
Positive Crankcase Ventilation (PCV) System

Overview

The PCV system cycles crankcase gases back through the intake air system into the engine where they are burned. The PCV valve regulates the amount of ventilated air and blow-by gases to the intake manifold.

Currently, both heated and non-heated PCV systems are used. The heated systems use either a water heated valve, an electrically heated valve, or an electrically heated tube. Engine coolant flows around the water heated valve to prevent it from freezing. Electrically heated systems use a heating element enclosed in the PCV valve, PCV fitting or the PCV tube to prevent the valve or tube from freezing. The valve or the tube heater can be controlled by either the powertrain control module (PCM) or the thermal harness.

- Thermal harness controlled heater — On vehicle applications equipped with a thermal harness to the PCV valve or tube. The thermal harness only provides electrical continuity to the heating element when temperatures are less than 5°C +/- 4°C (40°F +/- 7° F). Typically this harness is located close to the PCV valve or tube.
- PCM controlled heater — On these applications the PCV heater is turned on by the PCM. When the intake air temperature is less than 0°C (32°F) the PCM grounds the positive crankcase ventilation valve heater control (PCVHC) circuit and turns the heater on. When the intake air temperature exceeds 9°C (48°F) the heater is turned off. The PCV heater is also off when the engine is not running to prevent unnecessary battery drain. The heater is also off if the vehicle charging system is greater than 16 volts. This minimizes heater element overload.

PCV systems that comply with on board diagnostic (OBD) PCV monitoring requirements use a quarter-turn cam-lock thread design at one end to prevent accidental disconnection from the valve cover. For more information about the PCV monitor refer to [Positive Crankcase Ventilation \(PCV\) System Monitor](#) in this section.

PCV Types

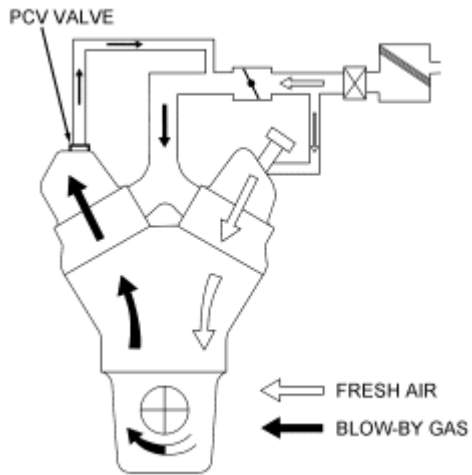
Heated Tubes

- PCM-controlled (no thermistor in harness)
- non-PCM controlled (thermistor in harness)

PCV Valves

- water heated
- non-heated
- PCM-controlled
- non-PCM controlled electrically heated thermistor in harness

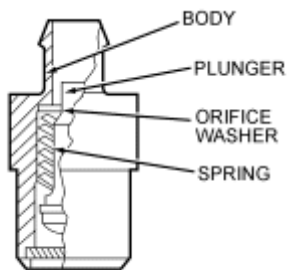
Refer to the following figures for examples of these types of PCV valves.



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Typical PCV System for V-Engine

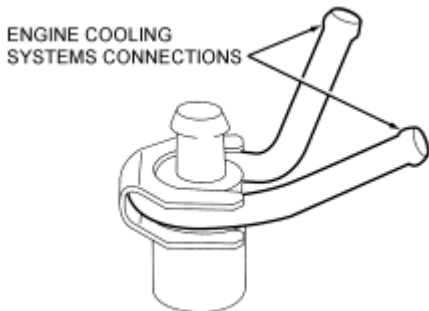
Hardware



PCV INTERNAL DRAWING

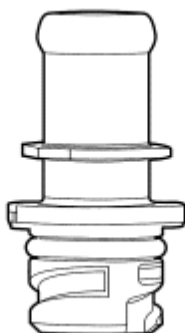
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Typical PCV Internal Drawing



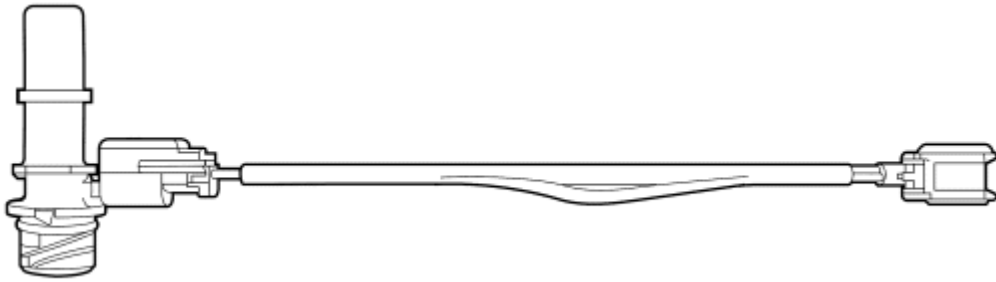
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Water Heated PCV



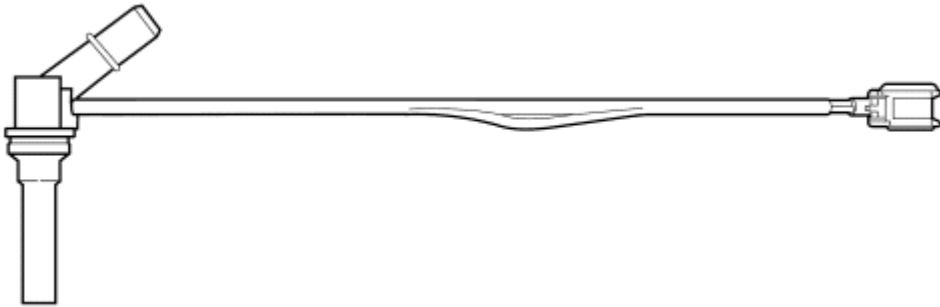
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Quarter-Turn Cam-Lock Design PCV



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Electrically Heated PCV (with Thermal Harness)



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Electrically Heated PCV Tube (with Thermal Harness)
