

Bell Helicopter **TEXTRON**

A Subsidiary of Textron, Inc.

April 26, 2005

TO: All Owners/Operators of Bell 407 Helicopters

**SUBJECT: REVISION "A" TO TECHNICAL BULLETIN 407-05-65:
(TRANSMISSION OIL PUMP SEAL 38-79-004-1045-2
INTRODUCTION OF)**

Technical Bulletin 407-04-65 is revised to correct the index numbers in the text of the ACCOMPLISHMENT INSTRUCTION.

TECHNICAL BULLETIN
Bell Helicopter **TEXTRON**

A Subsidiary of Textron Inc.

No. 407-05-65
Date Apr 11, 2005
Page 1 of 9

DATE Apr 26, 2005
REV "A"

MODEL AFFECTED: 407

SUBJECT: TRANSMISSION OIL PUMP SEAL 38-79004-1045-2, INTRODUCTION OF

HELICOPTERS AFFECTED: 407 serial number 53000 and subsequent.

NOTE-

This Technical Bulletin cancels and supercedes the TB 407-00-23.

COMPLIANCE: At Customer's Option

DESCRIPTION:

This Bulletin is being issued to introduce a new seal on the Transmission Oil Pump. This new seal has performed exceptionally well during testing and is anticipated to display significantly longer service life than the seal that is currently used.

APPROVAL:

The engineering design aspects of this bulletin are TCCA approved.

MANPOWER:

No additional manpower is required when accomplishing this Bulletin during overhaul.

MATERIALS:

Required Material:

The following material is required for the accomplishment of this bulletin and may be obtained through your Bell Helicopter Textron Supply Center.

<u>PART NUMBER</u>	<u>NOMENCLATURE</u>	<u>QUANTITY</u>
38-79004-1045-2	SEAL	1

SPECIAL TOOLS:

WORKAID ITEM # 1, Figure 3.

WORKAID ITEM # 2, Figure 3.

WEIGHT AND BALANCE:

Not affected

ELECTRICAL LOAD DATA:

Not affected

REFERENCES:

BHT-407-MM, Rev. 19, 17 December 2003.

Chapter 63, Main rotor drive.

BHT-407-CR&O, Rev. 2, 9 March 2004.

Chapter 63, Main rotor drive system.

PUBLICATIONS AFFECTED:

BHT-407-IPB, Rev. 3, 6 September 2002.

Chapter 63, Rotor drive.

ACCOMPLISHMENT INSTRUCTIONS:

1. Remove transmission oil pump (BHT-407-MM, Chapter 63).
2. Disassemble transmission oil pump as follows:
 - a. Remove retainer ring (1, figure 1).

- b. To allow for easier reassembly, apply an index mark with a permanent ink marker to the head assembly (2) and the body assembly (10).
- c. Lightly tap output end of the shaft (5) with a soft hammer to remove the shaft and the head assembly (2) from the body assembly (10).
- d. Lightly tap the pump body assembly (10) to remove the outer gerotor (8) from the housing.
- e. Remove the retainer rings (4), the inner gerotor (9) and the key (6) from the shaft (5).

CAUTION

BE EXTREMELY CAREFUL TO NOT DAMAGE THE SURFACE OF THE BEARING DURING SEAL REMOVAL.

- f. With an offset screwdriver or equivalent, remove the seal (3).
3. Visually inspect oil pump parts details for condition (BHT-407-CR&O, Chapter 63).
 4. Assemble transmission oil pump as follows:
 - a. Obtain the workaids (#1 and #2, figure 3) or their equivalents.
 - b. Ensure that all parts are clean.
 - c. Lubricate new seal (3, figure 2) with transmission oil.

-NOTE-

Do not use hydraulic press to install seal (3). Use an arbor press. Excessive pressure can deform the seal casing distorting the seal lip and cause leakage to occur.

- d. Use workaid (1#, figure 3) to press the new seal (3, Figure 2), with lip facing inboard, into pump body (10) until seated (Refer to figure 2, step 1).
- e. Install the outer gerotor (8) into the pump body assembly (10).
- f. If disassembled, reassemble the inner gerotor (9) to the shaft (5) as follows:
 - 1) Install the key (6), the inner gerotor (9) and the retainer rings (4) onto the shaft (5).

A

A

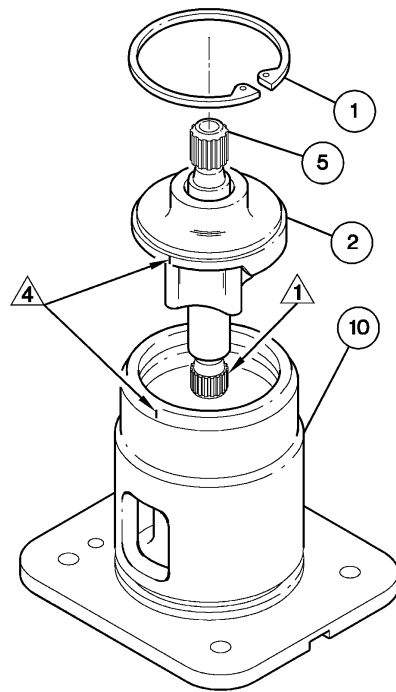
- g. Place the bullet workaid (#2, figure 3) on the outboard end of the shaft (5, figure 2).
- h. Lubricate the seal (3), the gerotors (8 and 9) and the shaft (5) with transmission oil.
- i. Insert the shaft (5) into the body assembly (10). Rotate shaft (5) to engage inner and outer gerotors (8 and 9). Remove the bullet workaid.
- j. Align the marks done previously on the head assembly (2) and the body assembly (10).
- k. Position the head assembly (2) into the body assembly (10). Ensure that the head assembly (2) clears the groove for the retainer ring (1).
- l. Install the retaining ring (1) with the chamfered edge of the retaining ring facing outboard. Ensure the retainer ring (1) is firmly seated in the groove of the body assembly (10).
- m. Rotate the shaft (5) and check for free and smooth rotation.
- n. Re-identify oil pump assembly:

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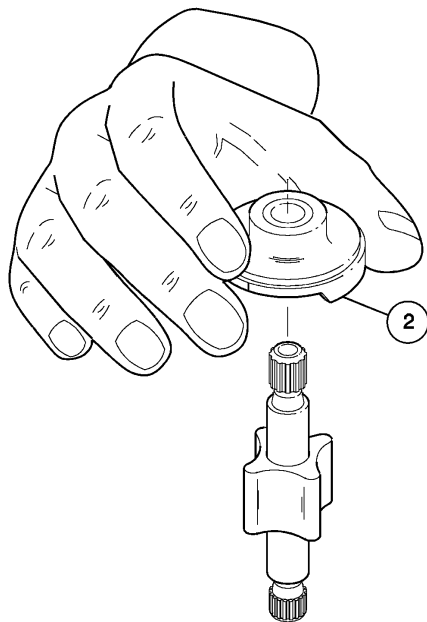
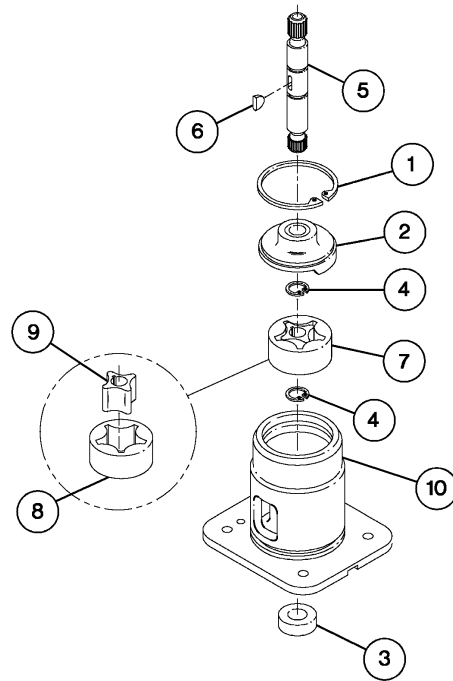
-NOTE-

Following installation into the helicopter, perform an operational check to ensure that the transmission oil pressure is within limits and that no leaks exist.

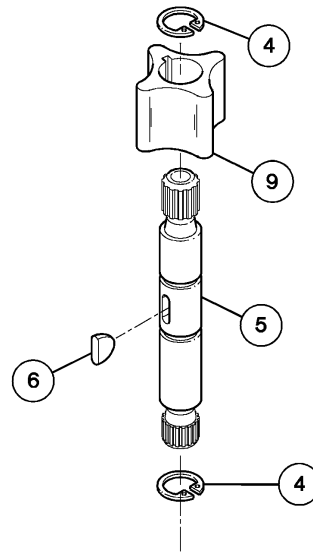
- 5. Install pump assembly into transmission (BHT-407-MM, Chapter 63).
- 6. Make an entry in the Historical Service Record indicating the work that was performed.



STEP 1



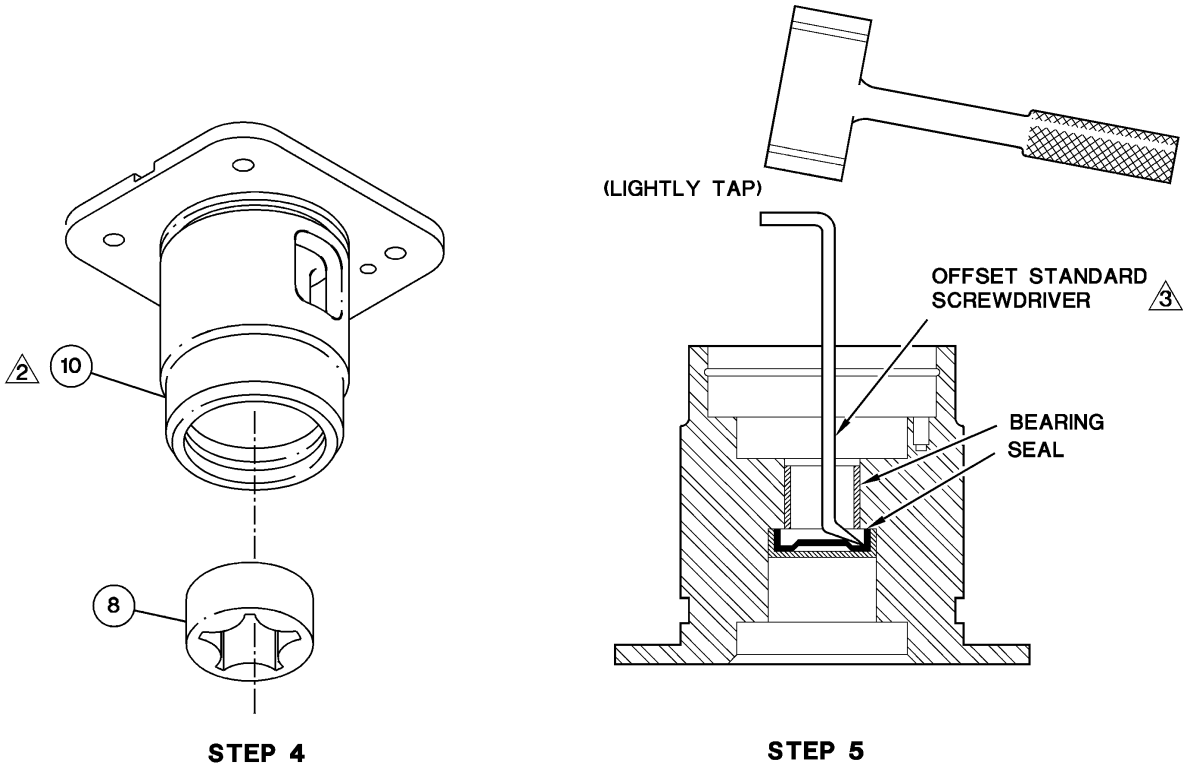
STEP 2



STEP 3

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Figure 1. Oil Pump Assembly – Disassembly (Sheet 1 of 2)



LEGEND

- 1. Retaining ring (38-18313-0193-2) (Ref)
- 2. Head assembly (32-53005-0060-1) (Ref)
- 3. Seal
- 4. Retaining ring
- 5. Shaft
- 6. Key
- 7. Gerotor assembly
- 8. Outer gerotor
- 9. Inner gerotor
- 10. Body assembly

NOTES

- ① Lightly tap with a soft hammer to remove shaft (5) and head assembly (2). To prevent damage to the pump, do not use force or pry the parts.
- ② Lightly tap body assembly (10) on a soft surface.
- ③ Be careful to prevent damage to the bearing.
- ④ Apply an index mark with a permanent ink marker.

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Figure 1. Oil Pump Assembly – Disassembly (Sheet 2)

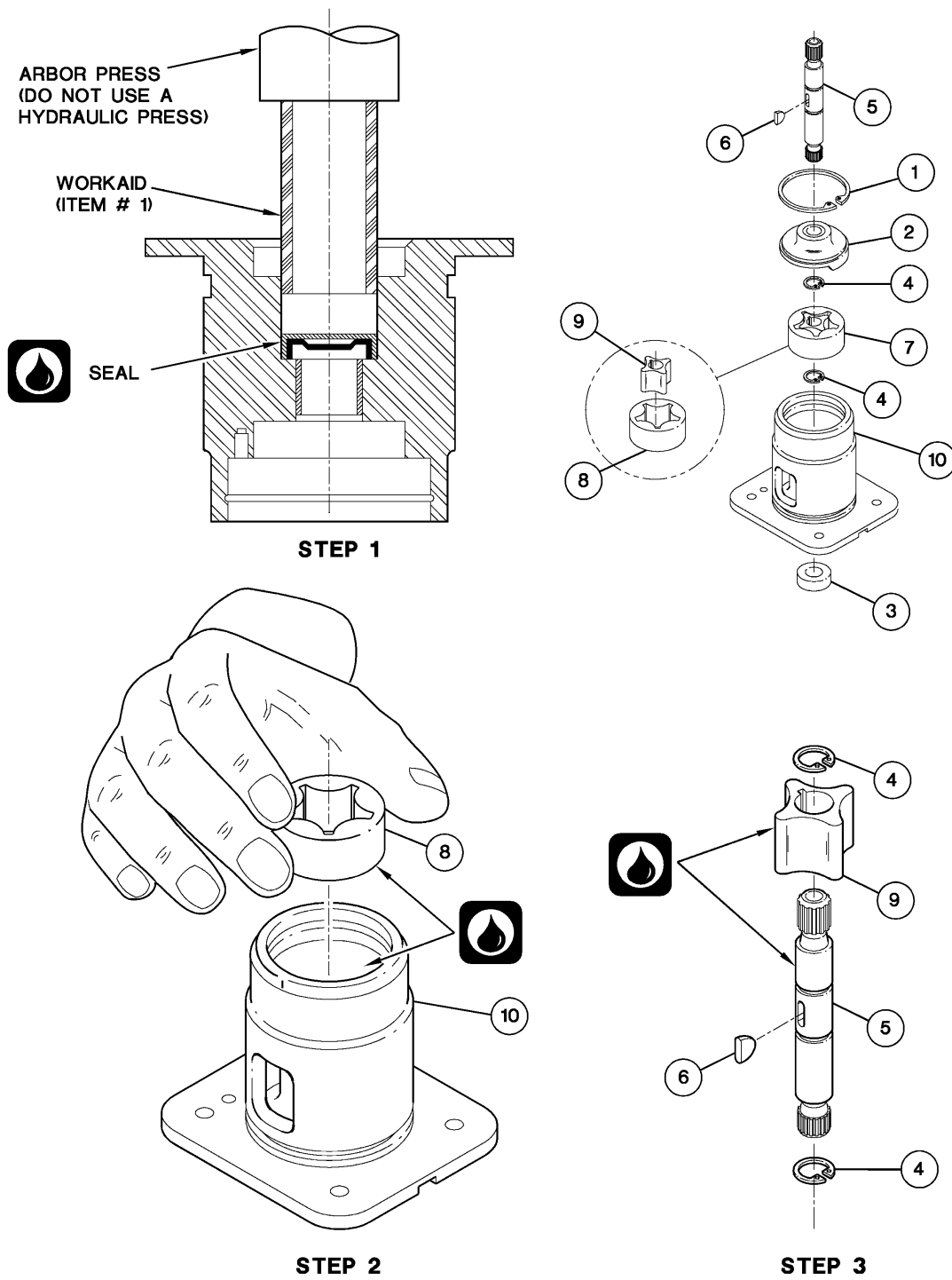
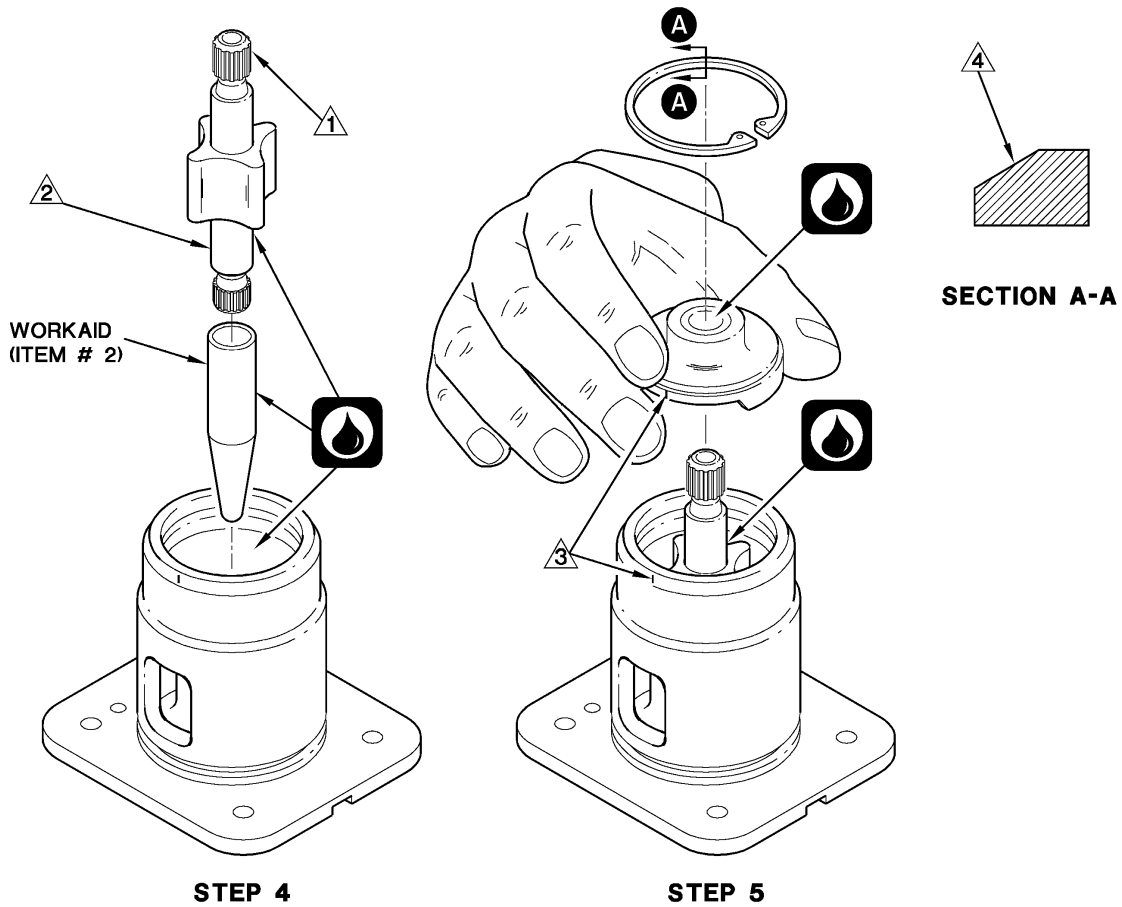


Figure 2. Oil Pump Assembly – Assembly (Sheet 1 of 2)



LEGEND

- | | |
|-------------------|---------------------|
| 1. Retaining ring | 6. Key |
| 2. Head assembly | 7. Gerotor assembly |
| 3. Seal | 8. Outer gerotor |
| 4. Retaining ring | 9. Inner gerotor |
| 5. Shaft | 10. Body assembly |



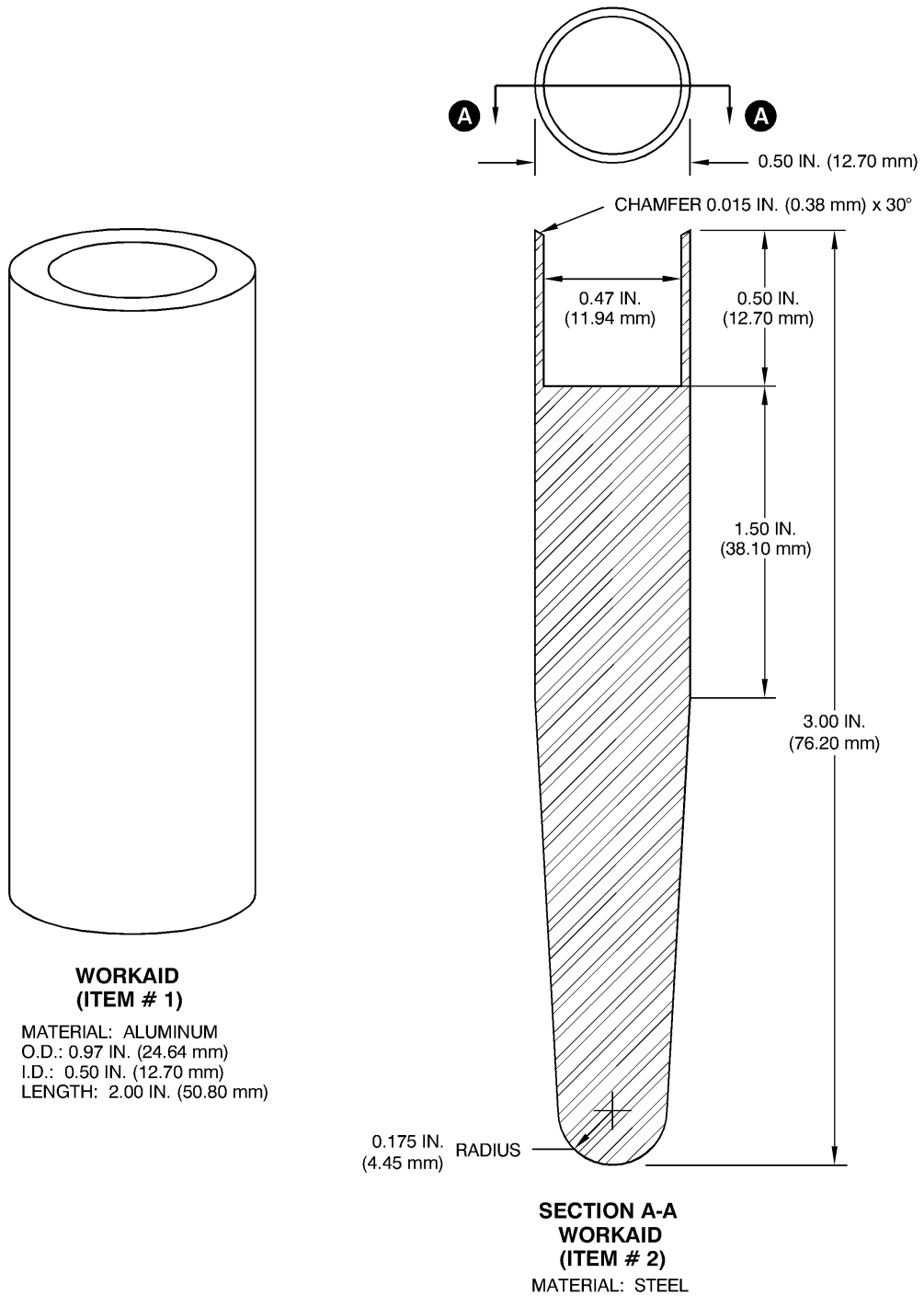
SYSTEM LUBRICANT

NOTES

- ① Turn shaft to engage inner and outer gerotor.
- ② Longer section of shaft down.
- ③ Align index marks to make sure internal pin aligns with receptacle. Alignment pin is not shown for clarity.
- ④ Chamfered edge of retainer faces outboard, away from head assembly (2).
- 5. Verify free rotation of oil pump shaft.

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Figure 2. Oil Pump Assembly – Assembly (Sheet 2)



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Figure 3. Workaids No. 1 and No. 2