CHAPTER 5

INSPECTIONS

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CHAPTER 5

INSPECTIONS

5-10 Introduction

The R66 helicopter must be inspected periodically to verify it is in airworthy condition; refer to Table 1.

> NOTE
>
> Helicopters on a Part 91 Approved Inspection Program (AIP), a Part 135 Approved Aircraft Inspection Program (AAIP), or an equivalent foreign-approved inspection program, must refer to & comply with that program. Refer to current revisions of FAA Advisory Circulars 91-90 & 135-10.

Fluid leaks, discoloration, dents, scratches, nicks, cracks, galling, chafing, fretting, and corrosion all warrant further investigation. Unairworthy items must be replaced or repaired as allowed by Robinson Helicopter Company. This section contains procedures for performing the required periodic airframe inspections.

> NOTE
>
> Unless directed by Service Bulletin, parts which were not listed as requiring replacement during previous compliance with a 12- or 15-year or 2000-hour Inspection may remain in service until next 15-year or 2000-hour Inspection (whichever occurs first).

5-20 [Reserved]

5-30 General Procedures

Unless otherwise specified, the following general procedures apply to R66 inspection. When required, magnetic particle inspection may be performed in accordance with ASTM E 1444 and MIL-STD-1907. Fluorescent penetrant inspection may be performed in accordance with ASTM E 1417 and MIL-STD-1907.

5-31 Ball and Roller Bearings

The first indication of bearing failure is usually an increase in bearing noise. Noise will almost always start several hours prior to bearing failure. Listen to drive system during start-up and shutdown. A failing bearing will produce a loud whine, rumble, growl, or siren sound. Upon hearing an unusual noise, thoroughly inspect all bearings before further flight.

A failing bearing may have a distorted seal or be exuding a large amount of grease. Monitor bearings for increase in temperature, but do not rely on Telatemps to detect failing bearings as temperature increase may occur only seconds before bearing disintegrates.

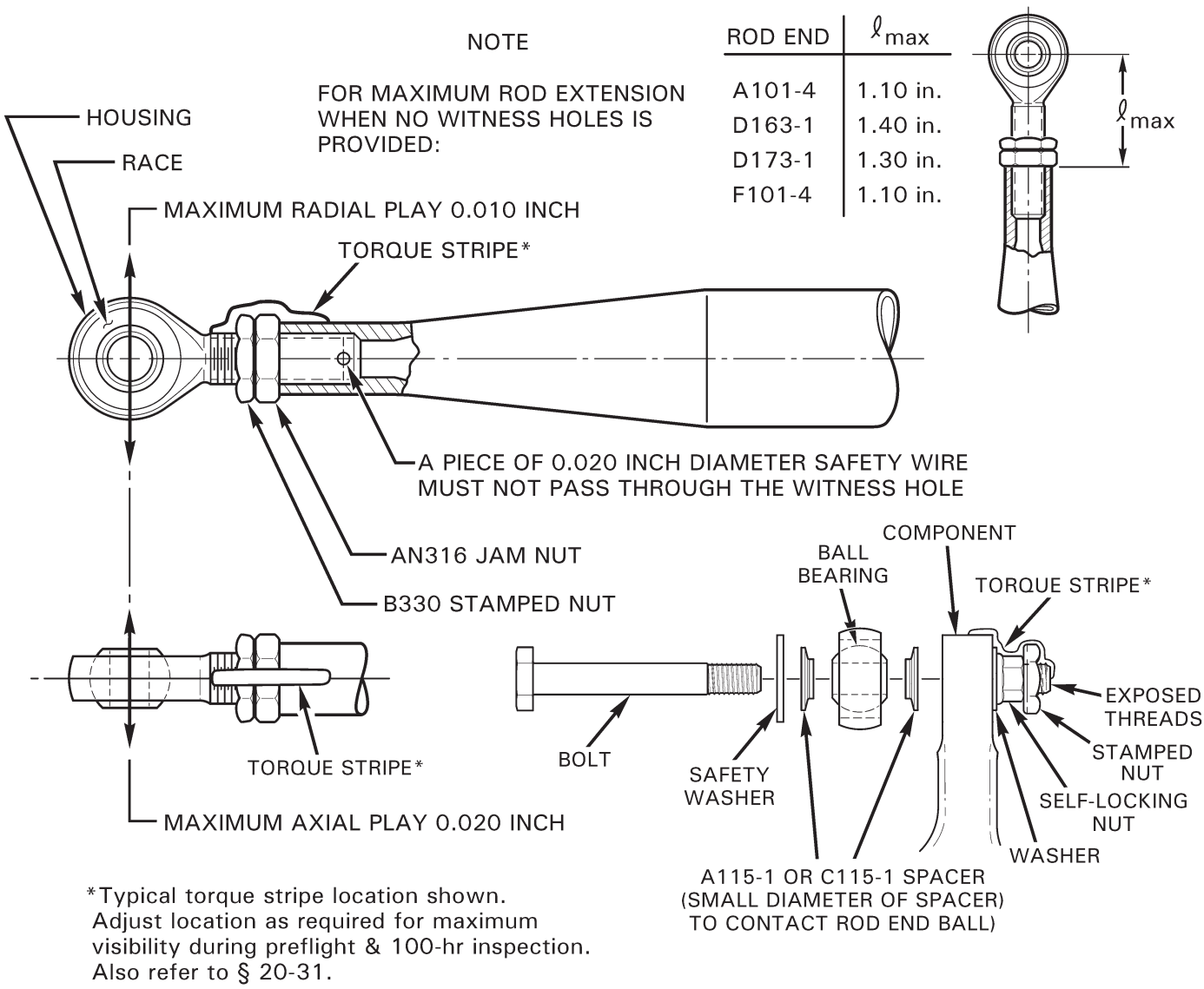
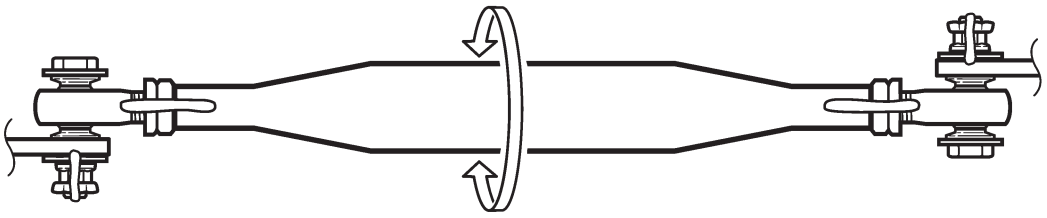


FIGURE 5-1 ROD END AND SPHERICAL BEARING PLAY LIMITS AND TORQUE STRIPE APPLICATION



Position rod ends for maximum rotation

FIGURE 5-2 ROD END CENTERING

5-32 Push-Pull Tubes

1. Nicks, cuts, or scratches in tube not more than 0.010 inch deep and not more than 1/4 of tube circumference may be polished out in lengthwise direction using 320-grit or finer wet-or-dry abrasive paper to 1-inch minimum blend radius. Replace push-pull tube if depth exceeds these limits.
2. Replace push-pull tube if tube is dented or flattened more than 5% of its diameter in unswaged area; dents or flattening is not permitted in swaged (tapered and threaded) ends of tubes.
3. Replace any C121 push-pull tube if tube threaded end allows insertion of inspection pin beyond allowable limits per following table:

Thread Size	Example Rod End	Maximum Diameter Inspection Pin
10-32	A933-3	0.1730 inch diameter for first 0.09 inch of threads; 0.1670 inch diameter for remaining threads
1/4-28	A127-4	0.2300 inch diameter for first 0.11 inch of threads; 0.2240 inch diameter for remaining threads
5/16-24	A101-4	0.2880 inch diameter for first 0.13 inch of threads; 0.2820 inch diameter for remaining threads
3/8-24	D173-2	0.3520 inch diameter for first 0.15 inch of threads; 0.3440 inch diameter for remaining threads

5-33 Rod Ends and Spherical Bearings

1. Maximum axial play: 0.020 inch (for A104-4 bearing only: 0.035 inch axial play)
   Maximum radial play: 0.010 inch
2. Looseness between spherical bearing outer race & rod end housing, or between spherical bearing outer race & part, is not permitted.
3. Rod ends not riveted in place must block passage of 0.020-inch diameter wire through witness hole. Refer to Figure 5-1 for maximum rod end extension when no witness hole is provided.
4. Rod end jam nuts and stamped nuts must be torqued per § 20-32 and torque striped per Figure 5-1 at the most visible position for pre-flight inspection. Torque stripe must extend across nuts to both rod end shank and push-pull tube (or pitch link barrel, yoke, support, strut, etc.). Torque stripes are subject to deterioration and must be periodically renewed.
5. Refer to Figure 5-2. Rod ends must be positioned (centered) to allow as much push-pull tube or link rotational movement as possible without binding.

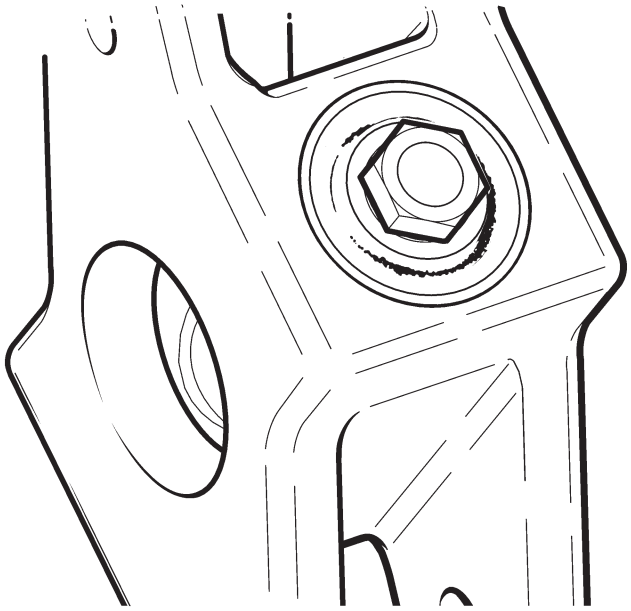
CAUTION

Teflon-lined bearings must not be lubricated or solvent cleaned.

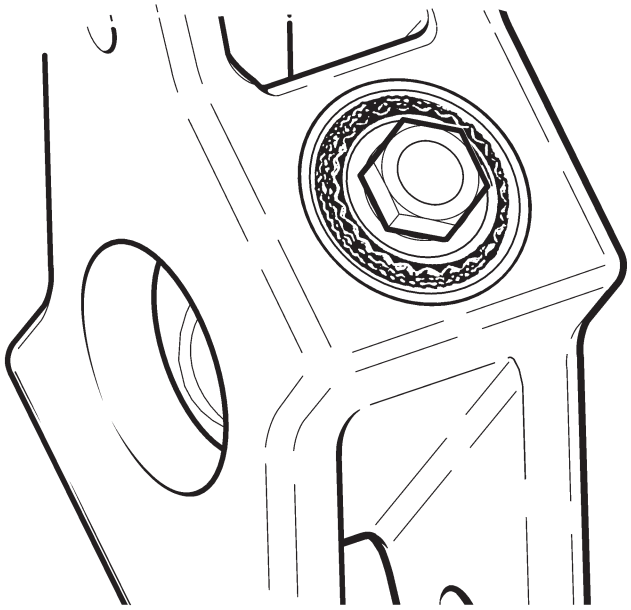
WARNING

Assembly of flight controls is critical and requires inspection by a qualified person. If a second person is not available, RHC recommends the installer take a 5-minute break prior to inspecting flight control connections the installer has assembled.

Elastomer Fatigue



Elastomer Oil Contamination



Elastomer Overload

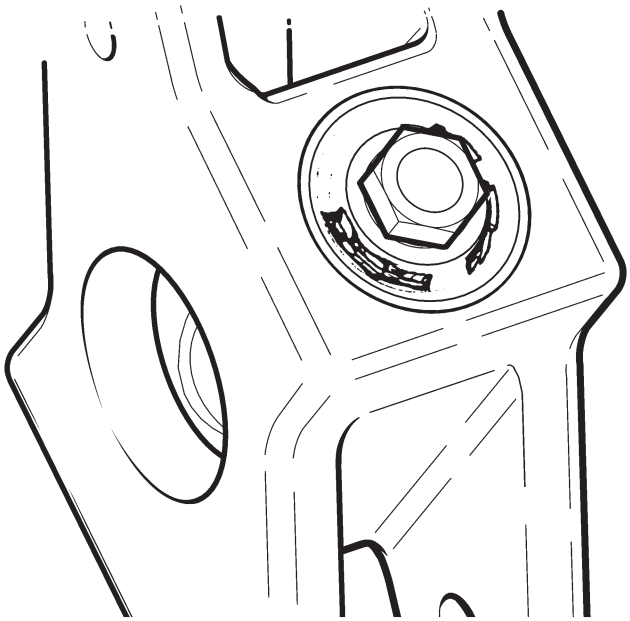


FIGURE 5-3 ELASTOMERIC BEARING DAMAGE

5-34 Elastomeric Bearings

Refer to Figure 5-3. Elastomeric bearings are used in the G062-1 tail rotor hub assembly. Fatigue, oil contamination, or overload can degrade the elastomer.

Small surface cracks (fatigue cracks) and elastomer dust or “eraser crumbs” are normal and are not cause for replacement. As cracks grow, enough elastomer will be lost to cause reduced stiffness and increased vibration. Replace bearing if crack is deeper than 0.10 inch or cracks are present over more than 25% of elastomer face.

Avoid elastomer exposure to oil, grease, hydraulic fluid, cleaning solvent, and rust-preventative fluids. Immediately wash off contaminants with detergent and water. Replace a contaminated bearing that exhibits swelling, wavy edges, or debonding.

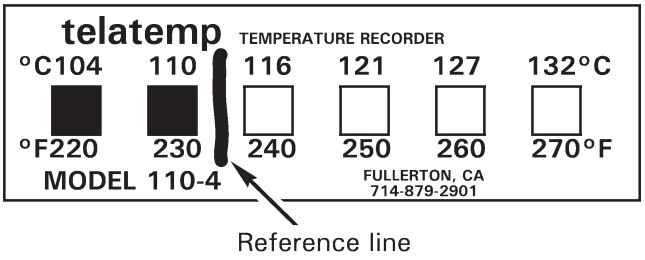
Overload occurs when elastomer’s tensile strength or rubber-to-metal bond strength is exceeded. This can occur when normal loads are applied to a bearing weakened by fatigue or oil contamination. Overload is indicated by large clean cracks or extrusions from elastomer.

Elastomer may also separate (debond) from metal bushings. Replace bearing if separation exceeds 25% of bonded area.

5-35 Telatemp Indicators

Refer to Figure 5-4. Self-adhesive Telatemp indicators record increases in operating temperatures of the hydraulic pump and tail rotor gearbox. To use a Telatemp, draw a reference line between the highest temperature square which has darkened during normal operation and the next undarkened square. During every check thereafter, determine if an additional square has blackened. If an indicated temperature increase cannot be accounted for by a change in operating conditions, carefully examine the component before further flight.

> NOTE
>
> Telatemps can indicate erroneously if contaminated by a petroleum product, typically appearing as white, unactivated square(s) between darkened squares at each end; replace any Telatemp indicating as such and clean area with acetone prior to installing.



Part Number	Temperature Range		
F110-2	60°C / 140°F	—	88°C / 190°F
F110-3	82°C / 180°F	—	110°C / 230°F
F110-4	104°C / 220°F	—	132°C / 270°F

FIGURE 5-4 TELATEMP INDICATOR WITH DRAWN REFERENCE LINE

5-36 Torque Stripes

WARNING

Refer to Safety Data Sheet (SDS) and observe precautions when working in proximity to hazardous materials.

Refer to Figure 5-1. Apply lacquer-paint Torque Seal® to all critical fasteners after stamped nut installation in a stripe ("torque stripe") extending from the fastener's exposed threads across both nuts and onto the component. Subsequent rotation of the nut or bolt can be detected visually. Position torque stripes for maximum visibility during preflight inspections. Approved Torque Seal® is listed in § 20-74.

If, during inspection, the remaining torque stripe on a fastener is insufficient to determine joint integrity, then remove accompanying stamped nut as required and apply specified torque to fastener. If fastener moves, disassemble joint and inspect parts for damage such as fretting, thread deformation, hole elongation, etc.; replace damaged parts. If fastener does not move, install new stamped nut as required & standard torque per § 20-32. Torque stripe fastener per Figure 5-1.

5-40 Operation Checks for 100-Hour / Annual Inspection

Complete the following checklists in conjunction with 100-hour / annual inspection. Note and correct any discrepancies.

5-41 Ground Check (aircraft not running)

1. _____ **Twist Grip:**
   Verify twist grip smooth rotation without binding in full up and full down collective position. Verify over center spring holds twist grip full open or closed.

2. _____ **Fuel Cutoff Valve:**
   Verify smooth actuation without binding. Verify proper function of lock button.

3. _____ **Collective Control:**
   Verify proper operation through full control travel with and without friction applied. With friction off, verify approximately one-half inch total free play before encountering hydraulic resistance. Verify normal hydraulic resistance throughout remainder of control travel. With friction on, verify increased resistance but no binding or locking of control. Verify power turbine governor rigging as follows:

   a. _____ Turn battery switch on. With collective full down, hold beep switch actuator all the way down. Have a second person verify the PTG reads approximately 45°.

   b. _____ With collective full down, hold beep switch actuator all the way up. Have a second person verify the PTG reads approximately 65°. Return actuator to nominal position. Turn battery switch off.

4. _____ **Cyclic Control:**
   With friction off, verify approximately one-half inch total longitudinal and one inch total lateral free play before encountering hydraulic resistance. Verify normal hydraulic resistance throughout remainder of control travel. With friction on, verify increased resistance but no binding or locking of control.

5. _____ **Tail Rotor Pedals:**
   Verify smooth actuation without binding. Verify proper pedal position for pilot and locking pin security.

6. _____ **Removable Controls (if installed):**
   Verify proper operation and locking pin security.

5-41 Ground Check (continued)

7. _____ **Lighting, Instruments, and Audio Alerts:** (Turn battery switch on.)

ANNUNCIATOR PANEL AND ROTOR BRAKE LIGHTS

a. _____ MR TEMP PRESS segment illuminates.

b. _____ ENGINE OIL segment illuminates.

c. _____ GEN segment illuminates.

d. _____ LOW RPM segment illuminates.

e. _____ HYD segment illuminates (if hydraulic switch is OFF; later helicopters).

f. _____ COWL DOOR segment illuminates when fuel filler cowl door or baggage door is not closed. On later helicopters, the COWL DOOR segment also illuminates when an engine cowl door is not closed.

g. _____ ROTOR BRAKE segment illuminates (if rotor brake is applied).

h. _____ All annunciator panel segments illuminate when test button is depressed (segments below have additional behaviors):

i. _____ LOW FUEL and <12 GAL FUEL segments take approximately two seconds before they illuminate due to a time delay in circuit. If LOW FUEL segment illuminates immediately after test button depress, a fault is indicated.

ii. _____ EMU segment will illuminate only when test button is depressed. EMU segment takes approximately 10 seconds to perform self-test after battery is switched ON before it will illuminate.

INSPECTION LIGHTING

a. _____ Left side cowl door – verify LEDs illuminate main rotor gearbox and hydraulic reservoir sight gages when cowl door is open (battery switch on or off).

EXTERIOR LIGHTING

a. _____ Position lights – check function.

b. _____ Anti-collision light – check function.

c. _____ Landing lights – check function.

5-41 Ground Check (continued)

7. _____ **Lighting, Instruments, and Audio Alerts (continued):** (Turn battery switch on.)

INTERIOR LIGHTING

a. _____ Panel lighting & dimmer control – check function (position lights must be illuminated to enable panel lighting and dimmer control).

b. _____ Map light – check function.

c. _____ Digital voltmeter – indicates approximately 24 volts.

d. _____ Oil temperature gage – slight needle deflection with engine cold.

e. _____ Fuel quantity gage – indication of fuel level.

AUDIO ALERTS (Later helicopters; verify tone in headset)

a. _____ High rotor RPM: a high/low "warble" tone will sound when test button is depressed (five times per second).

b. _____ High engine torque/MGT: a beeping tone will sound when test button is depressed (four beeps per second for two seconds followed by 12 beeps per second).

(Turn battery switch off.)

8. _____ **Aircraft Documents:**

(Additional documents may be required in countries other than the US.)

a. _____ Inspect condition and verify R66 MT699-1 laminated pilot's checklist is current revision. Check revision status online at: www.robinsonheli.com.

b. _____ Inspect condition and verify R66 Pilot's Operating Handbook is current revision and contains correct Equipment List/Weight & Balance Data. Check revision status online at: www.robinsonheli.com.

c. _____ Verify airworthiness certificate onboard & matches helicopter S/N.

d. _____ Verify registration certificate onboard & matches helicopter S/N and all registration markings.

5-42 Run-Up

1. _____ Clean engine gas path, if required, per RR300 Series Operation and Maintenance Manual (OMM).
2. _____ Perform Pilot's Operating Handbook (POH) Section 4 “Preflight” checklist.
3. _____ Perform POH Section 4 “Before Starting Engine” checklist.
4. _____ Prior to start, verify rotor brake locks out starter.
5. _____ Prior to start, review the Cautions and Notes in POH Section 4 “Starting Engine and Run-Up”.
6. _____ Perform POH Section 4 “Starting Engine and Run-Up” checklist.
7. _____ Once stabilized idle is reached, disconnect ground power and switch generator ON. Verify ammeter shows non-zero generator load and GEN light out. Verify aircraft voltmeter reads 28.0 to 29.0 volts and calibrated voltmeter indicates 28.2 to 28.8 volts. When complete, disconnect calibrated voltmeter.
8. _____ Switch generator OFF. Verify GEN annunciator illuminates, voltmeter reading decreases but remains at or above 24 volts, and ammeter decreases to zero.
9. _____ Switch battery and generator OFF. Verify dual tachometer continues to function, then switch battery and generator back ON. Ensure avionics master switch is OFF, and depress annunciator panel Test button. Both sides of dual tachometer should drop to off-scale low indication while button is depressed.
10. _____ With avionics master switch OFF, verify generator continues to supply power with battery OFF (instruments continue to function, voltmeter reading remains steady), then switch battery back ON.
11. _____ Switch avionics master ON, and turn on avionics. Once avionics are on, verify avionics master controls power to all avionics by switching OFF then back ON.
12. _____ Perform annunciator panel test with avionics master ON. Verify all segments illuminate. Verify dual tachometer continues to function during test.
13. _____ Open collective twist grip (throttle) to flight position and allow RPM to stabilize. Set N2 RPM to 100%. N2 and rotor tach needles must be within 1% of point-to-point.
14. _____ Beep RPM full down and verify N2 RPM is 98% or lower. Attempt to beep RPM full up, but **DO NOT** exceed 105%. Verify N2 at full beep up is 102% to 104%. Beep N2 back to 100%.

5-42 Run-Up (continued)

15. _____ Transmit on 118.0, 125.0, and 135.0 MHz. Verify no variation in dual tachometer readings during transmission.

16. _____ Briefly operate the heater at 100% N2 to ensure system functions and is clear of debris.

17. _____ Check engine anti-ice system. Green anti-ice indicator should illuminate accompanied by small MGT increase when anti-ice is switched ON.

18. _____ Raise collective slightly, reduce N2 RPM slowly via twist grip. Verify low RPM horns and light activate at 95% to 94% and continue at all lower RPMs.

19. _____ Perform engine N1 DECELERATION CHECK per Section 4 of the Pilot's Operating Handbook. (With N2/R at 100% and N1 at 80%, N1 decel to 70% following rapid throttle closure should take at least 2 seconds.)

20. _____ Check hydraulic system operation. Using cyclic-mounted hydraulics switch, turn hydraulics OFF and verify HYD light on (if equipped). Using small longitudinal cyclic inputs, there should be approximately one-half inch of freeplay before encountering stiffness and feedback. Turn hydraulics ON. Controls should be free with no feedback or uncommanded motion. Pull hydraulic circuit breaker, and verify that hydraulics remain on regardless of cyclic hydraulic switch position. Reset system to breaker in, hydraulics switch ON.

21. _____ Air conditioning (if installed): Verify system blows cold air on both low and high settings. Verify no EMI/RFI with other instruments and systems. After a flight with air conditioning on, verify water drains from drain tube in ship's belly (may be little or no water in very dry conditions).

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. Margin = Max allowable MGT - Indicated MGT.

4. _____ **Shutdown:**

a. _____ Perform POH "Shutdown Procedure" checklist.

b. _____ Verify rotor brake function and ROTOR BRAKE annunciator segment illuminates.

5-45 100-Hour / Annual Maintenance and Inspection

RHC recommends retaining a copy of the most recently performed 100-hour / annual checklist with the aircraft's maintenance records to meet the requirement of 14 CFR § 91.417 (b)(1).

R66 Serial No.: _____ Technician Name: _____

Registration No.: _____

Collective-Activated (Time In Service) Hourmeter Indication: _____ Technician Certificate Number: _____

Helicopter Total Time In Service: _____

_____ **Operation Checks:**
Perform ground and flight checks per § 5-40.

A. Preparation

CAUTION

Prior to pre-inspection cleaning, identify any residue and its source for follow-up examination. Residue may be fuel, oil, grease, paint, plastic, magnetic-metal, non-magnetic-metal, etc., or a combination; metal residue requires careful attention as it may indicate structural damage. Residue may be visible on structures adjacent to the source and not the source part itself.

_____ **Cleaning (required by 14 CFR Part 43, Appendix D, paragraph (a)):**
Clean main and tail rotor blades, hubs, and airframe exterior with a mild soap (pH between 7 & 9) and water solution per Chapter 20.

CAUTION

Do not spray main rotor hub, tail rotor gearbox vent, hydraulic reservoir vent, swashplate area, or bearing seals with high-pressure water or solvent as water or solvent may cause corrosion or breakdown of lubricants. See RR300 Series Operation and Maintenance Manual (OMM) for engine cleaning instructions and precautions.

5-45 100-Hour / Annual Inspection (continued)

A. Preparation (continued)

_____ **Access and Inspection Panels:**
Refer to R66 Illustrated Parts Catalog Chapter 6 for access and inspection panel locations. Remove or open necessary panels, doors, covers, fairings, and cowlings in accordance with 14 CFR Part 43, Appendix D, paragraph (a).

NOTE

If radio antennas are installed on removed panels, disconnect antenna lead and corresponding ground wire. Pull respective radio circuit breaker and tag circuit breaker with "Antenna Removed."

CAUTION

Instrument console removal (§ 95-10) is not required for scheduled inspections. Sufficient access for inspection is gained by removing the chin inspection panel, as well as removal of installed avionics, as required (refer to Chapter 97 & R66 SB-35A).

B. Inspection

CABIN FORWARD FOOTWELLS

_____ **Tail Rotor Pedal Bearing Blocks:**
Remove pedal bearing block covers as required. Examine accessible portion with inspection light and mirror. Inspect condition. Check for looseness or play in pedal bearings. Maximum allowable play is 0.080 inch axially and 0.030 inch radially. Verify bearing block security.

_____ **Adjustable Tail Rotor Pedals:**
Inspect condition. Verify no cracks in welds. Verify locking pins engage holes to secure adjustable pedals. Verify proper operating clearance. Verify no evidence of contact between outboard portion of lateral (torque) tube of RH pedal and under-floor longitudinal stiffener. Verify smooth actuation.

_____ **Co-Pilot Removable Tail Rotor Pedals:**
Inspect condition. Verify no cracks in welds. Verify locking pins engage holes to secure removable pedals. Verify proper operating clearance and smooth actuation.

_____ **Cabin Heater Diffusers:**
Inspect condition. Verify marking legibility. Verify no significant nicks, scratches or dents, or cracks in welds. Verify security.

_____ **Fire Extinguisher and Mount:**
Inspect condition. Inspect fire extinguisher per § 25-62A. Verify no loss of charge or obstructions in extinguisher nozzle. Verify security.

5-45 100-Hour / Annual Inspection (continued)

CABIN FORWARD FOOTWELLS (continued)

_____ **Map Holders:**
Inspect condition. Verify no defects, tears, or material deterioration. Remove foreign objects and verify security.

_____ **License Holder:**
Inspect condition. Verify no defects, cracks in plastic, or material deterioration. Verify security.

_____ **Cabin Chin and Floor:**
Inspect condition. Verify equipment security. Retrieve and discard trapped debris.

CONSOLE

_____ **Console Assembly:**
Inspect condition. Verify no significant nicks, scratches or dents; verify no cracks, corrosion, or loose rivets in lower console assembly. Verify hinge security.

_____ **HID Landing Lights:**
Inspect condition. Verify proper installation and security of wiring and equipment.

_____ **Flight & Engine Instruments:**
Inspect condition. Verify proper instrument markings per R66 POH Section 2. Verify proper installation and security of wiring and equipment.

_____ **Post Lights:**
Inspect condition. Verify proper function and equipment security.

_____ **Fuel Cutoff Control and Guard:**
Inspect condition. Verify cable and mounting bezel security. Verify proper adjustment and smooth operation of knob. Verify guard is attached to console.

_____ **Radios and Radio Trays:**
Inspect condition. Verify no cracks or corrosion. Verify proper installation and security of wiring and equipment.

_____ **Pitot & Static Lines:**
Inspect pitot and static lines for obstructions, cracking, chafing, pinching or kinking. Verify integrity of pitot and static line connections. Verify line security.

_____ **Tail Rotor Pedal Bearing Block Supports:**
Examine accessible portion with inspection light and mirror. Inspect both vertical sheet metal supports inside lower console and verify no cracks. Pay particular attention to area near NAS6603-13 bolts. Replace any cracked support prior to flight.

_____ **Tail Rotor Controls:**
Examine accessible portion with inspection light and mirror. Inspect tail rotor control components for obvious defects. Verify operating clearance.

5-45 100-Hour / Annual Inspection (continued)

CONSOLE (continued)

_____ **Cabin Heater Hose:**
Inspect condition. Verify no collapsed areas or chafing. Verify hose clamp and hose security.

_____ **Copper Bus Bars:**
Inspect condition. Verify no corrosion or bends in bus bar. Verify bus bar security and isolation from surrounding structure.

_____ **Wiring:**
Inspect condition. Verify no loose, chafed, or broken wires or terminals. Verify neatness, proper routing and installation, and security.

_____ **Fasteners & Torque Stripes:**
Inspect condition. Verify proper installation and security of fasteners. Renew deteriorated torque stripes per Figure 5-1.

_____ **Close & Secure:**
Verify foreign objects are removed. Verify equipment security and cleanliness of interior. Close console and verify security.

PILOT-SIDE CONSOLE (Optional equipment)

_____ **Pilot Avionics Support Weldment:**
Inspect condition. Verify no significant nicks, scratches, or dents on console shell. Verify no cracks in welds. Verify weldment mounting security.

CIRCUIT BREAKER PANEL

CAUTION

Ensure BATTERY switch is turned off while circuit breaker panel is open.

_____ **Panel Cover:**
Inspect condition. Verify no damage to nutplates and rails in panel interior. Verify marking legibility.

_____ **Fuses and Fuse Holders:**
Inspect condition. Verify security and no corrosion. Verify correct fuse installation.

_____ **Circuit Breakers:**
Inspect condition. Check airworthiness directive applicability. Verify proper installation and security.

_____ **Copper Bus Bars:**
Inspect condition. Verify no corrosion or bends in bus bars. Verify bus bar security and isolation from surrounding structure.

5-45 100-Hour / Annual Inspection (continued)

CIRCUIT BREAKER PANEL (continued)

_____ **Wiring:**
Inspect condition. Verify no loose, chafed, or broken wires or terminals. Verify neatness, proper routing and installation, and security.

_____ **Fasteners & Torque Stripes:**
Inspect condition. Verify proper installation and security of fasteners. Renew deteriorated torque stripes per Figure 5-1.

_____ **Close & Secure:**
Verify foreign objects are removed. Verify equipment security. Verify cleanliness of interior and of access cover. Close cover and verify security.

UNDER LEFT FRONT SEAT

_____ **Lithium-Ion Battery Circuit Back-Up Batteries (required with optional Lithium-ion main battery):**
Inspect condition. Verify presence and proper orientation of (2) 9V back-up batteries. Verify security of battery trays and G468-1 mount assembly. Verify legibility of silkscreen lettering on mount. Inspect wiring for obvious damage.

HORIZONTAL CONTROL TUNNEL (Front seats)

_____ **Covers:**
Inspect condition. Verify marking legibility.

_____ **Antenna Wiring & Connectors:**
Inspect condition. Verify no loose, chafed, frayed, or broken wires. Verify no damaged connectors. Verify neatness, proper routing and installation, and security.

_____ **Cyclic Box Assembly:**
Inspect condition. Verify no nicks, scratches, dents, cracks, corrosion, or loose rivets. Verify no distortion or damage on cyclic stop sheet metal assembly. Verify security.

_____ **Cyclic Stick Assembly:**
Inspect condition. Verify no nicks, scratches, dents, cracks, or corrosion. Verify no cracks in welds. If paint has worn thru to metal, touch-up with § 20-75 approved primer. Verify security, proper operating clearance, and smooth actuation. Verify security of removable co-pilot grip and locking pin.

_____ **Cyclic Boot:**
Inspect condition. Verify proper locking function of boot snaps. Verify no defects, tears, or material deterioration. Verify security.

_____ **Cyclic Friction Assembly:**
Inspect condition. Inspect link rod end bearings per § 5-33. Verify no excessive flaring at either end of friction spacer. Verify proper installation, security, and operation.

5-45 100-Hour / Annual Inspection (continued)

HORIZONTAL CONTROL TUNNEL (Front seats; continued)

_____ **Cyclic Pivot:**
Inspect condition. Verify no nicks, scratches, dents, cracks, or corrosion. Inspect spherical bearings per § 5-33. Verify proper installation, security, and operating clearance.

_____ **Cyclic Torque Tube:**
Examine accessible portion with inspection light and mirror. Verify no nicks, scratches, dents, cracks, or corrosion. Verify no cracks around reinforcement blocks on forward end of torque tube. Verify proper installation, security, and operating clearance.

_____ **Horizontal Push-Pull Tubes:**
Examine accessible portion with inspection light and mirror. Inspect condition per § 5-32. Verify no nicks, scratches, chafing, dents, cracks, or corrosion. Inspect rod end bearings per § 5-33; verify rod ends are centered and evaluate torque stripes per § 5-36. Check witness holes for proper thread engagement. Verify proper installation, security, and operating clearance.

_____ **Collective Stick Assembly:**
Inspect condition. Verify no nicks, scratches, dents, cracks, or corrosion. Verify no cracks in welds. Verify proper installation, security, and operation of collective micro switches. Verify security, proper operating clearance, and smooth actuation of both flight and throttle controls. Verify over center spring holds twist grip full open or full closed. Verify placard legibility.

_____ **Collective Stick Torque Tube:**
Inspect condition. Verify no nicks, scratches, dents, cracks, or corrosion.

_____ **Collective Boot:**
Inspect condition. Verify proper locking function of boot snaps. Verify ty-rap is properly installed (loosely securing boot around collective stick). Verify no defects, tears, or material deterioration. Verify security.

_____ **Fuel Valve Knob and Guard:**
Inspect condition. Verify cable and mounting bezel security. Verify proper adjustment and smooth operation of valve. Verify guard is present.

_____ **Collective Friction & Stop Assembly:**
Inspect condition. Verify no nicks, scratches, dents, cracks, or corrosion in stop assembly. Verify no bending or binding of stop through full control travel, with and without friction applied. Measure collective friction per § 67-22. Verify proper installation and security of collective friction lever and stop assembly.

5-45 100-Hour / Annual Inspection (continued)

HORIZONTAL CONTROL TUNNEL (Front seats; continued)

_____ **Autopilot (if installed; Garmin or HeliSAS):**
Inspect condition of pitch servo, pitch & roll servo linkages to cyclic, and wiring; verify security, no obvious damage, and neatness. While observing servo linkages, have second person manipulate flight controls through full range of travel; verify operating clearance.

_____ **Co-Pilot Removable Collective Stick Assembly:**
Remove co-pilot collective stick assembly. Inspect condition. Verify no nicks, scratches, dents, cracks, or corrosion. Verify no damage to spring pin and safety wire at coupling. Firmly grasp coupling and rotate twist grip in each direction with opposite hand. Verify no free play of coupling or spacer relative to torque tube. Install removable collective stick in helicopter and verify both locking pins engage holes to secure stick. Verify security, proper operating clearance, and smooth actuation of both flight and throttle controls. Verify placard legibility.

_____ **Co-Pilot Removable Collective Boot:**
Inspect condition. Verify proper locking function of boot snaps. Verify ty-rap is properly installed (loosely securing boot around collective stick). Verify no defects, tears, or material deterioration. Verify security.

_____ **Pitot & Static Lines & Drains:**
Inspect pitot and static lines for obstructions, cracking, chafing, pinching, or kinking. If internal moisture is evident, remove drain plug from tee fitting on affected line, remove moisture, install drain plug(s), and verify integrity of pitot and static line connections. Verify line security.

_____ **Wiring:**
Inspect condition. Verify no loose, chafed, or broken wires or terminals. Verify neatness, proper routing and installation, and security.

_____ **Fasteners & Torque Stripes:**
Inspect condition. Verify proper installation and security of fasteners. Renew deteriorated torque stripes per Figure 5-1.

_____ **Antennas:**
Inspect condition. Verify no cracks where antennas mount to cowling. Verify security.

_____ **Close & Secure:**
Verify foreign objects are removed. Verify equipment security. Verify cleanliness of interior and of inspection and access covers and cowlings. Connect ELT (if installed) wiring at connectors and anti-ice switch wiring terminals under cyclic box cover. Connect antenna leads and ground wires (if installed). Install covers and cowlings removed in preceding steps. Verify security. Verify security of removable and adjustable controls. Fasten cyclic, collective, and removable collective boot snaps.

5-45 100-Hour / Annual Inspection (continued)

HORIZONTAL CONTROL TUNNEL (Aft seats)

_____ **Covers:**
Inspect condition. Verify marking legibility.

_____ **Antenna Wiring & Connectors:**
Inspect condition. Verify no loose, chafed, frayed, or broken wires. Verify no damaged connectors. Verify neatness, proper routing and installation, and security.

_____ **Cyclic Yoke:**
Inspect condition. Verify no cracks, corrosion, or fretting. Inspect spherical bearings per § 5-33. Verify proper installation, security, and operating clearance.

_____ **Cyclic Fork:**
Inspect condition. Verify no nicks, scratches, dents, cracks, or corrosion. Inspect rod end bearings per § 5-33. Verify proper installation, security, and operating clearance.

_____ **Cyclic Torque Tube:**
Examine accessible portion with inspection light and mirror. Verify no nicks, scratches, dents, cracks, or corrosion. Verify no cracks around reinforcement blocks on aft end of torque tube. Verify proper installation, security, and operating clearance.

_____ **Horizontal Push-Pull Tubes:**
Examine accessible portion with inspection light and mirror. Inspect condition per § 5-32. Verify no nicks, scratches, chafing, dents, cracks, or corrosion. Inspect rod end bearings per § 5-33; verify rod ends are centered and evaluate torque stripes per § 5-36. Check witness holes for proper thread engagement. Verify proper installation, security, and operating clearance.

5-45 100-Hour / Annual Inspection (continued)

HORIZONTAL CONTROL TUNNEL (Aft seats; continued)

_____ **Fuel Cutoff and Throttle Control:**
Inspect condition. Verify proper fuel cutoff and throttle control clearance to installed equipment and surrounding structure. Verify proper installation and security.

_____ **Cabin Heater Valve and Control:**
Inspect condition. Verify control clearance to installed equipment and surrounding structure. Verify heater valve security. Verify proper installation and smooth operation of valve.

_____ **Flight Control Bellcranks:**
Inspect condition. Verify no nicks, scratches, dents, cracks, or corrosion. Inspect spherical bearings per § 5-33. Verify proper installation, security, and operating clearance.

_____ **Bellcrank Support:**
Inspect condition. Verify no cracks or corrosion in welds. Verify no cracks where support mounts to keel panels. Verify proper installation and security.

_____ **Evaporator and Blower Assembly (Air Conditioning; if installed):**
Remove middle seat assembly and cover, and inspect condition. Verify refrigerant line security, no damage, and clearance to adjacent structure. Verify no loose, chafed, frayed, or broken wires. Verify proper installation and security of blower and evaporator components.

_____ **Evaporator Drain Tubes and Valve (Air Conditioning; if installed):**
Remove middle seat assembly and cover, and covers inside left and right seat compartments to access drain system. Verify tubes are unobstructed. Function-check drain system by simultaneously squeezing drain tube and sediment tube near tee-fitting and verify check-valve ball moves up momentarily.

VERTICAL CONTROL TUNNEL

_____ **Vertical Push-Pull Tubes:**
Examine accessible portion with inspection light and mirror. Inspect condition per § 5-32. Verify no nicks, scratches, chafing, dents, cracks, or corrosion. Inspect rod end bearings per § 5-33; verify rod ends are centered and evaluate torque stripes per § 5-36. Check witness holes for proper thread engagement. Verify proper installation, security, and operating clearance.

_____ **Beep Switch Actuator:**
Inspect condition. Verify proper control clearance to installed equipment and surrounding structure. Verify proper actuator installation, security, and operation.

_____ **Tunnel Interior:**
Verify general cleanliness of tunnel interior. Inspect for fluid leaks or seepage; investigate cause and correct.

_____ **Seat Backs:**
Inspect condition. Verify upholstery cleanliness and security.

5-45 100-Hour / Annual Inspection (continued)

CABIN BULKHEAD

_____ **Blind Encoder & Engine Monitoring Unit (EMU):**
Inspect condition. Inspect wiring for obvious damage. Verify no cracks where units mount to bulkhead. Verify proper installation and security. Download EMU data as required per RR300 Series OMM.

_____ **Fuse Block and Fuses (Air Conditioning; if installed):**
Inspect condition. Verify no corrosion. Verify correct fuse amperage and security.

_____ **Antenna Wiring:**
Inspect condition. Verify no loose, chafed, frayed, or broken wires. Verify neatness, proper routing and installation, and security. Check grommets for proper installation.

_____ **Pitot & Static Lines:**
Inspect pitot and static lines for obstructions, cracking, chafing, pinching, or kinking. Verify integrity of pitot and static line connections. Verify line security.

_____ **Seat Back Interior:**
Verify general cleanliness of seat back interior. Inspect for fluid leaks or seepage; investigate cause and correct.

_____ **Fuel Flow Meter Adapter (if installed):**
Refer to § 28-23. Visually inspect adapter for any obvious damage; verify proper installation and security. Inspect wiring for loose, chafed, frayed, or broken wires. Verify no damaged connectors. Verify wiring neatness, proper routing and installation, and security.

_____ **Cabin Bulkhead:**
Examine accessible portion with inspection light and mirror. Verify no nicks, scratches, dents, cracks, corrosion, or loose rivets. Verify stiffener security. Verify upholstery cleanliness and security.

_____ **Wiring:**
Inspect condition. Verify no loose, chafed, or broken, wires or terminals. Verify neatness, proper routing and installation, and security.

_____ **Fasteners & Torque Stripes:**
Inspect condition. Verify proper installation and security of fasteners. Renew deteriorated torque stripes per Figure 5-1.

_____ **Antennas:**
Inspect condition. Verify no cracks where antennas mount to cowlings. Verify security.

_____ **Close & Secure:**
Verify foreign objects are removed. Verify equipment security. Verify cleanliness of interior and of inspection and access covers and cowlings. Connect antenna leads and ground wires (if installed). Install covers and cowlings removed in preceding steps. Verify security.

5-45 100-Hour / Annual Inspection (continued)

BAGGAGE COMPARTMENT

_____ **Door:**
Inspect condition. Verify proper operation of micro switch and COWL DOOR warning segment. Inspect hinges and latches for obvious defects. Verify security and proper latching/locking function.

_____ **Carpet:**
Inspect condition. Verify no defects, tears, or material deterioration. Verify proper installation and security.

_____ **Interior:**
Inspect condition. Verify no structural damage. Verify general cleanliness of baggage compartment. Verify any installed equipment or passenger cargo are secure.

_____ **Generator Control Unit (GCU) & Wiring:**
Inspect condition. Verify no exposed, loose, chafed, or broken, wires & terminals. Verify proper installation and security of wiring covers and Generator Control Unit (GCU).

BATTERY

_____ **Lead-Acid Battery Installations:**
Inspect condition. Verify no cracks or corrosion on or near battery cable terminals. As required, perform capacity test or replace battery per manufacturer's instructions. Verify battery cable security. Verify no corrosion in surrounding structure.

_____ **Lithium-Ion Battery Installation (if equipped):**
Refer to § 96-12. Inspect condition. Verify no cracks or corrosion on or near battery terminals. Verify vent hose, comm connector wiring, and battery cable security. Replace both 9V back-up batteries under LH front seat using batteries meeting standard ANSI/NEDA - 1604A, IEC - 6LR61, or IEC - 6LP3146. Perform scheduled maintenance as required. Verify no corrosion in surrounding structure.

AUX FUEL SYSTEM (If equipped)

_____ **Placards:**
Verify placard legibility, proper installation, and security.

_____ **Aux Fuel Tank:**
Examine accessible portion with inspection light and mirror. Inspect condition of exterior and verify no leakage. Check bladder interior for foreign objects or debris. Verify security.

_____ **Aux Fuel Tank Support:**
Examine accessible portion with inspection light and mirror. Inspect condition of exterior; verify no cracks or obvious damage. Verify security.

5-45 100-Hour / Annual Inspection (continued)

AUX FUEL SYSTEM (If equipped; continued)

_____ **Aux Fuel Hoses:**
Inspect condition. Verify no leakage, chafing, or obvious damage to fuel lines. Verify line clearance to installed equipment and surrounding structure. Verify security.

_____ **Aux Fuel Gage Sender & Wiring:**
Inspect condition. Verify no loose, chafed, or broken wires or terminals. Verify proper installation and security of sender and wiring.

_____ **Aux Fuel Pump Wiring:**
Inspect condition. Verify no loose, chafed, or broken wires. Verify proper installation and security of wiring.

_____ **Aux Fuel Cap:**
Inspect condition. Verify no damage or deterioration of gasket. Install cap and verify proper locking function. Verify security.

_____ **Aux Fuel Tank Sump Drain:**
Inspect condition. Verify drain valve opens easily, drains fuel freely, springs closed, and seals completely. Inspect drain hose assembly for defects, tears, or material deterioration. Secure hose at tab near drain valve.

_____ **MT183-1 Tool Kit:**
Inspect condition. Remove kit and verify kit contains loose parts listed in R66 Illustrated Parts Catalog. Clip kit to aux tank and verify security.

PRESSURE FUELING SYSTEM (If equipped)

_____ **Pressure Fueling System (optional):**
Perform scheduled inspections per § 28-67 Part A.

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5-45 100-Hour / Annual Inspection (continued)

MAIN ROTOR GEARBOX COMPARTMENT

_____ **Cowling Doors:**
Inspect condition. Verify proper operation of fasteners.

_____ **Antenna Wiring & Connectors:**
Inspect condition. Verify no loose, chafed, frayed, or broken wires. Verify no damaged connectors. Verify neatness, proper routing and installation, and security. Check grommets for proper installation.

_____ **Placards:**
Verify placard legibility, proper installation, and security. Refer to Chapter 11.

_____ **Fuel Tank:**
Examine accessible portion with inspection light and mirror. Inspect condition of exterior and verify no leakage. Check bladder interior for foreign objects or debris. Verify security.

_____ **Fuel Gage Sender & Wiring:**
Inspect condition. Verify no loose, chafed, or broken, wires or terminals. Verify proper installation and security of sender and wiring.

_____ **Low-Fuel Switch Assembly Warning:**
Turn battery switch on. With a clean wooden dowel, gently depress low-fuel sender float in fuel bladder and verify LOW FUEL warning segment illuminates after approximate 1-second delay. Turn battery switch off.

_____ **Fuel Cap:**
Inspect condition. Verify no damage or deterioration of gasket. Install cap and verify proper locking function. Verify security.

_____ **Fuel Tank Rollover Vents:**
Inspect condition. Inspect Tygon® tube for defects, tears, or material deterioration. Verify proper safety wire installation and security. Verify 0.25 inch minimum clearance between cable assembly and vent assembly Tygon® tube; adjust cable as required. Verify no obstructions in vents.

_____ **Fuel Tank Sump Drain:**
Inspect condition. Verify drain valve opens easily, drains fuel freely, springs closed, and seals completely. Inspect drain tube and clamp for defects, tears, or material deterioration. Clear fuel from drain tube and install clamp.

_____ **Fuel Valve:**
Inspect condition. Verify cable and component security. Verify proper installation and (smooth) operation of valve.

5-45 100-Hour / Annual Inspection (continued)

MAIN ROTOR GEARBOX COMPARTMENT (continued)

_____ **Cabin Bulkhead:**

Inspect condition. Verify no deformation, buckling, wrinkling, nicks, scratches, dents, cracks, corrosion, fretting, or loose rivets. Verify no leakage from fuel tanks. Verify security.

_____ **Main Rotor Gearbox:**

Inspect condition. Verify no damage, material deterioration, or deformation of gearbox mounts. Verify no leakage at mast tube-to-gearbox attachment. Inspect mast tube for cracks. With ship on level ground, verify correct oil level and cleanliness through sight gage and adjust or flush as required. Verify security of Hall Effect senders and yoke magnets. Inspect oil lines for leakage, chafing, or obvious damage. Inspect oil pump mounting and fittings for leaking or obvious damage. Inspect gearbox oil filter for leakage or for tripped bypass indicator. Verify oil system proper installation and security.

NOTE

At 600 hours time in service or annually, whichever occurs first, remove chip detector and clean detector's magnetic probe and adjacent metal body using a toothbrush and approved solvent per § 12-13 Part B. Service gearbox, change oil and filter, and clean chip detector at intervals recommended in § 1-90.

_____ **Gearbox Mounting Bolts:**

Torque check (4) F650 bolts securing gearbox to upper frame; refer to § 20-33 for special torque. Apply torque to bolt head while holding nut stationary using Lycoming cylinder base-nut wrench or equivalent. If any bolt rotates during check, torque each bolt in a clockwise pattern until all (4) bolts pass check without rotating. Reapply torque stripe per Figure 5-1 as required.

_____ **Rotor Brake:**

Inspect condition. Verify integrity of brake pads and 0.030 inch minimum pad thickness. Verify brake pads are clear of engine shaft with brake released. Inspect micro switches for cracks. Verify no loose, chafed, or broken wires or terminals. Verify security. Inspect both pulleys (one at end of lever, one next to fuel tank) for cracks. Verify no frayed strands or binding of rotor brake activating cable. Verify proper routing and installation, security, and operation of brake and brake micro switch.

_____ **Hydraulic Servo Support Frame:**

Inspect condition. Inspect rod ends per § 5-33. Use an inspection light and mirror to inspect all parts of each weld. Verify no cracks or corrosion in servo support. Verify proper installation and security.

5-45 100-Hour / Annual Inspection (continued)

MAIN ROTOR GEARBOX COMPARTMENT (continued)

_____ **Jackshaft:**
Inspect condition. Verify no cracks or corrosion in welded assembly. Inspect jackshaft to vertical push-pull tube attachment. Inspect jackshaft aft support frame attachment and forward attachment rod end per § 5-33. Inspect C343-8 tube and rod ends linking jackshaft to aft servo. Verify security and proper operating clearance.

_____ **Main Rotor Push-Pull Tubes:**
Examine accessible portion with inspection light and mirror. Inspect condition per § 5-32. Verify no nicks, scratches, chafing, dents, cracks or corrosion. Inspect rod end bearings per Section 5-33; verify rod ends are centered and evaluate torque stripes per § 5-36. Check witness holes for proper thread engagement. Verify proper installation, security, and operating clearance.

_____ **Tail Rotor Push-Pull Tube & Forward Bellcrank:**
Examine accessible portion with inspection light and mirror. Inspect condition per § 5-32. Verify no nicks, scratches, chafing, dents, cracks, or corrosion. Inspect rod end bearings per § 5-33; verify rod ends are centered and evaluate torque stripes per § 5-36. Check witness holes for proper thread engagement. Inspect bellcrank and bellcrank sheet metal mounting for nicks, scratches, dents, cracks, or corrosion. Inspect spherical bearings per § 5-33. Verify proper installation, security, and operating clearance.

_____ **Hydraulic Reservoir:**
Inspect condition. Verify no significant leakage. Replace filter and packing at intervals specified in § 1-90. Drain and flush hydraulic system per § 12-33 if oil has turned dark or emits bad odor. Add fluid as required. Verify security.

CAUTION

Cleanliness of hydraulic fluid is vital to proper system operation. Service hydraulic system with clean fluid from sealed containers. Verify funnels, tubing, and other service tooling is free of contaminants.

_____ **Forward Hydraulic Servos:**
Inspect condition; verify no obvious defects. Hydraulic fluid seepage is permissible ("seepage" is evidence of fluids without flow, drips, or runs) provided fluid does not contaminate MRGB rubber mounts. Verify servo input rod end/clevis area is clean; cleanse area with no-residue, nonalcoholic solvent as required. Verify approximately 0.040 inch total free-play at servo valve input. Inspect rod ends per § 5-33. Verify valve clearance to surrounding structure while flight controls are moved through full range of travel. Inspect condition and verify security of scissors at upper clevis of servos. Inspect clevis security and torque stripe per Figure 5-4A.

5-45 100-Hour / Annual Inspection (continued)

MAIN ROTOR GEARBOX COMPARTMENT (continued)

CAUTION

Use LPS PreSolve to clean hydraulic parts. Do not use alcohol.

_____ **Aft Hydraulic Servos:**
Inspect condition; verify no obvious defects. Hydraulic fluid seepage is permissible ("seepage" is evidence of fluids without flow, drips, or runs) provided fluid does not contaminate MRGB rubber mounts. Verify servo input rod end/clevis area is clean; cleanse area with no-residue, nonalcoholic solvent as required. Verify approximately 0.040 inch total free-play at servo valve input. Inspect rod ends per § 5-33. Verify valve clearance to surrounding structure while flight controls are moved through full range of travel. Inspect clevis security and torque stripe per Figure 5-4A.

_____ **Hydraulic-Servo Absorbent Pad (Recent Servos Only):**
If installed, examine white absorbent pad(s); replace pad if damaged. If pad is discolored, remove pad from tray, then use a roller to squeeze out absorbed fluid, or replace pad. Clean tray & install pad.

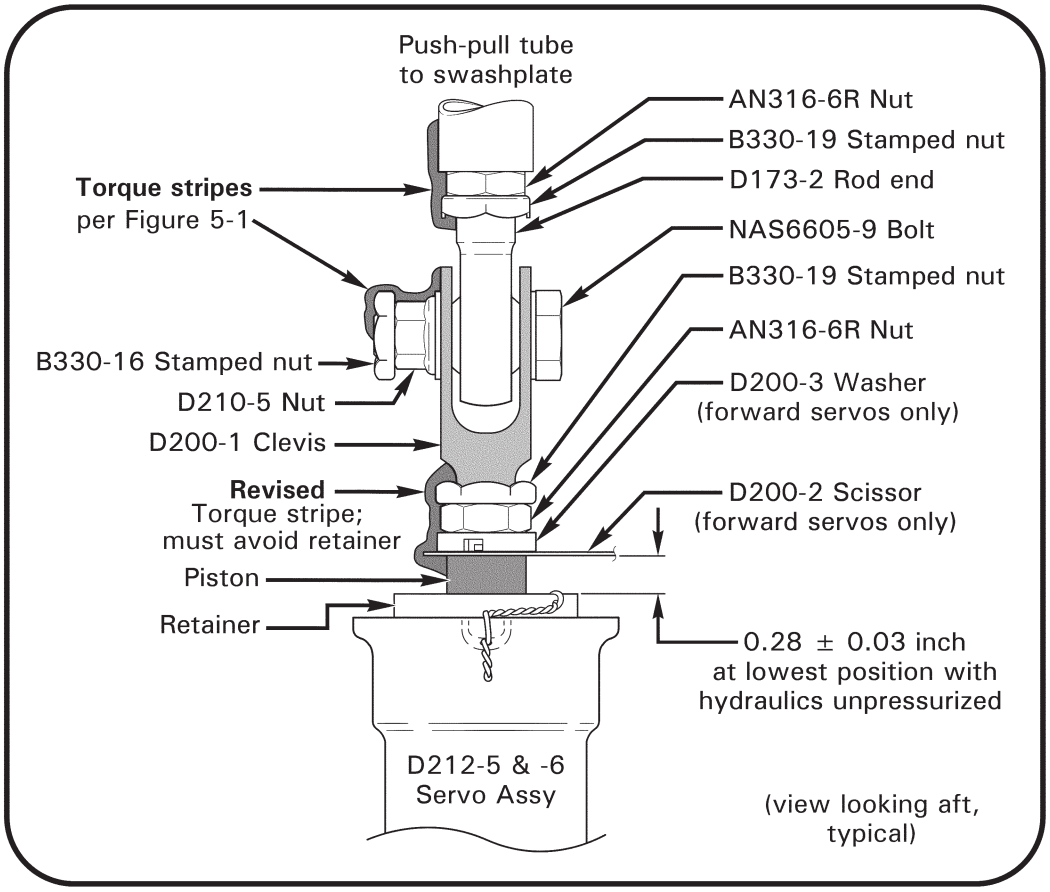


FIGURE 5-4A CLEVIS TORQUE STRIPE

5-45 100-Hour / Annual Inspection (continued)

MAIN ROTOR GEARBOX COMPARTMENT (continued)

_____ **Hydraulic Hoses, Lines, & Fittings:**
Inspect condition. Verify no leakage, chafing, or obvious damage to hydraulic lines. Verify integrity of connections. Verify fluid line clearance to installed equipment and surrounding structure and sufficient fluid hose slack available through full control travel. Verify proper installation and security.

_____ **Hydraulic Pump:**
Inspect condition. Inspect Telatemp per § 5-35. Verify no significant leakage. Verify proper installation and security.

_____ **Upper Steel Tube Frame:**
Inspect condition. Verify no nicks, scratches, dents, cracks, or corrosion. Verify no chafing where wires, hoses, or clamps attach to frame. Examine each weld for cracks with an inspection light and mirror.

CAUTION

Upper steel tube frame is fatigue loaded and therefore susceptible to fatigue cracks. Inspect all joints thoroughly.

_____ **F908-1 (Tail Rotor Drive) Yoke Assembly:**
Inspect condition. Verify no cracks, corrosion, or fretting. Verify proper installation, security, and operating clearance. Verify security of magnets.

_____ **G779-1 Pulley (Air Conditioning; if installed):**
Inspect condition. Verify no cracks, corrosion, or fretting. Verify no nicks or sharp edges in fins that could damage v-belt. Verify proper installation, security, and operating clearance.

_____ **V-Belt (Air Conditioning; if installed):**
Inspect condition. Replace belt if exhibiting frayed edges, excessive cracking, heat damage, or rubber deterioration. Verify 4.5–5.5 lb of force applied mid-span deflects belt 0.16-inch; adjust as required per § 21-21.

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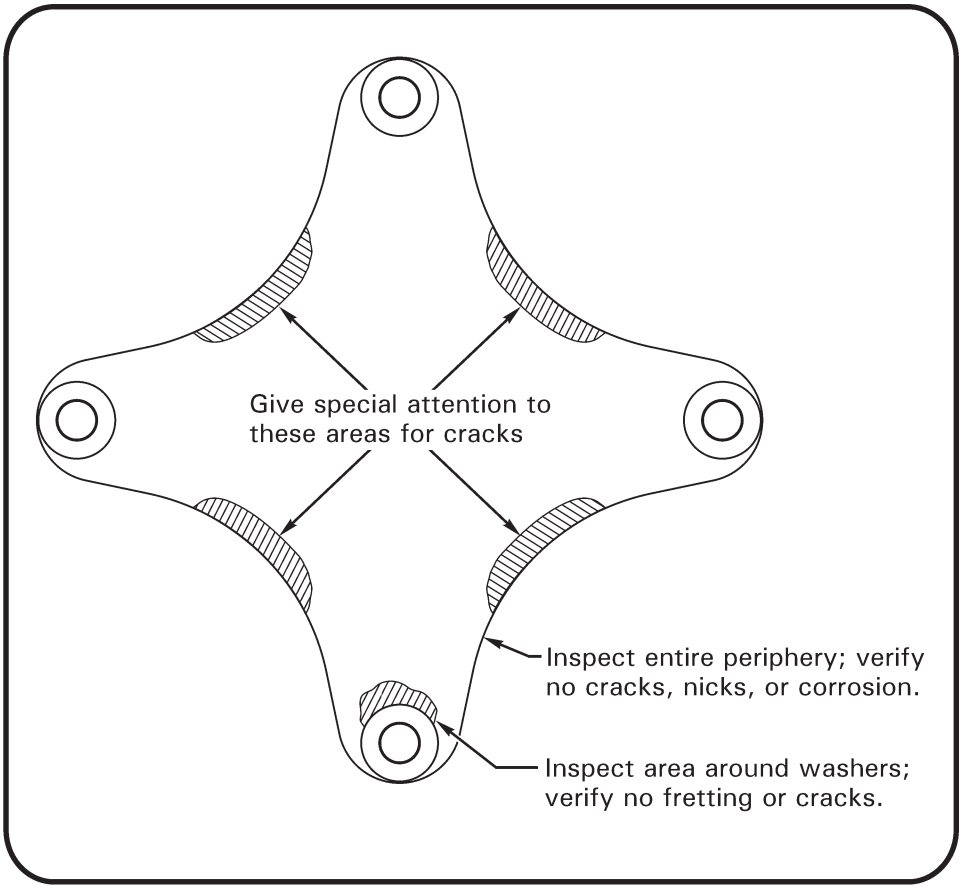


FIGURE 5-4B FLEX PLATE INSPECTION

5-45 100-Hour / Annual Inspection (continued)

MAIN ROTOR GEARBOX COMPARTMENT (continued)

_____ **Compressor Assembly (Air Conditioning; if installed):**
Inspect condition, including integrity of belt-tension slotted plate. Verify security of mounting. Verify no loose, chafed, frayed, or broken wires. Verify proper installation and security of pressure switches, snubber, and refrigerant lines.

_____ **Refrigerant Hose Assemblies (Air Conditioning; if installed):**
Verify security, no damage, and clearance to adjacent structure. Verify dust caps installed on service fittings where lines mount to compressor.

_____ **F196-1 (Tail Rotor Drive) Fan Shaft:**
Inspect condition. Verify no shaft corrosion. Remove any light surface corrosion and apply wax or suitable corrosion inhibitor. Verify no cracks, corrosion, or fretting in fore and aft weldment. Verify proper installation, security, and operating clearance.

5-45 100-Hour / Annual Inspection (continued)

MAIN ROTOR GEARBOX COMPARTMENT (continued)

_____ **C947-3 (Tail Rotor Drive) Plate Assemblies, Forward and Intermediate:**
Refer to Figure 5-4B. Inspect condition. Verify no distortion, nicks, scratches, cracks, corrosion, or fretting. If fretting is detected, contact RHC Technical Support. Verify bonded washers are installed on both sides of each flex plate ear. Verify proper installation, security, and operating clearance.

_____ **Fanwheel Assembly and Scroll Assembly:**
Clean fanwheel blades and inspect condition. Verify no cracks, corrosion, or obvious damage on blade leading edges or fan assembly. Verify 0.10 inch minimum gap between G174-1 fanwheel assembly and forward and aft F305-5 inlets. Check gap all the way around; rotate fanwheel and check gap again (several positions). If gap does not meet minimum limit, trim inlets per § 79-11. Verify proper installation, security, and operating clearance. Verify no cracks or damage to scroll assembly.

_____ **Emergency Locator Transmitter (ELT; if installed):**
In accordance with local regulation, test per ELT manufacturer instructions. If 406 Mhz ELT, confirm programming tag matches helicopter registration. If RHC installation, inspect condition of both primary hook & loop strap and secondary buckle strap; replace strap(s) if damaged or deteriorated. Verify ELT security and clearance to drive train.

_____ **Pitot Line & Static Vent:**
Inspect pitot and static lines for obstructions, cracking, chafing, pinching or kinking. Verify integrity of pitot and static line connections. Verify line security.

_____ **Horizontal Firewall:**
Inspect condition. Verify no deformation, buckling, wrinkling, nicks, scratches, dents, cracks, corrosion, fretting, or loose rivets. Verify no leakage from fuel tanks.

_____ **Wiring:**
Inspect condition. Verify no loose, chafed, or broken wires or terminals. Verify neatness, proper routing and installation, and security.

_____ **Fasteners & Torque Stripes:**
Inspect condition. Verify proper installation and security of fasteners. Renew deteriorated torque stripes per Figure 5-1.

_____ **Antennas:**
Inspect condition. Verify no cracks where antennas mount to cowling. Verify security.

_____ **Cowling Doors:**
Inspect condition. Verify proper operation of fasteners.

_____ **F910-1 (Main Rotor Drive) Yoke:**
Inspect condition. Verify no cracks, corrosion, or fretting. Verify proper installation, security, and operating clearance.

5-45 100-Hour / Annual Inspection (continued)

MAIN ROTOR GEARBOX COMPARTMENT (continued)

_____ **A947-2 (Main Rotor Drive) Plate Assemblies:**
Refer to Figure 5-4B. Inspect condition. Verify no distortion, nicks, scratches, cracks, corrosion, or fretting. If fretting is detected, contact RHC Technical Support. Verify bonded washers are installed on both sides of each flex plate ear. Verify proper installation, security, and operating clearance.

_____ **F642 (Engine) Shaft Weldment:**
Inspect condition. Verify 0.2 inch minimum clearance between shaft weldment and firewall grommet; verify equal gap concentrically between shaft and box assembly hole edges. Adjust F174-1 support weldment rod ends per § 53-31 as required. Rotate shaft and verify no cracks, corrosion, or fretting. Verify proper installation, security, and operating clearance. If shaft forward flange is not circular, remove shaft from service and install F642-7 shaft.

_____ **Engine Firewall:**
Inspect condition. Verify no deformation, buckling, wrinkling, nicks, scratches, dents, cracks, corrosion, fretting, or loose rivets. Verify no leakage from fuel tanks.

_____ **Engine Oil Tank:**
Inspect condition. Verify no leakage or obvious damage to oil tank exterior. Check tank interior for foreign objects. Add oil as required per R66 POH Section 8. Verify tank security.

_____ **Tailcone Attachment:**
Inspect condition. Verify no cracks near fasteners attaching tailcone to upper frame. Verify proper installation and security.

_____ **Upper Steel Tube Frame:**
Inspect condition. Verify no nicks, scratches, dents, cracks, or corrosion. Verify no chafing where wires, hoses, or clamps attach to frame. Examine each weld for cracks with an inspection light and mirror.

CAUTION

Upper steel tube frame is fatigue loaded and therefore susceptible to fatigue cracks. Inspect all joints thoroughly.

_____ **Antenna Wiring & Connectors:**
Inspect condition. Verify no loose, chafed, frayed, or broken wires. Verify no damaged connectors. Verify neatness, proper routing and installation, and security. Check grommets for proper installation.

_____ **Fasteners & Torque Stripes:**
Inspect condition. Verify proper installation and security of fasteners. Renew deteriorated torque stripes per Figure 5-1.

5-45 100-Hour / Annual Inspection (continued)

MAIN ROTOR GEARBOX COMPARTMENT (continued)

_____ **Antennas:**
Inspect condition. Verify no cracks where antennas mount to cowling. Verify security.

_____ **Close & Secure:**
Verify foreign objects are removed. Verify equipment security. Verify cleanliness of interior and of inspection and access doors and cowlings. Connect antenna leads and ground wires, if installed. Install/close doors and cowlings removed in preceding steps. Verify security.

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5-45 100-Hour / Annual Inspection (continued)

ENGINE

Refer to RR300 Series OMM, and applicable engine component manufacturer's maintenance publications for service and inspection procedures.

Additional service and inspection intervals are specified in § 1-90.

NOTE

For engine-related matters, if there is a conflict between this manual and Rolls-Royce instructions, Rolls-Royce instructions take precedence. Notify RHC of discrepancy.

_____ **Inlet Plenum and Filter Bypass Indication:**
Inspect plenum condition. Verify no foreign object debris or loose items. Turn battery switch on. Verify annunciator panel warning segment illuminates when bypass doors are opened individually, then simultaneously. Turn battery switch off.

_____ **Standard (Foam) Air Filter Assembly:**
Inspect condition. Verify no tears, punctures, or damage to filter media or cage assembly; verify no corrosion, cracks, or distortion to filter assembly components. Service filter as required per § 71-21, Part D. Verify proper installation and security.

_____ **Inlet Barrier Filter (if installed):**
Inspect condition. Verify no tears, punctures, or damage to filter media or cage assembly; verify no corrosion, cracks, or distortion to filter assembly components. Service or replace filter assemblies as required per § 71-21, Part E. Note indication on filter maintenance aid. Verify proper installation and security.

_____ **Engine Hoses:**
Inspect condition. Verify no rips, holes, or collapsed areas (gently squeeze hose with finger tips). Verify proper installation and security.

_____ **Exhaust Pipe:**
Inspect condition. Verify no cracks (illuminating exterior with bright light while viewing interior facilitates crack detection). Inspect condition and security of F173-1 struts. Inspect condition and security of gearbox vent and clamps.

_____ **Starter-Generator & Wiring:**
Inspect condition. Verify no loose, chafed, frayed, or broken wires. Verify no damaged connectors. Verify neatness, proper routing and installation, and security.

_____ **Starter-Generator Hose and Filter:**
Inspect condition. Remove hose at generator inlet and inspect interior condition and attachment of reinforcement wire. Verify no rips, holes, or collapsed areas in hose (gently squeeze hose with finger tips). Verify no tears, punctures, or damage to filter foam; may be cleaned with mild soap (pH between 7 & 9) and warm water solution.

5-45 100-Hour / Annual Inspection (continued)

ENGINE (continued)

_____ **Engine Oil and Oil Filter:**
Add oil as required per R66 POH Section 8. Change oil and oil filter as required per RR300 OMM. Verify filter security.

_____ **Oil Lines:**
Inspect condition. Verify no leakage where lines connect to tank. Verify no leakage, chafing, or obvious damage to oil lines. Verify line clearance to installed equipment and surrounding structure. Verify security.

_____ **Cooling Duct and Oil Coolers:**
Verify installation security with no cracks in duct or mounting. Verify cooler line connections are tight and coolers have no nicks, dents, cracks, or corrosion. Verify duct and cooler cores are free of debris to allow full airflow.

_____ **Power Turbine Governor (PTG) Control:**
Refer to Figure 76-2. Verify D333-13 fitting in PTG input lever moves in and out slightly with light finger pressure. If D333-13 fitting does not move in response to light finger pressure then follow compliance procedure in R66 Service Bulletin SB-01.

_____ **Fuel Control Unit (FCU) and Control Rigging:**
Verify proper routing and security of throttle and fuel cutoff controls; verify smooth actuation of both controls without binding. Verify FCU throttle arm contacts idle stop with twist grip closed and contacts maximum throttle stop with twist grip open. Verify FCU cutoff lever rests in detent when control is OFF and has 0.030–0.090 inch clearance from maximum fuel stop when control is ON.

_____ **Fuel Filter:**
Inspect condition; service fuel filter per RR300 OMM, as required. Verify proper installation and security of wiring and housing.

_____ **Fuel Hose:**
Inspect condition. Verify no leakage, chafing, or obvious damage to tank-to-engine hose. Verify hose clearance to installed equipment and surrounding structure. Verify security.

_____ **Fuel Flow Meter Transducer (if installed):**
Refer to § 28-23. Visually inspect fuel control unit-to-transducer fuel tube connections, transducer, and reducer connections to transducer & check valve for evidence of leakage. Visually inspect components for any obvious damage; verify proper installation and security. Verify no damaged connectors. Verify wiring neatness, proper routing and installation, and security.

5-45 100-Hour / Annual Inspection (continued)

ENGINE (continued)

_____ **Firewalls:**

Inspect condition. Verify no deformation, buckling, wrinkling, cracks, corrosion, fretting, or loose rivets. Pay particular attention to structural attachment points. Inspect condition of engine-to-firewall seal. Verify no open holes.

WARNING

Open holes in engine-to-firewall seals are potential fire leak paths.

_____ **Engine Mounts:**

Inspect condition. Verify no cracks or corrosion in engine mount weldment. Verify safety wire and security of mounting bolts.

_____ **Lower Steel Tube Frame:**

Inspect condition. Verify no nicks, scratches, dents, cracks, or corrosion. Verify no chafing where wires, hoses, or clamps attach to frame. Examine each weld for cracks with an inspection light and mirror.

_____ **Condenser and Fan Assemblies (Air Conditioning; if installed):**

Inspect condition. Verify security of fans, box assembly, condenser, and firewall supports. Verify security of desiccant cap.

_____ **Refrigerant Line Assemblies (Air Conditioning; if installed):**

Inspect condition. Verify security, no damage, and clearance to adjacent structure.

_____ **Wiring:**

Inspect condition. Verify no loose, chafed, or broken wires or terminals. Check for heat or fluid damage. Verify neatness, proper routing and installation, and security.

_____ **Fasteners & Torque Stripes:**

Inspect condition. Verify proper installation and security of fasteners. Renew deteriorated torque stripes per Figure 5-1.

_____ **Close & Secure:**

Verify foreign objects are removed. Verify equipment security. Verify cleanliness of interior and of cover or cowling. Install/close inspection covers or cowlings removed in preceding steps. Verify security.

5-45 100-Hour / Annual Inspection (continued)

TAILCONE & STABILIZERS

_____ **Inspection Plugs:**
Inspect condition. Verify proper operation of fasteners.

_____ **Tail Rotor Drive Shaft Assembly:**
Examine accessible portion through inspection holes with inspection light and mirror. Verify no cracks, corrosion, or fretting in fore and aft weldment. Verify no evidence of drive shaft contact with tailcone bays. Verify no bowing, bends, dents, cracks, or corrosion. Perform tail rotor drive shaft runout per § 65-21. Verify proper installation, security, and operating clearance.

CAUTION

Bowing, bends, dents, cracks, or corrosion are cause for immediate replacement of tail rotor drive shaft.

_____ **Tail Rotor Push-Pull Tube & Forward Bellcrank:**
Examine accessible portion through inspection holes with inspection light and mirror. Inspect condition per § 5-32. Verify no nicks, scratches, chafing, dents, cracks, or corrosion. Inspect rod end bearings per § 5-33; verify rod ends are centered and evaluate torque stripes per § 5-36. Check witness holes for proper thread engagement. Inspect bellcrank and bellcrank mount for nicks, scratches, dents, cracks, or corrosion. Inspect spherical bearings per § 5-33. Verify proper installation, security, and operating clearance. Verify tail rotor guard mounting screw shanks clear push-pull tube.

_____ **Tail Rotor Drive Shaft Hanger Bearing & Hanger:**
Inspect condition. Inspect bearing for obvious damage. Verify integrity of bearing seals. Verify bearing's inner race-to-drive shaft torque stripe is intact and no evidence of bearing slippage on shaft. Verify no bends, cracks, corrosion, or obvious damage to hanger and hanger mount to tailcone bulkhead. Verify proper installation, security, and smooth operation.

_____ **Tail Rotor Drive Shaft Damper Assembly:**
Inspect condition. Inspect bearing for obvious damage. Verify integrity of bearing seals. Inspect bearing housing for cracks or corrosion. Verify bearing's inner race-to-drive shaft torque stripe is intact and no evidence of bearing slippage. Verify no bends, cracks, corrosion or obvious damage to friction arms and (Teflon) bearings. Verify proper installation, security, and smooth operation.

_____ **Tailcone Interior:**
Inspect condition. Verify no nicks, scratches, dents, cracks, corrosion, fretting or loose rivets. Verify no cracks where damper assembly mounts to tailcone. Verify no excessive wear in bulkhead bushings from push-pull tubes. Retrieve and discard trapped debris.

5-45 100-Hour / Annual Inspection (continued)

TAILCONE & STABILIZERS (continued)

_____ **Tailcone Exterior:**
Inspect condition. Refer to § 53-41. Inspect tailcone exterior for nicks, scratches, dents, cracks, corrosion, fretting or loose rivets. Verify no obstructions in drain hole at forward edge of each bay (except forward bay).

_____ **F050-2 Horizontal Stabilizer (if installed):**
Inspect condition. Verify no nicks, scratches, dents, cracks, corrosion, fretting, or loose rivets. Verify security.

_____ **Empennage:**
Inspect condition. Verify no nicks, scratches, dents, cracks, corrosion, fretting, or loose rivets on skins or near attachment points. Check tail rotor skid for evidence of tail rotor or tail rotor skid strike. Refer to § 5-61 for tail rotor skid strike inspection criteria. Verify no obstructions in lower vertical stabilizer and skid drain holes. Verify proper installation and security.

_____ **Aft Navigation Light:**
Inspect condition. Verify no cracks where aft navigation light mounts to empennage. Verify lens cleanliness, clarity, and security. Verify proper operation.

_____ **Antennas:**
Inspect condition. Verify no cracks where antennas mount to tailcone. Verify security.

_____ **Anti-Collision Light:**
Inspect condition. Verify no cracks where anti-collision light mounts to tailcone. Verify lens cleanliness, clarity, and security. Verify proper operation.

_____ **Tail Rotor Visual Warning Guard:**
Inspect condition. Verify no cracks where guard mounts to tailcone. Inspect guard welds for cracks or corrosion. Verify security.

_____ **Wiring:**
Inspect condition. Verify no loose, chafed, or broken wires or terminals. Verify neatness, proper routing and installation, and security.

_____ **Fasteners & Torque Stripes:**
Inspect condition. Verify proper installation and security of fasteners. Renew deteriorated torque stripes per Figure 5-1.

_____ **Close & Secure:**
Verify foreign objects are removed. Verify equipment security. Verify cleanliness of interior and of inspection plugs. Install plugs removed in preceding steps. Verify security.

5-45 100-Hour / Annual Inspection (continued)

TAIL ROTOR & TAIL ROTOR GEARBOX

NOTE
Verify proper hardware installation securing plastic inspection cover. Longer screws could contact aft flex coupling and yoke.

_____ **Plastic Inspection Cover:**
Clean cover and inspect condition. Replace as required.

_____ **C947-3 (Tail Rotor Drive) Plate Assembly, Aft:**
Refer to Figure 5-4B. Inspect condition. Verify no distortion, nicks, scratches, cracks, corrosion, and fretting. If fretting is detected, contact RHC Technical Support. Verify bonded washers are installed on both sides of each flex plate ear. Verify proper installation, security, and operating clearance.

_____ **Tail Rotor Gearbox Input Yoke:**
Inspect condition. Verify no cracks, corrosion, or fretting. Inspect weld for cracks or corrosion. Verify proper installation, security, and operating clearance.

_____ **Tail Rotor Gearbox:**
Inspect condition. Verify gearbox-to-tailcone mounting security. Verify no leakage at input or output seals, chip detector, vent plug-filler assembly, or sight gage. With ship on level ground, verify correct oil level and oil cleanliness through sight gage and adjust or flush as required. Inspect Telatemp per § 5-35. Inspect output shaft for nicks, scratches, dents, cracks, or corrosion. Verify proper installation of safety wire (if installed). Gearbox S/Ns 9684 & prior: using 10X magnification, visually inspect four curved surfaces on input cartridge per Figure 5-4C; if cracking is detected, remove gearbox from service and perform C148 Bulkhead Inspection per § 5-75.

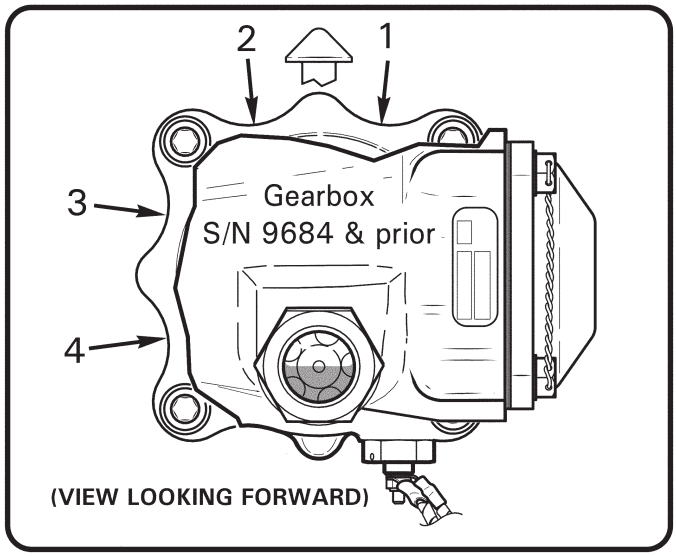


FIGURE 5-4C TRGB INPUT CARTRIDGE INSPECTION

5-45 100-Hour / Annual Inspection (continued)

TAIL ROTOR & TAIL ROTOR GEARBOX (continued)

_____ **Pitch Control Bearing Assembly & Aft Bellcrank:**

Inspect condition. Verify pitch control assembly has less than 0.25 inch rotational play measured at pitch link attach bolt. Verify no leakage at bearing seals. Verify no nicks, scratches, dents, cracks, or corrosion on pitch control housing or bellcrank. Inspect bellcrank spherical bearings per § 5-33. Inspect spherical bearing atop stud protruding from underside of pitch control for cracks. Verify proper installation, security, and smooth actuation without binding.

NOTE

B345-4 tail rotor pitch links can have different shaft diameters (0.250 inch or 0.300 inch). Balance tail rotor per § 18-20 if a different shaft diameter pitch link is installed.

_____ **Pitch Links:**

Inspect condition. Inspect rod ends per § 5-33. Remove and reinstall pitch links with outboard end inboard and inboard end outboard as required to obtain maximum service life; additionally, an optional A215-012 O-ring may be installed on A115-1 spacer under bolt head at pitch control. Reinstall chordwise weights at respective attachment points for balance purposes. Verify proper installation of A115-1 spacers. Verify proper installation, security and operating clearance.

_____ **Tail Rotor Blades:**

Refer to R66 SB-41. Inspect condition. Refer to § 64-30 for damage limits and repair. Verify no looseness between spherical bearing outer races and root fittings. Inspect bearings per § 5-33. Verify no obstructions in blade tip drain holes. Verify proper installation, security, and pitch change operation.

WARNING

Structural damage may occur if compressed air is applied to blade tip drain holes.

_____ **Tail Rotor Hub:**

Inspect condition. Verify no nicks, scratches, gouges, dents, cracks, or corrosion. Inspect elastomeric teeter bearings per § 5-34. Teeter rotor hub and verify teeter bearing bolt, spacers, and nuts do not rotate. Verify hub teeters smoothly. Verify proper installation and security of blade bolts.

_____ **Wiring:**

Inspect condition. Verify no loose, chafed, or broken wires or terminals. Verify neatness, proper routing and installation, and security.

_____ **Fasteners & Torque Stripes:**

Inspect condition. Verify proper installation and security of fasteners. Renew deteriorated torque stripes per Figure 5-1.

5-45 100-Hour / Annual Inspection (continued)

MAST FAIRING

_____ **Mast Fairing:**

Inspect condition. Verify no nicks, scratches, dents, cracks, corrosion, fretting, or loose rivets. Verify no yielding or cracking of pitot line and fuel vent restraint assembly.

_____ **Upper & Lower Ribs:**

Inspect condition. Inspect for cracks especially around mast tube attachments. Verify proper installation and security of ribs and lower rib clamp.

_____ **Vertical Push-Pull Tubes:**

Examine accessible portion with inspection light and mirror. Inspect condition per § 5-32. Verify no nicks, scratches, chafing, dents, cracks or corrosion. Inspect rod end bearings per § 5-33; verify rod ends are centered and evaluate torque stripes per § 5-36. Check witness holes for proper thread engagement. Verify proper installation, security, and operating clearance.

_____ **Pitot Tube & Line:**

Inspect pitot lines for obstructions, cracking, chafing, pinching or kinking. Verify integrity of pitot and static line connections. Verify proper routing and security of pitot tube and line. Verify no cracks where pitot tube mounts to mast fairing. Verify no obstructions in pitot tube.

_____ **Fuel Vent Weldment and Tygon® Tubes:**

Inspect condition. Verify no obstructions, cracking, chafing, pinching or kinking in plastic tubes. Inspect vents for cracks or obvious damage. Verify proper installation and security of safety wire.

5-45 100-Hour / Annual Inspection (continued)

MAST FAIRING (continued)

_____ **Swashplate Upper Scissors:**
Inspect condition. Verify bearing play within limits as shown in Figure 5-4D. Closely examine scissor linkage while a second person raises and lowers collective stick. Verify bolts and washers rotate together through full control travel without binding. Inspect fork assembly rod end bearing per § 5-33; verify rod end is centered and evaluate torque stripes per § 5-36. Verify proper installation of all parts, part security, and operating clearance.

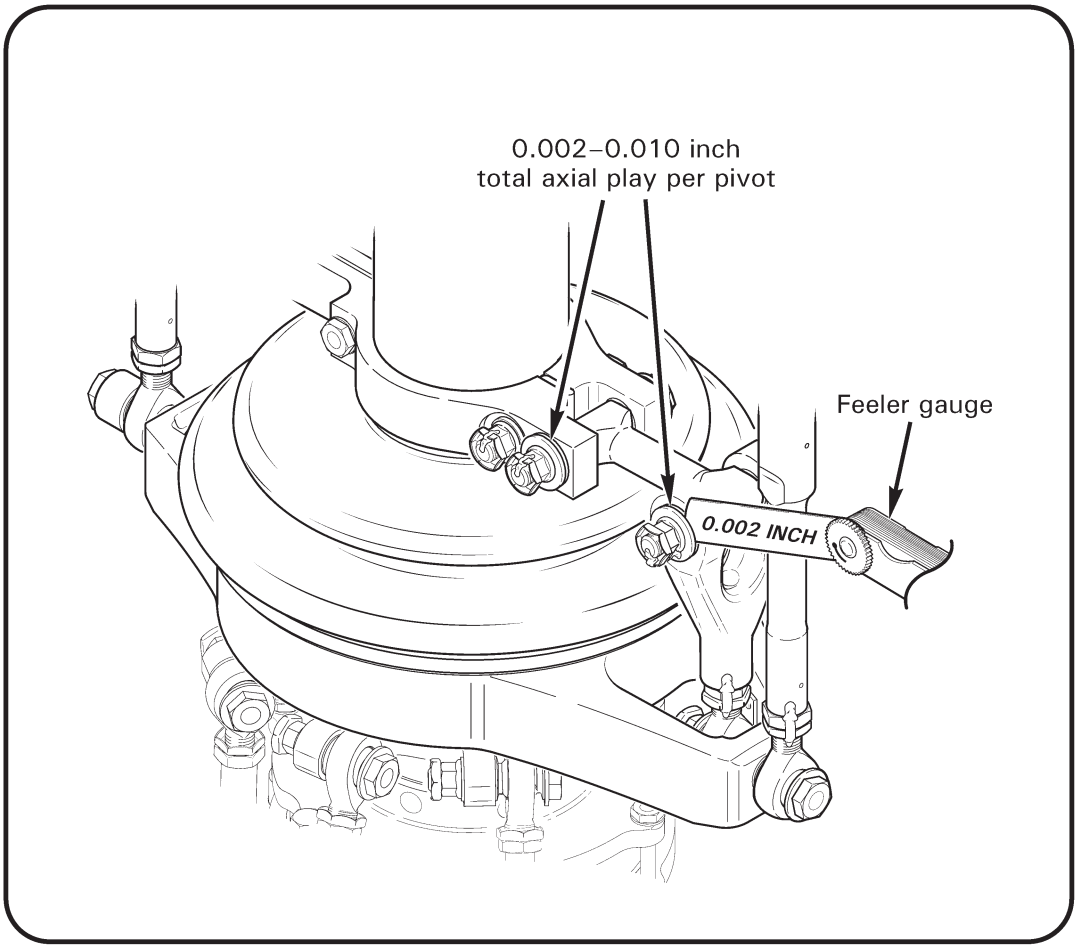


FIGURE 5-4D MEASURING UPPER SWASHPLATE SCISSOR AXIAL CLEARANCE
(MEASURE LOWER SWASHPLATE SCISSOR AS SHOWN)

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5-45 100-Hour / Annual Inspection (continued)

MAST FAIRING (continued)

_____ **Swashplate Lower Scissors:**
Inspect condition. Verify bearing play within limits as shown in Figure 5-4D. Closely examine scissor linkage while a second person raises and lowers collective stick. Verify bolts and washers rotate together through full control travel without binding. Inspect fork assembly rod end bearing per § 5-33; verify rod end is centered and evaluate torque stripes per § 5-36. Verify proper installation of all parts, part security, and operating clearance.

_____ **Swashplate Slider Tube:**
Inspect condition. Verify no cracks, corrosion, or loose rivets near tube base flange. Verify no damage or wearing through of anodized coating on tube surface. When viewed under 10X magnification, minute "checkerboarding" of anodized surface is normal.

_____ **Swashplate Interior:**
Remove swashplate boot lower ty-rap. Lift boot from swashplate, and verify no boot defects, tears, or material deterioration. Examine swashplate interior with inspection light and mirror. Verify no corrosion or debris between main rotor drive shaft and inside of slider tube. Install swashplate boot lower ty-rap. Verify proper boot position, security, and operating clearance.

_____ **Swashplate:**
Inspect condition. Verify no nicks, scratches, gouges, dents, cracks, or corrosion. Verify 0.020 inch maximum radial play between swashplate ball and slider tube. Rotate rotor by hand and verify no rough or dry bearings. Verify proper operation.

_____ **Swashplate Shimming:**
Closely examine area between lower swashplate and swashplate ball while a second person slowly raises and lowers collective stick. Verify synchronized movement of swashplate ball with swashplate when swashplate reverses direction.

> NOTE
>
> Swashplate shimming is required when swashplate ball lags collective inputs, indicating axial play. Shim swashplate per Chapter 67.

_____ **Fasteners & Torque Stripes:**
Inspect condition. Verify proper installation and security of fasteners. Renew deteriorated torque stripes per Figure 5-1.

_____ **Close & Secure:**
Verify foreign objects are removed. Verify equipment security. Verify cleanliness of interior and of access fairing. Close mast fairing and verify security.

5-45 100-Hour / Annual Inspection (continued)

ROTOR HUB & MAIN ROTOR BLADES

_____ **Teeter Stops & Teeter Stop Brackets:**
Inspect both urethane teeter stops and associated stainless steel brackets. Replace stops if cracked due to weathering. If stops evidence pinching and/or brackets are deformed, excessive MR teetering has occurred; contact RHC Technical Support for further instructions.

_____ **Droop Stops:**
Cone and support both MR blades. Inspect curved bottoms of both aluminum droop stops where spindle tusks contact; replace any droop stop if wear exceeds 0.030 inch.

_____ **Hub:**
Inspect condition. Verify no nicks, scratches, gouges, dents, cracks, or corrosion. Verify no brown or black residue indicating bearing wear. Verify proper installation and security.

_____ **Hinge Bolts:**
Inspect condition. Check blade hinge friction by lifting blades until spindle tusks clear droop stops. Hold one blade level and cone opposite blade; rotor hub must not teeter as blade is coned. Repeat check on opposite blade. Verify cotter pins are installed and secure. Verify bolt heads and nuts are torque striped to thrust washers.

_____ **Pitch Links & Rod Ends:**
Inspect condition. Inspect rod end bearings per § 5-33; verify rod ends are centered and stamped nut & jam nut torque stripes are acceptable. Verify correct orientation of C115-1 spacers. Check witness holes for proper thread engagement. Verify proper installation of safety wire (if applicable).

_____ **Blade Spindles & Root Fittings:**
Inspect condition. Verify no obvious damage to visible portions of blade spindles and pitch horns. Verify no obvious damage to, and no missing paint from, blade root fittings, especially in area adjacent to inboard edges of blade skin and doublers.

_____ **Blade Boots:**
Inspect condition. Verify no boot defects or oil leakage. Verify boot security. Verify clearance from hub assembly through full control travel.

_____ **Fasteners & Torque Stripes:**
Inspect condition. Verify proper installation and security of fasteners. Renew deteriorated torque stripes per Figure 5-1.

_____ **Main Rotor Blade Leading Edge Care:**
Perform main rotor blade leading edge care per § 62-53.

_____ **Main Rotor Blade Tip Maintenance:**
Perform main rotor blade tip maintenance per § 62-60.

5-45 100-Hour / Annual Inspection (continued)

ROTOR HUB & MAIN ROTOR BLADES (continued)

_____ **Blade Inspection and Care:**

Refer to § 62-40. Inspect skins and doublers for scratches and corrosion. Inspect blades for dents, local deformations, and voids. As required, wax blades with soft cleaning cloths using carnauba-type wax (such as SC Johnson® Paste Wax). Ensure tip cover and blade tip drain holes are unobstructed. Verify placard legibility and remove old tracking tape and/or residue.

WARNING

Structural damage may occur if compressed air is applied to blade tip drain holes.

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5-45 100-Hour / Annual Inspection (continued)

LANDING GEAR

_____ **Landing Gear Strut Fairings:**
Open as required to access landing gear structure for inspection. Inspect condition. Verify no nicks, scratches, dents, cracks, corrosion, fretting, or loose rivets. Verify hose clamp security and acceptable general cleanliness of fairing interior. Close and secure fairings.

_____ **Skid Tubes & Shoes:**
Inspect condition. Verify skid tube and skid shoe wear is within limits specified in §§ 32-30 & 32-31. Verify drain holes are not obstructed. Verify security of rain caps; if rain cap is loose or damaged, verify no internal corrosion. Verify security of ground handling wheel brackets and step(s) if installed.

_____ **Struts Assemblies:**
Inspect condition. Verify no cracks or corrosion, especially at collar and gusset joints and in weld areas at bottom of struts. Torque-check strut-to-skid-tube bolts. Verify security.

_____ **Cross Tubes:**
Inspect condition. With helicopter on level ground, verify minimum tail skid height per § 32-20. Verify no cracks, corrosion, or fretting at elbows. Verify security of (clear plastic) rain caps; if rain cap is loose or damaged, verify no internal corrosion. (Note that one vent hole per cross tube is located near left or right end of tube to prevent pressurization.)

_____ **Landing Gear Attach Points:**
Inspect condition. Verify no buckling, cracks, fretting, or loose fasteners. Inspect mounts and verify no loose swages or worn bearings.

_____ **Fasteners & Torque Stripes:**
Inspect condition. Verify proper installation and security of fasteners. Renew deteriorated torque stripes per Figure 5-1.

_____ **D679 Cylinder assembly (Pop-out floats; if installed):**
Inspect condition. Verify security. Verify pressure gage indicates correct pressure for ambient temperature; refer to placard on cylinder for limits.

_____ **Inflation manifold (Pop-out floats; if installed):**
Inspect condition. Verify no chafing or pinching of hoses, especially where hoses pass though structure.

_____ **Float assemblies (Pop-out floats; if installed):**
Inspect condition of stowed floats. Verify no holes, cuts, tears, abrasion through or unraveling of, float covers. If cover damage is found, inflate and inspect floats per § 32-64. Annually apply A257-7 dry-film lubricant to float cover snap mating surfaces. Verify snaps and hook-and-loop fasteners are properly secured. Verify float-to-skid attachment security.

5-45 100-Hour / Annual Inspection (continued)

CABIN

_____ **General Interior:**
Inspect condition. Verify general cleanliness of cabin and seat compartment interior. Verify no loose objects or equipment, which could foul controls or injure occupants in a hard landing. Verify legibility of placards and markings. Verify serviceable condition of switches, knobs, handles, and other controls.

_____ **Seat Belts & Shoulder Harnesses:**
Inspect condition. Verify no fraying or broken stitching of seat belts or shoulder harnesses. Verify no significant UV damage. Check inertia reels for proper operation by pulling harness quickly to verify locking function. Check buckles for proper operation. Check belt and reel attachment points for security. Verify no cracks in seat belt anchor welds. Verify security.

NOTE
TSO tag not required on factory-installed harnesses.

_____ **Heated Seats (if installed):**
Perform heated seats inspection per § 25-24 Part F.

_____ **Cyclic Guard (if installed):**
Inspect condition of cyclic guard. Verify security and proper operation.

_____ **Windshields & Windows:**
Inspect condition. Verify no significant UV damage (yellowing). Minor defects or imperfections that do not impair pilot visibility or indicate impending structural failure are acceptable. Refer to § 52-30 for damage and repair limits. Verify proper installation and security.

_____ **Static Ports:**
Inspect condition. Verify no obstructions.

5-45 100-Hour / Annual Inspection (continued)

CABIN (continued)

_____ **Yaw String:**
Inspect condition. Verify minimum string length is 3 inches on each side of clip. Verify security.

_____ **Landing & Taxi Lights:**
Inspect condition. Verify lens cleanliness, clarity, and security. Verify proper operation.

_____ **Landing Light Retainer & Support:**
Inspect condition. Verify no cracks where retainer mounts to support. Verify security.

_____ **Left & Right Navigation Lights:**
Inspect condition. Verify no cracks where right and left navigation lights mount to fuselage. Verify red left, green right, lens cleanliness, clarity, and security. Verify proper operation.

_____ **Exterior:**
Inspect condition. Inspect cabin exterior for nicks, scratches, dents, cracks, corrosion, fretting, or loose rivets. Loose rivets may be indicated by cracked paint and/or black residue around heads. Verify general cleanliness.

_____ **Doors:**
Inspect condition. Verify no cracks and proper fit of door-to-door frame. Verify no structural cracks near door hinges or latches. Verify proper operation of door latching and locking mechanisms. Ensure door hinge pins are secured with cotter rings. Verify security of hinge mounting screws. Verify proper installation and operation of gas struts and door vent assembly.

SPECIAL EQUIPMENT

_____ **Transmit and Intercom Switches:**
Verify proper operation of special transmit and intercom switches.

_____ **PA/Siren Speaker:**
Inspect condition. Verify no cracks in speaker. Verify security of mounting.

_____ **Wiring:**
Inspect condition. Verify no loose, chafed, or broken wires or terminals. Verify neatness, proper routing and installation, and security.

LIFE-LIMITED PARTS, PARTS WITH A RECOMMENDED TBO OR REPLACEMENT TIME, ADs, & SBs

_____ **Life-Limited Parts:**
Refer to § 4-10. Verify life-limited parts correspond with aircraft maintenance records. Verify life-limited parts have sufficient time remaining for projected operations.

_____ **Parts with a Recommended Time Between Overhauls (TBO) or Replacement Time**:
Refer to § 1-92. Verify parts with a recommended TBO or replacement time correspond with aircraft maintenance records. Verify parts with a recommended TBO or replacement time have sufficient time remaining for projected operations.

5-45 100-Hour / Annual Inspection (continued)

LIFE-LIMITED PARTS, PARTS WITH A RECOMMENDED TBO OR REPLACEMENT TIME, ADs, & SBs

_____ **Airframe and Engine Accessories:**
Refer to § 1-92 and accessory manufacturer's maintenance publications. Verify accessories correspond with aircraft maintenance records. Verify accessories scheduled for maintenance have sufficient time remaining for projected operations.

_____ **Airworthiness Directives:**
Verify applicable airframe, engine, and accessory Airworthiness Directives (ADs) have been performed according to AD compliance procedures. Some helicopters may be affected by ADs that require recurring inspections at less than 100-hour or annual intervals. Recent U.S. Airworthiness Directives are online at www.faa.gov.

_____ **Service Bulletins and Letters:**
Verify applicable airframe, engine, and accessory Service Bulletins (SBs) and Service Letters (SLs) have been complied with according to manufacturers' instructions. Some helicopters may be affected by SBs or SLs that require recurring inspections at less than 100-hour or annual intervals. RHC Service Bulletins and Service Letters are online at www.robinsonheli.com under the Publications tab.

REQUIRED DOCUMENTS AND PLACARDS

_____ **Documents**:
Check that required documents (Airworthiness Certificate, Registration, applicable Radio Station License, Pilot's Operating Handbook, Equipment List/Weight & Balance Data) are onboard, legible, and current.

_____ **Placards**:
Verify required placards are properly installed, legible, and current. Refer to Pilot's Operating Handbook Section 2 for placard requirements.

INSPECTION AND ACCESS COVERS

_____ **Foreign Objects Removed:**
Verify all tools, loose hardware, rags, and other foreign objects are removed from helicopter.

_____ **Covers Closed and Secure:**
Refer to § 6-70. Install/close inspection and access covers and cowlings removed in preceding steps. Verify proper installation and security.

5-45 100-Hour / Annual Inspection (continued)

MAINTENANCE RECORDS

_____ **Maintenance Records:**
Verify maintenance records are accurate, legible, and complete. Enter maintenance performed (such as part replacement, equipment adjustments, servicing, and lubrication) and inspection data. Data must include a description of (or reference to data acceptable to the Administrator) the work performed, date, helicopter total time in service, signature, certificate type and certificate number of person approving helicopter for return to service.

Inspection Procedures and Checklist completed:

Mechanic's signature: _____ Date: _____

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5-50 2000-Hour/15-Year Inspection

NOTE

Fuel bladder(s) are on condition.

NOTE

KI-6602 2000-Hour Inspection Kit contents are available online at https://robinsonheli.com for review.

NOTE

15-Year Inspection is only required for helicopters that have accumulated 15 years in service and less than 2000 hours time in service since new, since last 2000-hour inspection, or since last 15-year inspection (previously 12-year inspection).

1. Refer to helicopter maintenance records and § 4-30; replace life-limited parts, or next higher assemblies, as required.
2. Refer to helicopter maintenance records and § 1-92; perform additional component maintenance, as required.
3. Visually inspect stabilizers. Verify no cracks, corrosion, loose rivets, dents, or deformation.
4. Remove fuel bladder(s) per Chapter 28. Visually inspect interior and exterior. Verify no corrosion, residue, microbial growth, or damage to fabric. Visually inspect adjacent structure for evidence of bladder leakage. Replace roll-over vent valve O-rings and packings per § 28-11. Remove any foreign object debris. Install bladder(s) per Chapter 28.
5. Perform (engine driveline) forward flex plate shimming per § 63-11 and (tail rotor driveline) intermediate flex plate shimming per § 65-30.
6. Fill and bleed hydraulic system per § 12-34 as required.
7. Drain engine oil per § 12-60; utilize a suitable clean container if reuse of oil is intended. Using a borescope or remote camera, inspect oil tank internal baffle and welds for signs of cracking. If cracks are detected, or if a broken baffle is found, replace oil tank per § 79-20. Add engine oil per § 12-60.
8. Perform main rotor flight control and blade angle rigging per §§ 18-30 and 18-40.
9. Perform tail rotor flight control and blade rigging per §§ 18-50 and 18-60.
10. If installed, perform leak check of air conditioning system per § 12-83.
11. Perform 100-Hour / Annual Maintenance and Inspection per § 5-45.
12. Weigh helicopter per § 8-20.

5-50 2000-Hour/15-Year Inspection (continued)

13. Balance tail rotor per § 18-20. Track and balance main rotor per § 18-10. Perform flight checks per § 5-43.
14. Drain and flush tail rotor gearbox per § 12-23.
15. Make appropriate maintenance record entries. Enter maintenance performed (such as part replacement, equipment adjustments, weighing, servicing, and lubrication) and inspection data. Data must include a description of (or reference to data acceptable to the Administrator) the work performed, date, helicopter total time in service, signature, certificate type and certificate number of person approving aircraft return to service.

5-51 C258-5 & -8 Main Rotor Pitch Link Assembly Inspection

1. Temporarily mark each pitch link and associated swashplate ear with unique identifiers, such as different colors and/or X & O. Measure and record overall lengths of both links.
2. Remove pitch links.
3. R66 Service Letters SL-54 and SL-20 refer. Disassemble pitch links, keeping parts from each link separate from the other.
4. Evaluate rod ends per § 5-33 and replace as required.
5. Visually inspect parts with 10X magnification for obvious damage. Replace damaged parts.
6. Visually inspect interior of barrels with borescope for obvious damage. Replace damaged barrels.
7. Apply a light coat of A257-2 or -22 oil to rod end threads and assemble pitch links; adjust to recorded lengths. Torque jam nut & adjacent stamped nut per § 20-32. Special torque self-locking 21FKF-813 or 27FKF-813 jam nut per § 20-33.
8. Install pitch links to associated swashplate ear and, if installed, main rotor blade. Torque fasteners per § 20-32 and torque stripe per Figure 5-1.

5-52 Swashplate Assembly Detail Inspection

1. Remove swashplate assembly per § 67-40.
2. Remove both pitch links and upper A205-7 fork assembly from swashplate.
3. Determine revision ("REV") letters on C017-6 swashplate data plate. If revision letters are "AD" or subsequent, proceed to step 2. If revision letters are "AA", "AB", or "AC", perform R66 Service Bulletin SB-30.
4. Refer to Figure 12-7. Remove (10) NAS1352 screws (with washers) securing C206-2 & C200-3 retainers to upper swashplate. Remove both retainers and C219-3 spacer and set aside.
5. Remove inner screws securing sleeve to lower swashplate. Remove sleeve, shims, and ball and set aside.
6. Using a 0.006 inch feeler gage, gently pry up outer edge of upper C217-1 seal and expose top ball bearing. Discard upper seal.
7. Clean all parts, including C203-5 yokes.
8. Visually inspect cleaned parts with 10X magnification, to include blind screw-holes in upper & lower swashplates, for obvious damage. Replace swashplate assembly if damage is detected on either upper or lower swashplate. Replace damaged parts.
9. Perform swashplate tilting friction adjustment per § 67-41 step 4.
10. Lubricate swashplate bearings per § 12-90 steps 7 thru 11. Install new upper seal during procedure.
11. Remove rod end form upper fork. Using non-metallic tools, remove majority of sealant in threaded hole of fork. Visually inspect parts with 10X magnification for obvious damage. Replace damaged parts. Assemble upper fork assembly and adjust pivots' center-to-center dimension to 3.85 ± 0.03 inches. Standard torque jam nut & stamped nut per § 20-32 and torque stripe per Figure 5-1. Fill exposed cavity with B270-13 sealant.
12. Remove lower A205-7 fork assembly from non-rotating scissors and clean. Remove rod end from lower fork. Visually inspect parts with 10X magnification for obvious damage. Replace damaged parts. Assemble lower fork assembly and adjust pivots' center-to-center dimension to 3.70 ± 0.03 inches. Standard torque jam nut & stamped nut per § 20-32 and torque stripe per Figure 5-1. Install lower fork on C204-2 arm and standard torque bolt per § 20-32. Install stamped nut, standard torque per § 20-32, and torque stripe per Figure 5-1.
13. Install swashplate assembly per § 67-40 Part B.

5-53 Landing Gear Assembly Detail Inspection

1. Inspect cross tubes per § 32-20.
2. Remove landing gear per § 32-10.
3. Remove left skid tube, and remove rain cap and skid extension from tube.
4. Remove fasteners securing struts to cross tubes. Using a twisting motion, remove left struts from cross tubes.
5. Remove right skid tube, and remove rain cap and skid extension from tube.
6. Using a twisting motion, remove right struts from cross tubes.
7. Clean cross tubes, struts, and skid tubes.
8. Visually inspect interior of struts with borescope (or similar) for obvious damage. Visually inspect exterior of struts using minimum 3X magnification for obvious damage. Any corrosion on, or adjacent to, a weld requires corrosion & paint removal followed by MPI. Upon favorable MPI results, apply § 20-76 powder coat.
9. Refer to § 32-30. Visually inspect interior of skid tube with borescope (or similar). Visually inspect exterior of parts using minimum 3X magnification. As required, touch-up coatings with § 20-75 primers and § 20-77 paints.
10. Visually inspect interior of cross tubes with borescope (or similar) for obvious damage. Visually inspect exterior of cross tubes using minimum 3X magnification for obvious damage. As required, touch-up coatings with § 20-75 primers and § 20-77 paints.
11. Assemble landing gear.
12. Install landing gear per § 32-10.

5-54 Hydraulic Reservoir Detail Inspection

1. Perform hydraulic system drain and flush per § 12-33 step 1. Remove D516-1 cap.
2. Refer to Figure 5-5. Suction remaining fluid using suitable, clean, plastic tube (do not use metal tool). Wipe out any residue from both traps with clean, foam-tip swab.
3. Inspect interior of reservoir for corrosion with borescope (or similar). Replace reservoir if corrosion is detected.
4. Perform hydraulic system drain and flush per § 12-33, steps 2 thru 12.

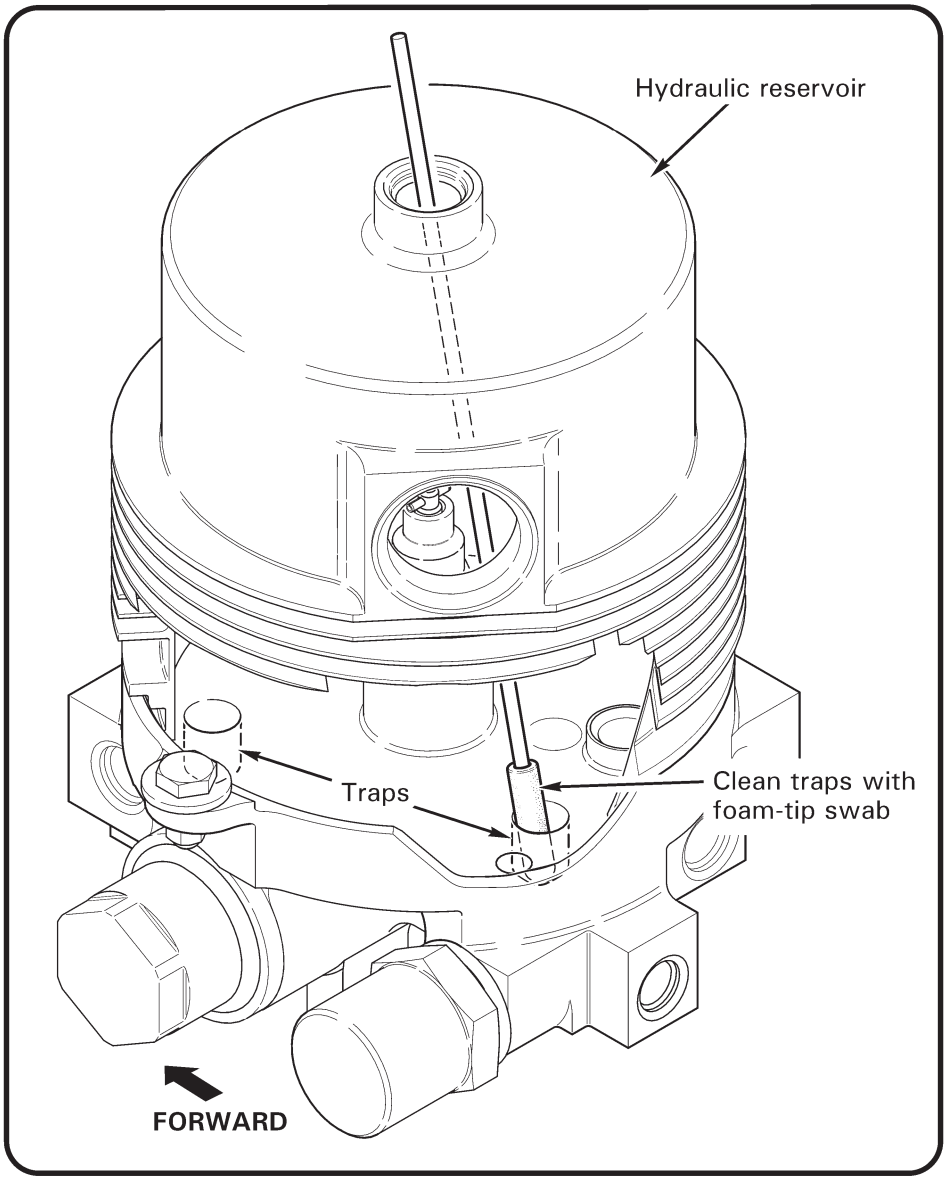


FIGURE 5-5 HYDRAULIC RESERVOIR INSPECTION

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5-60 Special Maintenance and Instructions

WARNING

Do not install or return to service any part removed from a damaged aircraft unless the part can be verified as undamaged. Return suspect parts to RHC, with details of damage history, for airworthiness evaluation.

5-61 Tail Skid Strike

A. If evidence of scuffing is found on the tail skid, inspect the rotorcraft as follows:

1. Visually inspect tail rotor blades for evidence of solid object or ground contact. If tail rotor damage is found, inspect tail rotor for strike per § 5-62. _____
2. Visually inspect vertical stabilizer for evidence of buckling, cracks, or loose rivets at tail skid and at lower vertical stabilizer-to-horizontal stabilizer attach points. _____
3. Visually inspect tail rotor guard for bending or cracking at attach mounts. _____
4. Visually inspect the empennage assembly-to-tailcone attach points for evidence of buckling, loose rivets, or cracking. _____
5. Visually inspect tailcone for damage and tailcone-to-upper steel tube structure attach points for buckling and loose attach bolts. _____

B. For tail skid bending or breakage, or buckling of lower vertical stabilizer, perform the following inspections in addition to those listed in Step A.

1. Perform tail rotor drive shaft runout per § 65-21. _____
2. Remove tailcone assembly per § 53-40. Visually inspect (8) tailcone mounting holes [(4) tailcone & (4) upper frame] and verify no elongation of holes (0.454-inch diameter maximum). _____
3. Remove empennage assembly per § 53-70. Remove tail rotor gearbox per § 65-40. _____
4. Perform § 5-75 Inspection After Stabilizer Damage. _____
5. Visually inspect mount assembly or horizontal stabilizer (as applicable) attach points and verify no elongated holes (0.386-inch diameter maximum), loose rivets, or buckling. _____
6. Remove lower vertical stabilizer per § 53-72. Visually inspect attach points on vertical stabilizer and mount assembly or horizontal stabilizer (as applicable). Verify no elongated holes (0.266-inch diameter maximum), buckling, cracks, or loose rivets. _____
7. Remove tail rotor guard per § 53-50. Remove D082-1 mount. Visually inspect guard, mount, & blocks; verify no deformation & no elongation of attach holes. _____

5-62 Tail Rotor Strike

The tail rotor strike inspection is listed in two parts. Part 1 concerns damage received by a tail rotor blade due to contact with a small stone, tall grass, or some small object contacting rotor blade in free air. Part 2 is concerned with sudden stoppage of tail rotor due to ground or solid object contact causing bending or shearing of a tail rotor blade or blades.

1. Inspect tail rotor blades per § 64-30 and perform Part 2, step (a).
2. If one or both tail rotor blades contact ground or a solid object causing bending or shearing of blades a tail rotor sudden stoppage inspection must be performed. Inspect per following procedure:
   a. Perform tail rotor drive shaft runout per § 65-21. If runout exceeds 0.025 inch at any location the shaft must be replaced.
   b. Remove tail rotor assembly per § 64-10 and tail rotor gearbox per § 65-40 and return to RHC.
   c. Visually inspect D224 tail rotor drive shaft for evidence of twisting, nicks, dents or scratches. Nicks and scratches may be polished out to a maximum of 0.003 inch deep. Evidence of twisting or dents is cause for replacement of the drive shaft.
   d. Remove yokes from each end of tail rotor drive shaft. Inspect arms for deformation and holes for any elongation. Strip paint and dye penetrant inspect yokes according to manufacturer's instructions (forward yoke may be magnetic particle inspected).
   e. Remove F196-1 (tail rotor drive) shaft weldment per § 65-10. Strip paint back at least 2 inches from welds at both ends of shaft and dye penetrant or magnetic particle inspect. Verify no cracks.
   f. Replace C947-3 plate assemblies (forward, intermediate, and aft).
   g. Visually inspect F193-2 hanger and F172-3 (bearing) housing for cracks or deformation.
   h. Visually inspect tailcone and empennage for evidence of a tail rotor blade strike.
   i. Visually inspect main rotor system.

5-63 Main Rotor Strike

The main rotor strike inspection is listed in two parts. Part 1 concerns contact of main rotor blades with object in free air such as small stones, brush, small birds, etc. Part 2 is concerned with sudden stoppage of main rotor due to ground or solid object contact.

1. If main rotor blade has contacted a small object in free air such as small stones, brush, small birds, etc., inspect main rotor blades as follows:

   a. Verify any nicks, scratches, and dents are within § 62-10 limits; repair as required.

   b. Visually inspect trailing edge of blade for evidence of buckling or bending. This will be most evident near root of blade.

CAUTION

Any blade buckling or permanent bending is considered sudden stoppage and requires a sudden stoppage inspection of the entire rotorcraft.

2. If main rotor blade or blades have contacted ground or a solid object, they must be inspected for sudden stoppage. Sudden stoppage is evident when buckling or bending of the main rotor blades has occurred. Use the following procedure for inspecting rotorcraft after main rotor sudden stoppage has occurred:

   a. Perform tail rotor drive shaft runout per § 65-21.

   b. Visually inspect G027 scroll assembly and F193 bearing hanger for cracks and/or deformation.

   c. Remove the following components and return to RHC for inspection.

      C005-10 Main Rotor System
      F006 Main Rotor Gearbox
      F018 Clutch Assembly
      A947-2 Flex Plates
      C947-3 Flex Plates
      C017 Swashplate
      F906 Yoke
      F908 Yoke
      F910 Yoke
      F196 Shaft Weldment
      F642 Shaft Weldment
      G174 Fanwheel

   d. Inspect engine for sudden stoppage per engine manufacturer's instructions.

5-64 Rotor/Engine Overspeed

1. For rotor overspeeds between 106 and 112%:

> NOTE
>
> Refer to Part 3 if a power-on overspeed occurs.

   a. Check main rotor and tail rotor dynamic balance. Compare pre-overspeed and post-overspeed balance.

> CAUTION
>
> Any change in rotor dynamic balance greater than 0.3 ips requires inspection per Part 2.

   b. Remove main rotor blades. Drain pitch bearing housings. Remove outer blade boot clamps and fold boots away from pitch horns. Rotate spindles to verify no brinelling of pitch bearings.

> NOTE
>
> Bearings have a high preload; slight drag is normal. If roughness is evident, return blade and spindle assembly to RHC for repair.

   c. Visually inspect main and tail rotor blades.

   d. Check tail rotor drive shaft runout per § 65-21.

2. If an overspeed at or above 112% is reported or suspected or if balance changes or pitch bearing roughness is evident, perform following inspections in addition to Part 1.

> NOTE
>
> Refer to Part 3 if a power-on overspeed occurs.

   a. Perform Part 1 inspection.

   b. Check coning hinge bolts for evidence of bending. Replace any bent bolts.

   c. Coning hinge bolts, washers, and journals must be magnetic particle inspected. Replace any cracked bolts, journals or washers.

   d. Visually inspect hub and dye penetrant inspect any areas suspected of having cracks. Dye penetrant inspect according to manufacturer's instructions.

   e. Reinstall blades and check balance. If a change in balance is evident, rotor system should be returned to RHC for inspection and/or repair.

3. Refer to RR300 Series Operation and Maintenance Manual (OMM) for overspeed inspection requirements.

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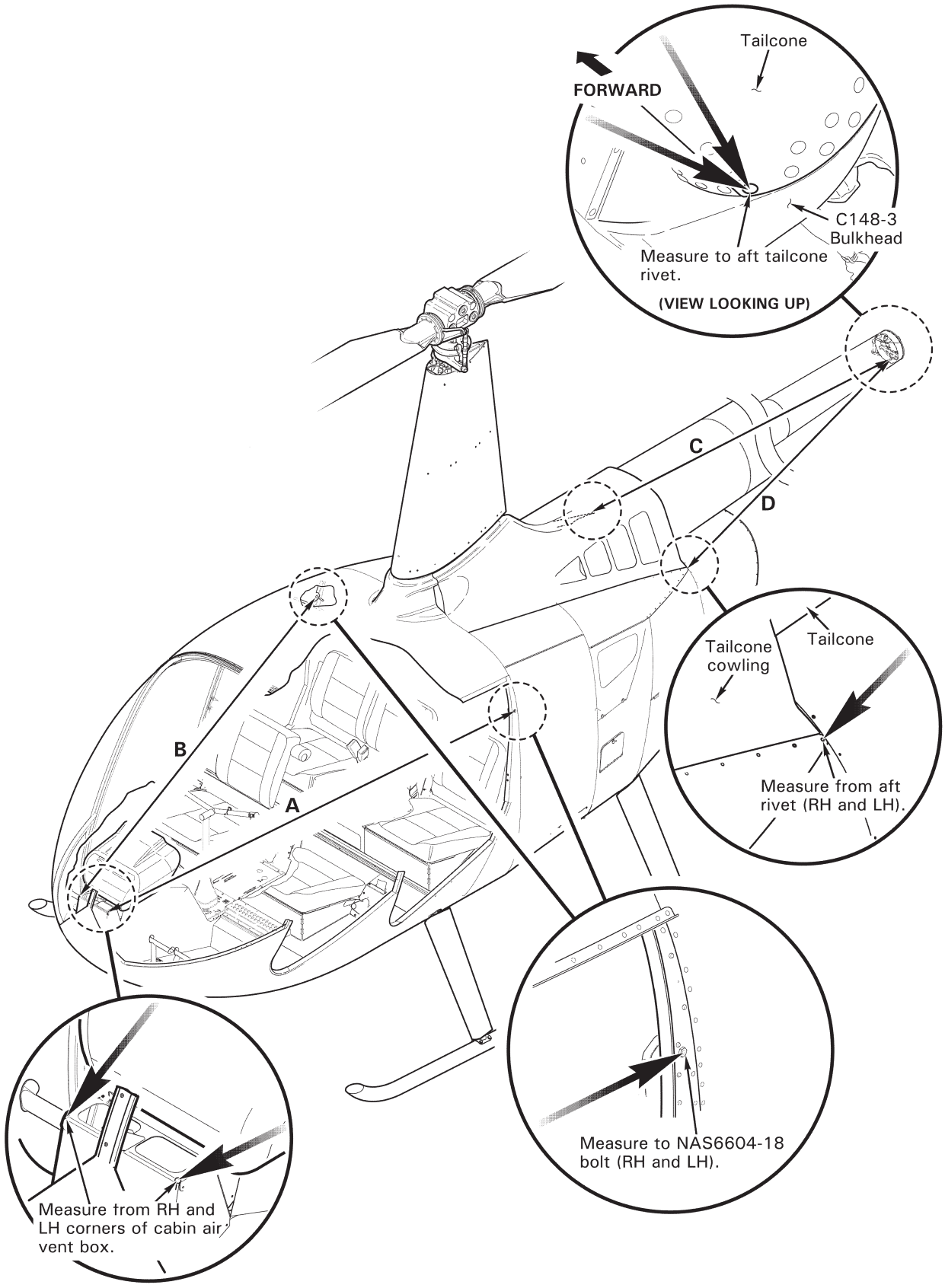


FIGURE 5-6 SYMMETRY CHECK

5-65 Hard Landing

NOTE

RR300 Operation and Maintenance Manual requires special engine inspection (subtask 05-50-00-210-002) when a hard landing exceeds 10g. While there is no single indicator for a 10g impact, an impact was less than 10g if there was no contact between the fuselage belly or landing gear cross tubes and the ground. Yielding or buckling of any engine mount tubes or crushing of the energy absorbers within any occupied seat indicates the impact was likely greater than 10g.

The hard landing inspection is listed in two parts. Part 1 concerns yielding (bending) of the cross tubes due to hard landing such as hovering autorotations or run-on landings that do not apply side loads to the landing gear. Part 2 concerns hard landings that, in addition to yielding of cross tubes, have yielding of steel tube frames or fuselage primary structure.

NOTE

Buckling and bent steel tube structure are evidence of side loads on the airframe.

1. Yielding of cross tube due to hard landing with no side loads:
   a. Perform tail rotor drive shaft runout per § 65-21.
   b. Visually inspect main rotor blades for oil canning of skins and buckling. Inspect and repair main rotor blades per §§ 62-40 and 62-50.
   c. Check landing gear cross tubes for yielding beyond serviceable limit. Place rotorcraft on level ground, push up on tail rotor gearbox and release, allowing rotorcraft to settle, then measure from tip of tail skid to ground. If less than 38 inches, one or both cross tubes must be replaced.
   d. Inspect front seat structure for yielding. Visually inspect, thru vent holes in seat bottoms, the internal box structure for any deformation. Inspect aft seat structure for yielding.
2. If yielding of steel tube frame(s) OR fuselage has occurred, inspect rotorcraft as follows:
   a. Perform Part 1 inspection.
   b. Verify no yielding or cracks in steel tube frames.
   c. Visually inspect fuselage, landing gear attach points, and firewalls for buckling or cracks.
   d. Dye penetrant inspect upper steel tube structure and all welded joints.

5-65 Hard Landing (continued)

2. e. Visually inspect tailcone for buckling or loose rivets.

f. Visually inspect landing gear skid tube-to-strut attach points for bending and cracks.

g. Hard landings can be accompanied by tail skid strikes, tail rotor strikes, main rotor blade strikes, etc. To inspect for these conditions, refer to the appropriate instructions in § 5-60. Refer to § 53-11 for cabin repairs. Any cracks, yielding or buckling in steel tube structure or tailcone are cause for replacement or factory repair.

h. Replace parts as required.

i. Check for symmetry if there is evidence of buckling of the cabin assembly per Figure 5-6. Position helicopter on a hard, level surface with the weight of the helicopter settled on the skids. Measure and record distances of lines A, B, C, and D. Verify the difference between lines A & B is not more than 0.30 inch and the difference between lines C & D is not more than 0.40 inch. If the difference between lines A & B or C & D is greater than the limits given, the cabin assembly must be returned to RHC for repair.

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5-66 Dye Penetrant Inspection of F020-1 Upper Frame

1. Carefully clean all paint, primer, oil, grease, etc from steel tube structure around and adjacent to four tailcone mounts.
2. Apply epoxy paint remover and allow the softening action to complete (temperature affects time required).
3. Remove softened paint by hand using a wire brush. Be sure steel structure is perfectly clean before application of dye penetrant.
4. Carefully check for cracks in and around each weld bead and along each steel supporting tube for at least two inches away from weld beads. Replace any frame exhibiting crack indications.
5. If no cracks are found, clean all inspection materials from steel tubing.
6. Prime with good quality zinc chromate or epoxy primer and allow adequate drying time.
7. Refinish area with gray epoxy top coat or equivalent.

5-67 Corrosion on F020-1 Upper Frame

1. Polish out corrosion on steel frame tube members.
   a. Polish out light surface corrosion on frame members using Scotchbrite or 400 grit wet-or-dry sandpaper. Verify 0.002 inch maximum depth after rework.
   b. Polish out corrosion pitting using 320-grit wet-or-dry sandpaper. Verify 0.004 inch maximum depth and 0.10 inch maximum diameter, after rework.

NOTE
For large areas of corrosion, it may be necessary to remove entire upper frame from aircraft and strip off paint to adequately determine extent of damage.

2. Prime bare metal with a good quality zinc chromate or epoxy primer.
3. Refinish area with gray epoxy top coat or equivalent.

5-68 Main Rotor Gearbox Overtemp Illumination

If the gearbox overtemp annunciator segment illuminates, remove main rotor gearbox per § 63-20 and return to RHC.

NOTE
Light illuminates at 240 ± 5ºF.

5-69 Main Rotor Gearbox (MR) Chip Light Illumination

If the MR CHIP annunciator segment illuminates:

1. Remove main rotor gearbox chip detector per § 12-13. Inspect any particles found on the chip detector. Examine the particles and perform following appropriate corrective action:

   a. For fuzz particles: Clean chip detector with compressed air or toothbrush (do not use magnet) and reinstall per § 12-13. Normal wear, especially new gearboxes, will produce fine fuzz.

   b. For flake particles or slivers longer than 0.12 inch or wider than 0.02 inch: Clean chip detector. Replace gearbox filter per § 12-12. Visually examine old filter with 10X magnification; return gearbox to RHC if metallic debris is detected.

   c. For large ferrous chips or chunky particles: Remove gearbox per § 63-20 and return to RHC. Return chips and/or particles if possible.

5-70 Tail Rotor Gearbox (TR) Chip Light Illumination

If the TR CHIP annunciator segment illuminates:

1. Drain the gearbox per § 12-21, straining the oil through a 190-micron (or finer) paint filter into a clean container.
2. Inspect any particles found in the paint filter or on the chip detector. Examine the particles for size; any particles larger (0.09 inch long or 0.02 inch wide) than fine fuzz (normal wear) should be identified as ferrous or non-ferrous by using a magnet. If particles are ferrous, remove tail rotor gearbox per § 65-40 and return it to RHC.

5-71 Main Rotor Gearbox Filter Bypass Indicator

NOTE
Extremely cold temperatures may cause the bypass to activate.

If the main rotor gearbox filter bypass indicator button continues to activate after two consecutive resets (at operating temperature), perform the following:

1. Service filter per § 12-12. Examine filter for particles.

   a. If filter is clean, replace (Purolator-Facet P/N) 1740839 bowl assembly or F651-1 filter assembly.

   b. If filter is contaminated, return main rotor gearbox to RHC for overhaul, replace main rotor gearbox oil cooler and flush oil lines.

5-72 Lightning Strike

Lightning strikes are extremely rare for helicopters operating in VFR conditions.

If a lightning strike does occur, RHC recommends performing a 100-hour inspection per § 5-45 and performing the inspection for lightning strike damage per Rolls-Royce RR300 Operation and Maintenance Manual (OMM).

High voltage that is well conducted through the aircraft structure will dissipate and cause minimal damage. High voltage that is not well conducted through the aircraft structure can result in excessive heat, which can bake, burn, char, or even melt certain materials. Heat damage may or may not be detectable by visual inspection. A component may not exhibit obvious damage, but temperatures above 300° F can alter the strength of some materials and thus affect a component's service life and airworthiness.

Visually inspect main rotor blades, landing gear, drive train, airframe, and flight controls thoroughly for obvious damage such as electrical arcing or burns, pitting, or cracking. Particular attention should be given to rod ends, journals, etc., where the conductive path is most susceptible. If obvious damage is detected in any of the above-mentioned systems, additional components may require replacement. Contact RHC Technical Support with detailed documentation for further guidance prior to approving aircraft for return to service.

5-73 Pop-Out Float-Equipped Helicopter Water Landing with Tail Rotor Contact

1. Clean tail rotor blades, hub, and airframe exterior with a mild soap (pH between 7 & 9) and water solution per Chapter 20.

CAUTION

Do not spray main rotor hub, tail rotor gearbox vent, hydraulic reservoir vent, swashplate area, or bearing seals with high-pressure water or solvent as water or solvent may cause corrosion or breakdown of lubricants. See RR300 Series Operation and Maintenance Manual (OMM) for engine cleaning instructions and precautions.

2. Inspect tail rotor blades per § 64-30; inspect trailing edges for buckling, and leading edges for bending. If either blade is damaged, remove tail rotor assembly per § 64-10 and tail rotor gearbox per § 65-40 and return components to RHC.
3. Perform tail rotor drive shaft runout per § 65-21. If runout exceeds 0.025 inch at any location:
    a. Remove tail rotor drive shaft assembly per § 65-20 and return drive shaft to RHC.
    b. Visually inspect F193-2 hanger and F172-3 (bearing) housing for cracks or deformation.
    c. Replace C947-3 plate assemblies (forward, intermediate, and aft).

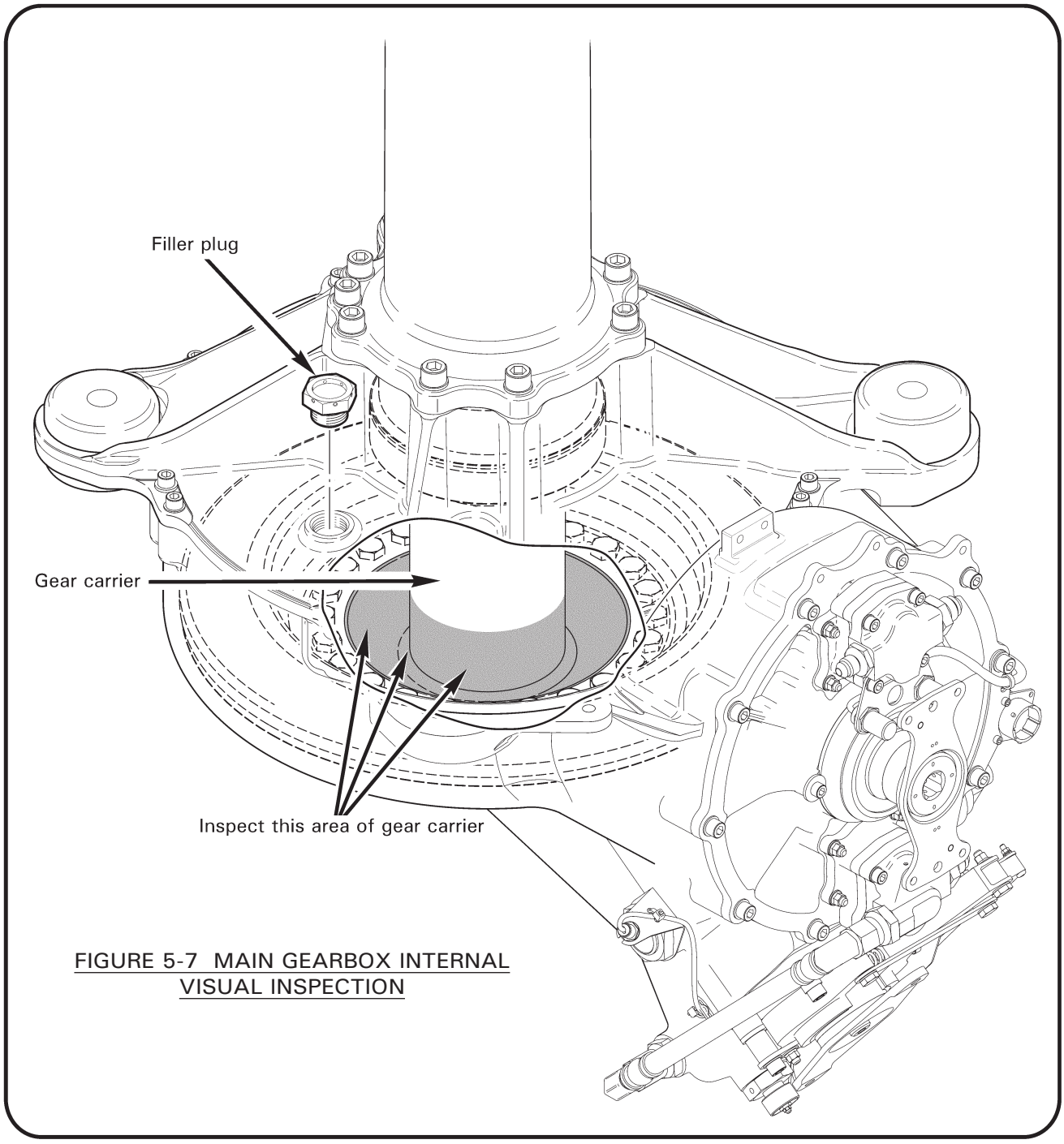


FIGURE 5-7 MAIN GEARBOX INTERNAL VISUAL INSPECTION

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 C148 Bulkhead Inspection

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 or tail gearbox breakage has occurred, perform the following:

1. On associated tailcone's 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.

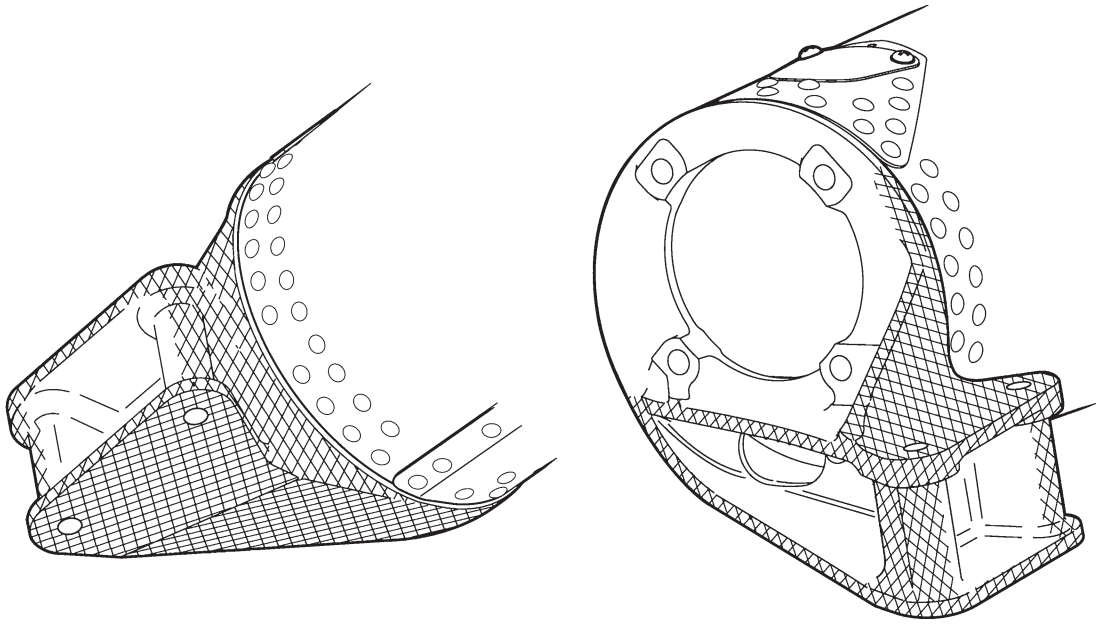


FIGURE 5-8 PENETRANT INSPECT CROSS-HATCHED SURFACES OF C148 BULKHEAD