SERVICE BULLETIN

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SUBJECT: INSPECTION AND REWORK OF MAIN AND TAIL ROTOR CONTROL TUBES (PNS 369A7007, 389A7009, 369A7011 AND 369A7012).

MODELS AFFECTED: All MD Helicopters, Inc. (MDHI) 369 Series helicopters, including the 369A (OH−6A) Series helicopters.

TIME OF COMPLIANCE: **PART I** of this NOTICE, the inspection of the control tube, shall be accomplished within the next 25 hours of helicopter operation and at each subsequent 100 hours of helicopter operation until the requirements of **PART II** are accomplished.

PART II of this NOTICE, the rework procedure to install the sleeve, shall be accomplished within the next 600 hours of helicopter operation or at the next annual inspection performed after 30 October 1989, whichever occurs first.

All spares inventories shall comply with **PART I** and **PART II** of this Notice prior to installation into a helicopter or within 180 days from the date of this Notice whichever occurs first.

PREFACE: MDHI inspections have revealed internal and external cracks in the vertical Tunnel−Routed main and tail rotor control tubes. Therefore, MDHI is requiring all operators of affected helicopters to perform the following inspection and install reinforcing sleeves to each end of the control tubes. There have been no reported failures of the control tubes.

REFERENCE PUBLICATIONS:

369H Basic HMI (CSP−H−2) Revised 15 January 1989
369D/E HMI Vol. I (CSP−D−2) Revised 01 March 1989
369F/FF HMI Vol. I (CSP−F−2) Revised 01 June 1989

REPLACEMENT POLICY: The following policy is applicable for replacement of subject control tubes found to be defective.

A. Aircraft Under Warranty (within two years of aircraft delivery):
1. MDHI will provide, Free Of Charge, Control Tube Rework Sleeves and Epoxy Adhesive.
2. For tubes that are rejected per PART I of this Notice, MDHI will provide, on exchange (free of charge), a serviceable control tube with sleeve modification applied. A completed Service and Operations Report (SOR, form 853A) must accompany the control tube specifying the serial number of the aircraft from which the control tube was removed. Control tubes damaged by obvious misuse, negligence, or accident will not be replaced free of charge.
3. MDHI will pay shipping charges one−way.

B. Aircraft Beyond Warranty (more than two years since aircraft delivery):
1. MDHI will provide, Free Of Charge, Control Tube Rework Sleeves and Epoxy Adhesive.
2. For tubes that are rejected per PART I of this Notice, MDHI will sell, on exchange, a serviceable control tube with sleeve modification applied at a cost of $ 300.00 USD. A completed Service and Operations Report (SOR, form 853A) must accompany the control tube specifying the serial number of the aircraft from which the control tube was removed.
3. MDHI will pay shipping charges one−way.

SERVICE BULLETIN

PARTS LIST

Nomenclature	Part No.	Qty.	Source
Sleeve (for 369A7007)	369D27013–1 or 369D27013–2	2 2	MDHI No Charge or Field Fabricate
Sleeve (for 369A7009)	369D27013–1 or 369D27013–2	2 2	
Sleeve (for 369A7011)	369D27013–3 or 369D27013–4	2 2	
Sleeve (for 369A7012)	369D27013–5	2	
Rivet	MS20470AD3–15	4	

MATERIAL

Nomenclature	Source
Primer, zinc chromate (RM009222) (TT–P–1757) (MIL–P–8585)	MDHI COMMERCIAL (Refer to HMI)
Paint (top coat – Flat Black) (RM006851)	MDHI Commercial (Refer to HMI)
M.E.K. or equivalent (RM008922) (TT–M–261)	MDHI Commercial (Refer to HMI)
Cloth, Oil and Lint free (RM003505)	MDHI Commercial (Refer to HMI)
Epoxy Adhesive (RMI012080) EA9330.3	MDHI – No Charge Dexter Corporation Hysol Division Pittsburg, CA 94565
Isopropyl Alcohol (RM010721) (TT–I–735)	MDHI Commercial (Refer to HMI)
Contact Cement (RM000685) (Alternate material, GRIP) EC1300L	MDHI Commercial (Refer to HMI)
Chemical Film (RM012007) (Iridite or Al–coat) (MIL–C–5541) (Required if sleeve is field Fabricated)	MDHI Allied–Kelite Products Division 2400 E. Devon Des Plaines, IL

TOOLS AND EQUIPMENT

Nomenclature	Source
Kit, dye penetrant (MIL–I–25135)	Commercial (ZA43) Zyglo Test Kit
Drift Punch 3/32 inch diameter	Commercial
Caliper (0–1 inch)	Commercial
Drill Motor, portable	Commercial
#40 Drill	Commercial

PART I - INSPECTION PROCEDURE

a. Remove 369A7007, 369A7009, 369A7011 and 369A7012 control tubes as follows: (refer to figure 1)

1. Align blue blade to right side of aircraft.

2. Remove bolts from top of tubes.

3. Remove double boot from the 11 and 09 tubes (ref. view A). All tubes will be removed through the double hole.

4 Move blue blade pitch housing down as far as it will go. This will allow the tubes to go past the housing.

5. Remove bolts from bottom of 11 and 09 tubes.

6. Move cyclic controls so that the 12 tube moves to its highest point (ref. view B). Place 09 tube to the far right and lower out of the way. Lower 11 tube to the left side of center beam. This will allow 11 tube to angle up through the double hole.

7. Remove bolt from bottom of 12 tube and lower to belly of aircraft and angle up through the double hole (ref. view C).

8. Remove bolts from bottom of 07 tube and lower to the belly of aircraft, then angle up through the double hole (ref. view D).

9. Move 09 tube to the other side of center beam and angle up through the double hole. To install tubes just reverse sequence (ref. view E).

b. Using paint stripper (refer to HMI), remove paint approximately six inches back from end of each tube (tapered area of tube).

c. Dye penetrant inspect external surface of stripped area for cracks. Cracks are indicated by heavy bleed out. It may be necessary to wipe off and reapply the developer to distinguish between surface defects caused during swaging operation. Light penetrant indications are not cause for rejection. Control tubes that are cracked must be removed from service.

d. If no cracks are found and Part II will not be accomplished at this time, inspected control tubes can be painted and reinstalled.

e. Record compliance to PART I of this Service Information Notice in the Compliance Record section of the helicopter Log Book.

PART II - REWORK PROCEDURE

a. Perform Part I prior to installing sleeve. If control tube was reinstalled after performing PART I, reinspection per PART I is required. All four control tubes are to be reworked during this procedure.

CAUTION

If control tube is not accurately measured, flight controls will require rerigging.

b. Measure and record length of control tubes for reinstalling rod ends and to prevent rerigging after control tube reinstallation.

c. Remove rod ends (MS20470AD3 Rivet must be removed from fixed end). When removing rivet, drill out rivet head and punch out the remainder of the rivet with a drift punch.

CAUTION

Drilled out rivet may damage threads upon rod end removal. Visually Inspect control tube threads for damage from rivet and rod end removal. Replace damaged control tubes. Drilled rod ends are match drilled to each control tube and must be rein-stalled into control tube end from which it is removed.

d. Measure outside diameter of control tube end and select sleeve per table in figure 2.

e. Temporarily install sleeve onto control tubes per figure 2. Align sleeve and control tube witness hole. If sleeve protrudes past end of control tube, trim end of sleeve flush (0.000 inch) or back (0.080 inch) from end of tube.

f. Thoroughly clean end of control tube and interior surfaces of sleeve with lint free cloth and MEK, or equivalent.

g. Mix epoxy adnesive per manufacturer's instructions.

h. Plug end of control tube to prevent adhesive from entering threads.

CAUTION

Bond integrity is dependent on clean surfaces.

i. Bond sleeve to control tube per figure 2. Apply adhesive to both surfaces and install sleeve. Align witness/rivet hole in sleeve and tube.

j. Remove excessive adhesive with lint free cloth moistened with MEK, or equivalent. Do not saturate the cleaning cloth. Remove adhesive from witness holes.

k. Repeat procedure for ends of each control tube.

l. Allow to cure for 24 hours at minimum ambient temperature of 68 degrees F (alternate cure 4 hours at 115 - 140 degrees F).

CAUTION

Do not use Heat Gun. Use of heat lamp is acceptable.

m. Install rod ends into end from which it was removed.

n. On fixed rod end, align witness/rivet hole in sleeve and tube with rivet hole in rod end. Drill (#40) thru opposite end of sleeve.

o. Rivet fixed end with MS20470AD3-15 rivet.

p. Adjust each control tube to its previously measured length.

q. Paint control tube ends with primer. Paint adjustable end of control tube flat black.

CAUTION

Do not vibrato-mark or impression stamp the control tubes.

r. Reidentify/, with permanent ink, the control tubes that have been reworked as indicated below;

Old Part Number	New Rework Part Number
369A7007	369A7007-5
369A7009	369A7009-5
369A7011	369A7011-5
369A7012	369A7012-5

s. Rework control tube boots per Figure 1, View F.

t. Reinstall control tubes and boots in reverse order listed in Part I. Reinstall trimmed boots with vertical seam facing aft. If control tubes have not been accurately measured, flight controls will require rerigging.

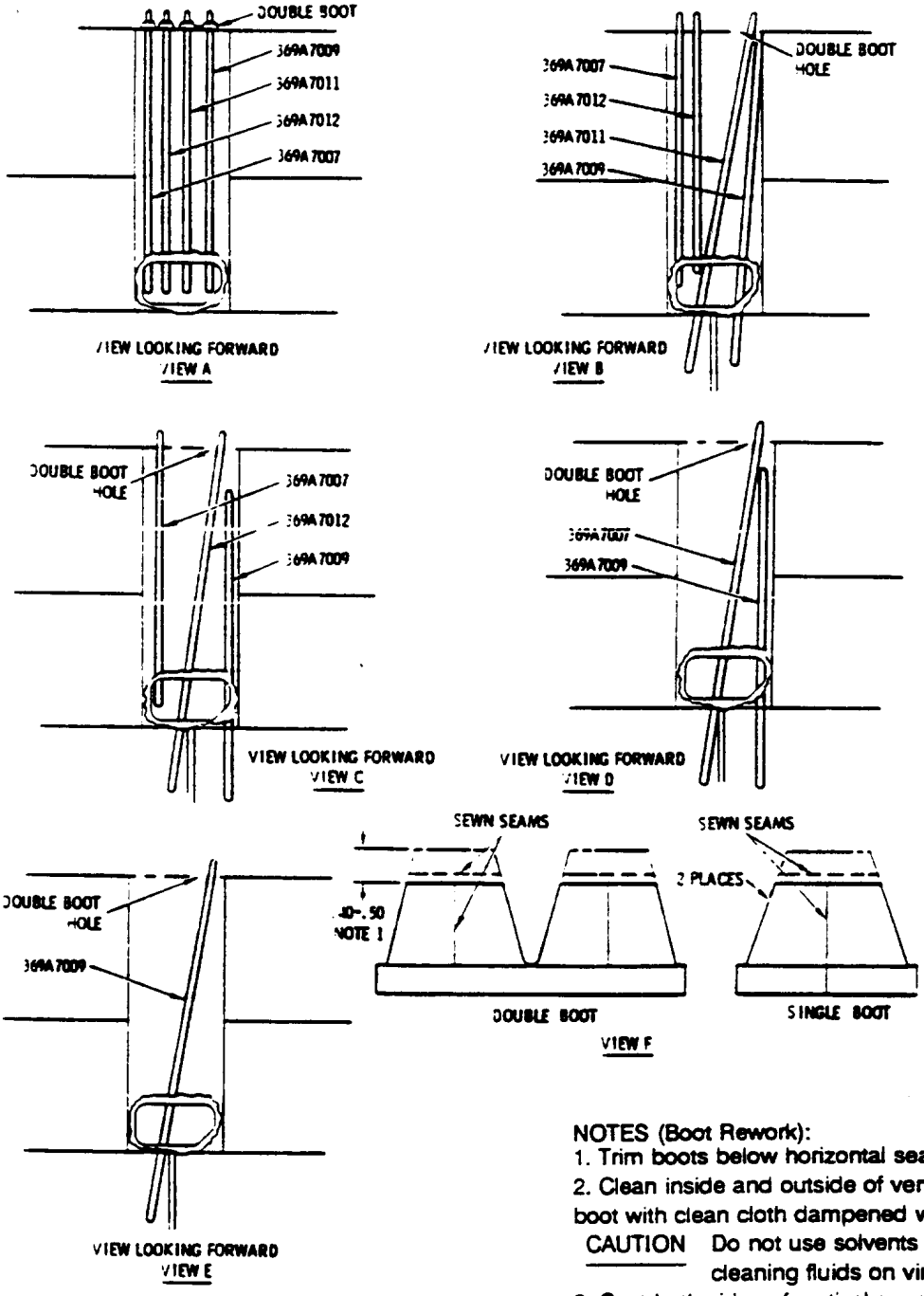
u. Check flight controls for interference or binding.

v. Record compliance to this Service Information Notice in the Compliance Record section of the helicopter Log Book.

WEIGHT AND BALANCE: Weight and Balance not affected.

The resultant alteration to affected models as prescribed by procedures in this Notice has been shown to comply with Federal Aviation Regulations and is FAA Approved.

SERVICE BULLETIN



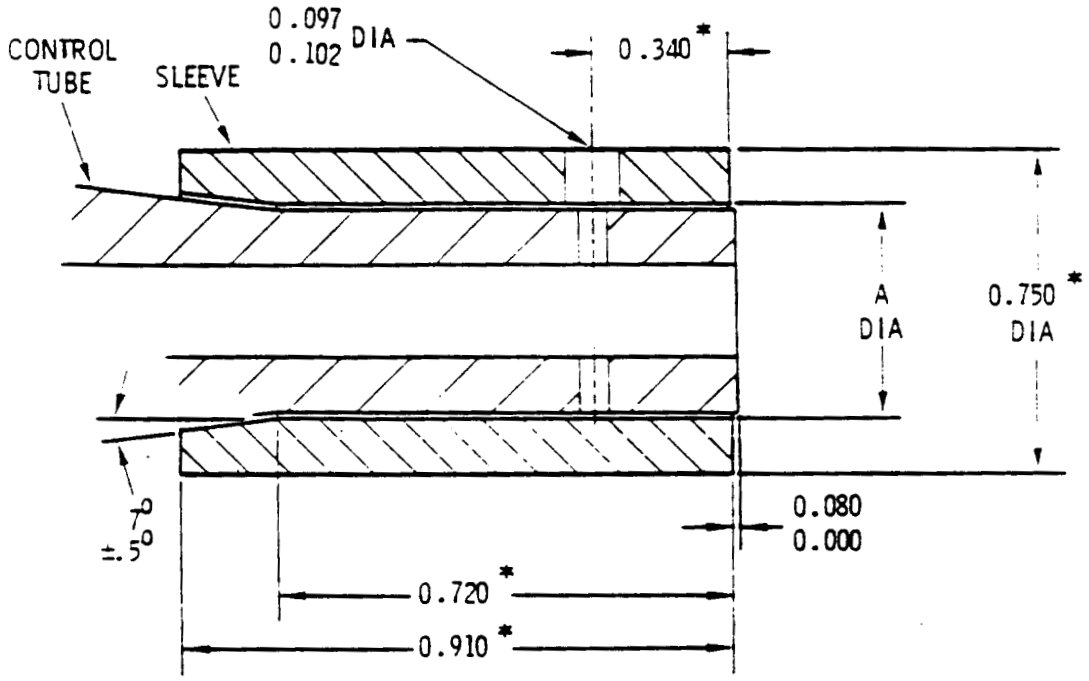
NOTES (Boot Rework):

1. Trim boots below horizontal seam
2. Clean inside and outside of vertical seam and top of boot with clean cloth dampened with isopropyl alcohol.

   CAUTION Do not use solvents or petroleum based cleaning fluids on vinyl boots.
3. Coat both sides of vertical seam with contact cement.
4. Apply thin coat of contact cement. along trimmed edge and 1/8 to 1/4 inch down inside and outside surfaces of boots to prevent fraying.

88-694

Figure 1. Control Tube Removal and Boot Rework



DIMENSION TABLE

ROD NO.	SLEEVE NO. 369D27013	DIM A	TUBE O.D.
369A7007 369A7009	-1	.540 - .545	.501 - .530
	-2	.510 - .515	.470 - .500
369A7011	-3	.590 - .595	.551 - .580
	-4	.560 - .565	.520 - .550
369A7012	-5	.570 - .575	.530 - .560

NOTES:
1. Material 2024-T351 or -T4 (QQA 225/6) Bar or Round Stock
2. Break sharp edges 0.005 - 0.015 inch
3. Surface finish 125 RMS
4. Chemical Film per MIL-C-5541
5. Tolerance * ±0.010 inch

88-695

Figure 2. Sleeve Fabrication and Installation