220 or finer abrasive paper sand guide coat smooth.

NOTE: Guide coat has been sufficiently sanded when the only visible remaining trace of the material is in surface depressions.

(8) Inspect radome surface for pin holes. There shall be no pin holes. If pin holes are found, apply filler putty and filler surfacer to radome surface again. (Refer to Cleaning/Painting, this section.)

3. Adjustment/Test

A. Radome Anti-Static Conductive Coating Electrical Resistance Test (See Figure 202.)
(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

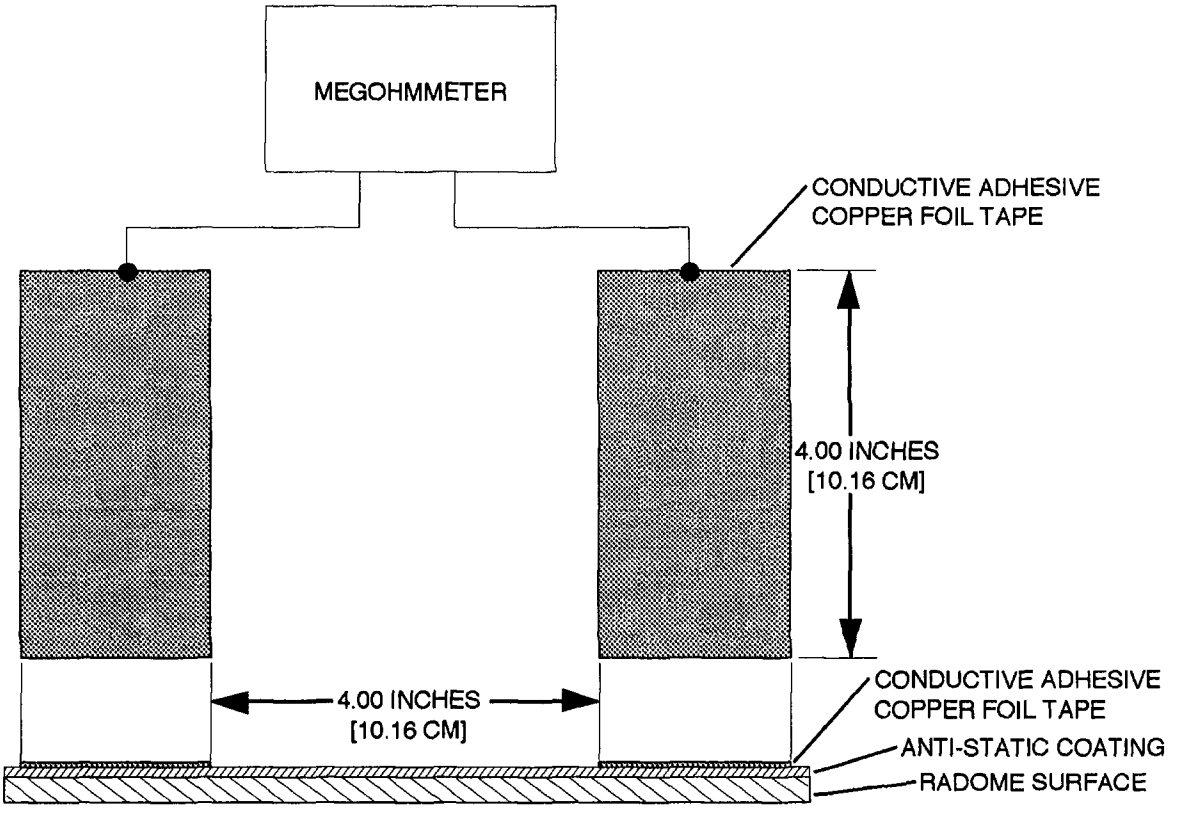
NAME	PART NUMBER	MANUFACTURER	USE
Megohmmeter	1864	General Radio	Check resistance.
Copper Foil Conductive Adhesive Tape, 1 inch [2.54 cm]	1181	3M Company St. Paul, MN	Check resistance.
Isopropyl Alcohol		Commercially Available	Clean tape adhesive from radome.
Ethyl Alcohol (Ethanol) Denatured Alcohol	Spec. O-E-760	Commercially Available	Clean tape adhesive from radome.

(2) Make sure anti-static coating has reached time-to-test cure condition.
(3) Measure surface electrical resistance in two different locations on radome as follows:
  (a) Cut 2 pieces of copper foil 4 inches long.
  (b) Place the copper foil on the radome 4 inches apart and parallel so that a 4 inch square is formed between the strips. Rub tape down to ensure good conductivity between tape and anti-static conductive coating.
  (c) Connect megohmmeter leads to each anti-static conductive tape strip.
  (d) Set meter to 500 vdc and test resistivity between tape strips.

NOTE: Average surface resistivity shall be 1 to 100 megohms per square.

CAUTION: ALL CLEANING OF ANTI-STATIC CONDUCTIVE COATING SHALL BE ACCOMPLISHED WITH ALCOHOL. OTHER CLEANING SOLVENTS CAN AFFECT THE CONDUCTIVITY OF THE ANTI-STATIC COATING.

  (e) If surface square resistance meets requirements, immediately remove copper foil tape from radome and clean radome with alcohol.
  (f) If surface square resistance exceeds 500 megohms, proceed as follows:
    1) Remove copper foil tape from radome and clean radome with alcohol.
    2) Place radome in oven for an additional one (1) hour of baking.
    3) Measure resistivity. (Refer to step 3.A.(3).)
    4) If this resistivity test exceeds requirement, remove copper foil tape from radome, clean radome with alcohol, lightly scuff sand the entire surface and bake for an additional one (1) hour.



Test Set-up for Measuring Electrical Resistivity
Figure 202

5) Measure resistivity. (Refer to step 3.A.(3).)
6) If resistivity still exceeds 500 megohms, contact Bombardier Aerospace/Learjet Field Service.

(g) If surface square resistance is less than one (1) megohms, sand to remove entire anti-static conductive coating and apply a new anti-static conductive coating. (Refer to step 4.G.)

CAUTION: THE RADOME TO BE PROCESSED MUST BE INSPECTED PRIOR TO STARTING THIS PROCEDURE. (REFER TO INSPECTION/CHECK AND STEP 4.A., THIS SECTION.)

4. Cleaning/Painting

NOTE: A radome is made from one of two materials: polyester/glass or epoxy. Polyester/glass radomes have a stepped interior surface. Epoxy radomes have an even interior surface.

A. Determining Start of Radome Resurfacing Steps
(1) Remove radome erosion boot unless local defects are being repaired that do not require its removal. (Refer to 53-50-02.)
(2) Remove lightning diverter strips unless local defects are being repaired that do not require their removal. (Refer to 53-50-03.)
(3) If the polyester/glass radome is smooth without pin hole or other defects, start with step 4.E.
(4) If the epoxy radome is smooth without pin holes or other defects, start with step 4.G.
(5) If the radome has paint removed and is uneven, determine the depth of the material removed. If enough material has been removed to uncover (bare metal) the attaching parts, start with step 4.B. If the attaching parts are still covered (no metal), perform steps 4.B. through 4.E. and steps 4.G. through 4.J.
(6) If installing a replacement radome per SSK 911, start with step 4.G. when SSK 911 refers to Chapter 53.

B. Radome Cleaning. (1258AC)
(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Cleaning Solvent			
Acetone		Commercially Available	Cleaning.
or			
Methyl Ethyl Ketone (MEK)	Spec. TT-M-261	Commercially Available	Cleaning.
Cheesecloth or Cotton Cloth		Commercially Available	Cleaning.

CAUTION: DO NOT CLEAN ANTI-STATIC CONDUCTIVE COATING WITH ACETONE OR MEK SINCE THEY CAN AFFECT THE CONDUCTIVITY OF THE ANTI-STATIC COATING. ALL CLEANING OF ANTI-STATIC CONDUCTIVE COATING SHALL BE ACCOMPLISHED WITH ALCOHOL. (REFER TO STEP 3.A.)

(2) Wash radome exterior surface with cleaning solvent using clean cheesecloth or cotton cloth.
(3) Dry surface thoroughly with dry clean cheesecloth or cotton cloth. Do not allow acetone or MEK to air dry as a residue remains on the surface.

C. Surface Preparation of Radome (1258AC)
(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Abrasive Paper	320 & 400 Grit	Commercially Available	Abrading surface.

(2) Clean radome exterior surface. (Refer to step 4.B.)

CAUTION: USE EXTREME CARE NOT TO SAND THROUGH OUTER RESIN COAT INTO THE FIBERGLASS CLOTH.

(3) Sand radome surface by hand using 320-grit *(Aircraft equipped with epoxy radome)* or 220-grit *(Aircraft equipped with polyester/glass radome)* abrasive paper.
(4) Clean radome exterior surface. (Refer to step 4.B.)

D. Application of Filler Putty to Radome (1258AC)
(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Filler Putty Base Catalyst	 467-9 White CA-41B	 Dexter Aerospace Orange, CA	Fill pin holes in polyester/glass radome.
Epoxy Filler Putty Base Adduct	 480-915 Off White 120-915	 Sherwin-Williams	Fill pin holes in epoxy radome.
Gram Balance Scale		Commercially Available	Mix materials.
Squeegee		Commercially Available	Apply filler.
Abrasive Paper	320 & 400 Grit	Commercially Available	Surface prep.
Cleaning Solvent Acetone or *Methyl Ethyl Ketone (MEK)*	 *Spec. TT-M-261*	 Commercially Available *Commercially Available*	Cleaning. *Cleaning.*

(2) On *Aircraft equipped with polyester/glass radome*, mix filler putty (467-9) at a ratio of 100 grams to 2.9 grams of catalyst (CA-41B). Stir thoroughly.

NOTE: Mixed filler putty has a pot life of one (1) hour at room temperature.

(3) On *Aircraft equipped with epoxy radome*, mix filler putty as follows:
(a) Using volume ratio, mix four (4) parts base (480-915) to one (1) part adduct (120-915).
(b) Using weight ratio, mix six (6) parts base (480-915) to one (1) part adduct (120-915).
(c) Stir thoroughly.

NOTE: Mixed filler putty has a pot life of one (1) hour at room temperature.

(4) Apply mixed filler putty to radome outside surface with a squeegee. Work filler putty over entire surface in all directions to fill in pin holes, etc. Remove excess filler putty from radome surface with squeegee.
(5) Allow filler putty to cure at room temperature for 24 hours or force cure at 130° to 150°F [54° to 66°C] for 1 hour.
(6) Ensure that filler putty is fully cured and sand radome surface by hand with 320-grit *(Aircraft equipped with epoxy radome)* or 220-grit *(Aircraft equipped with polyester/glass radome)* abrasive paper until smooth.
(7) Clean radome exterior surface. (Refer to step 4.B.)
(8) Repeat steps 4.D.(2) thru 4.D.(7).
(9) Inspect radome exterior surface to ensure that all pin holes and surface defects are filled. Repeat steps 4.D.(2) thru 4.D.(7) if necessary.

NOTE: Unacceptable local areas of filler putty may be removed and touched up per step 4.D.

Guide coat application may be used to aid in pin hole detection. (Refer to Inspection/Check, this section.)

E. Application of Filler Surfacer (Primer) to Radome (1258AC)

NOTE: Filler surfacer (primer) is applied for the purpose of improving the cosmetic exterior surface appearance of the radome.

Sanding of filler surfacer (primer) prior to application of anti-static coating will cause surface resistivity value of anti-static coating to increase.

(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Filler Surfacer (High Solids)			
Base	531K012	Courtaulds Aerospace	Improve radome
Activator	930K082	Glendale, CA.	appearance.
Gram Balance Scale		Commercially Available	Mix materials.
Cleaning Solvent			
Acetone		Commercially Available	Cleaning.
or			
Methyl Ethyl Ketone (MEK)	Spec. TT-M-261	Commercially Available	Cleaning.
Cheesecloth or Cotton Cloth		Commercially Available	Cleaning.
Abrasive Paper	320 & 400 Grit	Commercially Available	Surface prep.

(2) Mix filler surfacer as follows:
(a) Slowly add one (1) part by volume of activator to two (2) parts by volume base and stir thoroughly.
(b) Allow mix to stan 10 minutes minimum.

NOTE: The mixed primer has a pot life of approximately 8 hours at room temperature.

(3) Clean radome exterior surface. (Refer to step 4.B.)
(4) Apply mixture evenly without interruption over entire exterior surface of radome to attain a dry film thickness of 0.001 to 0.002 inch [0.003 to 0.005 cm].
(5) Allow filler surfacer sufficient time to cure before application of anti-static coating.
  (a) At room temperature, allow filler surfacer two (2) hours.
  (b) To shorten curing time, allow filler surfacer to flash a minimum of 15 minutes, then oven bake at 140°F [60°C] for 30 minutes.
(6) After primer has cured, lightly sand surface by hand with 400-grit *(Aircraft equipped with epoxy radome)* or 220-grit *(Aircraft equipped with polyester/glass radome)* abrasive paper until smooth with no pin holes.

NOTE: Sanding of filler surfacer (primer) prior to application of anti-static coating will cause surface resistivity value of anti-static coating to increase.

(7) Inspect radome exterior surface. Unacceptable local areas of filler surfacer may be removed and touched up per step 4.E.

F. Application of Glaze to Radome Interior (1258 AC)

NOTE: Glaze is used to seal the interior surface of radome.

(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Glaze Resin Hardener	 Epon 815 Epon 916	 Shell Chemical Corp.	 Seal epoxy or polyester/glass radome interior and mating edge.
Resin Hardener	Epocast 50-A Epocast 946	Ciba-Geigy Los Angeles, CA	Seal polyester/glass radome interior and mating edge.
Cleaning Solvent Acetone or Methyl Ethyl Ketone (MEK)	 Spec. TT-M-261	 Commercially Available Commercially Available	 Cleaning. Cleaning.
Cheesecloth or Cotton Cloth		Commercially Available	Cleaning and applying glaze.
Bristle Brush		Commercially Available	Applying glaze.

(2) Clean all drilled holes.
(3) Remove putty and foreign matter from edge and inner surface of radome using acetone or MEK.
(4) Dry surface thoroughly with clean cheesecloth.

(5) Mix glaze as follows:
(a) When mixing Shell glaze, mix 20-25 parts by weight hardener (Epon 916) into 100 parts by weight base (Epon 815).
(b) When mixing Ciba-Geigy glaze, mix 15 parts by weight of hardener (Epocast 946) with 100 parts by weight resin (Epocast 50-A).
(c) Mix thoroughly.

NOTE: Glaze will have a pot life of approximately 25 minutes at room temperature.

(6) Apply mixed glaze smoothly and uniformly to inner surface and aft edge using cheesecloth or bristle brush.
(7) Allow glaze to cure.

NOTE: Shell glaze will fully cure in four (4) days at room temperature or four (4) hours at 140° to 160F [60° to 71°C].

Ciba-Geigy glaze will fully cure in three (3) days at room temperature or three (3) hours at 140° to 160F [60° to 71°C].

(8) Inspect radome interior surface. Unacceptable local areas of glaze may be removed and touched up per step 4.F.

G. Application of Anti-Static (Conductive) Coating to Radome (1258AC)
(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Super Koropon Anti-Static Coating			
Base	528X306	Courtaulds Aerospace	Anti-static conductive coating.
Curing Solution	910X464	Glendale, CA.	
Conductive Black Epoxy			
Base	561-100	Sherwin-Williams	Anti-static conductive coating.
Curing Agent	120-561		
Reducer	110-588		
Cleaning Solvent			
Acetone		Commercially Available	Cleaning.
or			
Methyl Ethyl Ketone (MEK)	Spec. TT-M-261	Commercially Available	Cleaning.
Cheesecloth or Cotton Cloth		Commercially Available	Cleaning.
Gram Balance Scale		Commercially Available	Mix materials.
Spray Gun (Fluid Line Pressure 5 psi)		Commercially Available	Apply coating.

(2) Make sure filler surfacer has been applied to radome exterior surface. (Refer to Application of Filler Surfacer (Primer) to Radome, this section.)
(3) Make sure glaze has been applied to radome interior surface. (Refer to Application of Glaze to Radome Interior, this section.)

(4) Clean radome exterior surface. (Refer to step 4.B.)
(5) Mix anti-static coating as follows:
  (a) Mix equal parts by volume of anti-static coating (Super Koropon 528X306) with curing solution (910X464) and stir thoroughly. Anti-static coating may be thinned up to 10% maximum by volume with MEK for sprayability and mixed thoroughly.
  (b) Mix Black Epoxy conductive coating one (1) part by volume of curing agent (120-561) into four (4) parts by volume base (561-100) and stir thoroughly. Anti-static coating may be thinned up to 20% maximum with reducer (110-588) for sprayability and mixed thoroughly.
  (c) Make sure coating is mixed thoroughly.

    NOTE: Pot life of anti-static coating mixture is approximately four (4) hours at room temperature.

(6) Allow anti-static coating mixture to age 20 minutes prior to application.

CAUTION: DO NOT APPLY ANTI-STATIC COATING IF AMBIENT TEMPERATURE IS BELOW 65°F.

APPLY ANTI-STATIC COATING ONLY ON NEWLY PRIMED SURFACE.

MULTIPLE ANTI-STATIC CONDUCTIVE COATINGS ON RADOME INHIBIT RADAR PERFORMANCE.

(7) Spray anti-static conductive coating mixture over the entire exterior, aft edge and a strip on the interior approximately 2 inches wide forward of the aft edge.

NOTE: Application shall be applied without interruption to achieve a dry film thickness of 0.0006 to 0.001 inch [0.0015 to 0.003 cm].

Utilizing full pot life of mixed material prior to application will usually result in higher surface resistance values of the cured coating.

CAUTION: DO NOT ATTEMPT A ROOM TEMPERATURE CURE BELOW 60° F.

(8) Allow radome anti-static conductive coating to cure.
  (a) Allow 4 to 24 hours at room temperature.

    NOTE: The following is a time schedule for each cure condition at room temperature:
    Dust Free ..... 15 minutes
    Tack Free ..... two (2) hours
    Time to Test .....two (2) hours minimum
    Dry to Overcoat..... 4 to 24 hours

  (b) If desired, force cure as follows:
    1) Allow a flash time of 15 minutes at room temperature.
    2) Bake at 140 (±5)°F [60(±9)°C] for 30 minutes minimum.

      NOTE: Delaying the start of oven baking will usually cause surface resistance value to increase even though actual oven baking will cause surface resistance values to decrease.

(9) After anti-static conductive coating has cured, measure surface electrical resistance. (Refer to Adjustment/Test, this section.)

(10) Inspect radome anti-static coating surface for pin holes.
(a) If local surface porosities are found and total more than 10.0 square inches [25.4 square cm], proceed as follows:
1) Sand entire anti-static coating on exterior side of radome down to filler (primer) surfacer.
2) Apply anti-static coating. (Refer to step 4.G.)
(b) If local surface porosities are found and do not to exceed a total of 10.0 square inches [25.4 square cm], proceed as follows:
1) Locally sand anti-static coating down to filler (primer) surfacer.
2) Locally apply filler putty coating. (Refer to step 4.D.)
3) Locally apply filler surfacer coating. (Refer to step 4.E.)
4) Locally apply anti-static coating. (Refer to step 4.G.)
5) If anti-static coating passed resistance test prior to this rework, a new test is not mandatory.

H. Preparation of Radome for Priming and Painting (1258AC)
(1) Install radome lightning diverter strips. (Refer to 53-50-03.)
(2) Install radome erosion boot at this time if it is to be topcoated. (Refer to 53-50-02.)
(3) Install radome on the aircraft. (Refer to Removal/Installation, this section.)

I. Prime and Paint Radome (1258AC)

WARNING: MAKE SURE THAT THE AREA FOR SPRAYING IS PROPERLY VENTILATED. OBSERVE ALL SAFETY PRECAUTIONS IN THE WORK AREA TO PRECLUDE FUME BUILD-UP AND EXPLOSIONS.

(1) Tools and Equipment

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Vapor Proof Masking Tape		Commercially Available	Masking.
Vapor Proof Masking Paper		Commercially Available	Masking.
Primer Base Adduct Thinner	 480-920 120-911 110-978	Sherwin-Williams	Prime radome.
Abrasive Paper	320 & 400 Grit	Commercially Available	Sanding surface.
Methyl Ethyl Ketone (MEK)	Spec. TT-M-261	Commercially Available	Cleaning.
Clean, Cotton Cloth		Commercially Available	Cleaning.
Cheesecloth		Commercially Available	Cleaning.
High Solids Jet-Glo Urethane Matterhorn White	86M Series	Sherwin-Williams	Paint radome.

(2) Using vapor proof masking tape, mask off lightning diverter strips.
(3) Prime radome as follows: (1258AC, 1348H, 1091AM)
(a) Mix primer as follows:
1) Mix by volume, one part adduct (120-911) to four (4) parts base (480-920).

2) Mix thoroughly.

NOTE: Primer mixture may be thinned with up to a maximum of one (1) part by volume thinner (110-978) for sprayability.

The mixed primer has a pot life of 8 hours at room temperature.

3) Allow primer mixture a required 30 minutes sweat-in.

(b) Lightly scuff sand anti-static conductive coating (exterior surface only).

CAUTION: **PRIMING THE CENTER 3/8-INCH-WIDE AREA OF THE DAYTON-GRANGER LIGHTNING DIVERTER STRIPS AT ANY POINT ALONG THE FULL EXPOSED LENGTH OF THE STRIPS WITH ANY PROTECTIVE MATERIAL IS PROHIBITED.**

ALUMINUM LIGHTNING DIVERTER STRIPS SHALL NOT TO BE PRIMED.

PRIMING THE METALLIC DIAMONDS ON THE TRAN-STRIKE LIGHTNING DIVERTER STRIPS AT ANY POINT ALONG THE FULL EXPOSED LENGTH OF THE STRIPS WITH ANY PROTECTIVE MATERIAL IS PROHIBITED.

PRIMING THE ANTI-STATIC CONDUCTIVE COATING ON THE AFT EDGE OF THE RADOME OR THE TWO (2.00) INCH [5.08 CM] WIDE STRIP ON THE INTERIOR SURFACE OF THE RADOME AROUND THE AFT EDGE IS PROHIBITED.

EXCESSIVE PRIMER THICKNESS WILL INHIBIT PROPER RADAR SIGNAL TRANSMISSION.

(c) Apply primer mixture evenly without interruption over entire exterior surface of radome to attain a dry film thickness of 0.0003 to 0.0008 inch [0.0008 to 0.0020 cm].

NOTE: Minimum temperature at application time shall be 65°F [18°C].

(d) Allow primer to cure at room temperature for a minimum of 2 hours before applying topcoat.

(4) After primer has cured, lightly sand surface by hand with 320 grit or finer abrasive paper to achieve a smooth surface.

(5) Remove masking from lightning diverter strips.

(6) Clean sanded area of radome exterior surface and exposed edges of lightning diverter strips. (Refer to step 4.B.)

CAUTION: **DO NOT APPLY MEK OR ACETONE TO A POLYCARBONATE EROSION BOOT.**

(7) Using MEK and a clean, cotton cloth, clean a urethane erosion boot, if installed. Dry surface thoroughly with clean cheesecloth. Do not allow MEK to air dry as a residue remains on the surface.

(8) Using 3/8 inch wide masking tape, mask off center 3/8 inch of exposed lightning diverter strip from erosion boot to aft edge of radome.

NOTE: This will allow approximately 1/16 inch along each edge of the lightning diverter strips to be topcoated.

(9) Topcoat radome as follows:

CAUTION: TOPCOATING THE CENTER 3/8-INCH-WIDE AREA OF THE DAYTON-GRANGER LIGHTNING DIVERTER STRIPS AT ANY POINT ALONG THE FULL EXPOSED LENGTH OF THE STRIPS WITH ANY DECORATIVE MATERIAL IS PROHIBITED.

ALUMINUM LIGHTNING DIVERTER STRIPS SHALL NOT TO BE PAINTED.

TOPCOATING THE METALLIC DIAMONDS ON THE TRAN-STRIKE LIGHTNING DIVERTER STRIPS AT ANY POINT ALONG THE FULL EXPOSED LENGTH OF THE STRIPS WITH ANY DECORATIVE MATERIAL IS PROHIBITED.

TOPCOATING THE ANTI-STATIC CONDUCTIVE COATING ON THE AFT EDGE OF THE RADOME OR THE TWO (2.00) INCH [5.08 CM] WIDE STRIP ON THE INTERIOR SURFACE OF THE RADOME AROUND THE AFT EDGE IS PROHIBITED.

EXCESSIVE TOPCOAT THICKNESS WILL INHIBIT PROPER RADAR SIGNAL TRANSMISSION.

(a) Mix and apply topcoat per manufacturer's instructions evenly over entire surface without interruption utilizing low pressure (30 to 50 psi) to attain a dry film thickness of 0.002 inch maximum.
(b) Allow topcoat to cure thoroughly.
(c) Using 400-grit abrasive paper, lightly sand cured topcoat.
(d) Clean radome outer surface using MEK and a clean, cotton cloth. Dry surface thoroughly with cheesecloth.
(e) Apply second coat of topcoat material.
(f) Allow topcoat to cure thoroughly.

NOTE: It is acceptable to touch up topcoat in area(s) between lightning diverter strips providing cosmetic appearance is acceptable and thickness is not excessive.

(10) Remove masking from lightning diverter strips and erosion boot, if covered.
(11) Apply stripes as required to radome as follows:
(a) Make sure top coat has cured 24 hours before applying stripes.
(b) Mask off areas of radome for special stripes.
(c) Sand areas to receive stripes using 400-grit abrasive paper.
(d) Clean sanded areas using MEK and cheesecloth or cotton cloth. Dry surface thoroughly using cheesecloth.
(e) Mix and apply stripe color topcoat material. Apply minimum thickness to give good coverage and gloss.

NOTE: Maximum allowable dry film thickness of topcoat material, including color stripes is 0.004 inch.

(f) Allow stripe material to cure thoroughly.
(g) Remove masking material.

J. Completion of Radome Cleaning/Painting (1258AC)
(1) Install clear, unpainted radome erosion boot if required. (Refer to 53-50-02.)
(2) Install radome. (Refer to Removal/Installation, this section.)

RADOME - APPROVED REPAIRS

1. **Approved Repairs** (See figures 801 and 802.)

NOTE:
- Approved repairs for the radome include the repair of minor damage to the radome skin.
- As a general rule, minor damage is defined as damage to the radome skin only. This excludes any damage which goes into or beyond the core.
- Before beginning radome repair, determine which type of resin was used in radome fabrication by looking inside radome with a strong light on the outside. Radomes fabricated with polyester resin are translucent and their cores are constructed of 2-inch-wide strips of fiberglass that are visible. Radomes fabricated with epoxy resin are opaque and have one-piece cores.
- Radomes which cannot be repaired per the following instructions must either be replaced with a new radome or returned to Learjet Inc. Factory, Attention Warranty Department, for repair. This includes any radome damaged beyond the limits set in the following instructions.

A. Tools and Equipment

NOTE: Equivalent substitutes can be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Polyseter Resin	Hetron 92	Pittsburg Plate Glass Co.	
6% Cobalt Napthenate	Fed. Spec. TT-D-643		
MEK Peroxide		Lucidol Div. Novadel Agene Corp.	
Hypodermic Syringes and Needles		Commercially Available	
Epoxy Resin	Epon 828 or 815	Shell Chemical Co.	
Epoxy Hardener	916 Hardener	Shell Chemical Co.	

B. Repair Radome

(1) Mix polyester resin as follows for repairs of blisters, delaminations, and scratches.

(a) Mix by weight 100 parts of Hetron 92 and 0.50 part of 6% cobalt napthenate. After thoroughly mixing, add by weight 1.0 part of MEK peroxide.

NOTE: MEK peroxide should be added just before using. After mixing, pot life is approximately 1 hour at room temperature.

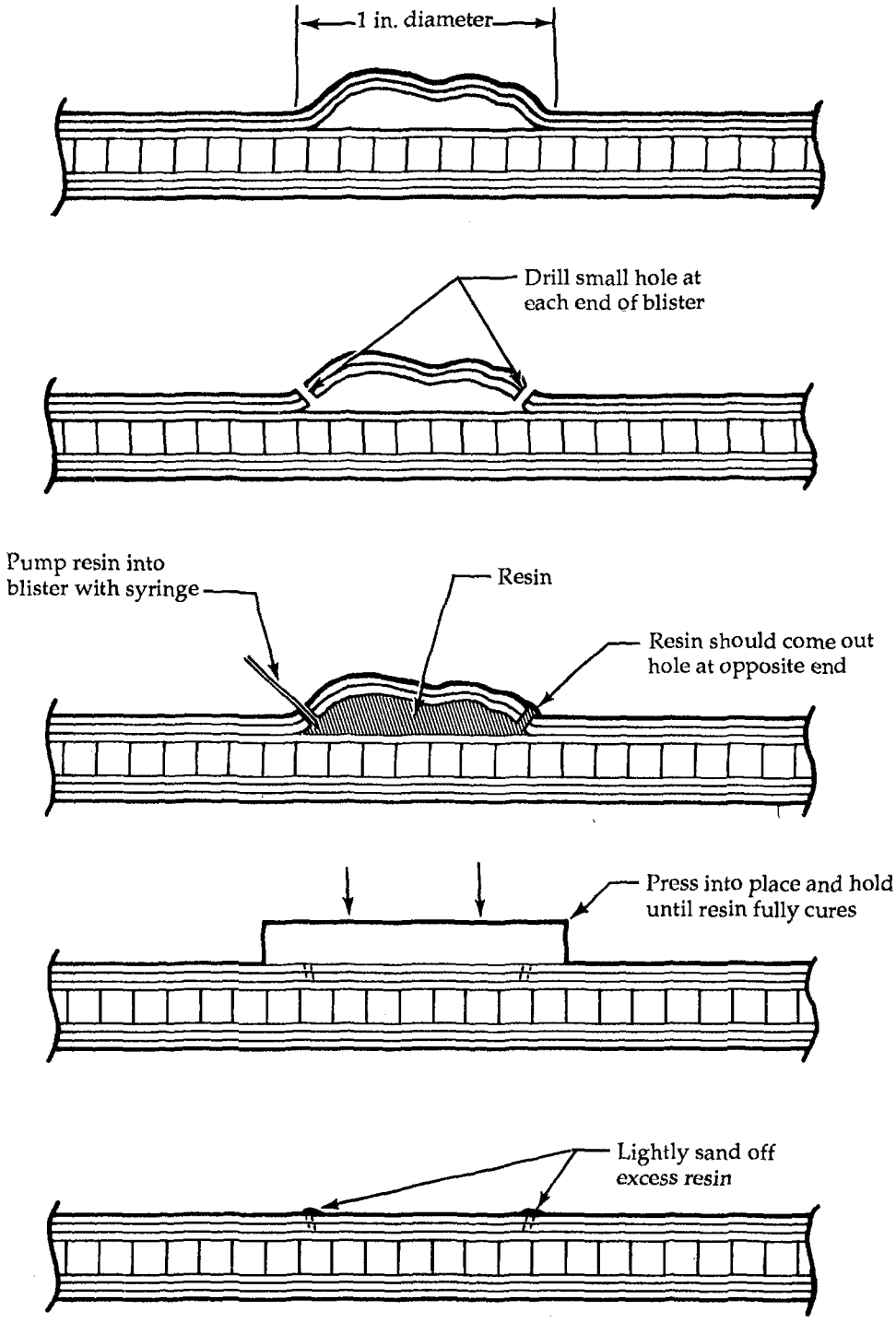
(2) Mix epoxy resin as follows for repairs of blisters, delaminations, and scratches:

(a) Mix by weight 100 parts of Epon 828 or Epon 815 and 20 to 25 parts of 916 hardener.

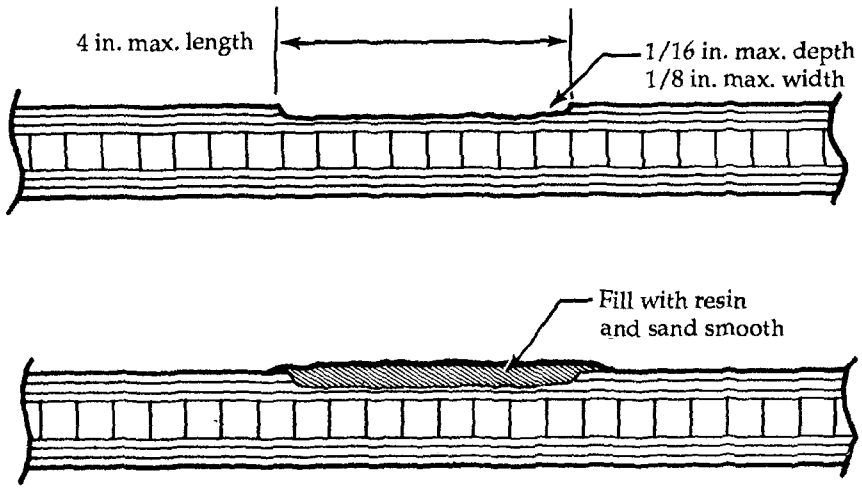
NOTE: After mixing, pot life is approximately 23 minutes at room temperature.

(3) Blisters and delaminations not greater than 1 inch in diameter, not closer than 4 inches, or greater in number than 4 in 4 square feet of surface are to be repaired as follows:
   (a) Drill a small hole into, but not through, the skin at each end of the blister or delamination.
   (b) Fill syringe with resin and pump the blister or delamination full of resin.
   (c) Press the blister or delamination firmly into place and hold until resin has cured.
   (d) Remove any excess resin from the surface with light sanding.
   (e) Check repair for a sound bond by tapping the repaired area with a coin. Any area which is not properly bonded will make a different sound when tapped.
   (f) Mask off the middle 3/8 inch of lightning diverter strips.
   (g) Repaint affected area of radome. (Refer to Chapter 20.)
   (h) Remove masking tape from lightning diverter strips.

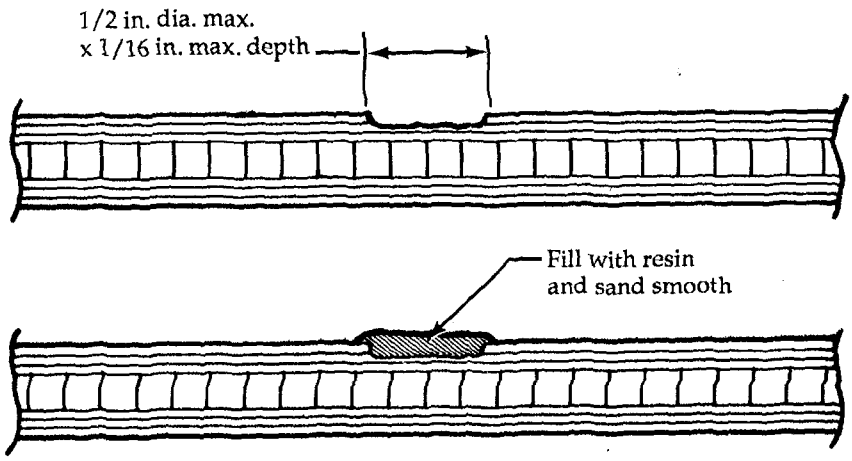
(4) Scratches are limited to those not more than 1/8 inch wide, 1/16 inch deep, and 4 inches long. Pits and depressions are limited to those not more than 1/2 inch in diameter and not more than 1/16 inch deep. These defects must not be any closer than 1 inch and there shall be no more than three defects per 1 square foot of surface area. Repair the defects as follows:
   (a) Fill defect with resin and allow to fully cure.
   (b) Carefully sand the resin to a uniform smoothness blending with the contour of the radome.
   (c) Mask off the middle 3/8 inch of lightning diverter strips.
   (d) Repaint affected area of radome. (Refer to Chapter 20.)
   (e) Remove masking tape from lightning diverter strips.



Blister and Delamination Repair
Figure 801



Scratch Repair



Pit and Depression Repair

Scratch, Pit and Depression Repair
Figure 802

1. **Removal/Installation**
   A. Tools and Equipment

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Isopropyl Alcohol	Spec. TT-I-735	Commercially Available	Wetting solution
Squeegee (Polyolefin Material		Commercially Available	Boot application
Methyl-Ethyl-Ketone (MEK)	Spec. TT-M-261	Commercially Available	Adhesive removal
Ethyl Alcohol (Ethanol) Denatured Alcohol	O-E-760	Commercially Available	Surface prep.
Abrasive paper or Scotch-Brite Pad, Type A	400 Grit 7447, Very fine	Commercially Available 3M Company St Paul, MN	Surface prep.
Needle, Pin or sharp, round, pointed instrument		Commercially Available	Boot application
Rubber Roller		Commercially Available	Boot application
Clean Cotton Cloth		Commercially Available	Surface prep.
Mild Detergent		Commercially Available	Surface prep.
Plastic Spray Bottle		Commercially Available	Wetting solution application
Cyanoacrylate Adhesive	ATS-PX-500	Pacer Tech & Resources Campbell, CA 95008	Boot application

B. Remove Radome Erosion Boot (Urethane).

WARNING: ADHESIVES AND SOLVENTS USED FOR REMOVAL AND INSTALLATION OF THE URETHANE EROSION BOOT ARE FLAMMABLE AND THEIR FUMES ARE TOXIC. ALL WORK SHOULD BE DONE IN A WELL-VENTILATED AREA AWAY FROM ANY SPARKS OR FLAME.

(1) Remove radome. (Refer to 53-50-01.)
(2) Clean radome along aft edge of erosion boot with MEK. Apply masking tape on radome along edge of erosion boot. This will establish a trim line for new boot.
(3) Remove alcohol anti-ice nozzle.

(4) Apply MEK to aft edge of erosion boot. Allow approximately 2 minutes for adhesive to soften.
(5) Slowly peel erosion boot away from radome while applying MEK along separation line.
(6) After erosion boot has been removed, clean adhesive from radome using a clean cloth and MEK.

NOTE: The longer the erosion boot has been bonded to the radome, the more difficult it will be to remove. It is easier to remove the boot in pieces and then clean the adhesive from the radome.

C. Install Radome Erosion Boot (Urethane).

CAUTION: APPLICATION OF MEK TO THE CONDUCTIVE COATING AFFECTS THE CONDUCTIVITY OF THE COATING. CONDUCTIVE COATING MUST BE REAPPLIED TO AREAS THAT HAVE MEK APPLIED TO THEM.

NOTE: The erosion boot shall only be applied to radomes that have received a black conductive coating (refer to 53-50-01) and that have the lightning diverter strips installed. (Refer to 53-50-03.)

(1) Thoroughly clean radome with mild detergent and water. Thoroughly rinse with clean water and wipe dry using clean cotton cloth or blow dry with clean, filtered, compressed air.
(2) Wipe radome with a clean, cotton cloth moistened with ethanol. Do not allow ethanol to evaporate completely from surface. Remove ethanol by wiping with a clean, dry cloth.
(3) If required to remove glazed or roughened surface, lightly abrade area where boot is to be applied using either 400-grit abrasive paper or Scotch-Brite pad. Reclean abraded area with ethanol. Dry with clean, dry, cotton cloth.

NOTE: If abrasion penetrates black conductive coating, repair coating. (Refer to 53-50-01.)

(4) Using a marking pen, place an orientation mark at the forward end in the center of the radome.
(5) Position erosion boot, with protective liner still in place, over radome. Rotate boot to position of best fit.
(6) When optimum fit has been achieved, use a marking pen to trace over the orientation mark previously applied to the radome, placing the same orientation mark on the erosion boot as is on the radome.
(7) Remove boot from radome. Turn boot inside out and place over radome disregarding orientation marks.
(8) In a spray bottle or other suitable container, mix isopropyl alcohol and water in a 25:75 to 50:50 ratio of isopropyl alcohol to water. Add mild detergent at the rate of one (1) teaspoon per gallon of solution. Mix thoroughly to form wetting agent.
(9) Carefully remove transparent protective liner from boot, saturating exposed adhesive surface of boot with wetting agent as liner is removed.
(10) When protective liner is completely removed, ensure that the entire adhesive surface is completely saturated with wetting agent.
(11) Remove boot from radome. Saturate radome surface where boot is to be installed.
(12) Carefully align orientation mark on boot with orientation mark on radome. Place boot in contact with radome.
(13) Squeegee or roll out wetting solution starting at the orientation marks and working in an expanding circle toward the aft end of the radome. Care should be taken to avoid blisters under the boot.
(14) Blisters (air or wetting agent) appearing under the boot after application shall be removed by piercing the blister with a needle or other sharp object and working the blister out with the squeegee or roller.

(15) Mark the trim line on the boot. Using an industrial razor blade, trim the erosion boot at the trim line, being careful not to damage the radome skin.
(16) Wipe off any excess wetting solution. Allow boot to set overnight, then re-squeegee or re-roll to ensure complete adhesion.
(17) Using an industrial razor blade, cut a hole in erosion boot to match hole in radome for alcohol diffuser.
(18) Where boot overlaps diverter strips, seal gap underneath boot around each diverter strip where boot bridges by injecting cyanoacrylate adhesive until void is filled.
(19) Remove any excess adhesive by wiping with clean, dry, cotton cloth.
(20) Allow radome to sit undisturbed for approximately 30 minutes during cure.
(21) Mask exterior surface of radome, except erosion boot.
(22) Apply epoxy primer to erosion boot. (Refer to Chapter 20.)
(23) Apply conductive coating to erosion boot. Coating shall extend past the edge of the erosion boot and contact the conductive surface of the lightning diverter strips.
(24) Install radome. (Refer to 53-50-01.)

CAUTION:
- **MASK THE MIDDLE 3/8 INCH OF THE LIGHTNING DIVERTER STRIPS. *(FLEXIBLE, SELF-ADHESIVE TYPE)***
- **MASK THE METALLIC SEGMENTS OF THE LIGHTNING DIVERTER STRIPS. *(RIGID, FIBERGLASS TYPE)***

(25) Prime and paint radome. (Refer to 53-50-01.)

D. Tools and Equipment

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Plastic Tape	226	3M Company St Paul, MN	Masking tape
Methyl Ethyl Ketone (MEK)	Spec. TT-M-261	Commercially Available	Adhesive removal
Abrasive paper	320-grit	Commercially Available	Surface prep.
Clean, White, Lint-free Cotton Cloth		Commercially Available	Surface prep.
Isopropyl Alcohol	Spec. TT-I-735	Commercially Available	Remove excess sealant
Sealant	Pro-Seal 890B-1/2 or Silastic 732 RTV	Products Research & Chemical Co. Glendale, CA Dow Corning Corp. Midland, MI	Attach boot
Sheet Metal Burr Hook		Commercially Available	Remove boot
Breather Space Shim (See Figure 201.)		Fabricate Locally	Attach boot

E. Remove Radome Erosion Boot (Polycarbonate).
   (1) Remove radome. (Refer to 53-50-01.)
   (2) Clean radome along aft edge of erosion boot with MEK. Apply masking tape on radome along edge of boot to establish a trim line for new boot.

   NOTE: On radomes requiring boot replacement without repainting the radome, the new boot can be trimmed slightly larger than the old boot to overlap the old seal line. Position masking tape accordingly.

   (3) Remove alcohol anti-ice nozzle.
   (4) Beginning at breather space at bottom center of erosion boot, use a sheet metal burr hook or other thin tool to release boot from radome around edge.
   (5) Remove boot. Sealer at anti-ice hole should release with upward pressure.
   (6) Using an industrial-grade razor blade, slice under any remaining sealant on radome, being careful not to cut into radome skin.
   (7) Clean adhesive from radome using a clean cloth and MEK. Wipe radome dry with a clean cloth.
   (8) Replace lightning diverter strips as required. (Refer to 53-50-03.)
   (9) Refinish radome as required. (Refer to 53-50-01.)

F. Install Radome Erosion Boot (Polycarbonate)

   CAUTION: APPLICATION OF MEK TO THE CONDUCTIVE COATING AFFECTS THE CONDUCTIVITY OF THE COATING. CONDUCTIVE COATING MUST BE REAPPLIED TO AREAS THAT HAVE MEK APPLIED TO THEM.

   NOTE: The erosion boot shall only be applied to radomes that have received a black conductive coating (Refer to 53-50-01.) and that have the lightning diverter strips installed. (Refer to 53-50-03.)

   (1) Check boot for proper finish and fit.
   (2) Trim boot as required using tin snips.
   (3) Bevel outer edge of boot rim using 320-grit abrasive paper.

   CAUTION: DO NOT USE MEK OR ACETONE ON REPLACEMENT EROSION BOOT.

   (4) Lightly sand interior of boot and wipe clean with a clean, white, lint-free, cotton cloth. Clean interior of boot using isopropyl alcohol on a clean, white, line-free, cotton cloth. Spray paint interior of clear boot as desired using same type paint as on radome, apply stripes, if any, first.
   (5) When interior of boot is thoroughly dry, position boot on radome for best fit.
   (6) Tape breather space shim in place as shown in figure 201. Mark position of shim outer edges on boot with two pieces of masking tape.
   (7) Tape boot to radome with four evenly spaced pieces of masking tape.
   (8) From inside radome, drill pilot hole in boot for alcohol anti-ice hole in center of anti-ice opening using a long bit.
   (9) On outside of radome, drill anti-ice hole in boot using a 7/16-inch spotfacer.
   (10) Check alcohol anti-ice nozzle for clear passages by blowing air through nozzle. Clear blocked passages or replace nozzle.
   (11) Tape around forward, outer edges of nozzle, covering outlet holes to protect from sealant.
   (12) Check fit of boot to radome at anti-ice hole. If gap between inside surface of boot and outer surface of radome is more than 0.032 inch, fabricate a shim from sheet polycarbonate of appropriate thickness up to 0.080 inch.
      (a) Drill 7/16-inch hole in sheet polycarbonate.
      (b) Trim shim stock to be no larger than diameter of anti-ice nozzle.

(13) Using a razor blade, cut tape installed in step (7).

NOTE: These four strips will be used to align boot after sealer is applied.

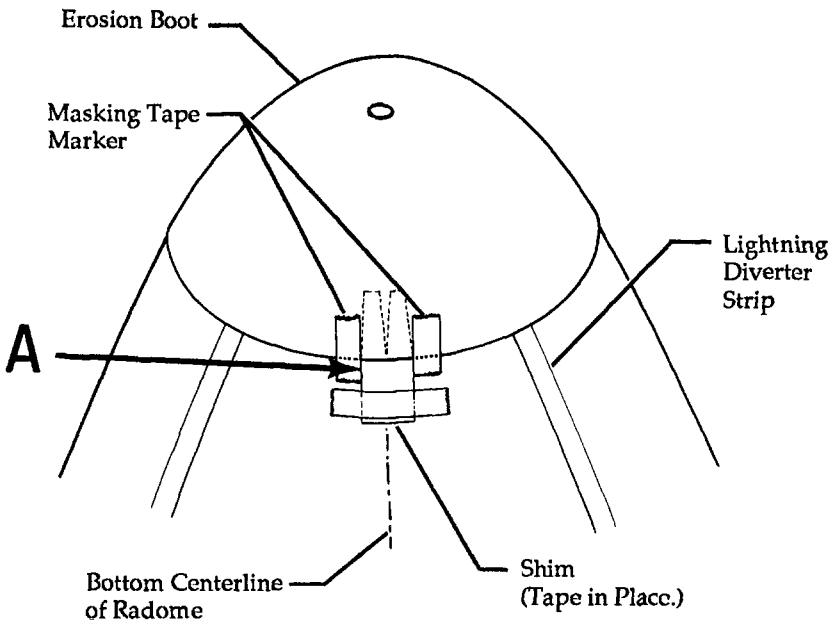
(14) Install anti-ice hole shim on radome if required using a small amount of sealer to hold in place.
(15) Clean interior of boot and exterior of radome nose with a clean, white, lint-free, cotton cloth and isopropyl alcohol.
(16) On inside of boot, apply 1/4-inch bead of sealer around anti-ice hole and rim of boot, skipping breather space marked by tape.

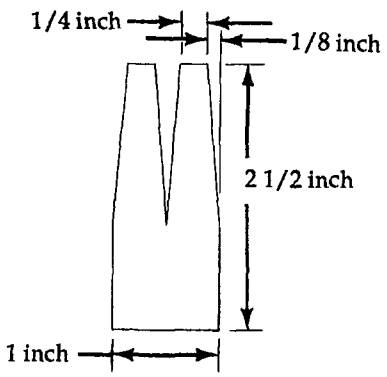
NOTE: Use Pro-Seal 890B-1/2 on black boots. Use clear Silastic 732 sealer on clear boots with painted interiors to avoid sealer bleedthrough that occurs with the use of Pro-Seal 890 under the paint. Use clear or white Silastic 732 sealer on white boots.

(17) Align tape strips which were left on boot and radome.
(18) Push boot onto radome firmly. Excess sealant will be extruded.
(19) Install alcohol anti-ice nozzle, ensuring that outlet holes are vertical.
(20) Wipe off excess sealant from rim of boot and around alcohol anti-ice nozzle using isopropyl alcohol and a clean, white, lint-free, cotton cloth.
(21) While holding boot in place, tape boot to radome in at least four directions.
(22) Allow sealant to cure 24 hours.
(23) Remove breather space shim and tape.
(24) Mask exterior surface of radome, except erosion boot.
(25) Apply epoxy primer to erosion boot. (Refer to Chapter 20.)
(26) Apply conductive coating to erosion boot. Coating shall extend past the edge of the erosion boot and contact the conductive surface of the lightning diverter strips.
(27) Install radome. (Refer to 53-50-01.)

CAUTION:
- **MASK THE MIDDLE 3/8 INCH OF THE LIGHTNING DIVERTER STRIPS. *(FLEXIBLE, SELF-ADHESIVE TYPE)***
- **MASK THE METALLIC SEGMENTS OF THE LIGHTNING DIVERTER STRIPS. *(RIGID, FIBERGLASS TYPE)***

(28) Prime and paint radome. (Refer to 53-50-01.)





0.020 inch Thick
Plastic Shim

Detail A

1-23A

Breather Space Shim Installation
Figure 201

RADOME LIGHTNING DIVERTER STRIPS - MAINTENANCE PRACTICES

1. Removal/Installation

A. Tools and Equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Abrasive Paper or Scotch-Brite Pad, Type A	400 Grit 7447, Very Fine	Commercially Available 3M Company St Paul, MN	Surface prep.
Plastic Tape	226	3M Company	Masking tape
Clean Cotton Cloth		Commercially Available	Surface prep.
Ethyl Alcohol (Ethanol) Denatured Alcohol	O-E-760	Commercially Available	Surface prep.
Methyl Ethyl Ketone (MEK)	Spec. TT-M-261	Commercially Available	Remove strips
Rubber Roller		Commercially Available	Secure strips
Industrial Oven		Commercially Available	Secure strips.
Sealant	Pro-Seal 890 Class B-1/2	Products Research & Chemical Co. Glendale, CA	Attach strips. (Rigid, Fiber-glass Type)
Sealant Scotch Cal	Edge Sealer 3950	3M Company St. Paul, MN	Seal edges of strips.

B. Remove Lightning Diverter Strips. (Flexible, Self-Adhesive Type; identified by smooth gray surface)

WARNING: MATERIALS USED FOR REMOVAL AND INSTALLATION OF LIGHTNING DIVERTER STRIPS ARE FLAMMABLE AND THEIR FUMES ARE TOXIC. ALL WORK SHALL BE DONE IN A WELL-VENTILATED AREA AWAY FROM ANY SPARKS OR FLAME.

(1) Remove radome. (Refer to 53-50-01.)
(2) Remove radome erosion boot. (Refer to 53-50-02.)
(3) Clean radome along edges of lightning diverter strips with MEK. Apply masking tape on radome along edges of lightning diverter strips. This tape will mark replacement area for new lightning diverter strips.
(4) Apply MEK to forward end of each lightning diverter strip. Allow approximately 2 minutes for adhesive to soften.
(5) Slowly lift each lightning diverter strip away from radome while applying MEK between strip and radome.

C. Install Lightning Diverter Strip. (Flexible, Self-Adhesive Type; identified by smooth gray surface)

CAUTION: APPLICATION OF MEK TO THE CONDUCTIVE COATING AFFECTS THE CONDUCTIVITY OF THE COATING. CONDUCTIVE COATING MUST BE REAPPLIED TO AREAS THAT HAVE MEK APPLIED TO THEM.

NOTE: Lightning diverter strips shall be installed only on radomes that have the black conductive coating. (Refer to 53-50-01.)

(1) Mix a solution of mild detergent and water at the rate of 2 to 3 level teaspoons of detergent per gallon of water.
(2) Scrub area of radome where lightning diverter strip will be applied. Thoroughly rinse area with clean water. Allow to air dry, wipe dry with clean, cotton cloth, or blow dry with clean shop air.
(3) Wipe washed area with alcohol and clean cotton cloth. Do not allow alcohol to evaporate completely from surface. Remove alcohol by wiping with clean, cotton cloth.
(4) Using 400-grit abrasive paper, scuff-sand the black anti-static coating where each lightning diverter strip is to be applied.
(5) Again clean the radome with alcohol and clean, cotton cloth.
(6) Remove protective liner from forward end of each lightning diverter strip. Carefully align strip with edges of the previously applied masking tape.
(7) Press lightning diverter strip into place at forward end. Using a rubber roller and slowly removing remainder of protective covering, proceed to aft end of radome with lightning diverter strip.

CAUTION: DO NOT EXCEED 175° F. RADOME STRUCTURAL DAMAGE MAY RESULT IT TEMPERATURE LIMIT IS EXCEEDED.

(8) When all lightning diverter strips to be replaced are installed, remove masking tape and place entire radome assembly in oven at 125°F - 175°F for 1 to 1-1/2 hours.
(9) After 15 to 30 minutes in oven, run rubber roller over lightning diverter strip to remove any bubbles which might have formed during heat cure. Repeat this procedure immediately following removal of radome from oven.
(10) Install Radome Erosion Boot. (Refer to 53-50-02.)

CAUTION: MASK OFF THE MIDDLE 3/8 INCH OF THE LIGHTNING DIVERTER STRIPS PRIOR TO PAINTING.

(11) Repaint affected area of radome. (Refer to 53-50-01.)
(12) If only paint touch-up is performed, mask diverter strip and radome and apply a narrow strip of edge sealer along full length of both edges of diverter strip.
(13) Install radome. (Refer to 53-50-01.)

D. Remove Lightning Diverter Strips. (Rigid Fiberglass Type; identified by metallic diamond shaped segments)
(1) Remove radome. (Refer to 53-50-01.)
(2) Remove radome erosion boot. (Refer to 53-50-02.)
(3) Clean radome along edges of lightning diverter strips with MEK. Apply masking tape to radome along edges of lightning diverter strips. This will mark replacement area for new diverter strip.

CAUTION: USE CARE NOT TO DAMAGE RADOME ANTI-STATIC COATING WHEN REMOVING LIGHTNING DIVERTER STRIPS. ANY DAMAGE MUST BE REPAIRED PRIOR TO PROCEEDING WITH DIVERTER STRIP INSTALLATION. (REFER TO 53-50-01.)

(4) Carefully apply non-metallic scraper under end of diverter strip to separate strip from radome.

E. Install Lightning Diverter Strip. (Rigid Fiberglass Type; identified by metallic diamond shaped segments)

NOTE: Lightning diverter strips shall be installed only on radomes that have the black conductive coating. (Refer to 53-50-01.)

(1) Carefully remove all traces of old adhesive from nose radome.
(2) Mix a solution of 2 to 3 level teaspoons of mild detergent per gallon of water.
(3) Scrub area of radome where diverter strips will be applied and rinse with clean water.
(4) Allow area to air dry, wipe dry with a clean dry cotton cloth, or blow dry with clean air.
(5) Wipe washed area with alcohol and a clean cotton cloth. Do not allow alcohol to air dry. Wipe dry with a clean dry cloth.

CAUTION: USE CARE NOT TO DAMAGE RADOME ANTI-STATIC COATING WHEN INSTALLING LIGHTNING DIVERTER STRIPS. ANY DAMAGE MUST BE REPAIRED PRIOR TO PROCEEDING WITH DIVERTER STRIP INSTALLATION. (REFER TO 53-50-01.)

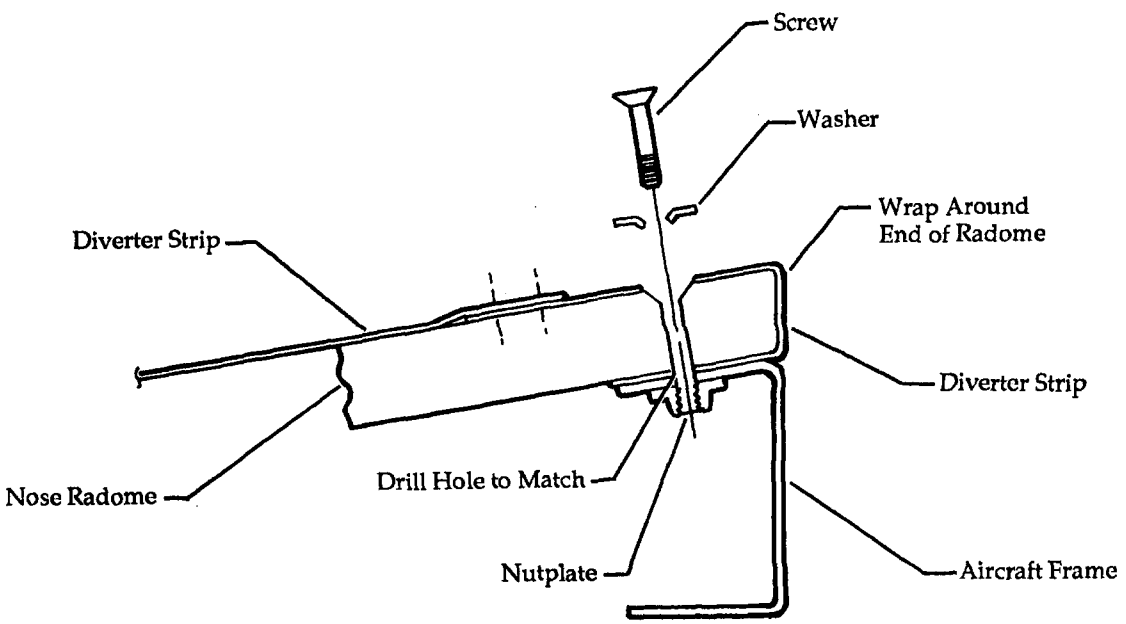
(6) Mask radome areas along edges where lightning diverter strips will be installed with 226 tape.
(7) Scuff sand the black anti-static coating on nose radome where lightning diverter strip will be installed with 400 grit abrasive or Scotch-Brite pad.
(8) Remove masking tape from radome.
(9) Again clean area with alcohol and a clean cotton cloth, wiping dry with a clean, dry cloth.
(10) Carefully align lightning diverter strip on radome with the hole in the metal end of the strip matching the bolt hole in the radome.
(11) Bend the metal strip around the end of the radome and drill a hole in the inside part of the strip that aligns with the hole in the radome. Repeat for the three remaining strips.
(12) Prefit the erosion boot.
(13) Mark, on the lightning strips, the point at which the boot covers the strips.
(14) Remove the erosion boot.
(15) Grind off the metallic diamonds from the sections of the strips covered by the boot.
(16) From the point at which the boot covers the strips, taper the edges of the strips toward center at approximately 30°.
(17) From the point at which the boot covers the strips, taper the edges of the strips to approximately 0.003 in. (0.0067 cm).
(18) Apply Pro-Seal 890 to diverter strip mating surface. Press strip in place and remove any excess adhesive along the edges of the strip. Secure along entire length with 226 tape.
(19) Insert pins through bolt holes and remove excess sealant.
(20) Allow Pro-Seal 890 to cure at room temperature for 24 hours or oven cure for 1 hour.

CAUTION: DO NOT EXCEED 175° F. RADOME STRUCTURAL DAMAGE MAY RESULT IF TEMPERATURE LIMIT IS EXCEEDED.

(21) If oven curing, when all lightning diverter strips are installed, place entire radome assembly in oven at 125°F - 140°F for one hour.
(22) Remove tape used to secure lightning diverter strips to radome. Apply fillet seal along periphery of lightning diverter strips to provide a smooth transition to radome surface.
(23) Allow Pro-Seal 890 to cure.
(24) Install radome erosion boot. (Refer to 53-50-02.)

CAUTION: NO COATING SHALL BE APPLIED OVER THE METALLIC SEGMENTS AS THIS WOULD PREVENT IONIZATION OF THE CHANNEL OVER THE STRIP.

(25) Repaint affected area of radome as necessary. (Refer to 53-50-01.)
(26) If only paint touch-up is performed, mask diverter strips and radome and apply a narrow strip of edge sealer along full length of both edges of diverter strip.
(27) Perform resistance test of diverter strips. (See Adjustment/Test, this section.)
(28) Install radome. (Refer to 53-50-01.)



1-8A

Lightning Diverter Strip Installation (Rigid, Fiberglass Type)
Figure 201

2. Adjustment/Test

A. Tools and Equipment

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Megohmmeter	Model 1863 or 1864	General Radio	Measure resistance

B. Test Lightning Diverter Strip. (See Figure 202.)

(1) Remove radome from aircraft. (Refer to 53-50-01.)

(2) Visually inspect diverter strip for voids, cracks, erosion or corrosion of material. (Flexible, Self-Adhesive Type)

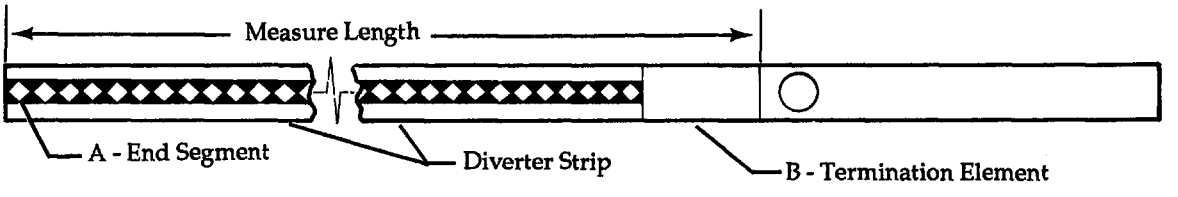
(3) Set up megohmmeter to test lightning diverter strip resistance at 500 volts minimum.

WARNING: HIGH VOLTAGE IS APPLIED TO MEASUREMENT TERMINALS. READ MANUFACTURER'S INSTRUCTIONS PRIOR TO OPERATION.

NOTE: The following procedure is for a General Radio Model 1863 Megohmmeter.

(a) Turn power switch on.
(b) Set TEST VOLTAGE switch to 500 volts.
(c) Set function switch to DISCHARGE.
(d) Set multiplier dial to any range.
(e) With no connection to UNKNOWN terminals, adjust SET ∞ control for ∞ meter reading.
(f) Set multiplier to highest range, function switch to MEASURE, and adjust SET ∞ HIGHEST RANGE for ∞ meter reading.
(g) Turn power switch off.
(h) Set multiplier to correct range for type of diverter strip being tested. (100M for rigid, fiberglass type and 10G for flexible, self-adhesive type.)
(i) Touch negative probe to end segment at forward end of diverter strip.
(j) Touch positive probe to termination element at aft end of diverter strip.
(k) Set Power Switch on.
(l) Set function switch to CHARGE.
(m) After red DANGER lamp illuminates, set function switch to MEASURE. Resistance shall be 0.25 to 10.0 megohms per foot measured on segmented side (rigid fiberglass type) or greater than 500 megohms per foot (flexible self-adhesive type).

(4) If resistance is not within limits, replace lightning diverter strip.



$$\text{Resistance/Foot} = \frac{\text{Resistance A to B in Megohms}}{\text{Length of Segment Strip in Feet}}$$

14-220A

Lightning Diverter Strip Resistance Test (Rigid, Fiberglass Type)
Figure 202

FUSELAGE TO WING AFT FAIRING - MAINTENANCE PRACTICES

1. Repairs

A. Repair Chafing Areas on Fuselage to Wing Aft Fairing (See Figure 201.)

(1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Abrasive Pad (Fine)		Commercially Available	Removing oxides.
Isopropyl Alcohol		Commercially Available	Cleaning.
Adhesion Promoter	86	3M Co. St. Paul, MN	Promotes adhesion to tape to aft fuselage to wing fairing.
Cloth, Clean and Lint-Free		Commercially Available	Applying adhesion promoter.
Protective Tape (Transparent, 1 inch wide)	8671	3M Co. St. Paul, MN	Protect against chafing.
Roller (Hard, Smooth)		Commercially Available	Work out bubbles.

(2) Clean any oxides off fuselage to wing aft fairing surface at chafe area 1-1/2 inches wide with abrasive pad.

(3) If chafing wore through to bare metal on fuselage to wing aft fairing, make the following repairs:

NOTE: If chafing has worn through to bare metal on fairing it may also have worn through to bare metal on flaps. To repair flaps, refer to Chapter 20.

(a) Touch up chemical film. (Refer to Chapter 20.)

(b) Touch up paint. (Refer to Chapter 20.)

(4) Clean surface area with a 50/50 mixture of water and isopropyl alcohol.

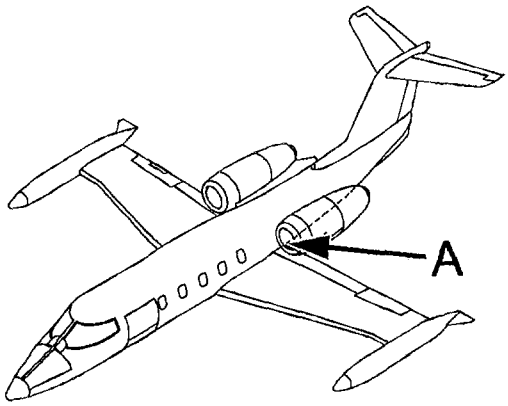
(5) Allow surface to dry.

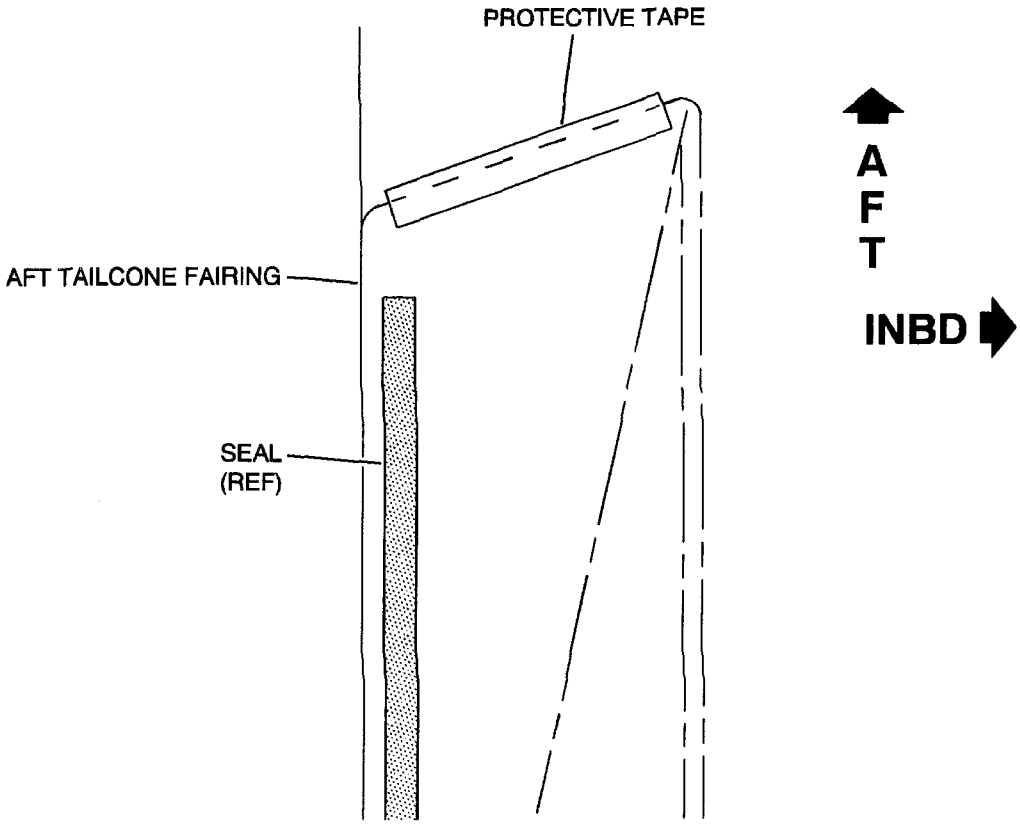
(6) Apply a light coat of adhesion promoter to area with a clean, lint-free cloth.

(7) Allow adhesion promoter to dry 15 to 20 minutes.

(8) Align center of protective tape with center of chafe area and stick tape to fuselage to wing aft fairing.

(9) Work out any bubbles in protective tape with roller using care not to stretch protective tape.





VIEW LOOKING UP

(LH SHOWN; RH TYPICAL)

Detail A

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Fuselage to Wing Aft Fairing Repair
Figure 201