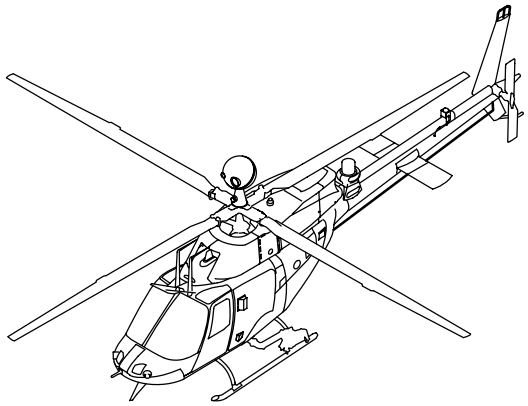
TECHNICAL MANUAL

AVIATION UNIT AND INTERMEDIATE MAINTENANCE MANUAL



ARMY MODEL OH-58D HELICOPTER

DISTRIBUTION STATEMENT A.
Approved for public release; distribution is unlimited.

***This manual together with TM 1-1520-248-23-1, TM 1-1520-248-23-3, TM 1-1520-248-23-4, TM 1-1520-248-23-5, TM 1-1520-248-23-6 and TM 1-1520-248-23-7, all dated 28 February 2000, supersedes TM 55-1520-248-23-1, TM 55-1520-248-23-2, TM 55-1520-248-23-3, TM 55-1520-248-23-4, TM 55-1520-248-23-5, TM 55-1520-248-23-6, TM 55-1520-248-23-7, TM 55-1520-248-23-8-1, TM 55-1520-248-23-8-2, and TM 55-1520-248-23-9, all dated 12 January 1988, including all changes.**

THIS VOLUME IS ONE OF A SERIES OF SEVEN VOLUMES AND IS INCOMPLETE WITHOUT TM 1-1520-248-23-1, TM 1-1520-248-23-3, TM 1-1520-248-23-4, TM 1-1520-248-23-5, TM 1-1520-248-23-6, AND TM 1-1520-248-23-7.

Headquarters, Department of the Army

28 FEBRUARY 2000

CHANGE
NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 November 2000

Aviation Unit and Intermediate
Maintenance Manual
For

ARMY MODEL
OH–58D HELICOPTER

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

TM 1–1520–248–23–2, 28 February 2000, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
A/(B blank)	A through C/(D blank)
a through d	a through d
i through xii	i through xii
xv through xxix/(xxx blank)	xv through xxix/(xxx blank)
4–3 through 4–6	4–3 through 4–6
4–13 through 4–16	4–13 through 4–16
4–25 through 4–28	4–25 through 4–28
4–31 and 4–32	4–31 and 4–32
4–35 and 4–36	4–35 and 4–36
4–45 and 4–46	4–45 and 4–46
4–53 and 4–54	4–53 and 4–54
4–59 through 4–62	4–59 through 4–62
4–75 and 4–76	4–75 and 4–76
4–79 and 4–80	4–79 and 4–80
4–83 through 4–86	4–83 through 4–86
4–89 through 4–92	4–89 through 4–91/(4–92 blank)
4–93 and 4–94	–––––––––––
4–95 though 4–100	4–95 though 4–100
4–101 and 4–102	–––––––––––
4–103 through 4–110	(4–103 blank)/4–104 through 4–110
4–113 through 4–116	4–113 through 4–116

TM 1–1520–248–23–2

C 1

Remove pages	Insert pages
–––––––––––	4–116.1/(4–116.2 blank)
4–117 and 4–118	4–117 and 4–118
–––––––––––	4–118.1/(4–118.2 blank)
4–119 through 4–124	4–119 through 4–124
4–127 through 4–132	4–127 through 4–132
4–135 through 4–160	4–135 through 4–159/(4–160 blank)
4–161 through 4–184	4–161 through 4–184
4–187 through 4–192	4–187 through 4–192
4–195 and 4–196	4–195 and 4–196
4–199 through 4–208	4–199 through 4–208
4–211 through 4–218	4–211 through 4–218
–––––––––––	4–218.1/(4–218.2 blank)
4–223 and 4–224	4–223 and 4–224
–––––––––––	4–224.1/(4–224.2 blank)
4–229 through 4–246	4–229 through 4–246
4–253 and 2–254	4–253 and 2–254
4–257 and 4–258	4–257 and 4–258
4–261 and 4–262	4–261 and 4–262
4–265 through 4–274	4–265 through 4–274
4–277 through 4–282	4–277 through 4–282
–––––––––––	4–282.1/(4–282.2 blank)
4–283 through 4–292	4–283 through 4–292
–––––––––––	4–292.1/(4–292.2 blank)
4–293 through 4–297/(4–298 blank)	4–293 through 4–297/(4–298 blank)
5–1 through 5–8	5–1 through 5–8
–––––––––––	5–8.1 and 5–8.2
5–9 through 5–12	5–9 through 5–12
–––––––––––	5–12.1/(5–12.2 blank)
5–13 through 5–20	5–13 through 5–20
5–25 through 5–28	5–25 through 5–28
–––––––––––	5–28.1/(5–28.2 blank)
5–29 and 5–30	5–29 and 5–30
5–35 and 5–36	5–35 and 5–36
5–43 through 5–48	5–43 through 5–48
5–53 through 5–56	5–53 through 5–56
5–59 through 5–64	5–59 through 5–64
5–67 through 5–70	5–67 through 5–70
–––––––––––	5–70.1/(5–70.2 blank)
5–73 and 5–74	5–73 and 5–74
5–77 and 5–78	5–77 and 5–78

Remove pages	Insert pages
5–81 through 5–88	5–81 through 5–88
5–91 through 5–96	5–91 through 5–96
5–97 and 5–98	–––––––––––
5–99 and 5–100	(5–99 blank)/5–100
–––––––––––	5–100.1/(5–100.2 blank)
5–101 through 5–108	5–101 through 5–108
5–113 through 5–122	5–113 through 5–122
5–129 through 5–136	5–129 through 5–136
5–141 and 5–142	5–141 and 5–142
5–145 through 5–148	5–145 through 5–148
5–155 and 5–156	5–155 and 5–156
5–159 and 5–160	5–159 and 5–160
5–163 and 5–164	5–163 and 5–164
–––––––––––	5–164.1/(5–164.2 blank)
5–165 and 5–166	5–165 and 5–166
–––––––––––	5–168.1/(5–168.2 blank)
5–169 through 5–174	5–169 through 5–174
5–177 through 5–184	5–177 through 5–184
5–187 and 5–188	5–187 and 5–188
–––––––––––	5–188.1/(5–188.2 blank)
5–189 and 5–190	5–189 and 5–190
5–193 and 5–194	5–193 and 5–194
5–197 and 5–198	5–197 and 5–198
–––––––––––	5–198.1/(5–198.2 blank)
5–199 and 5–200	5–199 and 5–200
5–203 through 5–208	5–203 through 5–208
–––––––––––	5–208.1/(5–208.2 blank)
5–209 and 5–210	5–209 and 5–210
5–213 and 5–214	5–213 and 5–214
5–217 through 5–224	5–217 through 5–223/(5–224 blank)
5–227 and 5–228	5–227 and 5–228
–––––––––––	5–228.1/(5–228.2 blank)
5–229 through 5–232	5–229 through 5–232
–––––––––––	5–232.1/(5–232.2 blank)
5–233 through 5–236	5–233 through 5–236
–––––––––––	5–236.1/(5–236.2 blank)
5–237 through 5–264	5–237 through 5–264
5–267 and 5–268	5–267 and 5–268
5–271 through 5–284	5–271 through 5–284
5–287 through 5–296	5–287 through 5–296
5–299 through 5–302	5–299 through 5–302

Remove pages	Insert pages
5–305 and 5–306	5–305 and 5–306
5–309 through 5–318	5–309 through 5–318
––––––––––	5–318.1/(5–318.2 blank)
5–319 through 5–340	5–319 through 5–340
5–349 through 5–356	5–349 through 5–356
5–359 through 5–368	5–359 through 5–368
5–373 through 5–376	5–373 through 5–376
––––––––––	5–376.1/(5–376.2 blank)
5–377 through 5–382	5–377 through 5–382
––––––––––	5–382.1/(5–382.2 blank)
5–383 through 5–386	5–383 through 5–386
––––––––––	5–386.1/(5–386.2 blank)
5–387 through 5–418	5–387 through 5–418
5–421 and 5–422	5–421 and 5–422
5–427 and 5–428	5–427 and 5–428
5–431 through 5–438	5–431 through 5–438
5–441 and 5–442	5–441 and 5–442
5–451 through 5–456	5–451 through 5–456
5–459 through 5–462	5–459 through 5–462
––––––––––	5–462.1/(5–462.2 blank)
5–463 through 5–470	5–463 through 5–470
––––––––––	5–470.1/(5–470.2 blank)
5–471 and 5–472	5–471 and 5–472
5–475 through 5–484	5–475 through 5–484
5–487 through 5–492	5–487 through 5–492
5–495 through 5–508	5–495 through 5–508
––––––––––	5–508.1/(5–508.2 blank)
5–509 and 5–510	5–509 and 5–510
––––––––––	5–510.1/(5–510.2 blank)
5–511 through 5–514	5–511 through 5–514
Glossary–1/(Glossary–2 blank)	Glossary–1 through Glossary–8
Index 1 through Index 12	Index 1 through Index 74

2. Retain these sheets in front of manual for reference purposes.

By Order of the Secretary of the Army:

Official:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0022401

DISTRIBUTION:
To be distributed in accordance with initial distribution number (IDN) 311435, requirements for TM 1-1520-248-23-2.

WARNING

HIGH VOLTAGE

The helicopter contains high voltage and shall be electrically grounded when parked. Serious burns and electrical shock can result from contact with exposed electrical wires or connectors.

WARNING

HIGH VOLTAGE

High voltage may be stored in the ignition system after operation of the APU. This high voltage can cause injury or death.

- Do not make contact with exposed wires or connectors.
- Allow at least 5 minutes after operation of the ignition system before disconnecting or removing ignition system components.
- Turn all power switches off before making any connections or disconnections.
- Observe instructions for grounding the power cable to discharge high voltage.
- For artificial respiration, refer to FM 21-11.

WARNING

STRAY VOLTAGE

Stray voltage may exist in electronic equipment installed in the helicopter. These voltages present an explosive hazard to fuel and fuel fumes. Severe injury or death could result.

WARNING

PITOT HEAT

The pitot tube assembly is very hot during and immediately after operation requiring pitot heat. Severe burns will result if contacted by hands or other parts of the body.

WARNING

LUBRICATING OILS HAZARDOUS

Lubricating oils DOD-L-85734, MIL-L-7808, and MIL-L-23699 contain materials hazardous to health. They can cause paralysis if swallowed. Prolonged contact with skin can cause irritation. Fire can result if oil is exposed to heat or flames.

- Use only in areas with adequate ventilation.
- Wash hands thoroughly after handling.

WARNING

The laser rangefinder/designator (LRF/D) is very dangerous. Looking at the laser beam or its reflection from a shiny surface can cause permanent blindness. Under noncombat conditions, the laser shall be used only in controlled areas and at times specified by a range control officer.

BATTERY ELECTROLYTE

Corrosive battery electrolyte (potassium hydroxide) requires rubber gloves, apron, and face shield when handling leaking batteries. Potassium hydroxide spilled on clothing or other material shall be washed immediately with clean water. If spilled on personnel, severe skin burns will result. Immediately start flushing the affected area with clean water and continue flushing until medical assistance arrives.

WARNING
RADIATION HAZARD

SELF-LUMINOUS DIALS

Self-luminous instrument dials contain radioactive materials.

- If glass is broken or case becomes unsealed, avoid personal contact. Injury to personnel could result.
- Forceps or gloves made of rubber or polyethylene shall be used to pick up contaminated material.
- Place material and gloves in a plastic bag. Seal bag and dispose of it as radioactive waste in accordance with AR 755-15 and TM 3-261.
- Repair procedure shall conform to requirements in AR 700-52.

WARNING

DRYCLEANING SOLVENT

Drycleaning solvent is flammable and toxic. It can irritate skin and cause burns.

- Use only in well-ventilated area away from heat and open flame.
- Wear rubber gloves and goggles.
- In case of contact, immediately flush skin or eyes with water for at least 15 minutes.
- Get medical attention for eyes.

WARNING

SOUND LEVEL

Sound pressure levels in this helicopter during operating conditions exceed the Surgeon General hearing conservation criteria. Hearing protection devices, such as aviator helmet or ear plugs or ear sound suppressors, are required to be worn by all personnel in and around the helicopter during its operation.

WARNING

MAIN AND TAIL ROTOR BLADES

Stay clear of turning main and tail rotor blades. Wind gusts, coast down or cyclic movement may cause the main rotor blade to flap down below the height of a person. Dangerous winds are created by the main rotor blades when blades are operated at or near top rpm. Adequate distance must be maintained from main and tail rotor blades during operation. Severe injury or death may result.

WARNING

ARMAMENT

Loaded weapons, or weapons being loaded or unloaded, shall be pointed in a direction which offers the least exposure to personnel or property in the event of accidental firing. Personnel should remain clear of hazardous area of all loaded weapons. Death or severe injury may result.

WARNING

HF ANTENNA

Ensure that HF antenna is not operating while performing maintenance. When operating, HF antenna emits infrared radiation that can cause radiation burns. If exposed to infrared radiation, seek medical aid immediately.

WARNING

ASBESTOS DUST

Avoid creating dust. Breathing asbestos dust may cause serious long-term bodily harm.

LIST OF EFFECTIVE PAGES

INSERT LATEST CHANGED PAGES. DESTROY SUPERSEDED PAGES.

NOTE: The portion of the text affected by the changes is indicated by a vertical bar in the outer margins of the page. Changes to illustrations are indicated by a vertical bar or a pointing hand adjacent to the area of the change.

Dates of issue for original and changed pages are:

Original . . . . . 0 . . . . . 28 February 2000
Change . . . . . 1 . . . 30 November 2000

TOTAL NUMBER OF PAGES IN THIS VOLUME IS 982, CONSISTING OF THE FOLLOWING:

Page No.	*Change No.
Cover-1	0
Cover-2 Blank	0
A	1
B	1
C	1
D Blank	0
a — d	1
i — xii	1
xiii — xiv	0
xv	1
xvi — xvii	0
xviii — xxix	1
xxx Blank	0
4-1 — 4-2	0
4-3	1
4-4	0
4-5	1
4-6 — 4-13	0
4-14 — 4-16	1
4-17 — 4-25	0
4-26	1
4-27	0
4-28	1
4-29 — 4-30	0
4-31	1
4-32 — 4-35	0
4-36	1
4-37 — 4-45	0
4-46	1
4-47 — 4-53	0
4-54	1
4-55 — 4-58	0
4-59	1
4-60	0
4-61	1
4-62 — 4-75	0
4-76	1
4-77 — 4-79	0
4-80	1
4-81 — 4-82	0
4-83 — 4-85	1
4-86 — 4-89	0
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4-93 — 4-94 Deleted	1
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4-101 — 4-102 Deleted	1
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4-211 — 4-213	1
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4-232 — 4-233	1
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4-235 — 4-237	1
4-238 — 4-239	0
4-240 — 4-246	1
4-247 — 4-252	0
4-253	1
4-254 — 4-257	0
4-258	1
4-259 — 4-260	0
4-261	1
4-262 — 4-265	0
4-266 — 4-268	1
4-269	0
4-270 — 4-271	1
4-272	0
4-273	1
4-274 — 4-277	0

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES (Cont)

Page No.	*Change No.
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4-289	0
4-290 — 4-292	1
4-292.1 Added	1
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4-293	0
4-294 — 4-297	1
4-298 Blank	1
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5-2 — 5-4	1
5-5	0
5-6 — 5-8	1
5-8.1 Added	1
5-8.2 Blank	1
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5-18 — 5-20	1
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5-240 — 5-243	1

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES (Cont)

Page No.	*Change No.
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5-417	1
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5-434 — 5-438	1
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5-441 — 5-442	1
5-443 — 5-450	0
5-451 — 5-455	1
5-456 — 5-458	0
5-459 — 5-462	1
5-462.1 Added	1
5-462.2 Blank	1
5-463	0
5-464	1
5-465	0
5-466 — 5-470	1
5-470.1 Added	1
5-470.2 Blank	1
5-471	0
5-472	1
5-473 — 5-475	0
5-476 — 5-477	1
5-478	0
5-479 — 5-480	1
5-481	0
5-482 — 5-484	1
5-485 — 5-486	0
5-487 — 5-491	1
5-492 — 5-494	0
5-495 — 5-497	1
5-498	0
5-499	1
5-500	0
5-501 — 5-503	1
5-504	0
5-505	1
5-506	0
5-507 — 5-508	1
5-508.1 Added	1
5-508.2 Blank	1
5-509	0
5-510	1
5-510.1 Added	1
5-510.2 Blank	1
5-511	0
5-512 — 5-513	1
5-514 — 5-115	0
5-516 Blank	0
Glossary-1 — Glossary-2	1
Glossary-3 — Glossary-8 Added	1
Index 1 — Index 68	1
Index 69 — Index 74 Added	1

TECHNICAL MANUAL
NO. TM 1-1520-248-23

HEADQUARTERS
Department of the Army
Washington, D.C., 28 February 2000

AVIATION UNIT AND INTERMEDIATE MAINTENANCE MANUAL FOR ARMY MODEL OH-58D HELICOPTER

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-LS-P, Redstone Arsenal, AL 35898-5230. You may also submit your recommended changes by E-mail directly to ls-lp@redstone.army.mil in the format provided in the back of this manual immediately preceding the hard copy 2028. DA Form 2028's may also be faxed to DSN 788-6546 or commercial fax 256-842-6546. A reply will be furnished to you.

TABLE OF CONTENTS **PAGE**

*This manual together with TM 1-1520-248-23-1, TM 1-1520-248-23-3, TM 1-1520-248-23-4, TM 1-1520-248-23-5, TM 1-1520-248-23-6 and TM 1-1520-248-23-7, all dated 28 February 2000, supersedes TM 55-1520-248-23-1, TM 55-1520-248-23-2, TM 55-1520-248-23-3, TM 55-1520-248-23-4, TM 55-1520-248-23-5, TM 55-1520-248-23-6, TM 55-1520-248-23-7, TM 55-1520-248-23-8-1, TM 55-1520-248-23-8-2, and TM 55-1520-248-23-9, all dated 12 January 1988, including all changes.

TABLE OF CONTENTS (Cont) **PAGE**

TABLE OF CONTENTS (Cont) PAGE

TABLE OF CONTENTS (Cont) **PAGE**

TABLE OF CONTENTS (Cont) **PAGE**

HOW TO USE THIS MANUAL

1. GENERAL

To get the job done correctly, you must be able to find all the information you need. Knowing how to use this manual is the key. You should know what is in this manual, how the manual is organized, and how to use it.

2. ORGANIZATION

a. The complete OH-58D/OH-58D(R) Kiowa Warrior helicopter (AVUM/AVIM) maintenance manual consists of a set of seven volumes. These volumes are numbered as follows: TM 1-1520-248-23-1 through TM 1-1520-248-23-7.

b. Volumes are made up of chapters. Each chapter is numbered in Arabic numerals (1, 2, 3, etc.). Each chapter has maintenance information on a particular helicopter system.

c. Chapters are broken down into sections. Sections are numbered in Roman numerals (I, II, III, etc.).

d. Sections are made up of paragraphs and tasks. The first three sections of Chapter 1 are made up of paragraphs that describe and locate the helicopter systems and components. Other sections throughout the manual are made up primarily of tasks, but all sections contain introductory paragraphs that describe the section contents. Sections cover major parts of a system.

e. Tasks are detailed descriptions of maintenance procedures. Some tasks are brief. Some are several pages long.

f. The title of each task contains the name of the component followed by the type of operation that is being described, e.g., Removal, Cleaning, Inspection, Repair, Installation, and others as applicable.

g. A task starts with an initial setup (content detailed in paragraph 8.) which is followed by a step-by-step procedure on how to perform the task correctly. The steps in the procedures have illustrations to help make things clear.

h. The words **"**INSPECT**"** or **"**INSPECT**"** may be seen in a task. **"**INSPECT**"** means that the repairer shall stop and check the component. **"**INSPECT**"** means that a Technical Inspector (TI) is required. Do not go beyond that point in the procedure until the TI has completed his inspection.

i. If applicable, a paragraph at the end of a task called **"**FOLLOW-ON MAINTENANCE**"** may be seen. The steps listed will be required to place the helicopter in a flyable state following the completion of the maintenance task.

j. Operational checks and troubleshooting procedures are contained in the three-volume TM 1-1520-248-T manual. A reference to TM 1-1520-248-T will be made if an operational check must be performed to ensure serviceability.

3. PARAGRAPH NUMBERING

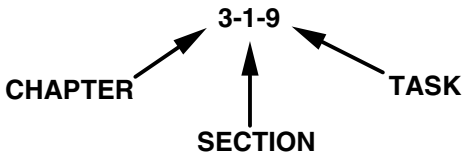
a. Paragraph numbers are assigned to each major information subject.

b. Paragraphs are individually numbered by chapter and sequence.

4. TASK NUMBERING

Task numbers are in three parts. The first is the chapter number. The second is the section number in that chapter. The third number is the task's actual sequence in the section. Each number is separated by a (–) as shown in the example:

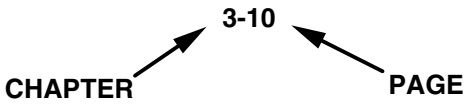
HOW TO USE THIS MANUAL — continued



Task numbers are the most important numbers in the manual. Always use the task number, NOT the page number, to find information.

5. PAGE NUMBERING

Except for front matter (all material that precedes Chapter 1), appendices, glossary, alphabetical index, and foldouts, all page numbering is by chapters. The first number is the number of the chapter; the second number is the number of the page in that chapter. The numbers are separated by a dash as shown in the example:



6. MANUAL INDEX

a. The alphabetical index for the entire manual is located at the end of each volume of volumes 1 through 6. The index lists all task titles and certain key paragraphs of non-task text in alphabetical order. After you find the title in the index, it tells the task number or paragraph number of that task or text. For example, if you need information on the wire cutter, go to the **"**C**"** section of the index and look under **"**Cutter.**"**

There you will find:

Cutter (Rapid Deployment), Lower Wire — Removal/Installation 2-2-60

The index tells that the wire cutter information for the lower wire cutter is in Chapter 2, section 2, task 60.

b. You can find your task in the index, even if you only know a single word in the title. In the sample title above you could also find your tasks by looking under **"**Wire**"**. Examples:

Wire Cutter (Rapid Deployment), Lower — Removal/Installation 2-2-60

Or, you could look under **"**Lower**"**:

Lower Wire Cutter (Rapid Deployment) — Removal/Installation 2-2-60

In using the manual index, many similar task titles will be encountered. Some titles are similar though in different systems. This is true with shafts, brackets, supports, bearings, etc. The index will provide the name of the correct system to help you avoid going to the wrong paragraph/task.

c. Any task can be located in the way described. If you know the name, job, part, assembly, procedure, description, etc., you can use one of the words to find the paragraph number in the index.

7. GLOSSARY

a. A glossary of words used throughout the manual is located just before the alphabetical index in each volume of volumes 1 through 6. Section I of the glossary is the list of abbreviations and acronyms. Abbreviations are shortened terms for words. Acronyms are shortened terms for several words and use only the first letter of each of the words. Abbreviations and acronyms are defined where first used. The glossary provides a good place to check if there is any doubt.

HOW TO USE THIS MANUAL — continued

b. Section II of the glossary contains definitions of unusual terms that appear in the manual. Many words have more than one meaning. A word that has a certain meaning in everyday language could have a different meaning for the helicopter. This is the reason for the definitions. If you see an unfamiliar word in the manual, check the list of definitions.

c. Review the glossary periodically to ensure familiarity with the abbreviations, acronyms, and unusual terms.

8. INITIAL SETUP

The first page of each maintenance task in the manual contains the initial setup. Always check the initial setup before starting a task on the helicopter. The initial setup contains information you must know. DON'T START A TASK UNTIL:

- You understand the task
- You understand what you are to do
- You understand what is needed to do the work
- You have the things you need.

An example initial setup is shown below. Not all tasks have the headings shown.

Each part of the initial setup is explained by the following subparagraphs (a. through h.). Each subparagraph describes initial setup entries in order of their appearance in the example.

a. **Title:** The title in the upper border contains the chapter/section/task number and title of the task as listed in the index. The task is performed at the intermediate level if (AVIM) appears in the title.

b. **This Task Covers:** This entry appears in the border below the title. The task may require one or more operations (such as removal and installation).

c. **Applicable Configurations:** This entry specifies the model or models for which the task is used, i.e., OH-58D, OH-58D(R), or All.

d. **Tools:** This heading identifies the list of tool kit(s) by MOS(s). The tools in the kit(s) and any others listed will be all that are required to perform the task. Tasks requiring tools other than those in this tool kit are considered SPECIAL TOOLS. Special tools could be: (1) tools from the shop set: (2) tools from the kits of other MOSs, or (3) tools made especially for the OH-58D helicopter. Special tools will be listed in addition to MOS tool kits when needed. Tool kits and special tools have an item number assigned to them and are located in Appendix B. Appendix B contains a **"**Tools and Test Equipment Requirements**"** listing. Each item listed has an Equipment Reference Code. This code is used to clearly identify a tool or item of test equipment, e.g., (B127). It is acceptable to use a torque wrench other than that which is listed as long as the torque range is the same. Example: 1/4 - inch drive torque wrench **30 INCH-POUNDS to 150 INCH-POUNDS** or 3/8 - inch drive torque wrench **30 INCH-POUNDS to 150 INCH-POUNDS.** If a tool or a part will have to be made, it is listed in an index in Appendix H. The index will identify the tool or part by name or part number, and a figure number in Appendix H will be referenced. All information required to construct a part or tool is provided in the figure.

HOW TO USE THIS MANUAL — continued

INITIAL SETUP EXAMPLE

9-6-1. WEIGHT-ON-GEAR SWITCH (RAPID DEPLOYMENT LANDING GEAR) — REMOVAL/ INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Personnel Required:
67S Scout Helicopter Technical Inspection (TI)
68F Aircraft Electrician

Tools:
Electrical Repairer Tool Kit (B177)

Material:
Sealing Compound (D179)
Lockwire (D132)
Rubber Gloves (D111)

References:
TM 11-1520-248-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Helicopter on Jacks (Task 1-6-8)

e. **Material:** This heading identifies the list of materials needed to complete the task. Most materials cannot be used on the helicopter a second time; they are expendable. Expendable materials are items such as solvent, grease, oil, hydraulic fluid, etc.

(1) Each expendable has an item number assigned to it and is located in Appendix D. The item number is placed in parentheses following the item name on the initial setup page. A typical example of an expendable item is:

Lockwire (D132)

See the expendable and durable item list in Appendix D for more information about expendable and durable materials.

(2) Some parts are also expendable.

(3) It may be necessary to use a part as a tool to do a step in a task. These parts do not appear in TM 1-1520-248-23P. A typical example would be when a bolt is used to temporarily hold an assembly in place or to align two pieces of material to be fastened.

f. **Personnel Required:** This heading lists the people required to perform the task. It also tells the MOS of each person and the number of persons required. For example:

67S Scout Helicopter Repairer (2)
67S Scout Helicopter Technical Inspector (TI)

This listing would indicate that two 67S repairers and a 67S technical inspector will be needed to complete the task.

IF YOUR MOS IS NOT LISTED IN THE PERSONNEL REQUIRED COLUMN IN THE INITIAL SETUP, CHECK WITH YOUR MAINTENANCE SUPERVISOR FIRST BEFORE STARTING THE TASK.

g. **References:** This heading identifies the list of other technical manuals (TMs) needed to complete a task. The steps in the task will tell you when you must refer to another TM.

h. **Equipment Condition:** This heading identifies the list of tasks or parts of tasks that must be accomplished before starting a task. It may require an operation such as jacking the helicopter, or just the tailboom; or removing parts, assemblies, etc. These operations are described in other tasks or technical manuals. The paragraphs or TMs that describe how to do these operations are referenced here. If the job is to be done on the helicopter, the statement "Helicopter Safed" will appear here. The reference will be to Task 1-6-7 where armament safing is described. It is essential that equipment conditions listed in a particular task be followed in sequence so that required conditions are not missed and all required tasks are reviewed prior to start of maintenance.

9. WARNINGS, CAUTIONS AND NOTES

The warnings used in this manual may be in text or icon format. Text warnings are used to describe hazardous situations, and icons are for hazardous materials and certain operations where defined.

Icon warnings are pictorial images which may be used in place of words. The safety summary sheet, which is located immediately after the title page, explains in detail what each icon means.

WARNING AND CAUTION STATEMENTS

WARNING and CAUTION statements are used prior to operating or maintenance procedures, practices, or conditions considered essential to the protection of personnel (WARNING) or equipment and property (CAUTION). A WARNING or CAUTION will apply each time the related step is repeated. Prior to starting any task, the WARNINGS or CAUTIONS included in the text for that task will be reviewed and understood. Refer to the materials list figure at the beginning of the appropriate manual section for material used during maintenance of this equipment. The detailed warnings for hazardous material and operations are listed separately in the safety summary as "Hazardous Materials and Operations Icons".

HAZARDOUS MATERIALS

This publication describes physical and chemical processes which may require the use of chemicals, solvents, paints, or other commercially available material. The user of this publication should obtain the material safety data sheets (Occupational Safety and Health Administration (OSHA) Form 20 or equivalent) from the manufacturers or suppliers of materials to be used. The user must become completely familiar with the manufacturer/supplier information and adhere to the procedures, recommendations, warnings, and cautions of the manufacturer/supplier for the safe use, handling, storage, and disposal of these materials.

HAZARDOUS MATERIALS WARNINGS

Warnings for hazardous material in this manual are designed to warn personnel of hazards associated with such items when they come in contact with them during actual use. For each hazardous material used, material safety data sheet (MSDS) is required to be provided and available for review by the users. Consult your local safety and health staff concerning any questions on hazardous chemicals, MSDSs, personnel protective equipment requirements, and appropriate handling and emergency procedures.

This Safety Summary gives the complete warnings for hazardous material used in this manual.

NOTES

Notes tell something extra or special a person must know to do the task. They can appear before or after the item they tell about. Notes shall be read and remembered when working on the helicopter.

10. USE OF SHALL, WILL, SHOULD, AND MAY

Within this technical manual the word shall is used to indicate a mandatory requirement. The word will is used to express a declaration of purpose or futurity. The word should is used to indicate a desired result

or a nonmandatory but preferred method of accomplishment. The word may is used to indicate an acceptable method of accomplishment.

11. TORQUING INFORMATION

a. An inspector shall be present to verify all torques specified in this manual.

b. Each hardware fastener (except types used in sheet metal work) is assigned an applied torque.

c. There are two types of applied torques. They are: special torques and standard torques.

(1) Special torques differ from standard torques as determined by engineers who look at each application. Special torques are given in bold type. Torque wrenches and adapters to be used when a special torque is given are listed under Tools in the initial setup.

(2) Standard torques are listed in Appendix P. Standard torques not listed in Appendix P can be found in TM 1-1500-204-23. Standard torque applies to all fasteners for which a special torque is not specified.

12. INSPECTION INFORMATION

General inspection information is in the front of each chapter or section for the equipment covered in that chapter or section. Inspection criteria peculiar to a specific part, assembly, or component are in the inspection steps of the removal/installation task for that part, assembly, or component.

13. GENERAL MAINTENANCE INFORMATION

The following are considered standard maintenance practices. Instructions about these practices are not normally included in maintenance procedure task steps.

a. Lines shall be tagged before they are disconnected. Tubes and parts shall be capped or plugged when they are disconnected.

b. Used preformed packings, retainers, gaskets, cotter pins, lockwashers, etc., shall be discarded. New parts shall be installed.

c. Packings shall be lubricated before installation. Specific instructions are provided in each maintenance procedure.

d. Tubes and related parts shall be tied out of the way with twine, not lockwire.

e. Disassembly procedures reflect disassembly needed to support total authorized repair. You may not need to disassemble a part as far as described in the task. Follow the steps to disassemble as far as needed to repair/replace worn or damaged parts.

f. Before a component or the disassembled parts of a component are inspected, they are cleaned as required.

g. Components and mating surface areas shall be inspected for serviceable condition before installation.

h. Guide lines shall be used when any item is hoisted overhead.

i. When a nut is tightened or loosened on a bolt, the bolt head shall be held with a wrench.

j. When a coupling nut on a line is tightened or loosened, the mating fitting shall be held with a wrench.

k. A special torque shall be cited when a direction to torque is given. A standard torque is required when no specific torque is given. Standard torque information is located in Appendix P of this manual and TM 1-1500-204-23.

l. When torquing hardware, observe compliance with drag torque as required. To determine drag torque, thread nut onto screw or bolt until at least two threads protrude. The nut shall not contact the mating part. The torque necessary to begin turning the nut is the drag torque. Drag torque is explained in more detail in TM 1-1500-204-23.

m. Chafing is a condition which occurs when two or more components contact each other in such a manner that friction and consequent wear occur. This condition is not acceptable. Proper routing, clamping, and component installation are required.

14. ELECTRICAL WIRING AND CABLING

This technical manual contains removal and installation procedures for wiring harness/cable assemblies that are permanently installed in the helicopter. Wiring harnesses/cable assemblies that can or are normally removed with avionic/electronic equipment are contained in TM 11-1520-248-23. Wiring harnesses/cable assemblies applicable to armament systems are contained in TM 9-1090-214-23&P where these wiring harnesses/cable assemblies are external to the helicopter fuselage.

15. GENERAL REFERENCES

a. Refer to TM 55-1500-323-24 for all electrical tasks of a general nature not peculiar to the OH-58D helicopter.

b. Refer to TM 1-1500-204-23 for mechanical tasks of a general nature not peculiar to the OH-58D helicopter.

c. Refer to TM 1-1520-266-23 for approved nondestructive inspection methods.

16. APPENDICES

The organization and content of Appendices to this manual are provided for reference as required during performance of maintenance tasks.

Appendix A is a list of References.
Appendix B is the Maintenance Allocation Chart and Tool and Test Equipment Requirements List.
Appendix C is the Helicopter Inventory Master Guide.
Appendix D is an Expendable Supplies and Materials List.
Appendix E describes Storage of Helicopter.
Appendix F is Wiring Data.
Appendix G provides Weight and Balance Data.
Appendix H provides Locally Manufactured Items Data.
Appendices J, K and L are reserved for future use.
Appendix M provides Electrical Bonding Procedures.
Appendix N is reserved for future use.
Appendix P provides Standard Torque Values.
Appendix Q provides Corrosion Control Information.
Appendix R is reserved for future use.

Table 1. Organization and Content of Appendix A

Organization	Content
References List	List of additional manuals required for use by maintenance personnel in the performance of their duties.

Table 2. Organization and Content of Appendix B

Organization	Content
Section I	Introduction to Maintenance Allocation Chart.
Section II	Maintenance Allocation Chart.
Section III	Tool and Test Equipment Requirements. Tools and test equipment, including special tools and common tool sets required for each maintenance function as referenced in Maintenance Allocation Chart and individual tasks.
Section IV	List of remarks for each maintenance function as referenced in the Maintenance Allocation Chart.

Table 3. Organization and Content of Appendix C

Organization	Content
Helicopter Inventory Master Guide	Paragraph that provides general information.
Security	Normally, helicopter inventory records are not classified.
Inventoriable Items	List of mission equipment, loose equipment, modification kits, and special environment equipment.
Periods of Inventory	Guidelines on the events and frequency of events that mandate an inventory accounting of listed items.

Table 4. Organization and Content of Appendix D

Organization	Content
Scope	Description of purpose and limits for the Appendix.
Explanation of Columns	Description of the tabular layout by function.
	Expendable Supplies and Material List in both numerical and alphabetical order.

Table 5. Organization and Content of Appendix E

Organization	Content
Section I	General Information including components involved in accidents, Requirements, Storage Categories, Procedures, and Inspection.
Section II	Description of procedures required to store the OH-58D in a flyable state.
Section III	Description of procedures required to store the OH-58D for a short term.
Section IV	Description of procedures required to store the OH-58D for an intermediate period of time.

Table 6. Organization and Content of Appendix F

Organization	Content
Wiring Diagrams	Essential general wiring information about electrical systems and circuits.
Equipment List	Electrical equipment items listed by reference designator, and their nomenclature, location, and access in tabular form.
Wire Repair and Replacement	Wiring repair and replacement data including wire sizes and part numbers, wire construction, marking, soldering, support, and stripping.
Routing and Clamping	Diagrams of OH-58D wire bundle clamping arrangements.

Table 7. Organization and Content of Appendix G

Organization	Content
Section I	General information required for intermediate maintenance personnel to perform their phase of weight and balance control.
Section II	Instruction on proper use of forms and charts required for calculations and documentation of weight and balance data.
Section III	Specific instructions for properly weighing the OH-58D helicopter.

Table 8. Organization and Content of Appendix H

Organization	Content
Part Number Index	Part numbers arranged in alphanumeric order along with figure reference for each part number.
Illustrations of Locally Manufactured Items	Illustrations of locally manufactured items in sufficient detail to enable their construction.

Appendices J, K and L are reserved for future use.

Table 9. Organization and Content of Appendix M

Organization	Content
Section I	Introduction and general information including intended purpose, definitions, electrical bonding classes, and tools.
Section II	Description of tools required.
Section III	Resistance requirements for each class of bonding.
Section IV	Surface preparation and methods of bonding.
Section V	Testing of completed bonds.

Appendix N is reserved for future use.

Table 10. Organization and Content of Appendix P

Organization	Content
Introduction	General information about the Appendix.
Torque Values	General and specific information about torquing procedures including Torque Tables.
Selection and Use of Torque Wrench	Methods of choosing torque wrenches and procedures and calculations.

Table 11. Organization and Content of Appendix Q

Organization	Content
Section I	An introduction that explains purpose of Appendix and defines corrosion.
Section II	Explanation of Inspection and Corrosion Prone Areas as to Purpose of Inspection and Responsibilities for Corrosion Control.
Section III	Preventive Maintenance described in terms of Prevention and Preservation.
Section IV	Required references to appropriate manuals for Corrosion Control Processes and Equipment Requirements.
Section V	Description of Corrosion Prone Areas. Provision of and reference to Inspection and Repair Procedures. Data is both tabular and pictorial.

Appendix R is reserved for future use.

SAFETY SUMMARY

1. GENERAL SAFETY INSTRUCTIONS.

This manual contains procedures which, if not followed properly, can cause injury or long-term health hazards to personnel. This safety summary includes general safety precautions and instructions that must be understood and applied during operation and maintenance to ensure personnel safety. Prior to performing any task, the WARNINGs included in that task shall be reviewed and understood.

2. WARNINGS.

WARNINGs are used in this manual to highlight operating or maintenance procedures, practices, conditions, statements which are considered essential to protection of personnel (WARNING). WARNINGs immediately precede the step or procedure to which they apply. WARNINGs consist of four parts: heading (WARNING or icon [see HAZARDOUS MATERIALS WARNINGS]), or statement of the hazard, maintenance precautions, and possible result if disregarded.

WARNING

Highlights an essential operating or maintenance procedure, practice, condition, statement, etc., which, if not strictly observed, could result in injury or long-term health hazards to personnel.

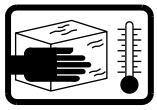
3. HAZARDOUS MATERIALS WARNINGS.

Hazardous Materials Warnings in this manual are provided through use of the Hazard Symbols listed below. Consult the HAZARDOUS MATERIALS DESCRIPTION below or Material Safety Data Sheets (MSDS) (Occupational Safety and Health Administration (OSHA) Form 20 or equivalent) for specific information on hazards, effects, and protective equipment requirements. If you do not have an MSDS for the material involved, contact your supervisor or the base Safety or Bioenvironmental Engineering Office.

3.1 Hazardous Materials and Operations Icons. Icons are used in this manual to identify dangers associated with hazardous materials and certain conditions. The symbols used and their definitions are as follows.

The abstract bug symbol shows that a material may contain bacteria or viruses that present a danger to your life or health.

The symbol of drops of a liquid onto a hand shows that the material will cause burns or irritation of human skin or tissue.



The symbol of a hand in a block of ice shows that the material is extremely cold and can injure human skin or tissue.

The rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources of ignition, or high pressure.

The symbol of a person wearing goggles shows that the material will injure your eyes.

The symbol of a flame shows that a material can ignite and burn you.

The symbol of a skull and crossbones shows that a material is poisonous or is a danger to life.

The symbol of three circular wedges shows that the material emits radioactive energy and can injure human tissue or organs.

The symbol of a human figure in a cloud shows that vapors of a material present a danger to your life or health.

The symbol of a lightning bolt shows that you may contact voltage and current that may present a danger to your life or health.

To avoid violent reactions that can cause personal injury, always pour acid into water, never water into acid.

The symbol of a head with the ear highlighted shows that the noise level may injure your hearing.

3.2 Hazardous Materials Description. The following hazardous materials are used in this manual. Each icon represents certain hazards as described above. Beneath the icons is the hazardous material name. Below the icons and material name is a description of the hazardous material. Only the icons and material name are used in the text of the manual. If a full description of the hazardous material is required while performing procedures in this manual, use the material name to locate the appropriate description below.

ACETONE

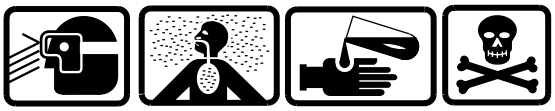
Acetone is flammable; do not use near open flames, near welding areas, or on hot surfaces. Do not smoke while using acetone, and do not use it where others are smoking. Prolonged inhalation of vapor can irritate eyes and mucous membranes and can cause dizziness and headache. If any liquid contacts skin, wash with soap and water. Immediately remove solvent-saturated clothing. If vapors cause drowsiness, go to fresh air. In all cases get immediate medical attention. When handling large quantities of liquid (more than a gallon), use at air-exhausted workbench. Wear approved gloves. Store solvent and dispose of liquid-soaked rags in approved metal safety container. Metal containers of solvent must be grounded to maintain electrical continuity.

ACRYLIC LACQUER

Acrylic lacquer is flammable. Keep away from open flames, sparks, and heat. Overexposure may cause coma, headache, narcotic effect, confusion, depression, irritation of skin, eyes, and respiratory system. Remove contaminated clothing. Wipe off with towel or cloth. Remove remainder with mineral spirits or lacquer remover and thoroughly wash skin area with soap and water. Immediately flush eyes with water for 15 minutes. If inhaled, move to fresh air. If breathing has stopped perform resuscitation. In all cases get immediate medical attention. When working with acrylic lacquer, wear approved protective gloves, goggles or safety glasses, protective clothing, and approved respirator. Use in a well-ventilated area.

ADHESION PROMOTER

Adhesion promoter is flammable; keep away from sparks, flames, and non-explosion proof devices. Inhalation may cause nose and throat irritation, headache, drowsiness, weakness, or exhaustion. Prolonged or repeated skin contact may cause irritation. Vapor and liquid may cause eye irritation. Ingestion may cause intoxication and gastrointestinal irritation. Prolonged overexposure to ethanol can have adverse effects on liver. If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. Remove contaminated clothing and wash with soap and water. Flush eyes with plenty of water for 15 minutes while holding eyelids open. If ingested, dilute with one to two glasses of water or milk. Induce vomiting by sticking finger down throat. In all cases, get immediate medical attention. When working with adhesion promoter, wear approved respirator, goggles, and rubber gloves. Work in well-ventilated area.

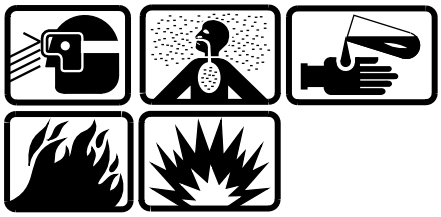


ADHESIVE, EA934NA

Adhesive can cause allergic reaction, skin sensitization, or gastrointestinal irritation. Contact with eyes can cause severe burns. Wash skin immediately with soap and water. Flush eyes with water for at least 15 minutes. Get immediate medical attention in event of eye contact with adhesive. Wash contaminated clothing before reuse. Wear approved respirator in closed area. Work in well-ventilated area using approved rubber gloves and safety glasses or goggles.

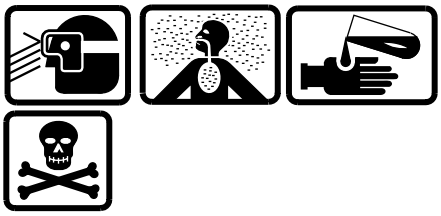
ADHESIVE, MMM-A-1617, TYPE I, II, OR III

Adhesive may cause irritation to skin, eyes, and respiratory system. Thoroughly wash skin area with soap and water and immediately flush eyes with water for 15 minutes. In all cases get immediate medical attention. When working with adhesive, wear approved protective gloves, goggles or faceshield, and respirator approved for organic solvents. Use in a well-ventilated area away from open flame, spark sources, and heat.



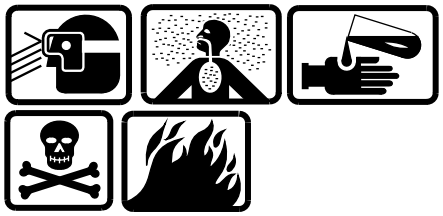
ADHESIVE PRIMER

Adhesive primer is flammable and its vapor is explosive. Keep away from heat, open flame or other sources of ignition. Inhalation will cause irritation to the respiratory tract. Symptoms are headache, nausea, dizziness, and drowsiness. Move to fresh air and administer oxygen. If skin or eyes are affected wash skin with soap and water and flush eyes with water for 15 minutes. In all cases get immediate medical attention. When working with adhesive primer, wear approved respirator, rubber gloves and splashproof goggles and faceshield. Work in well-ventilated area.



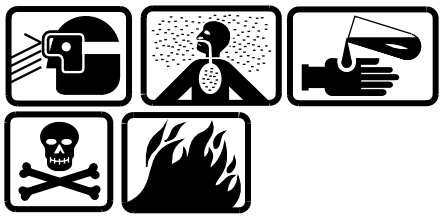
ADHESIVE VAPORS

Adhesive vapors may cause irritation of eyes, nose, and respiratory system. Eye and skin contact with material may cause irritation. If ingested, may cause gastric distress. Flush eyes with water for 15 minutes. Wash skin with soap and water. If inhaled, move to fresh air. In all cases get immediate medical attention. Work in a well-ventilated area. Wear approved gloves and safety glasses.



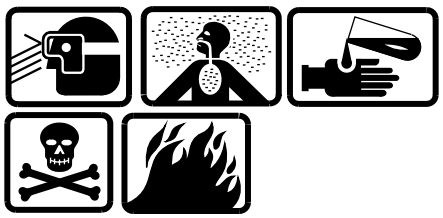
ANTI-ICING/DEICING FLUID

Anti-icing/Deicing fluid contains diluted alcohol. Alcohol is flammable; do not use near open flames, near welding areas, or on hot surfaces. Do not use while smoking or while others are smoking. Inhalation of vapors can cause drowsiness, dizziness, and headache. If vapors cause drowsiness, go to fresh air. Contact with skin may cause irritation. If liquid touches skin or eyes, flush thoroughly with water. Remove contaminated clothing.



ANTISEIZE COMPOUND

Antiseize compound is flammable; do not use near open flames, welding areas, or on hot surfaces. When decomposed by heating, toxic gases are released. Do not use while smoking or when others are smoking. Liquid can cause severe skin and eye irritation. Inhalation of vapor can cause drowsiness, headache and unconsciousness. Wash affected skin with soap and water. Flush eyes with water for at least 15 minutes. If drowsiness occurs, go to fresh air. Seek medical attention if overexposed. Use approved respirator, gloves, and goggles for prolonged use. Dispose of liquid soaked rags in an approved, grounded metal safety container.



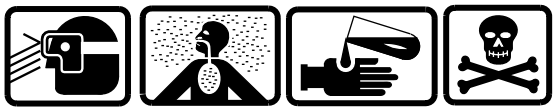
CHEMICAL CONVERSION MATERIALS

Chemical conversion materials are strongly oxidizing and are a fire hazard in contact with acid, reducing agents, and combustible and

readily oxidizing materials; separate storage is mandatory. Thoroughly rinse rags and containers contaminated with chemical conversion materials and dispose of in a fireproof container. Contact with skin and eyes can cause burns. Breathing of dust or vapors can cause ulceration of mucous membranes. Thoroughly wash skin area with soap and water and immediately flush eyes with water for 15 minutes. If ingested, drink milk of magnesia, aluminum hydroxide gel, or lime water followed by large amounts of water. In all cases get immediate medical attention. Wash contaminated clothing before wearing. When working with chemical conversion materials, wear approved respirator, rubber apron, gloves, and goggles or faceshield in a well-ventilated area away from heat, open flames or sparks. Follow approved toxic waste disposal procedures. Read manufacturers label for additional information.

CHROMIC ACID

Chromic acid is highly reactive; do not mix with organic or oxidizable materials such as paper or wood. When mixing solutions, add acid slowly to water, not water to acid. Any contact with skin, or inhalation of vapors and powder can irritate skin and can cause skin ulcers. Repeated or prolonged exposure can cause permanent injury. If any liquid or powder contacts skin, flush affected area with water, and immediately change contaminated clothing. If skin ulcers appear, get immediate medical attention. When handling dry material or solution at air-exhausted workbench, wear approved gloves, apron, and goggles. When handling dry material or solution at unexhausted workbench, wear approved respirator, gloves, apron, and long sleeves.

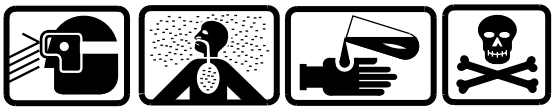


CLEANING COMPOUND

Aircraft cleaning compound is flammable and is toxic to the skin by absorption and to the liver and kidneys. It can cause irritation of the eyes and respiratory system, skin irritation and headache. Thoroughly wash skin area with water and immediately flush eyes with water for 15 minutes. If ingested, do not induce vomiting. In all cases get immediate medical attention. When working with cleaning compound, wear approved chemical cartridge respirator, rubber gloves, safety goggles, and protective clothing. Keep away from heat and open flames. Use in a well-ventilated area.

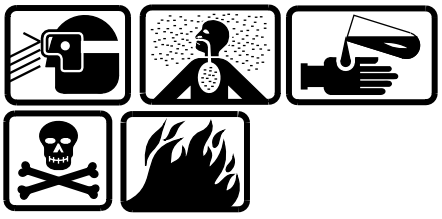
COMPRESSED AIR

When using compressed air for any cleaning or drying operation, do not exceed 30 psig at the nozzle. Eyes can be permanently damaged by contact with liquid or large particles propelled by compressed air. Inhalation of air-blown particles or solvent vapor can damage lungs. If injury occurs, get immediate medical attention. When using air for drying or cleaning at an air-exhausted workbench, wear approved goggles or faceshield. When using air for drying or cleaning at an unexhausted workbench, wear approved respirator and goggles.



CORROSION PREVENTIVE COMPOUND, MIL-C-11796

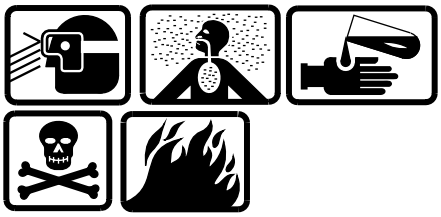
If solution of petrolatum corrosion preventive compound is decomposed by heat, toxic gases are released. Prolonged contact with solution or mist can cause skin irritation. If there is any prolonged contact with skin, wash contacted area with soap and water. If solution contacts eyes, flush eyes with water immediately. Remove saturated clothing. If solution is swallowed, do not try to vomit. In all cases get immediate medical attention. When handling solution, wear approved rubber gloves. If prolonged contact with mist is likely, wear approved respirator.



CORROSION PREVENTIVE COMPOUND, MIL-C-16173

Corrosion preventive compound is combustible; do not use near open flames, near welding areas, or on hot surfaces. Prolonged contact with skin

can cause skin irritation. Prolonged inhalation of vapor can cause dizziness, headache, and intoxication. If there is any prolonged contact with skin, wash affected area with soap and water. If liquid contacts eyes, flush eyes thoroughly with water. Remove contaminated clothing. If vapors cause light-headedness, go to fresh air. If liquid is swallowed, do not try to vomit. In all cases get immediate medical attention. When handling liquid or when applying it at air-exhausted workbench, wear approved gloves. When handling liquid or when applying it at unexhausted workbench, wear approved gloves and goggles. Dispose of liquid-soaked rags in approved metal container.



CORROSION PREVENTIVE COMPOUND, MIL-C-27725

Corrosion preventive compound is flammable. Keep away from ignition sources. Overexposure may cause headache, dizziness, nausea, skin drying, eye irritation, and respiratory irritation. Corrosion preventive compound may also cause narcotic effects, shortness of breath and could affect the central nervous system. Thoroughly wash with soap and water and apply emollient cream or lotion and immediately flush eyes with water for 15 minutes. If inhaled move to fresh air. In all cases get immediate medical attention. When working with corrosion preventive compound, wear approved protective gloves, goggles, and clothing. Use in a well-ventilated area. If adequate ventilation is not available, wear approved respirator.

CORROSION REMOVING AND METAL CONDITIONING COMPOUND

Corrosion removing and steel protecting compound causes skin irritation. Avoid contact with skin and eyes. If irritation occurs, get immediate medical attention. Wear approved gloves and goggles or faceshield when handling. Wash hands thoroughly after handling.

DENATURED ETHYL ALCOHOL

Denatured ethyl alcohol and its vapor are flammable and explosive — do not use it where others are smoking. POISON — do not ingest. Ingestion will cause vomiting, stupor, and collapse. Inhalation of vapor may cause headache and drowsiness. If vapors cause drowsiness, go to fresh air. Immediately remove wet clothing. When working with denatured ethyl alcohol, wear approved respirator, gloves, and goggles. If splashing could occur, wear an approved faceshield over the goggles. In case of contact with eyes, flush with water for at least 20 minutes and obtain medical attention. Dispose of liquid soaked rags in approved metal container. Metal containers must be grounded to maintain electrical continuity.

DRILLING OPERATIONS

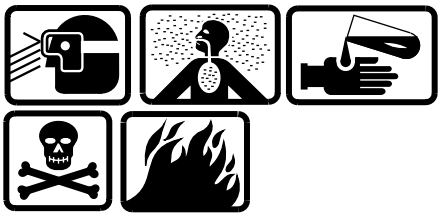
Metallic structures drilling operations produce airborne metallic dust particles that are harmful to respiratory tract and eyes. Avoid breathing dust and use eye protection when drilling. Avoid composite materials that are toxic to skin, eyes and respiratory tract. When drilling advanced composite materials, avoid inhalation of dust and wear protective gloves and eye protection.

DRY LUBRICANT

Overexposure can cause nausea, vomiting, and irritation of skin, eyes, and respiratory system. If symptoms occur, seek fresh air. Wash affected skin with soap and water. Flush eyes with water for 15 minutes. If ingested do not induce vomiting. In all cases, seek medical attention. Wear approved protective gloves, goggles, and respirator.

DRYCLEANING SOLVENT

Drycleaning solvent is combustible; do not use near open flames, near welding areas, or on hot surfaces. Prolonged contact of skin with liquid can cause skin irritation. Repeated inhalation of vapor can irritate nose and throat and can cause dizziness. If any liquid contacts skin or eyes, immediately flush affected area thoroughly with water. Remove solvent-saturated clothing. If vapors cause dizziness, go to fresh air. In all cases get immediate medical attention. When handling liquid or when applying it in an air-exhausted, partially covered tank, wear approved gloves. When handling liquid or when applying it at an unexhausted, uncovered tank or workbench, wear approved respirator and goggles.

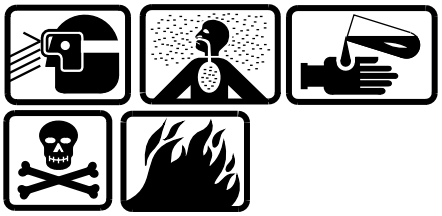


DYNASOLVE 165

Dynasolve 165 contains powerful organic solvents. It is harmful if inhaled or swallowed. Avoid breathing vapors or mist. Keep away from heat and flame. Avoid contact with eyes and skin. Wear gloves, safety goggles, and protective clothing when handling. Use with adequate ventilation. Contact of skin with liquid or inhalation of vapor can cause severe burns, and respiratory system irritation. If any solution, liquid, or vapor contacts skin or eyes, flush affected areas thoroughly with water. Immediately change any contaminated clothing. If vapors are inhaled, go to fresh air. In all cases get immediate medical attention.

ELECTRIC SHOCK

To prevent electric shock, ensure electrical power is off before working on helicopter. Remove watches, rings and other jewelry before working on electrical circuits. Voltage and/or current may be contacted that could present a threat to your health or life. If voltage/current is contacted and breathing ceases, CPR must be administered by qualified personnel. Seek medical aid. For electrical shock safety steps and procedures, refer to TM 1-1500-204-23 and TB 385-4.

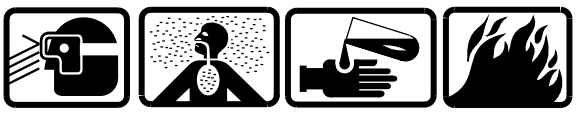


EPOXY PRIMER COATING

Epoxy primer coating is flammable. It contains lead and may cause irritation of nose, throat, eyes, skin, respiratory system, and nervous system. Overexposure may result in headache, narcotic effect, nervousness, drying of skin, and possible death. Thoroughly wash skin area with soap and water and immediately flush eyes with water for 15 minutes. If ingested, do not induce vomiting. In all cases get immediate medical attention. When working with epoxy primer coating wear approved respirator, chemical splash goggles, solvent resistant gloves, apron, protective clothing, and barrier cream. Work in a well-ventilated area.

EPOXY RESIN

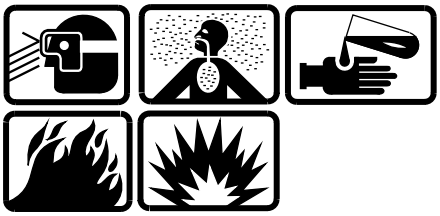
Filled epoxy resin may cause skin and eye irritation. Thoroughly wash skin area with soap and warm water and immediately flush eyes with water for 15 minutes. In all cases get immediate medical attention. When working with epoxy resin, wear approved protective gloves and goggles. Use in a well-ventilated area and avoid breathing vapors.



FINGERPRINT REMOVER

Fingerprint remover is flammable. Do not use near heat or flames. Overexposure may cause skin and eye irritation, dizziness, headache and nausea. Thoroughly wash skin area with soap and water and immediately flush eyes with water for 15 minutes. If inhaled, move to fresh air. In all cases get immediate medical attention. When working with fingerprint remover wear approved solvent

resistant gloves, goggles or faceshield, and respirator.

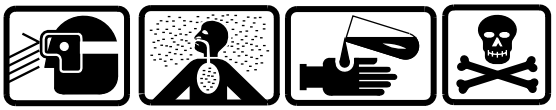


FLUORESCENT PENETRANT

Prolonged or repeated inhalation of powders and vapors of cleaning solvent, developers, and emulsifiers used in fluorescent penetrant inspection can irritate mucous membrane areas of the body. Continual exposure to penetrant inspection materials can irritate the skin. Direct exposure of eyes to light and prolonged exposure of skin to light can inflame and damage eyes and skin. Wear approved neoprene gloves when handling penetrant inspection materials. Keep insides of gloves clean. Store all pressurized spray cans containing penetrants, developers, and emulsifiers in a cool, dry area protected from direct sunlight, heat, and open flames. Temperatures higher than 120 °F (49 °C) may cause pressurized can to burst and cause injury. If direct eye contact with light causes eye problems, get immediate medical attention. When using black light for fluorescent inspections, wear approved safety glasses.

GREASE

Avoid any skin contact with grease. Wash hands thoroughly with soap and water after handling grease.

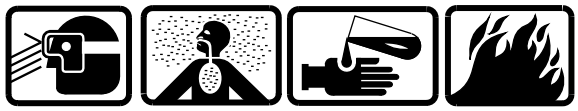


HYDRAULIC FLUID, MIL-H-5606

MIL-H-5606 hydraulic fluid is flammable. Flashpoint is 180 °F (82 °C). When hydraulic fluid is decomposed by heat, toxic gases are released. Prolonged contact with liquid or mist can cause skin irritation. If there is any prolonged contact with skin, wash contacted area with soap and water. If liquid contacts eyes, flush eyes with water immediately. Remove saturated clothing. If fluid is swallowed, do not try to vomit. In all cases get immediate medical attention. When handling liquid, wear approved rubber gloves. If prolonged contact with mist is likely, wear approved respirator.

HYDRAULIC FLUID, MIL-H-83282

MIL-H-83282 hydraulic fluid is flammable. Flashpoint is 400 °F (204 °C). When hydraulic fluid is decomposed by heat, toxic gases are released. Prolonged contact with liquid or mist can cause skin irritation. If there is any prolonged contact with skin, wash contacted area with soap and water. If liquid contacts eyes, flush eyes with water immediately. Remove saturated clothing. If fluid is swallowed, do not try to vomit. In all cases get immediate medical attention. When handling liquid, wear approved rubber gloves. If prolonged contact with mist is likely, wear approved respirator.



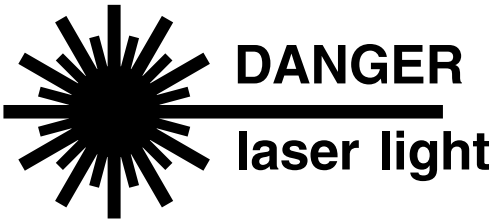
ISOPROPYL ALCOHOL

Isopropyl alcohol is flammable; do not use near open flames, near welding areas, or on hot surfaces. Do not use while smoking or while others are smoking. Inhalation of vapors can cause drowsiness, dizziness, and headache. Contact with skin may cause irritation. If liquid touches skin or eyes, flush thoroughly with water. Remove contaminated clothing. If vapors cause drowsiness, go to fresh air. When handling large quantities (greater than 1 gallon), work at air-exhausted workbench or covered tank. Store solvent and liquid-soaked clothes in an approved, grounded metal container.

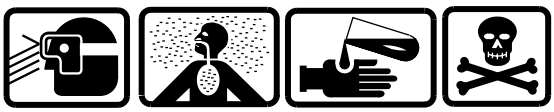
JET FUEL

Jet fuel is flammable; do not use near open flames, welding areas, or on hot surfaces. Do not

handle or store near strong oxidants, e.g., liquid oxygen or hypochlorite. Do not smoke when using jet fuel and do not use it where others are smoking. Contact of eyes with liquid can cause severe irritation and blurred vision. Inhalation of vapor may cause irritation, headache, nausea, and dizziness. If liquid contacts eyes, flush eyes thoroughly with water for a minimum of 15 minutes. Immediately remove fuel-saturated clothing. If vapors cause dizziness, go to fresh air. If liquid is swallowed, do not try to vomit. In all cases get immediate medical attention. When handling large quantities of liquid (more than 1 gallon) at an unexhausted workbench, wear approved respirator and goggles or faceshield. Dispose of liquid-soaked rags in approved metal container. Contaminated clothing shall be laundered prior to reuse. Metal containers of fuel must be closed and grounded to maintain electrical continuity.

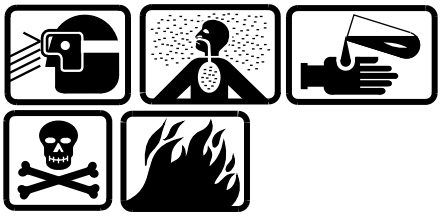


The laser rangefinder/designator (LRF/D) is very dangerous. Looking at the laser beam or its reflection from a shiny surface can cause permanent blindness. Under noncombat conditions, the laser shall be used only in controlled areas and at times specified by a range control officer.



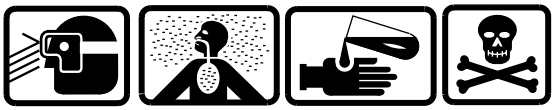
LHE CADMIUM SOLUTION

Cadmium brush plating solution is toxic and may cause damage to skin, eyes, and mucous membranes. Overexposure may cause skin sensitization and skin irritation. Thoroughly wash skin area with water and immediately flush eyes with water for 15 minutes. If vapor causes drowsiness, go to fresh air. In all cases get immediate medical attention. Wear approved rubber gloves, apron, boots, goggles or faceshield, and activated carbon respirator. Work in well-ventilated area. Wash hands thoroughly before eating or smoking.



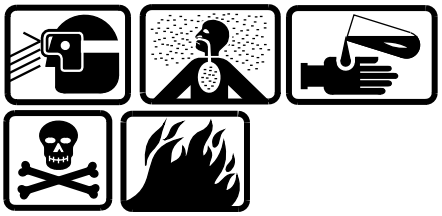
LUBRICANT, SOLID FILM

Solid film lubricant is flammable. Do not use near fire or open flame. Lubricant may cause irritation to skin and upper respiratory system. Inhalation may cause a narcotic effect and light headedness. Swallowing may be fatal. Thoroughly wash skin area with soap and water and immediately flush with water for 15 minutes. If ingested, do not induce vomiting. In all cases get immediate medical attention. When working with lubricant, wear approved rubber gloves, respirator, and safety glasses or goggles with unperforated side shields. Work in a well-ventilated area.



LUBRICATING OIL

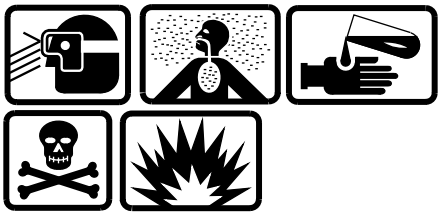
If lubricating oil is decomposed by heat, toxic gases are released. Prolonged contact with liquid or mist may cause skin irritation. If there is any prolonged contact with skin, wash area with soap and water. If oil contacts eyes, flush eyes with water immediately. Remove saturated clothing. If oil is swallowed, do not try to vomit. In all cases get immediate medical attention. When handling liquid, wear approved rubber gloves. If prolonged contact with mist is likely, wear approved respirator.



NAPHTHA/NAPTHALENE

Naphtha/Naphthalene is combustible; do not use it near welding areas, near flames, or on hot surfaces. Avoid prolonged or repeated contact with liquid. Contact of skin with liquid can cause irritation. Inhalation of vapors can cause irritation, giddiness, and drowsiness. If liquid contacts eyes, flush eyes thoroughly with water. If there is any prolonged skin contact, wash contacted area with

soap and water. If vapors cause drowsiness, go to fresh air. Remove solvent-saturated clothing. If liquid is swallowed, do not try to vomit. In all cases get immediate medical attention. When handling liquid in an air-exhausted, partially covered tank, wear approved gloves. When handling liquid in an open, unexhausted container, wear approved rubber gloves and goggles. If contact with vapor is likely, wear an approved respirator. Dispose of liquid-soaked rags in approved metal container. Metal containers of liquid must be grounded to maintain electrical continuity.



NITRIC ACID

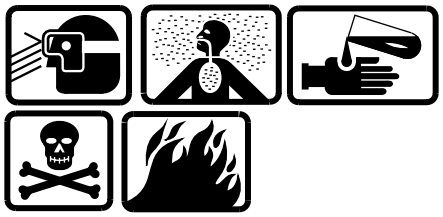
Nitric acid is highly reactive; do not mix with combustible organics or other oxidizable materials such as wood, paper, and cloth. When heated, toxic gases are released. When mixing solutions, add acid slowly to water, not water to acid. Contact of skin with liquid or inhalation of mist can cause severe burns, respiratory system irritation, and chronic bronchitis. If any solution, liquid, or mist contacts skin or eyes, flush affected area thoroughly with water for a minimum of 15 minutes. Immediately change any contaminated clothing. If mist is inhaled, go to fresh air. In all cases get immediate medical attention. If handling solution or concentrated liquid in air-exhausted covered tank, wear approved gloves and apron, and wear approved goggles or faceshield. When handling solution or concentrated liquid in open tank, wear approved respirator, full-body clothing, gloves, and goggles.

NOISE HAZARD

Personnel hearing can be PERMANENTLY DAMAGED if exposed to constant high noise levels of 85 dB (A) or greater. Wear approved hearing protection devices when working in high noise level areas. Hearing loss occurs gradually but becomes permanent over time. Hearing protection is required.

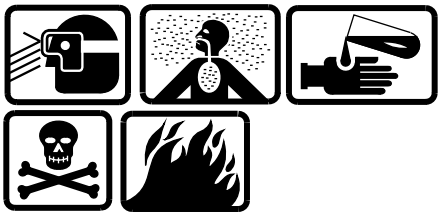
PAINT REMOVER

Paint remover can cause severe burns, narcotic effects, headache, dizziness, and nausea. In some cases it may cause elevated blood pressure, unconsciousness, shock, and death. Contact with eyes may cause blindness. Avoid contact with flammable liquids. Contact with alkali metals, powdered magnesium, and aluminum may cause a violent reaction. Thoroughly wash skin area with water and immediately flush eyes with water for 15 minutes. In all cases get immediate medical attention. When working with paint remover wear approved respirator (manufacturer recommends approved fresh air mask), approved faceshield or goggles, neoprene or Viton gloves, solvent resistant boots, and apron. Work in a well-ventilated area. Read manufacturers label for specific instruction due to variations of each product.



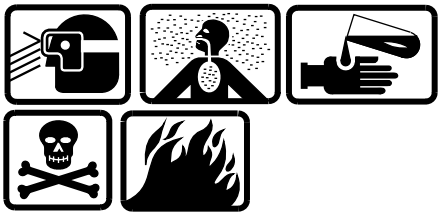
PLASTIC POLISH COMPOUND

Plastic polish compound is flammable. Keep away from heat, open flame or other sources of ignition. Plastic polish compound may be poisonous if inhaled or absorbed through the skin. Vapors may cause dizziness or suffocation and are an irritant to the skin and eyes. Move to fresh air and thoroughly wash skin with water and flush eyes with water for 15 minutes. In all cases, get immediate medical attention. Wear approved safety glasses or goggles and gloves. Use in a well-ventilated area.



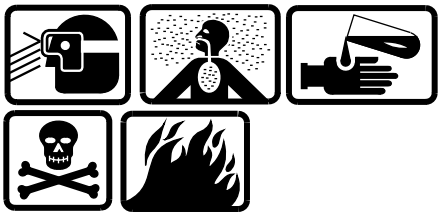
POLYURETHANE COATING

Polyurethane coating is flammable. Keep away from open flame, sparks, heat, and organic material. Exposure can cause skin, eye, nose, throat, and respiratory system irritation. Prolonged exposure may cause headache, allergic sensitivity, narcotic effect, nausea, and vomiting. Ingestion causes lead poisoning. Thoroughly wash skin area with soap and water and immediately flush eyes with water for 15 minutes. If inhaled, move to fresh air. In all cases get immediate medical attention. When working with polyurethane coating, wear approved chemical resistant rubber gloves, goggles, respirator, and protective clothing. Use in a well-ventilated area.



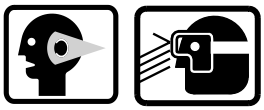
POLYURETHANE CONDUCTIVE COATING

Polyurethane conductive coating is flammable; do not use near open flames, near welding areas, or on hot surfaces. Contact with liquid or vapor can cause skin or eye irritation. Prolonged overexposure can result in kidney and liver damage, headache, nausea, vomiting, dizziness or loss of consciousness. Prolonged occupational overexposure can result also with permanent brain and nervous system damage. Deliberately concentrating and inhaling the contents may be harmful or fatal. After prolonged skin contact, wash contacted area with lukewarm water for 15 minutes. Remove contaminated clothing promptly. If vapors cause dizziness, go to fresh air, in all cases get immediate medical attention. Dispose of contents in approved metal container. Follow approved toxic waste disposal procedures.



RESINS AND HARDENERS

Resins and hardeners are flammable; do not use near open flames, welding areas, or on hot surfaces. When decomposed by heating, toxic fumes are released. Inhalation of vapor can cause irritation, drowsiness, and headache. Contact with eyes can cause severe burns. Flush eyes with water for at least 15 minutes. Wash skin immediately with soap and water. In all cases get immediate medical attention. When mixing or applying liquid in air-exhausted paint spray booth, wear approved gloves and goggles. When mixing or applying liquid in unexhausted work area, wear approved gloves, long sleeves, apron, goggles, and respirator. Metal containers of solution must be grounded to maintain electrical continuity.



RIVETING OPERATIONS

Bucking rivets produces high levels of noise. Hearing can be PERMANENTLY DAMAGED if exposed to constant high noise levels of 85 dB (A) or greater. Wear approved hearing protection devices when working in high noise level areas. Hearing loss occurs gradually but becomes permanent over time. Hearing protection is required. Wear goggles or faceshield when riveting to prevent damaging eyes.

SANDING OPERATIONS

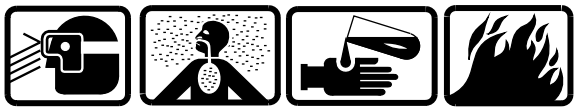
Avoid prolonged or repeated contact with sanding, power grinding, or drilling dust. Inhalation of dust may cause temporary coughing and wheezing, respiratory system irritation, and permanent lung problems. If dust contacts eyes, flush them thoroughly with water. If coughing or wheezing persists, get immediate medical attention. When using an air-exhausted grinding wheel, wear approved respirator and goggles or faceshield.

SEALING COMPOUND, MIL-S-22473

Anaerobic sealing compound is flammable; do not use near open flames or welding areas. Avoid prolonged exposure to light. Avoid materials such as peroxide or other strong oxidizing agents, iron rust or carbon monoxide/dioxide. Anaerobic sealing compound can cause dermatitis. It may also cause delayed eye and skin irritations and skin sensitivity. Thoroughly wash skin area with water and immediately flush eyes with water for at least 15 minutes. If ingested, do not induce vomiting. Keep individual calm. In all cases, get immediate medical attention. When working with anaerobic sealing compound, wear approved rubber apron, boots, gloves, and goggles or faceshield in well-ventilated area.

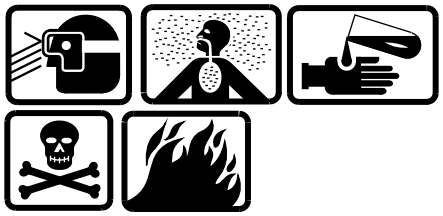
SEALING COMPOUND, MIL-S-8784, MIL-S-8802, MIL-S-83249

Sealing compound is flammable. Do not use near heat, open flames, or sparks. Overexposure can cause irritation of skin and eyes, headache, nausea, vomiting, and systemic problems. Thoroughly wash skin area with soap and water and immediately flush eyes with water for 15 minutes. In all cases get immediate medical attention. Wear approved protective gloves and goggles. Avoid breathing of vapors and prolonged or repeated skin contact.



SHELLAC

Shellac is flammable. Keep away from heat, sparks, and open flame. All electrical equipment must be explosion proof. Shellac may cause irritation of eyes, nose, and throat. Headache, intoxication, and drowsiness may occur. In case of skin contact, flush contact area thoroughly with water. For inhalation, remove to fresh air and give oxygen. In all cases, get immediate medical attention. Use shellac in well-ventilated area. When handling wear approved rubber gloves and safety goggles.

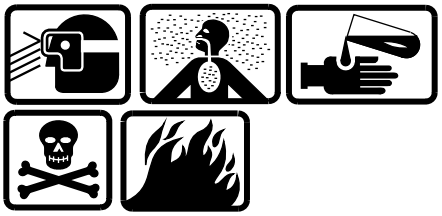


SILICONE

Conformal coating is flammable. Do not use near open flame or high temperatures. Repeated or prolonged contact or inhalation of vapors can cause skin and eye irritation, or damage to lungs, blood, liver, kidneys, and nervous system. Existing eye, skin, and respiratory disorders can be aggravated. Short-term inhalation of vapors can cause drowsiness and irritation of nose and throat. Use only in a well-ventilated area. If vapors are inhaled, go to fresh air. Short-term skin contact can cause irritation, redness, and swelling. Wipe off skin contact area and flush with fresh water. Flush eyes with with fresh water for 15 minutes. Get immediate medical attention if irritation develops or ill effects persist. If swallowed, do not induce vomiting. Vomiting can cause serious lung damage. If vomiting occurs, keep head below hips to prevent entry of liquid into lungs. When handling, wear approved protective gloves, goggles, and respirator with organic vapor cartridge. Metal storage containers must be grounded to eliminate static electricity fire hazard.

THINNER

Paint thinner is flammable; do not use near open flames, near welding areas, or on hot surfaces. Do not smoke when using paint thinner, and do not use it where others are smoking. Contact with liquid or vapor can cause skin, nose, throat, and eye irritation, drowsiness, headache, nausea, and vomiting. After any prolonged contact of liquid with skin, wash contacted area with soap and water. Remove solvent-saturated clothing. If vapors cause drowsiness, go to fresh air. In all cases get immediate medical attention. When handling liquid at air-exhausted workbench wear approved gloves, goggles, and long sleeves. When handling liquid or liquid-soaked cloth in open unexhausted area, wear approved respirator, gloves, and goggles. Dispose of liquid-soaked rags in approved metal container. Metal containers must be grounded to maintain electrical continuity.

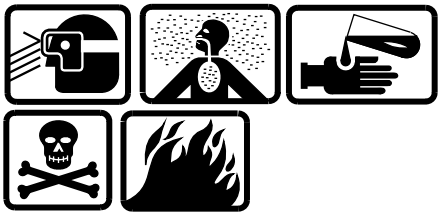


URETHANE ADHESIVE

Urethane Adhesive Components A and B are flammable. Keep away from heat, sparks, or any source of ignition.

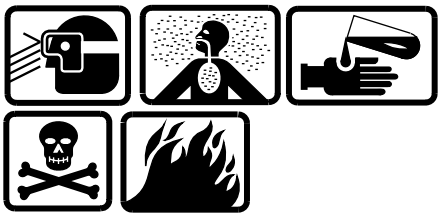
Overexposure to Component A may cause headache, nausea, and skin irritation and is an irritant to the upper respiratory system. In case of skin or eye contact, flush thoroughly with water. If inhaled remove to fresh air. If swallowed give large amounts of water. In all cases get immediate medical attention.

Overexposure to Component B, which is mildly toxic, may cause headache and mild irritation of nose, throat, and eyes. Contact with skin may cause irritation and dryness. Ingestion may cause vomiting and stomach cramps. In case of ingestion, get immediate medical attention. If inhaled remove to fresh air and give artificial respiration. In case of skin contact, remove contaminated clothing and wash with soap and water. Flush eyes immediately with large quantities of water. In all cases get immediate medical attention. Use in well-ventilated area and wear approved respirator, goggles, and rubber gloves.



ZINC CHROMATE PRIMER

Zinc chromate primer is flammable; do not use near open flames, near welding areas, or on hot surfaces. Do not smoke when using zinc chromate primer, and do not use it where others are smoking. Contact with liquid or vapor can cause skin or eye irritation, dizziness, and headache. Prolonged inhalation can result in kidney and liver damage. After prolonged skin contact, wash contacted area with soap and water. If vapors cause dizziness, go to fresh air. In all cases get immediate medical attention. When handling small quantities (less than 1 gallon), wear approved gloves. When handling large quantities of liquid (greater than 1 gallon), at unexhausted workbench, wear approved respirator, gloves, goggles, apron, and long sleeves. Do not eat, smoke, or carry smoking materials in areas where liquid is handled. Dispose of liquid-soaked rags in approved metal container. Zinc chromate primer contains chromates. Follow approved toxic waste disposal procedures.



ZINC CHROMATE PUTTY

Zinc chromate putty is flammable; do not use near open flames, near welding areas, or on hot surfaces. Do not smoke when using zinc chromate putty, and do not use it where others are smoking. Contact with liquid or vapor can cause skin or eye irritation, dizziness, and headache. Prolonged inhalation can result in kidney and liver damage. After prolonged skin contact, wash contacted area with soap and water. If vapors cause dizziness, go to fresh air. In all cases get immediate medical attention. When handling small quantities (less than 1 gallon), wear approved gloves. Do not eat, smoke, or carry smoking materials in areas where putty is handled. Dispose of putty in approved

metal container. Zinc chromate putty contains chromates. Follow approved toxic waste disposal procedures.

4. SAFETY PRECAUTIONS.

The following safety precautions shall be observed while performing procedures in this manual.

- Dangerous voltages are present at system connectors. Ensure power is OFF prior to connecting or disconnecting cables.
- Do not wear metal frame glasses, rings, watches, or other metal jewelry while working on electronic equipment.
- Some cleaning materials specified herein are flammable and/or toxic. Keep away from open flame or other ignition sources. Provide adequate ventilation and avoid skin/eye exposure.
- Cleaning with compressed air can create airborne particles that may enter eyes or penetrate skin. Pressure shall not exceed 30 psig. Wear goggles. Do not direct compressed air against skin.
- For electrical shock safety steps and procedures, refer to TM 1-1500-204-23 and TB 385-4.

CHAPTER 4

POWERPLANT

4-1. POWERPLANT

This chapter contains maintenance procedures for the powerplant and related systems. This chapter is divided into nine sections.

Section I. ENGINE ASSEMBLY

4-2. ENGINE ASSEMBLY

4-3. INTRODUCTION

This section contains maintenance procedures for removal, disassembly, assembly, and installation of the engine assembly. It also covers removal, operational check, and installation of the oil pressure transducer; removal and installation of bleed air heater tube and gasket; and removal and installation of the engine accessory gearbox seal. Standard torques are provided in Appendix P and TM 1-1500-204-23.

4-4. TASK LIST

The task list lists those tasks required to support unit and intermediate level maintenance.

LIST OF TASKS

4-1-1. ENGINE ASSEMBLY (OH-58D) — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
OH-58D

Tools:
Powerplant Tool Kit (B179)
Maintenance Stand (2) (B162)
General Mechanic Tool Kit (B178)
Engine Lifting Angle Bracket (B10)
Engine Stand (B161)
Hoist (B69)
Wrench (B216)
Wrench (B219)
Wrench (B220)
Socket (B157)
Engine Covers (Loose Equipment)
Plastic 12 Qt. Pail (or suitable substitute) (B101)
Torque Wrench (B240)

Material:
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Repairer (3)
68B Aircraft Powerplant Repairer

References:
TM 55-2840-256-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)
Engine Cowl Assembly Removed (Task 2-2-50)
Air Induction Cowl Removed (Task 4-2-1)
Engine Oil System Drained (Task 1-4-5)
Freewheeling Unit Drained (Task 1-4-7)
Engine to Transmission Driveshaft Removed (Task 6-2-2)
Forward Shaft Assembly Removed (Task 6-6-1)
Engine Inlet and Engine Exhaust Covered With Protective Covers (Task 1-7-3)

GO TO NEXT PAGE

Jet Fuel

CAUTION

To prevent contamination of equipment, all opened hoses, tubes, lines, fittings, ports and electrical connectors shall be capped or plugged when disconnected.

NOTE

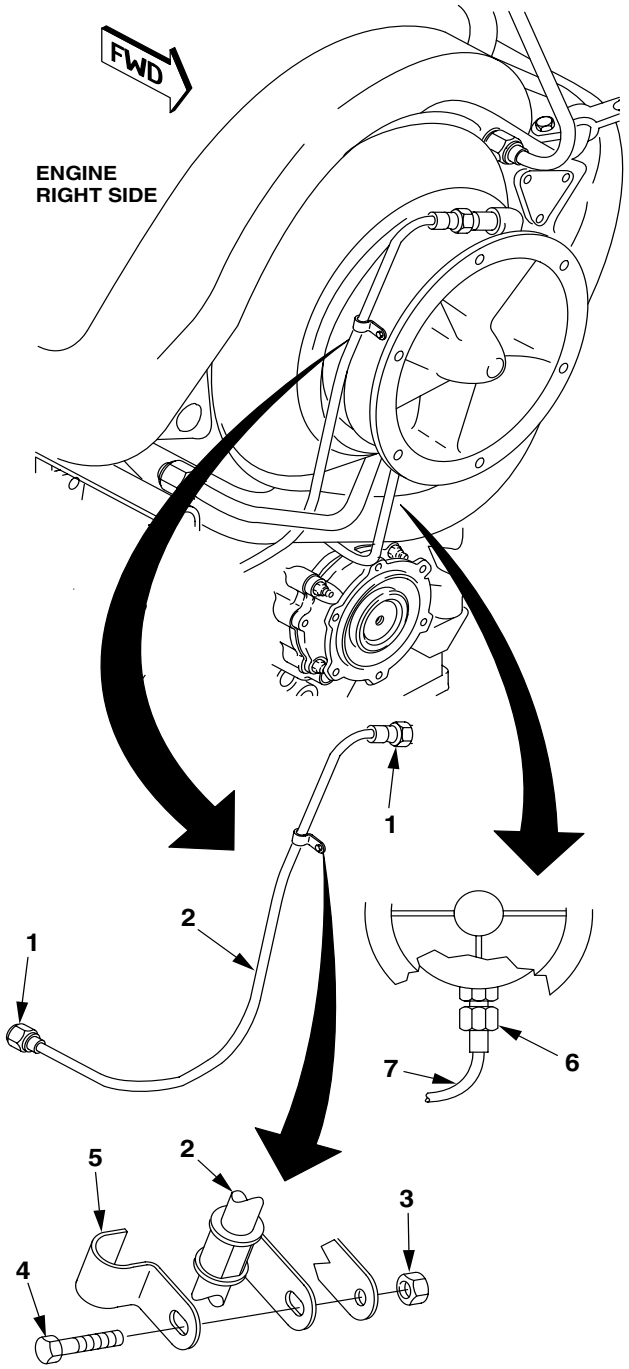
All serviceable parts shall be retained for reinstallation.

1. Position maintenance stands (B162) at both sides of helicopter.

2. Disconnect coupling nut (1) at top end of pressure line (2). Loosen coupling nut (1) at bottom of pressure line (2).

3. Remove nut (3) and bolt (4) to disconnect clamp (5). Move pressure line (2) as necessary to gain access to bellmouth attaching screws.

4. Disconnect coupling nut (6) securing scavenge line (7) to bottom of compressor inlet housing. Loosen coupling nut on aft end (not shown) of scavenge line (7) and move scavenge line (7) as necessary to gain access to bellmouth attaching screws.



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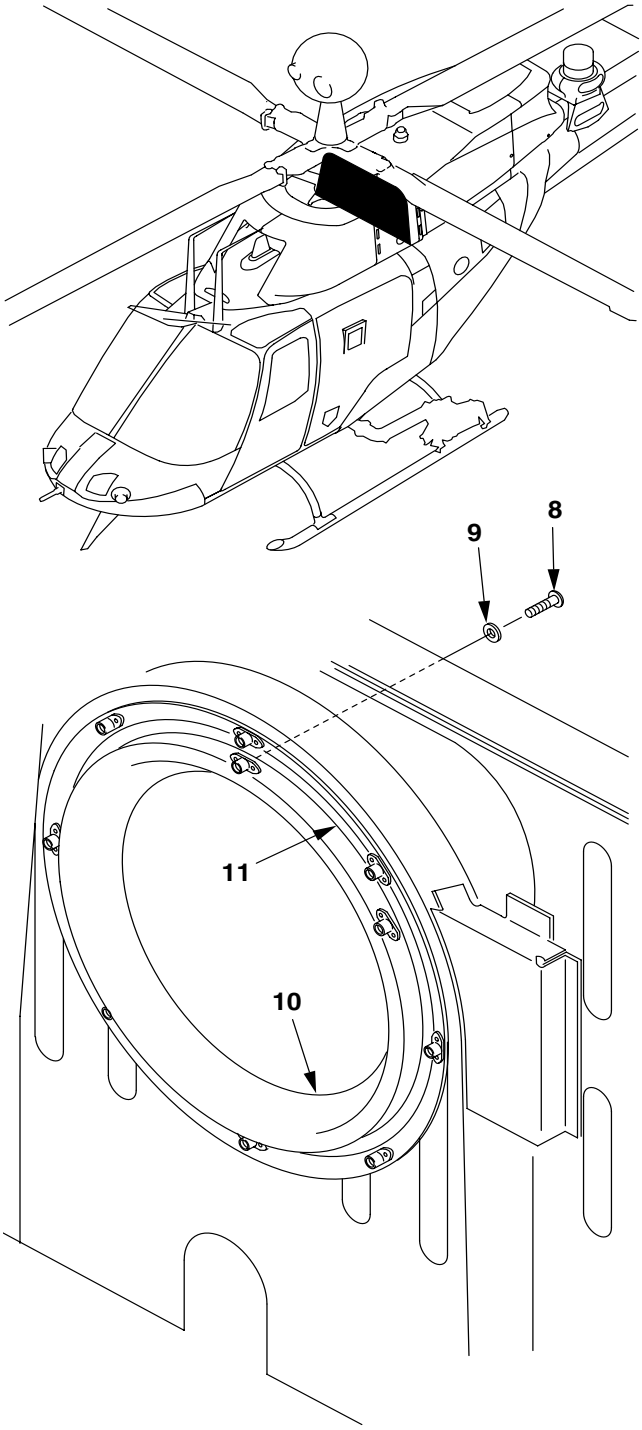
4-1-1. ENGINE ASSEMBLY (OH-58D) — REMOVAL (CONT)

5. Remove six Allen head screws (8) and washers (9) from engine inlet bellmouth (10) attaching to firewall bellmouth (11).



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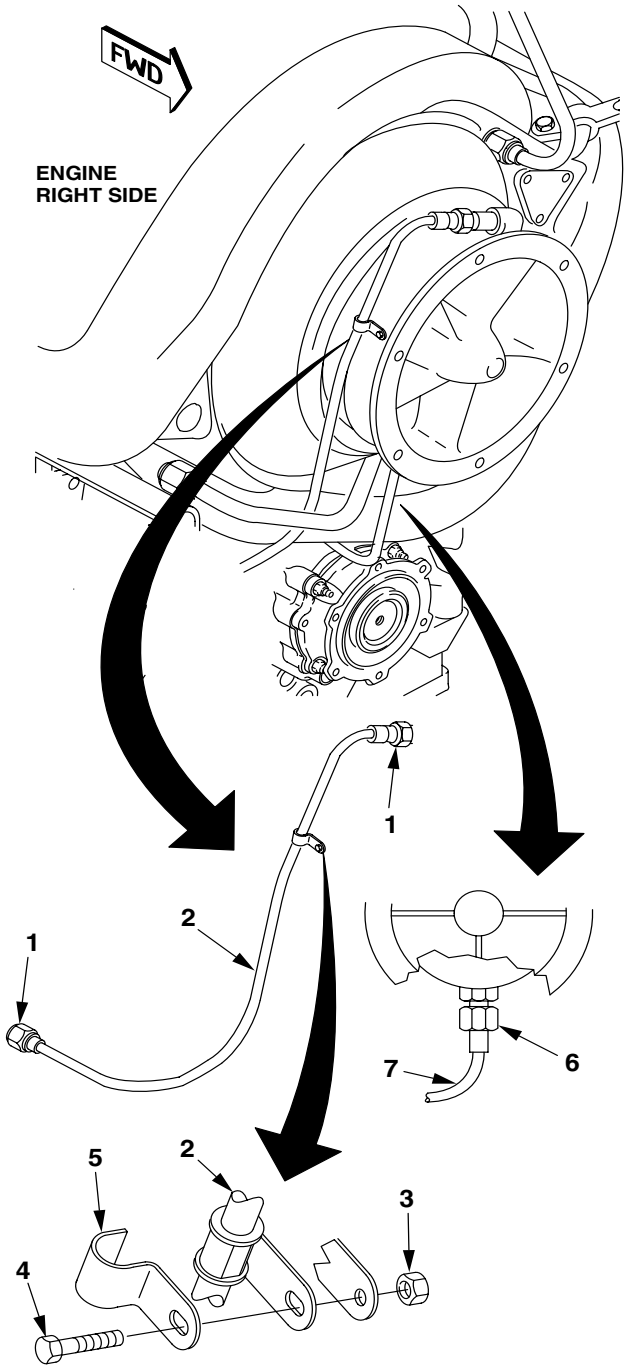
4-1-1. ENGINE ASSEMBLY (OH-58D) — REMOVAL (CONT)

6. Move pressure line (2) to its original position and connect coupling nut (1). Tighten coupling nut (1) at bottom of pressure line (2).

7. Install clamp (5) with bolt (4) and nut (3).

8. Connect coupling nut (6) on scavenge line (7) to bottom of compressor inlet housing. Tighten coupling nut on aft end (not shown) of scavenge line (7).



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4-1-1. ENGINE ASSEMBLY (OH-58D) — REMOVAL (CONT)

9. Disconnect forward freewheeling unit cap assembly lubrication line (12) from fitting (13).

10. Disconnect forward freewheeling unit lubrication hose (14) from elbow (15).

11. Disconnect oil vent hose (16) from union (17).

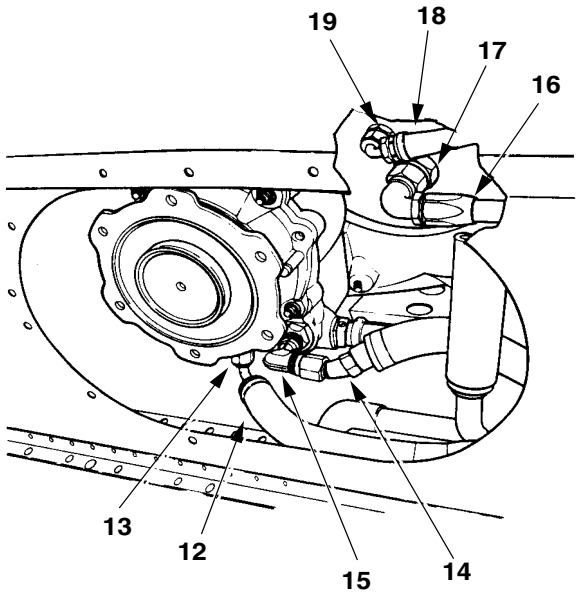
12. Disconnect engine torque transmitter hose (18) from restrictor (19).

13. Disconnect engine bleed air tube (20) from deck union (21).

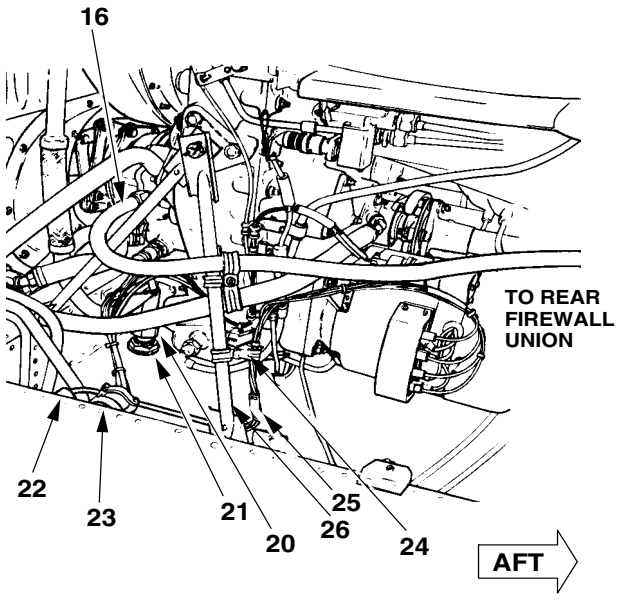
14. Disconnect AC generator electrical connector (22).

15. Disconnect miscellaneous electrical connector (23).

16. Disconnect clamp (24) attaching AC generator wiring harness (25) to aft leg of left engine mount (26).



VIEW LOOKING AFT



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17. Disconnect AC generator pad drain tube (27) from reducer (28).

18. Disconnect exhaust collector drain tube (29).

19. Disconnect fireshield drain tube (30).

20. Disconnect combustion chamber drain hose (31) at burner drain valve (32).

21. Disconnect aft freewheeling unit oil line (33).

22. Disconnect oil pressure transducer hose (34) from engine port (35).

23. Disconnect engine electrical connector (36).

24. Disconnect starter-generator electrical connector (37).

25. Disconnect upper magnetic chip detector electrical connector (38).

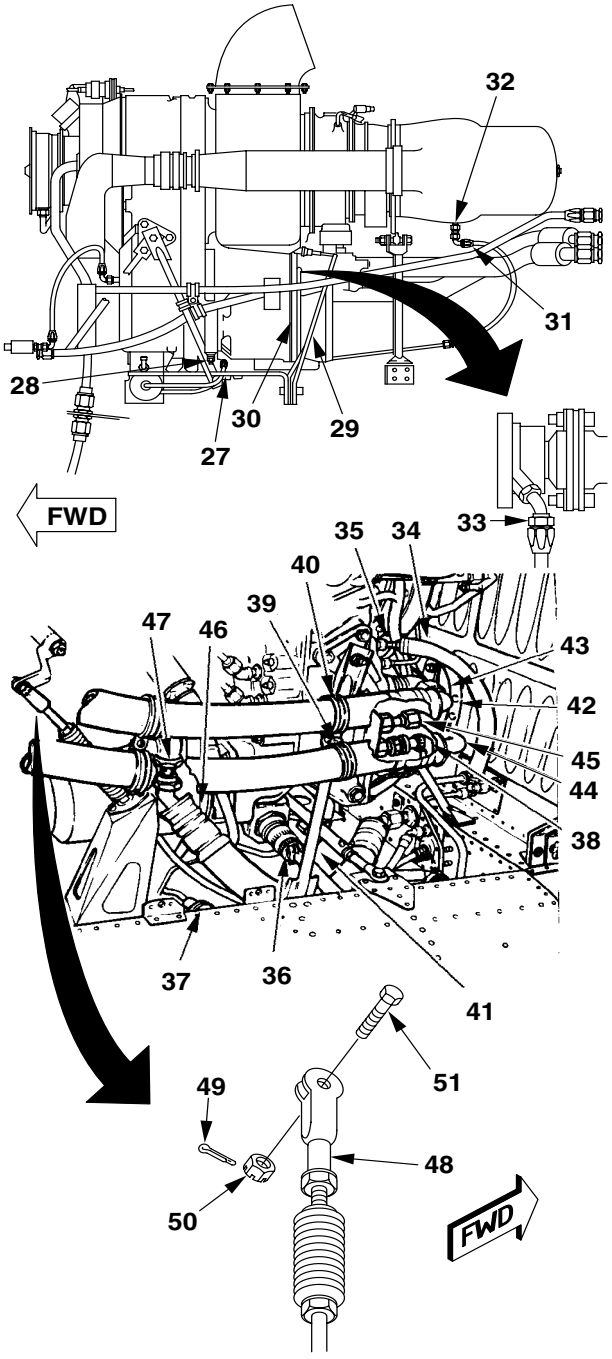
26. Loosen clamps (39 and 40) on right engine mount aft leg (41).

27. Disconnect engine lubrication inlet hose (42) from oil in port elbow (43).

28. Disconnect engine lubrication outlet hose (44) from oil out port union (45).

29. Disconnect main engine fuel hose (46) from pump inlet union (47).

30. Disconnect Controlex cable (48) by removing cotter pin (49), nut (50), and bolt (51). Discard cotter pin (49).



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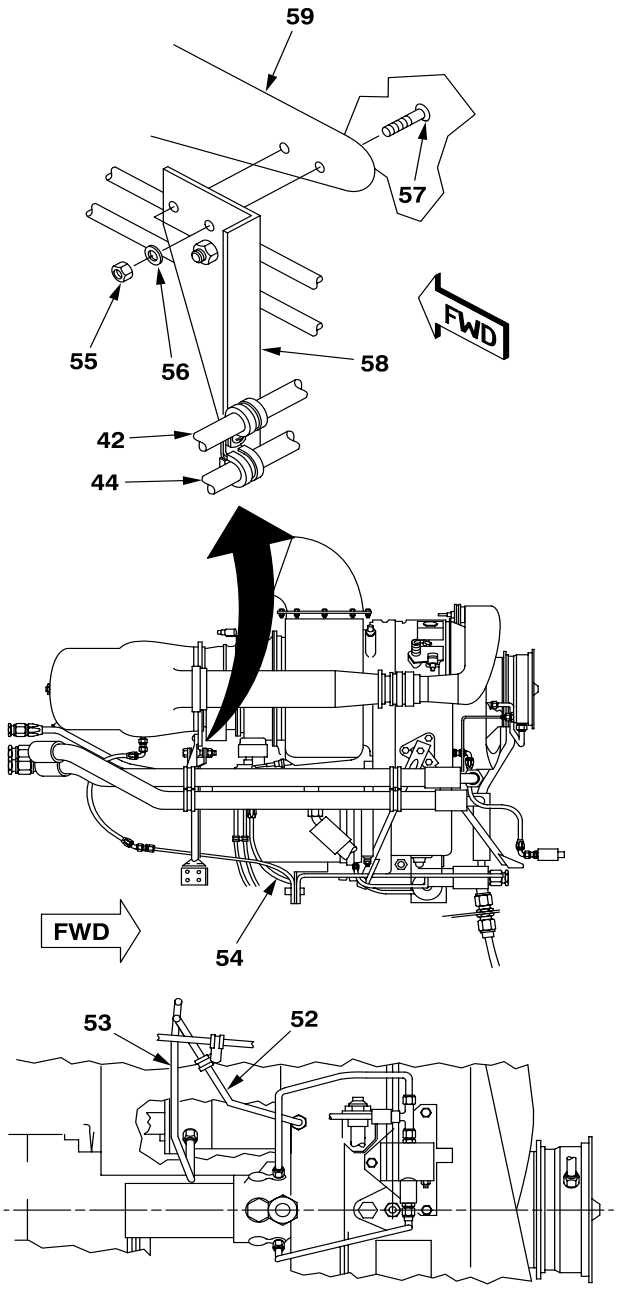
4-1-1. ENGINE ASSEMBLY (OH-58D) — REMOVAL (CONT)

31. Disconnect starter-generator case lubrication drain tube (52).

32. Disconnect fuel pump seal drain tube (53).

33. Disconnect engine vapor vent hose (54).

34. Remove two nuts (55), washers (56), and screws (57) attaching bracket (58) to fireshield (59) to allow movement of engine lubrication inlet hose (42) and outlet hose (44).



BOTTOM OF ENGINE
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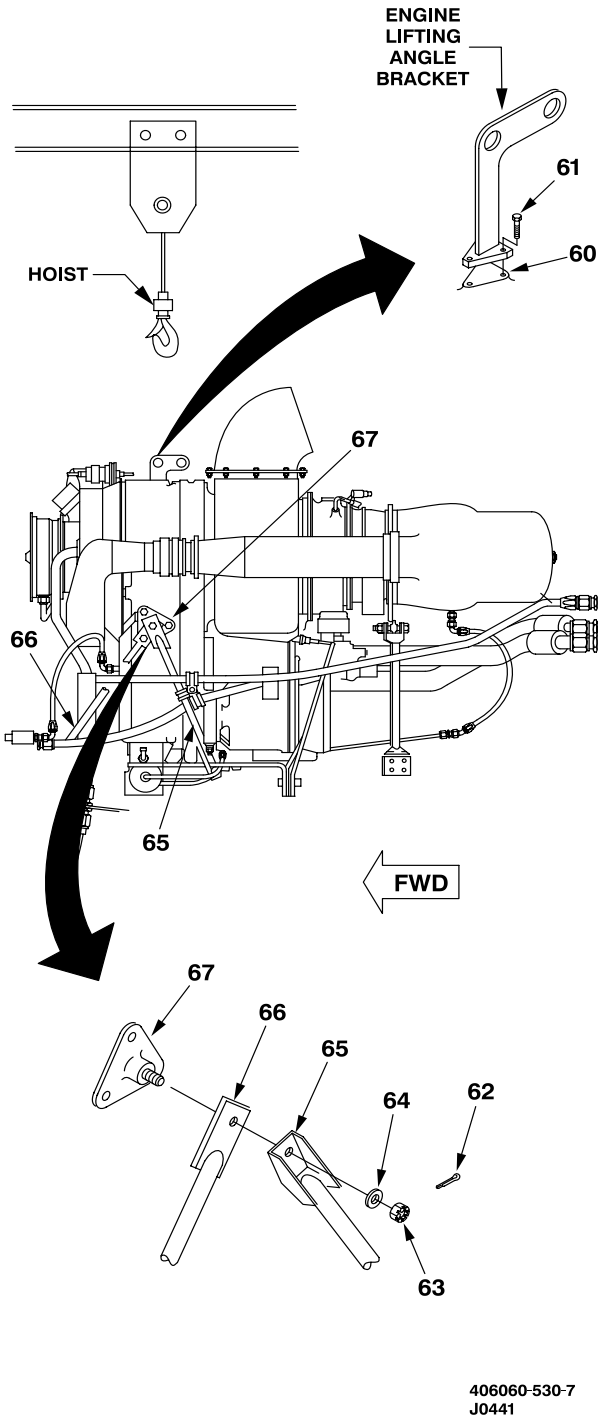
4-1-1. ENGINE ASSEMBLY (OH-58D) — REMOVAL (CONT)

35. Install engine lifting angle bracket (B10) on engine gearbox pad (60) with three bolts (61). Torque bolts (61) **160 TO 190 INCH-POUNDS**.

36. Attach hoist (B69) to engine lifting angle bracket (B10) and take up slack on hoist.

37. Remove cotter pin (62) and discard. Remove nut (63) and washer (64). Disconnect engine mount legs (65 and 66) from trunnion (67).

38. Repeat step 37. for engine mount on right side.



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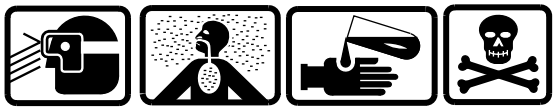
NOTE

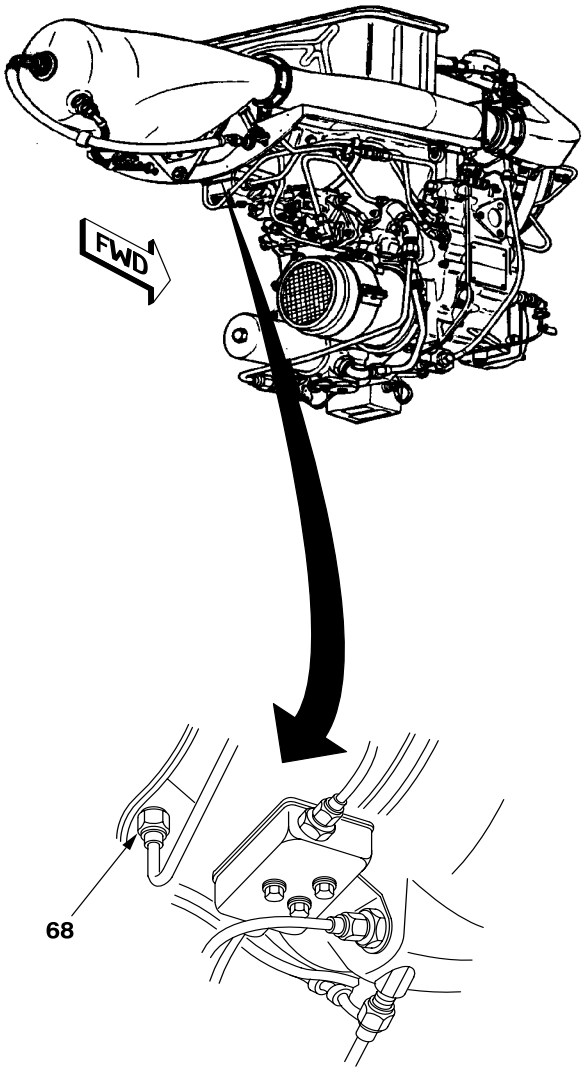
Steps 39. and 40. must be accomplished to allow access to aft engine mount attaching nut.

39. Place suitable container (B101) directly below coupling nut (68).



Lubricating Oil

40. Disconnect coupling nut (68). Allow all oil to drain.



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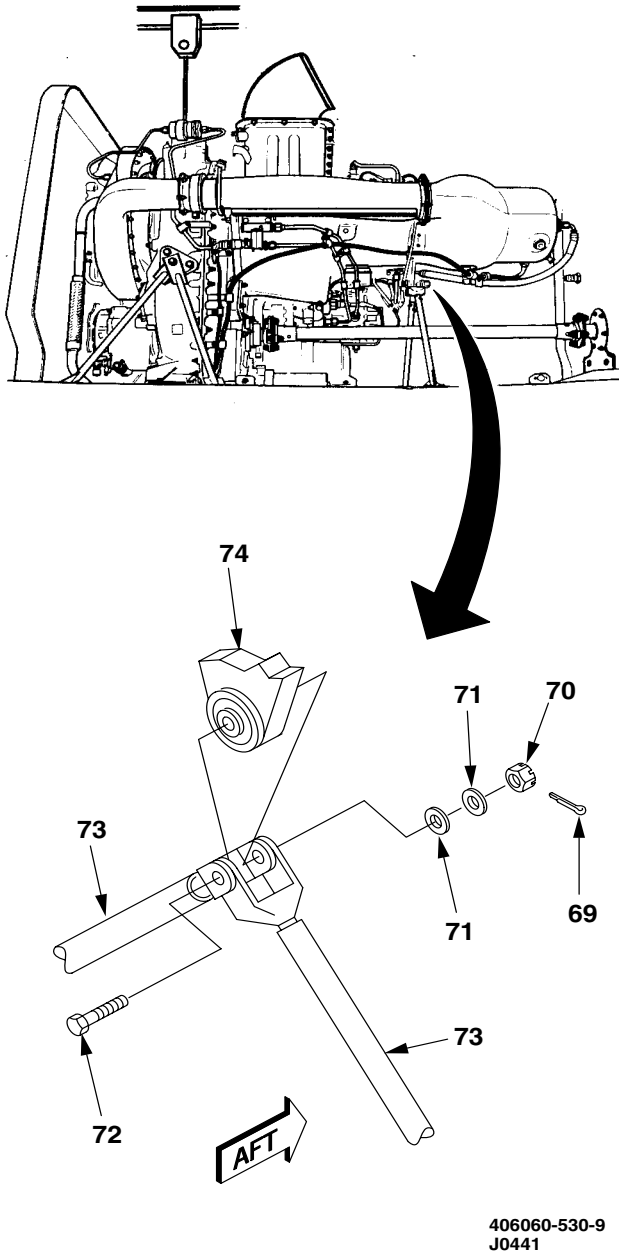
4-1-1. ENGINE ASSEMBLY (OH-58D) — REMOVAL (CONT)

41. Remove cotter pin (69) and discard. Remove nut (70), two washers (71) and bolt (72). Disconnect aft engine mount legs (73) from engine mount (74).



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4-1-1. ENGINE ASSEMBLY (OH-58D) — REMOVAL (CONT)

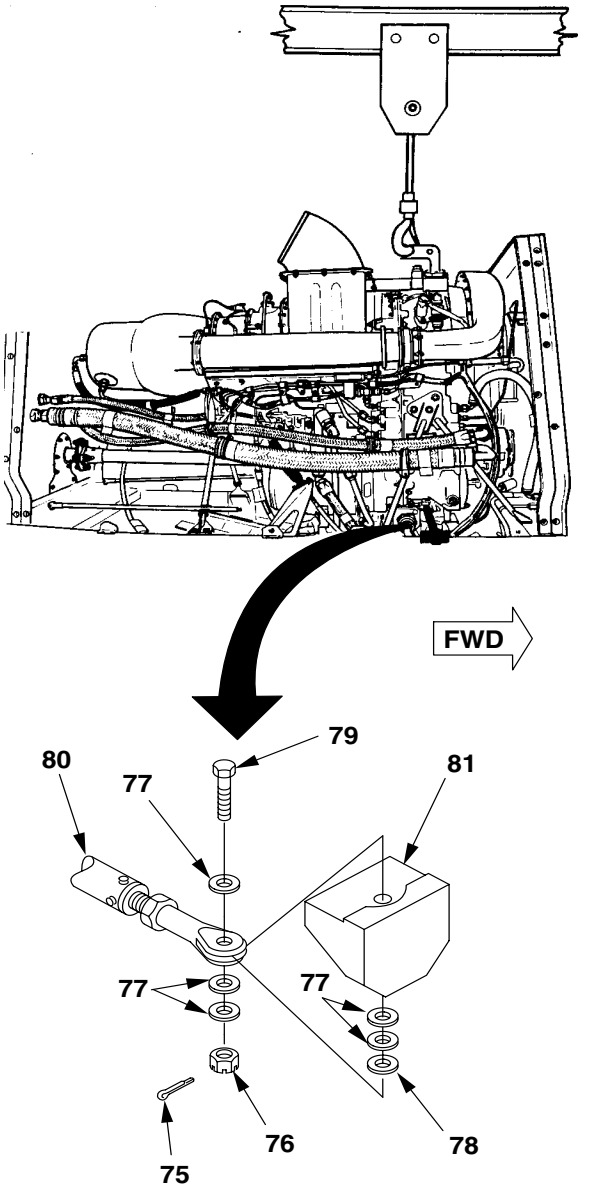
42. Remove cotter pin (75) and discard. Remove nut (76), five washers (77), one washer (78), and bolt (79). Disconnect lower leg (80), from airframe attachment (81).

CAUTION

Before lifting engine from airframe, forward firewall shall be moved forward allowing clearance for engine removal or damage to firewall and/or engine may result.

43. Ensure engine, wiring, hoses, and tubes are free of all airframe attachments.

44. Lift engine from airframe.



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NOTE

Steps 45. through 53. must be accomplished if engine is to be installed in engine stand.

45. Cut lockwire from heads of bolts (82) and discard. Remove three bolts (82) and washers (83) from trunnion (84). Retain trunnion for installation.

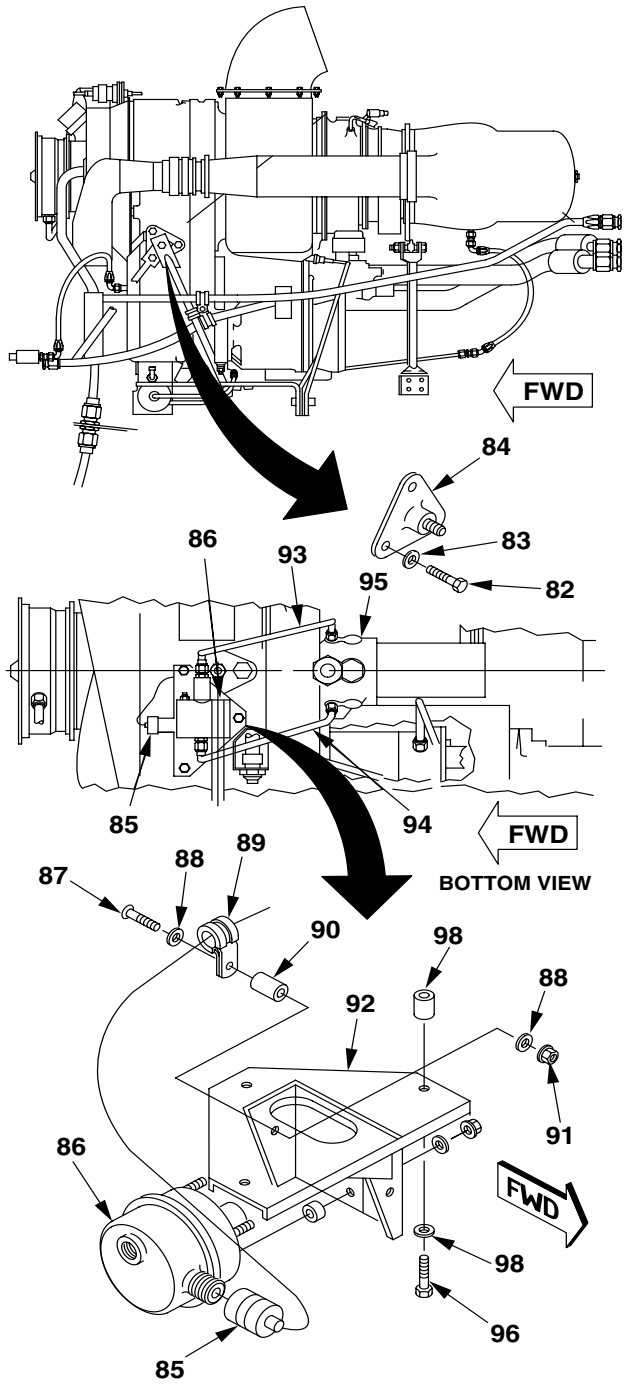
46. Repeat step 46 on opposite side of engine.

47. Disconnect electrical connector (85) from switch assembly (86).

48. Remove screw (87), washers (88), clamp (89), spacer (90), and nut (91) from switch assembly (86) and mounting bracket (92).

49. Disconnect fuel filter differential pressure lines (93 and 94) from fuel filter assembly (95) and switch assembly (86).

50. Remove three bolts (96), washers (97), and spacers (98), from mounting bracket (92) (3 places).



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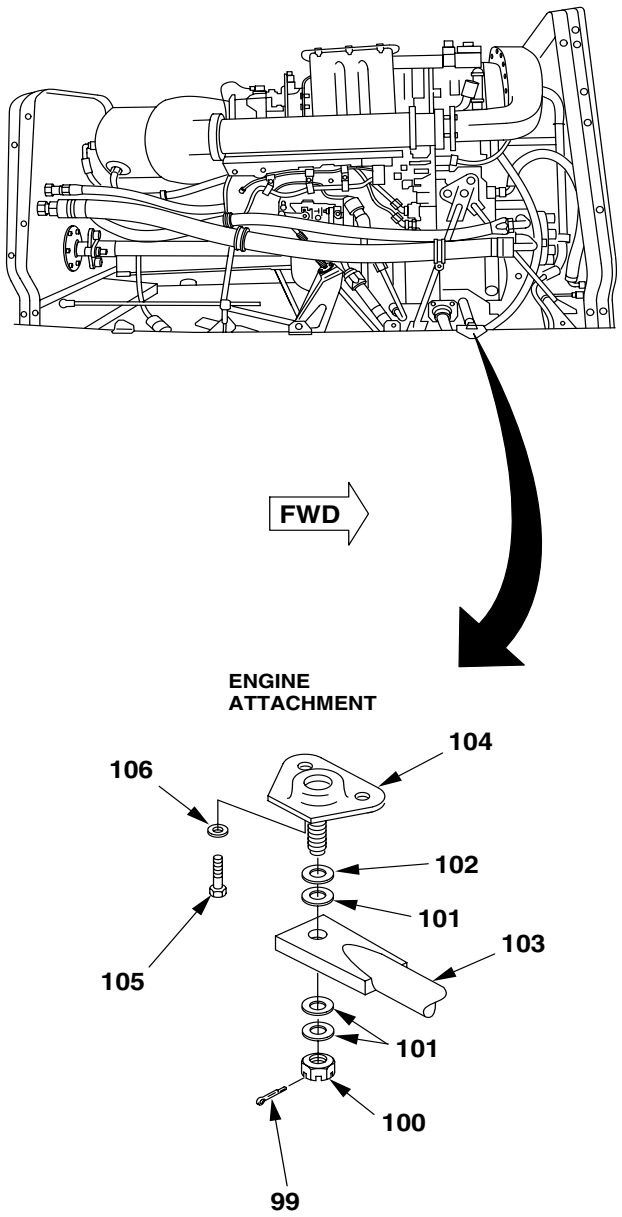
51. Remove cotter pin (99) and discard. Remove nut (100), three washers (101) and washer (102) attaching lower leg (103) to trunnion (104). Retain lower engine mount leg for installation.

52. Cut lockwire from two bolts (105) and remove bolts (105) with washers (106).

53. Install engine in engine stand (B161) (TM 55-2840-256-23).

FOLLOW-ON MAINTENANCE

Remove electronic supervisory control (ESC) for shipment with engine (Task 9-7-3).



END OF TASK

4-1-2. ENGINE ASSEMBLY (OH-58D(R)) — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
OH-58D(R)

Tools:
Powerplant Tool Kit (B179)
Maintenance Stand (2) (B162)
General Mechanic Tool Kit (B178)
Engine Lifting Angle Bracket (B10)
Engine Stand (B161)
Hoist (B69)
Wrench (B216)
Wrench (B219)
Wrench (B220)
Engine Covers (Loose Equipment)
Plastic 12 Qt. Pail (or suitable substitute) (B101)
Torque Wrench (B240)

Material:
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Repairer (3)
68B Aircraft Powerplant Repairer

References:
TM 55-2840-256-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)
Engine Cowl Assembly Removed (Task 2-2-50)
Air Induction Cowl Removed (Task 4-2-1)
Engine Oil System Drained (Task 1-4-5)
Freewheeling Unit Drained (Task 1-4-7)
Engine to Transmission Driveshaft Removed (Task 6-2-2)
Forward Shaft Assembly Removed (Task 6-6-1)
Engine Inlet and Engine Exhaust Covered With Protective Covers (Task 1-7-3)

GO TO NEXT PAGE

Jet Fuel

CAUTION

To prevent contamination of equipment, all opened hoses, tubes, lines, fittings, ports, and electrical connectors shall be capped or plugged when disconnected.

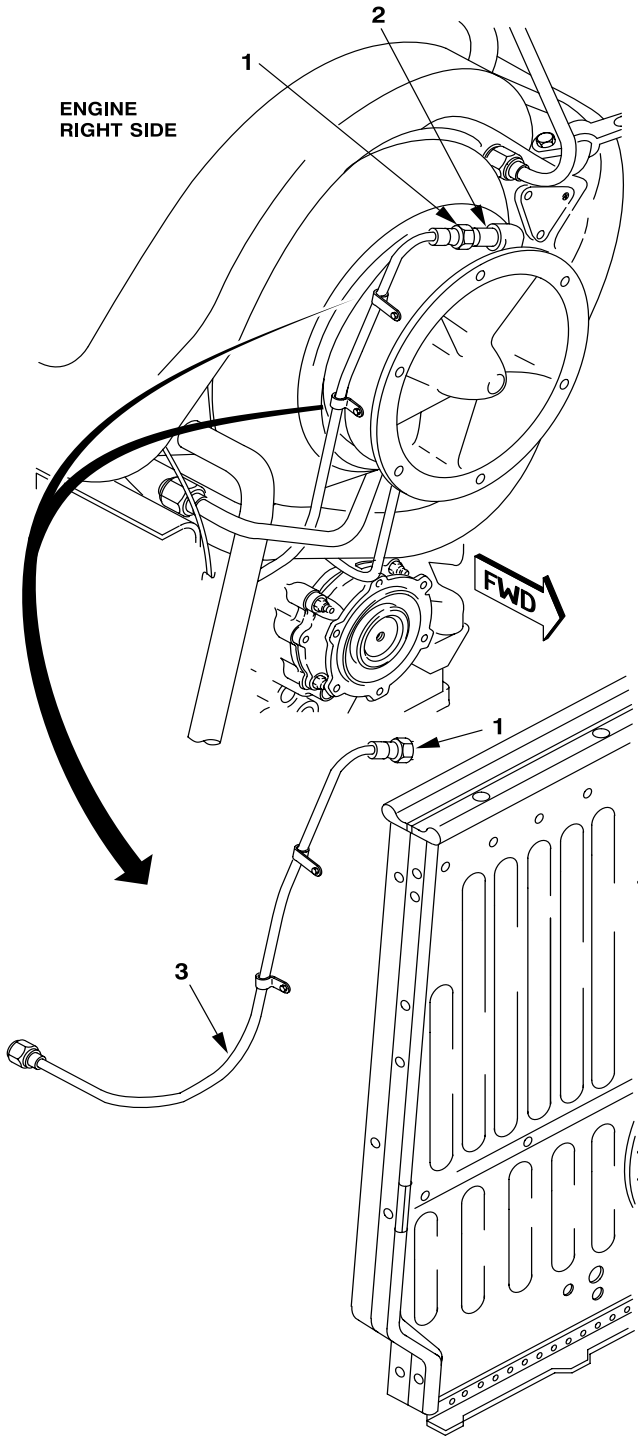
NOTE

All serviceable parts shall be retained for reinstallation.

1. Position maintenance stands (B162) on both sides of helicopter.

2. Disconnect coupling nut (1) from pressure reducer (2).

3. Loosen coupling nut on bottom of pressure line (3) at accessory drive gearbox assembly.



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4-1-2. ENGINE ASSEMBLY (OH-58D(R)) — REMOVAL (CONT)

4. Remove two nuts (4) and bolts (5) to disconnect upper and lower clamp assemblies (6). Move pressure line (3) as necessary to gain access to bellmouth attaching screws.

5. Disconnect bearing scavenge line coupling nut (7) from bottom of compressor inlet housing (8).

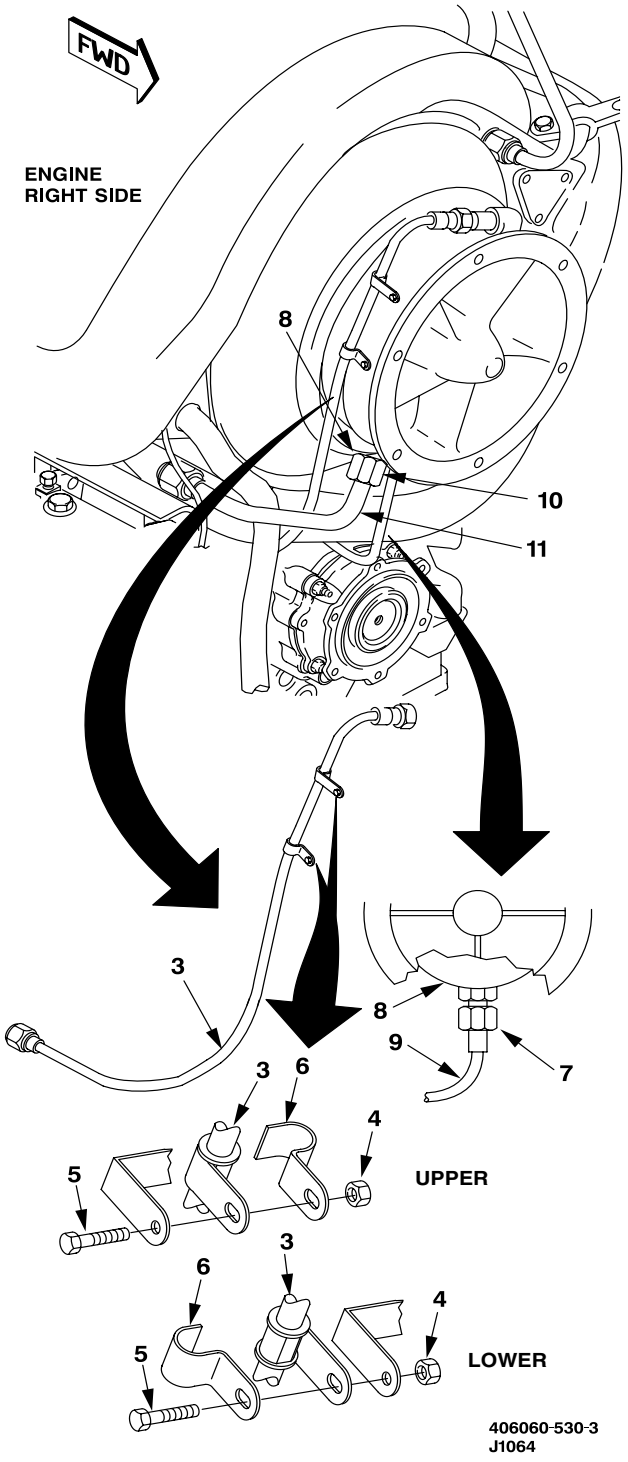
6. Loosen coupling nut on aft end (not shown) of scavenge line (9) and move scavenge line as necessary to gain access to bellmouth attaching screws.

7. Disconnect coupling nut (10) from compressor inlet housing (8).

8. Loosen coupling nut on aft end of anti-icing line (11).

9. Disconnect clamp by removing nut and bolt (not shown).

10. Move anti-icing line (11) as necessary to gain access to bellmouth attaching screws.



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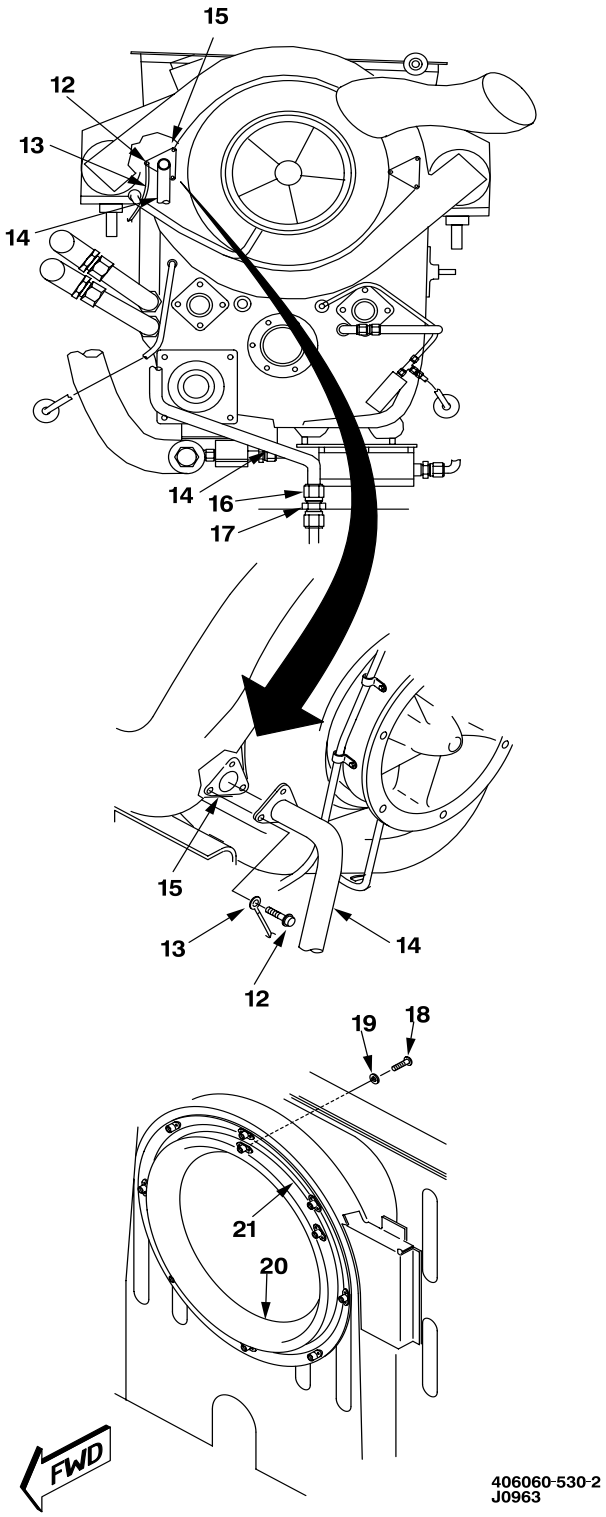
4-1-2. ENGINE ASSEMBLY (OH-58D(R)) — REMOVAL (CONT)

11. Cut lockwire and remove three bolts (12) securing grounding strap (13) and engine bleed-air tube (14) to manifold (15).

12. Disconnect nut (16) securing engine bleed-air tube (14) to engine deck coupling (17).

13. Remove engine bleed-air tube (14).

14. Remove six Allen head screws (18) and washers (19) that attach engine inlet bellmouth (20) to firewall bellmouth (21).



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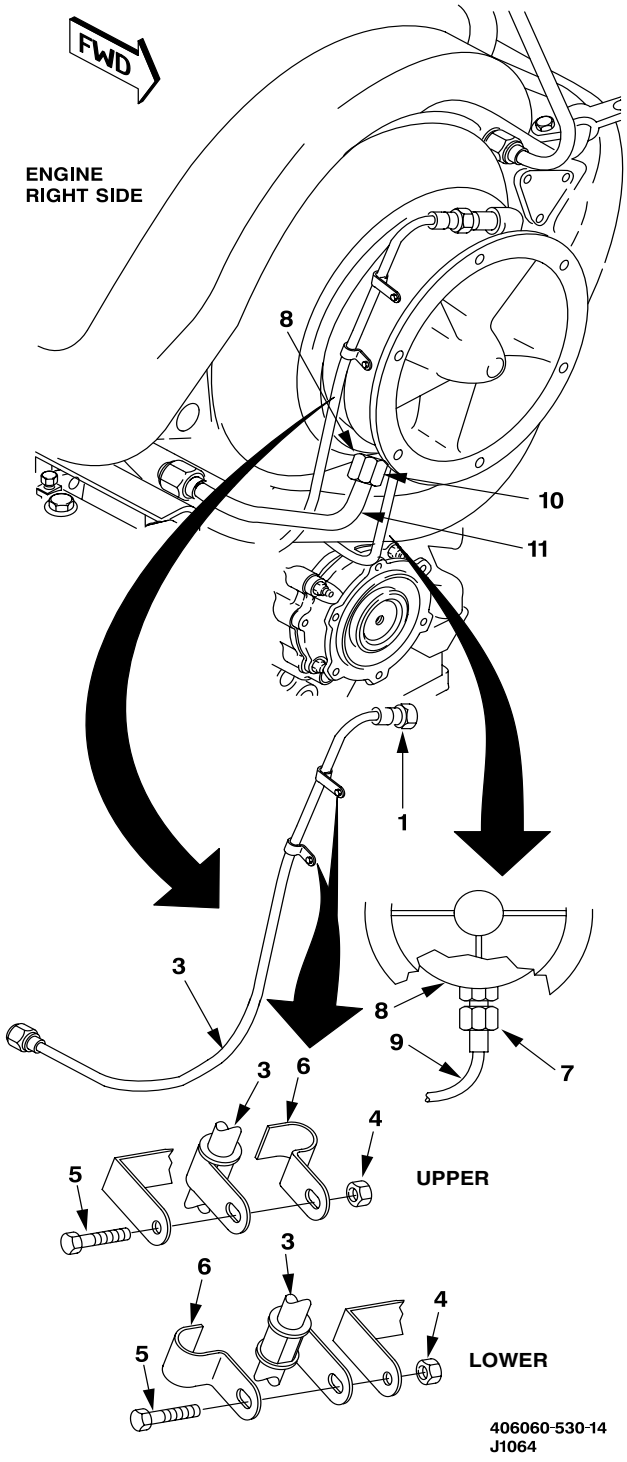
4-1-2. ENGINE ASSEMBLY (OH-58D(R)) — REMOVAL (CONT)

15. Move pressure line (3) to its original position and connect coupling nut (1). Tighten coupling nut at bottom of pressure line.

16. Install clamp (6) with bolt (5) and nut (4) two places.

17. Connect coupling nut (7) on scavenge line (9) to bottom of compressor inlet housing (8). Tighten coupling nut on aft end (not shown) of scavenge line.

18. Rotate anti-icing line (11) and reconnect coupling nut (10) to bottom of compressor inlet housing. Tighten both anti-icing line coupling nuts.



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19. Disconnect forward freewheeling unit cap assembly lubrication line (22) from fitting (23).

20. Disconnect forward freewheeling unit lubrication hose (24) from elbow (25).

21. Disconnect oil vent hose (26) from union (27).

22. Disconnect engine torque transmitter hose (28) from tee connector (29).

23. Disconnect engine bleed air tube coupling nut (30) from engine deck union (31).

24. Disconnect AC generator electrical connector (32) from engine deck.

25. Disconnect miscellaneous electrical connector (33) from engine deck.

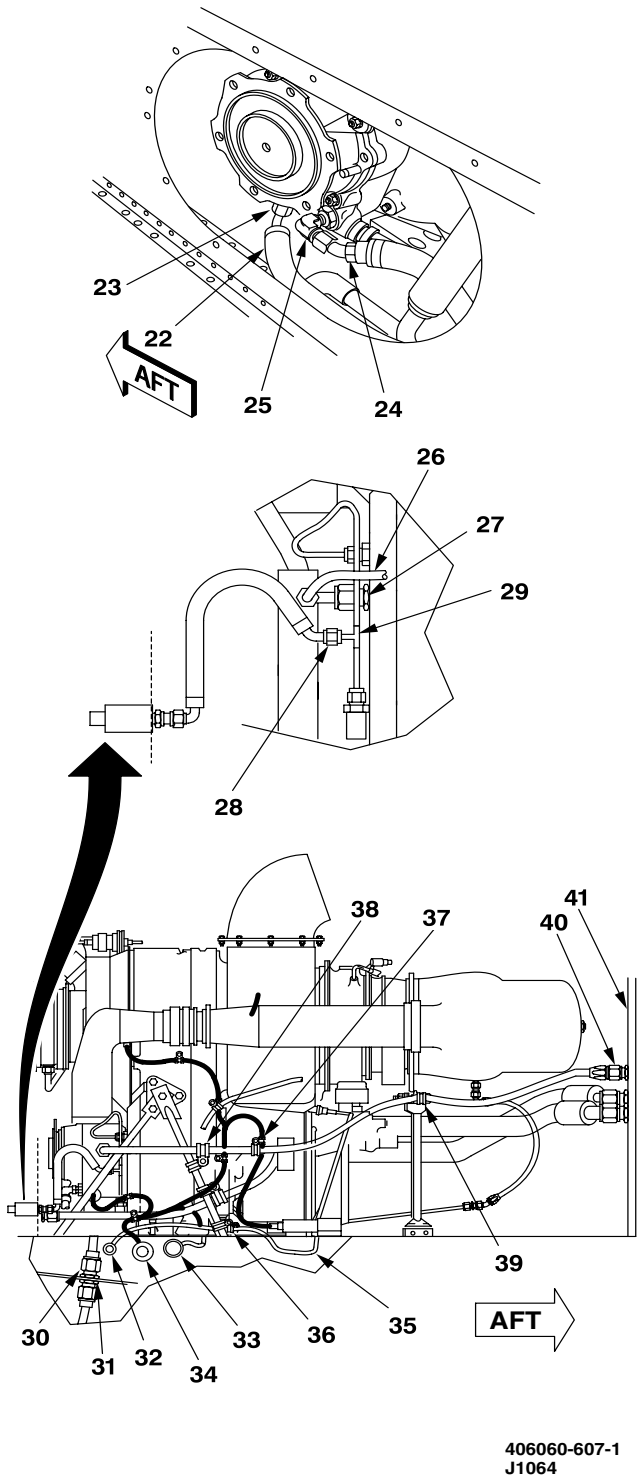
26. Disconnect engine deck electrical connector (34).

27. Remove AC generator wiring harness (35) clamp arrangement (36).

28. Remove oil vent tube clamp arrangement (37) and (38).

29. Remove oil vent tube clamp arrangement (39).

30. Disconnect oil vent tube coupling nut (40) from aft firewall (41).



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4-1-2. ENGINE ASSEMBLY (OH-58D(R)) — REMOVAL (CONT)

31. Disconnect AC generator pad drain tube (42) from reducer.

32. Disconnect exhaust collector drain tube (43).

33. Disconnect fireshield drain tube (44).

34. Disconnect combustion chamber drain hose (45) at burner drain valve (46).

35. Disconnect aft freewheeling unit oil line (47).

36. Disconnect oil pressure transmitter hose (48) from engine oil port (49).

37. Remove clamp (50) securing engine oil inlet/outlet hoses to engine horizontal firewall.

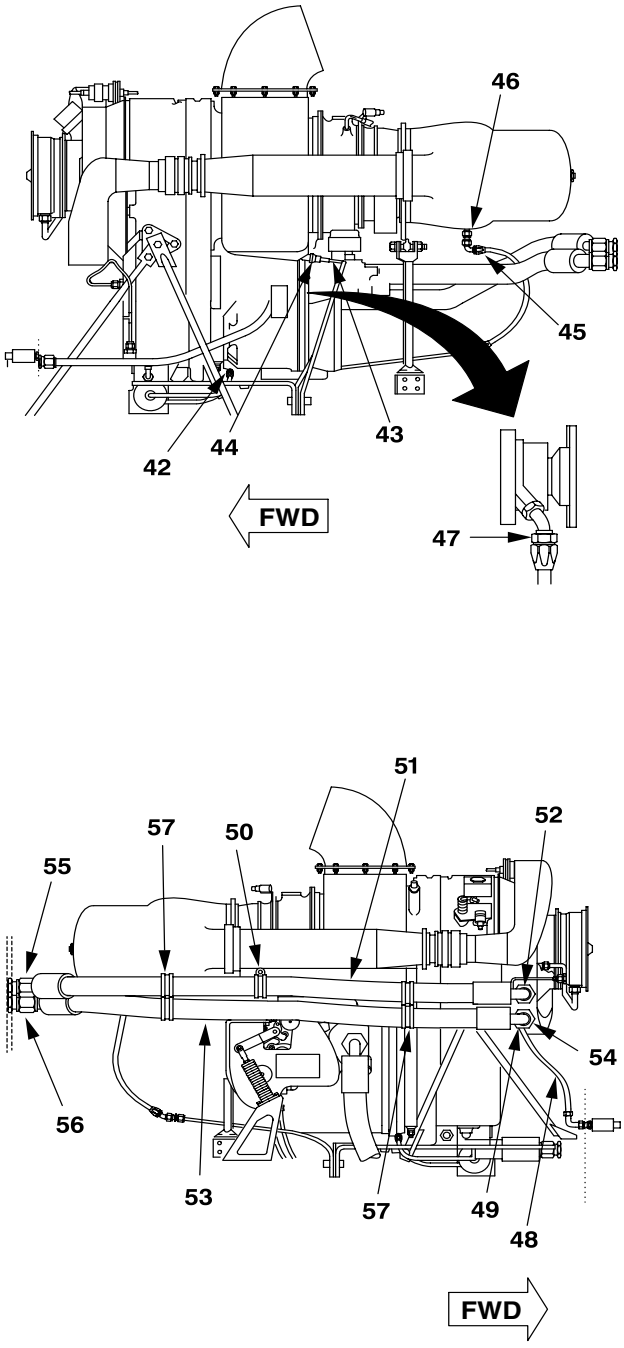
38. Disconnect engine oil inlet hose (51) coupling nut (52) from forward engine oil inlet port.

39. Disconnect engine oil outlet hose (53) coupling nut (54) from forward engine oil outlet port.

40. Disconnect engine oil inlet hose (51) coupling nut (55) from aft engine oil inlet port.

41. Disconnect engine oil outlet hose (53) coupling nut (56) from aft engine oil outlet port.

42. Remove engine oil inlet and engine oil outlet hoses (51 and 53) with clamps (57) remaining attached.



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CAUTION

To prevent engine failure, electrical connector containing FADEC wiring shall be carefully protected after it is disconnected.

43. Disconnect FADEC/ECU electrical connector (58).

44. Disconnect starter-generator electrical connector (59) from engine deck.

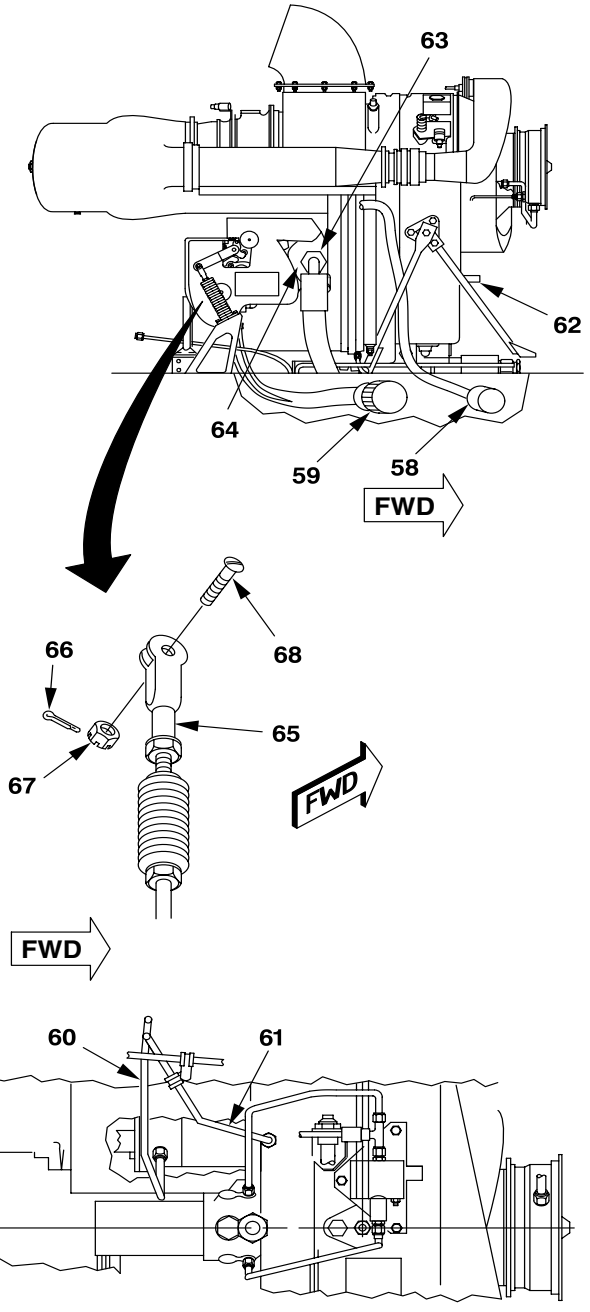
45. Disconnect HMU seal drain tube (60).

46. Disconnect starter generator case lubrication drain tube (61) from reducer.

47. Disconnect upper magnetic chip detector electrical connector (62).

48. Disconnect main engine fuel hose (63) from HMU inlet fitting (64).

49. Disconnect Controlex cable (65) from HMU by removing cotter pin (66), nut (67), and screw (68). Discard cotter pin.



BOTTOM OF ENGINE VIEW LOOKING UP

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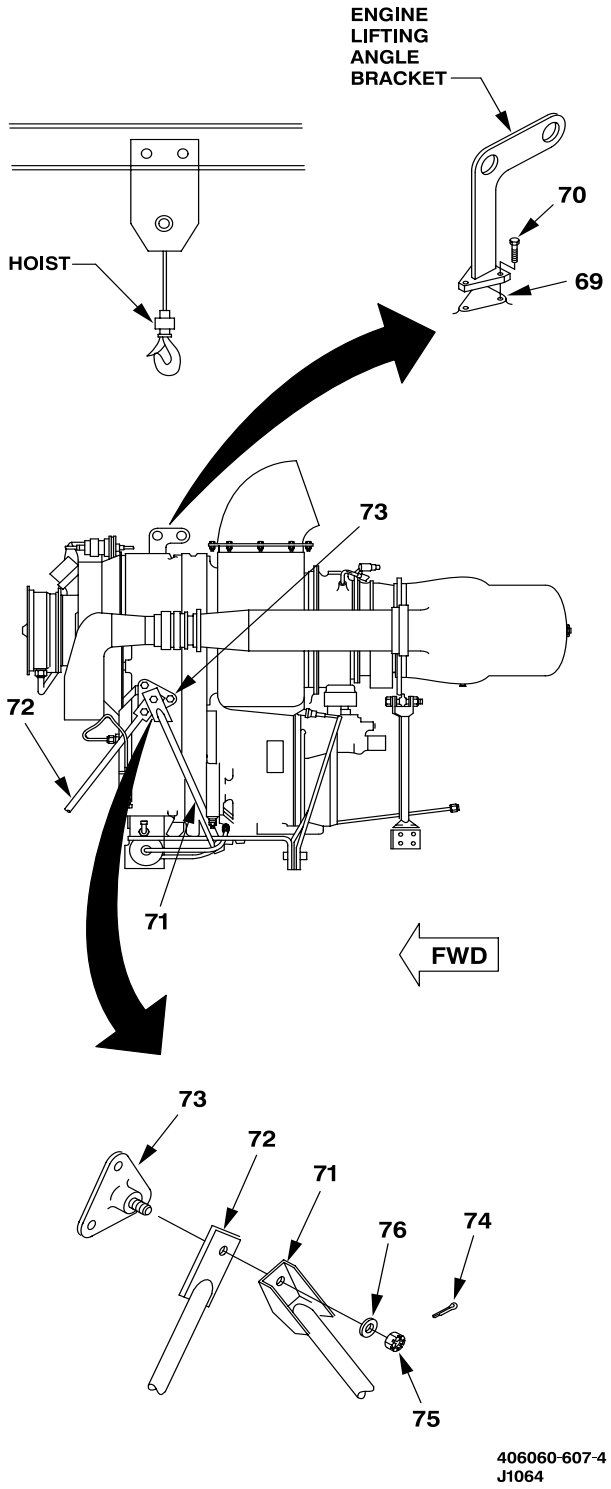
4-1-2. ENGINE ASSEMBLY (OH-58D(R)) — REMOVAL (CONT)

50. Install engine lifting angle bracket (B10) on engine gearbox pad (69) with three bolts (70). Torque bolts (70) **160 TO 190 INCH-POUNDS**.

51. Attach hoist (B69) to engine lifting angle bracket (B10) and take up slack on hoist.

52. Disconnect engine mount legs (71 and 72) from trunnion (73) by removing cotter pin (74), nut (75), and washer (76). Discard cotter pin.

53. Repeat step 52. for engine mounts on opposite side.



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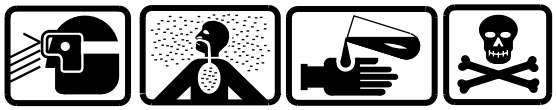
54. Place suitable container (B101) directly below coupling nut (77).

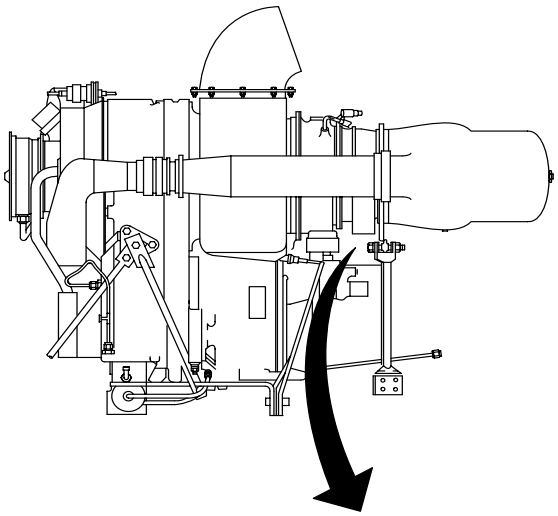


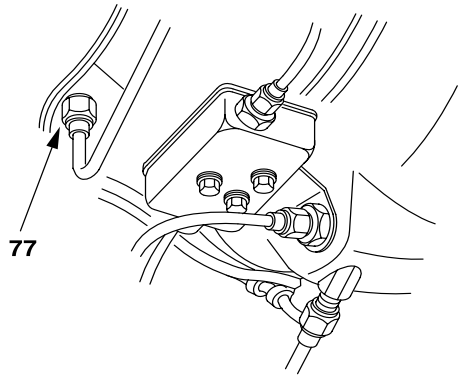
Lubricating Oil

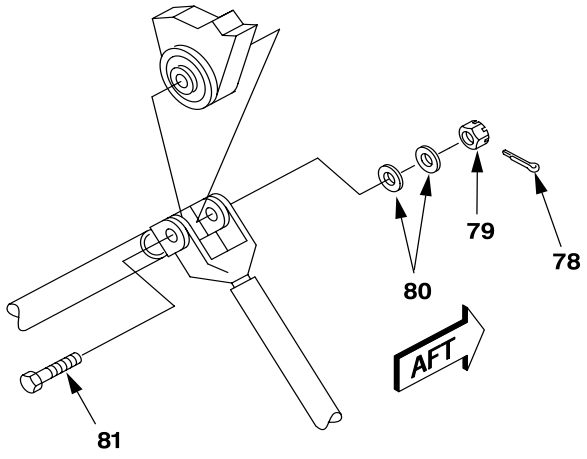
55. Disconnect coupling nut (77). Allow all oil to drain.

56. Disconnect aft engine mount from aft engine mount legs by removing cotter pin (78), nut (79), two washers (80), and bolt (81). Discard cotter pin.

57. Connect coupling nut (77).







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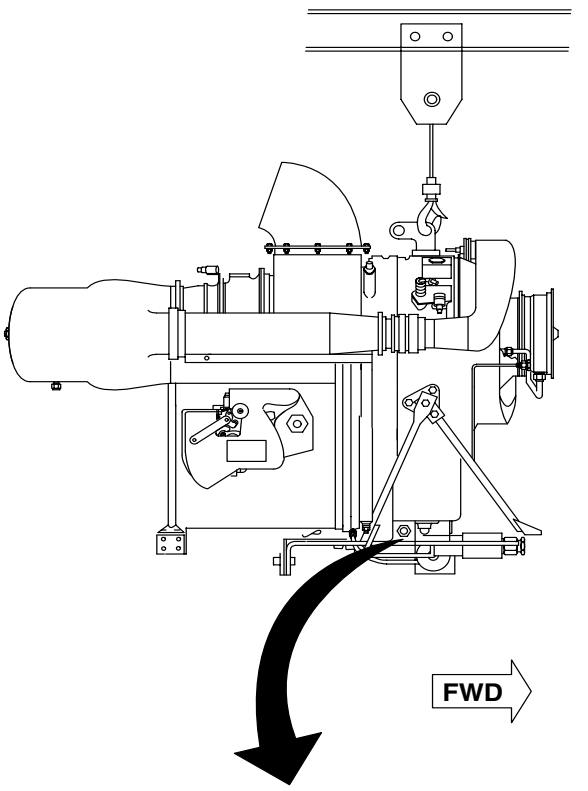
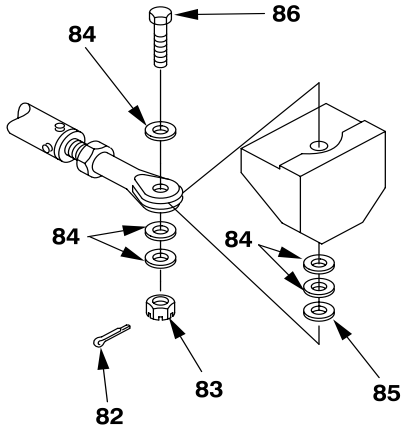
58. Disconnect lower leg from airframe attachment by removing cotter pin (82), nut (83), five washers (84) and washer (85), and bolt (86). Discard cotter pin.

CAUTION

Before lifting engine from airframe, engine, wiring, hoses, and tubes shall be free of all airframe attachments and forward firewall shall be moved forward allowing clearance for engine removal.

59. Lift engine from airframe.





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NOTE

Steps 60. through 70. must be accomplished if engine is to be installed in engine stand.

60. Remove engine mount trunnion (73) by removing lockwire, three bolts (87) and washers (88) from trunnion. Discard lockwire.

61. Repeat step 60. on opposite side of engine.

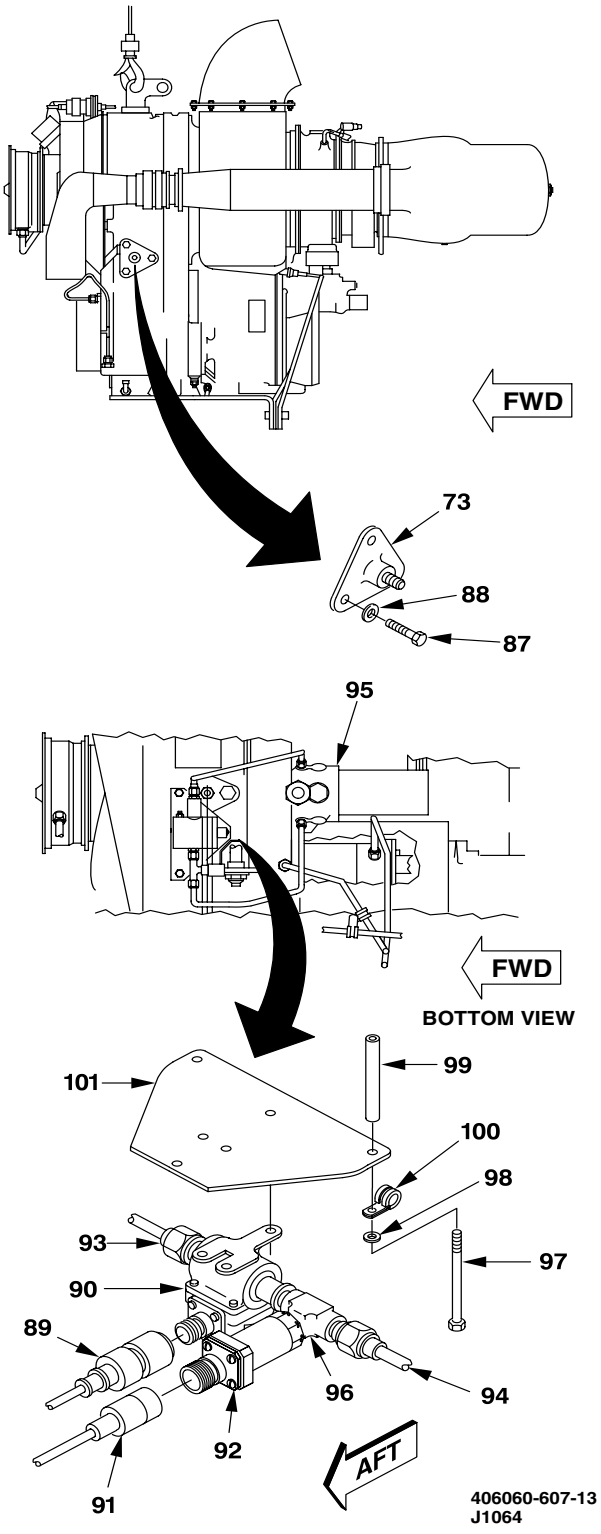
62. Disconnect electrical connector (89) from differential pressure switch assembly (90).

63. Disconnect electrical connector (91) from low fuel pressure warning switch (92).

64. Disconnect fuel differential pressure switch fuel lines (93) and (94) from fuel filter assembly (95), switch assembly (90), and tee fitting (96).

65. Remove three bolts (97), washers (98), spacers (99), and clamp (100) from mounting bracket (101).

66. Retain all parts for installation.



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4-1-2. ENGINE ASSEMBLY (OH-58D(R)) — REMOVAL (CONT)

67. Remove lower engine mount leg by removing cotter pin (102), nut (103), three washers (104) and washer (105). Discard cotter pin.

68. Cut lockwire from two bolts (106). Discard lockwire.

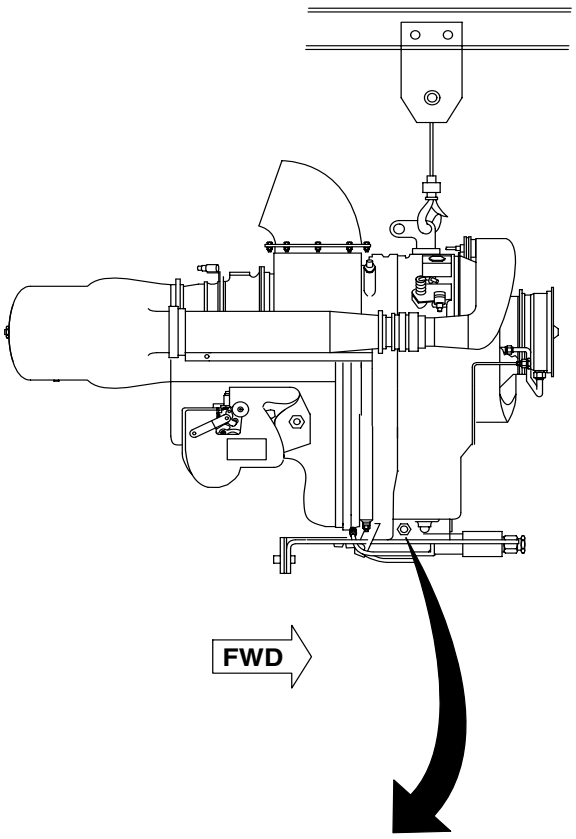
69. Remove bolts (106) with washers (107).

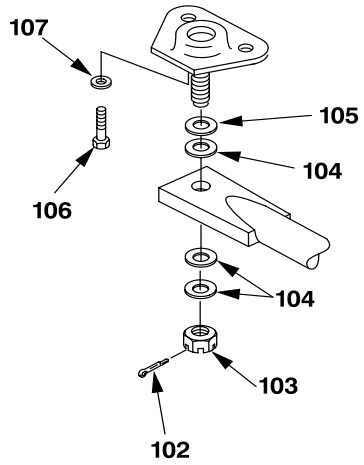
70. Retain all parts for installation.

71. Install engine in engine stand (B161) (TM 55-2840-256-23).

FOLLOW-ON MAINTENANCE

Remove Electronic Control Unit (ECU) (Task 9-7-4) (ECU and engine are shipped as a unit only if engine is replaced.)





END OF TASK

4-1-3. ENGINE — DISASSEMBLY

This task covers: Disassembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powerplant Tool Kit (B179)
Engine Lifting Angle Bracket (B10)
Wrench (B216)
Wrench (B219)
Wrench (B217)
Wrench (B221)
Socket (B157)
Socket (B154)
Socket (B153)

Personnel Required:
68B Aircraft Powerplant Repairer

References:
TM 55-2840-256-23 (OH-58D)
TM 1-2840-263-23 (OH-58D(R))

Equipment Condition:
Engine In Turnover Stand (TM 55-2840-256-23) (OH-58D)
Engine In Turnover Stand (TM 1-2840-263-23) (OH-58D(R))

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CAUTION

To prevent contamination of equipment, all opened hoses, tubes, lines, fittings, and ports shall be capped or plugged.

1. Remove engine lifting angle bracket (B10) by removing three bolts (1).

2. Remove bleed air overboard fitting (2) by removing four screws (3) with washers (4).

3. Remove bleed air heater tube (5) by cutting lockwire and removing three bolts (6). Remove tube with gasket (7) from scroll (8), and discard gasket.

4. Remove oil tank vent union (9) with packing (10). Discard packing.

5. Remove engine torque transducer restrictor (11) with packing (12). Discard packing.

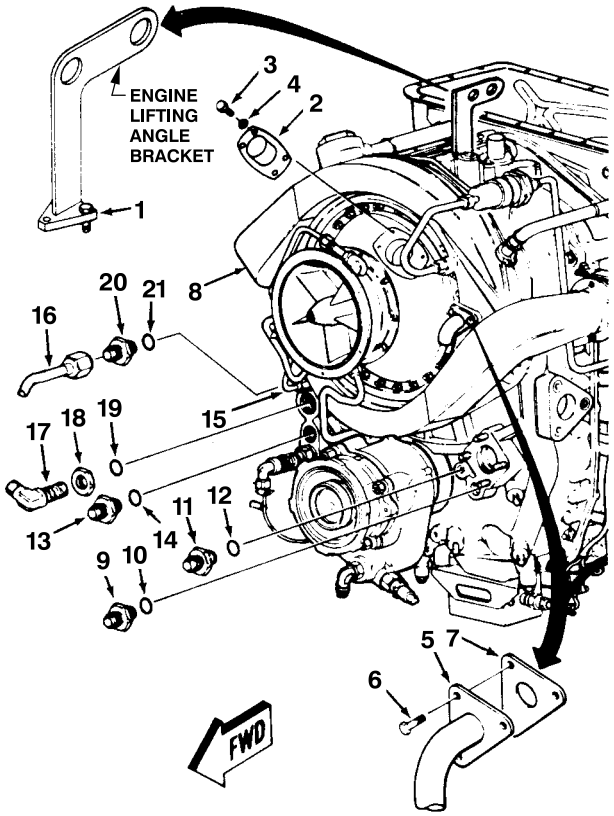
6. Remove engine oil outlet reducer (13) with packing (14). Discard packing.

7. Disconnect number one bearing pressure line (15).

8. Remove oil pressure transducer line (16).

9. Remove engine oil inlet elbow (17) with nut (18) and packing (19). Discard packing.

10. Remove engine oil pressure transducer restrictor (20) with packing (21). Discard packing.



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11. Remove exhaust duct (22) by removing 20 nuts (23), washers (24), and bolts (25).

12. Install a protective cover over exhaust opening.

CAUTION

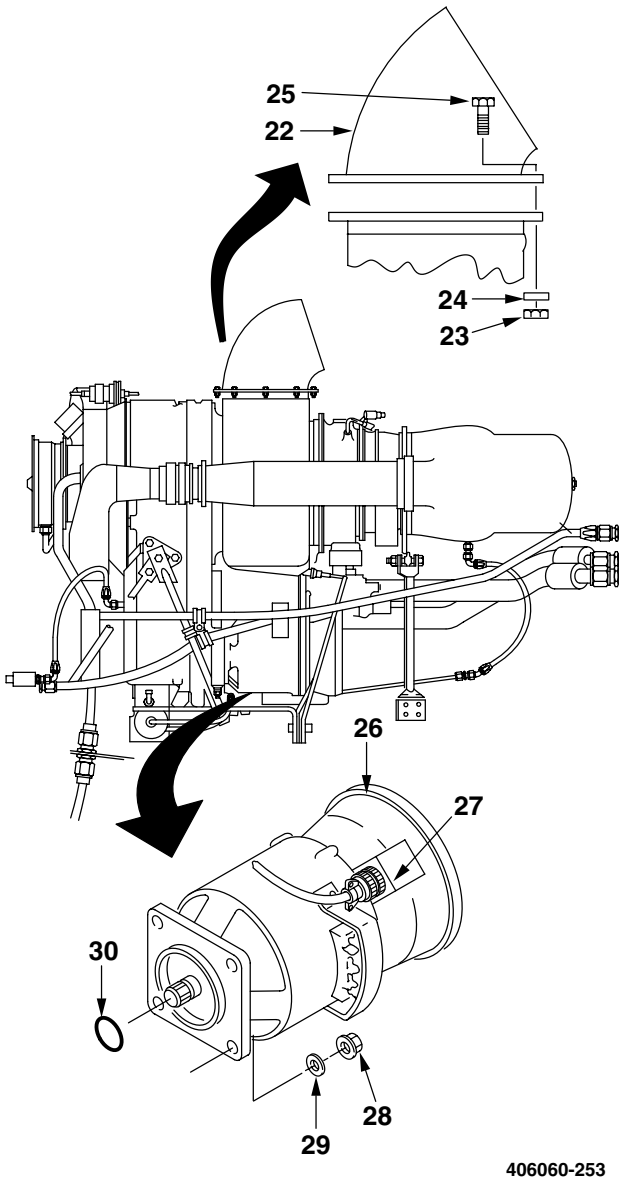
To prevent binding shaft, AC generator shall be supported during removal.

13. Remove AC generator (26) as follows:

a. Disconnect electrical connector (27).

b. Remove four nuts (28) with washers (29).

c. Remove AC generator (26) with packing (30). Discard packing.



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4-1-3. ENGINE — DISASSEMBLY (CONT)

14. Remove electrical harness (31) as follows:

a. Remove screw (32), nut (33), and washer (34) from clamp (35).

b. Remove nut (36), washer (37), and screw (38) from bracket (39).

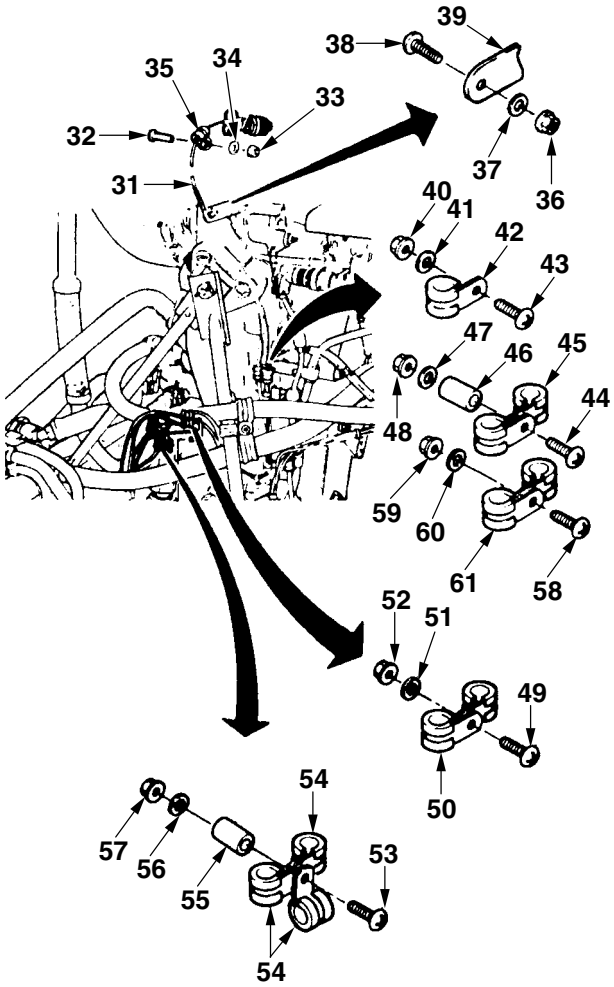
c. Remove nut (40), washer (41), clamp (42), and screw (43).

d. Remove screw (44), two clamps (45), spacer (46), washer (47), and nut (48).

e. Remove screw (49), two clamps (50), washer (51), and nut (52).

f. Remove screw (53), three clamps (54), spacer (55), washer (56), and nut (57).

g. Remove screw (58), nut (59), and washer (60) from two clamps (61) on start counter wire.



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h. Tag and remove electrical leads (62 and 63) from starter-generator (64).

15. Remove fuel control lever (65).

CAUTION

To prevent binding shaft, starter-generator shall be supported during removal.

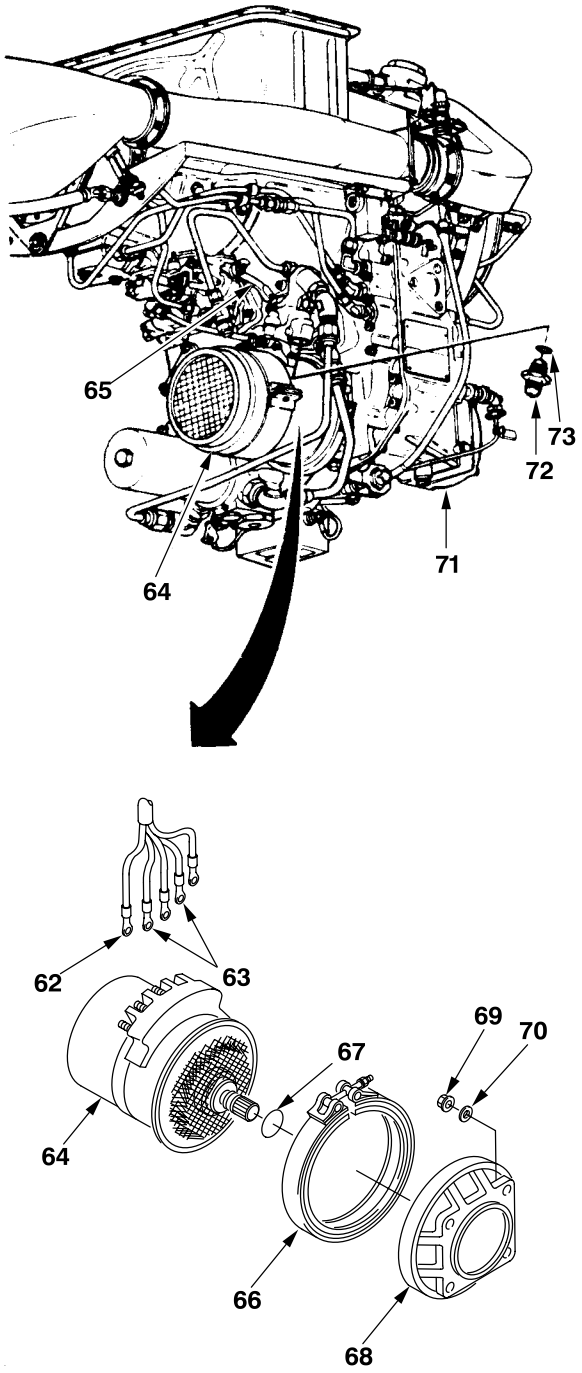
16. Remove lockwire and remove QAD clamp (66) and starter-generator (64).

17. Remove and discard packing (67).

18. Remove QAD adapter (68) by removing four nuts (69) with washers (70).

19. Remove freewheeling unit (71) (Task 6-5-1).

20. Remove engine fuel inlet reducer (72) with packing (73). Discard packing.



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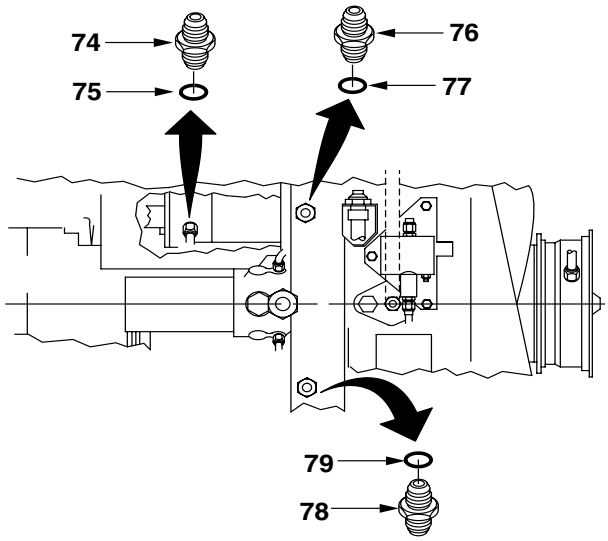
4-1-3. ENGINE — DISASSEMBLY (CONT)

21. Remove fuel pump seal drain union (74) with packing (75). Discard packing.

22. Remove starter-generator drain reducer (76) with packing (77). Discard packing.

23. Remove AC generator drain reducer (78) with packing (79). Discard packing.

24. Prepare engine for shipment and storage per TM 55-2840-256-23 (OH-58D)/TM 1-2840-263-23 (OH-58D(R)).



**BOTTOM OF ENGINE
VIEW LOOKING UP**

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END OF TASK

4-1-4. ENGINE — ASSEMBLY

This task covers: Assembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powerplant Tool Kit (B179)
Torque Wrench (B235)
Torque Wrench (B236)
Torque Wrench (B237)
Torque Wrench (B239)
Torque Wrench (B240)
Torque Wrench (B241)
Crowfoot (B23)
Crowfoot (B24)
Crowfoot (B27)
Crowfoot (B29)
Crowfoot (B30)
Crowfoot (B31)
Hex Bit Driver (B157)
Vacuum (B111)
Socket (B153)
Socket (B293)
Wrench (B216)
Wrench (B217)

Material:
Drycleaning Solvent (D199)
Acetone (D2)
Lockwire (D132)
Lubricating Oil (D140 or D233)
Zinc Chromate Primer (D161)
Rubber Gloves (D111)
Antiseize Compound (D45)
Corrosion Preventive Compound (CPC) (D82)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68B Aircraft Powerplant Repairer

References:
TM 55-2840-256-23 (OH-58D)
TM 1-2840-263-23 (OH-58D(R))

Equipment Condition:
Engine In Turnover Stand
(TM 55-2840-256-23 (OH-58D)
Engine In Turnover Stand
(TM 1-2840-263-23 (OH-58D(R))

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4-1-4. ENGINE — ASSEMBLY (CONT)

1. Remove two covers (1) from engine accessory gearbox output shaft (2) by removing six nuts (3) and washers (4).

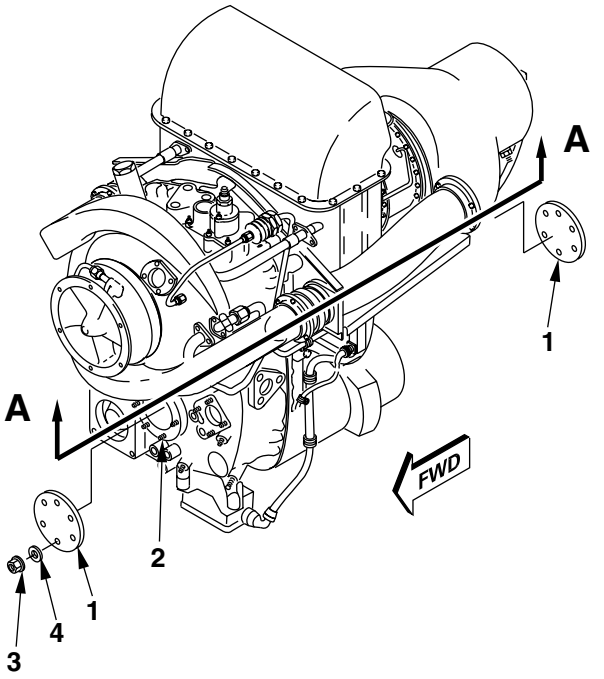
CAUTION

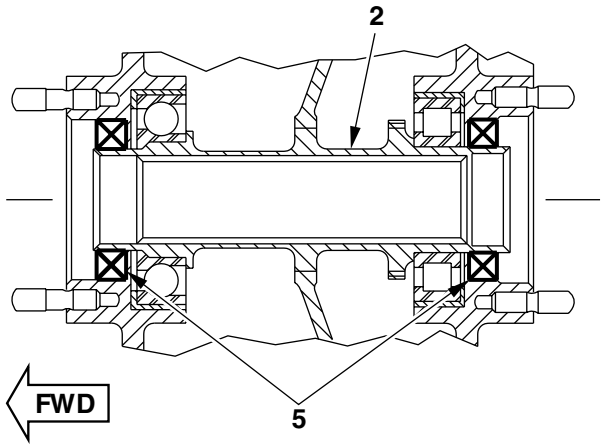
Prying between engine gearbox seal cavity and seal is not allowed. Damage to seal cavity will render engine unserviceable. Caution shall be used to avoid damaging engine gearshaft or contaminating gearshaft bearings, thereby rendering engine unserviceable.

NOTE

Only shipping seals have to be replaced. If double lip seals are installed, they do not have to be replaced.

2. Remove two existing engine accessory gearbox seals (5) and replace with double lip engine accessory gearbox seals (Task 4-1-11).





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3. Install freewheeling unit (Task 6-5-7).

4. Install packing (6) on AC generator drain reducer (7).

Lubricating Oil

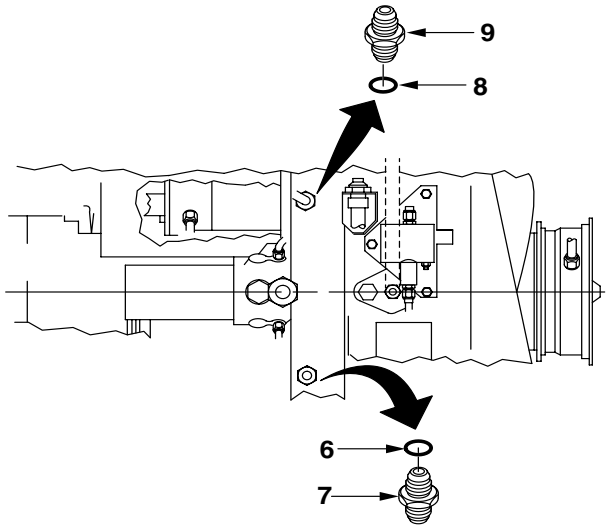
5. Coat packing (6) and threads with lubricating oil (D140 or D233).

6. Install AC generator drain reducer (7) with packing (6).

7. Torque reducer (7) **65 INCH-POUNDS**.

8. Install packing (8) on starter-generator drain reducer (9).

9. Coat packing (8) and threads with lubricating oil (D140 or D233).



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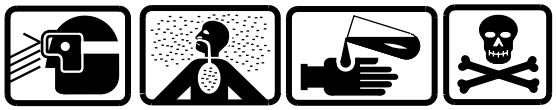
10. Install starter-generator drain reducer (9) with packing (8).

11. Torque reducer (9) **65 INCH-POUNDS**.

12. Install packing (10) on fuel pump seal drain union (11).



Lubricating Oil

13. Coat packing (10) and threads with lubricating oil (D140 or D233).

14. Install union (11) with packing (10).

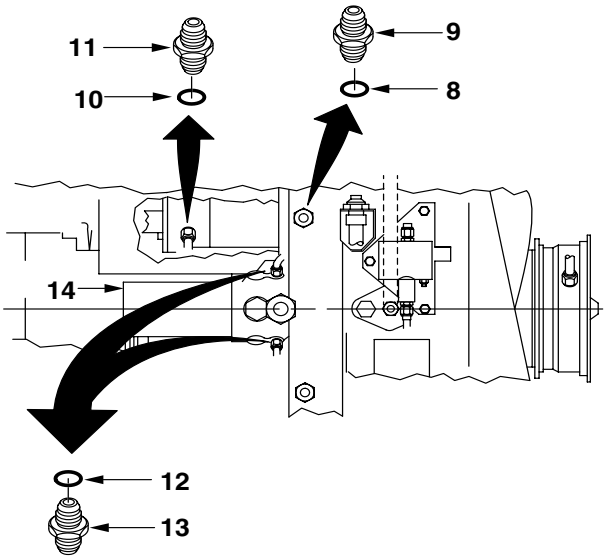
15. Torque union (11) **30 TO 40 INCH-POUNDS**.

16. Install two packings (12) on two unions (13).

17. Coat packings and threads with lubricating oil (D140 or D233).

18. Install two unions (13) with packing (12) into fuel filter assembly (14).

19. Torque unions (13) **65 INCH-POUNDS**.



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406060-583
J0442

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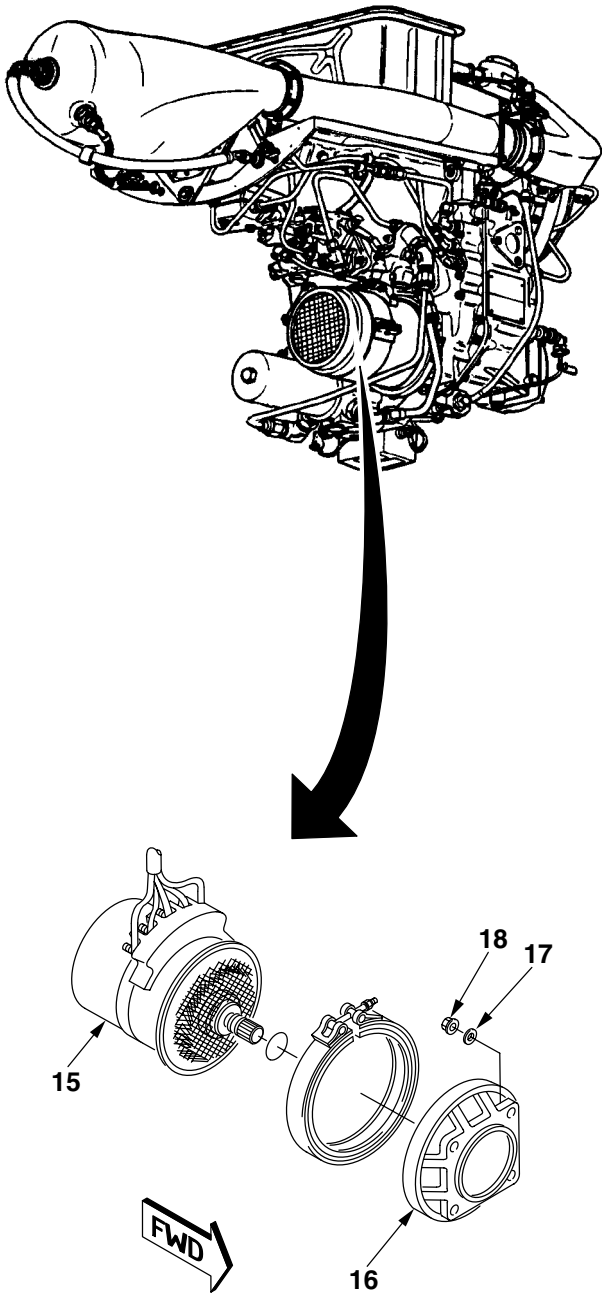
20. Install starter-generator (15) as follows:

Acetone

a. Clean mating splines of accessory drive gearbox and starter-generator (15) with acetone (D2).

b. Install QAD adapter (16) with four washers (17) and four nuts (18).

c. Torque nuts (18) **100 TO 140 INCH-POUNDS**.



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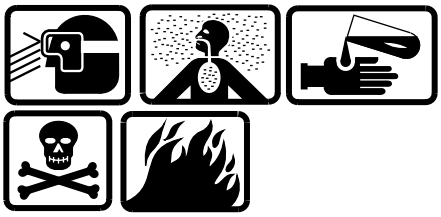
Lubricating Oil

d. Install packing (19) on splines of starter-generator (15). Coat splines and packing with lubricating oil (D140 or D233).



Zinc Chromate Primer

e. Apply coat of unreduced zinc chromate primer (D161) to inside surface of QAD clamp (20).

CAUTION

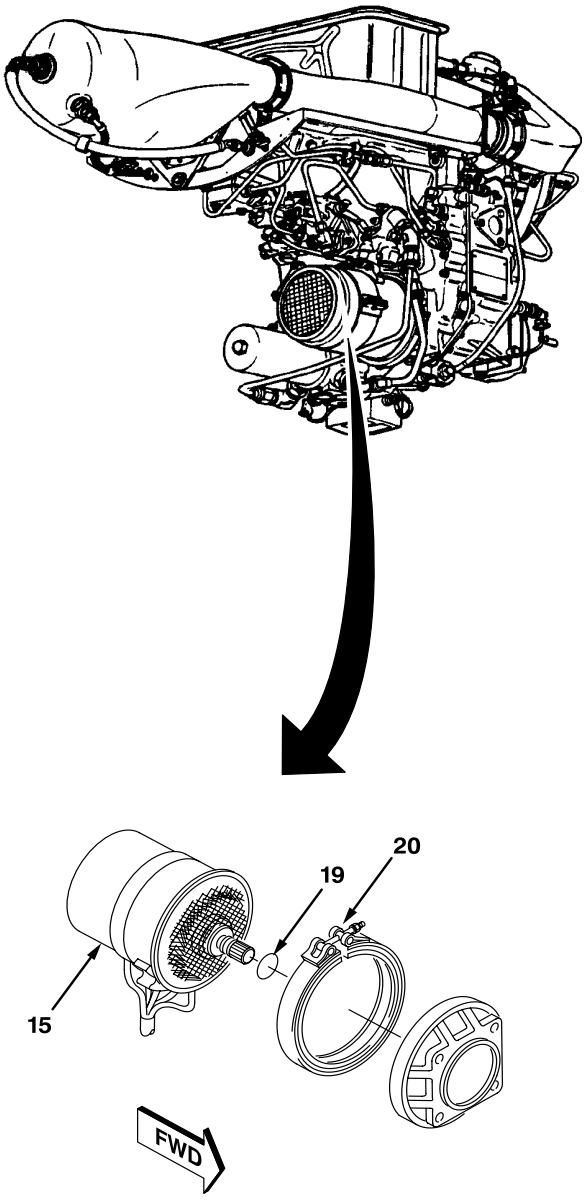
Starter-generator shall be supported until clamp is torqued. Failure to support starter-generator can result in premature failure of shaft.

f. Install starter-generator (15) with electrical harness down.

g. Engage splines and install clamp (20).

h. Torque nut on clamp (20) **40 TO 50 INCH-POUNDS** while tapping clamp with mallet.

i. Secure clamp (20) with lockwire (D132).



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21. Install fuel control lever (21) as follows:

a. Set pointer (22) on fuel control quadrant (23) at 40 degree mark.

b. Position lever (21) with centerline of lever-to-clevis hole (24) **0.900 inch** below throttle shaft (25) centerline plane.

c. Install washer (26) and nut (27).

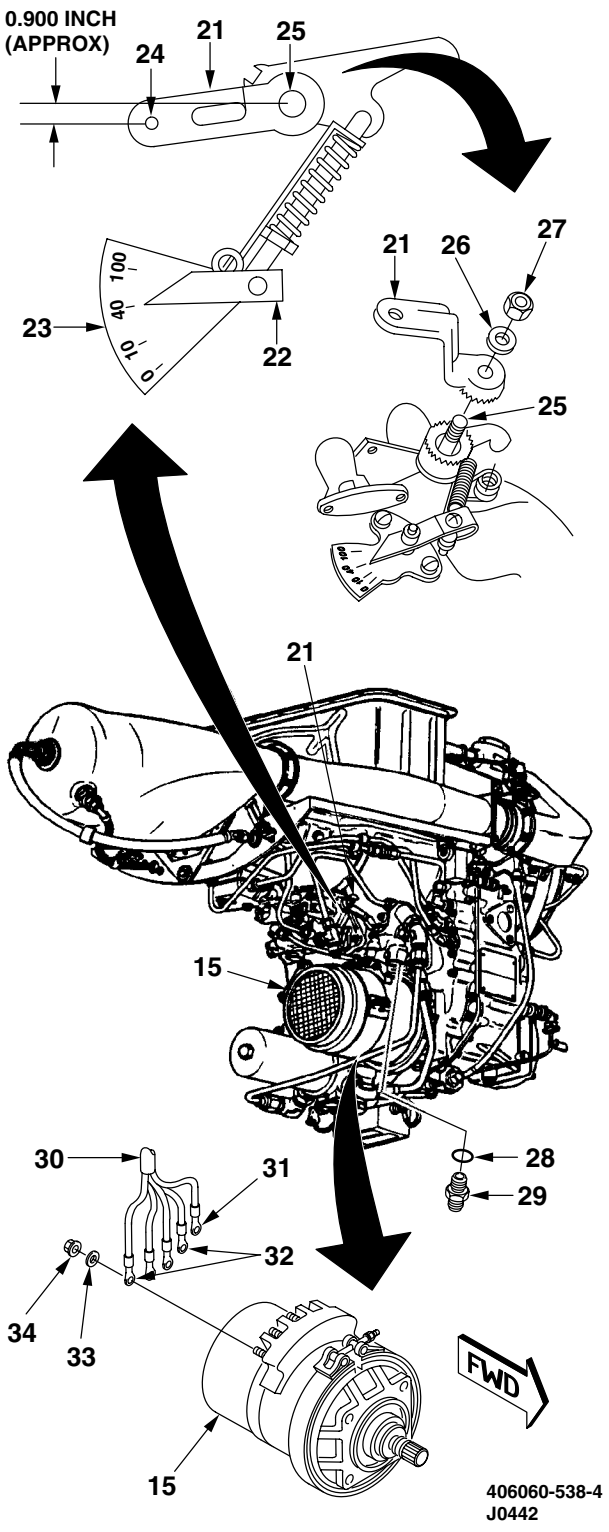
d. Torque nut (27) **40 TO 60 INCH-POUNDS**.

22. Install packing (28) on engine fuel inlet reducer (29) and install reducer.

23. Torque reducer (29) **200 INCH-POUNDS**.

24. Install starter-generator electrical harness (30).

a. Install electrical leads (31 and 32) with washers (33) and nuts (34) to starter-generator (15).



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b. Install clamp assembly (35) with nut (36) and washer (37).

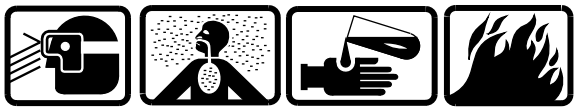
c. Install two clamps (38) with screw (39), spacer (40), washer (41), and nut (42).

d. Install clamp (43) with screw (44), washer (45), and nut (46).

e. Install bracket (47) with screw (48), washer (49), and nut (50).

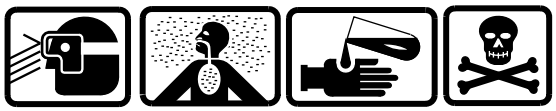
f. Install clamp (51) with screw (52), washer (53), and nut (54).

25. Install AC generator (55) as follows:



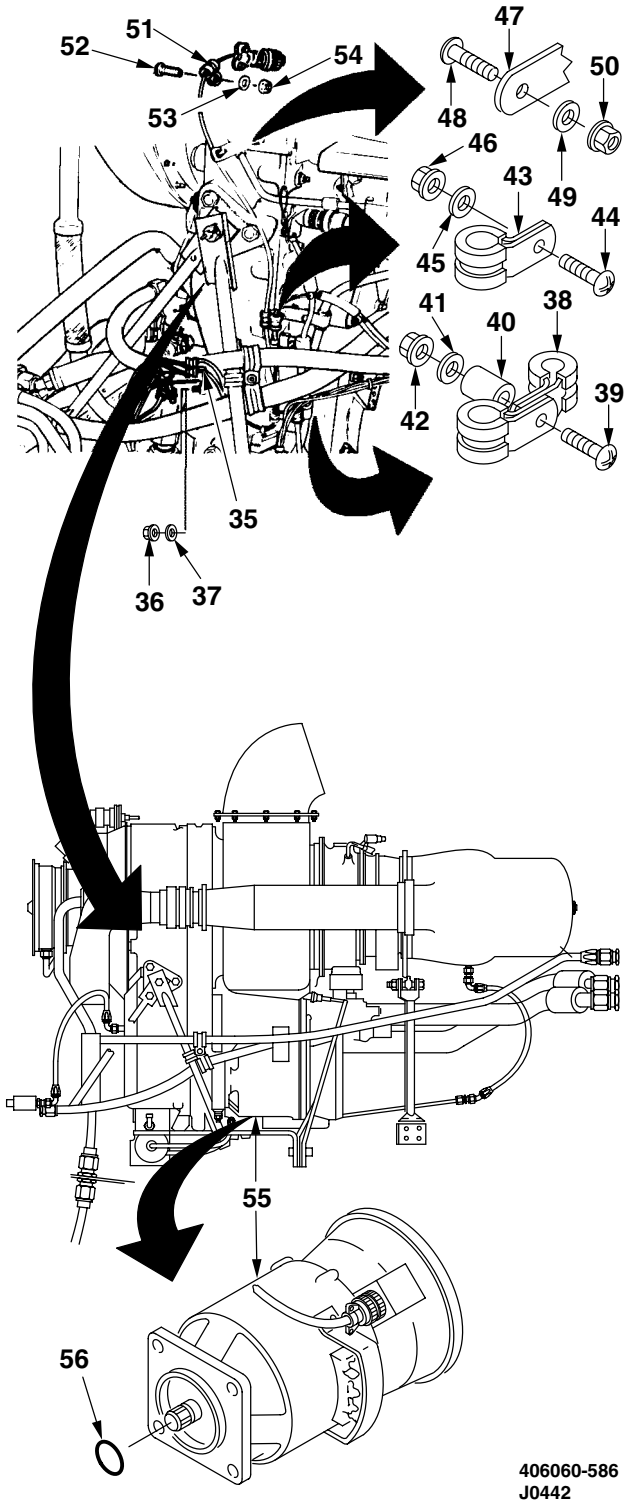
Drycleaning Solvent

a. Clean mating splines of accessory drive gearbox and AC generator (55) with drycleaning solvent (D199).



Lubricating Oil

b. Install packing (56) on AC generator (55) shaft. Coat packing and splines with lubricating oil (D140 or D233).



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CAUTION

AC generator shall be supported during installation to prevent binding shaft.

c. Install AC generator (55) on accessory gearbox, ensuring electrical connector assembly is positioned approximately 120° (rotated left) from top of engine to face outboard on left side of aircraft.

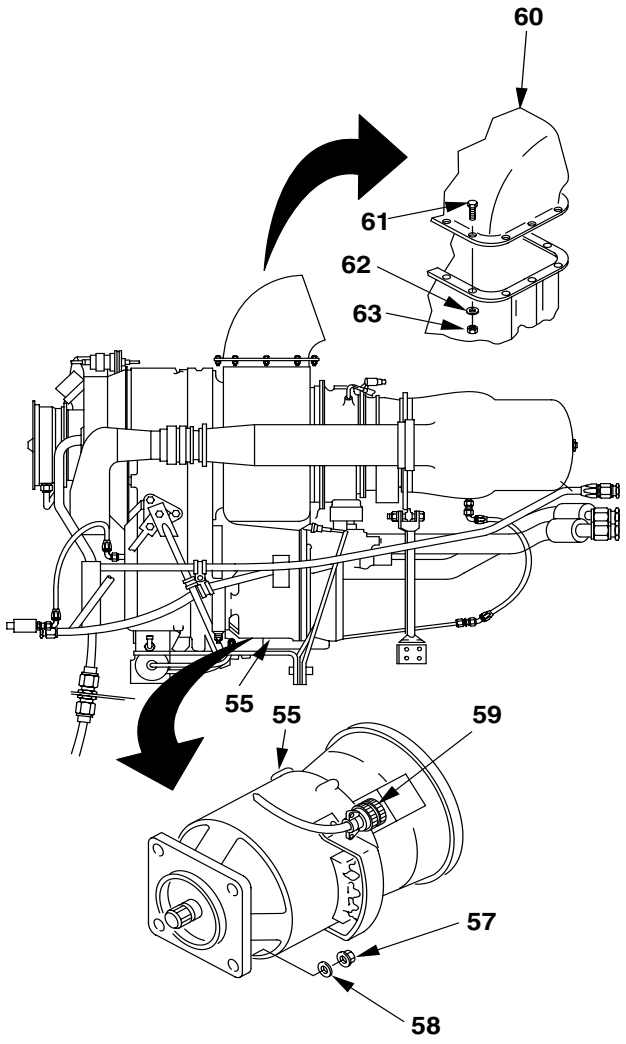
d. Secure with four nuts (57) and four washers (58).

e. Torque nuts (57) **100 TO 140 INCH-POUNDS**.

f. Install electrical connector (59).

26. Install exhaust duct (60) with 20 bolts (61), 20 washers (62), and 20 nuts (63).

27. Torque nuts (63) **20 TO 25 INCH-POUNDS**.



406060-587
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Lubricating Oil

28. Install packing (64) on engine oil pressure transducer restrictor (65). Coat packing and threads with lubricating oil (D140 or D233).

29. Install restrictor (65) with packing (64).

30. Install jamnut (66) and packing (67) on engine oil inlet elbow (68). Coat packing and threads with lubricating oil (D140 or D233).

31. Install number one bearing pressure line (69).

32. Install elbow (68) with nut (66) and packing (67).

33. Position elbow (68) and torque nut (66) **500 INCH-POUNDS**.

34. Install oil pressure transmitter line (70).

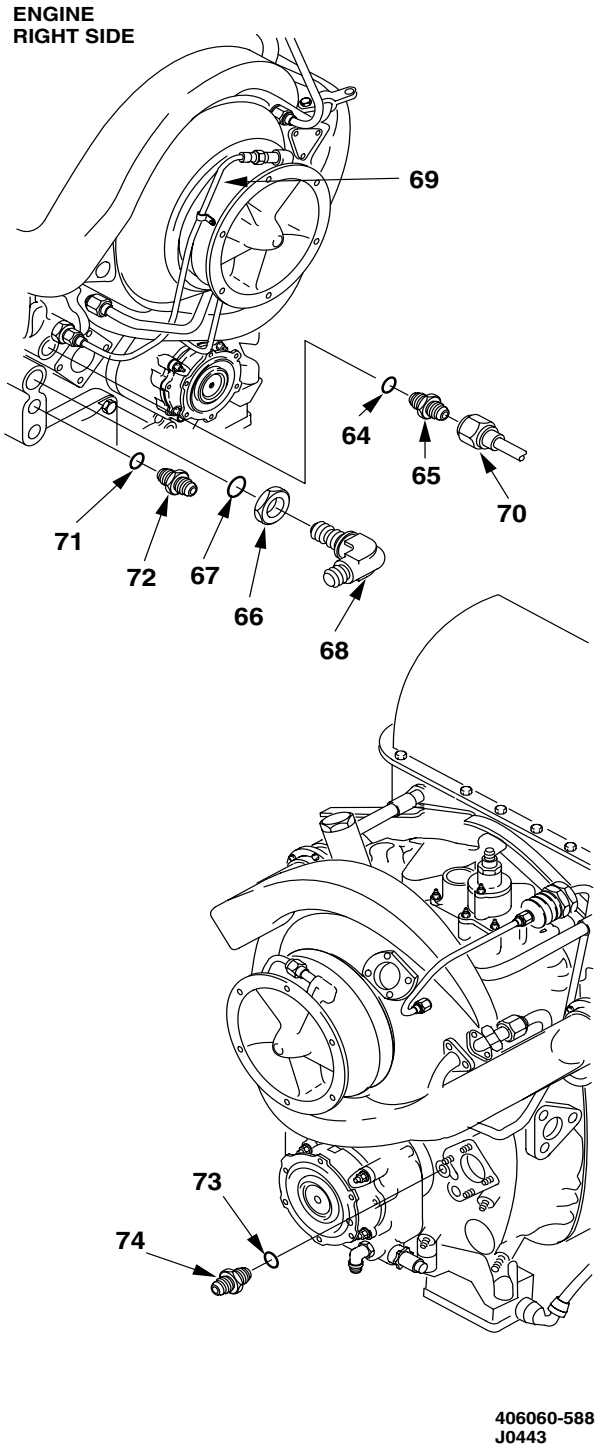
35. Install packing (71) on engine oil outlet reducer (72). Coat packing and reducer threads with lubricating oil (D140 or D233).

36. Install reducer (72) with packing (71).

37. Torque reducer (72) **200 INCH-POUNDS**.

38. Install packing (73) on engine torque transducer restrictor (74). Coat packing and restrictor threads with lubricating oil (D140 or D233).

39. Install restrictor (74) with packing (73). Torque restrictor **65 INCH-POUNDS**.



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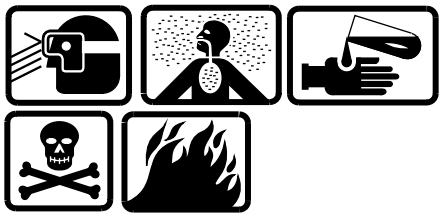
Lubricating Oil

40. Install packing (75) on oil tank vent union (76). Coat packing and union threads with lubricating oil (D140 or D233).

41. Install union (76) with packing (75).



Antiseize Compound

42. Apply antiseize compound (D45) to bolts (77).

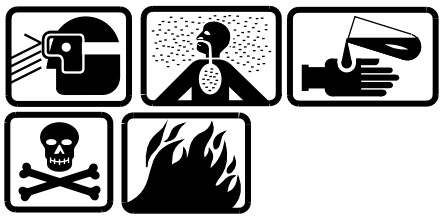
43. Install bleed air heater tube (78) and gasket (79) with three bolts (77).

44. Torque bolts (77) **35 TO 40 INCH-POUNDS**.

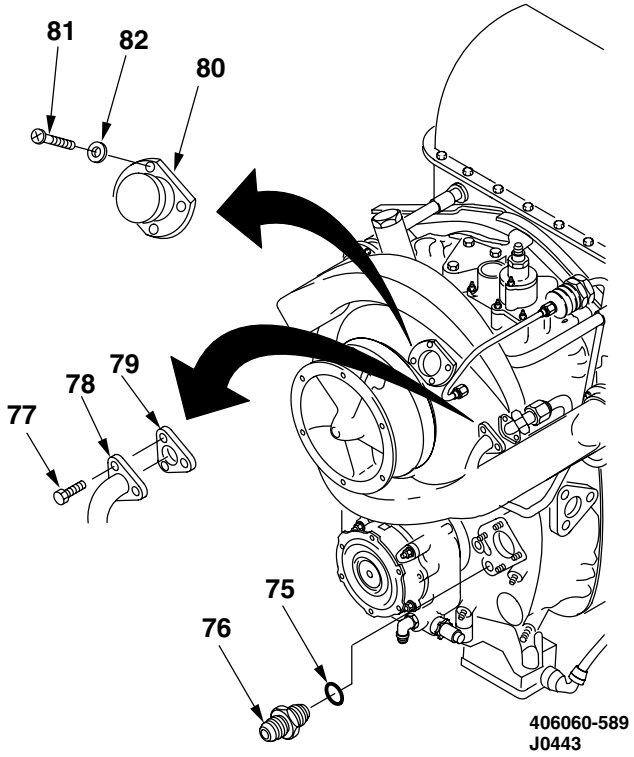
45. Secure bolts (77) with lockwire (D132).

46. Install bleed air overboard fitting (80) and four screws (81) and washers (82).

47. Torque screws (81) **5 INCH-POUNDS**.



Corrosion Preventive Compound



CAUTION

CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals.

48. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads, excluding any metallic or elastomeric bearings or seals that are exposed to the environment.

INSPECT

END OF TASK

4-1-5. ENGINE ASSEMBLY (OH-58D) — INSTALLATION

This task covers: This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
OH-58D

Tools:
Powerplant Tool Kit (B179)
General Mechanic Tool Kit (B178)
Engine Lifting Angle Bracket (B10)
Engine Stand (B161)
Hoist (B69)
Maintenance Stand (2) (B162)
Wrench (B216)
Wrench (B219)
Wrench (B220)
Torque Wrench (B232)
Torque Wrench (B235)
Torque Wrench (B236)
Torque Wrench (B237)
Torque Wrench (B240)
Torque Wrench (B241)
Torque Wrench (B242)
Plastic 12 Qt. Pail (or suitable substitute) (B101)

Material:
Corrosion Preventive Compound (CPC) (D81)
Lockwire (D131)
Lockwire (D133)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer (2)
68B Aircraft Powerplant Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 55-2840-256-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)
Engine Cowl Assembly Removed (Task 2-2-50)
Air Induction Cowl Removed (Task 4-2-1)
Engine Oil System Drained (Task 1-4-5)
Freewheeling Unit Drained (Task 1-4-7)
Engine to Transmission Driveshaft Removed (Task 6-2-1)
Forward Shaft Assembly Removed (Task 6-6-1)
Engine Inlet and Engine Exhaust Covered With Protective Covers (Task 1-7-3)

GO TO NEXT PAGE

CAUTION

- If engine replacement is caused by internal failure and metal contamination is determined, oil cooler shall be replaced and oil tank lines and hoses flushed clean.
- External scavenge engine oil filter shall be replaced prior to installation. Failure to accomplish the above may result in contamination of new engine.

NOTE

- When installing engine, correct electronic supervisory control shall be used. ESC 23054294 shall be used with engine 23055439, and ESC 23030755 shall be used with engine 23035714.
- Prior to installing a new or overhauled engine, engine shipping gaskets, seals, and hardware shall be removed. Shipping hardware shall not be used on replacement engine.

1. Install engine lifting angle bracket (B10) on engine gearbox pad (1) with three bolts (2). Torque bolts (2) **160 TO 190 INCH-POUNDS**.

2. Attach hoist (B69) to engine lifting angle bracket (B10) and take up slack on hoist.

3. Remove engine from engine stand (B161) (TM 55-2840-256-23).

4. Install left and right trunnions (3) on forward pads (4) of engine gearbox with three washers (5) and bolts (6).

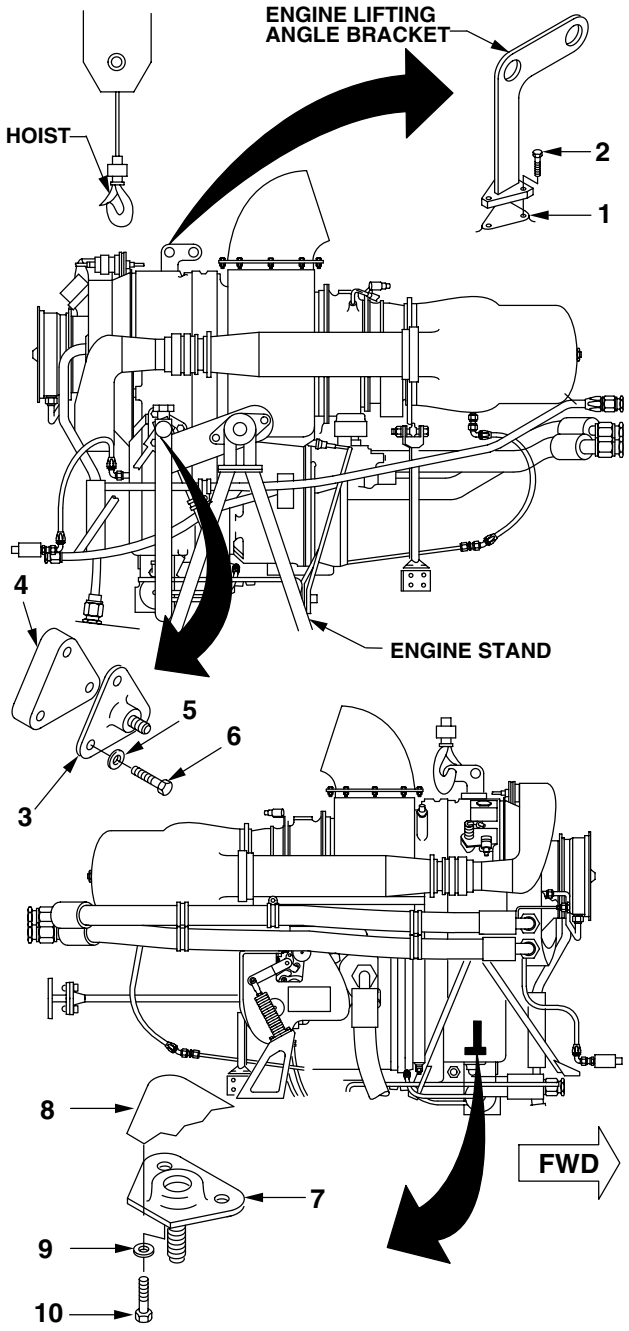
5. Torque bolts (6) **70 TO 90 INCH-POUNDS**.

6. Secure bolts (6) with lockwire (D133).

7. Install lower trunnion (7) on lower engine pad (8) with two washers (9) and two bolts (10).

8. Torque bolts (10) **70 TO 90 INCH-POUNDS**.

9. Secure bolts (10) with lockwire (D133).



406060-535
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10. Install fuel differential pressure switch assembly (11) with spacers (12) through bracket (13).

11. Secure with washers (14) and nuts (15).

12. Attach bracket (13) to engine case with bolts (16), washers (17), and spacers (18).

13. Torque bolts (16) **30 TO 40 INCH-POUNDS**.

NOTE

Differential pressure switch connector may have to be installed as engine is lowered if wire is too short.

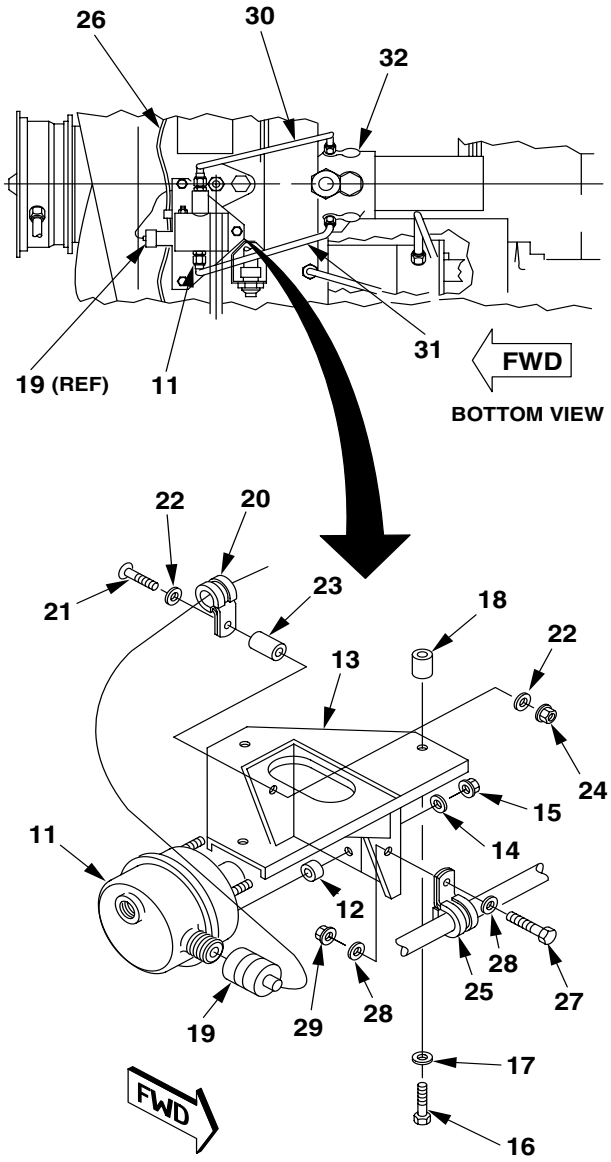
14. Connect electrical connector (19) to differential pressure switch assembly (11).

15. Install clamp (20) on wiring harness with screw (21), washers (22), spacer (23), and nut (24).

16. Install clamp (25) on engine wiring harness (26) on bracket (13) with bolt (27), washers (28), and nut (29).

17. Connect fuel differential pressure lines (30 and 31) to fuel filter assembly (32) and to differential pressure switch assembly (11).

18. Torque differential pressure lines (30 and 31) coupling nuts **60 INCH-POUNDS**.



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19. Position maintenance stands (B162) on both sides of helicopter.

CAUTION

Before hoisting engine onto helicopter airframe, forward firewall shall be moved forward to allow clearance for engine installation.

20. Position forward firewall (33) as necessary (Task 4-8-1). Hoist engine onto helicopter airframe. Ensure wiring, hoses, and tubes are free of engine and airframe attachments.

21. Connect left and right engine mounts (34) to trunnions (3) with nuts (35) and washers (36).

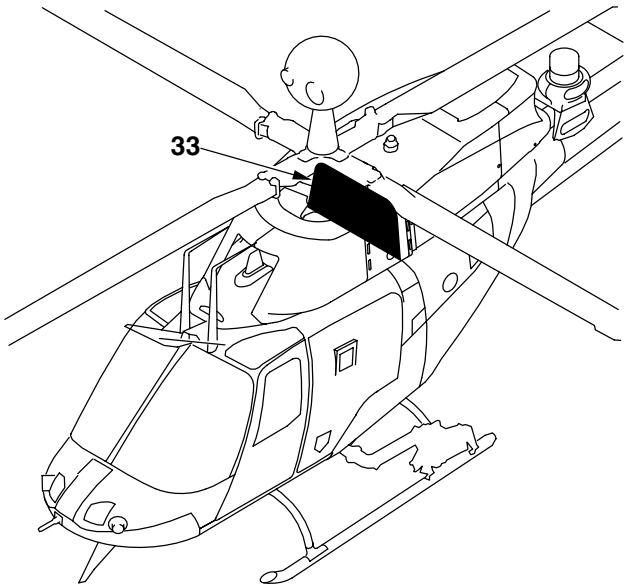
22. Torque nuts (35) **70 TO 90 INCH-POUNDS**.

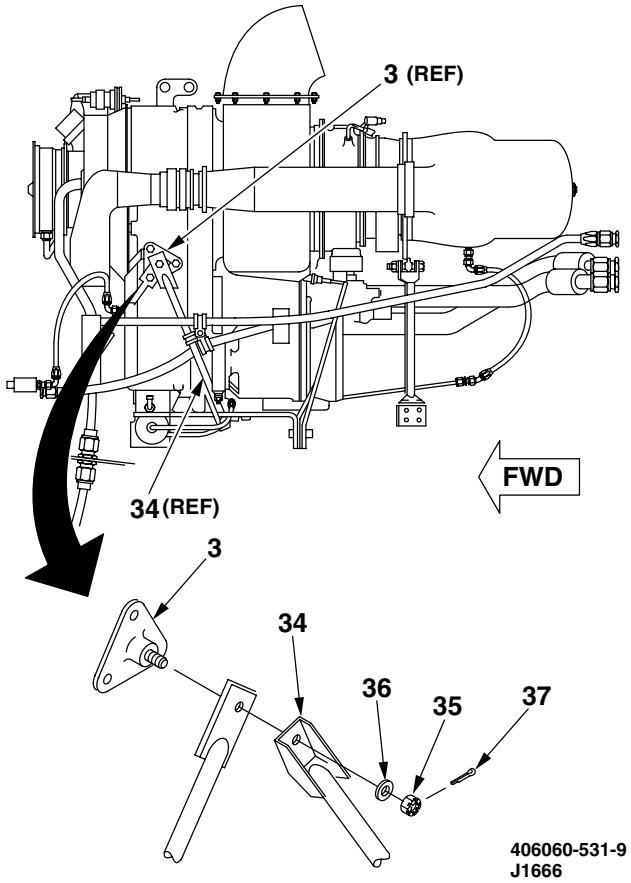
WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct installation of cotter pins is a characteristic critical to flight safety.

23. Install cotter pins (37) through nuts (35).





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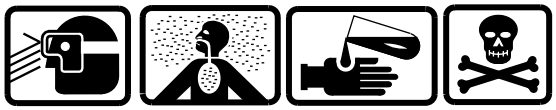
NOTE

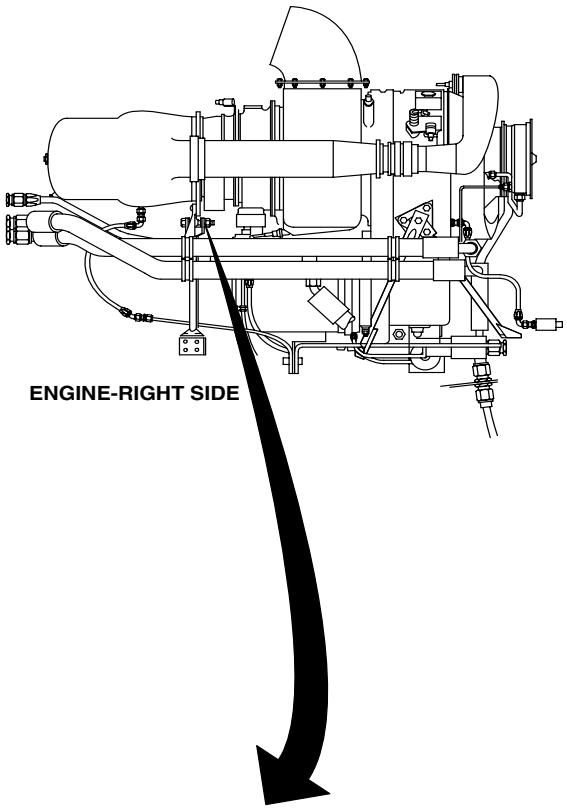
Steps 24. and 25. shall be accomplished to allow access to aft engine mount attaching nut.

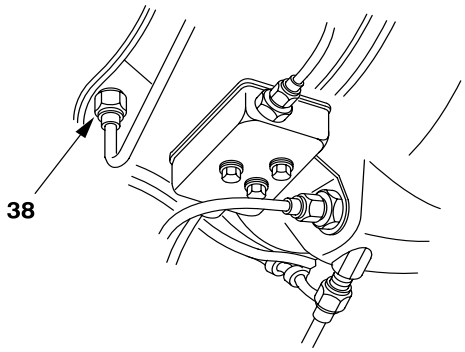
24. Place suitable container (B101) directly below coupling nut (38).



Lubricating Oil

25. Disconnect coupling nut (38). Allow all oil to drain.





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26. Connect legs (39) to aft engine mount (40) with bolt (41), two washers (42), and nut (43).

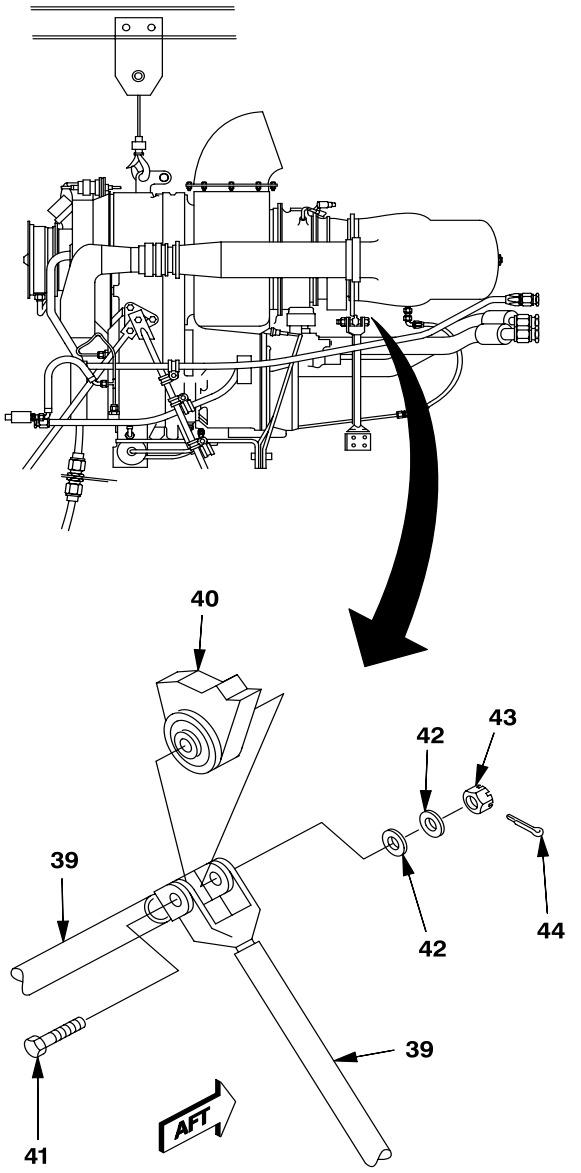
27. Torque nut (43) **10 TO 15 INCH-POUNDS**.

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct installation of cotter pin is a characteristic critical to flight safety.

28. Install cotter pin (44) through nut (43).



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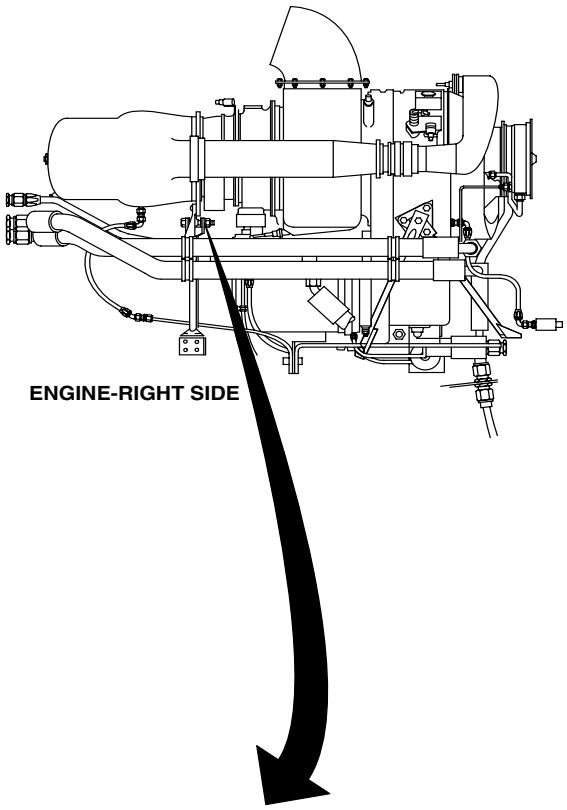
4-1-5. ENGINE ASSEMBLY (OH-58D) — INSTALLATION (CONT)

29. Connect coupling nut (38).

30. Torque coupling nut (38) **150 TO 200 INCH-POUNDS**.



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NOTE

Lower mounting leg attach bolt shall not preload on reassembly.

31. To check and/or obtain proper length of lower leg (45), position lower leg onto airframe attachment (46) and trunnion (7). Attempt to insert bolt (47) through clevis and airframe attachment (46). If bolts install without preload (freely drops in place), proceed to step 35. If bolt (47) will not fit freely, remove lockwire from jamnut (48).

32. Adjust lower mounting leg (45) clevis by loosening jamnut (48) while holding clevis jaws. Rotate clevis in half-turn increments until bolt (47) freely drops in place.

33. Torque jamnut (48) **160 TO 190 INCH-POUNDS**.

34. Secure jamnut (48) using lockwire (D132).

NOTE

For proper fit it is permissible to locate thin washer between upper side of fitting and clevis with both thick washers between lower side of fitting and clevis.

35. Install lower leg (45) by placing one thick washer (49) and one thin washer (50) on trunnion (7). Holding washers in place, install mount leg flat side towards trunnion. Place thick washers (49) on trunnion and secure with nut (51).

36. Install lower leg (45) clevis on airframe attachment (46) with bolt (47). Washer stackup will be one thick washer (52) under bolt head and two thick washers (52) and one thin washer (53) between airframe attachment (46) and lower clevis tang. Install two thick washers (52) and nut (54).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

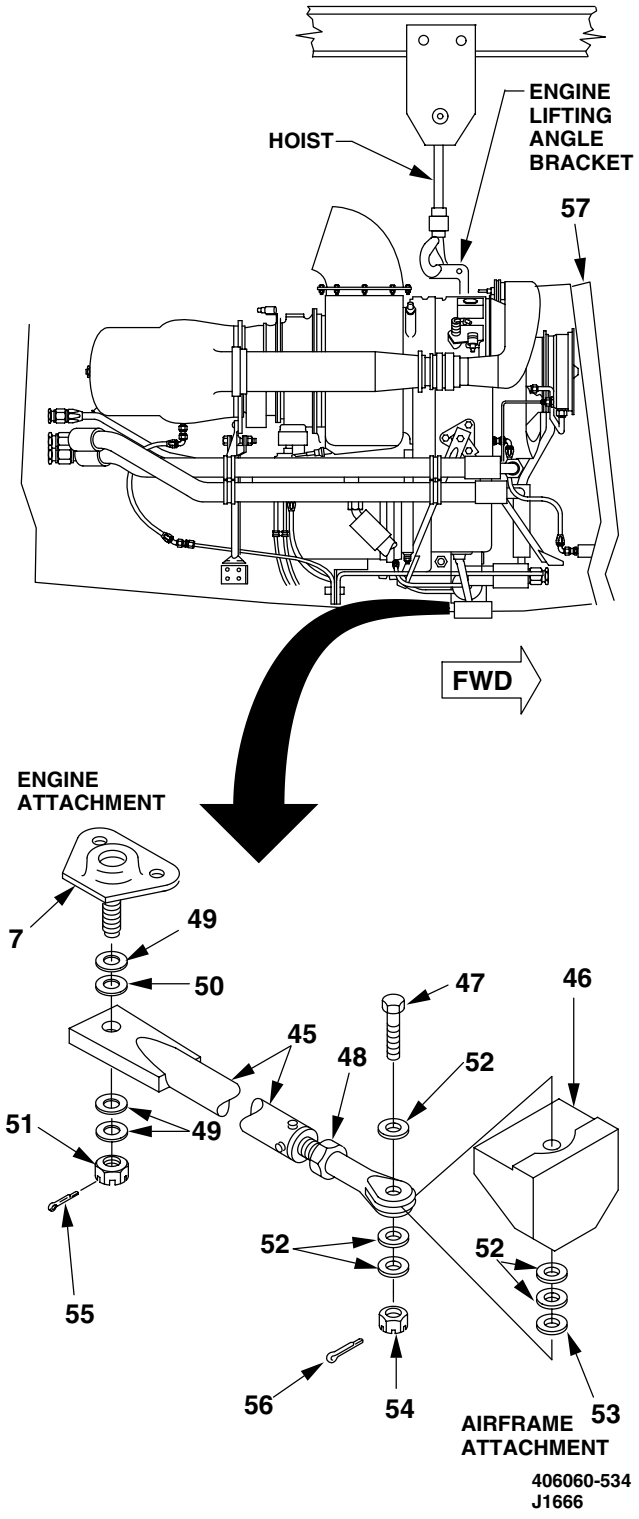
Correct installation of cotter pins is a characteristic critical to flight safety.

37. Torque nuts (54 and 51) **70 TO 90 INCH-POUNDS**.

38. Install cotter pins (55 and 56) through nuts (51 and 54).

39. Remove hoist and engine lifting angle bracket.

40. Reposition forward firewall (57).



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4-1-5. ENGINE ASSEMBLY (OH-58D) — INSTALLATION (CONT)

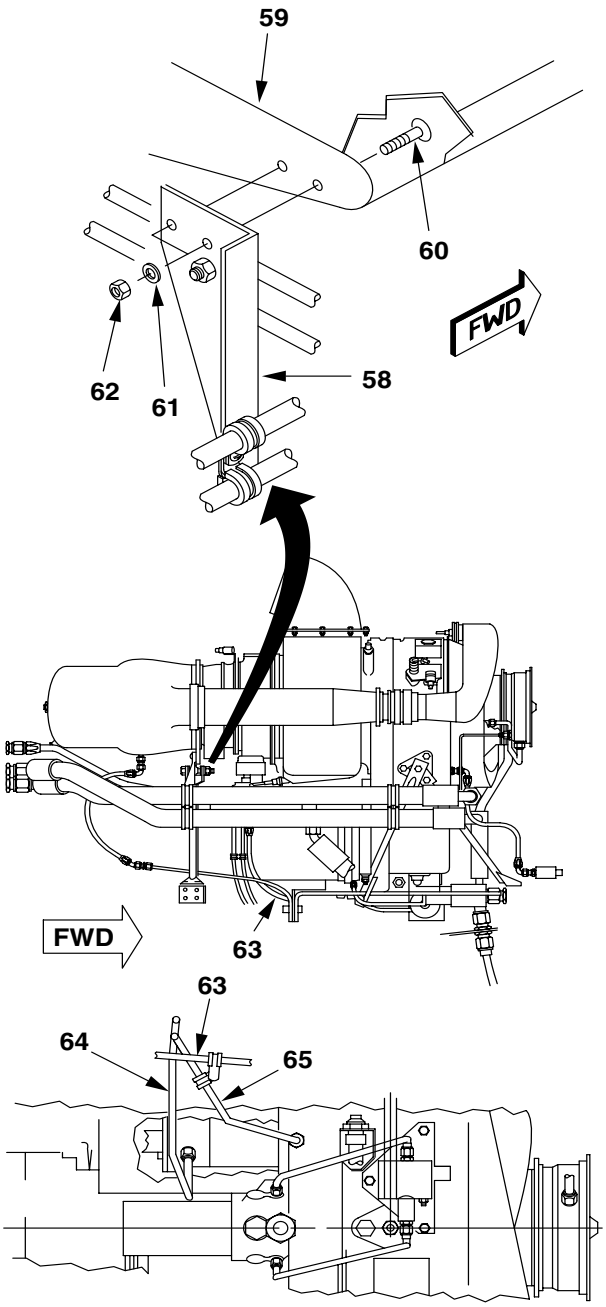
41. Install bracket (58) on fireshield (59) with two screws (60), washers (61), and nuts (62).

42. Install engine vapor vent hose (63) on vent.

43. Torque fittings on vapor vent hose (63) **70 TO 120 INCH-POUNDS**.

44. Install fuel pump seal drain tube (64) on seal drain.

45. Install starter-generator case lubrication drain tube (65) on pad drain.



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46. Install Controlex cable (66) on fuel control lever (67) with bolt (68) (with bolthead outboard), and nut (69). Rig NG engine control cable (Task 4-6-2).

47. Install main engine fuel hose (70) on pump inlet union (71).

48. Torque main engine fuel hose (70) on pump inlet union (71) **265 TO 285 INCH-POUNDS**.

49. Install engine lubrication outlet hose (72) on oil out port union (73).

50. Torque engine lubrication outlet hose (72) on oil out port union (73) **300 TO 480 INCH-POUNDS**.

NOTE

To ensure oil is in lines, refer to servicing Task 1-4-7.

51. Install engine lubrication inlet hose (74) on oil in port elbow (75).

52. Torque engine lubrication inlet hose (74) on oil in port elbow (75) **41 TO 70 FOOT-POUNDS**.

53. Tighten clamps on right engine mount aft.

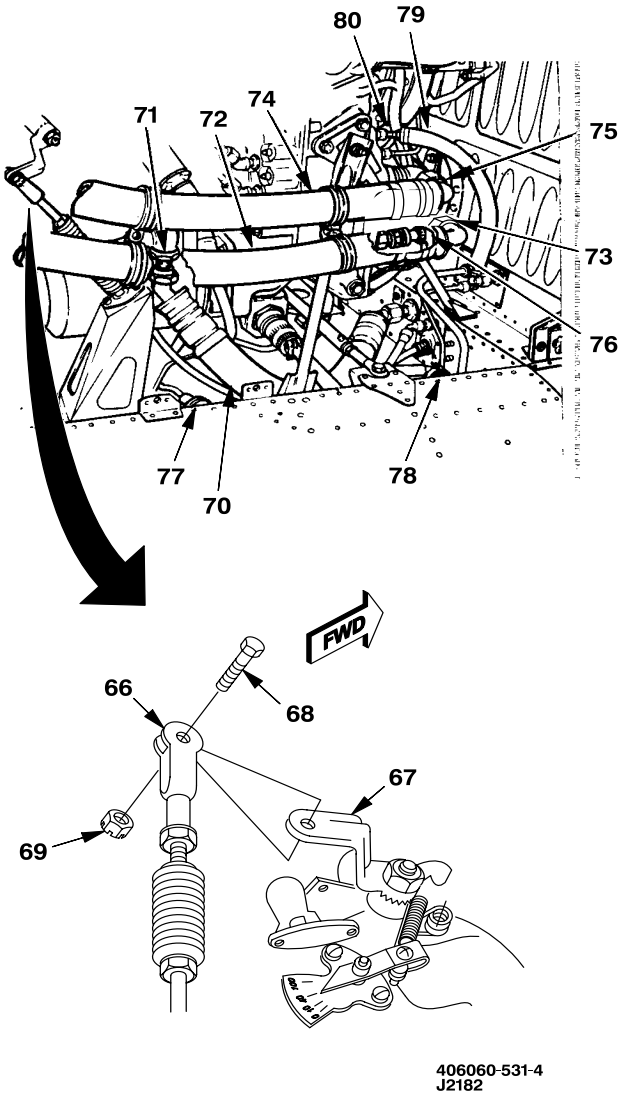
54. Connect upper magnetic chip detector electrical connector (76).

55. Connector starter-generator electrical connector (77) and secure with lockwire (D131).

56. Connect engine electrical connector (78) and secure with lockwire (D131).

57. Install oil pressure transducer hose (79) on engine oil pressure port union (80).

58. Torque oil pressure transducer hose (79) on engine oil pressure port union (80) **70 TO 120 INCH-POUNDS**.



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4-1-5. ENGINE ASSEMBLY (OH-58D) — INSTALLATION (CONT)

59. Install aft freewheeling unit oil line (81).

60. Torque aft freewheeling oil line fittings (81) **70 TO 120 INCH-POUNDS**.

61. Install combustion chamber drain hose (82) on burner drain valve (83).

62. Torque combustion chamber drain hose (82) fittings **70 TO 120 INCH-POUNDS**.

63. Install fireshield drain tube (84).

64. Install exhaust collector drain tube (85).

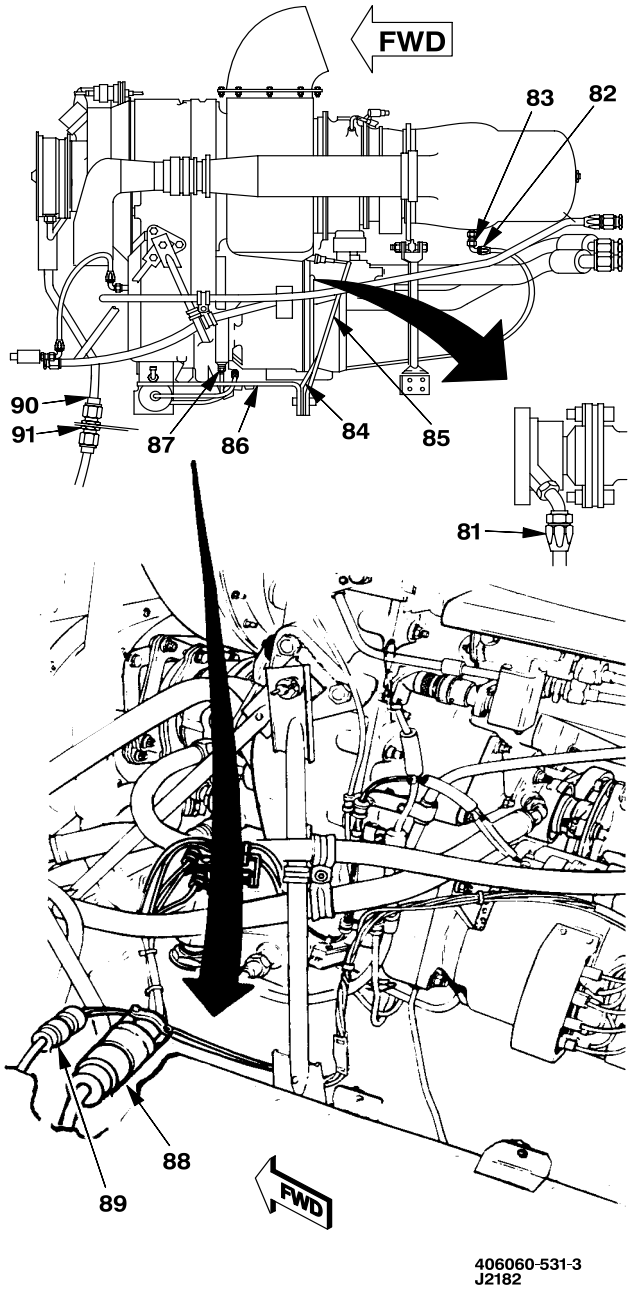
65. Install AC generator pad drain tube (86) on reducer (87).

66. Connect miscellaneous electrical connector (88) and secure with lockwire (D131).

67. Connect AC generator electrical connector (89).

68. Install engine bleed air tube (90) on deck union (91).

69. Torque engine bleed air tube (90) on deck union (91) **37 TO 41 FOOT-POUNDS**.



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70. Install engine torque transmitter hose (92) on restrictor (93).

71. Torque engine torque transmitter hose (92) on restrictor (93) **70 TO 120 INCH-POUNDS**.

72. Install oil vent hose (94) on union (95).

73. Torque oil vent hose (94) on union (95) **210 TO 420 INCH-POUNDS**.

74. Install forward freewheeling unit lubrication hose (96) on elbow (97).

75. Torque forward freewheeling unit lubrication hose (96) on elbow (97) **70 TO 120 INCH-POUNDS**.

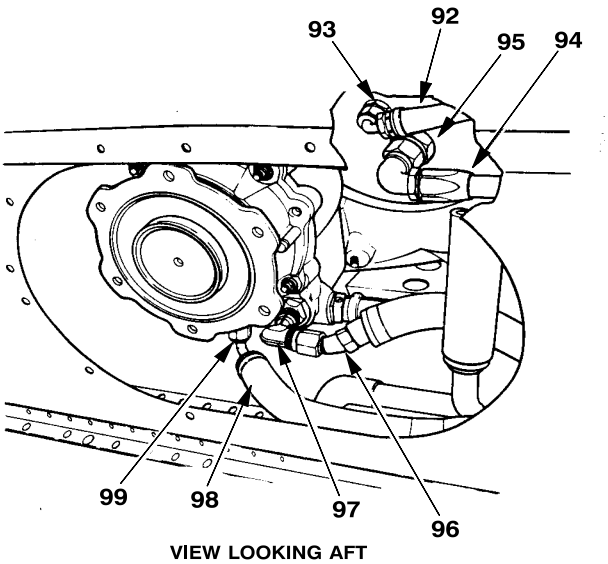
76. Install forward freewheeling unit cap assembly lubrication line (98) on fitting (99).

77. Torque forward freewheeling unit cap assembly lubrication line (98) on fitting (99) **100 TO 250 INCH-POUNDS**.

78. Disconnect coupling nut (100) from pressure reducer (101).

79. Loosen coupling nut (102).

80. Disconnect clip (103) by removing nut (104) and bolt (105). Reposition pressure line (106) as necessary to install attaching Allen head screws.



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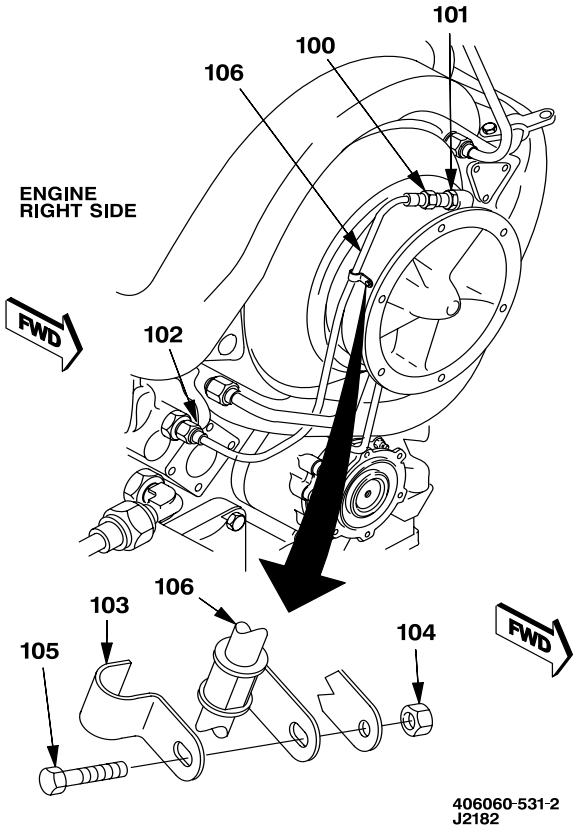

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CAUTION

To prevent damage to adjoining lines, care shall be taken when installing hardware on engine inlet bellmouth.

81. Install six Allen head screws (107) with washers (108) through engine inlet bellmouth (109) into firewall bellmouth (110).

82. Install coupling nut (100) of pressure line (106) on pressure reducer (101).

83. Torque coupling nut (100) of pressure line (106) on pressure reducer (101) **65 TO 100 INCH-POUNDS**.

84. Torque coupling nut (102) **65 TO 100 INCH-POUNDS**.

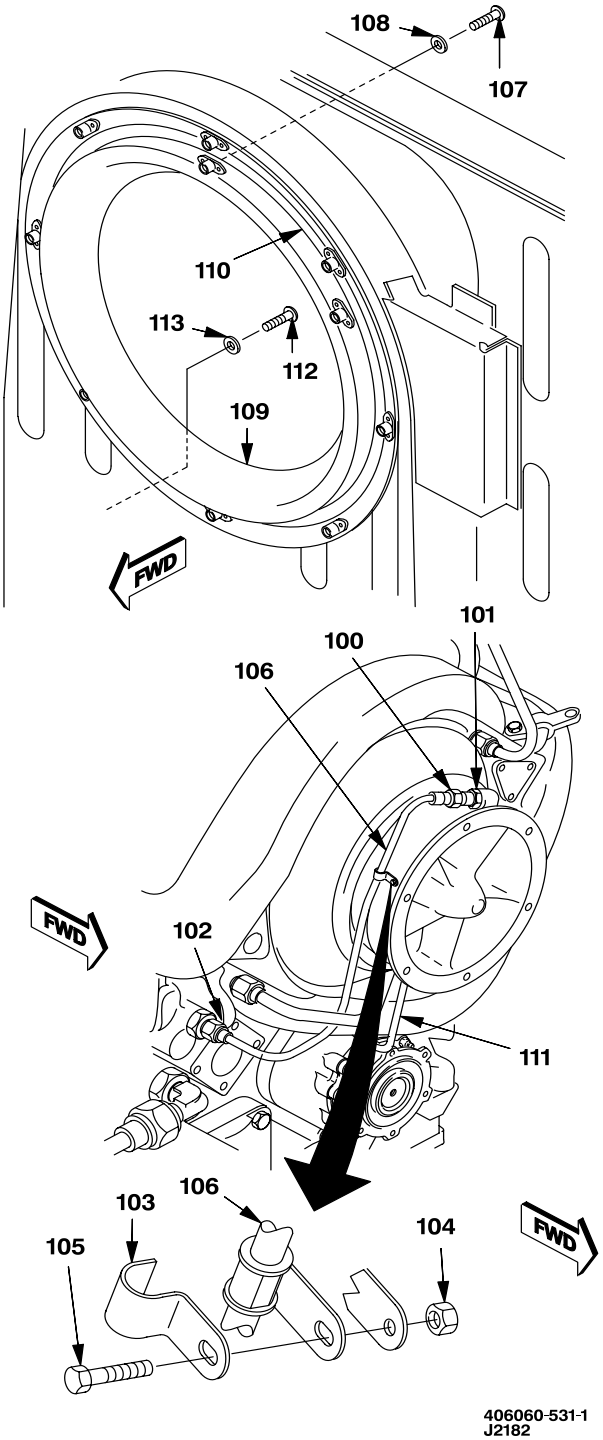
85. Install clip (103) with bolt (105) and nut (104).

86. Disconnect coupling nut on number one bearing scavenge line (111) on bottom bellmouth housing. Loosen coupling nut on aft end of scavenge line (111).

87. Move scavenge line (111) to gain access to install Allen head screws (112) and washers (113) through engine inlet bellmouth (109) into firewall bellmouth (110).

88. Connect coupling nut on scavenge line (111) to bottom of bellmouth housing.

89. Torque coupling nut on aft end of scavenge line (111) **150 TO 200 INCH-POUNDS**.



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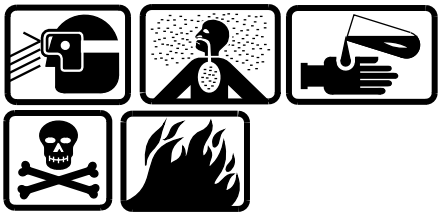

Corrosion Preventive Compound

CAUTION

To prevent damage to engine bearings or seals, CPC shall not be allowed to enter metallic bearings or seals.

90. After assembly, apply a light coat of CPC (D81) to external areas and exposed threads.

INSPECT

91. Check powerplant components for leaks (excluding engine components).

FOLLOW-ON MAINTENANCE

Install engine-to-transmission driveshaft (Task 6-2-1).

Perform engine-to-transmission alignment check (Task 4-7-4).

Install forward shaft assembly (Task 6-6-1).

Align tail rotor driveshaft (Task 6-6-17).

Service engine oil system (Task 1-4-6).

Prime engine oil pump (TM 55-2840-256-23).

Service power turbine scavenge oil strut (TM 55-2840-256-23)

Purge air in engine fuel system (TM 55-2840-256-23).

Remove, clean, inspect, and reinstall engine oil filter (TM 55-2840-256-23).

Remove, clean, inspect, and reinstall both engine chip detectors (TM 55-2840-256-23).

Service transmission oil system (Task 1-4-8).

Perform pneumatic leak check (TM 55-2840-256-23).

Perform engine vibration check (TM 55-2840-256-23).

Check turbine gas temperature system.

Operate engine and check for leaks (TM 55-2840-256-23).

Shut down engine and recheck for leaks (TM 55-2840-256-23).

Install engine cowl assembly (Task 2-2-50).

Install air induction cowl (Task 4-2-4).

Install forward fairing assembly (Task 2-2-47).

Accomplish preventive maintenance as required (Chapter 1, Section IX).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).

GO TO NEXT PAGE

FUNCTION	COMPONENT	LEAK TYPE	LEAKAGE RATE (MAX)
Fuel supply and vent system	Fittings/couplings	Static/dynamic	None
	Packings/seals	Static/dynamic	None
	Lines/hoses	Static/dynamic	None
Engine oil supply, return and vent system	Fittings/couplings	Dynamic	1 Drop/5 minutes
	Packings/seals	Dynamic	1 Drop/5 minutes
	Lines/hoses	Static/dynamic	None
	Cooler	Static/dynamic	None
	Tank	Static/dynamic	None

NOTES:

1. **Approximately 20 drops = 1 cubic centimeter.**
2. **During static condition (parked aircraft), fittings, couplings, packings, and seals are allowed leakage rate of five drops per seal or packing every 24 hours.**
3. **Check for proper torque (fittings, couplings, nut, and seal) if visible leakage occurs. If this does not stop leak, seal or component is deteriorated or damaged and should be repaired or replaced.**

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END OF TASK

4-1-6. ENGINE ASSEMBLY (OH-58D(R)) — INSTALLATION

This task covers: This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
OH-58D(R)

Tools:
Powerplant Tool Kit (B179)
General Mechanic Tool Kit (B178)
Wrench (B216)
Wrench (B219)
Wrench (B220)
Engine Lifting Angle Bracket (B10)
Torque Wrench (B232)
Torque Wrench (B235)
Torque Wrench (B236)
Torque Wrench (B237)
Torque Wrench (B240)
Torque Wrench (B241)
Torque Wrench (B242)
Engine Stand (B161)
Hoist (B69)
Maintenance Stand (2) (B162)
Plastic 12 Qt. Pail (or suitable substitute) (B101)

Material:
Lockwire (D131)
Lockwire (D132)
Lockwire (D133)
Corrosion Preventive Compound (CPC) (D82)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer (2)
68B Aircraft Powerplant Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-2840-263-23
TM 55-2840-256-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)
Engine Cowl Assembly Removed (Task 2-2-50)
Air Induction Cowl Removed (Task 4-2-1)
Engine Oil System Drained (Task 1-4-5)
Freewheeling Unit Drained (Task 1-4-7)
Engine to Transmission Driveshaft Removed (Task 6-2-2)
Forward Shaft Assembly Removed (Task 6-6-1)
Engine Inlet and Engine Exhaust Covered With Protective Covers (Task 1-7-3)
Install Electronic Control Unit (ECU) (Task 9-7-6) (Only if engine is being replaced and ECU and engine are shipped as a unit.)

GO TO NEXT PAGE

CAUTION

If engine replacement is caused by internal failure and metal contamination is determined, oil cooler shall be replaced and oil tank lines and hoses flushed clean. Engine oil filter shall be replaced or cleaned ultrasonically prior to installation. Failure to accomplish the above may result in contamination of new engine.

NOTE

Prior to installing a new or overhauled engine, all engine shipping gaskets, seals, and hardware shall be removed. Shipping hardware shall not be used.

1. Install engine lifting and angle bracket (B10) on engine gearbox pad (1) with three bolts (2). Torque bolts (2) **160 TO 190 INCH-POUNDS**.

2. Attach hoist (B69) to engine lifting angle bracket (B10) and take up slack on hoist.

3. Remove engine from engine stand (B161) (TM 55-2840-256-23).

4. Install left and right trunnions (3 and 4) on forward pads (5) of engine gearbox with three washers (6) and bolts (7).

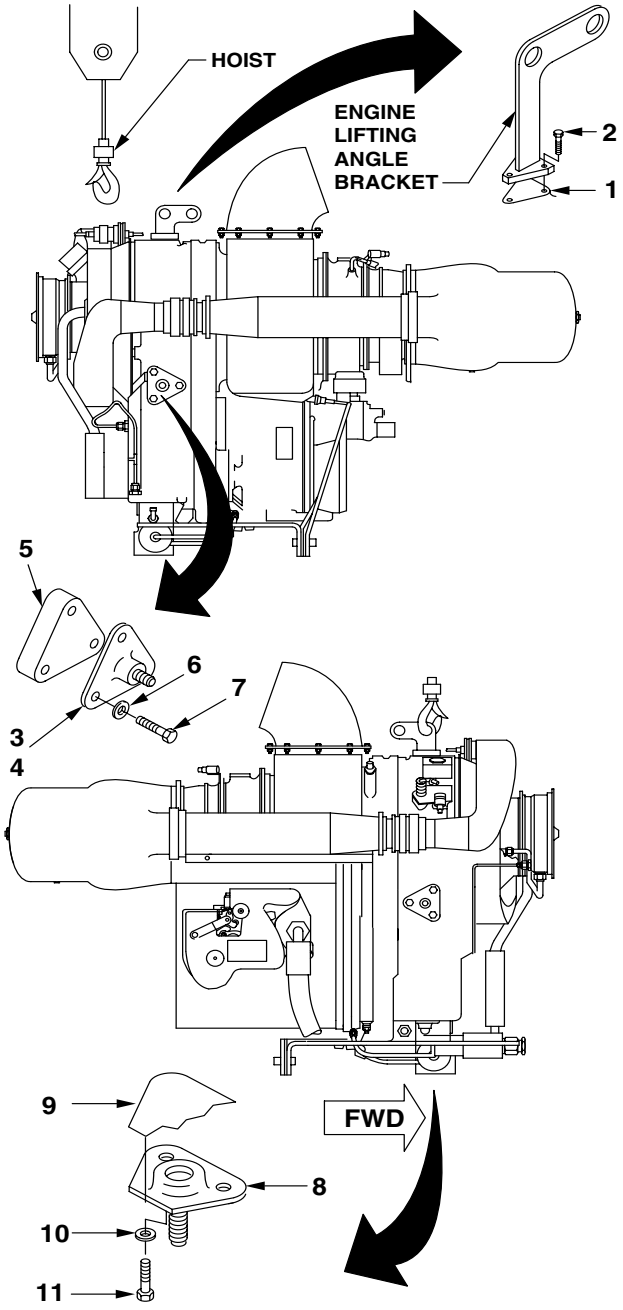
5. Torque bolts (7) **70 TO 90 INCH-POUNDS**.

6. Secure bolts (7) with lockwire (D133).

7. Install lower trunnion (8) on lower engine pad (9) with two washers (10) and bolts (11).

8. Torque bolts (11) **70 TO 90 INCH-POUNDS**.

9. Secure bolts (11) with lockwire (D133).



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10. Place clamp (12) on engine wiring harness (13).

11. Install bracket (14) on engine case with three bolts (15), three washers (16), one clamp (12), and three spacers (17).

12. Torque bolts (15) **30 TO 40 INCH-POUNDS**.

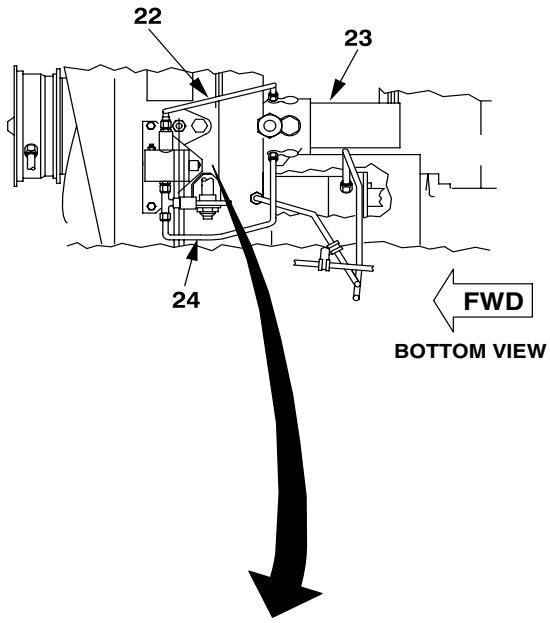
13. Connect electrical connector (18) to fuel differential pressure switch (19).

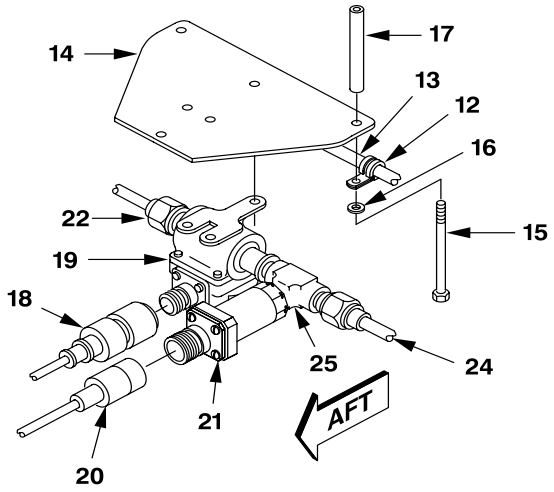
14. Connect electrical connector (20) to low fuel pressure warning switch (21).

15. Connect fuel differential pressure switch fuel line (22) to fuel filter assembly (23) and fuel differential pressure switch (19).

16. Connect low fuel pressure warning switch fuel line (24) to tee fitting (25).

17. Torque coupling nuts **60 INCH-POUNDS**.





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18. Position maintenance stands (B162) on both sides of helicopter.

CAUTION

- Before hoisting engine into helicopter airframe, forward firewall shall be moved forward to allow clearance for engine installation.
- To prevent damage to airframe and lateral engine mounts, guide lateral leg into position.

19. Using hoist (B69) connected to engine lifting angle bracket (B10), hoist engine into helicopter airframe. Ensure wiring, hoses, and tubes are free of engine and airframe attachments.

20. Connect left engine mount (26) to trunnion (3) with nut (27) and washer (28).

21. Connect right engine mount (26) to trunnion (4) with nut (27) and washer (28).

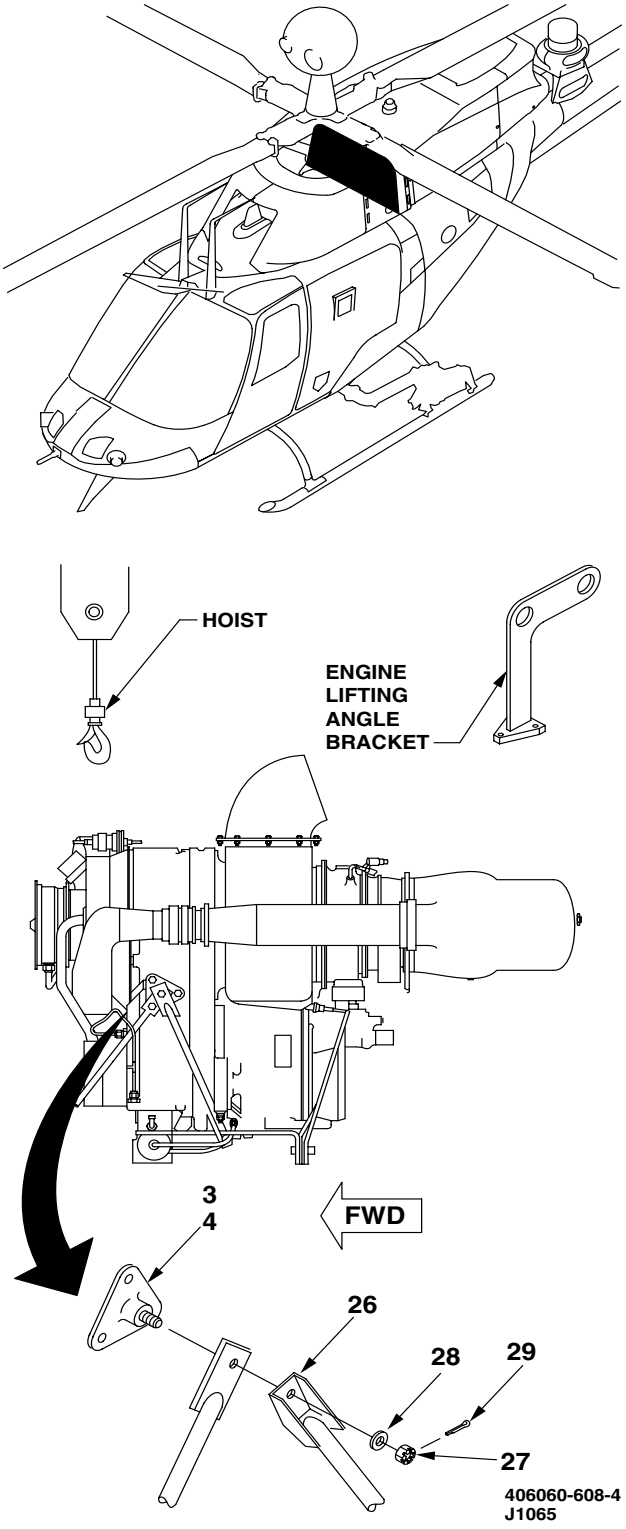
22. Torque nuts (27) **70 TO 90 INCH-POUNDS**.

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PART

Correct installation of cotter pins (34) is a characteristic critical to flight safety.

23. Secure with cotter pins (29).



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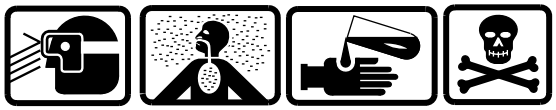
NOTE

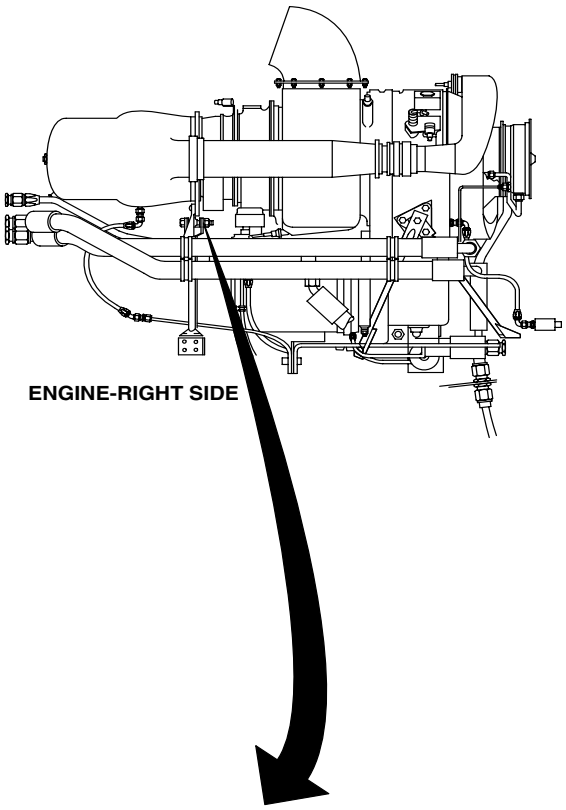
Steps 24. and 25. must be accomplished to allow access to aft engine mount attaching bolt.

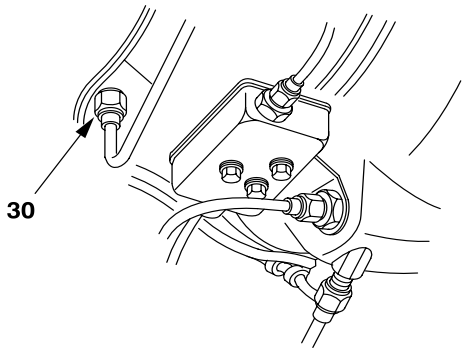
24. Place suitable container (B101) directly below coupling nut (30).



Lubricating Oil

25. Disconnect coupling nut (30). Allow all oil to drain.





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4-1-6. ENGINE ASSEMBLY (OH-58D(R)) — INSTALLATION (CONT)

26. Connect aft mount legs (31) to aft engine mount (32) with bolt (33), two washers (34), and nut (35).

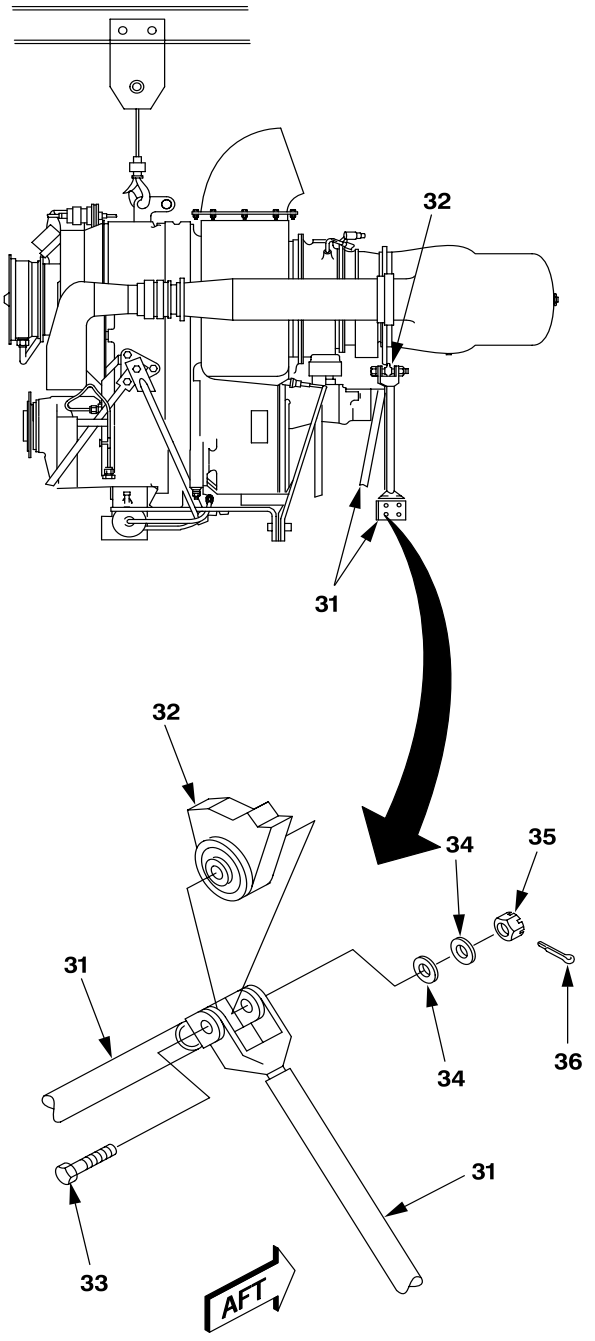
27. Torque nut (35) **10 TO 15 INCH-POUNDS**.

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PART

Correct installation of cotter pins (36) is a characteristic critical to flight safety.

28. Secure nut (35) with cotter pin (36).



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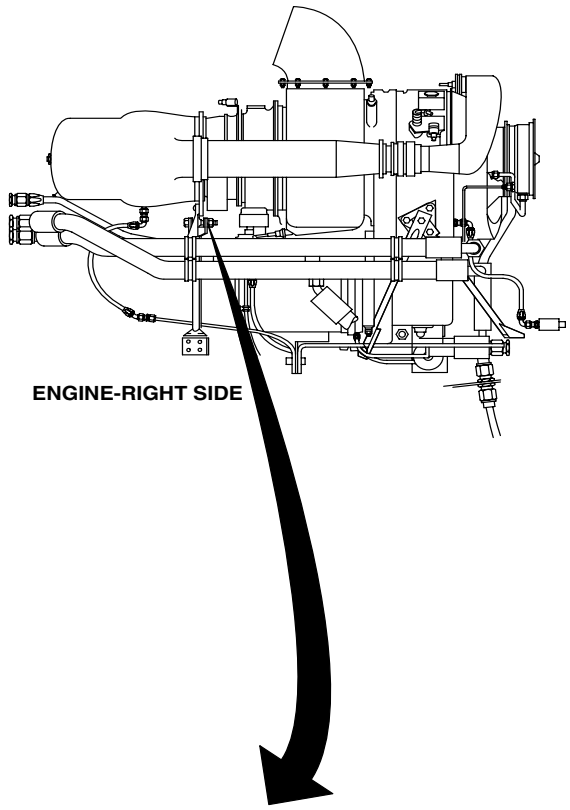
4-1-6. ENGINE ASSEMBLY (OH-58D(R)) — INSTALLATION (CONT)

29. Connect coupling nut (30).

30. Torque coupling nut (30) **150 TO 200 INCH-POUNDS**.



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4-1-6. ENGINE ASSEMBLY (OH-58D(R)) — INSTALLATION (CONT)

NOTE

Lower mounting leg attach bolt shall not preload on reassembly.

31. To check and/or obtain proper length of lower leg (37), position lower leg onto airframe attachment (38) and trunnion (8). Attempt to insert bolt (39) through clevis and airframe attrachment (38). If bolts install without preload (freely drops in place), proceed to step 35. If bolt will not fit freely, remove lockwire from jamnut (40).

32. Adjust lower mounting leg (37) clevis by looseing jamnut (40) while holding clevis jaws. Rotate clevis in half-turn increments until bolt (39) freely drops in place.

33. Torque jamnut (40) **160 TO 190 INCH-POUNDS**.

34. Secure jamnut (40) with lockwire (D132).

NOTE

- It is permissible for proper fit to locate thin washer between upper side of fitting and clevis with both thick washers between lower side of fitting and clevis.
- Number of washers (41) may vary per installation.

35. Install lower leg (37) by placing one thick washer (41) and one thin washer (42) on trunnion (8). Holding washers in place, install mount leg flat side towards trunnion. Place thick washers (41) on trunnion and secure with nut (43).

36. Install lower leg (37) (clevis) on airframe attachment (38) with bolt (39). Washer stackup will be one thick washer (44) under bolt head, two thick washers (44) and one thin washer (45) between airframe attachment (38) and lower clevis tang. Install two thick washers (44) and nut (46).

WARNING

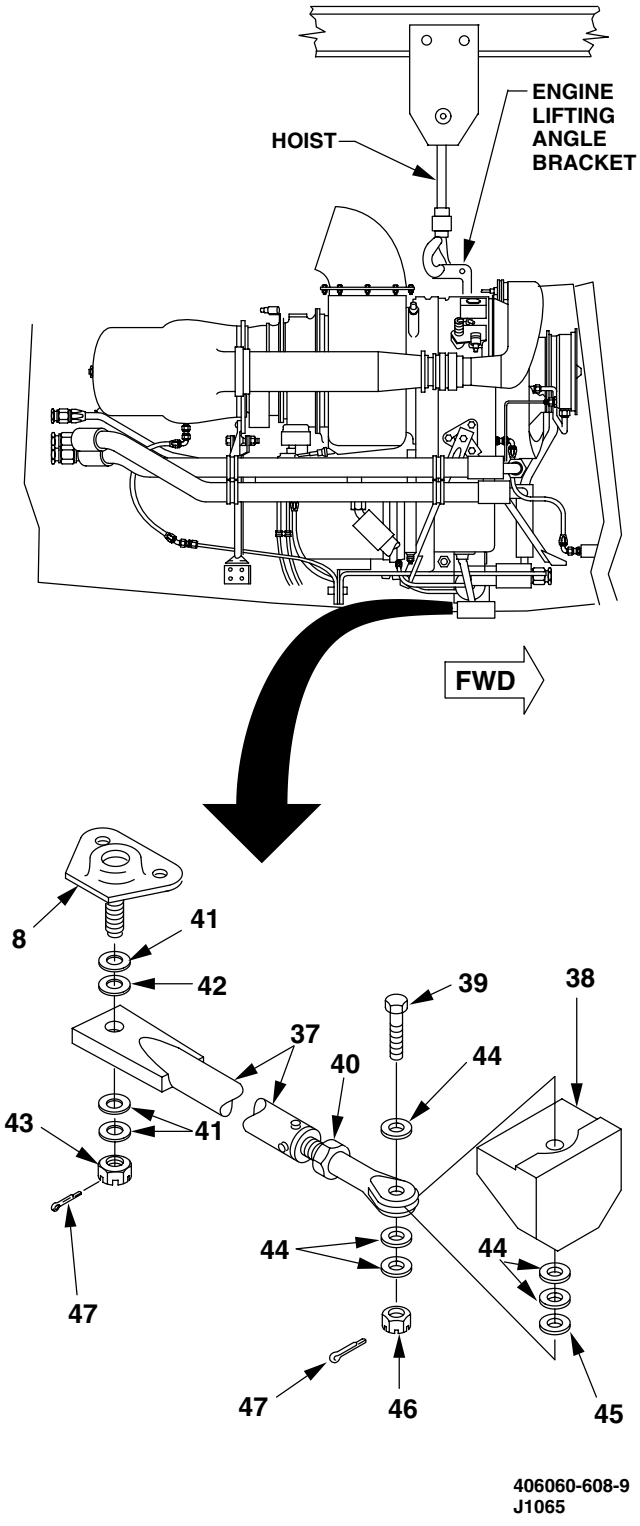
FLIGHT SAFETY CRITICAL AIRCRAFT PART

Correct installation of cotter pin (47) is a characteristic critical to flight safety.

37. Torque nuts (43 and 46) **70 TO 90 INCH-POUNDS**.

38. Install cotter pins (47) through nuts (43 and 46).

39. Remove hoist and engine lifting angle bracket.



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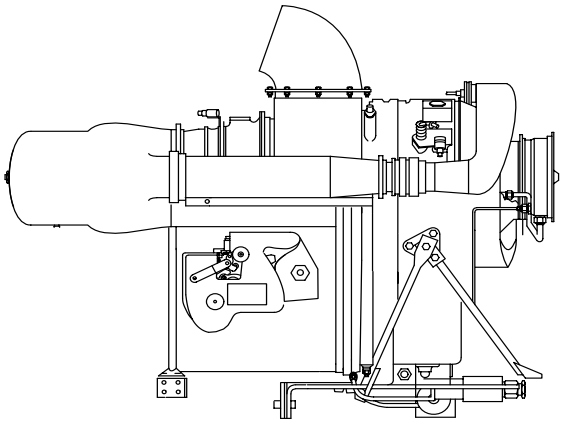
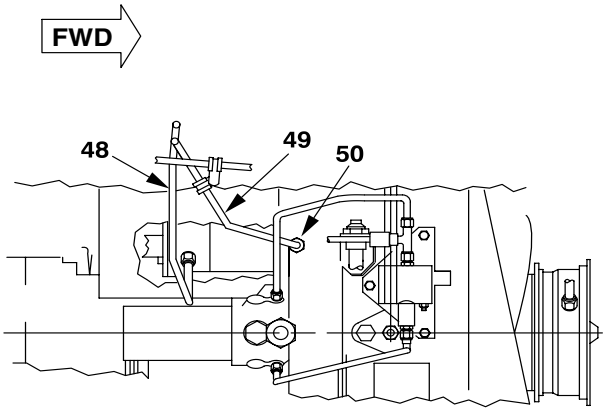
4-1-6. ENGINE ASSEMBLY (OH-58D(R)) — INSTALLATION (CONT)

40. Install HMU seal drain tube (48).

41. Install starter-generator case lubrication drain tube (49) on reducer (50).





BOTTOM OF ENGINE
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42. Install main engine fuel hose (51) on HMU inlet union (52).

43. Torque main engine fuel hose (51) on HMU inlet union (52) **265 TO 285 INCH-POUNDS**.

44. Install engine lubrication outlet hose (53) on oil out port union (54).

45. Torque engine lubrication outlet hose (53) on oil out port union (54) **300 TO 480 INCH-POUNDS**.

NOTE

To ensure oil in lines, refer to servicing Task 1-4-6.

46. Install engine lubrication inlet hose (55) on oil in port elbow (56).

47. Torque engine lubrication inlet hose (55) on oil in port elbow (56) **41 TO 70 FOOT-POUNDS**.

48. Install clamp (57) on right engine horizontal fire shield (58).

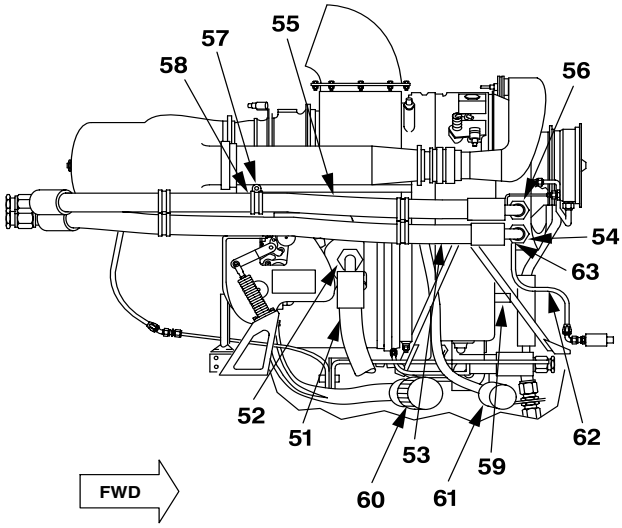
49. Connect upper magnetic chip detector electrical connector (59).

50. Connect starter-generator electrical connector (60) and secure to engine deck with lockwire (D131).

51. Connect FADEC/ECU electrical connector (61).

52. Install oil pressure transducer hose (62) on engine oil pressure port union (63).

53. Torque oil pressure transducer hose (62) on engine oil pressure port union (63) **70 TO 120 INCH-POUNDS**.



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54. Install aft freewheeling unit oil line (64).

55. Torque aft freewheeling oil line (64) fitting **70 TO 120 INCH-POUNDS**.

56. Install combustion chamber drain hose (65) on burner drain valve (66).

57. Torque combustion chamber drain hose (65) fitting **70 TO 120 INCH-POUNDS**.

58. Install fireshield drain tube (67).

59. Install exhaust collector drain tube (68).

60. Install clamp (69) attaching AC generator wiring harness (70).

61. Install AC generator pad drain tube (71) on reducer (72).

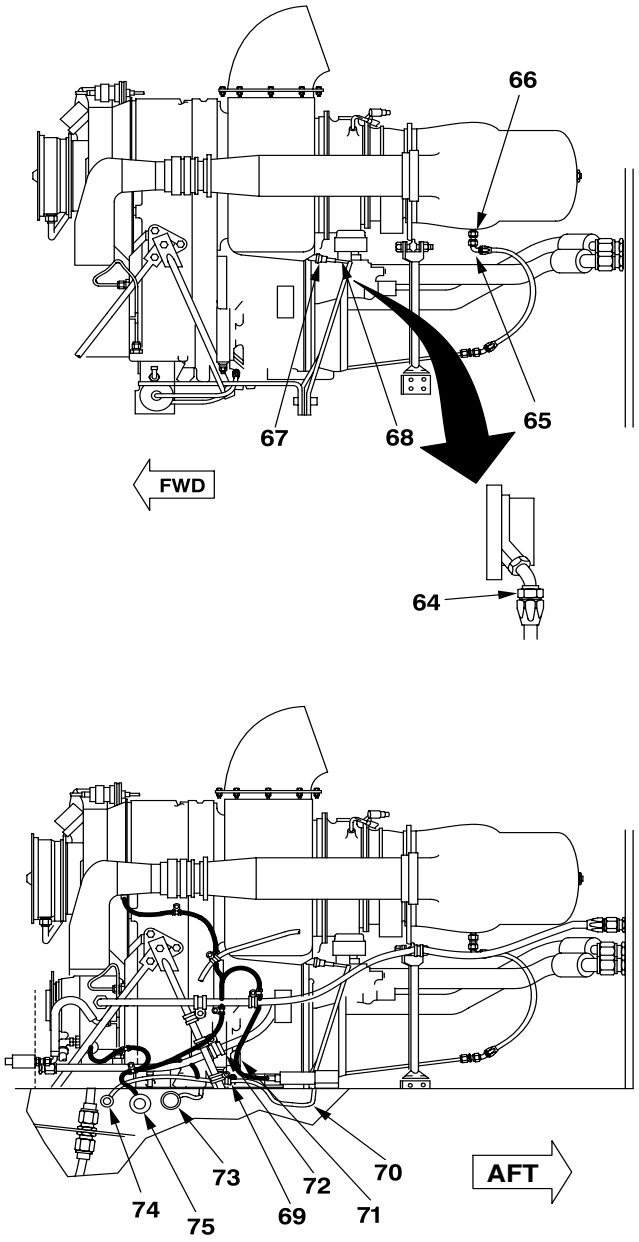
62. Connect miscellaneous electrical connector (73) and secure with lockwire (D131).

NOTE

Installation of AC generator electrical connector assembly shall be checked to ensure electrical connector assembly is positioned approximately 120° (rotated left) from top of engine to face outboard on left side of aircraft.

63. Connect AC generator electrical connector (74).

64. Connect engine deck electrical connector (75).



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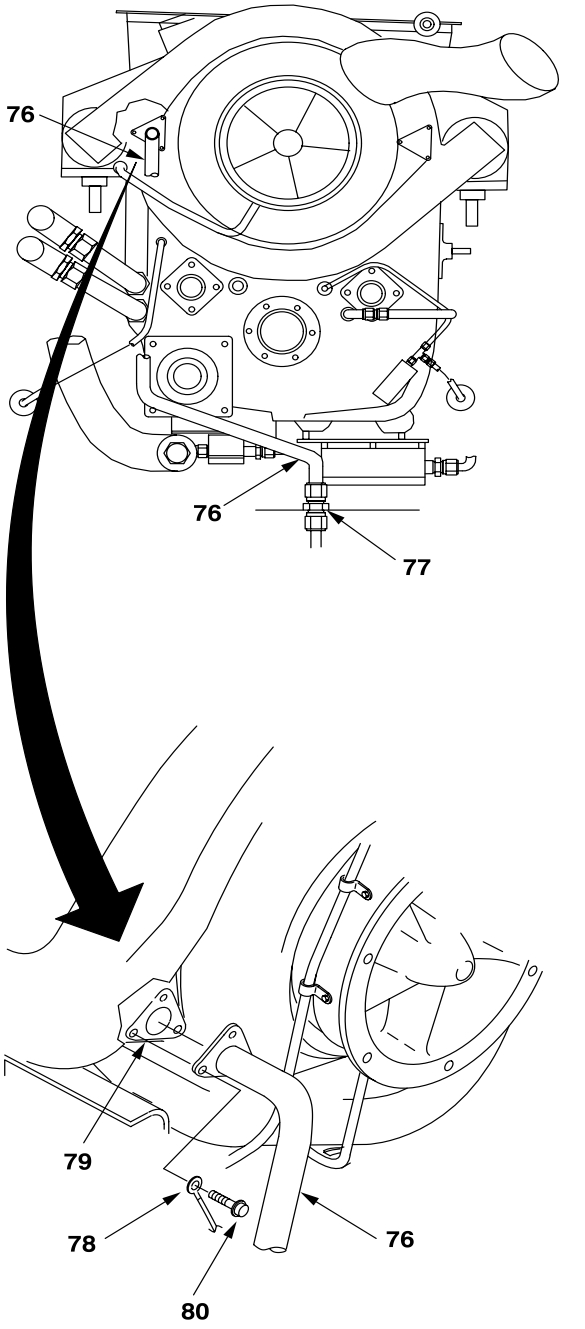
4-1-6. ENGINE ASSEMBLY (OH-58D(R)) — INSTALLATION (CONT)

65. Connect engine bleed air tube (76) on deck union (77).

66. Connect bleed air tube (76) including engine grounding strap (78) to engine manifold (79) using three bolts (80).

67. Torque engine bleed air tube bolts (80) to engine manifold (79) **35 TO 40 INCH-POUNDS**. Secure with lockwire (D132).

68. Torque engine bleed air tube (76) coupling nut to deck union (77) **37 TO 41 FOOT-POUNDS**.



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69. Connect engine torque transmitter hose (81) coupling nut to tee fitting (82).

70. Torque engine torque transmitter hose (81) coupling nut on tee fitting (82) **70 TO 120 INCH-POUNDS**.

71. Connect oil vent hose (83) coupling nut to union (84).

72. Torque oil vent hose (83) coupling nut on union (84) **210 TO 420 INCH-POUNDS**.

73. Connect oil vent hose (83) coupling nut to aft firewall union (85).

74. Torque oil vent hose (83) coupling nut on aft firewall union (85) **210 TO 420 INCH-POUNDS**.

75. Install oil vent hose clamp arrangement (86) on aft left side forward engine mount leg (31).

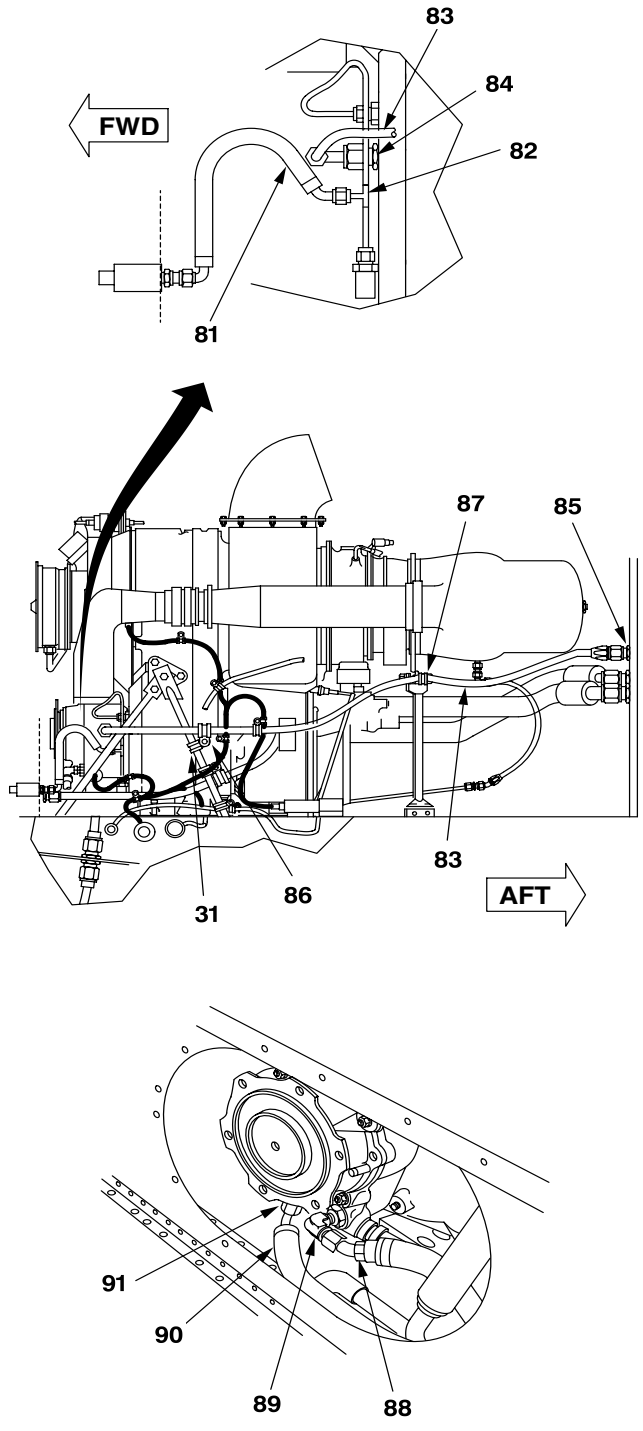
76. Install oil vent hose clamp arrangement (87) on left side aft engine heat shield.

77. Connect forward freewheeling unit lubrication hose (88) to elbow (89).

78. Torque forward freewheeling unit lubrication hose (88) on elbow (89) **70 TO 120 INCH-POUNDS**.

79. Connect forward freewheeling unit cap assembly lubrication line (90) to fitting (91).

80. Torque forward freewheeling unit cap assembly lubrication line (90) on fitting (91) **100 TO 250 INCH-POUNDS**.



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NOTE

In order to install bellmouth and attaching Allen head screws, number one bearing pressure and scavenge line shall be repositioned in accordance with the following steps.

81. Disconnect coupling nut (92) from pressure reducer (93).

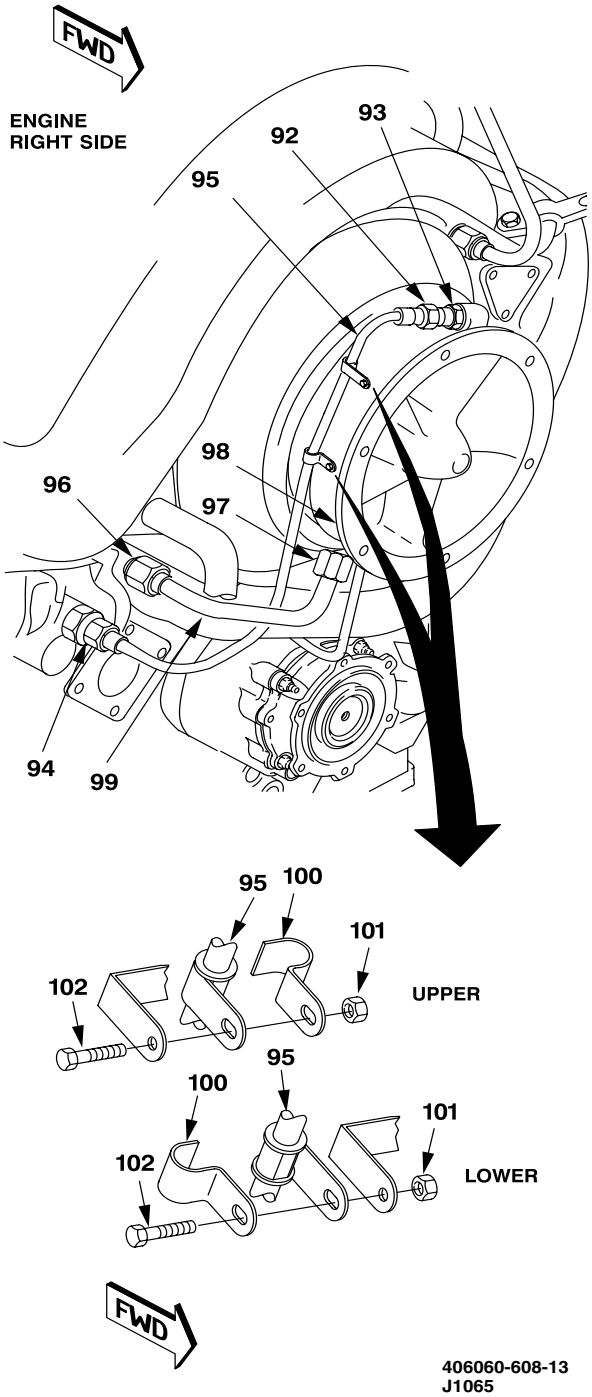
82. Loosen coupling nut (94) on pressure line (95).

83. Loosen coupling nut (96).

84. Disconnect coupling nut (97) from bottom of compressor inlet housing (98).

85. Rotate anti-icing line (99) out of way to facilitate installation of Allen head screws.

86. Disconnect two clamps (100) by removing two nuts (101) and bolts (102). Reposition pressure line (95) as necessary to install attaching Allen head screws.



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87. Disconnect coupling nut on number one bearing scavenge line (103) on bottom of compressor inlet housing. Loosen coupling nut on aft end of scavenge line (103).

88. Move scavenge line (103) to gain access to install Allen head screws (104) and washers (105) through engine inlet bellmouth (106) into firewall bellmouth (107).

CAUTION

Care shall be taken when installing hardware to engine inlet bellmouth to prevent damage to adjoining lines.

89. Install six Allen head screws (104) with washers (105) through engine inlet bellmouth (106) into firewall bellmouth (107).

90. Connect anti-icing line (99) to compressor housing.

91. Torque nuts (96 and 97) on both ends of anti-icing line (99) **65 TO 100 INCH-POUNDS**.

92. Install coupling nut (92) of pressure line (95) on pressure reducer (93).

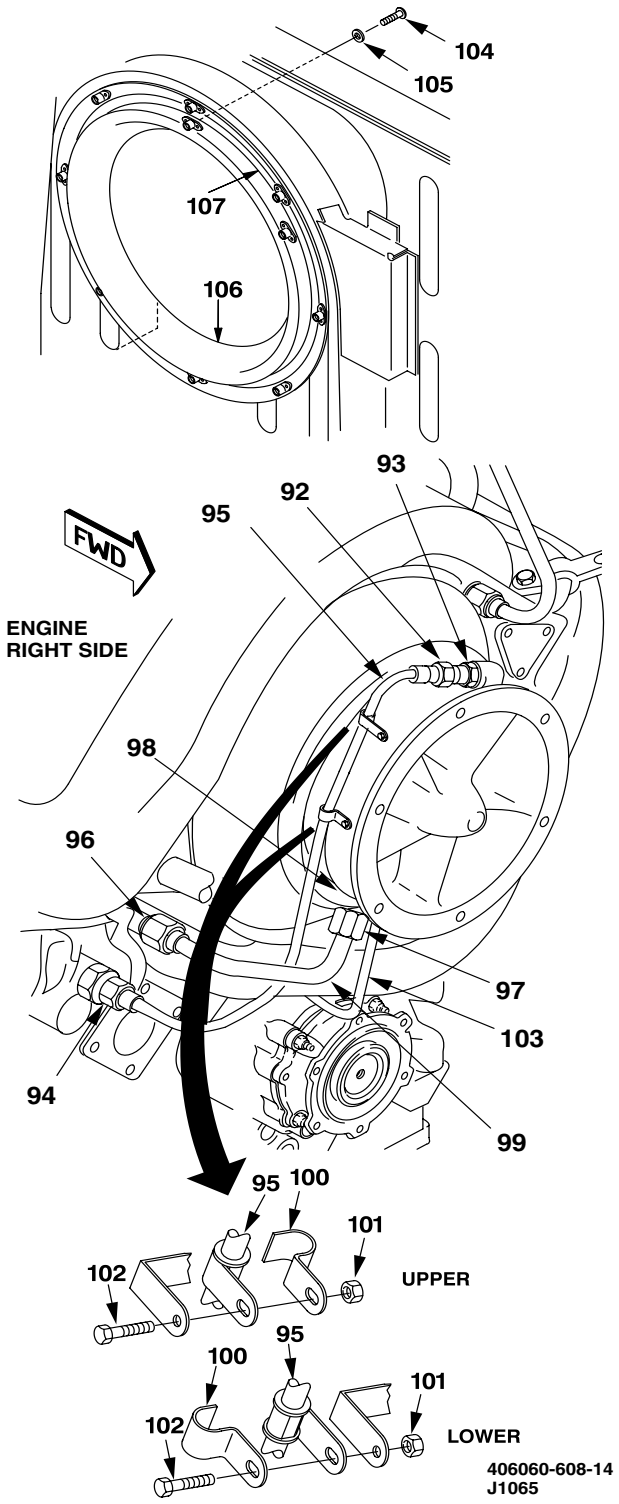
93. Torque coupling nut (92) of pressure line (95) on pressure reducer (93) **65 TO 100 INCH-POUNDS**.

94. Torque coupling nut (94) **65 TO 100 INCH-POUNDS**.

95. Install two clamps (100) with bolts (102) and nuts (101).

96. Connect coupling nut on scavenge line (103) to bottom of bellmouth housing (98).

97. Torque coupling nut on both ends of scavenge line (103) **150 TO 200 INCH-POUNDS**.



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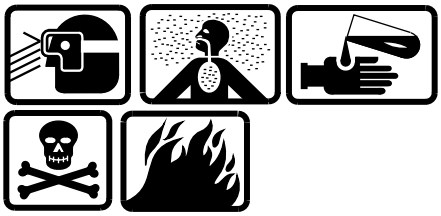

Corrosion Preventive Compound

CAUTION

CPC shall not be allowed to enter metallic or elastometric bearings or come in contact with seals.

98. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads, excluding any metallic or elastomeric bearings or seals that are exposed to environment.

INSPECT

99. Check powerplant components for leaks (including engine components).

FOLLOW-ON MAINTENANCE

Perform engine-to-transmission alignment check (Task 4-7-4).

Install main driveshaft (Task 6-2-2).

Install forward shaft assembly (Task 6-6-2).

Rig Ng engine control cable (Task 4-6-3).

Install engine cowl assembly (Task 2-2-50). ▮

Install air induction cowl (Task 4-2-4).

Service engine oil system (Task 1-4-6).

Prime engine oil pump (TM 1-2840-263-23).

Service power turbine scavenge oil strut (TM 1-2840-263-23).

Purge air in engine fuel system (TM 1-2840-263-23).

Service freewheeling unit oil system (Task 1-4-8). ▮

Perform engine vibration check (TM 1-2840-263-23).

Install forward fairing assembly (Task 2-2-47). ▮

Accomplish preventive maintenance as required (Chapter 1, Section IX).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).

GO TO NEXT PAGE

4-1-6. ENGINE ASSEMBLY (OH-58D(R)) — INSTALLATION (CONT)

FUNCTION	COMPONENT	LEAK TYPE	LEAKAGE RATE (MAX)
Fuel supply and vent system	Fittings/couplings	Static/dynamic	None
	Packings/seals	Static/dynamic	None
	Lines/hoses	Static/dynamic	None
Engine oil supply, return and vent system	Fittings/couplings	Dynamic	1 Drop/5 minutes
	Packings/seals	Dynamic	1 Drop/5 minutes
	Lines/hoses	Static/dynamic	None
	Cooler	Static/dynamic	None
	Tank	Static/dynamic	None

NOTES:

1. **Approximately 20 drops = 1 cubic centimeter.**
2. **During static condition (parked aircraft), fittings, couplings, packings, and seals are allowed leakage rate of five drops per seal or packing every 24 hours.**
3. **Check for proper torque (fittings, couplings, nut, and seal) if visible leakage occurs. If this does not stop leak, seal or component is deteriorated or damaged and should be repaired or replaced.**

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END OF TASK

4-1-7. OIL PRESSURE TRANSDUCER (TYPICAL) — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Wrench (B216)
Crowfoot (B29)
Torque Wrench (B237)
Maintenance Stand (B162)

Material:
Lockwire (D132)
Lockwire (D131)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Pilot

References:
TM 1-1520-248-10
TM 1-1520-248-CL

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Particle Separator Fan and Duct Removed (Task 4-2-8)

REMOVE

1. Position maintenance stand (B162) next to right side of helicopter.

2. Cut lockwire and disconnect electrical connector (1) from oil pressure transducer (2).

3. Disconnect elbow fitting (3) from transducer (2).

4. Cut lockwire and remove jamnut (4) and washer (5) from transducer (2).

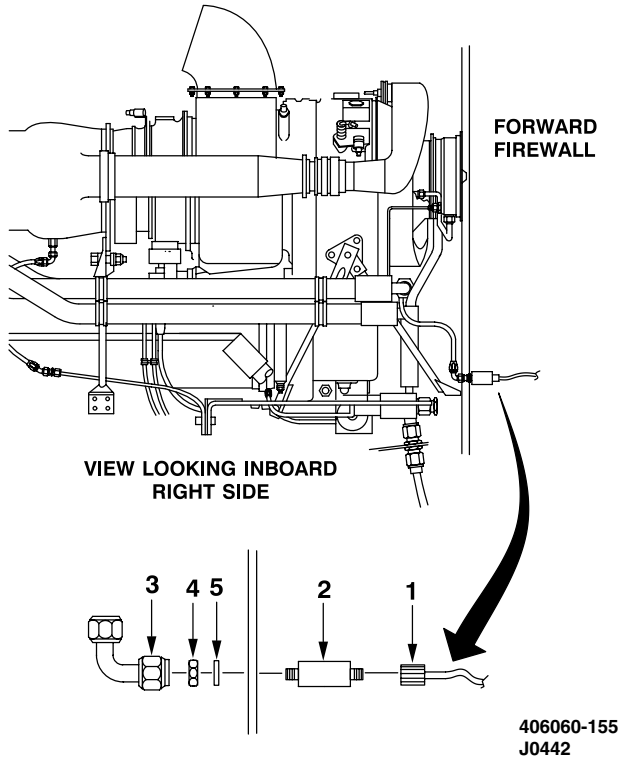
5. Remove transducer (2) from forward firewall.

INSTALL

6. Install transducer (2) through forward firewall and install washer (5) and jamnut (4); torque jamnut (4) **65 INCH-POUNDS**.

7. Lockwire (D132) transducer (2) and connect electrical connector (1); lockwire (D131) electrical connector.

8. Connect fitting (3) to transducer (2). Torque fitting (3) **95 TO 105 INCH POUNDS**.



INSPECT

FOLLOW-ON MAINTENANCE

Install particle separator fan and duct (Task 4-2-11).

Pilot perform MOC (TM 1-1520-248-10/CL).

END OF TASK

4-1-8. ENGINE OIL PRESSURE TRANSDUCER — CHECKING

This task covers: Check (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Pressure Gage (B50)
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)
Torque Wrench (B237)
Tee (Work Aid)
Adapter Tube (2) (Work Aid)

Material:
Corrosion Preventive Compound (CPC) (D81)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Pilot

References:
TM 55-2840-256-23 (OH-58D)
TM 1-2840-263-23 (OH-58D(R))
TM 1-1520-248-10
TM 1-1520-248-CL

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

4-1-8. ENGINE OIL PRESSURE TRANSDUCER — CHECKING (CONT)

CHECK

Lubricating Oil

1. Position maintenance stand (B162) next to right side of helicopter.

2. Remove oil pressure line (1) from forward firewall.

3. Install tee fitting (Work Aid) between pressure line (1) and oil pressure transducer (2) pressure fitting using two short adapter tubes (Work Aids).

4. Attach direct reading pressure gage (B50) to tee fitting (Work Aid).

5. Perform engine ground run (TM 1-1520-248-10/CL).

6. Check direct reading pressure gage (B50) reading against MPD (3) ENG OIL PSI × 10 indication.

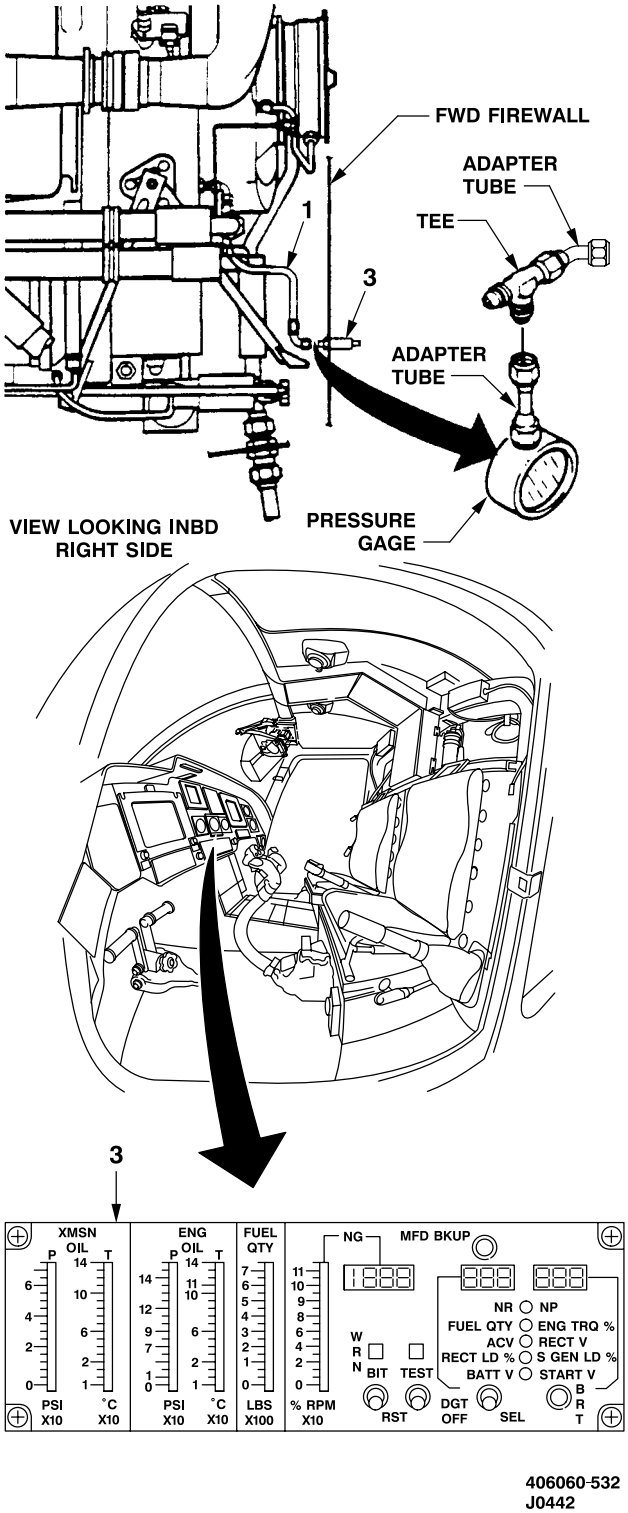
7. Note and record readings for oil pressure limits (TM 55-2840-256-23 (OH-58D)/TM 1-2840-263-23 (OH-58D(R))).

8. Shut down engine.

9. If MPD and direct reading pressure gage readings are in agreement, but out of tolerance, troubleshoot engine oil system (TM 55-2840-256-23 (OH-58D)/TM 1-2840-263-23 (OH-58D(R))).

10. If MPD and direct reading pressure gage readings differ, replace oil pressure transducer (2) (Task 4-1-7).

11. Remove tee fitting (Work Aid) and reinstall oil pressure line (1). Torque oil pressure line (1) coupling nut **95 TO 105 INCH-POUNDS**.



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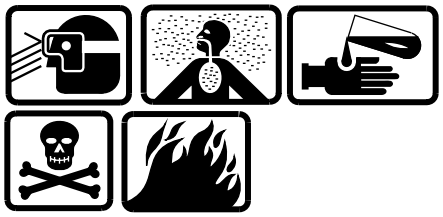


Corrosion Preventive Compound

CAUTION

To prevent damage to engine bearings or seals, CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals.

12. After assembly, apply a light coat of CPC (D81) to external areas and exposed threads.

INSPECT

FOLLOW-ON MAINTENANCE

Pilot perform MOC (TM 1-1520-248-10/CL).

END OF TASK

4-1-9. BLEED AIR HEATER TUBE AND GASKET — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Wrench (B220)
Crowfoot (B30)
Wrench (B219)
Wrench (B221)
Torque Wrench (B232)
Torque Wrench (B236)
Maintenance Stand (B162)

Material:
Lockwire (D132)
Antiseize Compound (D45)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Pilot

References:
TM 55-2840-256-23 (OH-58D)
TM 1-2840-263-23 (OH-58D(R))
TM 1-1520-248-10
TM 1-1520-248-CL

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

4-1-9. BLEED AIR HEATER TUBE AND GASKET — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Position maintenance stand (B162) on applicable side of helicopter.

2. Open applicable engine cowl door.

3. Disconnect bleed air heater tube (1) at engine deck union (2) and tube coupling nut (3).

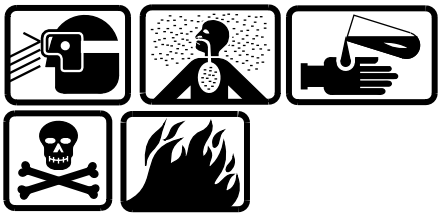
4. Cut lockwire on bolts (4) securing bleed air heater tube (1).

NOTE

Grounding strap only applies to OH-58D(R).

5. Remove three bolts (4), grounding strap (5), gasket (6), and bleed air heater tube (1). Discard gasket.

INSTALL

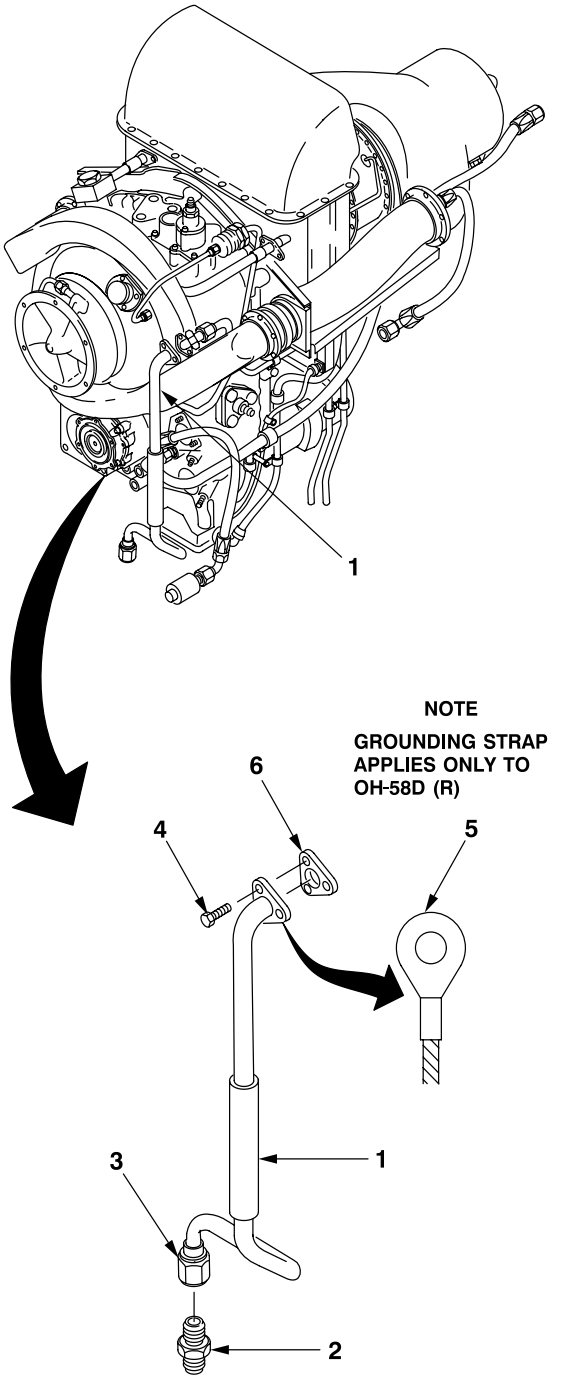


Antiseize Compound

NOTE

Bleed air heater tube and gasket mating surfaces shall be clean before installing heater tube.

6. Apply antiseize compound (D45) to bolts (4).



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4-1-9. BLEED AIR HEATER TUBE AND GASKET — REMOVAL/INSTALLATION (CONT)

7. Install bleed air heater tube (1), gasket (6), and ground strap (5) on engine with three bolts (4).

8. Torque bolts (4) **35 TO 40 INCH-POUNDS**.

9. Lockwire heads of bolts (4) together with lockwire (D132).

10. Install bleed air heater tube (1) on engine deck union (2) by connecting tube coupling nut (3).

11. Torque coupling nut (3) **37 TO 41 FOOT-POUNDS**.

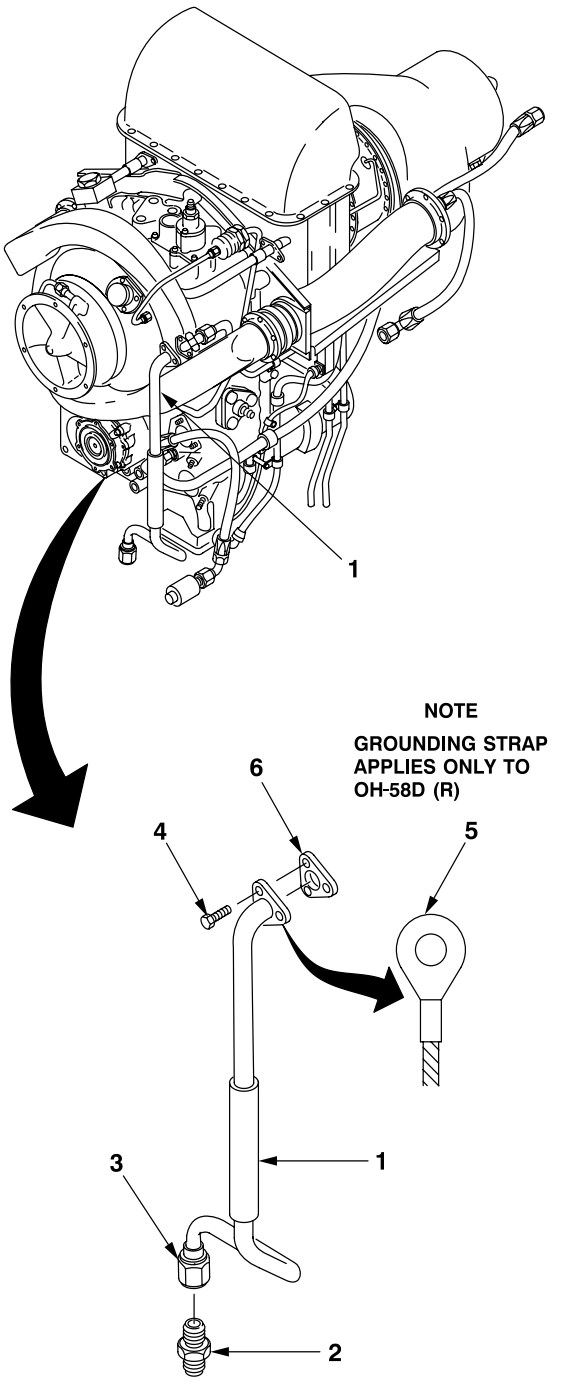
INSPECT

FOLLOW-ON MAINTENANCE

Perform leak check.

Pilot perform MOC (TM 1-1520-248-10/CL).

Close left engine cowl door.



END OF TASK

4-1-10. ENGINE ACCESSORY GEARBOX SEAL — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powerplant Tool Kit (B179)
Seal Removal Kit (B87)
Seal Installation Kit (B86)

Material:
Sealant (D180)
Grease (D116)
Rubber Gloves (D111)
Acetone (D2)
Low-Lint Cleaning Cloth (D67)
Lubricating Oil (D139)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68B Aircraft Powerplant Repairer
Pilot

References:
TM 55-2840-256-23 (OH-58D)
TM 1-2840-263-23 (OH-58D(R))
TM 1-1520-248-10
TM 1-1520-248-CL

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Removed (Task 2-2-47)
Air Induction Cowling Removed (Task 4-2-1)
Engine-to-Transmission Driveshaft Removed (Task 6-2-2)
Forward Tail Rotor Assembly Shaft Removed (Task 6-6-1)
Freewheeling Unit Removed (Task 6-5-1)
Freewheeling Unit Forward Housing Assembly Removed (Task 6-5-1)
Freewheeling Unit Aft Bearing and Seal Cap Removed (Task 6-5-1)
AC Generator Assembly Removed (Task 9-4-8)

GO TO NEXT PAGE

4-1-10. ENGINE ACCESSORY GEARBOX SEAL — REMOVAL/INSTALLATION (CONT)

NOTE

Removal is typical for accessory gearbox input and output seals.

REMOVAL

1. Insert puller bolt (1) (Part of B87) through puller mandrel (2) (Part of B87).

2. Start locknut (3) (Part of B87) on puller bolt (1).

3. Insert puller bolt (1) and puller mandrel (2) into gearbox seal (4).

4. Hand tighten locknut (3) against puller mandrel (2) until puller mandrel begins to expand.

5. Place one wrench on puller mandrel (2) wrench flats and another on locknut (3).

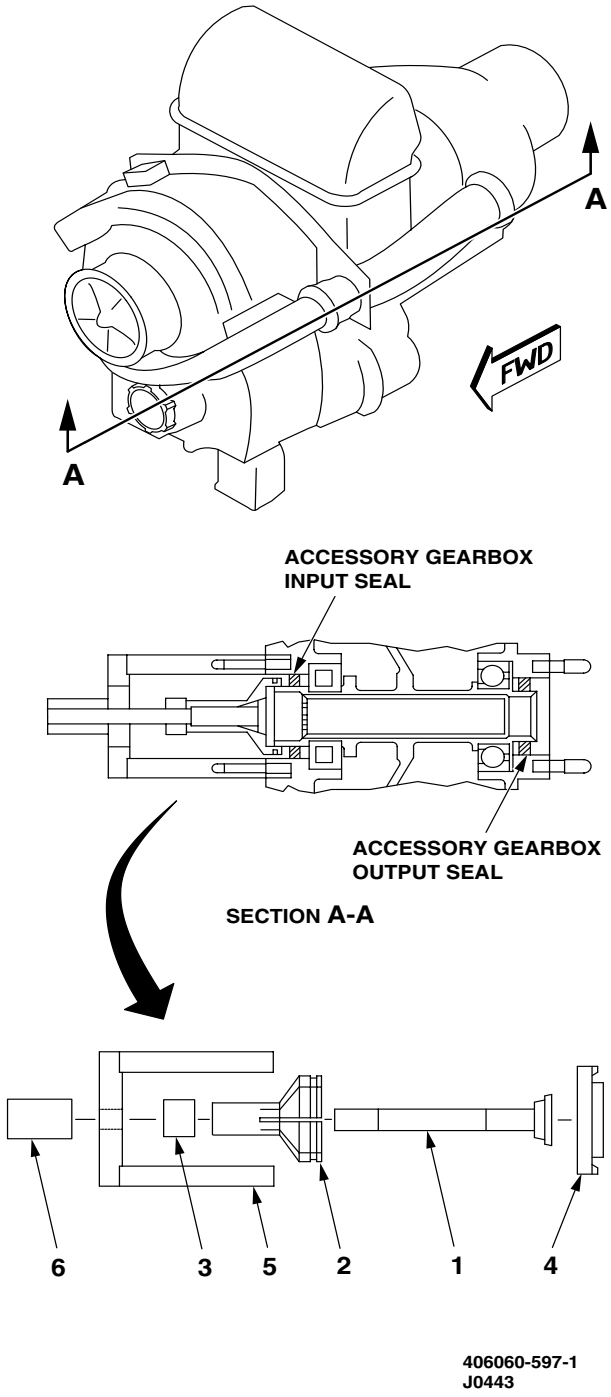
6. Slowly tighten locknut (3) until puller mandrel (2) fully expands to lock into gearbox seal (4).

7. Slide puller bridge (5) (Part of B87) over puller bolt (1) and align clearance holes in puller bridge (5) legs to existing gearbox studs.

8. Thread coupling nut (6) (Part of B87) to puller bolt (1) and hand tighten against puller bridge (5).

9. Slowly tighten coupling nut (6) until gearbox seal (4) is out of seal cavity.

10. Disassemble gearbox seal removal tooling (B87) in reverse order of assembly to remove gearbox seal (4).



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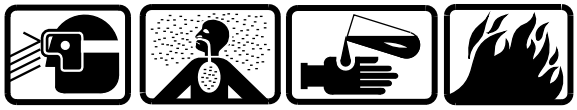
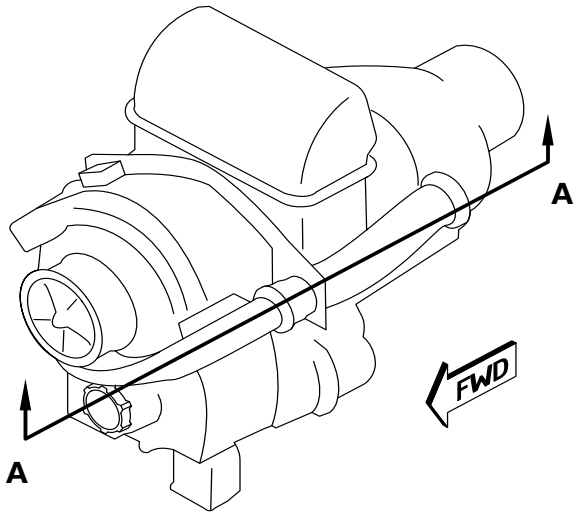
INSTALL

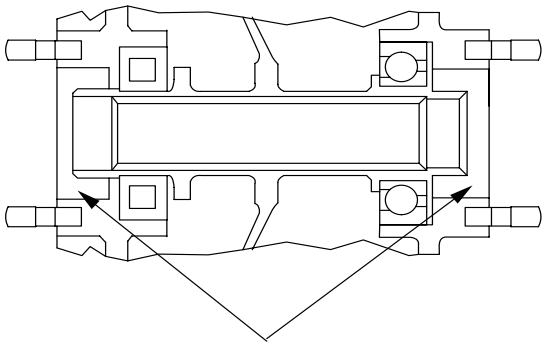
11. Ensure that seal cavity in accessory gearbox is free of contamination.



Acetone

12. Wipe accessory gearbox seal bore with low-lint cloth (D67) moistened with acetone (D2).





ACCESSORY GEARBOX SEAL BORES

SECTION A-A

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Grease

CAUTION

To prevent contamination of engine lube system, use of other lubricants is not authorized.

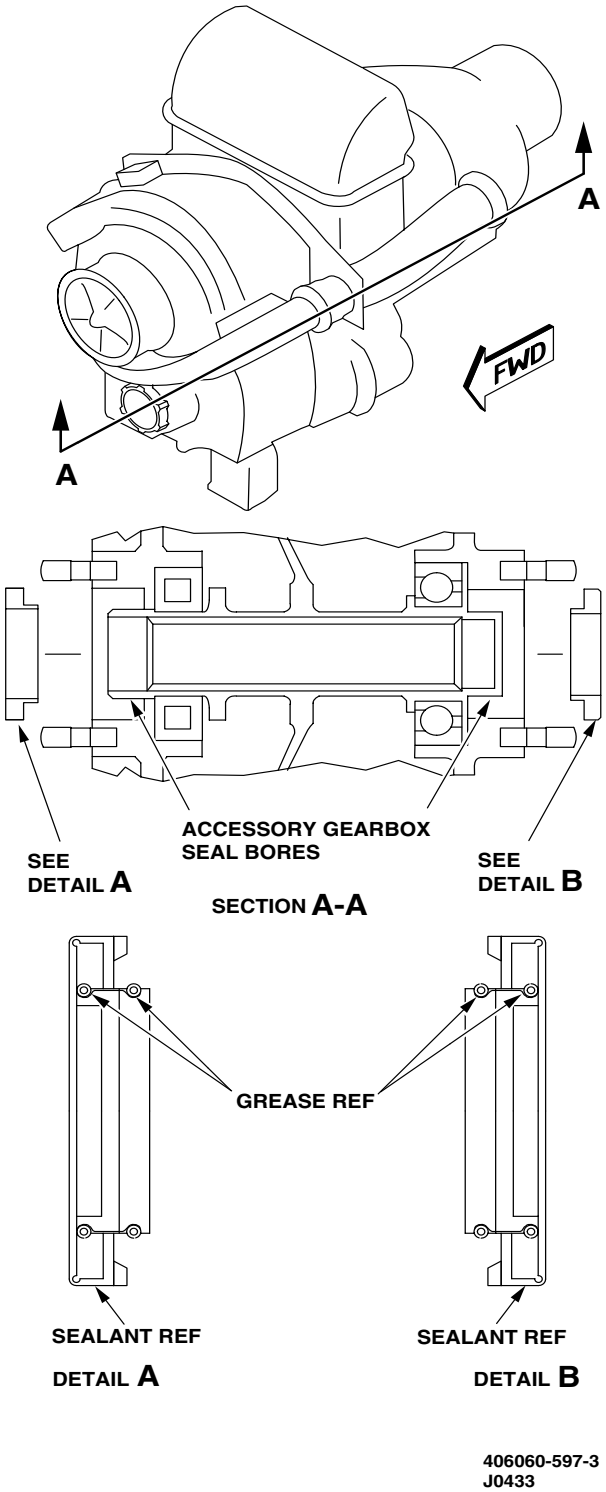
13. Fill area between seal lips with grease (D116).

Sealing Compound

CAUTION

To prevent oil foaming and overheating, use of silicone sealant (such as RTV) is not permitted.

14. Coat outer diameter of seal with a thin coat of sealant (D180).



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15. Carefully insert guide sleeves (7) (Part of B86) into accessory gearbox shaft opening and seat fully against lip.

Lubricating Oil

16. Lubricate outer surface of guide sleeves (7) and accessory gearbox shaft with lubricating oil (D139).

17. Install accessory gearbox output seal (4) on installation tool (8) (Part of B86) and carefully guide threaded rod (9) (Part of B86) and installation tool (8) into accessory gearbox assembly.

NOTE

Forward guide sleeve shall be supported during this procedure.

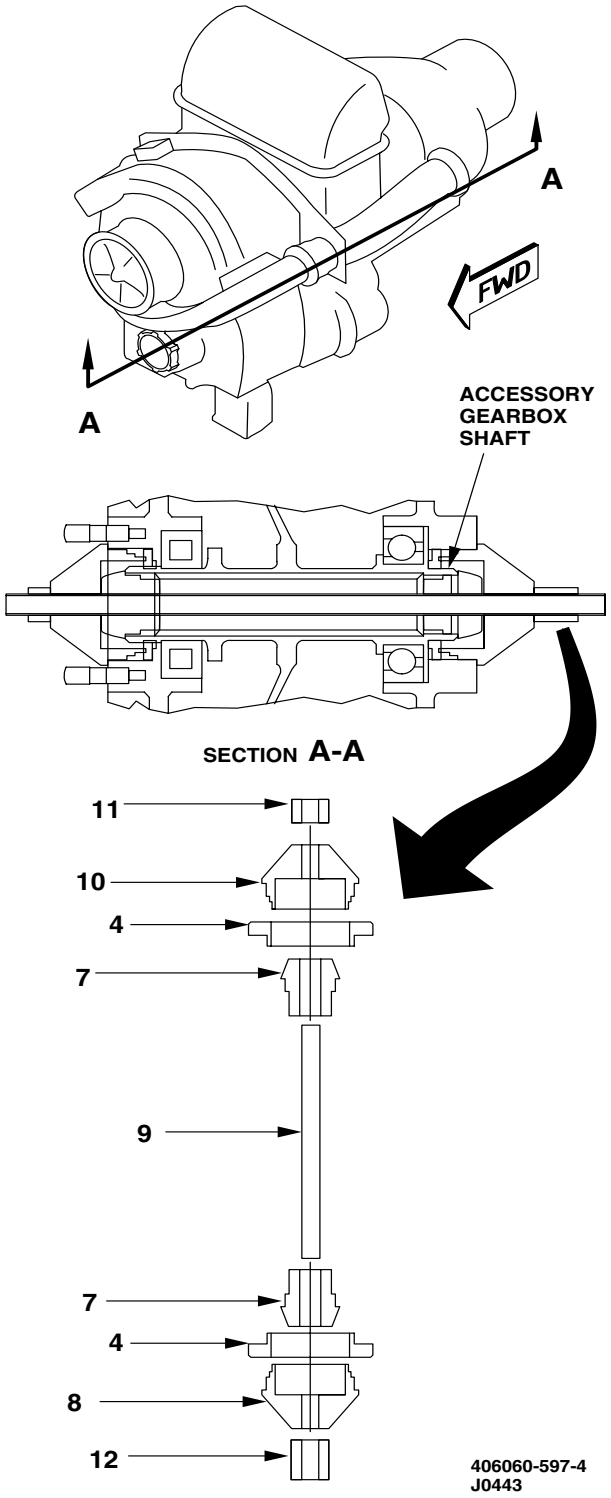
18. Place accessory gearbox input seal (4) on installation tool (10) (Part of B86) and install on end of threaded rod (9).

19. Install locknut (11) (Part of B86) on end of threaded rod (9) and hand tighten until seated against installation tool (10).

20. Ensure seals (4) are started and tooling (B86) is square to engine.

21. Place ratchet/socket on coupling nut (12) (Part of B86) and slowly tighten seals (4) until fully seated in bores as evenly as possible.

22. Remove seal installation tooling (B86) in reverse order of assembly.



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Acetone

CAUTION

To prevent deterioration of rubber, acetone shall not be allowed to contact seal lip.

23. Remove any excess sealant from engine accessory gearbox housing with low-lint cloth (D67) moistened with acetone (D2).

INSPECT

FOLLOW-ON MAINTENANCE

Install AC generator assembly (Task 9-4-9).

Install freewheeling unit aft bearing and seal cap (Task 6-5-7).

Install freewheeling unit forward housing assembly (Task 6-5-7).

Install freewheeling unit (Task 6-5-7).

Install forward tail rotor assembly shaft (Task 6-6-1).

Install engine-to-transmission driveshaft (Task 6-2-2).

Install air induction cowling (Task 4-2-3).

Install forward fairing (Task 2-2-47).

Pilot perform MOC (TM 1-1520-248-10/CL).

END OF TASK

Section II. AIR INDUCTION

4-5. AIR INDUCTION

4-6. INTRODUCTION

This section contains maintenance procedures for removal, cleaning, inspection, repair, and installation of the air induction cowl, cowl access door, and particle separator fan. Standard torques are provided in Appendix P and TM 1-1500-204-23.

4-7. TASK LIST

The task list lists those tasks required to support unit and intermediate level maintenance.

LIST OF TASKS

4-2-2. AIR INDUCTION COWL (COMPRESSOR INLET TEMPERATURE SENSOR INSTALLED) — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Removed (Task 2-2-47)
Aft Fairing Removed (Task 2-2-55)
Engine Cowl Removed (Task 2-2-50)

GO TO NEXT PAGE

4-2-2. AIR INDUCTION COWL (COMPRESSOR INLET TEMPERATURE SENSOR INSTALLED) — REMOVAL (CONT)

CAUTION

To avoid damage to main rotor hub and blades, blades shall be aligned in position as shown on illustration.

1. Loosen four fasteners (1) on each side of particle separator fairing assembly (2).

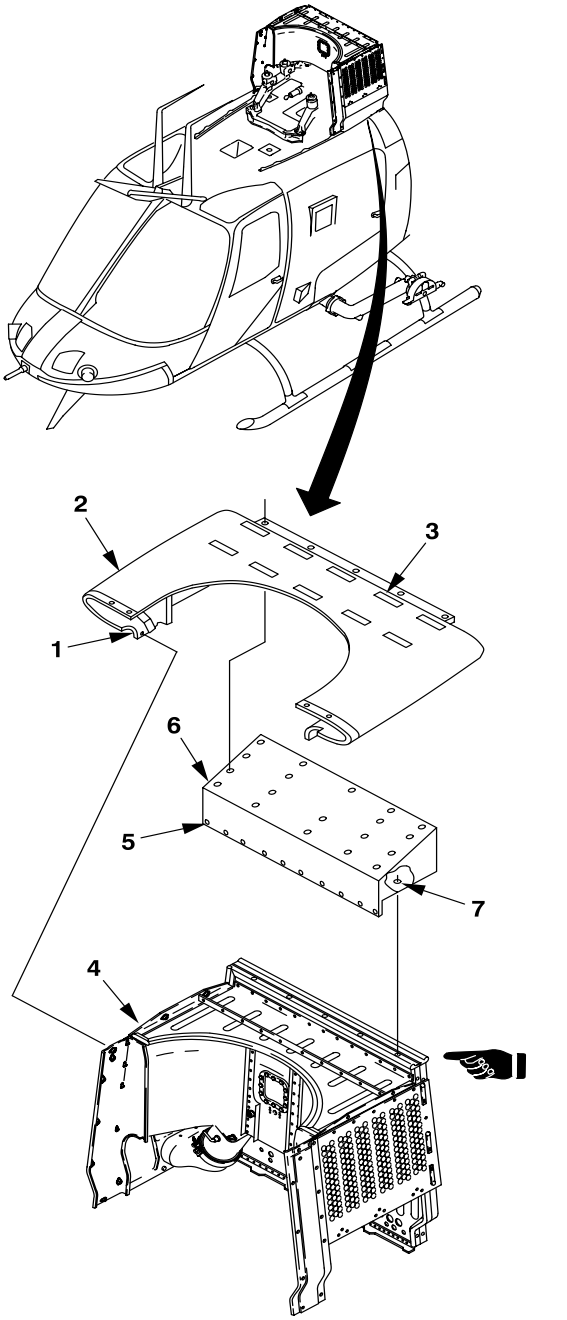
2. Loosen 10 fasteners (3) on top of particle separator fairing assembly (2).

3. Lift particle separator fairing assembly (2) from air induction cowl (4).

4. Unfasten 10 fasteners (5) from front side of work platform (6).

5. Reach in through access holes in the aft side of work platform (6) and loosen five fasteners (7).

6. Lift work platform (6) from air induction cowl (4).



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4-2-2. AIR INDUCTION COWL (COMPRESSOR INLET TEMPERATURE SENSOR INSTALLED) — REMOVAL (CONT)

7. Remove one screw (8) on each side of air induction cowl (4).

8. Remove 13 screws (9) and washers (10) that attach air induction cowl (4) to forward firewall (11).

9. Remove nine mounting bolts (12) and washers (13) on aft side of forward firewall (11).

10. Remove two bolts (14) and washers (15) from cover assemblies (16 and 17).

11. Remove four bolts (18) and washers (19) from the top half of cover assembly (16).

12. Remove the top half of cover assembly (16) and gasket (20).

13. Loosen five bolts (21) on the lower half of cover assembly (17).

14. Loosen eight fasteners (22) on air induction cowl (4).

15. Disconnect electrical plug (23) from particle separator fan (24).

NOTE

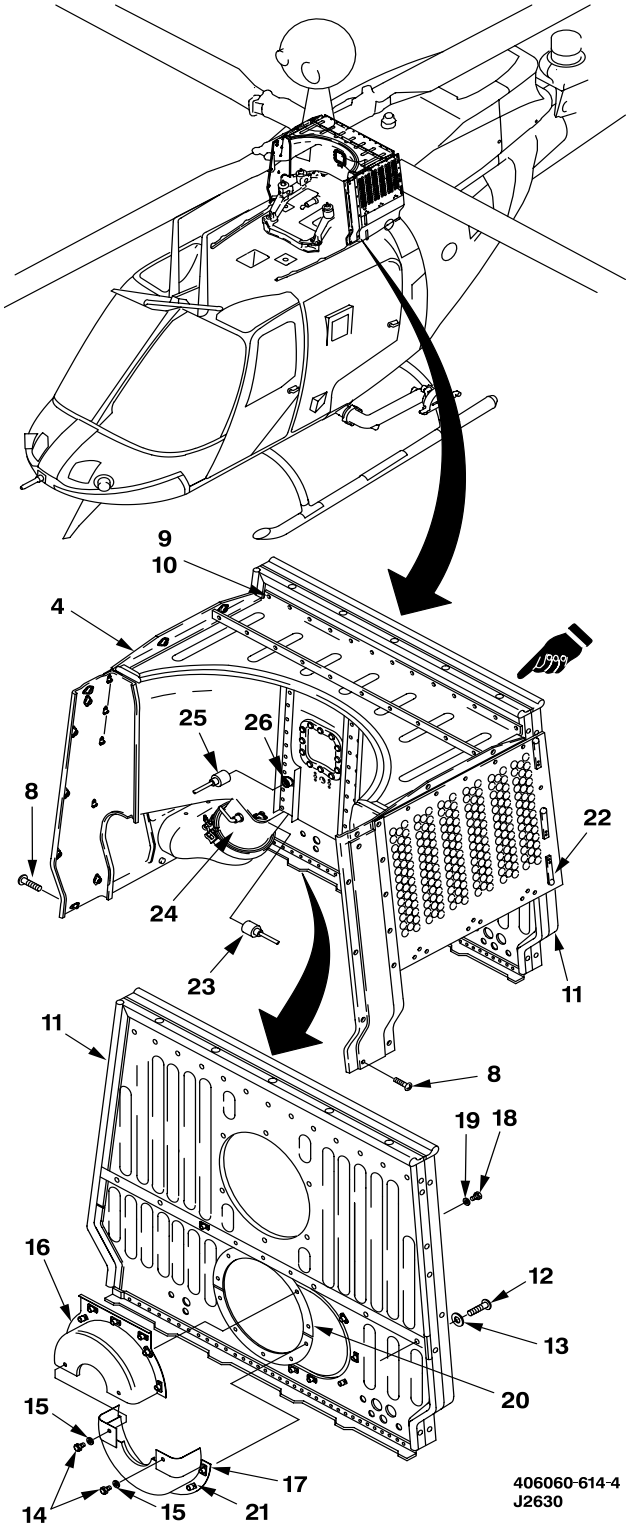
Step 16. applies to OH-58D(R) helicopters only

16. Disconnect electrical plug (25) from compressor inlet temperature sensor (26).

CAUTION

To prevent damage to engine bellmouth assembly, air induction cowling shall be raised carefully and slid forward.

17. Raise and slide air induction cowl (4) forward and off forward firewall (11). Remove air induction cowl from helicopter.



END OF TASK

4-2-3. AIR INDUCTION COWL — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)

Material:
Drycleaning Solvent (D199)
Wiping Rags (D164)
Rubber Gloves (D111)
Sealing Compound (D184)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

References:
TM 1-1500-204-23
TM 1-1520-266-23

GO TO NEXT PAGE

Drycleaning Solvent

CLEAN

1. Clean air induction cowl with drycleaning solvent (D199) and wiping rags (D164).

2. Dry with wiping rags (D164).

INSPECT

3. Inspect window (1) for cracks, crazing, and missing rivets.

4. Inspect gasket (2) for cracks and deterioration.

5. Inspect for loose fittings and tubes.

6. Inspect for cracked stiffeners and missing or damaged rivets.

7. Inspect cowl (3) for cracks, holes, and deformed areas.

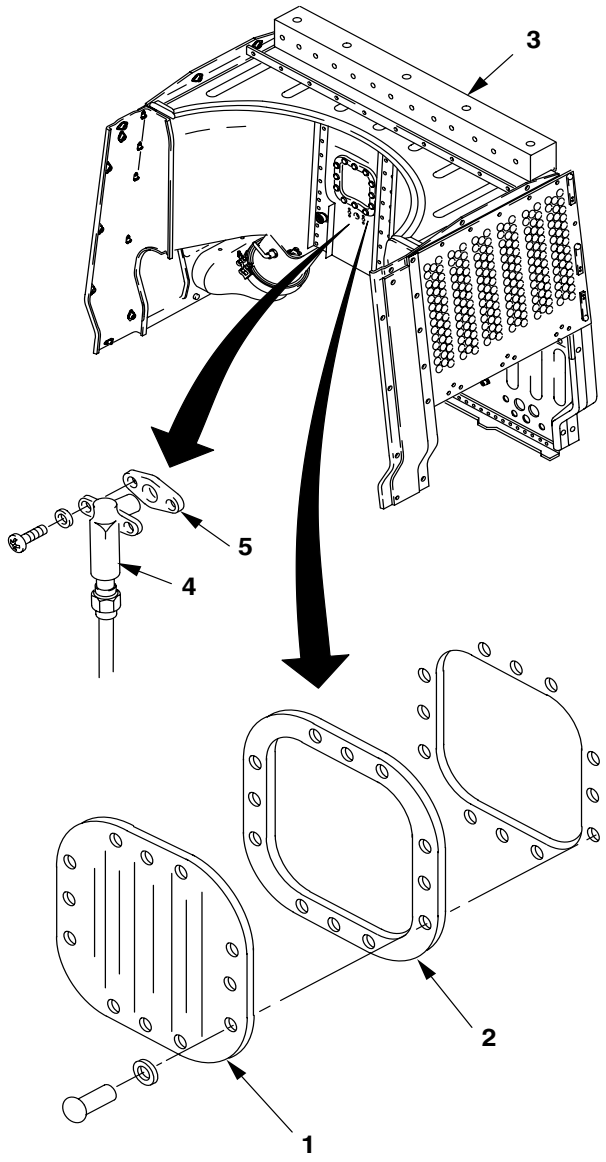
NOTE

- To aid in the visual inspection of the air induction cowling, hold the cowling up to a light source and look through the inside of the cowling. Light will shine through any gaps present.
- Pay particular attention to forward upper and lower sheet metal corner seam areas when inspecting for gaps.

7.1. If a crack is suspected, refer to TM 1-1520-266-23.

8. Inspect all sheet metal seam areas for gaps. All gaps should be sealed.

9. Inspect for sealing compound around engine wash nozzle (4) and mounting spacer (5) and around inlet temperature sensor (not shown).



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4-2-3. AIR INDUCTION COWL — CLEANING/INSPECTION/REPAIR (CONT)

REPAIR

10. Replace window (1) if cracked or crazed.

a. Drill out 12 rivets (6).

b. Remove 12 washers (7), window (1), and gasket (2).

c. Deburr rivet holes.

d. Position gasket (2) and window (1) in place.

CAUTION

Blind rivets shall be used to prevent breaking window.

e. Install 12 washers (7) and rivets (6).

11. Repair stiffeners and replace rivets (6) per TM 1-1500-204-23.

12. Tighten fittings and tubes.

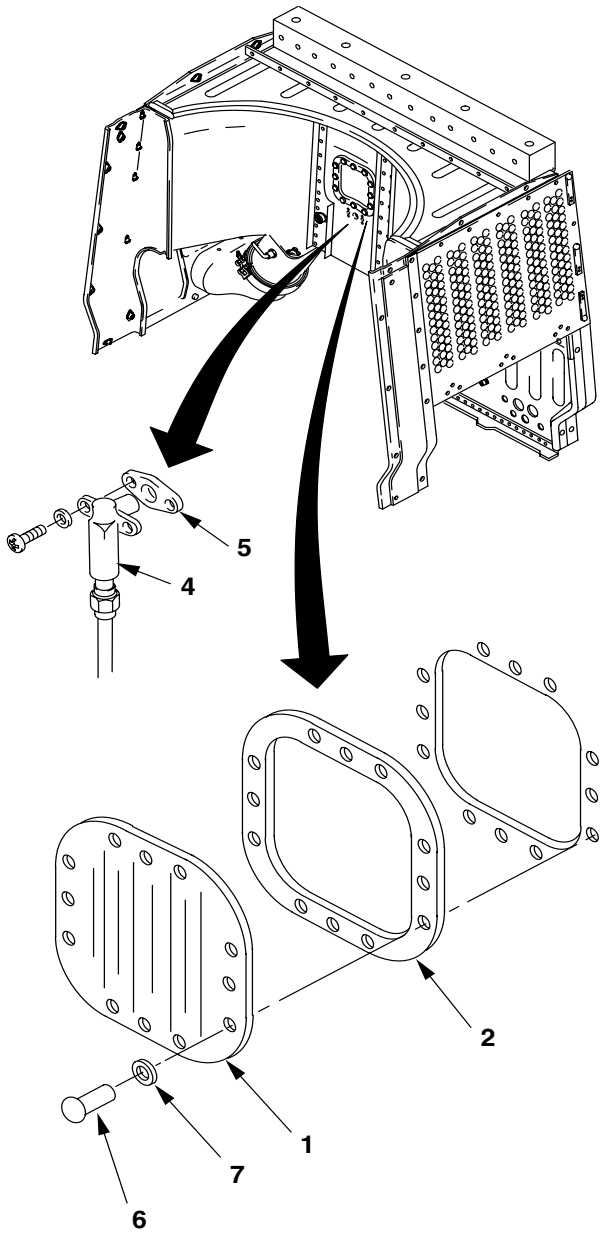
13. Repair cowl cracks, holes, and deformed areas. Reject cowl which cannot be repaired per TM 1-1500-204-23.

Adhesive

14. Apply sealing compound (D184) to gaps on sheet metal and around engine wash nozzle (4), spacer (5), and inlet temperature sensor (not shown).

NOTE

Allow 24 hour cure time before ground run or next flight.



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J2448

INSPECT

END OF TASK

4-2-5. AIR INDUCTION COWL (COMPRESSOR INLET TEMPERTURE SENSOR INSTALLED) — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Removed (Task 2-2-47)
Aft Fairing Removed (Task 2-2-55)
Engine Cowl Removed (Task 2-2-50)
Air Induction Cowl Access Doors removed (Task 4-2-6)

GO TO NEXT PAGE

4-2-5. AIR INDUCTION COWL (COMPRESSOR INLET TEMPERTURE SENSOR INSTALLED) — INSTALLATION (CONT)

INSPECT

1. Inspect seals and gaskets on forward firewall for damage, dry rot, incorrect seal and security.

2. Replace seals (Task 4-8-2) as required.

INSTALL

CAUTION

- To avoid damage to main rotor hub and blades, blades shall be aligned in position as shown on illustration.
- During installation of the air induction cowling, damage to the engine bellmouth assembly shall be prevented.

3. Slide air induction cowl (1) into position and over forward firewall (2) curvature.

4. Secure eight Dzus fasteners (3) to air induction cowl (1).

5. If cover assembly gasket (4) is damaged, replace gasket (Task 4-8-2).

6. Position top half of cover assembly (5) onto firewall (2).

7. Install four bolts (6) and washers (7).

8. Install two bolts (8) and washers (9).

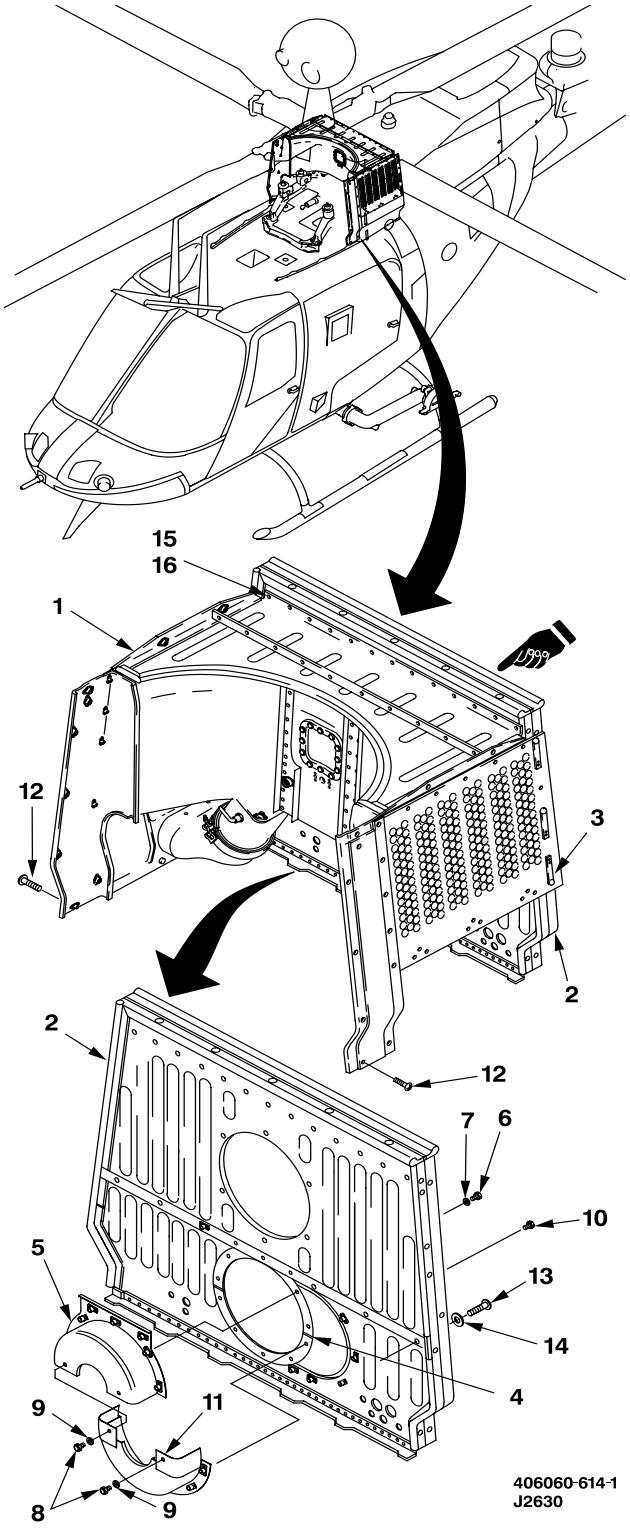
9. Tighten bolts (10) in lower half of cover assembly (11).

10. Loosely install one screw (12) on each side of air induction cowl (1).

11. Install nine mounting bolts (13) and washers (14) in aft side of forward firewall (2).

12. Install 13 screws (15) and washers (16) that attach air induction cowl (1) to forward firewall (2).

13. Tighten screws (12).



INSPECT

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4-2-5. AIR INDUCTION COWL (COMPRESSOR INLET TEMPERTURE SENSOR INSTALLED) — INSTALLATION (CONT)

14. Connect electrical plug (17) to particle separator fan (18) (Task 4-2-11).

15. Connect electrical plug (19) to compressor inlet temperature sensor (20).

16. Place work platform (21) on air induction cowl (1).

17. Reach in through access holes in aft side of work platform (21) and secure five Dzus fasteners (22).

18. Fasten 10 Dzus fasteners (23) from front side of work platform (21).

INSPECT

19. Position particle separator fairing assembly (24) and fasten four Dzus fasteners (25) on each side.

20. Fasten 10 Dzus fasteners (26) on top of particle separator fairing assembly (24).

INSPECT

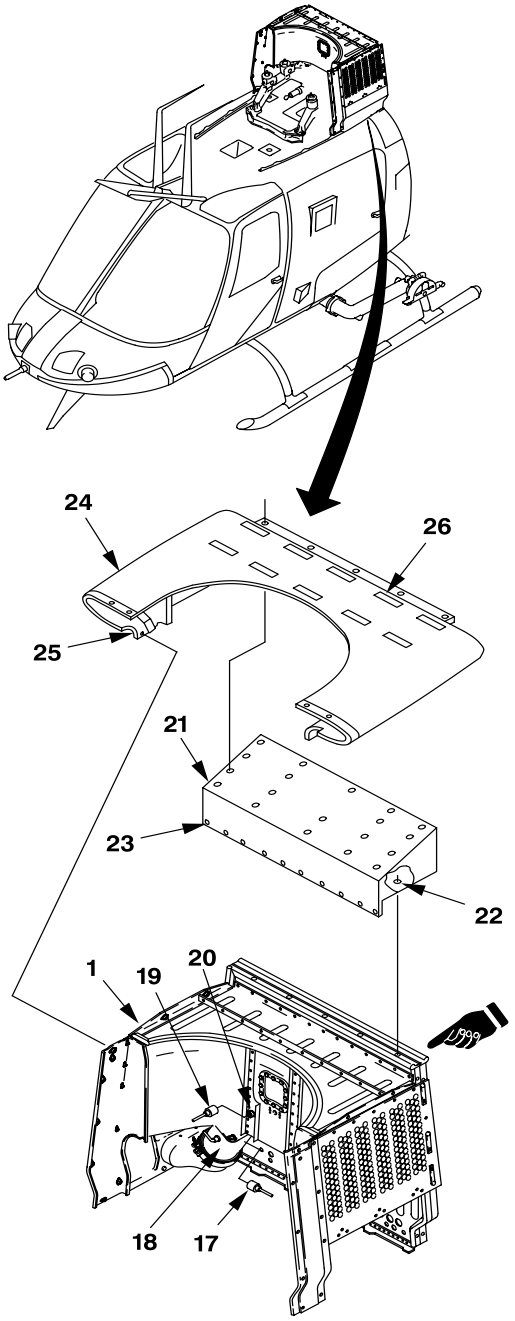
FOLLOW-ON MAINTENANCE

Install engine cowl (Task 2-2-50).

Install aft fairing (Task 2-2-55).

Install forward fairing (Task 2-2-47).

Install air induction cowl access doors (Task 4-2-6).



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END OF TASK

4-2-6. AIR INDUCTION COWL ACCESS DOOR — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

REMOVE

1. Loosen two fasteners (1) on access door (2).

2. Remove nine screws (3), washers (4), and nuts (5).

3. Remove access door (2).

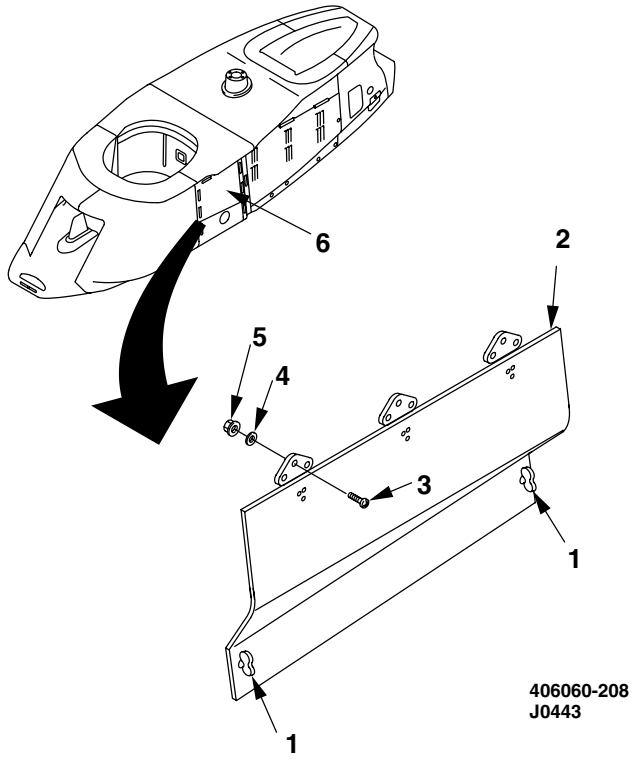
INSTALL

4. Align access door (2) with holes in flange under particle separator (6).

5. Install nine screws (3), washers (4), and nuts (5).

6. Secure two fasteners (1) on bottom of access door.

INSPECT



END OF TASK

4-2-7. AIR INDUCTION COWL ACCESS DOOR — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)

Material:
Soap Cleaning Compound (D192)
Wiping Rags (D164)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

References:
TM 1-1500-204-23
TM 1-1520-266-23

CLEAN

1. Clean access door (1) using soap cleaning compound (D192) and lukewarm water.

2. Rinse with clean water and wipe dry with clean wiping rags (D164).

INSPECT

3. Inspect access door (1) and hinges (2) for cracks or other damage.

3.1. If a crack is suspected, refer to TM 1-1520-266-23.

4. Inspect access door (1) for missing, broken, or damaged fasteners (3) and grommet (4).

NOTE

There is no limit on damage as long as repair does not affect function.

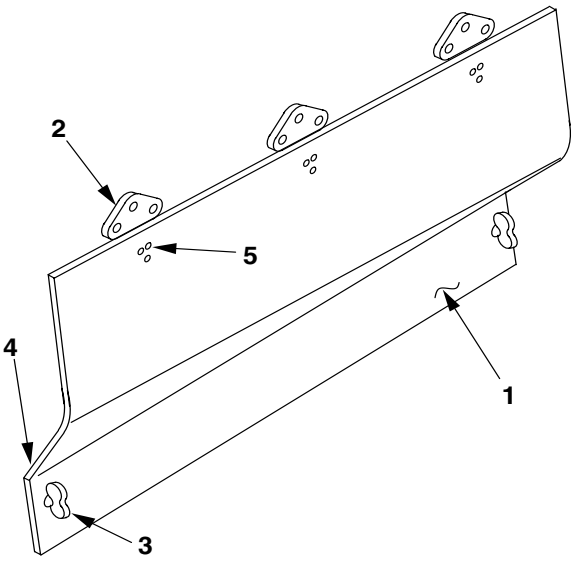
REPAIR

5. Replace hinge (2) by removing and installing rivets (5) (TM 1-1500-204-23).

6. Replace fastener (3) and grommet (4) (TM 1-1500-204-23).

7. Repair cracks and other damage in aluminum access door (1) (TM 1-1500-204-23).

INSPECT



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END OF TASK

4-2-8. PARTICLE SEPARATOR FAN AND DUCT — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

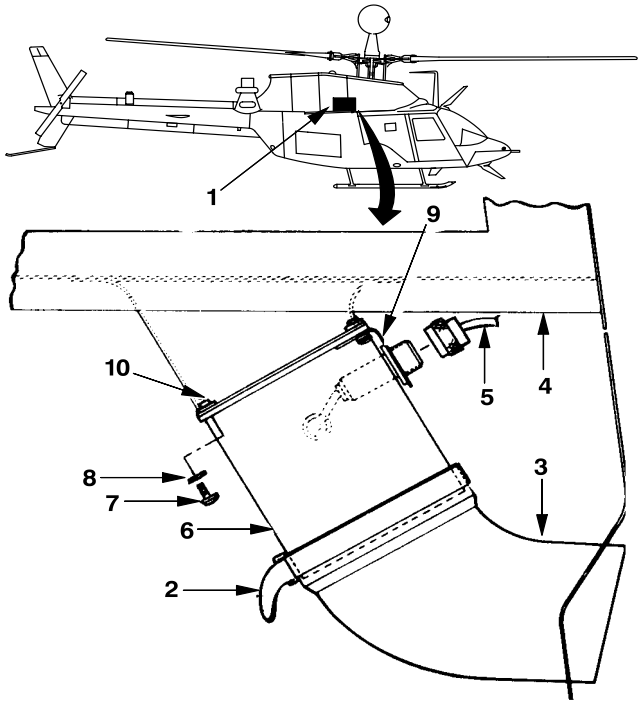
1. Loosen fasteners and open air induction cowl right side access door (1).

2. Remove clamp (2) and duct (3) below particle separator (4).

3. Remove lockwire and disconnect electrical connector (5) from fan (6).

4. Remove screws (7), washers (8), and bracket (9) from nutplates (10).

5. Remove fan (6).



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END OF TASK

4-2-9. PARTICLE SEPARATOR FAN (AVIM) — DISASSEMBLY/ASSEMBLY

This task covers: Disassembly and Assembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Electrical Repairer Tool Kit (B177)
End Frame Tool T11108 (B196)
Dial Indicator (B37)
Bearing Removal and Installation Plate (B103)
Torque Wrench (B235)

Material:
Sealing Compound (D183)
Sealing Compound (D186)
Petrolatum (D152)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68F Aircraft Electrician

Equipment Condition:
Particle Separator Fan and Duct Removed (Task 4-2-8)

GO TO NEXT PAGE

4-2-9. PARTICLE SEPARATOR FAN (AVIM) — DISASSEMBLY/ASSEMBLY (CONT)

DISASSEMBLE

NOTE

Before disassembly it is recommended that a clean work area be prepared and covered with a clean sheet of paper.

1. Remove nut (1), washer (2), and impeller (3) from end of rotor shaft (4).

2. Remove contacts with cable (5) from connector (6).

3. Remove screw (7), washer (8), nut (9), and clip (10) from housing assembly (11).

4. Pull cable (5) through grommet (12) and let cable hang loose from housing assembly (11).

5. Remove adhesive holding cable (5) in hole in end cap (13).

6. Remove three screws (14) and three washers (15) from end cap (13).

7. Remove end cap (13) complete with retaining ring (16), shims (17 and 18), wave washer (19), and bearing (20) allowing cable (5) to pass through hole in end cap (13).

NOTE

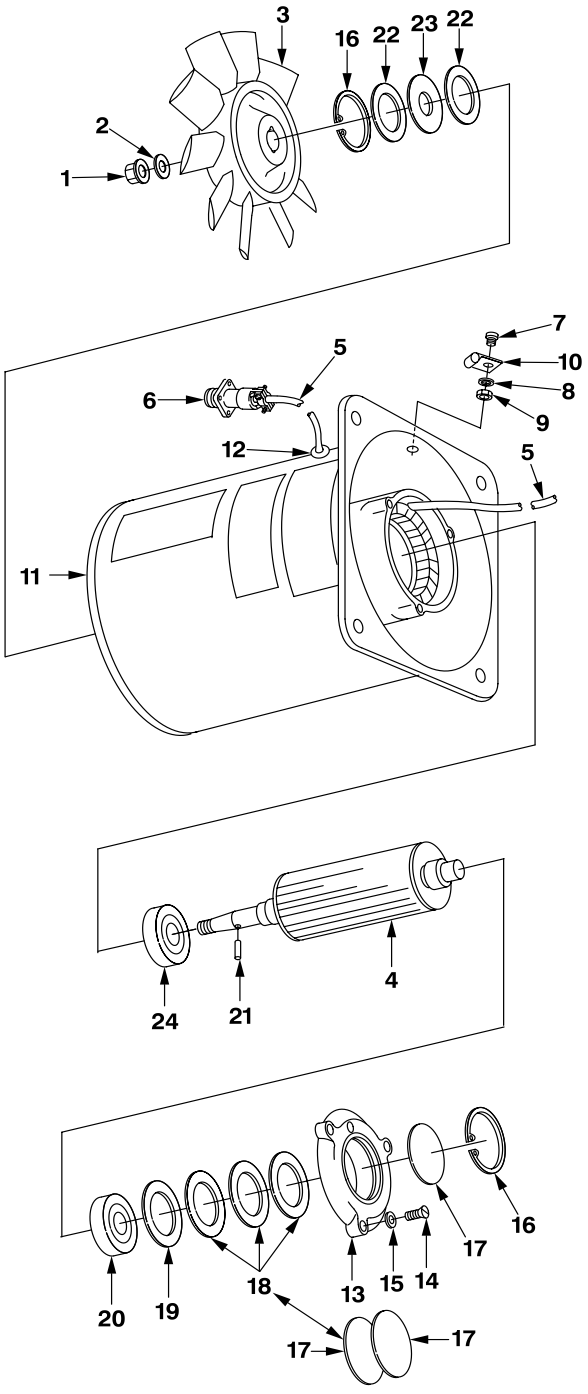
Wave washer details and number of shims fitted shall be carefully noted.

8. Remove and discard retaining ring (16), shims (17 and 18), wave washer (19), and bearing (20).

9. Remove and discard spiral pin (21), retaining ring (16), shim (22), seal (23), and shim (22) from drive end of housing assembly (11).

10. Withdraw rotor shaft assembly (4) with bearing (24).

11. Remove and discard bearing (24) from rotor shaft assembly (4).



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4-2-9. PARTICLE SEPARATOR FAN (AVIM) — DISASSEMBLY/ASSEMBLY (CONT)

ASSEMBLE

12. Fit bearing (20) in end cap (13) and place end cap on tool (B103).

CAUTION

To prevent brinelling of bearings, inner ring of bearing (20) shall be supported.

13. Align rotor shaft assembly (4) with end cap (13) and press rotor shaft assembly (4) into bearing (20), ensuring correct vertical alignment.

14. Press in bearing (24) using housing assembly (11).

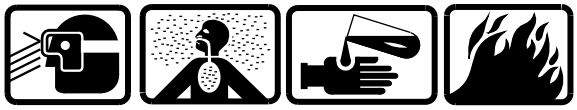
15. Coat mating surface of end cap (13) with petrolatum (D152). Align housing assembly (11) so that cable (5) passes through hole in end cap (13).

16. Gently press until bearing (20) and end cap (13) correctly mate and three mounting holes line up.

17. Remove tool (B103) and place housing assembly (11) horizontally on wooden V block.

18. Install shim (22), seal (23), shim (22), and retaining ring (16) on rotor shaft (4).

19. Align holes between end cap (13) and housing assembly (11).



Sealing Compound

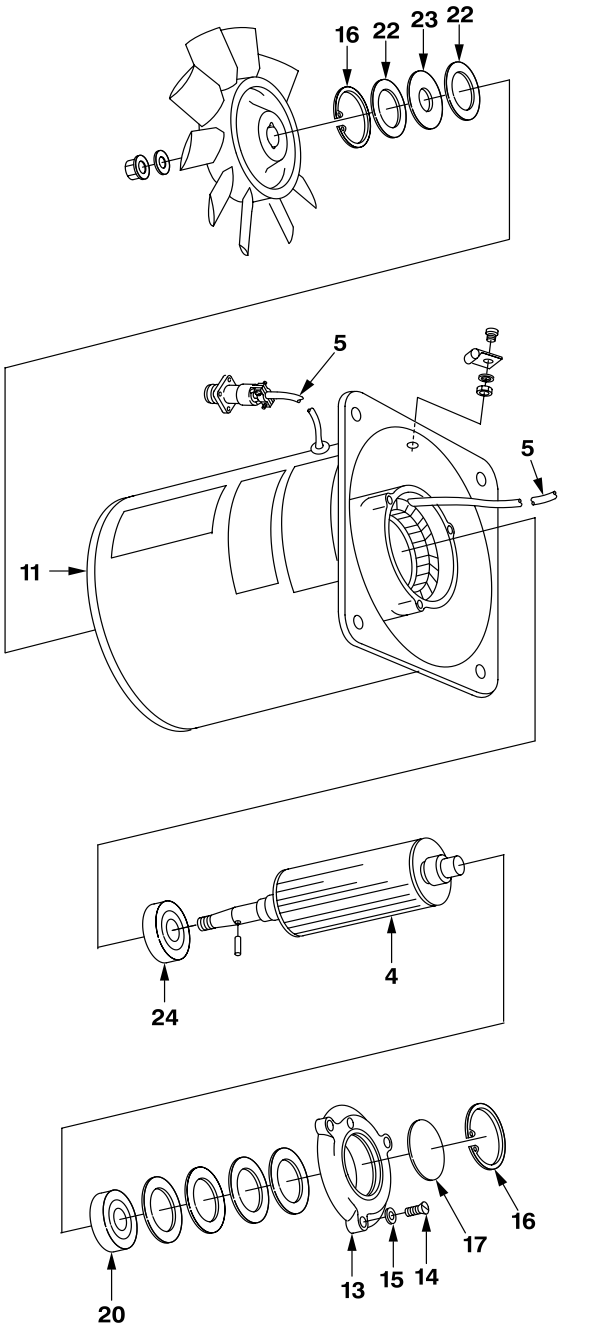
20. Apply sealing compound (D183) to threads on screws (14) and install with washers (15).

CAUTION

To prevent thread damage, a delicate feel shall be used when tightening screw.

21. Tighten screws (14).

22. Temporarily fit shim (17) and retaining ring (16) into end cap (13).



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23. Determine correct shim thickness as follows:

a. Using dial indicator (B37) measure axial movement of shaft (4) to full extent of its travel between two retaining rings (16).

b. Place wave washer (19) between two flat surfaces and measure thickness of spring when compressive load of 7.7 pounds is applied.

c. Thickness of shim to be applied will equal dimension resulting from deducting step b thickness from step a thickness. Use quantity of shims (18) to give this dimension.

24. Remove retaining ring (16) and shim (17) and remove end cap (13).

NOTE

Shims (17) may be used in lieu of shims (18).

25. Install wave washer (19) adjacent to bearing (20) and shims (18), reinstall shim (17) and retaining ring (16).

26. Install spiral pin (21) on rotor shaft assembly (4).

27. Install cable (5) through clip (10) and grommet (12) bringing wires outside housing assembly (11).

28. Coat screw threads (7) with sealing compound (D183).

29. Install clip (10) with screw (7), washer (8), and nut (9).

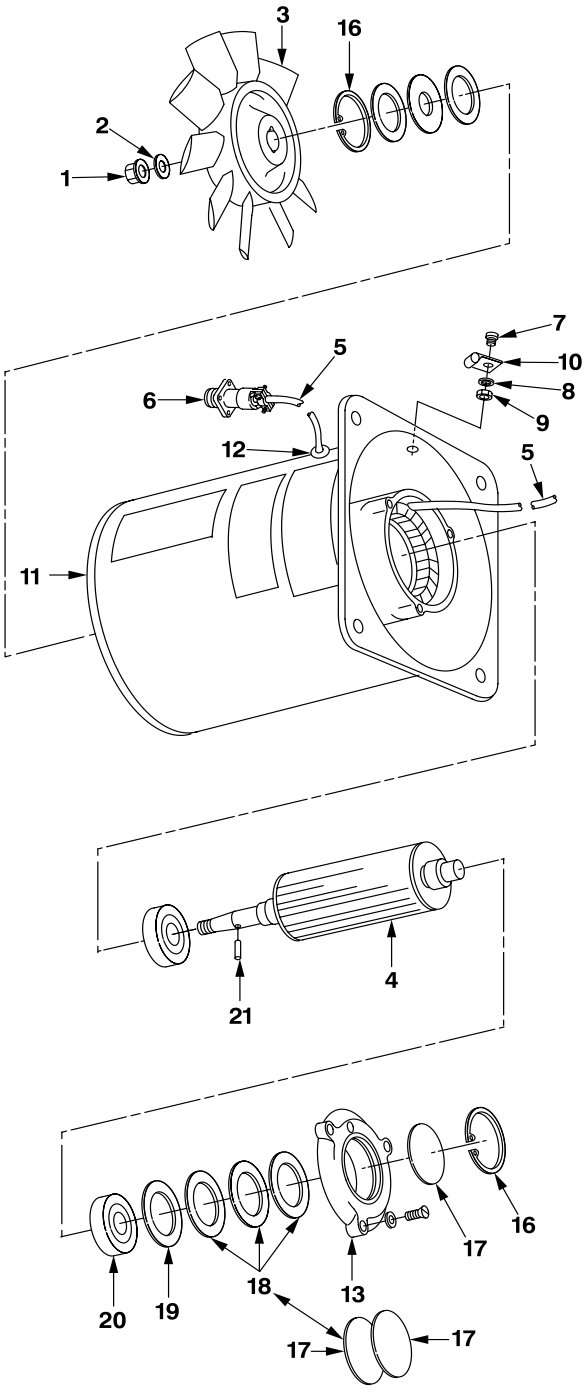
30. Apply sealing compound (D186) to hole in end cap (13) where cable passes through to produce complete seal.

31. Install contact pins on cable (5) and install pins in connector (6).

32. Install impeller (3), washer (2), and nut (1) on rotor shaft assembly (4).

33. Measure clearance between housing and impeller. Clearance may vary between **0.023 inch** and **0.025 inch**. No provisions made for adjustment.

34. Torque nut (1) **20 INCH-POUNDS**.



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INSPECT

FOLLOW-ON MAINTENANCE

Install particle separator fan (Task 4-2-11).

END OF TASK

4-2-10. PARTICLE SEPARATOR FAN (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Insulation Resistance Tester, DC Portable (B172)

Material:
Drycleaning Solvent (D199)
Crocus Cloth (D90)
Low-Lint Cleaning Cloth (D67)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68F Aircraft Electrician

References:
TM 55-1500-345-23
TM 1-1520-266-23

GO TO NEXT PAGE

4-2-10. PARTICLE SEPARATOR FAN (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN

Compressed Air

1. Prior to using solvents, remove all dust adhering to components using dry, low pressure, compressed air.

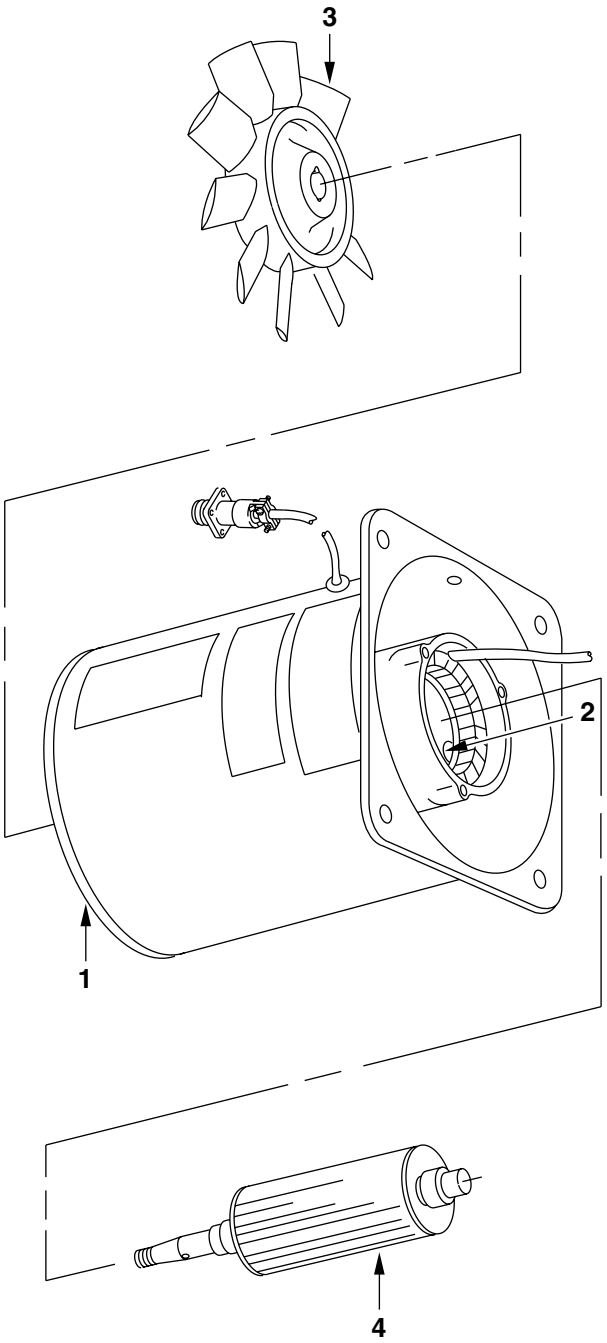
Drycleaning Solvent

2. Clean housing casing (1), stator (2), impeller (3), and rotor shaft (4) using low-lint cleaning cloth (D67) moistened with drycleaning solvent (D199). Wipe dry before solvent evaporates.

NOTE

Components shall be free from lint after cleaning.

3. Clean all other parts using clean cloth (D67) moistened with drycleaning solvent (D199) and wipe dry before solvent evaporates.



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4-2-10. PARTICLE SEPARATOR FAN (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

INSPECT

4. Inspect all components for cleanliness, distortion, cracks, impact damage, scoring, or any evidence of wear.

5. Inspect for damage to protective treatment including effects of corrosion.

6. Inspect housing assembly (1) including stator (2) as follows:

a. Ensure stator leads are free from cracking or deterioration of insulation.

b. Measure insulation resistance of the stator using a DC portable insulation resistance tester (B172). Resistance should not be less than 20 megohms.

c. Inspect impeller (3) for worn, cracked, chipped or broken blades.

d. Ensure rotor shaft (4) is free from cracks, distortion, scoring and excessive wear.

6.1. If damage is suspected, refer to TM 1-1520-266-23.

REPAIR

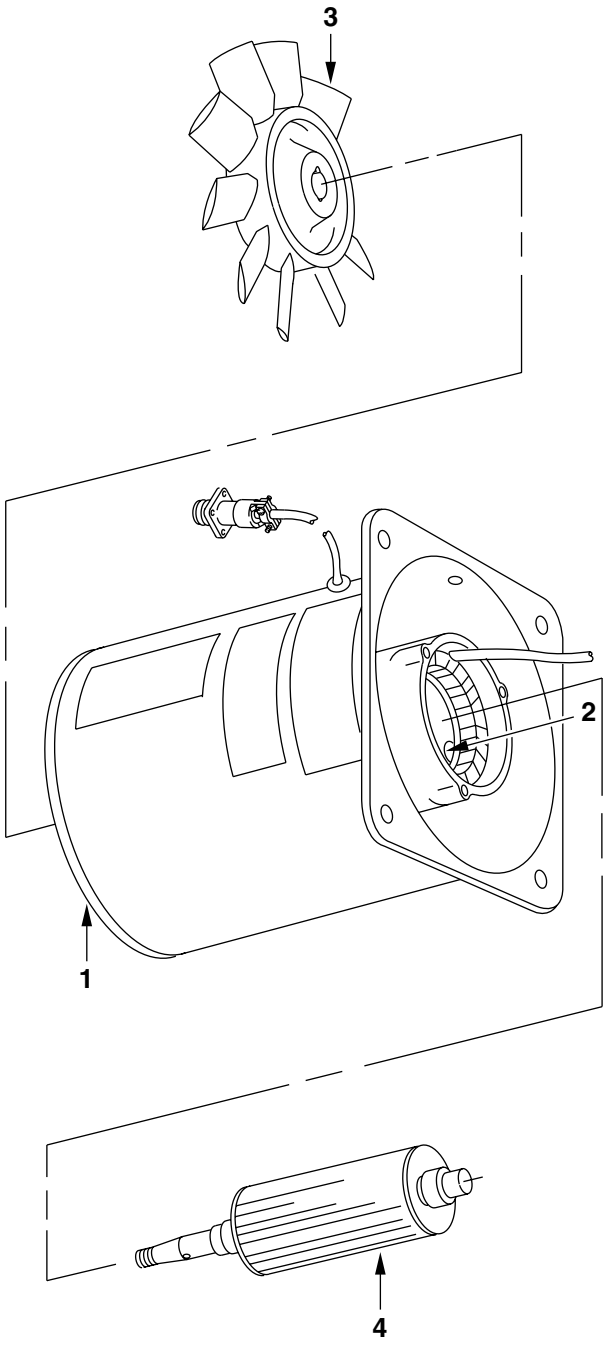
7. Replace any components that do not meet inspection requirements.

Sanding Operations

8. Remove corrosion using crocus cloth (D90).

9. Touch up repaired housing assembly (1) (TM 55-1500-345-23).

INSPECT



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END OF TASK

4-2-11. PARTICLE SEPARATOR FAN AND DUCT — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Corrosion Preventive Compound (CPC) (D82)
Lockwire (D132)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Pilot

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

4-2-11. PARTICLE SEPARATOR FAN AND DUCT — INSTALLATION (CONT)

1. Align top of fan (1) and bracket (2) with nutplates (3) in bottom of particle separator (4).

2. Install four screws (5) with washers (6).

3. Install duct (7) between bottom of fan (1) and access door (8).

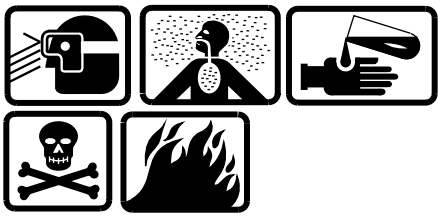
4. Loosely install clamp (9) and at the same time close access door (8) to align duct with access door.

5. Open access door and tighten clamp (9).

6. Check operation of door.

7. Connect electrical connector (10) to fan (1).

8. Secure electrical connector (10) to fan (1) with lockwire (D132).



Corrosion Preventive Compound

CAUTION

To prevent damage to equipment, CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals.

9. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.

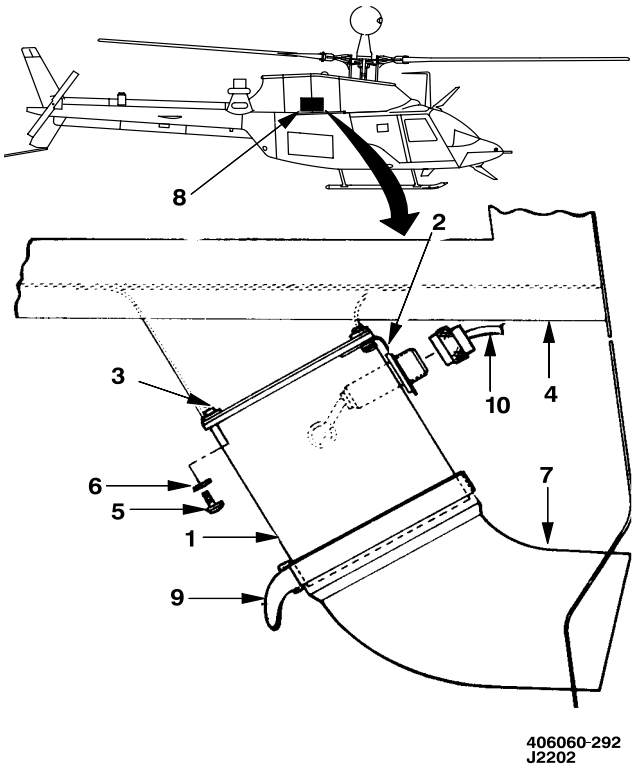
INSPECT

FOLLOW-ON MAINTENANCE

Apply external dc power (Task 1-6-5).

Close PART SEP BLWR circuit breaker. Check fan operation.

Pilot perform MOC (TM 1-1520-248-10/CL)



END OF TASK

4-2-12. PARTICLE SEPARATOR — REMOVAL/INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Sealing Compound (D185)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

GO TO NEXT PAGE

4-2-12. PARTICLE SEPARATOR — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Remove eight screws (1) and washers (1.1) from forward lower flange of air induction cowl (2).

1.1. Disconnect compressor wash line (2.1) at fitting (2.2).

1.2. Remove three screws (2.3), washers (2.4) and clamps (2.5). Remove compressor wash line.

2. Remove 20 screws (3) attaching particle separator (4) to air induction cowl (2).

3. Remove particle separator (4).

INSTALL

4. Slide particle separator (4) inside air induction cowl (2).

CAUTION

To prevent damage to engine, completely seal mating surface of particle separator with sealing compound (D185) and clean up any sealing compound (D185) that could be ingested into engine.

5. Seal particle separator (4) and aircraft mating surfaces with sealing compound (D185).

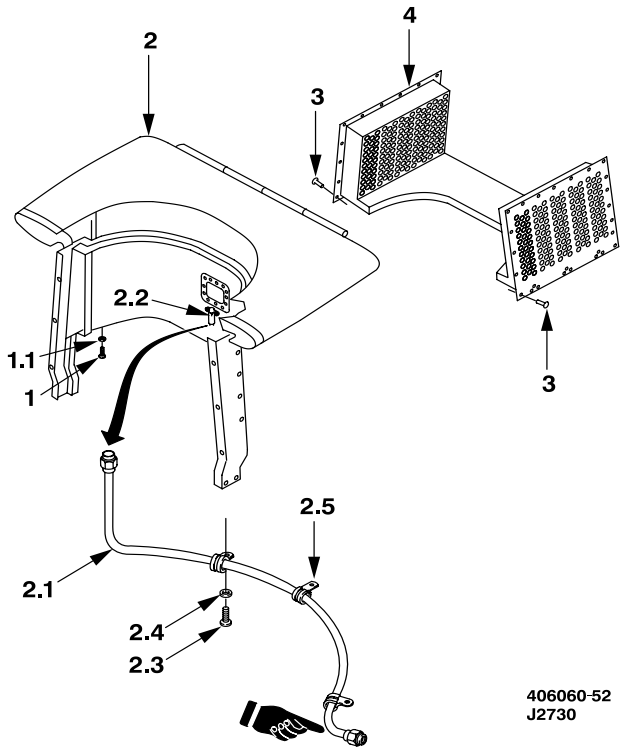
6. Install eight screws (1) and washers (1.1) along lower front cowl contour.

6.1. Connect compressor wash line (2.1) to fitting (2.2).

6.2. Install three clamps (2.5), washers (2.4), and screws (2.3)

7. Install 20 screws (3) in forward and top edges of particle separator (4).

INSPECT



END OF TASK

4-2-13. PARTICLE SEPARATOR — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Airframe Repairer Tool Kit (B176)
Plastic Scraper (B123)
Welding Shop Set (B212)
Heat Gun (B59)

Material:
Low-Lint Cleaning Cloth (D67)
Cleaning Compound Soap (D192)
Acid Swabbing Brush (D51)
Acetone (D2)
Abrasive Mats (D1)
Adhesive (D26)
Synthetic Rubber (D208)
Chemical Conversion Coating (Alodine 1201) (D57)
Pressure Adhesive Tape (D212)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer
67S Scout Helicopter Repairer

References:
TM 1-1500-204-23
TM 1-1520-266-23

Equipment Condition:
Particle Separator Fan and Duct Removed (Task 4-2-8)

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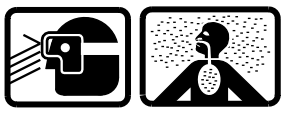
4-2-13. PARTICLE SEPARATOR — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN



Compressed Air

CAUTION

To prevent damage to filter elements, care shall be exercised in all cleaning phases. Pressure shall not be exerted on the swirls. Water hotter than 140 °F shall not be used when cleaning particle separator.

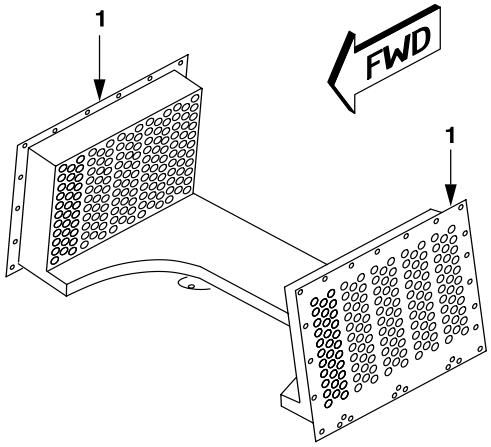
1. Use low air pressure source (up to 90 psi) to blow foreign matter out of particle separator (1).

2. Clean outside of particle separator (1) using cleaning compound soap (D192), lukewarm water, and low-lint cleaning cloths (D67).

3. Clean inside of particle separator (1) through particle separator discharge port (not shown) using cleaning compound soap (D192), lukewarm water, and low-lint cleaning cloths (D67).

4. Rinse outside of particle separator (1) with clean water. Dry with low air pressure and low-lint cleaning cloths (D67).

5. Rinse inside of particle separator (1) through particle separator discharge port (not shown) with clean water. Dry with low air pressure and low-lint cleaning cloths (D67).



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4-2-13. PARTICLE SEPARATOR — CLEANING/INSPECTION/REPAIR (CONT)

INSPECT

6. Inspect gasket (2) for tears, splits, or other damage.

7. Inspect particle separator (1) for cracks in floor frame (3).

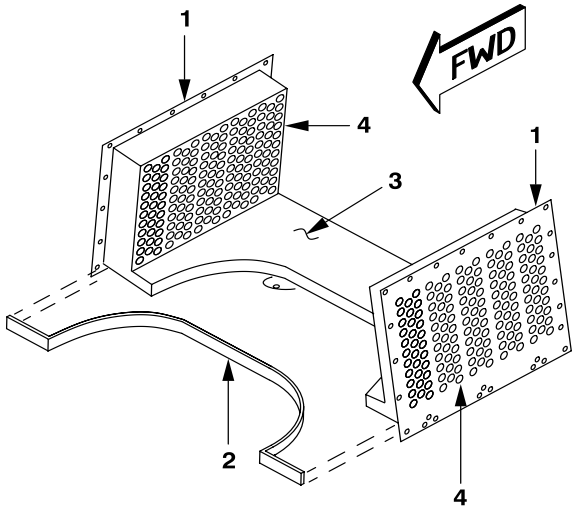
7.1. If damage is suspected, refer to TM 1-1520-266-23.

8. Inspect for cracked, damaged, loose, clogged, or missing vortex generator tubes (4).

a. Particle separator shall be replaced when 25 or more vortex generator tube holes have been plugged or when 50 or more tubes have been replaced. No more than seven tubes in a group shall be plugged and groups of two to seven plugged tubes must be separated by at least three serviceable tubes.

b. Cracks in vortex generator tubes are acceptable if no two cracks converge.

c. Damage to the vortex generator tube vanes is considered acceptable if no more than **0.250 inch** of the leading edge of each vane is eroded away or broken off. Jagged tears in the first **0.250 inch** of each vane should be trimmed off to prevent further tearing.



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J1444

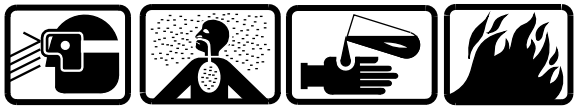
REPAIR

9. Remove gasket (2) using plastic scraper (B123).

Acetone

10. Clean surface with abrasive mat (D1) dampened with acetone (D2).

11. Cut new gasket (2) from synthetic rubber (D208) the width and length of forward edge of floor frame (3).



Adhesive

12. Apply adhesive (D26) to particle separator (1).

13. Bond gasket (2) to particle separator (1).

Heat

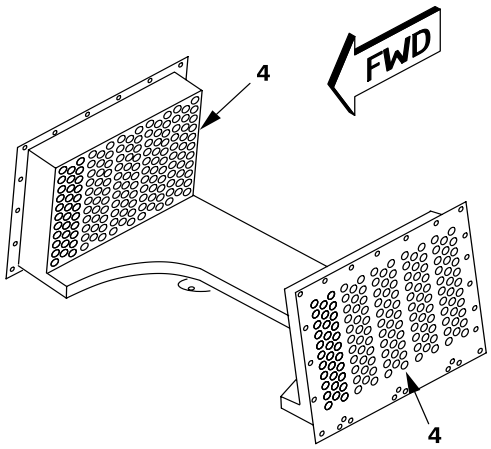
14. Using heat gun, apply heat of 205 to 260 °F for 1 minute and allow to cool at room temperature for 4 hours.

15. Weld crack in particle separator floor frame (3) in accordance with TM 1-1500-204-23.

GO TO NEXT PAGE

16. Coat repaired area with Alodine 1201 (D57) (Task 2-1-38).

17. If replacement vortex generator tubes or plugs are not available, pressure adhesive tape (D212) may be used. Cut pressure adhesive tape to fit and tape over damaged or missing vortex generator tube (4).



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J2448

INSPECT

FOLLOW-ON MAINTENANCE

Install particle separator fan and duct (Task 4-2-11).

END OF TASK

4-2-14. PARTICLE SEPARATOR VORTEX GENERATOR TUBES — REMOVAL/INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Airframe Repairer Tool Kit (B176)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer
67S Scout Helicopter Repairer

Equipment Condition:
Particle Separator Removed (Task 4-2-12)

GO TO NEXT PAGE

4-2-14. PARTICLE SEPARATOR VORTEX GENERATOR TUBES — REMOVAL/INSTALLATION (CONT)

REMOVE

CAUTION

- To prevent damage to particle separator, all pieces of vortex generator tube shall be removed.
- To prevent damage to triangular protrusion used to lock vortex generator tube in place, no attempt to twist vortex generator tube in hole shall be made.
- To prevent damage to helicopter, installation of plug is required if vortex generator tube hole or protrusion becomes enlarged or damaged.

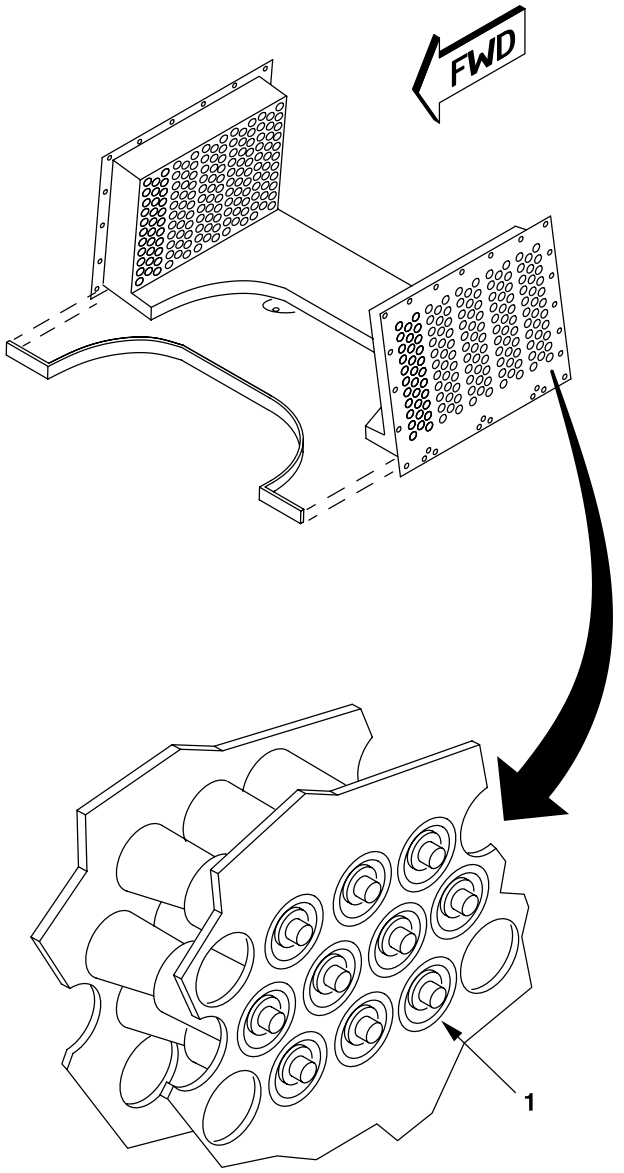
NOTE

No more than **25 vortex generator tubes** per helicopter shall be plugged and repaired tubes shall not exceed **50** per helicopter. No more than **seven tubes** in a group shall be plugged and groups of **two to seven plugged tubes** shall be separated by at least **three serviceable tubes.**

1. Remove damaged vortex generator tube.

a. Crimp damaged vortex generator tube (1) with long nose pliers.

b. Remove damaged vortex generator tube (1).



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J1599

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4-2-14. PARTICLE SEPARATOR VORTEX GENERATOR TUBES — REMOVAL/INSTALLATION (CONT)

INSTALL

2. Replace displaced (pushed-in) vortex generator tubes (1) (detail A).

a. Ensure vortex generator tube (1) is in full contact with outlet tube (2).

b. Position repair plug (3) in inlet tube plate (4) hole.

c. Align with center pin of vortex generator stem (5) and press firmly into position until repair plug (3) is retained by inlet tube plate (4).

3. Replace missing or damaged vortex generator tubes (1) with repair plugs (3) (details B and C).

a. Assemble repair plug by placing center pin of stem (5) into sponge (6) portion of repair plug (3).

b. Position assembled repair plug (3) into hole and align stem (5) to outlet tube (2).

c. Press repair plug (3) firmly into position until it is retained by inlet tube plate (4).

4. Install replacement vortex generator tubes (detail D).

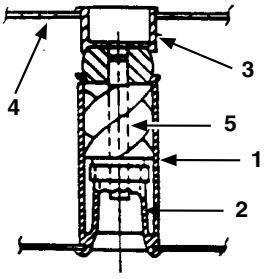
CAUTION

To prevent damage to triangular protrusion used to lock vortex generator tube in place, no attempt shall be made to twist vortex generator tube in hole.

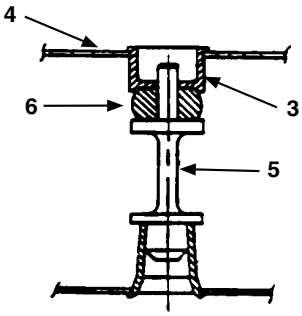
a. Position replacement vortex generator tube (1) in vacant hole.

b. Push vortex generator tube (1) through hole using thumb pressure until groove in tube O.D. engages in inlet tube plate (4).

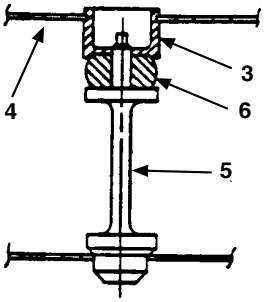
c. Vortex generator tube (1) is considered properly installed when groove on vortex generator tube fully engages with inlet tube plate (4) hole and lip is flush with plate.



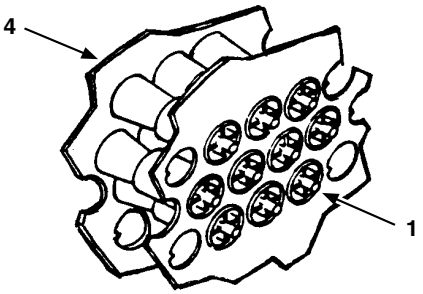
DETAIL A



DETAIL B



DETAIL C



DETAIL D

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H5812

FOLLOW-ON MAINTENANCE

Install particle separator (Task 4-2-12).

END OF TASK

4-2-15. COMPRESSOR INLET TEMPERATURE SENSOR (OH58D(R)) — REMOVAL/INSTALLATION

This task covers: Removal/Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
OH-58D(R)

Tools:
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

4-2-15. COMPRESSOR INLET TEMPERATURE SENSOR (OH58D(R)) — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Disconnect electrical plug (1) from compressor inlet temperature sensor (4).

2. Remove two screws (2) and two washers (3) from compressor inlet temperature sensor (4).

3. Slide compressor inlet temperature sensor (4) out of air induction cowling (5).

INSPECT

4. Inspect sensor (4) for damage and connector for bent, broken, or corroded pins.

INSTALL

5. Insert compressor inlet temperature sensor (4) into air induction cowling (5).

6. Install two washers (3) and screws (2).

WARNING

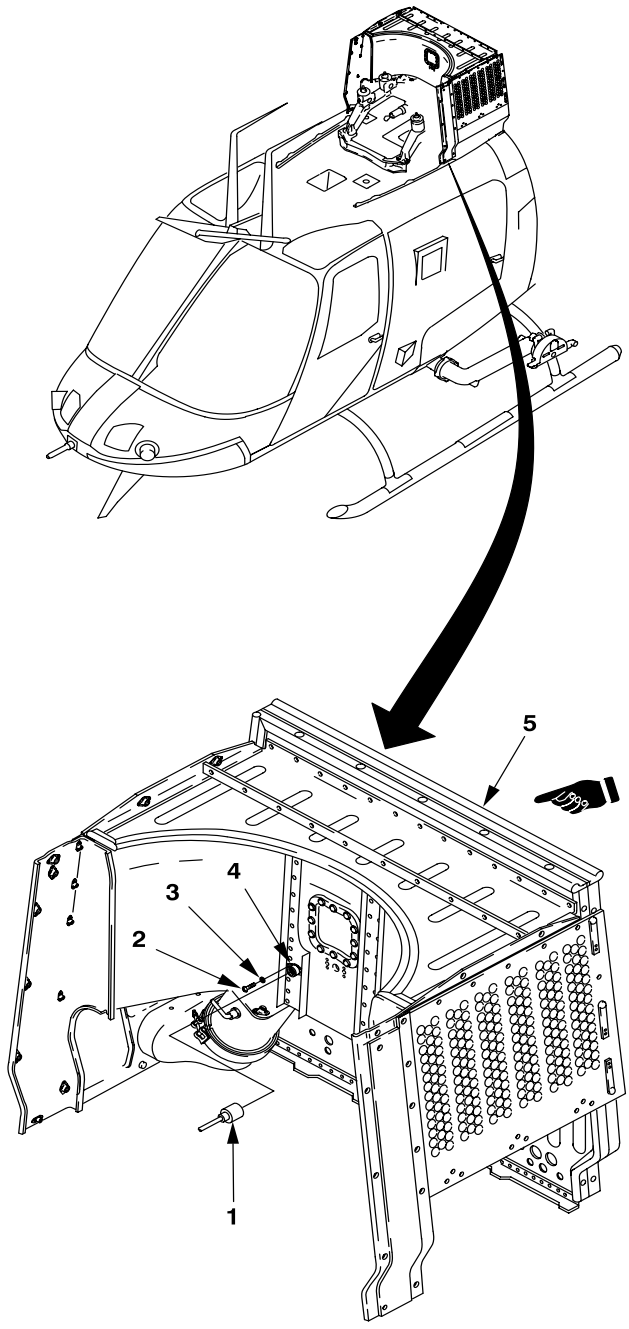
When connecting electrical plug, electrical plug shall be properly secured or catastrophic main driveshaft failure may occur.

CAUTION

Overtightening of screws may result in nutplates becoming stripped.

7. Connect electrical plug (1) to compressor inlet temperature sensor (4) receptacle.

INSPECT



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J2630

END OF TASK

Section III. EXHAUST SYSTEM

4-8. EXHAUST SYSTEM

4-9. INTRODUCTION

This section contains: removal, repair, and installation procedures for repairing exhaust ducts. Standard torque tables are provided in Appendix P and TM 1-1500-204-23.

4-10. TASK LIST

The task list lists those tasks required to support unit and intermediate level maintenance.

LIST OF TASKS

4-3-1. EXHAUST DUCT — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B236)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Engine Cowl Removed (Task 2-2-50)

GO TO NEXT PAGE

4-3-1. EXHAUST DUCT — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Remove 20 nuts (1), washers (2), and bolts (3) from exhaust duct (4).

2. Remove exhaust duct (4).

3. Cover engine exhaust to prevent foreign object damage.

INSTALL

4. Remove engine exhaust cover.

5. Check for conditions which may affect resistance of electrical bond (dirt, grease, paint, corrosion).

6. Clean and visually inspect mating surfaces for damage which may affect Class S electrical bond (Appendix M).

7. Repair any damage (Task 4-3-2) and prepare mating surfaces for Class S electrical bond (Appendix M).

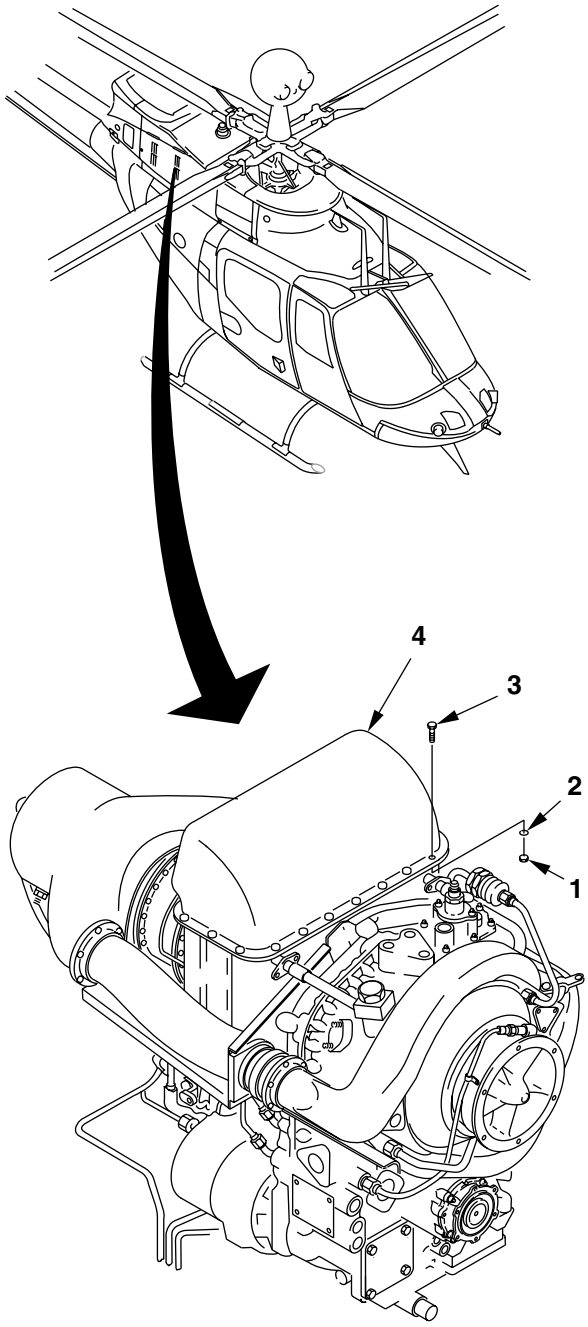
8. Position exhaust duct (4) in place and install bolts (3), washers (2), and nuts (1).

9. Torque nuts (1) **20 TO 25 INCH-POUNDS**.

INSPECT

FOLLOW-ON MAINTENANCE

Install engine cowl (Task 2-2-50)



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H1683

END OF TASK

4-3-2. EXHAUST DUCTS (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Shop Set, Welding (B146)
Airframe Repairer Tool Kit (B176)

Material:
Drycleaning Solvent (D199)
Wiping Rag (D164)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer
67S Scout Helicopter Repairer

References:
MIL-S-6721
MIL-W-8611A
TM 1-1500-204-23
TM 1-1520-266-23

GO TO NEXT PAGE

CLEAN

Drycleaning Solvent

1. Clean exhaust duct using drycleaning solvent (D199) and wiping rags (D164). Dry with clean wiping rags (D164).

INSPECT

2. Inspect exhaust duct for punctures and dents. All dents up to **0.50 inch** deep that do not puncture duct may be worked out. Dents that puncture duct must be patched.

3. Inspect exhaust duct for cracks. If cracks are found with piece or pieces missing, remove duct immediately and repair or replace. This is to preclude overheating of engine and engine compartment equipment, local charring of fiberglass cowling, and excessive damage to duct itself.

3.1. If a crack in the exhaust duct is suspected, refer to TM 1-1520-266-23.

4. Cracks of **1.5 inches** or less found in exhaust duct, with no piece or pieces missing are negligible.

5. Cracks that exceed **1.5 inches** must be repaired or replaced.

REPAIR

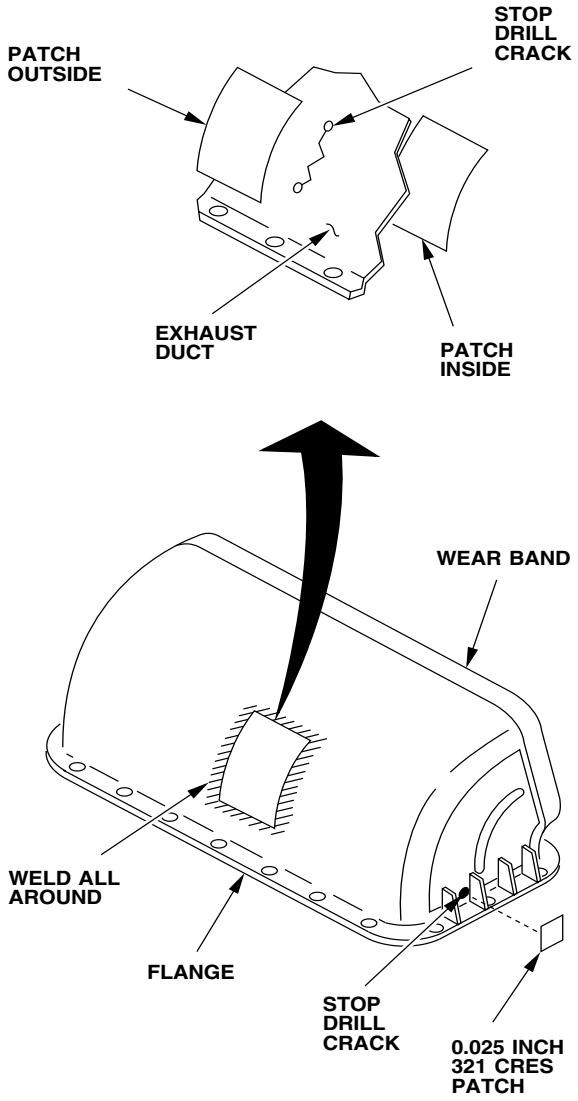
6. Cracks in duct portion shall be stop-drilled using **0.094 inch** diameter drill. Fabricate two repair patches from **0.025 inch** thick 321 CRES per MIL-S-6721 to sandwich duct over cracked area. Patches must have minimum of **0.75 inch** edge distance from cracked area. Weld patches to duct (MIL-W-8611A) or rivet using stainless steel rivets (TM 1-1500-204-23). The finished heads of rivets will be in exhaust airstream.

7. Cracks on sides of exhaust duct may be repaired by accomplishing following:

a. Stop-drill crack with **0.094 inch** diameter drill.

b. Fabricate a repair patch from **0.025 inch** thick 321 CRES per MIL-S-6721 and place over the cracked area. Patch must have minimum of **0.75 inch** edge distance from cracked area.

c. Weld patch to side of exhaust duct (MIL-W-8611A).



NOTE

CRACKS MAY NOT EXTEND INTO WEAR BAND AT TOP OR FLANGE AT BOTTOM OR PAST FLAT SURFACE ON EITHER SIDE OF EXHAUST DUCT.

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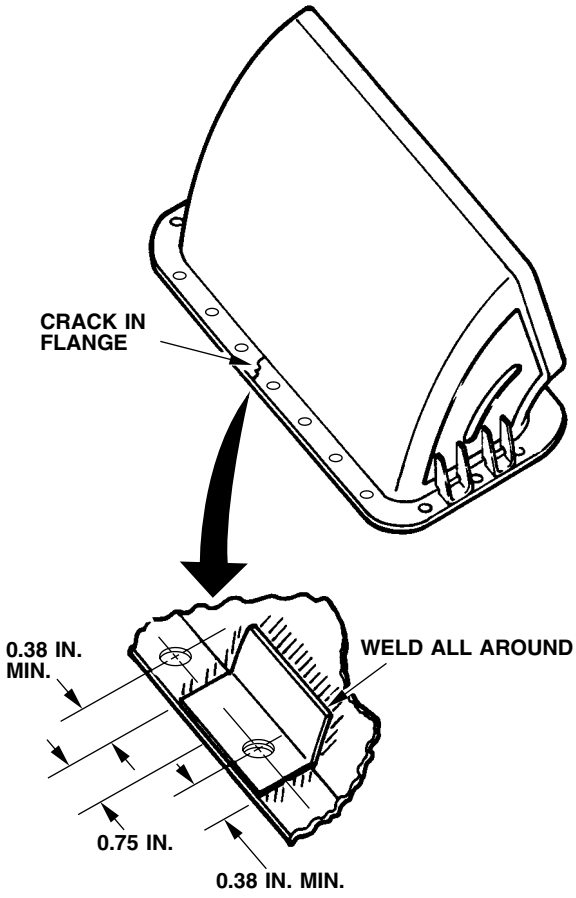
H2677

GO TO NEXT PAGE

8. Cracks in flange may be repaired with patch made from **0.080 inch** 321 CRES material in accordance with MIL-S-6721. Weld in accordance with MIL-W-8611A.

INSPECT

TYPICAL FLANGE REPAIR



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H1684

END OF TASK

Section IV. ENGINE OIL SYSTEM

4-11. ENGINE OIL SYSTEM

4-12. INTRODUCTION

This section contains: maintenance procedures for removal, repair, and installation of the engine oil system components. Standard torque tables are provided in Appendix P and TM 1-1500-204-23.

4-13. TASK LIST

The task list lists those tasks required to support unit and intermediate level maintenance.

LIST OF TASKS

4-4-1. OIL TANK ASSEMBLY — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Electrical Repairer Tool Kit (B177)
Torque Wrench (B237)
Torque Wrench (B240)
Torque Wrench (B241)
Torque Wrench (B242)
Wrench (B216)

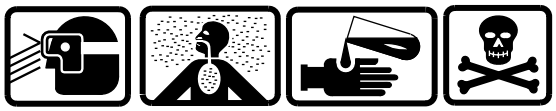
Material:
Lubricating Oil (D140 or D233)
Corrosion Preventive Compound (CPC) (D82)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68F Aircraft Electrician
Pilot

References:
TM 1-1520-248-10
TM 1-1520-248-CL

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Removed (Task 2-2-55)
Engine Oil Tank Drained (Task 1-4-5)
Oil Tank Temperature Transducer Removed (Task 4-4-6)

REMOVE



Lubricating Oil

CAUTION

To prevent contamination by entry of foreign materials, protective covers shall be used to cover all open ports and lines.

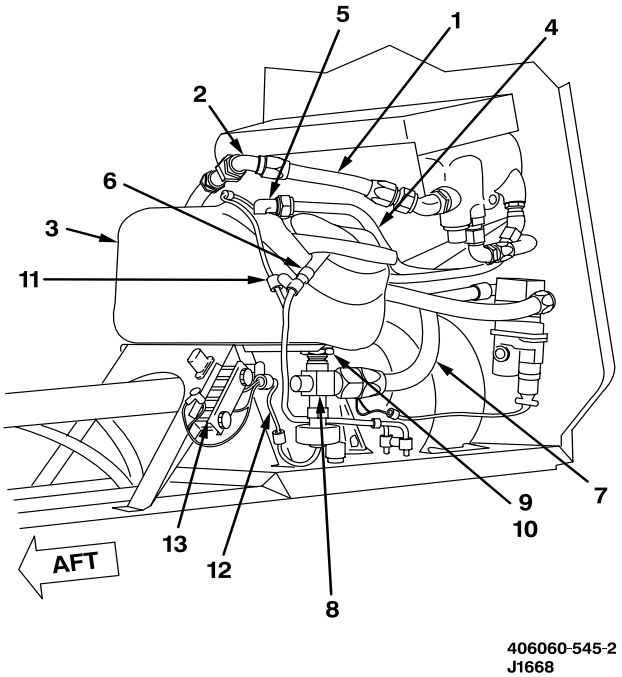
1. Disconnect return line (1) at elbow (2) on oil tank assembly (3).

2. Disconnect vent line (4) at elbow (5).

3. Disconnect scupper drain line (6).

4. Disconnect supply line (7) at tee fitting (8).

5. Loosen jamnut (9) and remove tee fitting (8) with packing (10) from oil tank assembly (3). Discard packing.



6. Disconnect clamps (11).

7. Disconnect oil level switch wires (12) from terminal board 1TB1 terminal number one (13) and structural ground.

GO TO NEXT PAGE

8. Disconnect oil drain line (14) from oil drain valve (15).

9. Remove oil drain valve (15) (Task 4-4-7).

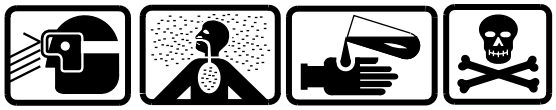
10. Remove jamnut (16) and packing (17). Discard packing.

11. Remove four bolts (18) and washers (19), and remove oil tank assembly (3).

INSTALL

12. Perform Class S electrical bond between oil tank assembly (3) and mounting support (Appendix M).

13. Place oil tank assembly (3) on mounting support and install using washers (19) and bolts (18). Torque bolts (18) **50 TO 70 INCH-POUNDS**.



Lubricating Oil

14. Lubricate packing (17) with oil (D140 or D233) and install oil drain valve (15) with jamnut (16) and packing (17). Torque jamnut (16) **70 TO 80 INCH-POUNDS**.

15. Connect oil drain line (14) to drain valve (15). Torque drain line (14) **40 TO 65 INCH-POUNDS**.

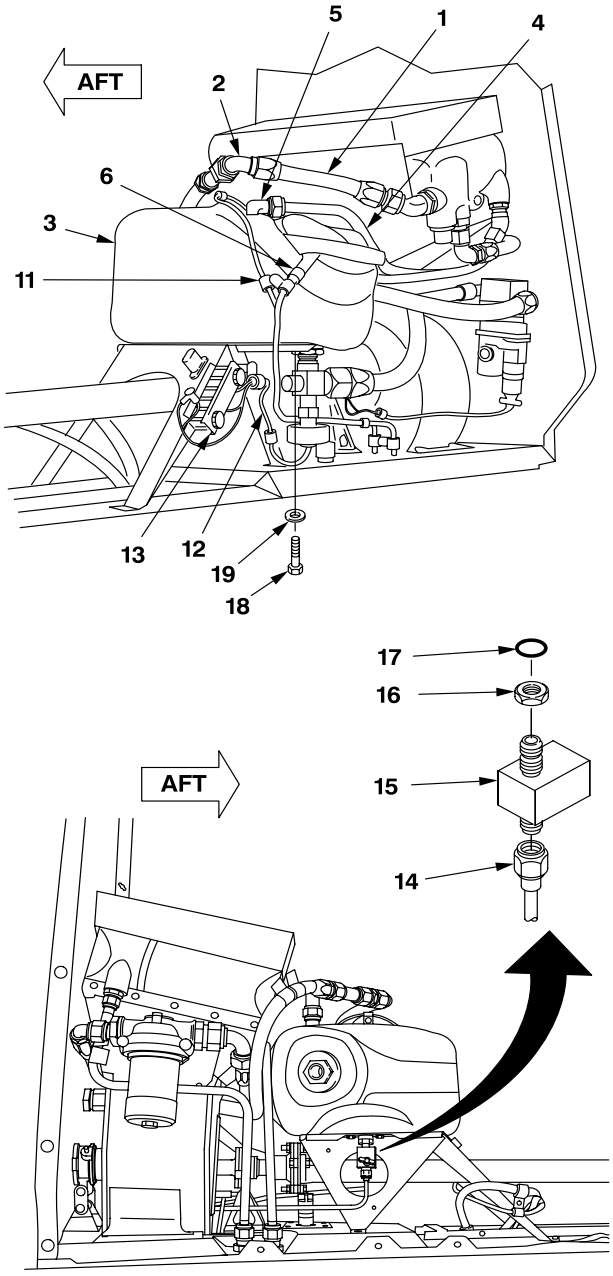
16. Connect vent line (4) to elbow (5). Torque vent line **150 TO 250 INCH-POUNDS**.

17. Connect scupper drain line (6). Torque drain line (6) **40 TO 65 INCH-POUNDS**.

18. Connect return line (1) to elbow (2). Torque line (1) **200 TO 315 INCH-POUNDS**.

19. Connect oil level switch wires (12) to terminal board 1TB1-1 (13) and structural ground.

20. Connect clamps (11).



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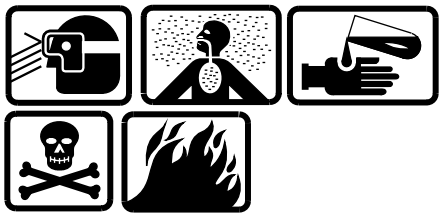
Lubricating Oil

21. Lubricate packing (10) with oil (D140 or D233) and install packing on tee fitting (8).

22. Install tee fitting (8) with jamnut (9) on oil tank assembly (3). Torque jamnut (9) **70 TO 80 INCH-POUNDS**.

23. Connect supply line (7) to tee fitting (8). Torque supply line (7) **300 TO 450 INCH-POUNDS**.



Corrosion Preventive Compound

CAUTION

To prevent damage to engine, CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals.

24. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.

INSPECT

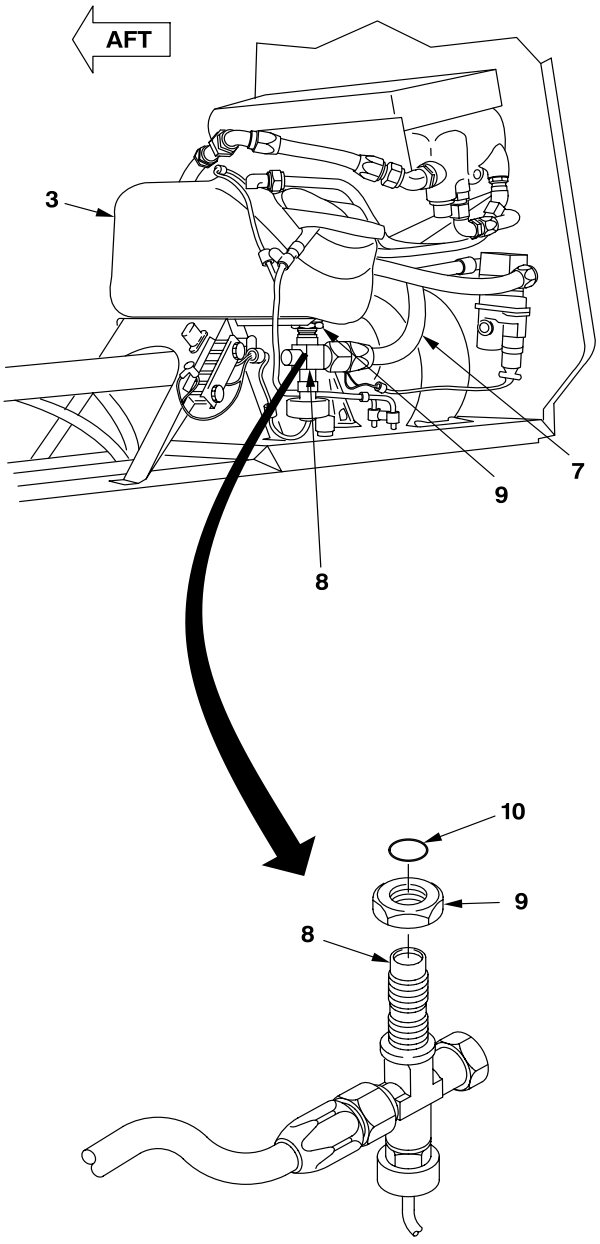
FOLLOW-ON MAINTENANCE

Install aft fairing (Task 2-2-55).

Service engine oil tank (Task 1-4-6).

Install oil tank temperature transducer (Task 4-4-6).

Pilot perform MOC (TM 1-1520-248-10/CL).



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J1668

END OF TASK

4-4-2. OIL TANK ASSEMBLY — DISASSEMBLY/ASSEMBLY

This task covers: Disassembly and Assembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Lubricating Oil (D140 or D233)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

GO TO NEXT PAGE

Lubricating Oil

CAUTION

To prevent contamination by entry of foreign materials, protective covers shall be used to cover all open ports.

DISASSEMBLE

1. Remove cap and adapter assembly (1) (Task 4-4-8).

2. Remove oil level switch (2) (Task 4-4-4).

3. Remove sight glass (3) (Task 4-4-5).

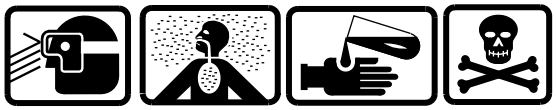
4. Remove nut (4) and packing (5) securing elbow (6) to top plate (7). Discard old packing (5).

5. Remove elbow (6) from top plate (7) and clip (8).

ASSEMBLE

6. Perform Class S electrical bond between elbow (6) and top plate (7) (Appendix M).

7. Install elbow (6) on top plate (7) and clip (8).



Lubricating Oil

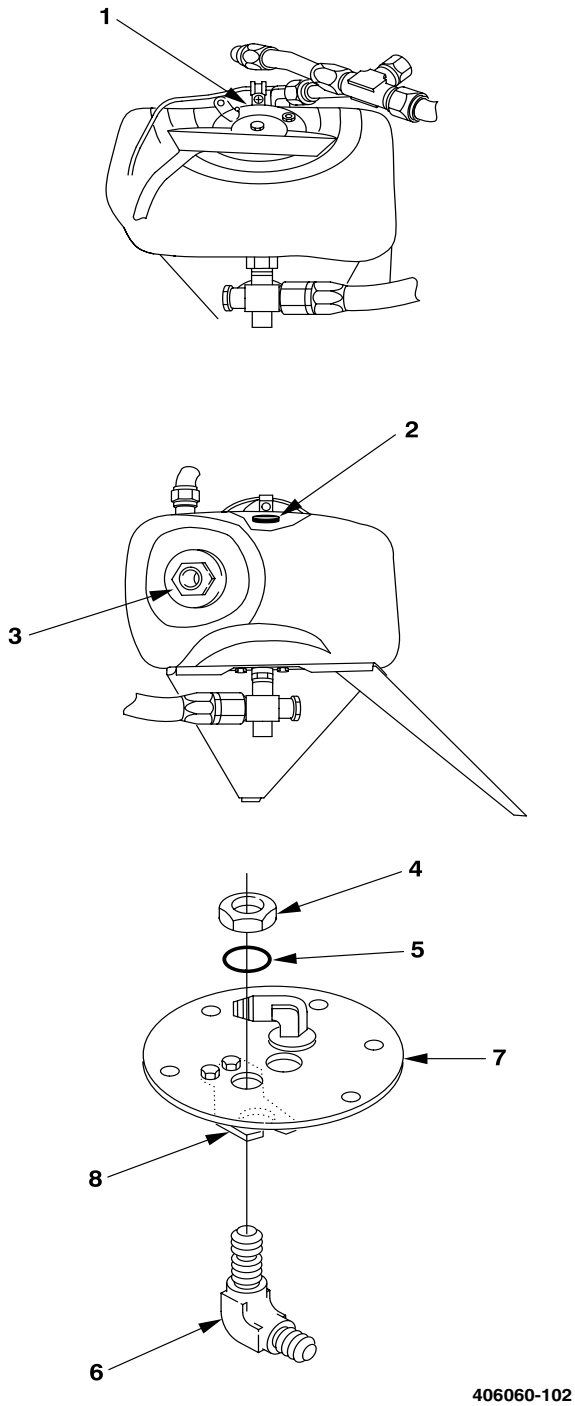
8. Lubricate packing (5) with oil (D140 or D233) and install packing and nut (4) on elbow (6) and secure to top plate (7).

9. Install cap and adapter assembly (1) (Task 4-4-8).

10. Install oil level switch (2) (Task 4-4-4).

11. Install sight glass (3) (Task 4-4-5).

INSPECT



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J1405

END OF TASK

4-4-3. OIL TANK ASSEMBLY — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Drycleaning Solvent (D199)
Wiping Rag (D164)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1500-204-23
TM 1-1520-266-23

Drycleaning Solvent

CLEAN

1. Clean oil tank using drycleaning solvent (D199) and wiping rags (D164). Dry with clean wiping rag (D164).

INSPECT

2. Inspect oil tank assembly for unserviceable or damaged fittings and oil passage leaks.

2.1. If a crack in the oil tank assembly is suspected, refer to TM 1-1520-266-23.

REPAIR

3. Repair oil tank in accordance with TM 1-1500-204-23.

4. Replace unserviceable or damaged parts.

INSPECT

END OF TASK

4-4-4. OIL LEVEL SWITCH — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B237)
Electrical Repairer Tool Kit (B177)

Material:
Lockwire (D132)
Corrosion Preventive Compound (CPC) (D82)
Lubricating Oil (D140 or D233)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68F Aircraft Electrician

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Removed (Task 2-2-55)
Engine Oil Tank Drained (Task 1-4-5)

GO TO NEXT PAGE

4-4-4. OIL LEVEL SWITCH — REMOVAL/INSTALLATION (CONT)

REMOVE

Lubricating Oil

CAUTION

To prevent contamination by entry of foreign materials, protective covers shall be used to cover all open ports and lines.

1. Disconnect return line (1) from oil cooler fitting (2).

2. Disconnect vent line (3) at elbow (4).

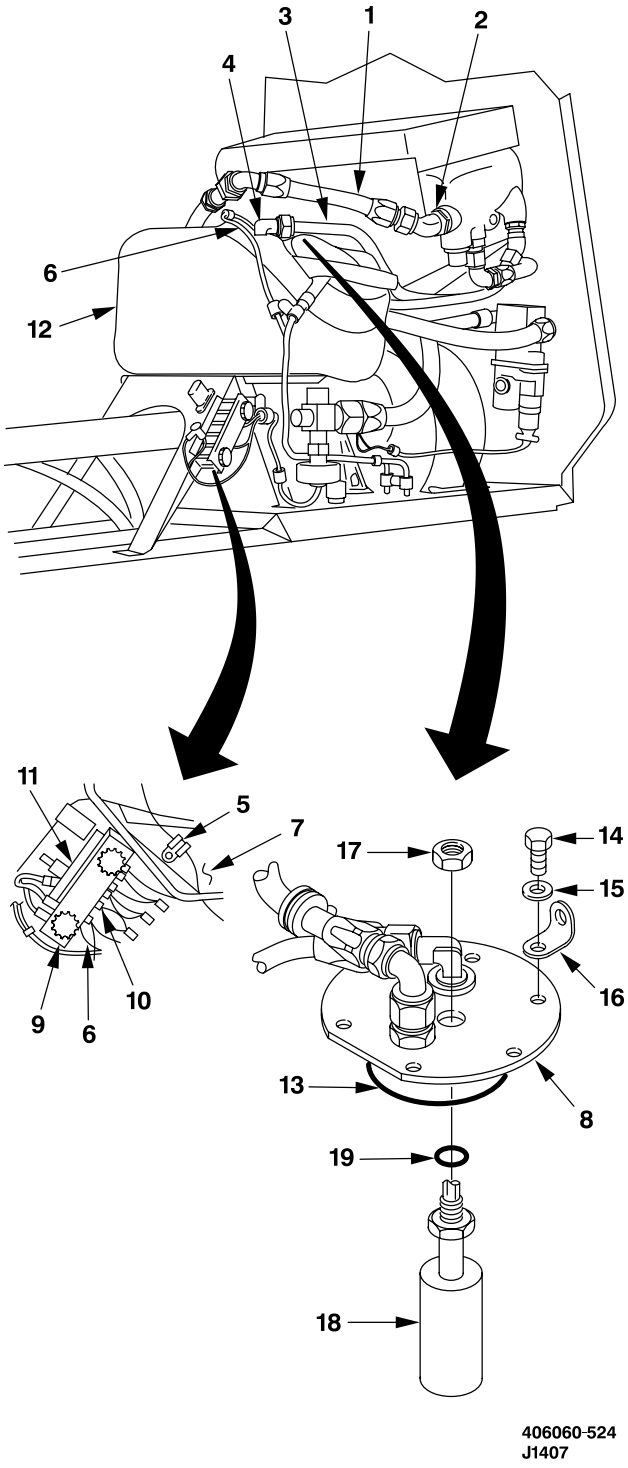
3. Remove clamps (5) securing oil level switch electrical leads (6) to oil tank mounting bracket (7) and oil tank top plate (8).

4. Remove cover (9) and disconnect electrical leads (6) at terminal board 1TB1-1 (10) and at structural ground (11). Retain cover (9).

5. Remove top plate (8) from oil tank (12) with packing (13) by removing six bolts (14), six washers (15), and bracket (16). Discard packing (13).

6. Cut lockwire and remove oil level switch jamnut (17).

7. Remove oil level switch (18) with packing (19). Discard packing (19).



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INSTALL

Lubricating Oil

8. Lubricate packing (19) with oil (D140 or D233) and install packing on oil level switch (18).

9. Install oil level switch (18) on tank top plate (8) using jamnut (17). Torque jamnut (17) **150 TO 250 INCH POUNDS**.

10. Secure jamnut (17) using lockwire (D132)

11. Lubricate packing (13) with oil (D140 or D233) and install packing on top plate (8).

12. Perform Class S electrical bond between top plate (8) and oil tank (12) (Appendix M).

13. Position top plate (8) on oil tank (12) and install bracket (16), six washers (15), and six bolts (14).

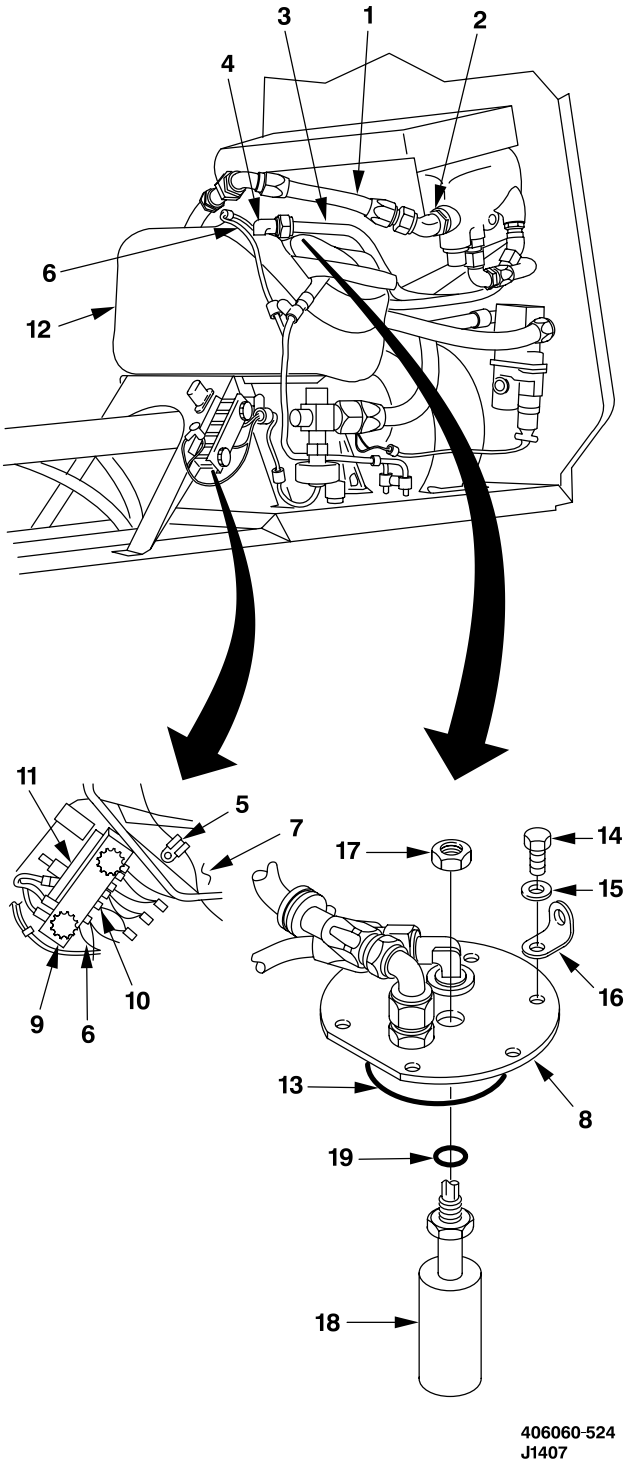
14. Torque bolts (14) **45 TO 55 INCH-POUNDS**.

15. Connect vent line (3) to elbow (4). Torque vent line (3) **150 TO 200 INCH-POUNDS**.

16. Connect return line (1) to oil cooler fitting (2). Torque return line (3) **200 TO 315 INCH-POUNDS**.

17. Route oil level switch (18) electrical leads (6) and attach clamps (5) to oil tank mounting bracket (7) and oil tank top plate (8).

18. Connect electrical leads (6) to terminal board 1TB1-1 (10) and structural ground (11). Install cover (9).



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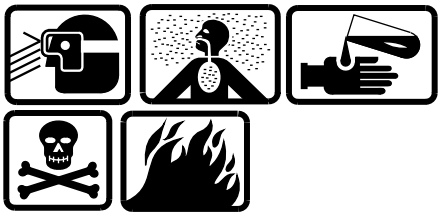


Corrosion Preventive Compound

CAUTION

CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals or damage to engine may result.

19. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.

INSPECT

FOLLOW-ON MAINTENANCE

Perform oil cooler bypass valve inspection (Task 4-4-11).

Install aft fairing (Task 2-2-55).

Service engine oil tank (Task 1-4-6).

END OF TASK

4-4-5. OIL TANK SIGHT GLASS — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Crowfoot (B31)
Torque Wrench (B236)

Material:
Lockwire (D132)
Lubricating Oil (D140 or D233)
Corrosion Preventive Compound (CPC) (D82)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Removed (Task 2-2-55)
Engine Oil Tank Drained (Task 1-4-5)

GO TO NEXT PAGE

4-4-5. OIL TANK SIGHT GLASS — REMOVAL/INSTALLATION (CONT)

REMOVE

Lubricating Oil

CAUTION

To prevent contamination by entry of foreign material, protective cover shall be used to cover open port.

1. Cut lockwire and remove sight glass (1) with packing (2). Discard packing (2).

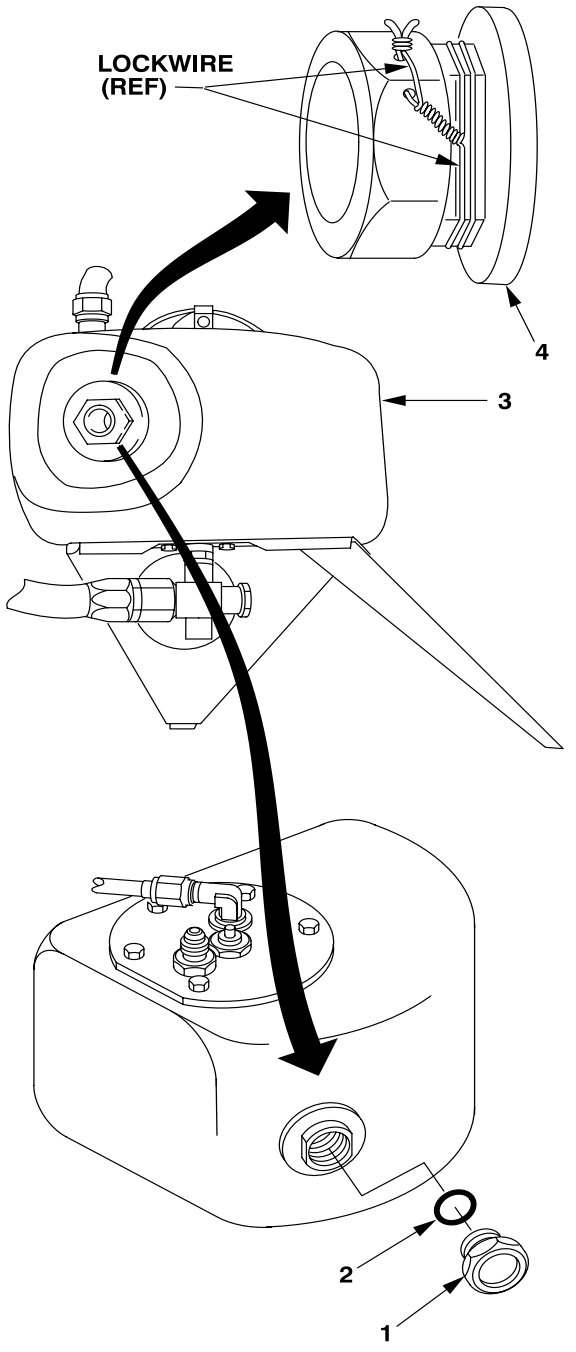
INSTALL

Lubricating Oil

2. Lubricate packing (2) with lubricating oil (D140 or D233) and install packing on sight glass (1).

3. Install sight glass (1) in oil tank (3). Torque sight glass (1) **25 TO 30 INCH-POUNDS**.

4. Secure sight glass (1) to oil tank box by double-looping lockwire (D132) around boss (4) and twisting tightly to form wire to boss wrench flats. Attach to sight glass (1).



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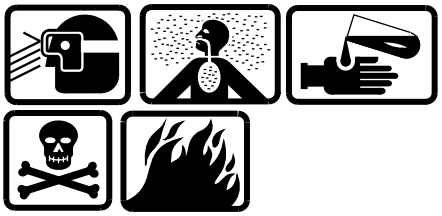


Corrosion Preventive Compound

CAUTION

To prevent damage to engine, CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals.

5. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.

INSPECT

FOLLOW-ON MAINTENANCE

Service engine oil tank (Task 1-4-6).

Install aft fairing (Task 2-2-55).

END OF TASK

4-4-6. OIL TANK TEMPERATURE TRANSDUCER — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Electrical Repairer Tool Kit (B177)
Electrical Connector Kit (B80)

Material:
Lockwire (D132)
Corrosion Preventive Compound (CPC) (D82)
Lubricating Oil (D140 or D233)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68F Aircraft Electrician
Pilot

References:
TM 1-1520-248-10
TM 1-1520-248-CL

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Removed (Task 2-2-55)
Engine Oil Tank Drained (Task 1-4-5)

GO TO NEXT PAGE

REMOVE

CAUTION

To prevent breaking of wires at the bottom of the transducer when removing transducer from engine outlet fitting, the bottom of transducer shall not be allowed to come in contact with the deck while being removed.

1. Disconnect oil temperature transducer (1) electrical cables from connector (2) using removal tool from electrical connector kit (B80) as follows:

a. Disconnect connector (2).

b. Remove blue/white wire from connector (2), pin 12.

NOTE

White wires shall be marked so they can be reinstalled in the same location.

c. Remove two white wires from connector (2), pins 11 and 13.

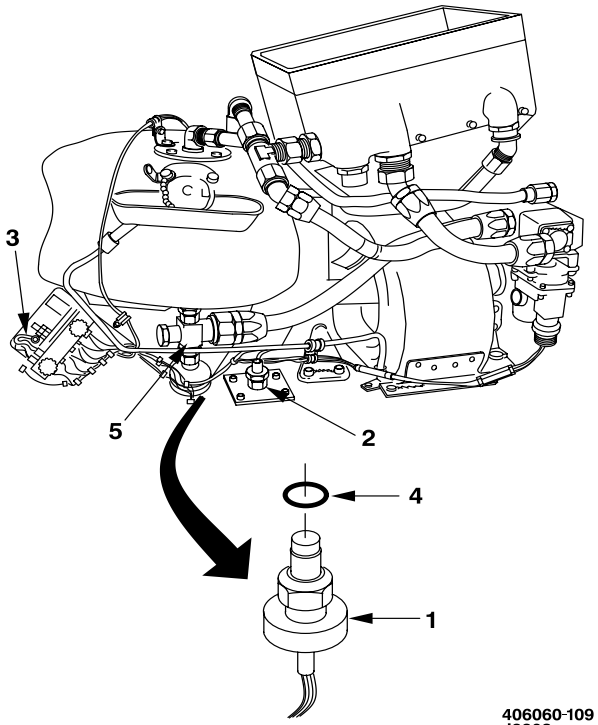
d. Remove red wire from connector (2), pin 10.

e. Remove brown wire from structural ground (3).

f. Remove bundle ties as necessary to separate wires.

Lubricating Oil

2. Cut lockwire and remove temperature transducer (1) with packing (4) from oil tank outlet fitting (5). Discard packing.



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4-4-6. OIL TANK TEMPERATURE TRANSDUCER — REMOVAL/INSTALLATION (CONT)

INSTALL

Lubricating Oil

3. Lubricate packing (4) with oil (D140 or D233) and install packing on temperature transducer (1).

4. Install temperature transducer (1) in oil tank outlet fitting (5).

5. Torque temperature transducer (1) **50 TO 65 INCH-POUNDS**.

6. Secure temperature transducer (1) with lockwire (D132).

7. Connect oil temperature transducer (1) electrical cables to connector (2) as follows:

a. Connect brown wire to structural ground (3).

b. Connect red wire to connector (2), pin 10.

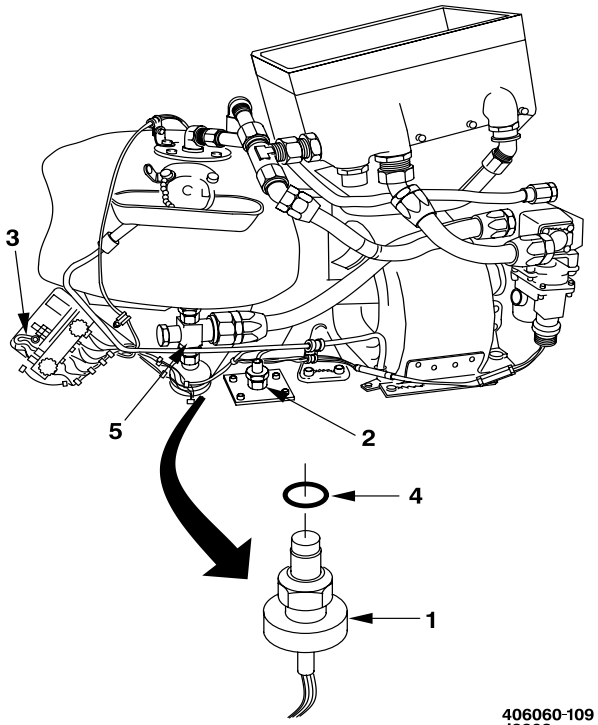
c. Connect two white wires to connector (2), pins 11 and 13.

d. Connect blue/white wire to connector (2), pin 12.

Corrosion Preventive Compound

CAUTION

To prevent damage to engine, CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals.



8. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.

INSPECT

FOLLOW-ON MAINTENANCE

Service engine oil tank (Task 1-4-6). ▮

Pilot perform MOC (TM 1-1520-248-10/CL).

Install aft fairing (Task 2-2-55). ▮

END OF TASK

4-4-7. OIL TANK DRAIN VALVE — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Lubricating Oil (D140 or D233)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Removed (Task 2-2-55)
Engine Oil Tank Drained (Task 1-4-5)

GO TO NEXT PAGE

4-4-7. OIL TANK DRAIN VALVE — REMOVAL/INSTALLATION (CONT)

REMOVE

Lubricating Oil

CAUTION

To prevent contamination by entry of foreign material, protective cover shall be used to cover open port.

1. Disconnect tube assembly (1) from drain valve (2).

2. Loosen jamnut (3).

3. Remove drain valve (2), jamnut (3), and packing (4). Discard packing.

INSTALL

Lubricating Oil

NOTE

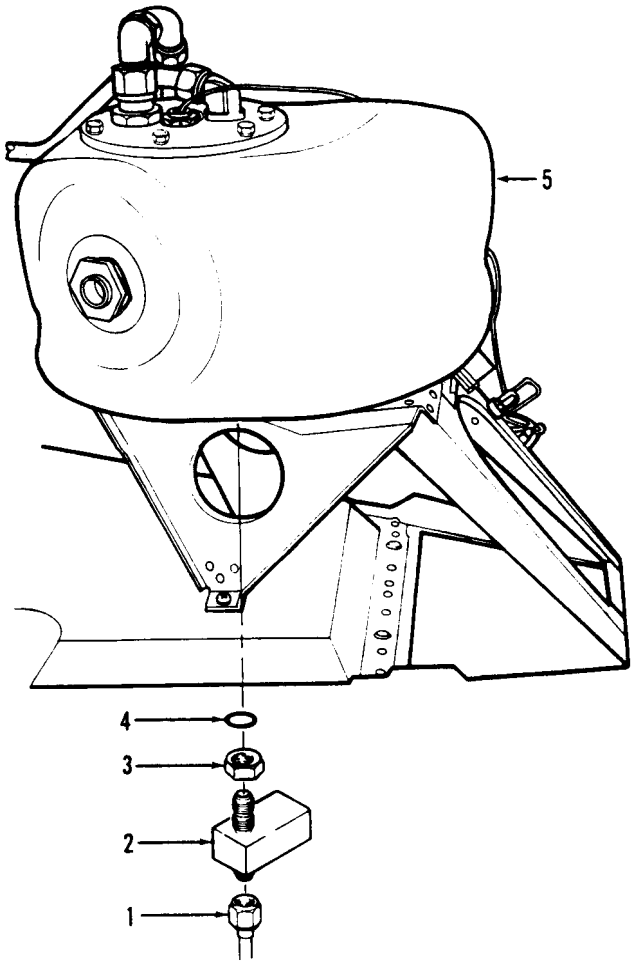
Drain valve shall be installed with arrow pointing down and lever outboard.

4. Lubricate packing (4) with oil (D140 or D233) and install jamnut (3) and packing on drain valve (2).

5. Install drain valve (2) in bottom of oil tank (5). Torque jamnut (3) **70 TO 80 INCH-POUNDS**.

6. Connect tube assembly (1).

7. Torque tube (1) **40 TO 65 INCH-POUNDS**.



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INSPECT

FOLLOW-ON MAINTENANCE

Service engine oil tank (Task 1-4-6).

Install aft fairing (Task 2-2-55).

END OF TASK

4-4-8. OIL TANK CAP AND ADAPTER ASSEMBLY — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B237)

Material:
Lubricating Oil (D140 or D233)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Removed (Task 2-2-55)

REMOVE

Lubricating Oil

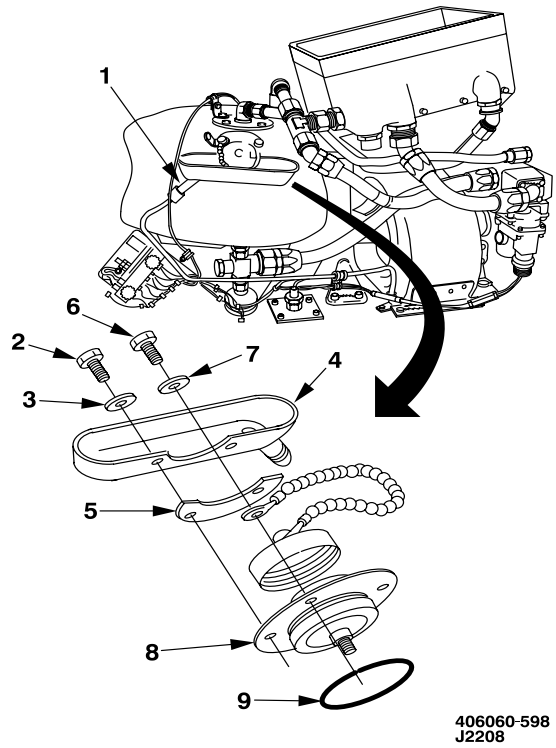
CAUTION

To prevent contamination by entry of foreign material, protective cover shall be used to cover open port.

1. Disconnect scupper drain line (1).

2. Remove two bolts (2) and washers (3) and remove scupper (4) and seal (5). Discard seal.

3. Remove two bolts (6) and washers (7) and remove cap and adapter assembly (8) with packing (9). Discard packing.



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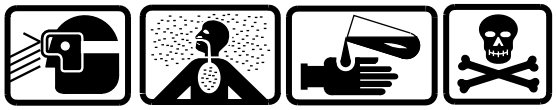
INSTALL



Lubricating Oil

4. Lubricate packing (9) with lubricating oil (D140 or D233) and install packing on cap and adapter assembly (8).

5. Install cap and adapter assembly (8) using two washers (7) and bolts (6).

6. Torque bolts (6) **50 INCH-POUNDS.**

7. Perform Class S electrical bond between scupper (4) and oil tank mating surfaces (Appendix M).

8. Install new seal (5) and scupper (4) using two washers (3) and bolts (2).

9. Torque bolts (2) **50 INCH-POUNDS.**

10. Connect scupper drain line (1).

INSPECT

FOLLOW-ON MAINTENANCE

Install aft fairing (Task 2-2-55).

END OF TASK

4-4-9. OIL COOLER BYPASS VALVE — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Wrench (B216)
Torque Wrench (B234)

Material:
Lockwire (D132)
Lubricating Oil (D140 or D233)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Pilot

References:
TM 1-1520-248-10
TM 1-1520-248-CL
TM 1-1520-248-T

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Removed (Task 2-2-55)
Engine Oil Tank Drained (Task 1-4-5)

GO TO NEXT PAGE

REMOVE

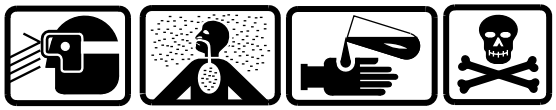
CAUTION

To prevent contamination by entry of foreign material, protective cover shall be used to cover open port.

1. Open right engine cowl door.

2. Disconnect electrical connector (1) from from oil cooler bypass valve (2).

3. Identify and label three return lines (3, 4, and 5) to aid in reinstallation.



Lubricating Oil

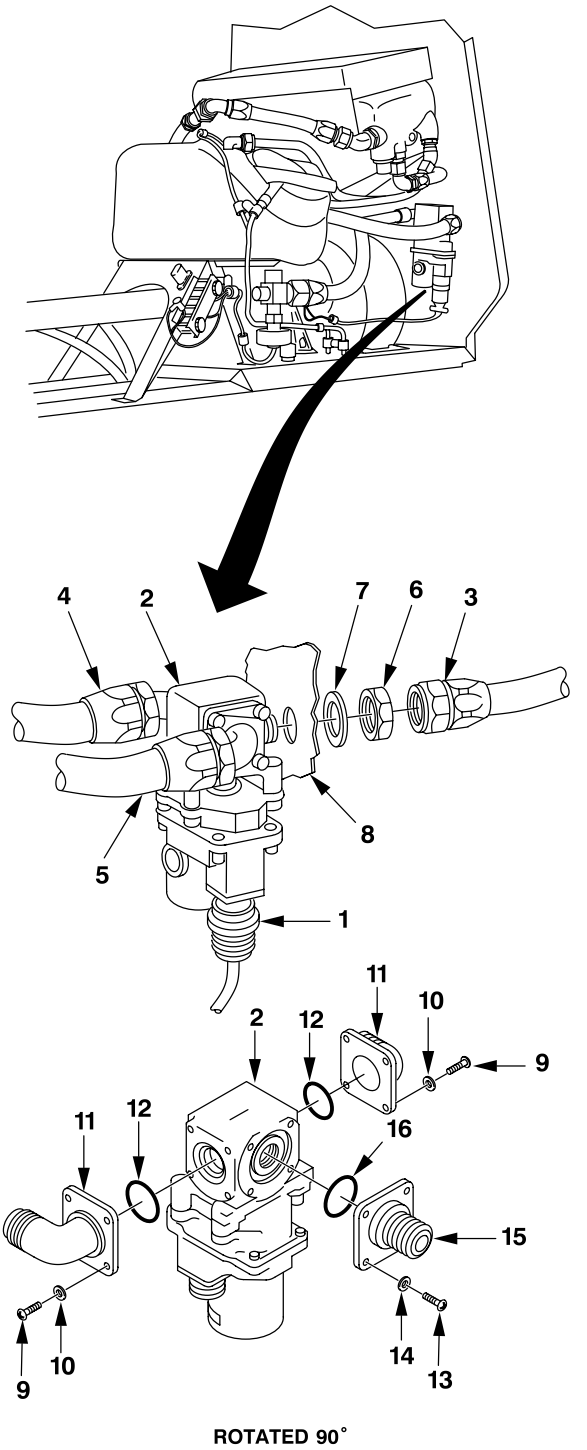
4. Disconnect return lines (3, 4, and 5) from valve (2).

5. Hold valve (2) with hand and remove jamnut (6) and washer (7) securing valve (2) to aft firewall (8).

6. Remove valve (2) from aft firewall (8).

7. Cut lockwire and remove eight screws (9) and washers (10) securing two fittings (11) to valve (2). Discard packings (12).

8. Cut lockwire and remove four screws (13) and washers (14) securing fitting (15) to valve (2). Discard packing (16).



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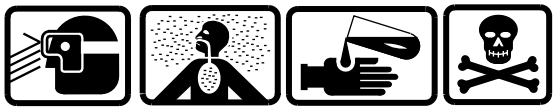
4-4-9. OIL COOLER BYPASS VALVE — REMOVAL/INSTALLATION (CONT)

INSTALL



Lubricating Oil

9. Lubricate packings (12) with oil (D140 or D233) and install packings on fittings (11).

10. Observing orientation shown, position two fittings (11) onto valve (2) and secure using eight washers (10) and screws (9).

11. Secure screws (9) in pairs using lockwire (D132).

12. Lubricate packing (16) with oil (D140 or D233) and install packing on fitting (15).

13. Position fitting (15) onto valve (2) and secure with four washers (14) and screws (13).

14. Secure screws (13) in pairs using lockwire (D132).

15. Perform Class S electrical bond between valve (2) and aft firewall (8) (Appendix M).

16. Position serviceable valve (2) onto aft firewall (8) and install using washer (7) and jamnut (6). Torque jamnut (6) **200 TO 350 INCH-POUNDS**.

17. Connect three return lines (3, 4, and 5) to appropriate ports on valve (2).

18. Connect electrical connector (1) to valve (2).

19. Secure connector (1) with lockwire (D132).

20. Close right engine cowl door.

INSPECT

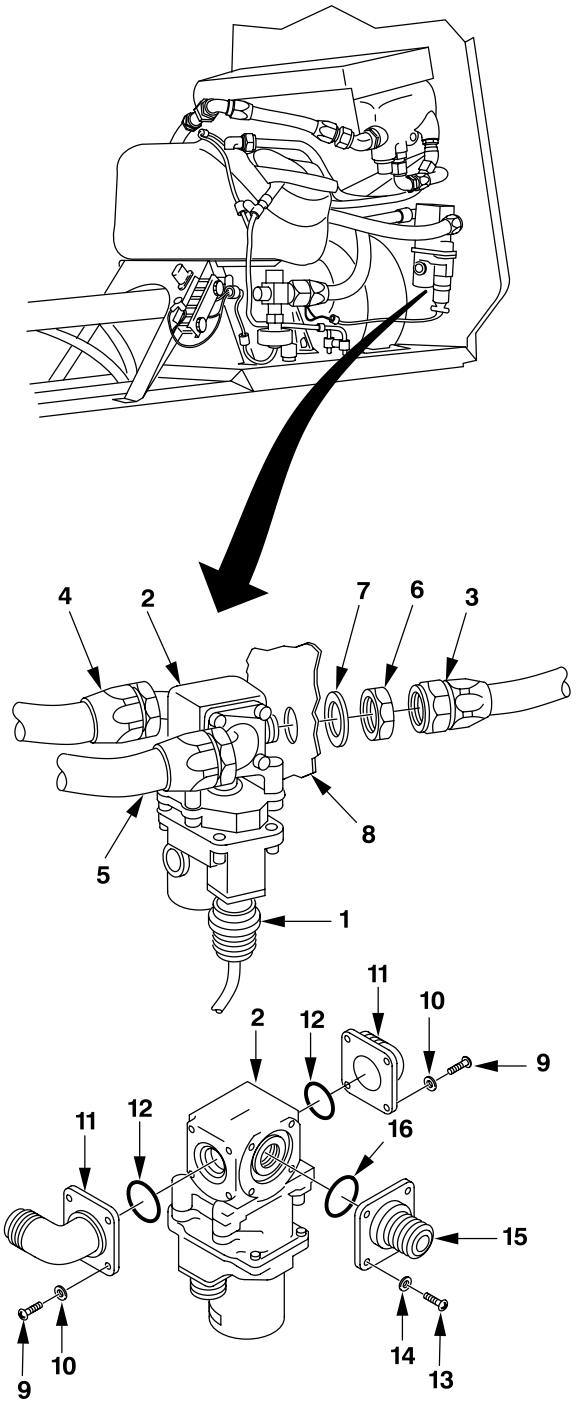
FOLLOW-ON MAINTENANCE

Service engine oil tank (Task 1-4-6).

Perform operational check (TM 1-1520-248-T).

Pilot perform MOC (TM 1-1520-248-10/CL).

Install aft fairing (Task 2-2-55).



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END OF TASK

4-4-10. OIL COOLER BYPASS VALVE (AVIM) — DISASSEMBLY/ASSEMBLY

This task covers: Disassembly and Assembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Lubricating Oil (D140 or D233)
Lockwire (D132)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

GO TO NEXT PAGE

4-4-10. OIL COOLER BYPASS VALVE (AVIM) — DISASSEMBLY/ASSEMBLY (CONT)

DISASSEMBLE

1. Remove lockwire from screws (1).

1.1. Remove four screws (1) and actuator assembly (2) from valve body (3).

2. Align shaft (4) so lower shaft key is straight between ports A and B.

3. Press out seals (5) and ball (6) from valve body (3). Discard packings (7).

4. Remove shaft (4) from valve body (3) and discard packing (8).

5. Deleted.

6. Deleted.

7. Deleted.

8. Deleted.

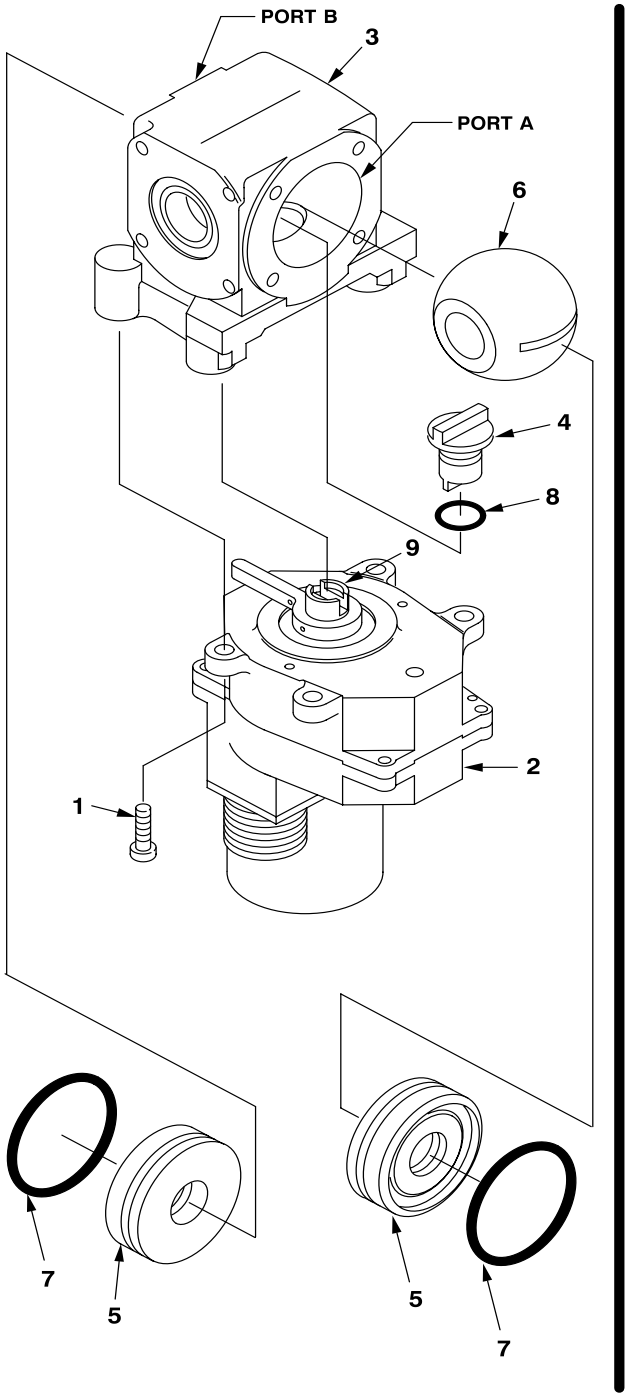
9. Deleted.

10. Deleted

ASSEMBLE

Lubricating Oil

11. Place seals (5) and packings (7 and 8) on clean, wax free paper. Lubricate parts with a light film of lubricating oil (D140 or D233).



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12. Install packing (8) on shaft (4) and install in valve body (3).

13. Install ball (6) in valve body (3) and engage tang of shaft (4) in slot in ball.

14. Install new packings (7) on seals (5). Position seals in valve body (3) and push seals in until they contact ball (6).

15. Deleted.

16. Deleted.

17. Deleted.

18. Deleted.

19. Deleted.

20. Deleted.

21. Deleted.

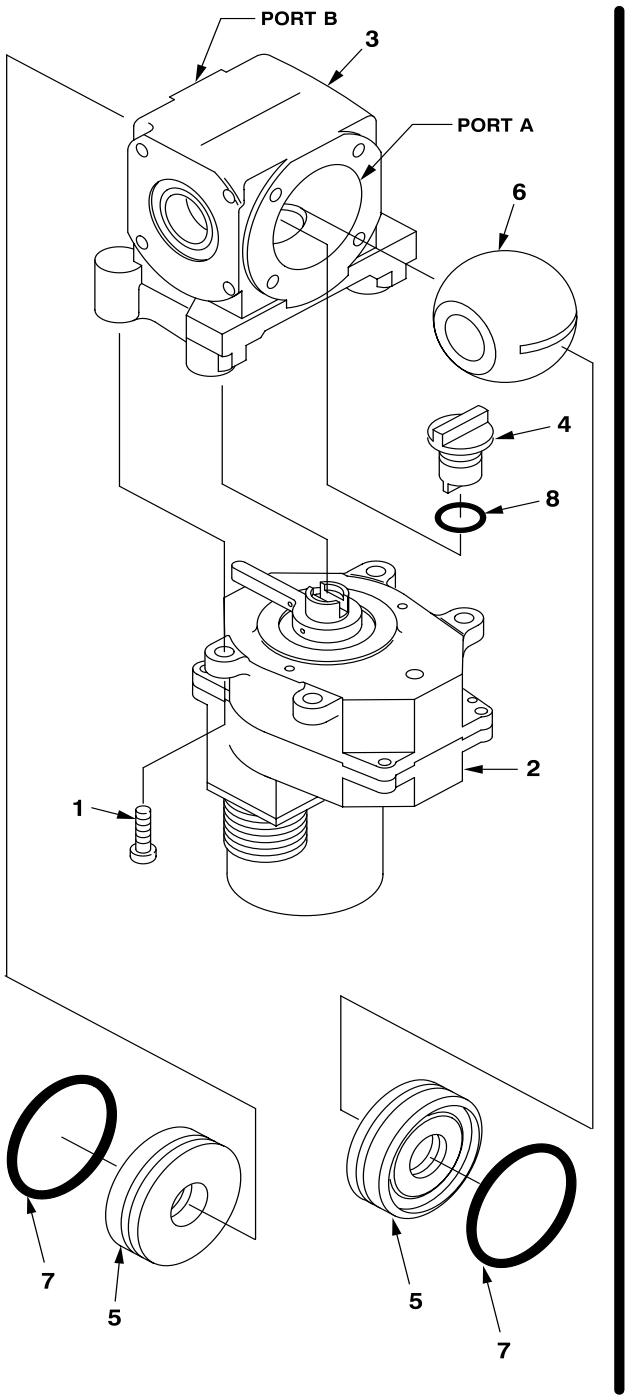
22. Deleted.

23. Deleted.

24. Position actuator housing (2) on valve body (3). Rotate shaft (4) if necessary to engage slot in output shaft (9).

25. Install four screws (1) and secure with lockwire (D132).

INSPECT



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END OF TASK

4-4-11. OIL COOLER BYPASS VALVE (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Drycleaning Solvent (D199)
Wiping Rag (D164)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1520-266-23

Equipment Condition:
Oil Cooler Bypass Valve Disassembled (Task 4-4-10)

GO TO NEXT PAGE

CLEAN

Drycleaning Solvent

1. Clean bypass valve with wiping rag (D164) moistened with drycleaning solvent (D199). Dry with clean wiping rags (D164).

2. Clean parts other than bypass valve by washing in drycleaning solvent (D199). Dry with wiping rag (D164).

INSPECT

3. Inspect all parts for cracks, breaks, and signs of obvious damage or wear.

4. Inspect seals (1) for scoring and scratches which could cause leakage.

5. Inspect ball (2) for scoring and scratches which could cause leakage.

6. Inspect valve body (3) for cracks, burrs, and obstructed passages.

6.1. If a crack in the valve body is suspected, refer to TM 1-1520-266-23.

7. Inspect actuator assembly (4) for wear or signs of obvious damage.

8. Inspect indicator arm (5) for wear.

9. Inspect output shaft (9).

REPAIR

10. Replace packings (7, and 8).

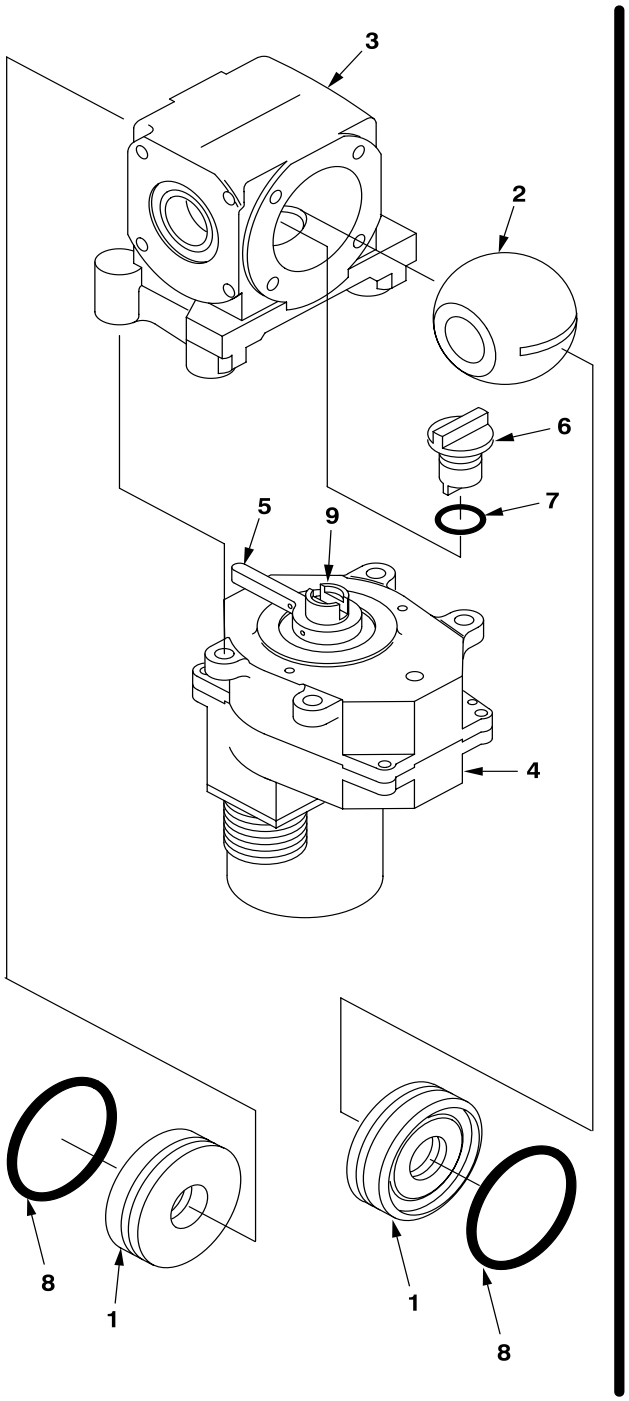
11. Deleted.

12. Deleted.

13. Replace bypass valve if any damage other than specified to actuator assembly is found (Task 4-4-9).

14. Replace bypass valve if damage found is in valve body (3), shaft (6), seals (1), or ball (2) (Task 4-4-9).

INSPECT



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FOLLOW-ON MAINTENANCE

Assemble oil cooler bypass valve (Task 4-4-10).

END OF TASK

4-4-12. OIL TANK SUPPORT — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Assembly Removed (Task 2-2-55)
Oil Tank Assembly Removed (Task 4-4-1)

GO TO NEXT PAGE

4-4-12. OIL TANK SUPPORT — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Remove four screws (1) and four washers (2) from oil tank support (3).

2. Remove oil tank support (3).

INSTALL

3. Perform Class S electrical bond between oil tank support (3) and roof mating surfaces (Appendix M).

4. Place oil tank support (3) on roof.

5. Align screws holes on oil tank support (3) with holes in roof.

6. Install four washers (2) and four screws (1).

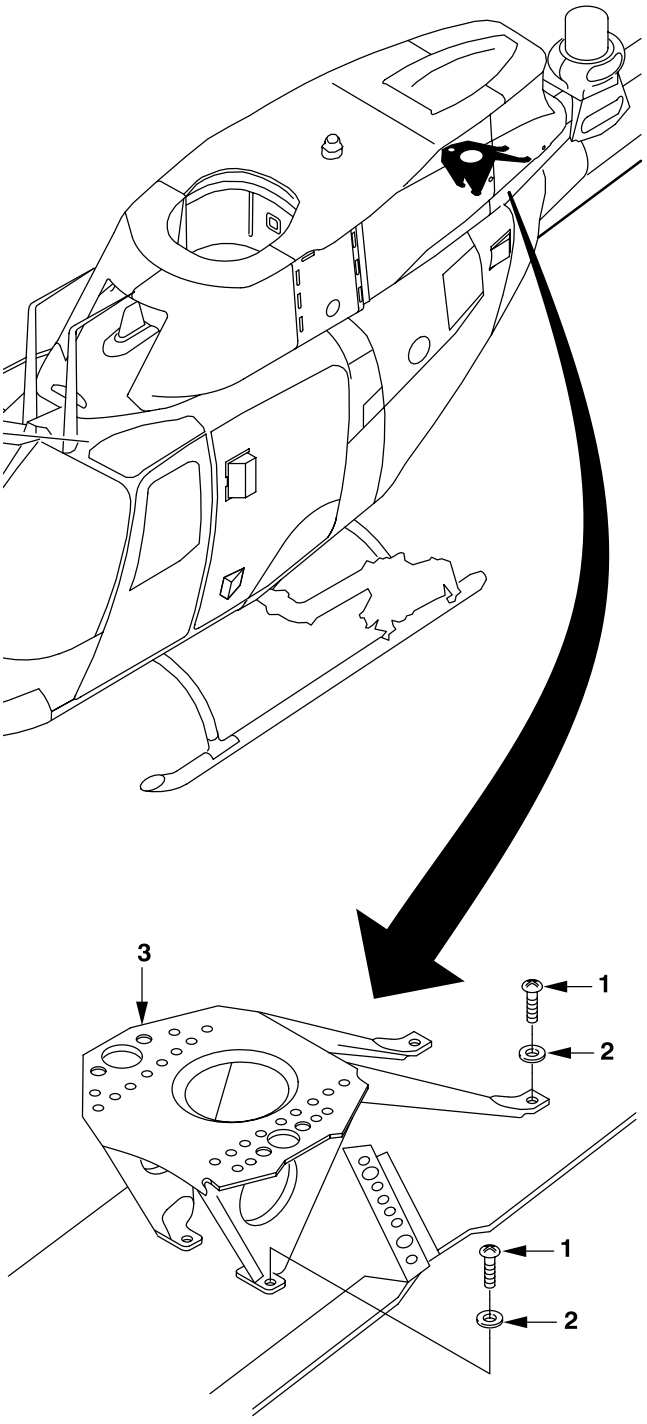
INSPECT

FOLLOW-ON MAINTENANCE

Install oil tank assembly (Task 4-4-1).

Install aft fairing (Task 2-2-55).

Service engine oil system (Task 1-4-6).



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END OF TASK

4-4-13. OIL TANK SUPPORT — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Airframe Repairer Tool Kit (B176)

Material:
Wiping Rags (D164)
Drycleaning Solvent (D199)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68G Aircraft Structural Repairer

References:
TM 1-1500-204-23
TM 1-1520-266-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Removed (Task 2-2-55)

GO TO NEXT PAGE

4-4-13. OIL TANK SUPPORT — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN

Drycleaning Solvent

1. Clean oil tank support (1) with drycleaning solvent (D199) and wiping rag (D164).

2. Dry with wiping rags (D164).

INSPECT

3. Inspect oil tank support (1) for cracks, dents, and other damage to limits as shown. See figure Oil Tank Support — Damage Limits. Replace if limits are exceeded.

3.1. If a crack in the oil tank support is suspected, refer to TM 1-1520-266-23.

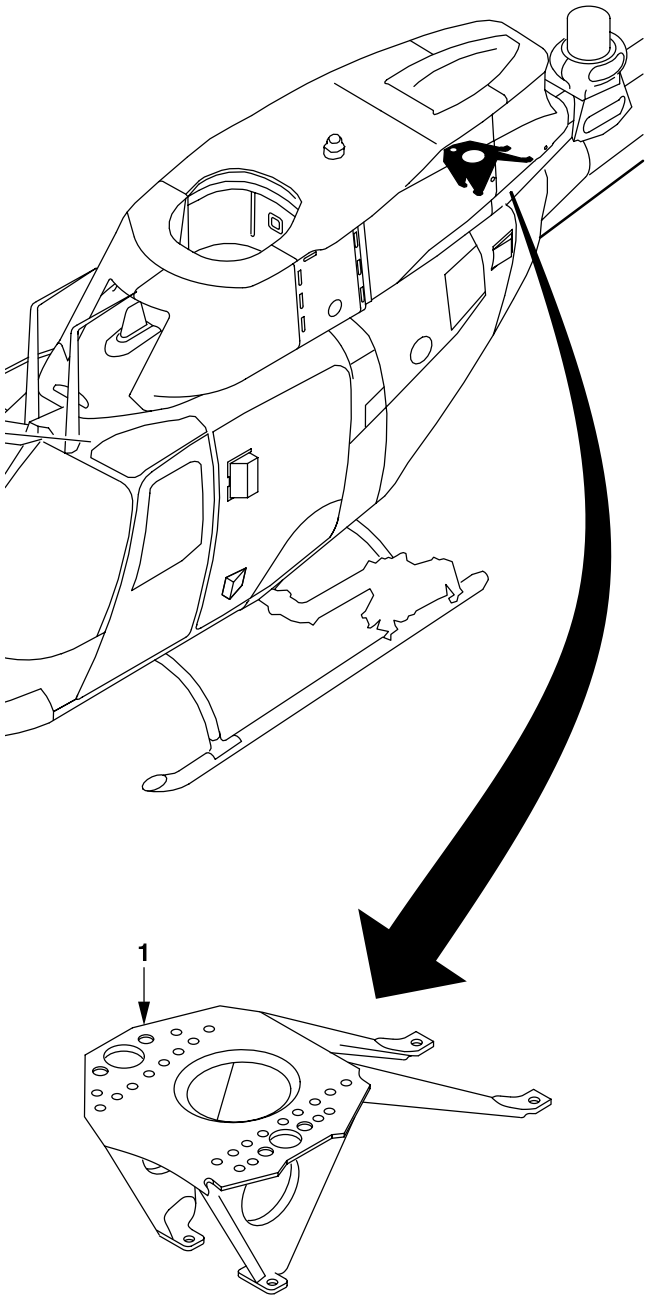
REPAIR

4. Repair damage to oil tank support (1) by stopdrilling cracks, removing dents, or patching (TM 1-1500-204-23).

INSPECT

FOLLOW-ON MAINTENANCE

Install aft fairing (Task 2-2-55).



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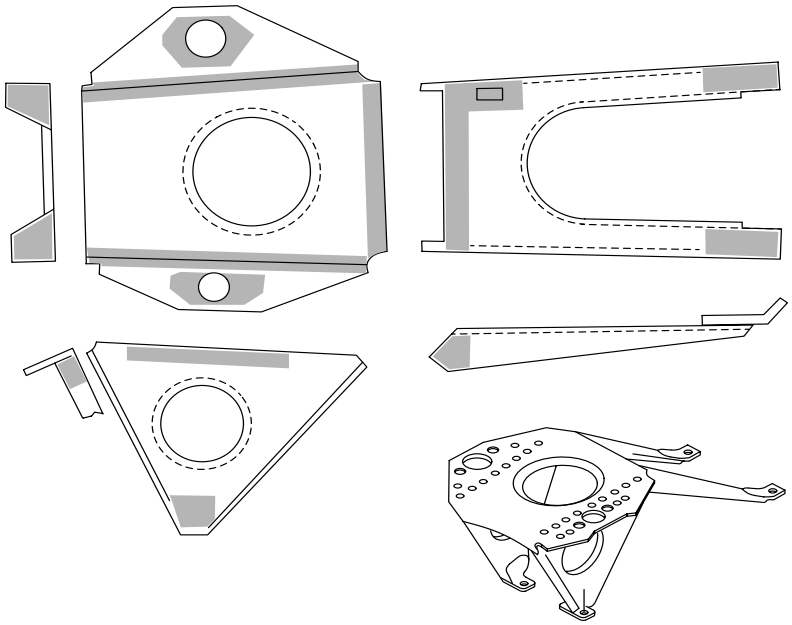

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS	
	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.004 in. before and after repalr 0.008	0.010 in. before and after repalr 0.015
CORROSION	0.004 in. before and 0.008 after repair	0.008 in. before and 0.015 In. after repalr
MAXIMUM AREA PER FULL DEPTH REPAIR	0.15 Sq. in.	0.30 Sq. in.
NUMBER OF REPAIRS	2	4
EDGE CHAMFER TO REMOVE DAMAGE	0.005 in	0.010 in.
BORES	0.004 in. for 1/4 circumference	

NOTE: 1. No cracks are permitted.

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Oil Tank Support — Damage Limits

END OF TASK

4-4-14. OIL COOLER FAIRING SEALS — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Plastic Scraper (B123)

Material:
Rubber Gloves (D111)
Acetone (D2)
Low-Lint Cleaning Cloth (D67)
Adhesive (D4)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Removed (Task 2-2-55)

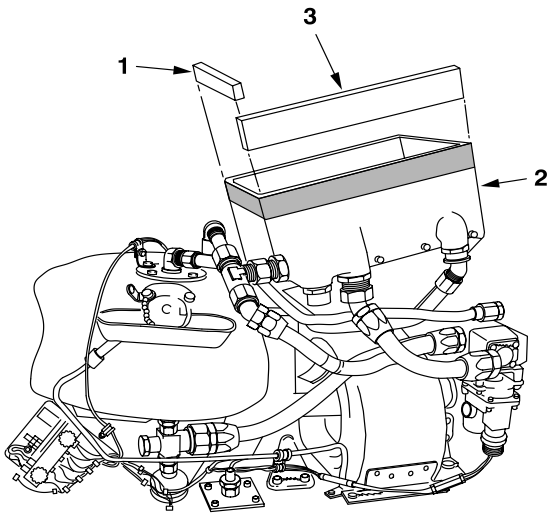
GO TO NEXT PAGE

4-4-14. OIL COOLER FAIRING SEALS — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Remove seals (1) from back and front of oil cooler (2) using plastic scraper (B123). Discard seals.

2. Remove seals (3) from left and right side of oil cooler (2) using plastic scraper (B123). Discard seals.



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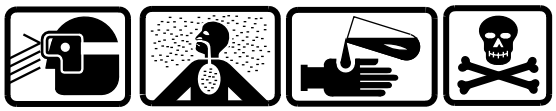
CLEAN

Acetone

3. Clean surface of oil cooler (2) where seals (1 and 3) mate with acetone (D2).

4. Wipe surface dry with clean low-lint cloth (D67).

INSTALL



Adhesive

5. Apply thin coat of adhesive (D4) to seal/oil cooler mating surfaces.

6. Install seals (1 and 3) on back, front and both sides of oil cooler (2).

INSPECT

FOLLOW-ON MAINTENANCE

Install aft fairing (Task 2-2-55).

END OF TASK

4-4-15. CLOGGED OIL DRAIN TUBES — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Plastic 12 Qt. Pail (or suitable substitute) (B101)
General Mechanic Tool Kit (B178)
Air Blow Gun (B56)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 55-2840-256-23 (OH-58D)
TM 1-2840-263-23 (OH-58D(R))

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Removed (Task 2-2-55)

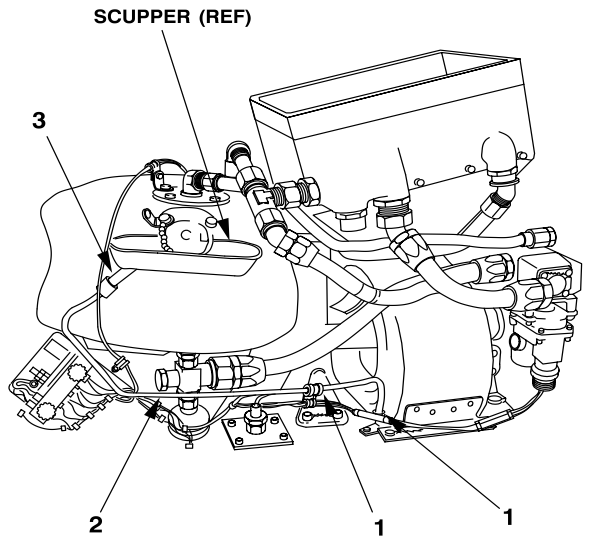
REMOVE

Lubricating Oil

1. Disconnect clamps (1) supporting upper drain tube (2).

2. Place suitable container (B101) under scupper disconnect (3) to catch residual oil.

3. Disconnect drain tube (2) at scupper disconnect (3) and remove.



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CLEAR TUBE

Compressed Air

NOTE

Drain tube shall drain properly or be replaced.

4. Clear obstruction from drain tube (2) using air blow gun.

5. Remove container (B101) from deck.

6. Place upper drain tube (2) in position and connect to scupper.

7. Install clamps (1) to support drain tube (2).

INSTALL

GO TO NEXT PAGE

4-4-15. CLOGGED OIL DRAIN TUBES — REMOVAL/INSTALLATION (CONT)

INSPECT

8. Open aft avionics/electrical compartment door.

9. Disconnect four clamps (4) securing lower drain tubes (5 and 6) to bulkhead.

10. Place suitable container (B101) under disconnect to catch residual oil.

11. Disconnect drain tube (5) at drain pan (7).

12. Disconnect drain tubes (5 and 6) at union (8) and remove.

CLEAR TUBES

Compressed Air

NOTE

Drain tube shall drain properly or be replaced.

13. Clear obstruction from drain tubes (5 and 6) using air blow gun.

INSTALL

14. Perform Class S electrical bond between union (8) and structure mating surfaces (Appendix M).

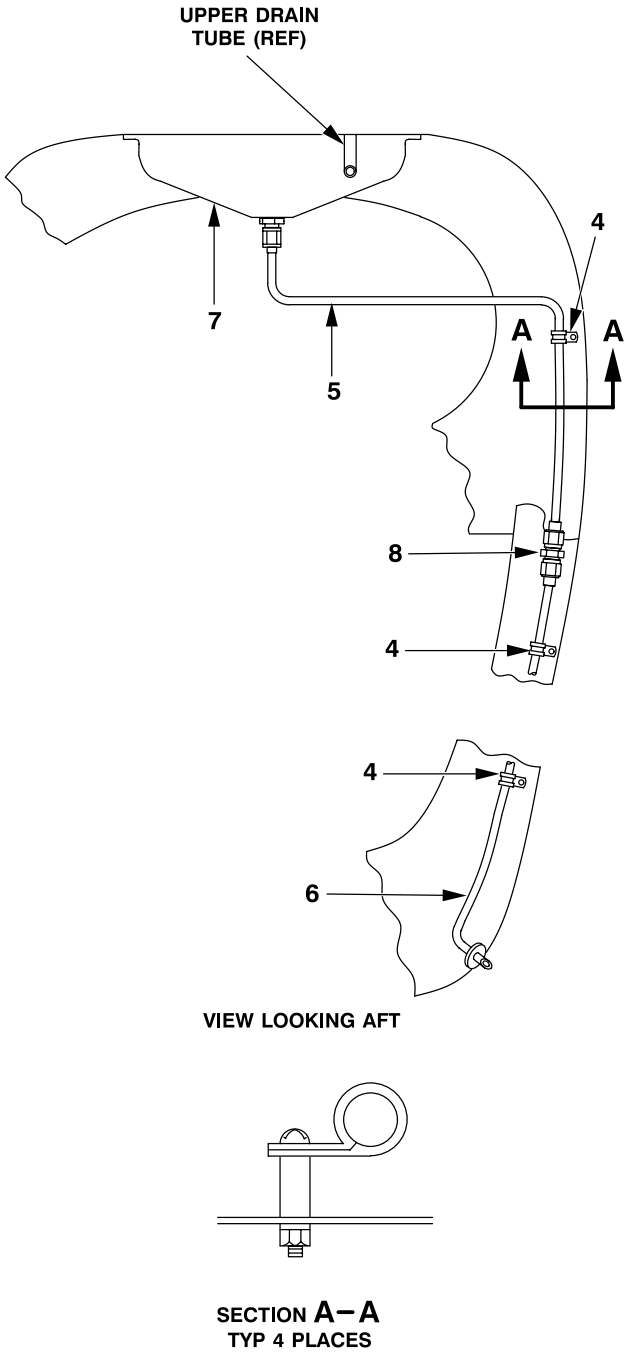
15. Install union (8) at lower end of lower drain tube (5).

16. Place drain tube (5) along bulkhead and connect upper end of drain pan (7).

17. Place lower drain tube (6) along bulkhead and insert lower end through hole in bottom of fuselage.

18. Connect upper end of drain tube (6) to union (8).

19. Install four clamps (4) to secure drain tubes (5 and 6) to bulkhead.



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4-4-15. CLOGGED OIL DRAIN TUBES — REMOVAL/INSTALLATION (CONT)

20. Remove container (B101) from under helicopter.

INSPECT

FOLLOW-ON MAINTENANCE

Install aft fairing (Task 2-2-55).

Close and secure aft avionics/electrical compartment door.

END OF TASK

4-4-16. ENGINE SCAVENGE OIL FILTER ELEMENT — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Plastic 12 Qt. Pail (or suitable substitute) (B101)

Material:
Drycleaning Solvent (D199)
Lockwire (D132)
Lubricating Oil (D140 or D233)
Rubber Gloves (D111)
Wiping Rags (D164)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Pilot

References:
TM 1-1520-248-10
TM 1-1520-248-CL

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Removed (Task 2-2-55)
Engine Oil Tank Drained (Task 1-4-5)

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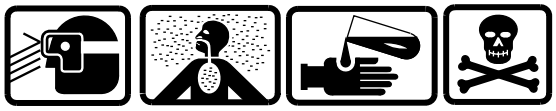
4-4-16. ENGINE SCAVENGE OIL FILTER ELEMENT — REMOVAL/INSTALLATION (CONT)

REMOVE



Lubricating Oil

CAUTION

To prevent contamination by entry of foreign material, protective cover shall be used to cover open port.

1. Place suitable container (B101) or rags under filter assembly, cut lockwire, and remove filter bowl (1) from filter head (2).

2. Remove filter element (3) from filter head (2). Discard filter element (3).

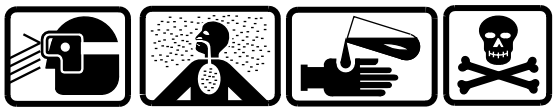
3. Remove packing (4) from filter bowl (1). Discard packing.

CLEAN

Drycleaning Solvent

4. Clean inside of filter bowl (1) using drycleaning solvent (D199) and wiping rags (D164).

INSTALL



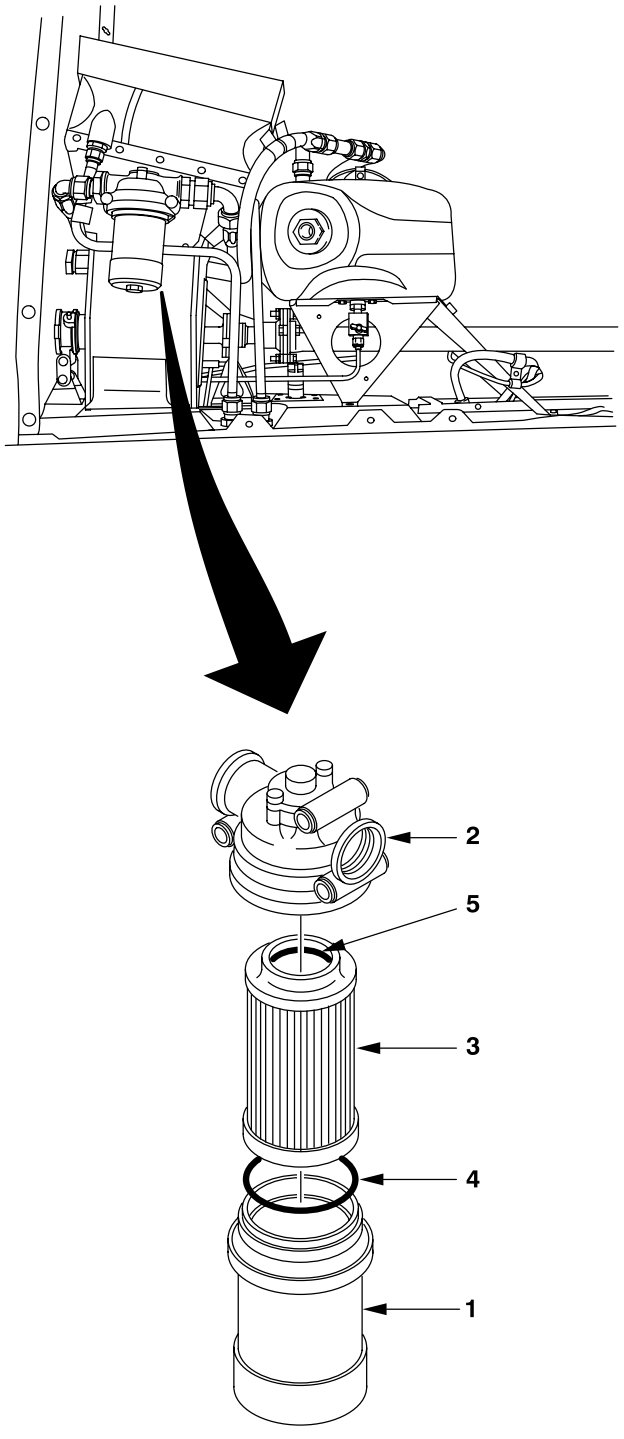
Lubricating Oil

5. Lubricate packing (5) in new filter element (3) with lubricating oil (D140 or D233).

6. Place filter element (3) in filter bowl (1).

7. Lubricate packing (4) with lubricating oil (D140 or D233) and install on filter bowl (1).

8. Install filter bowl (1) handtight on filter head (2). Secure with lockwire (D132).



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4-4-16. ENGINE SCAVENGE OIL FILTER ELEMENT — REMOVAL/INSTALLATION (CONT)

INSPECT

FOLLOW-ON MAINTENANCE

Service engine oil tank (Task 1-4-6).

Install aft fairing (Task 2-2-55).

Pilot perform MOC (TM 1-1520-248-10/CL).

END OF TASK

4-4-17. ENGINE SCAVENGE OIL FILTER ASSEMBLY — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Lubricating Oil (D140 or D233)
Corrosion Preventive Compound (CPC) (D82)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Pilot

References:
TM 1-1520-248-10
TM 1-1520-248-CL

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Removed (Task 2-2-55)
Engine Oil Tank Drained (Task 1-4-5)

GO TO NEXT PAGE

Lubricating Oil

CAUTION

To prevent contamination by entry of foreign material, protective cover shall be used to cover open port.

REMOVE

1. Remove hose (1) from inlet side of filter assembly (2).

2. Remove hose (3) from outlet side of filter assembly (2).

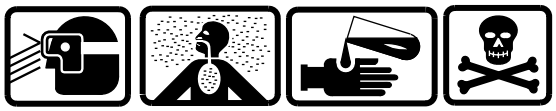
3. Remove reducer (4) and packing (5) from outlet side of filter assembly (2). Discard packing.

4. Remove union (6) and packing (7) from inlet side of filter assembly (2). Discard packing.

5. Remove filter assembly (2) by removing three bolts (8), three washers (9), and three spacers (10).

INSTALL

6. Install filter assembly (2) with three bolts (8), three washers (9), and three spacers (10).



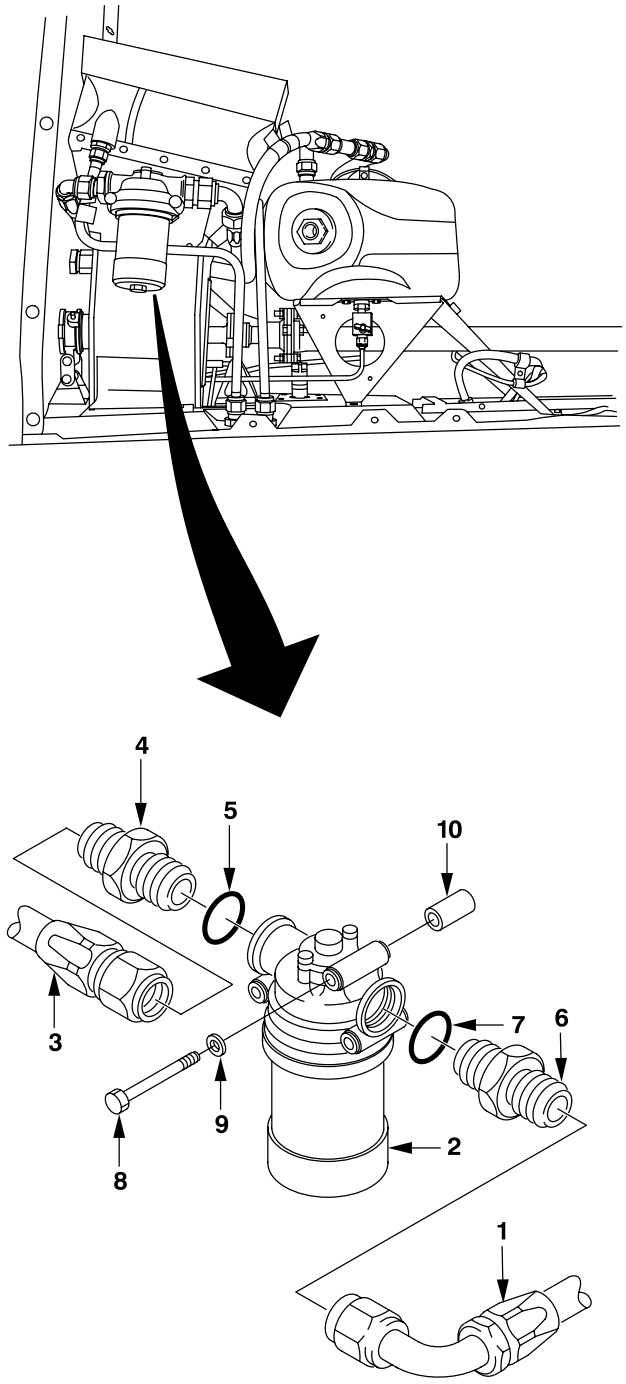
Lubricating Oil

7. Install union (6) with new packing (7) lubricated with lubricating oil (D140 or D233) on inlet side of filter assembly (2). Torque union (6) **460 TO 500 INCH POUNDS**.

8. Install reducer (4) with packing (5) lubricated with lubricating oil (D140 or D233) on outlet side of filter assembly (2). Torque reducer (4) **460 TO 500 INCH POUNDS**.

9. Install hose (3) on outlet side of filter assembly (2). Torque hose (3) **200 TO 315 INCH POUNDS**.

10. Install hose (1) on inlet side of filter assembly (2). Torque hose (1) **150 TO 225 INCH POUNDS**.



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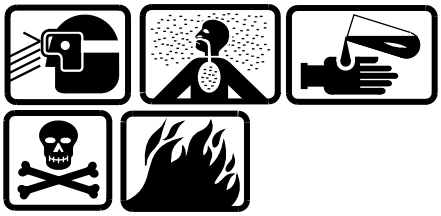


Corrosion Preventive Compound

CAUTION

Do not allow CPC to enter metallic or elastomeric bearings or come in contact with seals.

11. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads, excluding any metallic or elastomeric bearings or seals that are exposed to the environment.

INSPECT

FOLLOW-ON MAINTENANCE

Service engine oil tank (Task 1-4-6).

Install aft fairing (Task 2-2-55).

Pilot perform MOC (TM 1-1520-248-10/CL).

END OF TASK

Section V. IGNITION SYSTEM

4-14. IGNITION SYSTEM

Refer to TM 55-2840-256-23 for OH-58D and to TM 1-2840-263-23 for OH-58D(R).

Section VI. POWERPLANT CONTROLS

4-15. POWERPLANT CONTROLS

4-16. INTRODUCTION

This section contains: maintenance procedures for the replacement of the engine control cable, aft support bracket and bearing, throttle arm rod end, fuel control lever and clevis, fuel differential pressure switch, and low pressure warning switch. This section also contains rigging of the engine throttle control cable. Standard torque tables are provided in Appendix P and TM 1-1500-204-23.

4-17. TASK LIST

The task list lists those tasks required to support unit and intermediate level maintenance.

LIST OF TASKS

4-6-1. NG ENGINE CONTROL CABLE — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Powerplant Tool Kit (B179)
C Clamp (B16)
Spring Scale (B121)
Torque Wrench (B236)
Maintenance Stand (B162)

Material:
Lockwire (D132)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68N Avionic Mechanic
67S Scout Helicopter Repairer
68B Aircraft Powerplant Repairer

References:
TM 11-1520-248-23
TM 55-2840-256-23 (OH-58D)
TM 1-2840-263-23 (OH-58D(R))

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Avionic Equipment Removed to Gain Access to Center Post Door (TM 11-1520-248-23)
Crew Seat and Armor Seat Panel Removed (Tasks 2-2-33 and 2-2-34)
Center Post Duct and Panels Removed (Task 2-2-69)

GO TO NEXT PAGE

4-6-1. NG ENGINE CONTROL CABLE — REMOVAL/INSTALLATION (CONT)

REMOVE

NOTE

Maintenance stand (B162) should be positioned as necessary to facilitate access to engine.

1. Remove pilot collective stick cover (1) (Task 11-3-3).

2. Disconnect cable rod end (2) at throttle arm (3) of pilot collective stick (4) by removing cotter pin (5), nut (6), washer (7), and bolt (8). Discard cotter pin.

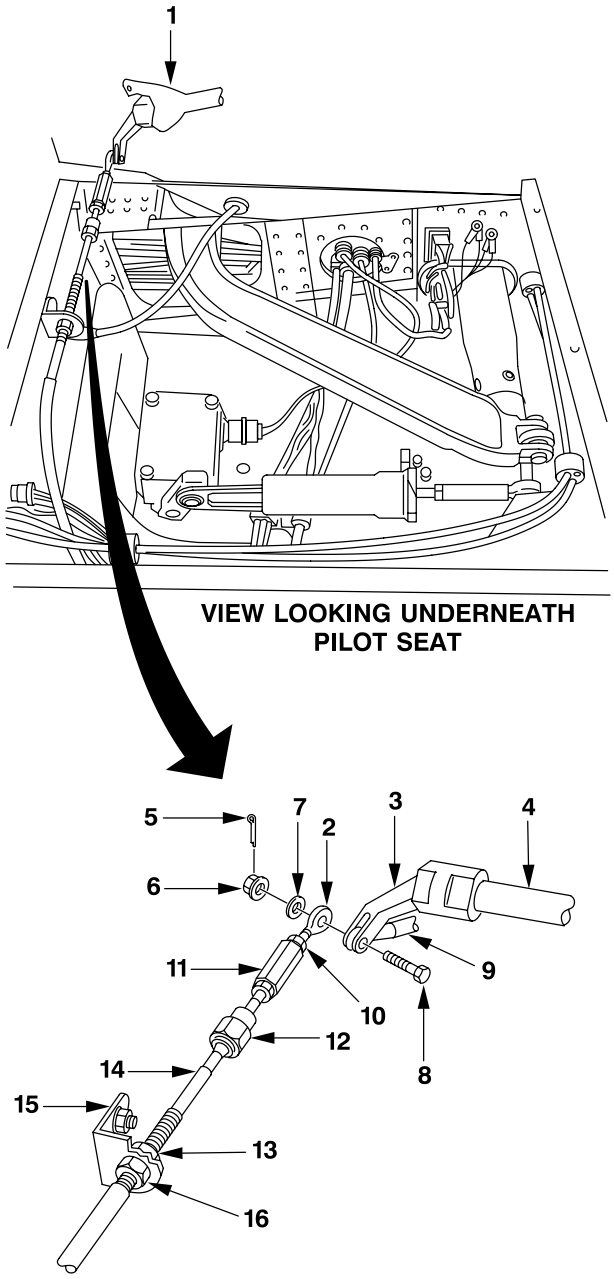
3. Temporarily install bolt (8) with washer (7) and nut (6) to hold throttle arm connecting tube (9) in place.

4. Cut lockwire to jamnut (10) and loosen while holding adapter (11) with wrench.

5. Remove swivel assembly (12) with adapter (11) and rod end (2).

6. Cut lockwire and remove jamnut (13) securing cable (14) to support bracket (15).

7. Withdraw cable (14) from bracket (15) and remove opposing jamnut (16).



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NOTE

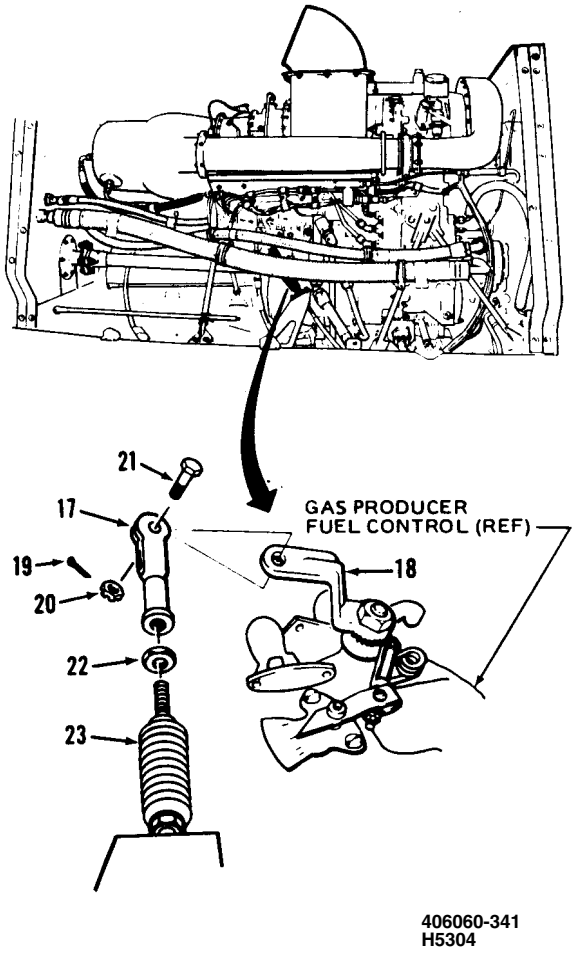
The locator view on this page depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.

8. Open right engine cowl door.

9. Disconnect clevis (17) at fuel control lever (18) by removing cotter pin (19), nut (20), and bolt (21). Discard cotter pin.

10. Loosen clevis jamnut (22) while holding clevis (17).

11. Remove clevis (17), jamnut (22), and bellows assembly (23).



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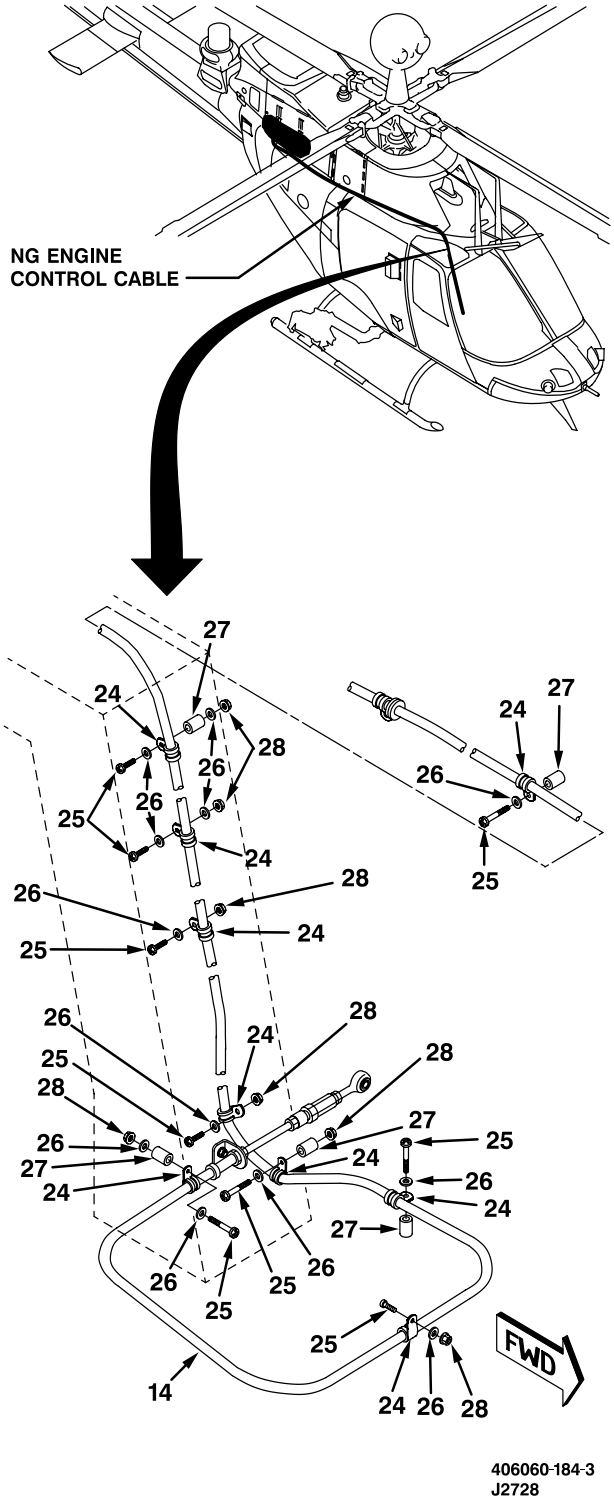
4-6-1. NG ENGINE CONTROL CABLE — REMOVAL/INSTALLATION (CONT)

NOTE

Spacers are different lengths to maintain cable in a straight line to enable smooth operation. Screws and spacers should be immediately reinstalled in mounting holes to ensure correct stackups are kept at the proper location.

12. Remove 6 nuts (28), 5 spacers (27), 12 washers (26), 9 screws (25) and 8 clamps (24) from cable (14) from structure.



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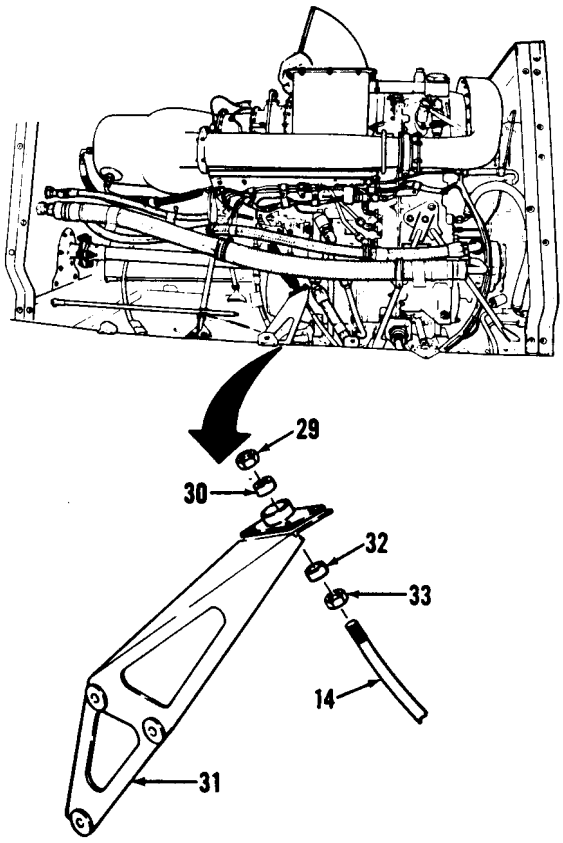
NOTE

The locator view on this page depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.

13. Cut lockwire and remove jamnut (29) with spacer (30) securing cable (14) to support bracket (31) in engine compartment.

14. Withdraw cable (14) through bearing in bracket support (31). Remove opposing spacer (32) and jamnut (33).

15. Withdraw cable (14) through control tunnel and grommets in structure.



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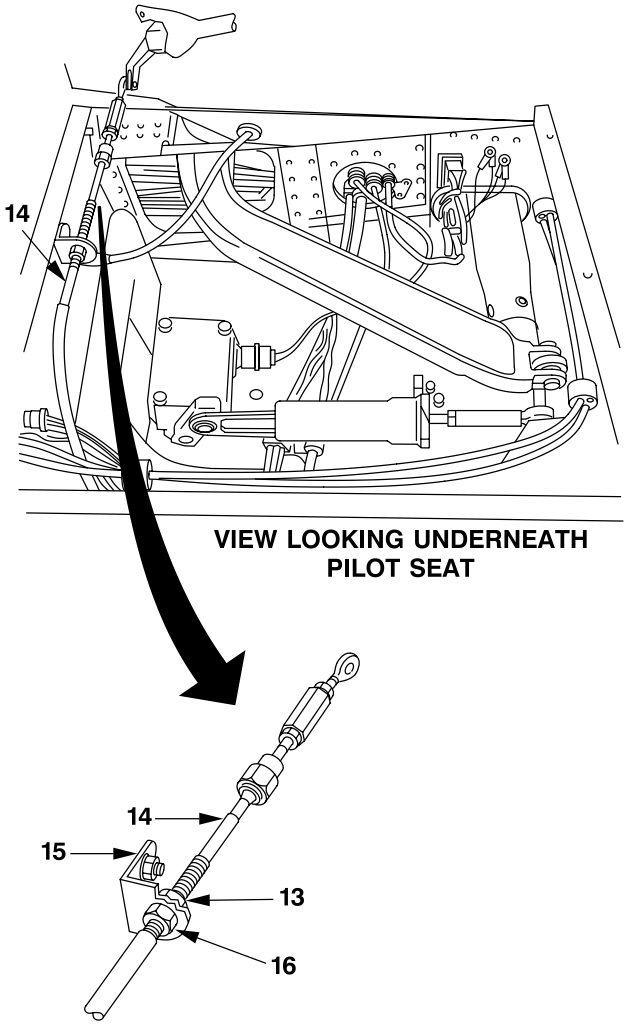
4-6-1. NG ENGINE CONTROL CABLE — REMOVAL/INSTALLATION (CONT)

INSTALL

16. Route cable (14) through grommets and control tunnel.

17. Install one jamnut (16) on forward end of cable (14).

18. Insert cable (14) through support bracket (15) and install opposing jamnut (13).



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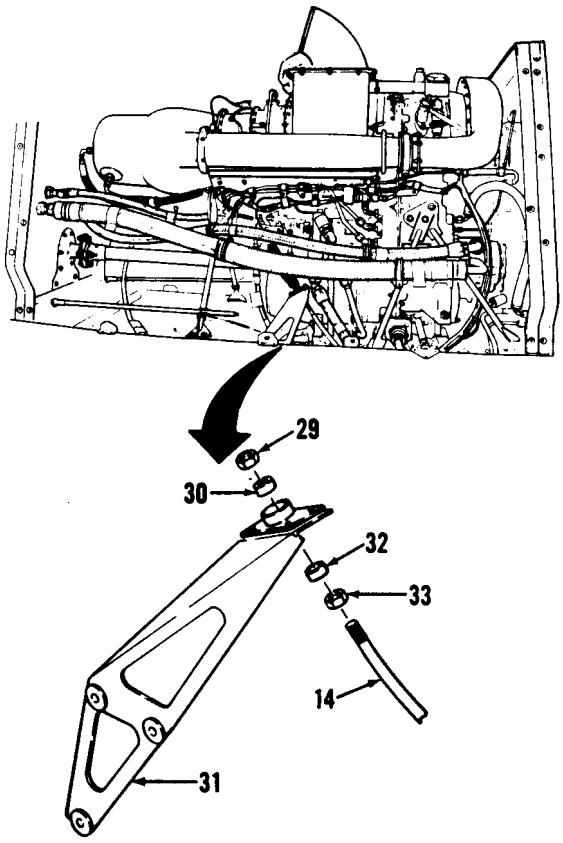
4-6-1. NG ENGINE CONTROL CABLE — REMOVAL/INSTALLATION (CONT)

NOTE

The locator view on this page depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.

19. Install one jamnut (33) with spacer (32) on aft end of cable (14).

20. Insert cable through bearing in support bracket (31) and install opposing spacer (30) and jamnut (29).



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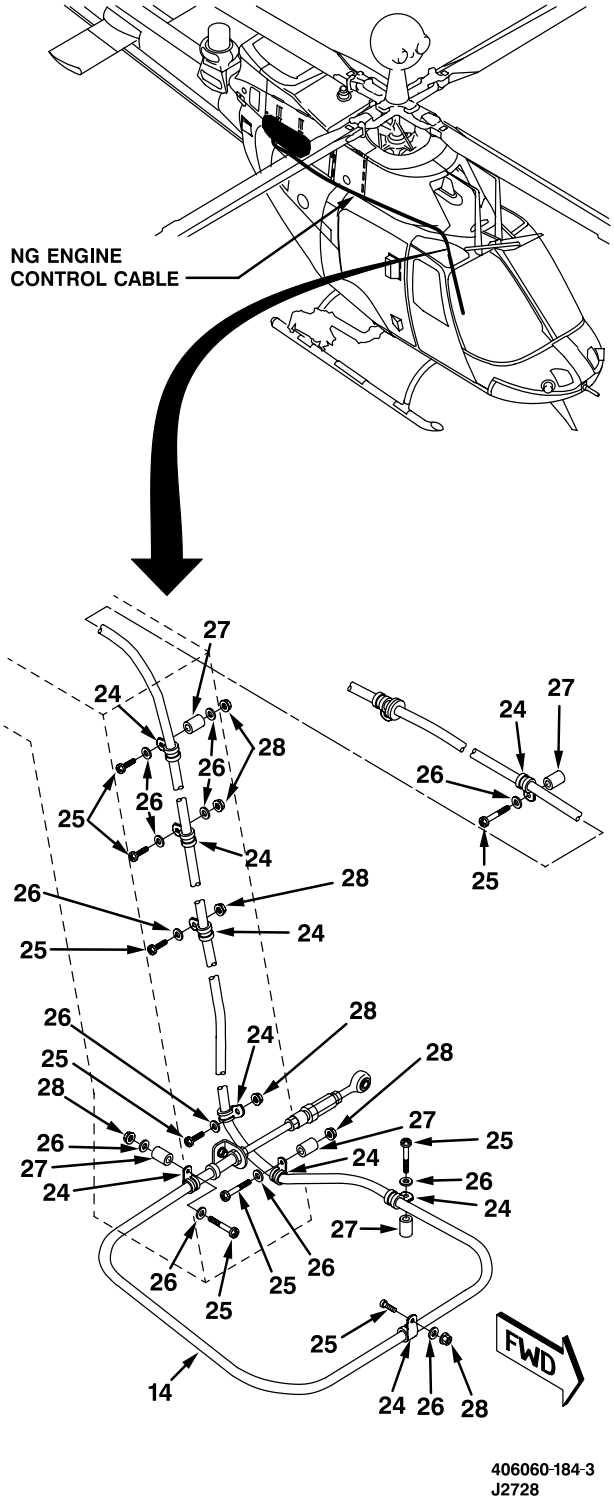
4-6-1. NG ENGINE CONTROL CABLE — REMOVAL/INSTALLATION (CONT)

21. Secure cable (14) to structure with 9 clamps (24), 9 screws (25), 12 washers (26), 5 spacers (27), and 7 nuts (28).



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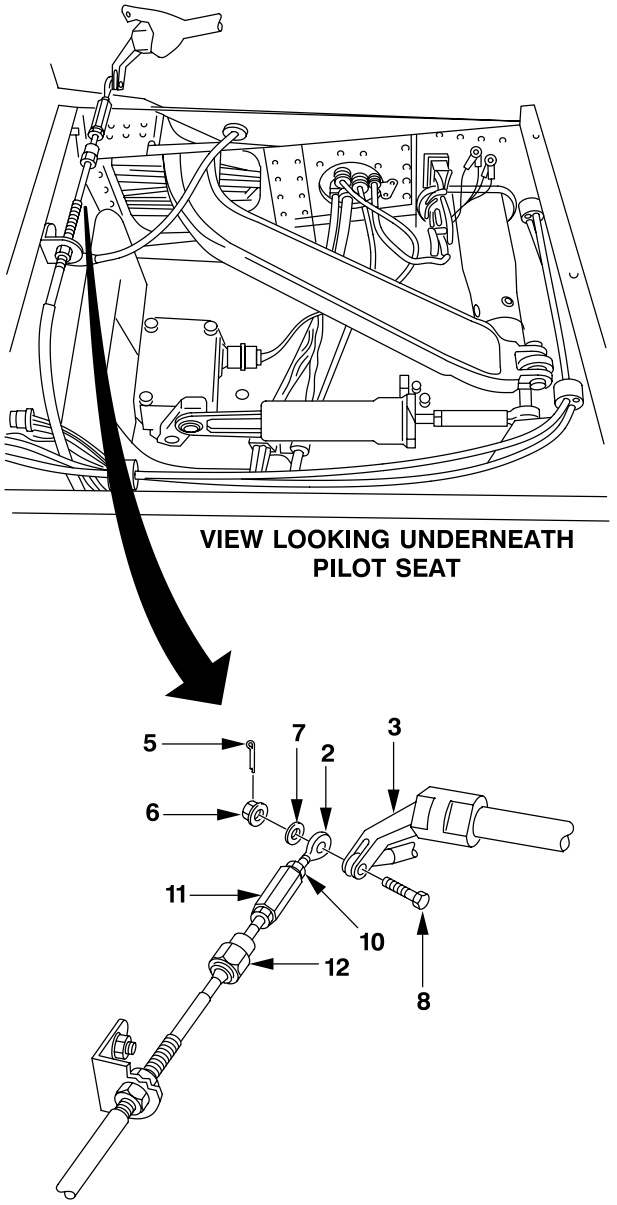
22. Install jamnut (10) on swivel assembly (12) with adapter (11) and rod end (2) to forward end of cable.

23. Secure jamnut (10) with lockwire (D132).

24. Connect rod end (2) to throttle arm (3) of collective stick with bolt (8), washer (7), nut (6). Install cotter pin (5) through nut (6).



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NOTE

The locator view on this page depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.

25. Install bellows assembly (23), jamnut (22), and clevis (17) on aft end of cable.

NOTE

Construction of idle-detent button may allow button to partially pop out. Twist grip shall continue to be turned open until button pops all the way out.

26. With pilot twist grip at idle-detent position and pointer (34) on fuel control quadrant (35) at 40° mark, lever (18) shall be positioned with center of the lever-to-clevis hole (36) **0.900 inch** below throttle shaft (37) centerline plane.

27. If needed, reposition lever (18) and torque retaining nut (38) **40 TO 60 INCH-POUNDS** while holding throttle shaft (37) with Allen wrench.

CAUTION

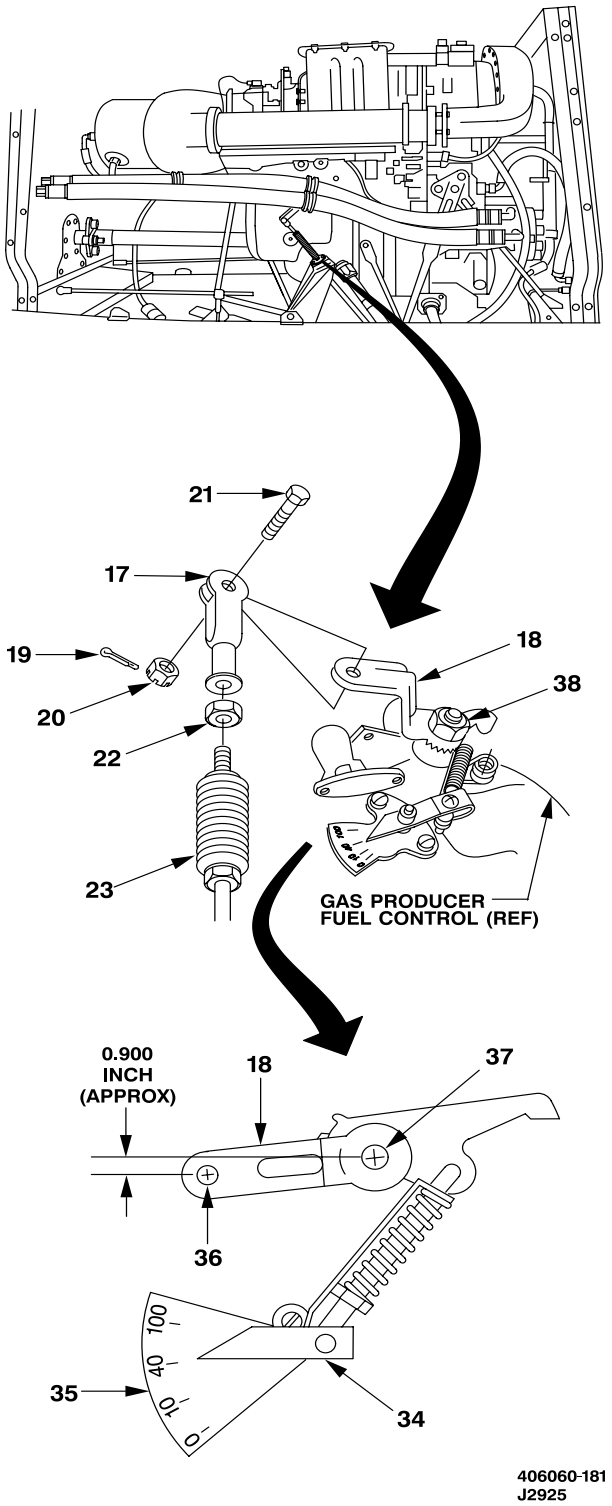
- To prevent binding, fuel control lever-to-clevis nut shall not be overtightened.
- To prevent damage to engine, control arm bolt may be installed in either direction, and repositioning of lines and hoses may be done to prevent chafing or interference.

28. Adjust clevis (17) to fit lever (18) and install bolt (21) and nut 20.

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

29. Tighten until nut (20) is snug against clevis (17). Install cotter pin (19) through nut. Bolt (21) should be free enough to turn by hand after installation.



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CHECK PILOT TWIST GRIP FORCE

NOTE

The locator view on this page depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.

30. If twist grip forces are objectionable to pilot, use the following as a guideline.

a. Install C-clamp (B16) on pilot twist grip (39) with T-handle jackscrew of C-clamp (B16) up.

b. Attach spring scale (B121) to T-handle jackscrew of C-clamp (B16) **2.2 inches** from surface of collective stick grip (39).

c. Check for following results:

NOTE

Direction of pulling force must be kept perpendicular to axis of C-clamp. As the grip is rotated, the direction of pull on the spring scale must be adjusted continuously to keep direction of pull perpendicular to axis through grip.

(1) Breakaway force required to rotate twist grip (39) from full closed position shall not exceed 8.33 pounds.

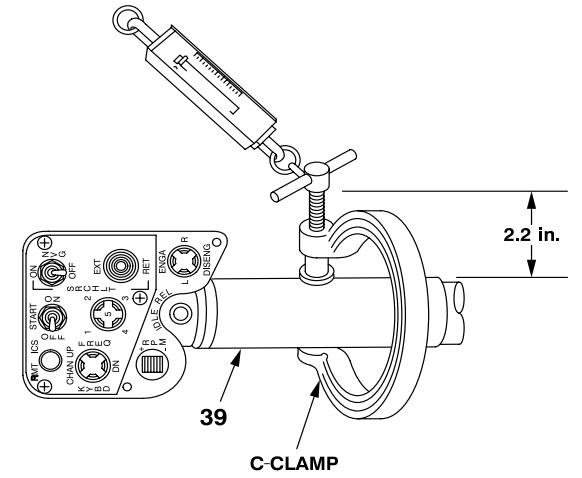
(2) With continuous pull to flight idle position, the force shall not exceed 5.0 pounds.

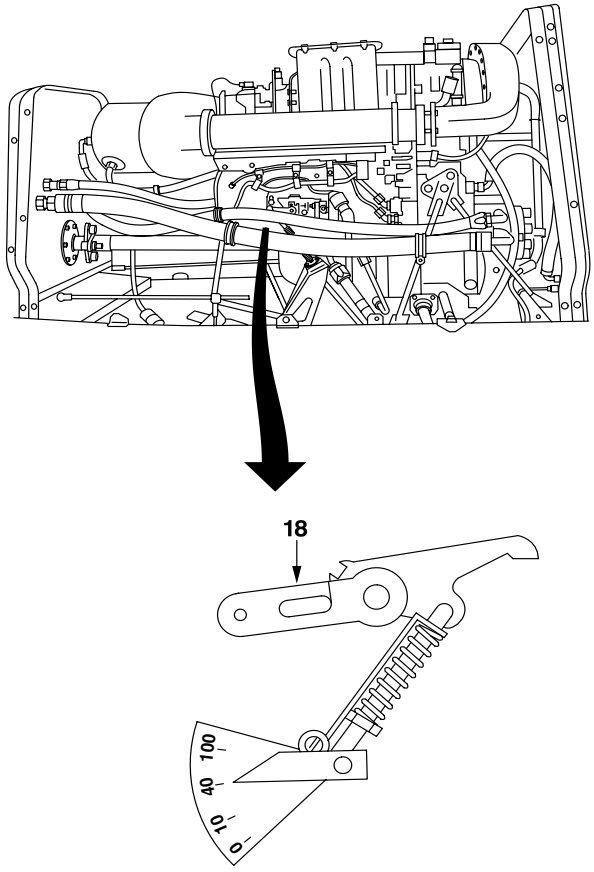
(3) From flight idle to full open position, the force shall not exceed 3.33 pounds.

(4) Operation shall be smooth throughout entire range.

CHECK PILOT TWIST GRIP FOR FULL TRAVEL

31. Rotate pilot twist grip through full travel and check for smooth, unrestricted operation. Check that fuel control lever (18) contacts minimum and maximum stops on fuel control before twist grip bottoms out.





406060-178
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32. If full travel cannot be obtained, reposition nine cable clamps (24) and bracket (31).

33. If binding is felt in twist grip, check control cable for sharp bends, improper clamping, rough bearing or over-tightened lever-to-clevis nut.

34. If looseness is felt, check control system for worn components such as rod end bearing, uniball bearing in support bracket, swivel, clevis, and twist grip gearing.

CAUTION

To prevent malfunction of fuel control unit, minimum and maximum stops of fuel control unit shall not be adjusted. Refer to TM 55-2840-256-23 (OH-58D) or TM 1-2840-263-23 (OH-58D(R)).

35. If lever does not contact stops on fuel control unit, reposition cable at clamps (24) and bracket (31).

INSPECT

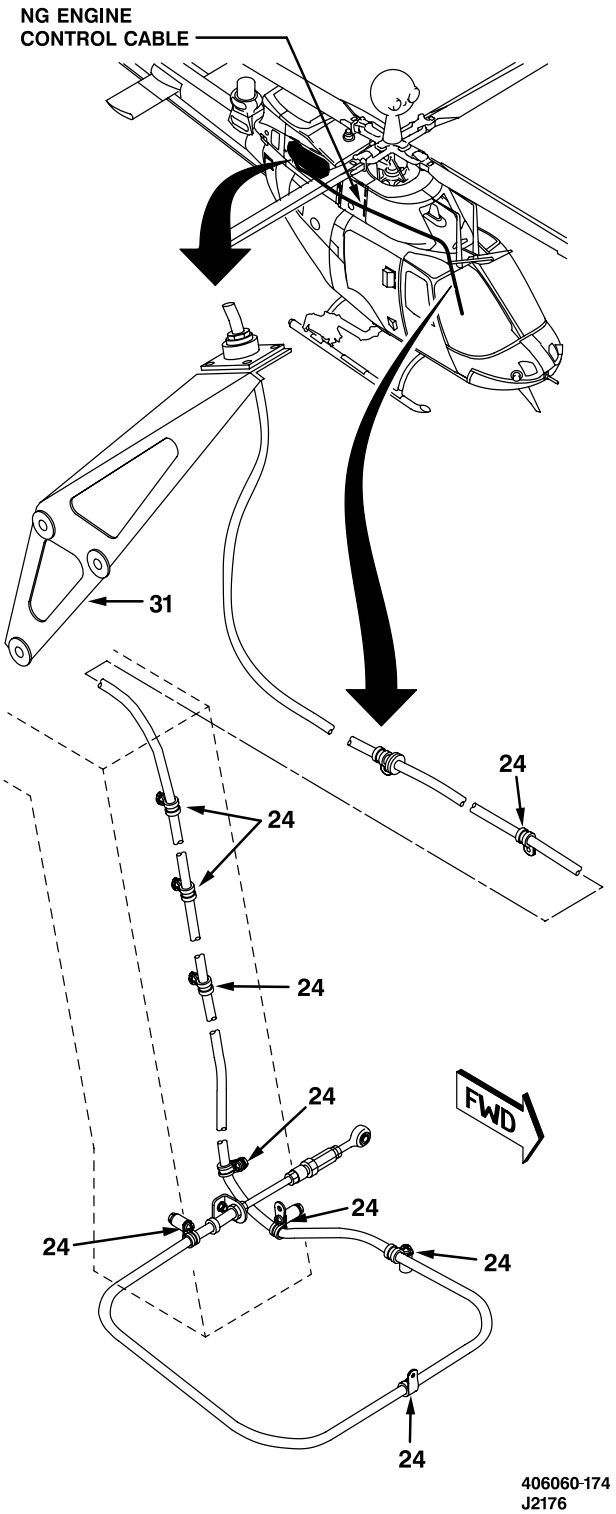
FOLLOW-ON MAINTENANCE

Perform rigging check (Task 4-6-2).

Install avionics equipment removed to gain access to center post door (TM 11-1520-248-23).

Install center post duct and panels (Task 2-2-69).

Install crew seat and armor seat panel (Tasks 2-2-33 and 2-2-34).



END OF TASK

4-6-2. NG ENGINE CONTROL CABLE (OH-58D) — RIGGING

This task covers: Rigging (On Helicopter)

INITIAL SETUP

Applicable Configurations:
OH-58D

Tools:
General Mechanic Tool Kit (B178)
Powerplant Tool Kit (B179)
Torque Wrench (B237)
Crowfoot (B23)
Maintenance Stand (B162)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68B Aircraft Powerplant Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 55-2840-256-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

4-6-2. NG ENGINE CONTROL CABLE (OH-58D) — RIGGING (CONT)

RIG

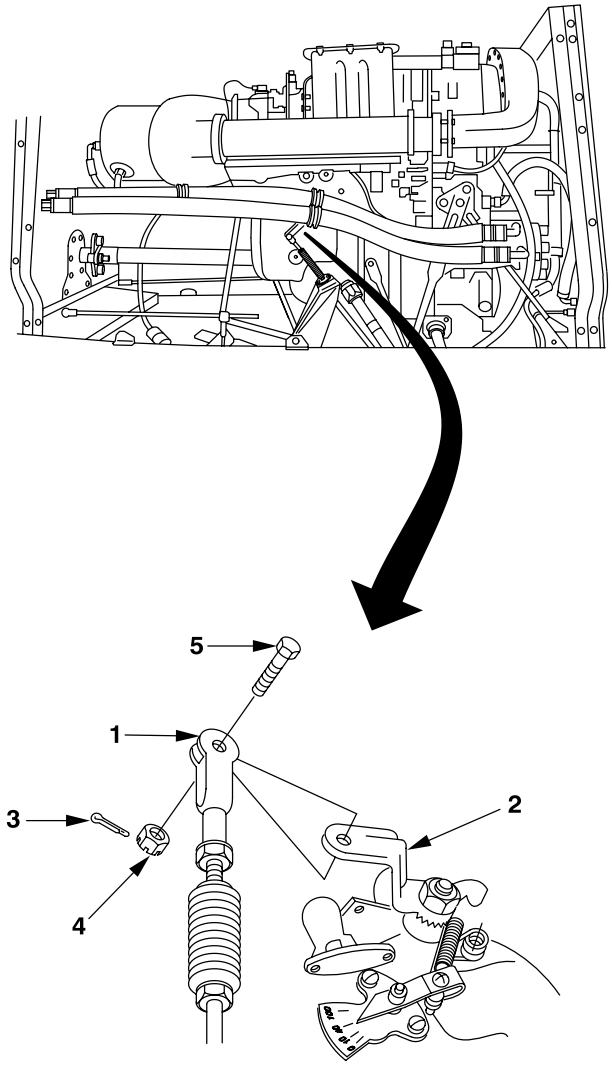
NOTE

- Control system rigging check is required when any component of system has been disturbed.
- Ng control cable rigging adjustments on helicopter are checked by operation of pilot twist grip.
- Recheck is accomplished using copilot twist grip. If rigging conforms to TM 55-2840-256-23, proceed with MOC.
- Maintenance stand (B162) should be positioned as necessary to facilitate access to engine.
- The locator view on this page depicts the right side of an OH-58D(R) engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.

1. Open right engine cowl door.

2. Disconnect clevis (1) from fuel control lever (2) by removing cotter pin (3), nut (4), and bolt (5). Discard cotter pin.

3. Turn pilot twist grip to idle-detent position.



406060-176
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4. Set pointer (6) on fuel control quadrant (7) at 40° mark. Fuel control lever (2) should be positioned with center of the lever-to-clevis bolt hole (8) **0.900 inch** below throttle shaft (9) centerline plane.

5. If lever (2) is not positioned correctly, proceed as follows:

a. Loosen lever retaining nut (10) while holding throttle shaft (9) with Allen wrench.

b. Reposition lever (2) on throttle shaft (9) with center of the lever-to-clevis bolt hole (8) **0.900 inch** below throttle shaft (9) centerline plane.

c. With lever (2) correctly positioned, torque retaining nut (10) **40 TO 60 INCH-POUNDS** while holding throttle shaft (9) with Allen wrench.

6. Adjust clevis (1) to fit lever (2) and install bolt (5) and nut (4).

7. Using crowfoot (B23) tighten nut (4) until dragging begins, then turn to next castellation and install cotter pin (3) through nut (4).

8. Check rigging by operating throttle and observing that pointer (6) on quadrant (7) hits low and high stops.

NOTE

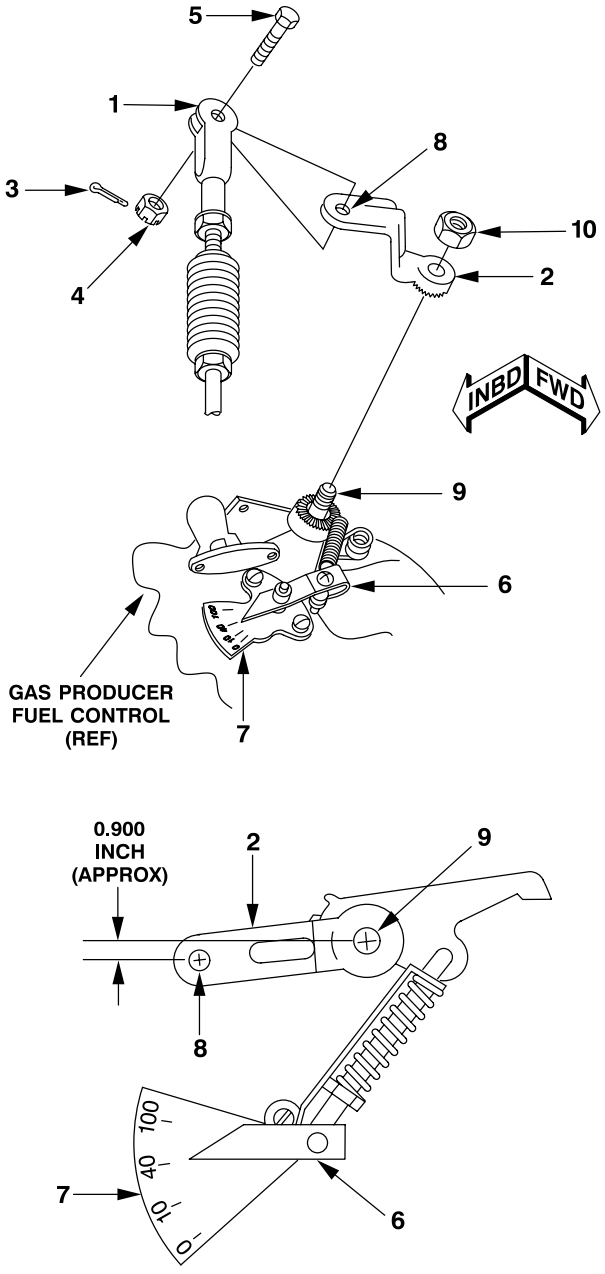
If the pointer does not hit low and high stops, engine will not shut off completely.

9. Pilot start engine and run at idle speed for a minimum of 5 minutes to stabilize temperature.

10. Increase twist on grip to provide 100-percent Np (power turbine) with collective in flat pitch, then decrease to idle-detent and let Ng (gas producer) stabilize.

11. Mark precise position of pointer (6) on fuel control quadrant (7).

12. If pointer (6) is at or above the 40° mark, shut engine down and adjust clevis (1) to move pointer (6) just below 40° mark.



406060-175
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13. If pointer (6) is more than **0.078 inch** below the 40° mark, adjust clevis (1) to move pointer (6) closer to 40° mark.

14. Start engine and let Ng stabilize.

15. Release idle-detent button on twist grip and very slowly roll grip in cutoff direction just enough to detect movement at pointer (6).

16. If idle rpm decreases, the internal rigging of fuel control is incorrect.

17. If no change is encountered, very slowly roll grip in power increase direction.

18. No increase in rpm is permitted before pointer (6) reaches 40° mark.

19. If rpm increases before pointer (6) reaches 40° mark, the internal rigging of fuel control is incorrect. An increase at or above 40° mark is normal.

CAUTION

No attempt shall be made to adjust Ng idle speed by adjusting clevis at fuel control lever. Pointer shall be at 40° mark on quadrant or within specified limits. Ng idle speed shall be adjusted at idle speed adjusting screw on fuel control. Failure to comply with this direction can result in an engine flameout. Refer to TM 55-2840-256-23.

20. Increase twist grip to provide 100 percent Np with collective in flat pitch, then decrease to idle-detent.

NOTE

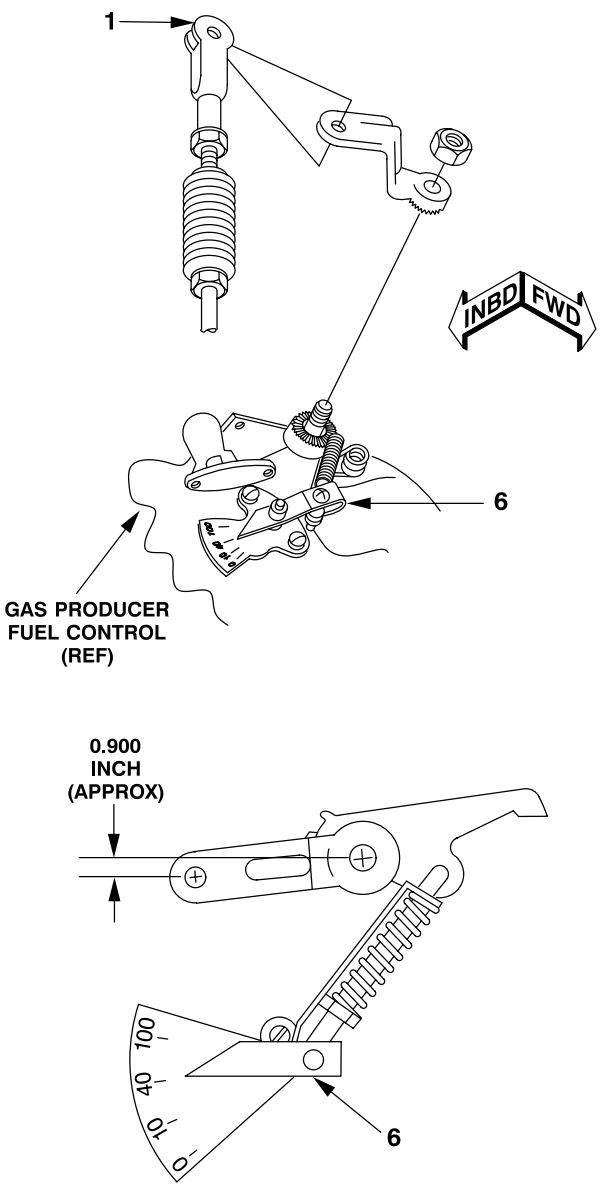
Ng speed should be 63-65 percent with both generators off.

21. Adjust idle speed on fuel control, if necessary to obtain 63-65 percent Ng idle speed. Refer to TM 55-2840-256-23 for idle speed adjustment procedure.

INSPECT

FOLLOW-ON MAINTENANCE

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).



END OF TASK

4-6-3. NG ENGINE CONTROL CABLE (OH-58D(R)) — RIGGING

This task covers: Rigging (On Helicopter)

INITIAL SETUP

Applicable Configurations:
OH-58D(R)

Tools:
General Mechanic Tool Kit (B178)
Powerplant Tool Kit (B179)
Torque Wrench (B237)
Crowfoot (B23)
Maintenance Stand (B162)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68B Aircraft Power Plant Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-2840-263-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

4-6-3. NG ENGINE CONTROL CABLE (OH-58D(R)) — RIGGING (CONT)

RIG

NOTE

- Control system rigging check is required when any component of system has been disturbed.
- NG control cable rigging adjustments on helicopter are checked by operation of pilot twist grip.
- Recheck is accomplished using copilot twist grip. If rigging conforms to TM 1-2840-263-23, proceed with MOC.
- Maintenance stand (B162) should be positioned as necessary to facilitate access to engine.

1. Open right engine cowl door.

2. Disconnect clevis (1) at hydromechanical unit (HMU) lever (2) by removing cotter pin (3), nut (4), and screw (5). Discard cotter pin.

3. Set pointer (6) on HMU quadrant (7) at the 35° mark. The HMU lever (2) should be positioned with centerline of the HMU lever approximately 45° below the horizontal throttle shaft (8) centerline plane.

4. If HMU lever (2) is positioned correctly, go to step 5.

   a. Loosen lever retaining nut (9).

   b. Position HMU lever (2) onto throttle shaft (8) with centerline of the lever-to-clevis bolt hole approximately 45° below horizontal throttle shaft centerline plane.

   c. With HMU lever (2) positioned, torque retaining nut (9) to **45 INCH-POUNDS**.

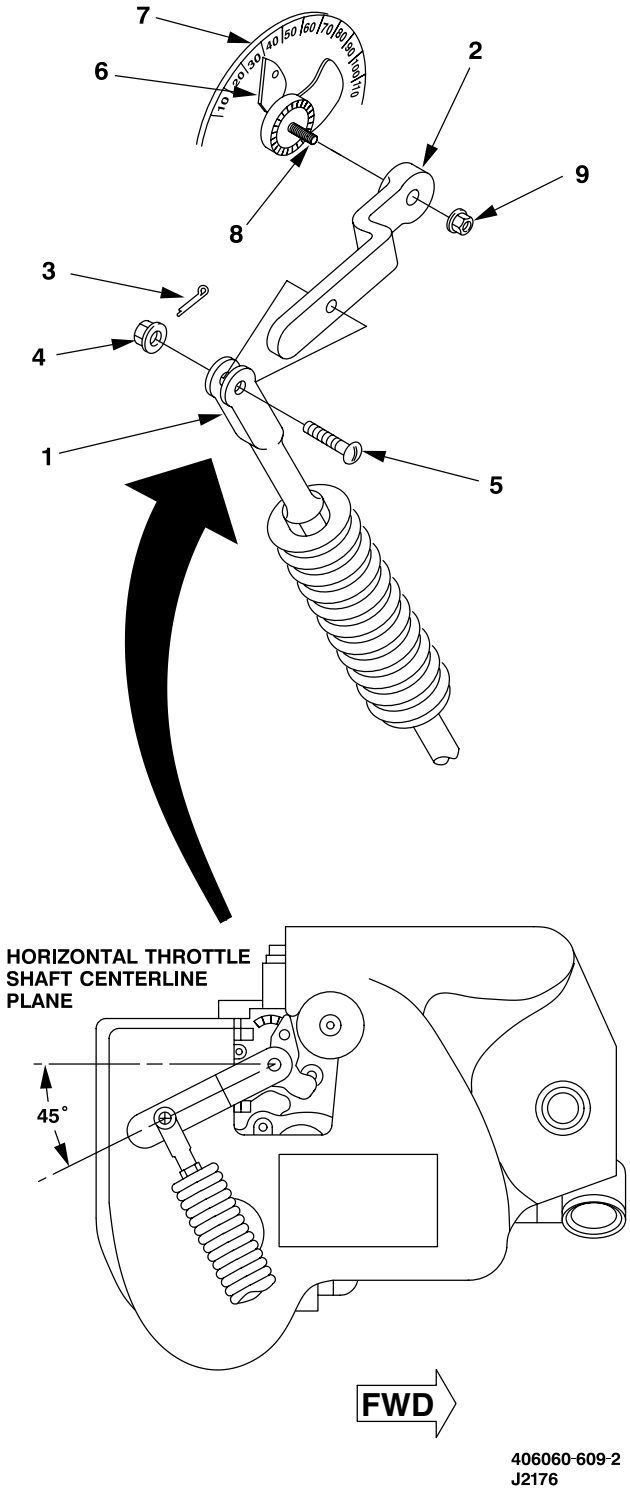
5. Rotate pilot twist grip to full open position.

6. Rotate pilot twist grip to idle detent.

7. Adjust clevis (1) to fit HMU lever (2). Ensure pointer (6) is at 35° mark.

8. Install screw (5) and nut (4). Do not overtighten.

9. Rotate pilot twist grip to full open and vigorously roll back to idle detent a minimum of two times.



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10. Check HMU pointer:

a. If pointer indicates **35**° ±**5**°, proceed with step 12.

b. If pointer fails to indicate **35**° ±**5**°, complete Task 4-6-1, steps 31-34.

c. Check pilot throttle grip control linkage (Task 11-3-1).

11. Repeat procedures from steps 9 and 10.

12. Rotate copilot twist grip to full open and vigorously roll back to idle detent a minimum of two times.

13. Check HMU pointer:

a. If pointer (6) indicates **35**° ±**5**°, proceed to step 14.

b. If pointer (6) fails to indicate **35**° ±**5**°, repeat steps 6. through 13. increasing or decreasing pointer (6) angle until pilot and copilot twist grips are within limit.

c. If pilot twist grip meets limit and copilot grip does not, complete Task 11-3-1. Recheck rigging.

14. Check rigging as follows:

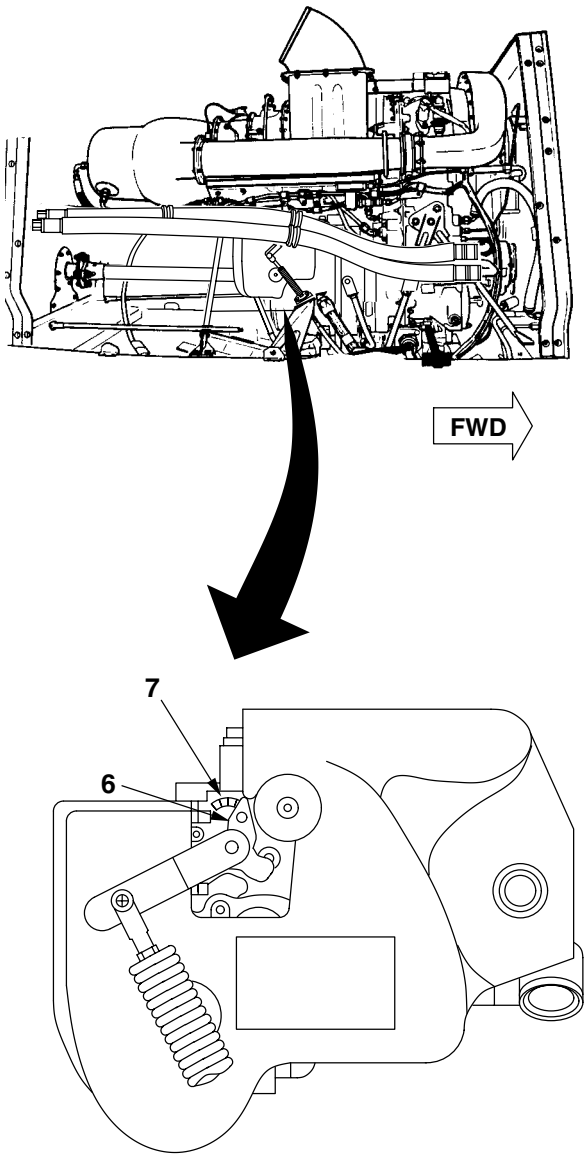
a. Rotate twist grip to full close observing pointer (6) on HMU quadrant (7) makes physical contact with minimum mechanical stop (upper).

b. Rotate twist grip to full open observing pointer (6) on HMU quadrant (7) makes physical contact with maximum mechanical stop (lower).

c. If pointer (6) fails to contact one or both mechanical stops, verify all adjustment steps.

d. If pointer (6) fails to contact one or both mechanical stops after verification of all adjustment steps, replace HMU.

15. Check pilot twist grip force (Task 4-6-1, step 30).



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4-6-3. NG ENGINE CONTROL CABLE (OH-58D(R)) — RIGGING (CONT)

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23-6.

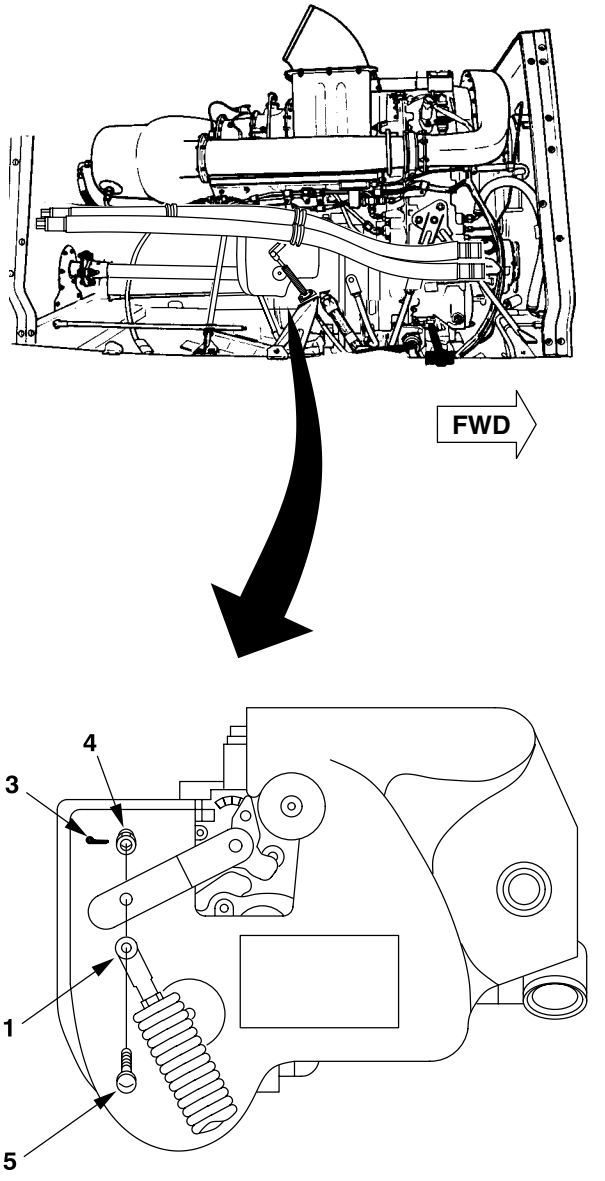
16. Using crowfoot (B23) tighten nut (4) until snug against clevis (1). Screw (5) should be free enough to turn by hand after installation.

17. Install cotter pin (3).

WARNING

- Sound pressure levels in this helicopter during operating conditions exceed the Surgeon General hearing conservation criteria. Hearing protection devices, such as aviator helmet, ear plugs, or ear sound suppressors are required to be worn by all personnel in and around the helicopter during its operation.
- Stay clear of turning main and tail rotor blades. Wind gusts, coast down or cyclic movement may cause the main rotor blade to flap down below the height of a person. Dangerous winds are created by the main rotor blades when blades are operated at or near top rpm. Adequate distance shall be maintained from main and tail rotor blades during operation. Severe injury or death may result.

18. Maintenance test pilot perform normal engine start (TM 1-1520-248-MTF).



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NOTE

NG may decrease below **63%** NG when DC GEN is turned on.

19. Maintenance test pilot perform normal engine runup (TM 1-1520-248-MTF).

20. Check NG setting and verify stabilized at idle for 5 minutes.

21. Release idle detent button on twist grip and very slowly roll grip in cutoff direction just enough to detect movement at pointer (6).

22. If idle rpm decreases, the rigging of fuel control is incorrect. Repeat rigging procedures from steps 2 through 21.

23. If no change is encountered, very slowly roll grip in power increase direction.

24. No increase in rpm permitted before pointer (6) reaches the 40° mark.

25. If rpm increases before pointer (6) reaches the 40° mark, troubleshoot electronic control unit (ECU). An increase at or above the 40° mark is normal.

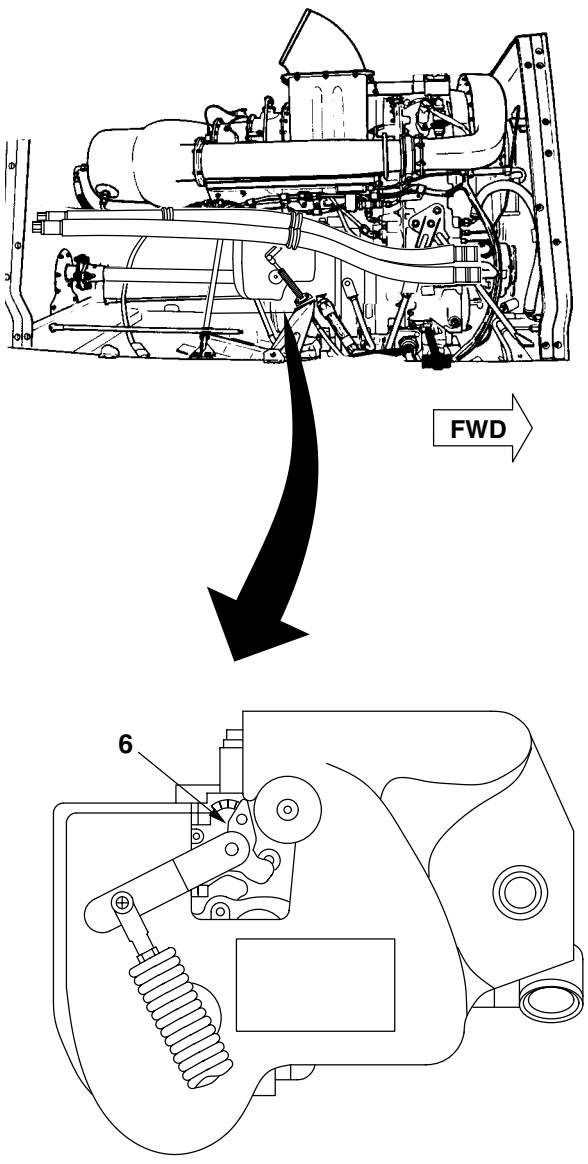
26. Increase twist grip to provide **100%** NP with collective in flat pitch, then decrease to idle detent.

INSPECT

FOLLOW-ON MAINTENANCE

Close right engine cowl door.

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).



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END OF TASK

4-6-4. AFT NG CABLE UNIBALL BEARING AND CAP — REMOVAL/CLEANING/INSPECTION/ INSTALLATION

This task covers: Removal, Cleaning, Inspection, and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Powerplant Tool Kit (B179)
Outside Micrometer Caliper Set (B12)
Maintenance Stand (B162)

Material:
Rubber Gloves (D111)
Lockwire (D132)
Acetone (D2)
Wiping Rag (D164)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68B Aircraft Powerplant Repairer

References:
TM 55-2840-256-23 (OH-58D)
TM 1-2840-263-23 (OH-58D(R))
TM 1-1520-266-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

4-6-4. AFT NG CABLE UNIBALL BEARING AND CAP — REMOVAL/CLEANING/INSPECTION/ INSTALLATION (CONT)

REMOVE

NOTE

- Maintenance stand (B162) should be positioned as necessary to facilitate access to engine.
- The locator view on this page depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.

1. Open right engine cowl door.

2. Disconnect clevis (1) from fuel control lever (2) by removing cotter pin (3), nut (4), and bolt (5). Discard cotter pin.

3. Loosen clevis jamnut (6) while holding clevis (1).

4. Remove clevis (1), jamnut (6), and bellows assembly (7).

5. Cut lockwire and remove jamnut (8) with spacer (9).

6. Remove bearing (10) by removing screws (11), washers (12), cap (13), and shim (14) from support bracket (15).

CLEAN

Acetone

7. Wipe bearing (10) and cap (13) with wiping rag (D164) dampened with acetone (D2).

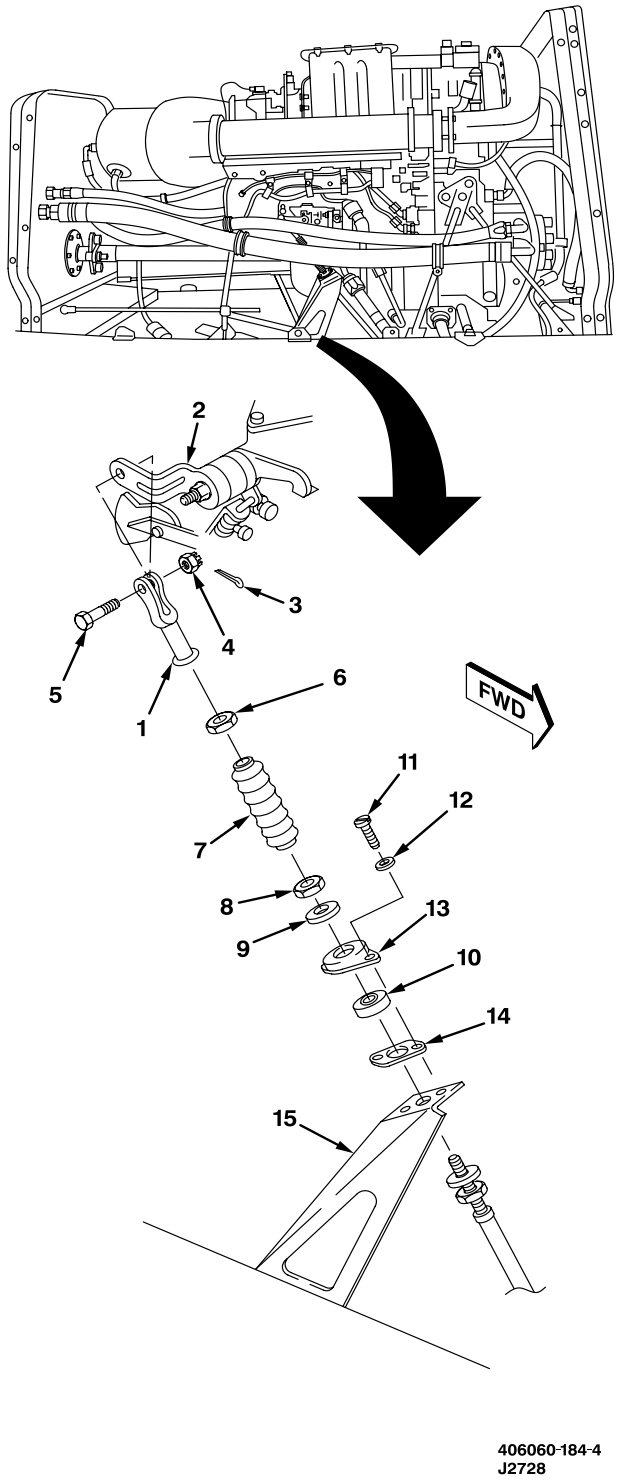
8. Dry bearing and cap with clean wiping rag (D164).

INSPECT

9. Inspect cap for dents, punctures, and other damage. See figure Uniball Bearing and Cap — Wear and Damage Limits.

9.1. If damage in cap is suspected, refer to TM 1-1520-266-23.

10. Inspect bearing for pitting, corrosion, and wear. See figure Uniball Bearing and Cap — Wear and Damage Limits.



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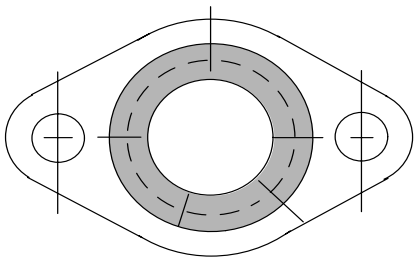
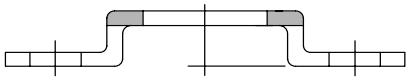
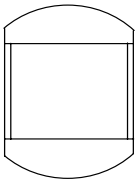
4-6-4. AFT NG CABLE UNIBALL BEARING AND CAP — REMOVAL/CLEANING/INSPECTION/ INSTALLATION (CONT)

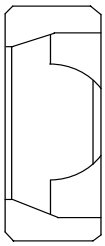


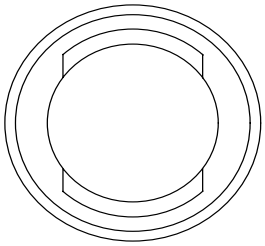


TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS	
	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.007 In. before and 0.010 In. after repalr	0.010 In. before and 0.014 In. after repair
CORROSION	0.005 In. before and 0.007 In. after repalr	0.010 In. before and 0.014 In. after repalr
MAXIMUM AREA PER FULL DEPTH REPAIR	0.25 Sq. In.	1.0 Sq. In.
NUMBER OF REPAIRS	Two per zone	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.020 In.	0.040 In.
BORES	0.004 In. for 1/4 circumference	

NOTES:
1. No cracks are permitted.
2. Max hole is 0.620 for 0.600 hole and 0.270 for bolt holes.







BALL

RACE	RADIAL LIMITS	Wear on ball to 0.557 dia.
	AXIAL LIMITS	Pitting of ball is permissible to 0.005 depth.
		Local pitting of race to 0.005 depth is allowed.

NOTES

1. Ball & race should be inspected for the above at 2400 hr. intervals.
2. Ball Is replaced Independent of race.
3. All dimensions are in inches.

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Uniball Bearing And Cap — Wear and Damage Limits

GO TO NEXT PAGE

4-6-4. AFT NG CABLE UNIBALL BEARING AND CAP — REMOVAL/CLEANING/INSPECTION/ INSTALLATION (CONT)

INSTALL

NOTE

The locator view on this page depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.

11. Temporarily install replacement bearing (10) and cap (13) without shim (14) on support bracket (15).

12. Tighten screws (11) evenly until there is no play between bearing (10) and cap (13).

13. Using two feeler gages and a **0 to 1 inch** outside micrometer caliper (B12), measure diametrically opposite gap between cap (13) and support bracket (15). Average the two measurements.

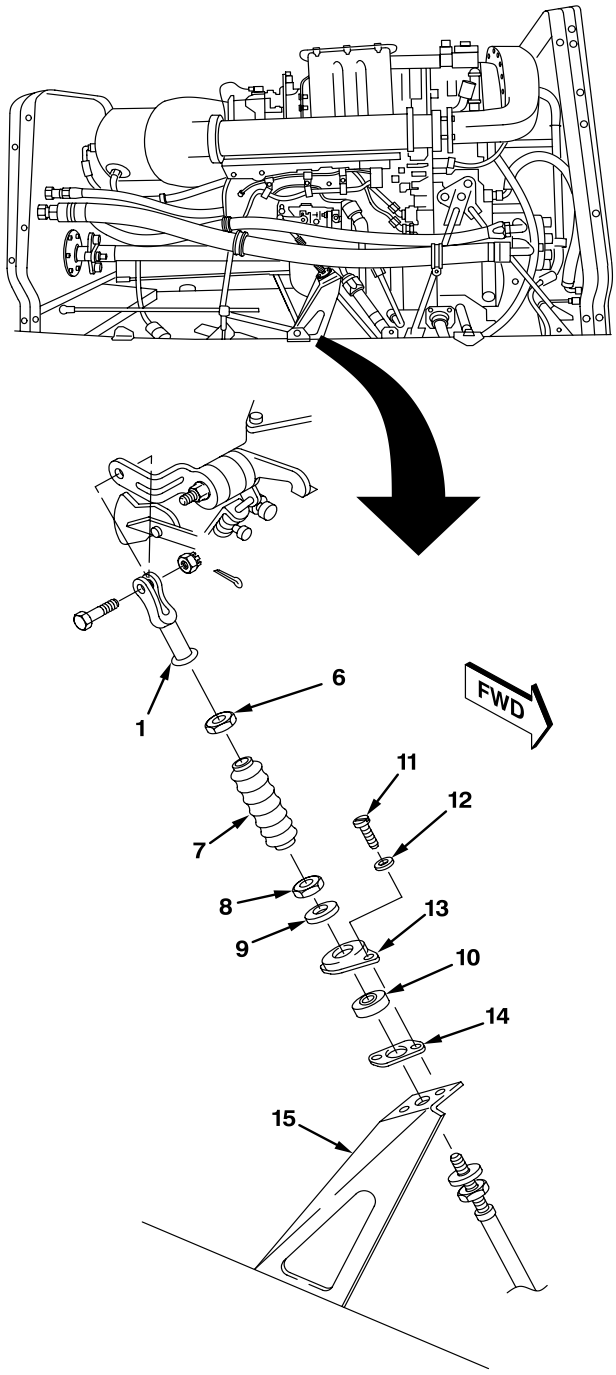
14. Peel shim (14) to **0.002 to 0.004 inch** less than measured gap.

15. Remove cap (13) and reinstall with shim (14), two washers (12), and two screws (11).

16. Install spacer (9) and jamnut (8).

17. Secure jamnut (8) with lockwire (D132)

18. Install bellows assembly (7), jamnut (6), and clevis (1) and handtighten.



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4-6-4. AFT NG CABLE UNIBALL BEARING AND CAP — REMOVAL/CLEANING/INSPECTION/ INSTALLATION (CONT)

NOTE

The locator view on this page depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.

19. Rotate pilot twist grip to idle-detent position and check position of pointer (16) on fuel control quadrant (17).

20. For OH-58D, if pointer (16) is not at 40° mark, refer to Task 4-6-2 for adjustment. For OH-58D(R), if pointer (16) is not at 35° mark, refer to Task 4-6-3 for adjustment.

21. Rotate pilot twist grip through full travel and check for smooth operation.

22. If full travel cannot be obtained, reposition cable (18) at support bracket (15) by adjusting jamnut (8) and spacer (9).

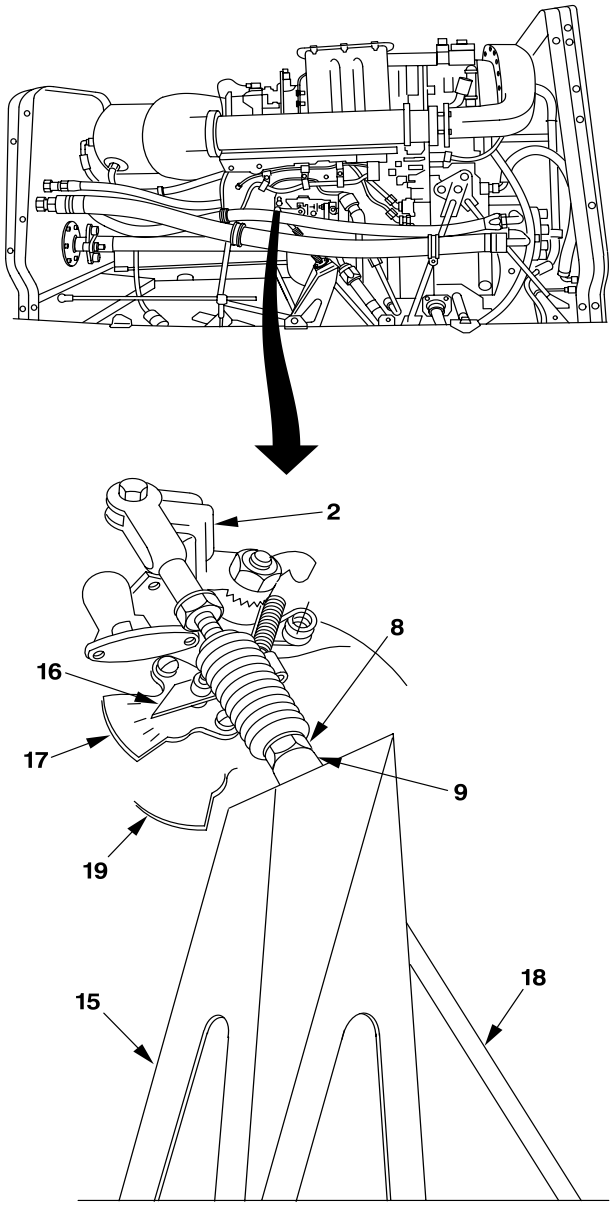
23. Check that lever (2) contacts minimum and maximum stops on fuel control (19) before twist grip bottoms out.

24. If looseness is felt, check for improper shimming of Uniball bearing (steps 11 through 15) or worn components in control installation.

CAUTION

Minimum and maximum stops on fuel control shall not be adjusted. Malfunction of fuel control unit may result. Refer to TM 55-2840-256-23 (OH-58D) or TM 1-2840-263-23 (OH-58D(R)).

25. If lever (2) does not contact minimum and maximum stops on fuel control (19), reposition cable (18) at support bracket (15).



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INSPECT

FOLLOW-ON MAINTENANCE

Perform rigging check (Task 4-6-2 (OH-58D) or Task 4-6-3 (OH-58D(R))).

Close and secure right engine cowl door (Task 2-1-33).

GO TO NEXT PAGE

4-6-5. NG ENGINE CABLE AFT SUPPORT BRACKET — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Powerplant Tool Kit (B179)

Material:
Lockwire (D132)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68B Aircraft Powerplant Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

4-6-5. NG ENGINE CABLE AFT SUPPORT BRACKET — REMOVAL/INSTALLATION (CONT)

REMOVE

NOTE

Locator view on this page depicts right side of OH-58D engine. No maintenance significant differences exist between OH-58D and OH-58D(R) as far as locator is concerned.

1. Open right engine cowl door.

2. Disconnect clevis (1) at fuel control lever (2) by removing cotter pin (3), nut (4), and bolt (5). Discard cotter pin.

3. Loosen clevis jamnut (6) while holding clevis (1).

4. Remove clevis (1), jamnut (6), and bellows assembly (7) from cable (8).

5. Cut lockwire and remove jamnut (9) with spacer (10), securing cable (8) to support bracket (11).

6. Remove support bracket (11) by removing three bolts (12) and washers (13). Do not disturb shims (14).

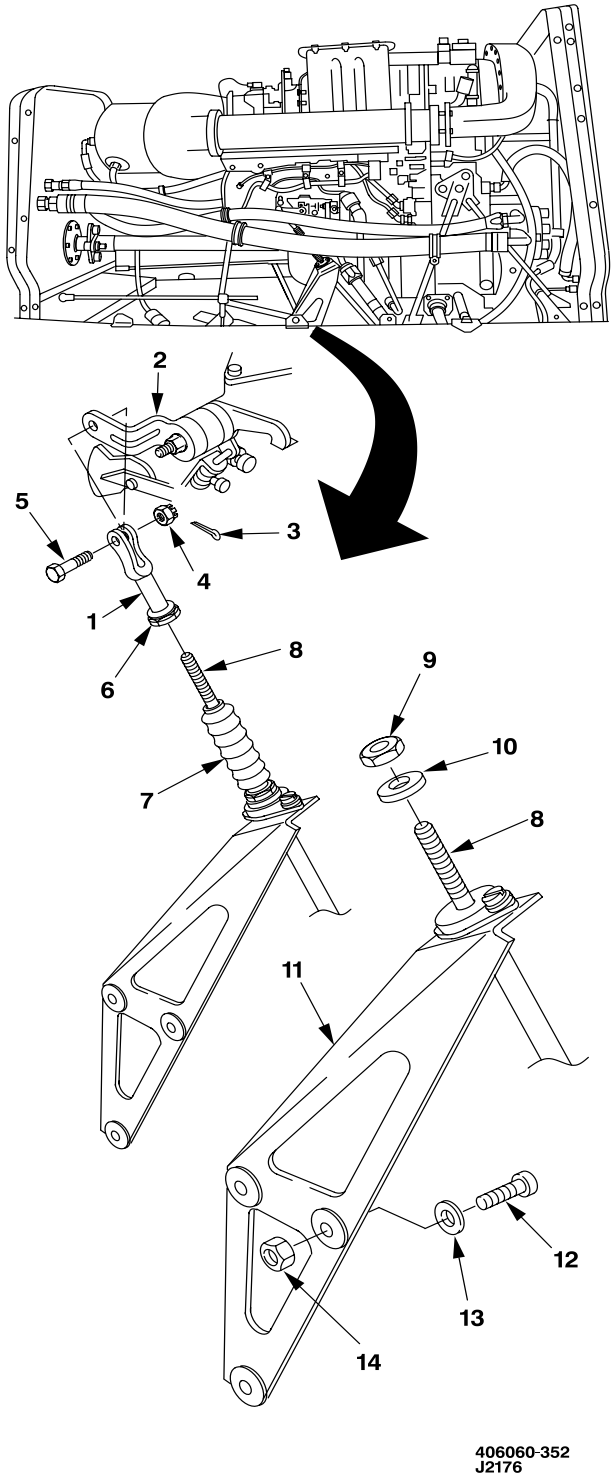
7. Lift support bracket (11) off cable (8).

TRANSFER UNIBALL BEARING

8. Transfer Uniball bearing to new support bracket (Task 4-6-3).

INSTALL

9. Position cable (8) in bearing (15) and install spacer (10) and jamnut (9). Tighten jamnut.



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NOTE

Locator view on this page depicts right side of OH-58D engine. No maintenance significant differences exist between OH-58D and OH-58D(R) as far as locator is concerned.

10. Secure jamnut (9) with lockwire (D132).

NOTE

If new shims (14) are required, a minimum of **0.050 inch** gap shall be maintained between bracket (11) and starter generator. Do not bind cable (8).

11. Align support bracket (11) on shims (14) and attach with three washers (13) and three bolts (12).

12. Install bellows (7), jamnut (6), and clevis (1).

ADJUST CLEVIS

13. Rotate pilot twist grip to idle-detent position.

14. Position pointer (16) on fuel control quadrant (17) at 40° mark.

CAUTION

Overtightening of fuel control lever-to-clevis nut causes binding.

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

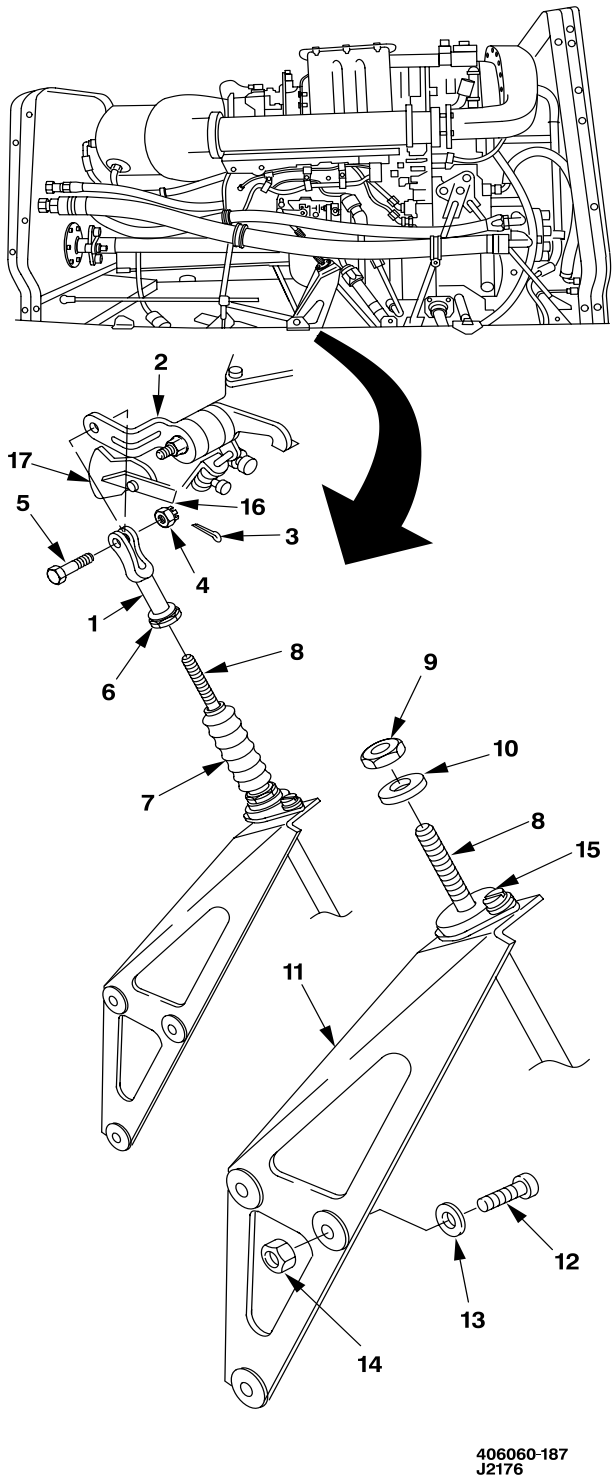
15. Adjust clevis (1) to fit lever (2), and install bolt (5) and nut (4). Tighten until nut is snug against clevis (1) and install cotter pin (3) through nut (4). Bolt (5) should be free enough to turn by hand after installation.

INSPECT

FOLLOW-ON MAINTENANCE

Perform rigging check (Task 4-6-2 (OH-58D) or Task 4-6-3 (OH-58D(R))).

Close right engine cowl door.



END OF TASK

4-6-6. ENGINE CONTROL CABLE BELLOWS ASSEMBLY — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powerplant Tool Kit (B179)
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68B Aircraft Powerplant Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

REMOVE

NOTE

The locator view on this page depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.

1. Open right engine cowl door.

2. Disconnect clevis (1) from fuel control lever (2) by removing cotter pin (3), nut (4), and bolt (5). Discard cotter pin.

3. Loosen clevis jamnut (6) and remove clevis (1), jamnut (6), and bellows assembly (7).

INSTALL

4. Install bellows assembly (7), jamnut (6), and clevis (1) by hand.

5. Rotate twist grip to idle-detent position.

6. Position pointer (8) on fuel control quadrant (9) at 40° mark.

CAUTION

Overtightening of fuel control lever-to-clevis nut causes binding.

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

7. Adjust clevis (1) to fit lever (2) and install bolt (5) and nut (4). Tighten until nut (4) is snug against clevis (1) and install cotter pin (3) through nut (4). Bolt (5) should be free enough to turn by hand after installation.

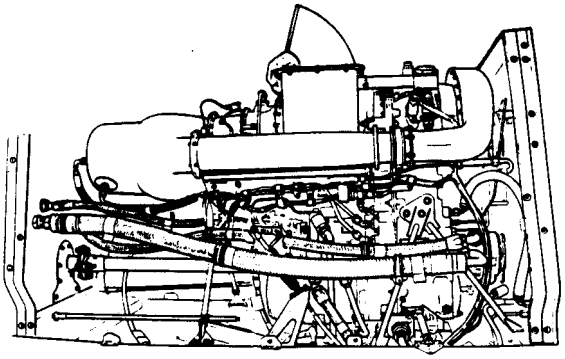
8. Tighten jamnut (6) against clevis (1).

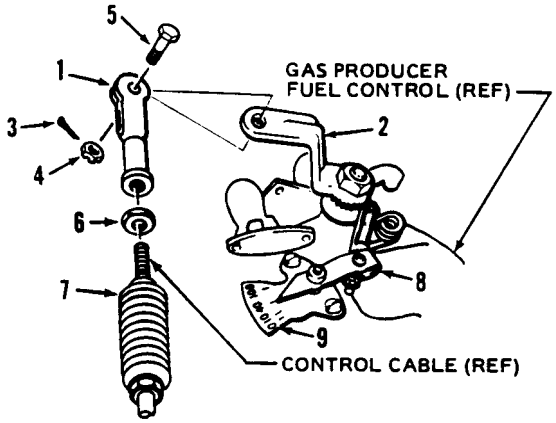
9. Close right engine cowl door.

INSPECT

FOLLOW-ON MAINTENANCE

Perform rigging check (Task 4-6-2 (OH-58D) or Task 4-6-3 (OH-58D(R))).





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END OF TASK

4-6-7. THROTTLE ARM ROD END — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Lockwire (D132)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Crew Seat and Armor Seat Panel Removed (Task 2-2-33 and 2-2-34)

GO TO NEXT PAGE

4-6-7. THROTTLE ARM ROD END — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Remove pilot collective stick cover (1) (Task 11-3-3).

2. Disconnect rod end (2) at throttle arm (3) of pilot collective stick (4) by removing cotter pin (5), nut (6), washer (7), and bolt (8). Discard cotter pin. Temporarily attach tube (9) to throttle (3) with removed hardware.

3. Cut lockwire and loosen jamnut (10) while holding adapter (11) with wrench.

4. Unscrew rod end (2) and remove with jamnut (10).

INSTALL

5. Screw rod end (2) with jamnut (10) into adapter (11).

6. Turn pilot twist grip to idle-detent position.

7. Adjust rod end (2) to fit throttle arm (3) of pilot collective stick (4).

8. Tighten jamnut (10).

9. Secure jamnut (10) to adapter (11) using lockwire (D132).

10. Remove nut (6), washer (7), and bolt (8) connecting tube (9) to throttle arm (3).

11. Connect rod end (2) and connecting tube (9) to throttle arm (3) using bolt (8), washer (7), and nut (6). Install cotter pin (5) through nut (6).

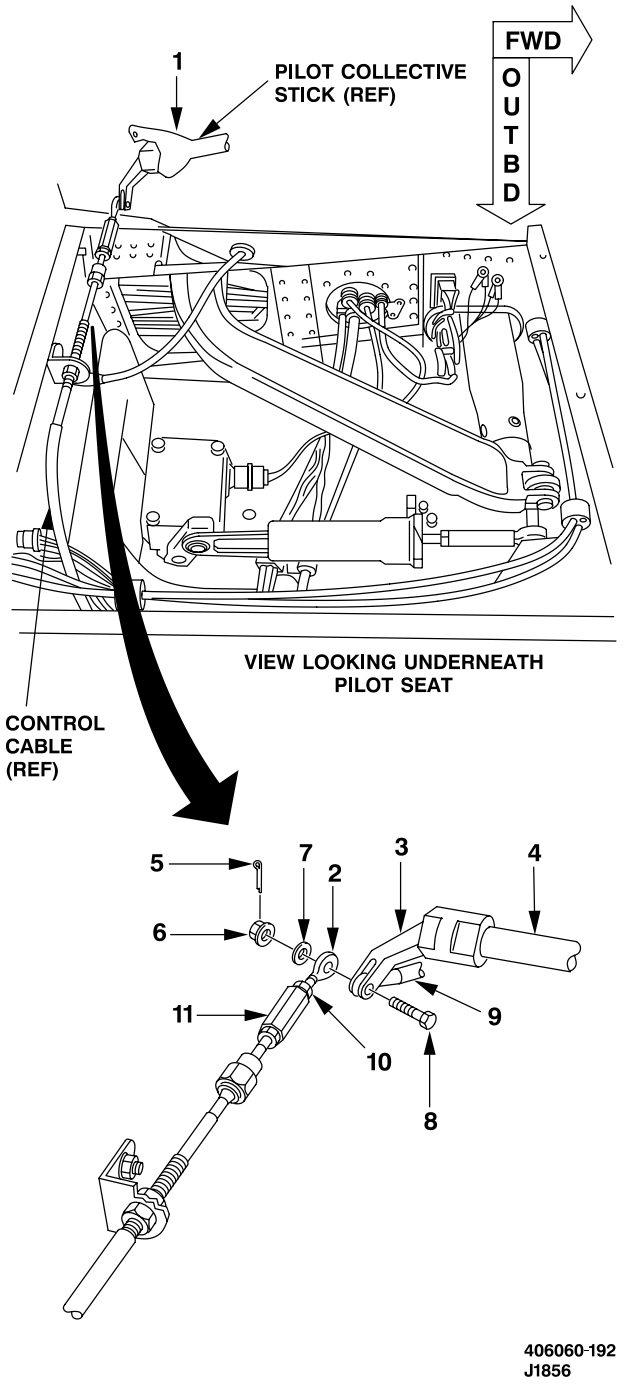
12. Install pilot collective stick boot (1).

INSPECT

FOLLOW-ON MAINTENANCE

Perform rigging check (Task 4-6-2 (OH-58D) or Task 4-6-3 (OH-58D(R))).

Install crew seat and armor seat panel (Tasks 2-2-33 and 2-2-34).



END OF TASK

4-6-8. FUEL CONTROL LEVER — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powerplant Tool Kit (B179)
General Mechanic Tool Kit (B178)
Torque Wrench (B237)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68B Aircraft Powerplant Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

4-6-8. FUEL CONTROL LEVER — REMOVAL/INSTALLATION (CONT)

REMOVE

NOTE

The locator view on this page depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.

1. Open right engine cowl door.

2. Disconnect clevis (1) at fuel control lever (2) by removing cotter pin (3), nut (4), and bolt (5). Discard cotter pin.

3. Remove retaining nut (6) while holding throttle shaft (7) with Allen wrench.

4. Remove lever (2) from throttle shaft (7).

INSTALL

5. Position pointer (8) on fuel control quadrant (9) at 40° mark.

6. Install lever (2) with its lever-to-clevis bolt hole (10) center **0.900 inch** below the throttle shaft (7) centerline plane.

7. Install retaining nut (6) while holding throttle shaft (7) with Allen wrench.

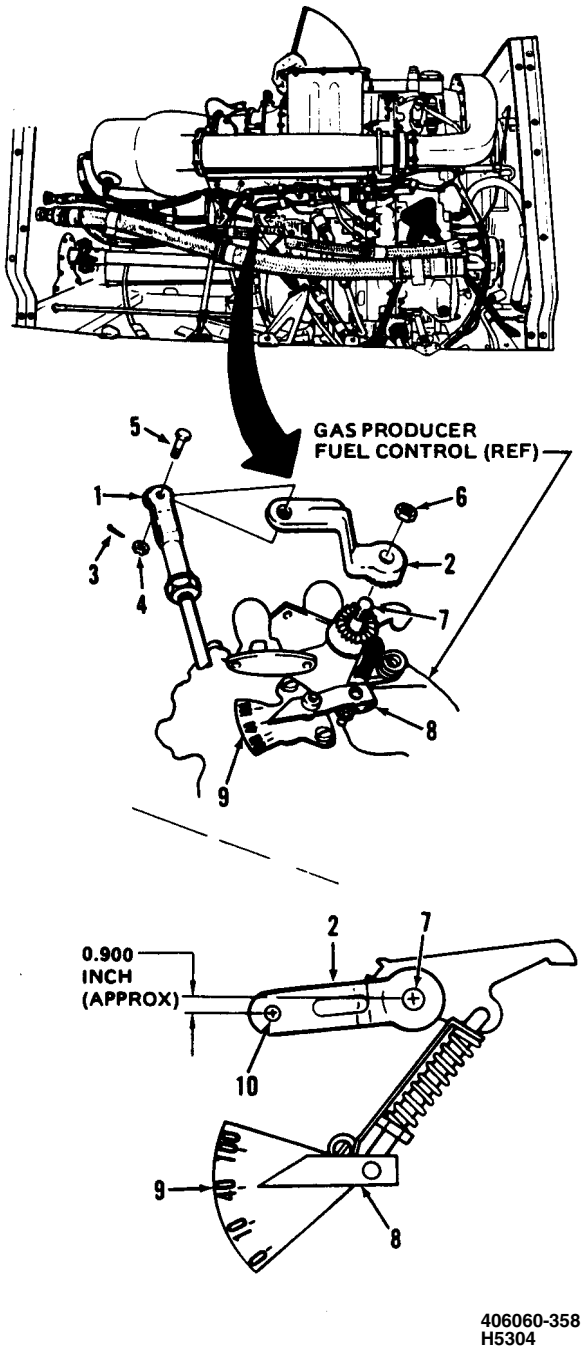
8. Torque retaining nut (6) **40 TO 60 INCH-POUNDS** while holding throttle shaft (7) with Allen wrench.

INSPECT

ADJUST CLEVIS

9. Turn pilot twist grip to idle-detent position.

10. Position pointer (8) on fuel control quadrant (9) to 40° mark.



406060-358
H5304

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NOTE

The locator view on this page depicts the right side of an OH-58D(R) engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.

11. Adjust clevis (1) to fit lever (2) and install bolt (5) and nut (4).

CAUTION

Overtightening of fuel control lever-to-clevis nut causes binding.

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

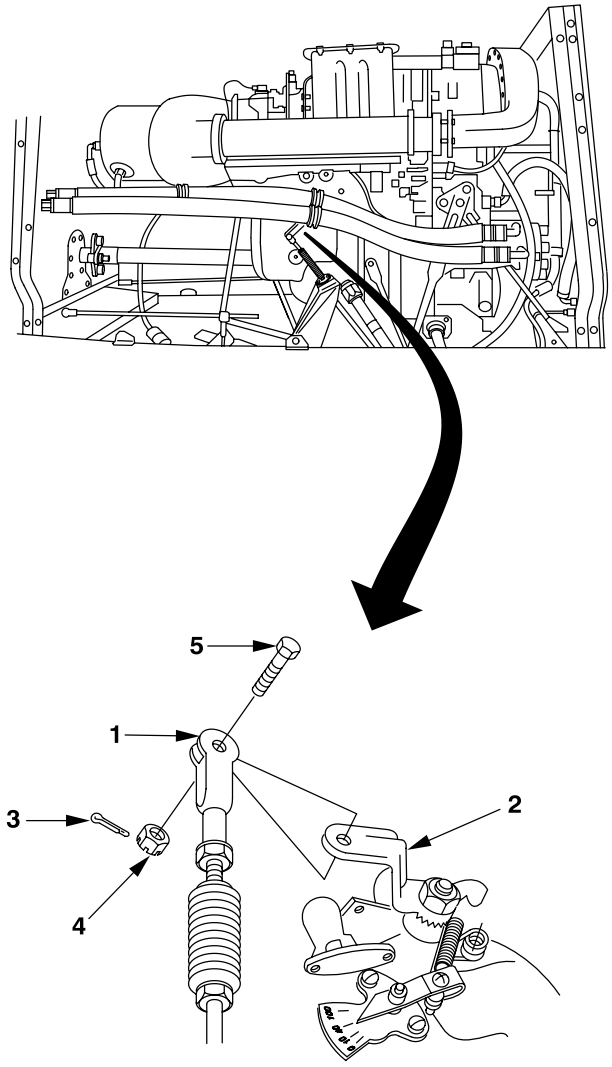
12. Tighten nut (4) until nut is snug against clevis (1). Install cotter pin (3) through nut (4). Bolt (5) should be free enough to turn by hand after installation.

13. Close right engine cowl door.

INSPECT

FOLLOW-ON MAINTENANCE

Perform rigging check (Task 4-6-2 (OH-58D) or Task 4-6-3 (OH-58D(R))).



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J0448

END OF TASK

4-6-9. FUEL CONTROL CLEVIS — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Powerplant Tool Kit (B179)
Torque Wrench (B237)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68B Aircraft Powerplant Repairer

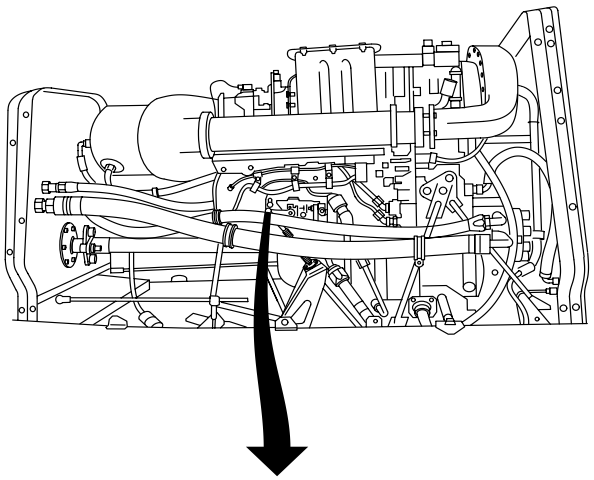
Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

4-6-9. FUEL CONTROL CLEVIS — REMOVAL/INSTALLATION (CONT)

NOTE

The locator view on this page depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.



REMOVE

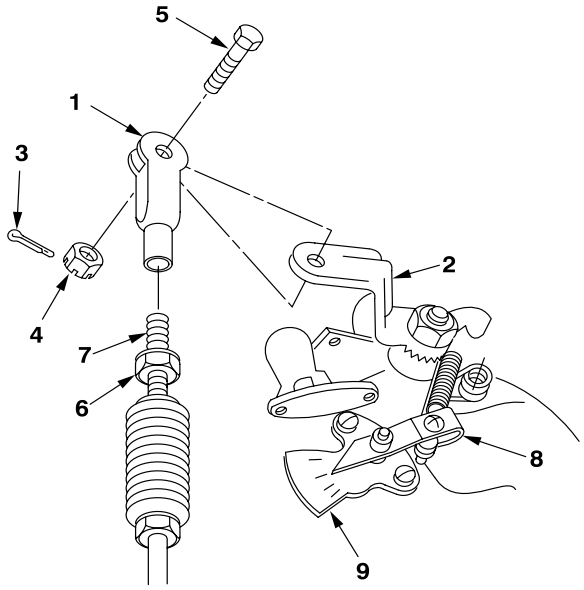
1. Open right engine cowl door.
2. Disconnect clevis (1) from fuel control lever (2) by removing cotter pin (3), nut (4), and bolt (5).
3. Loosen clevis jamnut (6) while holding clevis (1) with wrench.
4. Unscrew clevis (1) from control cable (7).

INSTALL

5. Install clevis (1) on cable (7).

ADJUST CLEVIS

6. Turn pilot twist grip to idle-detent position.
7. Position pointer (8) on fuel control quadrant (9) to 40° mark.
8. Adjust clevis (1) to fit lever (2) and install bolt (5) and nut (4).



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J1857

CAUTION

- Overtightening of fuel control lever-to-clevis nut causes binding.
- Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

9. Tighten nut (4) until nut is snug against clevis (1), then install cotter pin (3) through nut (4). Bolt (5) should be free enough to turn by hand after installation.
10. Torque jamnut (6) on clevis (1) **30 TO 40 INCH-POUNDS.**
11. Close right engine cowl door.

INSPECT

GO TO NEXT PAGE

4-6-9. FUEL CONTROL CLEVIS — REMOVAL/INSTALLATION (CONT)

FOLLOW-ON MAINTENANCE

Perform rigging check (Task 4-6-2 (OH-58D) or Task 4-6-3 (OH-58D(R))).

END OF TASK

4-6-10. FUEL DIFFERENTIAL PRESSURE SWITCH — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
OH-58D

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)
Torque Wrench (B237)
Plastic 12 Qt. Pail (or suitable substitute) (B101)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Pilot

References:
TM 1-1520-248-10
TM 1-1520-248-CL

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

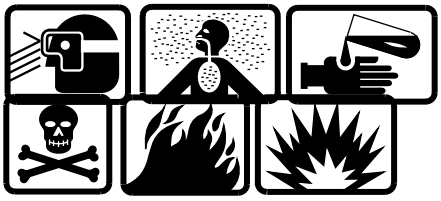
4-6-10. FUEL DIFFERENTIAL PRESSURE SWITCH — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Position maintenance stand (B162) as necessary to facilitate access to engine.

2. Accomplish any part of engine removal (Task 4-1-1) required to gain access to fuel differential pressure switch assembly.

3. Disconnect electrical connector (1) from fuel differential pressure switch (5).



Jet Fuel

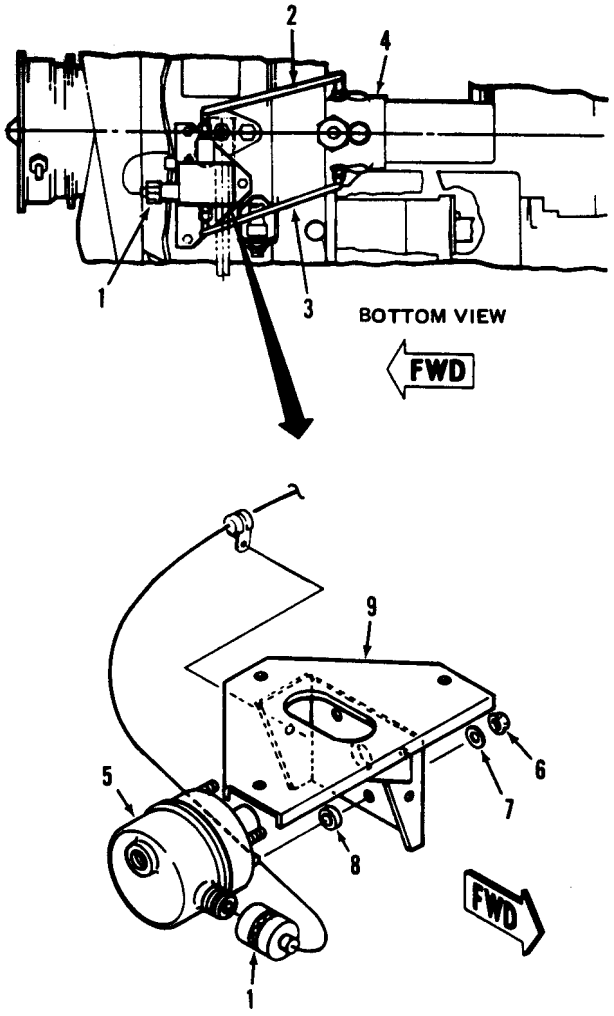
4. Place suitable container (B101) under engine deck drain line.

5. Disconnect fuel differential pressure lines (2) and (3) from fuel filter assembly (4) and fuel differential pressure switch (5).

NOTE

Use Allen wrench to hold fuel differential switch studs.

6. Remove four nuts (6), washers (7), and spacers (8) from fuel differential pressure switch (5) and mounting bracket (9).



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H5304

INSTALL

NOTE

Use Allen wrench to hold fuel differential switch studs.

7. Insert fuel differential pressure switch (5) through four spacers (8) and bracket (9). Install four washers (7) and four nuts (6).

8. Connect fuel differential pressure lines (2) and (3) to fuel filter assembly (4) and fuel differential pressure switch (5). Torque lines **60 INCH POUNDS**.

9. Connect electrical connector (1).

INSPECT

GO TO NEXT PAGE

4-6-10. FUEL DIFFERENTIAL PRESSURE SWITCH — REMOVAL/INSTALLATION (CONT)

10. Accomplish engine installation (Task 4-1-5) as required to restore helicopter to flight configuration.

FOLLOW-ON MAINTENANCE

Perform fuel system purge (TM 55-2840-256-23).

Pilot perform MOC (TM 1-1520-248-10/CL).

END OF TASK

4-6-11. FUEL DIFFERENTIAL PRESSURE SWITCH (OH-58D(R)) — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
OH-58D(R)

Tools:
Maintenance Stand (B162)
General Mechanic Tool Kit (B178)
Torque Wrench (B237)
Plastic 12 Qt. Pail (or suitable substitute) (B101)

Material:
Lockwire (D132)
Gloves (D111)
Wiping Rag (D164)
Fuel (D110)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Pilot

References:
TM 1-2840-263-23
TM 1-1520-248-10
TM 1-1520-248-CL

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

4-6-11. FUEL DIFFERENTIAL PRESSURE SWITCH (OH-58D(R)) — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Position maintenance stand (B162) as necessary to facilitate access to engine.

2. Accomplish any part of engine removal (Task 4-1-2) required to gain access to fuel differential pressure switch assembly.

Jet Fuel

3. Place suitable container (B101) under engine deck drain line.

4. Disconnect electrical connector (1) from fuel differential pressure switch (2).

5. Disconnect electrical connector (3) from low fuel pressure warning switch (4).

6. Remove low pressure warning switch (4) from tee fitting (5).

7. Remove and discard packing (6).

8. Disconnect low fuel pressure warning switch fuel line (7) from tee fitting (5).

9. Disconnect fuel differential pressure switch fuel line (8) from fuel differential pressure switch (2).

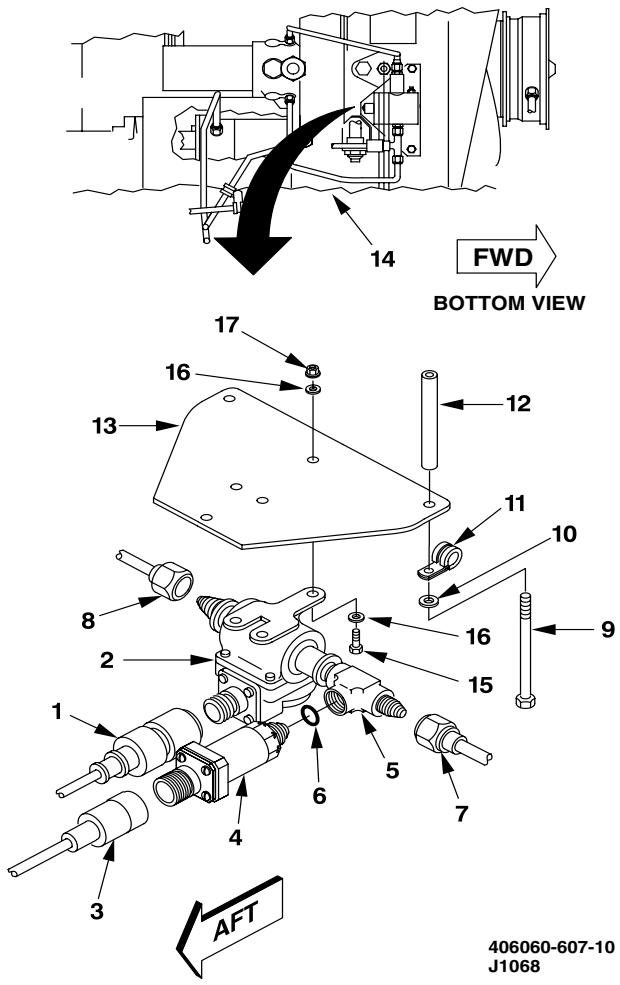
10. Remove three bolts (9), washers (10), clamp bracket (11), and spacers (12) from fuel differential pressure switch assembly mounting bracket (13).

11. Remove fuel differential pressure switch (2) with mounting bracket (13) from lower engine case (14).

12. Remove three bolts (15), six washers (16), and three nuts (17) that mount fuel differential pressure switch (2) on bracket (13).

13. Remove tee fitting (5) from fuel differential pressure switch (2).

14. Clean fuel differential pressure switch using wiping rag (D164).



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4-6-11. FUEL DIFFERENTIAL PRESSURE SWITCH (OH-58D(R)) — REMOVAL/INSTALLATION (CONT)

INSTALL

15. Install tee fitting (5) on fuel differential pressure switch (2).

16. Install fuel differential pressure switch (2) on mounting bracket (13) using three bolts (15), six washers (16) and three nuts (17).

16.1. Torque three nuts (17) **30 TO 40 INCH-POUNDS**.

17. Install fuel differential pressure switch (2) with mounting bracket (13) on lower engine case (14) using three spacers (12), clamp bracket (11), three washers (10), and three bolts (9).

18. Torque bolts (9) **30 TO 40 INCH-POUNDS.**

19. Connect fuel differential pressure switch fuel line (8) to fuel differential pressure switch (2).

20. Connect low fuel pressure warning switch fuel line (7) to tee fitting (5).

21. Torque fuel differential pressure switch fuel line (8) **60 INCH-POUNDS.**

22. Torque low fuel pressure warning switch fuel line (7) **60 INCH-POUNDS.**

Jet Fuel

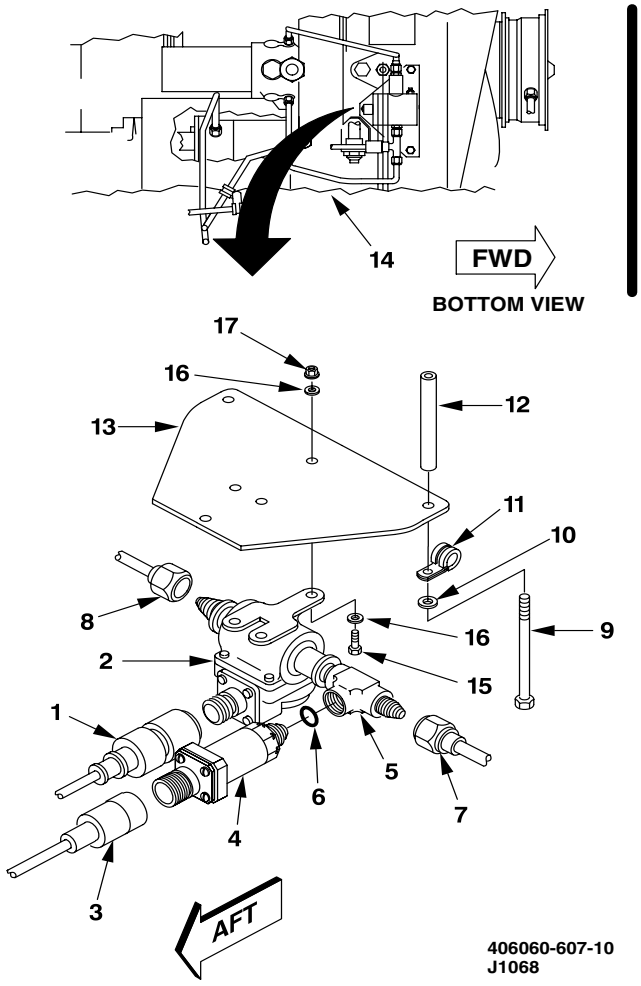
23. Install new packing (6) on low fuel pressure warning switch (4).

24. Lubricate packing (6) with jet fuel (D110).

25. Install low fuel pressure warning switch (4) in tee fitting (5).

26. Connect electrical connector (3) to low fuel pressure switch (4).

27. Connect electrical connector (1) to fuel differential pressure switch (2).



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4-6-11. FUEL DIFFERENTIAL PRESSURE SWITCH (OH-58D(R)) — REMOVAL/INSTALLATION (CONT)

INSPECT

FOLLOW-ON MAINTENANCE

Perform fuel system purge (TM 1-2840-263-23).

Pilot perform MOC (TM 1-1520-248-10/CL).

END OF TASK

4-6-12. FUEL DIFFERENTIAL PRESSURE SWITCH — INSPECTION

This task covers: Cleaning and Inspection (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Drycleaning Solvent (B199)
Wiping Rag (B164)
Rubber Gloves (B111)

Personnel Required:
67S Scout Helicopter Repairer

CLEAN

Drycleaning Solvent

1. Clean fuel differential pressure switch using solvent (B199) and brush. Dry with wiping rag (B164).

INSPECT

2. Inspect fuel differential pressure switch for serviceability or obvious physical damage.

END OF TASK

4-6-13. LOW FUEL PRESSURE WARNING SWITCH (OH-58D(R)) — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
OH-58D(R)

Tools:
General Mechanic Tool Kit (B178)

Material:
Fuel (D110)
Rubber Gloves (D111)
Wiping Rag (D164)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Pilot

References:
TM 1-1520-248-10
TM 1-1520-248-CL
TM 1-2840-263-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

4-6-13. LOW FUEL PRESSURE WARNING SWITCH (OH-58D(R)) — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Open right side engine cowl panel.

2. Disconnect electrical connector (1) from low fuel pressure warning switch (2).

Jet Fuel

3. Remove switch (2) from tee fitting (3). Remove and discard packing (4).

4. Clean low fuel pressure warning switch using wiping rag (D164).

INSTALL

Jet Fuel

5. Install new packing (4) on low fuel pressure warning switch (2).

6. Lubricate new packing (4) with fuel (D110).

7. Install low fuel pressure warning switch (2) in tee fitting (3).

8. Connect electrical connector (1) to low fuel pressure warning switch (2).

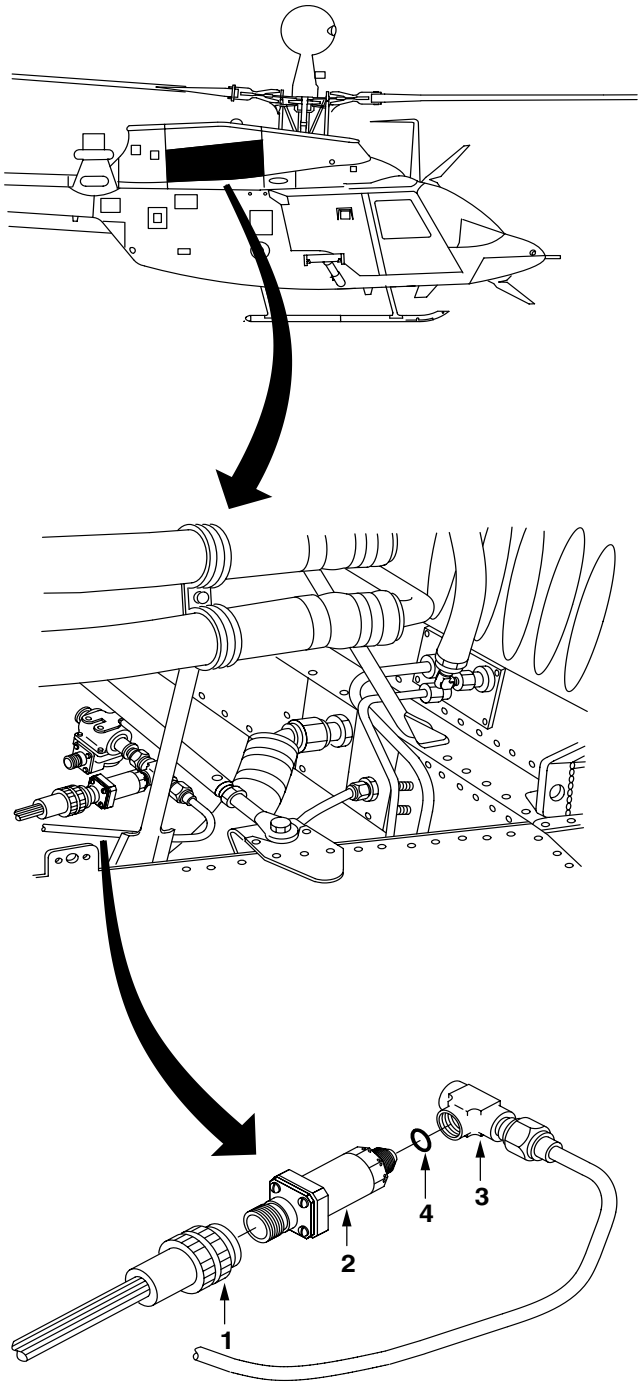
INSPECT

9. Close right side engine cowl panel.

FOLLOW-ON MAINTENANCE

Perform fuel system purge (TM 1-2840-263-23).

Pilot perform MOC (TM 1-1520-248-10/CL).



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END OF TASK

Section VII. ENGINE MOUNTS

4-18. ENGINE MOUNTS

4-19. INTRODUCTION

This section contains: maintenance procedures for cleaning, inspection, and repair of the engine mount legs and trunnions. This section also includes procedures for engine to transmission alignment. Standard torque tables are provided in Appendix P and TM 1-1500-204-23.

4-20. TASK LIST

The task list lists those tasks required to support unit and intermediate level maintenance.

LIST OF TASKS

4-7-1. ENGINE MOUNT LEGS — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powerplant Tool Kit (B179)
General Mechanic Tool Kit (B178)
Torque Wrench (B235)
Torque Wrench (B236)
Torque Wrench (B237)
Torque Wrench (B240)
Engine Lifting Angle Bracket (B10)
Hoist (B69)
Plastic 12 Qt. Pail (or suitable substitute) (B101)

Material:
Corrosion Preventive Compound (CPC) (D82)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer (2)
68B Aircraft Powerplant Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Engine Cowl Assembly Removed (Task 2-2-50)

GO TO NEXT PAGE

4-7-1. ENGINE MOUNT LEGS — REMOVAL/INSTALLATION (CONT)

REMOVE

WARNING

Engine shall be supported during replacement of one or more of the mounts. Unsupported engine can fall and cause injury to hands and arms. If injury occurs, seek medical help.

CAUTION

Engine mount legs shall not bend during replacement. Bending could cause cracks and engine mount leg failure.

NOTE

The locator view on this page depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.

1. Install engine lifting angle bracket (B10) on engine gearbox pad (1) with three bolts (2). Torque bolts (2) **100 TO 140 INCH-POUNDS**.

2. Attach hoist (B69) to engine lifting angle bracket (B10) and take up slack on hoist to release tension on engine forward legs (3), lower leg (4), lateral legs (5), and aft legs (6).

NOTE

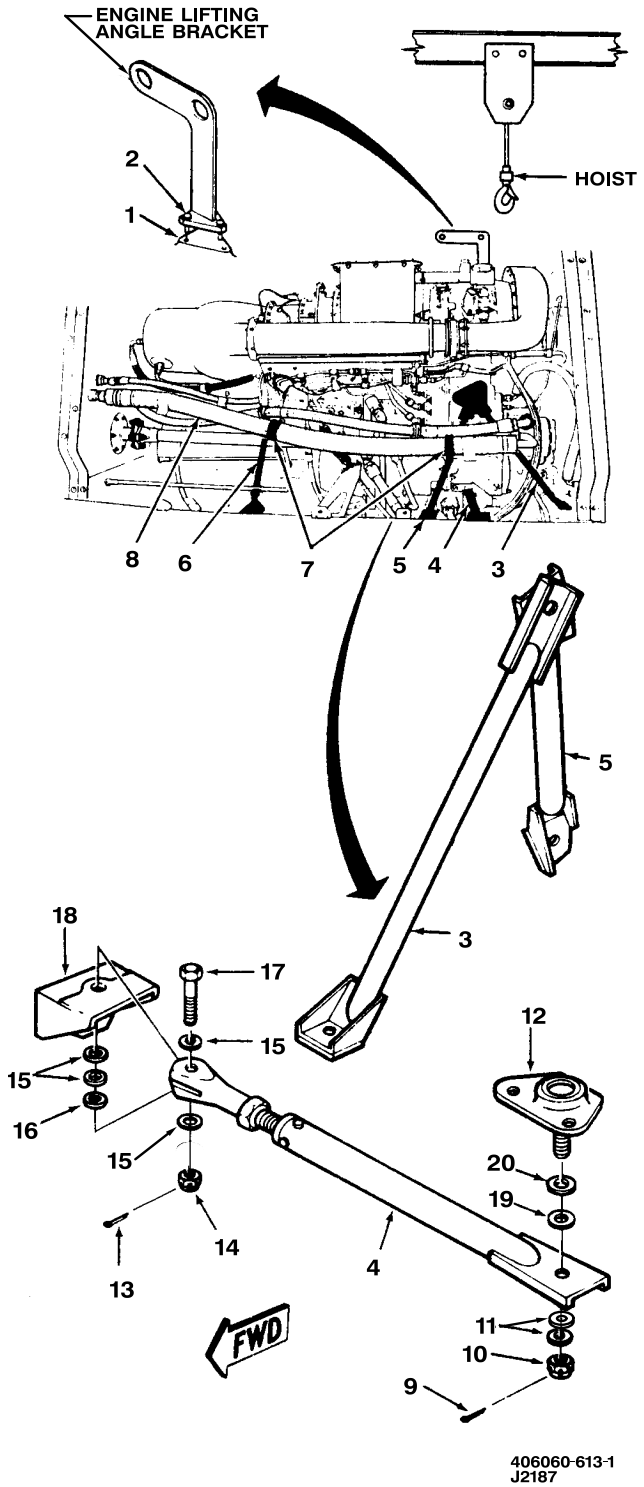
Removal procedures for the forward, lateral, and aft legs on left and right side of engine are similar. However, the lower leg is located on right side of engine only.

3. Remove two clamps (7) attaching wire harnesses, tubes, and hoses (8) from lateral leg (5), and aft leg (6).

4. Remove cotter pin (9), nut (10), and two washers (11) from engine mounted trunnion (12). Discard cotter pin.

5. Remove cotter pin (13), nut (14), five washers (15), one washer (16), and bolt (17) from airframe attachment (18). Discard cotter pin.

6. Remove lower leg (4) from trunnion (12) with washers (19 and 20).



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NOTE

- The locator view on this page depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.
- Shims between legs and trunnions are for engine-to-transmission alignment. Loose shims are to be rebonded in place immediately. If removal is required, shims shall be identified to ensure reinstallation to original positions for proper alignment. Loss or intermixing of shims will require realignment of engine to transmission.
- Length of bolts holding legs to airframe is determined by thickness of shims between legs and airframe.

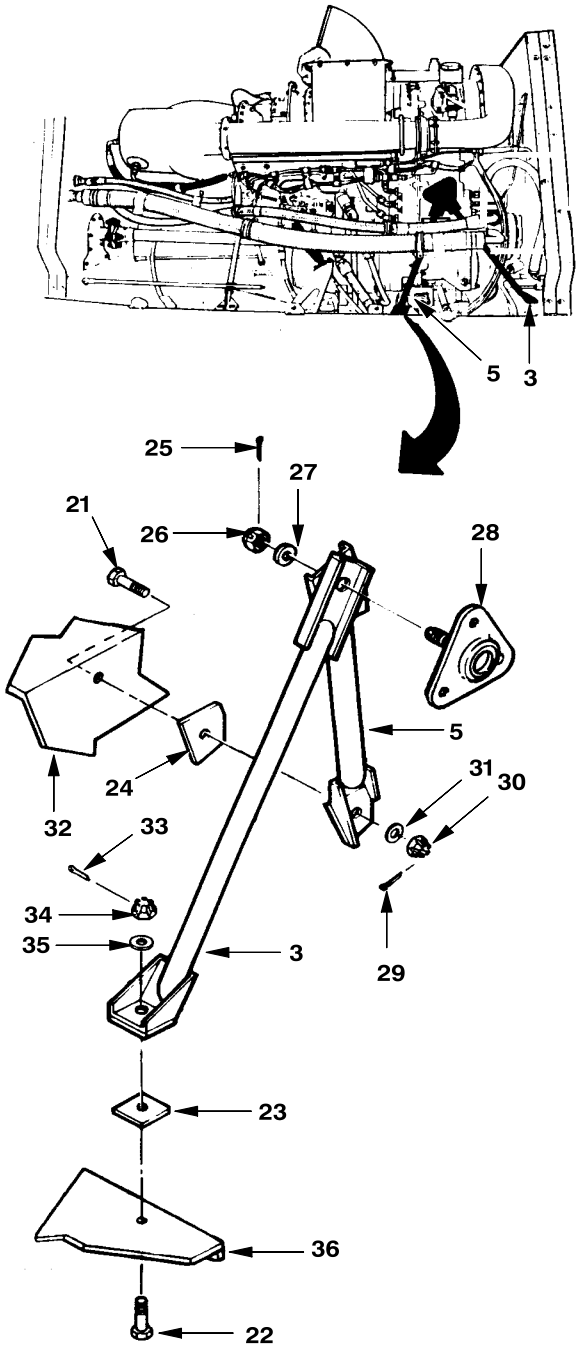
7. Identify bolts (21 and 22) by position prior to removal to ensure reinstallation of correct length bolts in same position with same shims (23 and 24). Do not remove shims.

8. Remove cotter pin (25), nut (26), and washer (27) from engine mounted trunnion (28). Discard cotter pin.

9. Remove cotter pin (29), nut (30), washer (31), and bolt (21) from airframe attachment (32). Remove lateral leg (5). Discard cotter pin.

10. Remove cotter pin (33), nut (34), washer (35), and bolt (22) from airframe attachment (36). Remove forward leg (3). Discard cotter pin.

ENGINE - RIGHT SIDE



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J2187

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4-7-1. ENGINE MOUNT LEGS — REMOVAL/INSTALLATION (CONT)

NOTE

Shims between legs and trunnions are for engine to transmission alignment. Loose shims are to be rebonded in place immediately. If removal is required, shims shall be identified to ensure reinstallation to original positions for proper alignment. Loss or intermixing of shims will require realignment of engine to transmission.

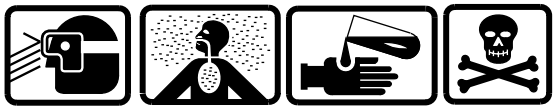
11. Remove clamp (37), nut (38), and bolt (39) on left aft leg (6) to free oil tank vent hose (40).

12. Remove cotter pins (41), nuts (42), washers (43), and bolts (44) from airframe attachment (45). Do not disturb shims (46). Discard two cotter pins.

NOTE

Steps 13. and 14. must be accomplished to allow access to aft engine mount attaching nut.

13. Place suitable container (B101) directly below coupling nut (47).



Lubricating Oil

14. Disconnect coupling nut (47). Allow all oil to drain.

15. Remove cotter pin (48), nut (49), two washers (50), and bolt (51) from aft engine mount (52). Remove aft legs (6). Discard cotter pin.

INSTALL

WARNING

Engine shall be supported by hoist during replacement of engine mount legs. Unsupported engine can fall and cause injury to hands and arms.

NOTE

Installation procedures are the same for both left and right aft legs.

16. Align each aft leg (6) between shim (46) on the airframe attachment (45) and aft engine mount (52).

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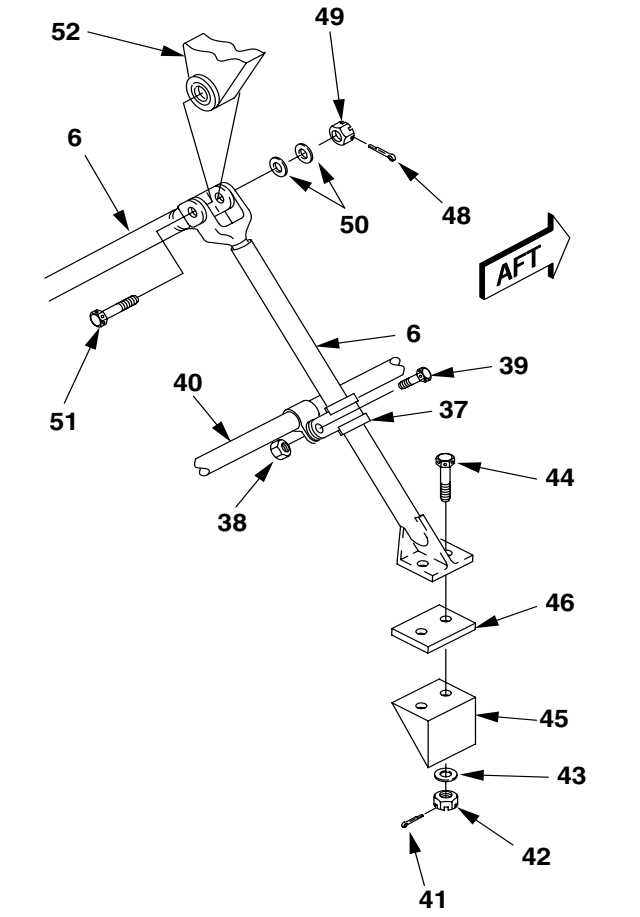

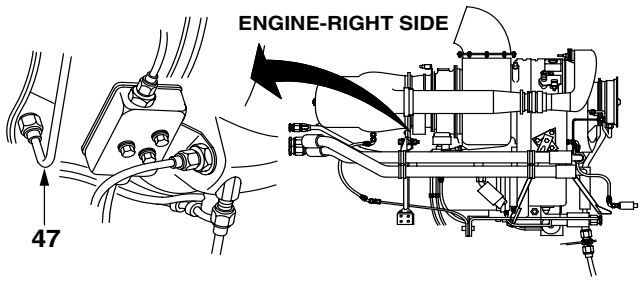

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J2351

NOTE

Self-locking castellated nuts shall be safetied with a cotter pin. The nonmetallic insert is not the primary safetying feature of these nuts. Nuts shall be tested by attempting to insert a matching bolt by hand. Only those nuts that cannot be tightened down with fingers after the locking action engages bolt shall be reused.

17. Install bolt (51) with bolthead forward, two washers (50) as required (maximum of five), and nut (49).

18. Install two bolts (44), washers (43), and nuts (42) for each aft leg (6).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct installation of cotter pins is a characteristic critical to flight safety.

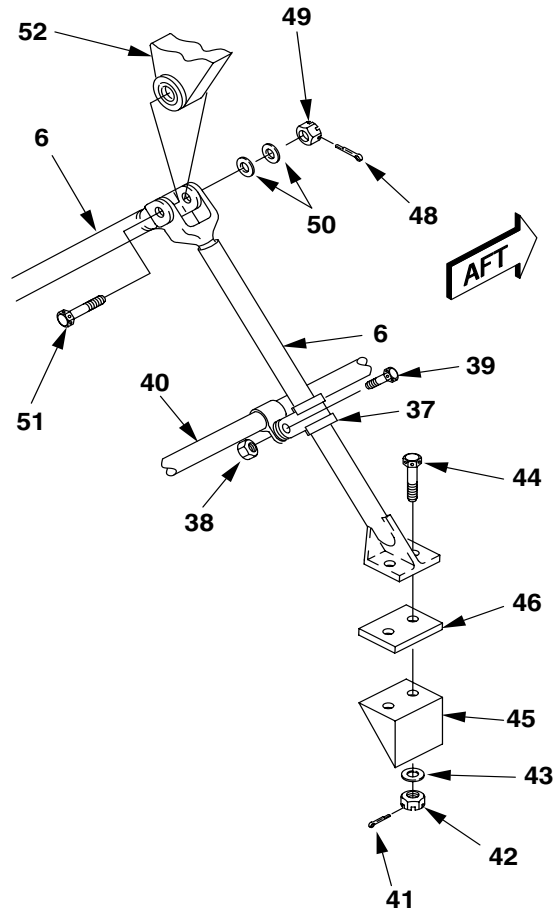
19. Torque nut (49) **10 TO 15 INCH-POUNDS**. Install cotter pin (48) through nut (49).

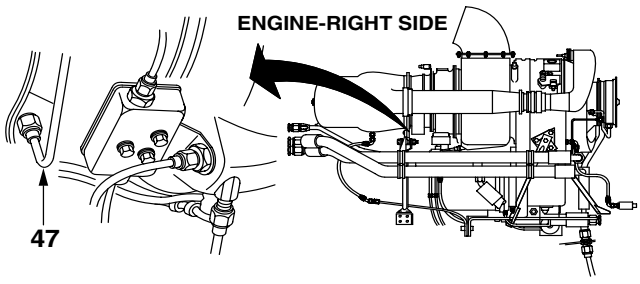
20. Torque four nuts (42) **30 TO 40 INCH-POUNDS**. Install cotter pin (41) through nut (42).

21. Connect coupling nut (47).

22. Torque coupling nut (47) **150 TO 200 INCH-POUNDS**.

23. Install clamp (37), bolt (39), and nut (38) to connect oil tank vent hose (40) to aft leg (6).





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J2351

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4-7-1. ENGINE MOUNT LEGS — REMOVAL/INSTALLATION (CONT)

NOTE

- The locator view on this page depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.
- Installation procedures for both left and right forward and lateral legs are identical.

24. Align forward leg (3) between engine mounted trunnion (28) and shim (23) on airframe attachment (36).

25. Install bolt (22), washer (35), and nut (34).

26. Align lateral leg (5) between engine mount trunnion (28) and shim (24) on airframe attachment (32).

27. Install bolt (21) with bolthead outboard, washer (31), and nut (30).

28. Install washer (27) and nut (26) on engine mounted trunnion (28).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

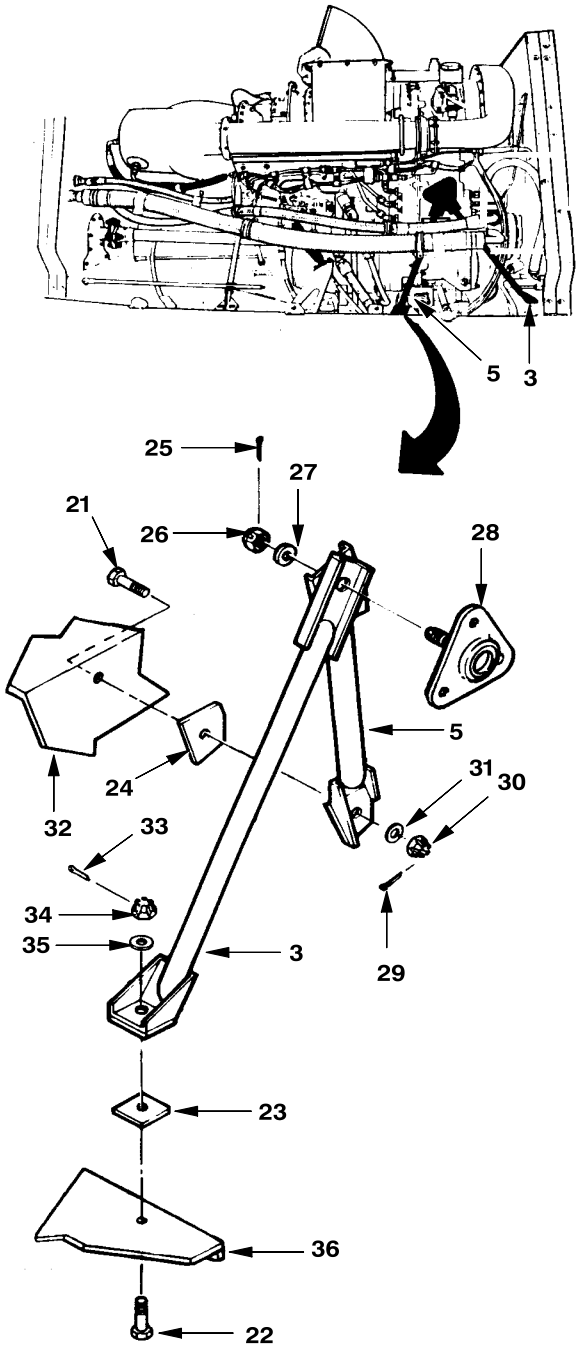
Correct installation of cotter pins is a characteristic critical to flight safety.

29. Torque nut (26) **70 TO 90 INCH-POUNDS**. Install cotter pin (25) through nut (26).

30. Torque nut (34) on forward leg (3) **30 TO 40 INCH-POUNDS**. Install cotter pin (33) through nut (34).

31. Torque nut (30) on lateral leg (5) **30 TO 40 INCH-POUNDS**. Install cotter pin (29) through nut (30).

ENGINE - RIGHT SIDE



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J2187

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NOTE

The locator view on this page depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.

32. Install clamps (7) attaching wire harnesses, tubes, and hoses (8) to lateral leg (5) and aft leg (6).

33. To check and/or obtain proper length of lower leg (4), position one end of lower leg (4) on trunnion (12), and other end (clevis) on airframe attachment (18). Attempt to insert bolt (17) through clevis and airframe attachment (18). If bolt installs without preload (freely drops in place) proceed to step 37. If bolt (17) will not fit freely, remove lockwire from jamnut (53).

34. Adjust lower mounting leg (4) clevis by loosening jamnut (53) while holding clevis jaws. Rotate clevis in half-turn increments until bolt (17) freely drops in place.

35. Torque jamnut (53) **160 TO 190 INCH-POUNDS**.

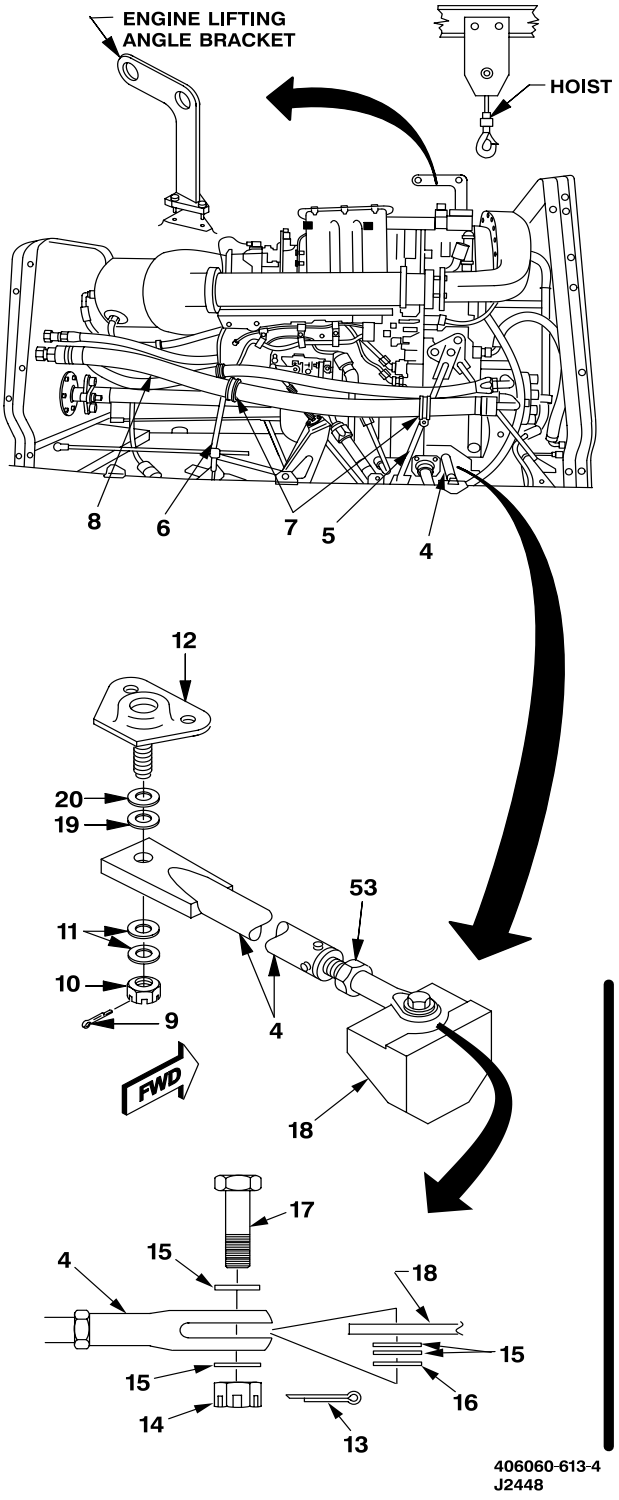
36. Secure jamnut (53) with lockwire (D132).

NOTE

It is permissible for proper fit of clevis to locate thin washer between upper side of fitting and clevis with both thick washers between lower side of fitting and clevis.

37. Install lower leg (4) by placing one thick washer (20) and one thin washer (19) on trunnion (12). Holding washers in place, install lower leg (4) with two thick washers (11) and nut (10). Do not torque.

38. Install other end of leg (clevis) (4) on airframe attachment (18) with bolt (17). Washer stackup will be one thick washer (15) under bolthead, two thick washers (15) and one thin washer (16) between airframe attachment (18) and lower clevis tang. Install two thick washers (15) and nut (14). Do not torque.



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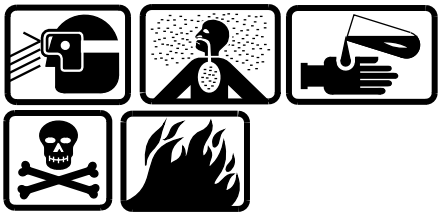
WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct installation of cotter pins is a characteristic critical to flight safety.

39. Torque nuts (10 and 14) **70 TO 90 INCH-POUNDS**. Install cotter pins (9 and 13) through nuts (10 and 14).

40. Remove hoist (B69) and engine lifting angle bracket (B10).



Corrosion Preventive Compound

CAUTION

CPC shall not be allowed to enter metallic bearings or come in contact with seals or damage to engine may result.

41. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.

INSPECT

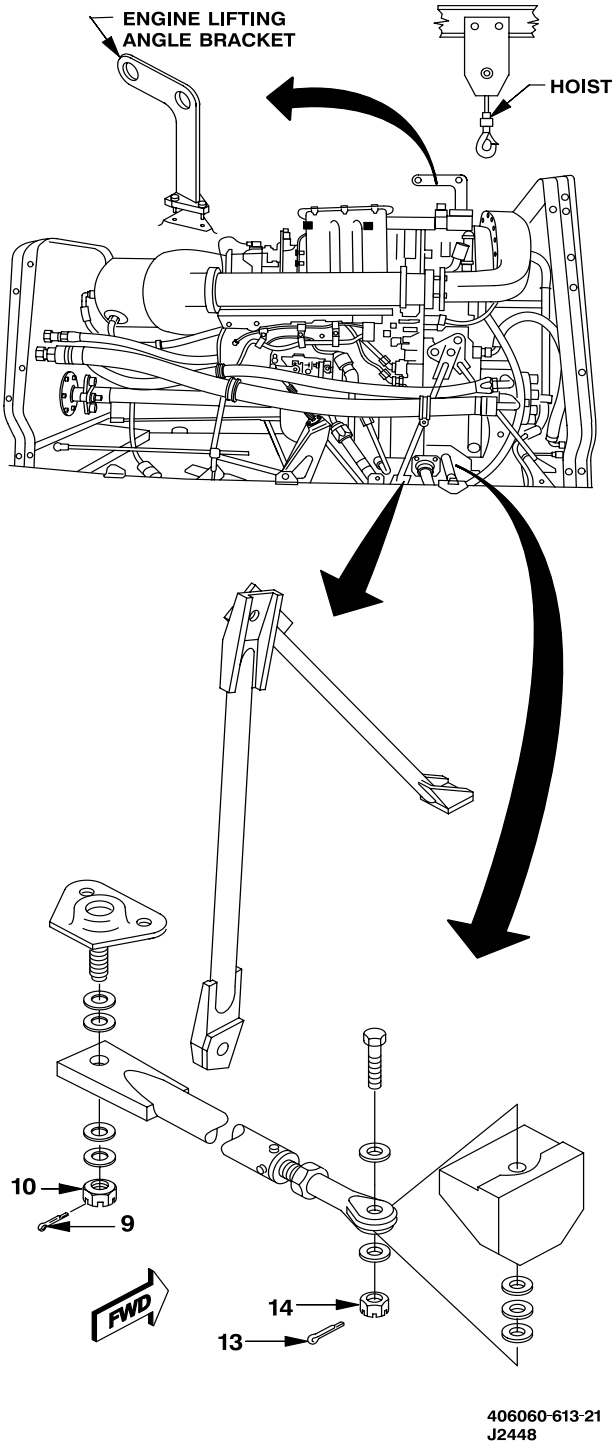
FOLLOW-ON MAINTENANCE

Perform engine-to-transmission alignment check (Task 4-7-4).

Align tail rotor driveshaft (Task 6-6-17).

Service engine oil system (Task 1-4-6).

Install engine cowl assembly (Task 2-2-50).



END OF TASK

4-7-2. ENGINE MOUNT TRUNNION — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Abrasive Pads (D147)
Wiping Rags (D164)
Drycleaning Solvent (D199)
Rubber Gloves (D111)
Brush Chrome Solution (D60)
Zinc Chromate Coating (D99)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1520-266-23

CLEAN

Drycleaning Solvent

1. Clean trunnion surface with drycleaning solvent (D199).

2. Dry trunnion with a wiping rag (D164).

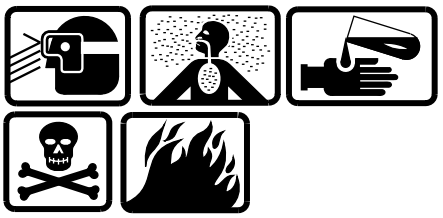
INSPECT

3. Inspect trunnion to limits shown. Replace if limits are exceeded. See figures Engine Mount Trunnion — Damage Limits and Engine Mount — Damage Limits.

3.1. If a crack in the trunnion is suspected, refer to TM 1-1520-266-23.

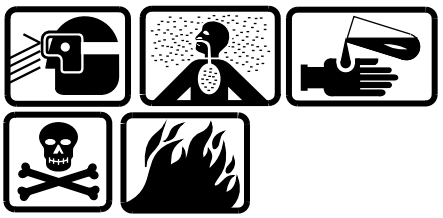
REPAIR

4. Remove corrosion with abrasive pad (D147).



Chemical Conversion Materials

5. Coat repaired areas with brush chrome solution (D60).



Zinc Chromate Primer

6. Cover repaired areas with zinc chromate coating (D99). Do not allow zinc chromate to get into threads.

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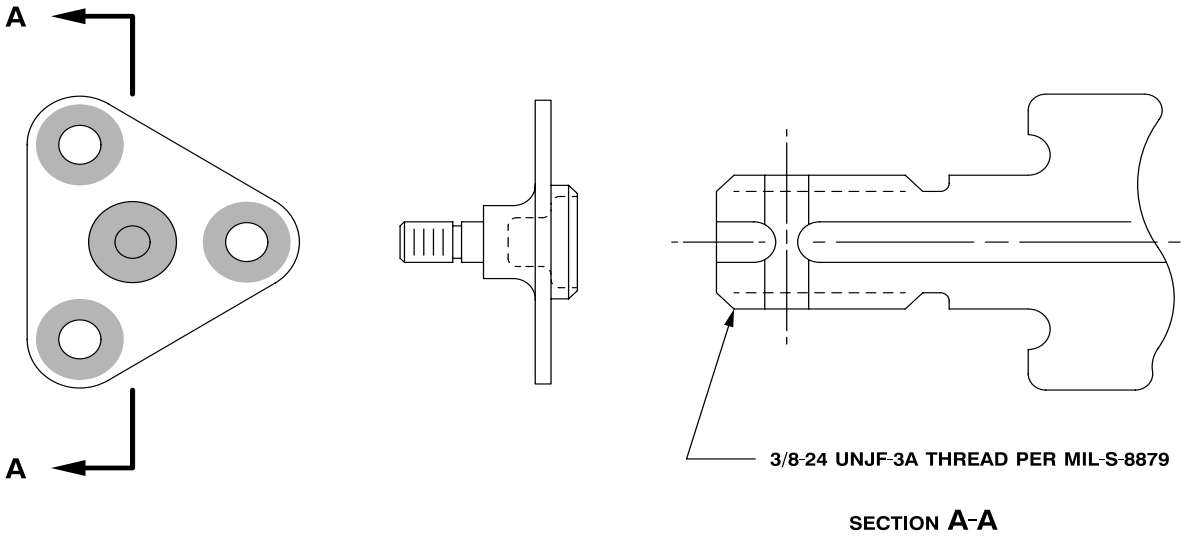

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
	DAMAGE LOCATION SYMBOLS	
MECHANICAL DAMAGE	0.005 in. before and after repair	0.010 in. before and after repair
CORROSION DAMAGE	0.005 in. before and 0.005 In. after repaIr	0.005 in. before and 0.010 In. after repaIr
MAXIMUM AREA PER FULL DEPTH REPAIR	0.25 sq. in.	0.50 sq. in.
NUMBER OF REPAIRS	Two	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.015 In. X 45°	0.030 In. X 45°
THREAD DAMAGE	Not acceptable	

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J2187

Engine Mount Trunnion — Damage Limits

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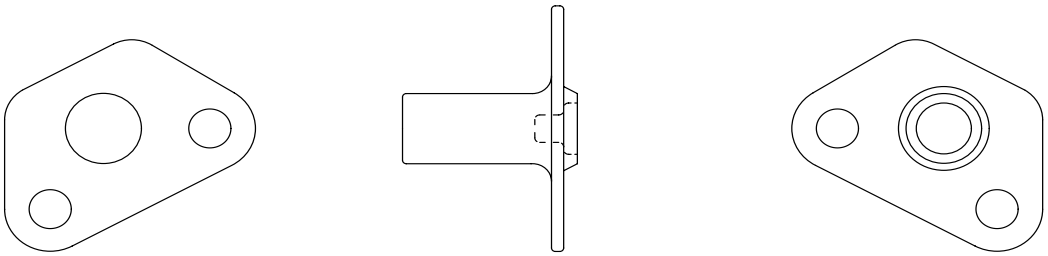

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL AND CORROSION	0.010 in. before and 0.020 In. after repaIr
MAXIMUM AREA PER FULL DEPTH REPAIR	0.50 sq. in.
NUMBER OF REPAIRS	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In. X 45°
THREAD DAMAGE	None allowed

406060-2-1
J1535

Engine Mount — Damage Limits

END OF TASK

4-7-3. ENGINE MOUNT LEGS — CLEANING/INSPECTION

This task covers: Cleaning and Inspection (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Wiping Rags (D164)
Drycleaning Solvent (D199)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1520-266-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Engine Cowl Assembly Removed (Task 2-2-50)

CLEAN

Drycleaning Solvent

1. Clean engine mount leg surfaces using drycleaning solvent (D199).

2. Dry engine mount legs with wiping rags (D164).

INSPECT

3. Inspect engine mount legs to limits shown. Replace if limits are exceeded. See figure Engine Mount Legs — Damage Limits.

3.1. If damage in leg is suspected, refer to TM 1-1520-266-23.

INSPECT

FOLLOW-ON MAINTENANCE

Install engine cowl assembly (Task 2-2-50).

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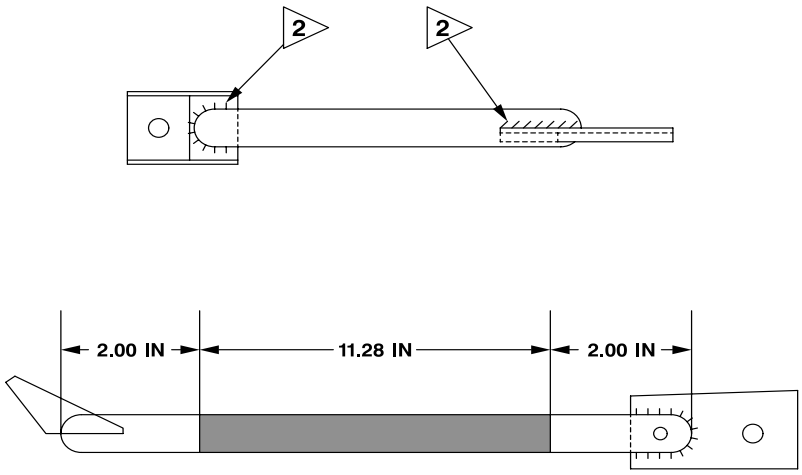

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.005 in. before and 0.010 In. after repair	0.005 in. before and 0.010 In. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.25 sq. In.	0.50 sq. In.
NUMBER OF REPAIRS	Not critical	Not critical
EDGE CHAMFER TO REMOVE DAMAGE		0.020 in. X 45°
BORES		0.002 inch for 1/4 circumference

NOTES

1. No cracks are permitted.

2 Inspect welds for cracks, none allowed. If a cracked weld is suspected, refer to TM 1-1520-266-23.

406060-15
J0451

Engine Mount Legs — Damage Limits (Sheet 1 of 4)

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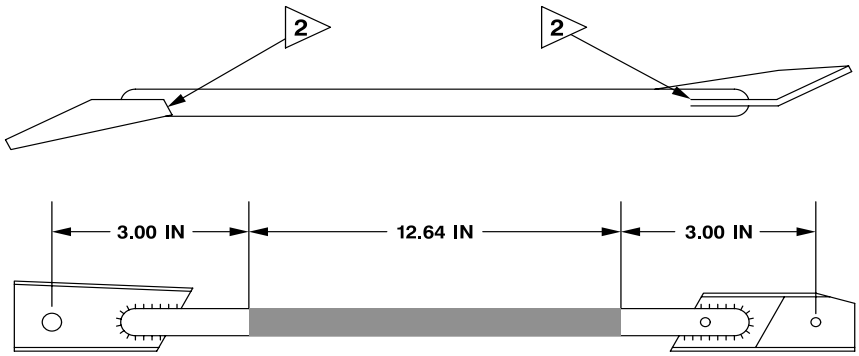

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.006 in. before and 0.010 In. after repair	0.005 in. before and 0.010 In. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.25 sq. in.	0.50 sq. In.
NUMBER OF REPAIRS	Not critical	Not critical
EDGE CHAMFER TO REMOVE DAMAGE		0.020 in. X 45°
BORES		0.002 inch for 1/4 circumference

NOTES

1. No cracks are permitted.

2 Inspect welds for cracks, none allowed. If a cracked weld is suspected, refer to TM 1-1520-266-23.

406060-14
J0451

Engine Mount Legs — Damage Limits (Sheet 2 of 4)

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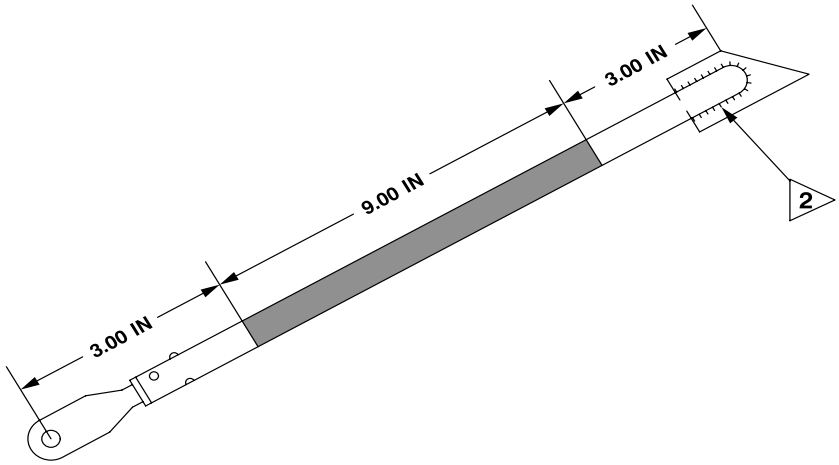

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.005 in. before and 0.010 In. after repair	0.005 in. before and 0.010 In. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.25 sq. in.	0.50 sq. In.
NUMBER OF REPAIRS	Not critical	Not critical
EDGE CHAMFER TO REMOVE DAMAGE		0.020 in. X 45°
BORES		0.002 inch for 1/4 circumference

NOTES

1. No cracks are permitted.

2 Inspect welds for cracks, none allowed. If a cracked weld is suspected, refer to TM 1-1520-266-23.

406060-17
J0451

Engine Mount Legs — Damage Limits (Sheet 3 of 4)

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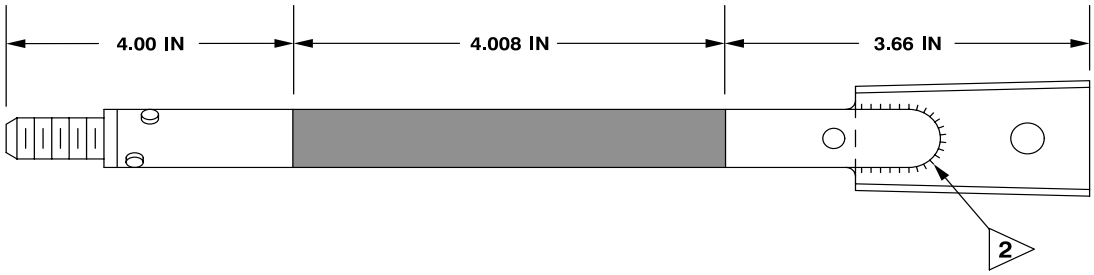


DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.005 in. before and 0.010 in. after repair	0.005 in. before and 0.010 in. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.25 sq. in.	0.50 sq. in.
NUMBER OF REPAIRS	Not critical	Not critical
EDGE CHAMFER TO REMOVE DAMAGE		0.020 in. X 45°
BORES		0.002 Inch for 1/4 circumference
THREAD DAMAGE:		
Depth:	1/3 Of thread	
Length:	0.187 in.	
Number:	One per thread	

NOTES

1. No cracks are permitted.

2. Inspect welds for cracks, none allowed. If a cracked weld is suspected, refer to TM 1-1520-266-23.

406060-16
J0451

Engine Mount Legs — Damage Limits (Sheet 4 of 4)

END OF TASK

4-7-4. ENGINE-TO-TRANSMISSION — ALIGNMENT

This task covers: Aligning Engine-to-Transmission (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)
Powerplant Tool Kit (B179)
Transmission-to-Engine Alignment Set (B125)
Engine Lifting Angle Bracket (B10)
Plastic 12 Qt. Pail (or suitable substitute) (B101)
Hoist (B69)
Heat Gun (B59)
Torque Wrench (B235)
Torque Wrench (B236)
Torque Wrench (B237)
Torque Wrench (B240)

Material:
Adhesive Rubber (D11)
Acetone (D2)
Sandpaper (D175)
Wiping Rags (D164)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer (2)
Maintenance Test Pilot

References:
TM 1-1520-248-MTF

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)
Aft Fairing Removed (Task 2-2-55)
Air Induction Cowl Removed (Task 4-2-1)
Engine Cowl Assemblies Removed (Task 2-2-50)
Engine-to-Transmission Driveshaft Removed (Task 6-2-2)

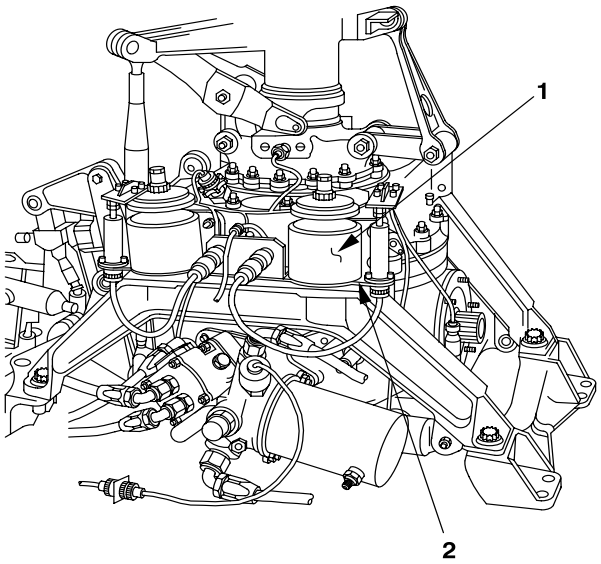
GO TO NEXT PAGE

4-7-4. ENGINE-TO-TRANSMISSION — ALIGNMENT (CONT)

ALIGNMENT

NOTE

- A locator view within this task depicts the right side of an OH-58D engine. There are no maintenance significant differences between the OH-58D and the OH-58D(R) as far as the locator is concerned.
- Maintenance stand (B162) should be positioned as necessary to facilitate access to engine.
- If pylons are not seated on down stops, pylon mounts must be inspected per Tasks 2-4-4 and 2-4-6.
- Alignment will be accomplished for the following reasons:
- • transmission installation
- • engine installation involving replacement of engine mount parts
- • replacement of engine mount parts
- • after engine deck repair
- • damage resulting from a hard landing
- • suspected changes brought about by wear.



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J1454

1. Visually check that pylon elastomeric mount housing (1) is securely seated on pylon down stops (2).

GO TO NEXT PAGE

CAUTION

The following steps are not redundant. The reversing steps are necessary to validate engine-to-transmission alignment and shall be performed or damage to engine and/or transmission may result.

NOTE

Overlay plate shall be installed over the target plate and both plates shall be properly oriented.

2. Install tool target plate (Part of B125)(3) and overlay plate (Part of B125)(4) on transmission input adapter (5) with "UP XMSN" at 12 o'clock position, using three bolts (6), washers (7), and nuts (8) provided in tool set (B125). Tighten nuts (8).

NOTE

Plunger housing assembly should be installed so that shoulder screw is easily accessible.

3. Install plunger housing assembly (Part of B125)(9) on freewheeling output adapter (10) using three bolts (11), washers (12) and nuts (13) provided in tool set (B125). Tighten nuts (13).

4. Using shoulder screw (14), extend plunger (Part of B125)(15) into hole (16) in overlay plate (4).

5. The small diameter **(0.312 inch)** end of plunger (15) should enter the hole in the overlay plate (4) without interference. If interference is encountered, note and record on Condition 1 Target at Transmission target interference azimuth chart where plunger (15) contacts overlay plate (4).

NOTE

No attempt to correct alignment should be made at this time.

6. Remove tool target plate (3), overlay plate (4), and plunger housing assembly (9) from transmission and engine.

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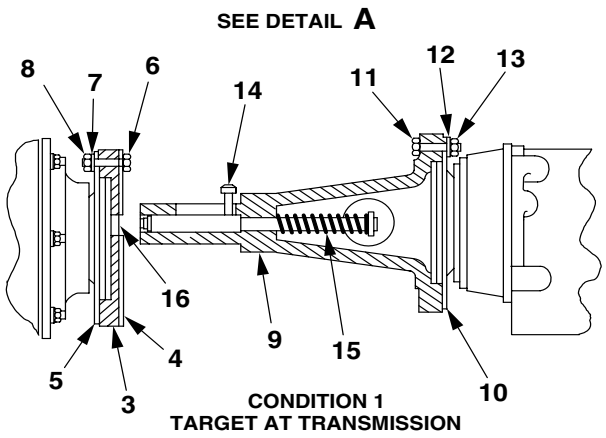

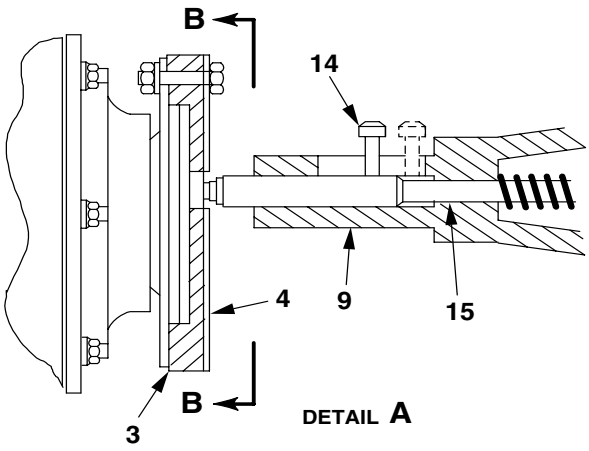

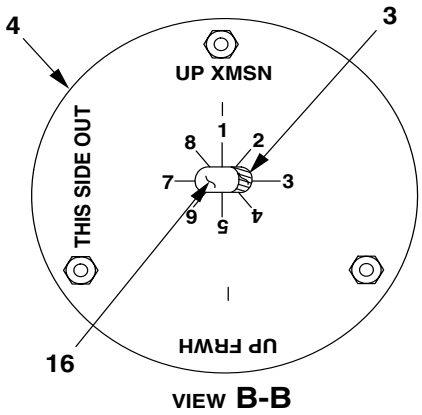

406060-613-6
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NOTE

Overlay plate shall be installed over the target plate and both plates shall be properly oriented.

7. Install tool target plate (3) and overlay plate (4) on freewheeling unit output adapter (10) with "UP FRWH" at 12 o'clock position using three bolts (6), washers (7), and nuts (8) provided in tool set. Tighten nuts (8).

NOTE

Plunger housing assembly can be installed so that shoulder screw is easily accessible.

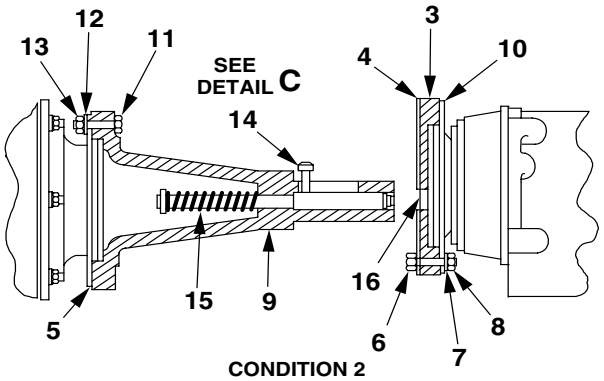
8. Install plunger housing assembly (9) on transmission input adapter (5) using three bolts (11), washers (12), and nuts (13). Tighten nuts (13).

9. Using shoulder screw (14) extend plunger (15) into hole (16) in overlay plate (4).

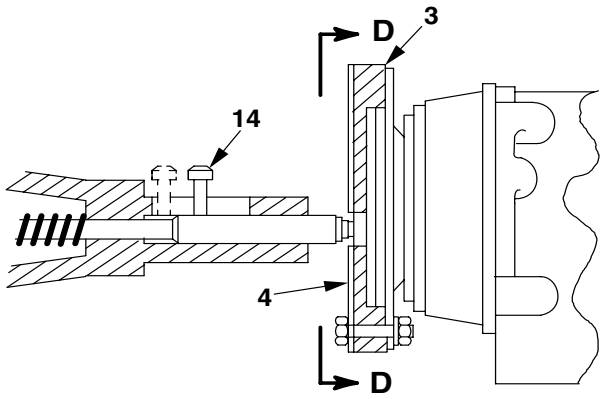
10. The small diameter **(0.312 inch)** end of plunger (15) should enter hole in overlay plate (4) without interference. If interference is encountered, note and record on Condition 2 Target at Freewheeling Unit target interference azimuth chart where plunger (15) contacts overlay plate (4).

NOTE

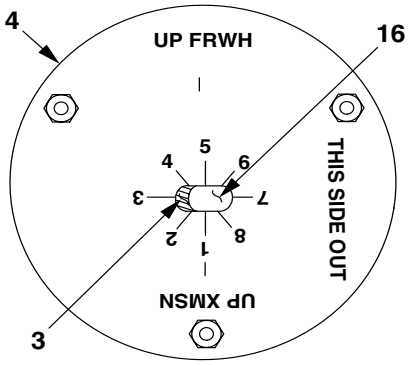
If interference is encountered in either of the two alignment checks, realignment of engine-to-transmission is necessary.



CONDITION 2
TARGET AT FREEWHEELING UNIT



DETAIL C



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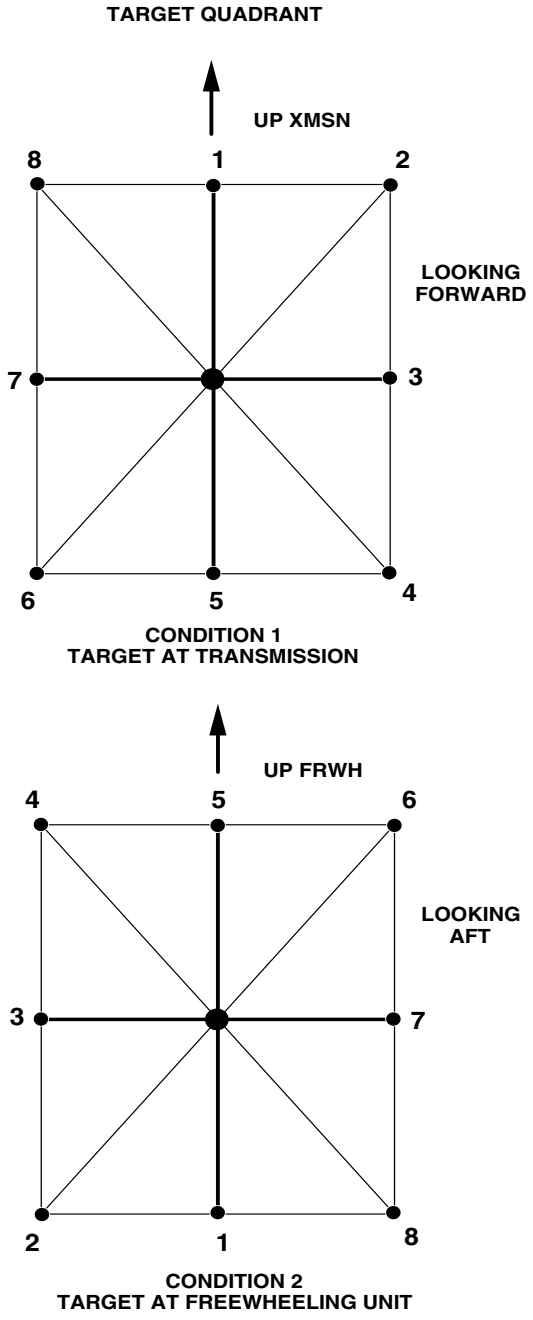
4-7-4. ENGINE-TO-TRANSMISSION — ALIGNMENT (CONT)

11. Using actual plunger interference points and adjacent target interference azimuth charts, determine which number on each chart most closely represents each actual interference location.

NOTE

The plunger will not strike the exact locations every time but the target indicators will provide a starting point for alignment correction.

12. Using azimuth numbers obtained in step 11 and chart 1, determine the engine position change required to correct the transmission-to-engine misalignment.



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GO TO NEXT PAGE

4-7-4. ENGINE-TO-TRANSMISSION — ALIGNMENT (CONT)

CHART 1

CONDITION (1) TARGET AT TRANSMISSION PLUNGER TOUCHES (READ ACROSS)

CONDITION (2) TARGET AT FREEWHEELING UNIT PLUNGER TOUCHES (READ DOWN)

(2) \ (1)	0	1	2	3	4	5	6	7	8
0	NO ACTION	NOSE DN	NOSE DN NOSE LT	—— NOSE LT	NOSE UP NOSE LT	NOSE UP ——	NOSE UP NOSE RT	—— NOSE RT	NOSE DN NOSE RT
1	—— NOSE UP ENG DN	—— —— ENG DN	—— ENG DN NOSE LT	NOSE UP ENG DN NOSE LT	NOSE UP ENG DN NOSE LT	—— NOSE UP ENG DN	NOSE UP ENG DN NOSE RT	NOSE UP ENG DN NOSE RT	—— ENG DN NOSE RT
2	NOSE UP ENG DN NOSE LT ENG RT	—— ENG DN NOSE LT ENG RT	—— ENG DN NOSE LT ENG RT	NOSE UP ENG DN NOSE LT ENG RT	NOSE UP ENG DN NOSE RT ENG RT	NOSE UP ENG DN NOSE RT ENG RT	NOSE UP ENG DN —— ENG RT	NOSE UP ENG DN —— ENG RT	—— ENG DN —— ENG RT
3	—— —— NOSE LT ENG RT	NOSE DN —— NOSE LT ENG RT	NOSE DN —— NOSE LT ENG RT	—— —— NOSE LT ENG RT	NOSE UP —— NOSE LT ENG RT	NOSE UP —— NOSE RT ENG RT	NOSE UP —— —— ENG RT	—— —— —— ENG RT	NOSE DN —— —— ENG RT
4	NOSE DN ENG UP NOSE LT ENG RT	NOSE DN ENG UP NOSE LT ENG RT	NOSE DN ENG UP NOSE LT ENG RT	NOSE DN ENG UP NOSE LT ENG RT	—— ENG UP NOSE LT ENG RT	—— ENG UP NOSE LT ENG RT	—— ENG UP —— ENG RT	NOSE DN ENG UP —— ENG RT	NOSE DN ENG UP —— ENG RT
5	NOSE DN ENG UP ——	NOSE DN ENG UP ——	NOSE DN ENG UP NOSE LT	NOSE DN ENG UP NOSE LT	—— ENG UP NOSE LT	—— ENG UP ——	—— ENG UP NOSE RT	NOSE DN ENG UP NOSE RT	NOSE DN ENG UP NOSE RT
6	NOSE DN ENG UP NOSE RT ENG LT	NOSE DN ENG UP NOSE RT ENG LT	NOSE DN ENG UP —— ENG LT	NOSE DN ENG UP —— ENG LT	—— ENG UP —— ENG LT	—— ENG UP NOSE RT ENG LT	—— ENG UP NOSE RT ENG LT	NOSE DN ENG UP NOSE RT ENG LT	NOSE DN ENG UP NOSE RT ENG LT
7	—— —— NOSE RT ENG LT	NOSE DN —— NOSE RT ENG LT	NOSE DN —— —— ENG LT	—— —— —— ENG LT	NOSE UP —— —— ENG LT	NOSE UP —— NOSE RT ENG LT	NOSE UP —— NOSE RT ENG LT	—— —— NOSE RT ENG LT	NOSE DN —— NOSE RT ENG LT
8	NOSE UP ENG DN NOSE RT ENG LT	—— ENG DN NOSE RT ENG LT	—— ENG DN —— ENG LT	NOSE UP ENG DN —— ENG LT	NOSE UP ENG DN —— ENG LT	NOSE UP ENG DN NOSE RT ENG LT	NOSE UP ENG DN NOSE RT ENG LT	NOSE UP ENG DN NOSE RT ENG LT	—— ENG DN NOSE RT ENG LT

CHART OF REQUIRED ENGINE POSITION CHANGES TO CORRECT MISALIGNMENT

406060-599
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GO TO NEXT PAGE

NOTE

Condition 1 information in Chart 1 (target at transmission) reads across the chart and Condition 2 information (target at freewheeling unit) reads down the chart.

13. Example:

a. For misalignment of one condition only. Condition 1: plunger strikes at 3 on overlay plate with target and overlay plate installed on the transmission. Condition 2: small diameter of plunger enters hole in overlay plate with target and overlay plate installed on freewheeling unit. Locate column 3 under condition 1 of Chart 1 and then scan down column to 0 row to find the required engine position change, "NOSE LT", to correct the misalignment.

b. For a misalignment of both conditions. Condition 1: small diameter of plunger strikes at 3 on overlay plate with target and overlay plate installed on the transmission. Condition 2: small diameter of plunger strikes at 5 on overlay plate with target and overlay installed on the freewheeling unit. Locate column 3 under condition 1 of Chart 1 and then scan down column to row 5 to find the required engine position change, "NOSE DOWN, ENG UP, NOSE LT", to correct misalignment.

NOTE

There are three pairs of shim requirements (Chart 2, below) for mounting legs to align engine per steps 14 through 120.

CHART 2 - SHIMMING REQUIREMENTS

PAIRS	ENGINE MOVEMENT	SHIM THICKNESS (INCHES)	BOLT USE
(A) (B)	Pitch Axis Vertlcal DIsplacement	0.0 – 0.063 0.064 – 0.126 0.127 – 0.190	NAS6204-4D NAS6204-5D NAS6204-6D
(C) (D)	Yaw/Roll Axis Vertical Displacement	0.0 – 0.063 0.064 – 0.126 0.127 – 0.190	NAS6204-7D NAS6204-8D NAS6204-9D
(E) (F)	Horizontal Displacement	0.0 – 0.063 0.064 – 0.126 0.127 – 0.190	NAS6204-4D NAS6204-5D NAS6204-6D

406060-613-8
J2187

GO TO NEXT PAGE

NOTE

Shim adjustment pads are identified by alphabetical references (A) through (E). These references are used throughout the following procedures. Adding or subtracting shims at the three pairs of adjusting points allows for limited engine movement.

14. Alignment movements will be small in most cases. Movement in one axis or direction will directly affect movement in another axis or direction. Refer to Chart 2 for primary engine movements shim thickness and mounting bolt requirements associated with adjustment point pairs.

PITCH ALIGNMENT

15. Attach engine lifting angle bracket (B10) (17) to engine using three washers (18) and bolts (19), which are attached to tool. Torque bolts (19) **160 TO 190 INCH-POUNDS**.

CAUTION

To prevent damage to forward firewall and engine bellmouth seal, engine shall be hoisted only enough to relieve weight on engine mount legs.

NOTE

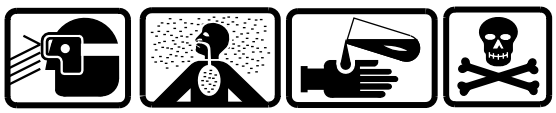
Engine lift holes are marked for correct hook placement.

16. Using a suitable hoist (B69), lift engine to remove weight from mounts.

NOTE

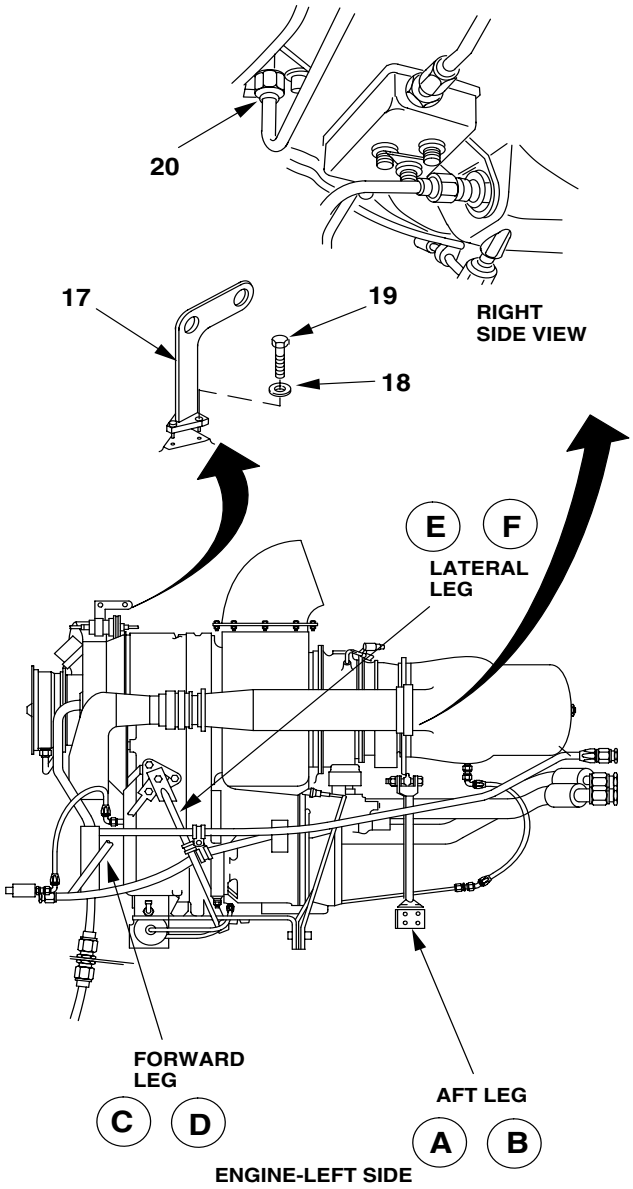
Steps 17 and 18 shall be accomplished to allow access to aft engine mount attaching nut.

17. Place suitable container (B101) directly below coupling nut (20).



Lubricating Oil

18. Disconnect coupling nut (20). Allow oil to drain.



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19. Remove cotter pin (21), nut (22), two washers (23), and bolt (24) from bipod mounting point (25). Discard cotter pin.

NOTE

Removal procedures for both left and right aft legs are the same.

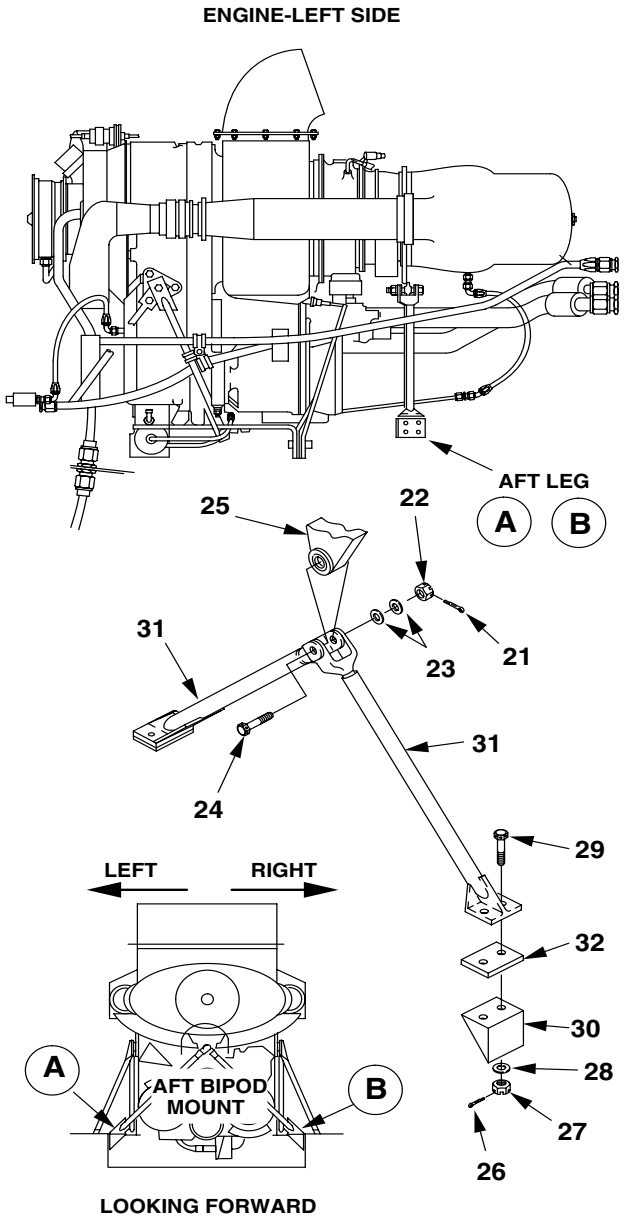
20. Remove two cotter pins (26), nuts (27), washers (28), and bolts (29) from airframe attachment (30). Remove aft legs (31). Discard cotter pins.

21. Remove shim (32). Discard shim.

NOTE

- Maximum shim thickness allowed for engine alignment is **0.190 inch.**
- Pairs (A) and (B) at aft end of engine will be shimmed equally at location shown. See Chart 3.

22. Peel shim (32) to meet requirements.



406060-613-9
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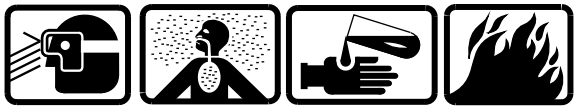


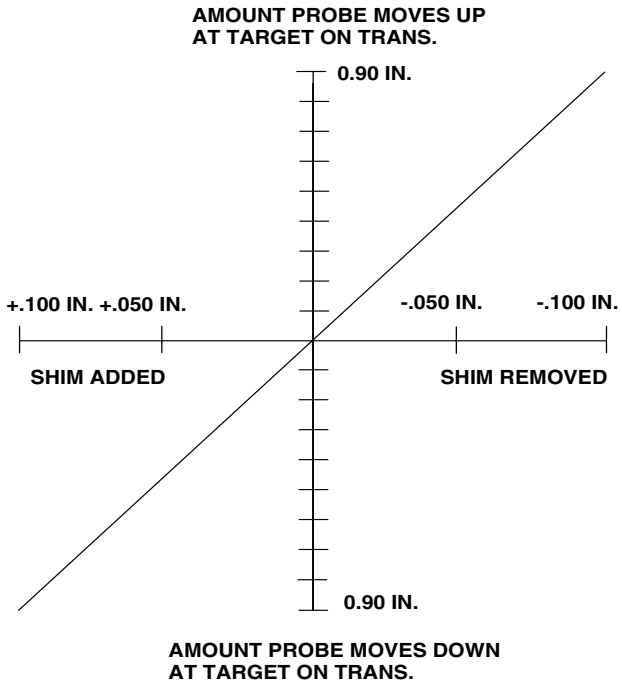
Acetone

Abrasive/Sandpaper/Drilling Dust

23. Lightly scuff surface with 400 grit sandpaper (D175) and clean bonding areas with acetone (D2).

CHART 3

THE AMOUNT OF SHIM TO BE ADDED OR SUBTRACTED (EQUALLY) AT Ⓐ AND Ⓑ IS DETERMINED FROM THE CHART BELOW



406060-355
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24. Place new shims (32) under each aft leg (31) and temporarily install bolts (29), washers (28), and nuts (27).

25. Install bolt (24) with bolthead forward, washers (23) as required (maximum of five), and nut (22).

26. Release tension on hoist and recheck alignment (steps 3 through 13).

NOTE

- If small diameter **(0.312 inch)** end of plunger enters hole in overlay plate in both conditions, complete steps 27 and subsequent.
- If plunger does not enter hole in overlay plate in both conditions, shims shall not be bonded at this time since alignment process must be repeated, beginning at step 15.

27. Take up slack with hoist (B69). Remove nut (22), washers (23), and bolt (24).

28. Remove nuts (27), washers (28), bolts (29), and shims (32).

Adhesive

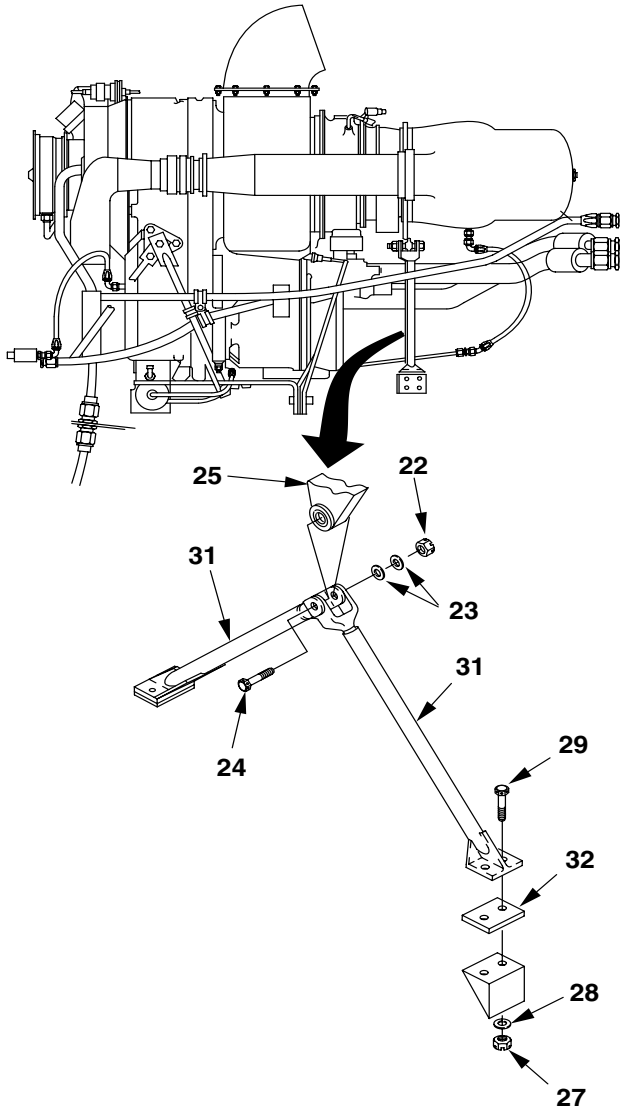
29. Bond shims (32) using adhesive (D11). Cover all faying surfaces.

30. Reinstall shims (32) under each aft leg (31).

31. Reinstall bolts (29), washers (28), and nuts (27).

32. Install bolt (24), through engine mount (25), washers (23), and nut (22).

ENGINE-LEFT SIDE



406060-613-10
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WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct installation of cotter pins is a characteristic critical to flight safety.

33. Torque nut (22) **10 TO 15 INCH-POUNDS**. Install cotter pin (21) through nut (22).

34. Release tension on hoist (B69).

35. Torque nuts (27) **30 TO 40 INCH-POUNDS**. Install cotter pins (26) through nuts (27).

36. Reconnect coupling nut (20).

37. Torque coupling nut (20) **150 TO 200 INCH-POUNDS**.

Heat

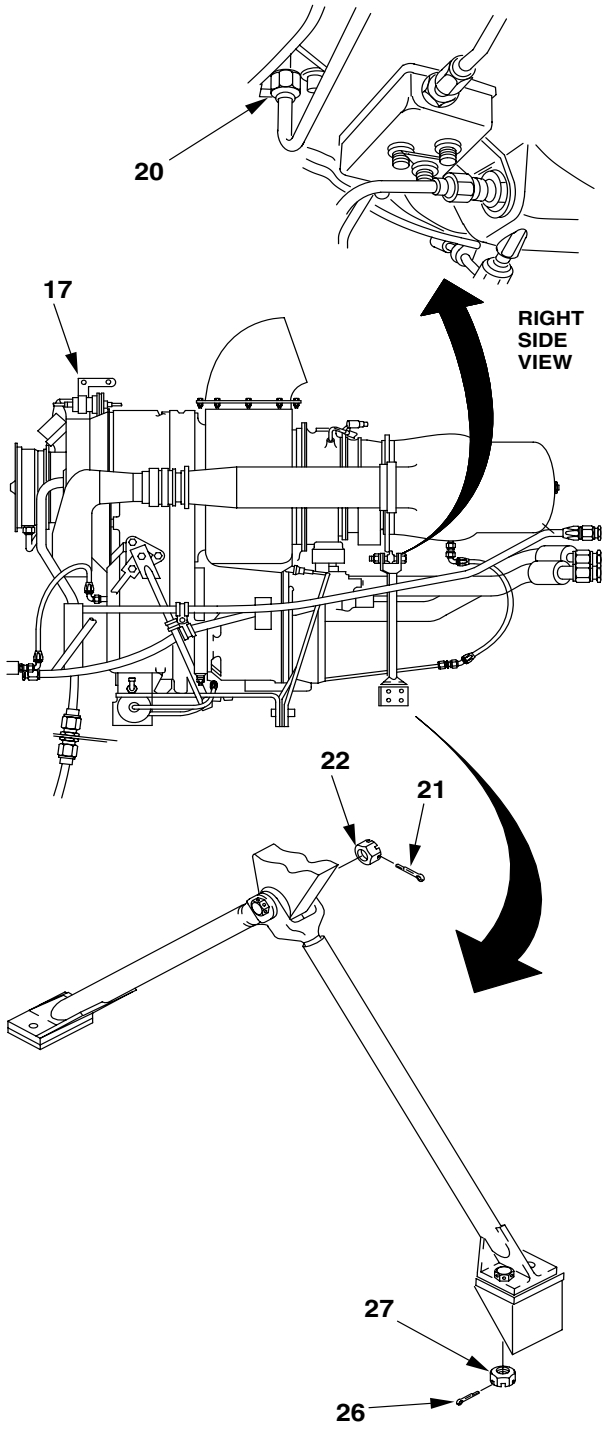
38. Apply heat 190 °F for approximately 60 minutes to bonded parts with heat gun (B59).

NOTE

Room temperature curing requires 24 hours; maximum strength attained in 6 to 7 days.

39. Remove engine lifting angle bracket (B10) (17).

40. Verify engine-to-transmission operating distance per step 134.



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YAW AND ROLL ALIGNMENT

41. Attach engine lifting angle bracket (B10) (17) to engine using three washers (18) and bolts (19) which are attached to engine lifting angle bracket. Torque bolts (19) **160 TO 190 INCH-POUNDS**.

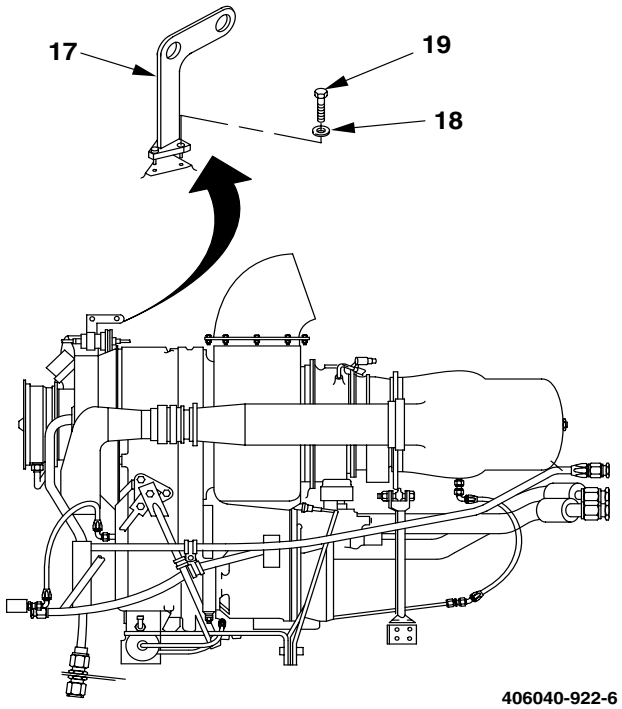
CAUTION

To prevent damage to forward firewall and engine bellmouth seal, engine shall be hoisted only enough to relieve weight on engine mount legs.

NOTE

Engine lift holes are marked for correct hook placement.

42. Using a suitable hoist (B69), lift engine to remove weight from mounts.



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4-7-4. ENGINE-TO-TRANSMISSION — ALIGNMENT (CONT)

43. Remove cotter pin (33) and loosen nut (34) from engine mounted trunnion (35). Discard cotter pin.

44. Remove cotter pin (36), nut (37), four washers (38), washer (39), and bolt (40) from airframe attachment (41). Discard cotter pin.

45. Move lower mounting leg (lateral restraint) (42) out of the way.

46. Remove cotter pin (43) and loosen nut (44) from engine mounted trunnion (45). Discard cotter pin.

47. Remove cotter pin (46) and loosen nut (47) from airframe attachment (48) and lateral leg (49). Discard cotter pin.

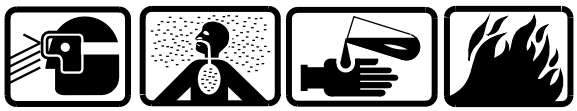
48. Remove cotter pin (50), nut (51), washer (52), and bolt (53) from airframe attachment (54) and forward leg (55). Discard cotter pin. Swing forward leg (55) to clear shim (56).

49. Remove shim (56). Discard shim.

NOTE

Maximum peel shim allowed for engine is **0.190 inch**.

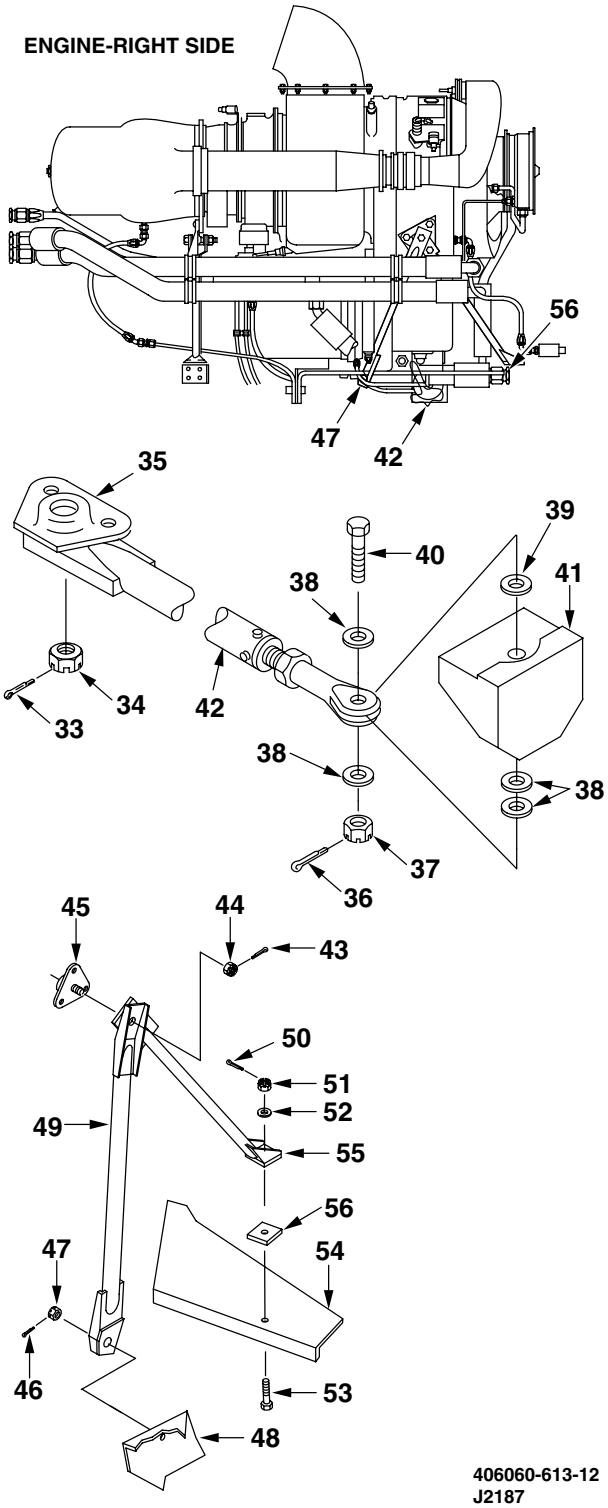
50. Peel new shim (56) to meet requirements.



Acetone

Abrasive/Sandpaper/Drilling Dust

51. Lightly scuff surface with 400 grit sandpaper (D175) and clean bonding areas with acetone (D2).



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NOTE

- Pairs (C) and (D) are shimmed mounting pad locations for forward mounting legs. Shims applied at these locations must be added to one side and subtracted from the other equally.
- Shims added to (C) and subtracted from (D) will require engine nose to yaw right. Shims subtracted from (C) and added to (D) will require engine nose to yaw left.
- This procedure will roll the engine and move it horizontally in the same direction as yaw because aft bipod mounting has no lateral adjustment. Movement around roll axis causes engine power takeoff to move horizontally more than the engine.

52. Place new shims (56) under mount (55) and temporarily install bolt (53), washer (52), and nut (51). Snug nuts (47 and 51).

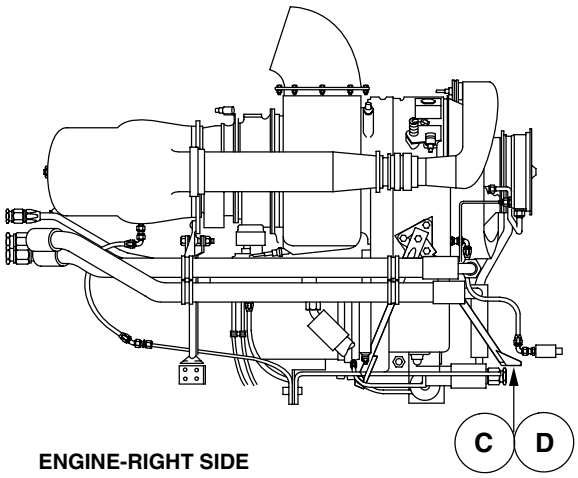
53. Release tension on hoist and recheck alignment (steps 2 through 12).

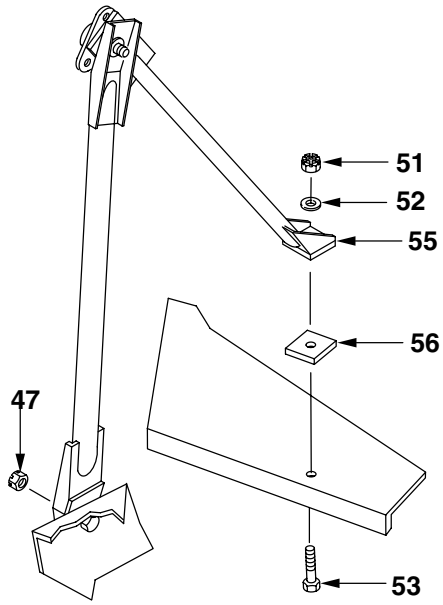
NOTE

- If small diameter **(0.312 inch)** end of plunger enters hole in overlay plate in both conditions, complete steps 45 and subsequent.
- If plunger does not enter hole in overlay plate in both conditions, shims shall not be bonded at this time since alignment process must be repeated, beginning at step 15.

54. Take up slack with hoist (B69). Loosen nuts (47 and 51).

55. Remove nut (51), washer (52), bolt (53), and shims (56).





NOTE:

(C) NEAR LEG

(D) FAR LEG

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GO TO NEXT PAGE

Adhesive

56. Bond shims (56) using adhesive (D11). Cover all faying surfaces.

57. Insert bolt (53) through airframe attachment (54), shims (56), and forward leg (55). Place washer (52) on bolt (53) and start nut (51).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct installation of cotter pins is a characteristic critical to flight safety.

58. Torque nut (47) **30 TO 40 INCH-POUNDS**. Install cotter pin (46) through nut (47).

59. Torque nut (44) **70 TO 90 INCH-POUNDS**. Install cotter pin (43) through nut (44).

60. Release tension on hoist.

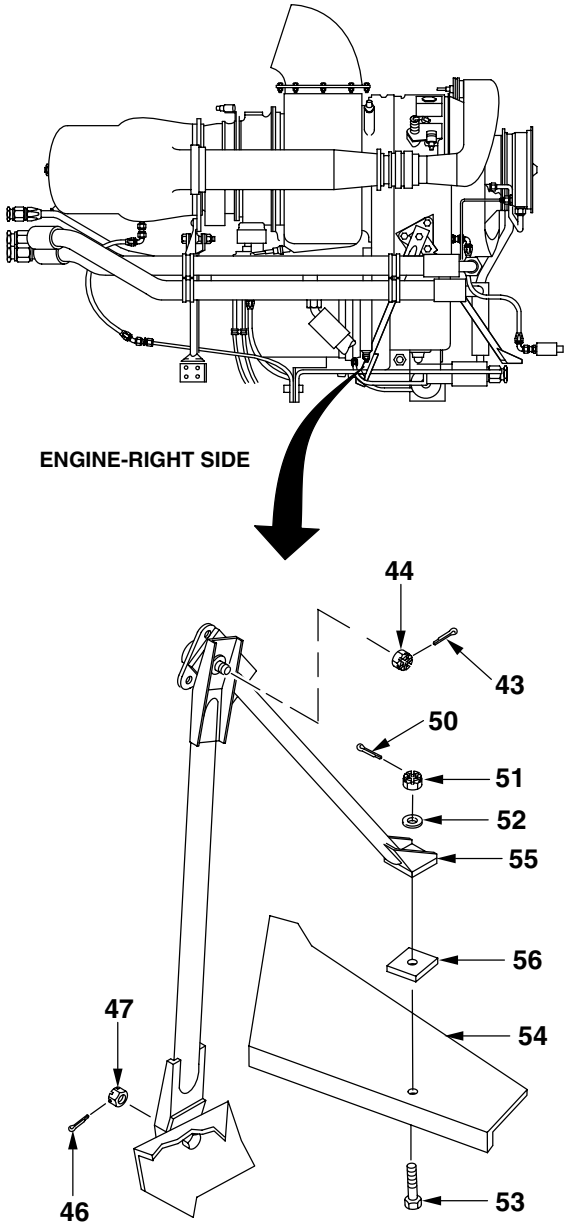
61. Torque nut (51) **30 TO 40 INCH-POUNDS**. Install cotter pin (50) through nut (51).

Heat

62. Apply heat 190 °F for approximately 60 minutes to bonded parts using heat gun (B59).

NOTE

Room temperature curing requires 24 hours. Maximum strength is attained in 6 to 7 days.



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63. After engine shimming is complete, move lower mounting leg to its mount point under engine and loosely install bolt (40), washers (38 and 39), and nut (37).

NOTE

Lower mounting leg attach bolt shall not preload on reassembly.

64. If preload is present, remove bolt (40), washers (38 and 39), and nut (37) from airframe attachment (41) and lower mounting leg (42).

65. Adjust lower mounting leg clevis (57) by cutting lockwire on jammnut (58) and loosening jam nut (58) while holding clevis jaws. Rotate clevis (57) in half-turn increments until bolt (40) drops into place.

NOTE

It is permissible for proper fit of clevis to locate thin washer between upper side of fitting and clevis with both thick washers between lower side of fitting and clevis.

66. Install other end of leg (clevis) (57) on airframe attachment (41) with bolt (40). Washer stackup will be one thick washer (38) under bolthead, two thick washers (38) and one thin washer (39) between airframe attachment (41) and lower clevis tang. Install two thick washers (38) and nut (37). Do not torque.

67. Torque jamnut (58) **160 TO 190 INCH-POUNDS**.

WARNING

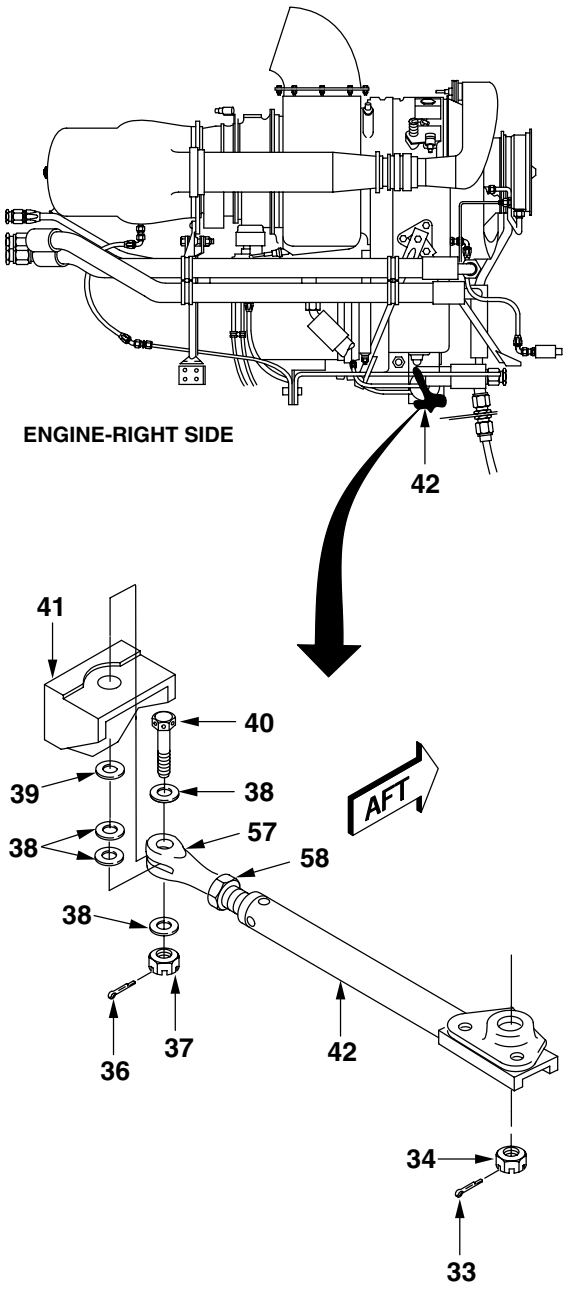
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct installation of cotter pins is a characteristic critical to flight safety.

68. Secure jamnut (58) with lockwire (D132).

69. Torque nuts (34 and 37) **70 TO 90 INCH-POUNDS**. Install cotter pins (33 and 36) through nuts (34 and 37).

70. Remove engine lifting angle bracket.



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4-7-4. ENGINE-TO-TRANSMISSION — ALIGNMENT (CONT)

71. Verify engine-to-transmission operating distance per step 134.

HORIZONTAL ALIGNMENT

NOTE

Maximum shim thickness allowed for engine alignment is **0.190 inch**.

72. Attach engine lifting angle bracket (B10) (17) to engine using three washers (18) and bolts (19), which are attached to tool. Torque bolts (19) **160 TO 190 INCH-POUNDS**.

CAUTION

To prevent damage to forward firewall and engine bellmouth seal, engine shall be hoisted only enough to relieve weight on engine mount legs.

NOTE

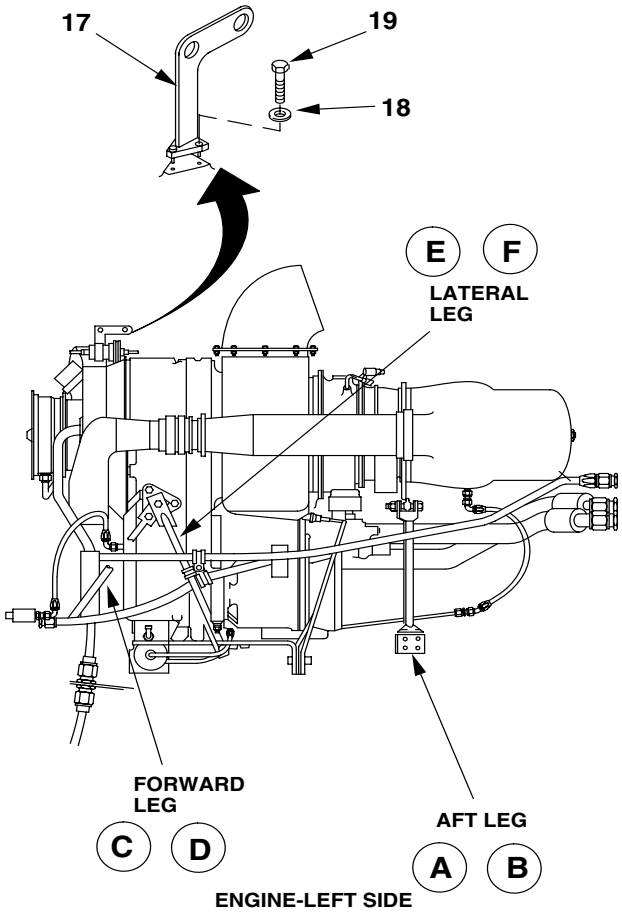
Engine lift holes are marked for correct hook placement.

73. Using a suitable hoist (B69), lift engine to remove weight from mounts.

NOTE

- Pair (E) and (F) are located at airframe end of engines lateral mounting leg. In order to move engine horizontally shims applied to these locations must be added to one side and subtracted from other, equally. This procedure will also yaw engine nose in same direction as horizontal movement.
- Horizontal adjustment requires removal, readjustment, and reinstallation of lower mounting leg under the engine same as for yaw and roll adjustment.

74. Repeat steps 43., 44., and 45.



NOTE;

(A), (D), AND (F) ARE NEAR LEGS

(B), (C), AND (E) ARE FAR LEGS

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75. Remove cotter pin (43). Loosen nut (44) on engine mounted trunnion (45). Discard cotter pin.

76. Remove cotter pin (50). Loosen nut (51) on forward leg (55). Discard cotter pin.

77. Remove cotter pin (46), nut (47), washer (59), and bolt (60) from airframe attachment (48) and lateral leg (49). Swing lateral leg (49) to clear shim (61). Discard cotter pin.

78. Remove shim (59). Discard shim.

79. Lightly scuff surface with 400 grit sandpaper (D175) and clean bonding areas with acetone (D2).

80. Peel shims (61) to meet requirements.

81. Install new shim (61) between airframe attachment (48) and lateral leg (49) and temporarily install bolt (60), washer (57), and nut (47). Snug nuts (47 and 51).

82. Release tension on hoist and recheck alignment (steps 2 through 12.).

NOTE

- If small diameter **(0.312 inch)** end of plunger enters hole in overlay plate in both conditions, complete steps 82. and subsequent.
- If plunger does not enter hole in overlay plate in both conditions, shims shall not be bonded at this time since alignment process must be repeated, beginning at step 15.

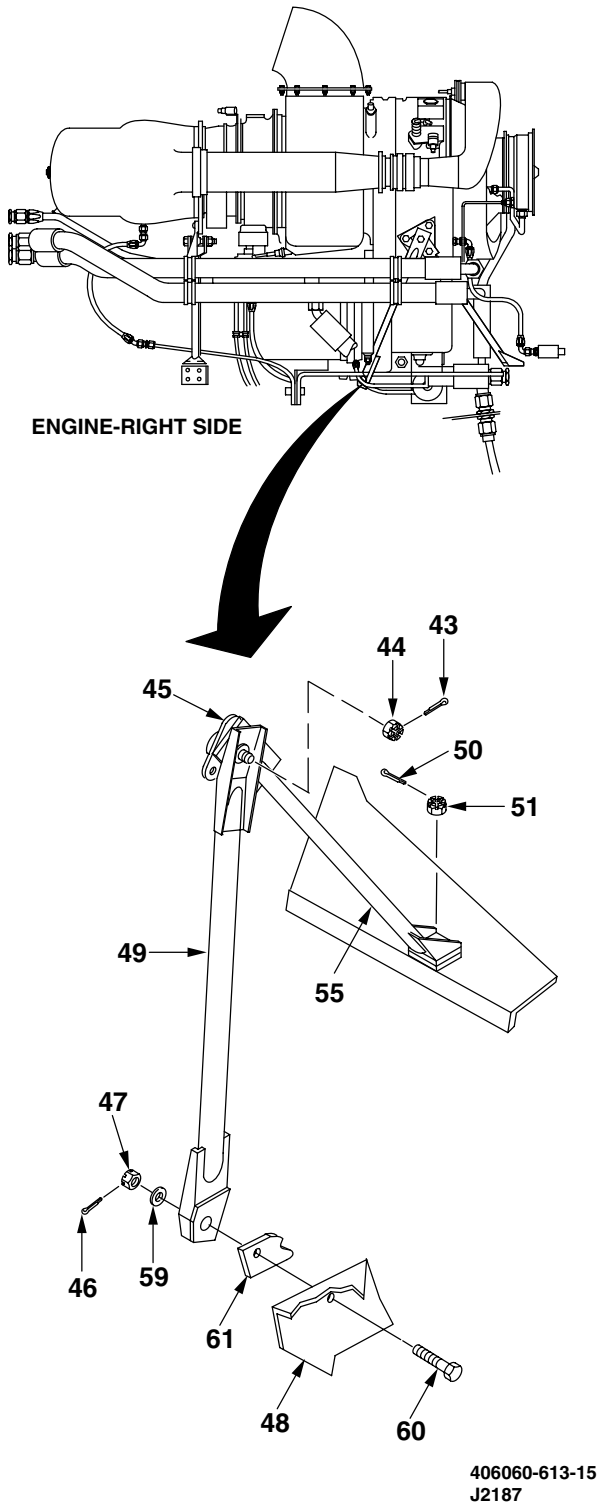
83. Take up slack with hoist (B69). Loosen nuts (47 and 51).

84. Remove nut (47), washer (59), bolt (60), and shims (61).

85. Bond shims (61) using adhesive (D11). Cover all faying surfaces.

86. Align lateral leg (49) with shim (61) and airframe attachment (48).

87. Install bolt (60) (with bolthead outboard), washer (59), and nut (47).



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WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct installation of cotter pins is a characteristic critical to flight safety.

88. Torque nut (44) evenly **30 TO 40 INCH-POUNDS**. Install cotter pin (43) through nut (44).

89. Torque nut (51) evenly **70 TO 90 INCH-POUNDS**. Install cotter pin (50) through nut (51).

90. Release tension on hoist.

91. Torque nut (47) evenly **30 TO 40 INCH-POUNDS**. Install cotter pin (46) through nut (47).

Heat

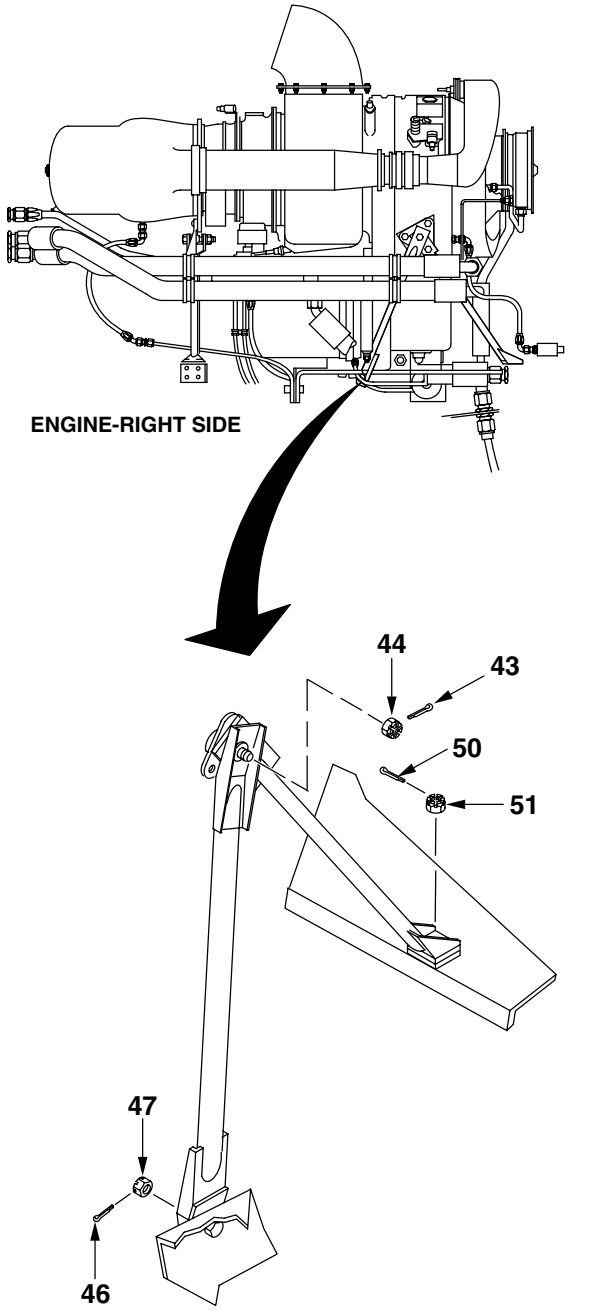
92. Apply heat 190 °F for approximately 60 minutes using heat gun (B59) to bond parts.

NOTE

Room temperature curing requires 24 hours. Maximum strength is attained in 6 to 7 days.

93. Repeat steps 63. through 69.

94. Remove engine lifting angle bracket.



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95. Verify engine-to-transmission operating distance per step 134.

VERTICAL ALIGNMENT

96. Attach engine lifting angle bracket (B10) (17) to engine using three washers (18) and bolts (19), which are attached to tool. Torque bolts (19) **160 TO 190 INCH-POUNDS**.

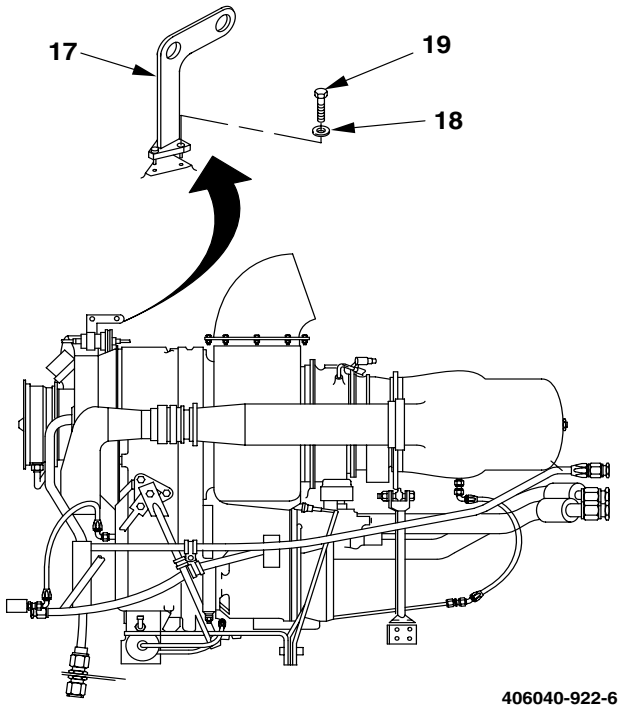
CAUTION

To prevent damage to forward firewall and engine bellmouth seal, engine shall be hoisted only enough to relieve weight on engine mount legs.

NOTE

Engine lifting angle bracket (B10) holes are marked for correct hook placement.

97. Using a suitable hoist (B69), lift engine to remove weight from mounts.



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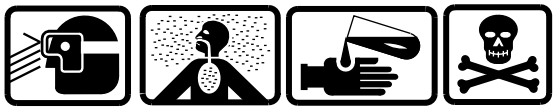
98. Remove cotter pin (46). Loosen nut (47) on leg (49). Discard cotter pin.

99. At upper ends of forward leg (49) and lateral leg (55), remove cotter pin (43) and loosen nut (44) on engine mounted trunnion (45). Discard cotter pin.



Lubricating Oil

NOTE

Steps 100. and 101. shall be accomplished to allow access to aft engine mount attaching nut.

100. Place suitable container (B101) directly below coupling nut (20).

101. Disconnect coupling nut (20). Allow all oil to drain.

NOTE

Removal procedures for both left aft and right aft legs are the same.

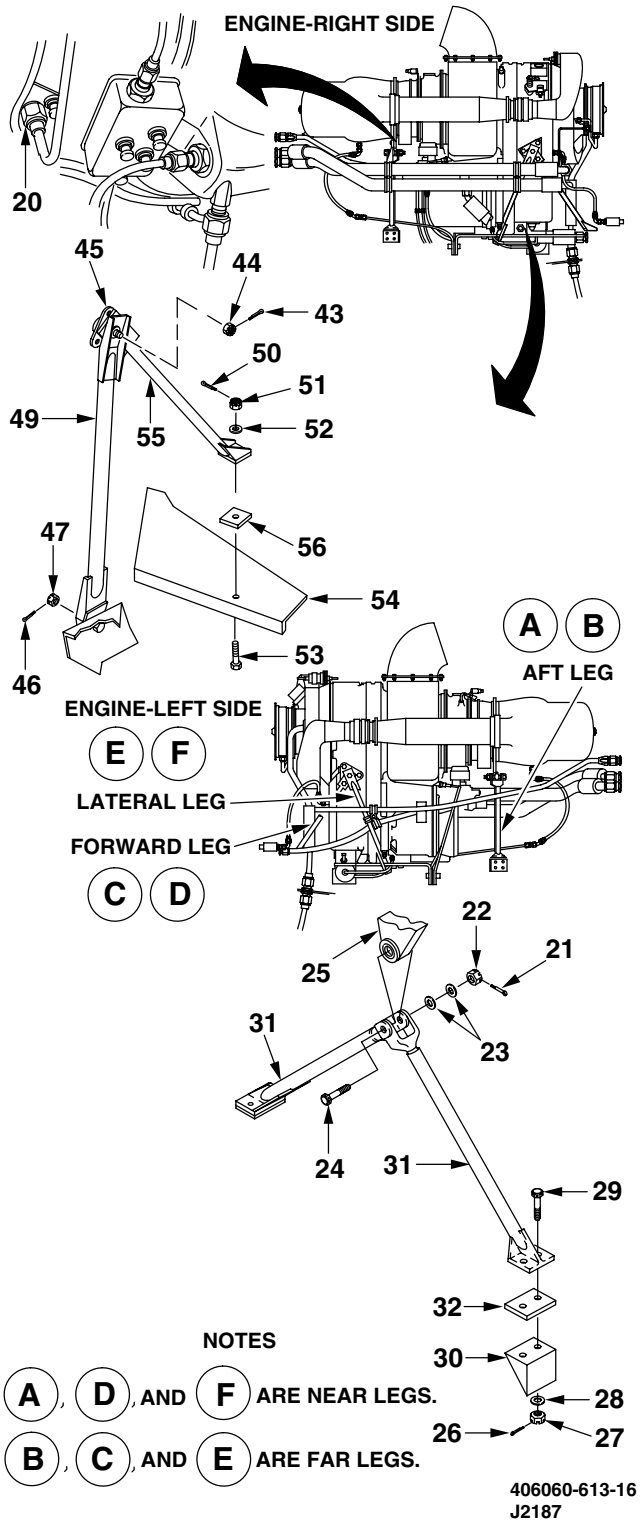
102. Remove cotter pin (21), nut (22), washers (23), and bolt (24) from bipod mounting point (25). Discard cotter pin.

103. At lower ends of forward leg assemblies (pair (C) and (D)) and aft legs (pair (A) and (B)), remove attaching hardware as follows:

a. Remove cotter pin (50), nut (51), washer (52), and bolt (53) from airframe attachment (54) and forward legs (pair (C) and (D)) (49). Swing forward leg (55) to clear shim (56). Discard cotter pin.

b. Remove two cotter pins (26), nuts (27), washers (28), and bolts (29) from airframe attachments (30), and aft legs (pair (A) and (B)) (29). Swing aft legs (31) to clear shims (32). Discard cotter pins.

104. Remove shim (32). Discard shim.



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CAUTION

Maximum shim thickness allowed for engine adjustment is **0.190 inch**.

105. Peel shims (32) for aft legs (pair (A) and (B)) (31) and shim (56) for forward legs (pair (C) and (D)) (55) to meet requirements.

Acetone

Abrasive/Sandpaper/Drilling Dust

106. Lightly scuff surface with 400 grit sandpaper (D175) and clean bonding areas completely with acetone (D2).

NOTE

Pairs (A) and (B) and (C) and (D) are the fore and aft mounting points to the airframe. In order to move the engine up or down, shims shall be added or removed equally at each of these pair locations. Movement of the engine will be equal to amount of shim thickness used at pair (A) and (B). However, movement of engine will be equal to approximately 1/3 the amount of shim used at pair (C) and (D). This procedure will also move engine slightly aft as engine is raised and slightly forward as engine is lowered.

107. Install shims (32) under each aft leg (31).

108. Install two bolts (29), washers (28), and nuts (27).

109. Connect aft leg (31) to engine mount (25) and install bolt (24), washers (23), and nut (22).

110. Install bolt (53) through airframe attachment (54), shims (56), leg (55), washer (52), and nut (51). Snug nuts (47 and 51).

111. Release tension on hoist and recheck alignment (steps 2. through 12.).

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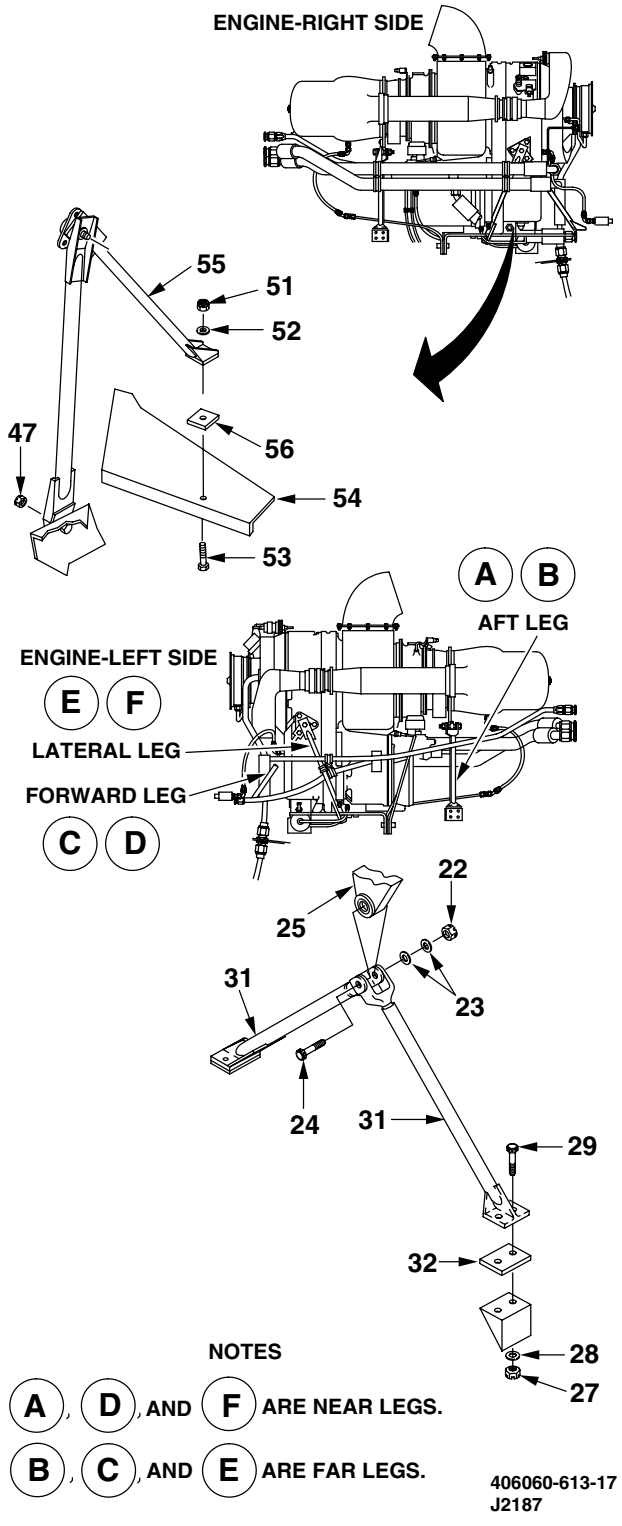


NOTE

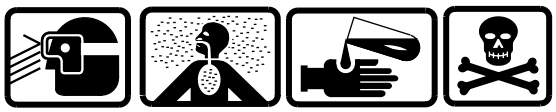
- If small diameter **(0.312 inch)** end of plunger enters hole in overlay plate in both conditions, complete steps 112. and subsequent.
- If plunger does not enter hole in overlay plate in both conditions, do not bond shims at this time since alignment process must be repeated, beginning at step 16.

112. Take up slack with hoist (B69). Loosen nuts (44 and 47).

113. Remove nut (51), washer (52), shims (56), and bolt (53).

114. Remove nut (22), washers (23), and bolt (24).

115. Remove two nuts (27), washers (28), bolts (29), and shims (32).



Adhesive

116. Bond shims (32) using adhesive (D11). Cover all mating surfaces.

117. Align forward leg (pair (C) and (D)) (55) on shims (56) and airframe attachment (54).

118. Install bolt (53), washer (52), and nut (51).

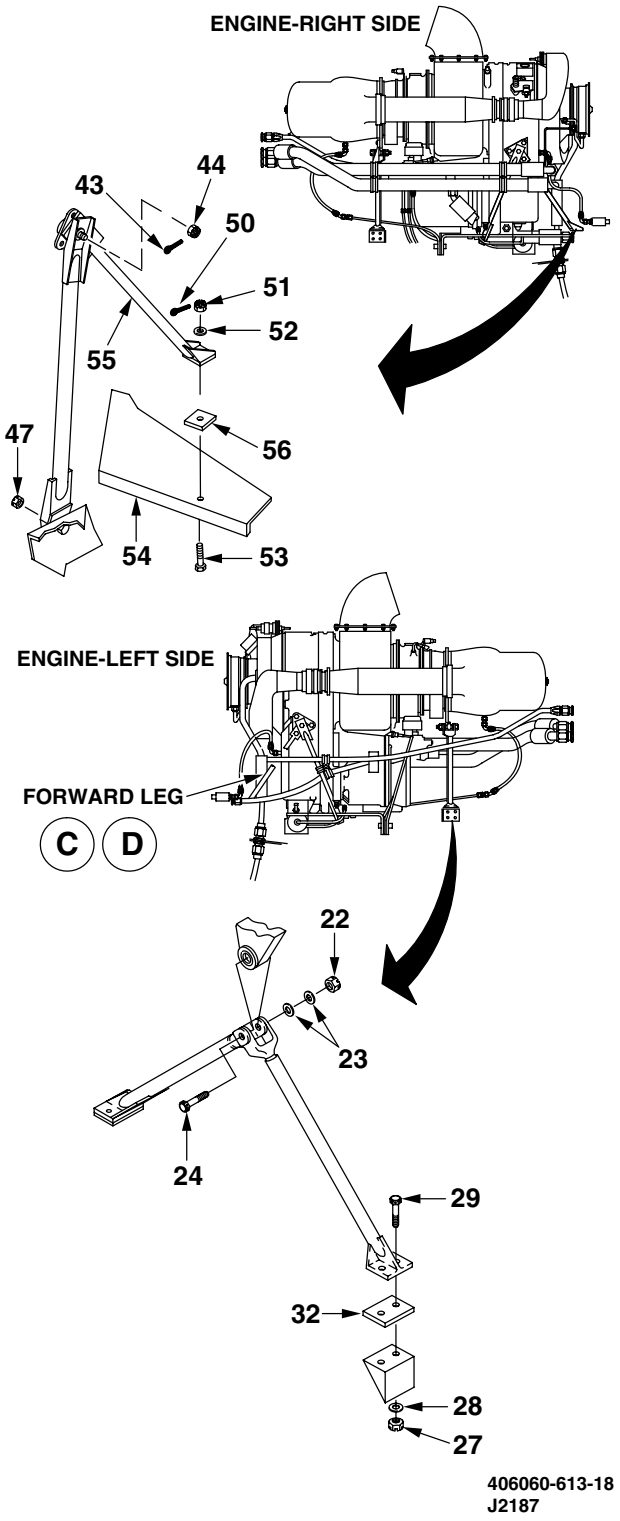
WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct installation of cotter pins is a characteristic critical to flight safety.

119. Torque nut (51) **70 TO 90 INCH-POUNDS**. Install cotter pin (50) through nut (51).

120. Torque nut (44) **30 TO 40 INCH-POUNDS**. Install cotter pin (43) through nut (44).



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121. Align aft leg (pair (A) and (B)) (31) on shims (32) and airframe attachment (30).

122. Install two bolts (29), washers (28), and nuts (27).

123. Align both upper ends of legs (31) to engine mount (25). Install bolt (24), washers (23), and nut (22).

124. Torque nut (22) **10 TO 15 INCH-POUNDS**. Install cotter pin (21) through nut (22).

125. Connect coupling nut (20).

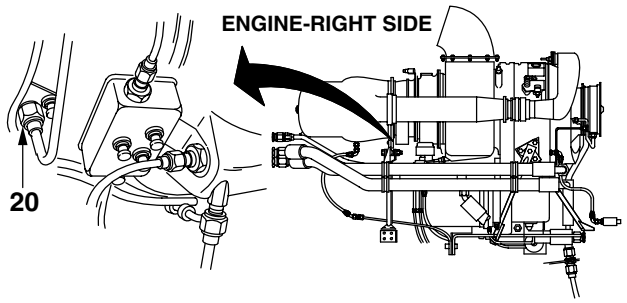
126. Torque coupling nut (20) **150 TO 200 INCH-POUNDS**.

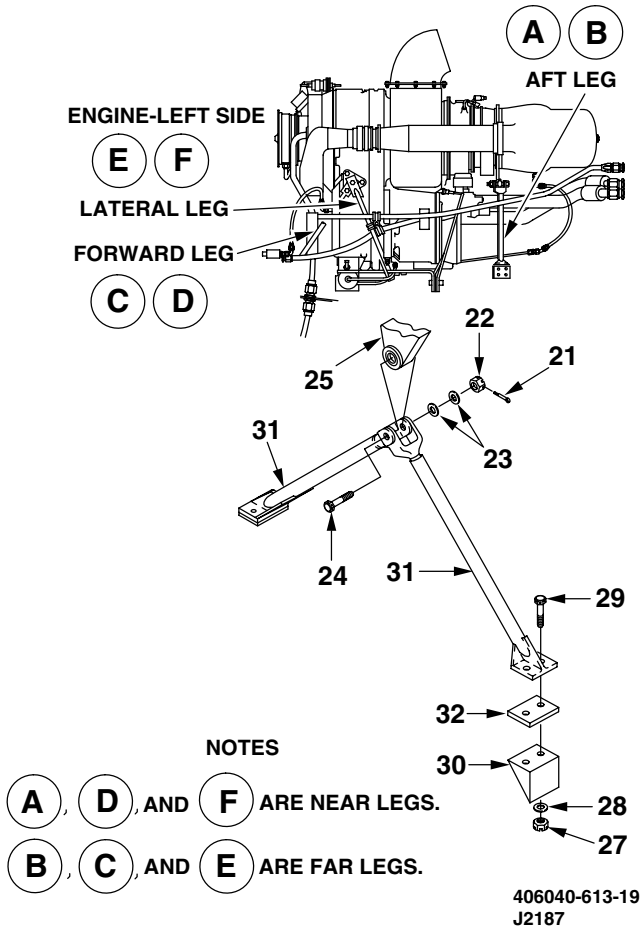
Heat

127. Apply heat, 190 °F for approximately 60 minutes using heat gun (B59) to bond parts.

NOTE

Room temperature curing requires 24 hours. Maximum strength is attained in 6 to 7 days.





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128. Release tension on hoist.

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct installation of cotter pins is a characteristic critical to flight safety.

129. Torque nuts (27) **30 TO 40 INCH-POUNDS**. Install two cotter pins (26) through nuts (27).

130. Torque nut (51) **30 TO 40 INCH-POUNDS**. Install cotter pin (50) through nut (51).

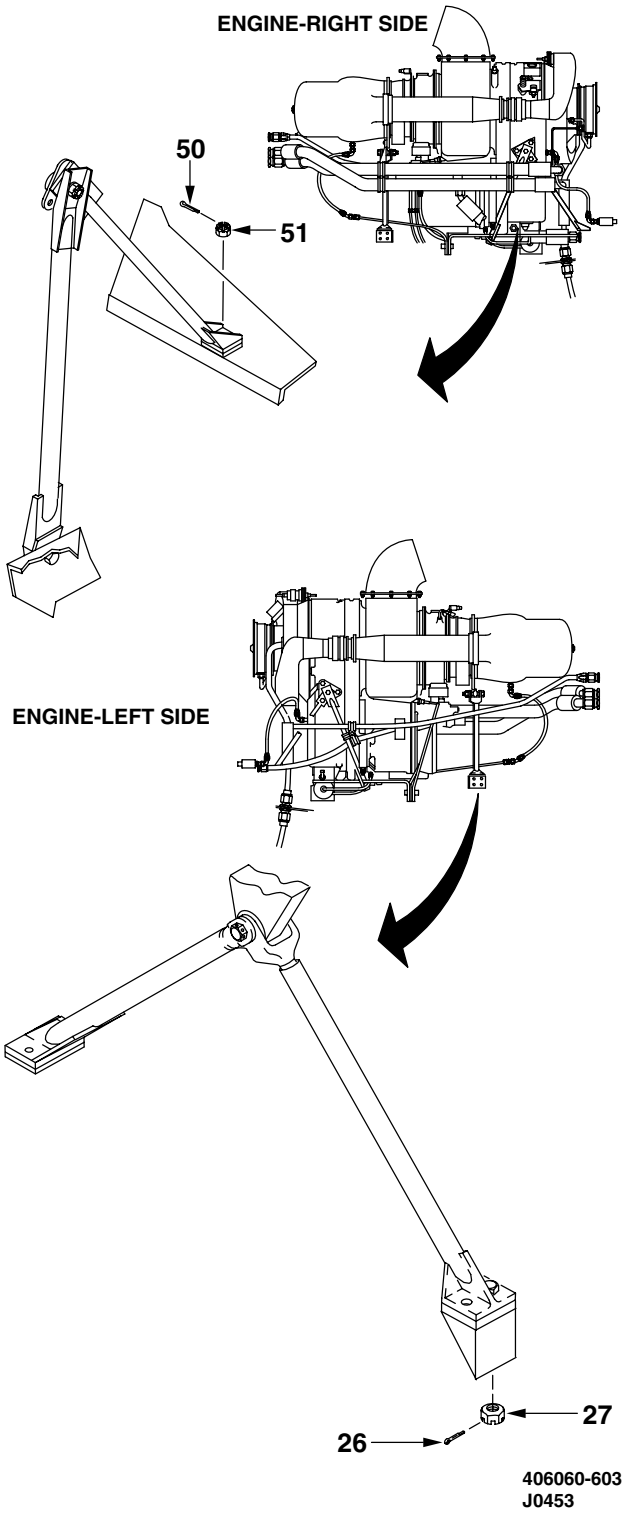
131. Remove engine lifting angle bracket.

132. Verify engine-to-transmission mounting distance per step 135.

NOTE

All alignment procedures are complete when steps 1 through 130. are accomplished.

133. Verify engine alignment by performing alignment check in steps 2. through 12.



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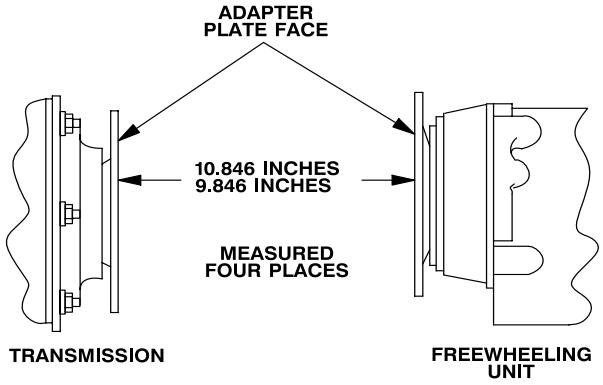
ENGINE OPERATING DISTANCE CHECK

134. Measure between freewheeling unit adapter plate face and transmission adapter plate face. Measurements should be taken at top, bottom, left, and right. Measurement average should be between **9.846 inches** and **10.846 inches** to be within acceptable limits.



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135. Install main driveshaft (Task 6-2-2).

136. Visually check security of main driveshaft installation, engine shimming, and engine mounting attachment points.

INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing assembly (Task 2-2-47).

Install engine cowl assemblies (Task 2-2-50).

Install aft fairing (Task 2-2-55).

Install air induction cowl (Task 4-2-3).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).

END OF TASK

Section VIII. FORWARD FIREWALL

4-21. FORWARD FIREWALL

Standard torque tables are provided in Appendix P and TM 1-1500-204-23.

4-22. INTRODUCTION

This section contains: maintenance procedures for removal and installation of the forward firewall and Dzus receptacles, seals, and nutplate detail parts.

4-23. TASK LIST

The task list lists those tasks required to support unit and intermediate level maintenance.

LIST OF TASKS

4-8-1. FORWARD FIREWALL ASSEMBLY — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Airframe Repairer Tool Kit (B176)
Maintenance Stand (B162)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68G Aircraft Structural Repairer
Pilot

References:
TM 1-1520-248-10
TM 1-1520-248-CL
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Removed (Task 2-2-47)
Air Induction Cowl Removed (Task 4-2-1)
Engine Cowl Assembly Removed (Task 2-2-50)
Main Driveshaft Removed (Task 6-2-2)
Bellmouth Assembly Removed (Task 4-8-3)

GO TO NEXT PAGE

4-8-1. FORWARD FIREWALL ASSEMBLY — REMOVAL/INSTALLATION (CONT)

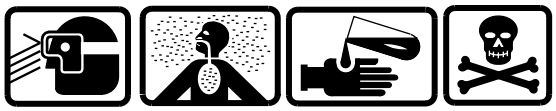
REMOVE

Lubricating Oil

NOTE

- Caps and protective covers shall be installed on all open lines and fittings.
- Maintenance stand (B162) should be positioned as necessary to facilitate access to forward firewall.

1. Disconnect engine oil pressure line (1) from transducer (2).

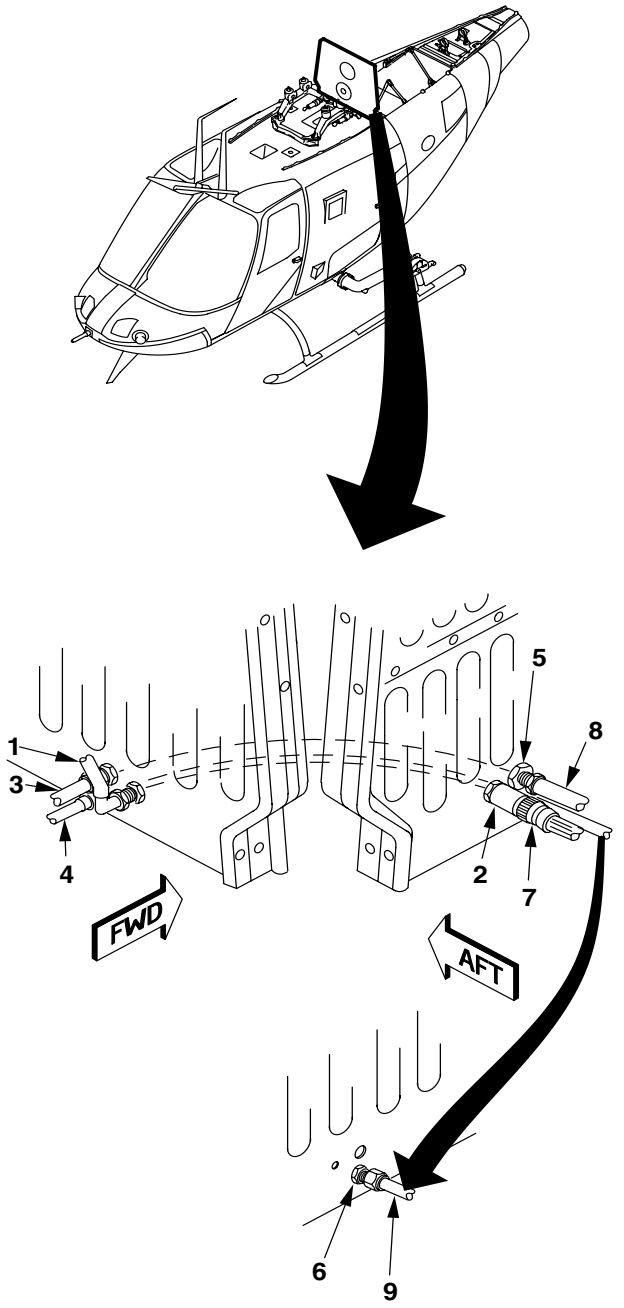


Hydraulic Fluid

2. Disconnect hydraulic lines (3 and 4) at firewall fittings (5 and 6).

3. Disconnect electrical connector (7) from engine oil pressure transducer (2).

4. Disconnect hydraulic lines (8 and 9) from firewall fittings (5 and 6).



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4-8-1. FORWARD FIREWALL ASSEMBLY — REMOVAL/INSTALLATION (CONT)

5. Disconnect lubrication line (10) from torque pressure transducer (11).

6. Disconnect transmission lines (12 and 13) from firewall fittings (14 and 15).

7. Disconnect hydraulic drain line (16) from firewall fitting (17).

8. Disconnect lubrication line (18) from firewall fitting (19).

9. Disconnect lubrication lines (20 and 21) from tee firewall fitting (22).

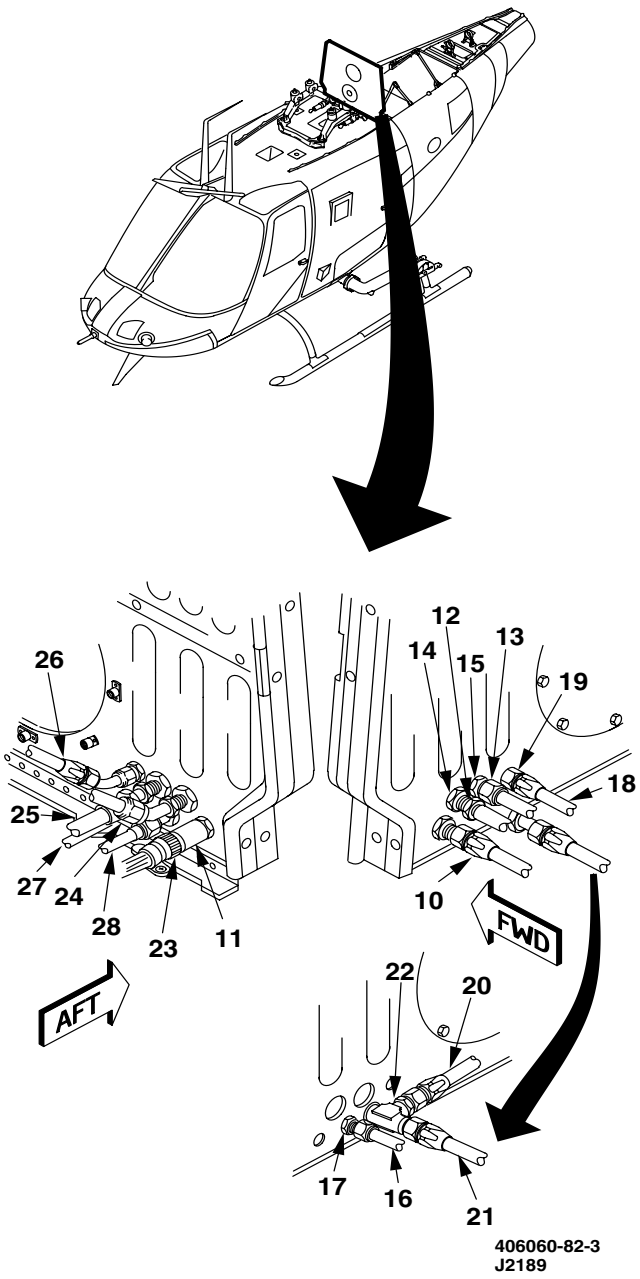
10. Disconnect electrical connector (23) from torque pressure transducer (11).

11. Disconnect transmission lines (24 and 25) from firewall fittings (14 and 15).

12. Disconnect lubrication line (26) from firewall fitting (19).

13. Disconnect transmission oil pressure line (27) from firewall fitting (22).

14. Disconnect hydraulic line (28) from firewall fitting (17).



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4-8-1. FORWARD FIREWALL ASSEMBLY — REMOVAL/INSTALLATION (CONT)

15. Drill out 36 rivets (29) from angle (30) (TM 1-1500-204-23).

16. Drill out six rivets (31) from side clips (32) (TM 1-1500-204-23).

17. Remove firewall (33) from helicopter.

18. Remove firewall fittings (5, 6, 14, 15, 17, 19 and 22) from firewall (33).

19. Remove oil pressure and torque pressure transducers (2 and 11).

INSTALL

NOTE

Cap and protective covers shall be removed from all firewall fittings.

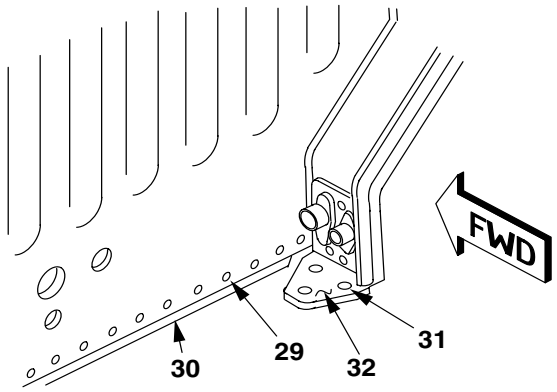
20. Install oil pressure and torque pressure transducers (2 and 11) in firewall (33).

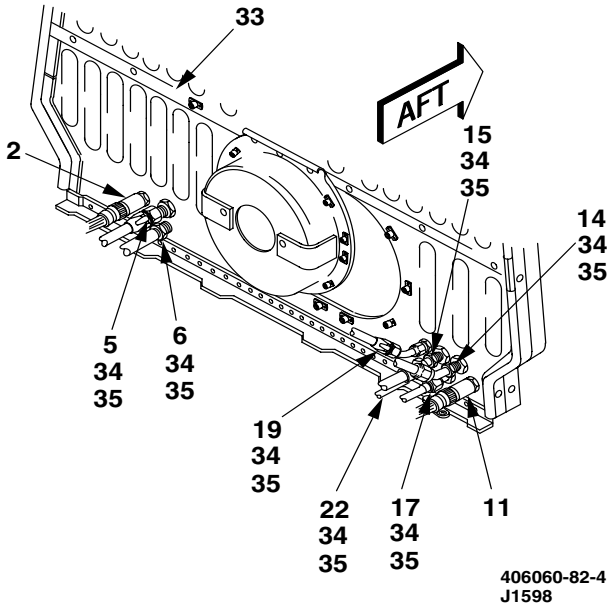
21. Torque transducers (2 and 11) **50 TO 65 INCH-POUNDS**.

22. Install firewall fittings (5, 6, 14, 15, 17, 19 and 22) with jamnuts (34) and washers (35) in firewall (33).

23. Position firewall (33) onto helicopter.

24. Install six rivets (31) in side clips (32).





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4-8-1. FORWARD FIREWALL ASSEMBLY — REMOVAL/INSTALLATION (CONT)

25. Install 36 rivets (29) in angle (30).

26. Connect hydraulic line (28) to firewall fitting (17).

27. Connect transmission oil pressure line (27) to firewall fitting (22).

28. Connect lubrication line (26) to firewall fitting (19).

29. Connect transmission lines (24 and 25) to firewall fittings (14 and 15).

30. Connect electrical connector (23) to torque pressure transducer (11).

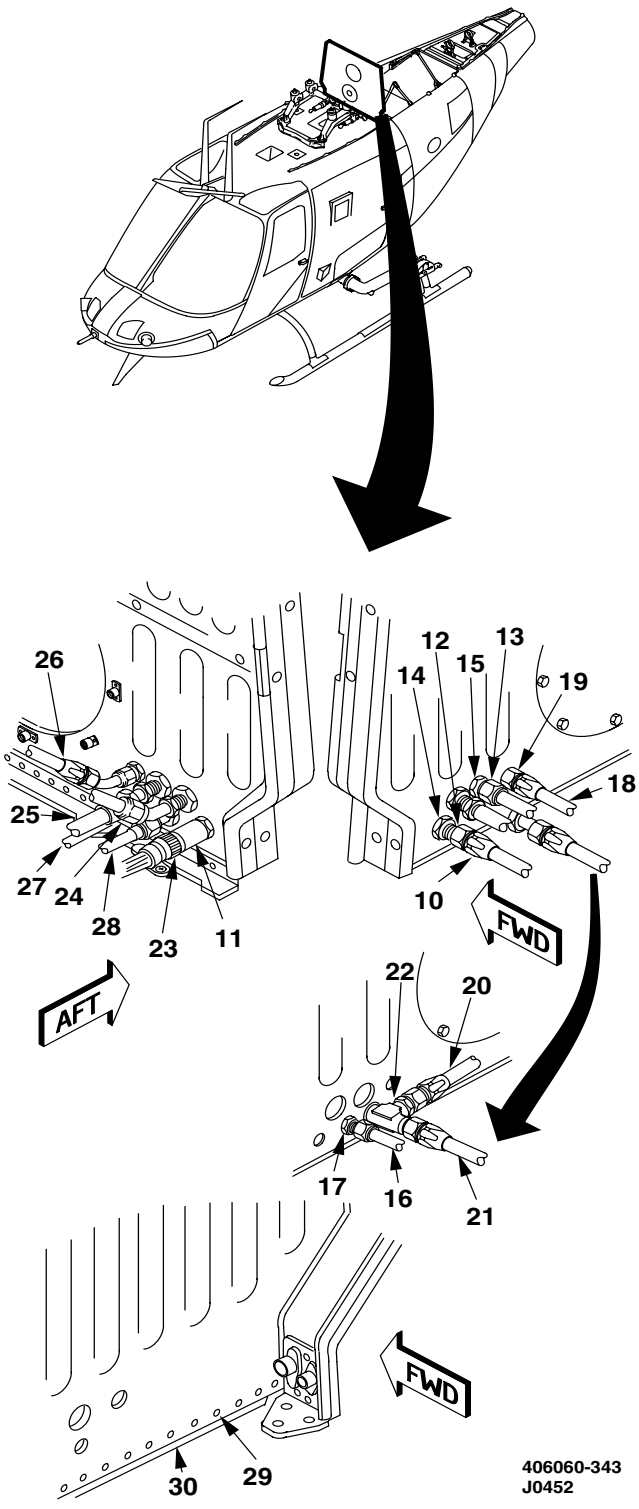
31. Connect lubrication lines (20 and 21) to tee firewall fitting (22).

32. Connect lubrication line (18) to firewall fitting (19).

33. Connect hydraulic drain line (16) to firewall fitting (17).

34. Connect transmission line (12 and 13) to firewall fittings (14 and 15).

35. Connect lubrication line (10) to torque pressure transducer (11).



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4-8-1. FORWARD FIREWALL ASSEMBLY — REMOVAL/INSTALLATION (CONT)

36. Connect hydraulic lines (8 and 9) to firewall fittings (5 and 6).

37. Connect electrical connector (7) to engine oil pressure transducer (2).

38. Connect hydraulic lines (3 and 4) to firewall fittings (5 and 6).

39. Connect engine oil pressure line (1) to engine oil pressure transducer (2).

INSPECT

FOLLOW-ON MAINTENANCE

Install bellmouth assembly (Task 4-8-3)

Install engine cowl assembly (Task 2-2-50).

Install air induction cowl (Task 4-2-3).

Install forward fairing (Task 2-2-47).

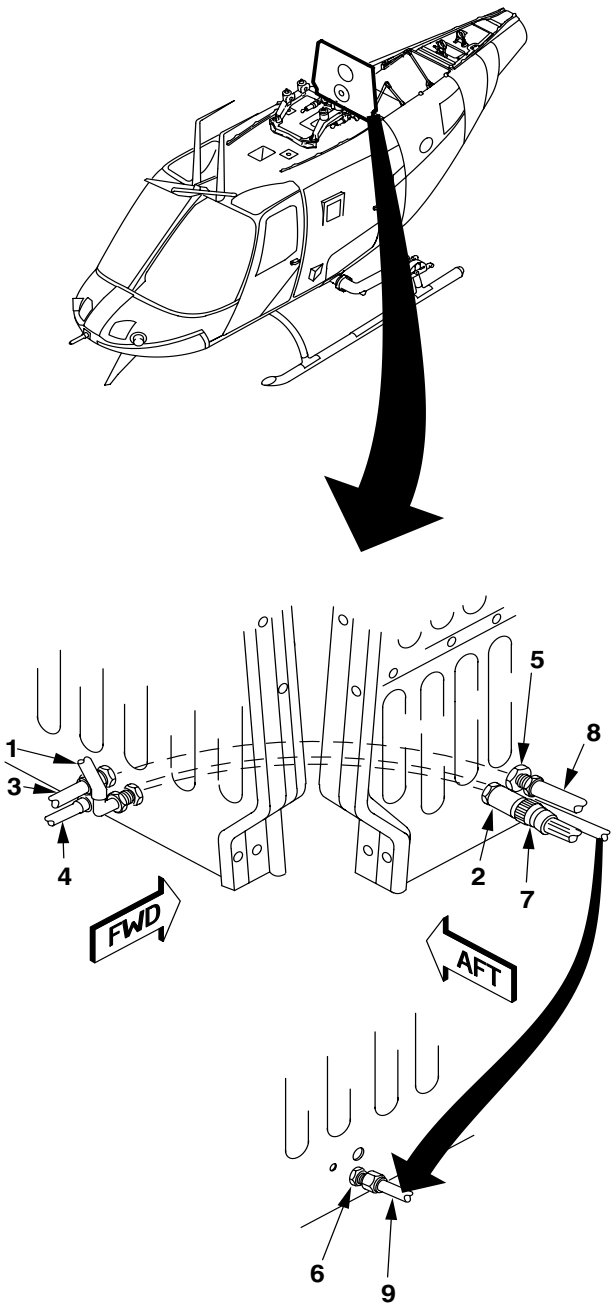
Service hydraulic reservoir (Task 1-4-8).

Bleed hydraulic system (Task 7-2-1).

Service main transmission oil system (Task 1-4-8).

Service engine oil tank (Task 1-4-6).

Pilot perform MOC (TM 1-1520-248-10/CL).



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END OF TASK

4-8-2. FORWARD FIREWALL — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Maintenance Stand (B162)

Material:
Acetone (D2)
Drycleaning Solvent (D199)
Wiping Rags (D164)
Rubber Gloves (D111)
Adhesive (D6)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

References:
TM 1-1500-204-23
TM 1-1520-266-23

Equipment Condition:
Bellmouth Assembly Removed (Task 4-8-3)

GO TO NEXT PAGE

4-8-2. FORWARD FIREWALL — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN

Drycleaning Solvent

NOTE

Maintenance stand (B162) should be positioned as necessary to facilitate access to forward firewall.

1. Wearing rubber gloves (D111), clean forward firewall (1) with solvent (D199) and wiping rags (D164).

2. Dry with wiping rags (D164).

INSPECT

3. Inspect forward firewall (1) to limits shown for cracks and damaged, loose, or missing receptacles (2), nutplates (3), and rivets (4). See figure Forward Firewall — Damage Limits.

3.1. If a crack in the forward firewall is suspected, refer to TM 1-1520-266-23.

4. Inspect forward firewall (1) for damaged, loose, and missing seals (5, 6 and 7) and gaskets (7.1, 8, and 9).

5. Inspect coverplate (10) for damage, cracks, or elongated bolt holes.

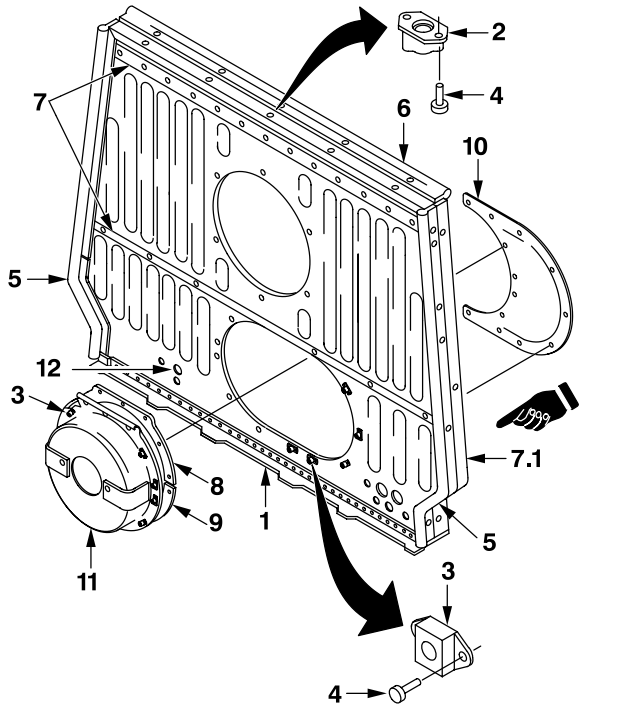
5.1. If a crack in the cover plate is suspected, refer to TM 1-1520-266-23.

6. Inspect upper and lower cover (11) for damage, cracks and loose and/or missing nutplates (3).

6.1. If damage in covers is suspected, refer to TM 1-1520-266-23.

7. Inspect forward firewall (1) for cracked fitting holes (12).

7.1. If a crack in the fitting hole is suspected, refer to TM 1-1520-266-23.



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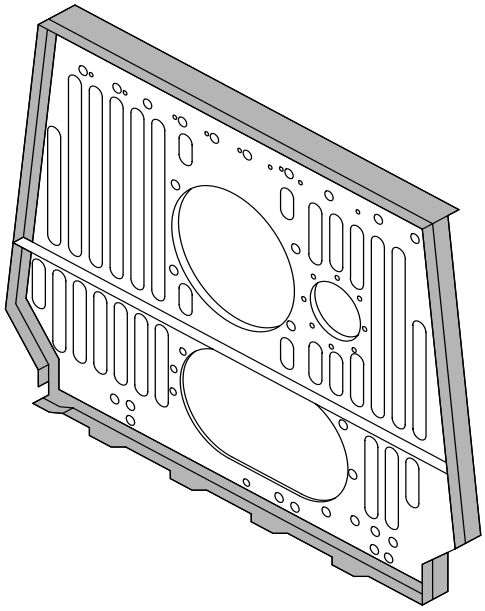
4-8-2. FORWARD FIREWALL — CLEANING/INSPECTION/REPAIR (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MAXIMUM DAMAGE DEPTH	0.003 in.	0.003 in.
MAXIMUM REPAIR DEPTH	0.005 in.	0.005 in.
MAXIMUM AREA PER FULL DEPTH REPAIR	1.00 sq. in.	1.00 sq. in.
MAXIMUM EDGE CHAMFER	0.0035 in. X 45°	0.0035 in. X 45°

NEGLIGIBLE DAMAGE LIMITS

MECHANICAL AND CORROSION:
The maximum depth of mech/corrosion damage to the forward firewall is 10% of the thickness of the part before repair and 15% after repair.

NUMBER AND AREA OF REPAIRS:
Only one repair may be made per area of damage. Damage area is limited to 1.00 sq. in. Areas must be spaced 2.0 in. apart from edge to edge.

FASTENERS:
Any loose, damaged, or missing fasteners shall be replaced immediately. Maximum allowable size for firewall to fuselage attachment is the hole size for the next size rivet.

EDGE CHAMFER TO REMOVE DAMAGE SHALL BE 0.0015 IN. X 45°.

NO CRACKS PERMITTED ANYWHERE ON FIREWALL.

REPLACE ANY CRACKED SEALS OR GASKETS.

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Forward Firewall — Damage Limits

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4-8-2. FORWARD FIREWALL — CLEANING/INSPECTION/REPAIR (CONT)

REPAIR

8. Replace forward firewall (1) if damaged beyond practical repair (Task 4-8-1). Repair firewall (1) (TM 1-1500-204-23).

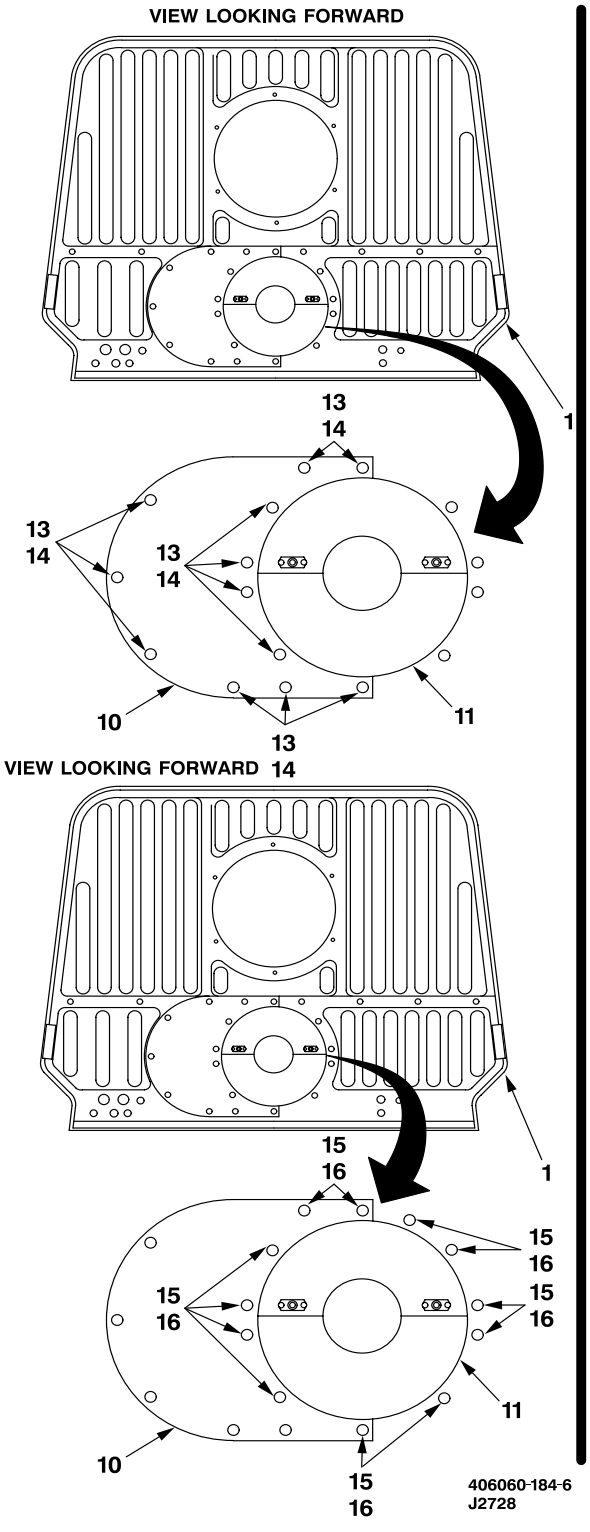
9. Replace unserviceable coverplate (10). Remove 12 bolts (13) and washers (14). Remove coverplate (10). Fabricate a new coverplate (10) (Appendix H).

10. Position new coverplate (10) onto firewall (1). Install 12 washers (14) and bolts (13) in coverplate (10) and firewall(1). Tighten bolts (13).

11. Replace or repair cover (11). Remove 12 bolts (13) and washers (14) and remove cover (11) and gaskets (8 and 9). (Refer to TM 1-1500-204-23 for repair.) If gaskets are unserviceable, fabricate gaskets (Appendix H).

12. Position cover (11) with gaskets (8 and 9) onto firewall (1). Install 12 washers (14) and bolts (13) in cover (11) and firewall (1). Tighten bolts (13).

13. Replace damaged nutplates (3) and receptacles (2) (TM 1-1500-204-23).



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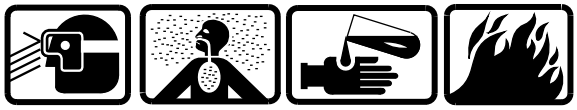


Acetone

14. Remove damaged seals (5, 6 and 7) and gasket (7.1). Discard seals and gasket. Remove adhesive from firewall (1) using acetone (D2).

15. Fabricate new gasket (7.1) (Appendix H).

16. Fabricate new seals (5, 6 and 7) (Appendix H).

17. Clean seal and gasket area with acetone (D2).

NOTE

Seals (5 and 7) and gaskets (7.1) shall be installed one at a time.

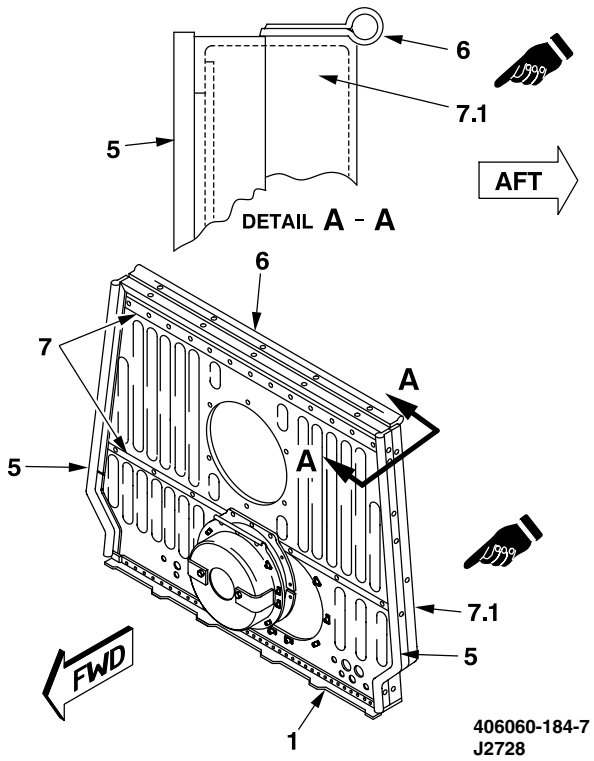
Adhesive

18. Apply thin, even coat of adhesive (D6) to mating surfaces of seals (5 and 7), gaskets (7.1), and forward firewall (1).

19. Allow 10 minutes drying time, or until adhesive is in tacky stage. Align seals (5 and 7) and gaskets (7.1) with forward firewall (1). Starting at one end, roll or press firmly in place to ensure complete contact. Trim seals (5 and 7) and gaskets (7.1) as necessary.

20. Remove excess adhesive with acetone (D2). Allow bond to set for 4 hours (minimum) at room temperature.

21. Apply thin, even coat of adhesive (D6) to mating surfaces of seal (6) and forward firewall (1). Align seal (6) with firewall (1), and starting at one end, roll or press firmly in place to ensure complete contact.



22. Remove excess adhesive with acetone (D2). Allow bond to set for 4 hours (minimum) at room temperature.

INSPECT

FOLLOW-ON MAINTENANCE

Install bellmouth assembly (Task 4-8-3).

END OF TASK

4-8-3. BELLMOUTH — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Airframe Repairer Tool Kit (B176)
Maintenance Stand (B162)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68G Aircraft Structure Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Removed (Task 2-2-47)
Air Induction Cowl Removed (Task 4-2-1)
Engine Cowl Assembly Removed (Task 2-2-50)

REMOVE

NOTE

Maintenance stand (B162) should be positioned as necessary to facilitate access to bellmouth.

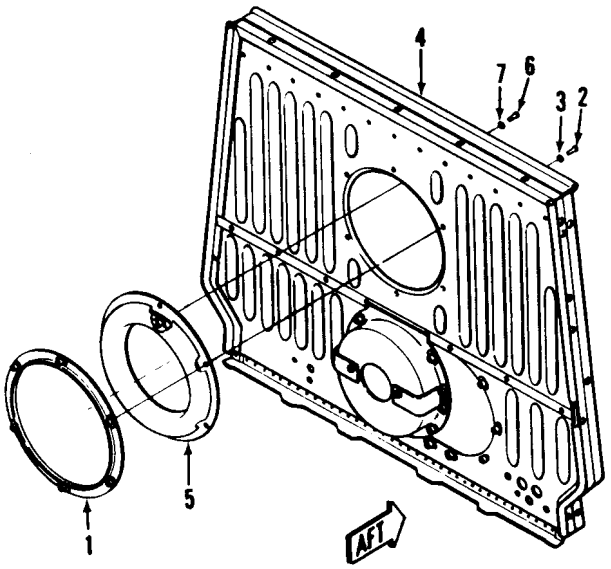
1. Remove retaining ring (1), six bolts (2), and six washers (3) from firewall (4).

2. Remove bellmouth assembly (5), six screws (6), and six washers (7).

INSTALL

3. Install bellmouth assembly (5) with six washers (7) and six screws (6).

4. Install retaining ring (1) with six washers (3) and six screws (2) on firewall (4).



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INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing (Task 2-2-47).

Install air induction cowl (Task 4-2-3).

Install engine cowl assembly (Task 2-2-50).

END OF TASK

4-8-4. FORWARD FIREWALL SEALS — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Plastic Scraper (B123)
Maintenance Stand (B162)

Material:
Acetone (D2)
Adhesive (D6)
Paint Brush (D54)
Crocus Cloth (D90)
Wiping Rag (D164)
Rubber Gloves (D111)
Abrasive Mats (D1)
Sealing Compound (D235)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Removed (Task 2-2-47)
Air Induction Cowling Removed (Task 4-2-1)
Engine Cowl Assembly Removed (Task 2-2-50)

GO TO NEXT PAGE

4-8-4. FORWARD FIREWALL SEALS — REMOVAL/INSTALLATION (CONT)

1. Position maintenance stand (B162) adjacent to forward firewall (1).

REMOVE

2. Remove old seals (2, 3 and 4) and gasket (4.1) from firewall (1) using a sharpened plastic scraper (B123).

Acetone

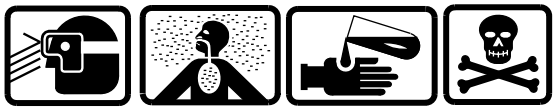
3. Remove old sealant using acetone (D2) and abrasive mats (D1).

4. Wipe dry with a wiping rag (D164).

INSTALL

5. Fabricate new gaskets (4.1) (Appendix H).

6. Fabricate new seals (2, 3 and 4) (Appendix H).



Adhesive

7. Apply a thin, even coat of adhesive (D6) to mating surfaces of seals (2 and 4), gaskets (4.1), and forward firewall (1).

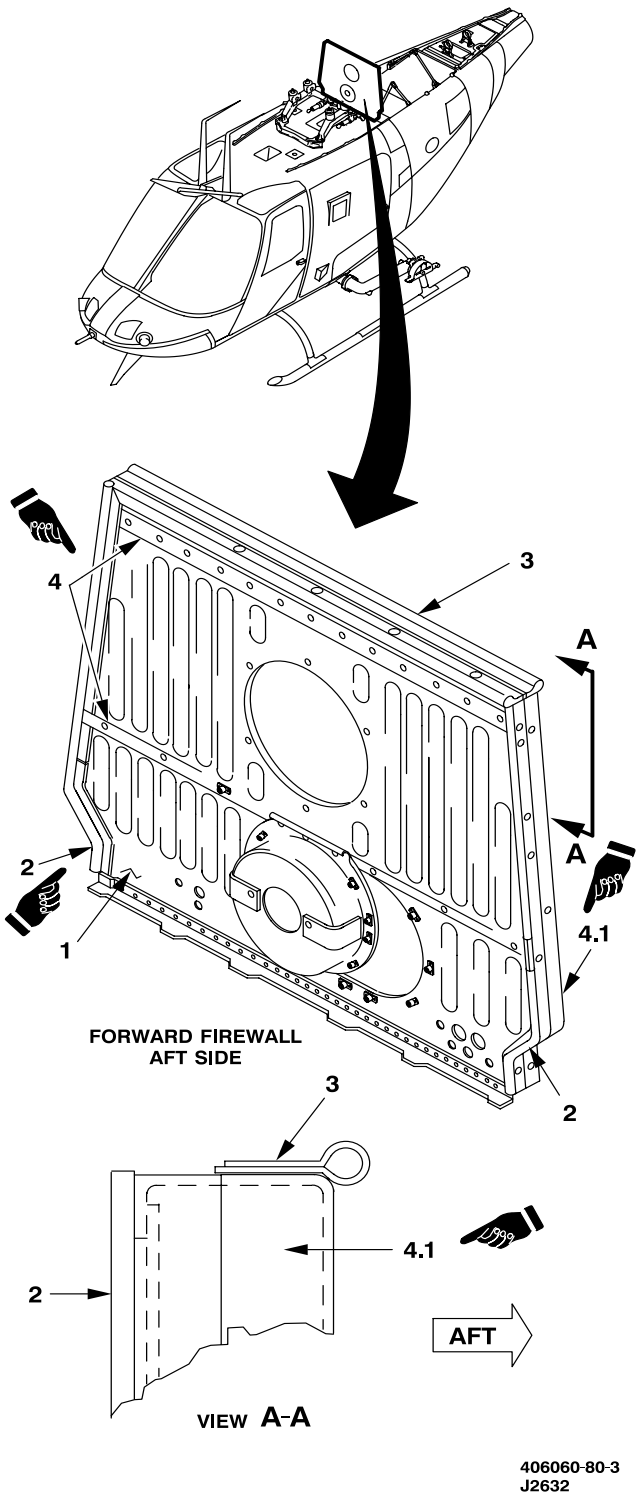
8. Allow approximately 10 minutes drying time, or until adhesive is in tacky stage. Align seals (2 and 4) and gaskets (4.1) on forward firewall (1). Starting at one end, roll or press firmly in place. Trim seals (2 and 4) and gaskets (4.1) as necessary.

9. Remove excess adhesive with acetone (D2). Allow bond to set 4 hours minimum.

10. Apply a thin, even coat of adhesive (D6) to mating surfaces of seal (3) and forward firewall (1).

11. Allow approximately 10 minutes drying time or until adhesive is in the tacky stage. Align seal (3) on forward firewall (1). Starting at one end roll or press firmly in place. Trim seal (3) as necessary.

INSPECT



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ALTERNATIVE METHOD

Acetone

NOTE

If new seals and gaskets, are dry rotted, cracked, or damaged and new seals and gaskets are not available, a bead of sealing compound may be used to fill in the damaged areas.

12. Clean seals using acetone (D2) and wiping rag (D164).

13. Wipe dry with a wiping rag (D164).

NOTE

Apply only enough sealing compound to fill the damaged area.

14. Apply sealing compound (D235) to the damaged area.

Acetone

15. Remove any excessive sealing compound (D235) with acetone (D2) and wiping rag (D164) and allow sealing compound to set up before installing forward fairing, engine cowl and air induction cowl.

INSPECT

FOLLOW-ON MAINTENANCE

Install engine cowl assembly (Task 2-2-50).

Install air induction cowl (Task 4-2-3).

Install forward fairing (Task 2-2-47).

END OF TASK

Section IX. AFT FIREWALL

4-24. AFT FIREWALL

4-25. INTRODUCTION

This section contains: maintenance procedures for removal and installation of the aft firewall and components. Standard torque tables are provided in Appendix P and TM 1-1500-204-23.

4-26. TASK LIST

The task list lists those tasks required to support unit and intermediate level maintenance.

LIST OF TASKS

4-9-1. AFT FIREWALL ASSEMBLY — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Airframe Repairer Tool Kit (B176)
Maintenance Stand (B162)

Material:
Corrosion Preventive Compound (CPC) (D82)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68G Aircraft Structural Repairer
Pilot

References:
TM 1-1520-248-10
TM 1-1520-248-CL
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Removed (Task 2-2-55)
Engine Cowl Assembly Removed (Task 2-2-50)
Aft Firewall Pan Removed (Task 4-9-3)

GO TO NEXT PAGE

4-9-1. AFT FIREWALL ASSEMBLY — REMOVAL/INSTALLATION (CONT)

REMOVE

Lubricating Oil

NOTE

- Maintenance stand (B162) should be positioned as necessary to facilitate access to engine.
- Protective caps or plugs shall be installed in all open lines and fittings.

1. Disconnect the following lines from both ends of typical fitting (1) in aft firewall (2):

   a. Engine oil out (3).

   b. Oil tank vent (4).

   c. Engine oil in (5).

2. Remove typical fitting (1) from aft firewall (2) by removing nut (6) and washer (7).

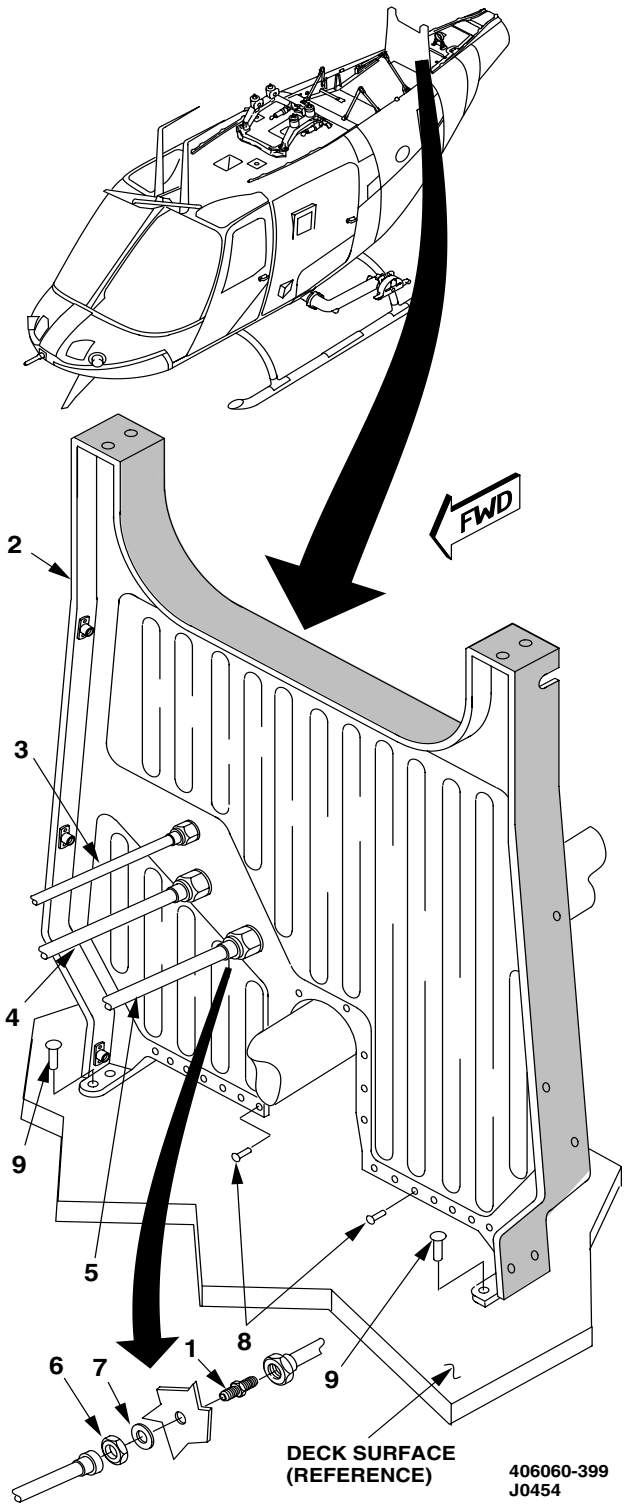
3. Remove rivets (8) per accepted procedures in TM 1-1500-204-23.

4. Remove rivets (9) per accepted procedures in TM 1-1500-204-23.

5. Remove aft firewall (2) from helicopter.

INSTALL

6. Position aft firewall (2) onto helicopter.



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7. Install rivets (8) per accepted procedures in TM 1-1500-204-23.

8. Install rivets (9) per accepted procedures in TM 1-1500-204-23.

9. Perform Class S electrical bond between typical fitting (1) and aft firewall (2) (Appendix M).

10. Position typical fitting (1) in aft firewall (2) and install washer (7) and nut (6).

NOTE

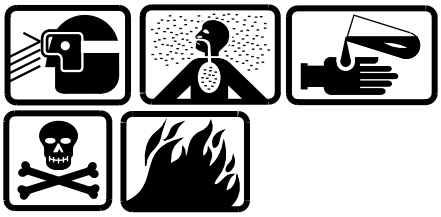
Remove protective caps and plugs.

11. Install the following lines on both sides of typical fitting (1):

a. Engine oil out (3).

b. Oil tank vent (4).

c. Engine oil in (5).



Corrosion Preventive Compound

CAUTION

CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals or damage to equipment may result.

12. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.

INSPECT

FOLLOW-ON MAINTENANCE

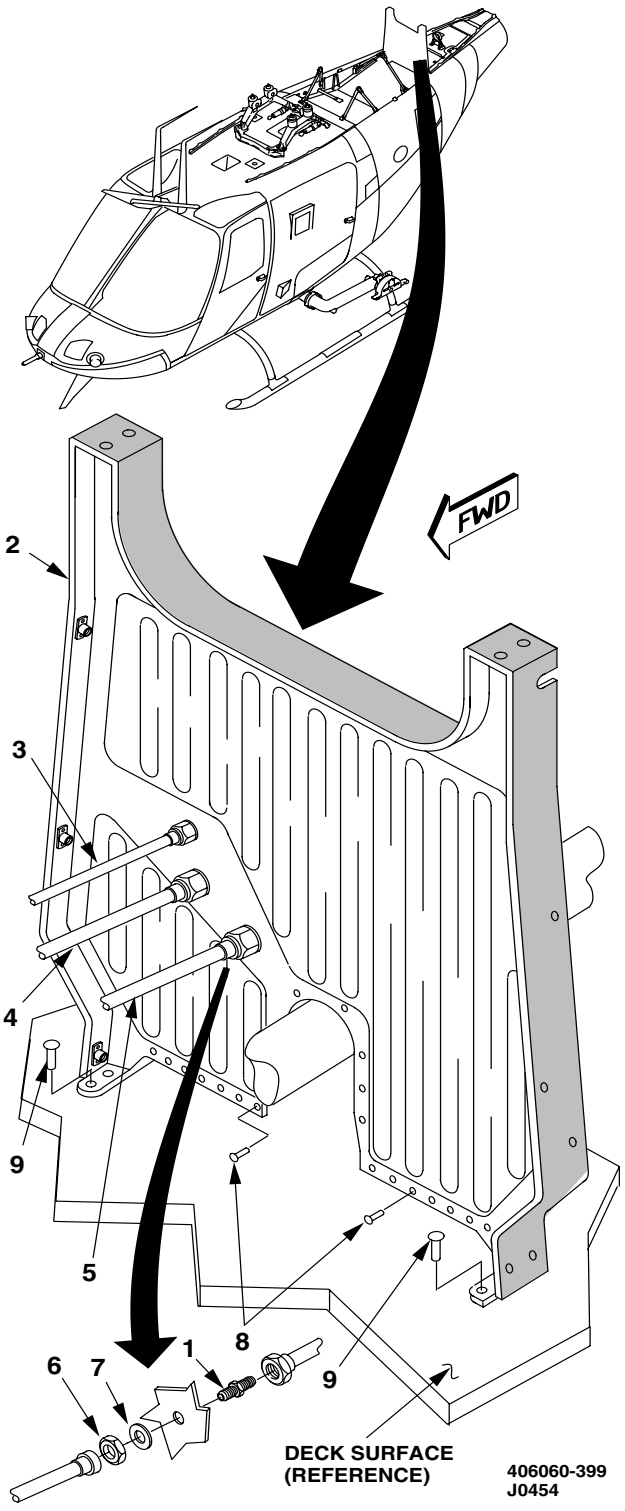
Install aft firewall pan (Task 4-9-3).

Service engine oil tank (Task 1-4-6).

Install engine cowl assembly (Task 2-2-50).

Install aft fairing (Task 2-2-55).

Pilot perform MOC (TM 1-1520-248-10/CL).



END OF TASK

4-9-2. AFT FIREWALL — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Maintenance Stand (B162)

Material:
Drycleaning Solvent (D199)
Rubber Gloves (D111)
Wiping Rags (D164)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

References:
TM 1-1500-204-23
TM 1-1520-266-23

GO TO NEXT PAGE

4-9-2. AFT FIREWALL — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN

Drycleaning Solvent

NOTE

Maintenance stand (B162) should be positioned as necessary to facilitate access to aft firewall.

1. Wearing rubber gloves (D111), clean aft firewall (1) with drycleaning solvent (D199) and wiping rags (D164).

2. Dry with wiping rags (D164).

INSPECT

3. Inspect aft firewall (1) to limits shown for cracks and damaged, loose, or missing receptacles (2) and rivets (3). See figure Aft Firewall — Damage Limits.

3.1. If a crack in the aft firewall is suspected, refer to TM 1-1520-266-23.

4. Inspect aft firewall (1) for damaged, loose, or missing seal (4).

5. Inspect aft firewall (1) for damage, cracks, elongated bolt holes, and evidence of wear or corrosion.

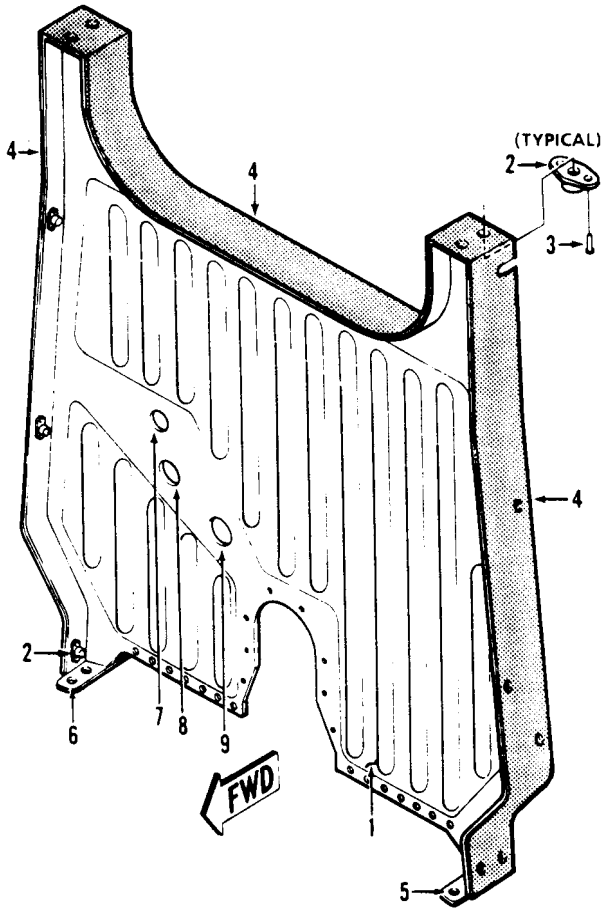
5.1. If a crack in the aft firewall suspected, refer to TM 1-1520-266-23.

6. Inspect aft firewall (1) for damaged brackets (5 and 6).

6.1. If a crack in the aft firewall brackets is suspected, refer to TM 1-1520-266-23.

7. Inspect aft firewall (1) for cracked fitting holes (7, 8, and 9).

7.1. If a crack in the fitting hole is suspected, refer to TM 1-1520-266-23.



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4-9-2. AFT FIREWALL — CLEANING/INSPECTION/REPAIR (CONT)

REPAIR

8. Replace aft firewall (1) if damaged beyond repair limits shown.

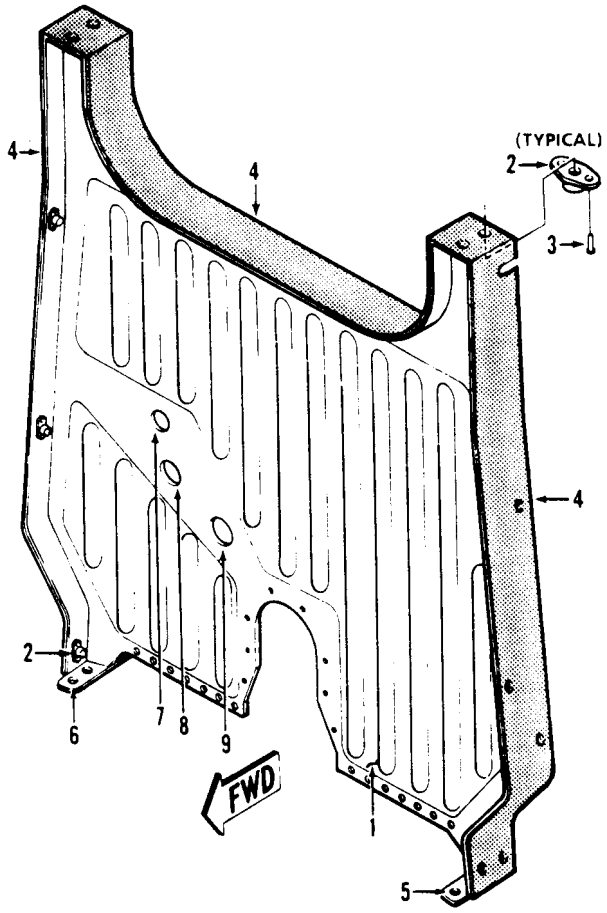
9. Replace damaged or missing seal (4) (Task 4-9-4).

10. Repair cracks and damaged or missing receptacles (2) and rivets (3) per TM 1-1500-204-23.

11. Repair damaged brackets (5 and 6) and cracked or damaged fitting holes (7, 8, and 9) per TM 1-1500-204-23.

12. Repair elongated bolt holes, wear, and corrosion per TM 1-1500-204-23.

INSPECT



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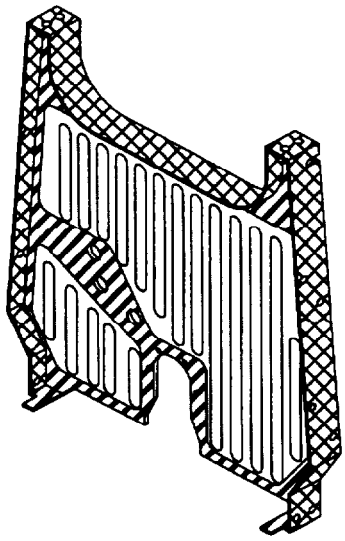
4-9-2. AFT FIREWALL - CLEANING/INSPECTION/REPAIR (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH		
MAXIMUM DAMAGE DEPTH	0.002 in.	0.003 in.	0.001 in.
MAXIMUM REPAIR DEPTH	0.003 in.	0.005 in.	0.002 in.
MAXIMUM AREA PER FULL DEPTH REPAIR	0.20 sq. in.	0.20 sq. in.	0.20 sq. in.
MAXIMUM EDGE CHAMFER	0.0020 in. X 45°	0.0032 in. X 45°	0.0015 in. X 45°
MAXIMUM NUMBER OF REPAIRS	One	One	One

NEGLIGIBLE DAMAGE LIMITS

MECHANICAL AND CORROSION:
The maximum depth of mech/corrosion damage to the forward firewall is 10% of the thickness of the part before repair and 15% after repair.

NUMBER AND AREA OF REPAIRS:
Only one repair may be made per area of damage. Damage area is limited to 0.50 in. dia. circle. Areas must be spaced 2.0 in. apart from edge to edge.

FASTENERS:
Any loose, damaged, or missing fasteners shall be replaced immediately. Maximum allowable size for firewall to fuselage attachment is the hole sior the next size rivet.

EDGE CHAMFER TO REMOVE DAMAGE SHALL BE 0.0015 IN. X 45°.

NO CRACKS PERMITTED ANYWHERE ON FIREWALL.

REPLACE ANY CRACKED SEALS OR GASKETS.

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Aft Firewall - Damage Limits

END OF TASK

4-9-3. AFT FIREWALL PAN — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Airframe Repairer Tool Kit (B176)
Maintenance Stand (B162)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
68G Aircraft Structural Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Removed (Task 2-2-55)
Engine Cowl Assembly Removed (Task 2-2-50)

GO TO NEXT PAGE

4-9-3. AFT FIREWALL PAN — REMOVAL/INSTALLATION (CONT)

REMOVE

NOTE

Maintenance stand (B162) should be positioned as necessary to facilitate access to aft firewall pan.

1. Remove left aft firewall pan (1) and/or right aft firewall pan (2) by accomplishing the following:

a. Remove nuts (3), washers (4), and bolts (5).

b. Remove bolts (6) and washers (7).

c. Remove left aft firewall pan (1) and/or right aft firewall pan (2) from aft firewall (8).

INSTALL

2. Position left aft firewall pan (1) and/or right aft firewall pan (2) onto aft firewall (8) and accomplish the following:

a. Install bolts (5), washers (4), and nuts (3).

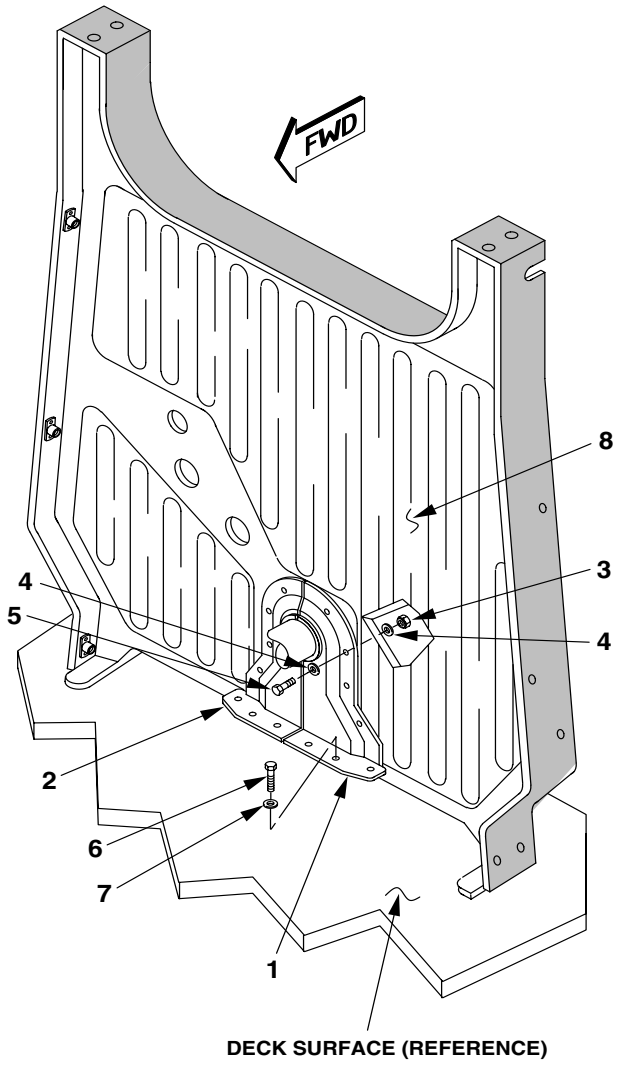
b. Install bolts (6) and washers (7).

INSPECT

FOLLOW-ON MAINTENANCE

Install aft fairing (Task 2-2-55).

Install engine cowl assembly (Task 2-2-50).



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END OF TASK

4-9-4. AFT FIREWALL SEAL — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Plastic Scraper (B123)
Maintenance Stand (B162)

Material:
Acetone (D2)
Adhesive (D6)
Paint Brush (D54)
Wiping Rag (D164)
Rubber Gloves (D111)
Abrasive Mats (D1)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Aft Fairing Removed (Task 2-2-55)
Engine Cowl Assembly Removed (Task 2-2-50)

GO TO NEXT PAGE

4-9-4. AFT FIREWALL SEAL — REMOVAL/INSTALLATION (CONT)

1. Position maintenance stand (B162) adjacent to aft firewall (1).

REMOVE

2. Remove old seal (2) from aft firewall (1) using a plastic scraper (B123).

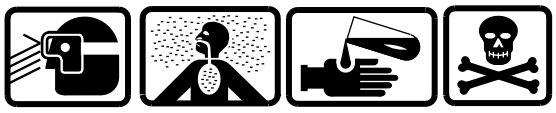
Acetone

3. Remove old sealant using acetone (D2) and abrasive mats (D1).

4. Wipe dry with a wiping rag (D164).

INSTALL

5. Fabricate new seal (2) (Appendix H).



Adhesive

6. Apply a thin, even coat of adhesive (D6) to mating surface of seal (2) and aft firewall (1).

7. Allow approximately 10 minutes drying time, or until adhesive (D6) is in the tacky stage. Align seal (2) on aft firewall (1). Starting at one end, roll or press firmly in place. Trim seal (2) as necessary.

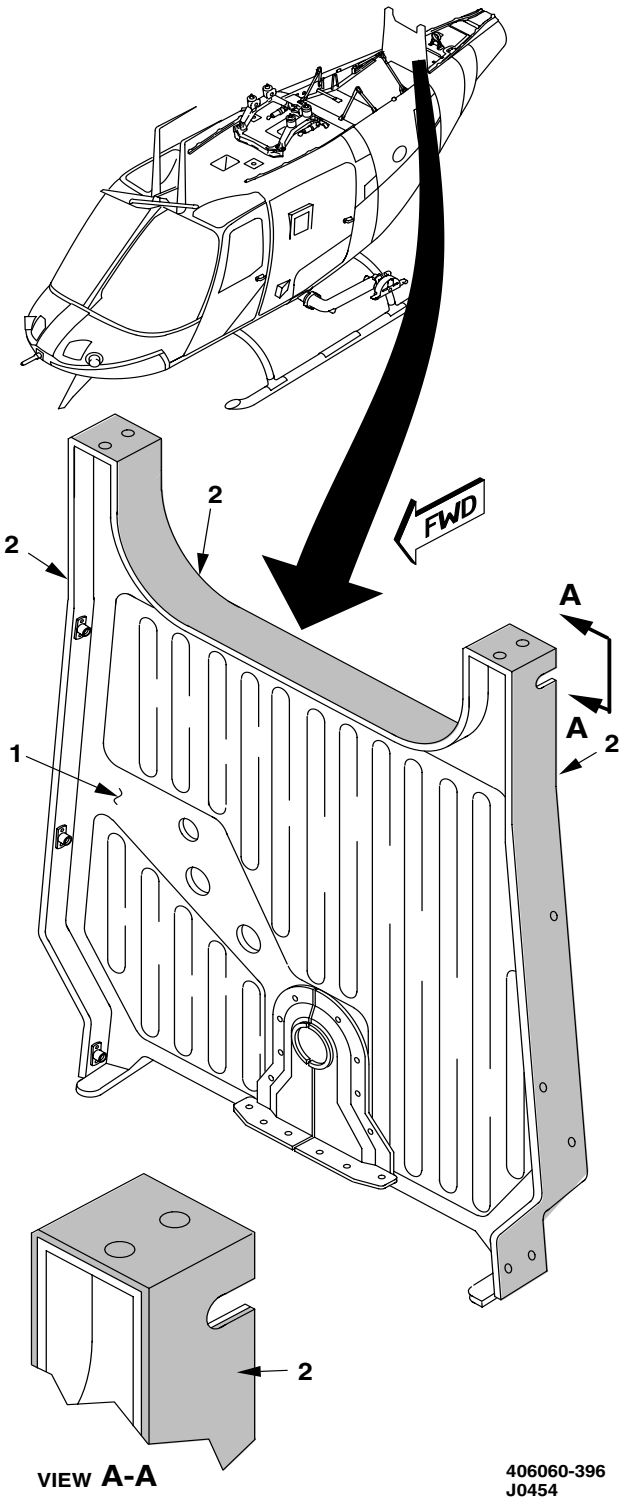
8. Remove excess adhesive (D6) with acetone (D2). Allow bond to set for 4 hours (minimum) at room temperature.

INSPECT

FOLLOW-ON MAINTENANCE

Install engine cowl assembly (Task 2-2-50).

Install aft fairing (Task 2-2-55).



END OF TASK

CHAPTER 5

ROTORS

5-1. ROTORS

This chapter consists of five sections and contains information and instructions to accomplish maintenance on rotors. Supplemental procedures for main and tail rotor tracking and dynamic balancing can be found in Aviation Vibration Analyzer (AVA) manual TM 1-6625-724-13&P.

Section I. MAIN ROTOR HUB BLADE ASSEMBLY

5-2. MAIN ROTOR HUB AND BLADE ASSEMBLY

hub and blade assembly and its components. Standard torques are in Appendix P and TM 1-1500-204-23.

5-3. INTRODUCTION

This section contains maintenance procedures for repair, replacement, and inspection of main rotor

5-4. TASK LIST

The task list lists those tasks required to support unit and intermediate level maintenance.

LIST OF TASKS

LIST OF TASKS (CONT)

5-1-1. MAIN ROTOR HUB AND BLADE ASSEMBLY — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (2) (B162)
Hoist (B69)
Helicopter Hoisting Sling Assembly (B149)
Main Rotor Hub Support (B166)

Personnel Required:
67S Scout Helicopter Repairer (3)

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)
Mast Mounted Sight Removed (TM 9-1240-778-23)
Torquemeter Support and Bearing Assembly Removed (Task 6-4-5)

GO TO NEXT PAGE

NOTE

- If blades are to be removed before removing hub, refer to Task 5-1-6.
- A rattle-type noise may be observed in the blade tip area when installed blades are rapped or shaken. This noise is normal and should not be cause for concern. The noise originates from movement of the product balance weights installed in the leading and trailing edge weight pockets. These weights are loose-fit over three internal bosses on the pocket covers. The weights are held in place by centrifugal force and can not rattle during rotor operation.

1. Position maintenance stands (B162) adjacent to transmission on both sides of helicopter.

2. Attach helicopterhoisting sling assembly (B149) to hoist (B69) and main rotor hub and blade assembly (1). Raise hoist enough to support hub and blade assembly.

3. Cut lockwire from pitch horns (2) and attaching bolts (3) in four places.

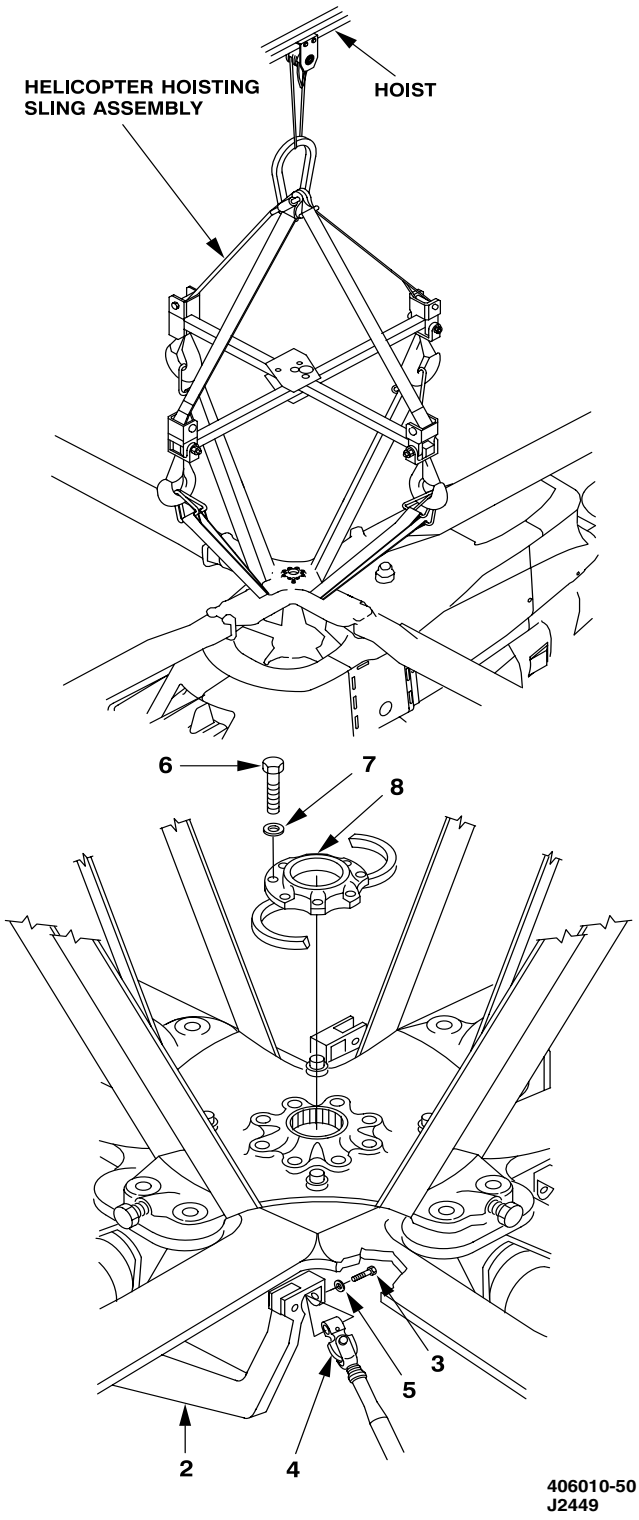
4. Disconnect pitch links (4) by removing four bolts (3) and washers (5).

NOTE

Barrel nut and retainer should be located with pitch link or taped in place to keep barrel nut from falling out of pitch horn.

5. Tape or tie pitch links clear of main rotor hub and blade assembly.

6. Cut lockwire from eight bolts (6) and remove bolts (6) and washers (7) from upper cone plate assembly (8).



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5-1-1. MAIN ROTOR HUB AND BLADE ASSEMBLY — REMOVAL (CONT)

6.1. If two-piece lower cone, P/N 406-010-134-105 is installed, cut lockwire from eight bolts (9) and remove bolts (9) with washers (10) from lower cone (11). Remove cone (11).

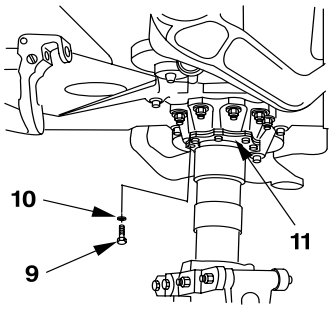
7. If one-piece lower cone, P/N 406-010-134-103 is installed, cut lockwire from eight bolts (9) and remove bolts (9) with washers (10) from lower cone (11). Move lower cone (11) down on mast to clear main rotor hub and blade assembly (1).

8. Lower hub and blade assembly (1) slightly on mast and remove upper cone plate assembly (8).

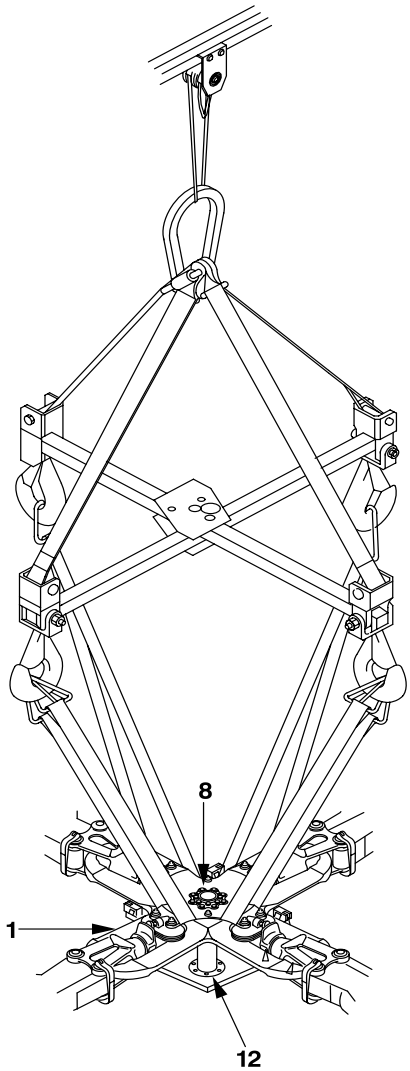
9. Lift main rotor hub and blade assembly (1) off mast.

10. Remove lower cone (11) from mast.

11. Lower main rotor hub and blade assembly (1) and place on main rotor hub support assembly (12) (B166).



VIEW LOOKING UP



406010-49
J2449

END OF TASK

5-1-2. MAIN ROTOR HUB AND BLADE ASSEMBLY — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Main Rotor Hub and Blade Sling (B151)
Hoist (B69)
Torque Wrench (B236)
Torque Wrench (B237)
Torque Wrench (B239)
Torque Wrench (B240)

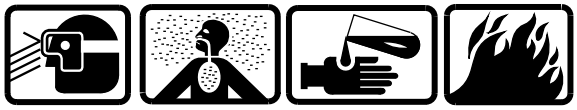
Material:
Drycleaning Solvent (D199)
Wiping Rags (D164)
Abrasive Pad (D147)
Corrosion Preventive Compound (CPC) (D82)
Corrosion Preventive Compound (CPC) (D83)
Lockwire (D132)
Rubber Gloves (D111)
Sealant (D180)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer (3)
Maintenance Test Pilot

References:
TM 1-1520-248-T
TM 9-1240-778-23
TM 1-6625-724-13&P
TM 1-1520-248-MTF

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Main Rotor Hub Upper Cone Plate Assembly Cleaned and Inspected (Task 5-1-3)
Main Rotor Hub Lower Cone Cleaned and Inspected (Task 5-1-4)

GO TO NEXT PAGE



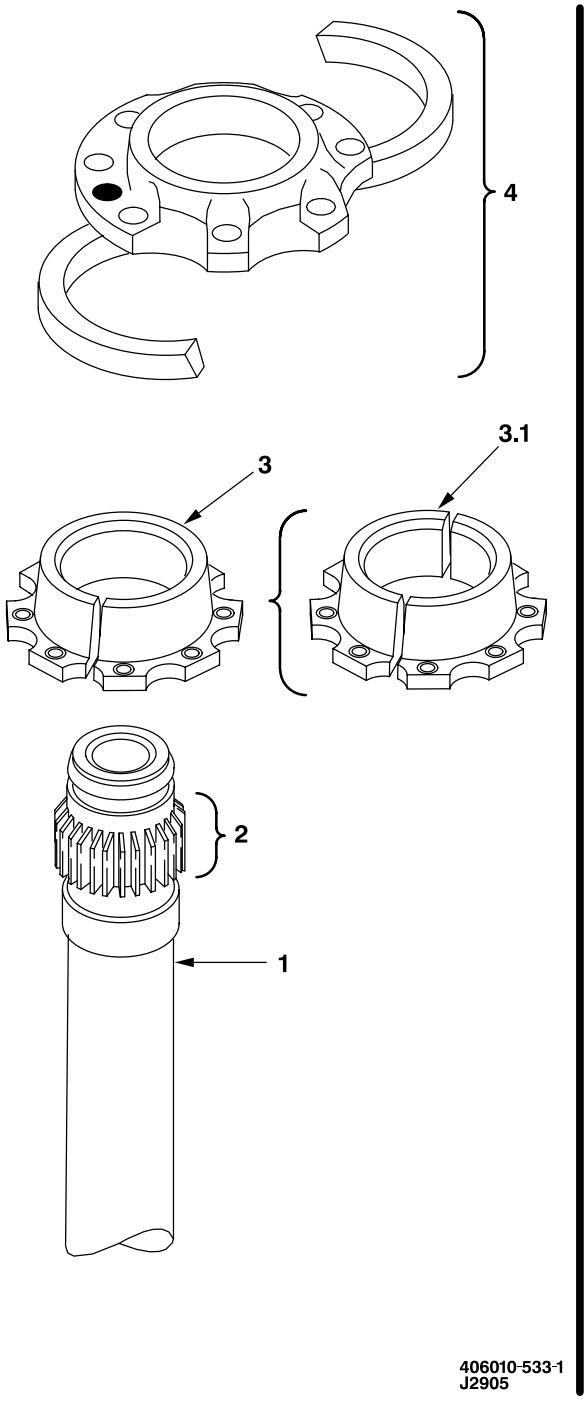
Drycleaning Solvent

CAUTION

- If mast assembly P/N 406-040-011-107 is installed, one-piece lower cone P/N 406-010-129-103 will be used.
- If mast assembly P/N 406-040-011-105 is installed, two-piece lower cone P/N 406-010-134-105 will be used.

1. Clean mast (1) in area of splines (2), lower cone (3 or 3.1), and mast cap plate assembly (4) with drycleaning solvent (D199) and wipe dry with wiping rags (D164).

2. Position one-piece lower cone (3) onto mast (1) with beveled side up.



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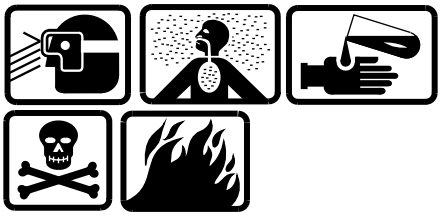


Corrosion Preventive Compound

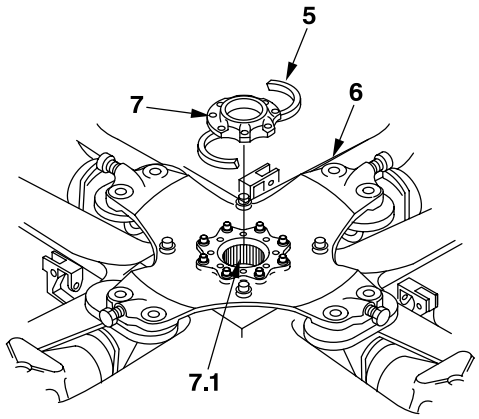
3. Apply CPC (D82) to mast splines (2). Allow CPC to stand undisturbed for 20 minutes minimum.

CAUTION

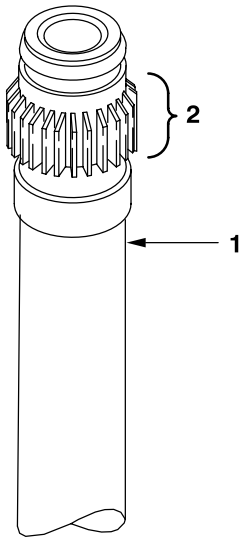
To prevent failure of installation, CPC shall not be allowed to contact lower cone liner or liner mating surfaces.

4. Apply thin coat of CPC (D83) to mating surfaces of mast (1), upper cone set (5), main rotor hub and blade assembly (6) and mast cap plate (7).

5. Apply thin coat of CPC (D82) to mast splines (2) and drive ring splines (7.1).



VIEW LOOKING DOWN



406010-533-13
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GO TO NEXT PAGE

6. Attach main rotor hub and blade sling assembly (B151) to hoist (B69) and main rotor hub and blade assembly (6).

7. Raise main rotor hub and blade assembly (6).

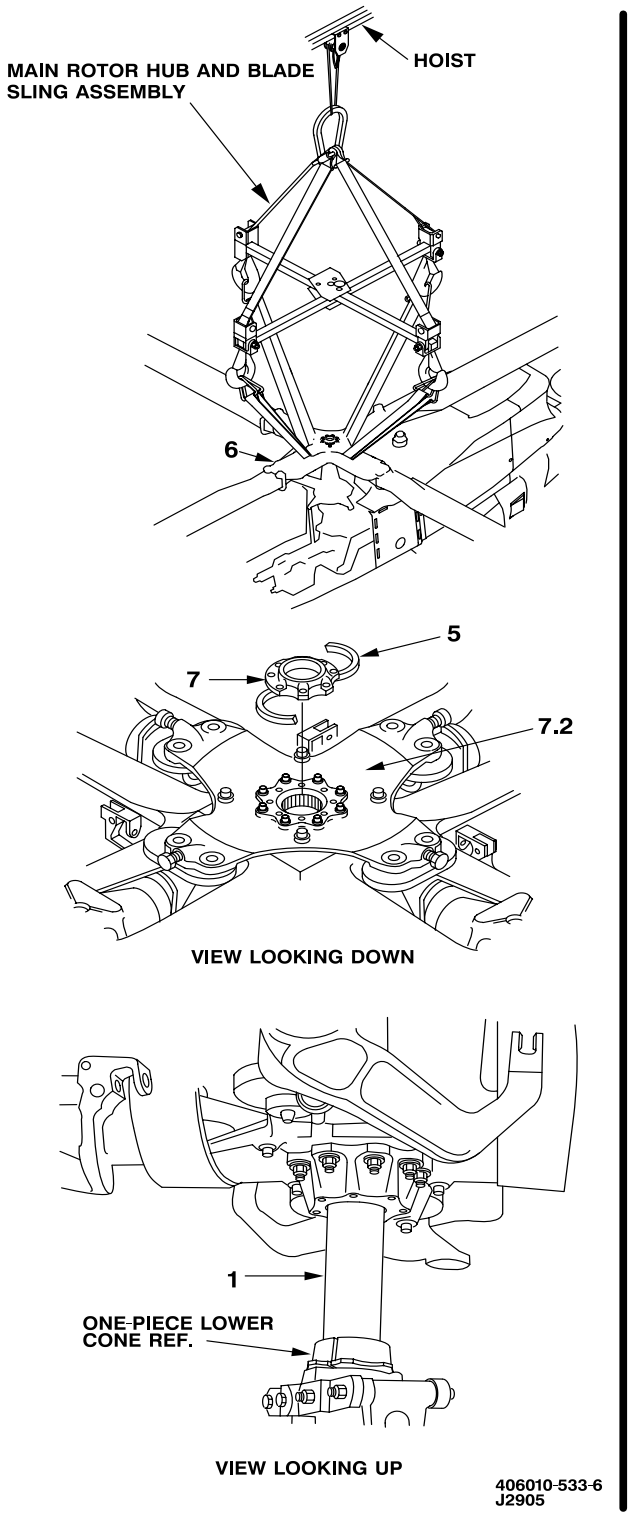
8. Align master tooth of main rotor hub and blade assembly (6) with master tooth on mast (1) and install main rotor hub and blade assembly on mast.

NOTE

Pitch change links shall be repositioned to eliminate interference with installation of main rotor hub.

9. Lower main rotor hub and blade assembly (6) onto mast (1) until mast cap plate (7) can be installed on mast, and rotate upper cone set (5) into recess on mast.

10. Raise main rotor hub and blade assembly (6) until upper plate assembly (7.2) contacts mast cap plate (7).



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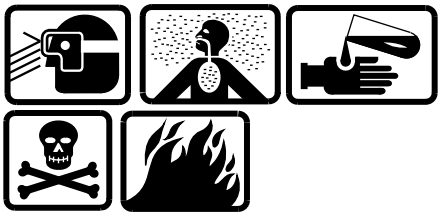


Corrosion Preventive Compound

CAUTION

To prevent erroneous torque values, CPC shall not be applied to bolt threads.

11. Apply a thin coat of CPC (D83) only under head and to shank of bolts (8).

12. Install eight bolts (8) and washers (9) finger tight. Do not torque.

CAUTION

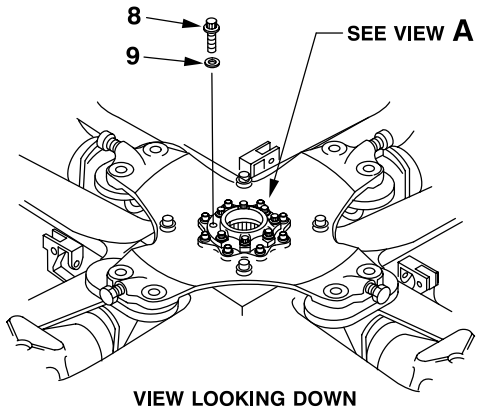
To prevent erroneous torque values, CPC shall not be applied to bolt threads.

13. Apply a thin coat of CPC (D83) under head and shank only of bolts (10).

13.1. Raise one-piece lower cone (3) into position or if applicable install two-piece lower cone (3.1).

14. Install eight bolts (10) and washers (11) in main rotor hub lower cone (3 or 3.1) finger tight. Do not torque.

15. Torque mast cap plate assembly bolts (8) in numbered sequence, as shown, to the following values in steps: **30 INCH-POUNDS, 50 INCH-POUNDS, 70 INCH-POUNDS, 90 INCH-POUNDS, 110 INCH-POUNDS,** and finally **115 TO 135 INCH-POUNDS**. Check torque in numerical sequence until specified torque of **115 TO 135 INCH-POUNDS** is obtained.



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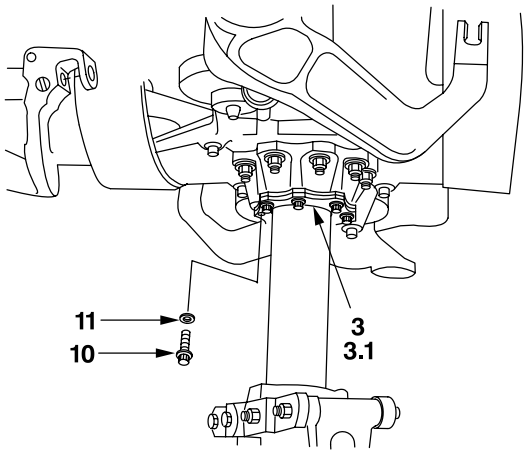

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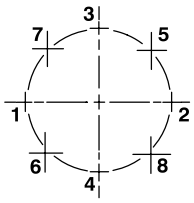


VIEW **A**

TORQUE SEQUENCE UPPER CONE PLATE ASSEMBLY LOOKING DOWN

406010-533-9
J2905

GO TO NEXT PAGE

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PART (FSCAP)

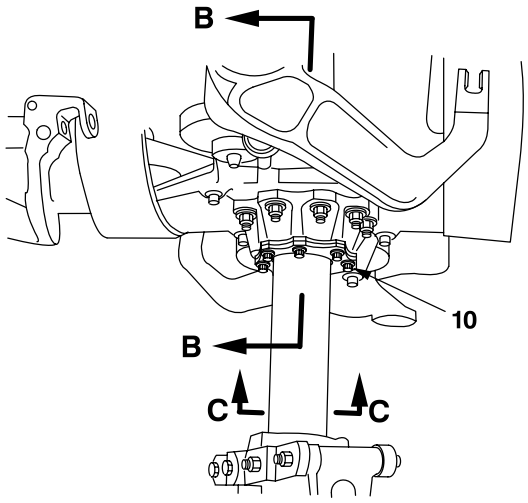
Correct lockwiring of bolts (8) is a characteristic critical to flight safety.

16. Secure bolts (8) in pairs with lockwire (D132)

NOTE

Following torque sequence consists of 10-bolt pattern with eight bolts. Two bolts get torqued twice in accordance with view shown.

17. Torque main rotor hub lower cone bolts (10) in numbered sequence, as shown, to the following values in steps: **30 INCH-POUNDS, 50 INCH-POUNDS, 70 INCH-POUNDS, 90 INCH-POUNDS, 110 INCH-POUNDS,** and finally **150 TO 170 INCH-POUNDS**. Repeat pattern at each torque value until no bolt turning is detected with the application of specified torque. After each torque value is achieved, measure the spacing requirement (View B), at each bolt location (eight places; adjacent to bolts (10)). The measurements are to be equal within **0.010 inch**.



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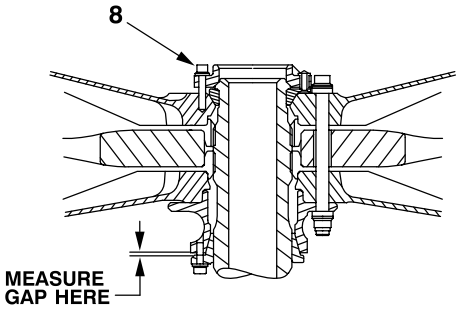
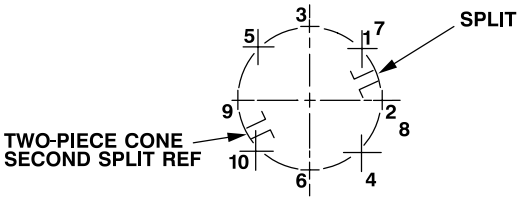


SECTION **B-B**



VIEW **C-C**

TORQUE SEQUENCE
LOWER CONE
LOOKING UP

406010-533-11
J2905

GO TO NEXT PAGE

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PART (FSCAP)

Correct lockwiring of bolts (10) is a characteristic critical to flight safety.

18. Secure bolts (10) in pairs with lockwire (D132).

Corrosion Preventive Compound

19. Coat heads of bolts (8) and (10) with CPC (D82).

20. Install four barrel nuts (12) and four retainers (13), if removed, on four pitch horns (14).

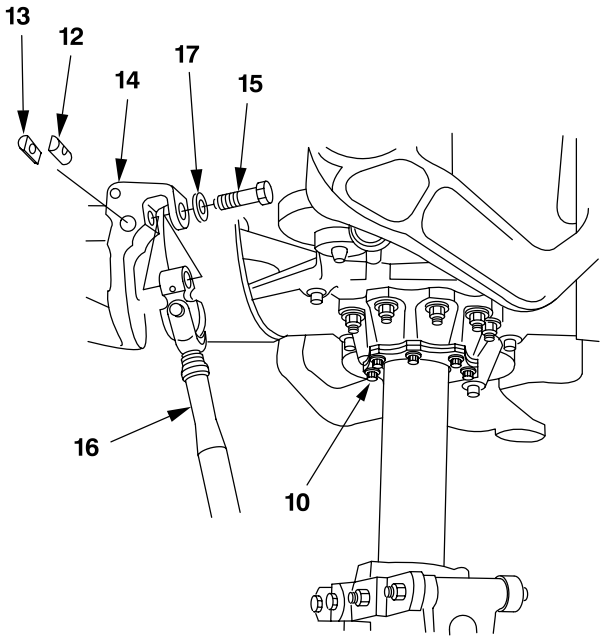
CAUTION

To prevent incorrect torque values, CPC (D82) shall not be applied to bolt (15) threads.

21. Apply thin coat of CPC (D82) to bolts (15) under head and on shank only.

22. Connect four pitch links (16) to four pitch horns (14) with washers (17) and bolts (15).

23. Torque bolts (15) **90 TO 110 INCH-POUNDS**. Secure with lockwire (D132).



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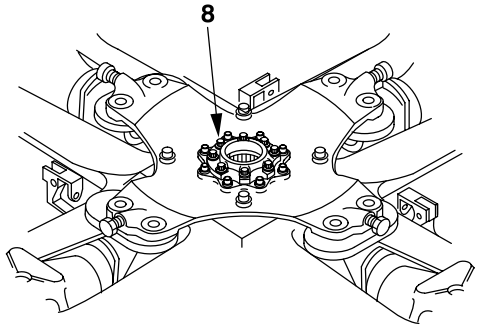

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406010-533-12
J2905

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Sealing Compound

23.1. Apply sealant (D180) to areas shown in section B - B.

NOTE

Sealant must be flush with edge of mast cap plate to allow clearance with next assembly.

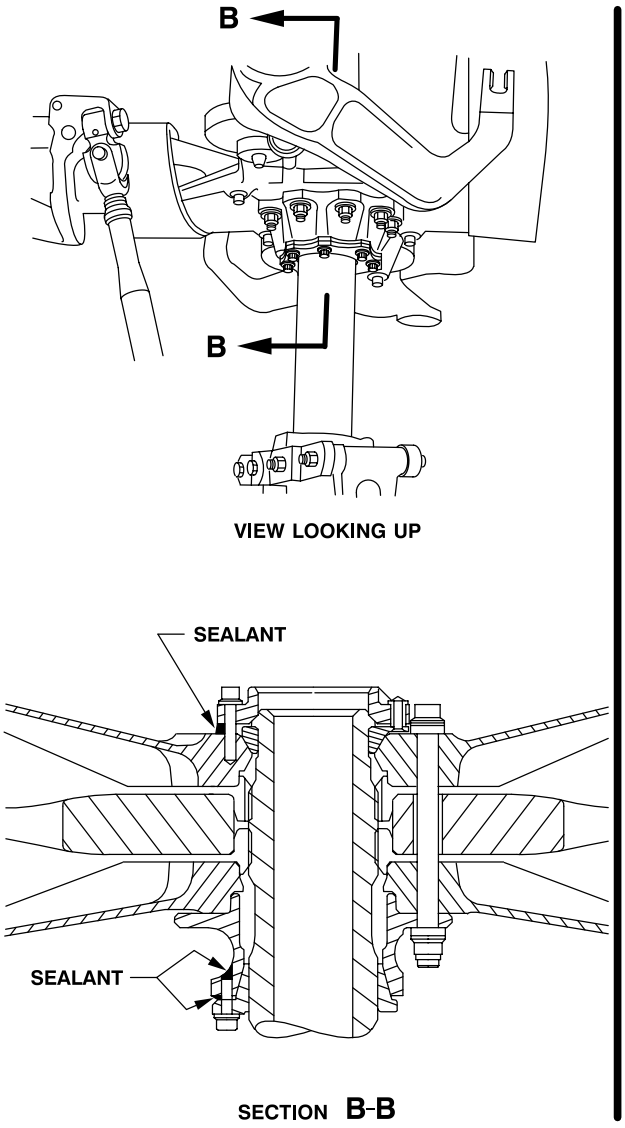
Corrosion Preventive Compound

CAUTION

To prevent failure of bearings and seals, CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals.

24. After assembly, apply light coat of CPC (D82) to external areas and exposed threads that are exposed to the environment.

INSPECT



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5-1-2. MAIN ROTOR HUB AND BLADE ASSEMBLY — INSTALLATION (CONT)

FOLLOW-ON MAINTENANCE

Install torquemeter support and bearing (Task 6-4-11).

Perform mast torque calibration (TM 1-1520-248-T).

Install mast mounted sight (TM 9-1240-778-23).

Install forward fairing assembly (Task 2-1-28).

Track and balance main rotor hub and blade assembly as required (TM 1-6625-724-13&P).

Perform retorque (Chapter 1, Section IX).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF)

END OF TASK

5-1-3. MAIN ROTOR UPPER CONE PLATE ASSEMBLY — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)

Material:
LHE Cadmium Solution (D129)
Drycleaning Solvent (D199)
Wiping Rags (D164)
Sandpaper (D175)
Crocus Cloth (D90)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

References:
TM 1-1500-204-23
TM 1-1500-344-23
TM 1-1520-266-23

CLEAN

Drycleaning Solvent

1. Clean plate assembly surface with drycleaning solvent (D199).

2. Dry plate assembly with wiping rags (D164).

INSPECT

3. Inspect plate assembly to limits shown; reject if limits are exceeded. See Figure Main Rotor Upper Cone Plate Assembly — Damage Limits.

3.1. If a crack on the upper cone plate assembly is suspected, refer to TM 1-1520-266-23.

4. Inspect cadmium plating on upper cone plate assembly for scratches, nicks, and areas worn through to base metal.

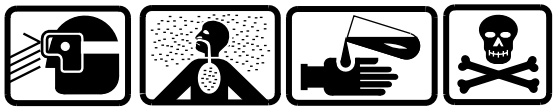
5. Inspect bushings for cracks and rivets for wear and damage.

REPAIR

Sanding Operations

6. Polish out repairable damage with 400 grit sandpaper (D175).

7. Remove any sanding marks with crocus cloth (D90).



LHE Cadmium Solution

8. Touch up finish of main rotor upper cone plate with a brush coat of LHE cadmium plate (D129) (TM 1-1500-344-23).

9. Replace worn or damaged rivets (TM 1-1500-204-23).

INSPECT

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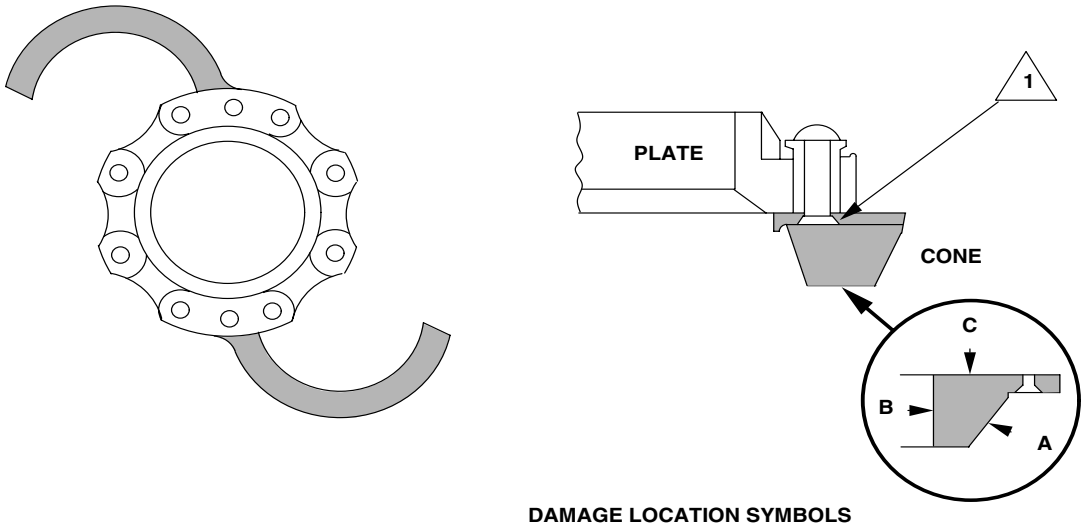

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH AREAS A, B, AND C	
MECHANICAL AND CORROSION	0.002 In. before and after repair	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.05 Sq. in.	0.05 Sq. in.
NUMBER OF REPAIRS	One per surface	
EDGE CHAMFER TO REMOVE DAMAGE	0.010 In.	0.020 In.
BORES	0.001 Inch for 1/4 circumference	

NOTES

1. Protrusion of rivet head must not exceed 0.002 inch above surface. Grinding or shaving is permissible.

2. No cracks are permitted.

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J0454

Main Rotor Upper Cone Plate Assembly — Damage Limits

END OF TASK

5-1-4. MAIN ROTOR HUB LOWER CONE — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

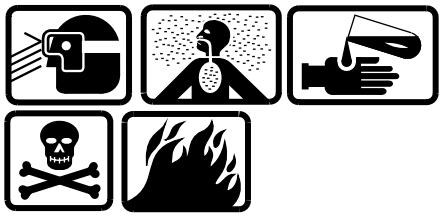
Tools:
General Mechanic Tool Kit (B178)

Material:
Aliphatic Naphtha (D141)
Wiping Rags (D164)
Sandpaper (D175)
Crocus Cloth (D90)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1520-266-23

CLEAN



Naphtha/Naphthalene, TT-N-97

1. Clean lower cone set surface with naphtha (D141).

2. Dry lower cone set with wiping rags (D164).

INSPECT

3. Inspect plate assembly to limits shown; reject if limits are exceeded. See figure Main Rotor Hub Lower Cone — Damage Limits.

3.1. If a crack on the lower cone is suspected, refer to TM 1-1520-266-23.

REPAIR

Sanding Operations

4. Polish out repairable damage with 400 grit sandpaper (D175).

5. Remove any sanding marks with crocus cloth (D90).

INSPECT

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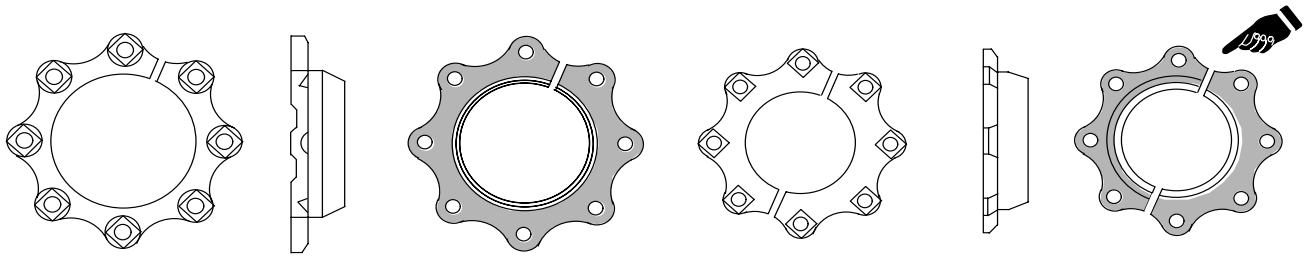
5-1-4. MAIN ROTOR HUB LOWER CONE — CLEANING/INSPECTION/REPAIR (CONT)



406-010-129-103

406-010-134-105

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.005 In. before and after repair	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.05 Sq. in.	0.010 Sq. in.
NUMBER OF REPAIRS	One per lug	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.020 X 45°	0.020 X 45°
BORE DAMAGE	0.002 For 1/4 circumference	
THREAD DAMAGE		
Depth	1/3 Of thread	
Length	1/4 Of circumference	
Number	One per threaded hole	
TEFLON DAMAGE:		
Tears or cuts	1 2	
Voids	3	

NOTES

1. Tears or cuts not penetrating to the base metal nor resulting in loose fabric in an area extending more than 0.125 inch on either side of defect are acceptable.
2. Loose Teflon fabric within 0.125 inch from edge may be trimmed.
3. Not to exceed 0.25 sq. in.
4. No cracks are permitted.
5. All dimensions are in inches.

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J2899

Main Rotor Hub Lower Cone — Damage Limits

END OF TASK

5-1-5. MAIN ROTOR BLADES — REMOVAL/CLEANING/INSPECTION/INSTALLATION

This task covers: Removal and Installation

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)
Hoist (B69)
Main Rotor Hub and Blade Sling (B151)
Torque Wrench (B242)
Socket (B155)
Taper Driftpin (B39)

Material:
Corrosion Preventive Compound (CPC) (D82)
Corrosion Preventive Compound (CPC) (D83)
Drycleaning Solvent (D199)
Wiping Rags (D164)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer (2)
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-6625-724-13&P

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

REMOVE

WARNING

To avoid damage to blades or injury to personnel, if hoist is not available blades shall be lifted by hand only if two maintenance stands and three persons are present.

NOTE

A rattle-type noise may be observed in the blade tip area when installed blades are rapped or shaken. This noise is normal and should not be cause for concern. The noise originates from movement of the product balance weights installed in the leading and trailing edge weight pockets. These weights are loose-fit over three internal bosses on the pocket covers. The weights are held in place by centrifugal force and cannot rattle during rotor operation.

1. Position maintenance stand (B162) on side of helicopter adjacent to transmission.

2. Attach main rotor hub and blade sling (B151) to hoist (B69) and blade (1).

3. Attach tiedown (2) to end of blade to steady blade after removal.

4. Lift blade (1) to relieve loading on bolt (3) and expandable bolt (4).

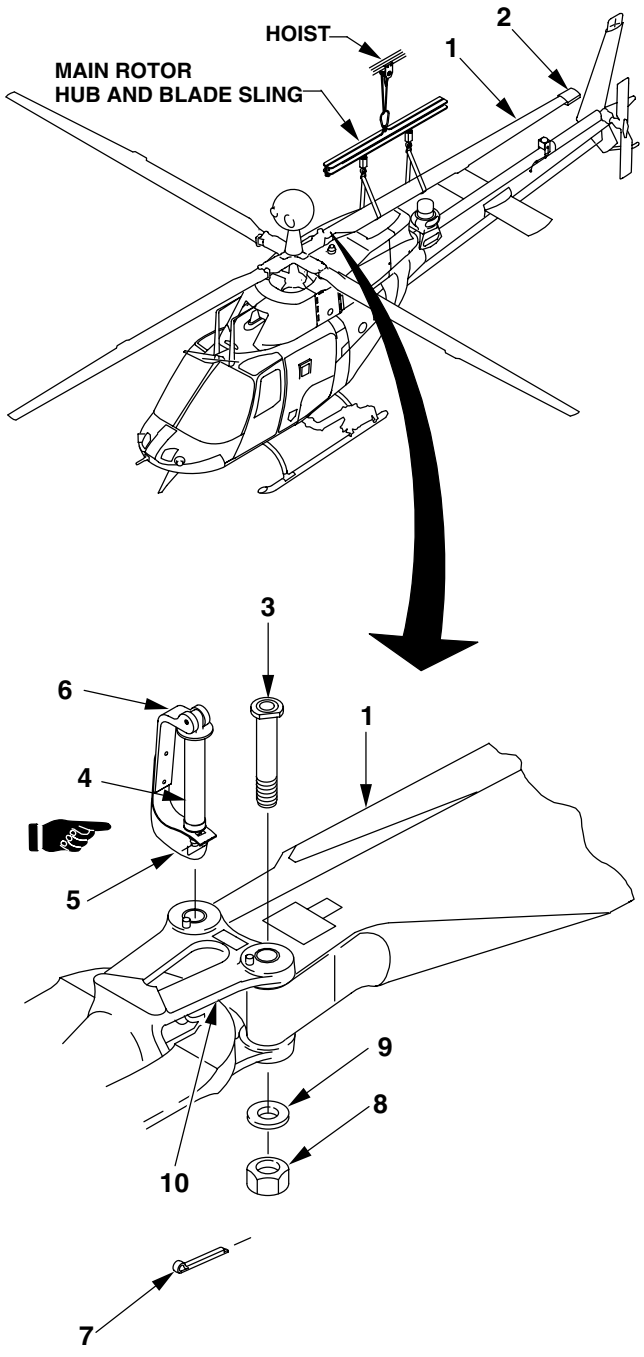
5. Remove safety pin (5) and pull spring clip handle (6) out and up. Remove expandable bolt (4) and tag with blade number and color for installation.

6. Remove cotter pin (7), nut (8), and washer (9). Remove bolt (3). Discard cotter pin.

7. Remove blade (1) from grip (10) and stow blade in suitable blade rack.

8. Remove tiedown (2), main rotor hub and blade sling (B151), and hoist (B69) from blade (1).

9. Repeat steps 1 through 8 for removal of remaining three blades.



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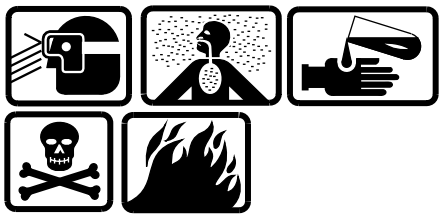
CLEAN

Drycleaning Solvent

10. Clean blade grips (10) and bolts (3 and 4) with drycleaning solvent (D199). Wipe dry with rags (D164).



Corrosion Preventive Compound

CAUTION

Corrosion preventive compound (D82) shall not be applied to blade bolt (4) due to substance thickness buildup, which increases force required to activate spring clip handle (6).

11. Apply CPC (D83) to shank of blade bolt (3) and faying surfaces of blade (1) and grip (10).

INSPECT

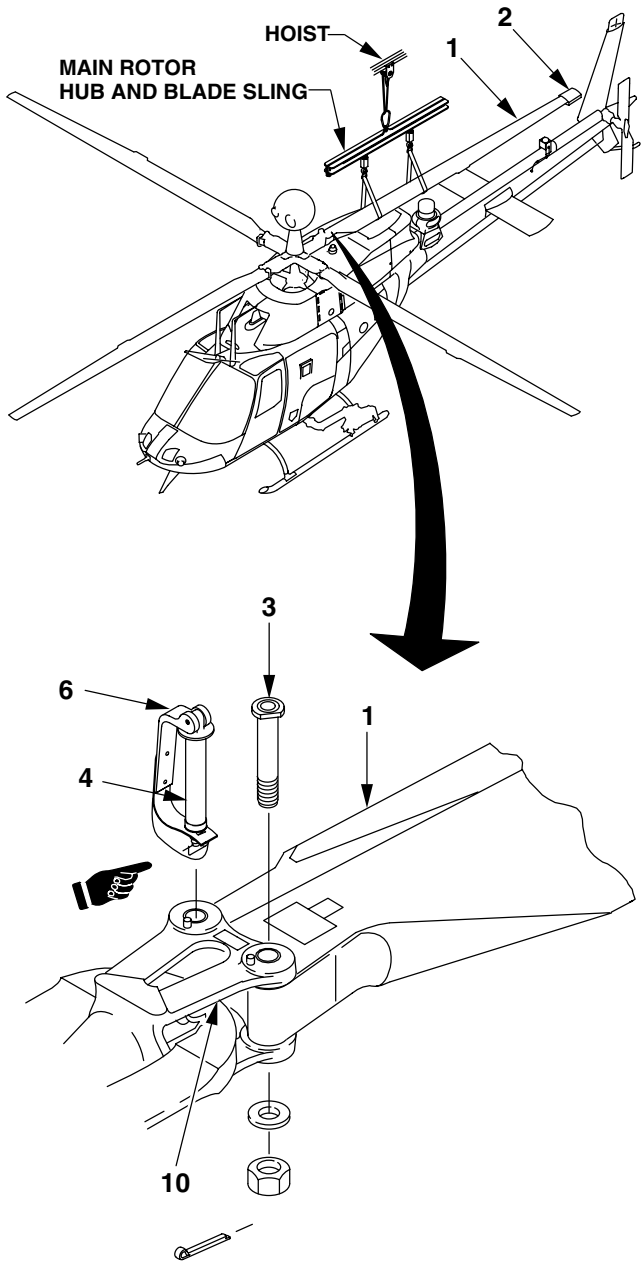
12. Inspect blade bolts (3) (Task 5-1-10).

13. Inspect expandable bolts (4) (Task 5-1-9).

INSTALL

14. Place main rotor hub and blade sling (B151) around blade (1) and attach main rotor hub and blade sling (B151) to hoist (B69). Place tiedown (2) over end of blade.

15. Lift blade (1), steadying blade with tiedown (2) and position blade into grip (10).



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NOTE

One expandable bolt shall be installed in leading edge of red and green blades. One expandable bolt shall be installed in trailing edge of blue and orange blades.

16. Push blade bolts (3 and 4) through grip (10) and blade (1).

NOTE

Spring clip handle shall have proper tension (Task 5-1-6).

17. Swing spring clip handle (6) down and latch on to lower nut of expandable bolt (4). Ensure spring clip handle (6) is completely seated over lower nut of expandable bolt (4). Install safety pin (5).

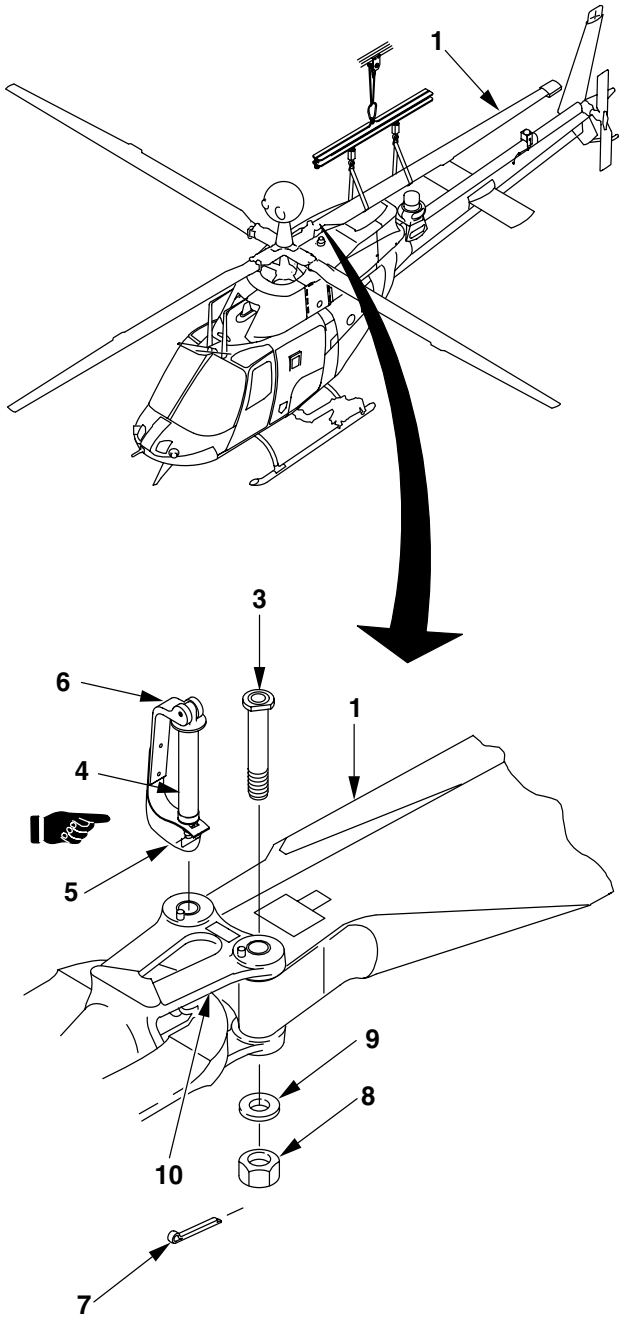
NOTE

Only those nuts that cannot be tightened down with fingers after locking action engages bolt shall be reused.

18. Install bolt (3), washer (9), and nut (8).

19. Torque nut (8) **540 TO 780 INCH-POUNDS**. Install cotter pin (7) through bolt (3).

20. Repeat steps 14. through 19. to install remaining three blades.



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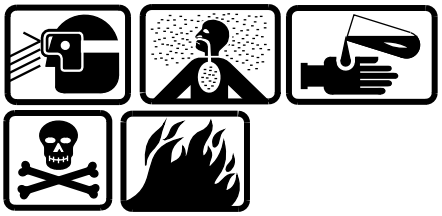


Corrosion Preventive Compound

21. Apply CPC (D82) to exposed surfaces of nut (8), washer (9), and bolt (3).

22. Remove tiedown (2), main rotor hub and blade sling, and hoist from blade (1).

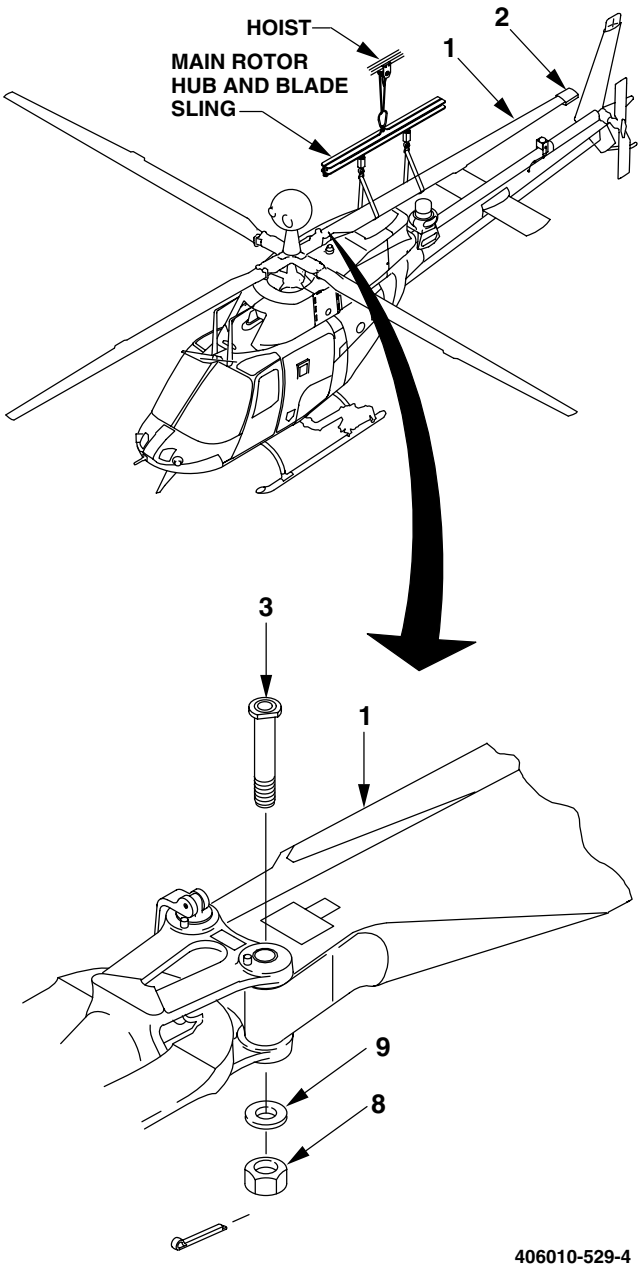
23. Apply a light coat of CPC (D83) to exposed hardware including bolt threads.

INSPECT

FOLLOW-ON MAINTENANCE

Track and balance main rotor hub and blade assembly as required (TM 1-6625-724-13&P).

Maintenance Test Pilot perform MOC/MTF (TM 1-1520-248-MTF).



END OF TASK

5-1-6. MAIN ROTOR EXPANDABLE BOLTS — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)
Hoist (B69)
Main Rotor Hub and Blade Sling (B151)
Spring Scale (B122)

Material:
Drycleaning Solvent (D199)
Corrosion Preventive Compound (D83)
Rubber Gloves (D111)
Wiping Rags (D164)
Abrasive Pad (D147)
Corrosion Preventive Compound (CPC) (D82)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Pilot

References:
TM 1-1520-248-10
TM 1-1520-248-CL

Equipment Condition:
Helicopter Safed (Task 1-6-7)

REMOVE

1. Position maintenance stand (B162) adjacent to helicopter.

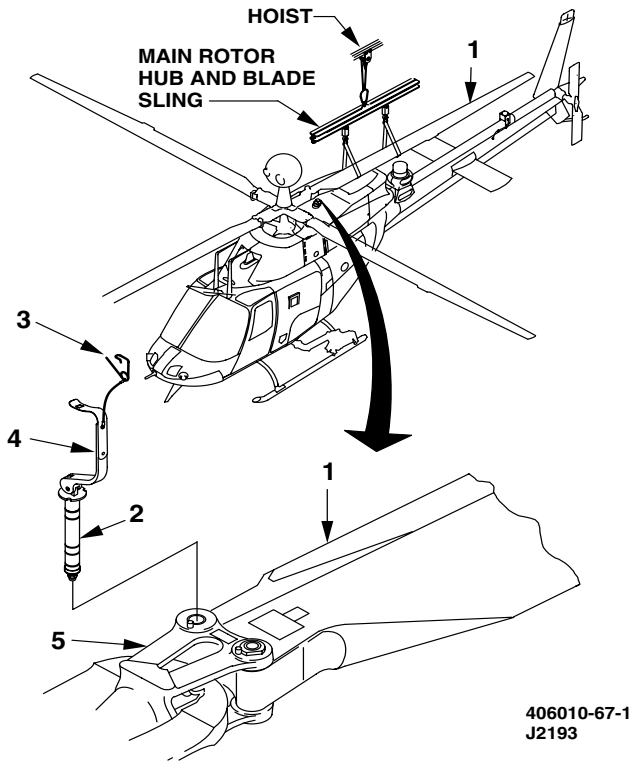
2. Attach main rotor hub and blade sling (B151) to hoist (B69) and blade (1).

3. Lift blade (1) to relieve loading on expandable bolt (2).

4. Remove safety pin (3) and pull spring clip handle (4) out and up. Remove expandable bolt (2) from grip (5) and blade (1).

Drycleaning Solvent

5. Clean bore on grip (5) and blade (1) with drycleaning solvent (D199) and dry with wiping rags (D164). Remove corrosion with abrasive pad (D147).



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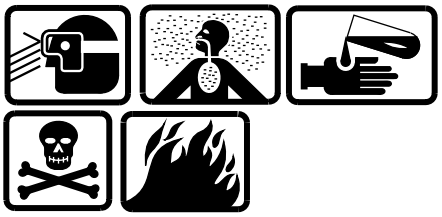


Corrosion Preventive Compound

CAUTION

CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals, or damage to equipment may result.

6. Apply CPC (D83) on expandable bolt (2) and faying surfaces of blade bolt hole.

INSTALL

NOTE

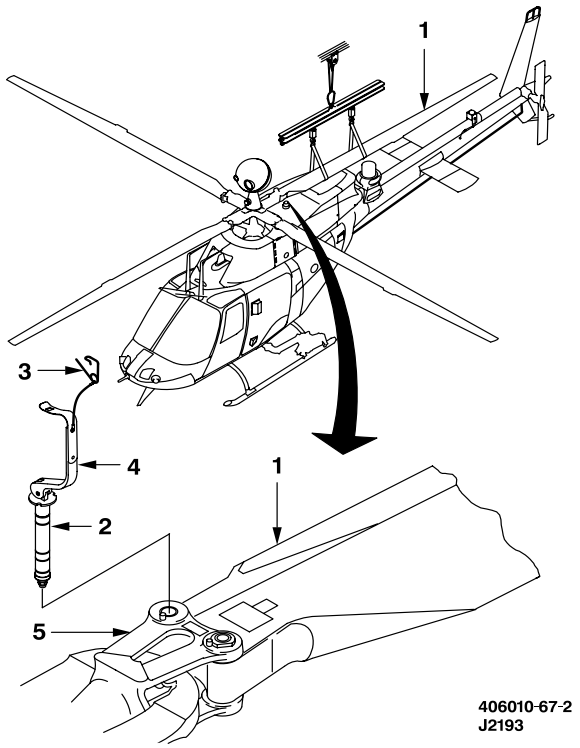
One expandable bolt shall be installed in red and green blades leading edge. One expandable bolt shall be installed in blue and orange blades trailing edge.

7. Position expandable bolt (2) in grip (5) and blade (1).

8. Push spring clip handle (4) down and latch on bottom of bolt (2). Check force required to lock spring clip using spring scale (B122). Secure with safety pin (3).

NOTE

Spring clip handle should require 50 to 75 pounds force on end of handle to lock expandable bolt into position.



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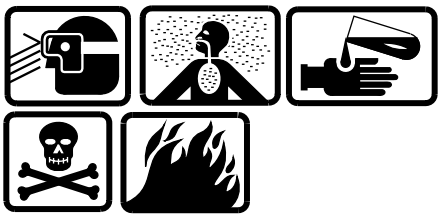
9. Adjust spring clip handle (4) locking force as follows:

a. To increase locking force, position spring clip handle (4) in open position. Adjust nut (6) clockwise.

b. To decrease locking force, position spring clip handle (4) in open position. Adjust nut (6) counterclockwise.

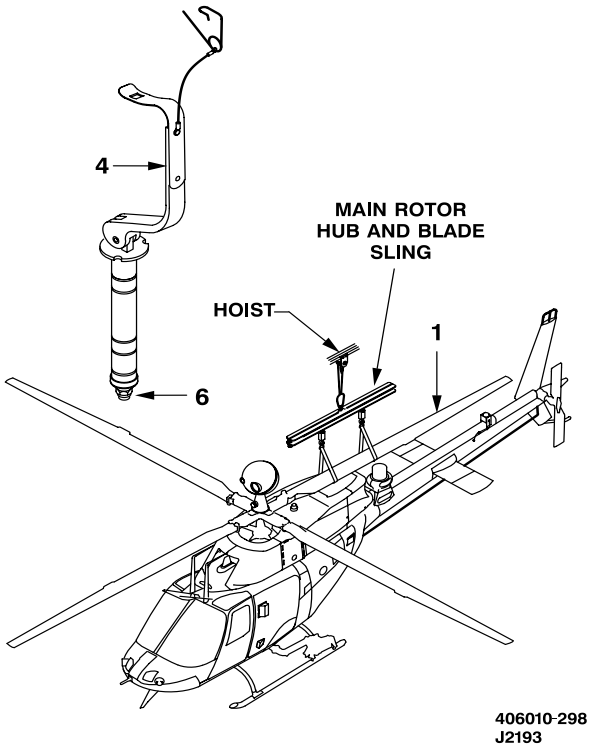
10. Remove main rotor hub and blade sling (B151) to hoist (B69) from blade (1).

11. Repeat steps 1. through 10. for remaining three blades.



Corrosion Preventive Compound

12. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.



INSPECT

FOLLOW-ON MAINTENANCE

Pilot perform MOC (TM 1-1520-248-10/-CL)

END OF TASK

5-1-7. LANYARD ON MAIN ROTOR EXPANDABLE BOLT — REMOVAL/INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

REMOVE

1. Remove broken lanyard (1) by drilling out rivet (2) in spring clip (3).

2. Remove shavings and deburr rivet hole.

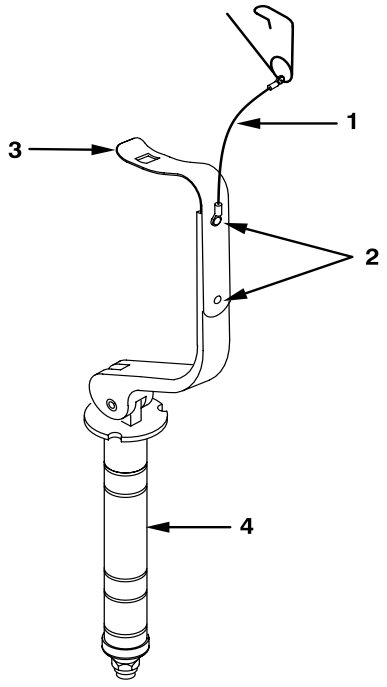
INSTALL

3. Install serviceable lanyard (1) with rivet (2) in spring clip (3).

INSPECT

4. Inspect expandable bolt (4) (Task 5-1-8).

INSPECT



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END OF TASK

5-1-8. MAIN ROTOR EXPANDABLE BOLT — DISASSEMBLY/CLEANING/INSPECTION/REPAIR/ ASSEMBLY

This task covers: Disassembly, Cleaning, Inspection, Repair, and Assembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Dry Lubricant (D135)
Drycleaning Solvent (D199)
Wiping Rags (D164)
Sandpaper (D173)
Sandpaper (D174)
Sandpaper (D175)
Crocus Cloth (D90)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1500-344-23

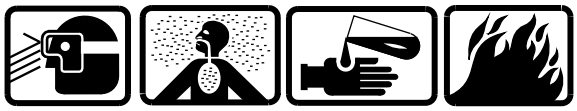
GO TO NEXT PAGE

5-1-8. MAIN ROTOR EXPANDABLE BOLT — DISASSEMBLY/CLEANING/INSPECTION/REPAIR/ ASSEMBLY (CONT)

DISASSEMBLE

1. Remove nut (1) from bolt (2).
2. Remove expandable collars (3).

CLEAN



Drycleaning Solvent

3. Clean parts with drycleaning solvent (D199).
4. Dry parts with wiping rags (D164).

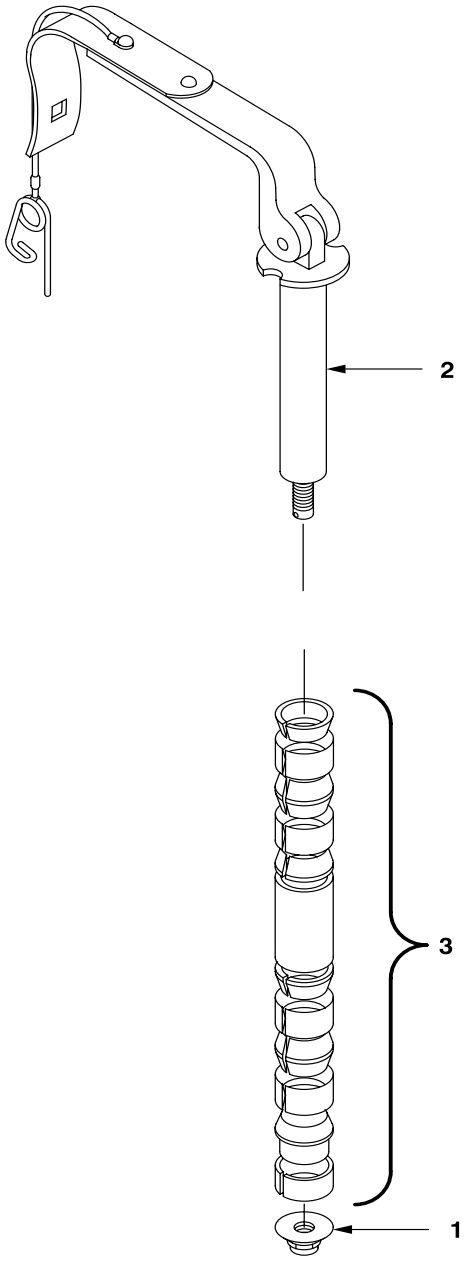
INSPECT

5. Inspect expandable bolt to limits shown; reject if limits are exceeded. See figure Main Rotor Expandable Bolt — Damage Limits.

REPAIR

Sanding Operations

6. Polish out repairable damage with 240 grit sandpaper (D173), followed by 320 (D174) and 400 (D175) grit sandpapers.
7. Remove any sanding marks with crocus cloth (D90).



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5-1-8. MAIN ROTOR EXPANDABLE BOLT — DISASSEMBLY/CLEANING/INSPECTION/REPAIR/ ASSEMBLY (CONT)

ASSEMBLE

Frekote 44-NC

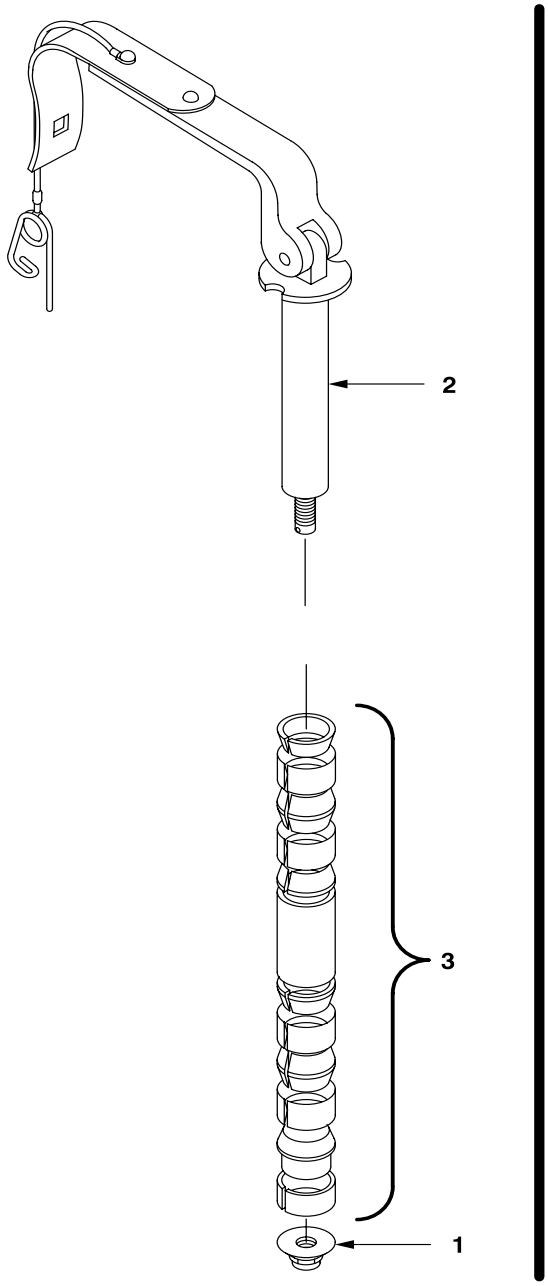
8. If immediately installed after repair, apply dry lubricant (D135).

9. If not immediately installed after repair, preserve expandable bolt (TM 1-1500-344-23).

10. Install expandable collars (3) on bolt (2) and secure by installing nut (1).

INSPECT

11. Perform a functional check of bolt ensuring expandable collars contract and expand.



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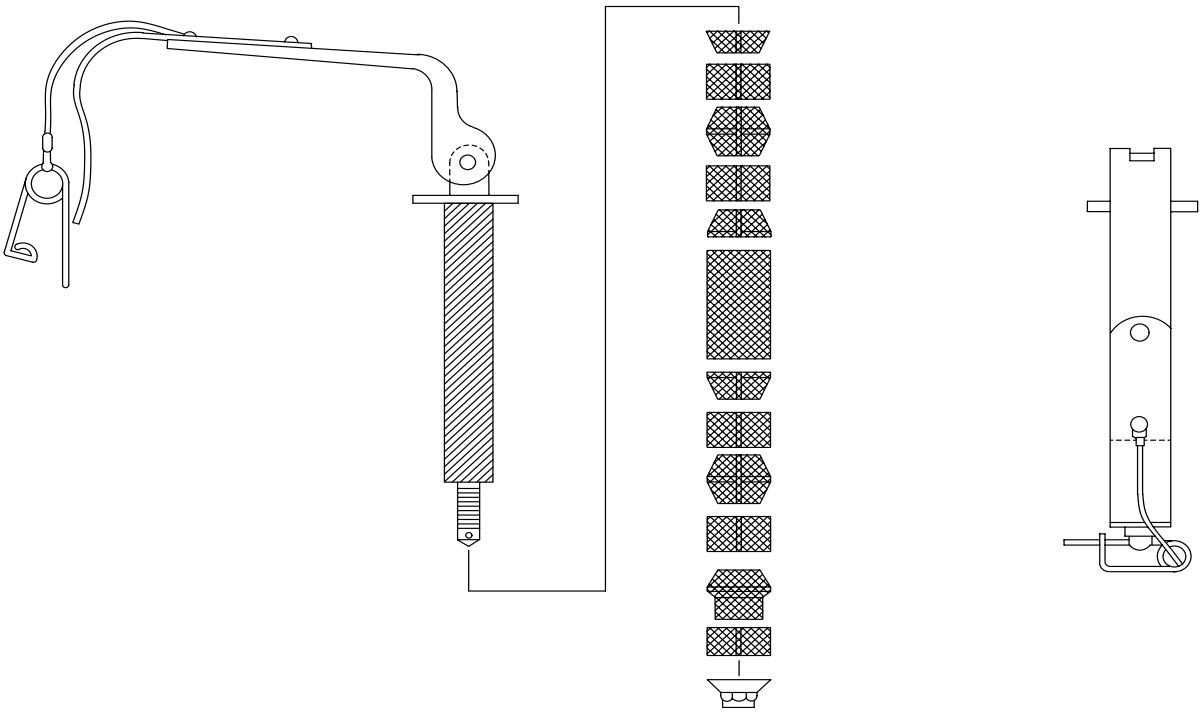
5-1-8. MAIN ROTOR EXPANDABLE BOLT — DISASSEMBLY/CLEANING/INSPECTION/REPAIR/ ASSEMBLY (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH		
MECHANICAL AND CORROSION	0.005 in. before and after repair	0.002 in. before and after repair	Not critical
MAXIMUM AREA PER FULL DEPTH REPAIR	0.05 Sq. in.	0.25 Sq. in. for 1/4 Circumference Max	Not critical
NUMBER OF REPAIRS	One per section	One	Not critical

No cracks are permitted

Thread Damage

Depth	1/3 of Thread
Length	0.25 in.
Number	One

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J2652

Main Rotor Expandable Bolt — Damage Limits

END OF TASK

5-1-9. MAIN ROTOR BLADE BOLT — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

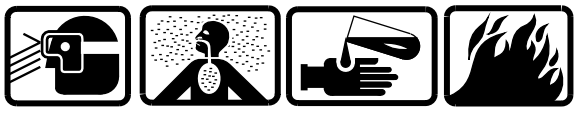
Tools:
General Mechanic Tool Kit (B178)

Material:
Shellac (D187)
LHE Cadmium Solution (D129)
Drycleaning Solvent (D199)
Wiping Rags (D164)
Sandpaper (D173)
Sandpaper (D174)
Sandpaper (D175)
Crocus Cloth (D90)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1500-344-23
TM 1-1520-266-23

CLEAN



Drycleaning Solvent

1. Clean blade bolt with drycleaning solvent (D199).

2. Wipe bolt dry with wiping rags (D164).

INSPECT

3. Inspect blade bolt to limits shown; reject if limits are exceeded. See figure Main Rotor Blade Bolt — Damage Limits.

3.1. If a crack on the main rotor blade bolt is suspected, refer to TM 1-1520-266-23.

4. Inspect cork stopper for complete shellac (D187) protective coating. If shellac (D187) is not intact, inspect cork for cracks and brittleness. Replace defective cork.

REPAIR

Sanding Operations

5. Polish out repairable damage with 240 grit sandpaper (D173), followed by 320 (D174) and 400 (D175) grit sandpapers.

6. Remove any sanding marks with crocus cloth (D90).

Shellac

7. Remove defective cork and clean cork residue from hole in blade bolt. Install new cork stopper **0.06 to 0.12 inch** below surface of bolt head; shellac (D187) in place.

LHE Cadmium Solution

8. Touch up finish of blade bolt with brush coat of LHE cadmium plate (D129) to external surface of bolt (TM 1-1500-344-23).

INSPECT

9. If not immediately installed after repair, preserve blade bolt (TM 1-1500-344-23).

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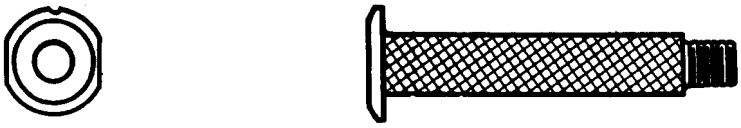


DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.002 In. before and after repair	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.10 Sq. in.	0.20 Sq. in.
NUMBER OF REPAIRS	Two maximum	
EDGE CHAMFER TO REMOVE DAMAGE	0.015 In.	0.030 In.
THREAD DAMAGE:		
Depth:	1/3 Of thread	
Length:	1/4 Inch	
Number:	One per threaded segment	

NOTE: No cracks are permitted.

406010-10
H2254

Main Rotor Blade Bolt — Damage Limits

END OF TASK

5-1-10. MAIN ROTOR DROOP STOP PLUGS — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)
Hoist (B69)
Main Rotor Hub and Blade Sling (B151)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

5-1-10. MAIN ROTOR DROOP STOP PLUGS — REMOVAL/INSTALLATION (CONT)

REMOVE UPPER DROOP STOP PLUGS

1. Position maintenance stand (B162) at side of helicopter adjacent to transmission.

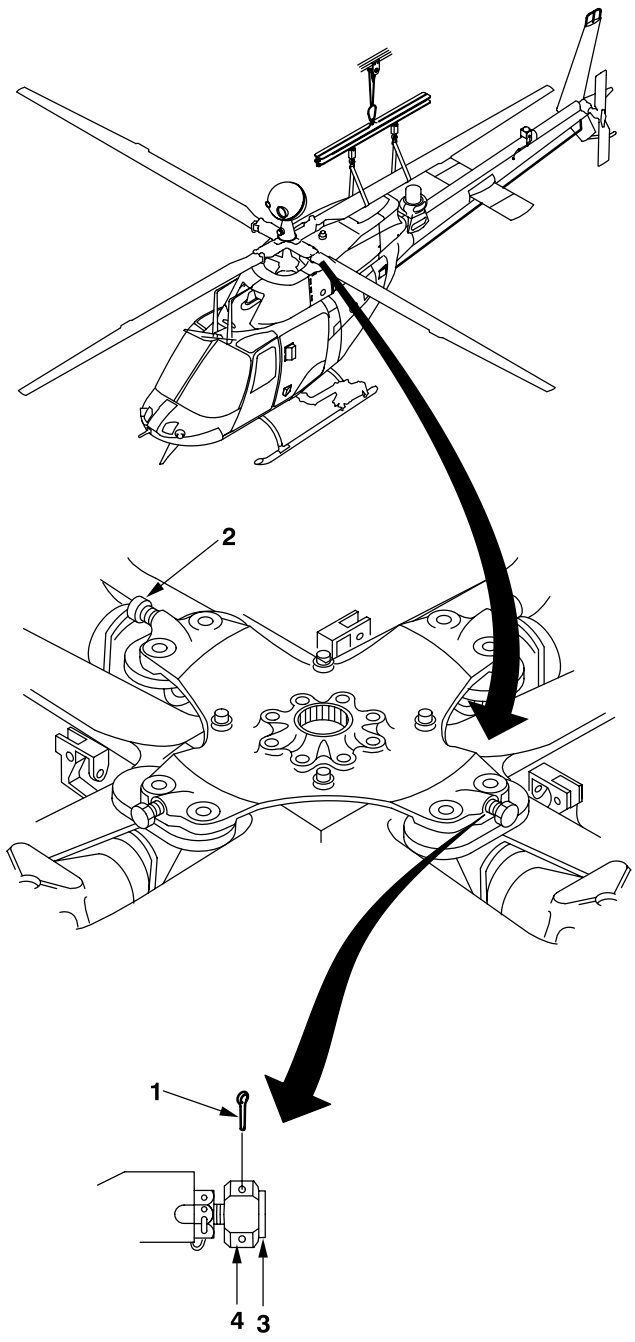
2. Remove two cotter pins (1) from droop stop assembly (2). Discard cotter pins.

3. Remove droop stop plug (3) from droop stop stud (4).

4. Repeat steps 2. and 3. for remaining three droop stop plugs.

INSPECT

5. Inspect droop stop plugs (Task 5-1-11).



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5-1-10. MAIN ROTOR DROOP STOP PLUGS — REMOVAL/INSTALLATION (CONT)

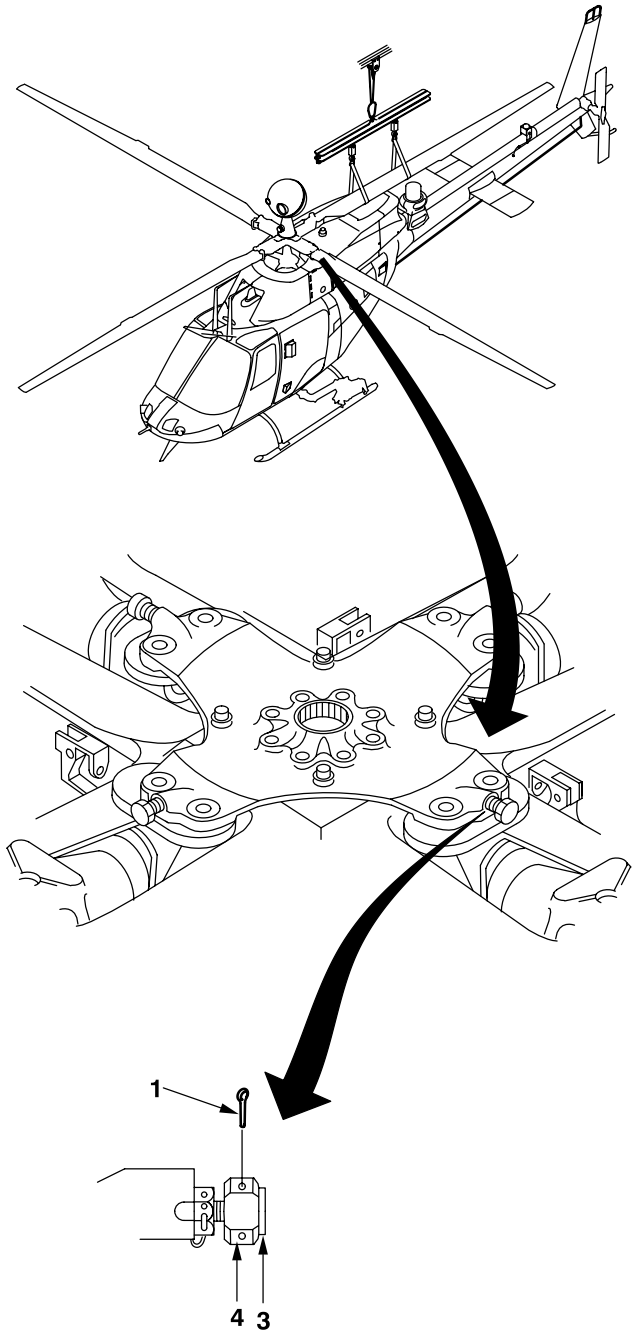
INSTALL UPPER DROOP STOP PLUGS

6. Install droop stop plug (3) in recess of droop stop stud (4).

7. Install two cotter pins (1) in holes of droop stop stud (4) and bend cotter pins around circumference of stud.

8. Repeat steps 6 and 7 for remaining three droop stop plugs (3).

INSPECT



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5-1-10. MAIN ROTOR DROOP STOP PLUGS — REMOVAL/INSTALLATION (CONT)

REMOVE LOWER DROOP STOP PLUGS

9. Attach main rotor hub and blade sling (B151) to hoist (B69) and blade (5).

10. Lift blade so that droop stop assembly (6) has maximum clearance from pitch horn assembly (7).

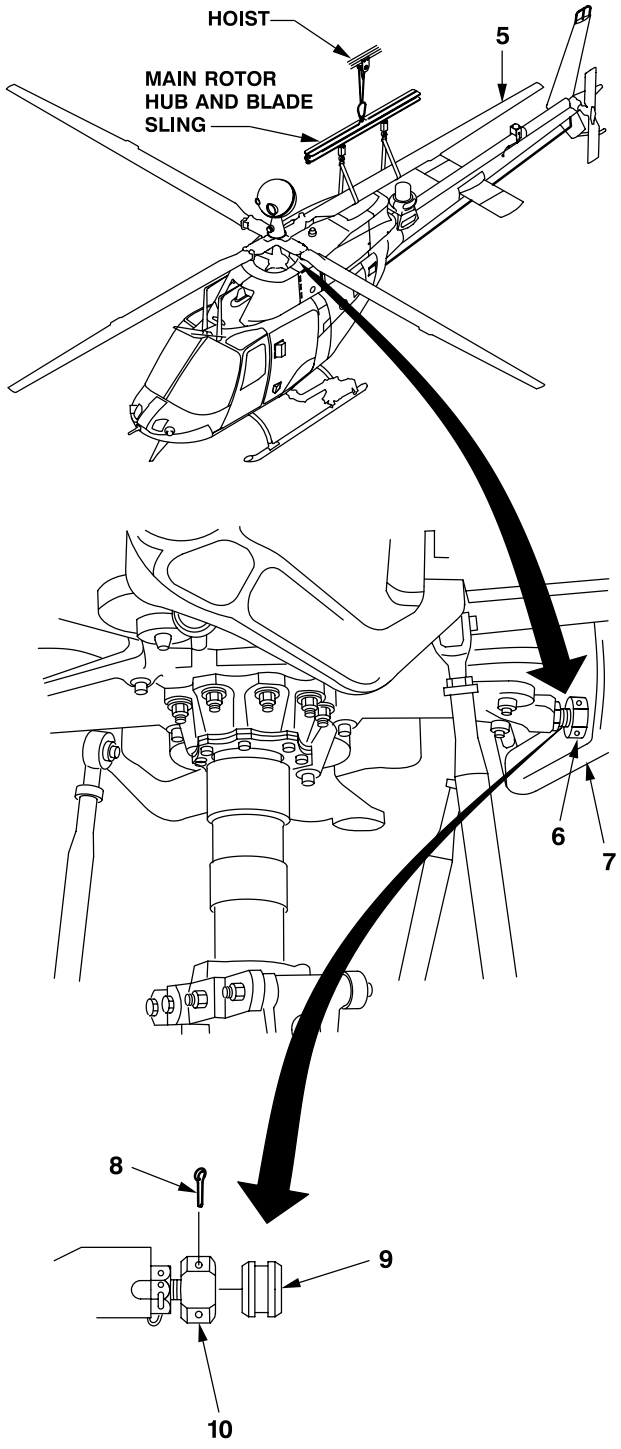
11. Remove two cotter pins (8) from droop stop assembly (6). Discard cotter pins.

12. Remove droop stop plug (9) from droop stop stud (10).

13. Repeat steps 9 through 12 for remaining three droop stop plugs.

INSPECT

14. Inspect droop stop plugs (Task 5-1-11).



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INSTALL LOWER DROOP STOP PLUGS

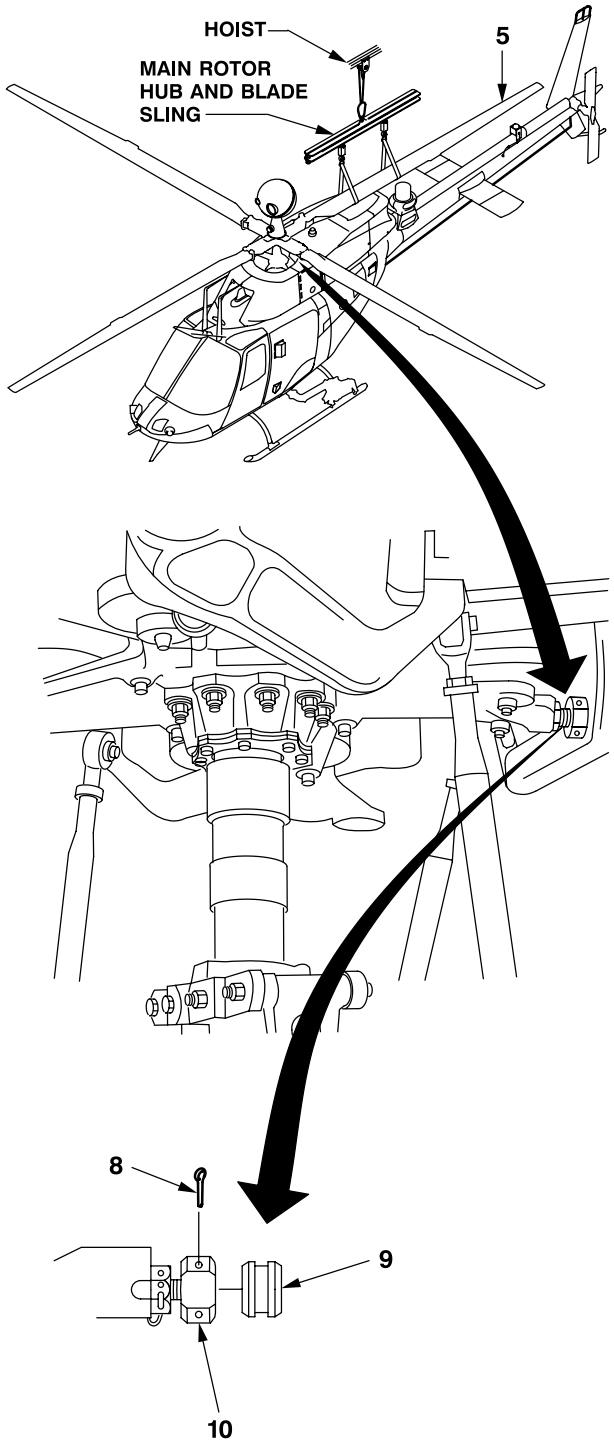
15. Install plug (9) in recess of stud (10).

16. Install two cotter pins (8) in holes of droop stop stud (10) and bend cotter pins around circumference of stud.

17. Lower blade (5) and remove main rotor hub and blade sling to hoist.

18. Repeat steps 15 through 17 for the remaining three droop stop plugs.

INSPECT



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J2193

END OF TASK

5-1-11. MAIN ROTOR DROOP STOP PLUG — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Drycleaning Solvent (D199)
Wiping Rags (D164)
Sandpaper (D175)
Crocus Cloth (D90)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

CLEAN

Drycleaning Solvent

1. Clean droop stop plug with drycleaning solvent (D199).

2. Dry droop stop plug with wiping rags (D164).

INSPECT

3. Inspect droop stop plug to limits shown; reject if limits are exceeded. See figure Main Rotor Droop Stop Plug — Damage Limits.

REPAIR

Sanding Operations

4. Polish out repairable damage with 400 grit sandpaper (D175).

5. Remove any sanding marks with crocus cloth (D90).

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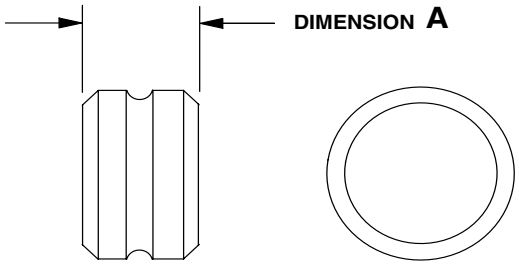
5-1-11. MAIN ROTOR DROOP STOP PLUG — CLEANING/INSPECTION/REPAIR (CONT)



TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL	0.050 in. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.05 Sq. In.
NUMBER OF REPAIRS	One per surface
EDGE CHAMFER TO REMOVE DAMAGE	0.015 In.
DIMENSION A	0.445 In. minimum

NOTE
No cracks are permitted.

406010-11
J2193

Main Rotor Droop Stop Plug — Damage Limits

END OF TASK

5-1-12. MAIN ROTOR DROOP STOP STUDS — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (2)(B162)
Hoist (B69)
Main Rotor Hub and Blade Sling (B151)
Torque Wrench (B242)
Crowfoot (B25)

Material:
Lockwire (D132)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

5-1-12. MAIN ROTOR DROOP STOP STUDS — REMOVAL/INSTALLATION (CONT)

REMOVE UPPER DROOP STOP STUDS

1. Position maintenance stands (B162) adjacent to transmission on both sides of helicopter.

2. Remove two cotter pins (1) from droop stop assembly (2). Discard cotter pins.

NOTE

Position of droop stop plug shall be noted during removal for reference during installation procedure.

3. Remove droop stop plug (3) from droop stop stud (4).

4. Cut and remove lockwire on droop stop jamnut (5).

5. Straighten out tabs on droop stop lockplate (6).

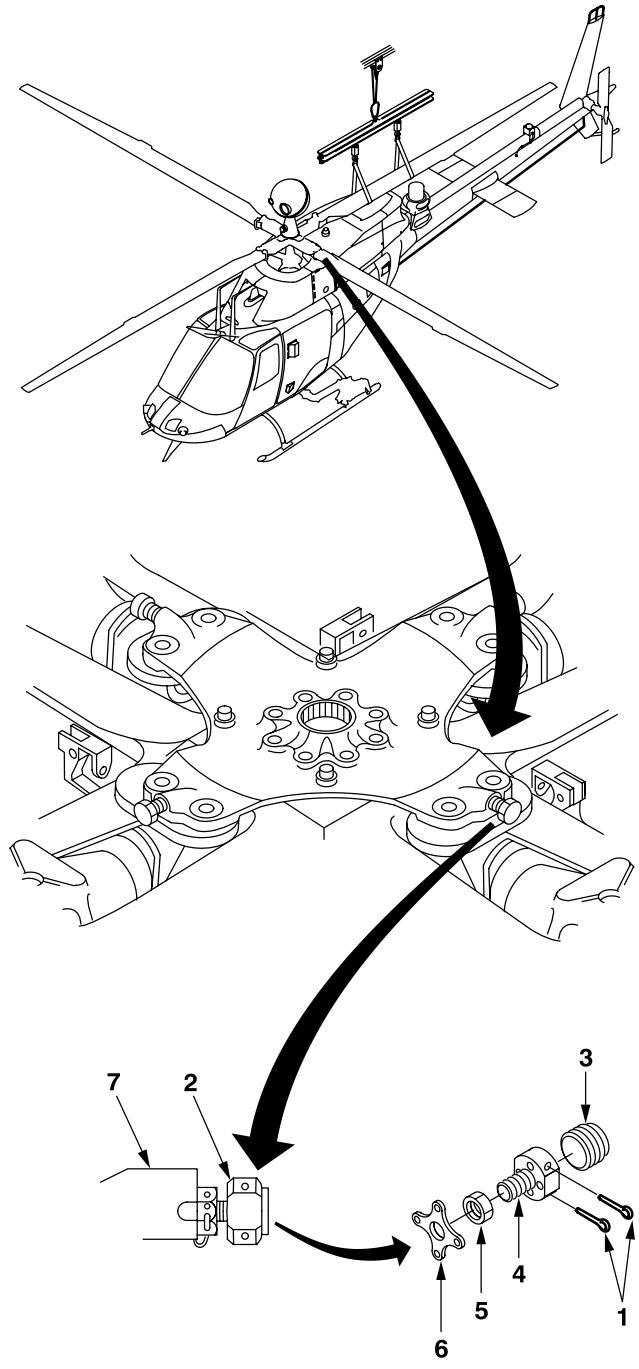
6. Loosen jamnut (5) and unscrew stud (4) from plate (7).

7. Discard lockplate (6).

INSPECT

8. Inspect droop stop plug (Task 5-1-11).

9. Inspect droop stop stud (Task 5-1-13).



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5-1-12. MAIN ROTOR DROOP STOP STUDS — REMOVAL/INSTALLATION (CONT)

INSTALL UPPER DROOP STOP STUDS

10. Install jamnut (5) and lockplate (6) on droop stop stud (4).

11. Thread stud (4) into plate (7) approximately **0.50 inch**.

NOTE

Reversing the position of droop stop plug during installation will decrease support area on backface of droop stop plug. Droop stop plug shall be installed with the same working surface installed.

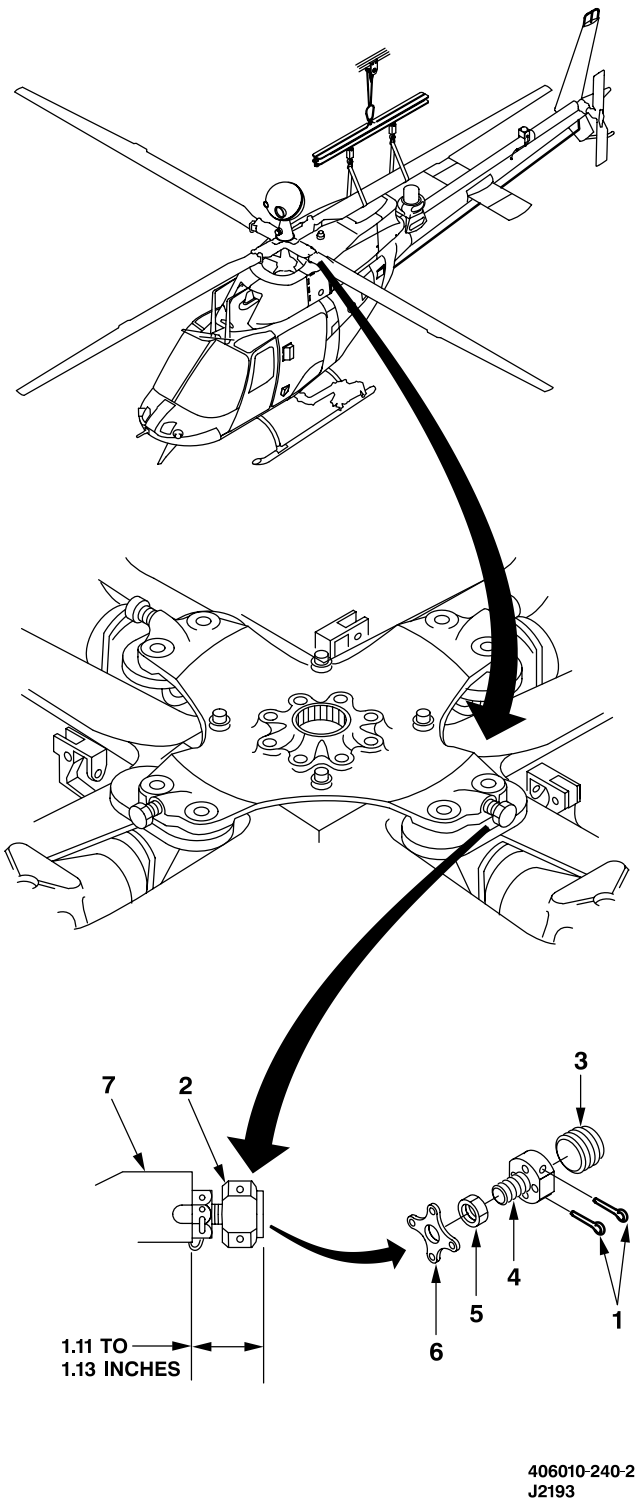
12. Insert plug (3) into recess of stud (4). Install two cotter pins (1) in holes of droop stop stud (4) and bend cotter pins around circumference of stud.

13. Adjust droop stop assembly (2) to length shown. Torque jamnut (5) **250 TO 300 INCH-POUNDS** and secure with lockwire (D132) to one tab of lockplate (6).

14. Bend three tabs on lockplate (6) down 90 degrees.

15. Repeat steps 2 through 14 for remaining three droop stop studs.

INSPECT



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5-1-12. MAIN ROTOR DROOP STOP STUDS — REMOVAL/INSTALLATION (CONT)

REMOVE LOWER DROOP STOP STUDS

16. Attach main rotor hub and blade sling (B151) to hoist (B69) at approximate center of blade (8).

17. Lift blade so that droop stop assembly (9) has maximum clearance from pitch horn assembly (10).

18. Remove two cotter pins (11) from droop stop assembly (9). Discard cotter pins.

19. Remove droop stop plug (12) from droop stop stud (13).

20. Cut and remove lockwire on droop stop jamnut (14).

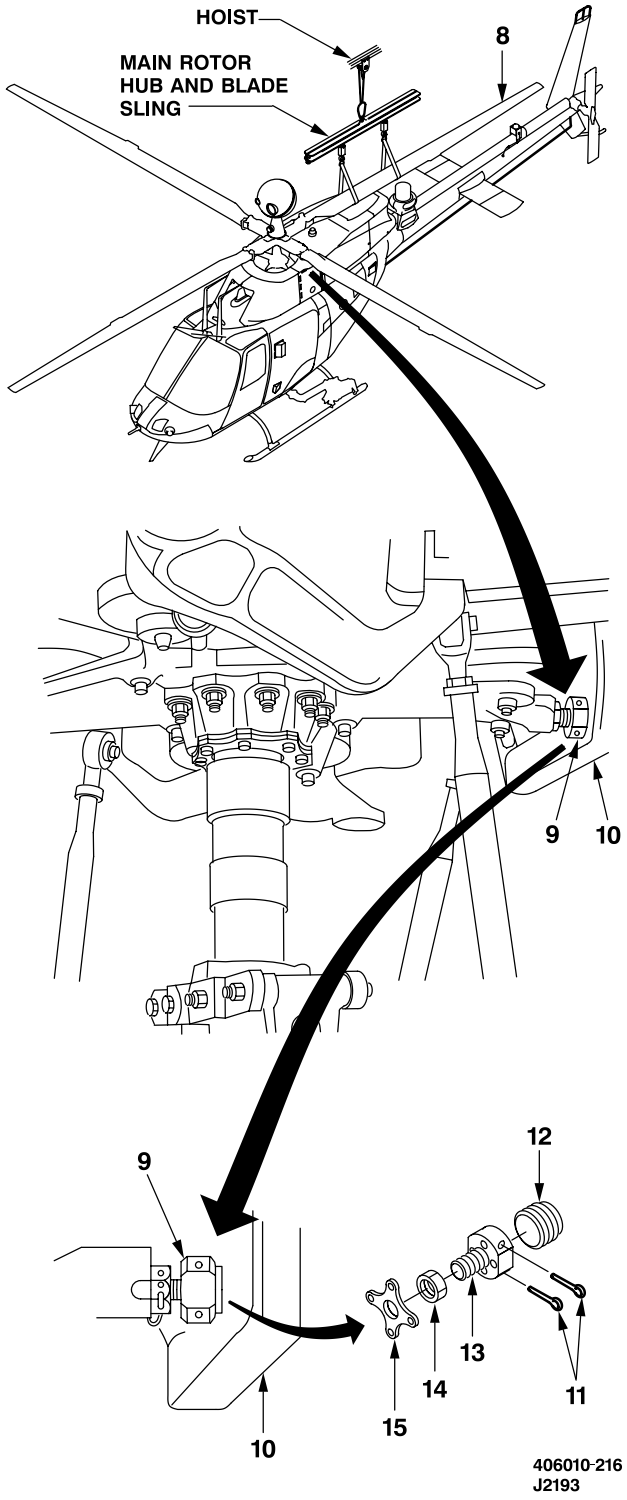
21. Straighten out tabs on droop stop lockplate (15).

22. Loosen jamnut (14) and unscrew stud (13). Discard lockplate (15).

INSPECT

23. Inspect droop stop plug (Task 5-1-11).

24. Inspect droop stop stud (Task 5-1-13).



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5-1-12. MAIN ROTOR DROOP STOP STUDS — REMOVAL/INSTALLATION (CONT)

INSTALL LOWER DROOP STOP STUDS

25. Install jamnut (14) and lockplate (15) on droop stop stud (13).

26. Thread stud (13) into plate (16) approximately **0.50 inch**.

27. Insert droop stop plug (12) into recess of stud (14). Install two cotter pins (11) in holes of droop stop stud (13) and bend cotter pins around circumference of stud.

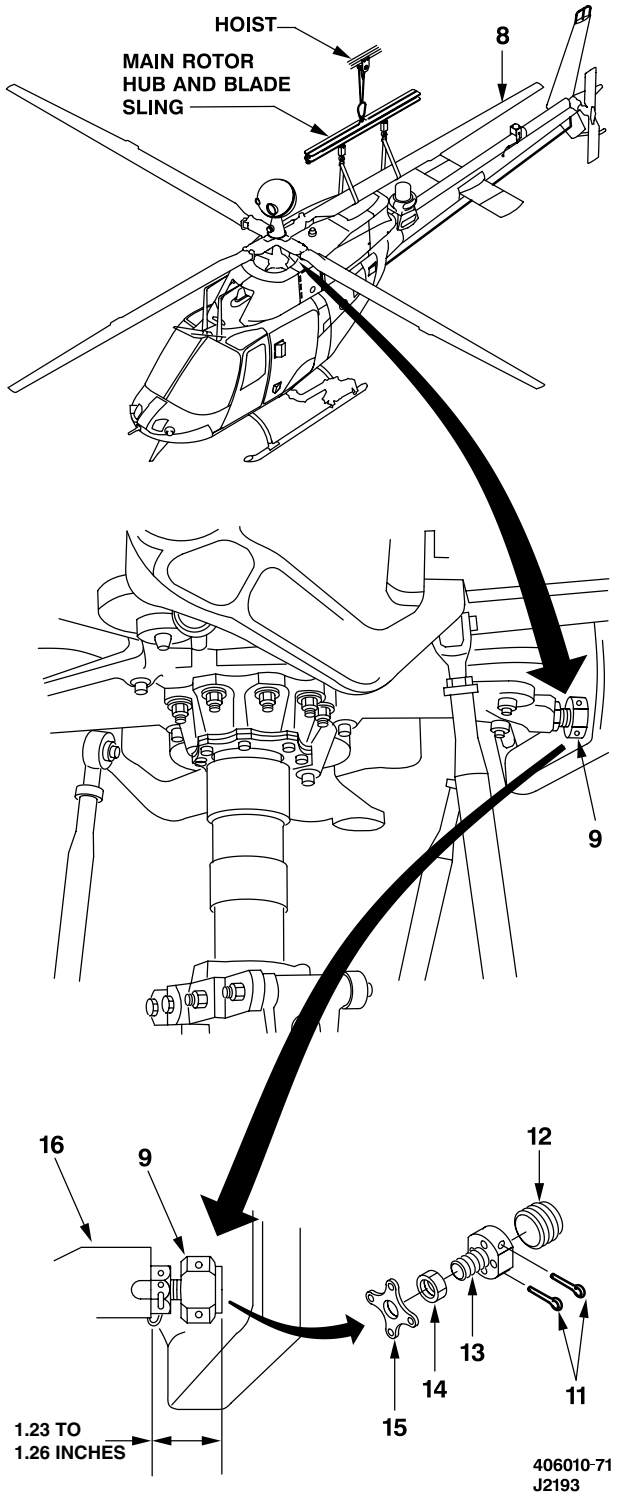
28. Adjust droop stop assembly (9) to length shown. Torque jamnut (14) **250 TO 300 INCH-POUNDS** and secure with lockwire (D132) to one tab of lockplate (15).

29. Bend three tabs on lockplate (15) down 90 degrees.

30. Lower blade (8) and remove main rotor hub and blade sling to hoist.

31. Repeat steps 15 through 30 for the remaining three droop stop studs.

INSPECT



END OF TASK

5-1-13. MAIN ROTOR DROOP STOP STUD — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
LHE Cadmium Solution (D129)
Drycleaning Solvent (D199)
Wiping Rags (D164)
Sandpaper (D175)
Crocus Cloth (D90)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1500-344-23
TM 1-1520-266-23

CLEAN

Drycleaning Solvent

1. Clean droop stop stud with drycleaning solvent (D199).

2. Dry droop stop stud with wiping rags (D164).

INSPECT

3. Inspect droop stop stud to limits shown; reject if limits are exceeded. See figure Main Rotor Droop Stop Stud — Damage Limits.

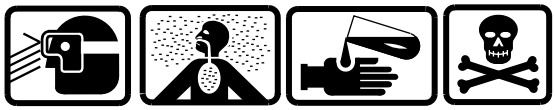
3.1. If a crack on the surface of the droop stop stud is suspected, refer to TM 1-1520-266-23.

REPAIR

Sanding Operations

4. Polish out repairable damage with 400 grit sandpaper (D175).

5. Remove any sanding marks with crocus cloth (D90).

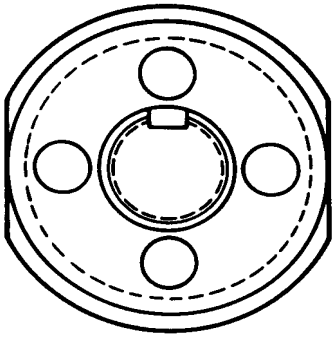


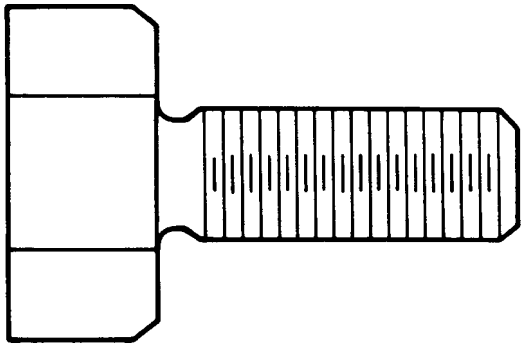
LHE Cadmium Solution

6. Touch up finish of droop stop stud with brush coat of LHE cadmium plate (D129) TM 1-1500-344-23.

INSPECT

GO TO NEXT PAGE





DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL AND CORROSION	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.15 Sq. in.
NUMBER OF REPAIRS	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.015 In.
THREAD DAMAGE:	
Depth:	1/3 Of thread
Length:	1/4 Inch
Number:	One per threaded segment

NOTE: No cracks are permitted.

406010-15
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Main Rotor Droop Stop Stud — Damage Limits

END OF TASK

5-1-14. MAIN ROTOR PITCH LINK HORN ATTACHING HARDWARE — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (2) (B162)
Torque Wrench (B237)

Material:
Drycleaning Solvent (D199)
Wiping Rags (D164)
Corrosion Preventive Compound (D82)
Abrasive Pad (D147)
Lockwire (D132)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)

REMOVE

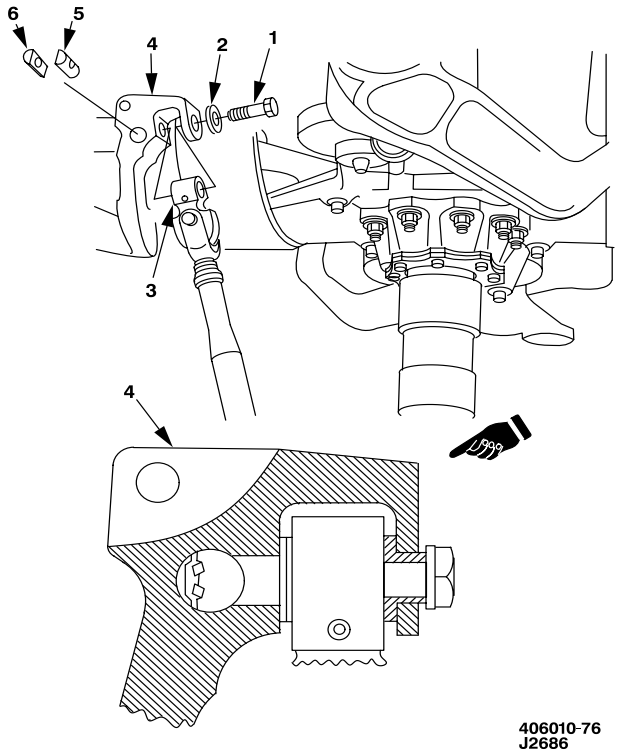
1. Position maintenance stands (B162) adjacent to transmission on both sides of helicopter.

2. Cut lockwire on pitch link/horn attaching bolt (1).

3. Remove bolt (1) and washer (2).

4. Move pitch link (3) away from pitch horn (4).

5. Remove barrel nut (5) and retainer (6).



406010-76
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INSPECT

6. Inspect pitch link (Task 5-2-2).

7. Inspect pitch horn (Task 5-1-22).

8. Inspect bolt (1) and barrel nut (5) for thread damage.

a. If bolt or barrel nut is damaged, replace both parts.

b. If no thread damage is found, check barrel nut for proper tare torque (TM 1-1500-204-23):

(1) Minimum — **6.5 INCH-POUNDS**.

(2) Maximum — **60.0 INCH-POUNDS**.

GO TO NEXT PAGE

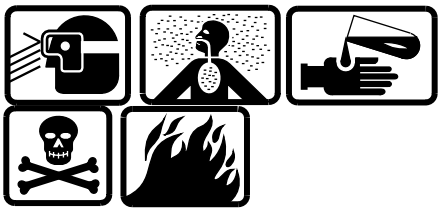
5-1-14. MAIN ROTOR PITCH LINK HORN ATTACHING HARDWARE — REMOVAL/INSTALLATION (CONT)

CLEAN

Drycleaning Solvent

9. Clean area with drycleaning solvent (D199). Dry with wiping rags (D164).

10. Remove corrosion with abrasive pad (D147).



Corrosion Preventive Compound

11. Apply CPC (D82) to bolted joints and faying surfaces during assembly.

INSTALL

12. Install barrel nut (5) and retainer (6) in pitch horn (4).

13. Position pitch link (3) into horn (4).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

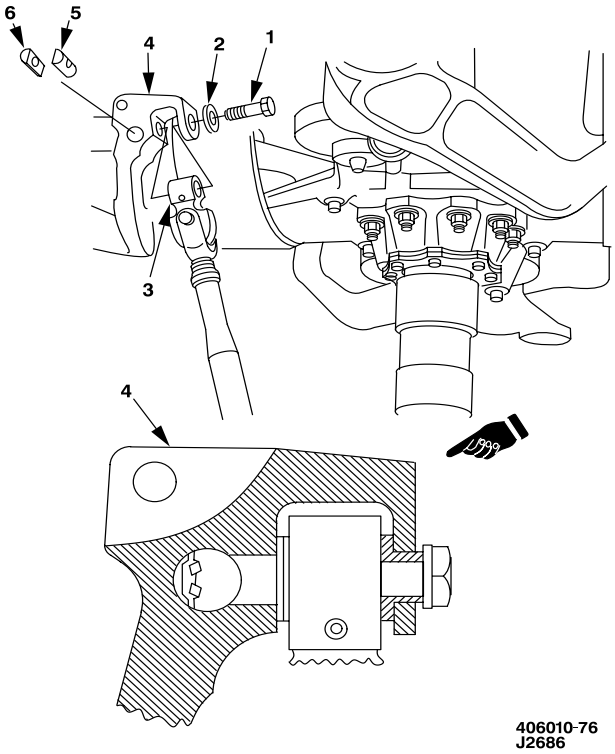
The correct torquing and lockwiring of bolts are characteristics critical to flight safety.

14. Place washer (2) on bolt (1). Install bolt (1) and torque **90 TO 110 INCH-POUNDS**.

15. Secure bolt (1) with lockwire (D132).

16. Repeat steps 2 through 15 for the remaining three pitch links.

INSPECT



END OF TASK

5-1-15. MAIN ROTOR HUB DAMPERS (AVIM) — REMOVAL/INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Torque Wrench (B241)
Torque Wrench (B237)
Torque Wrench (B242)
Main Rotor Hub Adapter (B3)
Main Rotor Hub Support Assembly (B166)
Rubber Mallet (B97)

Material:
Drycleaning Solvent (D199)
Lockwire (D133)
Wiping Rags (D164)
Corrosion Preventive Compound (CPC) (D82)
Corrosion Preventive Compound (CPC) (D83)
Rubber Gloves (D111)
Epoxy Primer Coating (D98)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

Equipment Condition:
Main Rotor Blades Removed (Task 5-1-5)

GO TO NEXT PAGE

NOTE

Removal may be started with main rotor hub mounted on main rotor hub support assembly (B166).

REMOVE

1. Remove eight nuts (1), eight washers (2), eight bolts (3), and eight washers (4) attaching upper plate (5) and lower plate (6) to yoke assembly (7).

2. Remove eight nuts (8) and eight washers (9) attaching four damper assemblies (10) to upper plate (5).

3. Remove eight nuts (8) and eight washers (9) attaching four damper assemblies (10) to lower plate (6).

NOTE

Nonmetallic wedges may be used to assist in upper plate removal.

4. Remove upper plate (5) from yoke assembly (7).

5. Remove shims (11).

NOTE

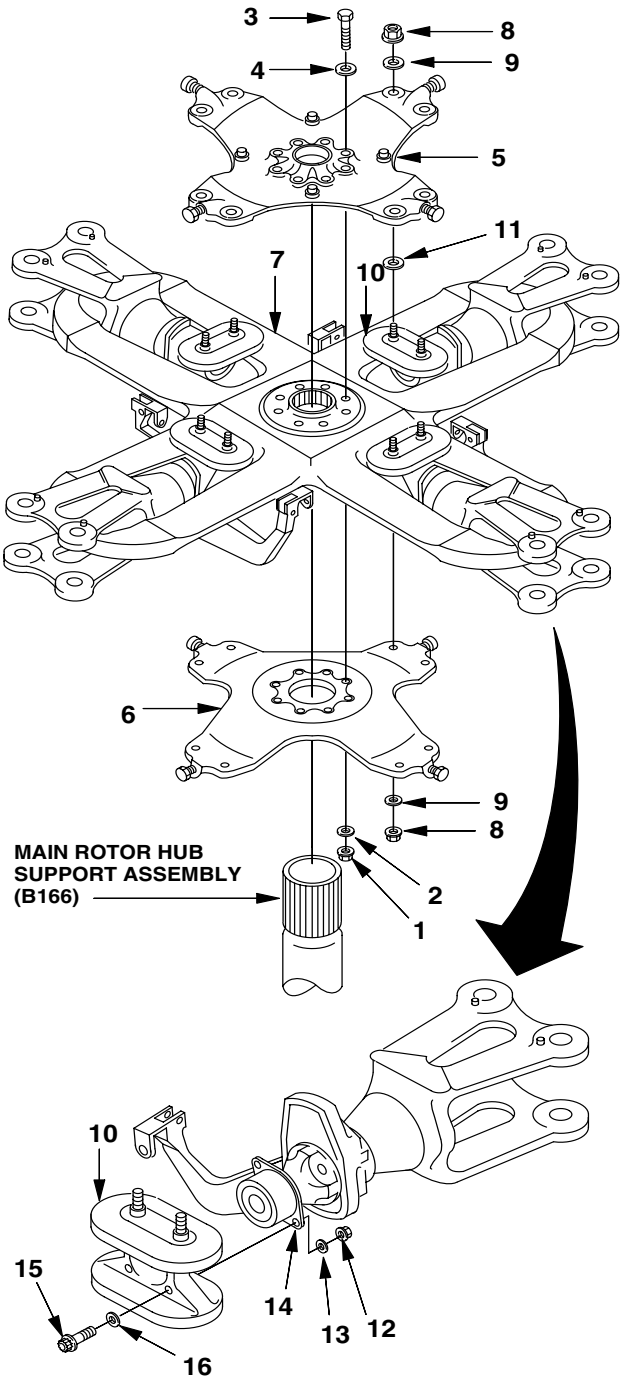
Removal procedures are for one grip and damper assembly only. Procedures are identical for all four grips and damper assemblies.

6. Remove two nuts (12) and two washers (13) attaching damper assembly (10) to shear bearing (14).

7. Remove two bolts (15) and two washers (16) from shear bearing (14) and damper assembly (10).

NOTE

If main rotor hub adapter (B3) is not available, upper half of drive ring set may be used to support yoke assembly on main rotor hub support assembly (B166).



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8. Remove yoke assembly (7) from lower plate (6). Place yoke assembly (7) on main rotor hub support assembly (B166) with main rotor hub adapter (B3).

9. Separate damper assembly (10) from shear bearing (14).

10. Disconnect shear bearing (14) and pitch horn (17) from grip (18).

a. Cut lockwire and remove four bolts (19) and four washers (20).

b. Use rubber mallet to remove pitch horn (17) and shear bearing (14) from grip (18).

11. Twist damper assembly (10) and remove.

NOTE

Refer to Task 5-1-38 for removal of grips and adapter assemblies.

CLEAN

Drycleaning Solvent

CAUTION

Drycleaning solvent (D199) shall not be allowed to come in contact with elastomer, or damage to equipment may result.

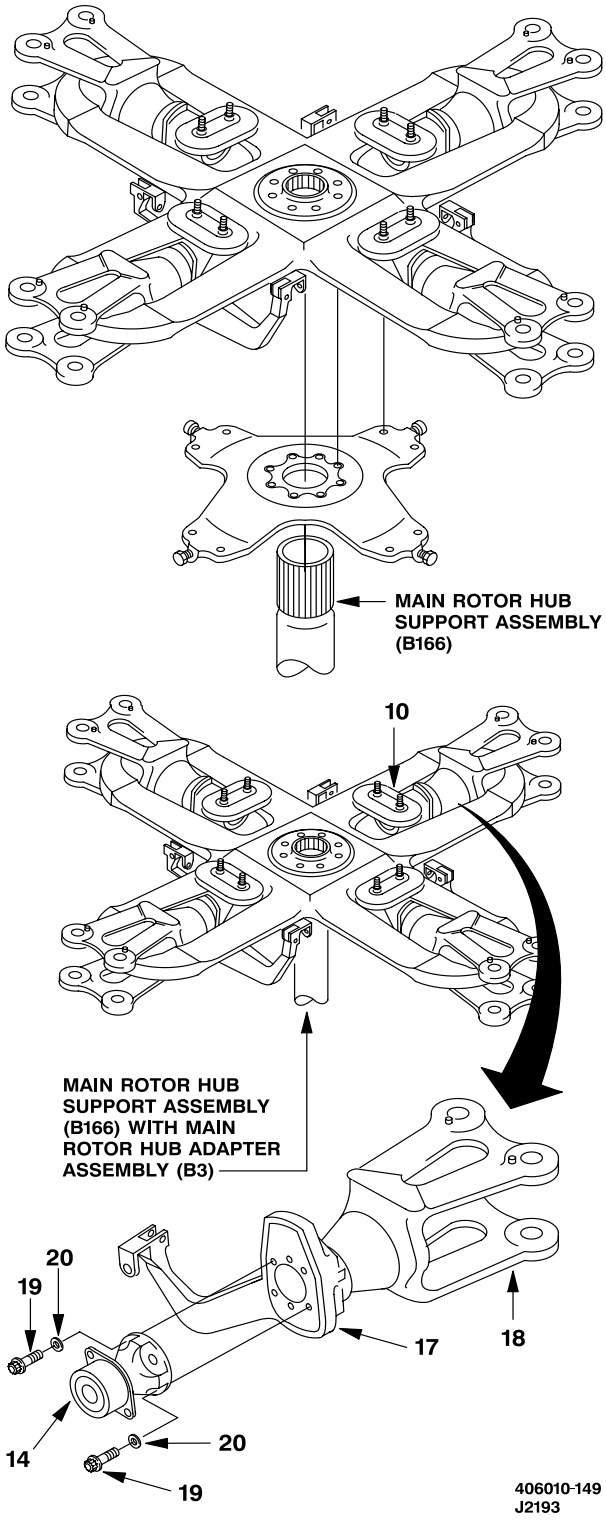
12. Clean all parts and hardware removed with drycleaning solvent (D199) and dry parts with wiping rags (D164).

INSPECT

13. Inspect all nuts, bolts, washers, and shims for damage. Replace if necessary.

14. Inspect damper assemblies (Task 5-1-16).

15. Inspect upper plate (Task 5-1-18).



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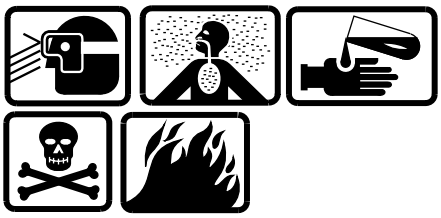
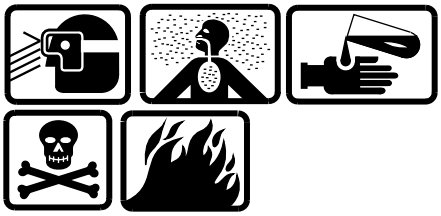
INSTALL



Corrosion Preventive Compound

16. Apply CPC (D83) to faying surfaces of dampers (10).



Epoxy Primer Coating

17. Apply epoxy primer coating (D98) to faying surfaces of shear bearings (14), pitch horns (17), and grips (18).

18. Install grips and adapter assemblies (Task 5-1-38). Apply corrosion preventive compound (D83) to faying surfaces.

19. Install pitch horn (17). Position damper (10) into yoke (7). Install shear bearing (14) on grip (18).

20. Apply CPC (D83) to shank of bolts (19).

21. For each grip (18), install four bolts (19) and four washers (20).

WARNING

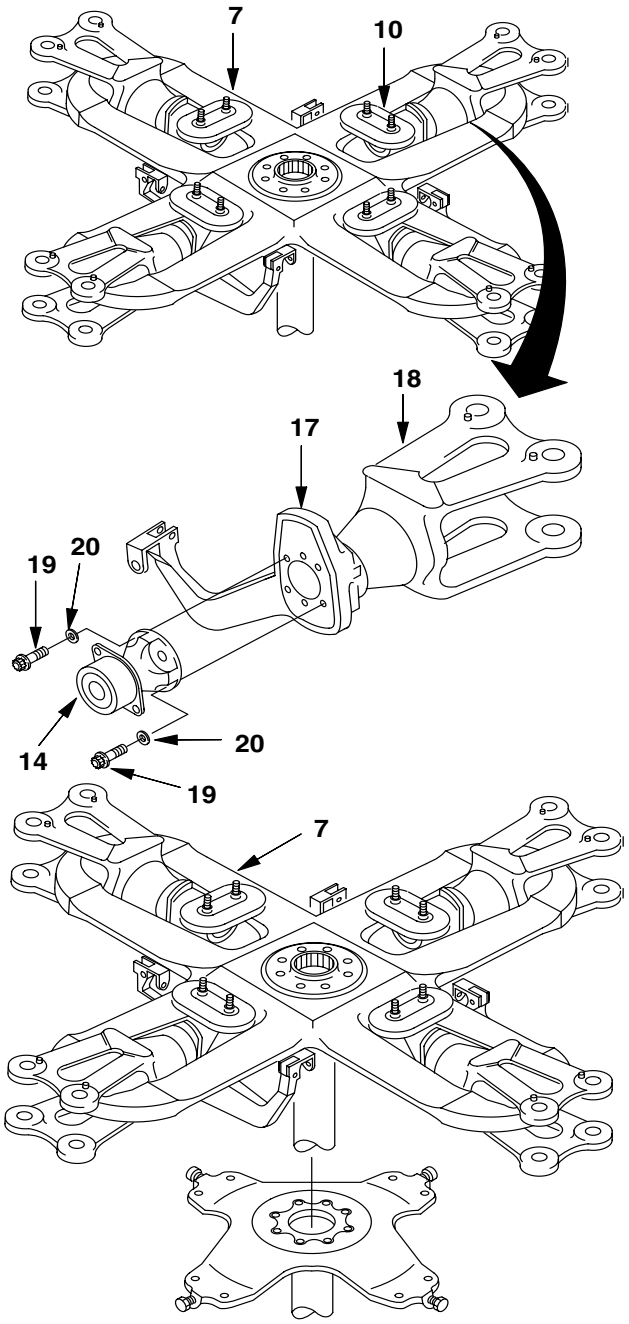
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing and lockwiring of bolts are characteristics critical to flight safety.

22. Torque bolts (19) **300 TO 336 INCH-POUNDS**.

23. Secure bolts (19) with lockwire (D133).

24. Apply CPC (D83) to exposed surfaces of bolts (19) and washers (20).



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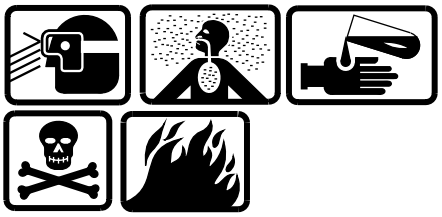
25. Apply CPC (D82) to exposed surfaces of drive ring lower surface (21) and lower plate (6).

26. Position yoke (7) onto lower plate (6).



Corrosion Preventive Compound

27. Apply CPC (D83) to shank of bolts (15).

NOTE

Main rotor hub adapter (B3) should be removed from main rotor hub support assembly (B166) to accommodate yoke with lower plate installed.

28. Install two bolts (15) and washers (16) through damper assembly (10) and shear bearing (14).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of nuts is a characteristic critical to flight safety.

29. Install two washers (13) and nuts (12) on bolts (15).

30. Torque nuts (12) **75 TO 95 INCH-POUNDS**.

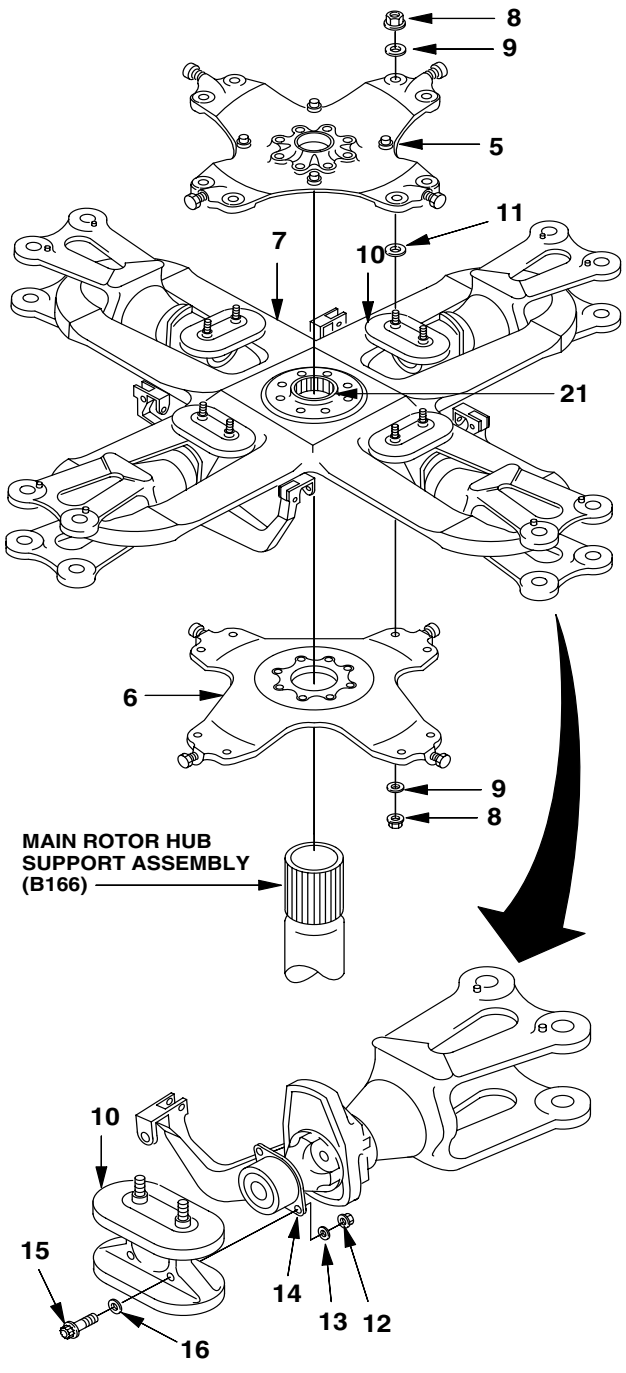
31. Apply CPC (D82) to exposed surfaces of bolts (15), washers (13 and 16), and nuts (12).

32. Apply CPC (D82) to faying surfaces of upper plate (5) and yoke assembly (7) and upper surface of drive ring set (21).

33. Position upper plate (5) onto damper assemblies (10).

34. Install shims (11) (Task 5-1-17).

35. Install 16 nuts (8) and 16 washers (9) to secure upper plate (5) and lower plate (6).



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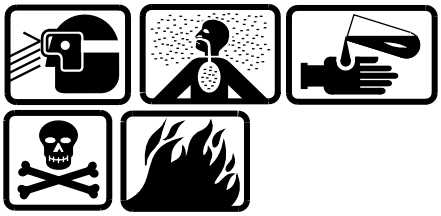
36. Torque nuts (8) **75 TO 95 INCH-POUNDS**.



Corrosion Preventive Compound

37. Apply CPC (D82) to surfaces of nuts (8) and washers (9).

38. Apply CPC (D83) to shanks of bolts (3).

39. Install eight bolts (3) and washers (4) attaching upper plate (5) and lower plate (6) to yoke assembly (7). Install eight washers (2) and nuts (1).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of nuts is a characteristic critical to flight safety.

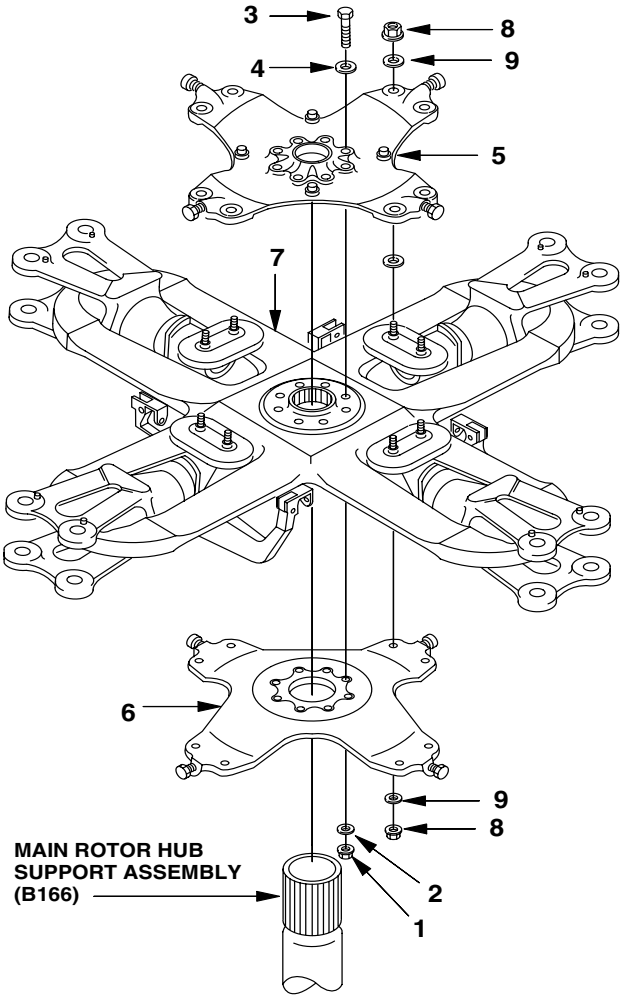
40. Torque nuts (1) **696 TO 744 INCH-POUNDS**.

41. Apply CPC (D82) to exposed surfaces of nut (1), washers (2 and 4), and bolts (3).

CAUTION

CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals, or damage to equipment may result.

42. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.



INSPECT

FOLLOW-ON MAINTENANCE

Perform retorque (Chapter 1, Section IX).

END OF TASK

5-1-16. MAIN ROTOR HUB DAMPER (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Drycleaning Solvent (D199)
Wiping Rags (D164)
Sandpaper (D175)
Crocus Cloth (D90)
Rubber Gloves (D111)
Epoxy Primer Coating (D98)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 55-1500-345-23

CLEAN

Drycleaning Solvent

CAUTION

Drycleaning solvent (D199) shall not be allowed to come in contact with elastomer or damage to equipment may result.

1. Clean dampers with cloth moistened with drycleaning solvent (D199).

2. Dry dampers with wiping rags (D164).

INSPECT

3. Inspect metal part of dampers to limits shown; reject if limits are exceeded. See figure Main Rotor Hub Damper — Damage Limits.

4. Inspect dampers for elastomer separation, cracks, or tears. Localized defects are not cause for removal. Remove the damper if any of the following conditions are noted:

a. A debond or tear to the bondline exists such that a **0.005 inch** thick feeler gage can be inserted to a depth of **0.50 inch** or more for a length of **2.0 inches** or more.

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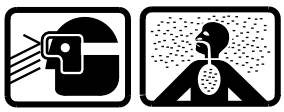
b. A tear perpendicular to the bondline exists such that a **0.005 inch** thick feeler gage can be inserted more than **1.0 inch** into any one crack.

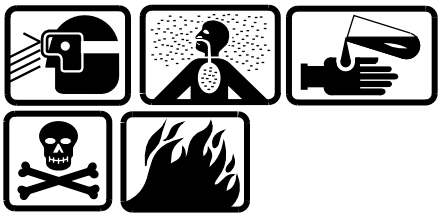
REPAIR



Sanding Operations

5. Polish out repairable damage with 400 grit sandpaper (D175).

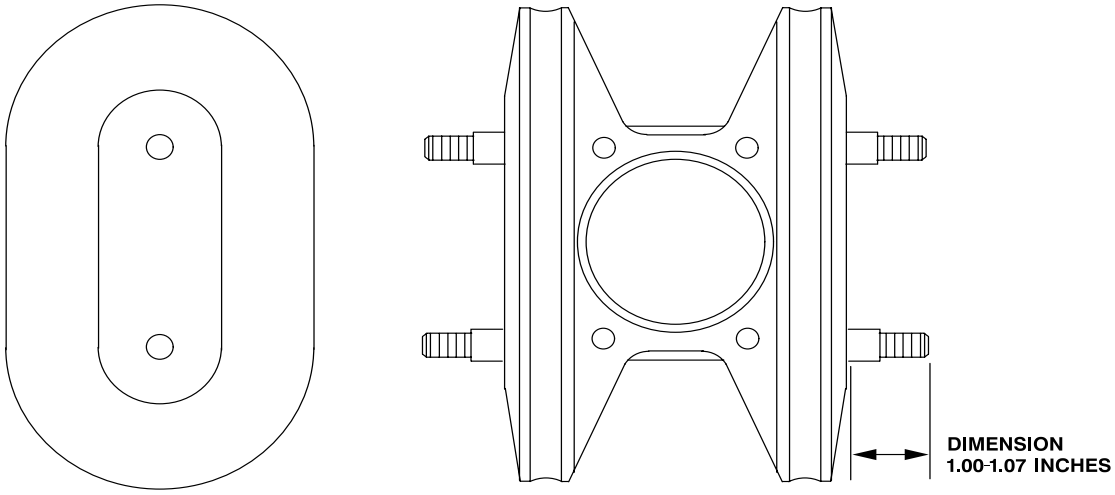
6. Remove any sanding marks with crocus cloth (D90).



Epoxy Primer Coating

7. Touch up finish of dampers with a brush coat of epoxy primer coating (D98) (TM 55-1500-345-23).

INSPECT



TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL	0.040 In. before and after repair
CORROSION	0.020 In. before and 0.040 in after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.25 Sq. in.
NUMBER OF REPAIRS	One per surface
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In. x 45°
THREAD DAMAGE:	
Depth:	1/3 Of thread
Length:	0.25 Inch
Number:	One per threaded segment

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Main Rotor Hub Damper — Damage Limits

END OF TASK

5-1-17. MAIN ROTOR HUB DAMPER SHIMS (AVIM) — REMOVAL/INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Torque Wrench (B242)
Torque Wrench (B237)
Main Rotor Hub and Blade Sling (B151)
Hoist (B69)

Material:
Drycleaning Solvent (D199)
Wiping Rags (D164)
Corrosion Preventive Compound (CPC) (D82)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

Equipment Condition:
Main Rotor Blades Removed (Task 5-1-5)

GO TO NEXT PAGE

5-1-17. MAIN ROTOR HUB DAMPER SHIMS (AVIM) — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Remove eight nuts (1) with washers (2) from bolts (3) attaching upper plate (4) and lower plate (5) to yoke (6).

2. Remove eight bolts (3) with washers (7) from upper plate (4).

3. Remove eight nuts (8) with washers (9) from upper plate (4), and eight nuts (8) with washers (9) from lower plate (5).

NOTE

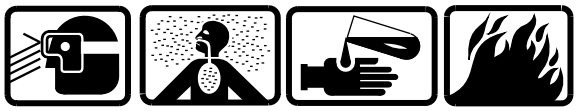
Nonmetallic wedges may be used to assist in removal of upper and lower plate.

4. Remove upper plate (4) and shims (10) from yoke (6).

5. Install hoist (B69) and main rotor hub and blade sling (B151) with straps positioned between two blade grips (11).

6. Lift main rotor hub assembly slightly to separate lower plate (5) from hub assembly until shims (10) can be removed.

7. Remove shims (10) from four damper assemblies (12).



Drycleaning Solvent

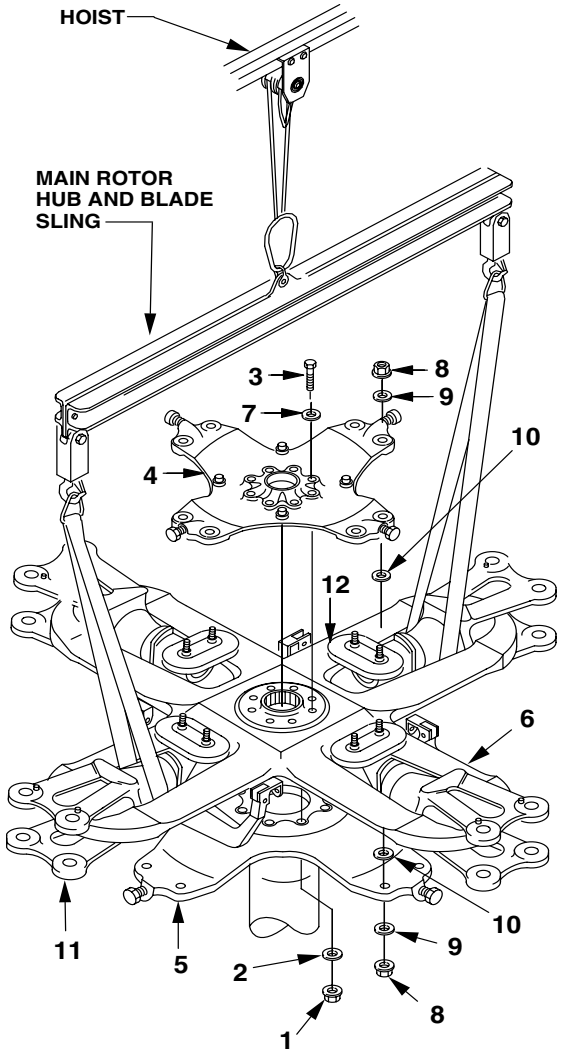
CAUTION

Dampers shall be cleaned with a cloth moistened with drycleaning solvent. Drycleaning solvent (D199) shall not be allowed to come in contact with elastomer in damper.

8. Clean upper plate (4), lower plate (5), and damper assemblies (12) with drycleaning solvent (D199) and dry with wiping rags (D164).

9. Lower hub assembly until hoist has slack.

10. Install eight bolts (3) with washers (7) through upper plate (4), yoke (6), and lower plate (5).



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11. Install washers (2) with nuts (1) on bolts (3). Torque nuts (1) **696 to 744 INCH-POUNDS**.

NOTE

Steps 12, 13, and 14 apply to each stud on all four dampers. Dimensions shall be taken for each individual damper stud and coded per color codes and right or left on the upper plate.

12. Install two washers (9) and two nuts (8) on damper studs at lower plate (5). Torque nuts (8) **75 TO 95 INCH-POUNDS**.

13. Use feeler gage to measure dimension between upper plate (4) surface A, and top of buffer shim pad on damper (12) surface B.

14. Take the dimension and add **0.080 inch**, divide by 2 and note total. Dimension will be used on installation.

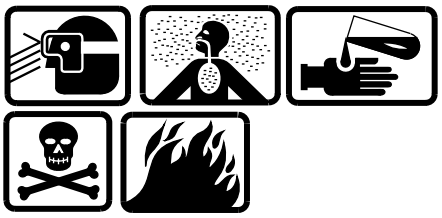
15. Remove nuts (8) and washers (9).

16. Remove eight nuts (1) with washers (2) from bolts (3). Remove bolts (3) and washers (7).

INSTALL

17. Raise hub assembly until upper plate (4), yoke (6), and lower plate (5) can be separated enough to install shims (10).

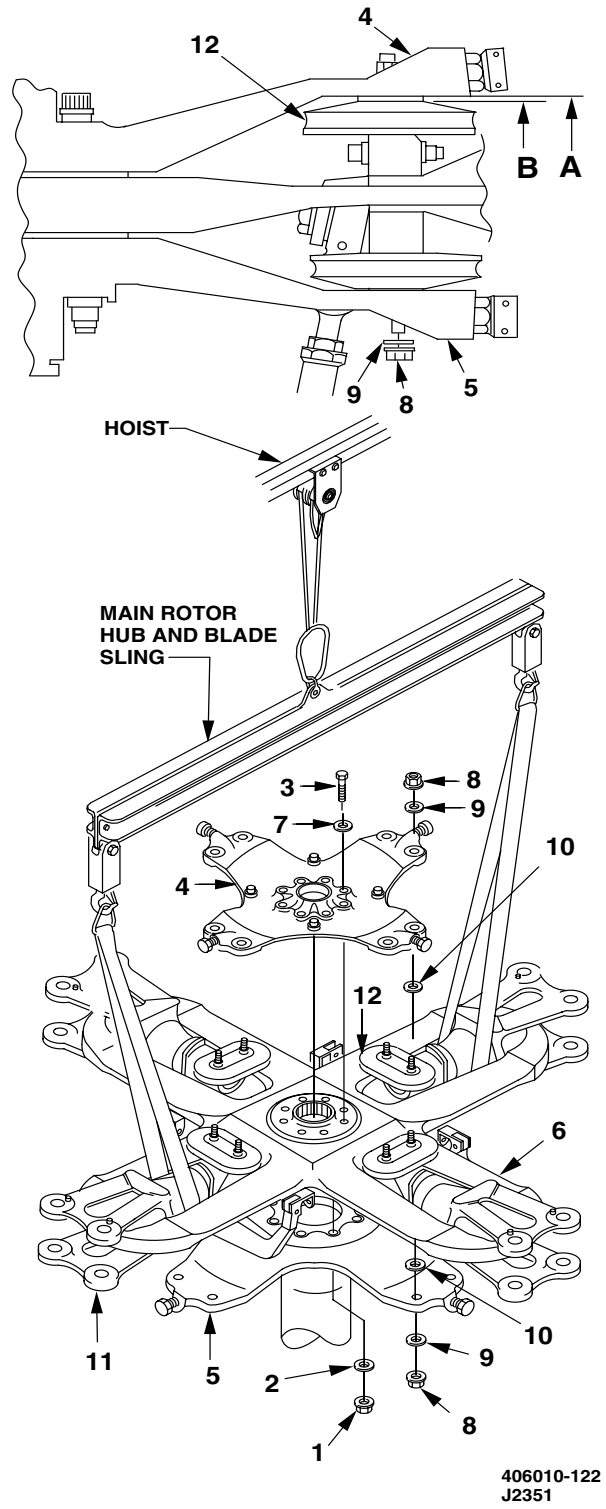
18. Install equal shims (10) thickness, within ±**0.002 inch**, determined in steps 12 through 14, on upper and lower surfaces of damper assemblies (12).



Corrosion Preventive Compound

19. Apply CPC (D81) to faying surfaces of damper assemblies (12), upper plate (4), and lower plate (5).

20. Lower hub assembly and main rotor hub and blade sling, hoist, and straps.



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WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing and lockwiring of bolts are characteristics critical to flight safety.

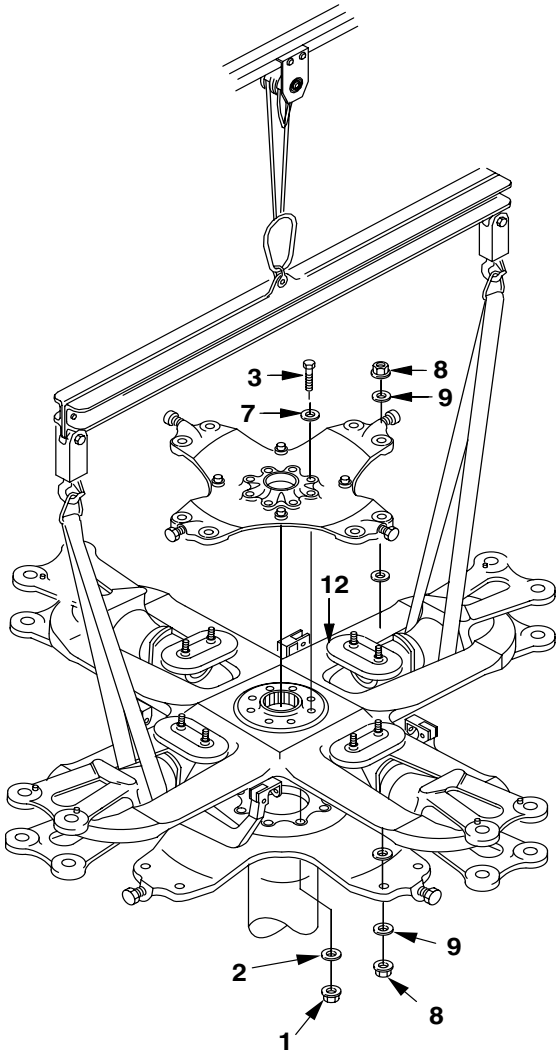
21. Install eight bolts (3), washers (7), washers (2), and nuts (1). Torque nuts (1) **696 TO 744 INCH-POUNDS**.

22. Install eight nuts (8) and washers (9) on top studs of dampers (12). Install eight washers (9) and nuts (8) on bottom studs of dampers. Torque nuts (8) **75 TO 95 INCH-POUNDS**.

INSPECT

FOLLOW-ON MAINTENANCE

Install main rotor blades (Task 5-1-5).



406010-121-2
J2351

END OF TASK

5-1-18. MAIN ROTOR HUB UPPER PLATE — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Drycleaning Solvent (D199)
Wiping Rags (D164)
Sandpaper (D175)
Crocus Cloth (D90)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 55-1500-345-23
TM 1-1520-266-23

GO TO NEXT PAGE

5-1-18. MAIN ROTOR HUB UPPER PLATE — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN

Drycleaning Solvent

1. Clean upper plate with drycleaning solvent (D199).

2. Dry upper plate with wiping rags (D164).

INSPECT

3. Inspect upper plate to limits shown: reject if limits are exceeded. See figure Main Rotor Hub Upper Plate — Damage Limits.

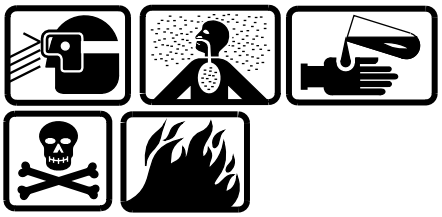
3.1. If a crack on the surface of the upper plate is suspected, refer to TM 1-1520-266-23.

REPAIR

Sanding Operations

4. Polish out repairable damage with 400 grit sandpaper (D175).

5. Remove any sanding marks with crocus cloth (D90).



Epoxy Primer Coating

Acrylic Lacquer

6. Refinish repaired surfaces with epoxy primer coating (D98) followed by two coats of black acrylic lacquer (D124) in accordance with TM 55-1500-345-23.

INSPECT

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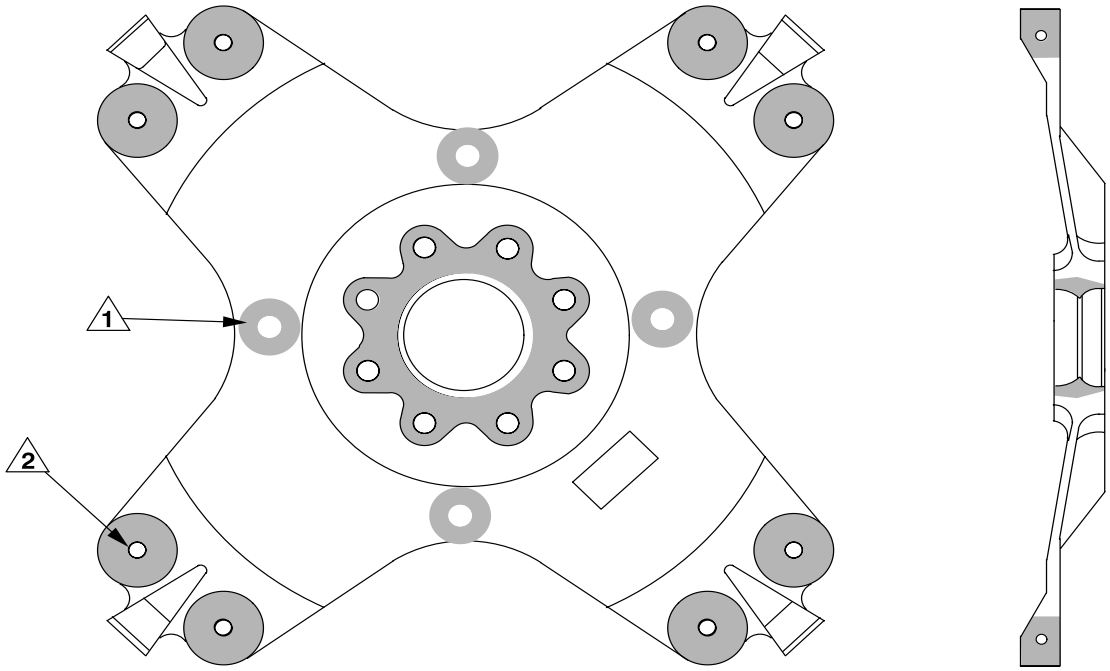
5-1-18. MAIN ROTOR HUB UPPER PLATE — CLEANING/INSPECTION/REPAIR (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.010 In. before and after repair	0.020 In. before and after repair
CORROSION	0.005 In. before and 0.010 in after repair	0.010 In. before and 0.020 in after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.10 Sq. in.	Not critical
NUMBER OF REPAIRS	One per lug	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.020 In.	0.040 In.
BORES	0.001 In. for full circumference	

NOTE

1. Maximum allowable diameter 0.438 inch (typical 4 places)
2. Maximum allowable diameter 0.386 inch (typical 8 places)
3. No cracks are permitted.

406010-8
J0455

Main Rotor Hub Upper Plate — Damage Limits

END OF TASK

5-1-19. MAIN ROTOR HUB SHEAR BEARING (AVIM) — REMOVAL/INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Torque Wrench (B241)

Material:
Rubber Gloves (D111)
Drycleaning Solvent (D199)
Wiping Rags (D164)
Lockwire (D133)
Corrosion Preventive Compound (CPC) (D82)
Epoxy Primer Coating (D98)

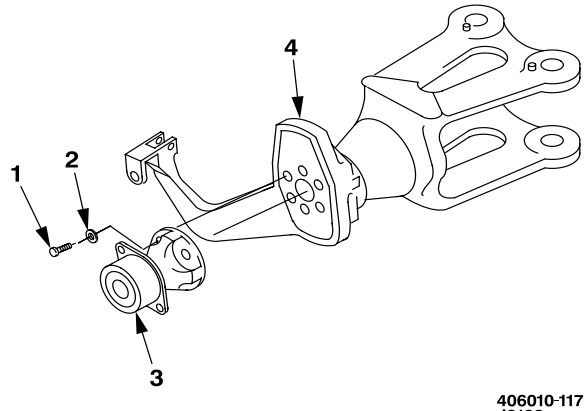
Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

Equipment Condition:
Main Rotor Hub Damper Removed (Task 5-1-15)

REMOVE

1. Cut lockwire and remove bolts (1) and washers (2) attaching shear bearing (3) to pitch horn assembly (4).

2. Remove shear bearing (3) from pitch horn assemblies (4).



406010-117
J2193

CLEAN


Drycleaning Solvent

CAUTION

Drycleaning solvent (D199) shall not be allowed to come in contact with elastomer in shear bearing.

3. Clean all disassembled parts and hardware with drycleaning solvent (D199) and dry with wiping rags (D164).

INSPECT

4. Inspect all nuts, bolts, washers, and shims for damage. Replace if necessary.

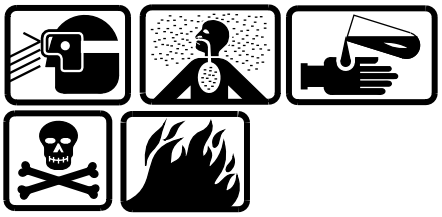
5. Inspect shear bearing (Task 5-1-20).

6. Inspect damper (Task 5-1-16).

7. Inspect upper plate (Task 5-1-18).

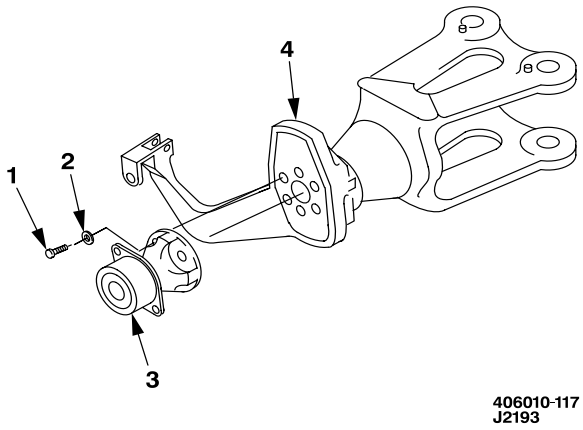
GO TO NEXT PAGE

INSTALL



Epoxy Primer Coating

8. Apply epoxy primer coating (D98) to faying surfaces of shear bearing (3), align shear bearing (3) with pitch horn assembly (4), and install 16 bolts (1) and washers (2) through shear bearing (3) and into pitch horn assembly (4).



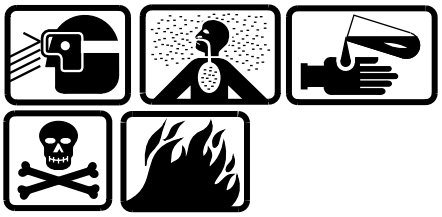
406010-117
J2193

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing and lockwiring of bolts are characteristics critical to flight safety.

9. Torque bolts (1) **300 TO 336 INCH-POUNDS** and secure with lockwire (D133).



Corrosion Preventive Compound

10. Apply CPC (D82) to bolts (including threads) (1) and washers (2).

INSPECT

FOLLOW-ON MAINTENANCE

Install main rotor hub damper (Task 5-1-15).

END OF TASK

5-1-20. MAIN ROTOR HUB SHEAR BEARING (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Drycleaning Solvent (D199)
Wiping Rags (D164)
Sandpaper (D175)
Crocus Cloth (D90)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 55-1500-345-23

CLEAN

Drycleaning Solvent

CAUTION

Drycleaning solvent (D199) shall not be allowed to come in contact with elastomer, or damage to equipment may result.

1. Clean shear bearing with drycleaning solvent (D199).

2. Wipe shear bearing dry with wiping rag (D164).

INSPECT

3. Inspect shear bearing for evidence of cracked shims. Replace if a shim crack is detected. See figure Main Rotor Hub Shear Bearing — Damage Limits.

4. Inspect bearing for evidence of shims touching. This will occur in areas where the elastomer is missing and will result in clean or fretted metallic surfaces exposed in the elastomer area on two adjacent shims. Replace if this condition exists.

5. Inspect bearing for elastomer separation, cracks, or tears. Localized defects are not cause for removal. Evidence of edge separation, cracks, or tears 360 degrees on both sides of one laminate is cause for removal.

6. Inspect bearing for elastomer voids. A void in the elastomer is defined as an area where the elastomer is missing and a **0.015 inch** thick feeler gage may be easily inserted without deflecting the bearing. Any void whose total depth exceeds **0.38 inch** and length exceeds 45 degrees of arc, is cause for bearing replacement. The total depth is the sum of the void depth from both sides at the same location in the layer.

GO TO NEXT PAGE

7. Inspect bearing for elastomer sheeting or extruding out from between the shim edge and the maximum arc (in degrees) of the damaged area. If the combination of extension versus arc (in degrees) plots above the attached curve, replace bearings. See Chart.

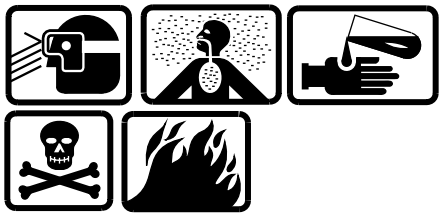
8. Inspect metal part of shear bearing to limits shown: reject if limits are exceeded.

REPAIR

Sanding Operations

9. Polish out repairable damage with 400 grit sandpaper (D175).

10. Remove any sanding mark with crocus cloth (D90).



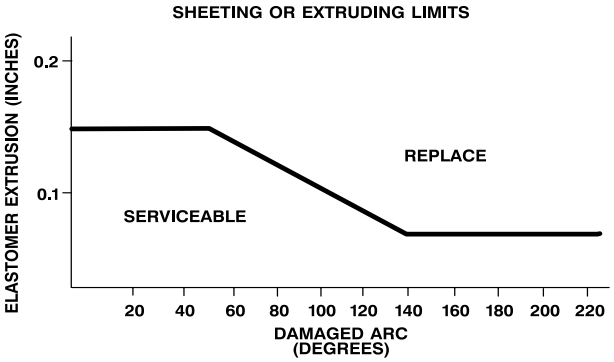
Epoxy Primer Coating

Acrylic Lacquer

11. Refinish repaired surface with epoxy primer coating (D98) followed by two coats of black acrylic lacquer (D124) in accordance with TM 55-1500-345-23.

INSPECT

SHEARING BEARING DAMAGE LIMITS SCALE



406310-9
J2193

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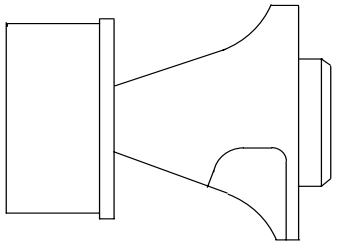
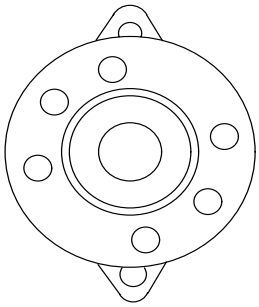




TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL	0.020 In. before and after repair
CORROSION	0.010 In. before and 0.020 in after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.50 Sq. in.
NUMBER OF REPAIRS	One per surface
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.
BORES	0.002 For 1/4 of circumference

NOTE

No cracks are permitted.

406310-4
J0455

Main Rotor Hub Shear Bearing — Damage Limits

END OF TASK

5-1-21. MAIN ROTOR PITCH HORN ASSEMBIES (AVIM) — REMOVAL/INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Drycleaning Solvent (D199)
Wiping Rags (D164)
Corrosion Preventive Compound (D82)
Rubber Gloves (D111)

Personnel Required:
68D Aircraft Powertrain Repairer
67S Scout Helicopter Technical Inspector (TI)

Equipment Condition:
Main Rotor Hub Dampers Removed (Task 5-1-15)
Shear Bearings Removed (Task 5-1-19)

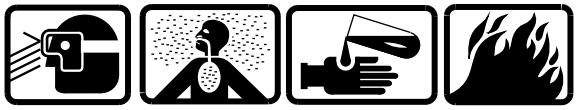
GO TO NEXT PAGE

5-1-21. MAIN ROTOR PITCH HORN ASSEMBIES (AVIM) — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Remove four pitch horn assemblies (1) from guide pins (2) of grip assemblies (3).

CLEAN



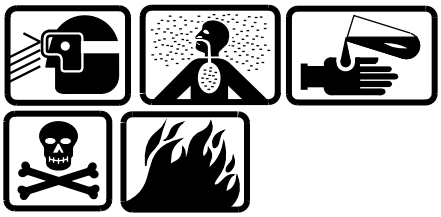
Drycleaning Solvent

2. Clean pitch horn assemblies (1) with drycleaning solvent (D199) and dry with wiping rags (D164).

INSPECT

3. Inspect pitch horn assemblies (Task 5-1-22).

PREPARATION



Corrosion Preventive Compound

4. Apply CPC (D82) to faying surfaces of four pitch horn assemblies (1).

INSTALL

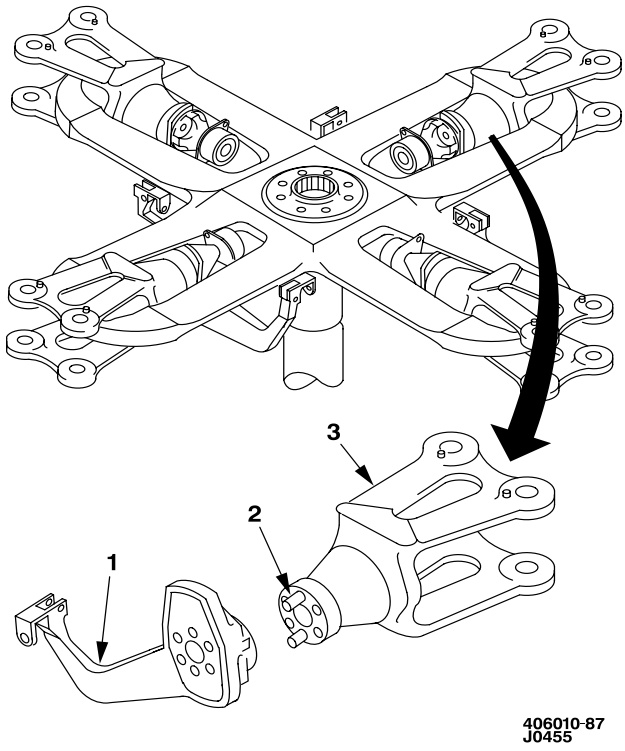
5. Install pitch horn assemblies (1) on guide pins (2) on grip assemblies (3).

INSPECT

FOLLOW-ON MAINTENANCE

Install shear bearings (Task 5-1-19).

Install main rotor hub dampers (Task 5-1-15)



406010-87
J0455

END OF TASK

5-1-22. MAIN ROTOR PITCH HORN ASSEMBLY (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspecting, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Heat Gun (B59)

Material:
Adhesive EA 9340 (D24)
Drycleaning Solvent (D199)
Wiping Rags (D164)
Sandpaper (D175)
Crocus Cloth (D90)
Rubber Gloves (D111)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Aliphatic Naphtha (D141)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1520-266-23

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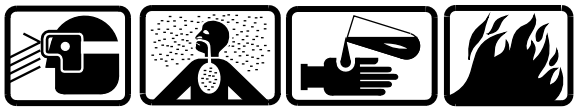
CLEAN



Drycleaning Solvent

1. Clean pitch horn with drycleaning solvent (D199).

2. Wipe pitch horn dry with wiping rag (D164).

INSPECT

3. Inspect pitch horn to limits shown; reject if limits are exceeded. See figure Main Rotor Pitch Horn Assembly — Damage Limits.

3.1. If a crack on the surface of the pitch horn is suspected, refer to TM 1-1520-266-23.

4. Inspect pitch horn bushings for damage. Replace if damaged (Task 5-1-23).

5. Inspect pitch horn stop plate for damage and separation from pitch horn. Replace pitch horn stop plate if wear and/or damage removal is beyond **0.010 inch.** See figure Stop Plate — Damage Limits.

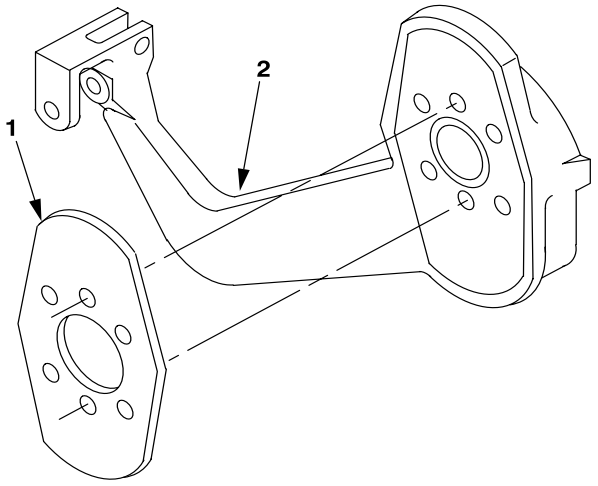
REPAIR

6. Replace pitch horn stop plate (1) as follows:

Heat

a. To soften adhesive, use heat gun (B59) to heat pitch horn (2) and stop plate (1). Do not exceed 250 °F.

b. Separate stop plate (1) from pitch horn (2).



406010-306
J0455

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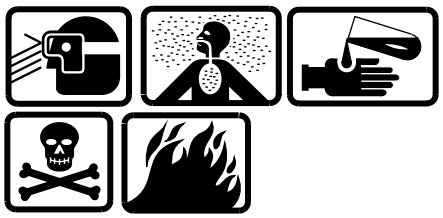
Sanding Operations

c. Remove old adhesive with 400 grit sandpaper (D175).



Naphtha/Naphthalene, TT-N-97

d. Clean abraded surface with wiping rag (D164) dampened with naphtha (D141).

Adhesive

e. Mix adhesive (D24) per manufacturers instructions and apply to pitch horn (2) with spatula or other suitable tool.

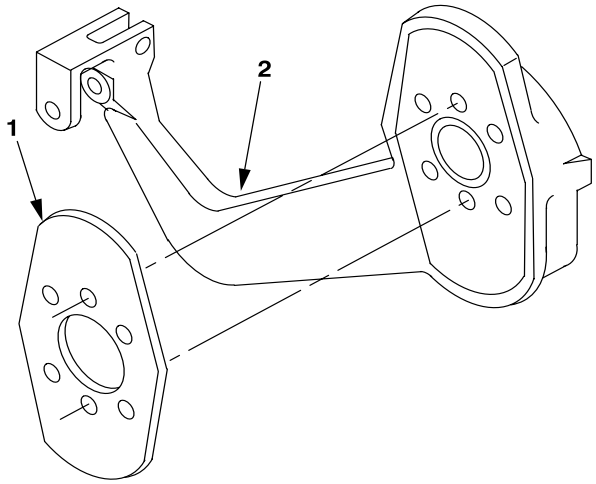
f. Position stop plate (1) onto pitch horn (2) and apply firm pressure to hold in place.

g. Clean adhesive squeezed out with wiping rag (D164) dampened with naphtha (D141).

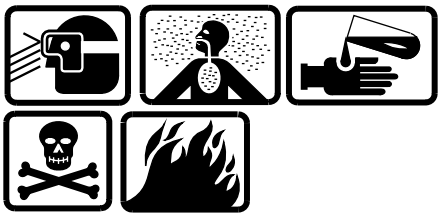
h. Cure adhesive (D24) for 24 hours at room temperature or for 30 minutes at 145 to 180 °F.

7. Polish out repairable damage with 400 grit sandpaper (D175).

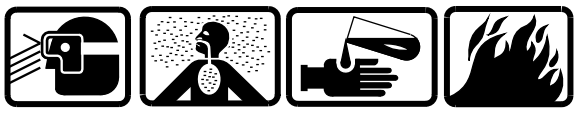
8. Remove any sanding marks with crocus cloth (D90).



406010-306
J0455



Epoxy Primer Coating



Acrylic Lacquer

9. Refinish pitch horn with a mist coat of epoxy primer coating (D98) followed by two coats of black acrylic lacquer (D124).

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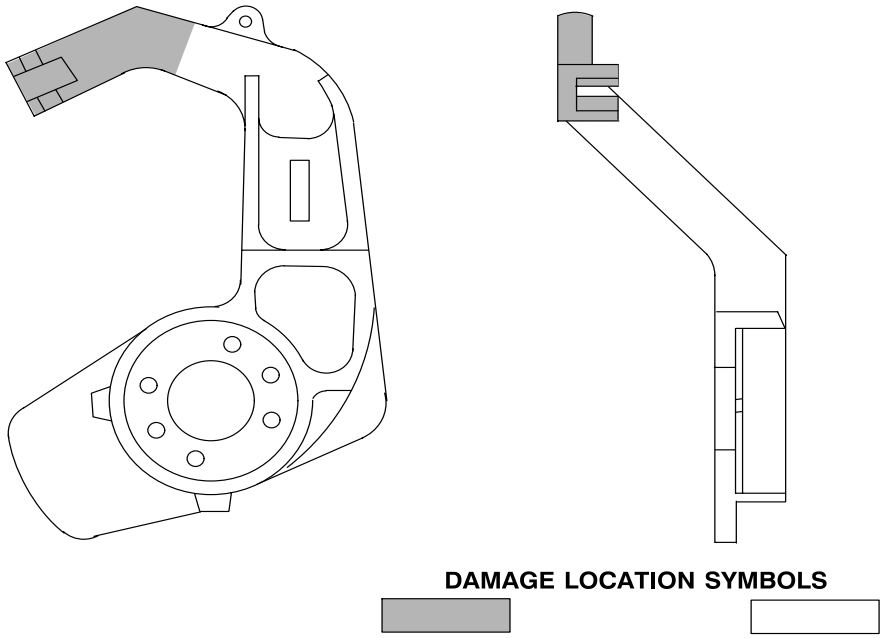

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.005 In. before and after repair	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.25 Sq. in.	0.15 Sq. in.
NUMBER OF REPAIRS	One	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.010 In.	0.020 In.
BORES	0.002 In. for 1/4 circumference	

NOTE

No cracks are permitted.

406010-30
J0455

Main Rotor Pitch Horn Assembly — Damage Limits

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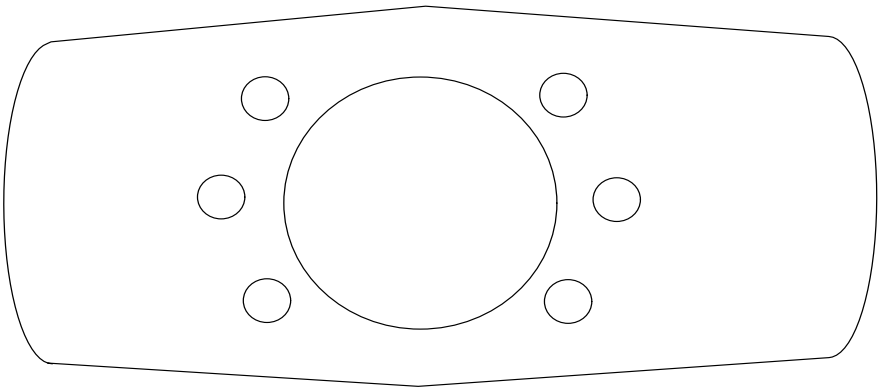


STOP PLATE

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL AND CORROSION	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	Not critical ⚠2
NUMBER OF REPAIRS	Not critical ⚠2
EDGE CHAMFER TO REMOVE DAMAGE	0.020 In. before and after repair

NOTES

1. No cracks are permitted.
2. ⚠2 Plate thickness at any point should not be less than 0.020 inch.
3. No disbonding from pitch horn permitted.

406010-528
J0482

Stop Plate — Damage Limits

END OF TASK

5-1-23. MAIN ROTOR PITCH HORN BUSHINGS (AVIM) — REMOVAL/INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Hand Arbor Press (B107)
Freezer (B46)

Material:
Epoxy Primer Coating (D98)
Acetone (D2)
Abrasive Pads (D147)
Cotton Gloves (D112)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

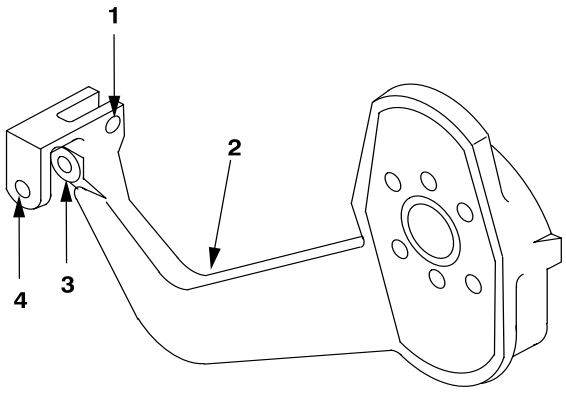
Equipment Condition:
Pitch Horn Removed (Task 5-1-21)

REMOVE

1. Using hand arbor press (B107), press out defective pitch lock bushings (1) from four pitch horn assemblies (2).

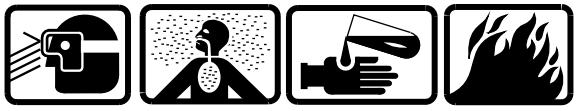
2. Using hand arbor press (B107), press out defective clevis bushings (3) from four pitch horn assemblies (2).

3. Using hand arbor press (B107), press out defective sleeve bushings (4) from four pitch horn assemblies (2).



406010-90
J0455

CLEAN



Acetone

4. Remove primer from bores using acetone (D2) and abrasive pads (D147).

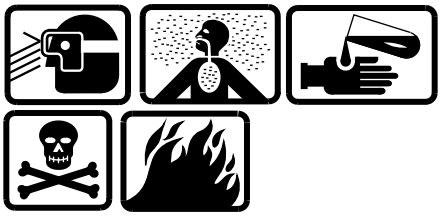
INSPECT

5. Inspect bores for damage.

GO TO NEXT PAGE

INSTALL

6. Using freezer (B46), freeze replacement bushings (1,3 and 4) prior to installation.



Epoxy Primer Coating

7. Apply a coat of epoxy primer coating (D98) to bores in pitch horn assemblies (2).

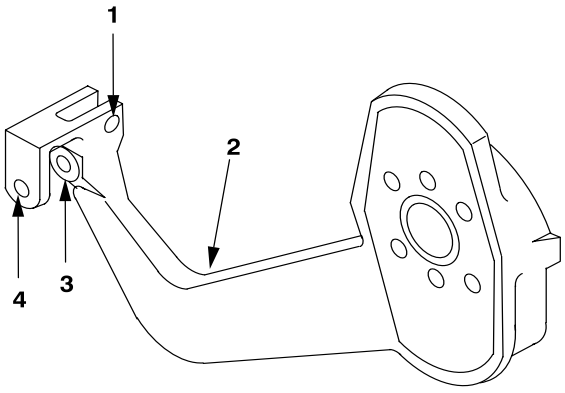
WARNING

Frozen bushings shall be handled with cotton gloves (D112) to prevent injury to skin. If injury occurs, seek medical aid.

NOTE

To ensure bushing remains frozen during installation, only one bushing at a time shall be removed from the freezer for installation.

8. Remove bushings (1, 3 and 4) singly from freezer (B46) and, using hand arbor press (B107), press into pitch horn assemblies (2) while epoxy primer coating (D98) is still wet.



406010-90
J0455

INSPECT

FOLLOW-ON MAINTENANCE

Install pitch horn assemblies (Task 5-1-21).

END OF TASK

5-1-24. MAIN ROTOR GRIP LEAD LAG BEARINGS (AVIM) — REMOVAL/INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Torque Wrench (B237)

Material:
Rubber Gloves (D111)
Drycleaning Solvent (D199)
Wiping Rags (D164)
Lockwire (D132)
Epoxy Primer Coating (D98)

Personnel Required:
68D Aircraft Powertrain Technical Inspector (TI)
68D Aircraft Powertrain Repairer

Equipment Condition:
Main Rotor Grip and Adapter Assembly Removed (Task 5-1-38)

GO TO NEXT PAGE

5-1-24. MAIN ROTOR GRIP LEAD LAG BEARINGS (AVIM) — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Cut lockwire on bolts (1) attaching lead lag bearing (2) to grip (3). Remove bolts (1) with washers (4).

2. Remove lead lag bearing (2).

3. Repeat steps 1 and 2 for the three remaining main rotor grips.

CLEAN

Drycleaning Solvent

CAUTION

Drycleaning solvent (D199) shall not be allowed to come in contact with elastomer in bearings, or damage to equipment may result.

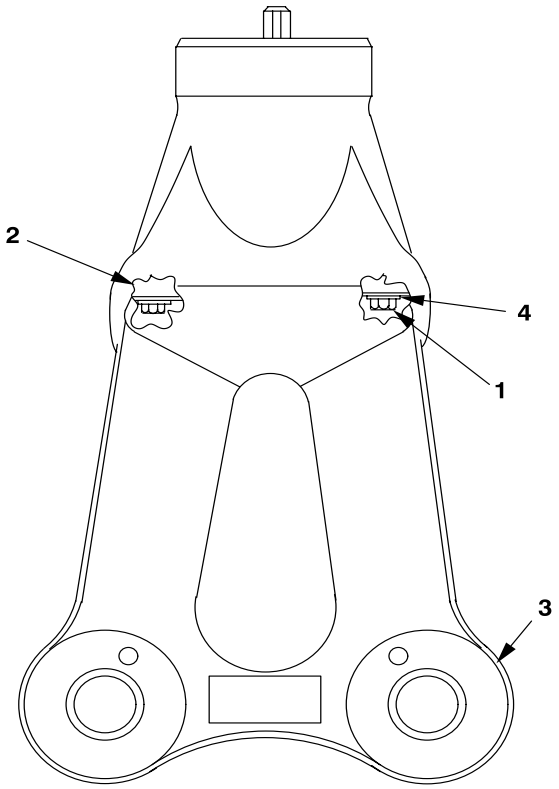
4. Clean all parts and hardware removed with drycleaning solvent (D199) and dry with wiping rags (D164).

INSPECT

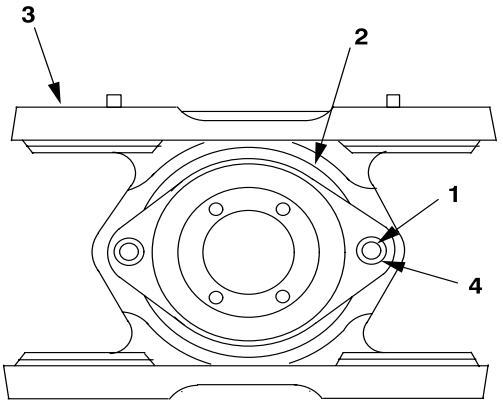
5. Inspect bolts (1) and washers (4) for damage. Replace if necessary.

6. Inspect lead lag bearings (4) (Task 5-1-25).

7. Inspect grip assemblies (3) (Task 5-1-28).



VIEW LOOKING DOWN



VIEW LOOKING INBOARD

406310-14
J2193

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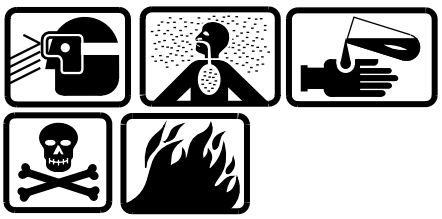
5-1-24. MAIN ROTOR GRIP LEAD LAG BEARINGS (AVIM) — REMOVAL/INSTALLATION (CONT)

INSTALL



Epoxy Primer Coating

8. Apply epoxy primer (D98) to faying surfaces of lead lag bearing (2) and grip (3).

9. Install two bolts (1) with washers (4) through lead lag bearing (2) in grip (3).

10. Torque bolts (1) to maintain gap between lead lag bearing (2) and grip (3) equal within **0.020 inch** until lead lag bearing (2) is seated in grip (3).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing and lockwiring of bolts are characteristics critical to flight safety.

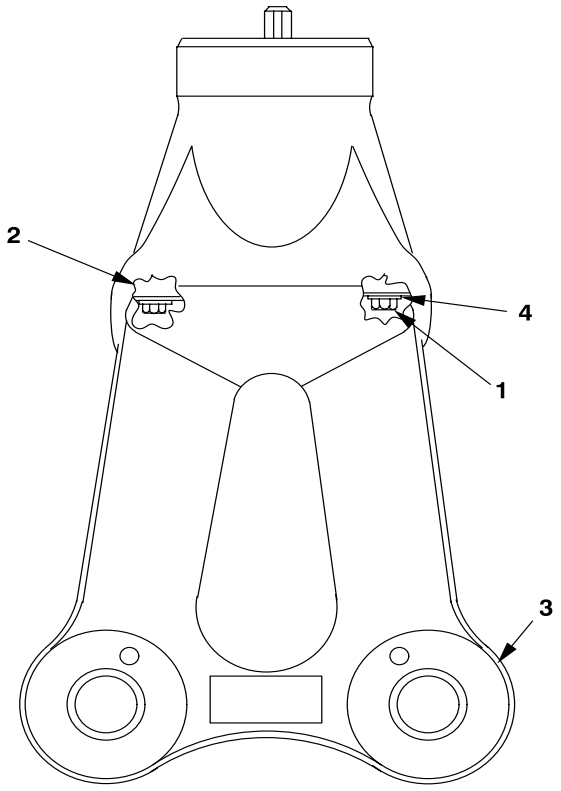
11. Torque bolts (1) **50 TO 70 INCH-POUNDS** and secure with lockwire (D132).

12. Repeat steps 8 through 11 for the three remaining main rotor grips.

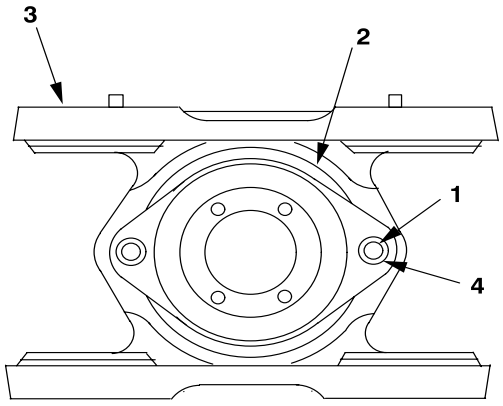
INSPECT

FOLLOW-ON MAINTENANCE

Install main rotor grip and adapter assembly (Task 5-1-38).



VIEW LOOKING DOWN



VIEW LOOKING INBOARD

406310-14
J2193

END OF TASK

5-1-25. MAIN ROTOR GRIP LEAD LAG BEARING (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Drycleaning Solvent (D199)
Wiping Rags (D164)
Sandpaper (D175)
Crocus Cloth (D90)
Rubber Gloves (D111)
LHE Cadmium Solution (D129)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1500-344-23

GO TO NEXT PAGE

5-1-25. MAIN ROTOR GRIP LEAD LAG BEARING (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN

Drycleaning Solvent

CAUTION

Drycleaning solvent (D199) shall not be allowed to come in contact with elastomer, or damage to equipment may result.

1. Clean lead lag bearing with drycleaning solvent (D199).

2. Wipe lead lag bearing dry with wiping rags (D164).

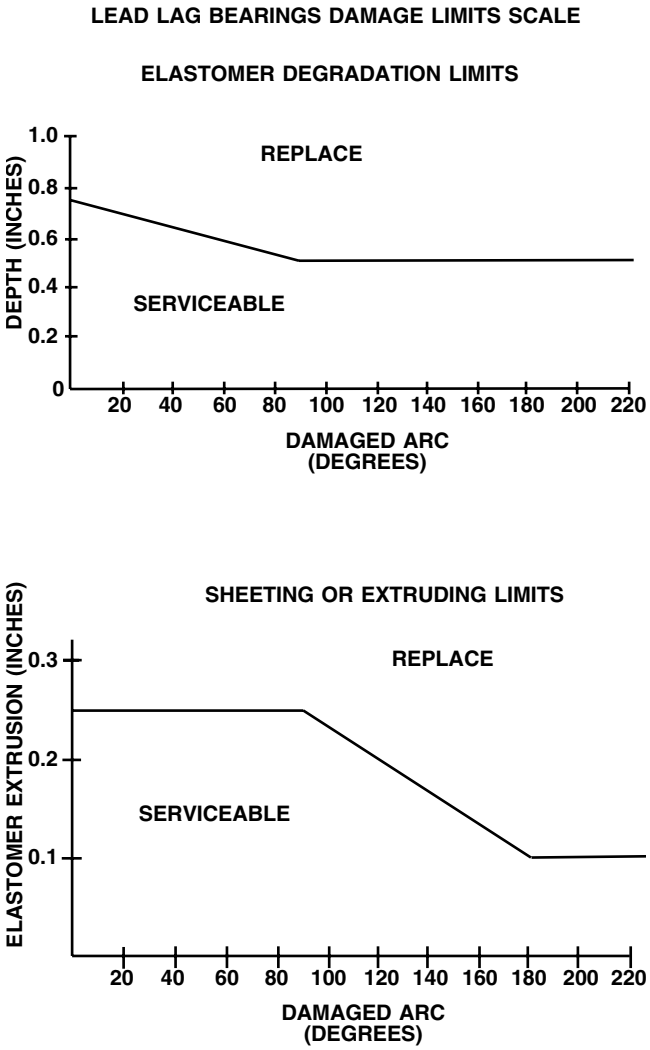
INSPECT

3. Inspect lead lag bearing for evidence of shims touching. This will occur in areas where elastomer is missing and will result in clean or fretted metallic surfaces exposed in elastomer area on two adjacent shims. Replace if this condition exists.

4. Inspect lead lag bearing for elastomer degradation using **0.005 inch** feeler gage. Note maximum depth of penetration of feeler gage and maximum arc (in degrees) of damaged area. If plot of depth versus arc (in degrees) is above attached curve, replace the bearing.

5. Inspect bearing for elastomer sheeting or extruding out from between shims. Note the maximum extension beyond shim edge and maximum arc (in degrees) of damaged area. If the combination of extension versus arc (in degrees) plots above the attached curve, replace lead lag bearing.

6. Inspect metal part of lead lag bearing to limits shown; reject if limits are exceeded. See figure Main Rotor Grip Lead Lag Bearing — Damage Limits.



406310-12
H2254

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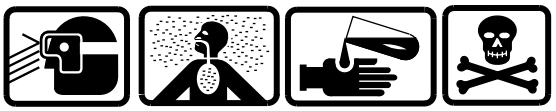
5-1-25. MAIN ROTOR GRIP LEAD LAG BEARING (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

REPAIR

Sanding Operations

7. Polish out repairable damage with 400 grit sandpaper (D175).

8. Remove any sanding marks with crocus cloth (D90).



LHE Cadmium Solution

9. Touch up finish of lead lag bearing with a brush coat of LHE cadmium plate (D129) (TM 1-1500-344-23).

INSPECT

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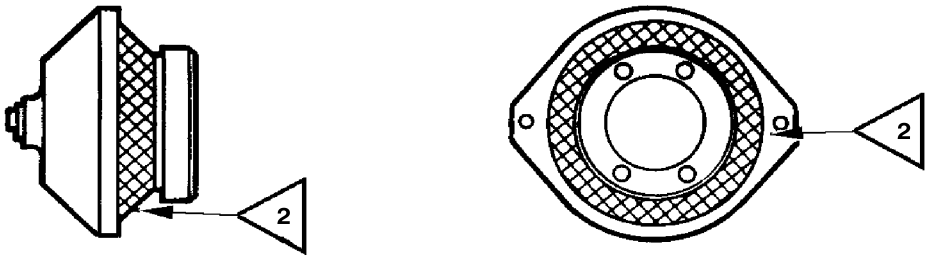
5-1-25. MAIN ROTOR GRIP LEAD LAG BEARING (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL	0.020 In. before and after repair
CORROSION	0.010 In. before and 0.020 in. after repair
MAXIMUM AREA PER FILL DEPTH REPAIR	0.50 Sq. In.
NUMBER OF REPAIRS	One per surface
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.
THREAD DAMAGE:	
Depth;	1/3 Of thread
Length:	1/4 Of circumference
Number:	One per threaded hole

NOTES:

1. No cracks are permitted.
2. Elastomer material. Mechanical and corrosion limits do not apply to this area.

406310-6
J2226

Main Rotor Grip Lead Lag Bearing — Damage Limits

END OF TASK

5-1-26. MAIN ROTOR YOKE ADAPTER ASSEMBLY — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Epoxy Primer Coating (D98)
Drycleaning Solvent (D199)
Wiping Rags (D164)
Sandpaper (D175)
Crocus Cloth (D90)
Rubber Gloves (D111)
Black Acrylic Lacquer (D124)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1520-266-23

CLEAN

Drycleaning Solvent

1. Clean adapter assembly with drycleaning solvent (D199).

2. Wipe adapter assembly dry with wiping rags (D164).

INSPECT

3. Inspect adapter assembly to limits shown; reject if limits are exceeded. See figure Main Rotor Yoke Adapter Assembly — Damage Limits.

3.1. If a crack on the surface of the yoke adapter assembly is suspected, refer to TM 1-1520-266-23.

4. Inspect adapter assembly yoke mount bushings. Replace if damaged.

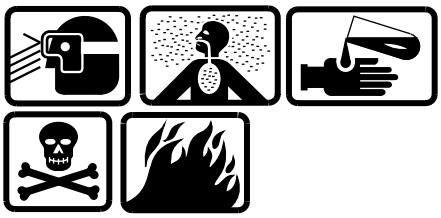
REPAIR

Sanding Operations

5. Polish out repairable damage with 400 grit sandpaper (D175).

6. Remove any sanding marks with crocus cloth (D90).

7. Replace damaged bushings (Task 5-1-27).



Epoxy Primer Coating

Acrylic Lacquer

8. Refinish repaired surfaces with epoxy primer (D98) followed by two coats of black acrylic lacquer (D124).

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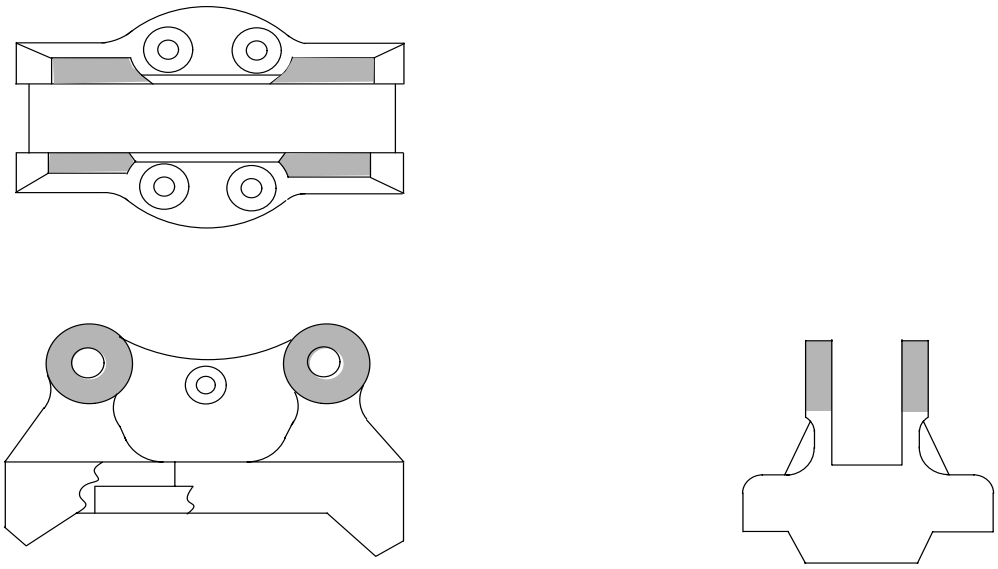


DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.010 In. before and after repair	0.020 In. before and after repair
CORROSION	0.005 In. before and 0.010 In. after repair	0.010 In. before and 0.020 in. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.05 Sq. in.	0.15 Sq. in.
NUMBER OF REPAIRS	One per lug	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.010 In.	0.030 In.
BORES	0.002 In. for 1/4 circumference	

NOTE

No cracks are permitted.

406010-28
J0455

Main Rotor Yoke Adapter Assembly — Damage Limits

END OF TASK

5-1-27. MAIN ROTOR YOKE ADAPTER MOUNT BUSHINGS (AVIM) — REMOVAL/INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Hand Arbor Press (B107)
Freezer (B46)

Material:
Epoxy Primer Coating (D98)
Acetone (D2)
Abrasive Pads (D147)
Cheesecloth (D56)
Cotton Gloves (D112)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

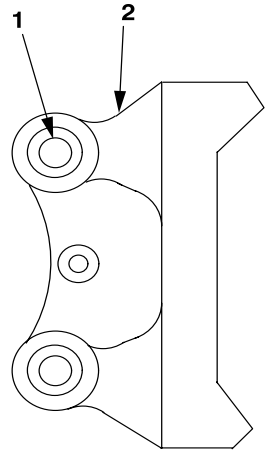
Equipment Condition:
Main Rotor Grip Lead Lag Bearings Removed (Task 5-1-24)

GO TO NEXT PAGE

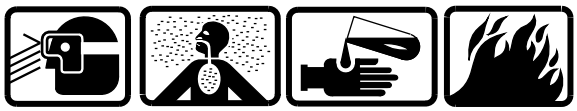
5-1-27. MAIN ROTOR YOKE ADAPTER MOUNT BUSHINGS (AVIM) — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Using hand arbor press (B107), press out defective yoke mount bushings (1) from each of the four yoke adapter assemblies (2).



CLEAN



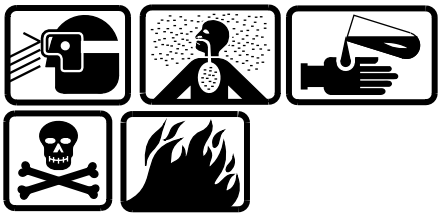
Acetone

2. Remove epoxy primer coating from bushing bores using acetone (D2) and abrasive pads (D147). Dry with cheesecloth (D56).

3. Inspect bores for damage (maximum of **0.002 inch** for 1/4 circumference).

INSTALL

4. Freeze replacement bushings (1) in freezer (B46) prior to installation.



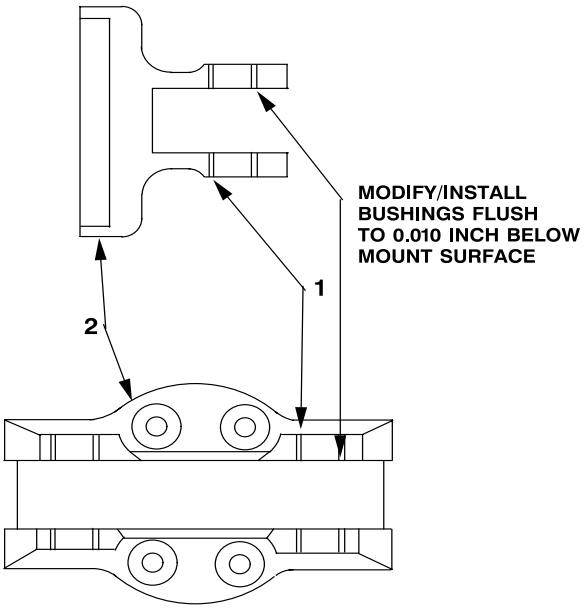
Epoxy Primer Coating

5. Apply a coat of epoxy primer coating (D98) to bushing bores in yoke adapter assemblies (2).

WARNING

Frozen bushings shall be handled with cotton gloves (D112) to prevent injury to skin. If injury occurs, seek medical aid.

6. Remove bushings (1) from freezer (B46) and, using hand arbor press (B107), press into yoke adapter assemblies (2) while epoxy primer coating (D98) is still wet. Bushings shall be installed flush to **0.010 inch** below surface.



406010-171
J0455

INSPECT

FOLLOW-ON MAINTENANCE

Install lead lag bearings (Task 5-1-24)

END OF TASK

5-1-28. MAIN ROTOR GRIP ASSEMBLY — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Drycleaning Solvent (D199)
Wiping Rags (D164)
Sandpaper (D175)
Crocus Cloth (D90)
Rubber Gloves (D111)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 55-1500-345-23
TM 1-1520-266-23

CLEAN

Drycleaning Solvent

1. Clean grip assembly with drycleaning solvent (D199).

2. Wipe grip assembly dry with wiping rag (D164).

INSPECT

3. Inspect grip assembly to limits shown; reject if limits are exceeded. See figure Main Rotor Grip Assembly — Damage Limits.

3.1. If a crack on the grip assembly is suspected, refer to TM 1-1520-266-23.

4. Inspect grip assembly bushings, pins, and inserts. Replace if damaged.

REPAIR

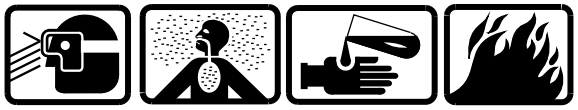
Sanding Operations

5. Polish out reparable damage with 400 grit sandpaper (D175).

6. Remove sanding marks with crocus cloth (D90).

7. Replace damaged bushings, pins, and inserts (Task 5-1-29).

Epoxy Primer Coating



Acrylic Lacquer

8. Refinish repaired surfaces with epoxy primer coating (D98) followed by two coats of black acrylic lacquer (D124) (TM 55-1500-345-23).

INSPECT

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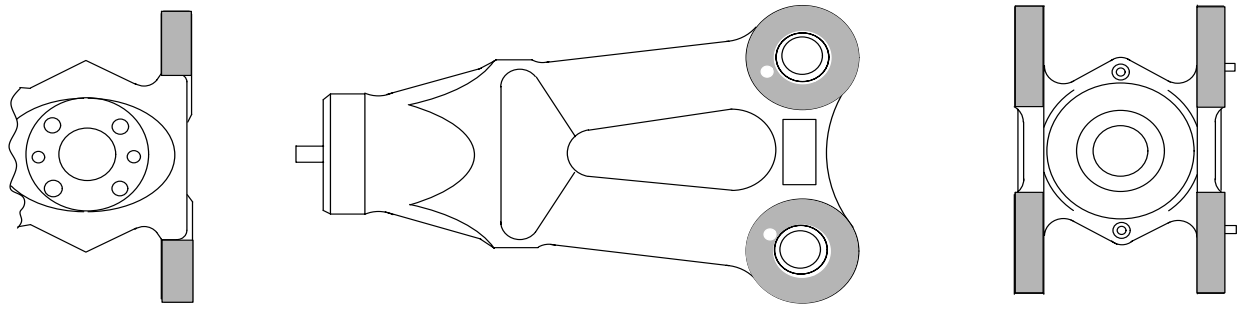


DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.010 In. before and after repair	0.020 In. before and after repair
CORROSION	0.005 In. before and 0.010 in after repair	0.010 In. before and 0.020 in after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.25 Sq. in.	0.50 Sq. in.
NUMBER OF REPAIRS	One per lug	One
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.	0.060 In.
BORES	0.001 In. for 1/4 circumference	

NOTE

No cracks are permitted.

406010-29
J0455

Main Rotor Grip Assembly — Damage Limits

END OF TASK

5-1-29. MAIN ROTOR GRIP BUSHINGS/PINS/INSERTS (AVIM) — REMOVAL/INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Hand Arbor Press (B107)
Upright Drill Press (B108)
Drill Set (B126)
Freezer (B46)

Material:
Epoxy Primer Coating (D98)
Acetone (D2)
Abrasive Pads (D147)
Cheesecloth (D56)
Cotton Gloves (D112)
Soap (D192)
Chemical Conversion Coating (Alodine 1201) (D57)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

Equipment Condition:
Pitch Horn Removed (Task 5-1-21)
Main Rotor Grip Lead Lag Bearings Removed (Task 5-1-24)

GO TO NEXT PAGE

5-1-29. MAIN ROTOR GRIP BUSHINGS/PINS/INSERTS (AVIM) — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Using hand arbor press (B107), press out bushings (1) from each grip assembly (2).

2. Pull out pins (3) from each grip assembly (2).

3. Remove inserts (4) from each grip assembly (2).

4. Carefully centerpunch pins (5) for drilling. Position grip assembly (2) into drilling machine and clamp securely. Using **5/16-inch** drill, drill out pins (5). Use care not to damage pin bores in grip assembly during drilling process.

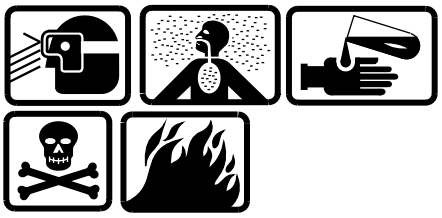
5. Remove inserts (6) from each grip assembly (2).

Acetone

6. Remove primer from bushing, pin, and insert bores using acetone (D2) and abrasive pads (D147).

7. Clean and decontaminate bore surfaces with soap (D192) and rinse with clean water. Wipe dry with cheesecloth (D56).

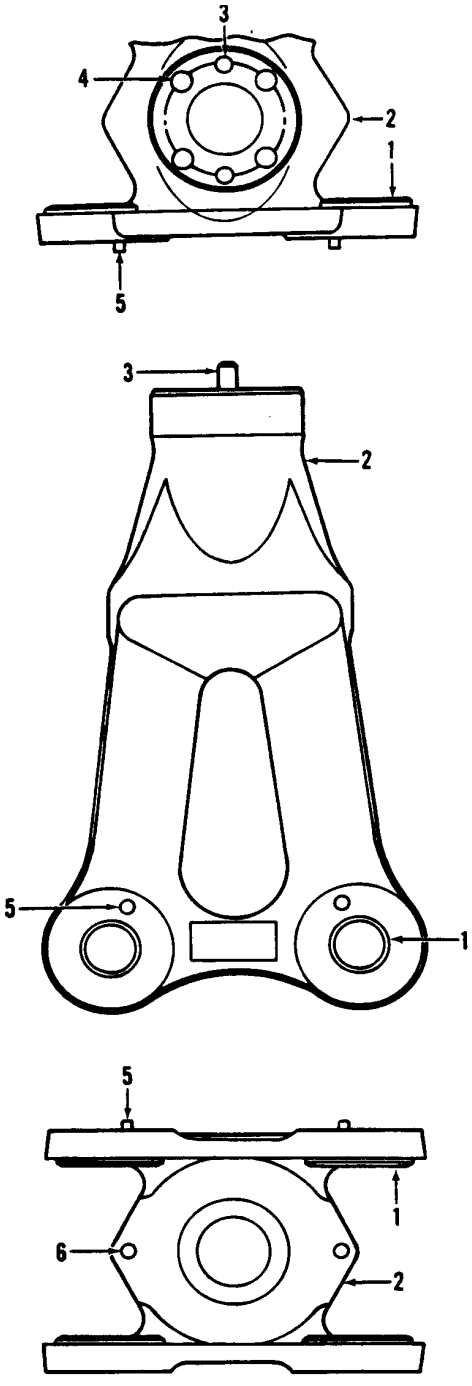
8. Inspect bores for damage (Task 5-1-28).



Chemical Conversion Materials

9. Brush on Alodine 1201 (D57) in all bores on grip assembly (2). Rinse bore surfaces in clean water and wipe dry with cheesecloth (D56).

10. All bushings (1), pins (3 and 5), and inserts (4 and 6) will be frozen prior to installation and shall be installed with wet epoxy primer coating (D98).



406010-126
H5304

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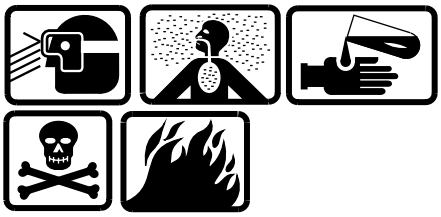
INSTALL

WARNING

Frozen bushings, pins, and inserts shall be handled with cotton gloves (D112) to prevent injury to skin. If injury occurs, seek medical aid.



Epoxy Primer Coating

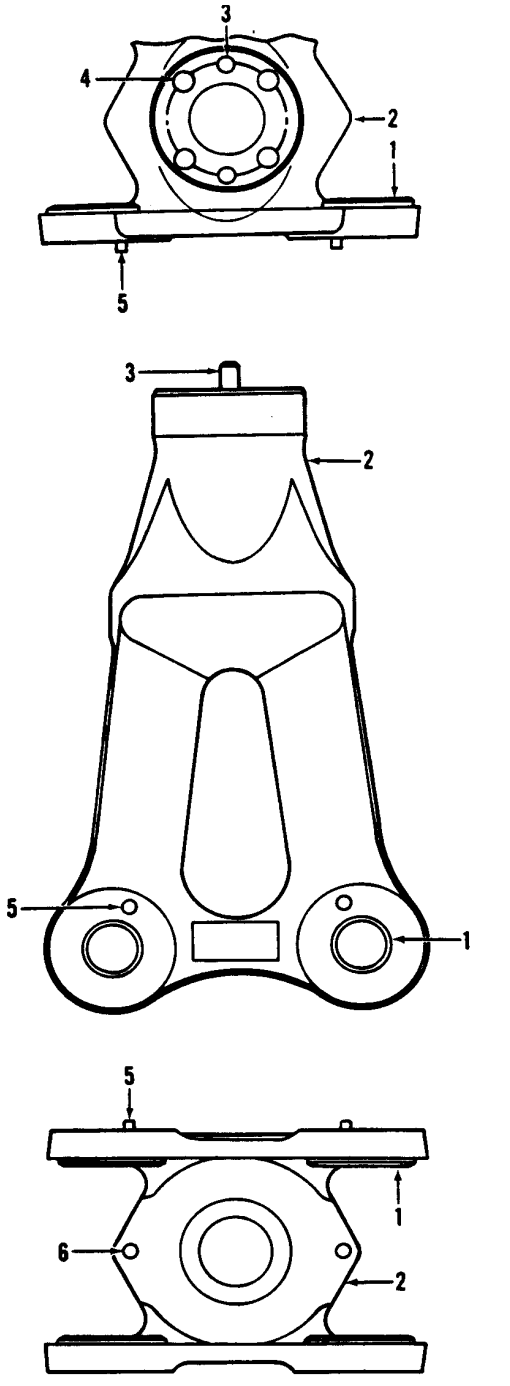
11. Remove bushings (1) from freezer (B46). Apply epoxy primer coating (D98) to bores in grip assembly (2) and, using hand arbor press (B107), press bushings (1) into grip assembly (2) bores while primer is wet.

12. Remove pins (3) from freezer (B46), apply epoxy primer coating (D98) to bores in grip assembly (2), and tap pins (3) into bores while primer is still wet.

13. Remove insert (4) from freezer (B46); apply epoxy primer coating (D98) to bores in grip assembly (2); and using hand arbor press (B107), press inserts (4) into bores while primer is still wet. Inserts (4) shall be installed **0.015 to 0.025 inch** below surface.

14. Remove pins (5) from freezer (B46); apply epoxy primer coating (D98) to bores in grip assembly (2); and using hand arbor press (B107), press pins (5) into bores while primer is still wet.

15. Remove inserts (6) from freezer (B46); apply epoxy primer coating (D98) to bores in grip assembly (2); and using hand arbor press (B107), press inserts (6) into bores while primer is still wet. Inserts (6) shall be installed **0.015 to 0.025 inch** below surface.



406010-126
H5304

INSPECT

FOLLOW-ON MAINTENANCE

Install lead lag bearings (Task 5-1-24).

Install pitch horns (Task 5-1-21).

END OF TASK

5-1-30. MAIN ROTOR DRIVE RING SET (AVIM) — REMOVAL/INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Drycleaning Solvent (D199)
Wiping Rags (D164)
Abrasive Pads (D147)
Corrosion Preventive Compound (D82)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

Equipment Condition:
Main Rotor Hub Dampers Removed (Task 5-1-15)
Main Rotor Hub Shear Bearings Removed (Task 5-1-19)
Main Rotor Pitch Horns Removed (Task 5-1-21)
Main Rotor Grip Lead Lag Bearings Removed (Task 5-1-24)

REMOVE

1. Remove upper drive ring half (1) from yoke (2).

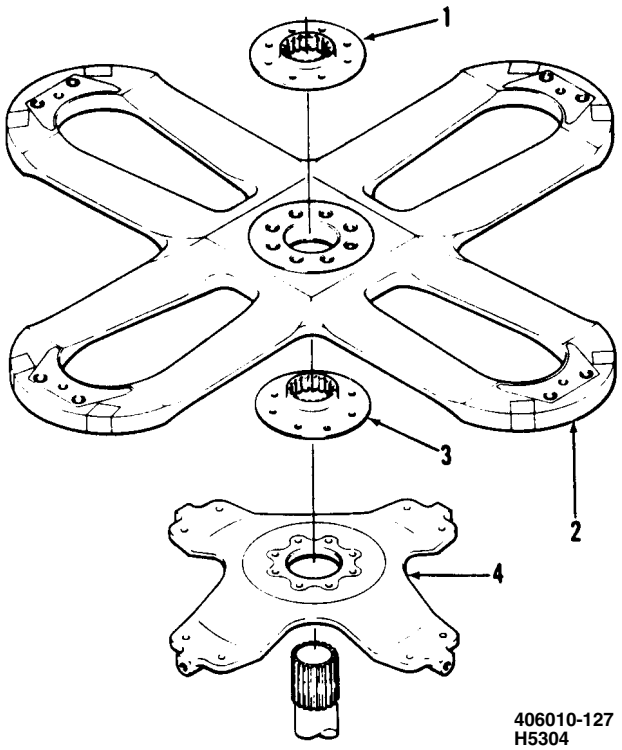
2. Separate yoke (2) from lower drive ring half (3) and lower plate (4).

CLEAN

Drycleaning Solvent

3. Clean yoke (2) with drycleaning solvent (D199) and wipe dry with wiping rags (D164).

4. Remove corrosion with abrasive pads (D147).



406010-127
H5304

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5-1-30. MAIN ROTOR DRIVE RING SET (AVIM) — REMOVAL/INSTALLATION (CONT)

INSPECT

5. Inspect main rotor yoke buffers (Task 5-1-34).

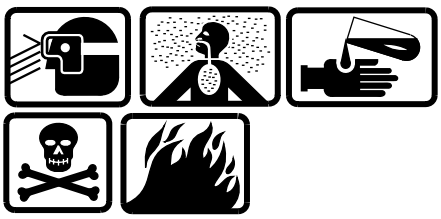
6. Inspect main rotor yoke bumpers (Task 5-1-36).

7. Inspect main rotor drive ring set (Task 5-1-31).

8. Inspect main rotor hub lower plate (Task 5-1-32).

9. Inspect main rotor yoke (Task 5-1-37).

INSTALL



Corrosion Preventive Compound

NOTE

Drive ring halves shall be replaced as a set.

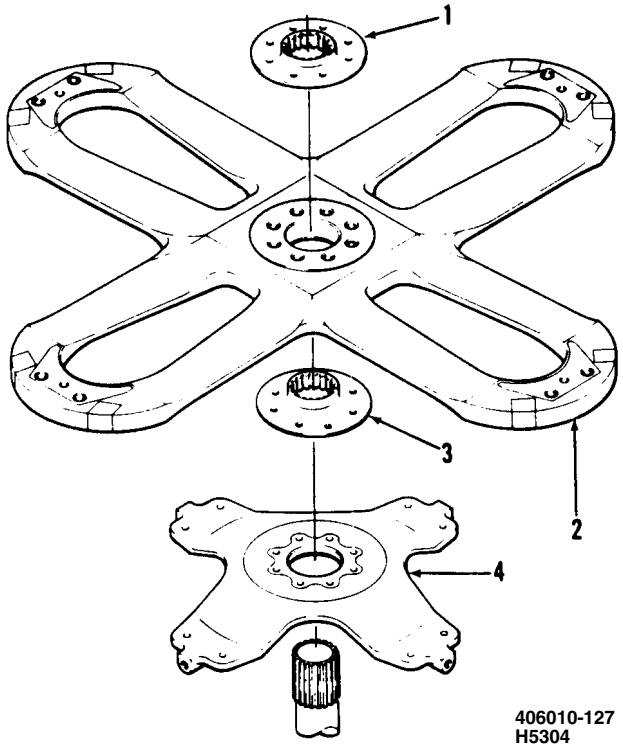
10. Apply corrosion preventive compound (D82) to faying surfaces of drive ring halves (1 and 3), yoke (2), and lower plate (4).

11. Position lower plate (4) onto stand.

12. Place lower drive ring half (3) on lower plate (4).

13. Position yoke (2) onto lower drive ring half (3) aligning master spline with red blade.

14. Place upper drive ring half (1) on yoke (2).



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INSPECT

FOLLOW-ON MAINTENANCE

Install main rotor grip lead lag bearings (Task 5-1-24).

Install main rotor pitch horns (Task 5-1-21).

Install main rotor hub shear bearings (Task 5-1-19).

Install main rotor hub dampers (Task 5-1-15).

END OF TASK

5-1-31. MAIN ROTOR DRIVE RING SET (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Drycleaning Solvent (D199)
Wiping Rags (D164)
Sandpaper (D175)
Crocus Cloth (D90)
Rubber Gloves (D111)
LHE Cadmium Solution (D129)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1500-344-23

CLEAN

Drycleaning Solvent

1. Clean drive ring set with drycleaning solvent (D199).

2. Dry drive ring set with wiping rags (D164).

INSPECT

3. Inspect drive ring set to limits shown; reject if limits are exceeded. See figure Main Rotor Drive Ring Set — Damage Limits.

REPAIR

4. Polish out repairable damage with 400 grit sandpaper (D175).

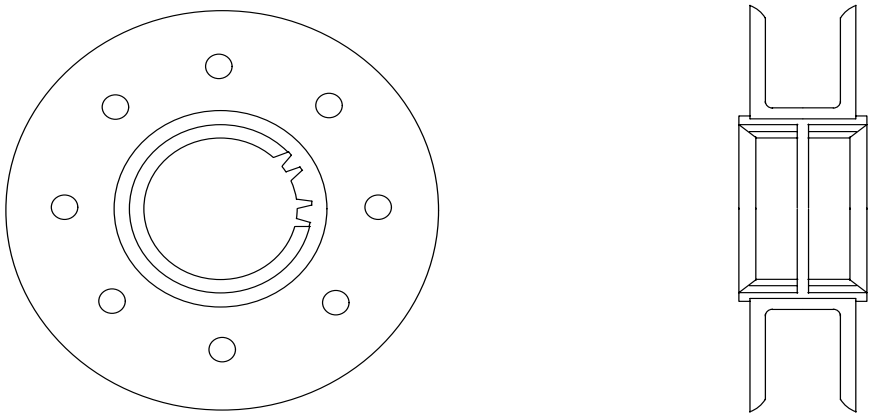
5. Remove any sanding marks with crocus cloth (D90).

LHE Cadmium Solution

6. Refinish drive ring set with brush coat of LHE cadmium plate (D129) (TM 1-1500-344-23).

INSPECT

GO TO NEXT PAGE



TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL	0.010 In. before and after repair
CORROSION	0.005 In. before and 0.010 In. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.015 Sq. In.
NUMBER OF REPAIRS	One per side
BORES	0.002 Inch for 1/2 circumference
SPLINE DAMAGE:	
Depth:	1/3 Of spline
Length:	1/2 Of spline
Number:	Two per half

406010-12
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Main Rotor Drive Ring Set — Damage Limits

END OF TASK

5-1-32. MAIN ROTOR HUB LOWER PLATE — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Drycleaning Solvent (D199)
Wiping Rags (D164)
Sandpaper (D175)
Crocus Cloth (D90)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 55-1500-345-23
TM 1-1520-266-23

CLEAN

Drycleaning Solvent

1. Clean lower plate with drycleaning solvent (D199).

2. Dry lower plate with wiping rags (D164).

INSPECT

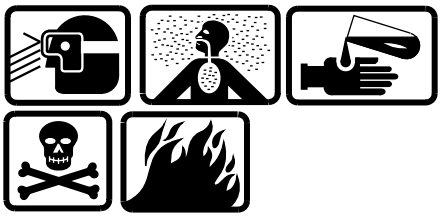
3. Inspect lower plate to limits shown; reject if limits are exceeded. See figure Main Rotor Hub Lower Plate — Damage Limits.

3.1. If a crack on the hub lower plate stop stud is suspected, refer to TM 1-1520-266-23.

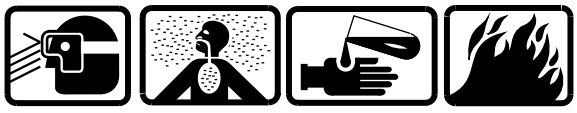
REPAIR

4. Polish out repairable damage with 400 grit sandpaper (D175).

5. Remove any sanding marks with crocus cloth (D90).



Epoxy Primer Coating



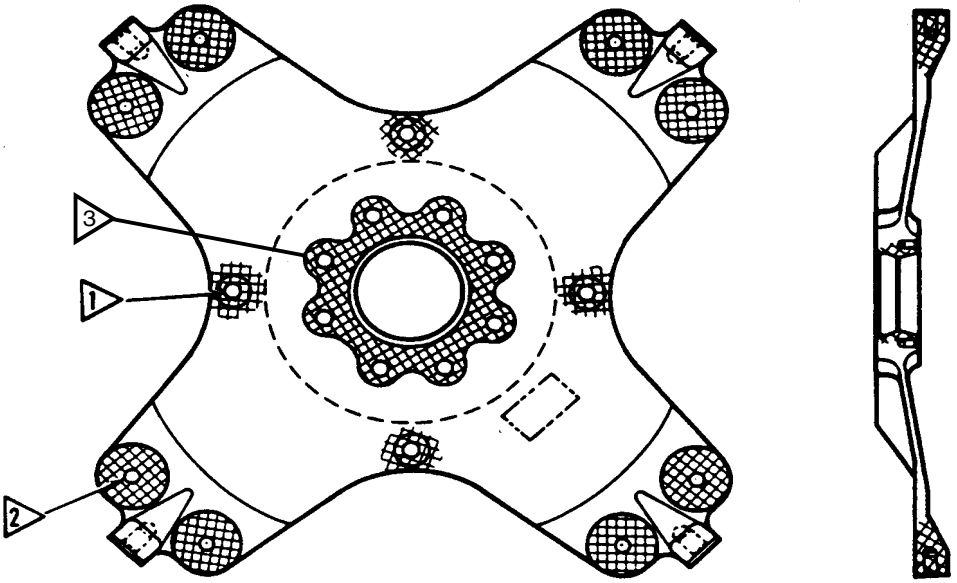
Acrylic Lacquer

6. Refinish repaired surfaces with epoxy primer coating (D98) followed by two coats of black acrylic lacquer (D124) in accordance with TM 55-1500-345-23.

INSPECT

GO TO NEXT PAGE

5-1-32. MAIN ROTOR HUB LOWER PLATE — CLEANING/INSPECTION/REPAIR (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.010 in. before and after repair	0.020 in. before and after repair
CORROSION	0.005 in. before and 0.010 in. after repair	0.010 in. before and 0.020 in. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.10 Sq. in.	Not critical
NUMBER OF REPAIRS	One per lug	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.020 in.	0.040 in.
BORES	0.001 in. for full circumference	

NOTES:

1. Maximum allowable diameter 0.438 inch (typical 4 places).
2. Maximum allowable diameter 0.386 inch (typical 8 places).
3. Maximum allowable diameter 0.445 inch (typical 8 places).
4. No cracks are permitted.

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H4181

Main Rotor Hub Lower Plate — Damage Limits

END OF TASK

Pages 5-97 through 5-99 deleted.

5-1-34. MAIN ROTOR YOKE BUFFERS (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Aircraft Powertrain Tool Kit (B180)
Heat Gun (B59)

Material:
Isopropyl Alcohol (D39)
Wiping Rags (D164)
Adhesive (D6)
Acid Swabbing Brush (D51)
Rubber Gloves (D111)
Sandpaper (D175)
Plastic Bag (D153)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer
68G Aircraft Structural Repairer

GO TO NEXT PAGE

5-1-34. MAIN ROTOR YOKE BUFFERS (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN

Isopropyl Alcohol

1. Moisten wiping rag (D164) with isopropyl alcohol (D39) and wipe yoke buffers clean.

2. Dry yoke buffers with wiping rag (D164).

INSPECT

3. Inspect buffers to limit shown; reject if limits are exceeded.

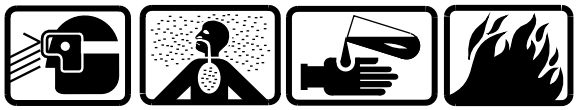
REPAIR

4. Polish out repairable damage with 400 grit sandpaper (D175) not to exceed limits shown.

5. Clean repaired area with wiping rag (D164) and isopropyl alcohol (D39).

6. Dry buffers with wiping rag (D164).

7. Repair edge voids not to exceed maximum depth **0.250 inch** and maximum length **1.00 inch** as follows:



Adhesive

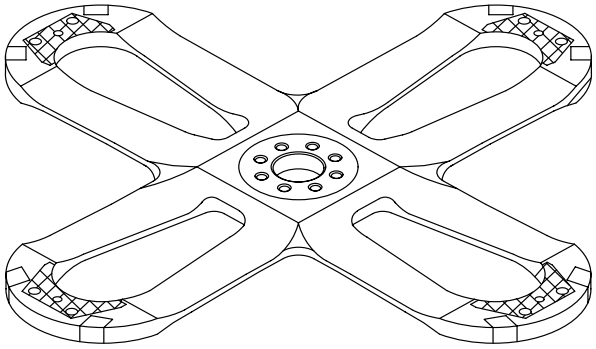
a. Mix adhesive (D6) per manufacturers instructions.

b. Fill void(s) completely using acid swabbing brush (D51).

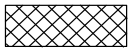
c. Cover repaired areas with a plastic bag (D153).

d. Apply 15 psi pressure and cure at room temperature for 24 hours or use heat gun (B59) for 1 hour at 175 to 190 °F. Remove plastic bag.

INSPECT



DAMAGE LOCATION SYMBOL



TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
SCRATCHES, CUTS, OR TEARS	Max depth 0.250 in. Max length 1.000 In.

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END OF TASK

5-1-35. MAIN ROTOR YOKE BUMPERS (AVIM) — REMOVAL/INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Plastic Scraper (B123)
Heat Gun (B59)

Material:
Acetone (D2)
Sandpaper (D175)
Cheesecloth (D56)
Rubber Gloves (D111)
Adhesive (D6)
Acid Swabbing Brush (D51)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

Equipment Condition:
Main Rotor Hub Dampers Removed (Task 5-1-15)
Main Rotor Hub Shear Bearings Removed (Task 5-1-19)
Main Rotor Pitch Horns Removed (Task 5-1-21)
Main Rotor Grip Lead Lag Bearings Removed (Task 5-1-24)
Main Rotor Drive Ring Set Removed (Task 5-1-30)

GO TO NEXT PAGE

5-1-35. MAIN ROTOR YOKE BUMPERS (AVIM) — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Pull damaged bumpers (1) loose from yoke (2) by working edges loose with a plastic scraper (B123).

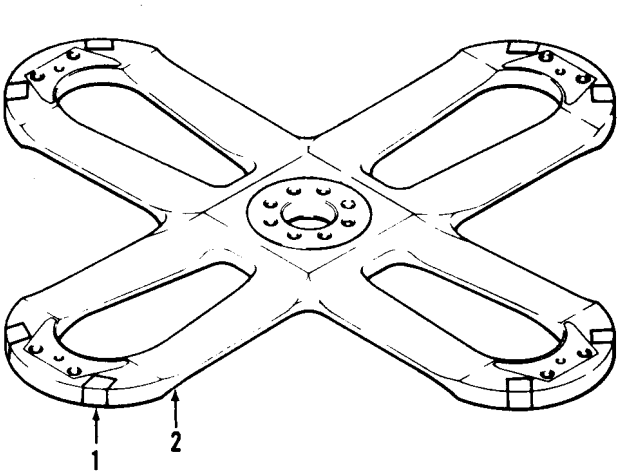
PREPARATION

Sanding Operations

2. Lightly sand the surfaces on yoke (2) where the bumpers (1) will be installed with 400 grit (D175) sandpaper. Remove sanding residue with clean, dry cheesecloth (D56).

Adhesive

3. Apply adhesive (D6) to surfaces on yoke (2) with acid swabbing brush (D51).



406010-134
H5304

INSTALL

Heat

4. Join the eight bumpers (1) to cold yoke (2) surfaces. Using heat gun (B59) heat 275 to 280 °F and then cool.

Acetone

5. Remove excess adhesive using acetone (D2) taking care not to soak surface.

INSPECT

FOLLOW-ON MAINTENANCE

Install main rotor drive ring set (Task 5-1-30).

Install main rotor grip lead lag bearings (Task 5-1-24).

Install main rotor pitch horns (Task 5-1-21).

Install main rotor hub shear bearings (Task 5-1-19).

Install main rotor hub dampers (Task 5-1-15).

END OF TASK

5-1-36. MAIN ROTOR YOKE BUMPERS (AVIM) — CLEANING/INSPECTION

This task covers: Cleaning and Inspection (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Isopropyl Alcohol (D39)
Wiping Rags (D164)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

GO TO NEXT PAGE

5-1-36. MAIN ROTOR YOKE BUMPERS (AVIM) — CLEANING/INSPECTION (CONT)

CLEAN

Isopropyl Alcohol

1. Moisten wiping rag (D164) with isopropyl alcohol (D39) and wipe yoke bumpers clean.

2. Dry yoke bumpers with wiping rag (D164).

INSPECT

3. Deleted.

3.1. Bumpers are to be replaced if they are nicked and/or split (Task 5-1-35).

NOTE

If bumpers are damaged inspect the main rotor yoke for delamination and main rotor blade for edge delamination and skin cracks.

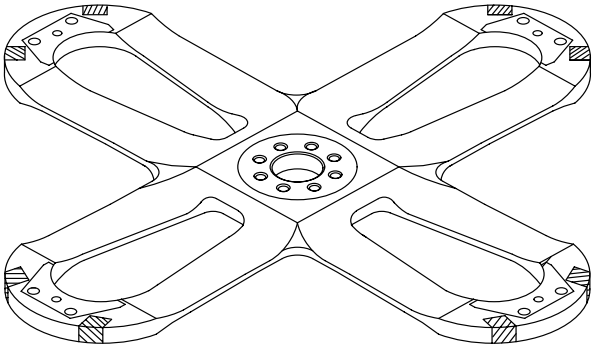
REPAIR

4. Deleted.

5. Deleted.

6. Deleted.

7. Deleted.



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J0456

END OF TASK

5-1-37. MAIN ROTOR HUB YOKE — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Aliphatic Naphtha (D141)
Epoxy Adhesive (D20)
Black Acrylic Lacquer (D124)
Wiping Rags (D164)
Sandpaper (D175)
Rubber Gloves (D111)
Epoxy Primer Coating (D98)
Drycleaning Solvent (D199)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 55-1500-345-23

GO TO NEXT PAGE

CLEAN

Drycleaning Solvent

1. Moisten wiping rag (D164) with drycleaning solvent (D199) and wipe yoke clean.

2. Dry yoke with wiping rags (D164).

INSPECT

3. Inspect yoke to limits shown; reject if limits are exceeded. See figure Main Rotor Hub Yoke — Damage Limits.

REPAIR

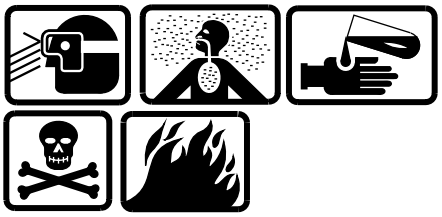
NOTE

Splintering is a condition where fibers in the surface plies have broken loose or separated from the underlying plies. It typically occurs at the machined or molded edges of a laminate. Edge delamination is a condition wherein plies separate from each other.

4. Repair splintering, edge delamination, and scratches as follows:

Sanding Operations

a. Remove paint and clean damaged area by abrading with 400 grit sandpaper (D175).



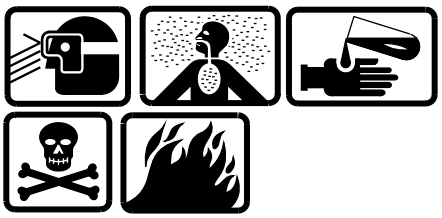
Naphtha/Naphthalene, TT-N-97

b. Wipe abraded area with wiping rag (D164) moistened with naphtha (D141).

Adhesive

c. Mix adhesive (D14) per manufacturers instructions and smooth on damaged area. Allow adhesive (D14) to cure at room temperature for 24 hours.

d. After adhesive (D14) cures, sand area smooth with 400 grit sandpaper (D175).



Epoxy Primer Coating

Acrylic Lacquer

5. Refinish repaired surfaces with epoxy primer coating (D98) followed by two coats of black acrylic lacquer (D124) in accordance with TM 55-1500-345-23.

INSPECT

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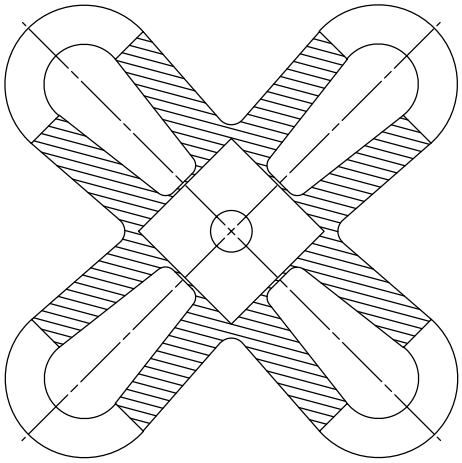
5-1-37. MAIN ROTOR HUB YOKE — CLEANING/INSPECTION/REPAIR (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
DENTS	0.005 In. no repair 0.010 In. no repair
SPLINTERING	Top or bottom two plies, not more than 2 square inches, extending not more than 0.750 inch from edge.
EDGE DELAMINATION	0.250 Inch deep by 2.000 Inches long, one per foot.
SURFACE SCRATCHES	0.005 inch deep, 2.000 inches long, 20 percent of part dimension, in direction of scratch.

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J2193

Main Rotor Hub Yoke — Damage Limits

END OF TASK

5-1-38. MAIN ROTOR GRIP AND ADAPTER ASSEMBLY (AVIM) — REMOVAL/INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Torque Wrench (B237)
Torque Wrench (B240)
Socket (B158)

Material:
Lockwire (D132)
Corrosion Preventive Compound (CPC) (D82)
Corrosion Preventive Compound (CPC) (D83)
Epoxy Primer Coating (D98)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

Equipment Condition:
Main Rotor Hub Shear Bearings Removed (Task 5-1-19)
Main Rotor Pitch Horn Assemblies Removed (Task 5-1-21)
Main Rotor Hub Damper Assemblies Removed (Task 5-1-15)

GO TO NEXT PAGE

5-1-38. MAIN ROTOR GRIP AND ADAPTER ASSEMBLY (AVIM) — REMOVAL/INSTALLATION (CONT)

REMOVE GRIP

NOTE

Procedure shown is for one grip. Procedure shall be repeated for each grip as required.

1. Cut lockwire and remove bolts (1) and washers (2) attaching adapter assembly (3) to lead lag bearing (4).

2. Lift grip (5) from adapter assembly (3).

REMOVE ADAPTER ASSEMBLY

NOTE

- Procedure shown is for one adapter assembly. Procedure shall be repeated for each adapter assembly as required.
- Bolts and nuts secure balance washers and balance weights to adapter assembly and yoke. Maximum quantity of washers and weights is shown. Actual quantity may vary. Quantity and position of balance washers and balance weights should be noted for installation.

3. Remove nut (6) from bolt (7) and remove bolt (7) with washers (8) and weights (9) (if installed) from adapter assembly (3).

4. Remove nuts (10) and washers (11). Remove bolts (12) with washers (13).

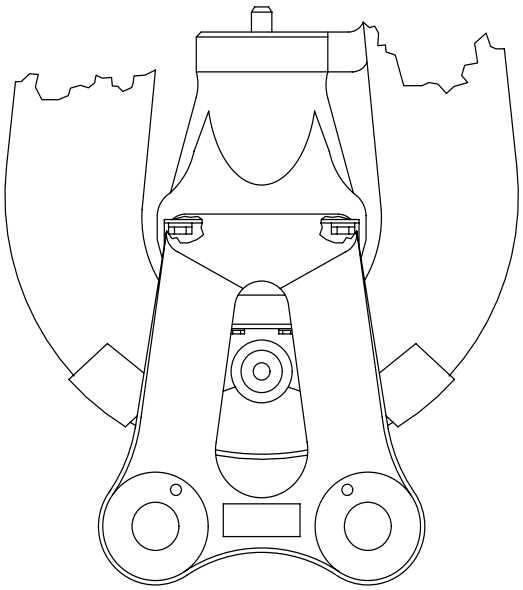
5. Remove adapter assembly (3).

6. Remove main rotor grip lead lag bearing (4) (Task 5-1-24).

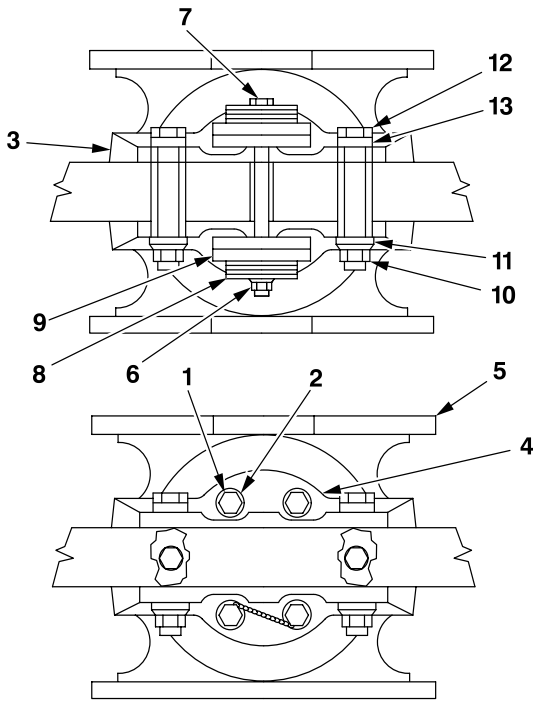
7. Clean, inspect, and repair main rotor grip lead lag bearing (4) (Task 5-1-25).

8. Clean, inspect, and repair main rotor yoke adapter assembly (3) (Task 5-1-26).

VIEW LOOKING DOWN



VIEW LOOKING INBOARD



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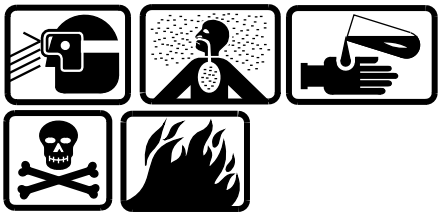
5-1-38. MAIN ROTOR GRIP AND ADAPTER ASSEMBLY (AVIM) — REMOVAL/INSTALLATION (CONT)

INSTALL ADAPTER ASSEMBLY



Corrosion Preventive Compound

9. Apply CPC (D82) to faying surfaces of yoke (14) and adapter assembly (3).

10. Place adapter assembly (3) in position on yoke (14).

11. Apply CPC (D83) to shank of two bolts (12) and two washers (13).

12. Install two bolts (12) and two washers (13).

WARNING

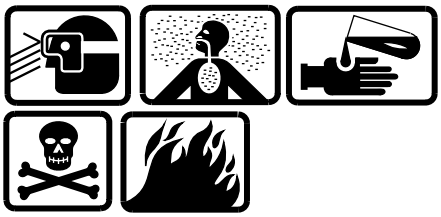
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of bolts is a characteristic critical to flight safety.

13. Install two nuts (10) and washers (11) on bolts (12) attaching adapter assembly (13) to yoke (14). Torque nuts (10) **160 TO 190 INCH-POUNDS**.

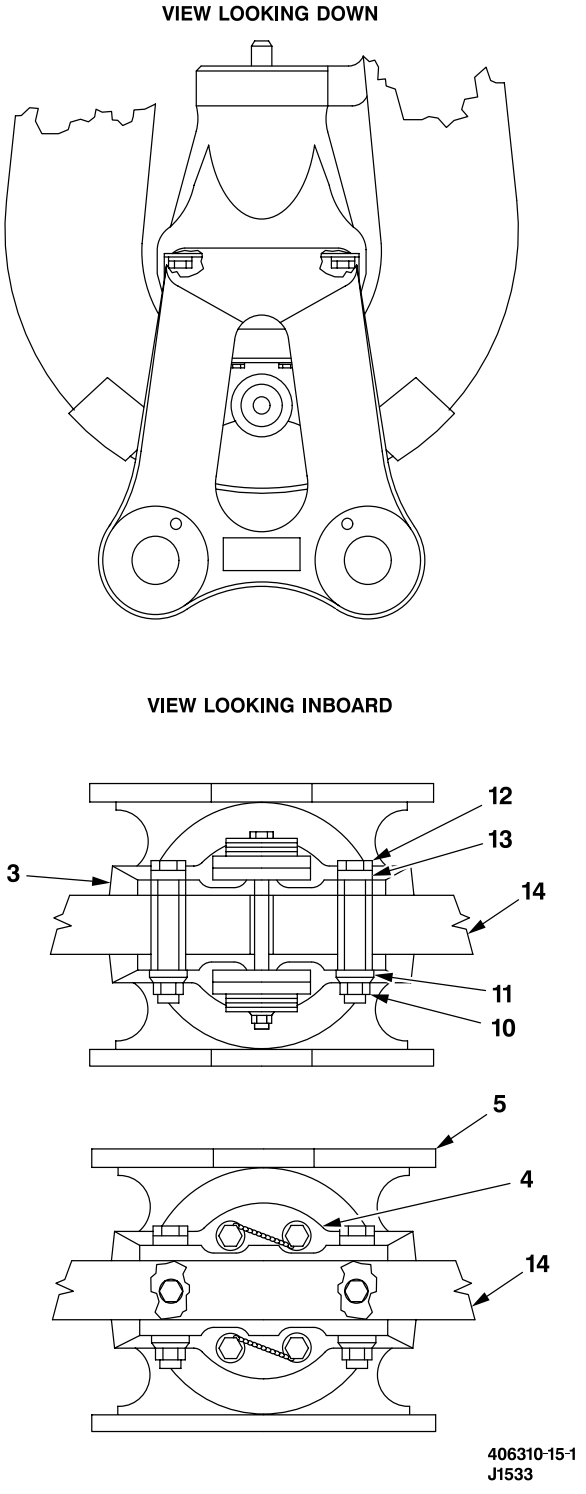
INSTALL GRIP

14. Install main rotor grip lead lag bearing (4) in grip (5) (Task 5-1-24).



Epoxy Primer Coating

15. Apply epoxy primer coating (D98) to faying surfaces of bearing (4) and adapter assembly (3).



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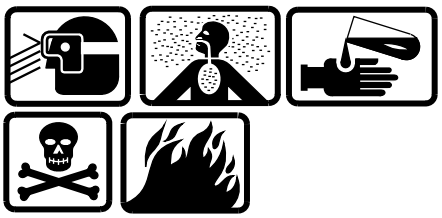
5-1-38. MAIN ROTOR GRIP AND ADAPTER ASSEMBLY (AVIM) — REMOVAL/INSTALLATION (CONT)



Corrosion Preventive Compound

16. Apply CPC (D83) to washer (2) and shank of bolt (1).

17. Place grip (5) in position.

18. Install four bolts (1) and washers (2).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing and lockwiring of bolts are characteristics critical to flight safety.

19. Torque bolts (1) **50 TO 70 INCH-POUNDS** and secure with lockwire (D132).

NOTE

Bolts and nuts secure balance washers and balance weights to adapter assembly and yoke. Maximum quantity of washers is shown. Actual quantity may vary, as required for rotor balancing.

20. If the following hardware was previously removed in step 3:

a. Apply CPC (D83) during assembly to weights (9), washers (8), nut (6), and shank of bolt (7).

b. Install weights (9), washers (8) with bolt (7) and nut (6). Washers (8) and weights (9) are to be evenly divided on each side of adapter assembly (3). Torque nut (6) **50 TO 70 INCH-POUNDS**.

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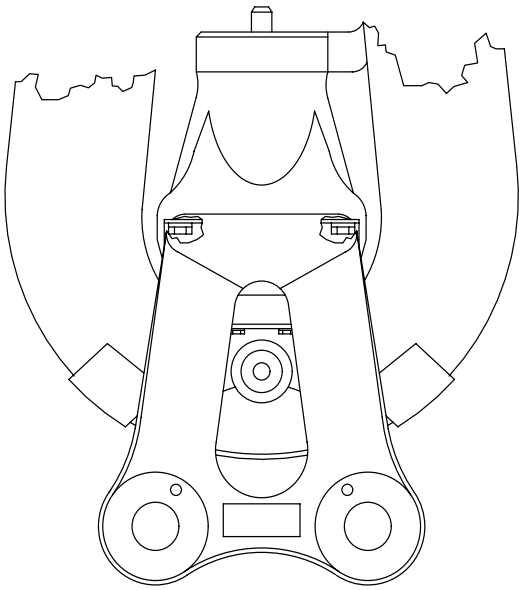
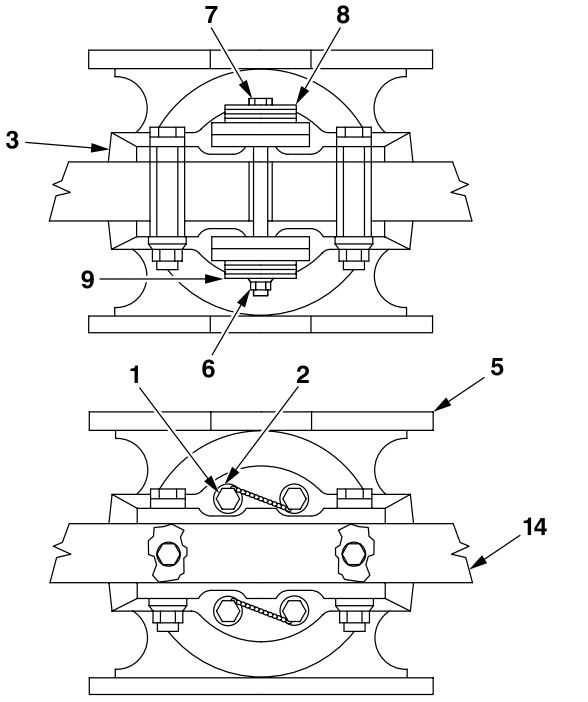


VIEW LOOKING INBOARD



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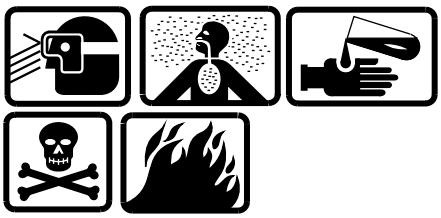
5-1-38. MAIN ROTOR GRIP AND ADAPTER ASSEMBLY (AVIM) — REMOVAL/INSTALLATION (CONT)



Corrosion Preventive Compound

CAUTION

CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals.

21. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.

INSPECT

FOLLOW-ON MAINTENANCE

Install main rotor hub damper assemblies (Task 5-1-15).

Install main rotor pitch horn assemblies (Task 5-1-21).

Install main rotor hub shear bearings (Task 5-1-19).

END OF TASK

5-1-39. MAIN ROTOR BLADES — INSPECTION

This task covers: Inspection (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Inside Micrometer Caliper (B13)

Material:
Adhesive (D20)
Sandpaper (D175)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

References:
TM 1-1520-266-23

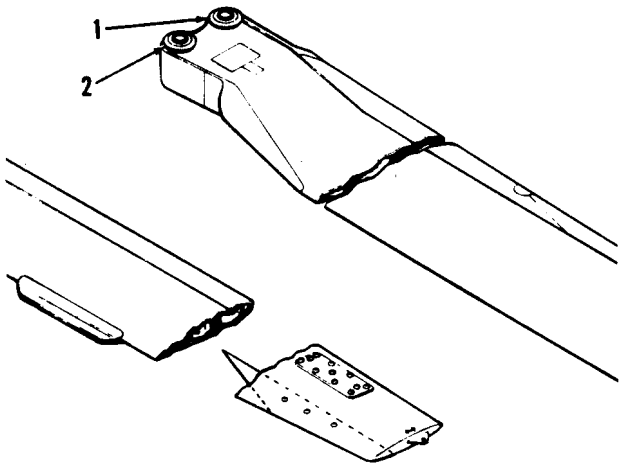
Retention Bolt Hole Bushing Liners.

1. Inspect bushing liners (1) for pitting and corrosion. Polish out pits and corrosion with 400 grit sandpaper (D175).

2. Use inside micrometer caliper (B13) and measure inside diameter of bushing liners. Inside diameter of more than **1.002 inches** requires replacement of blade.

Fretting Pads.

3. Inspect fretting pads (2) for cracks. Any crack requires replacement of blade.



406015-13
H5304

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5-1-39. MAIN ROTOR BLADES — INSPECTION (CONT)

4. Inspect fretting pads (2) for adhesive voids.

a. Edge voids deeper than **0.125 inch** require replacement of blade.

b. Any void covering more than 1.000 square inch in total area require replacement of blade.

c. Edge voids less than **0.1250 inch** may be repaired by sealing with adhesive (D20).

d. If an adhesive void on the fretting pads is suspected, refer to TM 1-1520-266-23.

Blade Root Closures.

5. Inspect blade root closures for cracks, punctures, gouges, nicks, and delamination. Cracks are not to exceed **3 inches** in length or 50% of total closure.

NOTE

Tapping method may be used to determine whether an area is hollow.

6. Most areas of blade root closures are hollow and may have puncture damage. All other areas of closures should not be damaged deeper than adhesive below enclosure. All damage requires repair (Task 5-1-40).

Trim Tabs.

7. Inspect trim tabs (3) for voids and debonding.

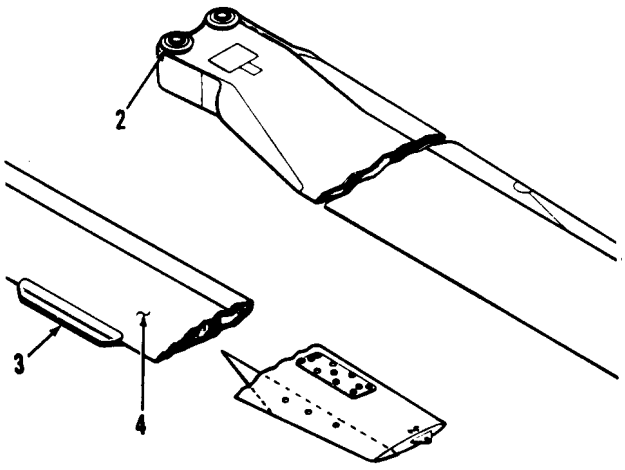
a. Voids within the trim tabs (3) or between the trim tabs (3) and skin (4) not exceeding **0.500 inch** chordwise by **0.500 inch** spanwise and not closer than **0.500 inch** from the edge will be repaired (Task 5-1-43).

b. Voids exceeding above limits will require replacement of trim tab (3) (Task 5-1-42).

c. Debonded trim tabs (3) will require replacement (Task 5-1-42).

d. If an adhesive void on trim tabs or between the trim tabs and skin is suspected, refer to TM 1-1520-266-23.

8. Trim tab (3) bent or dented to such an extent it cannot be straightened will require replacement (Task 5-1-42).



406015-14
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5-1-39. MAIN ROTOR BLADES — INSPECTION (CONT)

Inboard Erosion Strip.

9. Inspect inboard erosion strip (5) for voids.

a. Voids less than **0.500 inch** in diameter, less than **0.125 inch** high, and at least **1.000 inch** between voids shall be repaired by injection of adhesive (D20) and ironing or by repairing per Task 5-1-47.

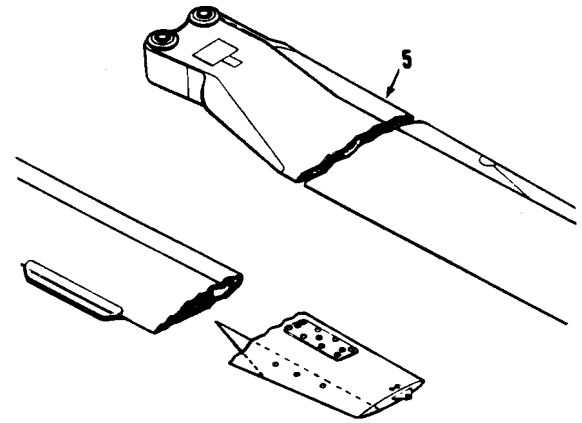
b. Voids in areas A and C shall be repaired (Task 5-1-47).

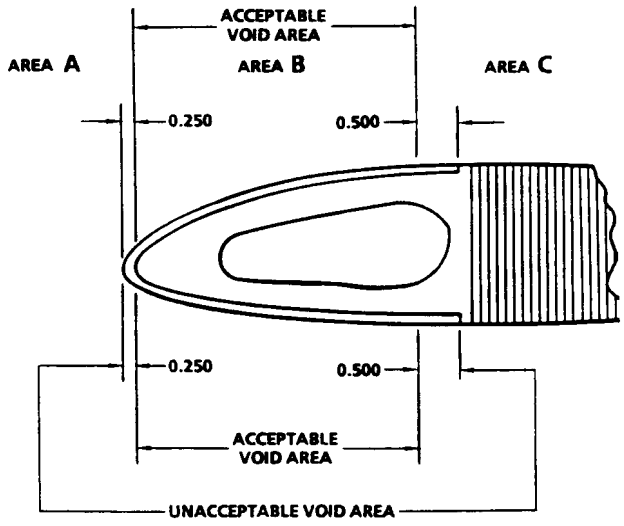
c. All voids larger than **1.00 inch** chordwise and **8.00 inches** spanwise in area B will require replacement of erosion strip (Task 5-1-49).

d. Voids in area B, less than **1.00 inch** chordwise and **8.00 inches** spanwise shall be repaired (Task 5-1-47).

9.1. If an adhesive void on the inboard erosion strip is suspected, refer to TM 1-1520-266-23.

10. Inspect inboard erosion strip (5) for nicks, gouges, and tears. All nicks, gouges, and tears not exceeding 8.00 square inches shall be repaired (Task 5-1-49). Any damage with **1 inch** or less separation is to be considered one damage area. No more than 16.00 square inches of damage per blade is allowed.





406015-50
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5-1-39. MAIN ROTOR BLADES — INSPECTION (CONT)

Outboard Erosion Strip.

11. Inspect outboard erosion strip (6) for voids.

NOTE

Voids within **1.000 inch** of each other will be considered as one void.

a. Voids exceeding 8.000 square inches in area and **1.000 inch** chordwise width requires replacement of blade.

b. Edge voids not exceeding **0.250 inch** deep and which are not within **0.500 inch** of a repairable internal void may be repaired (Task 5-1-46).

c. Edge voids exceeding **0.250 inch** in depth or closer than **0.500 inch** to a nonrepairable internal void will require replacement of blade.

11.1. If an adhesive void on the outboard erosion strip is suspected, refer to TM 1-1520-266-23.

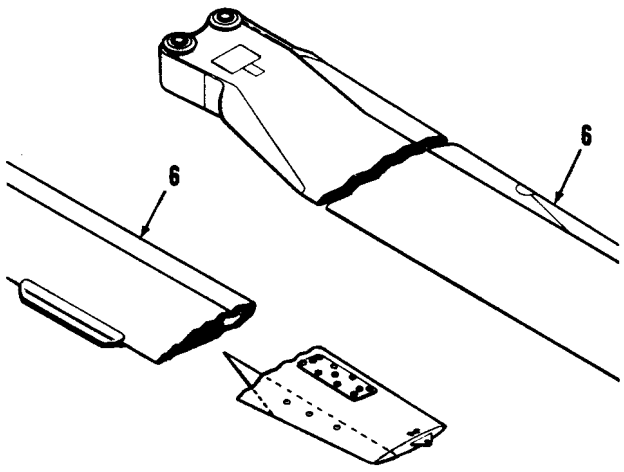
12. Inspect outboard erosion strip (6) for nicks, dents, and scratches.

a. Nonsharp dents that do not exceed **0.020 inch** deep are acceptable without repair.

b. Nicks, scratches, and sharp dents that do not exceed **0.012 inch** deep will be repaired (Task 5-1-46).

c. Nicks, scratches, and sharp dents exceeding **0.012 inch** deep require replacement of blade.

d. Nonsharp dents exceeding **0.020 inch** deep require replacement of blade.



406015-16
H5304

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Erosion Shield.

13. Inspect erosion shield (7) for voids.

a. Voids less than 3.000 square inches in area with a chordwise width less than **1.000 inch**, not exceeding a total area of 6.000 square inches, and more than **0.500 inch** from edge are acceptable without repair.

b. Voids exceeding 3.000 square inches in area with a chordwise width of more than **1.000 inch,** exceeding total area of 6.000 square inches, and closer than **0.500 inch** to edge require replacement of blade.

c. Edge voids less than **0.500 inch** deep will be repaired (Task 5-1-44).

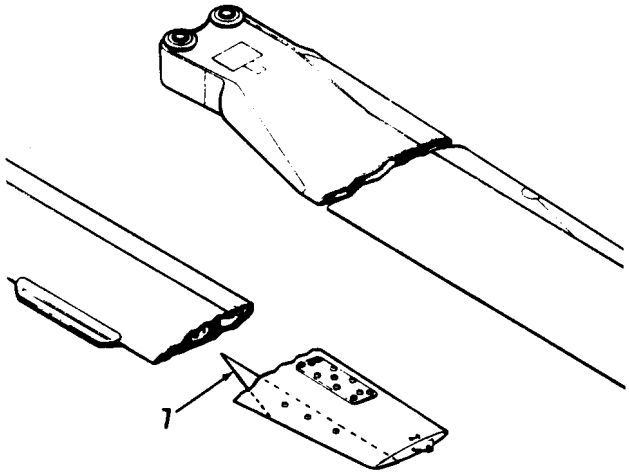
d. Edge voids exceeding **0.500 inch** deep will require replacement of blade. 1

13.1. If an adhesive void on the erosion shield is suspected, refer to TM 1-1520-266-23.

14. Inspect erosion shield (7) for nicks and scratches.

a. Any nick or scratch that does not penetrate through erosion shield (7) will be repaired (Task 5-1-44).

b. Any nick or scratch that penetrates through erosion shield will require replacement of blade.



406015-17
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5-1-39. MAIN ROTOR BLADES — INSPECTION (CONT)

Skin.

15. Inspect blade skin (8) for voids.

NOTE

Voids within **1.000 inch** of each other will be considered as one void.

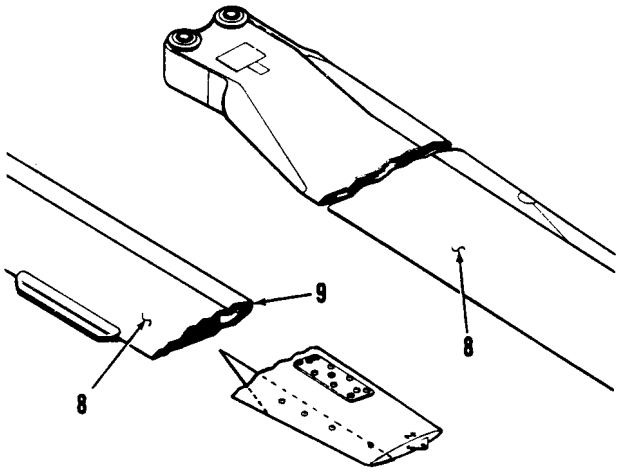
a. Voids between the skin (8) and core less than 5.000 square inches in area with a chordwise width less than **1.000 inch** and a total area less than 25.000 square inches are acceptable without repair.

b. Voids exceeding 5.000 square inches require replacement of blade.

c. Voids between skin (8) and spar (9) less than 1/4 the width of faying surface, less than **20.000 inches** in length, more than **0.500 inch** from edge of skin (8), and less than 15.000 square inches in total area each side are acceptable without repair.

d. Voids between skin (8) and spar (9) exceeding 1/4 the width of faying surface, more than **20.000 inches** in length, less than **0.500 inch** from edge of skin (8), and more than 15.000 square inches total area on either side of blade require replacement of blade.

e. Edge voids between skin (8) and spar (9) will be repaired by standard injection method. Refer to tasks 5-1-46 through 5-1-49.



406015-18
H5304

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f. Voids between skin (8) and trailing edge (10) less than 1/4 the width of faying surface, less than **16.000 inches** in length, more than **0.500 inch** from edge of skin, and less than 8.000 square inches in total area are acceptable without repair.

g. Voids between skin (8) and trailing edge (10) exceeding **1/4** the width of faying surface, more than **16.000 inches** in length, less than **0.500 inch** from edge of skin, and more than 8.000 square inches in total area require replacement of blade.

h. Edge voids between skin (8) and trailing edge (10) less than **0.250 inch** will be repaired (Task 5-1-45).

i. Edge voids between skin (8) and trailing edge (10) exceeding **0.250 inch** require replacement of blade.

15.1. If an adhesive void between and core or an adhesive void between skin and spar is suspected, refer to TM 1-1520-266-23.

16. Inspect skin (8) for nicks, dents, gouges, scratches, and holes.

a. Nicks, dents, scratches, and gouges that do not break the fibers or cause delamination are acceptable without repair.

b. Nicks, dents, and scratches that penetrate skin (8) will be repaired (Task 5-1-40).

c. Holes in skin not exceeding **3.000 inches** in diameter will be repaired (Task 5-1-40).

d. Holes in skin exceeding **3.000 inches** in diameter will require replacement of blade.

17. Inspect cover (11) for cracks, nicks, dents, scratches, or missing screws.

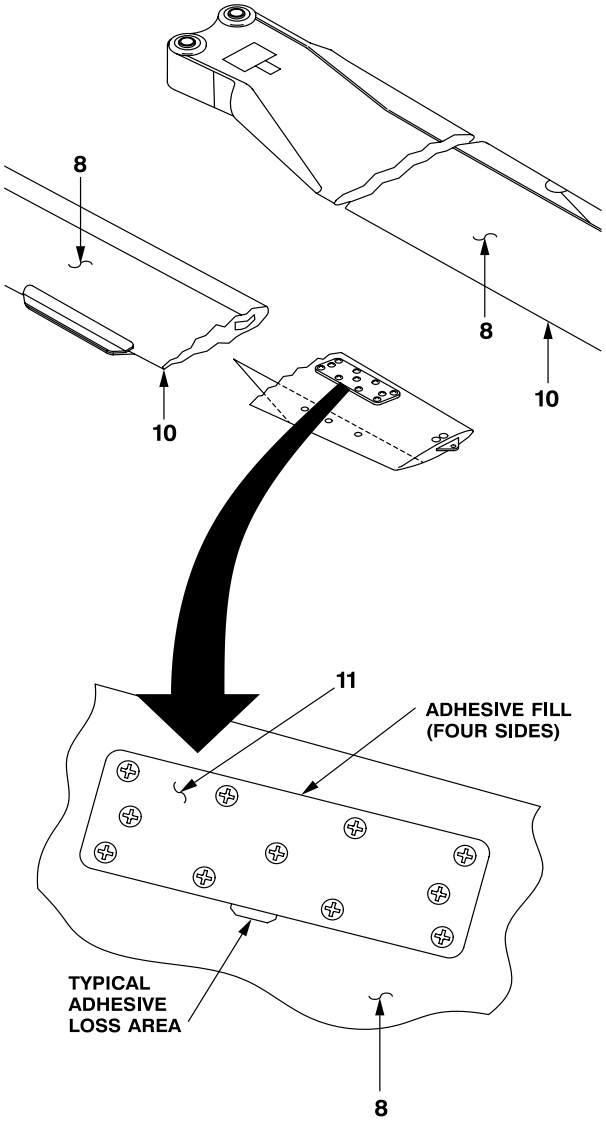
a. Replace any missing screws.

b. Replace cover (11) if cracked or otherwise unserviceable.

18. Inspect adhesive fill around outside diameter of cover (11). If a loss of adhesive has occurred and repair is desired, refer to Task 5-1-52.

Trailing Edge.

19. Inspect trailing edge (10) for nicks and notches.



406015-48
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5-1-39. MAIN ROTOR BLADES — INSPECTION (CONT)

a. Nicks and notches less than **0.120 inch** deep will be repaired (Task 5-1-45).

b. Nicks and notches exceeding **0.120 inch** require replacement of blade.

Erosion Strip Splice Cover.

20. Inspect splice cover (12) for voids.

a. Edge voids less than **0.250 inch** in depth will be repaired (Task 5-1-48).

b. Edge voids more than **0.250 inch** in depth will require replacement of splice cover (12) (Task 5-1-50).

c. Internal voids greater than 0.250 square inch in area will require replacement of splice cover (12) (Task 5-1-50).

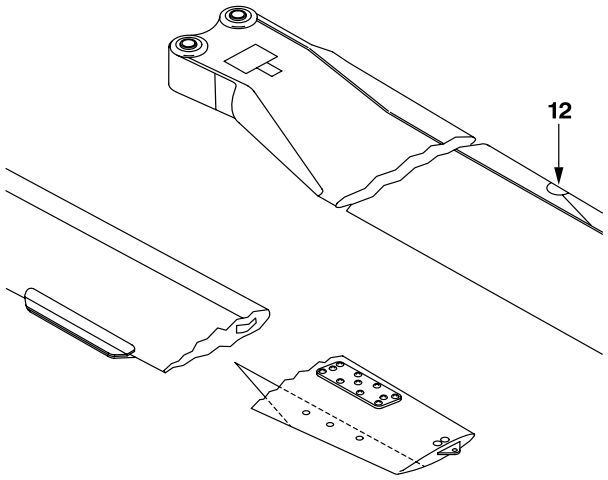
20.1. If an adhesive void on the erosion shield cover is suspected, refer to TM 1-1520-266-23.

21. Inspect splice cover (12) for nicks, dents, scratches, and other damage.

a. Sharp nicks, dents, and scratches not exceeding **0.012 inch** in depth will be repaired (Task 5-1-48).

b. Nonsharp nicks, dents, and scratches less than **0.012 inch** in depth are acceptable without repair as long as there are not any voids exceeding limits.

c. Sharp nicks, dents, and scratches exceeding **0.012 inch** in depth will require replacement of splice cover (12) (Task 5-1-50).



406015-19
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END OF TASK

5-1-40. MAIN ROTOR BLADE SKIN BY PATCHING (AVIM) — REPAIR

This task covers: Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Blade Repair Kit (B79)
Goggles (B55)

Material:
Rubber Gloves (D111)
Sandpaper (D172)
Sandpaper (D174)
Cheesecloth (D56)
Aliphatic Naphtha (D141)
Fiberglass Cloth (D101)
Masking Tape (D216)
Cotton Gloves (D112)
Adhesive (D20)
Acetone (D2)
Denatured Alcohol (D38)
Adhesive (D12)
Tedlar (D219)
Peel Ply Fabric (D102)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

References:
TM 1-6625-724-13&P
DA PAM 738-751

GO TO NEXT PAGE

5-1-40. MAIN ROTOR BLADE SKIN BY PATCHING (AVIM) — REPAIR (CONT)

REPAIR

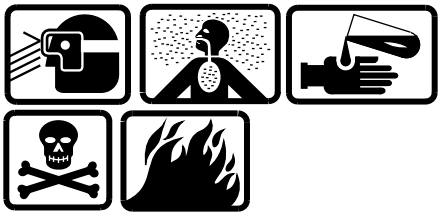
1. Repair damage confined to outer layer of woven glass cloth as follows:

Sanding Operations

CAUTION

Excessive sanding will weaken blade skin. Skin shall be sanded only until yellow color is removed.

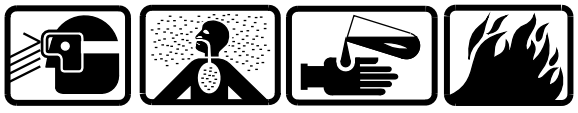
a. Use 180 grit sandpaper (D172) and remove paint from blade (1) in an area approximately **3.00 inches** (2) around the perimeter of the damage (3).



Naphtha/Naphthalene, TT-N-97

b. Clean sanded area with cheesecloth (D56) dampened with aliphatic naphtha (D141).

c. Cut a piece of fiberglass cloth (D101) large enough to cover the damaged area (3) plus **1.00 inch** all around.



Adhesive

d. Mix adhesive (D20) per manufacturers instructions.

e. Apply wet layer of fiberglass cloth (D101) and adhesive (D20) to damaged area.

f. Cure adhesive for 24 hours at room temperature.

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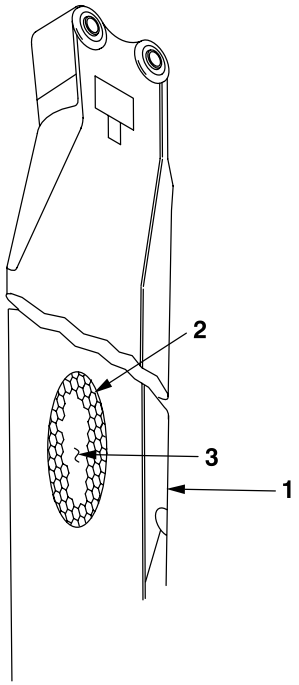


406015-10
J2193

Sanding Operations

g. Use 180 grit sandpaper (D172) and sand area smooth.

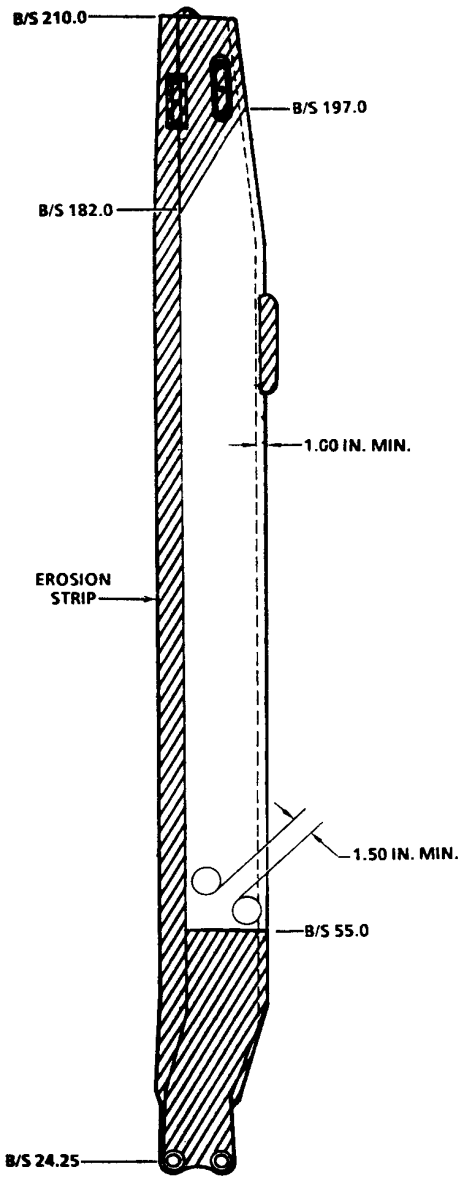
INSPECT

2. Refinish repaired area (Task 5-1-41).

3. Repair damaged skins with no core damage or core damage less than 1.00 square inch in reparable areas as follows:

CAUTION

- Repair of blade will require dynamic balancing of rotor system (TM 1-6625-724-13&P).
- Grease pencils will not be used to mark on blade. Only lead pencil lines will be made as shown. Pencil marks other than those specified in the instructions can weaken the repair.
- Repairs are required to be logged on DA Form 2408-13-1, DA Form 2408-13-2 and DA Form 2408-16 (Reference DA Pam 738-751). A permanent record in the 2408-16 must be maintained on all skin or core patches. Once a skin or core patch has been installed it is not possible to determine which type has been applied.
- The patch shall cover the damage by **1.00 inch** minimum all around and shall be circular or oblong in shape.



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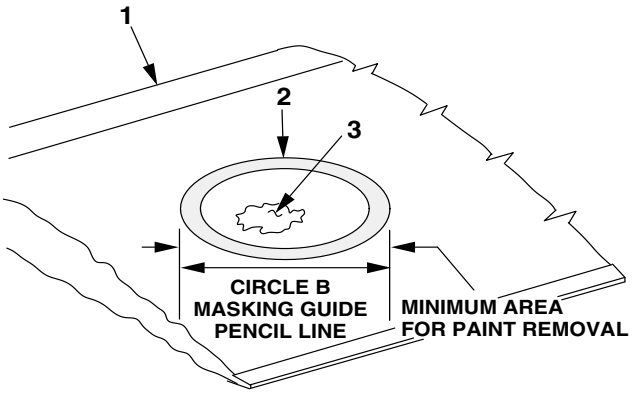
a. Position blade (1) for access to damaged area (3). Support blade to prevent movement and droop.

NOTE

Equipment used in this repair is from the patch repair kit. The outer surface of the patch material is marked with part number and directions for installation. The patch shall cover the crack by **1.00 inch** minimum all around and shall be circular in shape. Damage is limited to **3 inches** in any direction and the patch is limited to **5.00 inches** in diameter.

b. From blade repair kit (B79), obtain patch kit no larger than necessary to overlap damage **1.00 inch** all around.



406015-31
J2193

NOTE

Damage passing through both skins with core damage less than **1.00 inch** diameter will be repaired by applying a skin patch to both sides of blade.

c. Place template (2) from kit on blade (1). Position inner circle to enclose damage (3) as shown. Hold template (2) to keep from slipping, and draw a pencil line around the outer circle as shown.

Acetone

CAUTION

Care should be taken to prevent acetone (D2) from entering core of blade. Spillage shall be avoided. Acetone (D2) can damage leading edge erosion strip.

d. Dampen cheesecloth (D56) with acetone (D2) and remove lacquer from within guide circle.

GO TO NEXT PAGE

Sanding Operations

CAUTION

Excessive sanding will weaken blade skin. Skin shall be sanded only until yellow color primer is removed.

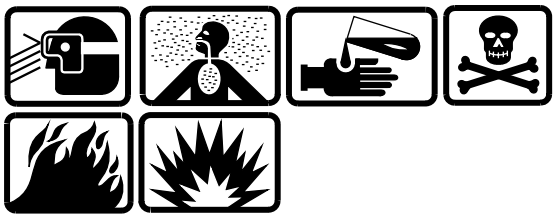
e. Starting with 180 grit sandpaper (D172) and finishing with 320 grit sandpaper (D174), sand yellow primer from blade (1) from within guide circle. Sand only until yellow primer and any damaged material raised above normal contour of blade is removed. Do not sand skin fibers.

f. Wipe off all sanding dust.

g. Use template (2) and redraw guide circle.

h. Use masking tape (4) (D216) and mask around outside of guide circle as shown.

i. Wear cotton gloves (D112), rubber gloves (D111) and goggles (B55) while working with bonding material.



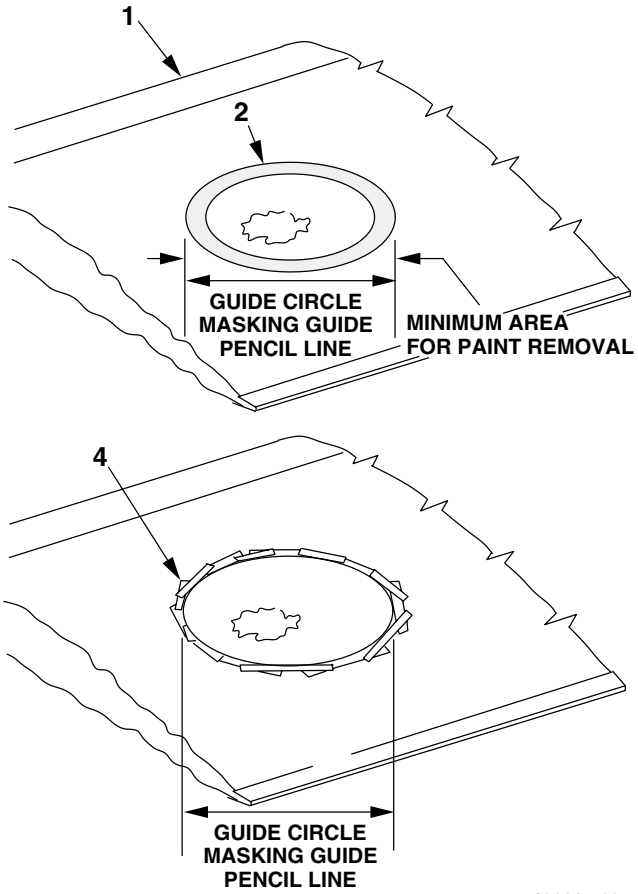
Denatured Ethyl Alcohol

CAUTION

Surface to be bonded shall be clean, dry, and free of fingerprints and all foreign material.

j. Dampen clean cheesecloth (D56) with denatured alcohol (D38) and clean inside masked area. Wipe with clean, dry cheesecloth (D56) before alcohol evaporates.

k. Sand underside of patch with 180 grit sandpaper (D172) and clean with denatured alcohol (D38).



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Adhesive

NOTE

Never mix less than a complete two-part package of adhesive. A full batch shall be mixed and then any excess shall be discarded after the repair is completed.

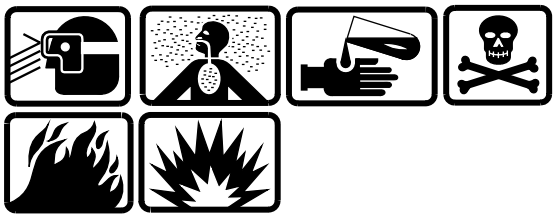
l. Mix adhesive (D12) per instructions on package.

NOTE

Pot life of adhesive is 15 minutes at 75 °F. It is shorter at higher temperatures.

m. Use a clean 1-inch brush from repair kit and apply a light coat of adhesive (D12) to blade skin (5) within guide circle and to underside of patch (6).

n. With stenciled arrow pointing outboard, center patch within guide circle and press firmly into place. Slide patch back and forth slightly under hand pressure to even adhesive. Use light hand pressure to squeeze the patch from the center to edge to work out any air bubbles.



Denatured Ethyl Alcohol

o. Using clean cheesecloth (D56) dampened with denatured alcohol (D38), temporarily lift edges of peel ply (D102) and wipe off excessive adhesive.

p. Prevent patch movement by placing masking tape (D216) over edge of patch in four places. Place two long pieces of masking tape (D216) at right angles, centered over the patch spanwise and chordwise and extending beyond the dimension of the blade repair fixture bladder.

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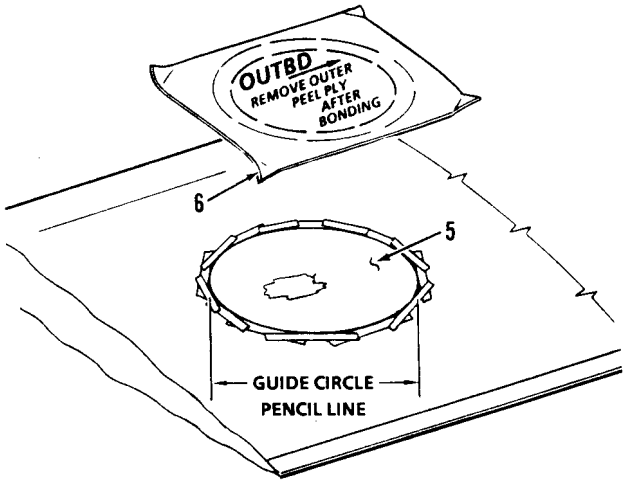


406015-33
H5304

q. Apply a layer of peel ply fabric (7) (D102) over patch. Ensure peel ply fabric (D102) (7) extends approximately **2.00 inches** around patch.

r. Cover peel ply fabric (D102) (7) with a sheet of Tedlar (D219) (8) similar in size to the peel ply material.

BONDING

4. Install blade repair tool (Part of B79) and bond patch (6) as follows:

a. Install blade repair tool (Part of B79) over blade (1) from trailing edge only.

b. Loosen four bladder locking knobs (Part of B79) and center bladder (Part of B79) over repair area and tighten locking knobs.

c. Center pad (Part of B79) opposite bladder and secure.

CAUTION

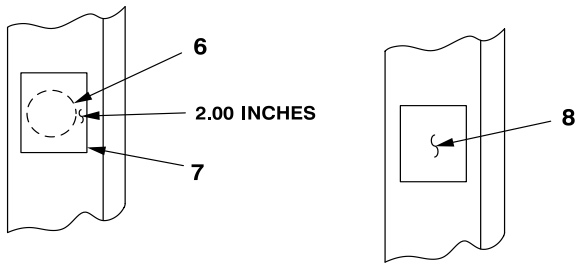
Tightening of locking knobs so that metal skirt around bladder is closer than **0.250 inch** to blade can damage blade.

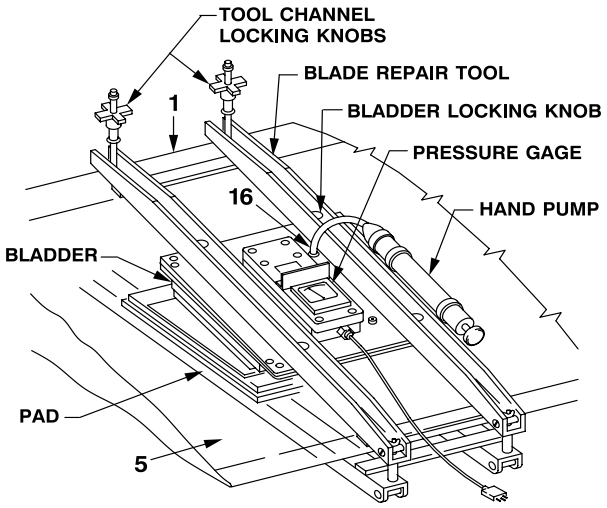
d. Tighten tool channel locking knobs (Part of B79) until metal skirt around bladder is approximately **0.250 inch** from blade skin (5).

e. Actuate hand pump (Part of B79) to obtain 4 psi reading on pressure gage (Part of B79). Disconnect pump hose clamp from air valve (Part of B79).

NOTE

During curing, it may be necessary to periodically reconnect hose and to actuate pump to maintain 4 psi.





406015-52
J2193

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5-1-40. MAIN ROTOR BLADE SKIN BY PATCHING (AVIM) — REPAIR (CONT)

f. Connect electrical connector (Part of B79) to 110 Vac electrical outlet.

g. Set temperature to 150±10 °F on temperature gage (Part of B79) and maintain for 1 hour.

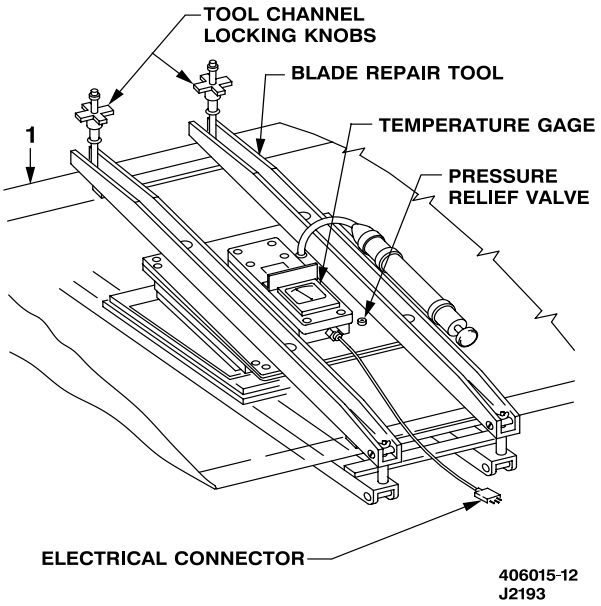
h. At end of curing time, disconnect electrical power and release air pressure by lifting center portion of pressure relief valve (Part of B79).

i. Loosen tool channel locking knobs (Part of B79) and remove blade repair tool (Part of B79) from blade (1).

j. Remove peel ply and Tedlar from patch.

Sanding Operations

k. Use 180 grit sandpaper (D172) and smooth up fillet of adhesive around repair.



INSPECT

5. Refinish repaired area (Task 5-1-41).

END OF TASK

5-1-41. MAIN ROTOR BLADE (AVIM) — REFINISHING

This task covers: Refinishing (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Paint Spray Gun (B61)
Respirator (B116)

Material:
Sandpaper (D174)
Cheesecloth (D56)
Aliphatic Naphtha (D141)
Masking Tape (D216)
Epoxy Primer Coating (D98)
Abrasive Pad (D147)
Conductive Coating (D71)
Polyurethane Coating (D156)
Tack Rag (D209)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

References:
TM 55-1500-345-23

GENERAL

1. The only paint refinishing authorized is the touchup of repaired areas. This restriction is necessary to maintain lightning protection.

2. The paint coating system for the composite blade consists of a urethane compatible primer, a copper-filled polyurethane conductive coating and aliphatic polyurethane paint. The copper-filled polyurethane conductive coating is intended for use as a lightning strike protective coating and a static bleedoff coating on the composite blade.

3. When actual operational emergencies require immediate use of the helicopter, touchup painting may be deferred until termination of the emergency.

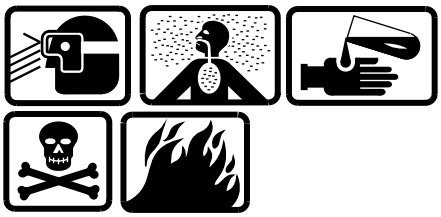
PREPARATION

Sanding Operations

CAUTION

Extreme care shall be used during sanding to prevent damage to blade glass skin fibers.

4. Thoroughly sand area to be refinished with 320 grit sandpaper (D174).



Naphtha/Naphthalene, TT-N-97

5. Remove sanding residue with cheesecloth (D56) dampened with aliphatic naphtha (D141).

6. Use masking tape (D216) to mask off area to be refinished.

7. Mix epoxy primer (D98) per instructions on containers.

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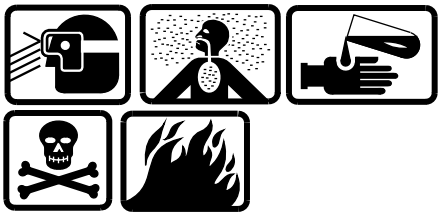


Epoxy Primer Coating

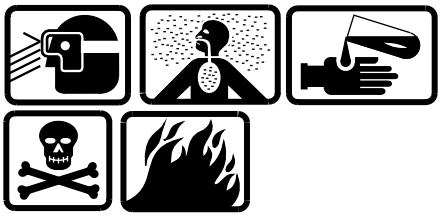
CAUTION

Epoxy primer shall be overcoated within eight hours following mixing. If primer is not overcoated within 8 hours, the primer must be scuff sanded with abrasive pad (D147) and a mist coat of primer (D98) must be added.

8. Apply coat of epoxy primer (D98) with a minimum thickness of **0.003 inch**.

REFINISHING

9. Apply two coats of conductive coating (D71) (TM 55-1500-345-23).



Polyurethane Coating

10. Mix polyurethane coating (D156) per instructions on containers.

11. Immediately prior to applying polyurethane coating (D156) wipe area to be painted with tack rag (D209).

12. Apply coat of polyurethane coating (D156), allow to dry minimum of 30 minutes, then apply another coat.

13. Allow to dry at room temperature for 30 minutes to be tackfree and 8 hours for hard dry. Drying may be accelerated by heating to 90 to 120 °F for 2 hours.

14. Remove masking tape.

INSPECT

END OF TASK

5-1-42. MAIN ROTOR BLADE TRIM TAB (AVIM) — REMOVAL/INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Heat Gun (B59)
Trim Tab Gage (B51)
Trim Tab Bending Tool (B207)
C-Clamp (B16) (A/R)

Material:
Masking Tape (D216)
Sandpaper (D172)
Cheesecloth (D56)
Adhesive Primer (D28)
Rubber Gloves (D111)
Denatured Alcohol (D38)
Adhesive (D12)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

GO TO NEXT PAGE

5-1-42. MAIN ROTOR BLADE TRIM TAB (AVIM) — REMOVAL/INSTALLATION (CONT)

REMOVE

1. Remove trim tab (1) by cutting a section off about **0.125 inch** beyond the blade (2) trailing edge.

2. Using heat gun (B59), apply heat to trim tab (1) while peeling tab off. Do not exceed 200 °F.

3. Pull tab (1) spanwise starting at a corner, one side at a time. Use extreme care to prevent tearing or separating the plies of the fiberglass skins.

PREPARATION

4. Mask off the area to receive new trim tab with masking tape (D216) plus a **0.50 to 1.00 inch** border around area.

Sanding Operations

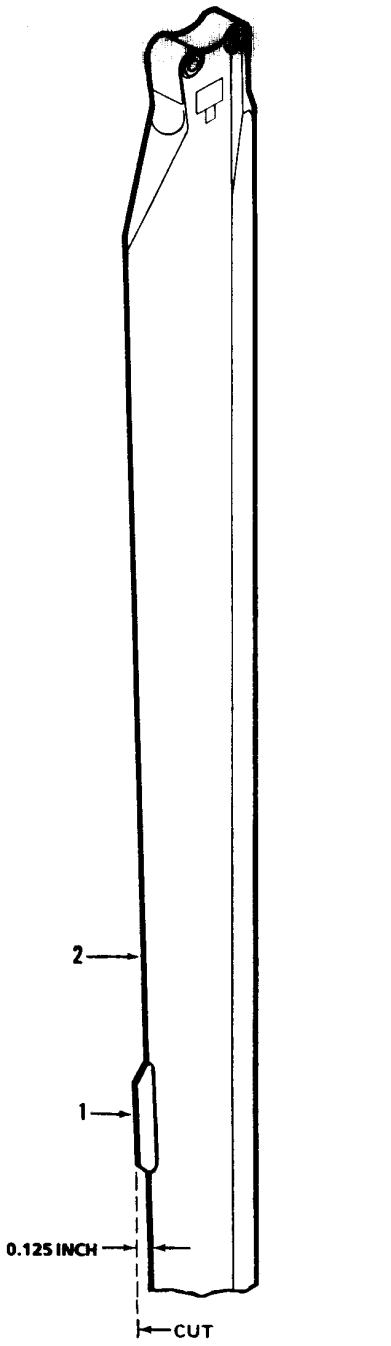
5. Remove primer with 180 grit sandpaper (D172) sanding in a spanwise direction.

6. Remove adhesive with 180 grit sandpaper (D172). Clean off residue by wiping with clean cheesecloth (D56).

7. Remove peel ply from trim tab (1) faying surfaces and lightly sand with 180 grit sandpaper (D172). Dry wipe and inspect for uniform abrading.

Denatured Ethyl Alcohol

8. Wipe abraded surfaces of blade (2) and trim tab (1) with cheesecloth (D56) dampened with denatured alcohol (D38). Repeat until cheesecloth remains clean after wiping. Wipe dry with a final clean cheesecloth (D56).



406015-4
H5304

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Adhesive

9. Mix adhesive (D12) per manufacturers instructions.

10. Apply adhesive (D12) to inside mating surfaces of trim tab (1) and mating surfaces of blade (2). Spread adhesive (D12) around to assure complete wetting of contact surfaces.

11. Position trim tab (1) trailing edge corners between outboard station 143.24 and inboard station 134.24 of blade (2) as shown. Move trim tab (1) back and forth slightly to expel air pockets.

12. Wipe off excessive adhesive and fillet around trim tab (1).

13. Apply 5 psi pressure to trim tab using wooden blocks and c-clamps (D16).

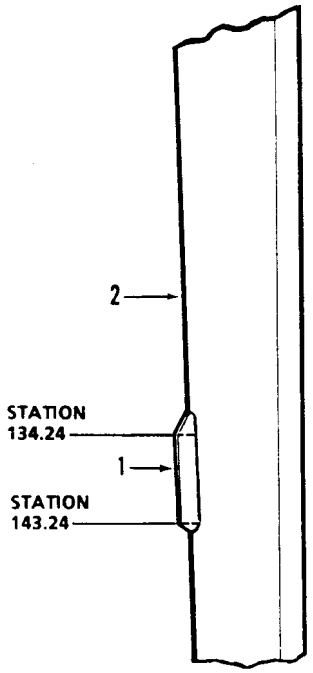
14. Using heat gun (B59), heat cure for 2 hours at 155 to 165 °F (69 to 74 °C). Apply heat locally only and do not exceed maximum temperature.

15. If heat source is not available, then cure adhesive for 24 hours at room temperature.

INSPECT

16. Refinish repaired areas (Task 5-1-41).

17. Use trim tab bending tool (B207) and trim tab gage (B51) and zero trim tab.



406015-23
H5304

END OF TASK

5-1-43. MAIN ROTOR BLADE TRIM TAB — REPAIR

This task covers: Repair (On/Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Hypodermic Syringe (B167)
Trim Tab Gage (B51)
Trim Tab Bending Tool (B207)

Material:
Sandpaper (D172)
Adhesive (D12)
Adhesive (D20)

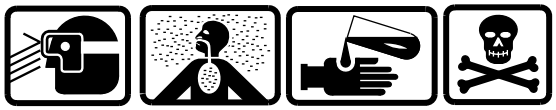
Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

References:
TM 1-6625-724-13&P

Equipment Condition:
Helicopter Safed (Task 1-6-7)

REPAIR

1. Repair edge voids between skin (1) and trim tab (2) and between upper and lower trim tab as follows:



Adhesive

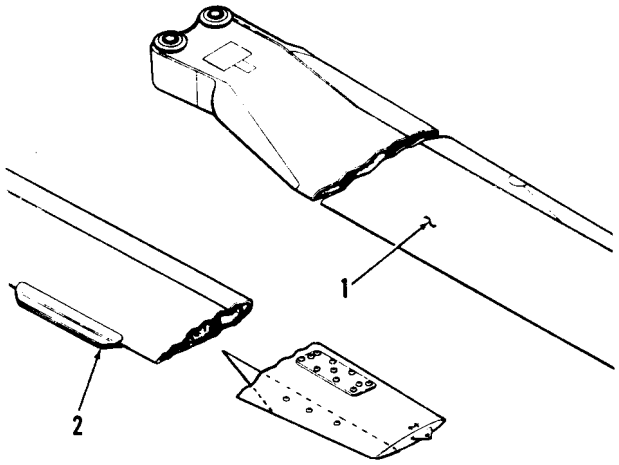
a. Mix adhesive (D20 or D12) per manufacturers instructions.

b. Use hypodermic syringe (B167) and inject adhesive into void.

c. Cure adhesive 24 hours at room temperature.

Sanding Operations

2. Use 180 grit sandpaper (D172) to sand any nicks or scratches in trim tab (2).



406015-21
H5304

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5-1-43. MAIN ROTOR BLADE TRIM TAB — REPAIR (CONT)

3. Repair bent or dented trim tab (2) as follows:

a. Loosen four wing nuts (3) on bending tool (B207) (4) and position on trim tab (2) as shown.

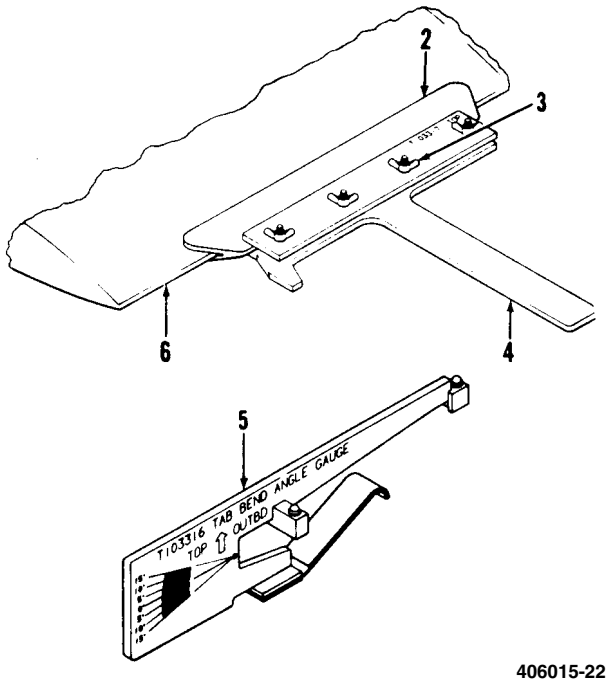
b. Tighten four wing nuts (3) to straighten trim tab (2).

c. Position trim tab gage (B51) (5) onto blade (6) inboard of trim tab (2).

d. Bend trim tab (2) to zero degree angle.

e. Loosen four wing nuts (3) and remove bending tool (4) from trim tab (2).

f. Remove trim tab gage (5) from blade (6).



406015-22
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INSPECT

4. Refinish repaired areas (Task 5-1-41).

FOLLOW-ON MAINTENANCE

Accomplish dynamic track and balance of main rotor system (TM 1-6625-724-13&P).

END OF TASK

5-1-44. MAIN ROTOR BLADE EROSION SHIELD — REPAIR

This task covers: Repair (On/Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Hypodermic Syringe (B167)

Material:
Sandpaper (D172)
Adhesive (D20)
Adhesive (D12)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

REPAIR

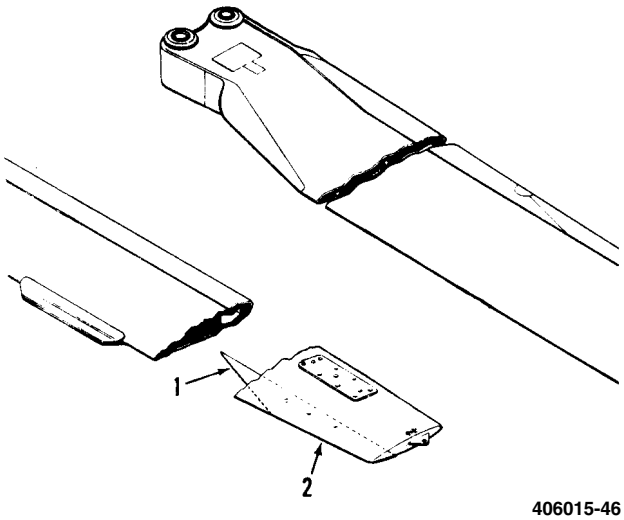
1. Repair edge voids between erosion shield (1) and skin (2) as follows:

Adhesive

a. Mix adhesive (D20 or D12) per manufacturers instructions.

b. Use hypodermic syringe (B167) to inject adhesive into void.

c. Cure adhesive 24 hours at room temperature.



406015-46
H5304

2. Repair nicks in erosion shield (1) as follows:

Sanding Operations

a. Use 180 grit sandpaper (D172) to sand out nicks and scratches.

b. Remove only enough material to remove the nicks or scratches.

3. Refinish repaired areas (Task 5-1-41).

INSPECT

END OF TASK

5-1-45. MAIN ROTOR BLADE TRAILING EDGE — REPAIR

This task covers: Repair (On/Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)

Material:
Sandpaper (D172)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

REPAIR

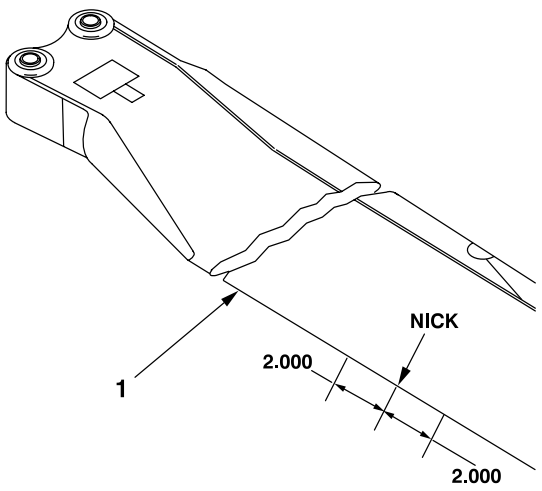
1. Repair nicks or notches in extreme trailing edge (1) as follows:

Abrasive/Sandpaper/Drilling Dust

a. Use 180 grit sandpaper (D172) and sand nick or notch out over a distance of **2.00 inches** on each side as shown.

b. Remove only enough material to remove nick or notch.

2. Refinish repaired areas (Task 5-1-41).



406015-20
J2193

INSPECT

END OF TASK

5-1-46. MAIN ROTOR BLADE OUTBOARD EROSION STRIP — REPAIR

This task covers: Repair (On/Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Hypodermic Syringe (B167)

Material:
Sandpaper (D172)
Steel Wool (D205)
Adhesive (D12)
Adhesive (D20)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

REPAIR

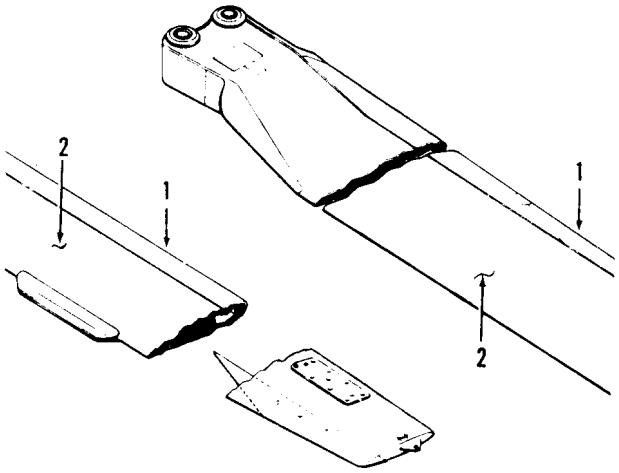
1. Repair edge voids between outboard erosion srip (1) and skin (2) as follows:

Adhesive

a. Mix adhesive (D20 or D12) per manufacturers instructions.

b. Use hypodermic syringe (B167) to inject adhesive into void.

c. Cure adhesive 24 hours at room temperature.



406015-47
H5304

2. Repair nicks and scratches in erosion strip (1) as follows:

Sanding Operations

a. Use 180 grit sandpaper (D172) or steel wool (D205) to sand out nicks or scratches.

b. Remove only enough material to remove nicks or scratches.

INSPECT

3. Refinish repaired areas (Task 5-1-41).

END OF TASK

5-1-47. MAIN ROTOR BLADE INBOARD EROSION STRIP — REPAIR

This task covers: Repair (On/Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Hypodermic Syringe (B167)

Material:
Adhesive (D15)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

5-1-47. MAIN ROTOR BLADE INBOARD EROSION STRIP — REPAIR (CONT)

REPAIR

1. Repair voids between inboard erosion strip (1) and blade (2) in areas A, B, and C as follows:

Adhesive

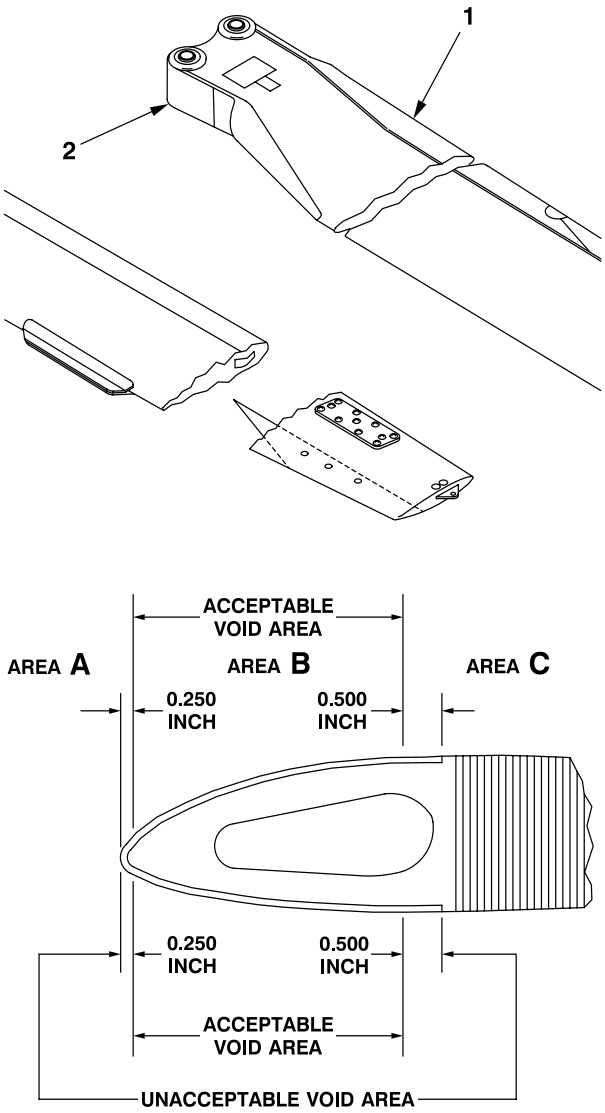
a. Mix adhesive (D20) per manufacturers instructions.

b. Use awl or other sharp instrument and punch hole in erosion strip (1). Use hypodermic syringe (B167) and inject adhesive (D20) into void. Squeeze out excess adhesive.

c. Cure adhesive 24 hours at room temperature 75 to 80 °F.

INSPECT

2. Refinish repaired areas (Task 5-1-41).



406015-24
J2193

END OF TASK

5-1-48. MAIN ROTOR BLADE EROSION STRIP SPLICE COVER — REPAIR

This task covers: Repair (On/Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Hypodermic Syringe (B167)

Material:
Adhesive (D20)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

REPAIR

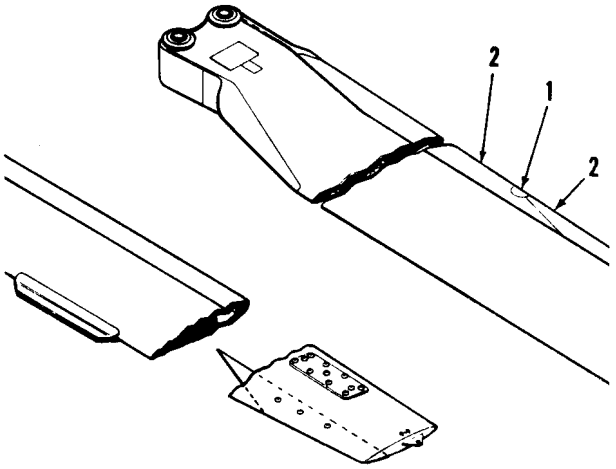
1. Repair allowable edge voids between splice cover (1) and erosion strips (2) as follows:

Adhesive

a. Mix adhesive (D20) per manufacturers instructions.

b. Use hypodermic syringe (B167) and inject adhesive (D20) into void.

c. Allow adhesive to cure for 24 hours at room temperature 75 to 80 °F.



406015-43
H5304

INSPECT

2. Refinish repaired area (Task 5-1-41).

END OF TASK

5-1-49. MAIN ROTOR BLADE INBOARD EROSION STRIP (AVIM) — REPAIR/REPLACEMENT

This task covers: Repair and Replacement (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Vacuum Pump (B111)
Vacuum Gage (B52)
Orbital Sander (B119)
Heat Gun (B59)
Putty Knife (B90)
Plastic Scraper (B123)

Material:
Sandpaper (D172)
Rubber Gloves (D111)
Adhesive Brush (D52)
Denatured Alcohol (D38)
Low-Lint Cleaning Cloth (D67)
Sandpaper (D171)
Sandpaper (D176)
Masking Tape (D216)
Tedlar (D219)
Fiberglass Cloth (D101)
Vacuum Bag Film (D103)
Vacuum Bag Sealing Tape (D210)
Peel Ply Fabric (D102)
Adhesive (D20)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

REPAIR

1. Repair nicks, gouges, and tears in inboard erosion strip (1) as follows:

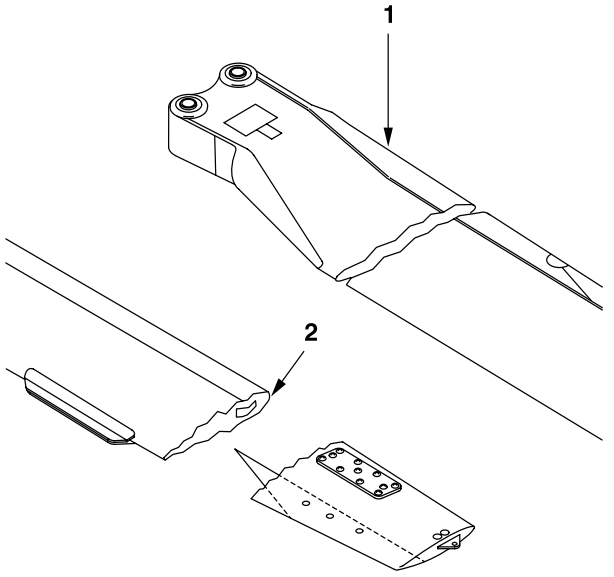
Sanding Operations

CAUTION

Excessive sanding will damage spar (2). Spar shall be sanded only until damaged portion of erosion strip (1) and old adhesive are removed.

a. Use sandpaper (D172) to remove damaged portion of erosion strip (1) and old adhesive. An orbital sander may be used.

b. Sand edges of remaining erosion strip (1) around area where erosion strip was removed.



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J1214

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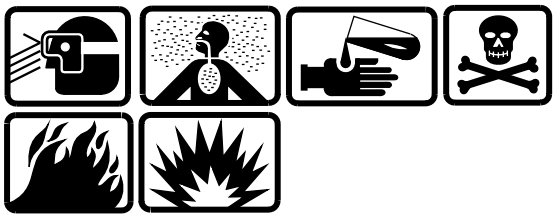
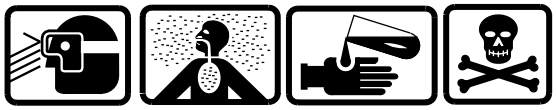
5-1-49. MAIN ROTOR BLADE INBOARD EROSION STRIP (AVIM) — REPAIR/REPLACEMENT (CONT)



Denatured Ethyl Alcohol

c. Wipe sanded surface with low-lint cleaning cloth (D67) dampened with denatured alcohol (D38).



Adhesive

d. Mix adhesive (D20) per manufacturers instructions.

e. Use adhesive brush (D52) and apply adhesive (D20) to sanded area. Continue adding coats of adhesive until the area is built up above contour.

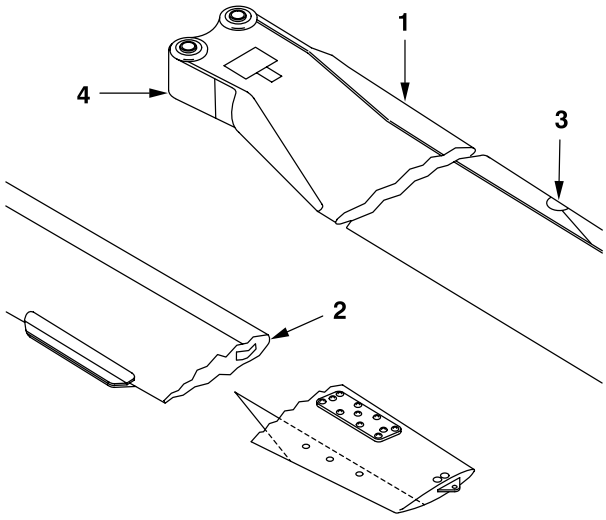
f. Cover repaired area with masking tape (D216). Do not pull tape below contour.

g. Cure adhesive for 24 hour minimum at room temperature.

Sanding Operations

h. Use 80 grit sandpaper (D176) and sand builtup area to contour of blade spar (2).

INSPECT



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J1214

2. Refinish repaired areas (Task 5-1-41).

REMOVE

3. Remove erosion strip splice cover (3) (Task 5-1-50).

4. Remove old erosion strip (1) as follows:

a. Peel strip (1) off blade (4). If strip tears, stretches, or will not peel, use plastic scraper (B123) and scrape strip off blade (4) using care not to damage fiberglass plies.

GO TO NEXT PAGE

5-1-49. MAIN ROTOR BLADE INBOARD EROSION STRIP (AVIM) — REPAIR/REPLACEMENT (CONT)

Sanding Operations

CAUTION

Excessive sanding will damage spar (2). Spar shall be sanded only until strip and adhesive are removed.

b. Use 100 grit sandpaper (D171) and remove remaining adhesive. Sand in a spanwise direction. An orbital sander may be used.

Denatured Ethyl Alcohol

5. Clean sanded area by wiping with low-lint cleaning cloth (D67) dampened in denatured alcohol (D38).

REPLACE

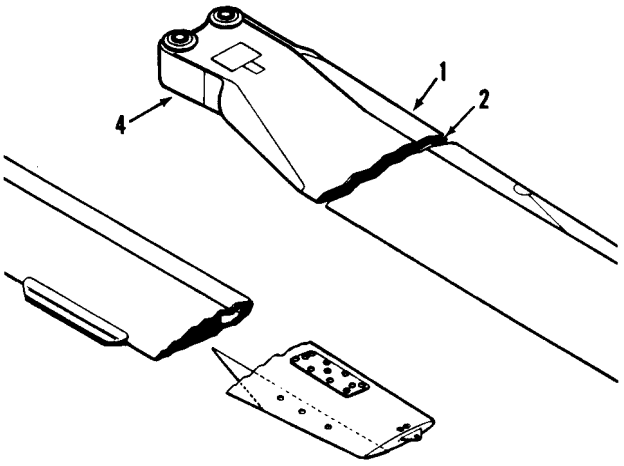
6. Obtain new erosion strip (1) (H96). Sand surface with sandpaper (D171). Wipe prepared surface with low-lint cleaning cloth (D67) dampened in denatured alcohol (D38).

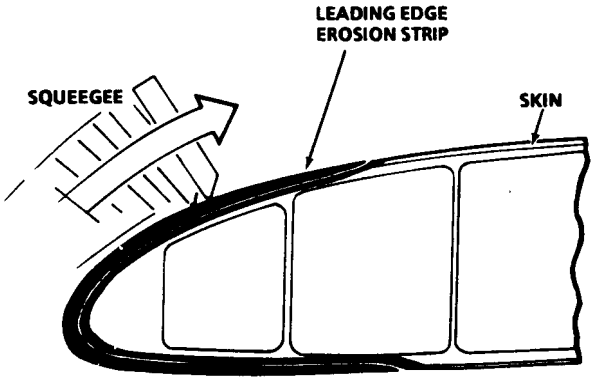
7. Install new erosion strip (1) on blade (4) as follows:

Adhesive

a. Mix sealing compound (D184) per manufacturers instructions.

b. Apply sealing compound (D184) to erosion strip (1) and spar (2).





NOTES

1. **SQUEEGEE ALONG LEADING EDGE IN A SPANWISE DIRECTION. NEXT SQUEEGEE IN A CHORDWISE DIRECTION FROM FORWARD TO AFT. WORK EXCESS ADHESIVE AND ANY AIR POCKETS FROM UNDER THE REPLACEMENT LEADING EDGE EROSION STRIP SECTION.**

2. **INSPECT BOTH LEADING EDGE AND FLAT SURFACES OF LEADING EDGE EROSION STRIP FOR ANY SOFT SPOTS IN BOOT MATERIAL AS EVIDENCE OF AIR POCKETS.**

406015-30
H5304

GO TO NEXT PAGE

5-1-49. MAIN ROTOR BLADE INBOARD EROSION STRIP (AVIM) — REPAIR/REPLACEMENT (CONT)

c. Place erosion strip (1) on blade (4) and tape in position with masking tape (D216).

Adhesive

d. Smooth sealing compound (D184) under and along leading edge of erosion strip using a squeegee as shown.

e. Work excess sealing compound (D184) and any air pockets from under the erosion strip.

f. Cover erosion strip with one layer of peel ply fabric (D102). Peel ply fabric will overlap aft edge of erosion strip a minimum of **2.00 inches**.

g. Cover peel ply fabric with one layer of perforated Tedlar (D219). Use two or three plies of fiberglass cloth (D101) on top of Tedlar (D219) for wicking.

h. Install vacuum fitting (Part of B79) in vacuum bag film (D103) with vacuum bag sealing tape (D210).

i. Install film (D103) around outer ply of fibeglass cloth (wicking) and secure to blade (4) with sealing compound (D184).

j. Use vacuum pump (B111) and apply a minimum of 25 inches of vacuum to film (9).

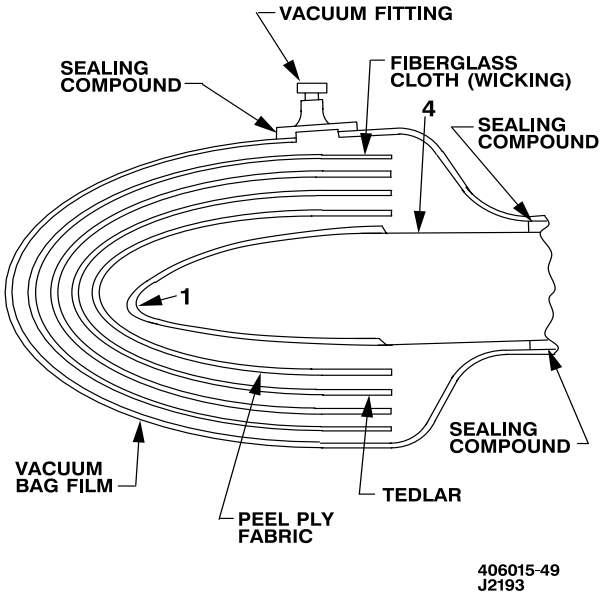
8. Cure sealing compound (D184) for 24 hours at 75 °F or for 60 minutes at 140 °F.

9. Release vacuum and remove film, sealing compound, fiberglass cloth, Tedlar, and peel ply fabric from blade (4).

INSPECT

10. Install erosion strip splice cover (Task 5-1-48).

11. Refinish repaired areas (Task 5-1-41).



END OF TASK

5-1-50. MAIN ROTOR BLADE EROSION STRIP SPLICE COVER (AVIM) — REPLACEMENT

This task covers: Replacement (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)

Material:
Sandpaper (D172)
Denatured Alcohol (D38)
Cheesecloth (D56)
Rubber Gloves (D111)
Adhesive (D12)

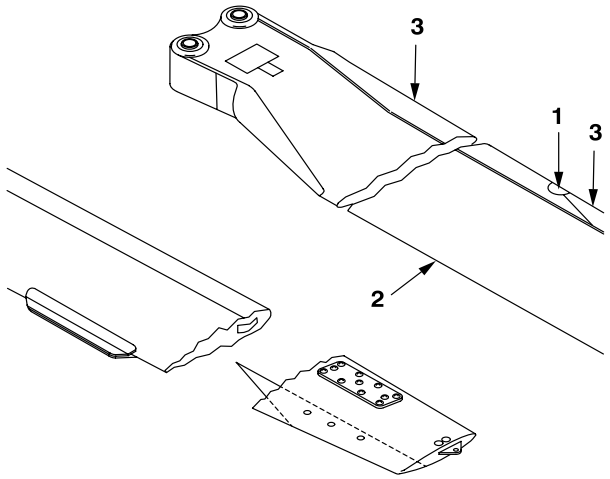
Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

GO TO NEXT PAGE

5-1-50. MAIN ROTOR BLADE EROSION STRIP SPLICE COVER (AVIM) — REPLACEMENT (CONT)

REMOVE

1. Use a chisel and very carefully pry splice cover (1) from blade (2), being careful not to damage blade (2), or erosion strips (3).



406015-44
J1231

CLEAN

Sanding Operations

CAUTION

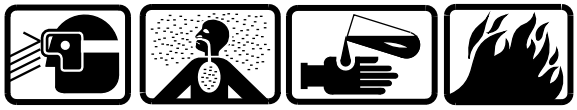
To prevent damage to skin fibers, sanding shall only remove adhesive and paint.

2. Use 180 grit sandpaper (D172) and sand old adhesive, paint, and other contaminants from erosion strips (3) in the area to receive the new splice cover (1). Sand in a spanwise direction.

Denatured Ethyl Alcohol

3. Wipe sanded surfaces with cheesecloth (D56) dampened with denatured alcohol (D38). Repeat until cheesecloth remains clean after wiping. Wipe dry with a final clean cheesecloth (D56).

REPLACE



Adhesive

4. Mix adhesive (D12) per manufacturers instructions.

5. Apply coat of adhesive (D12) to blade (2) and splice cover (1).

6. Place splice cover (1) on blade (2) with outboard end **1.00 inch** outboard of most outboard part of splice.

7. Move splice cover back and forth slightly to expel any air pockets.

8. Wipe off excess adhesive. Fair in edges of cover with adhesive.

9. Hold cover in place with heavy rubber bands or bungee cords. Allow adhesive to cure 24 hours at room temperature 75 to 80 °F.

INSPECT

10. Refinish repaired area (Task 5-1-41).

END OF TASK

5-1-51. MAIN ROTOR BLADE CORE (AVIM) — REPAIR

This task covers: Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Apron (B7)
Blade Repair Kit (B79)
Goggles (B55)
Respirator (B116)

Material:
Sandpaper (D172)
Sandpaper (D171)
Sandpaper (D173)
Denatured Alcohol (D38)
Cotton Gloves (D112)
Masking Tape (D216)
Tedlar (D219)
Adhesive (D12)
Peel Ply Fabric (D102)
Cheesecloth (D56)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

References:
TM 1-6625-724-13&P
DA PAM 738-751

GO TO NEXT PAGE

5-1-51. MAIN ROTOR BLADE CORE (AVIM) — REPAIR (CONT)

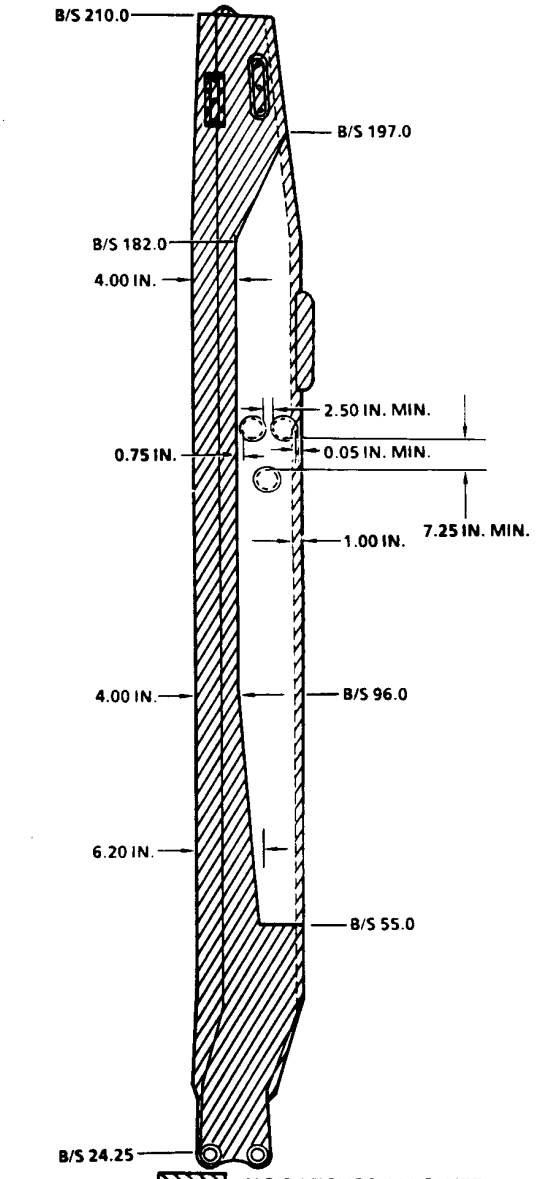
GENERAL

1. Core patches are not allowed closer than **0.75 inch** to aft edge of spar or **1.00 inch** of trailing edge. Distance between patches must be at least **2.50 inches** chordwise and **7.25 inches** spanwise from a patch of any kind.

2. The core skin patch shall cover the damage by **1.00 inch** all around and shall be circular or oblong in shape.

3. Damage is limited to **3.00 inches** in any direction, and the core patch is limited to **5.00 inches** in diameter.

4. Repairs are required to be logged on helicopter DA Form 2408-13-1, DA Form 2408-13-2, and DA Form 2408-16 (Ref. DA PAM 728-751). A permanent record in the DA Form 2408-16 must be maintained on all skin and core patches. Once a skin or core patch has been installed, it is not possible to determine which type has been applied.



406015-45
H5304

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5. Core voids larger than **1.00 inch** can be repaired with a single patch.

6. Damage that does not pass completely through blade may be repaired with a single patch.

7. Damage that passes completely through blade and is larger than **1.00 inch** in diameter will be repaired by installing core patches from top and bottom sides of blade. Install larger diameter and depth core patch first as shown.

PREPARATION

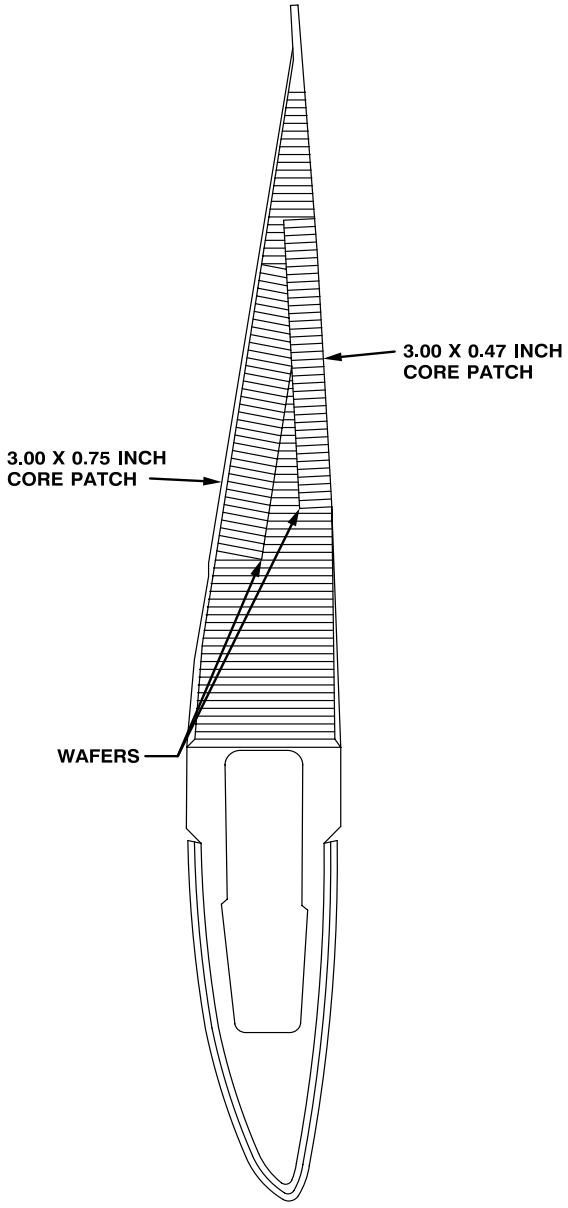
8. Position blade for access to damaged area.

9. Measure diameter and depth of damage to determine size of core patch required.

NOTE

Equipment used in this repair is from patch repair kit. The outer surface of the patch material is marked with part number and directions for installation.

10. Obtain core patch kit (no larger than necessary for repairing damage) from blade repair kit (B79).



406015-34
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5-1-51. MAIN ROTOR BLADE CORE (AVIM) — REPAIR (CONT)

REPAIR

CAUTION

Grease pencils shall not be used to mark on blade (1). Only lead pencil lines shall be made as shown. Pencil marks other than those specified in the instructions can weaken the repair.

NOTE

Repair of blade will require dynamic balancing of main rotor system (TM 1-6625-724-13&P).

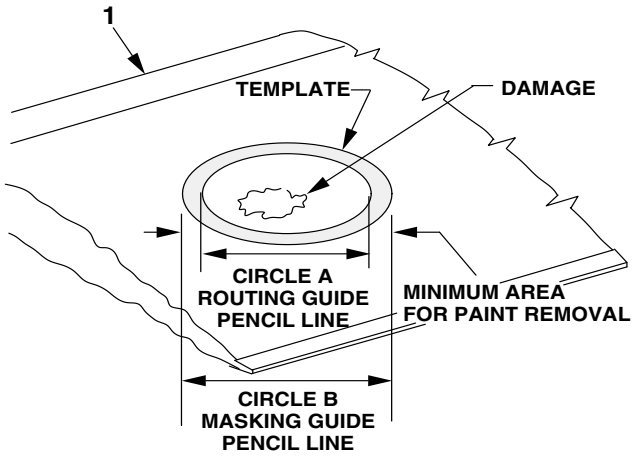
11. Place template from blade repair kit (B79) on blade (1) to enclose damage as shown. Hold template to keep from slipping and draw a pencil line around the outer and inner circles as shown.

Sanding Operations

CAUTION

To avoid damaging skin fibers, blade shall be sanded only until yellow color primer is removed.

12. Starting with 100 grit sandpaper (D171) and finishing with 240 grit sandpaper (D173), sand yellow primer from blade (1) between circles. Sand only until yellow primer is removed. Do not sand skin fibers.



406015-35
J2193

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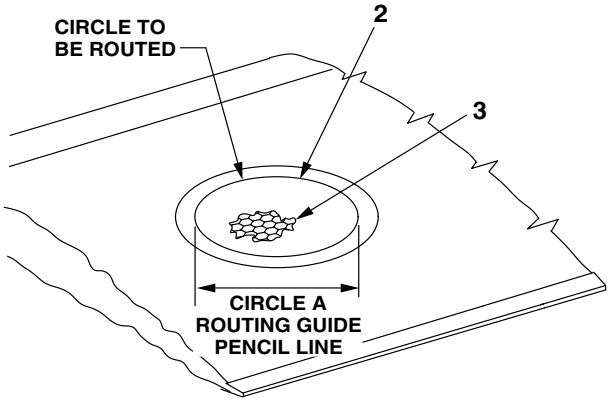
13. Wipe off all sanding dust.

14. Redraw circle A. This is the routing guideline.



406015-36
J2196

WARNING

- Router cord shall disconnected from electrical outlet before changing or installing bits, end mills, or making adjustments, or injury to personnel can result.
- Ensure router switch is in off position before connecting router to electrical power, or injury to personnel may result.
- Hands and fingers shall be kept away from rotating bits and end mills, or injury to personnel may result.
- Personnel protection equipment, respirator (B166), goggles (B55), and apron (B7) shall be worn while operating router (Part of blade repair kit (B79)).

CAUTION

- During all routing operations, long dimension of router base shall be kept in spanwise direction, or damage to main rotor blade may result.
- Router with shall be guided with both hands on router grips, or damage to main rotor blade may result.

NOTE

End mills will burn out if used to cut skin.

15. Using router from blade repair kit (B79), install rasp-type bit in router. Set router depth to **0.020 inch**. Rout a complete circle through the skin inside of and following circle A.

16. Peel skin (2) from core (3).

17. Measure core thickness at trailing edge of routed circle.

GO TO NEXT PAGE

18. Select core plug patch (4) of appropriate thickness from blade repair kit (B79).

WARNING

- Router cord shall disconnected from electrical outlet before changing or installing bits, end mills, or making adjustments, or injury to personnel can result.
- Ensure router switch is in off position before connecting router to electrical power, or injury to personnel may result.
- Hands and fingers shall be kept away from rotating bits and end mills, or injury to personnel may result.
- Personnel protection equipment, respirator (B166), goggles (B55), and apron (B7) while operating router (Part of blade repair kit (B79)).

CAUTION

- During all routing operations, long dimension of router base shall be kept in spanwise direction, or damage to main rotor blade may result.
- Router with shall be guided with both hands on router grips, or damage to main rotor blade may result.

NOTE

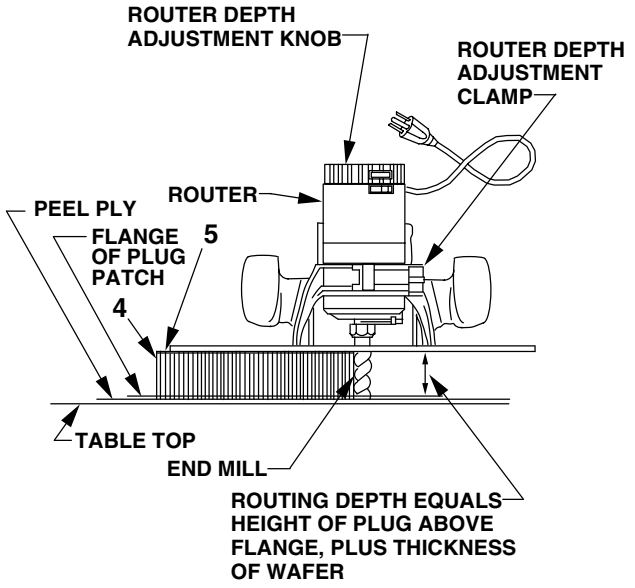
End mills will burn out if used to cut skin.

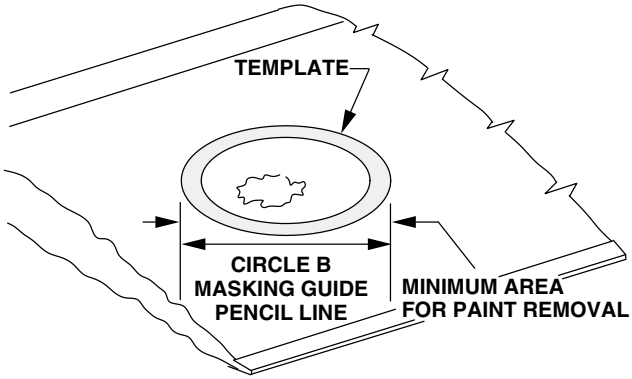
19. Install end mill (Part of blade repair kit (B79)) in router (Part of blade repair kit (B79)). Set end mill to depth of plug patch (4) plus thickness of blade repair kit (B79) wafer (5) as shown.

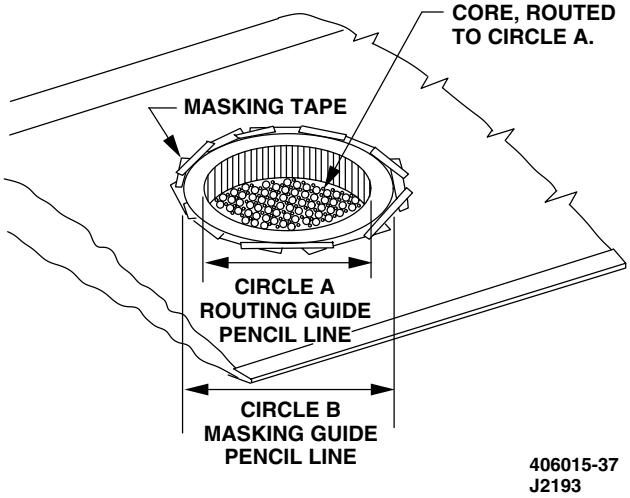
20. First rout a complete circle following inside of circle A. Rout out remainder of core moving router in a chordwise direction.

21. Wipe off all cuttings and sanding dust from repair area. Use template and redraw circle B.

22. Use masking tape (D216) and mask around the outside of circle B as shown.







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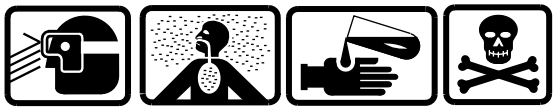
23. Put on cotton gloves (D112) and rubber gloves (D111) and leave on until repair is completed.

Denatured Ethyl Alcohol

CAUTION

Care shall be taken to prevent spillage of denatured alcohol (D38) from entering core area of blade, or damage to equipment may result.

24. Use clean cheesecloth (D56) dampened with denatured alcohol (D38) and clean skin (2) inside masked area. Also clean both sides of wafer (5) and underside of patch flange. Wipe with clean, dry cheesecloth (D56) before alcohol (D38) evaporates.



Adhesive

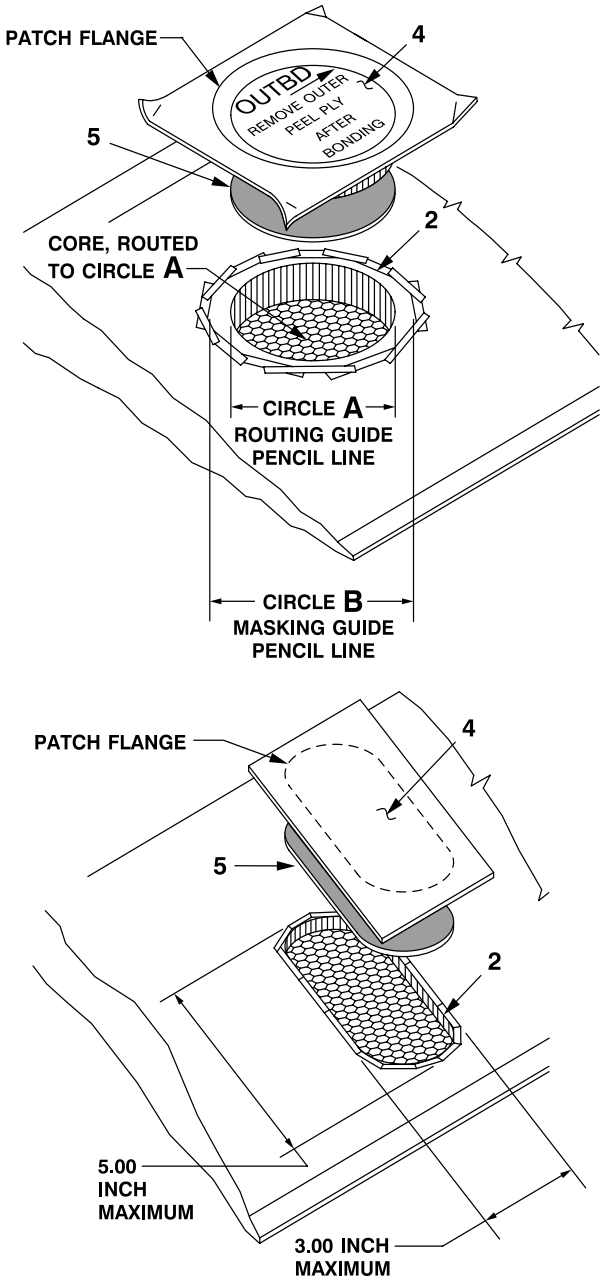
NOTE

Never mix less than a complete two-part package of adhesive. Full batch shall be mixed and then any excess shall be discarded after the repair is completed.

25. Mix adhesive (D12) per instructions on package.

NOTE

Pot life of adhesive (D12) is 15 minutes at 75 °F. It is shorter at higher temperature.



406015-124
J2193

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26. Use a **1.00 inch** brush from blade repair kit (B79) to apply a liberal coat of adhesive (D12) to wafer (5).

a. If repair is on top of blade, place wafer (5) in routed cavity with adhesive coated side down.

b. If repair is on bottom of blade, place adhesive coated side of wafer (5) against plug (6) with open ends of plug core up.

CAUTION

Adhesive should not be packed into cells of blade core or plug patch. Excess adhesive can cause blade to be out of balance.

27. Use a spatula or brush from blade repair kit (B79) and apply a liberal coat of adhesive (D12) to walls (7) in blade core.

28. Use brush from blade repair kit (B79) and apply a light coat of adhesive (D12) to:

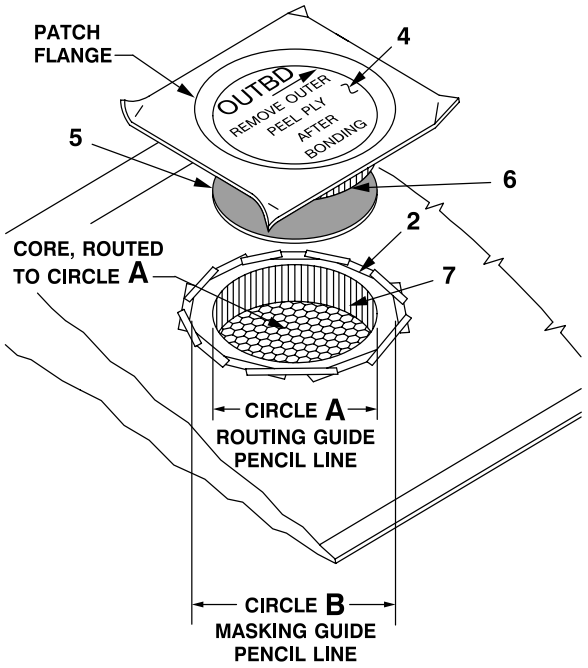
a. Blade skin (2) in masked off area around cavity.

b. Flange surrounding patch.

c. Outside diameter of plug (6).

d. Second side of repair kit wafer.

29. Place plug patch (4) in cavity with stenciled arrow pointing outboard as shown, and press firmly into place. Use light hand pressure to squeeze area overlapping blade skin (2) to expel excess adhesive and air bubbles.



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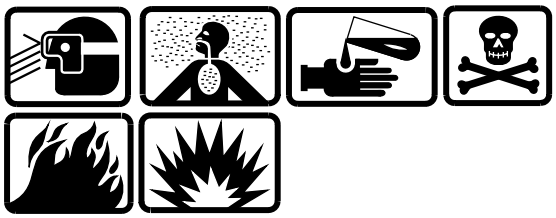


Denatured Ethyl Alcohol

CAUTION

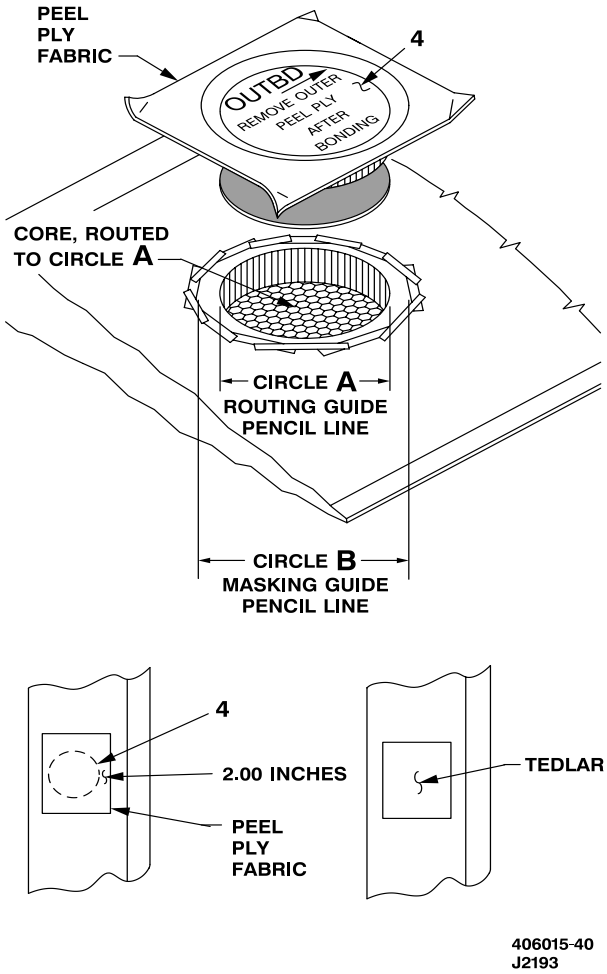
Care shall be taken to prevent denatured alcohol (D38) from entering core area of blade. Spillage shall be avoided. Denatured alcohol can damage leading edge erosion strip.

30. Using cheesecloth (D56) dampened with denatured alcohol (D38), temporarily lift edges of peel ply fabric (D102) and wipe off excess adhesive.

31. Tape patch in position with two pieces of masking tape (D216) centered over the plug patch (4) spanwise and chordwise.

32. Apply a layer of peel ply fabric (D102) over plug patch (4). Peel ply fabric should extend approximately **2.00 inches** beyond edge of plug patch.

33. Cover peel ply fabric with a piece of Tedlar (D219) similar in size to peel ply fabric.



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BONDING

34. Install blade repair tool over blade (1) from trailing edge only.

35. Loosen four bladder locking knobs (Part of blade repair kit (B79)) and center bladder (Part of blade repair kit (B79)) over repair area and tighten locking knobs (Part of blade repair kit (B79)).

36. Center pad (Part of blade repair kit (B79)) opposite bladder (Part of blade repair kit (B79)) and secure.

CAUTION

Tightening of locking knobs so that metal skirt around bladder is closer than **0.250 inch** to blade can damage blade.

37. Tighten tool channel locking knobs (Part of blade repair kit (B79)) until metal skirt around bladder (Part of blade repair kit (B79)) is approximately **0.250 inch** from blade skin (2).

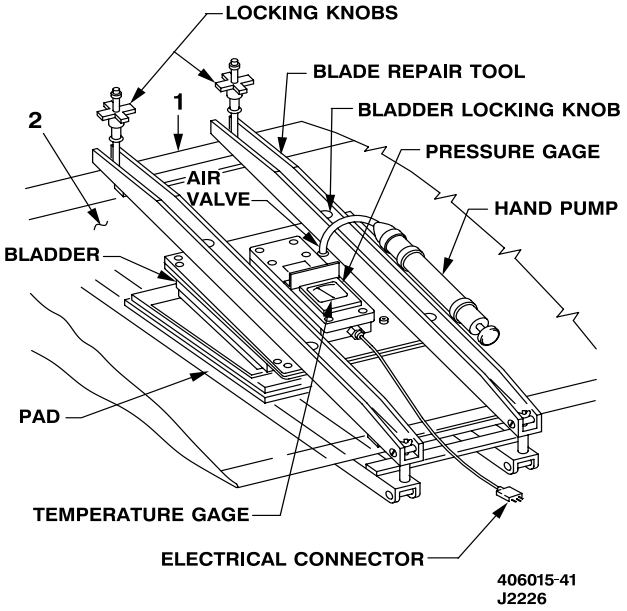
38. Actuate hand pump (Part of blade repair kit (B79)) to obtain 4 psi reading on pressure gage (Part of blade repair kit (B79)). Disconnect pump hose clamp from air valve (Part of blade repair kit (B79)).

NOTE

During curing it may be necessary to periodically reconnect hose and to actuate pump to maintain 4 psi.

39. Connect electrical connector (Part of blade repair kit (B79)) to 110 Vac electrical outlet.

40. Set temperature to 150 °F on temperature gage (Part of blade repair kit (B79)) and maintain for 1 hour.



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5-1-51. MAIN ROTOR BLADE CORE (AVIM) — REPAIR (CONT)

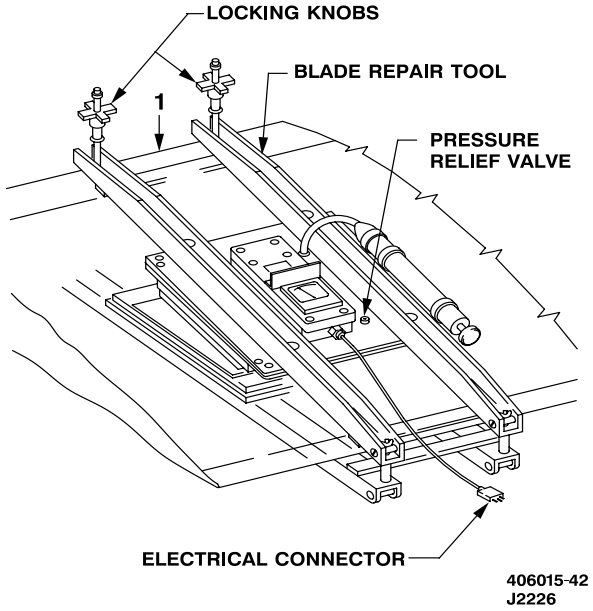
41. At end of curing time, disconnect electrical connector (Part of blade repair kit (B79)) and release air pressure by lifting center portion of pressure relief valve (Part of blade repair kit (B79)).

42. Loosen tool channel locking knobs (Part of blade repair kit (B79)) and remove blade repair tool (Part of blade repair kit (B79)) from blade (1).

43. Remove Tedlar and peel ply fabric from blade (1).

Sanding Operations

44. Use 180 sandpaper (D172) and smooth up fillet of adhesive around repair.



INSPECT

45. Refinish repaired area (Task 5-1-41).

END OF TASK

5-1-52. WEIGHT POCKET EDGE ADHESIVE FILL (AVIM) — REPAIR

This task covers: Repair (On/Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Maintenance Stand (B162)

Material:
Rubber Gloves (D111)
Sandpaper (D172)
Cheesecloth (D56)
Aliphatic Naphtha (D141)
Masking Tape (D216)
Adhesive (D12)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer

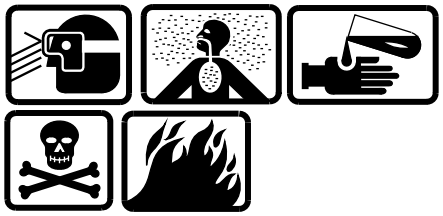
Equipment Condition:
Helicopter Safed (Task 1-6-7)

Sanding Operations

CAUTION

Extreme care must be used during sanding to prevent damage to blade glass skin fibers.

1. Thoroughly sand weight pocket edge area to be refinished with 180 grit sandpaper (D172).

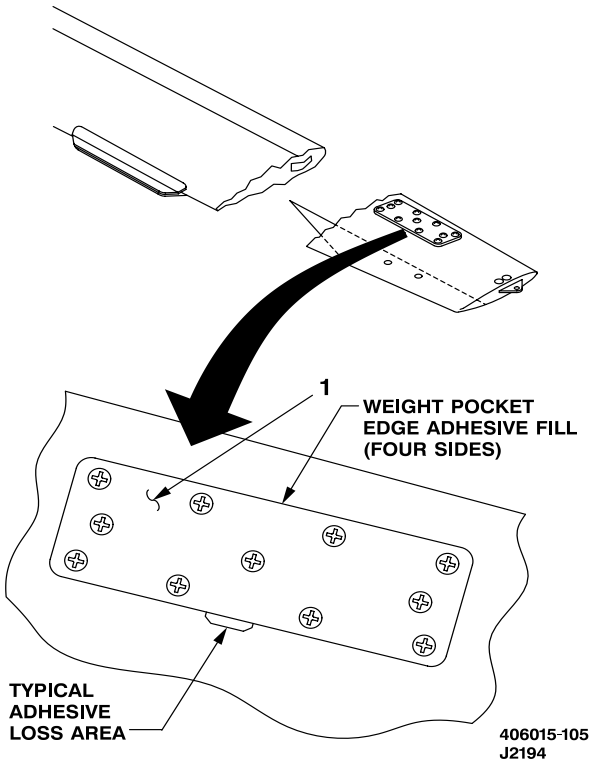


Naphtha/Naphthalene, TT-N-97

2. Remove sanding residue with cheesecloth (D56) dampened with aliphatic naphtha (D141).

3. Allow surface to air dry a minimum of 20 minutes.

4. Use masking tape (D216) to mask off cover (1) and weight pocket edge area to be refinished.



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5-1-52. WEIGHT POCKET EDGE ADHESIVE FILL (AVIM) — REPAIR (CONT)

Adhesive

5. Mix adhesive (D12) per manufacturers instructions.

6. Apply adhesive (D12) to weight pocket edge area to be repaired.

7. Cure adhesive (D12) for 24 hours at room temperature.

8. Remove masking tape (D216).

9. Use 180 grit sandpaper (D172) and sand adhesive (D12) to contour.

10. Refinish repaired area (Task 5-1-41).

INSPECT

END OF TASK

Section II. MAIN ROTOR CONTROLS

5-5. MAIN ROTOR CONTROLS

Standard torques are provided in Appendix P and TM 1-1500-204-23.

5-6. INTRODUCTION

This section contains: maintenance procedures for removal, cleaning, inspection, repair, and installation of main rotor rotating controls.

5-7. TASK LIST

The task list lists those tasks required to support unit and intermediate level maintenance.

LIST OF TASKS

LIST OF TASKS (CONT)

5-2-1. MAIN ROTOR PITCH LINK — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)

Material:
Tiedown Strap (D206)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)

GO TO NEXT PAGE

WARNING

No one shall operate cyclic or collective controls from inside helicopter during removal of pitch link. Physical injury can occur. If injury occurs seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

NOTE

The following procedures are the same for removing any pitch link.

1. Place maintenance stand (B162) adjacent to aircraft work area.

2. Remove cotter pin (1) and discard.

NOTE

Spacers shall be temporarily installed in swashplate outer ring bushings using tiedown strap (D206) to prevent loss after hardware is removed.

3. Remove nut (2), washers (3), spacer (4), and bolt (5).

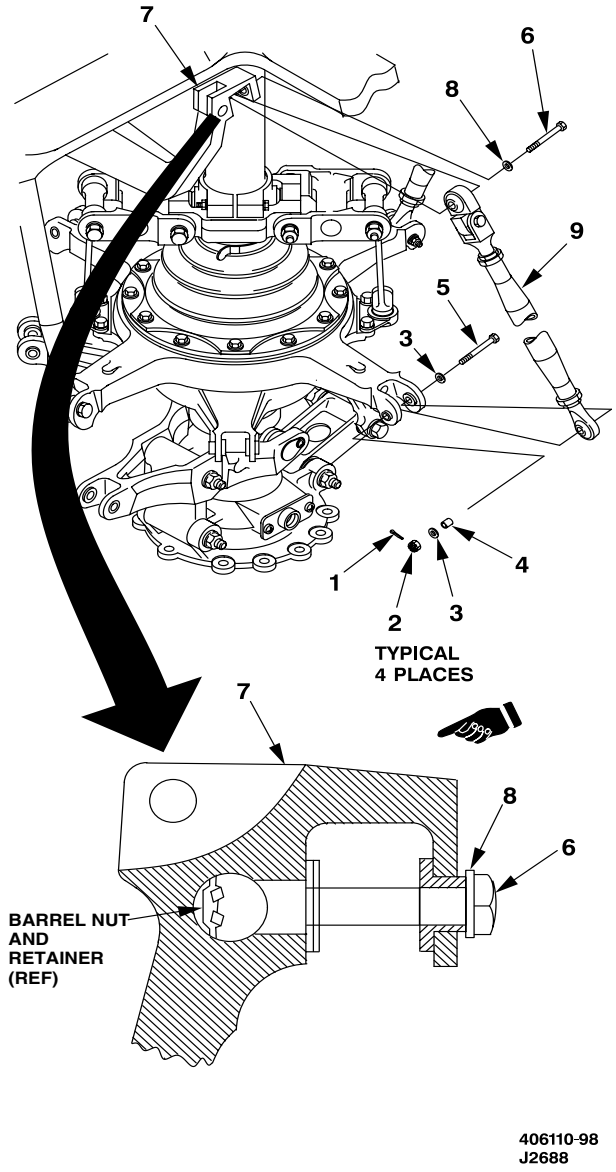
4. Remove lockwire from bolt (6) and pitch horn (7).

5. Remove bolt (6) and washer (8).

6. Remove pitch link (9).

NOTE

To ensure barrel nut and retainer do not fall out of pitch horn, install bolt and washer back in pitch horn.



END OF TASK

5-2-2. MAIN ROTOR PITCH LINK ASSEMBLY — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B237)
Dial Indicator (B37)

Material:
Sandpaper (D174)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Drycleaning Solvent (D199)
Aliphatic Naphtha (D141)
Wiping Rag (D164)
Paint Brush (D54)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1520-266-23

GO TO NEXT PAGE

CLEAN

Drycleaning Solvent

1. Clean pitch link with paint brush (D54) and drycleaning solvent (D199).

2. Dry pitch link with a wiping rag (D164).

INSPECT

3. Inspect pitch link for damage to limits shown. Replace link if limits are exceeded. See figure Main Rotor Pitch Link Assembly — Wear and Damage Limits.

3.1. If a crack on the pitch tube or rod end is suspected, refer to TM 1-1520-266-23.

CAUTION

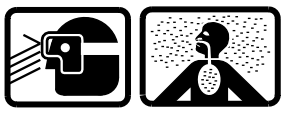
Bearing should be lubricated on helicopter prior to inspection (appropriate cautions should be observed to avoid bearing contamination in sandy/dusty conditions).

NOTE

- Removal is not necessary at each inspection interval requiring inspection for worn bearings or excessive wear.
- The ratchet feel of bearings, when rotated by hand, is not cause for replacement. This is normal due to close tolerances and particular bearing design.

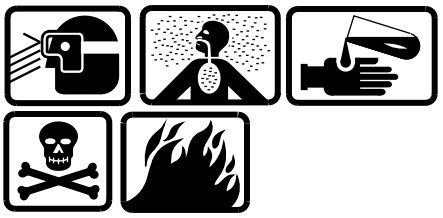
4. Using dial indicator (B37), inspect bearings for wear to limits shown. See figure Main Rotor Pitch Link Assembly — Wear and Damage Limits.

REPAIR



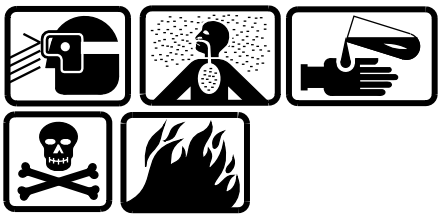
Sanding Operations

5. Polish out repairable damage with 320 grit sandpaper (D174).



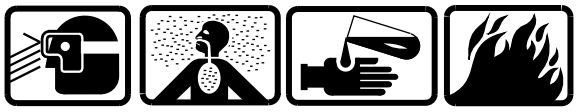
Naphtha/Naphthalene, TT-N-97

6. Clean repaired areas with a wiping rag (D164) dampened with aliphatic naphtha (D141).



Epoxy Primer Coating

7. Apply one coat of epoxy primer coating (D98) to repaired areas which were previously painted.



Acrylic Lacquer

8. Apply two coats of black acrylic lacquer (D124) to primed areas.

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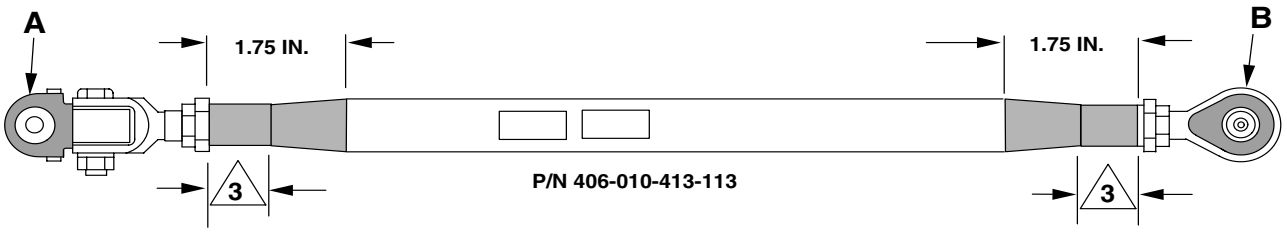


DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH		
MECHANICAL	0.003 in. before and after repair	0.005 in. before and after repair	0.006 in. before and after repair
CORROSION	0.0015 in. before and 0.003 in. after repair	0.002 in. before and 0.005 in. after repair	0.003 in. before and 0.006 in. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.250 sq. in.	0.010 sq. in.	0.500 sq. in.
NUMBER OF REPAIRS	One per end	One per clevis or bearing	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.030 in.	0.020 in.	0.030 in.
BORE DAMAGE		0.020 inch for 1/4 circumference	
BEARING WEAR:		A	B
Axial		0.010 in.	0.015 in.
Radial		0.010 in.	0.015 in.
THREAD DAMAGE			
Depth:	1/3 of thread		
Length:	0.250 inch		
Number:	Two per threaded segment		

NOTES:

1. Width of repair area on any section of control tube not to exceed one-third tube circumference for damage less than 0.005 inch, or one-sixth of tube circumference for damage less than 0.010 inch.
2. No cracks are permitted.

3 Diameter must be 0.750 inch minimum after repair.

406010-34
J2195

Main Rotor Pitch Link Assembly — Wear and Damage Limits

GO TO NEXT PAGE

NOTE

Any new pitch link or link with new rod end bearing shall be set to length of removed link (if known) prior to installation.

9. Replace rod end (1) as follows:

a. Loosen nut (2).

b. Remove rod end (1).

c. Install serviceable rod end (1).

10. Replace universal bearing (3) as follows:

a. Remove cotter pin (4) and discard.

b. Remove nut (5), washers (6), bolt (7), and universal bearing (3).

c. Install serviceable universal bearing (3), bolt (7), washers (6), and nut (5).

d. Torque nut (5) **50 TO 70 INCH-POUNDS**.

e. Install cotter pin (4) through nut (5).

11. Replace clevis (8) as follows:

a. Remove universal bearing (3) per step 10, substeps a and b.

b. Remove lockwire and loosen nut (9).

c. Remove clevis (8).

d. Install serviceable clevis (8).

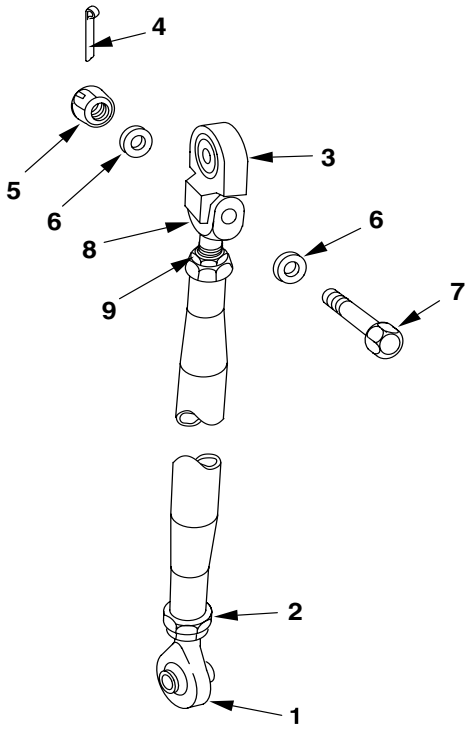
e. Install universal bearing (3) per step 10, substeps c. through e.

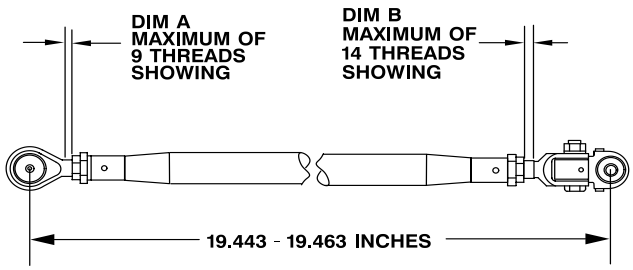
NOTE

Dimensions A and B shall not be exceeded.

12. Adjust pitch link to **19.443 to 19.463 inches** if length of removed link is not known.

13. Tighten nuts (2 and 9) snug. Torquing of nuts (2 and 9) and lockwiring of nut (9) will be accomplished at installation.





406010-37
J2195

INSPECT

END OF TASK

5-2-3. MAIN ROTOR PITCH LINK — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B237)
Torque Wrench (B240)
Maintenance Stand (B162)

Material:
Lockwire (D132)
Lockwire (D133)
Corrosion Preventive Compound (CPC) (D82)
Corrosion Preventive Compound (CPC) (D83)
Tiedown Strap (D206)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Maintenance Test Pilot

References:
TM 1-6625-724-13&P
TM 1-1520-248-MTF

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

5-2-3. MAIN ROTOR PITCH LINK — INSTALLATION (CONT)

INSTALL

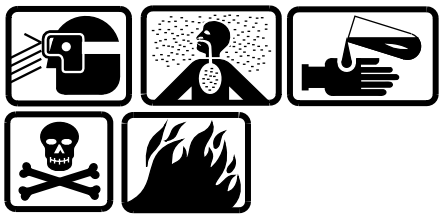
WARNING

No one shall operate cyclic or collective controls from inside helicopter during installation of pitch link. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

NOTE

The following procedures are the same for installing any pitch link.

1. Place maintenance stand (B162) adjacent to aircraft work area.



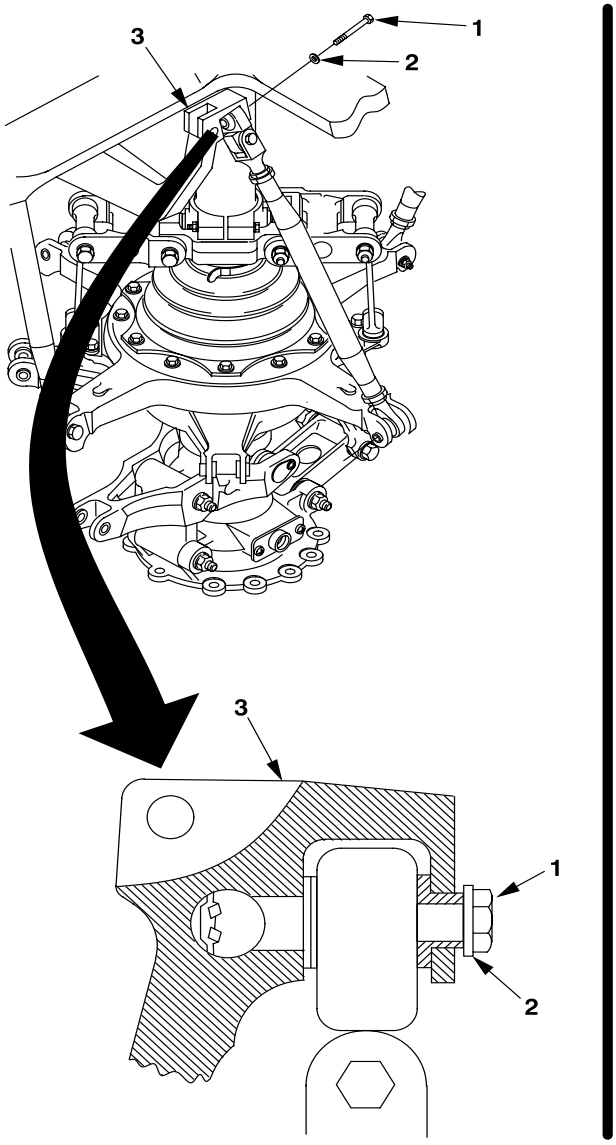
Corrosion Preventive Compound

CAUTION

To prevent fatigue cracks in pitch horn ensure bushing is installed correctly.

2. Coat shank of bolt (1), washer (2), and mating surfaces of pitch horn (3) and pitch link assemblies (4) with CPC (D83).

3. Install pitch link assemblies (4) in pitch horn (3) and install bolt (1) with washer (2).



406010-540-2
J2688

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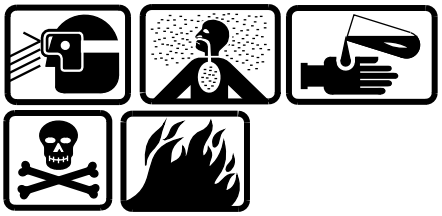
WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing and lockwiring of bolt are characteristics critical to flight safety.

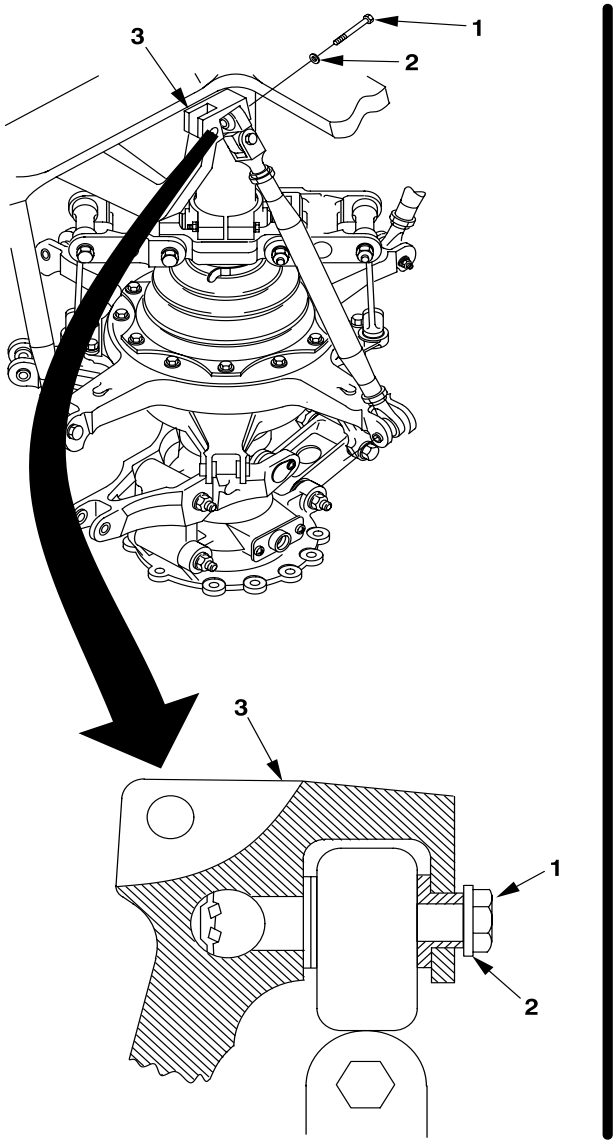
4. Torque bolt (1) **90 TO 110 INCH-POUNDS**.



Corrosion Preventive Compound

5. Coat exposed head of bolt (1) and washer (2) with corrosion preventive compound (D82).

6. Secure bolt (1) to pitch horn (3) with lockwire (D132).



406010-540-2
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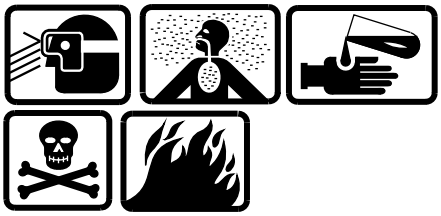


Corrosion Preventive Compound

CAUTION

CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals, or damage to equipment may result.

7. Coat shank of bolt (6), washers (7), and mating surface of pitch link assemblies (4) and horn of swashplate (8) with CPC (D83).

CAUTION

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23-6.

8. Remove tie down strap (D206) from spacer (5).

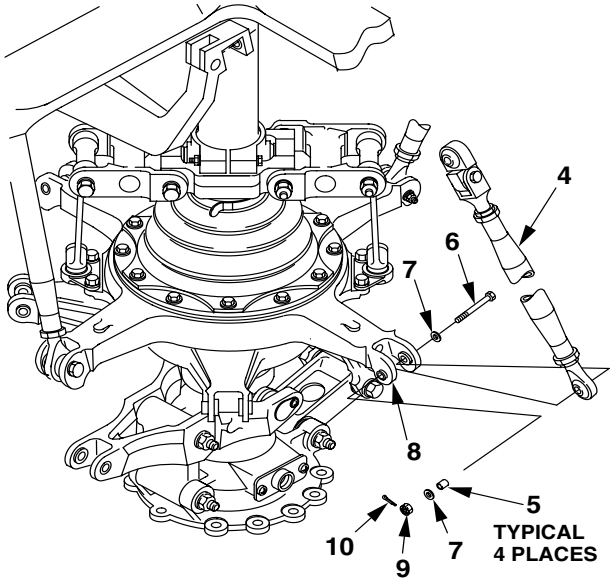
9. Coat spacer (5) with corrosion preventive compound (D83) prior to installation of pitch link assemblies (4).

10. Install pitch link assemblies (4) in horn of swashplate (8) and install bolt (6), washers (7), and nut (9).

11. Torque nut (9) **120 TO 160 INCH-POUNDS**.

12. Install cotter pin (10) through nut (9).

13. Coat exposed head of bolt (6), washers (7), and nut (9) with CPC (D82).



406010-36-3
J0462

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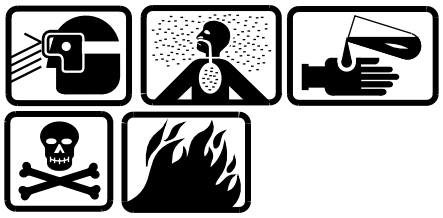
14. Torque nut (11) **150 TO 200 INCH-POUNDS**.

15. Verify no more than 14 rod end threads are exposed.

16. Secure nut (11) with lockwire (D133).



Corrosion Preventive Compound

17. Coat nut (11) with CPC (D82).

18. Adjust position of rod end bearing (12) in horn of swashplate (8) until A and B are equal within **0.04 inch** with controls set at midcollective and cyclic in neutral. Hold rod end in this position.

19. Torque nut (13) **150 TO 200 INCH-POUNDS**.

20. Verify no more than nine rod end threads maximum are exposed.

21. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.

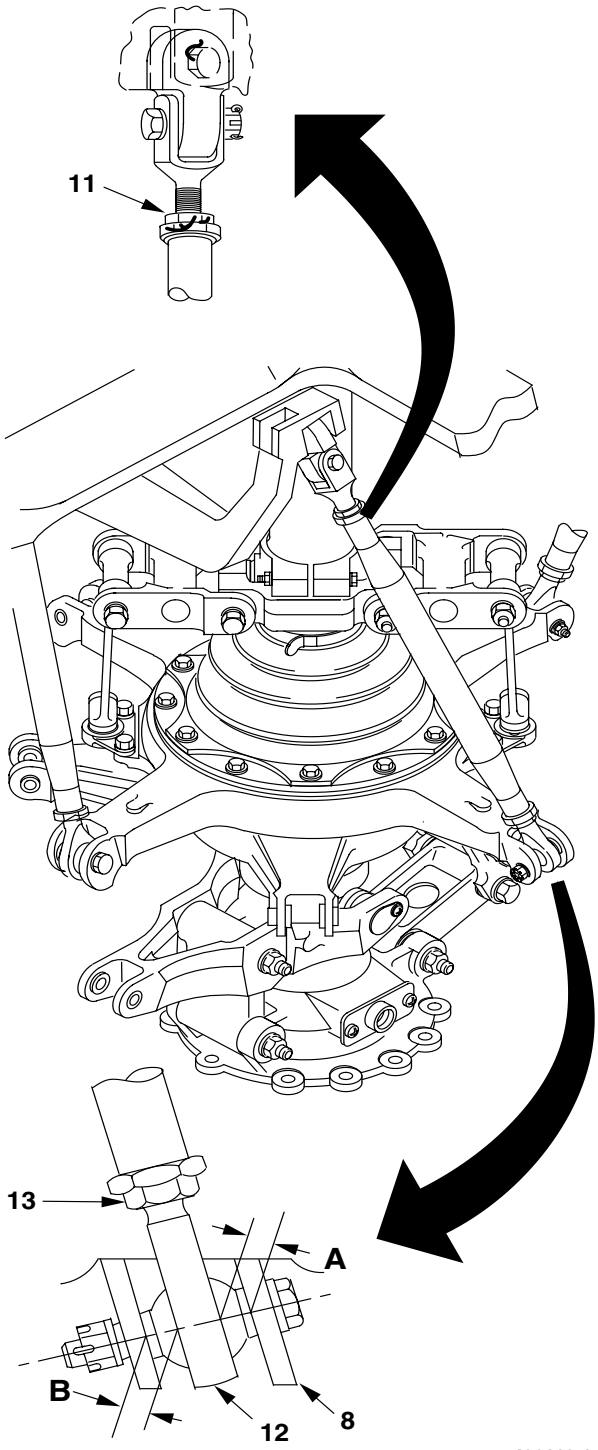
INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing assembly (Task 2-2-47).

Track main rotor blades as required (TM 1-6625-724-13&P).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).



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END OF TASK

5-2-4. MAIN ROTOR CONTROLS DRIVE LINK — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)

Personnel Required:
67S Scout Helicopter Repairer

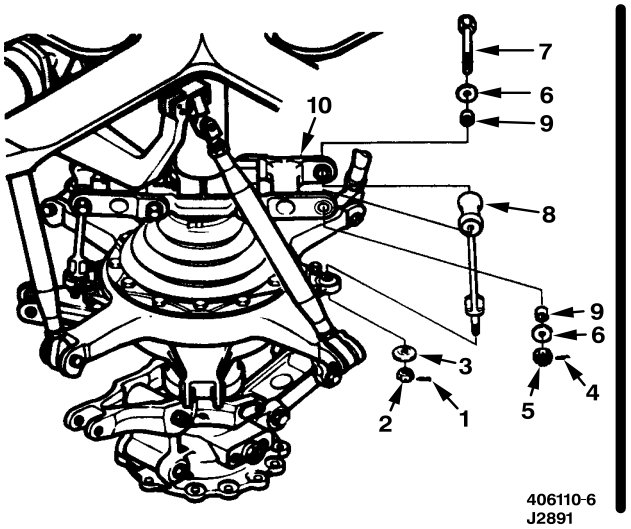
Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)

WARNING

No one shall operate cyclic or collective controls from inside helicopter during removal of drive link. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

NOTE

The following procedures can be used for removing either drive link.



1. Place maintenance stand (B162) adjacent to aircraft work area.
2. Remove cotter pin (1) and discard.
3. Remove nut (2) and washer (3).
4. Remove cotter pin (4) and discard.
5. Remove nut (5), two washers (6), and bolt (7).
6. Remove drive link (8).
7. Remove spacers (9) from tangs of drive lever (10).

END OF TASK

5-2-5. MAIN ROTOR CONTROLS DRIVE LINK (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airmobile Sheet Metal Shop Set (B143)
Powertrain Tool Kit (B180)
Hand Arbor Press (B107)
Freezer (B46)
Heat Protective Gloves (B54)
Heat Gun (B59)

Material:
Sandpaper (D174)
Drycleaning Solvent (D199)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Acetone (D2)
Wiping Rag (D164)
Abrasive Mats (D1)
Aliphatic Naphtha (D141)
Cotton Gloves (D112)
Paint Brush (D54)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer
68G Aircraft Structural Repairer

References:
TM 1-1500-204-23
TM 1-1520-266-23

CLEAN

Drycleaning Solvent

1. Clean drive link with paint brush (D54) and drycleaning solvent (D199).

2. Dry drive link with a wiping rag (D164).

INSPECT

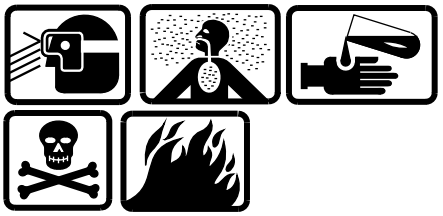
3. Inspect drive link for damage to limits shown; replace if limits are exceeded. See figure Main Rotor Controls Drive Link (AVIM)— Damage Limits.

3.1. If a crack on the surface of the drive link is suspected, refer to TM 1-1520-266-23.

REPAIR DRIVE LINK

Sanding Operations

4. Polish out repairable damage with 320 grit sandpaper (D174).



Naphtha/Naphthalene, TT-N-97

5. Clean repaired areas with a wiping rag (D164) dampened with aliphatic naphtha (D141).

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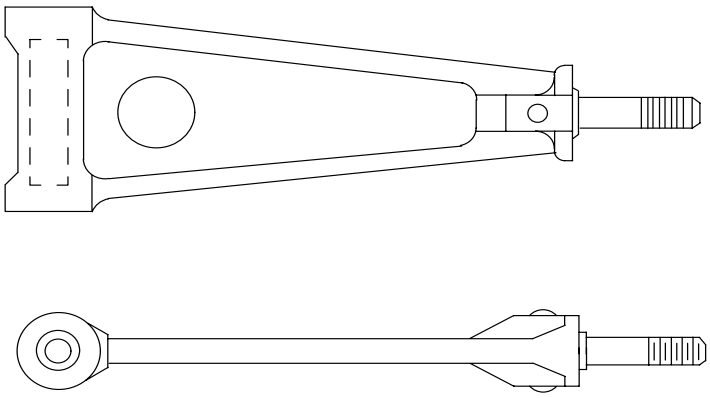

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL	0.010 In. before and after repair
CORROSION	0.005 In. before and 0.010 in. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.015 Sq. in.
EDGE CHAMFER TO REMOVE DAMAGE	0.010 In.
BORES	0.001 Inch for 1/4 circumference
THREAD DAMAGE:	
Depth:	1/3 Of thread
Length:	1/4 Inch
Number:	One per threaded segment

NOTE: No cracks are permitted

406010-24
J2195

Main Rotor Controls Drive Link (AVIM) — Damage Limits

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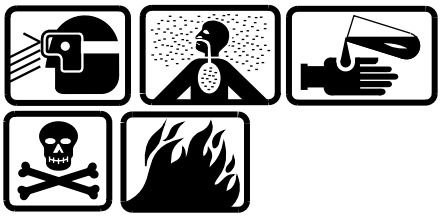


Epoxy Primer Coating

6. Apply one coat of epoxy primer coating (D98) to repaired areas which were previously painted.

Acrylic Lacquer

7. Apply two coats of black acrylic lacquer (D124) to primed areas.

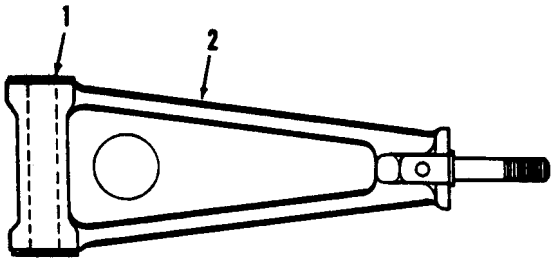
REPLACE BUSHINGS

8. Using hand arbor press (B107) and appropriate pressing plug, press bushings (1) from drive link (2).

Acetone

9. Remove epoxy primer coating (D98) from bushing bore with acetone (D2) and abrasive mats (D1).

10. Inspect bushing bores for damage. Maximum allowable: **0.001 inch** in depth for one-fourth of circumference.



406010-39
H5304

11. Using freezer (B46), freeze replacement bushing (1)

WARNING

To prevent injury to skin, cotton gloves (D112) shall be worn when handling frozen bushings. If injury occurs, seek medical aid.

12. Coat bushing bore in drive link (2) and mating surfaces of bushings (1) with epoxy primer coating (D98).

13. Using hand arbor press (B107) and appropriate pressing plug, press bushing (1) into drive link (2), while epoxy primer coating (D98) is still wet.

GO TO NEXT PAGE

5-2-5. MAIN ROTOR CONTROLS DRIVE LINK (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

REPLACE INSERT

NOTE

Airframe repairer should remove and install rivet.

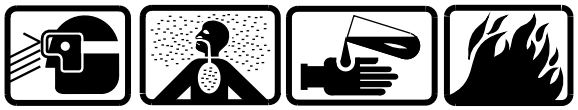
14. Remove rivet (3) using procedures in TM 1-1500-204-23.

WARNING

To avoid burns, heat protective gloves (B54) shall be worn when handling heat gun and heated parts. If burn occurs, seek medical aid.

15. Heat drive link (2) using heat gun (B59). Do not exceed 200 °F.

16. Remove insert (4) using plier wrench.



Acetone

17. Remove epoxy primer coating from insert bore with acetone (D2) and abrasive mats (D1).

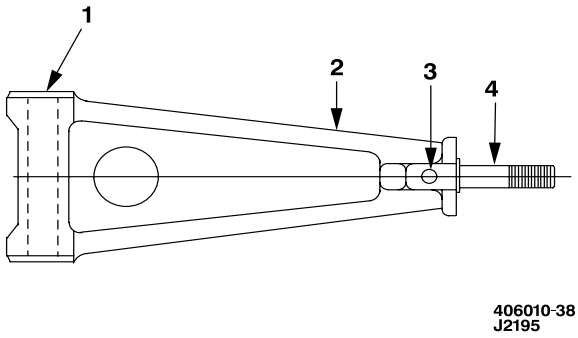
18. Inspect insert (4) bore for damage. Maximum allowable, **0.001 inch** for one-fourth of circumference.

19. Using freezer (B46), freeze replacement insert (4).

WARNING

To prevent injury to skin, cotton gloves (D112) shall be worn when handling frozen insert. If injury occurs, seek medical aid.

20. Coat insert bore in drive link (2) and mating surfaces of insert (4) with epoxy primer coating (D98).



406010-38
J2195

21. Using hand arbor press (B107) and pressing sleeve with an inside diameter of **0.313 inch**, press insert (4) into drive link (2), while epoxy primer coating is still wet.

22. Drill matching hole through insert (4), using hole in drive link (3) as a guide, with drilling machine.

23. Install rivet (3) per procedures in TM 1-1500-204-23.

INSPECT

END OF TASK

5-2-6. MAIN ROTOR CONTROLS DRIVE LINK — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B239)
Maintenance Stand (B162)

Material:
Corrosion Preventive Compound (CPC) (D82)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)

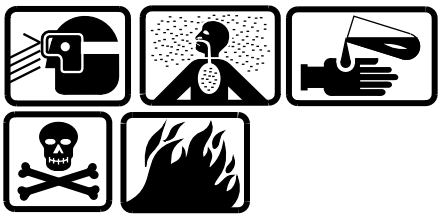
GO TO NEXT PAGE

5-2-6. MAIN ROTOR CONTROLS DRIVE LINK — INSTALLATION (CONT)

INSTALL

WARNING

No one shall operate cyclic or collective controls from inside helicopter during installation of drive link. Physical injury can occur. If injury occurs seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.



Corrosion Preventive Compound

CAUTION

Corrosion preventive compound shall not be applied to Teflon coated bushings, or to surfaces in contact with Teflon coated bushings, or damage to equipment may result.

NOTE

The following procedures are the same for installing either drive link.

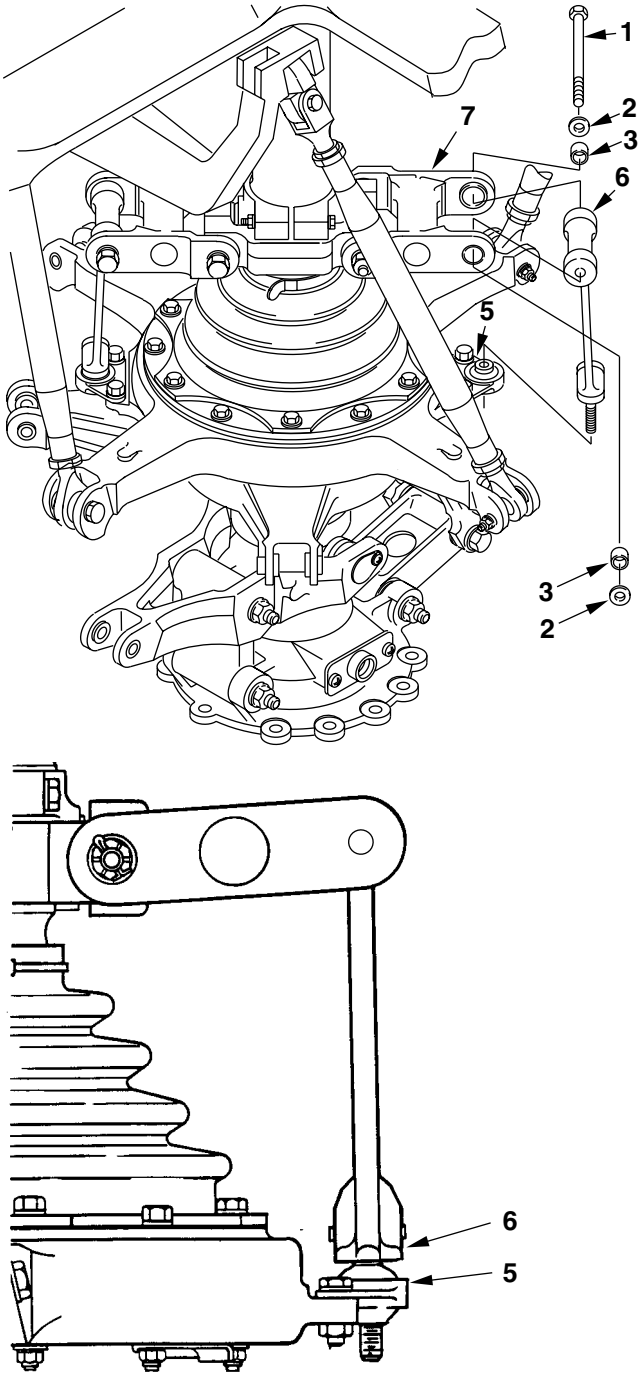
1. Place maintenance stand (B162) adjacent to aircraft work area.

2. Coat shank of bolt (1), washers (2), and spacers (3) with CPC (D82).

NOTE

Cupped washer should not be installed on top of bearing.

3. Install drive link (6) in bearing and liner (5) and drive lever (7).



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H3440

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5-2-6. MAIN ROTOR CONTROLS DRIVE LINK — INSTALLATION (CONT)

4. Install two spacers (3) in tangs of drive lever (7).

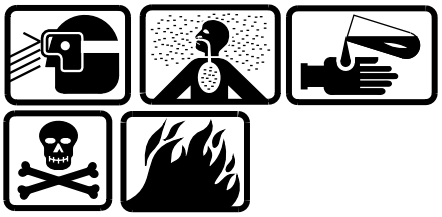
NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

5. Install bolt (1), two washers (2), and nut (8).

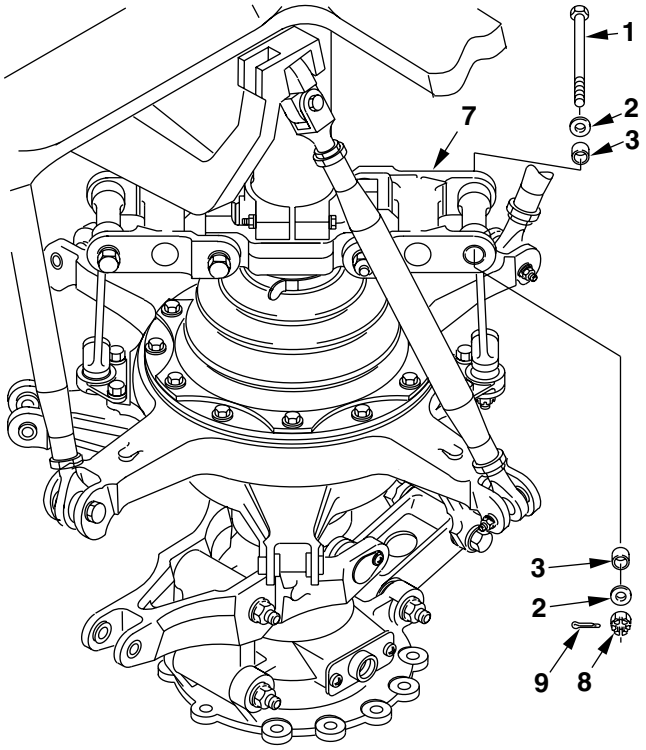
6. Torque nut (8) **120 TO 160 INCH-POUNDS**.

7. Install cotter pin (9) through nut (8).



Corrosion Preventive Compound

8. Coat exposed end of bolt (1), two washers (2), and nut (8) with CPC (D82).



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H3440

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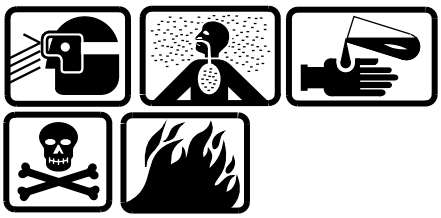
9. Install washer (4) and nut (10).

10. Torque nut (10) **120 TO 160 INCH-POUNDS**.

11. Install cotter pin (11) through nut (10).



Corrosion Preventive Compound

12. Coat washer (4) and nut (10) with CPC (D82).

CAUTION

CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals, or damage to equipment may result.

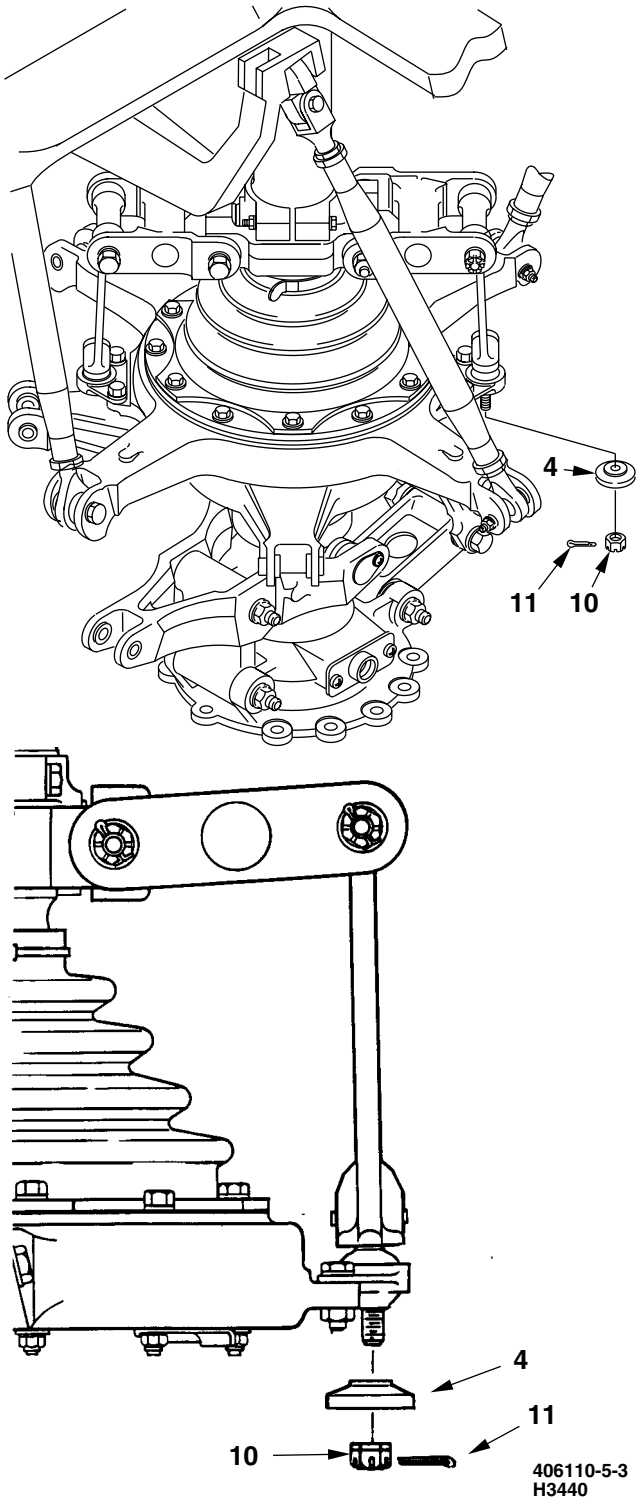
13. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.

INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing (Task 2-2-47).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).



END OF TASK

5-2-7. MAIN ROTOR CONTROLS DRIVE LEVER — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)

GO TO NEXT PAGE

5-2-7. MAIN ROTOR CONTROLS DRIVE LEVER — REMOVAL (CONT)

REMOVE

WARNING

No one shall operate cyclic or collective controls from inside helicopter during removal of drive lever. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

NOTE

The following procedure is the same for removing either drive lever.

1. Place maintenance stand (B162) adjacent to aircraft work area.

2. Remove cotter pin (1) and discard.

3. Remove nut (2), washers (3), and bolt (4).

4. Remove cotter pin (5) and discard.

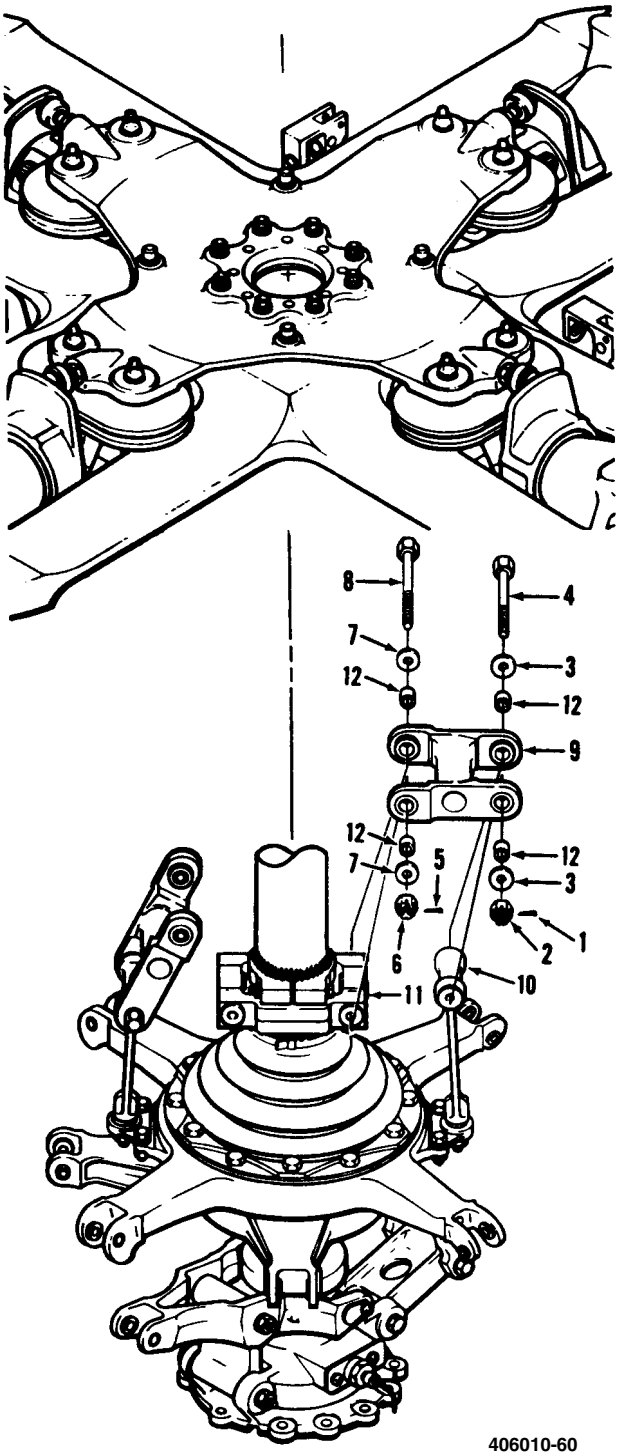
5. Remove nut (6), washers (7), and bolt (8).

6. Remove drive lever (9) from drive link (10) and gimbal ring (11).

7. Remove four spacers (12) from tangs of lever (9).

INSPECT

8. Inspect bolts (4 and 8). Any bolts with wear through the plating shall be replaced.



406010-60
H5304

END OF TASK

5-2-8. MAIN ROTOR CONTROLS DRIVE LEVER (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Hand Arbor Press (B107)
Freezer (B46)

Material:
Sandpaper (D174)
Drycleaning Solvent (D199)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Acetone (D2)
Wiping Rag (D164)
Abrasive Mats (D1)
Aliphatic Naphtha (D141)
Cotton Gloves (D112)
Paint Brush (D54)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1520-266-23

GO TO NEXT PAGE

CLEAN

Drycleaning Solvent

1. Clean drive lever with paint brush (D54) and drycleaning solvent (D199).

2. Dry drive lever with a wiping rag (D164).

INSPECT

3. Inspect bushings in drive lever for wear. If Teflon lining in bushing is worn through, bushing should be replaced and bore of lever should be inspected.

4. Inspect drive lever for damage to limits shown; replace if limits are exceeded. See figure Main Rotor Controls Drive Lever (AVIM) — Damage Limits.

4.1. If a crack on the surface of the drive lever is suspected, refer to TM 1-1520-266-23.

NOTE

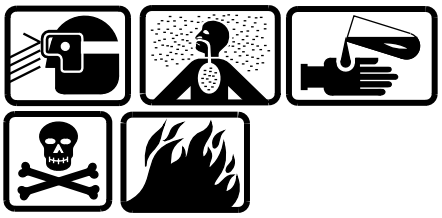
Cadmium plating is defined as the silver colored plating applied over the bolt and should not be confused with protective coating applied over the cadmium plating.

5. Inspect attaching bolts for wear through cadmium plating. Replace worn bolts.

REPAIR DRIVE LEVER

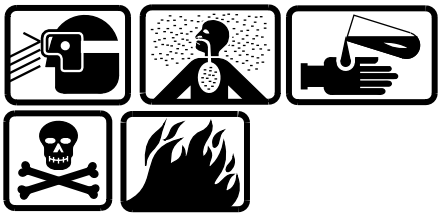
Sanding Operations

6. Polish out repairable damage with 320 grit sandpaper (D174).



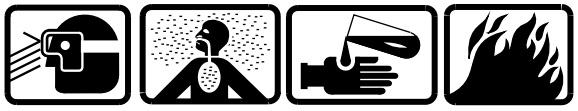
Naphtha/Naphthalene, TT-N-97

7. Clean repaired area with a wiping rag (D164) dampened with aliphatic naphtha (D141).



Epoxy Primer Coating

8. Apply one coat of epoxy primer coating (D98) to repaired areas which were previously painted.



Acrylic Lacquer

9. Apply two coats of black acrylic lacquer (D124) to primed areas.

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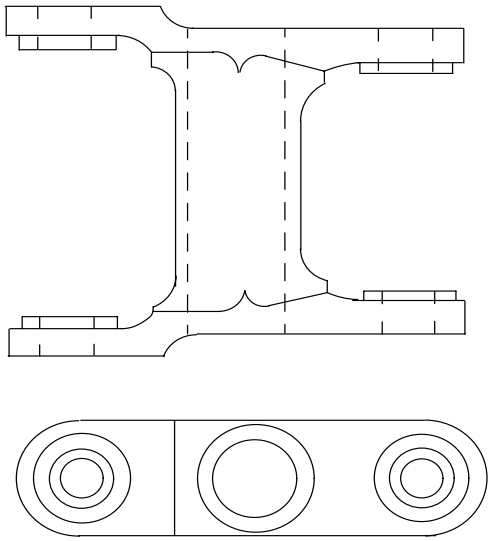


TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL AND CORROSION	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.025 Sq. in.
NUMBER OF REPAIRS	One per segment
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.
BORE DAMAGE	0.002 In. for 1/4 circumference

NOTES:

1. No cracks are permitted.

406010-23
J2195

Main Rotor Controls Drive Lever (AVIM) — Damage Limits

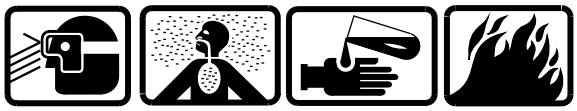
GO TO NEXT PAGE

REPLACE BUSHINGS

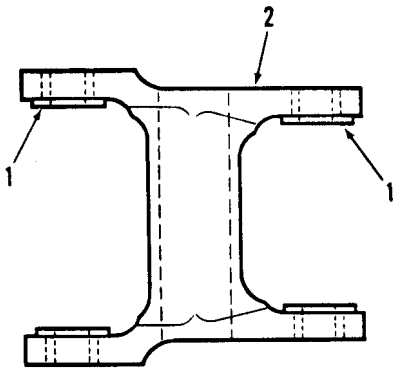
NOTE

The following procedure is the same for replacing either bushing.

10. Using hand arbor press (B107) and appropriate pressing plug, press bushings (1) from drive lever (2).



Acetone



406010-41
H5304

11. Remove epoxy primer coating from bushing bores with acetone (D2) and abrasive mats (D1).

12. Inspect bushing bores for damage; maximum allowable: **0.002 inch** for one-fourth of circumference.

13. Using freezer (B46), freeze replacement bushing (1).

WARNING

To prevent injury to skin, cotton gloves (D112) shall be worn when handling frozen bushings. If injury occurs, seek medical aid.

14. Coat bushing bore in drive lever (2) and mating surfaces of bushing (1) with epoxy primer coating (D98).

15. Using hand arbor press (B107) with a steel plate against bushing and appropriate pressing plug through opposite hole, press bushing (1) into drive lever (2) while epoxy primer coating is still wet.

INSPECT

END OF TASK

5-2-9. MAIN ROTOR CONTROLS DRIVE LEVER — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B239)
Maintenance Stand (B162)

Material:
Corrosion Preventive Compound (CPC) (D82)
Corrosion Preventive Compound (CPC) (D83)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

5-2-9. MAIN ROTOR CONTROLS DRIVE LEVER — INSTALLATION (CONT)

INSTALL

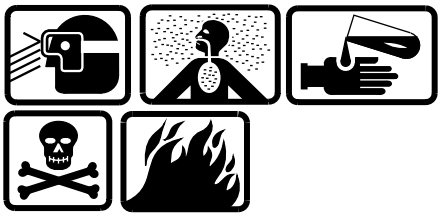
WARNING

No one shall operate cyclic or collective controls from inside helicopter during installation of drive lever. Physical injury can occur. In injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

NOTE

The following procedures are the same for installing either drive lever.

1. Place maintenance stand (B162) adjacent to aircraft work area.

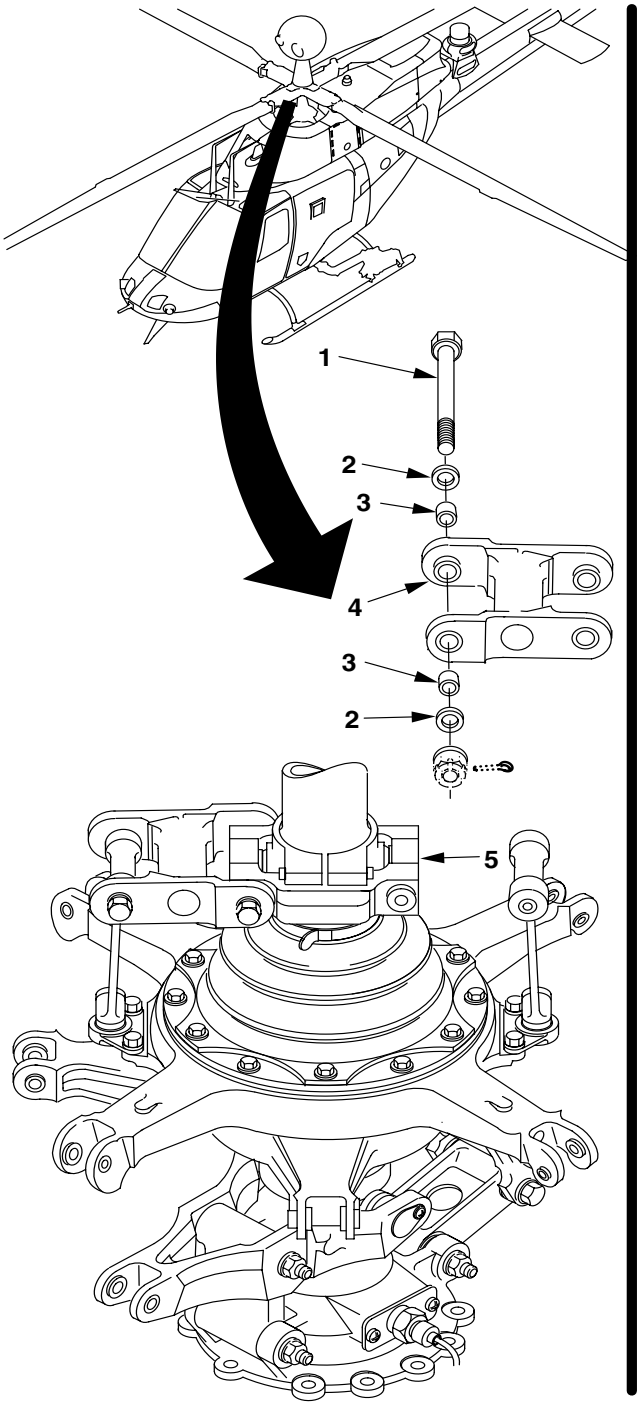


Corrosion Preventive Compound

CAUTION

CPC shall not be applied to Teflon coated bushings or to surface in contact with Teflon coated bushings or damage to equipment may result.

2. Coat shank of bolt (1), washers (2), spacers (3), and mating surfaces of drive lever (4) and gimbal ring (5) with CPC (D83).



406110-16-2
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5-2-9. MAIN ROTOR CONTROLS DRIVE LEVER — INSTALLATION (CONT)

3. Install drive lever (4) between gimbal ring (5) and drive link (6).

4. Install two spacers (3) in tangs of drive lever (4).

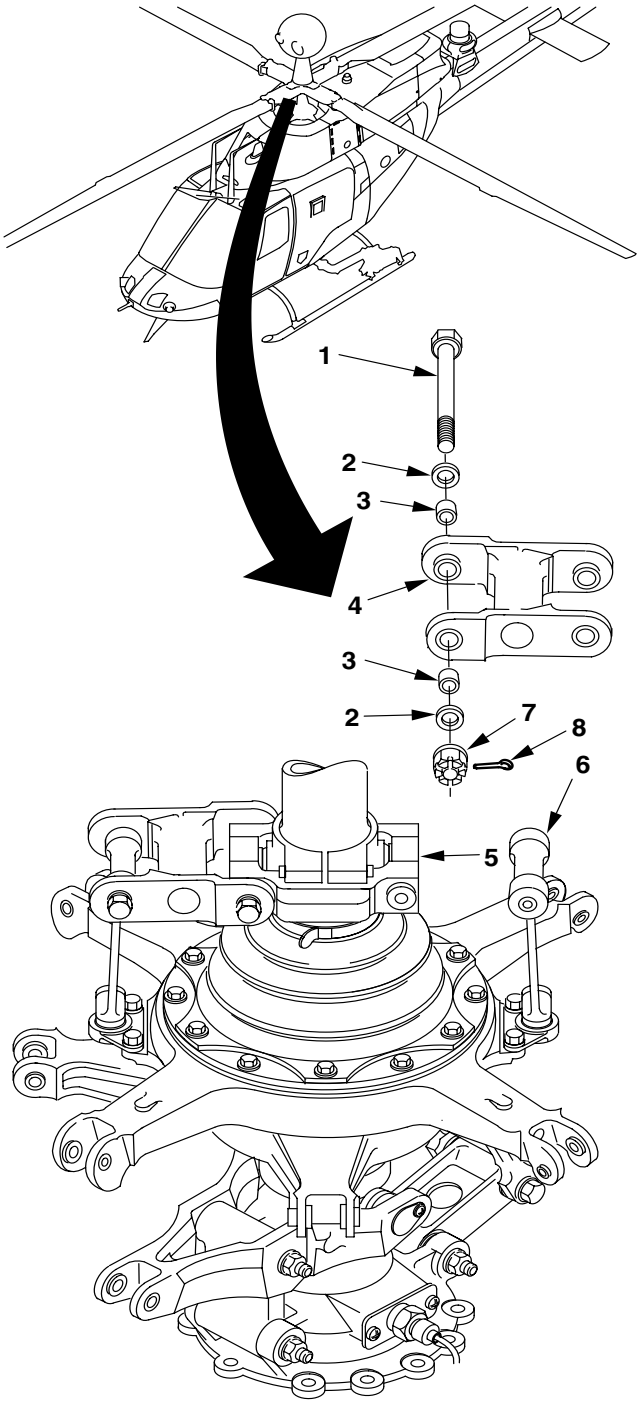
NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

5. Install bolt (1), two washers (2), and nut (7).

6. Torque nut (7) **120 TO 160 INCH-POUNDS**.

7. Install cotter pin (8) through nut (7).



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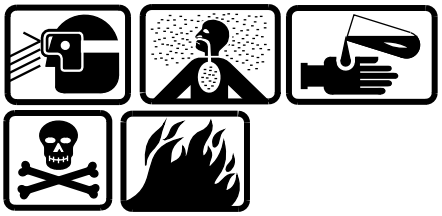


Corrosion Preventive Compound

8. Coat shank of bolt (9), washers (10), spacers (11), and mating surfaces of drive lever (4) and drive link (6) with CPC (D82).

9. Install two spacers (11) in tangs of drive lever (4).

10. Install bolt (9), two washers (10), and nut (12).

11. Torque nut (12) **120 TO 160 INCH-POUNDS**.

12. Coat exposed ends of bolt (9), two washers (10), and nut (12) with CPC (D82).

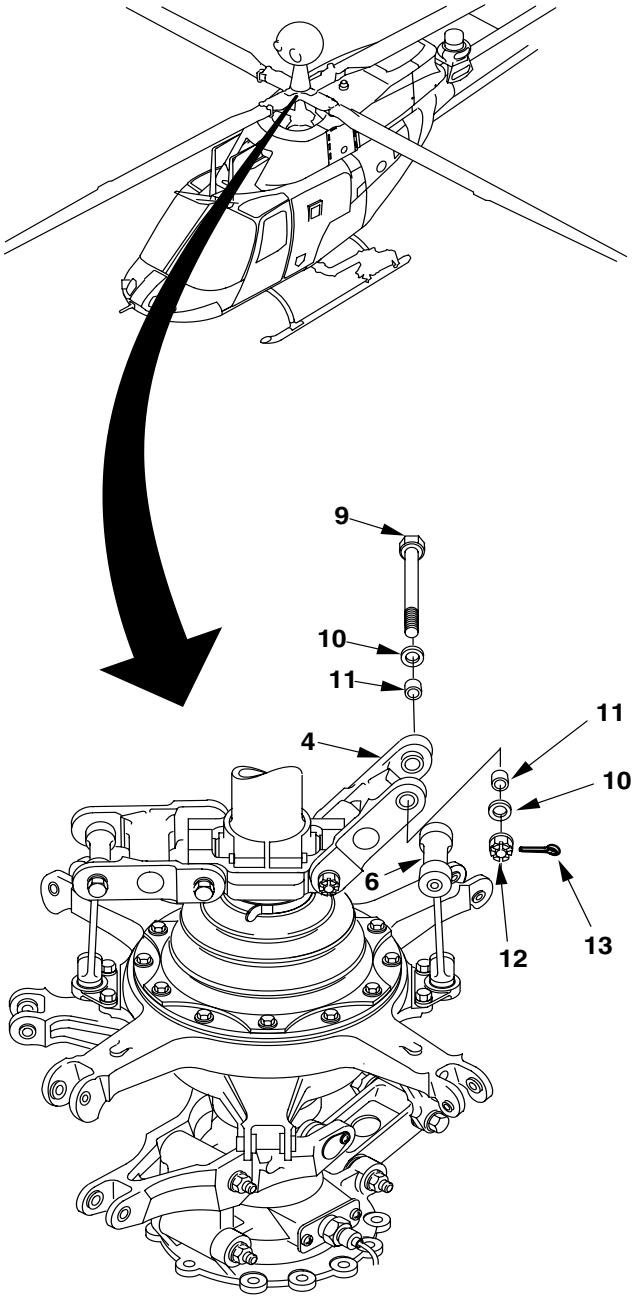
13. Install cotter pin (13) through nut (12).

INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing assembly (Task 2-2-47).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).



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J0462

END OF TASK

5-2-10. MAIN ROTOR CONTROLS DRIVE HUB SET — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

5-2-10. MAIN ROTOR CONTROLS DRIVE HUB SET — REMOVAL (CONT)

REMOVE

WARNING

No one shall operate cyclic or collective controls from inside helicopter during removal of drive lever. Physical injury can occur. If injury occurs, seek medical aid A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

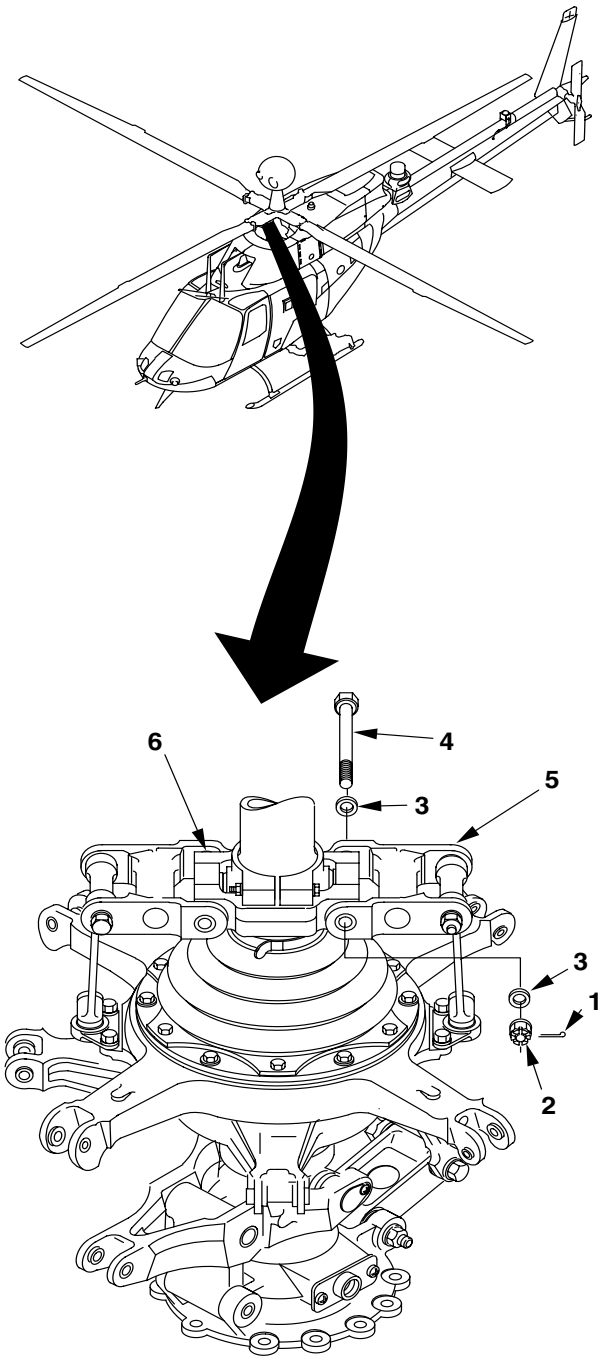
1. Place maintenance stand (B162) adjacent to aircraft work area.

2. Remove cotter pin (1) and discard.

3. Remove nut (2), washers (3), and bolt (4).

4. Repeat steps 2 and 3 to disconnect opposite drive lever (5).

5. Move drive levers (5) away from gimbal ring (6).



406110-13
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5-2-10. MAIN ROTOR CONTROLS DRIVE HUB SET — REMOVAL (CONT)

6. Remove four spacers (7) from tangs of drive levers (5).

NOTE

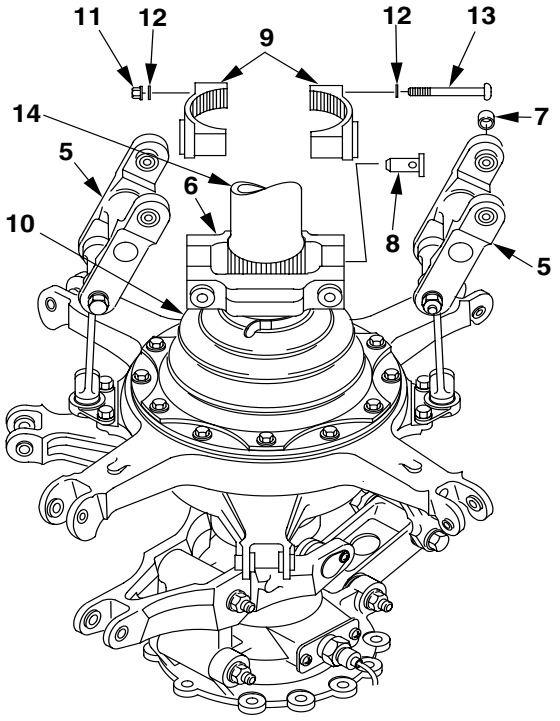
A 1/4-28 bolt may be installed in drive pin and used to remove drive pin.

7. Remove two drive pins (8) from gimbal ring (6), and drive hub (9).

8. Lower gimbal ring (6) and allow to rest on boot (10).

9. Remove nuts (11), washers (12), and bolts (13).

10. Slide drive hub (9) up mast (14) until clear of splines. Separate and remove halves of drive hub (9) from mast (14).



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END OF TASK

5-2-11. MAIN ROTOR CONTROLS DRIVE HUB SET (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Hand Arbor Press (B107)
Freezer (B46)

Material:
Sandpaper (D174)
Drycleaning Solvent (D199)
Polyamide Epoxy Primer (D98)
Black Acrylic Lacquer (D124)
Acetone (D2)
Wiping Rag (D164)
Abrasive Mats (D1)
Aliphatic Naphtha (D141)
Cotton Gloves (D112)
Paint Brush (D54)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1520-266-23

GO TO NEXT PAGE

5-2-11. MAIN ROTOR CONTROLS DRIVE HUB SET (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN

Drycleaning Solvent

1. Clean drive hub set with paint brush (D54) and drycleaning solvent (D199).

2. Dry drive hub set with a wiping rag (D164).

INSPECT

NOTE

Drive hub sets are matched, serialized halves. If one half is damaged beyond limits, both halves shall be replaced.

3. Inspect drive hub set for damage to limits shown; replace if limits are exceeded. See figure Main Rotor Controls Drive Hub Set — Damage Limits.

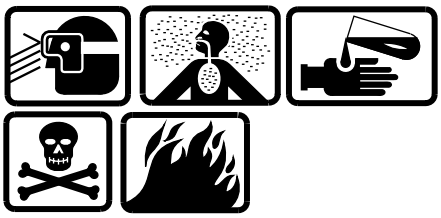
3.1. If a crack on the surface of the hub set is suspected, refer to TM 1-1520-266-23.

4. Inspect bushings in drive hub set for wear. If Teflon lining in bushing is worn through, replace bushing.

REPAIR DRIVE HUB SET

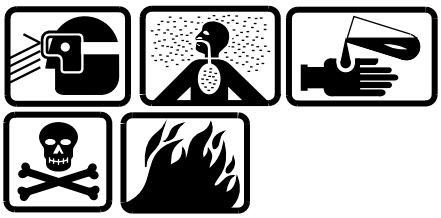
Sanding Operations

5. Polish out repairable damage with 320 grit sandpaper (D174).



Naphtha/Naphthalene, TT-N-97

6. Clean repaired areas with a wiping rag dampened with aliphatic naphtha (D141).



Epoxy Primer Coating

7. Apply one coat of epoxy primer coating (D98) to repaired areas which were previously painted.

Acrylic Lacquer

8. Apply two coats of black acrylic lacquer (D124) to primed areas.

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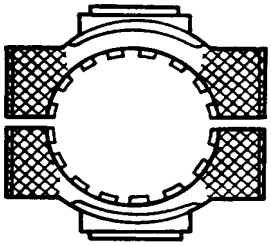
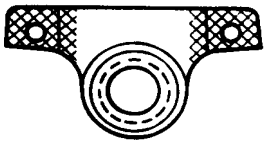
5-2-11. MAIN ROTOR CONTROLS DRIVE HUB SET (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)





DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.010 In. before and after repair	0.020 In. before and after repair
CORROSION	0.005 In. before and 0.010 in. after repair	0.010 In. before and 0.020 in. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.10 Sq. in.	0.15 Sq. in.
NUMBER OF REPAIRS	One per segment	One per segment
EDGE CHAMFER TO REMOVE DAMAGE	0.020 In.	0.040 In.
BORES	0.002 Inch for 1/4 circumference	
SPLINE DAMAGE:		
Depth:		1/3 Spline
Length:		1/2 Spline
Number:		Three splines

NOTE : No cracks are permitted.

406010-26
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Main Rotor Controls Drive Hub Set — Damage Limits

GO TO NEXT PAGE

5-2-11. MAIN ROTOR CONTROLS DRIVE HUB SET (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

REPLACE BUSHING

NOTE

The following procedures can be used for replacing either bushing.

9. Using hand arbor press (B107) and appropriate pressing plug, press bushing (1) from drive hub half (2).

Acetone

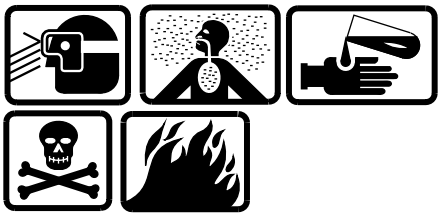
10. Remove primer from bushing bore with acetone (D2) and abrasive mats (D1).

11. Inspect bushing bore for damage; maximum allowable: **0.002 inch** for one-fourth of circumference.

12. Using freezer (B46), freeze replacement bushing (1).

WARNING

To prevent injury to skin, cotton gloves (D112) shall be worn when handling frozen bushings. If injury occurs, seek medical aid.

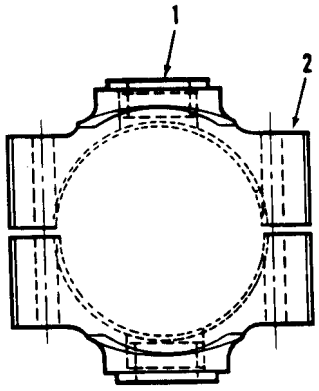


Epoxy Primer Coating

13. Coat bushing bore in drive hub half (2) and mating surfaces of bushing (1) with primer (D98).

14. Using hand arbor press and appropriate pressing plug, press bushing (1) into drive hub half (2) while primer is still wet.

INSPECT



406010-40
H5304

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5-2-12. MAIN ROTOR CONTROLS DRIVE HUB SET — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B239)
Torque Wrench (B237)
Maintenance Stand (B162)

Material:
Acetone (D2)
Corrosion Preventive Compound (CPC) (D82)
Wiping Rag (D164)
Abrasive Mats (D1)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-1500-204-23

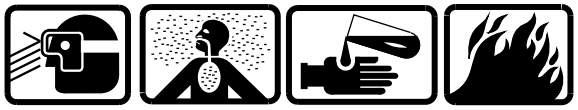
Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

WARNING

No one shall operate cyclic or collective controls from inside helicopter during installation of drive lever. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

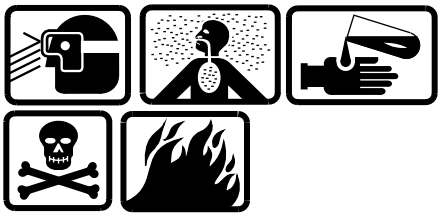
1. Place maintenance stand (B162) adjacent to aircraft work area.



Acetone

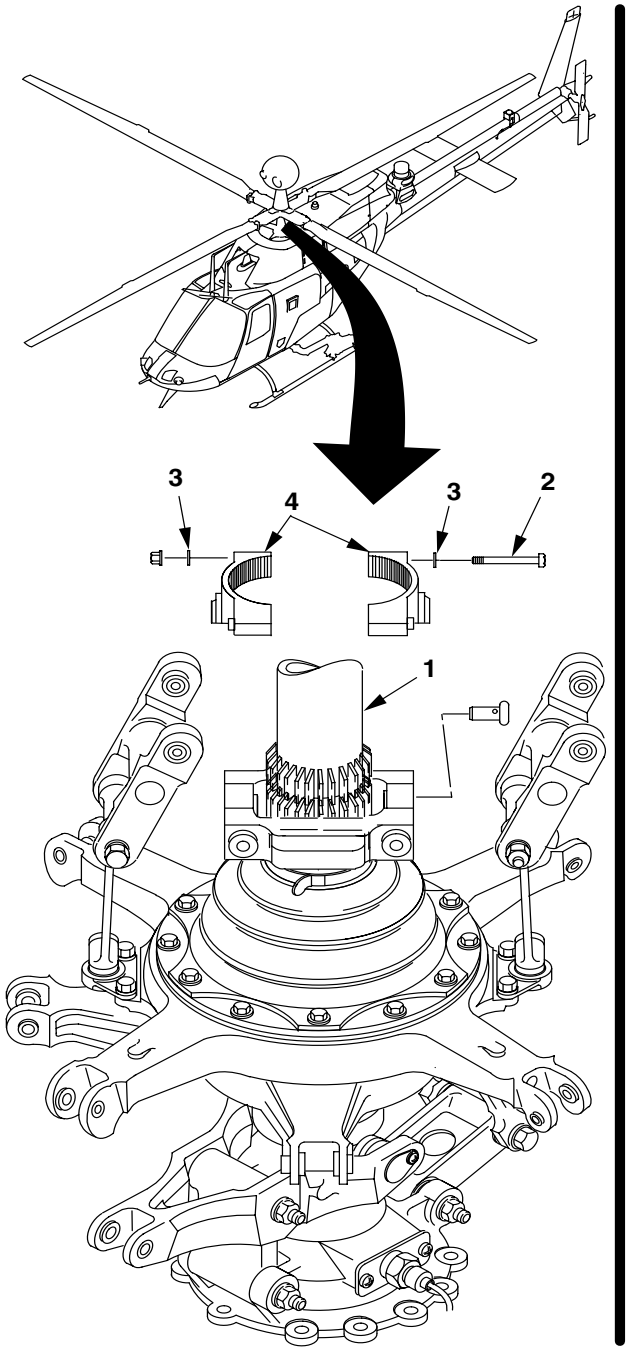
2. Clean splines of mast (1) with a wiping rag (D164) dampened with acetone (D2).

3. Remove any surface corrosion from mast (1) splines with abrasive mats (D1). Dry with wiping rag (D164).



Corrosion Preventive Compound

4. Coat shank of bolts (2), washers (3), and mating surfaces of mast (1) and drive hub (4) with CPC (D82).



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5-2-12. MAIN ROTOR CONTROLS DRIVE HUB SET — INSTALLATION (CONT)

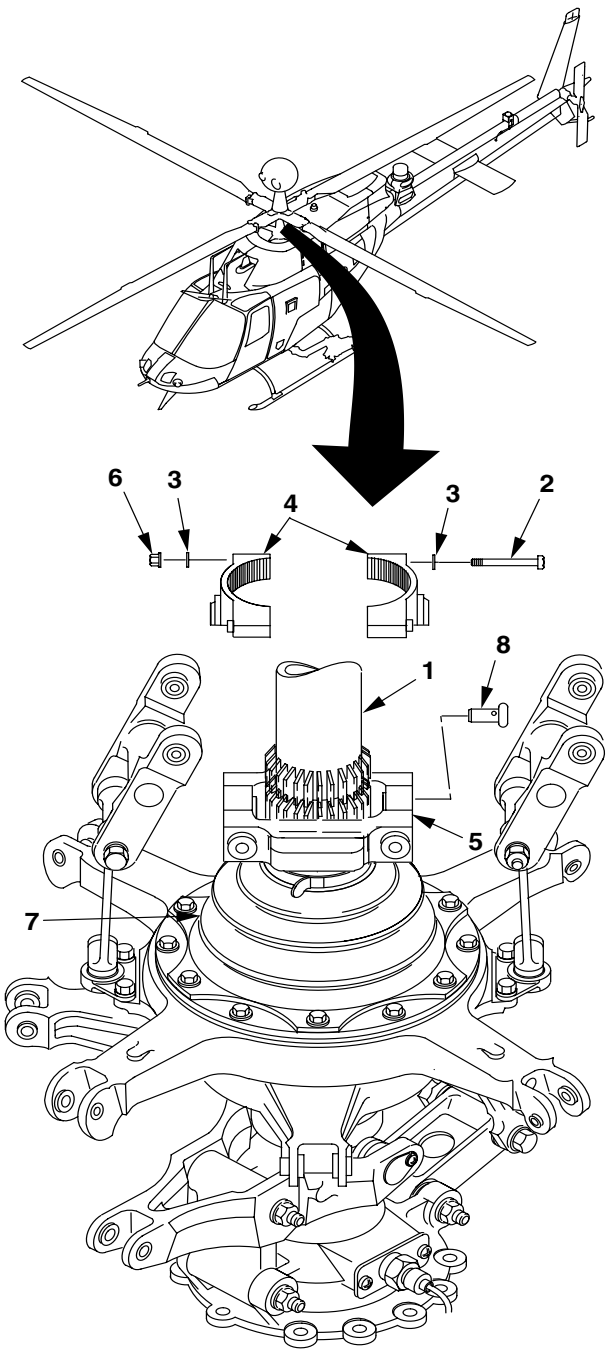
5. Place gimbal ring (5) on mast (1) at the top of boot and position drive hub (4) halves around mast (1) above splines. Slide drive hub (4) down on mast (1), ensuring that splines of drive hub (4) and mast (1) align.

6. Install two bolts (2), four washers (3), and two nuts (6).

7. Torque nuts (6) **50 TO 70 INCH-POUNDS**.

8. Raise gimbal ring (5) off boot (7) and align with drive hub (4).

9. Install drive pins (8) on each side of gimbal ring (5) and drive hub (4). Align hole in drive pins (8) with bolt hole through gimbal ring (5).



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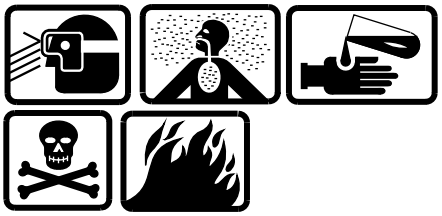
5-2-12. MAIN ROTOR CONTROLS DRIVE HUB SET — INSTALLATION (CONT)



Corrosion Preventive Compound

CAUTION

CPC shall not be applied to Teflon coated bushings or to surfaces in contact with Teflon coated bushings, or damage to equipment may result.

10. Coat shank of bolts (9), washers (10), bushings (11), and mating surfaces of gimbal rings (5), and drive levers (12) with CPC (D82).

11. Move one drive lever (12) to align with gimbal ring (5).

12. Install two spacers (11) in tangs of drive lever (12).

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

13. Install bolt (9), two washers (10), and nut (13).

14. Torque nut (13) **120 TO 160 INCH-POUNDS**.

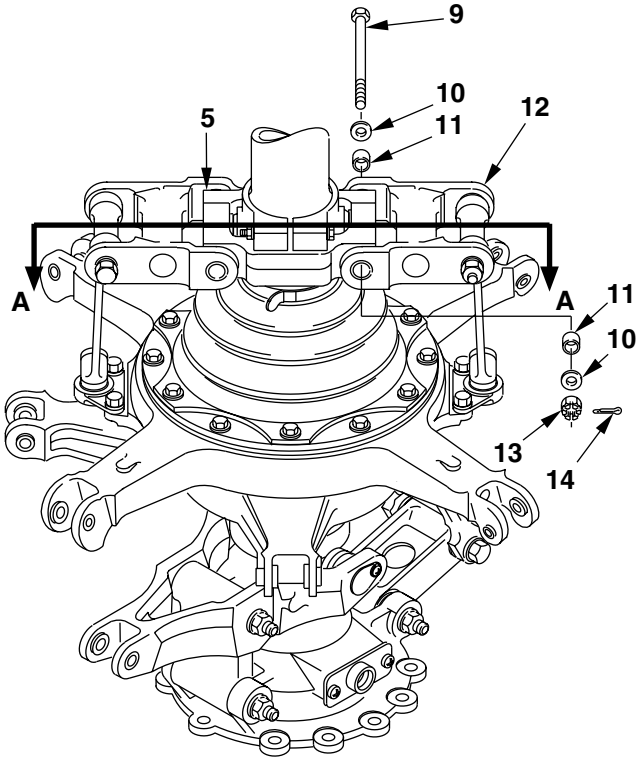
15. Install cotter pin (14) through nut (13).

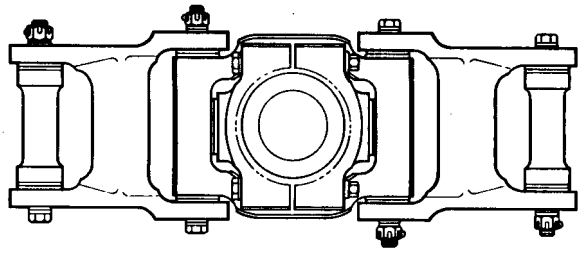
16. Repeat steps 11 through 14 to connect opposite drive lever (12).

INSPECT

FOLLOW-ON MAINTENANCE

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).





VIEW **A-A**

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H2074

END OF TASK

5-2-13. MAIN ROTOR CONTROLS GIMBAL RING — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Main Rotor Hub and Blades Removed (Task 5-1-1)

GO TO NEXT PAGE

5-2-13. MAIN ROTOR CONTROLS GIMBAL RING — REMOVAL (CONT)

WARNING

No one shall operate cyclic or collective controls from inside helicopter during removal of gimbal ring. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

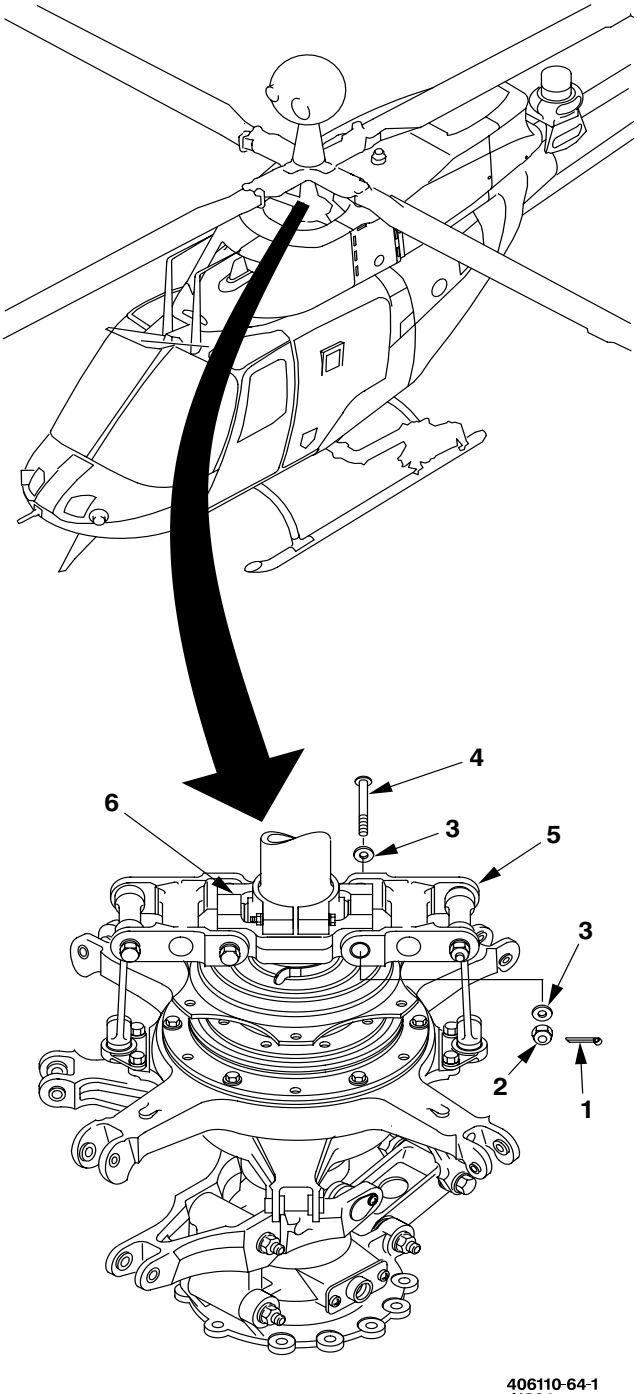
1. Place maintenance stand (B162) adjacent to aircraft work area.

2. Remove cotter pin (1) and discard.

3. Remove nut (2), washers (3), and bolt (4).

4. Repeat steps 2 and 3 to disconnect opposite drive lever (5).

5. Move drive levers (5) away from gimbal ring (6).



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J1864

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5-2-13. MAIN ROTOR CONTROLS GIMBAL RING — REMOVAL (CONT)

6. Remove four spacers (7) from tangs of drive levers (5).

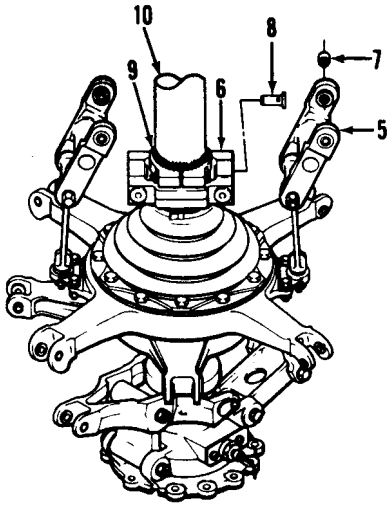
NOTE

A 1/4-28 bolt may be installed in drive pin and used to remove drive pin.

7. Remove two drive pins (8) from gimbal ring (6) and drive hub (9).

8. Remove main rotor control drive hub (9) (Task 5-2-10).

9. Lift gimbal ring (6) from mast (10).



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H5304

END OF TASK

5-2-14. MAIN ROTOR CONTROLS DRIVE PIN — CLEANING/INSPECTION

This task covers: Cleaning, Inspection (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

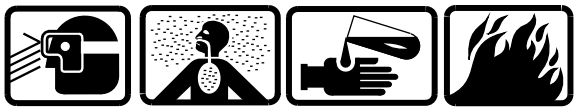
Tools:
General Mechanic Tool Kit (B178)

Material:
Drycleaning Solvent (D199)
Wiping Rag (D164)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Repairer

References:
TM 1-1520-266-23

CLEAN



Drycleaning Solvent

1. Clean main rotor controls drive pin with drycleaning solvent (D199).

2. Dry main rotor controls drive pin with wiping rag (D164).

INSPECT

3. Inspect drive pin per limits shown; replace if limits are exceeded. See figure Main Rotor Controls Drive Pin — Damage Limits.

4. Fluorescent penetrant inspect (TM 1-1520-266-23).

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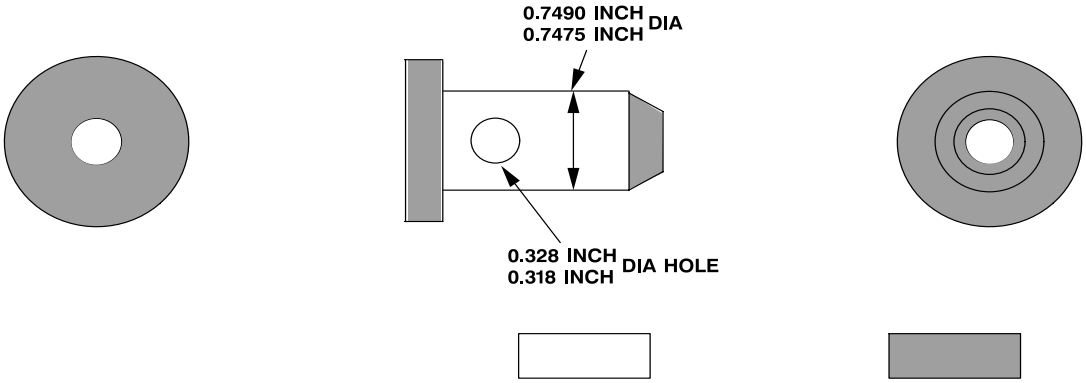


MECHANICAL	0.003 inch	0.020 inch
CORROSION	0.003 inch	0.020 inch
MAX AREA	0.05 sq. In.	Not critical
NUMBER OF REPAIRS	Two	Not critical
EDGE CHAMFER	0.030 inch	0.030 inch
BORES	0.002 Inch for 1/4 circumference	
THREADS	Depth:	1/3 of thread
	Length:	1/4 inch
	Number:	Two

NOTES:

1. No cracks allowed.

406010-527
J2195

Main Rotor Controls Drive Pin — Damage Limits

END OF TASK

5-2-15. MAIN ROTOR CONTROLS GIMBAL RING (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Hand Arbor Press (B107)
Freezer (B46)
Drill Set (B126)
Upright Drill Press (B108)

Material:
Sandpaper (D174)
Drycleaning Solvent (D199)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Acetone (D2)
Wiping Rag (D164)
Abrasive Mats (D1)
Aliphatic Naphtha (D141)
Cotton Gloves (D112)
Paint Brush (D54)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1520-266-23

GO TO NEXT PAGE

5-2-15. MAIN ROTOR CONTROLS GIMBAL RING (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN

Drycleaning Solvent

1. Clean gimbal ring with paint brush (D54) and drycleaning solvent (D199).

2. Dry gimbal ring with a wiping rag (D164).

INSPECT

3. Inspect gimbal ring for damage to limits shown; replace if limits are exceeded. See figure Main Rotor Controls Gimbal Ring — Damage Limts.

3.1. If a crack on the gimbal ring set is suspected, refer to TM 1-1520-266-23.

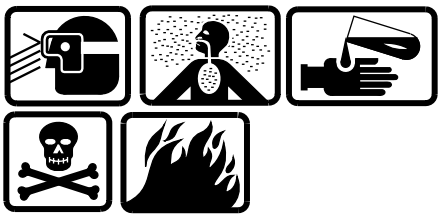
4. Inspect large bushings in gimbal ring for wear. If bushing I.D. exceeds **0.7520 inch** or if any sign of metal to metal contact on bushing flange exists, replace bushing.

5. Inspect small bushing in gimbal ring for wear replace if inside diameter exceeds **0.3515 inch**.

REPAIR

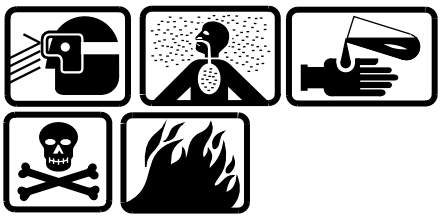
Sanding Operations

6. Polish out repairable damage with 320 grit sandpaper (D174).



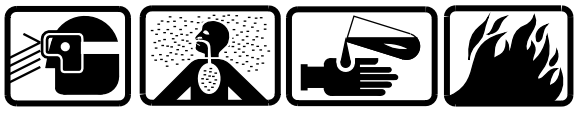
Naphtha/Naphthalene, TT-N-97

7. Clean repaired areas with a wiping rag (D164) dampened with aliphatic naphtha (D141).



Epoxy Primer Coating

8. Apply one coat of epoxy primer coating (D98) to repaired areas which were previously painted.



Acrylic Lacquer

9. Apply two coats of black acrylic lacquer (D124) to primed areas.

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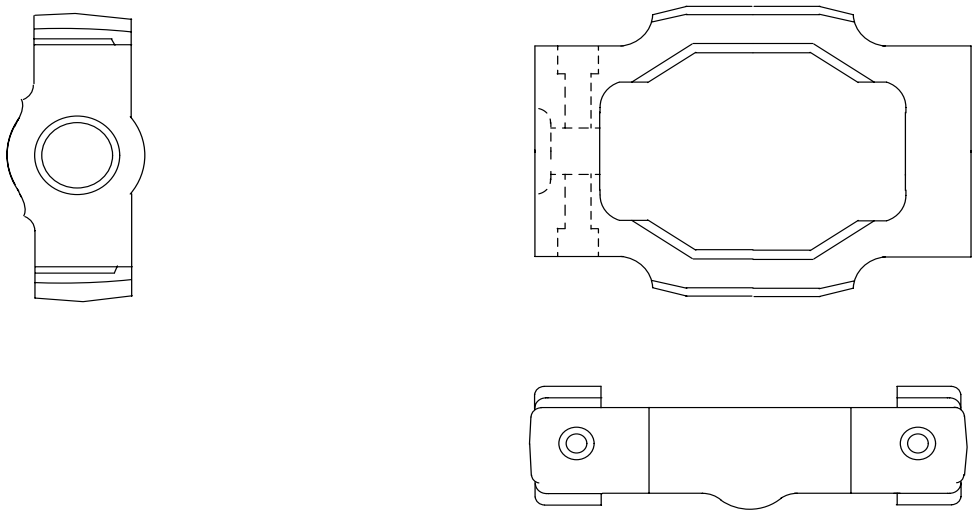
5-2-15. MAIN ROTOR CONTROLS GIMBAL RING (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL	0.010 In. before and after repair
CORROSION	0.005 In. before and 0.010 In. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.10 Sq. in.
NUMBER OF REPAIRS	One per segment
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.
BORE DAMAGE	0.001 In. for 1/4 circumference

NOTES:

No cracks are permitted.

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J2219

Main Rotor Controls Gimbal Ring — Damage Limits

GO TO NEXT PAGE

5-2-15. MAIN ROTOR CONTROLS GIMBAL RING (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

REPLACE BUSHING (1)

NOTE

The following procedures are the same for replacing either bushing.

10. Using hand arbor press (B107) and appropriate pressing plug, press bushing (1) from gimbal ring (2).

Acetone

11. Remove epoxy primer coating from bushing bore with acetone (D2) and abrasive mats (D1).

12. Inspect bushing bore for damage; maximum allowable: **0.001 inch** for one-fourth circumference.

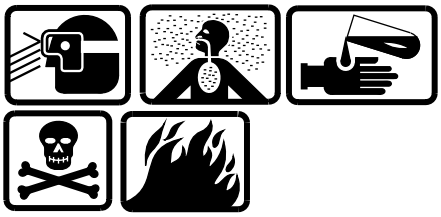
NOTE

Bushing (3) on each side of bushing (1) shall be removed prior to installing bushing (1) to allow drilling bushing (1). (Refer to step 17.)

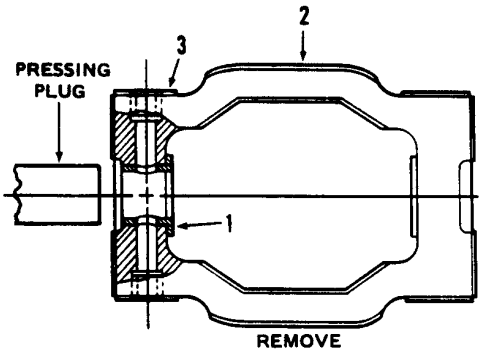
13. Using freezer (B46), freeze replacement bushing (1).

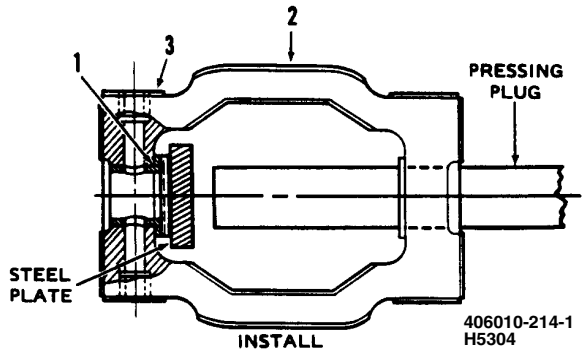
WARNING

To prevent injury to skin, cotton gloves (D112) shall be worn when handling frozen bushings. If injury occurs, seek medical aid.



Epoxy Primer Coating





14. Coat bushing bore in gimbal ring (2) and mating surfaces of bushing (1) with epoxy primer coating (D98).

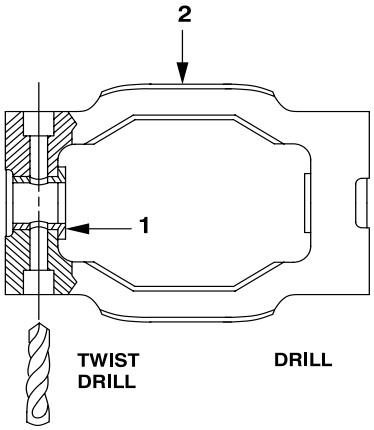
15. Using hand arbor press (B107), with steel plate of appropriate size against bushing and appropriate pressing plug through opposite bushing, press bushing (1) into gimbal ring (2), while epoxy primer coating is still wet.

GO TO NEXT PAGE

5-2-15. MAIN ROTOR CONTROLS GIMBAL RING (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

Drilling Operations

16. Using upright drill press (B108), drill **0.318 to 0.324 inch** hole through sides of bushing (1) using bolt hole through gimbal ring (2) as guide.



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J2684

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5-2-15. MAIN ROTOR CONTROLS GIMBAL RING (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

REPLACE BUSHING (3)

17. Using hand arbor press (B107) and appropriate pressing plug long enough to reach through opposite bushing, press bushing (3) from gimbal ring (2).

Acetone

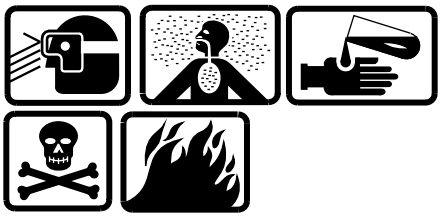
18. Remove epoxy primer coating from bushing bore with acetone (D2) and abrasive mats (D1).

19. Inspect bushing bore for damage; maximum allowable: **0.001 inch** for one-fourth circumference.

20. Using freezer (B46), freeze replacement bushing (3).

WARNING

To prevent injury to skin, cotton gloves (D112) shall be worn when handling frozen bushings. If injury occurs, seek medical aid.

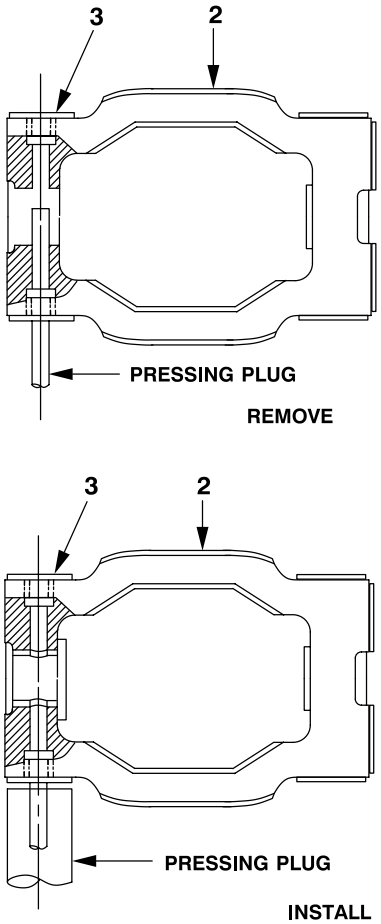


Epoxy Primer Coating

21. Coat bushing bore in gimbal ring (2) and mating surfaces of bushing (3) with epoxy primer coating (D98).

22. Using hand arbor press (B107) and appropriate pressing plug, press bushing (3) into gimbal ring (2) while epoxy primer coating is still wet.

INSPECT



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J2684

END OF TASK

5-2-16. MAIN ROTOR CONTROLS GIMBAL RING — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B240)
Maintenance Stand (B162)

Material:
Corrosion Preventive Compound (CPC) (D82)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1500-204-23

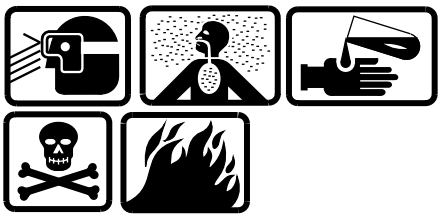
Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

INSTALL

WARNING

No one shall operate cyclic or collective controls from inside helicopter during installation of gimbal ring. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.



Corrosion Preventive Compound

CAUTION

CPC shall not be applied to Teflon coated bushings or to surfaces in contact with Teflon coated bushings, or damage to equipment may result.

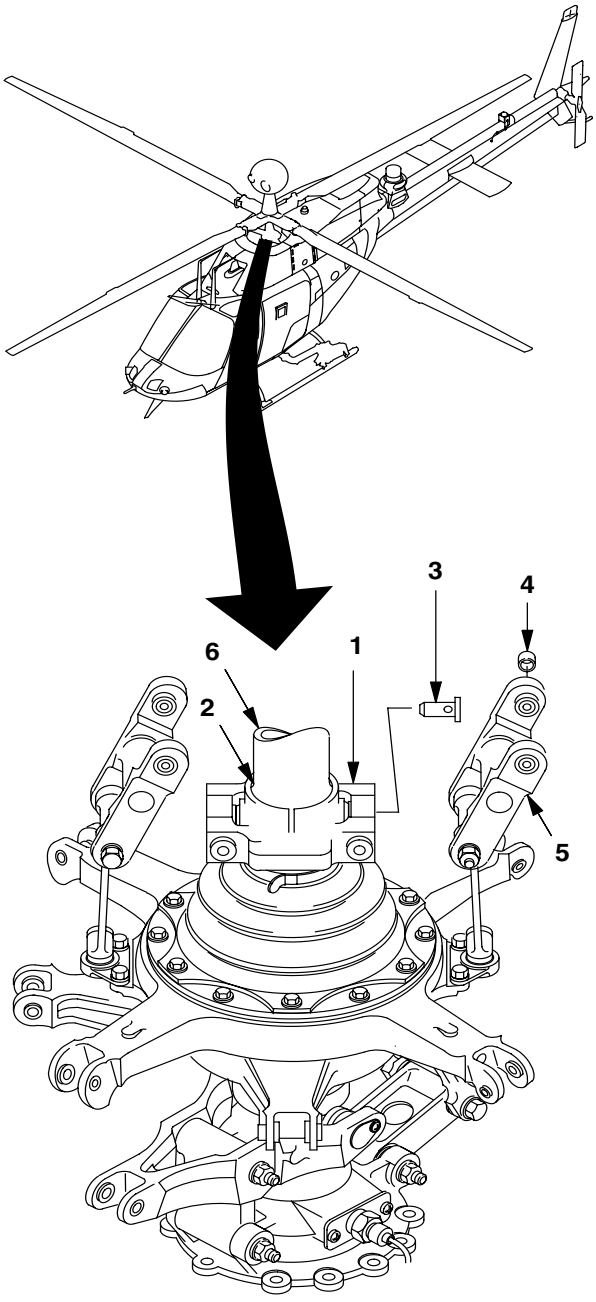
1. Place maintenance stand (B162) adjacent to aircraft work area.

2. Coat mating surfaces of gimbal ring (1), drive hub (2), drive pins (3), spacers (4), and drive levers (5) with CPC (D82).

NOTE

Drive hub should be fitted to accommodate screw hole alignment.

3. Install gimbal ring (1) over mast (6). Install drive hub (2) (Task 5-2-12).



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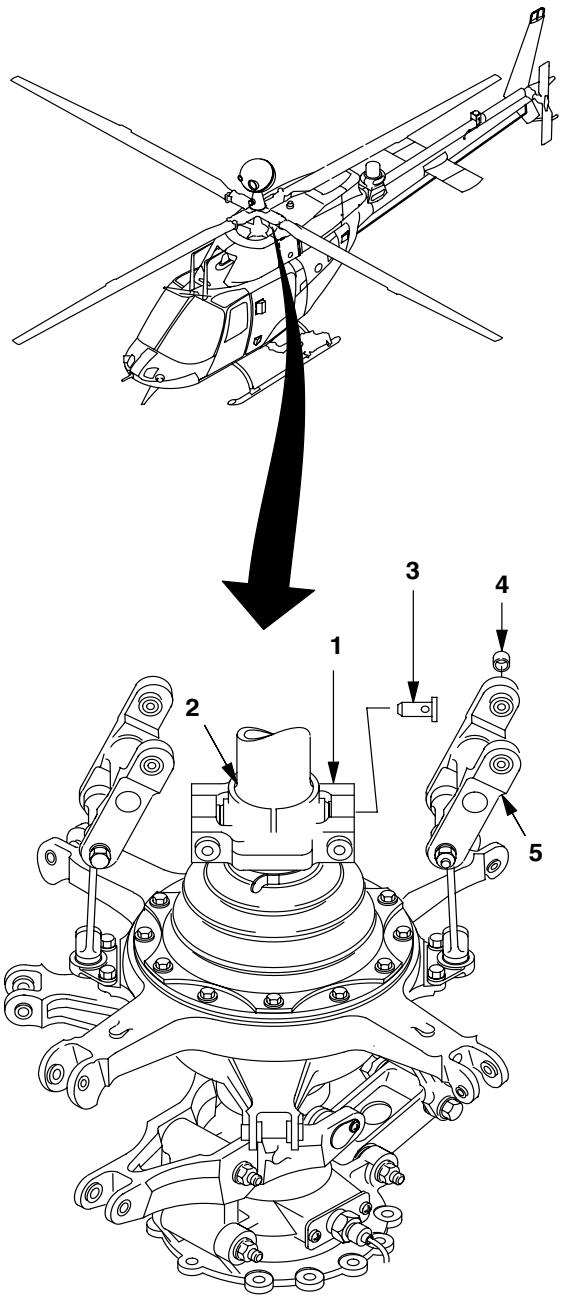
5-2-16. MAIN ROTOR CONTROLS GIMBAL RING — INSTALLATION (CONT)

4. Install drive pins (3) on each side of gimbal ring (1) and drive hub (2). Align hole in drive pin (3) with bolt hole through gimbal ring (1).

5. Install four spacers (4) in tangs of drive levers (5).

6. Move drive levers (5) to align with gimbal ring (1).



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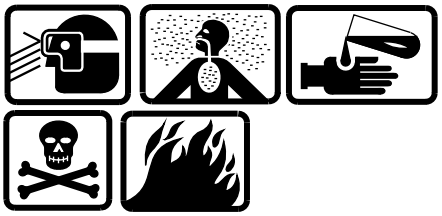


Corrosion Preventive Compound

7. Coat shanks of bolts (7) and washers (8) with CPC (D82).

NOTE

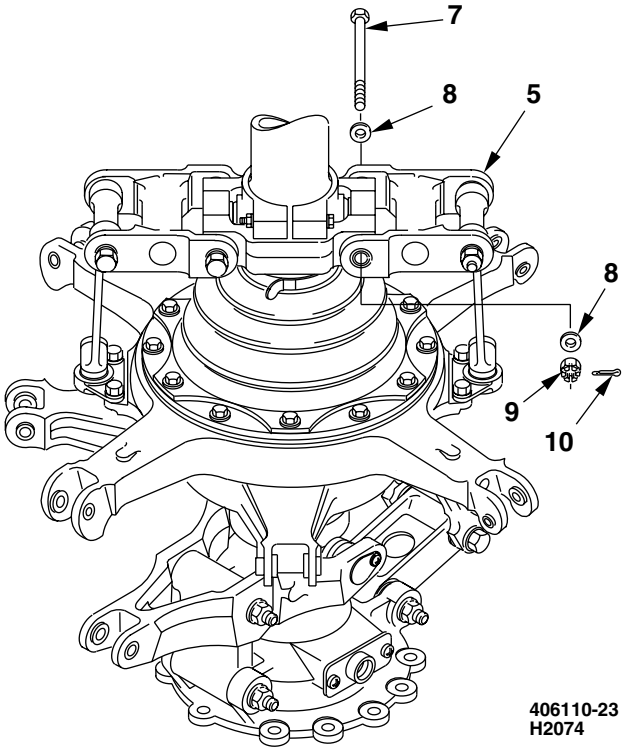
Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

8. Install bolt (7), two washers (8), and nut (9).

9. Torque nut (9) **120 TO 160 INCH-POUNDS**.

10. Install cotter pin (10) through nut (9).

11. Repeat steps 8 through 10 to connect opposite drive lever (5).



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INSPECT

FOLLOW-ON MAINTENANCE

Install main rotor hub and blades (Task 5-1-2).

END OF TASK

5-2-17. MAIN ROTOR CONTROLS BOOT — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B239)
Torque Wrench (B237)
Maintenance Stand (B162)

Material:
Lockwire (D132)
Wiping Rags (D164)
Acetone (D2)
Corrosion Preventive Compound (CPC) (D82)
Corrosion Preventive Compound (CPC) (D83)
Abrasive Mats (D1)
Rubber Gloves (D111)
Tiedown Strap (D206)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)
Main Rotor Hub and Blades Removed (Task 5-1-1)

GO TO NEXT PAGE

5-2-17. MAIN ROTOR CONTROLS BOOT — REMOVAL/INSTALLATION (CONT)

REMOVE

WARNING

No one shall operate cyclic or collective controls from inside helicopter during replacement of boot. Physical injury can occur. If injury occurs seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Place maintenance stand (B162) adjacent to aircraft work area.

2. Remove cotter pin (1) and discard.

3. Remove nut (2), washers (3), and bolt (4).

4. Repeat steps 1 and 2 to disconnect opposite drive lever (5).

5. Move drive levers (5) away from gimbal ring (6).

6. Remove four spacers (7) from tangs of drive levers (5).

7. Remove two nuts (8), four washers (9), and two bolts (10).

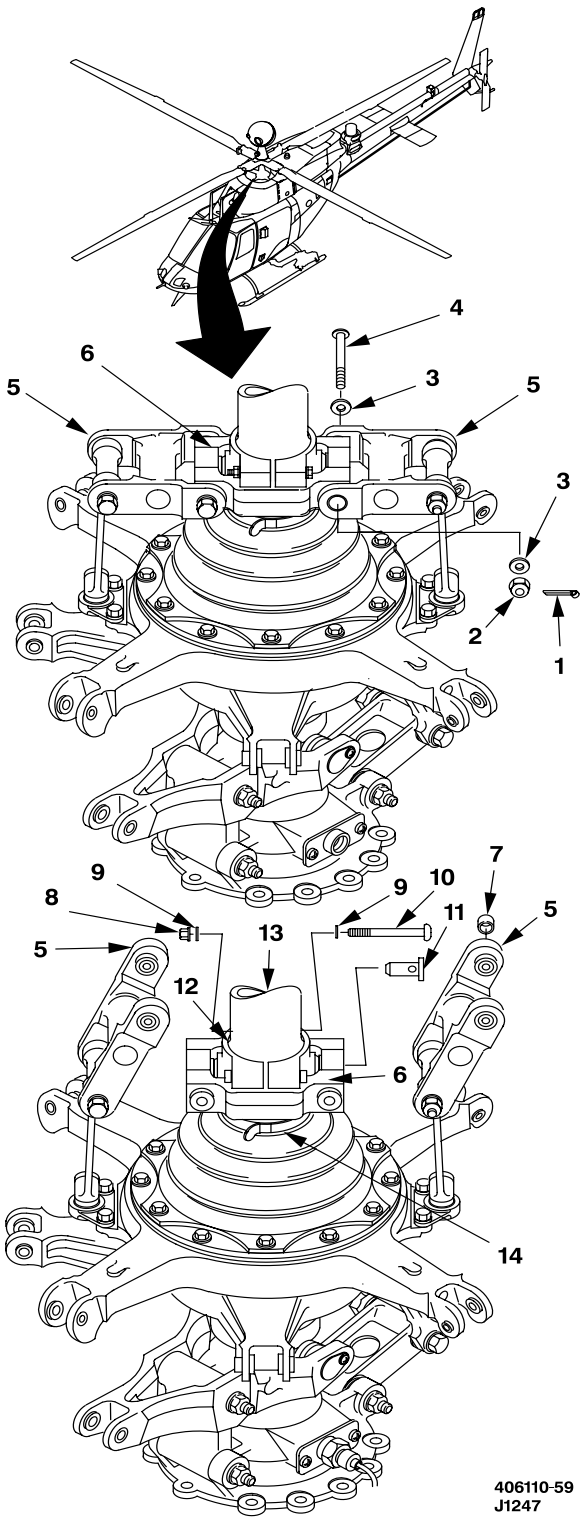
NOTE

A 1/4-28 bolt may be installed in drive pin and used to remove drive pin.

8. Remove two drive pins (11) from gimbal ring (6) and drive hub (12).

9. Lift gimbal ring (6) and drive hub (12), as an assembly, from splines of mast (13) and remove from mast.

10. Remove tiedown strap (D206) (14).



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5-2-17. MAIN ROTOR CONTROLS BOOT — REMOVAL/INSTALLATION (CONT)

11. Remove lockwire from bolt (15) and remove bolt (15) and washer (16).

12. Remove 5 nuts (17), 10 washers (18), and 5 bolts (19) from bottom of boot (20).

13. Remove boot (20) from mast (13).

INSTALL

Acetone

14. Clean splines of mast (13) with abrasive mats (D1) and acetone (D2). Dry with wiping rag (D164).

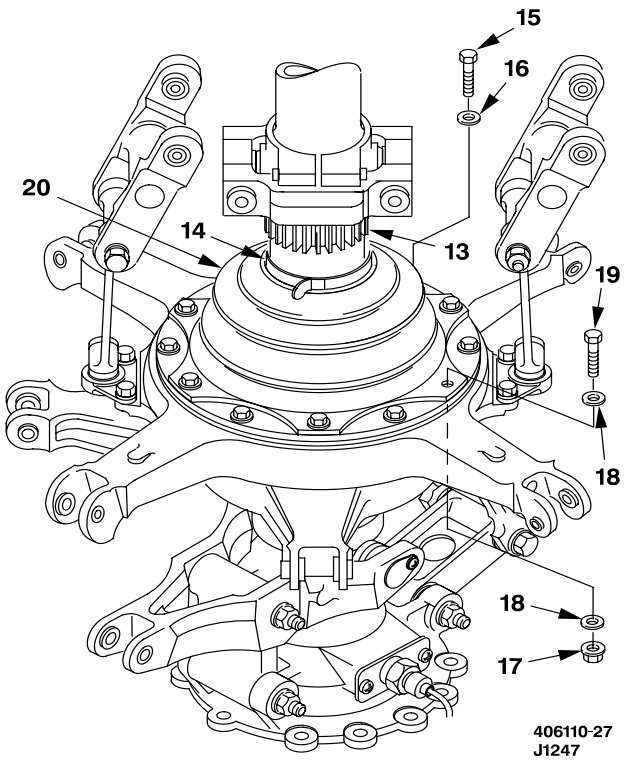
15. Install boot (20) on mast (13).

16. Install bolts (19), washers (18), and nuts (17). Torque nuts (17) **75 TO 95 INCH-POUNDS**.

17. Secure top of boot (20) with tiedown strap (14) (D206).

18. Install bolt (15) and washer (16). Torque bolt (15) **75 TO 95 INCH-POUNDS**.

19. Secure bolt (15) with lockwire (D132).



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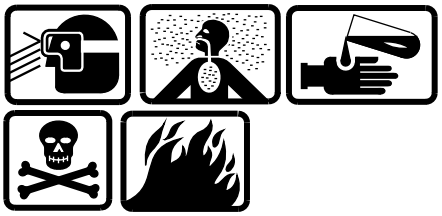
5-2-17. MAIN ROTOR CONTROLS BOOT — REMOVAL/INSTALLATION (CONT)



Corrosion Preventive Compound

CAUTION

CPC shall not be applied to Teflon coated bushings or surfaces in contact with Teflon coated bushings.

20. Coat shank of bolts (10), washers (9), and mating surfaces of drive hub (12) and mast (13) with CPC (D83).

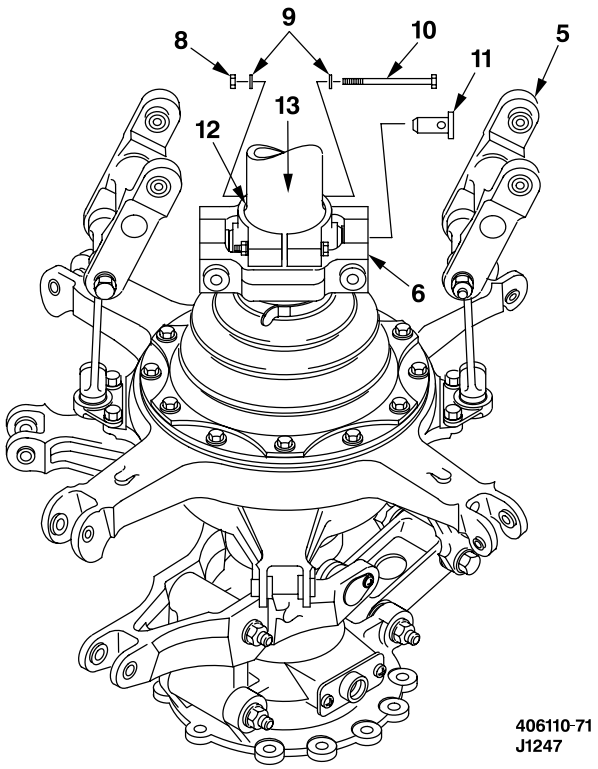
21. Lower assembled drive hub (12) and drive levers (5) over mast (13). Ensure that splines of drive hub (12) engage splines of mast (13).

22. Install drive pins (11) on each side of gimbal ring (6) and drive hub (12). Align hole in drive pins (11) with bolt hole through gimbal ring (6).

23. Install two bolts (10), four washers (9), and two nuts (8).

24. Torque nuts (8) **50 TO 70 INCH-POUNDS**.

25. Coat exposed ends of bolts (10), washers (9), and nuts (8) with CPC (D82).



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5-2-17. MAIN ROTOR CONTROLS BOOT — REMOVAL/INSTALLATION (CONT)

Corrosion Preventive Compound

26. Coat shanks of bolt (4), washers (3) spacers (7), and mating surfaces of gimbal ring (6) and drive levers (5) with CPC (D83).

27. Move drive levers (5) to align with gimbal ring (6).

28. Install four spacers (7) in tangs of drive levers (5).

NOTE

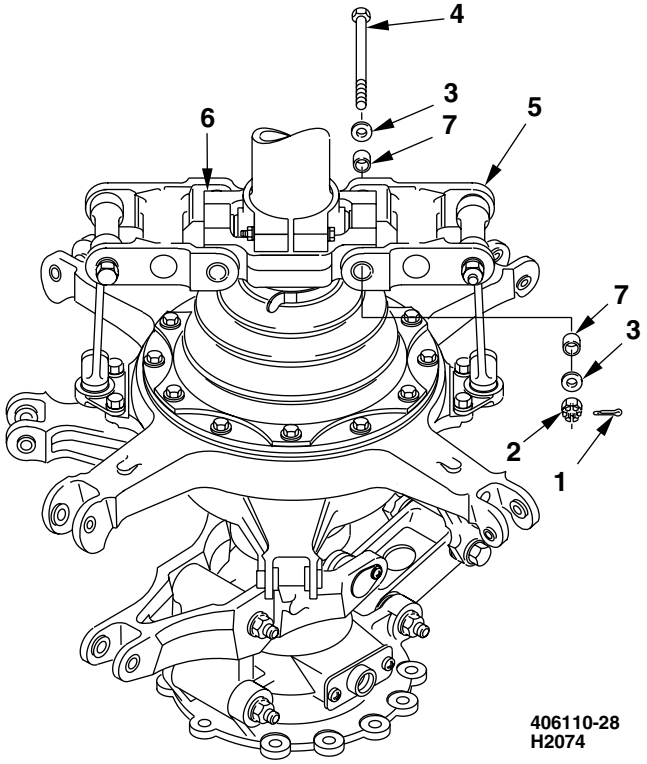
Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

29. Install two bolts (4), four washers (3), and two nuts (2).

30. Torque nuts (2) **120 TO 160 INCH-POUNDS**.

31. Coat exposed ends of bolts (4), washers (3), and nuts (2) with CPC (D82).

32. Install cotter pins (1) through nuts (2).



INSPECT

FOLLOW-ON MAINTENANCE

Install main rotor hub and blades (Task 5-1-2).

Install forward fairing assembly (Task 2-2-47).

END OF TASK

5-2-18. MAIN ROTOR CONTROLS COLLECTIVE LEVER — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)

GO TO NEXT PAGE

WARNING

No one shall operate cyclic or collective controls from inside helicopter during removal of drive lever. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Place maintenance stand (B162) adjacent to aircraft work area.

2. Remove cotter pin (1) and discard.

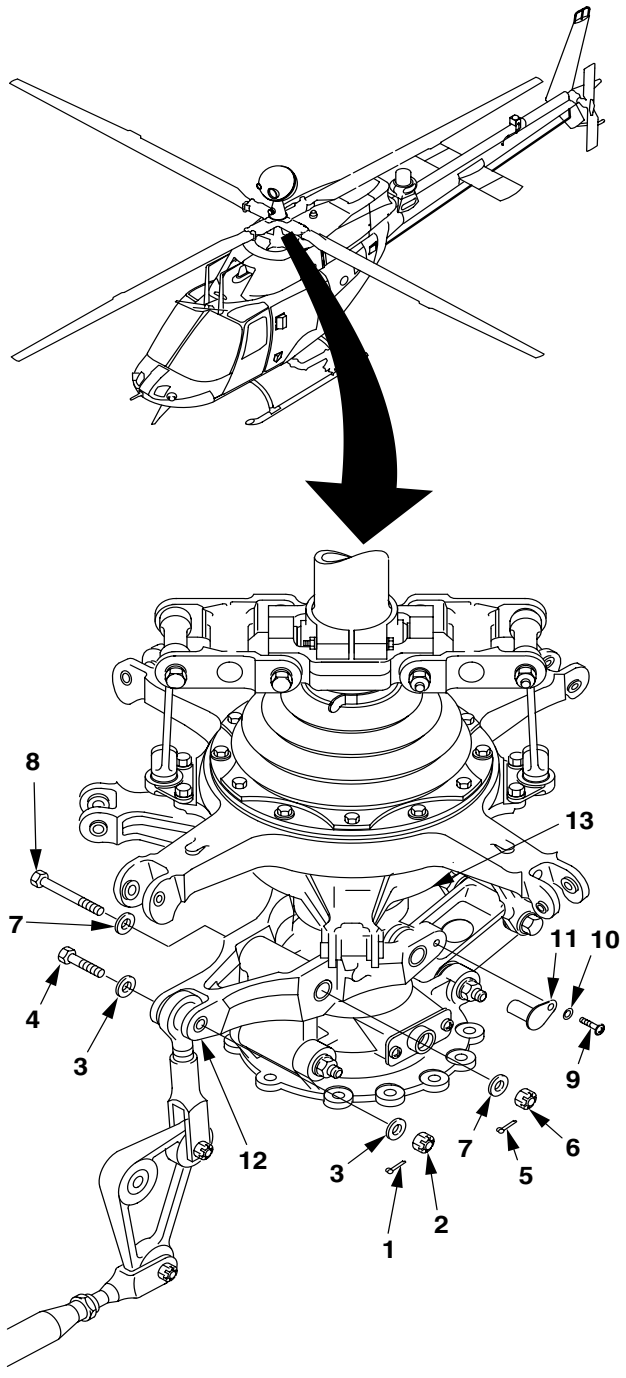
3. Remove nut (2), washers (3), and bolt (4).

4. Remove cotter pin (5) and discard.

5. Remove nut (6), washers (7), and bolt (8).

6. Cut lockwire and remove screw (9), washer (10), and pin (11) from each side of collective lever (12).

7. Remove collective lever (12) from swashplate and support (13).



406010-46
J0453

END OF TASK

5-2-19. MAIN ROTOR CONTROLS COLLECTIVE LEVER (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Sandpaper (D174)
Drycleaning Solvent (D199)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Wiping Rags (D164)
Aliphatic Naphtha (D141)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1520-266-23

GO TO NEXT PAGE

5-2-19. MAIN ROTOR CONTROLS COLLECTIVE LEVER (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN

Drycleaning Solvent

1. Clean collective lever with paint brush (D54) and drycleaning solvent (D199).

2. Dry collective lever with a wiping rag (D164).

INSPECT

3. Inspect collective lever for damage to limits shown; replace if limits are exceeded. See figure Main Rotor Controls Collective Lever — Damage Limits.

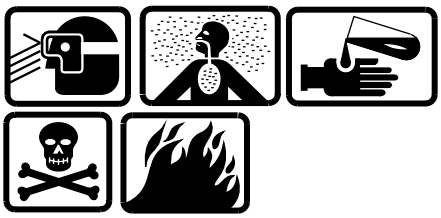
3.1. If a crack on the surface of the collective lever is suspected, refer to TM 1-1520-266-23.

4. Inspect bushings in lever for damage or wear. Damage or wear in excess of **0.002 inch** is cause for main rotor controls collective lever replacement.

REPAIR

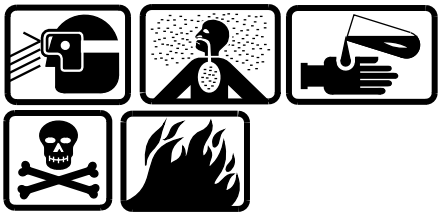
Sanding Operations

5. Polish out repairable damage with 320 grit sandpaper (D174).



Naphtha/Naphthalene, TT-N-97

6. Clean repaired areas with a wiping rag (D164) dampened with aliphatic naphtha (D141).



Epoxy Primer Coating

7. Apply one coat of epoxy primer coating (D98) to repaired areas which were previously painted.

Acrylic Lacquer

8. Apply two coats of black acrylic lacquer (D124) to primed areas.

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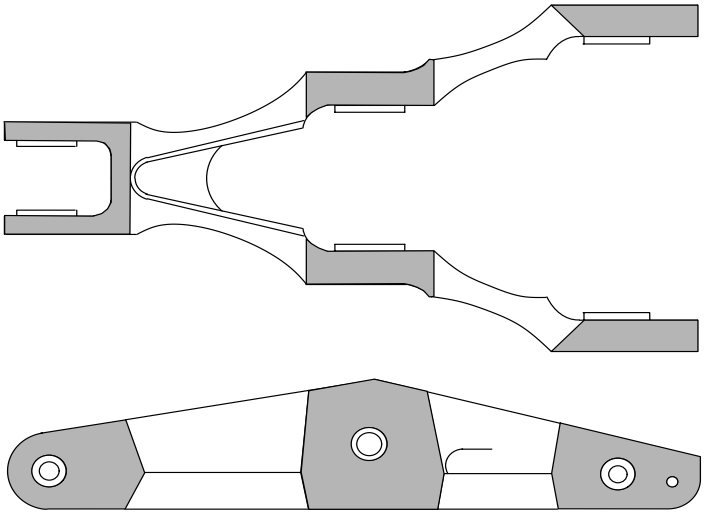
5-2-19. MAIN ROTOR CONTROLS COLLECTIVE LEVER (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)



	DAMAGE LOCATION SYMBOLS	
TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL DAMAGE	0.010 In. before and after repair	0.030 In. before and after repair
CORROSION	0.005 In. before and 0.010 in. after repair	0.015 In. before and 0.030 in. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.15 Sq. in.	0.25 Sq. in.
NUMBER OF REPAIRS	One per segment	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.	0.050 In.
BORES	0.001 Inch for 1/4 circumference	

NOTE: No cracks are permitted.

406010-16
J0459

Main Rotor Controls Collective Lever — Damage Limits

END OF TASK

5-2-20. MAIN ROTOR CONTROLS COLLECTIVE LEVER — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B235)
Maintenance Stand (B162)
Torque Wrench (B237)

Material:
Corrosion Preventive Compound (CPC) (D82)
Lockwire (D132)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

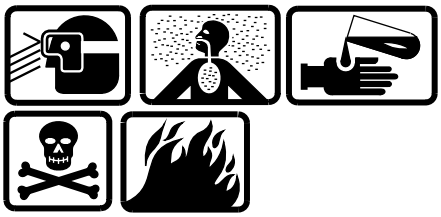
5-2-20. MAIN ROTOR CONTROLS COLLECTIVE LEVER — INSTALLATION (CONT)

INSTALL

WARNING

No one shall operate cyclic or collective controls from inside helicopter during installation of collective lever. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Place maintenance stand (B162) adjacent to aircraft work area.



Corrosion Preventive Compound

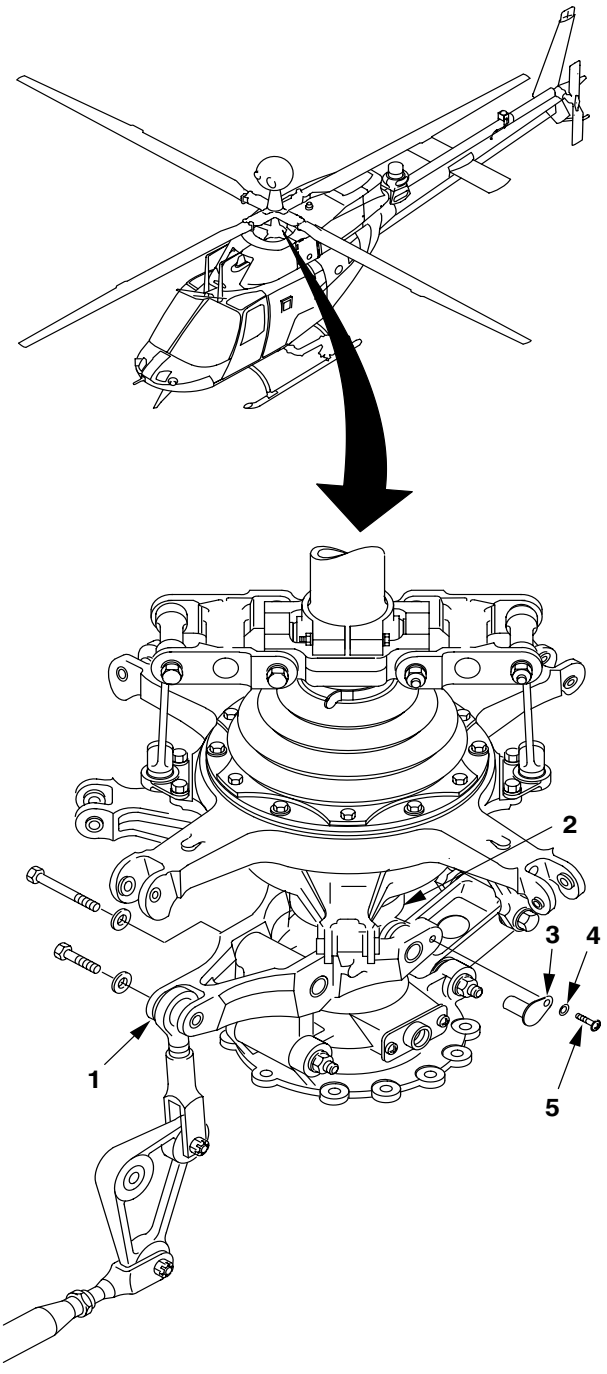
CAUTION

CPC shall not be applied to Teflon coated bushings or to surfaces in contact with Teflon coated bushings.

2. Coat mating surfaces of collective lever (1), swashplate sleeve (2), and pins (3) with CPC (D82).

3. Install collective lever (1) (TOP UP) on swashplate sleeve (2).

4. Install pins (3), washers (4), and screws (5) on each side of collective lever (1).



406010-218-2
J2891

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WARNING

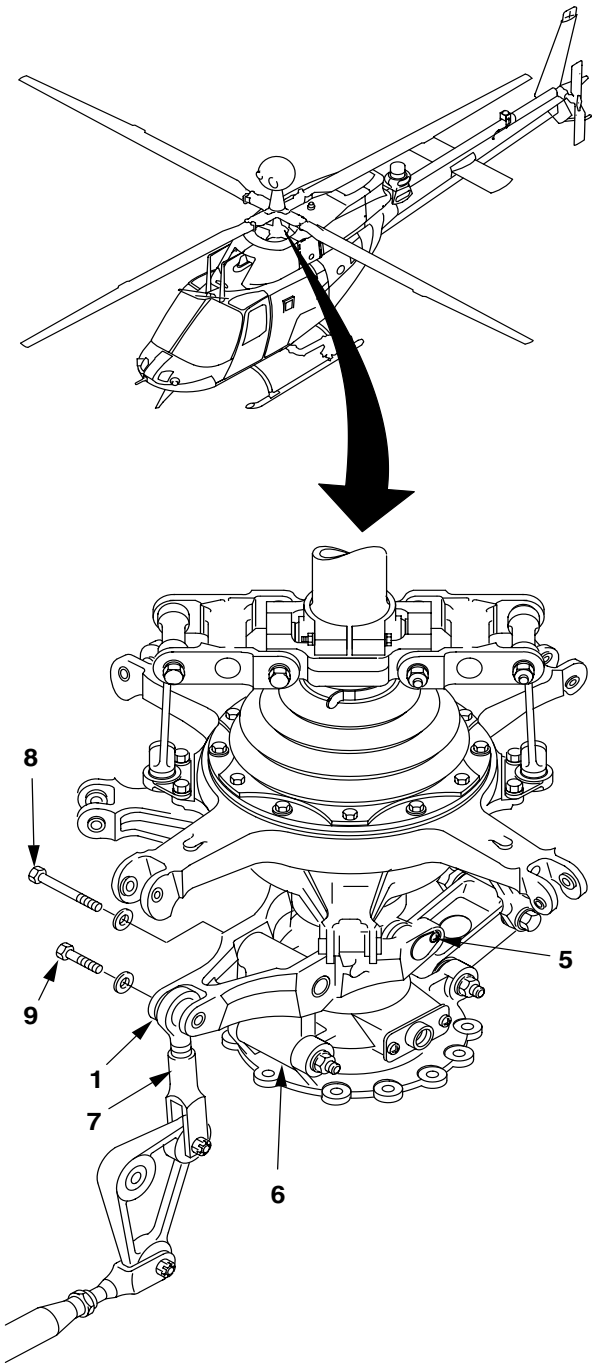
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing and lockwiring of screws are characteristics critical to flight safety.

5. Torque two screws (5) **20 TO 26 INCH-POUNDS**.

6. Secure two screws (5) with lockwire (D132).

7. Coat mating surfaces of collective lever (1), collective link (6), link (7), and shanks of bolts (8) and (9) with CPC (D82).



406010-218-1
J2195

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5-2-20. MAIN ROTOR CONTROLS COLLECTIVE LEVER — INSTALLATION (CONT)

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

8. Install bolt (8), two washers (10), and nut (11).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of nut and installation of cotter pin are characteristics critical to flight safety.

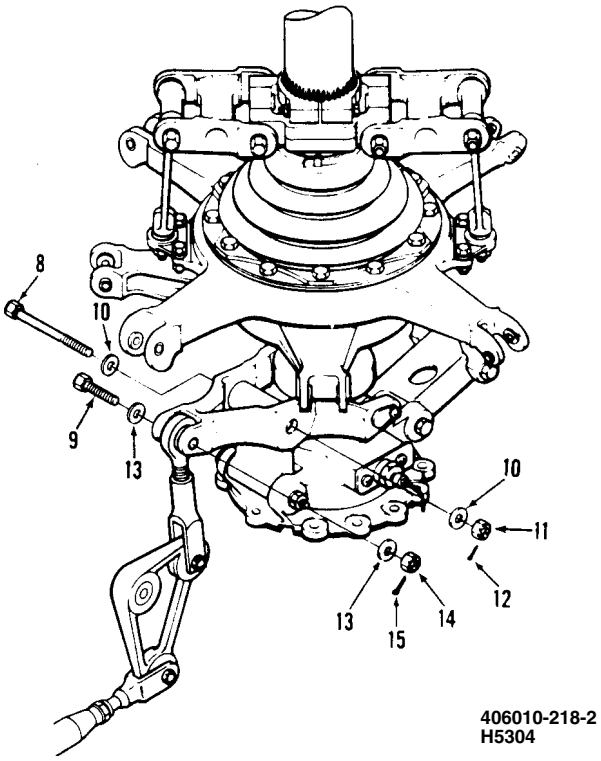
9. Torque nut (11) **95 TO 110 INCH-POUNDS**.

10. Install cotter pin (12) through nut (11).

11. Install bolt (9), two washers (13), and nut (14).

12. Torque nut (14) **60 TO 85 INCH-POUNDS**.

13. Install cotter pin (15) through nut (14).



406010-218-2
H5304

INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing (Task 2-2-47).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).

END OF TASK

5-2-21. MAIN ROTOR CONTROLS COLLECTIVE LINK — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)

GO TO NEXT PAGE

WARNING

No one shall operate cyclic or collective controls from inside helicopter during removal of collective link. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Place maintenance stand (B162) adjacent to aircraft work area.

2. Remove cotter pin (1) and discard.

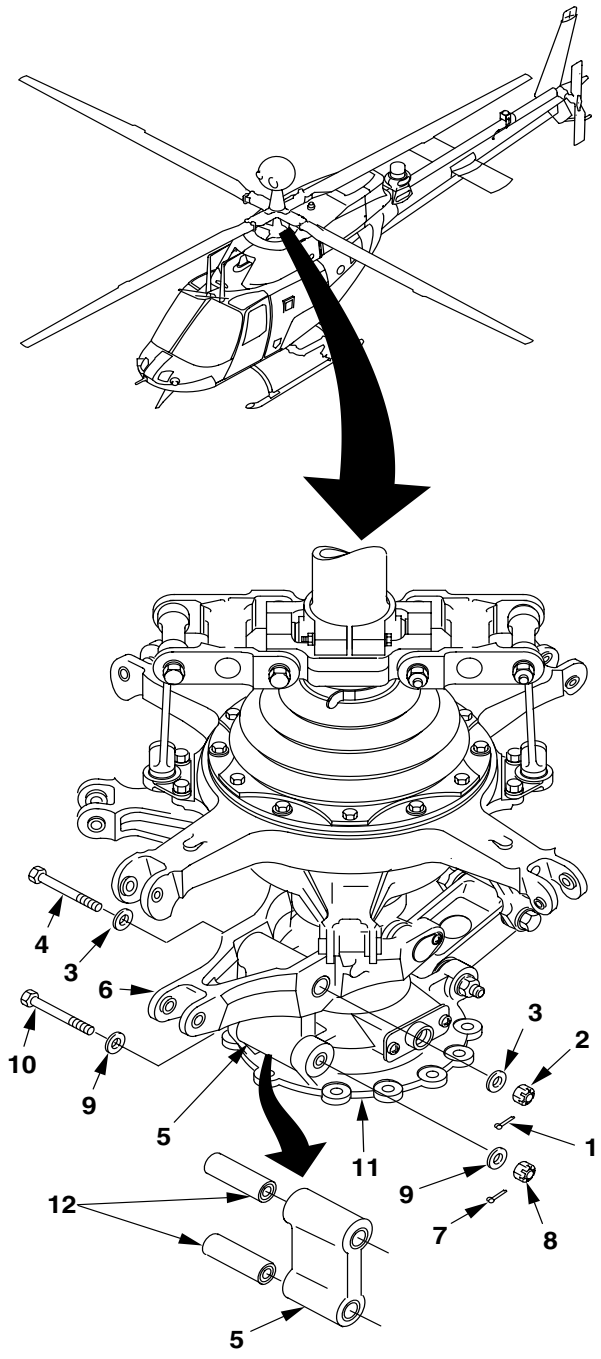
3. Remove nut (2), washers (3), and bolt (4) from collective link (5) and collective levers (6).

4. Remove cotter pin (7) and discard.

5. Remove nut (8), washers (9), and bolt (10) from collective link (5) and swashplate support (11).

6. Remove collective link (5).

7. Remove two spacers (12) from collective link (5).



406010-219
J0453

END OF TASK

5-2-22. MAIN ROTOR CONTROLS COLLECTIVE LINK (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Hand Arbor Press (B107)
Hammer (B64)
Taper Driftpin (B38)
Freezer (B46)

Material:
Sandpaper (D174)
Drycleaning Solvent (D199)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Acetone (D2)
Wiping Rag (D164)
Abrasive Mats (D1)
Aliphatic Naphtha (D141)
Cotton Gloves (D112)
Rubber Gloves (D111)
Paint Brush (D54)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1520-266-23

GO TO NEXT PAGE

5-2-22. MAIN ROTOR CONTROLS COLLECTIVE LINK (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN

Drycleaning Solvent

1. Clean collective link with paint brush (D54) and drycleaning solvent (D199).

2. Dry collective link with a wiping rag (D164).

INSPECT

3. Inspect collective link for damage to limits shown; replace if limits are exceeded. See figure Collective Link — Damage Limits.

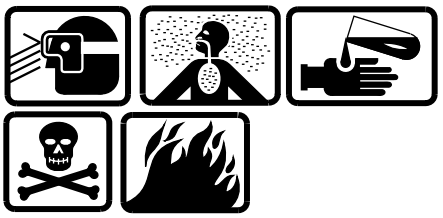
3.1. If a crack on the surface of the collective link is suspected, refer to TM 1-1520-266-23.

4. Inspect bushings in collective link for wear. If Teflon lining in bushing is worn through, bushing will be replaced.

REPAIR

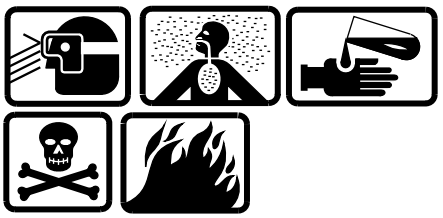
Sanding Operations

5. Polish out repairable damage with 320 grit sandpaper (D174).



Naphtha/Naphthalene, TT-N-97

6. Clean repaired areas with a wiping rag (D164) dampened with aliphatic naphtha (D141).



Epoxy Primer Coating

7. Apply one coat of epoxy primer coating (D98) to repaired areas which were previously painted.

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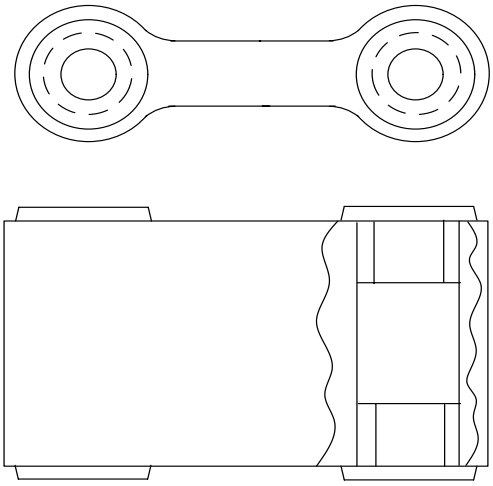
5-2-22. MAIN ROTOR CONTROLS COLLECTIVE LINK (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)



TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL AND CORROSION	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.15 Sq. in.
NUMBER OF REPAIRS	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.020 In.
BORES	0.002 Inch for 1/4 circumference

NOTE: No cracks are permitted.

406010-31
J0453

Collective Link — Damage Limits

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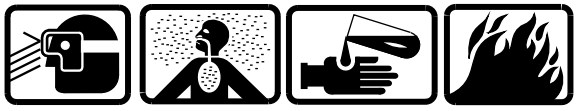
5-2-22. MAIN ROTOR CONTROLS COLLECTIVE LINK (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)



Acrylic Lacquer

8. Apply two coats of black acrylic lacquer (D124) to primed areas.

REPLACE BUSHING

9. Remove bushing (1) using a **0.50 inch** brass driftpin (B38) through opposite bushing.

10. After one bushing has been removed, opposite bushing can be pressed out with hand arbor press (B107) and appropriate pressing plug.

Acetone

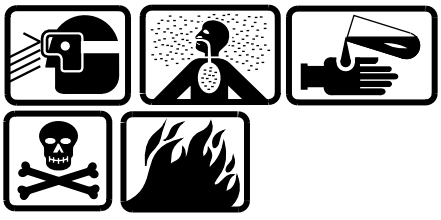
11. Remove epoxy primer coating from bushing bore with acetone (D2) and abrasive mats (D1).

12. Inspect bushing bore for damage; maximum allowable: **0.002 inch** for one-fourth circumference.

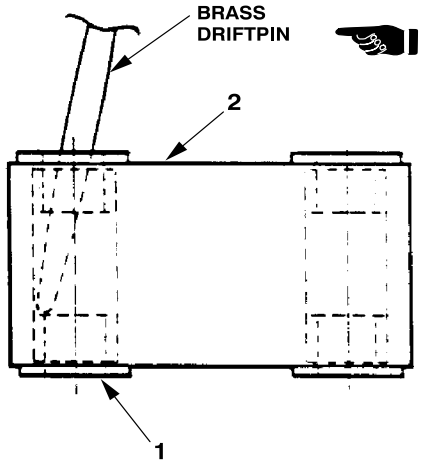
WARNING

To prevent injury to skin, cotton gloves (B112) shall be worn when handling frozen bushings.

13. Using freezer (B46) freeze replacement bushing (1).



Epoxy Primer Coating



14. Coat bushing bore in collective link (2) and mating surfaces of bushing (1) with epoxy primer coating (D98).

15. Using hand arbor press (B107) and appropriate pressing plug, press bushing (1) into collective link (2) while epoxy primer coating is still wet.

16. Fluorescent penetrant inspect (TM 1-1520-266-23).

INSPECT

END OF TASK

5-2-23. MAIN ROTOR CONTROLS COLLECTIVE LINK — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B237)
Maintenance Stand (B162)

Material:
Corrosion Preventive Compound (CPC) (D82)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

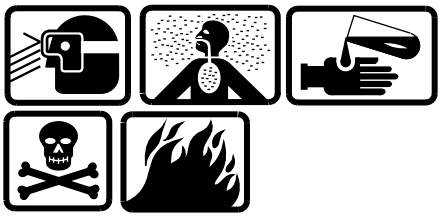
5-2-23. MAIN ROTOR CONTROLS COLLECTIVE LINK — INSTALLATION (CONT)

INSTALLATION

WARNING

No one shall operate cyclic or collective controls from inside helicopter during installation of collective link. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Place maintenance stand (B162) adjacent to aircraft work area.



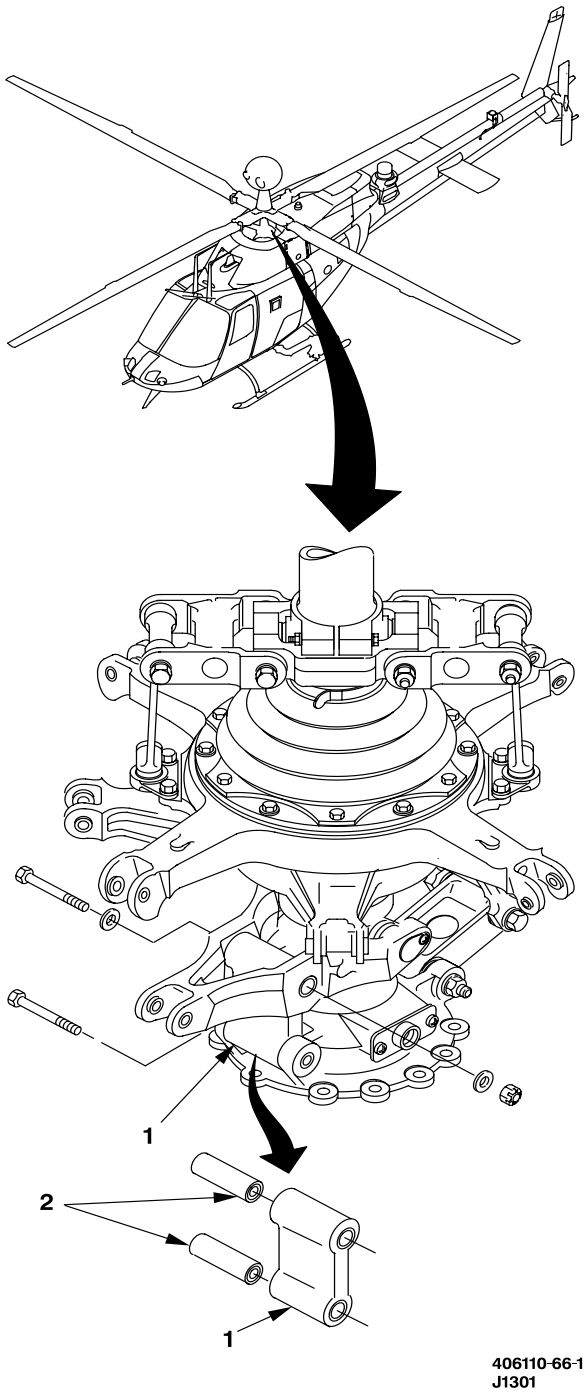
Corrosion Preventive Compound

CAUTION

CPC shall not be applied to Teflon coated bushings or to surfaces in contact with Teflon coated bushings, or damage to equipment may result.

2. Coat mating surfaces of collective link (1) and spacers (2) with CPC (D82).

3. Install two spacers (2) in collective link (1).



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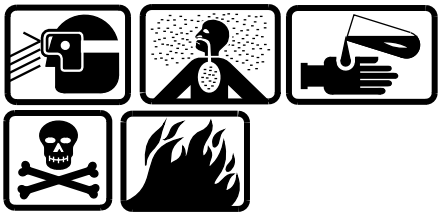


Corrosion Preventive Compound

CAUTION

CPC shall not be applied to Teflon coated bushings or to surfaces in contact with Teflon coated bushings, or damage to equipment may result.

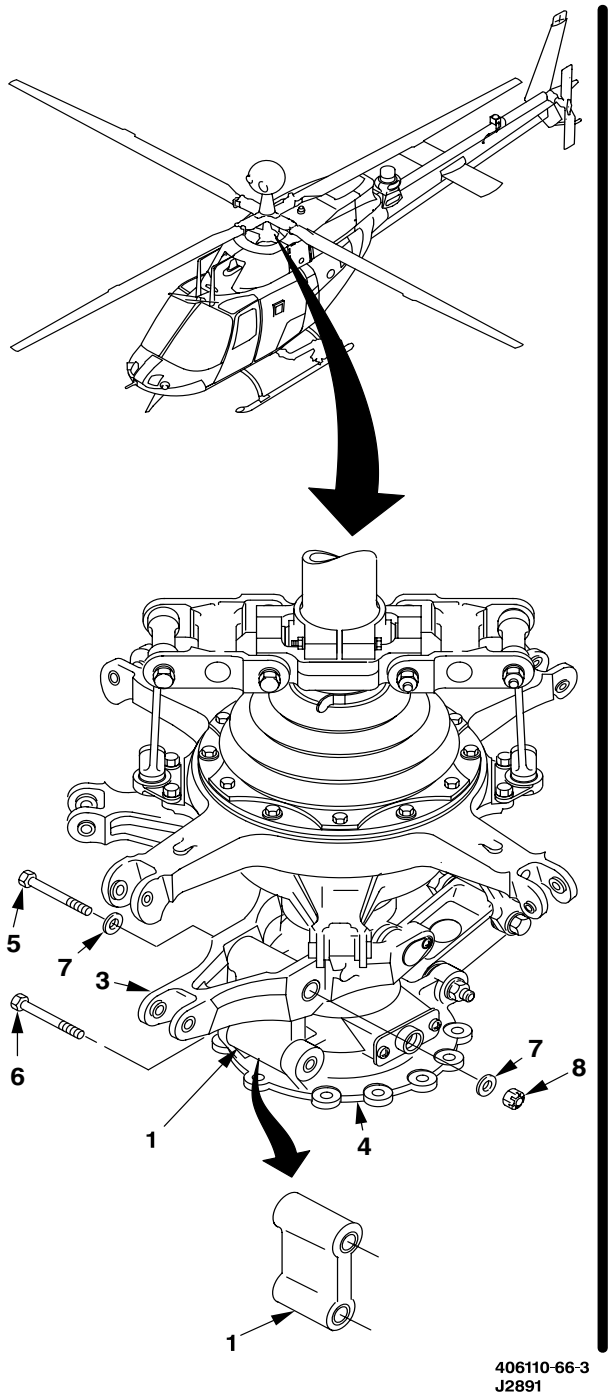
4. Coat mating surfaces of collective link (1), collective lever (3), swashplate support (4), and shank of bolts (5) and (6) with corrosion preventive compound (D82).

5. Install collective link (1) between collective lever (3) and front of swashplate support (4).

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

6. Install bolt (5), two washers (7), and nut (8).



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WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nuts and installation of cotter pins are characteristics critical to flight safety.

7. Torque nut (8) **95 TO 110 INCH-POUNDS**.

8. Install cotter pin (9) through nut (8).

9. Install bolt (6), two washers (10), and nut (11).

10. Torque nut (11) **95 TO 110 INCH-POUNDS**.

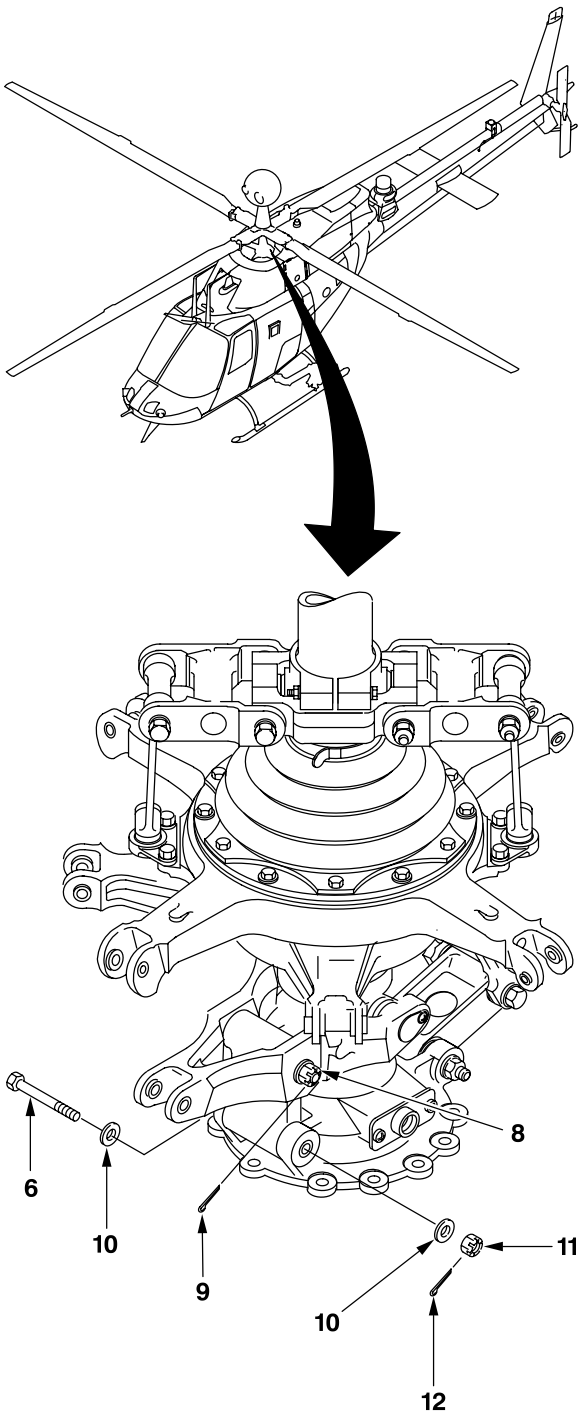
11. Install cotter pin (12) through nut (11).

INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing (Task 2-2-47).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).



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J1301

END OF TASK

5-2-24. MAIN ROTOR CONTROLS SPACER — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Sandpaper (D175)
Crocus Cloth (D90)
Drycleaning Solvent (D199)
Wiping Rag (D164)
Rubber Gloves (D111)
Acid Brush (D51)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1520-266-23

CLEAN

Drycleaning Solvent

CAUTION

When cleaning flapping bearing, drycleaning solvent (D199) shall not be allowed to come in contact with elastomer of flapping bearing.

NOTE

The main rotor controls spacer is used in the collective link and the antidrive link assembly.

1. Clean spacer with acid brush (D51) and drycleaning solvent (D199).

2. Dry spacer with a wiping rag (D164).

INSPECT

3. Inspect spacer to limits shown; replace if limits are exceeded. See figure Main Rotor Controls Spacer — Damage Limits.

3.1. If a crack on the surface of the main rotor controls spacer is suspected, refer to TM 1-1520-266-23.

REPAIR

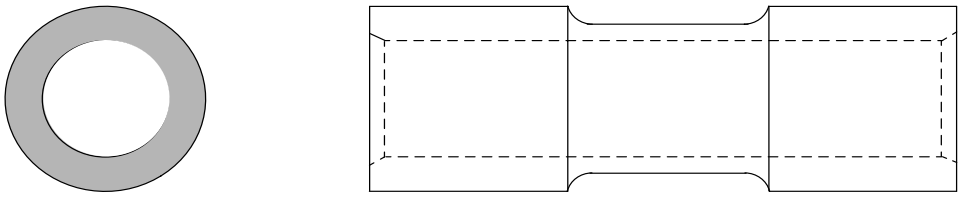
Sanding Operations

4. Polish out repairable damage with 400 grit sandpaper (D175).

5. Remove any sanding marks with crocus cloth (D90).

INSPECT

GO TO NEXT PAGE



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.010 In. before and after repair	0.020 In. before and after repair
CORROSION	0.005 In. before and 0.010 in. after repair	0.010 In. before and 0.020 in. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.100 Sq. in.	0.200 Sq. in.
NUMBER OF REPAIRS	One per end	Two
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.	0.030 In.
BORES	0.010 Inch for 1/4 clrcumference	

NOTE: No cracks are permltted.

406010-22
J2218

Main Rotor Controls Spacer — Damage Limits

END OF TASK

5-2-25. MAIN ROTOR CONTROLS ANTIDRIVE LEVER — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)
Air Induction Cowling Removed (Task 4-2-1)

GO TO NEXT PAGE

5-2-25. MAIN ROTOR CONTROLS ANTIDRIVE LEVER — REMOVAL (CONT)

WARNING

No one shall operate cyclic or collective controls from inside helicopter during removal of antidrive lever. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Place maintenance stand (B162) adjacent to aircraft work area.

2. Remove cotter pin (1) and discard.

3. Remove nut (2), two washers (3), and bolt (4).

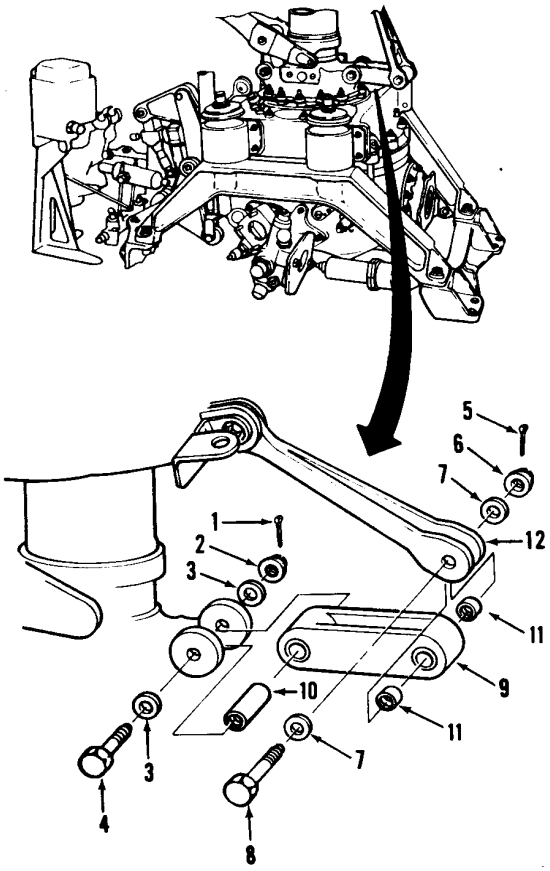
4. Remove cotter pin (5) and discard.

5. Remove nut (6), two washers (7), and bolt (8).

6. Remove antidrive lever (9).

7. Remove spacer (10) from antidrive lever (9).

8. Remove two spacers (11) from tangs of antidrive link (12).



406010-62
H5304

END OF TASK

5-2-26. MAIN ROTOR CONTROLS ANTIDRIVE LEVER (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Hand Arbor Press (B107)
Hammer (B64)
Taper Driftpin (B38)

Material:
Sandpaper (D174)
Drycleaning Solvent (D199)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Acetone (D2)
Wiping Rag (D164)
Abrasive Mats (D1)
Aliphatic Naphtha (D141)
Cotton Gloves (D112)
Rubber Gloves (D111)
Acid Brush (D51)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1520-266-23

GO TO NEXT PAGE

5-2-26. MAIN ROTOR CONTROLS ANTIDRIVE LEVER (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN

Drycleaning Solvent

1. Clean antidrive lever with acid brush (D51) and drycleaning solvent (D199).

2. Dry antidrive lever with a wiping rag (D164).

INSPECT

3. Inspect antidrive lever for damage to limits shown; replace if limits are exceeded. See figure Main Rotor Controls Antidrive Lever — Damage Limits.

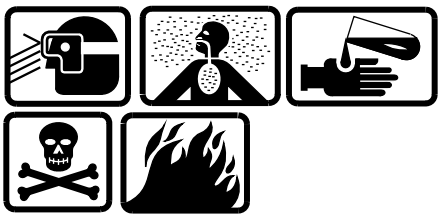
3.1. If a crack on the surface of the antidrive lever is suspected, refer to TM 1-1520-266-23.

4. Inspect bushings in antidrive lever for wear. If Teflon lining in bushing is worn through, bushing will be replaced.

REPAIR

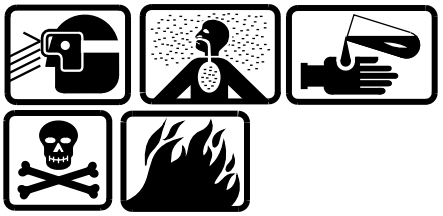
Sanding Operations

5. Polish out repairable damage with 320 grit sandpaper (D174).



Naphtha/Naphthalene, TT-N-97

6. Clean repaired area with a wiping rag dampened with aliphatic naphtha (D141).



Epoxy Primer Coating

7. Apply one coat of epoxy primer coating (D98) to repaired areas which were previously painted.

Acrylic Lacquer

8. Apply two coats of black acrylic lacquer (D124) to primed areas.

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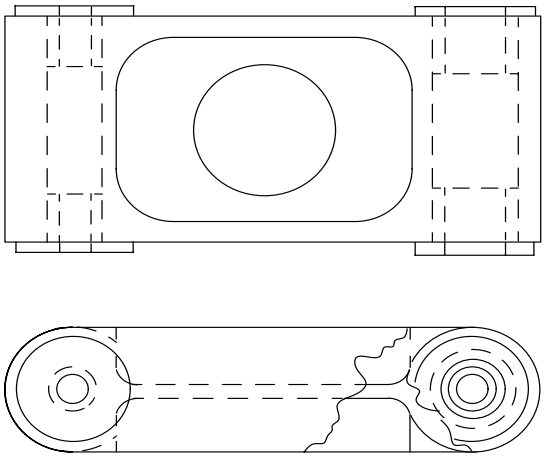
5-2-26. MAIN ROTOR CONTROLS ANTIDRIVE LEVER (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)



TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL AND CORROSION	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.05 Sq. in.
NUMBER OF REPAIRS	One per surface
EDGE CHAMFER TO REMOVE DAMAGE	0.010 In.
BORES	0.002 Inch for 1/4 circumference

NOTE: No cracks are permitted.

406010-27
J0453

Main Rotor Controls Antidrive Lever — Damage Limits

GO TO NEXT PAGE

5-2-26. MAIN ROTOR CONTROLS ANTIDRIVE LEVER (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

REPLACE BUSHINGS

NOTE

Bushings are different size, but either may be replaced using the following procedure.

9. Remove bushings (1) and/or (2) using appropriate brass driftpin (B38) through opposite bushing.

Acetone

10. Remove epoxy primer coating from bushing bore with acetone (D2) and abrasive mats (D1).

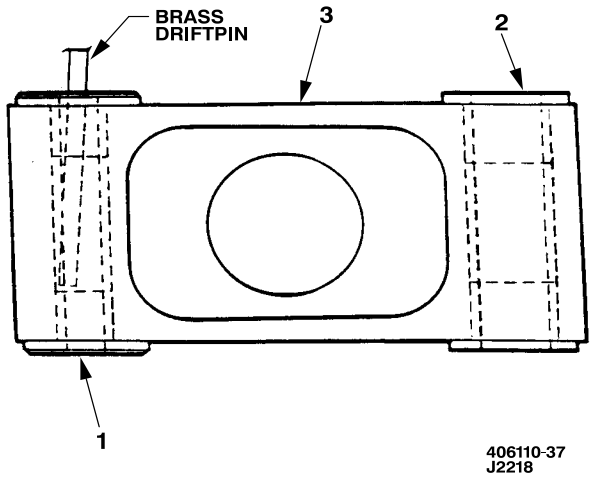
11. Inspect bushing bore for damage; maximum allowable: **0.002 inch** for one-fourth circumference.

12. Coat bushing bore in antidrive lever (3) and mating surfaces of bushing (1) with epoxy primer coating (D99).

13. Using hand arbor press (B107) and appropriate pressing plug, press bushing (1) and/or (2) into antidrive lever (3) while epoxy primer coating is still wet.

14. Fluorescent penetrant inspect (TM 1-1520-266-23).

INSPECT



END OF TASK

5-2-27. MAIN ROTOR CONTROLS ANTIDRIVE LEVER — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B237)
Maintenance Stand (B162)

Material:
Corrosion Preventive Compound (CPC) (D82)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Air Induction Cowling Removed (Task 4-2-1)

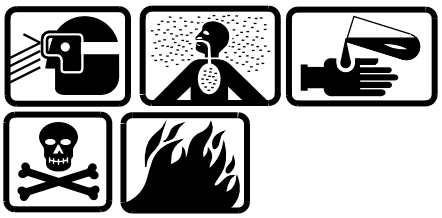
GO TO NEXT PAGE

5-2-27. MAIN ROTOR CONTROLS ANTIDRIVE LEVER — INSTALLATION (CONT)

INSTALL

WARNING

No one shall operate cyclic or collective controls from inside helicopter during installation of antidrive lever. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.



Corrosion Preventive Compound

CAUTION

CPC shall not be applied to Teflon coated bushings or to surfaces in contact with Teflon coated bushings or damage to equipment may result.

1. Place maintenance stand (B162) adjacent to aircraft work area.

2. Coat mating surfaces of antidrive lever (1), spacer (2), antidrive link (3), spacers (4), and swashplate support (5) with corrosion preventive compound (D82).

3. Install spacer (2) in antidrive lever (1).

4. Install antidrive lever (1) between antidrive link (3) and rear of swashplate support (5).

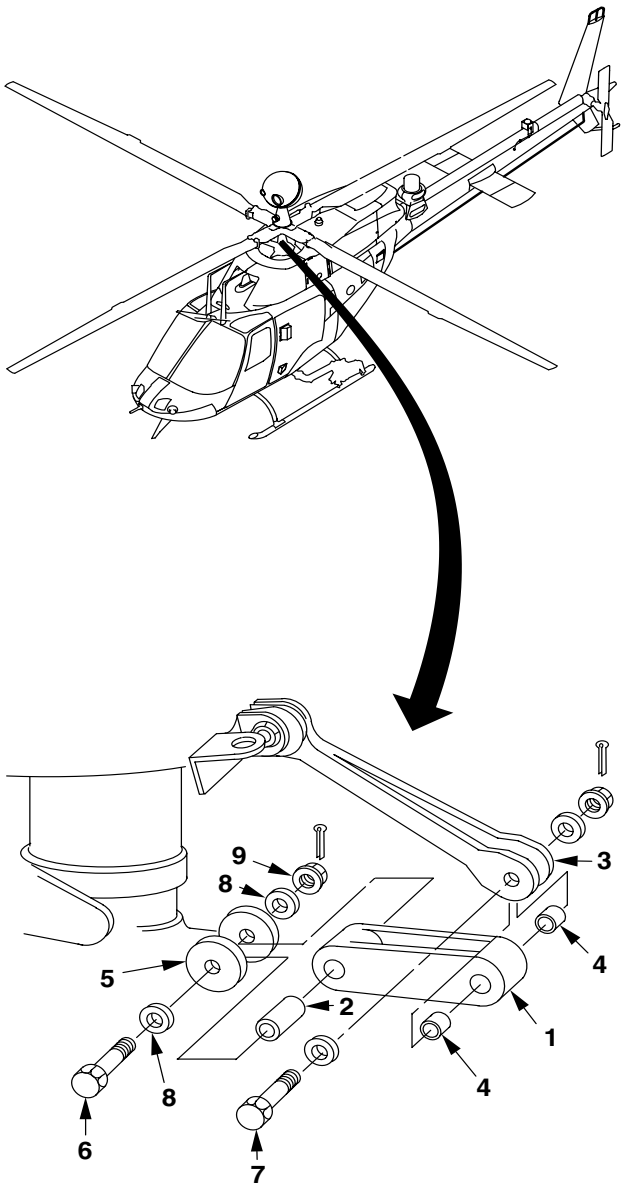
5. Install two spacers (4) in tangs of antidrive link (3).

6. Coat shank of bolts (6) and (7) with corrosion preventive compound (D82).

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

7. Install bolt (6), two washers (8), and nut (9).



406110-67-1
J1261

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WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nuts and installation of cotter pins are characteristics critical to flight safety.

8. Torque nut (9) **90 TO 110 INCH-POUNDS**.

9. Install cotter pin (10) through nut (9).

10. Install bolt (7), two washers (11), and nut (12).

11. Torque nut (12) **60 TO 85 INCH-POUNDS**.

12. Install cotter pin (13) through nut (12).

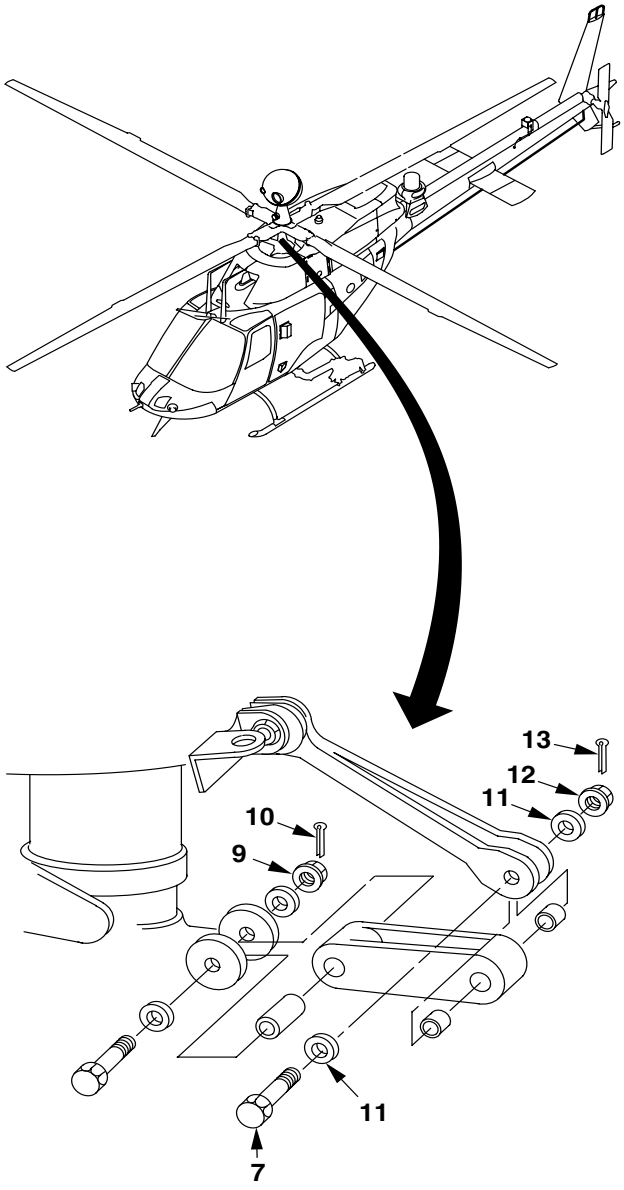
INSPECT

FOLLOW-ON MAINTENANCE

Install air induction cowling (Task 4-2-4).

Install forward fairing assembly (Task 2-2-47).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).



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J1261

END OF TASK

5-2-28. MAIN ROTOR CONTROLS ANTIDRIVE LINK — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)

Material:
Tiedown Strap (D206)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)

WARNING

No one shall operate cyclic or collective controls from inside helicopter during removal of antidrive link. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Place maintenance stand (B162) adjacent to aircraft work area.

2. Remove cotter pin (1) and discard.

3. Remove nut (2), two washers (3), and bolt (4).

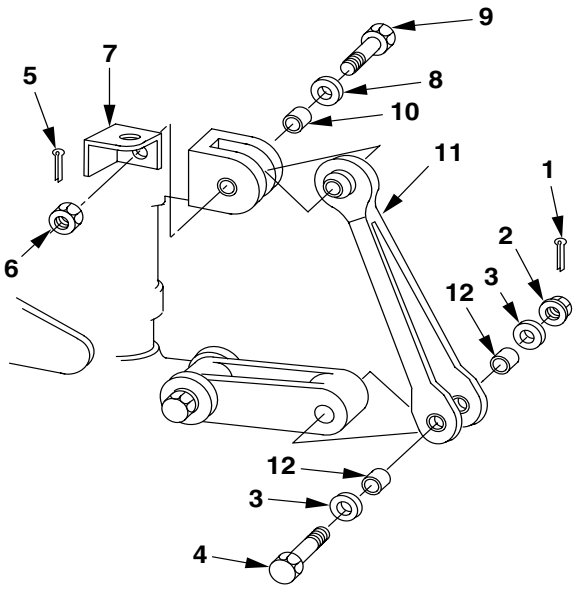
4. Remove cotter pin (5) and discard.

5. Remove nut (6), bracket (7), washer (8), bolt (9), and spacer (10).

6. Tie spacer (10) to swashplate inner ring with tiedown strap (D206).

7. Remove antidrive link (11).

8. Remove two spacers (12) from tangs of antidrive link (11).



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J0453

END OF TASK

5-2-29. MAIN ROTOR CONTROLS ANTIDRIVE LINK (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Hand Arbor Press (B107)
Upright Drill Press (B108)
Roll Staking Tool (B203)
Dial Indicator (B37)
Acid Brush (D51)

Material:
Sandpaper (D174)
Drycleaning Solvent (D199)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Acetone (D2)
Wiping Rag (D164)
Abrasive Mats (D1)
Aliphatic Naphtha (D141)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1500-204-23
TM 1-1520-266-23

GO TO NEXT PAGE

5-2-29. MAIN ROTOR CONTROLS ANTIDRIVE LINK (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN

Drycleaning Solvent

1. Clean antidrive link with acid brush (D51) and drycleaning solvent (D199).

2. Dry antidrive link with wiping rag (D164).

INSPECT

3. Inspect antidrive link for damage to limits shown, replace if limits are exceeded. See figure Main Rotor Controls Antidrive Link — Damage Limits.

3.1. If a crack on the surface of the antidrive link is suspected, refer to TM 1-1520-266-23

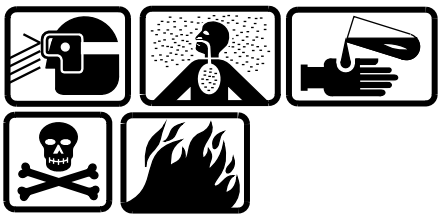
4. Inspect bushings in antidrive link for wear. Replace bushings if Teflon lining is worn through.

5. Inspect bearing in antidrive link and end face for wear. See figure Main Rotor Controls Antidrive Link — Damage Limits.

REPAIR

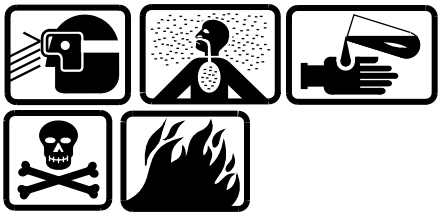
Sanding Operations

6. Polish out repairable damage with 320 grit sandpaper (D174).



Naphtha/Naphthalene, TT-N-97

7. Clean repaired area with a wiping rag dampened with aliphatic naphtha (D141).



Epoxy Primer Coating

8. Apply one coat of epoxy primer coating (D98) to repaired areas which were previously painted.

Acrylic Lacquer

9. Apply two coats of black acrylic lacquer (D124) to primed areas.

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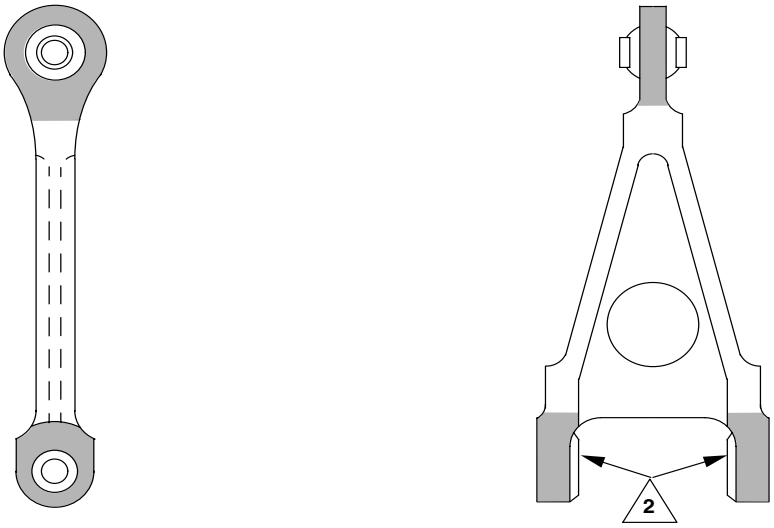
5-2-29. MAIN ROTOR CONTROLS ANTIDRIVE LINK (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.005 In. before and after repair	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.05 Sq. in.	0.15 Sq. in.
NUMBER OF REPAIRS	One per lug	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.010 In.	0.020 In.
BORES	0.002 In. for 1/4 circumference	
BEARING WEAR:		
Axial	0.015 In.	
Radial	0.015 In.	

NOTES: 1. No cracks are permitted.

2 Fabric looseness or wear through of Teflon lining of bushings is not allowed

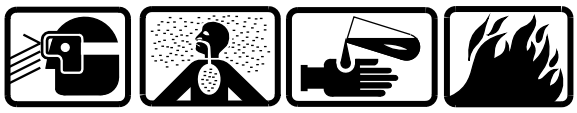
406010-33
J0453

Main Rotor Controls Antidrive Link — Damage Limits

GO TO NEXT PAGE

5-2-29. MAIN ROTOR CONTROLS ANTIDRIVE LINK (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

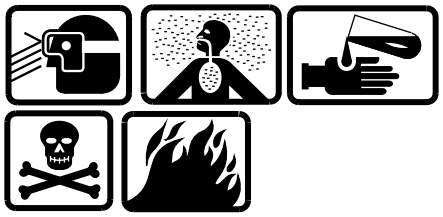
10. Using hand arbor press (B107) and appropriate pressing plug, press bushings (1) out of antidrive link (2).



Acetone

11. Remove epoxy primer coating from bushing bores with acetone (D2) and abrasive mats (D1).

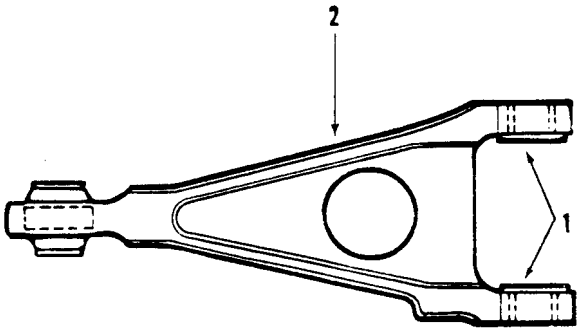
12. Inspect bushing bores for damage; maximum allowable: **0.002 inch** for one-fourth circumference.



Epoxy Primer Coating

13. Coat bushing bores in antidrive link (2) and mating surface of bushings (1) with epoxy primer coating (D98).

14. Using hand arbor press (B107) and appropriate pressing plug, press bushings (1) into antidrive link (2) while epoxy primer coating is still wet,



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H5304

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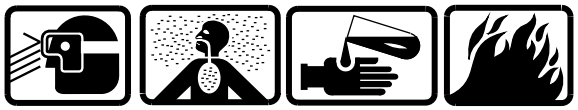
5-2-29. MAIN ROTOR CONTROLS ANTIDRIVE LINK (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

REPLACE BEARING

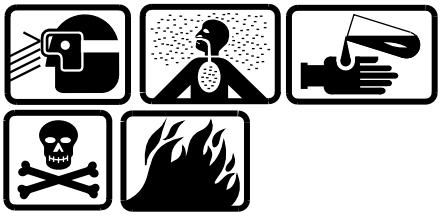
15. Using hand arbor press (B107) and appropriate pressing sleeve, press bearing (3) out of antidrive link (2).



Acetone

16. Remove epoxy primer coating from bearing bore with acetone (D2) and abrasive mats (D1).

17. Inspect bearing bore for damage; maximum allowable: **0.002 inch** for one-fourth circumference.



Epoxy Primer Coating

18. Coat bearing bore in antidrive link and mating surfaces of bearing with epoxy primer coating (D98).

19. Using hand arbor press (B107), install bearing (3) in bore of antidrive link (2) while epoxy primer coating is still wet.

ROLL STAKE BEARING

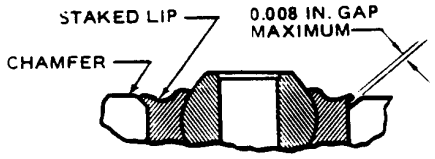
20. Roll stake pregrooved race of bearing (3) using procedures in TM 1-1500-204-23 and observe the following:

a. Use roll staking tool (B203).

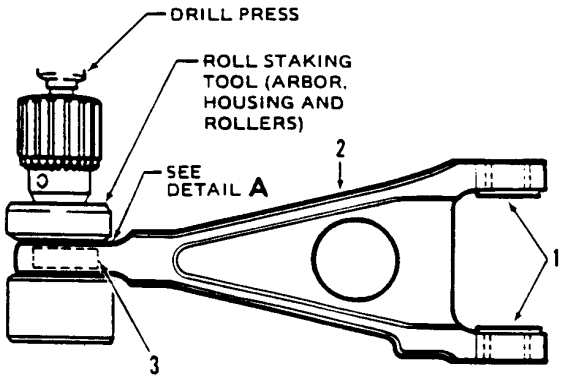
b. Operate upright drill press (B108) at 250 to 350 rpm.

CAUTION

Undue forcing of roll staking tool into the outer lip of pregrooved bearing may cause excessive reduction of the outer lip metal thickness.



DETAIL A



406110-96
H5304

c. Apply steady hand pressure on the drill press for a minimum of 10 seconds to allow roll staking tool to flow metal out. Roll stake both sides of bearing (3).

d. After staking, check for a maximum gap of **0.008 inch** between staked lip of bearing (3) and chamfered area of link (2).

e. Using dial indicator (B37), check bearing (3) for looseness in antidrive link (2); no looseness allowed.

21. Fluorescent penetrant inspect (TM 1-1520-266-23).

INSPECT

END OF TASK

5-2-30. MAIN ROTOR CONTROLS ANTIDRIVE LINK — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B237)
Maintenance Stand (B162)

Material:
Corrosion Preventive Compound (CPC) (D82)
Corrosion Preventive Compound (CPC) (D83)
Tiedown Strap (D206)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1520-248-MTF
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Removed (Task 2-2-47)

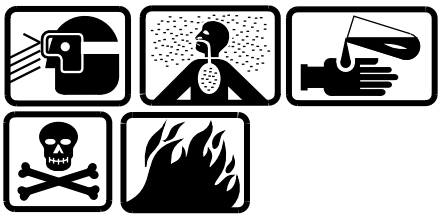
GO TO NEXT PAGE

5-2-30. MAIN ROTOR CONTROLS ANTIDRIVE LINK — INSTALLATION (CONT)

INSTALL

WARNING

No one shall operate cyclic or collective controls from inside helicopter during installation of antidrive link. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.



Corrosion Preventive Compound

CAUTION

CPC shall not be applied to Teflon coated bushings or to surfaces in contact with Teflon coated bushings, or damage to equipment may result.

1. Place maintenance stand (B162) adjacent to aircraft work area.

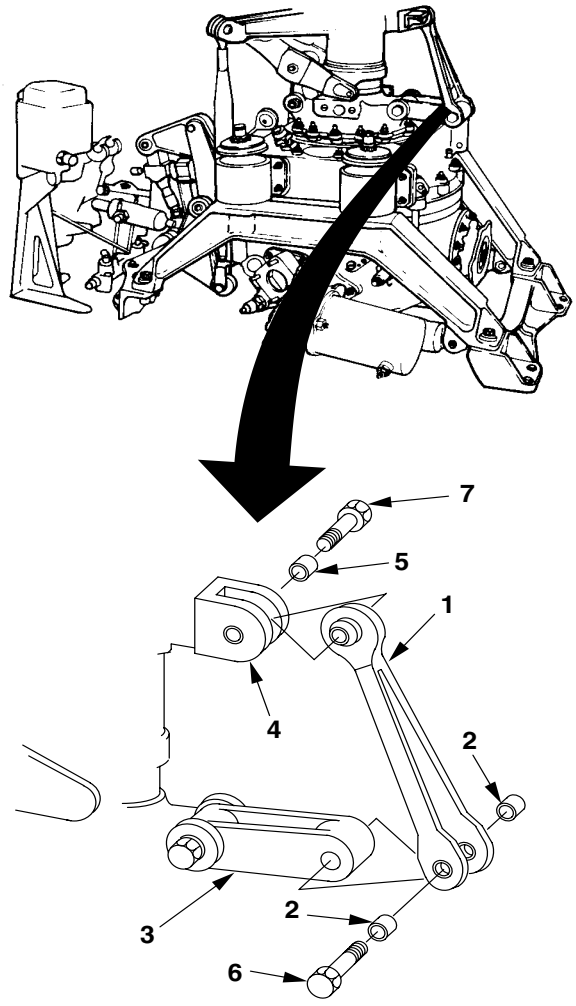
2. Coat mating surfaces of antidrive link (1), spacers (2), antidrive lever (3), and swashplate ring (4) with CPC (D83).

3. Remove tiedown strap (D206) and install spacer (5).

4. Install antidrive link (1) between antidrive lever (3) and swashplate ring (4).

5. Install two spacers (2) in tangs of antidrive link (1).

6. Coat shank of bolts (6 and 7) with CPC (D83).



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J0453

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5-2-30. MAIN ROTOR CONTROLS ANTIDRIVE LINK — INSTALLATION (CONT)

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

7. Install bolt (6), two washers (8), and nut (9).

WARNING

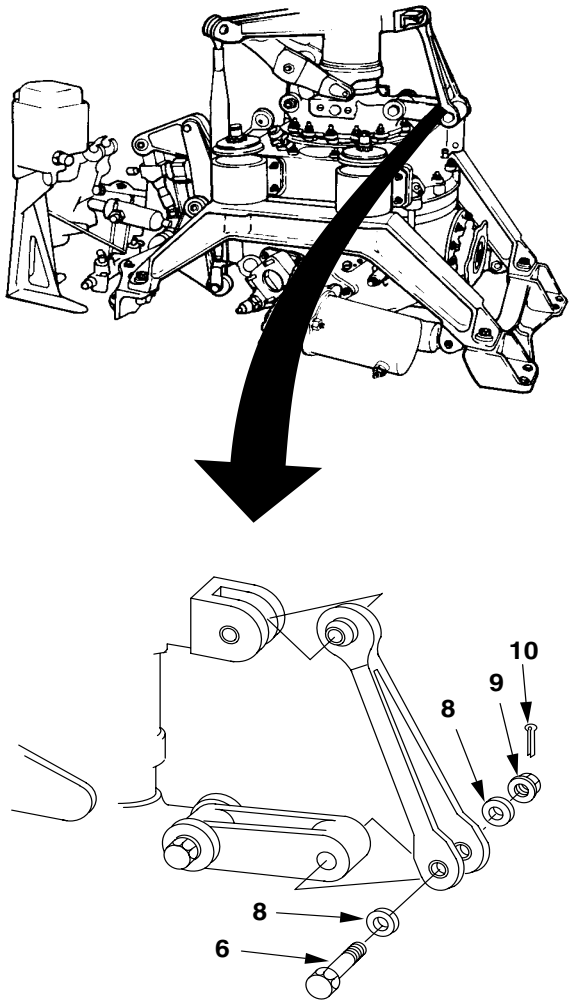
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nuts and correct installation of cotter pins are characteristics critical to flight safety.

8. Torque nut (9) **60 TO 85 INCH-POUNDS**.

9. Coat exposed ends of bolt (6), two washers (8), and nut (9) with CPC (D82).

10. Install cotter pin (10) through nut (9).



406110-45-2
J0453

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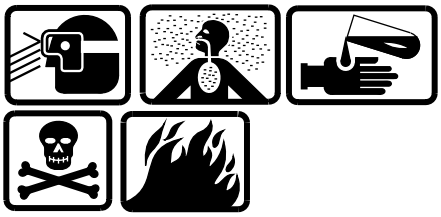
5-2-30. MAIN ROTOR CONTROLS ANTIDRIVE LINK — INSTALLATION (CONT)

11. Install bolt (7), washer (11), bracket (12), and nut (13).

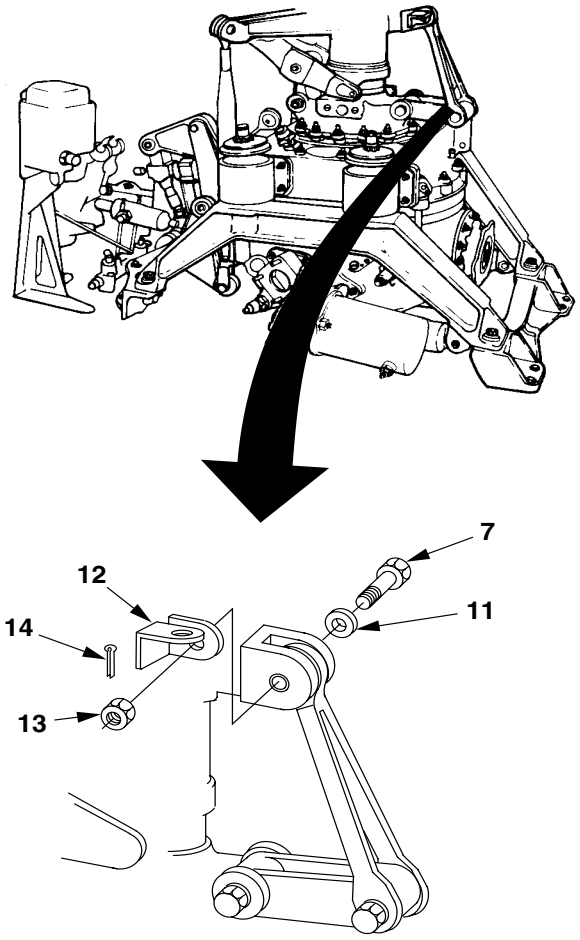
12. Torque nut (13) **60 TO 85 INCH-POUNDS**.



Corrosion Preventive Compound

13. Coat exposed ends of bolt (7), washer (11), bracket (12), and nut (13) with CPC (D82).

14. Install cotter pin (14) through nut (13).



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J0453

INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing (Task 2-2-47).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).

END OF TASK

5-2-31. MAIN ROTOR SWASHPLATE AND SUPPORT — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)

Material:
Sandpaper (D174)
Aliphatic Naphtha (D141)
Wiping Rag (D164)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Rubber Gloves (D111)
Drycleaning Solvent (D199)
Acid Brush (D51)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)

CLEAN

WARNING

No one shall operate cyclic or collective controls from inside helicopter during inspection or repair of swashplate and support. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Place maintenance stand (B162) adjacent to aircraft work area.

Drycleaning Solvent

2. Clean swashplate and support with acid brush (D51) and drycleaning solvent (D199).

3. Dry swashplate and support with wiping rag (D164).

GO TO NEXT PAGE

5-2-31. MAIN ROTOR SWASHPLATE AND SUPPORT — CLEANING/INSPECTION/REPAIR (CONT)

INSPECT

4. Check collective lever (1) for damage (Task 5-2-19). If limits are exceeded, replace collective lever (Tasks 5-2-18/20).

5. Check collective link (2) for damage (Task 5-2-22). If limits are exceeded, replace collective link (Tasks 5-2-21/23).

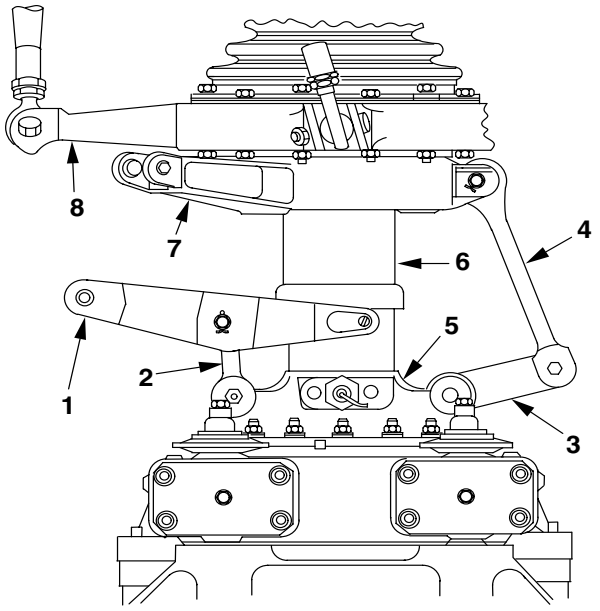
6. Check antidrive lever (3) for damage (Task 5-2-26). If limits are exceeded, replace lever (Tasks 5-2-25/27).

7. Check antidrive link (4) for damage (Task 5-2-29). If limits are exceeded, replace link (Tasks 5-2-28/30).

8. Check exposed areas of support (5) and sleeve (6) for damage (Task 5-2-35). If limits are exceeded, replace swashplate and support (Tasks 5-2-33/38).

9. Check exposed areas of swashplate inner ring (7) and outer ring (8) for damage (Task 5-2-35). If limits are exceeded, replace swashplate and support (Tasks 5-2-33/38).

10. Check attaching hardware for security.



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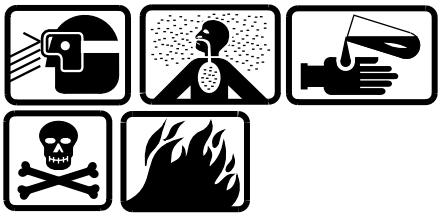
REPAIR

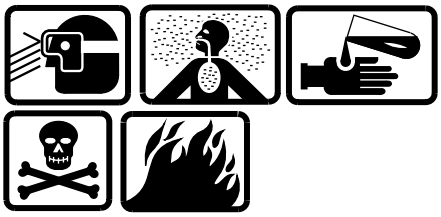
Sanding Operations

11. Polish out repairable damage with 320 grit sandpaper (D174).



Naphtha/Naphthalene, TT-N-97

12. Clean repaired areas with wiping rag (D164) dampened with aliphatic naphtha (D141).



Epoxy Primer Coating

Acrylic Lacquer

13. Touchup paint repaired areas, which were previously painted, with one coat of epoxy primer coating (D98) and one coat of black acrylic lacquer (D124).

INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing assembly (Task 2-2-47). ▮

END OF TASK

5-2-32. MAIN ROTOR SWASHPLATE UNIBALL FRICTION — CHECKING AND ADJUSTMENT

This task covers: Checking and Adjusting (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Spring Scale (B121)
Torque Wrench (B239)
Torque Wrench (B237)
Swashplate Friction Adjustment Studs (Workaid H-29)

Material:
Lockwire (D132)
Corrosion Preventive Compound (CPC) (D82)
Corrosion Preventive Compound (CPC) (D83)
Masking Tape (D216)
Drycleaning Solvent (D199)
Low-Lint Cleaning Cloth (D67)
Acetone (D2)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)

GO TO NEXT PAGE

5-2-32. MAIN ROTOR SWASHPLATE UNIBALL FRICTION — CHECKING AND ADJUSTMENT (CONT)

PREPARE FOR FRICTION CHECK

WARNING

No one shall operate cyclic or collective controls from inside helicopter during checking and adjusting swashplate Uniball friction. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Remove cotter pin (1) and discard.

2. Remove nut (2), two washers (3), and bolt (4).

3. Move link (5) away from collective lever (6).

NOTE

One bushing in tang of swashplate ring is a slip fit and should be retained with swashplate ring when tube is removed.

4. Remove cotter pin (7) and discard.

5. Remove nut (8), two washers (9), and bolt (10).

6. Move tube (11) away from swashplate inner ring (12).

NOTE

Spacer (13) shall be installed in swashplate inner ring (12) bushing prior to reinstalling hardware.

7. Install hardware in swashplate inner ring (12) and tighten nut (8) fingertight.

8. Repeat steps 4. through 7. to disconnect opposite tube (11).

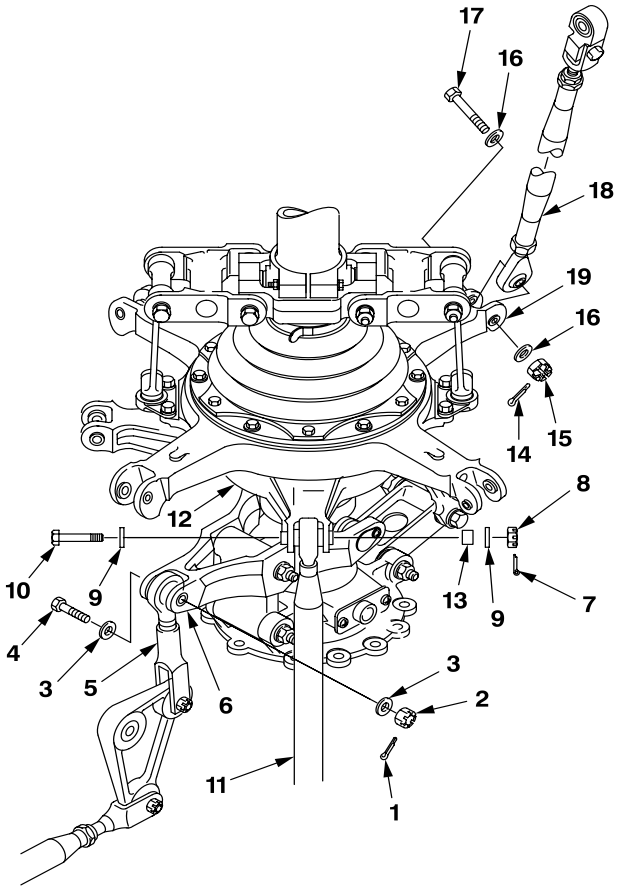
NOTE

One bushing in tang of swashplate ring is a slip fit and should be retained with swashplate ring when tube is removed.

9. Remove cotter pin (14) and discard.

10. Remove nut (15), two washers (16), and bolt (17).

11. Move pitch link (18) away from swashplate outer ring (19).



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12. Repeat steps 9. through 11. to disconnect three remaining pitch links.

13. Remove antidrive link (Task 5-2-28).

14. Remove 5 nuts (20), 10 washers (21), and 5 bolts (22) from bottom of boot (23).

15. Remove lockwire from bolt (24). Remove bolt (24) and washer (25) from bottom of boot (23).

16. Roll bottom of boot (23) up and secure out of immediate work area.

17. Clean swashplate Uniball, upper and lower bearing, and race before attempting to adjust swashplate friction as follows:

Drycleaning Solvent

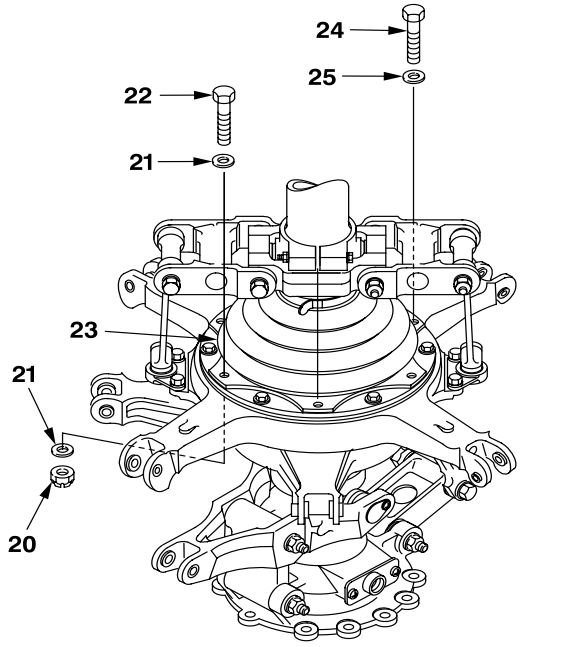
CAUTION

Teflon lined bearings shall not be cleaned with drycleaning solvent (D199) failure to comply may result in damage of bearings.

a. Clean all parts, except Teflon lined bearings, with drycleaning solvent (D199) and wipe dry with low-lint cleaning cloth (D67).

Acetone

b. Clean Teflon lined bearings with low-lint cleaning cloth (D67) dampened with acetone (D2) and wipe dry before acetone evaporates.



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18. Attach spring scale (B121) to bolt (10) through swashplate inner ring (12).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Breakout torque on pivot ball to be 28.0 to 35.0 pounds at the inner ring input arms at initial installation. Acceptable breakout torque in the field or after operation is 20.0 to 35.0 pounds at the inner ring input arms. Swashplate shall be checked by tilting through full travel on each of the inner ring horns. Thickness of peel of shims shall be decreased as required. No vertical looseness is allowed between the inner ring and the sleeve assembly. These requirements are characteristics critical to flight safety.

NOTE

Swashplate inner ring should be tilted almost full down, but not bottomed.

19. Pull on spring scale (121), and observe force required to tilt swashplate inner ring (12). Move swashplate inner ring (12) through full travel. Force required to tilt swashplate inner ring (12) should be 20 to 35 pounds. Repeat check to ensure scale reading was accurate.

20. Move spring scale (121) to other horn of swashplate inner ring (12) and repeat step 19.

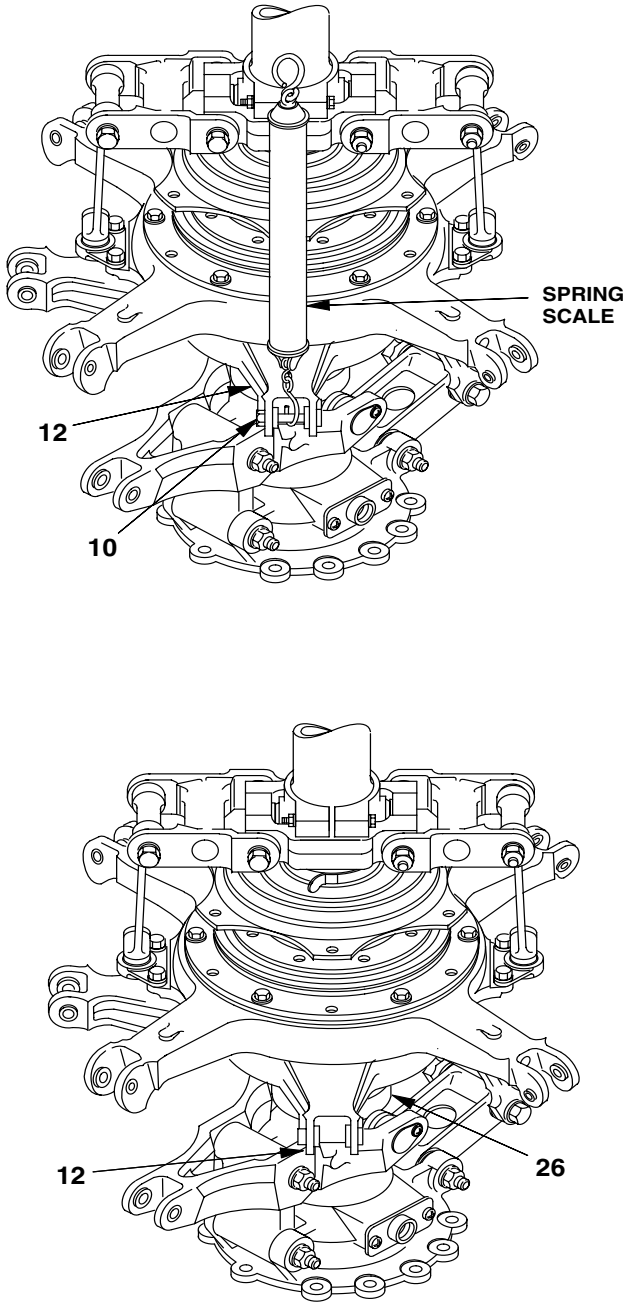
21. Force required to move swashplate inner ring at either horn must be 20 to 35 pounds.

ADJUST

NOTE

Setting of swashplate friction to higher side of range will allow increased flight hours between required adjustments.

22. Wrap cardboard around sleeve (26) and secure with masking tape (D216). This will prevent inner ring (12) from slipping down when upper race is removed.



406110-95-3
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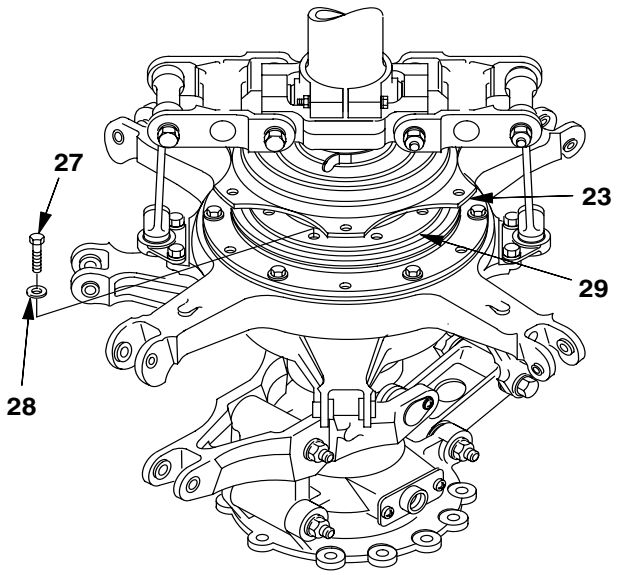
23. Remove lockwire and remove eight bolts (27) and washers (28).

24. Match mark upper race (29) with felt tip marker prior to removal.

25. Lift upper race (29) and secure out of area with boot (23).

NOTE

If force required to tilt swashplate was low, shims shall be removed. If force required to tilt swashplate was high, shims shall be added. Shims are made of **0.002 and 0.003 inch** laminated stock which can be peeled to desired thickness.



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26. Remove shims (30).

NOTE

Cap should remain in place when removing upper race on shims.

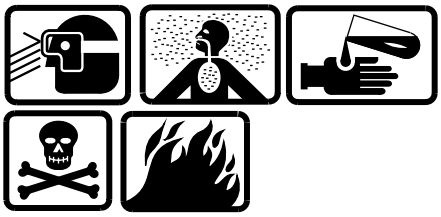
27. Reinstall cap (31) if it has moved from normal position.

NOTE

Workaid studs (four required) may be fabricated per instructions in Appendix H, to facilitate shim alignment during friction adjustment procedures.

28. Install four workaid studs (H-29) handtight approximately 90 degrees apart.

29. Adjust thickness of shim (30) by removing or adding shim.

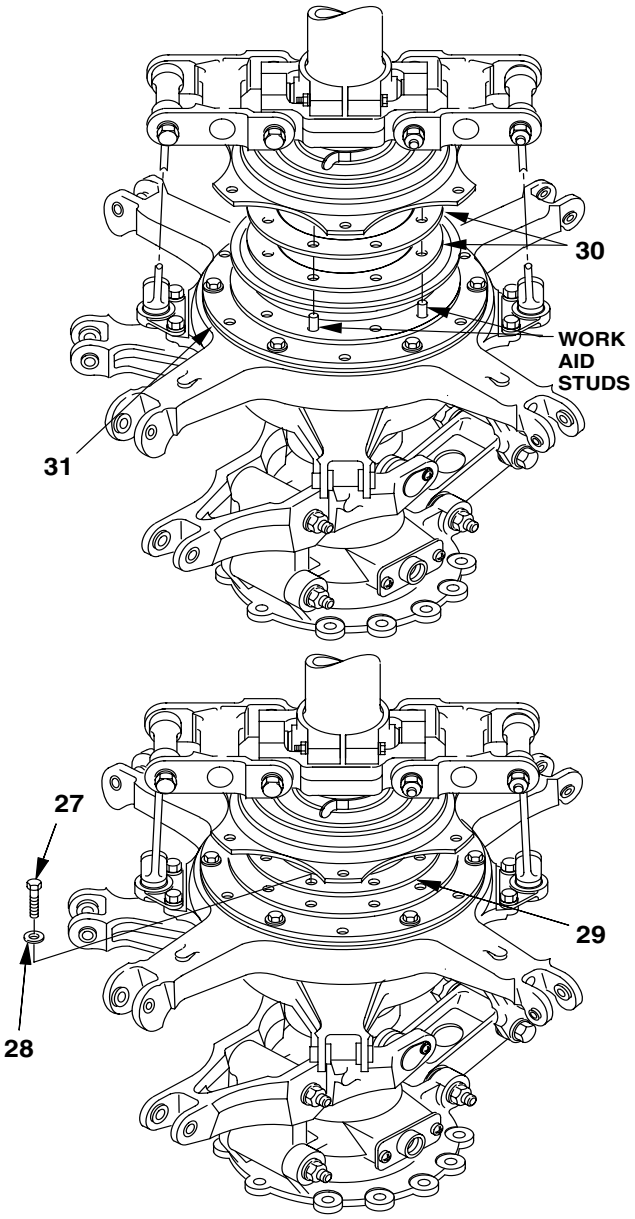


Corrosion Preventive Compound

30. Install shims (30) in cap (31). Apply CPC (D83) to ends of shims (30).

31. Remove four workaid studs (H-29).

32. Install upper race (29), eight bolts (27), and washers (28).



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WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing and lockwiring of bolts are characteristics critical to flight safety.

CAUTION

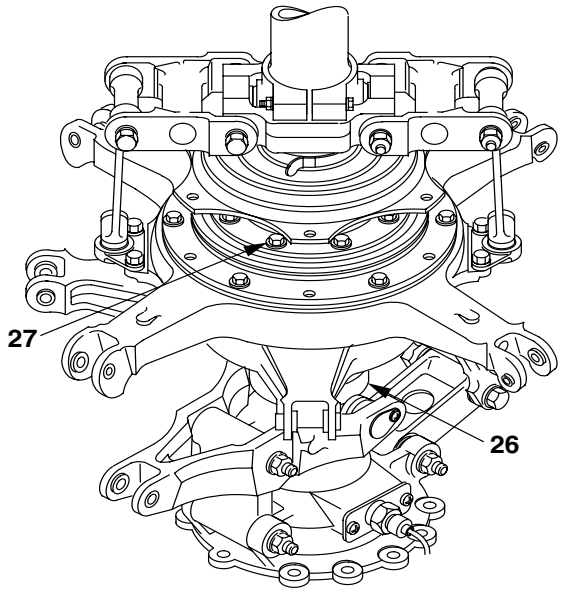
Torque bolts in sequence of 180 degrees apart.

33. Torque bolts (27) **50 TO 70 INCH-POUNDS**.

34. Remove cardboard and masking tape from swashplate sleeve (26).

35. Repeat steps 18. through 21. to check swashplate friction.

36. Secure bolts (27) with lockwire (D132).



406110-93
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INSPECT

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5-2-32. MAIN ROTOR SWASHPLATE UNIBALL FRICTION — CHECKING AND ADJUSTMENT (CONT)

RECONNECT CONTROLS

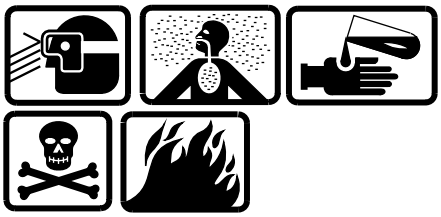
37. Install 5 bolts (22), 10 washers (21), and 5 nuts (20) through boot (23) and cap (31).

38. Torque 5 nuts (20) **75 TO 95 INCH-POUNDS**.

39. Install bolt (24) and washer (25).

40. Torque bolt (24) **75 TO 95 INCH-POUNDS**.

41. Install antidrive link (Task 5-2-30).

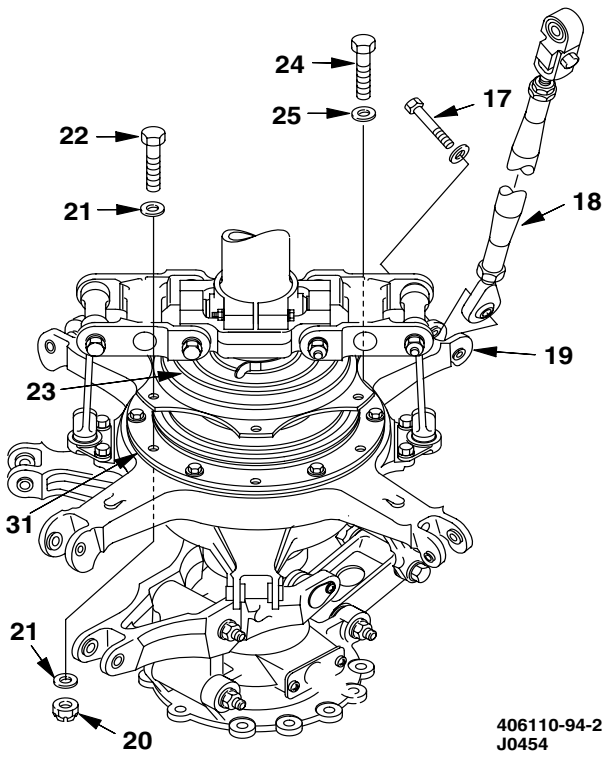


Corrosion Preventive Compound

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

42. Apply CPC (D83) to mating surface of pitch link (18), swashplate outer ring (19), and bolt (17).



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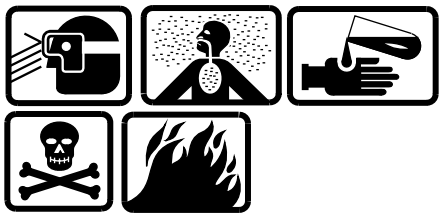
NOTE

One bushing in tang of swashplate ring is a slip fit. Bushing shall remain in place when connecting tube.

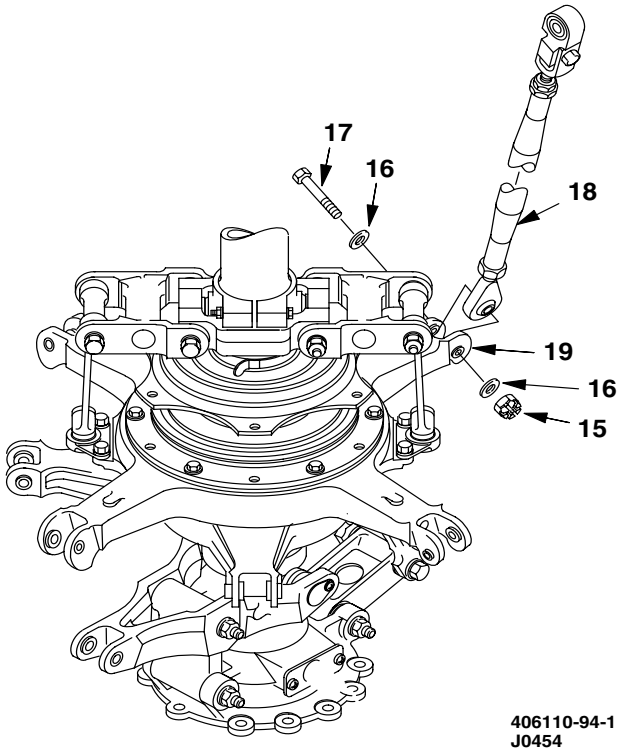
43. Install pitch link (18) in tangs of swashplate outer ring (19). Install bolt (17), two washers (16), and nut (15).

44. Torque nut (15) **120 TO 160 INCH-POUNDS**.



Corrosion Preventive Compound

45. Apply CPC (D82) to exposed ends of bolt (17), washers (16), and nut (15).



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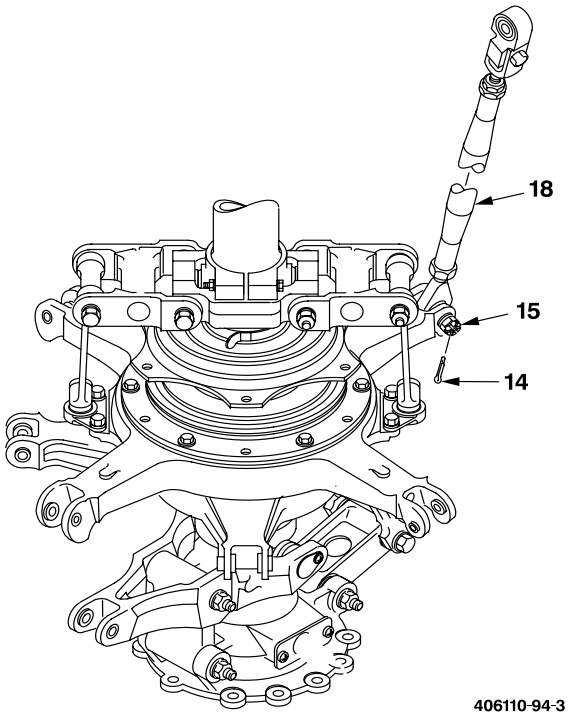
5-2-32. MAIN ROTOR SWASHPLATE UNIBALL FRICTION — CHECKING AND ADJUSTMENT (CONT)

46. Install cotter pin (14) through nut (15).

47. Repeat steps 42. through 46. to connect three remaining pitch links (18).



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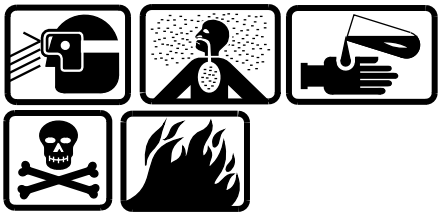


Corrosion Preventive Compound

NOTE

One bushing in tang of swashplate ring is a slip fit. Bushing shall remain in place when connecting tube.

48. Apply CPC (D83) to bolt (10), mating surfaces of tube (11) and swashplate inner ring (12).

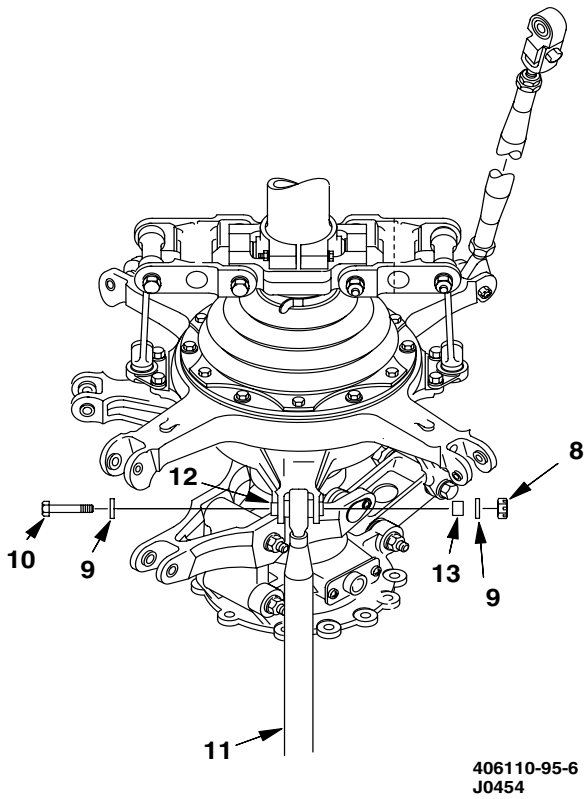
NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

NOTE

Spacer (13) shall be installed in swashplate inner ring (12) bushing prior to installation of hardware.

49. Install tube (11) in tangs of swashplate inner ring (12). Install bolt (10), two washers (9), and nut (8).



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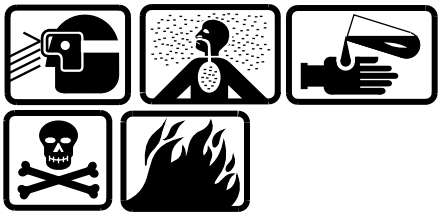
WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nut and correct installation of cotter pin are characteristics critical to flight safety.

50. Torque nut (8) **95 TO 110 INCH-POUNDS**.



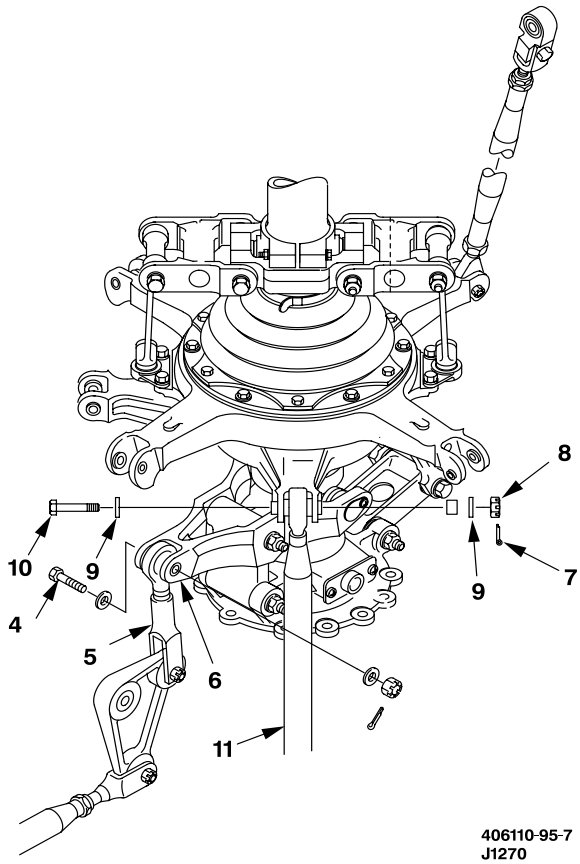
Corrosion Preventive Compound

51. Apply CPC (D82) to exposed ends of bolt (10), washers (9), and nut (8).

52. Install cotter pin (7) through nut (8).

53. Repeat steps 48. through 52. to connect opposite tube (11).

54. Apply CPC (D83) to bolt (4) and mating surfaces of link (5) and collective lever (6).



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NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

55. Install link (5) in collective lever (6). Install bolt (4), two washers (3), and nut (2).

56. Torque nut (2) **60 TO 85 INCH-POUNDS**.

57. Apply CPC (D82) to exposed ends of bolt (4), washers (3), and nut (2).

58. Install cotter pin (1) through nut (2).

CAUTION

CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals, or damage to equipment may result.

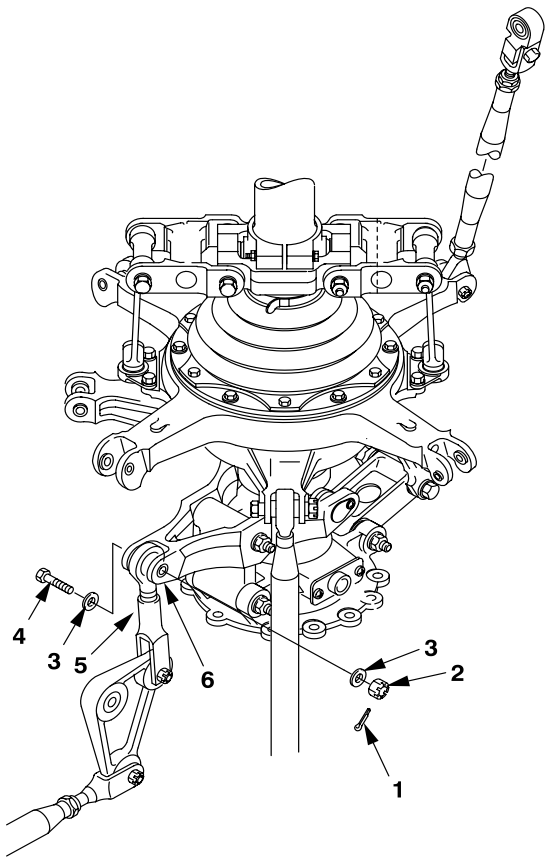
59. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.

INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing assembly (Task 2-2-47).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).



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J1270

END OF TASK

5-2-33. MAIN ROTOR SWASHPLATE AND SUPPORT — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Maintenance Stand (B162)
Heat Gun (B59)
Plastic Scraper (B123)

Material:
Tiedown Strap (D206)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)
Air Induction Cowling Removed (Task 4-2-1)
Main Rotor Hub and Blades Removed (Task 5-1-1)
Torquemeter Support Removed (Task 6-4-5)
Main Rotor Controls Pitch Links Removed (Task 5-2-4)
Main Rotor Controls Boot Removed (Task 5-2-17)
Torque Transducers Removed From Swashplate (Task 6-4-10)

GO TO NEXT PAGE

5-2-33. MAIN ROTOR SWASHPLATE AND SUPPORT — REMOVAL (CONT)

REMOVE

WARNING

No one shall operate cyclic or collective controls from inside helicopter during removal of swashplate and support. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Place maintenance stand (B162) adjacent to aircraft work area.

2. Remove cotter pin (1) and discard.

3. Remove nut (2), two washers (3), and bolt (4).

4. Move link (5) from collective lever (6).

5. Remove cotter pin (7) and discard.

6. Remove nut (8), two washers (9), and bolt (10).

NOTE

Spacer (13) in tang of swashplate ring is slip fit and should be retained with swashplate ring when tube (11) is removed.

7. Move tube (11) from ring of swashplate (12).

8. Tie spacer (13) to swashplate (12) inner ring with tiedown strap (D206).

9. Repeat steps 4 through 6 to disconnect opposite tube (11).

10. Remove 12 nuts (14) and washers (15).

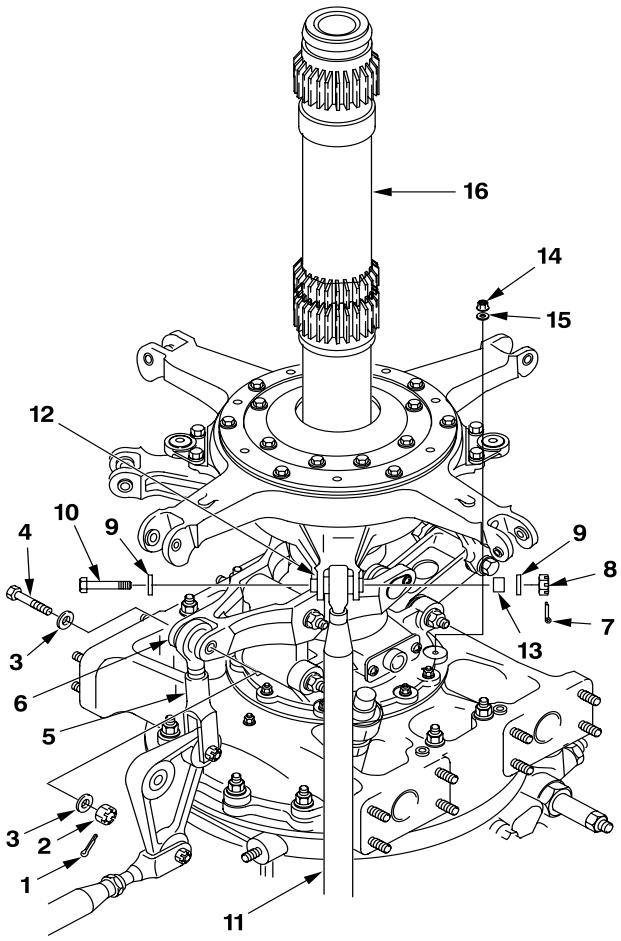
11. Remove sealant from bottom of swashplate with plastic scraper (B123).

CAUTION

Guide swashplate over splines of mast during removal to prevent damage to mast.

12. Using heat gun (B59), heat swashplate support not to exceed 250 °F.

13. Remove swashplate (12) from mast (16).



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J1272

END OF TASK

5-2-34. MAIN ROTOR SWASHPLATE AND SUPPORT (AVIM) — DISASSEMBLY

This task covers: Disassembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Personnel Required:
68D Aircraft Powertrain Repairer

GO TO NEXT PAGE

5-2-34. MAIN ROTOR SWASHPLATE AND SUPPORT (AVIM) — DISASSEMBLY (CONT)

REMOVE ANTIDRIVE LINK AND LEVER

1. Remove cotter pin (1) and discard.

2. Remove nut (2), bracket (3), bolt (4), washer (5), and spacer (6), securing link (7) to inner ring (8).

NOTE

Tape spacer (6) in place in link (7) and inner ring (8) to prevent loss after hardware is removed.

3. Remove cotter pin (9) and discard.

4. Remove nut (10), two washers (11), and bolt (12). Separate link (7) from lever (13).

5. Remove two spacers (14) from link (7).

6. Remove cotter pin (15) and discard.

7. Remove nut (16), two washers (17), bolt (18), and spacer (19) securing lever (13) to support (20).

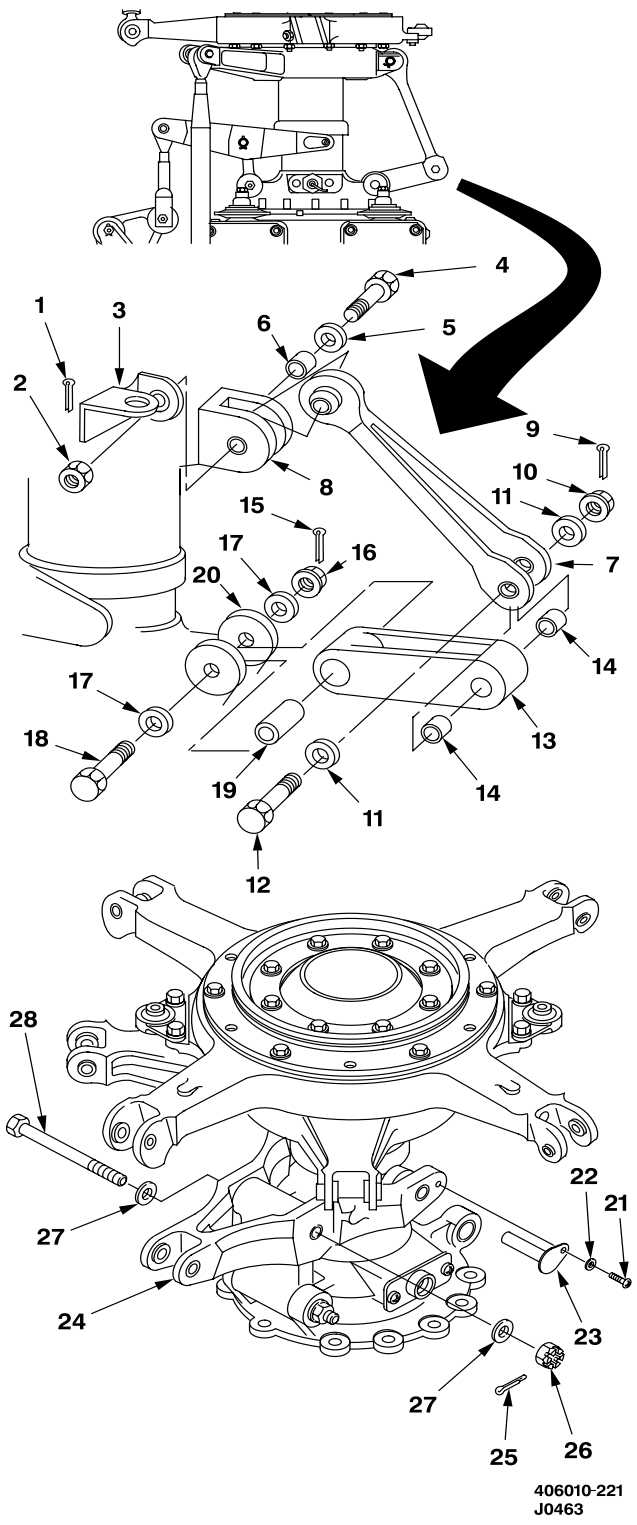
REMOVE COLLECTIVE LEVER

8. Remove lockwire and remove screw (21), washer (22), and pin (23) from each side of collective lever (24).

9. Remove cotter pin (25) and discard.

10. Remove nut (26), two washers (27), and bolt (28).

11. Remove collective lever (24).



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5-2-34. MAIN ROTOR SWASHPLATE AND SUPPORT (AVIM) — DISASSEMBLY (CONT)

REMOVE COLLECTIVE LINK

12. Remove cotter pin (29) and discard.

13. Remove nut (30), two washers (31), and bolt (32). Separate link (33) from support (20).

14. Remove two spacers (34) from link (33).

15. Remove lockwire, two screws (35), two washers (36), and plate (37) from each side of support (20).

REMOVE DRIVE LINK BEARING

16. Remove two nuts (38), washers (39), and bolts (40) to remove bearing (41) from each side of outer ring (42).

REMOVE OUTER CAP

17. Remove bolt (43), washer (44), and interrupter (45).

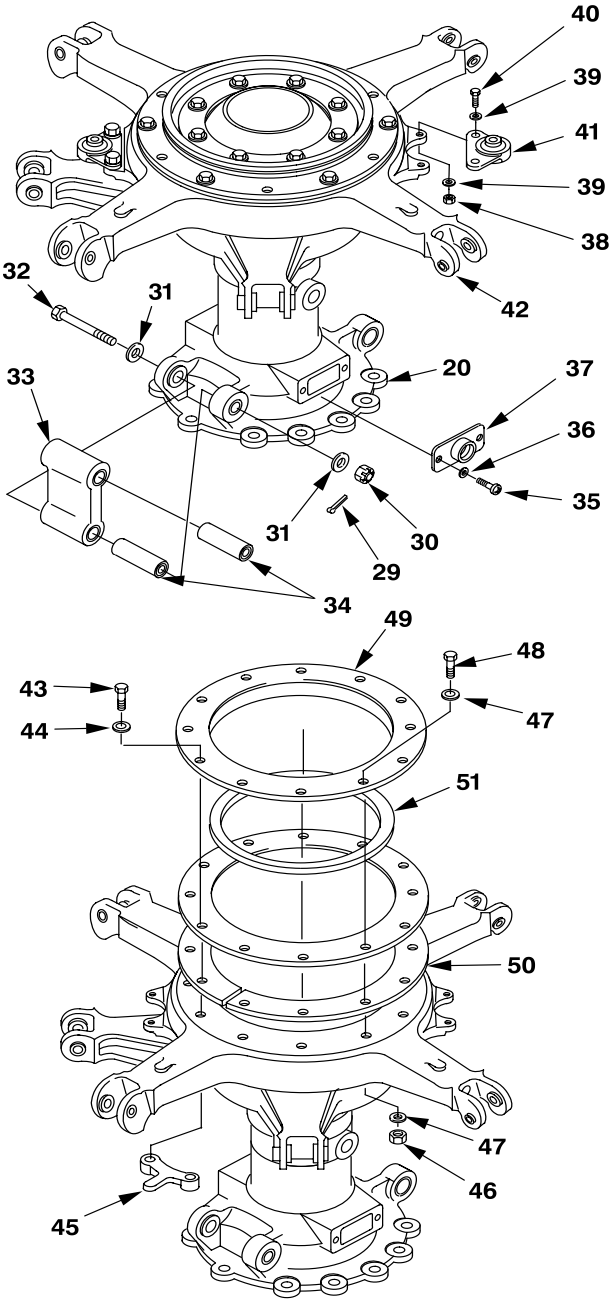
18. Remove 5 nuts (46), 10 washers (47), and 5 bolts (48).

19. Tap lightly to loosen and remove outer cap (49) and split shims (50).

20. Tag split shims (50) to identify location for assembly.

21. Remove seal (51) from outer cap (49).

22. Discard used seal.



406010-222
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5-2-34. MAIN ROTOR SWASHPLATE AND SUPPORT (AVIM) — DISASSEMBLY (CONT)

SUPPORT INNER RING

23. Fabricate two wooden blocks of correct length to fit between support (20) and inner ring (8).

24. Install two wooden blocks between support (20) and inner ring (8).

REMOVE UPPER RACE AND INNER CAP

NOTE

Prior to removal of upper race, match mark upper race to inner ring.

25. Remove lockwire from eight bolts (54) and then remove bolts (54) and washers (55) from inner ring (8).

26. Remove upper race (53) and shims (56).

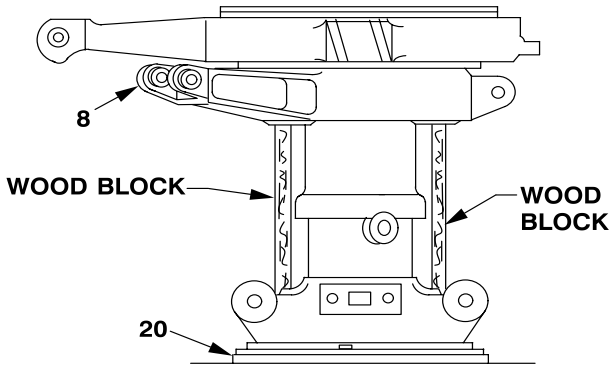
27. Tag shims (56) to identify location for assembly.

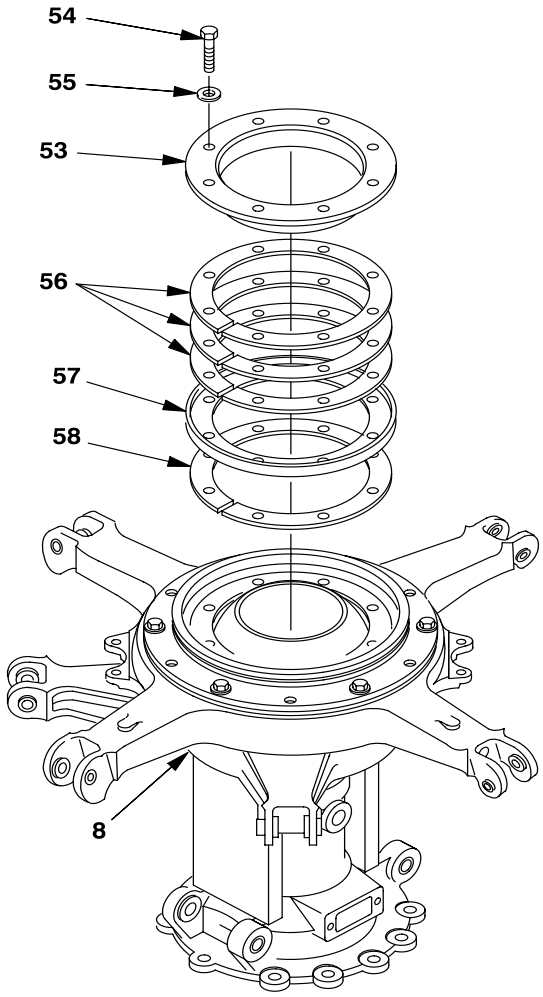
NOTE

Inner cap and shims are secured to inner ring with adhesive and will require a small amount of pressure to remove.

28. Remove inner cap (57) and shims (58).

29. Tag shims (58) to identify location for assembly.





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5-2-34. MAIN ROTOR SWASHPLATE AND SUPPORT (AVIM) — DISASSEMBLY (CONT)

REMOVE OUTER RING

30. Remove outer ring (42) from inner ring (8) by lifting straight up.

31. Remove seal (59) from bottom of outer ring (42).

32. Discard seal.

33. Tap lightly and remove duplex bearing (60) from top of outer ring (42).

REMOVE INNER RING AND SLEEVE

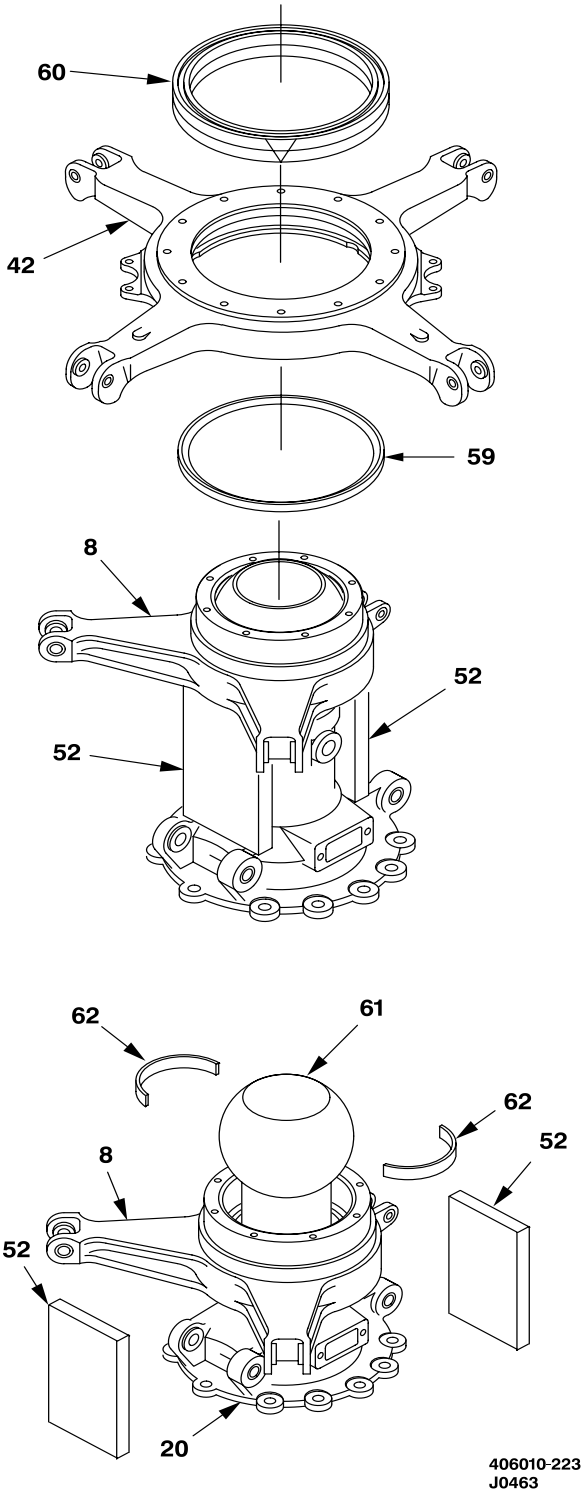
34. Remove two wooden blocks (52).

35. Lower inner ring (8) on sleeve (61) and support (20).

36. Remove two lower pivot bearing halves (62) from inner ring (8).

37. Remove sleeve (61) from support (20).

38. Remove inner ring (8) from sleeve (61).



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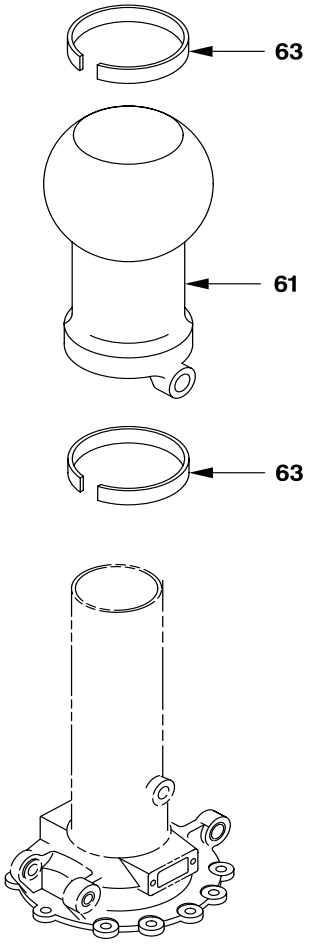
5-2-34. MAIN ROTOR SWASHPLATE AND SUPPORT (AVIM) — DISASSEMBLY (CONT)

REMOVE SLEEVE BEARINGS

NOTE

These sleeve bearings are spring located in-place. End of bearing should be lifted at slot and pulled toward other end of bearing until bearing is completely removed.

39. Remove two bearings (63) from sleeve (61).



406010-224
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END OF TASK

5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Hand Arbor Press (B107)
Freezer (B46)

Material:
Sandpaper (D175)
Sandpaper (D174)
Epoxy Primer Coating (D98)
Abrasive Mats (D1)
Cotton Gloves (D112)
Crocus Cloth (D90)
Chemical Conversion Coating (Alodine 1201) (D57)
Drycleaning Solvent (D199)
Acetone (D2)
Waterproof Barrier Material (D48)
Paint Remover (D148)
Wiping Rag (D164)
Corrosion Preventive Oil (D87)
Masking Tape (D216)
Rubber Gloves (D111)
Acid Brush (D51)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1500-204-23
TM 1-1520-266-23

GO TO NEXT PAGE

5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)

CLEAN PARTS

Drycleaning Solvent

1. Wash all parts except Teflon lined bearings, with drycleaning solvent (D199) and acid brush (D51).

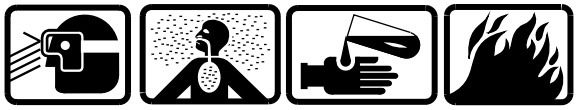
Compressed Air

CAUTION

Duplex bearing shall not be allowed to spin when drying. Spinning the bearings may result in bearing damage.

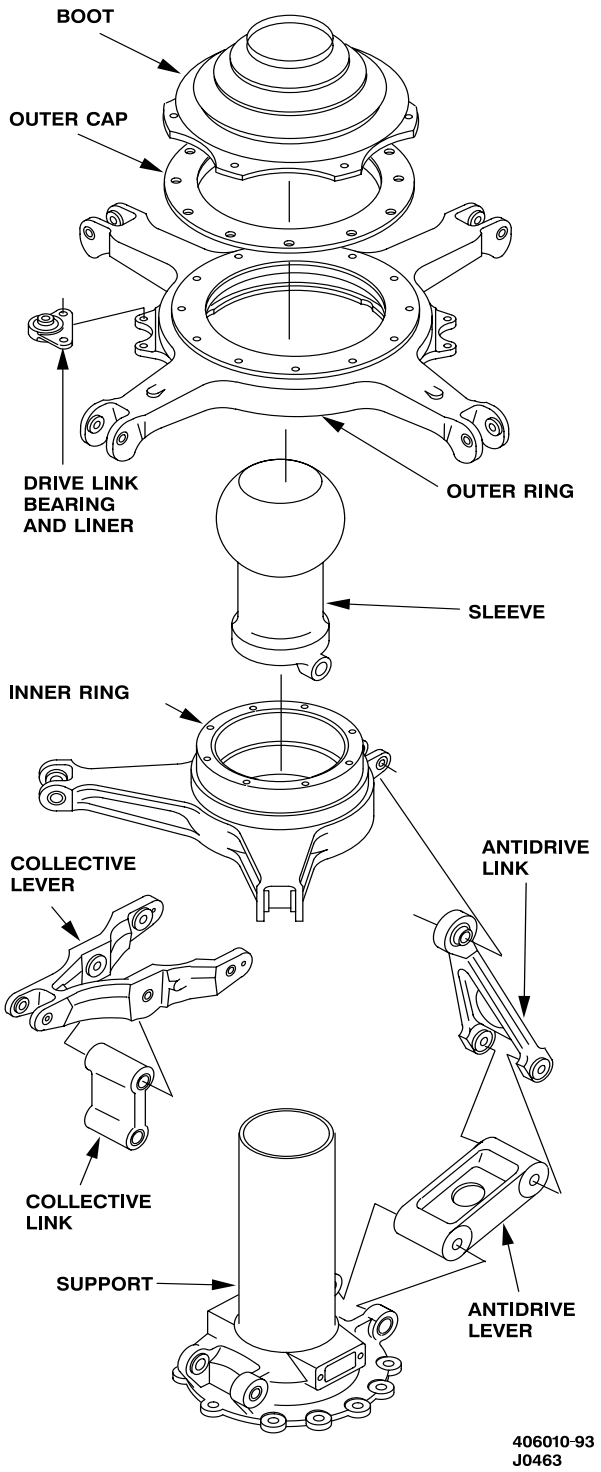
2. Dry parts with filtered compressed air.

3. Wrap duplex bearings in waterproof barrier material (D48).



Acetone

4. Clean Teflon lined bearings with a wiping rag (D164) dampened with acetone (D2).



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5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)

REMOVE PAINT

NOTE

Parts shall be free of paint and primer prior to fluorescent penetrant inspection.

5. Protect bearings, bushings, and unpainted machined surfaces, in parts shown, with masking tape (D216).

Paint Remover

CAUTION

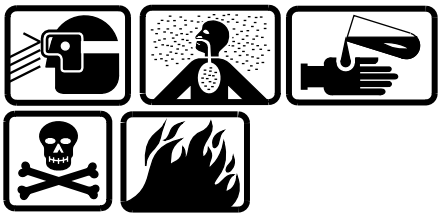
Paint remover shall not be allowed to come in contact with bearings and bushings (Teflon).

6. Apply paint remover (D148) to parts with brush. Allow paint remover to remain on part 15 to 45 minutes.

7. Scrub part with wiping rag (D164) to remove loosened paint.

8. Reapply paint remover as needed until all paint and primer is removed.

9. Rinse parts with water to remove loosened paint and paint remover.



Corrosion Preventive Compound

10. Coat parts with corrosion preventive oil (D87) unless inspection and repair is to start immediately.

INSPECT PARTS FOR WEAR

NOTE

Wear limits are provided to show the required fit between mating parts. It is not intended that all dimensions be checked as a prescribed inspection procedure; however, parts that show evidence of wear shall be checked dimensionally.

11. Inspect parts for wear as shown. If limits are exceeded, part must be repaired or replaced. See figure Main Rotor Swashplate and Components — Wear and Damage Limits (Sheets 1 and 2).

INSPECT PARTS FOR CRACKS

12. Check for cracks using fluorescent penetrant method TM 1-1520-266-23.

12.1. If a crack on the upper bearing race is suspected, refer to TM 1-1520-266-23.

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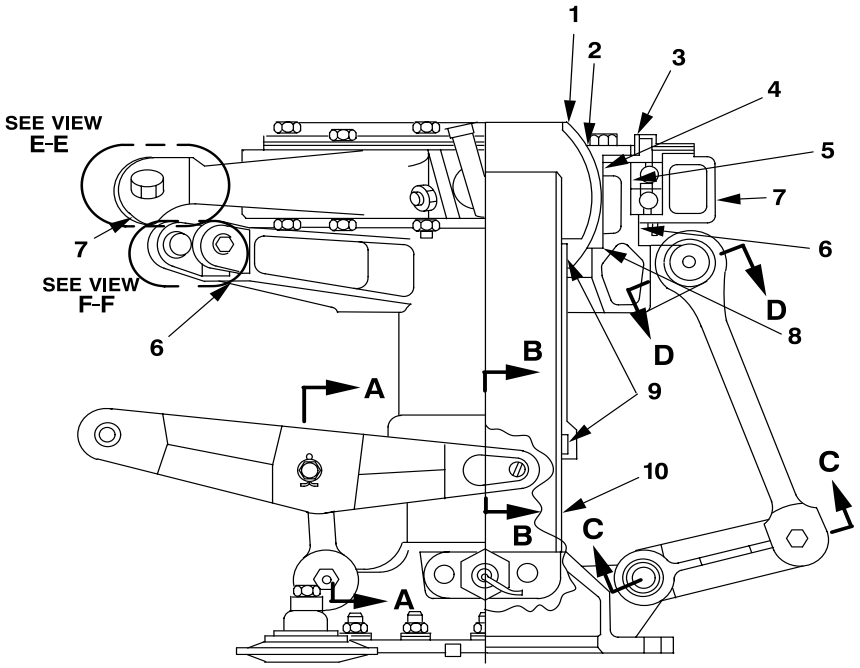
5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)



ITEM	NOMENCLATURE		REPLACE
1	Pivot sleeve sphere (sphere diameter must be spherical within 0.0010)	OD	4.9340
2	Upper bearing	Spherical ID	If Teflon shows any damage or if fabric base is exposed.
3	Inner cap	OD	Groove maximum depth 0.0200 inch.
4	Inner ring	ID	5.0460 after smooth contour cleanup.
5	Inner ring	OD	6.2470 after smooth contour cleanup.
6	Inner ring (P/N 406-010-410-115)	OD	Groove maximum depth 0.0200 inch.
7	Outer ring (P/N 406-010-411-113)	OD	7.5030
8	Lower bearing	Spherical ID	If Teflon shows any damage or if fabric base is exposed.
9	Sleeve bearing	ID	If Teflon shows any damage or if fabric base is exposed.
10	Swashplate support	OD	3.2200

NOTE: All dimensions are in inches.

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Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 1 of 9)

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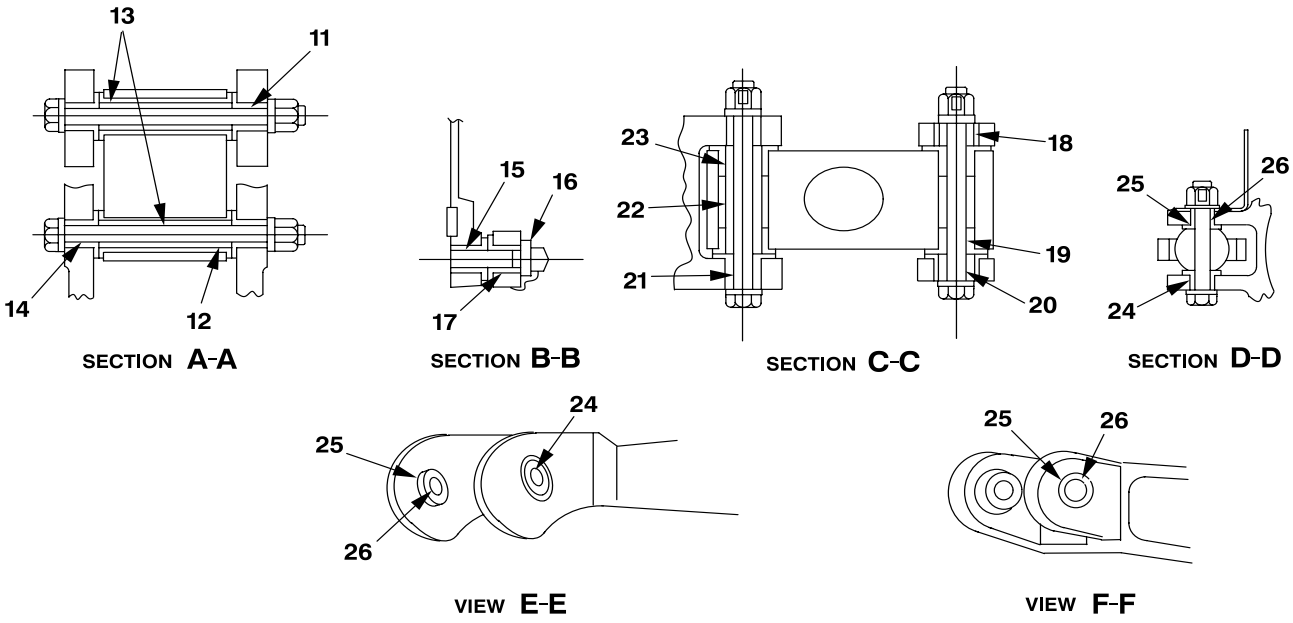
5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)



ITEM	NOMENCLATURE		REPLACE
11	Collective lever bushings	ID	0.3770
12	Link bushings	ID	0.5650
13	Spacers	OD ID	0.5600 0.3770
14	Swashplate support boss bushings	ID	0.3758
15	Sleeve bushings	ID	0.3780
16	PIn	OD	0.3720
17	Collective lever bushings	ID	0.3790
18	Link bushings	ID	0.5030
19	Lever bushings	ID	0.3150
20	LInk spacers	OD ID	0.4980 0.3150
21	Swashplate support boss bushings	ID	0.3758
22	Lever spacer	OD ID	0.5600 0.3770
23	Lever bushings	ID	0.5650
24	BushIng (P/N 406-010-457-101)	ID	0.3135
25	Bushing (P/N 406-010-457-103)	ID	0.4694
26	Spacer (P/N 406-010-458-101)	OD ID	0.4674 0.3130

406010-136-2
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Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 2 of 9)

GO TO NEXT PAGE

5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)

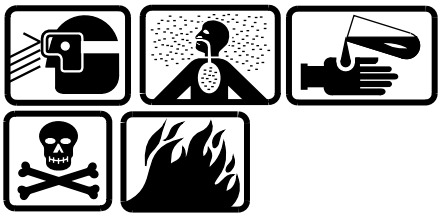
INSPECT AND REPAIR UPPER BEARING RACE, PIVOT BEARING, AND SLEEVE BEARING

13. Inspect upper bearing race, pivot bearing, and sleeve bearings for damage. Replace if limits are exceeded.See figure Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 3).

14. Inspect Teflon lining on bearings: if lining is worn through or loose, replace bearing.

Sanding Operations

15. Polish out repairable damage on metal part of bearing with 400 grit sandpaper (D175).



Chemical Conversion Materials

16. Apply Alodine 1201 (D57) to repaired areas.

INSPECT

INSPECT AND REPAIR MAIN ROTOR CONTROLS

17. Inspect and repair collective lever (Task 5-2-19).

18. Inspect and repair collective link (Task 5-2-22).

19. Inspect and repair antidrive lever (Task 5-2-26).

20. Inspect and repair antidrive link (Task 5-2-29).

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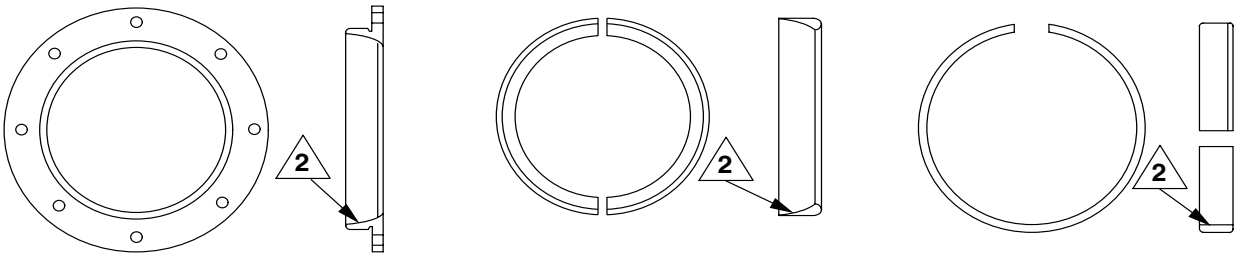
5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)



UPPER BEARING RACE | PIVOT BEARING | SLEEVE BEARING

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL	0.010 In. before and after repair
CORROSION	0.005 In. before and 0.010 In. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.010 Sq. in.
NUMBER OF REPAIRS	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.
BORES	0.002 Inch for full circumference

NOTES:

1. No cracks are permitted.
2. Wear damage of Teflon fabric liner must not penetrate liner.

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Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 3 of 9)

GO TO NEXT PAGE

5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)

20.1. If a crack on the inner cap or the outer cap is suspected, refer to TM 1-1520-266-23.

INSPECT AND REPAIR INNER AND OUTER CAP

21. Inspect inner and outer cap for damage to limits shown. Replace if limits are exceeded. See figure Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 4).

Sanding Operations

22. Polish out repairable damage with 400 grit sandpaper (D175).

Chemical Conversion Materials

23. Apply Alodine 1201 (D57) to repaired areas.

24. Check for cracks using fluorescent penetrant method in accordance with TM 1-1520-266-23.

24.1. If a crack on the surface of the drive link or retainer is suspected, refer to TM 1-1520-266-23.

INSPECT

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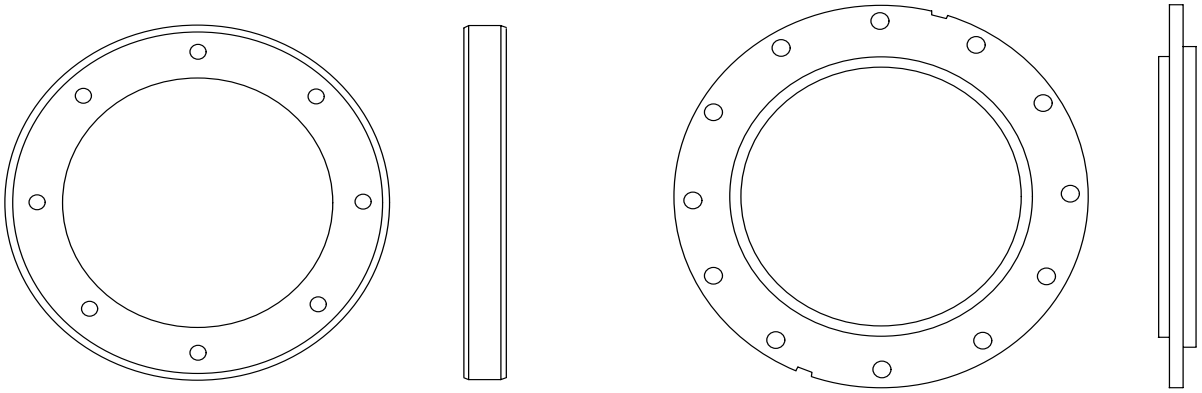
5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)



INNER CAP

OUTER CAP

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL	0.010 In. before and after repair
CORROSION	0.005 In. before and 0.010 In. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.10 Sq. in.
NUMBER OF REPAIRS	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.
BORES	0.002 inch for full circumference

NOTE. No cracks are permitted.

406010-94
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Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 4 of 9)

GO TO NEXT PAGE

5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)

INSPECT AND REPAIR DRIVE LINK BEARING AND LINER

25. Inspect bearing and liner for damage to limits shown. Replace if limits are exceeded. See figure Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 5).

Sanding Operations

26. Polish out repairable damage with 400 grit sandpaper (D175).

27. Check for cracks using fluorescent penetrant method in accordance with TM 1-1520-266-23.

27.1. If a crack on the surface of the main rotor pivot sleeve is suspected, refer to TM 1-1520-266-23.

INSPECT

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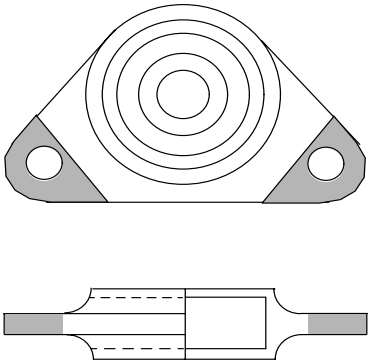
5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)



DRIVE LINK BEARING AND LINER

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.005 In. before and after repair	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.05 Sq. in.	Two per side
NUMBER OF REPAIRS	One per lug	Two per side
EDGE CHAMFER TO REMOVE DAMAGE	0.010 In.	0.020 In.
BORES	0.002 Inch for 1/4 circumference	
BEARING WEAR:		
Axial:	0.015 In.	
Radial:	0.015 In.	

NOTE: No cracks are permitted.

406010-20
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Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 5 of 9)

GO TO NEXT PAGE

5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)

INSPECT SLEEVE ASSEMBLY

28. Inspect sleeve assembly for damage to limits shown. Replace if limits are exceeded. See figure Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 6).

29. Inspect tungsten carbide coating on Uniball for wear and damage. If coating is worn through or penetrated by damage, replace sleeve.

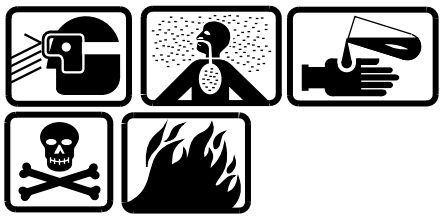
30. Inspect two bushings in sleeve for wear and damage. If Teflon lining in bushing is loose, worn through, or penetrated by damage, replace bushing.

31. Check for cracks using fluorescent penetrant method in accordance with TM 1-1520-266-23.

REPAIR DAMAGE TO SLEEVE

Sanding Operations

32. Polish out repairable damage to uncoated portion of sleeve with 320 grit sandpaper (D174) followed by 400 grit sandpaper (D175).



Chemical Conversion Materials

33. Apply Alodine 1201 (D57) to repaired areas.

34. Smooth out minor damage to coated area of sleeve with crocus cloth (D90).

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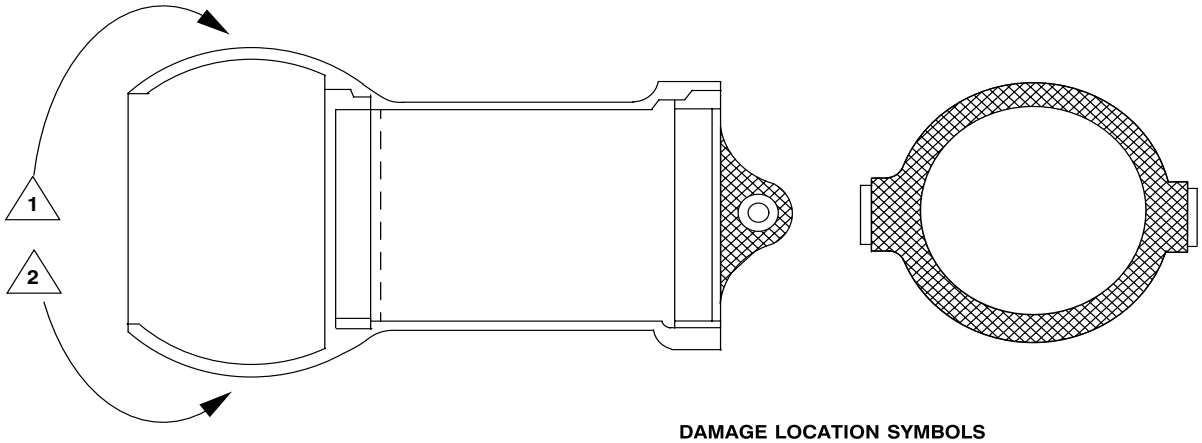
5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.010 In. before and after repaIr	0.020 In. before and after repaIr
MECHANICAL (BEARING GROOVES)	0.010 In. before and after repair	
CORROSION	0.005 In. before and 0.010 In. after repair	0.010 In. before and 0.020 after repair
CORROSION (BEARING GROOVES)	0.005 In. before and 0.010 In. after repair	
MAXIMUM AREA PER FULL DEPTH REPAIR	0.10 Sq. In.	Not crItIcal
NUMBER OF REPAIRS	One per lug	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.040 In.	0.040 In.
BORES	0.001 Inch for 1/4 circumference	

NOTES:
1. No wear through of tungsten carbide surface permitted.
2. Damage not penetratIng surface Is acceptable, If raIsed edges are blended to match surface.
3. No cracks are permitted.

406010-17
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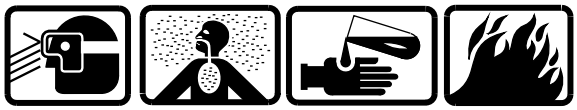
Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 6 of 9)

GO TO NEXT PAGE

5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)

REPLACE BUSHING IN SLEEVE

35. Using hand arbor press (B107) and appropriate pressing plug, press bushing (1) out of sleeve (2).



Acetone

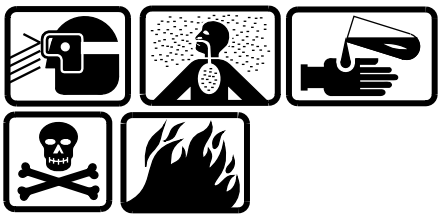
36. Remove epoxy primer coating (D98) from bushing bore with acetone (D2) and abrasive mats (D1).

37. Inspect bushing bore for damage; maximum allowable: **0.001 inch** for one-fourth circumference.

38. Using freezer (B46) freeze replacement bushing (1).

WARNING

Frozen bushing shall be handled with white cotton gloves (D112) to prevent injury to skin. If injury occurs, seek medical aid.

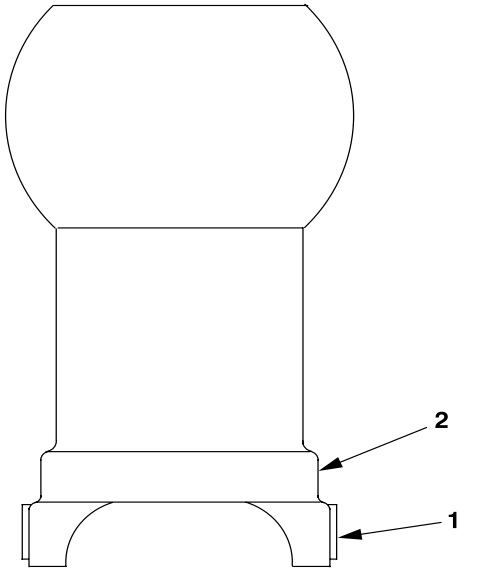


Epoxy Primer Coating

39. Coat bushing bore in sleeve (2) and mating surfaces of bushing (1) with epoxy primer coating (D98).

40. Using hand arbor press (B107) and appropriate pressing plug, press bushing (1) into sleeve (2) while epoxy primer coating (D98) is still wet.

INSPECT



406010-95
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5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)

INSPECT SUPPORT ASSEMBLY

41. Inspect support assembly for damage to limits shown. Replace if limits are exceeded. See figure Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 7).

41.1. If a crack on the surface of the support assembly is suspected, refer to TM 1-1520-266-23.

42. Inspect tungsten carbide coated area for wear and damage. If coating is worn through or penetrated by damage, replace support.

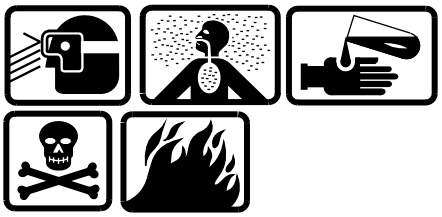
43. Inspect four bushings in support for wear. If inside diameter of bushing exceeds **0.3758 inch**, replace bushing.

44. Check for cracks using fluorescent penetrant method in accordance with TM 1-1520-266-23.

REPAIR DAMAGE TO SUPPORT

Sanding Operations

45. Polish out repairable damage to uncoated portion of support with 320 grit sandpaper (D174) followed by 400 grit sandpaper (D175).



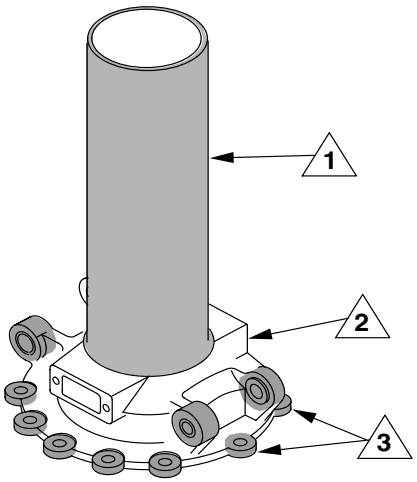
Chemical Conversion Materials

46. Apply Alodine 1201 (D57) to repaired areas.

47. Smooth out minor damage to coated area of support with crocus cloth (D90).

GO TO NEXT PAGE

5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)



SUPPORT ASSEMBLY

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH		
MECHANICAL	0.010 in. before and after repair	0.030 in. before and after repair	1
CORROSION	0.005 in. before and 0.010 in. after repair	0.015 in. before and 0.030 in. after repair	1
MAXIMUM AREA PER FULL DEPTH REPAIR	0.100 sq. in.	0.150 sq. in.	–
NUMBER OF REPAIRS	1 Per lug	3/None overlapping	–
EDGE CHAMFER	0.030 in.	0.050 in.	–
BUSHING BORE	0.001 in. for 1/4 circumference		
MOUNT BOLT BORE	0.002 in. for full circumference		

NOTES:

1. Damage must not penetrate tungsten carbide surface. Damage not penetrating the surface should be lightly polished with fine crocus cloth.
2. Minimum radius of repair is 0.35 inch.
3. Minimum radius of repair is 0.50 inch.
4. No cracks are permitted.

406010-135
J0463

Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 7 of 9)

GO TO NEXT PAGE

5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)

REPLACE BUSHING IN SUPPORT

48. Using hand arbor press (B107) and appropriate pressing plug, press bushing (3) out of support (4).

Acetone

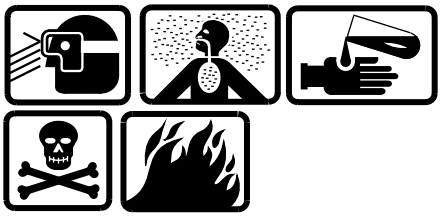
49. Remove primer from bushing bore with acetone (D2) and abrasive mats (D1).

50. Inspect bushing bore for damage; maximum allowable: 0.001 inch for one-fourth circumference.

51. Using freezer (B46), freeze replacement bushing (3).

WARNING

Frozen bushing shall be handled with cotton gloves (D112) to prevent injury to skin. If injury occurs, seek medical aid.

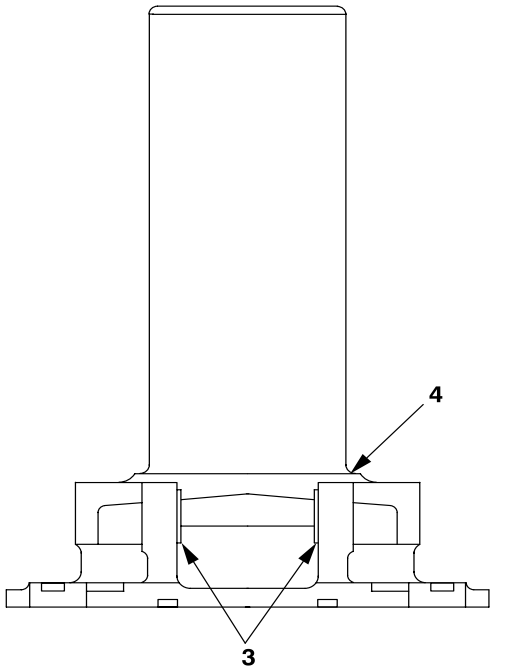


Epoxy Primer Coating

52. Coat bushing bore in support (4) and mating surfaces of bushing (3) with epoxy primer coating (D98).

53. Using hand arbor press and appropriate pressing plug press bushing (3) into support (4) while epoxy primer coating (D98) is still wet.

INSPECT



406010-96
J0463

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5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)

INSPECT INNER RING

54. Inspect inner ring for damage to limits shown. Replace if limits are exceeded. See figure Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 8).

55. Inspect three spacers P/N 406-010-458-101 to limits shown. Replace if limits are exceeded.

56. Inspect three bushings P/N 406-010-457-103 for wear. Replace if limits are exceeded.

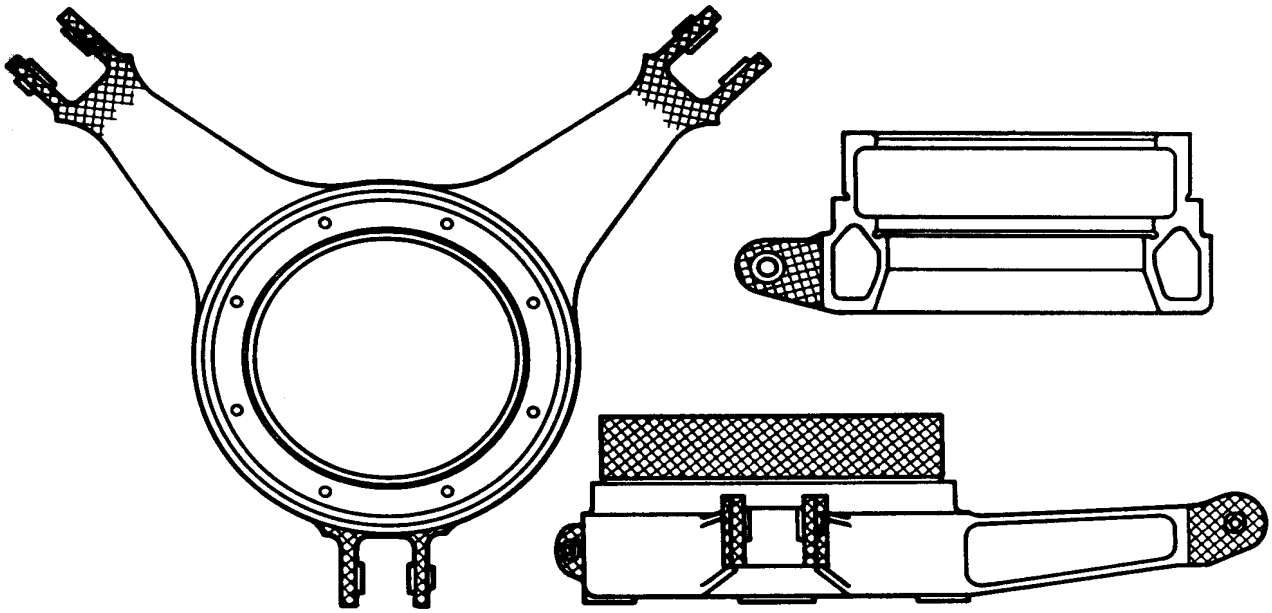
57. Inspect eight threaded inserts for damage. If limits are exceeded, replace insert.

58. Check for cracks using fluorescent penetrant method in accordance with TM 1-1520-266-23.

58.1. If a crack on the surface of the inner or outer ring is suspected, refer to TM 1-1520-266-23.

GO TO NEXT PAGE

5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.010 In. before and after repair	0.030 In. before and after repair
CORROSION	0.005 In. before and 0.010 in. after repair	0.015 In. before and 0.030 in. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.10 Sq. in.	Not critical
NUMBER OF REPAIRS	One per lug	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.040 In.	0.080 In.
BORES	0.001 Inch for 1/4 circumference	
THREAD DAMAGE:		
Depth:	1/3 Of thread	
Length:	1/10 Inch	
Number:	One per threaded segment	

NOTE: No cracks are permitted.

406010-18
H5304

Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 8 of 9)

GO TO NEXT PAGE

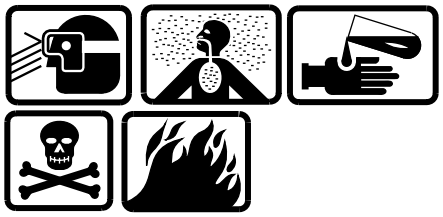
5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)

REPAIR DAMAGE TO INNER RING

Sanding Operations

59. Polish out repairable damage to inner ring with 320 grit sandpaper (D174) followed by 400 grit sandpaper (D175).

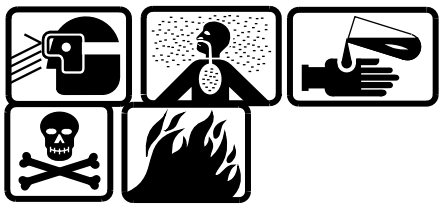
60. Polish machined areas of inner ring with crocus cloth (D90).



Chemical Conversion Materials

61. Apply Alodine 1201 (D57) to repaired areas.

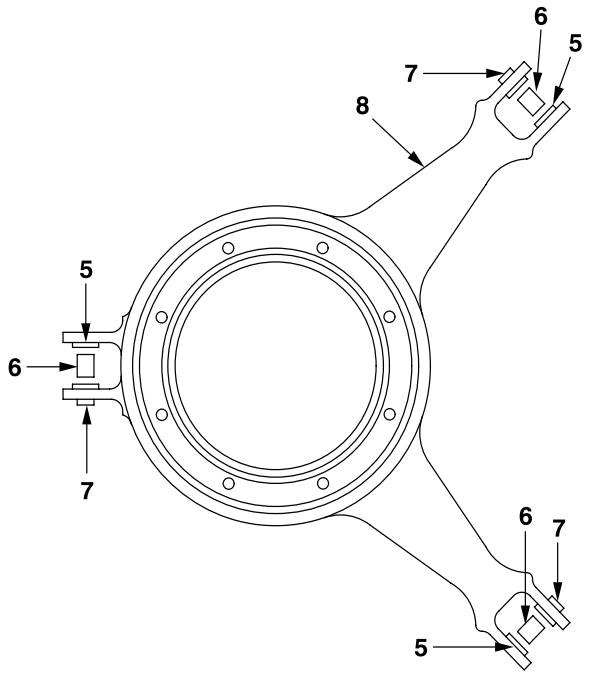
REPLACE THREADED INSERTS



Epoxy Primer Coating

62. Remove and install threaded inserts (TM 1-1500-204-23). Coat replacement threaded insert with epoxy primer coating (D98) prior to installing.

REPLACE BUSHINGS IN INNER RING



406010-98
J0464

63. Remove spacers (6) and using hand arbor press (B107) and appropriate pressing plug, press bushings (7) from inner ring (8).

64. Using hand arbor press (B107) and appropriate pressing plug, press bushings (5) out of inner ring (8).

Acetone

65. Remove epoxy primer coating (D98) from bushing bore with acetone (D2) and abrasive mats (D1).

GO TO NEXT PAGE

5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)

66. Inspect bushing bore for damage; maximum allowable is **0.001 inch** for one-fourth circumference.

67. Using freezer (B47) freeze replacement bushings (5 and 7).

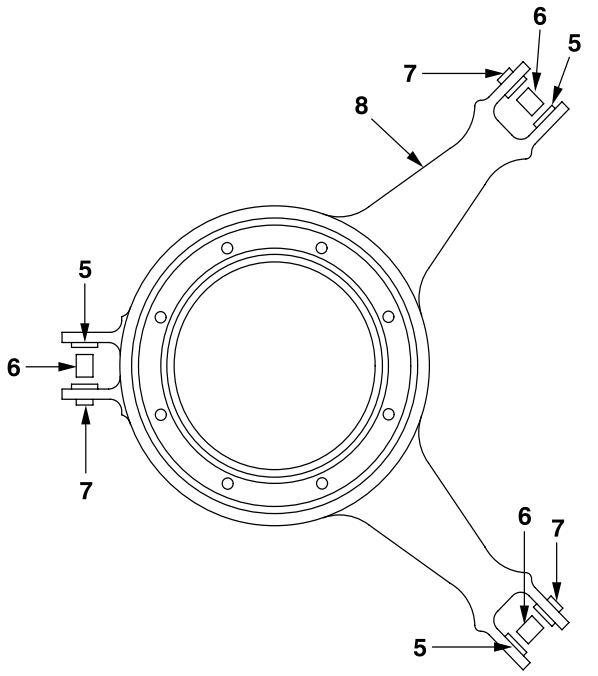
WARNING

Frozen bushings shall be handled with cotton gloves (D112) to prevent injury to skin. If injury occurs, seek medical aid.

68. Coat bushing bore in inner ring (8) and mating surfaces of bushings (5) and (7) with epoxy primer coating (D98).

69. Using hand arbor press (B107) and appropriate pressing plug, press bushings into inner ring (8), while epoxy primer coating (D98) is still wet.

70. Install spacers (6) in bushings (7) and retain in place with string or tape.



406010-98
J0464

INSPECT OUTER RING

71. Inspect outer ring to limits shown. Replace if limits are exceeded. See figure Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 9).

72. Inspect four spacers P/N 406-010-458-101 to limits shown. Replace if limits are exceeded.

73. Inspect four bushings P/N 406-010-457-103 for wear. If inside diameter of bushing exceeds limits shown, replace bushing.

74. Inspect four bushings P/N 406-010-457-101 for wear. If inside diameter of bushing exceeds limits shown, replace bushing.

75. Inspect for cracks using fluorescent penetrant method in accordance with TM 1-1520-266-23.

REPAIR DAMAGE TO OUTER RING


Sanding Operations

76. Polish out repairable damage to outer ring with 320 grit sandpaper (D174) followed by 400 grit sandpaper (D175).

77. Apply Alodine 1201 (D57) to repaired areas.

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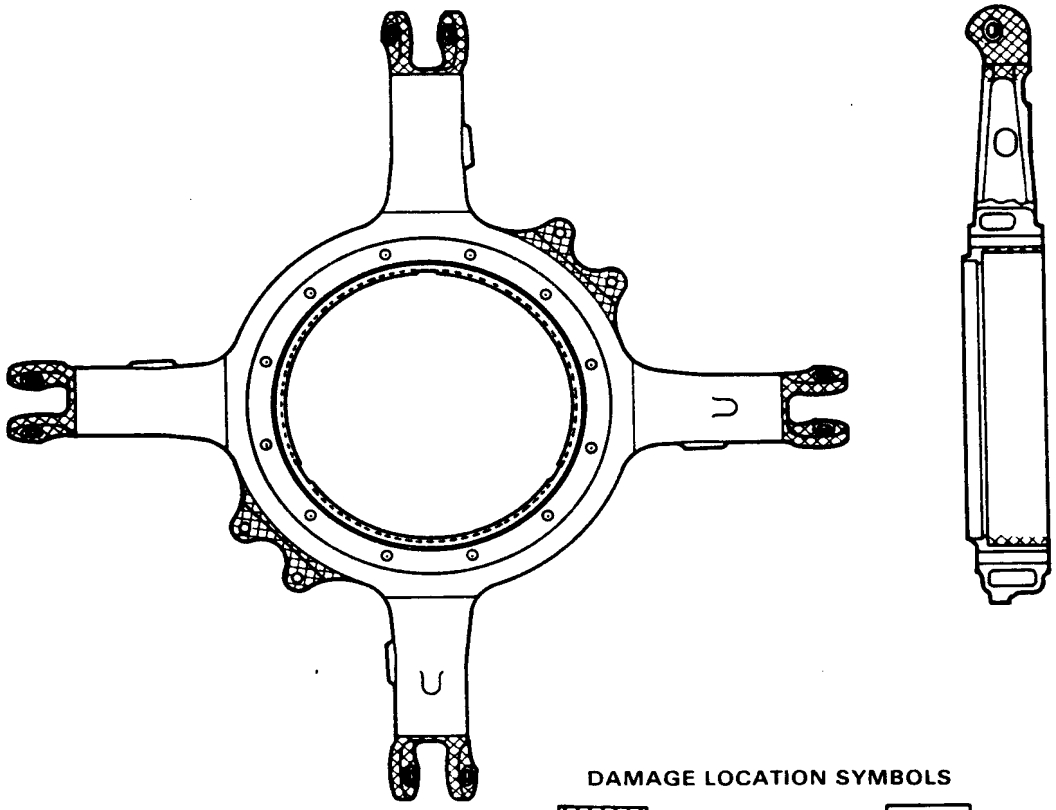
5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.010 In. before and after repair	0.030 In. before and after repair
CORROSION	0.005 In. before and 0.010 in. after repair	0.015 In. before and 0.030 in. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.10 Sq. in.	Not critical
NUMBER OF REPAIRS	1 Per lug	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.020 In.	0.040 In.
BORES	0.001 Inch for 1/4 circumference	

406010-19
H5304

Main Rotor Swashplate and Support Components — Wear and Damage Limits (Sheet 9 of 9)

GO TO NEXT PAGE

5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)

REPLACE BUSHINGS IN OUTER RING

NOTE

When replacing bushings (9), adjacent bushings (10) should be removed. Bushings (9 and 10) shall be installed in position shown.

78. Remove spacers (11) and press bushings (10) from outer ring (12) using hand arbor press (B107) and appropriate pressing plug.

79. Press bushings (9) out of outer ring (12) using arbor press and appropriate pressing plug.

Acetone

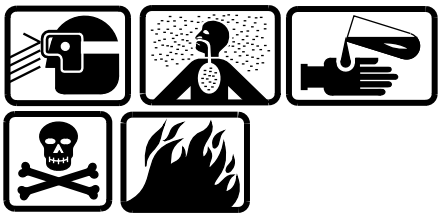
80. Remove primer from bushing bore with acetone (D2) and abrasive mats (D1).

81. Inspect bushing bore for damage; maximum allowable is 0.001 inch for one-fourth circumference.

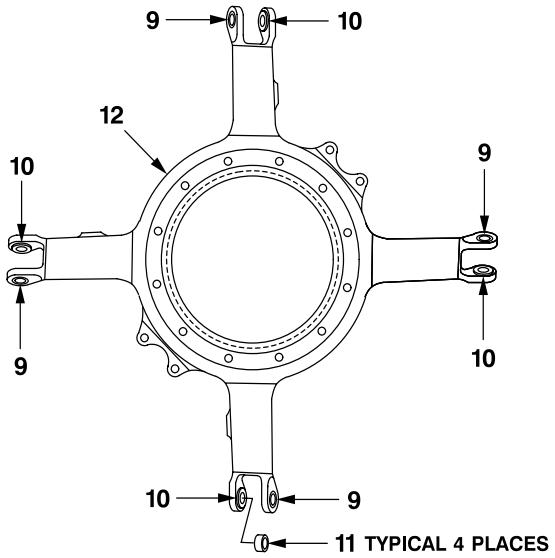
82. Using freezer (B47), freeze replacement bushings (9 and 10).

WARNING

Frozen bushings shall be handled with cotton gloves (D112) to prevent injury to skin. If injury occurs, seek medical aid.



Epoxy Primer Coating



406010-97
J0464

83. Coat bushing bore in outer ring (12) and mating surfaces of bushings (9 and 10) with epoxy primer coating (D98).

84. Using hand arbor press (B107) and appropriate pressing plug, press bushings (9 and 10) into outer ring (12), while epoxy primer coating (D98)is still wet.

85. Install spacers (11) in bushings (10) and retain in place with string or tape.

INSPECT

GO TO NEXT PAGE

5-2-35. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — CLEANING/ INSPECTION/REPAIR (CONT)

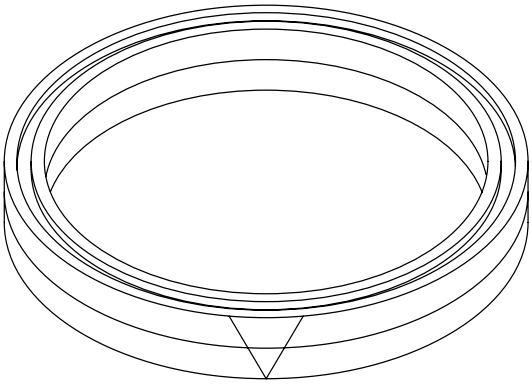
INSPECT DUPLEX BEARING

86. Visually inspect duplex bearing for pitting, spalling, or scoring of bearing balls or races.

87. Place bearing on a clean smooth surface. Apply hand pressure to upper surface of bearing while rotating to check for roughness.

88. Replace duplex bearing for any visual defects or roughness found in preceding steps. Duplex bearing is a matched set and must be replaced as a set.

INSPECT



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J0464

END OF TASK

5-2-36. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — PAINTING

This task covers: Painting (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

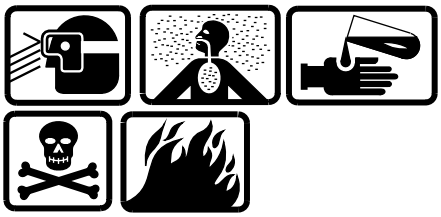
Tools:
Powertrain Tool Kit (B180)
Paint Spray Gun (B61)

Material:
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Aliphatic Naphtha (D141)
Wiping Rag (D164)
Masking Tape (D216)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

Equipment Condition:
Special Dust-Free Environment

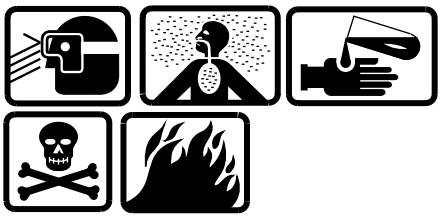
PREPARE FOR PAINT



Naphtha/Naphthalene, TT-N-97

1. Clean parts as required with aliphatic naphtha (D141). Dry with wiping rag (D164).

2. Mask off areas of parts not to be painted, as shown, with masking tape (D216). See figure Main Rotor Swashplate and Support Components — Painting.



Epoxy Primer Coating

3. Apply one coat of epoxy primer coating (D98). Allow to dry 1 to 8 hours before painting.

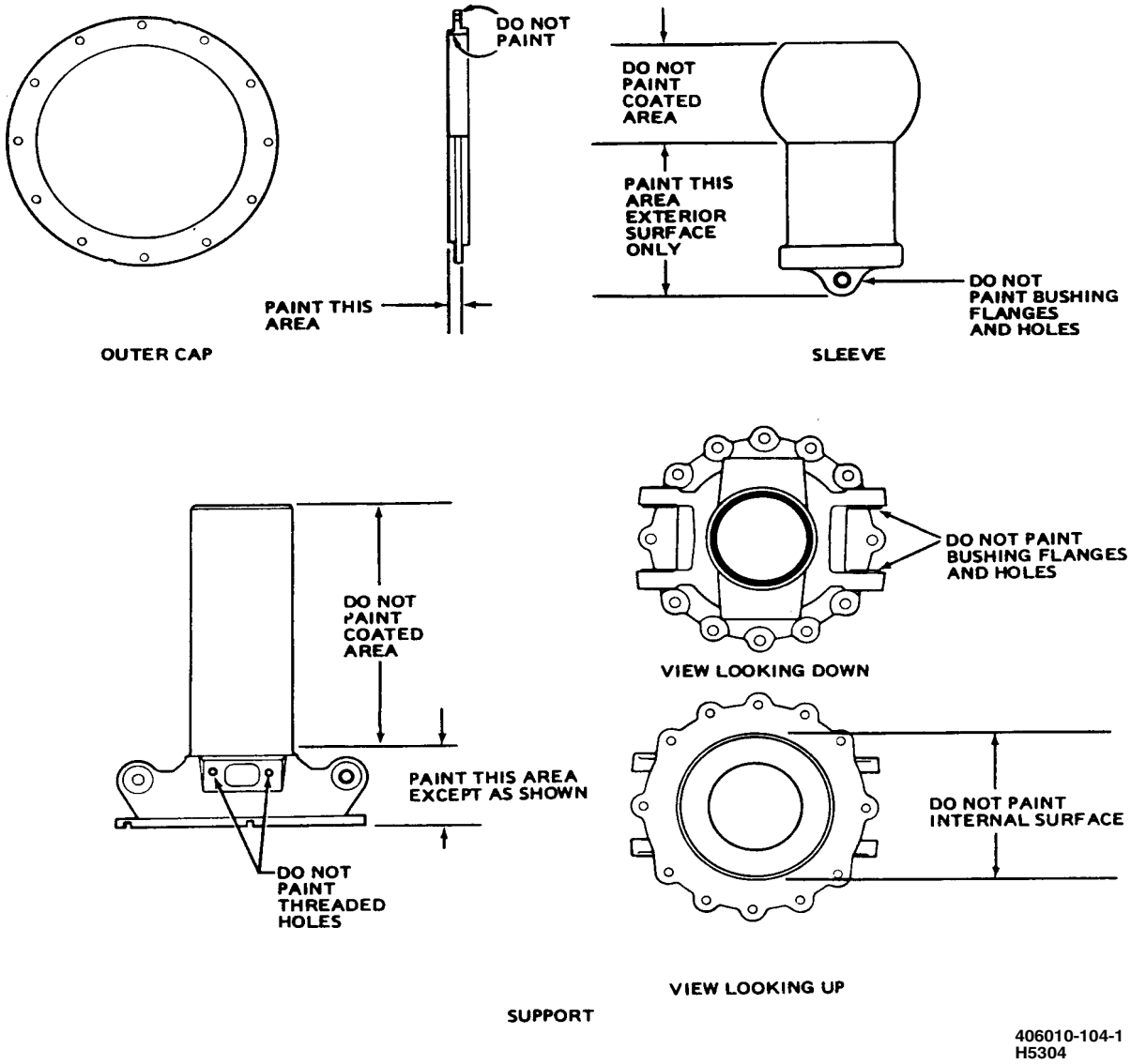
Acrylic Lacquer

4. Apply two coats of black acrylic lacquer (D124). Allow to dry 1 to 8 hours between coats.

INSPECT

GO TO NEXT PAGE

5-2-36. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — PAINTING (CONT)



Main Rotor Swashplate and Support Components — Painting (Sheet 1 of 3)

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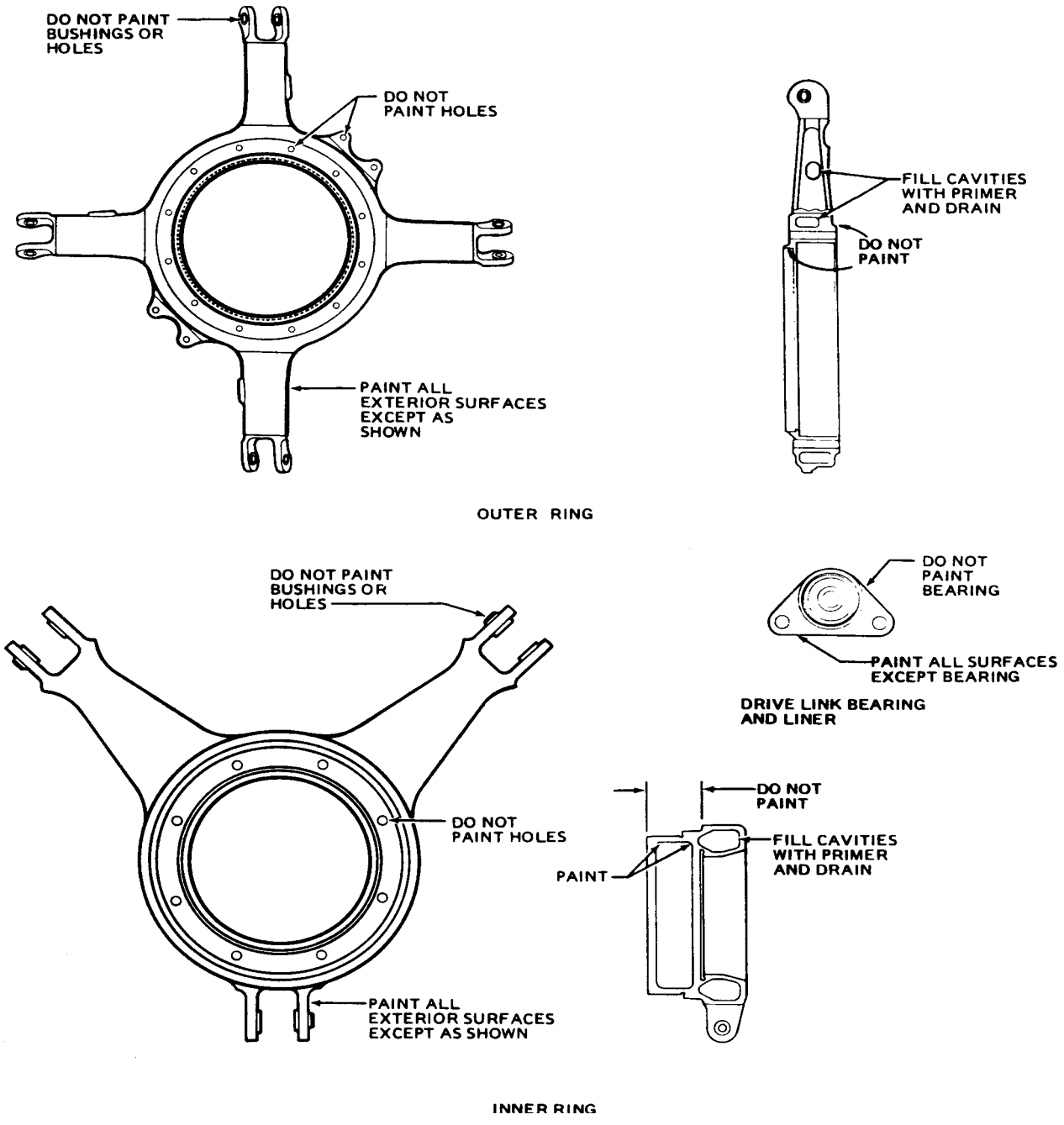
5-2-36. MAIN ROTOR SWASHPLATE AND SUPPORT COMPONENTS (AVIM) — PAINTING (CONT)



Main Rotor Swashplate and Support Components — Painting (Sheet 2 of 3)

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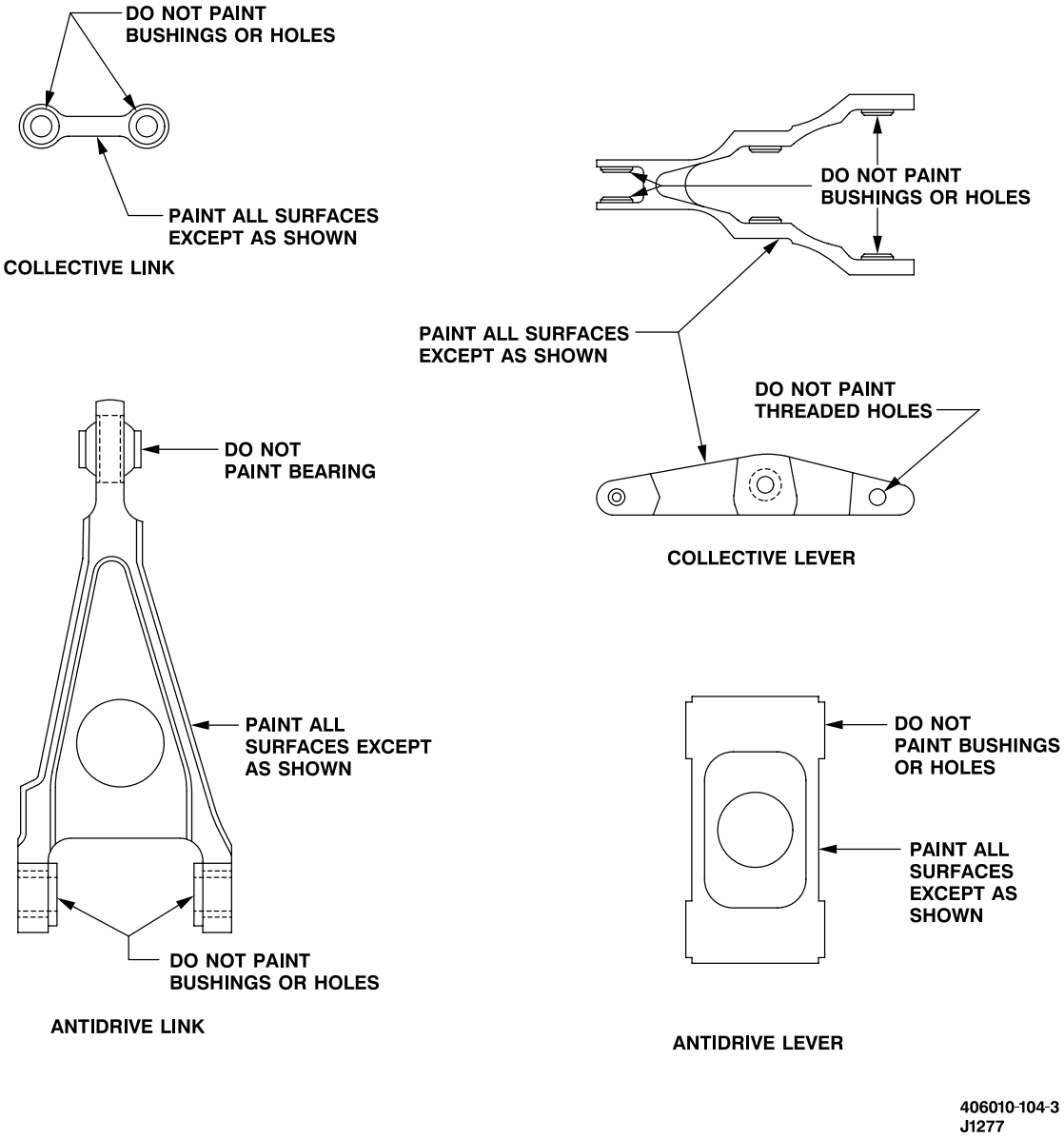


Main Rotor Swashplate and Support Components — Painting (Sheet 3 of 3)

END OF TASK

5-2-37. MAIN ROTOR SWASHPLATE AND SUPPORT (AVIM) — ASSEMBLY

This task covers: Assembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Torque Wrench (B237)
Torque Wrench (B236)
Outside Micrometer Caliper Set (B12)
Goggles (B55)
Swashplate Friction Adjustment Studs (Workaid H-29)
Spring Scale (B121)
Heat Gun (B59)
Rawhide Mallet (B96)
Heat Protective Gloves (B54)
Dial Indicator (B37)

Material:
Drycleaning Solvent (D199)
Grease (D113)
Corrosion Preventive Compound (CPC) (D82)
Corrosion Preventive Compound (CPC) (D83)
Lockwire (D132)
Rubber Adhesive (D33)
Wiping Rag (D164)
Acetone (D2)
Rubber Gloves (D111)
Adhesive (D12)

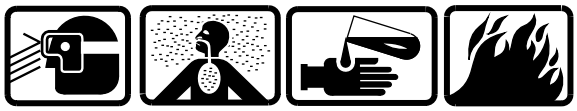
Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1500-204-23

GO TO NEXT PAGE

5-2-37. MAIN ROTOR SWASHPLATE AND SUPPORT (AVIM) — ASSEMBLY (CONT)

INSTALL UPPER SEAL



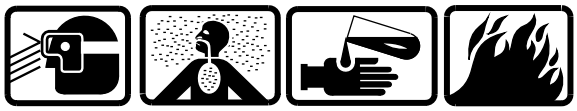
Adhesive

1. Apply rubber adhesive (D33) to mating surface of outer cap (1) and seal (2).

NOTE

Adhesive shall be allowed to dry to a tacky stage before installing seal.

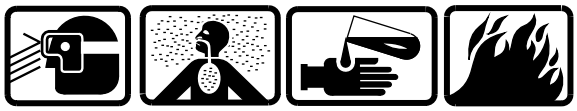
2. Install seal (2) in bottom of outer cap (1) using rawhide mallet (B96).



Acetone

3. Remove excess adhesive with wiping rag (D164) dampened with acetone (D2).

INSTALL AND SHIM DUPLEX BEARING



Drycleaning Solvent

4. Wash duplex bearing (3) with drycleaning solvent (D199). Air dry.

Grease

5. Hand pack duplex bearing (3) with grease (D113).

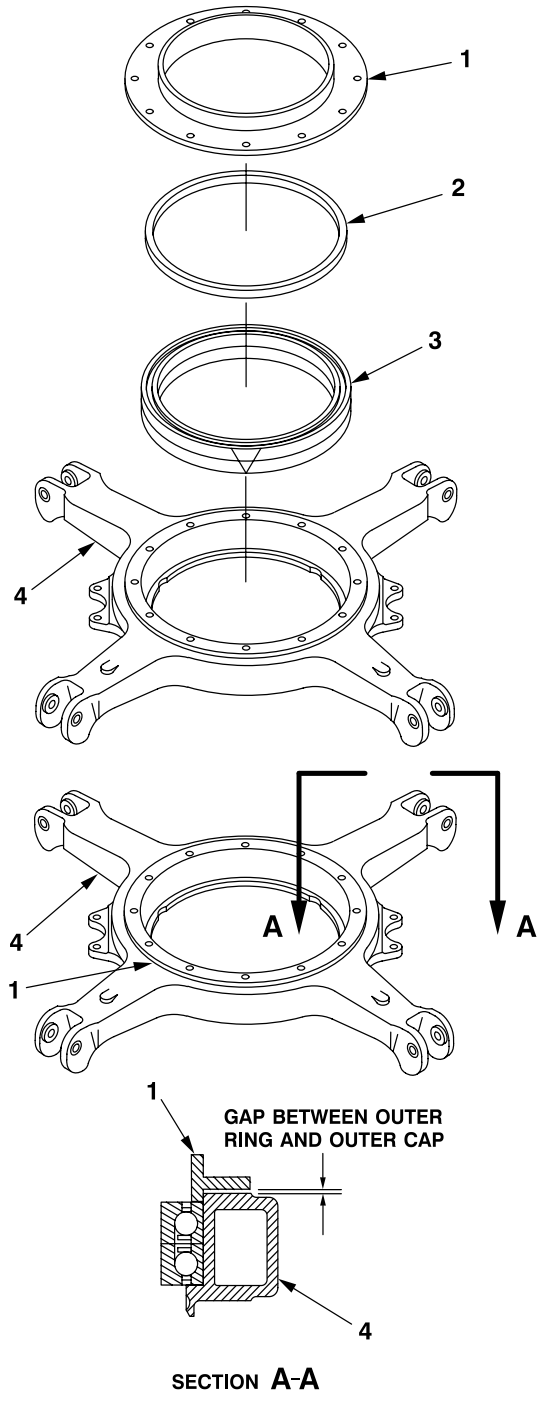
6. Apply light film of grease (D113) to outer surfaces of duplex bearing (3) and inner surface of outer ring (4).

7. Align V marks on outer race of duplex bearing (3) and install in outer ring (4). Ensure duplex bearing (3) is fully seated.

INSPECT

8. Place outer cap (1) on outer ring (4).

9. Press down on outer cap (1) and measure gap between outer cap (1) and outer ring (4) with thickness gage. Record dimension.



SECTION A-A

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J2694

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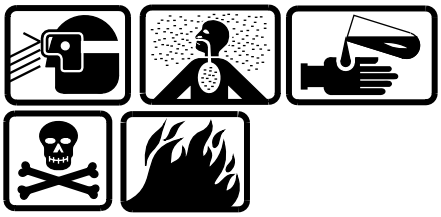
10. Prepare shims (5) to measure **0.004 to 0.008 inch** less than measurement taken in step 9.

INSPECT



Corrosion Preventive Compound

11. Place shims (5) on outer ring (4). Apply CPC (D82) to ends of shims (5).

NOTE

- Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.
- Ensure that grease fitting in outer cap is located in area shown on outer ring.

12. Place outer cap (1) on outer ring (4) and secure with 5 bolts (6), 10 washers (7), and 5 nuts (8).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nuts and bolts and the correct lockwiring of bolts are characteristics critical to flight safety.

13. Torque nuts (8) **75 TO 95 INCH-POUNDS**.

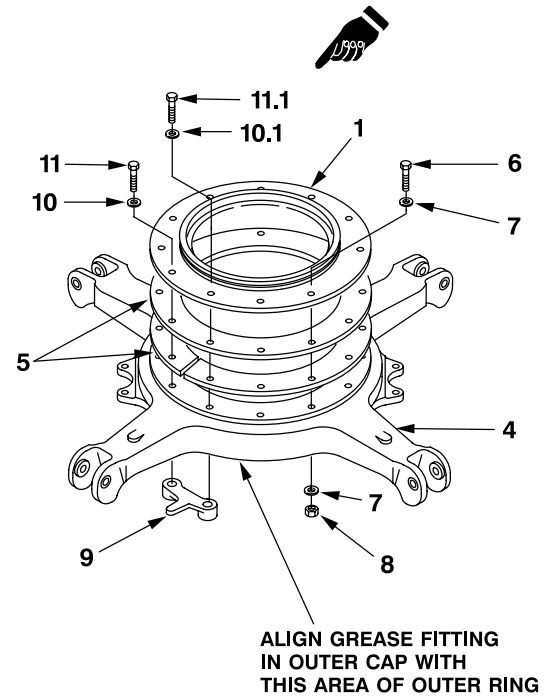
14. Secure interrupter (9) to outer ring (4) with washers (10 and 10.1) and bolts (11 and 11.1).

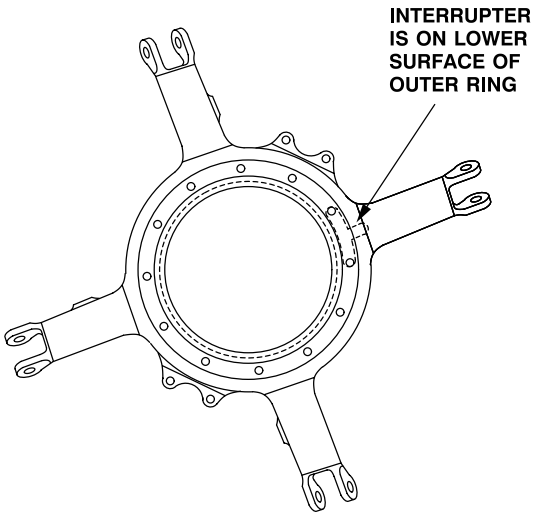
15. Torque bolts (11 and 11.1) **75 TO 95 INCH-POUNDS**.

15.1. Remove bolt (11.1) and washer (10.1).

NOTE

Bolt (11.1) and washer (10.1) will be permanently installed in Task 5-2-6.





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J2694

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INSTALL LOWER SEAL

Adhesive

16. Apply adhesive (D33) to mating surfaces of outer ring (4) and seal (12).

NOTE

Adhesive shall be allowed to dry to a tacky stage before installing seal.

17. Install seal (12), with lip facing down, in bottom of outer ring (4).

Acetone

18. Remove excessive adhesive with wiping rags (D164) dampened with acetone (D2).

INSTALL OUTER RING

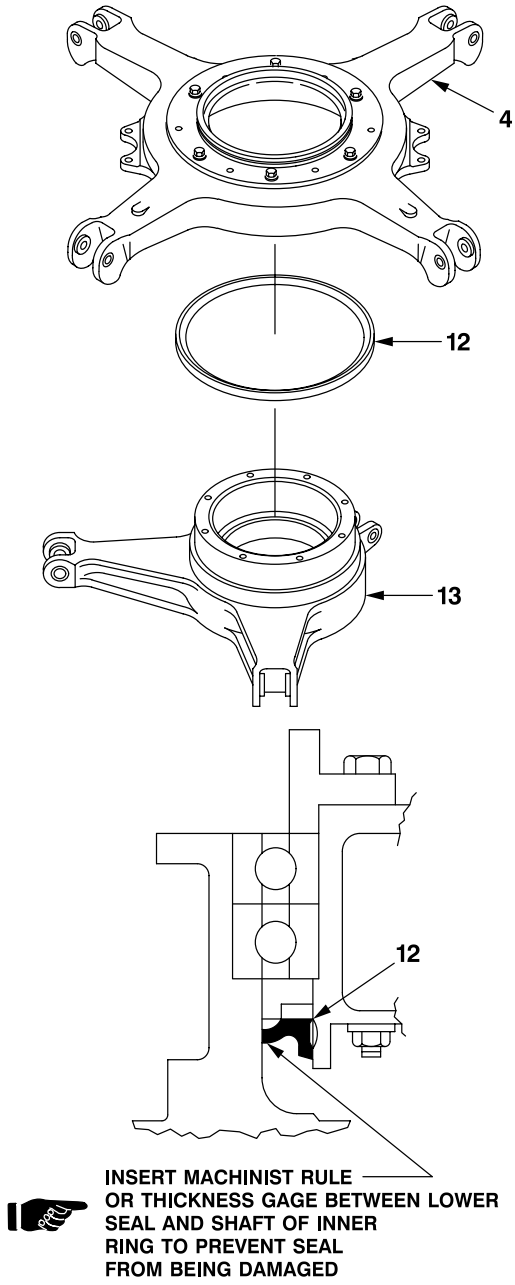
Grease

19. Lubricate bore of outer ring (4), shaft of inner ring (13), and lip of seal (12) with grease (D113).

CAUTION

When installing outer ring over inner ring, a machinist rule or thickness gage leaf shall be placed between lower seal and shaft of inner ring to prevent shaft of inner ring damaging seal.

20. Install outer ring (4) over inner ring (13). Use care to prevent damage to seal (12).



406010-542-5
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5-2-37. MAIN ROTOR SWASHPLATE AND SUPPORT (AVIM) — ASSEMBLY (CONT)

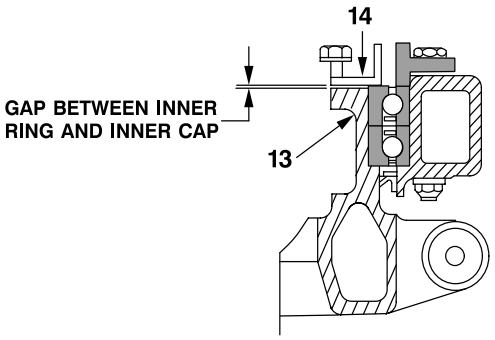
DETERMINE SHIM FOR INNER CAP

21. Position inner cap (14) inside outer ring (4) over inner ring (13).

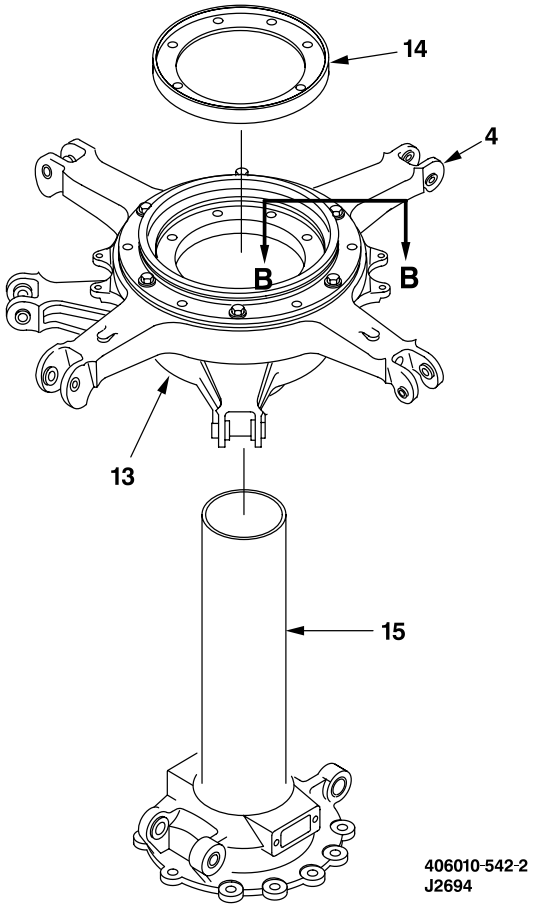
22. Hold inner cap (14) firmly against inner ring (13). Measure gap between inner ring (13) and inner cap (14). Record this measurement. Remove inner cap (14).

INSTALL SUPPORT

23. Install inner ring (13) and outer ring (4) over support (15).



SECTION B-B



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Adhesive

INSTALL SLEEVE

24. Apply a coating of adhesive (D12) to mating surface of two bearings (16) and to grooves inside sleeve (17).

25. Install two bearings (16) in grooves inside sleeve (17).

CAUTION

No adhesive (D12) squeezeout allowed on bearing surface or protruding above surface.

Acetone

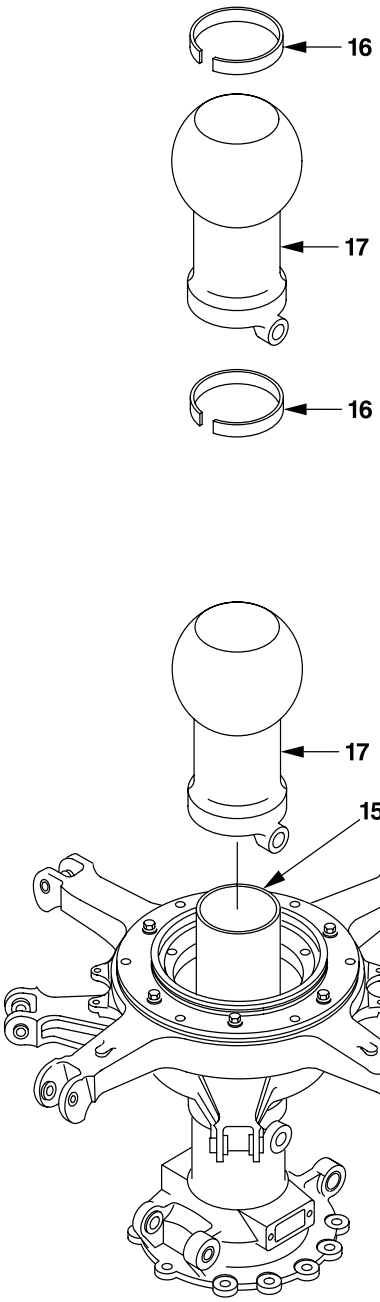
26. Remove excessive adhesive with wiping rags (D164) dampened with acetone (D2).

WARNING

Handling of hot parts with bare hands may cause reddening and blistering of skin, or third degree burns. If skin is burned, contacted area shall be immersed in cold water for 10 minutes. If pain or blistering persists, immediate medical attention shall be obtained. When handling hot parts, heat protective gloves (B54) shall be worn.

27. Apply heat 175 to 190 °F for 60 minutes to sleeve (17) to cure adhesive (D12) (full cure is 24 hours at 70 to 90 °F).

28. Install sleeve (17) on support (15).



406010-542-6
J2694

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5-2-37. MAIN ROTOR SWASHPLATE AND SUPPORT (AVIM) — ASSEMBLY (CONT)

INSTALL BEARINGS

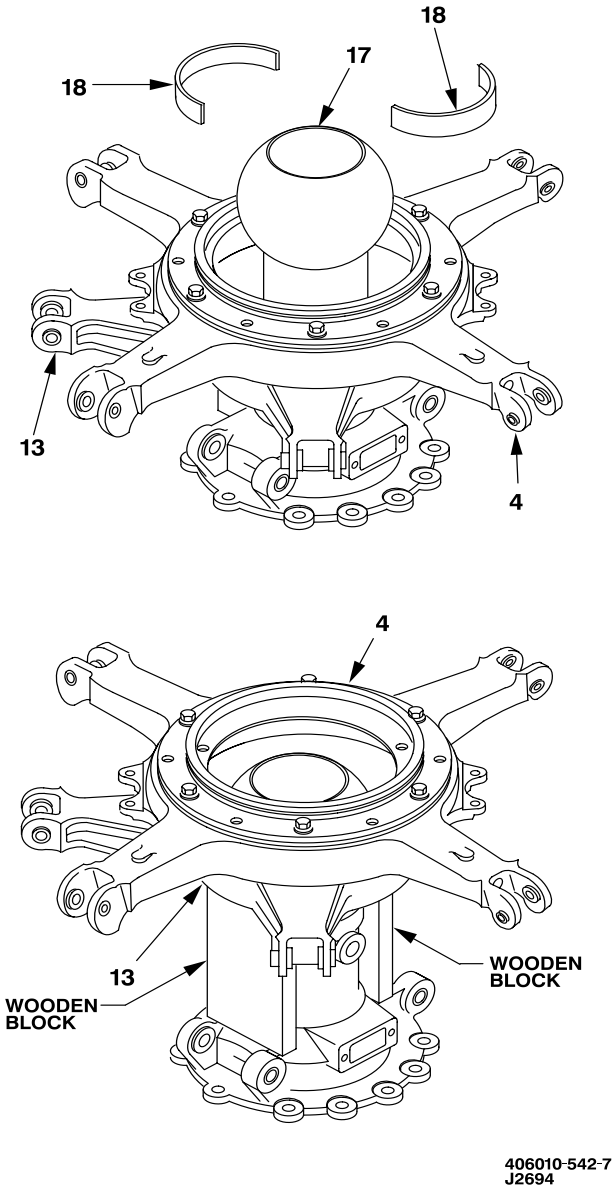
NOTE

- If bearing set does not meet inspection criteria, the complete set shall be replaced.
- Ends of bearings shall not be touching after installation.

29. Install two bearings (18) around sleeve (17) and let bearings rest on shoulder of inner ring (13).

30. Raise outer ring (4) and inner ring (13) up until bearings (18) contact Uniball of sleeve (17).

31. Support inner ring (13) with two wooden blocks.



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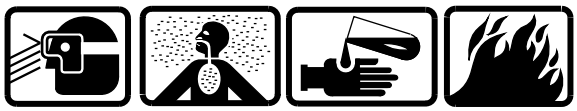
INSTALL INNER CAP AND UPPER RACE

NOTE

No vertical looseness allowed between the inner ring and outer ring (across the bearing).

32. Prepare shim (19) to thickness of **0.004 to 0.008 inch** less than measurement recorded in step 22.



Adhesive

33. Apply adhesive (D12) sparingly to mating surfaces of inner ring (13), shim (19), and inner cap (14).

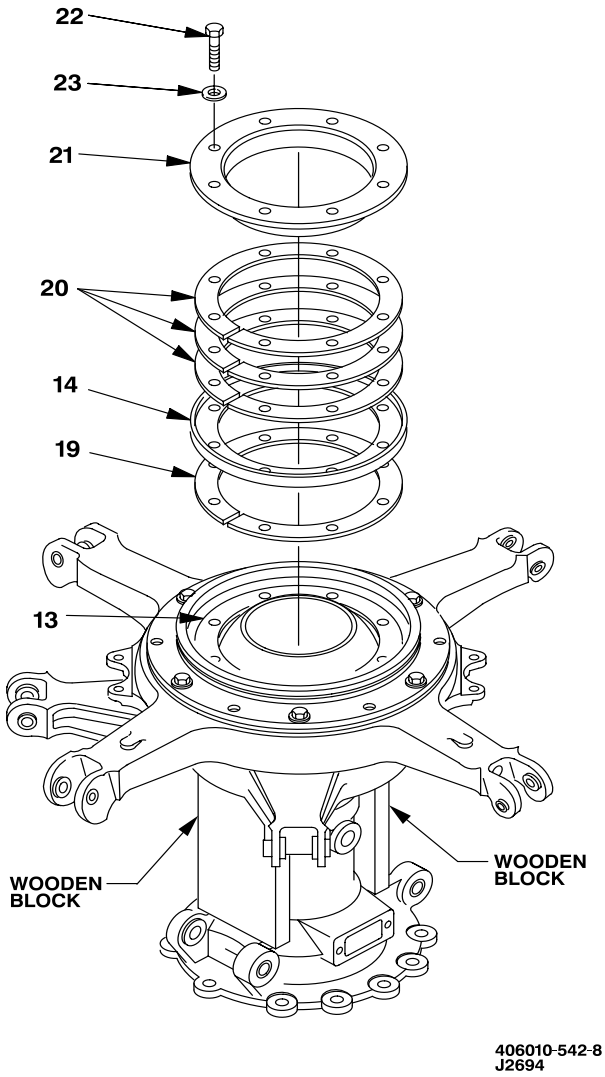
NOTE

- Adhesive shall be allowed to dry to a tacky state before installing shim and inner cap.
- Workaid (H-29) (swashplate friction adjustment studs) shall be used to align shims (19), inner cap (14), shims (20), and upper race (21).

34. Install shim (19) and inner cap (14).

35. Install shims (20) and apply corrosion preventive compound (D82) to ends of shims.

36. Install upper race (21) and secure with eight bolts (22) and eight washers (23).



WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of bolts is a characteristic critical to flight safety.

37. Torque bolts (22) **50 TO 70 INCH-POUNDS**.

38. Remove wooden blocks.

GO TO NEXT PAGE

5-2-37. MAIN ROTOR SWASHPLATE AND SUPPORT (AVIM) — ASSEMBLY (CONT)

CHECK DUPLEX BEARING

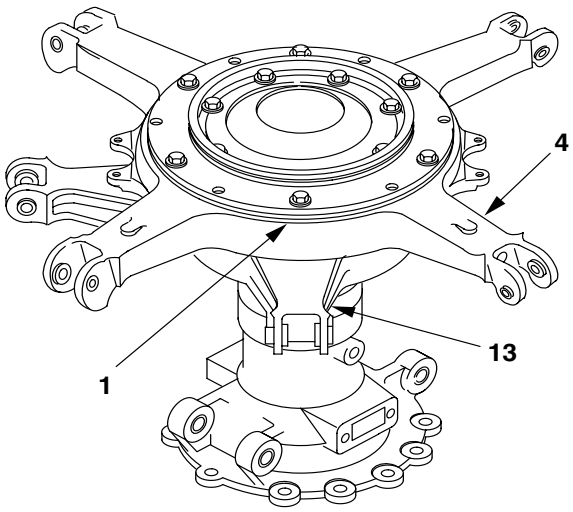
Grease

39. Grease swashplate through two fittings on outer cap (1) with grease (D113). Purge grease past seals.

40. Remove excess grease with wiping rags (D164).

41. Apply pressure to opposite arms of outer ring (4) and rotate while holding inner ring (13) in place. No rough spots should be felt when rotating outer ring.

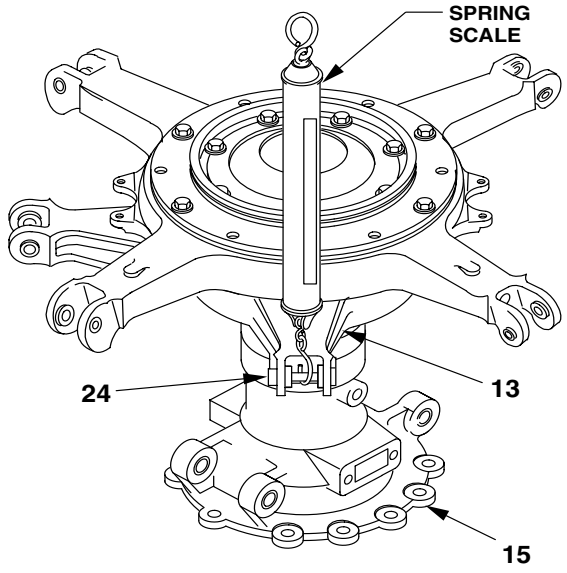
42. Verify no axial play exists between inner ring (13) and outer ring (4).



CHECK SWASHPLATE FRICTION

43. Attach support (15) to workbench with clamps or bolts through holes in support.

44. Install bolt (24) through horn of inner ring (13). Attach spring scale (B121) to bolt (24).



406010-542-9
J2694

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WARNING

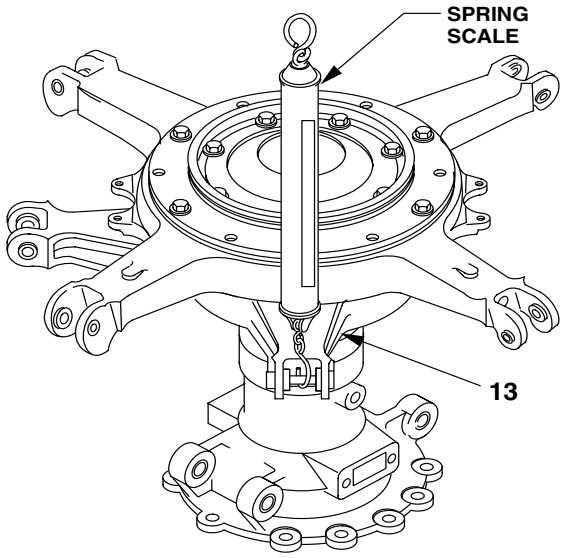
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Breakout force on pivot ball to be 28.0 to 35.0 pounds at the inner ring input arms at initial installation. Acceptable breakout force torque in the field or after operation is 20.0 to 35.0 pounds at the inner ring input arms. Check by tilting swashplate through full travel on each of the inner ring horns. Peel shims are required. No vertical looseness is allowed between the inner ring and the sleeve assembly. These requirements are characteristics critical to flight safety.

NOTE

Swashplate inner ring should be tilted almost full down, but not bottomed.

45. Pull on spring scale (B121) and observe pounds required to tilt inner ring (13). Move inner ring (13) through full travel. Force required should be 20.0 to 35.0 pounds. Repeat check to ensure scale reading was accurate.



406010-542-18
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46. Move bolt (24) and scale (B121) to other horn of inner ring (13). Repeat step 45.

47. Force required to move inner ring (13) through full travel at either horn must be 20 to 35 pounds. If friction is not within limits, adjust using the following procedure.

ADJUST SWASHPLATE FRICTION

48. Place two wooden blocks between inner ring (13) and support (15).

49. Remove eight bolts (22) and washers (23).

50. Remove upper race (21) and shims (20). Inner cap (14) should remain in place when removing shims. Reinstall cap (14) if it was moved.

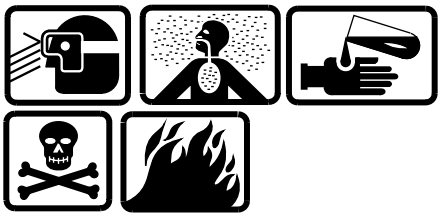
NOTE

If force required to tilt swashplate is below minimum breakaway force, shims must be removed. If force required to tilt swashplate is above maximum breakaway force, shims must be added. Setting of swashplate friction to higher side of range will allow increased flight hours between required adjustments.

51. Adjust thickness of shims (20) by adding or removing shims.

NOTE

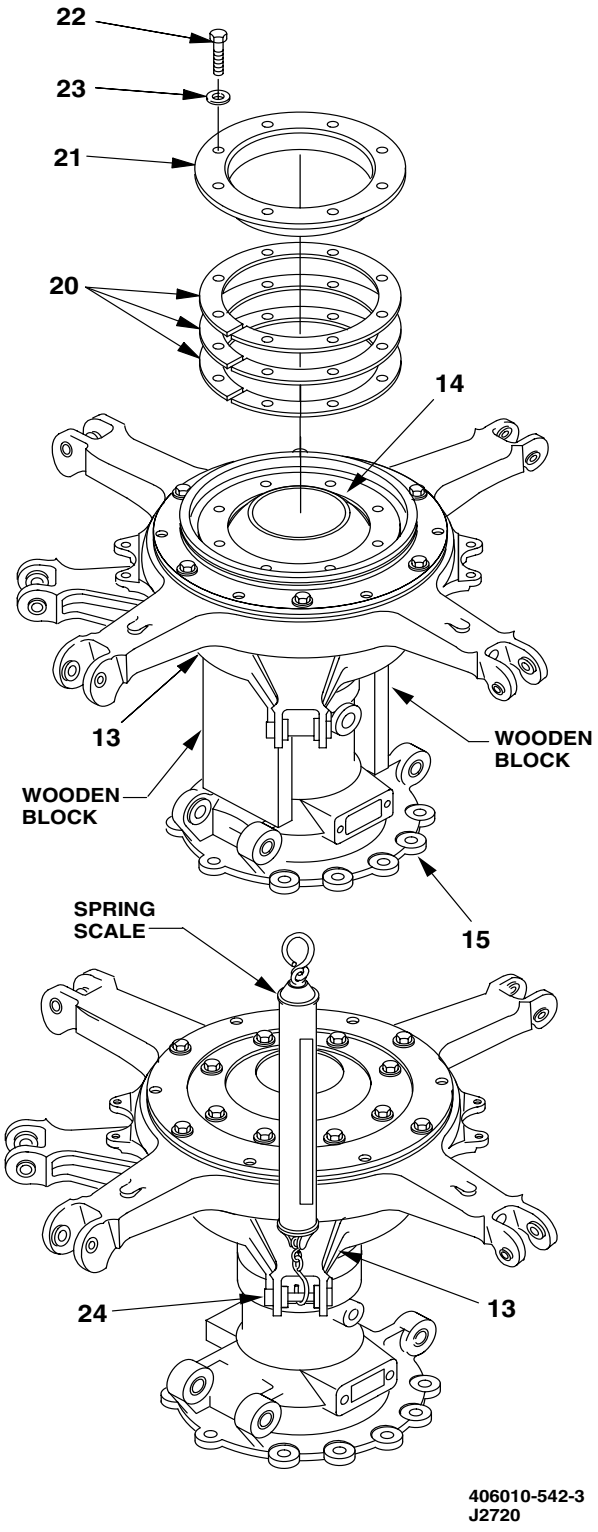
Use work aid (H-29) (swashplate friction adjustment studs) in inner ring (13) to align shims (20), with inner cap (14), and upper race (21).



Corrosion Preventive Compound

52. Install shims (20) in inner cap (14). Apply CPC (D82) to ends of shims (20).

53. Install upper race (21) and secure with eight bolts (22) and washers (23).



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WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing and lockwiring of bolts are characteristics critical to flight safety.

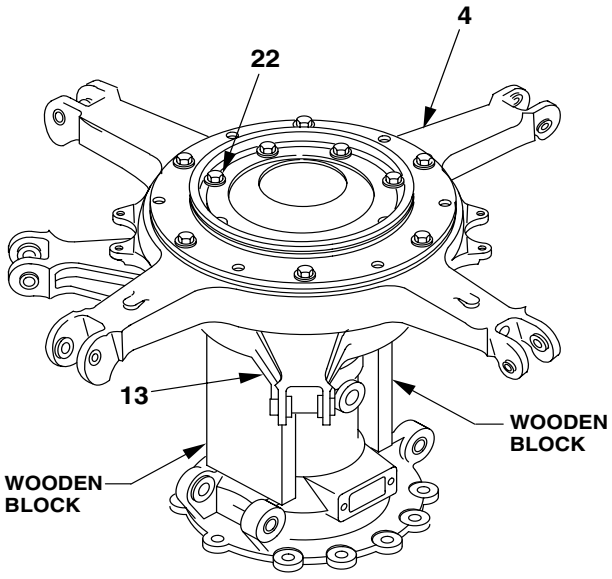
54. Torque bolts (22) **50 TO 70 INCH-POUNDS**.

55. Remove wooden blocks.

56. Repeat steps 43. through 47. to check swashplate friction.

57. Secure bolts (22) in pairs with lockwire (D132).

58. Using dial indicator (B37) verify no axial play exists between inner ring (13) and outer ring (4).



406010-542-10
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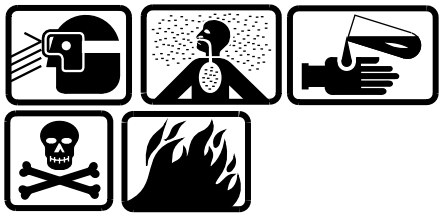


Corrosion Preventive Compound

INSTALL DRIVE LINK BEARING

59. Apply CPC (D83) to mating surfaces of outer ring (4), bearing (25) and two bolts (26).

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

60. Install bearing (25) and secure with two bolts (26), four washers (27), and two nuts (28).

WARNING

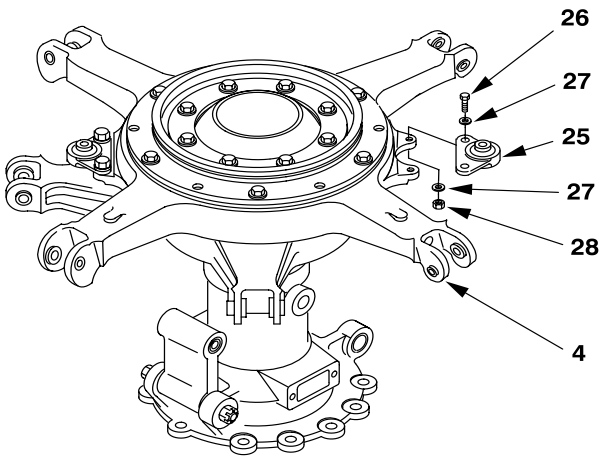
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nuts is a characteristic critical to flight safety.

61. Torque nuts (28) **75 TO 95 INCH-POUNDS**.

62. Apply CPC (D82) to exposed ends of bolts (26), washers (27), and nuts (28).

63. Repeat steps 59. through 62. to install opposite bearing.



406010-542-11
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INSTALL COLLECTIVE LINK

64. Install two spacers (29) in link (30).

65. Install link (30) in support (15).

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

66. Install bolt (31), two washers (32), and nut (33).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nut and correct installation of cotter pin are characteristics critical to flight safety.

67. Torque nut (33) **95 TO 110 INCH-POUNDS**.

68. Install cotter pin (34) through nut (33).

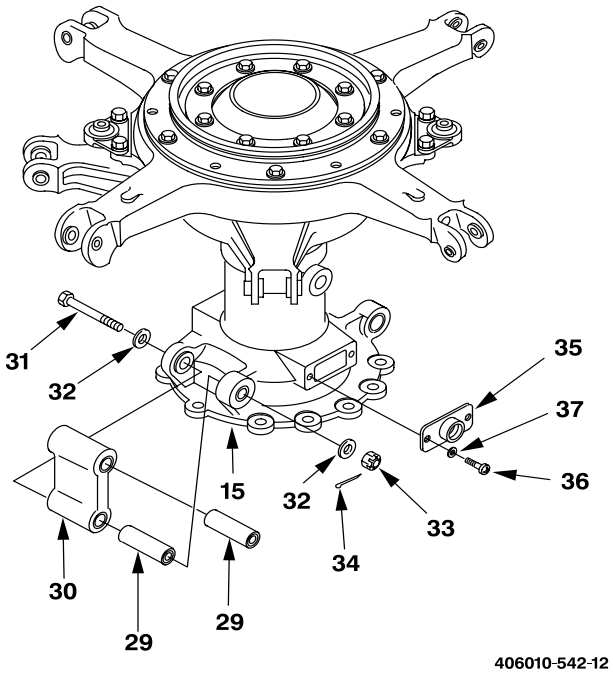
69. Install plate (35) and secure with two screws (36) and two washers (37).

70. Torque screws (36) **20 TO 50 INCH-POUNDS**.

NOTE

Screws will be lockwired after swashplate is installed.

71. Repeat steps 69 and 70 to install opposite plate.



406010-542-12
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INSTALL COLLECTIVE LEVER

Corrosion Preventive Compound

CAUTION

Do not apply CPC (D83) to Teflon coated bushings or to surfaces in contact with Teflon coated bushings.

72. Apply CPC (D83) to mating surfaces of sleeve (17), collective lever (38), link (30), two pins (39), and bolt (42).

73. Install collective lever (38), two pins (39), two washers (41) and two screws (40).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing and lockwiring of screws are characteristics critical to flight safety.

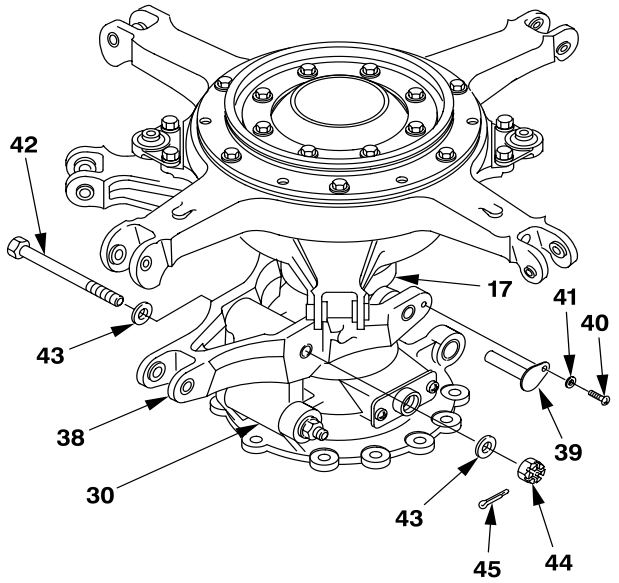
74. Torque screws (40) **20 TO 25 INCH-POUNDS**.

75. Secure screws (40) with lockwire (D132).

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

76. Install bolt (42), two washers (43), and nut (44).



406010-542-13
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WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nut and correct installation of cotter pin are characteristics critical to flight safety.

77. Torque nut (44) **95 TO 110 INCH-POUNDS**.

78. Apply CPC (D82) to exposed ends of bolt (42), washers (43), and nut (44).

79. Install cotter pin (45) through nut (44).

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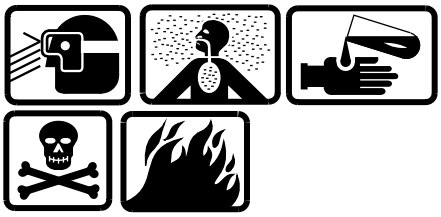
5-2-37. MAIN ROTOR SWASHPLATE AND SUPPORT (AVIM) — ASSEMBLY (CONT)

INSTALL ANTIDRIVE LEVER AND LINK



Corrosion Preventive Compound

80. Apply CPC (D83) to mating surfaces of lever (46), spacer (47), and bolt (48).

81. Install spacer (47) in lever (46).

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

82. Install lever (46) and secure with bolt (48), two washers (49), and nut (50).

WARNING

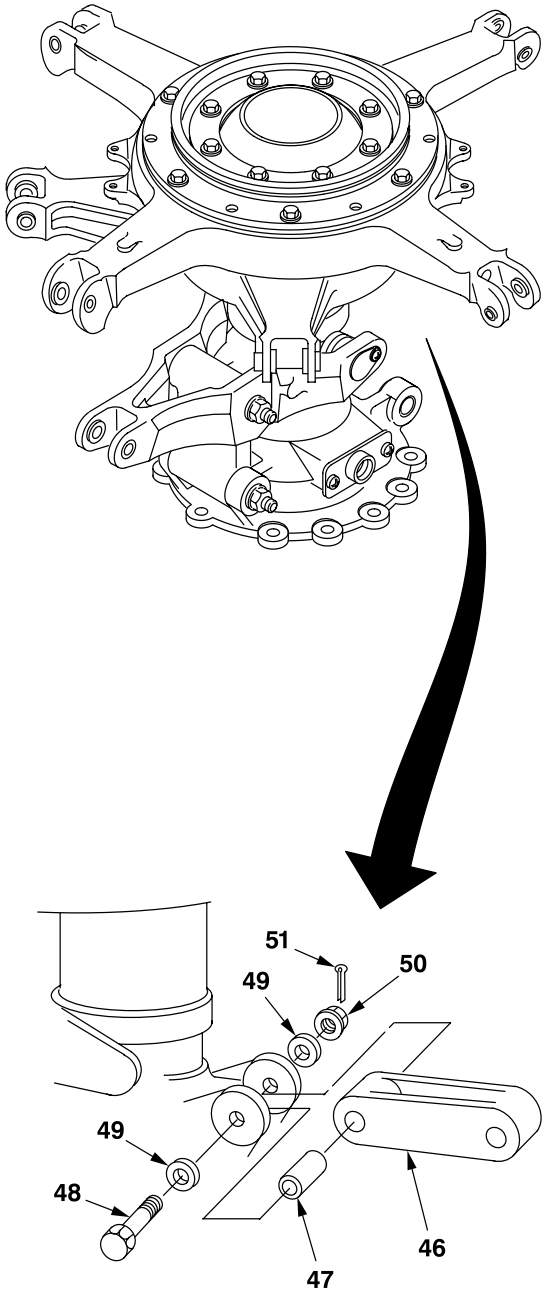
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nut and correct installation of cotter pin are characteristics critical to flight safety.

83. Torque nut (50) **95 TO 110 INCH-POUNDS**.

84. Install cotter pin (51) through nut (50).

85. Apply CPC (D83) to exposed ends of bolt (48), two washers (49), and nut (50).



406010-542-14
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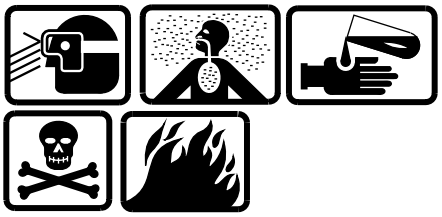


Corrosion Preventive Compound

NOTE

Remove tie or strap from spacer (55) prior to installation of hardware.

86. Apply CPC (D83) to mating surfaces of inner ring (13), link (52), spacer (55), and bolt (53).

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

87. Install link (52) and secure with bolt (53), spacer (55), washer (54), bracket (56), and nut (57).

WARNING

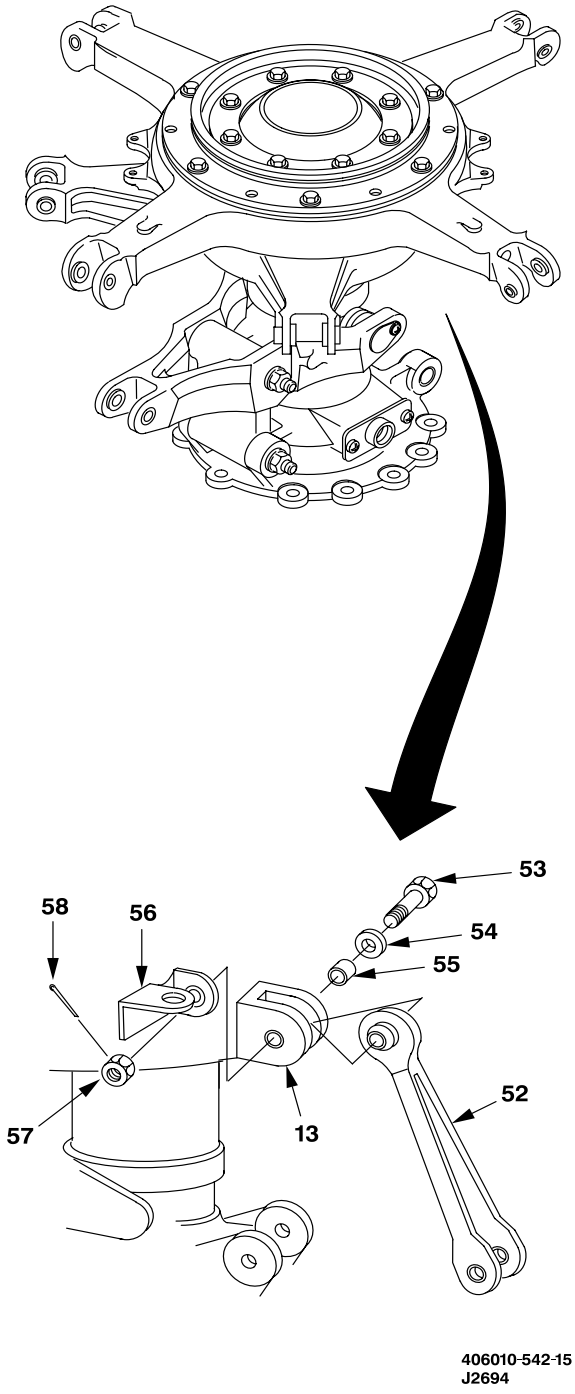
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nut and correct installation of cotter pin are characteristics critical to flight safety.

88. Torque nut (57) **60 TO 85 INCH-POUNDS**.

89. Apply CPC (D82) to exposed ends of bolt (53), washer (54), bracket (56), and nut (57).

90. Install cotter pin (58) through nut (57).



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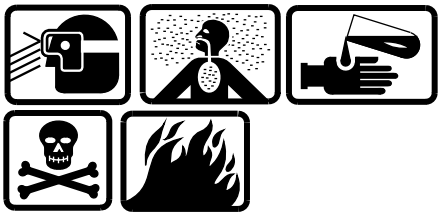


Corrosion Preventive Compound

NOTE

Remove tie or strap from spacers (59) prior to installation of hardware.

91. Apply CPC (D83) to mating surfaces of link (52), lever (46), spacers (59), and bolt (60).

92. Install link (52) on lever (46). Install two spacers (59) in link (52).

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

93. Install bolt (60), two washers (61), and nut (62).

94. Apply CPC (D82) to exposed ends of bolt (60), two washers (61), and nut (62).

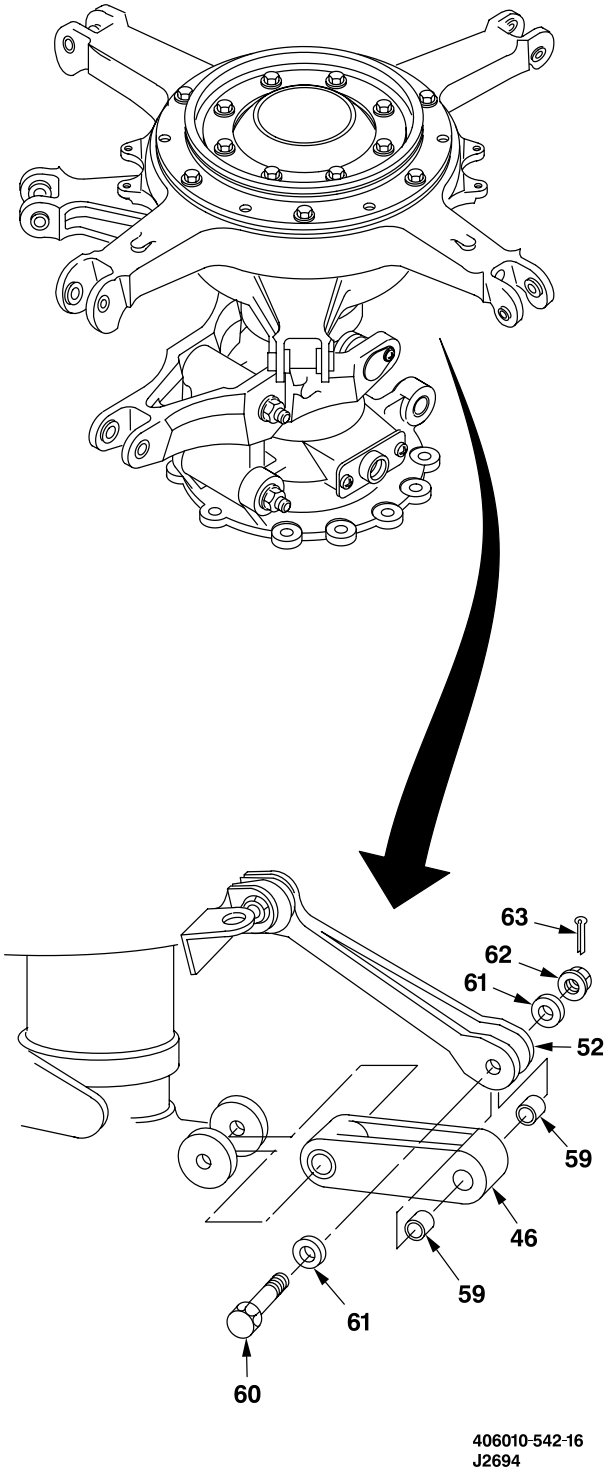
WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nut and correct installation of cotter pin are characteristics critical to flight safety.

95. Torque nut (62) **60 TO 85 INCH-POUNDS**.

96. Install cotter pin (63) through nut (62).



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5-2-37. MAIN ROTOR SWASHPLATE AND SUPPORT (AVIM) — ASSEMBLY (CONT)

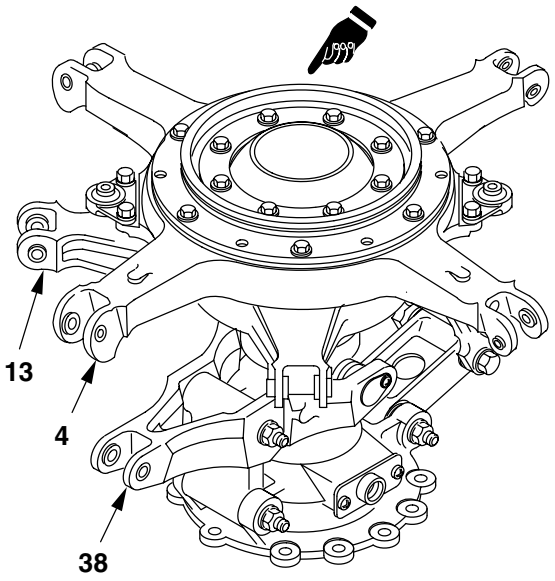
CHECK SWASHPLATE OPERATION

97. Rotate outer ring (4) through full circle. No rough spots should be felt when rotating outer ring (4).

98. Tilt inner ring (13) through full travel. Force required to tilt through full travel should be even with no high spots.

99. Move collective lever (38) through full travel. Force required to move lever should be even with no high spots.

INSPECT



406010-542-17
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END OF TASK

5-2-38. MAIN ROTOR SWASHPLATE AND SUPPORT — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B239)
Torque Wrench (B237)
Maintenance Stand (2) (B162)
Heat Gun (B59)

Material:
Acetone (D2)
Abrasive Mats (D1)
Rubber Gloves (D111)
Sealing Compound (D184)
Wiping Rags (D164)
Tiedown Strap (D206)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer (2)

Equipment Condition:
Helicopter Safed (Task 1-6-7)

CLEAN MAST

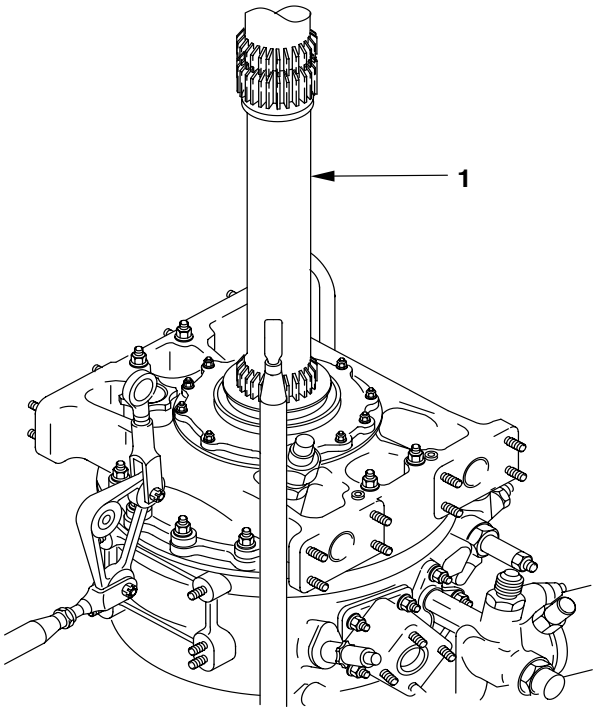
1. Place maintenance stand (B162) adjacent to aircraft work area.

2. Remove surface corrosion from mast (1) with abrasive mats (D1).

Acetone

3. Clean mast (1) with wiping rag (D164) dampened with acetone (D2).

4. Dry mast (1) with wiping rag (D164).



406010-116
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5-2-38. MAIN ROTOR SWASHPLATE AND SUPPORT — INSTALLATION (CONT)

INSTALL SWASHPLATE

5. Move swashplate and support (2) directly over mast (1).

CAUTION

Guide swashplate over splines of mast during installation to prevent damage to mast.

6. Lower swashplate and support (2) over mast (1). Guide swashplate and support (2) into position on studs (3).

7. Install 12 washers (4) and 12 nuts (5).

8. Using heat gun (B59), heat swashplate support (6) not to exceed 250 °F.

9. Torque nuts (5) **100 TO 140 INCH-POUNDS**.

Sealing Compound

10. Apply sealing compound (D184) around bottom flange of swashplate support (6) and top flange of transmission (7).

11. Remove tiedown strap (D206) and install spacer (8).

12. Install tube (9), bolt (10), washers (11), and nut (12).

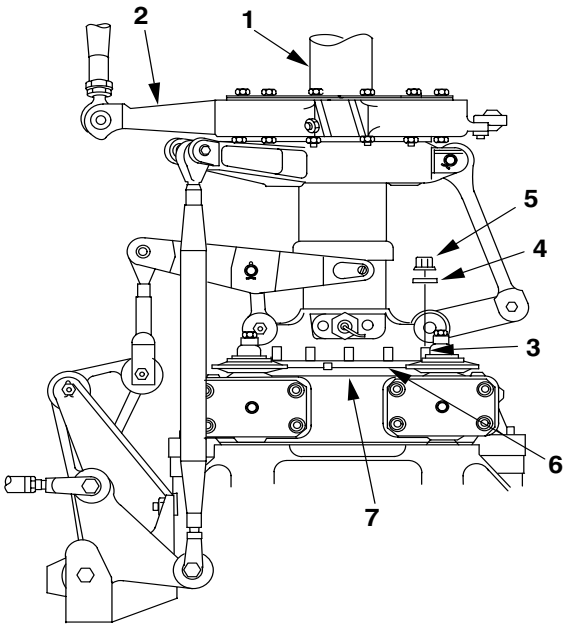
WARNING

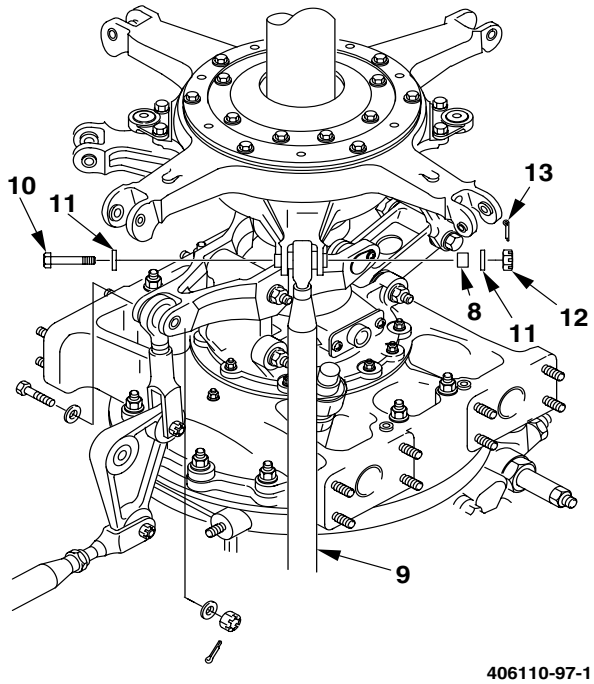
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nut and correct installation of cotter pin are characteristics critical to flight safety.

13. Torque nut (12) **95 TO 110 INCH-POUNDS**.

14. Install cotter pin (13) through nut (12).





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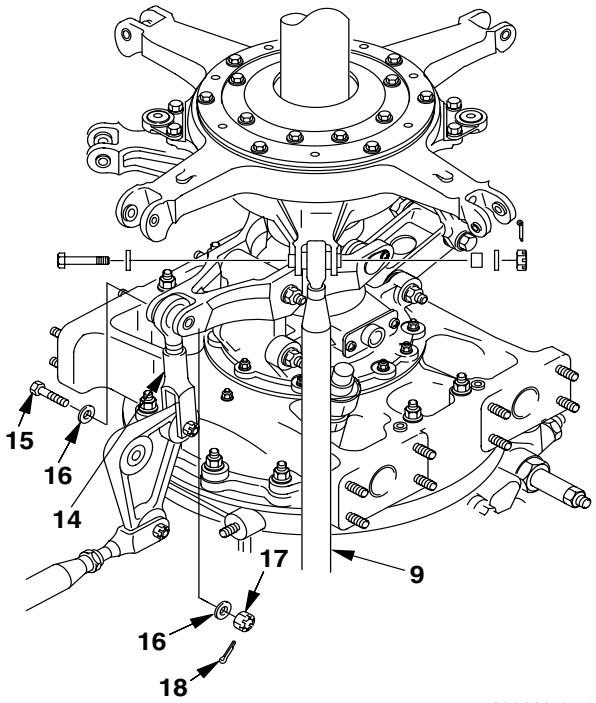
5-2-38. MAIN ROTOR SWASHPLATE AND SUPPORT — INSTALLATION (CONT)

15. Repeat steps 10. through 12. to install opposite tube (9).

16. Install link (14), bolt (15), washers (16), and nut (17).

17. Torque nut (17) **60 TO 85 INCH-POUNDS**.

18. Install cotter pin (18) through nut (17).



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INSPECT

FOLLOW-ON MAINTENANCE

Install main rotor controls boot (Task 5-2-17).

Install main rotor controls drive link (Task 5-2-6).

Install main rotor hub and blade assembly (Task 5-1-2).

Install torque transducers in swashplate (Task 6-4-10).

Install torquemeter support and bearing assembly (Task 6-4-11).

Install air induction cowl (Task 4-2-4).

Install forward fairing assembly (Task 2-2-47).

END OF TASK

5-2-39. SWASHPLATE INNER RING ASSEMBLY FOR ROTATIONAL MOVEMENT — INSPECTION

This task covers: Inspection (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Dial Indicator (B37)
Spring Scale (B120)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)

GO TO NEXT PAGE

5-2-39. SWASHPLATE INNER RING ASSEMBLY FOR ROTATIONAL MOVEMENT — INSPECTION (CONT)

1. Mount base of dial indicator (B37) in a stationary position at base of swashplate assembly (1).

2. Move swashplate inner ring arm (2) to limit of travel opposite from dial indicator (B37).

3. Position pointer of dial indicator (B37) against swashplate inner ring arm (2) and preload dial indicator.

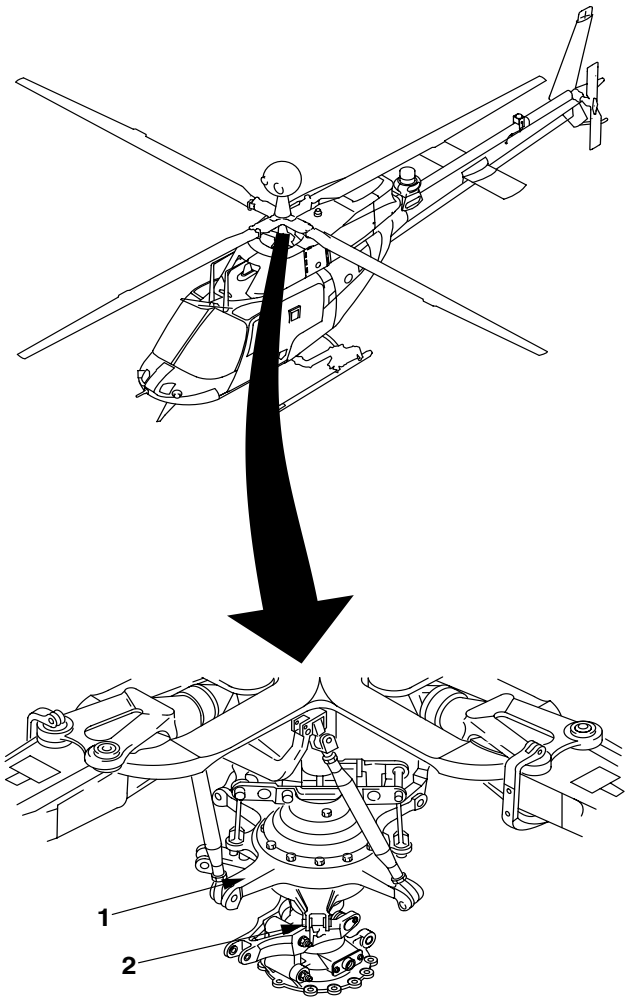
4. Attach spring scale (B120) to swashplate inner ring arm (2) and apply maximum rotational force of 5 pounds toward dial indicator (B37).

5. Record reading on dial indicator (B37).

6. Reading on dial indicator (B37) of **0.125 inch** or less is acceptable.

7. Reading on dial indicator of more than **0.125 inch** requires checking of swashplate linkage to determine worn parts.

8. Make entry in aircraft logbook of dial indicator (B37) reading and airframe hours.



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INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing assembly (Task 2-2-47).

END OF TASK

5-2-40. MAST MOUNTED SIGHT (MMS) SUPPORT COVER — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
MMS Removed (TM 9-1240-778-23)

REMOVE

1. Remove 12 bolts (1) and 12 washers (2).

2. Remove MMS sight support cover (3).

3. Remove special cable assembly (4) (P/N 406-075-628-121) by disconnecting electrical connectors (5).

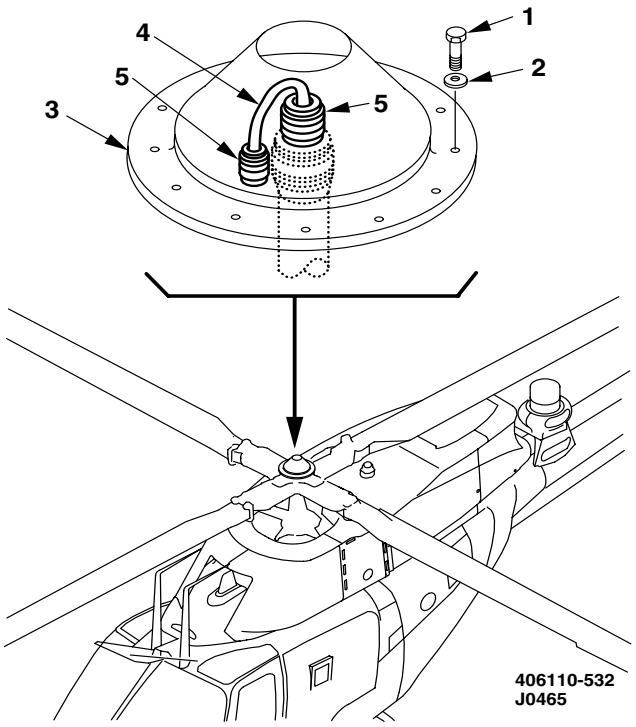
INSTALL

4. Install special cable assembly (4) (P/N 406-075-628-121) by connecting electrical connectors (5).

5. Align MMS sight support cover (3) with support assembly dowel pin.

6. Install 12 washers (2) and 12 bolts (1).

INSPECT



END OF TASK

Section III. MAIN ROTOR TRACKING AND DYNAMIC BALANCING

5-8. MAIN ROTOR TRACKING AND DYNAMIC BALANCING

This section contains maintenance procedures for adjusting main rotor autorotation rpm. Standard torques are provided in Appendix P and TM 1-1500-204-23.

5-9. INTRODUCTION

NOTE

If RADS System is utilized, refer to TM> 1-6625-724-13&P for balancing procedures.

5-10. TASK LIST

The task list lists those tasks required to support unit and intermediate level maintenance.

LIST OF TASKS

5-3-1. MAIN ROTOR AUTOROTATION RPM — ADJUSTMENT

This task covers: Adjusting Main Rotor Autorotation RPM (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B240)

Material:
Corrosion Preventive Compound (CPC) (D82)
Corrosion Preventive Compound (CPC) (D83)
Tiedown Strap (D206)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-6625-724-13&P

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Forward Fairing Assembly Removed (Task 2-2-47)

GO TO NEXT PAGE

5-3-1. MAIN ROTOR AUTOROTATION RPM — ADJUSTMENT (CONT)

ADJUST

1. Remove cotter pin (1) and discard.

2. Remove nut (2), two washers (3), and bolt (4).

3. Secure spacer (5) to swashplate horn (6) with strap (D206).

4. Loosen nut (7).

5. Remove pitch link assembly (8) from swashplate horn (6).

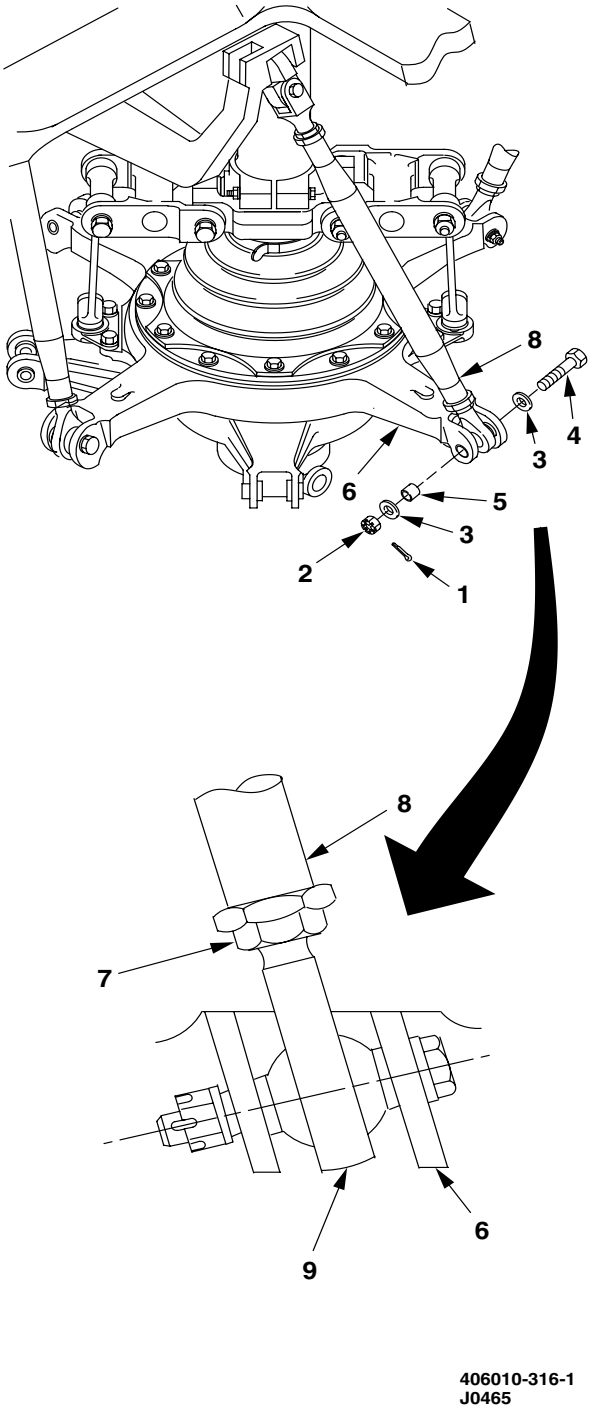
6. Adjust autorotation rpm as follows.

NOTE

- Adjust all four pitch link assemblies (8) an equal amount. One full turn of rod end bearing (9) will change the autorotation rpm approximately 3% Nr.
- Mast torque start point for autorotation RPM adjustment at flat pitch and 100% Nr should be 25 to 30%.
- For the purpose of setting and/of adjusting the rotor speed (Nr) or the power turbine speed (Np), use the digital readout on the multiparameter display (MPD). Readouts from the Nr vertical scale indicator and from the MFD Nr backup display may indicate one percent higher than the actual Nr. The actual Nr is displayed on the MPD.

a. If autorotation rpm is high, screw rod end bearing (9) out of pitch link assembly (8) the amount necessary to adjust autorotation rpm.

b. If autorotation rpm is low, screw rod end bearing (9) into pitch link assembly (8) the amount necessary to adjust autorotation rpm.



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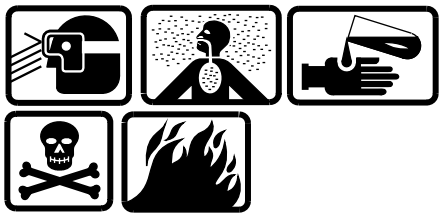
7. Remove tiedown strap (D206) securing spacer (5) to swashplate horn (6).



Corrosion Preventive Compound

8. Coat shank of bolt (4), mating surface of pitch link assembly (8), and swashplate horn (6) with CPC (D83).

9. Install pitch link assembly (8) in swashplate horn (6) and install bolt (4), two washers (3), and nut (2).

10. Torque nut (2) **120 TO 160 INCH-POUNDS**.

11. Coat exposed ends of bolt (4), two washers (3), and nut (2) with CPC (D82).

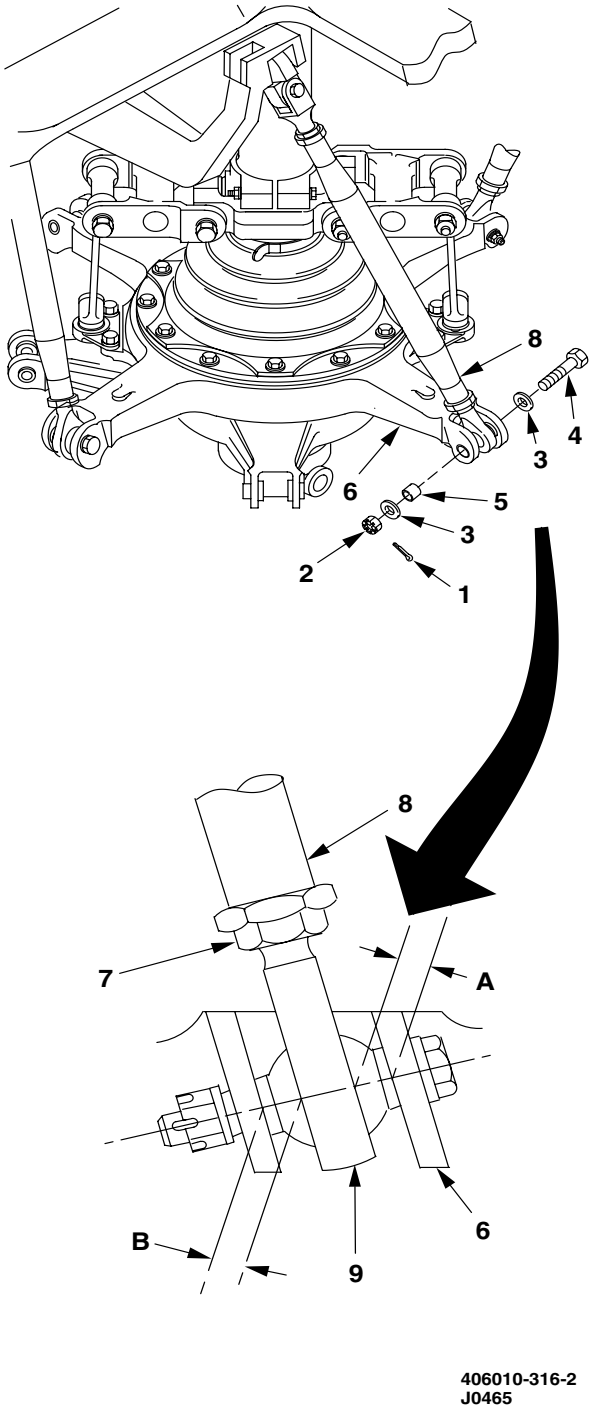
12. Install cotter pin (1) through nut (2).

13. Adjust position of rod end bearing (9) in swashplate horn (6) until dimensions A and B are equal within **0.04 inch**. Hold rod end (9) in this position.

NOTE

After tightening nut (7), maximum number of threads showing on rod end bearing (9) is nine.

14. Torque nut (6) **150 TO 200 INCH-POUNDS**.



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INSPECT

FOLLOW-ON MAINTENANCE

Perform main rotor track and balance (TM 1-6625-724-13&P).

Install forward fairing assembly (Task 2-2-47).

Maintenance test pilot perform MTF/MOC (TM 1-1520-248-MTF).

END OF TASK

5-3-2. MAIN ROTOR — TRACKING AND DYNAMIC BALANCING

This task covers: Tracking and Dynamic Balancing (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B238)
Torque Wrench (B240)
Torque Wrench (B241)
Trim Tab Bending Gage (B51)
Trim Tab Bending Tool (B207)
Basic Vibrex System Kit (B209):
Gram Scale
177M-6A Balancer (or equivalent)
135M-11 Strobex Tracker
4177B Accelerometers (2)
3383 Accelerometer Bracket
4296-2 Accelerometer Cables (2)
3529 Power Cable
3597 Clock Angle Corrector
3319-2 Magnetic Pickup Cable
EC3030AN Magnetic Pickup
4726 Type Reflective Tape
A3428-2 Tip Target Set (4)

Parts:
Cotter Pin
Bolts
Weights
Screws

Material:
Isopropyl Alcohol (D39)
Lockwire (D133)
Corrosion Preventive Compound (D83)
Low-Lint Cleaning Cloth (D67)
Tiedown Strap (D206)

Personnel Required:
67S Scout Helicopter Repairer
67S Scout Helicopter Technical Inspector (TI)
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-1520-248-10
TM 1-1520-248-23P
TM 9-1240-778-23

Equipment Condition:
Forward Fairing Assembly Removed (Task 2-2-47)
Cyclic, Collective, and Directional Flight Controls Rigged (Tasks 11-1-1, 11-1-2, 11-1-3, and 11-1-4)

GO TO NEXT PAGE

GENERAL

NOTE

A rattle-type noise may be observed in the blade tip area when installed blades are rapped or shaken. This noise is normal and should not be cause for concern. The noise originates from movement of the product balance weights installed in the leading and trailing edge weight pockets. These weights are loose-fit over three internal bosses on the pocket covers. The weights are held in place by centrifugal force and cannot rattle during rotor operation.

1. 1/Rev Characteristics. The helicopter can be operated with or without the Mast Mounted Sight (MMS) installed. These two configurations exhibit different characteristics with respect to main rotor 1/rev vibration.

a. Characteristics without MMS installed:

(1) The helicopter is sensitive to rotor out-of-balance at 100% Nr on the ground.

(2) Rotor out-of-balance can cause a vertical 1/rev vibration in flight.

(3) Significant adjustments to pitch link length and tab settings can affect the balance of the rotor.

b. Characteristics with MMS installed.

(1) The helicopter is not sensitive to rotor out-of-balance at 100% Nr on the ground, but remains sensitive at lower RPM.

(2) Rotor out of balance does not cause a significant vertical 1/rev vibration in flight.

(3) Significant adjustments to pitch length and tab settings do not significantly affect the lateral or fore-and-aft vibration (the perceived out-of-balance).

GO TO NEXT PAGE

c. Other characteristics to be considered.

(1) The helicopter can exhibit an increased main rotor 1/rev vibration on the ground at low RPM and high RPM due to control position.

(a) The vibration at low RPM is caused by having excessive cyclic pitch in the rotor. This is corrected by centering the cyclic or moving the cyclic to a position where the vibration is no longer present.

(b) At high RPM an increased main rotor 1/rev vibration on the ground is present when the rotor is generating just enough thrust to support itself. This is corrected by putting in a slight amount of forward cyclic and/or raising the collective slightly.

(2) In flight, a change in vertical 1/rev vibration can occur in a range of torque, generally between 65% and 85%. This is due to a variation in swashplate drive link loads which occurs at this torque setting. Any vertical 1/rev data obtained at this power level may create a false indication of the proper adjustment required to minimize the overall 1/rev vibration.

NOTE

Because of these characteristics it is difficult to determine if the rotor is properly balanced when the MMS is installed. For this reason removing the MMS to work the rotor is the recommended procedure. Rotors containing one or more new rotor blades or a new hub assembly should be worked without the MMS installed to ensure that the rotor has been properly balanced. Rotors being worked which do not have new or repaired blades or new hub components can be worked without removing the MMS, since no changes have been made which should have significantly changed the balance of the rotor.

GO TO NEXT PAGE

CAUTION

Product balance weight adjustment is a depot level function.

2. Preset trim tabs and product balance. The main rotor blades are preset against a master blade at the factory or authorized blade repair facility prior to shipment. This procedure does an initial course adjustment on the blade trim tabs and a final adjustment on the blade tip chordwise balance weights (product balance). The information from this process is stencilled on the root end of the blade. Within this information is the tab setting which was required to match the rotor blade to the master blade. (Example Tab +4° or Tab -2°). The **"+"** indicates a positive tab angle; the **"-"** indicates a negative tab angle. All trim tab angles are referenced to **"0"** on trim tab bending gage (B51). This setting is a starting point and the trim tab can be adjusted as necessary to minimize the 1/rev vibration.

PREFLIGHT SETUP

3. Prior to beginning the rotor working process, identify the type of rotor installed on the helicopter. When the type of rotor has been determined, refer to trim tab adjustment table for setup instructions prior to flight. The type of rotor will fall into the following categories:

a. The rotor has had no blade changes or major blade repairs. Examples as follows:

(1) Rotor being reworked because it has degraded over time.

(2) Pitch link rod end bearings replaced.

(3) Original blades removed and then reinstalled after mast torque calibration.

b. The rotor has one or two blades replaced or extensively repaired.

c. Three or four rotor blades have been replaced.

GO TO NEXT PAGE

4. Install components of Vibrex System Kit (B209) as follows:

a. Install EC3030AN magnetic pickup (1) on bracket (2) and secure using nuts (3 and 4).

NOTE

Magnetic pickup bracket (2) and interrupter (5) are part of helicopter hardware and are permanently installed.

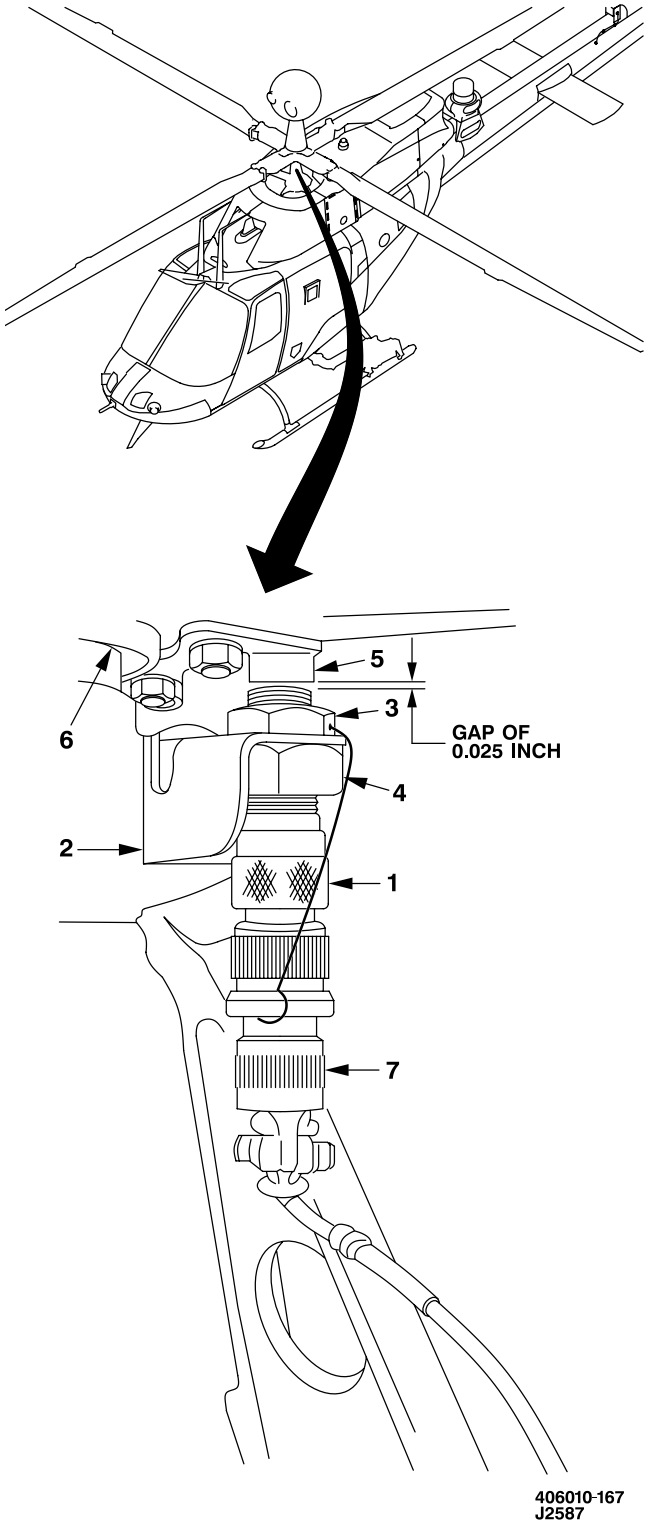
b. Rotate swashplate (6) as necessary to position interrupter (5) over magnetic pickup (1).

c. Adjust nuts (3 and 4) as necessary until a gap of **0.025 inch** exists between magnetic pickup (1) and interrupter (5). Tighten nuts (3 and 4).

d. Attach magnetic pickup cable (7) to magnetic pickup (1) and secure with lockwire (D133) as shown.

NOTE

Cable (7) is permanently installed on helicopter.



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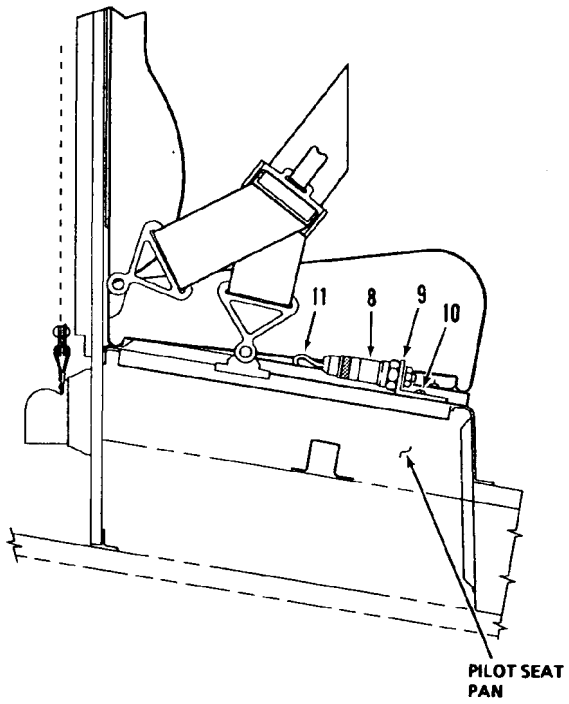
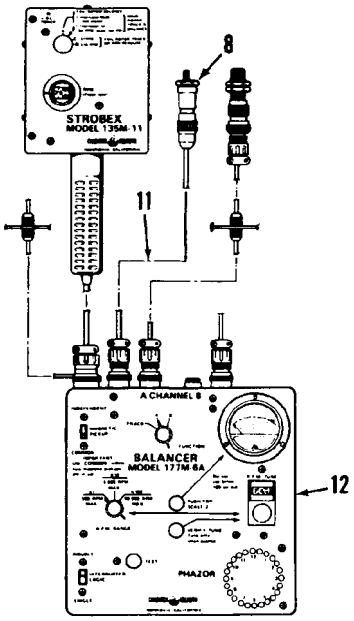
5-3-2. MAIN ROTOR — TRACKING AND DYNAMIC BALANCING (CONT)

e. Install 4177B fore and aft accelerometer (8) on bracket (9) and secure with hardware provided with accelerometer (8). Accelerometer connection is pointed aft.

f. Remove screw (10) on right side of pilot seat pan. Install bracket (9) to pilot seat pan using screw (10) previously removed.

g. Connect 4296-2 accelerometer cable (11) to lateral accelerometer (8) and connect opposite end of cable to 177M-6A balancer (12) (or equivalent) at receptacle marked Channel "A" ACCELEROMETER.





406010-257
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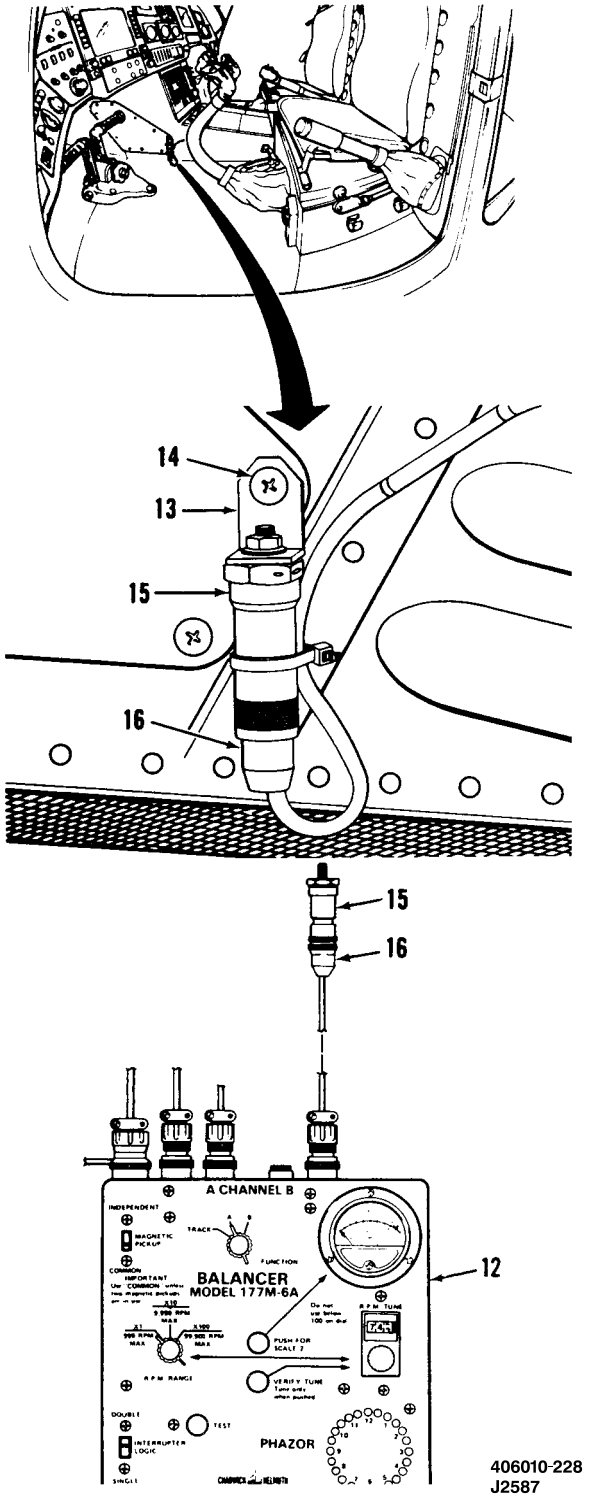
5-3-2. MAIN ROTOR — TRACKING AND DYNAMIC BALANCING (CONT)

h. Attach 3383 accelerometer bracket (13) to left side of pedestal using screw (14). Connect 4177B vertical accelerometer (15), on bracket (13); ensure connector end of accelerometer (16) points down as shown.

i. Connect 4296-2 cable (16) to vertical accelerometer (15) and connect opposite end of cable (16) to 177M-6A balancer (12) (or equivalent) at receptacle marked Channel "B" ACCELEROMETER.



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j. Connect 3319-2 cable (17) to receptacle (18) on copilot seat forward bulkhead (19) and to receptacle (20) on balancer (12).

k. Connect 3529 power cable (21) to 28 VDC receptacle (22) on copilot seat forward bulkhead (19).

l. Connect Strobex cable (23) to receptacle (24).

m. Set magnetic pickup switch (25) to COMMON.

n. Set interrupter logic switch (26) to SINGLE.

o. Perform checklist as shown in Table 5-1.

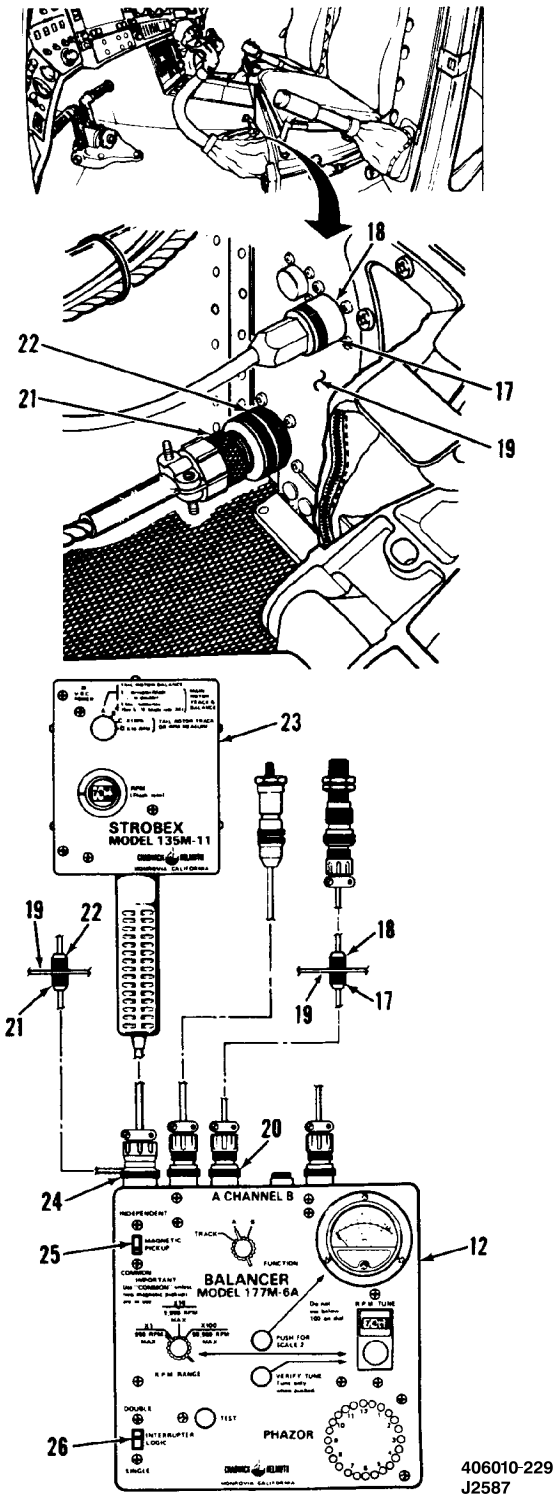

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TABLE 5-1. Preground Run Checklist

ITEM	FLIGHT CREW ACTION
Magnetic Pickup and Interrupter Installation	Be sure gap between magnetic pickup and interrupter is approximately **0.025 inch** and does not interfere with any of the rotating control system. Assure that blue blade is directly over the nose when the interrupter is over the magnetic pickup.
Accelerometer Installation	Verify that the fore-and-aft and vertical accelerometers are wired to the proper channel on the balancer.
Magnetic Pickup Configuration	On the balancer face be sure that the INTERRUPTER LOGIC switch is set to SINGLE and the MAGNETIC PICKUP switch is set to COMMON.
RPM Range	Set RPM RANGE to X1.
Reflectors or Reflective Tape	Reflectors or reflective tape installed.

GO TO NEXT PAGE

NOTE

Trim tabs are preset at the factory. Later blades have this angle stencilled on the root end of the blade. This angle is to serve as a starting point only. The trim tab can be adjusted as required.

5. Position trim tabs (27) as follows:

a. Install trim tab bending gage (B51) (28) over trailing edge of main rotor blade (29) inboard of trim tab (27).

NOTE

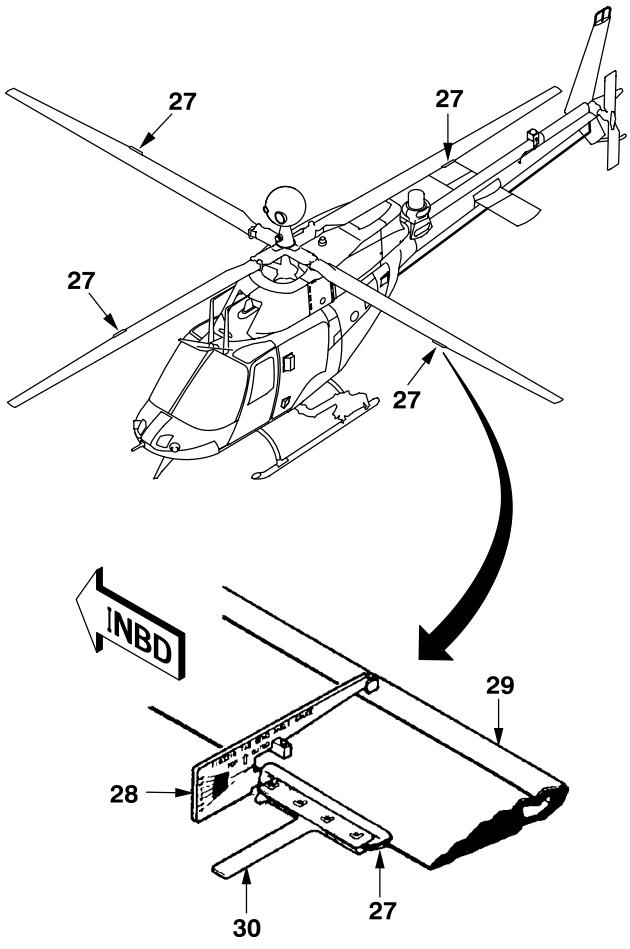
Blades which have been previously adjusted are not reset to 0 degrees.

b. Install trim tab bender (B207) (30) on trim tab (27).

c. Set trim tab (27) as shown on Table 5-2.

d. Repeat steps a. through c. for remaining new blades.

e. Remove trim tab bending gage (28) and trim tab bender (30).



406010-258
J2587

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TABLE 5-2. Main Rotor Blade Preflight Setup
Main Rotor Blade Replacement Configuration

COMPONENT TO BE PRESET	NO NEW OR REPAIRED BLADES	ONE OR TWO NEW OR REPAIRED BLADES	THREE OR FOUR NEW OR REPAIRED BLADES
Pitch Change Links	Do not adjust prior to flight. **NOTE** Any new pitch change link or link with new rod end bearings should be set to length of removed link prior to installation.	Same	Same
Trim Tabs	Check and set trim tabs to setting recorded in rotor smoothing log. **NOTE** If setting is not available leave trim tabs at original setting.	Leave trim tab setting of unreplaced blades at original setting. Adjust tabs of new/repaired blades to setting marked on blade root end. **NOTE** If setting is not available set trim tab to zero degrees.	Same
Hub Balance Weights	Leave hub balance weights at original adjustment.	Remove hub balance weights from pairs of blades having one or more new/repaired blades.	Remove all hub balance weights.

NOTE

It is not necessary to remove MMS when troubleshooting main rotor 1/rev vertical vibrations.

GO TO NEXT PAGE

6. Install reflective targets (31) as follows:

NOTE

Alternate method of using A3428-2. Tip Target set may be used in lieu of reflective tape.

Isopropyl Alcohol

a. Clean underside of main rotor blades (29) tips with low-lint cleaning cloth (D67) moistened with isopropyl alcohol (D39) to remove all dirt and oil.

b. Apply one strip of 4726 reflective tape (31) to underside of each main rotor blade (29) tip as shown. Spanwise and chordwise placement of reflective tape (31) must be the same on all four main rotor blade (29) tips.

NOTE

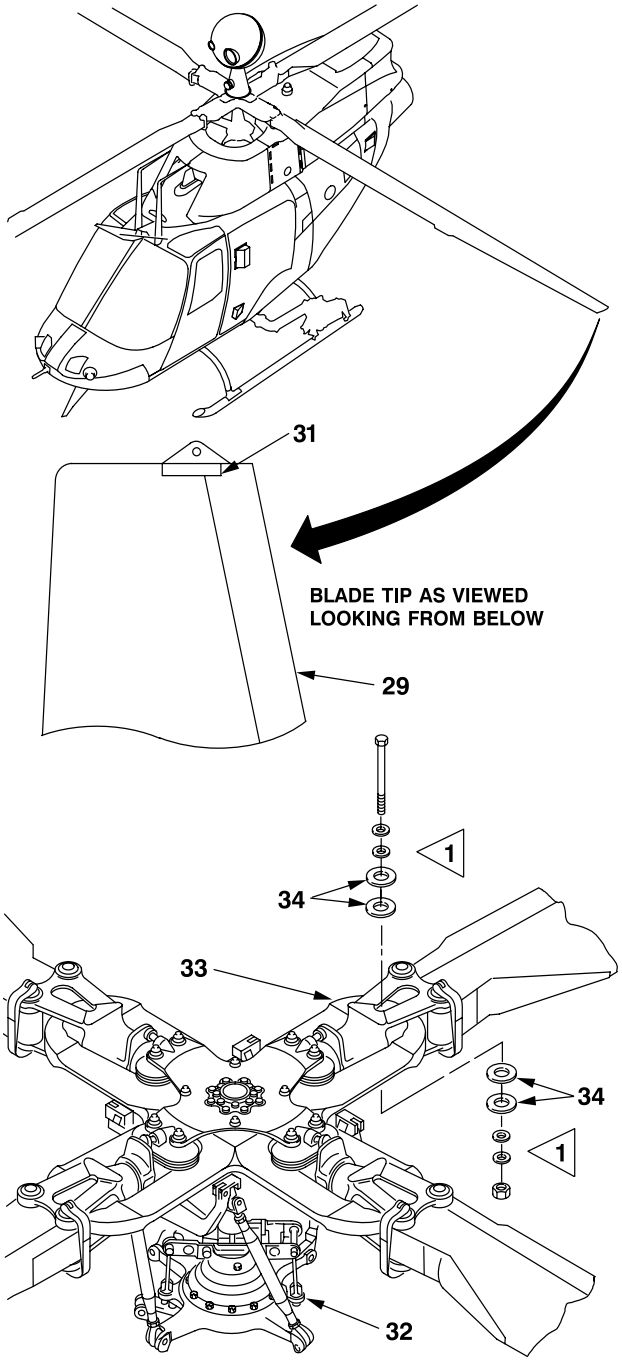
Reflective tape is used as reflective targets for the strobe tracker.

7. On new rotors check that the length of all four pitch links (32) are set at their normal installation dimensions of **19.443** to **19.463 inches** (Task 5-2-2).

8. On rotors with any blades that have been previously worked, leave pitch links at previously adjusted lengths.

9. Check and record, by color code, which main rotor hub yoke arms (33) have weights (34) installed and the amount.

10. Rotate the main rotor hub by hand. Install forward fairing assembly (Task 2-2-47). Visually to ensure there is no interference and no binding nor slack in cables that could possibly be caught in moving or rotating parts of helicopter. Pay particular attention to swashplate. Use tie-wrap (D206), as required, to secure cables.



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5-3-2. MAIN ROTOR — TRACKING AND DYNAMIC BALANCING (CONT)

TRACK MAIN ROTOR BLADES AT IDLE

11. Check main rotor blade idle track on ground as follows:

a. Position helicopter so it is oriented with nose pointed in the general direction of the wind within constraints of the operation area.

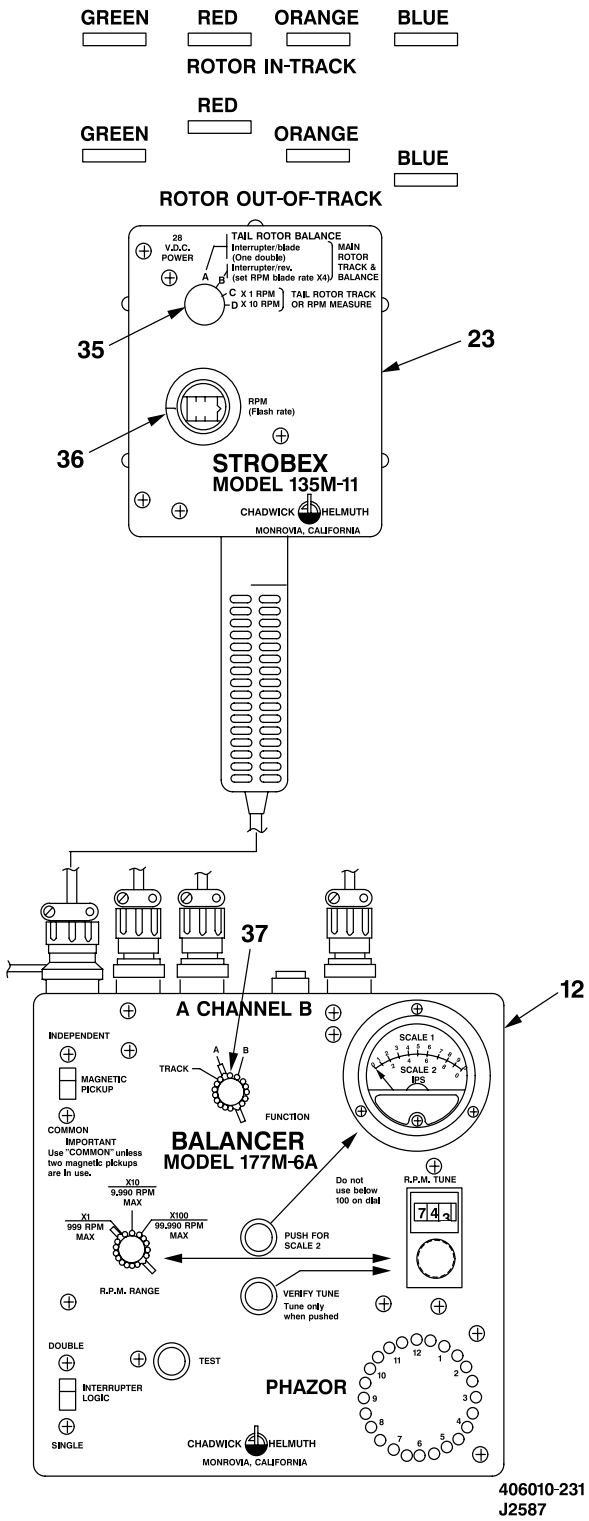
b. Set Strobex 135M-11(23) mode switch (35) to B position and RPM dial (36) to 375 RPM.

c. Set balancer (12) FUNCTION switch (37) to TRACK.

d. Qualified pilot, operate helicopter at idle (65% Nr), (TM 1-1520-248-10). Leave collective full down for idle track and center the cyclic while performing blade track.

e. Scan main rotor blade tip path plane directly in front of helicopter until one target is visible. This will be the "Blue" blade.

f. Increase RPM by rotating RPM dial (36) until other three targets appear from the left and the four targets form a group in order shown: green, red, orange, and blue. Note the relative vertical pattern of blade targets.



406010-231
J2587

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g. Record the relative vertical track pattern (position) of each blade target on a rotor working chart provided in Vibrex System Kit (B209).

h. Pilot shut down helicopter engine (TM 1-1520-248-10).

NOTE

The helicopter has leading edge pitch horns. This means that lengthening a pitch link increases the angle of attack of its blade causing it to climb. Shortening the pitch link decreases the angle of attack of its blade and causes it to dive. Pitch link length is used to change 1:1 vertical vibration as measured by the vertical accelerometer in the cockpit. For track adjustments of less than **1.0 inch**, accomplish steps i., j., and m. For track adjustments of more than **1.0 inch**, accomplish steps k., l., and m.

When adjusting the pitch link length with the pitch link barrel, the move which shortens the upper rod will lengthen the pitch link and the move which lengthens the upper rod end will shorten the pitch link.

When adjusting the pitch link length with the rod end, lengthening the rod end will lengthen the pitch link and shortening the rod end will shorten the pitch link.

GO TO NEXT PAGE

i. Remove lockwire (38) from nut (39). Loosen nuts (39 and 40) and rotate barrel of pitch link (32), as required, to adjust blade track.

(1) One full turn of barrel = **0.5 inch** blade track change.

(2) One flat turn of barrel = **0.1 inch** blade track change.

CAUTION

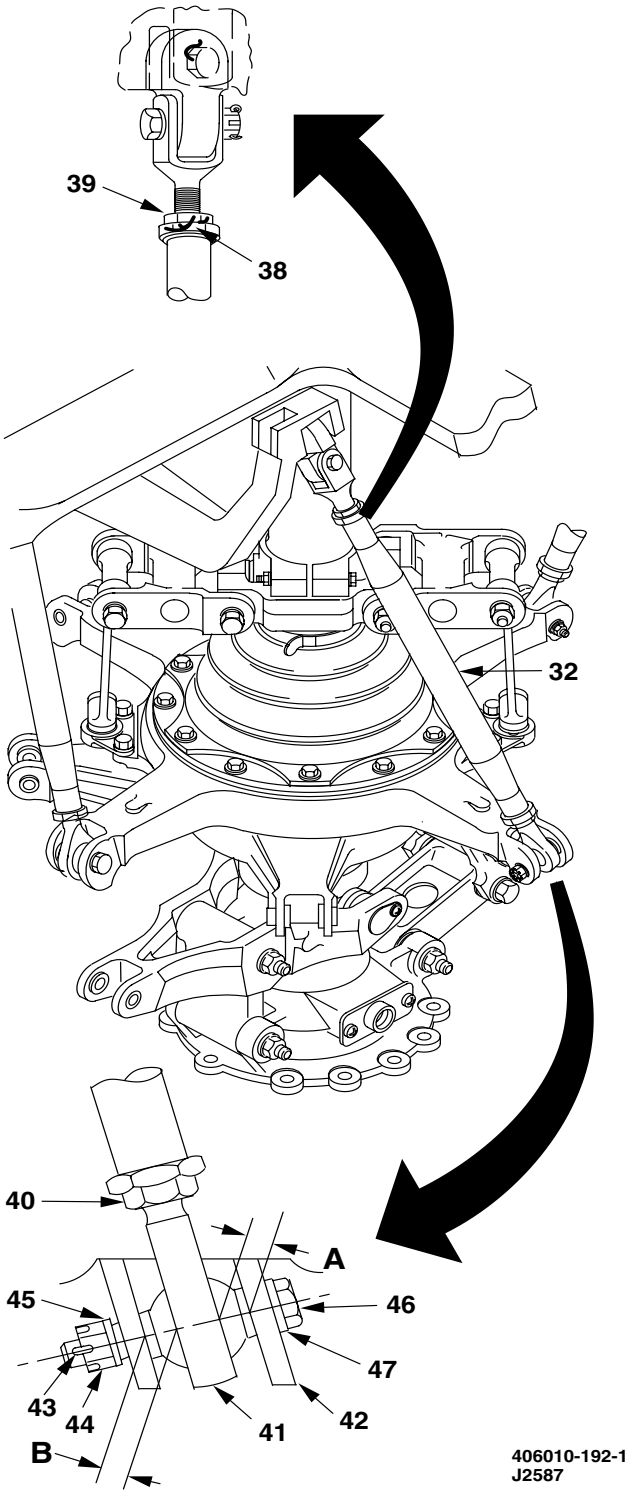
After tightening nut (39), maximum number of threads showing on upper clevis is 14. After tightening nut (40), maximum number of threads showing on lower rod end bearing is 9.

j. Torque nut (39) **150 TO 200 INCH-POUNDS**. Adjust position of rod end bearing (41) in horn of swashplate (42) until A and B are equal within **0.04 inch**. Hold rod end in this position. Torque nut (40) **150 TO 200 INCH-POUNDS**. Secure nut (39) with lockwire (D133).

NOTE

A half turn of rod end bearing (41) = **0.8 inch** blade track change.

k. Loosen nut (40). Remove cotter pin (43), nut (44), washer (45), bolt (46) and washer (47). Adjust rod end bearing (41) as required to adjust blade track.



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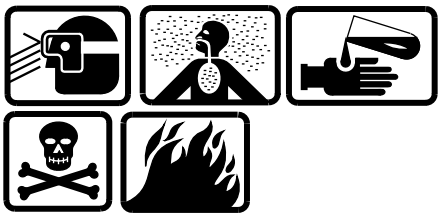
l. Install lower end of pitch link (32) as follows:



Corrosion Preventive Compound

(1) Coat shank of bolt (46), washers (45 and 47), and mating surface of pitch link (32) and horn of swashplate (42) with corrosion preventive compound (D83).

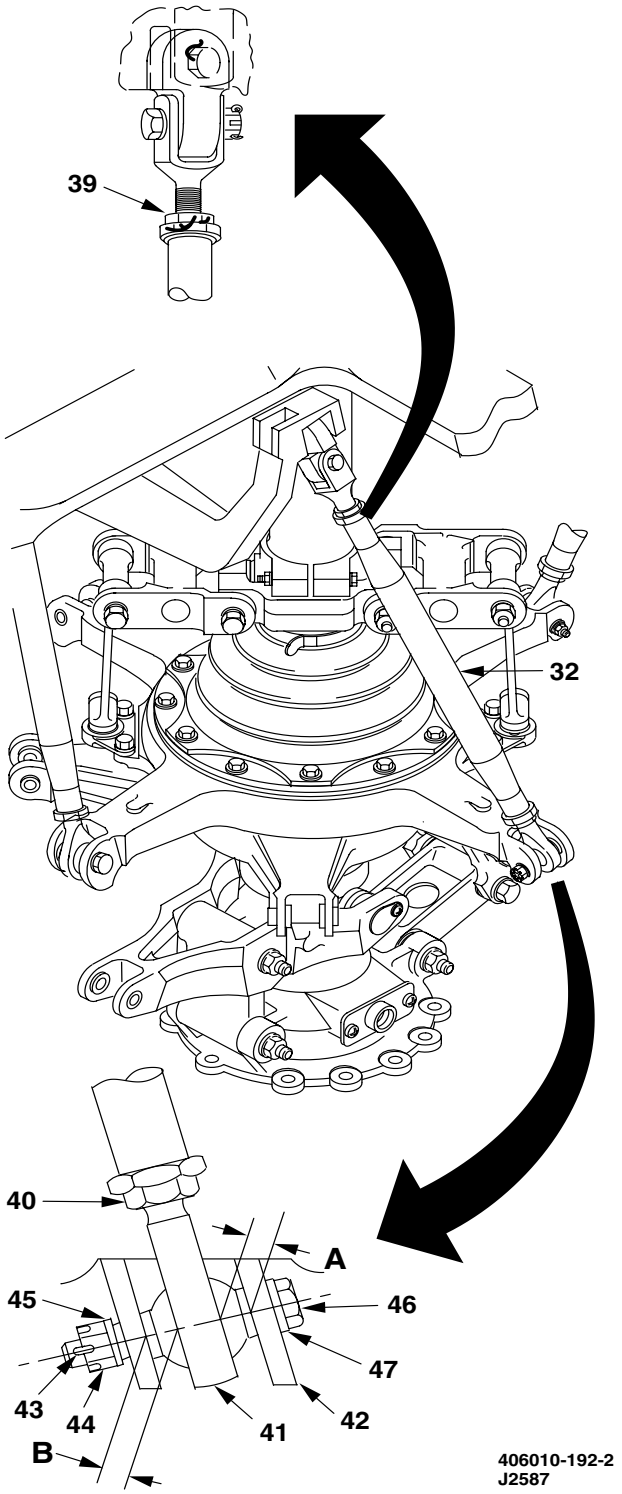
(2) Install pitch link (32) in horn of swashplate (42) and install bolt (46), washers (45 and 47), and nut (44).

(3) Torque nut (44) **120 TO 160 INCH-POUNDS**.

(4) Install cotter pin (43). Adjust position of rod end bearing (41) in horn of swashplate (42) until A and B are equal within **0.04 inch**. Hold rod end in this position.

(5) Torque nut (40) **150 TO 200 INCH-POUNDS**.

m. Repeat steps 11.d. through 11.l. until all main rotor blades are in track at 65% Nr.



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5-3-2. MAIN ROTOR — TRACKING AND DYNAMIC BALANCING (CONT)

BALANCING MAIN ROTOR AT IDLE

12. Check main rotor blade balance on the ground at idle as follows:

a. Set FUNCTION switch (37) to A.

b. Set RPM RANGE switch (48) to X1 and RPM TUNE dial (49) to 256 RPM.

c. Press TEST button (50) and ensure that only the "12 o'clock" light on PHAZOR (51) is lit. Adjust RPM TUNE dial (49) as necessary. Release TEST button (50).

d. With pilot at controls, run helicopter at 65% NR (TM 1-1520-248-10). Center cyclic and collective on the down stop.

NOTE

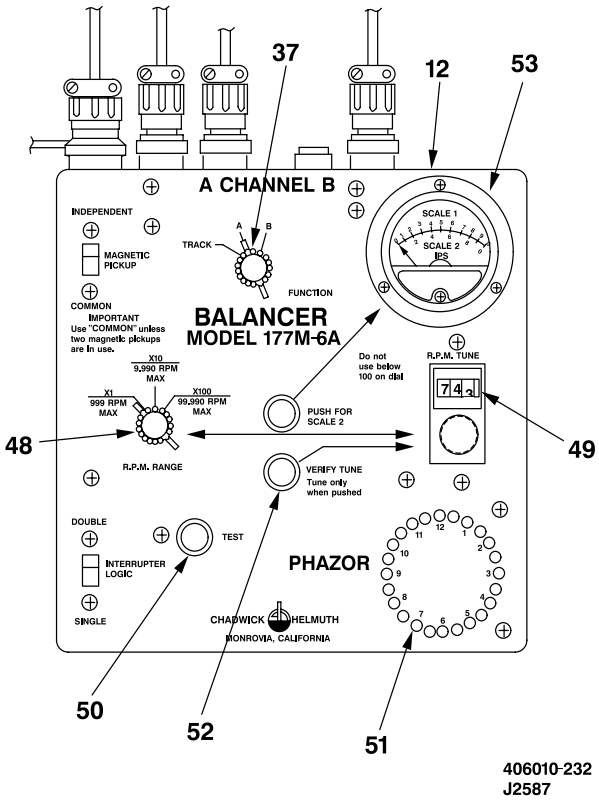
Minor changes in cyclic and collective are acceptable to minimize ground vibration prior to taking readings.

e. While pilot maintains positions established in step d., note clock angle of PHAZOR (51). Push VERIFY TUNE button (52) and note clock angle indicated on PHAZOR (51). Hold VERIFY TUNE button (52) down and rotate RPM TUNE dial (49) until the PHAZOR (51) light returns to position noted before pushing VERIFY TUNE button (52). Release VERIFY TUNE button (52) and note new clock angle.

f. Repeat step e. until there is no difference in PHAZOR (51) clock angle in either position of VERIFY TUNE button (52). This indicates that band pass filter of balancer (12) is tuned correctly.

g. Read and record both the fore-and-aft vibration IPS level from IPS meter (53) and clock angle from PHAZOR (51). Pilot shut down helicopter (TM 1-1520-248-10).

h. Ground balance chart provides information used to correct fore-and-aft 1/rev vibration.



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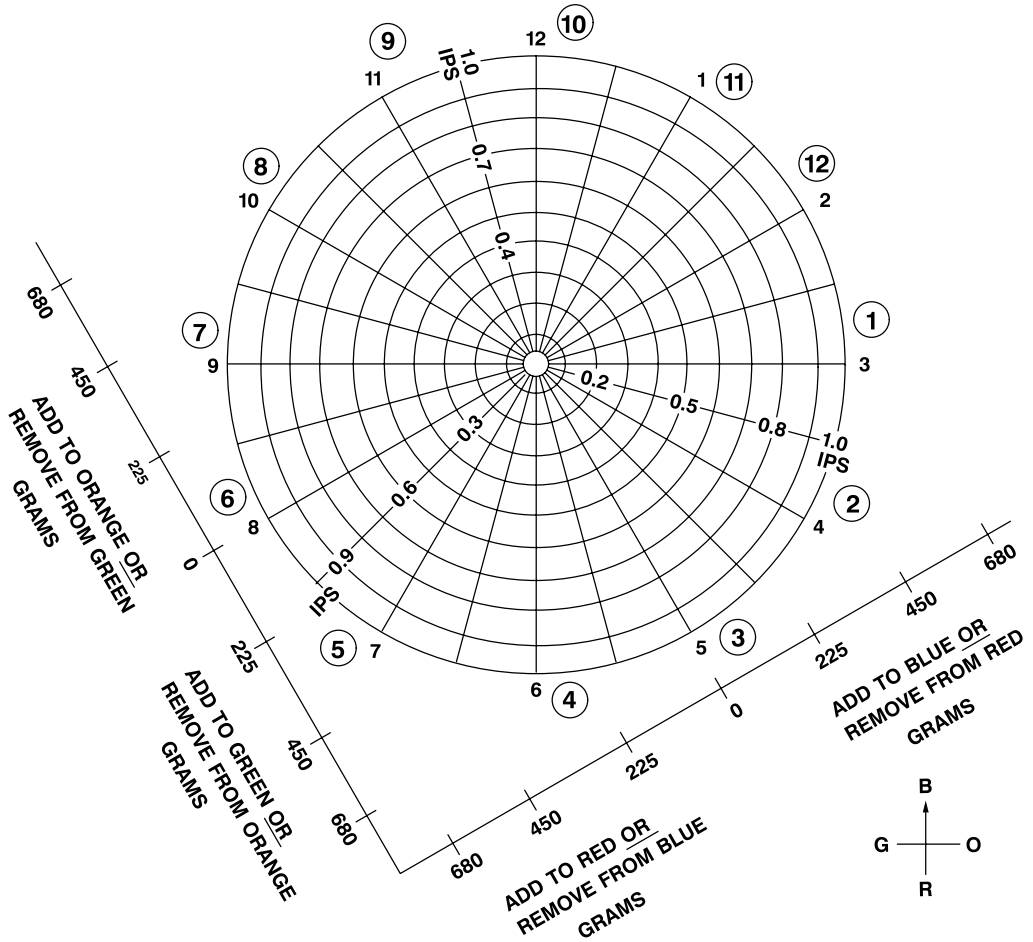
5-3-2. MAIN ROTOR — TRACKING AND DYNAMIC BALANCING (CONT)



APPROXIMATE TRACK SENSITIVITY AT IDLE	
P/C ADJUSTMENT	TRACK CHANGE
1 FLAT OF BARREL	0.1 INCH
1 TURN OF BARREL	0.5 INCH
1/2 TURN OF LOWER ROD END	0.8 INCH

NOTES:

1. DATA OBTAINED AT IDLE (65% NR).
2. SET RPM TUNE DIAL TO 256.
3. SET STROBEX RPM DIAL TO 375 INITIALLY.
4. USE FORE AND AFT ACCELEROMETER.
5. CIRCLED CLOCK POSITIONS ARE FOR MMS REMOVED.

406010-310
J2587

Ground Balance Chart

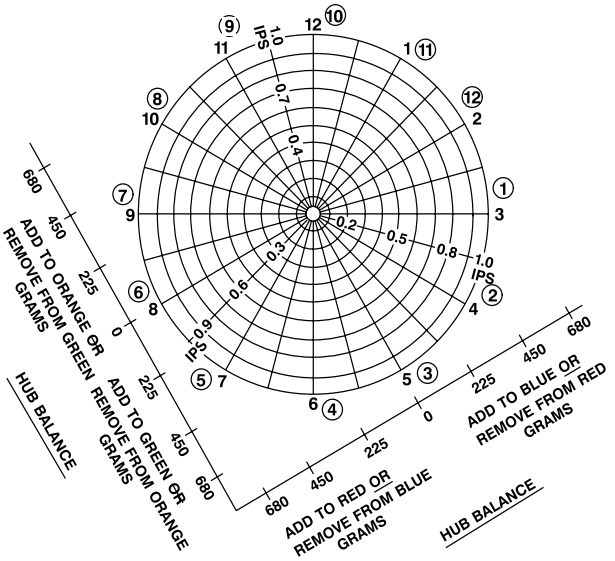
GO TO NEXT PAGE

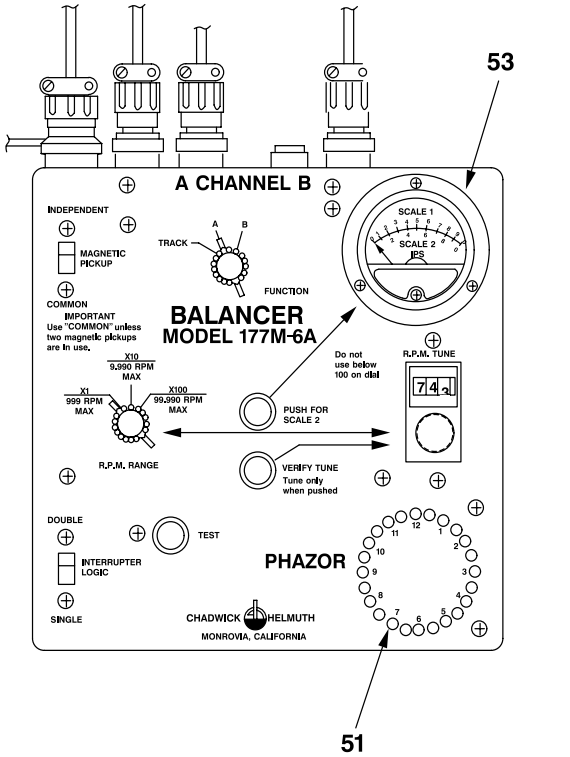
5-3-2. MAIN ROTOR — TRACKING AND DYNAMIC BALANCING (CONT)

i. Pilot fore-and-aft IPS level from IPS meter (53) and clock angle from PHAZOR (51) on ground balance chart. Example:

(1) Assume an IPS level of 0.7 IPS and a clock angle of 10:00 o'clock.

(2) Plot this on chart, labeling it point No. 1. Sketch lines to the two axes on chart as shown.





406010-233
J2587

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(3) Chart calls for adding 393 grams of weight (34) to orange yoke and 225 grams to red yoke or for removing 393 grams of weight (34) from green yoke and 225 grams from blue yoke.

j. Adjust yoke (33) weights as determined by chart as follows:

NOTE

If the chart calls for two moves, make only one change for the first move. Move lines will not always go exactly according to chart on every helicopter. Making only one weight change will indicate if the chart needs to be rephased. To rephase chart, use 3597 clock angle corrector (part of Vibrex Kit) and follow instructions provided in kit. When chart is properly phased, multiweight adjustments may be made, if required by balance chart.

(1) Remove nut (54), washers (55), weights (34) (if installed), and bolt (56).

(2) Using gram scale, provided in Vibrex Kit (B209), measure the proper amount of weights (34) to be either added or removed.

NOTE

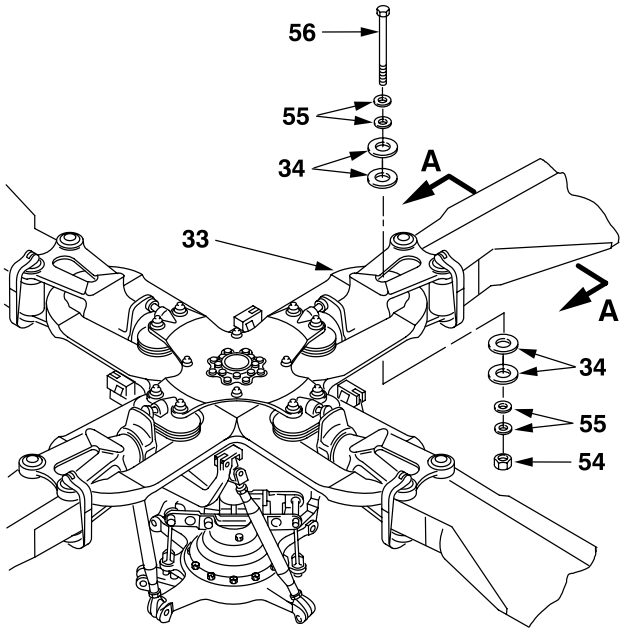
If possible, remove excessive weights rather than adding weights.

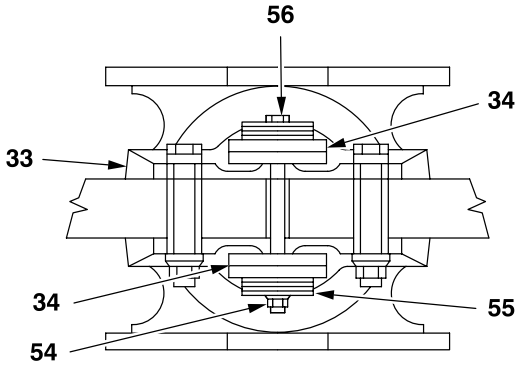
(3) Install bolt (56) with two washers (55) and half of weights (34), at bolthead, then install remaining weights (34), two washers (55), and nut (54).

(4) Torque nut (54) **50 TO 70 INCH-POUNDS**.

NOTE

Ensure that adequate number of bolt threads extend through nut (54). If necessary, replace bolt (56) with bolt of proper length. (Refer to TM 1-1520-248-23P.)





VIEW A-A

406010-196
J2587

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k. Repeat steps 12.d. and 12.g. Plot IPS level and clock angle on ground balance chart. Example:

(1) If first weight adjustment was accurate, the next plot should be an IPS level of 0.5 IPS with clock angle of 8:00 o'clock.

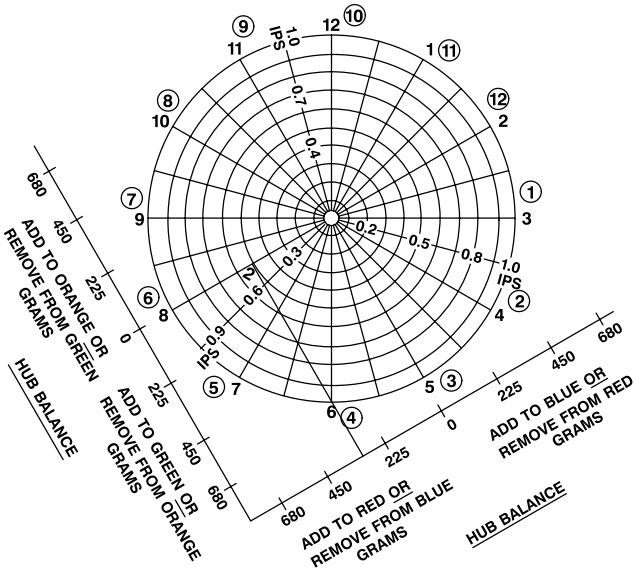
(2) Plot this on chart, labeling it point No. 2. Sketch lines to the two axes on chart as shown.

(3) Chart now calls for adding 300 grams of weight to red yoke or removing 300 grams of weight from blue yoke.

l. Adjust yoke weight in accordance with step j.

m. Repeat step 12.d. through 12.k. until vibration is 0.10 IPS or below.

n. Once 0.10 IPS or less is obtained, recheck main rotor blade idle track (step 11). If track at idle is unacceptable, repeat steps 11. and 12. until idle track and balance are both acceptable.



406010-259
J2587

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5-3-2. MAIN ROTOR — TRACKING AND DYNAMIC BALANCING (CONT)

13. Check main rotor blade track at 100% Nr on ground as follows:

a. Position helicopter so it is facing into the wind (as within operating constraints).

b. Set Strobex 135M-11 (23) mode switch (35) to B position and RPM dial (36) to 600 RPM.

c. Set balancer (12) FUNCTION switch (37) to TRACK.

d. Qualified pilot, operate helicopter at 100% Nr (TM 1-1520-248-10). Increase collective to between 33 and 35% mast torque and position cyclic to minimize ground bounce.

e. Scan main rotor blade tip path plane directly in front of helicopter until one target is visible. This will be the **"**Blue**"** blade.

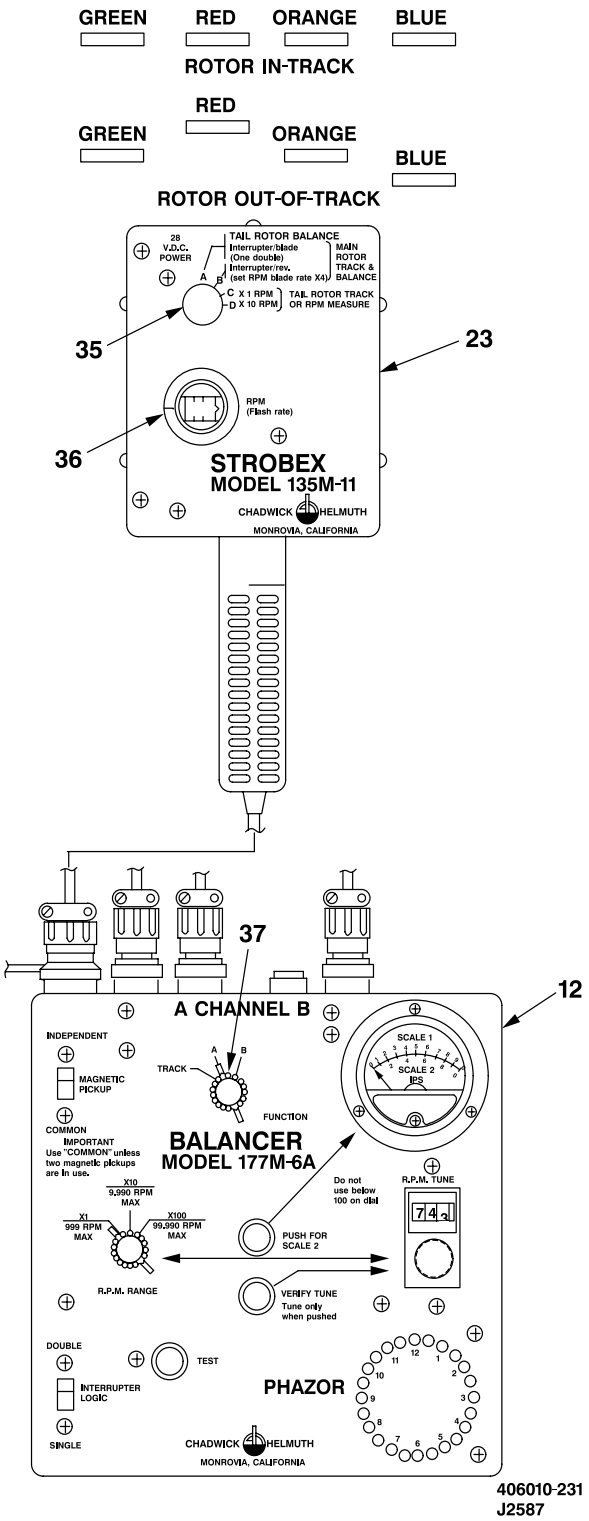
f. Increase RPM by rotating RPM dial (36) until other three targets appear from the left and the four targets form a group in order shown: green, red, orange, and blue. Note the relative vertical pattern of blade targets.

g. Record the relative vertical track pattern (position) of each blade target on a rotor working chart provided in Vibrex Kit (B209).

h. Pilot shut down helicopter engine (TM 1-1520-248-10).

NOTE

100% Nr tracking procedures are also used to observe track in flight.



406010-231
J2587

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5-3-2. MAIN ROTOR — TRACKING AND DYNAMIC BALANCING (CONT)

i. If track varies more than **0.2 inch** between idle and 100% Nr, adjust trim tabs as follows:

(1) Install trim tab bending gage (B51) (28) on blade (29) inboard trim tab and trim tab bender (B207) (30) on trim tab (27).

NOTE

Leave an approximate **0.10 inch** gap between trim tab bender and trailing edge of blade.

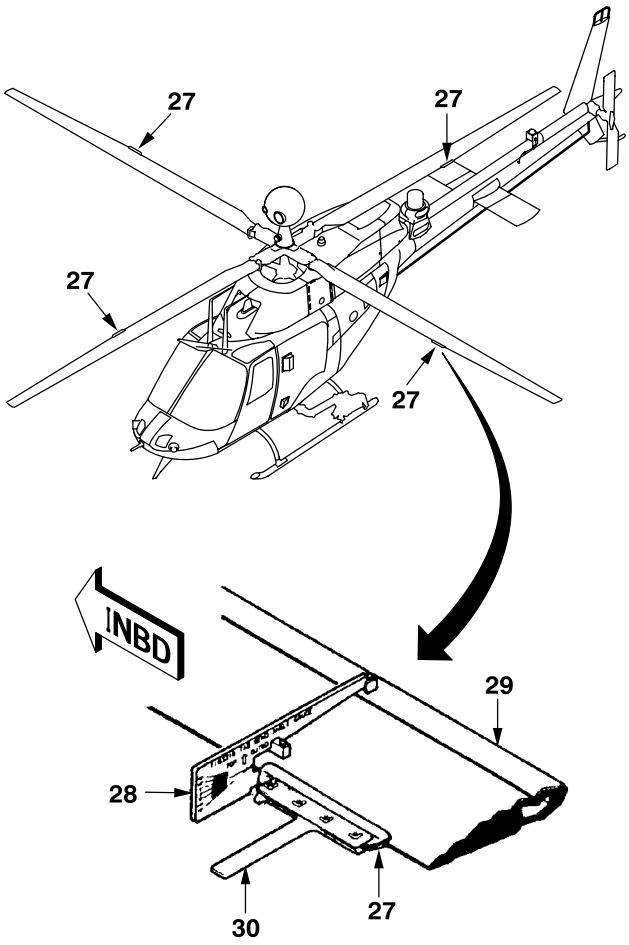
(2) One degree of trim tab adjustment = **0.1 inch** of track change. Bending trim tab up will cause blade to rise in track picture. Bending trim tab down will cause blade to dive in track picture.

j. Remove trim tab bender (30) and trim tab bending gage (28) from blade (29).

k. Repeat steps 13.d. through 13.j. until rotor is within **0.2 inch** of track at 100% Nr (one width of tape).

NOTE

It is better to make too little tab adjustment than too much.



406010-258
J2587

GO TO NEXT PAGE

14. Check main rotor blade balance on the ground as follows:

a. Set FUNCTION switch (37) to A.

b. Set RPM RANGE switch (48) to X1 and RPM TUNE dial (49) to 394 RPM.

c. Press TEST button (50) and ensure that only the '12 o'clock' light on PHAZOR (51) is lit. Adjust RPM TUNE dial (49) as necessary. Release TEST button (50).

d. With pilot at controls, run helicopter at 100% Nr (TM 1-1520-248-10). Center cyclic and increase collective pitch until 33 to 35% mast torque is obtained.

NOTE

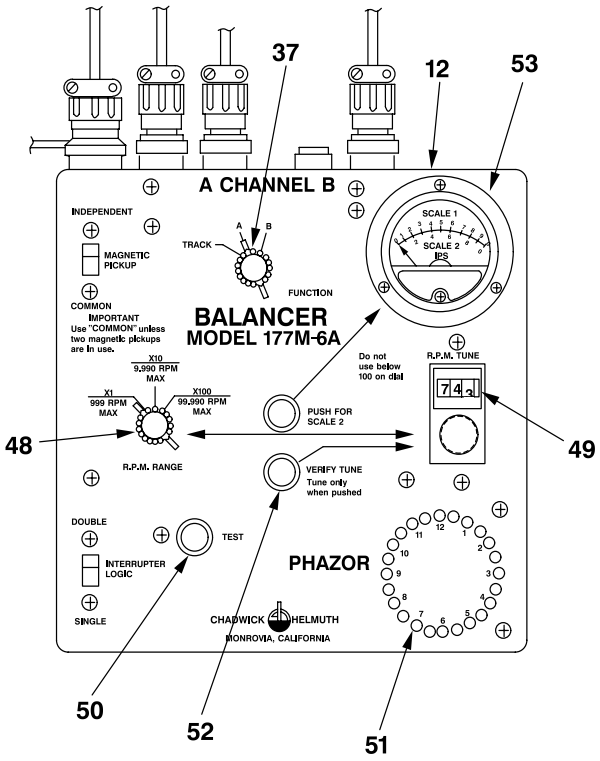
Minor changes in cyclic and collective are acceptable to minimize ground vibration prior to taking readings.

e. While pilot maintains positions established in step d., note clock angle of PHAZOR (51). Push VERIFY TUNE button (52) and note clock angle indicated on PHAZOR (51). Hold VERIFY TUNE button (52) down and rotate RPM TUNE dial (49) until the PHAZOR (51) light returns to position noted before pushing VERIFY TUNE button (52). Release VERIFY TUNE button (52) and note new clock angle.

f. Repeat step e. until there is no difference in PHAZOR (51) clock angle in either position of VERIFY TUNE button (52). This indicates that band pass filter of balancer (12) is tuned correctly.

g. Read and record both the fore-and-aft vibration IPS level from IPS meter (53) and clock angle from PHAZOR (51). Pilot shut down helicopter (TM 1-1520-248-10).

h. Ground balance chart provides information used to correct fore-and-aft 1/rev vibration.



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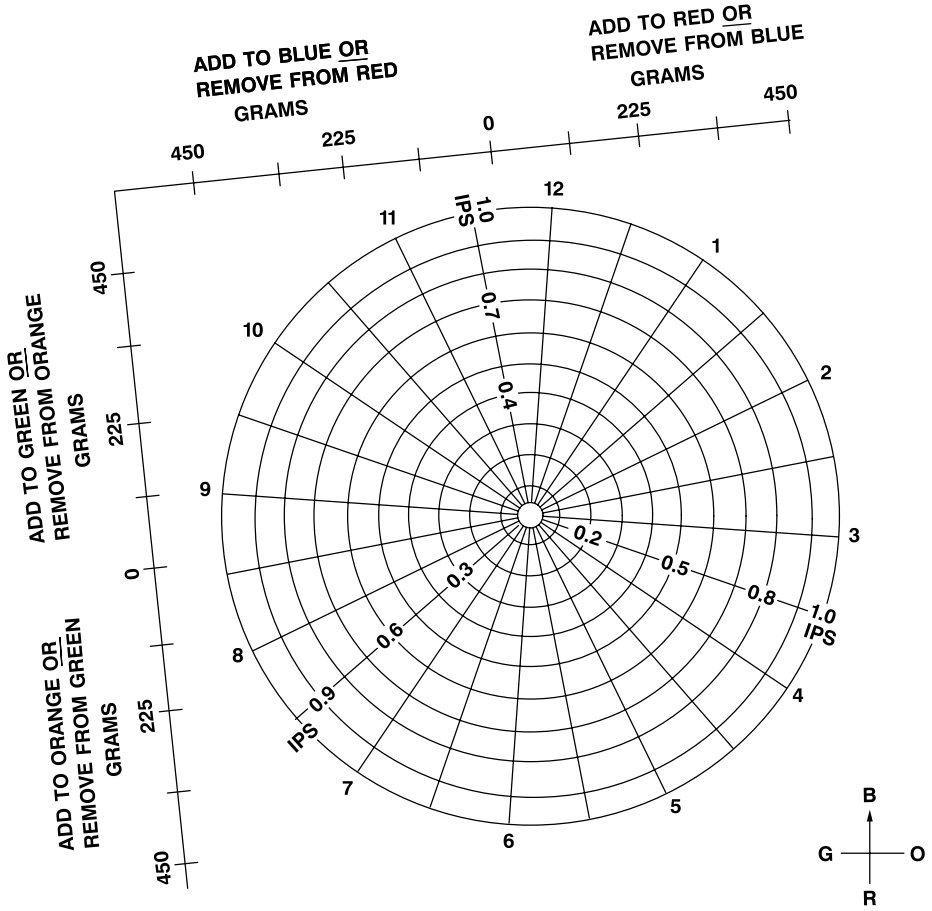


APPROXIMATE TRACK SENSITIVITY AT 100% NR.

P/C ADJUSTMENT	TRACK CHANGE
1 FLAT OF BARREL	0.1 INCH
1 TURN OF BARREL	0.5 INCH
1/2 TURN OF LOWER ROD END	0.8 INCH
1° OF TAB	0.1 INCH

NOTES:

1. DATA OBTAINED AT 100% NR
2. SET RPM TUNE DIAL TO 394
3. SET STROBEX RPM DIAL TO 600
4. USE FORE AND AFT ACCELEROMETER

406010-311
J2587

Ground Balance Chart

GO TO NEXT PAGE

i. Repeat steps 12.i. through 12.m.

j. Once 0.10 IPS or less is obtained, recheck main rotor blade 100% Nr track (step 13.). If track at 100% Nr is unacceptable, repeat steps 13. and 14. until 100% Nr track and balance are both acceptable.

TRACKING AND BALANCING DURING FLIGHT

15. Track and balance main rotor during flight (MMS removed) as follows:

a. Operate helicopter at 100% Nr. Set collective to between 33% and 35% mast torque. Adjust cyclic to minimize vibration. Measure and record the fore-and-aft vibration level and phase. Record the rotor track.

b. Pilot will operate and fly the helicopter (TM 1-1520-248-10) and another crew member will record IPS magnitude from meter (53) and PHAZOR (51) clock angle at vertical vibration and also use the Strobex 135M-11 (23) and record relative vertical position of main rotor blades at the various conditions and airspeeds as indicated below.

(1) Hover.

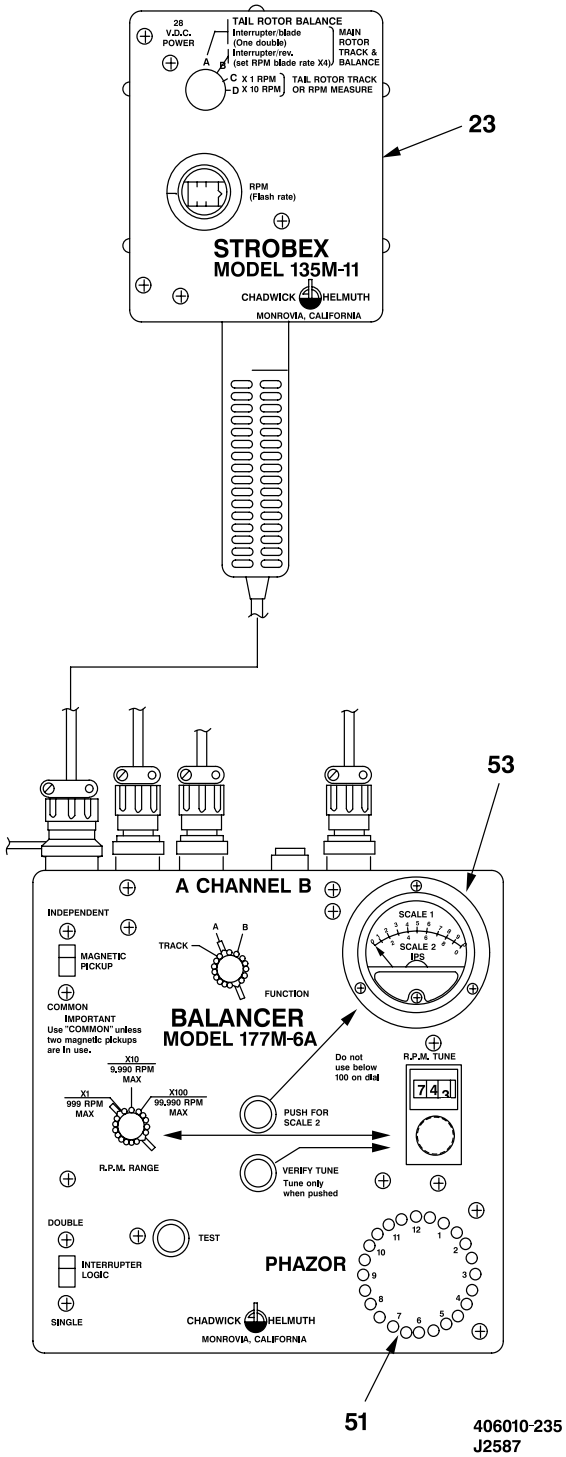
(2) Level flight at 60 knots.

(3) Level flight at 95% mast torque.

NOTE

Tracking rotor at 100% Nr in flight is accomplished same as in paragraph 13.

c. After pilot lands helicopter (TM 1-1520-248-10), plot IPS and clock angle readings on the vertical 1/rev chart.



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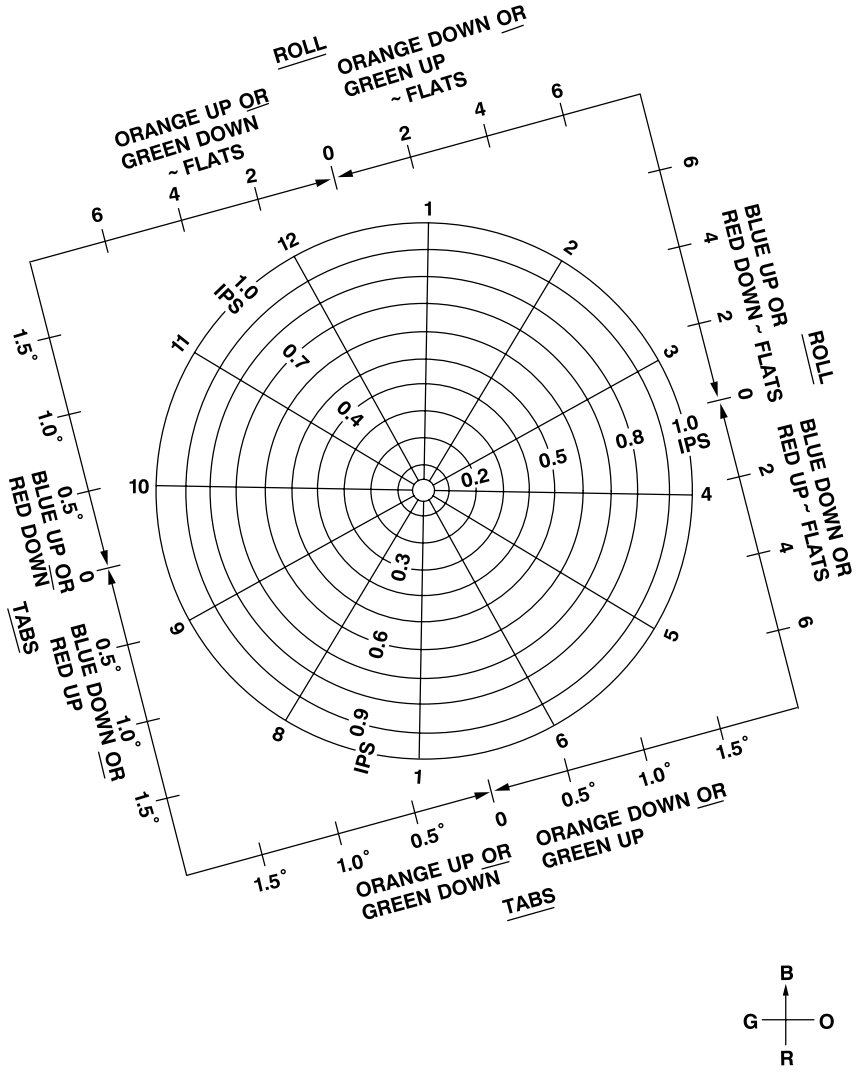


NOTES:

1. USE VERTICAL ON NOSE PANEL
2. SENSITIVITIES ARE FOR 110 KTS DOUBLE THE AMOUNT OF MOVE INDICATED FOR 60 KTS
3. ROLL SENSITIVITY IN LETDOWN IS THE SAME AS 110 KTS

406010-307
J2587

Flight Balance Chart

GO TO NEXT PAGE

d. Note the changes in blade tracking between hover, 60 knots and level flight at 95% mast torque.

e. Compare the adjustments indicated by the chart in step b. and the track changes noted in step c. With this information determine whether the pitch links or the trim tabs should be adjusted by the following rules:

(1) If the track changes significantly with airspeed and the chart indicates that the tab move indicated will result in a closer track as well as a lower vertical 1/rev level, then make the indicated tab move.

(2) If the track does not change significantly with airspeed and/or the chart indicates adjustments are required which will not result in a closer track, the pitch link roll move is indicated.

NOTE

The trim tab has significantly more effect at high speed than pitch link adjustment.

f. If a vertical 1/rev in level flight at 95% mast torque is present without a 1/rev at 60 knots being present (or is of opposite phase to the 1/rev at 95% mast torque), use trim tabs to reduce the 1/rev 95% mast torque and pitch links (roll) to correct the 60 knot point.

g. Determine what adjustments are to be made and adjust as follows:

(1) Adjust trim tabs as shown in step 13.

(2) Adjust pitch links as shown in step 11.

h. Operate helicopter at 100% Nr and check balance as shown in step 14. If balance is unacceptable, rebalance rotor prior to flight using procedures in step 14.

i. Repeat steps a. through h. until an acceptable level of main rotor vertical 1/rev is obtained.

GO TO NEXT PAGE

NOTE

The recommended procedure for smoothing main rotor is with MMS removed. If time or conditions prohibit removal of MMS after installation of new blades, it may be worked with MMS installed.

16. To track and balance main rotor with MMS installed use the following procedures:

a. Balance and track main rotor using procedures in steps 11. and 12.

b. Track rotor using procedures in step 13. Do not balance at 100% Nr.

c. Track rotor using procedures in step 15. Do not balance at 100% Nr.

d. If the main rotor is being checked for vertical vibration in forward flight, use procedures in step 15. to trim the main rotor.

TROUBLESHOOTING

17. If problems are encountered during tracking and balancing of main rotor, refer to Table 5-3 for possible solutions.

GO TO NEXT PAGE

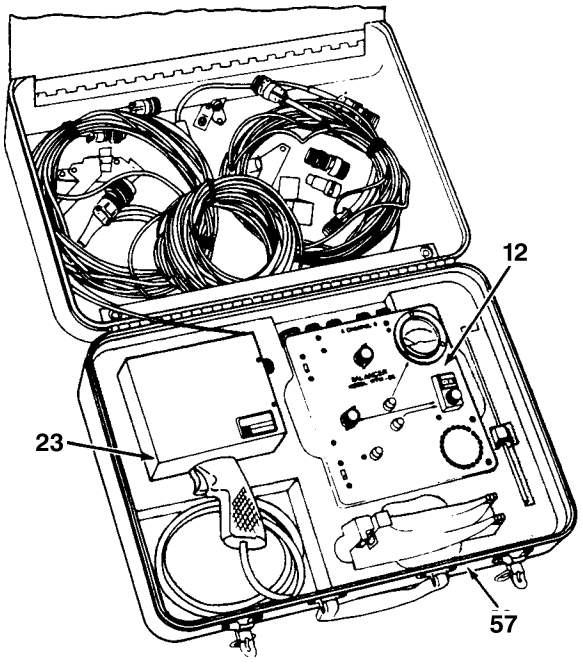
TABLE 5-3. Troubleshooting

PROBLEM	SOLUTION
Chart does not match moves.	Check that "Press to Test" gives proper reading (12 o'clock light).
	Check magnetic pickup and cable.
	Use 3597 clock angle corrector from Vibrex System Kit (B209).
1/rev occurs during roll-in into a turn, but is not in a steady turn.	Check and reset swashplate friction (Task 5-2-32).
Excessive 1/rev in turn.	Adjust trim tabs to stop track change with airspeed.
	Adjust pitch links to correct vertical in level flight.
	Check lead lag bearing bolts for proper torque (Task 5-1-25).
	Rotor blade out of product balance. Replace affected blade (Task 5-1-6).
Unexplained changes in 1/rev or 4/rev.	Retorque lower hub to mast split cones (Task 5-1-2).
	Check swashplate bearing for freeplay (Task 5-2-32).
	Check swashplate friction (Task 5-2-32).
	Check skid gear attachment for wear or rubber failure (Task 3-1-1 or 3-1-2).
Excessive tab or balance weight required.	Replace suspect blade Task 5-1-6).

GO TO NEXT PAGE

18. If previously removed, install MMS in accordance with TM 9-1240-778-23 prior to removal of Vibrex and verify conditions have not changed.

19. Remove cables, magnetic pickup, accelerometers, and reflective tape used for blade tip targets, Strobex 135M-11 (23) and balancer (12) from helicopter and return to storage in Vibrex System Kit (B209) carrying case (57).



406010-260
J2587

INSPECT

FOLLOW-ON MAINTENANCE

Install torquemeter support and bearing (Task 6-4-11).

Install mast mounted sight (TM 9-1240-778-23).

Boresight mast mounted sight (TM 9-1240-778-23).

Install forward fairing assembly (Task 2-2-47).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).

END OF TASK

Section IV. TAIL ROTOR HUB AND BLADES

5-11. TAIL ROTOR HUB AND BLADES

5-12. INTRODUCTION

This section contains: maintenance procedures for removal, cleaning, inspection, repair, and installation of tail rotor hub and blades. Standard torques are provided in Appendix P and TM 1-1500-204-23.

5-13. TASK LIST

The task list lists those tasks required to support unit and intermediate level maintenance.

LIST OF TASKS

5-4-1. TAIL ROTOR — INSPECTION

This task covers: Inspection (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Dial Indicator (B37)
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

WARNING

No one shall operate tail rotor controls from inside the helicopter during installation of tail rotor. Physical injury can occur. If injury occurs, seek medical aid.

NOTE

- This inspection is to determine if any part of the tail rotor installation is damaged to the extent that it should be replaced or repaired.
- A clicking noise may be heard in the tail rotor hub when the rotor is manually flapped gently back and forth. This noise is normal. The noise is generated when the outer race of the flapping bearing slips **0.001 inch** in the yoke and the keyway slaps the key stop in the clamp ring. The noise is repeated when the rotor is flapped in the opposite direction and the other side of the keyway slaps the key stop.

GO TO NEXT PAGE

5-4-1. TAIL ROTOR — INSPECTION (CONT)

1. Inspect tail rotor blades (1) (Task 5-4-27) for:

   a. Nicks, dents, scratches and holes.

   b. Security of attaching hardware.

2. Inspect counterweight bracket for damage (Task 5-4-22) and weights (2) for security.

3. Inspect tail rotor counterweight support (3) for damage (Task 5-4-17).

4. Inspect tail rotor retaining nut (4) for damage (Task 5-4-18), security, and lockwire.

5. Inspect tail rotor crosshead (5) for damage (Task 5-4-9). Check seal on inboard end of crosshead for holes or tears. Check bolts and nuts on outboard end of crosshead for security.

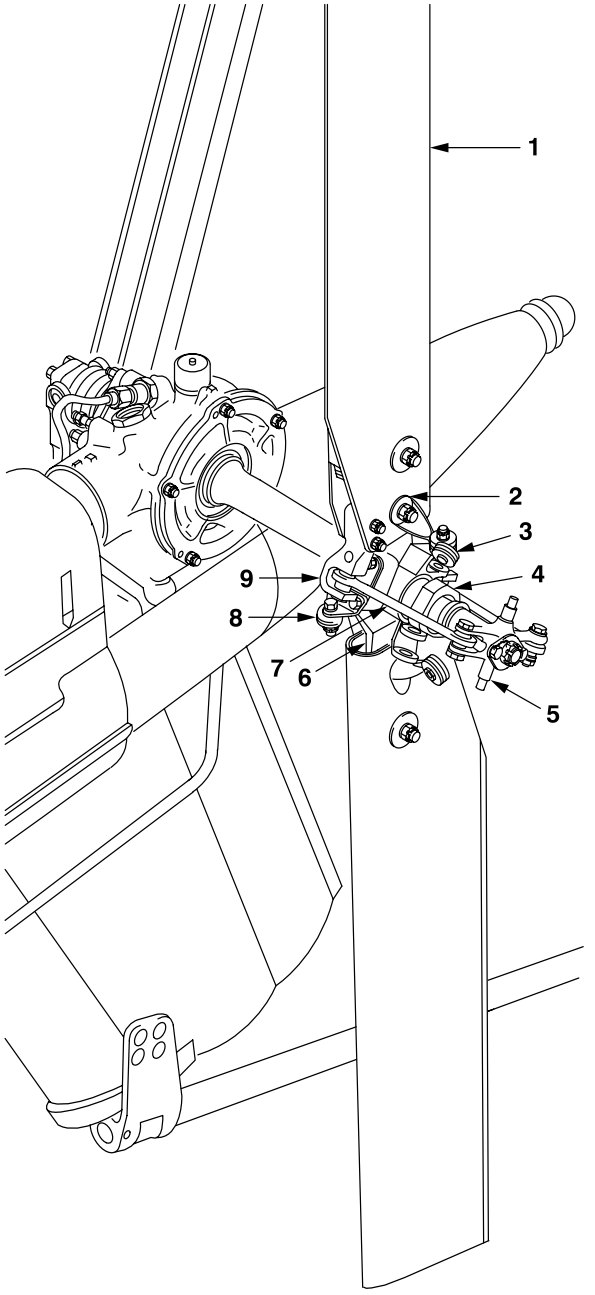
6. Inspect exposed portion of yoke (6) for damage (Task 5-4-24).

7. Inspect tail rotor pitch links (7) for damage (Task 5-4-3).

8. Using dial indicator (B37), check tail rotor pitch change link (7) bearings for looseness: **0.020 inch** axial play maximum allowed. Check attaching hardware for security.

9. Inspect weights and support (8) for damage (Task 5-4-24) and security.

10. Inspect tail rotor pitch horn (9) for damage (Task 5-4-20) and security.



406012-17
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END OF TASK

5-4-2. TAIL ROTOR PITCH LINK — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

WARNING

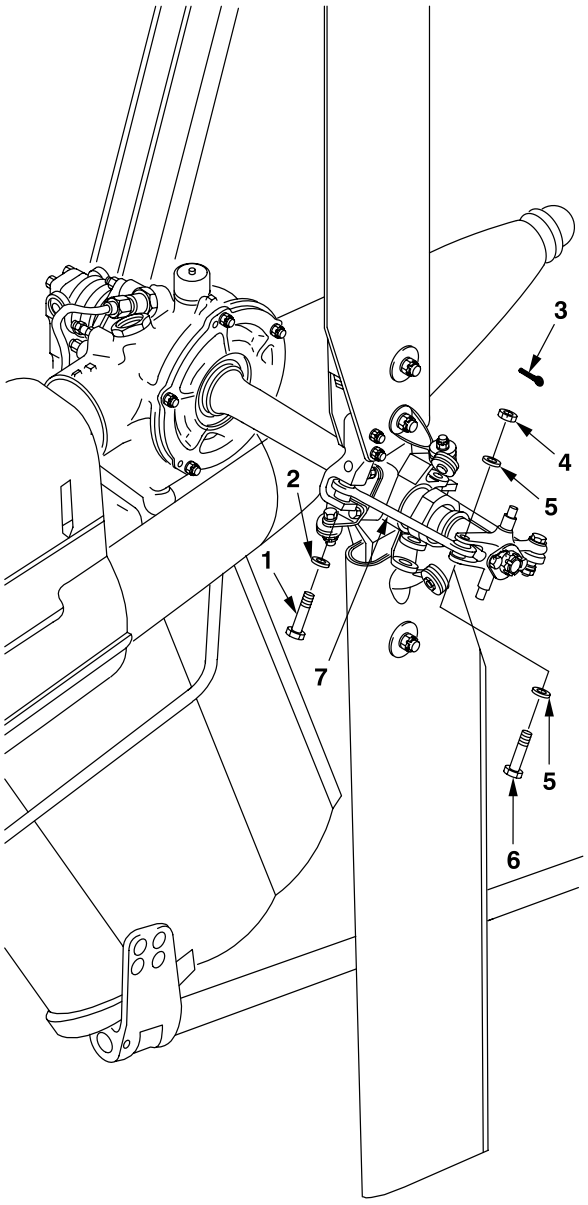
No one shall operate tail rotor controls from inside of helicopter during removal of pitch link. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Cut lockwire and remove bolt (1) and washer (2).

2. Remove cotter pin (3) and discard.

3. Remove nut (4), two washers (5), and bolt (6).

4. Remove pitch link (7).



406012-18
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END OF TASK

5-4-3. TAIL ROTOR PITCH LINK — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Dial Indicator (B37)

Material:
Black Acrylic Lacquer (D124)
Drycleaning Solvent (D199)
Chemical Conversion Coating (Alodine 1201) (D57)
Sandpaper (D175)
Rubber Gloves (D111)
Wiping Rag (D164)
Polyamide Epoxy Primer (D98)
Acid Swabbing Brush (D51)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1520-266-23

CLEAN

Drycleaning Solvent

1. Clean pitch link with drycleaning solvent (D199) and acid swabbing brush (D51). Dry with wiping rag (D164).

INSPECT

2. Inspect pitch link to limits shown.

2.1. If a crack on the pitch link is suspected, refer to TM 1-1520-266-23.

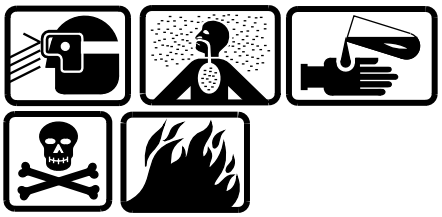
3. Use dial indicator (B37) to check bearing wear.

4. Replace pitch link if limits are exceeded. See figure Tail Rotor Pitch Link — Wear and Damage Limits.

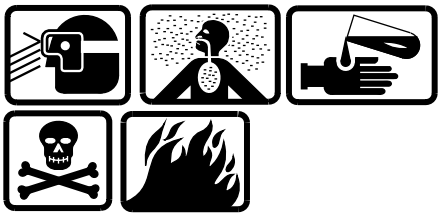
REPAIR

Sanding Operations

5. Polish out acceptable damage as shown with 400 grit sandpaper (D175).



Chemical Conversion Materials



Epoxy Primer Coating

6. Apply Alodine 1201 (D57) to repaired areas with acid swabbing brush (D51). Allow Alodine to remain on part for approximately 1 minute.

7. Flush part with water and allow to air dry.

8. Repaired area must be primed with polyamide epoxy primer (D98) and top coated with acrylic lacquer (D124).

INSPECT

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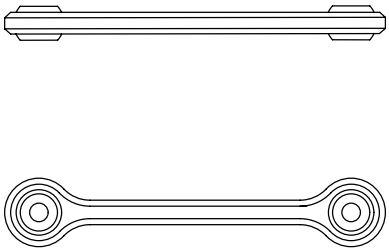


DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL AND CORROSION	0.010 in. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.050 sq. in.
BEARING WEAR:	
Axial:	0.020 in.

NOTES: 1. The pitch link may have one repair per end and one on the center section.

2. No cracks are permitted.

406312-1
J1693

Tail Rotor Pitch Link — Wear and Damage Limits

END OF TASK

5-4-4. TAIL ROTOR PITCH LINK — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B237)

Material:
Lockwire (D132)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Pilot

References:
TM 1-1520-248-10
TM 1-1520-248-CL
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

5-4-4. TAIL ROTOR PITCH LINK — INSTALLATION (CONT)

INSTALL

WARNING

No one shall operate tail rotor controls from inside of helicopter during installation of pitch link. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

NOTE

If reinstalling a repaired pitch link previously damaged by contact with crosshead, install repaired end of pitch link at pitch horn.

1. Position pitch link (1) between pitch horn (2) and crosshead (3).

2. Install washer (4) and bolt (5).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing and lockwiring of bolt are characteristics critical to flight safety.

3. Torque bolt (5) **60 TO 80 INCH-POUNDS**.

4. Secure bolt (5) to pitch horn (2) with lockwire (D132).

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

5. Install bolt (6), two washers (7), and nut (8).

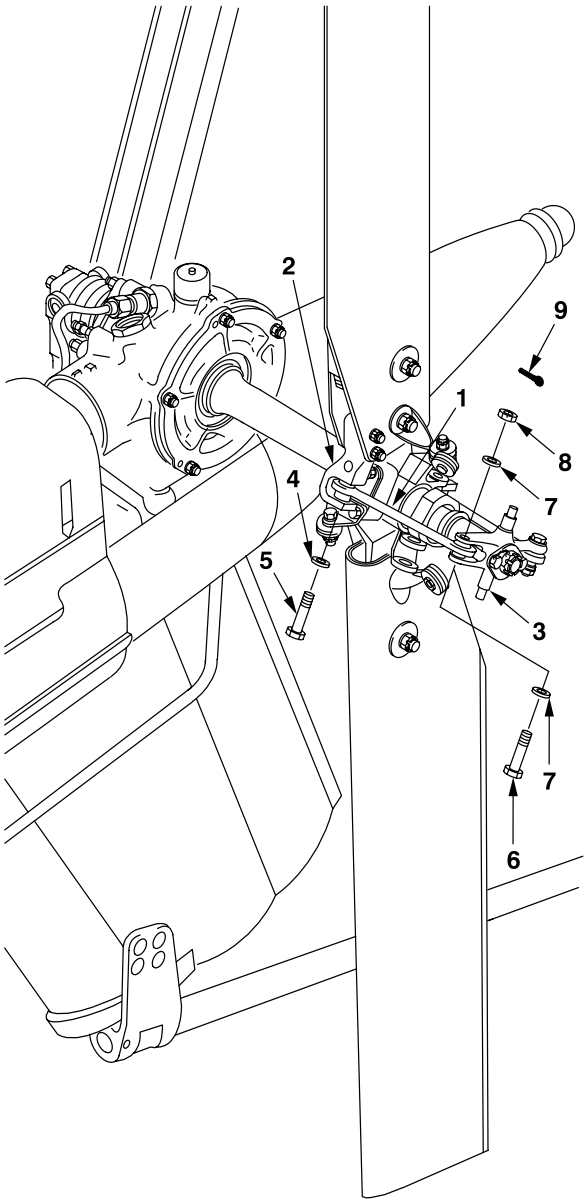
WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nut and correct installation of cotter pin are characteristics critical to flight safety.

6. Torque nut (8) **60 TO 80 INCH-POUNDS**.

7. Install cotter pin (9) through nut (8).



406012-21
J0466

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5-4-4. TAIL ROTOR PITCH LINK — INSTALLATION (CONT)

INSPECT

FOLLOW-ON MAINTENANCE

Pilot perform MOC (TM 1-1520-248-10/-CL).

END OF TASK

5-4-5. TAIL ROTOR CONTROL TUBE DRIVER PLATE — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

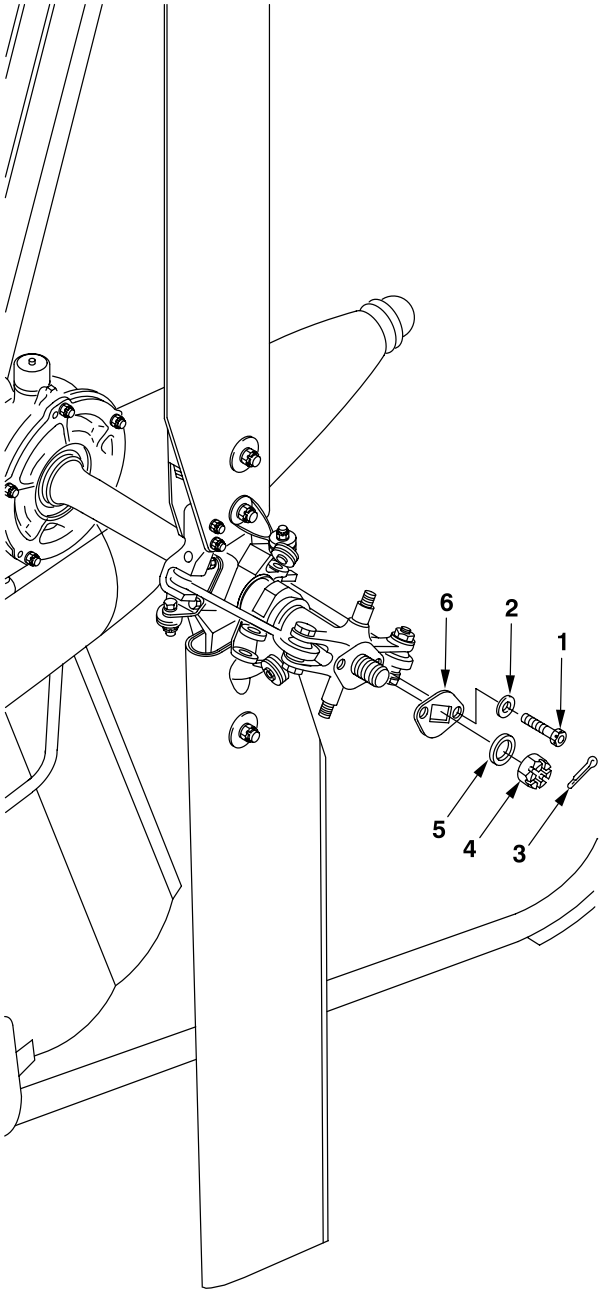
GO TO NEXT PAGE

5-4-5. TAIL ROTOR CONTROL TUBE DRIVER PLATE — REMOVAL (CONT)

WARNING

No one shall operate tail rotor controls from inside the helicopter during removal of driver plate. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Remove lockwire and remove two bolts (1) and washers (2).
2. Remove cotter pin (3) and discard.
3. Remove nut (4) and washer (5).
4. Remove driver plate (6).



406012-22
J0466

END OF TASK

5-4-6. TAIL ROTOR CONTROL TUBE DRIVER PLATE — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Drycleaning Solvent (D199)
Sandpaper (D175)
Wiping Rag (D164)
Polyamide Epoxy Primer (D98)
Black Acrylic Lacquer (D124)
Rubber Gloves (D111)
Acid Swabbing Brush (D51)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1520-266-23

CLEAN

Drycleaning Solvent

1. Clean driver plate using drycleaning solvent (D199) and acid swabbing brush (D51). Dry with wiping rag (D164).

INSPECT

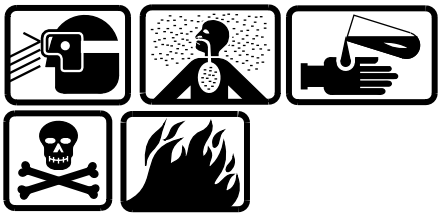
2. Inspect driver plate to limits shown: replace if limits are exceeded. See figure Tail Rotor Control Tube Driver Plate — Damage Limits.

2.1. If a crack on the surface of the driver plate is suspected, refer to TM 1-1520-266-23.

REPAIR

Sanding Operations

3. Polish out acceptable damage with 400 grit sandpaper (D175).



Epoxy Primer Coating

4. Apply one coat of primer (D98) to repaired areas which were previously painted.

Acrylic Lacquer

5. Apply two coats of black lacquer (D124) to primed areas.

INSPECT

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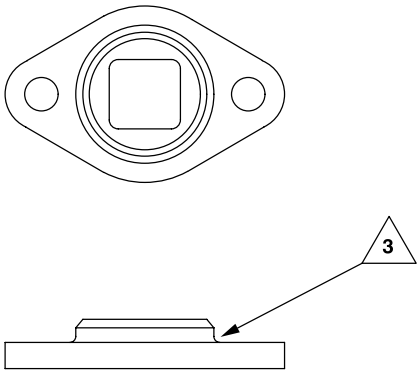


DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL AND CORROSION	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.050 Sq. In.
NUMBER OF REPAIRS	One per lug
EDGE CHAMFER TO REMOVE DAMAGE	0.020 In. x 45°

NOTES:
1. No cracks are permitted.
2. Edge chamfer not to exceed one-half length of edge. No more than two areas.
3. Exterior damage not to exceed 0.002 inch for one-fourth circumference after repair.

406012-8
J2198

Tail Rotor Control Tube Driver Plate — Damage Limits

END OF TASK

5-4-7. TAIL ROTOR CONTROL TUBE DRIVER PLATE — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B237)
Torque Wrench (B239)

Material:
Lockwire (D132)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

5-4-7. TAIL ROTOR CONTROL TUBE DRIVER PLATE — INSTALLATION (CONT)

INSTALL

WARNING

No one shall operate tail rotor controls from inside the helicopter during installation of driver plate. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Align pitch change control tube (1) with driver plate (2) to ensure cotter pin hole in pitch change control tube is perpendicular to mounting bolts (3) (see view A).

2. Install driver plate (2) with two washers (4) and bolts (3). Do not tighten bolts.

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

3. Install washer (5) and nut (6).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nut and correct installation of cotter pin are characteristics critical to flight safety.

4. Torque nut (6) **120 TO 140 INCH-POUNDS**.

5. Install cotter pin (7) through nut (6).

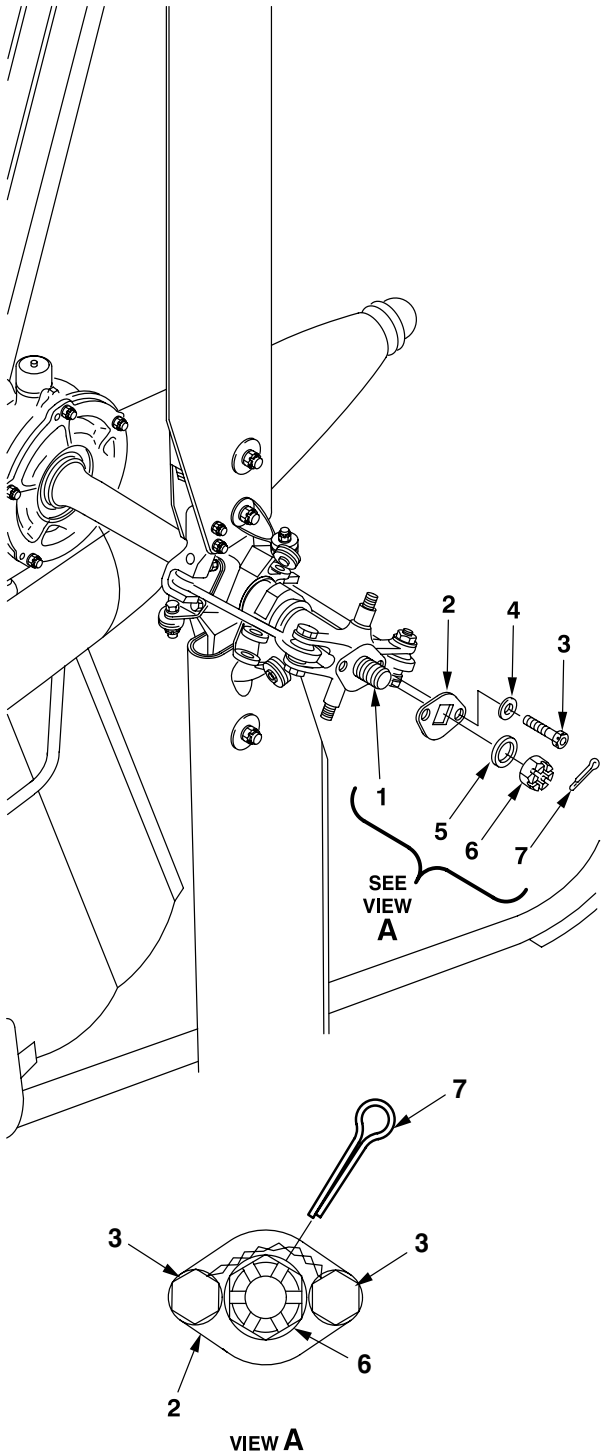
WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing and lockwiring of bolts are characteristics critical to flight safety.

6. Torque two bolts (3) **60 TO 80 INCH-POUNDS**.

7. Secure two bolts (3) with lockwire (D132), routing lockwire behind head of cotter pin (7).



ASSEMBLY CONFIGURATION

406012-24
J2351

GO TO NEXT PAGE

5-4-7. TAIL ROTOR CONTROL TUBE DRIVER PLATE — INSTALLATION (CONT)

INSPECT

FOLLOW-ON MAINTENANCE

Pilot perform MOC (TM 1-1520-248-10/-CL).

END OF TASK

5-4-8. TAIL ROTOR CROSSHEAD — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

5-4-8. TAIL ROTOR CROSSHEAD — REMOVAL (CONT)

REMOVE

WARNING

No one shall operate tail rotor controls from inside the helicopter during removal of crosshead. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Cut lockwire on bolts (1).

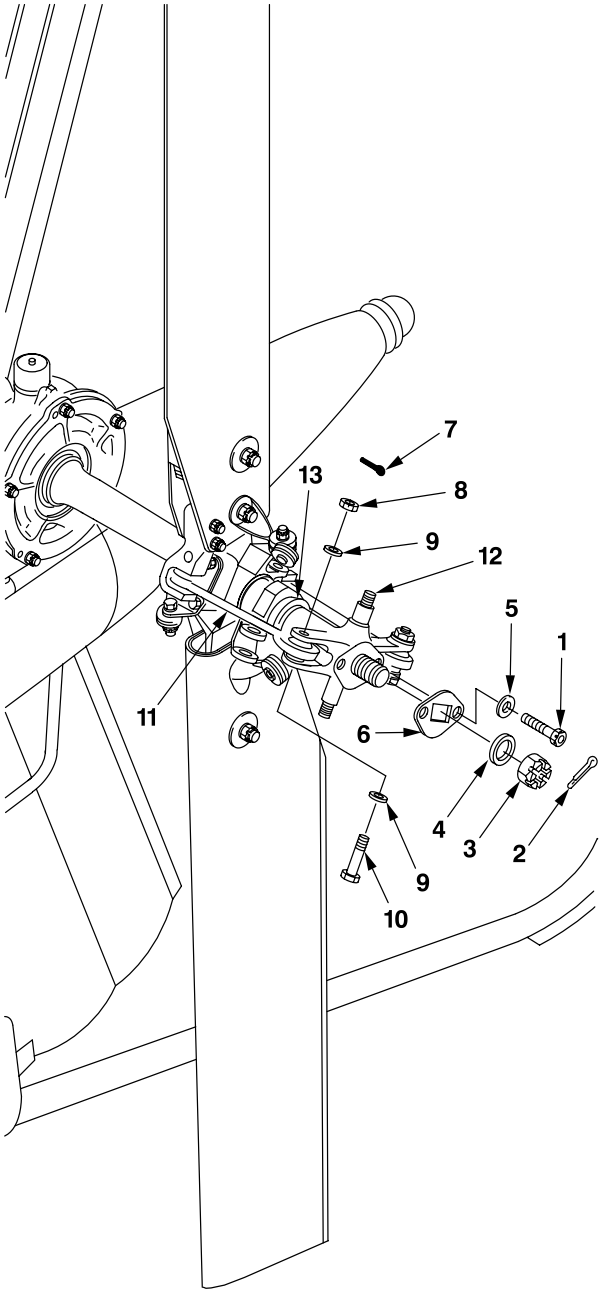
2. Remove cotter pin (2), nut (3) and washer (4). Discard cotter pin.

3. Remove two bolts (1), washers (5), and driver plate (6).

4. Remove cotter pin (7), nut (8), two washers (9), and bolt (10). Discard cotter pin.

5. Repeat step 3 to disconnect opposite pitch link (11).

6. Remove crosshead (12) with seal (13) attached. Separate seal (13) from crosshead.



406012-28
J0466

END OF TASK

5-4-9. TAIL ROTOR CROSSHEAD — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Drycleaning Solvent (D199)
Sandpaper (D175)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Wiping Rag (D164)
Rubber Gloves (D111)
Sealing Compound (D183)
Electrical Insulating Sheet (D96)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1520-266-23

GO TO NEXT PAGE

5-4-9. TAIL ROTOR CROSSHEAD — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN

Drycleaning Solvent

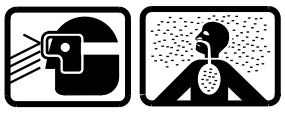
1. Clean crosshead using drycleaning solvent (D199) and paint brush (D54). Dry with wiping rag (D164).

INSPECT

2. Inspect crosshead to limits shown; replace if limits are exceeded. See figure Tail Rotor Crosshead — Damage Limits.

2.1. If a crack on the surface of the crosshead is suspected, refer to TM 1-1520-266-23.

REPAIR



Sanding Operations

3. Polish out acceptable damage with 400 grit sandpaper (D175).

Epoxy Primer Coating

4. Apply one coat of epoxy primer coating (D98) to repaired areas which were previously painted.

Acrylic Lacquer

5. Apply two coats of black acrylic lacquer (D124) to primed areas.

CAUTION

There shall be no interference between pad and pitch link bearing.

Sealing Compound

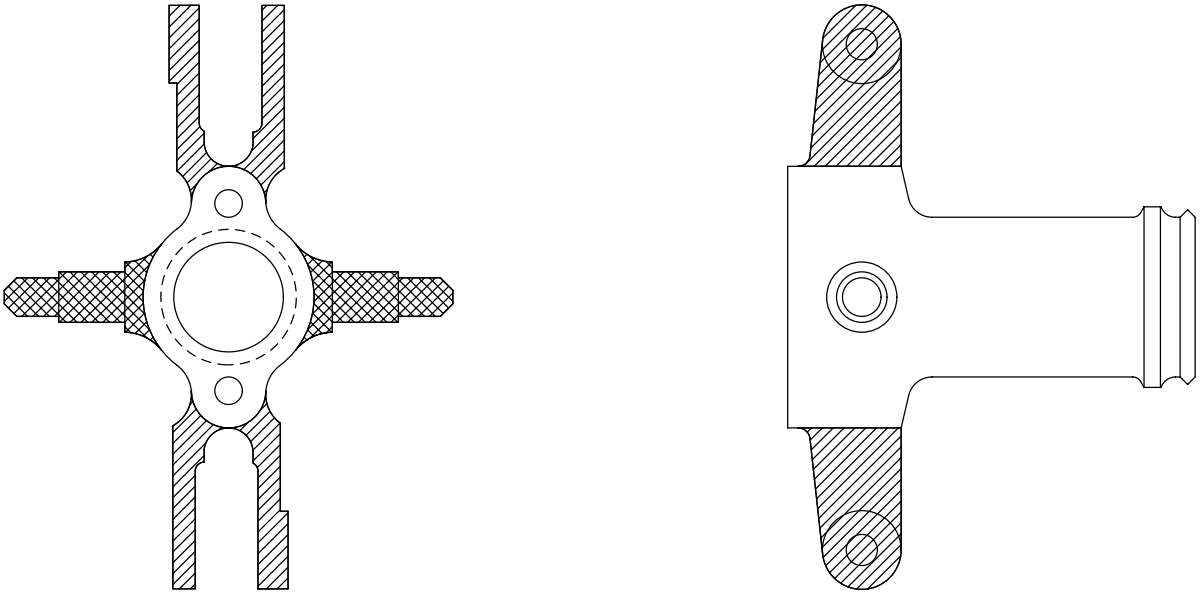
6. Fabricate wear pad using electrical insulating sheet (D96) and cover repaired areas.

7. Bond pad to crosshead with sealing compound (D183). Apply sufficient pressure to assure complete adherence of pad to crosshead.

8. Upon installation rotate pitch link from end to end so that any new wear is not located in same area on pitch link as previous wear.

INSPECT

GO TO NEXT PAGE



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH		
MECHANICAL AND CORROSION	0.002 in. before and after repair	0.005 in. before and after repair	0.010 in. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.050 sq. in.	0.050 sq. in.	0.150 sq. in.
NUMBER OF REPAIRS	One per shaft	One per lug	Not critical

NOTES:
1. The crosshead may have two repair areas. Repairs must not be on the same lug. Minimum radius of repair is 0.300 inch. Repaired area must be coated with epoxy primer and top coated with acrylic lacquer.
2. Apply 0.017 inch thick cover pad at point of wear repair.
3. No cracks are permltted.
4. Spline damage: Depth: One-third of spline
   Length: One-third of spline
   Number: Two
5. Spline wear: 0.9580 in. Maximum diameter between pins (0.0450 Inch dlameter pins)

406012-9
J2198

Tail Rotor Crosshead — Wear and Damage Limits

END OF TASK

5-4-10. TAIL ROTOR CROSSHEAD — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B237)
Torque Wrench (B239)

Material:
Lockwire (D132)
Grease (D113)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

5-4-10. TAIL ROTOR CROSSHEAD — INSTALLATION (CONT)

INSTALL

WARNING

No one shall operate tail rotor controls from inside of helicopter during installation of crosshead. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Install lip of seal (1) in groove of crosshead (2).

Grease

2. Lubricate splines of crosshead (2) with grease (D113).

3. Install crosshead and seal assembly on gearbox output shaft.

4. Install driver plate (3) with two washers (4) and bolts (5).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of bolts and nuts, the correct installation of cotter pins, and correct lockwiring of bolts are characteristics critical to flight safety.

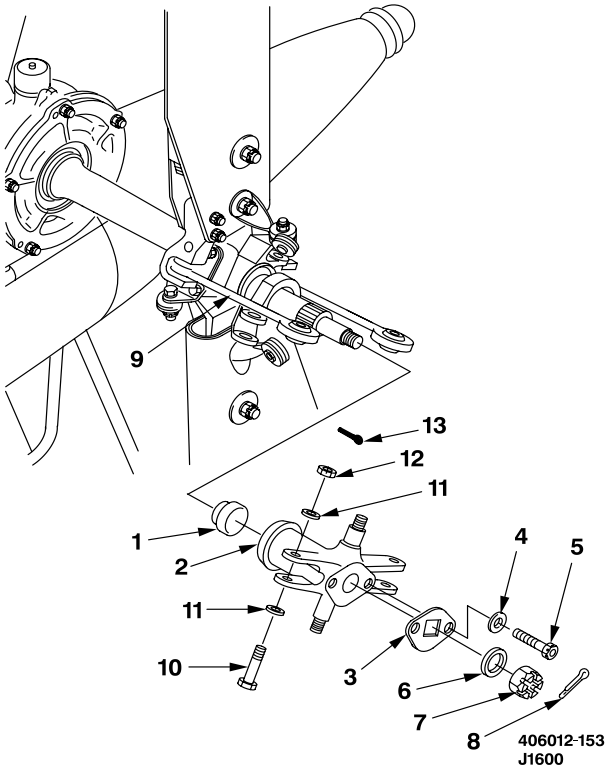
5. Torque two bolts (5) **60 TO 80 INCH-POUNDS**.

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

6. Install washer (6) and nut (7).

7. Torque nut (7) **120 TO 140 INCH-POUNDS**.



8. Install cotter pin (8) through nut (7).

9. Secure two bolts (5) with lockwire (D132).

10. Connect pitch link (9) to crosshead (2) with bolt (10), two washers (11), and nut (12).

11. Torque nut (12) **60 TO 80 INCH-POUNDS**.

12. Install cotter pin (13) through nut (12).

13. Repeat steps 10, 11, and 12 to connect opposite pitch link.

INSPECT

FOLLOW-ON MAINTENANCE

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).

END OF TASK

5-4-11. TAIL ROTOR ASSEMBLY — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Crowfoot (B33)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

5-4-11. TAIL ROTOR ASSEMBLY — REMOVAL (CONT)

REMOVE CROSSHEAD AND PITCH LINKS

WARNING

No one shall operate tail rotor controls from inside of helicopter during removal of tail rotor. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Remove lockwire from two bolts (1).

2. Remove cotter pin (2), nut (3), and washer (4).

3. Cut lockwire and remove bolt (5) and washer (6).

4. Repeat step 3 to disconnect opposite pitch link (7).

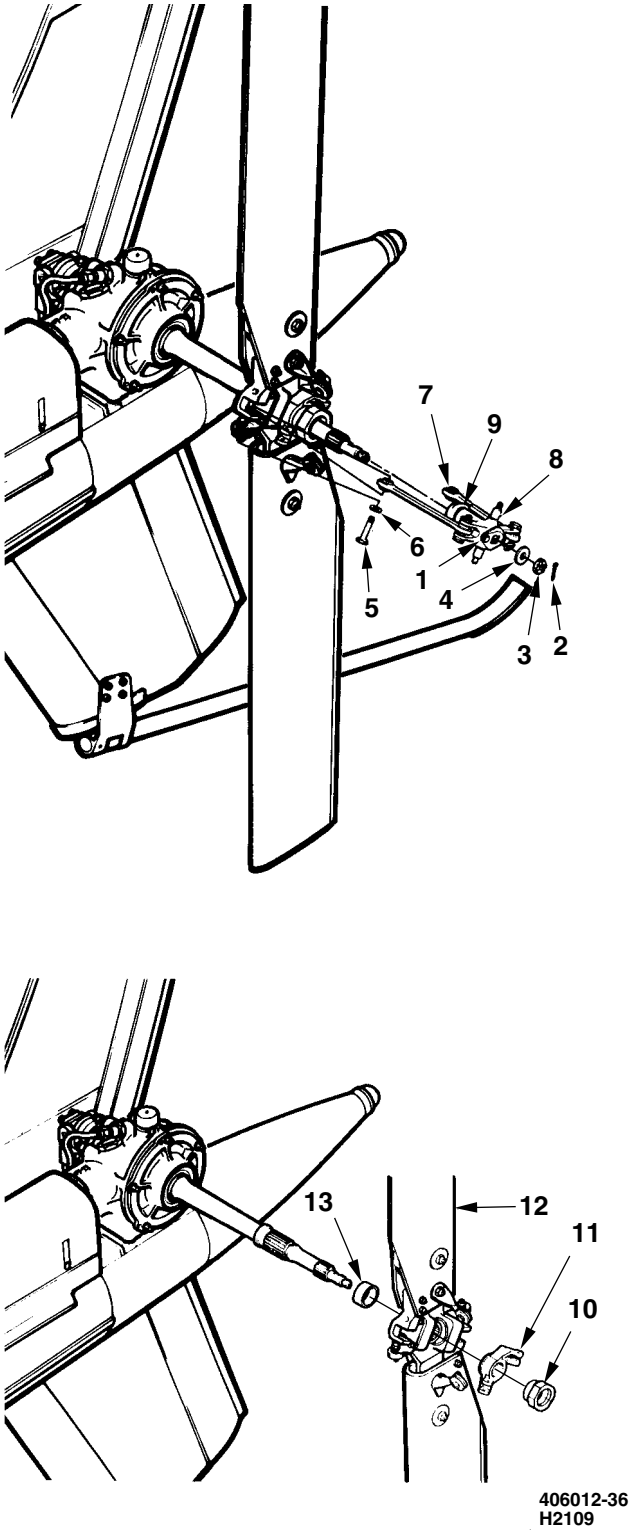
5. Remove pitch links (7), crosshead (8), and seal (9) as an assembly.

REMOVE TAIL ROTOR ASSEMBLY

6. Cut lockwire and remove nut (10) with crowfoot (B33).

7. Remove support (11).

8. Remove tail rotor assembly (12) and spacer (13).



406012-36
H2109

END OF TASK

5-4-12. TAIL ROTOR ASSEMBLY — DISASSEMBLY

This task covers: Disassembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

GO TO NEXT PAGE

5-4-12. TAIL ROTOR ASSEMBLY — DISASSEMBLY (CONT)

REMOVE PITCH HORN

1. Remove two cotter pins (1), two nuts (2), four washers (3), and two bolts (4).

2. Remove pitch horn (5) from blade (6).

3. Repeat steps 1 and 2 to remove opposite pitch horn.

REMOVE BLADE FROM HUB

4. Remove two cotter pins (7), two nuts (8), balance washers (9, 10, and 11) (if installed), two chamfered washers (14), and weight bracket (12).

5. Remove two bolts (13), two chamfered washers (14), and weight bracket (12).

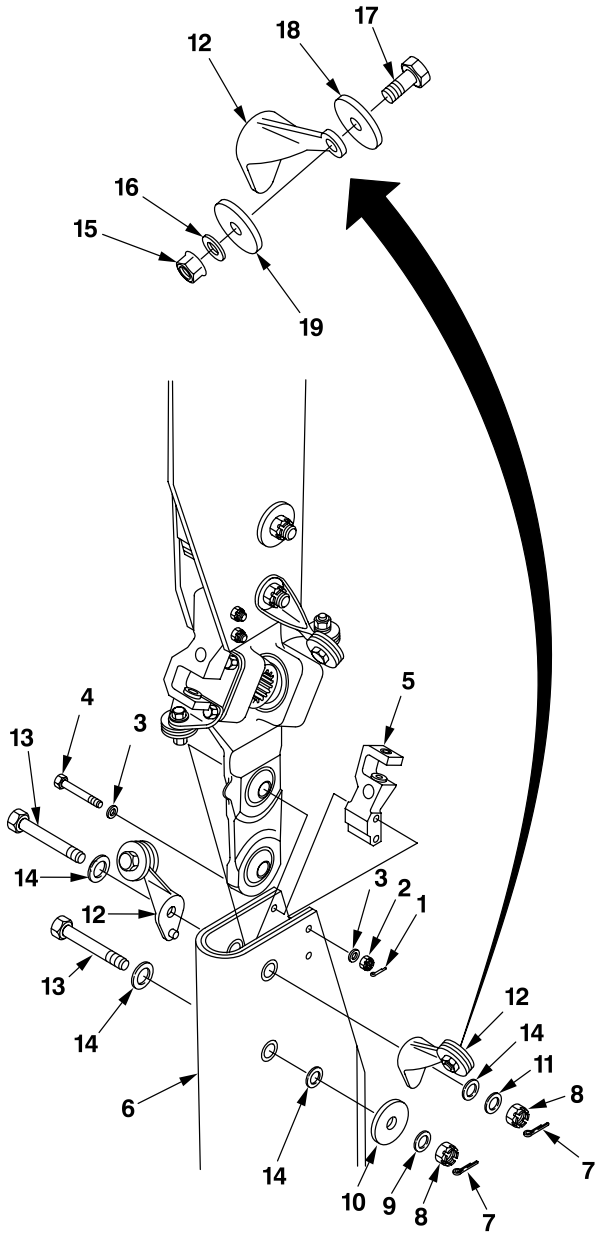
6. Remove blade (6).

7. Repeat steps 4 through 6 to remove opposite blade.

REMOVE WEIGHTS FROM WEIGHT BRACKET

8. Remove nut (15), washer (16), and bolt (17) to separate weights (18 and 19) from weight bracket (12).

9. Repeat step 8 to remove weights from other three weight brackets.



406012-35
J2198

END OF TASK

5-4-13. TAIL ROTOR ASSEMBLY — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Drycleaning Solvent (D199)
Wiping Rag (D164)
Rubber Gloves (D111)
Paint Brush (D54)

Personnel Required:
67S Scout Helicopter Repairer

GO TO NEXT PAGE

CLEAN

Drycleaning Solvent

1. Clean crosshead (1), pitch links (2), nut (3), support (4), spacer (5), and attaching hardware with drycleaning solvent (D199) and paint brush (D54).

CAUTION

When cleaning hub with drycleaning solvent (D199), solvent shall not contact elastomeric trunnion bearing. Drycleaning solvent can damage bearing.

2. Wipe tail rotor blades (6) and tail rotor hub (7) with a wiping rag (D164) dampened with drycleaning solvent (D199). Dry with wiping rag (D164).

NOTE

For damage limits on part, refer to inspection task for the part.

INSPECT

3. Inspect tail rotor blades (6) (Task 5-4-27).

4. Inspect tail rotor hub (7) (Task 5-4-24).

5. Inspect tail rotor crosshead (1) (Task 5-4-9).

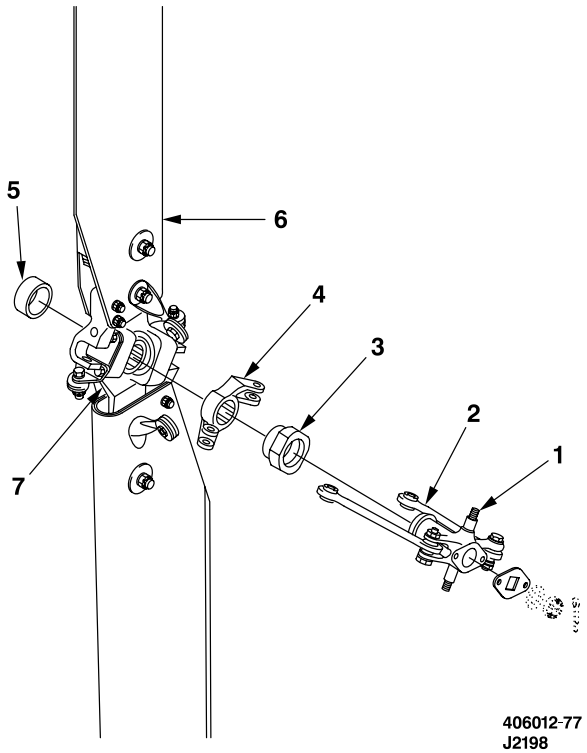
6. Inspect tail rotor pitch links (2) (Task 5-4-3).

7. Inspect spacer (5) (Task 5-4-19).

8. Inspect tail rotor counterweight support (4) (Task 5-4-17).

9. Inspect tail rotor retaining nut (3) (Task 5-4-18).

REPAIR



10. Repair tail rotor blades (6) (Task 5-4-27).

11. Repair tail rotor hub (7) (Task 5-4-25).

12. Repair tail rotor crosshead (1) (Task 5-4-9).

13. Repair tail rotor pitch links (2) (Task 5-4-3).

14. Repair spacer (5) (Task 5-4-19).

15. Repair tail rotor counterweight support (4) (Task 5-4-17).

16. Repair retaining nut (3) (Task 5-4-18).

END OF TASK

5-4-14. TAIL ROTOR ASSEMBLY — ASSEMBLY

This task covers: Assembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Torque Wrench (B237)
Torque Wrench (B239)

Material:
Epoxy Primer Coating (D98)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1500-204-23

GO TO NEXT PAGE

5-4-14. TAIL ROTOR ASSEMBLY — ASSEMBLY (CONT)

ASSEMBLE WEIGHTS TO WEIGHT BRACKETS

1. Attach weights (1 and 2) to weight bracket (3) with bolt (4), washer (5), and nut (6).

NOTE

Nut is installed toward direction of rotation on outboard side of blade only.

2. Torque nut (6) **100 TO 140 INCH-POUNDS**.

3. Repeat steps 1 and 2 to assemble other three weight brackets.

ATTACH BLADES TO HUB

NOTE

Installation of balance washers on blade bolts and torquing of nuts on blade bolts shall not be done at this time. This will be done during static balancing of tail rotor.

4. Place blade (7) on hub assembly (8) as shown.

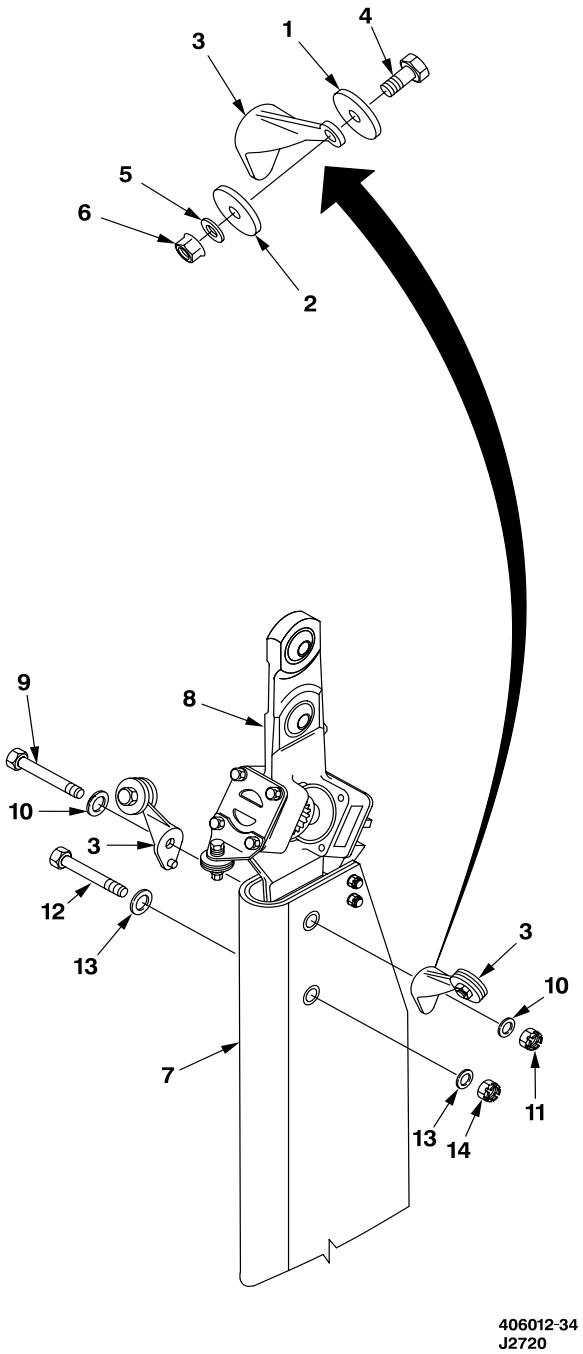
NOTE

- Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.
- Chamfered side of washers shall go against head of bolt.

5. Place weight brackets (3) on each side at inboard end of blade (7) and install bolt (9), two chamfered washers (10), and nut (11). Nut (11) will be torqued during static balancing.

6. Install bolt (12), two chamfered washers (13), and nut (14). Nut (14) will be torqued during static balancing.

7. Repeat steps 4 through 6 to attach opposite blade.



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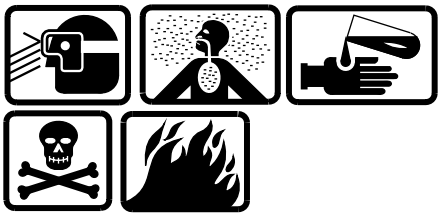
5-4-14. TAIL ROTOR ASSEMBLY — ASSEMBLY (CONT)

INSTALL PITCH HORN



Epoxy Primer Coating

8. Apply epoxy primer coating (D98) to mating surfaces of pitch horn (15) and blade (7). Position pitch horn (15) in blade (7). Install two bolts (16), four washers (17), and two nuts (18).

WARNING

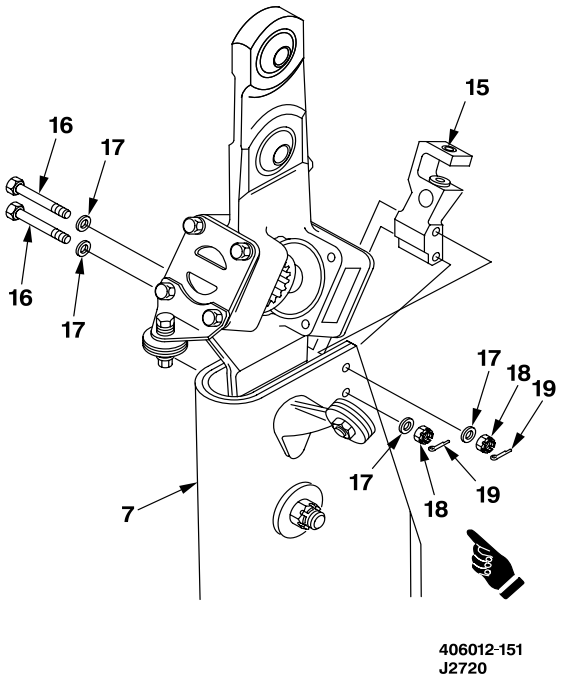
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nuts (18) and the correct installation of cotter pins (19) are characteristics critical to flight safety.

9. Torque two nuts (18) **60 TO 80 INCH-POUNDS**.

10. Install two cotter pins (19) through two nuts (18).

11. Repeat steps 8 through 10 to install opposite pitch horn.



406012-151
J2720

INSPECT

FOLLOW-ON MAINTENANCE

Static balance tail rotor assembly (Task 5-4-15).

END OF TASK

5-4-15. TAIL ROTOR ASSEMBLY — BALANCING

This task covers: Balancing (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Torque Wrench (B237)
Torque Wrench (B241)
Balancing Stand Kit (B78)
Static Balance Kit (B89)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 55-4920-201-14
TM 1-1500-204-23

GO TO NEXT PAGE

5-4-15. TAIL ROTOR ASSEMBLY — BALANCING (CONT)

PREPARE

1. Set up T101280-111 balance set (Part of static balance set (B89)) and install tail rotor assembly as follows:

a. Place 2532 fixture (Part of (B89)) (1) on flat top bench. Install 2516 arbor (Part of (B89)) (2) in fixture (1). Tighten setscrews (3) to secure arbor in fixture.

b. Install T101280-109 adapter (Part of (B89)) (4) on arbor (2).

c. Place tail rotor assembly (5) on arbor (2) with flat side of blades facing up.

d. Install T101280-105 base (Part of (B89)) (6) on arbor (2).

e. Install 2533 bushing (Part of (B89)) (7) on arbor (2) with top of bushing at 8 mark on arbor. Tighten setscrews (8) to maintain bushing in this position.

f. Loosen setscrews (3) in fixture (1).

g. Tilt assembly and move arbor (2) downward until bushing (7) is seated on base (6).

h. Ensure that all components are seated and tighten setscrews (3 and 9) securing arbor (2) to fixture (1).

i. Install two T101280-107 locks (Part of (B89)) (10) between pitch horns (11) and fixture (1). Secure locks with screws (12) and bolts attached to pitch horns.

j. Loosen setscrew (13) of indicator collar (Part of (B89)) (14). Use feeler gage to position indicator collar (14) **0.004 TO 0.006 inch** from collar of arbor boss.

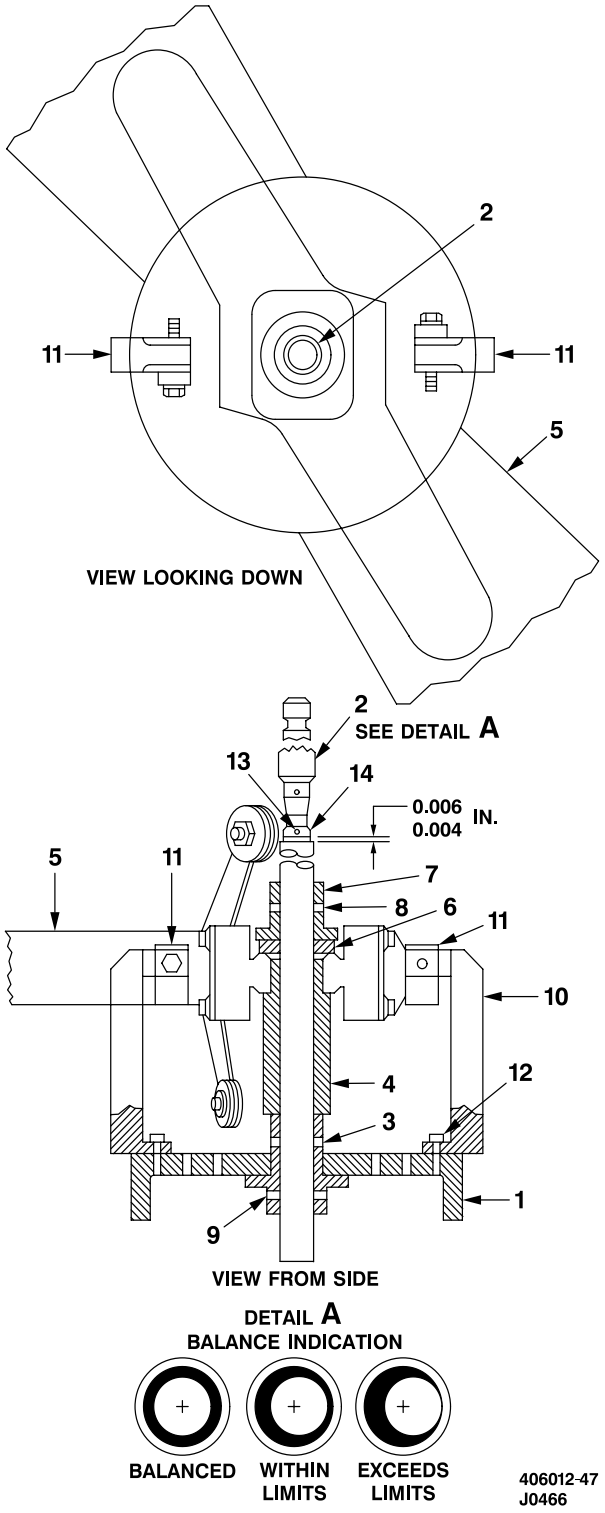
2. Selecting a draft free area, set up balance stand and hoist (Part of (B78)) (TM 55-4920-201-14).

3. Attach cable of balance stand and hoist to arbor.

4. Raise tail rotor and T101280-111 balance set approximately **0.25 inch** from work stand.

BALANCE

5. Check balance indicator on arbor for balance condition of tail rotor (Detail A).



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6. If tail rotor is out of balance, make corrections as follows:

a. Spanwise balance.

NOTE

Spanwise balance is accomplished by adding washers under blade bolts. Prior to adding washers to light side, excess washers shall be removed from heavy side. To determine amount of weight required, washers may be temporarily stacked on bolt.

(1) Remove cotter pins (15) and nuts (16). Leave chamfered washers (17) next to blade.

(2) Place combination of washers on bolts to attain balance. Use a maximum of six AN970-6, two AN960-616, and two AN960-616L washers on outboard bolts. Use a maximum of two AN960-616 and two AN960-616L washers on inboard bolts.

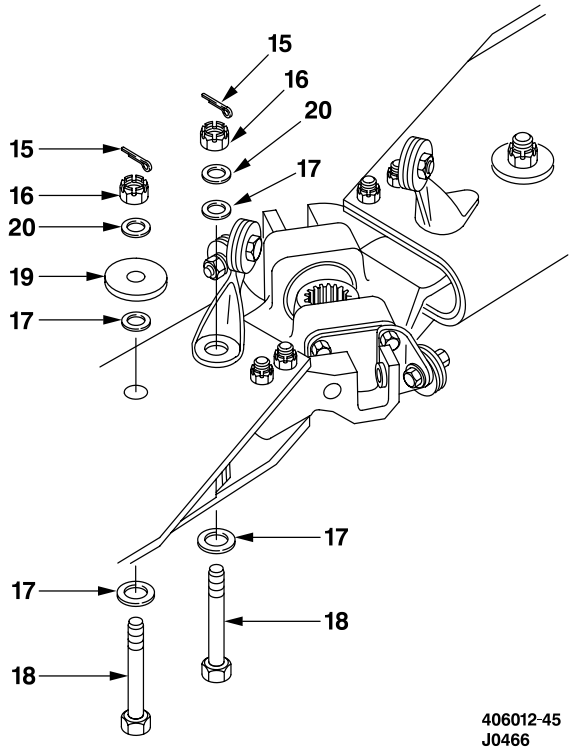
NOTE

- Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.
- Blade bolts (18) of proper length shall be used to accommodate balance washers.

CAUTION

To prevent deformation leading to a reduction in bolt torque, do not use a single AN960-616L washer next to the 140-007-25-22C4 washer.

(3) Install balance washers (19) and/or (20) with heaviest washer next to chamfered washer (17) and nuts (16).



WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nuts (16) and the correct installation of cotter pins (15) are characteristics critical to flight safety.

(4) Torque nuts (16) on all blade bolts **300 TO 325 INCH-POUNDS**.

(5) Install cotter pins (15) through nuts (16).

GO TO NEXT PAGE

b. Chordwise balance.

NOTE

Chordwise balance is accomplished by adding or removing washers to bolt through support (20). Prior to adding washers to light side, washers shall be removed from heavy side.

(1) Place combination of washers on bolt (21) to attain balance; use AN960-416 washers (22) and AN970-4 washers (23).

NOTE

Bolt (21) (NAS6204-1 through NAS6204-9) of proper length shall be used to accommodate balance washers.

(2) Install bolt (21) with proper amount of washers (22 and 23). Place a maximum of three washers (22) under bolthead next to pitch horn.

(3) Install nut (24).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

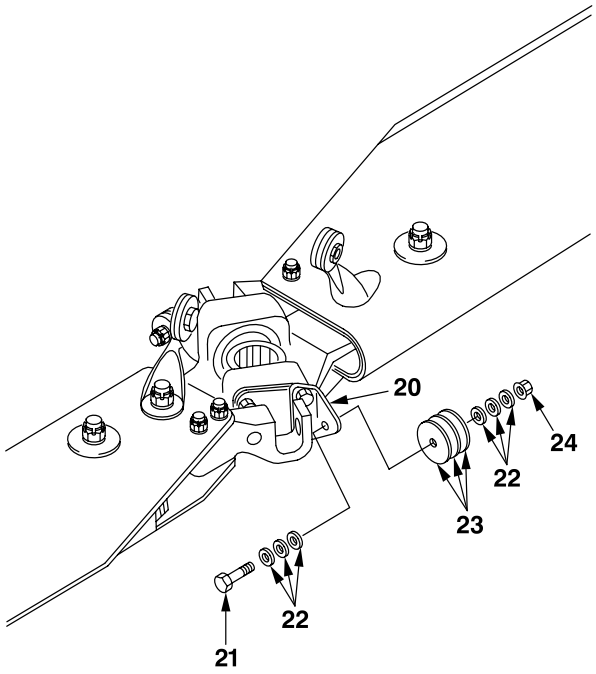
The correct torquing of nut is a characteristic critical to flight safety.

(4) Torque nut (24) **60 TO 80 INCH-POUNDS**.

7. Recheck balance of tail rotor; if balance is not correct, repeat procedures as required.

INSPECT

8. Remove tail rotor from balance stand.



406012-46
J0466

END OF TASK

5-4-16. TAIL ROTOR ASSEMBLY — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B239)
Torque Wrench (B242)
Torque Wrench (B237)
Crowfoot, 1-7/8 Inch (B33)

Material:
Lockwire (D132)
Grease (D113)
Corrosion Preventive Compound (CPC) (D82)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-6625-724-13&P
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)

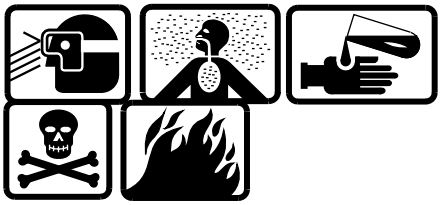
GO TO NEXT PAGE

5-4-16. TAIL ROTOR ASSEMBLY — INSTALLATION (CONT)

INSTALL

WARNING

No one shall operate tail rotor controls from inside of helicopter during installation of tail rotor. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.



Corrosion Preventive Compound

CAUTION

CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals, or damage to equipment may result.

1. Apply CPC (D82) to inboard splines only and to threads of gearbox shaft (1) and mating surfaces of spacer (2), tail rotor assembly (3), support (4), and nut (5).

2. Install spacer (2), tail rotor assembly (3), support (4), and nut (5).

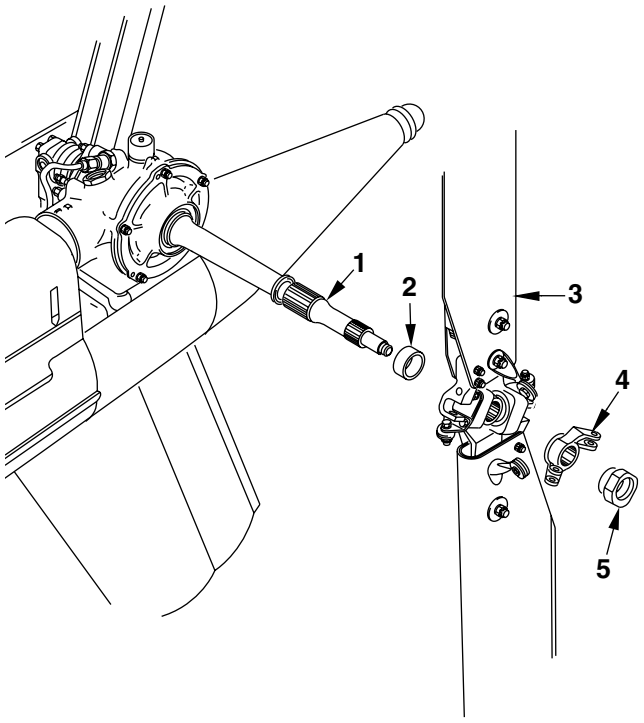
WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing and lockwiring of nut are characteristics critical to flight safety.

3. Use crowfoot (B33) to torque nut (5) **560 TO 580 INCH-POUNDS**.

4. Secure nut (5) to support (4) with lockwire (D132).



406012-33
H2110

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5-4-16. TAIL ROTOR ASSEMBLY — INSTALLATION (CONT)

Grease

5. Lubricate splines of crosshead (6) with grease (D113).

6. During installation align square in crosshead driver plate with pitch change rod and ensure cotter pin hole in pitch change rod is perpendicular to driver plate mounting bolts (8.1). Install assembled crosshead (6), seal (7), and pitch change links (8).

6.1. Loosen driver plate mounting bolts (8.1)

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

7. Install washer (9) and nut (10).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of nut and correct installation of cotter pin are characteristics critical to flight safety.

8. Torque nut (10) **120 TO 140 INCH-POUNDS**.

9. Install cotter pin (11) through nut (10).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

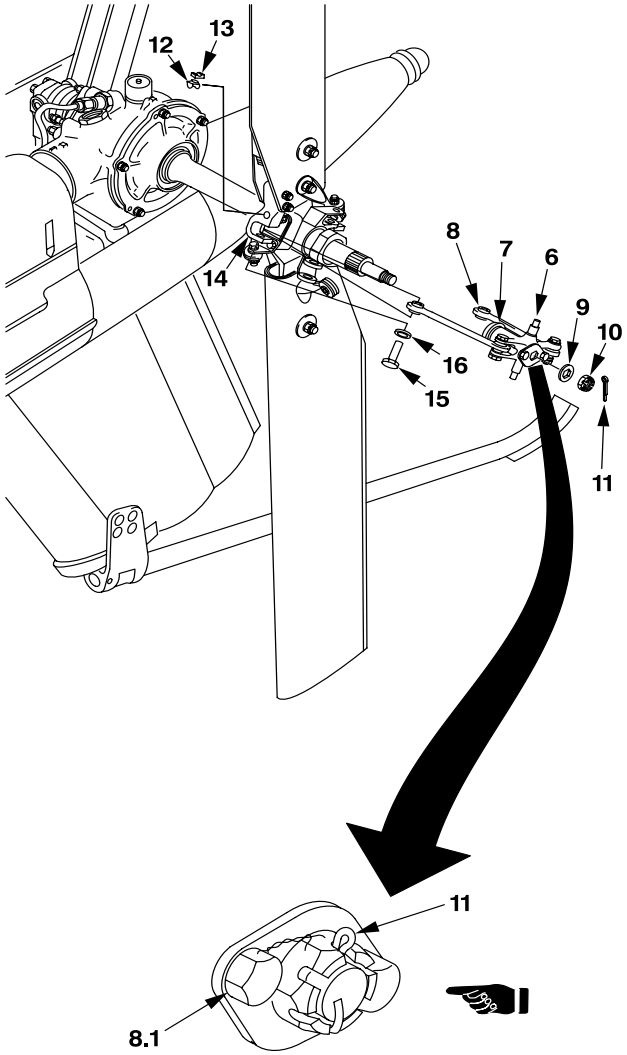
The correct torquing of bolts and lockwiring of bolts are characteristics critical to flight safety.

9.1. Torque bolts (8.1) **60 to 80 INCH-POUNDS**.

9.2. Secure bolts (8.1) with lockwire (D132) routing lockwire behind head of cotter pin (11).

10. If removed, install nut (12) and retainer (13) in pitch horn (14).

11. Connect pitch link (8) to pitch horn (14) with bolt (15) and washer (16).



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WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

The correct torquing of bolts is a characteristic critical to flight safety.

12. Torque bolt (15) **60 TO 80 INCH-POUNDS**.

13. Secure bolt (15) to pitch horn (14) with lockwire (D132).

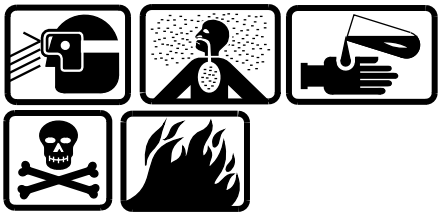
14. Repeat steps 10 through 13 to connect opposite pitch link.

NOTE

A clicking noise may be heard in some tail rotor hubs when the rotor is manually flapped gently back and forth. This noise is normal and should not be a cause for concern. The noise is generated when the outer race of the flapping bearing slips **0.001 inch** in the yoke and the keyway strikes the key stop in the clamp ring. The noise is repeated when the rotor is flapped in the opposite direction and the other side of the keyway strikes the key stop.

15. Deleted.

16. Deleted.



Corrosion Preventive Compound

17. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.

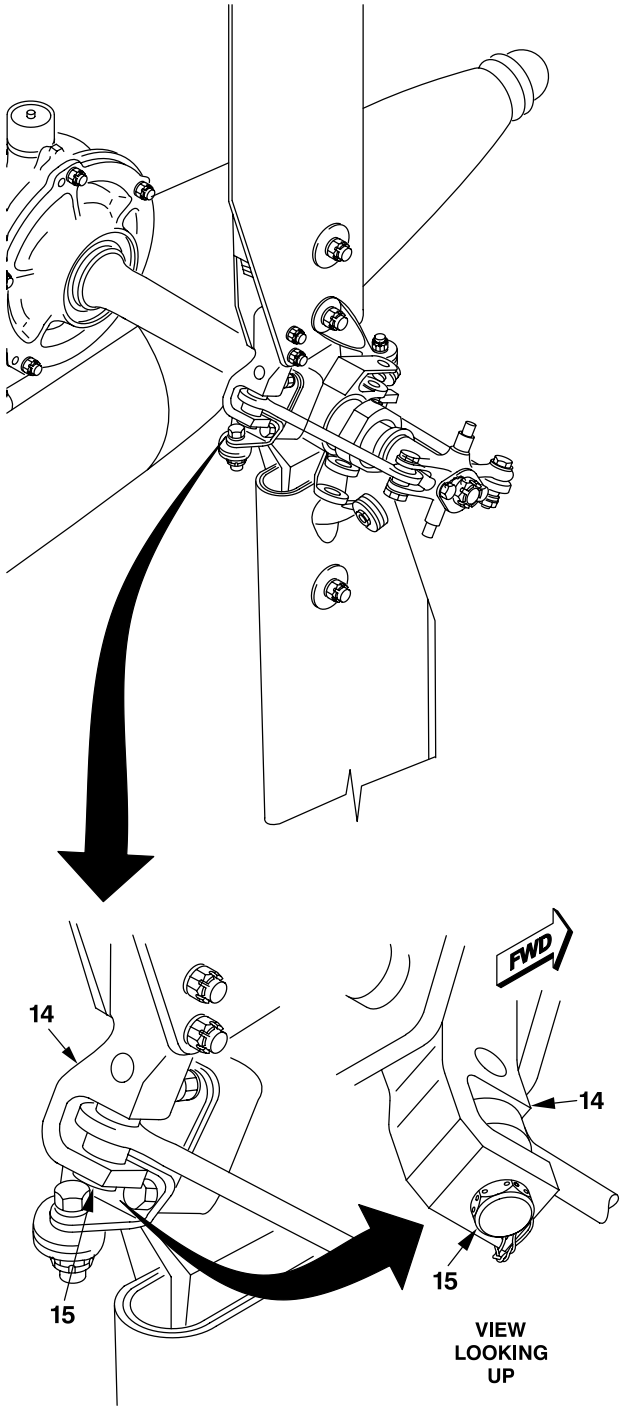
INSPECT

FOLLOW-ON MAINTENANCE

Perform dynamic balance of tail rotor assembly (TM 1-6625-724-13&P).

Perform retorque (Chapter 1, Section IX).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).



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5-4-17. TAIL ROTOR COUNTERWEIGHT SUPPORT — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Drycleaning Solvent (D199)
Wiping Rag (D164)
Sandpaper (D175)
Rubber Gloves (D111)
Paint Brush (D54)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

CLEAN

Drycleaning Solvent

1. Clean support with drycleaning solvent (D199) and paint brush (D54). Dry support with wiping rag (D164).

INSPECT

2. Inspect support to limits shown; replace if limits are exceeded. See figure Tail Rotor Counterweight Support — Damage Limits.

REPAIR

Sanding Operations

3. Polish out acceptable damage with 400 grit sandpaper (D175).

INSPECT

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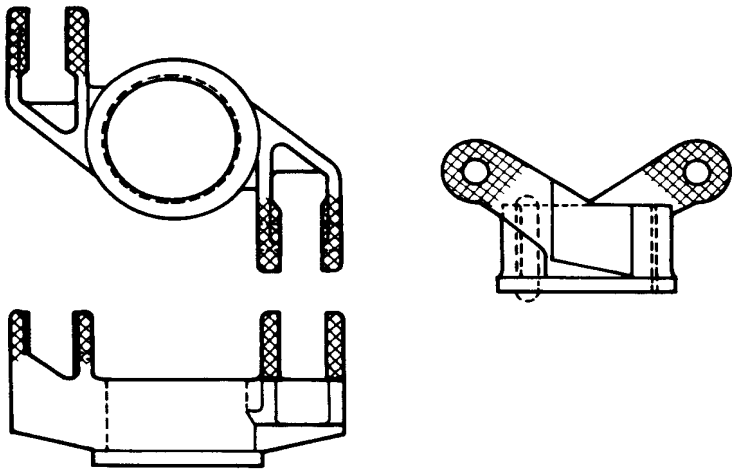

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.005 In. before and after repair	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.050 Sq. in.	0.100 Sq. in.
NUMBER OF REPAIRS	One per lug	One
EDGE CHAMFER TO REMOVE DAMAGE	0.025 In. x 40-50°	0.025 In. x 40-50°
BORES	0.002 Inch for 1/4 circumference	
SPLINE DAMAGE:		
Depth:	1/3 Of spline	
Length:	1/3 Of spline	
Number:	Two	

406012-7
H5304

Tail Rotor Counterweight Support — Damage Limits

END OF TASK

5-4-18. TAIL ROTOR RETAINING NUT — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Drycleaning Solvent (D199)
Wiping Rag (D164)
Sandpaper (D175)
Rubber Gloves (D111)
Paint Brush (D54)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

CLEAN

Drycleaning Solvent

1. Clean nut with drycleaning solvent (D199) and paint brush (D54). Dry nut with wiping rag (D164).

INSPECT

2. Inspect nut to limits shown; replace if limits are exceeded. See figure Tail Rotor Retaining Nut — Damage Limits.

REPAIR

Sanding Operations

3. Polish out acceptable damage with 400 grit sandpaper (D175).

INSPECT

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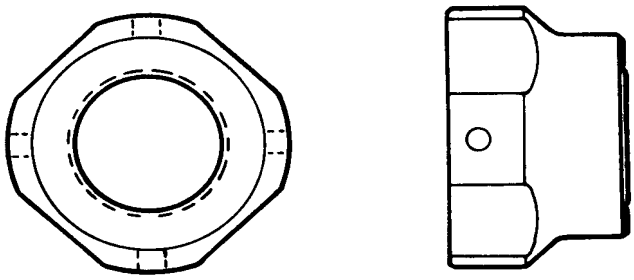
5-4-18. TAIL ROTOR RETAINING NUT — CLEANING/INSPECTION/REPAIR (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL AND CORROSION	0.010 In.
MAXIMUM AREA PER FULL DEPTH REPAIR	Not critical
NUMBER OF REPAIRS	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.025 In.
BORES	Not critical
THREADS:	
Depth:	1/3 Of thread
Length:	1/4 Inch
Number:	One per segment

406012-1
H5304

Tail Rotor Retaining Nut — Damage Limits

END OF TASK

5-4-19. SPACER — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Drycleaning Solvent (D199)
Wiping Rag (D164)
Sandpaper (D175)
Rubber Gloves (D111)
Paint Brush (D54)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

CLEAN

Drycleaning Solvent

1. Clean spacer with drycleaning solvent (D199) and paint brush (D54). Dry spacer with wiping rag (D164).

INSPECT

2. Inspect spacer to limits shown; replace if limits are exceeded. See figure Spacer — Damage Limits.

REPAIR

Sanding Operations

3. Polish out acceptable damage with 400 grit sandpaper (D175).

INSPECT

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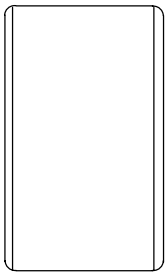
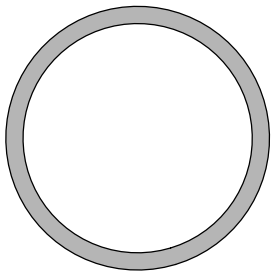




DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.010 in. before and after repair	0.010 in. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.200 sq. in. for 1/4 circumference	
NUMBER OF REPAIRS	Three	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.015 In.	0.015 In.

406012-6
J1901

Spacer — Damage Limits

END OF TASK

5-4-20. TAIL ROTOR PITCH HORN — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Drycleaning Solvent (D199)
Sandpaper (D175)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Wiping Rag (D164)
Rubber Gloves (D111)
Paint Brush (D54)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

CLEAN

Drycleaning Solvent

1. Clean pitch horn using drycleaning solvent (D199) and paint brush (D54). Dry with wiping rag (D164).

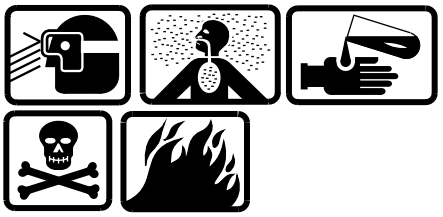
INSPECT

2. Inspect pitch horn to limits shown; replace if limits are exceeded. See figure Tail Rotor Pitch Horn — Damage Limits.

REPAIR

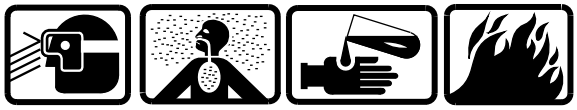
Sanding Operations

3. Polish out acceptable damage with 400 grit sandpaper (D175).



Epoxy Primer Coating

4. Apply one coat of epoxy primer coating (D98) to repaired areas which were previously painted.



Acrylic Lacquer

5. Apply two coats of black acrylic lacquer (D124) to primed areas.

INSPECT

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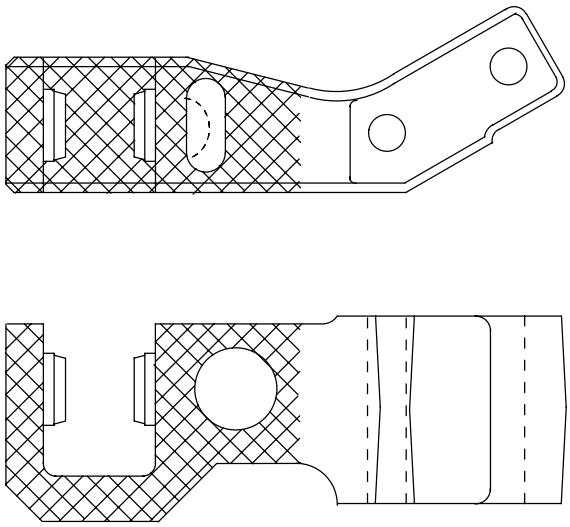


DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.005 in. before and after repair	0.010 in. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.05 sq. in.	0.15 sq. In.
NUMBER OF REPAIRS	One per lug	Four
EDGE CHAMFER TO REMOVE DAMAGE	0.010 in. x 45°	0.020 in.
BORES	0.002 inch for 1/4 circumference	
BUSHINGS WEAR LIMIT I.D.	0.2510 in.	

406012-12
J1601

Tail Rotor Pitch Horn — Damage Limits

END OF TASK

5-4-21. TAIL ROTOR PITCH HORN BUSHING (AVIM) — REPLACEMENT

This task covers: Bushing Replacement (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Hand Arbor Press (B107)
Freezer (B46)

Material:
Epoxy Primer Coating (D98)
Acetone (D2)
Abrasive Mats (D1)
Cotton Gloves (D112)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

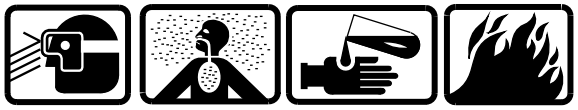
GO TO NEXT PAGE

REPLACE BUSHINGS

NOTE

The following procedure can be used for replacing either bushing.

1. Using hand arbor press (B107) and appropriate pressing plug, press bushings (1) from pitch horn (2.)



Acetone

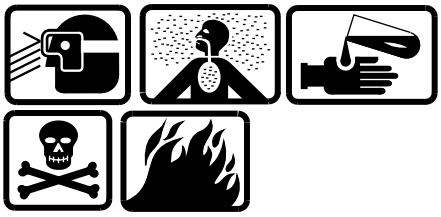
2. Remove epoxy primer coating from bushing bore with acetone (D2) and abrasive mats (D1).

3. Inspect bushing bores for damage; maximum allowable: **0.002 inch** in depth for one-fourth of circumference.

WARNING

To prevent injury to skin, cotton gloves (D112) shall be worn when handling frozen bushings. If injury occurs, seek medical aid.

4. Using freezer (B46), freeze replacement bushing (1).

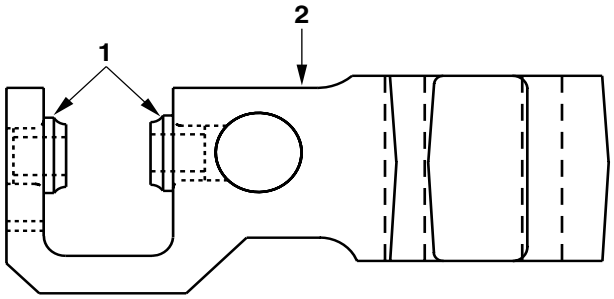


Epoxy Primer Coating

5. Coat bushing bore in pitch horn (2) and mating surfaces of bushing (1) with epoxy primer coating (D98).

6. Using hand arbor press (B107) and appropriate pressing plug, press bushing (1) into pitch horn (2) while epoxy primer coating is still wet.

INSPECT



406012-150
H3444

END OF TASK

5-4-22. TAIL ROTOR COUNTERWEIGHT BRACKET — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)

Material:
Drycleaning Solvent (D199)
Sandpaper (D175)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Wiping Rag (D164)
Rubber Gloves (D111)
Paint Brush (D54)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

CLEAN

Drycleaning Solvent

1. Clean counterweight using drycleaning solvent (D199) and paint brush (D54). Dry with wiping rag (D164).

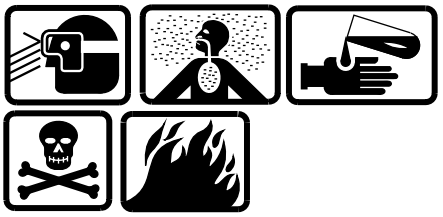
INSPECT

2. Inspect counterweight to limits shown; replace if limits are exceeded. See figure Tail Rotor Counterweight Bracket — Damage Limts.

REPAIR

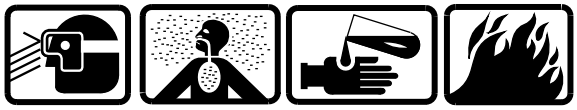
Sanding Operations

3. Polish out acceptable damage with 400 grit sandpaper (D175).



Epoxy Primer Coating

4. Apply one coat of epoxy primer coating (D98) to repaired areas which were previously painted.



Acrylic Lacquer

5. Apply two coats of black acrylic lacquer (D124) to primed areas.

INSPECT

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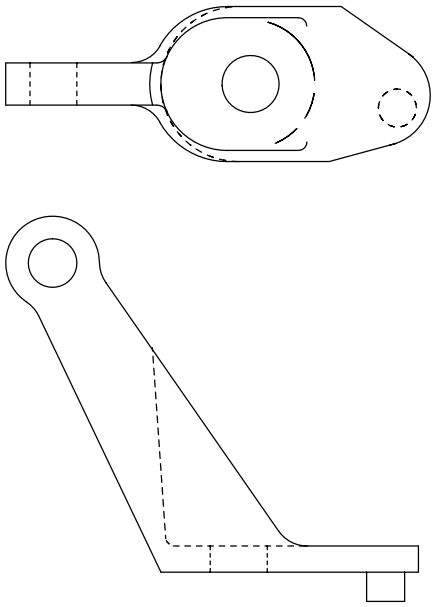
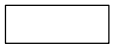


P/N 406-012-106-107

DAMAGE LOCATION SYMBOLS



TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL AND CORROSION	0.005 in before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.010 sq. in.
NUMBER OF REPAIRS	One maximum
EDGE CHAMFER TO REMOVE DAMAGE	0.010 in.
BORES	0.002 inch for 1/4 circumference

406012-14
J1659

Tail Rotor Counterweight Bracket — Damage Limits

END OF TASK

5-4-23. TAIL ROTOR HUB (AVIM) — DISASSEMBLY

This task covers: Disassembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Tail Rotor Bearing Tool Set (B191)

Personnel Required:
68D Aircraft Powertrain Repairer

GO TO NEXT PAGE

5-4-23. TAIL ROTOR HUB (AVIM) — DISASSEMBLY (CONT)

DISASSEMBLE

1. Cut lockwire and remove two bolts (1) and support (2).

2. Cut lockwire and remove two bolts (3) and washers (4).

3. Remove clamp ring (5).

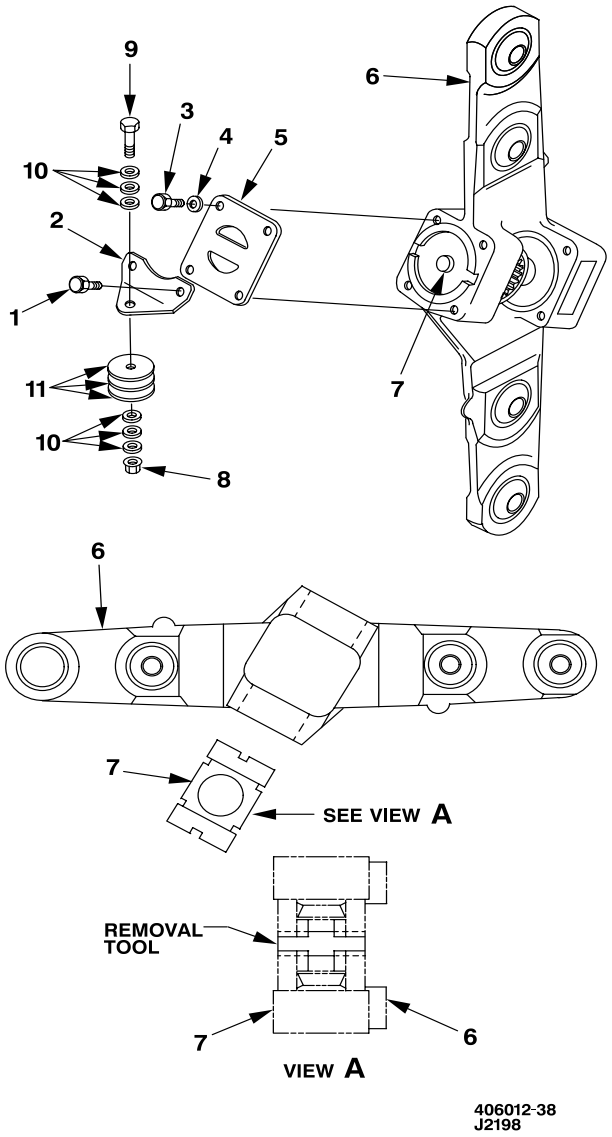
4. Repeat steps 1 through 3 to remove parts from opposite side of yoke (6).

5. Install removal tool T101750-101 (Part of tailrotor bearing set (B191)) inside yoke (6) around trunnion (view A). Use a suitable sleeve to press bearing (7) from yoke (6).

6. Remove nut (8) and bolt (9) to separate washers (10 and 11) from each support (2).

NOTE

Washers (10 and 11) may be of different quantity than shown. Retain washers, bolts, and nuts for use during static balancing of tail rotor.



END OF TASK

5-4-24. TAIL ROTOR HUB COMPONENTS (AVIM) — CLEANING/INSPECTION

This task covers: Cleaning and Inspection (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Dial Indicator (B37)
Inside Micrometer Caliper (B13)

Material:
Drycleaning Solvent (D199)
Wiping Rag (D164)
Rubber Gloves (D111)
Paint Brush (D54)

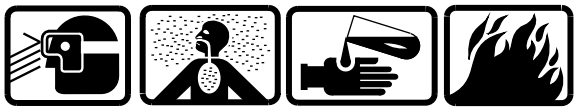
Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1520-266-23

GO TO NEXT PAGE

5-4-24. TAIL ROTOR HUB COMPONENTS (AVIM) — CLEANING/INSPECTION (CONT)

CLEAN



Drycleaning Solvent

CAUTION

When cleaning flapping bearing, drycleaning solvent (D199) shall not contact elastomer portion of bearing. Damage to bearing may result.

1. Clean parts with drycleaning solvent (D199) and paint brush (D54). Dry with wiping rag (D164).

INSPECT

2. Inspect attaching hardware for damage; replace damaged nuts, bolts, or washers.

3. Inspect support to limits shown; replace if limits are exceeded. See figure Tail Rotor Weight Support — Damage Limits.

3.1. If a crack on the surface of the hub support is suspected, refer to TM 1-1520-266-23.

4. Inspect clamp ring to limits shown; replace if limits are exceeded. See figure Tail Rotor Clamp Ring — Damage Limits.

4.1. If a crack on the surface of the clamp ring is suspected, refer to TM 1-1520-266-23.

5. Fluorescent penetrant inspect clamp ring (TM 1-1520-266-23).

5.1. If a crack on the surface of the yoke is suspected, refer to TM 1-1520-266-23.

6. Inspect yoke to limits shown; replace if limits are exceeded. See figure Tail Rotor Yoke Assembly — Damage Limits.

7. Fluorescent penetrant inspect yoke (TM 55-1500-335-23).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Axial displacement and/or radial looseness of outer race of pitch change bearings are characteristics that are critical to flight safety and are not permitted.

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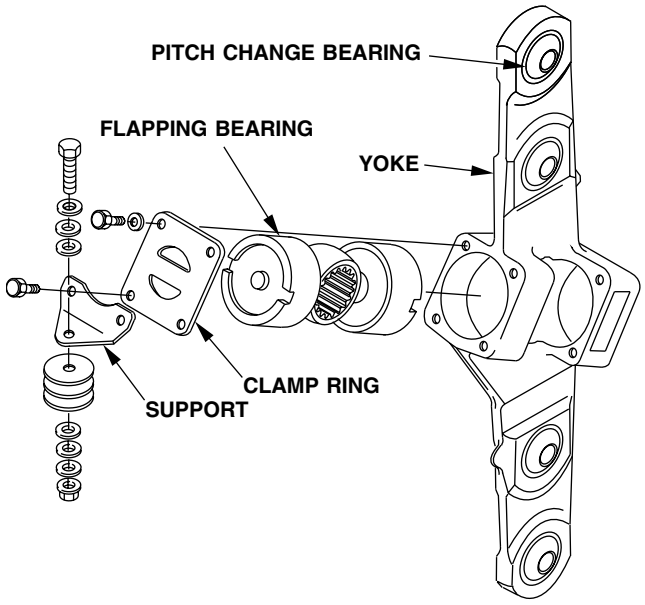


406012-39
H2110

8. Inspect pitch change bearings in yoke for wear. Maximum wear is **0.015 inch** axial play.

9. Using a dial indicator (B37), inspect pitch change bearings for lateral looseness in yoke; any evidence of lateral looseness is cause for bearing replacement.

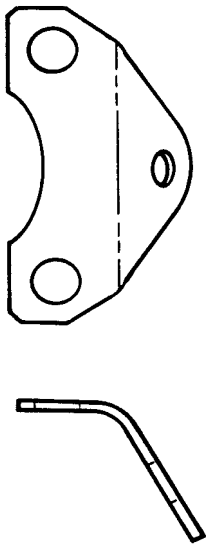
10. Inspect flapping bearing for damage and wear as follows. See figure Tail Rotor Flapping Bearing — Damage Limits.

a. Inspect bearing for cracked shims. Replace if shims are cracked.

b. Inspect bearing for evidence of shims touching. This will occur in areas where elastomer is missing and will result in clean or fretted surfaces exposed on two adjacent shims. Replace if this condition exists.

10.1. If a crack on the surface of the flapping bearing is suspected, refer to TM 1-1520-266-23.

5-4-24. TAIL ROTOR HUB COMPONENTS (AVIM) — CLEANING/INSPECTION (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL AND CORROSION	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.010 Sq. in.
NUMBER OF REPAIRS	One maximum
EDGE CHAMFER TO REMOVE DAMAGE	0.010 In.
BORES	0.002 Inch for 1/4 circumference

NOTE: No cracks are permitted

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H5304

Tail Rotor Weight Support — Damage Limits

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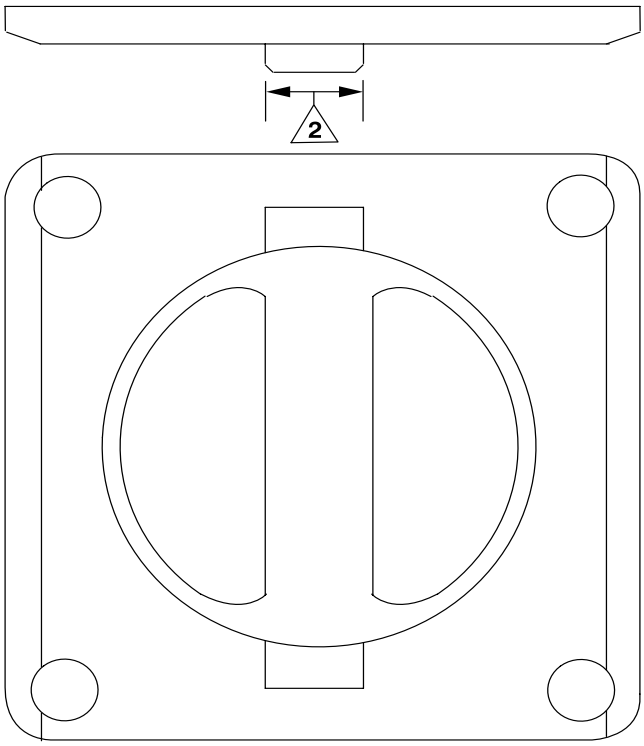

DAMAGE LOCATION SYMBOL

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL AND CORROSION	0.010 In. before and after repalr
MAXIMUM AREA PER FULL DEPTH REPAIR	0.15 Sq. in.
NUMBER OF REPAIRS	One per side
EDGE CHAMFER TO REMOVE DAMAGE	0.010 In. before and after repalr
BORES	0.002 Inch for 1/4 clrcumference

NOTES:

1. No cracks are permltted.
2. MInlmum tab wldth 0.372 Inch.

406012-13
J2172

Tail Rotor Clamp Ring — Damage Limits

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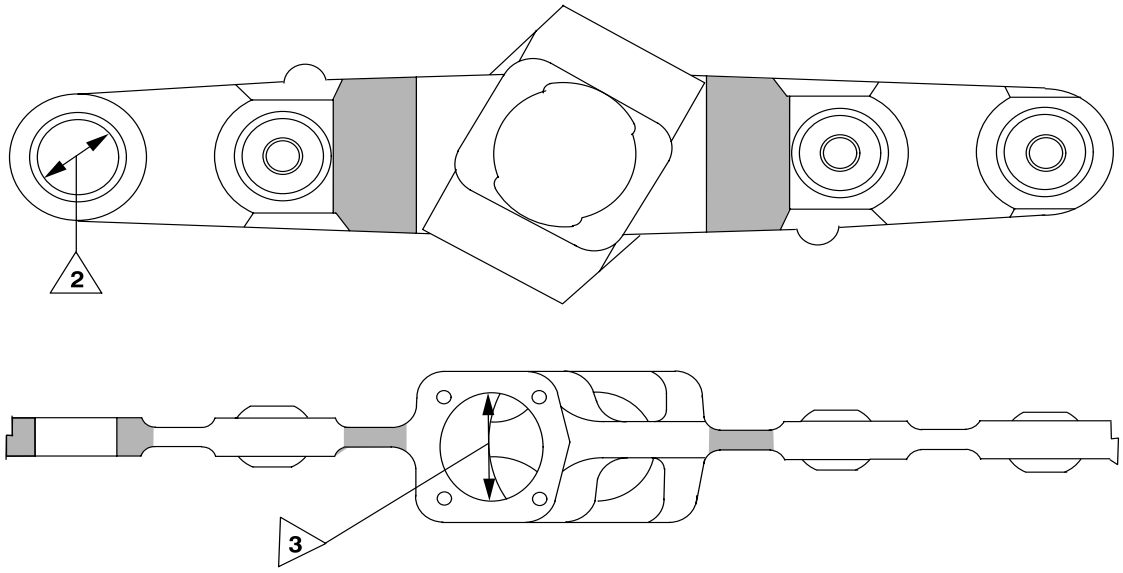
5-4-24. TAIL ROTOR HUB COMPONENTS (AVIM) — CLEANING/INSPECTION (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL DAMAGE	0.005 In. before and after repair	0.010 In. before and after repaIr
CORROSION DAMAGE	0.005 In. before and after repair	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.05 Sq. in.	0.15 Sq. In.
NUMBER OF REPAIRS	One per segment	One per segment
EDGE CHAMFER TO REMOVE DAMAGE	4	4
BORES	0.002 Inch for 1/4 circumference	
THREAD DAMAGE:		
DEPTH	Visual	1/3 of thread
LENGTH		1/2 of thread
NUMBER		one per threaded hole

NOTES:
1. No cracks are permitted.
2. Pitch change bearing bore 1.1260 inches maximum diameter 4 places
3. Flapping bearing bore 1.6270 inches maximum diameter.
4. Same as mechanical damage repair limits.

406012-11
J2198

Tail Rotor Yoke Assembly — Damage Limits

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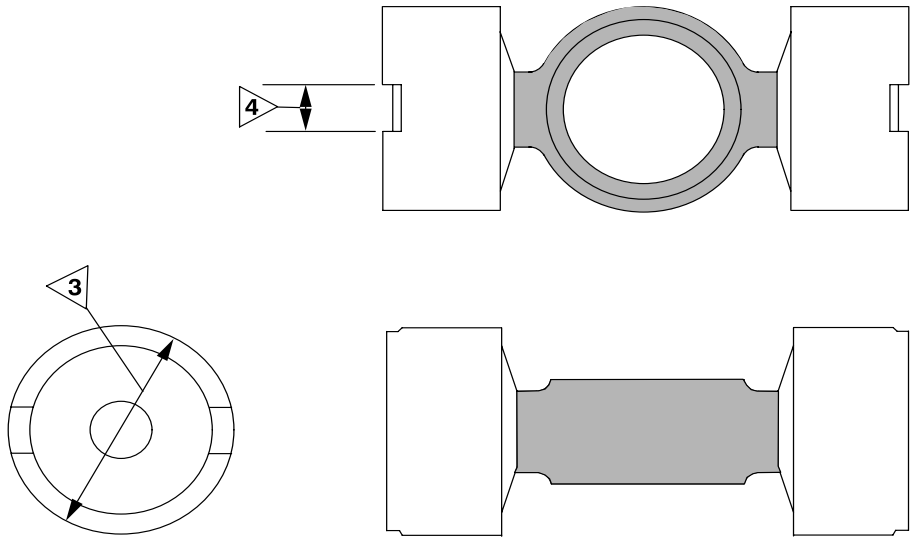

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.005 In. before and after repair	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.05 Sq. in.	0.15 Sq. in.
NUMBER OF REPAIRS	One	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.010 In.	0.020 In.
SPLINE DAMAGE:		
DEPTH	Visual	1/3 of spline
LENGTH		1/2 of spline
NUMBER		two per half

NOTES:
1. No cracks are permitted.
2. No wear through permitted.
3. Minimum diameter 1.6235 inch.
4. Maximum slot width.

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J2172

Tail Rotor Flapping Bearing — Damage Limits

GO TO NEXT PAGE

5-4-24. TAIL ROTOR HUB COMPONENTS (AVIM) — CLEANING/INSPECTION (CONT)

a. Inspect bearing for elastomer separation, cracks, or tears. Localized defects are allowable. Evidence of separation, cracks, or tears for 36 degrees on both sides of elastomer segment is cause for bearing replacement.

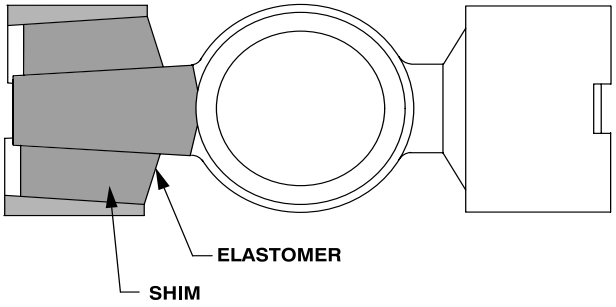
b. Inspect bearing for elastomer voids. Voids are areas where elastomer is missing and **0.015 inch** thickness gage can be easily inserted without deflecting bearing. Any void whose total depth exceeds **0.15 inch** and length exceeds 45 degrees of elastomer arc is cause for bearing replacement. Total depth is sum of void depth from both sides at same location in layer.

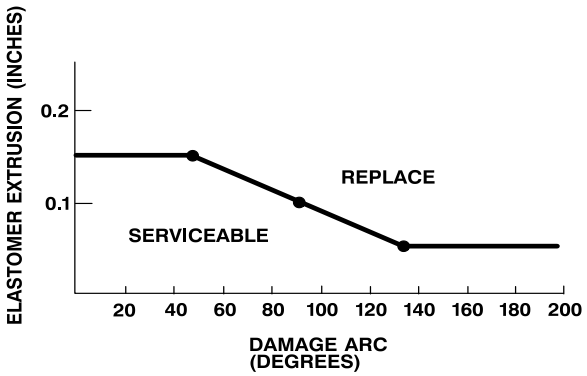
c. Inspect bearing for elastomer sheeting or extrusion from between shims. Measure maximum extension beyond shim edge and maximum arc (in degrees of damaged area). If plot of extension versus arc is above curve on chart, bearing must be replaced.

11. Fluorescent penetrant inspect flapping bearing (TM 1-1520-266-23).

FOLLOW-ON MAINTENANCE.

Repair tail rotor hub (Task 5-4-25).





406012-44
J2198

END OF TASK

5-4-25. TAIL ROTOR HUB (AVIM) — REPAIR

This task covers: Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Roll Stake Bearing Tool (B202)
Hand Arbor Press (B107)
Upright Drill Press (B108)

Material:
Sandpaper (D175)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)

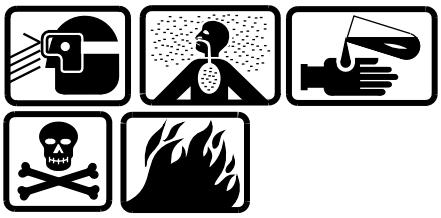
Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

References:
TM 1-1500-204-23

REPAIR SURFACE DAMAGE

Sanding Operations

1. Polish out acceptable damage with 400 grit sandpaper (D175). See Task 5-4-24 For Limitations.

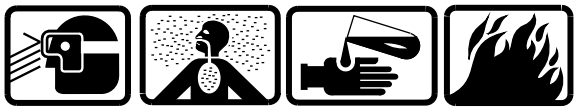


Epoxy Primer Coating

NOTE

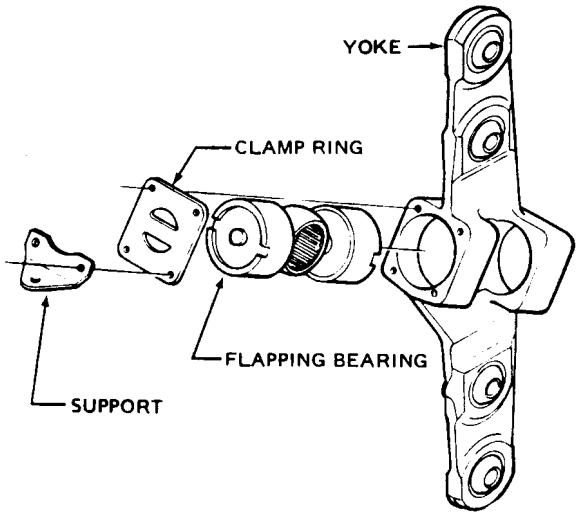
Flapping bearing is not painted.

2. Apply one coat of epoxy primer coating (D98) to repaired areas.



Acrylic Lacquer

3. Apply two coats of black acrylic lacquer (D124) to primed areas.



406012-41
H5304

GO TO NEXT PAGE

5-4-25. TAIL ROTOR HUB (AVIM) — REPAIR (CONT)

REMOVE PITCH CHANGE BEARING

4. Place yoke on hand arbor press (B107) with staked side of pitch change bearing up.

5. Using a suitable pressing plug, press pitch change bearing out of yoke from staked side.

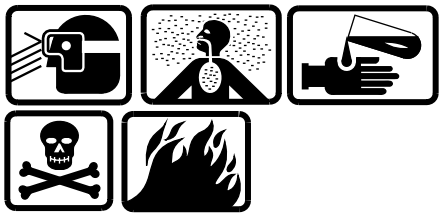
CLEAN AND INSPECT BEARING BORE

Sanding Operations

6. Clean aged primer from bearing bore of yoke using 400 grit sandpaper (D175).

7. Inspect bearing bore for damage; maximum allowable is **0.002 inch** for one-fourth of circumference.

INSTALL PITCH CHANGE BEARING

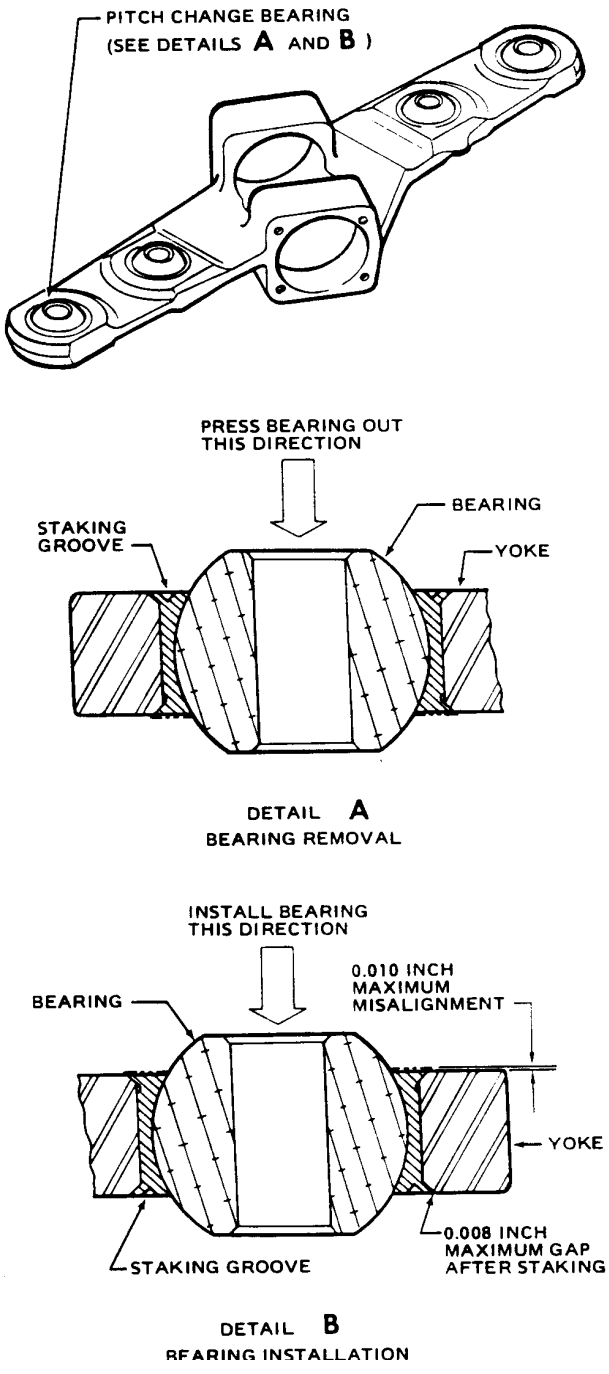


Epoxy Primer Coating

8. Coat mating surfaces of yoke pitch change bearing with epoxy primer coating (D98); install bearing while primer is still wet.

9. Using hand arbor press (B107), press pitch change bearing into yoke from the side opposite that from which old bearing was removed.

10. Check that bearing race aligns with yoke within **0.010 inch**.



406012-42
H5304

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5-4-25. TAIL ROTOR HUB (AVIM) — REPAIR (CONT)

ROLL STAKE BEARING

11. Roll stake bearing into yoke using procedures in TM 1-1500-204-23 and observe the following:

a. Use roll staking tool (B202).

b. Operate upright drill press (B108) at 250 to 350 rpm.

CAUTION

Excessive pressure on the roll staking tool can cause binding of the bearing and damage staking groove. Care shall be used not to stake inner lip of bearing race.

c. Apply steady, hard pressure on drill press for a minimum of 10 seconds.

CHECK BEARING INSTALLATION

12. Check for a maximum gap of **0.008 inch** between staked lip of bearing race and yoke.

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

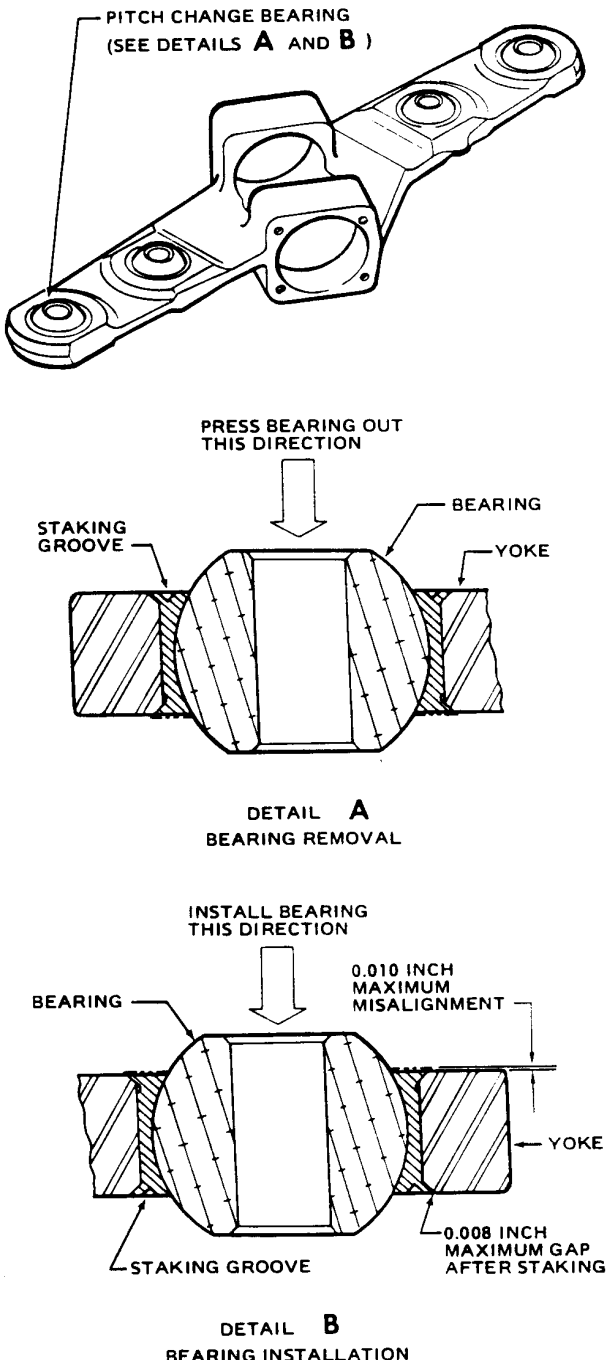
Axial displacement and/or lateral looseness of outer race of pitch change bearings are characteristics that are critical to flight safety and are not permitted.

13. Check for looseness between bearing outer race and yoke; no looseness allowed.

14. Check bearing for freedom of movement; no binding permitted.

15. Proof load bearing 200 pounds from stake side.

INSPECT



END OF TASK

5-4-26. TAIL ROTOR HUB (AVIM) — ASSEMBLY

This task covers: Assembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Torque Wrench (B236)
Tail Rotor Bearing Tool Set (B191)

Material:
Tail Rotor Flapping Bearing
Lockwire (D132)
Epoxy Primer Coating (D98)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

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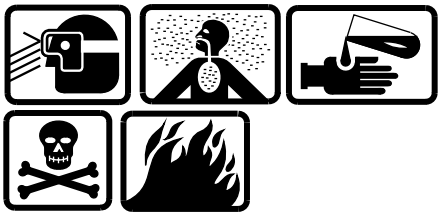


Epoxy Primer Coating

NOTE

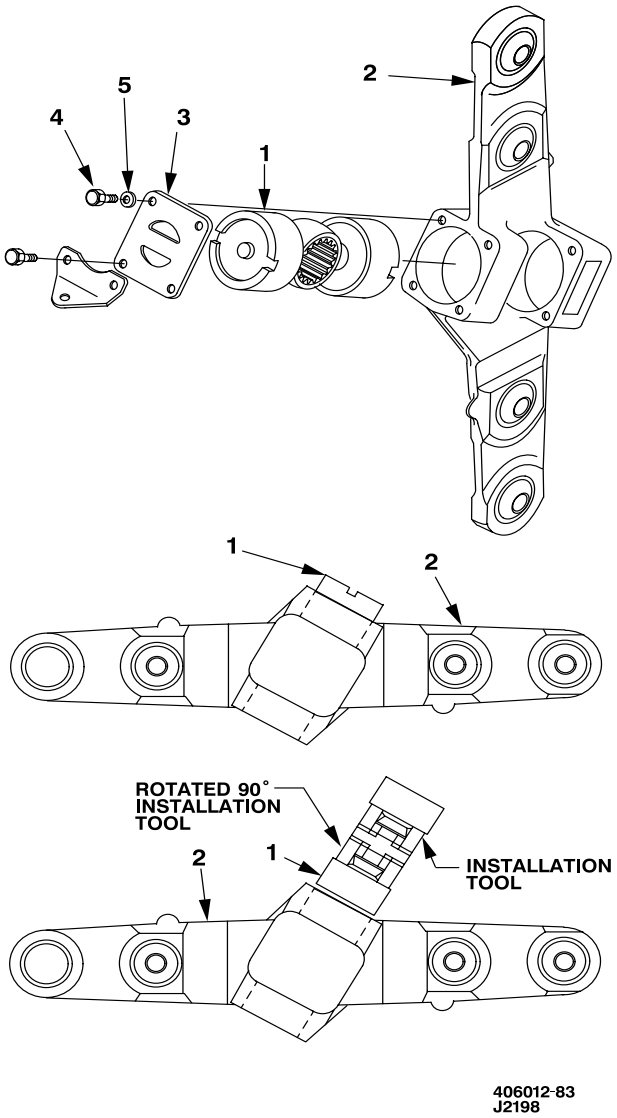
Before epoxy primer coating is cured, tabs on clamp ring shall be aligned with slots on bearing.

1. Coat mating surfaces of bearing (1) and yoke (2) with epoxy primer coating (D98). Assemble installation tool T101750 (Part of tail rotor bearing tool set (B191)) around bearing (1). Use a suitable sleeve and press bearing (1) into yoke (2) while epoxy primer coating is still wet.

NOTE

Clamp ring to be installed on high side of yoke.

2. Install clamp ring (3) with two bolts (4) and washers (5).



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3. Install support (6) with two bolts (7), as shown in illustration.

4. Repeat steps 2 and 3 to install parts on opposite side of yoke (2).

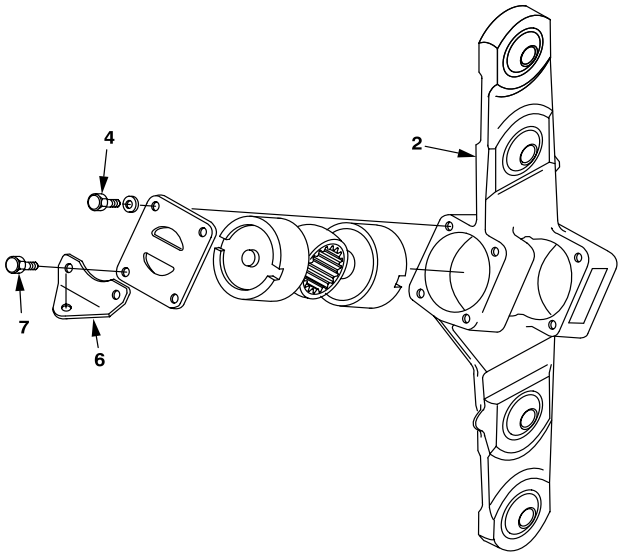
WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing and lockwiring of bolts are characteristics critical to flight safety.

5. Torque bolts (4 and 7) **30 TO 40 INCH-POUNDS**.

6. Secure bolts (4 and 7) in pairs with lockwire (D132).



406012-43
J2198

INSPECT

END OF TASK

5-4-27. TAIL ROTOR BLADES (AVIM) — CLEANING/INSPECTION/REPAIR/REFINISHING

This task covers: Cleaning, Inspection, Repair, and Refinishing (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Airframe Repairer Tool Kit (B176)
Paint Spray Gun (B61)
Heat Gun (B59)
Hole Saw Set (B128)
Hammer 4 oz. (B65)
Putty Knife (B90)
Blade Repair Kit (B79)
Heat Protective Gloves (B54)

Material:
Adhesive EA956 (D20)
Adhesive Brush (D52)
Low-Lint Cleaning Cloth (D67)
Sandpaper (D172)
Sandpaper (D174)
Sandpaper (D175)
Steel Wool (D205)
Acetone (D2)
Denatured Alcohol (D38)
Masking Tape (D216)
Adhesive EA934 (D12)
Drycleaning Solvent (D199)
Wiping Rag (D164)
Skin Patch Material (D190)
Core Patch Material (D78)
Core Patch Material (D79)
Core Patch Material (D76)
Core Patch Material (D77)
Rubber Gloves (D111)
Epoxy Primer Coating (D98)
Copper Filled Polyurethane Coating (D71)
Lusterless Black Polyurethane Coating (D156)
Aliphatic Naphtha (D141)
Crocus Cloth (D90)
Teflon Tape (D220)
Adhesive (D5)
Paint Brush (D54)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI) ▮
68G Aircraft Structural Repairer

References:
TM 1-1520-266-23 ▮

GO TO NEXT PAGE

5-4-27. TAIL ROTOR BLADES (AVIM) — CLEANING/INSPECTION/REPAIR/REFINISHING (CONT)

CLEAN

Drycleaning Solvent

1. Clean tail rotor blades with drycleaning solvent (D199) and paint brush (D54). Dry with wiping rag (D164).

INSPECT BLADE FOR DAMAGE

2. Inspect leading edge abrasion strip (1) for damage:

a. Replace blade if abrasion strip (1) has any of the following defects:

(1) Leading edge deformation due to abrasion.

(2) Holes, cracks, or tears.

(a) If a crack is suspected, refer to TM 1-1520-266-23.

(3) Edge voids deeper than **0.250 inch**.

b. Nicks, scratches, or sharp dents not exceeding **0.005 inch** in depth are acceptable if sanded out.

c. Nonsharp dents not exceeding **0.010 inch** in depth are acceptable without repair.

d. If damage exceeds limits, replace blade.

3. Inspect erosion shield (2) for damage:

a. Nicks or scratches in the erosion shield (2) are acceptable if they do not penetrate shield.

b. Replace blade if damage penetrates erosion shield (2).

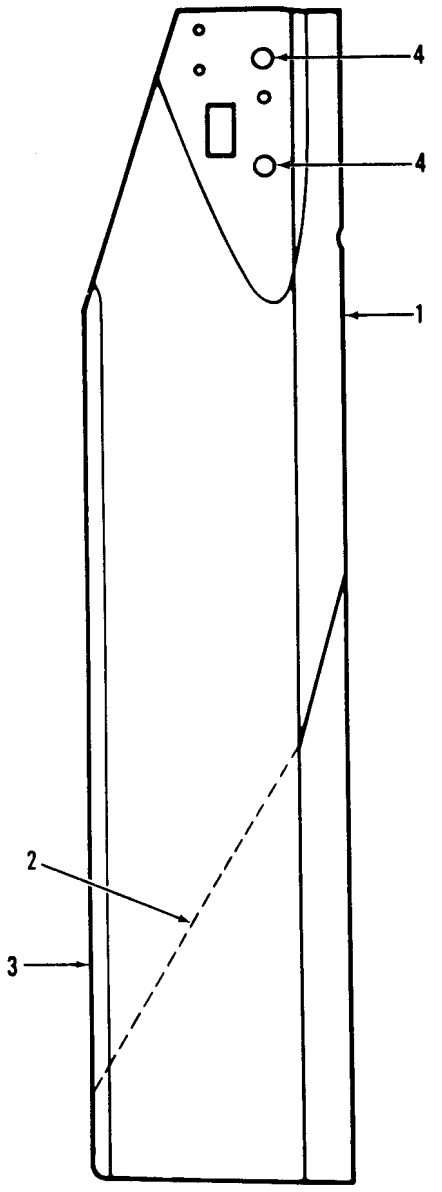
4. Inspect blade extreme trailing edge (3) for damage:

a. Nicks and notches in the blade extreme trailing edge (3) that are less than **0.060 inch** in depth are allowable after repair.

b. Replace blade if damage exceeds limits.

5. Inspect blade bolt retention bushings (4) for wear and damage:

a. Inspect bushings (4) for wear; maximum inside diameter: **0.376 inch**.



406016-10
H5304

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b. Inspect bushings (4) for corrosion pitting, gouges, or other damage.

(1) If damage is deep enough to exceed **0.376 inch** after cleanup, bushing must be replaced.

(2) If damage is in a small enough area that it can be repaired by local polishing on a maximum of 20 percent of inside surface of bushing, repair is permitted.

6. Inspect blade skin (5) for damage:

a. Inspect skin (5) for cracks. If cracks are found, replace blade.

(1) If a crack is suspected, refer to TM 1-1520-266-23.

b. Washer or bracket impressions in the skin (i.e., built-up ridges) on either side of the blade at the bolt holes are acceptable without repair providing no voids exist.

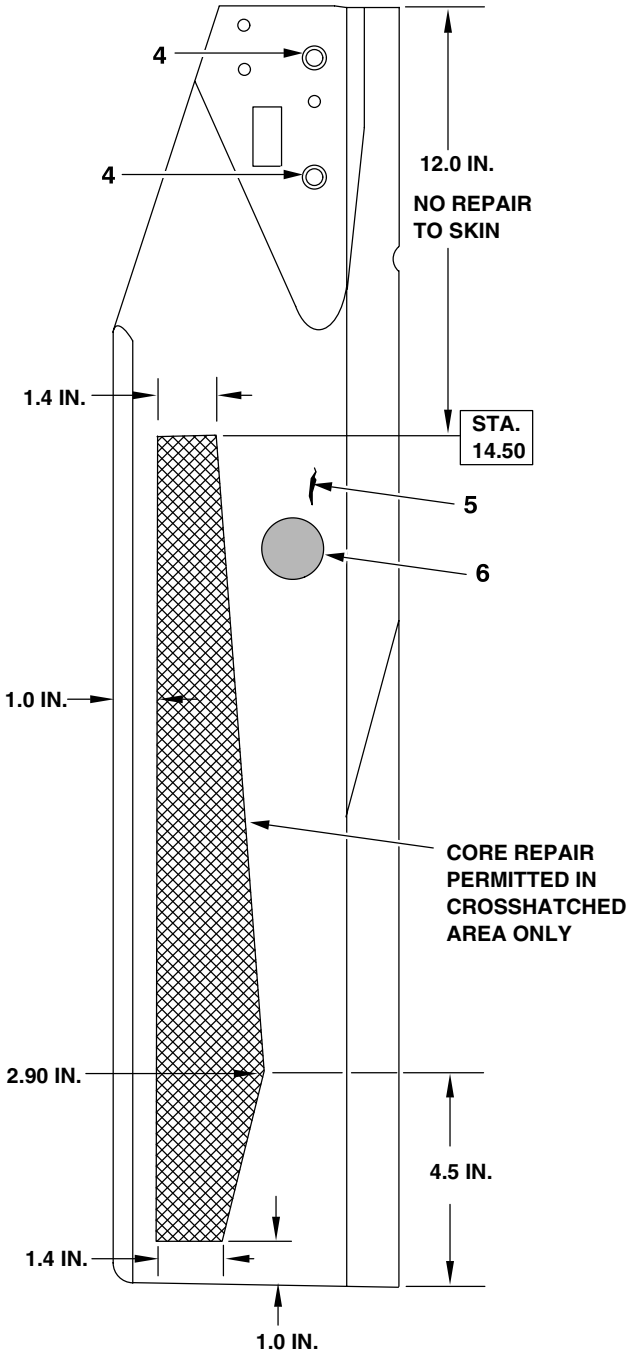
c. Nicks, scratches, or dents on the surface of skin (5) are acceptable without repair provided they do not break the fibers or cause delaminations.

d. If damage breaks fibers or penetrates the skin inboard of station 14.50, replace the blade.

e. Damage outboard of station 14.50 which breaks the fibers or penetrates the skin (5) but does not damage the core (6) may be repaired if damage does not exceed **2.00 inches** in diameter.

f. Damage outboard of station 14.50 which penetrates the skin (5) and damages the core (6) may be repaired in crosshatched area only. Repair of this type damage is limited to **2.00 inches** in diameter.

g. Replace blade if damage limits are exceeded.



406016-5
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INSPECT BLADE FOR VOIDS

NOTE

A void is defined as any unbonded area. Many subdefinitions of voids are often used, such as lack of adhesive, gas pocket, misfit, etc. This manual makes no distinction among these subdefinitions, but groups them under the general term, void. Inspect for voids using a small steel tapping hammer, T-75449-2 (B65) or equivalent, on small surfaces.

7. Inspect for voids under abrasive strip (1).

NOTE

There is no adhesive bonding from the extreme leading edge of the abrasive strip (1) to **0.50 inch** aft. This area will sound hollow, like a void, when tapped.

a. Single voids, not in excess of 0.60 square inch in area with a maximum chordwise width of **0.20 inch**, are acceptable.

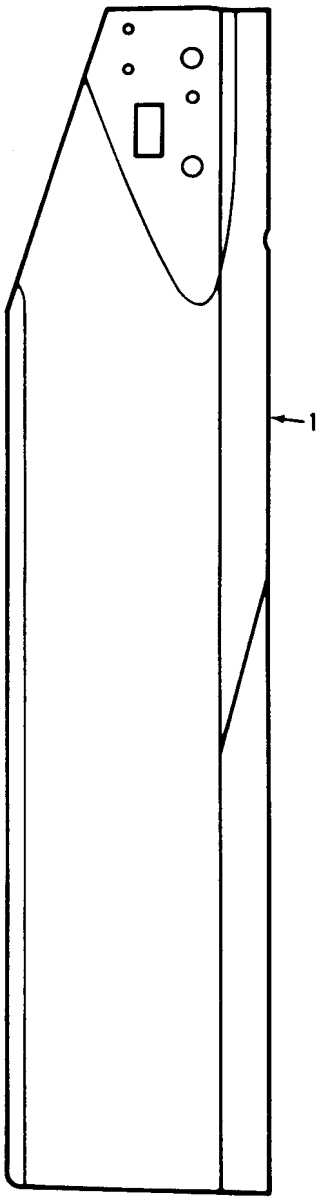
b. Voids within **0.20 inch** of each other shall be considered a single void.

c. If total area of voids is in excess of 1.00 square inch on each side, the blade must be replaced.

d. Voids are acceptable within **0.25 inch** of edge of abrasive strip (1).

e. Edge voids less than **0.25 inch** in depth must be repaired. If edge voids exceed **0.25 inch**, blade must be replaced.

7.1. If an adhesive void on the leading edge abrasive strip is suspected, refer to TM 1-1520-266-23.



406016-11
H5304

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8. Inspect erosion shield (2) for voids. Voids are not acceptable if they are more than **0.50 inch** wide chordwise, **1.00 inch** wide spanwise, or closer than **0.50 inch** to an edge.

8.1. If an adhesive void on the erosion shield is suspected, refer to TM 1-1520-266-23.

9. Inspect for voids under skin (5).

a. Voids between the skin (5) and trailing edge (3) in excess of one-fourth width of mating surfaces and **3.00 inches** in length are not acceptable.

a.1. If an adhesive void between skin and trailing edge is suspected, refer to TM 1-1520-266-23.

b. Voids between skin (5) and core exceeding 0.70 square inch in area and **0.25 inch** chordwise width are not acceptable.

b.1. If an adhesive void between skin and core is suspected, refer to TM 1-1520-266-23.

c. Total area of voids exceeding 1.20 square inches on either side of blade is not acceptable.

d. Delaminations between skin and plies are not acceptable.

e. If an adhesive void between skin and plies is suspected, refer to TM 1-1520-266-23.

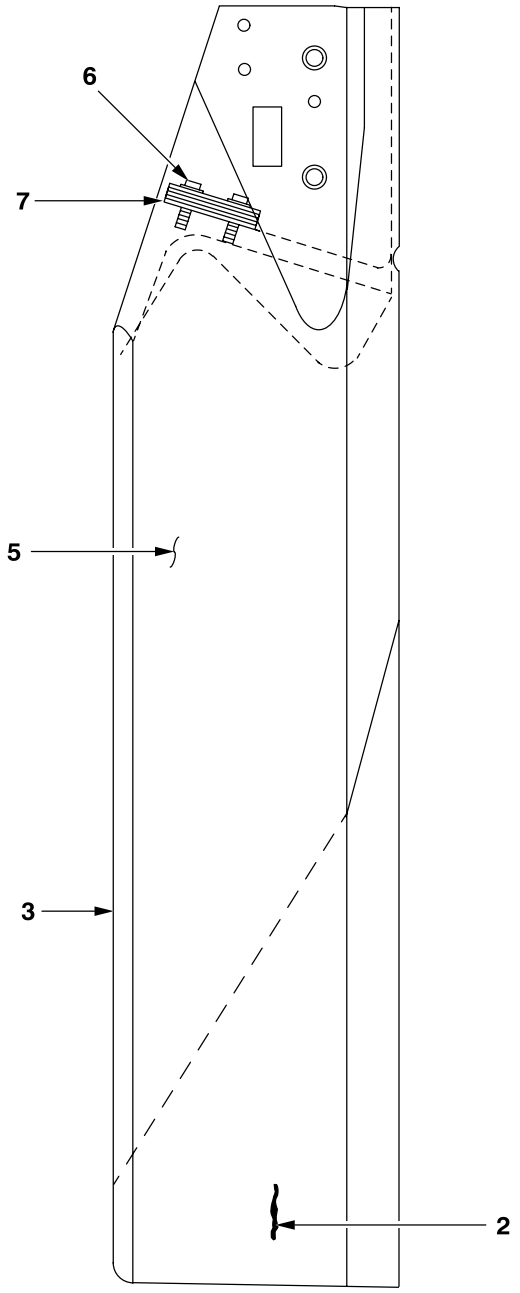
INSPECT MASTER BALANCE SCREW(S)

NOTE

The tail rotor blade may be equipped with either one or two balance screws.

10. Inspect balance screw(s) (6), as follows:

a. Inspect balance screw(s) (6) and weights (7) for looseness. If loose, forward tail rotor blade to depot for repair.



406016-6
J1346

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REPAIR SURFACE DAMAGE

NOTE

After tail rotor blade repair has been accomplished, the tail rotor balance shall be checked dynamically .

11. Sand out nicks, and scratches in abrasion strip (1) with steel wool (D205) and 180 grit sandpaper (D172). Remove only enough material to remove damage. Nonsharp dents within limits are acceptable without repair.

12. Sand out nicks and scratches in erosion shield (2) with 180 grit sandpaper (D172). Lightly abrade painted surface surrounding sanded areas.

13. Sand out damaged area of blade trailing edge (3) with 180 grit sandpaper (D172) followed with 320 grit sandpaper (D174). Fair repair out a minimum of **2 inches** each side of damage.

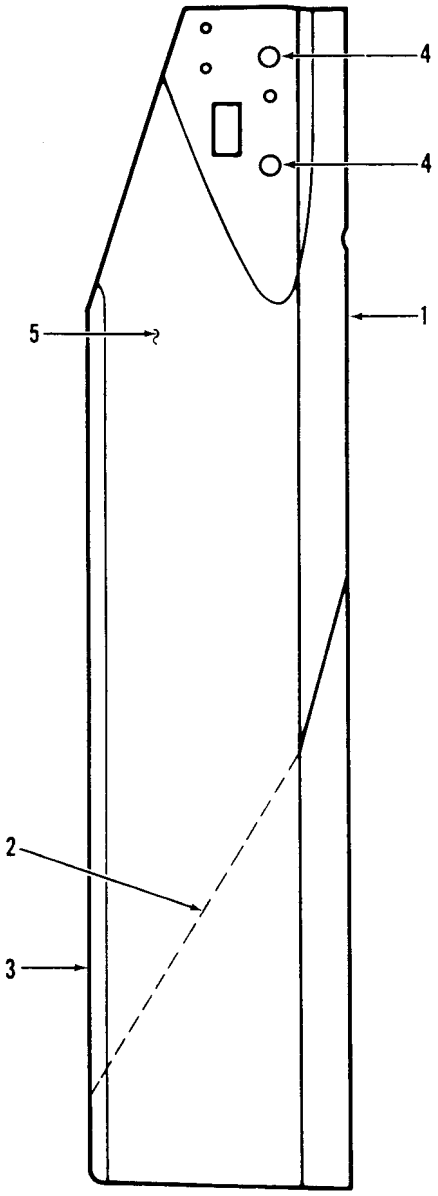
14. Repair damage area to blade bolt retention bushing (4) as follows:

a. Sand out damaged area with crocus cloth (D90). If damage is restricted to a small local area, only polish that area.

b. After removal of damage area, using vernier caliper (B14), measure inside diameter of bushing (4); maximum diameter of **0.376 inch** allowed.

c. If damage is in a small enough area that it can be repaired by local polishing on a maximum of 20 percent of inside surface of bushing, repair is permitted.

15. Sand out damaged area in blade skin (5) with 180 grit sandpaper (D172) followed with 320 grit sandpaper (D174). Lightly abrade painted surfaces surrounding painted area.



406016-4
H5304

INSPECT

REPAIR EDGE VOIDS

16. Repair edge voids under abrasion strip (1) which do not exceed **0.25 inch** depth as follows:

a. Mix adhesive (D12 or D20) per manufacturers instructions.

GO TO NEXT PAGE

Adhesive

b. Fill void completely with adhesive (D20 or D12) using tongue depressor or putty knife (B90).

c. Smooth adhesive to surrounding surfaces.

WARNING

To avoid burns, heat protective gloves (B54) shall be worn when handling heat gun and heated parts. If burn occurs, seek medical aid.

NOTE

Adhesive may be cured at room temperature for 24 hours instead of applying heat.

d. Using heat gun (B59), cure adhesive for 2 hours at 155 to 160 °F. Apply heat locally and do not exceed maximum temperature.

INSPECT

17. Repair loose or buckled screen wire on blade exterior at retention holes as follows:

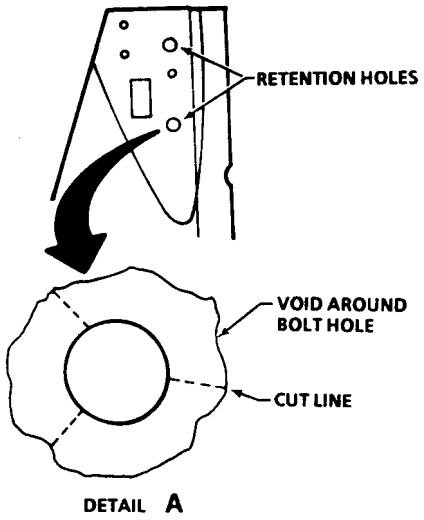
a. Cut screen wire into three equal parts. See detail A.

b. Lift each part of wire and inject with adhesive (D20 or D12).

c. Use an over press covered with Teflon tape (D220) over the repaired area and clamp with firm pressure.

d. Cure adhesive (D20 or D12) at room temperature for 24 hours or use heat gun (B59) to heat to 140 °F for 2 hours. Do not exceed 140 °F.

INSPECT



DETAIL A

406016-13
H5304

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5-4-27. TAIL ROTOR BLADES (AVIM) — CLEANING/INSPECTION/REPAIR/REFINISHING (CONT)

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22. Deleted.

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5-4-27. TAIL ROTOR BLADES (AVIM) — CLEANING/INSPECTION/REPAIR/REFINISHING (CONT)

REPAIR SKIN DAMAGE

23. Use the following criteria to repair damage to tail rotor blade skin and core in accordance with step 25:

a. Skin fibers are broken.

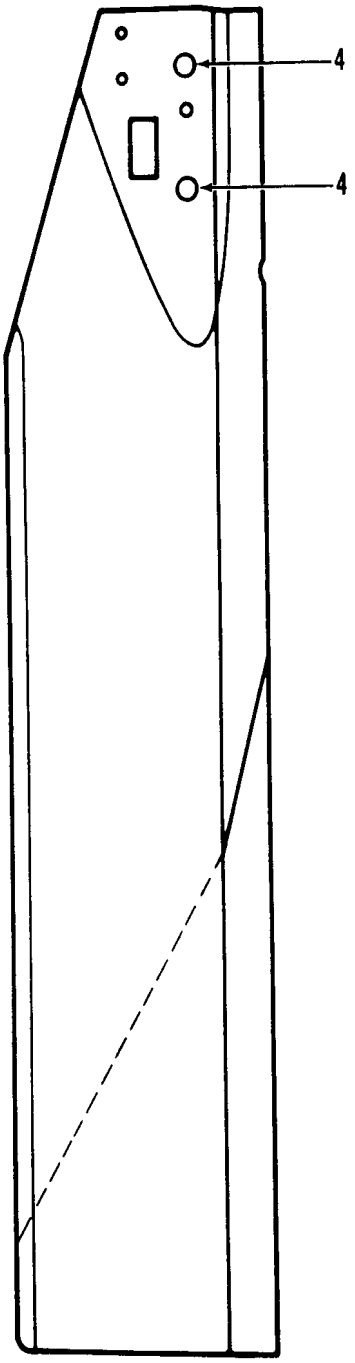
b. Skin is penetrated and core damage is less than 1.00 square inch.

c. Damage passes through blade and core damage is less than 1.00 square inch.

24. Use the following criteria to repair damage to tail rotor blade skin and core in accordance with step 28:

a. Skin is penetrated and core damage is in excess of 1.00 square inch but can be enclosed within a **2.00 inch** diameter circle.

b. Damage passes through blade and core damage is in excess of 1.00 square inch but can be enclosed within a **2.00 inch** diameter circle.



406016-12
H5304

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25. Repair damaged skin having no core damage or core damage limited to 1.00 square inch as follows:

a. Repair is limited to **2.00 inches** in diameter. Patch must cover damage a minimum of **1.00 inch** in all directions.

b. Remove paint and primer from blade approximately **3.00 inches** around damage using 180 grit sandpaper (D172).

Acetone

c. Remove final traces of paint and primer using wiping rag (D164) dampened with acetone (D2).

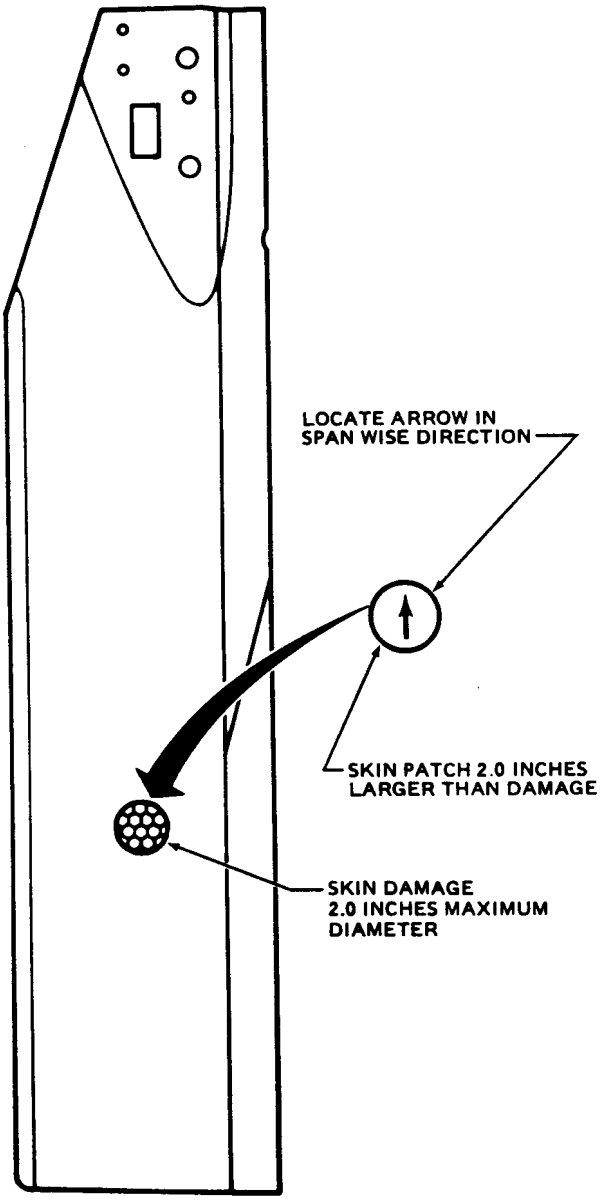
NOTE

Outer surface of patch material is marked with arrow for direction of installation.

d. Cut patch from skin patch material (D190). Trim to a diameter **2.00 inches** larger than damaged area.

Sanding Operations

e. Remove peel ply and abrade inner surface of patch with 180 grit sandpaper (D172).



406016-7
H5304

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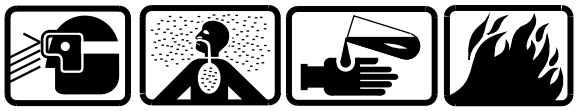
Denatured Ethyl Alcohol

f. Clean sanded area of blade and patch with a clean wiping rag (D164) dampened with denatured alcohol (D38). Repeat with successive clean wiping rags and alcohol until rag remains clean after wiping.

g. Dry with clean dry wiping rag (D164).

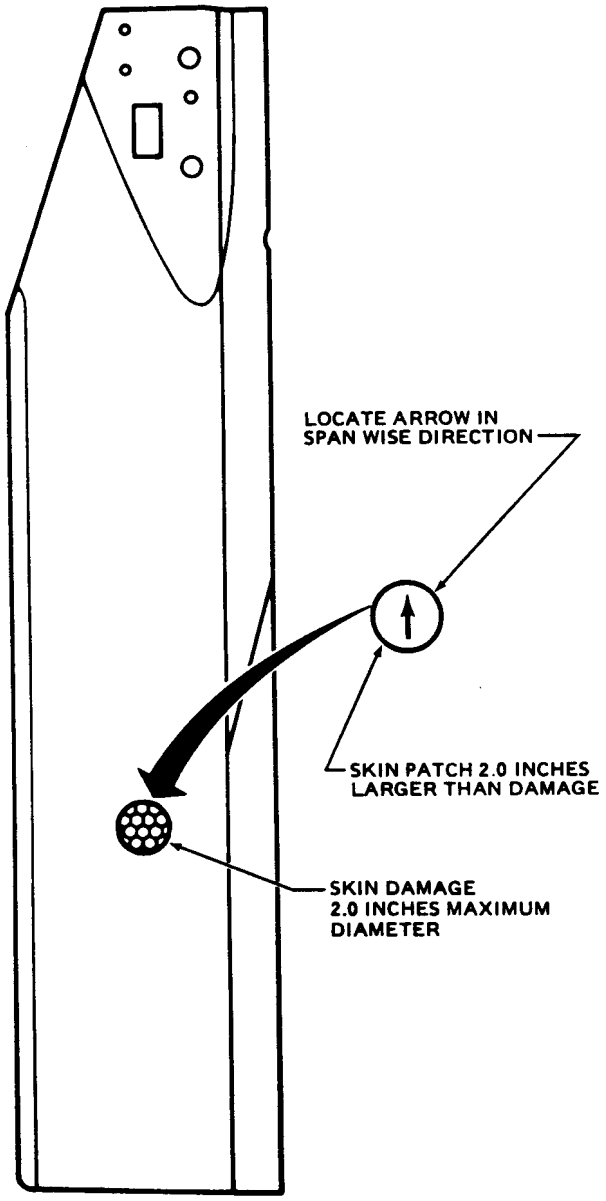


Adhesive

h. Mix adhesive (D12), three parts A to one part B.

i. Apply adhesive (D12) to patch and mating surface of blade. Spread adhesive thoroughly using putty knife or tongue depressor to achieve complete wetting of surfaces. Use sufficient adhesive to fill low areas on blade skin.

j. Position patch on blade with arrow pointing in a spanwise direction. Secure patch with masking tape (D216).



406016-7
H5304

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WARNING

To avoid burns, heat protective gloves (B54) shall be worn when handling heat gun and heated parts. If burn occurs, seek medical aid.

NOTE

Adhesive may be cured at room temperature for 24 hours instead of applying heat.

k. Using heat gun, cure adhesive for 2 hours at 155 to 165 °F. Apply heat locally and do not exceed maximum temperature.

l. Smooth adhesive around patch using 180 grit sandpaper (D172).

INSPECT

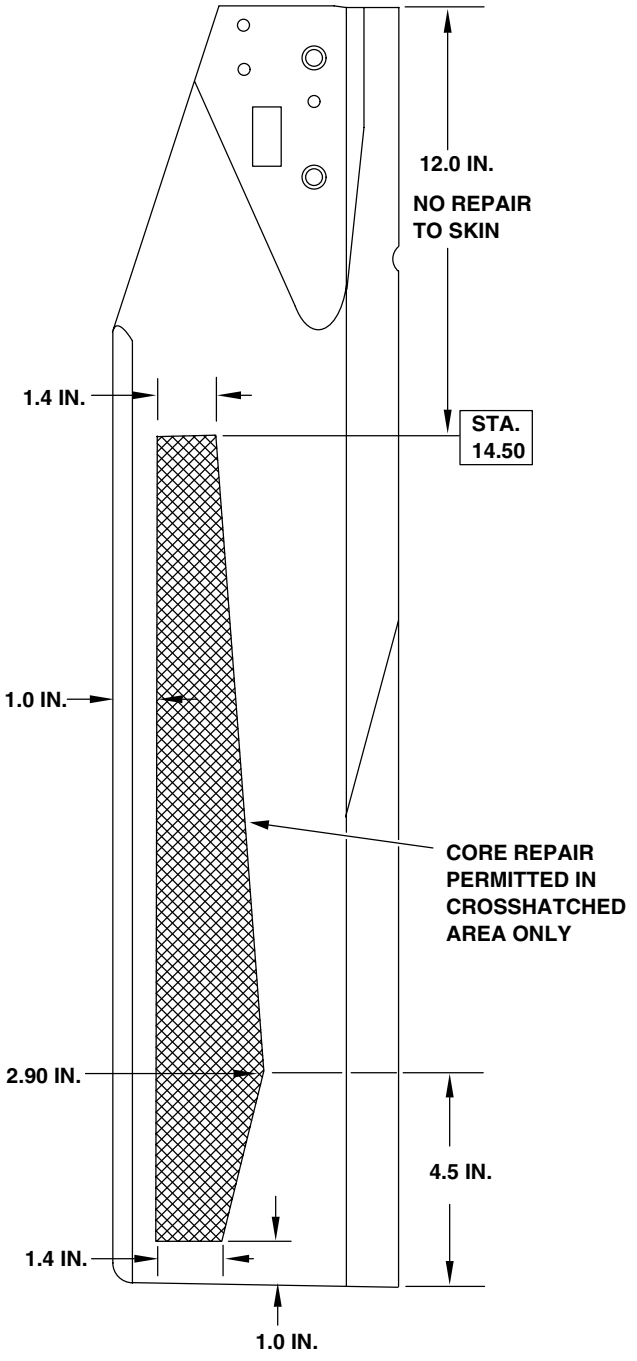
REPAIR SKIN AND CORE DAMAGE

26. Repair blade with damage to core in excess of 1.00 square inch as follows:

a. Repair of core permitted only in crosshatch area as illustrated. Repair is limited to **2.00 inches** in diameter.

Sanding Operations

b. Remove paint and primer from blade approximately **3.00 inches** around damage using 180 grit sandpaper (D172).



406016-8
J1902

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c. Remove final traces of paint and primer using wiping rag (D164) dampened with acetone (D2).

d. Mark a circle on blade skin around damage, **2.00 inches** in diameter, maximum.

e. Cut through skin around circle using hole saw (part of hole saw set (B128)) or router cutter. Peel damaged skin from core.

f. Determine depth of core damage. Select core patch material (D78), (D79), (D76), or (D77) thick enough to fill damage. If damage extends completely through blade, select patch which will extend more than half way through blade so remaining damage can be filled from opposite side of blade.

NOTE

Core patch material is made with a thin layer of glass fiber bonded to one side, which will be bonded to the core at bottom of damaged hole. Core patches may be stacked to provide different thickness.

g. Remove damaged core as follows:

(1) Rout out core within skin cutout using a router with end mill (Part of Blade Repair Kit (B79)). Follow blade contour to ensure cutout is uniform depth.

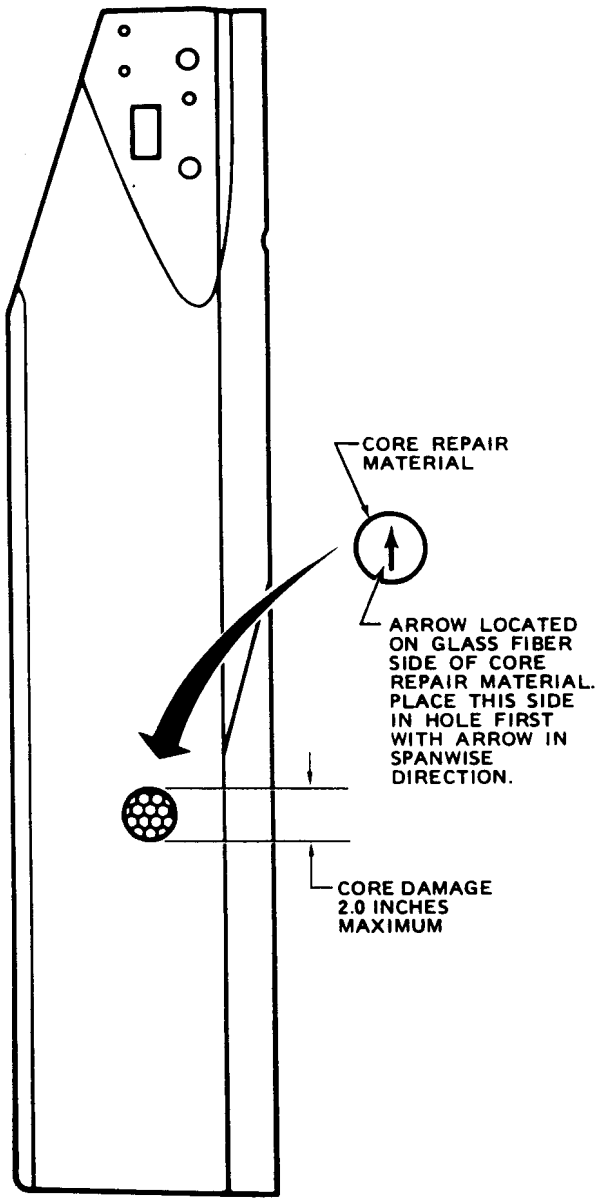
(2) Remove sanding and routing dust from blade.

NOTE

Glass fiber side of core patch material and outer surface of skin patch material are marked with an arrow for direction of installation.

h. Cut a circular core patch from selected material that will fit hole loosely, approximately **1/16 inch** gap all around.

i. Cut patch from skin patch material (D190). Trim to a diameter **2.00 inches** larger than hole in blade. Remove peel ply from patch.



406016-1
H5304

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Sanding Operations

j. Abrade inner surfaces of core patch and skin patch with 180 grit sandpaper (D172).

Denatured Ethyl Alcohol

k. Clean sanded areas of patches and blade with a clean wiping rag (D164) dampened with denatured alcohol (D38). Repeat with successive clean wiping rags and alcohol until rag remains clean after wiping.

l. Dry with clean dry wiping rag (D164).

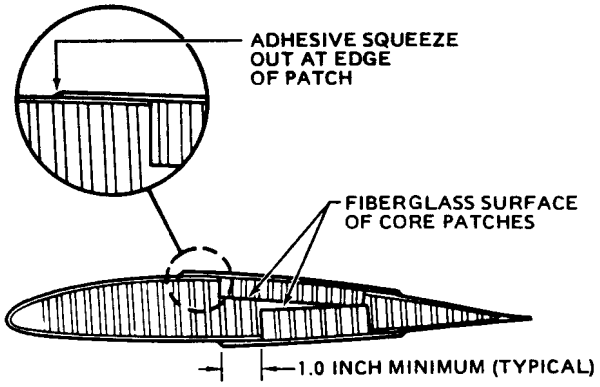
Adhesive

m. Mix adhesive (D12), three parts A to one part B.

n. Apply adhesive (D12) to glass fiber side of core patch and mating surfaces of core patch and hole.

o. Insert core patch into hole with arrow pointing in a spanwise direction.

p. Apply adhesive (D12) to mating surfaces of skin patch and blade. Do not apply adhesive to cell ends of core patch. Spread adhesive thoroughly using putty knife (B90) or tongue depressor to achieve complete wetting of surfaces.



CROSS SECTION OF BLADE WITH CORE PATCHES INSTALLED IN TOP AND BOTTOM SIDES

406016-2
H5304

q. Position patch on blade with arrow pointing in spanwise direction. Secure patch with masking tape (D216).

WARNING

To avoid burns, heat protective gloves (B54) shall be worn when handling heat gun and heated parts. If burn occurs, seek medical aid.

NOTE

Adhesive may be cured at room temperature for 24 hours instead of applying heat.

r. Using heat gun, cure adhesive for 2 hours at 155 to 165 °F. Apply heat locally and do not exceed maximum temperature.

s. Smooth adhesive around patch using 180 grit sandpaper (D172).

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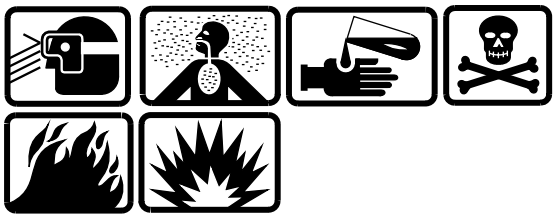
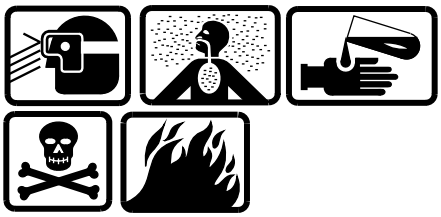
REPLACE BLADE ROOT END SEALANT

27. Replace blade root end sealant as follows:



Denatured Ethyl Alcohol



Naphtha/Naphthalene, TT-N-97

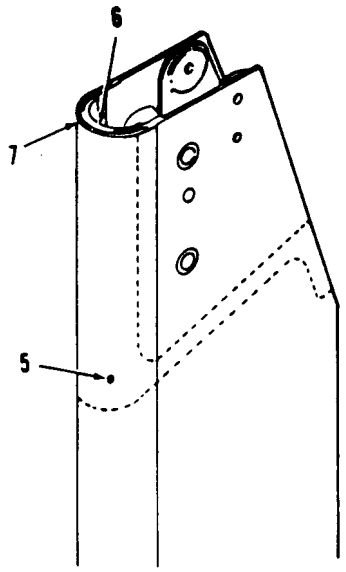
a. Clean drain hole (5) and bond joints between root closure (6) and skin (7) with low-lint cleaning cloth (D67) or adhesive brush (D52) dampened with denatured alcohol (D38) or aliphatic naphtha (D141).

b. Air dry for 30 minutes.

c. Mix adhesive (D5) per manufacturers instructions.

d. Apply a coat of adhesive (D5) approximately **0.0312 inch** thick and **0.250 inch** wide to cleaned bond joints and inside lip of drain hole (5).

e. Cure adhesive (D5) for 24 hours at room temperature or use heat gun and cure 2 hours at 140 °F.



406016-14
H5304

INSPECT

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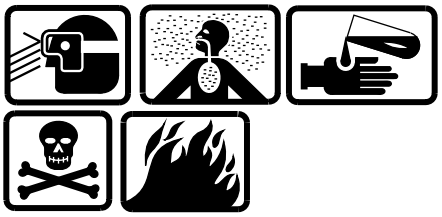
PREPARE BLADE FOR REFINISHING



Naphtha/Naphthalene, TT-N-97

28. Clean areas to be refinished with aliphatic naphtha (D141) and wiping rags (D164).

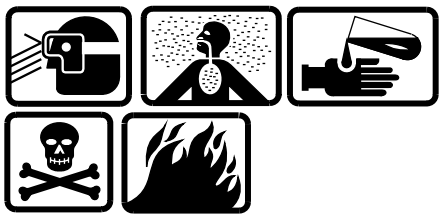
Sanding Operations

29. Sand areas to be refinished with 320 grit sandpaper (D174).

30. Remove sanding residue with clean wiping rags (D164) dampened with naphtha (D141).

31. Mask areas to be painted with masking tape (D216).

REFINISH REPAIRED AREAS OF BLADE



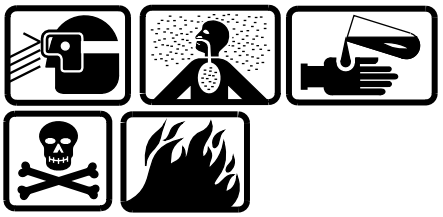
Epoxy Primer Coating

32. Mix epoxy primer coating (D98), copper filled polyurethane coating (D71), and lusterless black polyurethane coating (D156) per instructions on container.

33. Using spray gun (B61), apply one spray coat of epoxy primer coating (D98). Allow to dry 1 to 8 hours.

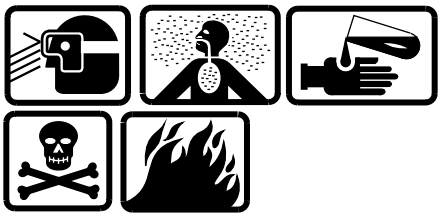
34. Sand epoxy primer coating smooth with 400 grit sandpaper (D175).

35. Remove sanding residue with clean wiping rag (D164) dampened with naphtha (D141).



Polyurethane Conductive Coating

36. Apply two spray coats of copper filled polyurethane coating (D71). Allow to dry a minimum of 30 minutes and a maximum of 24 hours between coats.



Polyurethane Coating

37. Apply two spray coats of lusterless black polyurethane coating (D156). Allow to dry a minimum of 30 minutes and a maximum of 24 hours between coats.

38. Allow blade to dry a minimum of 4 hours before installing on helicopter.

INSPECT

END OF TASK

Section V. TAIL ROTOR PITCH CHANGE MECHANISM

5-14. TAIL ROTOR PITCH CHANGE MECHANISM

5-15. INTRODUCTION

This section contains: maintenance procedures for removal, cleaning, inspection, repair, and installation of tail rotor pitch change mechanism. Standard torques are provided in Appendix P and TM 1-1500-204-23.

5-16. TASK LIST

The task list lists those tasks required to support unit and intermediate level maintenance.

LIST OF TASKS

5-5-1. TAIL ROTOR PITCH CHANGE ROD ASSEMBLY — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Fin Assembly Removed (Task 2-3-22)
Tail Light Support Removed (Task 2-3-31)

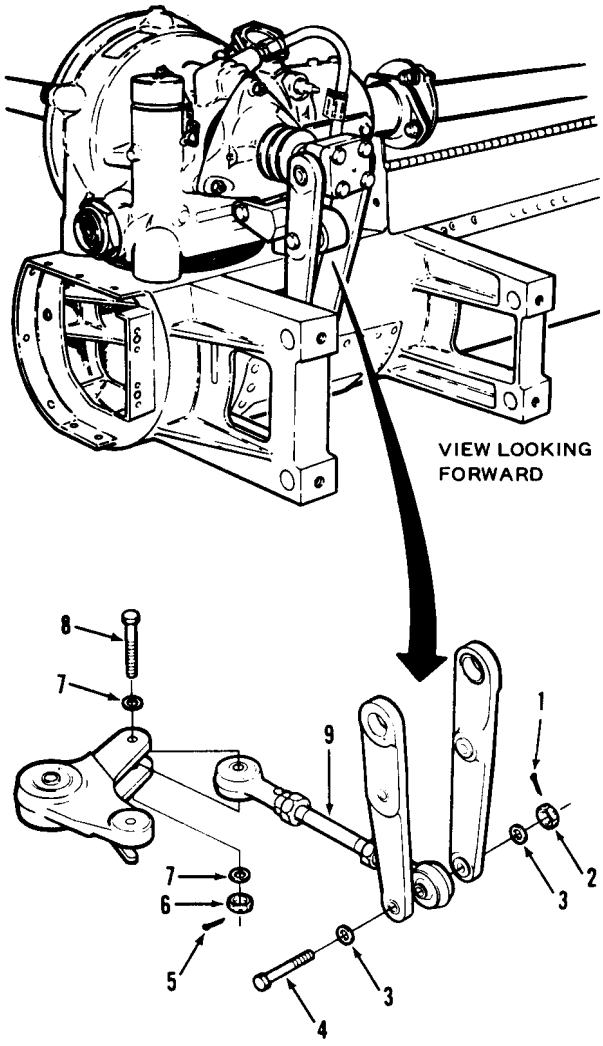
GO TO NEXT PAGE

5-5-1. TAIL ROTOR PITCH CHANGE ROD ASSEMBLY — REMOVAL (CONT)

WARNING

No one shall operate tail rotor controls from inside the helicopter during inspection of pitch change mechanism. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Remove cotter pin (1) and discard.
2. Remove nut (2), two washers (3), and bolt (4).
3. Remove cotter pin (5) and discard.
4. Remove nut (6), two washers (7), and bolt (8).
5. Remove rod assembly (9).



406012-51
H5304

END OF TASK

5-5-2. TAIL ROTOR PITCH CHANGE MECHANISM — INSPECTION

This task covers: Inspection (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Tail Light Support Removed (Task 2-3-31)

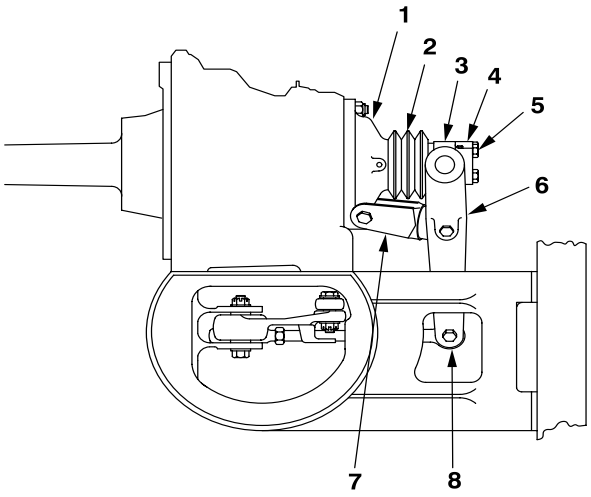
GO TO NEXT PAGE

WARNING

No one shall operate tail rotor controls from inside the helicopter during inspection of pitch change mechanism. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

NOTE

This inspection is to determine if any part of the pitch change mechanism is damaged to the extent that it should be repaired or replaced. Refer to inspection task for particular part for damage limits.



VIEW LOOKING FORWARD
WITH TAIL LIGHT SUPPORT REMOVED

406012-52
J1661

1. Inspect housing (1) for damage (Task 5-5-21), security, and oil leakage between housing and tail rotor gearbox.

2. Inspect boot (2) for holes, deterioration, and presence of lockwire.

3. Inspect trunnion (3) for damage (Task 5-5-20)

4. Inspect cap (4) for damage (Task 5-5-19)

5. Check bolts (5) for security and presence of lockwire.

6. Inspect levers (6) for damage (Task 5-5-6) Check attaching hardware for presence of cotter pins.

7. Inspect idler (7) for damage (Task 5-5-10). Check attaching hardware for presence of cotter pins.

8. Inspect rod assembly (8) for damage and bearing wear (Task 5-5-3). Check attaching hardware for presence of cotter pins.

FOLLOW-ON MAINTENANCE

Install taillight support (Task 2-3-31).

END OF TASK

5-5-3. TAIL ROTOR PITCH CHANGE ROD ASSEMBLY — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

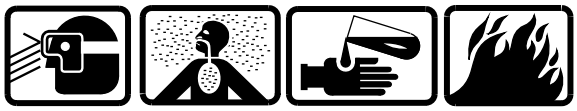
Tools:
Airframe Repairer Tool Kit (B176)
General Mechanic Tool Kit (B178)
Torque Wrench (B239)

Material:
Sandpaper (D175)
LHE Cadmium Solution (D129)
Drycleaning Solvent (D199)
Wiping Rag (D164)
Rubber Gloves (D111)
Paint Brush (D54)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68G Aircraft Structural Repairer
67S Scout Helicopter Repairer

References:
TM 1-1500-204-23

CLEAN



Drycleaning Solvent

1. Clean rod assembly using drycleaning solvent (D199) and paint brush (D54). Dry with wiping rag (D164).

INSPECT

2. Inspect rod assembly to limits shown. Replace rod assembly if limits are exceeded. See figure Tail Rotor Pitch Change Rod Assembly — Wear and Damage Limits.

GO TO NEXT PAGE

	DAMAGE LOCATION SYMBOLS	
TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.010 In. before and after repair	0.010 In. before and after repair
CORROSION	0.005 In. before and 0.010 In. after repair	0.005 In. before and 0.010 in after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.050 Sq. in.	0.100 Sq. in.
NUMBER OF REPAIRS	One	One per rod end
EDGE CHAMFER TO REMOVE DAMAGE		0.030 In. x 45°
BEARING WEAR:		
Axial:	0.020 In.	
THREAD DAMAGE:		
Depth:	1/3 Of thread	
Length:	1/4 Inch	
Number:	Two per threaded segment	

406012-3
J2449

Tail Rotor Pitch Change Rod Assembly — Wear and Damage Limits

GO TO NEXT PAGE

REPAIR

Sanding Operations

3. Polish out allowable damage with 400 grit sandpaper (D175).

LHE Cadmium Solution

4. Apply LHE cadmium solution (D129) to repaired areas.

REPLACE RIVETED ROD END BEARING

5. Remove rivet (1) (TM 1-1500-204-23).

6. Loosen jamnut (2).

7. Remove rod end bearing (3).

8. Install serviceable rod end bearing (3) on rod (4) and align rivet hole.

9. Insert rivet (1) into aligned rivet hole.

10. Torque jamnut (2) **100 TO 140 INCH-POUNDS**.

11. Install rivet (1) (TM 1-1500-204-23).

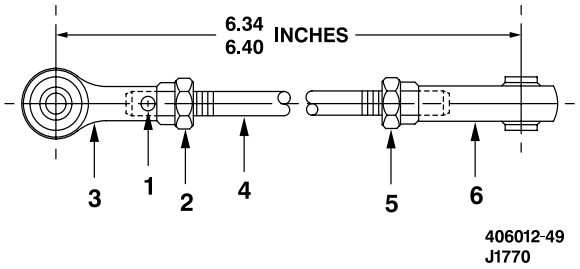
REPLACE ADJUSTABLE ROD END BEARING

12. Loosen jamnut (5).

13. Remove rod end bearing (6)

14. Install serviceable rod end bearing (6) on rod (4) and adjust to **6.34 to 6.40 inches**.

15. Tighten jamnut (5) snug against rod end bearing (6), as it will be torqued during installation.



INSPECT

END OF TASK

5-5-4. TAIL ROTOR PITCH CHANGE ROD ASSEMBLY — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B239)
Torque Wrench (B237)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

WARNING

- No one shall operate tail rotor controls from inside the helicopter during inspection of pitch change mechanism. Physical injury can occur. If injury occurs, seek medical aid.
- A "DO NOT MOVE CONTROLS" shall be displayed in the cockpit during the performance of this task.

1. Install rod assembly (1) between levers (2) and bellcrank (3) with nonadjustable end toward bellcrank.

2. Install bolt (4), two washers (5), and nut (6).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of nuts and correct installation of cotter pins are characteristics critical to flight safety.

3. Torque nut (6) **60 TO 80 INCH-POUNDS**.

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

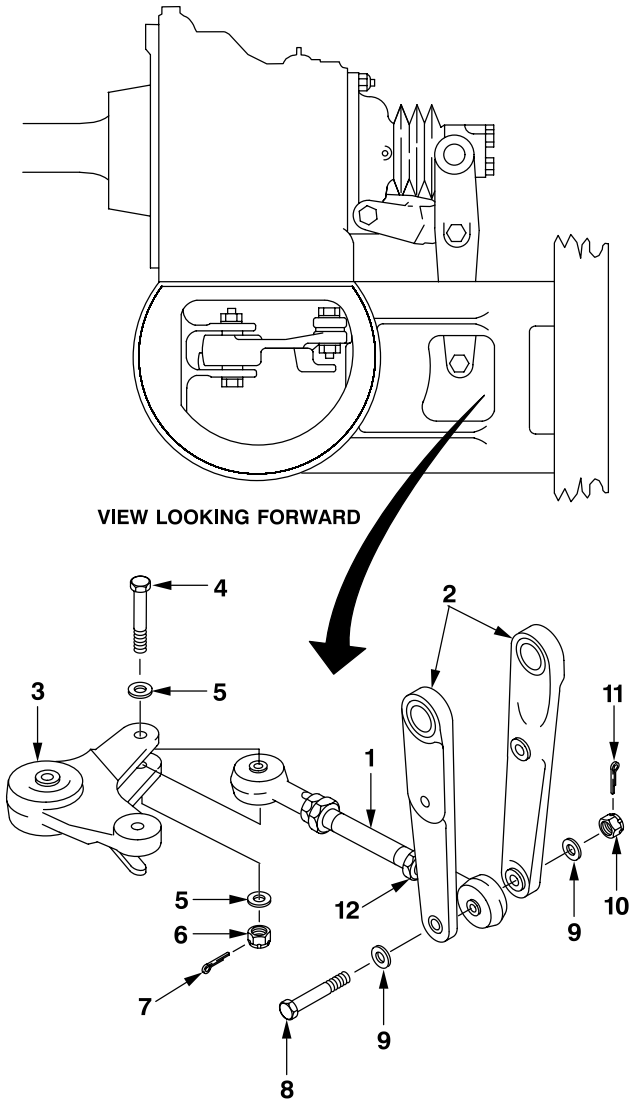
4. Install cotter pin (7) through nut (6).

5. Install bolt (8), two washers (9), and nut (10).

6. Torque nut (10) **60 TO 80 INCH-POUNDS**.

7. Install cotter pin (11) through nut (10).

8. Torque jamnut (12) **100 TO 140 INCH-POUNDS**.



INSPECT

FOLLOW-ON MAINTENANCE

Check directional controls rigging (Task 11-2-4).

Install fin assembly (Task 2-3-22).

END OF TASK

5-5-5. TAIL ROTOR PITCH CHANGE LEVERS — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Fin Assembly Removed (Task 2-3-22)

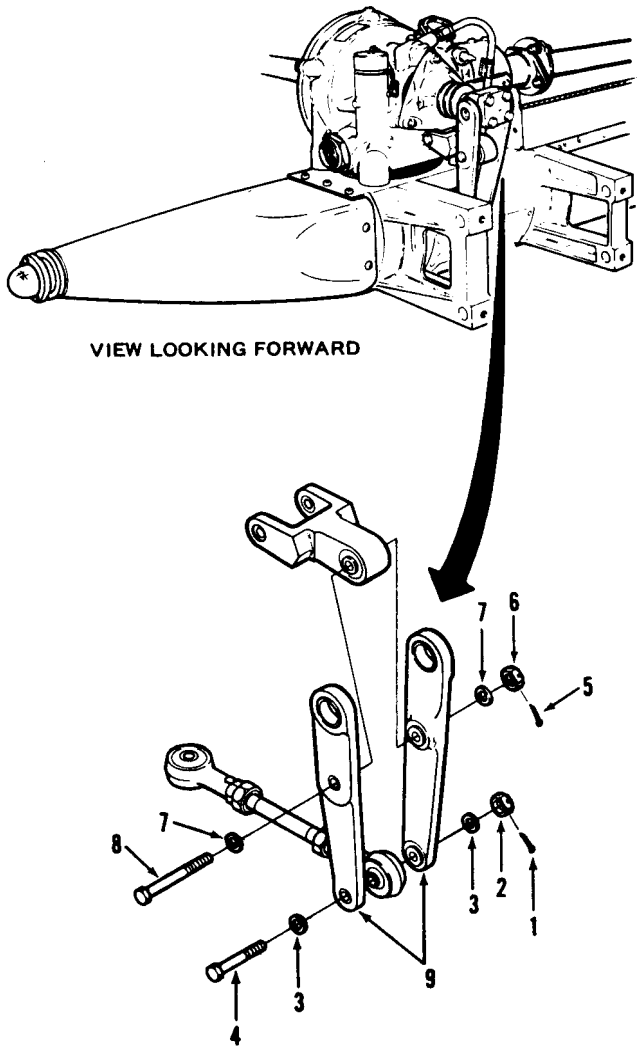
GO TO NEXT PAGE

5-5-5. TAIL ROTOR PITCH CHANGE LEVERS — REMOVAL (CONT)

WARNING

No one shall operate tail rotor controls from inside the helicopter during inspection of pitch change mechanism. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Remove cotter pin (1) and discard.
2. Remove nut (2), two washers (3), and bolt (4).
3. Remove cotter pin (5) and discard.
4. Remove nut (6), two washers (7), and bolt (8).
5. Remove levers (9).



406012-54
H5304

END OF TASK

5-5-6. TAIL ROTOR PITCH CHANGE LEVER (AVIM) — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Dial Indicator (B37)

Material:
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Drycleaning Solvent (D199)
Wiping Rag (D164)
Rubber Gloves (D111)
Sandpaper (D175)
Paint Brush (D54)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1520-266-23

GO TO NEXT PAGE

5-5-6. TAIL ROTOR PITCH CHANGE LEVER (AVIM) — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN

Drycleaning Solvent

CAUTION

To prevent washing out of grease in bearing, lever bearing shall not be soaked in drycleaning solvent.

1. Clean lever using drycleaning solvent (D199) and paint brush (D54). Dry with wiping rag (D164).

INSPECT

2. Inspect lever for mechanical or corrosion damage. Replace lever if limits have been exceeded. See figure Tail Rotor Pitch Change Lever — Damage Limits.

2.1. If a crack on the surface of the pitch change lever is suspected, refer to TM 1-1520-266-23.

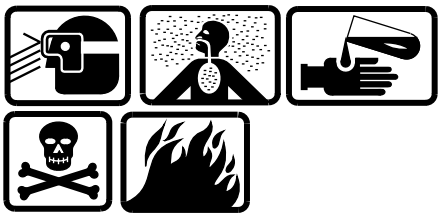
3. Inspect bushings installed in lever for wear.

4. Inspect bearing for wear and roughness. Using dial indicator (B37) measure for maximum wear of **0.006 inch** radial and **0.030 inch** axial.

REPAIR

Sanding Operations

5. Polish out repairable damage with 400 grit sandpaper (D175).



Epoxy Primer Coating

6. Apply one coat of epoxy primer coating (D98) to all repaired areas which were previously painted.

Acrylic Lacquer

7. Apply two coats of black acrylic lacquer (D124) to all primed areas.

8. Replace bushings or bearings if limits have been exceeded (Task 5-5-7).

INSPECT

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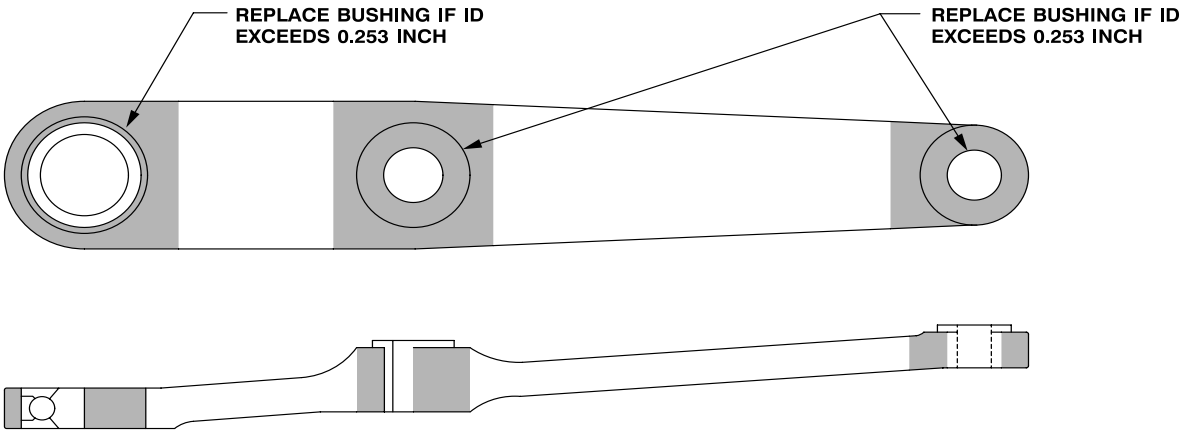


DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.010 in. before and after repair	0.020 in. before and after repair
CORROSION	0.005 In. before and 0.010 in. after repair	0.010 In. before and 0.020 in. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.040 sq. in.	0.100 sq. in.
NUMBER OF REPAIRS	One per segment	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In. x 46°	0.050 In. x 46°
BORES	0.002 in. for 1/4 circumference	

NOTE: No cracks are permitted

406012-5
J1904

Tail Rotor Pitch Change Lever — Damage Limits

END OF TASK

5-5-7. TAIL ROTOR PITCH CHANGE LEVER BUSHINGS AND BEARING (AVIM) — REMOVAL/ INSTALLATION

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Vernier Caliper (B14)
Hand Arbor Press (B107)
Reamer Set (B114)
Freezer (B46)

Material:
Epoxy Primer Coating (D98)
Abrasive Mats (D1)
Acetone (D2)
Rubber Gloves (D111)
Cotton Gloves (D112)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

REMOVE BEARING

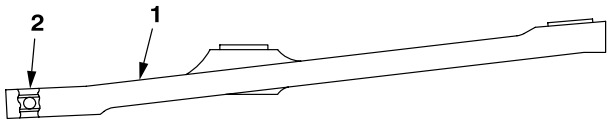
1. Place lever (1) on hand arbor press (B107) and using applicable pressing plug, press out bearing (2).

Acetone

2. Clean bearing bore in lever (1) with acetone (D2) and abrasive mats (D1).

3. Using vernier caliper (B14) check bearing bore in lever (1) for damage; maximum allowed: **0.002 inch** for one-fourth of circumference.

4. Check size of bearing bore in lever (1). Maximum allowable inside diameter is **0.814 inch**.



406012-59-1
J1735

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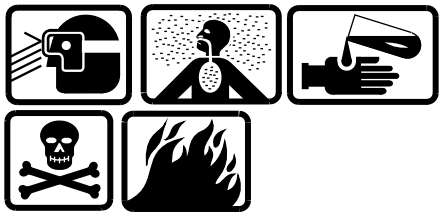
5-5-7. TAIL ROTOR PITCH CHANGE LEVER BUSHINGS AND BEARING (AVIM) — REMOVAL/ INSTALLATION (CONT)

INSTALL BEARING



Epoxy Primer Coating

5. Coat outer surface of replacement bearing (2) and bore of lever (1) with epoxy primer coating (D98).

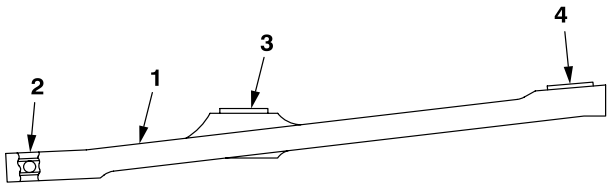
6. Using hand arbor press (B107), install bearing (2) in lever (1) while primer is still wet.

INSPECT

INSTALL BUSHINGS

NOTE

Either bushing in lever can be replaced with these procedures.



406012-59-2
J1735

7. Place lever (1) on hand arbor press (B107). Press out bushing (3 or 4) using **5/16 inch** stock.

8. Clean bushing bore in lever (1) with acetone (D2) and abrasive mats (D1).

9. Using vernier caliper (B14), check bushing bore in lever (1) for damage. Maximum allowed is **0.002 inch** for one-fourth of circumference.

INSTALL

10. Freeze replacement bushing (3 or 4) in freezer (B46).

WARNING

To prevent injury to skin, cotton gloves (D112) shall be worn when handling frozen bushings. If injury occurs, seek medical aid.

11. Coat outside diameter of bushing (3 or 4) and bore of lever (1) with epoxy primer coating (D98).

12. Using hand arbor press (B107), install bushing (3 or 4) into lever (1) while primer is still wet.

13. Using reamer (Part of B114), ream bushing (3 or 4) to **0.250 to 0.251 inch**.

INSPECT

END OF TASK

5-5-8. TAIL ROTOR PITCH CHANGE LEVERS — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B237)

Material:
Corrosion Preventive Compound (CPC) (D82)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Fin Assembly Removed (Task 2-3-22)

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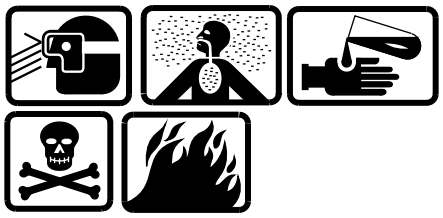
5-5-8. TAIL ROTOR PITCH CHANGE LEVERS — INSTALLATION (CONT)

INSTALL



Corrosion Preventive Compound

NOTE

CPC (D82) shall be applied to all bolted joints and faying surfaces at installation.

1. Install levers (1) in place on trunnion (2) and idler (3).

2. Install bolt (4), two washers (5), and nut (6).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of nuts and correct installation of cotter pins are characteristics critical to flight safety.

3. Torque nut (6) **60 TO 80 INCH-POUNDS**.

NOTE

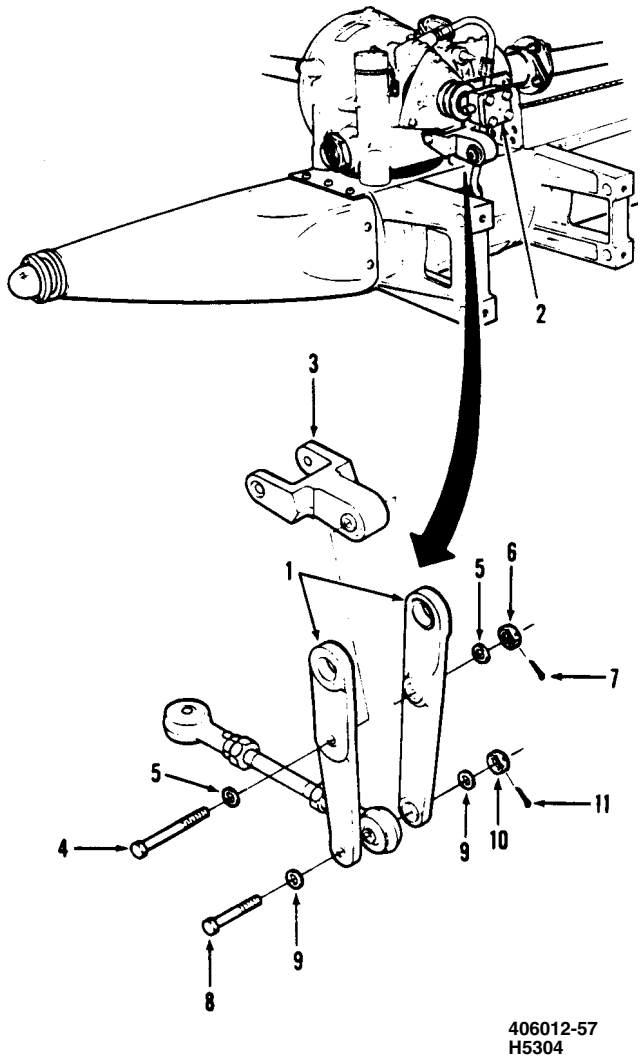
Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

4. Install cotter pin (7) through nut (6).

5. Install bolt (8), two washers (9), and nut (10).

6. Torque nut (10) **60 TO 80 INCH-POUNDS**.

7. Install cotter pin (11) through nut (10).



406012-57
H5304

INSPECT

FOLLOW-ON MAINTENANCE

Install fin assembly (Task 2-3-22).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).

END OF TASK

5-5-9. TAIL ROTOR PITCH CHANGE IDLER — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Repairer

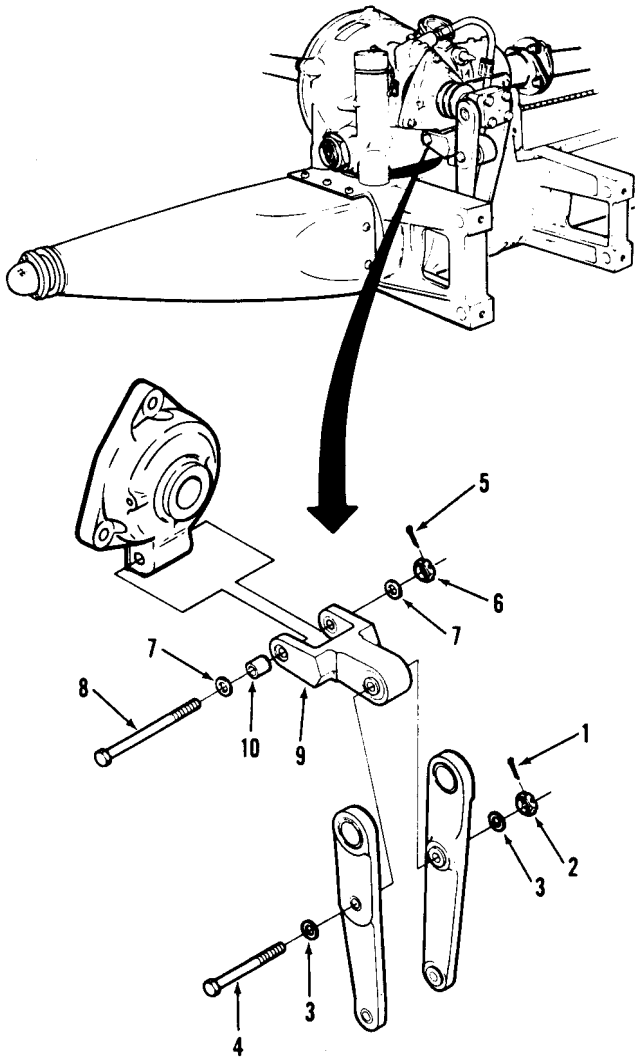
Equipment Condition:
Helicopter Safed (Task 1-6-7)
Fin Assembly Removed (Task 2-3-22)

GO TO NEXT PAGE

WARNING

No one shall operate tail rotor controls from inside the helicopter during inspection of pitch change mechanism. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Remove cotter pin (1) and discard.
2. Remove nut (2), two washers (3), and bolt (4).
3. Remove cotter pin (5) and discard.
4. Remove nut (6), two washers (7), and bolt (8).
5. Remove idler (9).
6. Remove two bushings (10) from tangs of idler (9).



406012-63
H5304

END OF TASK

5-5-10. TAIL ROTOR PITCH CHANGE IDLER — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Dial Indicator (B37)

Material:
Sandpaper (D175)
Epoxy Primer Coating (D98)
Drycleaning Solvent (D199)
Wiping Rag (D164)
Rubber Gloves (D111)
Paint Brush (D54)
Black Acrylic Lacquer (D124)

Personnel Required:
67S Scout helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1520-266-23

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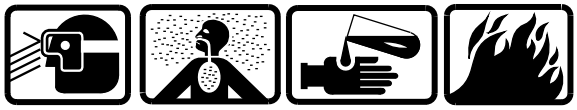
CLEAN



Drycleaning Solvent

CAUTION

To prevent washing out of grease in bearing, lever bearing shall not be soaked in drycleaning solvent.

1. Clean idler using drycleaning solvent (D199) and paint brush (D54). Dry with wiping rag (D164).

INSPECT

2. Inspect idler for damage as shown. Replace idler if limits are exceeded. See figure Tail Rotor Pitch Change Idler — Damage Limits.

2.1. If a crack on the surface of the pitch change lever is suspected, refer to TM 1-1520-266-23.

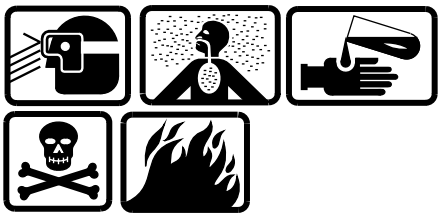
3. Inspect bushings in idler for wear (Task 5-5-11).

4. Inspect bearing for wear and roughness. Using dial indicator (B37), measure maximum wear **0.005 inch** radial and **0.030 inch** axial. Replace idler if limits are exceeded.

REPAIR

Sanding Operations

5. Polish out repairable damage with 400 grit sandpaper (D175).



Epoxy Primer Coating

6. Apply one coat of epoxy primer coating (D98) to repair areas which were previously painted.

Acrylic Lacquer

7. Apply two coats of black acrylic lacquer (D124) to primed areas.

8. Replace bushings or bearings if limits are exceeded (Task 5-5-11).

INSPECT

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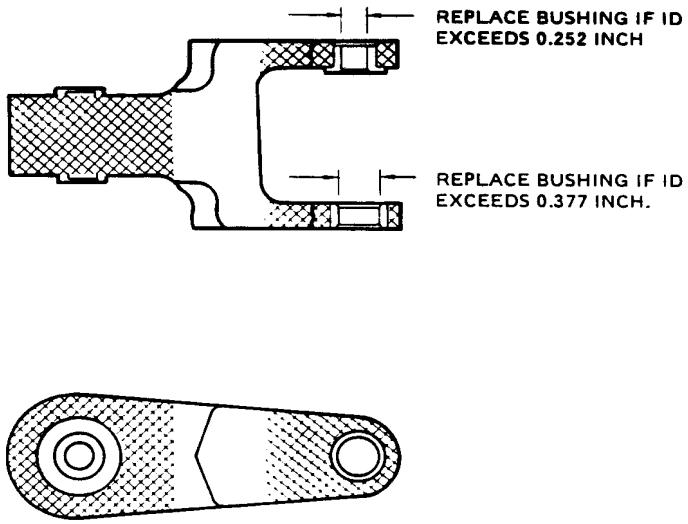


DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.010 In. before and after repair	0.020 In. before and after repair
CORROSION	0.005 In. before and 0.010 after repair	0.010 In. before and 0.020 after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.100 Sq. in.	0.160 Sq. in.
NUMBER OF REPAIRS	One per area	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.050 In.	0.060 In.
BORES	0.002 In. for 1/4 circumference	

NOTE: No cracks are permitted.

406012-2
H5304

Tail Rotor Pitch Change Idler — Damage Limits

END OF TASK

5-5-11. TAIL ROTOR PITCH CHANGE IDLER BUSHINGS AND BEARING —REMOVAL/INSTALLATION (AVIM)

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Powertrain Tool Kit (B180)
Vernier Caliper (B14)
Hand Arbor Press (B107)
Reamer Set (B114)
Freezer (B46)

Material:
Wiping Rag (D164)
Epoxy Primer Coating (D98)
Abrasive Mats (D1)
Aliphatic Naphtha (D141)
Acetone (D2)
Rubber Gloves (D111)
Cotton Gloves (D112)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
68D Aircraft Powertrain Repairer

GO TO NEXT PAGE

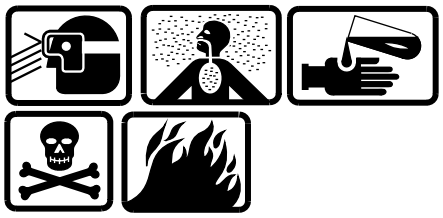
5-5-11. TAIL ROTOR PITCH CHANGE IDLER BUSHINGS AND BEARING —REMOVAL/INSTALLATION (AVIM) (CONT)

REMOVE BUSHINGS

NOTE

Either bushing in idler can be removed with these procedures.

1. Place idler (1) on hand arbor press (B107) and using applicable pressing plug, press out bushing (2 or 3).



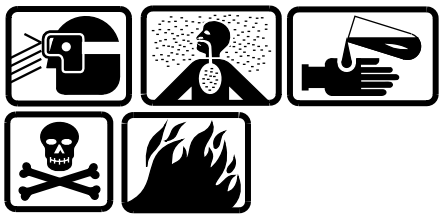
Naphtha/Naphthalene, TT-N-97

2. Clean bushing bore in idler (1) with aliphatic naphtha (D141) and abrasive mats (D1).

3. Check bushing bore for damage. Measure bore using vernier caliper (B14), maximum allowed is **0.002 inch** for one-fourth of circumference.

INSTALL

4. Using freezer (B46), freeze replacement bushing (2 or 3).

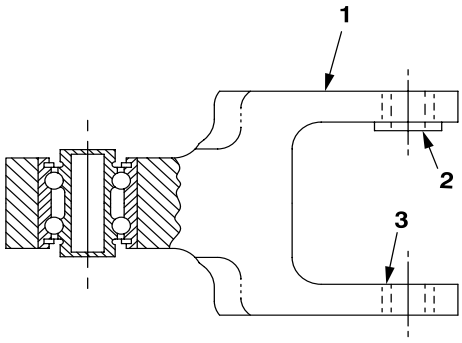


Epoxy Primer Coating

WARNING

To prevent injury to skin, cotton gloves (D112) shall be worn when handling frozen bushings. If injury occurs, seek medical aid.

5. Coat outside diameter of bushing (2 or 3) and bore of idler (1) with epoxy primer coating (D98).



406012-61-1
J1662

6. Using hand arbor press (B107), install bushing (2 or 3) in idler (1) while epoxy primer coating is still wet. Seat bushing flush with idler.

Acetone

7. Clean excess epoxy primer coating from around bushing with acetone (D2). Dry with wiping rag (D164).

REAM BUSHINGS

8. Using reamer (Part of reamer set (B114)), ream bushing (2) to **0.2495 to 0.2505 inch**.

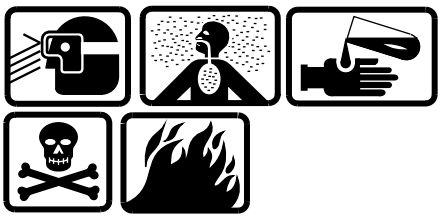
9. Ream bushing (3) to **0.3745 to 0.3755 inch** in line with bushing (2).

GO TO NEXT PAGE

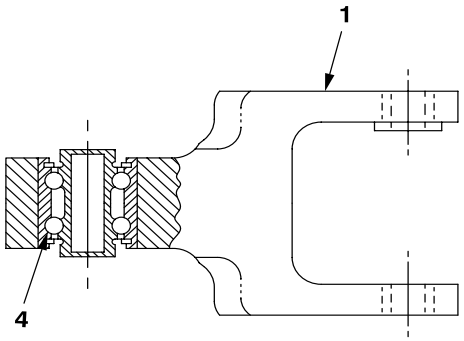
5-5-11. TAIL ROTOR PITCH CHANGE IDLER BUSHINGS AND BEARING —REMOVAL/INSTALLATION (AVIM) (CONT)

REMOVE BEARING

10. Place idler (1) on hand arbor press (B107) and using applicable pressing plug, press out bearing (4).



Naphtha/Naphthalene, TT-N-97



406012-61-2
J1662

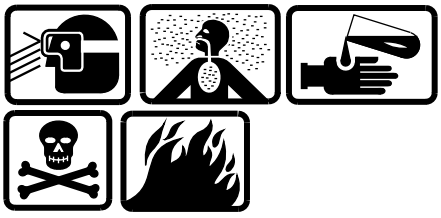
11. Clean bearing bore in idler (1) with aliphatic naphtha (D141) and abrasive mats (D1).

12. Using vernier caliper (B14), check bearing bore in idler (1) for damage. Maximum allowed is **0.002 inch** for one-fourth of circumference.

13. Check size of bearing bore in idler (1). Maximum allowable inside diameter is **0.7493 inch**.

INSPECT

INSTALL



Epoxy Primer Coating

14. Coat outer surface of replacement bearing (4) and bore of idler (1) with epoxy primer coating (D98).

15. Segment stake bearing (4) in three places to idler (1) while epoxy primer coating is still wet.

INSPECT

END OF TASK

5-5-12. TAIL ROTOR PITCH CHANGE IDLER — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B237)

Material:
Corrosion Preventive Compound (CPC) (D82)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)

GO TO NEXT PAGE

5-5-12. TAIL ROTOR PITCH CHANGE IDLER — INSTALLATION (CONT)

INSTALL

Corrosion Preventive Compound

1. Apply CPC (D82) to all bolted joints and faying surfaces at installation.

2. Position idler (1) between levers (2) and tail rotor gearbox (3).

3. Place bushing (4) in tang of idler (1).

4. Install bolt (5), two washers (6), and nut (7).

5. Install bolt (8), two washers (9), and nut (10).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

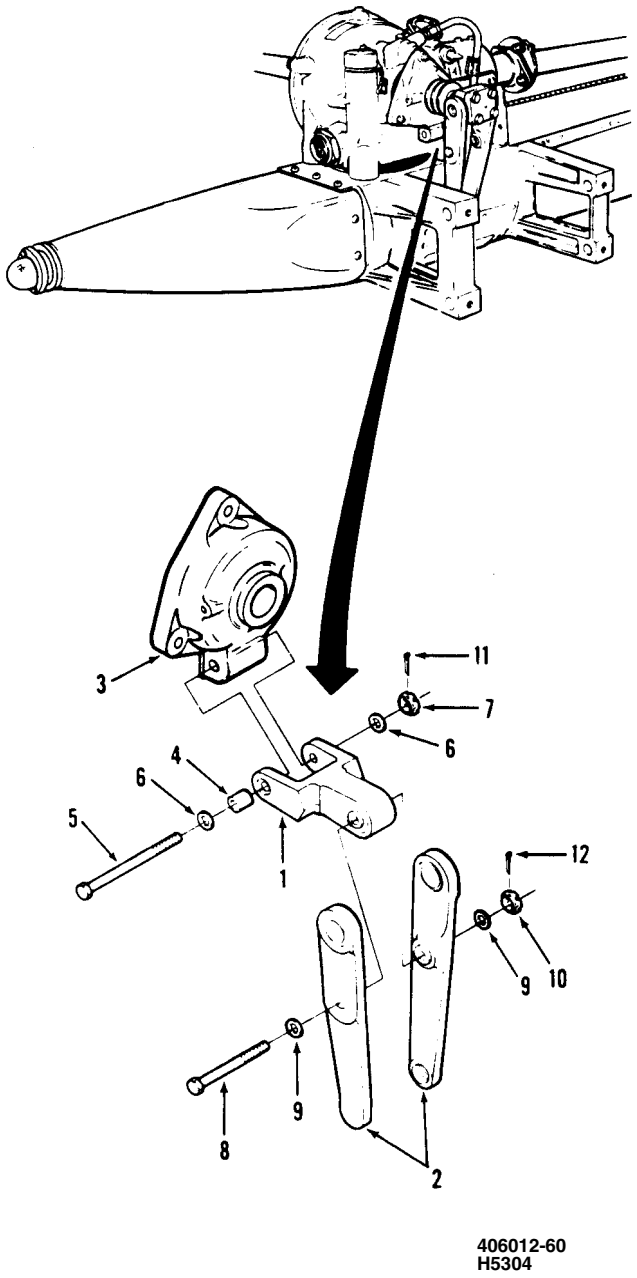
Correct torquing of nuts and correct installation of cotter pins are characteristics critical to flight safety.

6. Torque nuts (7 and 10) **60 TO 80 INCH-POUNDS**.

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

7. Install cotter pins (11 and 12) through nuts (7 and 10).



406012-60
H5304

INSPECT

FOLLOW-ON MAINTENANCE

Install fin assembly (Task 2-3-22).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).

END OF TASK

5-5-13. TAIL ROTOR PITCH CHANGE CONTROL TUBE — REMOVAL

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Personnel Required:
67S Scout Helicopter Repairer

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Fin Assembly Removed (Task 2-3-22)

GO TO NEXT PAGE

5-5-13. TAIL ROTOR PITCH CHANGE CONTROL TUBE — REMOVAL (CONT)

REMOVE CROSSHEAD NUT

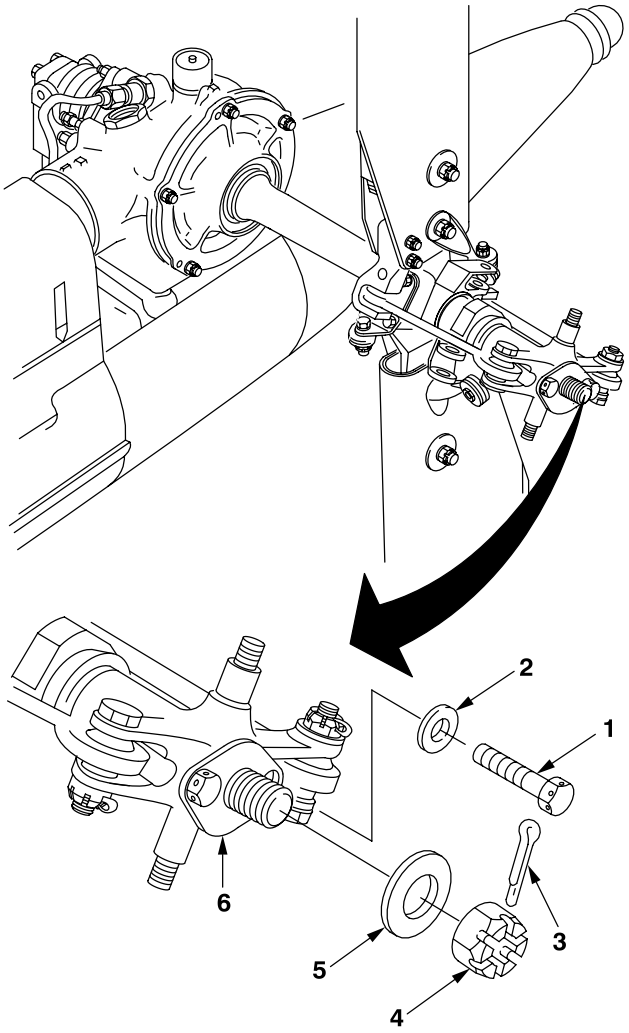
WARNING

No one shall operate tail rotor controls from inside the helicopter during inspection of pitch change mechanism. Physical injury can occur. If injury occurs, seek medical aid.

1. Cut lockwire and remove two bolts (1) and two washers (2).

2. Remove cotter pin (3), nut (4), and washer (5). Discard cotter pin.

3. Remove drive plate (6).



406012-144
J1359

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5-5-13. TAIL ROTOR PITCH CHANGE CONTROL TUBE — REMOVAL (CONT)

REMOVE TRUNNION CAP AND CONTROL TUBE NUT

4. Remove lockwire from bolts (7).

5. Remove four bolts (7), four washers (8), and cap (9).

6. Remove cotter pin (10), nut (11), and washer (12). Discard cotter pin.

REMOVE TRUNNION, LEVERS, IDLER, AND CONTROL TUBE

7. Remove lockwire securing boot (13) to trunnion (14).

8. Remove cotter pin (15), nut (16), two washers (17), and bolt (18). Discard cotter pin.

9. Remove bushing (19) from tang of idler (20).

10. Remove cotter pin (21), nut (22), washers (23 and 24), and bolt (25). Discard cotter pin.

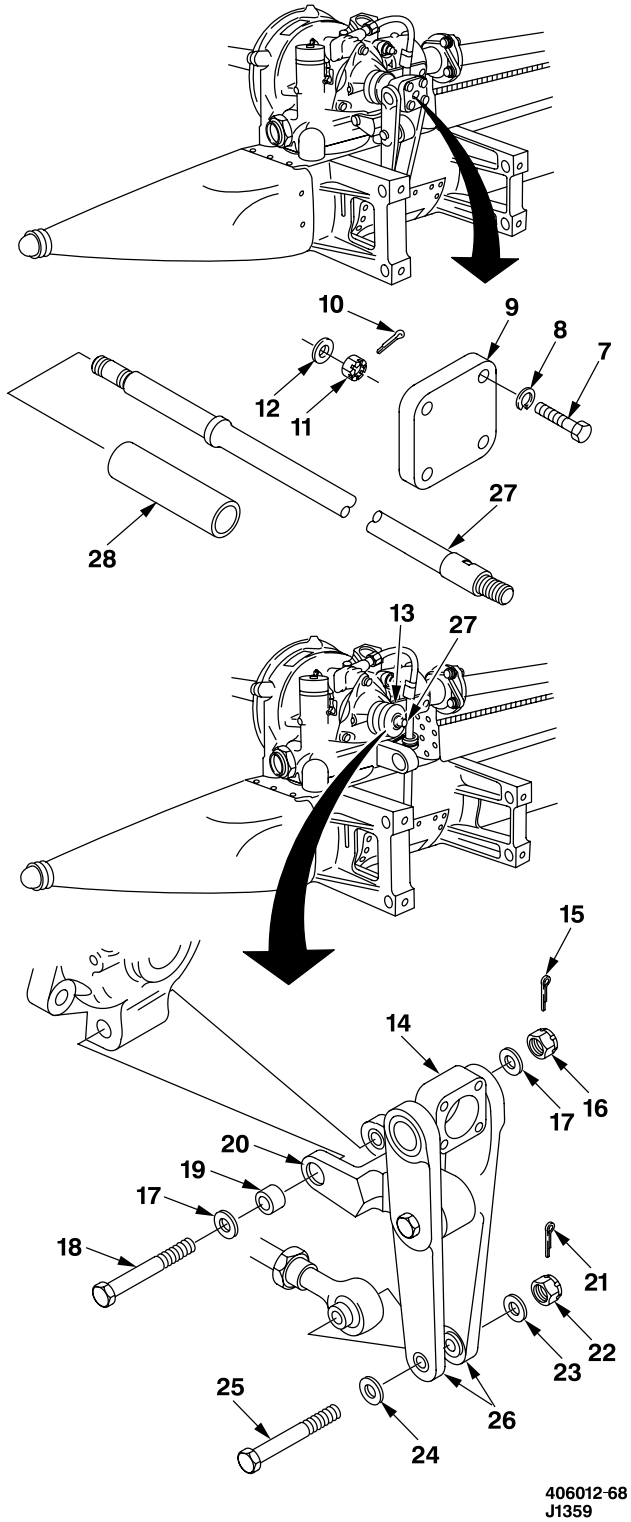
11. Remove trunnion (14), idler (20), and levers (26) as an assembly.

NOTE

Sleeve (28) should be removed from control tube (27) for alignment of vent hole for replacement purposes only.

12. Remove control tube (27).

13. Remove sleeve (28) from control tube (27).



406012-68
J1359

END OF TASK

5-5-14. TAIL ROTOR PITCH CHANGE CONTROL TUBE — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Sandpaper (D175)
Crocus Cloth (D90)
Drycleaning Solvent (D199)
Wiping Rag (D164)
LHE Cadmium Solution (D129)
Rubber Gloves (D111)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

CLEAN

Drycleaning Solvent

1. Clean control tube using drycleaning solvent (D199) and brush. Dry with wiping rag (D164).

INSPECT

2. Inspect control tube for damage as shown. Replace control tube if limits are exceeded. See figure Tail Rotor Pitch Change Control Tube — Damage Limits.

3. Replace control tube sleeve (Task 5-5-15) if measurable damage is detected on any area of the outer surface.

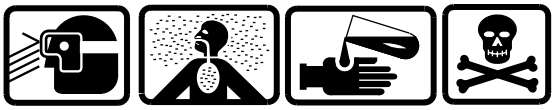
4. Inspect control tube and sleeve vent hole for proper alignment (Task 5-5-15).

REPAIR

Sanding Operations

5. Remove repairable damage with 400 grit sandpaper (D175).

6. Polish out sanding marks with crocus cloth (D90).



LHE Cadmium Solution

7. Apply LHE cadmium solution (D129) to repaired areas which were previously cadmium plated.

INSPECT

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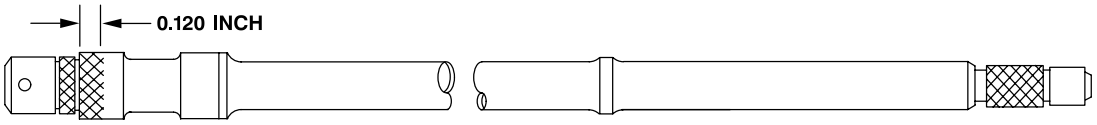


DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.002 In. before and after repair	0.010 In. before and after repair
MAXIMUM AREA OF FULL DEPTH REPAIR	0.010 sq. in.	1/4 Circumference
NUMBER OF REPAIRS	One per seg. leg	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In. x 45°	0.030 In. x 45°
THREADS:		
Depth:	1/3 Of thread	
Length:	1/4 Inch	
Number:	Two per threaded segment	

406012-4
J1905

Tail Rotor Pitch Change Control Tube — Damage Limits

END OF TASK

5-5-15. TAIL ROTOR PITCH CHANGE CONTROL TUBE — INSTALLATION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B236)
Torque Wrench (B237)
Torque Wrench (B239)
Hand Lubricating Gun (B58)

Material:
Lockwire (D132)
Lockwire (D133)
Grease (D113)
Corrosion Preventive Compound (CPC) (D82)
Corrosion Preventive Compound (CPC) (D83)
Epoxy Primer Coating (D98)
Cleaning Cloth (D67)
Acetone (D2)
Sealing Compound (D179)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Maintenance Test Pilot

References:
TM 1-1520-248-MTF
TM 1-1500-204-23

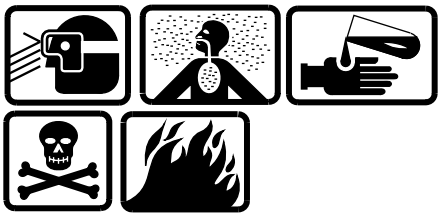
Equipment Condition:
Helicopter Safed (Task 1-6-7)
Fin Assembly Removed (Task 2-3-22)

GO TO NEXT PAGE

INSTALL CONTROL TUBE, LEVERS, TRUNNION, AND IDLER

WARNING

No one shall operate tail rotor controls from inside the helicopter during inspection of pitch change mechanism. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.



Epoxy Primer Coating

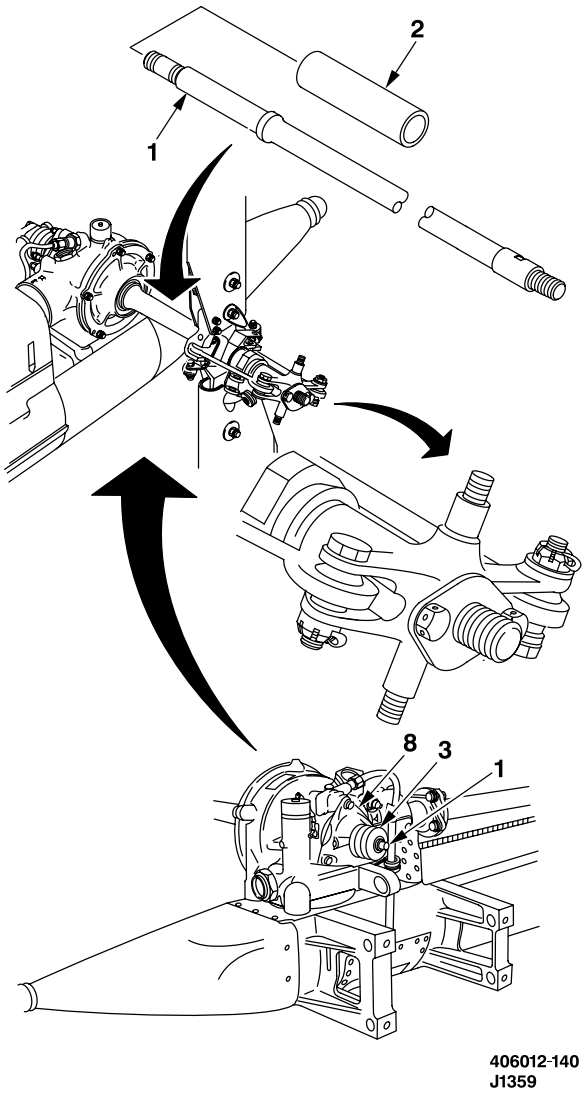
1. Apply epoxy primer coating (D98) to outside of control tube (1) and inside of sleeve (2).

NOTE

Pressure shall be applied to maintain constant contact of sleeve with shoulder on control tube during curing of epoxy primer coating.

2. Install sleeve (2) on control tube (1) while epoxy primer coating (D98) is still wet and align by inserting a piece of lockwire (D133) into bushing and control tube vent hole until primer dries.

3. Install control tube (1) through boot (3) and gearbox.



406012-140
J1359

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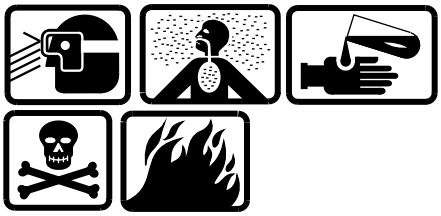


Corrosion Preventive Compound

4. CPC (D83) shall be applied to all bolted joints and faying surfaces at installation.

5. Install assembled trunnion (5) and idler (6) and levers (7) over control tube (1) and fitting on housing (8).

6. Install bushing (9) in tang of idler (6). Install bolt (10), two washers (11), and nut (12).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of nuts and correct installation of cotter pins are characteristics critical to flight safety.

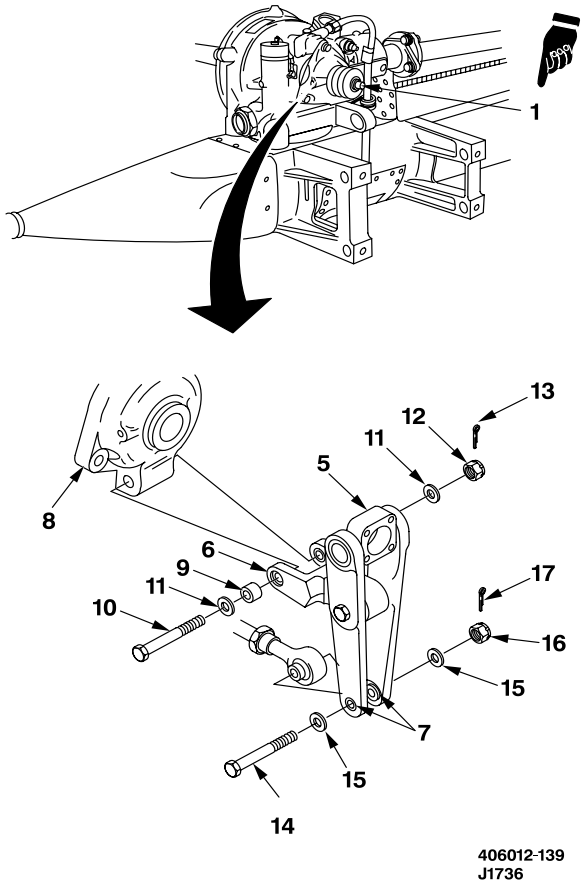
7. Torque nut (12) **60 TO 80 INCH-POUNDS**.

8. Install cotter pin (13) through nut (12).

9. Install bolt (14), two washers (15), and nut (16).

10. Torque nut (16) **60 TO 80 INCH-POUNDS**.

11. Install cotter pin (17) through nut (16).



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INSTALL CONTROL TUBE NUT AND TRUNNION CAP

12. Install washer (18) and nut (19).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of nut and correct installation of cotter pin are characteristics critical to flight safety.

13. Torque nut (19) **45 TO 65 INCH-POUNDS**.

NOTE

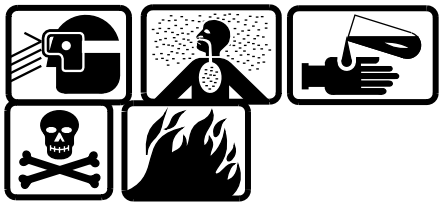
Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

14. Install cotter pin (20) through nut (19).

INSPECT

Acetone

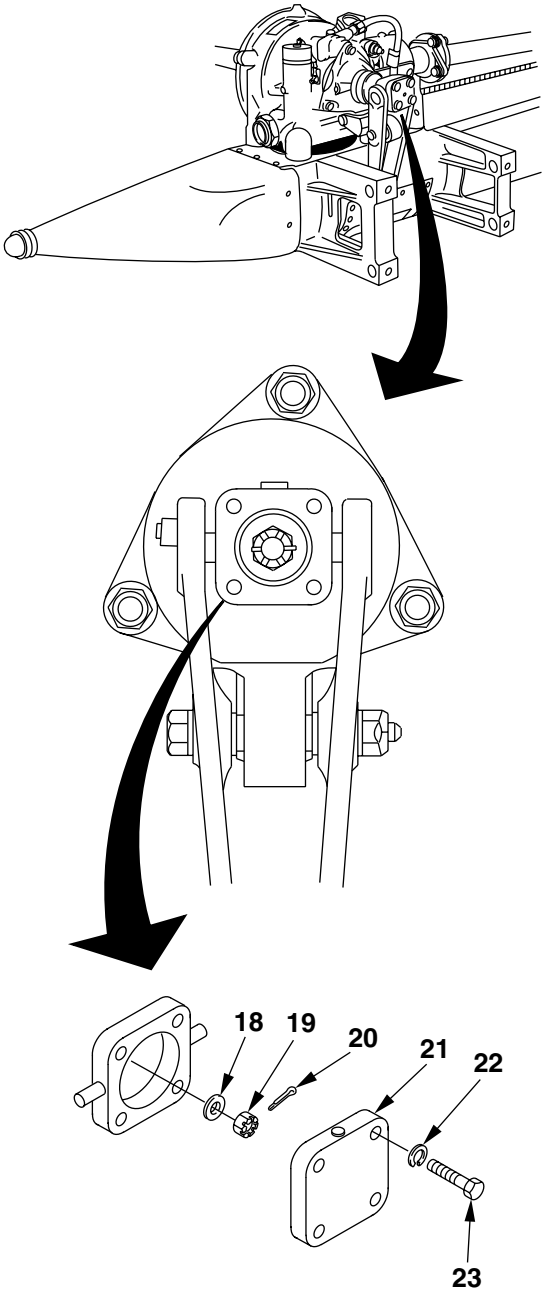
15. Clean cap (21) with low-lint cleaning cloth (D67) dampened with acetone (D2) and wipe dry.



Corrosion Preventive Compound

16. Apply a light coat of CPC (D82) to faying surfaces of cap (21).

17. With grease fitting pointing up, install cap (21) with four washers (22) and bolts (23).



406012-137
H3371

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WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing and lockwiring of bolts are characteristics critical to flight safety.

18. Torque bolt (23) **25 TO 30 INCH-POUNDS**.

19. Ensure control tube rotates freely in cap (21).

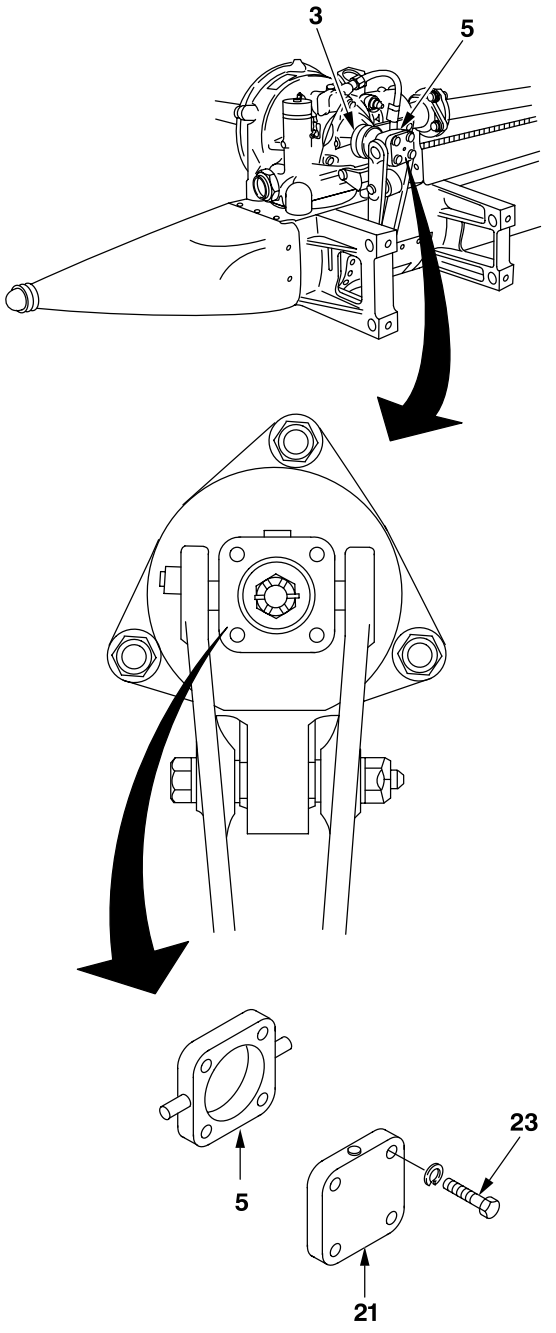
20. Secure bolts (23) with lockwire (D132).

Grease

21. Using hand lubrication gun (B58), purge lubricate trunnion bearing with grease (D113) until grease is pushed past seals.

22. Clean excess grease from seals and from inside boot (3).

23. Install boot (3) on trunnion (5). Secure with lockwire (D132).



406012-138
J1359

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5-5-15. TAIL ROTOR PITCH CHANGE CONTROL TUBE — INSTALLATION (CONT)

INSTALL CROSSHEAD NUT

Corrosion Preventive Compound

24. Apply a light coat of CPC (D82) to faying surfaces of driver plate (24).

25. Align pitch change control tube (1) with driver plate (24) to ensure cotter pin hole in pitch change control tube is perpendicular to mounting bolts (25).

26. Install driver plate (24) with two washers (26) and two bolts (25). Do not tighten bolts.

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

27. Install washer (27) and nut (28).

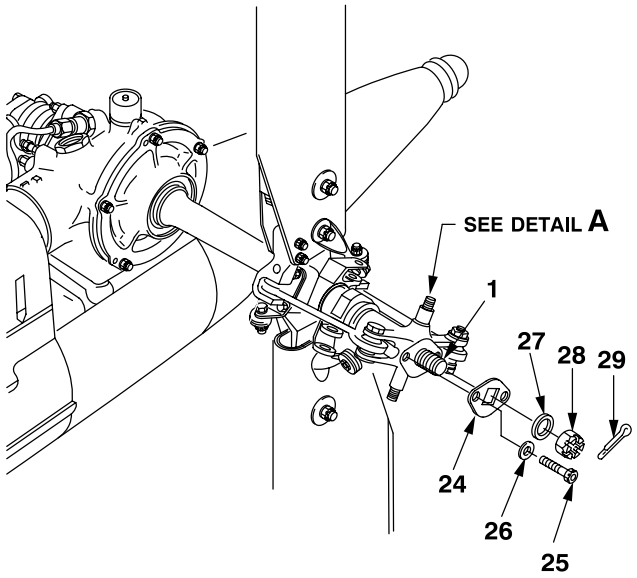
WARNING

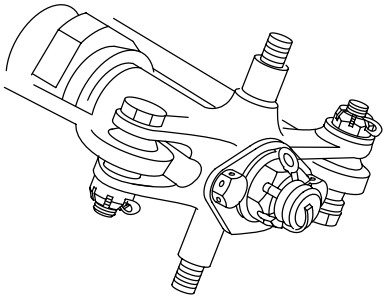
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of nut and correct installation of cotter pin are characteristics critical to flight safety.

28. Torque nut (28) **120 TO 140 INCH-POUNDS**.

29. Install cotter pin (29) through nut (28).





DETAIL A

406012-145-1
J2909

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WARNING

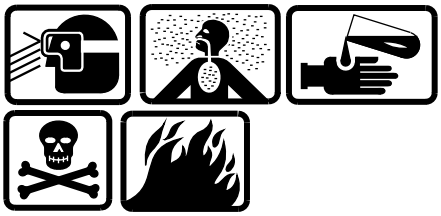
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of bolts and correct installation of lockwire are characteristics critical to flight safety.

30. Torque two bolts (25) **60 TO 80 INCH-POUNDS**.

31. Secure two bolts (25) with lockwire (D132), routing lockwire behind head of cotter pin (29).

APPLY CPC

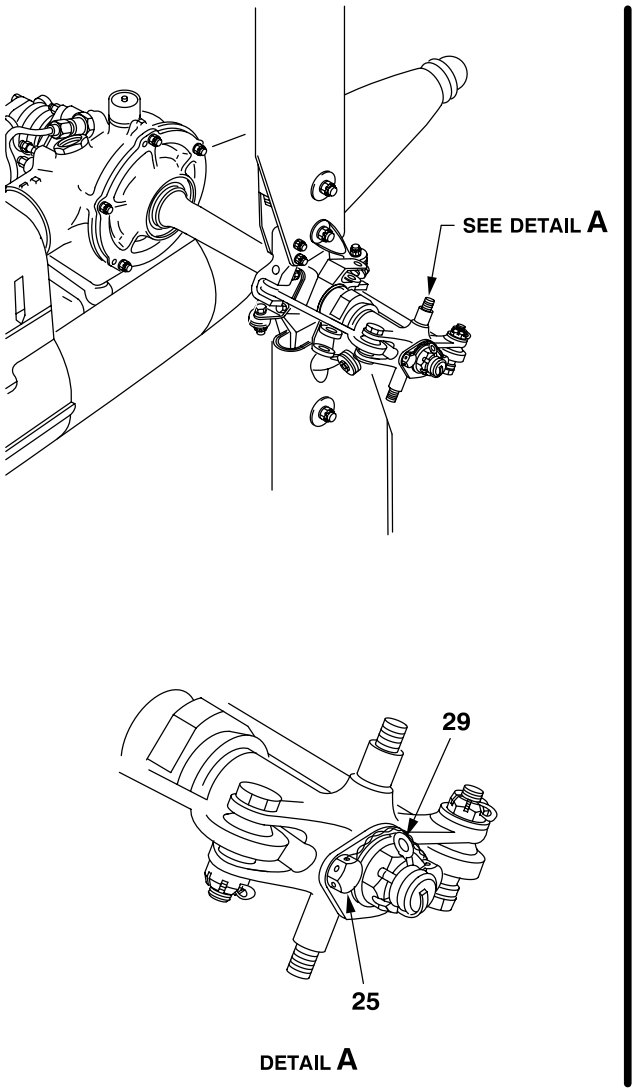


Corrosion Preventive Compound

CAUTION

CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals, or damage to equipment may result.

32. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.



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INSPECT

FOLLOW-ON MAINTENANCE

Install fin assembly (Task 2-3-22).

Maintenance test pilot perform MOC/MTF (TM 1-1520-248-MTF).

END OF TASK

5-5-16. TAIL ROTOR GEARBOX BOOT — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B237)
Hand Lubrication Gun (B58)
Torque Wrench (B236)

Material:
Lockwire (D132)
Grease (D113)
Low-Lint Cleaning Cloth (D67)
Acetone (D2)
Corrosion Preventive Compound (CPC) (D82)
Corrosion Preventive Compound (CPC) (D83)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Pilot

References:
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Fin Assembly Removed (Task 2-3-22)

GO TO NEXT PAGE

5-5-16. TAIL ROTOR GEARBOX BOOT — REMOVAL/INSTALLATION (CONT)

REMOVE TRUNNION CAP AND CONTROL TUBE NUT

1. Remove lockwire on bolts (1) and remove four bolts (1), washers (2), and cap (3).

2. Remove cotter pin (4) and discard.

3. Remove nut (5) and washer (6).

REMOVE TRUNNION, LEVERS, AND IDLER

4. Remove cotter pin (7), nut (8), two washers (9), and bolt (10). Discard cotter pin.

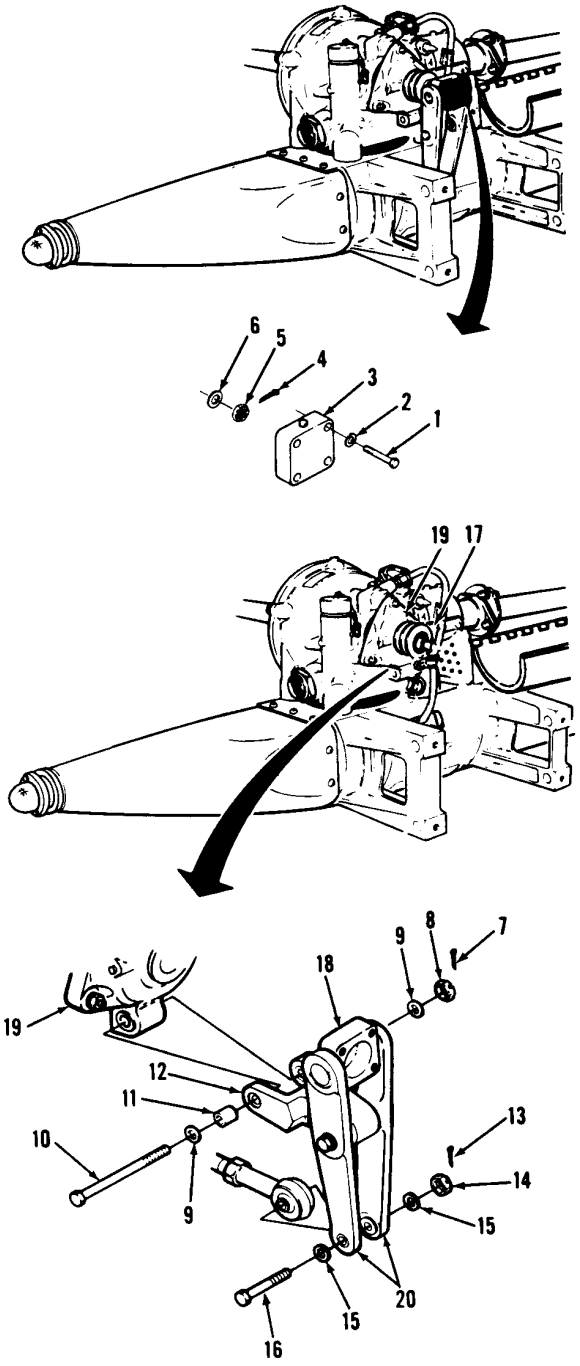
5. Remove bushing (11) from tang of idler (12).

6. Remove cotter pin (13), nut (14), two washers (15), and bolt (16). Discard cotter pin.

7. Remove lockwire securing boot (17) to trunnion (18) and housing (19).

8. Remove idler (12), trunnion (18), and levers (20) as an assembly.

9. Remove boot (17).



406012-75
H5304

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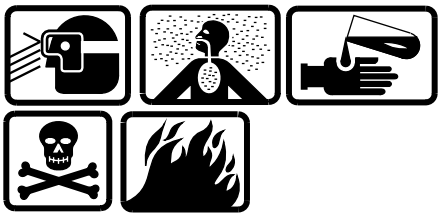
INSTALL LEVERS, TRUNNION, AND IDLER



Corrosion Preventive Compound

10. Apply CPC (D83) to all bolted joints and faying surfaces at installation.

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

11. Install bushing (11) in tang of idler (12).

12. Install bolt (10) and two washers (9) through bushing (11), tangs of idler (12), and housing (19). Install nut (8).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of nuts and correct installation of cotter pins are characteristics critical to flight safety.

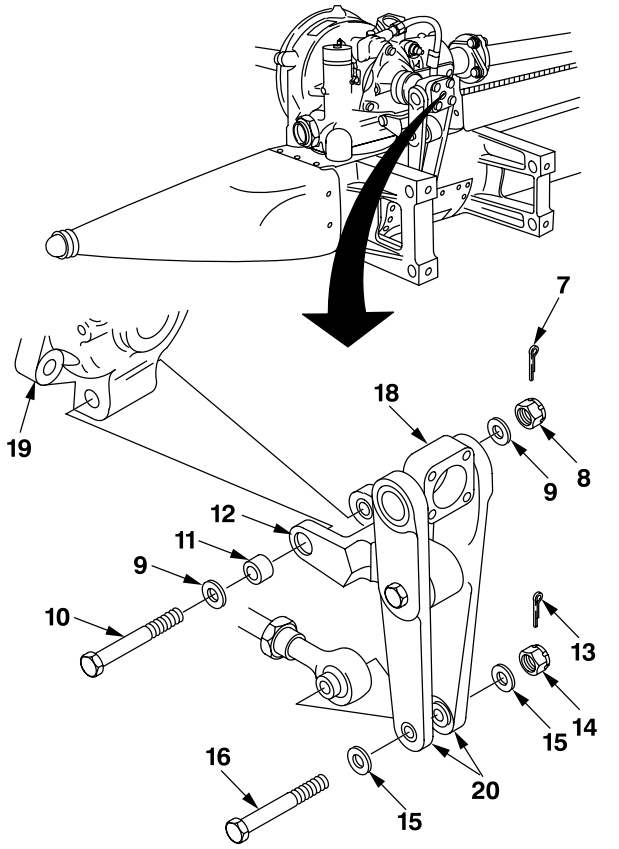
13. Torque nut (8) **60 TO 80 INCH-POUNDS**.

14. Install cotter pin (7) through nut (8).

15. Install bolt (16), two washers (15), and nut (14).

16. Torque nut (14) **60 TO 80 INCH-POUNDS**.

17. Install cotter pin (13) through nut (14).



406012-74
J1359

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5-5-16. TAIL ROTOR GEARBOX BOOT — REMOVAL/INSTALLATION (CONT)

INSTALL CONTROL TUBE NUT AND TRUNNION CAP

18. Install washer (6) and nut (5).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

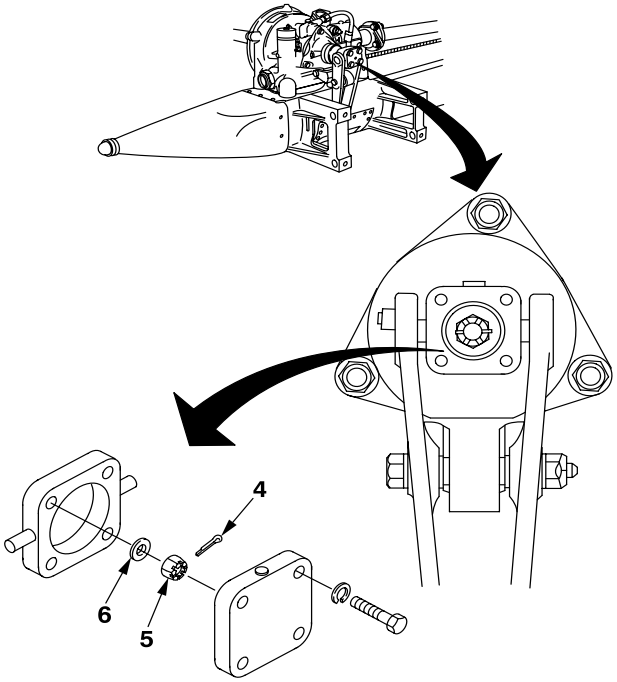
Correct torquing of nut and correct installation of cotter pin are characteristics critical to flight safety.

19. Torque nut (5) **45 TO 65 INCH-POUNDS**.

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

20. Install cotter pin (4) through nut (5).



406012-73-2
J2199

INSPECT

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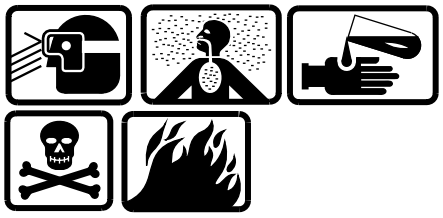
Acetone

21. Clean cap (3) with low-lint clean cloth (D67) dampened with acetone (D2) and wipe dry before solvent evaporates.



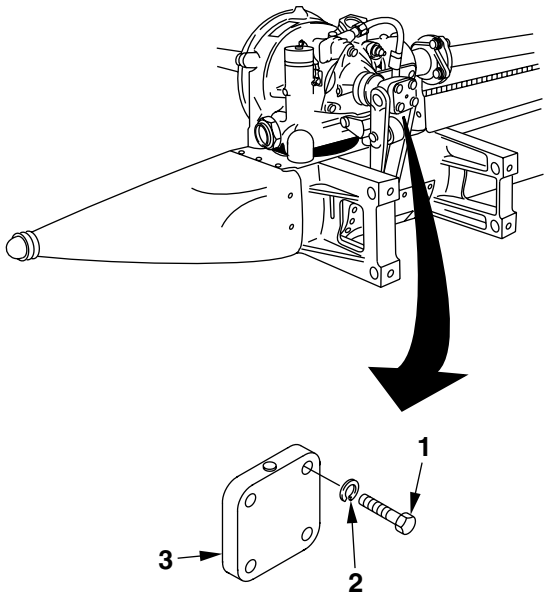
Corrosion Preventive Compound

22. Apply a light coat of CPC (D82) to faying surfaces of cap (3).

NOTE

Ensure grease fitting on cap (3) is pointing up.

23. Install cap (3) with four bolts (1) and washers (2).



406012-141
H3373

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WARNING

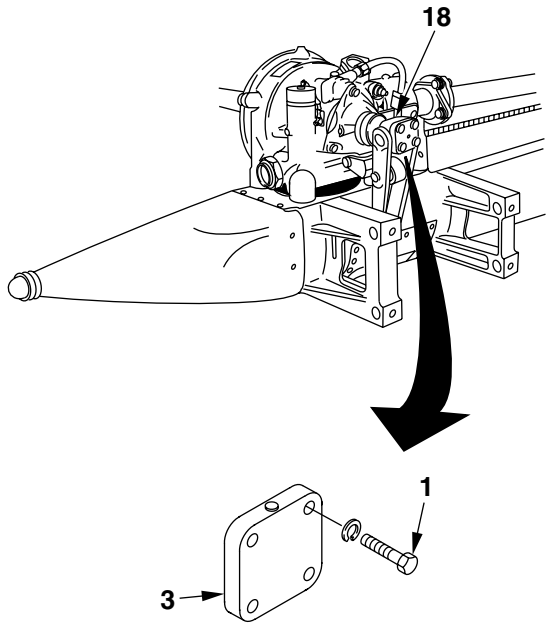
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing and lockwiring of bolts are characteristics critical to flight safety.

24. Torque bolts (1) **25 TO 30 INCH-POUNDS**.

25. Ensure control tube rotates freely in cap (3) on trunnion (18).

26. Secure bolts (1) with lockwire (D132).



406012-142
H3373

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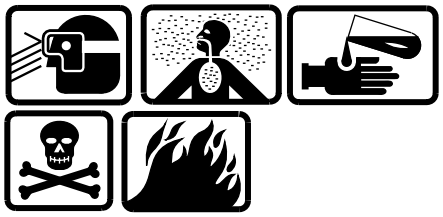
Grease

27. Using hand lubrication gun (B58), lubricate trunnion (18) and housing (19) with grease (D113) until grease is purged past seals.

28. Clean excess grease from seal and from inside boot (17).

29. Install boot (17) on trunnion (18) and housing (19). Secure with lockwire (D132).

APPLY CPC



Corrosion Preventive Compound

CAUTION

CPC shall not be allowed to enter metallic or elastomeric bearings or come in contact with seals.

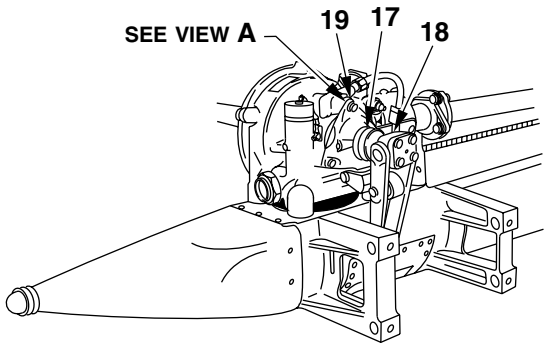
30. After assembly, apply a light coat of CPC (D82) to external areas and exposed threads.

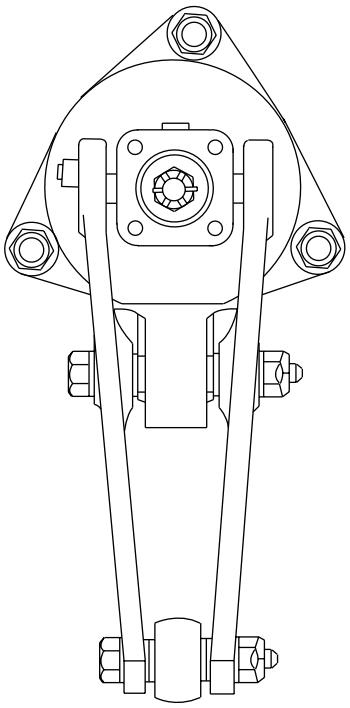
INSPECT

FOLLOW-ON MAINTENANCE

Install fin assembly (Task 2-3-22).

Pilot perform MOC (TM 1-1520-248-10/CL).





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406012-143
H3373

END OF TASK

5-5-17. TAIL ROTOR GEARBOX TRUNNION SEAL AND BEARING — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B236)
Hand Lubrication Gun (B58)
Torque Wrench (B237)
Plastic Scraper (B123)

Material:
Lockwire (D132)
Grease (D113)
Corrosion Preventive Compound (CPC) (D83)
Epoxy Primer Coating (D98)
Rubber Gloves (D111)
Low-Lint Cleaning Cloth (D67)
Acetone (D2)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1500-204-23

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Fin Assembly Removed (Task 2-3-22)

GO TO NEXT PAGE

5-5-17. TAIL ROTOR GEARBOX TRUNNION SEAL AND BEARING — REMOVAL/INSTALLATION (CONT)

REMOVE TRUNNION CAP AND CONTROL TUBE NUT

WARNING

No one shall operate tail rotor controls from inside the helicopter during inspection of pitch change mechanism. Physical injury can occur. If injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Remove cap (1) by removing lockwire from bolts (2).

2. Remove four bolts (2) and washers (3) and cap (1).

3. Remove cotter pin (4) and discard.

4. Remove nut (5) and washer (6).

REMOVE TRUNNION, LEVERS, AND IDLER

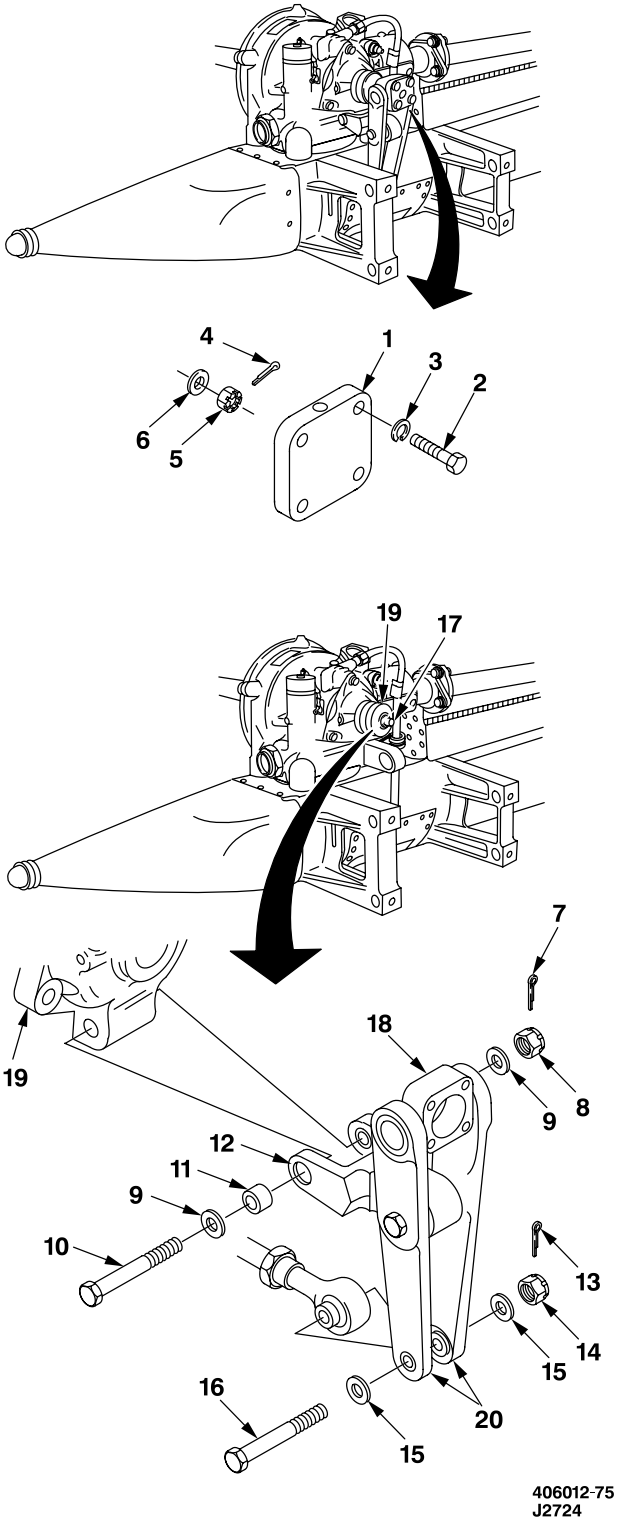
5. Remove cotter pin (7), nut (8), two washers (9), and bolt (10). Discard cotter pin.

6. Remove bushing (11) from tang of idler (12).

7. Remove cotter pin (13), nut (14), two washers (15), and bolt (16). Discard cotter pin.

8. Remove lockwire securing boot (17) to trunnion (18) and housing (19).

9. Remove idler (12), trunnion (18), and levers (20) as an assembly.



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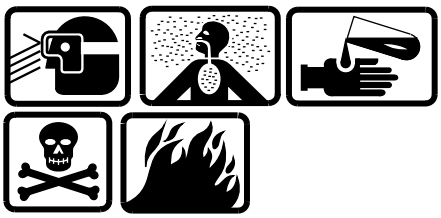
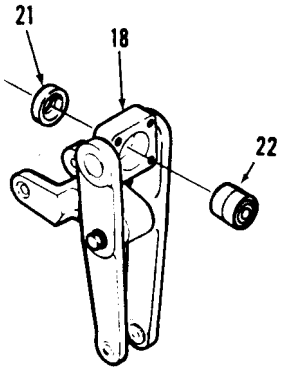
5-5-17. TAIL ROTOR GEARBOX TRUNNION SEAL AND BEARING — REMOVAL/INSTALLATION (CONT)

REPLACE TRUNNION SEAL AND BEARING

10. Apply pressure to seal (21) and remove seal (21) and bearing (22) from trunnion (18). Discard seal (21).



Epoxy Primer Coating



406012-71
H5304

11. Apply epoxy primer coating (D98) to inside of trunnion (18).

12. Install seal (21) with lip toward boot in trunnion (18).

CAUTION

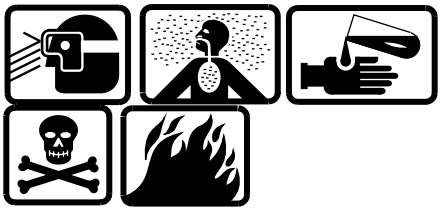
Epoxy primer coating (D98) shall not be allowed to enter bearing, it may cause damage to bearing and could cause binding and/or loss of tailrotor control.

13. Apply epoxy primer coating (D98) to exterior surface of bearing (22) and install in trunnion while primer is still wet.

GO TO NEXT PAGE

5-5-17. TAIL ROTOR GEARBOX TRUNNION SEAL AND BEARING — REMOVAL/INSTALLATION (CONT)

INSTALL LEVERS, TRUNNION, AND IDLER



Corrosion Preventive Compound

NOTE

Corrosion preventive compound (D83) shall be applied to all bolted joints and faying surfaces at installation.

14. Install assembled trunnion (18), idler (12), and levers (20).

15. Install bushing (11) in tang of idler (12).

16. Install bolt (10), and two washers (9), through idler (12), and housing (19). Install nut (8).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of nuts and correct installation of cotter pins are characteristics critical to flight safety.

17. Torque nut (8) **60 TO 80 INCH-POUNDS**.

NOTE

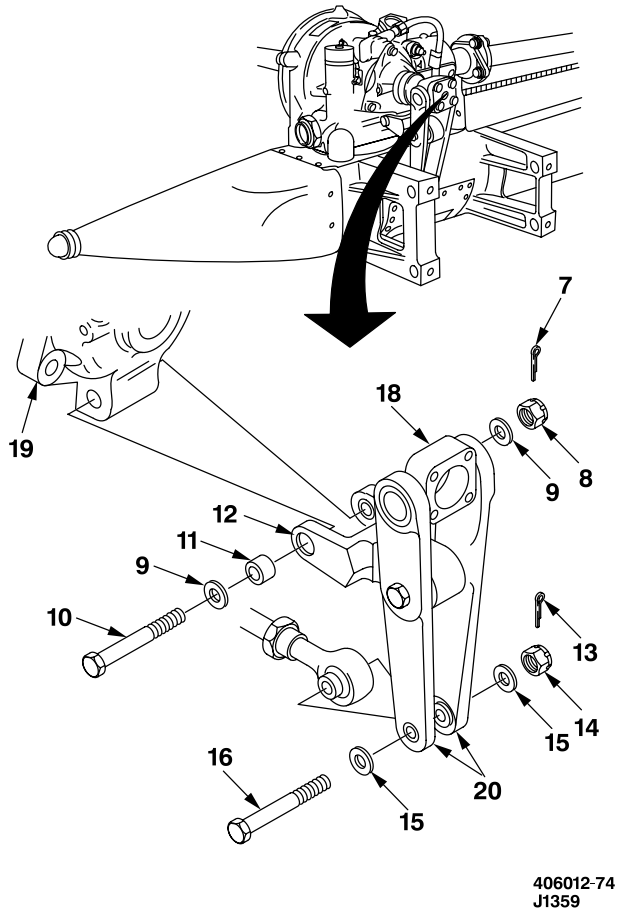
Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

18. Install cotter pin (7) through nut (8).

19. Install bolt (16), two washers (15), and nut (14).

20. Torque nut (14) **60 TO 80 INCH-POUNDS**.

21. Install cotter pin (13) through nut (14).



406012-74
J1359

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5-5-17. TAIL ROTOR GEARBOX TRUNNION SEAL AND BEARING — REMOVAL/INSTALLATION (CONT)

INSTALL CONTROL TUBE NUT AND TRUNNION CAP

22. Install washer (6) and nut (5).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of nut and correct installation of cotter pin are characteristics critical to flight safety.

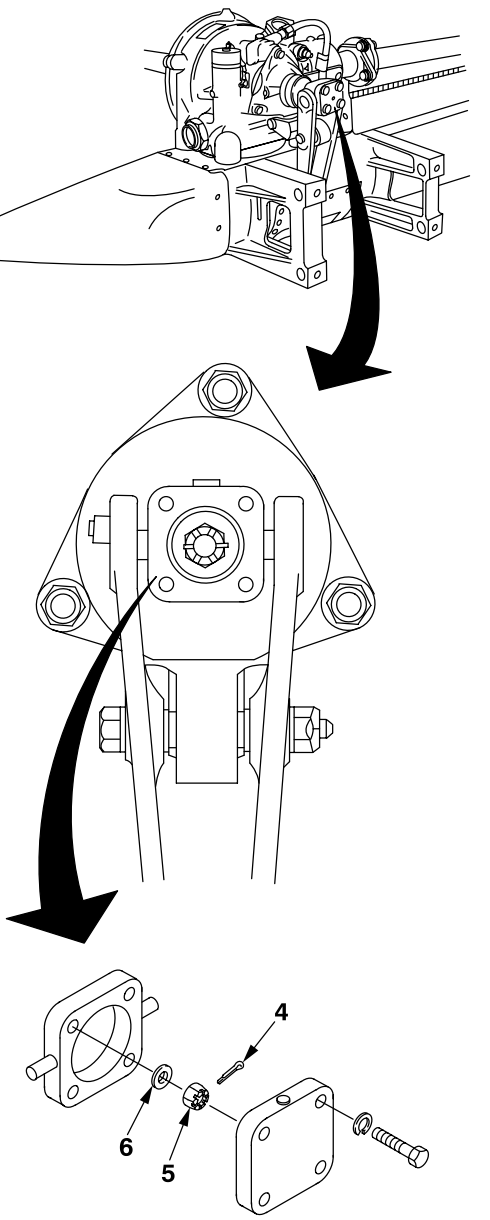
23. Torque nut (5) **45 TO 65 INCH-POUNDS**.

NOTE

Self-locking castellated nuts shall be reused only if they meet the minimum breakaway torque value specified in TM 1-1500-204-23.

24. Install cotter pin (4) through nut (5).

INSPECT



406012-73-2
J1906

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5-5-17. TAIL ROTOR GEARBOX TRUNNION SEAL AND BEARING — REMOVAL/INSTALLATION (CONT)

Acetone

25. Clean cap (1) with low-lint cleaning cloth (D67) dampened with acetone (D2) and wipe dry.

NOTE

Assure grease fitting on cap (1) is pointing up.

26. Install cap (1) with four bolts (2) and washers (3).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing and lockwiring of bolts are characteristics critical to flight safety.

27. Torque four bolts (2) **25 TO 30 INCH-POUNDS**.

28. Ensure control tube rotates freely in cap (1).

29. Secure bolts (2) with lockwire (D132).

Grease

30. Using hand lubrication gun (B58), lubricate trunnion (18) and housing (19) with grease (D113) until grease is purged past seals.

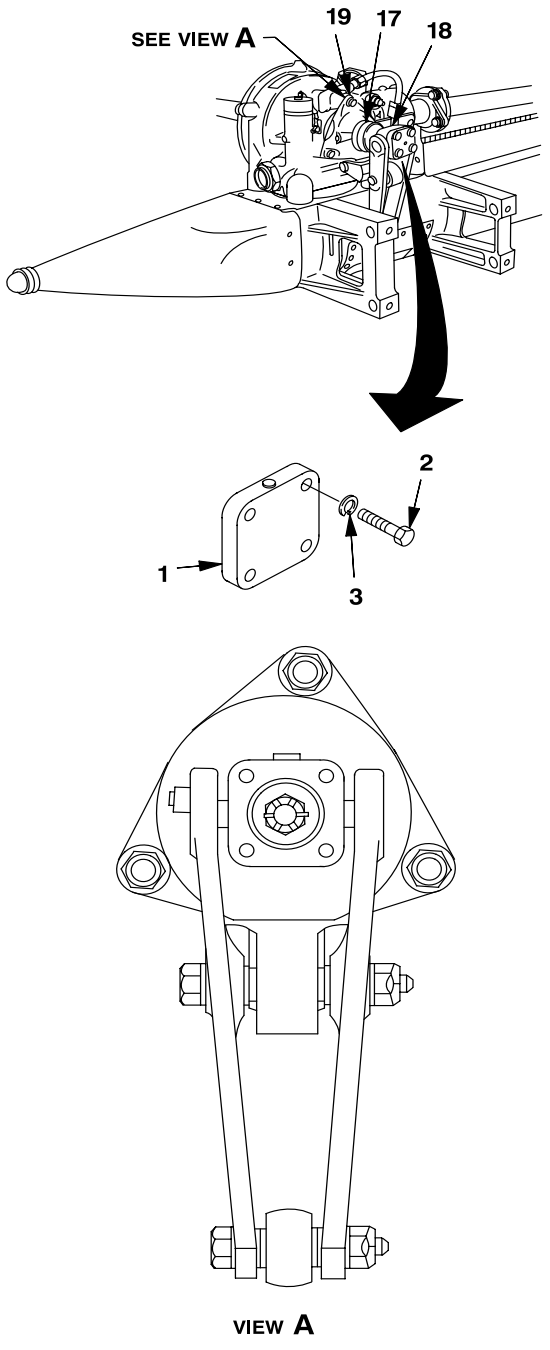
31. Clean excess grease from seals and from inside boot (17).

32. Secure boot (17) to trunnion (18) and housing (19) with lockwire (D132).

INSPECT

FOLLOW-ON MAINTENANCE

Install fin assembly (Task 2-3-22).



406012-70
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END OF TASK

5-5-18. TAIL ROTOR GEARBOX HOUSING PACKING — REMOVAL/INSTALLATION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Torque Wrench (B237)
Hand Lubrication Gun (B58)
Torque Wrench (B236)
Plastic Scraper (B123)

Material:
Lockwire (D132)
Grease (D113)
Lubricating Oil (D139)
Corrosion Preventive Compound (CPC) (D83)
Sealing Compound (D184)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer
Pilot

Equipment Condition:
Helicopter Safed (Task 1-6-7)
Fin Assembly Removed (Task 2-3-22)

GO TO NEXT PAGE

5-5-18. TAIL ROTOR GEARBOX HOUSING PACKING — REMOVAL/INSTALLATION (CONT)

REMOVE TRUNNION CAP AND CONTROL TUBE NUT

WARNING

No one shall operate tail rotor controls from inside helicopter during replacement of housing packing. Physical injury can occur. If physical injury occurs, seek medical aid. A DO NOT MOVE FLIGHT CONTROLS sign must be displayed in the cockpit during performance of this task.

1. Remove lockwire from bolts (1).

2. Remove remove four bolts (1), washers (2), and cap (3).

3. Remove cotter pin (4) and discard.

4. Remove nut (5) and washer (6).

REMOVE TRUNNION, LEVERS, AND IDLER

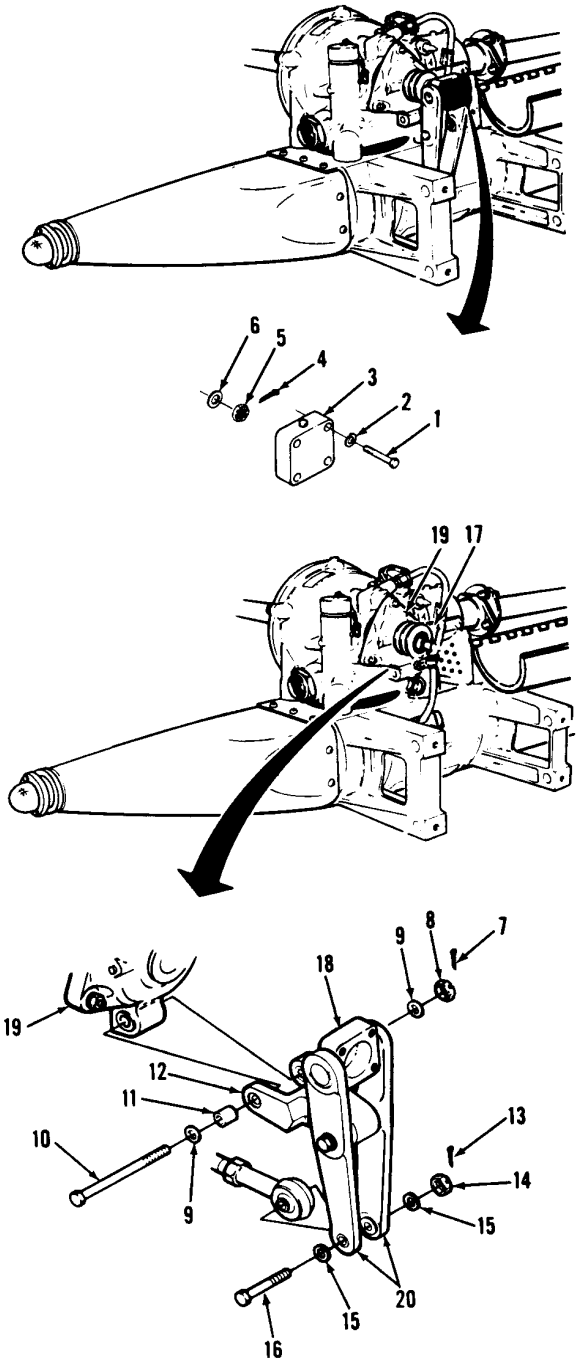
5. Remove cotter pin (7), nut (8), two washers (9), and bolt (10). Discard cotter pin (7).

6. Remove bushing (11) from tang of idler (12).

7. Remove cotter pin (13), nut (14), two washers (15), and bolt (16).

8. Remove lockwire securing boot (17) to trunnion (18) and housing (19).

9. Remove idler (12), trunnion (18), and levers (20) as an assembly.



406012-75
H5304

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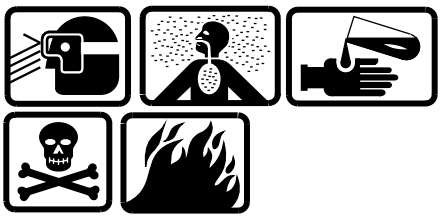
5-5-18. TAIL ROTOR GEARBOX HOUSING PACKING — REMOVAL/INSTALLATION (CONT)

REPLACE HOUSING PACKING

10. Remove boot (17).

11. Remove sealing compound from housing (19) and gearbox (21) with nonmetallic scraper (B123) .

12. Remove three nuts (22) and washers (23), two brackets (24), housing (19), and packing (25). Discard packing.



Corrosion Preventive Compound

13. Apply corrosion preventive compound (D83) to mating surface of housing (19) and gearbox (21).

Lubricating Oil

14. Lubricate packing (25) with oil (D139).

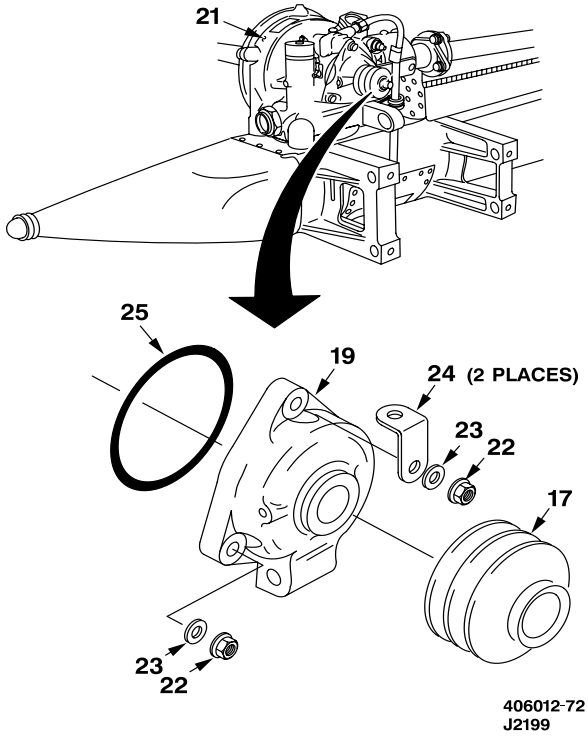
15. Install packing (25) in groove of housing (19).

16. Install housing (19), two brackets (24), three washers (23), and nuts (22).

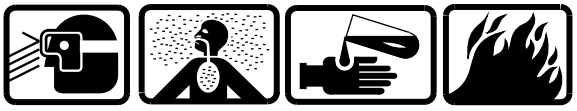
WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of nuts is a characteristic critical to flight safety.



17. Torque nuts (22) **60 TO 80 INCH-POUNDS**.



Sealing Compound

18. Apply an external bead of sealing compound (D184) at joint between gearbox (21) and housing (19).

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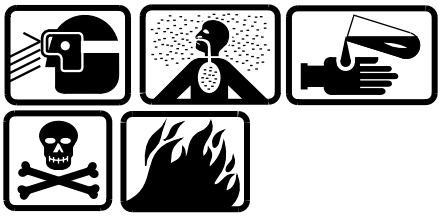
INSTALL LEVERS, TRUNNION, AND IDLER



Corrosion Preventive Compound

19. Apply CPC (D83) to all bolted joints and faying surfaces at installation.

20. Install assembled trunnion (18), idler (12), and levers (20).

21. Install bushing (11) in tang of idler (12).

22. Install bolt (10) and two washers (9) through tangs of idler (12), and housing (19). Install nut (8).

WARNING

FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of nuts and correct installation of cotter pins are characteristics critical to flight safety.

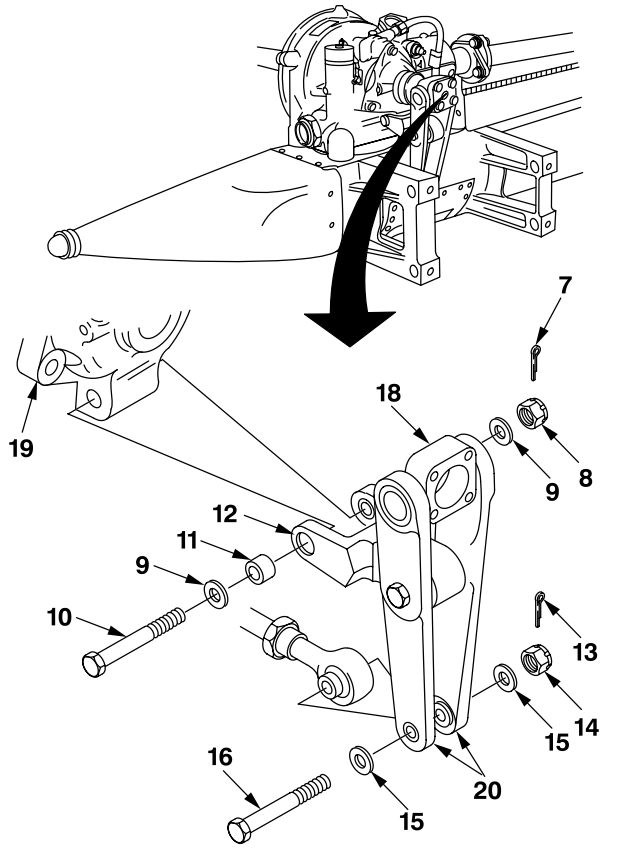
23. Torque nut (8) **60 TO 80 INCH-POUNDS**.

24. Install cotter pin (7) through nut (8).

25. Install bolt (16) and two washers (15) on levers (20), and install nut (14).

26. Torque nut (14) **60 TO 80 INCH-POUNDS**.

27. Install cotter pin (13) through nut (14).



406012-74
J1359

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5-5-18. TAIL ROTOR GEARBOX HOUSING PACKING — REMOVAL/INSTALLATION (CONT)

INSTALL CONTROL TUBE NUT AND TRUNNION CAP

28. Install washer (6) and nut (5).

WARNING

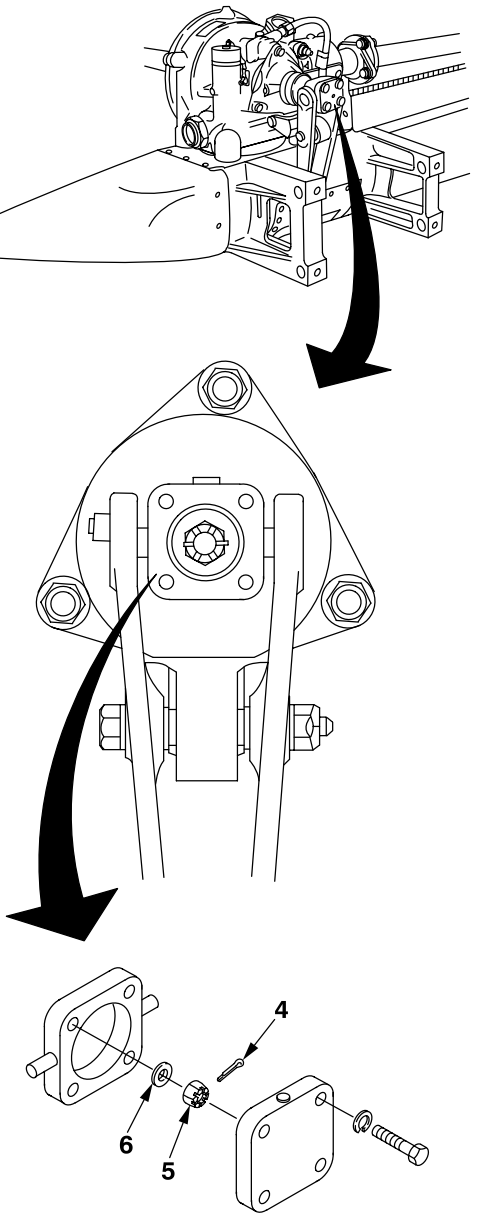
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing of nut and correct installation of cotter pin are characteristics critical to flight safety.

29. Torque nut (5) **45 TO 65 INCH-POUNDS**.

30. Install cotter pin (4) through nut (5).

INSPECT



406012-73-2
J1906

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NOTE

Ensure grease fitting on cap is pointing up.

31. Install cap (1) (with grease fitting pointing up) with four bolts (2) and washers (3).

WARNING

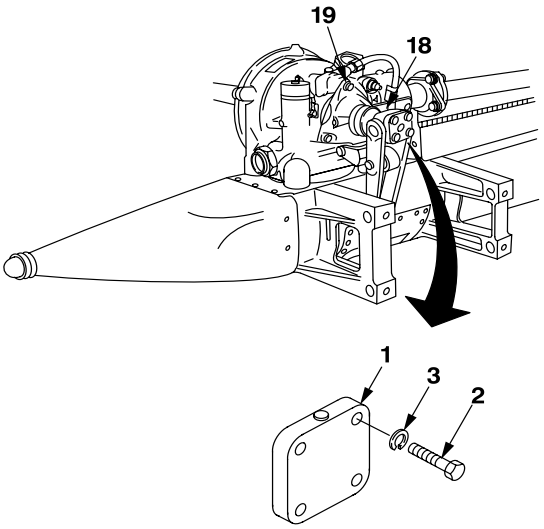
FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

Correct torquing and lockwiring of bolts are characteristics critical to flight safety.

32. Torque four bolts (2) **25 TO 30 INCH-POUNDS**.

33. Ensure control tube rotates freely in cap (3).

34. Secure bolts (2) with lockwire (D132).



406012-152
J2722

INSPECT

Grease

35. Using hand lubrication gun (B58), lubricate trunnion (18) and housing (19) with grease (D113) until grease is purged past seals.

36. Clean excess grease from seal and from inside boot (17).

37. Install boot (17) on trunnion (18) and housing (19). Secure boot (17) with lockwire (D132).

INSPECT

FOLLOW-ON MAINTENANCE

Install fin assembly (Task 2-3-22).

Pilot perform MOC (TM 1-1520-248-10/CL).

END OF TASK

5-5-19. TAIL ROTOR PITCH CHANGE TRUNNION CAP — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Drycleaning Solvent (D199)
Sandpaper (D175)
Epoxy Primer Coating (D98)
Wiping Rag (D164)
Chemical Conversion Coating (Alodine 1201) (D57)
Rubber Gloves (D111)
Black Acrylic Lacquer (D124)
Paint Brush (D54)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

References:
TM 1-1520-266-23

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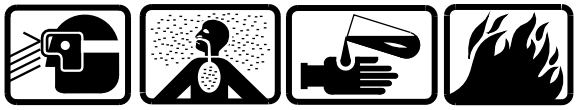
5-5-19. TAIL ROTOR PITCH CHANGE TRUNNION CAP — CLEANING/INSPECTION/REPAIR (CONT)

CLEAN



Drycleaning Solvent

1. Clean cap using drycleaning solvent (D199) and paint brush (D54). Dry with wiping rag (D164).

INSPECT

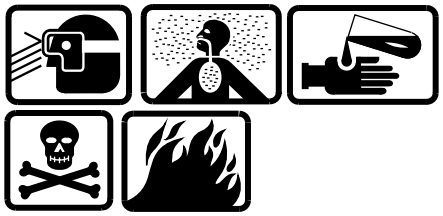
2. Inspect cap for damage as shown. Replace cap if limits are exceeded. See figure Tail Rotor Pitch Change Trunnion Cap — Damage Limits.

2.1. If a crack on the trunnion cap is suspected, refer to TM 1-1520-266-23.

REPAIR

Sanding Operations

3. Polish out repairable damage with 400 grit sandpaper (D175).

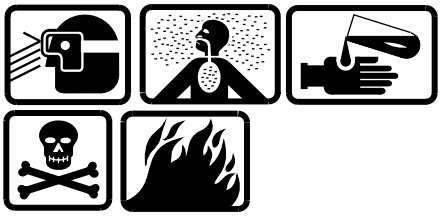


Epoxy Primer Coating

4. Apply one coat of epoxy primer coating (D98) to repaired areas which were previously painted.

Acrylic Lacquer

5. Apply two coats of black acrylic lacquer (D124) to primed areas.



Chemical Conversion Materials

6. Apply Alodine 1201 (D57) to repaired areas which are not painted.

INSPECT

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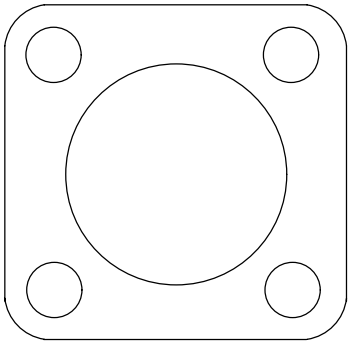

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL	0.020 In. before and after repair
CORROSION	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	Not critical
NUMBER OF REPAIRS	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.040 In.
BORE DAMAGE	0.002 In. for 1/4 circumference

NOTE:
No cracks are permitted.

406011-1
J1360

Tail Rotor Pitch Change Trunnion Cap — Damage Limits

END OF TASK

5-5-20. TAIL ROTOR PITCH CHANGE TRUNNION — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)

Material:
Drycleaning Solvent (D199)
Sandpaper (D175)
Epoxy Primer Coating (D98)
Black Acrylic Lacquer (D124)
Wiping Rag (D164)
Alcoholic Phosphoric Solution (D37)
Rubber Gloves (D111)
Paint Brush (D54)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

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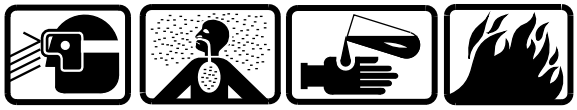
CLEAN



Drycleaning Solvent

1. Clean trunnion using drycleaning solvent (D199) and paint brush (D54). Dry with wiping rag (D164).

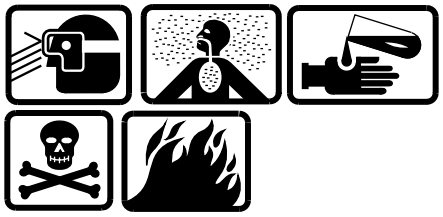
INSPECT

2. Inspect trunnion for wear and damage as shown. Replace trunnion if limits are exceeded. See figure Tail Rotor Pitch Change Trunnion — Wear and Damage Limits.

REPAIR

Sanding Operations

3. Polish out allowable damage with 400 grit sandpaper (D175).



Epoxy Primer Coating

4. Apply one coat of epoxy primer coating (D98) to repaired areas which were previously painted.

Acrylic Lacquer

5. Apply two coats of black acrylic lacquer (D124) to primed areas.

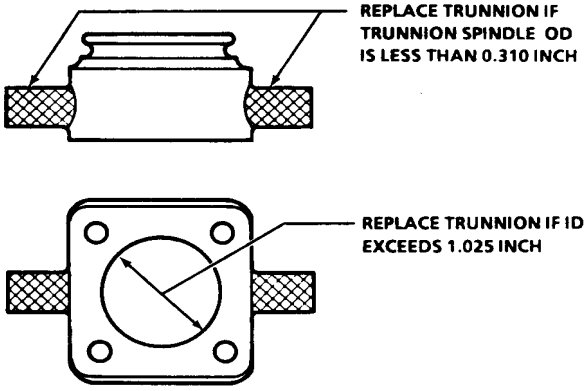
Corrosion Removing and Metal Conditioning Compound

6. Apply alcoholic phosphoric solution (D37) to repaired areas which were not painted. Allow solution to remain on part one to three minutes.

7. Rinse thoroughly with water; dry with wiping rag (D164).

INSPECT

GO TO NEXT PAGE



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.002 In. before and after repair	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	Not to exceed 1/4 circumference	0.100 Sq. in.
NUMBER OF REPAIRS	One per segment	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.010 In.	0.030 In.
BORES	0.002 In. for 1/4 circumference	

406011-2
H5304

Tail Rotor Pitch Change Trunnion — Wear and Damage Limits

END OF TASK

5-5-21. TAIL ROTOR GEARBOX PITCH CHANGE HOUSING — CLEANING/INSPECTION/REPAIR

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:
All

Tools:
General Mechanic Tool Kit (B178)
Hand Arbor Press (B107)

Material:
Drycleaning Solvent (D199)
Sandpaper (D175)
Polyamide Epoxy Primer (D98)
Black Acrylic Lacquer (D124)
Wiping Rag (D164)
Rubber Gloves (D111)
Paint Brush (D54)

Personnel Required:
67S Scout Helicopter Technical Inspector (TI)
67S Scout Helicopter Repairer

CLEAN

Drycleaning Solvent

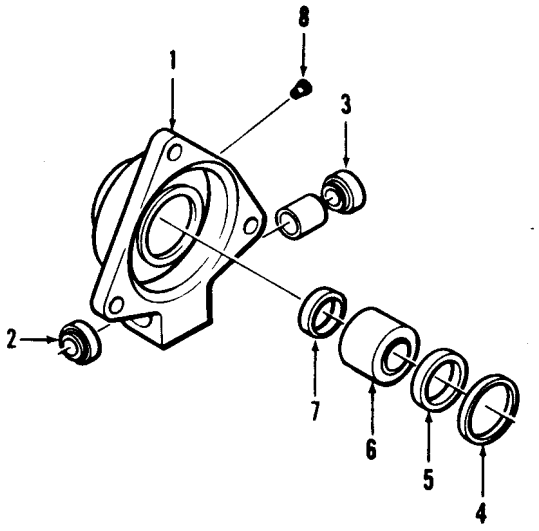
CAUTION

To avoid washing out or diluting grease in bearing, bearing in housing shall not be soaked in solvent.

1. Clean housing (1) using drycleaning solvent (D199) and paint brush (D54). Dry with wiping rag (D164).

INSPECT

2. Inspect housing (1) for wear and damage. Replace housing assembly if limits are exceeded. See figure Tail Rotor Pitch Change Housing — Wear and Damage Limits.



406012-84
H5304

3. Inspect bearings (2) and (3) for damage, binding, and corrosion. Replace if unserviceable.

4. Inspect retaining ring (4) and seal (5) for damage. Replace if damaged.

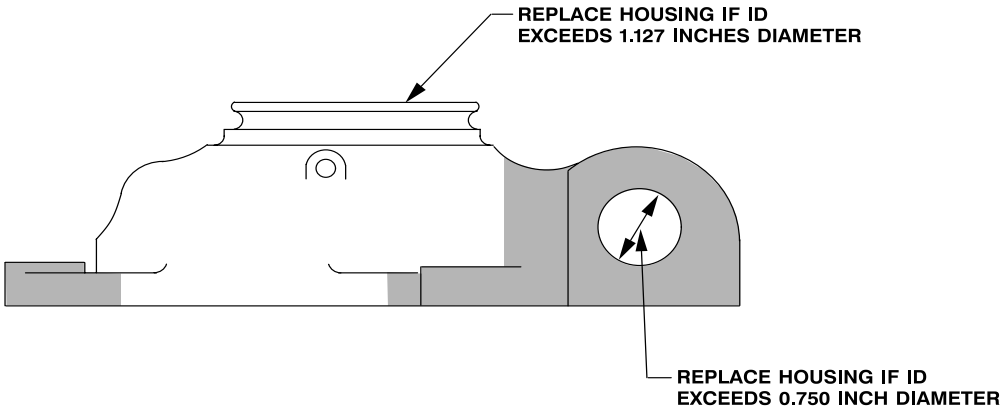
5. Inspect bearing (6) for binding, damage, and corrosion. Replace if unserviceable.

6. Inspect seal (7) for damage. Replace if damaged.

7. Inspect grease fitting (8) for damage. Replace if damaged.

GO TO NEXT PAGE

5-5-21. TAIL ROTOR GEARBOX PITCH CHANGE HOUSING — CLEANING/INSPECTION/REPAIR (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.010 In. before and after repair	0.030 In. before and after repair
CORROSION	0.005 In. before and after repair	0.015 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.100 Sq. in.	0.250 Sq. in.
NUMBER OF REPAIRS	One per segment	Not critical
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.	0.060 In.
BORE DAMAGE	0.002 In. for 1/4 circumference	

406011-3
J2199

Tail Rotor Pitch Change Housing — Wear and Damage Limits

GO TO NEXT PAGE

5-5-21. TAIL ROTOR GEARBOX PITCH CHANGE HOUSING — CLEANING/INSPECTION/REPAIR (CONT)

REPAIR

CAUTION

When bearings (2) and (3) are removed from housing, (1) they must be replaced with new ones.

8. Remove bearings (2) and (3) and bushing (9) from housing (1) as follows:

a. Place small brass drift through bearing (3) and bushing (9). Catch lip of inner race of bearing (2) with drift and tap with hammer to drive bearing (2) out of housing (1).

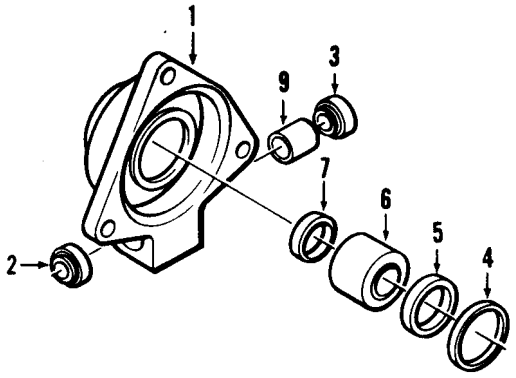
b. Use suitable sleeve placed through housing (1) from side where bearing (2) was removed, and using hand arbor press (B107), press bearing (3) and bushing (9) out of housing (1).

9. Remove retaining ring (4).

10. Apply pressure to outer ring of seal (7) and press seal (5), bearing (6), and seal (7) from housing (1).

Sanding Operations

11. Clean up allowable damage in housing (1) with 400 grit sandpaper (D175).



406012-85
H5304

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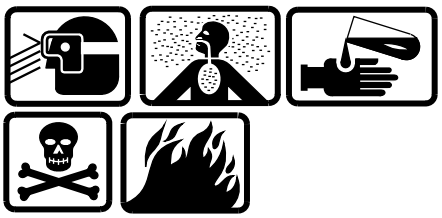
5-5-21. TAIL ROTOR GEARBOX PITCH CHANGE HOUSING — CLEANING/INSPECTION/REPAIR (CONT)



Epoxy Primer Coating

12. Apply one coat of epoxy primer coating (D98) to repaired areas of housing (1) which were previously painted.

Acrylic Lacquer

13. Apply two coats of black acrylic lacquer (D124) to primed areas of housing (1).

14. Press bearing (2) into housing (1) on opposite side from grease fitting (8).

15. Place bushing (9) in housing (1).

16. Press bearing (3) into housing (1) until it seats against bushing (9), being careful not to move bearing (2).

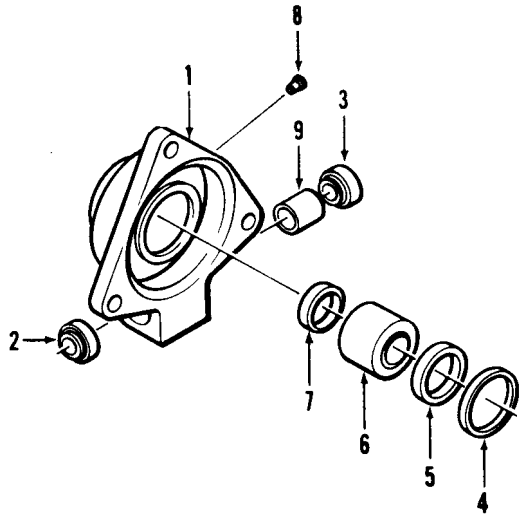
17. Press bearing (6) into housing (1).

18. Position seal (5) with lip facing outboard in housing (1). Press until seal (5) seats against bearing (6).

19. Install retaining ring (4).

20. Turn housing (1) over and position seal (7) with lip facing outboard. Press until seal (7) seats against bearing (6).

INSPECT



406012-86
H5304

END OF TASK

GLOSSARY

Abbreviation/ Acronym	Definition
AC	Alternating Current
ACK	Acknowledge
ADF	Automatic Direction Finder
ADS	Air Data System
ADSS	ANVIS Display Symbology System
ADU	Audio Distribution Unit
ADV	Advisory
AEU	Armament Electronic Unit
AI	Airborne Intercept
AJ	Antijamming
ALSE	Aviation Life Support Equipment
ALT	Altitude
AM	Amplitude Modulation
AMP	Ampere
AMP	Amplifier
ANVIS	Aviators Night Vision Imaging System
AOAP	Army Oil Analysis Program
APU	Aircraft Power Unit
AR	Army Regulation
ARMT	Armament
ASE	Aircraft Survivability Equipment
ATAS	Air-to-Air Stinger
ATHS	Airborne Target Handover System
ATTD	Attitude
AUTO	Automatic
AUX	Auxiliary
AVIM	Aviation Intermediate Maintenance
AVTR	Airborne Video Tape Recorder
AVUM	Aviation Unit Maintenance
AWG	American Wire Gauge
BATT	Battery
B HOT	Black Hot
BIT	Built-In Test
BITE	Built-In Test Equipment
BKUP	Backup

Glossary (Cont)

Abbreviation/ Acronym	Definition
BL	Butt Line
BLWR	Blower
BNR	Burner
BRSIT	Boresight
BRT	Bright
CAGE	Commercial and Government Entity Code
CARC	Chemical Agent Resistant Coating
CB	Circuit Breaker
CDS	Control Display System
CFT	Captive Flight Trainer
CG	Center of Gravity
CHGR	Charger
CIPH	Cipher
CIT	Compressor Inlet Temperature Sensor
CKPT	Cockpit
CKPT LT	Cockpit Light
CL	Center Line
CLR	Clear
COLL	Collision
COMSEC	Communication Security
CPC	Corrosion Preventive Compound
CPG	Copilot/Gunner
CRES	Corrosion Resistant Steel
CTRL	Control
DA PAM	Department of the Army Pamphlet
DC	Direct Current
DEFOG	Windshield Defogger System
DES	Designation
DETR	Detector
DIGT	Digital
DIR	Directional
DISENG	Disengage
DN	Down
DOD	Department of Defense
DRA	Data Rate Adapter
DSC	Digital Scan Converter

Glossary (Cont)

Abbreviation/ Acronym	Definition
DSPL	Display
DTS	Data Transfer System
DX	Direct Exchange
ECU	Electronic Control Unit
ECUIC	Electronic Control Unit Interface Computer
EGI	Embedded Global Position/Inertial Navigation
ELEV	Elevation
EMI	Electromagnetic Interference
ENG	Engine
ENGA	Engage
ESC	Electronic Supervisory Control
ESNTL	Essential
EU	Electronics Unit
EXT	External
FADEC	Full Authority Digital Electronic Control
FCU	Fuel Control Unit
FDLS	Fault Detection and Locating System
FFAR	Folding Fin Aerial Rocket
FM	Frequency Modulation
FOC	Focus
FOV	Field-of-View
FR	Frame
FREQ	Frequency
FRZ	Freeze
FS	Fuselage Station
FWD	Forward
FXD	Fixed
GEN	Generator
GRBX	Gearbox
GSE	Ground Support Equipment
HDG	Heading
HF	High Frequency
HHM	Heading Hold Mode
HLFR	Hellfire
HMS	HELLFIRE Missile System
HMU	Hydromechanical Unit

Glossary (Cont)

Abbreviation/ Acronym	Definition
HOM	Homing (FM)
HSD	Horizontal Situation Display
HSF	Hot Section Factor
HTR	Heater
HYD	Hydraulic
ICS	Internal Communication System
ID	Inside Diameter
IDM	Improved Data Modem
IEU	Interface Electronics Unit
IFF	Identification Friend or Foe
IFM	Improved Frequency Modulation
IGN	Ignition
INIT	Initiate
INST	Instrument
INST LT	Instrument Light
INTCOM	Intercommunication
INV	Inverter
IR	Infrared
ISP	Integrated Systems Processor
JETT	Jettison
KM	Kilometer
KPH	Kilometers Per Hour
KTS	Knots
KYBD	Keyboard
LAT	Latitude
LCF	Low Cycle Fatigue
LDS	Laser Detecting System
LOAL	Lock On After Launch
LOBL	Lock On Before Launch
LRF/D	Laser Rangefinder/Designator
LRU	Line Replaceable Unit
LT	Light
L/H	Left Hand
LVDT	Linear Variable Differential Transformer
MAC	Maintenance Allocation Chart
MAINT	Maintenance

Glossary (Cont)

Abbreviation/ Acronym	Definition
MAPS	Maintenance Action Precise Symptom
MCPS	MMS Central Power Supply
MCPU	Master Controller Processor Unit
MFD	Multifunction Display
MFK	Multifunction Keyboard
MLM	Multipurpose Lightweight Missile
MMS	Mast Mounted Sight
MMSS	Mast Mounted Sight Subsystem
MNL	Manual
MOC	Maintenance Operational Check
MOM	Moment
MPD	Multiparameter Display
MPLH	Multi Purpose Light Helicopter
M/R	Main Rotor
MOS	Military Occupational Specialty
MSDS	Material Safety Data Sheets
MSP	MMS System Processor
MSS	Missile Sight System
MSSEU	Missile Sight System Electronics Unit
MTA	Mast Turret Assembly
MTF	Maintenance Test Flight
MWO	Modification Work Order
MUX	Multiplex
NAV	Navigation
NBC	Nuclear Biological and Chemical
NG	Gas Generator Speed
NICAD	Nickel-Cadmium Battery
NOE	Nap-of-the-Earth
NP	Power Turbine RPM
NR	Main Rotor RPM
NSN	National Stock Number
NVG	Night Vision Goggles
OAT	Outside Air Temperature
OD	Outside Diameter
ODA	Optical Display Assembly
OPR	Operate

Glossary (Cont)

Abbreviation/ Acronym	Definition
OS	Overspeed
OSET	Offset
OSHA	Occupational Safety and Health Administration
PART SEP	Particle Separator
PDU	Pilot Display Unit
PLT	Pilot
PMA	Permanent Magnet Alternator
POS	Position
POS LT	Position Light
PPM	Progressive Phase Maintenance
PSI	Pounds Per Square Inch
PSID	Pounds Per Square Inch Differential
PSIG	Pounds Per Square Inch Gauge
PWR	Power
QAD	Quick Attach-Detach
QE	Engine Torque
QM	Mast Torque
QTY	Quantity
RALT	Radar Altimeter
RAST	Raster
RCCB	Remote Control Circuit Breaker
RCPT	Receptacle
RDS	Radar Detecting System
REC	Receive
RECT	Rectifier
REL	Release
RET	Retract
RFD	Remote Frequency Display
RHE	Remote HELLFIRE Electronics Unit
RKT	Rocket
RPM	Revolutions Per Minute
RPSTL	Repair Parts and Special Tools List
RST	Reset
RT	Receiver/Transmitter
R/H	Right Hand
SAM	Surface-To-Air Missile

Glossary (Cont)

Abbreviation/ Acronym	Definition
SCAS	Stability and Control Augmentation System
SCTY	Security
SEL	Select
SEU	Sight Electronics Unit
SINCGARS	Single Channel Ground/Air Radio System
SMR	Source, Maintenance, and Recoverability
SRCH	Search
STA	Station
STBY	Standby
SYMB	Symbology
TACFIRE	Tactical Fire Direction
TAMS	Transmission Attitude Measurement System
TB	Technical Bulletin
TBD	To Be Designated
TBO	Time Between Overhaul
TCU	Thermal Control Unit
TEMP	Temperature
TGT	Turbine Gas Temperature
TGT/TRQ	Turbine Gas Temperature/Torque
TI	Technical Inspector
TIS	Thermal Imaging Sensor
TM	Technical Manual
TMDE	Test, Measurement, and Diagnostic Equipment
TMOPS	Torquemeter Oil Pressure Sensor
T/R	Tail Rotor
TRK	Track
TRQ	Torque
TRU	Transformer Rectifier Unit
TVS	Television System
UHF	Ultra High Frequency
U/M	Unit of Measure
UTM	Universal Transverse Mercator
UUT	Unit Under Test
UWP	Universal Weapons Pylon
VAC	Volts Alternating Current
VAR	Variation

Glossary (Cont)

Abbreviation/ Acronym	Definition
VDC	Volts Direct Current
VDU	Video Downlink/Uplink
VHF	Very High Frequency
VID	Video
VSD	Vertical Situation Display
VSI	Vertical Scale Instrument
VTR	Video Tape Recorder
VTS	Video Tracker System
VTVM	Vacuum Tube Voltmeter
WDC	Water Displacing Compound
WL	Water Line
WRN	Warning
WSPS	Wire Strike Protection System
XDCR	Transducer (Sensor)
XFMR	Transformer
XMSN	Transmission

ALPHABETICAL INDEX

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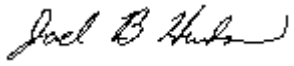

JOEL B. HUDSON
Administrative Assistant to the Secretary of the Army

9934903

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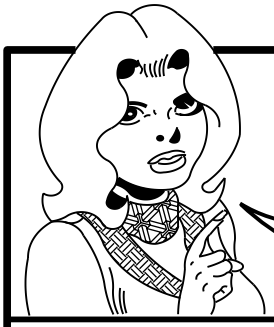

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PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
6	2-1 a		
B1		4-3	

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

In line 6 of paragraph 2-1a the manual states the engine has 6 cylinders. The engine on my set only has 4 cylinders. Change the manual to show 4 cylinders.

Callout 16 on figure 4-3 is pointed at a bolt. In key to figure 4-3, item 16 is called a shim - Please correct one or the other

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