ENSTROM HELICOPTER CORPORATION
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SERVICE DIRECTIVE BULLETIN

DATE: December 4, 1996

1. SUBJECT: Main Rotor Gearbox, P/N 4130020, Cracked Ring Gear Carrier

2. MODEL: TH-28/480, Main Rotor Gearbox S/Ns 04-001-93, 05-001-93LM, 05-003-93-LM, 01-001-94LM, 02-001-94LM, 02-002-94LM, 02-003-95LM, 02-004-95LM

3. EFFECTIVITY: Within the next five flight hours and every 50 hours thereafter until further notice

4. BACKGROUND:

Enstrom has had one incident of a cracked ring gear carrier after approximately 700 hours time in service. There was no damage to the helicopter since this condition was discovered during main rotor gearbox disassembly. However, if such a condition went undetected until an in-flight failure, the consequences could result in loss of the aircraft. The crack itself, may be undetectable without complete main rotor gearbox disassembly, but appears to exhibit itself by generating aluminum oxide from the cracked fretting surfaces. The oxide colors the oil very dark and leaves a black residue on all interior surfaces of the gear housing. No other noise or temperature indications were noted as a result of the crack, however, an accumulation of black sludge on the chip detector may also give reason to suspect the problem.

5. COMPLIANCE:

If not already complied with, the owner/operator must within five hours of the receipt of this bulletin:

5.1 Pull the magnetic plug and check for accumulation of black residue or sludge (Note: Some sludge is normal but is normally gray in color).

5.2 Drain the transmission oil and check the color of the oil. Note: Black oil may be a sign of aluminum surface fretting.

5.3 Collect a sample of the oil in the bottle provided following the instructions with the bottle and return it to Enstrom Customer Service, DHL, freight collect in the envelope provided. Identify the aircraft S/N, main rotor gearbox S/N, total flight time on gearbox, and time since last oil change on the tag provided. Enstrom will automatically provide you another oil sample kit and return envelope upon receipt of your first sample.

5.4 Remove the upper inlet air plenum, then pull the pinion gear inspection cover and inspect the ring gear carrier top surface. An accumulation of black residue on the interior casting surfaces is indicative of the problem. Note: The previous carrier (ie, the incident noted in Paragraph 4) cracked on the bottom surface. This area is not visible through the inspection cover. Any cracks noted on the top surface of the ring gear carrier should be reported immediately to Enstrom Customer Service.

If the accumulation of sludge, color of the oil, or interior residue appear to confirm the presence of aluminum oxide, notify Enstrom's Customer Service Department for further action.

If the accumulation of sludge (ie, some gray sludge is normal), color of the oil, or interior surfaces appear normal, clean the magnetic plug, replenish the oil, and resume operations.

6. MAN HOURS REQUIRED:

Approximately two hours.

7. WARRANTY/SPECIAL PRICING:

Two hours of labor. Submit warranty form. Enstrom will provide oil sample analysis kits on a N/C basis.

8. WEIGHT CHANGE: Not applicable.

9. LOG BOOK ENTRY: Note inspection and results.

10. REPETITIVE INSPECTIONS:

The inspections noted in Paragraphs 5.1, 5.2, and 5.3 are to be repeated every 50 flight hours until further notice. Additional oil analysis test kits will be provided by Enstrom Customer Service.

NOTE: The 50 hour repetitive inspection noted above is only required for the serial numbered main rotor gearboxes noted under model number in this revision. Main rotor gearboxes which have been upgraded with a 28-13106-3 ring gear carrier are exempt from the initial and all subsequent inspections. All model 480 aircraft, S/N 5011 and subsequent are equipped with the 28-13106-3 ring gear carrier and are exempt from the initial and all subsequent inspections. Some earlier models are also exempt as a result of main rotor transmission overhaul and their transmission S/N has been removed from the list of main rotor gearboxes still requiring repetitive inspections.