



## “WENCH WITH A WRENCH”

By Gail Wagner

### Your PCV Valve Sucks, Really!

Hi Miata Folks,

I’m pretty certain you’ve all heard of a “PCV valve” in your car but ever wonder exactly what it was, what it did or what you should do about it ? Never fear, *The Wench* is here to explain all. ☺

#### What is it?

The Positive Crankcase Ventilation system (PCV valve and hoses) was one of the earliest “green” auto emissions-control devices and became standard in all U.S. autos by 1968. Laws were passed to eliminate unburned automotive hydrocarbons from being vented directly into the atmosphere and so the old down-draft tube that vented unburned gasses directly into environment was the first to go, replaced by the PCV.

You can easily find the PCV as it is usually mounted in a grommet on the top or side of the engine valve cover at the end of a hose or tube or hidden underneath the intake manifold in later Miata models and can be either a small straight or L-shaped plastic piece.

#### What it does:

Basically, the PCV system takes leftover combustion gases (called “blow-by”) from inside the crankcase (the oil pan and bottom of the engine) and routes them back into the intake manifold where they’re burned in the combustion chamber instead of allowing hydrocarbons, a major source of air pollution discovered in the 1950’s, to escape into the atmosphere. Pretty cool, huh?

So, the PCV is essentially a metered “leak of air” into the intake system sucking all of its input from the crankcase. You can’t have a big air leak happening all the time or your car wouldn’t idle worth a damn. (Whoops, I mean *darn*.☺) The valve receives a signal when there are greater fumes to scavenge. Ergo, throttle shut (at idle) = not much fumes; throttle open (when you step on the gas) = lots of fumes to suck back to the intake manifold for burning.

A second function of the PCV valve is to protect the engine in case of backfire which causes a sudden high-pressure pulse in the intake manifold. This forces the PCV valve closed so that the backfire flame can’t reach the crankcase where it could ignite flammable fumes and cause damage, to say the least.

### Does it need replacement and why?

The PCV system is seldom listed as an auto maintenance item but it can cause engine performance and emissions problems. Basically a one-way check valve, if the PCV doesn’t open and close as it should or if any part of the system fails for instance, it can cause rough idle, sluggish acceleration, increased oil consumption or blow out gaskets and seals creating oil leaks.

Another problem can be a lack of air flow to carry vapors from the crankcase. Without sufficient air flow, moisture contamination will remain and engine sludge build-up can be a result. (Oil sludge is a solid or gel in motor oil caused by the oil gelling or solidifying. Oil sludge can be a major contributor to engine problems and can cause the engine to be replaced if the damage is severe.) A poorly maintained engine’s PCV system will eventually become contaminated with oil sludge. The clogged PCV system or a bad valve can increase oil consumption because pressure builds when the fumes from the crankcase aren’t allowed to flow into the combustion chamber to be burned off. That additional pressure can force oil past seals and gaskets if the valve is stuck open. If there’s a leak in the system that will allow too much air into the engine, it will throw off the air-fuel mixture triggering that good, old “Check Engine” idiot light we all love to hate.

A hose or tube in the PCV system can become clogged from a sludge build-up or a vacuum hose may leak rather than the valve itself, so it pays to have the total system inspected and tested for air flow and leaks. Rubber grommets or O-rings may also deteriorate and leak. You can also spot a bad PCV if there is an oil spot on your air filter as it backs up due to system clogging.

Though it’s not listed in the owner’s manual maintenance schedule in most cars, the PCV system should be inspected periodically to make sure it’s still in good condition. Some automotive experts recommend replacement between 20,000 to 50,000 miles along with routine maintenance such as an oil change while others suggest PCV valves can last up to 80,000 miles or more. Frequent shorter trips (under 10 miles) will cause the valve to fail sooner and under extreme conditions a 30,000 mile replacement may be needed.

That’s the bad news. The good news is because of its relatively low cost and ease of replacement (except on later Miata NC models) changing the PCV routinely is probably smart preventative maintenance. You decide.

### Common symptoms indicating a sick PCV:

- Leaks in the engine compartment or around the PCV grommet on the valve cover
- Oil present in the air filter
- Oil leaks underneath your car
- A whistle, a whine or a low moaning noise from the engine (and moans later from you, the owner) ☺
- Car runs poorly (idles rough/poor acceleration)
- Worse gas mileage
- Possible maintenance diagnostic trouble codes (DTC): P0171 or P0174

On summation, if you suspect any of the above or your vehicle has developed an oil leak, have the PCV system checked. It could save you a lot of money.

Zoom Zoom Safely!

*Gail*

**DISCLAIMER**

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PCV located on top of valve cover:



PCV System Illustrated:

