

KSSU Group

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STABILIZERS - DESCRIPTION AND OPERATION

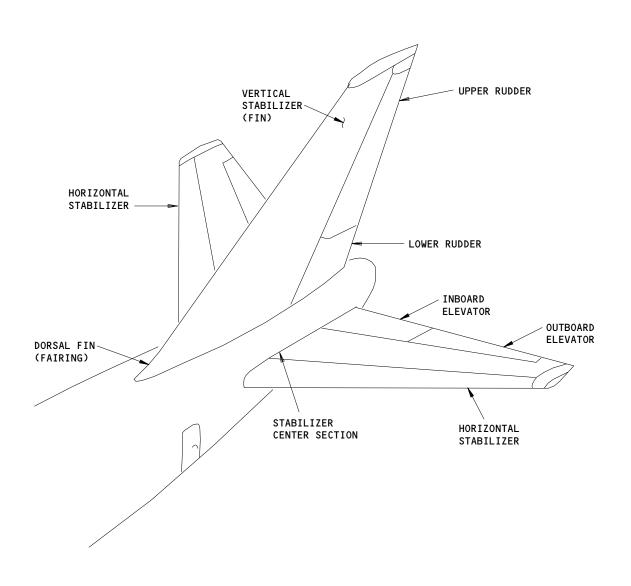
1. General (Fig. 1)

- A. The stabilizers are aerodynamic control structures in the tail or empennage section of the airplane. They consist of a vertical stabilizer (fin), dorsal fin, rudder, horizontal stabilizer and elevators. The vertical stabilizer is a structure composed of a leading edge, auxiliary, front and rear spar. It has a combination of aluminum honeycomb panels and rib and machined skin, stiffener and rib construction. The dorsal fin (fairing) is constructed of machined aluminum skin and ribs. It fairs the vertical stabilizer to the fuselage. The upper and lower rudders are made of fiberglass honeycomb sandwich construction with supporting ribs strengthened with front and rear spars. The rudders are hinged to the vertical fin. The horizontal stabilizers are constructed similarly to the vertical stabilizer as are elevators of similar construction to rudders. The elevators are hinged to the horizontal stabilizer.
- B. The vertical stabilizer (fin) is stationary, but rudders hinged to the fin move left and right to provide directional control for the aircraft. The horizontal stabilizer moves up and down to provide pitch trim control The elevators also move up and down to provide pitch control.

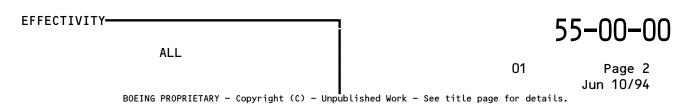
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Stabilizers Figure 1





HORIZONTAL STABILIZER - DESCRIPTION AND OPERATION

1. General (Fig. 1)

- A. The horizontal stabilizer consists of left and right outboard sections attached to a stabilizer center section located in the fuselage. The stabilizer is trimmed by pivoting on two rear spar hinges at the intersections of center and outboard sections. A trim drive mechanism attached by actuator fitting at the front spar of the center section provides for stabilizer movements (Ref 27-41-00). An aerodynamic seal fills the gap between stabilizer outboard sections and fuselage. A blade seal between front and rear spars where the spars pass into the fuselage provides sealing during trimming operation. At the outboard sections a removable leading edge attaches to an auxiliary spar. Between the auxiliary spar and front spar is the forward torque box. The aft torque box is between the front and rear spars. Aft of the rear spar is the fixed trailing edge which contains rib structure to which elevators are attached. A removable tip assembly is attached to the end of the outboard stabilizer section.
- B. The center section and the aft torque box out to STAB STA 285 are sealed to serve as a fuel tank. The area between STAB STA 510 and 560 on the right side is sealed to serve as the vent surge tank.

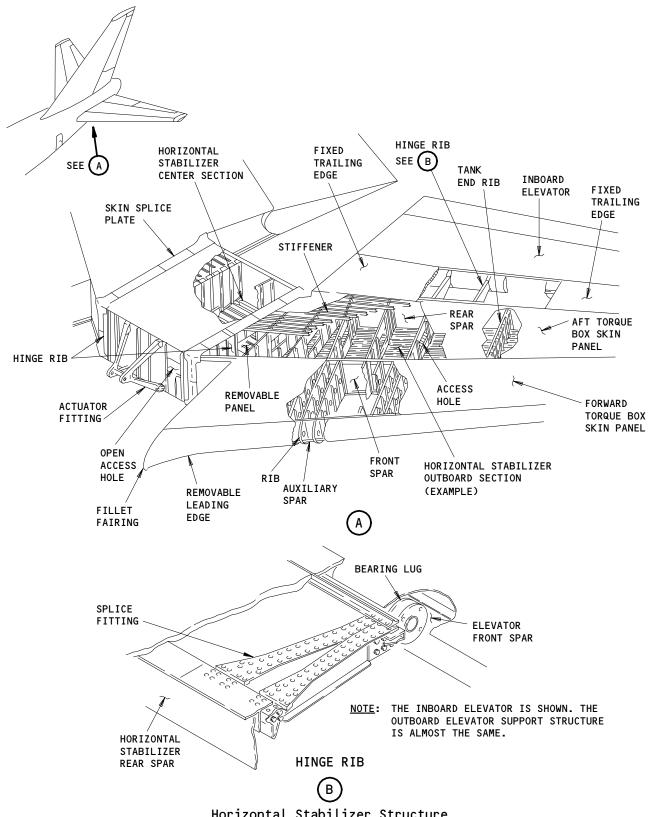
2. <u>Stabilizer Structure</u> (Fig. 1)

- A. The aft torque boxes of outboard stabilizer sections are joined by fittings and splice plates to the stabilizer center section to form a continuous main structural beam through the fuselage. The structure forward and aft of front and rear spars has no tie to the center section and exists primarily for aerodynamic purposes. The hinge rib assemblies in the center section, which bear high loads in stabilizer trim movements, are constructed of a web attached to upper and lower chords and splice plates strengthened by stiffeners.
- B. The removable leading edge assembly consists of machined aluminum formed skin attached to ribs.
- C. The forward torque box is composed of an auxiliary spar and air load ribs which extend from auxiliary spar to front spar. The auxiliary spar is constructed from a central web attached to upper and lower chords and strengthened by stiffeners. The ribs and spars are attached to upper and lower skin.
- D. The aft torque box is composed of a front spar, stiffened ribs extending from front to rear spar, a rear spar and skin-stringer panels. The front spar is constructed from a central web attached to upper and lower chords and strengthened by vertical and longitudinal stiffeners. Ribs between front and rear spars are composed of webs attached to upper and lower chords and strengthened by stiffeners. The ribs are attached to upper and lower riveted skin-stringer panels.

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Horizontal Stabilizer Structure
Figure 1

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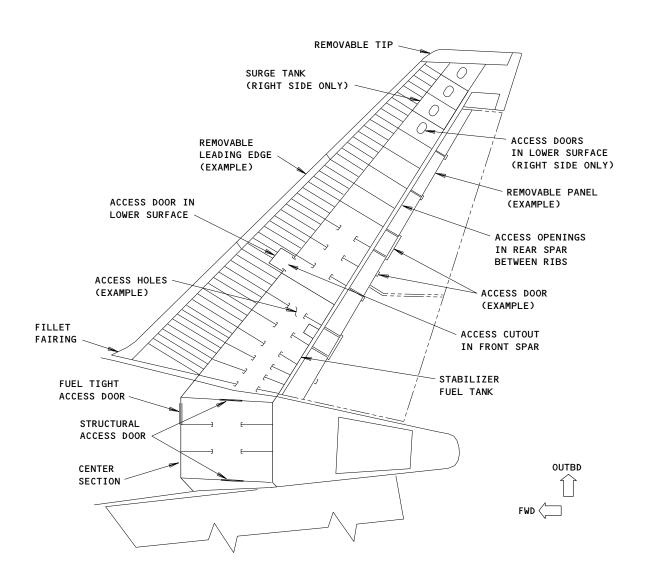
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- E. Tank end ribs are used between front and rear spar at STAB STA 285 on both left and right sides of the stabilizer, and the area is sealed to serve as a fuel tank. Tank end ribs are used at STAB STA 510 and 560, on the right side of the stabilizer only, and the area is sealed to serve as the vent surge tank.
- F. The fixed trailing edge is composed of stiffened ribs, hinge ribs, splice plates, lugs, beams, and skin panels cantilevered from the horizontal stabilizer rear spar. The hinge ribs are constructed from stiffened webs attached to upper and lower chords attached to splice plates which extend from stabilizer rear spar to trailing edge beam. An aerodynamic/environmental seal extends aft from each trailing edge beam to the elevators.
- G. The removable tip assembly is attached to the end of the outboard stabilizer section. The tip is comprised of a forward, mid, and aft fairing. The tip fairings are reinforced with ribs. The tip provides aerodynamic fairing and a closure for the stabilizer outboard section.
- H. Safety harness attachment receptacles are provided in the fixed trailing edge panel near the inboard elevator power control package. Receptacles accept Norco Inc. lock assemblies, type IL280-2.
- I. On airplanes with logo lights, safety harness attachment receptacles are provided on the horizontal stabilizer upper surface, near the body, forward of the front spar.
- 3. Access Doors and Openings (Fig. 2)
 - A. Access doors and openings are provided in the horizontal stabilizer interior and exterior structure to facilitate inspection, maintenance, and repair of airplane systems equipment components and internal structure (AMM 06-09-00/201).
 - B. The horizontal stabilizer crawlway access panel left and right is installed on the horizontal stabilizer hinge rib (Fig. 1). Three stiffeners are riveted to the crawlway access panel and must be removed with the panel. The panel and stiffeners are installed on the rib with bolts and nutplates. The bolts require a standard torque.

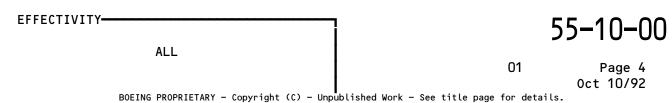
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NOTE: THE BOTTOM VIEW OF THE LEFT OUTBOARD STABILIZER SECTION IS SHOWN. THE RIGHT OUTBOARD SECTION IS ALMOST THE SAME.

Horizontal Stabilizer Access Doors and Openings Figure 2





HORIZONTAL STABILIZER LEADING EDGE - REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks. The first task is the removal of the leading edge for the horizontal stabilizer. The second task is the installation of the leading edge for the horizontal stabilizer.
- B. The leading edge for the horizontal stabilizer has three different parts. You can remove or install each part as one unit. The splice ribs connect the parts together.

TASK 55-10-01-004-001

- 2. Remove the Leading Edge
 - A. Equipment
 - (1) Safety Lanyard 24MIT65B00002
 - B. References
 - (1) 24-22-00/201, Manual Control
 - (2) IPC 55-10-03 Fig. 1
 - C. Access
 - (1) Location Zone
 - 331 Horizontal Stabilizer Leading Edge, Left
 - 341 Horizontal Stabilizer Leading Edge, Right
 - D. Procedure

s 484-038

WARNING: USE A MAN LIFT TO ATTACH THE SAFETY HARNESS FITTINGS TO THE

RECEPTACLES. MAINTENANCE PERSONS CAN FALL WHICH MAY CAUSE

INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

WARNING: DO NOT WALK ON THE HORIZONTAL STABILIZER WITHOUT A SAFETY

HARNESS. MAINTENANCEE PERSONS CAN FALL WHICH MAY CAUSE INJURY

TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Attach the Flight Control Safety Lanyard to the horizontal

stabilizer (AMM 20-11-33/201).

S 864-002

WARNING: APPLY ELECTRICAL POWER TO OPEN THE STABILIZER TRIM SHUTOFF AND

PREVENT HYDRAULIC OPERATION OF THE HORIZONTAL STABILIZER. IF

ELECTRICAL POWER IS NOT AVAILABLE, ATTACH A PLACARD TO THE

MANUAL CONTROL LEVERS FOR THE HORIZONTAL STABILIZER.

ACCIDENTAL OPERATION OF THE HORIZONTAL STABILIZER CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Connect the electrical power (Ref 24-22-00/201).

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s 864-003

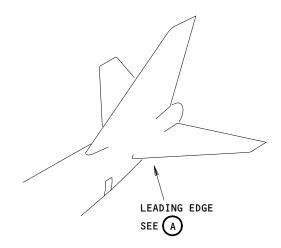
(3) Put the STAB TRIM NO. 2 and NO. 3 switches on the control stand in the CUTOUT position.

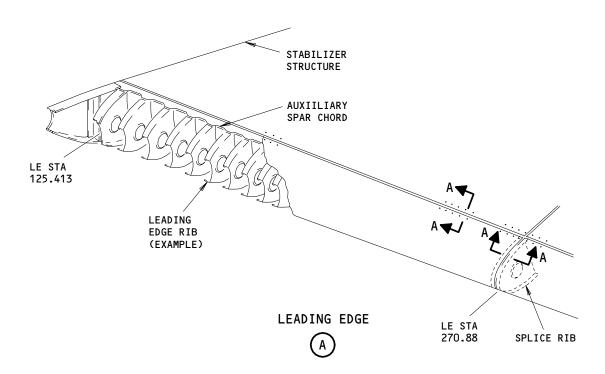
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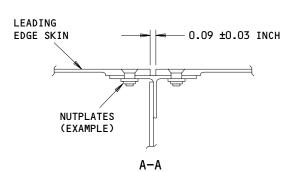
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Horizontal Stabilizer Leading Edge Installation Figure 401

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55-10-01

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S 864-004

- (4) Open these circuit breakers and attach DO-NOT-CLOSE tags:
 - (a) P7 Overhead Circuit Breaker Panel.
 - 1) 7E7 STAP TRIM L S/O VALVE
 - 2) 7E20 STAB TRIM R S/O VALVE

S 864-005

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

s 034-028

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE AREA BELOW THE LEADING EDGE. INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR IF THE EQUIPMENT FALLS.

(6) Remove the fasteners that attach the parts of the leading edge to the horizontal stabilizer.

s 034-027

(7) Remove the parts from the horizontal stabilizer.

NOTE: After you remove one part of the leading edge, you can remove the remaining parts with the splice rib attached.

s 554-033

(8) Put a cover on the auxiliary spar if the parts of the leading edge will be off for a long time.

TASK 55-10-01-404-007

- 3. Install the Leading Edge
 - A. Equipment
 - (1) Safety Lanyard 24MIT65B00002
 - B. Consumable Materials
 - (1) A00247 Sealant BMS 5-95
 - (2) C00064 Alodine 1000 (clear)
 - C. References
 - (1) 24-22-00/201, Manual Control
 - (2) 51-21-04/701, Alodized Surfaces
 - (3) 51-31-01/201, Seals and Sealing
 - (4) IPC 55-10-03 Fig. 1

ALL

EFFECTIVITY-

55-10-01



- D. Access
 - (1) Location Zone

331 Horizontal Stabilizer Leading Edge, Left

341 Horizontal Stabilizer Leading Edge, Right

E. Procedure

s 484-037

WARNING: USE A MAN LIFT TO ATTACH THE SAFETY HARNESS FITTINGS TO THE RECEPTACLES. MAINTENANCE PERSONS CAN FALL WHICH MAY CAUSE

INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

WARNING: DO NOT WALK ON THE HORIZONTAL STABILIZER WITHOUT A SAFETY HARNESS. MAINTENANCEE PERSONS CAN FALL WHICH MAY CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Attach the Flight Control Safety Lanyard to the horizontal stabilizer (AMM 20-11-33/201).

s 434-012

(2) Remove the cover from the auxiliary spar.

s 214-013

(3) Examine the splice ribs for damage.

S 964-029

(4) Repair or replace the damaged splice ribs.

S 214-014

- (5) Examine the nutplates and screws which attach the part of the leading edge to the horizontal stabilizer.
 - (a) Replace the nuts or screws if it is necessary.
 - (b) Attach the nutplates with rivets if the nutplates are loose.

s 434-030

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE AREA BELOW THE LEADING EDGE. INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR IF THE EQUIPMENT FALLS.

(6) Put the part of the leading edge in the correct position.

s 354-031

ALL

- (7) If you install a new part of the leading edge, do the steps that follow:
 - (a) Cut the edges of the new part of the leading edge skin.

NOTE: Make sure you have the correct clearance between the parts of the leading edge (View A-A, Fig. 401).

EFFECTIVITY-



- (b) Break the sharp edges of the skin you cut.
- (c) Apply a layer of clear Alodine (Ref 51-21-04/701).

s 434-034

(8) Install the fasteners that attach the parts of the leading edge to the horizontal stabilizer.

s 224-019

(9) Make sure the fastener heads are smooth with the leading edge skin.

The maximum distance below the surface is 0.010 inch. NOTE: The maximum distance above the surface is 0.002 inch. Do not cut the fastener heads to get the correct flushness.

s 344-020

(10) Fill the clearance between the parts of the leading edge with sealant (Ref 51-31-01/201).

NOTE: Make sure the flushness is less than ± 0.01 inch.

S 864-021

(11) Remove the placard from the manual control lever if you attached one.

s 864-022

(12) Connect the electrical power (Ref 24-22-00/201).

s 864-023

- (13) Close these circuit breakers and remove the DO-NOT-CLOSE tags:
 - (a) P7 Overhead Circuit Breaker Panel
 - 1) 7E7 STAB TRIM L S/O VALVE
 - 2) 7E20 STAB TRIM R S/O VALVE

S 864-024

ALL

(14) Put the STAB TRIM NO. 2 and NO. 3 switches in the NORM position.

EFFECTIVITY-



HORIZONTAL STABILIZER TIP - REMOVAL/INSTALLATION

1. General

- This procedure contains two tasks. The first task is the removal of the horizontal stabilizer tip. The second task is the installation of the horizontal stabilizer tip.
- B. The procedure that follows refers to the horizontal stabilizer tip as the
- C. The tip has a forward, middle, and an aft fairing. The forward and aft fairings are an aluminum alloy sheet. They attach to the fiberglass middle fairing with rivets. Thus, you remove the three fairings together as one unit.

TASK 55-10-02-004-001

- 2. Remove the Horizontal Stabilizer Tip
 - References
 - (1) 24-22-00/201, Manual Control
 - (2) IPC 55-10-02-02
 - Access
 - (1) Location Zone

Horizontal Stabilizer Tip, Left 347 Horizontal Stabilizer Tip, Right

C. Procedure

S 864-002

WARNING: APPLY ELECTRICAL POWER TO OPEN THE STABILIZER TRIM SHUTOFF TO

PREVENT HYDRAULIC OPERATION OF THE STABILIZER. IF ELECTRICAL POWER IS NOT AVAILABLE, ATTACH A PLACARD TO THE MANUAL CONTROL LEVERS FOR THE HORIZONTAL STABILIZER. ACCIDENTAL OPERATION OF THE HORIZONTAL STABILIZER CAN CAUSE INJURY TO PERSONS OR DAMAGE

TO EQUIPMENT.

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

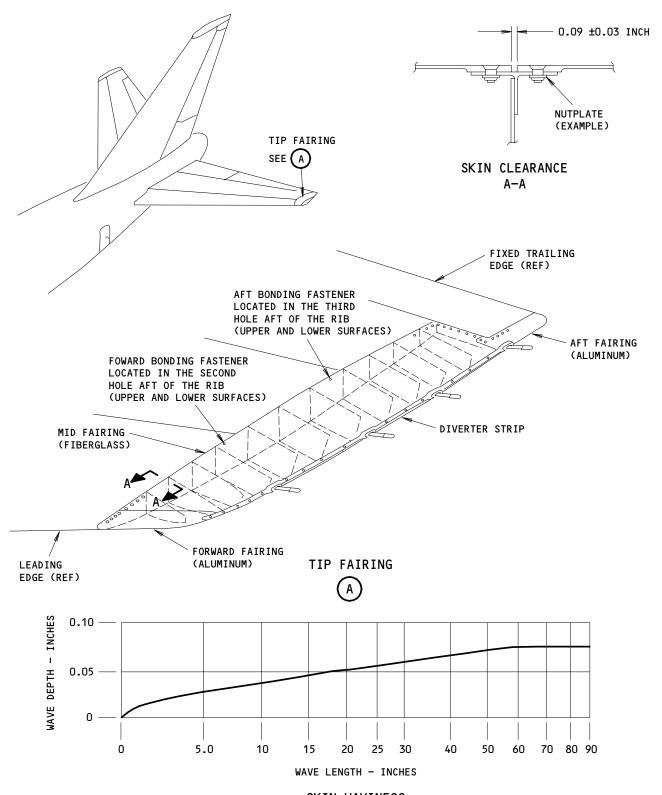
s 864-003

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(2) Put the STAB TRIM NO. 2 and NO. 3 switches on the control stand to the CUTOUT position.

EFFECTIVITY-





SKIN WAVINESS

Horizontal Stabilizer Tip Fairing Installation
Figure 401

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S 864-004

- (3) Open these circuit breakers and attach DO-NOT-CLOSE tags:
 - (a) P7 Overhead Circuit Breaker Panel.
 - 1) 7E7 STAB TRIM L S/O VALVE
 - 2) 7E20 STAB TRIM R S/O VALVE

S 864-005

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

s 034-008

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE AREA BELOW THE HORIZONTAL STABILIZER. INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR IF THE EQUIPMENT FALLS.

(5) Remove the fasteners that attach the tip to the horizontal stabilizer.

s 034-012

(6) Remove the tip from closure rib for the horizontal stabilizer.

s 554-013

(7) Put a cover on the closure ribs if the tip will be off for a long time.

TASK 55-10-02-404-007

- 3. Install the Horizontal Stabilizer Tip
 - A. Standard Tools and Equipment
 - (1) Bonding meter
 - (2) Bonding Brush Stainless steel, rotary, No. P-33-SS (C.W. Morris Co., Detroit, Michigan) or equivalent
 - B. Consumable Materials
 - (1) A00247 Sealant BMS 5-95
 - (2) C00064 Alodine 1000 (clear)
 - C. References
 - (1) 20-22-01/601, Electrical Bonding
 - (2) 24-22-00/201, Manual Control
 - (3) 51-21-04/701, Alodized Surfaces
 - (4) 51-24-03/701, Coating System for Exterior Fiberglass Conductive

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- (5) 51-24-11/701, Paint System Decorative
- (6) 51-31-01/201, Seals and Sealing
- (7) SRM 51-70-00, Aerodynamic Smoothness Empennage
- (8) IPC 55-10-03 Fig. 1
- D. Access
 - (1) Location Zone

337 Horizontal Stabilizer Tip, Left 347 Horizontal Stabilizer Tip, Right

E. Procedure

s 224-012

(1) Do a check of the resistance between the forward fairing and the diverter strip (Ref. 20-22-01/601).

NOTE: The maximum resistance is 0.1 ohm.

s 224-017

(2) Do a check of the resistance between the aft fairing and the diverter strip.

NOTE: The maximum resistance is 0.1 ohm.

s 434-013

(3) Remove the cover from the closure ribs for the horizontal stabilizer.

S 214-014

- (4) Examine the nutplates and fasteners which attach the tip to the
 - (a) Replace the nutplates or fasteners if it is necessary.
 - (b) Attach the nutplates with rivets if the nutplates are loose.

s 424-009

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE AREA BELOW THE HORIZONTAL STABILIZER. INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR IF THE EQUIPMENT FALLS.

(5) Put the tip in the correct position on the horizontal stabilizer.

s 354-014

- (6) If you install a new tip, do the steps that follow:
 - (a) Cut the edges of the new tip.

NOTE: Make sure you have the correct clearance between the tip skin and the horizontal stabilizer (View A-A, Fig. 401).

EFFECTIVITY-

55-10-02

ALL



- (b) Break the sharp edges of the skin you cut.
- (c) Apply a layer of clear Alodine (Ref 51-21-04/701).

s 434-018

(7) Install the fasteners loosely, then tighten evenly.

NOTE: Tighten the bolts in a sequence which will not cause the skin to buckle.

s 224-015

(8) Do a check of the skin wave tolerances (Fig. 401) (Ref SRM 51-70-00).

s 214-016

(9) Make sure the fastener heads are smooth with the leading edge skin.

The maximum distance below the surface is 0.010 inch. NOTE: The maximum distance above the surface is 0.002 inch. Do not cut the fastener heads to get the correct flushness.

s 344-011

(10) Fill the clearance between the tip and the horizontal stabilizer with sealant (Ref 51-31-01/201).

s 374-020

(11) Apply a layer of conductive coating to the middle fairing if it is necessary (Ref 51-24-03/701).

s 224-021

(12) Measure the resistance of the conductive coating (Ref 51-24-03/701).

(13) Repair the external finish of the tip if it is necessary (Ref 51-24-11/701).

s 864-024

ALL

(14) Remove the placard from the stabilizer manual control if you attached one.

EFFECTIVITY-



s 864-025

(15) Connect the electrical power (Ref 24-22-00/201).

S 864-026

- (16) Close these circuit breakers and remove the DO-NOT-CLOSE tags: (a) P7 Overhead Circuit Breaker Panel.
 - 1) 7E7 STAB TRIM L S/O VALVE
 - 2) 7E20 STAB TRIM R S/O VALVE

s 864-027

(17) Put the STAB TRIM NO. 2 and NO. 3 switches on the control stand to the ON position.

EFFECTIVITY-

ALL

55-10-02



HORIZONTAL STABILIZER-TO-FUSELAGE SEAL (FORWARD) - REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks. The first task is the removal of the horizontal stabilizer-to-fuselage seal. The second task is the installation of the horizontal stabilizer-to-fuselage seal.
- B. The horizontal stabilizer-to-fuselage seal has an upper seal, a leading edge seal, a lower seal, and a vertical seal. The upper seal extends from the front spar to the leading edge. The leading edge seal extends around the leading edge. The lower seal extends from the leading edge to the front spar. The vertical seal is at the outrigger No. 3. The upper seal, leading edge seal, and lower seal are bonded together with an adhesive to keep a smooth continuous seal.
- You can remove and install the seals separately.

TASK 55-10-03-004-001

- 2. Remove the Seals (Fig. 401)
 - A. References
 - (1) 24-22-00/201, Manual Control
 - (2) IPC 55-10-02 Fig. 1
 - B. Access
 - (1) Location Zone

300 Horizontal Stabilizer

C. Procedure

S 864-024

WARNING: APPLY ELECTRICAL POWER TO OPEN THE STABILIZER TRIM SHUTOFF AND PREVENT HYDRAULIC OPERATION OF THE HORIZONTAL STABILIZER. IF ELECTRICAL POWER IS NOT AVAILABLE, ATTACH A PLACARD TO THE MANUAL CONTROL LEVERS FOR THE HORIZONTAL STABILIZER. ACCIDENTAL OPERATION OF THE HORIZONTAL STABILIZER CAN CAUSE INJURY T O PERSONS OR DAMAGE TO EQUIPMENT.

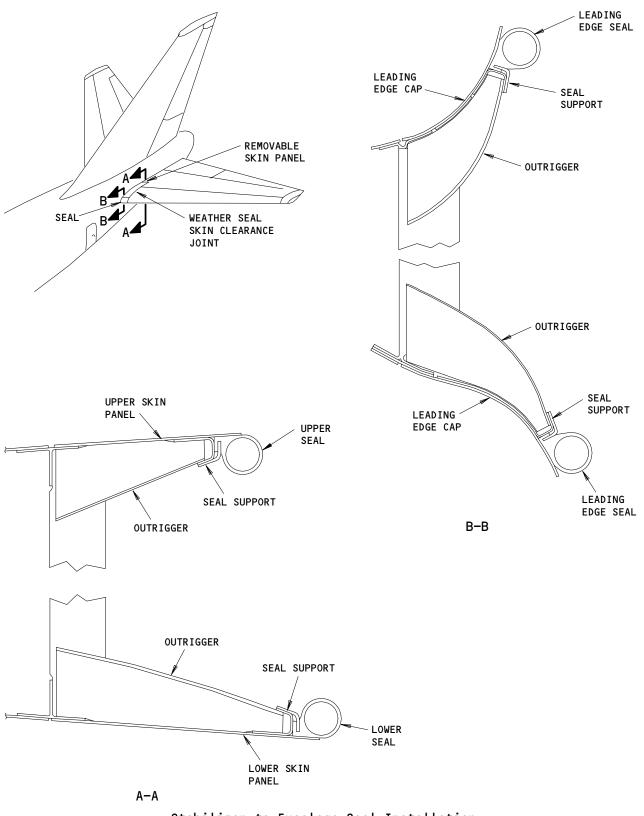
(1) Connect the electrical power (Ref 24-22-00/201).

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ALL





Stabilizer-to-Fuselage Seal Installation Figure 401

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s 864-003

(2) Put the STAB TRIM NO. 2 and NO. 3 HYD switches on the control stand in the CUTOUT position.

s 864-004

- (3) Open these circuit breakers and attach DO-NOT-CLOSE tags:
 - (a) P7 Overhead Circuit Breaker Panel.
 - 1) 7E7 STAB TRIM L S/O VALVE
 - 2) 7E20 STAB TRIM R S/O VALVE

S 864-005

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

s 024-006

- (5) Remove the upper, leading edge, and lower seals.
 - (a) Remove the sealant from the fasteners and skin clearances.
 - (b) Remove the fasteners that attach the skin panel and leading edge cap to the structure.
 - (c) Remove the seal from the seal support and the horizontal stabilizer.

s 024-007

- (6) Remove the vertical seal.
 - (a) Remove the sealant from the fasteners and skin clearances.
 - (b) Remove the fasteners that attach the skin panels to the structure.
 - (c) Remove the screws that attach the vertical seal and seal retainer to the outrigger No. 3.

TASK 55-10-03-404-008

- 3. Install the Seals (Fig. 401)
 - A. Consumable Materials
 - (1) A00247 Sealant BMS 5-95
 - (2) A00957 Adhesive BAC5010
 - (3) C00048 Primer RTV 1200

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- B. References
 - (1) 24-22-00/201, Manual Control
 - (2) 51-31-01/201, Seals and Sealing

EFFECTIVITY-

55-10-03



- (3) IPC 55-10-02 Fig. 1
- C. Access
 - (1) Location Zone

Horizontal Stabilizer 300

- D. Procedure
 - s 424-014
 - (1) Install the upper, leading edge, and lower seals.
 - (a) Examine the nutplates and fasteners which attach the skin panels and leading edge cap to the ribs.
 - 1) Replace the nuts or screws if it is necessary.
 - 2) Attach the nutplates with rivets if the nutplates are loose.
 - (b) Put the seal in the seal support.

NOTE: Make sure the seal does not buckle or wrinkle.

(c) Adjust the upper and lower seals to keep a tight fit with the leading edge seal.

s 344-015

- (2) Bond the upper and lower seals to the leading edge seal.
 - Apply primer to all of the surfaces that will be bonded. Let the primer dry for 30 minutes (minimum) to 4 hours (maximum).
 - Apply a constant layer of adhesive to a minimum of one surface to be bonded.

NOTE: You must be careful when you apply the adhesive to make sure no adhesive is outside of the bond area. joint must be smooth to ± 0.03 inch or less.

- Put the surfaces together as soon as it is possible after you apply the adhesive.
- Apply sufficient pressure to the joint for a complete contact but not enough to push out adhesive.

EFFECTIVITY-

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(e) Let the adhesive dry with an applied pressure for a minimum of 24 hours at 70 to 80°F and a minimum of 20% relative humidity.

s 424-016

- (3) Install the vertical seal.
 - (a) Adjust the vertical seal to keep a tight fit with the upper and lower seals at the outrigger No. 3.
 - (b) Put the seal and seal retainer in the correct positions.
 - (c) Attach the seal and seal retainer with screws.

s 434-017

(4) Put the skin panel and leading edge cap in the correct position.

s 434-025

(5) Attach the seal and seal retainer with screws.

s 344-018

(6) Apply an injection weather seal to the skin clearance joints and on the fasteners (Ref 51-31-01/201).

S 864-019

(7) Remove the placard from the manual control lever if you attached

s 864-020

(8) Connect the electrical power (Ref 24-22-00/201).

S 864-021

- (9) Close these circuit breakers and attach DO-NOT-CLOSE tags:
 - (a) P7 Overhead Circuit Breaker Panel.
 - 1) 7E7 STAB TRIM L S/O VALVE
 - 2) 7E20 STAB TRIM R S/O VALVE

s 864-022

(10) Put the STAB TRIM NO. 2 and 3 switches in the NORM position.

S 984-026

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(11) Operate the horizontal stabilizer to the limits of travel and make sure you have a good seal.

EFFECTIVITY-



\$ 864-023 (12) Disconnect the electrical power if it is not necessary (Ref 24-22-00/201).

EFFECTIVITY

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HORIZONTAL STABILIZER BONDING JUMPER - INSPECTION/CHECK

1. General

- A. This procedure has one task. This task gives instructions for the inspection of the six bonding jumpers.
- B. These jumpers are connected to the horizontal stabilizer.

TASK 55-10-04-206-001

- 2. Horizontal Stabilizer Bonding Jumper Inspection/Check (Fig. 601)
 - A. General
 - (1) It is necessary to do this task if an airplane has a horizontal stabilizer tank. IF the P42 refuel panel has these horizontal stabilizer components that follow, you must do this task:
 - H. STAB. fuel quantity indicator.
 - ISO VALVE switch and indicator light.
 - (2) Refer to 28-21-00/001 for the location of the horizontal stabilizer fuel tank components.
 - B. Standard Tools and Equipment
 - (1) Meter Bonding (Ref 20-22-01/601)
 - C. References
 - (1) 29-11-00/201, Main Hydraulic Supply System
 - (2) 20-22-01/601, Electrical Bonding
 - (3) 20-11-15/401, Bonding Jumpers and Ground Leads
 - D. Access
 - (1) Location Zones

315 Area Aft of Stabilizer Box Compartment, Left

316 Area Aft of Stabilizer Box Compartment, Right

(2) Access Panel

315A Access Door

334GA Panel

344GA Panel

E. Procedure

s 866-007

(1) Do this task to remove hydraulic power from systems No. 1, 2, 3 and 4: "Hydraulic System Depressurization" (Ref 29-11-00/201).

s 016-008

(2) Open the access door 315A.

s 016-012

(3) Open the panel 334GA.

s 016-014

(4) Open the panel 344GA.

EFFECTIVITY-

55-10-04

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s 216-009

- (5) Examine each of the six bonding jumpers:
 - (a) Examine the terminals for changes in the color on the bonding jumper.

NOTE: These changes will occur when the terminals become too hot.

- (b) Examine the joint for corrosion.
- (c) Examine the strands for signs of melted and broken strands of the bonding jumper.
- (d) Examine the bolts on the bonding jumper.
- (e) If it is necessary, tighten the bolts for the bonding jumpers.

s 766-010

(6) Do this task to measure the electrical resistance of the bonding jumper: "Electrical Bonding" (Ref 20-22-01/601)

<u>NOTE</u>: The electrical resistance of the bonding jumper must not be more than .001 ohms.

s 966-011

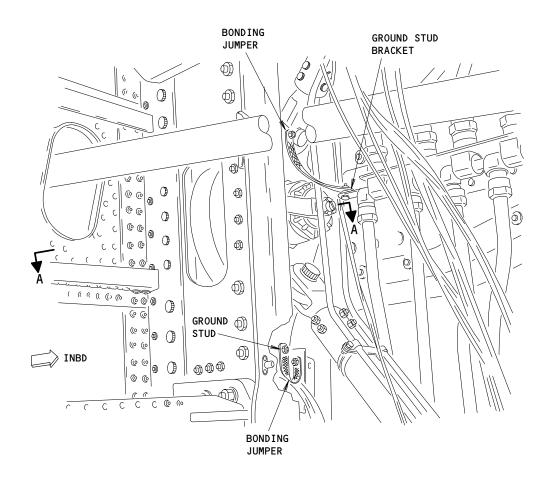
- (7) If the inspections given before are not satisfactory, do these tasks to replace the bonding jumpers:
 - (a) Remove the bonding jumpers and the ground leads (Ref 20-11-15/401)
 - (b) Install the bonding jumpers and the ground leads (Ref 20-11-15/401).

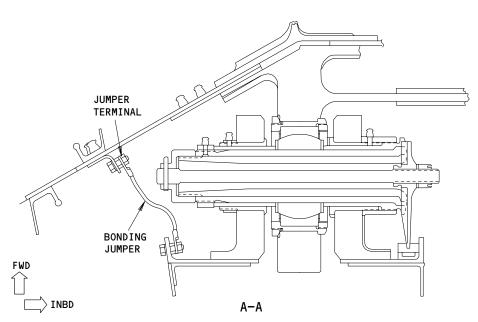
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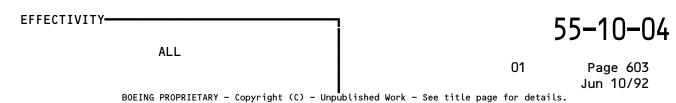
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Left Stabilizer Pivot Hinge (Right Almost the Same) Figure 601





HORIZONTAL STABILIZER PIVOT FITTINGS - REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks.
 - (1) The first task is the instructions to remove the pivot pin.
 - (2) The second task is the instructions to install the pivot pin.
- B. The procedures for the pivot pins for the left and right sides are equivalent.
- C. Remove the pivot pins from one side at a time.

TASK 55-17-51-004-001

- 2. Pivot Pin Removal
 - A. Equipment
 - (1) Dial Indicator and bracket Commercially available
 - (2) Horizontal Stabilizer Jacking Equipment, Customer supplied.
 - (3) Service Platform, Service Access Door -
 - B. References
 - (1) AMM 06-09-05/201, Empennage Access Doors and Panels
 - (2) AMM 27-41-02/601, Horizontal Stabilizer Free Play Check
 - C. Access
 - (1) Location Zones

311/312 Area Aft of the Pressure Bulkhead to Sta 2598

(2) Access Panel

312AR Service Access Door

D. Prepare to Remove the Pivot Pin

s 864-073

WARNING: APPLY ELECTRICAL POWER TO OPEN THE STABILIZER TRIM SHUTOFF AND

PREVENT HYDRAULIC OPERATION OF THE HORIZONTAL STABILIZER. IF ELECTRICAL POWER IS NOT AVAILABLE, ATTACH A PLACARD TO THE

MANUAL CONTROL LEVERS FOR THE HORIZONTAL STABILIZER.

ACCIDENTAL OPERATION OF THE HORIZONTAL STABILIZER CAN CAUSE

INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Put the leading edge of the horizontal stabilizer up (nose-up)

before you open the circuit breakers.

<u>NOTE</u>: This position will give you the best access when you remove

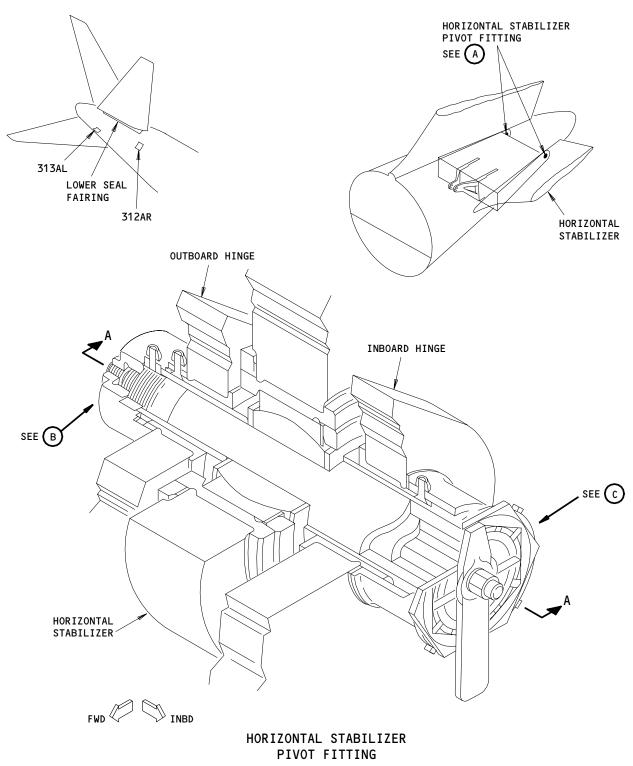
and install the pivot pin.

EFFECTIVITY-

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Horizontal Stabilizer Pivot Pin Figure 401 (Sheet 1)

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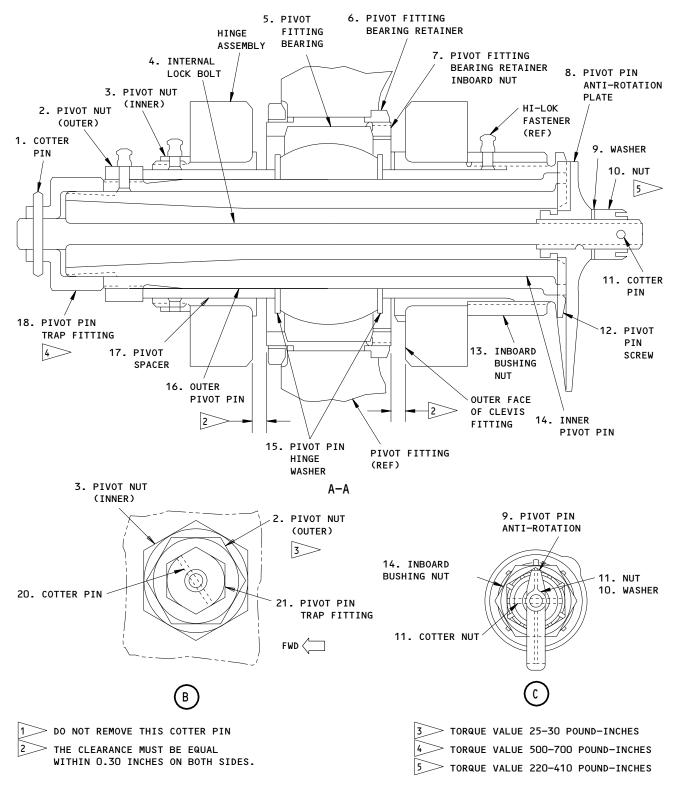
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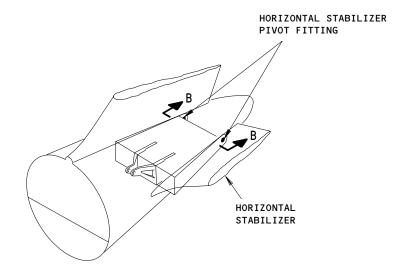
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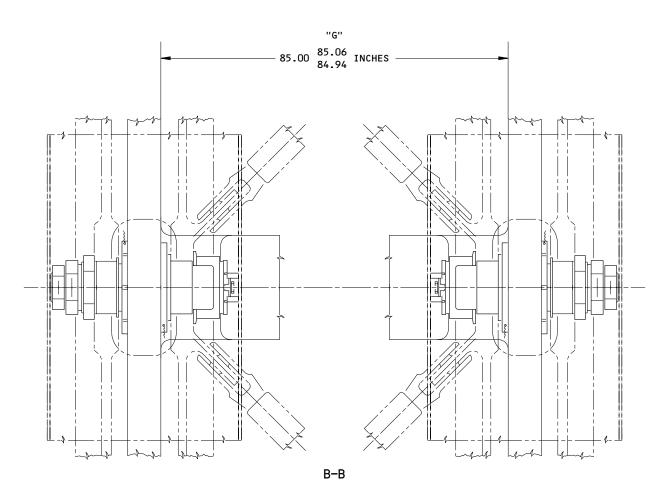




Horizontal Stabilizer Pivot Pin Figure 401 (Sheet 2)







Horizontal Stabilizer Pivot Pin Figure 401 (Sheet 3)

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S 864-004

(2) Put the STAB TRIM NO. 2 and NO. 3 HYD switches on the control stand in the CUTOUT position.

s 864-005

- (3) Open these circuit breakers on the overhead circuit breaker panel, P7, and attach D0-N0T-CLOSE tags:
 - (a) 7E7, STAB TRIM L S/O VALVE.
 - (b) 7E20, STAB TRIM R S/O VALVE.

s 014-074

WARNING: BEFORE YOU BEGIN TO WORK, MAKE SURE THAT THERE IS NO MOVEMENT OF THE HORIZONTAL STABILIZER.

(4) Open the Service Access Door, 312AR (AMM 06-09-05/201).

s 944-008

WARNING: MAKE SURE THE SERVICE PLATFORM IS INSTALLED ABOVE THE SERVICE ACCESS DOOR OPENING. IF YOU DO NOT INSTALL THE SERVICE PLATFORM, YOU CAN FALL THROUGH THE SERVICE ACCESS DOOR OPENING AND INJURY CAN OCCUR.

(5) Install the service platform above the opening of the service access door.

s 494-010

(6) Install the horizontal stabilizer jacking equipment.

s 494-011

- (7) Attach the dial indicator bracket to the flange of an intercostal bracket above and behind the torque box.
 - (a) At the free end of the dial indicator bracket, attach the dial indicator.
 - (b) Put the dial indicator needle on top of the torque box. The movement of the dial will indicate that the pivot fitting has moved vertically in relation to the airplane structure.

s 984-012

(8) Operate the horizontal stabilizer jacking equipment until you can move the pivot pin. Stop the operation when the dial indicator needle starts to move.

NOTE: Movement of the needle shows that the stabilizer does not have a load and that the pivot fitting has moved. This will permit you to remove the pin more easily.

EFFECTIVITY-

55-17-51



E. Procedure

S 224-061

(1) Before you remove any components, measure the distance "G" between the inboard face of the pivot fitting (Fig. 401) and make a record of the location and the dimension.

NOTE: After you install the pivot pin assembly, you will measure the same distance "G" at the same location. You will compare the before and after dimension.

s 024-015

(2) Remove the cotter pin (11).

s 024-016

(3) Remove the nut (10) and washer (9).

s 024-017

(4) Remove the anti-rotation plate (8).

s 024-018

CAUTION: WHEN YOU REMOVE THE TRAP FITTING (18) AND THE INTERNAL LOCK BOLT (4), DO NOT REMOVE THE COTTER PIN (1). IF YOU REMOVE THE COTTER PIN (1) YOU WILL NOT KEEP THE CORRECT ADJUSTMENT.

(5) Remove the trap fitting (18) and the internal lockbolt (4) together.

s 024-019

(6) Remove the inner pivot pin (14).

s 024-020

(7) Remove the nut (2).

ALL

s 024-021

CAUTION: BE CAREFUL WHEN YOU REMOVE THE OUTER PIVOT PIN (16). THE THREADS ON THE ON THE OUTTER PIVOT PIN (16) CAN EASILY CAUSE DAMAGE TO THE PIVOT FITTING BEARING (5) INNER MYCARTA LINER SURFACE.

(8) Carefully remove the outer pivot pin (16) and washers (15).

NOTE: When you remove the outer pivot pin (16), the washers (15) can fall on the ground.

EFFECTIVITY-

55-17-51



TASK 55-17-51-404-013

3. Pivot Pin Installation

- A. General
 - (1) The wear limits for the pivot pin components are in AMM 27-41-02/601.
- B. Equipment
 - (1) Dial Indicator Commercially available
 - (2) Horizontal Stabilizer Jacking Equipment, Customer supplied.
 - (3) Service Platform, Service Access Door -
- C. Consumable Materials
 - (1) C00913 Corrosion Preventative Compound BMS 3-27
 - (2) D00013 Grease BMS 3-24
 - (3) A00247 Sealant, Chromate Type BMS 5-95, Type I, Class B or C
- D. References
 - (1) 06-09-05/201, Empennage Access Doors and Panels
- E. Access
 - (1) Location Zones

311/312 Area Aft of the Pressure Bulkhead to Sta 2598

(2) Access Panel

312AR Service Access Door

- F. Procedure
 - S 644-024
 - (1) Apply grease to the washers (15) and to the outer pivot pin (16).
 - s 644-076
 - CAUTION: BE CAREFUL WHEN YOU INSTALL THE OUTER PIVOT PIN (16). THE THREADS ON THE ON THE OUTTER PIVOT PIN (16) CAN EASILY CAUSE DAMAGE TO THE PIVOT FITTING BEARING (5) INNER MYCARTA LINER SURFACE.
 - (2) Apply grease to the pivot pin screw (12).
 - s 424-064
 - (3) Install the outer pivot pin (16) into the pivot pin screw (12).
 - s 424-065
 - (4) Hold the one washer (15) in place.
 - s 424-066
 - (5) Hold the other washer (15) in place and put the spacer (17) into the hinge assembly.

EFFECTIVITY-

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s 424-067

(6) Install the outer pin (16) and the pivot pin screw (12) together into the hinge assembly.

S 644-025

(7) Apply the grease to the threads in the nut (2).

s 424-014

(8) Install and tighten the nut (2) until there is no clearance between the spacer (17) and the bearing (5).

S 644-027

(9) Apply the grease to the inner pivot pin (14).

s 424-028

(10) Install the inner pivot pin (14).

s 824-029

(11) Adjust the pivot pin assembly as follows:

NOTE: Prevent excessive loading of the hinge joints during installation.

(a) On the right side, loosen the screw (12) and the nut (2).

NOTE: This will let you adjust the pivot joint on the left side.

- Make sure you can turn the left-hand outer pivot pin (16) easily with your hand.
- Adjust the screw (12) and the nut (2) until the horizontal stabilizer assembly is in the center position.

When you turn the screw (12), do not apply more torque than the break-away torque plus 25 pound-inches.

Tighten the nut (2) until there is no clearance between the bearing (5) and the spacer (17), and the screw (12) and the bearing (5).

EFFECTIVITY-

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Make sure the clearance between the horizontal stabilizer and the outer face of the clevis fitting is equal within 0.030 on both sides.(View A-A, Fig. 401)

s 434-068

(12) Install the pivot pin assembly.

NOTE: The instructions that follow are for the left side only.

- Make sure the horizontal stabilizer is in the center and the mating parts are correctly installed, and then do these steps:
 - 1) Loosen the screw (12) approximately one quarter of a turn. Then, tighten the screw (12) to a torque that is equal to the break-away torque plus 25 pound-inches.

NOTE: You can turn back the screw (12) a maximum of 30 degrees to help you align the slots.

2) Loosen the nut (2) approximately one quarter of a turn. Then tighten the nut (2) to 25-30 pound-inches.

NOTE: You can turn back the nut (2) a maximum of 30 degrees to help you align the slots.

- (b) Apply a thin layer of BMS 3-27 to the threads of the trap fitting (18).
- (c) Apply grease to the trap fitting (18) and to the internal lock bolt (4).
- With the trap fitting (18) internal lock bolt (4) and cotter pin (1) together, install this unit into the inner pivot pin.
- (e) Apply a torque of 500-700 pound-inches to the trap fitting (18)
- Apply the grease to the anti-rotation plate (8).
- (q) Install the anti-rotation plate (8).
- (h) Install the washer (9) and the nut (10) to 220-410 pound-inches
- (i) Install the cotter pin (11).

EFFECTIVITY-

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Measure the distance "G" between the inboard face of the pivot fitting at the same location as was done before (Fig. 401). Compare the before and after dimensions.

NOTE: If the difference between the before and after dimensions "G" is greater than 0.010 inch, disassemble the left pivot joint and repeat the procedure.

- (k) If the left joint is in tolerance, complete the pivot joint installation on the right side.
- G. Put the Airplane in its Usual Condition.

s 094-038

(1) Remove the horizontal stabilizer jacking equipment and the dial indicator.

s 864-039

- (2) Remove the DO-NOT-CLOSE tags and close these circuit breakers on the P7 panel:
 - (a) 7E7, STAB TRIM L S/O VALVE.
 - (b) 7E20, STAB TRIM R S/O VALVE.

s 864-040

(3) Put the STAB TRIM NO. 2 and NO. 3 HYD switches on the control stand in the NORM position.

s 714-042

(4) Operate the horizontal stabilizer and make sure the stabilizer pivot fittings do not bind.

s 944-043

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(5) Remove the service platform and close the service access door, 312AR.

EFFECTIVITY-

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ELEVATOR - DESCRIPTION AND OPERATION

1. General

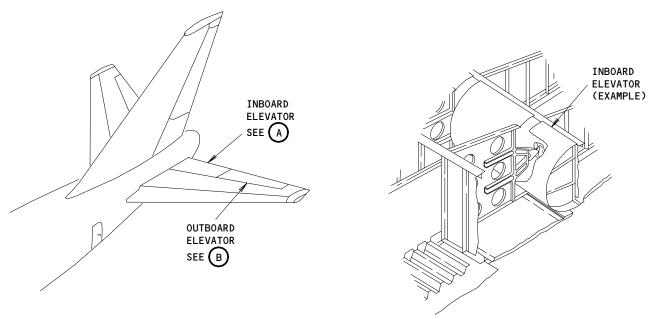
A. Two elevators, inboard and outboard, are hinged from each of the outboard horizontal stabilizer sections. The elevators consist of front and rear spars with stiffened ribs between spars, hinges, bearing lugs, lug assemblies, actuators, and panels. The ribs are attached to panels between front and rear spars. Aft of the rear spar is a trailing edge. Weights are attached to outboard elevators for balance. Each elevator is actuated up or down by a single power control package (Ref 27-31-00).

2. Elevator Structure (Fig. 1)

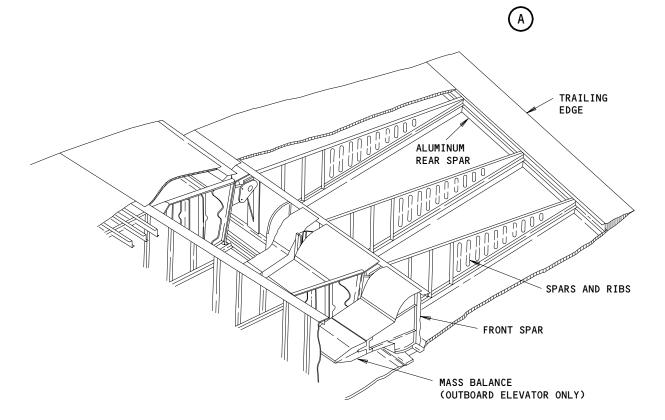
- A. The elevator front spars are composed of central webs attached to upper and lower chords and strengthened by stiffeners. Hinges are attached to front spar for elevator movements. The elevator leading edge fairs elevator to stabilizers.
- B. Elevator ribs extending from front to rear spar are composed of central webs attached to upper and lower caps and strengthened by stiffeners.
- C. Elevator rear spars are composed of channel sections.

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INBOARD ELEVATOR



OUTBOARD ELEVATOR

(B)

Elevator Structure Figure 1

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VERTICAL STABILIZER (FIN) - DESCRIPTION AND OPERATION

1. General (Fig. 1)

A. The vertical stabilizer (fin) structure is attached to the fuselage at body section 48. A removable dorsal fin (fairing) attaches to the fuselage to fair the fin leading edge to the fuselage. Above the fairing the removable leading edge attaches to the auxiliary spar. Between the auxiliary spar and front spar is the forward torque box. The aft torque box extends from front to rear spars. Aft of the rear spar is the fixed trailing edge which contains rib structure to which rudders are attached. A removable fin tip assembly is attached to top of the fin.

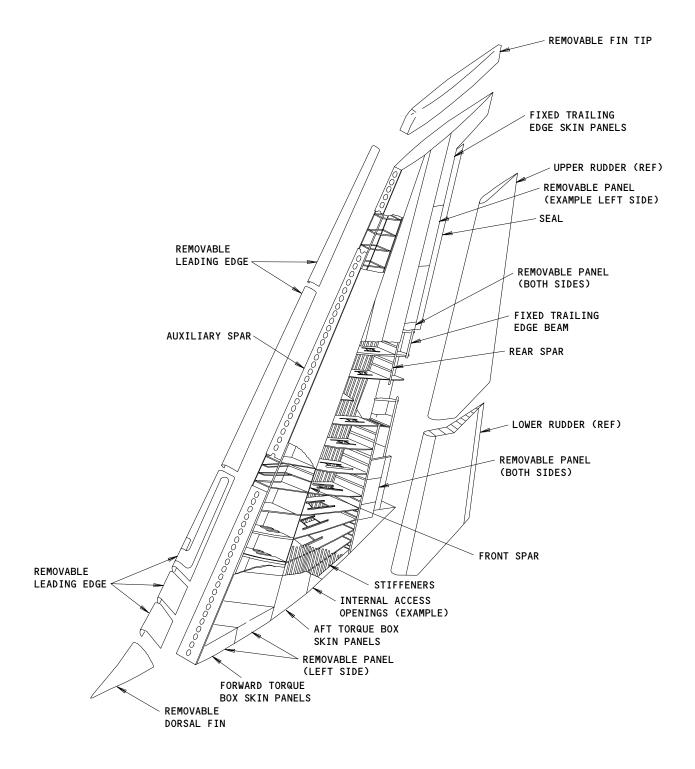
2. Fin Structure (Fig. 1)

- A. The primary structure of the fin is the aft torque box which is attached by bolts and attach angles to the fuselage.
- B. The removable leading edge assembly consists of skin attached to ribs. The HF communications antenna is attached to one section of the leading edge.
- C. The forward torque box is composed of an auxiliary spar and air load ribs extending from auxiliary to front spar. The auxiliary spar is constructed from a central web attached to chords and strengthened by stiffeners. Airload ribs and spars are attached to upper and lower panels. The forward torque box is sealed to the fuselage by mechanical seals.
- D. The aft torque box is composed of a front spar, stiffened ribs extending from front to rear spar, a rear spar and skin panels. Front and rear spars are constructed of central webs attached to chords and strengthened by stiffeners. The torque box is strengthened by ribs attached to skinstringer panels.
- E. The fixed trailing edge, cantilevered from the fin rear spar, is comprised of ribs, beams, and skin panels. The ribs, which extend from fin rear spar to the left and right trailing edge beams, are of two types, standard ribs and hinged ribs. Standard ribs are composed of a stiffened web attached to chords and angles. Hinge ribs, constructed similar to standard ribs, incorporate hinge lugs for attachment of the upper and lower rudders. The triangular shaped beams, composed of chords, stiffeners, webs, and skin, form a closure for the leading edge of the rudders. An aerodynamic/environmental seal extends aft from each beam to the rudder surface.
- F. A removable tip assembly is attached to the top of the fin. The tip assembly is comprised of a forward and aft fairing and center section. The tip provides aerodynamic fairing and a closure for the VOR antenna.
- G. The dorsal fin, attached to the fuselage below the leading edge, is constructed of skin and ribs. Two seals, one around the dorsal fin lower periphery and one between dorsal fin and leading edge, provide environmental protection and aerodynamic fairing.

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Vertical Stabilizer (Fin) Figure 1

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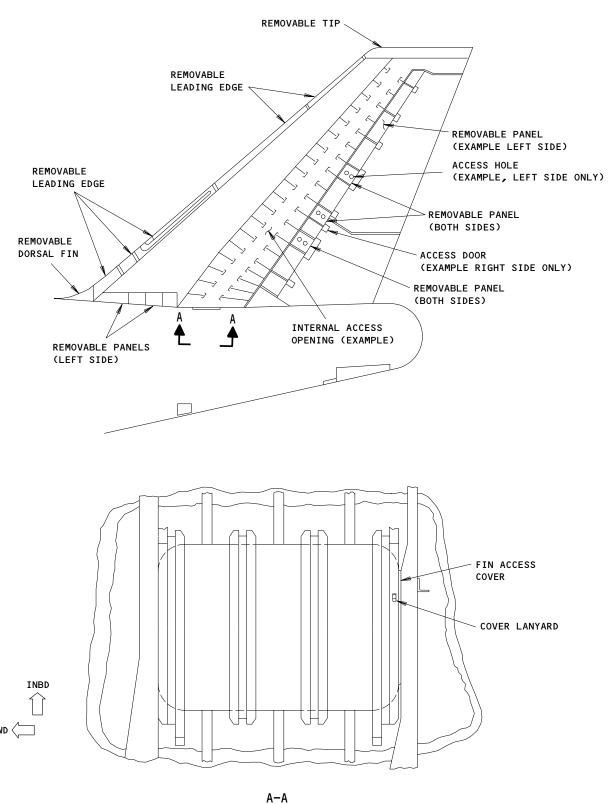
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- H. On some airplanes, the dorsal fin, attached to the fuselage below the leading edge, is constructed of fiberglass/honeycomb sandwich panel and ribs. Two seals, one around the dorsal fin lower periphery and and one between the dorsal fin and the leading edge, provide environmental protection and aerodynamic fairing.
- 3. Access Doors and Openings (Fig. 2)
 - A. Access doors and openings are provided in the fin interior and exterior structure to facilitate inspection, maintenance, and repair of airplane systems equipment components and internal structure (Ref AMM 06-09-00/201).
 - B. The body fin deck opening has a fin access cover (Fig. 2). The cover is held in place by four mount bolts that have lockwires and a retaining lanyard.

55-30-00





Fin Access Doors and Openings
Figure 2

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FIN LEADING EDGE - REMOVAL/INSTALLATION

1. General

- This procedure contains two tasks. The first task is the removal of the leading edge for the vertical stabilizer (fin). The second task is the installation of the fin leading edge.
- The fin leading edge has four different parts. You can replace each part as one unit. The splice ribs attach the parts of the leading edge together.

TASK 55-30-01-004-001

- 2. Remove the Fin Leading Edge (Fig. 401)
 - Equipment
 - (1) Access Panel Leverage Adapter, B20004-21
 - (2) Safety Lanyard 24MIT65B00002
 - References B.
 - (1) IPC 55-30-01 Fig. 1
 - Access
 - (1) Location Zone

Fin Leading Edge 321

Procedure

s 034-023

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE AREA

BELOW THE LEADING EDGE. INJURY TO PERSONS AND DAMAGE TO

EQUIPMENT CAN OCCUR IF THE EQUIPMENT FALLS.

USE A MAN LIFT TO ATTACH THE SAFETY HARNESS FITTINGS TO THE WARNING:

RECEPTACLES. MAINTENANCE PERSONS CAN FALL WHICH MAY CAUSE

INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

WARNING: DO NOT WALK ON THE HORIZONTAL STABILIZER WITHOUT A SAFETY

HARNESS. MAINTENANCE PERSONS CAN FALL WHICH MAY CAUSE INJURY

TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Attach the Flight Control Safety Lanyard to the horizontal

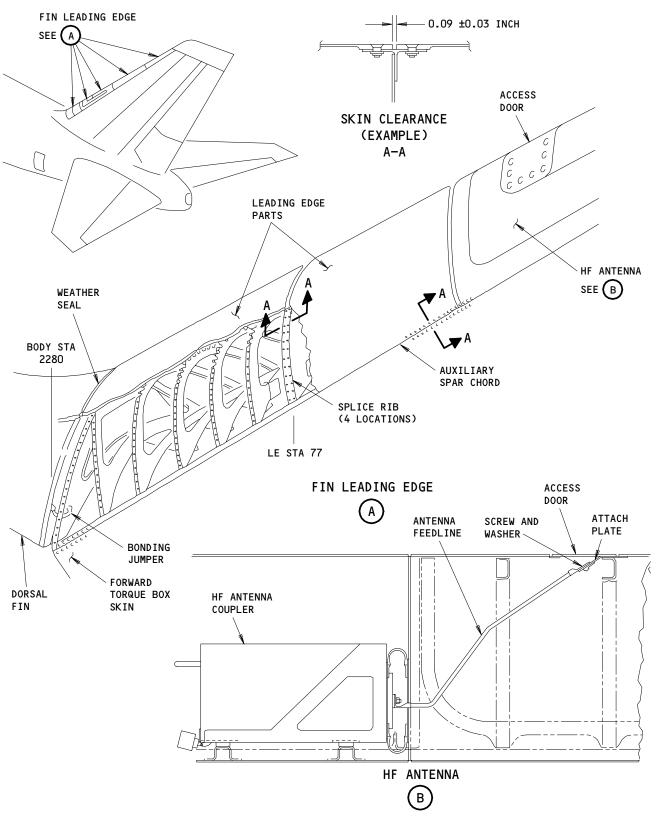
stabilizer (AMM 20-11-33/201).

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Fin Leading Edge Installation
Figure 401

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s 014-038

CAUTION: WHEN REMOVING PANEL FASTENERS, MAKE SURE THAT THE DRIVER BIT IS IN LINE WITH A FASTENER. THIS WILL PREVENT DRIVER BIT WOBBLE WHICH CAN CAUSE DAMAGE TO THE FASTENER RECESSES AND THREADS.

- (2) When you remove the bolts from a leading edge panel, the following suggestions can help:
 - (a) A leverage adapter, B20004-21,
 - (b) A removal anti cam-out ribbed (ACR) bit,

NOTE: The bit should have a hardness of 56-58 RC.

<u>NOTE</u>: A combination removal/installation ACR bit is not recommended.

CAUTION: ONLY APPLY FASTENER REMOVAL COMPOUND TO THE BIT IF NEEDED.
CLEAN THE BIT AFTER EACH USE. DO NOT APPLY FASTENER
REMOVAL COMPOUND TO THE FASTENER RECESSES, HOLES, OR
THREADS. THIS CAN CAUSE DAMAGE TO THE FASTENERS.

(c) Apply a fastener removal compound on the driver bit if a fastener is difficult to remove.

s 024-031

- (3) If you remove the part of the leading edge that contains the high frequency (HF) antenna, do the steps that follow:
 - (a) Remove the access door to get access to the antenna feedlines.
 - (b) Remove the screws and washers that attach the antenna feedlines to the attach plate (View B, Fig. 401).
 - (c) Remove the part of the leading edge from the airplane.

S 034-024

ALL

- (4) If you remove the part of the leading edge that contains the bonding jumper, do the steps that follow:
 - (a) Remove the fasteners around the part of the leading edge between BS 2280.2 and LE Sta 77.3 (View A, Fig. 401).
 - (b) Lift the part of the leading edge sufficiently to get access to the bonding jumper, approximately 5 to 6 inches.

NOTE: The bonding jumper is forward of the leading edge rib (View A, Fig. 401).

EFFECTIVITY-

55-30-01



- (c) Open these circuit breakers and attach DO-NOT-CLOSE tags:
 - 1) On the overhead circuit breaker panel, P7.
 - a) 7E12, HF L
 - b) 7E15, HF R
- (d) Disconnect the bonding jumper from the leading edge rib.
- (e) Remove the part of the leading edge from the airplane.

S 034-025

(5) Remove the fasteners that are around the remaining parts of the leading edge.

s 034-022

(6) Remove the remaining parts from the airplane.

NOTE: After you remove an adjacent part of the leading edge, you can remove the remaining parts with the splice rib attached.

TASK 55-30-01-404-003

- Install the Fin Leading Edge (Fig. 401)
 - A. Standard Tools and Equipment
 - (1) Access Panel Leverage Adapter, B20004-21
 - (2) Meter Bonding (Ref 20-22-01/601)
 - B. Consumable Materials
 - (1) A00247 Sealant BMS 5-95
 - (2) B00184 Solvent BMS 11-7
 - (3) C00064 Alodine 1000 (clear)
 - (4) G00381 Paper Abrasive, Aluminum Oxide, 180-grit
 - C. References
 - (1) 20-11-14/701, Metal Surfaces
 - (2) 20-22-01/601, Electrical Bonding
 - (3) 20-51-01/201, Standard Torques
 - (4) 23-11-00/501 HF Communication System
 - (5) 51-21-04/701, Alodized Surfaces
 - (6) 51-31-01/201, Seals and Sealing
 - (7) IPC 55-30-01 Fig. 1
 - D. Access
 - (1) Location Zone

321 Fin Leading Edge

E. Procedure

s 214-004

(1) Make sure there is no damage to the splice ribs.

s 964-026

(2) If there is damage, repair or replace the splice ribs.

EFFECTIVITY-

55-30-01

ALL

01.1

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s 214-005

- (3) Examine the nutplates and screws that attach the parts of the leading edge to the fin.
 - (a) Replace the nuts or screws if it is necessary.
 - (b) Attach the nutplates with rivets if the nutplates are loose.

S 434-032

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE AREA BELOW THE LEADING EDGE. INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR IF THE EQUIPMENT FALLS.

CAUTION: WHEN INSTALLING FASTENERS, MAKE SURE THAT THE DRIVER BIT IS IN LINE WITH A FASTENER. THIS WILL PREVENT DRIVER BIT WOBBLE WHICH CAN CAUSE DAMAGE TO THE FASTENER RECESSES AND THREADS.

(4) When you install the bolts on the leading edge, the following can help:

NOTE: These suggestions are to make sure that the bolts can be removed freely later and are not damaged when you install them.

- (a) Use an access panel leverage adapter, B20004-21 to install the bolts.
- (b) Make sure that the fasteners have correct grip length, undamaged threads, and undamaged recesses.

NOTE: If any fasteners need to be replaced, it is recommended that K-coated titanium bolts with cadmium plated Cres nut-plates be installed where applicable.

- (c) Remove any excess paint or debris on fastener recesses.
- (d) Lubricate the threads of the fasteners with compound, BMS 3-28.

EFFECTIVITY-

ALL

55-30-01



Install bolts with a fastener tool and an installation anti cam-out (ACR) driver bit.

NOTE: Use decreased lubricated fastener torques,

(AMM 20-51-01/201).

NOTE: A combination removal/installation ACR bit is not

recommended. The bit should have a hardness of

56-58 RC.

s 414-040

- (5) Do the steps that follow to install the part of the leading edge that contains the bonding jumper:
 - Put the lower part of the leading edge in the correct position between BS 2280.2 and LE Sta 77.3.
 - Clean the mating surfaces at the bonding jumper with 180-grit abrasive paper.
 - (c) Clean the surfaces again with a clean cheesecloth moist with solvent.
 - (d) Apply alodine 1000 to the cleaned surfaces (Ref 51-21-04/701).
 - (e) Attach the bonding jumper to the leading edge rib forward of BS 2280.2.
 - (f) Make sure the resistance between the bonding jumper and the leading edge rib is 0.010 ohms or less (Ref 20-22-01/601).
 - Make sure the seal on the dorsal fin is smooth against the leading edge.
 - (h) Install the fasteners around this part of the leading edge.

s 434-030

ALL

- Do the steps that follow to install the part of the leading edge that contains the HF antenna:
 - (a) Clean the mating surfaces between the attach plates and the antenna feedlines with 180-grit abrasive paper.
 - Clean the surfaces again with a clean cheesecloth moist with solvent.

EFFECTIVITY-

55-30-01



- (c) Apply alodine 1000 to the cleaned surfaces (Ref 51-21-04/701).
- (d) Put the part of the leading edge that contains the HF antenna in the correct position.

NOTE: While you put it in the correct position, make sure the attach plate is below the antenna feedlines.

- (e) Attach the antenna feedlines to the attach plates (View B, Fig. 401).
- Do a resistance check between the antenna feedline and attach plate (Ref 20-22-01/601).

NOTE: The maximum resistance permitted is 0.0025 ohm.

(g) If the resistance between the antenna feedline and attach plate is more than 0.0025 ohm, clean the antenna feedline again.

s 424-018

(7) Install the splice ribs and the remaining parts of the leading edge one at a time.

s 434-028

- (8) If you install a new part of the leading edge, do the steps that follow:
 - (a) Cut the edges of the new part of the leading edge skin.

NOTE: Make sure you have the correct clearance between the parts of the leading edge (View A-A, Fig. 401).

- (b) Break the sharp edges of the skin you cut.
- (c) Apply a layer of Alodine 1000 to the cut edges (Ref 51-21-04/701).

s 224-019

ALL

(9) Make sure the fastener heads are smooth with the leading edge skin.

The maximum distance below the surface is 0.010 inch. The maximum distance above the surface is 0.002 inch. cut the fastener heads to get the correct flushness.

EFFECTIVITY-

55-30-01



s 344-020

(10) Fill the clearance between the parts of the leading edge with sealant (Ref 51-31-01/201).

NOTE: Make sure the flushness is less than \pm 0.01 inch.

s 344-029

(11) Fill the clearance between the part of the leading edge and the skin for the forward torque box with sealant (Ref 51-31-01/201).

NOTE: Make sure the flushness is less than \pm 0.01 inch.

s 414-021

(12) Install the access door if you removed it.

s 864-033

- (13) Remove the DO-NOT-CLOSE tags and close these circuit breakers: (a) On the overhead curcuit breaker panel, P7.
 - 1) 7E12, HF L
 - 2) 7E15, HF R

s 714-034

(14) Do the operational test - HF Communication System (Ref 23-11-00/501).

EFFECTIVITY-

ALL

55-30-01



VERTICAL STABILIZER REMOVABLE LEADING EDGE - APPROVED REPAIRS

1. General

- A. This procedure contains two tasks. The first task gives instructions to repair with tape the fiberglass leading edge section which is the HF antenna cover. The second task of this procedure gives instructions to repair the Rain-Erosion Resistant Coating (RERC) on the vertical stabilizer.
- B. If the rain erosion-resistant layer is worn away, you can apply tape over the fiberglass section. It is best if you replace the Rain Erosion-Resistant Coating (RERC). Do not use antistatic coatings. Refer to the end of this procedure for the repair instructions of the Rain-Erosion Resistant Coatings (RERC).

NOTE: Antistatic rain erosion-resistant coatings are not allowed for use on the fiberglass leading edge HF antenna cover. If you use the antistatic rain erosion-resistant coating, HF radio performance will badly decrease. Radio transmissions will cause the deterioration of the antistatic layer.

TASK 55-30-01-308-000

- 2. Repair the Vertical Stabilizer Removable Leading Edge (Fig. 801)
 - A. Equipment
 - (1) Brush Commercially available
 - (2) Felt tip marker Commercially avialable
 - (3) Hot air blower Commercially available
 - (4) Rubber applicator (squeegee) Commercially available
 - (5) Rubber roller Commercially available
 - B. Consumable Materials
 - (1) B00340 Abrasive paper 240 grit (minimum grit number)
 - (2) G00033 Cheesecloth BMS 15-5
 - (3) Sealer 683-3-2 Clear
 - (4) Catalyst X-310A
 - (5) Solvents

NOTE: Use one of these solvents:

- (a) B00178 Acetone 0-A-51
- (b) B00148 Methyl Ethyl Ketone TT-M-261
- (c) B00090 1,1,1 Trichloroethane MIL-T-81533A
- (6) 3M Polyurethane Outdoor Tape 8671.
- (7) B00052 Soap, Liquid
- C. References
 - (1) Standard Overhaul Practices Manual 20-44-03, Application of Polyurethane Rain Erosion Resistant Coatings

EFFECTIVITY-

55-30-01

ALL



- D. Access
 - (1) Location Zone

321 Vertical Stabilizer - Removable Leading Edge

- E. Procedure
 - s 118-018
 - MAKE SURE PERSONNEL STAY A MINIMUM OF 6 FEET AWAY FROM THE WARNING: VERTICAL STABILIZER WHEN THE HF SYSTEM TRANSMITS. RF ENERGY FROM THE HF COMMUNICATION ANTENNA CAN CAUSE INJURIES TO PERSONNEL.
 - DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR WARNING: SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.
 - (1) Clean the surface that you will repair with a cheesecloth that is soaked with solvent, Series 87 (AMM 20-30-87).
 - s 118-003
 - (2) Dry the surface with a clean cheesecloth.
 - s 348-004
 - CAUTION: DO NOT RUB THE SURFACE WITH THE ABRASIVE PAPER FOR TOO MUCH TIME OR WITH TOO MUCH PRESSURE. IF YOU ARE NOT CAREFUL, DAMAGE TO THE FIBERS CAN OCCUR. THE DAMAGE TO THE FIBERS WILL DECREASE THE STRENGTH OF THE PART.
 - (3) Lightly rub the surface with the abrasive paper.
 - (4) Clean the area with a clean cheesecloth that is moist with solvent.
 - s 118-006

ALL

(5) Dry the surface with a clean, dry cheesecloth.

EFFECTIVITY-

55-30-01



s 348-009

- (6) Prepare the tape as follows:
 - (a) Measure and cut the tape to have a length that is 1 inch more than the eroded area.

NOTE: As an example, for an eroded area of 1 inch, it is necessary to have a 2-inch length of tape.

(b) Cut the tape to a width of 6 inches.

s 348-010

(7) Make a mark, with a felt tip marker, at the edge of the area where you will apply the tape.

s 348-007

(8) Apply the tape as follows:

NOTE: Use Method A or Method B.

- (a) Method A
 - 1) Remove the paper backing for approximately 1 inch along the length of the tape.
 - 2) Push the tape in position as you continuously remove the paper backing.
- (b) Method B
 - 1) Prepare a solution of one part liquid soap to 50 parts water.
 - 2) Make the surface wet with the soap and water solution.

NOTE: The wet surface lets you adjust the tape before it bonds fully.

- Remove the paper backing from the tape.
- 4) Find the highest area on the fin that has erosion. Apply the tape first in that area.
- 5) Push on all of the tape until it is satisfactorily attached to the surface. Make sure you do not make too many air bubbles below the tape.
- 6) Start at the centerline of the tape, and remove all the detergent solution and the air bubbles with a rubber squeegee.
- 7) Rub the tape with a clean cheesecloth or a small rubber roller.
- 8) Remove all the caught air bubbles with a small pin and rub the tape again.

EFFECTIVITY-

55-30-01

ALL



s 358-008

(9) Fully dry the surface with a hot air blower.

s 398-017

(10) Apply the edge sealer with a brush to make an overlap of 3/8 inch on each side of the tape edge.

TASK 55-30-01-308-019

- 3. <u>Vertical Stabilizer Removable Leading Edge RERC Repair</u> (Figs. 801, 802))
 - A. General
 - (1) These tasks are for the repair of the Rain-Erosion-Resistant Coating (RERC) with Caapcoat, when the damage extends over much of the surface of the RERC, and for different types of damage when only minor repair to the topcoat of the RECR is required.
 - B. Equipment
 - (1) Spray Gun Nozzle Commercially available
 - (2) High-Speed Disk Sander Commercially available
 - C. Consumable Materials
 - (1) Rain Erosion Coatings
 - (a) COO807 Primer Chemglaze 9924 Wash Primer Base (Part A) and Catalyst (Part B)
 - (b) Erosion Coating Caapcoat FP-200 (BAC 707, Gray) Base curing agent and accelerator
 - (2) E00136 Caapcoat Polyurethane Thinner PUT10, or Mil-T-81772 Type I (for use with Caapcoat paint).
 - (3) Solvents
 - (a) B00378 Methyl Ethyl Ketone (MEK) TT-M-261
 - (b) B00589 Toluene (Toluol), TT-T-548
 - (c) B00154 JAN-T-171 Grade A
 - (d) B00344 Xylene, TT-X-916
 - (4) Abrasive Pads
 - (a) GO2167 Scotchbrite Finishing Type A, very fine
 - (b) Aluminum Abrasive Nylon Pad Type F
 - (5) Masking Tape, Solvent Resistant
 - (a) No. 226 YR-239
 - (b) G00366 P-705
 - (6) GOO843 Wipers Lint Free Cotton (BMS 15-5 Class A?)
 - D. References
 - (1) Standard Overhaul Practices Manual 20-30-03, Stripping Requirements
 - E. Access
 - (1) Location Zone

ALL

321 Vertical Stabilizer - Removable Leading Edge

EFFECTIVITY-

55-30-01



F. Procedure

s 348-022

(1) If the damage extends over much of the surface of the RERC repair as follows:

WARNING: MAKE SURE PERSONNEL STAY A MINIMUM OF 6 FEET AWAY FROM THE VERTICAL STABILIZER WHEN THE HF SYSTEM TRANSMITS. RF ENERGY FROM THE HF COMMUNICATION ANTENNA CAN CAUSE INJURIES TO PERSONNEL.

WARNING: DO NOT GET THESE FINISHES AND SOLVENTS IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES. PUT ON PROTECTIVE SPLASH GOGGLES AND GLOVES WHEN YOU USE THESE SOLVENTS. KEEP THESE SOLVENTS AWAY FROM SPARKS, FLAMES AND HEAT. THESE SOLVENTS ARE POISONOUS AND FLAMMABLE WHICH CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT. OBEY ALL SAFETY AND FIRE PRECAUTIONS. IF THE MATERIALS TOUCH THE EYES, FLUSH WITH WATER FOR 15 MINUTES AND GET MEDICAL ATTENTION. IF MATERIALS TOUCH THE SKIN, WASH WITH WATER AND WIPE UP ALL SPILLS IMMEDIATELY.

(a) Apply masking tape to areas that surround the RERC coating that will not be touched by solvents, cleaners or equivalent agents.

CAUTION: DO NOT LET SOLVENTS REMAIN ON THE SURFACE FOR MORE THAN 12-24 HOURS. IF YOU LEAVE SOLVENTS ON THE SURFACE FOR MORE THAN 24 HOURS, THE SURFACE CAN SWELL.

- (b) Clean off the coating with abrasive pads and water.
- (c) Wipe the area with solvent, Series 87 (AMM 20-30-87) and use the wiper until it collects no signs of coating residue.
- (d) Place a wiper moistened with solvent over the area to be repaired.
- (e) Place a plastic cover over the moistened wiper.

NOTE: The plastic cover will capture the solvent and will help keep the solvent in the part and will not let the solvent evaporate.

- (f) Keep the plastic cover on the leading edge from 12-24 hours.
- (g) Remove any paint or primer and old conductive coating and use 240 grit or finer abrasive cloth or paper.
- (h) Wipe off sanding residue with a clean cloth moistened with solvent.

EFFECTIVITY-

55-30-01



Application of Coating

s 378-024

(1) Refer to Figure 802 when you mix, thin, apply, and cure the materials.

NOTE: Unmixed primer and coating can be used up to 24 months from the date of manufacture, if they were stored in accordance with standard industry practices. They can also be used if tests at 12 and 18 months from the date of manufacture show that they agree with specifications. Discard materials more than 2 years old.

> Caapcoat comes as a kit, including primer, corrosion coating and thinner.

BMS 10-79 primer comes as a two-component kit. Before you mix the components together, shake each component sufficiently to mix all solids. Then add and stir continuously (Ratio 1 part base to 1 part catalyst by volume. Use thinner as applicable). Let the mixture stand a minimum of 30 minutes before application.

s 378-013

(2) Apply primers and coatings by spray only.

On the primer coat if the film is rough, lightly sand with NOTE: 180 grit or finer aluminum oxide abrasive paper or pad before you apply the overcoat. Remove sanding residues with wipers lightly dampened with solvents.

s 378-015

ALL

(3) Apply materials to get the dry film thickness per Fig. 802.

Make sure that between application of coats, you allow enough NOTE: time to flush off the solvents because of the thickness requirements of the Caapcoat erosion coating. If you follow these instructions, you will prevent appearance of bubbles and get a better finish.

EFFECTIVITY-

55-30-01



H. Minor Repair to Topcoats of the RERC

s 348-021

(1) The two sets of instructions that follow should be used if there is minor damage to the RERC, and/or the fiberglass of the leading edge, and/or the primer.

s 348-014

(2) If the RERC is damaged and the fiberglass of the LE is not damaged and the primer is intact repair as follows:

CAUTION: AVOID EXPOSURE OF PRIMER OR FIBERGLASS SUBSTRATE. IF FIBER-GLASS SUBSTRATE IS EXPOSED, APPLY PRIMER. DO NOT APPLY PRIMER OVER EXISTING POLYURETHANE.

- (a) Trim or sand to remove all loosened coatings.
- (b) Make the area smooth and feather the edges by sanding.

NOTE: Use 280 grit or finer abrasive. A high-speed disk sander is recommended.

- (c) Vacuum thoroughly to remove sanding dust.
- (d) Just before you begin to apply the coating, wipe the sanded area with thinner.
 - 1) Repeat the solvent wipe and use a clean wiper until there is no visible pick-up of particles or discoloration.
 - 2) Wipe dry with a clean wiper.
- (e) Brush apply the appropriate polyurethane coatings to the required thicknesses.

<u>NOTE</u>: Prevent any overlap of this coating onto the unsanded area of the existing coating.

- (f) Make sure that the final finish is smooth, continuous and has no particles in it.
- (g) Make sure that the dry film thickness is within the limits of Fig. 802 and the coatings conform to the contour of the part.

s 348-016

- (3) If the RERC, primer and fiberglass of the Leading Edge is exposed repair as follows:
 - (a) If a small damaged areas exits where primer or epoxy fiberglass substrate is exposed, trim to remove significant amounts of loosened coatings.
 - (b) Use sandpaper to remove the remaining, loosened coating.

EFFECTIVITY-

55-30-01



(c) Make the area smooth the feather the edges of the sound coating.

NOTE: Do not expose glass fabric during sanding operation.

- (d) Rub the repaired area with a bristle brush and solvent, Series 87 (AMM 20-30-87) for a minimum of 1 minute.
- (e) With a dry, clean cloth blot-dry, then dry brush and vaccuum to remove loose particles.
- (f) Apply BMS10-79 primer and Caapcoat kit with a brush to the required thicknesses.

NOTE: Do not apply primer over existing polyurethane coating.

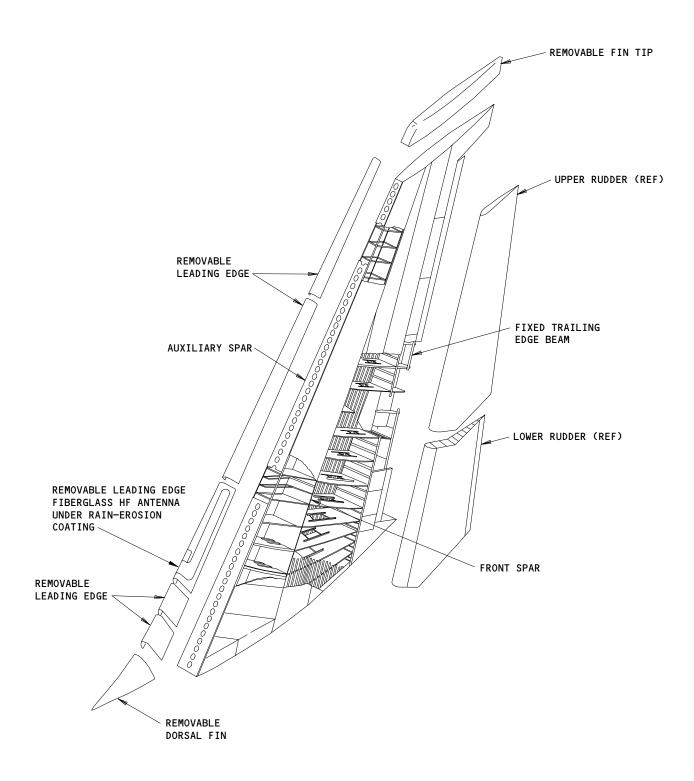
- (g) Make sure that the final finish is smooth, continuous and has no particles in it.
- (h) Make sure that the dry film thickness is within the limits of Fig. 802 and the coatings conform to the contour of the part.

EFFECTIVITY-

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55-30-01





Fiberglass Panel on Vertical Stabilizer Figure 801

ALL

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MATERIAL	MIX RATIO PARTS BY VOLUME	VIS- COSITY SEC. ZAHN NO. 2	RELA- TIVE HUMI- DITY PERCENT	DRY FILM THICKNESS, MIL-INCHES		CURE TIMES, HOURS		
				PER COAT	TOTAL	TO RECOAT	TO OVERCOAT	FINAL
TYPE I, CLASS 5 FP-200, VEHICLE CURING AGENT ACCELERATOR	48 4 3	22 TO 28 AT 70° TO 80°F (RECOM- MENDED)	MINIMUM 30	MAXIMUM 1ST TO 1.5 2ND AND ON 2.0	12 ±2	MINIMUM 1/3, MAXIMUM 2 HOURS	2 TO 8	TO HANDLE -36 TO SERV- ICE -48

CURE TIME MAY BE SPEED UP BY 24 HOURS AT ROOM TEMPERATURE FOLLOWED BY OVEN CURING AT 150°F FOR 3 HOURS.

Material Chart Figure 802

EFFECTIVITY-

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55-30-01

01

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FIN TIP - REMOVAL/INSTALLATION

1. General

A. This procedure contains two tasks. The first task is the removal of the vertical stabilizer (fin) tip. the second task is the installation of the fin tip.

TASK 55-30-02-004-001

- 2. Remove the Fin Tip (Fig. 401)
 - A. References
 - (1) IPC 55-30-04 Fig. 1
 - B. Access
 - C. Procedure

s 024-019

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE AREA BELOW THE FIN TIP. INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR IF THE EQUIPMENT FALLS.

(1) Remove the fasteners that attach the fin tip to the fin (Fig. 401).

s 034-017

(2) Remove the fin tip.

s 554-020

(3) Put a cover on the closure rib and equipment for protection from the environment.

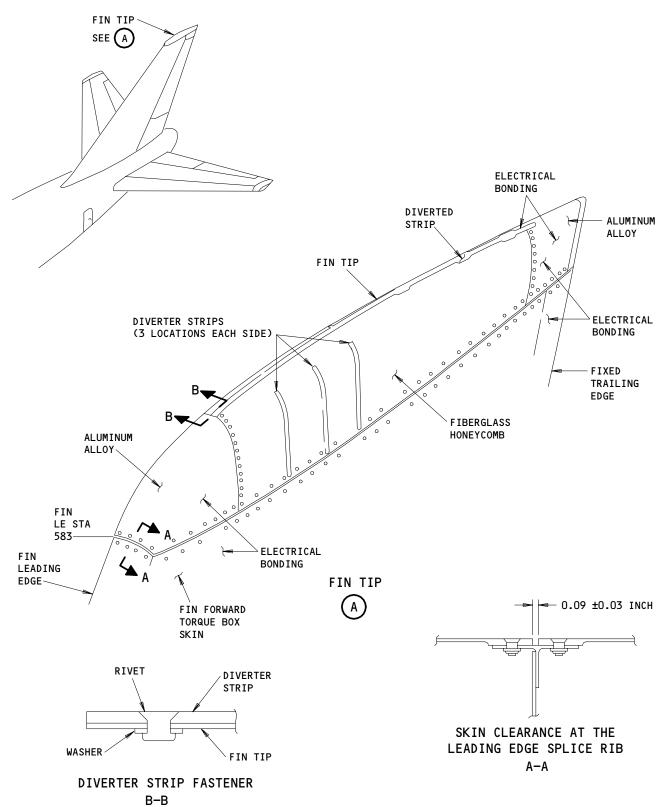
TASK 55-30-02-404-003

- 3. Install the Fin Tip (Fig. 401)
 - A. Standard Tools and Equipment
 - (1) Bonding Brush Stainless Steel Rotary, No. P-33-SS (C.W. Morris Co., Detroit, Michigan, or equivalent)

EFFECTIVITY-

55-30-02





Fin Tip Installation Figure 401

ALL

O1 Page 402

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- (2) Rivets BACR15CE5D (or equivalent)
- B. Consumable Materials
 - (1) C00064 Alodine 1000 (clear)
 - (2) A00247 Sealant, BMS 5-95
- C. References
 - (1) 20-22-01/601, Electrical Bonding
 - (2) 51-21-04/701, Alodized Surfaces
 - (3) 51-31-01/201, Seals and Sealing
 - (4) IPC 55-30-04 Fig. 1
- D. Access
 - (1) Location Zone
 327 Fin Tip
- E. Procedure

s 434-006

(1) Remove the cover from the closure rib and equipment.

s 214-007

(2) Examine the rib splice between the leading edge and the fin tip.(a) If there is damage, repair or replace the splice rib.

s 214-008

- (3) Examine the nutplates and screws that attach the fin tip to the fin.
 - (a) Replace the damaged nuts and screws.
 - (b) Tighten the loose nutplates with new rivets.

s 424-009

(4) Put the fin tip in the correct position.

s 434-021

(5) Install the fasteners around the edge of the fin tip.

s 354-010

ALL

- (6) If you install a new fin tip, do the steps that follow:
 - (a) Cut the lower edge of the fin tip skin.

NOTE: Make sure you have the correct clearance between the lower edge of the fin tip and the fin (View A-A, Fig. 401).

EFFECTIVITY-

55-30-02



- (b) Break the sharp edges of the cut skin.
- (c) Apply a layer of clear alodine (Ref 51-21-04/701).

s 434-028

(7) Install the fin tip.

s 224-012

Do a resistance check between the fin leading edge and the forward (8) end of the fin tip.

NOTE: The maximum permitted resistance is 0.0005 ohm (Ref 20-22-01/601).

S 224-025

(9) Do a resistance check between the fixed trailing edge and the aft end of the fin tip.

The maximum permitted resistance is 0.0005 ohm (Ref 20-22-01/601).

s 224-026

(10) Do a resistance check between the forward end of the diverter strip and the forward end of the fin tip.

NOTE: The maximum permitted resistance is 0.0005 ohm (Ref 20-22-01/601).

s 224-027

(11) Do a resistance check between the aft end of the diverter strip and the aft end of the fin tip.

The maximum permitted resistance is 0.0005 ohm NOTE: (Ref 20-22-01/601).

s 124-023

ALL

- (12) If the resistance is more than 0.0005 ohm between the given surfaces, do the steps that follow:
 - (a) Use a wire brush made of stainless steel to clean the mating surfaces.

EFFECTIVITY-

55-30-02



(b) Do a resistance check again.

s 224-014

(13) Make sure the fastener heads are smooth with the fin tip skin.

NOTE: The maximum distance below the surface is 0.010 inch.

The maximum distance above the surface is 0.002 inch. Do not cut the fastener heads to get the correct flushness.

s 224-015

(14) Do a resistance check between the diverter strips on the side of the fin and either the forward or the aft edge of the fin tip.

NOTE: The maximum permitted resistance is 0.010 ohm.

s 124-024

- (15) If the resistance is more than 0.010 ohm, do the steps that follow:
 - (a) Remove the fasteners.
 - (b) Clean the mating surfaces of the fasteners and diverter strips.
 - (c) Install the fasteners.
 - (d) Do a resistance check again.

s 344-016

ALL

(16) Apply sealant to the clearance between the fin tip and fin (Ref 51-31-01/201).

EFFECTIVITY-

55-30-02



DORSAL FIN - REMOVAL/INSTALLATION

1. General

A. This procedure contains two tasks. The first task is the removal of the dorsal fin for the vertical stabilizer. The second task is the installation of the dorsal fin for the vertical stabilizer.

TASK 55-30-03-014-026

- 2. Remove the Dorsal Fin (Fig. 401, 402)
 - A. References
 - (1) IPC 53-51-34 Fig. 1
 - B. Access
 - (1) Location Zone

321 Vertical Stabilizer

C. Procedure

s 024-016

WARNING: MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE AWAY FROM THE AREA BELOW THE DORSAL FIN. INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR IF THE EQUIPMENT FALLS.

(1) Remove the fasteners that attach the dorsal fin to the fuselage.

S 014-024

(2) Move the dorsal fin forward sufficiently for an access to the bonding jumper, approximately 5 to 6 inches.

NOTE: The bonding jumper is on the aft side of the dorsal fin (Fig. 401).

s 034-018

(3) Disconnect the bonding jumper from the dorsal fin rib.

s 034-019

(4) Remove the dorsal fin.

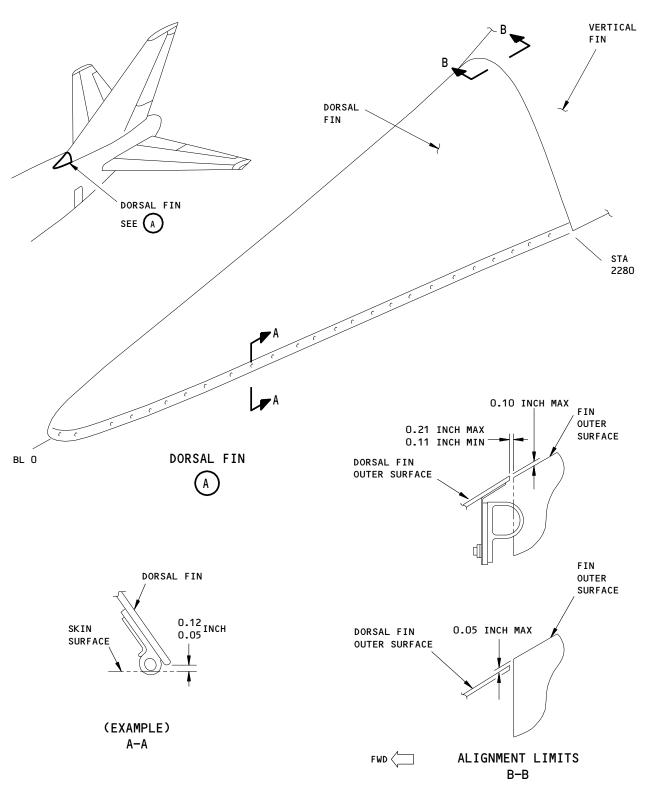
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Dorsal Fin Installation Figure 401

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TASK 55-30-03-404-027

- Install the Dorsal Fin (Fig. 401, 402)
 - A. Standard Tools and Equipment
 - (1) Meter Bonding
 - (2) C00259 Enamel Primer, Green, BMS 10-11
 - (3) G00381 Paper Abrasive, Aluminum Oxide, 180-grit
 - B. References
 - (1) 20-22-01/601, Electrical Bonding
 - (2) IPC 53-51-34 Fig. 1
 - C. Access
 - (1) Location Zone

321 Vertical Stabilizer

D. Procedure

s 424-006

(1) Put the dorsal fin in the correct position on the fuselage without the weather seal around the bottom.

s 354-007

- (2) If you install a new dorsal fin, do the steps that follow:
 - (a) Cut the lower edge of the dorsal fin skin.

NOTE: Make sure you have the correct clearance between the lower edge of the dorsal fin and the fuselage (Fig. 401 or Fig. 402).

- (b) Break the sharp edges of the trimmed skin.
- (c) Apply a layer of clear Alodine (Ref 51-21-04/701).

NOTE: Some airplanes have a dorsal fin made from fiberglass honeycomb sandwich panel. On these applications you do not have to treat the exposed edges with clear Alodine.

s 404-029

(3) Adjust the shim laminations to get the correct clearance between the bottom of the dorsal fin and the fuselage (View A-A, Fig. 401 or Fig. 402).

s 374-021

(4) If you adjusted the shim laminations, apply primer to the bare shim surface.

s 434-011

(5) Install the weather seal around the bottom of the dorsal fin.

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S 864-022

(6) Make sure the seal is smooth around the bottom of the dorsal fin.

s 434-012

(7) Attach the bonding jumper to the aft side of dorsal fin rib.

S 224-013

(8) Do a check to make sure the resistance between the dorsal fin rib and the leading edge rib is less than 0.010 ohms (Ref 20-22-01/601).

s 124-023

(9) If it is necessary, clean the mating surfaces for the bonding jumper with abrasive paper.

s 434-014

(10) Install the fasteners around the bottom of the dorsal fin.

s 224-015

(11) Make sure the fastener heads are smooth with the dorsal fin skin.

NOTE: The maximum distance below the surface is 0.010 inch. The maximum distance above the surface is 0.002 inch. Do not cut the fastener heads to get the correct flushness.

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EMPENNAGE ACCESS PANELS - REMOVAL/INSTALLATION

- 1. General
 - A. This procedure contains two tasks:
 - (1) The first task is the removal of the panels from the empennage.
 - (2) The second task is the installation of the empennage panels.
 - (3) Remove the panel as follows:
 - Loosen the screws on the panel.
 - Remove the panel from the empennage.
 - (4) Install the panel as follows:
 - Clean and remove the remaining sealant
 - Install the panel
 - Tighten the screws
 - Seal the space between the skin panels
 - B. The panels are part of the panel assemblies of the empennage. The edge of each panel is held together directly between the adjacent honeycomb panel and panel stiffener.

TASK 55-30-10-004-001

- 2. Panel Removal (Fig. 401)
 - A. Access
 - (1) Location Zone

320 Vertical Stabilizer

330 Horizontal Stabilizer, Left

340 Horizontal Stabilizer, Right

B. Procedure

s 024-002

- (1) Remove the panel.
 - (a) To remove the panel, remove the bolts on the panel edge.

TASK 55-30-10-404-003

- 3. Panel Installation (Fig. 401)
 - A. Consumable Materials
 - (1) B00184 Solvent Presealing Cleaning, BMS 11-7
 - (2) A00099 Sealant BMS 5-95
 - (3) B00624 Compound Lubricant BMS 3-28
 - B. References
 - (1) AMM 20-51-01/201, Standard Torque Values
 - C. Access
 - (1) Location Zone

320 Vertical Stabilizer

330 Horizontal Stabilizer, Left

340 Horizontal Stabilizer, Right

EFFECTIVITY-

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D. Procedure

s 424-004

- (1) Install the panel.
 - (a) If you use the same panel, remove the sealant from the lower surface of the panel edge.
 - (b) Put the aft and forward panel edge into their positions between the adjacent honeycomb panel and the panel stiffener.
 - (c) Make sure that you put the panel in the center of the opening before you install the screws.
 - (d) Apply BMS3-28 lubricant to the fasteners prior to installation (AMM 20-51-01/201).

NOTE: The BMS 3-28 will prevent corrosion on the threads of the fasteners and make them easier to remove.

- (e) Install the screws through the panel along the forward edge of the panel.
- (f) Make sure that the space between the forward and aft edges of the panel and the adjacent honeycomb panels is 0.06 +/-0.03 inch.
- (g) Tighten the bolts directly forward and aft of the panel.
- (h) Tighten the remaining fasteners.

s 344-005

(2) Seal the panel joints.

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- (a) Clean the space at the forward edge of the panel. Use a clean bristle brush applied with the approved solvent.
- (b) Remove the unwanted solvent with filtered air that has no oil or water in it from an air hose.
- (c) For the last step to clean, lightly apply solvent with a cloth.
- (d) Rub to make the area dry.
- (e) Apply sealant to the area between the panel and the honeycomb panel.

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LIGHTNING DIVERTER - REMOVAL/INSTALLATION

1. General

A. This procedure contains two tasks. The first task is the instructions to remove the lightning diverter from the vertical stabilizer. The second task is the instructions to install the lightning diverter to the vertical stabilizer.

TASK 55-31-02-004-001

- 2. Remove the Lightning Diverter
 - A. Access
 - (1) Location Zone

327 Vertical Stabilizer Tip

B. Procedure

s 024-013

WARNING: MAKE SURE PERSONNEL STAY A MINIMUM OF 6 FEET AWAY FROM THE VERTICAL STABILIZER WHEN THE HF SYSTEM TRANSMITS. RF ENERGY FROM THE HF COMMUNICATION ANTENNA CAN CAUSE INJURIES TO PERSONNEL.

CAUTION: BE CAREFUL WHEN YOU REMOVE THE LIGHTNING DIVERTER. DO NOT RUB
THE VERTICAL STABILIZER STRUCTURE OR ANTENNA. CORROSION OR AN
ANTENNA DEFECT CAN OCCUR IF YOU ARE NOT CAREFUL.

(1) Remove the screws that hold the splice together.

s 024-004

(2) Remove the screws that hold the lightning diverter to the fin tip.

024-005

(3) Remove the lightning diverter.

TASK 55-31-02-404-006

- 3. <u>Install the Lightning Diverter</u>
 - A. Access
 - (1) Location Zone

327 Vertical Stabilizer Tip

B. Procedure

s 424-014

WARNING: MAKE SURE PERSONNEL STAY A MINIMUM OF 6 FEET AWAY FROM THE VERTICAL STABILIZER WHEN THE HF SYSTEM TRANSMITS. RF ENERGY FROM THE HF COMMUNICATION ANTENNA CAN CAUSE INJURIES TO PERSONNEL.

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CAUTION: BE CAREFUL WHEN YOU REMOVE THE LIGHTNING DIVERTER. DO NOT RUB THE VERTICAL STABILIZER STRUCTURE OR ANTENNA. CORROSION OR AN ANTENNA DEFECT CAN OCCUR IF YOU ARE NOT CAREFUL.

- (1) Put the lightning diverter strips in position and install the screws.
- C. Examine the electrical resistance of the diverter strips, with a bonding meter.

s 284-011

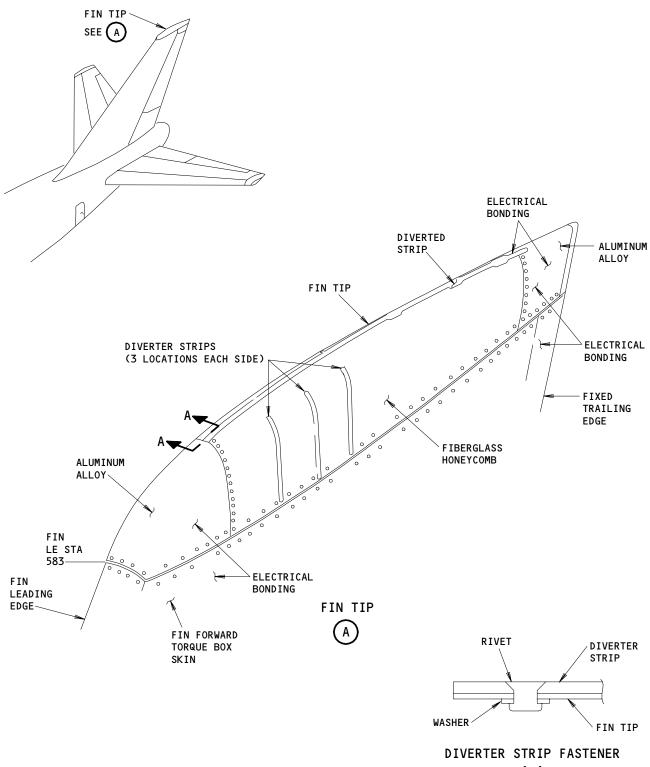
(1) Make sure that the resistance between each diverter strip and fuselage skin is not more than 0.1 ohm (Ref 20-22-01/601).

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A-A

Fin Tip Installation Figure 401

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RUDDER - DESCRIPTION AND OPERATION

1. General (Fig. 1)

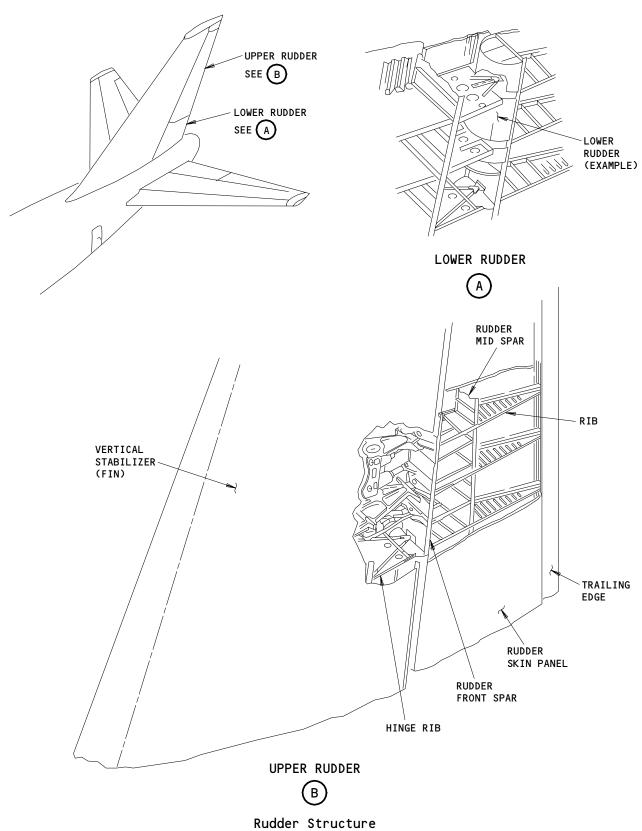
- A. The rudder consists of an upper and lower rudder hinged from the vertical stabilizer. The structure consists of front, mid, and rear spars on the upper rudder and front and rear spars only on the lower rudder with ribs extending from front to rear spar on both rudders. The rudder skin is attached to the structure.
- B. The upper rudder is powered by three actuators, the lower rudder is powered by two actuators (Ref 27-21-00/001).
- 2. Rudder Structure (Fig. 1)
 - A. The rudder front spar is constructed of a central web attached to chords and strengthened by stiffeners. Hinges are attached to the centerline of front spar for rudder movements. The rudder leading edge fairs rudder to fin trailing edge.
 - B. The upper rudder mid spar is constructed of a central web attached to chords and strengthened by stiffeners.
 - C. Rudder ribs are composed of central webs attached to chords and strengthened by stiffeners. Chords attach to panels extending from front to rear spars.
 - D. Rudder rear spars are composed of central channels strengthened by splice angles.

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Figure 1



ATTACH FITTINGS - DESCRIPTION AND OPERATION

1. General

A. The horizontal stabilizer attach fittings provide pivot points for stabilizer movement. The elevator attaches to the horizontal stabilizer trailing edge. The vertical stabilizer (fin) attaches to the fuselage at section 48. The rudder attaches to the trailing edge of the fin.

2. Horizontal Stabilizer Attach Fittings (Fig. 1)

A. The horizontal stabilizer actuator fitting attaches the stabilizer center section front spar to the trim drive mechanism at the upper gimbal. The trim drive rotates the stabilizer by a jackscrew through the upper gimbal, translating load through actuator ribs to pivot hinges at the stabilizer center section rear spar.

3. Elevator Attach Fittings (Fig. 1)

A. The elevator is attached from hinge fittings on ribs extending from horizontal stabilizer rear spar to elevator front spar. On each side, there are twelve hinges on the elevators, four elevator hinges and one reaction hinge on the inboard elevator and six elevator hinges and one reaction hinge on the outboard elevator.

4. Fin Attachment Fittings (Fig. 2)

A. The fin is attached to the fuselage by bolt and angle attachments at front and rear spars, angle fittings between spars and a pinned link fitting between auxiliary spar and fuselage. Link fitting allows vertical movements. The attachment is strengthened by body fittings, splice plates and stiffeners. At six locations, on both the left and right side, tension bolts, in clearance holes, are installed into barrel nuts (section A-A). The apparent threads in bearing at these locations are structurally acceptable as shear is carried by other bolts in the pattern.

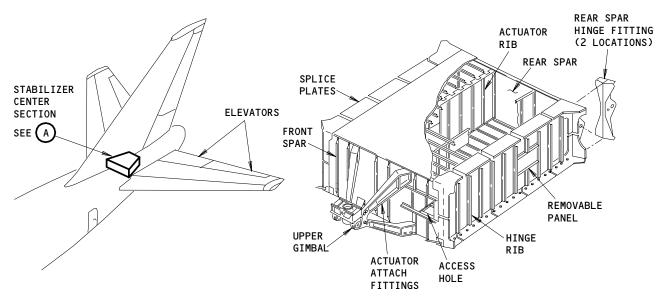
5. Rudder Attachment Fittings (Fig. 2)

A. The rudder is attached by hinge fittings on ribs and chords extending from fin rear spar to centerline of rudder front spar. There are eleven hinges on rudders, seven on upper rudder and four on lower rudder.

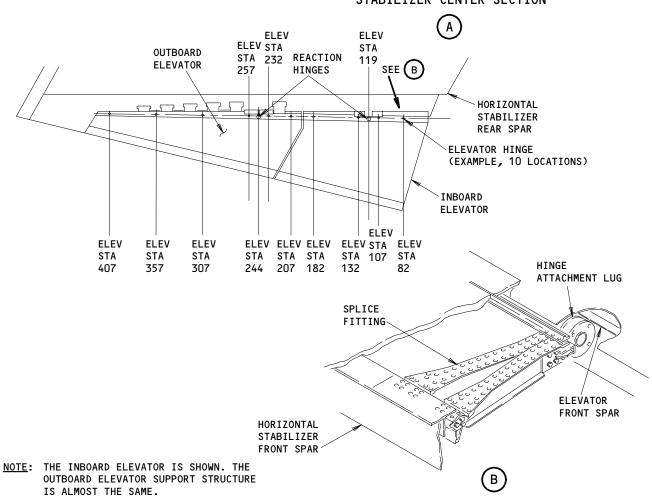
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STABILIZER CENTER SECTION



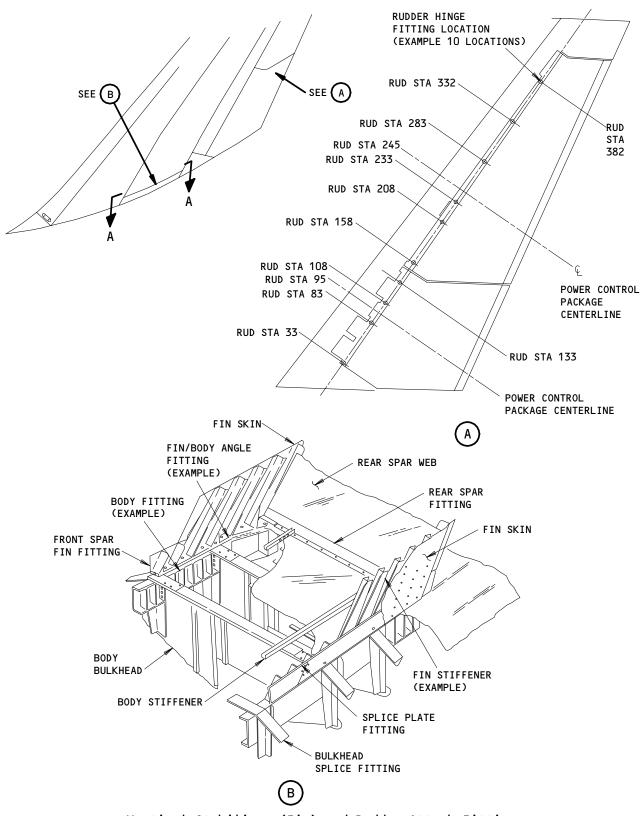
Horizontal Stabilizer and Elevator Attach Fittings Figure 1

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Vertical Stabilizer (Fin) and Rudder Attach Fittings Figure 2 (Sheet 1)

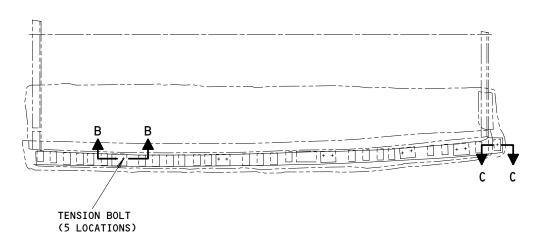
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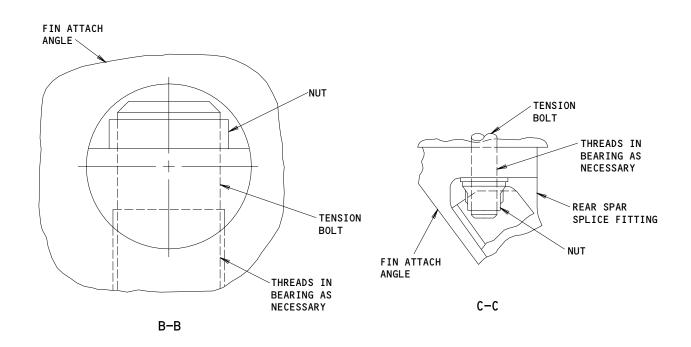
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FIN ATTACHMENT BOLT LOCATIONS A-A



Vertical Stabilizer (Fin) and Rudder Attach Fittings Figure 2 (Sheet 2)

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