

HG: Positive Crankcase Ventilation (PCV) System

← [HG: Introduction](#)

HG1 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS)

- Check for DTCS P053A, P145E or P1489.

Are any of the above listed DTCS present?

Yes	No
GO to HG5 .	For all other symptoms without DTCS, GO to HG2 .

HG2 VISUAL INSPECTION OF THE PCV VALVE

Note: If the PCV valve or tube is electrically heated, verify the electrical connection. On some applications the vehicle may be equipped with a thermal harness that only provides electrical continuity when the temperature is less than 5°C (40°F) +/- 4°C (+/- 7° F). Typically this harness is located close to the PCV valve or tube.

Note: If the PCV valve is water heated, verify the coolant hose and clip connections.

- Check the PCV valve, hoses and connections for leaks or restrictions.
- Verify the PCV valve maintenance schedule has been followed.
- Verify the proper PCV valve part number.
- Verify the PCV valve is clean.
- Verify the fresh air tube and related hoses are clean and routed correctly.

Is a concern present?

Yes	No
REPAIR as necessary. VERIFY the symptom no longer exists.	For an electrically heated PCV tube, GO to HG4 . For all others, GO to HG3 .

HG3 STUCK PCV VALVE CHECK

- Disconnect the PCV valve from the valve cover.
- Shake the PCV valve.

Does the PCV valve rattle when shaken?

Yes	No
REINSTALL the PCV valve. For PCV systems with electrical heating, GO to HG4 . For PCV systems without electrical heating, GO to HG12 .	The PCV valve is sticking. INSTALL a new PCV valve. VERIFY the symptom no longer exists.

HG4 CHECK FOR A PCM CONTROLLED PCV HEATER

Note: If a thermal extension harness is present then the PCV is non-PCM controlled. Refer to Section 1 [Positive Crankcase Ventilation \(PCV\) System](#).

- Check if the PCV heater is PCM controlled.

Is the PCV heater PCM controlled?

Yes	No
GO to HG5 .	GO to HG8 .

HG5 CHECK THE HARNESS VOLTAGE TO THE PCM CONTROLLED PCV HEATER

- Suspect PCV connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) PCVHF Connector, Harness Side	(-)
IGN START/RUN	Ground

- Measure the voltage between:

(+) PCV Connector, Harness Side	(-)
IGN START/RUN	Ground

Is the voltage greater than 10 V?

Yes	No
GO to HG6 .	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

HG6 CHECK THE HARNESS CIRCUIT TO THE PCM CONTROLLED PCV HEATER

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

(+) PCM Connector, Harness Side	(-) PCVHF Connector, Harness Side
PCVHF	PCVHF

- Measure the resistance between:

(+) PCM Connector, Harness Side	(-) PCV Connector, Harness Side
PCVHC	PCVHC

Is the resistance greater than 5 ohms?

Yes	No

GO to [HG7](#).

REPAIR the open circuit. CLEAR the DTCs.
REPEAT the self-test.

HG7 CHECK THE RESISTANCE OF THE PCM CONTROLLED PCV VALVE OR TUBE HEATER

- Measure the resistance between:

(+) PCVHF Connector, Component Side	(-) PCVHF Connector, Component Side
IGN START/RUN	PCVHF

- Measure the resistance between:

(+) PCV Connector, Component Side	(-) PCV Connector, Component Side
IGN START/RUN	PCVHC

Is the resistance between 10 - 35 ohms?

Yes	No
GO to HG13 .	INSTALL a new PCV valve or tube. REFER to the Workshop Manual Section 303-08, Engine Emission Control. CLEAR the DTCs. REPEAT the self-test.

HG8 CHECK THE VOLTAGE AND GROUND AT THE HARNESS ELECTRICALLY HEATED PCV VALVE OR TUBE NON-PCM CONTROLLED

- PCV connector disconnected.
- PCVTE-Harness Side connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) PCVTE-Harness Side, Harness Side	(-) PCVTE-Harness Side, Harness Side
IGN START/RUN - Pin 1	GND - Pin 2

Is the voltage greater than 10 V?

Yes	No
For vehicles with a thermal extension harness, GO to HG10 . For all others, GO to HG11 .	GO to HG9 .

HG9 CHECK THE VOLTAGE CIRCUIT

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

(+) PCV Connector, Harness Side	(-)
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IGN START/RUN	Ground
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Is the voltage greater than 10 V?

Yes	No
REPAIR the open GND circuit. Test the system for normal operation.	REPAIR the open PWR circuit Test the system for normal operation.

HG10 VALVE RESISTANCE CHECK WITHOUT AN EXTENSION HARNESS

Note: On some applications the vehicle may be equipped with a thermal harness that only provides electrical continuity when the temperature is less than 5°C (40°F) +/- 4°C (+/- 7°F). Typically this harness is located close to the PCV valve or tube.

- Disconnect the thermal extension harness from the PCV valve.
- Measure the resistance between:

(+) PCV Connector, Component Side	(-) PCV Connector, Component Side
IGN START/RUN	PCVHC

Is the resistance between 10 - 35 ohms?

Yes	No
INSTALL a new thermal extension harness PCV. Test the system for normal operation.	INSTALL a new PCV.

HG11 CHECK THE RESISTANCE OF THE ELECTRICALLY HEATED PCV VALVE OR TUBE

- Measure the resistance between:

(+) PCV Connector, Component Side	(-) PCV Connector, Component Side
IGN START/RUN	GND

Is the resistance between 10 - 35 ohms?

Yes	No
GO to HG12 .	INSTALL a new PCV valve or tube. REFER to the Workshop Manual Section 303-08, Engine Emission Control.

HG12 PCV SYSTEM CHECK

- Start the engine and warm it until engine temperature is stable.
- Disconnect the closure (fresh air) hose from the remote air cleaner or air outlet tube (the tube connecting the mass air flow sensor and the throttle body).
- Place a stiff piece of paper over the hose end. Wait 1 minute.

Does vacuum hold the paper in place?

Yes	No

The PCV system is OK.

RETURN to [Section 3](#), Symptom Charts for further direction.

CHECK for vacuum leaks/obstruction in the PCV system (such as oil cap, PCV valve, hoses, cut grommets, valve cover bolt torque/gasket leak). REFER to the vehicle emissions control information (VECI) label for PCV system components and routing. REPAIR as necessary.

HG13 CHECK IF A CONCERN OR DTC IS STILL PRESENT

- Connect the PCV system.
- Clear the DTCs.
- Carry out the self-test.

Is the concern or DTC is still present?

Yes	No
GO to HG14 .	Unable to duplicate or identify the concern at this time. RETURN to Section 3 , Symptom Charts for further direction.

HG14 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.
