



SERVICE DIRECTIVE BULLETIN

SERVICE DIRECTIVE BULLETIN NO. 0083

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DATE: July 16, 1993

1. SUBJECT: Wrapped Main Rotor Shafts P/N 28-13183, All Versions
2. MODEL: All Enstrom F-28A, 280, F-28C, F-28C2, 280C, F-28F, 280F and 280FX model helicopters that have composite wrapped rotor shafts mounted in their transmissions
3. EFFECTIVITY: Prior to the next flight and as addressed under Compliance section of this Bulletin
4. BACKGROUND:

One incident of a wrapped main rotor shaft was found with a crack located just below the upper radius. It should be noted that the crack was not visible on the outside diameter of the shaft because it was located under the composite covering. The crack however, was visible on the inside diameter of the main rotor shaft. After removal of the composite covering at the crack location, the mast surface was found to be heavily corroded around the complete circumference with heavy scaling and pitting at the crack origin. At the time of detection, the crack had progressed approximately 1/2 the distance around the shaft circumference.

The following flight characteristics were evident in the helicopter described above: The helicopter developed a moderate to heavy one-per-rev bounce. The helicopter was untrackable and did not respond to manual track adjustments.

5. COMPLIANCE:
 - 5.1 Prior to the next flight, all Enstrom model helicopters noted in paragraph (2) that have a composite wrapped main rotor shaft installed, must have a close, one time inspection of the main rotor shaft for composite separations, signs of corrosion, or internal circumferential cracks as follows:

- 5.1.1 Closely inspect the termination points of the composite wrapping at the top and bottom of the rotor shaft. Any shafts evidencing separation between the composite wrapping and rotor shaft, which may or may not be accompanied by a reddish residue, must be removed from service and replaced by an airworthy component prior to further flight.
- 5.1.2 The upper inner bore of the rotor shaft, approximately 6 inches down from the top of the shaft, should be closely inspected with a small mirror and light for any evidence of circumferential cracks. In order to accomplish this inspection, it is necessary to first disconnect the push pull tubes from the inner end of the upper pitch change bellcrank, and then remove the pivot bolts from the pitch change bellcranks to allow the inspector better access or visibility of the inner diameter wall. Careful inspection is required, and moving the push pull tubes to allow complete inspection of the full circumference is essential. Note: Extreme care should be exercised during bolt removal to reduce the possibility of dropping hardware down the inside diameter of the shaft. Any rotor shaft found with any crack indications must be removed from service and replaced with an airworthy component.
- 5.2 Prior to the next 10 hours of service, or the next 100 hour or annual inspection, whichever occurs first from the date of this Service Directive Bulletin, all Enstrom model helicopters equipped with composite wrapped main rotor shafts must have them removed and replaced with an airworthy shaft (P/N 28-13140-11).
- 6. MAN HOURS REQUIRED:

Approximately one hour for the one time inspection.
- 7. WARRANTY/SPECIAL PRICING:

For all owners of Enstrom helicopters with a composite wrapped shaft, see attached Special pricing information, Advisory No. 006.

8. WEIGHT CHANGE:

Not applicable.

9. LOG BOOK ENTRY:

Note one time inspection was made and initialed.

10. REPETITIVE INSPECTIONS:

None, one time inspection only, retirement of the shaft is mandatory prior to the next 10 hours in service.