



# SERVICE INFORMATION LETTER

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SERVICE INFORMATION LETTER NO. 0159

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DATE: January 31, 2005

1. SUBJECT: F-28A and 280 Left Side Tail Rotor Installation
2. MODEL: F-28A and 280
3. EFFECTIVITY: All serial numbers
4. BACKGROUND:

The left side installation of the tail rotor assembly on F-28A and 280 model aircraft is an approved installation (Enstrom Drawing 28-163000). The left side tail rotor installation significantly improves directional control at higher density altitudes and during an inadvertent low rotor rpm.

This Service Information Letter provides the latest information for converting from a right side installation to a left side installation and installation of the "C/F" style tail rotor pitch link retainer, P/N 28-16392-13.

5. COMPLIANCE:

At owner/operator option, convert the tail rotor installation from the right side to the left side using the procedures in this Service Information Letter.

## NOTE

Tail Rotor Assembly, P/N 28-150022-3, must be used on the left side tail rotor installation.

At owner/operator option, convert the tail rotor pitch link retainer to the latest "C/F" style pitch link retainer, P/N 28-16392-13, using the procedures in this Service Information Letter.

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## 5.1. LEFT SIDE INSTALLATION CONVERSION:

**NOTE**

Perform all maintenance in accordance with the applicable Maintenance Manual, Service Information Letters, and/or Service Directive Bulletin applicable for the aircraft model.

1. Remove the tail rotor assembly.
2. Remove the tail rotor gearbox assembly, P/N 28-13500-1(R).
3. Remove the tail rotor pitch control assembly from the tail rotor gearbox.

**NOTE**

The tail rotor pitch control assembly can be converted to the "C/F" style pitch link retainer while the pitch control assembly is removed from the tail rotor gearbox. Refer to paragraph 5.2 of this Service Information Letter.

4. Install the tail rotor pitch control assembly on the replacement tail rotor gearbox assembly, P/N 28-13525-5(R).
5. Install the tail rotor gearbox.

**NOTE**

Tail Rotor Assembly, P/N 28-150022-3, must be used on the left side tail rotor installation.

6. Remove the blade and grip assemblies from the tail rotor assembly.
7. Remove the thrust bearings, spacers, and feather bearings from the tail rotor assembly.
8. Remove the retention plates, P/N 28-150021-11, from the tail rotor assembly. Turn the retention plates over and install on the tail rotor assembly.
9. Install the feather bearings, spacers, and thrust bearings onto the tail rotor assembly.
10. Install the blade and grip assemblies onto the tail rotor assembly. Ensure the retention plates are oriented in accordance with Figure 1.

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11. Lubricate the tail rotor assembly and statically balance as required.

**CAUTION**

If the tail rotor pitch control system is equipped with the "C/F" style pitch link retainer, P/N 28-16392-13, refer to paragraph 5.2 of this Service Information Letter for tail rotor and pitch link installation/rigging procedures.

12. Install the tail rotor assembly with the center line of the tail rotor hub pivot axis parallel to the pitch change link retainer center line (Figure 2).

**CAUTION**

The pitch change link is installed on the outboard (tip) side of the retention plate (Figure 3) when used with pitch link retainer, P/N 28-16325-"X", and installed on the inboard (hub) side of the retention plate (Figure 9) when used with pitch link retainer, P/N 28-16392-13.

13. Install the pitch change links and adjust the overall length to 4.32 inches/10.97 cm. Orient the rod ends with an approximate 45° offset (Figure 3 and Figure 4).
14. Rig the tail rotor controls using tools T-0012 (Figure 5) and T-0140.

**NOTE**

Rigging Tool, T-0012, is designed for right side tail rotor installations. When rigging the tail rotor controls on a left side installation, the tool is used opposite of the markings on the tool.

**NOTE**

Use Tool, T-0140, to hold the tail rotor controls in the neutral position while checking/adjusting the tail rotor control cable tension.

15. Dynamically balance and check the track of the tail rotor assembly as required.

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## 5.2. INSTALLATION OF THE “C/F” STYLE TAIL ROTOR PITCH LINK RETAINER:

**NOTE**

Perform all maintenance in accordance with the applicable Maintenance Manual, Service Information Letters, and/or Service Directive Bulletin applicable for aircraft model.

**NOTE**

The “C/F” style pitch link retainer, P/N 28-16392-13, can only be installed on the F-28A and 280 configured with the left side tail rotor installation.

1. Disconnect and remove the tail rotor pitch change links.
2. Remove the tail rotor assembly.
3. Disconnect the pitch control bearing housing from the pitch control brackets and remove the bearing housing assembly from the tail rotor gearbox.
4. Remove the snap ring from the end of the pitch control bearing.
5. Remove the guide bolts from the pitch link retainer, P/N 28-16325-X, and remove the retainer.
6. Press the pitch control bearing, P/N 28-16302-1, from the bearing.

**NOTE**

See Figure 6 for parts referenced in the installation instructions for the “C/F” style pitch link retainer, P/N 19392-13.

7. Install the pitch control bearing, P/N 28-16394-2, into the bearing.
8. Install the two wave spring washers onto the pitch control bearing.
9. Visually align the dowel pin holes in the pitch link retainer with the pin holes in the pitch control bearing. Press the retainer onto the bearing.

**NOTE**

If the dowel pin holes do not completely line up, gently tap one ear of the pitch link retainer with a plastic mallet until the holes do line up.

**WARNING**

**Use protective gloves if installing the retainer using the following alternate method of installation.**

**NOTE**

As an alternate method of installing the pitch link retainer onto the bearing, heat the retainer to approximately 200°F/93°C and install the retainer onto the bearing. Align the dowel pin holes and insert an appropriate size “bullet” to maintain alignment until the retainer is cool. Remove the “bullet” and continue installation.

10. Press the dowel pins into the retainer. Seat the dowel pins .1 inch/2.5 mm below the surface of the pitch link retainer. The pins must not extend through the pitch control bearing.
11. Install the cotter pins in the pitch link retainer.
12. Install the seal into the outboard end of the pitch control bearing.
13. Install the seal retainer and seal onto the tail rotor gearbox output shaft spacer. Position the retainer and seal inboard of the spacer slots (Figure 7).
14. Install the keys into the slots in the shaft spacer.
15. Align the keyways in the pitch control bearing with the keys in the shaft spacer and slide the bearing housing assembly onto the shaft spacer.
16. Reconnect the pitch control assembly to the pitch control brackets.
17. Install the seal into the retainer and using Tool, T-0140, install the retainer into the recessed area of the pitch control bearing.
18. Install the tail rotor assembly. Ensure the center line of the tail rotor hub pivot axis aligns with the inboard side of the pitch link retainer ear that lags in the direction of rotation (Figure 8).

**CAUTION**

The pitch change link is installed on the outboard (tip) side of the retention plate (Figure 3) when used with pitch link retainer, P/N 28-16325-“X”, and installed on the inboard (hub) side of the retention plate (Figure 9) when used with pitch link retainer, P/N 28-16392-13.

19. Install the pitch change links and adjust the overall length to 4.26 inches/10.82 cm. Orient the rod ends with a 30° offset (Figure 9 and Figure 10).

**NOTE**

The fixed length pitch change link, P/N 28-16391-1, is approved for installation with this configuration of the tail rotor pitch change assembly.

20. Rig the tail rotor controls using tools T-0012 (see Figure 5) and T-0140.

**NOTE**

Rigging Tool, T-0012, is designed for right side tail rotor installations. When rigging the tail rotor controls on a left side installation, the tool is used opposite of the markings on the tool.

**NOTE**

Use Tool, T-0140, to hold the tail rotor controls in the neutral position while checking/adjusting the tail rotor control cable tension.

21. Dynamically balance and check the track of the tail rotor assembly as required.

## 5.3. PARTS:

## 1. LEFT SIDE INSTALLATION CONVERSION:

Description	Part Number	Quantity
Tail Rotor Gearbox Assembly	28-13525-5(R)	1
Lock Washer	SL61W-4	2
Cotter Pin	AN381-2-8	8

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2. INSTALLATION OF THE “C/F” STYLE TAIL ROTOR PITCH LINK  
RETAINER

Description	Part Number	Quantity
Tail Rotor Pitch Mechanism Kit*	28-01022-1	1

\* See Figure 6 and Figure 9 for parts included in the kit.

6. SPECIAL TOOLS:

1. T-0012 Tail Rotor Rigging Tool
2. T-0055 Bearing Locator Tool
3. T-0140 Tail Rotor Rigging Tool

7. MAN-HOURS:

1. 10 man-hours to complete the conversion from right side to left side tail rotor installation.
2. 4 man-hours to install the “C/F” style pitch link retainer; if installed in conjunction with the left side tail rotor installation, only 1 man-hour is required.

8. WARRANTY: N/A

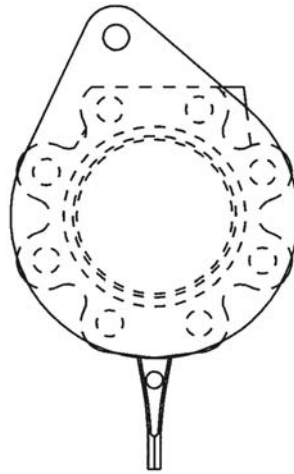
9. WEIGHT CHANGE: N/A

10. LOG BOOK ENTRY: As required for maintenance actions.

10.1. COMPONENT RECORDS:

In accordance with Type Certificate Data Sheet H1CE, Revision 23, the tail rotor blade, P/N 28-15120-1 (used on tail rotor assembly P/N 28-150022-3), has a retirement life of 4,500 hours for right side tail rotor installations; the tail rotor blade is an “On Condition” item when installed on a left side tail rotor installation. **Any tail rotor blade that was installed on a right side tail rotor installation and then reinstalled on the left side tail rotor installation after conversion must be retired at 4,500 hours.**

11. REPETITIVE INSPECTION: N/A



RETENTION PLATE ORIENTATION  
FOR LEFT SIDE INSTALLATION

Figure 1. Retention Plate Orientation.

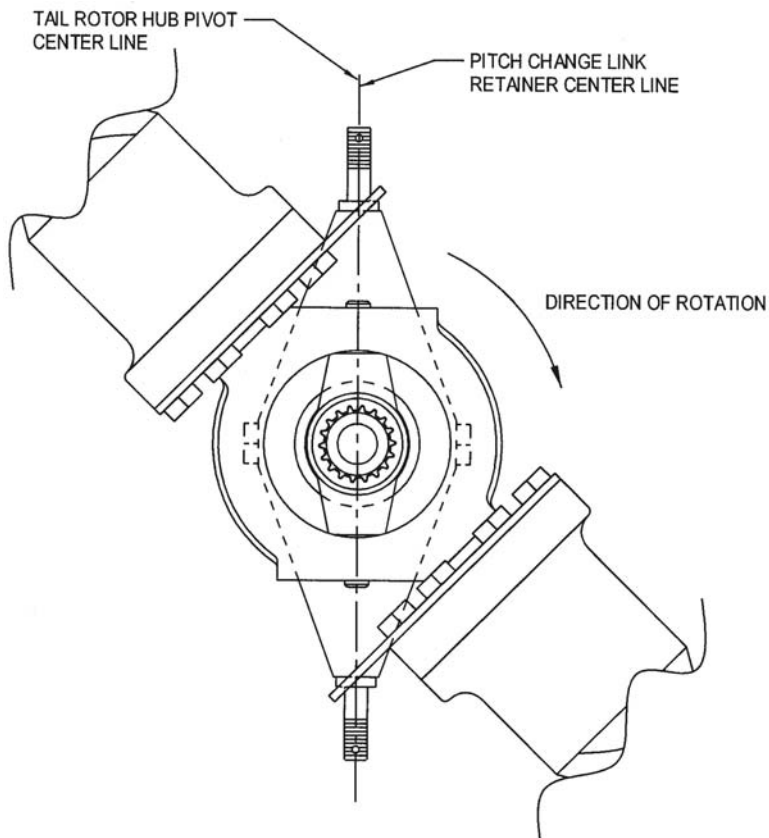
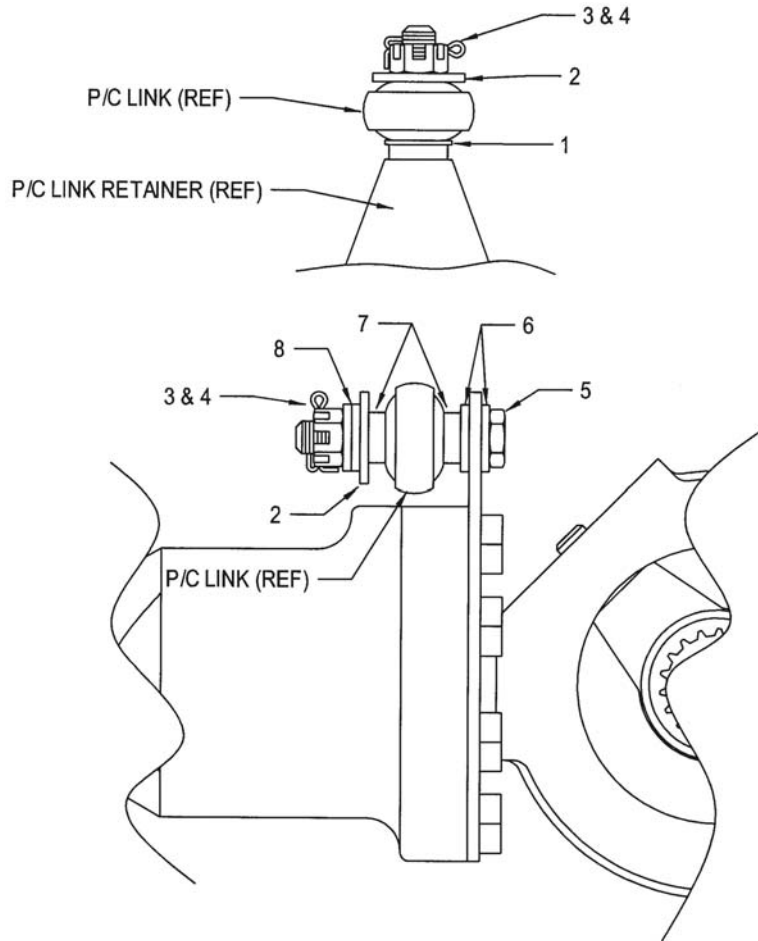


Figure 2. Tail Rotor Installation.





- |    |                                |    |                     |
|----|--------------------------------|----|---------------------|
| 1. | Washer - AN960-416L            | 5. | Bolt - AN4-XX       |
| 2. | 1/4 Harper Washer - 1/4 Harper | 6. | Washer - AN960-416  |
| 3. | Nut - F12NE4753-048            | 7. | Spacer - 28-16353-3 |
| 4. | Cotter Pin - AN381-2-8         | 8. | Washer - AN960-416* |

\* May also use 1/4 Harper, AN960-416L, AN960D416, or AN960D416L as required for dynamic balance.

Figure 3. Pitch Link Installation.

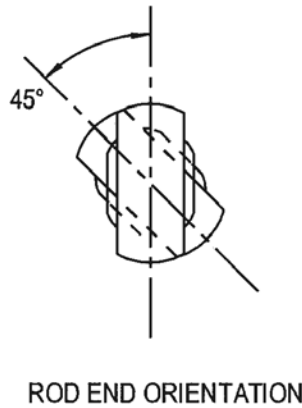
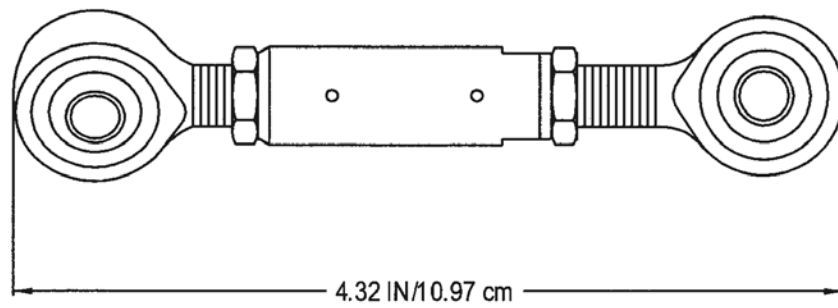


Figure 4. Pitch Link Adjustment (Retainer, P/N 28-16325-X)

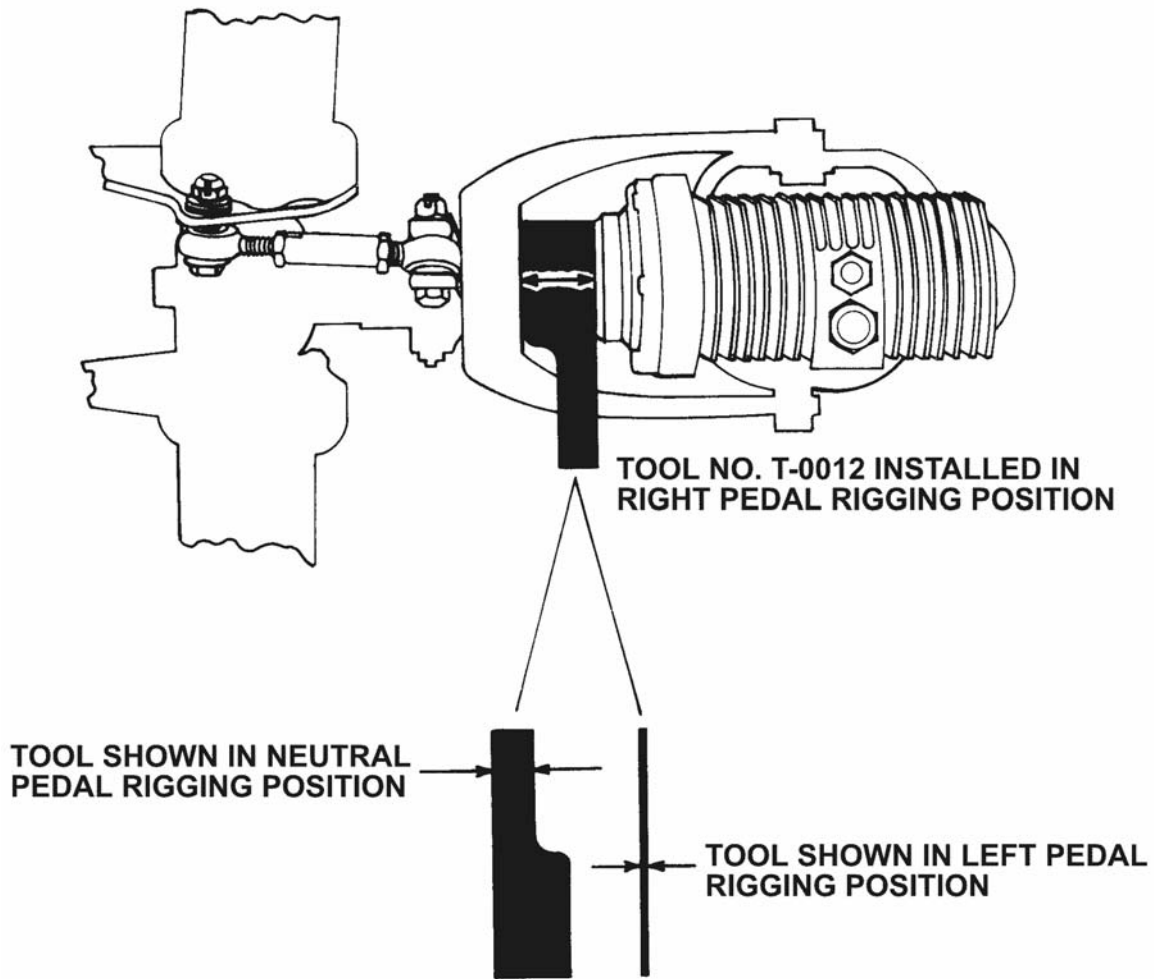
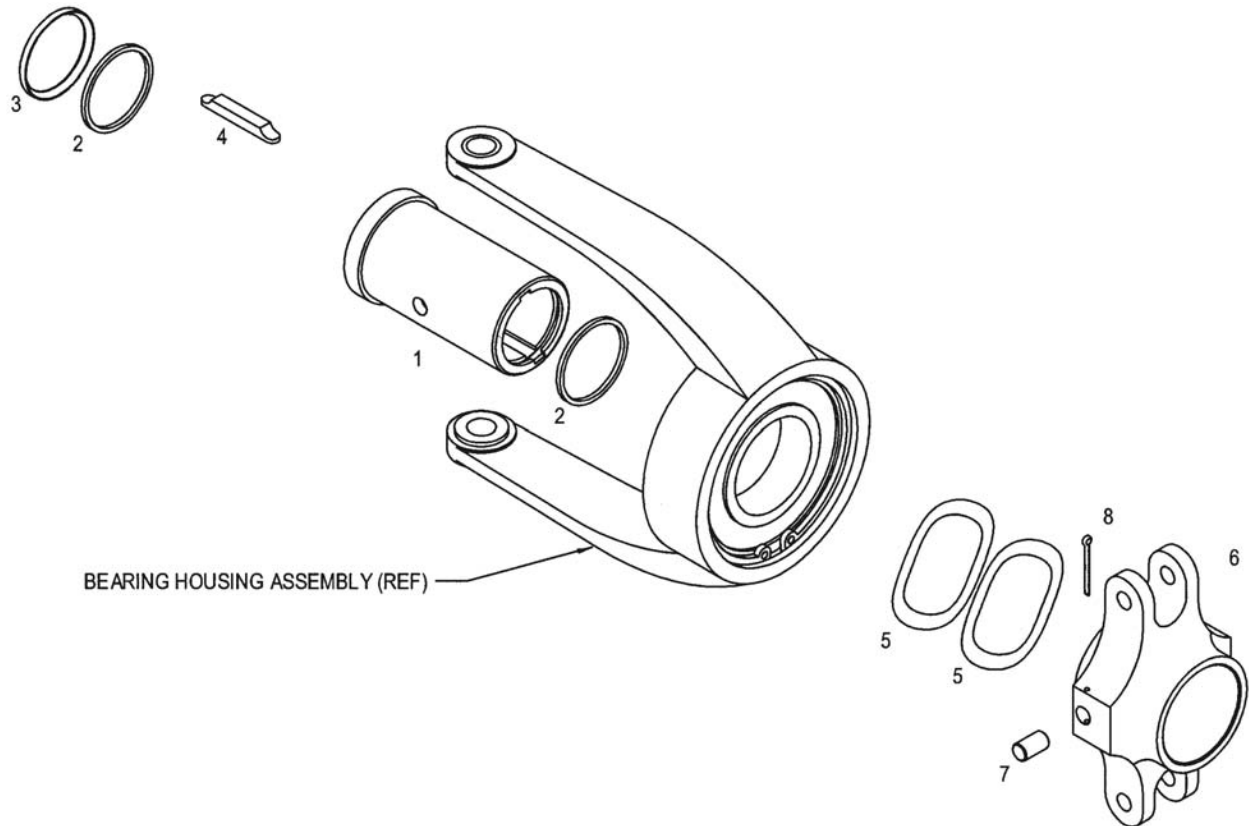


Figure 5. Rigging Tail Rotor Controls



- |    |                                    |    |                                  |
|----|------------------------------------|----|----------------------------------|
| 1. | Pitch Change Bearing* - 28-16394-2 | 5. | Washer* - W-47 (2 Ea)            |
| 2. | Seal - TS-023* (2 Ea)              | 6. | P/C Link Retainer* - 28-16392-13 |
| 3. | Seal Retainer* - 28-16374-1        | 7. | Pin* - 28-16397-11 (2 Ea)        |
| 4. | Key* - 28-16395-1 (2 Ea)           | 8. | Cotter Pin* - AN381-2-16 (2 Ea)  |

\* Included in Tail Rotor Pitch Mechanism Kit, P/N 28-01022-1

Figure 6. Pitch Change Assembly Modification.

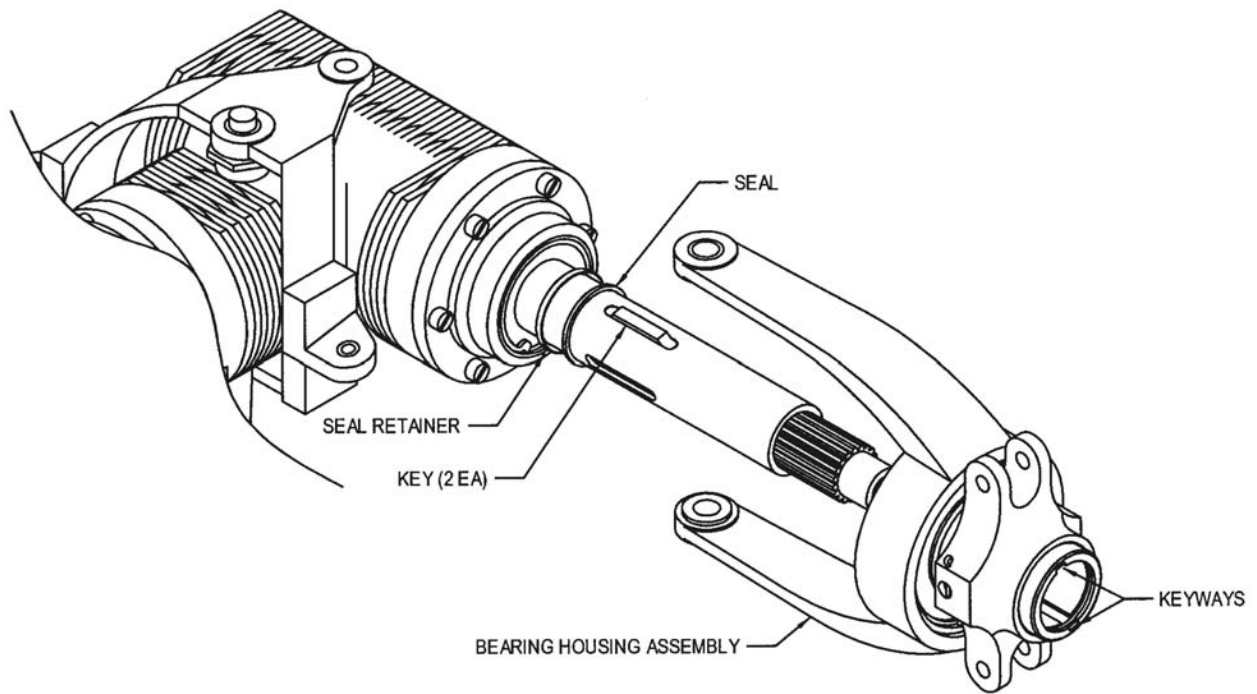


Figure 7. Bearing Housing Assembly Installation

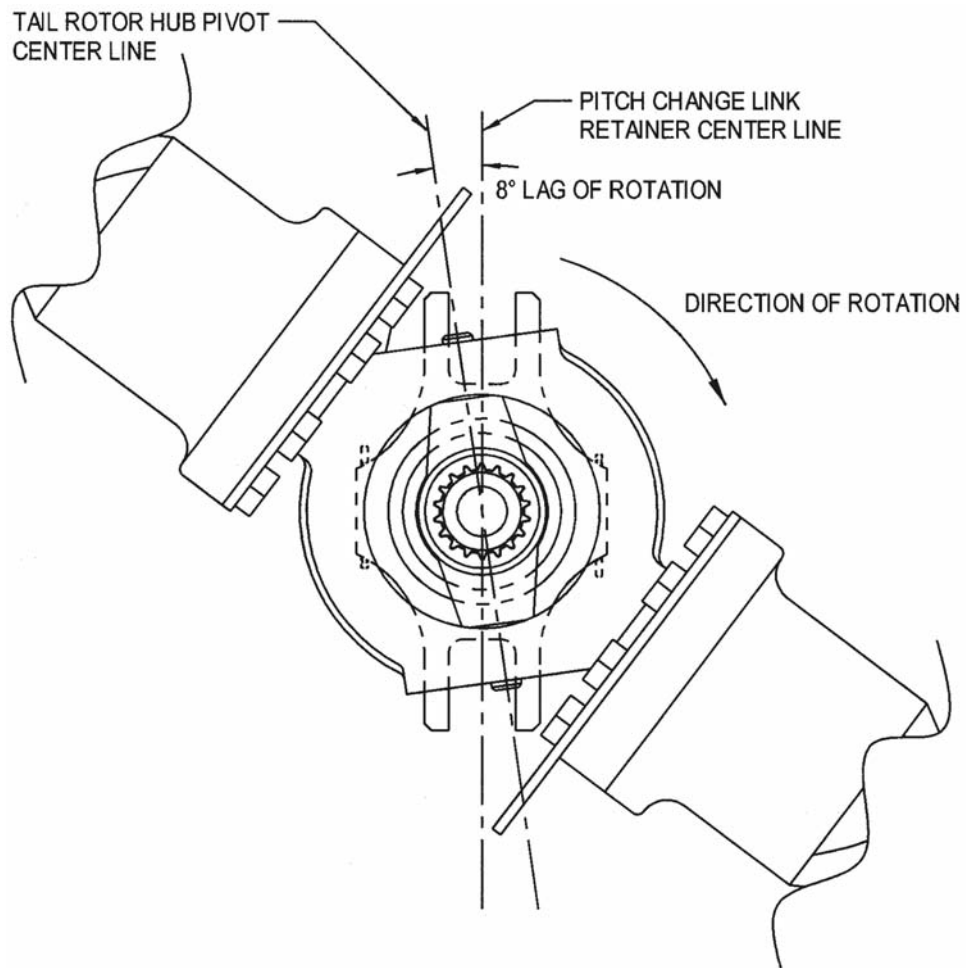
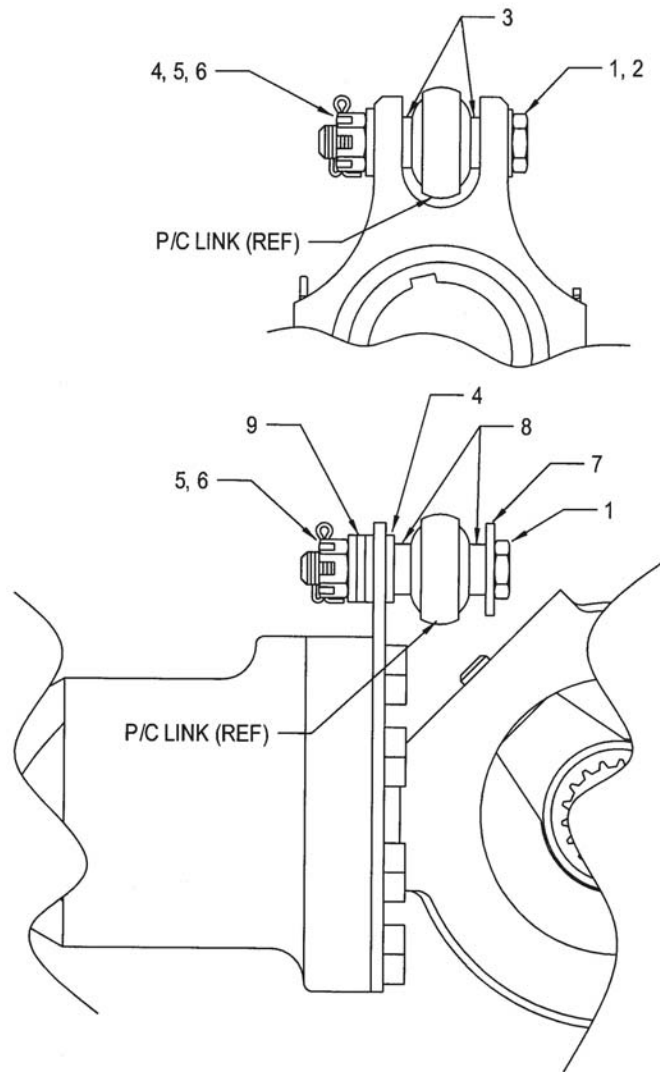


Figure 8. Tail Rotor Installation



- |    |                      |      |                                 |
|----|----------------------|------|---------------------------------|
| 1. | Bolt* - AN4-13       | 6.   | Cotter Pin* - AN381-2-8         |
| 2. | Washer* - AN960-416L | 7.   | 1/4 Harper Washer* - 1/4 Harper |
| 3. | Spacer* - 28-16353-5 | 8.   | Spacer* - 28-16353-3            |
| 4. | Washer* - AN960-416  | 9.** | Washer* - AN960-416             |
| 5. | Nut* - F12NE4753-048 |      |                                 |

\* Included in Tail Rotor Pitch Mechanism Kit, P/N 28-01022-1

\*\* May also use 1/4 Harper, AN960-416L, AN960D416, or AN960D416L as required for dynamic balance.

Figure 9. Pitch Link Installation

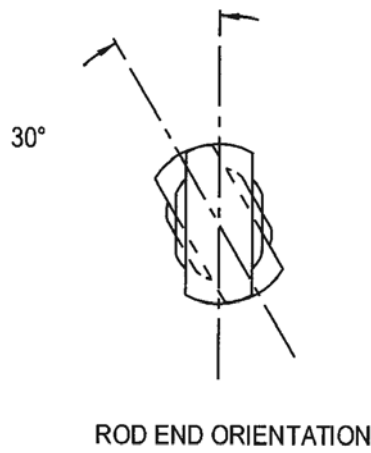
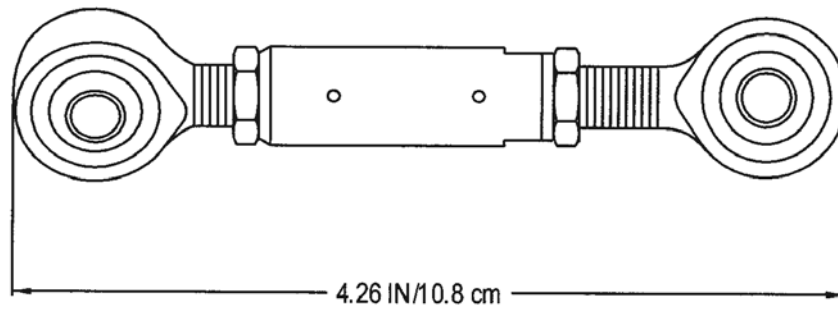


Figure 10. Pitch Link Adjustment (Retainer, P/N 28-16392-13)