

Engine Lubrication Symptoms

6.1 - Low Engine Oil Pressure

Overview

Determine reason engine oil pressure is low and / or oil pressure gauge reads low.

Possible Causes

- Instrument panel engine oil pressure gauge or circuit
- Engine Oil Pressure (EOP) sensor
- Collapsed oil filter / coolant saturated
- Oil pump / gear train
- Oil aeration / pickup tube or O-ring leak
- Piston cooling tubes
- Connecting rod and/or main bearing wear
- Missing / leaking cup plugs
- Oil pressure regulator

Low viscosity engine oil will cause lower engine oil pressure in hot ambient temperatures and high engine loads.

Test Procedure

Step 1	Perform operational checkout procedure.	Decision
	Perform 6.0 Engine Oil System Operational Checkout Procedure (page 31).	Yes: Go to Step 2.
	Was Engine Oil System Operational Checkout Procedure performed?	No: Go to 6.0 Engine Oil System Operational Checkout Procedure (page 31).
Step 2	Determine if instrument panel oil pressure gauge is working properly.	Decision
	Perform Instrument Panel Engine Oil Pressure Gauge Validation Test (page 1725).	Yes: Go to Step 3.
	Does ServiceMaxx™ Engine Oil Pressure (EOP) match oil pressure shown on instrument panel oil pressure gauge?	No: Repair instrument panel oil pressure gauge or circuit. After repairs are complete, retest for original problem.
Step 3	Determine if Engine Oil Pressure (EOP) sensor is operating properly.	Decision
	Perform Oil Pressure Verification Test (page 1719).	Yes: Replace EOP sensor. After repairs are complete, retest for original problem.
	Does pressure gauge read engine oil pressure in specification?	No: Go to Step 4.
Step 4	Determine if engine oil filter is restricted.	Decision
	Remove and inspect engine oil filter.	Yes: Go to 5.3 Coolant Leak to Engine Oil (page 65).
	Is oil filter crushed and/or contaminated with coolant?	No: Go to Step 5.

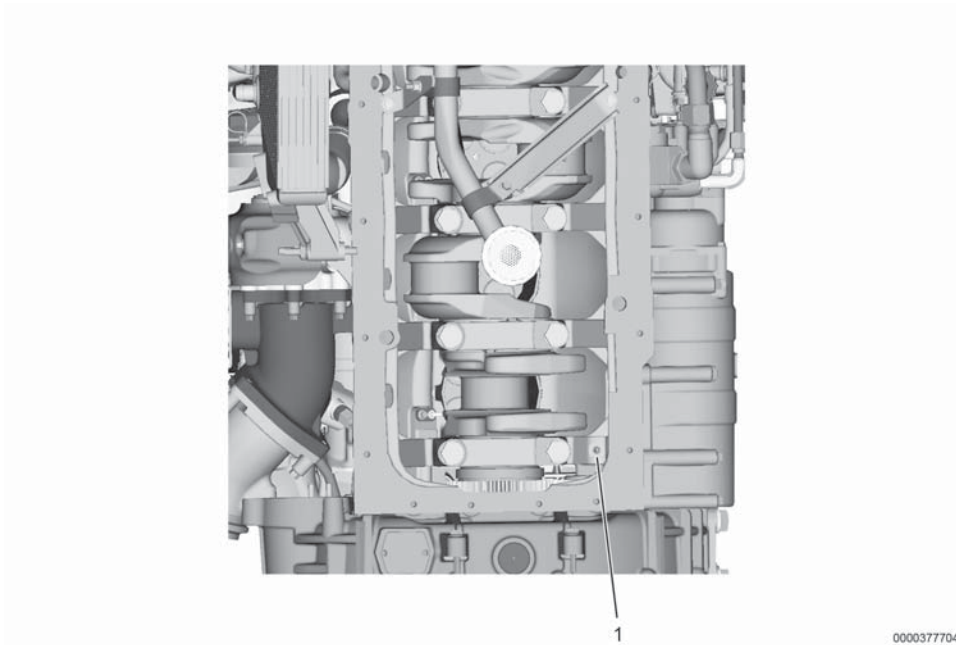


Figure 1 Crankcase Cup Plug

1. Crankcase Cup Plug Near #7 Main Bearing

Step 5	Determine if oil suction tube, piston cooling tubes, cup plug, main or connecting rod bearings are causing low oil pressure.	Decision
<p>A. Remove oil pan (see <i>Engine Service Manual</i>).</p> <p>B. Perform Oil and Crankcase Inspection (page 1757).</p> <p>C. Inspect for leaking or missing cup plug near #7 main bearing.</p>		<p>Yes, oil suction tube or O-ring damaged or restricted: Install new oil suction tube and O-ring. After repairs are complete, retest for original problem.</p>
		<p>Yes, piston cooling tube(s) damaged or restricted (burnt cylinder): Install new piston cooling tubes (see <i>Engine Service Manual</i>). After repairs are complete, retest for original problem.</p>
		<p>Yes, cup plug near #7 main bearing leaking or missing: Install new cup plug. After repairs are complete, retest for original problem.</p>
		<p>Yes, visual damage main and/or connecting rod bearing: Perform Connecting Rod, Main Bearing, and Journal Inspection (page 1776).</p>
<p>Is oil suction tube, O-ring, or piston cooling tubes cracked, damaged, or restricted (burnt cylinder); or is cup plug near #7 main bearing leaking or missing; or are connecting rod or main bearings damaged or spun?</p>		<p>No: Go to Step 6.</p>
Step 6	Determine if leaking or missing cup plugs under valve cover are causing low oil pressure.	Decision
<p>A. Remove valve cover (see <i>Engine Service Manual</i>).</p> <p>B. Perform Cylinder Head, Valve train, and Engine Brake Housing Oil Leak Inspection (page 1762).</p>		<p>Yes: Install new cup plug(s). After repairs are complete, retest for original problem.</p>
<p>Are cup plugs under valve cover leaking or missing?</p>		<p>No: Go to Step 7.</p>
Step 7	Determine if oil pressure regulator valve is stuck.	Decision
<p>A. Remove oil module assembly (see <i>Engine Service Manual</i>).</p> <p>B. Remove and inspect oil pressure regulator valve.</p>		<p>Yes: Go to Step 8.</p>
<p>Is oil pressure regulator in good condition and not stuck or damaged?</p>		<p>No: Replace oil pressure regulator. After repairs are complete, retest for original problem.</p>

Step 8	Determine if oil pump, oil pump bushing, or cup plug(s) are causing low oil pressure.	Decision
Perform Oil Pump and Fan Drive Oil Leak Inspection (page 1759).		Yes: Replace damaged, leaking or excessively worn components. After repairs are complete, retest for original problem.
Does oil pump, oil pump bushing, gear train or idle gear have damage or excessive wear; or are cup plugs leaking or missing?		No: End Diagnostic Steps.

End Diagnostic Steps

After performing all diagnostic steps, if fault remains, verify if each step was completed correctly and proper decision was made. Notify supervisor for further action.