Component Procedures: Oil Level Sensor

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Parts and Labor (itype_189)

Labor

Operation	Qualifier Path	Skill	Std Hrs	Wty Hrs
Remove & Replace	Senders > Oil Level Sensor, R&R	B	0.6	0.4

Engine Oil Level Sensor and/or Switch Replacement (Article 12179)

Removal Procedure

- Remove the oil pan . Refer to Oil Pan Replacement .
- Remove the engine oil level switch clip (4). Click for full-size image
- Remove the engine oil level switch bolts (1).
- Remove the engine oil level switch (2).
- Remove and discard the engine oil level switch seal (3).

Installation Procedure

- Install the NEW engine oil level switch seal (3). Click for full-size image
- Install the engine oil level switch (2).
- Install the engine oil level switch bolts (1) and tighten to 10 Nm (89 lb in) .
- Install NEW engine oil level switch clip (4).
- Install the oil pan. Refer to Oil Pan Replacement .

Engine Oil Level Sensor Diagnosis (Article 12035)

Diagnostic Instructions

- Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit Short to Ground Open/High Resistance Short to Voltage Signal Performance
Engine Oil Level Sensor Signal 2 1 — 1
Engine Oil Level Sensor Ground — 1 — —
1. DIC message Engine Oil Level Low Always ON 2. DIC message Engine Oil Level Low Always OFF

Typical Scan Tool Data

Circuit Short to Ground Open Short to Voltage
Operating Conditions: Ignition ON Parameter Normal Range: OK
Engine Oil Level Sensor /Switch Signal OK Low OK
Engine Oil Level Ground — Low —

Circuit/System Description

The engine oil level sensor/switch is a normally-closed with proper engine oil level. The switch opens when the engine oil level drops below a calibrated level. The engine control module (ECM) monitors the engine oil level signal circuit when the ignition is ON, and the engine is OFF. With the switch in the closed position, the ECM detects a low voltage signal circuit. With the switch in the open position, the ECM detects a high voltage on the signal circuit. When high voltage is detected on the signal circuit, the ECM will send a serial data message to the instrument panel cluster and a message is displayed on the driver information center.
The following information determines the message sent form the ECM to the instrument cluster. The Engine Oil Level Low message is displayed only after the ECM detects a high voltage on the signal circuit for three consecutive ignition cycles, followed by an ignition OFF event from 15 min to greater than 50 min, depending on the engine oil temperature.
The Engine Oil Level Low message is turned OFF when the ECM detects a low voltage on the signal circuit after an ignition OFF event for greater than 90 s, then followed by the ignition ON for less than 1 s.

Reference Information

Schematic Reference

- Engine Mechanical Schematics
- Instrument Cluster Schematics

Connector End View Reference
Component Connector End Views
Description and Operation

- Instrument Cluster Description and Operation
- Indicator/Warning Message Description and Operation

Electrical Information Reference
- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs
Scan Tool Reference
Control Module References for scan tool information.
Circuit/System Verification
- Verify proper engine oil level.
- If not at proper level Add oil as necessary.
- If at proper level
- Ignition ON, verify the scan tool Engine Oil Level parameter reads OK.
- If not OK Refer to Circuit/System Testing.
- If OK
- All OK.
Circuit/System Testing
- Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the B35 Engine Oil Level Switch . It may take up to 2 minutes for all vehicle systems to power down.
- Test for less than 5 Ω between the ground circuit terminal 1 and ground.
- If 5 Ω or greater
- Ignition OFF, disconnect the harness connector at the K20 Engine Control Module.
- Test for less than 2 Ω in the ground circuit end to end.
- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω, repair the open/high resistance in the ground connection.
- If less than 5 Ω
- Ignition ON.
- Verify the scan tool Engine Oil Level Switch parameter reads Low.
- If the Engine Oil Level Switch parameter reads OK
- Test for infinite resistance between the signal circuit terminal 2 and ground.
- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance, replace the K20 Engine Control Module.
- If the Engine Oil Level Switch parameter reads Low
- Install a 3A fused jumper wire between the signal circuit terminal 2 and the ground circuit terminal 1.
- Verify the scan tool Engine Oil Level Switch parameter reads OK.
- Ignition OFF, disconnect the harness connector at the K20 Engine Control Module, ignition ON.
- Test for less than 1 V between the signal circuit and ground.
- If 1 V or greater, repair the short to voltage on the circuit.
- If less than 1 V
- Test for less than 2 Ω in the signal circuit end to end.
- If 2 Ω or greater, repair the open/high resistance on the circuit.
- If less than 2 Ω, replace the K20 Engine Control Module.
- Test or replace the B35 Engine Oil Level Switch.
Repair Instructions
Perform the Diagnostic Repair Verification after completing the repair.
- Engine Oil Level Sensor and/or Switch Replacement
- Control Module References for the ECM replacement, programming, and setup