

V: Camshaft Position (CMP) Sensor

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V1 PRELIMINARY DIAGNOSIS FOR DTCs P0340, P0341, OR P2614

Note: Some DTCs require that the engine go through more than one key cycle to set.

Note: DTCs P2617 and P2614 may set simultaneously after an engine stalling event.

Note: DTC P2614 is calibrated to an increment counter. To set the DTC requires more than 10 consecutive fault events in the crank or the run mode. Carry out the required number of key cycles from ON to START to ON (cycling to OFF resets the timer) and then carry out the key on engine off (KOEO) or key on engine running (KOER) self-test.

- Carry out a visual inspection.
- Retrieve and record all DTCs.
- Record the freeze frame data.
- Clear all DTCs.
- Carry out the on-demand self-test.

Are any DTCs retrieved?

Yes	No
For P0340, P0341, or P2614, GO to V2 .	UNABLE to duplicate the condition. CHECK for a loose connection, and damaged or corroded terminals. WIGGLE the harness attempting to recreate the fault. REPAIR as necessary. REFER to Section 3 if a driveability concern exists. REFER to Section 4 to diagnose a no-start condition.

V2 DIAGNOSTIC TROUBLE CODES (DTCs) P0340, P0341, OR P2614

- Possible causes:
 - CMP circuit open
 - CMP circuit short to ground
 - CMP circuit short to power
 - signal circuit open
 - signal circuit shorted
 - PCM
 - CMP sensor

Does the engine start?

Yes	No
GO to V3 .	GO to V4 .

V3 ATTEMPT TO RECREATE THE DTCS

- Clear all DTCs.
- Key ON, engine running.
- Increase the engine speed to greater than 1,500 RPM for 10 seconds. Repeat 2 times.
- Key ON, engine OFF.
- Carry out the on-demand self-test.

Is DTC P0340, P0341, or P2614 present?

Yes	No
GO to V4 .	UNABLE to duplicate the condition. CHECK for a loose connection, and damaged or corroded terminals. WIGGLE the harness attempting to recreate the fault. REPAIR as necessary. REFER to Section 3 if a driveability concern exists.

V4 CHECK THE RESISTANCE OF THE CMP SENSOR

- Key OFF.
- Disconnect the PCM engine connector.
- Measure the resistance between the PCM engine connector pin 31, harness side and the PCM engine connector pin 43, harness side.

Is the resistance between 800 and 1,000 ohms?

Yes	No
GO to V5 .	GO to V7 .

V5 CHECK FOR AN INTERMITTENT SHORT CIRCUIT

- Connect the PCM engine harness connector.
- Key ON, engine OFF.
- Access the CMP sensor fault PID.
- Monitor the PID while wiggling the harness.

Is a concern present?

Yes	No
REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.	For DTCs P0340 or P0341, GO to V6 . For DTC P2614, GO to V9 .

V6 CONFIRM A PCM FAULT

- Key ON, engine OFF.
- Clear all DTCs.
- Carry out the on-demand self-test.

Are DTCs P0340 and P0341 present?

Yes	No
INSTALL a new PCM. CLEAR the DTCs. REPEAT the self-test.	UNABLE to duplicate the condition. CHECK for a loose connection, and damaged or corroded terminals. WIGGLE the harness attempting to recreate the fault. REPAIR as necessary. REFER to Section 3 if a driveability concern exists.

V7 CHECK THE CMP SENSOR CIRCUITS FOR A SHORT TO GROUND

- Key OFF.
- Disconnect the CMP sensor.
- Inspect the CMP sensor connector for damaged or corroded pins.
- Measure the resistance between the PCM engine connector pin 31, harness side and ground; and between the PCM engine connector pin 43, harness side and ground.

Are the resistances greater than 10,000 ohms?

Yes	No
GO to V8 .	REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.

V8 CHECK THE CMP CIRCUITS FOR AN OPEN

- Measure the resistance between the PCM engine connector pin 31, harness side and the CMP sensor pin 1, harness side; and between the PCM engine connector pin 43, harness side and the CMP sensor pin 2, harness side.

Are the resistance less than 5 ohms?

Yes	No
INSTALL a new CMP sensor. CLEAR the DTCs. REPEAT the self-test.	REPAIR the circuit in question. CLEAR the DTCs. REPEAT the self-test.

V9 CHECK THE CAMSHAFT POSITION SIGNAL FOR A SHORT TO VOLTAGE

- Key OFF.

- Disconnect the PCM engine harness connector.
- Disconnect the FICM harness connector C.
- Key ON, engine OFF.
- Measure the voltage between the FICM connector C pin 10, harness side and ground.

Is any voltage indicated?

Yes	No
REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.	GO to V10 .

V10 CHECK THE CAMSHAFT POSITION SIGNAL FOR A SHORT TO GROUND

- Key OFF.
- Measure the resistance between the FICM connector C pin 10, harness side and ground.

Is the resistance greater than 10,000 ohms?

Yes	No
GO to V11 .	REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.

V11 CHECK THE CAMSHAFT POSITION SIGNAL FOR AN OPEN

- Measure the resistance between the FICM connector C pin 10, harness side and the PCM engine connector pin 20, harness side.

Is the resistance less than 5 ohms?

Yes	No
GO to V12 .	REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.

V12 CHECK THE CMP SENSOR

- Inspect the CMP sensor for misalignment and improper installation.
- Remove the CMP sensor.
- Inspect the CMP sensor for damage.

Is a concern present?

Yes	No
REPAIR as necessary. CLEAR the DTCs. REPEAT the self-test.	INSTALL a new PCM. CLEAR the DTCs. REPEAT the self-test.