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# SERVICE INFORMATION LETTER

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- DATE:                    September 5, 2018
1. SUBJECT:            Main Rotor Gearbox Pump Upgrade
2. MODEL:              480B
3. EFFECTIVITY:    S/N 5114-5247
4. BACKGROUND:

This Service Information Letter (SIL) is intended to make operators aware that kit P/N 4230036-1 is available to install a main rotor gearbox pump upgrade. This upgrade is required if the electric pump P/N 8116-B needs replacement. Instructions for the upgrade are included in this SIL.

5. COMPLIANCE:

At owner/operator option, or if the electric pump requires replacement, install kit P/N 4230036-1 in accordance with paragraph 6.

6. INSTRUCTIONS:

**NOTES: Refer to supplied Enstrom kit drawing 4230036-1 for installation detail (sheet and zone references). All installation hardware is supplied with the kit, unless otherwise noted (see paragraph 7).**

**Safety wire and threadlocker application shall meet the standard acceptable practices defined in Enstrom Document 28-SP-102 (28-SP-102 is included with the kit).**

**All electrical attachments, cable installation and supports for routing shall meet the standard acceptable practices defined in AC43.13-1B, AC21.99, and Enstrom Document 28-SP-133 (28-SP-133 is included with the kit).**

**Refer to the TH-28/480 Series Maintenance Manual (MM) for paragraph references in parenthesis.**

**Standard torque values apply to all fittings. Apply a torque stripe to all fittings.**

**CAUTION: Disconnect aircraft power before proceeding to prevent serious injury or damage to equipment.**

- 6.1 Disconnect aircraft power.
- 6.2 Remove the transfer ducts (MM para. 13-23) and the upper plenum/air inlet (MM para. 13-28).
- 6.3 Remove the pump (sheet 1, zone B-1).
  - A. Disconnect the electrical connection between the oil pump and the wire harness. (Cut the cable ties securing the wire bundle to access the connector.)
  - B. Disconnect the oil lines (4130032-5) from the vacuum switch tee and the main rotor transmission housing.
  - C. Remove fitting (MS51525B4S) and O-ring (MS28778-4) from the forward side of the vacuum switch tee.
  - D. Disconnect the elbow (MS20822-4D) (with drain line assembly (4130032-7)) from the pump. Retain the elbow and the drain line assembly.
  - E. Loosen the hose clamp and remove the pump with attached oil lines.
- 6.4 Remove the loop clamp (MS21919DG3) and associated hardware (sheet 1, zone B-1).
- 6.5 Install supplied bolt, washers, and nut at the location where the loop clamp (MS21919DG3) was previously installed (to reinstall the cooling coil bracket).
- 6.6 Remove the bracket assembly (4130033-1). Retain the hose clamp and bracket attachment hardware. (Equivalent clamp and hardware is kit-supplied.)
- 6.7 Burnish the surface of the main rotor gearbox housing at the forward hole used for the bracket attachment (to prepare for a ground wire terminal attachment). Apply CP8-TB (Kopr-Shield) to the burnished area.
- 6.8 Install bracket P/N 4130038-11 (sheet 1, zone B-2).
  - A. Install hose clamp (ECD111-11) into the bracket.
  - B. Position the bracket with support flange to the aft side.

**NOTE: Hand tighten the hardware at the forward bracket attachment until the ground wire terminal is installed.**

- C. Install bracket to the transmission housing with screws, washers, and nuts (2x).

6.9 Install the fittings to the pump inlet and outlet ports.

**NOTE: Install ANPT/NPT fittings with 569 thread sealant, or equivalent.**

- A. Apply a small amount of grease (MIL-PRF-81322) to two O-rings (MS28778-8).
- B. Install one (1) O-ring each in the pump inlet and outlet ports.
- C. Install one (1) fitting (4-8 F5OX-S) each in the pump inlet and outlet ports.
- D. Hand tighten fittings until pump is installed.

6.10 Install the pump (sheet 1, zones A-3 and detail Section B-B).

- A. Install the pump in the hose clamp with the inlet/outlet ports of the pump aft and with the inlet port up.
- B. Snug the hose clamp.
- C. Finish tightening outlet and inlet fittings.
- D. Apply a torque stripe to the outlet and inlet fittings.

6.11 Install the vacuum switch tee fitting.

**NOTE: Install ANPT/NPT fittings with 569 thread sealant, or equivalent.**

- A. Apply a small amount of grease (MIL-PRF-81322) to O-ring (MS28778-4).
- B. Install fitting (MS51527B4S) and O-ring (MS28778-4) at the forward side of the vacuum switch tee. Orientate the elbow toward the pump.
- C. Apply a torque stripe to the outlet and inlet fittings.

6.12 Secure the pump.

- A. Loosen the hose clamp.
- B. Seat the aft end of the pump against the support flange of the bracket.
- C. Center the hose clamp in the bracket slot.
- D. Tighten (45 in-lb/5 Nm) the hose clamp.
- E. Safety the hose clamp screw with MS20995C32 lock wire (sheet 1, zone B-4).

- 6.13 Attach the oil lines.
- A. Connect the flex oil line (4130032-9) between the pump outlet port and the transmission housing.
  - B. Connect the flex oil line (4130032-9) between the pump inlet port and the vacuum switch tee.

- 6.14 Install the drain line.

**NOTE: Install ANPT/NPT fittings with 569 thread sealant, or equivalent.**

- A. Install one (1) adapter (1/8 X 1/16 FG-S) to the pump drain port.
  - B. Install the elbow (MS20822-4D) to the adapter (orientated downward).
  - C. Install the drain line assembly (4130032-7) to the elbow (MS20822-4D).
- 6.15 Connect/install the oil pump wiring.
- A. Install the wire mounts to the side of the fuel tank shelf (sheet 2, zone B-1).
    - 1) Use a cloth dampened with solvent to remove oils from the surface.
    - 2) Attach mounts (ABM1M-A-C, 4x).
    - 3) Seal the perimeter of the mounts with 748-RTV sealant, or equivalent sealant.
  - B. Install the ground wire (sheet 1, zone B-2).
    - 1) Remove the forward bracket attachment washer and nut.
    - 2) Install ground wire ring terminal.
    - 3) Install the washer and nut (standard torque).
  - C. Connect P169/J169 wire harness connectors (wire harness (4192514-17) to the pump/switch wire harness) (sheet 2, zone A-3).
  - D. Install the wire harness (4192514-17) to the new wire mounts.
    - 1) Taking up the slack of the wire harness from the fuel shelf bottom mount (sheet 2, zone B-4, detail C), install the wire harness into the newly attached wire mounts beginning with the bottom mount to the top mount.
    - 2) Secure the wire harness to each mount with a cable tie (SST2S-MP, or equivalent, 4x).
  - E. Bundle and secure the remainder of the wire harness to the pump bracket (sheet 1, zone B-4, detail E).

- 1) Install two connector rings (CR2-M, 2x) with cable ties (PLT4S-CO, 2x) (one on each side of the hose clamp) through the bracket slots and around the pump.
- 2) Bundle the remaining slack in the wire harness and secure with cable ties (SST1-.5I-M, or equivalent) through the connector rings attached in the step above.

#### 6.16 Functional Check

**NOTE: Perform the functional check before reinstalling the upper plenum/air inlet and the transfer ducts.**

- A. Apply aircraft power.
- B. Check the system for oil leaks and proper operation of the oil pump and pressure switch. Proper operation is indicated by the caution segment MRGB PRESS or MAIN XMSN PRESS. Verify the segment is illuminated once power is applied and then extinguishes. Turn the pump off and verify the segment illuminates.

**NOTE: It may take up to two minutes for the MRGB PRESS/MAIN XMSN PRESS caution indicator to come on after the pump is shut off.**

- 1) If required, turn battery switch off and prime the oil pump by disconnecting the oil line between the vacuum switch tee and the pump inlet and filling the line with oil. Reconnect the line, turn the battery switch on, and check the oil pump and pressure switch for proper operation.

#### 6.17 Install the upper plenum/air inlet (para. 13-31) and the transfer ducts (para. 13-26).

### 7. PARTS

#### A. 4230036-1 Kit

- 1) The kit excludes Loctite 569 thread sealant (or equivalent), grease (MIL-PRF-81322), CP8-TB Kopr-Shield (or equivalent), torque paint (Cross-Check Torque Seal or equivalent), SST1.5I-M cable ties, and SST2S-MP cable ties (or equivalent). These items may be procured locally.

8. SPECIAL TOOLS OR EQUIPMENT: None

9. MAN-HOURS: Installation – 2.5 hours

10. WARRANTY: Per Enstrom policy

11. WEIGHT CHANGE: N/A

12. LOG BOOK ENTRY: As required for maintenance actions