



# SERVICE DIRECTIVE BULLETIN

SERVICE DIRECTIVE BULLETIN NO. 0077

Revision C

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DATE:        June 5, 2020

1. SUBJECT: Tail Rotor Spindle, Enstrom P/N 28-150064-11 and -13 Life Limit Addition
2. MODEL:    F-28F, 280F and 280FX Models, and any F-28C, F-28C-2 or 280C Models that have been converted to use the 28-150064-11 or -13 spindle
3. EFFECTIVITY: As addressed in Paragraph 2, Model, and in Paragraph 5, Compliance
4. BACKGROUND:

There had been reported incidents of cracked tail rotor spindles associated with spindles configured with tapered roller trunnion bearings. The majority were found by visual preflight inspection. One instance resulted in an emergency landing due to unbalance and high vibration as a result of the cracked spindle. In order to prevent any further such occurrences, Enstrom has established a service life limit of 1,200 hours on tail rotor spindles P/N 28-150064-11 and -13.

New tail rotor spindle P/N 28-150074 had been developed as a replacement for all 28-150064-11 and -13 spindles. P/N 28-150074-11 or P/N 28-150074-13 is approved for tail rotor spindle assemblies configured with needle type trunnion bearings.

5. COMPLIANCE:

5.1 Prior to the Next Flight:

Check component records and log books to establish total time on the tail rotor spindle installed. Any tail rotor spindle P/N 28-150064-11 and -13 found with a total time of 1,200 hours or more must be replaced with an airworthy component. Spindles with undeterminable total time must be removed from service at the next 100 hour inspection or within 90 days from the receipt of this bulletin, whichever occurs first.

5.2 Prior to the Next Flight and Each Subsequent Flight:

Conduct a close visual inspection for cracks in the area around the teeter bearing bores (see Figure 1). Any spindles found cracked must be removed and replaced with an airworthy component prior to the flight.

5.3 Unless previously complied with, within the next five hours, the following dye penetrant and visual inspection of the tail rotor spindle, P/N 28-150064-11 and -13 must be performed. Note: Any ships that have had a dye penetrant inspection in compliance with Enstrom Service Directive Bulletin #0077 within the last 50 hours may delay this dye penetrant inspection until the next 100 hour scheduled maintenance. The preflight visual inspection must still be accomplished during this interim period. To perform this dye penetrant inspection, the tail rotor assembly does not have to be removed from the ship. The following step by step guide is provided to facilitate this inspection.

5.3.1 In order to expose the area for inspection, unless already accomplished, a one-time only removal and relocation of the safety wire is required.

**NOTE:** Four spindles (i.e., S/N's 11-002-90ST, 12-001-90ST, 12-023-90ST, and 13-003-90ST) originally installed new on ships (i.e., S/N 2062, 2064, 2066, and 2068 respectively) are safetied in a different manner. The safety method on these assemblies does not have to be changed as defined in this paragraph.

5.3.2 Before removing the safety wire, the bearing cap position on the P/N 28-150064-11 spindles only, must be marked with a magic marker to indicate any movement on re-safetying.

**NOTE:** Any movement or misalignment will affect the balance of the assembly.

5.3.3 The area around and under the safety wire on the inner teeter bearing bores should be closely inspected for cracks, scratches, nicks, or surface discontinuities. If any cracks are detected, the spindle must be rejected and replaced with an airworthy component.

5.3.4 Nicks or scratches .015" in depth or less can be polished out to a 32 rms finish or better. Nicks or scratches deeper than .015" are cause for rejection, the spindle must be replaced with an airworthy component.

5.3.5 Discontinuities in the forged surface at the transitions around the teeter bearing bores .045 or deeper in depth are cause for rejection and must be replaced with an airworthy component. Discontinuities in the forged surface less than .045" in depth can be returned to service.

5.3.6 Thoroughly clean spindle in the suspect area to the dye penetrant manufacturer's recommendations. See Figure 1.

5.3.7 Mask off blades and grips to prevent staining and proceed with the dye penetrant inspection per manufacturer's recommendations. See Figure 3.

5.3.8 All indications of cracks must be brought to Enstrom's attention. (Enstrom Customer Service, 906-863-1200). If any cracks are detected, the spindle must be replaced with an airworthy component.

5.3.9 After completion of the inspection, the bearing caps on the 28-150064-11 spindles must be re-safetied as illustrated in Figure 2. This illustration indicates the repositioning of the safety wire on the spindle which will allow an unobstructed view of the area to be inspected.

**NOTE:** Care must be exercised not to move the bearing caps while they are being re-safetied, check slippage marks.

5.3.10 The reworked area should be protected locally with an anti-corrosion preventative compound such as ACF-50, WD-40 or an epoxy primer.

5.4 The tail rotor can now be reassembled and the teeter bearing caps safetied per Figure 2 (28-150064-11 spindles only).

5.4.1 Remove masking and clean the area of dye penetrant residue. Position teeter stop as before, install retention bolt and washer into teeter stop, torque retention bolt to 300 in-lb/33.9 Nm and safety wire.

5.4.2 Lubricate teeter bearings and if any vibrations are noticed, dynamically balance, reference F-28F/280F Series Maintenance Manual, paragraph 10-3.

6. **SPECIAL TOOLS:**

Dye penetrant inspection kit (ASTM E165, or equivalent)

7. **ESTIMATED MAN HOURS:**

Approximately one hour for disassembly, inspection and reassembly.

8. **WARRANTY:**

None extended for inspection; cracked parts will be replaced free of charge by Enstrom with a new 28-150074-11 or 28-150074-13 tail rotor spindle.

9. **WEIGHT CHANGE:**

N/A

10. **LOG BOOK ENTRY:**

Note that dye penetrant inspection was accomplished per Enstrom Service Directive Bulletin 0077 Revision C.

11. **REPETITIVE INSPECTIONS:**

A close visual pre-flight inspection of P/N 28-150064-11 and -13 as noted in paragraph 5.2 and a dye penetrant inspection per paragraph 5.3 at all subsequent 100 hour inspections until further notice. Replacement of P/N 28-150064-11 and -13 with a P/N 28-150074-11 or P/N 28-150074-13 spindle exempts helicopters so equipped from this Service Directive Bulletin.



Figure 1: Areas of tail rotor spindle which require particular attention during pre-flight inspection.

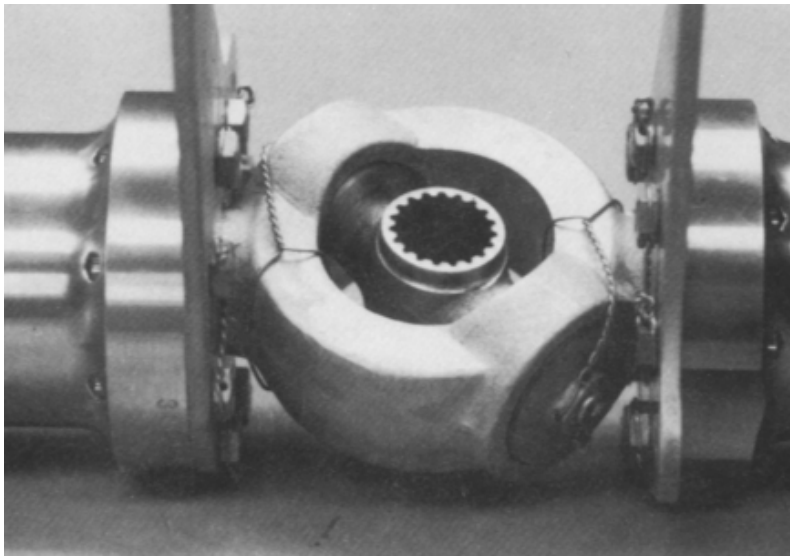


Figure 2: New safety wire method for teeter bearing cap retention.

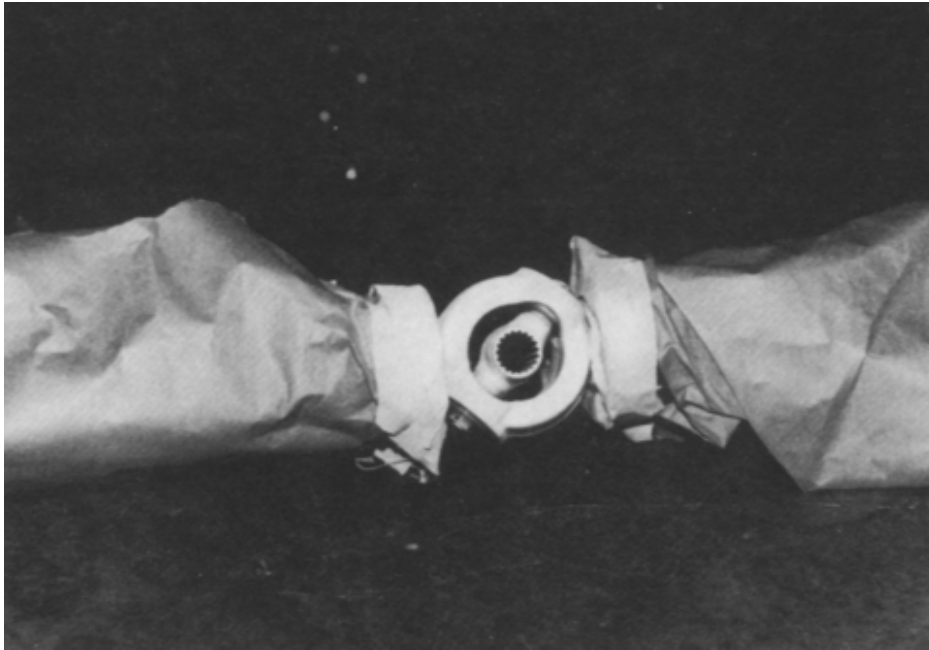


Figure 3: Tail rotor masked for dye penetrant inspection