Tail Rotor Spindle Assembly Repair Procedure

Disassembly

1. Remove tail rotor assembly and blade assemblies in accordance with:
    a. TH28/480 Series MM-9-107
    b. F-28F/280FX Series MM-10-2
2. Clamp spindle in a vise using brass jaws to avoid damaging spindle. (*Fig-1*)

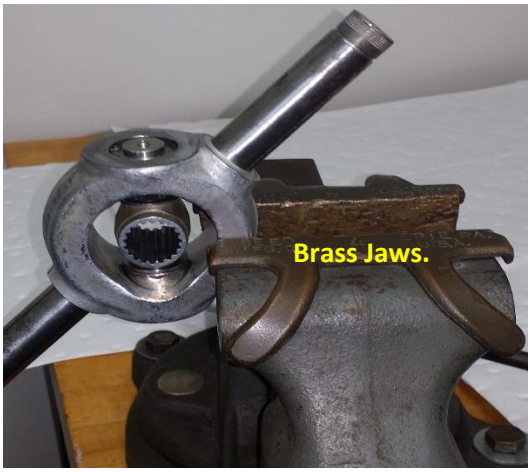


Figure 1

3. Remove snap ring. (*Fig-2*)

Figure 2

4. Remove end plate. (*Fig-3*)

Figure 3

NOTE:

When removing end plate keep track of thrust bumpers, and shims. Keep original shims and bumpers with respective end plate.

NOTE:

Inspect Thrust bumper for wear ridges on the inside, and outside diameters. Lay a strip of emery cloth on a flat surface and smooth ridges from thrust bumper surface.

5. Remove thrust bumper from end plate. (*Fig-4*)

Figure 4

6. Remove shims from end plate. (*Fig-5*)

Figure 5

7. Remove seal. (*Fig-6*)

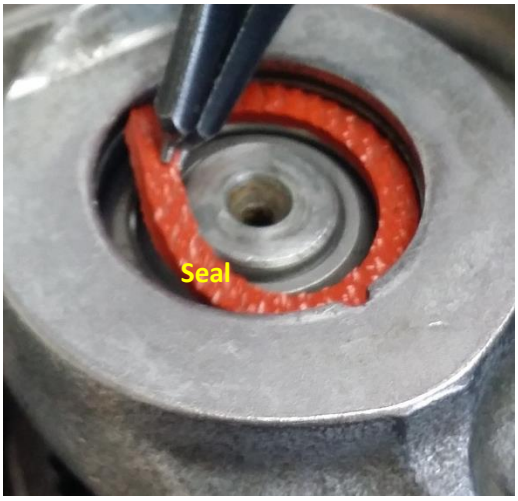
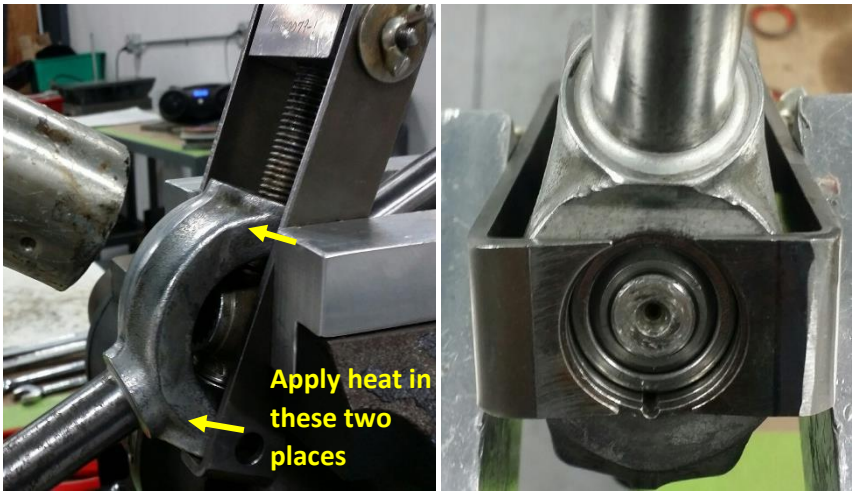


Figure 6

8. Rotate spindle in vise and repeat steps 3, 4, 5, 6, and 7, on opposite spindle ear. (*Fig-7*)

Figure 7

9. Install T-2893 on spindle, secure tool in a vise, adjust tool so that T-2893 does not interfere with bearing, and press both bearing out as far as possible. (*Fig-8*)



NOTE:

Heating the bearings to **80-100 C** will make it easier to remove the bearings.

NOTE:

Rotate hub as shown in figure 8 before pressing bearings.

Figure 8

NOTE:

Bearings will NOT come all the way out.

10. Install half-moon spacers from tool T-2893 over journals, and press out bearings with T-2893. (*Fig-9*)

Figure 9

11. Repeat step 10 on remaining bearing.
12. Heat journals and remove from hub with special tool T-2893. Repeat this step on remaining journal, and remove hub from spindle bore. (*Fig-10*)

Figure 10

NOTE:

Heat journals to **100-120 C** for 30 seconds to release the Loctite and facilitate removal.

NOTE:

a. Wash parts in cleaning solvent.

b. Wash bearings in clean solvent to prevent contamination of bearings.

13. Inspect In accordance with:
    a. TH28/480 Series *MM-9-111 – 9-118*
    b. F-28F/280FX Series *MM-10-5, F*

Assembly

1. Check hub, washers, and journals for slip fit.

NOTE:

Polish hub as required using scotchbrite pad or equivalent.

2. Apply Loctite 7649 primer to hub and journals. (*Fig-12*)

Figure 11

3. Apply a small bead of Loctite 277 to inboard I.D. of each journal. (*Fig-13*)

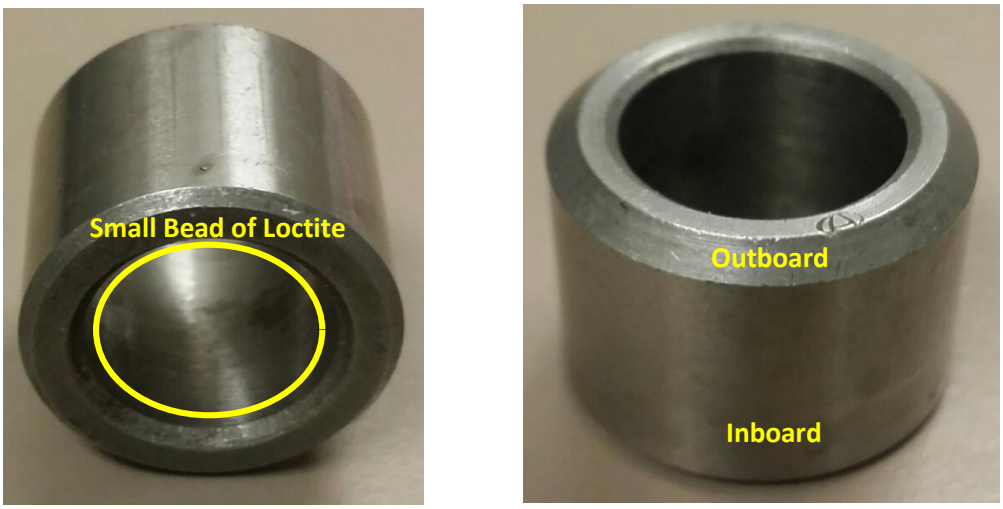
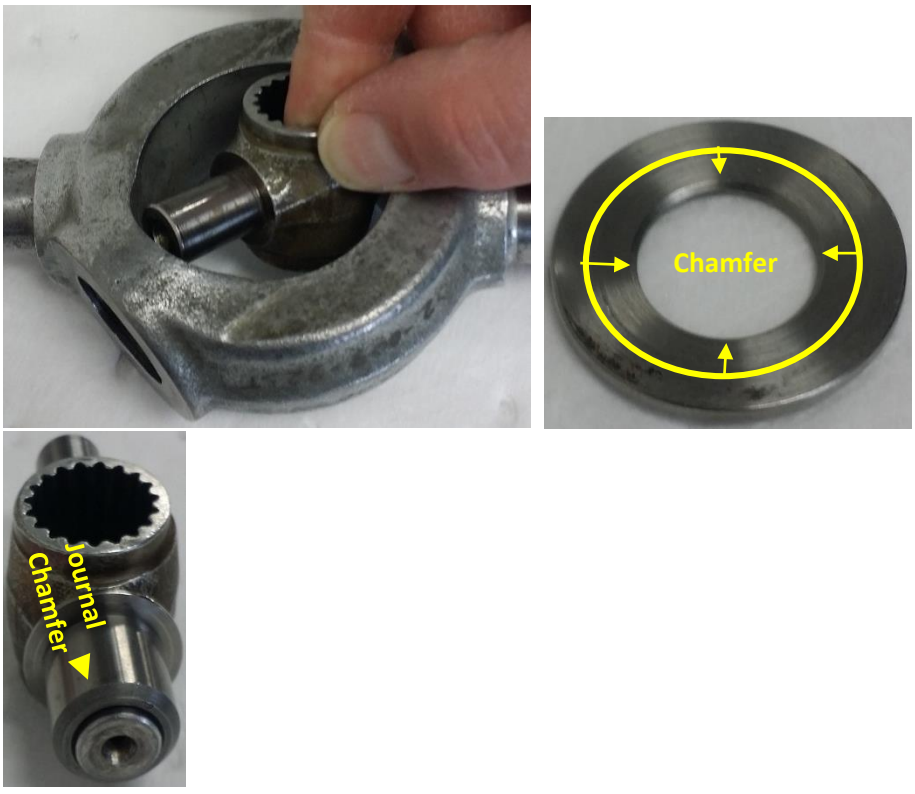


Figure 12

4. Install hub assembly into spindle bore, then install washer (chamfer inboard to hub), install journal chamfer outboard to hub. (*Fig-14*)



NOTE:

Hub must be installed in spindle before installing washers, and journals.

NOTE:

Remove excess Loctite from end hub ears, and journals.

Figure 13

5. Using two 9/16 deep-set sockets, mount spindle into arbor press, or vise, apply light pressure, and high heat for approximately 30 seconds, at **40- 80 C** (*Fig-16*)

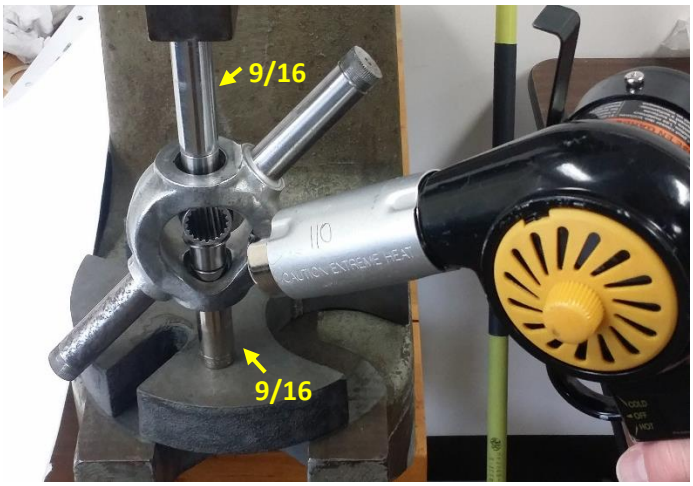


Figure 14

6. Insert bearing into spindle, flat end of bearing with writing facing outboard of spindle, and the rounded end facing inboard of spindle. (*Fig-17*)

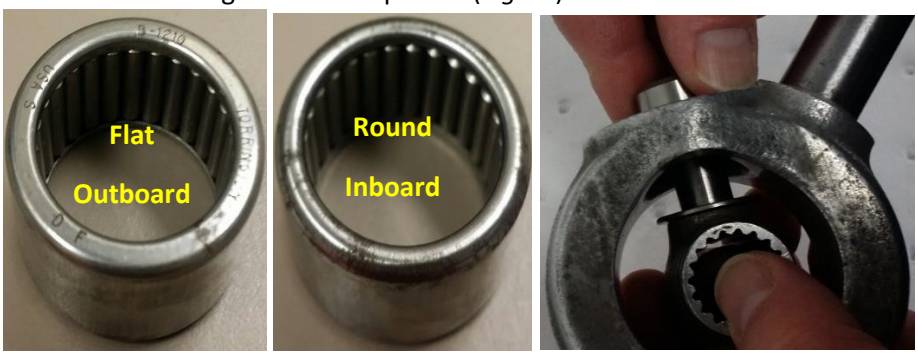


Figure 15

7. Press bearings to the depth of special tool cap. (*Fig-18*)

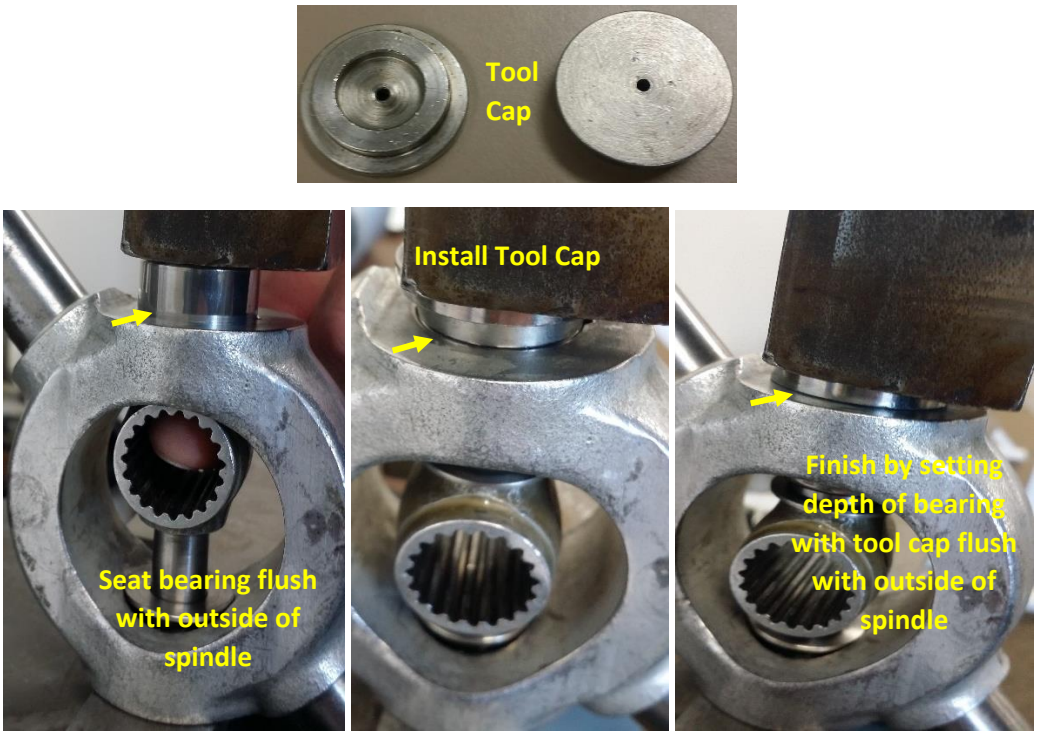


Figure 16

8. Install seal. (*Fig-19*)

Figure 17

9. Install shims into end plate, using a micrometer start with .015” on each side. (*Fig-20*)

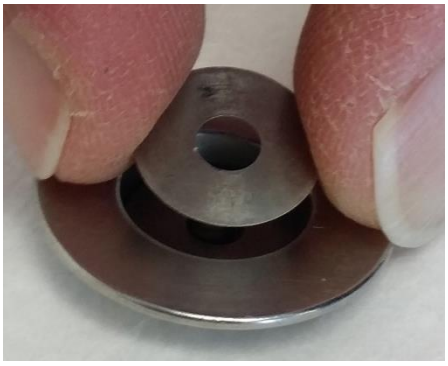


Figure 18

10. Install thrust bumper, notched end up, (notches inboard to hub). (*Fig-21*)

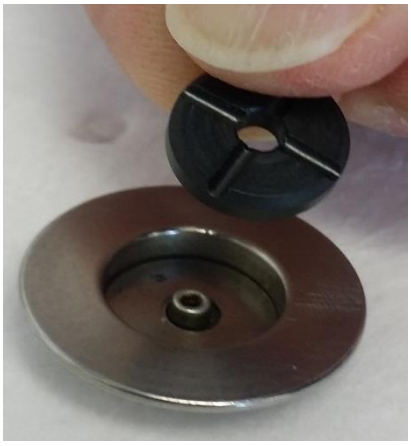


Figure 19

11. Install end plate, and then snap ring. (*Fig-22*)

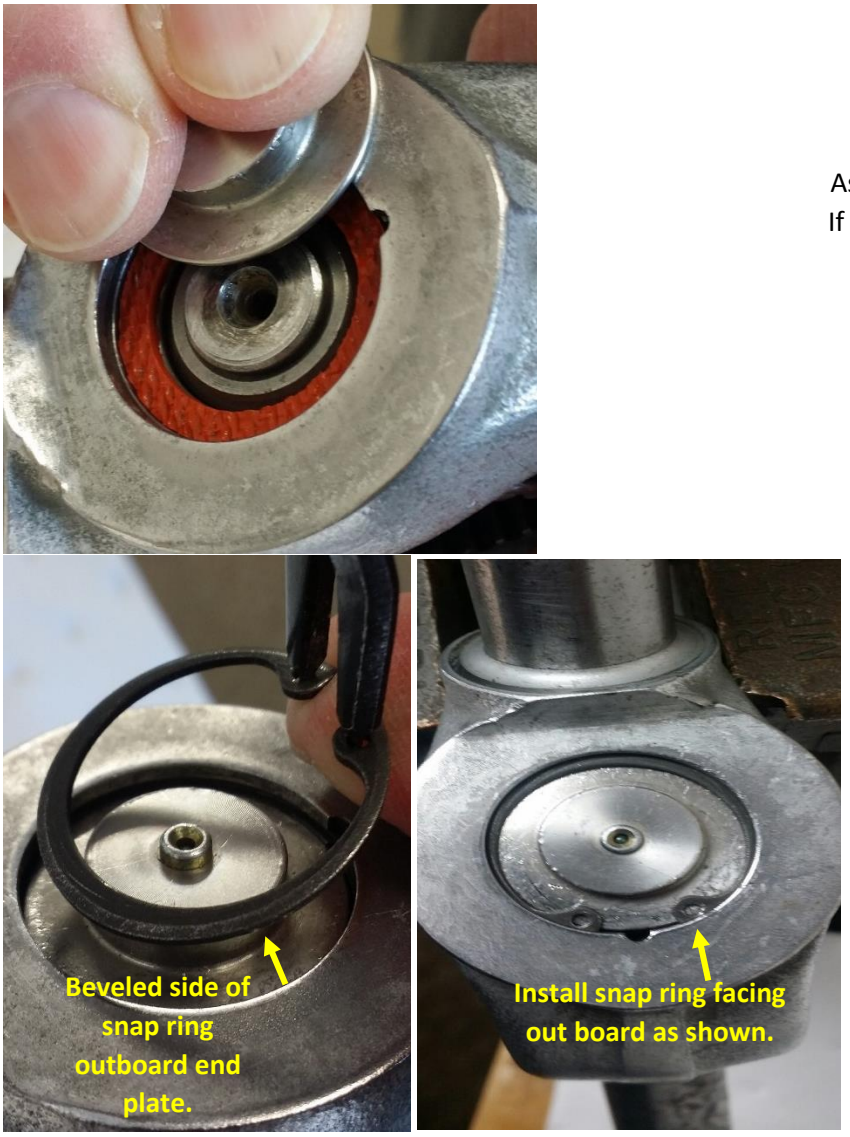


Figure 20

CAUTION:

Assure snap rings is fully seated. If snap rings are not fully seated, an incorrect preload will be obtained.

NOTE:

The snap ring has a flat side (inboard) and a beveled side (outboard).

12. Repeat steps 9 through 12 to opposite side.

13. Construct an arm to install in the hub splines and measure 6 inches from the center of the hub. (*Fig-23*)

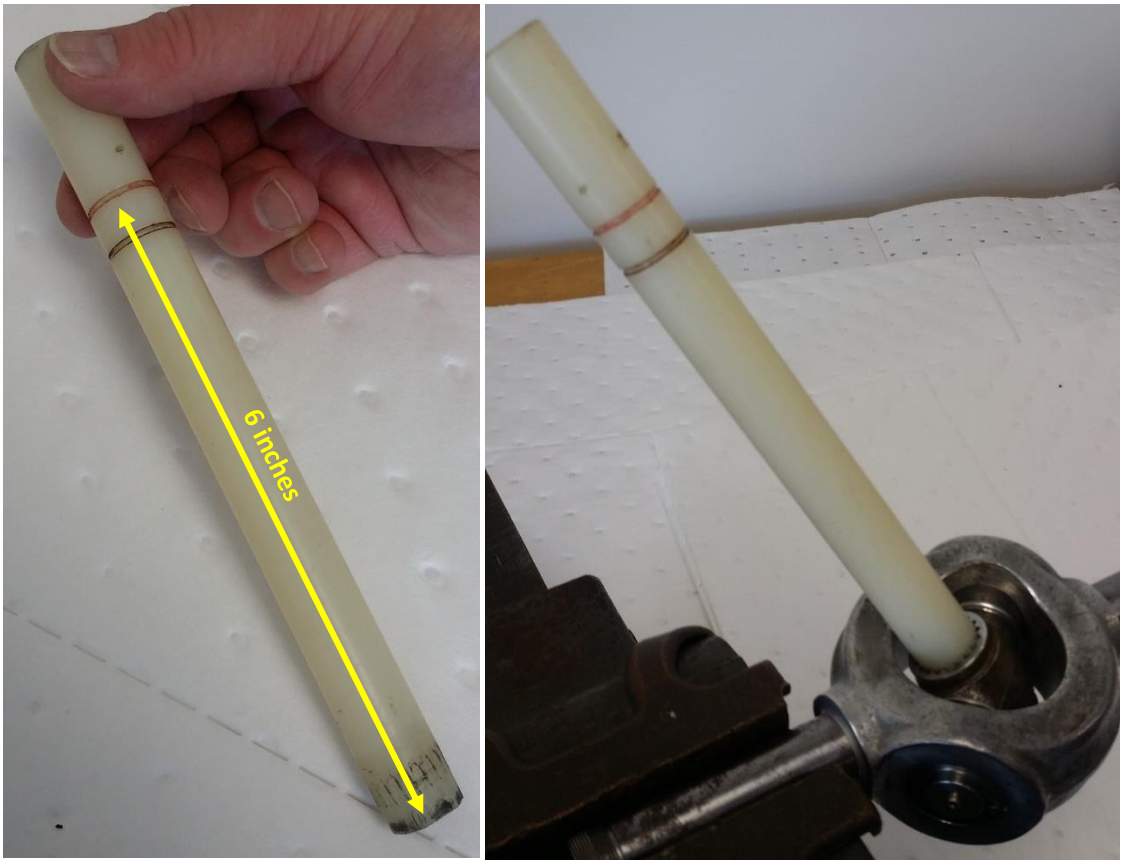


Figure 21

14. Using a spring scale, set drag to ½ to 1 lbs. break away force (*Fig-24*)

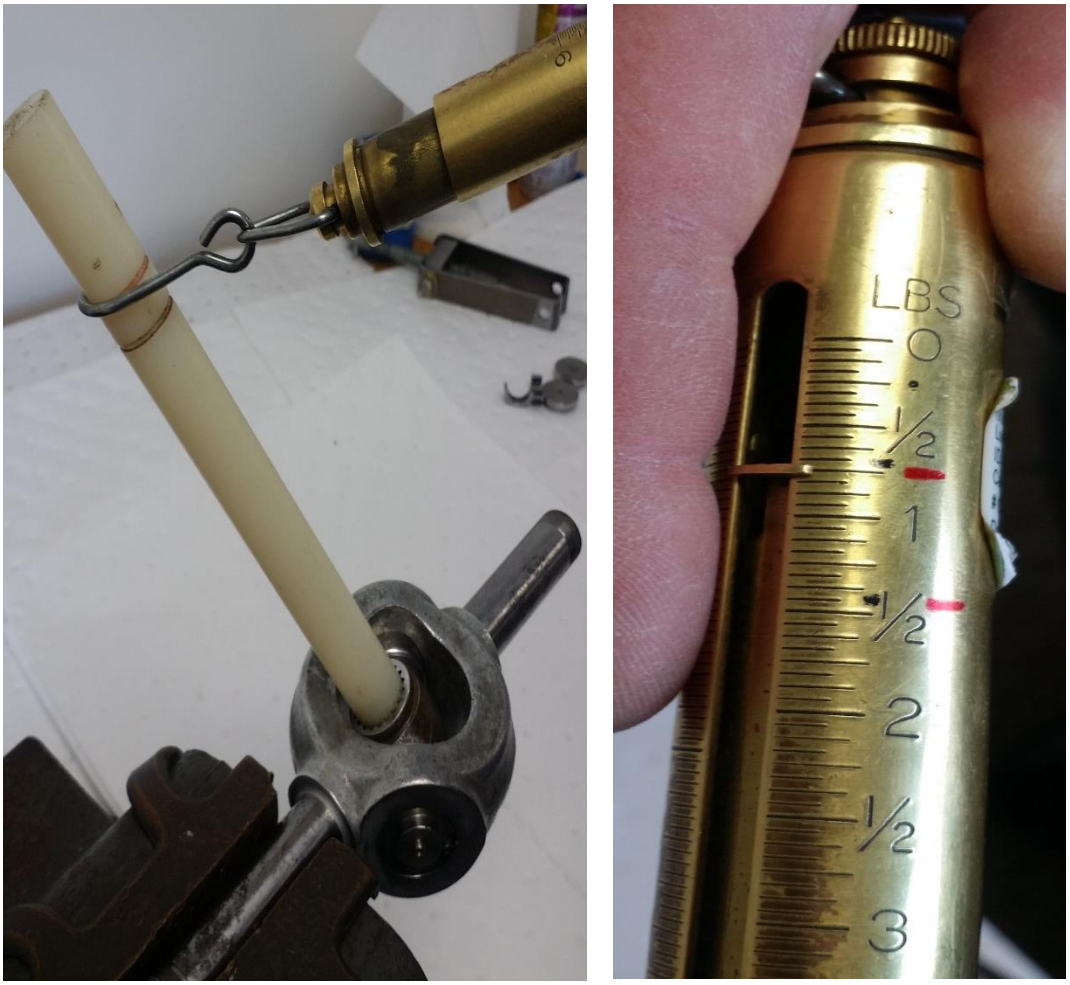


Figure 22

NOTE:

Adjust preload by adding shims (increase preload) or subtracting shims (decrease preload) until desired preload is obtained.

NOTE:

Shimming should be within .001 inches of either side.

15. Reinstall blade/grip assemblies, Tail rotor assembly, static/ dynamic balance.
    a. TH28/480 Series MM Para: 9-50 to 9-52
        i. Static balance MM Para: 9-42
        ii. Dynamic balance MM Para: 9-43
    b. F-28F/280FX Series MM-10-12 to 10-24