



## Tail Rotor Gear Box Seal Replacement Input Shaft and Output Shaft Seals

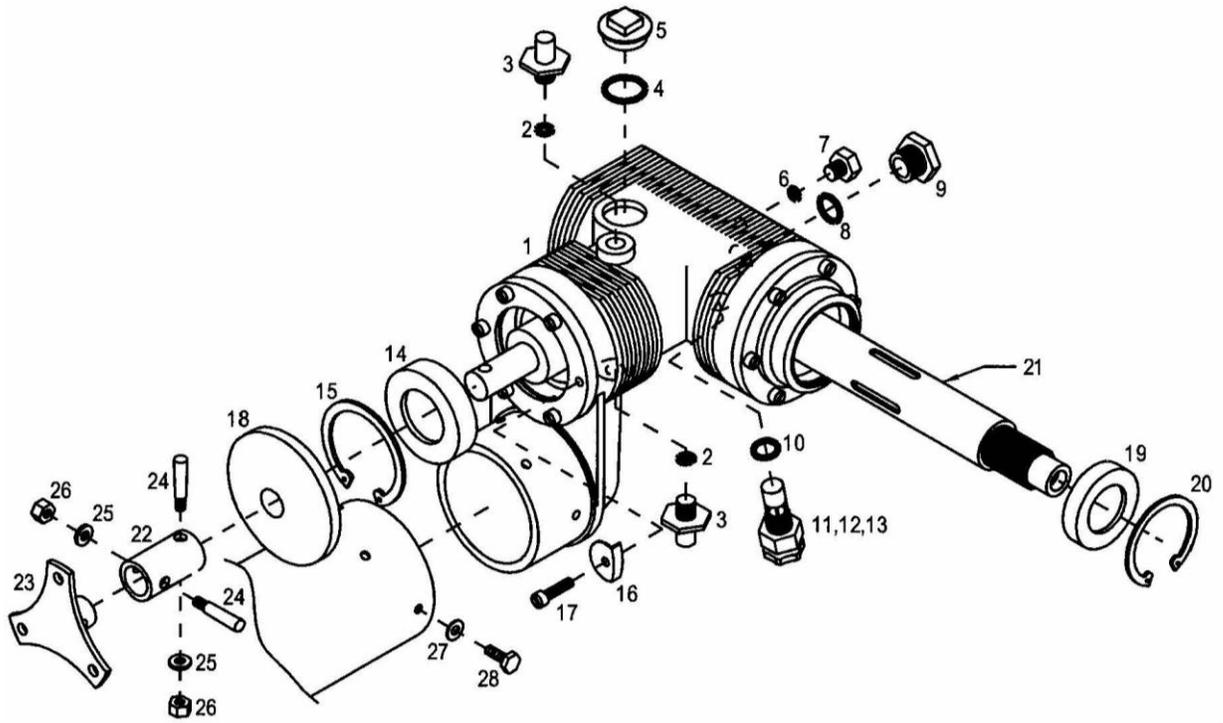


Figure 1



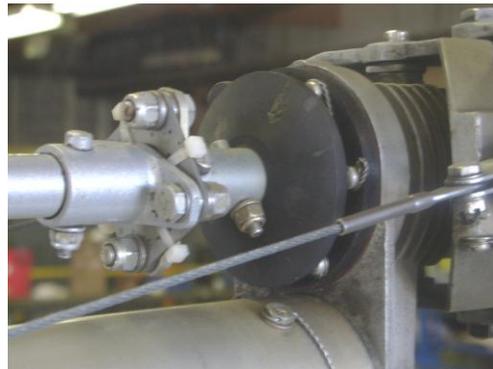
A. Changing the input seal:

1. Drain the oil from the tail rotor transmission.
2. Remove all the hardware and shims securing the aft three hanger bearings to the tail cone.
3. Mark the hanger bearings and the tail cone with an index mark so the hanger bearings can be secured back in the same position laterally.

**NOTE: Failure to align the index marks in the original position or to return the shims to the original position will require re-alignment of the tail rotor drive shaft.**

4. Tape the shims and hardware to the tail cone so that they can be re-installed in the same position.  
(Returns the tail rotor drive shaft to the same position vertically)

5. Remove the aft taper pin.

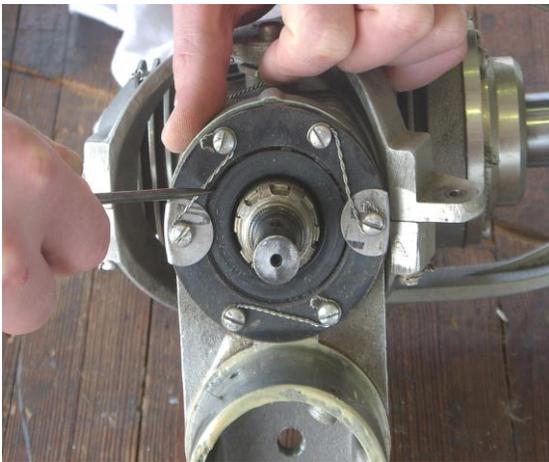


6. Carefully displace and secure the tail rotor drive shaft to one side so that the coupling can be removed from the TRGB input shaft.

**CAUTION: DISPLACE THE TRDS THE MINIMUM AMMOUNT NECESSARY TO GAIN ACCESS TO THE TRGB INPUT COUPLINGS AS DAMAGE TO THE DRIVE SHAFT MAY RESULT.**

7. Remove the flex plate coupling (23) and the coupling shaft (22) from the input shaft.

10. Remove the rain slinger (18).



**NOTE: Earlier style gearboxes will have 2 tab washers securing the input seal into the gearbox housing as shown here. Later manufactured gearboxes use a retaining ring (15).**

11. Remove the retaining ring (15) or the two tab washers which secure the seal (14) into the gearbox.

12. Use an awl or small screw driver to pry the seal out of the gearbox housing.

**NOTE: Do not remove the retaining screws that secure the bearing housing to the gearbox housing (except for the two that may secure the tab washers).**

13. Clean the tail rotor transmission seal surface and the O.D. of the new seal.

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14. Apply a small amount MIL 2105 transmission oil to the inside lip of the seal and to the outside of the seal.
15. Wrap a piece of shim stock around the input shaft retention nut and securing tab washer to protect the inside of the seal from damage.
16. Install the seal into the bearing retention housing using a soft plastic or rubber hammer or other suitable press tool to tap the seal into place.



17. Install the retaining ring (15) or the tab washers if used.
18. Torque the screws securing the tab washers to 25in lbs. if removed and lock wire.
19. Install the rubber rain slinger.
20. Install the taper pin [AN386-2-8A] in input shaft, and torque the taper pin to 25in lbs.
21. Install flex coupling. Make sure all the hardware, spacers, and washers are installed in the same way they were removed.

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22. Re-install the three hanger bearings, using the same shims, spacers, and bolts for each hanger and align the lateral index marks.
23. Torque attach bolts to 35in lbs.
24. Service the tail rotor transmission. (MIL 2105 Mobil 1 75-90).

B. Changing the output seal;

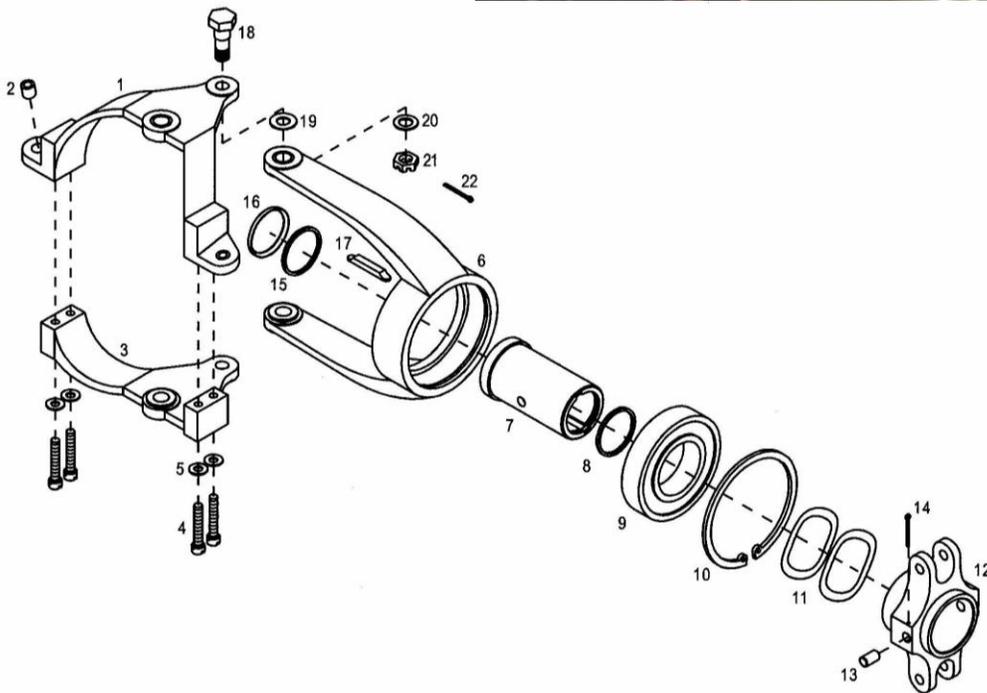


Figure 2

1. Drain the oil from the tail rotor transmission.
2. Remove the tail rotor assembly from the output shaft.

**NOTE: Index the pitch links and the tail rotor assembly to ensure reassembly in the same relative position.**

**NOTE: If the tail rotor components are not installed in the exact same position as removed, the tail rotor must be re-balanced.**

3. Remove the hardware securing the pitch change control slider bearing assembly to the pitch change bellcrank. (18 – 22, figure 2)

**NOTE: The washer (19) is a special spacer and must be installed between the pitch change assembly (6) and the bellcrank (1).**

4. Index the chrome slider sleeve to the tail rotor gearbox output shaft.

**NOTE: If the tail rotor pitch change components are not installed in the exact same position as removed, the tail rotor must be re-balanced.**

5. Remove the pitch change bearing retention assembly (6, figure 2) by pulling it out the chrome slider, away from the tail rotor gear box.

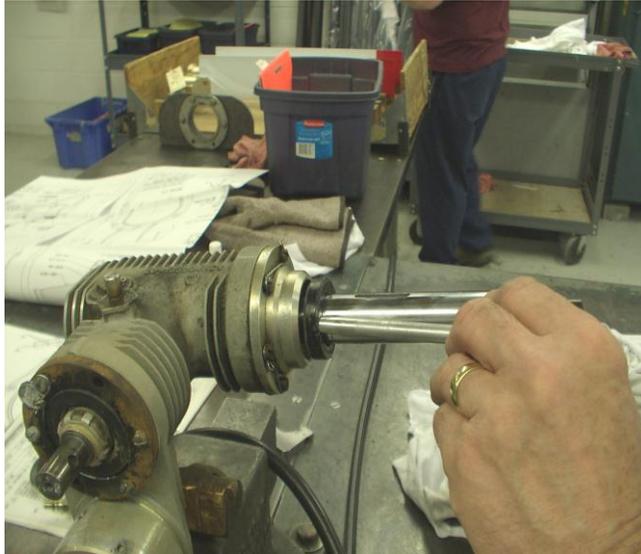
**NOTE: Resistance will be felt when removing the pitch change bearing retention assembly as the seal and seal retainer (15 & 16, figure 2) must be forced out of the bearing (7).**

6. Remove the seal (15) and the seal retainer (16) from the chrome slider.
7. Remove the retaining ring (20, figure 1).
8. Using an awl or ice pick, remove the seal (19, figure 1) from the output

**NOTE: The chrome slider may come off while the seal is being removed. It is important to re-install it in the same position on the output shaft.**

9. Clean the tail rotor transmission seal surface and the O.D. of the new seal.
10. Apply a small amount of MIL 2105 to the outside of the seal.

11. Coat the inside lip of the seal with MIL 2105 TRGB oil.



12. Install the new seal and use a punch and soft hammer (or other acceptable press tool) to carefully push the seal into position.

13. Install the retaining ring (20, figure 1).

14. Install the seal retainer (16) and the seal (15, figure 2) onto the slider shaft (21, figure 1).

15. Install the two keys (17, figure 2) into the key slots in the slider.

16. Use Shell 22 grease to lubricate the keys during installation and prior to installing the pitch change assembly.

17. Install the pitch change assembly on to the slider shaft.

**NOTE: Take care to align the pitch change assembly to the index marks. If the pitch change assembly cannot be realigned to the original index marks, the tail rotor assembly must be dynamic balanced.**

18. Install the spacers (19, Figure 2) between the pitch change bellcrank and the pitch change assembly.

19. Install the bolts, washers, and nuts (18,20,21, figure 2).
20. Torque nuts to 60 to 85 in/lbs and install cotter pins. (22)
21. Insert the seal (15) into the groove in the pitch change bearing (7, figure 2)
22. Use a small straight screwdriver or punch and a small hammer to tap the seal retainer (16) into the groove in the pitch change bearing (7 figure 2).

**CAUTION: Use of excessive force to insert the seal retainer will destroy it. BE GENTLE.**

23. Align and install tail rotor assembly in accordance with instructions in the appropriate maintenance manual and torque retention bolt to 25 ft/lbs.
24. Cycle the tail rotor pitch full travel in both directions to ensure that the pitch change system operates correctly.
25. Service the tail rotor transmission using (MIL 2105 Mobil 1 75-90).