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CHAPTER 54 - NACELLES/PYLONS

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CHAPTER 54 - NACELLES/PYLONS

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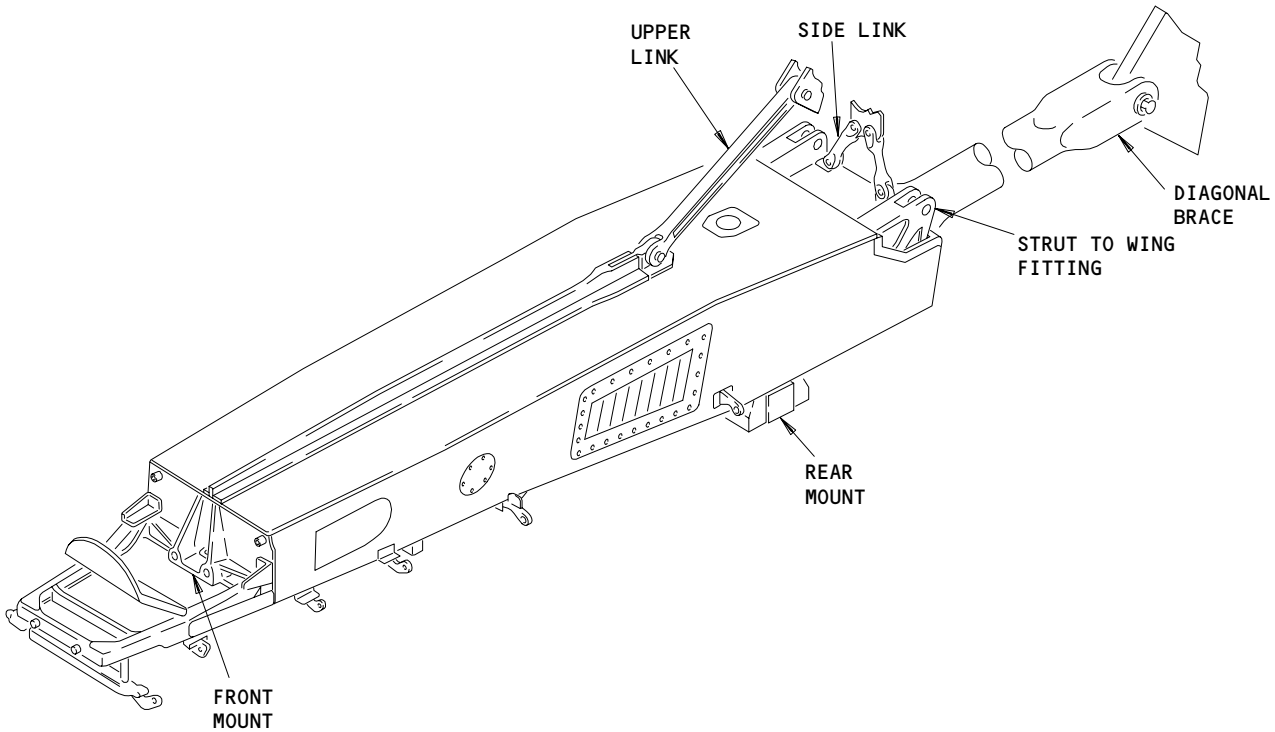
NACELLES/PYLONS - DESCRIPTION AND OPERATION

1. General
   A. The engines are attached to the wing with nacelle struts (pylons). The strut encloses all the pneumatic, electric, fuel, and hydraulic connections to the engine.
2. Component Details (Fig. 1)
   A. Engine Strut Structure
      (1) Struts are essentially frame and skin structures riveted and bonded together to form a torque box. Each nacelle strut attaches to the wing with an upper link, strut to wing fittings, and diagonal brace. The side links provide stability against vibrations and side loads. Fuse pins are used at the upper link, diagonal brace, side link, and strut to wing fittings.
      (2) The strut transmits engine loads through the forward and aft engine mounts. The forward engine mount transmits thrust, vertical and side loads. The aft engine mount transmits vertical and side loads.

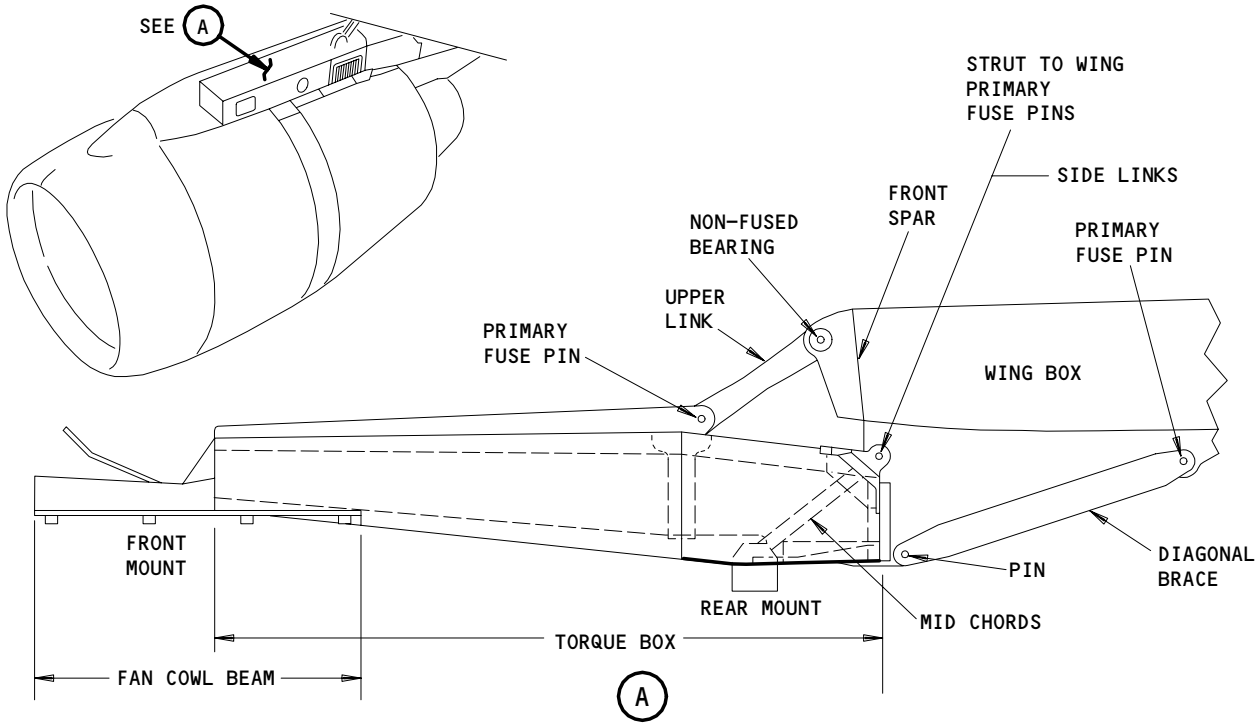


Nacelles/Pylons
Figure 1

(3) The strut and nacelle fair the wing to the engine. The fairings and cowlings provide smooth airflow over the nacelle and strut. Cowlings are described in 71-11-00.

NACELLE STRUT - DESCRIPTION AND OPERATION

1. General
   A. The strut attaches to the wing in four places: the upper link, strut to wing fittings, and diagonal brace. Engine mount loads are transmitted through these members to the wing.
2. Component Details (Fig. 1)
   A. Strut (pylon) attaches the engine to the wing with the upper link, strut to wing fittings and diagonal brace.
      (1) The upper link attaches the strut upper spar to the wing with fuse pins set to 220,000 lbs.
      (2) Strut to wing fittings directly connect the strut to the wing with fuse shoulder bolts and provide stability against side sway of strut. Primary fuse pins are set to 190,000 lbs.
      (3) The diagonal brace connnects lower spar to wing with primary and secondary fuse pins. Primary fuse pin is set to 150,000 lbs.



Nacelle Strut
Figure 1

B. The strut is essentially a frame and skin structure riveted and bonded together to form a torque box. Outside skins are riveted to bulkheads, spars and frames.
   (1) Spars are the primary load carrying members in the strut. Spars are spanwise structural members made of chords, webs, and stiffeners. Two spars in the strut are the lower spar and upper spar. The upper spar fitting attaches to the upper link, the upper spar and mid chord attach to the strut to wing fittings, and the lower spar fitting attaches to the diagonal brace.
   (2) Bulkheads are transverse structural members made of forged aluminum. The forward and aft engine mounts are connected to the forward bulkhead and aft engine mount bulkhead with tension bolts and shear pins.
   (3) Length of strut from forward engine mount to aft bulkhead is approximately 100 inches.

C. The loads of the forward and aft engine mounts are transmitted through the strut to the wing.

STRUT - MAINTENANCE PRACTICES

1. General
   A. This procedure adjusts the strut access doors, panels and fairings to permit smooth air flow. These access doors, panels and fairings are in areas where aerodynamic smoothness is very important.

TASK 54-51-01-912-001

2. Aerodynamic Smoothness Adjustment
   A. References
      (1) 78-31-00/201, Thrust Reverser System
   B. Access
      (1) Location Zones
          430 No. 1 Nacelle Strut
          440 No. 2 Nacelle Strut

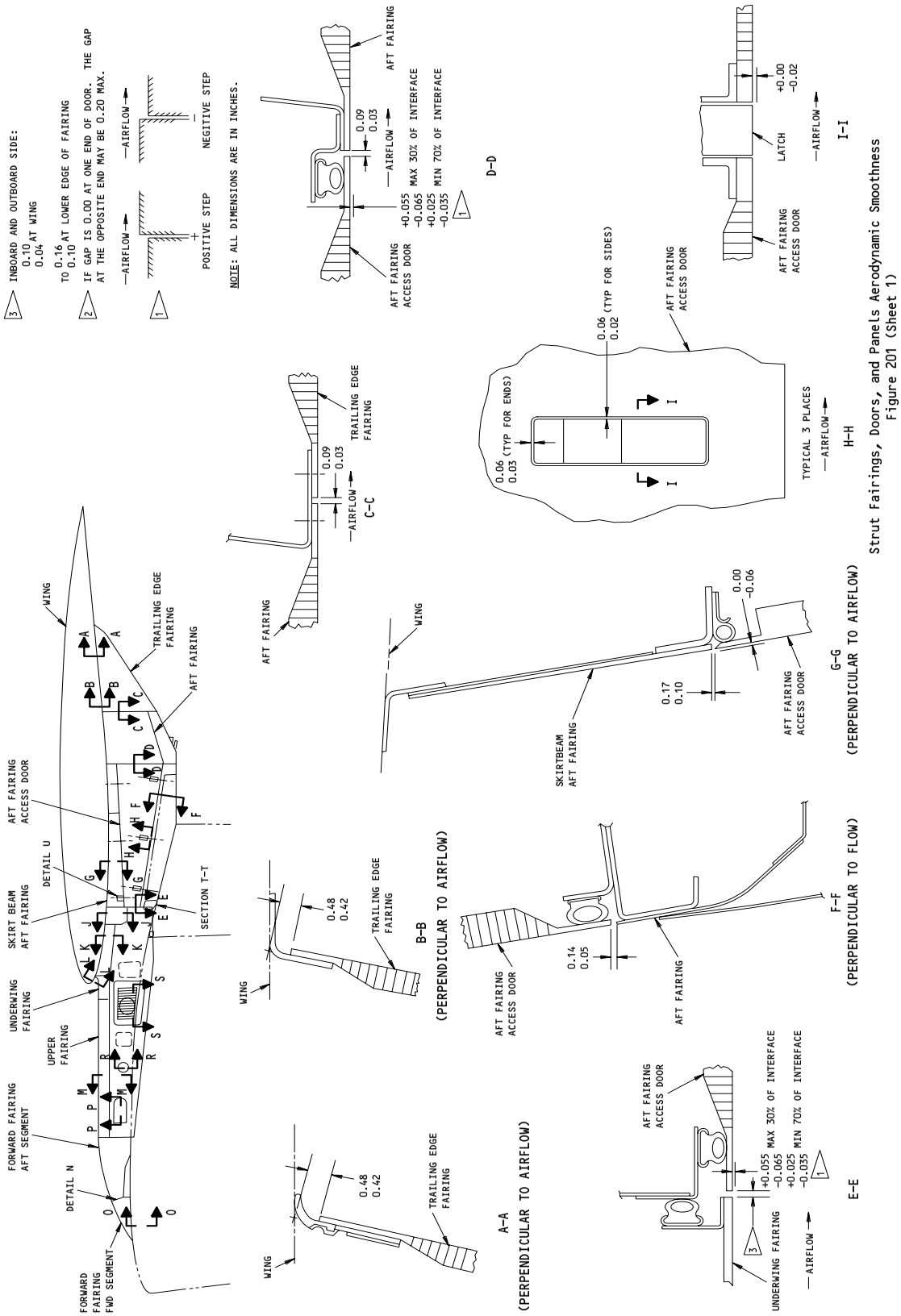
   C. Do the Aerodynamic Smoothness Adjustment (Fig. 201)

      S 042-002

      WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (1) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (Ref 78-31-00).

      S 222-003
      (2) Do these steps to examine the clearance between the adjacent surfaces.
          (a) Look for an unusually large clearance or a change in the contour between adjacent surfaces.
          (b) The clearance between these surfaces must agree with the permitted tolerance.



Strut Fairings, Doors, and Panels Aerodynamic Smoothness
Figure 201 (Sheet 1)

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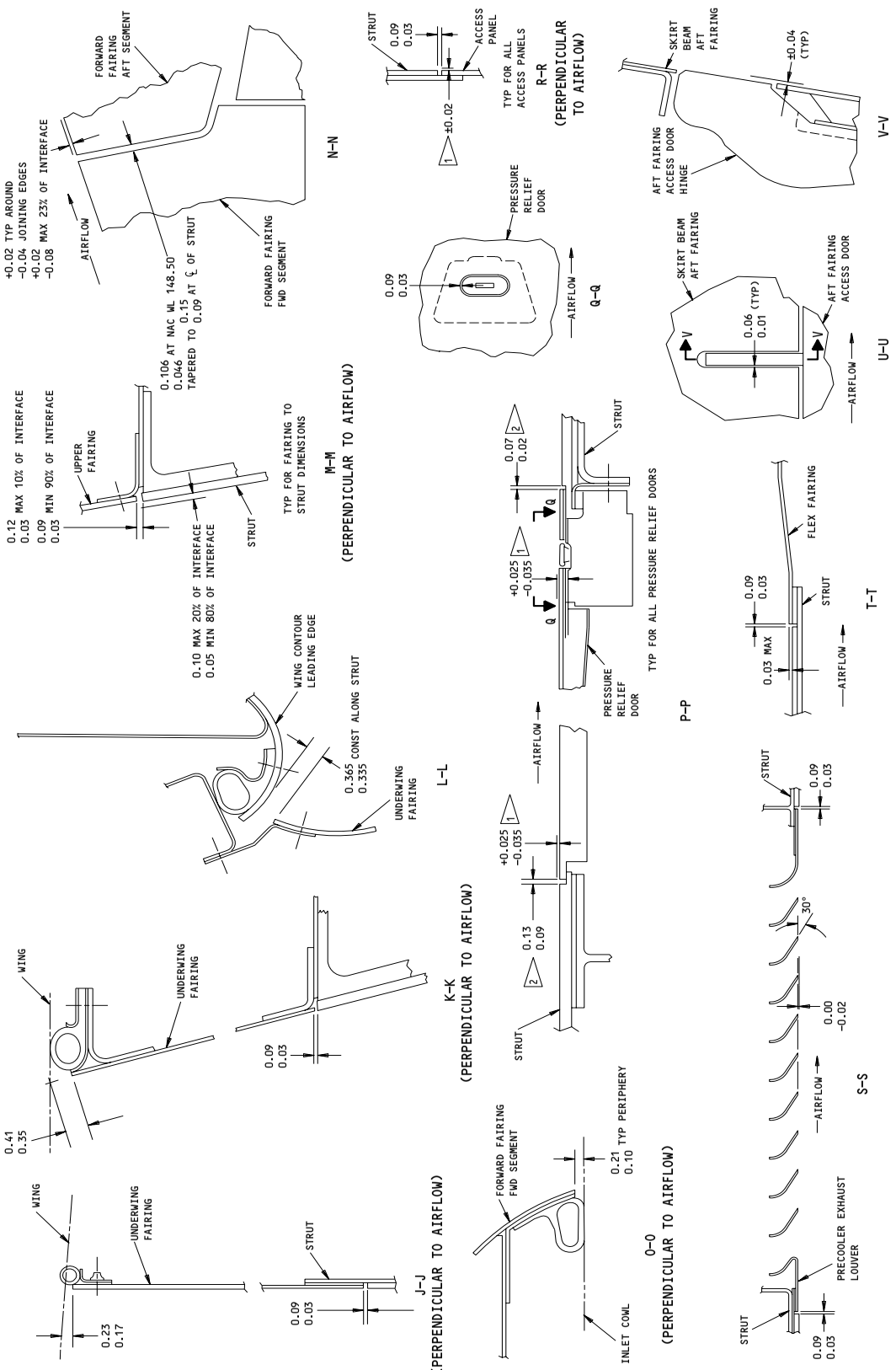


Strut Fairings, Doors, and Panels Aerodynamic Smoothness
Figure 201 (Sheet 2)

195424

(c) If it is necessary, cut, shim, or form the fairings to make the surfaces smooth.

S 442-004

(3) Do this procedure: Thrust Reverser Activation (Ref 78-31-00).

STRUT - REMOVAL/INSTALLATION

1. General
   A. This procedure has 2 tasks. The first task removes the strut from the wing. The second task installs the strut on the wing.

TASK 54-51-01-014-195

2. Prepare the Aircraft for the Strut Removal
   A. References
      (1) AMM 20-41-00/201, Static Grounding
      (2) AMM 24-22-00/201, Control (Supply Power)
      (3) AMM 27-81-00/201, Leading Edge Slat System
      (4) AMM 71-00-02/401, Powerplant
      (5) AMM 78-31-01/401, Thrust Reverser
   B. Procedure

      S 844-196
      (1) Do the steps that follow to prepare the aircraft for removal of the strut:
         (a) Ground the airplane to an approved grounding lug (AMM 20-41-00/201).
         (b) Do the deactivation procedure for the leading edge slats in the retracted position (AMM 27-81-00/201).
         (c) Make sure the fuel control switch is in the CUTOFF position.
         (d) Remove the electrical power (AMM 24-22-00/201).
         (e) Remove the thrust reverser (AMM 78-31-01/401).
         (f) Remove the powerplant (AMM 71-00-02/401).

TASK 54-51-01-844-197

3. Prepare the Strut for Removal from the Aircraft
   A. References
      (1) AMM 29-11-00/201, Main Hydraulic Systems
      (2) AMM 36-11-01/401, Pneumatic Duct
      (3) AMM 54-52-01/401, Strut Fairings
      (4) AMM 54-53-01/401, Strut Pressure Relief And Access Doors

(5) AMM 76-11-03/201, Thrust Control Cables

B. Procedure

S 844-248

(1) Do the steps that follow to provide access to the internal components located in the strut:
   (a) Remove all the strut fairings (AMM 54-52-01/401).
   (b) Remove the applicable access panel, 511KT or, 611KT.

      NOTE: These panels are on the front spar of the wing leading edge, above the underwing fairing.

   (c) Remove all the strut access panels (AMM 54-53-01/401).

S 844-198

(2) Do the steps that follow to remove the engine fuel components located in the strut (Figure 401):
   (a) Close the applicable shutoff valve for the fuel.
   (b) Disconnect the electrical connector from the shutoff valve for the fuel.
   (c) Drain the fuel supply line to the engine.
   (d) On the left strut, disconnect the support bracket of the fuel line on the upper link.
      1) Remove the nuts (7), the washers (6), and the bolts (5) to disconnect the bracket.
   (e) Do these steps when you disconnect fuel components:
      1) Remove the sealant to disconnect the fuel components if necessary.
      2) Install caps or plugs on the fuel components after you disconnect it.
   (f) Disconnect the fuel line (1).
   (g) On the left strut, remove the bracket (8) and the block assembly (9) if you use a new fuel line.

S 844-249

(3) Do the steps that follow to remove the engine hydraulic and fire extinguisher components located in the strut:
   (a) Release the pressure in the hydraulic system for the applicable strut (AMM 29-11-00/201).
   (b) Close the applicable shutoff valves for the hydraulic fluid.
   (c) Disconnect the electrical connector from the shutoff valve for the hydraulic fluid.
   (d) Drain the hydraulic fluid lines to the engine.
   (e) Remove the nut (4), washer (3), screw (2) and clamp (4A) from the support bracket of the hydraulic lines.
   (f) Do these steps when you disconnect hydraulic components:
      1) Remove the sealant to disconnect the components if necessary.
      2) Install caps or plugs on the components after you disconnect them.

3) Replace hose assemblies if there are signs of excessive residue build-up, blockage, or if the hose has a sharp bend in it that slows or prevents flow.

(g) Disconnect the hydraulic lines.

(h) Disconnect the fire extinguisher and the drain lines at the aft bulkhead (2 places).

(i) Do these steps when you disconnect fire extinguisher components:

1) Remove the sealant to disconnect the components if necessary.

2) Install caps or plugs on the components after you disconnect them.

3) Replace hose assemblies if there are signs of excessive residue build-up, blockage, or if the hose has a sharp bend in it that slows or prevents flow.

S 844-250

(4) Do the steps that follow to remove the engine pneumatic and mechanical components located in the strut:

(a) Disconnect the pneumatic Y-duct in the upper strut (AMM 36-11-01/401).

(b) Do these steps when you disconnect pneumatic components:

1) Remove the sealant to disconnect the components if necessary.

2) Install caps or plugs on the components after you disconnect them.

(c) Disconnect the thrust control cables from the strut control drum (AMM 76-11-03/201).

1) Remove the thrust control cables from the strut.

S 844-251

(5) Do the steps that follow to remove the engine electrical components located in the strut:

(a) AIRPLANES WITHOUT A GLAND SEAL WHERE THE POWER CABLE FROM THE IDG GOES THROUGH THE STRUT FIREWALL;
Do these steps to wire bundles that do not have a connection between the wing and the strut:

1) Disconnect the wire bundle from the strut.

2) Remove the clamps that hold the power cable to the strut.

3) Remove the wire bundle from the strut.

4) Wind the wire bundle into coils and attach the coil so it will not become damaged.

5) Install a tag for identification.

(b) AIRPLANES WITH A GLAND SEAL WHERE THE POWER CABLE FROM THE IDG GOES THROUGH THE STRUT FIREWALL;
Remove the power cable from the strut.
1) Remove from the strut the pan assembly that contains the gland seal.
2) Remove the clamps that hold the power cable to the strut.
3) Put the power cable through the hole in the strut.
4) Remove the power cable from the strut.
5) Wind the power cable into coils and attach the coil so it will not become damaged.
6) Install a tag for identification.

TASK 54-51-01-844-199

4. Attach the Tools to the Strut

A. Equipment
(1) B54002 Strut Sling
(2) B54003 Strut Preload Fixture Equipment
(3) B54019 Strut Unload, Forward Engine Mount Adapter Equipment

B. Procedure

S 844-200

(1) Do the steps that follow to install the tooling to remove the strut from the wing (Figure 402):
(a) Install the strut sling equipment B54002 tool on the strut.

NOTE: The instructions for correct tool use is included with the tool.

(b) To prepare for preload balancing to help in removal of the strut fuse pin / bolts, install one of the tools that follow:

NOTE: The instructions for correct tool use is included with each tool listed below.

1) Strut Preload Fixture Tool B54003.

NOTE: B54003 is used for hole alignment and preload balancing of the strut/wing attaching bolts and it is also used in conjunction with a customer furnished load cell, overhead lifting equipment and either a customer furnished tripod jack or a B54002 strut sling.

2) Strut Unload, Forward Engine Mount Adapter Equipment Tool B54019.

NOTE: B54019 adapter equipment is used after engine removal unload the engine mount strut, allowing removal of the wing/strut attach fuse pins and it is used in conjunction with a customer furnished tripod jack.

CAUTION: DO NOT LIFT THE STRUT MORE THAN IS NECESSARY TO PERMIT THE FUSE PIN TO TURN. USE A MAXIMUM TORQUE OF 125 INCH-POUNDS TO TURN THE FUSE PIN. DO NOT LIFT THE STRUT OR PULL DOWN ON THE STRUT WITH MORE THAN 3,000 POUNDS OF FORCE. IF YOU LIFT THE STRUT WITH MORE FORCE THAN NECESSRY, DAMAGE TO THE SURFACE CAN OCCUR.

(c) Adjust the one of the preload fixtures tools shown above, to apply a force that is equal to the total weight of the strut and the preload fixture tool.
(d) Remove the strut to wing attachments in the sequence as follows:
1) Diagonal Brace and attached fasteners.
2) Side Links and attached fasteners.
3) Upper Link and attached fasteners.
4) Midspar Fuse Pins and attached fasteners.

TASK 54-51-01-024-201

5. Remove the Strut (Diagonal Brace Procedures)

A. Equipment
(1) B54002 Strut Sling
(2) B54018 Fuse Pin Removal/Installation Kit

B. Procedure

S 484-202

(1) AIRPLANES PRE SB 54-0027 OR PRE SB 54-0035;
Do the steps that follow to remove the diagonal brace (Figure 406) located between strut and the wing:

NOTE: Make sure you install the diagonal brace on the same airplane and strut that it was removed.

(a) To remove the diagonal brace forward link fuse pin (attach point to the strut), do the steps that follow:

(b) Use one of the preload fixture tools shown in TASK 54-51-01-844-199 to find the place where you can turn the pin (4) with a maximum torque of 125 inch-pounds (14 newton-meters).

NOTE: Do not remove the pin (4) if it has a load.

NOTE: The permitted load up or down is 3000 pounds (1361 kg).

CAUTION: DO NOT LIFT THE STRUT MORE THAN IS NECESSARY TO PERMIT THE FUSE PIN TO TURN. USE A MAXIMUM TORQUE OF 125 INCH-POUNDS (14 NEWTON-METERS) TO TURN THE FUSE PIN. DO NOT LIFT THE STRUT OR PULL DOWN ON THE STRUT WITH MORE THAN 3000 POUNDS (1360.78 Kg) OF FORCE. IF YOU LIFT THE STRUT WITH MORE FORCE THAN NECESSARY, DAMAGE TO THE SURFACE CAN OCCUR.

1) To remove the pin (4), do the steps that follow:
   a) Remove the nut (1), the washer (2), the end cap (3), at the forward end of the brace (15).
   b) Remove the bolt (7), the washer (6), the end cap (5), at the forward end of the brace (15).
   c) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to remove the diagonal brace forward link fuse pin (4).

      NOTE: The instructions for correct tool use is included with the tool.

(c) To remove the diagonal brace aft link fuse pin (attach point to the wing), do the steps that follow:
1) Remove the nut (8), the washer (9), the end cap (10), at the aft end of the brace (15).
2) Remove the bolt (14), the washer (13), the end cap (12), at the aft end of the diagonal brace (15).
3) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to remove the fuse pin (11).

   NOTE: The instructions for correct tool use is included with the tool.

4) Tag the brace with the airplane number and strut location or make sure this data is marked on the diagonal brace.

S 484-203

(2) AIRPLANES POST SB 54-0027 OR PRE SB 54-0035;
Do the steps that follow to remove the diagonal brace (Figure 406):

(a) To remove the diagonal brace forward link fuse pin (attach point to the strut), do the steps that follow:

1) To remove the shoulder bolt (18), use the preload fixture and apply a load to the forward engine mount (Figure 406) and do the steps that follow:

NOTE: The permitted load up or down is 3000 pounds (1361 kg).

a) Remove the nut (16), the end cap (17), at the forward end of the brace (15).
b) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to remove the shoulder bolt (18), at the forward end of the brace (15).

NOTE: The instructions for correct tool use is included with the tool.

(b) To remove the diagonal brace aft link fuse pin (attach point to the wing), do the steps that follow:

1) Remove the nut (19), the washer (20), the end cap (21), at the aft end of the brace (15).
2) Remove the bolt (25), the washer (24), the end cap (23), at the aft end of the brace (15).
3) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to remove the fuse pin (22).

NOTE: The instructions for correct tool use is included with the tool.

4) Tag the brace (15) with the airplane number and strut location or make sure this data is marked on the brace.

S 484-205

(3) AIRPLANES POST SB 54-0035;
Do the steps that follow to remove the diagonal brace (Figure 406):

(a) To remove the diagonal brace forward link fuse pin (attach point to the strut), do the steps that follow:

1) Use one of the preload fixture tools shown in TASK 54-51-01-844-199 to find the place where you can turn the shoulder bolt (28) with a maximum torque of 125 inch-pounds (14 newton-meters).

NOTE: Do not remove the shoulder bolt (28) if it has a load.

NOTE: The permitted load up or down is 3000 pounds (1361 kg).

2) To remove the shoulder bolt (28), do the steps that follow:

a) Remove the nut (26), the end cap (27), at the forward end of the brace (36).

b) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to remove the shoulder bolt (28), at the forward end of the brace (36).

NOTE: The instructions for correct tool use is included with the tool.

(b) To remove the diagonal brace aft link fuse pin (attach point to the wing), do the steps that follow:

1) Remove the nut (29), the washer (30), the end cap (31), at the aft end of the brace (36).

2) Remove the bolt (35), the washer (34), the end cap (33), at the aft end of the brace (36).

3) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to remove the fuse pin (32).

NOTE: The instructions for correct tool use is included with the tool.

4) Tag the brace (36) with the airplane number and strut location or make sure this data is marked on the brace.

TASK 54-51-01-024-206

6. Remove the Strut (Side Links Procedure)

A. Equipment

(1) B54002 Strut Sling

(2) B54018 Fuse Pin Removal/Installation Kit

B. Procedures

S 024-207

(1) AIRPLANES PRE SB 54-0035;
Do the steps that follow to remove the inboard and outboard assembies of two-piece side links (Figure 405):

NOTE: The operator may choose which side link assembly to remove first. The removal procedures are the same for the inboard and outboard two-piece side links.

(a) To remove the lower end of the two-piece side link (attach point to the strut), do the steps that follow:
1) Remove the nut (1), the washer (2), the bushing (3) on the lower end of the two-piece side link (19).
2) Remove the bolt (7), the washer (6, 5), the bushing (4), on the lower end of the two-piece side link (19).

(b) To remove the upper end of the two-piece side link (attach point to the wing), do the steps that follow:
1) Remove the nut (8), the washer (9), the end cap (10) on the upper end of the two-piece side link (19).
2) Remove the bolt (18), the washer (17), the end cap (16), the washer (15), on the upper end of the two-piece side link (19).
3) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to remove the fuse pin (11) and the washers (14, 13).

NOTE: The instructions for correct tool use is included with the tool.

S 024-208

(2) AIRPLANES POST SB 54-0035;
Do the steps that follow to remove the inboard and outboard assembies of two-piece side links (Figure 405):

NOTE: The operator may choose which side link assembly to remove first. The removal procedures are the same for the inboard and outboard two-piece side links.

(a) To remove the lower end of the two-piece side link (attach point to the strut), do the steps that follow:
1) Remove the cotter pin (26), the castellated nut (25), the washer (24), the spacer (23) on the lower end of the two-piece side link (35).
2) Remove the bolt (20), the washer (21), the spacer (22), on the lower end of the two-piece side link (35).

(b) To remove the upper end of the two-piece side link (attach point to the wing), do the steps that follow:
1) Remove cotter pin (34), the nut (33), the washers (32, 31), on the upper end of the two-piece side link (35).
2) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to remove the fuse pin (27), the washers (30, 29, 28) on the upper end of the two-piece side link (35).

NOTE: The instructions for correct tool use is included with the tool.

TASK 54-51-01-024-209

7. Remove the Strut (Upper Link Procedure)

A. Equipment
(1) B54002 Strut Sling
(2) B54018 Fuse Pin Removal/Installation Kit

B. Procedure

S 024-210

(1) AIRPLANES PRE SB 54-0027 OR PRE SB 54-0035;
Do the steps that follow to remove the upper link (Figure 404):
(a) To remove the upper link forward fuse pin (attach point to the strut), do the steps that follow:
1) Use one of the preload fixture tools shown in TASK 54-51-01-844-199 and find the place where you can turn the fuse pin (4) with a maximum torque of 125 inch-pounds (14 newton-meters).

NOTE: Do not remove the pin if it has a load.

2) Remove the nut (7), the washer (6), the end cap (5), on the forward end of the upper link (26).
3) Remove the bolt (1), the washer (2), the end cap (3), on the forward end of the upper link (26).
4) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to remove the fuse pin (4).

NOTE: The instructions for correct tool use is included with the tool.

(b) To remove the upper link aft fuse pin (attach point to the wing), do the steps that follow:
1) Remove the nut (14), the washer (13), the end cap (12), on the aft end of the upper link (26).
2) Remove the bolt (8), the washer (9), the end cap (10), on the aft end of the upper link (10).

3) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to remove the secondary pin (11).

NOTE: The instructions for correct tool use is included with the tool.

S 024-211

(2) AIRPLANES POST SB 54-0027 OR POST SB 54-0035;
Do the steps that follow to remove the upper link (Figure 404):

(a) To remove the upper link forward fuse pin (attach point to the strut), do the steps that follow:

1) Use one of the preload fixture tools shown in TASK 54-51-01-844-199 and find the place where you can turn the fuse pin (18) with a maximum torque of 125 inch-pounds (14 newton-meters).

NOTE: Do not remove the pin if it has a load.

2) Remove the nut (21), the washer (20), the end cap (19), on the forward end of the upper link (26).
3) Remove the bolt (15), the washer (16), the end cap (17), on the forward end of the upper link (26).
4) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to remove the fuse pin (18).

NOTE: The instructions for correct tool use is included with the tool.

(b) To remove the upper link aft shoulder bolt (attach point to the wing), do the steps that follow:

1) Remove the nut (25), the end cap (24), on the aft end of the upper link (26).
2) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to remove the shoulder bolt (22), and the washers (23) on the aft end of the upper link (20).

NOTE: The instructions for correct tool use is included with the tool.

NOTE: Washers (23) may be found if the wing fitting bushings were replaced with SB 54-0026.

TASK 54-51-01-024-212

8. Remove the Strut (Midspar Fuse Pins Procedure)

A. Equipment
(1) B54002 Strut Sling
(2) B54018 Fuse Pin Removal/Installation Kit

B. Procedure

S 024-214

(1) AIRPLANES WITH STRAIGHT FUSE PINS (PRE SB 54-0020 OR PRE SB 54-0035);
Do the steps that follow to remove the inboard and outboard midspar straight fuse (2 locations) (Figure 403):

NOTE: Both midspar fuse pins on a strut must be the same type.

NOTE: The operator may choose which midspar fuse pin assembly to remove first. The removal procedures are the same for the inboard and outboard midspar fuse pin assemblies.

(a) To remove the straight fuse pin (5), do the steps that follow:
1) Remove the small nut (1), the small washer (2), the large nut (3), the large washer (4), from the fuse pin (5).
2) Remove the bolt (7), the end cap (6), on the end of the fuse pin (5).
3) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to install the fuse pin puller assembly tool on the fuse pin (5).

NOTE: The instructions for correct tool use is included with the tool.

a) Use one of the preload fixture tools shown in TASK 54-51-01-844-199 to find the place where you can turn the fuse pin (5) with a maximum torque of 125 inch-pounds (14 newton-meters).

NOTE: Do not remove the fuse pin (5) if it has a load.

CAUTION: DO NOT REMOVE THE PIN UNLESS IT TURNS FREELY WITH A MAXIMUM TORQUE OF 125 POUND-INCHES (14 NEWTON-METERS). THE PIN HAS A LOAD WHEN IT WILL NOT TURN FREELY. IF YOU REMOVE A PIN THAT HAS A LOAD, STRUCTURAL DAMAGE WILL OCCUR.

4) Remove the fuse pin (5) from the midspar fitting as follows:
a) Install the slide hammer on the puller assembly.
b) Move the slide hammer on the removal tool in the opposite direction of the fuse pin to assist in the removal of the fuse pin.
c) Make a note of the fitting that the fuse pin came from.

CAUTION: BE CAREFUL TO PREVENT DAMAGE TO THE DUCTS, TUBES, AND LINES WHEN THE STRUT IS REMOVED FROM THE WING. USE SANDBAGS TO PREVENT DAMAGE TO THE ENGINE MOUNTS ON THE STRUT.

(b) Remove the strut and put the strut on a pallet or a dolly on the ground.
(c) Remove the strut preload fixture and sling (if necessary) from the strut.

S 024-213
(2) AIRPLANES WITH BULKHEAD STYLE FUSE PINS (PRE SB 54-0020 OR PRE SB 54-0035);
Do the steps that follow to remove the inboard and outboard midspar bulkhead style fuse pins (2 locations) (Figure 403):

NOTE: Both midspar bulkhead style fuse pins on a strut must be the same type.

NOTE: The operator may choose which midspar bulkhead style fuse pin assembly to remove first. The removal procedures are the same for the inboard and outboard midspar bulkhead style fuse pin assemblies.

(a) To remove the bulkhead style fuse pin (11), do the steps that follow:
1) Remove the nut (8), the washer (9), the cap (10), from the fuse pin (11).
2) Remove the bolt (12), from the fuse pin (11).
3) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to install the fuse pin puller assembly tool on the fuse pin (11).

NOTE: The instructions for correct tool use is included with the tool.

a) Use one of the preload fixture tools shown in TASK 54-51-01-844-199 to find the place where you can turn the bulkhead style fuse pin (11) with a maximum torque of 125 inch-pounds (14 newton-meters).

NOTE: Do not remove the bulkhead style fuse pin (11) if it has a load.

CAUTION: DO NOT REMOVE THE PIN UNLESS IT TURNS FREELY WITH A MAXIMUM TORQUE OF 125 POUND-INCHES (14 NEWTON-METERS). THE PIN HAS A LOAD WHEN IT WILL NOT TURN FREELY. IF YOU REMOVE A PIN THAT HAS A LOAD, STRUCTURAL DAMAGE WILL OCCUR.

4) Remove the bulkhead style fuse pin (11) from the midspar fitting as follows:
   a) Install the slide hammer on the puller assembly.
   b) Move the slide hammer on the removal tool in the opposite direction of the fuse pin to assist in the removal of the fuse pin.
   c) Make a note of the fitting that the fuse pin came from.

CAUTION: BE CAREFUL TO PREVENT DAMAGE TO THE DUCTS, TUBES, AND LINES WHEN THE STRUT IS REMOVED FROM THE WING. USE SANDBAGS TO PREVENT DAMAGE TO THE ENGINE MOUNTS ON THE STRUT.

(b) Remove the strut and put the strut on a pallet or a dolly on the ground.
(c) Remove the strut preload fixture and sling (if necessary) from the strut.

S 024-215
(3) AIRPLANES WITH 15-5PH CRES FUSE BOLTS (POST SB 54-0020 OR PRE SB 54-0035);
Do the steps that follow to remove the the inboard and outboard midspar straight fuse bolts (2 locations) (Figure 403):

NOTE: Both midspar fuse bolts on a strut must be the same type.

NOTE: The operator may choose which midspar fuse bolt assembly to remove first. The removal procedures are the same for the inboard and outboard midspar fuse bolt assemblies.

(a) To remove the straight fuse bolt (17), do the steps that follow:
   1) Remove the small nut (13), the small washer (14), the large nut (15), the large washer (16), from the fuse bolt (17).
   2) Remove the bolt (19), the end cap (18), on the end of the fuse bolt (17).

3) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to install the fuse pin puller assembly tool on the fuse bolt (17).

NOTE: The instructions for correct tool use is included with the tool.

a) Use one of the preload fixture tools shown in TASK 54-51-01-844-199 to find the place where you can turn the fuse bolt (17) with a maximum torque of 125 inch-pounds (14 newton-meters).

NOTE: Do not remove the fuse bolt (17) if it has a load.

CAUTION: DO NOT REMOVE THE FUSE BOLT UNLESS IT TURNS FREELY WITH A MAXIMUM TORQUE OF 125 POUND-INCHES (14 NEWTON-METERS). THE FUSE BOLT HAS A LOAD WHEN IT WILL NOT TURN FREELY. IF YOU REMOVE A FUSE BOLT THAT HAS A LOAD, STRUCTURAL DAMAGE WILL OCCUR.

4) Remove the fuse bolt (17) from the midspar fitting as follows:
   a) Install the slide hammer on the puller assembly.
   b) Move the slide hammer on the removal tool in the opposite direction of the fuse bolt to assist in the removal of the fuse bolt.
   c) Make a note of the fitting that the fuse bolt came from.

CAUTION: BE CAREFUL TO PREVENT DAMAGE TO THE DUCTS, TUBES, AND LINES WHEN THE STRUT IS REMOVED FROM THE WING. USE SANDBAGS TO PREVENT DAMAGE TO THE ENGINE MOUNTS ON THE STRUT.

(b) Remove the strut and put the strut on a pallet or a dolly on the ground.
(c) Remove the strut preload fixture and sling (if necessary) from the strut.

S 024-216

(4) AIRPLANES WITH 15-5PH CRES FUSE BOLTS (POST SB 54-0035);
Do the steps that follow to remove the the inboard and outboard midspar straight fuse bolts (2 locations) (Figure 403):

NOTE: Both midspar fuse bolts on a strut must be the same type.

NOTE: The operator may choose which midspar fuse bolt assembly to remove first. The removal procedures are the same for the inboard and outboard midspar fuse pin assemblies.

(a) To remove the straight fuse bolt (24), do the steps that follow:
1) Remove the cotter pin (20) from the castellated nut (21).
2) Remove the castellated nut (21), the washers (22, 23), from the fuse bolt (24).
3) Use the tools found in the B54018 Fuse Pin Removal / Installation Kit to install the fuse pin puller assembly tool on the fuse bolt (24).

NOTE: The instructions for correct tool use is included with the tool.

a) Use one of the preload fixture tools shown in TASK 54-51-01-844-199 to find the place where you can turn the fuse bolt (24) with a maximum torque of 125 inch-pounds (14 newton-meters).

NOTE: Do not remove the fuse bolt (24) if it has a load.

CAUTION: DO NOT REMOVE THE FUSE BOLT UNLESS IT TURNS FREELY WITH A MAXIMUM TORQUE OF 125 POUND-INCHES (14 NEWTON-METERS). THE FUSE BOLT HAS A LOAD WHEN IT WILL NOT TURN FREELY. IF YOU REMOVE A FUSE BOLT THAT HAS A LOAD, STRUCTURAL DAMAGE WILL OCCUR.

4) Remove the fuse bolt (24) from the midspar fitting as follows:
a) Install the slide hammer on the puller assembly.
b) Move the slide hammer on the removal tool in the opposite direction of the fuse bolt to assist in the removal of the fuse bolt.
c) Make a note of the fitting that the fuse bolt came from.

CAUTION: BE CAREFUL TO PREVENT DAMAGE TO THE DUCTS, TUBES, AND LINES WHEN THE STRUT IS REMOVED FROM THE WING. USE SANDBAGS TO PREVENT DAMAGE TO THE ENGINE MOUNTS ON THE STRUT.

(b) Remove the strut and put the strut on a pallet or a dolly on the ground.
(c) Remove the strut preload fixture and sling (if necessary) from the strut.

TASK 54-51-01-204-217

9. Condition of Parts

A. References
(1) AMM 54-51-01/601 Strut Inspection

B. Procedure

S 214-218

(1) Examine the items removed in these maintenance procedures, but not limited to the bolts, end caps, washers and the inner surfaces of the fuse pins (AMM 54-51-01/601).

TASK 54-51-01-844-219

10. Prepare the Aircraft for the Strut Installation

A. References
(1) AMM 20-41-00/201, Static Grounding
(2) AMM 24-22-00/201, Control (Supply Power)
(3) AMM 27-81-00/201, Leading Edge Slat System
(4) AMM 29-11-00/201, Main Hydraulic Systems

B. Procedure

S 844-221

(1) Do the steps that follow to prepare the wing for the installation of the strut to the wing:
(a) Make sure the airplane is grounded (AMM 20-41-00/201).
(b) Make sure the slats on the wing leading edge are in the retracted position (AMM 27-81-00/201).
(c) Make sure the fuel control switches is in the CUTOFF position.
(d) Make sure the electrical power is removed (AMM 24-22-00/201).
(e) Make sure the pressure in the hydraulic system for the strut is released (AMM 29-11-00/201).
(f) Make sure the applicable fuel shutoff valve for the engine is closed.
(g) Make sure the shutoff valve for the hydraulic fluid is closed.
(h) Make sure the fuel supply line is drained of fluid.
(i) Make sure the hydraulic fluid lines to the engine are drained of fluid.

TASK 54-51-01-844-222

11. Prepare the Strut for the Installation on the Aircraft

A. Equipment
(1) B54002 Strut Sling

B. Procedure

S 424-223

(1) Do the steps that follow to install the tooling to install the strut from the wing (Figure 402):
(a) Install the strut sling equipment B54002 tool on the strut.
(b) Lift the strut into its position below the wing.
(c) Install the strut to wing attachments in the sequence as follows:
1) Midspar Fuse Pins and attached fasteners.
2) Upper Link and attached fasteners.
3) Side Links and attached fasteners.
4) Diagonal Brace and attached fasteners.

TASK 54-51-01-424-225

12. Install the Strut (Midspar Fuse Pin Procedures)

A. Equipment
(1) B54002 Strut Sling
(2) B54018 Fuse Pin Removal/Installation Kit

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(3) D00014 Grease - MIL-G-21164 (Alternate)
(4) G50136 Compound - Corrosion Preventive BMS 3-38

C. Procedure

S 424-224

(1) AIRPLANES WITH STRAIGHT FUSE PINS
(PRE SB 54-0020 OR PRE SB 54-0035);
Do the steps that follow to install the the inboard and outboard midspar straight fuse pins (2 locations) (Figure 403):

NOTE: Both midspar fuse pins on a strut must be the same type.

NOTE: The operator may choose which midspar fuse pin assembly to install first. The installation procedures are the same for the inboard and outboard midspar fuse pin assemblies.

(a) Do the steps that follow to prepare the straight fuse pin (5) for installation:
1) If there is no corrosion preventive compound, apply the compound to the inner surface of the straight fuse pin (5) with a thickness of 0.050 inches (1.270 mm).

2) Apply a thin layer of grease to the outer surface of the straight fuse pin (5).

NOTE: This is to help in installation of the fuse pin.

(b) To install the straight fuse pin (5), do the steps that follow:
1) Install thread protectors on the fuse pin (5).

NOTE: Thread protectors can be found in the B54018 Fuse Pin Removal / Installation Kit.

CAUTION: IF THERE ARE NO CRACKS AND NOT TOO MUCH WEAR, INSTALL THE FUSE PINS BACK INTO THE SAME FITTINGS THAT THEY CAME FROM TO MAKE SURE THAT CLEARANCE BETWEEN THE PIN AND THE FITTING IS CORRECT AND TO KEEP THE CRACKS IN THE PIN TO A MINIMUM.

2) Install the fuse pin (5) through the wing and midspar fittings.
3) Remove the thread protectors from the fuse pin (5).
4) Install the large washer (4), the large nut (3), on the fuse pin (5) and do the steps that follow:
   a) Make sure the run-on torque of the nut (3) is a minimum of 11.7 inch-pounds (1.3 newton-meters).

      NOTE: Replace the nut if the torque value is below the limit.

   b) Make sure the large nut (3) is fully against the large washer (4).
   c) Tighten the nut (3) to 1250 ±250 inch-pounds (141 ±28 newton-meters).
5) Install the end cap (6), the bolt (7) on the end of the fuse pin (5).
6) Install the small washer (2), the small nut (1), on the bolt (7) and do the steps that follow:
   a) Make sure the run-on torque of the small nut (1) is a minimum of 10 inch-pounds (1 newton-meter).

      NOTE: Replace the nut if the torque value is below the limit.

   b) Make sure the end cap (6) is fully against the shoulder of the bolt (7), on the fuse pin (5).
   c) Make sure the small washer (2) is fully against the fuse pin (5).
   d) Tighten the small nut (1) to 125 ±25 inch-pounds (14 ±3 newton-meters).
   e) Remove the unwanted grease.

S 424-226

(2) AIRPLANES WITH BULKHEAD STYLE FUSE PINS (PRE SB 54-0020 OR PRE SB 54-0035);
Do the steps that follow to install the the inboard and outboard midspar bulkhead style fuse pins (2 locations) (Figure 403):

NOTE: Both midspar bulkhead style fuse pins on a strut must be the same type.

NOTE: The operator may choose which midspar bulkhead style fuse pin assembly to install first. The installation procedures are the same for the inboard and outboard midspar fuse bulkhead style fuse pin assemblies.

(a) Do the steps that follow to prepare the bulkhead style fuse pin (11) for installation:
1) Make sure the inner surface of the bulkhead style fuse pin (11) has a layer of corrosion preventive compound.
a) If there is no corrosion preventive compound, apply the compound to the inner surface of the bulkhead style fuse pin (11).
2) Apply a thin layer of grease to the outer diameter of the bulkhead style fuse pin (11).

NOTE: This is to help in installation of the fuse pin.

CAUTION: IF THERE ARE NO CRACKS AND NOT TOO MUCH WEAR, INSTALL THE BULKHEAD STYLE FUSE PINS BACK INTO THE SAME FITTINGS THAT THEY CAME FROM TO MAKE SURE THAT CLEARANCE BETWEEN THE BULKHEAD STYLE FUSE PIN AND THE FITTING IS CORRECT AND TO KEEP THE CRACKS IN THE BULKHEAD STYLE FUSE PIN TO A MINIMUM.

(b) To install the bulkhead style fuse pin (11), do the steps that follow:
1) Install the fuse pin (11) through the wing and midspar fittings.
2) Install the bolt (12) on the end of the fuse pin (11).
3) Install the cap (10), the washer (9) and the nut (8) and do the steps that follow:
a) Make sure the run-on torque of the nut is a minimum of 14 inch-pounds (2 newton-meters).

NOTE: Replace the nut if the torque value is below the limit.

b) Tighten the nut to 270 ±30 inch-pounds (31 ±4 newton-meters).
c) Remove the unwanted grease.

S 424-227

(3) AIRPLANES WITH 15-5PH CRES FUSE BOLTS (POST SB 54-0020 OR PRE SB 54-0035);
Do the steps that follow to install the the inboard and outboard midspar fuse bolts (2 locations) (Figure 403):

NOTE: Both midspar fuse bolts on a strut must be the same type.

NOTE: The operator may choose which midspar fuse bolt assembly install first. The installation procedures are the same for the inboard and outboard midspar fuse bolt assemblies.

(a) Do the steps that follow to prepare the fuse bolt (17) for installation:
1) If there is no corrosion preventive compound, apply the compound to the inner surface of the fuse bolt (17).
2) Apply a thin layer of grease to the outer surface of the fuse bolt (17).

NOTE: This is to help in installation of the fuse bolt.

(b) To install the fuse bolt (17), do the steps that follow:
1) Install thread protectors on the fuse bolt (17).

NOTE: Thread protectors can be found in the B54018 Fuse Pin Removal / Installation Kit.

CAUTION: IF THERE ARE NO CRACKS AND NOT TOO MUCH WEAR, INSTALL THE FUSE BOLTS BACK INTO THE SAME FITTINGS THAT THEY CAME FROM TO MAKE SURE THAT CLEARANCE BETWEEN THE FUSE BOLT AND THE FITTING IS CORRECT AND TO KEEP THE CRACKS IN THE FUSE BOLT TO A MINIMUM.

2) Install the fuse bolt (17) through the wing and midspar fittings.
3) Remove the thread protectors from the fuse bolt (17).
4) Install the large washer (16), the large nut (15), on the fuse bolt (17) and do the steps that follow:
a) Make sure the run-on torque of the large nut (15) is a minimum of 117 inch-pounds (13 newton-meters).

NOTE: Replace the nut if the torque value is below the limit.

b) Make sure the large nut (15) is fully against the large washer (16).
c) Tighten the nut (15) to 1250 ±250 inch-pounds (141 ±28 newton-meters).

5) Install the end cap (18), the bolt (19) on the end of the fuse bolt (17).
6) Install the small washer (14), the small nut (13), on the bolt (19) and do the steps that follow:
   a) Make sure the run-on torque of the small nut (13) is a minimum of 14 inch-pounds (2 newton-meters).

      NOTE: Replace the nut if the torque value is below the limit.

   b) Make sure the end cap (18) is fully against the shoulder of the bolt (19), on the fuse bolt (17).
   c) Make sure the small washer (14) is fully against the fuse bolt (17).
   d) Tighten the small nut (13) to 270 ±30 inch-pounds (31 ±4 newton-meters).
   e) Remove the unwanted grease.

S 424-228

(4) AIRPLANES WITH 15-5PH CRES FUSE BOLTS (POST SB 54-0035);
Do the steps that follow to install the the inboard and outboard midspar fuse bolts (2 locations) (Figure 403):

NOTE: Both midspar fuse bolts on a strut must be the same type.

NOTE: The operator may choose which midspar fuse bolt assembly to install first. The installation procedures are the same for the inboard and outboard midspar fuse bolt assemblies.

(a) Do the steps that follow to prepare the fuse bolt (24) for installation:
   1) If there is no corrosion preventive compound, apply the compound to the inner surface of the fuse bolt (24).
   2) Apply a thin layer of grease to the outer surface of the fuse bolt (24).

      NOTE: This is to help in installation of the fuse pin.

(b) To install the fuse bolt (24), do the steps that follow:
   1) Install thread protectors on the fuse bolt (24).

      NOTE: Thread protectors can be found in the B54018 Fuse Pin Removal / Installation Kit.

CAUTION: IF THERE ARE NO CRACKS AND NOT TOO MUCH WEAR, INSTALL THE FUSE BOLTS BACK INTO THE SAME FITTINGS THAT THEY CAME FROM TO MAKE SURE THAT CLEARANCE BETWEEN THE FUSE BOLT AND THE FITTING IS CORRECT AND TO KEEP THE CRACKS IN THE FUSE BOLT TO A MINIMUM.

2) Install the fuse bolt (24) through the wing and midspar fittings.
3) Remove the thread protectors from the fuse bolt (24).
4) Install the washer (23, 22), the castellated nut (21), on the fuse bolt (24) and do the steps that follow:
   a) Make sure the run-on torque of the castellated nut (21) is a minimum of 150 inch-pounds (17 newton-meters).

      NOTE: Replace the nut if the torque value is below the limit.

   b) Make sure the castellated nut (21) is fully against the washers (22, 23).
   c) Tighten the castellated nut (21) to 1850 ±650 inch-pounds (209 ±73 newton-meters).

TASK 54-51-01-424-229

13. Install the Strut (Upper Link Procedures)

A. Equipment
   (1) B54002 Strut Sling
   (2) B54003 Strut Preload Fixture Equipment
   (3) B54019 Strut Unload, Forward Engine Mount Adapter Equipment

B. Consumable Materials
   (1) D00633 Grease - BMS 3-33 (Preferred)
   (2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
   (3) D00014 Grease - MIL-G-21164 (Alternate)
   (4) G50136 Compound - Corrosion Preventive BMS 3-38

C. Procedure

S 844-231

(1) To prepare for preload balancing to help in installation of the strut fuse pin / bolts, install one of the tools that follow:

NOTE: The instructions for correct tool use is included with each tool listed below.

(a) Strut Preload Fixture Tool B54003.

NOTE: B54003 is used for hole alignment and preload balancing of the strut/wing attaching bolts and it is also used in conjunction with a customer furnished load cell, overhead lifting equipment and either a customer furnished tripod jack or a B54002 strut sling.

(b) Strut Unload, Forward Engine Mount Adapter Equipment Tool B54019.

NOTE: B54019 adapter equipment is used after engine removal to unload the engine mount strut, allowing removal of the wing/strut attach fuse pins and it is used in conjunction with a customer furnished tripod jack.

S 424-232

(2) AIRPLANES PRE SB 54-0027 OR PRE SB 54-0035;
Do the steps that follow to install the upper link between strut and the wing:

(a) Do the steps that follow to prepare the aft upper link secondary pin (11) for installation:

1) If there is no corrosion preventive compound, apply the compound to the inner surface of the secondary pin (11) with a thickness of 0.050 inches (1.270 mm).
2) Apply a thin layer of grease to the outer surface of the secondary pin (11).

NOTE: This is to help in installation of the fuse pin.

(b) To install the aft upper link secondary pin (attach point to the wing), do the steps that follow:

1) Apply a thin layer of corrosion preventive compound to the outer surface of the bolt (8).
2) Install the secondary pin (11), end cap (10), washer (9), bolt (8) at the aft end of the upper link (26).
3) Install the end cap (12), the washer (13), and the nut (14), at the aft end of the upper link (26).
4) Make sure the run-on torque of the nut (14) is a minimum of 50 inch-pounds (6 newton-meters).

NOTE: Replace the nut if the torque value is below the limit.

5) Tighten the nut (14) to 550 ±100 inch-pounds (62 ±11 newton-meters).
6) Make sure the washers (9, 13) are fully against the end caps (10, 12).
7) Remove the unwanted grease.

(c) Do the steps that follow to prepare the forward upper link fuse pin (4) for installation:

1) If there is no corrosion preventive compound, apply the compound to the inner surface of the fuse pin (4) with a thickness of 0.050 inches (1.270 mm).

2) Apply a thin layer of grease to the outer surface of the fuse pin (4).

NOTE: This is to help in installation of the fuse pin.

(d) To install the forward upper link fuse pin (attach point to the strut), do the steps that follow:
1) Apply a thin layer of corrosion preventive compound to the outer surface of the bolt (1).
2) Install the fuse pin (4), end cap (3), washer (2), bolt (1) at the forward end of the upper link (26).
3) Install the end cap (5), the washer (6), and the nut (7), at the forward end of the upper link (26).
4) Make sure the run-on torque of the nut (7) is a minimum of 50 inch-pounds (6 newton-meters).

NOTE: Replace the nut if the torque value is below the limit.

5) Tighten the nut (7) to 550 ±100 inch-pounds (62 ±11 newton-meters).
6) Make sure the washers (2, 6) are fully against the end caps (3, 5).
7) Remove the unwanted grease.

S 424-233
(3) AIRPLANES POST SB 54-0027 OR POST SB 54-0035;
Do the steps that follow to install the upper link between strut and the wing:
(a) Do the step that follows to prepare the aft upper link shoulder bolt (22) for installation:
1) Apply a thin layer of grease to the outer surface of the shoulder bolt (22).

NOTE: This is to help in installation of the shoulder bolt.

(b) To install the aft upper link shoulder bolt (attach point to the wing), do the steps that follow:
1) Place a washer (23) on each side of the wing fitting.

NOTE: Washers (23) are installed if the wing fitting bushings were replaced with SB 54-0026.

2) Install the shoulder bolt (22), at the aft end of the upper link (26).
3) Install the end cap (24), the nut (25), at the aft end of the upper link (26).

4) Make sure the run-on torque of the nut (25) is a minimum of 70 inch-pounds (8 newton-meters).

NOTE: Replace the nut if the torque value is below the limit.

5) Tighten the nut (25) to 810 ±90 inch-pounds (92 ±11 newton-meters).
6) Remove the unwanted grease.

(c) Do the steps that follow to prepare the forward upper link fuse pin (18) for installation:
1) If there is no corrosion preventive compound, apply the compound to the inner surface of the fuse pin (18) with a thickness of 0.050 inches (1.270 mm).
2) Apply a thin layer of grease to the outer surface of the fuse pin (18).

NOTE: This is to help in installation of the fuse pin.

(d) To install the forward upper link fuse pin (attach point to the strut), do the steps that follow:
1) Apply a thin layer of corrosion preventive compound to the outer surface of the bolt (15).
2) Install the fuse pin (18), end cap (17), washer (16), bolt (15) at the forward end of the upper link (26).
3) Install the end cap (19), the washer (20), and the nut (21), at the forward end of the upper link (26).
4) Make sure the run-on torque of the nut (21) is a minimum of 30 inch-pounds (3 newton-meters).

NOTE: Replace the nut if the torque value is below the limit.

5) Tighten the nut (21) to 400 ±50 inch-pounds (45 ±6 newton-meters).
6) Make sure the washers (16, 20) are fully against the end caps (17, 19).
7) Remove the unwanted grease.

TASK 54-51-01-424-234

14. Install the Strut (Side Link Procedures)

A. Equipment
(1) B54002 Strut Sling
(2) B54006 Nacelle Side Link Align Fixture

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(3) D00014 Grease - MIL-G-21164 (Alternate)
(4) G50136 Compound - Corrosion Preventive BMS 3-38

C. Procedure

S 424-235

(1) AIRPLANES PRE SB 54-0035;
Do the steps that follow to install the inboard and outboard assemblies of two-piece side links located between strut and the wing (Figure 405):

NOTE: The operator may choose which side link assembly to install first. The assembly procedures are the same for the inboard and outboard two-piece side links.

(a) If not already done, do the steps that follow to adjust for the edge clearance gap between the wing fittings and the midspar fittings:
1) Move the strut inboard or outboard to get the edge clearance.
a) The outboard gap dimensions are a minimum of 0.045 inches (1.143 mm) to a maximum of 0.115 inches (2.921 mm).
b) The inboard gap dimensions are a minimum of 0.025 inches (0.635 mm) to a maximum of 0.115 inches (2.921 mm).
2) If you can not get the clearance shown, make the two outboard positions equal within 0.005 inches (0.127 mm) between 0.045 inches to 0.115 inches (2.921 mm).

(b) When the clearances are set, prepare the two-piece side links for installation with the Nacelle Side Link Align Fixure Tool B54006, to do the steps that follow:
1) Use the tool to find the distance between the aft upper spar fitting and the side link attach fitting.

NOTE: The instructions for correct tool use is included with the tool.

2) Use the tool to install the eccentric bushings with the retainers on each one of the side links (19).

NOTE: The instructions for correct tool use is included with the tool.

(c) Do the step that follows to prepare the upper end of the two-piece side link fuse pin (11) for installation:
1) Apply a thin layer of grease to the outer surface of the fuse pin (11).

NOTE: This is to help in installation of the fuse pin.

(d) To install the upper end of the two-piece side link (attach point to the wing), do the steps that follow:
1) Install the fuse pin (11) into the wing fitting.

2) Install washers (13, 14) on the fuse pin (11), in each side of the wing fitting.
3) Take one link of the two-piece side link and install it on the fuse pin (11), through the eccentric bushing side of the link (19) and place in the wing fitting.
4) Take the other link (19) and install it, through the eccentric bushing end, on to the fuse pin (11) already in the wing fitting.
5) Apply a thin layer of corrosion preventive compound to the outer surface of the bolt (18).
6) Install the washer (15), the end cap (16), the washer (17), and the bolt (18) into the eccentric bushing ends of the two-piece side links (19).
7) Install the washer (12), the end cap (10), the washer (9) and the nut (8).
8) Make sure the run-on torque of the nut (8) is a minimum of 14 inch-pounds (2 newton-meters).

NOTE: Replace the nut if the torque value is below the limit.

9) Tighten the nut (8) to 237.5 ±112.5 inch-pounds (26.8 ±12.7 newton-meters).
10) Make sure the washers (9,12,15,17) are fully against the end caps (10,16).

(e) To install the lower end of the two-piece side link (attach point to the strut), do the steps that follow:
1) Apply a thin layer of grease to the outer surface of the bolt (7).
2) Align the lower ends of the two-piece side links (19) with the strut fitting.
3) Install the bushing (4), the washers (5,6), the bolt (7) through one end of the link.
4) Attach the other end of the link and install the bushing (3), the washer (2), the nut (1).
5) Make sure the run-on torque of the nut (1) is a minimum of 32 inch-pounds (4 newton-meters).

NOTE: Replace the nut if the torque value is below the limit.

6) Tighten the nut (1) to 1100 ±100 inch-pounds (124 ±12 newton-meters).

S 424-236

(2) AIRPLANES POST SB 54-0035;
Do the steps that follow to install the inboard and outboard assemblies of two-piece side links located between strut and the wing (Figure 405):

NOTE: The operator may choose which side link assembly to install first. The assembly procedures are the same for the inboard and outboard two-piece side links.

(a) If not already done, do the steps that follow to adjust for the edge clearance gap between the wing fittings and the midspar fittings:
1) Move the strut inboard or outboard to get the edge clearance.
a) The outboard gap dimensions are a minimum of 0.045 inches (1.143 mm) to a maximum of 0.115 inches (2.921 mm).
b) The inboard gap dimensions are a minimum of 0.025 inches (0.635 mm) to a maximum of 0.115 inches (2.921 mm).
2) If you can not get the clearance shown, make the two outboard positions equal within 0.005 inches (0.127 mm) between 0.045 inches to 0.115 inches (2.921 mm).

(b) When the clearances are set, prepare the two-piece side links for installation with the Nacelle Side Link Align Fixure Tool B54006, to do the steps that follow:
1) Use the tool to find the distance between the aft upper spar fitting and the side link attach fitting.

NOTE: The instructions for correct tool use is included with the tool.

2) Use the tool to install the eccentric bushings with the retainers on each one of the side links (35).

NOTE: The instructions for correct tool use is included with the tool.

3) Do the step that follows to prepare the upper end of the two-piece side link fuse pin (27) for installation:

NOTE: This is to help in installation of the fuse pin.

(c) To install the upper end of the two-piece side link (attach point to the wing), do the steps that follow:
1) Place a washer (29,30) on each side of the wing fitting.
2) Take one link of the two-piece side link and align it through the eccentric bushing side of the link (35) and position it on the wing fitting.

3) Align the washer (28) on the other side of the eccentric bushing end of the side link and install the fuse pin (27).
4) Take the other link (35) and install it, through the eccentric bushing end, on to the fuse pin (27) already in the wing fitting.
5) Install the large washer (31), the small washer (32), and the castellated nut (33), on to the fuse pin (27).
6) Tighten the castellated nut (33) to 237.5 ±112.5 inch-pounds (26.8 ±12.7 newton-meters).
7) Install the cotter pin (34).

NOTE: You can install a maximum of three washers to align the nut for installation of the cotter pin.

(d) To install the lower end of the two-piece side link (attach point to the strut), do the steps that follow:
1) Apply a thin layer of grease to the outer surface of the bolt (20).
2) Align the lower ends of the two-piece side links (35) with the strut fitting.
3) Install the spacer (22), the washer (21), the bolt (20) through one end of the link.
4) Attach the other end of the link and install the spacer (23), the washer (24), and the castellated nut (25).
5) Tighten the castellated nut (25) to 700 ±300 inch-pounds (79 ±34 newton-meters).
6) Install the cotter pin (26).

NOTE: You can install a maximum of three washers to align the nut for installation of the cotter pin.

TASK 54-51-01-424-237

15. Install the Strut (Diagonal Brace Procedures)

A. Equipment
(1) B54002 Strut Sling
(2) B54003 Strut Preload Fixture Equipment
(3) B54019 Strut Unload, Forward Engine Mount Adapter Equipment

B. Consumable Materials
(1) D00633 Grease - BMS 3-33 (Preferred)
(2) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(3) D00014 Grease - MIL-G-21164 (Alternate)
(4) G50136 Compound - Corrosion Preventive BMS 3-38

C. Procedure

S 844-238

(1) To prepare for preload balancing to help in installation of the strut fuse pin / bolts, install one of the tools that follow (Figure 402):

NOTE: The instructions for correct tool use is included with each tool listed below.

(a) Strut Preload Fixture Tool B54003.

NOTE: B54003 is used for hole alignment and preload balancing of the strut/wing attaching bolts and it is also used in conjunction with a customer furnished load cell, overhead lifting equipment and either a customer furnished tripod jack or a B54002 strut sling.

(b) Strut Unload, Forward Engine Mount Adapter Equipment Tool B54019.

NOTE: B54019 adapter equipment is used after engine removal to unload the engine mount strut, allowing removal of the wing/strut attach fuse pins and it is used in conjunction with a customer furnished tripod jack.

S 424-239

(2) AIRPLANES PRE SB 54-0027 OR PRE SB 54-0035;
Do the steps that follow to install the diagonal brace to the wing (Figure 406):

NOTE: Make sure you install the same diagonal brace that was removed from this airplane and strut.

(a) Examine the tag or the markings on the brace to make sure you install the brace on the same airplane and strut that the brace was removed.
(b) Do the steps that follow to prepare the diagonal brace aft link fuse pin (11) for installation:
1) If there is no corrosion preventive compound, apply the compound to the inner surface of the fuse pin (11) to a thickness of 0.050 inches (1.270 mm).
2) Apply a thin layer of grease to the outer surface of the fuse pin (11).

NOTE: This is to help in installation of the fuse pin.

(c) To install the diagonal brace aft link fuse pin (attach point to the wing), do the steps that follow:
1) Apply a thin layer of corrosion preventive compound to the outer surface of the bolt (14).
2) Install the fuse pin (11), the end cap (12), the washer (13), and the bolt (14), at the aft end of the diagonal brace (15).
3) Install the end cap (10), the washer (9), and the nut (8), at the aft end of the diagonal brace (15).
4) Make sure the run-on torque of the nut (8) is a minimum of 32 inch-pounds (4 newton-meters).

NOTE: Replace the nut if the torque value is below the limit.

5) Tighten the nut (8) to 405 ±45 inch-pounds (46 ±5 newton-meters).
6) Make sure the washers (9, 13) are fully against the end caps (10,12).
7) Remove the unwanted grease.

(d) Do the steps that follow to prepare the diagonal brace forward link fuse pin (4) for installation:
1) If there is no corrosion preventive compound, apply the compound to the inner surface of the fuse pin (4) to a thickness of 0.050 inches (1.270 mm).
2) Apply a thin layer of grease to the outer surface of the fuse pin (4).

NOTE: This is to help in installation of the fuse pin.

(e) To make the installation of diagonal brace forward fuse pin (4) easier, use the preload fixture to apply a load to the forward engine mount (Figure 402).

NOTE: The permitted load up or down is 3000 pounds (1361 kg).

NOTE: If the diagonal brace does not install correctly with the permitted load because the brace is damaged or unserviceable, replace the brace.

(f) To install the diagonal brace forward link fuse pin (attach point to the strut), do the steps that follow:
1) Apply a thin layer of corrosion preventive compound to the outer surface of the bolt (7).
2) Install the fuse pin (4), the end cap (5), the washer (6), and the bolt (7), at the forward end of the diagonal brace (15).
3) Install the end cap (3), the washer (2), and the nut (1), at the forward end of the diagonal brace (15).

4) Make sure the run-on torque of the nut (1) is a minimum of 30 inch-pounds (3 newton-meters).

NOTE: Replace the nut if the torque value is below the limit.

5) Tighten the nut (1) to 400 ±50 inch-pounds (45 ±6 newton-meters).
6) Make sure that the washers (2, 6) are fully against the end caps (3, 5).
7) Remove the unwanted grease.

S 424-240
(3) AIRPLANES POST SB 54-0027 OR PRE 54-0035;
Do the steps that follow to install the diagonal brace located between strut and the wing (Figure 406):

NOTE: Make sure you install the same diagonal brace that was removed from this airplane and strut.

(a) Examine the tag or the markings on the brace to make sure you install the brace on the same airplane and strut that the brace was removed.
(b) Do the steps that follow to prepare the diagonal brace aft link fuse pin (22) for installation:
1) If there is no corrosion preventive compound, apply the compound to the inner surface of the fuse pin (22) to a thickness of 0.050 inches (1.270 mm).
2) Apply a thin layer of grease to the outer surface of the fuse pin (22).

NOTE: This is to help in installation of the fuse pin.

(c) To install the diagonal brace aft link fuse pin (attach point to the wing), do the steps that follow:
1) Apply a thin layer of corrosion preventive compound to the outer surface of the bolt (25).
2) Install the fuse pin (22), the end cap (23), the washer (24), and the bolt (25), at the aft end of the diagonal brace (15).
3) Install the end cap (21), the washer (20), and the nut (19), at the aft end of the diagonal brace (15).
4) Make sure the run-on torque of the nut (19) is a minimum of 18 inch-pounds (2 newton-meters).

NOTE: Replace the nut if the torque value is below the limit.

5) Tighten the nut (19) to 202.5 ±22.5 inch-pounds (22.9 ±2.6 newton-meters).

6) Make sure the washers (20, 24) are fully against the end caps (21, 23).
7) Remove the unwanted grease.

(d) Do the step that follows to prepare the diagonal brace forward link shoulder bolt (18) for installation:
1) Apply a thin layer of grease to the outer surface of the shoulder bolt (18).

NOTE: This is to help in installation of the fuse pin.

(e) To make the installation of bolt (18) easier, use the preload fixture to apply a load to the forward engine mount (Figure 402).

NOTE: The permitted load in the up or down direction is 3000 pounds (1361 kg).

NOTE: If the diagonal brace does not install correctly with the permitted load because the brace is damaged or unserviceable, replace the brace.

(f) To install the diagonal brace forward link shoulder bolt (attach point to the strut), do the steps that follow:
1) Install the shoulder bolt (18), at the forward end of the diagonal brace (15).
2) Install the end cap (17), the nut (16), at the forward end of the diagonal brace (15).
3) Make sure the run-on torque of the nut (16) is a minimum of 50 inch-pounds (6 newton-meters).

NOTE: Replace the nut if the torque value is below the limit.

4) Tighten the nut (16) to 550 ±100 inch-pounds (62 ±11 newton-meters).
5) Remove the unwanted grease.

S 424-241
(4) AIRPLANES POST SB 54-0035;
Do the steps that follow to install the diagonal brace located between strut and the wing (Figure 406):

NOTE: Make sure you install the same diagonal brace that was removed from this airplane and strut.

(a) Examine the tag or the markings on the brace to make sure you install the brace on the same airplane and strut that the brace was removed.

(b) Do the steps that follow to prepare the diagonal brace aft link fuse pin (32) for installation:
1) If there is no corrosion preventive compound, apply the compound to the inner surface of the fuse pin (32) to a thickness of 0.050 inches (1.270 mm).
2) Apply a thin layer of grease to the outer surface of the fuse pin (32).

NOTE: This is to help in installation of the fuse pin.

(c) To install the diagonal brace aft link fuse pin (attach point to the wing), do the steps that follow:
1) Apply a thin layer of corrosion preventive compound to the outer surface of the bolt (35).
2) Install the fuse pin (32), the end cap (33), the washer (34), and the bolt (35), at the aft end of the diagonal brace (36).
3) Install the end cap (31), the washer (30), and the nut (29), at the aft end of the diagonal brace (36).
4) Make sure the run-on torque of the nut (29) is a minimum of 18 inch-pounds (2 newton-meters).

NOTE: Replace the nut if the torque value is below the limit.

5) Tighten the nut (29) to 202.5 ±22.5 inch-pounds (22.9 ±2.6 newton-meters).
6) Make sure the washers (30, 34) are fully against the end caps (31, 33).
7) Remove the unwanted grease.

(d) Do the step that follows to prepare the diagonal brace forward link shoulder bolt (28) for installation:
1) Apply a thin layer of grease to the outer surface of the shoulder bolt (28).

NOTE: This is to help in installation of the fuse pin.

(e) To make the installation of bolt (28) easier, use the preload fixture to apply a load to the forward engine mount (Figure 402).

NOTE: The permitted load in the up or down direction is 3000 pounds (1361 kilograms).

NOTE: If the diagonal brace does not install correctly with the permitted load because the brace is damaged or unserviceable, replace the brace.

(f) To install the diagonal brace forward link shoulder bolt (attach point to the strut), do the steps that follow:
1) Install the bolt (28), at the forward end of the diagonal brace (36).
2) Install the end cap (27), the nut (26), at the forward end of the diagonal brace (36).
3) Make sure the run-on torque of the nut (26) is a minimum of 50 inch-pounds (6 newton-meters).

NOTE: Replace the nut if the torque value is below the limit.

4) Tighten the nut (26) to 550 ±100 inch-pounds (62 ±11 newton-meters).
5) Remove the unwanted grease.

TASK 54-51-01-424-242

16. Install the Internal Components of the Strut

A. References
(1) AMM 36-11-01/401, Pneumatic Duct
(2) AMM 76-11-03/201, Thrust Control Cables

B. Procedure

S 024-243

(1) Do the step that follows to allow access to the internal areas of the strut:
(a) Remove the equipment, hoists, and slings.

S 424-244

(2) Do the steps that follow to install the engine electrical components located in the strut:
(a) AIRPLANES WITHOUT A GLAND SEAL WHERE THE POWER CABLE FROM THE IDG GOES THROUGH THE STRUT FIREWALL;
Do these steps to wire bundles that do not have a connection between the wing and the strut:
1) Install the wire bundles in the strut.
2) Remove the identification tags and connect the electrical connectors.
3) Attach the clamps that hold the wire bundles to the strut.
4) Install lockwire on the connectors if necessary.
(b) AIRPLANES WITH A GLAND SEAL WHERE THE POWER CABLE FROM THE IDG GOES THROUGH THE STRUT FIREWALL;
Do these steps to install the power cable in the strut.
1) Put the power cable through the hole in the strut.
2) Attach the pan assembly that contains the gland seal to the strut.
3) Seal the pan assembly to the strut.
4) Attach the power cable and the clamps that hold the power cable to the strut.
5) Remove the identification tags and connect the electrical connectors.

6) Install lockwire on the connectors if necessary.

S 424-245

(3) Do the steps that follow to install engine pneumatic and mechanical components located in the strut:
(a) Install the thrust control cables on the strut control drum (AMM 76-11-03/201).
(b) Do these steps before the installation of pneumatic components:
1) Remove the protective caps or plugs on the pneumatic components before installation to the strut.
2) Remove the used sealant on the components before installation.
(c) Install the pneumatic Y-duct in the upper strut (AMM 36-11-01/401).

S 424-246

(4) Do the steps that follow to install the engine hydraulic and fire extinguisher components located in the strut:
(a) Do these steps before the installation of fire extinguisher components:
1) Remove the protective caps or plugs on the fire extinguisher components before installation to the strut.
2) Remove the used sealant on the components before installation.
3) Replace hose assemblies if there are signs of excessive residue build-up, blockage, or if the hose has a sharp bend in it that slows or prevents flow.
(b) Install the fire extinguisher components and the drain lines at the aft bulkhead (2 places).
(c) Do these steps before the installation of hydraulic components:
1) Remove the protective caps or plugs on the hydraulic components before installation to the strut.
2) Remove the used sealant on the components before installation.
3) Replace hose assemblies if there are signs of excessive residue build-up, blockage, or if the hose has a sharp bend in it that slows or prevents flow.
(d) Do the steps that follow to install the hydraulic lines:
1) Connect the hydraulic pressure line and do the steps as follows:
a) Torque the nut to 1200 ±60 inch-pounds (136 ±7 newton-meters).
b) Loosen the nut.
c) Torque the nut again to 1750 ±40 inch-pounds (198 ±5 newton-meters).
2) Connect the thrust reverser return line and do the steps as follows:
a) Torque the nut to 700 ±35 inch-pounds (79 ±4 newton-meters).
b) Loosen the nut.

c) Torque the nut again to 1050.5 ±52.5 inch-pounds (118 ±5.9 newton-meters).

3) Connect the thrust reverser pressure line and do the steps as follows:

a) Torque the nut to 700 ±35 inch-pounds (79 ±4 newton-meters).

b) Loosen the nut.

c) Torque the nut again to 1050.5 ±52.5 inch-pounds (118 ±5.9 newton-meters).

(e) Install the clamp (4A), screw (2), washer (3) and the nut (4) on the support bracket of the hydraulic lines.

(f) Install the electrical connector on the shutoff valve for the hydraulic fluid.

(g) Install lockwire on the connectors if necessary.

S 424-247

(5) Do the steps that follow to install the engine fuel components located in the strut:

(a) Do these steps before the installation of strut fuel components:

1) Remove the protective caps or plugs on the strut fuel components before installation to the strut.

2) Remove the used sealant on the components before installation.

3) Replace hose assemblies if there are signs of excessive residue build-up, blockage, or if the hose has a sharp bend in it that slows or prevents flow.

(b) Connect the strut fuel components.

1) On the left strut, do the steps that follow:

a) Remove the bracket (8) and the block assembly (9) if you use a new fuel line.

b) Connect the support bracket of the fuel line on the upper link.

c) Install the bolts (5), washers (6) and the nuts (7), to connect the bracket.

(c) Install the electrical connector on the shutoff valve for the fuel.

(d) Install lockwire on the connectors if necessary.

TASK 54-51-01-844-252

17. Put the Airplane Back to Its Usual Condition

A. References

(1) AMM 20-41-00/201, Static Grounding

(2) AMM 22-32-00/501, Thrust Management System

(3) AMM 24-11-00/501, Generator Drive System

(4) AMM 24-22-00/201, Control (Supply Power)

(5) AMM 26-11-00/501, Engine Fire and Overheat Detection System

(6) AMM 26-12-00/501, Strut Overheat Detection System

(7) AMM 26-13-00/501, Engine Turbine Cooling Overheat Detection System

(8) AMM 26-21-00/501, Engine Fire Extinguishing System
(9) AMM 27-81-00/201, Leading Edge Slat System
(10) AMM 29-11-00/201, Main Hydraulic Systems
(11) AMM 36-11-01/401, Pneumatic Duct
(12) AMM 54-52-01/401, Strut Fairings
(13) AMM 54-53-01/401, Strut Pressure Relief and Access Doors
(14) AMM 71-00-02/401, Power Plant
(15) AMM 76-11-03/201, Thrust Control Cables
(16) AMM 78-31-20/401, Thrust Reverser

B. Procedure

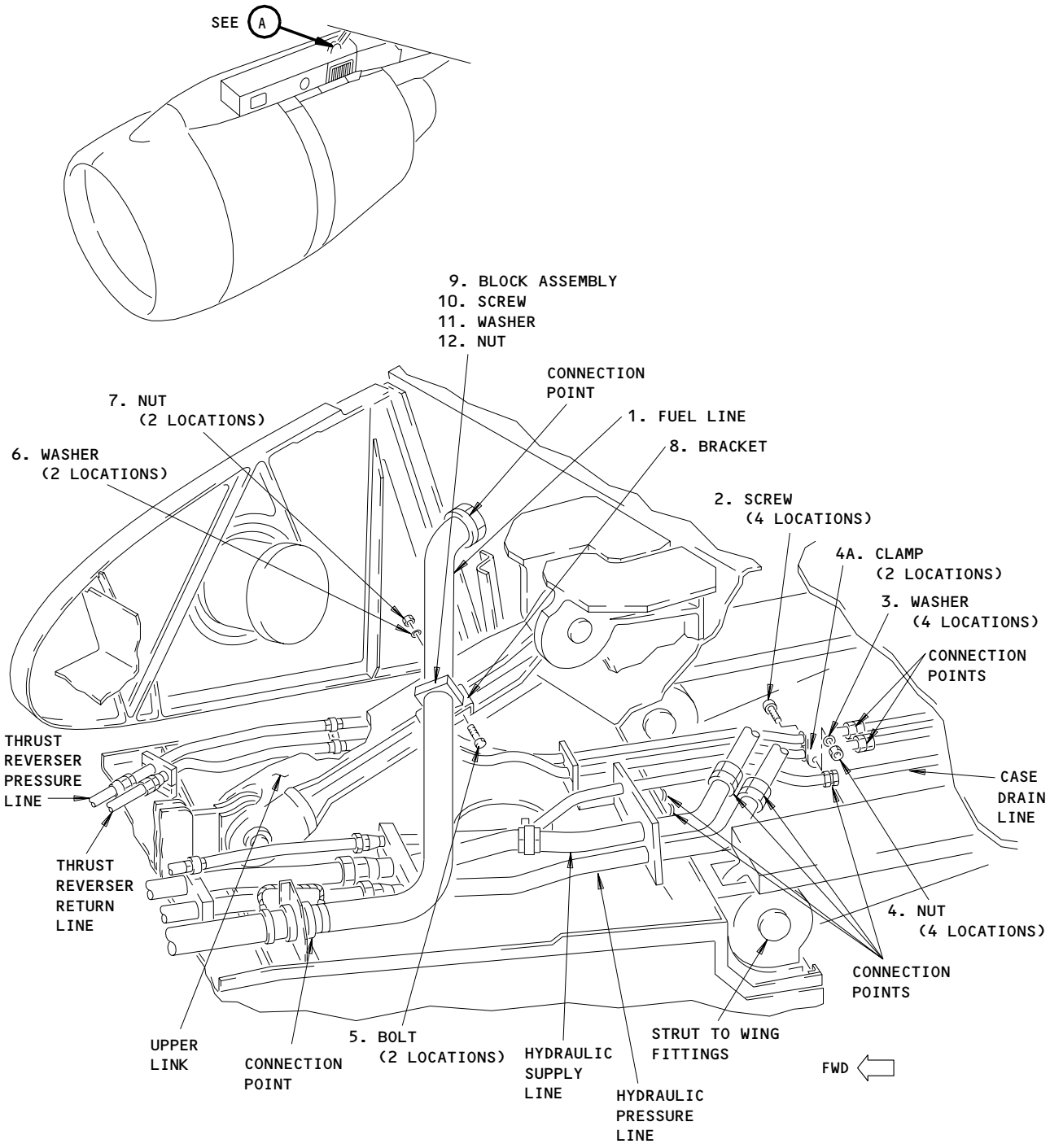
S 844-253

(1) Do the steps that follow to install the components attached to the strut:
   (a) Install the power plant (AMM 71-00-02/401).
   (b) Install the thrust reverser (AMM 78-31-20/401).
   (c) Connect the electrical connectors to the fuel and hydraulic shutoff valves.
   (d) Supply hydraulic power (AMM 29-11-00/201).
      1) Pressurize the hydraulic system in the strut.
      2) Look for hydraulic system leakage.
   (e) Supply electrical power (AMM 24-22-00/201).
   (f) Remove the electrical ground for the airplane (AMM 20-41-00/201).
   (g) Adjust the engine control system (AMM 76-11-00/501).
   (h) Do the test on the engine control system (AMM 76-11-00/501).
   (i) Do the test on the generator drive system (AMM 24-11-00/501).

   WARNING: IF THE SLATS MOVE FROM THE RETRACTED POSITION, INJURY COULD OCCUR TO PERSONS IN THE AREA OF THE SLATS. MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE SLATS.

   (j) Remove the locks from the leading edge slats (AMM 27-81-00/201).

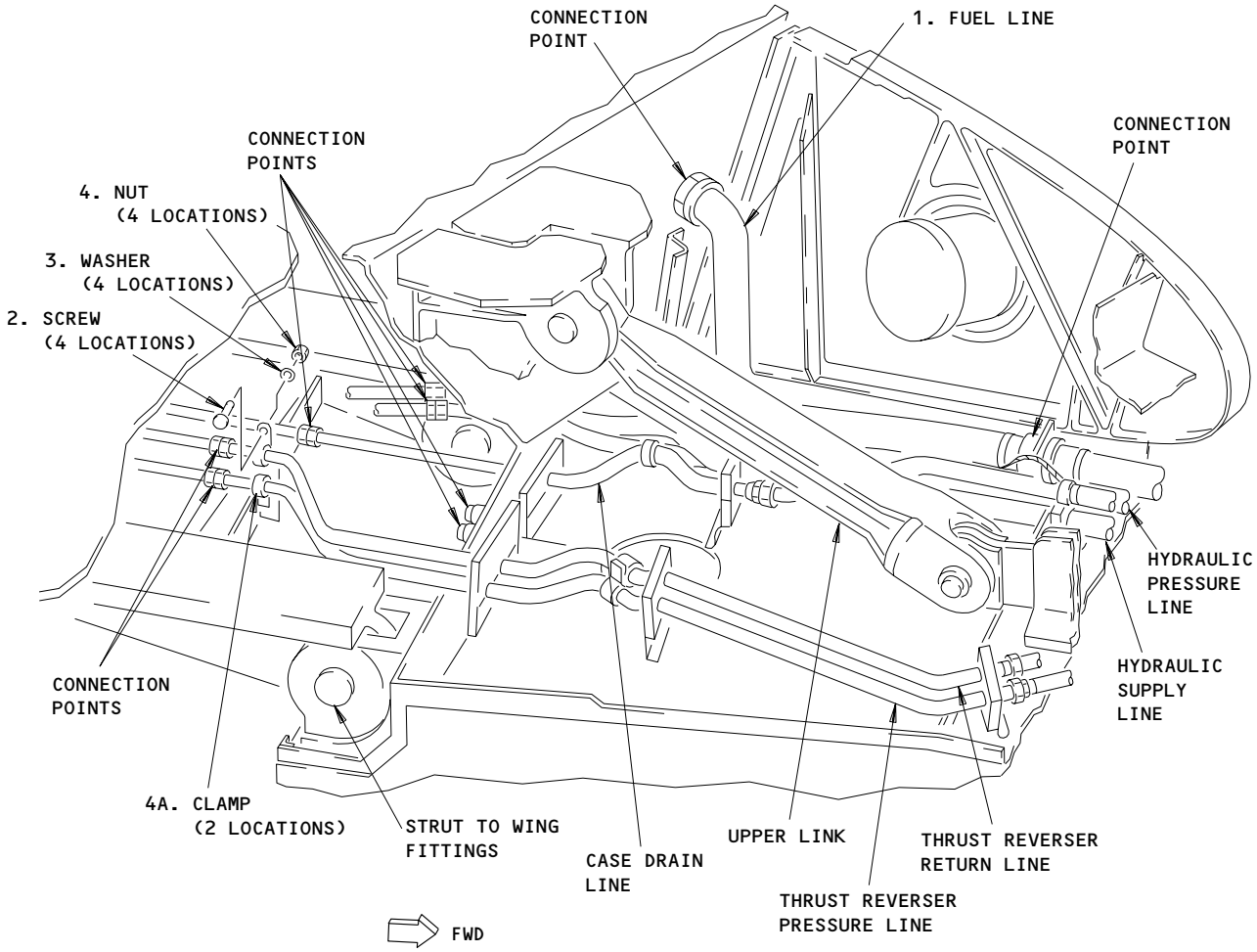
(k) Do the test on the hydraulic system (AMM 29-11-00/501).
(l) Do the test on the pneumatic system (AMM 36-11-00/501).
(m) Do the test on the wing anti-ice system (AMM 30-11-00/501).
(n) Do the Operational Test - Engine Fire Detection System (AMM 26-11-00/501).
(o) Close the access doors on the aft fairing.
(p) Install the strut access panels (AMM 54-53-01/401).
(q) Install the fairings (AMM 54-52-01/401).
(r) Install the access panel 511KT or 611KT, on the wing.



LEFT SIDE

A

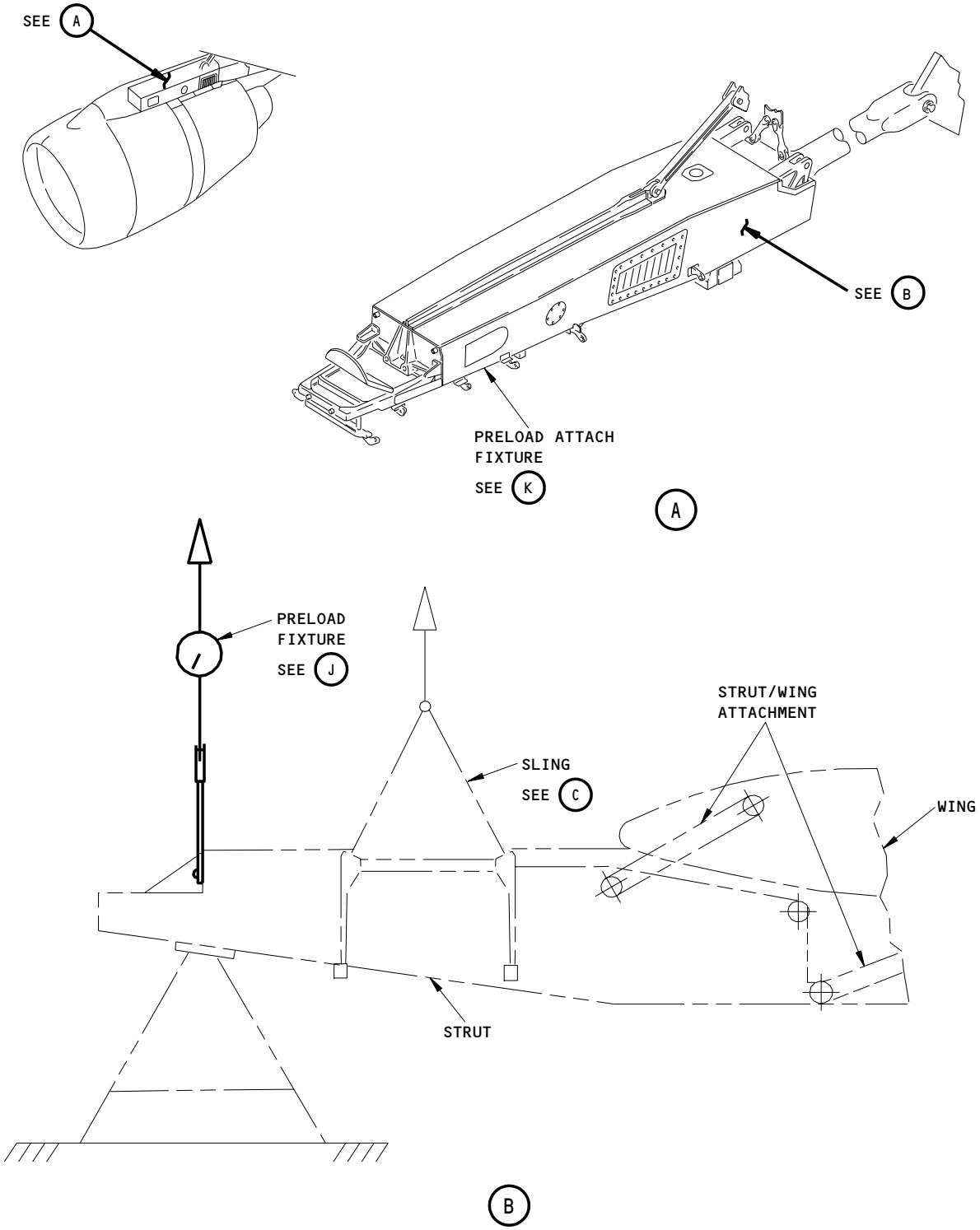
Strut Installation Equipment Attach Points
Figure 401 (Sheet 1)



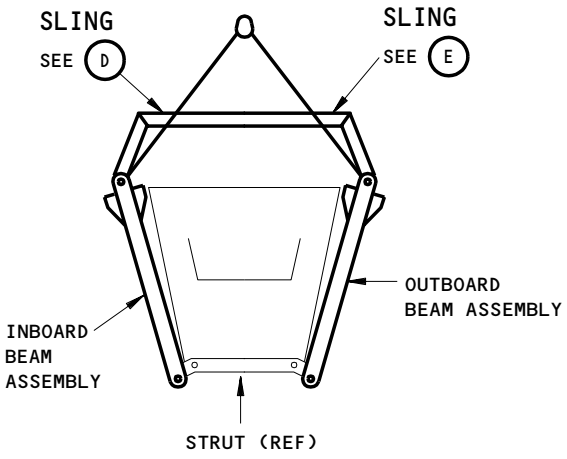
RIGHT SIDE

(A)

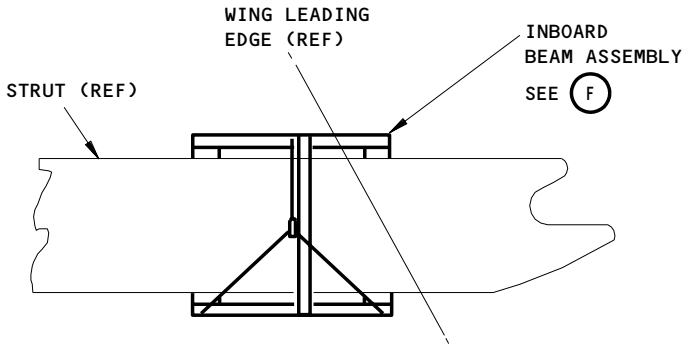
Strut Installation Equipment Attach Points
Figure 401 (Sheet 2)



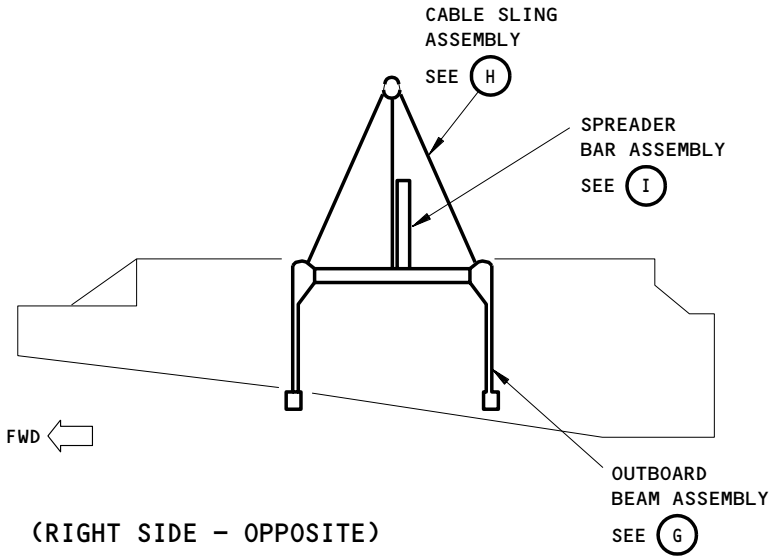
Strut Tooling Installation – RB211-535 Engine
Figure 402 (Sheet 1)



SLING
(LEFT SIDE STRUT IS SHOWN,
RIGHT SIDE STRUT IS OPPOSITE)
C



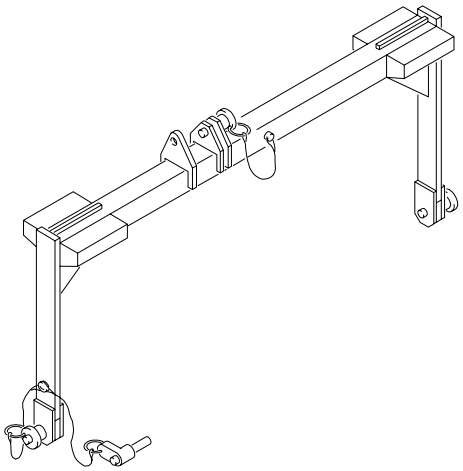
SLING
D



(RIGHT SIDE – OPPOSITE)

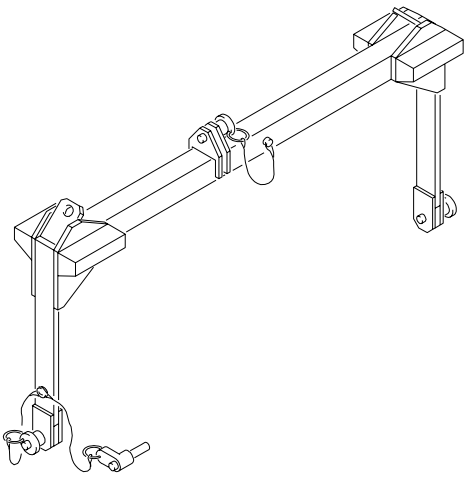
SLING
E

Strut Tooling Installation – RB211-535 Engine
Figure 402 (Sheet 2)



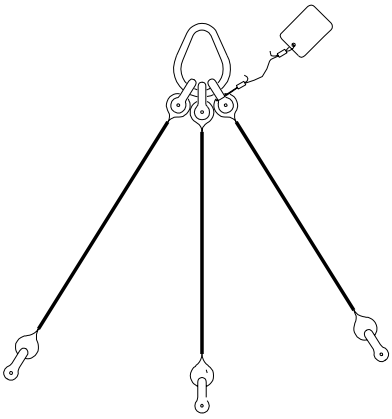
INBOARD BEAM ASSEMBLY

(F)



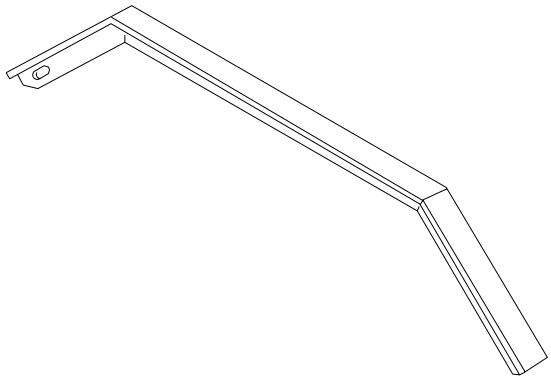
OUTBOARD BEAM ASSEMBLY

(G)



CABLE SLING ASSEMBLY

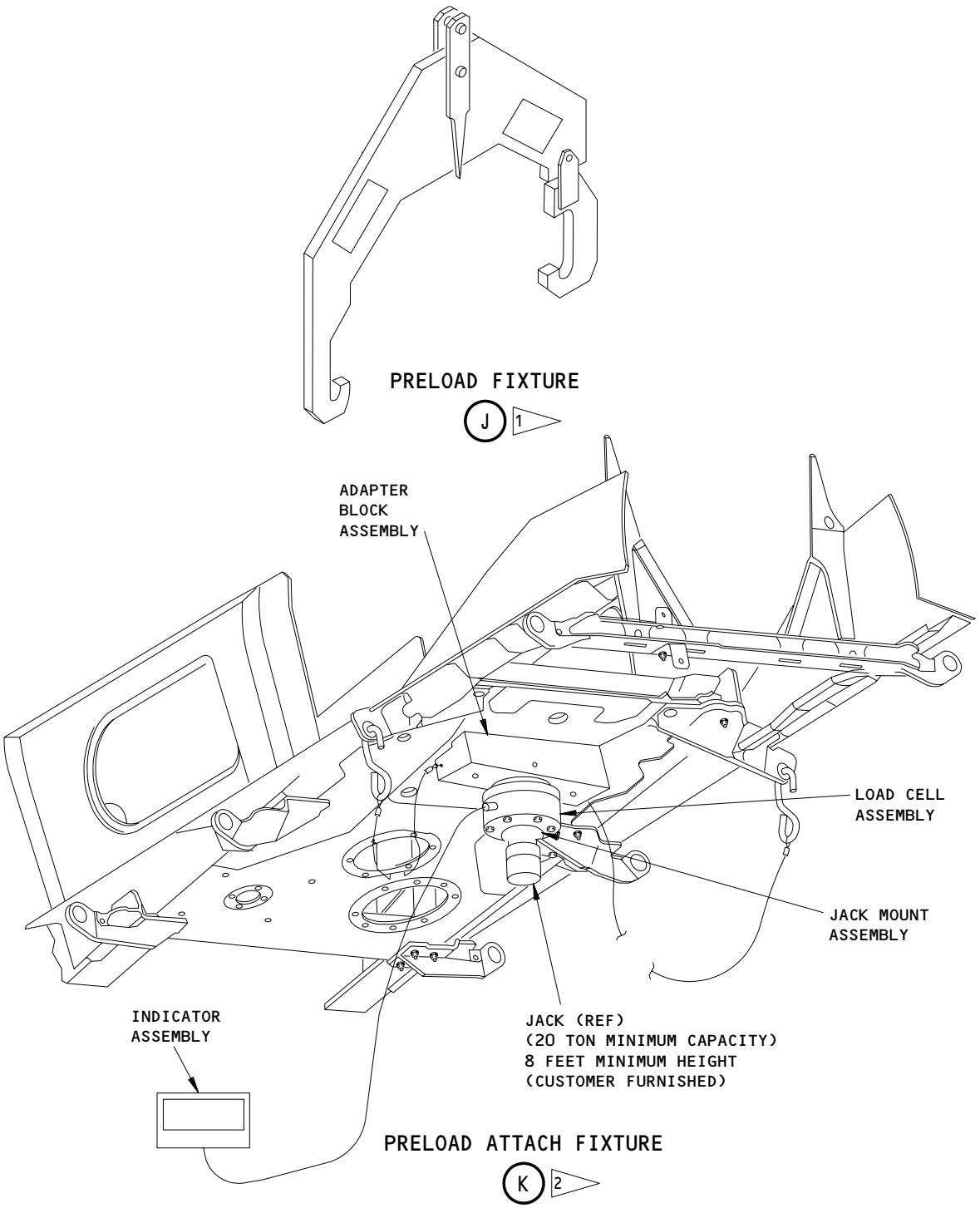
(H)



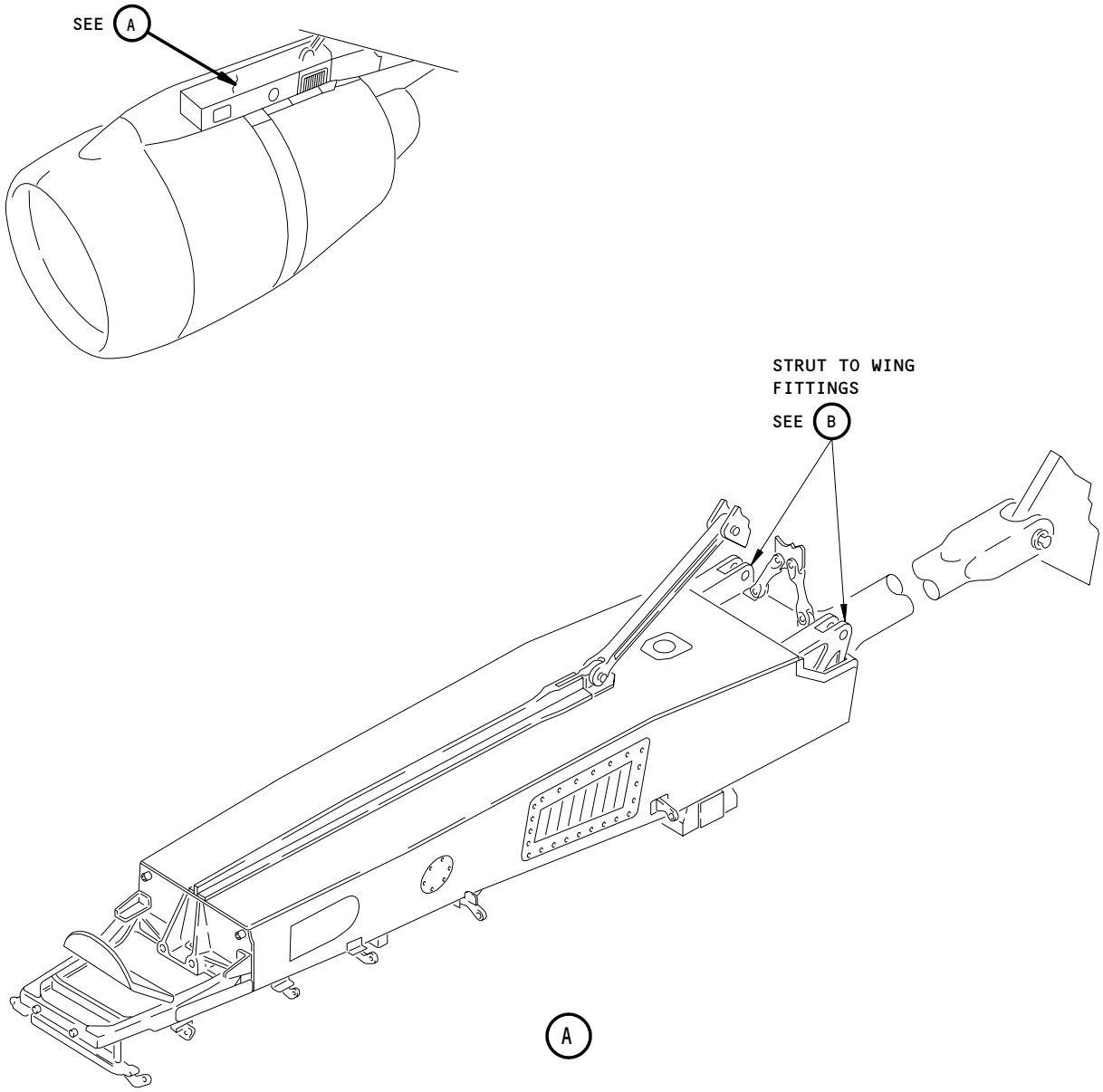
SPREADER BAR ASSEMBLY

(I)

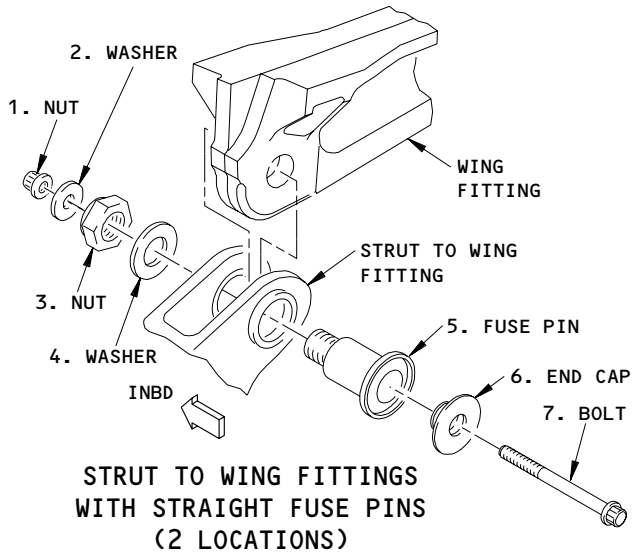
Strut Tooling Installation - RB211-535 Engine
Figure 402 (Sheet 3)



Strut Tooling Installation – RB211-535 Engine
Figure 402 (Sheet 4)

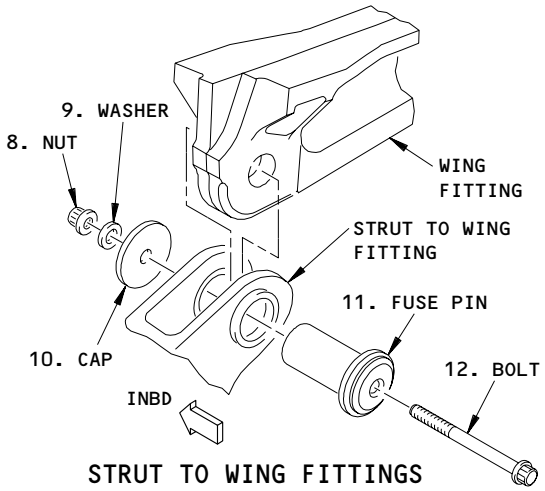


Strut Installation – Midspar Fuse Pin Attachments
Figure 403 (Sheet 1)



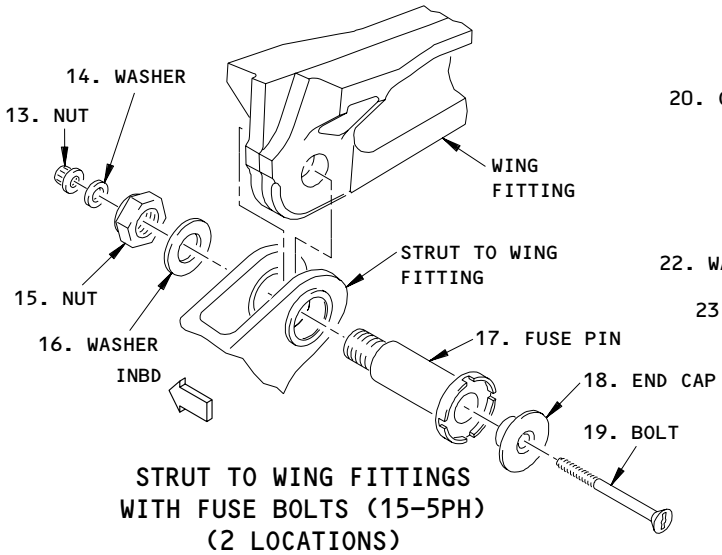
STRUT TO WING FITTINGS
WITH STRAIGHT FUSE PINS
(2 LOCATIONS)

B 1



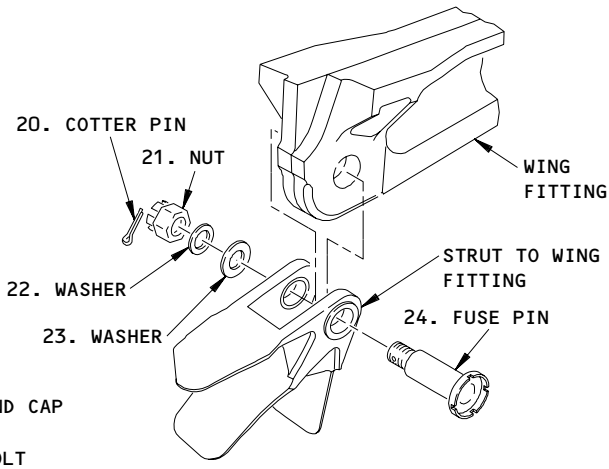
STRUT TO WING FITTINGS
WITH BULKHEAD FUSE PINS
(2 LOCATIONS)

B 1



STRUT TO WING FITTINGS
WITH FUSE BOLTS (15-5PH)
(2 LOCATIONS)

B 2

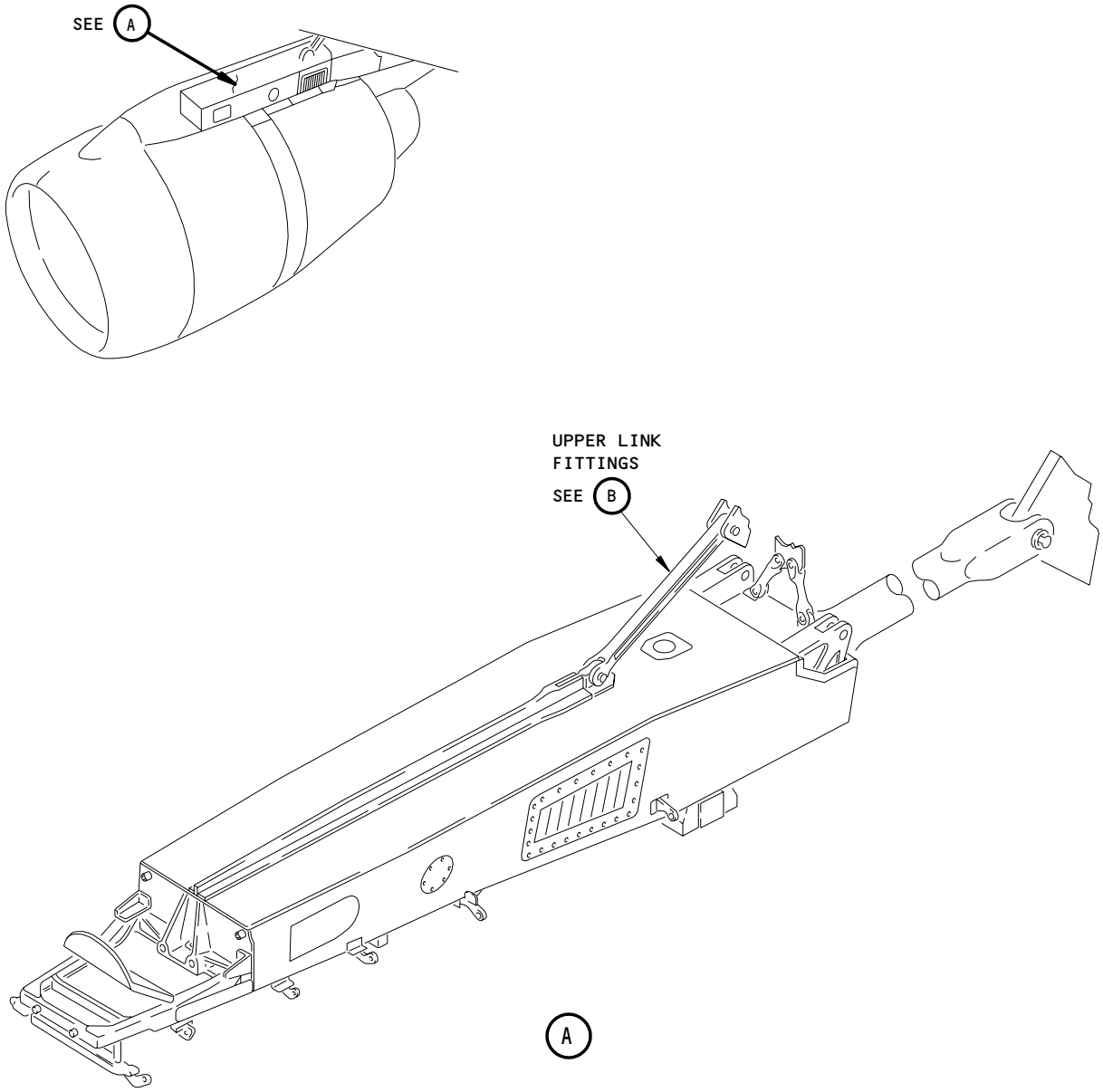


STRUT TO WING FITTINGS
WITH FUSE BOLTS (15-5PH)
(2 LOCATIONS)

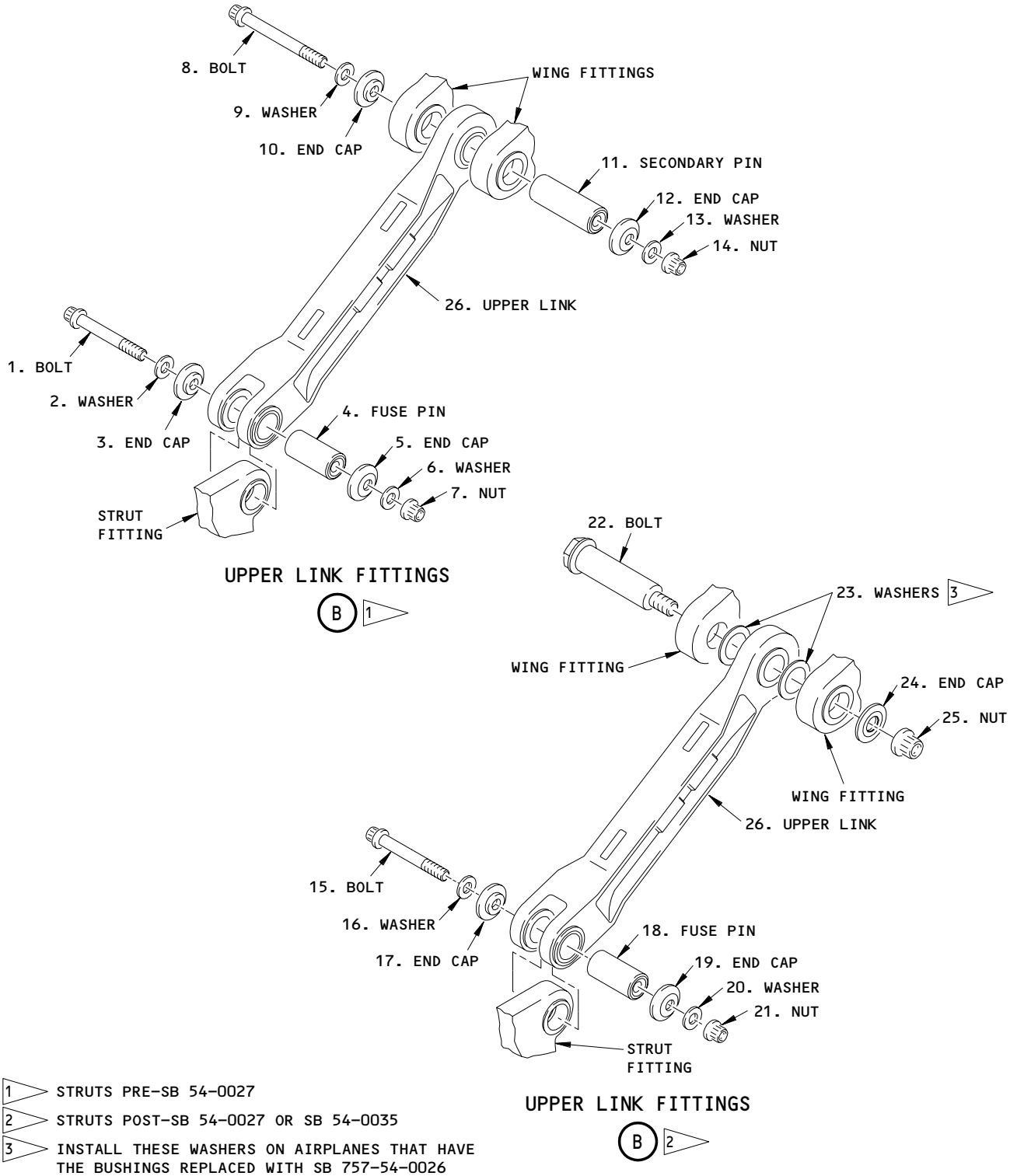
B 3

1 AIRPLANES PRE-SB 54-0020 OR SB 54-0035
2 AIRPLANES POST-SB 54-0020 OR PRE-SB 54-0035
3 AIRPLANES POST-SB 54-0035

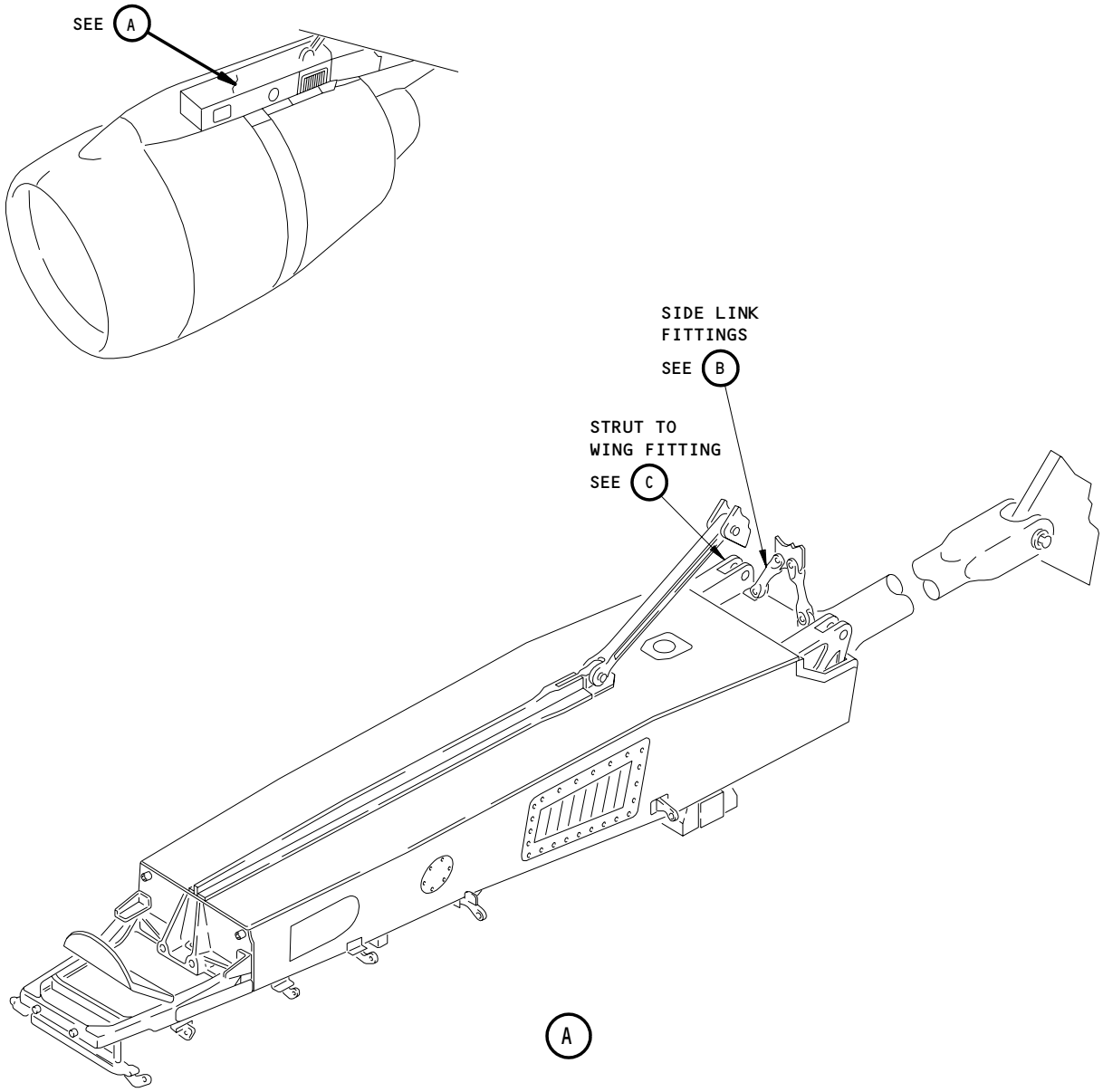
Strut Installation - Midspar Fuse Pin Attachments
Figure 403 (Sheet 2)



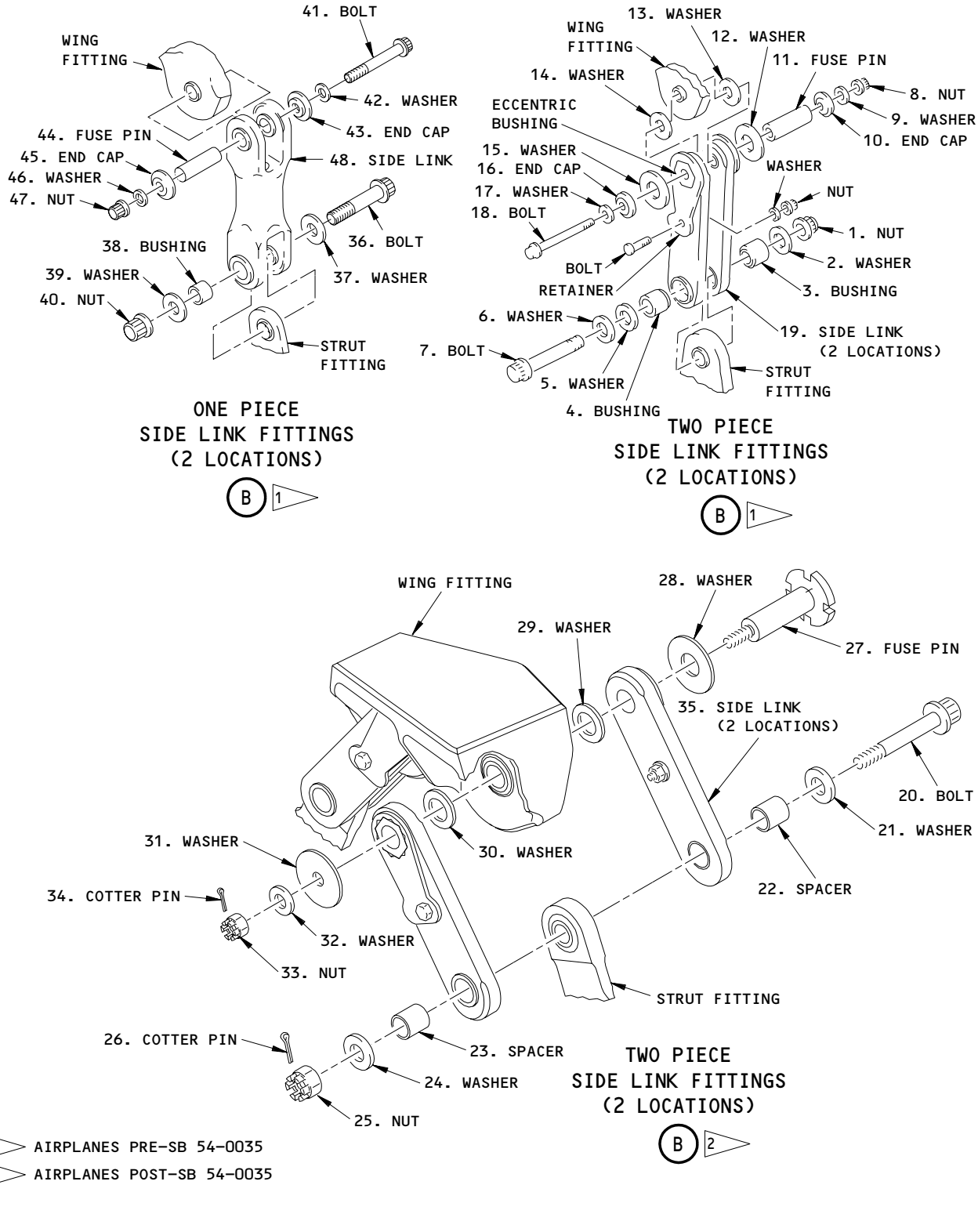
Strut Installation – Upper Link Attachments
Figure 404 (Sheet 1)



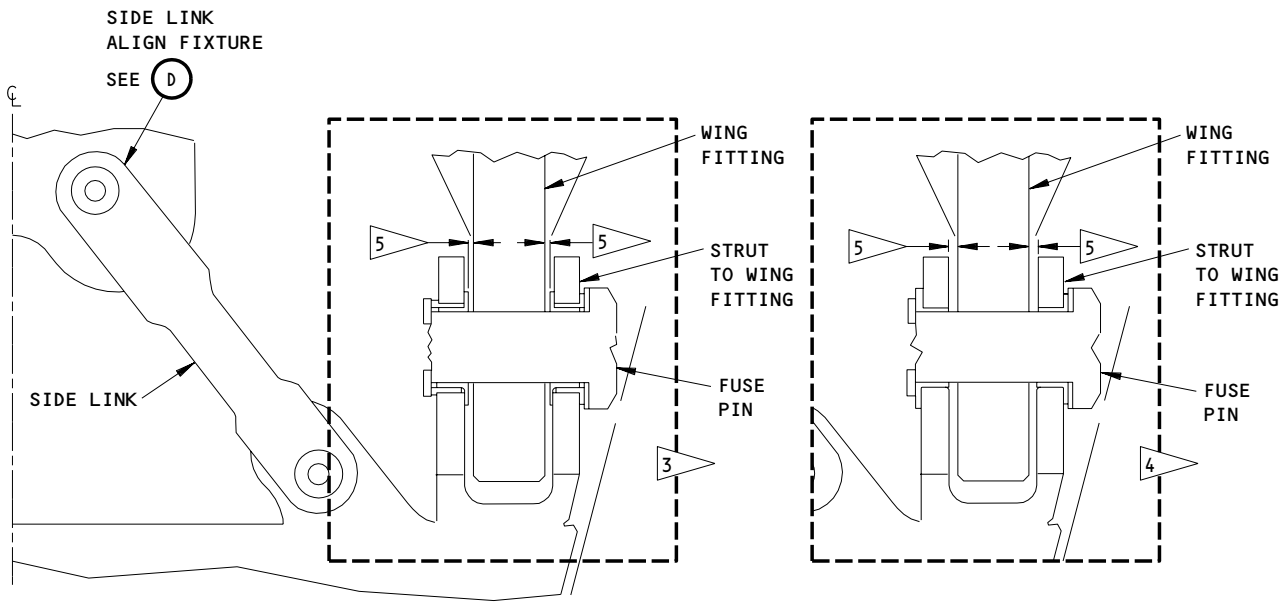
Strut Installation - Upper Link Attachments
Figure 404 (Sheet 2)



Strut Installation – Side Link Attachments
Figure 405 (Sheet 1)

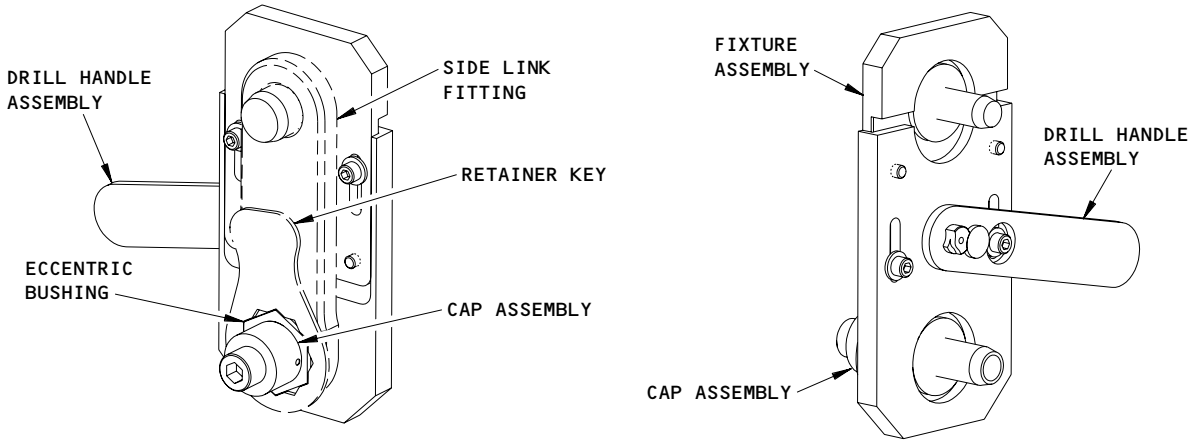


Strut Installation - Side Link Attachments
Figure 405 (Sheet 2)



STRUT TO WING FITTING

C



SIDE LINK ALIGN FIXTURE

D 6

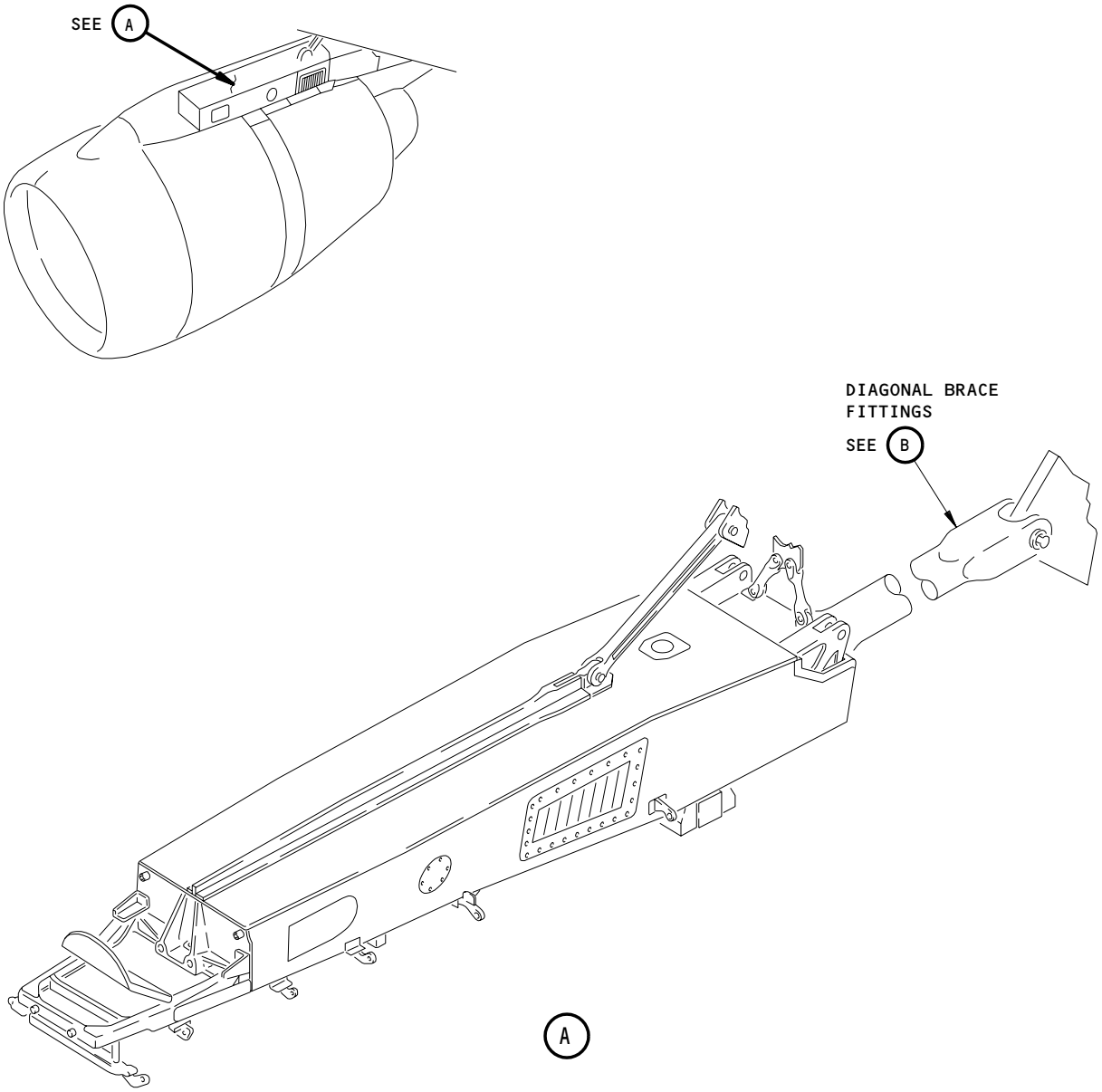
3 STRUTS WITH NESTED BUSHINGS

4 STRUTS WITHOUT NESTED BUSHINGS

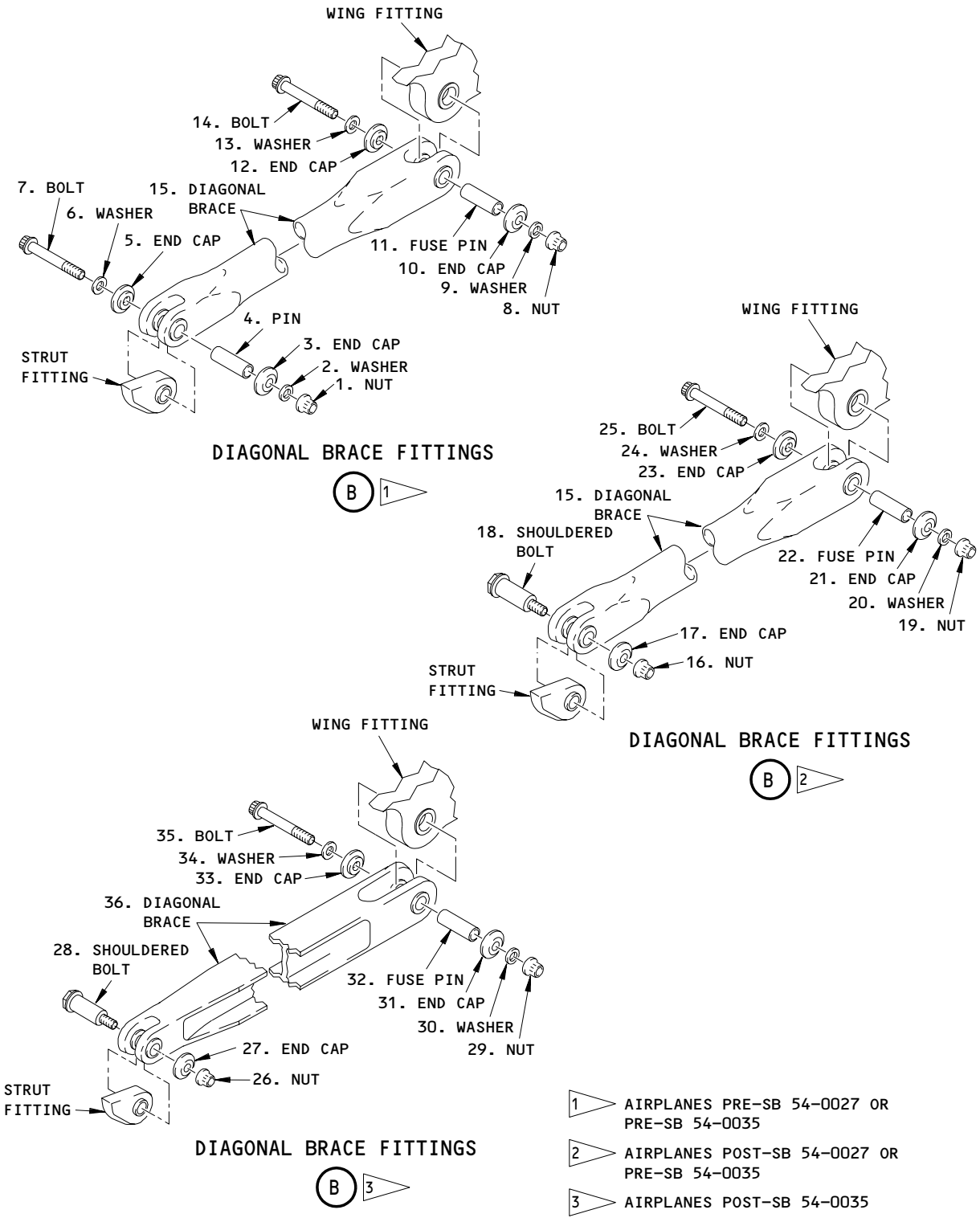
5 OUTBOARD GAPS SHALL BE BETWEEN 0.045 TO 0.115 INCH (1.143 TO 2.921 mm), AND EQUALIZE OUTBOARD GAPS WITHIN 0.005 INCH (0.127 mm). INBOARD GAPS SHALL BE BETWEEN 0.025 TO 0.115 INCH (0.635 TO 2.921 mm).

6 USE ALIGN FIXTURE TO ADJUST SIDE LINK TO RETAIN GAP SHOWN IN FLAGNOTE 5.

Strut Installation - Side Link Attachments
Figure 405 (Sheet 3)



Strut Installation – Diagonal Brace Attachments
Figure 406 (Sheet 1)



Strut Installation - Diagonal Brace Attachments
Figure 406 (Sheet 2)

STRUT - INSPECTION/CHECK

1. General
   A. This procedure contains the wear limits for the strut. This inspection does a check of the links and the brace on the strut. This procedure does not include the removal or installation of the components which are necessary to do this inspection.

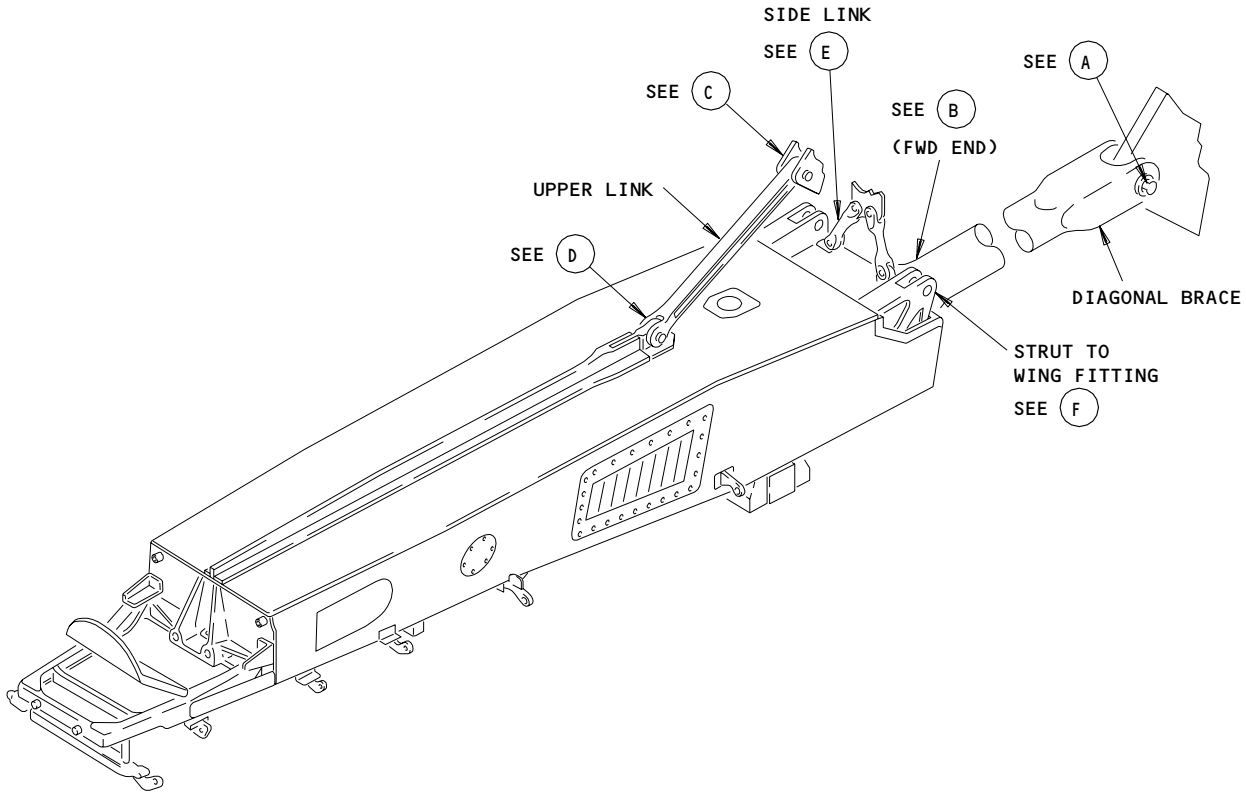
TASK 54-51-01-226-002

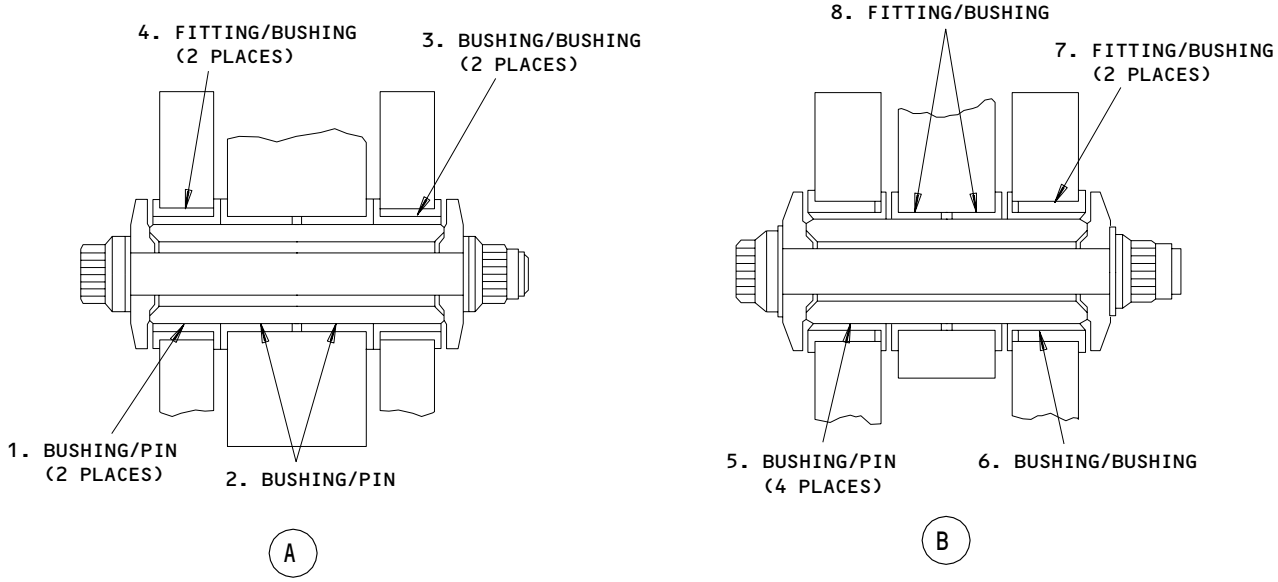
2. Nacelle Strut Wear Limits
   A. Access
      (1) Location Zones
          430 No. 1 Nacelle Strut
          440 No. 2 Nacelle Strut

   B. Procedure

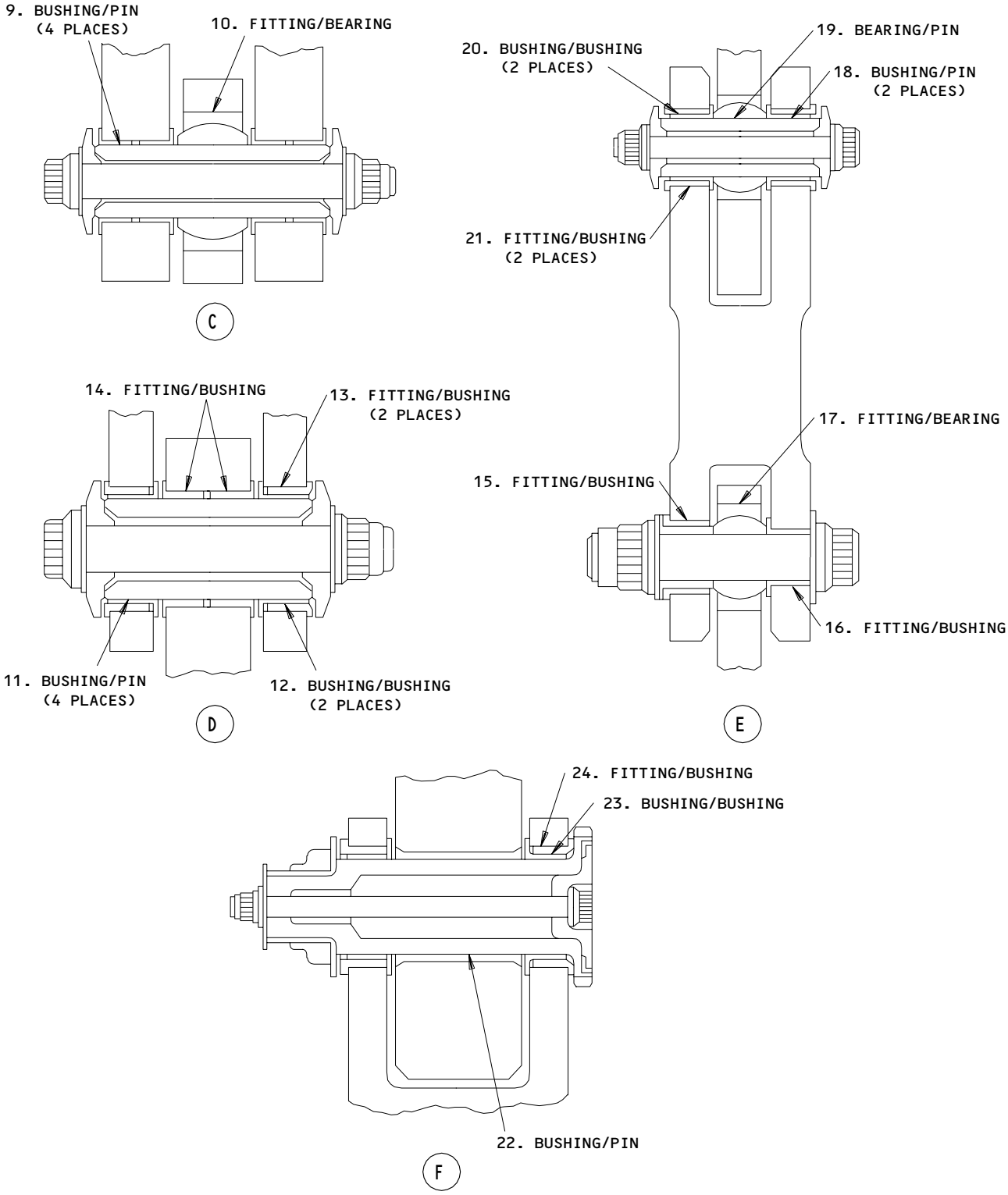
      S 226-001
      (1) Use these wear limits for the inspection of the strut (Fig. 601).

      S 226-005
      (2) Use these wear limits for the inspection of the strut thrust reverser hinge beam bushing/bearings (Fig. 602).





Strut Wear Limits
Figure 601 (Sheet 1)



Strut Wear Limits
Figure 601 (Sheet 2)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR.
			DIAMETER		MAX WEAR DIM.	MAX DIAM CLEAR-ANCE			
			MIN	MAX					
1	BUSHING	ID	1.4063	1.4071	1.4100	0.0047	X		
	PIN	OD	1.4048	1.4053	1.3924			X	
2	BUSHING	ID	1.4063	1.4071	1.4103	0.005	X		
	PIN	OD	1.4048	1.4053	1.4021			X	
3	BUSHING	ID	1.6250	1.6258	1.6265	-0.0006 *[1]	X		
	BUSHING	OD	1.6265	1.6274	---		X		
4	FITTING	ID	1.8750	1.8759	1.8771	-0.0006 *[1]		X	
	BUSHING	OD	1.8771	1.8780	---		X		
5	BUSHING	ID	1.3125	1.3133	1.3161	0.0046	X		
	PIN	OD	1.3110	1.3115	1.3087			X	
6	BUSHING	ID	1.5000	1.5008	1.5000	-0.0006 *[1]	X		
	BUSHING	OD	1.5015	1.5023	---		X		
7	FITTING	ID	1.7509	1.7500	1.7529	-0.0006 *[1]		X	
	BUSHING	OD	1.7520	1.7529	---		X		
8	FITTING	ID	1.5000	1.5008	1.5015	-0.0006 *[1]		X	
	BUSHING	OD	1.5015	1.5023	---		X		
9	BUSHING	ID	1.5000	1.5008	1.5025	0.005	X		
	PIN	OD	1.4970	1.4975	1.4958			X	
10	FITTING	ID	2.8510	2.8520	2.8525	0.003	X		
	BEARING	OD	2.8495	2.8500	2.8485		X		
11	BUSHING	ID	1.6250	1.6258	1.6288	0.0048	X		
	PIN	OD	1.6235	1.6240	1.6210			X	
12	BUSHING	ID	1.8125	1.8133	1.8141	-0.0006 *[1]	X		
	BUSHING	OD	1.8141	1.8149	---		X		
13	FITTING	ID	2.0313	2.0322	2.0331	-0.0006 *[1]		X	
	BUSHING	OD	2.0331	2.0340	---		X		

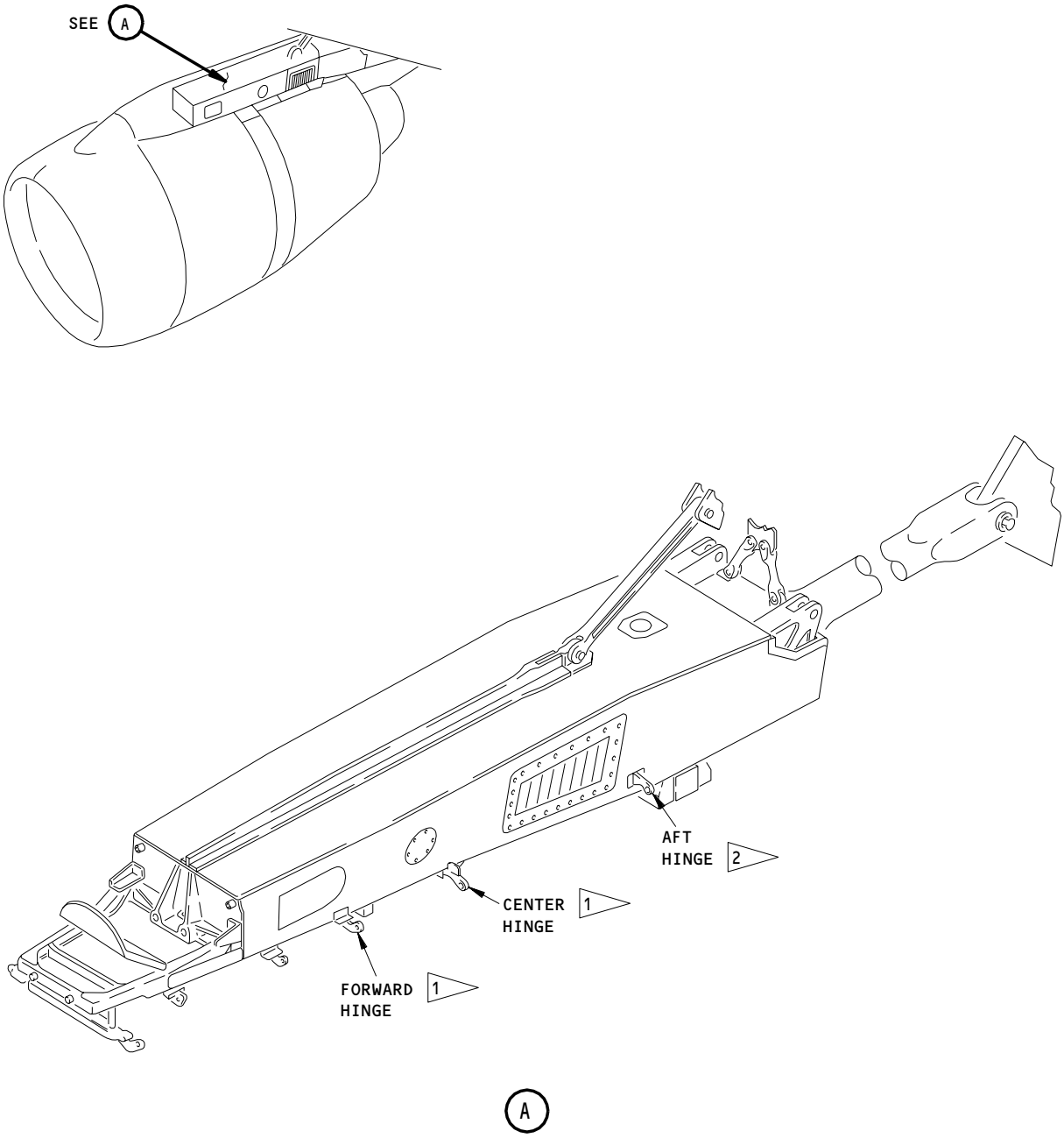
*[1] INTERFERENCE FIT

Strut Wear Limits
Figure 601 (Sheet 3)

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR
			DIAMETER		PER-MITTED WEAR DIM.	MAX DIA CLEAR-ANCE			
			MIN	MAX					
14	FITTING	ID	1.8750	1.8758	1.8767	-0.0006		X	
	BUSHING	OD	1.8767	1.8775	---	1	X		
15	FITTING	ID	1.0000	1.0008	1.0014	-0.0006		X	
	BUSHING	OD	1.0014	1.0021	---	1	X		
16	FITTING	ID	0.7500	0.7506	0.7512	-0.0006		X	
	BUSHING	OD	0.7512	0.7519	---	1	X		
17	FITTING	ID	1.3594	1.3604	1.3609	0.003	X		
	BEARING	OD	1.3589	1.3594	1.3579		X		
18	BUSHING	ID	0.7500	0.7506	0.7526	0.0031	X		
	PIN	OD	0.7490	0.7495	0.7475			X	
19	BEARING	ID	0.7495	0.7500	0.7525	0.003	X		
	PIN	OD	0.7490	0.7495	0.7470			X	
20	BUSHING	ID	0.8750	0.8758	0.8763	-0.0003	X		
	BUSHING	OD	0.8763	0.8770	---	1	X		
21	FITTING	ID	1.0000	1.0008	1.0014	-0.0006		X	
	BUSHING	OD	1.0014	1.0021	---	1	X		
22	BUSHING	ID	1.5625	1.5633	1.5665	0.005	X		
	PIN	OD	1.5610	1.5615	1.5583			X	
23	BUSHING	ID	1.7188	1.7196	1.7204	-0.0006	X		
	BUSHING	OD	1.7204	1.7213	---	1	X		
24	FITTING	ID	1.9375	1.9384	1.9392	-0.0006		X	
	BUSHING	OD	1.9392	1.9401	---	1	X		

1 INTERFERENCE FIT

Strut Wear Limits
Figure 601 (Sheet 4)



1 BUSHING WEAR LIMIT: 0.010 INCH ON DIAMETER

2 SPHERICAL BEARING WEAR LIMIT: 0.008 INCH CLEARANCE BALL TO RACE

Thrust Reverser Hinge Beam Wear Limits
Figure 602

STRUT ATTACH FUSE PINS - REMOVAL/INSTALLATION

1. General
   A. This procedure removes and installs the fuse pins of the diagonal brace, upper link, and strut to wing fittings.

TASK 54-51-02-004-001

2. Fuse Pin Removal (ENGINE INSTALLED)
   A. General
      (1) Both pins can be removed from either the upper link or the diagonal brace. However, when both pins are removed from one linkage the other linkage must have both pins installed to support the strut and engine.
      (2) Platforms and stands are necessary to get access to the engine and the strut. A crane and overhead sling are used to support the engine when the fuse pin is removed.
      (3) The weight of the power plant is approximately 11000 pounds (4989.5 kg). When the power plant is supported with a crane, a dynamometer or precision load positioner must be used. The strut and fuse pins can be damaged if the engine is not supported correctly. A crane that has an adjustable load limiter is satisfactory.
   B. Equipment
      (1) Crane - 12,000 pounds (5443.11 kg) capacity.
      (2) Dynamometer - 0-20,000 pound (0-9071.85 kg) capacity

          NOTE: A dynamometer is not necessary if the crane has an adjustable load limiter or if a precision load positioner is used.

      (3) Removal/Installation Kit, Fuse Pin - B54018
      (4) Sling Equipment - B54017
      (5) Tag lines - Used for controlling the overhead hoisting sling
      (6) Container - 10-gallon (37.85 liter) capacity (for fuel)
      (7) Container - 12-gallon (45.42 liter) capacity (for hydraulic fluid)
   C. References
      (1) NDT Part 6, 54-40-01

(2) AMM 20-41-00/201, Static Grounding
(3) AMM 24-22-00/201, Control (Supply Power)
(4) AMM 27-81-00/201, Leading Edge Slat System
(5) AMM 29-11-00/201, Main Hydraulic Systems
(6) AMM 54-52-01/401, Strut Fairings
(7) AMM 71-11-04/401, Fan Cowl Panels
(8) AMM 78-31-00/201, Thrust Reverser System

D. Access

(1) Location Zones

410	Power Plant Nacelle Left
420	Power Plant Nacelle Right
430	Nacelle Strut Left
440	Nacelle Strut Right
510	Wing Leading Edge - Left, Forward of front spar, inboard of the strut
610	Wing Leading Edge - Right, Forward of front spar, inboard of the strut

(2) Access Panels

511KT	Left Leading Edge - Aft of Strut
611KT	Right Leading Edge - Aft of Strut
433FL	Engine no. 1 outboard side of strut
433MR	Engine no. 1 inboard side of strut
443FR	Engine no. 2 outboard side of strut
443ML	Engine no. 2 inboard side of strut

E. Prepare to Remove the Fuse Pins.

S 864-002
(1) Make sure the forward thrust levers are at the idle position.

S 864-003
(2) Make sure the fuel control switch is in the CUTOFF position.

S 044-004

WARNING: DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Do the deactivation procedure for the thrust reverser for ground maintenance (AMM 78-31-00/201).

S 044-005
(4) Do the deactivation procedure for the leading edge slats in the stowed position (AMM 27-81-00/201).

S 014-006
(5) Remove the forward and the underwing fairings (AMM 54-52-01/401).

S 014-007
(6) Remove the applicable access panel, 511KT or, 611KT.

NOTE: These panels are on the upper leading edge of the wing. and are above the underwing fairing of the strut. Open these panels to get access to the upper link.

S 014-115
(7) Remove the applicable panels 433FL and 433MR or 443FR and 443ML.

S 014-008
(8) Open the access doors of the aft fairing.

S 864-009
(9) Ground the airplane (AMM 20-41-00/201).

S 014-010
(10) Remove the fan cowl panels (AMM 71-11-04/401).

S 864-011
(11) Remove the hydraulic power (AMM 29-11-00/201).
(a) Release the pressure from the hydraulic system.

S 864-012
(12) Close the fuel shutoff valves for the applicable engine.

S 864-047
(13) Close the hydraulic shutoff valves for the applicable engine.

S 864-013
(14) Drain the fuel supply line and hydraulic fluid lines to the engine.

S 864-014
(15) Remove the electrical power (AMM 24-22-00/201).

F. Remove the Pins for the Upper Link or the Diagonal Brace (Fig. 401)

S 024-225
(1) Remove the nut, washers, bolt and end caps from each pin.

S 484-220
(2) Install the Sling Equipment to the connections on the fan case (Fig. 402).

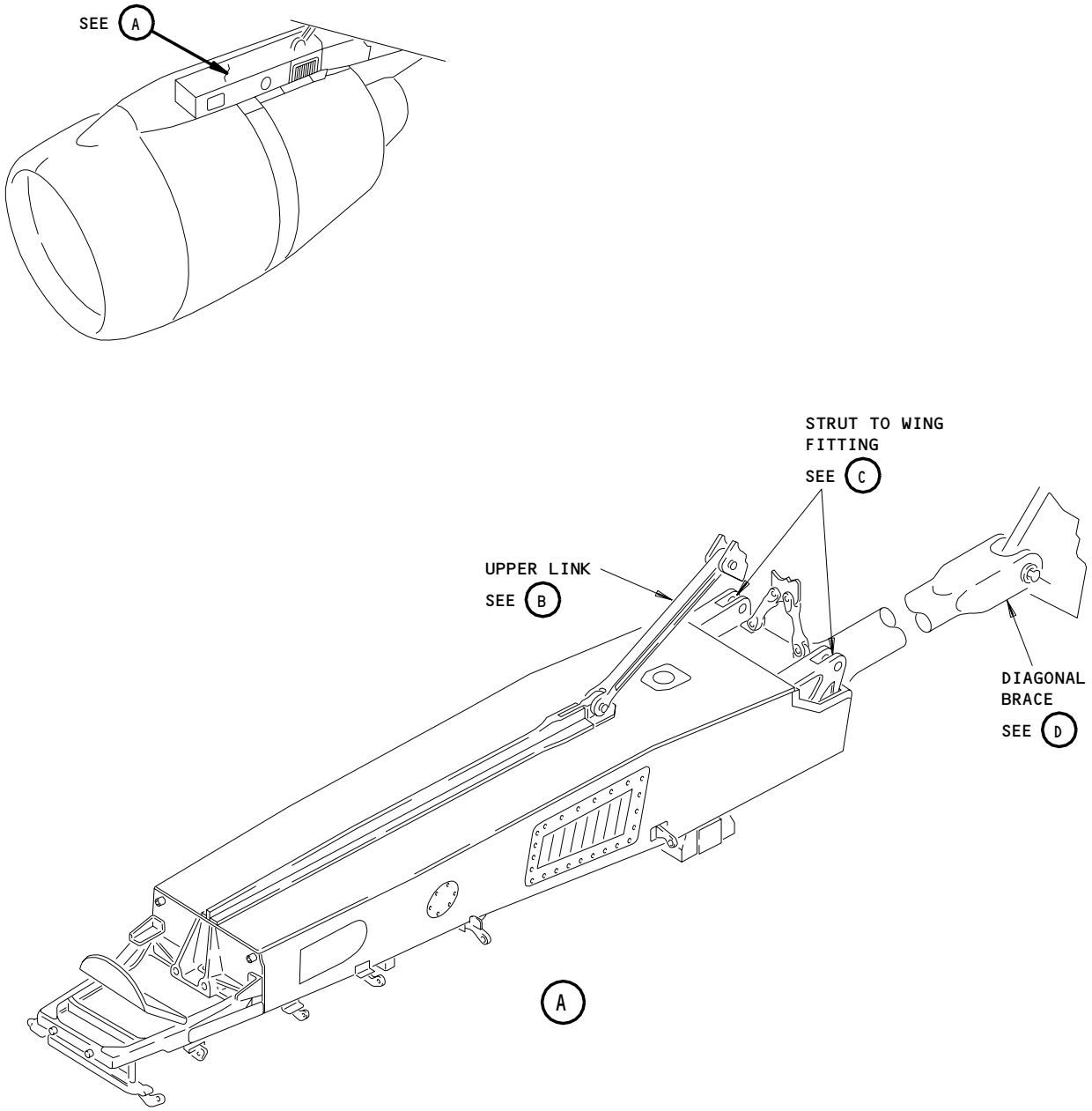
S 824-223

WARNING: USE ONLY EQUIPMENT SPECIFIED BY THE MANUFACTURERS. USE THE CORRECT EQUIPMENT WITH THE OVERHEAD SLING, DYNAMOMETER AND/OR PRECISION LOAD POSITIONER.

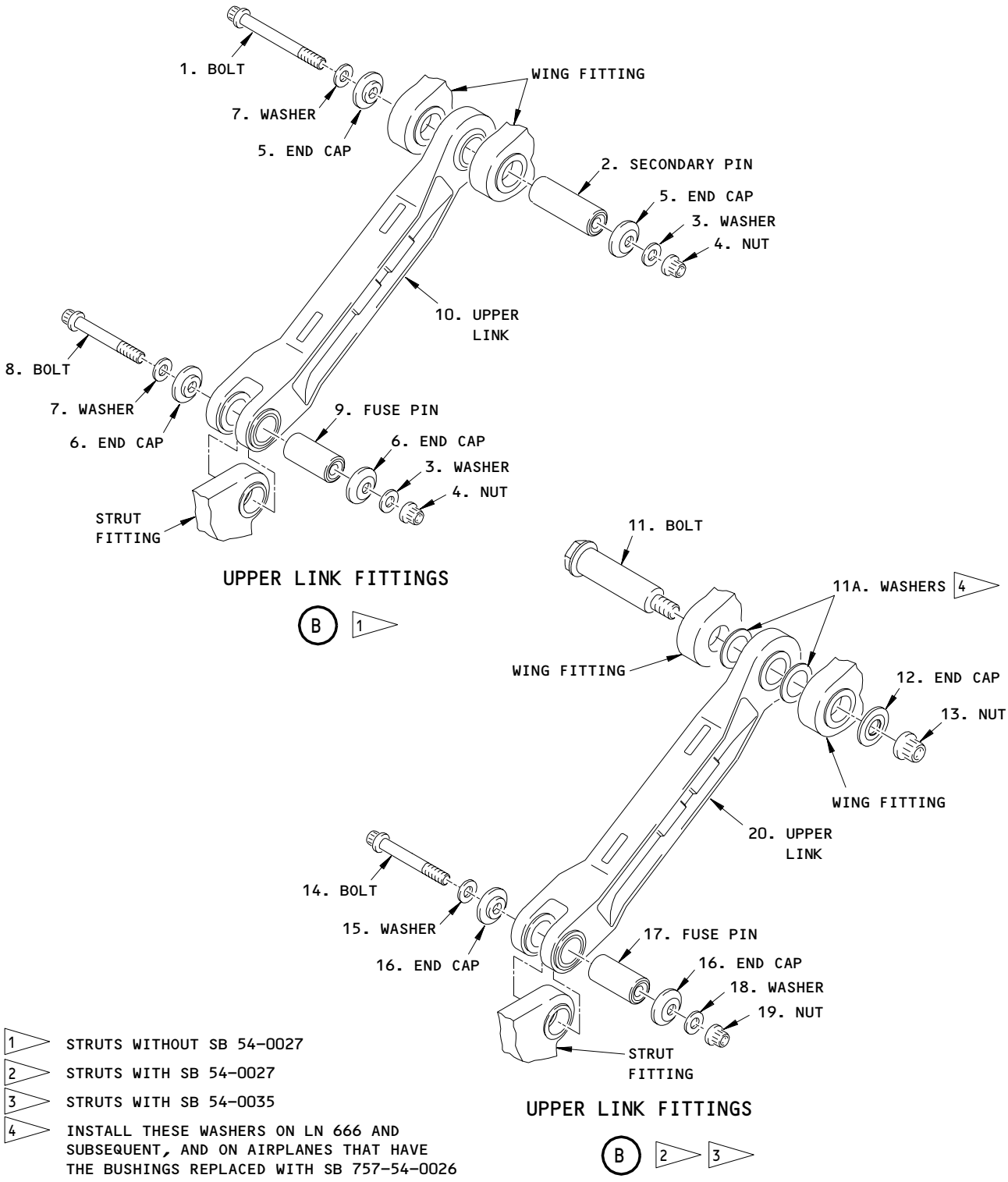
CAUTION: DO NOT PUT TOO MUCH FORCE ON THE STRUT AND ENGINE IN THE UP DIRECTION OR STRUCTURAL DAMAGE WILL OCCUR. THE MAXIMUM FORCE IN THE UP DIRECTION AT THE FRONT OF THE STRUT IS 12000 POUNDS (5443.11 Kg). DO NOT PUT MORE FORCE ON THE STRUT TO TRY TO TURN THE PIN.

(3) Do these steps to remove the force on the pin:
  (a) Use the crane to lift the strut in 500 pound (226.8 kg) increments until the load is approximately 6000 pounds (2721.5 kg).
  (b) Continue to increase the cranes load in increments of 250 pounds (113.4 kg) or less, to remove the load from the fuse pin.
    1) Adjust the load until you can turn the fuse pin with a maximum torque of 125 inch-pounds (14.12 Nm).

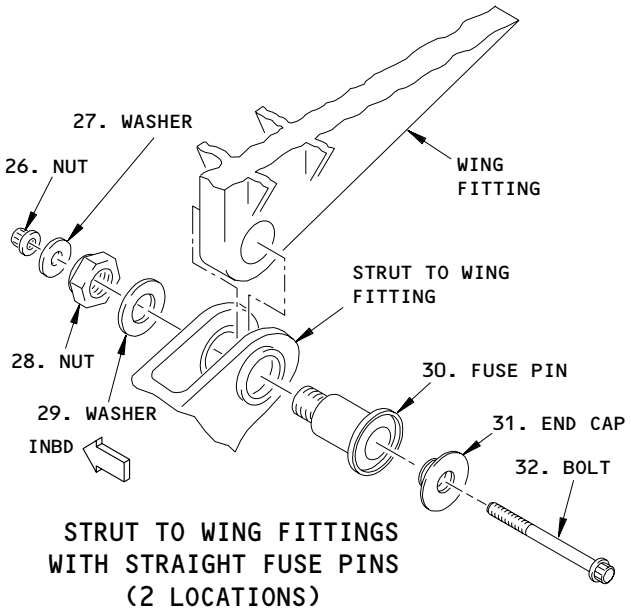
      NOTE: Do not remove the pin if it has a load on it.



Nacelle Strut Fuse Pins Installation
Figure 401 (Sheet 1)

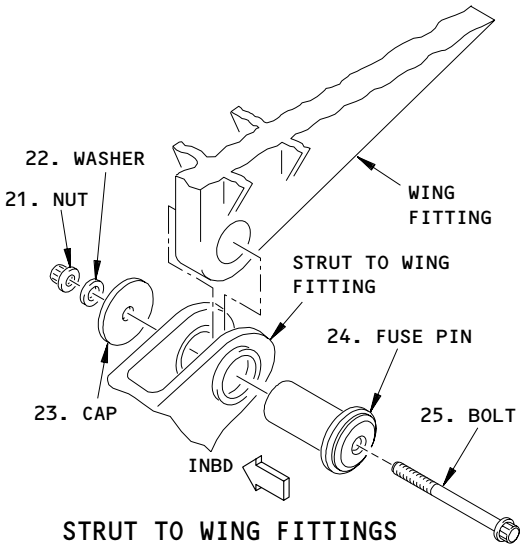


Strut Installation - Thrust Links Attachments
Figure 401 (Sheet 2)



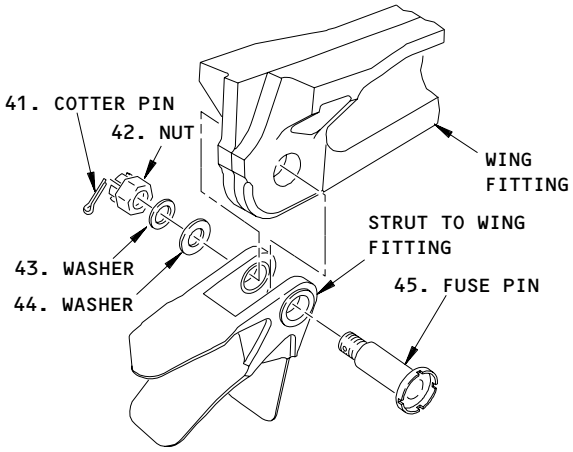
STRUT TO WING FITTINGS
WITH STRAIGHT FUSE PINS
(2 LOCATIONS)

C



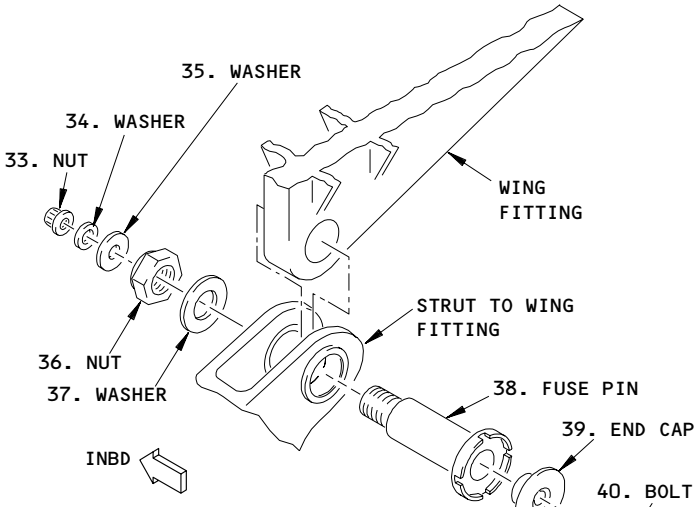
STRUT TO WING FITTINGS
WITH BULKHEAD FUSE PINS
(2 LOCATIONS)

C



STRUT TO WING FITTINGS
WITH STRAIGHT FUSE PINS (15-5PH)
(2 LOCATIONS)

C 3

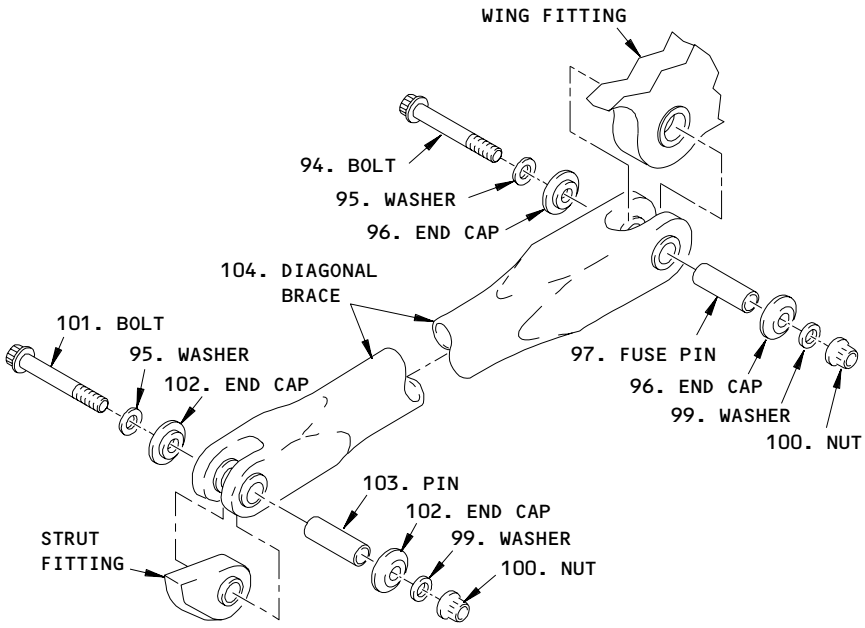


STRUT TO WING FITTINGS
WITH STRAIGHT FUSE PINS (15-5PH)
(2 LOCATIONS)

C 5

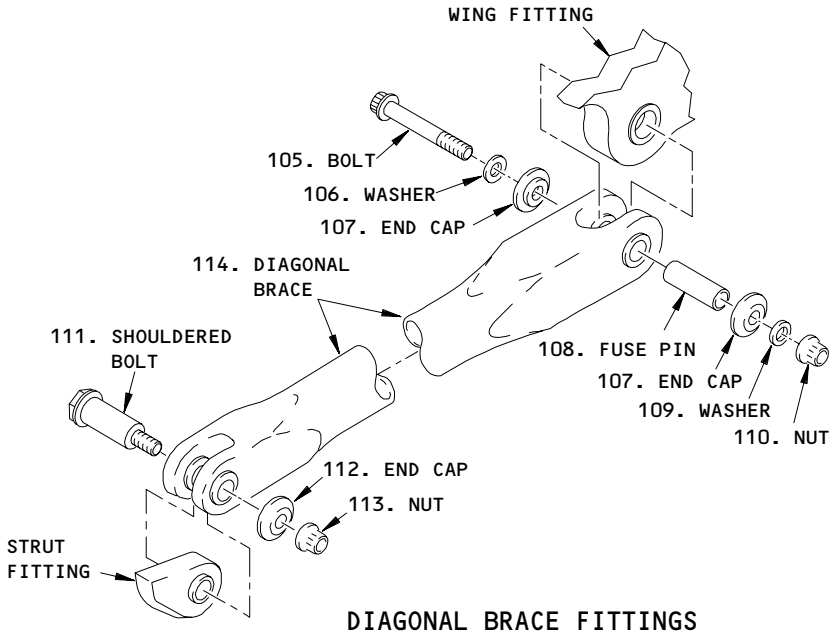
3 STRUTS WITH SB 54-0035
5 STRUTS WITH SB 54-A0020

Strut Installation - Thrust Links Attachments
Figure 401 (Sheet 3)



DIAGONAL BRACE FITTINGS

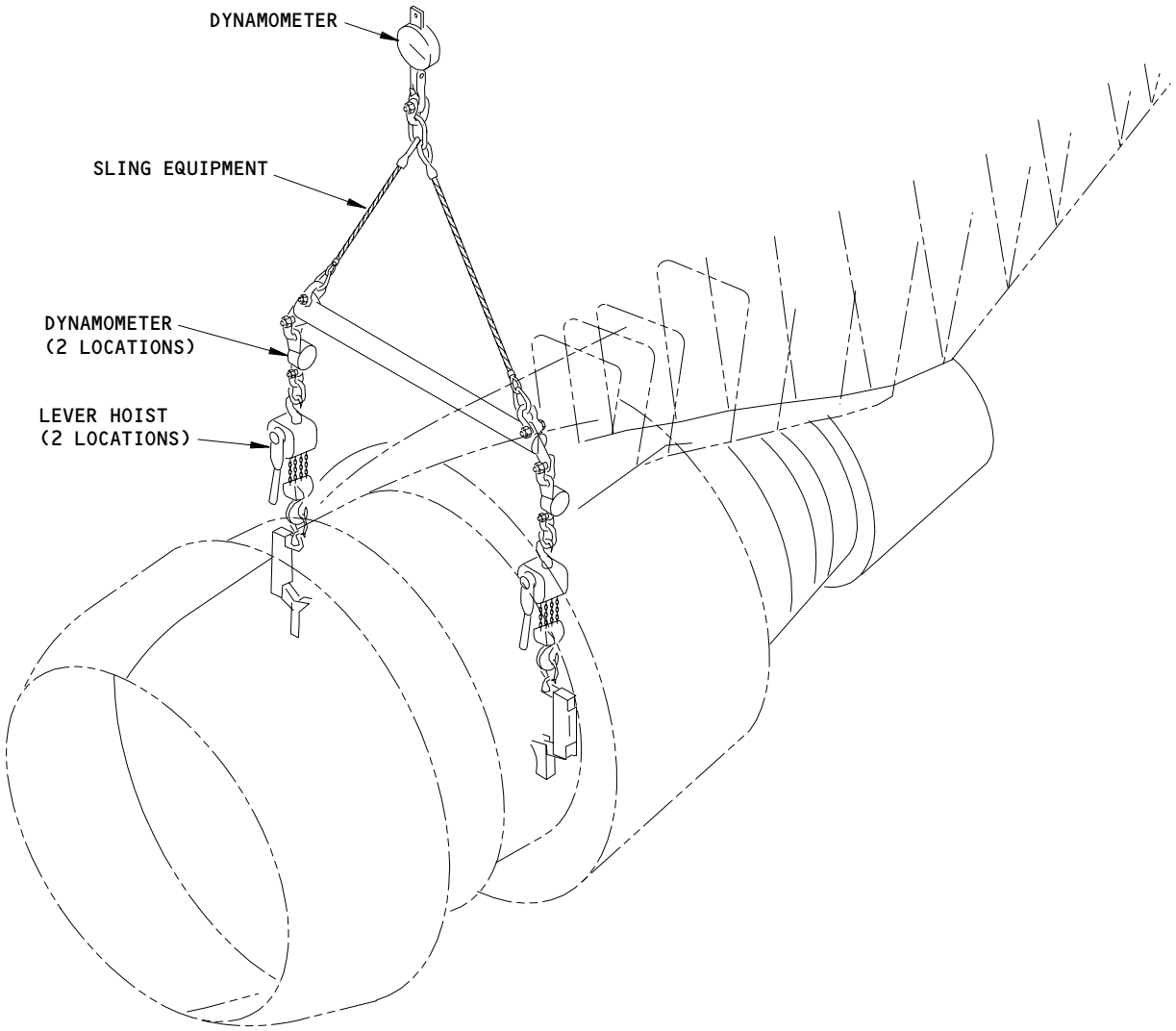
D 1



DIAGONAL BRACE FITTINGS

D 2

Strut Installation – Thrust Links Attachments
Figure 401 (Sheet 4)



Sling Equipment Installation
Figure 402

S 024-224

WARNING: DO NOT REMOVE THE UPPER LINK AND THE DIAGONAL BRACE AT THE SAME TIME. THE STRUT CAN SUDDENLY MOVE IN AN UNUSUAL DIRECTION. STRUCTURAL DAMAGES AND INJURIES TO PEOPLE CAN OCCUR.

CAUTION: DO NOT REMOVE THE PIN UNLESS IT TURNS FREELY WITH A MAXIMUM TORQUE OF 125 INCH-POUNDS (14.12 Nm). THE PIN IS CARRYING A LOAD IF IT WILL NOT TURN FREELY. IF YOU REMOVE A PIN THAT IS CARRYING A LOAD, STRUCTURAL DAMAGE WILL OCCUR.

CAUTION: THE FUEL LINE ON THE LEFT STRUT IS ATTACHED TO THE UPPER LINK. REMOVE THE BRACKET OR SUPPORT THE LINK TO PREVENT FORCES ON THE FUEL LINE WHICH COULD DAMAGE IT.

(4) Remove the fuse pins.
  (a) Remove the fuse pin if it turns freely.
  (b) As you remove the fuse pin, install the slug behind the fuse pin.
  (c) Do not change the load on the strut until you reinstall the fuse pin.

G. Remove the Fuse Pins from the Strut-to-Wing (Midspar) Fittings (Fig. 401)

S 024-226

(1) ON AIRPLANES PRE SB 54-0035;
Remove the nut, washer, bolt, and end cap from the fuse pin.
  (a) Install the appropriate puller plate tool on the fuse pin. There is a difference between the tools for bulkhead and straight fuse pins.

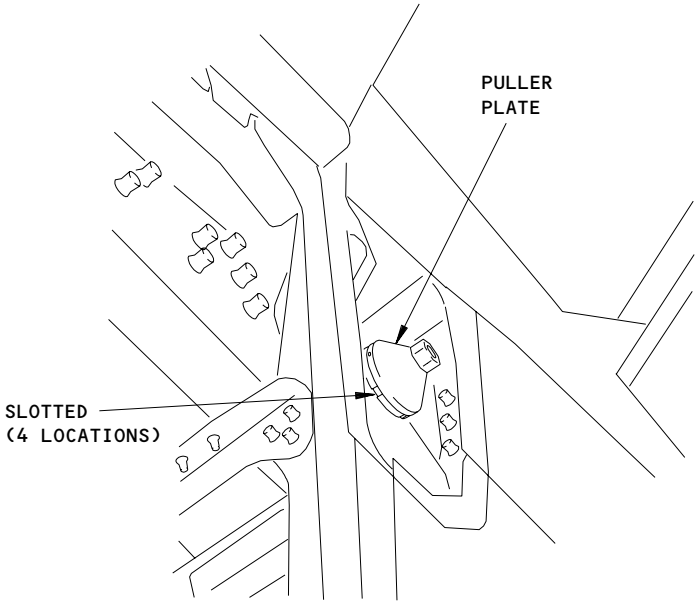
S 024-228

(2) Install the engine support sling to the connections on the fan case (Fig. 402).

S 024-229

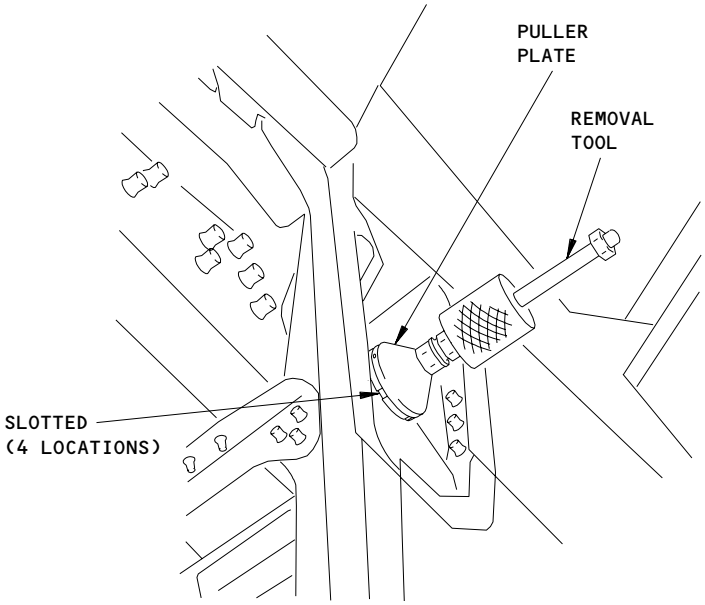
(3) Install a load cell between the spreaders and the overhead crane that is visible to the crane operator at all times.

NOTE: The load cell is not necessary if the crane includes an adjustable load limiter or if a precision load positioner is used.



FUSE PIN REMOVAL TOOL – PULLER ASSEMBLY
WITH STRAIGHT FUSE PIN
(2 LOCATIONS)

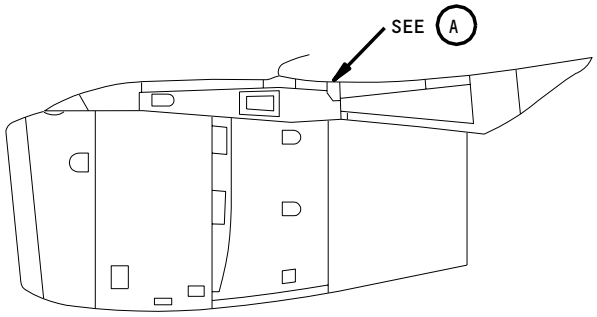
A

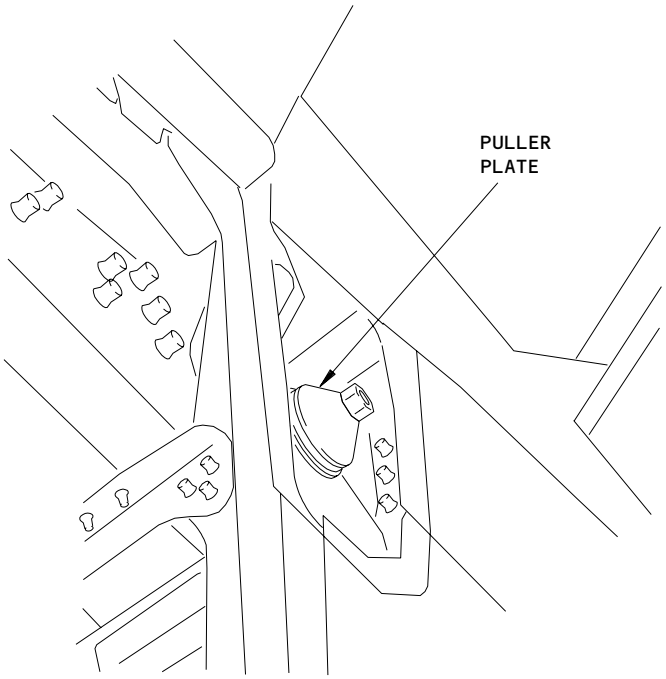


FUSE PIN REMOVAL TOOL WITH STRAIGHT FUSE PIN
(2 LOCATIONS)

A

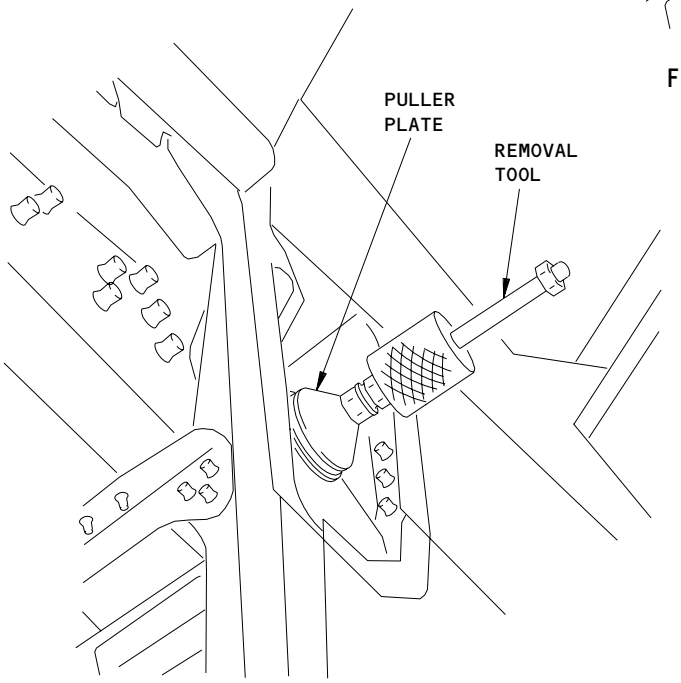
Fuse Pin Removal Tool Installation
Figure 403 (Sheet 1)





FUSE PIN REMOVAL TOOL – PULLER PLATE
WITH BULKHEAD FUSE PIN
(2 LOCATIONS)

A



FUSE PIN REMOVAL TOOL WITH BULKHEAD FUSE PIN
(2 LOCATIONS)

A

Fuse Pin Removal Tool Installation
Figure 403 (Sheet 2)

E46417

S 824-230

CAUTION: DO NOT PUT TOO MUCH FORCE IN THE UP DIRECTION ON THE STRUT OR STRUCTURAL DAMAGE WILL OCCUR. THE MAXIMUM FORCE IN THE UP DIRECTION AT THE FRONT OF THE STRUT IS 12000 POUNDS (5443.11 Kg). DO NOT PUT MORE FORCE ON THE STRUT TO TRY TO TURN THE FUSE PIN.

(4) Adjust the crane and sling to apply a force that is equal to the weight of the strut, the power plant and the sling. The fuse pin that is to be removed cannot be loaded.
   (a) Do these steps to remove the force on the fuse pin:
      1) Use the crane to lift the strut in 500 pound (226.8 kg) increments until the load is approximately 6000 pounds (2721.5 kg).
      2) Continue to increase the cranes load in increments of 250 pounds (113.4 kg) or less, to remove the load from the fuse pin.
      3) Adjust the loading until you can turn the fuse pin with a minimum torque.

         NOTE: Repeatedly adjust the load and try to turn the fuse pin. When the torque value necessary to turn the fuse pin begins to increase, you have gone past the minimum torque.

      4) The sling and lever hoists should be oriented within 5 degrees true vertical.

         CAUTION: WHEN TWISTING THE ENGINE, DO NOT ALLOW THE LOAD READINGS ON THE TWO LOWER SLING DYNAMOMETERS TO BE DIFFERENT BY MORE THAN 1500 POUNDS (680.4 Kg) OR DAMAGE TO EQUIPMENT MAY OCCUR.

      5) Use the two lever hoists to twist the engine and find the position where the torque required to turn the fuse pin is is less than 125 inch-pounds (14.12 Nm).

         NOTE: By lifting and twisting the engine to the appropriate position, the fuse pin will be unloaded enough to allow removal.

      6) Adjust the load until you can turn the fuse pin with a maximum torque of 125 inch-pounds (14.12 Nm).

         NOTE: Do not remove the pin if it has a load.

CAUTION: DO NOT REMOVE BOTH FUSE PINS IN THE STRUT TO WING FITTINGS AT THE SAME TIME. ONLY REMOVE ONE FUSE PIN AT A TIME. IF YOU REMOVE BOTH FUSE PINS, STRUCTURAL DAMAGE WILL OCCUR.

DO NOT REMOVE THE FUSE PIN UNLESS IT TURNS FREELY WITH A MAXIMUM TORQUE OF 125 INCH-POUNDS (14.12 Kg). THE PIN HAS A LOAD ON IT WHEN IT WILL NOT TURN FREELY. IF YOU REMOVE A PIN THAT HAS A HEAVY LOAD ON IT, STRUCTURAL DAMAGE WILL OCCUR.

(b) Remove the fuse pin from the strut-to-wing fitting.

NOTE: Do not remove the second fuse pin until after you reinstall the first fuse pin.

S 024-231

(5) ON AIRPLANES POST SB 54-0035;
Remove the nut or nuts on the fuse pin.

NOTE: Use the puller plate tool to hold the pin while removing the nut.

S 484-232

(6) Install the fuse pin removal tool on the puller plate tool (Fig. 403).
(a) Gently rock the engine from side-to-side to ease the pin removal if necessary.
(b) Use the slide hammer on the removal tool to tap the fuse pin out of the fitting.
(c) As you remove the fuse pin, install the midspar slug behind the fuse pin.
(d) Do not change the load on the strut until you reinstall the fuse pin again.

TASK 54-51-02-404-048

3. Install the Fuse Pins (ENGINE INSTALLED)
A. General
(1) Both pins can be removed from either the upper link or the diagonal brace. However, when both pins are removed from one linkage the other linkage must have both pins installed to support the strut and engine.
(2) Platforms and stands are necessary to get access to the engine and the strut. A crane and overhead sling are used to support the engine when the fuse pin is removed.

(3) The weight of the power plant is approximately 11000 pounds (4989.5 kg). When the power plant is supported with a crane, a dynamometer or precision load positioner must be used. The strut and fuse pins can be damaged if the engine is not supported correctly. A crane that has an adjustable load limiter is satisfactory.

B. Equipment

WARNING: DO NOT SUBSTITUTE EQUIPMENT USED FOR HOISTING. USE ONLY EQUIPMENT SPECIFIED BY MANUFACTURERS, PAYING PARTICULAR ATTENTION TO USE OF PROPER EQUIPMENT WITH OVERHEAD SLING, DYNAMOMETER AND/OR PRECISION LOAD POSITIONER.

(1) Crane - 12,000 pounds (5443.11 kg) capacity
(2) Dynamometer - 0-20,000 pound (0-9071.85 kg) capacity

NOTE: A dynamometer is not necessary if the crane has an adjustable load limiter or if a precision load positioner is used.

(3) Removal/Installation Kit, Fuse Pin - B54018.
(4) Sling Equipment - B54017
(5) Tag lines - Used for controlling the overhead hoisting sling
(6) Container - 10-gallon (37.85 liter) capacity (for fuel)
(7) Container - 12-gallon (45.42 liter) capacity (for hydraulic fluid)

C. Consumable Materials
(1) A00247 Sealant - BMS 5-95
(2) C00259 Primer - BMS 10-11, Type I
(3) D00633 Grease - BMS 3-33 (Preferred)
(4) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(5) D00014 Grease - MIL-G-21164 (Alternate)
(6) G50136 Compound - Corrosion Preventive BMS 3-38

D. References
(1) NDT Part 6, 54-40-01
(2) AMM 20-30-01/201, Adhesives, Cements, Sealers
(3) AMM 20-30-03/201, Finishing Materials

(4) AMM 20-30-04/201, Lubricants
(5) AMM 20-41-00/201, Static Grounding
(6) AMM 24-11-00/501, Generator Drive System
(7) AMM 24-22-00/201, Control (Supply Power)
(8) AMM 27-81-00/201, Leading Edge Slat System
(9) AMM 29-11-00/201, Main Hydraulic Systems
(10) AMM 29-11-00/501, Main Hydraulic Systems
(11) AMM 30-11-00/501, Wing Thermal Anti-Icing
(12) AMM 36-11-00/501, Pneumatic System
(13) AMM 51-31-01/201, Seals and Sealing
(14) AMM 54-51-01/601, Strut
(15) AMM 54-52-01/401, Strut Fairings
(16) AMM 71-11-04/401, Fan Cowl Panels
(17) AMM 78-31-00/201, Thrust Reverser System
(18) AMM 78-31-20/401, Thrust Reverser

E. Access

(1) Location Zones

410	Power Plant Nacelle Left
420	Power Plant Nacelle Right
430	Nacelle Strut Left
440	Nacelle Strut Right
510	Wing Leading Edge - Left, Forward of front spar, inboard of the strut
610	Wing Leading Edge - Right, Forward of front spar, inboard of the strut

(2) Access Panels

511KT	Left Leading Edge - Aft of Strut
611KT	Right Leading Edge - Aft of Strut
433FL	Engine no. 1 outboard side of strut
433MR	Engine no. 1 inboard side of strut
443FR	Engine no. 2 outboard side of strut
443ML	Engine no. 2 inboard side of strut

F. Examine the Fuse Pin for Worn Surfaces and Corrosion

S 214-102
(1) Check for worn parts, surface condition and corrosion at the attachment fittings (AMM 54-51-01/601).

S 214-103
(2) Check for worn parts and corrosion on all surfaces of the bolts, end caps, washers and fuse pins (AMM 54-51-01/601).
(a) Remove small surface corrosion from all non-bearing surfaces with a nylon scuff pad.
1) If the corrosion cannot be removed, replace the part.
(b) Clean the surfaces with solvent and apply two layers of primer (BMS 10-11).

S 254-104
(3) AIRPLANES PRE SB 54A0020 OR SB 54-0035;
Examine the strut to wing fuse pins for cracks.
(a) Clean the inner bore of the fuse pin.
(b) Perform an Eddy current inspection of the fuse pin. (NDT Part 6, 54-40-01).
1) If cracks are found or the eddy current inspection identifies differences, replace the fuse pin.

S 214-105
(4) Check all bushings for corrosion.

S 394-106
(5) If the bushings are not sealed, apply a fillet seal to the flanges of the bushings with sealant BMS 5-95 (AMM 51-31-01/201).

G. Install the Fuse Pins (Fig. 401)

S 424-201
(1) Install the fuse pin in the strut to wing fitting (Fig. 401).
(a) Check that the inner surface of the fuse pin is has a layer of corrosion preventive compound.
1) If there is no corrosion preventive compound, apply a layer of the compound that is 0.05 inch (1.27 mm) thick minimum.
(b) Apply a thin layer of grease to the outer surface of the fuse pin and the bolt.

S 424-234

(2) AIRPLANES PRE SB 54-0035;
Install the fuse pin, the end cap, the bolt, the washers and the nuts to connect the strut to wing fitting.

NOTE: Use the B54018 puller plate tool when you install nuts.

(a) Use the slide hammer on the removal tool to help you install of the fuse pin if necessary.
(b) Install the large nut (28 or 36) and washer on the fuse pin.
(c) Make sure the run-on torque of the large nut (28 or 36) is a minimum of 117 inch-pounds (13.22 Nm).
    1) Replace the nut if the torque value is below the limit.
    2) Measure the run-on torque again.
    3) Make sure the end cap is fully against the shoulder of the bolt.
(d) Tighten the large nut to 1000-1500 inch-pounds (112.92-169.38 Nm).
    1) Make sure the nut is installed against the washer.

CAUTION: DO NOT TORQUE THE FUSE PIN IF THE PIN IS LOADED. IF YOU TORQUE THE FUSE PIN WHEN IT HAS A LOAD, DAMAGE TO THE SURFACE OF THE FUSE PIN WILL OCCUR.

(e) As an alternate method, torque the fuse pin on the head side as follows:
    1) Make sure the nut is held to prevent it from turning.
    2) Make sure the fuse pin is not loaded by the midspar joint.
    3) Make sure no damage is on the inside finish of the fuse pin after torquing.
    4) Make sure the torque on the head side is plus or minus 10 percent of 1500 inch-pounds (1350 to 1650 inch-pounds or 152.53 to 186.43 Nm).
(f) Install the bolt, end cap, small washer, and nut.

(g) AIRPLANES PRE SB 54A0020 (311N5067 PINS);
Make sure the run-on torque of the nut (26) is a minimum of 10 inch-pounds (1.13 Nm).

(h) AIRPLANES POST SB 54A0020 (311N5217 [15-5PH] PINS);
Make sure the run-on torque of the nut (33) is a minimum of 14 inch-pounds (1.59 Nm).
1) Replace the nut if the torque value is less than the limit.
2) Measure the run-on torque again.

(i) AIRPLANES PRE SB 54A0020 (311N5067 PINS);
Tighten the nut (26) to 100-150 inch-pounds (11.30-16.95 Nm).

(j) AIRPLANES POST SB 54A0020 (311N5217 [15-5PH] PINS);
Tighten the nut (33) to 240-300 inch-pounds (27.12-33.90 Nm).
1) Make sure that the end cap is installed against the shoulder of the bolt.
2) Make sure the nut is installed against the washer.

(k) Remove any unwanted grease.

S 424-203

(3) AIRPLANES POST SB 54-0035;
Connect the strut to the wing at the strut to wing fittings (2 locations)(Fig. 402).

(a) Make sure the inner surface of the fuse pin has a layer of corrosion preventive compound.
1) If there is no corrosion preventive compound, apply the compound to the inner surface of the fuse pin with a minimum thickness of 0.05 inch (1.27 mm).

(b) Apply a thin layer of grease to the outer surface of the fuse pin and the bolt.

CAUTION: IF THERE ARE NO CRACKS AND NOT TOO MUCH WEAR, INSTALL THE FUSE PINS BACK INTO THE SAME FITTINGS THAT THEY CAME FROM TO MAKE SURE THAT CLEARANCE BETWEEN THE PIN AND THE FITTING IS CORRECT.

(c) Install the fuse pin, washers, and nut to connect the strut to the wing fittings. The head of the fuse pin is to be oriented to the outside surface of the strut.

(d) Make sure the run-on torque of the nut is a minimum of 150 inch-pounds (16.95 Nm).
1) Replace the nut if the torque value is below the limit.
2) Measure the run-on torque again.
3) Make sure the nut is fully against the washer.
(e) Tighten the nut to 1200-2500 inch-pounds (135.58-282.46 Nm). If the cotter pin cannot be inserted within this torque range, then back the nut off until the cotter pin can be inserted. The minimum allowable torque is 150 inch-pounds (16.95 Nm).

NOTE: You can install a maximum of 3 washers to align the nut for installation of the cotter pin.

1) Make sure that the washer is fully against the fuse pin.
(f) Inject grease into the fuse pin grease fittings until grease appears at either side of the joint. Wipe off any excess grease after installation.

S 424-235
(4) AIRPLANES PRE SB 54A0020 OR SB 54-0035 (BULKHEAD FUSE PINS); Install the fuse pin, washer and nut to connect the strut to wing fitting.
(a) Install the bolt, the cap, the washer and the nut.
1) Make sure the run-on torque of the nut is a minimum of 14 inch-pounds (1.59 Nm).
2) Replace the nut if the torque value is less than the limit.
3) Measure the run-on torque again.
(b) Tighten the nut to 240-300 inch-pounds (27.12-33.90 Nm).
1) Make sure that the cap is installed against the fuse pin.
2) Make sure the nut is installed against the washer.
(c) Remove any unwanted grease.

S 424-170
(5) AIRPLANES PRE SB 54-0027 OR SB 54-0035; Install the diagonal brace or upper link with the fuse pins, the bolts, the end caps, the washers, and the nuts.
(a) Make sure the inner surface of the fuse pins have a layer of corrosion preventive compound.
1) If there is no corrosion preventive compound, apply a layer of the compound that is 0.05 inch (1.27 mm) thick minimum.

(b) Apply a thin layer of grease to the outer surface of the bolts and the fuse pins.
(c) Install the diagonal brace with the fuse pins, bolts, end caps, washers and nuts.
(d) Check that the run-on torque of the nut on the diagonal brace is 32 inch-pounds (3.62 Nm) minimum.
1) Replace the nut if the torque is less than the limit.
2) Measure the torque again.
(e) Install the upper link with the fuse pin, bolt, end caps, washers and nut.
(f) Check that the run-on torque of the nut on the upper link is 50 inch-pounds (5.65 Nm) minimum.
1) Replace the nut if the torque is less than the limit.
2) Measure the torque again.
(g) Tighten the nut on the diagonal brace to 350-450 inch-pounds (39.54-50.84 Nm).
(h) Tighten the nut on the upper link to 450-650 inch-pounds (50.84-73.44 Nm).
1) Check that the washers are installed against the end caps.
(i) Remove any unwanted grease.

S 424-171
(6) AIRPLANES POST SB 54-0027 OR SB 54-0035;
Install the diagonal brace or upper link with the fuse pin, bolts, end caps, washers and nuts.
(a) Check that the inner surface of the fuse pin has a layer of corrosion preventive compound.
1) If there is no corrosion preventive compound, apply a layer of the compound to the inner surface of the fuse pin with a thickness of 0.05 inch (1.27 mm).
(b) Apply a thin layer of grease to the outer surface of the bolts and the fuse pin.
(c) AIRPLANES POST SB 54-0027;
Make sure the run-on torque of the diagonal brace nut (110) is 18 inch-pounds (2.03 Nm) minimum.
(d) AIRPLANES POST SB 54-0035;
Make sure the run-on torque of the diagonal brace nut (120) is 18 inch-pounds (2.03 Nm) minimum.
1) Replace the nut if the torque is less than the limit.

2) Measure the torque again.

(e) AIRPLANES POST SB 54-0027;
Tighten the diagonal brace nut (110) to 180-225 inch-pounds (20.34 to 25.42 Nm) and make sure that the washers are fully against the end caps.

(f) AIRPLANES POST SB 54-0035;
Tighten the diagonal brace nut (120) to 200-500 inch-pounds (22.60-56.49 Nm) and make sure that the washers are fully against the end caps.

(g) The run-on torque of the nut (19) on the upper link must be 30 inch-pounds (3.39 Nm) minimum.
1) Replace the nut if the torque is less than the limit.
2) Measure the torque again.

(h) Tighten the nut (19) on the upper link to 350-450 inch-pounds (39.54-50.84 Nm).
1) Check that the washers are installed against the end caps.

(i) Remove any unwanted grease.

H. Put the Airplane Back To It's Usual Condition.

S 944-027
(1) Make a check that all workstands are clear of the engine.

S 094-028
(2) Remove the force on the sling and remove the sling.

S 414-029
(3) Install the thrust reverser (AMM 78-31-20/401).

S 414-031
(4) Install the fan cowl panels, if removed (AMM 71-11-04/401).

S 434-033
(5) Connect the electrical plugs on the fuel shutoff valves and the hydraulic shutoff valves.

S 864-032
(6) Open the fuel shutoff valves and the hydraulic shutoff valves.

S 864-034
(7) Pressurize the applicable hydraulic system (AMM 29-11-00/201).

S 864-035
(8) Supply electrical power, if necessary (AMM 24-22-00/201).

S 864-036
(9) Remove the ground on the airplane (AMM 20-41-00/201).

S 794-037
(10) Make a check that there is no leakage from fuel and hydraulic lines.

S 714-038
(11) Do the procedure to test the power generation (AMM 24-11-00/501).

S 444-039
(12) Remove the safety locks from the leading edge slats (AMM 27-81-00/501).

S 714-040
(13) Do the procedure to test the hydraulic system (AMM 29-11-00/501).

S 714-041
(14) Do the procedure to test the pneumatic system (AMM 36-11-00/501).

S 714-042
(15) Do the procedure to test the wing anti-ice system (AMM 30-11-00/501).

S 414-043
(16) Close the access doors for the aft fairing.

S 414-044
(17) Install the fairings (AMM 54-52-01/401).

S 414-045
(18) Install the applicable access panel 511KT or 611KT on the upper leading edge of the wing.

S 414-112
(19) Install the applicable panels 433FL and 433MR or 443FR and 443ML.

S 444-046
(20) Do the procedure to activate the thrust reverser (AMM 78-31-00/501).

TASK 54-51-02-004-049

4. Remove the Fuse Pins (ENGINE REMOVED)

A. General

(1) Both pins can be removed from either the upper link or the diagonal brace. However, when both pins are removed from one linkage the other linkage must have both pins installed to support the strut.

(2) Platforms and stands are necessary to get access to the the strut. A crane and overhead sling are used to support the strut when the fuse pin is removed.

B. Equipment

WARNING: USE ONLY EQUIPMENT SPECIFIED BY THE MANUFACTURERS. USE THE CORRECT EQUIPMENT WITH THE OVERHEAD SLING, DYNAMOMETER AND/OR PRECISION LOAD POSITIONER.

(1) Crane - 12,000 pounds (5443.11 kg) capacity
(2) Dynamometer - 0-20,000 pound (0-9071.85 kg) capacity

NOTE: A dynamometer is not necessary if the crane has an adjustable load limiter or if a precision load positioner is used.

(3) Fixture, Strut Preload - B54003
(4) Removal/Installation Kit, Fuse Pin - B54018.
(5) Sling Equipment - B54017
(6) Tag lines - Used for controlling the overhead hoisting sling
(7) Tool, Grease Remover, Midspar Fuse Pin - B54014
(8) Container - 10-gallon (37.85 liter) capacity (for fuel)
(9) Container - 12-gallon (45.42 liter) capacity (for hydraulic fluid)

C. References
(1) AMM 20-41-00/201, Static Grounding
(2) AMM 24-22-00/201, Control (Supply Power)
(3) AMM 27-81-00/201, Leading Edge Slat System
(4) AMM 29-11-00/201, Main Hydraulic Systems
(5) AMM 54-52-01/401, Strut Fairings
(6) AMM 71-00-02/401, Power Plant
(7) AMM 71-11-04/401, Fan Cowl Panels
(8) AMM 78-31-00/201, Thrust Reverser System
(9) AMM 78-31-20/401, Thrust Reverser

D. Access
(1) Location Zones

410	Power Plant Nacelle Left
420	Power Plant Nacelle Right
430	Nacelle Strut Left
440	Nacelle Strut Right
510	Wing Leading Edge - Left, Forward of Front Spar, Inboard of the Strut
610	Wing Leading Edge - Right, Forward of Front Spar, Inboard of the Strut

(2) Access Panels

511KT	Left Leading Edge - Aft of Strut
611KT	Right Leading Edge - Aft of Strut
433FL	Engine no. 1 outboard side of strut
433MR	Engine no. 1 inboard side of strut
443FR	Engine no. 2 outboard side of strut
443ML	Engine no. 2 inboard side of strut

E. Prepare to Remove the Fuse Pins.

S 864-246

(1) Ground the airplane (AMM 20-41-00/201).

S 024-245

(2) If necessary, do these tasks to remove the power plant:
(a) Make sure the forward thrust levers are at the idle position.
(b) Make sure the fuel control switch is in the CUTOFF position.
(c) Close the fuel shutoff valves for the applicable engine.

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(d) Perform Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).
(e) Remove the Thrust Reverser (AMM 78-31-20/401).
(f) Remove the fan cowl panels (AMM 71-11-04/401).
(g) Close the hydraulic shutoff valves for the applicable engine.
(h) Drain the fuel supply line and hydraulic fluid lines to the engine.

S 044-247

(3) Remove the Power Plant (AMM 71-00-02/401).

S 044-255

WARNING: INSTALL LOCKS IN THE LEADING EDGE SLATS. THE ACCIDENTAL OPERATION OF THE SLATS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Perform deactivation procedure for the leading edge slats in the stowed position (AMM 27-81-00/201).

S 014-052

(5) Remove the forward and the underwing fairings (AMM 54-52-01/401).

S 014-053
(6) Remove the applicable access panel (511KT or 611KT).

NOTE: These panels are on the top leading edge of the wing and are above the underwing fairing of the strut. Open this panel to get access to the upper link.

S 014-113
(7) Remove the applicable panels (433FL and 433MR or 443FR and 443ML).

S 014-054
(8) Open the access doors of the aft fairing.

S 864-057
(9) Remove the hydraulic power (AMM 29-11-00/201).
(a) Release the pressure in the hydraulic system for the applicable strut.

S 034-060
(10) Disconnect the electrical connectors for the fuel shutoff valves.

S 034-061
(11) Disconnect the electrical connectors for the hydraulic shutoff valves.

S 864-063
(12) Remove the electrical power (AMM 24-22-00/201).

F. Remove the fuse pins from the Upper Link and/or the Diagonal Brace (Fig. 401)

S 024-238
(1) Remove the nut, washers, bolt and the end caps from the fuse pin.

S 484-237
(2) Install the strut preload fixture.
(a) Calculate the total weight of the strut and the preload fixture components.

NOTE: The weight of the strut is approximately 1200 pounds.

CAUTION: DO NOT PUT TOO MUCH FORCE ON THE STRUT OR STRUCTURAL DAMAGE WILL OCCUR. THE MAXIMUM FORCE AT THE FRONT OF THE STRUT IS 3000 POUNDS (1360.78 Kg) UP. DO NOT PUT ANY MORE FORCE ON THE STRUT IN ORDER TO TRY TO TURN THE PIN.

(b) Adjust the crane and the preload fixture to apply a force that is equal to the total weight that you calculated.
(c) Adjust the crane loading until you can turn the fuse pin with a maximum torque of 125 inch-pounds (14.12 Nm).

NOTE: Do not remove the pin if it requires more torque to turn the pin.

S 024-251

WARNING: DO NOT REMOVE THE UPPER LINK AND THE DIAGONAL BRACE AT THE SAME TIME. THE STRUT CAN SUDDENLY MOVE IN AN UNUSUAL DIRECTION. INJURIES TO PERSONS AND STRUCTURAL DAMAGE CAN OCCUR.

CAUTION: DO NOT REMOVE THE PIN UNLESS IT TURNS FREELY WITH A MAXIMUM TORQUE OF 125 INCH-POUNDS (14.12 Nm). THE PIN HAS A LOAD WHEN IT WILL NOT TURN FREELY. IF YOU REMOVE A PIN THAT HAS A LOAD, STRUCTURAL DAMAGE WILL OCCUR.

THE FUEL LINE ON THE LEFT STRUT IS ATTACHED TO THE UPPER LINK. REMOVE THE BRACKET OR SUPPORT THE LINK TO PREVENT FORCES ON THE FUEL LINE WHICH COULD DAMAGE IT.

(3) Remove the fuse pins.
(a) Remove the fuse pin, only if it turns freely.
1) As you remove the fuse pin, install the slug behind the pin.

2) Do not change the load on the strut until you reinstall the fuse pin.

G. Remove the Fuse Pins from the Strut-to-Wing (Midspar) Fittings (Fig. 401)

S 024-240

(1) Remove the nut, washer, bolt, and end cap from the fuse pin.

S 484-241

(2) Install the puller plate tool on the fuse pin (Fig. 403).

S 484-242

(3) Install the strut preload fixture.

CAUTION: DO NOT PUT TOO MUCH FORCE ON THE STRUT OR STRUCTURAL DAMAGE WILL OCCUR. THE MAXIMUM FORCE AT THE FRONT OF THE STRUT IS 3000 POUNDS UP (1360.78 Kg). DO NOT PUT ANY MORE FORCE ON THE STRUT IN ORDER TO TRY TO TURN THE PIN.

(a) Adjust the crane and the preload fixture to apply a force that is equal to the total weight of the strut and the preload fixture.

(b) Adjust the loading until you can turn the fuse pin with a maximum torque of 125 inch-pounds (14.12 Nm).

NOTE: Do not remove the pin if it has a load.

S 024-265

CAUTION: DO NOT REMOVE BOTH FUSE PINS IN THE STRUT TO WING FITTINGS AT THE SAME TIME. ONLY REMOVE ONE FUSE PIN AT A TIME. IF YOU REMOVE BOTH FUSE PINS, STRUCTURAL DAMAGE WILL OCCUR. DO NOT REMOVE THE PIN UNLESS IT TURNS FREELY WITH A MAXIMUM TORQUE OF 125 INCH-POUNDS (14.12 Nm). A PIN HAS A LOAD ON IT IF IT WILL NOT TURN FREELY. IF YOU REMOVE A PIN THAT HAS A LOAD ON IT, STRUCTURAL DAMAGE WILL OCCUR.

(4) Remove the nut or nuts on the fuse pin.

NOTE: Use the puller plate tool to hold the pin while removing the nut.

(a) Install the fuse pin removal tool on the puller assembly tool (Fig. 403).

S 024-244

(5) Remove the fuse pin from the strut-to-wing fitting.

NOTE: Do not remove the fuse pin from the second fitting until after you install the first fuse pin.

(a) Gently rock the strut from side to side to ease the pin removal if necessary.
(b) Use the slide hammer on the removal tool to tap the fuse pin out of the fitting.
(c) As you remove the fuse pin, install the midspar slug behind the pin.
(d) Do not change the load on the strut until you reinstall the fuse pin again.

TASK 54-51-02-404-071

5. Install the Fuse Pins (ENGINE REMOVED)

A. General

(1) Both pins can be removed from either the upper link or the diagonal brace. However, when both pins are removed from one linkage the other linkage must have both pins installed to support the strut.
(2) Platforms and stands are necessary to get access to the strut. A crane and overhead sling are used to support the strut when the fuse pin is removed.

B. Equipment

WARNING: USE ONLY EQUIPMENT SPECIFIED BY THE MANUFACTURERS. USE THE CORRECT EQUIPMENT WITH THE OVERHEAD SLING, DYNAMOMETER AND/OR PRECISION LOAD POSITIONER.

CAUTION: BE CAREFUL WHEN THE POWER PLANT IS REMOVED OR INSTALLED. THE POWER PLANT HAS A WEIGHT OF APPROXIMATELY 11000 POUNDS.

(1) Crane - 12,000 pounds (5443.11 kg) capacity (5443.1 kg)
(2) Dynamometer - 0-20,000 pound (0-9071.85 kg) capacity

NOTE: A dynamometer is not necessary if the crane has an adjustable load limiter or if a precision load positioner is used.

(3) Fixture, Strut Preload - B54003
(4) Removal/Installation Kit, Fuse Pin - B54018.
(5) Sling Equipment - B54017
(6) Tag lines - Used for controlling the overhead hoisting sling
(7) Container - 10-gallon (37.85 liter) capacity (for fuel)
(8) Container - 12-gallon (45.42 liter) capacity (for hydraulic fluid)

C. Consumable Materials
(1) AOO247 Sealant - BMS 5-95
(2) COO259 Primer - BMS 10-11, Type I
(3) DOO633 Grease - BMS 3-33 (Preferred)
(4) DOOO13 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(5) DOOO14 Grease - MIL-G-21164 (Alternate)
(6) G50136 Compound - Corrosion Preventive BMS 3-38

D. References
(1) NDT Part 6, 54-40-01
(2) AMM 20-30-01/201, Adhesives, Cements, Sealers
(3) AMM 20-30-03/201, Finishing Materials
(4) AMM 20-30-04/201, Lubricants
(5) AMM 20-41-00/201, Static Grounding
(6) AMM 24-11-00/501, Generator Drive System
(7) AMM 24-22-00/201, Control (Supply Power)
(8) AMM 27-81-00/201, Leading Edge Slat System
(9) AMM 29-11-00/201, Main Hydraulic Systems
(10) AMM 29-11-00/501, Main Hydraulic Systems
(11) AMM 30-11-00/501, Wing Thermal Anti-Icing
(12) AMM 36-11-00/501, Pneumatic System
(13) AMM 51-31-01/201, Seals and Sealing
(14) AMM 54-51-01/601, Strut
(15) AMM 54-52-01/401, Strut Fairings
(16) AMM 71-00-02/401, Power Plant
(17) AMM 71-11-04/401, Fan Cowl Panels
(18) AMM 78-31-00/201, Thrust Reverser System
(19) AMM 78-31-20/401, Thrust Reverser

E. Access
(1) Location Zones
410 Power Plant Nacelle Left
420 Power Plant Nacelle Right
430 Nacelle Strut Left
440 Nacelle Strut Right
510 Wing Leading Edge - Left, Forward of Front Spar, Inboard of the Strut
610 Wing Leading Edge - Right, Forward of Front Spar, Inboard of the Strut

(2) Access Panels

511KT	Left Leading Edge - Aft of Strut
611KT	Right Leading Edge - Aft of Strut
433FL	Engine no. 1 outboard side of strut
433MR	Engine no. 1 inboard side of strut
443FR	Engine no. 2 outboard side of strut
443ML	Engine no. 2 inboard side of strut

F. Examine the Fuse Pin for Worn Surfaces and Corrosion.

S 214-107

(1) Check for worn parts, surface condition and corrosion at the attachment fittings (AMM 54-51-01/601).

S 214-108

(2) Check for worn parts and corrosion on all surfaces of the bolts, end caps, washers and fuse pins (AMM 54-51-01/601).
   (a) Remove small surface corrosion from all nonbearing surfaces with a nylon scuff pad.
      1) If the corrosion cannot be removed, replace the part.
   (b) Clean surfaces with solvent and apply two layers of primer (BMS 10-11).

S 254-109

(3) AIRPLANES PRE SB 54A0020 OR SB 54-0035;
Examine the strut to wing fuse pins for cracks.
   (a) Clean the inner bore of the fuse pin.
   (b) Do an Eddy current inspection of the bore of the fuse pin (NDT Part 6, 54-40-01).
      1) If cracks are found or the eddy current inspection identifies differences, replace the fuse pin.

S 214-110

(4) Check all bushings for corrosion.

S 394-111

(5) If the bushings are not sealed, apply a fillet seal to the flanges of the bushings with sealant BMS 5-95 (AMM 51-31-01/201).

G. Install the Fuse Pins (Fig. 401, 402).

S 424-204

(1) Install the fuse pin for the strut to wing fitting (Fig. 401).

(a) Check that the inner surface of the fuse pin is has a layer of corrosion preventive compound.

1) If there is no corrosion preventive compound, apply a layer of the compound that is 0.05 inch (1.27 mm) thick minimum.

(b) Apply thin layer of grease to outer surface of the fuse pin and the bolt.

(c) AIRPLANES POST SB 54A0020;
Install the fuse pin, the end cap, the bolt, the washers and the nuts to connect the strut to wing fitting.

NOTE: Use the B54018 puller plate tool when you install nuts.

1) Use the slide hammer on the removal tool to help you install of the fuse pin if necessary.

(d) Install the large nut (28 or 36) and washer on the fuse pin.

(e) Make sure the run-on torque of the large nut (28 or 36) is a minimum of 117 inch-pounds (13.22 Nm).

1) Replace the nut if the torque value is below the limit.

2) Measure the run-on torque again.

(f) Make sure the end cap is fully against the shoulder of the bolt.

(g) Tighten the large nut to 1000-1500 inch-pounds (112.99-169.48 Nm).

1) Make sure the nut is installed against the washer.

CAUTION: DO NOT TORQUE THE FUSE PIN IF THE PIN IS LOADED. IF YOU TORQUE THE FUSE PIN WHEN IT HAS A LOAD, DAMAGE TO THE SURFACE OF THE FUSE PIN WILL OCCUR.

(h) As an alternate method, torque the fuse pin on the head side as follows:

1) Make sure the nut is held to prevent it from turning.

2) Make sure the fuse pin is not loaded by the midspar joint.
3) Make sure there is no damage on the inside finish of the fuse pin after torquing.
4) Make sure the torque on the head side is plus or minus 10 percent of 1500 inch-pounds (1350 to 1650 inch-pounds, or 152.53 to 186.43 Nm).

(i) Install the bolt, end cap, small washer and nut.
(j) AIRPLANES PRE SB 54A0020 OR SB 54-0035 (311N5067 PINS);
Make sure the run-on torque of the nut (26) is a minimum of 10 pound-inches.
(k) AIRPLANES POST SB 54-A0020 (311N5217 [15-5PH] PINS);
Make sure the run-on torque of the nut (33) is a minimum of 14 inch-pounds (1.58 Nm).
1) Replace the nut if the torque value is less than the limit.
2) Measure the run-on torque again.
(l) AIRPLANES PRE SB 54A0020 OR SB 54-0035 (311N5067 PINS);
Tighten the nut (26) to 100-150 inch-pounds (11.30-16.95 Nm).
(m) AIRPLANES POST SB 54A0020 (311N5217 [15-5PH] PINS);
Tighten the nut (33) to 240-300 inch-pounds (27.12-33.90 Nm).
1) Make sure that the end cap is installed against the shoulder of the bolt.
2) Make sure the nut is installed against the washer.
(n) Remove any unwanted grease.

S 424-206
(2) AIRPLANES POST SB 54-0035;
Connect the strut to the wing at the strut-to-wing fittings (2 locations)(Fig. 401).
(a) Make sure the inner surface of the fuse pin has a layer of corrosion preventive compound.
1) If there is no corrosion preventive compound, apply the compound to the inner surface of the fuse pin with a minimum thickness of 0.05 inch (1.27 mm).
(b) Apply a thin layer of grease to the outer surface of the fuse pin and the bolt.

CAUTION: IF THERE ARE NO CRACKS AND NOT TOO MUCH WEAR, INSTALL THE FUSE PINS BACK INTO THE SAME FITTINGS THAT THEY CAME FROM TO MAKE SURE THAT CLEARANCE BETWEEN THE PIN AND THE FITTING IS CORRECT.

(c) Install the fuse pin, washers, and nut to connect the strut to the wing fittings. The head of the fuse pin is to be oriented to the outside surface of the strut.
(d) Make sure the run-on torque of the nut is a minimum of 150 inch-pounds (16.95 Nm).
1) Replace the nut if the torque value is below the limit.
2) Measure the run-on torque again.
3) Make sure the nut is fully against the washer.
(e) Tighten the nut to 1200-2500 inch-pounds (135.58-282.46 Nm). If the cotter pin cannot be inserted within this torque range, then back the nut off until the cotter pin can be inserted. The minimum allowable torque is 150 inch-pounds (16.95 Nm).

NOTE: You can install a maximum of 3 washers to align the nut for installation of the cotter pin.

1) Make sure that the washer is fully against the fuse pin.
(f) Inject grease into the fuse pin grease fittings until grease appears at either side of the joint. Wipe off excess grease after installation.

S 424-249
(3) AIRPLANES PRE SB 54A0020 OR SB 54-0035 (BULKHEAD FUSE PINS); Install the fuse pin, bolt, cap, washer and nut to connect the strut to the wing at the strut-to-wing fitting.
(a) Install the bolt, the cap, the washer and the nut.
(b) Make sure the run-on torque of the nut is a minimum of 14 inch-pounds (1.59 Nm).
1) Replace the nut if the torque value is less than the limit.
2) Measure the run-on torque again.
(c) Tighten the nut to 240-300 inch-pounds (27.12-33.90 Nm).
1) Make sure that the cap is installed against the fuse pin.
2) Make sure the nut is installed against the washer.
(d) Remove any unwanted grease.

S 424-172

(4) AIRPLANES PRE SB 54-0027 OR SB 54-0035;
Install the diagonal brace and/or the upper link with the fuse pins, the bolts, the end caps, the washers and the nuts.
(a) Make sure the inner surface of the pin has a layer of corrosion preventive compound.
1) If there is no corrosion preventive compound, apply a layer of the compound that is 0.05 inch (1.27 mm) thick minimum.
(b) Apply a thin layer of grease to the outer surface of the bolt and the pin.
(c) Make a check that the run-on torque of the nut on the diagonal brace is 30 inch-pounds (3.39 Nm) minimum
1) Replace the nut if the torque is less than the limit.
2) Measure the torque again.
(d) Make a check that the run-on torque of the nut on the upper link is 50 inch-pounds (5.65 Nm) minimum.
1) Replace the nut if the torque is less than the limit.
2) Measure the torque again.
(e) Tighten the nut on the diagonal brace to 350-450 inch-pounds (39.54-50.84 Nm).
(f) Tighten the nut on the upper link to 450-650 inch-pounds (50.84-73.44 Nm)
1) Make sure that the washers are installed against the end caps.
(g) Remove any unwanted grease.

S 424-173

(5) AIRPLANES POST SB 54-0027 OR SB 54-0035;
Install the diagonal brace and/or the upper link with the fuse pins, the bolts, the end caps, the washers and the nuts.
(a) Check that the inner surface of the pin has a layer of corrosion preventive compound.
1) If there is no corrosion preventive compound, apply a layer of the compound to the inner surface of the pin with a thickness of 0.05 inch (1.27 mm).

(b) Apply a thin layer of grease to the outer surface of the bolt and the pin.
(c) AIRPLANES POST SB 54-0027;
Make sure the run-on torque of the diagonal brace nut (110) is 18 inch-pounds (2.03 Nm) minimum.
(d) AIRPLANES POST SB 54-0035;
Make sure that the run-on torque of the diagonal brace nut (120) is 18 inch-pounds (2.03 Nm) minimum.
1) Replace the nut if the torque is less than the limit.
2) Measure the torque again.
(e) AIRPLANES POST SB 54-0027;
Tighten the diagonal brace nut (110) to 180-225 inch-pounds (20.34-25.42 Nm).
1) Make sure that the washers are fully against the end caps.
(f) AIRPLANES POST SB 54-0035;
Tighten the diagonal brace nut (120) to 200-500 inch-pounds (22.60-56.49 Nm).
1) Make sure that the washers are fully against the end caps.
(g) The run-on torque of the nut (19) on the upper link must be 30 inch-pounds (3.39 Nm) minimum.
1) Replace the nut if the torque is less than the limit.
2) Measure the torque again.
(h) Tighten the nut (19) on the upper link to 350-450 inch-pounds (39.54-50.84 Nm).
1) Check that the washers are installed against the end caps.
(i) Remove any unwanted grease.

H. Put the Airplane Back to It's Usual Condition.

S 094-073
(1) Make sure all workstands are away from the engine.

S 094-095
(2) Remove the force on the preload fixture and remove the fixture.

S 414-074
(3) Install the thrust reverser (AMM 78-31-20/401).

S 414-075
(4) Install the engine (AMM 71-00-02/401).

S 414-076
(5) Install the fan cowl panels, if removed (AMM 71-11-04/401).

S 434-077
(6) Connect the electrical plugs on the fuel shutoff valves.

S 434-078
(7) Connect the electrical plugs on the hydraulic shutoff valves.

S 864-079
(8) Open the fuel shutoff valves.

S 864-080
(9) Open the hydraulic shutoff valves.

S 864-081
(10) Supply hydraulic system (AMM 29-11-00/201).

S 864-082
(11) Supply electrical power if it is necessary (AMM 24-22-00/201).

S 864-083
(12) Remove the ground on the airplane (AMM 20-41-00/201).

S 864-084
(13) Make sure there is no leakage from fuel and hydraulic lines.

S 714-085
(14) Do the test for the power generation (AMM 24-11-00/501).

S 864-086
(15) Remove the locks from the leading edge slats (AMM 27-81-00/501).

S 714-087
(16) Do the test for the hydraulic system (AMM 29-11-00/501).

S 714-088
(17) Do the test for the pneumatic system (AMM 36-11-00/501).

S 714-089
(18) Do the test for the wing anti-ice system (AMM 30-11-00/501).

S 414-090
(19) Close the access doors for the aft fairing.

S 414-091
(20) Install the fairings (AMM 54-52-01/401).

S 414-092
(21) Install the applicable access panel (511KT or 611KT).

S 414-114
(22) Install the applicable panels (433FL and 433MR or 443FR and 443ML).

S 444-093
(23) Do the procedure to activate the thrust reverser (AMM 78-31-00/201).

TASK 54-51-02-004-116

6. Remove the Fuse Pins Using the Airplane Wing Jack (ENGINE REMOVED)(OPTIONAL)

A. General

(1) Both pins can be removed from either the upper link or the diagonal brace. However, when both pins are removed from one linkage the other linkage must have both pins installed to support the strut.

(2) Platforms and stands are necessary to get access to the strut. A crane and overhead sling are used to support the strut when the fuse pin is removed.

B. Equipment

WARNING: USE ONLY EQUIPMENT SPECIFIED BY THE MANUFACTURERS. USE THE CORRECT EQUIPMENT WITH THE FLOOR JACK, LOAD CELL AND/OR PRECISION LOAD POSITIONER.

CAUTION: BE CAREFUL WHEN THE POWER PLANT IS REMOVED OR INSTALLED. THE POWER PLANT HAS A WEIGHT OF APPROXIMATELY 11000 POUNDS.

(1) Jacks - Airplane Wing (AMM 07-11-01/201)
(2) Load cell - 0-3,000 pound capacity
(3) Adapter - Strut Unload, FWD Engine Mount - B54019
(4) Removal and Installation Kit, Fuse Pin - B54018

C. References
(1) AMM 07-11-01/201, Jacking Airplane
(2) AMM 07-11-05/201, Jacking For Airplane Support With Engine(s) Removed
(3) AMM 20-41-00/201, Static Grounding
(4) AMM 24-22-00/201, Control (Supply Power)
(5) AMM 27-81-00/201, Leading Edge Slat System
(6) AMM 29-11-00/201, Main Hydraulic Systems
(7) AMM 54-52-01/401, Strut Fairings
(8) AMM 71-00-02/401, Power Plant
(9) AMM 71-11-04/401, Fan Cowl Panels
(10) AMM 78-31-00/201, Thrust Reverser
(11) AMM 78-31-20/401, Thrust Reverser

D. Access
(1) Location Zones

410	Power Plant Nacelle Left
420	Power Plant Nacelle Right
430	Nacelle Strut Left
440	Nacelle Strut Right
510	Wing Leading Edge - Left, Forward of front spar, inboard of the strut
610	Wing Leading Edge - Right, Forward of front spar, inboard of the strut

(2) Access Panels

511KT	Left Leading Edge - Aft of Strut
611KT	Right Leading Edge - Aft of Strut
433FL	Engine no. 1 outboard side of strut
433MR	Engine no. 1 inboard side of strut
443FR	Engine no. 2 outboard side of strut
443ML	Engine no. 2 inboard side of strut

E. Prepare to Remove the Fuse Pins.

S 864-252
(1) Ground the airplane (AMM 20-41-00/201).

S 024-253

(2) If necessary, do these tasks to remove the power plant:
   (a) Make sure that the forward thrust levers are at the idle position.
   (b) Make sure that the fuel control switch is in the CUTOFF position.
   (c) Close the fuel shutoff valves for the applicable engine.

   WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

   (d) Perform Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).
   (e) Remove the thrust reverser (OPTIONAL) (AMM 78-31-20/401).
   (f) Remove the fan cowl panels (AMM 71-11-04/401).
   (g) Close the hydraulic shutoff valves for the applicable engine.
   (h) Drain the fuel supply line and hydraulic fluid lines to the engine.

S 044-254

(3) Remove the Power Plant (AMM 71-00-02/401).

S 044-119

WARNING: INSTALL LOCKS IN THE LEADING EDGE SLATS. THE ACCIDENTAL OPERATION OF THE SLATS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(4) Perform the deactivation procedure for the leading edge slats in the stowed position (AMM 27-81-00/201).

S 584-120

(5) Stabilize the airplane by installing a floor jack under each wing, the nose and the tail (AMM 07-11-05/201).
   (a) Make sure all the jacks are seated properly.

S 014-123

(6) Remove the forward and the underwing fairings (AMM 54-52-01/401).

S 014-124

(7) Remove the applicable access panel (511KT or 611KT).

   NOTE: These panels are on the top leading edge of the wing and are above the underwing fairing of the strut. Open this panel to get access to the upper link.

S 014-125
(8) Remove the applicable panels (433FL and 433MR or 443FR and 443ML).

S 014-126
(9) Open the access doors of the aft fairing.

S 864-128
(10) Remove the hydraulic power (AMM 29-11-00/201).
(a) Release the pressure in the hydraulic system for the applicable strut.

S 034-131
(11) Disconnect the electrical connectors for the fuel shutoff valves.

S 034-132
(12) Disconnect the electrical connectors for the hydraulic shutoff valves.

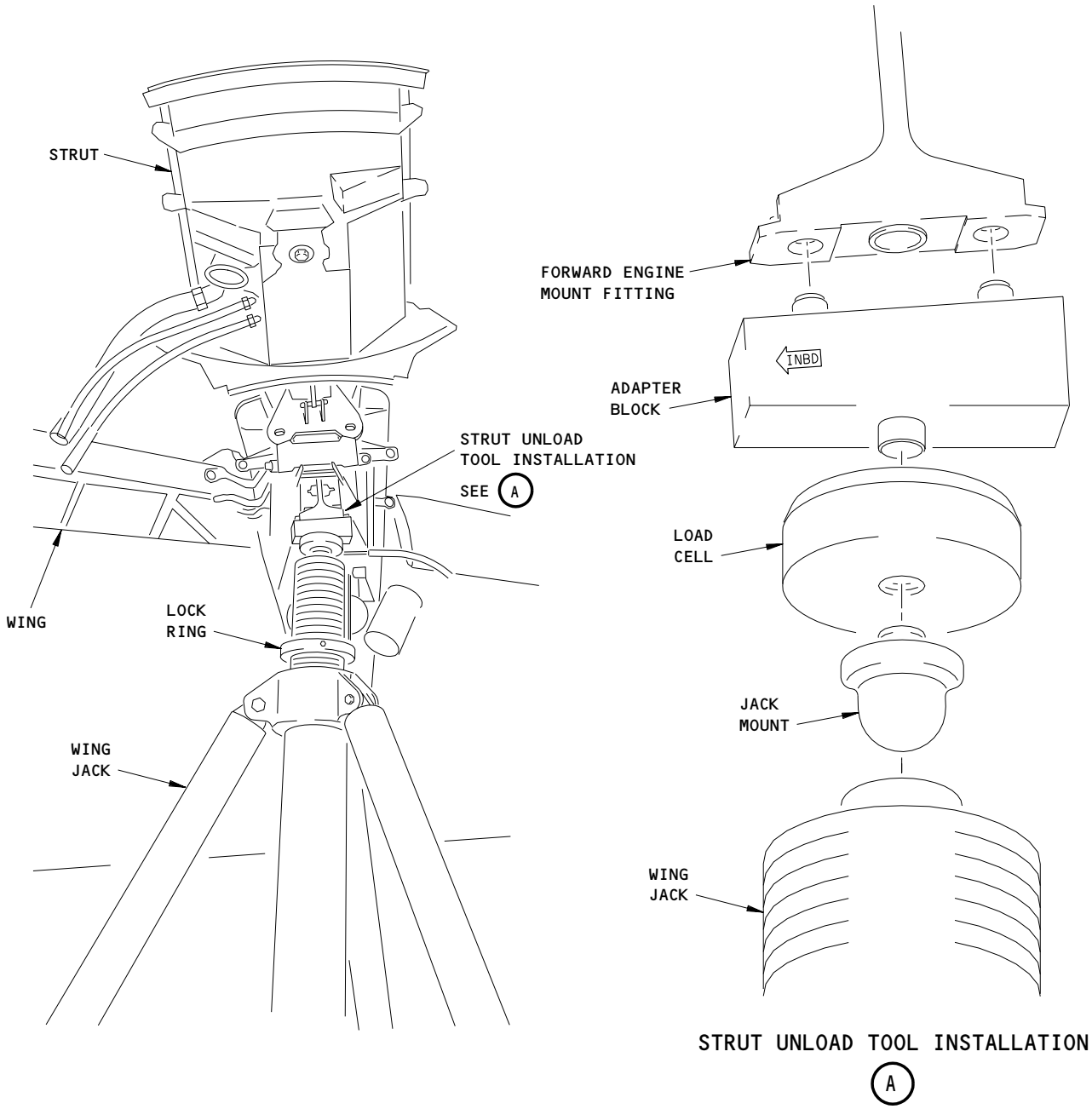
S 864-133
(13) Remove the electrical power (AMM 24-22-00/201).

F. Remove the Fuse Pins from the Upper Link and/or the Diagonal Brace (Fig. 401)

S 024-256
(1) Remove the nut, washers, bolt and the end caps from the fuse pin.

S 484-135
(2) Position the airplane wing jack under the strut.

S 484-136
(3) Install the strut unload tool on the strut (Fig. 404).
(a) Position the tapered tool under strut engine fitting.
1) Install two bolts on the strut engine fitting and the tapered block.
2) Tighten the bolts.
(b) Install the load cell on the bottom side of the tapered block.
(c) Install the jack mount to the bottom side of the load cell.



Airplane Wing Jack Attachment
for Unloading the Strut
Figure 404

S 824-176

CAUTION: DO NOT PUT TOO MUCH FORCE ON THE STRUT OR STRUCTURAL DAMAGE WILL OCCUR . THE MAXIMUM FORCE AT THE FRONT OF THE STRUT IS 3000 POUNDS (1360.78 Kg) UP. DO NOT PUT MORE FORCE ON THE STRUT TO TRY TO TURN THE PIN.

CAUTION: WHEN THE PYLON IS SUPPORTED BY THE JACK AVOID DYNAMIC CONDITIONS SUCH AS WIND, AIRPLANE LOWERING OR LARGE WEIGHT SHIFTS LIKE REMOVAL AND REPLACEMENT OF AN ENGINE, APU OR LANDING GEAR. DO NOT FUEL, DEFUEL OR TRANSFER FUEL.

(4) Adjust the jack so that a load is applied to the bottom side of the pad.

S 024-138

(5) Use the wing jack to unload the strut.
   (a) Make sure the lock-ring on the wing jack remains locked.

S 824-257

(6) Adjust the jack loading until you can turn the fuse pin with a maximum torque of 125 inch-pounds (14.12 Nm).

NOTE: Do not remove the pin if it requires a higher torque to turn it.

S 024-258

(7) Remove the Fuse Pin.

WARNING: DO NOT REMOVE THE UPPER LINK AND THE DIAGONAL BRACE AT THE SAME TIME. THE STRUT CAN SUDDENLY MOVE IN AN UNUSUAL DIRECTION. INJURIES TO PERSONS AND STRUCTURAL DAMAGE CAN OCCUR.

CAUTION: DO NOT REMOVE THE FUSE PIN UNLESS IT TURNS FREELY WITH A MAXIMUM TORQUE OF 125 INCH-POUNDS (14.12 Nm). THE PIN IS CARRYING A LOAD IF IT WILL NOT TURN FREELY. IF YOU REMOVE A FUSE PIN THAT HAS A LOAD, STRUCTURAL DAMAGE WILL OCCUR.

   (a) Remove the nut, washers, bolt and end caps from the fuse pin.
   (b) Remove the fuse pin only if it turns freely.
      1) As you remove the fuse pin, install the slug behind the fuse pin.

2) Do not change the load on the strut until you reinstall the fuse pin.

G. Remove the Fuse Pin from the Strut-to-Wing (Midspar) Fittings (Fig. 401)

NOTE: Do not remove the fuse pin from the second fitting until after you install the first fuse pin.

S 024-259

(1) Remove the nut or nuts, washers, bolt, and end cap from the fuse pin.

NOTE: Use the puller plate tool to hold the pin while removing the nut.

S 484-260

(2) Install the fuse pin removal tool on the puller assembly (Fig. 403).
   (a) Use the slide hammer on the removal tool to tap the fuse pin out of the fitting.
   (b) As you remove the fuse pin, install the midspar slug behind the fuse pin.
   (c) Do not change the load on the strut until you reinstall the fuse pin again.

TASK 54-51-02-404-141

7. Install the Fuse Pins Using the Airplane Wing Jack (ENGINE REMOVED)(OPTIONAL)

A. General

(1) Both pins can be removed from either the upper link or the diagonal brace. However, when both pins are removed from one linkage the other linkage must have both pins installed to support the strut.

(2) Platforms and stands are necessary to get access to the strut. A crane and overhead sling are used to support the strut when the fuse pin is removed.

B. Equipment

WARNING: USE ONLY EQUIPMENT SPECIFIED BY THE MANUFACTURERS. USE THE CORRECT EQUIPMENT WITH THE FLOOR JACK, LOAD CELL AND/OR PRECISION LOAD POSITIONER.

CAUTION: BE CAREFUL WHEN THE POWER PLANT IS REMOVED OR INSTALLED. THE POWER PLANT HAS A WEIGHT OF APPROXIMATELY 11000 POUNDS.

(1) Jack - Airplane Wing (AMM 07-11-01/201)
(2) Load cell - 0-3,000 pound capacity
(3) Adapter - Strut Unload, FWD Engine Mount - B54019
(4) Removal and Installation Kit, Fuse pin - B54018.

C. Consumable Materials
(1) A00247 Sealant - BMS 5-95
(2) C00259 Primer - BMS 10-11, Type I
(3) D00633 Grease - BMS 3-33 (Preferred)
(4) D00013 Grease - MIL-PRF-23827 (Supersedes MIL-G-23827) (Alternate)
(5) D00014 Grease - MIL-G-21164 (Alternate)
(6) G50136 Compound - Corrosion Preventive BMS 3-38

D. References
(1) NDT Part 6, 54-40-01
(2) AMM 20-30-01/201, Adhesives, Cements, Searlers
(3) AMM 20-30-03/201, Finishing Materials
(4) AMM 20-30-04/201, Lubricants
(5) AMM 20-41-00/201, Static Grounding
(6) AMM 24-11-00/501, Generator Drive System
(7) AMM 24-22-00/201, Electrical Power - Control
(8) AMM 27-81-00/201, Leading Edge Slat System
(9) AMM 29-11-00/201, Main Hydraulic Systems
(10) AMM 29-11-00/501, Main Hydraulic Systems
(11) AMM 30-11-00/501, Wing Thermal Anti-Icing
(12) AMM 36-11-00/501, Pneumatic System
(13) AMM 51-31-01/201, Seals and Sealing
(14) AMM 54-51-01/601, Strut
(15) AMM 54-52-01/401, Strut Fairings
(16) AMM 71-00-02/401, Power Plant

(17) AMM 78-31-20/401, Thrust Reverser

E. Access

(1) Location Zones

410 Power Plant Nacelle Left
420 Power Plant Nacelle Right
430 Nacelle Strut Left
440 Nacelle Strut Right
510 Wing Leading Edge - Left, Forward of front spar, inboard of the strut
610 Wing Leading Edge - Right, Forward of front spar, inboard of the strut

(2) Access Panels

511KT Left Leading Edge - Aft of Strut
611KT Right Leading Edge - Aft of Strut
433FL Engine no. 1 outboard side of strut
433MR Engine no. 1 inboard side of strut
443FR Engine no. 2 outboard side of strut
443ML Engine no. 2 inboard side of strut

F. Examine the Fuse Pin for Worn Surfaces and Corrosion

S 214-142

(1) Check for worn parts, surface condition and corrosion at the fittings for the strut and the wing (AMM 54-51-01/601).

S 214-143

(2) Check for worn parts and corrosion on all surfaces of the bolts, end caps, washers and fuse pins (AMM 54-51-01/601).
(a) Remove small surface corrosion from all non-bearing surfaces with a nylon scuff pad.
(b) Clean the surface with solvent.
1) If the corrosion cannot be removed, replace the part.
(c) Apply two layers of primer to the surface (BMS 10-11).

S 254-194

(3) AIRPLANES PRE SB 54A0020 OR SB 54-0035;
Examine the strut to wing fuse pins for cracks.
(a) Clean the inner bore of the fuse pin.
(b) Perform an Eddy current inspection of the fuse pin (NDT Part 6, 54-40-01).
1) If you find cracks or the eddy current inspection identifies differences, replace the fuse pin.

S 214-145

(4) Check all the bushings for corrosion.

S 394-146

(5) If the bushings are not sealed, apply a fillet seal to the flanges of the bushings with sealant BMS 5-95 (AMM 51-31-01/201).

G. Install the Fuse Pins (Fig. 401)

S 424-207

(1) Install the fuse pin in the strut-to-wing fitting (Fig. 401).
  (a) Check that the inner surface of the fuse pin is has a layer of corrosion preventive compound.
    1) If there is no corrosion preventive compound, apply a layer of the compound that is 0.05 inch (1.27 mm) thick minimum.
  (b) Apply thin layer of grease to the outer surface of the fuse pin and the bolt.
  (c) AIRPLANES PRE SB 54-0035;
  Install the fuse pin, the end cap, the bolt, the washers and the nuts to connect the strut-to-wing fitting.

    NOTE: Use the B54018 puller plate tool when you install the nuts.

    1) Use the slide hammer on the removal tool to help you install of the fuse pin if necessary.
  (d) Install the large nut (28 or 36) and washer on the fuse pin.
  (e) Make sure the run-on torque of the large nut (28 or 36) is a minimum of 117 inch-pounds (13.21 Nm).
    1) Replace the nut if the torque value is below the limit.
    2) Measure the run-on torque again.
    3) Make sure the end cap is fully against the shoulder of the bolt.
  (f) Tighten the large nut to 1000-1500 inch-pounds (112.92-169.38 Nm).
    1) Make sure the nut is fully against the washer.

  CAUTION: DO NOT TORQUE THE FUSE PIN IF THE PIN IS LOADED. IF YOU TORQUE THE FUSE PIN WHEN IT HAS A LOAD, DAMAGE TO THE SURFACE OF THE FUSE PIN WILL OCCUR.

  (g) As an alternate method, torque the fuse pin on the head side as follows:
    1) Make sure the nut is held to prevent it from turning.
    2) Make sure the fuse pin is not loaded by the midspar joint.
    3) Make sure no damage is on the inside finish of the fuse pin after torquing.
    4) Make sure the torque on the head side is plus or minus 10 percent of 1500 inch-pounds (169.38 Nm)(1350 to 1650 inch-pounds or 152.53 to 186.43 Nm).
  (h) Install the bolt, end cap, small washer and nut.
  (i) AIRPLANES PRE SB 54A0020 OR SB 54-0035 (311N5067 PINS);
  Make sure the run-on torque of the nut (26) is a minimum of 10 inch-pounds (1.13 Nm).
  (j) AIRPLANES POST SB 54A0020 (311N5217 [15-5PH] PINS);
  Make sure the run-on torque of the nut (33) is a minimum of 14 inch-pounds (1.59 Nm).
    1) Replace the nut if the torque value is less than the limit.

2) Measure the run-on torque again.

(k) AIRPLANES PRE SB 54A0020 OR 54-0035 (311N5067 PINS);
Tighten the nut (26) to 100-150 inch-pounds (11.29-16.94 Nm).

(l) AIRPLANES POST SB 54A0020 (311N5217 [15-5PH] PINS);
Tighten the nut (33) to 240-300 inch-pounds (27.1-33.88 Nm).
1) Make sure that the end cap is installed against the shoulder of the bolt.
2) Make sure the nut is installed against the washer.

(m) Remove any unwanted grease.

S 424-208

(2) AIRPLANES POST SB 54-0035;
Connect the strut to the wing at the strut-to-wing fittings (2 locations)(Fig. 402).

(a) Make sure the inner surface of the fuse pin has a layer of corrosion preventive compound.
1) If there is no corrosion preventive compound, apply the compound to the inner surface of the fuse pin with a minimum thickness of 0.05 inch (1.27 mm).

(b) Apply a thin layer of grease to the outer surface of the fuse pin and the bolt.

CAUTION: IF THERE ARE NO CRACKS AND NOT TOO MUCH WEAR, INSTALL THE FUSE PINS BACK INTO THE SAME FITTINGS THAT THEY CAME FROM TO MAKE SURE THAT CLEARANCE BETWEEN THE PIN AND THE FITTING IS CORRECT.

(c) Install the fuse pin, washers, and nut to connect the strut to the wing fittings. The head of the fuse pin is to be oriented to the outside surface of the strut.

(d) Make sure the run-on torque of the nut is a minimum of 150 inch-pounds (16.94 Nm).
1) Replace the nut if the torque value is below the limit.
2) Measure the run-on torque again.
3) Make sure the nut is fully against the washer.

(e) Tighten the nut to 1200-2500 inch-pounds (135.5-232.2 Nm).
(f) Install the cotter pin.
1) You can install a maximum of 3 washers to align the nut for installation of the cotter pin.
2) If the cotter pin cannot be inserted within this torque range, then back the nut off until the cotter pin can be inserted. The minimum allowable torque is 150 inch-pounds (16.94 Nm).
3) Make sure that the washer is fully against the fuse pin.
(g) Inject grease into the fuse pin grease fittings until grease appears at either side of the joint. Wipe off excess grease after installation.

S 424-261
(3) AIRPLANES PRE SB 54A0020 OR SB 54-0035 (BULKHEAD FUSE PINS);
Install the fuse pin, bolt, end cap, washers and nut to connect the strut-to-wing fitting.
(a) Make sure the run-on torque of the nut is a minimum of 14 inch-pounds (1.59 Nm).
1) Replace the nut if the torque value is less than the limit.
2) Measure the run-on torque again.
(b) Tighten the nut to 240-300 inch-pounds (27.1-33.88 Nm).
1) Make sure that the cap is installed against the fuse pin.
2) Make sure the nut is installed against the washer.
(c) Remove any unwanted grease.
(d) As an alternate method, torque the fuse pin on the head side as follows:
1) Make sure the nut is held to prevent it from turning.
2) Make sure the fuse pin is not loaded by the midspar joint.
3) Make sure no damage is on the inside finish of the fuse pin after torquing.
4) Make sure the torque on the head side is plus or minus 10 percent of 1500 inch-pounds (169.38 Nm)(1350 to 1650 inch-pounds or 152.53 to 186.43 Nm).

S 424-195
(4) AIRPLANES PRE SB 54-0027 OR SB 54-0035;
Install the diagonal brace and/or the upper link with the fuse pins, the bolts, the end caps, the washers and the nuts.
(a) Make sure the inner surface of the fuse pin has a layer of corrosion preventive compound.
1) If there is no corrosion preventive compound, apply a layer of the compound that is a minimum of 0.05 inch (1.27 mm) thick.
(b) Apply a thin layer of grease to the outer surface of the bolt and the fuse pin.
(c) Check that the run-on torque of the nut on the diagonal brace is 30 inch-pounds (3.39 Nm) minimum.
1) Replace the nut if the torque is less than the limit.
2) Measure the torque again.

(d) Tighten the nut on the diagonal brace to 350-450 inch-pounds (39.52-50.81 Nm).
(e) Check that the run-on torque of the nut on the upper link is 50 inch-pounds (5.65 Nm) minimum.
1) Replace the nut if the torque is less than the limit.
2) Measure the torque again.
(f) Tighten the nut on the upper link to 450-650 inch-pounds (50.81-73.4 Nm).
1) Check that the washers are installed against the end caps.
(g) Remove any unwanted grease.

S 424-196
(5) AIRPLANES POST SB 54-0027 OR SB 54-0035;
Install the diagonal brace and/or the upper link with the fuse pins, bolts, end caps, washers and nuts.
(a) Check that the inner surface of the fuse pin has a layer of corrosion preventive compound.
1) If there is no corrosion preventive compound, apply a layer of the compound to the inner surface of the pin with a thickness of 0.05 inch (1.27 mm).
(b) Apply a thin layer of grease to the outer surface of the bolt and the fuse pin.
(c) AIRPLANES POST SB 54-0027;
Make sure the run-on torque of the diagonal brace nut (110) is 18 inch-pounds (2.03 Nm) minimum.
(d) AIRPLANES POST SB 54-0035;
Make sure the run-on torque of the diagonal brace nut (120) is 18 inch-pounds (2.03 Nm) minimum.
1) Replace the nut if the torque is less than the limit.
2) Measure the torque again.
(e) AIRPLANES POST SB 54-0027;
Tighten the diagonal brace nut (110) to 180-225 inch-pounds (20.33-25.4 Nm) and make sure that the washers are fully against the end caps.
(f) AIRPLANES POST SB 54-0035;
Tighten the diagonal brace nut (120) to 200-500 inch-pounds (22.58-56.46 Nm) and make sure that the washers are fully against the end caps.

(g) The run-on torque of the nut (19) on the upper link must be 30 inch-pounds (3.39 Nm) minimum.
1) Replace the nut if the torque is less than the limit.
2) Measure the torque again.
(h) Tighten the nut (19) on the upper link to 350-450 inch-pounds (39.52-50.81 Nm).
1) Check that the washers are installed against the end caps.
(i) Remove any unwanted grease.

H. Put the Airplane Back To It's Usual Condition.

S 024-149
(1) Remove the strut preload tool from the strut (Fig. 404).
(a) Remove the force from the wing jack.
(b) Remove the jack mount from the load cell.
(c) Remove the load cell from the tapered tool.
(d) Remove the tapered tool from the FWD engine mount fitting.

S 844-150
(2) Make sure all of the workstands are away from the engine.

S 414-151
(3) Install the engine (AMM 71-00-02/401).

S 414-152
(4) If removed, install the thrust reverser (AMM 78-31-20/401).

S 424-153
(5) Connect the electrical plugs on the fuel shutoff valves.

S 424-154
(6) Connect the electrical plugs on the hydraulic shutoff valves.

S 864-155
(7) Open the fuel shutoff valves.

S 864-156
(8) Open the hydraulic shutoff valves.

S 864-157
(9) Supply hydraulic system (AMM 29-11-00/201).

S 864-158
(10) Supply electrical power if it is necessary (AMM 24-22-00/201).

S 864-159
(11) Remove the ground on the airplane (AMM 20-41-00/201).

S 864-160
(12) Make sure there is no leakage from fuel and hydraulic lines.

S 714-161
(13) Do the test for the power generation (AMM 24-11-00/501).

S 864-162
(14) Remove the locks from the leading edge slats (AMM 27-81-00/501).

S 714-163
(15) Do the test for the hydraulic system (AMM 29-11-00/501).

S 714-164
(16) Do the test for the pneumatic system (AMM 36-11-00/501).

S 714-165
(17) Do the test for the wing anti-ice system (AMM 30-11-00/501).

S 414-166
(18) Close the access doors for the aft fairing.

S 414-167
(19) Install the fairings (AMM 54-52-01/401).

S 414-168
(20) Install the applicable access panel (511KT or 611KT).

S 414-169

(21) Install the applicable panels (433FL and 433MR or 443FR and 443ML).

STRUT ATTACH POINT BUSHING MIGRATION - INSPECTION/CHECK

1. General
   A. This procedure contains the data to do an inspection of the bushings for the nacelle strut fuse pins as follows:
      (1) The lugs on each end of the upper link and diagonal brace assemblies,
      (2) the strut to wing fitting lugs of the strut,
      (3) the strut fitting for the upper link,
      (4) the strut fitting for the diagonal brace.

   TASK 54-51-02-206-001

2. Bushing Migration Inspection
   A. Consumable Materials
      (1) A00247 Sealant - BMS 5-95 (AMM 20-30-02/201)
   B. References
      (1) AMM 20-30-02/201, Sealant Application - Maintenance Practices
      (2) AMM 27-81-00/201, Leading Edge Slat System - Maintenance Practices
      (3) AMM 54-52-01/401, Strut Fairings - Removal/Installation
      (4) AMM 54-53-01/401, Strut Pressure Relief and Access Doors - Removal/Installation
   C. Access
      (1) Location Zones
          430 Nacelle Strut - Left
          440 Nacelle Strut - Right
          510 Wing Leading Edge - Left
          610 Wing Leading Edge - Right
   D. Prepare for the Inspection

      S 046-013
      (1) Do the deactivation procedure for the leading edge slats in the retracted position (AMM 27-81-00/201).

      S 016-003
      (2) Remove the applicable strut fairings (AMM 54-52-01/401).

      S 016-004
      (3) Open the access doors of the aft fairing.

      S 016-005
      (4) Remove the applicable strut access panels (AMM 54-53-01/401).

E. Do the Inspection

S 216-006

(1) Look for bushing migration along the outside edge of the bushings at these locations:

NOTE: The definition of a migrated bushing is a bushing that has a cracked fillet seal or a gap of 0.005 inches and more between the lug face and the bushing flange.

(a) Both ends of the upper link assembly
(b) The strut fitting at the forward end of the upper link
(c) Both ends of the diagonal brace assembly
(d) The strut fitting at the forward end of the diagonal brace assembly
(e) The strut to wing fitting lugs on the strut.

S 216-007

(2) AIRPLANES PRE-SB 54-0026;
If you do not find bushing migration, stop the inspection.

S 216-016

(3) AIRPLANES POST-SB 54-0026;
If you do not find bushing migration, do the following:
(a) Do the inspection at every 3,000 flight cycle intervals.

NOTE: To stop the requirment for reinspections of airplanes at every 3,000 flight cycles, do PART 2 - BUSHING REMOVAL AND INSTALLATION FOR EACH STRUT - of SB 54-0026.

S 216-008

(4) AIRPLANES PRE-SB 54-0026;
If you find bushing migration do these steps:
(a) Do a check of the bushing flange for wear (if the flange rubs an adjacent part of the structure).
1) If the flange face thickness has greater than 25% wear, replace the bushing.

NOTE: Refer to SRM 54-50-90 for bushings on the strut structure.

(b) Remove the sealant.

(c) Do a check for corrosion around the flange of the bushing.
1) If you see corrosion, replace the bushing.

NOTE: Refer to SRM 54-50-90 for bushings on the strut structure.

(d) If you do not find corrosion or flange face thickness wear less than 25%, fillet seal the outside edge of the bushing flange with BMS5-95 sealant (AMM 20-30-02/201).

S 216-015
(5) AIRPLANES POST-SB 54-0026;
If you find bushing migration do these steps:
(a) AIRPLANES WITH ROLLS ROYCE ENGINES;
If the mid spar bushings show migration, reinspect every 1,500 flight cycles. Replace bushings, with new high interference types, before 6,000 flight cycles after migration is found.

NOTE: To stop the requirment for reinspections of airplanes at every 1,500 flight cycles, do PART 2 - BUSHING REMOVAL AND INSTALLATION FOR EACH STRUT - of SB 54-0026.

(b) AIRPLANES WITH ROLLS ROYCE ENGINES;
If the upper link wing fitting bushings show any migration, reinspect every 3,000 flight cycles. Replace the bushings, with high interference types, before the airplane reaches 12,000 flight cycles after the migration was found or if they have migration limits of: 0.240 in (6.096 mm) for the outer bushings and 0.07 in (1.778 mm) for the inner bushings on the wing fitting.

NOTE: To stop the requirment for reinspections of airplanes at every 3,000 flight cycles, do PART 2 - BUSHING REMOVAL AND INSTALLATION FOR EACH STRUT - of SB 54-0026.

F. Put the Airplane Back to Its Usual Condition.

S 416-009
(1) Install the applicable strut fairings (AMM 54-52-01/401).

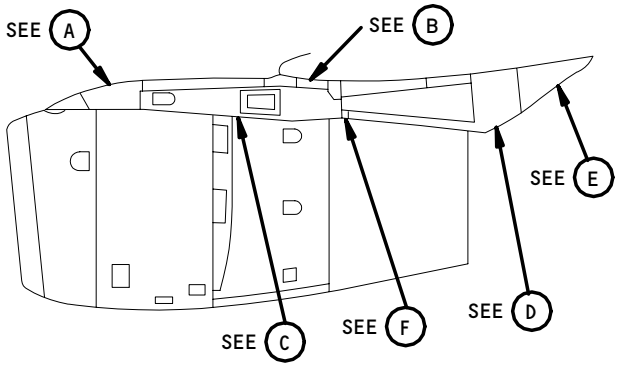
S 416-010
(2) Close the access doors of the aft fairing.

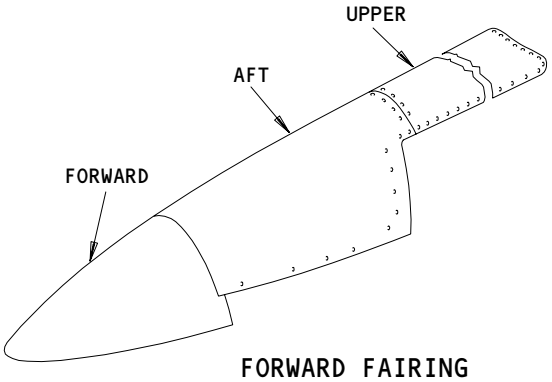
S 416-011
(3) Install the applicable strut access panels (AMM 54-53-01/401).

S 446-012
(4) Do the activation procedure for the leading edge slats (AMM 27-81-00/201).

ENGINE TO WING FAIRINGS - DESCRIPTION AND OPERATION

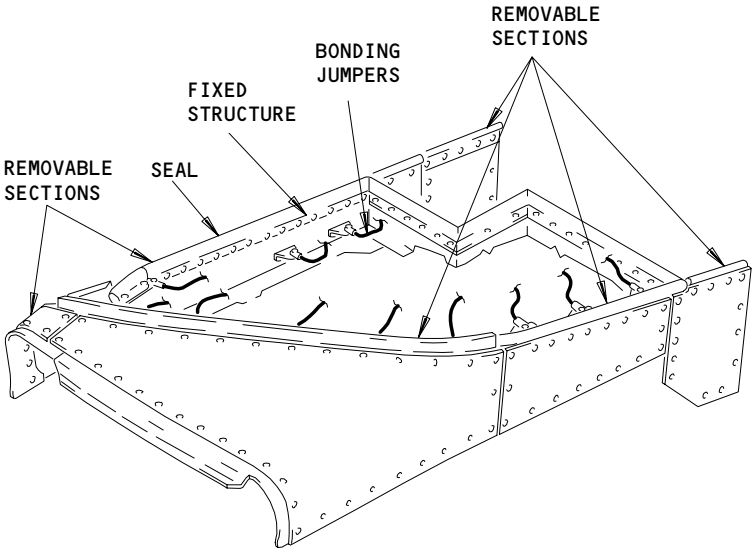
1. General
   A. The fairings provide the strut with a smooth surface for unobstructed airflow. Systems and connections in the strut are accessible through doors in the fairings.
   B. Engine cowling provides a smooth covering for the sides of the engine and its accessories. For additional information see 71-11-00.
2. Component Details (Fig. 1)
   A. Forward Fairing
      (1) The forward fairing is comprised of three sections. The aft section must be removed prior to removing the fwd or upper sections. The aft and upper sections are retained with bolts. The fwd section is retained with two nuts and a hook.
   B. Underwing Fairing
      (1) The underwing fairing fairs the wing to the strut. It is comprised of six removable sections which are retained with bolts to the fixed structure.
      (2) The two forward sections curve around the forward edge of the wing. The aft section provides access to inspect the strut to wing fittings.
      (3) The bonding jumpers are attached to the fixed structure and carry lightning strike current from the strut into the wing structure.
   C. Flex Fairing
      (1) The flex fairing provides a smooth transition to the trailing edge seal.
   D. Hinge Access Door of the Thrust Reverser
      (1) The hinge access door of the thrust reverser has a series of links and hinges that allow the door to open automatically when the thrust reverser is opened. The door allows access to the thrust reverser hinges, electrical, and hydraulic connections.
   E. Aft Fairing
      (1) The aft fairing contains an access door. The fairing is attached with bolts to the strut, wing and trailing edge fairing.
   F. Trailing Edge Fairing
      (1) The trailing edge fairing is retained with bolts. The upper edge attaches to the wing with an angle at the forward section and fairs to wing with a rubber seal at the aft section.





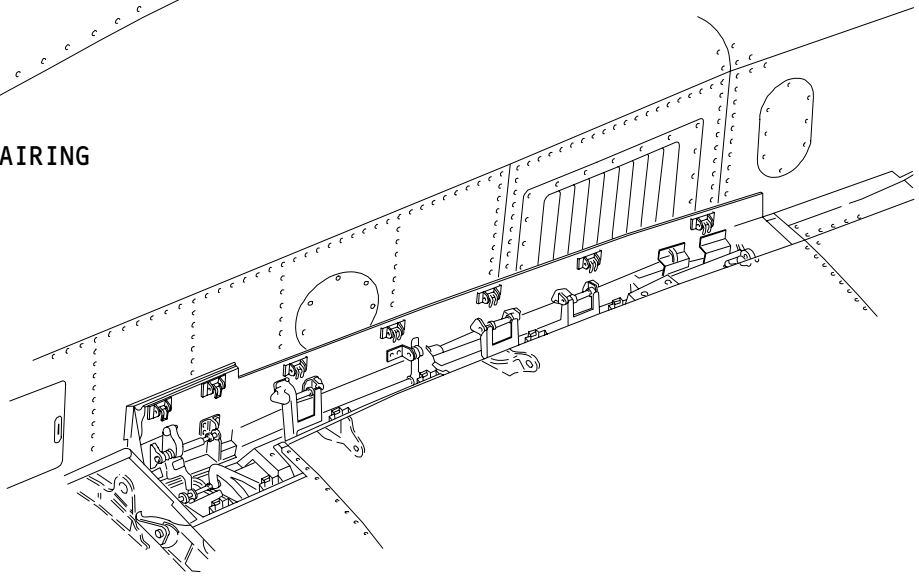
FORWARD FAIRING

A



UNDERWING FAIRING

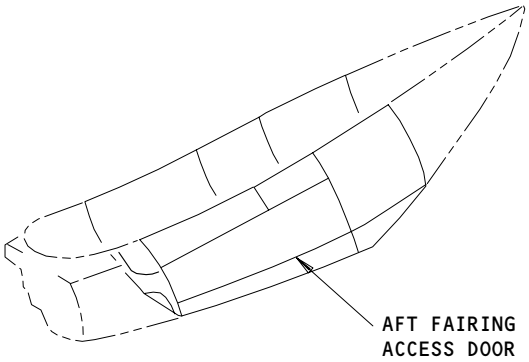
B



HINGE ACCESS DOOR FOR THE THRUST REVERSER

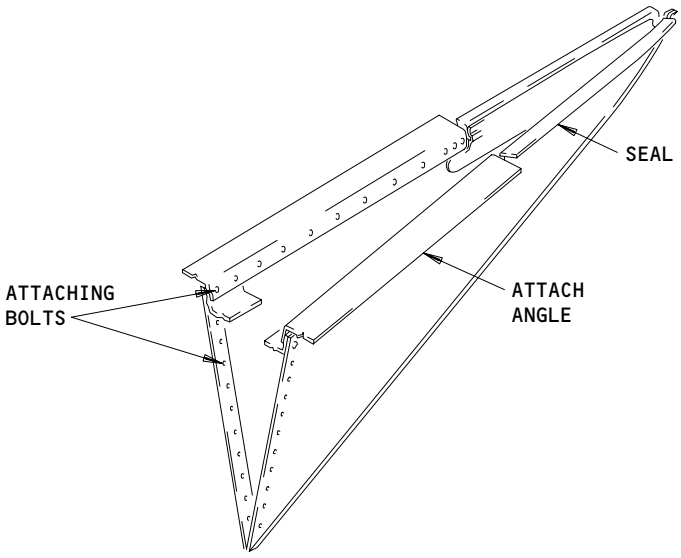
C

Engine to Wing Fairings
Figure 1 (Sheet 1)



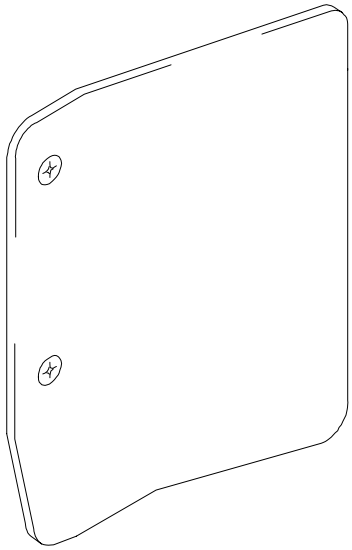
AFT FAIRING

D



TRAILING EDGE FAIRING

E



FLEX FAIRING

F

Engine To Wing Fairings
Figure 1 (Sheet 2)

STRUT FAIRINGS - REMOVAL/INSTALLATION

1. General
   A. The forward fairing contains three sections: the forward section, the aft section, and the top section. The forward section is the only location that is not attached with bolts. This section is attached at two locations. The aft end of the forward section is attached by nuts and the forward end by a hook mount. When you remove the forward fairings, remove the aft section before you remove the forward or the top sections.

TASK 54-52-01-004-001

2. Remove the Fairings
   A. General
      (1) The fairings which follow are removed:
         (a) The forward fairings.
         (b) The underwing fairings.
         (c) The hinged access doors of the thrust reverser.
         (d) The aft fairing.
         (e) The trailing edge fairing.
         (f) The flex fairings.
   B. References
      (1) AMM 78-31-00/201, Thrust Reverser System
      (2) AMM 78-31-10/401, Thrust Reverser Hinge Access Doors
   C. Access
      (1) Location Zones
         430 No. 1 Nacelle Strut
         440 No. 2 Nacelle Strut

   D. Remove the fairings (Fig. 401)

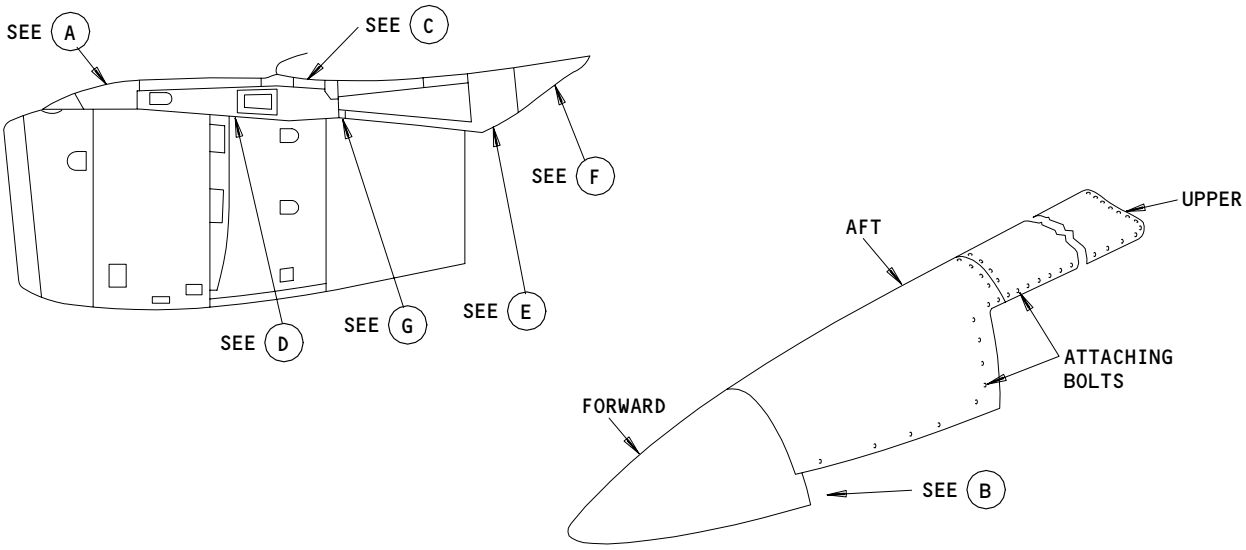
      S 044-002

      WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

      (1) Do the Thrust Reverser Deactivation for Ground Maintenance procedure (AMM 78-31-00/201).

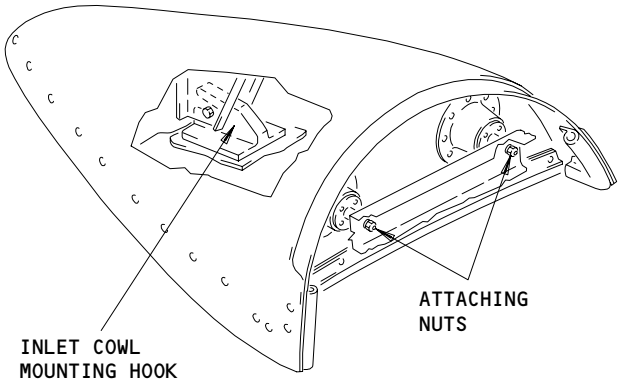
      S 824-005
      (2) Hold the fairings.

      S 024-004
      (3) Remove the forward fairing.
         (a) Remove the bolts from the aft section.
         (b) Remove the bolts from the top section.
         (c) Remove the nuts from the forward section.
            1) Move the fairing forward to disengage the hook.

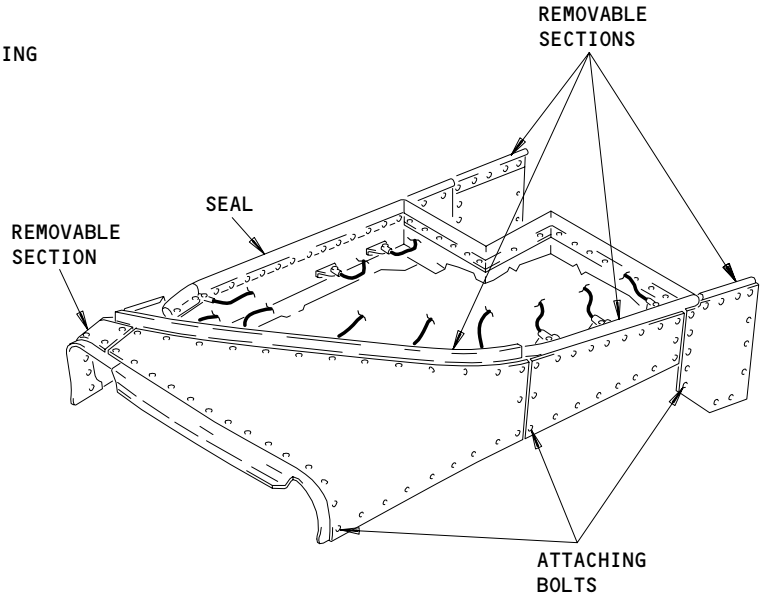


FORWARD FAIRING

A



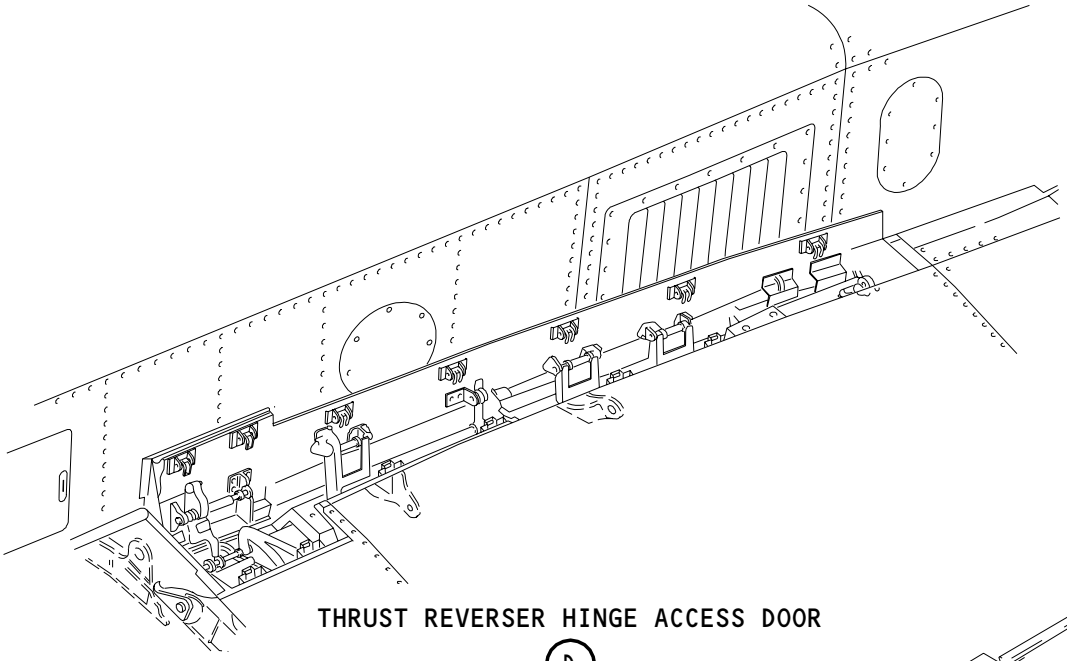
B



UNDERWING FAIRING

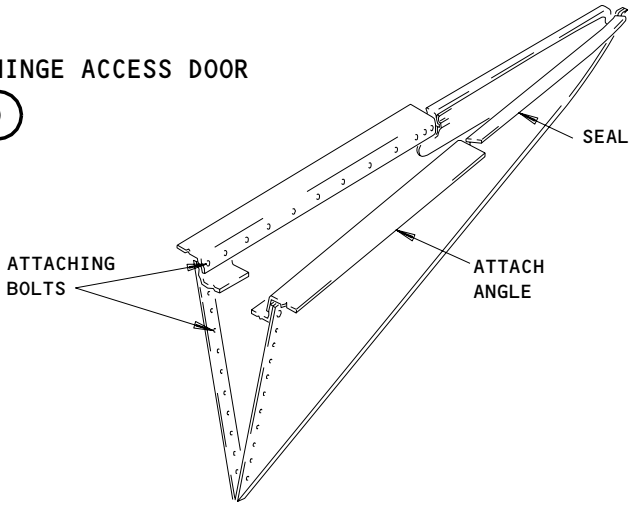
C

Strut Fairings Installation
Figure 401 (Sheet 1)



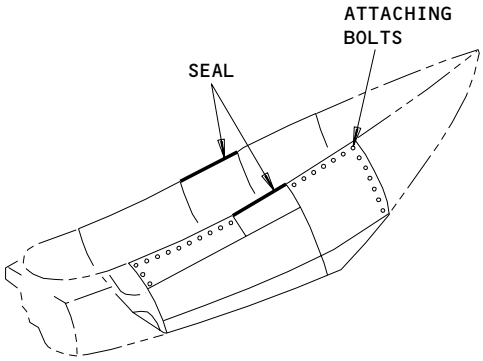
THRUST REVERSER HINGE ACCESS DOOR

D



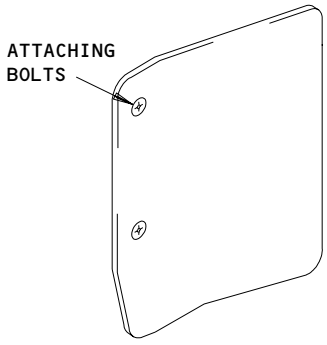
TRAILING EDGE FAIRING

F



AFT FAIRING

E



FLEX FAIRING

G

Strut Fairings Installation
Figure 401 (Sheet 2)

S 024-006
(4) Remove the underwing fairing.
(a) Remove the bolts from the top section of the forward fairing.
(b) Remove the bolts from the fairings.

S 014-007
(5) Remove the hinged access doors of the thrust reverser.
(a) Remove the hinged access doors of the thrust reverser (AMM 78-31-10/401).

S 024-009
(6) On all the other fairings, remove the bolts.
(a) If the bolt length changes, make a note of the locations.

TASK 54-52-01-404-010

3. Install the Fairings

A. General
(1) The fairings which follow are installed:
(2) The forward fairings.
(3) The underwing fairings.
(4) The hinged access doors of the thrust reverser.
(5) The aft fairing.
(6) The trailing edge fairing.
(7) The flex fairings.

B. Consumable Materials
(1) G50136 - Compound, Corrosion Preventive - BMS 3-38 (AMM 20-30-03/201)
(2) A00247 Sealant - BMS 5-95, Type I, Class B-2 (AMM 20-30-01)

C. References
(1) AMM 54-51-01/201, Strut
(2) AMM 78-31-00/201, Thrust Reverser System

D. Access
(1) Location Zones
430 No. 1 Nacelle Strut
440 No. 2 Nacelle Strut

E. Install the fairings (Fig. 401)

S 214-011
(1) Make sure the corrosion preventive compound is in the holes of the bolts on the forward, and the underwing fairings.

S 144-016
(2) Remove all of the sealant from the edges of the fairings and the mating surface of the strut.

S 424-012
(3) Put the fairings on the strut.
  (a) Align the holes of the bolts.
  (b) Install the bolts.
  (c) Find the correct locations if the bolt lengths changed.
  (d) Make sure the fairings are smooth (AMM 54-51-01/201).
  (e) Do the steps that follow to the edge of fairings that are not access doors.
    1) Fill the gap between the fairings with the sealant BMS 5-95, Type I, Class B-2.
    2) Make the sealant smooth with the fairing surface.

S 444-015
(4) Do this procedure: Thrust Reverser Activation (AMM 78-31-00/201).

STRUT FAIRINGS - INSPECTION/CHECK

1. General
   A. This procedure examines the strut fairings.

TASK 54-52-01-226-001

2. Strut Fairings Inspection Check
   A. References
      (1) 20-10-21/601, Electrical Bonding
      (2) 54-51-01/201, Strut
      (3) 54-52-01/401, Strut Fairings
      (4) 78-31-00/201, Thrust Reverser System
   B. Access
      (1) Location Zones
          430 No. 1 Nacelle Strut
          440 No. 2 Nacelle Strut

   C. Examine the Fairings

      S 046-002

      WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (1) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (Ref 78-31-00).

      S 216-003
      (2) Examine the fairings for cracks in the skin, separation of bonded layers, and damage to the paint and the protective coating.

      S 216-004
      (3) Make sure the bolts are not loose or have threads which are gone.

S 216-005
(4) Examine the support brackets for cracks or damage at the forward end of the strut.

S 216-006
(5) Examine the seal along the trailing edge and the wing for damage.

S 216-007
(6) Make sure the fairings are smooth (Ref 54-51-01).

S 766-010
(7) Do a check for the electrical bond (Ref 20-10-21):
  (a) Make sure the resistance between the aft section of the forward fairing and the strut is no more than 0.01 ohms.
  (b) Make sure the resistance between the top section of the forward fairing and the strut is no more than 0.01 ohms.
  (c) Make sure the resistance between the underwing fairing and the strut and wing is no more than 0.1 ohms.

S 446-009
(8) Do this procedure: Thrust Reverser Activation (Ref 78-31-00).

D. Permitted Damage to the Strut Fairing Foil

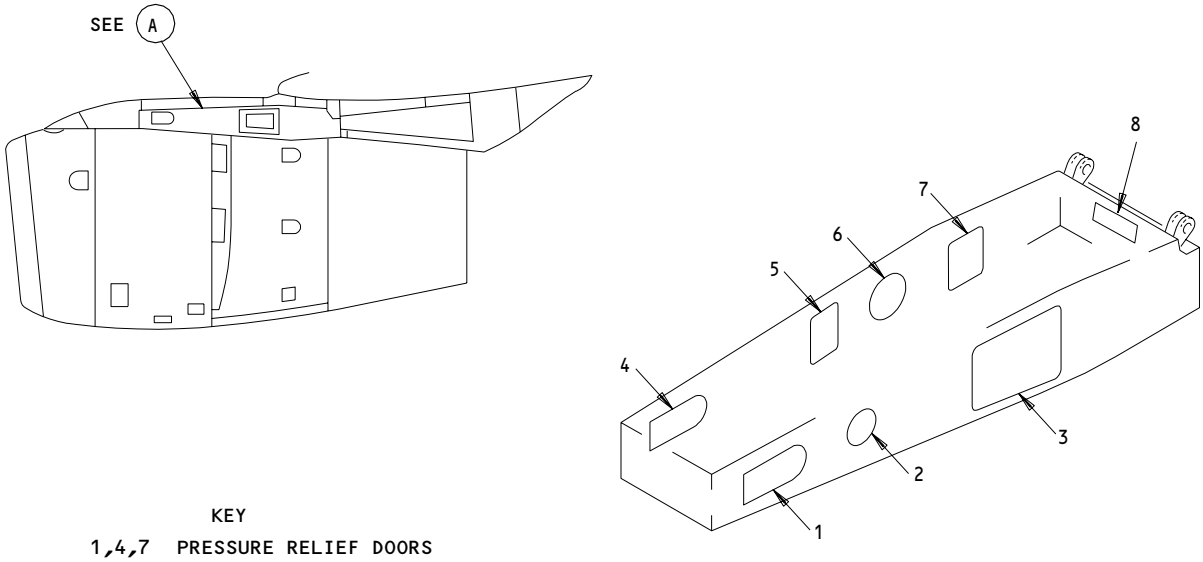
NOTE: Only one type of damage is permitted on each fairing section.

S 226-011
(1) The maximum permitted damage to the foil on the aft and top sections of the forward fairing, and the forward section of the underwing fairing is as follows:
  (a) The maximum separation along the direction of the span is 9 inches in length and 1/2 inch in width.
  (b) The maximum separation along the length of the strut is 18 inches in length and 1 inch in width.
  (c) The maximum area of the hole can not be more than 12 square inches with a maximum length along the span of 5 inches.
  (d) A maximum of 9 inches on the contact strip can be gone from the aluminum foil.
  (e) A maximum separation of 9 inches between the contact strip and the aluminum foil.

S 226-013
(2) If the damage is more than the limits, replace the fairing (Ref 54-52-01).

STRUT ACCESS DOORS AND PANELS - DESCRIPTION AND OPERATION

1. General
   A. Doors and panels in the strut and the access door in the aft fairing provide access to strut attachment points and systems within the strut.
2. Component Details
   A. Access Door of the Aft Fairing (Fig. 1)
      (1) The access door of the aft fairing is a hinged panel with three trigger latches. The latches are released by pressing the trigger and pulling the handle to release the latch. A hold-open rod stowed on the inside of the door with clips is used to prop the door open.
      (2) The access door of the aft fairing provides access to the hydraulics and diagonal brace.
   B. Strut Access Doors (Fig. 1)
      (1) The pressure relief doors are hinged at the forward edge and secured with a latch at the aft end.
      (2) The access doors are secured with rotary latches.
         (a) The pressure relief doors on the forward side provide access to the anti-ice duct for the nose cowl, starter duct and strut control drum.
         (b) The forward access panels provide access to the HP2 duct check valve.
         (c) The aft access panels provide access to the precooler.



Strut Access Doors and Panels
Figure 1

(d) The pressure relief door on the aft side provides access to the pressure regulating valve.
(e) The bulkhead coverplate provides access to the overtemperature limiting sensor. Coverplate access is through the access door of the aft fairing.

STRUT PRESSURE RELIEF AND ACCESS DOORS - REMOVAL/INSTALLATION

1. General
   A. There are two types of access doors. The first type are pressure relief doors which are opened with latches. The latches open when the internal pressure is more than a given limit. The second type are access doors which are held on by fasteners. This procedure removes and installs these doors.

TASK 54-53-01-004-001

2. Remove the Strut Doors
   A. References
      (1) AMM 78-31-00/201, Thrust Reverser System
   B. Access
      (1) Location Zones
          433 Nacelle Strut Mid Structure
          443 Nacelle Strut Mid Structure

   C. Remove the doors (Fig. 401)

      S 044-002

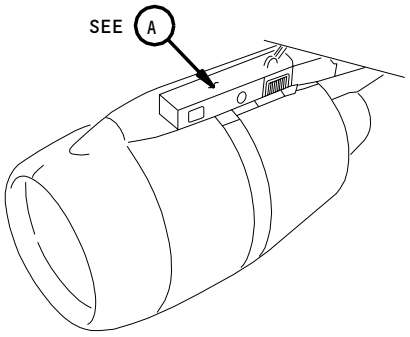
      WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

      (1) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

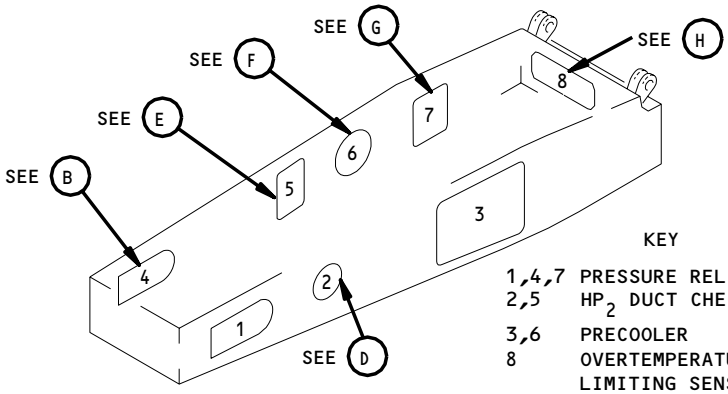
      S 024-003
      (2) Remove the pressure relief door.
          (a) Put a screwdriver into the tool slot and move rearward. This will release the latch.
          (b) Remove the bolt and the washers from the jumper.
          (c) Disconnect the spring from the pressure relief door.
          (d) Remove the bolts, the washers and the nuts that attach the hinge assembly to strut.

      S 024-004
      (3) Remove the access doors.
          (a) Turn the bolts on the access doors to release the rotary latches.

              NOTE: Access to the bulkhead coverplate is through the access door in the aft fairing.



LEFT ENGINE SHOWN
RIGHT ENGINE OPPOSITE

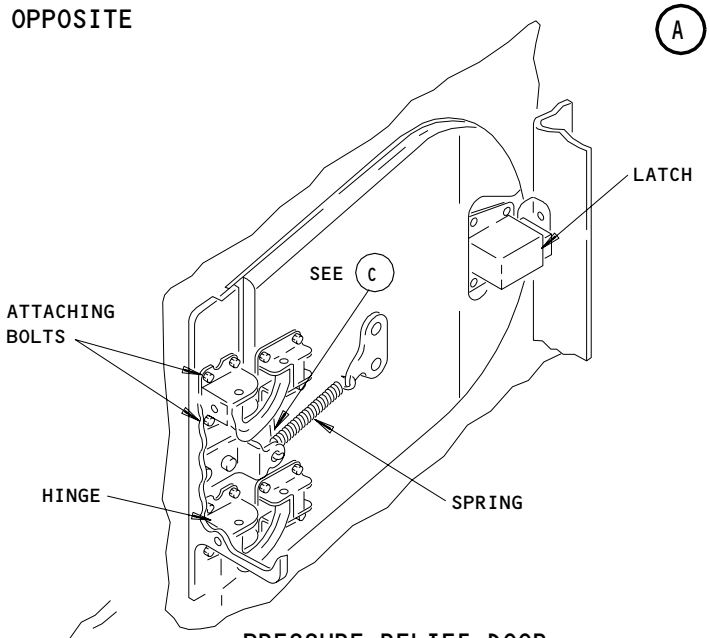


KEY

1,4,7	PRESSURE RELIEF DOORS
2,5	HP_2 DUCT CHECK VALVE
3,6	PRECOOLER
8	OVERTEMPERATURE LIMITING SENSOR

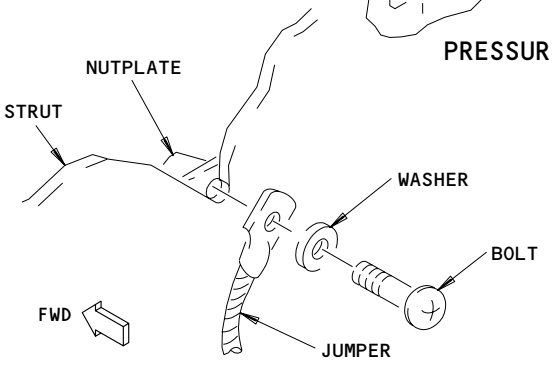
STRUT ACCESS DOORS & PANELS

A



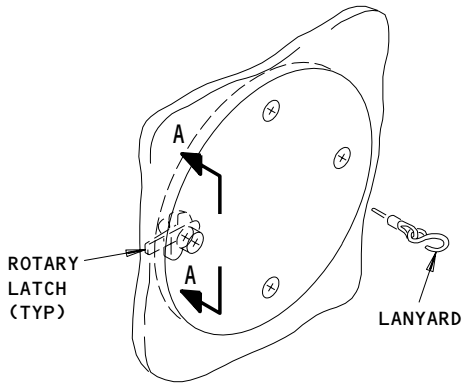
PRESSURE RELIEF DOOR

B



JUMPER ON PRESSURE RELIEF DOOR

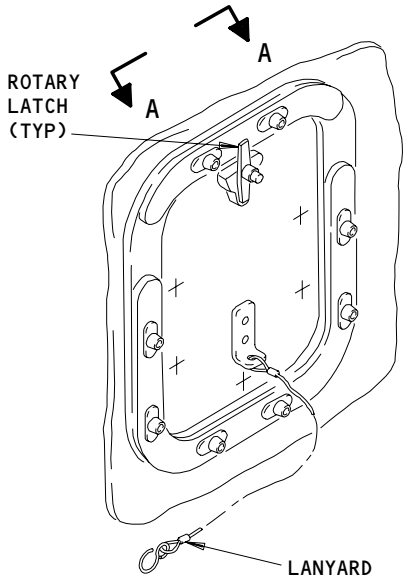
C



ACCESS DOOR

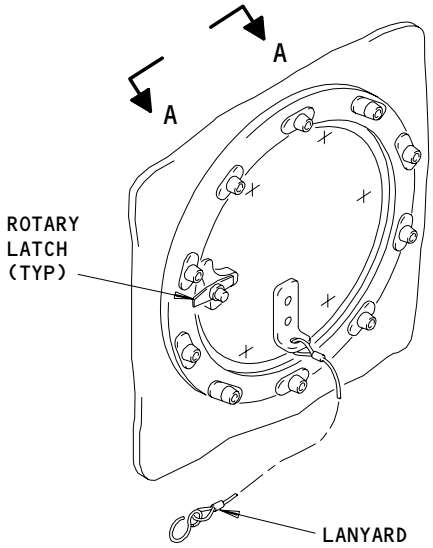
D

Strut Pressure Relief and Access Doors Installation
Figure 401 (Sheet 1)



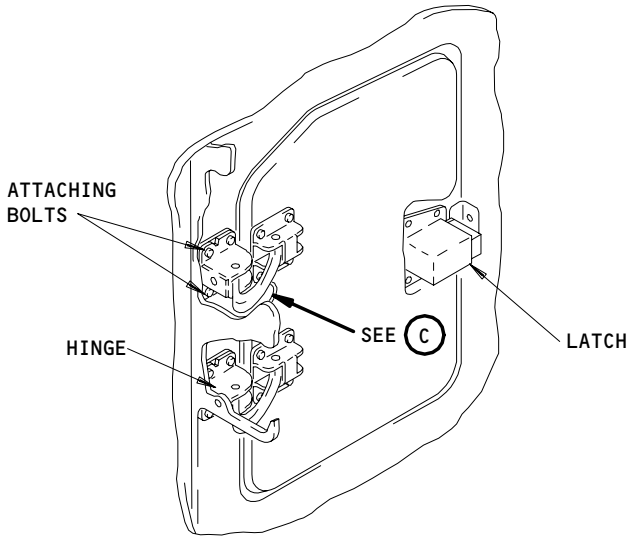
ACCESS DOOR

E



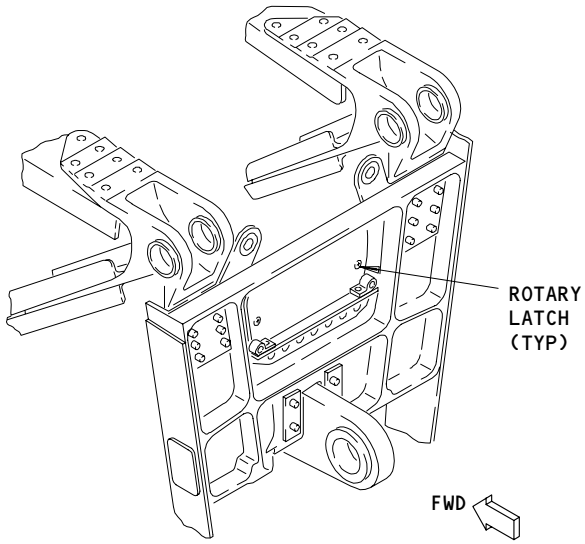
ACCESS DOOR

F



PRESSURE RELIEF DOOR

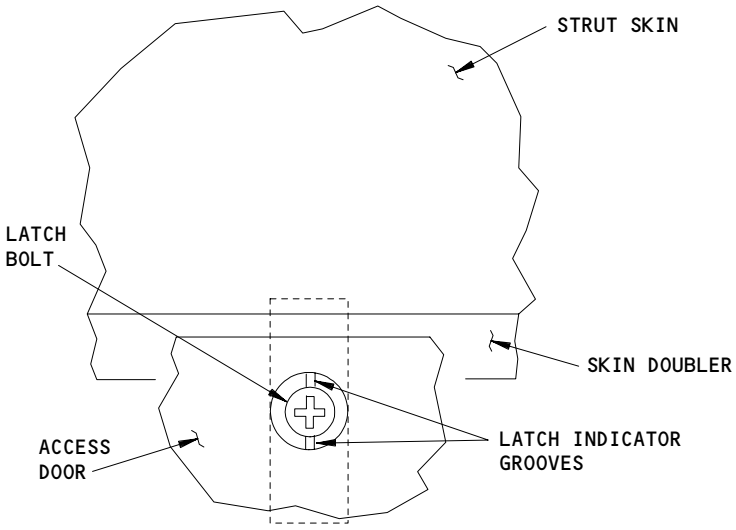
G



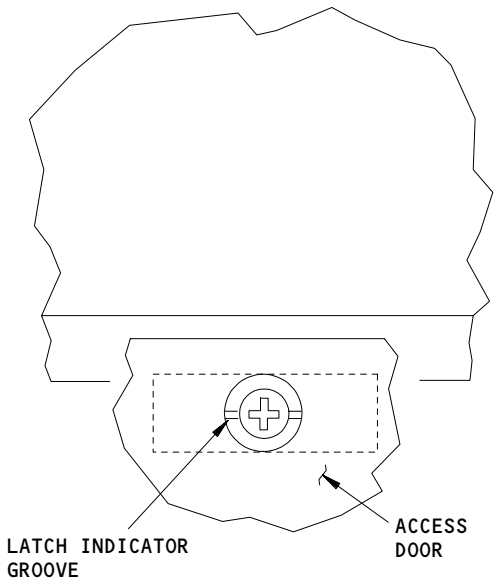
BULKHEAD COVERPLATE

H

Strut Pressure Relief and Access Doors Installation
Figure 401 (Sheet 2)



ROTARY LATCH CLOSED 1
A–A

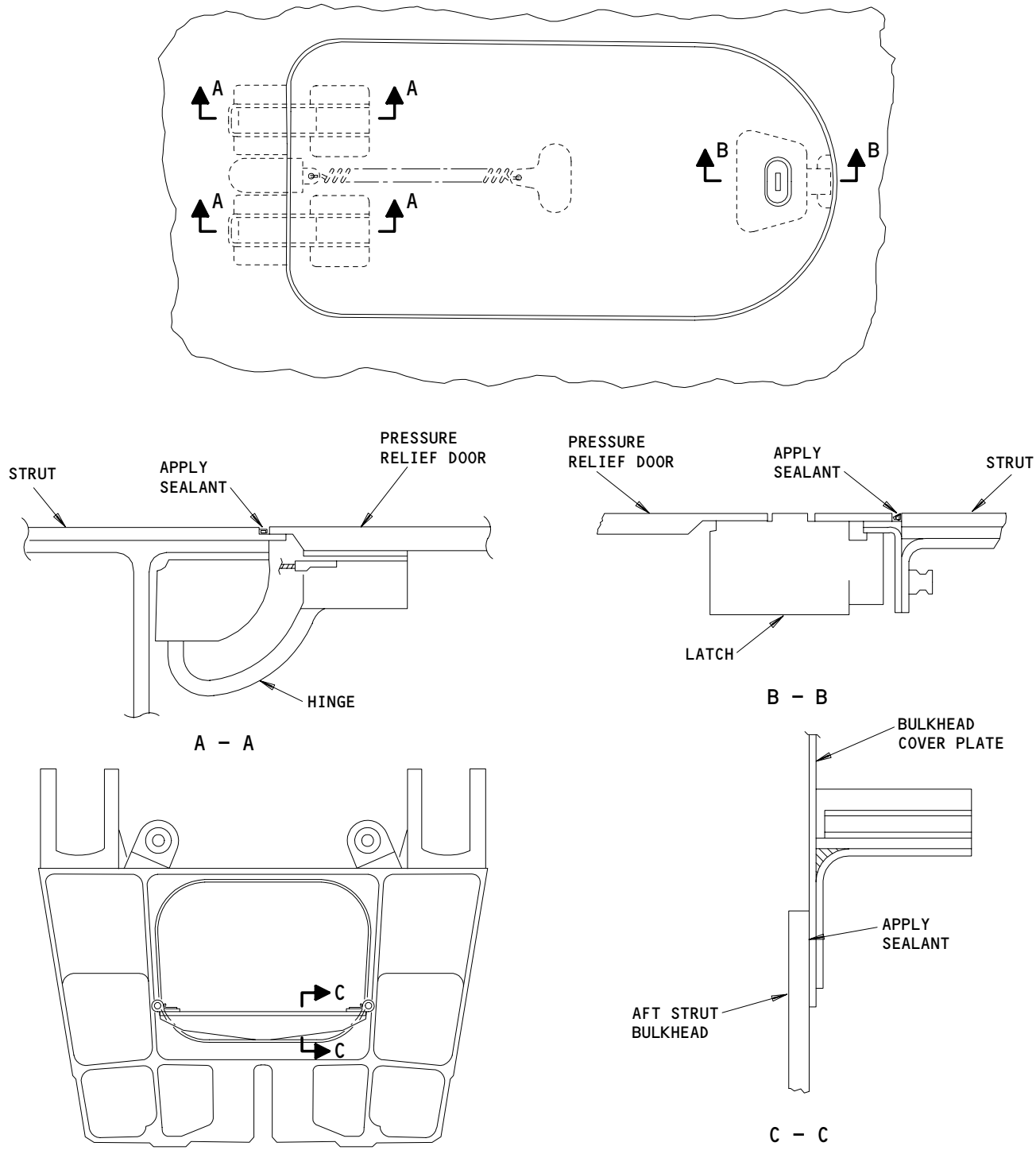


ROTARY LATCH OPEN 2
A–A

1 THE INDICATOR GROOVE IS VERTICAL TO THE DOOR EDGE WHEN THE LATCH IS CLOSED

2 THE INDICATOR GROOVE IS PARALLEL TO THE DOOR EDGE WHEN THE LATCH IS OPEN

Strut Pressure Relief and Access Door Installation
Figure 401 (Sheet 3)



Sealant Installation for Pressure Relief Door
Figure 402

TASK 54-53-01-404-005

3. Install the Strut Doors

A. Consumable Materials

(1) A00091 Silicone Rubber Sealant - Dow Corning 93-006
(2) G00286 Parting Agent
(3) C00259 Primer - BMS 10-11, Type 1 (AMM 20-30-03/201).
(4) G50136 - Compound, Corrosion Preventive - BMS 3-38 (AMM 20-30-03/201)

B. References

(1) AMM 54-51-01/201, Strut
(2) AMM 54-53-01/501, Strut Pressure Relief and Access Doors
(3) AMM 78-31-00/201, Thrust Reverser System

C. Access

(1) Location Zones
433 Nacelle Strut Mid Structure
443 Nacelle Strut Mid Structure

D. Install the doors (Fig. 401)

S 424-006

(1) Install the pressure relief doors.
(a) Make sure that the corrosion preventative compound is in the holes of the bolts.
1) Apply a corrosion preventative compound, if it is necessary.
(b) Install the bolts, the washers, and the nuts in the hinge assembly on the strut.
(c) Connect the spring to the pressure relief door.
(d) Install the jumper with the bolt and the washers.

CAUTION: DO NOT TAPE OR HOLD THE PRESSURE RELIEF DOORS CLOSED. DAMAGE TO THE STRUT CAN OCCUR FROM TO MUCH PRESSURE.

(e) Do a test of the door (AMM 54-53-01/401).
1) If it is necessary, adjust the shims below the door and the latch to make the door smooth (AMM 54-51-01/201).
2) Apply a primer to the shim after delamination.
(f) Repair the sealant, if it is necessary.
1) Apply a sealant and parting agent around all the edges of the door (Fig. 402).

S 424-007
(2) Install the access doors.

NOTE: Care must be taken when installing the bulkhead coverplate. Incorrect latch orientation could result in a loose access door which may allow engine heat to escape into the aft area of the strut. This can cause the activation of the strut overheat switch which could indicate a strut overheat condition to the EICAS system.

(a) Turn the bolts on the access door to lock the rotary latches.

CAUTION: DO NOT TIGHTEN THE LATCH BOLTS MORE THAN 40 POUND-INCHES. DAMAGE TO THE LATCH CAN OCCUR.

(b) Tighten the latch bolts to 20 to 40 pound-inches.

NOTE: When you close the latch, the indicator groove on the latch will be vertical to the edge of the door.

(c) Make sure the doors are smooth (AMM 54-51-01/201).

S 414-009
(3) Install the coverplate on the bulkhead.
(a) Repair the sealant if it is necessary.
(b) Apply a sealant and parting agent around all the edges of the coverplate.
(c) Turn the bolts on the coverplate to lock the rotary latches.

CAUTION: DO NOT TIGHTEN THE LATCH BOLTS MORE THAN 40 POUND-INCHES. DAMAGE TO THE LATCH CAN OCCUR.

(d) Tighten the latch bolts to 20 to 40 pound-inches.

NOTE: When you close the latch, the indicator groove on the latch will be vertical to the edge of the door.

S 444-010
(4) Do this procedure: Thrust Reverser Activation (AMM 78-31-00/201).

STRUT PRESSURE RELIEF AND ACCESS DOORS - ADJUSTMENT/TEST

1. General
   A. There are two types of access doors. The first type are pressure relief doors which are opened with latches. The latches open when the internal pressure is more than a given limit. The second type are access doors which are held on by fasteners. This procedure does the adjustment and the test of these doors.

TASK 54-53-01-715-001

2. Pressure Relief and Access Doors Adjustment Test
   A. References
      (1) 54-51-01/201, Strut
      (2) 54-53-01/401, Strut Pressure Relief and Access Doors
      (3) 78-31-00/201, Thrust Reverser System
   B. Equipment
      (1) B71044, Load Test Adapter/Pivot Support - Pressure Relief Door Latch (Removeable Fasteners)
      (2) B71044, Torque Adapter - Pressure Relief Door Latch (Permanent fasteners)
   C. Access
      (1) Location Zones
          433 Nacelle Strut Mid Structure
          443 Nacelle Strut Mid Structure

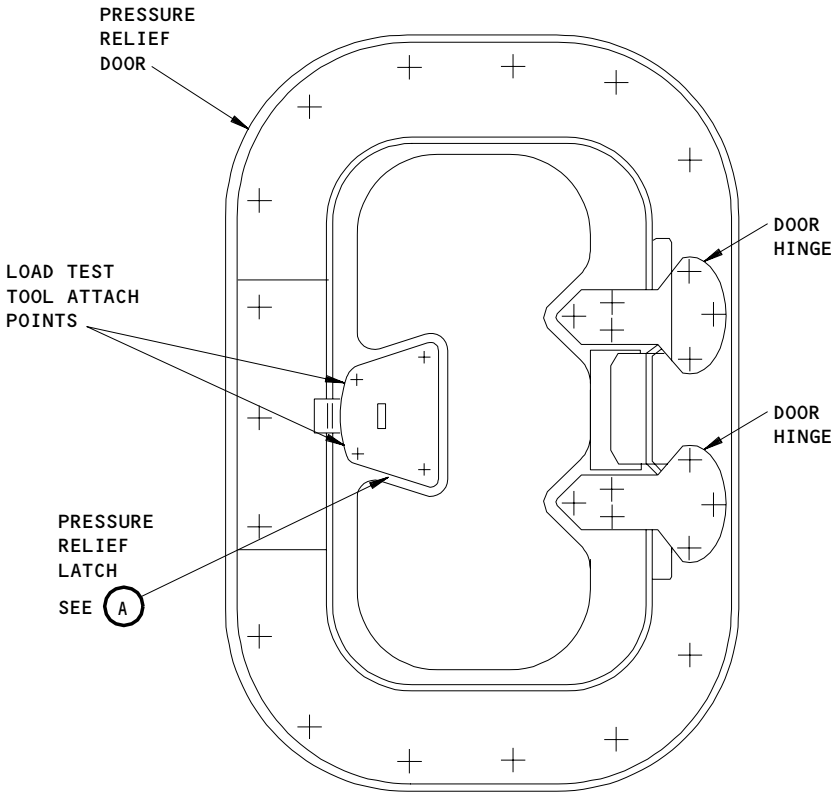
   D. Do a test of the doors.

      S 045-002

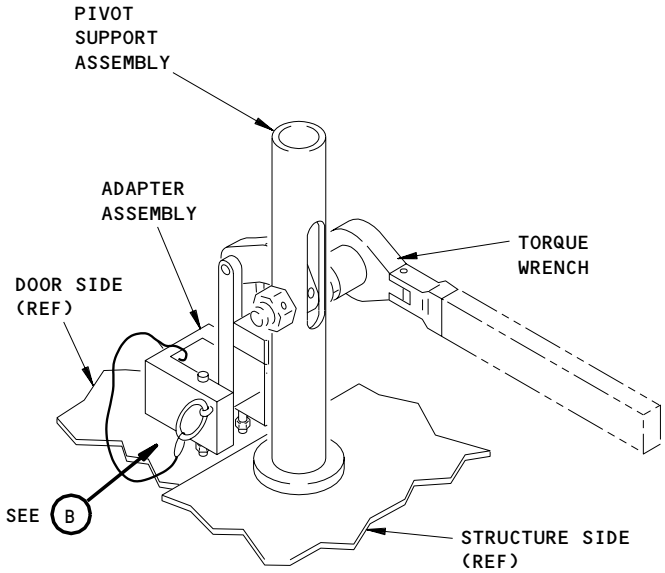
      WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (1) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (Ref 78-31-00).

      S 725-004
      (2) Do a test of the latches on the pressure relief door.
          (a) Attach the tool adapter assembly to the pressure relief door latch with two screws, washers and nuts finger tight (Fig. 501).

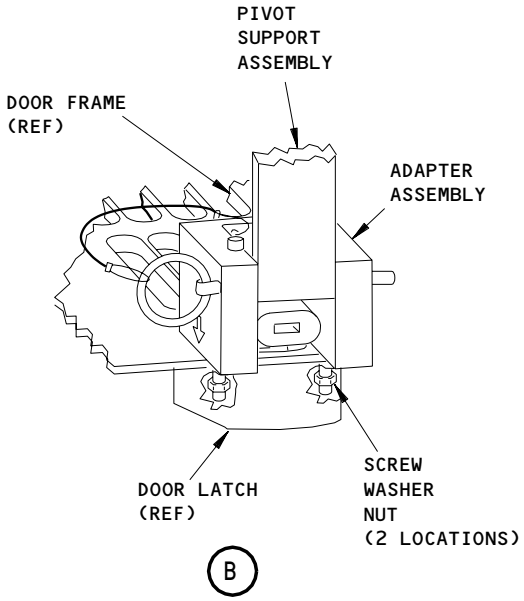


HINGED PRESSURE RELIEF DOOR
(EXAMPLE FAIRING)



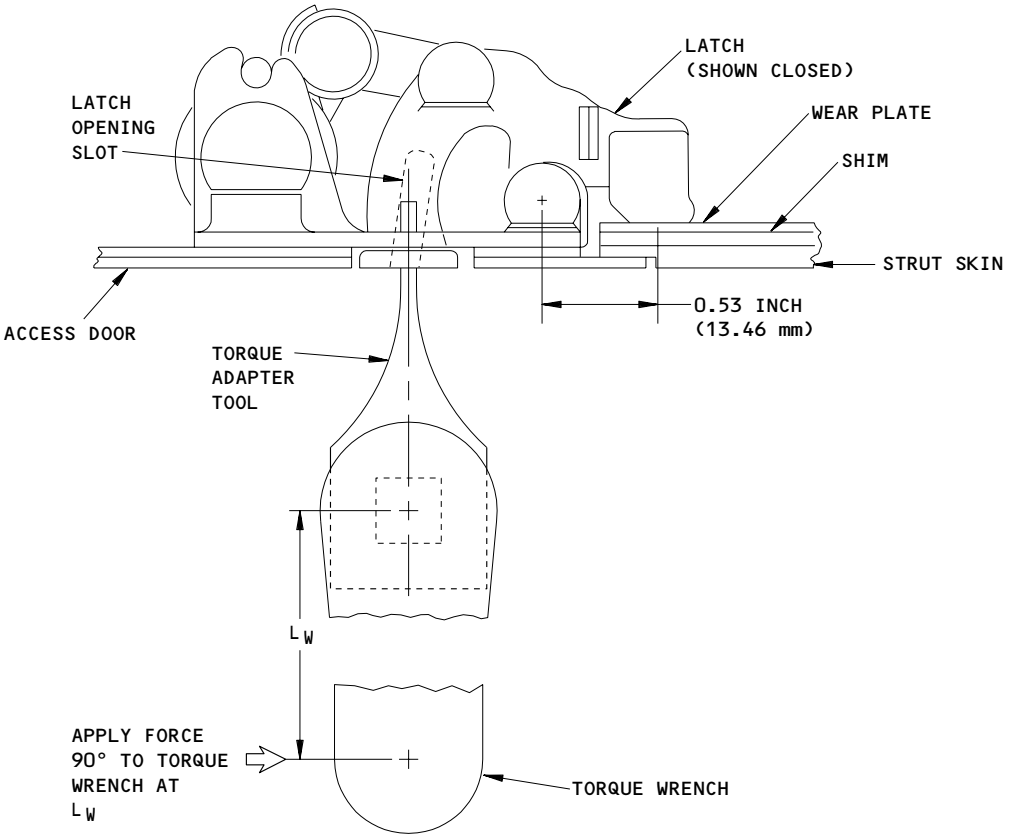
B71044-28 LOAD TEST TOOL INSTALLATION

A 1

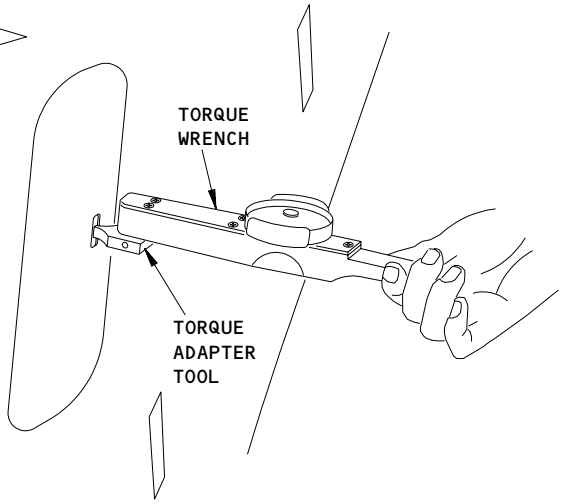


1 DOORS WITH REMOVABLE FASTENERS

Nacelle Strut Access Door Adjustment/Test
Figure 501 (Sheet 1)



PRESSURE RELIEF LATCH
LATCH RELEASE TEST 2
(TORQUE ADAPTER)



$$\text{INDICATED TORQUE} = \frac{(0.53)(L_W)}{(L_W + 1.5)} (P)$$

2 DOORS WITH PERMANENT FASTENERS

Nacelle Strut Access Door Adjustment/Test
Figure 501 (Sheet 2)

(b) Attach the pivot support assembly and torque wrench to the adapter assembly.
(c) With the torque wrench handle parallel to door edge, turn the handle until the latch releases, noting the torque required.

S 825-012
(3) Compare the torque just noted with the requirements (below).

NOTE: The adapter tool assembly increases torque required to release the latch by a factor of two (2.0x).

(a) The latch must open immediately when you apply a force of 97-119 pounds vertical to the bearing surface of the latch bolt.

CAUTION: YOU MUST REPLACE OR REPAIR ALL DOOR LATCHES THAT DO NOT RELEASE CORRECTLY. TOO MUCH FORCE ON THE LATCH CAN CAUSE DAMAGE TO THE DOORS.

(b) If the release load is not within the limits, replace the latch or replace the door.

S 435-010
(4) To replace the latch, do these steps:
(a) Remove the bolts, washers and nuts that attach the latch, wear plate and shim pack to the door.
(b) Put the replacement latch, shims and wear plate on the door sill.
(c) Make sure the finished side of the wear plate is against the shims.
(d) Install the bolts, washers and nuts.

S 425-005
(5) Install the pressure relief door if it was removed from the airplane (Ref 54-53-01).

S 825-011
(6) Do a release check of the replaced door.

S 215-008
(7) Make sure the fasteners on all the other access doors are not loose.
(a) Make sure that the corrosion preventative compound is in the holes of the bolt.

S 225-006
(8) Make sure the doors are smooth (Ref 54-51-01).

S 445-007
(9) Do this procedure: Thrust Reverser Activation (Ref 78-31-00).

AFT FAIRING ACCESS DOOR - REMOVAL/INSTALLATION

1. General
   A. This procedure removes and installs the access door on the aft fairing.

TASK 54-53-02-004-001

2. Remove the Access Door on the Aft Fairing
   A. References
      (1) 78-31-00/201, Thrust Reverser System
   B. Access
      (1) Location Zones
          434 Nacelle Strut Aft Fairing
          444 Nacelle Strut Aft Fairing

   C. Remove the access door (Fig. 401)

      S 044-002

      WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

      (1) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (Ref 78-31-00).

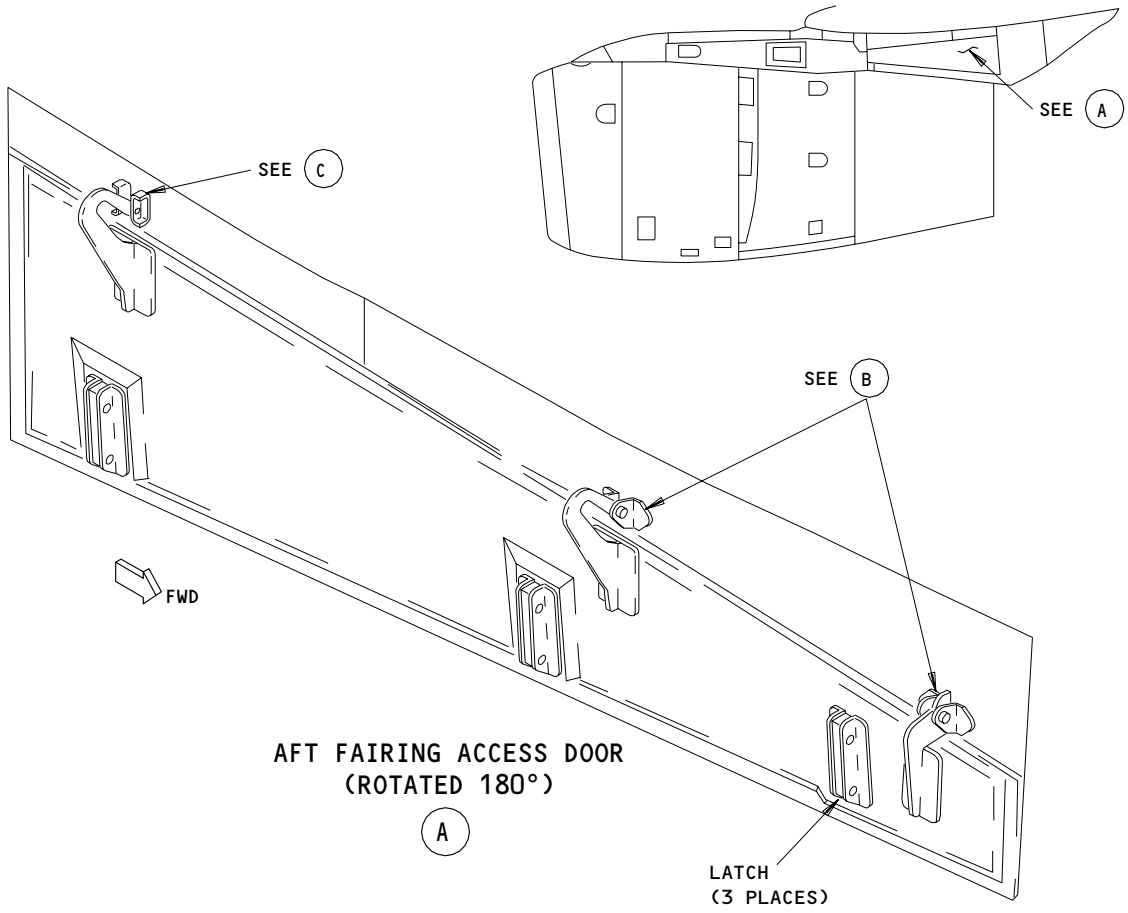
      S 014-003
      (2) Push on the latch trigger until you can release it.

      S 024-004
      (3) Remove the nuts, the washers, the jumpers, and the bolts at the location where the hinges turn.

      S 024-005
      (4) Remove the door.

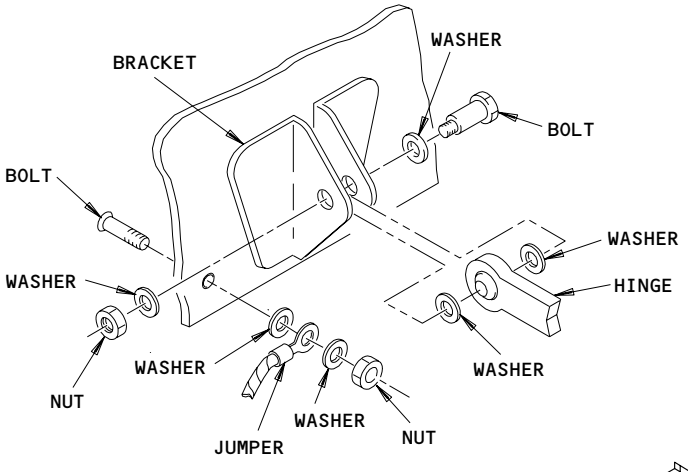
TASK 54-53-02-404-006

3. Install the Access Door on the Aft Fairing
   A. References
      (1) 54-51-01/201, Strut



AFT FAIRING ACCESS DOOR
(ROTATED 180°)

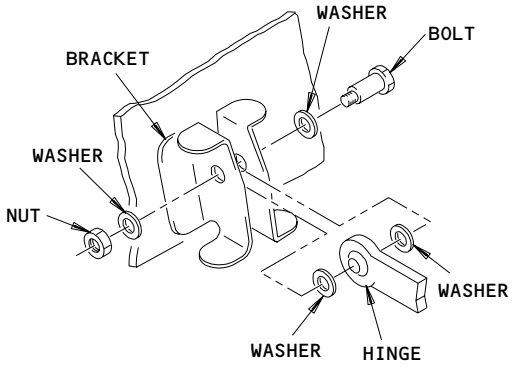
A



HINGE ATTACH FITTING

B

FWD



HINGE ATTACH FITTING

C

Aft Fairing Access Door
Figure 401

(2) 78-31-00/201, Thrust Reverser System

B. Access

(1) Location Zones

434 Nacelle Strut Aft Fairing
444 Nacelle Strut Aft Fairing

C. Install the access door (Fig. 401)

S 424-007

(1) Put the door on the aft fairing.

S 424-008

(2) Install the bolts, the washers, the jumpers, and the nuts at the location where the hinges turn.

S 224-009

(3) Make sure the latches, the hinges, and the door are smooth (Ref 54-51-01).

S 444-010

(4) Do this procedure: Thrust Reverser Activation (Ref 78-31-00).

AFT FAIRING ACCESS DOOR - INSPECTION/CHECK

1. General
   A. This procedure examines the latches and the hinges.

TASK 54-53-02-226-001

2. Aft Fairing Access Door Inspection Check
   A. References
      (1) 54-51-01/201, Strut
      (2) 78-31-00/201, Thrust Reverser System
   B. Access
      (1) Location Zones
          434 Nacelle Strut Aft Fairing
          444 Nacelle Strut Aft Fairing

   C. Examine the latches

      S 046-002

      WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (1) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (Ref 78-31-00).

      S 216-003
      (2) Make sure the latches and hinges are smooth (Ref 54-51-01).

      S 716-008
      (3) Open the door.

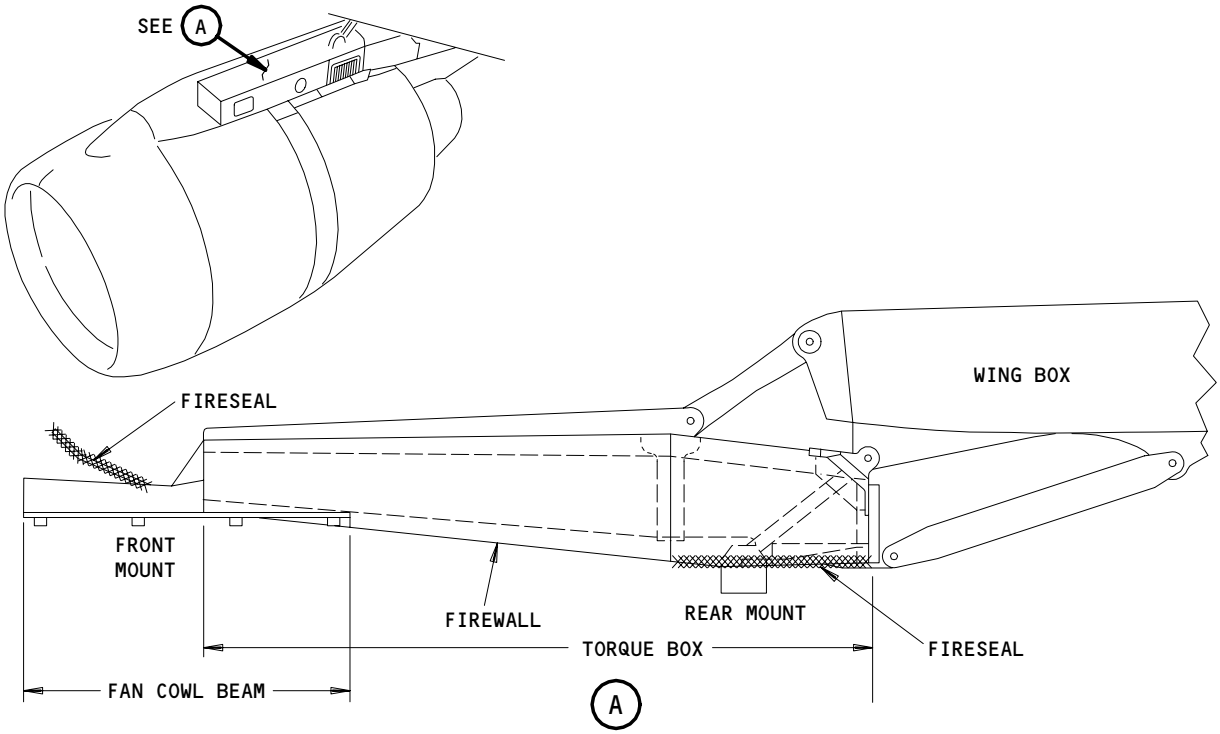
      S 216-005
      (4) Make sure the bolts that attach the hinge and latch are not loose.

      S 716-007
      (5) Close the door.

      S 446-009
      (6) Do this procedure: Thrust Reverser Activation (Ref 78-31-00).

STRUT FIRESEAL AND FIREWALL - DESCRIPTION AND OPERATION

1. General (Fig. 1)
   A. The strut fireseal and firewall protect the wing and upper strut area from exposure to engine fire damage.
   B. The firewall extends along the underside of the strut torque box.
   C. The firewall, constructed of stainless steel and titanium, creates a fire barrier between the strut and engine.
   D. Access to the firewall is gained through access doors in the strut, and by hinge access panels at the top of the C-duct.



Strut Fireseal and Firewall
Figure 1

STRUT FIRE SEAL AND FIREWALL - INSPECTION/CHECK

1. General
   A. When you examine the strut fire seal and the firewall, make sure the strut fire seal and the firewall structure are strong and not damaged, and that they are clean. Also make sure the sealant is in a good condition and that the strut fire seal and the firewall drain correctly.

TASK 54-54-00-216-016

2. Engine Firewall/Fire Seal Inspection
   A. References
      (1) AMM 27-81-00/201, Leading Edge Slat System - Maintenance Practices
      (2) AMM 54-52-01/401, Strut Fairings - Removal/Installation
      (3) AMM 54-53-01/401, Strut Pressure Relief and Access Doors - Removal/Installation
      (4) AMM 54-54-00/801, Strut Fireseal and Firewall - Approved Repairs
      (5) AMM 78-31-20/401, Thrust Reverser - Removal/Installation
   B. Access
      (1) Location Zones

210	Control Cabin
415/425	Thrust Reverser Left
416/426	Thrust Reverser Right
413/423	Fan Cowl Panel Left
414/424	Fan Cowl Panel Right
434/444	Nacelle Strut - Aft Fairing

   C. Examine the Engine Fire Seal and the Firewall (Fig. 601).

S 046-017

WARNING: INSTALL THE LOCKS FOR THE LEADING EDGE SLATS TO PREVENT THE ACCIDENTAL OPERATION OF THE LEADING EDGE SLATS. THE ACCIDENTAL OPERATION OF THE SLATS CAN CAUSE INJURY TO PERSONS.

(1) Do this procedure: Leading Edge Slat Deactivation in the Retracted Position (AMM 27-81-00/201).

S 016-002

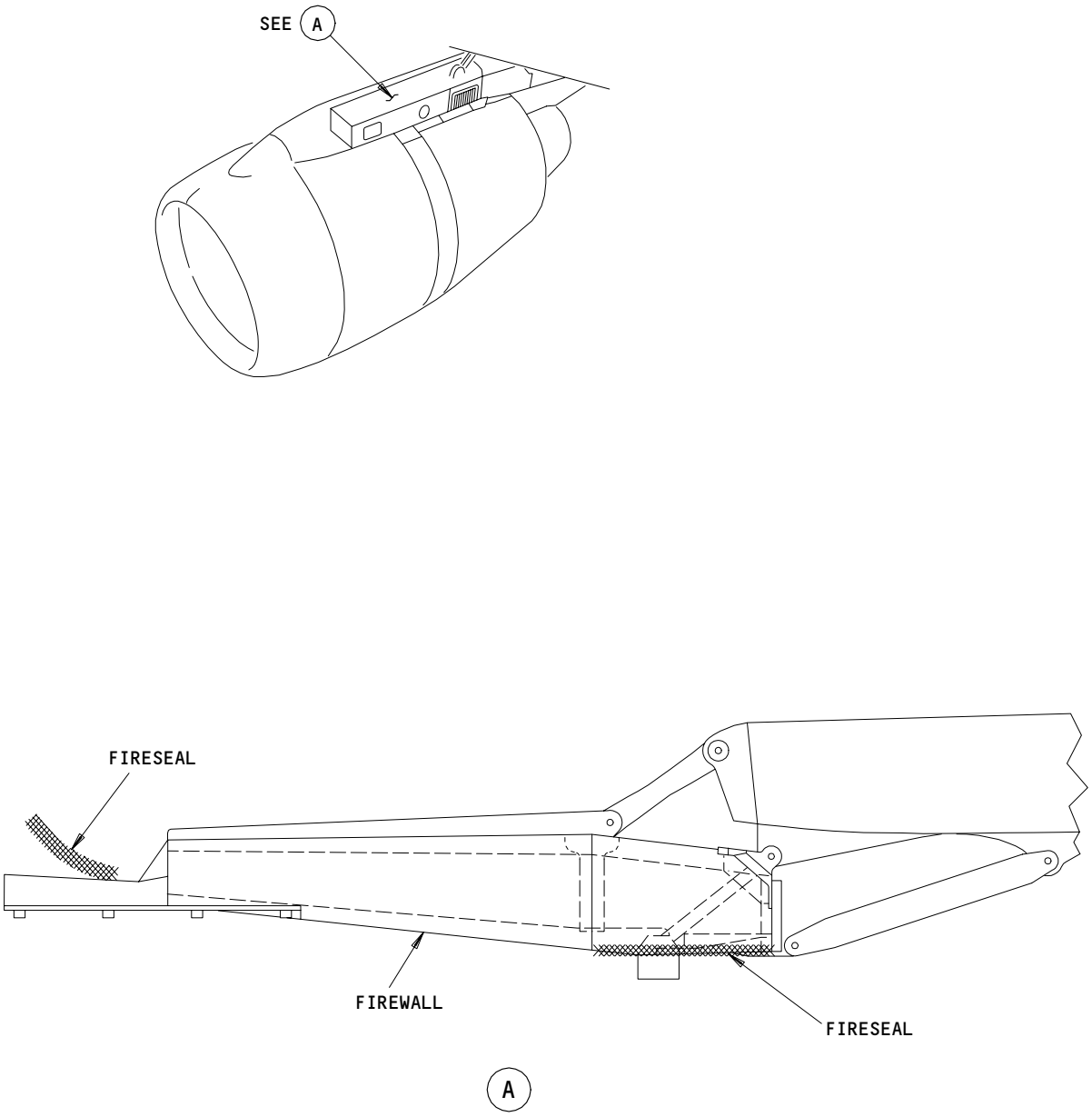
(2) Remove the thrust reverser (AMM 78-31-20/401).

S 016-003

(3) Remove the hinge access panels of the thrust reverser (AMM 54-52-01/401).

S 016-005

(4) Remove the pressure relief doors which are on the strut (AMM 54-53-01401).



Fireseal and Firewall Inspection
Figure 601

S 016-018
(5) Remove the access doors which are on the strut (AMM 54-53-01/401).

S 216-006
(6) Examine the engine fire seal and the firewall for cracks, tears, damaged areas, deterioration, loose sections or sections which are gone.

S 216-007
(7) Examine the structure for cracks or damaged areas.

S 216-008
(8) Examine the top surface to make sure the top surface is clean and that it drains correctly.

S 216-009
(9) Look for sealant which is loose or gone. Repair if it is necessary (AMM 54-54-00/801).

S 416-011
(10) Install the pressure relief doors which are on the strut (AMM 54-53-01/401).

S 416-019
(11) Install the access doors which are on the strut (AMM 54-53-01/401).

S 416-012
(12) Install the hinge access panels of the thrust reverser (AMM 54-52-01/401).

S 416-013
(13) Install the thrust reverser (AMM 78-31-20/401).

S 446-015
(14) Remove the locks for the leading edge slats (AMM 27-81-00/201).

STRUT FIRE SEAL AND FIREWALL - APPROVED REPAIRS

1. General
   A. This task contains data for the repair of the engine fire seal and the firewall.

TASK 54-54-00-398-001

2. Repair the Strut Fire Seal and Firewall
   A. Consumable Materials
      (1) A00204 Primer - Sealant BMS 5-63, Class B (Ref 20-30-03)
   B. References
      (1) SRM 54-50-01
      (2) 51-31-01/201, Seals and Sealing
   C. Access
      (1) Location Zones
          431/441 Forward Nacelle Strut Fairing
          433/443 Nacelle Strut - Mid Fairing

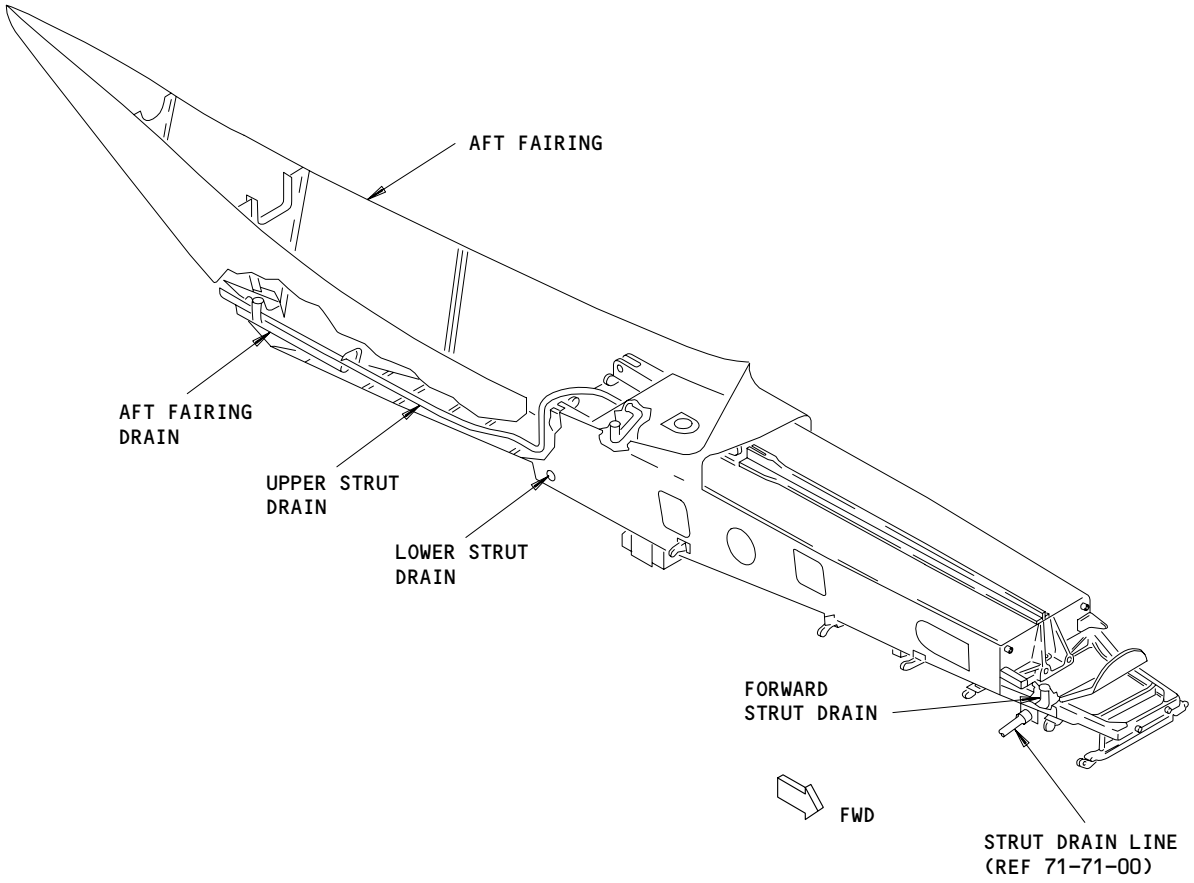
   D. Repair the Engine Fire Seal and the Firewall

      S 388-002
      (1) Repair the Firewall Web
          (a) Do the repair of the firewall web as found in the structural repair manual.

      S 398-003
      (2) Repair the engine fire seal
          (a) Apply the same type of a seal as was initially applied in 51-31-01. Also, do the steps that follow:
              1) Clean the area immediately before you apply the primer.
              2) Apply a layer of the primer.
              3) Let the primer dry for a minimum of 60 minutes.
              4) Apply the firewall sealant.
          (b) Replace the rubber bulk seals.

STRUT DRAINS - DESCRIPTION AND OPERATION

1. General
   A. This section describes the system of drains for the removal of fuel, hydraulic fluid, and water that accumulate in the strut.
2. Component Details
   A. Strut Drains (Fig. 1)
      (1) Waste fuel, hydraulic fluid, and water are removed from the strut by four gravity-fed drains.
         (a) The forward strut drain in the support structure for the fan cowl drains fuel, hydraulic fluid, and water through the engine drain mast.
         (b) The lower strut drain on the inboard side of the strut drains water from the lower strut.
         (c) The upper strut drain discharges fuel, hydraulic fluid, and water from the aft upper strut through the aft fairing.
         (d) The aft fairing drain in the aft fairing drains fuel, hydraulic fluid, and water.



Strut Drain Locations
Figure 1

STRUT DRAINS - LEAKAGE TEST

1. General
   A. This procedure has two tasks. The first task does a strut leak test. The second task does a check of the strut drains.
   B. The strut drains prevent the collection of fluids in the strut.

TASK 54-55-00-202-001

2. Strut Drain Leak Test
   A. Equipment
      (1) Container - clean, graduated, transparent, minimum capacity of 10 cubic centimeters
      (2) Container - Minimum 5.0 U.S. Gallon capacity
      (3) Funnel - long neck
   B. References
      (1) AMM 71-11-04/201, Fan Cowl Panels
      (2) AMM 78-31-00/201, Thrust Reverser System
      (3) AMM 71-71-00/601, Engine Vents and Drains
   C. Access
      (1) Location Zones

410	No. 1 Power Plant (Left)
420	No. 2 Power Plant (Right)

      (2) Access Panels

413AL	Fan Cowl Panel (Left)
414AR	Fan Cowl Panel (Right)
415AL	Thrust Reverser (Left)
416AR	Thrust Reverser (Right)
423AL	Fan Cowl Panel (Left)
424AR	Fan Cowl Panel (Right)
425AL	Thrust Reverser (Left)
426AR	Thrust Reverser (Right)

   D. Examine the Drains of the Strut.

S 012-002

CAUTION: OBEY THE PRECAUTIONS FOR THE KEVLAR WRAPPING WHEN YOU OPEN THE FAN COWL PANEL. IF YOU DO NOT OBEY THE PRECAUTIONS, DAMAGE TO THE KEVLAR WRAPPING CAN OCCUR.

(1) Open the fan cowl panels (AMM 71-11-04/201).

S 042-003

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 012-004

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00 WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Open the thrust reverser (AMM 78-31-00/201).

S 792-005

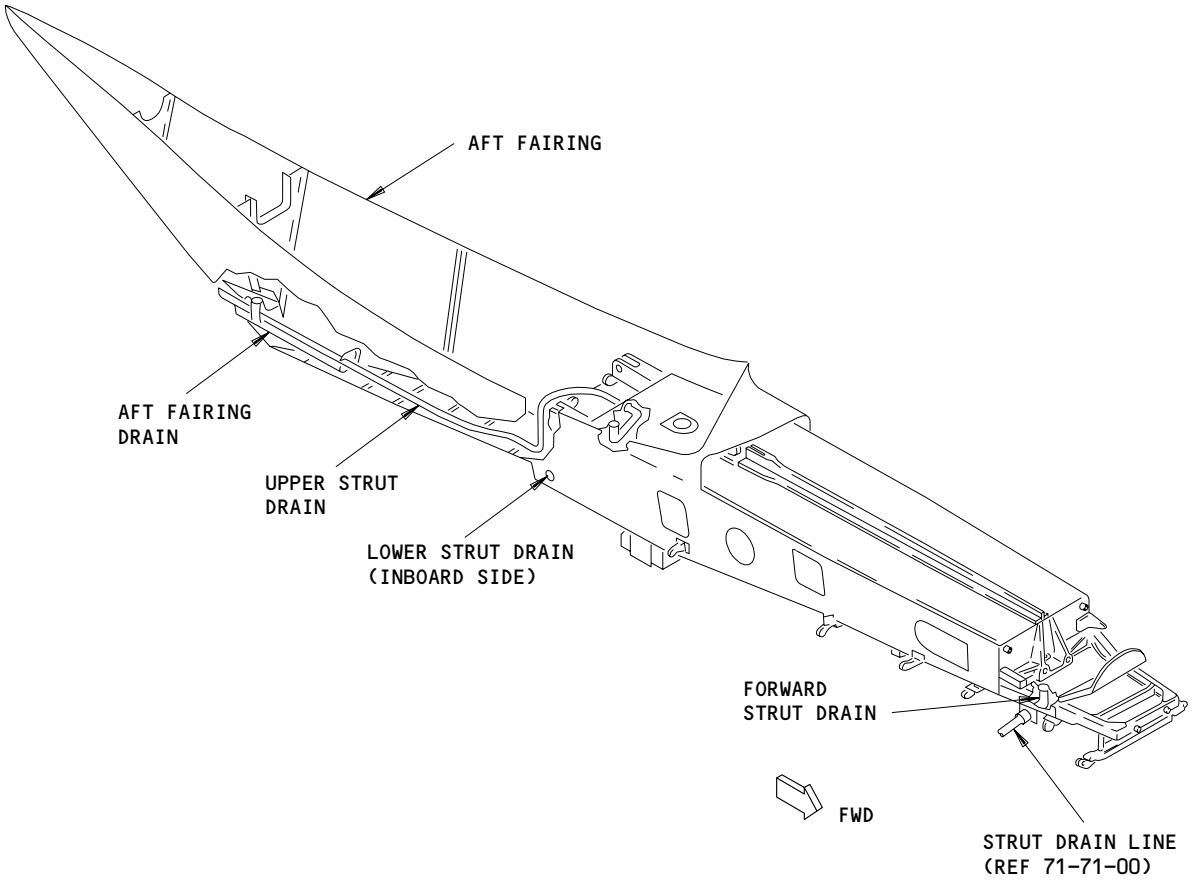
(4) Temporarily cover open holes in the forward upper spar and aft side of the services disconnect firewall, to allow water to collect in the area.
   (a) Pour 9 U.S. Quarts (8.5 liters) of water into the area and allow to rest for 15 minutes.
   (b) Do a visual check to ensure fluid does not leak to adjoining areas.
   (c) Open drain holes and collect water in container at drain exit area.

S 792-006

(5) Temporarily cover open holes In the upper aft side of strut at the forward side of the aft vapor barrier (nacelle station 202.1).
   (a) Pour 5.5 U.S. Quarts (5.2 liters) of water into the area and let stand for 5 minutes.
   (b) Do a visual check of adjacent areas to ensure there is no leakage of water.
   (c) Open drain holes and allow water to drain .
   (d) Make sure the area is clean and free of any objects that may block drains.

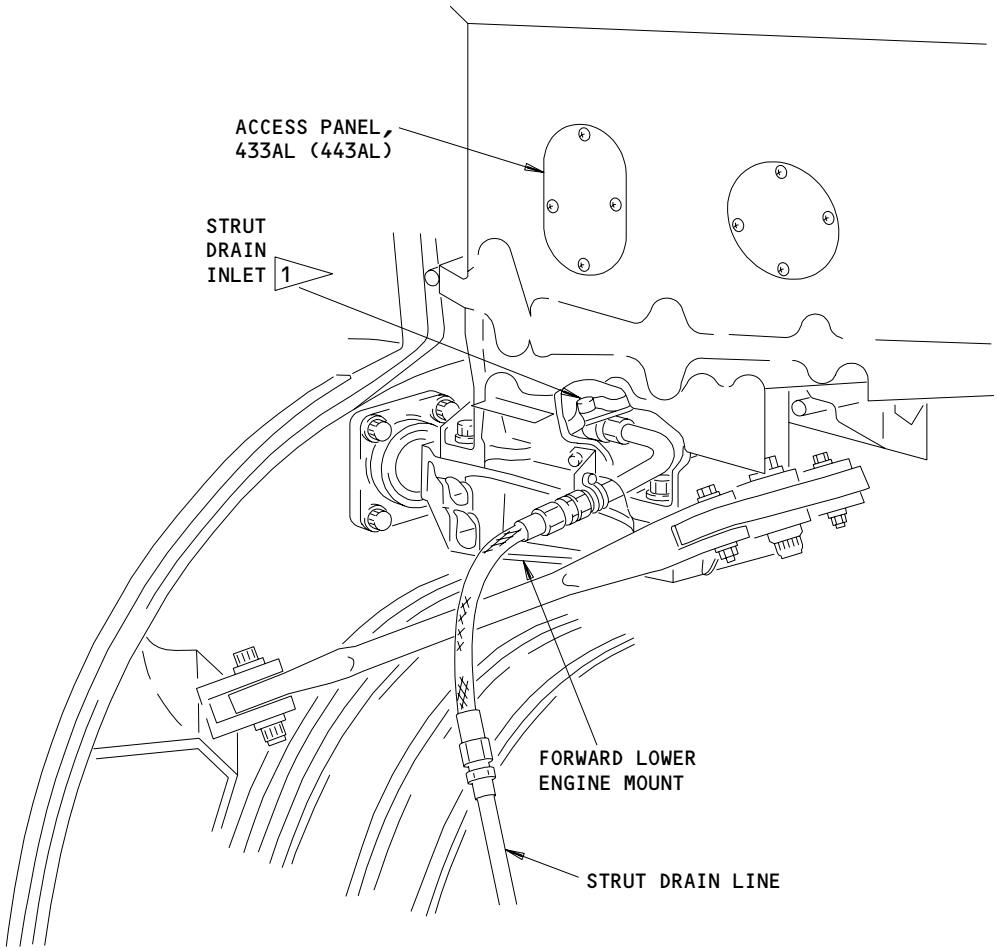
S 792-007

(6) Temporarily close the drain inlet At the lower spar - aft fairing.
   (a) Pour 5.0 U.S. Gallons (4.73 liters) of water in the area and let stand for 5 minutes.
   (b) Do a visual check for any water leakage.



Strut Drain Locations
Figure 201 (Sheet 1)

G23828



1 PART OF THE STRUT IS REMOVED TO SHOW THE STRUT DRAIN INLET

Strut Drain
Figure 201 (Sheet 2)

(c) Open drain hole and allow water to drain .
(d) Make sure the area is clean and free of debris that may block drain.

S 412-008

WARNING: OBEY THE INSTRUCTIONS IN AMM 78-31-00 WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(7) Close the thrust reverser (AMM 78-31-00/201).

S 412-009

CAUTION: OBEY THE PRECAUTIONS FOR THE KEVLAR WRAPPING WHEN YOU CLOSE THE FAN COWL PANEL. IF YOU DO NOT OBEY THE PRECAUTIONS, DAMAGE TO THE KEVLAR WRAPPING CAN OCCUR.

(8) Close the fan cowl panels (AMM 71-11-04/201).

S 442-010
(9) Do the activation procedure for the thrust reverser (AMM 78-31-00/201).

TASK 54-55-00-202-011

3. Examine/Test the Strut Drains

A. Equipment
(1) Container - 5 gallon capacity, can collect and measure fluid capacity to one ounce (Smaller container can be used to measure volume)
(2) Flashlight - Explosion-proof
(3) Funnel - long neck
(4) Mirror - Inspection, with handle 12 inches long
(5) Water Source - low pressure, can spray up to two quarts (1.9 liters per minute

B. References
(1) AMM 08-21-00/201, Leveling the Airplane

(2) AMM 08-31-00/201, Weighing the Airplane
(3) AMM 27-81-00/201, Leading Edge Flaps
(4) AMM 51-31-02/201, Seals and Sealing
(5) AMM 54-52-01/401, Strut Fairings
(6) AMM 54-53-01/401, Strut Pressure Relief and Access Doors
(7) AMM 71-11-04/201, Fan Cowl Panels
(8) AMM 78-31-00/201, Thrust Reverser System

C. Access

(1) Location Zones

410	No. 1 Power Plant (Left)
420	No. 2 Power Plant (Right)

(2) Access Panels

433AL	Forward Pressure Relief Door, Left Engine
433EL	Underwing Fairing - Outboard, Left Engine
433GR	Forward Pressure Relief Door, Left Engine
433LR	Aft Pressure Relief Door - Inboard, Left Engine
434AL	Aft Fairing Access Door - Outboard, Left Engine
443AR	Forward Pressure Relief Door, Right Engine
443ER	Underwing Fairing - Outboard, Right Engine
443GL	Forward Pressure Relief Door, Right Engine
443LL	Aft Pressure Relief Door - Inboard, Right Engine
444AR	Aft Fairing Access Door - Outboard, Right Engine

D. Prepare to perform drain checks

S 042-012

WARNING: DO THE THRUST REVERSER DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Do this procedure: Thrust Reverser Deactivation for Ground Maintenance (AMM 78-31-00/201).

S 012-013

CAUTION: OBEY THE PRECAUTIONS FOR THE KEVLAR WRAPPING WHEN YOU OPEN THE FAN COWL PANEL. IF YOU DO NOT OBEY THE PRECAUTIONS, DAMAGE TO THE KEVLAR WRAPPING CAN OCCUR.

(2) Open the fan cowl panels (AMM 71-11-04/201).

S 012-014

(3) Remove the underwing fairings on the strut (AMM 54-52-01/401).
(a) On the left engine, this fairing is 433EL.
(b) On the right engine, this fairing is 443ER.

S 012-015
(4) Open the forward pressure relief doors (AMM 54-53-01/401).
  (a) On the left engine, 433AL and 433GR.
  (b) On the right engine, 443AR 443GL.

S 012-016
(5) Open the aft pressure relief door (AMM 54-53-01/401).
  (a) On the left engine, 433LR.
  (b) On the right engine, 443LL.

S 012-017
(6) Open the aft fairing access door, 434AL or 444AR, to get access to the strut hydraulic compartment.

S 212-018
(7) Examine the strut drain inlets for blockage (Fig. 201).
  (a) Examine the two drain inlets for the forward strut drain line for blockage.

    NOTE: A mirror and a flashlight will help you do this inspection.

S 212-019
(8) Examine the drain tubes for the forward strut drains for damage.

  NOTE: One drain tube comes out of the bottom of the strut and goes out on the right side of the strut. One drain tube attaches to a drain tube on the engine, that goes to the bottom of the engine and exits.

  (a) Use the forward pressure relief doors 433AL/433GR or 443AR/443GL to get access to the drain inlets.
  (b) Place the container to collect water under the drain exit location.
  (c) Pour two (2) U.S. Gallons (256 fluid ounces) into drain inlet at an approximate rate of one half gallon (1900 ml or 64 fluid ounces) per minute for 4 minutes.
  (d) Allow 3 to 5 minutes for water to flow through tube and exit.
  (e) The amount of water recovered must be at least 250 fluid ounces.

S 212-020

(9) Examine the drain tube for the upper strut drain for blockage.

NOTE: The drain tube removes fluid from the upper, aft, inboard side of the strut. The tube turns and goes aft, through the aft bulkhead of the strut. The tube then goes down to the bottom of the aft fairing and goes to the aft corner of the fairing and exits.

(a) Use the underwing fairings, 433EL or 443ER to get access to the drain inlet.
(b) To see the part of the drain tube in the strut, go through the aft bulkhead coverplate, door 8 (AMM 54-53-01/401).
(c) You can examine the drain tube on the bottom of the hydraulic compartment through the aft fairing access door.
(d) You can examine the drain tube exit at the aft corner of the aft fairing.
    1) Place the container to collect water under the drain exit location.
    2) Pour two (2) U.S. Gallons (7600 ml or 256 fluid ounces) into the drain inlet at an approximate rate of one half gallon (1900 ml or 64 fluid ounces) per minute for 4 minutes.
    3) Allow 3 to 5 minutes for the water to flow through the tube and exit.
    4) The amount of water recovered must be at least 250 fluid ounces.

S 212-021

(10) Examine the aft fairing drain tube for damage.

NOTE: This drain tube removes fluid from the bottom of the hydraulic compartment. The drain tube exits from the aft corner of the aft fairing, below the drain tube from the upper strut drain.

(a) Pour two (2) U.S. Gallons (7600 ml or 256 fluid ounces) into the drain inlet at an approximate rate of one half gallon (1900 ml or 64 fluid ounces) per minute for 4 minutes.
(b) Allow 3 to 5 minutes for the water to flow through the tube and exit.
(c) The amount of water recovered must be at least 250 fluid ounces.

S 412-022
(11) Close the aft fairing access door, 434AL or 444LL.

S 412-023
(12) Install the underwing fairings on the strut, 433EL or 443ER (AMM 54-52-01/401).

S 412-024
(13) Close the forward pressure relief doors 433AL/433GR or 443AR/443GL (AMM 54-53-01/401).

S 412-025
(14) Close the aft pressure relief door, 433LR or 443LL (AMM 54-52-01/401).

S 412-026

CAUTION: OBEY THE PRECAUTIONS FOR THE KEVLAR WRAPPING WHEN YOU CLOSE THE FAN COWL PANEL. IF YOU DO NOT OBEY THE PRECAUTIONS, DAMAGE TO THE KEVLAR WRAPPING CAN OCCUR.

(15) Close the fan cowl panels (AMM 71-11-04/201).

S 442-027
(16) Do the activation procedure for the thrust reverser (AMM 78-31-00/201).