DETROIT DIESEL

Installation Instructions

18SP401 — Install Crankcase Pressure Sensor and Measure Crankcase Pressure

Crankcase pressure sensor kit P/N 23518757 is used to provide a reading of crankcase pressure (blowby) during vehicle operation. The kit includes the items listed in Table 1.

Part No.	Qty.	Description
23518756	1	Adapter, Crankcase Pressure Sensor
23518634	1	Sensor, Crankcase Pressure
23518635	1	Harness, Crankcase Breather Pressure
23504352	3	Seal, Crankcase Pressure Sensor Adapter
18SP401	1	Installation Instructions

Table 1. Kit 23518757

Assemble Crankcase Pressure Sensor Components

Use the following procedure to assemble the crankcase pressure sensor, adapter, and harness:

1. See Figure 1, and thread the adapter tube with seals onto the sensor body. Tighten securely.

Install Sensor and Measure Crankcase Pressure

NOTE:
The sensor connector may be left disconnected to ease installation onto the engine.

1. Remove the dipstick, and push the sensor assembly into the dipstick tube. Ensure that there is a good seal between the sensor and the dipstick tube.

2. Install the harness connector onto the end of the sensor, and route the sensor harness so as to avoid hot exhaust components. Secure any extra harness away from moving parts.

3. Unplug the wiring harness from the oil pressure sensor on the left rear of the block, and plug the crankcase pressure sensor harness into the oil pressure sensor wiring.

4. Plug a Diagnostic Data Reader (DDR) into the vehicle diagnostic inside the truck, and set the DDR for a key-triggered snapshot.

5. Start and operate the vehicle to get it up to normal operating temperature before beginning the test.

CAUTION:

To avoid injury from loss of vehicle/vessel control, the operator of a DDEC equipped engine must not attempt to use or read the Diagnostic Data Reader when the vehicle/vessel is moving.

6. With the engine at operating temperature, have the assistant trigger a snapshot following this guideline:

   - Test at 1200 to 1350 rpm at full throttle using a loaded trailer to maintain 100% load.

7. Print the snapshot, including RPM, % LOAD, OIL PRESSURE, OIL TEMPERATURE, COOLANT TEMPERATURE, AND TURBO BOOST PRESSURE.

8. Compare the snapshot to Table 1 to determine the status of the engine.

NOTE:
The limit for a 24 month used truck warranty is an oil pressure reading of 36.4 lb/in.^{2} (251 kPa) at 3.0 in. H_2O. The limit for a 12 month used truck warranty is an oil pressure reading of 38.4 lb/in.^{2} (265 kPa) at 4.0 in. H_2O.

Oil Pressure Reading		Crankcase Pressure
lb/in.^{2}	kPa	in. H_2O
30.0	207	0.00
31.0	214	0.47
32.0	221	0.95
33.0	228	1.43
34.0	234	1.91
35.0	241	2.39
36.0	248	2.87
36.4	251	3.0
37.0	255	3.35
38.0	262	3.83
38.4	265	4.0
39.0	269	4.31
40.0	276	4.79
41.0	283	5.27
42.0	290	5.75
43.0	296	6.23
44.0	303	6.70
45.0	310	7.18
46.0	317	7.66
47.0	324	8.14
48.0	331	8.62
49.0	338	9.10
50.0	345	9.58
51.0	352	10.06
52.0	359	10.54
53.0	365	11.02
54.0	372	11.50
55.0	379	11.98
56.0	386	12.46
57.0	393	12.94
58.0	400	13.41

Table 1. Acceptable Oil Pressure Versus Crankcase Pressure Limits

9. After measuring crankcase pressure, stop the vehicle and allow the engine to cool.

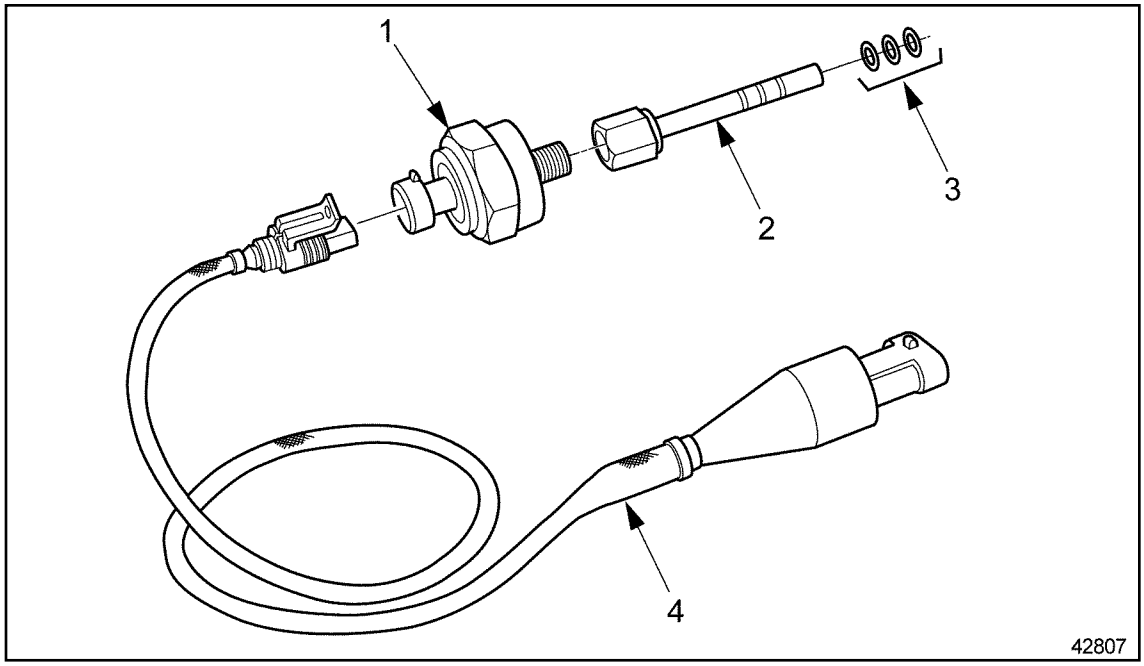
10. With the engine cool, disconnect the sensor from the oil pressure sensor wiring harness. Reconnect the oil pressure sensor harness to the oil pressure sensor. Remove the crankcase pressure from the dipstick tube, and replace the dipstick.

Evaluation of Engine

An overhaul is recommended only if at least six (6) of the following criteria are met:

- Blue smoke that continues at idle or under load for several days.
- White smoke, a thick white plume, that continues for more than 60 seconds after start-up under ambient weather conditions between 20°F (-6.67°C) and 40°F (4.44°C).
- Low horsepower on a chassis dynamometer: Less than 70% of the rated horsepower after allowing for driveline losses.
- Poor fuel economy: At least 20% worse than the fleet average.
- Hard starting in combination with excessive white smoke after starting.
- Low compression: Cylinder readings below 350 lb/in.^{2} (2413 kPa).
- High crankcase pressure (blowby): Above 5 inches of water column pressure at the breather.
- High oil consumption: Below 300 miles per quart of oil.
- High wear metals in the oil analysis above the trend line.

An engine overhaul is indicated only if six (6) or more of these criteria are met.



1. Crankcase Pressure Sensor
2. Sensor Adaptor Tube
3. Seals, Crankcase Pressure Sensor Adaptor Tube
4. Sensor Harness

Figure 1. Crankcase Pressure Sensor Components

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