CHAPTER 4

AIRFRAME

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4.000 Description

The R44 I & R44 II are both a four-place (R44 Cadet version is two-place, refer to Chapter 36), single-main-rotor, single-engine helicopter constructed primarily of metal and equipped with skid-type landing gear.

Primary structure is welded steel tubing and riveted aluminum. The tailcone is a monocoque structure in which aluminum skins carry most of the primary loads. Fiberglass and thermoset plastics are used in the secondary structure of the cabin, engine cooling system, and in various other ducts and fairings.

Cabin doors are removable. Four hinged cowl doors on right side provide access to main rotor gearbox, drive system and engine. A hinged cowl door on left side provides access to engine oil filler, dip stick, and battery (if installed here). For additional access to controls and other components, there are removable panels between seat cushions and seat backs, on each side and aft of engine compartment, under cabin and forward of tailcone.

The instrument console hinges up and aft for access to wiring and instrument connections and battery (if installed here). Small removable plug buttons are located on tailcone for internal inspection.

One stainless steel vertical firewall is forward of the engine and a stainless steel horizontal firewall is above the engine.

4.100 Cabin Assembly

The cabin assembly is a non-field-replaceable assembly.

4.110 Repair

1. Vertical firewall repairs may be accomplished in accordance with U.S. FAA Advisory Circular 43.13-1B paragraph 4-59. Firewall material is 0.016-inch thick, type 301, one-quarter hard corrosion-resistant (CRES) steel.
2. Keel panel replacement must be performed at the factory in a jig. Keel panel repairs may be accomplished in accordance with U.S. FAA Advisory Circular 43.13-1B. Keel panel material is 0.025-inch thick, 2024-T3 clad aluminum sheet.
3. To preserve crashworthiness, repairs to seat structure are limited to replacement of damaged components only.
4. U.S. FAA Advisory Circular 43.13-1B may be used for repair of cowlings, fairings, fiberglass chin, fiberglass roof, fiberglass doors, and roof & door windows.

4.120 Windshield Assembly

This section has been moved to Chapter 27 Doors and Windows.

4.130 Door Removal and Installation

This section has been moved to Chapter 27 Doors and Windows.

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4.140 Fairing, Cowling, and Inspection Panels

4.141 Engine Cowling

Engine cowling includes left-hand and right-hand cowling assemblies, belly cowling assembly, and the aft cowling assembly.

The lower edge of both engine cowling assemblies are supported by removable channels. The air intake hose is attached to right engine side panel assembly, which may be removed or connected through door in panel. Lower left slat in aft cowling assembly may be removed for access to clean out anything that may have fallen through slats.

4.142 Mast Fairing

CAUTION

Mast fairing must be installed for flight.

The C261 mast fairing upper rib is mounted to main rotor gearbox at swashplate tube assembly. Lower rib is clamped to main rotor gearbox mast assembly.

The pitot tube is mounted on lower front of mast fairing.

The fuel tank vents are installed through grommets in lower rib and attach to middle rib of mast fairing. The C665-2 guide assembly for C121-5 push-pull tube is mounted to center rib. It should be adjusted to minimize preload on push-pull tube.

4.143 Upper Cowling

Cowling above horizontal firewall includes D042 doors behind and below auxiliary tank, C347 panels around mast tube, and C706-1 tailcone cowling.

CAUTION

All cowlings must be installed for flight.

4.144 Cabin Inspection Panels

CAUTION

Inspection panels must be installed for flight. All panels may be left off for run-up. All must be installed for flight.

The cabin inspection panels include the following:

1. C794-1 forward belly panel and C794-3 aft belly panel assembly.
2. C465-1 and C465-2 aft seat back panels.
3. C474-1 panel between the aft seat backs and C474-2 panel between the aft seats.
4. C463-1 cover under the C464-1 tray.
5. C445-1 and C445-3 covers between the forward seats and C444-1 cyclic box cover.
6. C461-1 collective cross tube cover behind the left forward seat.

4.200 STEEL TUBE FRAME ASSEMBLIES

WARNING

All welded steel tube frames used in the R44 are stress relieved. No weld repairs are permissible outside Robinson Helicopter Company.

The following steel tube frames are required on the R44:

C020-1 Upper Frame Assembly

C046-1 Lower Frame Assembly, L.H.

C046-2 Lower Frame Assembly, R.H.

C046-3 Strut Assembly

C237-1 Frame Assembly

4.210 Lower Frame Assembly, L.H.

4.211 Frame Removal

a) Remove all cowling.

b) Remove main rotor gearbox, including both fuel tanks, per Section 7.110.

c) Remove powerplant, including tailcone and clutch assembly, per Section 6.110.

d) Remove battery and battery box.

e) Remove left aft seatback panel.

f) Disconnect the three forward mounting points (Figure 4-2A, Details D, E, and F) and the aft mounting point (Figure 4-2B, Detail H).

g) Disconnect the left aft NAS1307 landing gear mounting bolt.

h) Remove the NAS6604-2 bolt and the C722-2 cap screw connecting the upper frame to the lower left frame assembly (Figure 4-2, Details A & B).

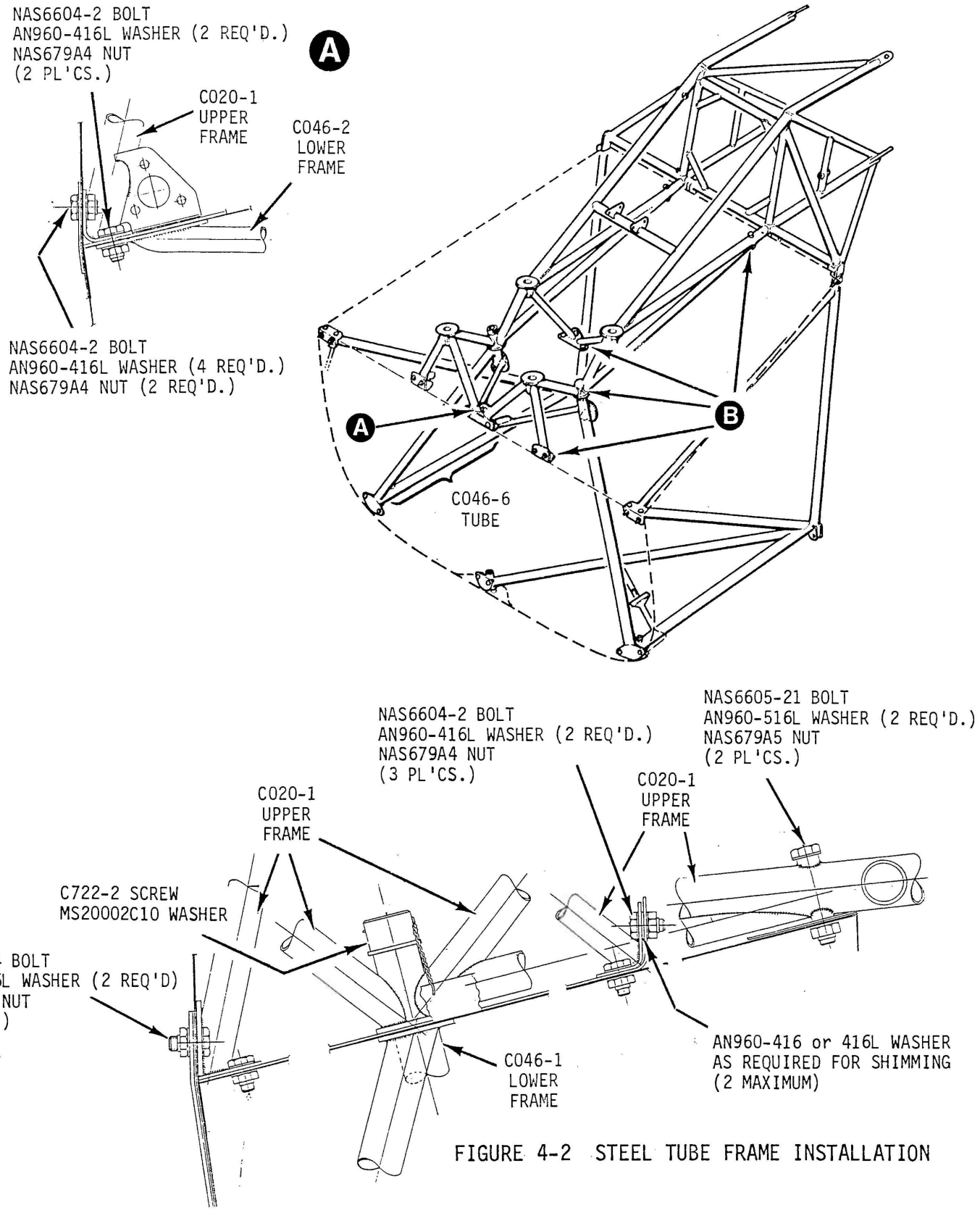


FIGURE 4-2 STEEL TUBE FRAME INSTALLATION

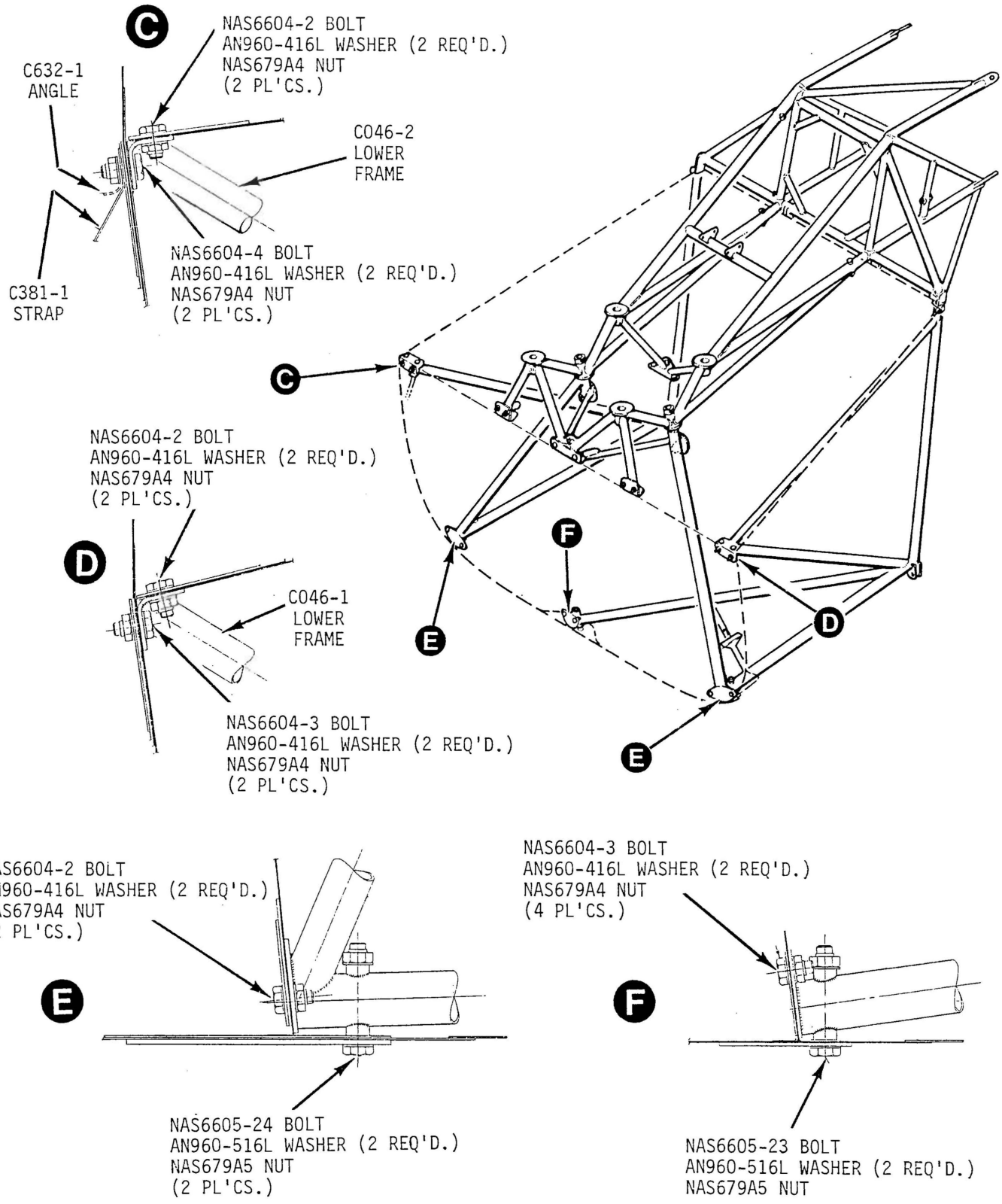


FIGURE 4-2A STEEL TUBE FRAME INSTALLATION

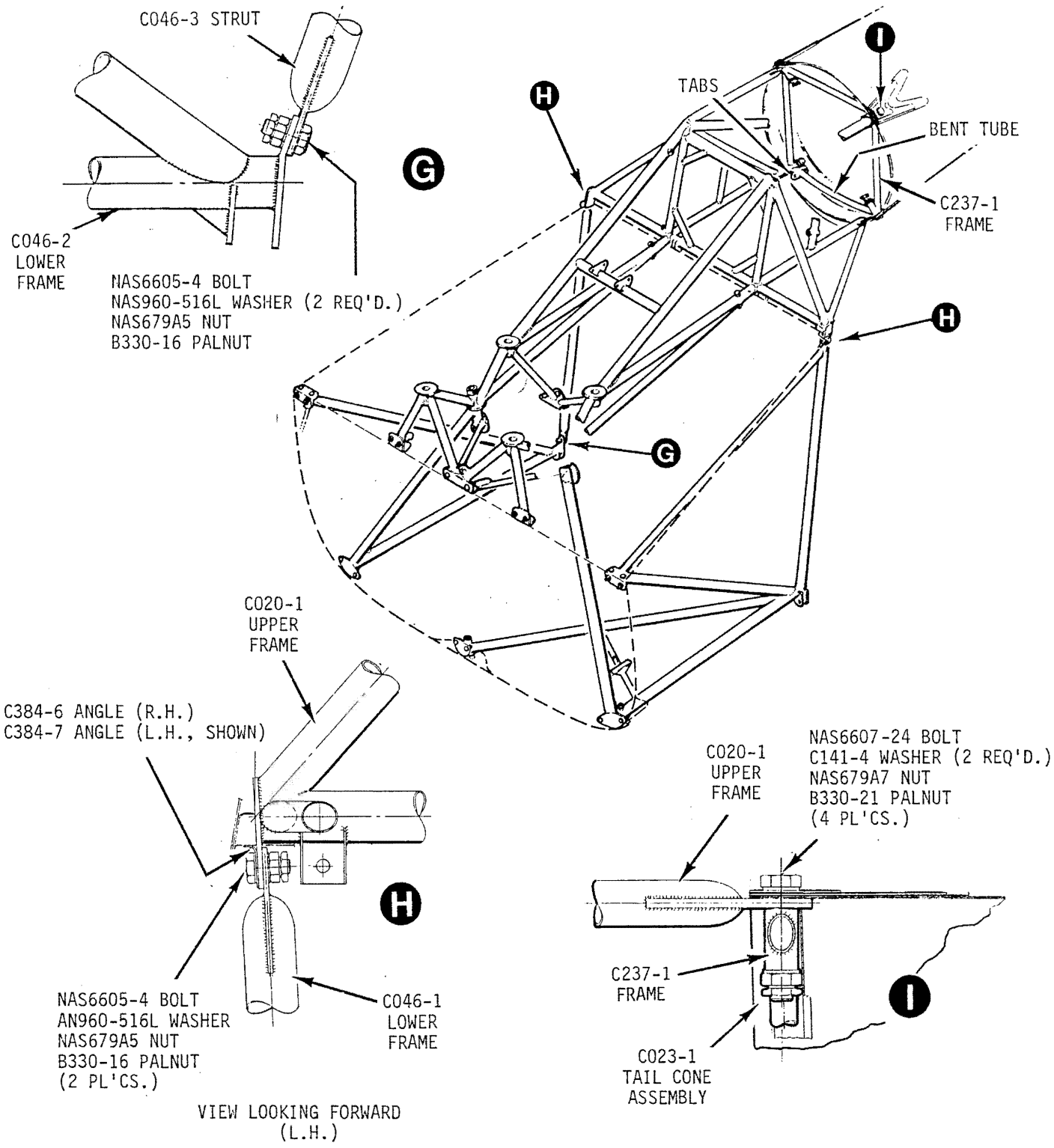


FIGURE 4-2B STEEL TUBE FRAME AND TAIL CONE INSTALLATION

4.211 Frame Removal (cont'd)

i) Remove the left frame assembly.

j) Remove the C014-7 landing gear support and D310-5 cowling bracket from the left frame assembly.

4.212 Frame Installation

a) Install the C014-7 landing gear support and D310-5 cowling bracket per Figure 5-1, Detail B. Torque per Section 1.320.

b) Position frame for installation. Install all hardware per Figure 4-2, Detail B, Figure 4-2A, Details D,E, and F, and Figure 4-2B, Detail H. Install all hardware before torquing.

c) Torque all NAS6600 bolts per Section 1.320. Torque the C722-2 Cap Screw per Section 1.330 and safety wire to the C385-1 firewall doubler with 0.041 inch diameter wire.

d) Install NAS6607 landing gear mounting bolt per Figure 5-1, Detail B, and torque per Section 1.320.

e) Install powerplant per Section 6.120.

f) Install tailcone per Section 4.312.

g) Install main rotor gearbox per Section 7.120.

h) Install clutch assembly per Section 7.220.

i) Install battery box and battery.

j) Verify all mounting hardware is torqued and install left aft seat back panel.

k) Install all cowling.

4.220 Lower Frame Assembly, RH

4.221 Frame Removal

1. Remove all cowling.
2. Remove main rotor gearbox, including both fuel tanks, per Section 7.110.
3. Remove powerplant, including tailcone, C046-3 strut, and clutch assembly, per Section 6.110.
4. Remove right rear seatback.
5. Disconnect the aft NAS6607 landing gear mounting bolt from the right landing gear support.
6. Disconnect the two forward mounting points (Figure 4-2A, Details C and E).
7. Remove the NAS6604-2 bolt and the C722-2 cap screw connecting the upper frame to the lower right frame assembly (Figure 4-2, Details A and B).
8. Remove the right frame assembly.
9. Remove the C014-7 landing gear support and the D310-6 bracket from the right frame assembly.

4.222 Frame Installation

1. Install the C014-7 landing gear support and D310-6 bracket per Figure 5-1. Torque per Section 1.320.
2. Position frame for installation. Install all hardware per Figure 4-2, Details A and B and Figure 4-2A, Details C and E. Install all hardware before torquing.
3. Torque all NAS6600 bolts per Section 1.320. Torque the C722-2 cap screw per Section 1.330 and safety wire to the C385-1 firewall doubler with 0.041 inch diameter safety wire.
4. Install NAS6607 landing gear mounting bolt per Figure 5-1 and torque per Section 1.320.
5. Install powerplant per Section 6.120.
6. Install tailcone per Section 4.300.
7. Install main rotor gearbox per Section 7.120.
8. Install clutch assembly per Section 7.200.
9. Verify all mounting hardware is torqued and install right aft seat back panel. Install all cowling.

4.230 Upper Frame Assembly

4.231 Frame Removal

Before the upper frame is disconnected and removed, the powerplant must be either removed or supported.

CAUTION

Extensive damage to the firewall and lower frame assemblies will occur if powerplant is not supported or if support is dislodged.

1. Remove all cowling.
2. Remove clutch assembly per Section 7.200.
3. Remove main rotor gearbox, including both fuel tanks, per Section 7.110.
4. Remove tailcone per Section 4.300.
5. Support powerplant or remove per Section 6.110.
6. Remove the right and left aft seat backs and panel between seatbacks.
7. Remove C316-1 upper bellcrank per Section 8.531 and remove the C121-15 push-pull tube.
8. Remove the C723 bulkhead assemblies at the aft end of the horizontal firewall.
9. Remove the NAS6605-4 bolts at the aft outboard corners of the horizontal firewall (Figure 4-2B, Detail H).
10. Remove all NAS6600 bolts and the C722-2 cap screws shown in Figure 4-2, Details A and B.
11. Remove upper frame.
12. Remove C329-1 bearing block assembly and A331-4 bellcrank assembly from upper frame.

4.232 Frame Installation

1. Clean upper frame and mounting points of all sealant, grease and oil. Install C329-1 bearing block assembly using AN509-8R11 screws, AN960-8L washers, and NAS1291-08 nuts, 3 places. Install A331-4 bellcrank assembly per Section 8.542.
2. Position upper frame for installation. Install all hardware per Figure 4-2, Details A and B and Figure 4-2B, Detail H. Install all hardware before torquing.
3. Torque all NAS6600 bolts per Section 1.320. Torque the C722-2 cap screws per Section 1.330 and safety wire to the C385-1 firewall doubler with 0.041 inch diameter wire.
4. Seal firewalls using B270-1 sealant to prevent fuel seepage.
5. Install the C723 bulkhead assemblies.
6. Install the C316-1 upper bellcrank per Section 8.532 and install the C121-15 push-pull tube.
7. Install powerplant, if removed, per Section 6.120.
8. Install tailcone per Section 4.300.
9. Install main rotor gearbox per Section 7.120.
10. Install clutch assembly per Section 7.200.
11. Verify all mounting hardware is torqued and install aft seat back and center panels.
12. Install all cowling.

4.240 Strut Assembly Removal and Installation

A. Removal

1. Remove right engine side panel and aft engine cowling.
2. Support engine from below to reduce the load on the lower frames.
3. Remove upper and lower mounting bolts and remove strut.

B. Installation

1. Install strut and hardware as shown in Figure 4-2B, Details G and H.
2. Torque bolts per Section 1.320.
3. Remove engine supports.
4. Install cowling.

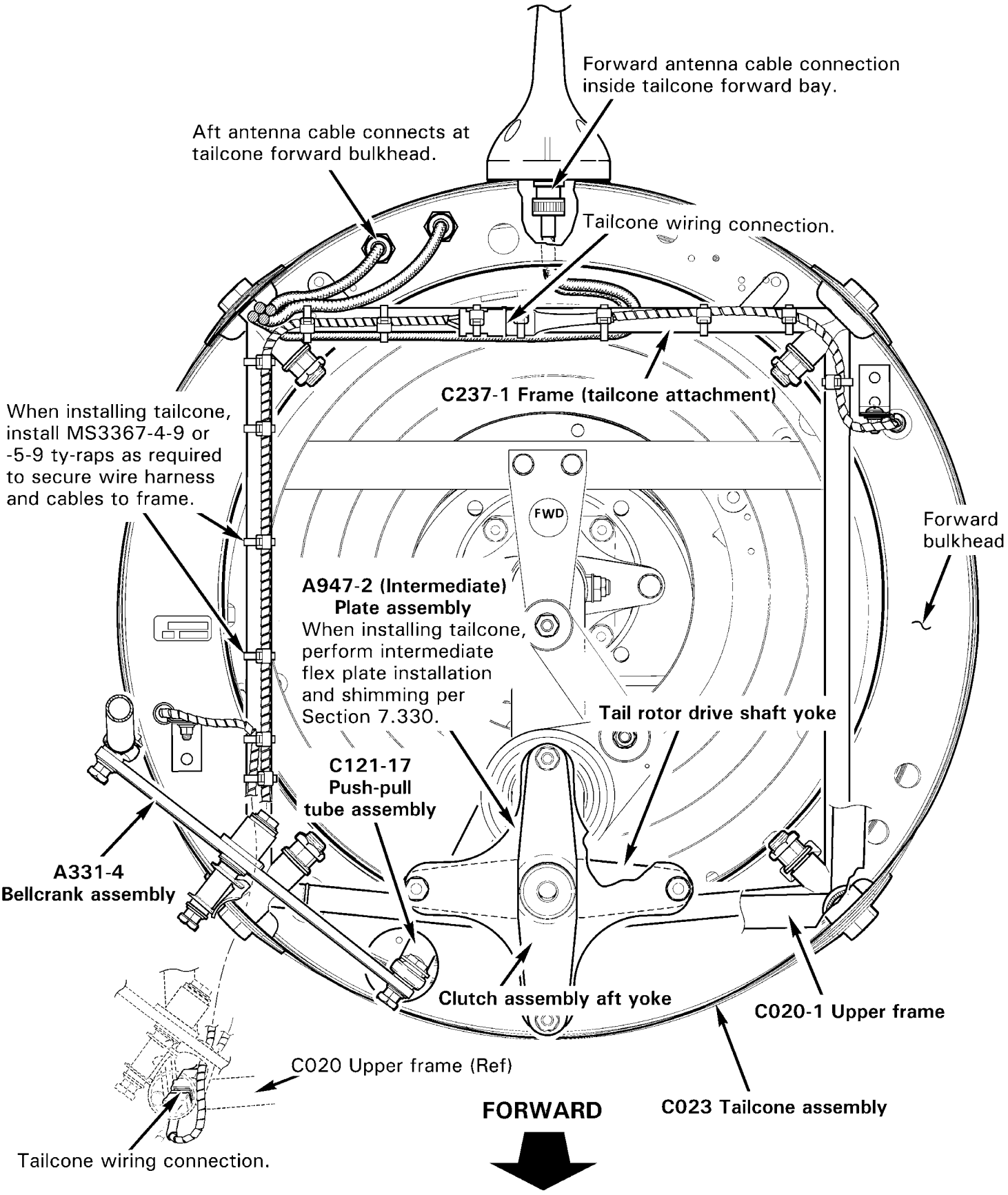


FIGURE 4-3 TAILCONE ASSEMBLY

4.300 Tailcone Assembly

NOTE

Tailcones with F955-1 or -6 bracket may not be installed on R44 I helicopters if C169-1 exhaust muffler assembly (smaller, 6.0-inch diameter shroud assembly) is installed.

CAUTION

If tailcone has an F955-1 or -6 bracket, then F050-2 horizontal stabilizer must be installed.

C044-1 horizontal stabilizer may not be installed on a tailcone that has an F955-1 or -6 bracket.

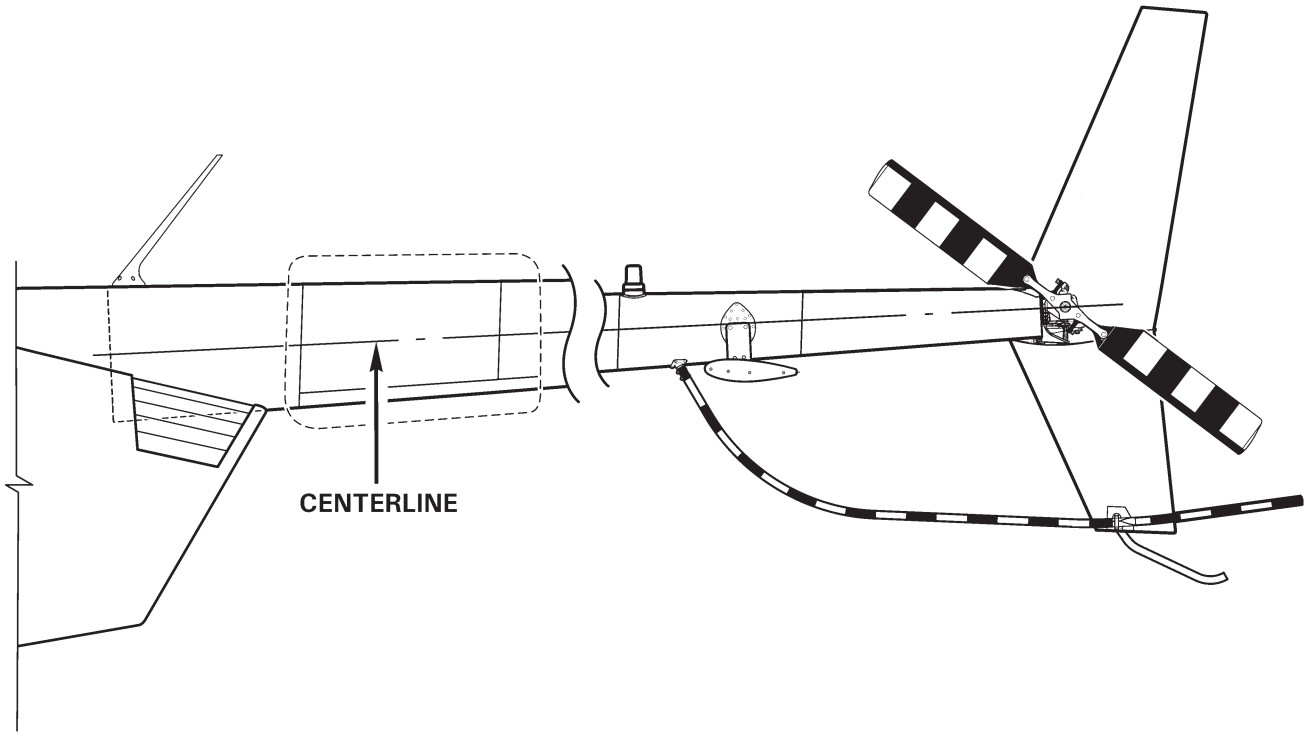
F044-1 vertical stabilizers mount assembly may only be installed on a tailcone that has an F955-1 or -6 bracket.

A. Removal

1. Pull associated circuit breakers for lights and antennas installed on tailcone, and C706-1 tailcone fairing.
2. Remove tailcone fairing and D040-1 aft cowling assemblies.
3. Refer to Figure 4-3. Cut and discard ty-raps as required and disconnect tailcone wiring at connectors. Disconnect two antenna cables inside tailcone forward bay, and cables at forward bulkhead, as required.
4. Remove hardware securing tail rotor drive shaft assembly forward yoke to A947-2 (intermediate) plate assembly. Support drive shaft using a foam block or equivalent, while drive shaft is disconnected from drive train.
5. Remove hardware securing C121-17 push-pull tube to A331-4 bellcrank assembly.
6. Remove hardware securing C023 tailcone assembly to frames and remove tailcone.
7. Cut and discard ty-raps as required and remove C237-1 tailcone-attachment frame, as required.

B. Installation

1. Refer to Figure 4-3. Install C237-1 tailcone-attachment frame, if not previously accomplished. Verify correct damper assembly orientation per Figure 7-11B.
2. Position C023 tailcone assembly on C020-1 upper frame assembly; do not pinch wiring between tailcone forward bulkhead and frames. Install hardware securing tailcone to frames, standard torque bolts per § 23-32, torque stripe per Figure 2-1.
3. Install hardware securing C121-17 push-pull tube to A331-4 bellcrank assembly. Standard torque bolt per § 23-32 and torque stripe per Figure 2-1.
4. Inspect flex plate per Figure 2-5. Perform intermediate flex plate installation and shimming per § 7.330.
5. Perform tail rotor drive shaft runout per § 7.340.



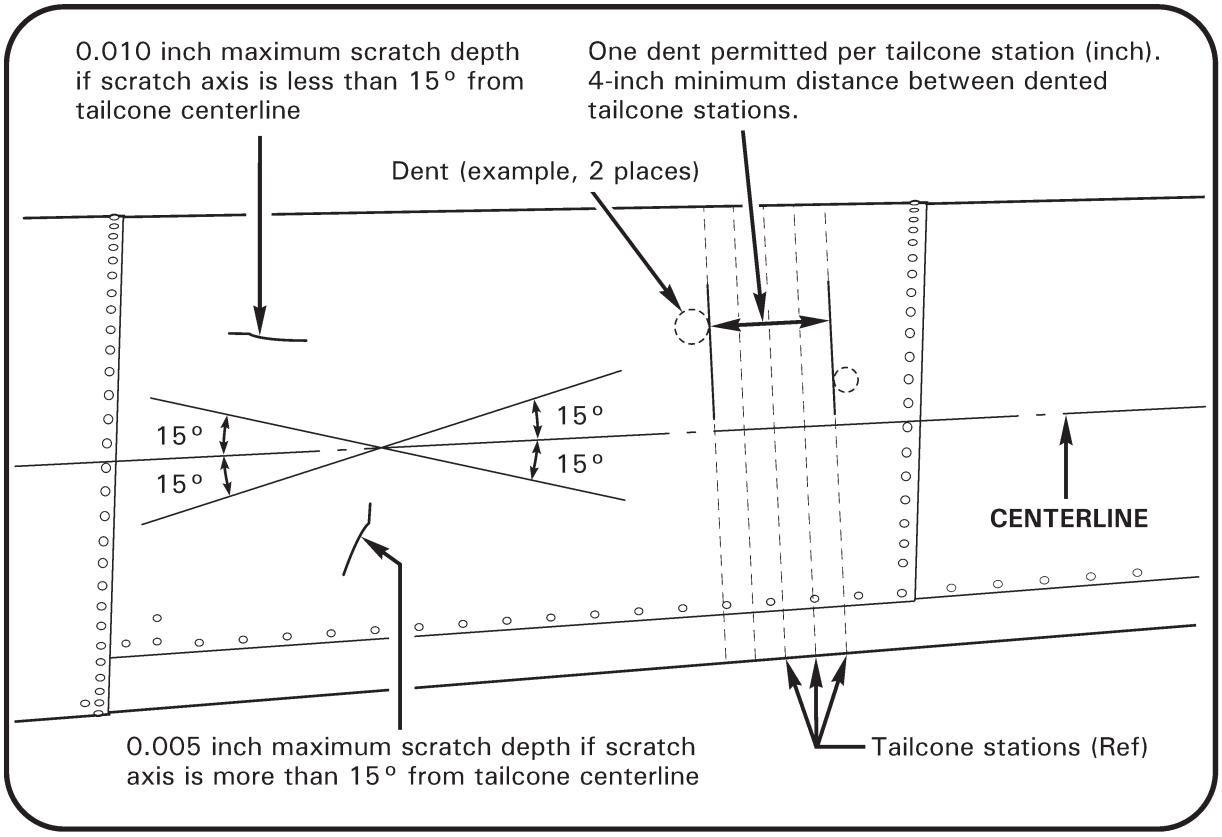


FIGURE 4-4 TAILCONE INSPECTION AND REPAIR

4.300 Tailcone Assembly (continued)

B. Installation (continued)

6. Connect tailcone wiring at connectors, connect two antenna cables inside tailcone forward bay, and connect antenna cables at forward bulkhead, as required. Individually test and verify correct function of tail position light, strobe, and TR chip light circuits.
7. Install MS3367-4-9 or -5-9 ty-raps as required to secure wire harness and cables to frame. Cinch ty-raps until snug without over-tightening, trim tips flush with heads.
8. Install C706-1 tailcone fairing and D040-1 aft cowling assemblies.

4.310 Inspection and Repair

Repairs are limited to blending out scratches within limits and refinishing skins. If allowable damage is exceeded, replace tailcone, or submit tailcone to RHC for repair.

A. Scratches

1. Refer to Figure 4-4. Verify damage does not exceed the following limits:
   a. 0.005 inch maximum scratch depth if scratch axis is more than 15° from tailcone centerline.
   b. 0.010 inch maximum scratch depth if scratch axis is less than 15° from tailcone centerline.
2. If damage exceeds limits, return tailcone assembly to RHC for repair. If damage is within limits, blend out scratches with a 0.10 inch minimum blend radius. Refinish skins using approved materials per § 23-70.

B. Dents

NOTE

0.125 inch minimum radius can be verified with using a 0.250 inch diameter bearing ball: Place bearing ball within dent and back light with lamp; if light is visible between skin & ball (i.e. ball not contacting dent bottom) then dent radius is less than 0.125 inch.

1. Refer to Figure 4-4. Smooth, round bottom dents with 0.125 inch minimum radius without sharp nicks or cracks are acceptable when damage does not exceed the following limits:
   a. 0.030 inch maximum dent depth.
   b. 1.250 inches maximum dent diameter.
   c. One dent permitted per tailcone station (inch).
   d. 4.000 inches minimum distance between dented tailcone stations.
2. If damage exceeds limits, replace tailcone or return to RHC for repair.

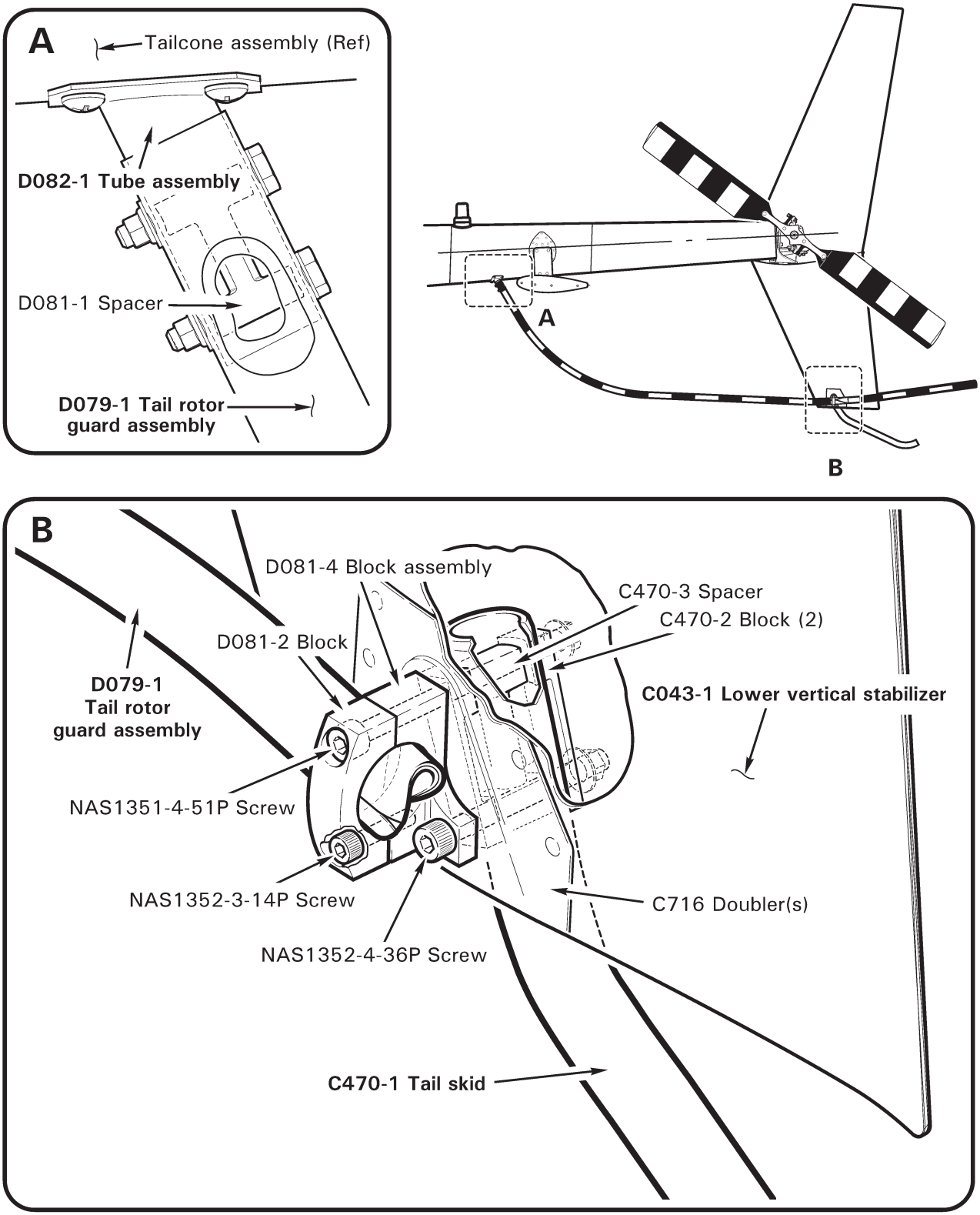


FIGURE 4-5 TAIL ROTOR GUARD ASSEMBLY
(C050-2 float stabilizer assembly not shown)

4.400 Tail Rotor Guard Assembly

A. Removal

1. Refer to Figure 4-5. Loosen two (forward) fasteners securing D081-2 block and D079-1 tail rotor guard assembly to C043-1 lower vertical stabilizer.
2. Remove hardware securing tail rotor guard to D082-1 tube assembly. Slide guard off of tube, then forward through blocks. Remove D081-1 spacer from tube.

B. Installation

1. Refer to Figure 4-5. Loosen two (forward) fasteners securing D081-2 block to C043-1 lower vertical stabilizer, if not previously accomplished. Insert D079-1 tail rotor guard assembly aft through blocks.
2. Install D081-1 spacer inside D082-1 tube assembly and align holes.
3. Lightly coat mating surfaces of tube and tail rotor guard, and retaining hardware bolt shanks, with § 23-70 approved primer. While wet with primer, slide tail rotor guard onto tube and install hardware ensuring bolts engage holes in spacer. Standard torque bolts per § 23-32, and torque stripe per Figure 2-1. Seal around end of tail rotor guard with primer after installation.
4. Verify D081 blocks clamp bonded sleeve on guard. For proper tail rotor guard-to-stabilizer clamping, first standard torque (forward, top) NAS1351-4-51P or -53P screw and associated hardware per § 23-32, then special torque (forward, bottom) NAS1352-3-14P screw and associated hardware per § 23-33. Torque stripe fasteners per Figure 2-1.

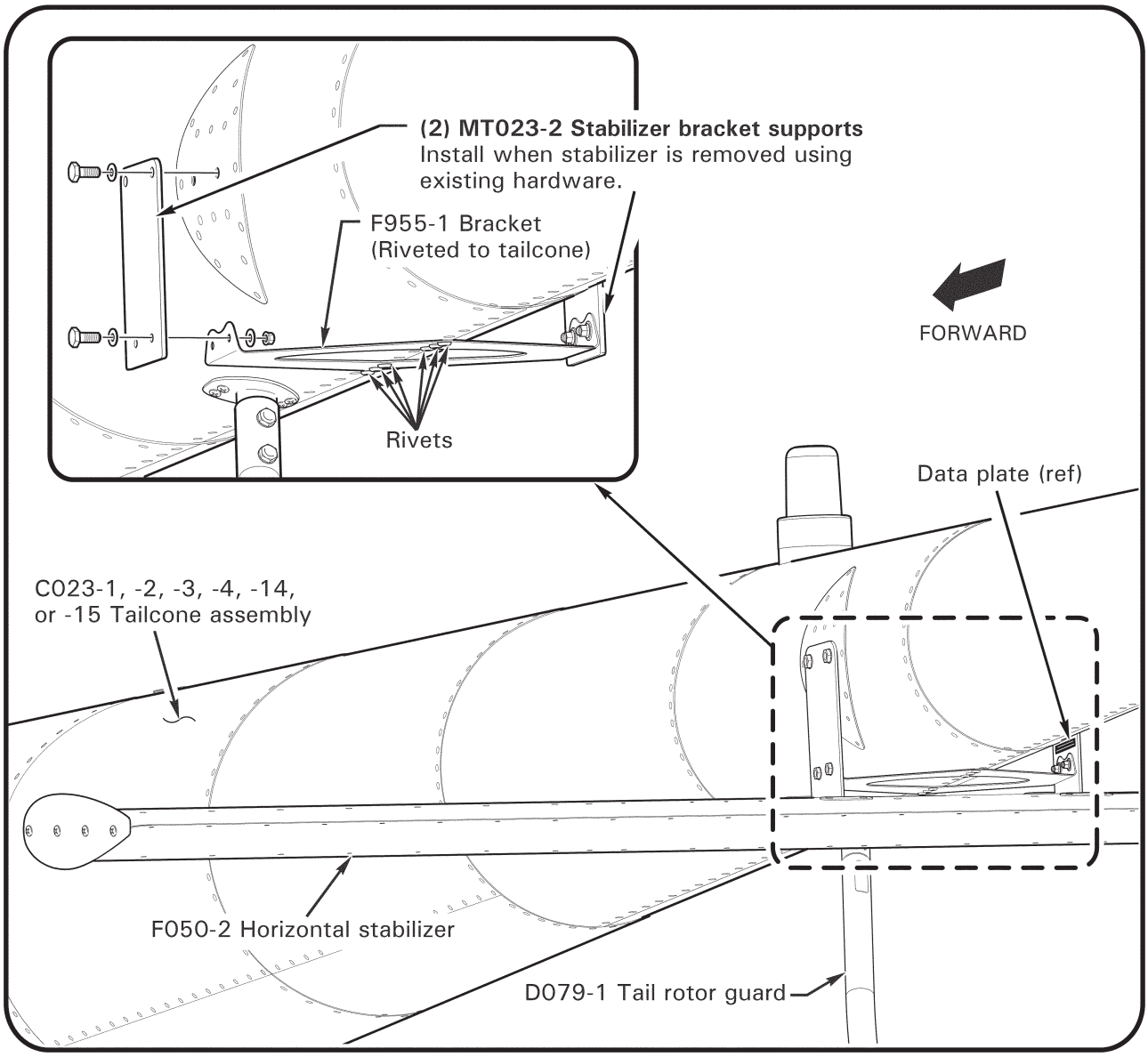


FIGURE 4-6 F050-2 HORIZONTAL STABILIZER ASSEMBLY

4.500 F050-2 Horizontal Stabilizer Assembly

NOTE

Tailcones with F955-1 or -6 bracket may not be installed on R44 I helicopters if C169-1 exhaust muffler assembly (smaller, 6.0-inch diameter shroud assembly) is installed.

CAUTION

If tailcone has an F955-1 or -6 bracket, then F050-2 horizontal stabilizer must be installed.

CAUTION

Support F050-2 horizontal stabilizer assembly during removal or installation when upper bolts are removed. F955-1 or -6 bracket is riveted to bottom of tailcone assembly.

A. Removal

1. Refer to Figure 4-6. Remove hardware securing F050-2 horizontal stabilizer assembly to F955-1 or -6 bracket.
2. Support the stabilizer, remove hardware securing stabilizer to tailcone assembly and remove stabilizer.
3. As required, install MT023-1 stabilizer bracket supports using removed hardware (recommended when stabilizer is removed).

B. Installation

1. If installed, remove hardware securing MT023-2 stabilizer bracket supports to F955-1 or -6 bracket & tailcone assembly and remove supports.
2. Support the F050-2 horizontal stabilizer assembly, install hardware securing stabilizer to tailcone and bracket. Special torque bolts per § 23-33 and torque stripe per Figure 2-1.

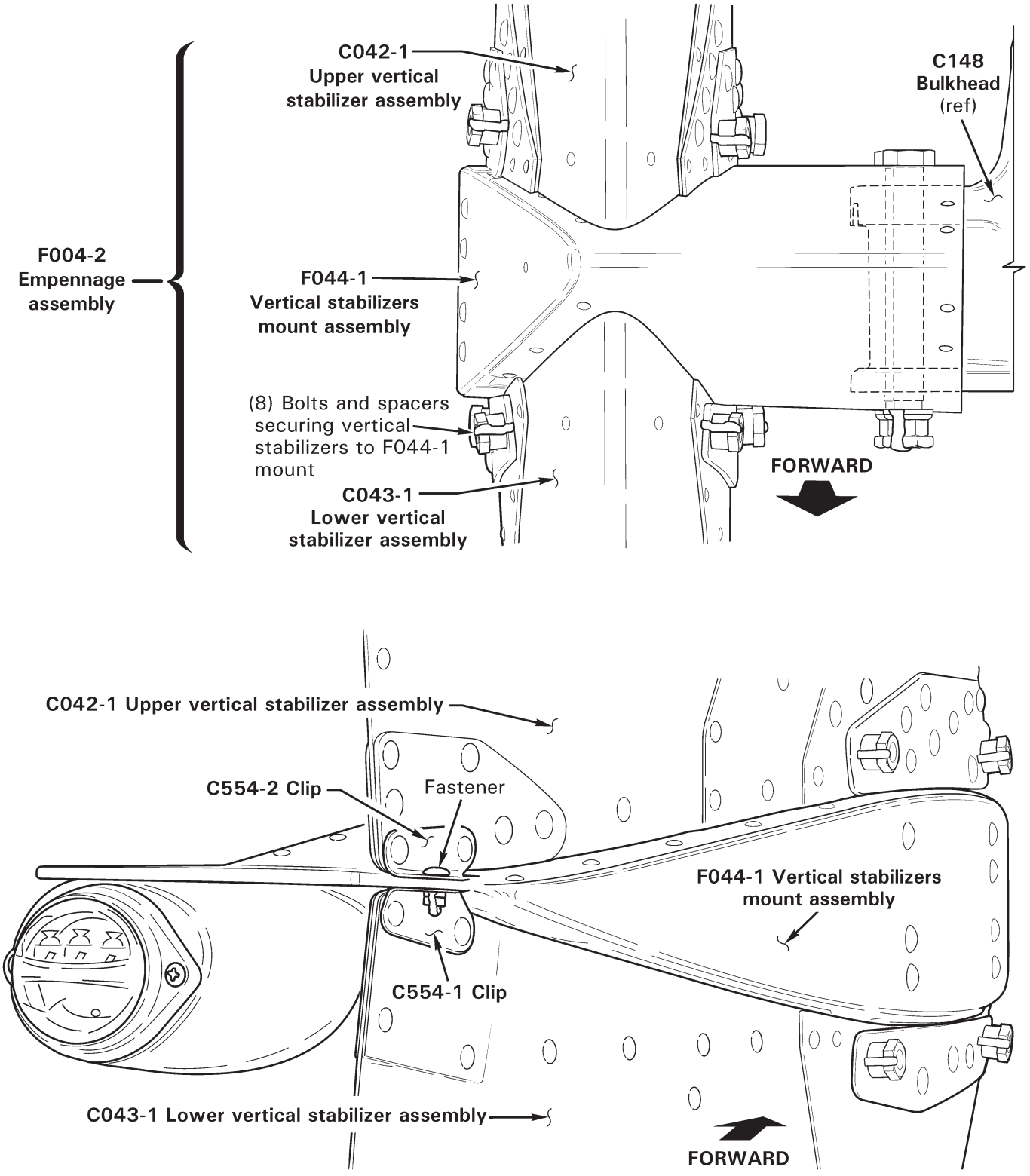


FIGURE 4-7 F004-2 EMPENNAGE ASSEMBLY

4.600 Empennage Assembly

CAUTION

If tailcone has an F955-1 or -6 bracket, then F050-2 horizontal stabilizer must be installed.

C044-1 horizontal stabilizer may not be installed on a tailcone that has an F955-1 or -6 bracket.

F044-1 vertical stabilizers mount assembly may only be installed on a tailcone that has an F955-1 or -6 bracket.

A. Removal

1. Remove tail rotor guard per § 4.400.
2. Remove hardware securing forward clamp, on position light & TGB chip detector wires, to empennage. Cut and discard ty-raps securing position light wire. Disconnect position light wire at connectors.
3. Refer to Figure 4-7 or 4-7A. Support the empennage assembly, remove hardware securing empennage to C148 bulkhead, and remove empennage.

B. Installation

1. Refer to Figure 4-7 or 4-7A. Position empennage assembly on C148 bulkhead.
   a. **If D301 (empennage ballast; ref. § 18-32) weights will not be installed:** Install (2) NAS6606-47 (or -48) bolts & associated hardware securing empennage to C148 bulkhead. Use as many NAS1149F0663P washers under nut as required to meet § 23-30 Part E.5. Standard torque bolts and palnuts per § 23-32 and torque stripe per Figure 2-1.
   b. **If D301 (empennage ballast; ref. § 18-32) weights will be installed:** Install (2) NAS6606-78 bolts & associated hardware securing empennage to C148 bulkhead. Use (1) or (2) NAS1149F0663P washers under nut as required to meet § 23-30 Part E.5; 1–4 threads may be exposed beyond primary nut. Standard torque bolts and palnuts per § 23-32 and torque stripe per Figure 2-1.
2. Connect position light wire connectors. Install forward clamp on position light & TGB chip detector wires and secure to empennage with hardware. Install ty-raps as required to secure wires and connectors together. Cinch ty-raps until snug without over-tightening, and trim tips flush with heads.
3. Test and verify correct function of position and TR chip light circuits.
4. Install tail rotor guard per § 4.400.

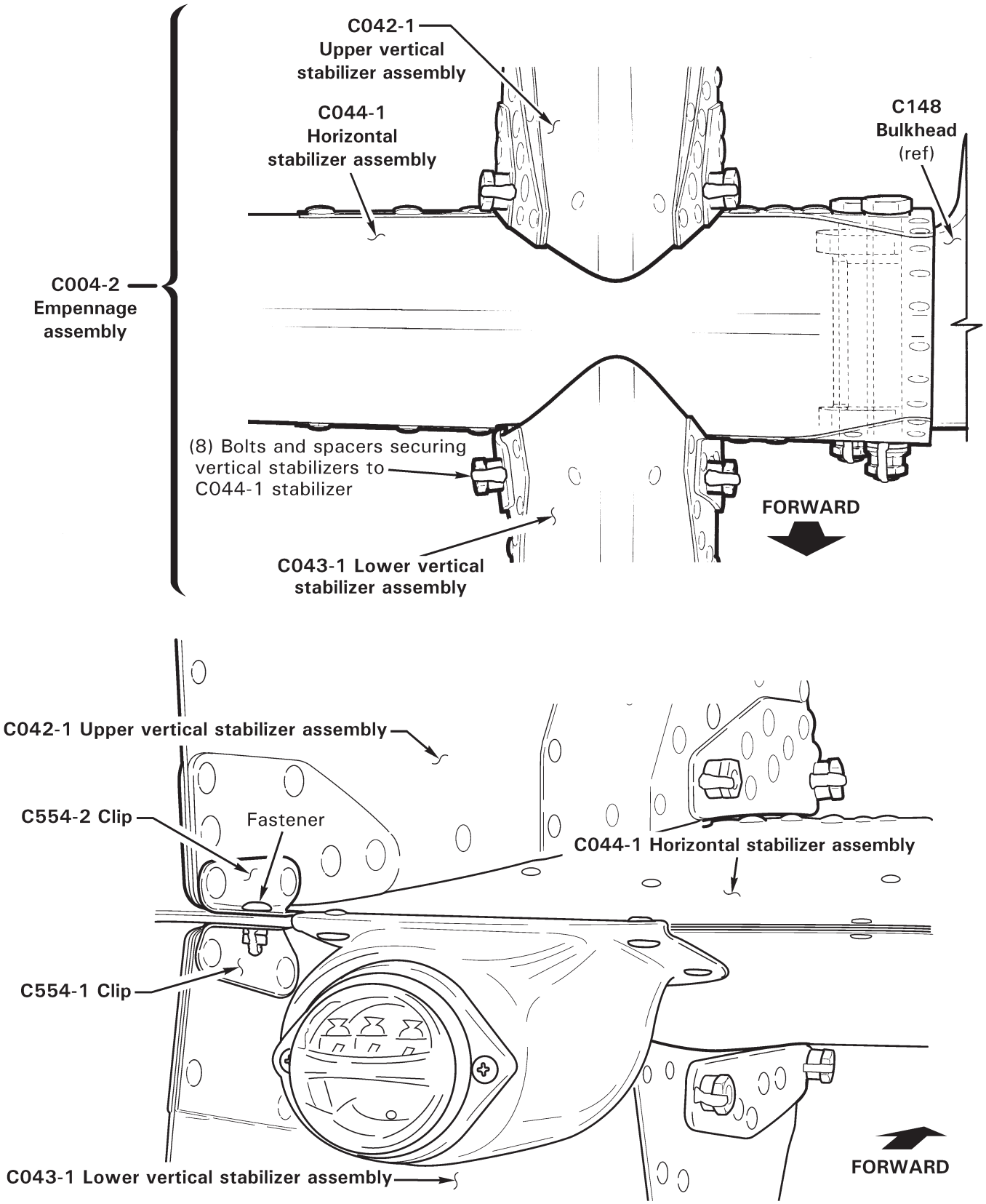


FIGURE 4-7A C004-2 EMPENNAGE ASSEMBLY

4.610 Upper Vertical Stabilizer Assembly

A. Removal

1. Refer to Figure 4-7 or 4-7A. Remove fastener securing C554-1 & -2 clips.
2. Support the C042-1 upper vertical stabilizer, remove (4) bolts & spacers securing stabilizer and remove stabilizer.
3. If replacing C042-1 stabilizer, C554-2 clip may be reused. Drill out two rivets securing clip to C042-1 stabilizer and remove clip.

B. Installation

1. Refer to Figure 4-7 or 4-7A. Position C042-1 upper vertical stabilizer assembly on mounting channels and align holes. Verify 0.030–0.120 inch gap between vertical stabilizer bottom edge and adjacent skin. File vertical stabilizer bottom edge as required. Conversion coat & prime bare aluminum edges per §§ 23-51 & 23-60.
2. Install bolts & spacers securing vertical stabilizer to mounting channels. Special torque bolts per § 23-33 and torque stripe per Figure 2-1.
3. Install fastener securing C554-1 & -2 clips. If reusing C554-2 clip, install clip and fastener, and match drill clip to vertical stabilizer with #30 drill. Deburr holes and install rivets. Torque stripe fastener per Figure 2-1.

4.620 Lower Vertical Stabilizer Assembly

A. Removal

1. Remove tail rotor guard per § 4.400.
2. Refer to Figure 4-7 or 4-7A. Remove fastener securing C554-1 & -2 clips.
3. Support the C043-1 lower vertical stabilizer, remove (4) bolts & spacers securing stabilizer and remove stabilizer.
4. As required, remove (pop-out or fixed floats) C050-2 float stabilizer per § 4.700 and tail skid per § 4.800.
5. If replacing C043-1 stabilizer, C554-1 clip may be reused. Drill out two rivets securing clip to C043-1 stabilizer and remove clip.

B. Installation

1. Refer to Figure 4-7 or 4-7A. Position C043-1 lower vertical stabilizer assembly on mounting channels and align holes. Verify 0.030–0.120 inch gap between vertical stabilizer upper edge and adjacent skin. File vertical stabilizer upper edge as required. Conversion coat & prime bare aluminum edges per §§ 23-51 & 23-60.
2. Install bolts & spacers securing vertical stabilizer to mount (or C044-1 stabilizer). Special torque bolts per § 23-33 and torque stripe per Figure 2-1.
3. Install fastener securing C554-1 & -2 clips. If reusing C554-1 clip, install clip and fastener, and match drill clip to vertical stabilizer with #30 drill. Deburr holes and install rivets. Torque stripe fastener per Figure 2-1.
4. Install (pop-out or fixed floats) C050-2 float stabilizer per § 4.700, as required. Install tail skid per § 4.800, if removed.
5. Install tail rotor guard per § 4.400.

4.630 F044-1 Vertical Stabilizers Mount Assembly

A. Removal

1. Remove C042-1 & C043-1 vertical stabilizer assemblies per §§ 4.610 & 4.620.
2. Remove hardware securing forward clamp to F044-1 vertical stabilizers mount assembly. Cut and discard ty-raps securing position light and gearbox chip detector wires and connectors together. Disconnect position light at connectors.
3. Support the mount assembly, remove hardware securing mount to C148 bulkhead and remove mount.

B. Installation

CAUTION

F044-1 vertical stabilizers mount assembly may only be installed on a tailcone that has an F955-1 or -6 bracket.

1. Position F044-1 vertical stabilizers mount assembly on C148 bulkhead.
   a. **If D301 (empennage ballast; ref. § 18-32) weights will not be installed:** Install (2) NAS6606-47 (or -48) bolts & associated hardware securing empennage to C148 bulkhead. Use as many NAS1149F0663P washers under nut as required to meet § 23-30 Part E.5. Standard torque bolts and palnuts per § 23-32 and torque stripe per Figure 2-1.
   b. **If D301 (empennage ballast; ref. § 18-32) weights will be installed:** Install (2) NAS6606-78 bolts & associated hardware securing empennage to C148 bulkhead. Use (1) or (2) NAS1149F0663P washers under nut as required to meet § 23-30 Part E.5; 1–4 threads may be exposed beyond primary nut. Standard torque bolts and palnuts per § 23-32 and torque stripe per Figure 2-1.
2. Install C042-1 & C043-1 vertical stabilizer assemblies per §§ 4.610 & 4.620.
3. If mount assembly was replaced, match drill C554-1 & -2 clips 0.144-inch diameter hole through mount. Deburr hole and install fastener.
4. Connect position light at connectors. Install hardware securing forward clamp to mount assembly. Install MS3367-4-9 or -5-9 ty-raps as required to secure position light and gearbox chip detector wires and connectors together. Cinch ty-raps until snug without over-tightening, and trim tips flush with heads.
5. Test and verify correct function of position and TR chip light circuits.

4.640 C044-1 Horizontal Stabilizer

A. Removal

1. Remove C042-1 & C043-1 vertical stabilizer assemblies per §§ 4.610 & 4.620.
2. Remove hardware securing forward clamp to C044-1 horizontal stabilizer assembly. Cut and discard ty-raps securing position light and gearbox chip detector wires and connectors together. Disconnect position light at connectors.
3. Support the stabilizer, remove hardware securing stabilizer to C148 bulkhead and remove stabilizer.

B. Installation

CAUTION

C044-1 horizontal stabilizer may not be installed on a tailcone that has an F955-1 or -6 bracket.

1. Position C044-1 horizontal stabilizer assembly on C148 bulkhead.
   a. **If D301 (empennage ballast; ref. § 18-32) weights will not be installed:** Install (2) NAS6606-47 (or -48) bolts & associated hardware securing empennage to C148 bulkhead. Use as many NAS1149F0663P washers under nut as required to meet § 23-30 Part E.5. Standard torque bolts and palnuts per § 23-32 and torque stripe per Figure 2-1.
   b. **If D301 (empennage ballast; ref. § 18-32) weights will be installed:** Install (2) NAS6606-78 bolts & associated hardware securing empennage to C148 bulkhead. Use (1) or (2) NAS1149F0663P washers under nut as required to meet § 23-30 Part E.5; 1–4 threads may be exposed beyond primary nut. Standard torque bolts and palnuts per § 23-32 and torque stripe per Figure 2-1.
2. Install C042-1 & C043-1 vertical stabilizer assemblies per §§ 4.610 & 4.620.
3. If horizontal stabilizer was replaced, match drill C554-1 & -2 clips 0.144-inch diameter hole through horizontal stabilizer. Deburr hole and install fastener.
4. Connect position light at connectors. Install hardware securing forward clamp to horizontal stabilizer. Install MS3367-4-9 or -5-9 ty-raps as required to secure position light and gearbox chip detector wires and connectors together. Cinch ty-raps until snug without over-tightening, and trim tips flush with heads.
5. Test and verify correct function of position and TR chip light circuits.

4.640 C044-1 Horizontal Stabilizer (continued)

C. Repair

A single dent on C044-1 horizontal stabilizer leading edge outboard of vertical stabilizers is permitted provided:

1. Dent is no more than 0.050 inch deep.
2. Dent must have a smooth bottom, with minimum 0.125-inch radius, and no sharp nicks or cracks.
3. Dent must be less than 1.25 inches spanwise.
4. It is permissible to remove above dent via metalworking.

Depending on the damage, U.S. FAA AC (Advisory Circular) 43.13-1B may be used to repair some horizontal stabilizer minor skin damage; refer to the AC's Title Page for limitations. Use only 0.020-inch thick 2024T3 aluminum sheet for repairs; do not use thicker sheet. Skin replacement, damage to spars, and either forward or middle attachment for vertical stabilizers, is not field repairable.

To inspect spars, remove NAS1919B04S01 rivets securing D292-3 outboard rib. Only the inboard D292-2 nose rib or D292-3 outboard tip rib may be field replaced; all other parts require use of the factory jig.

4.700 C050-2 Float Stabilizer Assembly (Pop-Out or Fixed Floats)

CAUTION

C050-2 stabilizer must be installed if helicopter is equipped with pop-out or fixed floats.

A. Removal

1. Remove tail skid per § 4.800.
2. Using plastic scraper, remove sealant around edges where C050-2 float stabilizer assembly brackets attach to C043-1 lower vertical stabilizer assembly doublers. Remove C050-2 float stabilizer.

B. Installation

1. Position C050-2 float stabilizer on C043-1 lower vertical stabilizer. Install tail skid per § 4.800.
2. Seal C050-2 float stabilizer bracket edges to lower vertical stabilizer assembly doublers using B270-1 sealant.

4.800 Tail Skid

A. Removal

1. Refer to Figure 4-5. Support D079-1 tail rotor guard assembly. Remove hardware securing D081-2 block to C043-1 lower vertical stabilizer assembly and remove block.
2. Support C050-2 float stabilizer assembly, if installed, and C470-1 tail skid. Remove hardware securing D081-4 block assembly to C043-1 stabilizer and remove block.
3. Remove C470-1 tail skid from C043-1 stabilizer. Remove C470-3 spacer from skid, as required. Support tail rotor guard and float stabilizer while hardware is removed.

B. Installation

1. Refer to Figure 4-5. As required, install C470-3 spacer inside C470-1 tail skid wet with epoxy primer. Position tail skid inside C043-1 lower vertical stabilizer, position D081-4 block assembly and install hardware securing block assembly to stabilizer but do not torque at this time.
2. Position D079-1 tail rotor guard assembly & D081-2 block, install hardware securing block to stabilizer. Verify D081-2 & -4 blocks clamp tail rotor guard sleeve. For proper tail rotor guard-to-stabilizer clamping, first standard torque hardware securing tail skid per § 23-32, then special torque screw securing D081-2 block to D081-4 block per § 23-33. Torque stripe fasteners per Figure 2-1.