


DIAGNOSIS AND TESTING

ENGINE

Special Tool(s)

SPECIAL TOOLS CHART

 <p>ST2957-A</p>	<p>Adapter, High-Pressure Pump Test 303-765</p>
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The information that follows is intended to diagnose engine oil pressure issues only. For diagnosis and testing of the electronic engine control system, refer to the **INTRODUCTION - 6.4L DIESEL - F250-F550 SUPER DUTY** .

Oil Pressure Test

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of damage.
3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the concern is not visually evident, check the base oil pressure.
5. Remove the Engine Oil Temperature (EOT) sensor. Refer to **ELECTRONIC ENGINE CONTROLS DIESEL ENGINE** .
6. Install the High-Pressure Pump Test Adapter.
 - Tighten to 12 Nm (106 lb-in).



Fig. 6: Identifying High-Pressure Pump Test Adapter
 Courtesy of FORD MOTOR CO.

NOTE: Use a backup wrench on the High-Pressure Pump Test Adapter when installing the oil pressure gauge or engine damage may occur.

7. Install a commercially available oil pressure gauge and check the base oil pressure. The minimum engine oil pressure specifications are 82.7 kPa (12 psi) at 700 RPM, 165.5 kPa (24 psi) at 1,200 RPM and 310.3 kPa (45 psi) at 1,800 RPM with the engine at operating temperature.
8. Install the **EOT** sensor. Refer to **ELECTRONIC ENGINE CONTROLS DIESEL ENGINE** .
9. If the concern is not evident, verify the symptom. GO to **SYMPTOM CHART**.

Symptom Chart

SYMPTOM CHART

Condition	Possible Sources	Action
	<ul style="list-style-type: none"> • Inaccurate gauge reading • Low oil level • Oil dilution (fuel) • Stuck open oil pressure regulator • Scored/damaged oil pump • Damaged or misaligned oil filter drain back valve in the oil filter housing 	<ul style="list-style-type: none"> • DIAGNOSE the instrument cluster. REFER to <u>INSTRUMENTATION, MESSAGE CENTER, AND WARNING CHIMES</u> . • ADJUST the oil level. • INSPECT the fuel injector O-rings. REFER to <u>FUEL CHARGING AND CONTROLS - 6.4L DIESEL</u> . REPAIR as necessary. TEST the system for normal operation. • INSTALL a new oil pressure regulator. REFER to <u>OIL PRESSURE REGULATOR</u>. TEST the system for normal operation. • REMOVE the oil pump and inspect. REFER to <u>OIL PUMP</u>. REPAIR as necessary. TEST the system for normal operation. • INSTALL a new oil filter base assembly or drain back valve. REPAIR as necessary. TEST the system for normal operation.

<ul style="list-style-type: none"> • Low oil pressure 	<ul style="list-style-type: none"> • Rear main gallery plug • Broken or damaged piston cooling jets • Front cover gasket leaks • Missing gallery plugs • Missing bearing shell (s) • Restriction in the pickup tube or oil pan 	<ul style="list-style-type: none"> • REMOVE the rear engine cover and inspect the plugs. REPAIR as necessary. TEST the system for normal operation. • REMOVE the lower oil pan. REFER to <u>OIL PAN - LOWER, PARTIAL BODY LIFT</u> or <u>OIL PAN - LOWER, BODY ON.</u> INSPECT the cooling jets. REPAIR as necessary. TEST the system for normal operation. • REMOVE the engine front cover. REFER to <u>ENGINE FRONT COVER.</u> INSPECT the gasket. REPAIR as necessary. TEST the system for normal operation. • INSPECT for missing plugs. REPAIR as necessary. TEST the system for normal operation. • REMOVE the crankshaft and inspect the main bearings. REFER to Disassembly - <u>ENGINE.</u> REPAIR as necessary. TEST the system for normal operation. • REMOVE the lower oil pan. REFER to <u>OIL PAN - LOWER, PARTIAL BODY LIFT</u> or <u>OIL PAN - LOWER, BODY ON.</u> INSPECT the oil pan and pickup tube. REPAIR as necessary. TEST the system for normal operation.
<ul style="list-style-type: none"> • Oil in coolant 	<ul style="list-style-type: none"> • Leaking head gasket(s) • Leaking oil cooler and/or gasket • Damaged cylinder head(s) 	<ul style="list-style-type: none"> • REMOVE the cylinder head(s). REFER to <u>ENGINE - BODY OFF</u> or <u>ENGINE - BODY ON.</u> INSPECT the head gasket(s). REPAIR as necessary. TEST the system for normal operation. • REMOVE the oil cooler. REFER to <u>OIL COOLER - BODY OFF</u> or <u>OIL COOLER - BODY ON.</u> INSPECT the oil cooler and gasket. REPAIR as necessary. TEST the system for normal operation. • REMOVE the cylinder head(s). REFER to <u>CYLINDER HEAD - BODY OFF</u> or <u>CYLINDER HEAD - BODY ON.</u> INSPECT the cylinder head(s). REPAIR as necessary. TEST the system for normal operation.
<ul style="list-style-type: none"> • Coolant in oil 	<ul style="list-style-type: none"> • Leaking head gasket(s) • Leaking oil cooler and/or gasket 	<ul style="list-style-type: none"> • REMOVE the cylinder head(s). REFER to <u>CYLINDER HEAD - BODY OFF</u> or <u>CYLINDER HEAD - BODY ON.</u> INSPECT the head gasket(s). REPAIR as necessary. TEST the system for normal operation. • REMOVE the oil cooler. REFER to <u>OIL COOLER - BODY OFF</u> or <u>OIL COOLER - BODY ON.</u> INSPECT the oil cooler and gasket.

	<ul style="list-style-type: none">• Damaged cylinder head(s)	<p>REPAIR as necessary. TEST the system for normal operation.</p> <ul style="list-style-type: none">• REMOVE the cylinder head(s). REFER to <u>CYLINDER HEAD - BODY OFF</u> or <u>CYLINDER HEAD - BODY ON</u>. INSPECT the cylinder head(s). REPAIR as necessary. TEST the system for normal operation.
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