DY: Engine Oil Temperature (EOT) Sensor

← DY: Introduction

DY1 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS)

Are DTCs P0196, P0197, P0198, P0298, or P1184 present?

Yes	No
For DTCs P0196 or P1184, GO to DY2 . For DTCs P0197 or P0198, GO to DY3 . For continuous memory DTC P0298, GO to DY14 .	For all others, GO to Section 4, Diagnostic Trouble Code (DTC) Charts and Descriptions .

DY2 DTCS P0196 OR P1184: CHECK THE EOT SENSOR OPERATION

> **Note:** Before continuing with this pinpoint test, verify the engine oil condition and level are within specification.

- Run the engine until the engine temperature stabilizes.
- Verify the radiator hoses are hot and the cooling system is pressurized.
- Carry out the self-test.

Are DTCs P0196 or P1184 present?

Yes	No
GO to DY3 .	The engine temperature was not stabilized. REPAIR any other DTCs as necessary.

DY3 DTCS P0196, P0197, P0198, P1184 OR P0298: CHECK THE TEMPERATURE SENSOR SIGNAL

- Ignition ON, engine OFF.
- Access the PCM and monitor the EOT PID.

Is the voltage less than 0.3 V?

Yes	No
GO to DY4 .	GO to DY6 .

DY4 SIMULATE AN OPPOSITE SIGNAL TO THE PCM

- Ignition ON, engine OFF.
- EOT Sensor connector disconnected.
- Access the PCM and monitor the EOT PID.

Is the voltage greater than 4.2 V?

Yes	No
INSTALL a new EOT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CLEAR the DTCs. REPEAT the self-test.	GO to DY5 .

DY5 CHECK THE SENSOR SIGNAL FOR A SHORT TO GROUND

- PCM connector disconnected.
- Measure the resistance between:

(+) EOT Sensor Connector, Harness Side	(-) EOT Sensor Connector, Harness Side
EOT	SIGRTN

- Measure the resistance between:

(+) EOT Sensor Connector, Harness Side	(-) Vehicle Battery
EOT	Negative terminal

Is the resistance greater than 10K ohms?

Yes	No
GO to DY18 .	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.

DY6 CHECK FOR HIGH EOT SENSOR VOLTAGE

- Access the PCM and monitor the EOT PID.

Is the voltage greater than 4.2 V?

Yes	No
GO to DY7 .	GO to DY11 .

DY7 CHECK THE EOT CIRCUIT VOLTAGE

- EOT Sensor connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) EOT Sensor Connector, Harness Side	(-) EOT Sensor Connector, Harness Side
EOT	SIGRTN

Is the voltage greater than 4.2 V?

Yes	No
GO to DY8 .	GO to DY10 .

DY8 CHECK THE RESISTANCE OF THE EOT SENSOR WITH THE ENGINE OFF

- Ignition OFF.
- EOT Sensor connector disconnected.
- Measure the resistance between:

(+) EOT Sensor Connector, Component Side	(-) EOT Sensor Connector, Component Side
EOT	SIGRTN

- Refer to the chart at the beginning of this test for the resistance specifications.

Is the resistance within specification?

Yes	No
GO to DY9 .	INSTALL a new EOT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CLEAR the DTCs. REPEAT the self-test.

DY9 CHECK THE SENSOR SIGNAL CIRCUIT FOR SHORTS TO PWR

- Ignition OFF.
- PCM connector disconnected.
- Measure the resistance between:

(+) PCM Connector, Harness Side	(-) PCM Connector, Harness Side
EOT - Pin E27	VREF - Pin E57
EOT - Pin E27	VPWR - Pin B35

Are the resistances greater than 10K ohms?

Yes	No
GO to DY18 .	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.

DY10 CHECK THE SIGNAL AND SIGRTN CIRCUITS FOR AN OPEN IN THE HARNESS

- Ignition OFF.
- PCM connector disconnected.
- Measure the resistance between:

(+) PCM Connector, Harness Side	(-) EOT Sensor Connector, Harness Side
EOT - Pin E27	EOT
SIGRTN - Pin E58	SIGRTN

Are the resistances less than 5 ohms?

Yes	No
GO to DY18 .	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

DY11 INTERMITTENT CHECK

- Ignition ON, engine OFF.
- Access the PCM and monitor the EOT PID.
- While observing the PID, carry out the following:
    - Tap on the sensor to simulate road shock
    - Wiggle the sensor connector

Is there a large change in the voltage reading?

Yes	No
DISCONNECT and INSPECT the connector. REPAIR as necessary. If OK, INSTALL a new EOT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CLEAR the DTCs. REPEAT the self-test.	GO to DY12 .

DY12 CHECK THE ELECTRONIC ENGINE CONTROL (EEC) WIRING HARNESS

- Access the PCM and monitor the EOT PID.
- While observing the PID, wiggle, shake, and bend small sections of the wiring harness while working from the sensor to the PCM.

Is there a large change in the voltage reading?

Yes	No
ISOLATE the concern. REPAIR as necessary. CLEAR the DTCs. REPEAT the self-test.	GO to DY13 .

DY13 CHECK THE RESISTANCE OF THE EOT SENSOR WITH THE ENGINE RUNNING

Note: Refer to the chart at the beginning of this test for the resistance specifications.

- Run the engine until the engine temperature stabilizes.
- Verify the radiator hoses are hot and the cooling system is pressurized.
- Measure the resistance between:

(+) EOT Sensor Connector, Component Side	(-) EOT Sensor Connector, Component Side
EOT	SIGRTN

Is the resistance within specification for the given engine temperature?

Yes	No
The concern is not present at this time. GO to Pinpoint Test Z .	INSTALL a new EOT sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. CLEAR the DTCs. REPEAT the self-test.

DY14 DTC P0298: ENGINE OIL OVER TEMPERATURE CONDITION

Note: The engine oil temperature protection strategy in the PCM has been activated. This protects the engine against mechanical damage due to overheating.

- Check for an overheating condition and base engine concerns.

Are there any overheating or base engine concerns?

Yes	No
ISOLATE the concern. REPAIR as necessary. REFER to the Workshop Manual Section 303-03, Engine Cooling to diagnose the overheat symptom. CLEAR the DTCs. REPEAT the self-test.	GO to DY15 .

DY15 CHECK FOR EOT SENSOR HARDWARE

- The engine oil temperature protection strategy in the PCM can be activated with or without an EOT sensor.

Does the vehicle have a EOT sensor?

Yes	No
GO to DY3 .	GO to DY16 .

DY16 IDENTIFY THE CUSTOMER'S DRIVING HABITS

- Identify the customer's driving habits.
- Access the freeze frame data (if available) and record the DTC concern conditions.

Does the vehicle appear to have been driven in an incorrect transmission gear or at high RPM for an extended period?

Yes	No
ADVISE the customer that improper transmission gear selection and high RPM for an extended period initializes the engine protection strategy. CLEAR the DTCs. REPEAT the self-test.	GO to DY17 .

DY17 TYPE OF ENGINE COOLANT SENSOR

Note: When an oil temperature sensor is not present, the PCM uses an oil algorithm to infer actual temperature based on input from the engine temperature sensor.

Is the vehicle equipped with cylinder head temperature (CHT) sensor?

Yes	No
GO to DL26 .	GO to DX22 .

DY18 CHECK FOR CORRECT PCM OPERATION

- Disconnect all the PCM connectors.
- Visually inspect for:
    - pushed out pins
    - corrosion
- Connect all the PCM connectors and make sure they seat correctly.
- Carry out the PCM self-test and verify the concern is still present.

Is the concern still present?

Yes	No
INSTALL a new PCM. REFER to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM) , Programming the VID Block for a Replacement PCM.	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.