



SERVICE DIRECTIVE BULLETIN

SERVICE DIRECTIVE BULLETIN NO. T-054

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DATE: February 3, 2017

1. SUBJECT: Lamiflex Bearing Inspection (P/N 28-14320-15)
2. MODEL: 480: S/N 5001-5004, 5006
3. EFFECTIVITY: Immediately (see paragraph 5.1) or within the next five hours of service or the next 30 calendar days, whichever comes first
4. BACKGROUND:

There have been several recent lamiflex bearing failures in which the bearing partially delaminated and started to extrude rubber and brass. Continued operation of the helicopter resulted in complete delamination and an extremely rough ride. The exact cause of the delaminations is under investigation, however, both grease contamination and rotor overspeed may have contributed to the premature failures.

Partial delamination of a lamiflex bearing in flight can result in the onset of a moderate to severe one-per-rev airframe vibration and cyclic stick vibratory feedback. If flight is continued, a severe worsening of this condition can occur threatening the controllability of the aircraft.

CAUTION

Precautionary landing and immediate inspection may be required.

If an operator encounters any of the following symptoms noted in paragraph 4.1 through 4.4, the operator should land the helicopter at his first opportunity utilizing a power-on reduced airspeed descent with minimal maneuvering and minimal collective input. **The lamiflex bearings should be inspected per paragraph 5.2 prior to further flight.**

- 4.1 A significant deterioration in ride quality during flight.
- 4.2 A smooth rotor system suddenly losing track and/or difficulty in maintaining a smooth track.

- 4.3 A trimmable aircraft becoming untrimmable, or developing high cyclic stick forces.
- 4.4 Any sudden abnormal feedback from the cyclic or collective controls, followed by a moderate to severe one-per-rev vibration.

5. COMPLIANCE:

- 5.1 The following inspection should be performed immediately if the helicopter exhibits any of the symptoms listed in paragraphs 4.1 through 4.4. Otherwise, the inspection shall be performed at the next scheduled 100-hour or annual inspection, whichever comes first.

5.2 INSPECTION CRITERIA:

All lamiflex bearings must be inspected to the following criteria.

A good serviceable lamiflex may exhibit a light to moderate layer of black to medium gray, fine, dry, elastomeric residue on the outside diameter or otherwise appear clean and free of residue. The outside diameter should be smooth, free of burrs and sharp edges and show no signs of delamination.

NOTE: Perform all maintenance in accordance with TH-28/480 Series Maintenance Manual (MM) unless noted otherwise.

- 5.2.1 Remove the main rotor blade, if required.
- 5.2.2 Remove the dust cover.
- 5.2.3 Inspect the dust cover interior for brass residue (chips or flakes). Any evidence of brass chips or flakes is cause for immediate rejection of the lamiflex.
- 5.2.4 Clean the lamiflex surface area with a clean cloth dampened with denatured alcohol. **Do not soak the bearings.**
- 5.2.5 Inspect the bearing for evidence of bulging around the outer circumference of the elastomer segments, excessive axial swelling, visual delamination of the segments or the expulsion of shim fragments on the outside diameter. (See examples in Figure 1.) Any indications are cause for immediate rejection of the lamiflex.
- 5.2.6 Using a marker, draw a horizontal line across the bearing to aid inspection of the lamiflex segments and the lamiflex spring back while feathering the grip (Figure 2).
 - 5.2.6.1 Disconnect the pitch links from the walking beams.

CAUTION: Do not over pitch the grip.

5.2.6.2 Feather the grip 1-3” at the trailing edge to check the response of the segments and to check the spring back of the lamiflex. The line should remain straight across while the grip is feathered (Figure 2). If the line doglegs at a segment, it indicates delamination in the lamiflex. Any delamination is cause for immediate rejection of the lamiflex (Figure 2).

5.2.6.3 The feather action should be light and smooth. When the grip is released from the deflected position, there should be a tendency of the grip assembly to spring back. If a grip spring return is stiff, the lamiflex requires reshimming. Reshim in accordance with the TH-28/480 Series MM, paragraph 9-18, A, (16).

5.2.7 Connect the pitch links to the walking beams.

5.2.8 Install the dust cover.

5.2.9 Install the main rotor blade, if necessary.

6. SPECIAL TOOLS: None

7. MAN-HOURS: 1 hour

8. WARRANTY: Per Enstrom Warranty Policy

9. WEIGHT CHANGE: Not applicable

10. LOG BOOK ENTRY: A log book entry of this inspection is required.

11. REPETITIVE ACTION:

11.1 This inspection shall be performed any time an operator encounters symptoms as described in paragraph 4.1 through 4.4.

11.2 This inspection shall be performed at all 100 hour intervals or annual inspections.

11.3 All inspections require log book entries per paragraph 10.

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Figure 1. Early stage of delamination (top, at the arrow tip), rubber extrusion (middle, left and right), and rubber extrusion with shear (bottom)

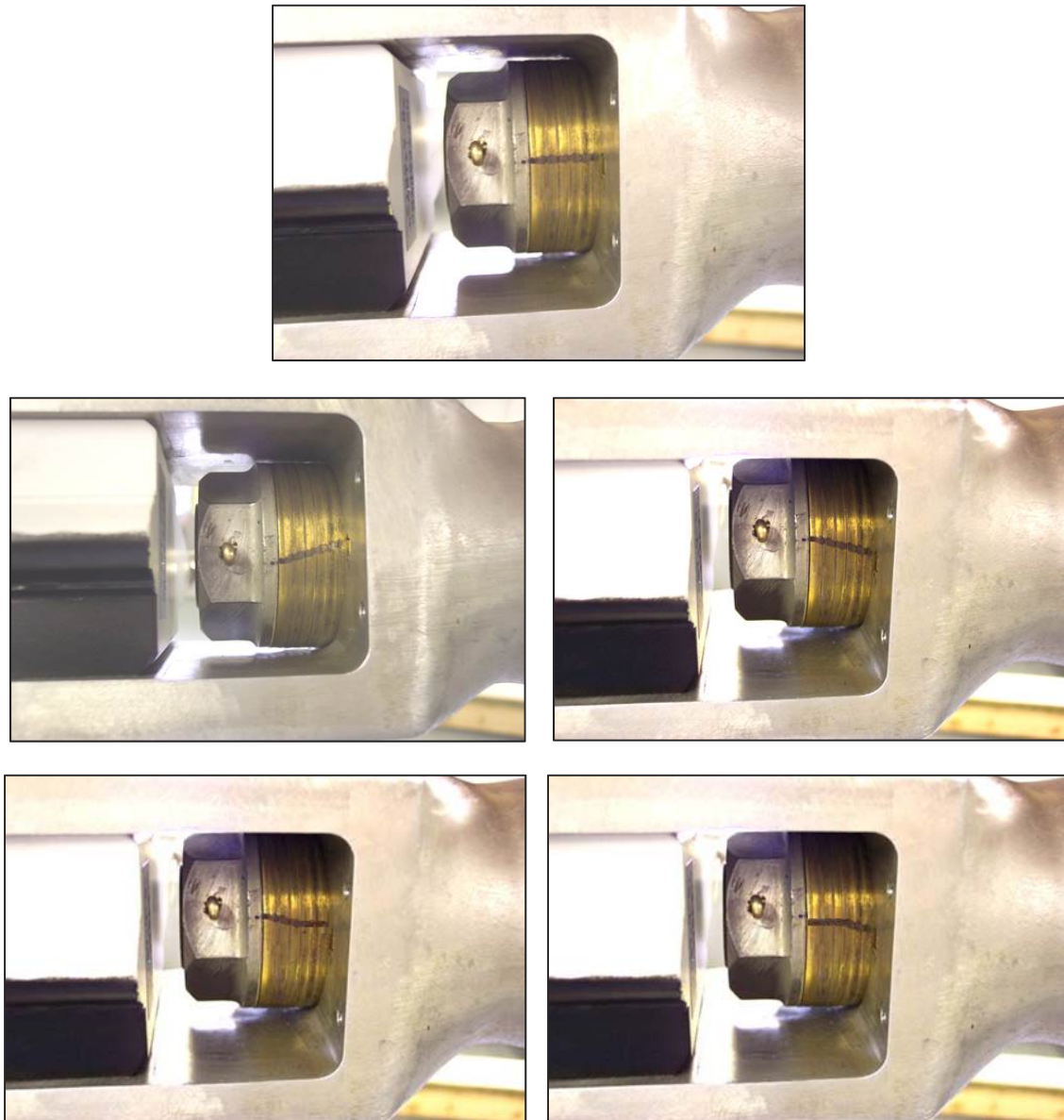


Figure 2. An inspection line drawn across lamiflex (top); then the blade is feathered up and down. A slanted, linear indication while the blade is feathered demonstrates an acceptable lamiflex (middle, left and right).

A non-linear indication while the blade is feathered demonstrates a delaminated lamiflex and is cause for rejection (bottom, left and right).