DTC P0340 CMP SENSOR (PHASE) [QG18DE (ULEV)]

Component Description

The camshaft position sensor (PHASE) senses the retraction with intake valve camshaft to identify a particular cylinder. The camshaft position sensor (PHASE) senses the piston position. When the crankshaft position sensor (POS) system becomes inoperative, the camshaft position sensor (PHASE) provides various controls of engine parts instead, utilizing timing of cylinder identification signals.

The sensor consists of a permanent magnet and Hall IC. When engine is running, the high and low parts of the teeth cause the gap with the sensor to change. The changing gap causes the magnetic field near the sensor to change. Due to the changing magnetic field, the voltage from the sensor changes.

On Board Diagnosis Logic

On Board Diagnosis Logic

<table>
<thead>
<tr>
<th>DTC No.</th>
<th>Trouble diagnosis name</th>
<th>DTC detecting condition</th>
<th>Possible cause</th>
</tr>
</thead>
</table>
| P0340 0340 | Camshaft position sensor (PHASE) circuit | ● The cylinder No. signal is not sent to ECM for the first few seconds during engine cranking.  
● The cylinder No. signal is not set to ECM during engine running.  
● The cylinder No. signal is not in the normal pattern during engine running. | ● Harness or connectors (The sensor circuit is open or shorted)  
● Camshaft position sensor (PHASE)  
● Camshaft (Intake)  
● Starter motor (Refer to SC-9.)  
● Starting system circuit (Refer to SC-9.)  
● Dead (Weak) battery |

DTC Confirmation Procedure

NOTE:
If “DTC Confirmation Procedure” has been previously conducted, always turn ignition switch “OFF” and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:
Before performing the following procedure, confirm that battery voltage is more than 10.5V.

WITH CONSULT-II
1. Turn ignition switch “ON”.
2. Select “DATA MONITOR” mode with CONSULT-II.
3. Crank engine for at least 2 seconds and run it for at least 5 seconds at idle speed.
4. If 1st trip DTC is detected, go to EC-284, “Diagnostic Procedure”.
   If 1st trip DTC is not detected, go to next step.
5. Maintain engine speed at more than 800 rpm for at least 5 seconds.
6. If 1st trip DTC is detected, go to EC-284, “Diagnostic Procedure”.

WITH GST
Follow the procedure “With CONSULT-II” above.
DTC P0340 CMP SENSOR (PHASE)

Specification data are reference values and are measured between each terminal and ground.

**CAUTION:**
Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM’s transistor. Use a ground other than ECM terminals, such as the ground.

<table>
<thead>
<tr>
<th>TERMINAL NO.</th>
<th>WIRE COLOR</th>
<th>ITEM</th>
<th>CONDITION</th>
<th>DATA (DC Voltage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>W/R</td>
<td>Camshaft position sensor (PHASE)</td>
<td>[Engine is running]</td>
<td>1.0 - 4.0V ✳</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Warm-up condition</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Idle speed</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[Engine is running]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Engine speed is 2,000 rpm.</td>
<td></td>
</tr>
</tbody>
</table>

✳: Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

**Diagnostic Procedure**

1. **CHECK STARTING SYSTEM**

Does the engine turn over?  
(Does the starter motor operate?)

Yes or No

Yes  >> GO TO 2.  
No   >> Check starting system. (Refer to SC-9, "STARTING SYSTEM".)

2. **RETIGHTEN GROUND SCREWS**

1. Turn ignition switch “OFF”.
2. Loosen and retighten engine ground screws.

   >> GO TO 3.
3. CHECK POWER SUPPLY

1. Disconnect camshaft position sensor (PHASE) harness connector.
2. Turn ignition switch “ON”.

3. Check voltage between camshaft position sensor (PHASE) terminal 3 and ground with CONSULT-II or tester.
   - Voltage: Battery voltage
   - OK or NG
     - OK >> GO TO 5.
     - NG >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.
- Harness for open or short between camshaft position sensor (PHASE) and ECM relay
- Harness for open or short between camshaft position sensor (PHASE) and ECM
  >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK INPUT SIGNAL CIRCUIT

1. Turn ignition switch “OFF”.
2. Disconnect ECM harness connector.
3. Check harness continuity between camshaft position sensor (PHASE) terminal 2 and ECM terminal 14. Refer to Wiring Diagram.
   - Continuity should exist.
4. Also check harness for short to ground and short to power.
   - OK or NG
     - OK >> GO TO 6.
     - NG >> Repair open circuit or short to ground or short to power in harness or connectors.
6. CHECK GROUND CIRCUIT

1. Turn ignition switch “OFF”.
2. Check harness continuity between camshaft position sensor (PHASE) terminal 1 and engine ground.
   Refer to the Wiring Diagram.
   **Continuity should exist.**
3. Also check harness for short to power.
   OK or NG
   OK  >> GO TO 7.
   NG  >> Repair open circuit or short to power in harness or connectors.

7. CHECK CAMSHAFT POSITION SENSOR (PHASE)

Refer to EC-286, "Component Inspection".
OK or NG
OK  >> GO TO 8.
NG  >> Replace camshaft position sensor (PHASE).

8. CHECK CAMSHAFT (INTAKE)

Check the following.
- Accumulation of debris to the signal plate of camshaft rear end
- Chipping signal plate of camshaft rear end
OK or NG
OK  >> GO TO 9.
NG  >> Remove debris and clean the signal plate of camshaft rear end or replace camshaft.

9. CHECK INTERMITTENT INCIDENT

Perform EC-138, “TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT”.

>> INSPECTION END

Component Inspection
CAMSHAFT POSITION SENSOR (PHASE)

1. Loosen the fixing bolt of the sensor.
2. Disconnect camshaft position sensor (PHASE) harness connector.
3. Remove the sensor.
4. Visually check the sensor for chipping.
5. Check resistance as shown in the figure.

<table>
<thead>
<tr>
<th>Terminal No. (Polarity)</th>
<th>Resistance [at 25°C (77°F)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 (+) - 1 (-)</td>
<td>Except 0 or ∞</td>
</tr>
<tr>
<td>3 (+) - 2 (-)</td>
<td></td>
</tr>
<tr>
<td>2 (+) - 1 (-)</td>
<td></td>
</tr>
</tbody>
</table>

**Removal and Installation**

**CAMSHAFT POSITION SENSOR (PHASE)**

Refer to [EM-39, “TIMING CHAIN”](#).
DTC P0455 EVAP CONTROL SYSTEM

On Board Diagnosis Logic

This diagnosis detects a very large leak (fuel filler cap fell off, etc.) in the EVAP system between the fuel tank and the EVAP canister purge volume control solenoid valve.

![Diagram of EVAP control system]

<table>
<thead>
<tr>
<th>DTC No.</th>
<th>Trouble diagnosis name</th>
<th>DTC detecting condition</th>
<th>Possible cause</th>
</tr>
</thead>
</table>
| P0455  | EVAP control system gross leak detected | EVAP control system has a very large leak such as fuel filler cap fell off, EVAP control system does not operate properly. | ● Fuel filler cap remains open or fails to close.  
● Incorrect fuel tank vacuum relief valve  
● Incorrect fuel filler cap used  
● Foreign matter caught in fuel filler cap.  
● Leak is in line between intake manifold and EVAP canister purge volume control solenoid valve.  
● Foreign matter caught in EVAP canister vent control valve.  
● EVAP canister or fuel tank leaks  
● EVAP purge line (pipe and rubber tube) leaks  
● EVAP purge line rubber tube bent.  
● Loose or disconnected rubber tube  
● EVAP canister vent control valve and the circuit  
● EVAP canister purge volume control solenoid valve and the circuit  
● Fuel tank temperature sensor  
● O-ring of EVAP canister vent control valve is missing or damaged.  
● EVAP control system pressure sensor  
● Refueling EVAP vapor cut valve  
● ORVR system leaks |

**CAUTION:**

- Use only a genuine NISSAN fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.
- If the fuel filler cap is not tightened properly, the MIL may come on.
- Use only a genuine NISSAN rubber tube as a replacement.
DTC Confirmation Procedure

**CAUTION:**
Never remove fuel filler cap during the DTC Confirmation Procedure.

**NOTE:**
- Make sure that EVAP hoses are connected to EVAP canister purge volume control solenoid valve properly.
- If “DTC Confirmation Procedure” has been previously conducted, always turn ignition switch “OFF” and wait at least 10 seconds before conducting the next test.

**TESTING CONDITION:**
- Perform “DTC WORK SUPPORT” when the fuel level is between 1/4 to 3/4 full and vehicle is placed on flat level surface.
- Open engine hood before conducting the following procedure.

**WITH CONSULT-II**

1. Tighten fuel filler cap securely until ratcheting sound is heard.
2. Turn ignition switch “ON”.
3. Turn ignition switch “OFF” and wait at least 10 seconds.
4. Turn ignition switch “ON” and select “DATA MONITOR” mode with CONSULT-II.
5. Make sure that the following conditions are met.
   - COOLANT TEMP/S: 0 - 70°C (32 - 158°F)
   - INT/A TEMP SE: 0 - 60°C (32 - 140°F)
6. Select “EVAP SML LEAK P0442/P1442” of “EVAPORATIVE SYSTEM” in “DTC WORK SUPPORT” mode with CONSULT-II.
   - Follow the instruction displayed.

**NOTE:**
If the engine speed cannot be maintained within the range displayed on the CONSULT-II screen, go to EC-88, “Basic Inspection”.

7. Make sure that “OK” is displayed.
   - If “NG” is displayed, select “SELF-DIAG RESULTS” mode with CONSULT-II and make sure that “EVAP GROSS LEAK [P0455]” is displayed. If it is displayed, refer to EC-339, “Diagnostic Procedure”.
   - If P0442 is displayed, perform “Diagnostic Procedure” for DTC P0442, EC-303.

**WITH GST**

**NOTE:**
Be sure to read the explanation of “Driving Pattern” on EC-68 before driving vehicle.
- Start engine.
2. Drive vehicle according to EC-68, "Driving Pattern".
3. Stop vehicle.
4. Select “MODE 1” with GST.
   - If SRT of EVAP system is not set yet, go to the following step.
   - If SRT of EVAP system is set, the result will be OK.
5. Turn ignition switch “OFF” and wait at least 10 seconds.
   It is not necessary to cool engine down before driving.
7. Drive vehicle again according to the EC-68, "Driving Pattern".
8. Stop vehicle.
9. Select “MODE 3” with GST.
   - If P0455 is displayed on the screen, go to EC-339, “Diagnostic Procedure”.
   - If P0442 is displayed on the screen, go to “Diagnostic Procedure” for DTC P0442, EC-303.
   - If P0441 is displayed on the screen, go to “Diagnostic Procedure” for DTC P0441, EC-296.
   - If P0441, P0442 and P0455 are not displayed on the screen, go to the following step.
10. Select “MODE 1” with GST.
   - If SRT of EVAP system is set, the result will be OK.
   - If SRT of EVAP system is not set, go to step 6.

**Diagnostic Procedure**

1. **CHECK FUEL FILLER CAP DESIGN**

   1. Turn ignition switch “OFF”.
   2. Check for genuine NISSAN fuel filler cap design.

      **OK** or **NG**

      **OK** >> GO TO 2.
      **NG** >> Replace with genuine NISSAN fuel filler cap.

2. **CHECK FUEL FILLER CAP INSTALLATION**

   Check that the cap is tightened properly by rotating the cap clockwise.

   **OK** or **NG**

   **OK** >> GO TO 3.
   **NG** >>
   - Open fuel filler cap, then clean cap and fuel filler neck threads using air blower.
   - Retighten until ratcheting sound is heard.

3. **CHECK FUEL FILLER CAP FUNCTION**

   Check for air releasing sound while opening the fuel filler cap.

   **OK** or **NG**

   **OK** >> GO TO 5.
   **NG** >> GO TO 4.
4. CHECK FUEL TANK VACUUM RELIEF VALVE

1. Wipe clean valve housing.
2. Check valve opening pressure and vacuum.
   - **Pressure:**
     - 15.3 - 20.0 kPa
     - (0.156 - 0.204 kg/cm², 2.22 - 2.90 psi)
   - **Vacuum:**
     - −6.0 to −3.4 kPa
     - (−0.061 to −0.035 kg/cm², −0.87 to −0.48 psi)

   **CAUTION:**
   Use only a genuine fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.

   **OK or NG**
   - **OK** >> GO TO 5.
   - **NG** >> Replace fuel filler cap with a genuine one.

5. CHECK EVAP PURGE LINE

Check EVAP purge line (pipe, rubber tube, fuel tank and EVAP canister) for cracks, improper connection or disconnection.
Refer to EC-574, "EVAPORATIVE EMISSION SYSTEM".

**OK or NG**
- **OK** >> GO TO 6.
- **NG** >> Repair or reconnect the hose.

6. CLEAN EVAP PURGE LINE

Clean EVAP purge line (pipe and rubber tube) using air blower.

>> GO TO 7.

7. CHECK EVAP CANISTER VENT CONTROL VALVE

Check the following.
- EVAP canister vent control is installed properly.
  Refer to EC-578, "Removal and Installation".
- EVAP canister vent control valve.
  Refer to EC-321, "Component Inspection".

**OK or NG**
- **OK** >> GO TO 8.
- **NG** >> Repair or replace EVAP canister vent control valve and O-ring.
8. **INSTALL THE PRESSURE PUMP**

To locate the EVAP leak, install EVAP service port adapter and pressure pump to EVAP service port securely.

**NOTE:**
Improper installation of the EVAP service port adapter to the EVAP service port may cause leaking.

Models with CONSULT-II>>GO TO 9.
Models without CONSULT-II>>GO TO 10.
9. CHECK FOR EVAP LEAK

With CONSULT-II
1. Turn ignition switch “ON”.
2. Select “EVAP SYSTEM CLOSE” of “WORK SUPPORT” mode with CONSULT-II.
3. Touch “START” and apply pressure into the EVAP line until the pressure indicator reaches the middle of the bar graph.
   **NOTE:**
   - Never use compressed air or a high pressure pump.
   - Do not exceed 4.12 kPa (0.042 kg/cm², 0.6 psi) of pressure in the system.

4. Using EVAP leak detector, locate the EVAP leak. For the leak detector, refer to the instruction manual for more details. Refer to EC-575, "EVAPORATIVE EMISSION LINE DRAWING".

**OK or NG**
- **OK** >> GO TO 11.
- **NG** >> Repair or replace.

10. CHECK FOR EVAP LEAK

Without CONSULT-II
1. Turn ignition switch “OFF”.
2. Apply 12 volts DC to EVAP canister vent control valve. The valve will close. (Continue to apply 12 volts until the end of test.)
3. Pressurize the EVAP line using pressure pump with 1.3 to 2.7 kPa (10 to 20 mmHg, 0.39 to 0.79 inHg), then remove pump and EVAP service port adapter.
   **NOTE:**
   - Never use compressed air or a high pressure pump.
   - Do not exceed 4.12 kPa (0.042 kg/cm², 0.6 psi) of pressure in the system.

4. Using EVAP leak detector, locate the EVAP leak. For the leak detector, refer to the instruction manual for more details. Refer to EC-575, "EVAPORATIVE EMISSION LINE DRAWING".

**OK or NG**
- **OK** >> GO TO 12.
- **NG** >> Repair or replace.
11. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

With CONSULT-II
1. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
2. Start engine.
3. Perform “PURG VOL CONT/V” in “ACTIVE TEST” mode.
4. Touch “Qu” on CONSULT-II screen to increase “PURG VOL CONT/V” opening to 100.0%.
5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm.

Vacuum should exist.

OK or NG
OK >> GO TO 14.
NG >> GO TO 15.

Without CONSULT-II
1. Start engine and warm it up to normal operating temperature.
2. Stop engine.
3. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
4. Start engine and let it idle for at least 80 seconds.
5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm.

Vacuum should exist.

OK or NG
OK >> GO TO 13.
NG >> GO TO 15.

12. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

13. CHECK VACUUM HOSE

Check vacuum hoses for clogging or disconnection. Refer to EC-34, “Vacuum Hose Drawing”.

OK or NG
OK (With CONSULT-II)>>GO TO 14.
OK (Without CONSULT-II)>>GO TO 15.
NG >> Repair or reconnect the hose.

14. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

With CONSULT-II
1. Start engine.
2. Perform “PURG VOL CONT/V” in “ACTIVE TEST” mode with CONSULT-II. Check that engine speed varies according to the valve opening.

OK or NG
OK >> GO TO 16.
NG >> GO TO 15.
15. **CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE**

Refer to [EC-315, "Component Inspection"].

**OK or NG**
- **OK** >> GO TO 16.
- **NG** >> Replace EVAP canister purge volume control solenoid valve.

16. **CHECK FUEL TANK TEMPERATURE SENSOR**

Refer to [EC-255, "Component Inspection"].

**OK or NG**
- **OK** >> GO TO 17.
- **NG** >> Replace fuel level sensor unit.

17. **CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR**

Refer to [EC-336, "Component Inspection"].

**OK or NG**
- **OK** >> GO TO 18.
- **NG** >> Replace EVAP control system pressure sensor.

18. **CHECK EVAP/ORVR LINE.**

Check EVAP/ORVR line between EVAP canister and fuel tank for clogging, kink, looseness and improper connection. For location, refer to [EC-581, "ON BOARD REFUELING VAPOR RECOVERY (ORVR)"].

**OK or NG**
- **OK** >> GO TO 19.
- **NG** >> Repair or replace hoses and tubes.

19. **CHECK SIGNAL LINE AND RECIRCULATION LINE**

Check signal line and recirculation line between filler neck tube and fuel tank for clogging, kink, cracks, looseness and improper connection.

**OK or NG**
- **OK** >> GO TO 20.
- **NG** >> Repair or replace hoses, tubes or filler neck tube.

20. **CHECK REFUELING EVAP VAPOR CUT VALVE**

Refer to [EC-584, "Component Inspection"].

**OK or NG**
- **OK** >> GO TO 21.
- **NG** >> Replace refueling EVAP vapor cut valve with fuel tank.

21. **CHECK INTERMITTENT INCIDENT**

Refer to [EC-138, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT"].

>> INSPECTION END