Manual: CSP-HMI-2, Handbook of Maintenance Instructions
Models: 369D/E/FF - 500/600N Helicopters
Issued: 31 October 1990
Revision 34: 21 August 2003

FILING INSTRUCTIONS:

(1) Before inserting this change, ensure the manual is current.
Check the existing List of Effective Pages in the manual to ensure all prior revisions are inserted.
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TR 03–002	None
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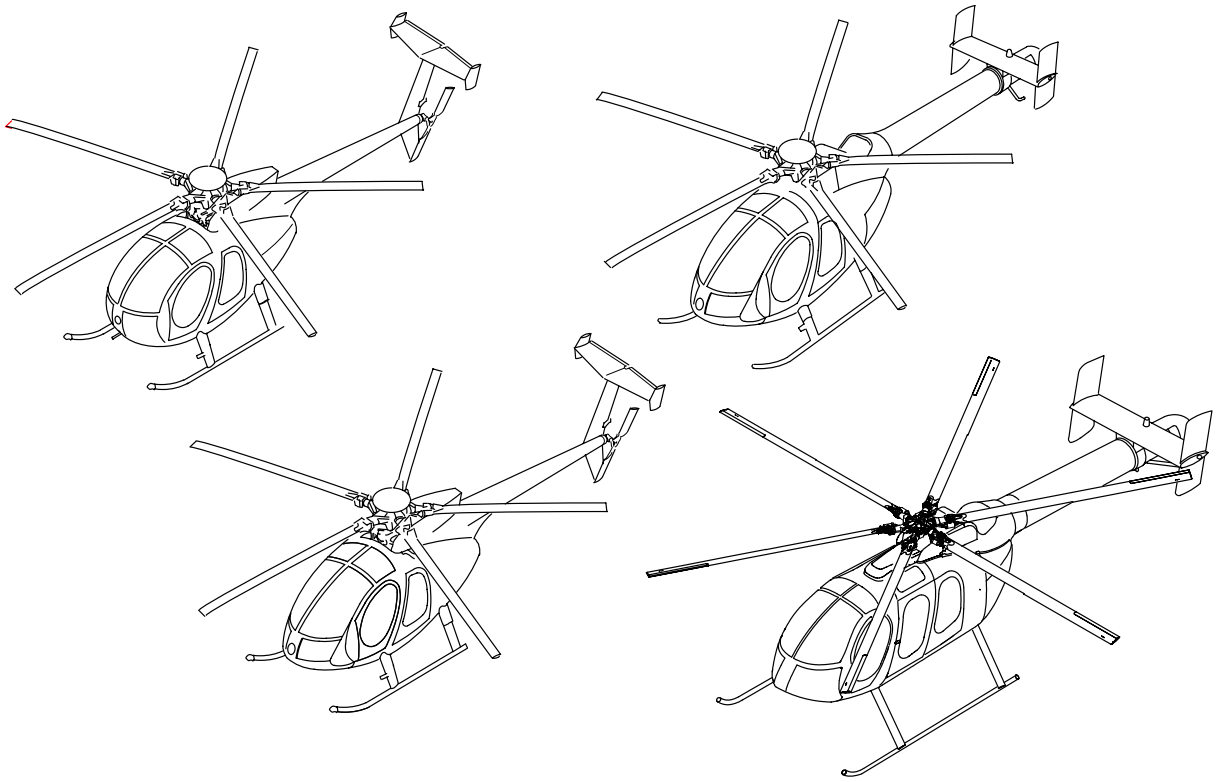
MDHI MODEL HELICOPTERS

MODELS 369D/E/FF – 500/600N

Basic Handbook of Maintenance Instructions

(CSP–HMI–2)

SERVICING AND MAINTENANCE



MD Helicopters, Inc.
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Issued: 31 October 1990
Revision No. 34: 21 August 2003

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This manual has been prepared and distributed by the Technical Publications Department and is intended for use by personnel responsible for the maintenance of MDHI Helicopters. Periodic revision of this manual will be made to incorporate the latest information. If, in the opinion of the reader, any information has been omitted or requires clarification, please direct your comments to this office via this form (or a duplicate). An endeavor will be made to include such information in future revisions.

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ATA Section Number: _____ Step Number(s): _____

Issue Date: _____ Figure Number(s): _____

Revision No. and Date: _____ Table Number(s): _____

Remarks / Instructions: _____

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MD HELICOPTERS INC.

RECORD OF TEMPORARY REVISIONS

MANUAL TITLE: CSP-HMI-2 MAINTENANCE MANUAL

REV. NO.	DATE INSERTED	BY	DATE REMOVED	BY	REV. NO.	DATE INSERTED	BY	DATE REMOVED	BY
02–001			Removed by						
and			Incorporating						
02–002			Revision 32						
03–001			Removed by						
and			Incorporating						
03–002			Revision 34						

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LIST OF EFFECTIVE PAGES

INSERT LATEST CHANGE PAGES, DESTROY SUPERSEDED PAGES
The highest revision number indicates pages changed, added or removed by the current change.

Date of original and revised pages are:

Original . . . . . 31 October 1990
Revision 1 . . . . . 29 March 1991
Revision 2 . . . . . 10 May 1991
Revision 3 . . . . . 09 September 1991
Revision 4 . . . . . 20 January 1992
Revision 5 . . . . . 24 August 1992
Revision 6 . . . . . 21 December 1992
Revision 7 . . . . . 01 June 1993
Revision 8 . . . . . 23 July 1993
Revision 9 . . . . . 22 April 1994
Revision 10 . . . . . 26 September 1994
Revision 11 . . . . . 18 January 1995
Revision 12 . . . . . 06 October 1995
Revision 13 . . . . . 31 May 1996
Revision 14 . . . . . 13 September 1996
Revision 15 . . . . . 15 November 1996
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Revision 24 . . . . . 07 December 1999
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Revision 28 . . . . . 30 November 2000
Revision 29 . . . . . 11 May 2001
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Revision 31 . . . . . 05 November 2001
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Revision 33 . . . . . 24 June 2002
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NOTE: The following sections are applicable to the helicopter models denoted to the right of the section.

Contents

Table 1. ACTIVE SERVICE BULLETINS (Cont.)

369D	369E	369F	500N	600N	SUBJECT	DATE
				013R1	Low Fuel Level Warning Light	4–15–98
	090R1	077R1	017R1	014R1	Socket Contact Assembly Inspection	9–25–98
				015	Engine Fuel Control Box Replacement	4–23–99
				016R1	Audio Warning System Replacement	9–19–00
				017	FADEC Manual Switch Guard Modification	10–6–98
				018R1	Torque Pressure Transducer High Intensity Radiated Fields (HIRF) Protection Modification	2–7–00
				019	FADEC Wire Harness Standoff Installation/Inspection	4–23–99
				020R2	Electromagnetic Compatability Test (EMC) for Optional Equipment Effects on the FADEC Control	4–14–03
				021R1	Inspection/Reidentification/Serialization of Cyclic Control Stick Sockets and Left Hand Command (Co–Pilot) Cyclic Tube	3–11–99
197	091		018		Engine Fuel Pressure Switch Replacement	2–23–99
198	092				Tail Rotor Fork Inspection, Four–Bladed	5–10–99
				022	Torque Transducer Replacement	4–23–99
				023R1	Cyclic Stick Replacement	7–30–99
				024R1	Link Assembly Replacement	4–6–99
				025	Fuel System Inspection	7–2–99
199	093		019		Turbine Outlet Temperature (TOT) Indicating System, One Time Inspection	1–11–00
				026	Turbine Outlet Temperature (TOT) Indicating System, One Time Inspection	1–11–00
			020R2	027R2	Forward and Center Thruster Control Cables, Conduit Cap Relief Area, Inspection	4–24–00
			021	028	Forward and Center Thruster Cables, Conduit Cap at Telescopic Swivel End, Inspection	11–19–99
200	094	078	022		Landing Gear Strut Inspection and Fairing Modification	4–7–00
				029	Motive Flow Restrictor Removal	1–10–01
				030R1	Inspection of Vertical Stabilizer and Torque Tube and Replacement of Attaching Hardware	5–25–01
201R1	095R1	079R1	023R1	031R1	Main Rotor Blade Torque Event Inspection	7–24–01
				032	Turbine Outlet Temperature (TOT) Indicator Replacement	12–13–01
				033	Main Rotor Drive Shaft Life Reduction	12–13–01
				034	Torque Transducer Electrical Connector One Time Inspection	12–13–01
			024	035	Fan Pitch Control Aft Tube Assembly One Time Inspection	10–23–01
				036	Tailboom Assembly Attach Fitting One Time Inspection and Repair	11–2–01
202	096	080	025	037	Main Transmission Bonding Jumper Inspection and Rework	8–14–02
				038	Exhaust Duct Inspection	5–6–03

4. Cancelled or Superceded Service Information Notices

(1). Table 2 a list of Service Information Notices that have been cancelled or superceded.

(2). Updated information, pertinent to the Notice, has been incorporated into the appropriate manuals.

(3). If the Notice is superceded by another Notice, it will be noted in the Subject column after the description.

5. Scope

The following is an explanation of how to read Table 2.

(1). **DN**-369D Model Helicopters
EN-369E Model Helicopters
FN-369F and 369FF Model Helicopters
NN-500N Model Helicopters.

(2). **Subject** - A brief description of the Notice.

(3). **Date** - Date the Notice was cancelled or superceded.

Table 2. CANCELLED OR SUPERCEDED SERVICE INFORMATION NOTICES

369D	369E	369F	500N	600N	SUBJECT	DATE
2.3					Main Rotor Strap Pack Lamination Inspection (Superceded by DN–154)	1–15–88
4.1					Main Rotor Blade Phasing, Tracking and Balancing	8–2–93
5					600–Hour Periodic Inspection – Model 369D Cyclic Control System	8–2–93
7					Installation of 369D21008 Main Rotor Pitch Control Rod Assembly, Upper and Lower Rod End Bearings	8–2–93
15					Periodic Inspection of 369D26300 and 369D26301 Landing Gear Damper Assemblies	8–2–93
28					Field Modification of 369D29919 Main Rotor Blade Phasing Kit to new 369D29919–501 Configuration	8–2–93
29.3					Periodic Replacement of 369H5655–3 and –5 Oil Cooler Blower Fan Bearings; Inspection of Pulley Attach Hardware and Driveshaft Couplings; Inspection and Adjustment of Fan Drive Belt; Driveshaft Compression Check	8–2–93
32					New Periodic Inspection Intervals – Battery Overtemperature Warning System	8–2–93
33.1					Replacement of 369A1602 Tail Rotor Drive Fork Hinge Bolt and 369A1603 Nut; New Assembly Procedure for Tail Rotor Hub and Drive Fork Unit; Periodic Check of Flapping Hinge Bolt Preload	8–2–93
38					Daily Inspection of 369H5307 Tail Rotor Stop and 369D21724–3 Support	8–2–93
41.1					Operational Check of Engine Fuel Pump Filter Pressure (Bypass) Switch Assembly	8–2–93
	2				Inspection of Spare Main Rotor Blade Root Fitting Assemblies; Inspection of Main Rotor Hub Lead–Lag Link Assemblies (Superceded by EN–42)	11–13–87
		2			Inspection of Main Rotor Hub Lead–Lag Link Assemblies (Superceded by FN–31)	11–13–87
53.1					100–Hour Periodic Inspection of Fuel Tank Sending Unit and Fuel Low Warning Light Indicating System	8–2–93
57					Field Repair of 369D21300 Pitch Housing Assembly, Main Rotor Hub	8–2–93
61.2					Periodic Check of 369D21400–502 and M50452 Main Rotor Elastomeric Damper Assemblies	8–2–93
64					Pilot/Operator Check of 369D21210–501 Main Rotor Hub Strap Pack Assembly (Superseded by DN–154)	1–15–88
74					Un–Assigned	
75.1					Procedure for Installation of Tail Rotor Drive Shaft (Superceded by DN–95)	9–27–82
77.1					Main Rotor Strap Pack Lamination Inspection (Superceded by DN–154)	1–15–88

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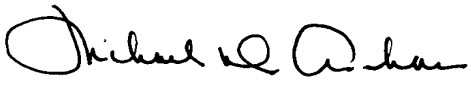
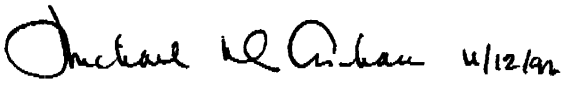
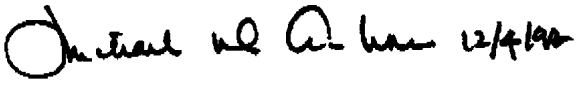
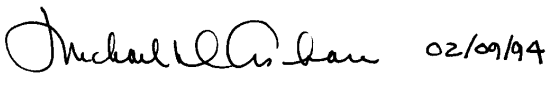
AIRWORTHINESS LIMITATIONS

Type Certificate No. H3WE

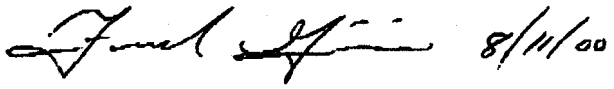
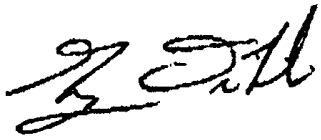
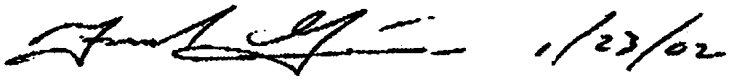
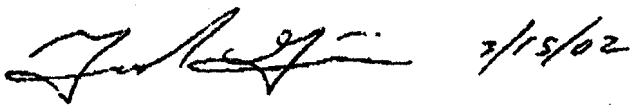
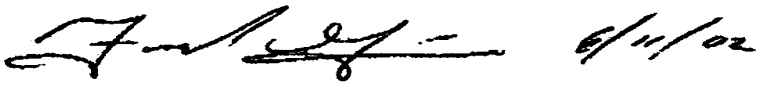
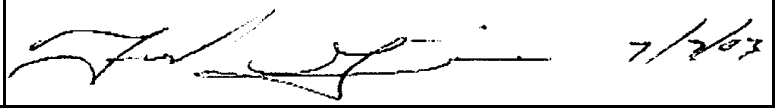
FAA Approved Airworthiness Limitations for MD Helicopters, Inc., Models 369D/E/F/FF and 500/600N.

1. General

The Airworthiness Limitations section is FAA approved and specifies maintenance required under Code of Federal Regulations (CFR), Title 14, Federal Aviation Regulation (FAR), Part 43.16 and 91.403 unless an alternative program has been FAA approved.

REVISION:	DATE	FAA SIGNATURE AND DATE
Original Issue:	October 31, 1990	Not FAA approved
Revision 1:	March 29, 1991	Not FAA approved this revision
Revision 2:	May 10, 1991	
TR 91–001	August 12, 1991	
Revision 3:	September 9, 1991	
TR 91–002	November 5, 1991	
Revision 4:	January 20, 1992	
TR 92–004	May 20, 1992	
Revision 5:	August 24, 1992	
TR 92–005	November 20, 1992	
Revision 6:	December 21, 1992	
Revision 7:	June 1, 1993	Section 04–00–00 Not Affected This Revision
TR 93–002	May 27, 1993	
Revision 8:	July 23, 1993	
TR 94–001	January 21, 1994	
Revision 9:	April 22, 1994	
Revision 10:	September 26, 1994	Section 04–00–00 Not Affected This Revision

REVISION:	DATE	FAA SIGNATURE AND DATE
TR 94–002	October 24, 1994	Michael W. Adams 10/24/94
Revision 11:	January 18, 1995	Michael W. Adams 01/23/95
Revision 12:	October 6, 1995	Section 04–00–00 Not Affected This Revision
TR 96–002:	April 24, 1996	Michael W. Adams 04/24/96
Revision 13:	May 31, 1996	Michael E. O'Neil 6/12/96 acting Mgr ANM-120L
Revision 14:	September 13, 1996	Michael W. Adams 09/09/96
Revision 15:	November 15, 1996	Section 04–00–00 Not Affected This Revision
Revision 16:	January 6, 1997	Section 04–00–00 Not Affected This Revision
Revision 17:	February 24, 1997	Michael W. Adams 02/20/97
TR 97–001:	July 2, 1997	Michael W. Adams 07/02/97
TR 97–002:	August 19, 1997	Michael W. Adams 08/19/97
Revision 18:	October 17, 1997	Section 04–00–00 Not Affected This Revision T/R 97–001 and 97–002 Previously Signed
Revision 19:	December 16, 1997	Michael W. Adams 12/19/97
TR 98–001:	March 25, 1998	Michael W. Adams 03/25/98
Revision 20:	June 1, 1998	Section 04–00–00 Not Affected This Revision T/R 98–001 Previously Signed
TR 98–002:	June 22, 1998	Acting Mgr. 7/10/98
TR 98–003:	3 August 1998	Michael W. Adams 8/3/98
Revision 21:	24 August 1998	Section 04–00–00 Not Affected This Revision T/R 98–002 and 98–003 Previously Signed
Revision 22:	10 March 1999	Section 04–00–00 Not Affected This Revision
Revision 23:	1 June 1999	Section 04–00–00 Not Affected This Revision
Revision 24:	7 December 1999	Maurice P. Cook 12/30/99 Acting Mgr
Revision 25:	28 April 2000	Section 04–00–00 Not Affected This Revision

REVISION:	DATE	FAA SIGNATURE AND DATE
Revision 26:	17 August 2000	 8/11/00
Revision 27:	9 October 2000	Section 04–00–00 Not Affected This Revision
Revision 28:	30 November 2000	Section 04–00–00 Not Affected This Revision
Revision 29:	11 May 2001	 5/4/01 5/14/01
Revision 30:	11 July 2001	Section 04–00–00 Not Affected This Revision
TR 01–001:	10 August 2001	 8/8/01
Revision 31:	5 November 2001	Section 04–00–00 Not Affected This Revision T/R 01–001 Previously Signed
TR 02–002:	30 January 2002	 1/23/02
Revision 32:	18 March 2002	 3/15/02
Revision 33:	24 June 2002	 6/11/02
TR 03–001:	18 June 2003	 6/13/03
TR 03–002:	25 June 2003	 7/3/03

This document conforms to Main Rotor Stress Analysis 369D/E, Rev. U.

This document conforms to Stress Analysis 369FF, Rev. R.

This document conforms to Service Life Analysis 500N, Rev. T.

This document conforms to Service Life Analysis 600N, Rev. U.

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AIRWORTHINESS LIMITATIONS

2. Component Mandatory Replacement

The Airworthiness Limitation Replacement Schedule specifies the mandatory replacement time, structural inspection interval and related structural inspection procedures approved per the certificate basis of the Type Certificate Data Sheet No. H3WE and CAR 6 (6.250, 6.251) and CFR 27.571 for models 500/600N unique components only. At the listed finite-life, components or assemblies must be removed from the helicopter and permanently retired from service. At the listed inspection interval, the components or assemblies must be inspected in accordance with the Handbook of Maintenance Instructions (HMI). The title of the task and section of the HMI are referred to which provide the inspection procedures and criteria.

NOTE: Refer to CFR Part 43.10 for latest requirements for the removal, installation, storage and disposition of life-limited parts.

(1). A "life-limited" part is a physical component of the helicopter to which a maximum number of allowable operating hours or cycles are assigned. Certain assemblies and components on the helicopter have a limited life established by MDHI and approved by FAA Engineering. For example, a part with an assigned limit of 1000 hours, may accumulate 1000 hours of operation in service. Upon completion of the 1000 hours of operation, useful life of the part is ended. The finite-life assigned to different parts varies according to engineering fatigue tests, part experience, etc. The parts listed in this section must be removed from the helicopter at the finite-life indicated and identified as to it's expired life (Ref, Table 1, Note (1)).

(2). All parts not having an assigned life or stated to be of unlimited life, have a life of not less than 20,000 hours.

(3). When a life-limited part or an assembly that incorporates a life-limited part is installed on a new or used helicopter, the nomenclature, part number, serial number, component time and current helicopter hours are recorded in the Log Book and component log for the helicopter. Whether the life-limited part is new or used, the remaining number of useful life hours and previous inspection time, if applicable, for the part is added to the existing helicopter time. The total helicopter hours obtained then denotes the subsequent time at which the part must be removed from the helicopter or inspected.

(4). If a life-limited part, is part of an assembly, the assembly must be removed from the helicopter when the time expires. The assembly may be overhauled and restored to maximum number of hours of useful life by installing new life-limited parts plus all other parts specified in the overhaul instructions (Refer to Component Overhaul Manual).

(5). If interchanged between different model helicopters (for instance, Model 369D to 369FF or vice versa), any component having a limited life or overhaul schedule must be restricted to the lowest service life or TBO schedule indicated for the helicopter models and serial numbers affected.

(6). Refer to the appropriate Allison Operation and Maintenance Manual for engine component replacement requirements.

3. Component Mandatory Inspections

Some components with mandatory inspection intervals require inspections to be completed in accordance with procedures detailed in other sections of this maintenance manual. The appropriate inspection procedures are referenced in the **Notes** flagged to each component to be inspected. All maintenance manual procedures which are referenced in the FAA Approved Airworthiness Limitations Component Mandatory Replacement Schedule are FAA approved procedures which cannot be changed without FAA review and approval of the proposed changes.

4. Retirement Index Number (RIN)

(1). A Retirement Index Number (RIN) is a number that accounts for different usage spectra in assigning the retirement time for a component.

The RIN is calculated as the sum of an adjustment factor times flight hours plus another adjustment factor times Torque Events.

When a component reaches 1,000,000 RIN's, it has reached it's maximum life and is to be scrapped.

5. Torque Event (TE)

A Torque Event (TE) is defined as:

The transition to a hover from forward flight.

Any external lift operation.

NOTE: An external lift can either be on the cargo hook, external hoist or in external baskets.

For external lift operators, an external load is recorded as two (2) TE's (pick-up and drop-off).

Hover taxi with no external load will typically result in no TEs.

6. External Lift and Torque Event (TE) Requirements

The 369D/E/F/FF - 500/600N helicopters are multi-use helicopters. If the helicopter is used primarily for external lifts or training flights (high TE flights), there may be a reduction in inspection intervals of some components.

CAUTION For safe operation of the helicopter, TE's must be recorded in the Rotorcraft Log Book. Each external lift will be recorded as two (2) TE's.

(1). Determine the number of TE's and external lifts the helicopter accumulates per hour of flight time.

(2). Record all TE's in Rotorcraft Log Book and continue to record all TE's.

(3). Perform required TE inspections.

Table 1. Airworthiness Limitations Schedule

Component (1)	Model	Part Number (2)	Finite Life Hours (1)	Mandatory Inspection Hours
Main Rotor System				
Blade assembly, main rotor	369D/E(5)(6)	369D21100	3530 (37)	25 (11)(20)
		369D21100–516	3530 (37)	100 (20)
		369D21100–517	2500 (31)	25 (22)
		369D21100–517	3530 (37)	100 (20)
		369D21100–523	4000 (37)	100 (20)
		369D21120–501	3530 (37)	100 (20)
		369D21120–503	3530 (37)	100 (20)
	369F/FF (6)	369D21102	3430 (37)	25 (11)(20)
		369D21102–503	3430 (37)	100 (20)
		369D21102–517	2500 (31)	25 (22)
		369D21102–517	3430 (37)	100 (20)
		369D21102–523	4000 (37)	100 (20)
		369D21121–501	3430 (37)	100 (20)
		369D21121–503	3430 (37)	100 (20)
	500N (6)	369D21102–503	3430 (37)	100 (20)
		369D21102–517	2500 (31)	25 (22)
		369D21102–517	3430 (37)	100 (20)
		369D21102–523	4000 (37)	100 (20)
		369D21121–501	3430 (37)	100 (20)
		369D21121–503	3430 (37)	100 (20)
	600N (6)	369D21102–517 (21)	1900 (32)(37)	100 (20)
		369D21102–523	3200 (33)(37)	100 (20)
		369D21121–501	3200 (33)(37)	100 (20)
		369D21121–503	3200 (33)(37)	100 (20)
Folding pin, main rotor blade attach	369D/E/F/FF	369A1004	2850	
		369A1004–3	2850	
		369A1004–5	7600	
	500/600N	369A1004–5	7600	
Hub subassembly, main rotor	369D/E/F/FF 500N	369D21201	8900	
Pitch housing assembly, main rotor hub	369D	369D21300	9100	
		369D21300–501	9100	
	369E/F/FF 500N	369D21300–501	9100	

Table 1. Airworthiness Limitations Schedule (Cont.)

Component (1)	Model	Part Number (2)	Finite Life Hours (1)	Mandatory Inspection Hours
Retention strap assembly, main rotor hub	369D	369D21210	2770	100 (4)
		369D21210–501	2770	100 (4)
	369E/F/FF	369D21210–501	2770	100 (4)
	500/600N	369D21210–501	2770	100 (4)
Bolt – lead–lag hub, main rotor	369D	369A1220	6120	
	369D/E/F/FF 500N	369D21220	6120	
	600N	369D21220	5400 (34)	
Link assembly – lead lag hub, main rotor	369D/E	369H1203–BSC (39)	5762	25 (23)
		369H1203–21 (39)	5762	25 (23)
		369H1203–31 (39)	5762	25 (11)
		369H1203–51 (39)	11080	
		369H1203–53 (40)	11080	
		369H1203–61 (39)	11080	
	369F/FF	369H1203–21 (39)	5762	25 (23)
		369H1203–31 (39)	5762	25 (11)
		369H1203–51 (39)	11080	
		369H1203–53 (40)	11080	
		369H1203–61 (39)	11080	
	500N	369H1203–51 (39)	11080	
		369H1203–53 (40)	11080	
		369H1203–61 (39)	11080	
	600N	369H1203–51 (39)	11080	
		369H1203–53 (40)	11080	
Lead lag damper – main rotor	369D	369D21400–501	6060	
		M50452	On Cond.	(16)
	369D/E/F/FF 500/600N	369D21400–503	On Cond.	(16)
Drive shaft, main rotor	369D/E	369D25510	5020	300 (8)
	369F/FF	369D25510	3675	300 (8)
	500N	369D25510–21	3260	300 (15)
	369D/E	369F5510	5020	
	369F/FF	369F5510	3675	
	500N	369F5510	3260	
	600N	600N5510	14000 (35)	
Mast assembly, main rotor	369D/E/F/FF 500N	369D22014	10450	
	600N	369D22014	3500	
Drive Shafts, Couplings and Clutches				
Drive shaft, main rotor transmission	369D/E/F	369A5510	3790	

Table 1. Airworthiness Limitations Schedule (Cont.)

Component (1)	Model	Part Number (2)	Finite Life Hours (1)	Mandatory Inspection Hours
Coupling, main transmission drive shaft	369D/E/F/FF	369H5660	4300	
	500N	369H5660	3200	
Overrunning clutch assembly	369D/E/F/FF 500/600N	369F5450–501	On Cond.	100 (24)
Sprag assembly, overrunning clutch	369D/E/F/FF	369A5364 369D25351	(3)	300 (10)
	500N	369D25351	(3)	300 (10)
	369D/E/F/FF 500/600N	369F5456	(3)	300 (17)
Drive shaft, fan	500N	500N5200	2620	
	600N	500N5200	1200 (36)	
Drive shaft, tail rotor	369D/E	369D25518	13900	
	369F/FF	369DSK152–11 369D25518–503	13900 14610	
Coupling – tail rotor drive shaft (Bendix) (**NOTE**: Not certified on 369FF Model) (9)	369D/E/F	369A5501 369H92564 (7)	4980 4980	
Anti–Torque System				
Gearshaft assembly, tail rotor input	369D/E	369D25434	12000	
	369F/FF	369D25434	3365	
Gearshaft, tail rotor output pinion	369D/E/F/FF	369D25430	7290	
Blade assembly, tail rotor	369D/E	369D21613 369D21613–11 369D21613–31 369D21613–41 369D21613–51 369D21613–61 369D21613–71 369D21640–501 (38) 369D21640–503 (38) 369D21640–505 (38)	5200 5140 5140 5140 5140 5140 5140 400 5140 5140	
	369F/FF	369D21606 369D21642–501 (38) 369D21642–503 (38) 369D21642–505 (38)	5140 400 5140 5140	
Blade assembly, tail rotor (optional 4–blade)	369D/E	369D21615 369D21641–501 (38) 369D21641–503 (38) 369D21641–505 (38)	10000 400 10000 10000	
Hub, tail rotor	369D/E/F/FF	369A1725	3450	

Table 1. Airworthiness Limitations Schedule (Cont.)

Component (1)	Model	Part Number (2)	Finite Life Hours (1)	Mandatory Inspection Hours
Retention strap assembly, tail rotor	369D/E/F	369A1706	5100	
	369FF	369A1706–507	5100	
		369A1706–509	5100	
Blade assembly, NOTAR fan	500N	500N5310–15	7500	
		500N5310–19	7500	
	600N	500N5310–19	12500	
Hub, fan	500N	500N5352–7	7500	
		500N5352–9	7500	
	600N	500N5352–9	7500	
Shaft, NOTAR fan support	600N	500N5357–13	4000	
Pitch plate assembly	500/600N	500N5363–7	7500	
Tube assembly, fan pitch	500N	500N7113–3	600 (18)	
Rotating cone assembly	500N	500N3740–1	10000	
		500N3740–41	10000	
	600N	500N3740–61	10000	
Tailboom				
Bolts, tailboom attach	369D/E/F/FF	MS21250–06014	21950	
Tailboom assembly	369D/E	369D23500	10300	
	369F/FF	369D23500–507	10300	
	500N	500N3500–19	10000	100 (14)
		500N3500–29	10000	
		500N3500–501	10000	
		500N3600–501	2400 (19)	
	600N	600N3500–503	2500 (25)	
		600N3500–505	5900	
		600N3500–507	1000 (19)	
		600N3500–509	1000 (19)	
		600N3500–511	1000 (19)	
Empennage fittings	600N	500N3530–7/8	On Cond.	100 (26)
		500N3530–9/10	On Cond.	100 (26)
Vertical stabilizer assembly	369D/E	369D23600	12700	
	369F/FF	369D23600–505	3388	
Torque tube, horizontal stabilizer	500N	500N3950–5	5000	
	600N	500N3950–7	3000	
		600N3950	1000 (19)	

Table 1. Airworthiness Limitations Schedule (Cont.)

Component (1)	Model	Part Number (2)	Finite Life Hours (1)	Mandatory Inspection Hours
Horizontal stabilizer assembly	369D (12)	369D23601	7700	
	369E (12)	421–087–505	7700	
		421–087–905 (13)	7700	
	369F/FF (12)	421–087–503	7700	
		421–087–903	7700	
	600N	500N3910–25	10000 (19)	
		500N3910–27	10000 (19)	
Controls				
Longitudinal idler bellcrank assembly	369D	369A7301	6500	
		369A7301–501	6500	
	369E/F/FF	369A7301–501	6500	
	500N	369A7301–501	2870	
Idler assembly, longitudinal pitch mixer	369D/E/F/FF	369A7603	13600	
	500N	369A7603	6050	
Longitudinal control rod	500N	369A7011–13	7740	
		369A7011–15	7740	
Socket, cyclic stick	600N	369A7141	1000	8 (27)
Cyclic tube assembly	600N	369D27132–503	1200	8 (27)
Housing, collective stick	600N	369A7347	450	
Tube, collective pitch control	600N	369A7348	400	
Tube assembly, collective pitch (pilot)	600N	369H7354–3	600	
Socket, cyclic stick	600N	369A7802	1000	8 (27)
Tube, collective pitch (co–pilot)	600N	369A7809	1800	
Housing, collective stick	600N	369A7820	450	
Housing, collective stick	600N	369H7837	450	
Tube assembly, collective pitch (co–pilot)	600N	369H7838–3	1000	
Fuselage Sta. 75 controls support bracket	600N	369N2608–11	6000	
Airframe				
Landing gear brace	600N	600N6010–17/19	5900 (28)	
Landing gear strut	600N	600N6022–7/8	696 (29)	
Landing gear foot	600N	600N6043–3	3900 (30)	
Floats				
Squib cartridge, used on Emergency float kit 369D292473–5, –6, –9, –10, –11, –12 **NOTE:** Life is based from original date of manufacture.	369D/E/F/FF 500N	12552–1 (Holex, Inc.) 281993 (Walter Kidde) 12754–1 (Holex, Inc.) 5003527 (Tavco)	5 years 5 years 5 years 5 years	

Table 1. Airworthiness Limitations Schedule (Cont.)

Component (1)	Model	Part Number (2)	Finite Life Hours (1)	Mandatory Inspection Hours
Stabilizer support, utility float	369D/E	369D292036 369DSK66	3190 3190	

NOTES:

(1) Life–limited components interchanged between models or configurations must be restricted to the lowest service life indicated for the models or configurations affected. Life–limited components removed at retirement are to be mutilated/destroyed or conspicuously marked to prevent inadvertent return to service. Parts are applicable only on models under which a service life is listed.
Life–limited components cannot be altered or permanently marked in any manner without compromising the part integrity. Part tagging or other record keeping system is required.
Related component records must be updated each time component is removed from service.

(2) Service life shown for the basic (no dash number) part numbers apply to all dash numbered versions unless otherwise indicated.

(3) With no cargo hook attached: – No retirement life assigned (Ref. Sec. 05–10–00, Component Overhaul or Recommended Replacement Schedule).
With cargo hook attached and no separate log: – 1800 hours.
With cargo hook attached and with separate log: – 1800 hours of external load operating time when logged separately.
(For 369D/E/F/FF helicopters with 369A5364 or 369D25351 sprag assembly, Refer to AD 90–19–02.)

(4) Inspect in accordance with Main Rotor Strap Pack Lamination Inspection at 100–hour intervals, or 25–hour intervals if 2 laminates (369D/E/F/FF – 500N) or 1 laminate (600N) have failed in any one leg or tongue area of any strap assembly. A single cracked laminate between the shoes at the outboard end of a strap pack is cause for rejection of the hub assembly
369D/E/F/FF – 500N: (Ref. Sec. 62–20–00, Main Rotor Strap Pack Lamination Inspection).
600N: (Ref. Sec. 62–20–60, Main Rotor Strap Pack Lamination Inspection).
(For 369D/E/F/FF helicopters, refer to AD 89–02–01.)

(5) The 369D21100–513, –515, 516, 517 and –523 main rotor blades are not interchangeable with any earlier configuration blades (Basic, –505 or –509); however, the –505 and –509 blades are interchangeable and the –513 and –515 blades are interchangeable. The –505 and –509 configuration blades may be modified to the –513M configuration, which is fully compatible with the –513 blade. (For information concerning modification, contact MDHI Customer Service Department.)

(6) For the 369D/E helicopters, the 369D21120–501, –503 main rotor blade has all the same inspections and interchangeability as the 369D21100–517 main rotor blade.
For the 369F/FF – 500N helicopters, the 369D21121–501, –503 main rotor blade has all the same inspections and interchangeability as the 369D21102–517 main rotor blade.
For the 600N helicopters, the 369D21121–501, –503 main rotor blade has all the same inspections and interchangeability as the 369D21102–523 main rotor blade.

(7) Used with 369H90123 Rotor Brake Kit.

(8) Inspect main rotor drive shaft every 300 hours (Ref. Sec. 63–10–00, Main Rotor Drive Shaft Inspection (300 Hour)) (Reference AD 81–26–01).

(9) Failsafe device, P/N 369D25530 bolt and 369D25531 socket, must be used at both ends of tail rotor driveshaft in accordance with Tail Rotor Drive Shaft Installation with Bendix Couplings (Reference AD 86–20–07).

(10) For helicopters equipped with a cargo hook, inspect overrunning clutch sprag assembly P/N 369D25351, clutch inner race P/N 369A5353 and outer race 369A5352 every 300 hours (Ref. C.O.M., Sec. 63–10–10, Overrunning Clutch Sprag Inspection (300 Hour)). To establish time in service, either clutch total time with hook attached or a separate and permanent log of external load operating time per CFR 91.417, may be used.
(For 369D/E/F/FF helicopters with 369A5364 or 369D25351 sprag assembly, Refer to AD 90–19–02.)

(11) Inspect main rotor blade root fittings and main rotor lead–lag link assemblies every 25 hours in accordance with Main Rotor Blade Upper and Lower Root Fitting Attach Lug and Lead–Lag Link Attach Lug Inspection (25 Hour) and every 100 hours in accordance with Main Rotor Blade Upper and Lower Root, Fitting Attach Lug and Lead–Lag Link Attach Lug Inspection (100 Hour) (Ref. Sec. 62–10–00) (Reference AD 95–03–13).

(12) Tip plates, tip weights (where applicable) and attaching hardware have no retirement life and may be reused on replacement horizontal stabilizers.

(13) 421–087–903 and –905 require addition of tip plates, tip weights and attaching hardware before installation.

(14) Inspect the three upper slot bridges for cracks (Ref. Sec. 05–20–00).

(15) Inspect main rotor drive shaft every 300 hours (Ref. Sec. 63–10–00, Main Rotor Drive Shaft Inspection (300 Hour)).

(16) Inspect for deterioration every 600 hours up to a total time of 4200 hours and every 300 hours thereafter until deterioration is sufficient to retire assembly
369D/E/FF – 500N: (Ref. Sec. 62–20–00, Main Rotor Damper and Attachments Inspection)
600N: (Ref. Sec. 62–20–60, Main Rotor Damper and Attachments Inspection).

(17) For helicopters equipped with a cargo hook, inspect overrunning clutch sprag assembly P/N 369F5456, clutch inner race P/N 369F5455 and outer race 369F5453 every 300 hours. To establish time in service, either clutch total time with hook attached or a separate and permanent log of external load operating time may be used.

(18) 500N7113–11 tube assembly, fan pitch is an On–Condition part and replaces the 500N7113–3 tube assembly.

(19) Interim hours: life extension testing in progress.

(20) Inspect upper and lower blade root fittings every 100 hours in accordance with Main Rotor Blade Upper and Lower Root, Fitting Attach Lug and Lead–Lag Link Attach Lug Inspection (100 Hour) (Ref. Sec. 62–10–00)
(For 369D/E/F/FF – 500N helicopters, Reference AD 96–10–09).

(21) Main rotor blades, P/N 369D21102–517 with S/N 1976 thru 2100, 2106 thru 2115 are not to be installed on 600N helicopter (Reference Service Bulletin SB600N–007R2) (Reference AD 98–15–26).

(22) Inspect main rotor blades with 600 or more hours of operation every 25 hours of helicopter operation with a 10X magnifying glass for cracking of the lower surface of the blade emanating from the root fitting and doubler at the inboard end of the blade and to detect debonding between the blade root end fitting and doubler if missing or cracked adhesive or paint is observed. (Reference Service Bulletins SB369D–195R3, SB369E–088R3, SB369F–075R3, SB500N–015R3) (Reference AD 98–15–26).

(23) Perform Main Rotor Blade Upper and Lower Root, Fitting Attach Lug and Lead–Lag Link Attach Lug Inspection (25 Hour) up to a total time of 500 hours and every 15 hours thereafter and every 100 hours in accordance with Main Rotor Blade Upper and Lower Root Fitting, Attach Lug and Lead–Lag Link Attach Lug Inspection (100 Hour) (Ref. Sec. 62–10–00) until retirement of 369H1203–BSC and –21 Lead–Lag Link Assembly. (Reference AD 95–03–13).

(24) Inspect clutch retainer and bearing carrier for evidence of spinning and/or wear (Ref. Sec. 05–20–20).

(25) The 600N3500–503 tailboom may be reworked to a 600N3500–505 tailboom by modifying the attachment fittings to all–steel fittings.

(26) (Ref. Sec. 05–20–00) Using a flashlight and 10X magnifying glass, inspect horizontal stabilizer mounting brackets for cracks (pay particular attention to the forward inboard legs) (Ref. Tailboom Inspection).

(27) Sockets must be inspected for cracks every eight hours after the initial 100 hour inspection.

(28) Log all landings: Brace life is limited to 35400 logged landings or 5900 hours flight time if landing are not logged (assumed six landings per one hour of flight time).

(29) Log all landings: Strut life is limited to 4170 logged landings or 696 hours flight time if landing are not logged (assumed six landings per one hour of flight time).

(30) Log all landings: Foot life is limited to 23780 logged landings or 3900 hours flight time if landing are not logged (assumed six landings per one hour of flight time).

(31) The following main rotor blades have a finite life of 2,500 hours or 15,000 torque events*, whichever occurs first;
P/N 369D21100–517 with S/N H664, H665, H667, H669, H671, H672, H674, H676, H679, H680, H683 thru H724, H726 thru H999 and J000 thru J039, J041 thru J055 and
P/N 369D21102–517 with S/N 1976 thru 2100, 2106 thru 2115.
* TORQUE EVENT (TE) – A TE is recorded for every transition from forward flight to a hover (Reference Service Bulletins SB369D–195R3, SB369E–088R3, SB369F–075R3, SB500N–015R3).

(32) RIN = (200 x Hrs.) + (52 x TE).

(33) RIN = (160 x Hrs.) + (24 x TE).

(34) RIN = (153 x Hrs.) + (3 x TE).

(35) RIN = (50 x Hrs.) + (3 x TE).

(36) RIN = (768 x Hrs.) + (11 x TE).

(37) After accumulation of 750 flight hours and 13,720 TE, perform Main Rotor Blade Torque Event Inspection (Ref. Sec. 62–10–00) every 35 flight hours or 200 TE's (whichever occurs first).

(38) The 369D21640–501, –503, –505 tail rotor blades are two–way interchangeable with the 369D21613 tail rotor blades in sets of two only.
The 369D21641–501, –503, –505 tail rotor blades are two–way interchangeable with the 369D21615 tail rotor blades in sets of two only (installed on the same inboard or outboard hub).
The 369D21642–501, –503, –505 tail rotor blades are two–way interchangeable with the 369D21606 tail rotor blades in sets of two only.

(39) The 369H1203–BSC, –11, –21, –31, –51 and –61 lead lag link assemblies can only be installed using the 369H1235–BSC bearing.

(40) The 369H1203–53 lead lag link assembly can only be installed using the 369H1235–1 bearing.

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CONTINUED AIRWORTHINESS CHECKS/INSPECTIONS

1. General Description of Inspections

The following Continued Airworthiness Sections specify inspections and other maintenance required under the Federal Aviation Regulations unless an alternative program has been FAA approved.

The inspection intervals designated herein are the maximum allowable and should not be exceeded. When unusual local conditions, such as environmental conditions, utilization, etc. dictate, it is the prerogative and responsibility of the operator to increase the scope and frequency of the inspections as necessary to ensure safe operation. Each item shall conform with the FAA Requirements, A.D.'s and Manufacturer Bulletins and Letters. Over flying the inspection interval, or any change desired to the requirements of this chapter, may be requested through the local aviation regulatory authority.

A. Airworthiness Limitations

Refer to section 04-00-00 for mandatory inspections and component mandatory retirement schedule.

B. Continued Airworthiness

This section contains the requirements for Component Overhaul/Recommended Replacement, 100-Hour or Annual Inspection Checklist, 300-Hour Inspection Checklist, Special Inspection Schedule and Conditional Inspections.

(1). **COMPONENT OVERHAUL/RECOMMENDED REPLACEMENT** (Ref. Sec. 05-10-00) is a schedule for the overhaul and recommended replacement of components and/or assemblies and scheduled maintenance checks.

(2). **100-HOUR OR ANNUAL INSPECTION CHECKLIST** (Ref. Sec. 05-20-00) is a schedule of inspections that must be accomplished every 100 hours of helicopter operation or on a 12-month (annual) basis.
An Annual Inspection is required on this helicopter for continued airworthiness and may be accomplished in combination with a 100-hour inspection.

NOTE:

- To comply with the requirements of service bulletins which have been incorporated into the appropriate maintenance and inspection manuals, the latest 100-Hour or Annual Inspection must be used.
- Refer to applicable Rolls-Royce Engine Operation and Maintenance Manual (Ref. Table 201, 01-00-00) for detailed requirements on inspection of the engine.

(3). **300-HOUR INSPECTION CHECKLIST** (Ref. Sec. 05-20-10) is a schedule of inspections that must be accomplished every 300 hours of helicopter operation.

(4). **YEARLY INSPECTION CHECKLIST** (Ref. Sec. 05-20-15) is a schedule of inspections that must be accomplished on a yearly basis.

(5). **SPECIAL INSPECTIONS** (Ref. Sec. 05-20-20) consist of inspections that are contingent upon elapsed flight time or calendar time.

(a). **Special Inspections Hourly** should be referred to for additional inspection requirements that must be performed at specified periodic hourly intervals.

(b). **Special Inspections Calendar** should be referred to for additional inspection requirements that must be performed at specified periodic calendar intervals.

(6). **CONDITIONAL INSPECTIONS** (Ref. Sec. 05-50-00) includes inspection requirements for unusual or other specific conditions or circumstances that might occur.

(7). Federal Aviation Regulations require pilot's, mechanics, owners and operators to be familiar with, and to main-

tain records of aircraft maintenance, inspections and repairs. This includes, but is not limited to, Airworthiness Directives, Manufacturers Notices, Scheduled Inspections and Time/Cycle limited-life components.

(8). Additional documentation is required to be available, or inside the aircraft, during operation. This documentation includes: Airworthiness and Registration Certificates, Rotorcraft Flight Manual, Weight and Balance information and Radio Permits. It is important that all required documentation be reviewed and revised as necessary during regular inspections, maintenance and operation of the helicopter.

NOTE: Because this manual pertains to MDHI model 369D, 369E, 369FF, 500N and 600N helicopters (including the basic 500MD configuration), it may contain inspection requirements applicable to specific equipment not installed on individual helicopters. When this situation is encountered, requirements that are not applicable should be disregarded.

CONTINUED AIRWORTHINESS

COMPONENT OVERHAUL/RECOMMENDED REPLACEMENT

1. Component Overhaul or Recommended Replacement Schedule

Table 1 is the Overhaul Schedule. The listed components or assemblies should be removed from the helicopter and overhauled at intervals specified.

Table 2 is the Recommended Replacement Schedule. The listed components should be removed from the helicopter and scrapped at intervals specified.

Neither the assignment of an airworthiness life to a component nor failure to assign an airworthiness life constitutes a warranty of any kind. The only warranty applicable to the helicopter and any components is that warranty included in the Purchase Agreement for the helicopter or the component.

NOTE: Hours for the 369F Model helicopters will be the same as the 369FF unless otherwise noted.

Table 1. Component Overhaul Schedule

Component (1)	Model	Part Number (2)	Hours
Main rotor transmission assembly	369D/E/FF – 500N	369D25100	3000
		369D25100	4000 (12)
	369D/E/FF – 500N	369F5100	5000
	600N	369F5100	3000
Main rotor swashplate assembly	369D/E/FF – 500N	369D27609	2770 (3)(9)
	600N	600N7630–3	2700 (4)(9)
Main rotor hub assembly	369D/E/FF – 500N	369D21200	2770 (7)(9)
	600N	600N1200	2700 (7)(9)
Landing gear damper	369D/E/FF – 500N	369D26300	On Cond. (6)
		369D26301	On Cond. (6)
	600N	600N6300	On Cond. (6)
Overrunning clutch assembly	369D/E/FF – 500N	369A5350–603	1800 (5)
		369A5350–605	1800 (5)
	369D/E/FF – 500/600N	369F5450	1800 (10)(11)
Tail rotor transmission	369D/E	369D25400	4800
	369FF		3365
	369D/E	369D25300	4800
Starter/Generator (8)	369D/E – 500N	369A4550	1200
	369FF – 600N	369D28550	1200

NOTES:

(1) Components interchanged between models or configurations must be restricted to the lowest service life indicated for the models or configurations affected. Components removed at retirement are to be destroyed or conspicuously marked to prevent inadvertent return to service. Parts are applicable only on models under which a service life is listed.

(2) Service life shown for basic part number applied to all dash–numbered versions unless otherwise indicated.

(3) Bearing assembly must be relubricated every 2 years or 2770 hours, whichever occurs first (Ref. CSP–COM–5, Sec. 62–30–10).

(4) Bearing assembly must be relubricated every 2 years or 2700 hours, whichever occurs first (Ref. CSP–COM–5, Sec. 62–30–60).

(5) Under some operating conditions, overrunning clutch splines may need to be regreased more often than at the 100–hour intervals and bearings may need to be regreased more often than at the 300–hour intervals.

With no cargo hook attached, inspect and regrease splines every 100 hours and bearing every 300 hours (Ref. Sec. 63–10–00, Installation of Overrunning Clutch Subassembly and CSP–COM–5, Ball Bearing Inspection and Grease Repack).

With cargo hook attached, inspect sprag assembly, inner race and outer race every 300 hours or 300 hours of actual hook time when logged separately as per FAR 91.417, regrease clutch splines every 100 hours and bearing every 300 hours (Ref. Sec. 63–10–00, Installation of Overrunning Clutch Subassembly and CSP–COM–5, Ball Bearing Inspection and Grease Repack).

(6) When inspected per Landing Gear Damper Inspection (Ref. Sec. 32–10–00 for 369D/E/FF – 500N, or Sec. 32–10–60 for 600N).

(7) Use only main rotor hubs overhauled by MDHI or approved MDHI Licensees.

(8) Refer to data plate to determine start/generator manufacturer.

(9) The shelf life of bearings preserved with grease is limited to 4 years.

(10) Regrease overrunning clutch bearings every 300 hours (Ref. CSP–COM–5, Sec. 63–10–15).

(11) Interim hours: life extension testing in progress.

(12) The 369D25100 main rotor transmission overhaul time may be extended from a mandatory 3000 hour overhaul time to a mandatory 4000 hour overhaul time, provided, the transmission is operated with Mobil SHC626 since last overhaul and the transmission has not accumulated more than 750 hours of cargo hook time since last overhaul.

Table 2. Component Recommended Replacement Schedule

Component (1)	Model	Part Number (2)	Hours	
Tail rotor swashplate (duplex) bearings	369D/E/FF	369D21832	On Cond.	(3)(9)
Fan support bearing	500/600N	500N5364	2400	(8)(9)
Pitch plate bearing	500/600N	500N7120	2400	(8)(9)
Thrust bearing cup, upper	369D/E/FF – 500N	369D21255	On Cond.	(3)(9)
Thrust bearing cone, upper	369D/E/FF – 500N	369D21254	On Cond.	(3)(9)
Thrust bearing cup, upper	600N	369D21255	600	(5)(9)
Thrust bearing cone, upper	600N	369D21254	600	(5)(9)
Thrust bearing cup, lower	369D/E/FF – 500N	369D21257	On Cond.	(3)(9)
Thrust bearing cone, lower	369D/E/FF – 500N	369D21256	On Cond.	(3)(9)
Thrust bearing cup, lower	600N	369D21257	5400	(4)(9)
Thrust bearing cone, lower	600N	369D21256	5400	(4)(9)
Lead lag damper	369D/E/FF – 500N	369D21400–503	On Cond.	(6)
	369D/E/FF – 500N	M50452	On Cond.	(6)
Bearings, oil cooler blower	369D/E/FF – 500/600N	369H5655–3	1200	
	369D/E/FF – 500/600N	369H5655–5	1200	
Belt, oil cooler blower	369D/E/FF – 500N	369D25623	1200	
	600N	93920219	1200	
Cyclic stick trim switch (7)	369D/E/FF – 500N	A218–100646–02	1000	

NOTES:

(1) Limited–life or scheduled replacement components interchanged between models or configurations must be restricted to the lowest service life indicated for the models or configurations affected. Limited–life or scheduled replacement components removed at retirement are to be destroyed or conspicuously marked to prevent inadvertent return to service. Parts are applicable only on models under which a service life is listed.

(2) Service life shown for basic part number applied to all dash–numbered versions unless otherwise indicated.

(3) Bearing assembly must be relubricated every 2 years or 2770 hours, whichever occurs first (Ref. Sec. 64–30–00, Tail Rotor Swashplate Bearing Regreasing).

(4) Bearing assembly must be relubricated every 2 years or 2700 hours, whichever occurs first (Ref. Sec. 62–20–60, Main Rotor Hub Tapered Bearing Grease Repack, Inspection and Replacement).

(5) Bearing assembly must be relubricated every 2 years or 300 hours, whichever occurs first (Ref. Sec. 62–20–60, Main Rotor Hub Upper Bearing Grease Repack, Inspection and Replacement).

(6) Inspect for deterioration every 600 hours up to a total time of 4200 hours and every 300 hours thereafter until deterioration is sufficient to retire assembly (Ref. Sec. 62–20–00, Main Rotor Damper and Attachments Inspection).

(7) Installed in 369D27133 grip assembly made by Guardian Electric Co., PN A218966714–00 (Ref. Sec. 67–10–20, Cyclic Stick Grip Switch Replacement (Standard Grip)).

(8) Bearing assembly must be relubricated every 2 years or 1200 hours, whichever occurs first (Ref. Sec. 64–25–30, Anti–Torque Fan Bearing Regreasing).

(9) The shelf life of bearings preserved with grease is limited to 4 years.

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CONTINUED AIRWORTHINESS
100–HOUR OR ANNUAL INSPECTION CHECKLIST

1. 100–Hour or Annual Inspection

This check sheet is designed to be used when performing 100-Hour or Annual inspections as defined under FAR, Part 43, Appendix D. This checklist, when completed, should be kept as a permanent part of the helicopter's records. Adherence to Maintenance Manual information is required, and the manual should be consulted when using the checklist.

NOTE:

- The Chap/Sect column of the following table is for reference unless a specific inspection requirement is called out. If there is only two numbers in the column, it refers to the Chapter. If there is three numbers, it refers to the Section the inspection is found.
- Refer to applicable Rolls-Royce engine inspection check list for required engine maintenance.

Table 1. 100–Hour or Annual Inspection

Registration No._____ **Serial No.**_____
Helicopter Hours_____ **Torque Events**_____

Model	Requirement	Chap/Sect	Initial
	GENERAL		
ALL	Thoroughly clean helicopter and engine prior to start of inspection.	20	
ALL	Remove trim panels, covers and access panels as necessary.	52–50–00	
ALL	Ensure all placards and markings are installed.	11–00–00	
ALL	Ensure compliance with component mandatory retirement schedule.	04–00–00	
ALL	Calculate and record TE's or RIN's, of all affected components, in Table 2.	04–00–00	
ALL	Ensure compliance with component overhaul schedule.	05–10–00	
ALL	Ensure compliance with all applicable airworthiness directives, service bulletins and special inspections.	N/A	
ALL	Review aircraft maintenance records for recorded discrepancies and correct discrepancies as applicable.	N/A	
ALL	Refer to related manufacturer's publications for detailed requirements on inspection of engine, starter/generator, battery and all installed STC equipment.	01–00–00	
	EXTERIOR		
ALL	* Air intake for cleanliness and foreign matter. * Visible portion of engine compressor inlet for foreign object damage.	71	
CAUTION:	Ensure that compressor cover is installed to prevent FOD.		
ALL	Engine air plenum chamber for: * Damage and cleanliness. * Wear and security of internal components. * Particle separator mounting structure for cracks or damage.	71 53	

Table 1. 100–Hour or Annual Inspection (Cont.)

Registration No. _____ **Serial No.** _____			
Helicopter Hours _____ **Torque Events** _____			
Model	**Requirement**	**Chap/Sect**	**Initial**
ALL	Fuselage upper surfaces for: * Damage and condition. * Mast base drain holes clean and free of debris (blow air thru holes to ensure no clogging). * Engine air inlet fairing free from damage. No delamination noted. Bypass door operationally checked. Seals free from damage. * Engine access doors for proper operation of latches and closure, distortion, damage, cracks and security.	52 53	
ALL	Fuselage for: * Damage and condition. * Compartment fresh air vents in doors and front of canopy for easy of operation and security. * Fuel cell vent fairings free of obstructions and obvious damage. * Pilot's and passenger/cargo compartment doors for condition of door glass, vents and proper operation of latching and locking mechanisms. * Door hinges and pins for play or wear. Ensure door pin locking tab is engaged with slot in frame. * No evidence of oil leakage around fuselage drain holes.	52 53	
369D/E/FF	Sta. 142.0 tail rotor control bellcrank support for cracking or damage, use bright light and mirror (Ref. Upper Fuselage and Tailboom Control Linkage Inspection).	67–20–10	
500/600N	Anti–torque fan inlet for: * Screen for cleanliness and damage. * Attaching hardware for security. * Interior of fan inlet for cleanliness and damage. * Driveshaft cover for damage.	53	
ALL	* Check for no gap between tailboom and fuselage at attach points. * Check tailboom skin around stabilizer fittings for cracks. * Tailboom attachment–to–fuselage for security, evidence of corrosion or cracks, loose rivets or buckling.	53	

Table 1. 100–Hour or Annual Inspection (Cont.)

Registration No. _____ **Serial No.** _____			
Helicopter Hours _____ **Torque Events** _____			
Model	**Requirement**	**Chap/Sect**	**Initial**
500/600N	* Thruster cones and tip cap (500N only) for damage and security. Inspect for wear between thruster cones and tailboom at points of contact. * Using a flashlight and 10X magnifying glass, inspect horizontal stabilizer mounting brackets for cracks (pay particular attention to the forward inboard legs) (Ref. Tailboom Inspection). * Using a bright flashlight, inspect fore and aft radii of the lower portion of the three upper slot bridges for cracks, illuminate area under the flap. The flap may be raised slightly, using finger pressure only, to aid in checking this area (Ref. Tailboom Inspection). * Using a bright light and 10X magnifying glass, inspect the four tailboom attachment lugs for cracks and fiber damage. Pay particular attention to area on top of the lug from the radius block to 2 inches aft (Ref. Tailboom Inspection). * Tailboom closeout fairings for security of attachment hardware. Inspect for damage and chafing between closeout fairing and tailboom.	53–40–30 53–50–30	
369D/E/FF	Horizontal stabilizer for: * Skin damage and loose rivets. * Tip plates for damage. Check for secure attachments (Ref. Horizontal Stabilizer and Tip Plates Inspection).	53–50–10	
500/600N	Horizontal stabilizer for: * Skin damage and loose rivets. * Mounting fittings for cracks and security. * Stabilizer attach bolts for security.	53	
369D/E/FF	Vertical stabilizer for: * Damage to leading and trailing edges and damaged stressed side panels (no repair of side panels permitted). * Mounting fittings for cracks and security. * Tail skid for obvious damage and security (Ref. Vertical Stabilizer Inspection).	53–50–10	
500/600N	Vertical stabilizers for: * Damage to leading or trailing edges and damaged side panels. * Cracks in skin, no cracks permitted (pay particular attention to areas around mounting bolts). * Stabilizer attach bolts for security. * Stabilizer mount bushings for wear. * Excess play in control linkage, bearings and security of attaching hardware.	53	

Table 1. 100–Hour or Annual Inspection (Cont.)

Registration No. _____ **Serial No.** _____			
Helicopter Hours _____ **Torque Events** _____			
Model	**Requirement**	**Chap/Sect**	**Initial**
	LANDING GEAR		
ALL	Landing gear skid tubes and fairings for: * Wear and damage in excess of permissible limits. * Upper fairing fillets for freedom of movement and general condition. * Strut attachment points for security and pivot (swivel) bearings for excessive play. * Landing gear dampers for correct extension, security of attachment and for signs of fluid leakage. Pivot bearings for excessive play. * Passenger steps for security and damage.	32	
369D/E/FF 500N	Remove landing gear fairing fillets and visually inspect landing gear strut assemblies for cracks and damage.		
369D/E/FF 500N	For aircraft 369D; 001 & subs, 369E; 0001 thru 0528, 369FF; 0001 thru 0114 and 500N; 001 thru 077: Remove plug button from inboard of fairing assembly. Using a bright light and 10X magnifying glass, inspect rivet hole in underside of strut for cracks. If crack is found, strut must be scrapped.		
	CABIN		
ALL	Compartment heat and anti–icing valve controls for: * Easy and correct operation and rigging. * Heating system heat diffusers for security.	21	
ALL	* Seat belts for condition and security. * Inertia reels for condition and proper extension/retraction.	25	
ALL	Pilot/copilot controls for: * Wear, looseness and general condition of control rods and rod end bearings. * Quick–release pins for condition. * Cyclic, collective and anti–torque controls for free movement. * Cyclic trim actuators for security. * Collective torque tube, support bracket and bungee support bracket for evidence of cracks, gouges or other visible damage in attach lug and bungee support bracket attach areas; gaps between bracket and cradle cap of collective torque tube (use bright light and mirror). * N_1 power controls for obvious damage. * Check for minimum cyclic friction adjustment (resistance to turning spring with fingers). * Flight control system one–way lock (Uniloc) for oil leakage, condition and security. Fluid reservoir 1/2 – 3/4 full; replenish if low.	67 76	

Table 1. 100–Hour or Annual Inspection (Cont.)

Registration No. _____ **Serial No.** _____

Helicopter Hours _____ **Torque Events** _____

Model	Requirement	Chap/Sect	Initial
NOTE: With main rotor blades stationary, some friction drag is felt in the cyclic. The collective also has some drag, plus resistance of the collective bungee spring. Heavy drag is an indication of droop stop deformation caused by droop stop pounding.			
ALL	Engine N_1 and N_2 (N/A 600N) power controls for: * Free movement, full travel, security, obvious damage and proper rigging. * Pilot's and copilot's throttle rigging checks at **FULL**, **GROUND IDLE** and **CUTOFF** positions.	76	
	MAIN ROTOR		
ALL	Main rotor mixer control push–pull rods, links, scissors and bellcranks for excessive bearing play, bent rods or links, worn bushings and cracked bellcranks or brackets; all rodends centered.	62 67	
ALL	Main rotor pitch control rod assemblies, upper and lower rod end bearing for evidence of axial play and for any extrusion, displacement or damage to the bearing teflon liner. Check that all rodends are centered and security of lockwire (Ref. Pitch Control Rod Inspection).	62–30–00 62–30–60	
ALL	Swashplate for evidence of galling or corrosion of spherical bearing, and seals for deterioration and evidence of grease leakage. Upper and lower dust boots free from damage and security. Swashplate interrupters and magnetic pick–up secure.	62	
ALL	Main rotor hub retention strap assemblies for breaks or cracks in strap pack laminations. Check visible portions of both lead and lag legs of pack in each pitch housing (Ref. Main Rotor Strap Pack Lamination Inspection). Refer to 04–00–00 for strap pack lamination airworthiness requirements.	62–20–00 62–20–60	
ALL	Outboard ends of main rotor hub retention strap assemblies for gaps between pack laminates (Ref. Main Rotor Strap Pack Lamination Inspection).	62–20–00 62–20–60	
ALL	* Main rotor hub feathering bearings for excessive wear (Ref. Main Rotor Hub Inspection). * Main rotor droop stop ring for corrosion, dents and scratches. * Main rotor droop stop striker plate rollers for play and excessive wear.	62–20–00 62–20–60	
ALL	Main rotor blade damper assemblies for obvious damage, security and excessive play in blade and pitch housing bearings, bonding of elastomeric material and corrosion (Ref. Main Rotor Damper and Attachments Inspection).	62–20–00 62–20–60	
ALL	Using bright light and 5X magnifying glass, inspect all main rotor hub assembly lead–lag links for corrosion, discoloration, pitting, intergranular cracks or stress corrosion cracks. Any discoloration or pitting is evidence of more than superficial corrosion, and the main rotor hub must be removed for replacement of lead–lag links (Ref. Main Rotor Hub Inspection).	62–20–00 62–20–60	
ALL	Main rotor hub bearings for roughness by rotating main rotor assembly several times by hand and listening for unusual noise (Ref. Main Rotor Hub Inspection).	62–20–00 62–20–60	
NOTE: Do not confuse with normal no–load transmission and overrunning clutch noise.			
ALL	Main rotor blade and damper attach pins tight and levers properly locked.	62	

Table 1. 100–Hour or Annual Inspection (Cont.)

Registration No. _____ **Serial No.** _____

Helicopter Hours _____ **Torque Events** _____

Model	Requirement	Chap/Sect	Initial
ALL	Entire trailing edge and tabs for nicks, scratches and cracks generating from trailing edge (Ref. Main Rotor Blade Inspection).	62–10–00	
WARNING: Using a bright light and 5X to 10X magnifying glass, inspect root fitting, attach lugs and doublers for cracks and security.			
ALL	Inspect main rotor blade root fittings, attach lug and lead–lag link attach lug every 100 hours in accordance with Main Rotor Blade Upper and Lower Root Fitting, Attach Lug and Lead–Lag Link Attach Lug Inspection (100 Hour). Pay particular attention to the lower side of the root fitting.	62–10–00	
ALL	Using a bright light and 10X magnifying glass, inspect main rotor blade abrasion strips for security of bonding on lower and upper surfaces, and by tapping at bond lines. Any blisters, bubbling or lifting of abrasion strip indicates a void (Ref. Main Rotor Blade Inspection).	62–10–00	
ALL	Tip area of main rotor blades for evidence of corrosion; pay particular attention to mating area of blade skin–to–tip weight interface; verify integrity of sealant coating (Ref. Main Rotor Blade Forward Tip Cap Inspection and Corrosion Protection).	62–10–00	
ALL	Drain holes in main rotor blade aft tip cap and vent holes in lower skin for clogging. Main rotor tip caps for security and evidence of corrosion.	62	
369D/E/FF 500N	Main rotor hub fairing for cracks, damage and security.	62	
	DRIVE TRAIN		
ALL	Main transmission lubrication and cooling system for: * Main transmission case and cooling installation for evidence of leakage and security of attachment. * Oil cooler blower, mount, ducting and hardware for security and damage. * Oil lines for chafing damage. * Clamps attached to oil lines for evidence of cushion wear or deterioration (if noted, remove clamp and inspect tube under clamp for chafing damage). * Pressure switch for security and deterioration; wiring for chafing.	63	
369D/E/FF 500N	Tach generator for security and deterioration; wiring for chafing.	63	
ALL	Rotor brake for: * Pucks and disc for wear and general condition. * Hydraulic lines for security and leaks. * Master cylinder for leaks. * Air in system (spongy feel at brake actuating handle when force is applied).	63	
ALL	Overrunning clutch for: * Evidence of oil leakage. * Proper operation: turn rotor in forward direction by hand – engine must decouple; turn rotor in reverse direction – engine must rotate (listen for turbine noise during reverse rotation). Rotor brake disc should not drag.	63	

Table 1. 100–Hour or Annual Inspection (Cont.)

Registration No. _____ **Serial No.** _____			
Helicopter Hours _____ **Torque Events** _____			
Model	**Requirement**	**Chap/Sect**	**Initial**
NOTE: Normal seal drag may be sufficient to rotate engine at low rpm.			
369D/E/FF 500N	With 369A5350 overrunning clutch installed, regrease clutch splines.	63	
ALL	Engine–to–main transmission drive shaft couplings and shaft for condition and security of attachment. Bendix couplings only: inspect shaft coupling diaphragms for scratches, nicks or cracks (Ref. Main Transmission Drive Shaft Inspection (Bendix)).	63–10–00	
500/600N	* Main transmission–to–fan transmission drive shaft for dents, bulkhead chafing and obvious damage. * Inter–Connect drive shaft for dents and obvious damage. * Free movement of control rod thru interconnect drive shaft.	63	
369D/E	Bendix couplings only: Check tail rotor blade tip movement in excess of 0.75 inch, without main rotor blade movement, when tail rotor blades are rocked back and forth in plane of rotation.	63	
369D/E/FF	Tail rotor drive shaft for: * Evidence of buckling, dents, bulkhead chafing and obvious damage. * Align aft coupling index stripe with corresponding tail rotor transmission stripe and verify that bulkhead–to–drive shaft index stripes align (Ref. Tail Rotor Drive Shaft Twist Inspection).	63–15–10	
ANTI–TORQUE			
Tail Rotor System			
369D/E/FF	Tail rotor transmission for: * Corrosion, excessive oil leakage, cracks and other damage. * Check torque of mounting nuts (also tailboom extension hardware on 369FF helicopters) (Ref. Tail Rotor Transmission Installation).	63–25–10	
369D/E/FF	Tail rotor pitch control assembly for: * Binding and unusual sounds (teeter blades to check for binding). * Teeter bearings for axial or radial play (no play allowed). * Control rod, pitch control links, hub and drive fork for play or damage. * Boots for installation and deterioration. * Retaining nut and lockwasher secure (no broken tangs noted and nut has not rotated). * Pitch control for evidence of seal rotation or loss of grease.	64	
369D/E/FF	Drive fork for; * Elastomeric bearing elements for bond failure. * Apply teetering force by hand (stop–to–stop) to rotor blades and inspect elastomers for radial–molded ridges on each bearing face. Discontinuity in molded ridges indicates bearing failure. There should by no apparent motion between the cage and fork, observed motion indicates bond failure.	64	
NOTE: Light swelling, pock marks and crumbs are surface conditions and do not indicate bearing failure.			
369D/E	If equipped with conical–type teetering bearings, torque check teeter bolt.	64	

Table 1. 100–Hour or Annual Inspection (Cont.)

Registration No._____ **Serial No.**_____

Helicopter Hours_____ **Torque Events**_____

Model	Requirement	Chap/Sect	Initial
369D/E/FF	Tail rotor blades for: * Evidence of damage, including leading edges, trailing edges, skin. * Open vent and drain holes. * Loose or damaged tip caps. * Rivets securing tip cap for installation and condition. * Abrasion strips free of damage, no excessive erosion noted and no separation in bond around edges or at tip end of blade (Ref. Tail Rotor Blade Inspection). * While holding hub stationary, check tail rotor blade pitch bearings for lead–lag play in excess of 0.250 inch (6.35 mm) at blade tip. If excess play is found, remove blades, replace pitch bearings and inspect hub–to–pitch bearing contact surface of hub (Ref. COM).	64–10–00	
369D/E/FF	Perform Tail Rotor Balance.	18	
	NOTAR® Anti–Torque System		
500/600N	* Rotate rotor system and check for unusual noises. * Fan assembly for cleanliness and damage. * Fan blades for excessive play. * Fan seal for cleanliness, cracks, damage and corrosion. * Check gap between fan blades and tip seal. * Check gap between fan blades and hub.	64	
NOTE: If any of these gaps for any blade exceeds the average gap of the other blades by more than 0.10 inch (2.54 mm), remove and inspect the tension–torsion strap for that blade.			
500/600N	Perform Fan Blade Inspection (100–Hour).	64–25–30	
500/600N	Fan Transmission for corrosion, excessive oil leakage, cracks, damage and security on mounting frame. Drain line for cracks and security.	63	
500/600N	Rotating cone control tubes and cables for freedom of movement and unusual sounds.	67	
	ELECTRICAL		
NOTE: When possible, use auxiliary power source, not battery, during **POWER ON** inspection.			
ALL	**XMSN OIL TEMP, FUEL FILTER** and **CHIPS** warning lights; electrical circuits for continuity to lamps by connecting jumper wire from each sender or chip detector terminal stud to an unpainted grounding surface; check each light for illumination (Ref. Caution/Warning System Operational Check).	95–00–00	
ALL	Push **PRESS TO TEST** switch: all caution and warning lights **ON**; depress instrument light rheostat knob; verify **CAUTION** lights dim.	95	
369D/E/FF 500N	Conduct operational check of automatic reignition system; igniter noise heard and reignition indicator light functions. Reset as required.	PFM	
CAUTION: Do not leave landing light **ON** for more that one minute during next check; lamp will overheat and lamp life will be shortened.			
ALL	Exterior lighting (landing, position and anti–collision lights) for proper operation; all switches **OFF** after check.	96	

Table 1. 100–Hour or Annual Inspection (Cont.)

Registration No. _____ **Serial No.** _____			
Helicopter Hours _____ **Torque Events** _____			
Model	**Requirement**	**Chap/Sect**	**Initial**
WARNING: Do not leave pitot heater ON for more than one minute during next check; severe burns to personnel may result.			
ALL	**PITOT HTR** switch **ON** for a few seconds. Heated pitot tube will feel warm to the touch; turn switch to **OFF** after check.	95	
600N	Apply power to aircraft and disconnect CIT sensor (Ref. CIT (Compressor Inlet Temperature) Sensor Replacement); Verify ECU FAIL light illuminates. Re–connect CIT sensor.	76–00–00	
ALL	Clean battery and inspect for: * Connector pins for evidence of corrosion. * Leakage (if battery is leaking (wet), remove and replace battery). * Battery case for cracks in support flanges. * Dc wiring for chafing caused by wiring rubbing against battery case. * Deep cycle charge (recondition) battery every 100 hours or on conditional basis at operator's discretion.	96	
ALL	Functionally check and inspect all installed avionics, auxiliary or optional systems and equipment. Do not actuate hoist guillotine or emergency floats.	97	
	ENGINE COMPARTMENT		
ALL	Exhaust stack(s) and exhaust supports for cracks, defects and improper attachment.	78	
ALL	Engine compartment plumbing and electrical relay installation on left or right side oleo (landing gear damper) support fitting for good condition and security of mounting. Diodes for broken terminals and wires. Diode bracket for security and corrosion.	96	
ALL	Entire engine for: * Loose bolts; loose or broken connections. * Accessories for security and broken or missing lockwire. * Fuel and oil lines for chafing and kinking. * Fuel drain line valve for leakage. * Oil cooler and cooler deflector for security and obvious damage. * Accessible areas for obvious damage; evidence of fuel and oil leaks. * Engine mounts for cracks and play in mounting hardware at engine and airframe (retorque any loose mounting bolts). * Fuel control and compressor exterior for condition and security.	71 75 76	
369D/E/FF 500N	RPM governor lever control rod (replace if aluminum).	76–10–00	
369D/E/FF 500N	Clean and lubricate drive splines of starter–generator drive shaft, and female splines in engine accessory gear case on dry spline installations.	96	
369D/E/FF 500N	Anti–ice air tubes and compressor scroll for cracks or breaks at the anti–ice air valve and bleed port. If cracks exist, check engine for possible vibration causes (Ref. Engine Anti–icing System and applicable Allison Engine Operation and Maintenance Manual).	75–10–00	

Table 1. 100–Hour or Annual Inspection (Cont.)

Registration No. _____ **Serial No.** _____			
Helicopter Hours _____ **Torque Events** _____			
Model	**Requirement**	**Chap/Sect**	**Initial**
	AFTER INSPECTION		
ALL	Touch–up all damaged paint and exterior markings, as necessary.	20	
ALL	Ensure all fluid levels are correct; service as required.	12	
ALL	Perform operational check of particle separator filter (Ref. Scavenge Air Operational Check).	71–10–10	
ALL	Install or close all stressed panels, covers and trim panels removed or opened for inspection. Check closure, fit and security. All loose equipment for proper stowage.	52–50–00	
CAUTION: Helicopter must not be flown unless controls access panel and fuel cell access panels in cargo compartment are securely installed. These are stressed panels.			
	POST INSPECTION RUN UP		
See applicable Pilot's Flight Manual for cockpit check and engine starting procedures. For troubleshooting procedures, refer to applicable section of this manual.			
	100–HOUR OR ANNUAL INSPECTION CERTIFICATION		
It is certified that this helicopter has been thoroughly inspected as required by FAR, found to be airworthy, and appropriate entries made in the helicopter log book. It is further certified that the helicopter conforms to FAA specifications, that all FAA Airworthiness Directives and Manufacturer's Service Notices and Maintenance Manual data have been complied with, and the helicopter records are in proper order			

Signature _____

Rating Type or Certificate No. _____

Date _____

2. Retirement Index Numbers Attachment

Table 2 is to be used for calculating and recording the Retirement Index Number (RIN) or Torque Events (TE) of components that are affected by Torque Events (TE).

This record of RINs/TE's should be kept as a permanent record.

Refer to Section 04–00–00 for components requiring calculation of RIN's/TE's and information pertaining to calculation of RIN's/TE's.

Component must be scrapped when it reaches 1,000,000 RIN's or maximum TE's (Ref. Sec. 04–00–00).

Table 2. Permanent Record of Retirement Index Numbers/Torque Events

Component	Part No.	Serial No.	Hours	TE's	RIN's	Signature

Table 2. Permanent Record of Retirement Index Numbers/Torque Events

Component	Part No.	Serial No.	Hours	TE's	RIN's	Signature

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CONTINUED AIRWORTHINESS
300–HOUR INSPECTION CHECKLIST

1. 300–Hour Inspection

This check sheet is designed to be used when performing scheduled inspections as defined under FAR Part 91. This checklist, when completed, should be kept as a permanent part of the helicopter's records. Adherence to Maintenance Manual information is required, and the manual should be consulted when using the checklist.

NOTE:

- The Chap/Sect column of the following table is for reference unless a specific inspection requirement is called out. If there is only two numbers in the column, it refers to the Chapter. If there is three numbers, it refers to the Section the inspection is found.
- Refer to applicable Rolls-Royce engine inspection check list for required engine maintenance.

Table 1. 300–Hour Inspection

Registration No._____ **Serial No.**_____ **Helicopter Hours**_____			
Model	**Requirement**	**Chap/Sect**	**Initial**
	EXTERIOR		
ALL	Retorque tailboom attachment bolts.	53	
500/600N	Remove rotating cone and tip cap (500N) and inspect: * Cables, cable ends and pulleys for condition and security. Perform Forward and Center Cable Assembly Inspection and Sector Assembly and Control Cable Inspection (Ref. Sec. 67–20–30). * Aft cable ends and turnbuckles for condition and security. Evidence of corrosion pitting requires replacement. * Cone rollers for condition and security. * Four fasteners that attach 500N3760–1 upper input shaft to the stationary thruster for play (replace pins and collars if any play is found). * Three fasteners that attach 500N3759 support shaft assembly for play (if play is found in top bolt, retorque to **10 – 15 inch–pounds (1.13 – 1.69 Nm)**. Replace pins and collars if any play is found in bottom fasteners). Reinstall rotating cone and tip cap (500N).	53	
369D/E/FF	Remove engine inlet bypass door and check latches, hinges and hardware for wear and security. Remove and replace the latch retention cotter pin (located inside the attach "U" clamp) (Ref. Engine Air Inlet Bypass Door 300–Hour Inspection).	71–10–10	
369D/E/FF	Check horizontal and vertical stabilizer attach bolts for proper torque (Ref. Horizontal Stabilizer Tip Plate Installation and Vertical Stabilizer Installation).	53–50–10	
369D/E/FF	Check lower surface of horizontal stabilizer for drain holes. Also check for gaps between upper and lower doublers and stabilizer skin (Ref. Horizontal Stabilizer and Tip Plates Inspection).	53–50–10	
500/600N	Control tubes and bellcranks in horizontal stabilizer for condition and security.	53	

Table 1. 300–Hour Inspection (Cont.)

Registration No._____ Serial No._____ Helicopter Hours_____			
Model	**Requirement**	**Chap/Sect**	**Initial**
500/600N	Inspect S.A.S. system for: * Actuator for security and damage (no damage allowed). * Wiring for condition and security (no wire chaffing, fraying or insulation cracking allowed). * Actuator mounting bracket for cracks, pay particular attention to area around four rivet attach holes (no cracks allowed). * Rate gyro and control box for security in mount and electrical connector secure. Inspect mount for security and condition (no corrosion or cracks allowed).	67	
LANDING GEAR			
ALL	Perform Landing Gear Inspection.	32–10–00	
ALL	Perform Cabin Entry Step Inspection.	32–10–00	
CABIN			
ALL	Remove instrument console base covers and inspect anti–torque pedal crossover torque tube and bellcrank for cracks, damage and security.	67	
ALL	Push–pull rods for excessive bearing play, wear and security.	67	
ALL	Perform Tunnel–Routed Control Rod Inspection.	67–10–00	
ALL	Check oil tank for security and evidence of leakage and damage.	79	
MAIN ROTOR			
ALL	Perform Swashplate Inspection.	62	
ALL	Perform Lead–Lag Bolt Inspection.	62	
ALL	Perform Main Rotor Hub Droop Angle Check.	62	
ALL	Perform Main Rotor Blade Inspection.	62	
ALL	Inspect main rotor mast, mast base and mast base support structure for evidence of cracks. Check with bright light and 5X magnifying glass. Visually check mast support bolts for security and condition. Inspect internal bore for chipping, orange peeling or flaking paint (Ref. Main Rotor Static Mast Inspection and Repair).	63–30–00	
ALL	Inspect hoisting eye–bolts for cracks or corrosion.	63	
369D/E/FF 500N	369D25510 drive shaft only, perform Main Rotor Drive Shaft Inspection (300–Hour).	63–10–00	
DRIVE TRAIN			
ALL	Remove, inspect and clean main transmission chip detectors.	63	
369D/E/FF 500N	369A5350 Overrunning Clutch: Perform Ball Bearing Inspection and Grease Repack (300 Hour).	COM	
ALL	369F5450 Overrunning Clutch: Perform Ball Bearing Grease Repack (300 Hour).	COM	
369D/E/FF	Remove tail rotor drive shaft and check boom fairing and tail boom for buckles, dents, bulkhead chafing and obvious damage.	53	
369D/E/FF	Remove tailboom control rod and inspect for wear though hard anodized surface (Ref. Tailboom Control Rod Replacement); inspect grommets for wear and deterioration.	67–20–10	

Table 1. 300–Hour Inspection (Cont.)

Registration No._____ Serial No._____ Helicopter Hours_____			
Model	**Requirement**	**Chap/Sect**	**Initial**
369D/E/FF	Check shaft damper for proper friction drag. Inspect damper for damage and security (Ref. Tail Rotor Drive Shaft Damper Inspection).	63–15–10	
369D/E	Check forward and aft coupling bolt and socket for indication of contact, Bendix couplings only (Ref. Tail Rotor Drive Shaft Inspection).	63–15–10	
ANTI–TORQUE			
Tail Rotor System			
369D/E/FF	Remove, inspect and clean chip detectors.	63	
369D/E/FF	Check for contact between tail rotor bellcrank and tail rotor transmission housing at extreme right pedal travel.	67	
369D/E/FF	Tail rotor assembly: Elastomeric teeter bearings for wear; bond between concentric metal cones and elastomer rings of bearing assembly (Ref. Elastomeric Bearing Inspection).	64–20–00	
369D/E/FF	Remove blade stop for thorough inspection; in particular, check for cracks or splits in stem area (Ref. Tail Rotor Blade Stop Inspection).	64–30–00	
NOTAR® Anti–Torque System			
500/600N	Check balance weights for security. If any balance weight stud is found to be loose, perform Fan Balance Stud Replacement.	64	
500/600N	Remove, inspect and clean fan transmission chip detector.	63	
500/600N	Remove tailboom: Perform visual inspection of fan assembly for: * Cracks, nicks or corrosion. * Blades for cracks, nicks or impact damage. * Check pitch horn counterweights for security. If counterweight(s) are found loose, perform Pitch Horn Counterweight Set Screw Replacement (Ref. Sec. 64–25–30). **NOTE:** Access the forward counterweights through the fan inlet (fan hub fairing must be removed). * Gap between fan blade and tip seal and gap between fan blade and hub (inboard end of the blade). If any of these gaps for any blade exceeds the average gap of the other blades by more than 0.10 inch (2.54 mm)., remove and inspect the tension–torsion strap for that blade. * Fan liner for cracks, debonding or corrosion of liner material. * P–seal for tears, deterioration and debonding. Reinstall tailboom (on 600N only, install new tailboom mounting bolts).	53 64	
ELECTRICAL			
NOTE: When possible, use auxiliary power source during **POWER ON** inspection, not battery.			
ALL	Perform Battery Temperature Sensing Switches – Testing.	96	
ALL	Check TOT indicating system for proper calibration (Ref. TOT Indicating System Calibration).	95–30–00	

Table 1. 300–Hour Inspection (Cont.)

Registration No. _____ **Serial No.** _____ **Helicopter Hours** _____			
Model	**Requirement**	**Chap/Sect**	**Initial**
	ENGINE COMPARTMENT		
ALL	Inspect starter/generator for: * Condition of brushes, electrical connections and commutator. * Screens for clogging. * Condition of O–ring on drive spline. * Damper backplate and clutch for condition.	96	
ALL	Perform Fuel Filter (Bypass) Caution Light Pressure Switch Test.	28–00–00 28–00–60	
NOTE: Also, perform this operational check whenever low pressure fuel pump filter element is replaced for any reason, or if contaminated.			

CONTINUED AIRWORTHINESS

SPECIAL INSPECTIONS

1. Special Inspection Hourly and Calendar

This table is a schedule of time-phase inspections that are contingent upon elapsed flight time or calendar time. These inspections require a Log Book entry. Adherence to Maintenance Manual information is required, and the manual should be consulted when using this checklist.

NOTE:

- The Chap/Sect column of the following table is for reference unless a specific inspection requirement is called out. If there is only two numbers in the column, it refers to the Chapter. If there is three numbers, it refers to the Section the inspection is found.
- Refer to applicable Rolls-Royce engine inspection check list for required engine maintenance.

Table 1. Special Inspections Hourly

Model	What to Inspect	Chap/Sect
AFTER INSTALLATION OF NEW 369F5100 MAIN ROTOR TRANSMISSION		
ALL	Perform transmission run–in (Ref. Main Transmission Run–In Procedure)	63–20–25
2 – 10 HOURS AFTER INSTALLATION OF TAIL ROTOR TRANSMISSION		
369D/E/FF	Using drag torque previously recorded, apply a torque load of **95 ±3 inch–pounds (10.73 ±0.34 Nm) plus the noted drag torque** (noted for each individual nut) to each mounting nut of the transmission (Ref. Tail Rotor Transmission Installation).	63–25–10
EVERY 15 HOURS		
369D/E/FF	Effectivity: 369H1203–BSC or 369H1203–21 lead–lag link assemblies with at least 500 hours, perform Main Rotor Blade Upper and Lower Root Fitting Attach Lug and Lead–Lag Link Attach Lug Inspection (25 Hour) and every 100 hours in accordance with Main Rotor Blade Upper and Lower Root Fitting Attach Lug and Lead–Lag Link Attach Lug Inspection (100 Hour) until retirement of 369H1203–BSC or–21 Lead–Lag Link Assembly. (Reference AD 95–03–13).	62–10–00
25 HOURS AFTER REPLACING TAIL ROTOR DRIVE FORK HINGE BOLT		
369D/E/FF	Check rotational torque of bolt by applying **125 inch–pounds (14.12 Nm)** with torque wrench. If 125 inch–pounds (14.12 Nm) torque does not rotate bolt, preload is correct (Ref. COM, Hub and Fork Assembly).	64–20–10 64–20–20
25 HOURS AFTER INSTALLATION OF OIL COOLER BLOWER		
ALL	With two pounds of force applied, check belt tension for 0.17 to 0.20 inch (4.32 – 5.08 mm) deflection. Check pulley (Ref. Cooling Blower Belt Tension Check and Adjustment). Check oil cooler blower driven pulley retaining nut for minimum torque of **160 inch–pounds (18.08 Nm)**. If loss of torque is noted, remove pulley nut and inspect pulley shaft and splines for condition. Reinstall nut and torque to **160 – 190 inch–pounds (18.08 – 21.47 Nm) plus drag torque**.	63
EVERY 25 HOURS WITH 2 FAILED LAMINATES IN MAIN ROTOR STRAP ASSEMBLY		
369D/F/FF 500N	Inspect in accordance with Main Rotor Strap Pack Lamination Inspection at 25–hour intervals if 2 laminates have failed in any one leg or tongue area of any strap assembly. A single cracked laminate between the shoes at the outboard end of a strap pack is cause for rejection of the hub assembly (Ref. Main Rotor Strap Pack Lamination Inspection).	62–20–00

Table 1. Special Inspections Hourly (Cont.)

Model	What to Inspect	Chap/Sect
EVERY 25 HOURS WITH 1 FAILED LAMINATES IN MAIN ROTOR STRAP ASSEMBLY		
600N	Inspect in accordance with Main Rotor Strap Pack Lamination Inspection at 25–hour intervals if 1 laminate has failed in any one leg or tongue area of any strap assembly. A single cracked laminate between the shoes at the outboard end of a strap pack is cause for rejection of the hub assembly (Ref. Main Rotor Strap Pack Lamination Inspection).	62–20–60
EVERY 25 HOURS		
NOTE: This inspection does not apply to 369D21100–516, –517, –523 and 369D21102–503, –517, –523 main rotor blades or the 369H1203–51 and –61 lead–lag links.		
369D/E/FF	Visually inspect exposed portion of all installed main rotor blade upper and lower root fitting attach lugs and main rotor hub lead–lag link attach lugs for broken or cracked lugs, corrosion or other damage to the lug areas (Ref. Main Rotor Blade Upper and Lower Root Fitting Attach Lug and Lead–Lag Link Attach Lug Inspection (25–Hour)).	62–10–00
600N	(Effectivity: RN003–RN077, Ref. SB600N–039), Perform Tailboom Attach Fitting Inspection (Ref. EAD 2001–24–51).	53–30–30
EVERY 50 HOURS		
369D/E/FF 500N	Effectivity: On models equipped with Rotorcraft Litter Kit: visually inspect litter doors for condition and security of quick–release fasteners. Rubber gasket between window glass and door for proper sealing.	CSP–026
EVERY 50 HOURS IF CRACKS ARE FOUND IN FAN LINER		
NOTE: If cracks protrude into Felt Metal Seal, replace seal.		
500/600N	Inspect fan liner to ensure cracks do not protrude into Felt Metal Seal (Ref. Anti–Torque Fan Liner (Felt Metal Seal) Inspection).	64–25–30
EVERY 100 HOURS		
ALL	If installed, floats and associated components for condition and security.	32
ALL	Effectivity: With 369F5450–501 overrunning clutch installed, remove clutch assembly and inspect clutch retainer, bearing carrier and housing at pin and shoulder for evidence of spinning and/or wear. If spinning and/or wear is observed, replace clutch assembly.	63
EVERY 300 HOURS OR ONE YEAR (Whichever occurs first)		
ALL	Effectivity: 369D25100 main transmission serviced with MIL–L–23699 oil, drain main transmission oil system; Flush with sufficient new oil to remove sludge accumulation. Replace filter and refill with new oil.	12
EVERY 300 HOURS OR TWO YEARS (Whichever occurs first)		
600N	Main rotor upper thrust bearing assembly must be relubricated every 2 years or 300 hours, whichever occurs first (Ref. Main Rotor Hub Upper Bearing Grease Repack, Inspection and Replacement).	62–20–60
EVERY 300 HOURS		
ALL	Effectivity: 369D21400–503 (369D/E/FF – 500/600N) or M50452 (369D/E/FF – 500N) lead–lag dampers with at least 4200 hours, inspect for deterioration until deterioration is sufficient to retire assembly (Ref. Main Rotor Damper and Attachments Inspection and Main Rotor Damper Weight Loading and Extension Check).	62–20–00 62–20–60

Table 1. Special Inspections Hourly (Cont.)

Model	What to Inspect	Chap/Sect
NOTE: The following inspection does not apply to 369D25100–505 and –507 transmissions.		
369D/E/FF	Visually inspect upper surface of main transmission output shaft assembly (ring gear carrier) for bulging or raised surfaces. Using 10X magnifying glass, inspect upper surface of shaft for cracks. (Ref. COM, Output Drive Shaft Visual Inspection)	63–20–00
369D/E 500/600N	Replace anti–ice/airframe fuel filter element (if installed) (Ref. Anti–Ice Fuel Filter Replacement).	28–25–00
ALL	Mist eliminator and access door for proper installation (attaching hardware for security).	71
ALL	Hoist installation (if installed) for condition and security.	25
EVERY 600 HOURS OR ONE YEAR (Whichever occurs first)		
ALL	Effectivity: 369D25100 main transmission serviced with Mobil SHC 626 oil and 369F5100 main transmission, drain main transmission oil system; Flush with sufficient new oil to remove sludge accumulation. Replace filter and refill with new oil.	12
369D/E/FF 500N	Effectivity: 369F5510 Main Rotor Drive Shaft, perform 369F5510 Main Rotor Drive Shaft Inspection (Ref. 600N5510 and 369F5510 Main Rotor Drive Shaft Inspection).	63–10–00
600N	Effectivity: 600N5510 Main Rotor Drive Shaft, perform 600N5510 Main Rotor Drive Shaft Inspection (Ref. 600N5510 and 369F5510 Main Rotor Drive Shaft Inspection).	63–10–00
EVERY 600 HOURS		
ALL	Cyclic control system for excessive slack or free play. Cyclic control stick, at grip, for play in excess of 3/8 inch (9.53 mm) (Ref. Main Rotor Flight Control System 600–Hour Inspection).	67–10–00
ALL	Effectivity: 369D21400–503 (369D/E/FF – 500/600N) or M50452 (369D/E/FF – 500N) lead–lag dampers with less than 4200 hours, inspect for deterioration until deterioration is sufficient to retire assembly (Ref. Main Rotor Damper and Attachments Inspection and Main Rotor Damper Weight Loading and Extension Check).	62–20–00 62–20–60
500/600N	Using a dial indicator, measure the rotation of the fan pitch control clevis mounted on the fan pitch control tube. If clevis rotation is more than 0.025 in. (0.635 mm), inspect splines on fan pitch control tube (Ref. Fan Pitch Control Tube Inspection) and splines in tube support (Ref. Tube Support Inspection).	63–25–30 67–20–30
EVERY 1200 HOURS		
ALL	Test battery over temperature sensor unit for proper operation and accuracy (Ref. Battery Temperature Sensing Equipment Operational Check).	96–05–00
500/600N	Perform visual inspection, using a 10x magnifying glass, on horizontal stabilizer mounting brackets (pay particular attention to the forward inboard legs).	53
500N	Regrease YSAS actuator (Ref. YSAS Actuator Regrease Procedure).	67–20–30
EVERY 1200 HOURS OR 2 YEARS (WHICHEVER OCCURS FIRST)		
500/600N	Clean, inspect and relubricate (repack) fan support and pitch plate bearings (Ref. Anti–Torque Fan Bearing Regreasing).	64–25–30
500/600N	Perform Anti–Torque Fan Inspection.	64–25–30
500/600N	Check pitch bearing retainer for cracks or damage.	64
EVERY 2700 HOURS OR 2 YEARS (WHICHEVER OCCURS FIRST)		
600N	Main rotor lower thrust bearing assembly must be relubricated every 2 years or 2700 hours, whichever occurs first.	62–20–60

Table 1. Special Inspections Hourly (Cont.)

Model	What to Inspect	Chap/Sect
600N	Clean, inspect and relubricate (repack) main rotor swashplate bearings.	62–30–60
EVERY 2770 HOURS OR 2 YEARS (WHICHEVER OCCURS FIRST)		
369D/E/FF 500N	Clean, inspect and relubricate (repack) main rotor swashplate bearings and main rotor hub tapered bearings (Ref. Main Rotor Hub Tapered Bearing Replacement).	62–20–00
369D/E/FF	Clean, inspect and relubricate (repack) tail rotor swashplate bearings (Ref. Tail Rotor Swashplate Bearing Regreasing).	64–30–00
AT 6000 HOURS AND EVERY 100 HOURS THEREAFTER		
600N	Remove tunnel control boot. Inspect interface between 369H2564 tunnel beams and 369D22508–7 web for cracks (Ref. Control Tunnel (FS 78.50) Beam Inspection).	53–30–30
AT 15,000 HOURS AND EVERY 5,000 HOURS THEREAFTER		
600N	Perform Lower Longeron Inspection (L158, R158).	53–30–30
600N	Perform Forward Upper Longeron Inspection (L137, R137).	53–30–30
EVERY 6,000 HOURS		
369D	Replace the 369H6414 Edgelighted Panel (Ref. Instrument Panel Lights Description and Replacement).	96–40–00

Table 2. Special Inspections Calendar

Model	What to Inspect	Section
(DAILY) BEFORE FINAL SHUTDOWN IN CORROSIVE ENVIRONMENT		
ALL	It is recommended that before shutdown from the last flight of the day, for helicopters operating in a corrosive environment, a Tri–Flow wash be preformed on the main rotor hub and strap pack assembly (Ref. Main Rotor Hub Corrosion Prevention (Tri–Flow Wash Procedure)).	20–40–00
(DAILY) AFTER FINAL SHUTDOWN IN CORROSIVE ENVIRONMENT		
500N	It is recommended that after shutdown from the last flight of the day, for helicopters operating in a corrosive environment, the splitter bungee spring be sprayed with Tri–Flow.	20
EVERY 6 MONTHS OR 5 INFLATIONS		
ALL	Inflate emergency floats to 4.5 psi (0.3164 kg/cm^2) for one hour. Check for leaks and condition. Continue inflation to 5.5 psi (0.3867 kg/cm^2) and check that chamber pressure relief valves operate. Pressure–test float compartments (Ref. Float Compartments Pressure Test).	32–82–00
AFTER COMPRESSOR WATER WASH/RINSE WITH PARTICLE SEPARATOR INSTALLED		
ALL	During engine run after compressor water wash with particle separator installed, it is recommended that scavenge air switch be switched on to remove any moisture that has accumulated in the solenoid air valve.	RFM
BEFORE OPERATION OF BREEZE HOIST SYSTEM		
ALL	Prior to daily hoisting operations: unreel and inspect entire length of hoist cable for broken strands (cluster of 7 wires), excessive broken wires, corrosion, and security of attachment to cable drums and swivel hook. Replace cable if broken strand or excessive broken wires are noted. (Refer to hoist manufacturer’s handbook, Table 201.)	01

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Table 1. Conditional Inspections (Cont.)

Model	Requirement	Chap/Sect
ALL	Perform a ground run operational check on the aircraft. Functionally check the flight control system, and all avionics, electrical, lighting, communication, and navigation systems.	67 96 97
ALL	Repair any damage and replace damaged components as required.	
If lightning strike is evident on main rotor system:		
ALL	Inspect blades for damage such as burns, pitting, skin separation, etc. If damage is evident, scrap damaged blade(s).	62
ALL	Remove hub assembly and return for overhaul.	62
ALL	Inspect all bearings in the fixed and rotating control system located on the main rotor mast.	62
ALL	Remove transmission assembly and overhaul.	63
ALL	Inspect main rotor mast and drive shaft for evidence of burns.	63
ALL	Check drive shafts for residual magnetism. If magnetized or damaged, scrap drive shafts and remove engine for overhaul.	63 71
If lightning strike is evident on tail rotor system:		
369D/E/FF	Inspect blades for damage such as burns, pitting, skin separation, etc. If damage is evident, scrap damaged blade(s).	64
369D/E/FF	Overhaul tail rotor assembly.	COM
369D/E/FF	Scrap pitch change links and pitch change assembly.	64
369D/E/FF	Inspect bellcrank and control rod for any indications of arcing. Scrap parts with indications of arcing.	67
369D/E/FF	Overhaul tail rotor gearbox.	COM
369D/E/FF	Inspect tail rotor drive shaft and drive shaft damper for magnetism and/or burns.	63
369D/E/FF	Check oil cooler blower assembly, overrunning clutch and tail rotor drive shaft couplings for residual magnetism; replace as necessary.	63
369D/E/FF	Inspect oil cooler assembly for damage; replace as necessary.	63
369D/E/FF	If previous drive train items show magnetism, overhaul transmission.	COM
369D/E/FF	If overrunning clutch assembly shows magnetism, remove engine and overrunning clutch and overhaul.	71 COM
369D/E/FF	Inspect engine mounts and fitting for damage. Replace as necessary.	71
AFTER 369F5100 MAIN TRANSMISSION LUBRICATION PUMP IMPENDING BYPASS INDICATOR POPS		
ALL	Refer to Troubleshooting Power Train System	63–00–00
WHENEVER ENGINE IS REMOVED		
ALL	Remove soundproofing from above engine and inspect airframe above engine for evidence of cracks.	53

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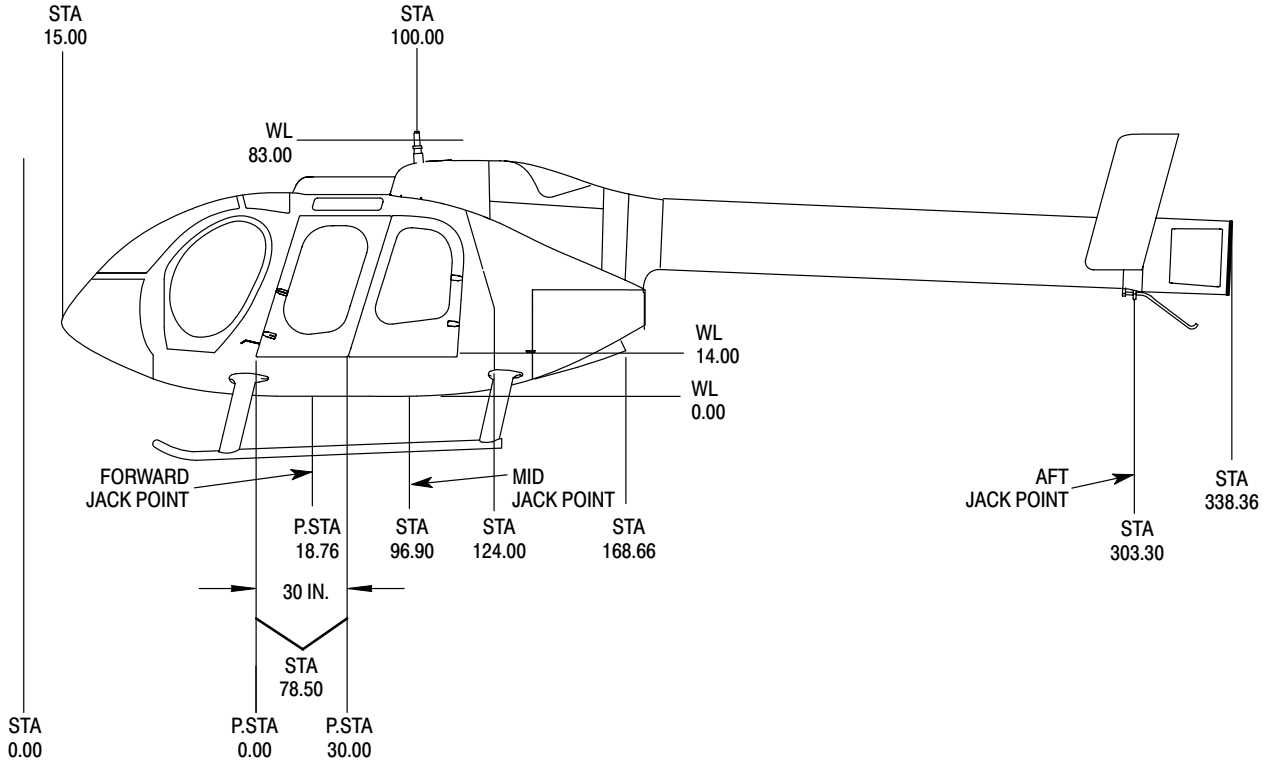
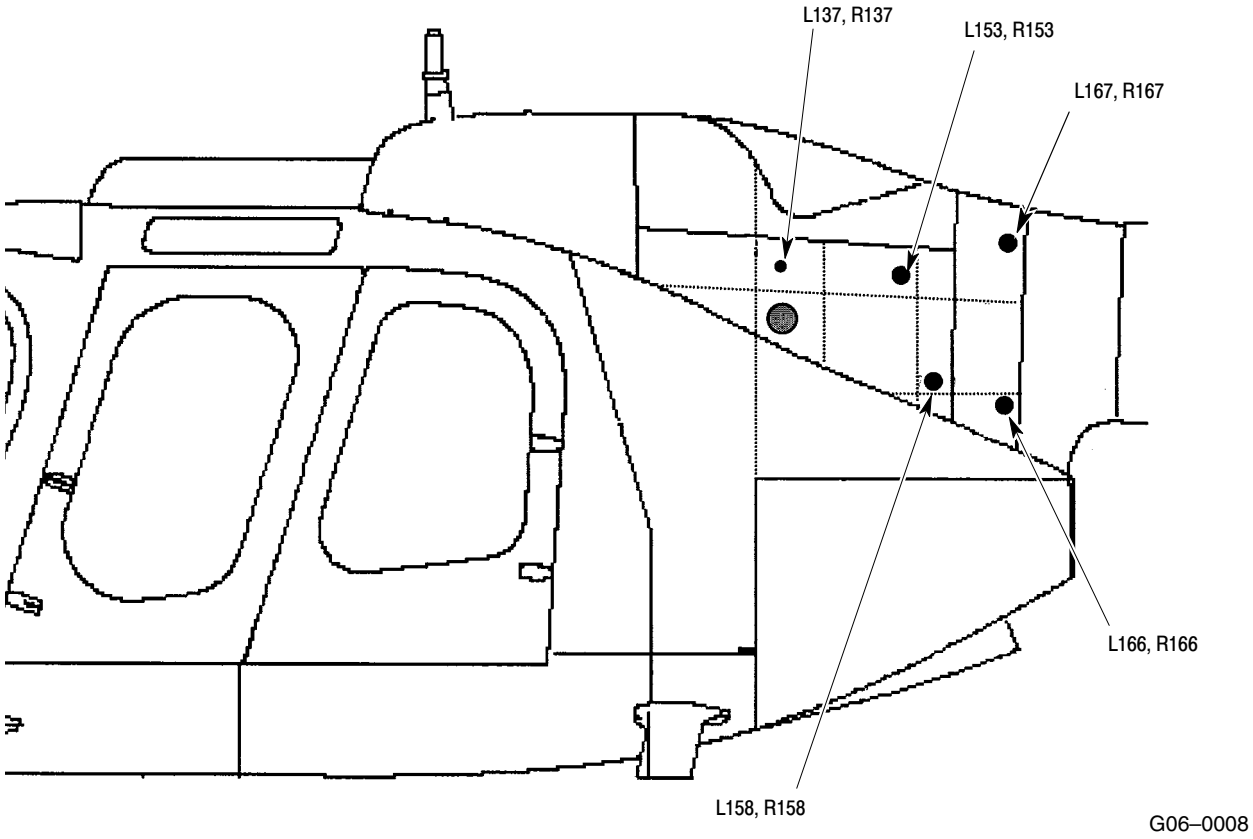


Figure 209. Fuselage Station Diagram – Model 600N



Item No.	Name	Permits Access To	Qty.	Type
L137	Plug	Left forward upper longeron	1	Plug Button
R137	Plug	Right forward upper longeron	1	Plug Button
L153	Plug	Left upper longeron	1	Plug Button
R153	Plug	Right upper longeron	1	Plug Button
L158	Plug	Left lower longeron	1	Plug Button
R158	Plug	Right lower longeron	1	Plug Button
L166	Plug	Left lower attach fitting	1	Plug Button
R166	Plug	Right lower attach fitting	1	Plug Button
L167	Plug	Left upper attach fitting	1	Plug Button
R167	Plug	Right upper attach fitting	1	Plug Button

Figure 210. Aft Empenage Access Plugs – Model 600N

(2). Place suitable container under engine oil tank drain and remove engine oil tank filler cap.

(3). Remove engine oil tank drain cap.

(4). After draining oil from tank, reinstall engine oil tank drain cap and filler cap.

(5). To drain residual oil from engine accessory gearbox drain, remove wire lead and lower chip detector. Use suitable container to catch oil. Check that detector O-ring is serviceable (replace as required); reinstall detector; torque to **50 - 60 inch-pounds (5.65 - 6.78 Nm)**; lockwire and reconnect wire lead.

E. Engine Oil System Draining (Helicopters with Drain Valve Installed)

(1). Remove interior trim and aft bulkhead right access cover.

(2). Place a suitable container under overboard oil drain line where it exits fuselage underside at firewall.

(3). Remove cap from engine oil tank filler. Pull out knurled spring-loaded button to open valve in engine oil drain line just below engine oil cooler (Ref. Figure 301). Rotate button and valve poppet so that locking pin rests on shoulders of pin slot.

(4). After draining oil from tank, reinstall filler cap and close oil drain valve; ensure that poppet pin is in stop slot.

(5). Reinstall access cover and interior trim.

(6). To drain residual oil from engine accessory gearbox drain, remove wire lead and lower chip detector (Ref. Sec. 79-00-00). Use suitable container to catch oil. Check that detector O-ring is serviceable (replace as required); reinstall detector, torque to **50 - 60 inch-pounds (5.65 - 6.78 Nm)** and reconnect wire lead.

F. Engine Oil System Flushing

The following procedure is for flushing oil that has been contaminated or when changing the type of oil.

(1). Drain oil from engine, oil tank and oil cooler (Ref. Engine Oil System Draining).

(2). Replace engine oil filter(s) (Ref. Applicable Allison Operation and Maintenance Manual).

(3). Refill engine oil system (Ref. Engine Oil System Filling).

(4). Operate engine for five minutes and repeat above procedures.

5. Main Rotor Transmission Servicing

Service the helicopter with one of the authorized oils listed (Ref. Sec. 91-00-00).

NOTE: Mobil oil SHC 626 can be formulated such that it may have two different colors. The oil can still be mixed with no adverse affects.

Main Transmission Capacities

369D25100	12.0 U.S. Pt. (5.67 Liter)
369F5100	14.0 U.S. Pt. (6.62 Liter)

A. Main Rotor Transmission Filling

Transmission (gearbox) oil should be replaced with new oil whenever it is drained. A liquid level sight gauge for checking main rotor transmission oil level is located on the right-hand side and visible through the clear panel of the main transmission interior cover.

NOTE:

- Replacement of oil pump filter (Ref. Sec. 63-21-00) is required after oil is drained from main rotor transmission and at intervals specified (Ref. Sec. 05-20-20).
- If oil was drained from transmission cooler, ground-operate helicopter for 15 minutes after replenishing oil (Ref. applicable PFM, Table 201, Sec. 01-00-00). Recheck oil level at liquid level sight gauge and replenish as necessary. This purges air from oil cooling system and ensures that entire oil cooling system is full.

(1). Replenish with correct oil until oil level is at FULL on sight gauge by lifting breather-filler cap and inserting spout of oil can into opening.

(2). Check that spring-loaded cap closes when oil can spout is removed. Replace trim cover.

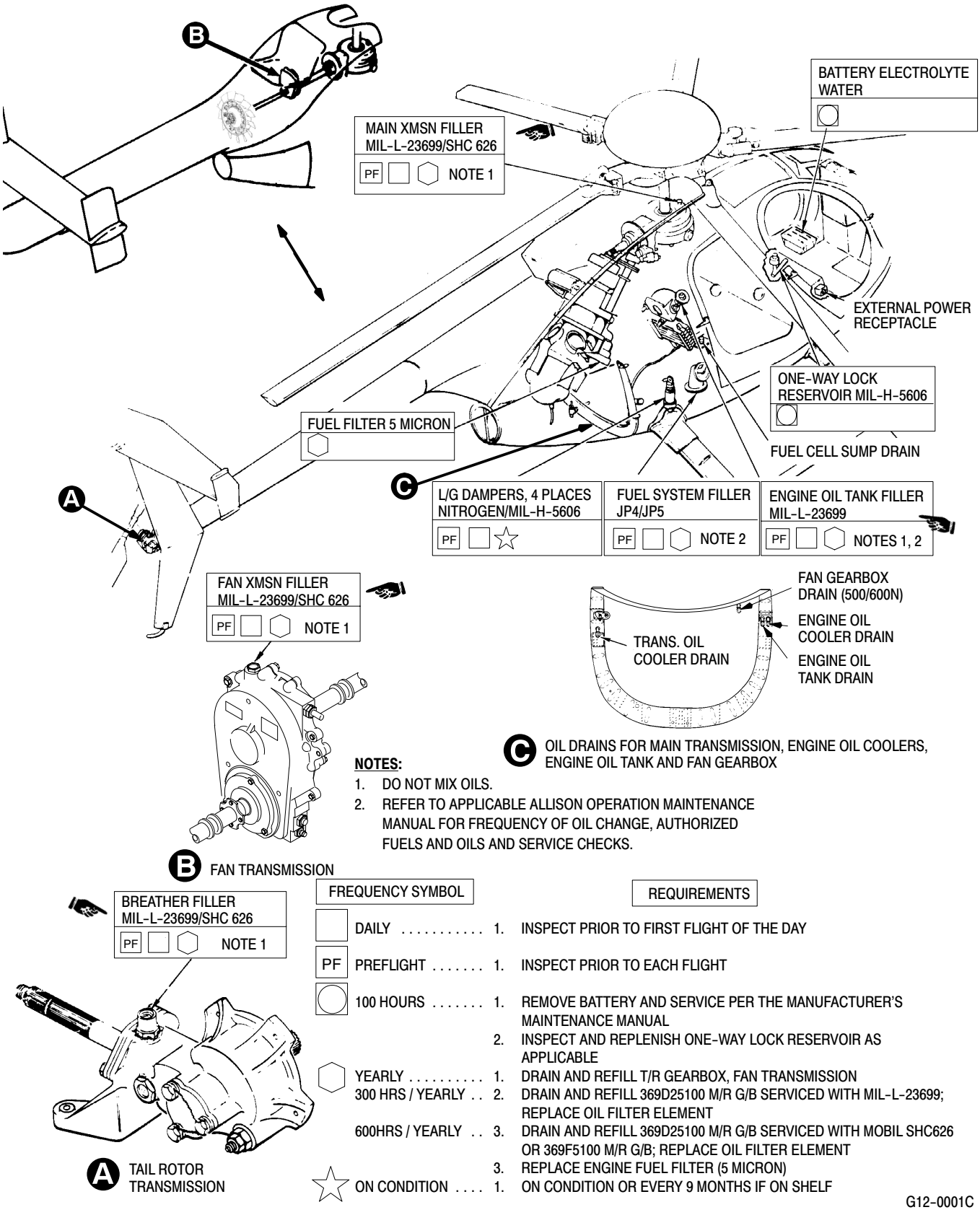


Figure 301. Servicing Points – Standard Equipment

MAIN ROTOR TRACK AND BALANCE ADJUSTMENT/TEST

1. Blade Tracking Procedure

Table 501 is a summary of the sequence of required procedures for blade tracking.

(1). Install strobe light, blade tip cap reflectors and related equipment.

(2). Use 1/2 inch (12.7 mm) diameter tracking tip cap reflector as a guide for estimating track accuracy. For example:

(a). A tip cap reflector image displacement of 1/2 diameter up, or down, indicates blade tip is approximately 1/4 inch (6.35 mm) out of track.

(b). One full reflector diameter indicates 1/2 inch (12.7 mm) out of track.

NOTE: Rocking or stick shake caused by a correctly tracking rotor indicates improper blade phasing.

(3). Accomplish blade phasing (Ref. Sec. 62-20-00) when installing new rotor blades or if ground rock or stick shake is noted. This must be accomplished prior to starting tracking procedure.

NOTE: Final rotor system balance cannot be accomplished until blades are in track.

(4). Ground tracking is basically track-observation and adjustment of idle and flight rpm. Improper track at idle rpm is corrected by adjusting length of pitch control links connecting rotating swashplate and blade pitch housing. Ground track at flat pitch and flight rpm is corrected by blade tab adjustment.

(5). Hover track verification is essentially an observation to check for track variations between high rpm (flat pitch) ground track check and hovering.

NOTE: Track adjustments are not made on basis of track observations during hovering. However, track variations should be noted and recorded for use during check of track in forward flight.

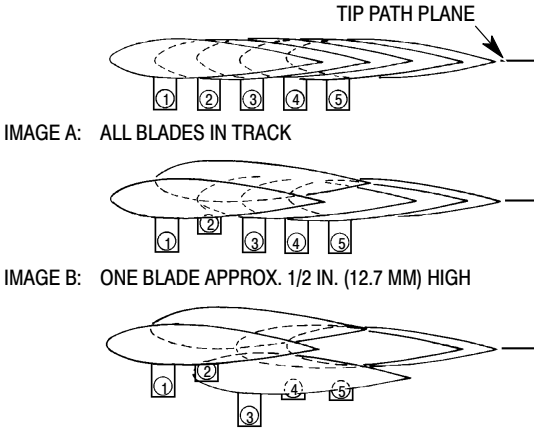


IMAGE A: ALL BLADES IN TRACK

IMAGE B: ONE BLADE APPROX. 1/2 IN. (12.7 MM) HIGH

IMAGE C: ONE BLADE APPROX. 1/2 IN. (12.7 MM) HIGH
ONE BLADE APPROX. 1 IN. (25.4 MM) LOW

G18-1001A

CORRECTIVE ACTION

CONDITION	GROUND IDLE RPM	HIGH RPM AND FWD FLIGHT
IMAGE A	NONE REQUIRED	NONE REQUIRED
IMAGE B	SHORTEN PITCH CONTROL ROD (2ND BLADE)	MOVE TAB DOWNWARD (2ND BLADE) MOVE TAB UPWARD (3RD BLADE)
IMAGE C	SHORTEN PITCH CONTROL ROD (2ND BLADE): LENGTHEN CONTROL ROD (3RD BLADE)	MOVE TAB DOWNWARD (2ND BLADE): MOVE TAB UPWARD (3RD BLADE)

NOTE: Chordwise spacing of tracking images are not an accurate indication of blade phasing. Do not adjust blade phasing in an attempt to equalize spacing. Slight tilting of magnetic interrupters or balance of the main rotor system can move the image

Figure 501. Typical Track Conditions and Adjustments

(6). Forward flight track is corrected only by making blade tab adjustments. Forward flight tracking requires track observation during following airspeeds and maneuvers: Flight at 0-100 knots. Forty-five degree banked turns at 80-100 knots. Flight at 100-155 knots.

(7). Check for proper balance of rotor system prior to checking autorotation.

(8). Obtaining correct autorotation rpm consists of checking main rotor rpm

during stabilized autorotation flight and adjusting rpm to specified limits as necessary. Autorotation rpm check must be accomplished to ensure that track adjustments do not alter rotor performance necessary for safe power-off landings.

A. Blade Track Adjustment

Although adjustment of pitch control links affects blade track at all rotor speeds, they should be adjusted only when necessary to establish acceptable track at ground idle speed; blade tabs are used for all other track corrections.

NOTE: Blade tab and/or track can make the collective heavy or light.

B. Pitch Control Link Adjustment

Repeat this adjustment procedure as necessary to establish ground idle track:

(1). To lower a blade tip, shorten pitch control link assembly. To raise a blade tip, lengthen pitch control link assembly. One-sixth of a turn of link (one flat) raises or lowers blade tip approximately 1/4 inch (6.35 mm).

CAUTION Center each rod end or (fitting wear) results. Make sure there is no binding in full up travel position.

(2). After adjusting pitch control link length, center each rod end in its fitting and hold while tightening jam nuts; safety with lockwire.

C. Blade Tab Adjustment

(Ref. Figure 502) Once ground idle track is obtained, all remaining tracking correction is accomplished by very slight bending of various blade tab zones with tab bending tool (ST902). Different zones of tabs are used to adjust blade track at different airspeeds. In general, tab zone A is used for high rpm, flat pitch ground tracking (369D/E - 103% N_2, 369FF/500N - 100% N_2) and zones C, D, and sometimes E, are used for tracking at higher airspeeds. Zone B is used to supplement zone A track correction when maximum tab (5 degrees) has been applied to zone A; if necessary, zone B may also be used for correction in 0-110 knot airspeed range.

Special Tools
(Ref. Section 91–00–00)

Item	Nomenclature
ST902	Main rotor blade fixture and tab bending tool

CAUTION Minimize bending and restrict adjustments to very small increments so that bonded trailing edge joint between upper and lower skins is not damaged. Tabs must never be displaced more than five degrees above or below neutral position (parallel to chordline).

(1). To lower blade tip that tends to climb during ground tracking at high rpm or during forward flight, bend appropriate tab section slightly downward; to raise tip of blade that tends to descend, bend tab slightly upward. If only slight track correction is necessary, limit tab bending to width of bending tool. If more correction is necessary, bend a slightly wider section of tab. Use small adjustments to avoid excessive rebending of tabs.

NOTE: Tab zones on same blade can require bending in opposite directions. For example, after bending tab zone A downward to get good tracking at 60-90 knots, it might become necessary to bend tab zone D or E upward to correct track at redline airspeed. In any case, do not use larger tab corrections than are actually necessary.

(2). Each time blade tabs are adjusted, recheck ground idle track and readjust if necessary.

(3). After completion of forward flight tracking, balance and check autorotation rpm.

D. Main Rotor Ground Tracking

(Ref. Figure 502) For best results, tracking should be performed under calm air conditions. Wind velocity should not exceed six knots during adjustments. Accurate adjustment of initial ground track is very important. In most instances, forward flight tracking problems can be avoided or greatly reduced by setting initial track as nearly perfect as possible. Tolerances specified in following instructions

MAIN ROTOR TRACK AND BALANCE (600N)
ADJUSTMENT/TEST

1. Blade Tracking Procedure

Table 501 is a summary of the sequence of required procedures for blade tracking.

(1). Install strobe light, blade tip cap reflectors and related equipment.

(2). Use 1/2 inch (12.7 mm) diameter tracking tip cap reflector as a guide for estimating track accuracy. For example:

(a). A tip cap reflector image displacement of 1/2 diameter up, or down, indicates blade tip is approximately 1/4 inch (6.35 mm) out of track.

(b). One full reflector diameter indicates 1/2 inch (12.7 mm) out of track.

NOTE: Rocking or stick shake caused by a correctly tracking rotor indicates improper blade phasing.

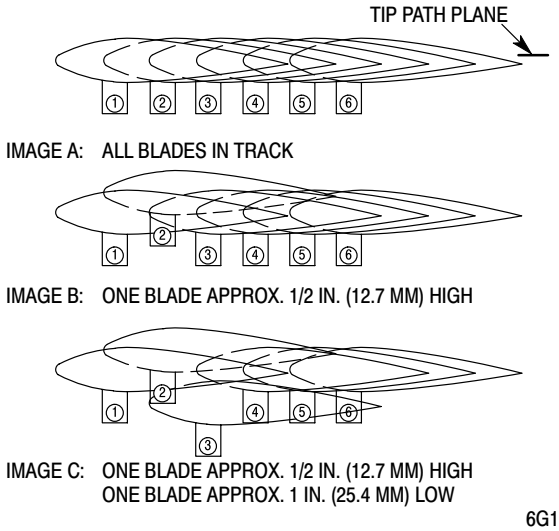
(3). Accomplish blade phasing (Ref. Sec. 62-20-60) when installing new rotor blades or if ground rock or stick shake is noted. This must be accomplished prior to starting tracking procedure.

NOTE: Final rotor system balance cannot be accomplished until blades are in track.

(4). Ground tracking is basically track-observation and adjustment of idle and flight rpm. Improper track at idle rpm is corrected by adjusting length of pitch control links connecting rotating swashplate and blade pitch housing. Ground track at flat pitch and flight rpm is corrected by blade tab adjustment.

(5). Hover track verification is essentially an observation to check for track variations between high rpm (flat pitch) ground track check and hovering.

NOTE: Track adjustments are not made on basis of track observations during hovering. However, track variations should be noted and recorded for use during check of track in forward flight.



CORRECTIVE ACTION

CONDITION	GROUND IDLE RPM	HIGH RPM AND FWD FLIGHT
IMAGE A	NONE REQUIRED	NONE REQUIRED
IMAGE B	SHORTEN PITCH CONTROL ROD (2ND BLADE)	MOVE TAB DOWNWARD (2ND BLADE) MOVE TAB UPWARD (3RD BLADE)
IMAGE C	SHORTEN PITCH CONTROL ROD (2ND BLADE): LENGTHEN CONTROL ROD (3RD BLADE)	MOVE TAB DOWNWARD (2ND BLADE): MOVE TAB UPWARD (3RD BLADE)

NOTE: Chordwise spacing of tracking images are not an accurate indication of blade phasing. Do not adjust blade phasing in an attempt to equalize spacing. Slight tilting of magnetic interrupters or balance of the main rotor system can move the image

Figure 501. Typical Track Conditions and Adjustments

(6). Forward flight track is corrected only by making blade tab adjustments. Forward flight tracking requires track observation during following airspeeds and maneuvers: Flight at 0-100 knots. Forty-five degree banked turns at 80-100 knots. Flight at 100-155 knots.

(7). Check for proper balance of rotor system prior to checking autorotation.

(8). Obtaining correct autorotation rpm consists of checking main rotor rpm

during stabilized autorotation flight and adjusting rpm to specified limits as necessary. Autorotation rpm check must be accomplished to ensure that track adjustments do not alter rotor performance necessary for safe power-off landings.

A. Blade Track Adjustment

Although adjustment of pitch control links affects blade track at all rotor speeds, they should be adjusted only when necessary to establish acceptable track at ground idle speed; blade tabs are used for all other track corrections.

NOTE: Blade tab and/or track can make the collective heavy or light.

B. Pitch Control Link Adjustment

Repeat this adjustment procedure as necessary to establish ground idle track:

(1). To lower a blade tip, shorten pitch control link assembly. To raise a blade tip, lengthen pitch control link assembly. One-sixth of a turn of link (one flat) raises or lowers blade tip approximately 1/4 inch (6.35 mm).

CAUTION Center each rod end or pitch case and/or swashplate wear will result. Ensure there is no binding in full up travel position.

(2). After adjusting pitch control link length, center each rod end in its fitting and hold while tightening jam nuts; safety with lockwire.

C. Blade Tab Adjustment

(Ref. Figure 502) Once ground idle track is obtained, all remaining tracking correction is accomplished by very slight bending of various blade tab zones with tab bending tool (ST902). Different zones of tabs are used to adjust blade track at different airspeeds. In general, tab zone A is used for high-rpm, flat pitch ground tracking (100% N_2) and zones C, D, and sometimes E, are used for tracking at higher airspeeds. Zone B is used to supplement zone A track correction when maximum tab (5 degrees) has been applied to zone A; if necessary, zone B may also be used for correction in 0-110 knot airspeed range.

Special Tools
(Ref. Section 91–00–00)

Item	Nomenclature
ST902	Main rotor blade fixture and tab bending tool

CAUTION Minimize bending and restrict adjustments to very small increments so that bonded trailing edge joint between upper and lower skins is not damaged. Tabs must never be displaced more than five degrees above or below neutral position (parallel to chordline).

(1). To lower blade tip that tends to climb during ground tracking at high rpm or during forward flight, bend appropriate tab section slightly downward; to raise tip of blade that tends to descend, bend tab slightly upward. If only slight track correction is necessary, limit tab bending to width of bending tool. If more correction is necessary, bend a slightly wider section of tab. Use small adjustments to avoid excessive rebending of tabs.

NOTE: Tab zones on same blade can require bending in opposite directions. For example, after bending tab zone A downward to get good tracking at 60-90 knots, it might become necessary to bend tab zone D or E (Ref. Figure 502) upward to correct track at redline airspeed. In any case, do not use larger tab corrections than are actually necessary.

(2). Each time blade tabs are adjusted, recheck ground idle track and readjust if necessary.

(3). After completion of forward flight tracking, balance and check autorotation rpm.

TAIL ROTOR BALANCE
MAINTENANCE PRACTICES

1. Tail Rotor Balancing

Special Tools (Ref. Section 91–00–00)	
Item	Nomenclature
ST903	Balancer/analyzer instrument kit

Balancing is accomplished by use of a balancing kit (ST903). The carrying case of this kit contains all instrumentation, balance charts and miscellaneous items needed to balance the tail rotor. Also included is a track and balance handbook for use with the equipment to correct balance when such can be obtained by addition or subtraction of weight at pitch-arm studs or at blade tips.

Since vibration reduction by weight adjustment is dependent on proper mechanical condition of the tail rotor and tail rotor drive system, troubleshooting information (Ref. Chap. 64) should be used with balancing kit instructions. Acceptance criteria for balance and vibration are contained in the balancing kit and on each balance chart. Main rotor and tail rotor balancing spare kit contains spare screws, washers and tip weights.

NOTE: If tail rotor balance is difficult to achieve and horizontal stabilizer resonance is noted refer to 421-087-505 Horizontal Stabilizer Tab Weight Installation.

A. Balance at Blade Tip

When balancing procedures indicate that weight should be added to a tip, it is preferable, if possible, to instead remove an equivalent amount from the opposite tip to keep overall weight to a minimum. Installation of tip weights is not mandatory. However, open screw holes are not permitted; screws must be installed. Shorter than normal screws may be used for balance if minimal thread engagement of 5/16 inch (7.9375 mm) exists.

(1). Remove tip-weight screws and weights (Ref. Figure 201). Select balancing hardware indicated by balancing procedure. Tail rotor balance spare kit contains extra tip weights and screws.

(2). Install combination of weights required. Maximum weight permitted is thirty-four grams at each tip (Ref. Table 201). Torque screws to **21 - 24 inch-pounds (2.37 - 2.71 Nm).**

B. Balance at Blade Pitch Arm

(Ref. Figure 201) Weight increase at light pitch arm may be obtained by removal of equivalent washer weight from opposite pitch arm. Always remove washers from opposite pitch arm, if installed, and subtract from weight to be added before adding more weight. For washer data, refer to Table 201. Main rotor and tail rotor balancing spare kit contains extra washers. Maximum washer weight allowed at either pitch arm bolt is 26.91 grams (23 washers).

NOTE:

- A tail rotor out-of-balance condition that cannot be corrected by standard balancing procedures may be an indication of excessive play in tail rotor hub components.
- There is possibility of slight weight variation between pitch control links.

(1). If tail rotor has maximum balance washer weight allowed on one pitch arm, compare the two links.

(2). If pitch link opposite the weight requirement appears larger, exchange one link for the other and repeat vibration analysis.

(3). If, as a result of parts peculiarity, maximum allowable weight at one pitch arm does not correct assembly balance, tail rotor hub may be shifted in fork and hub-to-fork shimming adjusted, if maximum allowable play in fork bearings is not exceeded. This is done by transferring fork-to-hub spacing shims from balance weighted side to opposite side of hub, according to hub and fork assembly procedures (Ref. COM).

(a). Chordwise weight shift resulting from each 0.001 inch (0.0254 mm) of spacing thickness transferred reduces weight requirement at weighted pitch arm by one HS306-227L balance washer.

(b). Transferring one 369A1717-53 spacing shim, 0.010 inch (0.254 mm) thickness, allows initial removal of 10 thin washers from pitch arm and thereby allows more flexibility for further balance correction during vibration analysis.

(4). It should be noted that spanwise balance is probably affected by any chordwise shift of fork.

(5). If maximum allowable play in fork bearings is exceeded, bearings must be replaced (Ref. COM).

(6). Replacement or adjustment of parts requires balancing of tail rotor following re-assembly.

C. Short Method Balance Check

(Ref. Figure 201 and Figure 202) Use tail rotor vibration analyzer (ST903) throughout this procedure.

(1). Mount accelerometer into tail rotor gearbox breather plug as noted in Chadwick-Helmuth Operation and Service Handbook.

(2). Connect accelerometer and balancer DC power cables as noted in the Chadwick-Helmuth Operation and Service Handbook.

(3). Apply a retro-reflective target material on blade root fitting. For four-bladed tail rotor, one blade of the outboard tail rotor assembly.

(4). Connect cables and instruments and adjust settings as noted in Chadwick-Helmuth Handbook.

(5). Direct strobe at tail rotor and adjust per Chadwick-Helmuth instructions for VERIFY TUNE.

(6). Initially balance the tail rotor until vibration level is 0.1 IPS (0.85 MIL) or less as follows:

(a). Add weights to blade tips only. For four-bladed tail rotor, divide weights as necessary between the two lower blades to make the total weight vector in the downward direction.

NOTE: If more than 15 grams of tip weight (including screw) is necessary on any one blade, use the "long method" balance procedure.

(7). After initial balance, reset RPM TUNE dial, according to Chadwick-Helmuth Handbook for final balancing. Direct strobe at tail rotor and adjust per Chadwick-Helmuth instructions for VERIFY TUNE. Apply the same method used for initial balance to balance until vibration level is 0.1 IPS (0.85 MIL) or less.

D. Long Method Balance Check (Four-Bladed Tail Rotor)

(Ref. Figure 203 and Figure 204) A long method balance check must be accomplished each time hubs and fork of four-bladed tail rotor are reassembled. Use tail rotor vibration analyzer (ST903) throughout the procedure.

CAUTION First runup of tail rotor assembly should be accomplished in a cautious manner, increasing tail rotor rpm slowly so that vibrations from out-of-balance tail rotor assembly will not cause damage.

NOTE: Prior to performing long method balance check, ensure hub is centered on fork and elastomeric bearings are preloaded correctly.

(1). With outboard blade removed, balance inboard blade by adjusting tip weights and washers at pitch arm bolt to achieve 0.10 IPS (0.85 MIL) or less vibration level at 2100 rpm (input shaft of transmission). This corresponds to tail rotor rpm of 2168.

(2). Install outboard blade and hub assembly; check balance of outboard blades by adjusting weights to obtain 0.10 IPS

(0.85 MIL) vibration or less, using same method as used for inboard blade balancing, except as shown in Figure 204.

2. Horizontal Stabilizer Tuning

Installation of tab weight is optional on the 421-087 -505 horizontal stabilizer if difficulty in tail rotor balance and horizontal stabilizer tab resonance vibration is encountered.

(1). With helicopter on flat smooth surface, operate engine at 102%-105% N_2 and observe horizontal stabilizer tab.

(2). If tab resonance vibration occurs, remove the horizontal stabilizer assembly and balance the tail rotor assembly.

(3). After balancing the tail rotor assembly, reinstall the horizontal stabilizer.

(4). Run engine at 102%-105% N_2 and observe horizontal stabilizer tab.

(5). If tab resonance occurs and tail rotor balance is no longer acceptable, install tab weight to horizontal stabilizer right tab (Ref. Sec. 53-50-10, Horizontal Stabilizer Tab Weight Installation).

(6). If needed, a one ounce weight may also be installed on left tab.

(7). A maximum of two ounces may be installed on each tab.

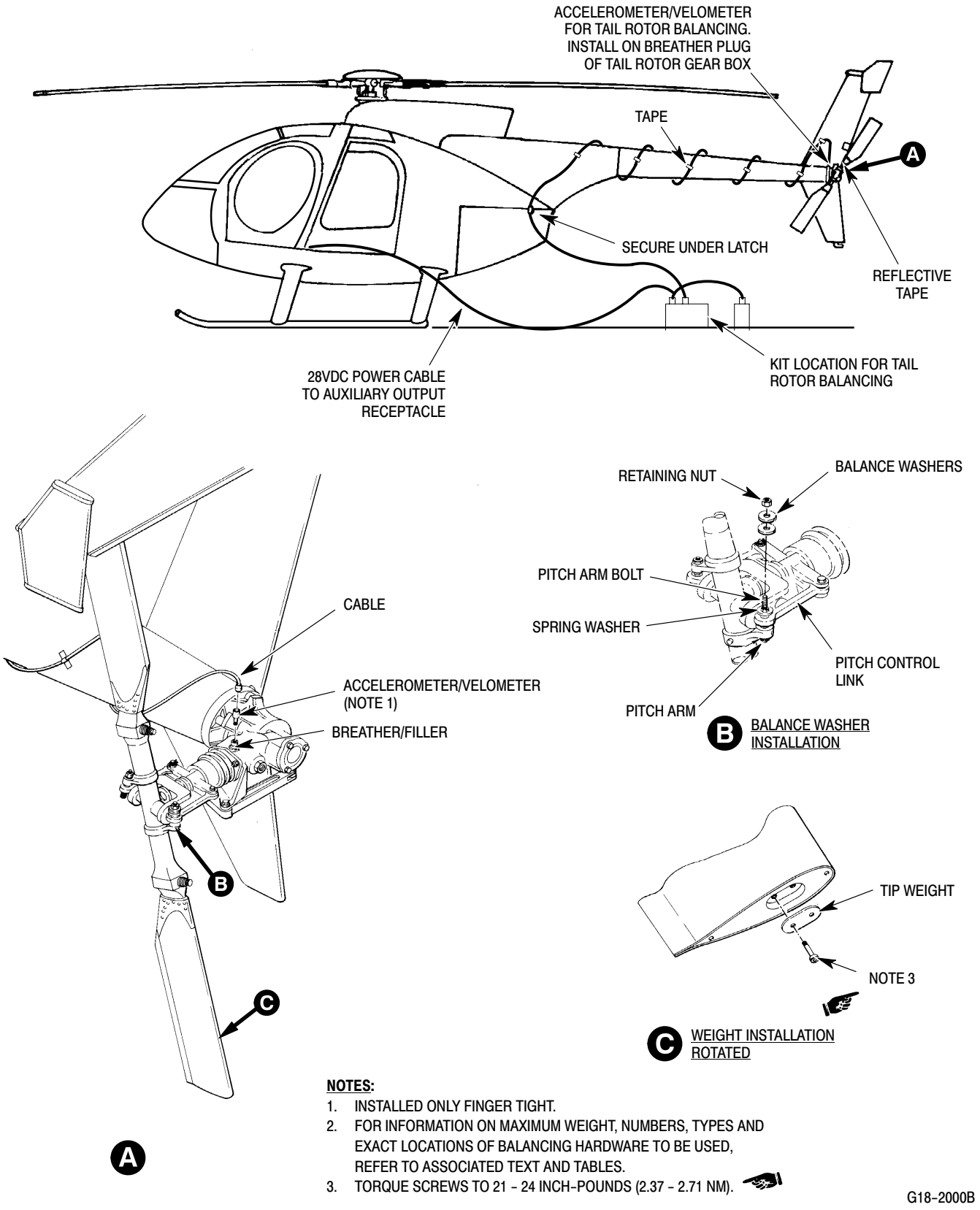


Figure 201. Tail Rotor Assembly Balancing (Two–Bladed Tail Rotor)

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4. Main Rotor Blade Paint

The following procedures is to be used whenever the main rotor blades require either repainting or paint touch-up.

NOTE:

- Repaint main rotor blades only in sets to maintain rotor balance. Never completely repaint only one main rotor blade installed on helicopter.
- New main rotor blades have the inboard 24 inches (610 mm) painted gloss white. This aids in inspection of the blade.
- At owner-operators convenience, in-service main rotor blades may have the inboard 24 inches (610 mm) painted gloss white.

Consumable Materials
(Ref. Section 91–00–00)

Item	Nomenclature
CM206	Chemical coating
CM217	Isopropyl alcohol
CM304	Enamel, epoxy
CM318	Primer
CM729	Tape, masking, pressure sensitive
CM801	Abrasive paper, silicon carbide

A. Main Rotor Blade Paint Removal

(1). Position main rotor blade on a bench of sufficient length to provide support.

(2). Inspect main rotor blade (Ref. Sec. 62-10-00, Main Rotor Blade Inspection).

CAUTION When removing paint from main rotor blade, do not use any paint remover. Bonding agents used in manufacture of the blade may be damaged by the chemicals causing the blade to be unserviceable.

(3). Apply tape (CM729) to all bushings, bearing, data plates and the abrasion strip.

CAUTION

- When sanding paint from the main rotor blade, take care to not damage rivet heads and sealant.
- Do not sand through the paint and primer into the base metal.

(4). Using 320 grit, or finer, abrasive paper (CM801) and wet or dry sanding method, sand areas that require painting.

(5). Using a soft cloth, dampened in isopropyl alcohol (CM217), thoroughly clean main rotor blade.

(6). Inspect sanded areas for damage.

B. Main Rotor Blade Paint Application

NOTE: If inboard 24 inches (610 mm) of main rotor blade is to be painted white, paint is to be applied to the entire circumference of the blade. There is to be no ridges in the paint when completed.

(1). Inspect main rotor blade (Ref. Sec. 62-10-00, Main Rotor Blade Inspection).

(2). Ensure all bushings, bearing, data plates and the abrasion strip are protected from paint with tape (CM729).

(3). Using a soft cloth, dampened in isopropyl alcohol (CM217), thoroughly clean main rotor blade.

(4). Treat any bare metal areas of main rotor blade with chemical coating (CM206).

NOTE: Mix primer (CM318) according to manufacturer's recommendations.

(5). Allow mixed primer to stand for 15 to 30 minutes prior to use.

NOTE:

- Working life of mixed primer is four hours maximum.
- Primer allowed to stand for more than two hours must be stirred or shaken before use.
- Addition of freshly mixed primer to replenish an older mixture is not permitted.

(6). Apply primer (CM318) to sanded areas, feather into surrounding color coat.

(7). Allow to air-dry for one hour minimum.

NOTE: Mix paint (CM304) according to manufacturer's recommendations.

(8). Allow mixed paint to stand for 20 minutes minimum prior to use.

NOTE:

- Working life of mixed paint is four hours maximum.
- Addition of freshly mixed primer to replenish an older mixture is not permitted.

(9). Apply paint (CM318) to primed areas. Feather-edge paint while applying.

(10). Allow to air-dry for eight hours minimum.

(11). Remove protective tape from main rotor blade.

NOTE: Main rotor assembly may need to be re-balanced after painting.

5. Tail Rotor Blade Paint

The following procedures is to be used whenever the tail rotor blades require either repainting or paint touch-up.

NOTE: Repaint tail rotor blades only in sets to maintain rotor balance. Never completely repaint only one tail rotor blade installed on helicopter.

Consumable Materials
(Ref. Section 91–00–00)

Item	Nomenclature
CM206	Chemical coating
CM217	Isopropyl alcohol
CM304	Enamel, epoxy
CM318	Primer
CM729	Tape, masking, pressure sensitive
CM801	Abrasive paper, silicon carbide

A. Tail Rotor Blade Paint Removal

(1). Inspect tail rotor blade (Ref. Sec. 64-10-00, Tail Rotor Blade Inspection).

CAUTION When removing paint from tail rotor blade, do not use any paint remover. Bonding agents used in manufacture of the blade may be damaged by the chemicals causing the blade to be unserviceable.

(2). Apply tape (CM729) to all bushings, data plates and the abrasion strip.

(3). Plug root end of tail rotor blade to ensure no paint enters.

CAUTION

- When sanding paint from the tail rotor blade, take care to not damage rivet heads and sealant.
- Do not sand through the paint and primer into the base metal.

(4). Using 320 grit, or finer, abrasive paper (CM801) and wet or dry sanding method, sand areas that require painting.

(5). Using a soft cloth, dampened in isopropyl alcohol (CM217), thoroughly clean tail rotor blade.

(6). Inspect sanded areas for damage.

B. Tail Rotor Blade Paint Application

(1). Inspect tail rotor blade (Ref. Sec. 64-10-00, Tail Rotor Blade Inspection).

(2). Ensure all bushings, data plates and the abrasion strip are protected from paint with tape (CM729).

(3). Ensure root end of tail rotor blade is plugged to prevent entry of paint.

(4). Using a soft cloth, dampened in isopropyl alcohol (CM217), thoroughly clean tail rotor blade.

(5). Treat any bare metal areas of tail rotor blade with chemical coating (CM206).

NOTE: Mix primer (CM318) according to manufacturer's recommendations.

(6). Allow mixed primer to stand for 15 to 30 minutes prior to use.

NOTE:

- Working life of mixed primer is four hours maximum.
- Primer allowed to stand for more than two hours must be stirred or shaken before use.
- Addition of freshly mixed primer to replenish an older mixture is not permitted.

(7). Apply primer (CM318) to sanded areas, feather into surrounding color coat.

(8). Allow to air-dry for one hour minimum.

NOTE: Mix paint (CM304) according to manufacturer's recommendations.

(9). Allow mixed paint to stand for 20 minutes minimum prior to use.

NOTE:

- Working life of mixed paint is four hours maximum.
- Addition of freshly mixed primer to replenish an older mixture is not permitted.

(10). Apply paint (CM318) to primed areas. Feather-edge paint while applying.

(11). Allow to air-dry for eight hours minimum.

(12). Remove protective tape from tail rotor blade.

NOTE: Tail rotor assembly may need to be rebalanced after painting.

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(7). Connect motive flow fuel hose assembly between Sta 124.00 bulkhead and fuel tank access cover. Torque hose assembly **55 - 65 inch-pounds (6.21 - 7.34 Nm)**.

(8). Connect fuel quantity transmitter connector from cell cover receptacle.

(9). Progressively torque fuel cell cover bolts to **70 - 90 inch-pounds (7.91 - 10.17 Nm)** in a cross pattern.

(10). Clamp and connect control cable to fuel shutoff valve. Rig fuel shutoff valve control cable (Ref. Fuel Shutoff Valve Control Cable Replacement).

(11). Install left aft access passenger/cargo compartment floor panel.

3. Fuel Cell Cover Replacement

WARNING **Avoid fuel vapor ignition and fire. Use only nonsparking tools and explosion proof work lights. Attach helicopter to an approved electrical ground. Switch OFF all electrical power. Disconnect external power and battery before opening fuel system. Ensure work area is adequately ventilated.**

CAUTION

- Air in fuel system may cause power surges or flameout. Bleed off trapped air after opening system at any point between fuel tank and engine fuel nozzle.
- Prevent fuel system contamination. Install caps on the ends of hoses, tubes and fittings as parts are removed. Bag and identify small parts to prevent loss or damage.

(1). Defuel helicopter. Drain remaining fuel from cell sump drain valve into a suitable container.

(2). Disconnect electrical power.

A. Fuel Cell Cover Removal

(1). To remove right side fuel cell access covers (Ref. Figure 406).

(a). Remove right side floor panels from passenger/cargo compartment floor.

(b). Remove bonding jumpers then remove fuel cell access cover bolts and washers.

(2). To remove left aft fuel cell access cover (Ref. Figure 402):

(a). Remove left aft fuel cell access panel from passenger/cargo compartment floor.

(b). Unclamp and disconnect control cable from fuel shutoff valve (Ref. Figure 401).

(c). Disconnect engine feed fuel supply hose assembly between fuel shutoff valve and Sta. 124.00 bulkhead. Use backup wrench on fuel shutoff valve so it will not rotate.

(d). Disconnect motive flow fuel hose assembly between Sta 124.00 bulkhead and fuel cell access cover.

(e). Disconnect fuel quantity probe wire harness connector from fuel cell cover receptacle.

(f). Unfasten and remove Sta. 91.00 and 102.00 left aft fuel cell cover support brackets.

(g). Remove cover bolts and washers. Prop cover open with suitably padded blocks.

(h). Using a backup wrench on valve, separate engine feed fuel cell supply hose from fuel shutoff valve and fuel inlet from fuel cell access cover.

(i). Disconnect submerged motive flow fuel hose assembly between fuel check valve and ejector pump from fuel cell access cover.

(j). Disconnect fuel cell scavenge hose assembly from bottom of fuel cell access cover bracket assembly to ejector pump (Ref. Figure 404).

(k). Cut safety wire from fuel probe electrical connector base nut and remove connector from fuel cell access cover.

(l). If applicable, remove fuel cell scavenge hose bracket assembly,bulkhead union and fuel shutoff valve from fuel cell cover.

B. Fuel Cell Cover Installation

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM114	Petrolatum
CM124	Kerosene
CM702	Lockwire CRES

(1). Wipe fuel cell and cover sealing surfaces clean with kerosene (CM124) on a clean lint free cloth.

(2). Inspect fuel cell cover seals for debonding, nicks or cuts and any other damage having a leak producing potential. Replace covers or left aft cover as required.

(3). Install bonding jumper with right cell access covers, bolts and washers (Ref. Figure 406). Progressively torque cover bolts to **70 - 90 inch-pounds (7.91 - 10.17 Nm)** in a cross pattern.

(4). To install left aft fuel cell access cover (Ref. Figure 402):

(a). Apply a coating of petrolatum (CM114) to a new fuel shutoff valve/cover sealwasher. Install valve on cell cover with sealwasher next to valve body and valve properly aligned to make connection with valve control cable. Install and torque valve jamnut to **240 - 280 inch-pounds (27.12 - 31.64 Nm)**.

(b). Apply a coating of petrolatum (CM114) to sealwasher. Install check valve and sealwasher to inside cover and a plain washer outside. Install jamnut and torque to **85 - 105 inch-pounds (9.6 - 11.86 Nm)**.

(c). Install bulkhead elbow to support bracket. with washer and nut. Torque jamnut to **240 - 280 inch-pounds (27.12 - 31.64 Nm).**

(d). Install support bracket to cover with bolts, washer, and sealwashers. Apply a coating of petrolatum (CM114) to sealwasher. Torque bolts **36 - 46 inch-pounds (4.06 - 5.19 Nm)**.

(e). Install bulkhead union to cover with sealwasher next to union. Apply a coating of petrolatum (CM114) to sealwasher. Install washer and jamnut. Torque jamnut. **120 - 150 inch-pounds (13.56 - 16.95 Nm).** Install cap outside of cell. Torque cap to **110 - 130 inch-pounds (12.43 - 14.69 Nm).**

(5). Place left forward fuel cell access cover into position on fuel cell.

(6). Connect fuel quantity probe wire harness connector to cell cover. Torque connector jamnut and safetywire to bulkhead union with (CM702) lockwire.

CAUTION

- On early aircraft, the fuel inlet hose and the fuel cell scavenge hose have the same size end fitting. Care must be taken to not misconnect these two hoses (Ref. Figure 404).
- The fuel inlet hose is the hose that runs from the fuel inlet fitting at the bottom of the fuel cell aft of the fuel cell baffle.
- The fuel cell scavenge hose is the hose that runs forward over the fuel cell baffle.

(7). Install left hand fuel cell inlet hose assembly to access cover fuel shutoff valve. Torque hose assembly **230 - 260 inch-pounds (25.99 - 29.38 Nm)**.

(8). Install submerged motive flow hose assembly to access cover check valve. Torque hose assembly **50 - 65 inch-pounds (5.65 - 7.34 Nm)**.

(9). Install scavenge fuel cell hose assembly to access cover bulkhead elbow. Torque hose assembly **230 - 260 inch-pounds (25.99 - 29.38 Nm)**.

(10). Install three support brackets on Sta. 91.00 and 102.00 floor cross–members

with washers and screws. Torque screws to **20 - 25 inch-pounds (2.26 - 2.82 Nm)**.

(11). Install cover bolts and washers. Progressively torque cover bolts to **70 - 90 inch-pounds (7.91 - 10.17 Nm)** in a cross pattern.

(12). Connect engine feed fuel supply hose to fuel shutoff valve. Torque hose nut to **230 - 260 inch-pounds (25.99 - 29.38 Nm)**.

(13). Connect fuel motive flow hose to access cover/check valve. Torque hose nut **(50 - 65 inch-pounds (5.65 - 7.34 Nm)**.

(14). Connect fuel quantity probe connector to wire harness receptacle.

(15). Slip control cable through hole in fuel shutoff valve lever swivel.

(16). Rig cable control system (Ref. Fuel Shutoff Valve Control Cable Replacement).

(17). Apply a torque alignment stripe to fuel line tube, hose and fitting fasteners.

(18). Install access panels on passenger cargo compartment floor.

4. Fuel Supply Lines Replacement

WARNING **Avoid fuel vapor ignition and fire. Use only nonsparking tools and explosion proof work lights. Attach helicopter to an approved electrical ground. Switch OFF all electrical power. Disconnect external power and battery before opening fuel system. Ensure work area is adequately ventilated.**

CAUTION

- Air in fuel system may cause power surges or flameout. Bleed off trapped air after opening system at any point between fuel tank and engine fuel nozzle.
- Prevent fuel system contamination. Install caps on the ends of hoses, tubes and fittings as parts are removed. Bag and identify small parts to prevent loss or damage.

(1). Defuel helicopter. Drain remaining fuel from tank sump drain valve into a suitable container.

(2). Cap fittings and lines as required.

A. Fuel Supply Lines Removal

(Ref. Figure 402, Figure 403 and Figure 404)

(1). Remove left aft fuel cell access panel from passenger/cargo compartment floor.

(2). Disconnect motive flow fuel hose assembly between Sta 124.00 bulkhead and fuel cell access cover. Use backup wrench so fittings will not rotate.

(3). Disconnect engine feed fuel supply hose assembly between fuel shutoff valve and Sta. 124.00 bulkhead. Use backup wrench on fittings so they will not rotate.

(4). Remove Sta. 91.00 and Sta.102.00 fuel cell cover support brackets.

(5). Remove clamps and attaching hardware from passenger/cargo compartment floor.

(6). Remove engine feed fuel supply hose and motive flow fuel hose assemblies.

(7). Remove Sta. 124.00 bulkhead unions.

B. Fuel Supply Lines Installation

(Ref. Figure 402, Figure 403 and Figure 404)

(1). Install Sta. 124.00 firewall bulkhead unions, with washer and jam nut on forward side of firewall. Torque engine feed fuel supply union nut to **240 - 280 inch-pounds (27.12 - 31.64 Nm)**. Torque fuel return by-pass union to **85 - 105 inch-pounds (9.60- 11.86 Nm)**.

(2). Connect fuel cell engine feed supply hose to fuel shutoff valve and bulkhead union. Use a backup wrench on valve and bulkhead union. Torque fuel supply hose **230 - 260 inch-pounds (25.99 - 29.38 Nm)**.

(3). Connect motive flow fuel hose assembly between Sta 124.00 bulkhead and fuel tank access cover. Torque hose assembly **50 - 65 inch-pounds (5.65 - 7.34 Nm)**.

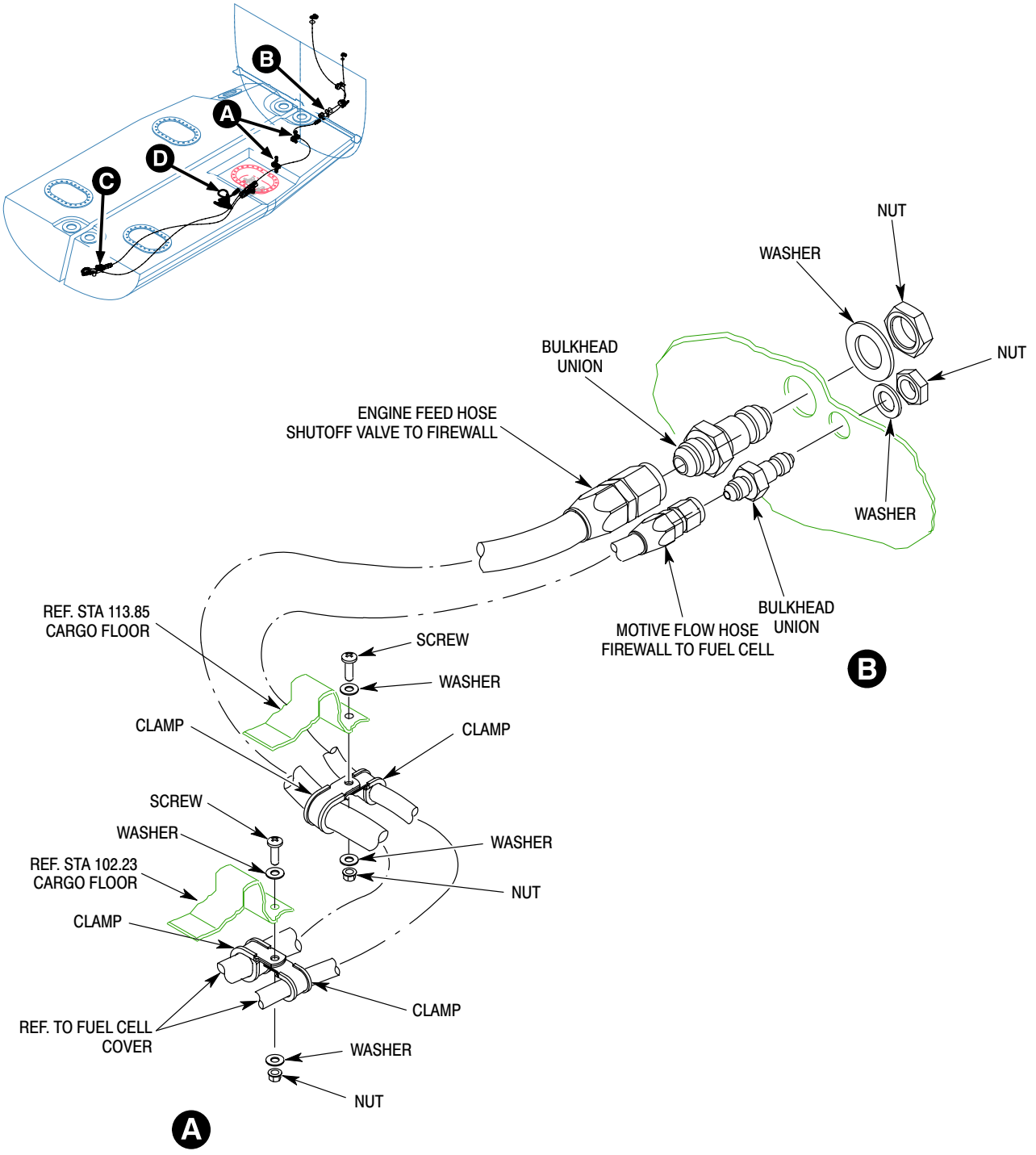

Figure 403. Fuel Lines Installation

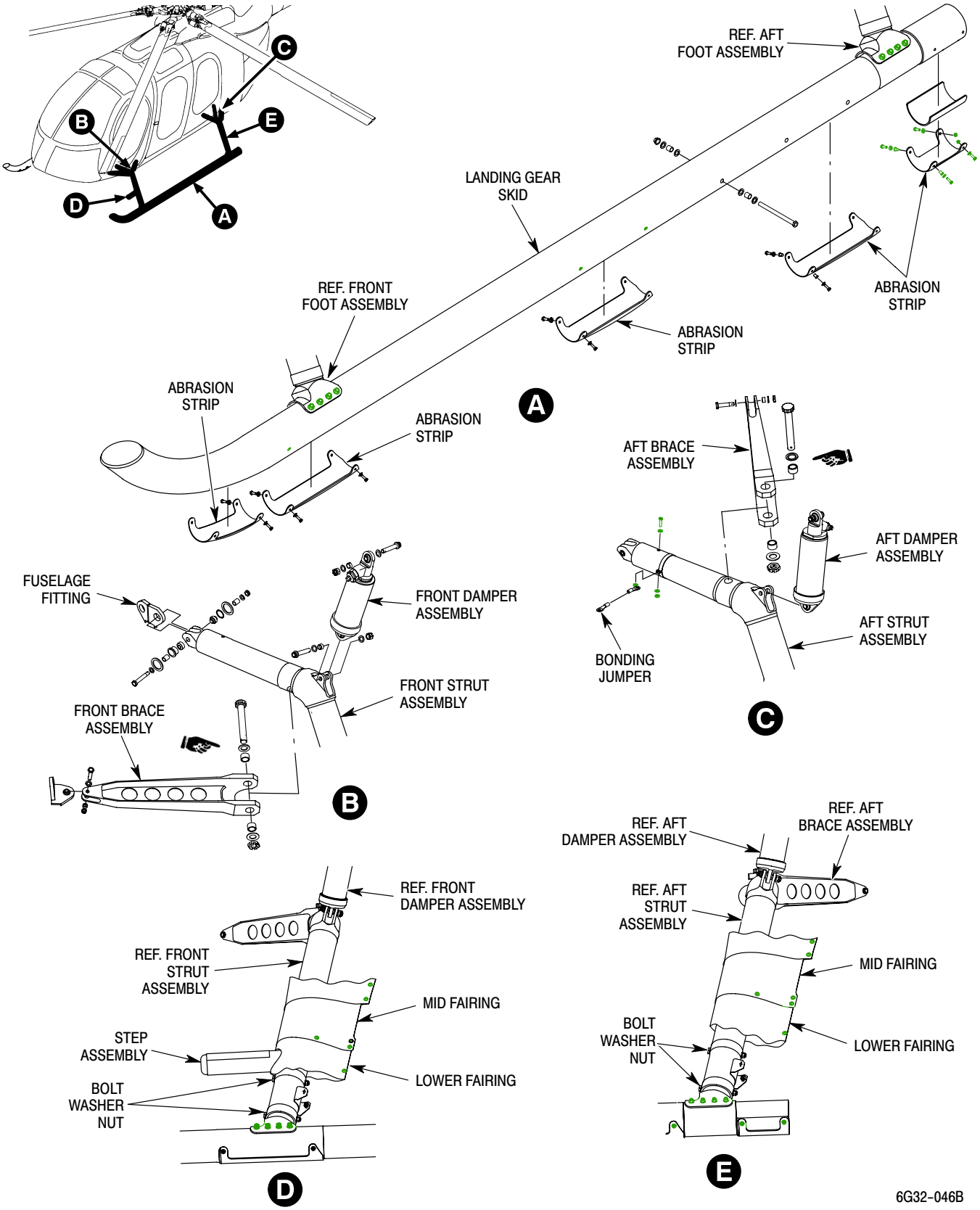

Figure 401. Landing Gear and Damper Installation

3. Landing Gear Skid Replacement

(Ref. Figure 401)

A. Landing Gear Skid Removal

(1). Jack up or hoist helicopter until skid assemblies clear surface by 10 – 20 inches (Ref. Sec. 07–00).

(2). Remove mid and lower fairings.

(3). Remove bolts attaching forward and aft feet to forward and aft struts.

(4). Simultaneously, slide front and rear feet from struts.

B. Landing Gear Skid Installation

(1). Simultaneously, slide front and rear feet onto struts.

(2). Install bolts attaching forward and aft feet to forward and aft struts; torque bolts to **95 - 110 inch-pounds (10.73 - 12.43 Nm) plus drag torque**.

(3). Install mid and lower fairings.

4. Landing Gear Fairing Replacement

A. Landing Gear Fairing Removal

(Ref. Figure 402 and Figure 403) The following instructions are typical for and apply to all four fairing assemblies.

(1). Remove lower fairing from fairing assembly as follows.

(a). Remove attaching hardware that secures lower fairing to two strut brackets, and that secures trailing edge of lower fairing.

(b). Carefully spread trailing edge of lower fairing and remove in forward direction.

(2). Remove fillet from upper fairing assembly as follows.

(a). Remove hardware that secure trailing edge of fillet.

(b). Open underfloor compartment or engine compartment doors for access to strut cutout in fuselage skin. Have an assistant push down on upper guide with suitable tool (wood dowel or equivalent), to relieve spring tension.

(c). With spring tension off guide, remove screws attaching fillet to upper guide. Slowly relax dowel pressure on guide until springs fully expand.

(d). Carefully spread fillet at trailing edge and remove in forward direction.

(3). Remove mid fairing as follows.

(a). Remove hardware that secure trailing edge of mid fairing.

(b). Remove hardware that secure fairing to strut bracket.

(c). Carefully spread trailing edge of fairing and remove in forward direction.

B. Landing Gear Fairing Installation

(Ref. Figure 402 and Figure 403) Following instructions apply to all four fairing assemblies.

(1). Install mid fairing as follows.

(a). Assemble upper guide, pin assembly, inner guide half, outer guide half, springs and lower support on landing gear strut (guide pins must be installed through matching holes of lower guide).

(b). Wedge temporary holding device between upper guide and strut to keep pins engaged.

NOTE: Use two small wood blocks or any similar suitable means to keep springs compressed. Device used must be small enough to be removed through strut cutout in skin after fillet is assembled.

(c). Carefully spread trailing edge of fairing and position fairing on strut bracket(s) and lower guide.

(d). Install hardware in top hole of trailing edge of mid fairing.

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UPPER AFT SECTION FUSELAGE (500/600N)

MAINTENANCE PRACTICES

NOTE: For all the following items, refer to Sec. 53-30-00.
Upper Firewall
Firewall and Plenum Chamber Panels
General Inspection
Mast Support Structure
Main Rotor Mast
Firewalls
Firewall Insulation and Soundproofing

1. Engine/Anti–Torque Air Inlet Fan Fairings

CAUTION When working near or around engine air and cooling inlets, use care to prevent entry of foreign objects.

(Ref. Figure 201) On the 500N, the engine air inlet fairing on top of the fuselage structure directs ambient outside air to the engine air inlet and the oil cooler blower. The fairing installation consists of a forward fairing section and an aft fairing section. Right and left halves of forward fairing are removable.

(Ref. Figure 202) On the 600N, the engine air inlet fairing on top of the fuselage structure directs ambient outside air to the engine air inlet bypass door and the oil cooler blower. The fairing installation consists of a forward inlet fairing sections and an aft fairing section. The controls cover and right and left halves of forward fairing are removable.

On the 600N, the engine inlet or particle separator is mounted aft of the inlet fairings and wraps around the engine plenum for increased air flow due to the larger engine installation.

The aft section consists of an air inlet screen on top of the fuselage structure which directs ambient air to the anti-torque fan assembly. The engine plenum access cover bolted to the fuselage and is removable to provide access to the engine plenum, particle separator and mist eliminator (optional equipment) if installed.

The engine plenum access cover on the 600N helicopter mounts to the aft end of the particle separator/bypass door frame. The plenum cover directs air downward for the engine air intake and when removed provides access to the engine plenum chamber area. With the installation of a particle separator, ejector outlets are positioned on each side of the plenum cover.

On the 500N, the R/H side of the aft fairing is the inlet bypass door which remains on the fuselage when the aft fairing is removed.

On the 600N, the inlet bypass door is just aft of the mast assembly and just forward of the engine plenum access cover.

A removable fan hub and transmission gear box fairing is also located in the fan plenum chamber.

For general maintenance practices for the upper aft section (Ref. Sec. 53-30-00).

2. Engine Air and Fan Inlet (Plenum Chamber Area) Inspection

(Ref. Figure 201 and Figure 202)

CAUTION Avoid FOD, Cover compressor inlet prior to working in plenum chamber area. Vacuum all FOD debris out of the plenum chamber before removing the protective cover from the inlet bell. Severe damage to the engine may result from entry of foreign objects.

(1). Open the plenum chamber bypass door by pulling the handle located in the cockpit. Open the engine access doors to inspect the rear side of the plenum panels.

(2). For access, remove the fan air inlet screen and engine plenum fairing assemblies.

(3). Inspect all panels for evidence of corrosion, punctures and security of rivets and fasteners.

(4). Inspect the engine air inlet bypass door attaching hardware and installation (Ref. Sec. 71-10-10, Engine Air Intake System).

(5). Inspect engine air shield mounting for secure attachment.

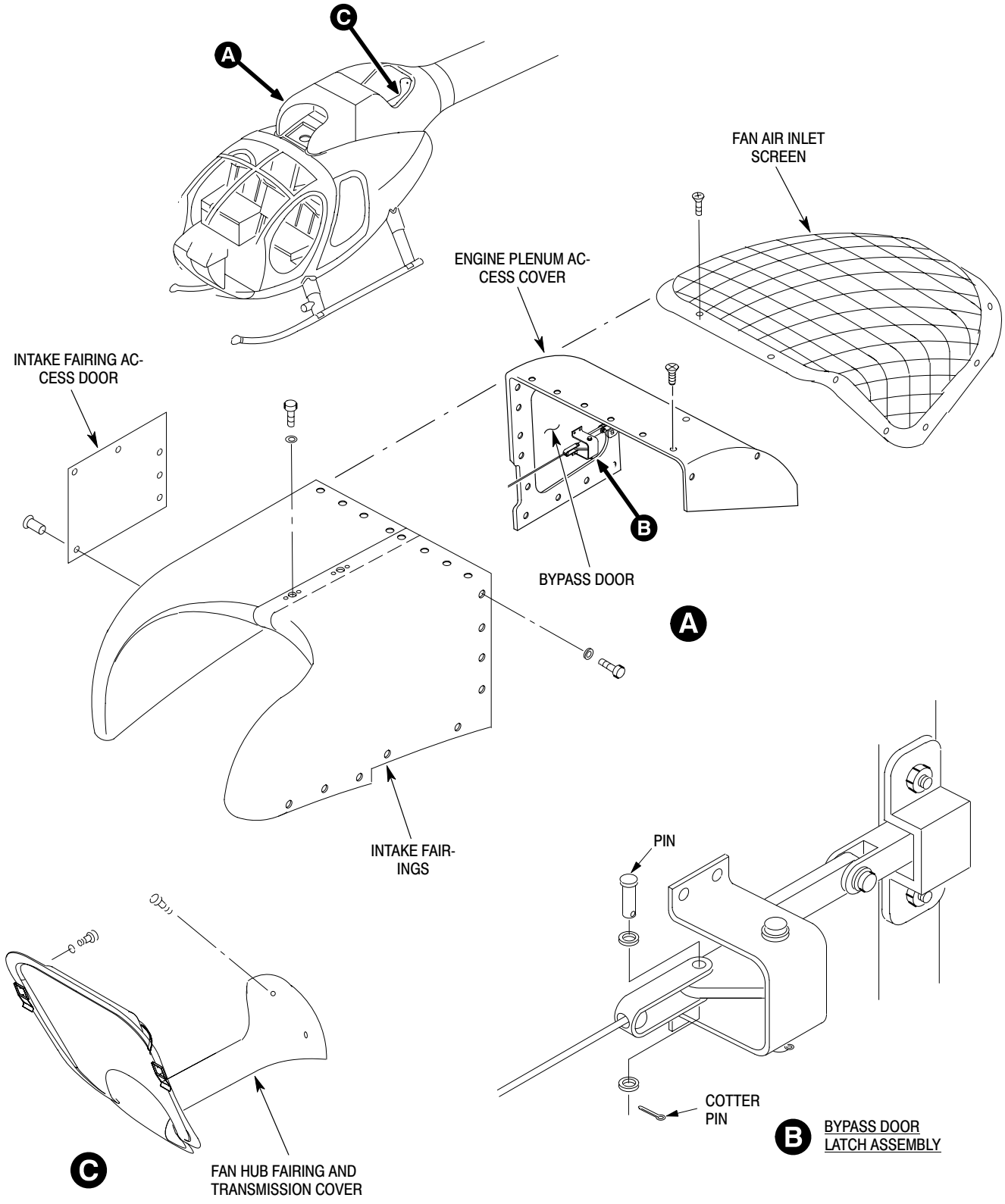


Figure 201. Upper Aft Section (500N)

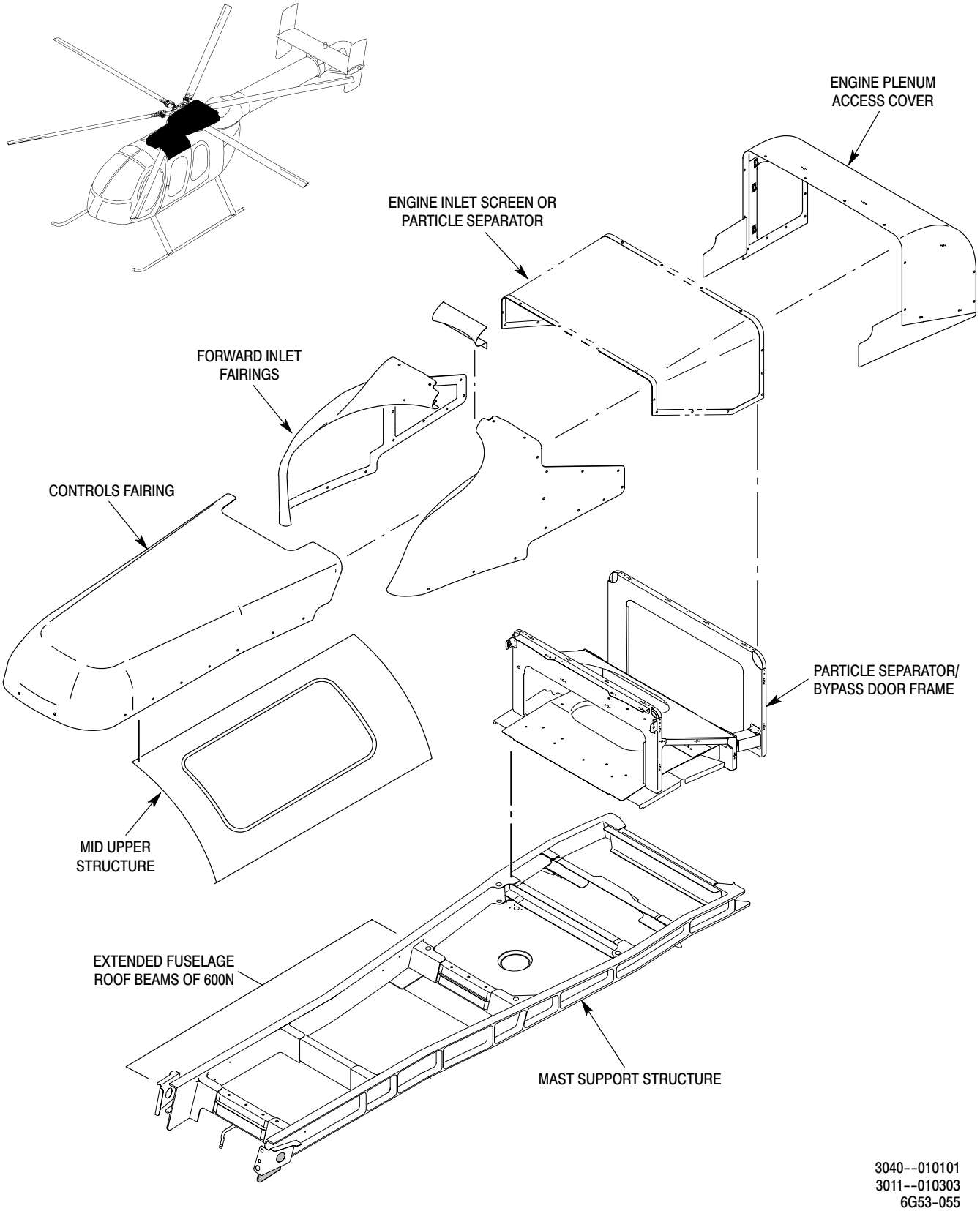


Figure 202. Upper Aft Section Fuselage (600N)

(6). Inspect aft section strut for rivets corrosion and edge clearance where it passes though cutout in forward panel.

(7). Inspect engine air cooling inlet screen for damage, seal deterioration and security.

(8). Inspect fan transmission driveshaft tube fairing and access panel for dents, buckled or wrinkled areas and signs of corrosion.

(9). Inspect the fan inlet screen mesh for condition and security.

(10). If fan inlet screen needs repair, re-welded using 0.063 inch (1.600 mm) annealed cres 302 or 304 wire per AMS5336 or AMS5639.

(11). Visually inspect through the fan inlet screen for security of the transmission fairing and FOD.

(12). Ensure that forward removable inlet fairings and engine access doors are secure.

A. Upper Aft Section General Repair

(Ref. FAA AC 43.13-1A & 2A and Structure Repair Manual for additional repair procedures.

3. Upper Fuselage Controls Fairing (600N)

The Upper Fuselage Controls Fairing covers the flight control rods that travel longitudinally aft along the roof of the fuselage for the rotor collective and cyclic controls.

4. Upper Fuselage Controls Fairing Replacement (600N)

The Upper Fuselage Controls Fairing is made of a lightweight Kevlar fabric and is used on the 600N installation only.

A. Upper Fuselage Controls Fairing Removal

(1). Remove hardware that attaches upper fuselage controls fairing to mounting surfaces.

(2). Remove controls fairing.

B. Upper Fuselage Controls Fairing Installation

(1). Inspect upper fuselage controls fairing for cracks, delaminations and overall general condition.

(2). Position controls fairing to align with holes in mounting surfaces.

(3). Install attaching hardware.

5. Engine Inlet Fairings Replacement

The R/H and L/H engine inlet fairings are made of a lightweight Kevlar fabric and are used on the 500/600N installation only.

A. Engine Inlet Fairing Removal

(1). Remove hardware from left-hand inlet fairing and remove fairing.

(2). Remove hardware from right-hand inlet fairing and remove fairing.

B. Engine Inlet Fairing Installation

(1). Inspect fairings for cracks, delaminations and condition of pressure sensitive tape.

(2). Install right-hand inlet fairing and attaching hardware.

(3). Install left-hand inlet fairing and attaching hardware.

(4). Ensure that 1-1/2 threads protrude through nutplates.

6. Anti–Torque Fan Air Inlet Screen Replacement

A. Fan Air Inlet Screen Removal

(1). Remove attaching hardware and remove air inlet screen.

B. Fan Air Inlet Screen Installation

(1). Install air screen and attaching hardware.

7. Fan Hub and Transmission Cover Fairing Replacement

A. Fan Hub and Transmission Cover Removal

(1). Remove attaching hardware on the fan hub transmission fairing.

B. Fan Hub and Transmission Cover Installation

(1). Inspect fairing for cracks and general condition.

(2). Install attaching hardware.

(3). Check for minimum run-on torque of attaching screws, **2 inch-pounds (0.226 Nm) minimum**.

8. Engine Plenum Access Cover Replacement

CAUTION Avoid FOD, Cover compressor inlet prior to working in plenum chamber area. Vacuum all FOD debris out of the plenum chamber before removing the protective cover from the inlet bell. Severe damage to the engine may result from entry of foreign objects.

A. Engine Plenum Access Cover Removal

NOTE: If particle separator is installed, ejector ducting is not removed with plenum access cover.

(1). Remove hardware that attaches engine plenum access cover to supporting structure.

(2). Remove plenum cover.

B. Engine Plenum Access Cover Installation

(1). Position engine plenum access cover to align with mounting holes in fuselage.

(2). Install hardware attaching plenum cover to structure.

9. Tailboom Attach Fitting Inspection

(Ref. Figure 203) Inspect the upper left-hand and right-hand tailboom attach fittings, angles and nutplates as follows:

(1). Remove button plug from attach fitting access cover.

(2). Using a bright light, inspect fitting and angle:

(a). Inspect attach fittings for cracks.

NOTE: Pay particular attention to area around aft rivet holes. No cracks are allowed.

(b). Inspect angle for cracks.

(c). If any cracks are found in attach fitting or angle, contact MDHI Field Service Dept. for replacement instructions.

(3). Inspect nutplate for thread damage and cracks.

NOTE: Cracks would appear from top of self-locking nut split to base of nut.

(a). Replace nutplate if threads are damaged or cracked.

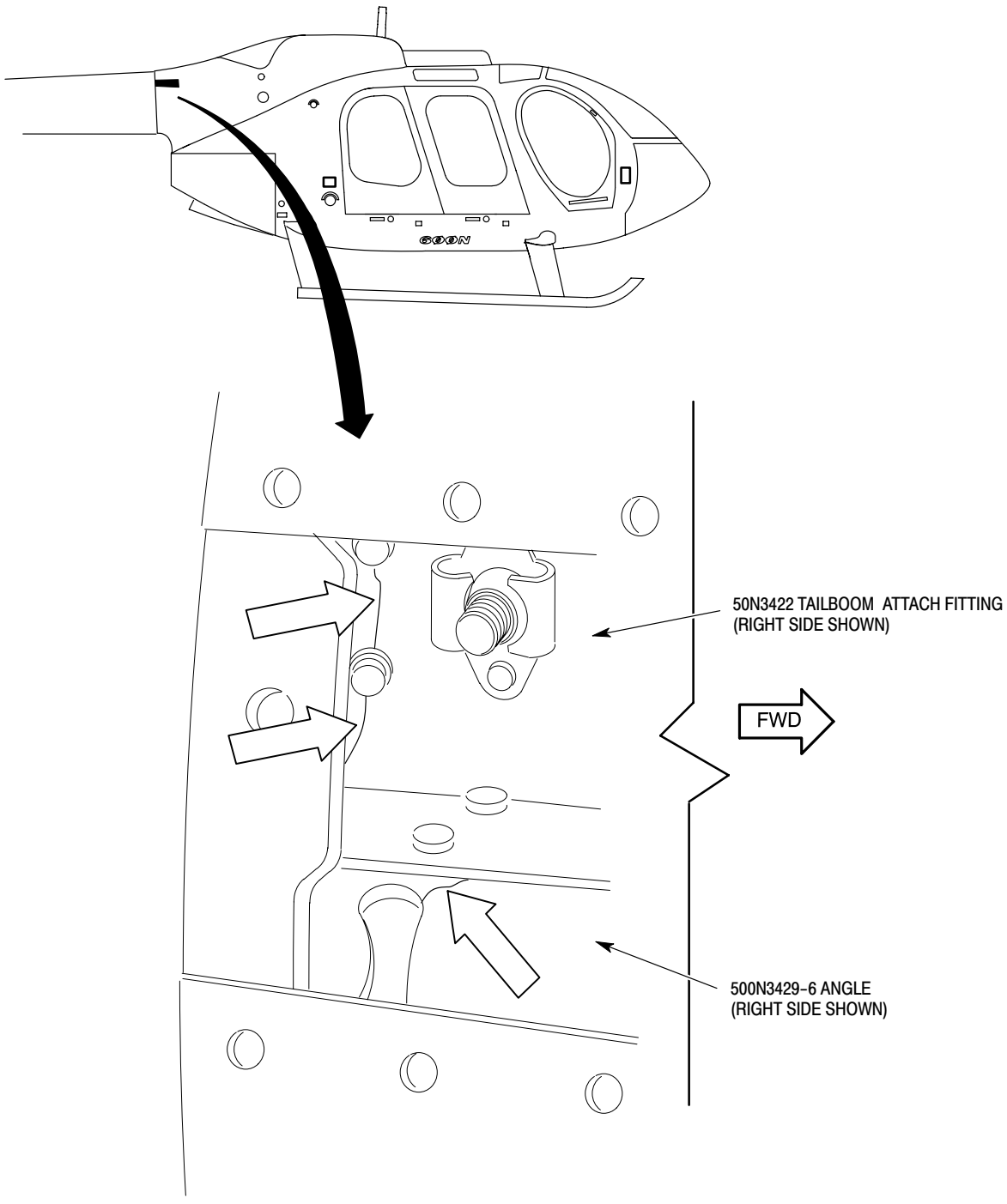


Figure 203. Tailboom Attach Fitting Inspection

10. Lower Longeron Inspection (L158, R158)

(Ref. Figure 204) Inspect the lower left-hand and right-hand longerons as follows:

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM425	Sealing compound

(1). Remove button plugs (L158, R158) from side of helicopter.

(2). Using bright light and mirror, or borescope, inspect the longeron, Sta. 155.75 frame and Cant. Sta. 159.97 frame for cracks.

(3). If any cracks are found, contact MDHI Field Service Dept. for repair instructions.

(4). Install button plugs in inspection hole and seal with sealing compound (CM425).

11. Forward Upper Longeron Inspection (L137, R137)

(Ref. Figure 204) Inspect the foreword upper left-hand and right-hand longerons as follows:

Consumable Materials (Ref. Section 91–00–00)

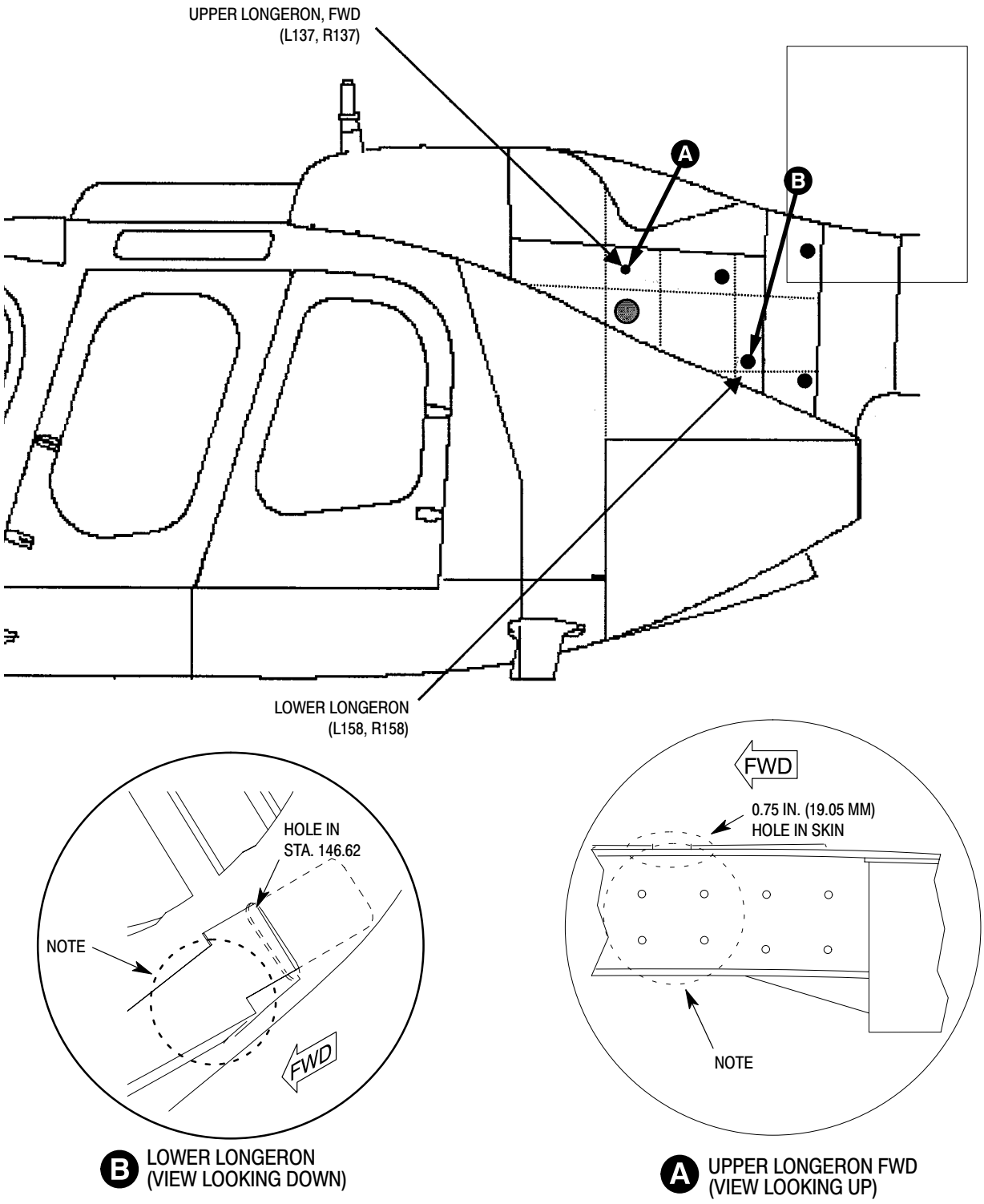
Item	Nomenclature
CM425	Sealing compound

(1). Remove button plugs (L137, R137) from side of helicopter.

(2). Using a borescope, inspect the longeron and Sta. 137.50 frame for cracks.

(3). If any cracks are found, contact MDHI Field Service Dept. for repair instructions.

(4). Install button plugs in inspection hole and seal with sealing compound (CM425).



NOTE: AREAS WHERE CRACKS ARE MOST LIKELY TO APPEAR.

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Figure 204. Inspection Hole Locations

12. Control Tunnel (FS 78.50) Beam Inspection

(Ref. Figure 205)

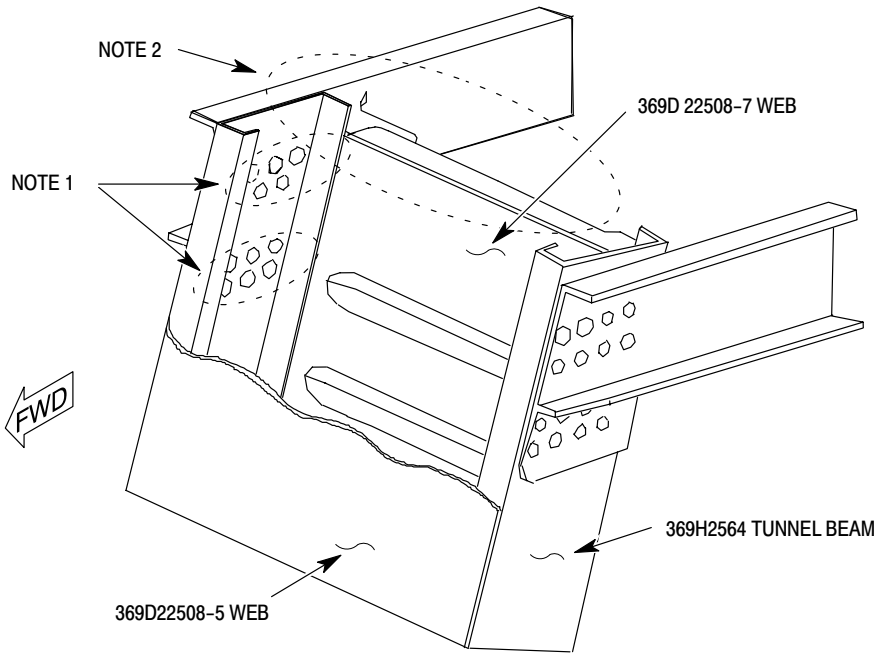
(1). Remove Ty-Raps securing boots to control tubes and shelf assembly.

(2). Slide boots up to top of tubes.

(3). Using a mirror and bright light, inspect tunnel beams, both sides, for cracks in the rivet area; no cracks allowed.

If cracks are found, contact MDHI field service department for repair instructions.

(4). Slide boots down over shelf assembly and secure top and bottom of boots with Ty-Raps.



NOTE:
1. INSPECT THESE AREAS FOR CRACKS (BOTH SIDES OF TUNNEL).
2. REMOVE CONTROL TUBE BOOTS TO GAIN ACCESS FOR INSPECTION.

G53-3014

Figure 205. Control Tunnel (FS 78.50) Beam Inspection

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B. Tailboom Installation

CAUTION Before tailboom installation, inspect radius blocks for brinneling, corrosion and indication of indent on face; none allowed.

NOTE: If installing a new tailboom, the 500N3500-5 cover will have to be installed after internal tailboom components are installed (Ref. 500N3500-5 Cover Installation).

(1). Support tailboom so that the mating bulkhead surfaces are flush.

(2). Slide countersunk/chamber washers on external wrenching bolts with countersunk side facing bolt head.

CAUTION If washers are installed backwards, structural failure may result due to insufficient surface in load bearing area that can cause spreading or cracking of washers and result in loss of clamp-up torque.

(3). With the tailboom supported in place, install four bolts with washers.

(a). 500N:

Torque bolts to **130 - 150 inch-pounds (14.69 - 16.95 Nm) plus drag torque**. Verify minimum run on torque of 6.5 inch-pounds (0.73 Nm).

(b). 600N:

RN003 - RN077 without TB600N-006 complied with; torque the two smaller diameter bolts to **130 - 150 inch-pounds (14.68 - 16.94 Nm) plus drag torque** and the two larger diameter bolts to **180 - 220 inch-pounds (20.33 - 24.85 Nm) plus drag torque**. Safety bolts.

RN003 - RN077 with TB600N-006 complied with and RN078 & subs; torque bolts to **180 - 220 inch-pounds (20.33 - 24.85 Nm) plus drag torque**. Safety bolts.

(4). Re-connect electrical connectors.

(5). Re-connect control cable assembly.

(6). Install tailboom fairing.

3. Tailboom Inspection

(Ref. Figure 201)

(1). Inspect tailboom exterior as follows:

(a). Inspect tailboom fairing for cracks and delaminations.

(b). Inspect tailboom flange and mounting bolt holes attachment area for cracks at Sta. 168.20.

(c). Inspect radius blocks for brinneling, corrosion and indication of indent on face; none allowed. If found, scrap radius block and install new radius block.

(d). Inspect strake for cracks, delaminations, debonding, dents, nicks and separation.

NOTE: Damage to slots can cause significant degradation of aircraft performance in a hover.

(e). Inspect tailboom surface area and tailboom circulation control slots surface area for cracks, voids, dents, holes, scratches, separation, delaminations at tailboom and security.

1). Using a bright light, inspect fore and aft radii of the lower portion of the three upper slot bridges for cracks, illuminate area under the flap.

NOTE: The flap may be raised slightly, using finger pressure only, to aid in checking this area.

(f). Inspect flaps for cracking and debonding (Ref. Figure 202):

1). A crack of any length, in line with aft edge of flap, is permissible at interface between flap and tailboom.

2). A crack of 1.25 inch (3.175 cm) maximum length, in line with the forward edge of flap, is permissible at interface between flap and tailboom.

NOTE: If crack in forward edge of flap is longer than 1.25 inch (3.175 cm), contact your local MDHI Field Service Representative for disposition.

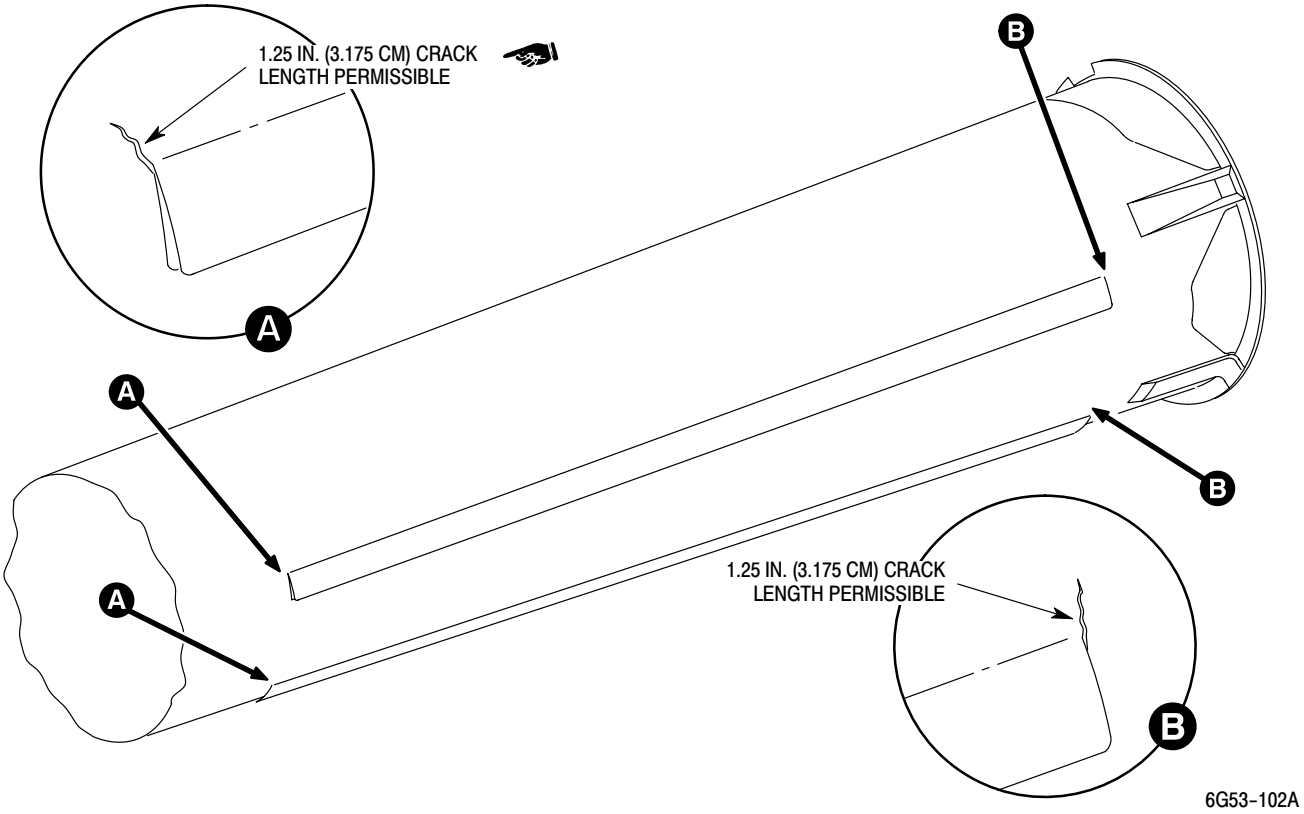

Figure 202. Tailboom Flap Inspection

(g). Inspect horizontal stabilizer mounting brackets (pay particular attention to the forward inboard legs) and attachment fittings for cracks, voids, separation and delamination.

(h). Inspect stabilizers (Ref. Sec. 53-50-30).

(i). Inspect (tail-skid) for cracks, dents, holes and delamination.

(j). Inspect rotating thruster cone for freedom of operation, cracks, holes, separation and delamination.

(k). Inspect tailboom grommets (2) places for cracks and proper fit.

(2). Inspect tailboom interior as follows:

(a). Check stator vanes and stator diffuser cone for cracks, delaminations and separation.

1). Maximum allowable cracks found emanating from stator vane inserts should not exceed 0.10 inch (2.54 mm) span-wise.

2). No cracks allowed running cord-wise towards leading or trailing edge

(b). Inspect slot air foils for cracks, delamination and separation from boom.

(c). Inspect control cable assembly attachment points for looseness, cracks and condition.

(d). Inspect cable conduit for cracks, separation and delamination.

(e). Inspect air circulation area for FOD and cleanliness. If necessary, clean with mild soap and water.

(3). Inspect rotating thruster cone collar strap ring rivets for looseness, strap for cracks and condition.

4. Tailboom Repair

There are no repair procedures for the tailboom at this time. Refer to MDHI Field Service Representative.

5. Stator Replacement

(Ref. Figure 201, View D)

A. Stator Removal

(1). Remove tailboom.

(2). Note or index top of stator for reassemble. Support stator and remove seven exterior screws and washers mounted around the forward part of the tailboom.

B. Stator Installation

(1). Support stator and align stator vanes in tailboom, install seven screws and washers, torque screws to **3 - 6 inch-pounds (0.34 - 0.68 Nm) plus drag torque**. Total torque should not exceed **15 inch-pounds (1069 Nm)** total torque.

(2). Install tailboom.

(3). Verify that stator does not rub against the fan and for clearance of 0.020–0.080 inch (0.508–2.032 mm) between stator and fan.

6. Stator Blade Replacement

(Ref. Figure 201, View E)

(1). Stator Blade Removal: Remove two self–locking screws and two surface washers.

(2). Stator Blade Installation: Install two surface washers and two self–locking screws. Torque screws to **3 - 6 inch-pounds (0.34 - 0.68 Nm) plus drag torque**. Total torque should not exceed **15 inch-pounds (1069 Nm)** total torque.

7. Rotating Thruster Cone Replacement

(Ref. Figure 201, View H)

A. Rotating Thruster Cone Removal

(1). Remove cone tip cap by removing eight screws and washers.

(2). Support rotating thruster cone and remove three bolts and washers that attach the rotating thruster cone, carefully slide rotating cone aft to clear stationary cone, bearings and followers and the cable and drum assembly.

B. Rotating Thruster Cone Installation

(1). Carefully slide rotating thruster cone over stationary cone, bearings, rollers and followers.

(2). With the thruster supported in place, install three bolts with washers attaching the rotating thruster to thruster gear box. Torque bolts **70 - 90 inch-pounds (7.91 - 10.17 Nm).** Safety wire bolts.

(3). Install cone tip cap with eight screws and washers, torque screws per general aircraft practices.

8. Rotating Thruster Cone Inspection

(1). Inspect for cracks and separation of composite laminates.

(2). Check for freedom of rotational movement within the control range of thruster.

(3). When the thruster is removed from helicopter, check roller surface area (strap) for cracks and condition.

NOTE: Refer to MD Helicopters Inc. Representative for structural repairs, cracks, etc.

9. Stationary Thruster Cone Replacement

(Ref. Figure 201)

A. Stationary Thruster Cone Removal

(1). Remove rotating thruster cone (Ref. Rotating Thruster Cone Removal).

(2). Remove eight off wing screws from pan cover, remove cotter pin, nut and washer from sector input shaft and remove pan cover. Remove washer and bushing from sector bellcrank input shaft.

(3). Remove bolt, washer and bushing from thruster input sector bellcrank clevis (Ref. View J).

(4). Remove thruster cone fairings.

(5). Support stationary thruster cone and remove eight bolts and washers, with cable assembly attached to cone, carefully lift cone off tailboom so that

the control rod passes through the thruster cone cutout.

B. Stationary Thruster Cone Installation

(1). Support stationary thruster cone to tailboom so that the control rod passes through the cutout of the stationary cone, and that the mating surfaces are flush to the tailboom. Slide countersunk/chamber washers on external wrenching bolts with countersunk side facing bolt head.

CAUTION If washers are installed backwards, structural failure may result due to insufficient surface clamp-up in load bearing areas that can cause spreading or cracking, resulting in loss of clamp-up torque.

(2). With the stationary thruster cone support in place, install eight bolts and washers. Torque bolts **30 - 40 inch-pounds (3.39 - 4.52 Nm) plus drag torque.**

(3). Connect control rod to input sector bellcrank clevis and install bushing, washer and bolt, torque bolt per standard aircraft torque values and safety wire.

(4). Install thruster cone fairings.

(5). Install rotating thruster (Ref. Rotating Thruster Cone Installation).

10. Stationary Thruster Cone Inspection

(1). Inspect for cracks and delamination of composites structure for the following: Internal ducts, air foil supports, pan cover and pan (hat section).

(2). Inspect rollers and bearings for condition and freedom of rotation. Inspect for cleanliness.

(3). Inspect sector bellcrank, cable assemblies, pulleys and support brackets for condition, inspect of cleanliness.

(4). Inspect upper input shaft for damage and wear. Check for play in mounting pins. If mounting pins are found to have play, replace with new pins and collars.

(5). Inspect thruster aft support shaft for damage and wear. Check for play in mounting hardware. If top bolt is found to be loose, retorque to **10 - 15 inch-pounds (1.13 - 1.69 Nm)**. If bottom mounting pins are found to be loose, replace with new pins and collars.

11. Conduit and Support Strap Rebonding

(Ref. Figure 203) The following procedure is for rebonding of the conduit supports.

Consumable Materials
(Ref. Section 91–00–00)

Item	Nomenclature
CM217	Isopropyl alcohol
CM402	Adhesive

(1). Lightly abrade faying surfaces with Scotchbrite until surface gloss of the laminate is gone.

(2). Solvent-wipe parts using a clean lint-free cloth dampened with isopropyl alcohol (CM217).

(3). Wipe dry using a clean, lint-free, dry cloth and allow to air dry for 15 minutes at ambient temperature.

CAUTION Do not heat conduit to more than 170°F (77°C). Conduit and tailboom can be damaged from too much heat.

(4). If conduit is bent away from tailboom, heat conduit to make more flexible for re-bonding.

NOTE: Adhesive must be applied within 2 hours of preparation. If more than 2 hours elapse before adhesive application, re-prepare surfaces.

(5). Mix adhesive (CM402) according to manufacturer's instructions and apply to faying surfaces.

(6). Secure parts together with light pressure and allow to cure for 24 hours at ambient temperature.

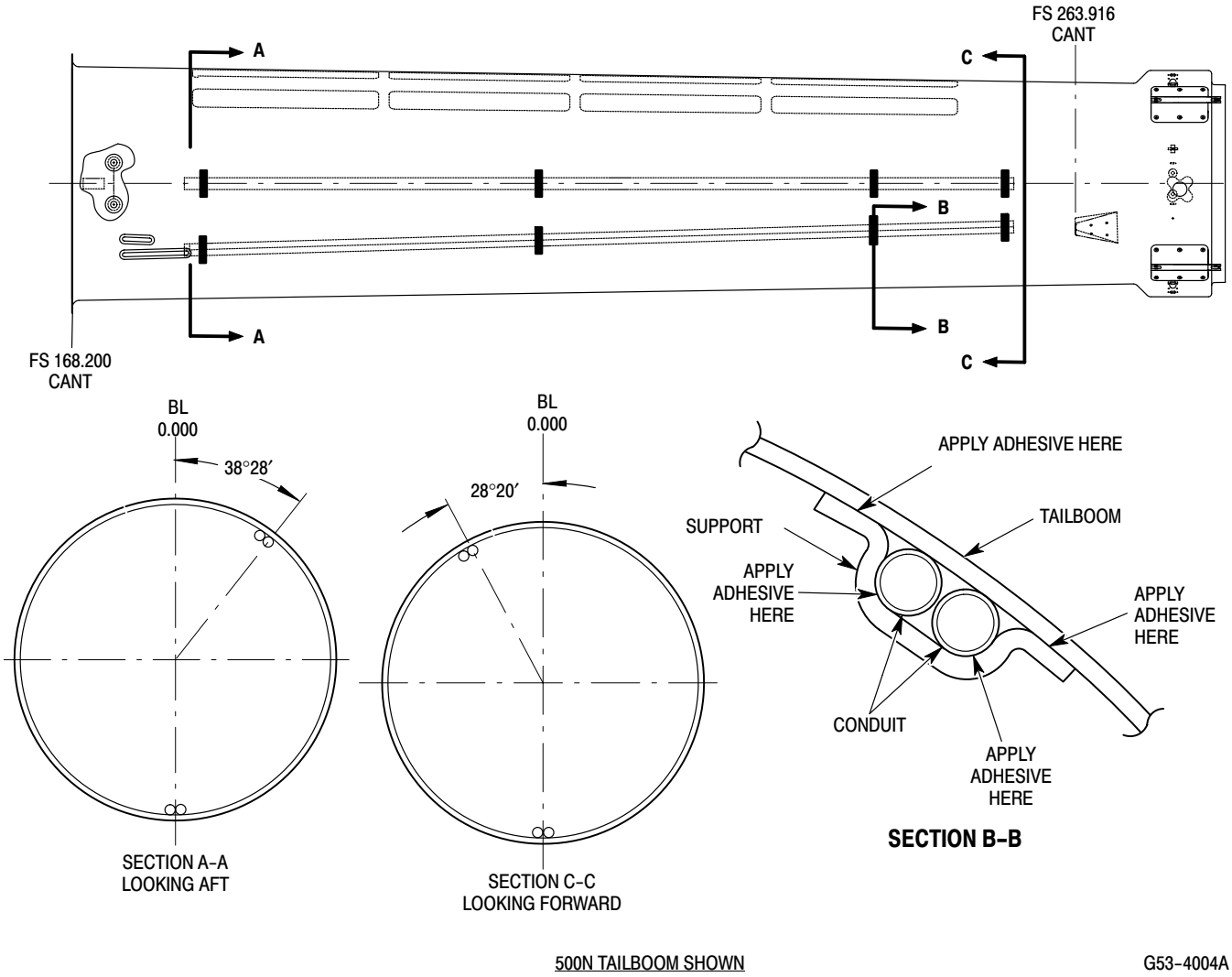

Figure 203. Conduit and Support Strap Rebonding

12. Horizontal Stabilizer Mount Fitting Replacement

(Ref. Figure 201)

Empennage Fitting	Part No.
L/H, Aluminum	500N3530–3, –7
R/H, Aluminum	500N3530–4, –8
L/H, CRES	500N3530–9
R/H, CRES	500N3530–10

Consumable Materials
(Ref. Section 91–00–00)

Item	Nomenclature
CM101	Solid film lubricant
CM206	Chemical coating
CM222	1,1,1–Trichloroethane
CM304	Enamel, epoxy
CM315	Adhesive primer
CM318	Primer
CM418	Cement, epoxy
CM425	Sealing compound
CM801	Abrasive paper, silicon carbide

(1). Remove horizontal stabilizer (Ref. Sec. 53-50-30, Horizontal Stabilizer Replacement).

(2). Remove rotating thruster cone (Ref. Rotating Thruster Cone Replacement).

(3). Remove stationary thruster cone (Ref. Stationary Thruster Cone Replacement).

(4). Remove collars from pins in mount fittings.

(5). Drive pins out of fittings.

CAUTION Do not allow fittings to reach 200°F (94°C), damage to tailboom composite material will occur.

NOTE: Heating the fitting to 150°F (66°C) may assist in removing them from tailboom.

(6). Carefully pop fittings loose from tailboom while not damaging fiberglass sheets under fitting.

(7). Clean area with 1,1,1-Trichloroethane (CM222).

(8). Locate new fitting on tailboom.

(9). Back-drill fittings to 0.186-0.188 inch (4.724-4.775 mm).

(10). Remove fitting and deburr rivet holes.

(11). Touch up rivet holes with solid film lubricant (CM101) for steel fittings or chemical coating (CM206) for aluminum fittings.

(12). Steel fittings only:

(a). Using abrasive paper (CM801), lightly abrade tailboom where fitting is to be mounted.

(b). Clean fitting and tailboom abraded area with 1,1,1-Trichloroethane (CM222).

(c). Prime fitting with adhesive primer (CM315).

(d). Apply a thin layer of cement (CM418) between fitting and tailboom.

NOTE:

- Use HTS12-6-4/-5 pin rivets with HTS1176DU-6AWU collars or alternate HTS48-6-4/-5 pin rivets with HST2000-6AW collars.
- Gage rivet holes to ensure proper length pin rivets.

(13). Relocate fitting on tailboom and install with pin rivets wet with primer (CM318).

(14). Seal edges around fittings with sealing compound (CM425).

(15). If installing steel fittings, prime with adhesive primer (CM315).

(16). Touch up with paint (CM304).

(17). Reinstall stationary thruster cone (Ref. Stationary Thruster Cone Replacement).

(18). Reinstall rotating thruster cone (Ref. Rotating Thruster Cone Replacement).

(19). Reinstall horizontal stabilizer (Ref. Sec. 53-50-30, Horizontal Stabilizer Replacement).

(20). Check rigging of thruster (Ref. Sec. 67-20-30).

(21). Check rigging of vertical stabilizers (Ref. Sec. 67-20-30).

13. 500N3500–5 Cover Installation

(Ref. Figure 204) New tailbooms come with the 500N3500-5 cover separate. This cover must be bonded in place after the wiring and cables are installed.

Consumable Materials
(Ref. Section 91–00–00)

Item	Nomenclature
CM222	1,1,1-Trichloroethane
CM410	Adhesive, epoxy (parts A & B)
CM802	Abrasive cloth, aluminum oxide
CM819	Kimwipe

(1). With cutout facing down and forward, gently role cover to shape of tailboom and position inside aft end of tailboom.

Slide cover in until aft end is flush with tailboom.

NOTE: Right edge of cover should be just to the right of the torque tube housing (8° to the right of centerline). Left edge should be under the left horizontal stabilizer empennage fitting.

(2). Check holes in cover to ensure they line up with electrical connectors on tailboom.

(3). If holes do not line up with electrical connectors, remove cover, role 180° and reposition in tailboom.

NOTE: Tailboom is manufactured with 1.0 x 1.0 inch (25.4 x 25.4 mm) spots marked for abrasion.

(a). If tailboom is not previously marked, place a mark every 2.0 inches (50.8 mm) around cover and tailboom.

(b). Do not bond the bottom 8.0 inches (203.2 mm) on aft end of cover.

(4). Abrade around the cover mating surface with 240 grit abrasive cloth (CM802) to remove gloss.

NOTE:

- Use care to avoid damage to the fiber reinforcement.
- Metallic faying surfaces do not require abrading.

(5). Using 240 grit abrasive cloth (CM802), lightly abrade spots, where marked, around the tailboom until the surface gloss is removed.

(6). Wipe abraded surfaces with kimwipes (CM819) dampened with 1,1,1–Trichloroethane (CM222). Allow to air dry for 15 minutes.

(7). Mix adhesive according to manufacturer's instructions.

NOTE: Adhesive must be applied within two hours of cleaning. Repeat solvent prep if more than two hours elapses before bonding.

(8). Apply adhesive to abraded areas and position cover in tailboom. Clean up excessive adhesive.

(9). Allow to cure per manufacturer's instructions.

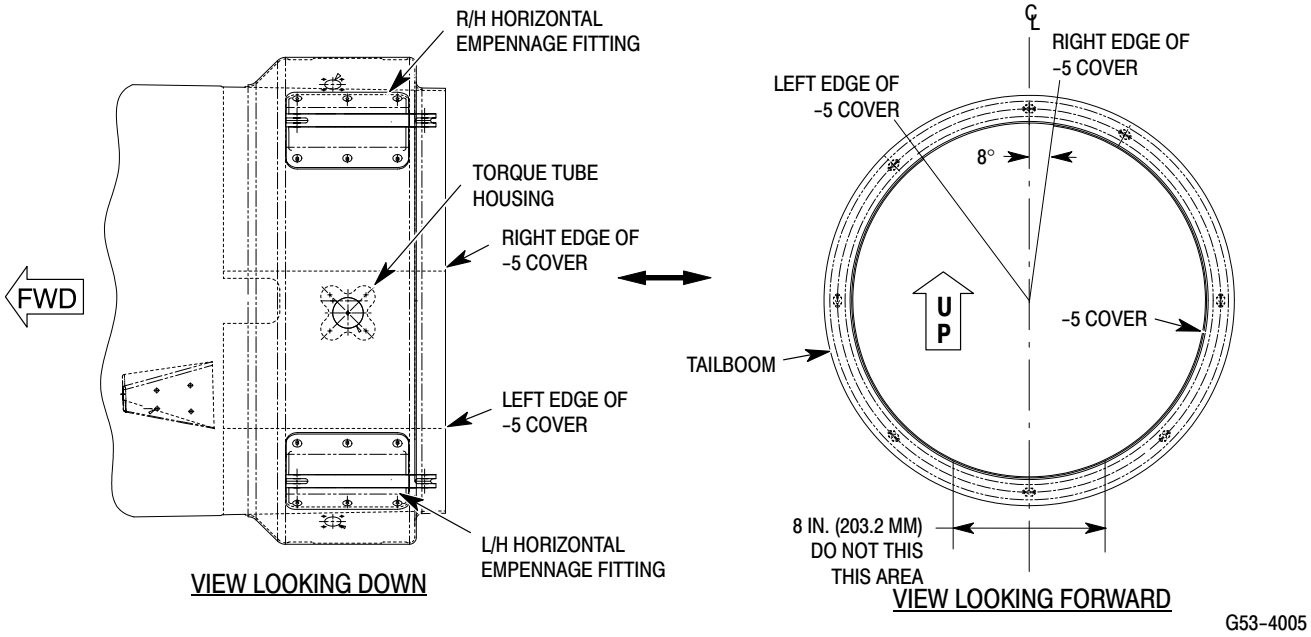

Figure 204. 500N3500–5 Cover Installation

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4. Horizontal Stabilizer Eye Bolt Replacement

A. Horizontal Stabilizer Eye Bolt Removal

(1). Remove horizontal stabilizer.

(2). Remove eye bolts by holding the flat surface of eye bolt with a wrench and removing nut.

B. Horizontal Stabilizer Eye Bolt Installation

(1). Install eye bolts in horizontal stabilizer, the short eye bolts in the forward holes and the longer eye bolts with spacer to the aft holes of horizontal stabilizer.

(2). Torque eye bolts to **80 - 120 inch-pounds (9.04 - 13.56 Nm) plus drag torque**.

(3). Install horizontal stabilizer.

5. Horizontal/Vertical Stabilizer Control Tube and Bellcrank Replacement

(Ref. Figure 201 and Figure 202)

A. Horizontal/Vertical Stabilizer Control Tube and Bellcrank Removal

(1). Remove horizontal stabilizer end tip covers and center access cover for access to bellcranks and control tubes.

(2). Remove cotter pin, nut, washer and bolt from center bellcrank shaft. Index mark bellcrank with grease pencil in relationship to shaft. Disconnect bellcrank.

(3). Disconnect control tube from vertical stabilizer torque tube bellcrank. Remove controls from horizontal stabilizer as required for maintenance.

B. Horizontal/Vertical Stabilizer Control Tube and Bellcrank Installation

Refer to adjustment and test control rigging during installation.

(1). Connect bellcrank to center bellcrank shaft and install bolt, washers and nut. Torque bolt to standard aircraft torque values and install cotter pin.

(2). Install control tubes and bellcranks as required, safety wire or cotter pin.

(3). Install center access plate with seven screws and washers.

6. Vertical Stabilizer Inspection

(Ref. Figure 201 and Figure 202)

(1). Inspect skin for cracks, bonding separation, delamanation and obvious damage.

(2). Inspect stabilizer for freedom of movement through pedal travel range, check for clearance between vertical to horizontal.

(3). Check mounting fitting holes for elongation.

NOTE: Internal stabilizer fitting may display cracking after installation of expandable bolts. This cracking, internal fitting only, is acceptable for continued service. Cracking of the external skin from the mounting bolt holes is unacceptable and stabilizer must be removed from service and scrapped.

7. Vertical Stabilizer Repair

Refer to MDHI Field Service Representative.

8. Horizontal Stabilizer Inspection

(1). Inspect skin for cracks, bonding separation, delamination and obvious damage.

(2). Inspect mounting fitting and attachment hardware for condition.

(3). Inspect center access panel and nut plate fasteners for condition, end tip plate access covers and position lights for condition.

(4). Inspect vertical stabilizer torques tubes for excessive axial and radial movement, 0.010 inch (0.254 mm) axial end play maximum allowable.

9. Vertical Stabilizer Torque Tube Replacement

A. Vertical Stabilizer Torque Tube Removal

(1). Remove vertical stabilizers (Ref. Vertical Stabilizer Replacement).

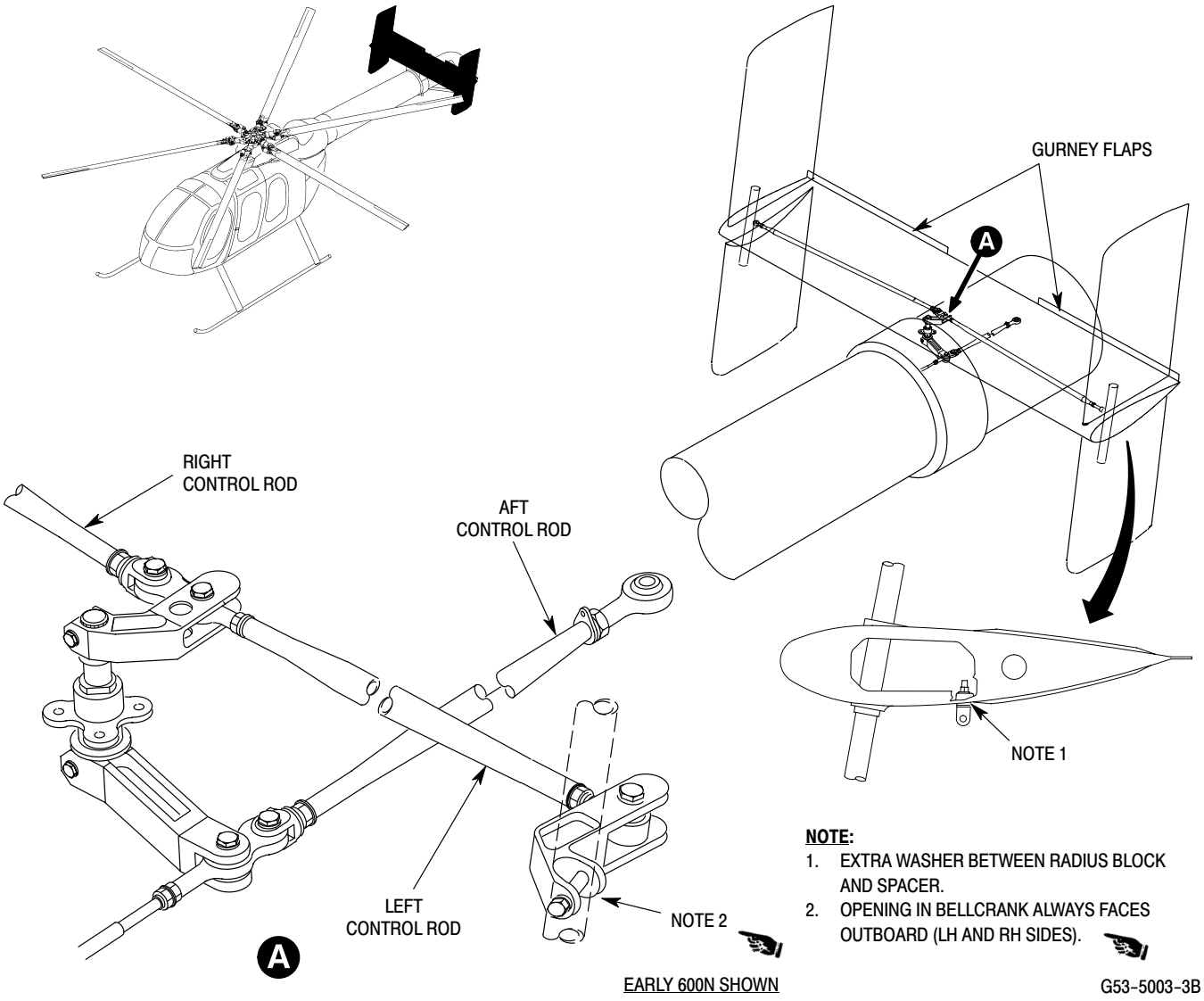


Figure 202. Stabilizer Installation without YSAS

(2). Remove horizontal tip plate access cover and disconnect YSAS torque tube (if installed) from vertical stabilizer bellcrank.

(3). Remove bellcrank from torque tube by removing expandable bolt.

(4). Remove cotter pin, locknut and bushing from torque tube. Remove torque tube by lifting upward.

B. Vertical Stabilizer Torque Tube Installation

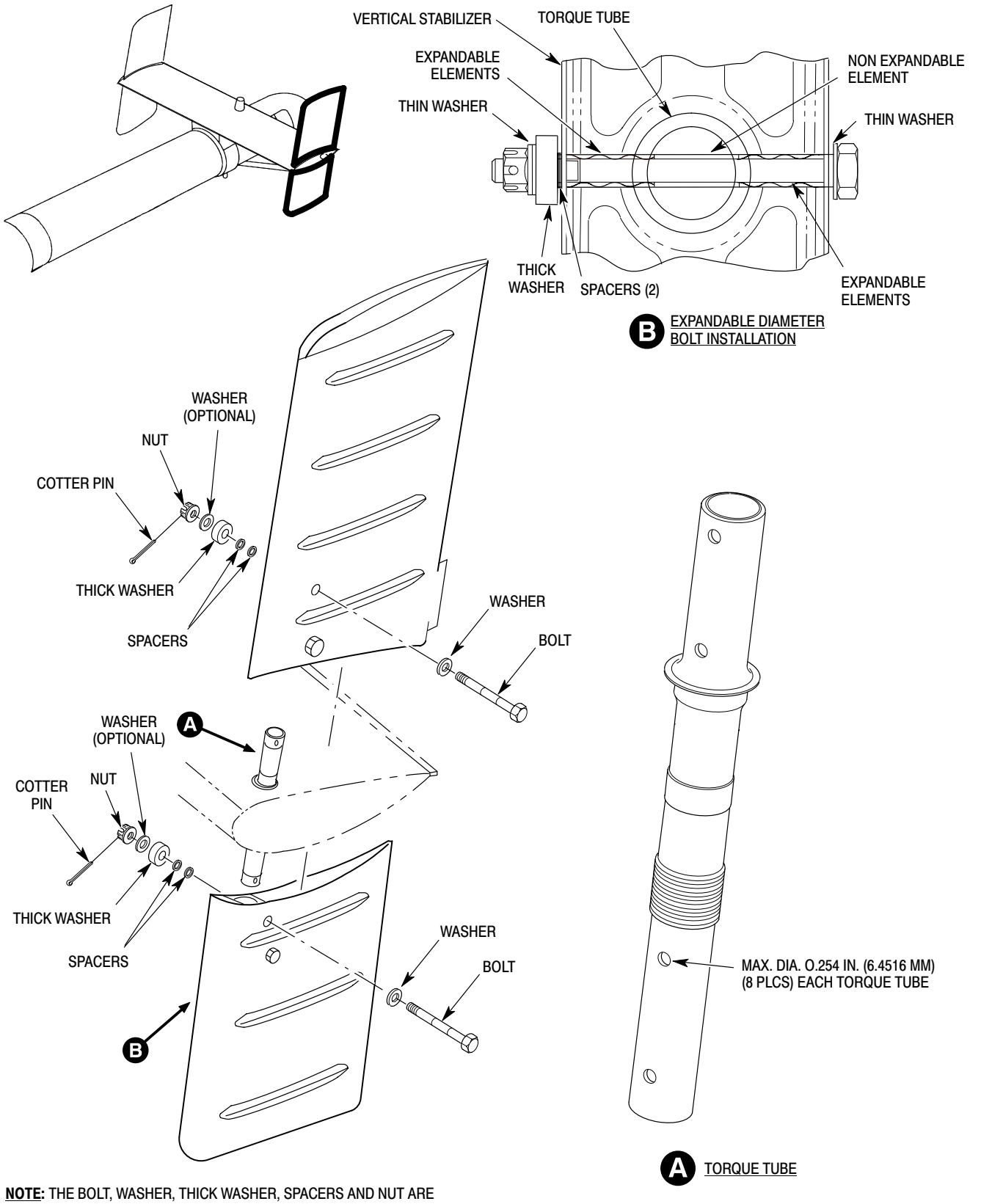
(1). Slide torque tube from the top thru the horizontal stabilizer.

(2). Apply one layer of teflon tape (CM726) to threads of torque tube prior to installing locknut.

(3). Install locknut, hand tighten and adjust to a 0.005–0.010 inch (0.127–0.254 mm) gap; Install cotter pin.

NOTE: When installing the bellcrank, opening in bellcrank must face outboard.

(4). Install bellcrank, with opening facing outboard, on torque tube and install expandable bolt; Torque to **30 - 40 inch-pounds (3.39 - 4.52 Nm) plus drag torque**; Install cotter pin.



NOTE: THE BOLT, WASHER, THICK WASHER, SPACERS AND NUT ARE COMPONENTS OF THE EXPANDABLE DIAMETER BOLT ASSEMBLY.

53-5007

Figure 203. Vertical Stabilizer Installation with Expandable Bolts

(5). Connect YSAS actuator to vertical stabilizer torque tube bellcrank. Torque nut to **30 - 40 inch-pounds (3.39 - 4.52 Nm)** and install cotter pin.

(6). Install end plate access covers.

(7). Install vertical stabilizer (Ref. Vertical Stabilizer Replacement).

10. Horizontal Stabilizer Repair

Refer to MDHI Field Service Representative.

11. Vertical Stabilizer Torque Tube and/or Bushing Replacement (Non–Bonded Bushings)

(Ref. Figure 201) The following procedure is for replacing the early style (non-bonded) torque tube bushings.

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM726	Tape, teflon

(1). Remove vertical stabilizers (Ref. Vertical Stabilizer Replacement).

(2). Remove horizontal tip plate access cover and disconnect YSAS torque tube (if installed) from vertical stabilizer bellcrank.

(3). Remove bellcrank from torque tube by removing expandable bolt.

(4). Remove cotter pin, locknut and bushing from torque tube. Remove torque tube by lifting upward.

(5). Remove bushing from bearing race of torque tube.

(6). Install one bushing on bearing race of torque tube and insert torque tube through fitting of horizontal stabilizer from the top downward.

(7). Apply one layer of teflon tape (CM726) to threads of torque tube prior to installing locknut.

(8). Install bushing and locknut, hand tighten locknut and adjust to a 0.005-0.010 inch (0.127-0.254 mm) gap; Install cotter pin.

NOTE: Ensure shouldered bushings are installed in bellcrank.

(9). Install bellcrank on torque tube and install expandable bolt and washers; Torque to **30 - 40 inch-pounds (3.39 - 4.52 Nm) plus drag torque**; Install cotter pin.

(10). Connect YSAS actuator to vertical stabilizer torque tube bellcrank. Torque nut to **30 - 40 inch-pounds (3.39 - 4.52 Nm)** and install cotter pin.

(11). Install end plate access covers.

(12). Install vertical stabilizer (Ref. Vertical Stabilizer Replacement).

12. Vertical Stabilizer Torque Tube and/or Bushing Replacement (Bonded Bushings)

(Ref. Figure 201) The following procedure is for replacing the current style (bonded) torque tube bushings.

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM222	1,1,1-Trichloroethane
CM402	Adhesive
CM726	Tape, teflon
CM802	Abrasive cloth, aluminum oxide

(1). Remove vertical stabilizers (Ref. Vertical Stabilizer Replacement).

(2). Remove horizontal tip plate access cover and disconnect YSAS torque tube (if installed) from vertical stabilizer bellcrank.

(3). Remove bellcrank from torque tube by removing expandable bolt.

(4). Remove cotter pin, locknut and bushing from torque tube. Remove torque tube by lifting upward.

CAUTION In the following steps, care must be taken to not damage the fibers of the horizontal stabilizer.

(5). Remove bushing(s) from horizontal stabilizer by gently working a sharp scraper between bushing and stabilizer.

(6). Sand excess sealant from horizontal stabilizer taking care not to disturb the composite fibers of the stabilizer.

(7). Clean faying surfaces of horizontal stabilizer, where bushings are to be bonded, with 1,1,1–trichloroethane (CM222).

(8). Wipe dry using a clean dry rag and then allow to air dry for 15 minutes.

(9). Lightly abrade the faying surface of the new bushings with abrasive cloth (CM802) until all gloss is removed. Wipe clean with 1,1,1–trichloroethane.

(10). Wipe dry using a clean dry rag and then allow to air dry for 15 minutes.

(11). Mix adhesive (CM402) according to manufacturers instructions. Apply adhesive within 2 hours of cleaning.

(12). Apply a thin uniform layer of adhesive to faying surfaces.

CAUTION Do not apply too much pressure, damage to horizontal stabilizer may occur.

(13). Press the faying surfaces firmly together and maintain contact pressure or apply 50 psi (3.45 kPa) maximum for 24 hours at ambient temperature.

(14). Using 1,1,1–trichloroethane, clean excess adhesive from parts before adhesive has had time to cure.

(15). Slide torque tube from the top thru the horizontal stabilizer.

(16). Apply one layer of teflon tape (CM726) to threads of torque tube prior to installing locknut.

(17). Install locknut, hand tighten and adjust to a 0.005–0.010 inch (0.127–0.254 mm) gap; Install cotter pin.

(18). Install bellcrank on torque tube and install expandable bolt; Torque to **30 - 40 inch-pounds (3.39 - 4.52 Nm) plus drag torque**; Install cotter pin.

(19). Connect YSAS actuator to vertical stabilizer torque tube bellcrank. Torque nut to **30 - 40 inch-pounds (3.39 - 4.52 Nm)** and install cotter pin.

(20). Install end plate access covers.

(21). Install vertical stabilizer (Ref. Vertical Stabilizer Replacement).

13. Vertical Stabilizer Torque Tube Bushing Rework (Non–Bonded Bushings to Bonded Bushings)

(Ref. Figure 201) The following procedure is for converting the vertical stabilizer torque tube to the current 500N3980–3 bushings, 500N3970–3 locknuts and MS24665–361 cotter pins.

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM222	1,1,1–Trichloroethane
CM402	Adhesive
CM726	Tape, teflon
CM802	Abrasive cloth, aluminum oxide

(1). Remove vertical stabilizers (Ref. Vertical Stabilizer Replacement).

(2). Remove cotter pins, locknuts and bushings, and scrap. Remove torque tube by lifting upward. Remove bushing and scrap.

(3). Clean faying surfaces of horizontal stabilizer, where bushings are to be bonded, with 1,1,1–trichloroethane (CM222).

(4). Wipe dry using a clean dry rag and then allow to air dry for 15 minutes.

(5). Lightly abrade the faying surface of the new bushings with abrasive cloth (CM802) until all gloss is removed. Wipe clean with 1,1,1–trichloroethane.

(6). Wipe dry using a clean dry rag and then allow to air dry for 15 minutes.

(7). Mix adhesive (CM402) according to manufacturers instructions. Apply adhesive within 2 hours of cleaning.

(8). Apply a thin uniform layer of adhesive to faying surfaces.

CAUTION Do not apply too much pressure, damage to horizontal stabilizer may occur.

(9). Press the faying surfaces firmly together and maintain contact pressure or apply 50 psi (3.45 kPa) maximum for 24 hours at ambient temperature.

(10). Using 1,1,1-trichloroethane, clean excess adhesive from parts before adhesive has had time to cure.

(11). Slide torque tube from the top thru the horizontal stabilizer.

(12). Apply one layer of teflon tape (CM726) to new 500N3970-3 locknut.

(13). Install locknut, hand tighten and adjust to a 0.005-0.010 inch (0.127-0.254 mm) gap; Install MS24665-361 cotter pin.

(14). Install bellcrank on torque tube and install expandable bolt; Torque to **30 - 40 inch-pounds (3.39 - 4.52 Nm) plus drag torque**; Install cotter pin.

(15). Install end plate access covers.

(16). Install vertical stabilizer (Ref. Vertical Stabilizer Replacement).

14. Vertical Stabilizer Torque Tube Bearing Race Replacement

(Ref. Figure 201) The following procedure is for removal of the bearing race from the vertical stabilizer torque tube. Some special tools will need to be manufactured for this procedure.

Consumable Materials
(Ref. Section 91–00–00)

Item	Nomenclature
CM234	Solvent, dry-cleaning
CM318	Primer
CM730	Tape, duct

Special Tools
(Ref. Section 91–00–00)

Item	Nomenclature
N/A	Arbor press

(1). Remove vertical stabilizers (Ref. Vertical Stabilizer Replacement).

(2). Remove vertical stabilizer torque tubes (Ref. Vertical Stabilizer Torque Tube Replacement).

(3). Fabricate the following tool for bearing race removal.

(a). Locate a steel plate of approximately 0.250 inch (6.35 mm) thickness.

(b). Drill a 1.510 inch (38.3540 mm) hole in the plate.

(c). Deburr edges of hole to prevent damage to torque tube.

(d). Apply tape (CM730) to tool to prevent damage to bearing race.

(4). Insert torque tube through the removal tool and install on arbor press.

CAUTION In the following steps, care must be taken to not damage the horizontal stabilizer torque tube.

(5). Place suitable device over torque tube end to protect tube from damage from arbor press.

(6). Remove bearing from the torque tube by gently pressing torque tube through the removal tool.

(7). Using solvent (CM234), clean primer residue from torque tube.

(8). Inspect torque tube for damage to bearing race contact surface.

(9). Fabricate the following tool for bearing race installation.

(a). Locate a steel plate of approximately 0.250 inch (6.35 mm) thickness.

(b). Drill a 1.390 inch (35.306 mm) hole in the plate.

(c). Deburr edges of hole to prevent damage to torque tube.

(d). Apply tape (CM730) to tool to prevent damage to bearing race.

(10). Insert bearing race into tool and mount on arbor press.

(11). Coat torque tube bearing race mating surface with primer (CM318).

CAUTION In the following steps, care must be taken to not damage the the horizontal stabilizer torque tube.

(12). Place suitable device over torque tube end to protect tube from damage from arbor press.

CAUTION In the following step, ensure bearing race is not cocked on torque tube, this will cause non-repairable damage to bearing race and torque tube.

(13). While primer is wet, press torque tube down through the bearing race until bearing race is tight against flange on torque tube.

(14). Inspect bearing race flanged surface to ensure no warpage occurred during installation.

(15). Reinstall vertical stabilizer torque tubes (Ref. Vertical Stabilizer Torque Tube Replacement).

(16). Reinstall vertical stabilizers (Ref. Vertical Stabilizer Replacement).

15. Stabilizer Troubleshooting

(Ref. Table 201)

Table 201. Troubleshooting Tailboom and Tail Surfaces

Symptom	Probable Trouble	Corrective Action
High frequency vibration	Fan assembly out of balance	Re–balance fan assembly.
	Loose fan blades	Replace and re–balance fan assy.
	Loose bolts/nuts on Horizontal or Vertical stabilizer	Inspect mounting hardware; adjust or replace as necessary.

NOTE: High frequency vibrations in helicopter can be caused by components in other systems (Ref. Sec. 64–00–00, 63–25–10, 63–25–30 and 71–00–00).

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(4). Remove backing and apply stainless steel abrasion tape to outboard leading edge of main rotor blade as follows:

(a). Apply 6.50 inch (16.5 cm) wide and 24 inch (61 cm) long abrasion tape along blade leading edge (Ref. Figure 804) so tape overlaps bottom and top of blade edge equally or (Ref. Figure 805) for 369D21100-505 and -509 blades.

(b). Smooth and press abrasion tape into place by hand. Use heat gun or equivalent to maintain temperature.

(c). Re-apply pressure by hand following initial installation to ensure proper bonding. Abrasion tape must be free of surface wrinkles or air bubbles.

NOTE: A second abrasion tape may be applied on top of the first tape to facilitate replacement when top tape becomes eroded. To apply second tape, wipe surface of installed strip clean with naptha aliphatic (CM220) and repeat steps (3). and (4). above. Second abrasion tape must be evenly aligned with first at top surface of blade (Ref. Figure 804) for 369D21100 blades or (Ref. Figure 805) for 369D21100-505 and -509 blades.

10. Leading Edge Abrasion Strip Sealing

(Ref. Figure 805)

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM219	Methyl-ethyl-ketone
CM228	Surface cleaner
CM404	Adhesive, epoxy

(1). Remove screw and tip cap from main rotor blade.

(2). Remove any loose or cracked sealant or adhesive from areas of main rotor blade.

WARNING **MEK is flammable. Use in well ventilated area and away from open flame.**

(3). Clean areas to be sealed with clean cloth moistened with solvent (CM228). For hard to clean problem areas, MEK (CM219) may be used.

(4). Prepare adhesive (CM404) per manufacturer's instructions.

(5). Apply bead of adhesive to interface of abrasion strip and blade skin. Ensure there are no gaps or bridges in bead.

(6). Cure adhesive per manufacturer's instructions.

11. Tip Cap Sealing

(Ref. Figure 805)

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM212	Releasing agent
CM213	Releasing agent
CM318	Primer
CM420	Sealant
CM427	Sealing compound
CM428	Sealing compound

(1). Apply release agent (CM212 or CM213) to inside of tip cap per manufacturer's instructions.

(2). Prepare and apply a 0.010-0.020 inch (0.254-0.508 mm) coating of sealant (CM420, CM427 or CM428) to faying surfaces per manufacturer's instructions.

(3). Attach tip cap to blade and install screw with primer (CM318).

(4). Wipe off squeezed out sealant flush with surface.

NOTE: To inhibit moisture entering bond joint of abrasion strip after initial application, reapply sealant, when sealant is worn away or becomes cracked.

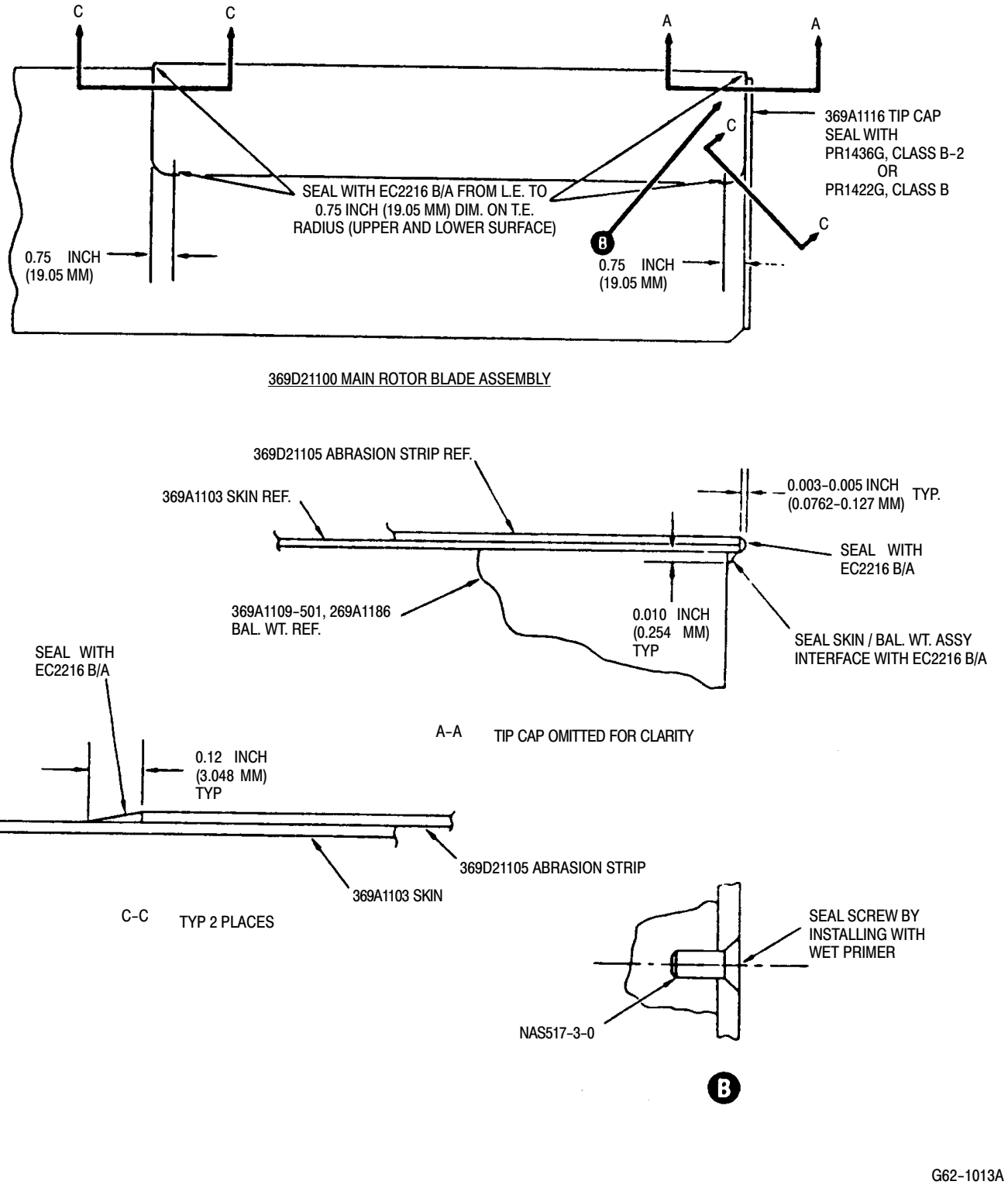


Figure 806. Main Rotor Blade Abrasion Strip and Tip Cap Sealing

MAIN ROTOR HUB

REPAIRS

1. Main Rotor Retention Strap Pack Repair

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM234	Solvent, dry-cleaning
CM725	Tape, electrical, plastic

(Ref. Table 601) Where accessible, ends of permissible cracks or broken laminates should be taped to prevent scratching and damaging adjacent laminates.

CAUTION Do not bend broken ends excessively and scratch adjacent straps.

(1). Carefully wipe ends of broken strap with a clean soft cloth moistened with solvent (CM234).

(2). Use mild blast of filtered air to dislodge any foreign particles between broken strap ends and adjacent strap.

(3). Carefully tape broken ends of strap with plastic electrical tape (CM725).

2. Pitch Housing Repair

(Ref. Figure 801)

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM206	Chemical coating
CM318	Primer
CM802	Abrasive cloth, aluminum oxide

CAUTION During repair of pitch housing, comply with precautions for covering engine air inlet fairing opening to prevent entry of foreign objects into air intake.

(1). Use grade 320 abrasive cloth (CM802) to smooth scratches, nicks and chafing wear in pitch housing.

(2). After smoothing (removal of all sharp or raised edges) repair depth must not exceed 0.010 inch (0.254 mm) in any area of housing except inner surfaces of arm clevis lugs.

(3). Maximum repair depth of 0.050 inch (1.27 mm) is acceptable in clevis lug with sleeve bushing.

(4). On opposite clevis lug repair depth of 0.030 inch (0.762 mm) is permissible in area of spot faces and maximum of 0.050 inch (1.27 mm) in area outside spot faces.

(5). Touch up repaired areas with chemical film (CM206) followed by primer (CM318) and remove main rotor hub for pitch housing replacement.

3. Unbushed Outboard Clevis Lug Hole Repair

(Ref. Figure 801) Repair elongated outboard hole in unbushed side of clevis lug if inside diameter of hole exceeds 0.3135 inch (7.9629 mm).

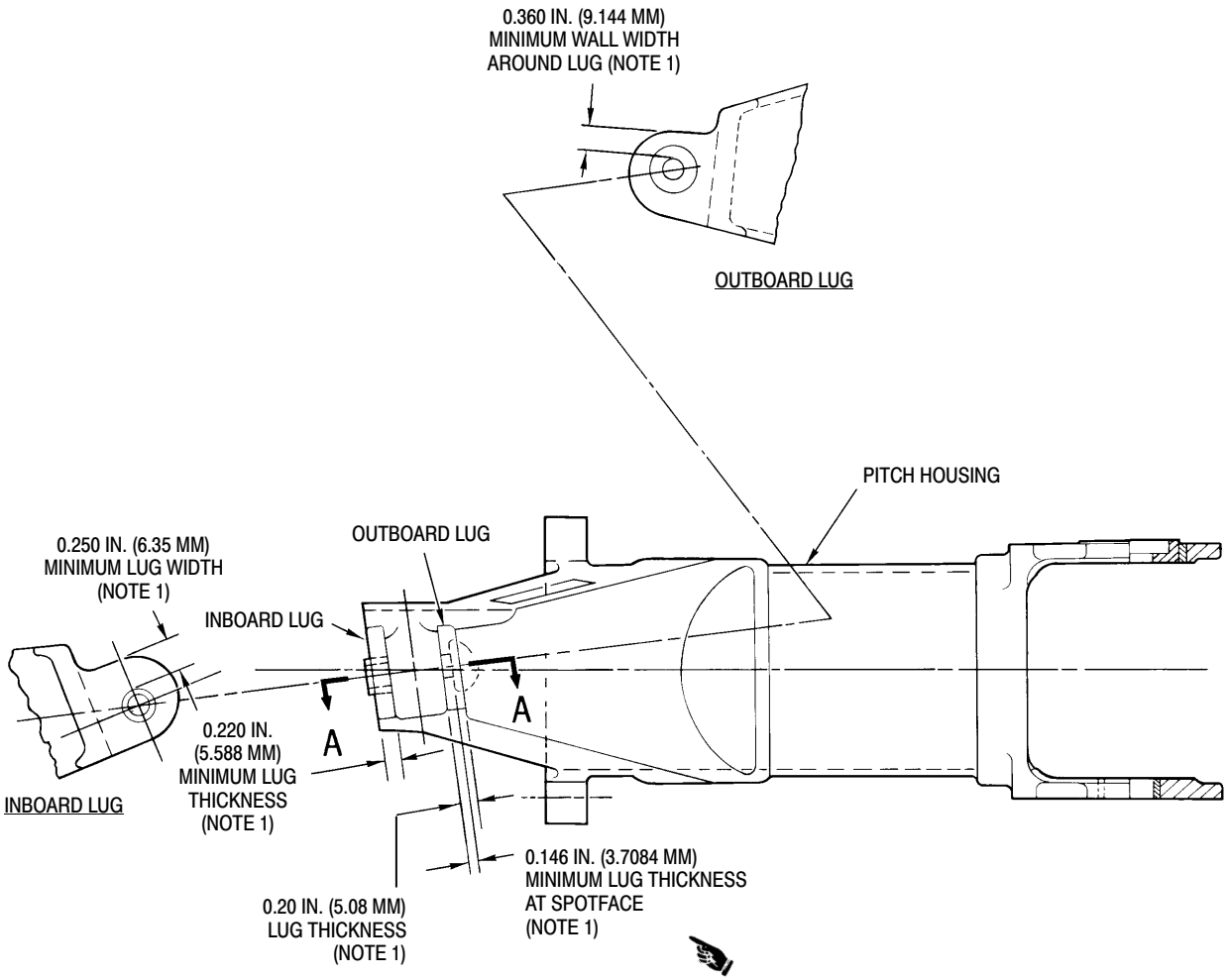
Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM118	Grease
CM318	Primer
CM431	Sealing, locking and retaining compound

(1). Remove existing bushing from inboard lug.

(2). Drill elongated hole in outboard lug to 0.3680 inch (9.3472 mm). Use drill bushing as guide.

(3). Line ream hole to 0.3760–0.3770 inch (9.5504–9.5758 mm) diameter.



NOTES:

1. MAINTAIN MINIMUM WALL THICKNESS AROUND LUG AND MINIMUM LUG THICKNESS FOR FIELD REPAIR OF CLEVIS LUG.
2. NO PAINT OR PRIMER PERMISSIBLE IN THIS AREA.
3. BRUSH CADMIUM PLATE GROUND SURFACE BEFORE INSTALLATION IF POSSIBLE. IF NOT, COAT GROUND SURFACE THOROUGHLY WITH PRIMER (CM318) AND INSTALL WHILE WET.

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Figure 801. Field Repair of Main Rotor Hub Pitch Control Lugs (Sheet 1 of 2)

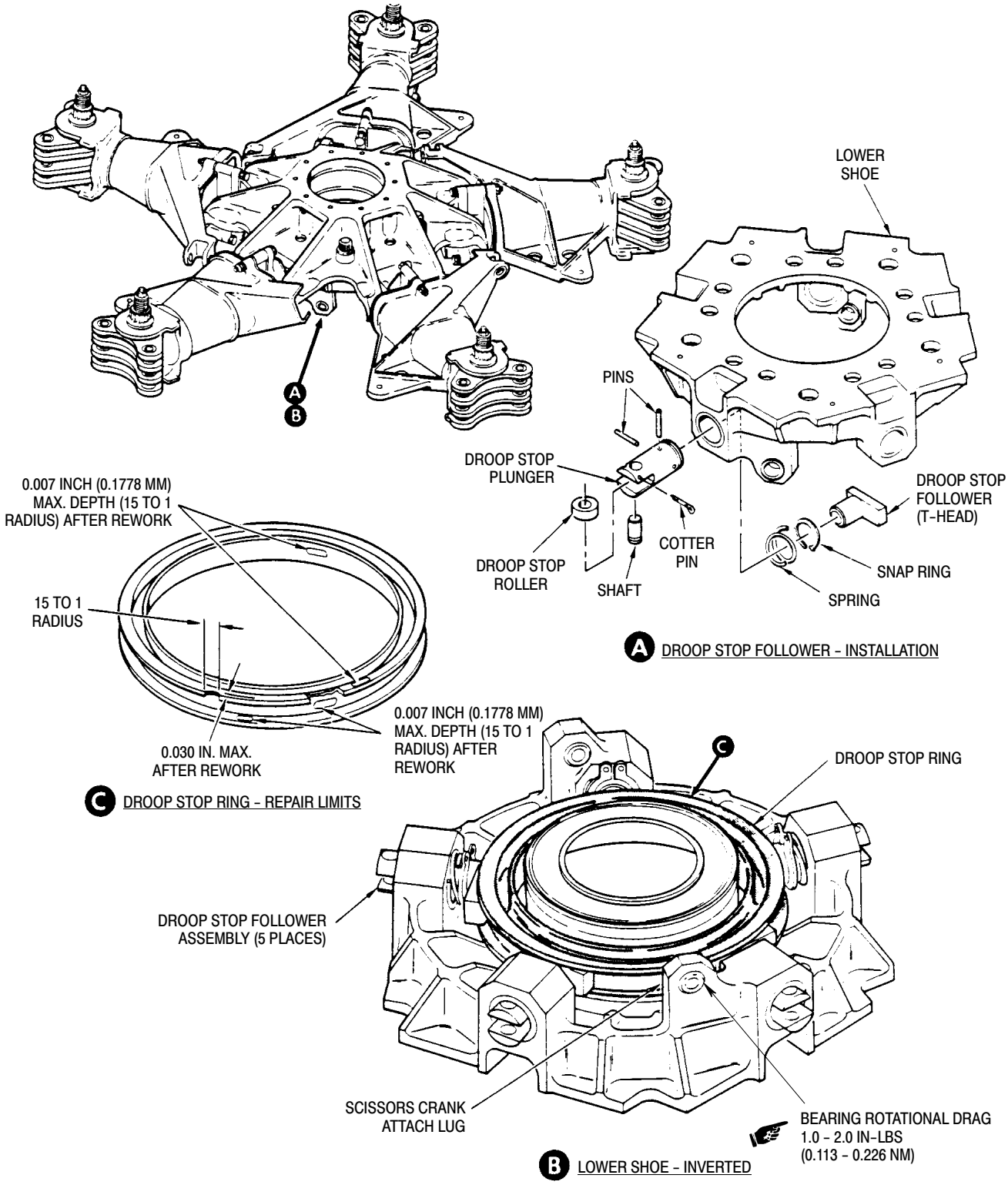

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Figure 804. Main Rotor Hub Assembly – Repair

17. Main Rotor Hub Tapered Bearing Grease Repack, Inspection and Replacement

(Ref. Figure 805) Replace tapered roller bearing cup or cone if it has any flat spots, scoring, pitting, grooving, discoloration (blue) or if it feels rough when rotated.

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM111	Grease, aircraft
CM121	Preservation oil
CM234	Solvent, dry-cleaning
CM802	Abrasive cloth, aluminum oxide
CM803	Crocus cloth

Special Tools (Ref. Section 91–00–00)

Item	Nomenclature
ST701	Main rotor wrench assembly

CAUTION Do not intermix Timken or NTN bearing cups and cones at upper and lower tapered roller bearing locations of main rotor hub.

NOTE:

- Roller bearing cones and cups should always be replaced as a set.
- Replace tapered roller bearing cup and cone if it has any flat spots, scoring, pitting, grooving, discoloration (blue) or if it feels rough when rotated.

(1). Use pressing tools equivalent to items A and B (Ref. Figure 806) to press upper and lower bearing cups from hub. A press ram of one to two tons is sufficient for removal.

(2). Press lower bearing cone from sleeve bushing.

CAUTION In next step, do not spin reusable bearings while cleaning. Coat bearings lightly with oil (CM121) after cleaning.

(3). Clean hub bore, sleeve bushing, seal retainer and reusable bearings using filtered solvent (CM234) spray.

(4). Check bearing cup hub bore for scoring. Smooth out any roughness with grade 400–600 abrasive cloth (CM802). Restore chemical film protection where removed. Maximum diameter of hub bore for upper bearing cup (Ref. Figure 805) is 4.4335 inch (11.26109 cm), measured in any direction. Maximum diameter of hub bore for lower bearing cup is 4.3095 inch (10.94613 cm), measured in any direction.

(5). Check upper seal retainer. No cracks, sharp nicks or burrs are allowed. Minor corrosion or other surface defects may be polished out using crocus cloth (CM803). Grooving on seal contact surfaces must not exceed 0.004 inch (0.1016 mm) depth after polishing.

WARNING **Bearing cups are installed in hub by differential temperature (shrink-fit) method. Take appropriate precautions to prevent burns when handling parts that are cooled to sub-zero temperatures.**

(6). Place bearing cups in closed container of dry ice and cool for not less than 20 minutes to -40°F (-40°C).

(7). Coat bore of hub with grease (CM111). Use care to maintain cup-to-hub bore alignment and press cup into bore, using tools D and E (Ref. Figure 806), until cup is seated.

(8). Apply film of grease to sleeve bushing. Use pressing tool equivalent to tool C, and press bearing cone onto sleeve bushing.

(9). With lip on center seal up, hand press it into hub (Ref. Figure 805).

(10). Apply film of grease on mast. Install preassembled sleeve bearing and bearing cone on mast. Do not apply any additional lubricant to roller bearing set. Wipe any excess preservative oil from bearing cone and cup.

(11). Place assembled hub over mast and seat on lower roller bearing cone.

(12). Install lead spacer 369A1224-5 (thickness gage substitute for recessed

spacer) over mast. Rest spacer on top of sleeve bushing.

NOTE: If lead spacer is not available, fabricate its equivalent from lead sheet. Spacer dimensions are; 2.96 inch (7.5184 cm) outside diameter; 2.68 inch (608072 cm) ID; 0.075–0.085 inch (1.905–2.159 mm) thick.

(13). Install upper bearing cone into hub and on top of lead spacer.

(14). Install steel ring washer, equivalent to tool F (Ref. Figure 806), as substitute for seal retainer (Ref. Figure 805).

NOTE: Step (14). is not required. However, use of substitute washer for retainer prevents unnecessary scoring of retainer. Several tightening and loosening actions may be required to get correct rotational drag on hub bearings.

(15). Install mast nut on mast using mast nut wrench (ST701), tighten until bearings are preloaded to **10 - 12 inch-pounds (1.13 - 1.36 Nm) of rotational drag**. Measure rotational drag using **0 - 10 pound (0 - 4.536 kg)** spring scale hooked over one of hub support web bosses, 6.5 inch (16.51 cm) from hub centerline). A 1.50 – 1.75 pound (0.681 – 0.7945 kg) pull with hub in motion indicates correct rotational drag.

(16). Remove mast nut, tool F (Ref. Figure 806), (or seal retainer), and upper bearing cone. Remove lead spacer and measure compressed thickness. Obtain serviceable recessed spacer of same thickness, or grind new recessed spacer to required dimension. Discard lead spacer after recessed spacer is correctly ground.

NOTE: To insure that hub is seated onto mast properly before torquing, 2 – 4 threads should be showing above the mast nut with nut installed finger tight.

(17). Install recessed spacer, recess down, on top of sleeve bushing. Reinstall upper bearing cone, seal retainer and mast nut. Torque nut to **200 - 250 foot-pounds (22.60 - 28.25 Nm)** and check for rotational drag of **10 - 15 inch-pounds (1.13 - 1.69 Nm)**. This will be **1.5 - 3 pounds (0.681 - 1.362 kg)** on spring scale used as in step (15). above.

(18). Remove hub and sleeve bushing with lower bearing cone from mast.

(19). Position hub upside–down. Hand–pack lower hub cavity (Ref. Figure 805) and bearing cone on sleeve bushing with grease.

(20). Install sleeve bushing with bearing cone in hub. Hand–pack cavity between bearing and hub liner with grease; then press in lower seal with seal lip toward top of hub. Wipe off excess grease.

(21). Turn hub assembly right side up.

(22). Complete reassembly of hub by installing recessed spacer, upper bearing cone, upper seal and seal retainer in hub at installation of hub on mast.

18. Main Rotor Hub Scissors Attach Lug Bearing Replacement

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM206	Chemical coating
CM216	Loctite remover
CM304	Enamel, epoxy
CM321	Surface primer locking compound
CM431	Sealing, locking and retaining compound

(1). Remove main rotor hub (Ref. Main Rotor Hub Replacement).

(2). Invert hub and place on work bench.

(3). Remove droop stop ring (Ref. Droop Stop Ring Replacement).

(4). Press bearing from hub lug.

(5). Clean bearing bore with Loctite remover (CM216).

(6). Inspect bearing bore for nicks, scratches and grooves.

(7). Inspect bore for diameter of 0.6551–0.6556 inch (16.63954–16.65224 mm).

(8). Touch up bearing bore with chemical coating (CM206).

(9). Apply surface primer (CM321) to mating surfaces of bearing and bores per manufacturer's instructions.

NOTE: Do not allow primer to enter bearing.

(10). Apply locking compound (CM431) to faying surfaces of bearing and bore, press bearing into bore while locking compound is wet.

(11). Remove excess sealant, do not allow sealant to enter bearing.

(12). Apply a small fillet of sealant around bearing and allow to dry for 24 hours at room temperature or heat to 140° – 160°F (60° – 72°C) for one hour.

(13). As required, touch up bearing lug with paint (CM304).

(14). Check bearing for a no–load rotational drag of **1.0 - 2.0 inch-pounds (0.113 - 0.226 Nm)**.

(15). Reinstall droop stop ring (Ref. Droop Stop Ring Replacement).

(16). Reinstall main rotor hub (Ref. Main Rotor Hub Replacement).

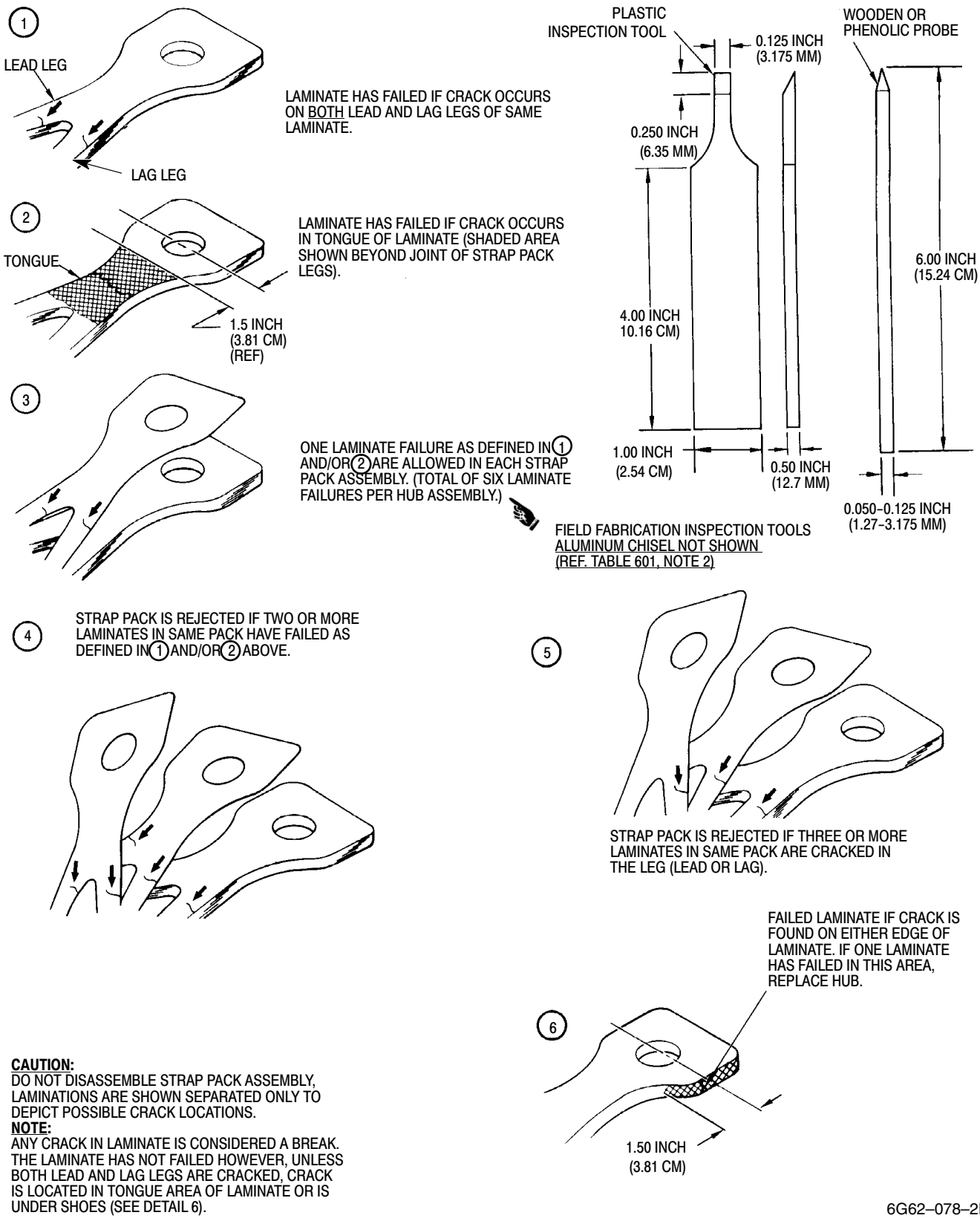


Figure 602. Strap Pack Lamination Inspection (Sheet 2 of 2)

Table 601. Strap Pack Inspection

Inspect	Procedure (1)	For	Acceptable	Replace or Return Hub for Overhaul
Outboard end.	Visually. Use blunt nosed wooden or phenolic probe (Figure 602). Probe at upper and lower end of pack. Failed laminate in lead or lag leg will move away from other laminates.	Failed laminates (3).	One or less per pack.	Two or more laminate failures in one pack.
	Visually.	Gaps between laminates.	Single straight gap not exceeding 0.03 inch (0.762 mm) within pack or next to either upper or lower outer shoe.	More than one gap found; gap exceeds acceptable limit.
	Visually using light and mirror (2).	Cracks or breaks.	None.	Cracks or breaks are noted.
In area of and within pitch housing assemblies.	Visually with light and mirror (2).	Cracks or breaks.	One or less laminate failures per strap pack (2).	Two or more laminate failures (2) in a pack; two or more laminates in pack with crack in same leg (lead or lag).
Cushioning laminates at each of two attach points.	Visually with light and mirror.	Crack or break.	None	Cracks or breaks are noted.

NOTES:

(1) Conduct visual inspections indoors or in shaded area to eliminate glare of sun or bright outdoor light.

(2) Removal of teflon covering is required for visual inspection of laminate edges. Use aluminum chisel, fabricated from stock 0.025 x 6.00 x 0.100 (6.35 x 152.4 x 25.4 mm) to carefully scrape excess interlaminate teflon sheets from both sides of strap pack between top and bottom shoes at outboard attachment bolt of all six strap packs. Remove excess teflon from a point 0.50 inch (12.7 mm) outboard of bolt centerline to 1.50 inches (38.1 mm) inboard of bolt centerline. Field fabricate and use plastic tool (Ref. Figure 602). Run plastic tool in both directions along each laminate feeling for cracked laminate. Use of plastic tool will ensure that shreds of teflon still hanging free does not obscure small cracks.

(3) Laminate has failed if crack is found in tongue area or if crack is found in both legs (lead and lag).

Consumable Materials (Ref. Section 91–00–00)	
Item	Nomenclature
CM217	Isopropyl alcohol

(1). Move pitch control bearing housing out of the way that contacts lower shoe roller to be removed.

NOTE: It may be easier if only one roller is removed at one time. The opposing pitch housing may be pressed against it's follower to force opposite follower out and expose roller shaft for removal. Same condition exists at installation.

(2). Remove droop stop roller.

(3). Wet down and clean plunger and mating shoe bushing with isopropyl alcohol (CM217).

(4). Install roller, shaft and new cotter pin.

(5). Install pitch control bearing housing.

7. Droop Stop Ring Repair

(Ref. Figure 803)

Consumable Materials (Ref. Section 91–00–00)	
Item	Nomenclature
CM103	Solid film lubricant

(1). Repair depth limit for corrosion, nicks or scratches in droop stop ring is 0.007 inch (0.1778 mm) for all surfaces except outer edges of ring outer flanges where the depth limit is 0.030 inch (0.762 mm). All reworked areas must be blended smoothly with 15 to 1 ratio into surrounding area.

(2). Spray repaired areas of rings with solid film lubricant (CM103).

(3). Replace droop stop ring if repair limits are exceeded.

8. Droop Stop Ring Replacement

(Ref. Figure 803)

(1). With hub upside down, support hub so that pitch housings unload droop stop followers and provide maximum clearance between striker plates and droop stop rollers.

(2). If necessary, release retaining (snap) ring of each droop stop restrainer from its groove. Move retaining ring flush against droop stop follower (T-head) to provide additional clearance and reduce spring tension.

(3). Remove six droop stop rollers.

(4). Starting from either scissors crank attach lug, number, or color code, all six droop stop follower assemblies in clockwise direction for location identification at replacement. This number code should be placed on outer, upper end of plunger and on adjacent area of lower shoe. Ensure codes are not accidentally removed during remaining steps.

(5). Compress each droop stop follower and insert a small wedge from the back side to hold follower away from droop ring.

(6). After all followers are compressed, remove droop stop ring.

(7). Install replacement droop stop ring by reversing removal procedure, steps (1). thru (6)., making certain to reinstall followers according to markings placed thereon prior to removal.

(8). Compress follower spring and install retaining (snap) ring, if removed, in its groove on each follower.

(9). Reinstall droop stop rollers, shafts and cotter pins.

9. Droop Stop Follower (T–Head) Replacement

(Ref. Figure 803) Replace the droop stop follower (T-head) if it is worn, scored or is causing damage to the droop stop ring. After the droop stop ring has been removed, the droop stop follower assemblies may be removed from hub.

(1). Remove droop stop follower assembly from hub.

(2). Remove pins that secure follower to plunger.

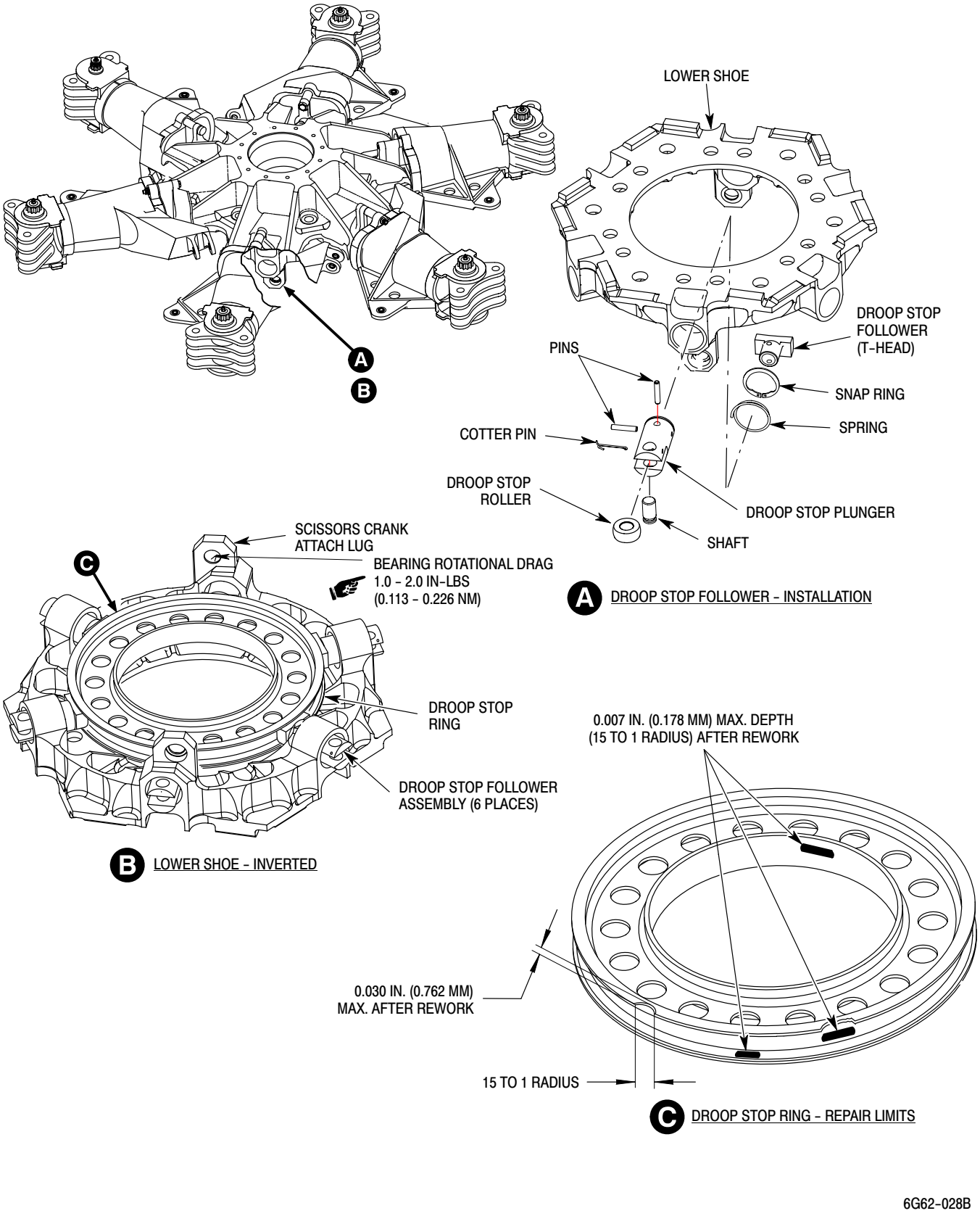
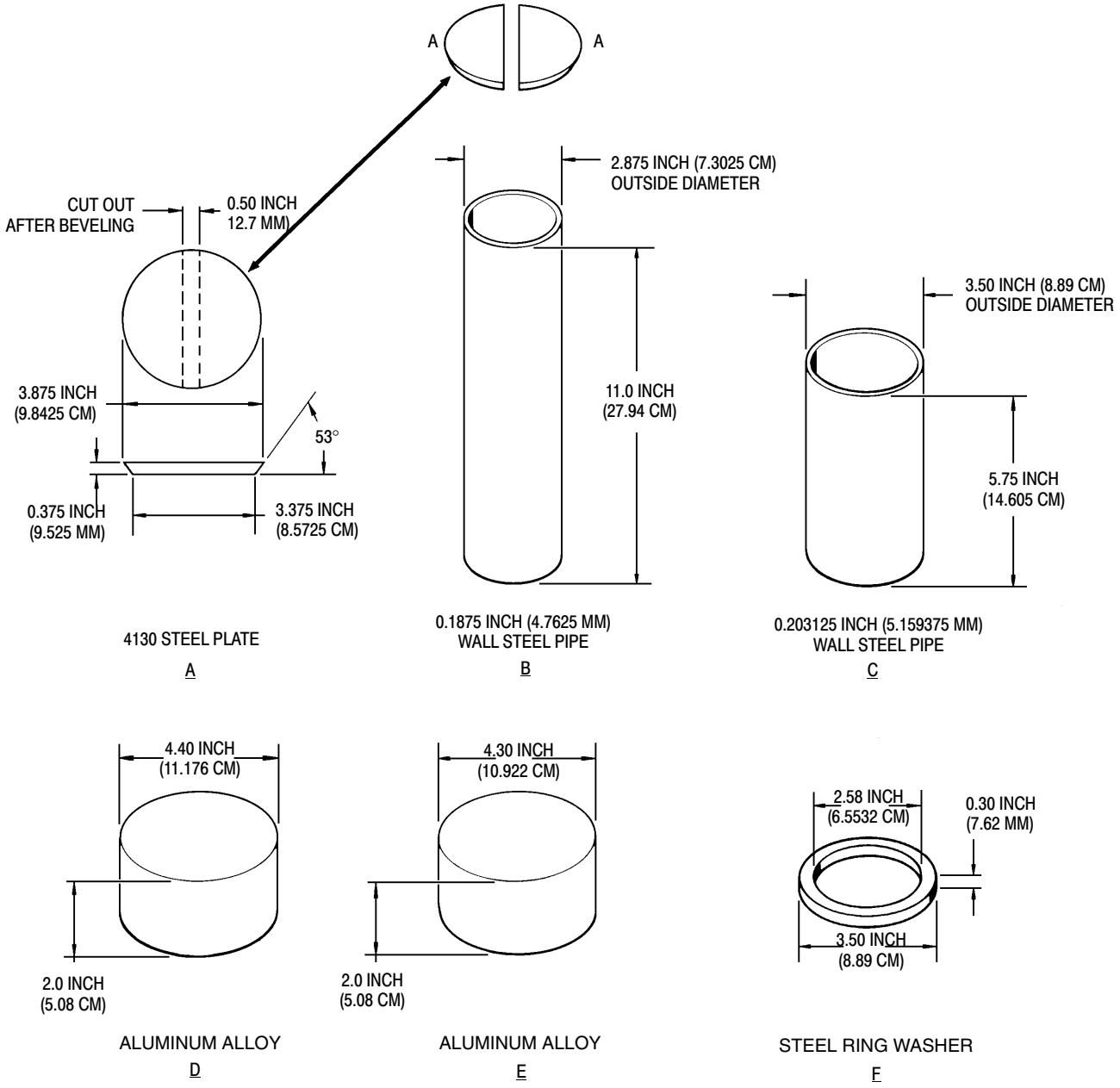


Figure 803. Droop Stop Ring Replacement and Repair



TOOL USE:

A & B – PRESS BEARING CUPS OUT OF HUB
C – PRESS LOWER BEARING CONE ON SLEEVE BUSHING
D – PRESS UPPER BEARING CUP INTO HUB
E – PRESS LOWER BEARING CUP ONTO HUB
F – IN PLACE OF UPPER SEAL RETAINER WHILE ADJUSTING ROTATIONAL DRAG
G – HUB BEARING REMOVAL – FABRICATION

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Figure 804. Tapered Bearing Tools – Main Rotor Hub (Sheet 1 of 2)

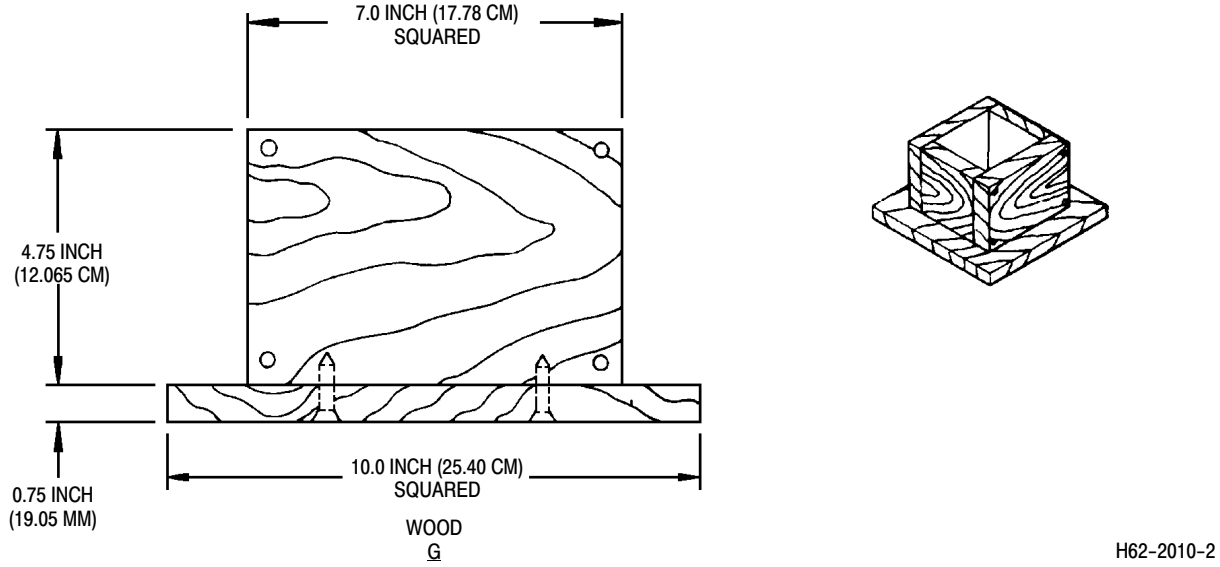


Figure 804. Tapered Bearing Tools – Main Rotor Hub (Sheet 2 of 2)

(15). Install mast nut on mast using mast nut wrench (ST701), tighten until bearings are preloaded to **10 - 12 inch-pounds (1.13 - 1.36 Nm) of rotational drag**. Measure rotational drag using **0 - 10 pound (0 - 4.536 kg)** spring scale hooked over one of hub support web bosses, 6.5 inch (16.51 cm) from hub centerline). A **1.50 - 1.75 pound (0.681 - 0.795 kg)** pull with hub in motion indicates correct rotational drag.

(16). Remove locknut, washer and cone.

(17). To determine thickness required for spacer:

NOTE: When determining spacer thickness, start with thick spacer and work down to thinner spacer.

(a). Install subsequently thinner spacers, from kit K-600N-1200A, starting with a thick spacer, along with cone, substitute washer for retainer and locknut.

(b). Torque nut to to **200 - 250 foot-pounds (271 - 339 Nm)** until **10 - 15 inch-pounds (1.13 - 1.69 Nm) of rotational drag (not break-away torque)** is obtained on hub.

(18). When proper torque has been reached, disassemble and remove steel ring washer.

(19). Alternative method for determining thickness required for spacer:

(a). Install 369A1224-5 lead spacer in place of the 369A1224-3 spacer.

(b). Place steel ring washer for retainer and locknut on the mast and gradually tighten the retaining nut until rolling torque of **10 - 15 inch-pounds (1.13 - 1.69 Nm) of rotational drag (not break-away torque)** is obtained on hub. If the **10 - 15 inch-pounds (1.13 - 1.69 Nm) of rotational drag** is exceeded, discard the lead washer, install new washer and continue.

(c). When proper torque has been reached, disassemble and measure thickness of the lead washer in the bearing seat area. Grind the 369A1224-3 spacer to the same thickness as measured on the lead washer. Check thickness of ground washer at six locations to ensure thickness does not vary by more than 0.0005 inch (0.0127 mm).

(d). Re-assemble with the ground steel washer, steel ring washer and locknut and torque to **200 - 250 foot-pounds (271 - 339 Nm)** until **10 - 15 inch-pounds (1.13 - 1.69 Nm) of rotational drag (not break-away torque)** is obtained on hub.

(20). Remove hub and sleeve bushing with lower bearing cone from mast.

(21). Position hub upside-down. Hand-pack lower hub cavity (Ref. Figure 805) and bearing cone on sleeve bushing with grease (CM111).

(22). Install sleeve bushing with bearing cone in hub. Hand-pack cavity between bearing and hub liner with grease (CM111); then press in lower seal with seal lip toward top of hub. Wipe off excess grease.

(23). Turn hub assembly right side up.

(24). Complete reassembly of hub by installing recessed spacer, upper bearing cone, upper seal and seal retainer in hub at installation of hub on mast.

13. Main Rotor Hub Upper Bearing Grease Repack, Inspection and Replacement

The following procedure is for greasing, inspection and replacement of the main rotor hub upper bearing only.

Consumable Materials
(Ref. Section 91–00–00)

Item	Nomenclature
CM111	Grease, aircraft
CM204	Compound, corrosion preventative
CM121	Preservation oil
CM234	Solvent, dry-cleaning
CM702	Lockwire CRES
CM802	Abrasive cloth, aluminum oxide

Special Tools
(Ref. Section 91–00–00)

Item	Nomenclature
ST701	Main rotor wrench assembly
ST703	Main rotor hub driver

(1). Remove main rotor hub assembly (Ref. Main Rotor Hub Removal) and place on bench.

(2). Remove upper bearing cone.

CAUTION Do not intermix Timken or NTN bearing cups and cones at upper and lower tapered roller bearing locations of main rotor hub.

NOTE:

- Roller bearing cones and cups should always be replaced as a set.
- Replace tapered roller bearing cup and cone if it has any flat spots, scoring, pitting, grooving, discoloration (blue) or if it feels rough when rotated.

(3). Use pressing tools equivalent to items A and B (Ref. Figure 804) to press upper bearing cup from hub. A press ram of one to two tons is sufficient for removal.

CAUTION In next step, do not spin reusable bearing while cleaning. Coat bearings lightly with oil (CM121) after cleaning.

(4). Clean hub bore, sleeve bushing, seal retainer and reusable bearing using filtered solvent (CM234) spray.

(5). Check bearing cup hub bore for scoring:

(a). Smooth out any roughness with grade 400-600 abrasive cloth (CM802).

(b). Restore chemical film protection where removed.

(c). Maximum diameter of hub bore for upper bearing cup (Ref. Figure 805) is 4.4335 inches (11.25 cm), measured in any direction.

(6). Check upper seal retainer.

(a). No cracks, sharp nicks or burrs are allowed.

(b). Minor corrosion or other surface defects may be polished out using crocus cloth (CM803).

(c). Grooving on seal contact surfaces must not exceed 0.004 inch (0.10 mm) depth after polishing.

WARNING **Bearing cups are installed in hub by differential temperature (shrink-fit) method. Take appropriate precautions to prevent burns when handling parts that are cooled to sub-zero temperatures.**

(7). Place bearing cup in closed container of dry ice and cool for not less than 20 minutes to -40°F (-40°C).

(8). Coat bore of hub with grease (CM111).

(9). Use care to maintain cup-to-hub bore alignment and press cup into bore, using tools D and E (Ref. Figure 804), until cup is seated.

CAUTION If hub assembly does not seat properly onto mast, do not attempt to force it into position. Remove hub assembly from mast and determine cause of hub not seating, correct the problem and follow the procedures for reinstallation.

(10). Check that rotor mast is clean. Hoist main rotor hub and position over mast; then lower hub onto mast.

NOTE: To inhibit mast corrosion when operating in salt water environment, lightly coat bearing journals of mast with grease (CM111).

(11). Remove adapter, hoist and eyebolts.

(12). Check that hub is fully seated on mast.

(13). Hand-pack hub cavity, between sleeve bushing and hub, with grease (CM111).

(14). Apply film of grease (CM111) on upper bearing cone and place into hub.

NOTE: Use of substitute steel ring washer for retainer prevents unnecessary scoring of retainer. Several tightening and loosening actions may be required to get rotational drag on hub bearings.

(15). Install steel ring washer, equivalent to tool F (Ref. Figure 804), as substitute for seal retainer (Ref. Figure 805)

(16). Install mast nut on mast using mast nut wrench (ST701), tighten until bearings are preloaded to **10 - 12 inch-pounds (1.13 - 1.36 Nm) of rotational drag**. Measure rotational drag using **0 - 10 pound (0 - 4.536 kg)** spring scale hooked over one of hub support web bosses, 6.5 inch (16.51 cm) from hub centerline). A **1.50 - 1.75 pound (0.681 - 0.795 kg)** pull with hub in motion indicates correct rotational drag.

(17). Remove locknut, washer and cone.

(18). To determine thickness required for spacer:

NOTE: When determining spacer thickness, start with thick spacer and work down to thinner spacer.

(a). Install subsequently thinner spacers, from kit K-600N-1200A, starting with a thick spacer, along with cone, steel ring washer for retainer and locknut.

(b). Torque nut to to **200 - 250 foot-pounds (271 - 339 Nm)** until **10 - 15 inch-pounds (1.13 - 1.69 Nm) of rotational drag (not break-away torque)** is obtained on hub.

(19). When proper torque has been reached, disassemble and remove steel ring washer.

(20). Alternative method for determining thickness required for spacer:

(a). Install 369A1224-5 lead spacer in place of the 369A1224-3 spacer.

(b). Place steel ring washer for retainer and locknut on the mast and gradually tighten the retaining nut until rolling torque of **10 - 15 inch-pounds (1.13 - 1.69 Nm) of rotational drag (not break-away torque)** is obtained on hub. If the **10 - 15 inch-pounds (1.13 - 1.69 Nm) of rotational drag** is exceeded, discard the lead washer, install new washer and continue.

(c). When proper torque has been reached, disassemble and measure thickness of the lead washer in the bearing seat area. Grind the 369A1224-3 spacer to the same thickness as measured on the lead washer. Check thickness of ground washer at six locations to ensure thickness does not vary by more than 0.0005 inch (0.0127 mm).

(d). Re-assemble with the ground steel washer, steel ring washer and locknut and torque to **200 - 250 foot-pounds (271 - 339 Nm)** until **10 - 15 inch-pounds (1.13 - 1.69 Nm) of rotational drag (not break-away torque)** is obtained on hub.

(21). Complete reinstallation of main rotor hub assembly (Ref. Main Rotor Hub Installation).

14. Main Rotor Hub Scissors Attach Lug Bearing Replacement

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM206	Chemical coating
CM216	Loctite remover
CM304	Enamel, epoxy
CM321	Surface primer locking compound
CM431	Sealing, locking and retaining compound

(1). Remove main rotor hub (Ref. Main Rotor Hub Replacement).

(2). Invert hub and place on work bench.

(3). Remove droop stop ring (Ref. Droop Stop Ring Replacement).

(4). Press bearing from hub lug.

(5). Clean bearing bore with Loctite remover (CM216).

(6). Inspect bearing bore for nicks, scratches and grooves.

(7). Inspect bore for diameter of 0.6551-0.6556 inch (16.63954-16.65224 mm).

(8). Touch up bearing bore with chemical coating (CM206).

(9). Apply surface primer (CM321) to mating surfaces of bearing and bores per manufacturer's instructions.

NOTE: Do not allow primer to enter bearing.

(10). Apply locking compound (CM431) to faying surfaces of bearing and bore, press bearing into bore while locking compound is wet.

(11). Remove excess sealant, do not allow sealant to enter bearing.

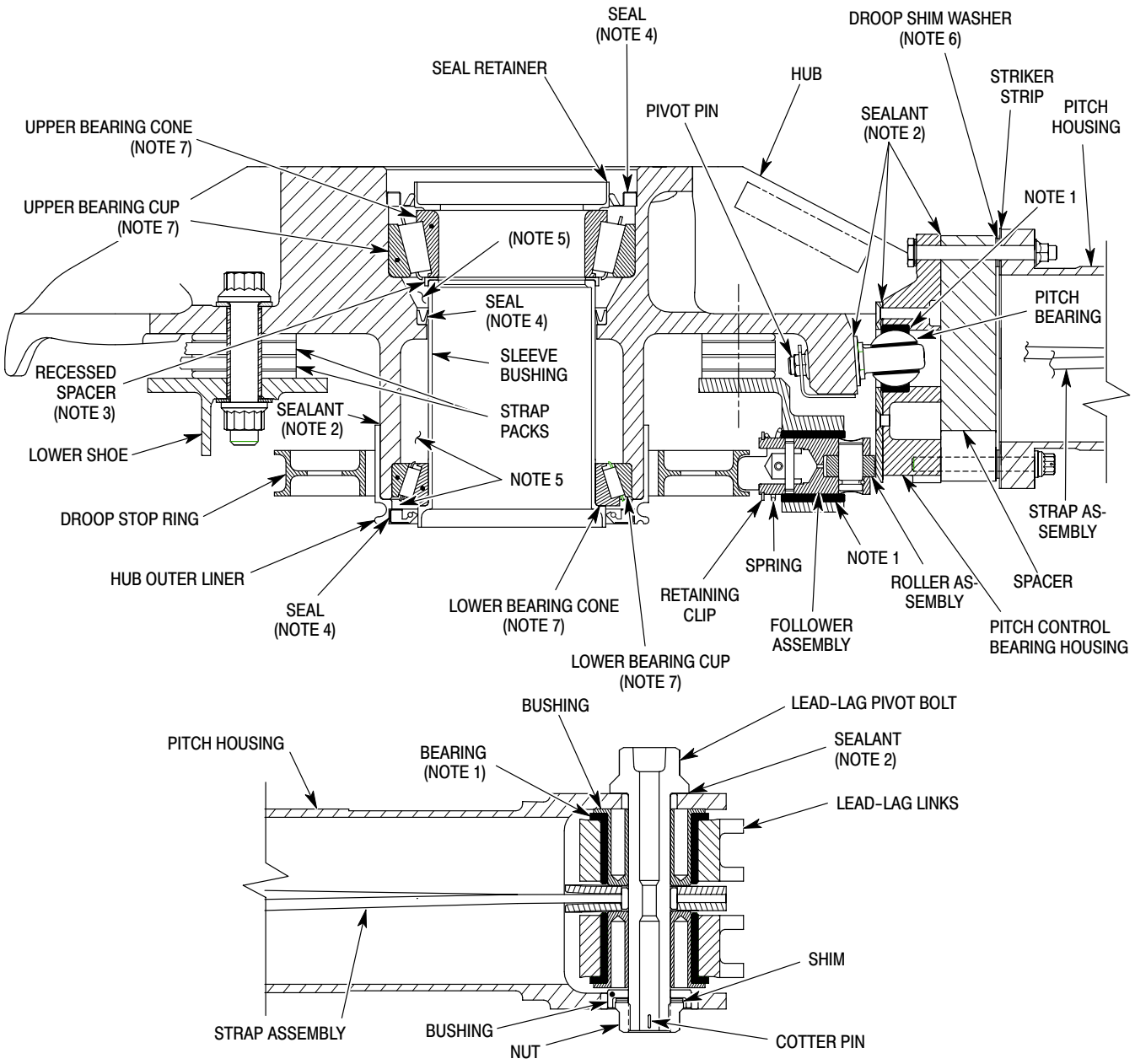
(12). Apply a small fillet of sealant around bearing and allow to dry for 24 hours at room temperature or heat to 140° - 160°F (60° - 72°C) for one hour.

(13). As required, touch up bearing lug with paint (CM304).

(14). Check bearing for a no-load rotational drag of **1.0 - 2.0 inch-pounds (0.113 - 0.226 Nm)**.

(15). Reinstall droop stop ring (Ref. Droop Stop Ring Replacement).

(16). Reinstall main rotor hub (Ref. Main Rotor Hub Replacement).



NOTES:

1. HEAVY LINES INDICATE REINFORCED TEFLON BEARING LININGS (TYPICAL).
2. SEALANT APPLIED TO LOCATIONS SHOWN.
3. RECESSED SPACER SPECIALLY GROUND TO ESTABLISH CORRECT ROTATIONAL DRAG ON TAPERED BEARINGS. INSTALL RECESS DOWN ON TOP OF SLEEVE BUSHING.
4. SEAL TO BE UPWARD.
5. BEARING AND CAVITY TO BE FILLED WITH GREASE.
6. DROOP SHIM WASHERS ARE INSTALLED, AS REQUIRED, TO OBTAIN PROPER ROTOR DROOP ANGLE.
7. DO NOT INTERMIX TIMKEN AND NTN BEARING CUPS AND CONES AT UPPER AND LOWER TAPERED BEARING LOCATIONS.

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Figure 805. Main Rotor Hub – Cross Section

(3). For 369F5450 clutch installation:

(a). Remove power output shaft cover plate from back of engine (Ref. Sec. 01-00-00, Allison Engine Operation and Maintenance Manual).

(b). Install O-rings on 369F5469 (C30/C47 engine) or 369F5468 (C20 series engines) bolt (Ref. Figure 404).

NOTE: Fill all voids and gaps between the outside of bolt and inside of engine shaft with grease.

(c). Lubricate internal spline area of engine output shaft with grease (CM111).

(d). Lubricate bolt threads with anti-seize compound (CM112) and insert through engine into overrunning clutch assembly.

(e). Using bolt removal tool (Ref. Figure 405) either hold output coupling to prevent overrunning clutch from turning or insert hex wrench through bolt to engage and hold clutch.

(f). Torque bolt to **250 - 300 inch-pounds (28.25 - 33.90 Nm) plus drag torque**.

(g). Using existing hardware, reinstall power output shaft cover plate on back of engine (Ref. Sec. 01-00-00, Allison Engine Operation and Maintenance Manual).

(4). Shim coupling on 369F5450 clutch assembly as follows:

(a). Remove output coupling bolt and coupling.

(b). Shim coupling to achieve 0.010-0.030 inch (0.254-0.508 mm) step above clutch output shaft.

(5). Shim coupling on 369A5350 clutch assembly as follows:

(a). Remove output coupling bolt and coupling.

(b). Shim coupling to achieve 0.035-0.055 inch (0.889-1.397 mm) step above clutch output shaft.

CAUTION When installing clutch coupling bolt, installation torque on the bolt must be **250 - 300 inch-pounds (28.25 - 33.90 Nm)** for the 369A5350 clutch or **315 - 365 inch-pounds (35.59 - 41.24 Nm)** for the 369F5450 clutch. Torquing to lower value reduces clutch bearing clamp-up and can result in bearing race spinning.

(6). Coat clutch-to-coupling splines with grease (CM111); install shim(s) and clutch coupling. Coat coupling bolt threads with anti-seize compound (CM112); install bolt with new O-ring. Check for bolt self-locking drag torque of **25 inch-pounds (2.82 Nm) minimum to 200 inch-pounds (22.60 Nm) maximum**. Replace bolt if torque values are exceeded.

(a). For 369A5350 clutch, torque coupling bolt to **actual drag torque plus 250 - 300 inch-pounds (28.25 - 33.90 Nm)**.

(b). For 36F5450 clutch, torque coupling bolt to **actual drag torque plus 315 - 365 inch-pounds (35.59 - 41.24 Nm)**.

(7). Install engine shaft firewall seal, bolts, washers, and nuts.

(8). Reinstall engine.

7. Overrunning Clutch Subassembly Replacement

(Ref. Figure 403 or Figure 404)

A. Overrunning Clutch Subassembly Removal

(1). Remove main transmission drive shaft.

(2). For 369F5450 clutch installation:

(a). Remove power output shaft cover plate from back of engine (Ref. Sec. 01-00-00, Allison Engine Operation and Maintenance Manual).

(b). Insert tool (Ref. Figure 405) to engage bolt in back of clutch.

(c). Insert a long 3/8 inch (9.525 mm) hex wrench, approximately 10 inches (25.4 cm) long, through tool and into back of clutch assembly.

(d). While holding internal hex wrench [3/8 inch (9.525 mm)], turn external hex wrench [1.00 inch (2.54 cm)] counter-clockwise to remove bolt from back of clutch.

(3). Remove coupling bolt, clutch coupling and shims.

(4). Remove retaining ring from clutch housing. Then pull complete clutch subassembly out of housing.

B. Overrunning Clutch Subassembly Installation

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM111	Grease, aircraft
CM125	Oil
CM126	Oil, turbine

(1). Remove shipping plug and O-ring from end of shaft in replacement clutch subassembly.

(2). Drain preservative oil from clutch subassembly by inverting it several times. Add lubricating oil (CM125 or CM126) (Ref. Sec. 12-00-00).

(3). Coat clutch splines with grease (CM111).

(4). Using care to avoid oil spillage, insert clutch subassembly into clutch housing and install retaining ring with beveled side outward.

(5). Check fluid level of clutch assembly before installing clutch coupling (Ref. Sec. 12-00-00).

(6). For 369F5450 clutch installation:

(a). Remove power output shaft cover plate from back of engine (Ref. Sec. 01-00-00, Allison Engine Operation and Maintenance Manual).

(b). Install O-rings on 369F5469 (C30/C47 engine) or 369F5468 (C20 series engines) bolt (Ref. Figure 404).

NOTE: Fill all voids and gaps between the outside of bolt and inside of engine shaft with grease.

(c). Lubricate internal spline area of engine output shaft with grease (CM111).

(d). Lubricate bolt threads with anti-seize compound (CM112) and insert through engine into overrunning clutch assembly.

(e). Using bolt removal tool (Ref. Figure 405) either hold output coupling to prevent overrunning clutch from turning or insert hex wrench through bolt to engage and hold clutch.

(f). Torque bolt to **250 - 300 inch-pounds (28.25 - 33.90 Nm) plus drag torque**.

(g). Using existing hardware, reinstall power output shaft cover plate on back of engine (Ref. Sec. 01-00-00, Allison Engine Operation and Maintenance Manual).

(h). Lubricate coupling bolt threads with anti-seize compound (CM112).

(7). Install clutch coupling, shims and coupling bolt.

(8). Install main transmission drive shaft.

8. Overrunning Clutch–to–Firewall Seal

The overrunning clutch-to-firewall seal consists of a stamped steel backing and a seal bonded to the cupped diameter of the backing.

9. Overrunning Clutch–to–Firewall Seal Replacement

(Ref. Figure 403)

(1). Remove engine.

(2). Remove three bolts, six washers and three nuts that attach firewall seal to overrunning clutch.

(3). Position replacement clutch-to-firewall seal assembly on flange of clutch with

seam orientated at the 6 o'clock position and secure with attaching hardware.

10. Main Transmission Drive Shaft Couplings

The main transmission drive shaft couplings connect the overrunning clutch to the drive shaft and the drive shaft to the main transmission.

11. Main Transmission Drive Shaft Coupling Replacement

(Ref. Figure 402)

A. Main Transmission Drive Shaft Coupling Removal

(1). Remove drive shaft; use care to keep it from striking any object.

(2). Remove coupling bolt from main transmission and overrunning clutch. Retain shim(s) with couplings for reinstallation.

B. Main Transmission Drive Shaft Coupling Installation

Consumable Materials
(Ref. Section 91–00–00)

Item	Nomenclature
CM111	Grease, aircraft
CM112	Anti-seize compound high temperature

CAUTION

- The 0.010 inch (0.254 mm) minimum measurement between the bolt seating surface and the input shaft must be obtained to ensure proper clamp up. Warped shims or foreign material could provide a false 0.010 inch (0.254 mm) minimum measurement and improper clamp up could result during normal operation which may damage the main transmission input shaft.
- Do not use clutch coupling shims under transmission input coupling. Inside diameter of clutch coupling shims, 1.260–1.270 inches (3.2004–3.2258 cm), is approximately 0.070 inch (1.778 mm) larger than inside diameter of shims used at transmission coupling. Incorrect diameters can cause an improperly seated shim, misalignment and cocked coupling.

NOTE: Transmission input coupling shims are laminated stock. Each lamination is 0.002 inch (0.051 mm) thick. Peel to thickness required.

(1). Install previously removed shims or refer to Main Transmission Drive Shaft Installation for shim thickness calculation.

(2). Lubricate drive shaft splines with grease (CM111) and install in place. Coat bolt threads with anti-seize compound (CM112) and install.

(a). For 369D25100 transmission installation, torque coupling bolt to **actual drag torque plus 250 - 300 inch-pounds (28.25 - 33.90 Nm)**. If bolt is not seated and/or existing torque is found to be less than **250 - 300 inch-pounds (28.25 - 33.90 Nm)**, ensure self-locking drag torque is not less than **25 inch-pounds (2.82 Nm)** before torquing bolt.

(b). For 369F5100 transmission installation, torque coupling bolt to **actual drag torque plus 315 - 365 inch-pounds (35.59 - 41.24 Nm)**. If bolt is not seated and/or existing torque is found to be less than **315 - 365 inch-pounds (35.59 - 41.24 Nm)**, ensure self-locking drag torque is not less than **25 inch-pounds (2.82 Nm)** before torquing bolt.

(3). Reinstall main transmission drive shaft, main transmission access cover and sound insulation.

12. Tail Rotor Drive Shaft Coupling Replacement

A. Tail Rotor Drive Shaft Coupling Removal

(1). Remove tail rotor drive shaft (Ref. Sec. 63-15-10).

NOTE: With Bendix coupling installed, remove socket from main transmission coupling only if visual inspection reveals signs of contact between coupling bolt and socket.

(2). Remove couplings from main and tail rotor transmissions. Retain shims with couplings for reinstallation.

CAUTION Do not immerse Bendix flexible couplings in fluid or cleansers such as magnetic particle, fluorescent penetrant, visible dye etc. Do not apply corrosion protection fluids unless coupling has been cleaned with solvent or detergent. Apply any corrosion protection very sparingly to outside only.

B. Tail Rotor Drive Shaft Coupling Installation

According to type of coupling installed, installation of tail rotor shaft requires shimming of couplings, and in some instances, tail rotor gearbox-to-tailboom shimming (Ref. Sec. 63-15-10, Tail Rotor Drive Shaft Installation).

NOTE: For 369D25100 transmission installation only; If equipped with 369D25626-11 mount bracket, examine bolts securing mount bracket to cooling blower assembly. If safety wired, remove and discard bolts. Replace with NAS1224-1L self-locking bolts.

(6). Disassemble cooling blower if required.

B. Cooling Blower Installation (369D25100 Transmission)

(Ref. Figure 405)

(1). Install pulley guard on main transmission input shaft.

(2). With belt looped around transmission input shaft, position mounting bracket on main transmission pad and loosely install four bolts and washers. Before tightening bolts, insert two shims between bracket and transmission pad. Verify that blower scroll clears tail rotor drive shaft by at least 0.190 inch (4.83 mm). Torque bolts to **65 - 75 inch-pounds (7.34 - 8.47 Nm)**. Lockwire bolt heads after belt tension is checked.

(3). Connect drain tube to cooling blower scroll fitting. Clamp tube to fitting with two turns of lockwire.

(4). Roll exhaust duct rubber connectors onto scroll outlets and secure with tie-down straps (Transmission oil cooler duct and engine oil cooler duct).

CAUTION In the following step do not use levers or other tools on belt, or in any way force belt onto pulley.

(5). Slide pulley onto transmission input shaft to engage belt in teeth of both pulleys.

(6). Adjust belt tension.

NOTE: Instructions in step (7). below, apply only when original shim(s) (same shim thickness) are installed and drive shaft, overrunning clutch and couplings remain unchanged. A distance of 0.010 inch (0.254 mm) between bolt seating surface on coupling and transmission input shaft is required to ensure coupling bolt will not bottom out shaft and to provide proper assembly clamp up. (Ref. Sec. 63-10-00).

CAUTION The 0.010 inch (0.254 mm) minimum measurement between the bolt seating surface and the input shaft must be obtained to ensure proper clamp up. Warped shims or foreign material could provide a false 0.010 inch (0.254 mm) minimum measurement and improper clamp up could result during normal operation which may damage the main transmission input shaft.

(7). Install laminated shim and coupling on transmission input shaft. Secure coupling with coupling bolt; torque to **250 - 300 inch-pounds (28.25 - 33.90 Nm) plus drag torque**.

(8). Install main transmission drive shaft (Ref. Sec. 63-10-00).

(9). Install access panels.

14. Oil Cooler Blower Installation (369F5100 Transmission)

(Ref. Figure 406)

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM111	Grease, aircraft
CM112	Anti-seize compound high temperature
CM425	Sealing compound
CM702	Lockwire CRES

(1). With belt looped around driven pulley, install oil cooler fan bracket.

NOTE: NAS1304 series bolts may be used in place of NAS6604 series bolts.

(a). Install four bolts with washers through oil cooler mounting bracket into fan bracket.

(b). Before tightening bolts, displace cooler toward the transmission flange to eliminate slack in that direction.

(c). Torque bolts to **70 - 90 inch-pounds (7.91 - 10.17 Nm)**.

(d). After bolts are torqued, seal around bolt heads with sealant (CM425).

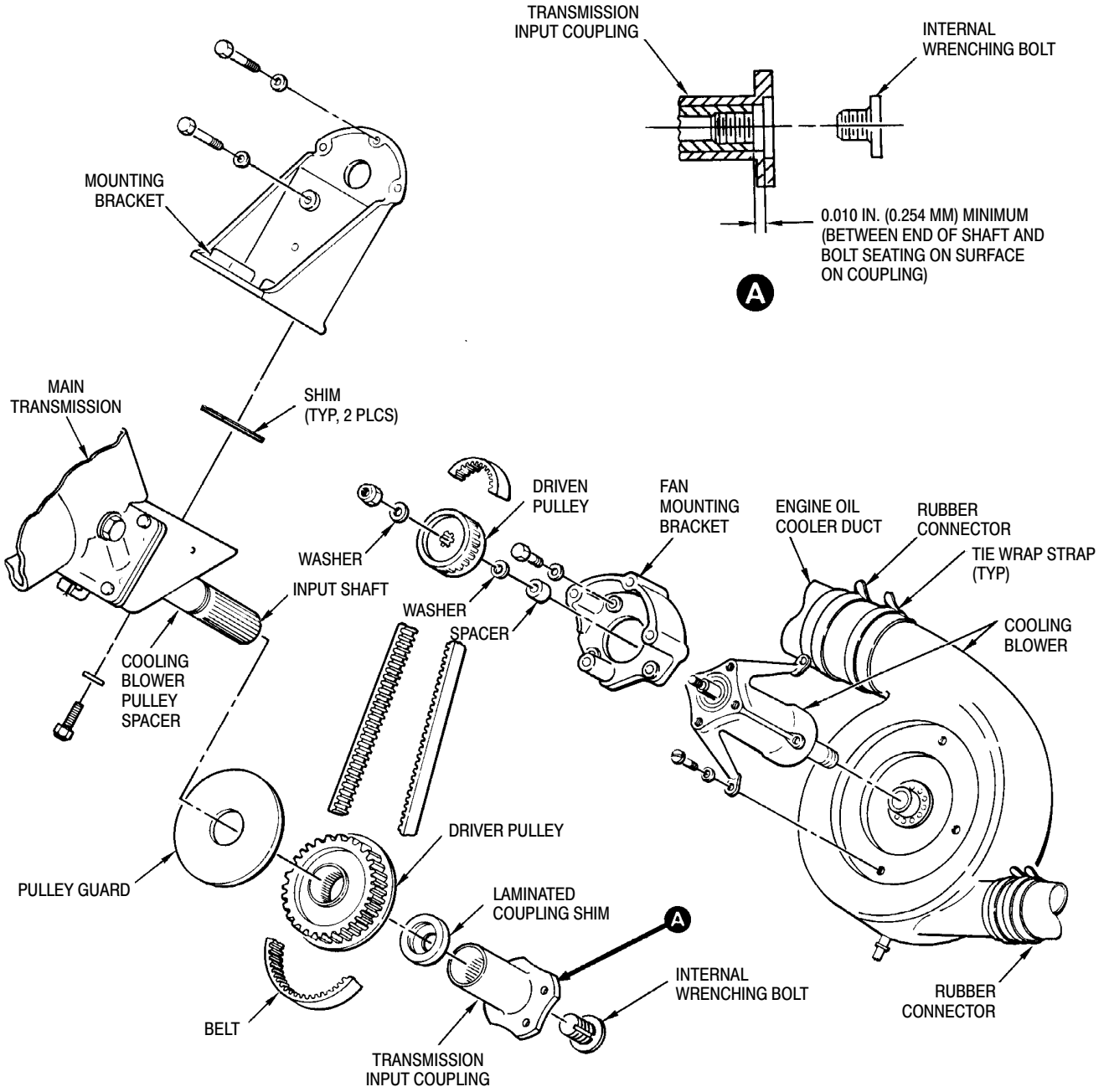


Figure 405. Cooling Blower Installation (369D25100 Transmission)

CAUTION When installing pulley and guard, ensure spring pin in pulley is fully engaged inside hole in pulley guard.

(2). Install pulley guard on main transmission input shaft.

(3). With belt looped around transmission input shaft, position mounting bracket on main transmission pad and loosely install two bolts with washers from the bottom of bracket and two bolts with washers from top of bracket.

(4). Before tightening bolts, insert two shims between bracket and transmission pad.

(5). Verify that blower scroll clears anti-torque drive shaft by a minimum of 0.190 inch (4.826 mm).

CAUTION In the following step, do not use levers or other tools on belt, or in any way force belt onto pulley.

(6). Slide driver pulley onto transmission input shaft to engage belt in teeth of both pulleys.

CAUTION

- The minimum of 0.010 inch (0.254 mm) measurement between the bolt seating surface and the input shaft must be obtained to ensure proper clamp-up. Warped shims or foreign material could provide a false 0.010 inch (0.254 mm) minimum measurement and improper clamp-up could result, which during normal operation, may damage the main transmission input shaft.
- Do not use clutch coupling shims under transmission input coupling. Inside diameter of clutch coupling shim is different than shim used on transmission input coupling. Incorrect diameters can cause an improperly seated shim, misalignment and cocked coupling.

(7). Coat threads of coupling bolt with anti-seize compound (CM112).

(8). Lubricate input shaft splines and coupling splines with grease (CM111).

(9). Install input coupling shim and coupling on transmission input shaft with coupling bolt.

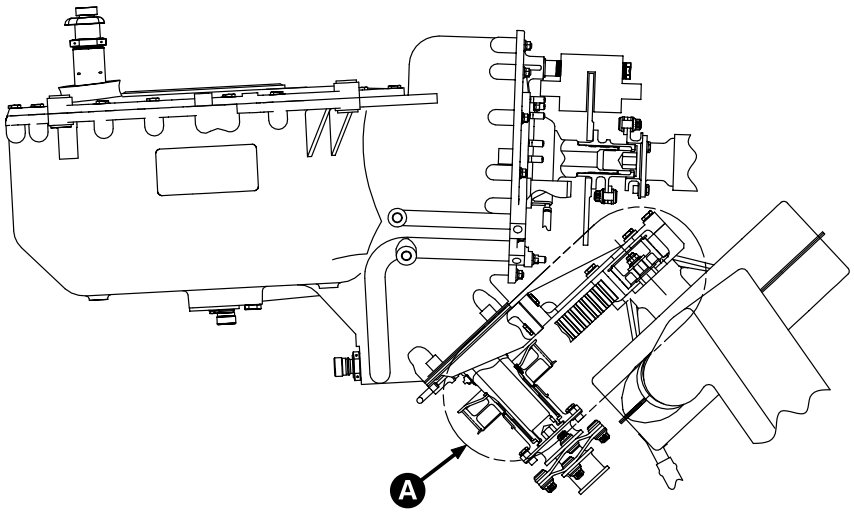
(10). Adjust belt tension (Ref. Sec. 63-21-00, Cooling Blower Belt Tension Check and Adjustment).

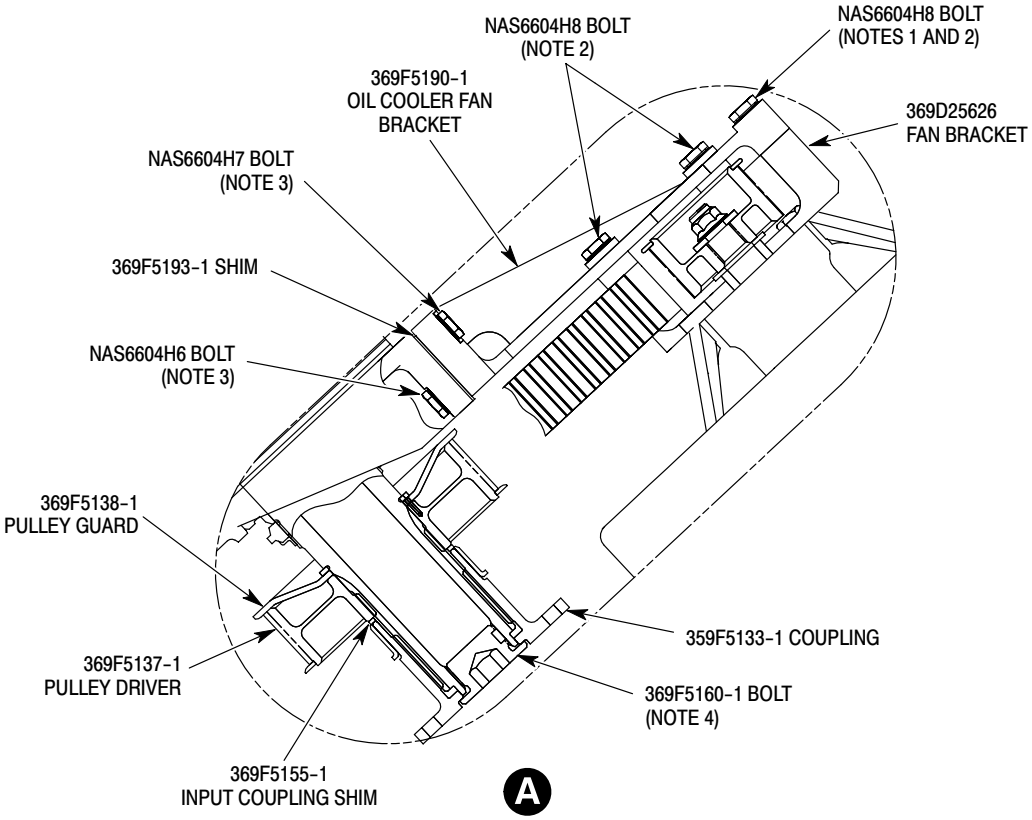
NOTE: Check coupling bolt for a minimum of **25 inch-pounds (2.82 Nm)** drag torque.

(11). Torque coupling bolt to **315 - 365 inch-pounds (35.59 - 41.24 Nm) plus drag torque**.

(12). Connect drain tube to cooling blower scroll fitting. Clamp tube to fitting with two turns of lockwire (CM702).

(13). Roll exhaust duct rubber connectors onto scroll outlets (transmission oil cooler duct and engine oil cooler duct) and secure with tie straps.





NOTES:

1. TORQUE BOLTS TO **70 – 90 INCH-POUNDS (7.91 – 10.17 NM)**.
2. AFTER TORQUING, SEAL BOLT HEADS WITH SEALANT (CM425).
3. TORQUE BOLTS TO **65 – 75 INCH POUNDS (7.34 – 8.47 NM)** AND SAFETY WITH LOCKWIRE (CM702).
4. TORQUE COUPLING BOLT TO **315 – 365 INCH POUNDS (25.59 – 41.24 NM) PLUS DRAG TORQUE** (DRAG TORQUE TO BE NOT LESS THAN 25 INCH-POUNDS (2.82 NM)).

CSP102-012A

Figure 406. Oil Cooler Blower Installation (369F5100 Transmission)

3. Main Rotor Static Mast Replacement (369F5100 Transmission Installation)

(Ref. Figure 202)

A. Main Rotor Static Mast Removal (369F5100 Transmission Installation)

CAUTION Main rotor mast is highly stressed. Do not allow tools to strike mast or mast to strike any object. Any impact damage may require replacement of mast.

(1). Remove main rotor hub (Ref. Sec. 62-20).

(2). Remove main rotor controls (Ref. Sec. 67-10).

(3). Remove main transmission (Ref. Sec. 63-25).

(4). Remove four bolts, washers and nuts.

(5). Lift main rotor mast from helicopter.

B. Main Rotor Static Mast Installation (369F5100 Transmission Installation)

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM306	Lacquer, clear
CM430	Sealant, solvent resistant

(1). Apply silicone sealant (CM430) on bottom surface of mast tube and base at drive shaft opening to seal base to mast support structure at installation.

(2). Position main rotor mast so that holes in base align with holes in mast support structure.

(3). Check underside of mast support structure at left aft stud hole location. Stud-to-pan doubler surface must be clean to bare metal for electrical bonding. Install main transmission mounting bolts, plate spacers and nuts. Torque nuts to **160 - 190 inch-pounds (18.08 - 21.47 Nm) plus drag torque**.

(4). Using 0.0010-0.0015 inch (0.0254-0.0381 mm) feeler gage, check for gap between self-locking nuts and plate spacers. No gap is allowed.

(5). If gap exists, remove nut and replace with new self-locking nut. Torque bolts into replacement nuts to **160 - 190 inch-pounds (18.08 - 21.47 Nm) plus drag torque** and repeat step e. above. Continue until each nut is flush against its spacer. Seal bare bond area with clear lacquer (CM306).

(6). Install main transmission (Ref. Sec. 63-25).

(7). Install main rotor controls (Ref. Sec. 67-10).

(8). Install main rotor hub (Ref. Sec. 62-20).

4. Main Rotor Static Mast Inspection and Repair

(Ref. Figure 203)

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM115	Grease, oscillating bearing
CM234	Solvent, dry-cleaning
CM318	Primer
CM323	Primer
CM803	Crocus cloth

(1). Inspect all areas of main rotor mast for cracks, nicks, scratches and evidence of impact damage.

(2). Inspect bearing surfaces for scoring and galling.

(3). Inspect threads for damage.

(4). Inspect rivets that secure base to mast tube for security.

(5). Check that tape (Ref. Figure 201) on forward edge of mast tube is secure and undamaged; replace if defective.

NOTE: To inhibit corrosion of mast when operating in salt water environment, check tape at frequent intervals. Also, apply thin grease film (CM115) to bearing journals.

(6). Inspect internal bore for paint chipping, orange peeling or flaking, none allowed.

NOTE: Chipping, orange peeling or flaking paint will normally be at the base of the static mast tube.

(7). Re-apply finish to mast internal bore as follows:

(a). Remove main rotor hub (Ref. Sec. 62-20-00 or 62-20-60, Main Rotor Hub Replacement).

(b). Remove main transmission (Ref. Sec. 63-20-00 or 63-20-25, Main Transmission Replacement).

(c). Remove static mast (Ref. Main Rotor Static Mast Replacement).

(d). Thoroughly clean interior tube with Solvent (CM234).

(e). Inspect for any corrosion, none allowed.

(f). Remove paint from bad areas and lightly feather paint edge with crocus cloth (CM803), remove any residue from feathering.

(g). Apply primer (CM318), or (CM323), to repair areas.

(h). Allow to cure per manufacturer's instructions.

(i). Reinstall static mast.

(j). Reinstall main transmission.

(k). Reinstall main rotor hub.

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TABLE OF CONTENTS (Cont.)

ANTI–TORQUE ASSEMBLY

FAULT ISOLATION

1. Tail Rotor Assembly

The tail rotor, mounted on the tail rotor transmission at the end of the tailboom, counteracts main rotor torque and controls heading of the helicopter. The tail rotor control system changes the pitch of the tail rotor blades. The antitorque pedals move a system of bellcranks and control rods routed through the fuselage and tailboom to a pitch control assembly which moves links that attach to blade–pitch arms on the blades.

The pitch control assembly slides axially on the tail rotor transmission output shaft. Pushing forward on the left pedal changes heading to the left; forward right pedal movement changes heading to the right.

For **two-bladed** tail rotor system, blade pitch movement is –13 degrees to –15 degrees thrust to the left and +27 degrees to +29 degrees to the right.

For **four-bladed** tail rotor system, blade pitch movement is –13 degrees to –15 degrees thrust to the left, +31 degrees to +32 degrees thrust to the right and +6.5 degrees to +8.5 degrees thrust to the right at neutral.

During flight, pedal position and pressure required to maintain a desired heading varies with main rotor torque variations, altitude and airspeed conditions. Control linkage includes a bungee spring that relieves left pedal forces in flight.

When the helicopter is on the ground, pedal–to–seat distance is adjusted by removing quick–release pins on top of pedal arms and repositioning pedals.

The **two-bladed** tail rotor assembly consists mainly of two tail rotor blades, a hub, drive fork, two pitch control links, and a pitch control assembly.

The **four-bladed** tail rotor assembly consists of four tail rotor blades, two hubs, drive fork, four pitch control links and a pitch control assembly. The blades are held together on the hub by a laminated tension–torsion strap pack that permits the blades to rotate axially on the hub. The hub pivots in the drive fork. Control of blade pitch is from the pitch control assembly through pitch control links that connect to pitch arms on the blade root fittings.

2. Anti–Torque Fan Assembly

The anti–torque fan is an axial fan with thirteen variable pitch blades. The fan provides anti–torque by furnishing variable flow of low pressure high volume air through the tailboom and thrusters.

During flight, pedal position and pressure required to maintain a desired heading varies with main rotor torque variations, altitude and airspeed conditions. Control linkage includes a bungee spring that relieves left pedal forces in flight.

When the helicopter is on the ground, pedal–to–seat distance is adjusted by removing quick–release pins on top of pedal arms and repositioning pedals.

Table 101. Troubleshooting Tail Rotor and Vibrations

Symptom	Probable Trouble	Corrective Action
Heavy medium–frequency vibration in tail rotor assembly; vibration sometimes felt in pedals as a buzzing sensation.	Tail rotor out of balance.	Rebalance tail rotor assembly (Ref. Sec. 18–20–00).
	Runout of tail rotor transmission output shaft excessive.	Replace transmission if shaft runout exceeds 0.0025 inch (0.0635 mm) T.I.R. No axial play allowed. (Ref. Sec. 63–25–10).

Table 101. Troubleshooting Tail Rotor and Vibrations

Symptom	Probable Trouble	Corrective Action
High frequency vibration, primarily in pedals as a buzzing sensation.	Tail rotor blades slightly out of balance.	Rebalance tail rotor assembly (Ref. Sec. 18–20–00).
	Tail rotor blade pitch bearings worn.	Replace tail rotor pitch bearings (Ref. COM).
	Excessive wear in pitch control link bearings.	Replace pitch control link bearings (Ref. COM).
NOTE: High frequency vibrations in the helicopter can also be caused by components of other systems (Ref. Sec. 18–20–00, 53–40–00, 63–25–10 and Chap. 71).	Excessive wear of swashplate or large bearings in housing of pitch control assembly.	Replace swashplate or repair pitch control assembly (Ref. COM).
	Excessive play in tail rotor fork bearings.	Replace fork bearings (Ref. COM).
	Tail rotor hub–to–fork play.	Repair (Ref. COM).
	Excessive dents in leading edge of blades.	Replace blade(s) or tail rotor assembly. (Ref. COM).
	Insufficient torque on stabilizer mount bolts.	Retorque mount bolts (Ref. Chap. 53).
	Insufficient torque on tail rotor assembly retaining nut.	Retorque retaining nut (Ref. Sec. 64–30–00).
Excessive play in pitch control link assemblies.	Worn pitch control link bearings.	Replace pitch control link bearings (Ref. COM).
High left pedal forces required in flight.	Bungee spring (Sta. 63) disconnected, broken or stretched.	Reconnect or replace bungee spring (Ref. Sec. 67–20–00).
Pedals binding.	Excessive drag of pitch control swashplate on transmission shaft.	Clean swashplate bore and transmission shaft splines. Re–lubricate splines.
Snapping noise heard in non–operating tail rotor when pitch angle changed from one extreme to the other.	Noise is normal action of strap pack and caused by laminates twisting and bending when blade is feathered without centrifugal load present.	None required.

TAIL ROTOR BLADES
MAINTENANCE PRACTICES

1. Tail Rotor Blades

Blades are cambered for high thrust to provide directional control at high altitude. Each consists of an aluminum honeycomb spar, aluminum skin, riveted aluminum blade fittings and an aluminum tip cap; all structurally bonded together.

At manufacture, static balancing moments of all blades are within plus or minus 40 gram inches of each other by use of a special balancing fixture and prebalancing with tip weights. Although erosion or allowable repairs may cause minor balance moment changes, such changes are considered negligible enough to allow direct replacement of any used blade with a new one and interchangeable use of blades with remaining service life. In any case of blade selection or use, inspection, repair and serviceability requirements must be complied with. Retirement schedule and remaining service life of a used blade should always be considered when making decision to replace a single blade (Ref. Sec. 04-00-00).

2. Tail Rotor Blade Inspection

(Ref. Figure 201) Perform balance check at intervals specified (Ref. Sec. 05-20-00). If any of following conditions exist, perform appropriate detailed inspections and allowable repairs (Ref. COM).

(1). Surface cracks, scratches, nicks, gouges, dents, pits or corrosion.

(2). Leading edge erosion or dents. Visually check abrasion strip for paint cracking or chipping along abrasion strip/airfoil bond line. Use 10X glass to check abrasion strip/airfoil bond line for debonding between epoxy adhesive and abrasion strip. If debonding has occurred, remove blade from service.

NOTE: If abrasion strip debonding is suspected, but cannot be confirmed by visual inspection, (Ref. Abrasion Strip Dye Penetrant and Tap Test Inspection).

(3). Root fitting cracks, scratches, nicks and gouges. No cracks are allowable. Scratches that do not exceed 0.020 inch (0.508 mm) depth are permissible if repaired.

(4). Loose or missing tip weights and attachment hardware.

(5). Clogged drain openings.

(6). Adhesive separation at exposed edges.

(7). Debonding of tip cap from tail rotor blade (Ref. Tail Rotor Blade Tip Cap Repair).

(8). Tip cap rivets for installation and condition (Ref. Tail Rotor Blade Tip Cap Repair).

(9). Tail rotor blade pitch bearings for a maximum 0.250 inch (6.350 mm) play measured at tip of blade.

3. Abrasion Strip Dye Penetrant and Tap Test Inspection

(Ref. Figure 202)

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM729	Tape, masking, pressure sensitive
CM801	Abrasive paper, silicon carbide

(1). Using a 1/8 inch (3.175 mm) drill bit and a pencil, fabricate a tapping hammer by taping drill bit to pencil. Drill bit should be a minimum of six inches (15.24 cm) from end of pencil that is to be held while tapping.

NOTE: Voids are indicated by a dull, dead tone. Slight tone changes will occur near the tip cap and along the length of the strip. These should not be mistaken for voids.

(2). Using the fabricated tapping hammer, tap test the entire abrasion strip. Hold end of pencil opposite drill bit and tap with shank (rounded) end of drill bit. If void indications are noted, remove blade from service.

(3). Mask area of blade around abrasion strip with masking tape (CM729).

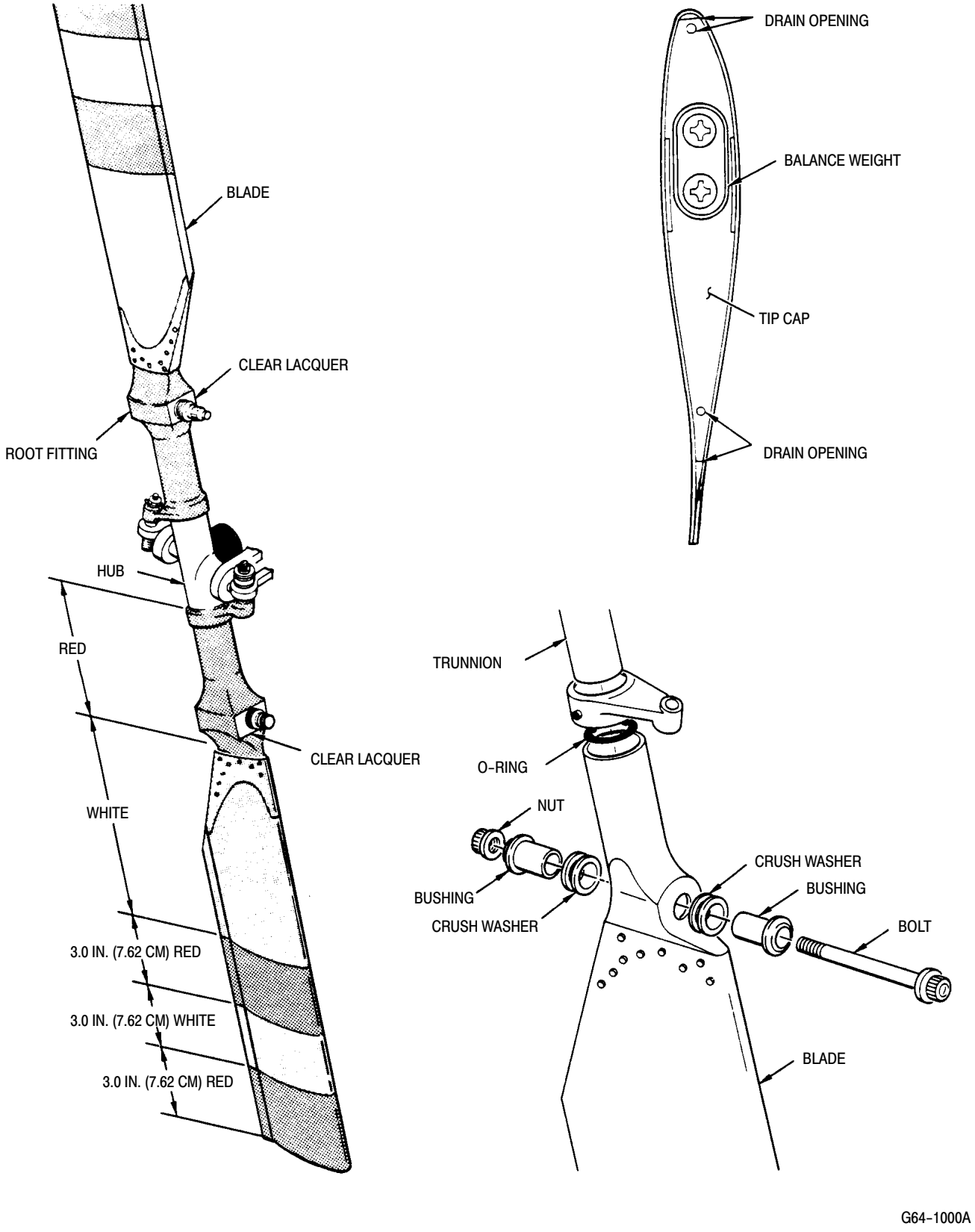

Figure 201. Tail Rotor Blade

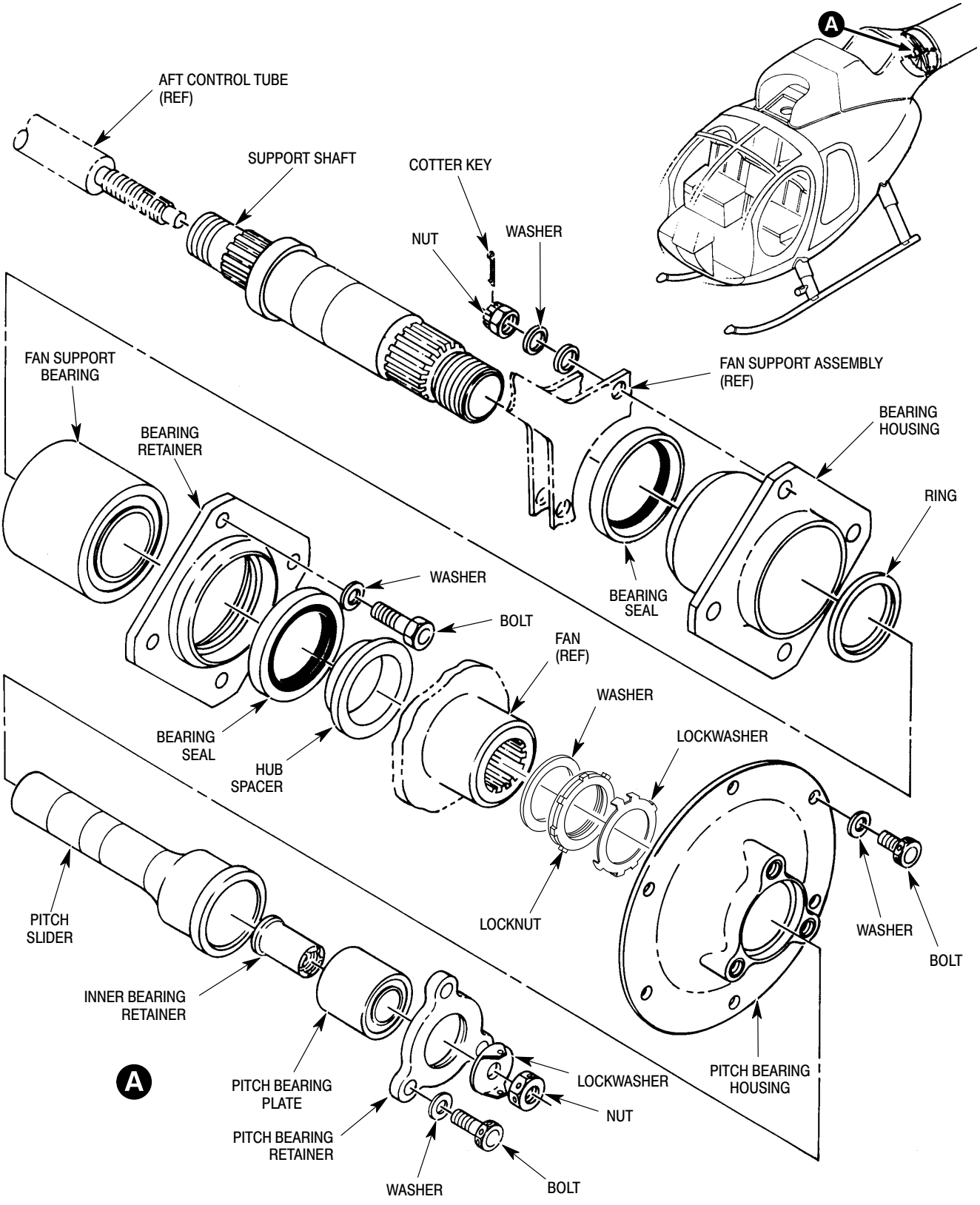

Figure 402. Anti–Torque Fan Support Shaft

(1). Removal with Pneumatic Tool: Pneumatic tools may be used only on fasteners in interference fit holes and fasteners with aluminum collars.

(a). Select the applicable removal tool. Fit removal tool to a 0.375 inch (9.525 mm) square socket drive that will fit a reversible screwdriver motor.

(b). Place the collar removal tool over the collar and press firmly.

(c). Rotate the tool counterclockwise by hand until the teeth bite into the collar.

(d). Place the motor on the drive socket and unscrew the collar using reverse drive.

(e). Tap out the pin with a nonmetallic-faced mallet.

(2). Removal with Hand Tool:

(a). Insert the applicable size hex wrench into the pin wrenching cavity and hold securely to prevent pin rotation.

(b). Rotate the collar counterclockwise with pliers or vise grips to remove.

(c). Tap out pin with a nonmetallic-faced mallet.

B. Fan Balance Stud Installation

Pins may be reused, provided the finish has not been marred and the threads and wrenching cavity are in acceptable condition.

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM409	Adhesive, epoxy

(1). Apply adhesive (CM409) to pin and insert, while wet, using a nonmetallic-faced mallet or rivet set into hole. Ensure Pin is seated flush against fan hub.

(2). Manually screw the collar onto the pin a minimum of two threads.

(3). Installation with Pneumatic Tool:

(a). Insert the hex wrench tip of the power driver into the wrenching cavity in the pin

(b). Press the power driver socket firmly against the collar and actuate the driver until the collar wrenching device is torqued off.

(c). Withdraw the hex wrench tip from the wrenching cavity and discard the wrenching collar.

(4). Installation with hand tool:

(a). Press socket from hand tool firmly onto collar.

(b). Insert hex wrench though center of tool and hold pin to prevent it from rotating.

(c). Turn socket clockwise, while holding hex wrench, until collar is firmly seated against fan hub; wrenching collar will torque off when proper torque is reached. Discard wrenching collar.

8. Pitch Horn Counterweight Set Screw Replacement

(Ref. Figure 403) If, during fan inspection, a counterweight is found to be loose, the set screw must be replaced.

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM216	Loctite remover
CM321	Surface primer locking compound

(1). Apply heat to loose counterweight.

(2). Remove and discard set screw.

(3). Remove retaining ring and washer.

(4). Inspect threads in counterweight for condition and cleanliness.

(5). Clean pitch horn threads with Loctite remover (CM216).

(6). Apply grade T primer (CM321) to threads of new set screw, allow to dry for 30 minutes at ambient temperature.

NOTE: Ensure counterweight-to-pitch horn index mark aligns correctly. All counterweights are index the same.

(7). Align index mark on counterweight to match with mark on pitch horn and install into pitch horn.

(8). Apply grade B locking compound (CM321) to threads of set screw and install into pitch horn. Tighten set screw.

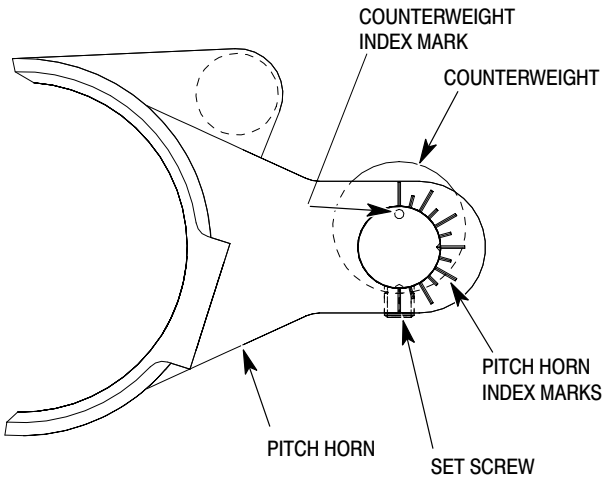

Figure 403. Pitch Horn Counterweight Set Screw Replacement

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ANTI–TORQUE FAN INSPECTION/CHECK

1. Anti–Torque Fan Inspection

Inspect the anti-torque fan for the following conditions:

(1). All components for cracks, nicks, corrosion or excessive wear.

(2). Tension-torsion straps for nicks or cuts in polyurethane coating. No exposed kevlar fibers allowed. Spools for cracks.

(3). Hub-to-blade bushings for cracks.

(4). Pitch horn for excessive wear (out-of-round condition).

(5). Counterweights on pitch horn for security. If loose, perform Pitch Horn Counterweight Set Screw Replacement.

NOTE: Access the forward counterweights through the fan inlet. Fan hub fairing must be removed for access (Ref. Sec. 53-30-30).

(6). Pitch plate bushing for excessive wear, grooves or cracking.

(7). Blades for cracks, nicks or impact damage.

(8). Inspect gap between fan blade and tip seal. Inspect gap between fan blade and hub (inboard end of the blade). If any of these gaps for any blade exceeds the average gap of the other blades by more than 0.10 inch (2.54 mm), removed and inspected the tension-torsion strap for that blade.

2. Support Shaft Inspection

Inspect the support shaft and its associated components as follows:

NOTE: Ensure proper pitch plate and/or support shaft bearings are installed. 900R bearings are not to be used in the 500/600N helicopters.

(1). Support shaft for:

(a). Cracks; none allowed.

(b). Wear.

(c). Scoring; axial marks from bearing installation or removal.

(d). Damaged spines; none allowed.

(e). Corrosion and pitting.

(2). Fan support bearing for free movement of set.

(3). Fan support bearing retainer and housing for:

(a). Cracks; none allowed.

(b). Wear.

(c). Scoring; axial marks from bearing installation or removal.

(4). Bearing seals for condition.

(5). Hub spacer for cracks and wear.

3. Anti–Torque Fan Liner (Felt Metal Seal) Inspection

(1). Inspect for cracks and debonding of liner material.

(2). Inspect for cracks around the radius cutouts of fan support.

(3). If cracks are found, stop drill and inspect every 50 hours (Ref. Sec. 05-20-20).

NOTE: Cracks protruding into the Felt Metal Seal are unacceptable, replace seal (Ref. Anti-Torque Fan Liner (Felt Metal Seal) Replacement).

(4). Inspect aft P-seal for tears, deterioration and debonding.

4. Fan Blade Inspection (100–Hour)

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM437	Sealing compound

(1). Inspect polypropylene portion of fan blade for nicks, scratches, abrasions and bulges; pay particular attention to

leading edge and area around the pin near the outboard edge of blade.

(a). Nicks and abrasion pits that are less than 0.040 inch (1.016 mm) deep and 0.25 inch (6.35 mm) in diameter may be blended out. (No more than two such repairs can be made per blade.)

(b). Nicks, scratches and abrasion pits less than 0.020 inch (0.508 mm) and 1.5 inch (3.81 cm) long may be blended out. (Total length of all repairs not to exceed 2.0 inch (5.08 cm).)

(2). Any bulges or blisters over 0.10 inch (2.54 mm) long in area of pin near outboard end of blade are reason for blade rejection.

(3). Seal cracks up to 0.10 inch (2.54 mm), coming from area of pin with sealing compound (CM437).

(4). If any cracks larger than 0.10 inch (2.54 mm) are found, replace blade.

(6). Install washer and nut on end of the bolt that extends through pitch arm. Torque nut to **50 - 60 inch-pounds (5.65 - 6.78 Nm)**; install cotter pin with wet primer (CM318).

(7). Check for clearance between pitch link and tail rotor hub pivot bolt.

(8). If removed from pitch arm bolt, install balance washer(s) of same color code as pitch control arm and secure with nut.

4. Tail Rotor and Pitch Control Assembly Repair

(Ref. Figure 203 and Figure 204)

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM801	Abrasive paper, silicon carbide

Repair allowable surface defects on fork and hub that may be reworked by using grade 320 abrasive paper (CM801) to round out and blend defect. Apply exterior surface touchup treatment and paint touchup (Ref. Sec. 20–30–00). (Repairable damage limits are defined in the Component Overhaul Manual.)

5. Tail Rotor Pitch Control Assembly Inspection

(Ref. Figure 203 and Figure 204)

Consumable Materials (Ref. Section 91–00–00)

Item	Nomenclature
CM115	Grease, oscillating bearing
CM234	Solvent, dry-cleaning
CM801	Abrasive paper, silicon carbide
CM803	Crocus cloth

(1). If tail rotor control system drag or friction is suspected, use spring scale (Ref. Figure 201) to measure drag (sliding friction) of pitch control assembly on shaft of tail rotor transmission. Note that pitch control links, Sta. 284 bellcrank and rubber boots must be detached from the assembly during drag check. If drag exceeds three pounds (13.4 N), remove pitch control assembly and clean swashplate and transmission shaft splines. Use solvent (CM234) and grade 400 abrasive paper (CM801) or crocus cloth (CM803). Clean again with solvent (CM234) and coat output shaft splines with light film of grease (CM115).

(2). Inspect fork and hub for scratches, nicks, dents, cracks, corrosion and similar surface defects. Check for wear caused by rubbing of aluminum support. Scratches and nicks that do not exceed 0.005 inch (0.127 mm) depth, 0.120 inch (3.048 mm) depth at inside corner of fork, may be repaired (Ref. COM). Worn areas resulting from rubbing of aluminum support up to 0.060 inch (1.524 mm) depth may be repaired (Ref. COM).

(3). Check wire-spring split ring halves for damage.

(4). If brinelling wear of inner surfaces of swashplate clevis ears is detected, 0.003 inch (0.076 mm) depth is allowable without rework or repair. For wear of greater depth, Ref. COM, for limits and allowable repairs.

(5). If there is evidence of swashplate contact with housing, check that minimum clearance of 0.010 inch (0.254 mm) exists through 360 degrees of rotation with axial loading applied. If contact is apparent or if axial play can be measured, replace swashplate or bearings (Ref. COM).

NOTE: Wobble may be accurately measured by attaching dial indicator support to tail rotor drive fork, with indicator probe contacting swashplate clevis ear. Use care not to allow pitch control assembly to slide on output shaft while measuring wobble.

(6). If pitch control assembly wobbles on transmission output shaft, up to 0.020 inch (0.508 mm) is allowable. If greater amount of wobble is present, replace swashplate, pitch control housing, bearings (Ref, COM) or the complete assembly.

(7). Check that hub-to-blade pitch arm clearance is 0.001-0.130 inch (0.025-3.302 mm).

(8). Inspect all bolts and nuts for security.

(9). Inspect boots for installation and deterioration.

(10). Perform following inspections for pitch control bearings at times specified (Ref. Sec. 05-20-00) and when bearing condition is questionable.

(a). Remove cotter pin, nut, washers and bolt securing Sta. 284 bellcrank to transmission. Separate pivot pin on bellcrank from pitch control assembly.

(b). Rotate pitch control housing by hand; check for rough, binding or hard turning. Inspect for grease leakage. If any of these conditions exist, remove pitch control assembly and inspect for further evidence of damage.

(c). Check that self-aligning bearing on underside of pitch control housing is adequately lubricated (packed approximately 40 percent full) with grease (CM115), is movable and is serviceable.

(d). Ensure that pivot pin on Sta. 284 bellcrank is lubricated with grease (CM115). Position bellcrank to engage pivot pin with pitch control assembly. Secure bellcrank to transmission with bolt, washers, nut and cotter pin.

NOTE: For more detailed information, refer to inspection, damage, wear and repair limits, and requirements for pitch control assembly (Ref. COM).

(11). Inspect for evidence of rotational binding by hand-turning tail rotor assembly a few turns while listening for unusual sounds. If condition is questionable, perform applicable inspection.

6. Tail Rotor Blade Stop Inspection

NOTE: Change of blade pitch angle when tail rotor is not rotating can produce audible snapping noise. Noise results as laminations of blade strap pack are twisted and bent without a centrifugal load. Such noise is normal and does not indicate a defect.

(1). Teeter blades back and forth and check for evidence of abnormal binding. Some stiffness is normal, especially when blade stop is newer.

(2). Inspect blade stop for deterioration. Be sure to check for cracking or splitting in stem area of stop. Allowable wear for rubber stop is to surface of aluminum support. Stop (and support) may be rotated 90 degrees if stop is excessively worn at contact point. Replace rubber stop if damaged, or if worn area cannot be rotated away from contact point.

NOTE: If replacement of stop support is required, replace with one-piece stop support and retaining nut.

(3). Check aluminum support for condition and wear. Replace aluminum support if damaged, or if excessive wear reduces clearance between tail rotor blade and tail boom to less than 0.50 inch (12.70 mm) minimum. Measure allowable clearance between tip of tail rotor blade and tail boom while holding hub against support, and with assistant applying full right tail rotor pedal.

NOTE: For any questionable items, refer to complete and detailed inspection, damage, wear and repair limits, and requirements for tail rotor assembly in COM.

7. Tail Rotor Pitch Control Link Inspection

Consumable Materials
(Ref. Section 91–00–00)

Item	Nomenclature
CM318	Primer

(1). Maximum axial play for bearing in pitch control link is 0.020 inch (0.508 mm).

NOTE: Since bearing wear usually occurs only at blade pitch control arm from displacement during operation, links can be reversed and continued in service until either or both bearings exceed wear tolerance.

(2). Replace pitch control link if worn beyond 0.070 inch (1.778 mm) limit. If wear area(s) are within limits, touch-up with primer (CM318) and paint (Ref. Sec. 20-30-00) at inspection.

8. Tail Rotor Conical Bearing Inspection

(1). Play is not permitted in conical drive fork bearings (Ref. COM).

9. Tail Rotor Pitch Bearing Inspection

NOTE: In the following step, physical check for pitch bearing wear that causes root fitting play on hub can be made by holding one blade firmly and measuring flapping play at tip of opposite blade. Measured play indicates combined wear of pitch bearings.

(1). Maximum allowable pitch bearings play is 0.250 inch (6.350 mm).

10. Tail Rotor Swashplate Bearing Regreasing

(Ref. Figure 205)

Consumable Materials
(Ref. Section 91–00–00)

Item	Nomenclature
CM111	Grease, aircraft
CM217	Isopropyl alcohol

Special Tools
(Ref. Section 91–00–00)

Item	Nomenclature
ST608	Pitch control assembly holding block
ST609	Adapter, torque wrench

(1). Remove tail rotor from helicopter (Ref. 64-20-00, Tail Rotor Hub and Fork Replacement).

(2). Remove swashplate from helicopter (Ref. Tail Rotor Pitch Control Assembly Replacement).

(3). Remove pitch control links from swashplate assembly.

CAUTION Tail rotor swashplate bearings cannot be removed from housing without damage to the bearings. If bearings are removed from housing, install new bearings.

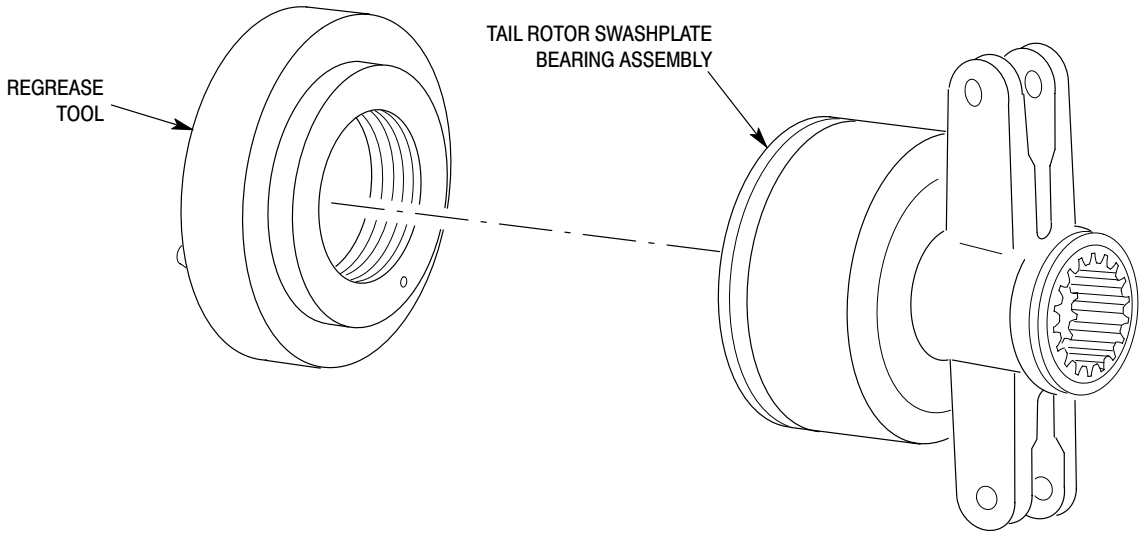


Figure 205. Tail Rotor Swashplate Bearing Regreasing

NOTE: For 4-Bladed tail rotor swashplates, holding block (ST608) will need to be modified. Accomplish modification, or build new block, as per Figure 207.

(4). Using wrench (ST609) and holding block (ST608), Remove nut and tang washer from threaded end of swashplate. Discard tang washer.

(5). Carefully remove bearing grease seal at gearbox end of housing (seal will be reused at reassembly).

(6). Inspect seal for damage; no damage is allowed.

(7). Install regreasing tool (Ref. Figure 206) and plug tang washer groove with locally fabricated plastic wedge (or equivalent plug).

NOTE: The following procedure provides 100% grease fill. Normal grease fill is 20 to 40%. Excess grease will extrude past seals for several hours of operation until the proper level is met.

(8). Purge bearings with grease (CM111).

(a). Purge bearings slowly to prevent damage to outer seal.

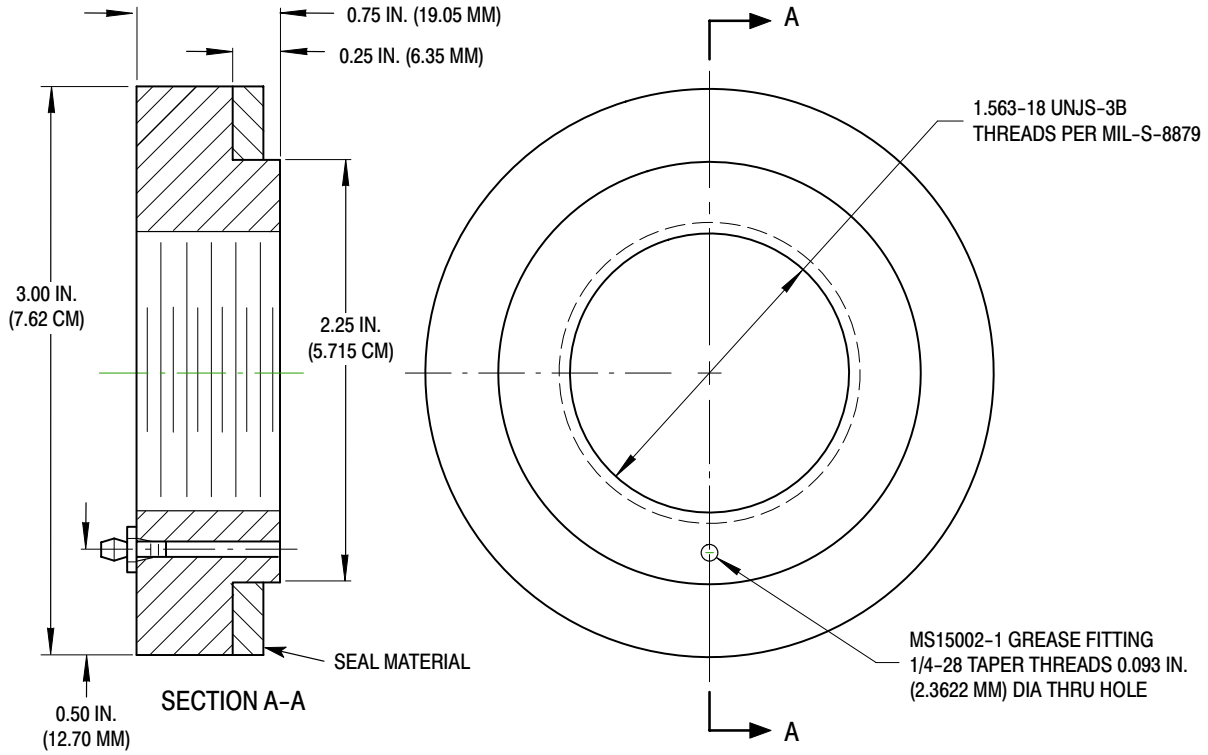
(b). Rotate bearings while greasing.

(9). Remove plastic wedge (or equivalent plug) and regreasing tool.

(10). Hand rotate bearing to remove excess grease.

NOTE: Ensure seal is serviceable. If new seal is required, seals and bearings must come from the same vendor.

(11). Install serviceable seal.



MATERIAL:

1. MATERIAL 6061-T651 ALUM PER QQ-A-250/11 OR EQUIVALENT.
2. SURFACE FINISH 125 RMS.
3. BREAK SHARP EDGES 0.002-0.015 IN. (0.051-0.381 MM).
4. CHEMICAL FILM TREAT PER MIL-C-5541.
5. DIMENSIONAL TOLERANCE ±.030 IN. (±0.762 MM); DIAMETERS TO BE CONCENTRIC TO CENTERLINE WITHIN 0.002 IN. (0.051 MM).

G64-3006A

Figure 206. Tail Rotor Swashplate Bearing Regreasing Tool

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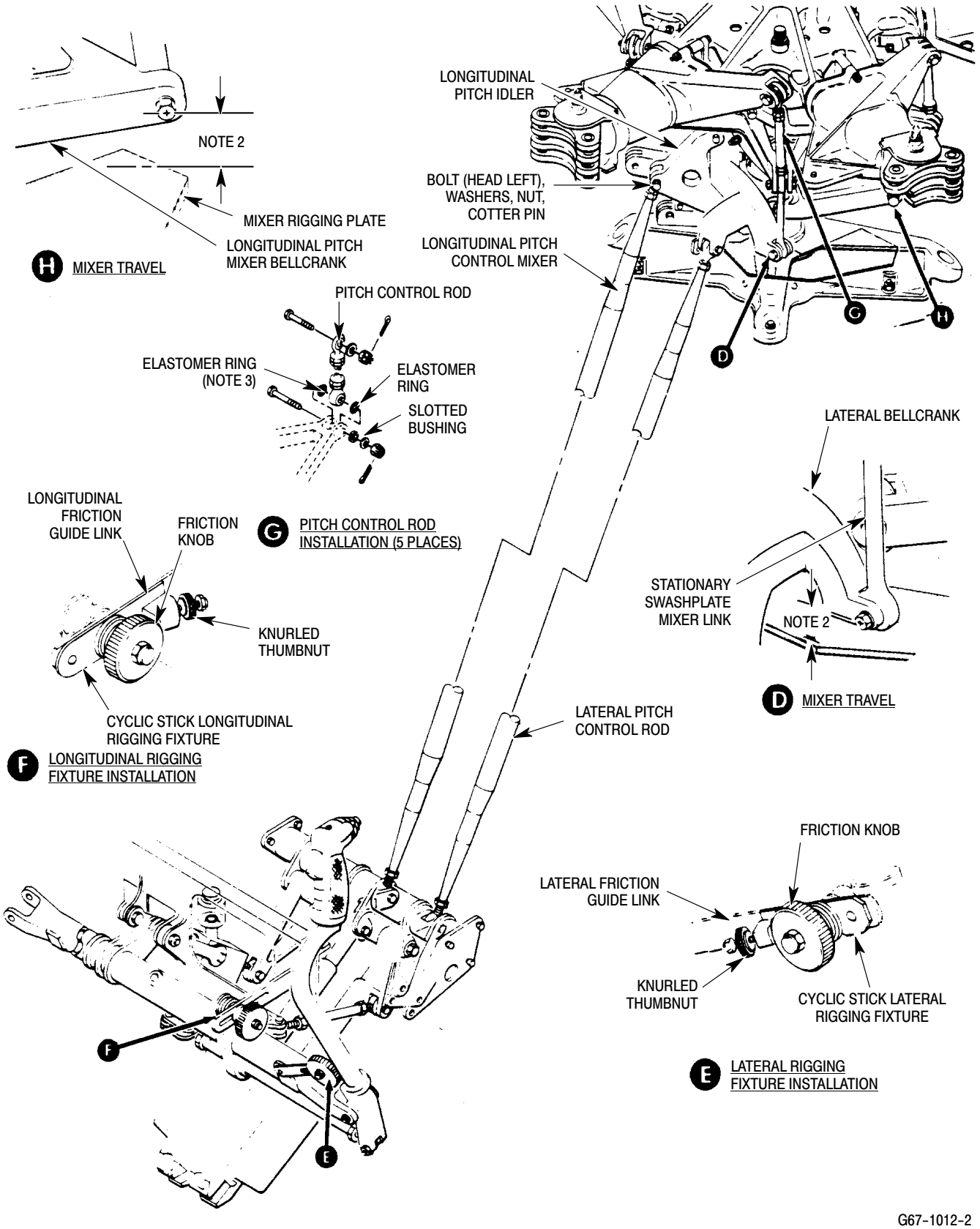

Figure 501. Main Rotor Control System Rigging (369D/E/FF – 500N) (Sheet 2 of 3)

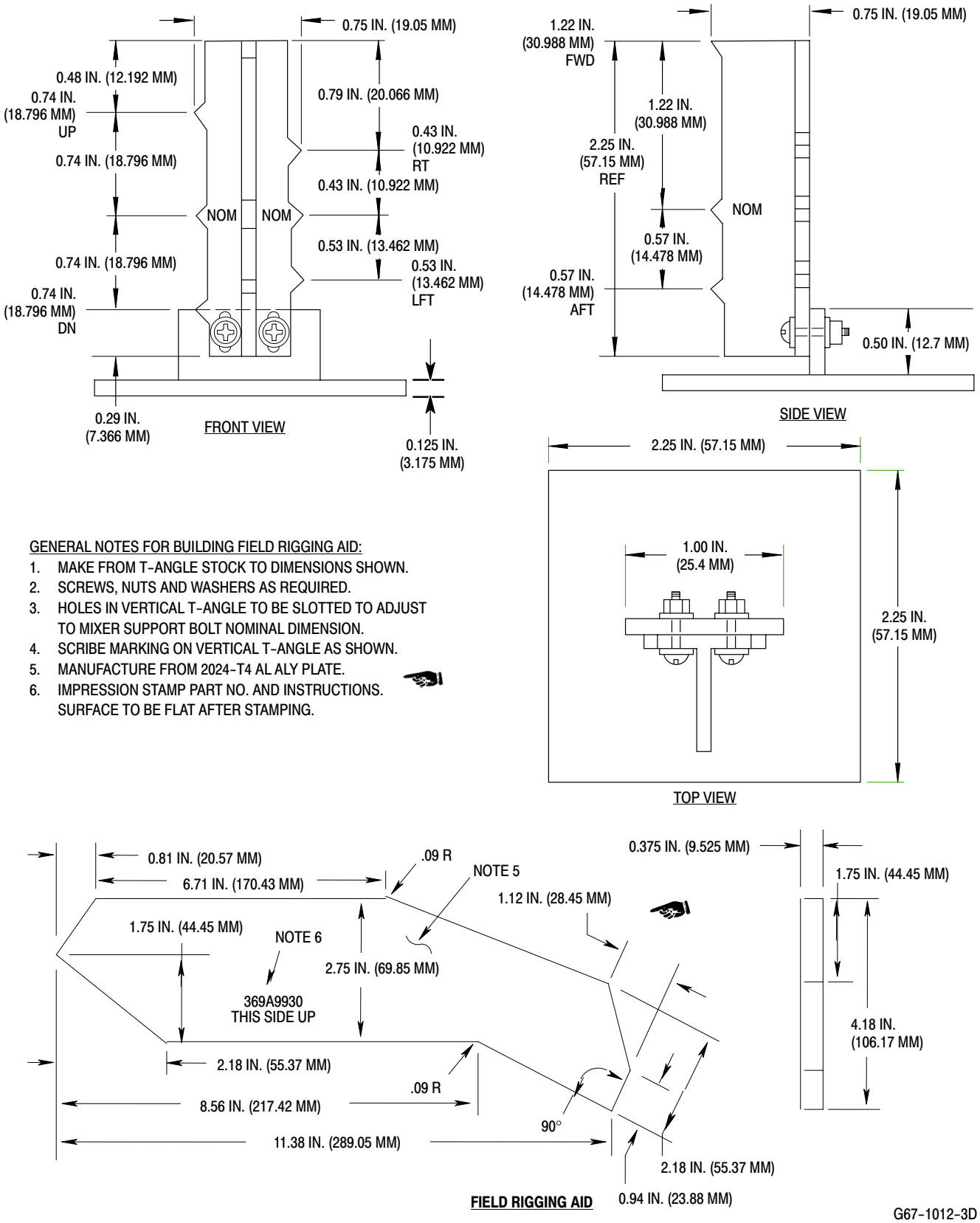

Figure 501. Main Rotor Control System Rigging (369D/E/FF – 500N) (Sheet 3 of 3)

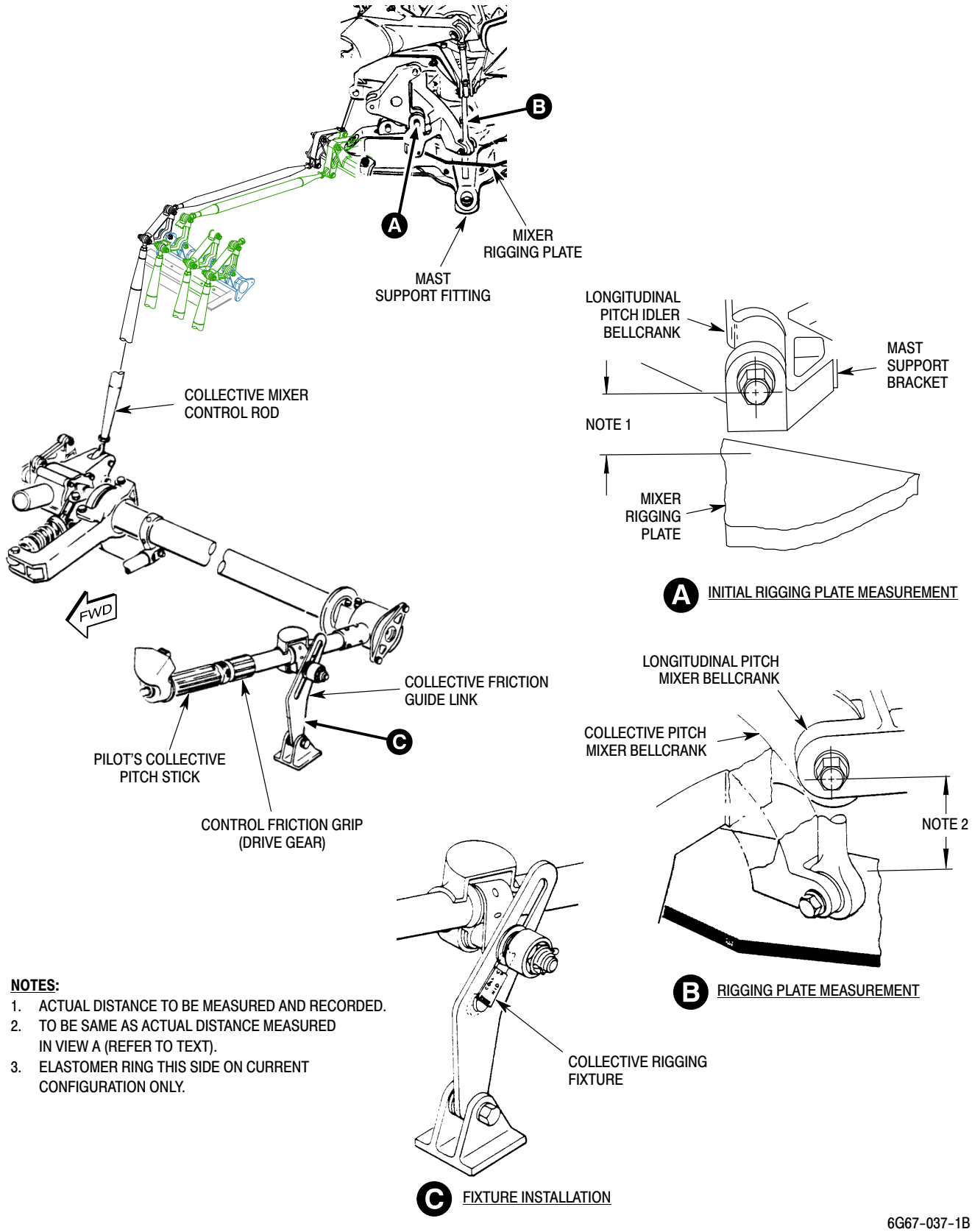

Figure 502. Rigging Main Rotor Control System (600N) (Sheet 1 of 3)

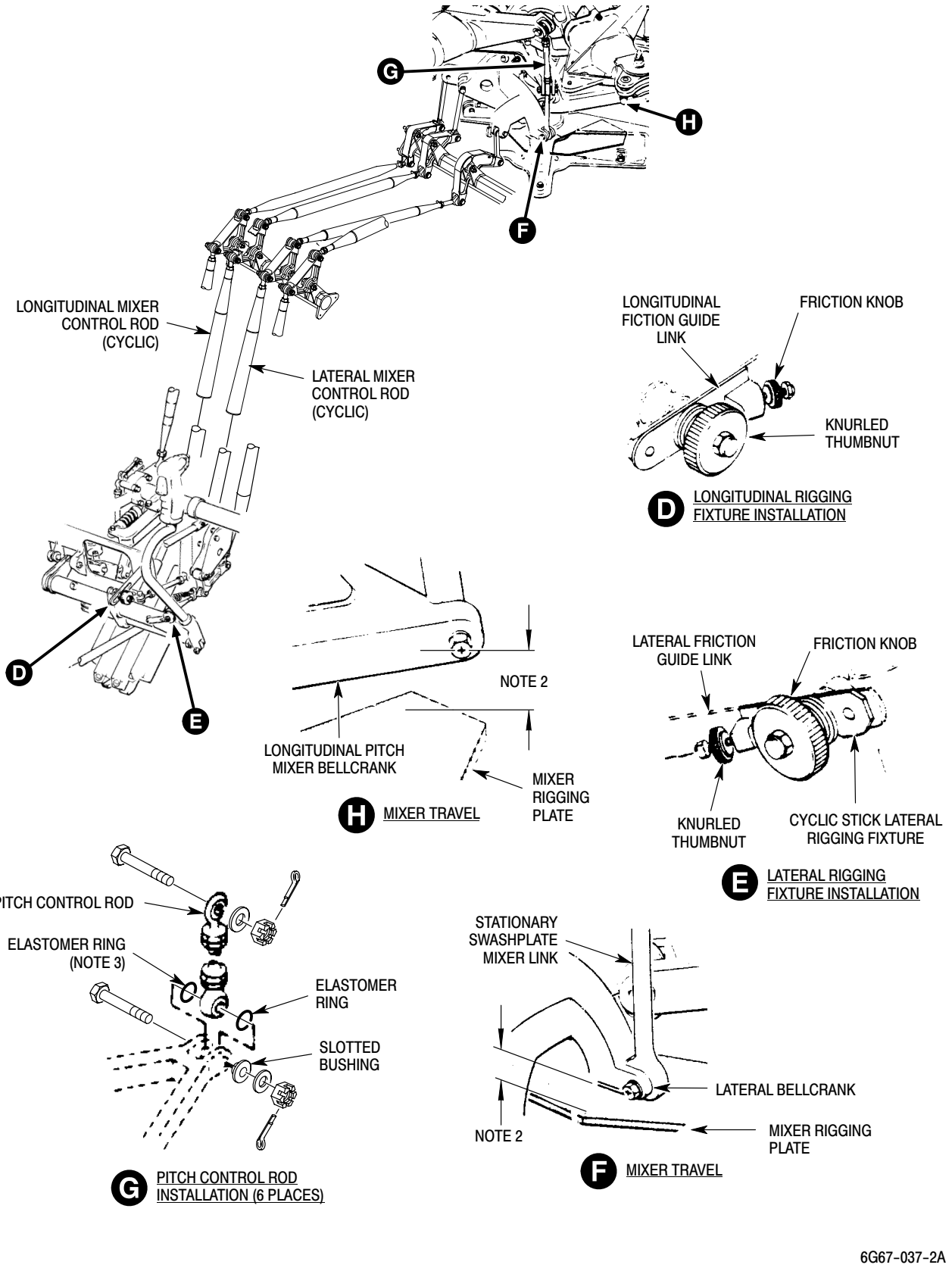

Figure 502. Rigging Main Rotor Control System (600N) (Sheet 2 of 3)

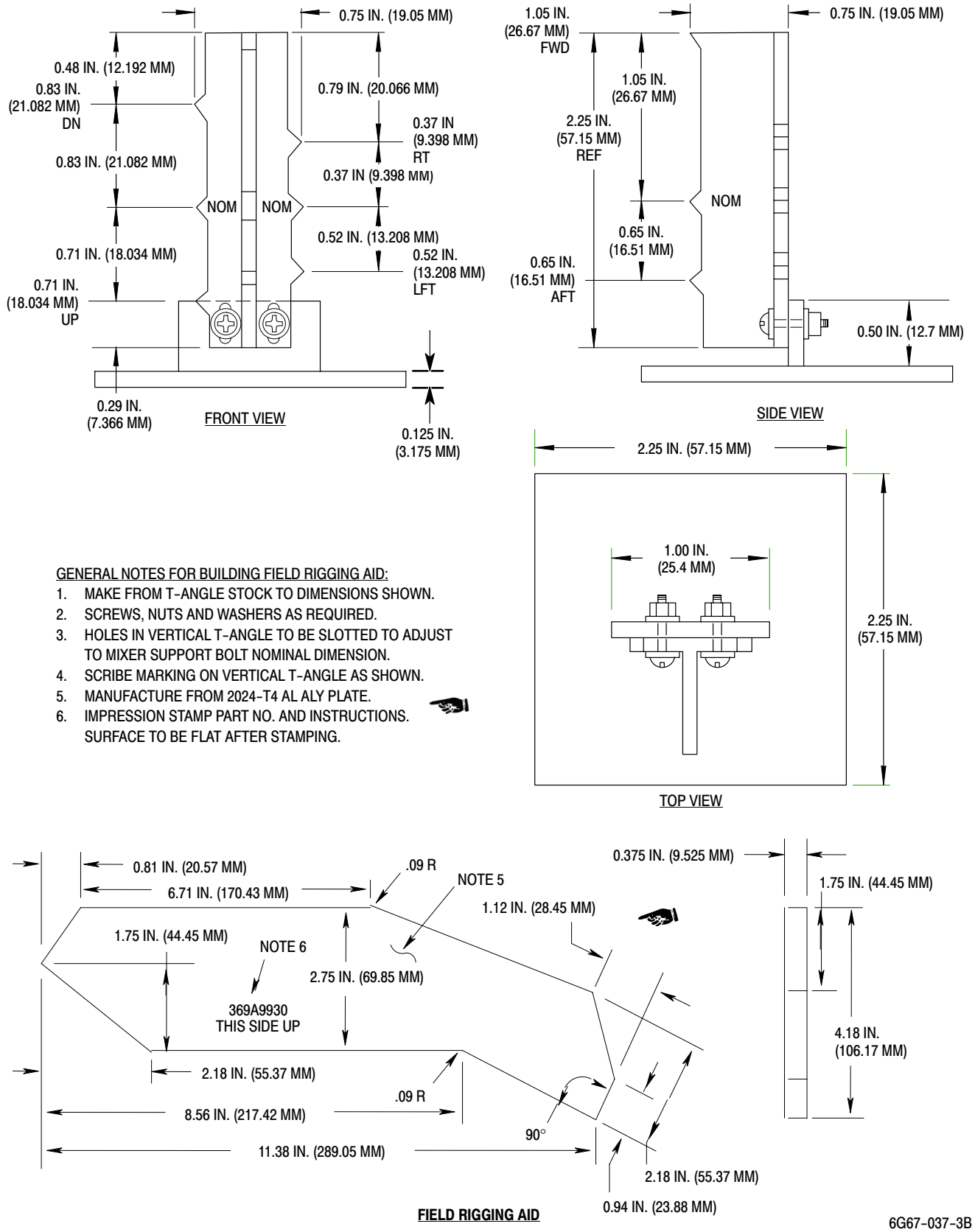

Figure 502. Rigging Main Rotor Control System (600N) (Sheet 3 of 3)

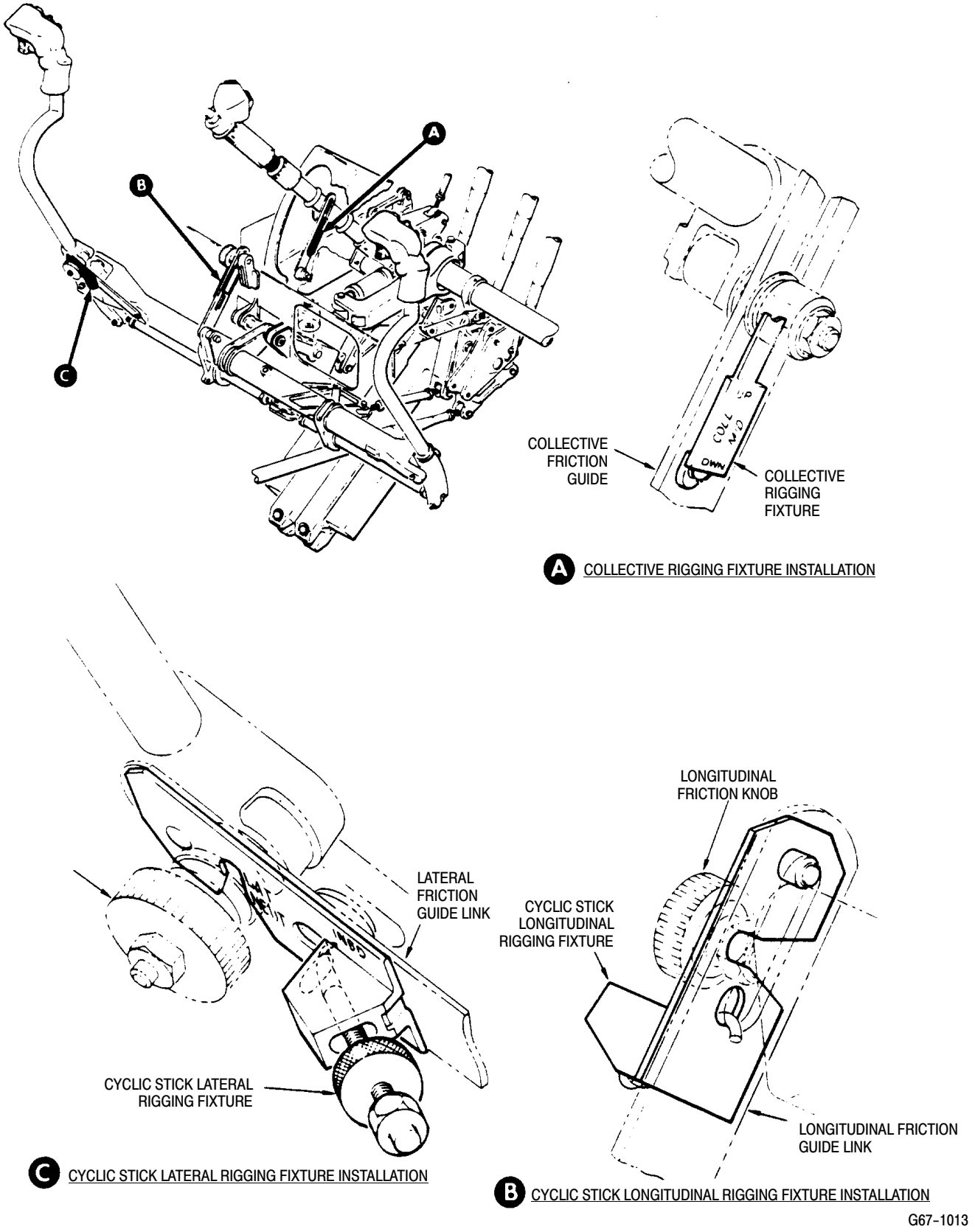

Figure 503. Cyclic and Collective Controls Rigging Tools (R/H Command)

2. Sta. 284 Bellcrank Replacement

A. Sta. 284 Bellcrank Removal

(Ref. Figure 401)

(1). Disconnect bellcrank from tailboom control rod.

(2). Disconnect bellcrank from tail rotor transmission. Disengage bellcrank pitch control pin from pitch control housing and remove bellcrank.

B. Sta. 284 Bellcrank Installation

(Ref. Figure 401)

(1). Insert bellcrank pivot pin into pitch control housing self-aligning bearing.

(2). Position bellcrank to align with mating hole in tail rotor transmission arm and install bolt.

(3). Check that slotted bushing is in place in lower lug of bellcrank; then attach tailboom control rod to bellcrank with bolt, two washers, nut and cotter pin.

(4). Check rigging of tail rotor controls (Ref. Tail Rotor Controls Rigging).

3. Tailboom Control Rod Replacement

A. Tailboom Control Rod Removal

(Ref. Figure 401)

(1). Disconnect control rod from Sta. 284 bellcrank.

(2). Remove tail rotor control bellcrank access door from left side of boom fairing.

(3). Accurately measure and record distance between unchamfered edge of forward rod end bearing jam nut and center of bearing attach bolt hole. Hold forward rod end, loosen jam nut and unthread control rod from rod end by turning aft end of rod.

(4). Slowly pull aft end of control rod and withdraw rod through opening in tail rotor transmission mounting frame.

B. Tailboom Control Rod Installation

(Ref. Figure 401)

NOTE: Tailboom control rod is routed through boom with forward rod end removed.

(1). Deleted

(2). Guide control rod through boom aft frame opening and carefully route through seven bushings (grommets). Rotate rod slightly to start it through each grommet.

(3). Check that slotted bushing is in place in lower lug of Sta. 284 bellcrank; then attach aft rod to bellcrank.

(4). Using measurement recorded at time of rod removal, install forward rod end bearing. Align rod ends so that bearings have equal space for angular throw; hold rod end and tighten jam nut.

(5). Check that slotted bushing is in place in lower end of Sta. 142 bellcrank; then attach forward rod end to bellcrank.

(6). Check rigging of tail rotor controls (Ref. Tail Rotor Controls Rigging).

(7). Close plenum chamber access door.

4. Sta. 95 Bellcrank and Support Replacement

A. Sta. 95 Bellcrank and Support Removal

(Ref. Figure 401)

(1). Disconnect tunnel-routed control rod from bellcrank.

(2). Disconnect bellcrank from support.

(3). Disconnect bellcrank from Sta. 120 control rod and remove bellcrank.

(4). Remove hardware that secures support to mast structure; remove support.

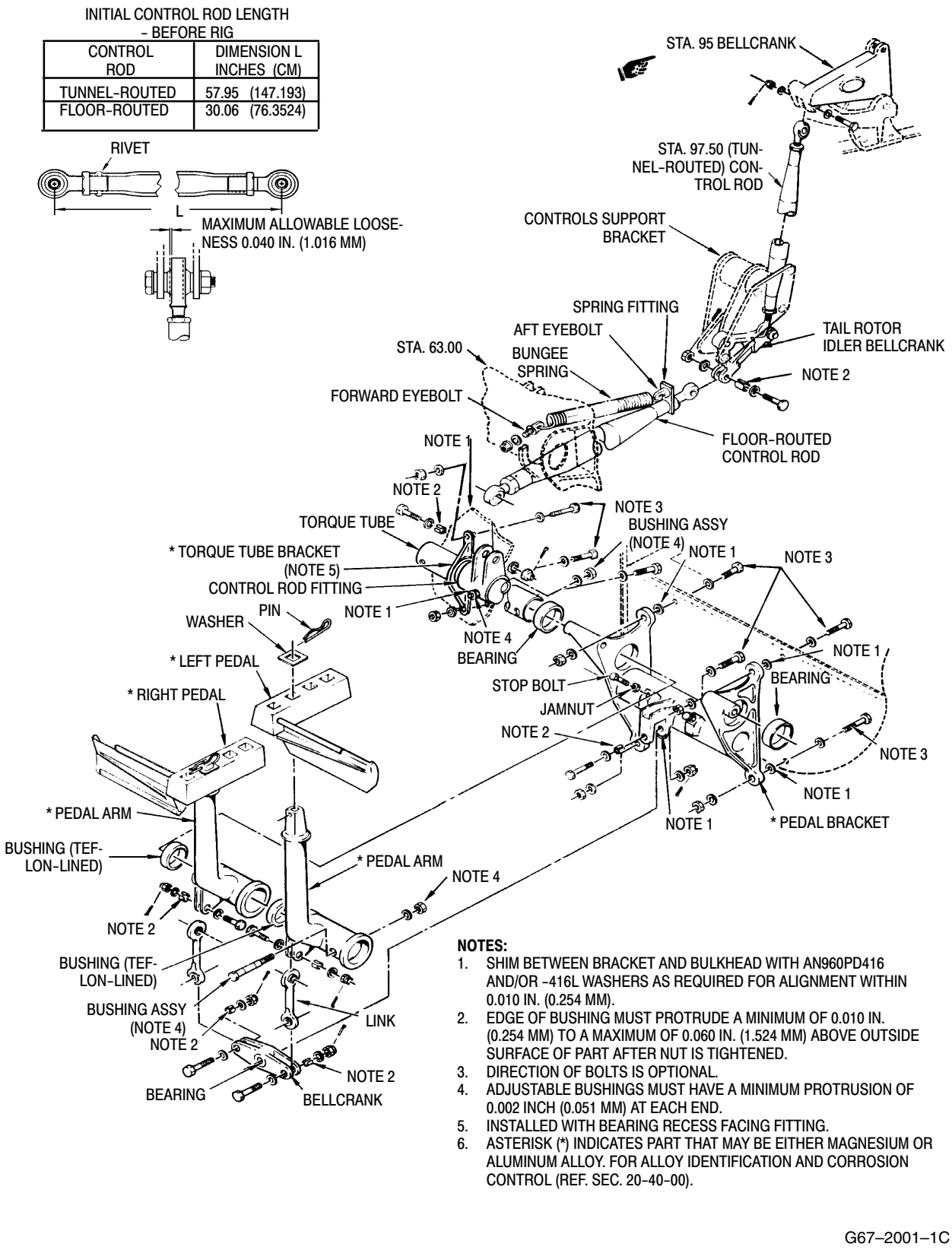

Figure 402. Tail Rotor Pedal Installation (Sheet 1 of 2)

NOTAR® ANTI–TORQUE SYSTEM FLIGHT CONTROLS DESCRIPTION AND OPERATION

1. NOTAR Anti–Torque System Control Linkages Configuration and Description

(1). The helicopter may be equipped with either of two basic configurations, single left–hand command or right–hand command, (dual control are optional).

NOTE:

- The 600N helicopter does not have a spring on the splitter assembly like the 500N helicopter.
- Some 600N helicopters are not equipped with a YSAS system.
- The 600N helicopter has a Sta. 95 bellcrank instead of a Sta. 97.50 Bellcrank.

(2). The control linkages for the foot pedals installation are identical to the basic helicopter, with the exception of a pedal friction mechanism with a preset friction tension. The pedal friction mechanism (500N only) offers the pilot an artificial feel or workload of a conventional tail rotor system.

(3). A splitter bungee spring (500N only) which is incorporated in the flight control system at the mast base between the 97.50 bellcrank support bracket and splitter pinion gear dampens control feedback.

(4). Fuselage controls linkages consist of Sta. 97.50 bellcrank and a support at the front of the main rotor mast base, fwd control tube, splitter bungee spring, splitter assembly, intermediate control tube, Sta. 137.50 support bracket and a bellcrank at the fan transmission support assembly, aft control tube and a two piece cable assembly to the thruster.

(5). Empennage controls consist of a thruster installation, four piece cable and drum assembly, a control rod, vertical stabilizer control tubes and bellcranks and, in the case of the 500N, a stability augmentation system (S.A.S.).

2. Stability Augmentation System Description and Operation

NOTE: Aircraft equipped with YSAS cannot be flown with any component of the system removed.

(1). The Yaw Stability Augmentation System provides increased directional stability and allows for a lower pilot workload in the directional axis.

(2). The YSAS adds an actuator that is located inside the right side of the horizontal stabilizer and is mechanically bolted to the horizontal stabilizer on the outboard side.

(3). Two access panels on the horizontal stabilizer allows access to the actuator, bellcranks, control rod and electrical connectors.

(4). A yaw rate gyro is located under the pilot's seat structure on the foreword bulkhead. Access to the gyro is through the rear access panel (footwell) Sta. 78.50 canted bulked.

The yaw rate gyro provides short term rate signals to the computer, proportional to the rate of angular displacement about the axis perpendicular to the gyro's mounting surface damping in the directional axis signal electronically.

(5). A YSAS electronic control box (computer) is installed below the rate gyro. It is equipped with an internally–mounted lateral accelerometer.

The lateral accelerometer enhances direction stability by feeding back to the YSAS computer signals measured during flight. The computer processes the signals received and sends them to the actuator.

(6). The 600N helicopters come equipped with an indicator mounted in the

console to alert the pilot in case of a YSAS failure.

3. 500NM7301 YSAS Fin Position Indicator (U.K. Only)

(Ref. Table 1) The 500N helicopters sold in the United Kingdom come equipped with an indicating system to alert the pilot in case of a YSAS failure. Because this is a very limited option, the parts are not listed in CSP-IPC-4. The following table is for ordering the major components of this system.

Table 1. 500NM7301 YSAS Fin Position Indicator Components

Component	Part Number
Edge light panel	369D26454–27
Indicator	500N7305–3
Vne card set	500N6530–31
369D24506–9	Indicator
PFM Flight Manual Supplement	CSP–520N–1C
369D26454–17	Decal

NOTAR® ANTI–TORQUE SYSTEM FLIGHT CONTROLS REMOVAL/INSTALLATION

1. Anti–Torque Flight Controls

NOTE:

- The NOTAR anti-torque control system must be re-rigged after removal or replacement of control rods, linkages and components or if helicopter operation reveals a rigging deficiency.
- Refer to adjustment and test control rigging, during flight control installation.

2. Upper Fuselage Sta. 97.50 (500N) or Sta. 95 (600N) Bellcrank and Support Bracket Replacement

(Ref. Figure 401)

A. Sta. 97.50 (500N) or Sta. 95 (600N) Bellcrank and Support Bracket Removal

(1). Disconnect anti–torque control tube (Sta. 87.50) and Fwd directional control tube from Sta. 97.50 (Sta. 95) bellcrank.

(2). Remove nuts, washers and bolts from main rotor mast base support bracket. Remove bellcrank and support bracket as an assembly.

B. Sta. 97.50 (500N) or Sta. 95 (600N) Bellcrank and Support Bracket Installation

(1). Position bellcrank and support bracket on mast base structure,and install three bolts, seven washers and three nuts. Most forward bolt requires extra thick washer under head of bolt. Torque bolt to **80 - 100 inch-pounds (9.04 - 11.30 Nm) plus drag torque**.

(2). Ensure slotted bushings are in place and connect anti–torque control tube and fwd rod end of Fwd directional control tube to bellcrank and cotter pin. Split bushings must protrude 0.010 – 0.060 inch (0.254 – 1.524 mm) above surface of bellcrank.

3. Forward Directional Control Tube Replacement

(Ref. Figure 401)

A. Forward Directional Control Tube Removal

(1). Remove fairings, access covers and doors necessary to facilitate maintenance (Ref. Sec. 53–30–30, Upper Aft Section Fuselage).

(2). Disconnect forward directional control tube from Sta. 97.50 (Sta. 95) bellcrank.

(3). Disconnect forward directional control tube from the lever assembly gear pinion rack Sta. 113.00 splitter and remove control tube.

B. Forward Directional Control Tube Installation

(1). Forward directional control rod initial length is 15.42 inches (39.17 cm), measured center of rod end to center of rod end. Install forward directional control tube on pinion gear rack lever assembly Sta. 113.00 splitter and on Sta. 97.50 (Sta. 95) bellcrank.

(2). Ensure slotted bushings are in place. Split bushings must protrude 0.010 – 0.060 inch (0.254 – 1.524 mm) above surface of bellcranks.

(3). Install washers, bolts and nuts. install cotter pins and safety wire jamnuts as required.

(4). Install fairings and panels.

4. Splitter Bungee Spring Replacement (500N)

(Ref. Figure 401)

Special Tools
(Ref. Section 91–00–00)

Item	Nomenclature
ST601	Rigging pin
ST602	Spring tension removal tool

A. Splitter Bungee Spring Removal

(1). Using two pieces of wood and C-clamp or rope, secure pilots pedals in mid position so they are aligned.

(2). Insert rigging pin (ST601) into the upper hole of bracket assembly and through the the slot marked **"M"** in the gear pinion rack. (View B).

WARNING **Bungee spring is under tension, use care to prevent personal injuries or damage to aircraft.**

(3). Disconnect spring from links, either aft or fwd., using a spring expansion tool (ST602).

B. Splitter Bungee Spring Installation

(1). Insert rigging pin (ST601) into the upper hole of bracket assembly and through the the slot marked **"M"** in the gear pinion rack Sta. 113.00 splitter.

(2). With a spring expansion tool (ST602), expand the spring the amount necessary to secure the spring to the forward and aft links.

(3). Remove rigging pin.

5. Upper Fuselage Station 113.00 Splitter Assembly and Bellcrank Replacement

(Ref. Figure 402)

A. Station 113.00 Splitter Assembly and Bellcrank Removal

(1). 500N Only: Remove splitter bungee spring from Sta. 113.00 splitter assembly pinion gear (Ref. Splitter Bungee Spring Replacement (500N)).

(2). Disconnect forward cable assembly rodend and rodend of forward directional control tube from walking lever.

NOTE: Note relationship of index marks on splitter assembly.

(3). Align index marks on gear teeth. Remove walking lever from splitter bracket by removing nut, pivot bolt, washers and spacer.

(4). Remove nut, washer, link assy. and spacer and disconnect intermediate control tube from gear pinion stud.

(5). Remove four bolts and washers, and remove splitter assembly.

B. Station 113.00 Splitter Assembly and Bellcrank Installation

(1). Position splitter bracket on structure and install four bolts and washers.

(2). Position intermediate control tube on gear pinion stud. Install link, spacer, washer and nut; install cotter pin.

(3). During installation of walking lever and bracket, align the index marks together and install pivot bolt, spacer, washers and nut and torque to **50 - 60 inch-pounds (5.65 - 6.78 Nm)**. Ensure bushings and bearings are in place; install cotter pin.

(4). Install forward cable assembly rodend and fwd directional control tube rodend. Ensure bushings are in place. Torque nuts and install cotter pin.

(5). 500N Only: Install splitter bungee spring.

6. Intermediate Control Tube Replacement

(Ref. Figure 402)

A. Intermediate Control Tube Removal

(1). 500N Only: Remove splitter bungee spring from Sta. 113.00 splitter assembly pinion gear (Ref. Splitter Bungee Spring Replacement (500N)).

(2). Disconnect intermediate control tube from gear pinion stud by removing nut, washer, link and spacer.

(3). Disconnect aft end of intermediate control tube at Sta. 137.50 bellcrank by depressing pin in head of bolt to release locking ball while removing nut. With pin still depressed, remove bolt.

(4). Remove control tube boot ty-strap, and move control tube carefully forward through boot, support tube at plenum chamber inlet.

(b). Install AN960KD616L washer and nut and torque to **95 - 110 inch-pounds (10.73 - 12.43 Nm)**; install MS24665-285 cotter pin.

(4). Install lower bolt at link assembly and bellcrank clevis, and upper bolt intermediate control tube Sta. 137.50 bellcrank bolts as follows:

NOTE: Install bolt-head up, nut facing down.

(a). Depress pin in head of bolt to install bolt through clevis end of bellcrank.

NOTE: In the following step, pin is to remain depressed while nut is torqued.

(b). While pin is depressed, install nut and torque to **40 - 50 inch-pounds (4.52 - 5.65 Nm)**.

(c). Release pin and retorque nut to **75 - 90 inch-pounds (8.47 - 10.17 Nm)** to ensure engagement of locking balls with nut.

NOTE: Pin must be in the released position (flush with bolt head) and bolt must protrude past the nut for proper installation.

(d). Apply torque stripe.

(5). Install alternate NAS6204-11D bolt and MS17826-4 nut as follows:

(a). Install bolt, with one AN960KD416L washer through clevis assembly.

(b). Install AN960KD416L washer and nut and torque to **20 - 40 inch-pounds (2.26 - 4.52 Nm)**; install MS24665-134 cotter pin.

(6). Install four support bracket assembly bolts and washers to fan transmission support. Torque bolts to **70 - 90 inch-pounds (7.91 - 10.17 Nm)**; safety wire bolts.

8. Fan Pitch Control Tube Replacement

A. Fan Pitch Control Tube Removal

(1). Remove tail boom fairing and tail boom.

(2). Remove bolt and clevis assembly at Sta. 137.50 bellcrank. Remove convoluted boot from fan gearbox.

NOTE:

- The Fan Pitch Control Tube can be removed in one of the following steps. The fan assembly pitch bearing slider, pitch bearing retainer, pitch plate bearings and bearing retainer nut with aft control tube can be removed as a unit or individually. Use extreme care do not damage parts.
- 1. Remove locking wire and remove nut and lock washer from fan pitch control tube. Remove locking wire and remove three bolts and washers from pitch bearing retainer housing. Pitch bearing slider, pitch plate bearings and, bearing retainer nut with aft control tube can be removed as a unit.
- 2. Remove locking wire and remove six pitch bearing housing assembly bolts. Remove pitch bearing retainer housing assembly as a unit.

B. Fan Pitch Control Tube Installation

NOTE:

- Refer to Fan Pitch Control Rigging during installation.
- Before installing fan pitch control tube, perform Fan Pitch Control Tube Inspection.

(1). Install the aft control tube.

(2). Install convoluted boot on fan gearbox or clevis.

(3). Install clevis assembly on aft control tube. Ensure that clevis has full thread engagement on control tube. Ensure locking washer tang tip is in slot. Tighten jam nut against locking washer and safety wire.

(4). Install floating bushing in clevis.

(5). Install bolt, bolthead on floating bushing side of clevis, through clevis and link assembly as follows:

(a). Depress pin in head of bolt to install bolt through clevis end of bellcrank.

NOTE: In the following step, pin is to remain depressed while nut is torqued.

(b). While pin is depressed, install nut and torque to **40 - 50 inch-pounds (4.52 - 5.65 Nm)**.

(c). Release pin and retorque nut to **75 - 90 inch-pounds (8.47 - 10.17 Nm)** to ensure engagement of locking balls with nut.

NOTE: Pin must be in the released position (flush with bolt head) and bolt must protrude past the nut for proper installation.

(d). Apply torque stripe.

(6). Install alternate NAS6204-11D bolt and MS17826-4 nut as follows:

(a). Install bolt, with one AN960KD416L washer through clevis assembly.

(b). Install AN960KD416L washer and nut and torque to **20 - 40 inch-pounds (2.26 - 4.52 Nm)**; install MS24665-134 cotter pin.

NOTE: Before installing fan pitch slider, perform Fan Pitch Slider Inspection.

(7). Install pitch bearing slider and bearing retainer per rigging instructions.

(8). Install pitch bearing and pitch bearing retainer housing using three bolts and washers. Torque bolts to **70 - 80 inch-pounds (7.91 - 9.04 Nm)**; safety wire bolts.

(9). Install lockwasher so that the face of the tang aligns with the tube assembly keyway, and the lockwasher aligns with one of the six slots in the face of the bearing retainer.

(10). Install jamnut on aft control tube.

(11). Torque nut to **95 -110 inch-pounds (10.73 - 12.43 Nm)** leaving a minimum of three threads protruding beyond the face of the jam nut.

(12). Install two lockwires on jamnut and lockwasher.

NOTE: After safety wiring nut and bolts, rotate fan and ensure that safety wires do not have interference with each other on rotation.

(13). Install tail boom (Ref. Sec. 53-40-30).

9. Forward Cable Assembly Replacement

(Ref. Figure 402)

A. Forward Cable Assembly Removal

CAUTION To prevent damage to the engine install F.O.D. cover over engine air inlet.

(1). Remove fairings, access doors and panels necessary to facilitate maintenance (Ref. Sec. 53-30-30).

(2). Remove tailboom fairing.

(3). Disconnect the aft end of the anti-torque control cable by turning outside collar sleeve counter-clockwise and back to expose the inner cable.

(4). Apply sufficient right pedal to expose inner cables.

(5). Without bending cable, slide male connector out of female connector.

(6). Disconnect cable assembly forward rodend from Sta. 113.00 splitter assembly outboard bellcrank clevis.

(7). Loosen jam nut at rodend and remove rodend from cable; remove jam nut.

(8). Remove safety wire, jam nuts and washers from cable assembly support bracket, remove by pulling or sliding cable assy. thru conduit and support bracket.

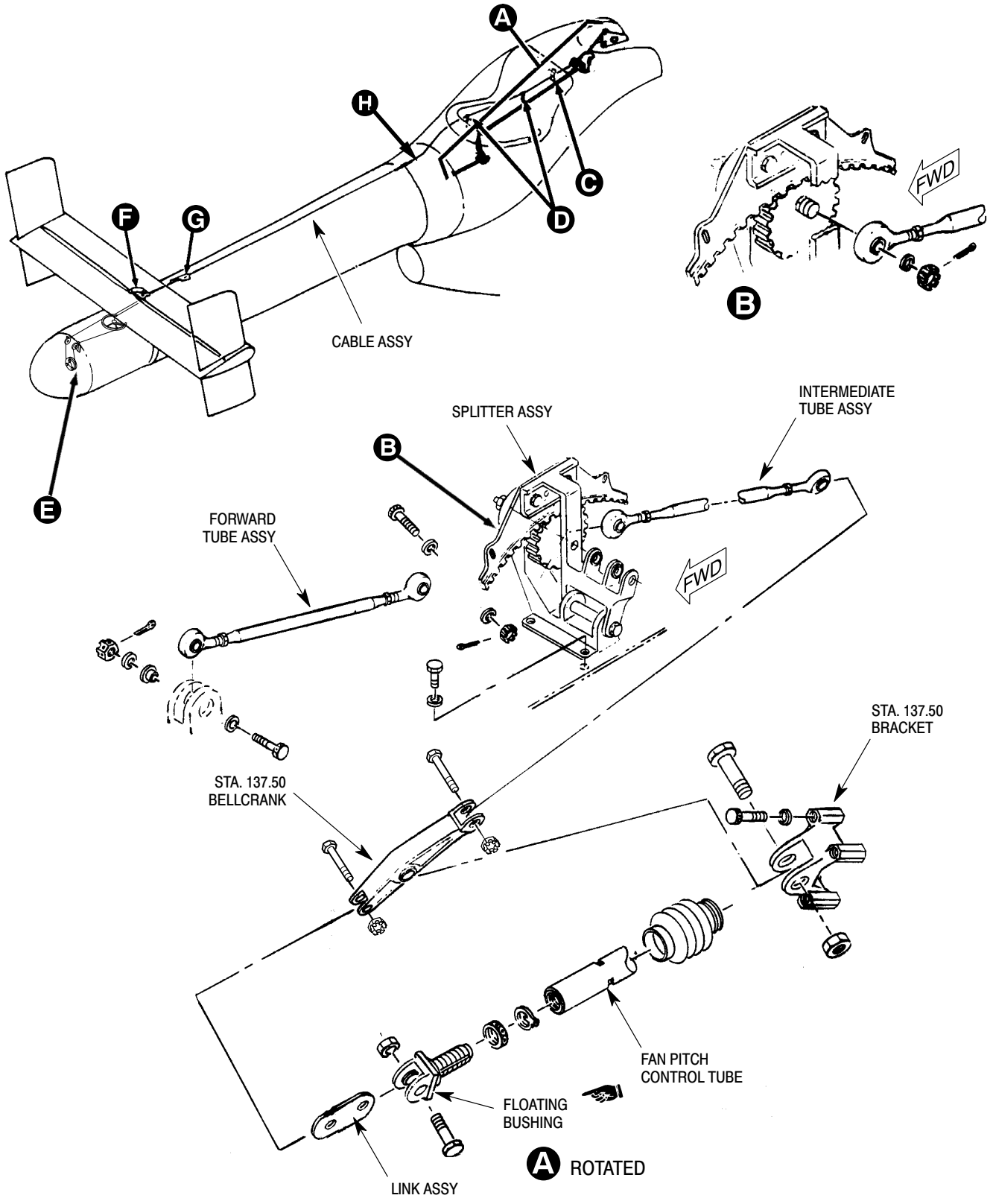

Figure 402. Upper Fuselage and Boom Control Linkage (Sheet 1 of 2)

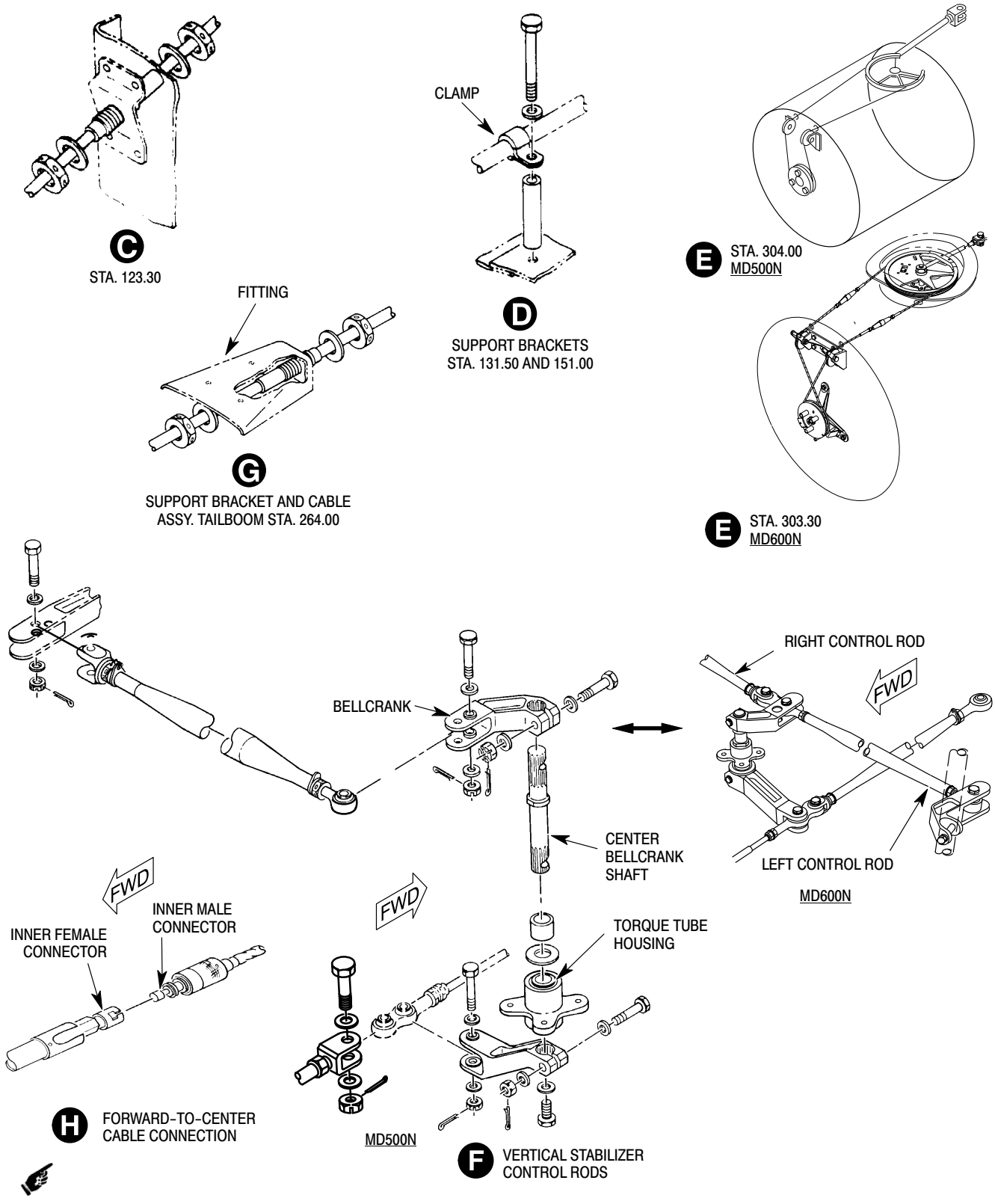

Figure 402. Upper Fuselage and Boom Control Linkage (Sheet 2 of 2)

NOTAR® ANTI–TORQUE SYSTEM FLIGHT CONTROLS INSPECTION/CHECK

1. Upper Fuselage and Tailboom Control Linkage Inspection

(Ref. Figure 401)

(1). Inspect rod end bearings for binding and excessive wear (0.040 inch (1.016 mm) maximum axial play). Inspect rivet at fixed rod end.

(2). Inspect control rod for surface damage and evidence of bending.

(3). Inspect rubber boot just forward of Sta. 137.50 bulkhead for condition.

(4). Inspect control rod surfaces serviceability, wear is limited to thickness of hard anodic coating.

(5). Inspect bellcranks for scratches, cracks, corrosion and similar surface defects. Check that all bushings are secure.

(6). Inspect bellcrank bearings for looseness and binding.

(7). Visually inspect bellcrank supports for cracking/damage.

2. Anti–Torque Pedal Assembly Inspection

(Ref. Figure 502)

NOTE: Inspect components at left and right position on the right–hand command models. Check that corresponding pedals contact stops simultaneously.

(1). Inspect pedals and pedal arms for cracks, elongated pedal attach holes and open drain holes. Inspect teflon–reinforced bushing liners for deterioration.

(2). Inspect pedal–to–arm quick–release locking pin for condition and positive spring action.

(3). Inspect links and bellcrank for cracks and bends, and bearings for excessive play.

(4). Inspect control rod fitting, torque tube mounting bracket and pedal mounting bracket for cracks and corrosion. Using an 8X magnifying glass, mirror and flashlight, closely inspect pedal link bellcrank fitting of pedal bracket in center forward area where fitting (fork piece) joins tubular section. If any cracks are detected, replace bracket assembly. Inspect bracket bearings for excessive looseness.

(5). Inspect torque tube for cracks, scratches, nicks, dents and similar surface defects.

(6). Inspect pedal brackets for corrosion.

3. Sta. 97.50 (500N) or Sta. 95 (600N) Bellcrank and Support Bracket Inspection

(1). Inspect bellcrank and support bracket for cracks, corrosion and other similar surface defects.

(2). Check that all bushings are secure. Check bellcrank bearings for looseness and binding.

(3). Inspect rod ends bearings for binding and excessive wear (0.040 inch (1.016 mm) maximum axial play). Inspect control rod surface serviceability, wear is limited to thickness of hard anodic coating. Inspect for safety wire at rodends and lockwasher as required. Bolts for cotter pins as required.

4. Forward and Intermediate Directional Control Tube, and Link Inspection

(1). Inspect rodend and link bearings for binding and excessive wear (0.040 inch (1.016 mm) maximum axial play).

(2). Inspect control tubes and link for surface damage and wear. Inspect control tubes surface serviceability, wear is limited to thickness of hard anodic coating.

(3). Inspect for safety wire at rodends and lockwasher as required. Bolts for cotter pins as required.

5. Splitter Bungee Spring Inspection (500N)

(1). Inspect spring support bracket for loose rivets, loose screws, corrosion and cracks and general condition.

(2). Check link assemblies for cracks, bends and dents.

(3). Inspect spring for condition and a positive spring action.

6. Sta. 113.00 Splitter Assembly and Bellcrank Inspection

(1). Visually inspect bellcrank and support bracket for cracks and damage using 5X power magnifying glass.

(2). Inspect for cracks, corrosion and other similar surface defects.

(3). Check that all bushings and bearings are secure.

(4). Inspect rodend bearings for binding and excessive wear (0.040 inch (1.016 mm) maximum axial play). Inspect control rod surface serviceability, wear is limited to thickness of hard anodic coating. Inspect for safety wire at rodends and lockwasher as required. Bolts for cotter pins as required.

7. Forward and Center Cable Assembly Inspection

(1). Inspect for freedom of movement and no binding.

(2). Check rodend bearings for corrosion, and wear.

(3). Cable housing for fraying, and security.

(4). Inspect cable couplings for wear, deformation or damage (Ref. Figure 602).

(5). Inspect inner cable coupling hex for proper alignment with outer cable coupling.

(6). Inspect cable inner couplings for deformation or obvious damage.

(7). Inspect center cable hex end for wear beyond allowable tolerance (Ref. Figure 601).

(8). Inspect collar for wear in locking groove.

(9). Inspect relieved area, at Sta. 123.30, between threads and swage for crack or evidence of corrosion.

(10). Inspect relieved area, at Sta. 164.00 (500N) or Sta. 292.00 (600N), between threads and swage for crack or evidence of corrosion.

(11). Inspect forward cable coupling opening for proper dimension (Ref. Figure 601).

(12). Using a bright light and 10x magnifying glass, inspect the swaged area of the telescopic swivel end for cracks (Ref. Figure 603).

(13). Inspect for any evidence of swivel ball separation.

8. YSAS Actuator, Rate Gyro and Electronic Control Box Inspection

(1). Inspect YSAS actuator for damage, no damage allowed.

(2). Inspect mounting hardware for proper installation and general condition.

(3). Inspect wiring for condition, no fraying, cracking of insulation or chafing allowed.

(4). Inspect grommet for proper installation and deterioration, replace if deteriorated.

(5). Inspect mounting bracket for cracks (pay particular attention to area around four rivet attach holes) no cracks allowed.

(6). Inspect rate gyro and electronic control box for damage, security in mount and ensure electrical plugs are secure.

(7). Inspect mounting bracket for cracks, no cracks allowed.

9. Fan Pitch Control Tube Inspection

(1). Inspect tube for dents, scratches, nicks, gouges and corrosion, none allowed.

(2). Inspect for visible step in splined area.

(3). If step is evident:

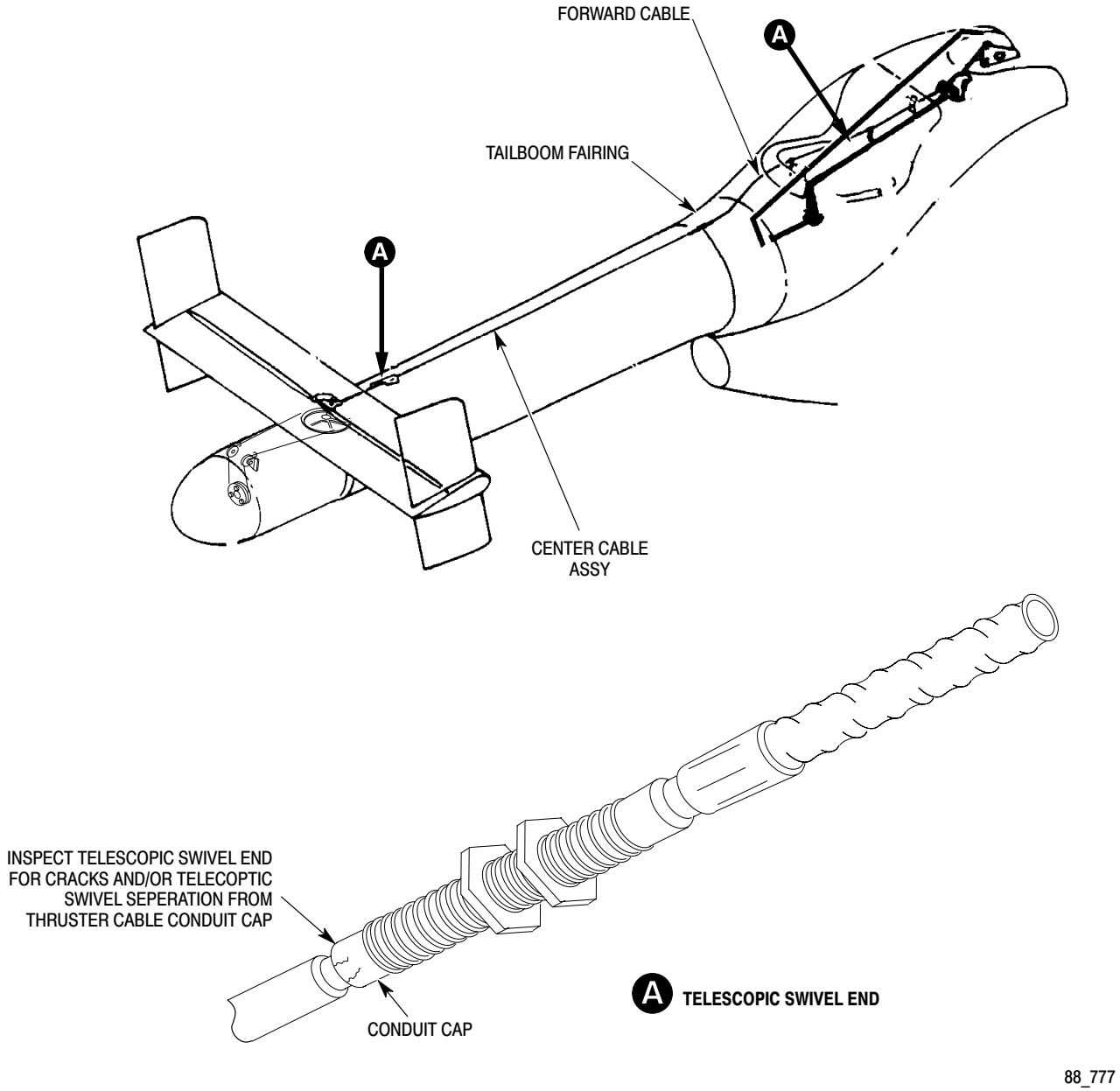

Figure 603. Control Cable Telescopic Swivel End Inspection

11. Sector Assembly, Control Cables and Drum Assembly Inspection

(Ref. Figure 402)

(1). Inspect sector assembly for:

(a). Proper installation of mounting hardware.

(b). Remove access cover from pan assembly.

(c). Center cable mounting bolt for security and proper installation of safety wire.

WARNING **In the following step, ensure the anti-torque pedals are not moved, personal injury can occur.**

(d). Check sector assembly for excess up-and-down play.

(e). Damage, cracks or corrosion; no damage, cracks or corrosion allowed.

(f). Reinstall access cover on pan assembly.

(2). Remove tip cap (500N).

(3). Remove rotating cone assembly.

(4). Remove access cover from top of stationary thruster assembly (600N).

(5). Inspect control cables for:

(a). Fraying or corrosion; no fraying or corrosion allowed.

(b). Proper installation of turnbuckle safety clips.

(c). Corrosion or cracking on turnbuckles; no corrosion or cracking allowed.

(d). Proper cable tension.

(6). Reinstall access cover on top of stationary thruster assembly (600N).

(7). Inspect control cable pulleys for:

(a). Proper installation of mounting hardware.

(b). Guard pins installed.

(c). Excessive groove in pulleys; evident in out-of-round pulley.

(8). Inspect drum assembly for:

(a). Proper installation of mounting hardware.

(b). Damage, cracks or corrosion; no damage, cracks or corrosion allowed.

(c). Guard pins installed.

(9). Reinstall rotating cone assembly.

(10). Reinstall tip cap (500N).

(11). Ensure slotted bushings are in place; then fasten each link in pedal arm lugs with bolt, two washers, nut and cotter pin.

(12). Ensure outboard pedals clear windows by a minimum of 0.20 inch (5.08 mm) with 20 pounds (9.07 kg) of force applied.

16. YSAS Actuator Regrease Procedure

A. YSAS Actuator Disassembly

(Ref. Figure 801)

CAUTION Do not attempt to loosen or tighten nut by grasping actuator shaft, damage to spline housing can occur.

(1). Cut and remove lockwire from nut; Loosen nut.

(2). Remove rod end, nut and lockwasher.

(3). Record output shaft orientation by marking the notch on the connector side of the shaft with a pencil.

(4). Measure endplay of the actuator as follows:

(a). Push the output shaft in towards the actuator housing by applying a load of 20 –100 lbs (9.07 – 45.36 kg).

(b). Using a depth gage, measure and record dimension “C”.

(c). Screw the rod end into the output shaft a few turns.

(d). Pull on the output shaft by applying a load of 20 –100 lbs (9.07 – 45.36 kg).

(e). Unscrew and remove the rod end without changing dimension “C”.

NOTE: If the variation in dimension “C” exceeds 0.013 inch (0.3302 mm), the actuator should be returned to the manufacturer for repair rather than regrease.

(f). Remeasure and record dimension “C”.

(5). Cut lockwire and remove the four screws that hold the seal housing and splined housing.

NOTE: It may be necessary to grasp the cylindrical portion of the seal housing or splined housing with a rubber-tipped clamping tool to loosen the housing because of primer applied to the screws at assembly.

(6). If there is an inspection seal at the housing joint, remove enough of the label so that it cannot get pinched between the housings when the actuator is re-assembled. Leave some of the label on the actuator to aid in re-assembly. If there is no inspection seal, use pieces of tape.

NOTE: Belleville spring, spacer and shims (if installed) are installed between the seal housing and splined housing.

(7). Remove seal housing and splined housing.

(8). Note the order of assembly of these parts.

(9). Measure and record the thickness of the spacer and the total thickness of the shims (if installed) to avoid confusion with the spacer and shims on the other side of the splined housing.

NOTE: The teflon washer attached to the end of the LVDT core is a close fit to the bore through the LVDT housing, it may be necessary to carefully tug a little to fully remove the shaft.

(10). Unscrew and remove the output shaft. This shaft has the LVDT core and associated hardware attached to it; Do not unscrew the nylon screw or the LVDT core.

(11). Note the orientation of the belleville spring, spacer and shims (if installed). Measure and record the thickness of the spacer and shims.

CAUTION Do not use any cleaning solvents. Damage to the motor bearings and the molybdenum disulfide finish on the acme nut and spline surfaces may occur.

(12). Wipe off old grease from all parts using lint-free cloth.

(13). Using cotton swabs, remove grease from acme nut area. Be sure to reach into the cavity just beyond the acme nut threads to remove grease deposits.

(14). Use the acme screw to remove grease from the acme nut threads.

(a). Run screw in and out, then wipe threads clean.

(b). Repeat above step until no more grease appears on screw threads.

B. YSAS Actuator Regrease and Reassembly

(Ref. Figure 801)

Consumable Materials
(Ref. Section 91-00-00)

Item	Nomenclature
CM111	Grease, aircraft
CM127	Grease, YSAS Actuator
CM318	Primer
CM731	Lockwire CRES

(1). Prior to applying new grease, re-assemble the output shaft with attached hardware (splined housing, belleville spring, spacer and shims (if installed)) to the actuator to avoid confusion at re-assembly.

(2). Remove and weigh output shaft with LVDT core and associated hardware attached; Record weight.

(3). Adjust scale up 2.5 grams.

(4). Apply special grease (CM127) to acme screw threads until scale is balanced again.

(5). Evenly distribute grease around the acme screw threads to form a fairly even cylinder in order to fit through the belleville spring without scraping off too much grease.

(6). With belleville spring, spacer and shims (if installed) in place within end bore in motor housing, carefully assemble greased output shaft to actuator.

(a). Screw in the shaft until the leading edge of the spline on the shaft is about flush with the end of the motor housing and oriented so that the splined housing can be put on in it's proper orientation.

(7). Apply grease (CM111) to splined surfaces of splined housing until grooves are completely full. Install splined housing as originally oriented.

(8). Apply film of grease (CM111) to smallest inside diameter of seal housing.

(9). With belleville spring, spacer and shims (if installed) in place within end bore of seal housing, slide seal housing into position over output shaft as originally oriented.

(10). Replace four screws which hold down seal housing; Use only NAS1352-04H8P screws.

(a). Install screws with wet primer (CM318).

(b). Torque screws to **9 inch-pounds (1.02 Nm)**.

(c). Using lockwire (CM731), safety screws.

(11). Re-install rod end, washer and nut with rod end face (surface "A") oriented at 90° ±2° with respect to surface "B". Torque nut to **170 - 200 inch-pounds (19.21 - 22.60 Nm)**.

(12). Using lockwire (CM731), safety nut to washer, washer may be oriented with lockwire end up or down.

CAUTION

- Do not use tubes or hoses as hand holds. Do not allow engine to strike airframe or components. Avoid damaging engine intake bell.
- Prevent FOD ensure that no foreign objects are trapped in firewall seal ring.

(7). Have hoist operator slowly raise engine while pushing engine down to maintain correct engine and transmission alignment.

(8). Align left and right engine mount assemblies with engine fittings. Install bolts and washers (Ref. Figure 403). Torque bolts to **220 - 360 inch-pounds (24.86 - 40.67 Nm)**; Safety bolts to engine mounts using lockwire (CM702).

(9). Align hole in lower engine mount assembly with engine fitting. Install bolt, washers and nut. Torque nut to **95 - 110 inch-pounds (10.73 - 12.43 Nm)**; install cotter pin as required.

(10). Ensure engine air inlet firewall seal ring contacts firewall seal around its entire circumference.

(11). Remove hoist from helicopter.

B. Connecting an Installed Engine

(Ref. Figure 401 and Figure 402)

Consumable Materials
(Ref. Section 91–00–00)

Item	Nomenclature
CM702	Lockwire CRES

WARNING **Proper tightening of engine tubing connections is critical to flight safety. Correct torque values must be used at all times. Excessive torque on fuel or pneumatic sensing system connections can result in cracking of the flare causing an air leak which can cause flameout, power loss, or overspeed.**

(1). Connect torque–meter oil line to firewall.

(2). Connect oil pressure gauge line to firewall.

(3). Connect engine oil vent line. Torque line nut to **120 - 140 inch-pounds (13.56 - 15.82 Nm)**.

CAUTION Do not bend oil return line. Bending loads are transferred to oil cooler port and may fracture cooler.

(4). Connect engine oil outlet and inlet lines. Hand–tighten until snug. Wrench–tighten approximately 1/4 turn or until definite resistance is felt.

(5). Position accessory drive vent elbow and connect with vent tube. Torque elbow jamnut to **150 - 250 inch-pounds (16.95 -** 28.25 Nm). Torque tube nut to **20 - 30 inch-pounds (2.26 - 3.39 Nm)**.

(6). Connect N_1 control rod to lever with bolt, two washers and nut. Install bolt with head outboard, one standard OD washer under nut and one large 0.8 inch diameter washer under head. Torque nut to **40 - 45 inch-pounds (4.52 - 5.08 Nm)**. Install a new cotter pin.

(7). Connect short N_2 control rod to governor lever with bolt head up, one standard OD washer under head, one large 0.80 inch (20.32 mm) OD washer under nut and a new cotter pin. Connect long N_2 control rod with bolt head forward, two washers, nut and a new cotter pin.

(8). Connect engine fuel pump seal drain line. Torque tube nut to **50 - 65 inch-pounds (5.65 - 7.34 Nm)**.

(9). Connect fuel inlet line to fuel pump. Torque hose nut to **230 - 260 inch-pounds (25.99 - 29.38 Nm)**.

NOTE: Ensure burner drain valve and plug are installed in combustion chamber with an O–ring on each part. Ensure drain valve is in the aft (lowest) position.

(10). Install combustion chamber drain line on drain valve.

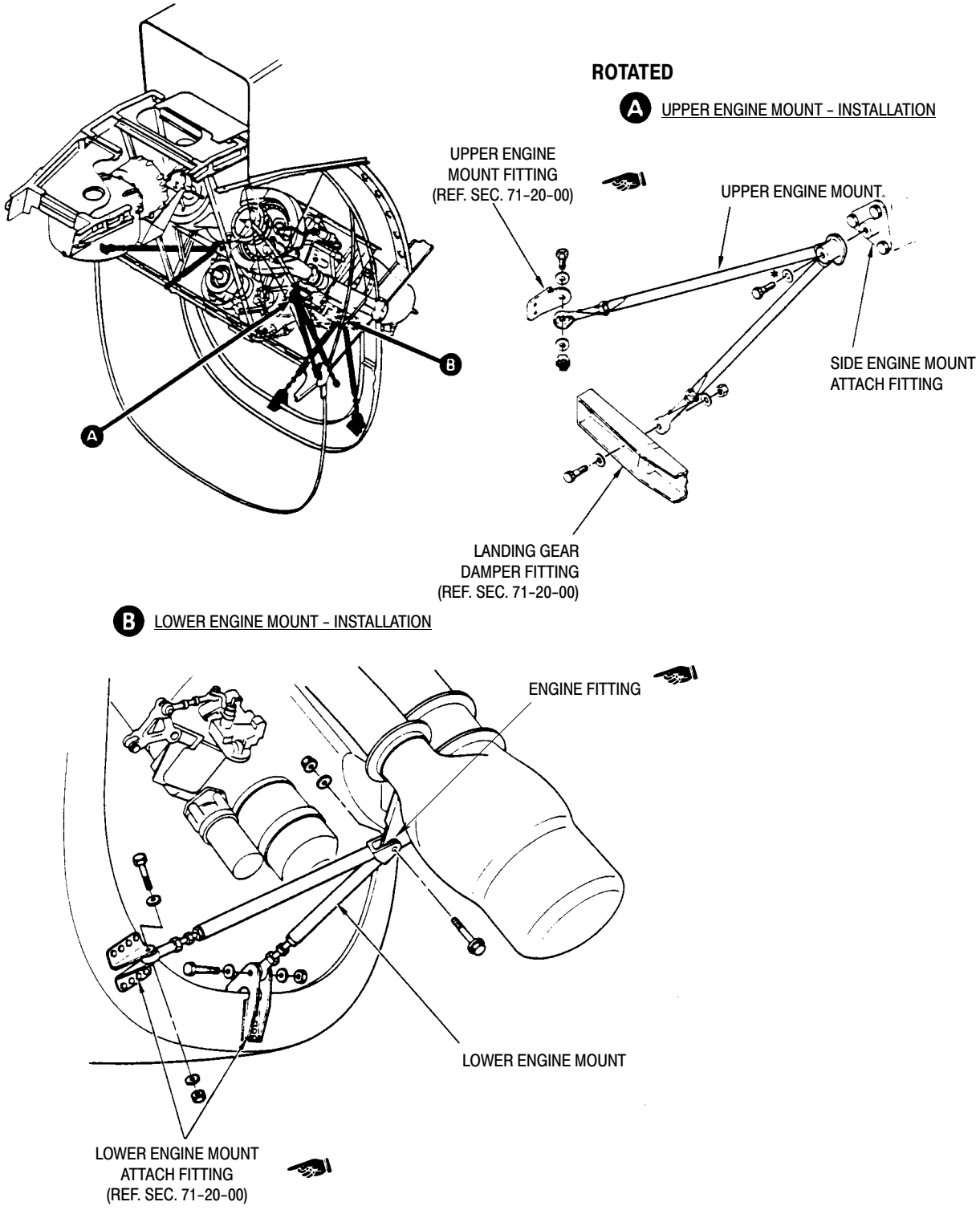

Figure 402. Engine Mounts and Structural Fittings

(2). Install engine-mount washer and bolt. Torque bolt to **100 - 140 inch-pounds (11.30 - 15.82 Nm)**.

(3). Torque upper engine mount fitting hardware at firewall and landing gear damper support to **30 - 40 inch-pounds (3.39 - 4.52 Nm) plus drag torque**.

(4). Repeat the appropriate steps to install the remaining upper engine mount.

(5). Remove engine hoist.

(6). Install wire harness clamp on right engine mount.

(7). Install compressor air duct support bracket on airframe hoist fitting. Install gear case cooling duct clamp on left engine mount (Ref. Sec. 71-60-00).

4. Lower–Aft Engine Mount Replacement (250–C30/–C47)

A. Lower–Aft Engine Mount Removal (250–C30/–C47)

(Ref. Figure 402)

Special Tools (Ref. Section 91–00–00)	
Item	Nomenclature
ST402	Engine hoist

(1). Remove hardware attaching upper cooling air duct support bracket to overhead engine hoist fitting.

(2). Install engine hoist (ST402). Back off mount nuts 1/2 turn. Tension hoist to relieve engine weight on aft mount until bolts will turn freely.

(3). Detach aft engine mount from engine fitting.

(4). Disconnect left and right forward ends of aft engine mount. Discard nuts.

B. Lower–Aft Engine Mount Installation (250–C30/–C47)

(Ref. Figure 402)

CAUTION

- Do not tighten airframe-mount bolts until engine fitting-mount bolt is torqued.
- If a new engine-mount fitting has been installed; retorque engine-mount attach bolt after 3 to 5 hours of flight time.

NOTE: All engine mount fitting bolts, washers and nuts are corrosion resistant steel.

(1). Place ends of lower engine mount against bulkhead fittings.

(2). Install aft engine mount as shown; use two bolts, four washers and two new nuts at bulkhead attach fittings.

(3). Install engine-mount attach bolt washers and new nut. Torque nut to **95 - 110 inch-pounds (10.73 - 12.43 Nm) plus drag torque**. Install cotter pin as required.

(4). Torque airframe fitting hardware at Sta. 137.50 to **95 - 110 inch-pounds (10.73 - 12.43 Nm) plus drag torque**.

5. Upper Engine Mounts Replacement (250–C30/–C47)

A. Upper Engine Mounts Removal (250–C30/–C47)

(Ref. Figure 402)

(1). Remove gear case cooling duct clamp from left side engine mount.

(2). Disconnect upper mount forward attach points from airframe fittings. Discard nuts.

(3). Disconnect aft ends of mounts from engine fittings.

B. Upper Engine Mounts Installation (250–C30/–C47)

(Ref. Figure 402)

CAUTION

- Do not tighten airframe-mount bolts until engine fitting-mount bolt is torqued.
- If a new engine-mount fitting has been installed; retorque engine-mount attach bolt after 3 to 5 hours of flight time.

NOTE: All engine mount fitting bolts, washers and nuts are corrosion resistant steel.

(1). Install two bolts, four washers and two new nuts to fasten mounts to airframe fittings.

(2). Install engine-mount washer and bolt. Torque bolt to **220 - 360 inch-pounds (24.86 - 40.67 Nm)**; lockwire bolt.

(3). Torque upper engine mount fitting hardware at firewall and landing gear damper to **60 - 85 inch-pounds (6.78 - 9.60 Nm) plus drag torque**.

(4). Repeat the appropriate steps to install the remaining upper engine mount.

(5). Remove engine hoist.

(6). Install gear case cooling duct clamp on left engine mount.

CHARTS

CONSUMABLE MATERIALS AND SPECIAL TOOLS

1. General

This chapter provides a table of Consumable Materials and a table of Special Tools used on the MD500/600 Series Helicopter.

The information in each table is divided into groups. Within each group, materials or tools are identified by a number. Numbers have a prefix of CM identifying a consumable material, or a ST identifying a special tool. CM and ST numbers are used throughout the maintenance manual, allowing quick reference for Consumable Materials and Special Tools.

2. Consumable Materials

Table 1 lists Consumable Materials, such as fuels and oils used to support repair or servicing procedures.

Consumable materials are assigned a CM number, with associated material name, specification number and commercial name.

The following consumable materials are approved for use on the MD500/600 Series. Do not use replacement materials unless equal in quality and grade. Refer to notes at the end of Table 1.

For additional servicing information, such as capacities Refer to Section 12-00-00.

- CM101 - Lubricants
- CM201 - Solvents, Cleaners and Corrosion Preventative Compounds
- CM301 - Paints, Primers and Coating Compounds
- CM401 - Adhesives, Cements and Sealants
- CM501 - Composite Materials
- CM601 - Rubber Material
- CM701 - Lockwire, Fasteners and Tape
- CM801 - Miscellaneous Materials

3. Special Tools

Table 3 identifies special tools, necessary for maintenance operations.

Each tool is assigned an ST number, with an associated part number, descriptive title and function.

4. Manufacturer/Supplier Number

Table 2 lists Manufacturer/Supplier (Vendor) Number with address. Table 2 is used with Table 1, Consumable Materials.

Table 4 lists Tool Manufacturer/Supplier (Vendor) Number with address. Table 4 is used with Table 3, Special Tools.

- ST101 - Ground Handling
- ST201 - Jacking and Leveling
- ST301 - Main Transmission
- ST401 - Engine
- ST501 - Flight Controls
- ST601 - Anti-Torque
- ST701 - Main Rotor
- ST801 - Fuel
- ST901 - Track and Balance
- ST1001 - Electrical/Instrument/Avionic
- ST2001 - Miscellaneous

Table 1. Consumable Materials

Item No.	Material	Specification No. (1) Type Class Grade	Commercial Name/No. (2)	Vendor (Table 2)
		Lubricants		
CM101	Solid film lubricant	MIL-L-46010		(3)
CM102	Solid film lubricant	MIL-L-46010A	Ecoalube No. 642	MS27
CM103	Solid film lubricant	MIL-L-8937 MIL-L-23398 HMS 4-1078 1	Lubribond A Molyspray Type PT-101	MS25 MS63
CM104	Lubricant, spray		Tri-Flow Break-Free	MS37 MS43
CM105	Lubricant, spray		Moly-Dee	MS9
CM106	Fluorocarbon dry lubricant		S-122	MS53
CM107	Fluorocarbon release agent (dry film lubricant)		6611N	MS24
CM108	Graphite, powdered			(3)
CM109	Molybdenum disulfide powder lubricant	MIL-L-7866		(3)
CM110	Grease		GD568-S	MS35
CM111	Grease, aircraft	MIL-G-81322	Mobil Grease 28 Aero Shell 22 Braycote 622	MS54 MS73 MS13
CM112	Anti-seize compound high temperature	MIL-PRF-907E	(3)	
CM113	Anti-seize compound low temperature	MIL-T-5544	Thread Lube	MS59
CM114	Petrolatum (petrolatum jelly)	MIL-G-6032 VV-P-236		MS22 MS70 MS81
CM115	Grease, oscillating bearing	MIL-G-25537 MIL-A-8623	Aero Shell 14 A-1177-B	MS73 MS12
CM116	Grease, aircraft and instrument	MIL-G-23827	Braycoat 627 Exxon 5114EP Aero Shell 7	MS13 MS28 MS73
CM117	Grease	MIL-G-23872		(3)
CM118	Grease		930A	MS47
CM119	Grease		130A	MS47
CM120	Oil, corrosion preventive		Steelgard 1301	MS36
CM121	Preservation oil (general purpose)	VV-L-800		MS13
CM122	Preservative oil, hydraulic	MIL-H-6083		(3)
CM123	Hydraulic fluid	MIL-H-5606		(3)
CM124	Kerosene	VV-K-211		(3)
CM125	Oil (4) (7)		Mobil SHC 626 (6)	MS54

Table 1. Consumable Materials (Cont.)

Item No.	Material	Specification No. (1) Type Class Grade	Commercial Name/No. (2)	Vendor (Table 2)
CM126	Oil, turbine (4) (5)	MIL-L (PRF)-23699		(3)
CM127	Grease, YSAS Actuator		168043	MS90
	Solvents, Cleaners and Corrosion Preventative Compounds			
CM201	Protective coating	MIL-C-6799 1		(3)
CM202	Metal protector, aerosol		Molykote	MS22
CM203	Potting compound	MIL-S-8516B		MS77
CM204	Compound, corrosion preventative	MIL-C-16173 . . . . . 3 4	Braycote	MS10 MS13 MS88
CM205	Dielectric compound		DC-4	MS22
CM206	Chemical coating	MIL-C-5541	Iridite 14-2 Al-Coat Alodine 1201	MS67 MS85
CM207	Chromic acid solution (pH 2.6 to 3.4, magnesium touchup)		Dow #19 or equivalent	MS22
CM208	Barrier material (grease-proof)	MIL-B-121 1 . . . . . 2 . . . . . A MIL-B-131 1		(3)
CM209	Zinc chromate putty	MIL-P-8116	Compound 3998	MS32
CM210	Corrosive preventive (aircraft gas turbine, synthetic base)	MIL-C-8188		(3)
CM211	Solvent		3339	MS82
CM212	Releasing agent		TC7-527	MS26
CM213	Releasing agent		225	MS64
CM214	Releasing agent	MIL-P-23377 HMS 20-1245		MS14 MS17
CM215	Parting agent		Slip-Spray Fre-Kote 33	MS24 MS31
CM216	Loctite remover (for disassembled parts)		Oakite 156	MS17 MS57 MS74
CM217	Isopropyl alcohol	TT-I-735		(3)
CM218	Alcohol, denatured	O-E-760 1		(3)
CM219	Methyl-ethyl-ketone	TT-M-261		(3)
CM220	Naphtha aliphatic	TT-N-95 2		(3)
CM221	Xylene			(3)
CM222	1,1,1-Trichloroethane	O-T-620		(3)
CM223	Acetone	O-A-51		(3)

Table 1. Consumable Materials (Cont.)

Item No.	Material	Specification No. (1) Type Class Grade	Commercial Name/No. (2)	Vendor (Table 2)
CM224	Soap paste	P-S-560		(3)
CM225	Detergent, general purpose	MIL-O-16791		(3)
CM226	Cleaning compound, alkaline waterbase	MIL-C-25769		(3)
CM227	Washing compound with wax			(3)
CM228	Surface cleaner (pre-paint solution with phosphoric acid base)	TT-C-490 MIL-C-10578 2	WO#1	MS79
CM229	Paint remover (acid-type for epoxy)	TT-R-25134		MS79
CM230	Paint remover (solvent-type)	MIL-R-25314		(3)
CM231	Plastic bead, spherical 20 - 30 mesh		Poly Plus 20/30 (8)	MS1 MS2 MS61
CM232	Rust inhibitor spray		WD-40	MS68
CM233	Rust inhibitor spray		LPS3	MS46
CM234	Solvent, dry-cleaning		P-D-680	(3)
CM235	Cleaner		Desoclean 45	MS17
	Paints (9), Primers and Coating Compounds			
CM301	Pre-treatment	MIL-P-15328		(3)
CM302	Epoxy primer / Catalyst reducer		1-1G-69 / 1-1H-75	MS3
CM303	Wash primer	MIL-C-8514		(3)
CM304	Enamel, epoxy (Fed–Std–595)	MDM 15-1100 2	Black #37038 White #37769 Tan #20318 Parchment #20371 Red #11958 Green #34151 Gray #36231 Yellow #13655	(3)
CM305	Lacquer, acrylic (Fed–Std–595)	MDM 15-1083	Black #17038 Black #37038 Parchment #20371 Green #34151 Blue #15102 Blue #35044 Brown #30140	(3)
CM306	Lacquer, clear (aluminum clad alloy surfaces)	MIL-L-6066		(3)
CM307	Lacquer, acrylic semi-gloss	HMS 15-1083		(3)
CM308	Lacquer, blue	FED-STD-15102		(3)
CM309	Lacquer, green	TT-L-32		(3)

Table 1. Consumable Materials (Cont.)

Item No.	Material	Specification No. (1) Type Class Grade	Commercial Name/No. (2)	Vendor (Table 2)
CM310	Enamel, lusterless	TT-E-527		(3)
CM311	Coating, logo white / Thinner		Q881 (Color No. 484) / T-80695	MS11
CM312	Ink stamp, permanent	MIL-M-43719 TT-I-558		(3)
CM313	Insulation varnish		Glyptal 1201	MS33
CM314	Varnish, moisture resistant	MIL-V-173 2		(3)
CM315	Adhesive primer (liquid primer)	HMS 16-1069 1		MS50
CM316	Epoxy coating / Thinner		Poly-EP	MS19
CM317	Resin primer / Thinner (paint base for polycarbonate plastic)		Q-881 / T-80679	MS11
CM318	Primer	MIL-P-85582 1 . . . . . C2		(3)
CM319	Barrier material, grease-proof	MIL-B-121 1 . . . . . 2 . . . . . A MIL-B-131 1		(3)
CM320	Thinner, lacquer (acrylin-nitrocellulose)	MIL-T-19544	Prepsol (DuPont 3919)	MS24
CM321	Surface primer locking compound (single component, grade as noted)	MIL-S-22473	Locquic	MS45
CM322	Primer, Silicone, Red		Dow Corning 1200	MS43
CM323	Primer	MIL-P-23377 1 C		(3)
	Adhesives, Cements and Sealants			
CM401	Adhesive		Stabond G-304	MS75
CM402	Adhesive	MDM 16-1068 11	EA9323 EA956	MS21
CM403	Adhesive		Epon 919	MS72
CM404	Adhesive, epoxy (non-structural)	HMS 16-1147 2	EC2216B/A Scotch Weld	MS86
CM405	Adhesive	HMS 16-1149	C-111	MS75
CM406	Adhesive		U-136 (AC-AAAA)	MS75
CM407	Adhesive / Primer / Catalyst		A-4000 / A-4004 / xy22	MS22
CM408	Adhesive, silicone rubber		Silastic 140	MS22

Table 1. Consumable Materials (Cont.)

Item No.	Material	Specification No. (1) Type Class Grade	Commercial Name/No. (2)	Vendor (Table 2)
CM409	Adhesive, epoxy	MDM 16-1068 1	EA9330.3	MS21
CM410	Adhesive, epoxy	MDM 16-1068 7	EA9309.3	MS21
CM411	Adhesive, epoxy (non-structural)	MIL-A-52194 MDM 16-1068 2	Scotch-Weld EC1838 A1177B	MS86 MS12
CM412	Adhesive, bonding, vulcanized (synthetic rubber-to-steel)	MIL-A-1154		MS86
CM413	Not used at this time			
CM414	Adhesive, cyanoacrylic / Accelerator	MIL-A-46050	3CI-1000 / Super Drop Accelerator	MS21
CM415	Cement	MIL-A-8576B	PS-18 S147	MS69
CM416	Cement		#2210	MS86
CM417	Cement	HMS 16-1149 2 1	Grip	MS38
CM418	Cement, epoxy	HMS 16-1149 2 2	EC1300L	MS86
CM419	Sealer	MDM 16-1068 2	A1177B	MS12
CM420	Sealant	MIL-S-81733	PR-1431 Type IV PR1436G Type II PR1436GB-2	MS62
CM421	Sealant		Anchor Weld #220	MS58
CM422	Sealant		#5220	MS30
CM423	Sealant		RTV106 **(2)**	MS34
CM424	Sealing compound		HT-4	MS75
CM425	Sealing compound (fuel resistant)	HMS 16-1097 1 . . . . . B2 MIL-S-8802	Pro-Seal 890	MS62
CM426	Sealing compound	MIL-S-8516 2	3C-3007	MS14
CM427	Sealing compound	MIL-S-8516 1 . . . . . 2 . . . . . A1/2	PR1422	MS62
CM428	Sealing compound	MIL-S-8516 1 2	RTV730 Silastic 730	MS22 MS34
CM429	Sealing compound, silicone		RTV11	MS34
CM430	Sealant, solvent resistant	MIL-S-8660B	RTV732 Silastic 732 RTV 157	MS22 MS34

Table 1. Consumable Materials (Cont.)

Item No.	Material	Specification No. (1) Type Class Grade	Commercial Name/No. (2)	Vendor (Table 2)
CM431	Sealing, locking and retaining compound (single component, grade as noted)	MIL-S-22473 MIL-R-46082	Loctite #85 or RC/609	MS45 MS60
CM432	Dichloromethane (methylene chloride)	MIL-D-6998		(3)
CM433	Ethylene chloride (ethylene dichloride, EDC)	MIL-E-10662		(3)
CM434	Thread sealant		P412	MS60
CM435	Tetrahydrofuran (THF)			MS51
CM436	Plastic steel		Devcon A	MS20
CM437	Sealing compound		Permabond 102 Loctite 414	MS43 MS60 MS45 MS87
CM438	Adhesive, Epoxy	HMS16-1068 12	EA9321	MS21
CM439	Adhesive	HMS16-1149 5		MS75
CM440	Sealant, electrically conductive	MDM16-1261	Cho-bond 2165	MS91
	Composite Materials			
CM501	Fiberglass cloth (0.022, 2 ply)	SAE-AMS-C-9084 No. 181		(3)
CM502	Sleeving, fiberglass (No. 4, 0.214 in. ID x 4.0 in.)	MIL-I-3190 . . . . . HA-1		(3)
CM503	Fiberglass repair kit		Cordokit RK-10	MS29
CM504	Epoxy resin with catalyst (low pressure laminating)	MIL-R-9300 1		(3)
CM505	Polyester laminating resin	MIL-R-7575		(3)
CM506	Resin, fiberglass		Epon 828	MS72
CM507	Resin, filler		Epon 960F	MS72
CM508	Resin, filler		#RP1257-3	MS66
	Rubber Material			
CM601	Insulation sleeving, electrical (vinyl tubing; size as notes)	MIL-I-631 F . . . . . 1 . . . . . A Form U, Category 1		(3)
CM602	Insulation sleeving, electrical, fiberglass (size as notes)	MIL-I-3190		(3)
CM603	Patching material (inside/outside)		#5200/5187/5194	MS82
CM604	Patching material (outside only)		#5218 or #5241/5241	MS82
CM605	Fuel cell repair kit		RK3CL	MS82

Table 1. Consumable Materials (Cont.)

Item No.	Material	Specification No. (1) Type Class Grade	Commercial Name/No. (2)	Vendor (Table 2)
CM606	Rubber cement	MIL-A-5092		(3)
CM607	Cement	MIL-S-9117	EC-678	MS82
CM608	Cement		Uniroyal #3230	MS80
CM609	Repair kit (non-self- sealing cell)		Uniroyal #RK-10-34	MS80
CM610	Patch material (self- sealing cell, exterior)		Uniroyal #5241/5241 sandwich	MS80
CM611	Tubing, vinyl clear		PVC tubing, 2 GA, clear 105C	MS71
CM612	Tube, silicone		No. 4 (H.A.I.)	MS83
CM613	Sleeve, vinyl		No. 2 Resinite	MS13
CM614	Sleeving, heat-shrink (class, type or diameter as noted)	MIL-I-23053	RNF100X3/8 RNF100X1/2 RNF100 .125 ID	MS65
	Lockwire, Fasteners and Tape			
CM701	Lockwire CRES	MS20995C20		(3)
CM702	Lockwire CRES	MS20995C32		(3)
CM703	Tie strap (size as noted)	MS3367-*-*		MS78
CM704	Tie strap, nylon	MS17821-1-9	TY-RAP	(3)
CM705	Tie, cable		SST2	MS18
CM706	Tie strap base		TC112	MS78
CM707	Tape, fastener (nylon hook and pile)		Velcro	(3)
CM708	Tape		#850	MS86
CM709	Tape		CT93C	MS42
CM710	Tape, high temperature (thickness as noted)		Temp-R	MS16 MS39
CM711	Tape, pressure sensitive (waterproof for packaging and sealing, width and thickness as noted)	PPP-T-60 1 1		MS60 MS86
CM712	Tape, pressure sensitive (width as noted)		#41	MS86
CM713	Tape, pressure sensitive		#471	MS86
CM714	Tape, pressure sensitive (width as noted)		#4104	MS86
CM715	Tape, pressure sensitive (width as noted)		#4508	MS86
CM716	Tape, pressure sensitive (adhesive, filament reinforced)	PPP-T-97		(3)
CM717	Tape, pressure sensitive, (polyurethane, width as noted)		#Y8560	MS86
CM718	Tape, double-faced		E-706	MS8

Table 1. Consumable Materials (Cont.)

Item No.	Material	Specification No. (1) Type Class Grade	Commercial Name/No. (2)	Vendor (Table 2)
CM719	Tape, vinyl plastic		#330	MS76
CM720	Tape and activator, vinyl		Scotch Cal #45 Scotch Tite A-2	MS86
CM721	Tape, aluminum foil		#425	MS86
CM722	Tape, polyethylene		#483	MS86
CM723	Tape, nitrile rubber		NE-71-A	MS7
CM724	Tape, non-slip (pressure sensitive, medium grade, black)	P-D-00455		(3)
CM725	Tape, electrical, plastic	MIL-I-7798	#33	MS86
CM726	Tape teflon		#520 #48	MS60 MS86
CM727	Tape, foam (adhesive backing)		4104Y 92772	MS86
CM728	Tape, pressure sensitive (sponge rubber)		4504 Scotchfoam tape	MS86
CM729	Tape, masking, pressure sensitive	UU-T-106	#216 (High Temp)	MS86
CM730	Tape, duct			(3)
CM731	Lockwire CRES	MS20995C15		(3)
	Miscellaneous Materials			
CM801	Abrasive paper, silicon carbide (grade as noted)	P-P-101		(3)
CM802	Abrasive cloth, aluminum oxide (grade as noted)	P-C-451		(3)
CM803	Crocus cloth	P-C-458		(3)
CM804	Emery cloth, fine			(3)
CM805	Dye penetrant kit	MIL-I-25135		MS6 MS48
CM806	Micro-Mesh plastic restoration kit	5350-01-290-4002	Micro-Mesh Kit KR-70	MS52
CM807	Twine, nylon	MIL-T-713		(3)
CM808	Lacing cord (high temperature)	Type T-3333		MS84
CM809	Nylon cord (lacing)	MIL-C-5040		(3)
CM810	Leak detector, liquid	MIL-L-25567C	Leak-Tec	MS4
CM811	Leak detector, liquid		Snoop	MS56
CM812	Splice, knife		32445	MS5
CM813	Wire	MS22759/34-22-9		(3)
CM814	Dykem, red or blue		SP1100	MS23 MS40 MS49
CM815	Solder (tin alloy, rosin core)	QQ-S-571 SN60WRP2		(3)

Table 1. Consumable Materials (Cont.)

Item No.	Material	Specification No. (1) Type Class Grade	Commercial Name/No. (2)	Vendor (Table 2)
CM816	Solder (tin alloy, acid core)	QQ-S-571		(3)
CM817	Brazing flux (paste)	O-F-499		(3)
CM818	Brazing alloy (silver base)			MS86
CM819	Kimwipe			(3)
CM820	Cheesecloth			(3)
CM821	Gasket material (adhesive one side only)		Scotchfoam #4304	MS86
CM822	Acetylene, technical grade	BB-A-106		(3)
CM823	Oxygen, industrial grade	BB-O-925 1 . . . . . B		(3)
CM824	Welding rod (corrosion and heat resistant alloys, class or type as noted)	AMS 5656, AWS A5.9, ER219	21-6-9 (Nitronic 40)	(3)
CM825	Welding rod	QQ-R-566 CLFS RA12 or RA143 (04043) 5% silicon		(3)

NOTES:

(1) Numbers are U.S. Specifications and Standards. Prefix symbols are specified as follows:
AMS – American Materials Standards;
MS – Military Standards;
MIL – Military Specification; Single, Double or Triple alpha prefix of the same letter – Federal Specification;
AN – Air Force/Navy Aeronautical Standard;
NAS – National Aerospace Standard.

(2) Primary selection. All equivalent material can be used as a different selection. Time increments on manufacturers instructions must be adhered to, unless given differently in a specific task.

(3) Use the best comparable grade material when conformity of available materials of same type with given Specification Number cannot be found.

(4) Oils approved for use in MD500/600 Series Helicopter main and fan transmission are synthetic compounds having Ryder Gear Value in excess of 2500 pounds.

(5) For Model 250 Series engine oil change requirements and restrictions on mixing oils, refer to Allison Operation and Maintenance Manual.
CAUTION: Mixing of oils within an oil series not in the same group is permitted only in an emergency. Use of mixed oils (oils not in the same group) in an engine is limited to five hours total running time. Adequate maintenance records must be maintained to ensure that the five hour limit is not exceeded. Mixing of oils from different series is not permitted.

(6) Mobil oil SHC 626 can be formulated such that it may have two different colors. The oil can still be mixed with no adverse affects.

(7) Use only Mobil SHC 626 oil in the 369F5450 overrunning clutch and 369F5100 main transmission.

(8) Do not use over 50 psig air pressure for abrasive cleaning method. Mask or shield threaded areas or critical surfaces where damage may result from abrasive blasting.

(9) When ordering paint, give each paint by type (i.e. acrylic, epoxy, polyurethane); by color and AC part number. Also include compatible HS or federal standard (FED–STD) number to make sure correct type and color paint is supplied. The color code numbers for finish paints used on MD500/600 Series Helicopters are entered in helicopter log books before delivery of aircraft. When ordering paints, ensure AC Number and SA Number are compatible.

Table 2. Manufacturer/Supplier Number

Number	Name
MS1	Abrasive Cleaning Equipment 20122 State Rd. Cerritos, CA 92701
MS2	Abrasives Unlimited 4653 S. 33rd St. Phoenix, AZ 85040 (602) 276–0077
MS3	Advanced Coating and Chemicals 2213 N. Tyler S. El Monte, CA 91733
MS4	American Gas and Chemical Co. 220A Pegasus Ave. Northvale, NJ 07647 1904 (201) 767–7300 (800) 526–1008
MS5	AMP Co. P.O. Box 55 Winston Salem, NC 27102 (336) 725–9222 (800) 522–6752
MS6	Ardrox Inc. 19 Woodburn Ave. P.O. Box 814 St. Catherines, Ontario Canada L2R 6Y3 (416) 684–1800
MS7	Armstrong Cork Co. Lancaster, PA 17604
MS8	Arno Adhesive Tapes Inc. Los Angeles, CA
MS9	Arthur Withrow 5511 District Blvd. Los Angeles, CA 90040
MS10	Tectyl Industrial Products A Div. Of Ashland Inc. 3499 Dabney Dr. Lexington, KY 40509 (859) 357–7534
MS11	Bee Chemical Co. 2700–T E. 170th St. Lansing, IL 60438 (708) 474–7000
MS12	B.F. Goodrich Co. 500 S. Main St. Akron, OH 44318
MS13	Castrol Industrial North America Inc. 1001– W. 31st St. Downers Grove, IL 60515 (630) 241–4000 (800) 621–2661
MS14	Churchill Chemical Corp. Los Angeles, CA
MS15	PRC–Desoto International, Inc. 5454 San Fernando Rd. Glendale, CA 91203 (818) 240 2060
MS16	Connecticut Hard Rubber Co. New Haven, CT
MS17	Crown Metro Inc P.O. Box 5857 Greenville, SC 29606 (864) 299–1331
MS18	Danquit Corp. Tinley Park, IL
MS19	Detroit Graphite Co. Detroit, MI
MS20	Devcon 30 Endicott St. Danvers, MA 01923 (978) 777–1100
MS21	Dexter Adhesive & Coating Systems 2850 Willow Pass Rd., P.O. Box 312 Bay Point, CA 94565–0031 (925) 458–8000 (800) 424–9300
MS22	Dow Corning Corporation P.O. Box 0994, South Saginaw Road Midland, MI 48686 (800) 634–9660
MS23	ITW/Dykem 805 E. Old 56 Hwy. Olathe, KS 6606 (800) 443–9536
MS24	Du Pont Wilmington, DE 19898 (302) 774–1000 (800) 441–7515

Number	Name
MS25	E/M Corp. 100–T Cooper Circle Peachtree City, GA 30269 (770) 261–4800
MS26	EPD Industries 2055 E. 223 St. Long Beach, CA 90810
MS27	Everlube Corp. North Hollywood, CA
MS28	Exxon Co. P.O. Box 2380 Houston, TX 77001
MS29	Ferro Corp. Composites Division 34 Smith St. Norwalk, CT 06852
MS30	Fiber–Resin Corp 170 W Providencia Ave Burbank, CA 91502 (800) 624–9487
MS31	Fre–Kote Inc.
MS32	Fuller O'Brien Co. S. San Francisco, CA
MS33	General Electric Insulation Dept. Schenectady, NY
MS34	General Electric Company Silicone Products Business Division 260 Hudson River Rd. Waterford, NY 12188 (518) 233–3330
MS35	GC Electronics Los Angeles, CA
MS36	Harry Miller Corp. 4th & Bristol Sts. Philadelphia, PA 19140 (215) 324–4000
MS37	IKS American Corp. Szumoto Seiko Division 1555 W. Rosecrans Ave. Gardena, CA 90249 (800) 421–2761
MS38	Columbia Aluminum Products 7020 E. Slauson Ave. Commerce, California 90040 (323) 728–7361

Number	Name
MS39	Insulectro Co. 1410 W. Olympic Blvd. Los Angeles, CA
MS40	Irwin–Hobson Co. Ninth and S.E. Woodward Portland, OR 97202
MS41	Deleted – Not used at this time.
MS42	Jones Industrial Supply Culver City, CA
MS43	K.R. Anderson 4316 E. University Dr. Phoenix, AZ 85034 (602) 437–0030
MS44	Not used at this time
MS45	Loctite Inc. 1001 Trout Brook Crossing Rocky Hill, CT 06067–3910 Phone: (860) 571–5100 FAX: (860) 571–5465
MS46	LPS Laboratories Inc. 4647 Hugh Howell Rd., Dept. M Tucker, GA 30084 (800) 241–8334
MS47	Lubriplate Div., Fiske Bros. Refining Co. 129–T Lockwood St. Newark, NJ 07105 (973) 589–9150
MS48	Magna Flux 11898–T Burnside Lane Roscoe, IL 61073 (815) 623–7634
MS49	Markall Products Co. 4772–T W. 139 St. Cleveland, OH 44135 (216) 267–3235
MS50	MD Helicopters Inc. 4555 E. McDowell Mesa, AZ 85215–9734 (480) 346–6377 (800) 388–3378
MS51	McKesson and Robbins Chemical Dept. Los Angeles, CA

Number	Name
MS52	Micro–Surface Finishing Products Inc. 1217 W. Third Street P.O. Box 818 Wilton, IA 52778 (319) 732–3240
MS53	Miller–Stevenson Chemical Co. 1001 E. first St. Los Angeles, CA
MS54	Mobil Oil Corp. International Aviation Division 150 E. 42nd St. New York, NY 10017
MS55	Rohm and Haas Company 100 Independence Mall West Philadelphia, PA 19106–2399 (215) 592–3000 (215) 592–3377
MS56	Nupro Company 4800 East 345th Street Willoughby, OH 44094 4460 (440) 951–7100
MS57	Chemetall Oakite Products, Inc. 50 Valley Rd. Berkeley Heights, NJ 07922 2712 (908) 464–6900
MS58	Pacific Upholstery Gardena, CA
MS59	Parker–Hannifin 711 Taylor Street P.O. Box 4032 Elyria, OH 44036 (440) 284–6300
MS60	Permabond International Corp. 480 S. Dean St. Englewood, NJ 07631 (201) 567–9494
MS61	Polyrock Co. 4763 Murrita Ave. Chino, CA 91710
MS62	Product Research and Chemical Co. 5426 San Fernando Rd. Glendale, CA 91209
MS63	Product Techniques, Inc. 511 East 8th Pl. Los Angeles, CA
MS64	Ram Chemical Co. Gardena, CA

Number	Name
MS65	Raychem Corp. 305 Constitution Dr., Mailstop 103/2A Menlo Park, CA 94025–1164 (800) 926–2425 (650) 361–3860
MS66	Ren Plastics Inc. Lansing, MI 48910
MS67	Richardson Company Allied–Kelite Products Division 2400 E. Devon Ave. Des Plains, IL
MS68	Rocket Chemical Co. Inc. San Diego, CA
MS69	Rohm and Haas Company 100 Independence Mall West Philadelphia, PA 19106–2399 (215) 592–3000 (215) 592–3377
MS70	Royal Lubricants, Inc. 215 Merry Lane, P.O. Box 518 East Hanover, NJ 07936 0518 (800) 989–7692
MS71	Sea Wire and Cable Inc. P.O. Box 647 Madison, AL 35758 1–800–633–7210
MS72	Shell Chemical Co. 910 Louisiana St. Houston, TX 77002 713–241–6161
MS73	Shell Oil Company 50 W. 50th. St. New York, NY 10020
MS74	Sherwin Williams
MS75	Stabond Corp. 14010–T S. Western Ave. Gardena, CA 90249 (310) 380–6168
MS76	Technical Tape Co. 363 Woodycrest Ave. Nashville, TN 37210 (800) 714–8806
MS77	Thiokol
MS78	Thomas and Betts Co. Elizabeth, NJ

Number	Name
MS79	Turco Products, Inc Division of Atochem North America 2700 Temple Ave Suite B Long Beach, CA 90806 (562) 981–8307
MS80	Uniroyal Inc. Engineered Systems Dept. Mishawaka, IN 46544
MS81	United–Erie Incorporated 438 Huron St. Erie, PA 16502 (800) 377–7561
MS82	U.S. Rubber Co. Fuel Container Dept. Mishawaka, IN
MS83	Varflex Corp. 512 W. Court St. Rome, NY 13440 (315) 336–4400
MS84	Warren Wire Co.
MS85	Witco Allied–Kelite Division 29111 Milford Rd. New Hudson, MI 48165 (313) 437–8161
MS86	3M Co. Bldg. 223–N 3M Center St. Paul, MN 55144–1000 (612) 733–1110 (800) 362–3550
MS87	R.S, Hughes 2107 E. Magnolia Phoenix, AZ 85034 (602) 275–5565 (602) 275–5025
MS88	Esgard Corrosion Coatings, PO Drawer 2698, Lafayette, LA 70502 (800) 888–2511
MS89	Hernon Mfg., Inc. 121–T Tech Dr. Sanford, FL 32771 USA (800) 527–0004 (407) 322–4000
MS90	Astronautics Corporation of America 4115 N. Teutonia Ave. Milwaukee, WI, 53209 www.astronautics.com Tel: (414) 449–4000 Fax: (414) 447–8231
MS91	Chomerics, Inc. 77 Dragon Court Woburn, MA 01801 (781) 935–4850