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Service Bulletin – G3 Propeller Gearbox Front Seal Upgrade

Description

This service bulletin describes the replacement of the propeller gearbox front seal with a high temperature "Viton" seal. It is a relatively simple procedure that can be performed in approximately two hours. **Note: This document shows the procedure performed on a gearbox sitting on our assembly bench. The actual procedure is performed with the gearbox still mounted to the engine.**

Applicability

Early Generation-III (G3) gearboxes were shipped with Buna-N type front seals. These seals can be identified by their BLACK color. These seals exhibit a relatively low tolerance to heat and in some cases have developed seepage. If your gearbox is not exhibiting any seepage, you can ignore this service bulletin and simply inspect the seal periodically.

PROVIDED PARTS:

1. Viton Replacement Seal

REQUIRED TOOLS:

1. Any tools required to remove your propeller.
2. 1/16" Drill Bit and Electric Drill
3. One sheet-rock screw
4. Flat File
5. A short section of 4" diameter PVC Pipe at least 2" long.
6. Plastic mallet
7. 5/16" Allen Socket & Rachet
8. Torque Wrench
9. Acetone and Paper Towel
10. Felt Tip Pen

PROCEDURE:

1) Using a felt-tip pen, draw an index mark across the propeller and gearbox flanges so that you will be able to reinstall them in the same position the prop was balanced in. If you fail to do this, you will need to rebalance your prop after this procedure.

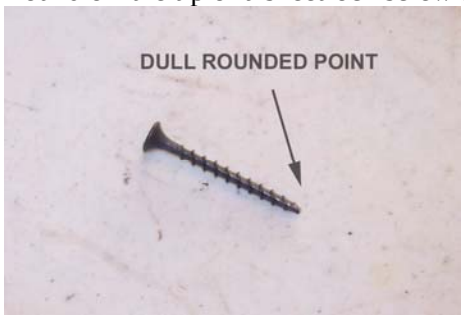
2) Remove your spinner and propeller and set them aside. Be careful not to damage the brushes when removing the propeller.
3) Using the felt tip pen, make another index mark between the prop flange and the large center nut so that you will be able to reinstall them in the same position the prop was balanced in. If you fail to do this, you will need to rebalance your prop after this procedure.
4) Drain the gearbox.
5) Using a 5/16" Allen socket, remove the 12 bolts that hold the prop flange to the gearbox drive shaft. DO NOT REMOVE THE LARGE NUT!!!


Prop Flange Allen Bolts

6) Lift the prop flange off the drive shaft and set it aside.
7) Drill a 1/16" hole through the metal face of the old seal as shown. Be careful to penetrate ONLY the seal face not the gearbox case! This hole can be in the center of the seal or slightly to the outside edge.


Carefully drill a hole in the old seal face.

8) Round off the tip of a sheetrock screw using a file or sander.



Rounded-off sheetrock screw

9) Insert the blunt sheetrock screw through the hole in the seal and screw it into the seal until the seal is jacked out of its seat. It is OK if the tip of the screw makes a small scratch in the anodized finish below the seal. It is the SIDE of the seal that prevents leakage, not the plate behind the seal. It may help to tilt the screw towards the outside edge of the seal.


Using a jack-screw to raise the old seal.

10) Remove the old seal and clean the area with a paper towel and acetone. Be very careful not to scratch the stainless steel drive shaft where the seal rides.


Remove all traces of oil

11) Wipe a tiny amount of engine oil on the inside lip of the new seal where it contacts the stainless steel drive shaft. Do not get any oil on the outer rim of the seal where it meets the gearbox case.
12) Set the new Viton seal into place and tap it very lightly with a plastic mallet to be sure the seal is started EVENLY. Do not attempt to pound the seal down into place with the mallet or you will deform the metal plate inside the seal!


Getting the seal started.

13) Using a section of PVC pipe or similar ring, drive the seal into place with the plastic mallet by slowing going around the ring several times with your plastic mallet using light blows.


Tap the seal into place with a tube.

14) Verify that the seal is properly seated. Its face will be slightly higher than the rim of the gearbox case and the seal will be flat and not deformed in any way.


A properly seated seal

15) Replace the prop flange paying attention to the index mark. Tighten the 12 allen bolts and torque to 400 INCH-POUNDS (Approx 30 ft/lbs). Do not use LocTite. These bolts thread into the stainless steel drive shaft and can be tricky to get started. Tap on them gently if necessary to get them started. Get them all started before tightening any of them.
16) Refill the gearbox with **16oz of Mobil-1 75w90 Synthetic Gear Lubricant**. The level in the glass window should be between the center 'dot' and top of the window. If you have a tail-dragger, elevate the tail when checking the level.
17) Replace the propeller and spinner paying attention to the index marks.

Congratulations, this completes the seal upgrade. Fly safe!