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# SERVICE DIRECTIVE BULLETIN



DATE: October 1, 1984

SUBJECT: Narrow Chord Tail Rotor Forged Grips

MODELS: All F-28A and 280 Model Helicopters With Narrow Chord Tail Rotor Forged Blade Grips P/N 28-15012 or 28-150024-11

COMPLIANCE: As Noted In the Following Text

There have been three reported instances of narrow chord forged tail rotor blade grips P/N 28-15012 or 28-150024-11 that were found to be cracked upon inspection. There has been one accident which can be attributed to complete failure and subsequent loss of the tail rotor blade. These reported instances can be directly attributed to the occurrence of fretting corrosion between the inner surface of the blade grip and the tail rotor blade retention block. This condition was initiated and/or is aggravated by inadequate torque being maintained on the retention bolts or improper clearance between the blade grip and tail rotor blade.

The following is a description of the right and left hand assemblies in use: tail rotor blade 28-15120-1, grip 28-150024-11 and tail rotor blade and grip assembly 28-150023-1 for left hand installation; tail rotor blade 28-15120-1, grip 28-15012-1 and tail rotor blade and grip assembly 28-15017 for the right hand installation.

A. Prior to the next flight and each flight thereafter until the work called out below has been completed, visually inspect the tail rotor blade grip adjacent to the retention bolts for any evidence of cracks with at least a 10 X glass. If any cracks are detected, the blade and grip assembly must be replaced with a serviceable unit before the next flight. Ref. Paragraph C.

CAUTION: On this initial inspection, blade assemblies found to be heavily discolored or streaked with a dark black substance exiting from the blade and grip junction indicate fretting corrosion is present. These assemblies should be inspected per Paragraph B within the next 10 hours of service.

B. Prior to the next 25 hours of service or the next annual inspection, whichever occurs first, after the initial inspection called for in Paragraph"A", the tail rotor blades must be removed from the blade grips. The grips should be closely examined in the vicinity of the retention bolt holes by standard dye penetrant inspection methods. NOTE: Care must be taken not to intermix grips and tail rotor blades. If any cracks are detected, the blade and grip assembly must be replaced with a serviceable unit before the next flight. Ref. Paragraph C.

C. Tail rotor blade and grip matched assemblies that are found to be defective must be returned to Enstrom Customer Service for inspection and match drilling to a new tail rotor grip.

D. Grips found to be serviceable in Paragraph B should be closely inspected for small nicks and scratches. Any found should be locally burnished out to a smooth finish. Any fretting found on the inner surfaces of the blade grip should be closely examined for cracks and burnished out locally. If, after burnishing, any fretted area in excess of .010 inch in depth are found, the grip must be rejected. Fretted areas on the tail rotor blade root end that are local, are allowable to .015/.020 of an inch. Note: Definition of local area on the inner surfaces of the blade root end mean an area no larger than .25 inch in diameter.

E. Grips found serviceable in Paragraph D must have the edges of both bolt holes chamfered by hand using a half-inch diameter back countersink and a 3/16 pilot or equivalent tools. The 8 hole edges of the grip must be reworked to a .015 x 40° chamfer.

F. Tail rotor blades found serviceable should have a coat of Ever—Lube (dry lubricant) MIL-P-16232 applied to the retention blocks that contact the blade grip to reduce the possibility of future fretting.

G. Tail rotor blade assembly P/N 28-15120-1 and tail rotor grip P/N 28-150024-11 or 28-15012-1 that have been found serviceable per Paragraphs B and D and have been reworked per Paragraphs E and F can now be reassembled.

1. Insert the tail rotor blade into the blade grip, and by the use of a feeler gauge, determine the amount of clearance between the blade retention block and the blade grip clevis. If the clearance measured is in excess of .002/.0025 inch, stainless steel shims must be used to fill this gap. A gap or out of parallel clearance of .002 to .0025 inch is allowable.

2. Blade and grip assemblies indicating an excess of .002 to .0025 inch out of parallel must be rechecked by measuring the tail rotor blade retention blocks. If this measurement indicates that an excess of .002 to .0025 inch variation exists across the face of the retention block, the assembly must be returned to the factory for rework.

   NOTE: Standard shims of .003, .005, and .007 of an inch thick are available for this requirement from Enstrom Customer Service (P/N 28-15136-3, -5, -7).

H. Blade and grip units that have been inspected per Paragraph G, Items 1 and 2, can now be reassembled.

1. Assemble blade to grip with shims as predetermined in Paragraph G and insert bolts.

   NOTE: A light coat of Lubri-Plate or other lubricant is recommended on bolts to reduce galling.

2. The blade retention bolts should not be fully torqued until after assembly onto the tail rotor spindle. This is to insure that during the preheating for assembly no damage will result from the expansion.

3. The blade retention bolts are torqued to 55-75 inch-pounds after assembly, as noted in (2) above.

I. Tail rotor blade and grip assemblies 28-15017 and 28-150023-1 that have been inspected and reworked per this Service Directive Bulletin can be returned to service.

J. Inspection requirements thereafter:

1. A daily visual walk-around.

2. A close visual with a 10 X glass at 50 hour inspections for cracks.

3. A torque check at 100 hours inspections.

NOTE: After assemblies have been in service, loss of torque on the retention bolts, or a fretting indication are cause for reinspection per this Service Directive Bulletin.