

ROBINSON HELICOPTER COMPANY

R66 MAINTENANCE MANUAL AND INSTRUCTIONS FOR CONTINUED AIRWORTHINESS RTR 660 VOLUME I

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1-80 Assembly Instructions for R66 Helicopter Crated for Export (continued)

28. Depreserve the engine after storage per RR300 Series Operation and Maintenance Manual (OMM). Install starter-generator cooling hose. Install engine cowling per § 53-21.
29. Install tail rotor dynamic balance equipment per § 18-21.
30. Perform run-up per § 5-42 steps 2 thru 16.
31. Perform tail rotor dynamic balance per § 18-20.
32. Remove tail rotor dynamic balance equipment. Install main rotor balance equipment per § 18-11.

CAUTION

Mast fairing, cowlings, and panels must be installed for flight.
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33. Perform hover checks per § 5-43 step 1. DO NOT proceed into forward flight.
34. Track and balance main rotor per § 18-12.
35. While climbing at maximum continuous torque, 60 KIAS:
 - a. Evaluate vibration level and controllability.
 - b. Perform momentary 30° left yaw to check for adequate directional control.
36. Level flight at typical cruise altitude (deviate as required for weather and terrain), maximum continuous torque:
 - a. Evaluate longitudinal and lateral cyclic control forces.
 - b. Evaluate collective control forces.
37. Evaluate vibration level at maximum continuous torque and straight-and-level flight.
38. During autorotation at 50 KIAS and 90% rotor RPM, perform momentary 30° right yaw to check for adequate directional control.
39. Check all instruments, gages, and avionics for proper operation.

<p>TABLE 1 SCHEDULED INSPECTIONS</p> <p>Consult latest revision of listed publications for specific applicability.</p>	First 100 Hours*	100 Hours**	200 Hours**	300 Hours**	400 Hours**	600 Hours**	1000 Hours**	2000 Hours**	12 Months**	24 Months**	5 Years**	6 Years**	12 Years**	15 Years**	3000 Cycles**
	Replace main gearbox oil filter per § 12-12.	•					•								
Perform 100-hour / annual inspection per § 5-45.		•							•						
Perform main rotor blade tip maintenance per § 62-60.		•													
As required by RR300 Series Operation and Maintenance Manual (OMM), perform maintenance and inspection.			•		•			•	•						•
Service inlet barrier filter per § 71-21.				•					•						
Replace both 9v back-up batteries under LH front seat (ships with Lithium-ion main battery only).									•						
Replace main gearbox oil per § 12-11.						•									
Drain and flush tail rotor gearbox per § 12-23.						•									
Replace hydraulic filter per § 12-32.						•									
Clean gearbox chip detectors per § 12-13 & 12-22.						•			•						
Lubricate swashplate bearings per § 12-90.							•					•			
Perform 2000-hour/12-year inspection per § 5-50.								•					•		
Perform main gearbox internal visual inspection per § 5-74.									•						
Perform pop-out float leak check per § 32-64 Part A.									•						
Test and inspect transponder per 14 CFR § 91.413. (U.S.-registered helicopters only).										•					
Perform pop-out float inflation check per § 32-64 Part B.											•				
Perform pop-out float pressure cylinder hydrostatic test (per U.S. DOT-SP 10915).											•				
Pop-out float pressure cylinder maximum life.														•	

* One-time maintenance after new or overhauled main rotor gearbox is installed.

** Recurring inspection not to exceed given interval.

5-43 Flight Check**1. _____ Hover:**

- a. _____ Verify normal gage indications.
- b. _____ Verify controllability in left and right pedal turns.
- c. _____ Verify hydraulic system zeros cyclic stick forces.
- d. _____ Evaluate vibration levels; if unacceptable, measure imbalance and correct.

2. _____ Level Flight:

Conduct at typical cruise altitude (weather permitting) and maximum continuous torque. Loading to typical operating conditions or nominal weight and CG in middle of envelope will provide the most useful evaluation.

- a. _____ Verify tail rotor pedal position when yaw string is centered. Right pedal 0.25 to 0.75 inch forward of left pedal.
- b. _____ Verify tail rotor elastic trim cord zeros pedal forces (cord applies left pedal force).
- c. _____ Verify hydraulic system zeros cyclic stick forces and collective is balanced with no feedback.
- d. _____ Verify acceptable control forces (feedback) with hydraulics off.
- e. _____ Evaluate vibration levels; if unacceptable, measure imbalance and correct.

5-43 Flight Check (continued)

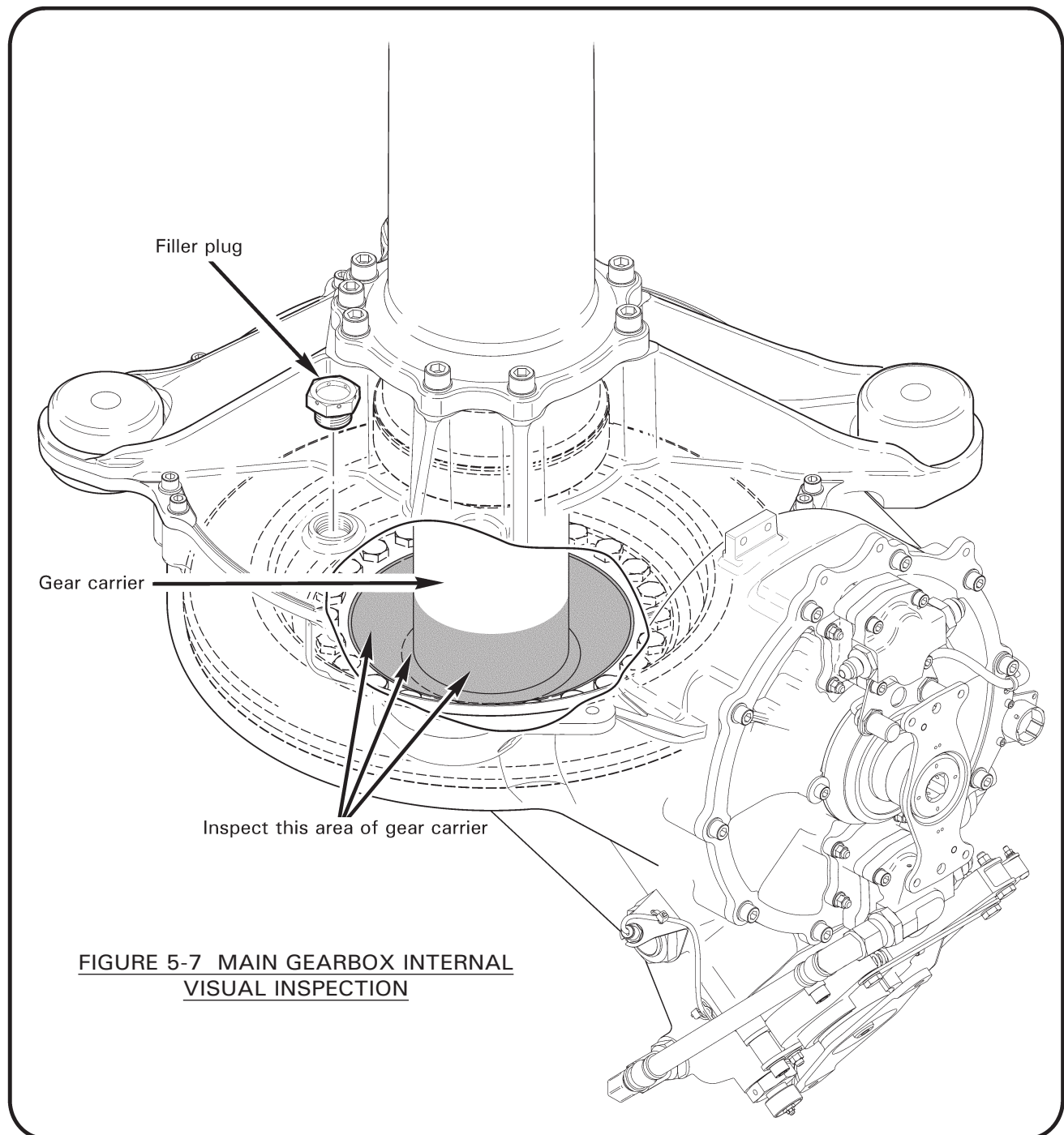
3. _____ **Power Assurance Check:**

Refer to R66 Pilot's Operating Handbook (POH) Chapter 5 power assurance chart. Conduct at typical cruise altitude (weather permitting) and maximum continuous torque (83%). Turn heater, generator, and anti-ice switches OFF. Stabilize N2/R at 100% (beep as required) and record the following values:

- a. _____ N1
- b. _____ % Torque (83% nominal)
- c. _____ OAT
- d. _____ MGT
- e. _____ Pressure altitude
- f. _____ Oil pressure
- g. _____ Oil temperature
- h. _____ Determine max allowable MGT from power assurance chart.
- i. _____ Calculate margin. $\text{Margin} = \text{Max allowable MGT} - \text{Indicated MGT}$.

4. _____ **Shutdown:**

- a. _____ Perform POH "Shutdown Procedure" checklist.
- b. _____ Verify rotor brake function and ROTOR BRAKE annunciator segment illuminates.



**FIGURE 5-7 MAIN GEARBOX INTERNAL
VISUAL INSPECTION**

5-74 Main Rotor Gearbox Internal Visual Inspection

1. Refer to Figure 5-7. Gain access to and remove main gearbox filler plug.
2. Via filler plug hole and using borescope, miniature camera, or smartphone camera with flash, visually inspect specified area of gear carrier. Rotate gearbox by hand-turning main or tail rotor as required to view entire circumference.
3. If no corrosion or paint bubbling is evident, install filler plug & special torque per § 20-33.
4. If corrosion or paint bubbling is detected, contact RHC Technical Support.

5-75 Inspection After Stabilizer Damage

For damage to an installed C042-1 upper vertical stabilizer, C043-1 lower vertical stabilizer, and/or C044 horizontal stabilizer that results in denting, tearing, or cracking of stabilizer metal, or if a tail skid strike has occurred, perform the following:

1. On associated tailcone's aft C148 bulkhead, strip paint from cross-hatched surfaces shown in Figure 5-8 using § 20-71 approved materials.
2. Perform fluorescent penetrant inspection (FPI) per § 20-42 of stripped surfaces. Replace tailcone if crack is indicated.
3. Conversion coat bare aluminum per § 20-51, as required. Epoxy prime (chromated-epoxy primer preferred) & topcoat stripped surfaces per § 20-60.

NOTE

Do not apply primer or topcoat to tail rotor gearbox attachment surfaces.

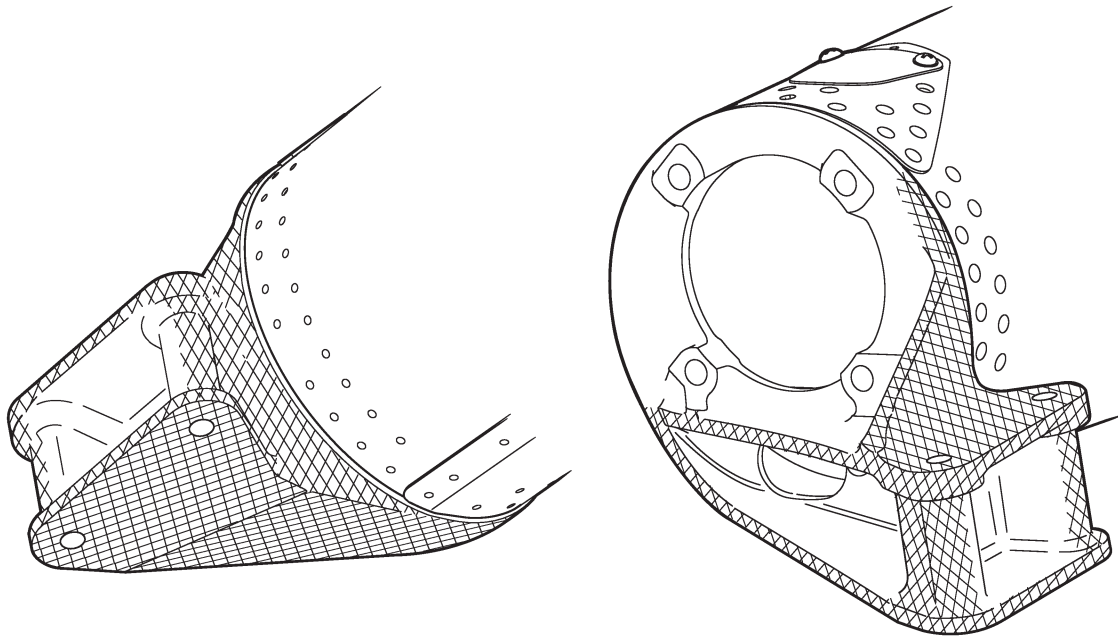


FIGURE 5-8 CROSS-HATCHED SURFACES OF TAILCONE'S AFT BULKHEAD

8-32 Empennage Ballast (continued)

B. Installation

CAUTION

Maximum allowable empennage ballast is 9.0 lb (except Police and E.N.G. Versions). One upper and one lower weight are required. Available combinations provide total weight of 3.0, 6.0, & 9.0 lb.

1. Remove C004-2, C004-3, or F004-2 empennage assembly per § 53-70.
2. Solvent-clean around and between 0.375 inch diameter holes on upper & lower surfaces of F044-1 vertical stabilizers mount assembly or C044-1 or -2 horizontal stabilizer, as applicable.
3. Temporarily position correct combination of two D301-2, -4, or -8 weights on mount assembly (or horizontal stabilizer) using two NAS6606-78 bolts & associated hardware, finger tight.
4. Trace outline of weights onto mount assembly (or horizontal stabilizer) upper & lower surfaces using felt-tip marker or tape. Remove weights.
5. Remove paint within traced outlines on mount assembly (or horizontal stabilizer) using approved stripper (ref. § 20-71), or by block sanding (to maintain flatness) using 320-grit or finer aluminum-oxide abrasive sandpaper.
6. Remove tracing tape, if installed. Solvent-clean bare metal on mount assembly (or horizontal stabilizer) & weight clamping surfaces. Conversion coat upper & lower bare metal surfaces of mount assembly (or horizontal stabilizer) per § 20-51.
7. Apply approved chromated-epoxy primer (ref. § 20-75) per § 20-60 to bare metal clamping surfaces of weights and mount assembly (or horizontal stabilizer). While primer is still wet, install empennage assembly per § 53-70.
8. As required, apply primer and topcoat to exposed hardware.
9. As required, apply A257-18 to O-ring and install two AN814-10D plugs on upper weight only (except D301-2 weights). Special torque plugs per § 20-33 and torques stripe per Figure 5-1.
10. Weigh helicopter or calculate basic empty weight and CG per § 8-22.
11. Revise Weight and Balance Record in R66 Pilot's Operating Handbook (POH) Section 6 to reflect ballast installation using Table 8-1.

Item	Weight	Longitudinal Arm	Longitudinal Moment	Lateral Arm	Lateral Moment
Empennage Ballast	3.0 lb	325.4 in.	976.2 in.-lb	4.45 in.	13.35 in.-lb
	6.0 lb	325.4 in.	1952.4 in.-lb	4.45 in.	26.70 in.-lb
	9.0 lb	325.4 in.	2928.6 in.-lb	4.45 in.	40.05 in.-lb

TABLE 8-1 EMPENNAGE BALLAST WEIGHT AND BALANCE

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CHAPTER 53

FUSELAGE

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53-74	C044-1 or -2 Horizontal Stabilizer	53.26
53-80	C050-2 or G950-2 Horizontal Stabilizer	53.29
53-90	Tail Skid	53.29

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53-40 Tailcone Assembly**CAUTION**

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

C044-1 or -2 horizontal stabilizer may not be installed on a tailcone that has an F955-1 bracket.

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

As applicable, C050-2 or G950-2 stabilizer must always be installed.

A. Removal

1. Remove tailcone cowling assembly per § 53-23. Remove engine cowling assembly per § 53-21.
2. Refer to Figure 53-4. 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.
3. Remove hardware securing D224 tail rotor drive shaft yoke to C947-3 (intermediate) plate assembly, noting hardware removed.
4. Remove hardware securing C121-17 push-pull tube to A331-4 bellcrank assembly.
5. Remove hardware securing C023 tailcone assembly to frames and remove tailcone.
6. Cut and discard ty-raps as required and remove F237-1 tailcone attachment frame, as required.

B. Installation

1. Refer to Figure 53-4. Install F237-1 tailcone attachment frame, if not previously accomplished. Verify correct damper assembly orientation per Figure 65-3.
2. Position C023 tailcone assembly on F020-1 upper frame assembly; do not pinch wiring between tailcone bulkhead and frames. Install hardware securing tailcone to frames, standard torque bolts per § 20-32, and torque stripe per Figure 5-1.
3. Install hardware securing D224 tail rotor drive shaft yoke to C947-3 (intermediate) plate assembly. Shim tail rotor driveline per § 65-30. Standard torque bolts per § 20-32, and torque stripe per Figure 5-1.
4. Install hardware securing C121-17 push-pull tube to A331-4 bellcrank assembly. Standard torque bolt per § 20-32, and torque stripe per Figure 5-1.
5. Perform tail rotor drive shaft runout per § 65-21.

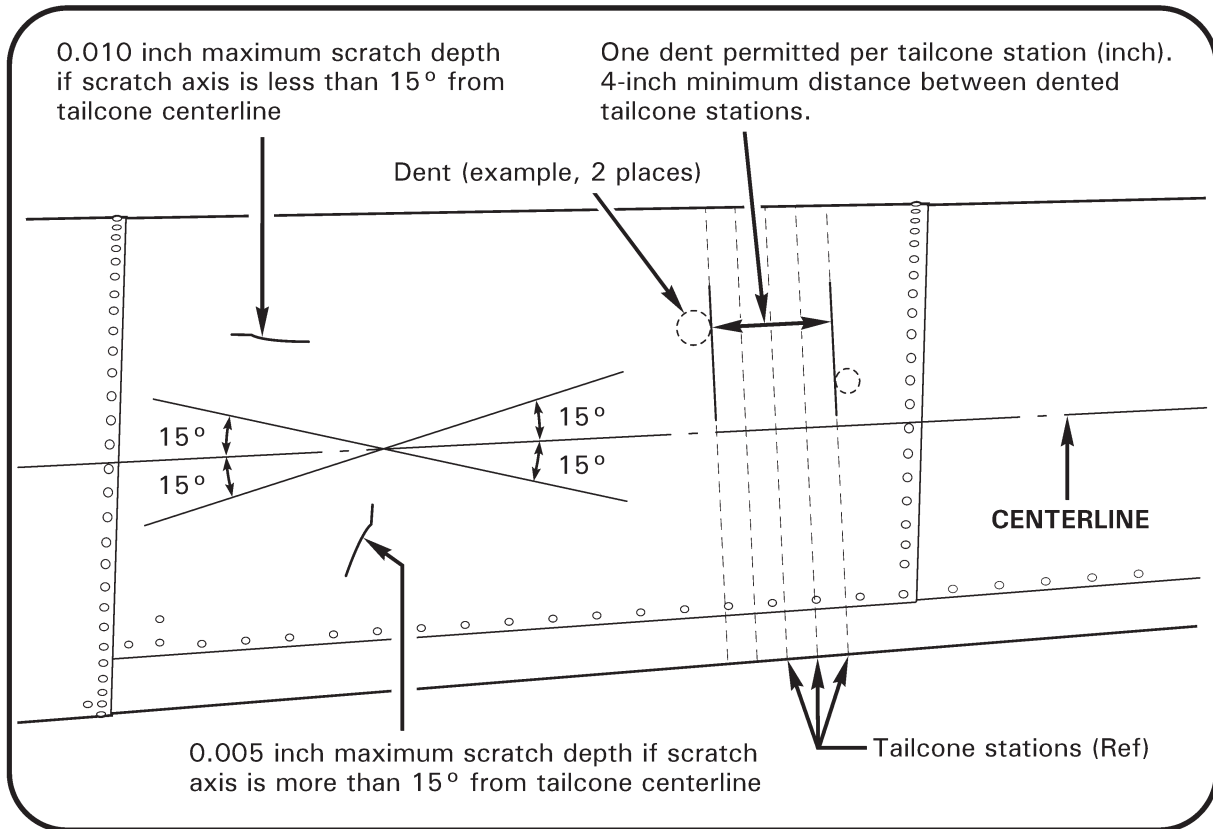
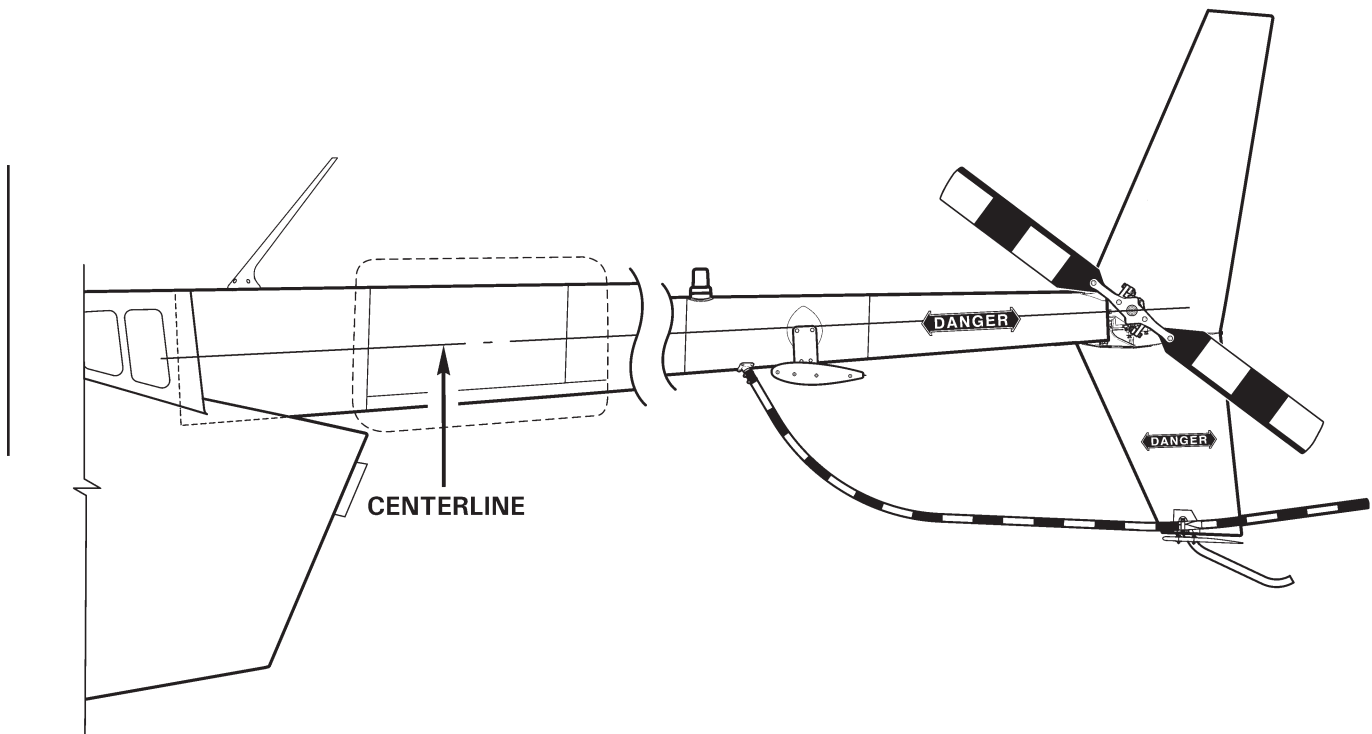


FIGURE 53-5 TAILCONE INSPECTION AND REPAIR

53-40 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 tailcone cowling assembly per § 53-23. Install engine cowling assembly per § 53-21.

53-41 Inspection and Repair

This procedure outlines the inspection criteria and repair limits for the tailcone assembly. Repairs are limited to blending out scratches and refinishing skins. Contact RHC Technical Support if allowable damage is exceeded.

A. Scratches

1. Refer to Figure 53-5. 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 § 20-70.

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 53-5. 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 inch maximum dent diameter.
 - c. One dent permitted per tailcone station (inch).
 - d. 4.000 inch minimum distance between dented tailcone stations.
2. If damage exceeds limits, replace tailcone or return to RHC for repair.

53-50 Tail Rotor Guard Assembly**A. Removal**

1. Refer to Figure 53-8. Loosen two (forward) fasteners securing D081-2 block and D079-1 guard assembly to C043-1 lower vertical stabilizer.
2. Remove hardware securing guard to D082-1 tube assembly. Slide guard off of tube, then forward through blocks. Remove D081-1 spacer from tube.

B. Installation**CAUTION**

Do not install D079-1 revision U or prior tail rotor guard assembly on R66 helicopters.

1. Refer to Figure 53-8. Loosen two (forward) fasteners securing D081-2 block to C043-1 lower vertical stabilizer, if not previously accomplished. Insert D079-1 guard assembly aft through blocks.
2. Lightly coat retaining hardware and mating surfaces of D082-1 tube assembly and D079-1 guard assembly with § 20-70 approved primer, prior to installation.
3. Install D081-1 spacer inside tube. While wet with primer, slide guard onto tube and install hardware. Standard torque bolts per § 20-32, and torque stripe per Figure 5-1. Seal around end of guard with primer after assembly.
4. Verify D081 blocks clamp guard sleeve. For proper guard-to-stabilizer clamping, first standard torque (forward, top) NAS1351-4-53P screw and associate hardware per § 20-32, then special torque (forward, bottom) NAS1352-3-14P screw and associate hardware per § 20-33. Torque stripe fasteners per Figure 5-1.

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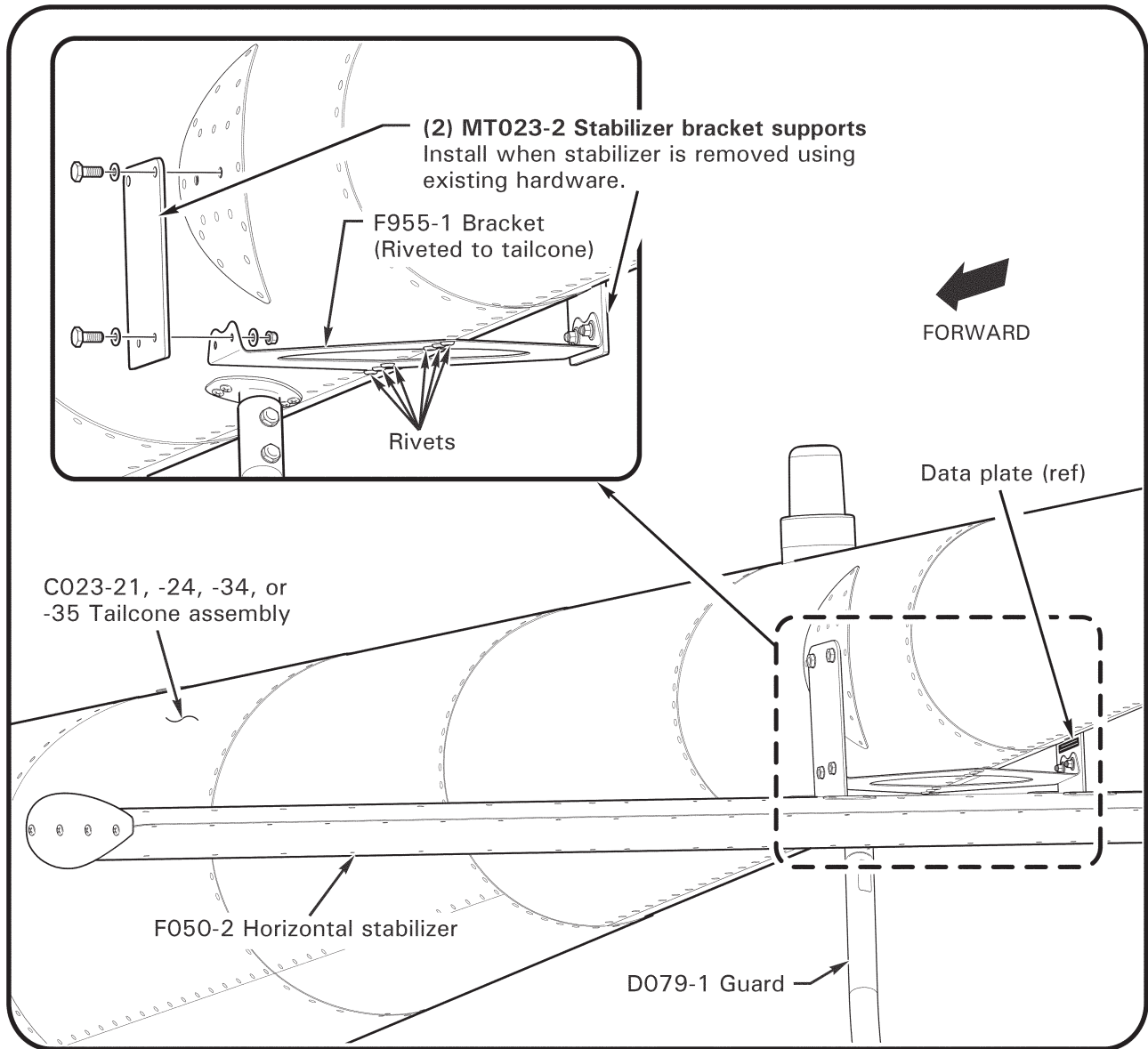


FIGURE 53-6 F050-2 HORIZONTAL STABILIZER ASSEMBLY

53-60 F050-2 Horizontal Stabilizer Assembly**CAUTION**

If tailcone has an F955-1 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 bracket is riveted to bottom of tailcone assembly.

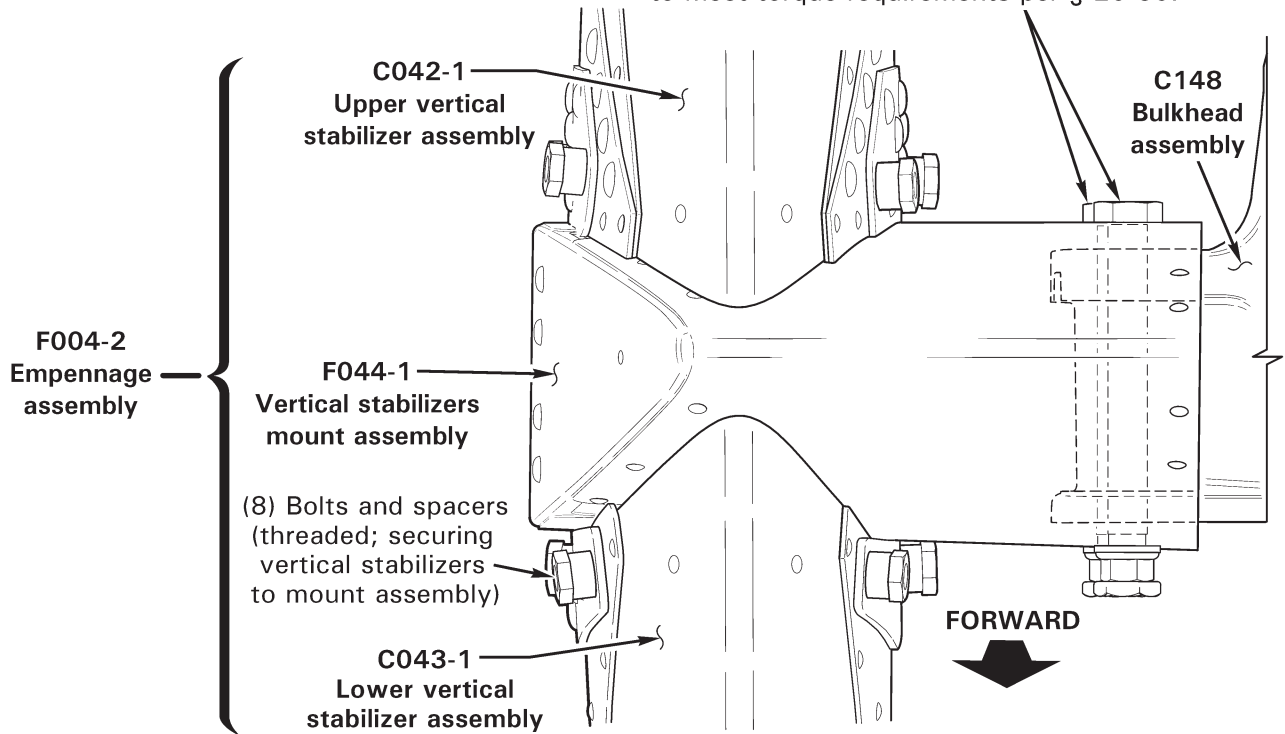
A. Removal

1. Refer to Figure 53-6. Remove hardware securing F050-2 horizontal stabilizer assembly to F955-1 bracket.
2. Supporting stabilizer, remove hardware securing stabilizer to tailcone assembly and remove stabilizer.
3. As required, install MT023-2 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 bracket & tailcone assembly and remove supports.
2. Supporting F050-2 horizontal stabilizer assembly, install hardware securing stabilizer to tailcone and bracket. Special torque bolts per § 20-33 and torque stripe per Figure 5-1.

Install hardware securing empennage assembly to tailcone assembly aft bulkhead; select bolt length to meet torque requirements per § 20-30.



If replacing stabilizer(s), verify 0.030–0.120 inch gap between vertical stabilizer skin edges and mount assembly skins. See text for fitting instructions, and reusing C554 clips.

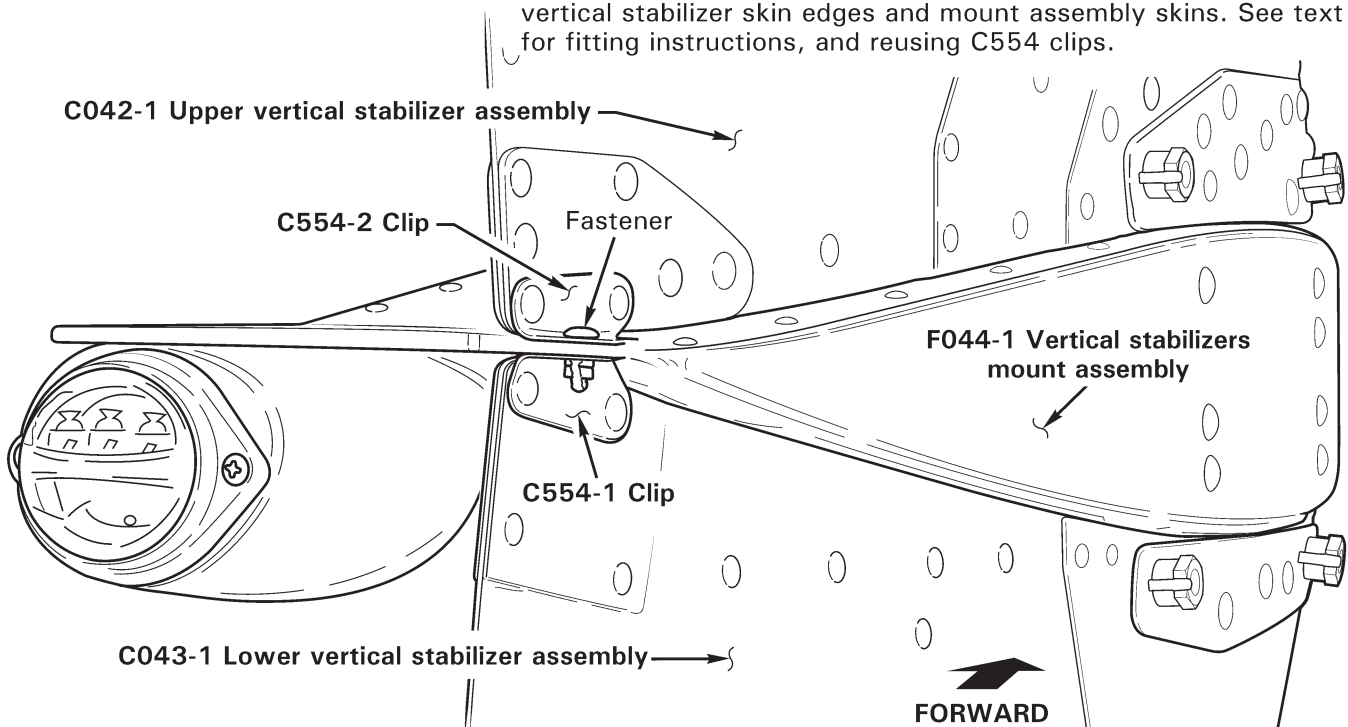


FIGURE 53-7 F004-2 EMPENNAGE ASSEMBLY – TAILCONE ASSEMBLY AFT BULKHEAD

53-70 Empennage Assembly**CAUTION**

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

C044-1 or -2 horizontal stabilizer may not be installed on a tailcone that has an F955-1 bracket.

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

As applicable, C050-2 or G950-2 stabilizer must always be installed.

A. Removal

1. Remove tail rotor guard assembly per § 53-50.
2. Remove hardware securing forward MS21919WDG3 clamp to F044-1 vertical stabilizers mount assembly (or C044-1 or -2 horizontal stabilizer, if installed). Cut and discard ty-raps securing position light and gearbox chip detector wires and connectors together. Disconnect position light at connectors.
3. Refer to Figure 53-7 or 53-7A. Supporting empennage assembly, remove hardware securing empennage to tailcone assembly aft bulkhead, and remove empennage.

B. Installation

1. Refer to Figure 53-7 or 53-7A. Position empennage assembly on tailcone assembly aft bulkhead.
 - a. **If D301 (empennage ballast; ref. § 8-32) weights will not be installed:** Install (2) NAS6606-47 bolts & associated hardware securing empennage to aft bulkhead. Use (1) or (2) NAS1149F0663P washers under nut as required to meet torque requirements per § 20-30 Part E. Standard torque bolts and palnuts per § 20-32 and torque stripe per Figure 5-1.
 - b. **If D301 (empennage ballast; ref. § 8-32) weights will be installed:** Install (2) NAS6606-78 bolts & associated hardware securing empennage to aft bulkhead. Use (1) or (2) NAS1149F0663P washers under nut as required to meet torque requirements per § 20-30 Part E; 1–4 threads may be exposed beyond primary nut. Standard torque bolts and palnuts per § 20-32 and torque stripe per Figure 5-1.
2. Connect position light wire connectors. Secure wires and install hardware securing forward MS21919WDG3 clamp to F044-1 vertical stabilizers mount assembly (or C044-1 or -2 horizontal stabilizer, if installed). Install MS3367-4-9 or -5-9 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 assembly per § 53-50.

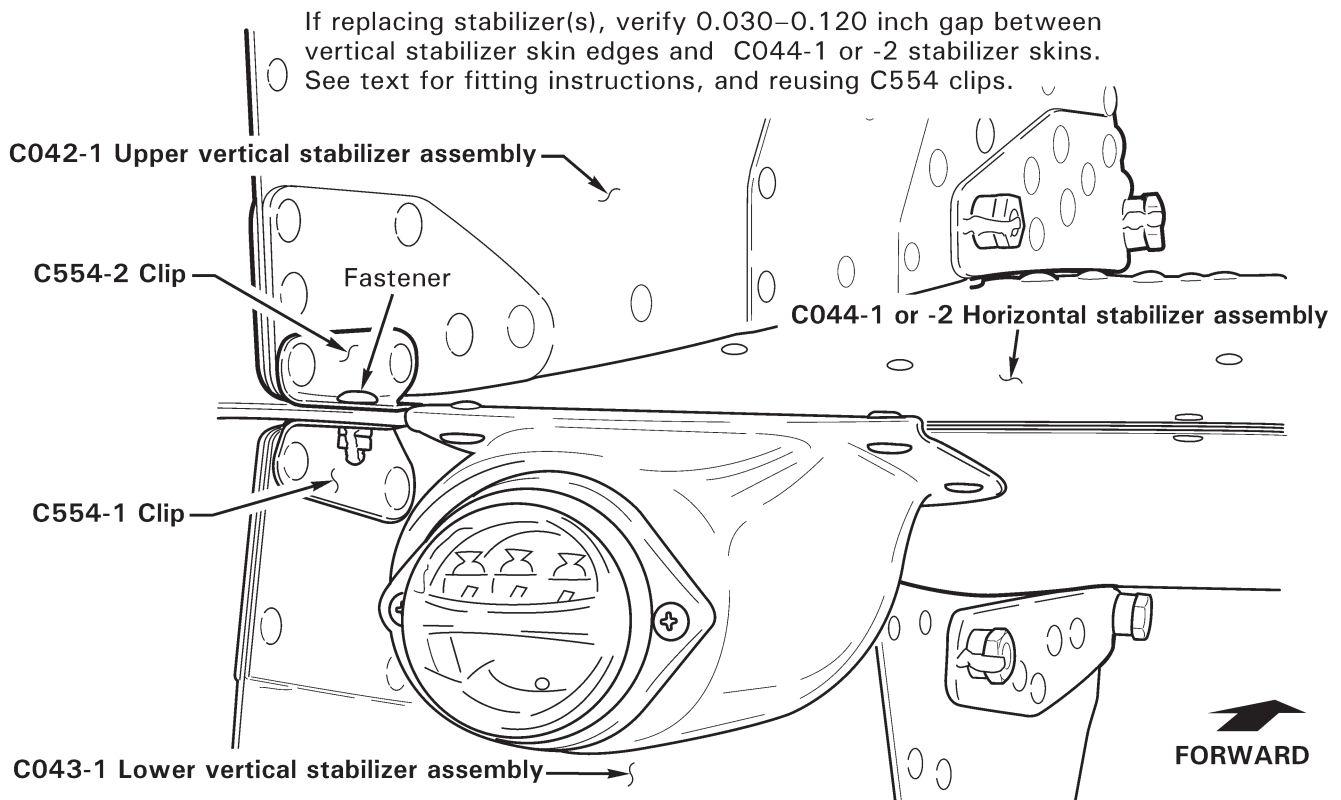
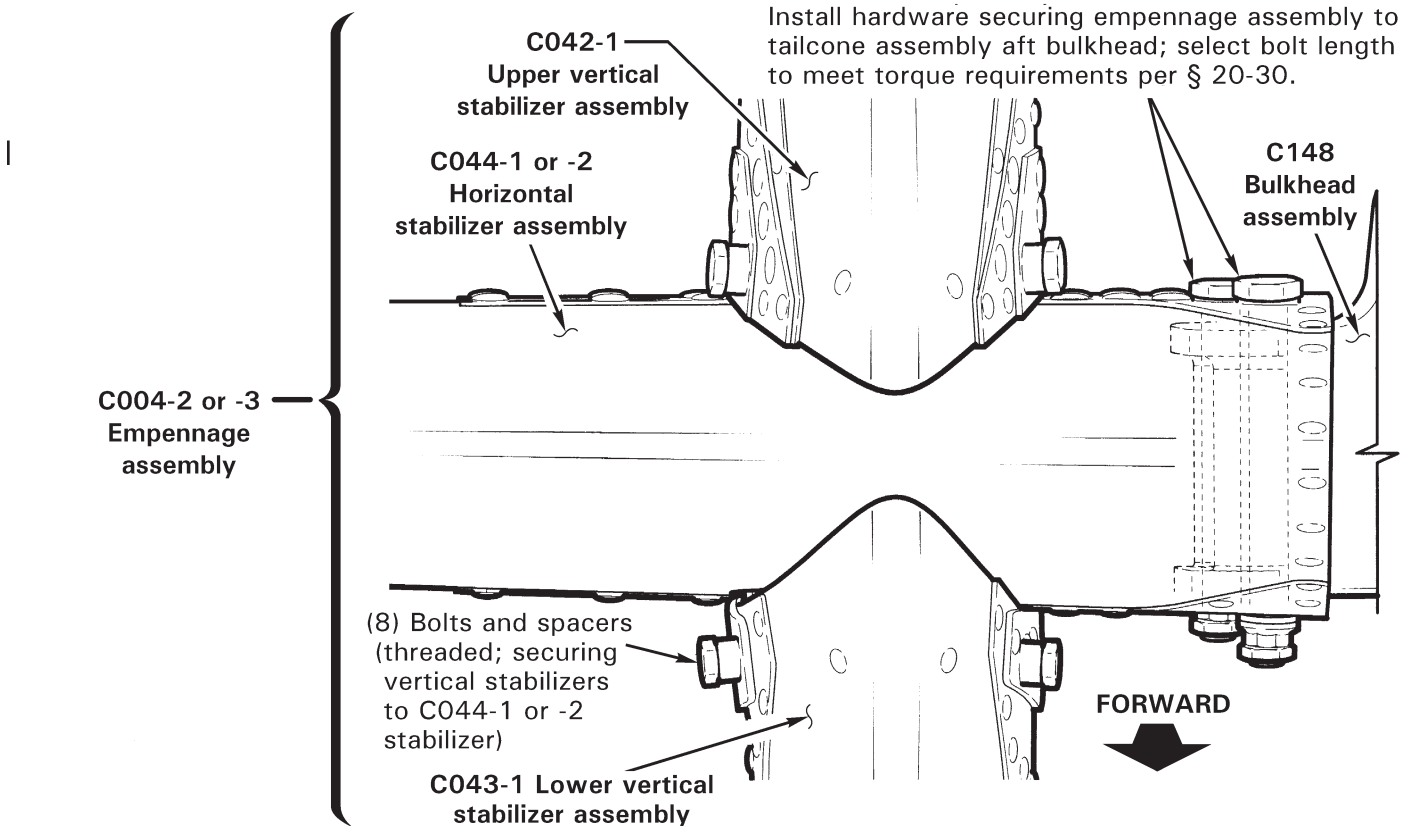


FIGURE 53-7A C004-2 OR C004-3 EMPENNAGE ASSEMBLY – TAILCONE ASSEMBLY AFT BULKHEAD

53-71 Upper Vertical Stabilizer Assembly

A. Removal

1. Refer to Figure 53-7 or 53-7A. Remove fastener securing C554-1 & -2 clips to F044-1 vertical stabilizers mount assembly (or C044-1 or -2 horizontal stabilizer, if installed).
2. Supporting C042-1 upper vertical stabilizer assembly, remove bolts & spacers securing C042-1 stabilizer to mount (or C044-1 or -2 stabilizer), and remove C042-1 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 53-7 or 53-7A. Position C042-1 upper vertical stabilizer assembly on empennage assembly. Verify 0.030–0.120 inch gap between vertical stabilizer skin edges and F044-1 vertical stabilizers mount assembly (or C044-1 or -2 horizontal stabilizer, if installed) upper skin. File vertical stabilizer skin edge(s) as required. Conversion coat & prime bare aluminum edges per §§ 20-51 & 20-60.
2. Install bolts & spacers securing vertical stabilizer to mount (or C044-1 or -2 stabilizer). Special torque bolts per § 20-33 and torque stripe per Figure 5-1.
3. Install fastener securing C554-1 & -2 clips to mount (or C044-1 or -2 stabilizer). 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 5-1.

53-72 Lower Vertical Stabilizer Assembly**A. Removal**

1. Remove tail rotor guard assembly per § 53-50.
2. As required, remove C050-2 or G950-2 horizontal stabilizer assembly per § 53-80, and tail skid per § 53-90.
3. Refer to Figure 53-7 or 53-7A. Remove fastener securing C554-1 & -2 clips to F044-1 vertical stabilizers mount assembly (or C044-1 or -2 horizontal stabilizer, if installed).
4. Supporting C043-1 lower vertical stabilizer assembly, remove bolts & spacers securing C043-1 stabilizer to mount assembly (or C044-1 or -2 stabilizer), and remove C043-1 stabilizer.
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 53-7 or 53-7A. Position C043-1 lower vertical stabilizer assembly on empennage assembly. Verify 0.030–0.120 inch gap between vertical stabilizer skin edges and F044-1 vertical stabilizers mount assembly (or C044-1 or -2 horizontal stabilizer, if installed) lower skin. File vertical stabilizer skin edge(s) as required. Conversion coat & prime bare aluminum edges per §§ 20-51 & 20-60.
2. Install bolts & spacers securing vertical stabilizer to mount (or C044-1 or -2 stabilizer). Special torque bolts per § 20-33 and torque stripe per Figure 5-1.
3. Install fastener securing C554-1 & -2 clips to mount (or C044-1 or -2 stabilizer). 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 5-1.
4. Install C050-2 or G950-2 horizontal stabilizer assembly per § 53-80, and tail skid per § 53-90, as required.
5. Install tail rotor guard assembly per § 53-50.

53-73 F044-1 Vertical Stabilizers Mount Assembly**A. Removal**

1. Remove C042-1 & C043-1 vertical stabilizer assemblies per §§ 53-71 & 53-72.
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. Supporting mount assembly, remove hardware securing mount to tailcone assembly aft 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 bracket.

1. Position F044-1 vertical stabilizers mount assembly on tailcone assembly aft bulkhead.
 - a. **If D301 (empennage ballast; ref. § 8-32) weights will not be installed:** Install (2) NAS6606-47 bolts & associated hardware securing empennage to aft bulkhead. Use (1) or (2) NAS1149F0663P washers under nut as required to meet torque requirements per § 20-30 Part E. Standard torque bolts and palnuts per § 20-32 and torque stripe per Figure 5-1.
 - b. **If D301 (empennage ballast; ref. § 8-32) weights will be installed:** Install (2) NAS6606-78 bolts & associated hardware securing empennage to aft bulkhead. Use (1) or (2) NAS1149F0663P washers under nut as required to meet torque requirements per § 20-30 Part E; 1–4 threads may be exposed beyond primary nut. Standard torque bolts and palnuts per § 20-32 and torque stripe per Figure 5-1.
2. Install C042-1 & C043-1 vertical stabilizer assemblies per §§ 53-71 & 53-72.
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.

53-74 C044-1 or -2 Horizontal Stabilizer Assembly**A. Removal**

1. Remove C042-1 & C043-1 vertical stabilizer assemblies per §§ 53-71 & 53-72.
2. Remove hardware securing forward clamp to C044-1 or -2 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. Supporting stabilizer, remove hardware securing stabilizer to tailcone assembly aft bulkhead and remove stabilizer.

B. Installation**CAUTION**

C044-1 or -2 horizontal stabilizer may not be installed on a tailcone that has an F955-1 bracket.

1. Position C044-1 or -2 horizontal stabilizer assembly on tailcone assembly aft bulkhead.
 - a. **If D301 (empennage ballast; ref. § 8-32) weights will not be installed:** Install (2) NAS6606-47 bolts & associated hardware securing empennage to aft bulkhead. Use (1) or (2) NAS1149F0663P washers under nut as required to meet torque requirements per § 20-30 Part E. Standard torque bolts and palnuts per § 20-32 and torque stripe per Figure 5-1.
 - b. **If D301 (empennage ballast; ref. § 8-32) weights will be installed:** Install (2) NAS6606-78 bolts & associated hardware securing empennage to aft bulkhead. Use (1) or (2) NAS1149F0663P washers under nut as required to meet torque requirements per § 20-30 Part E; 1–4 threads may be exposed beyond primary nut. Standard torque bolts and palnuts per § 20-32 and torque stripe per Figure 5-1.
2. Install C042-1 & C043-1 vertical stabilizer assemblies per §§ 53-71 & 53-72.
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.

53-74 C044-1 or -2 Horizontal Stabilizer Assembly (continued)**C. Repair**

A single dent on C044-1 or -2 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.

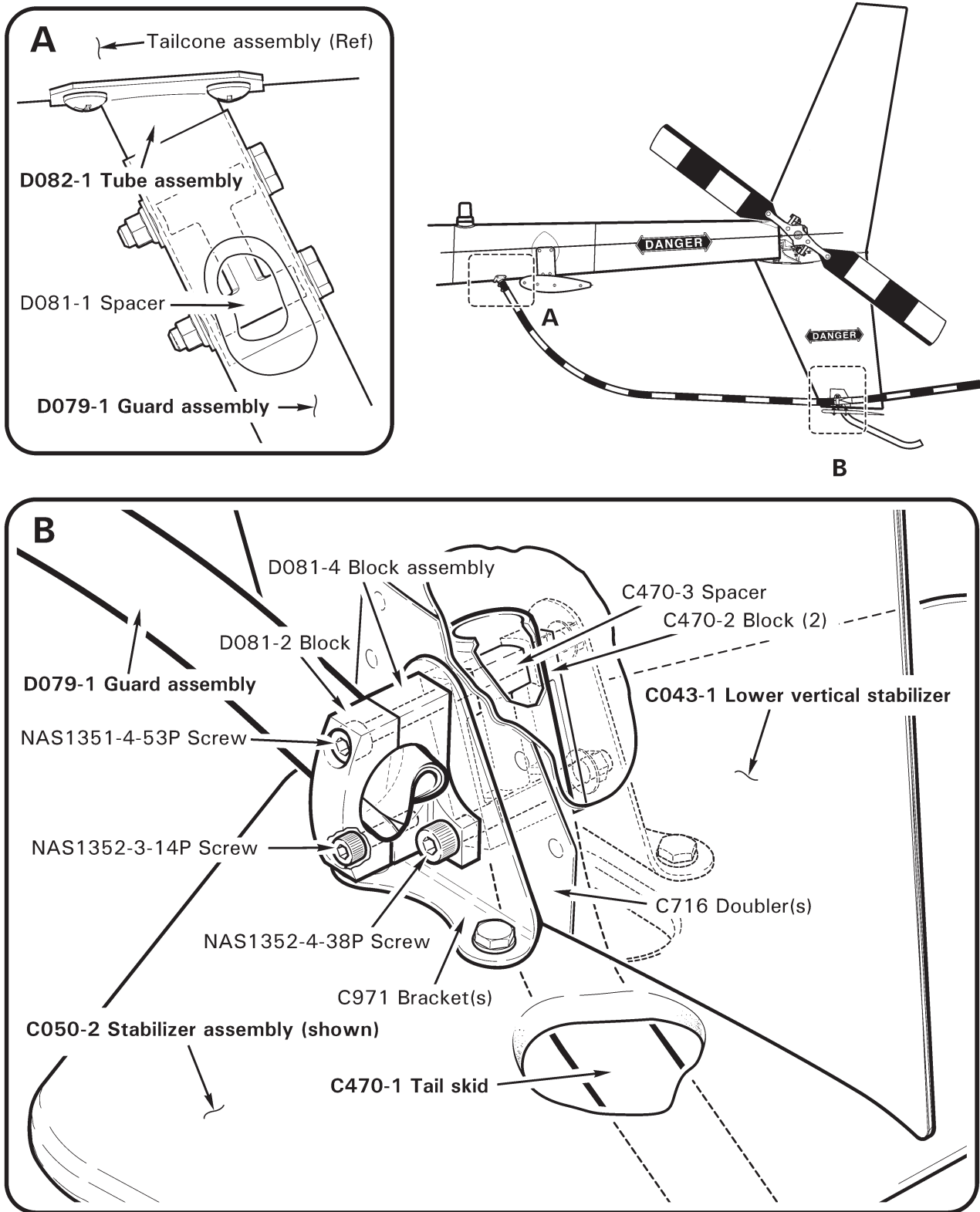


FIGURE 53-8 EMPENNAGE – TAIL ROTOR GUARD

53-80 C050-2 or G950-2 Horizontal Stabilizer Assembly**CAUTION**

As applicable, C050-2 or G950-2 stabilizer must always be installed.

A. Removal

1. Remove tail skid per § 53-90.
2. Refer to Figure 53-8. Using plastic scraper, remove sealant around edges where C050-2 or G950-2 horizontal stabilizer assembly brackets attach to C043-1 lower vertical stabilizer assembly doublers. Remove horizontal stabilizer assembly.

B. Installation

1. Refer to Figure 53-8. Position C050-2 or G950-2 horizontal stabilizer assembly on C043-1 lower vertical stabilizer assembly and install tail skid per § 53-90.
2. Seal horizontal stabilizer bracket edges to lower vertical stabilizer doublers using B270-1 sealant.

53-90 Tail Skid**A. Removal**

1. Refer to Figure 53-8. Support D079-1 guard assembly. Remove hardware securing D081-2 block to C043-1 lower vertical stabilizer assembly and remove block.
2. Support C050-2 or G950-2 horizontal stabilizer assembly 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 guard and C050-2 or G950-2 stabilizer while hardware is removed.

B. Installation

1. Refer to Figure 53-8. 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 guard assembly and D081-2 block, install hardware securing block to stabilizer. Verify D081-2 & -4 blocks clamp guard sleeve. For proper guard-to-stabilizer clamping, first standard torque hardware securing tail skid per § 20-32, then special torque screw securing D081-2 block to D081-4 block per § 20-33. Torque stripe fasteners per Figure 5-1.

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67-63 F316-1 Bellcrank**A. Removal**

1. Remove main rotor gearbox per § 63-20.
2. Disconnect F121-11 push-pull tube from F316-1 bellcrank assembly.
3. Disconnect F121-13 push-pull tube from F316-1 bellcrank assembly.
4. Remove nuts and spacer from outboard end of C494-2 shaft. Move shaft slightly inboard and remove washer from between frame tab and bellcrank.
5. Remove spring pin, castellated nut, and washers from inboard end of C494-2 shaft. Move shaft slightly outboard and remove washer from between bellcrank and inboard support.
6. Remove bellcrank.

B. Installation

1. Install one A141-3 washer on C494-2 shaft adjacent to both inboard and outboard end of F316-1 bellcrank.
2. Install bellcrank with washers in helicopter with longer arm pointing up.
3. On inboard end of C494-2 shaft, install two NAS1149F0463P washers followed by MS17825-4 castellated nut. Tighten nut until it aligns with hole in shaft and install new MS16562-14 spring pin.
4. On outboard end of shaft install C130-34 spacer and MS21042L4 nut. Special torque nut per § 20-33. Install palnut and standard torque per § 20-32. Torque stripe inboard and outboard nuts per Figure 5-1.
5. Connect F121-13 push-pull tube to bellcrank and standard torque bolt per § 20-32. Install palnut, standard torque per § 20-32, and torque stripe per Figure 5-1.
6. Connect F121-11 push-pull tube to bellcrank and standard torque bolt per § 20-32. Install palnut, standard torque per § 20-32, and torque stripe per Figure 5-1.
7. Move pedal full travel. Verify smooth movement and no interference.
8. Install main rotor gearbox per § 63-20.

67-64 A331-4 Bellcrank**A. Removal**

1. Disconnect F121-13 and C121-17 push-pull tubes from A331-4 bellcrank.
2. Disconnect NAS6604-35 attach bolt and remove bellcrank and two A105-3 journals.

B. Installation

1. Install two A105-3 journals in C331-4 bellcrank's pivot bearings. Install an NAS1149F0432P washer under head of an NAS6604-35 bolt followed by an A141-3 washer and insert bolt thru journals. Install an A141-3 washer on bolt against journal face, followed by an NAS1149F0432P washer.
2. Install bellcrank, with straight side aft, on F020-1 frame's boss, and secure to frame with an NAS1149F0432P washer and MS21042L4 nut. Standard torque bolt per § 20-32. Install palnut, standard torque per § 20-32, and torque stripe per Figure 5-1.

67-65 A120-5 Bellcrank**A. Removal**

1. Remove hardware securing C121-17 push-pull tube assembly to A120-5 bellcrank assembly.
2. Disconnect bellcrank pivot from C021-1 tail rotor gearbox.
3. Remove nut holding bellcrank to the pitch control. Remove bellcrank and reinstall nut, and shims found between bellcrank and pitch control.

B. Installation

1. Install pitch control per § 67-52.

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63.7	APR 2017	65.3	SEP 2023	71.3B	JUL 2020
63.8	APR 2017	65.4	SEP 2023	71.4	JUL 2020
63.9	JUL 2020	65.5	MAY 2015	71.5	JUL 2020
63.10	JUL 2020	65.6	MAY 2015	71.6	JUL 2020
63.11	APR 2017	65.7	MAY 2015	71.7	JUL 2023
63.12	APR 2017	65.8	MAY 2015	71.7A	JUL 2023
63.13	APR 2017	65.9	MAY 2015	71.7B	JUL 2023
63.14	APR 2017	65.10	MAY 2015	71.8	JUL 2023
		65.11	SEP 2012	71.9	JUL 2020
64.i	JUL 2023	65.12	SEP 2012	71.10	JUL 2020
64.ii	JUL 2023			71.11	APR 2019
64.1	JUL 2023	67.i	MAY 2015	71.12	APR 2019

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71.13	APR 2017	90.i	JUL 2020	90.37	JUL 2020
71.14	APR 2017	90.ii	JUL 2020	90.38	JUL 2020
71.15	APR 2019	90.1	SEP 2023	90.39	JUL 2020
71.16	APR 2019	90.2	SEP 2023	90.40	JUL 2020
71.17	JUL 2020	90.3	JUL 2020	90.41	JUL 2020
71.18	JUL 2020	90.4	JUL 2020	90.42	JUL 2020
71.19	JUL 2020	90.5	JUL 2020	90.43	JUL 2020
71.20	JUL 2020	90.6	JUL 2020	90.44	JUL 2020
71.21	APR 2017	90.7	JUL 2020	90.45	JUL 2020
71.22	APR 2017	90.8	JUL 2020	90.46	JUL 2020
		90.9	JUL 2020	90.47	JUL 2020
75.i	25 OCT 2010	90.10	JUL 2020	90.48	JUL 2020
75.ii	25 OCT 2010	90.11	JUL 2020	90.49	JUL 2020
75.1	25 OCT 2010	90.12	JUL 2020	90.50	JUL 2020
75.2	25 OCT 2010	90.13	JUL 2020	90.51	JUL 2020
		90.14	JUL 2020	90.52	JUL 2020
76.i	25 OCT 2010	90.15	JUL 2020	90.53	JUL 2020
76.ii	25 OCT 2010	90.16	JUL 2020	90.54	JUL 2020
76.1	JUL 2023	90.17	JUL 2020	90.55	JUL 2020
76.2	JUL 2023	90.18	JUL 2020	90.56	JUL 2020
76.3	25 OCT 2010	90.19	JUL 2020	90.57	JUL 2020
76.4	25 OCT 2010	90.20	JUL 2020	90.58	JUL 2020
76.5	25 OCT 2010	90.21	JUL 2020		
76.6	25 OCT 2010	90.22	JUL 2020	92.i	JUL 2020
76.7	25 OCT 2010	90.23	JUL 2020	92.ii	JUL 2020
76.8	25 OCT 2010	90.24	JUL 2020	92.1	SEP 2023
		90.25	JUL 2020	92.2	SEP 2023
79.i	APR 2017	90.26	JUL 2020	92.3	JUL 2020
79.ii	APR 2017	90.27	JUL 2020	92.4	JUL 2020
79.1	APR 2019	90.28	JUL 2020	92.5	JUL 2020
79.2	APR 2019	90.29	JUL 2020	92.6	JUL 2020
79.3	APR 2017	90.30	JUL 2020	92.7	JUL 2020
79.4	APR 2017	90.31	JUL 2020	92.8	JUL 2020
79.5	APR 2017	90.32	JUL 2020	92.9	JUL 2020
79.6	APR 2017	90.33	JUL 2020	92.10	JUL 2020
79.7	APR 2017	90.34	JUL 2020	92.11	JUL 2020
79.8	APR 2017	90.35	JUL 2020	92.12	JUL 2020
		90.36	JUL 2020	92.13	JUL 2020

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92.14	JUL 2020	92.50	JUL 2020	95.17	APR 2017
92.15	JUL 2020	92.51	JUL 2020	95.18	APR 2017
92.16	JUL 2020	92.52	JUL 2020	95.19	APR 2017
92.17	JUL 2020	92.53	JUL 2020	95.20	APR 2017
92.18	JUL 2020	92.54	JUL 2020	95.21	JUL 2020
92.19	JUL 2020	92.55	JUL 2020	95.22	JUL 2020
92.20	JUL 2020	92.56	JUL 2020	95.23	APR 2019
92.21	JUL 2020	92.57	JUL 2020	95.24	APR 2019
92.22	JUL 2020	92.58	JUL 2020	95.25	APR 2019
92.23	JUL 2020	92.59	JUL 2020	95.26	APR 2019
92.24	JUL 2020	92.60	JUL 2020	95.27	APR 2019
92.25	JUL 2020	92.61	JUL 2020	95.28	APR 2019
92.26	JUL 2020	92.62	JUL 2020	95.29	APR 2019
92.27	JUL 2020	92.63	JUL 2020	95.30	APR 2019
92.28	JUL 2020	92.64	JUL 2020	95.31	APR 2019
92.29	JUL 2020	92.65	JUL 2020	95.32	APR 2019
92.30	JUL 2020	92.66	JUL 2020		
92.31	JUL 2020	92.67	JUL 2020	96.i	JUL 2023
92.31A	JUL 2020	92.68	JUL 2020	96.ii	JUL 2023
92.31B	JUL 2020			96.1	APR 2019
92.32	JUL 2020	95.i	JUL 2020	96.2	APR 2019
92.33	JUL 2020	95.ii	JUL 2020	96.3	APR 2019
92.34	JUL 2020	95.1	APR 2017	96.4	APR 2019
92.35	JUL 2020	95.2	APR 2017	96.4A	JUL 2023
92.36	JUL 2020	95.3	APR 2017	96.4B	JUL 2023
92.37	JUL 2020	95.4	APR 2017	96.5	JUL 2023
92.38	JUL 2020	95.5	APR 2017	96.6	JUL 2023
92.39	JUL 2020	95.6	APR 2017	96.7	JUL 2023
92.40	JUL 2020	95.7	APR 2019	96.8	JUL 2023
92.41	JUL 2020	95.8	APR 2019	96.9	APR 2017
92.42	JUL 2020	95.9	APR 2019	96.10	APR 2017
92.43	JUL 2020	95.10	APR 2019	96.11	APR 2017
92.44	JUL 2020	95.11	APR 2017	96.12	APR 2017
92.45	JUL 2020	95.12	APR 2017	96.13	APR 2017
92.46	JUL 2020	95.13	APR 2017	96.14	APR 2017
92.47	JUL 2020	95.14	APR 2017	96.15	APR 2017
92.48	JUL 2020	95.15	APR 2017	96.16	APR 2017
92.49	JUL 2020	95.16	APR 2017	96.17	JUL 2023

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96.18	JUL 2023	98.ii	JUL 2023	98.32	APR 2017
96.19	JUL 2023	98.1	JUL 2023	98.33	APR 2017
96.20	JUL 2023	98.2	JUL 2023	98.34	APR 2017
		98.2A	JUL 2020	98.35	APR 2017
97.i	APR 2019	98.2B	JUL 2020	98.36	APR 2017
97.ii	APR 2019	98.3	APR 2017	98.37	APR 2017
97.1	APR 2019	98.4	APR 2017	98.38	APR 2017
97.2	APR 2019	98.5	APR 2017	98.39	APR 2017
97.3	APR 2019	98.6	APR 2017	98.40	APR 2017
97.4	APR 2019	98.7	APR 2017	98.41	APR 2017
97.5	APR 2019	98.8	APR 2017	98.42	APR 2017
97.6	APR 2019	98.9	APR 2017	98.43	APR 2017
97.7	APR 2019	98.10	APR 2017	98.44	APR 2017
97.8	APR 2019	98.11	APR 2017	98.45	JUL 2020
97.9	APR 2019	98.12	APR 2017	98.45A	JUL 2020
97.10	APR 2019	98.13	JUL 2023	98.45B	JUL 2020
97.11	APR 2019	98.14	JUL 2023	98.46	JUL 2020
97.12	APR 2019	98.15	APR 2019	98.47	JUL 2023
97.13	APR 2019	98.16	APR 2019	98.48	JUL 2023
97.14	APR 2019	98.17	APR 2017	98.49	APR 2019
97.15	APR 2019	98.18	APR 2017	98.50	APR 2019
97.16	APR 2019	98.19	APR 2017	98.51	APR 2019
97.17	JUL 2020	98.20	APR 2017	98.52	APR 2019
97.18	JUL 2020	98.21	APR 2017	98.53	APR 2019
97.19	APR 2019	98.22	APR 2017	98.54	APR 2019
97.20	APR 2019	98.23	APR 2017	98.55	APR 2019
97.21	APR 2019	98.24	APR 2017	98.56	APR 2019
97.22	APR 2019	98.24A	JUL 2020	98.57	APR 2019
97.23	APR 2019	98.24B	JUL 2020	98.58	APR 2019
97.24	APR 2019	98.24C	JUL 2020	98.59	APR 2019
97.25	APR 2019	98.24D	JUL 2020	98.60	APR 2019
97.26	APR 2019	98.25	APR 2017	98.61	JUL 2020
97.27	APR 2019	98.26	APR 2017	98.62	JUL 2020
97.28	APR 2019	98.27	APR 2017	98.63	JUL 2023
97.29	APR 2019	98.28	APR 2017	98.64	JUL 2023
97.30	APR 2019	98.29	APR 2017		
		98.30	APR 2017	99.i	APR 2017
98.i	JUL 2023	98.31	APR 2017	99.ii	APR 2017

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99.6	JUL 2023
99.7	JUL 2023
99.8	JUL 2023
99.9	JUL 2023
99.10	JUL 2023
100.i	MAY 2021
100.ii	MAY 2021
100.1	NOV 2023
100.2	NOV 2023
100.3	NOV 2023
100.4	NOV 2023
100.5	NOV 2023
100.6	NOV 2023
100.7	NOV 2023
100.8	NOV 2023
100.9	NOV 2023
100.10	NOV 2023