



SERVICE INFORMATION LETTER

SERVICE INFORMATION LETTER NO. T-051
Revision 2
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DATE: November 7, 2017

1. SUBJECT: Vented Clutch Oil Reservoir, Kit P/N 4230001
2. MODEL: 480, 480B
3. EFFECTIVITY: S/N 5142 and prior and any 480/480B models that have not been updated with the P/N 4230001 Vented Clutch Oil Reservoir
4. BACKGROUND:

Enstrom has certified a new installation for a P/N 4230001 Vented Clutch Oil Reservoir Kit. This kit installs a bearing housing modified for attachment of oil lines onto the overrunning clutch (ORC), installs a reservoir assembly onto the spare drive pad of the engine, and installs the associated lines connecting the reservoir to the bearing housing. This vented reservoir system allows excess oil to flow from the ORC to the reservoir and vent the pressure increase that occurs during normal operation of the aircraft. When the aircraft is shut down, the oil flows back into the ORC. The reservoir allows for availability of more lubricating oil for the ORC. Previously, loss of oil through the ORC seals into the engine or to the outer surface of the ORC caused frequent servicing of the clutch. The installation of the Vented Clutch Oil Reservoir is “standard” equipment in the turbine aircraft and has been incorporated into production aircraft starting with serial number 5143.

This Service Information Letter (SIL) provides the installation instructions for operators wanting to update to the P/N 4230001 Vented Clutch Oil Reservoir.

Revision 2 corrects the installation sequence and the torque requirement for the clutch vent oil line installations, clarifies the routing requirement for the oil line installation, and provides data for engines equipped with an offset bearing housing.

5. COMPLIANCE:

At owner/operator option, install the Vented Clutch Oil Reservoir Kit, P/N 4230001, in accordance with paragraph 6.1.

NOTES

Perform all maintenance of the Vented Clutch Oil Reservoir in accordance with the Enstrom TH-28/ 480 Series Maintenance Manual, paragraphs 11-8.1 through 11-8.4.

Refer to Kit Drawing 4230001 Sheets 2 and 3 for illustrations of the noted parts and their respective installation.

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6. INSTALLATION:

6.1 Overrunning Clutch – Bearing Housing Installation

6.1.1 Equipment Required: Hydraulic press, heat gun, T-0186, and oil (MIL-PRF-23699)

NOTE: Contact Enstrom Customer Service to obtain Enstrom Tool Set T-0186.**NOTE: Prior to removing the ORC, review the maintenance records for entries indicating if an offset bearing housing is installed. (A label affixed to the engine/gearbox assembly will also indicate if a unique bearing housing is installed.)****If an offset bearing housing is installed, refer to Table 3 to select the appropriate replacement part number. Contact Enstrom Product Support for assistance.**

6.1.2 Remove the ORC (18) (Sheet 2 B-2) in accordance with paragraph 11-5 of the maintenance manual. While removed, inspect the ORC in accordance with paragraph 11-6.

6.1.3 Remove the external snap ring (23) (Sheet 2 B-2) from the splined outer shaft. Retain the snap ring.

6.1.4 Using tool T-0186, press the bearing housing assembly (19) (Sheet 2 B-2) from the splined outer shaft using a hydraulic press. Discard the bearing housing (19) and the assembly components noted (Sheet 2 B-3).

CAUTION: Do not hammer the bearing housing onto the shaft. Damage to the bearings and seal will occur.

6.1.5 Lubricate the splined outer shaft with MIL-PRF-23699 oil. Install the bearing housing assembly (20) onto the splined outer shaft. Heat the bearing housing to approximately 250°F/121°C and press the bearing housing on the shaft.

6.1.6 Orient the bearing housing assembly (20) with the ports at 12 and 4 o'clock positions (Sheet 3 A-2).

6.1.7 Reinstall the ORC in accordance with paragraph 11-8 steps A-H of the maintenance manual. Replace o-ring (14) and gaskets (15) and (22) with new kit-supplied o-ring and gaskets (Sheet 2 B-1, B-2). Replace o-rings (3) and (6) with new kit-supplied o-rings (Sheet 2 A-2, B-2).

6.1.8 Install the fitting adapters (30) and o-rings (31) onto the ports of the new bearing housing assembly (20) (Sheet 3 A-3).

6.1.9 Proceed to paragraph 6.2.

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6.2 Clutch Vent Reservoir Installation

- 6.2.1 Equipment Required: Oil (MIL-PRF-23699)
- 6.2.2 Remove tube assembly (25) located between the fuel pump and the fire shield (Sheet 3 B-3). Discard the tube assembly.
- 6.2.3 Install kit-supplied swivel elbow (24) onto the existing fitting on the fuel pump where the tube assembly (25) was disconnected from the fuel pump (Sheet 3 B-3).
- 6.2.4 Install the new tube assembly (26) between the new swivel elbow (24) on the fuel pump and the existing bulkhead fitting in the fire shield (Sheet 3 B-3). Torque 80-120 in-lb / 9.0-13.5 Nm.
- 6.2.5 Install the reservoir bracket (27) by removing the three outboard nuts and washers from the spare pad cover. Retain the nuts and washers. Place the bracket over the three studs oriented as shown on Sheet 3. Reinstall the nuts and washers. Torque 70-85 in-lb / 7.9-9.6 Nm.
- 6.2.6 Install the clutch vent reservoir assembly (28) to the bracket (27) using the kit-supplied hose clamp (29). Orient the reservoir with the service port outboard and at the 12 o'clock position (Sheet 3 B-1).
- 6.2.7 Install the stand-off stud (32) to the gear box housing by removing the existing nut and washer from the stud in the housing. Torque 30-40 in-lb / 3.4-4.5 Nm. Retain the nut and washer. Screw item (32) onto the exposed stud as shown on Sheet 3 B-3.
- 6.2.8 Install clip (34) to the stand-off stud (32) using the nut and washer retained in step 6.2.7 (Sheet 3 B-1). Torque 35-40 in-lb / 3.9-4.5 Nm.

NOTE: Ensure the vent and return oil line routing does not contact either the fuel pump or the gearbox housing. Adjust as necessary to prevent any contact.

- 6.2.9 Install the vent oil line assembly (33) between the bearing housing (20) and the reservoir (28) (Sheet 3 B-1). Torque 95-105 in-lb / 10.7-11.9 Nm.
- 6.2.10 Secure the oil line (33) to the clip (34) using kit-supplied screw (35), washer (36), and nut (37) (Sheet 3 B-1).
- 6.2.11 Install the return oil line assembly (38) between the bearing housing (20) and the reservoir (28) (Sheet 3 B-1). Torque 95-105 in-lb / 10.7-11.9 Nm.
- 6.2.12 Service the ORC and clutch vent reservoir in accordance with paragraph 4-10 of the maintenance manual.
- 6.2.13 Check for leaks.

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- 6.2.14 Verify the reservoir sight glass is completely filled with oil.
- 6.2.15 Safety the service port plugs (2) in the clutch cover (5) with MS20995C25 safety wire (Sheet 2 A-2).
- 6.2.16 Safety the service port plug and sight glass in the clutch vent reservoir with MS20995C25 safety wire (Sheet 3 A-1).
- 6.2.17 Complete the ORC installation in accordance with paragraph 11-8 steps I-M of the maintenance manual.
- 6.2.18 Proceed with paragraph 6.3.

6.3 Pre-Flight Inspection and Post-Flight Inspection

NOTE: Perform an inspection of the ORC system oil level prior to the first flight after installing the vented clutch oil reservoir system and prior to the first flight of the day (reference paragraph 2-11.1 of the 480B rotorcraft flight manual).

- 6.3.1 Conduct a pre-flight inspection of the vented clutch oil reservoir oil level. The oil level between the reservoir sight glass and the ORC cover sight glass should be the same.
- 6.3.2 If oil does not completely fill the reservoir sight glass(es), remove the safety wire from the reservoir service port plug, and service the vented clutch reservoir in accordance with paragraph 4-10 of the maintenance manual. Re-safety the service port plug and the sight glass.
- 6.3.3 Ground run the aircraft and inspect for leaks.
- 6.3.4 Conduct a brief test flight. Inspect for leaks and inspect the oil level in accordance with step 6.3.2.
- 6.3.5 Contact Enstrom Customer Service for assistance when troubleshooting the vented clutch oil reservoir.

7. PARTS:

- 7.1 Kit P/N 4230001-1 includes the parts listed in Table 1.
- 7.2 Consumable materials not furnished with the kit are listed in Table 2.
- 7.3 Special bearing housing selection data for engines equipped with an offset bearing housing is provided in Table 3. Contact Enstrom Helicopter Product Support for assistance, if required.

Table 1: Kit Parts

Part Number	Description	Quantity
2-041 N674-70	O-Ring	1
2-141 N674-70	O-Ring	1
23053995	Gasket	1
3-902 V747-75	O-Ring	2
4122042-7	Tube Assembly	1
4122043-11	Stand Off Stud	1
4131001-129	Bearing Housing Assembly	1
4131020-7	Clutch Vent Reservoir Assembly	1
4131021-15	Bracket	1
4131021-17	Clip	1
4131022-5	Oil Line Assembly	1
4131022-7	Oil Line Assembly	1
4131024-11	Fitting Adapter	2
4230001 Drawing	Clutch Vent Reservoir Kit Drawing, Sheets 1 through 3	1
MS21043-3	Nut	1
AN525-10R6	Screw	1
MS51521B4S	Swivel Elbow	1
NAS1149F0332P	Washer	1
NAS1612-2	O-Ring	1
NAS1922-0275-3	Hose Clamp	1

Table 2: Consumable Materials

NOTE		
The following parts are not supplied with the kit and must be furnished by the installer.		
MIL-PRF-23699	Oil	A/R
MS20995C25	Safety Wire	A/R

Table 3: Offset Bearing Housing Information

NOTE			
<p>If an offset bearing housing is installed, refer to the following table to determine the replacement offset bearing housing to be installed. Refer to the maintenance log book to determine the ‘Previous Part Number’ for the offset bearing housing currently installed, then select the applicable ‘Replacement Part Number’ from the information provided in the table below.</p> <p>Contact Enstrom Helicopter Product Support for assistance.</p>			
Previous Part Number	Offset	Offset Rotation	Replacement Part Number
4131006-17	0.000	0°	4131006-25
4131006-19	0.002	30°	4131006-27
	0.002	90°	4131006-29
	0.002	150°	4131006-31
	0.002	210°	4131006-33
	0.002	270°	4131006-35
	0.002	330°	4131006-37
4131006-21	0.003	30°	4131006-39
	0.003	90°	4131006-41
	0.003	150°	4131006-43
	0.003	210°	4131006-45
	0.003	270°	4131006-47
	0.003	330°	4131006-49
4131006-23	0.004	30°	4131006-51
	0.004	90°	4131006-53
	0.004	150°	4131006-55
	0.004	210°	4131006-57
	0.004	270°	4131006-59
	0.004	330°	4131006-61

8. **SPECIAL TOOLS:** Hydraulic press, heat gun, Enstrom Tool Set T-0186

9. **MAN-HOURS:** Removal/Reinstallation – 10 hours

10. **WARRANTY:**

Enstrom’s standard policy applies if clutch oil must be re-filled in less than 10 flight-hour intervals. If the time interval for adding oil is greater than 10 hours then the warranty policy does not apply. Even so, owners/operators are encouraged to incorporate this system improvement.

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11. WEIGHT CHANGE: 1.0 lb at FS 147.05 inches
12. LOG BOOK ENTRY: As required for maintenance actions
13. REPETITIVE INSPECTIONS: As required in Section 4 of the maintenance manual
14. CONTACT INFORMATION:

Enstrom Helicopter Product Support

Phone: (906) 863-1200

Fax: (906) 863-6821

www.enstromhelicopter.com/support/technical-support/