1975-79 EXHAUST EMISSION SYSTEMS
Positive Crankcase Ventilation System (PCV)

American Motors.
Chrysler Corp.
Ford Motor Co.
General Motors
Buick
Cadillac
Chevrolet
Oldsmobile
Pontiac

DESCRIPTION

The Positive Crankcase Ventilation (PCV) system is designed to prevent hydrocarbons from escaping to the atmosphere. This is accomplished by routing the vapors from the crankcase, through a vacuum-controlled PCV valve, into the intake manifold. The vapors then mix with the air/fuel mixture and are burned in the combustion process.

OPERATION

Air is supplied to the PCV system through a crankcase ventilating filter assembly located in the air cleaner assembly or on rocker arm cover.

When the engine is operating, fresh air enters the PCV ventilation system through the air cleaner and filter.

The air then flows into the rocker arm cover and valve compartment. It combines with blow-by gas and unburned air/fuel mixture and burns in combustion chamber. *See Fig. 1.*

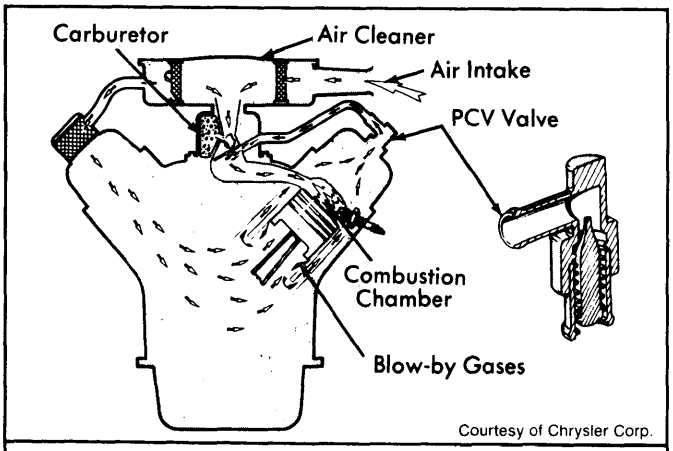

Fig. 1: Typical Crankcase Ventilation System

The PCV valve is constructed so it is held closed by spring pressure when engine is not running. *See Fig. 2.* This prevents an accumulation of hydrocarbon fumes from collecting in the intake manifold, which results in hard starting.

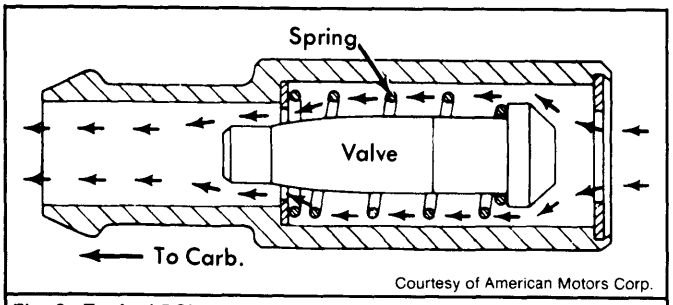

Fig. 2: Typical PCV Valve & Airflow

As the engine is started, manifold vacuum pulls the valve open against spring pressure. As long as there is engine vacuum, the valve floats, permitting crankcase fumes to enter the intake manifold.

A baffle in the rocker arm prevents oil from being drawn into the intake manifold through the PCV valve.

In the event of an engine backfire through the intake manifold, the PCV valve shuts, preventing any flow through it. This action prevents the ignition of fumes in the crankcase.

During certain engine operations, more blow-by is created than the PCV valve can handle. The excess amount is returned to air cleaner and carburetor through the rocker arm cover and breather assembly, then burned in the engine.

The breather assembly acts as a separator to keep oil from being drawn into the air cleaner during this operation.

TESTING

ALL (EXCEPT AMERICAN MOTORS)

Start engine and allow it to reach normal operating temperature. Make sure engine is idling at normal curb idle and perform following checks:

1) Remove PCV valve from its mounting. If valve is functioning properly, a hissing noise will be heard as air passes through. A strong vacuum should be felt when finger is placed over valve inlet. While finger is over inlet, check for vacuum leaks in hose line and at all connections. Re-install PCV valve, then remove crankcase air inlet hose at air cleaner.
2) Loosely hold a piece of stiff paper over opening at end of inlet hose. Paper should be sucked against hose opening with a noticeable force after sufficient time has elapsed for crankcase pressure to lower (usually about a minute).
3) As a final check; stop engine, remove PCV valve and shake it, a metallic clicking noise should be heard, indicating valve is free.

NOTE: If system passes both the engine running and stopped tests, it is functioning properly and no further tests are required. If it has failed either test, replace appropriate components and retest. If it does not pass on second try, clean system.

AMERICAN MOTORS

1) Remove PCV valve from hose (Calif. 4-cylinder engines with Auto. Trans. and V8 models) or from grommet in rocker arm cover (6-cylinder).
2) Connect valve to PCV Valve Tester (J-23111). Connect a vacuum gauge to read intake manifold vacuum.

NOTE: PCV valve must be in a horizontal position and lightly tapped during tests (holding tester in a vertical position).

3) Start engine, allow to idle, compare vacuum and tester reading to flow chart. A valve that flows above or below chart specification must be cleaned or replaced.

AMERICAN MOTORS PCV VALVE FLOW RATE CHART

Vacuum (in. Hg)	Airflow (CFM) 4-Cyl. [1] & 6-Cyl.	Airflow (CFM) V8
16		1.34-1.63
13	1.30-1.70	
7		2.70-3.79
5	1.30-2.20	
3		3.30-3.49
2	1.40-2.45	

[1] - Calif. Auto. Trans. only.

1975-79 EXHAUST EMISSION SYSTEMS
Positive Crankcase Ventilation System (PCV) (Cont.)

SERVICE PROCEDURES

NOTE: An engine may idle slow or rough due to clogged ventilator valve or system; therefore never adjust carburetor idle without first checking valve and system. See TESTING in this section).

If the ventilator valve or system becomes clogged, all crankcase ventilation will stop and serious engine damage could result.

Although the following manufacturer's service procedures give specific intervals, it is recommended the crankcase ventilation system be checked more frequently if vehicles are operated under severe conditions (extreme dust, prolonged idling, trailer hauling or short trips in cold weather).

AMERICAN MOTORS

PCV Valve - Replace every 30,000 miles. Cleaning may be required between valve replacement intervals under adverse operating conditions.

Oil Filler Cap Filter (V8 Engines) - Clean filter by applying light air pressure in reverse direction of normal flow through the filler tube opening of cap. Lightly oil filter with clean engine oil. If filter is deteriorated, replace filler cap.

Air Inlet Filter (4 & 6-Cyl. Engines) - Filter element is located in a retainer in the air cleaner. Rotate retainer and remove. Clean with kerosene and lightly oil element with engine oil at 30,000 miles.

BUICK

PCV Valve - Remove from intake manifold or rocker arm cover and check every 15,000 miles. Replace with new valve at 30,000 mile intervals.

Filter Element - Replace at 22,500 on schedule I vehicles; 30,000 miles for schedule II.

CADILLAC

PCV Valve - Disconnect valve from rubber elbow on right rocker arm cover and replace at 30,000 miles.

Filter Element - Attached to outside of air cleaner on models with carburetors and on left rocker arm cover on air injected models. Check at 15,000 miles; replace at 30,000 miles. On Diesel models check breather cap and valve assembly (replace every 30,000 miles) and crankcase ventilation filter assembly (both valve covers) every 6000 miles.

CHEVROLET

PCV Valve - Located on left rocker arm cover on V8 engines, at rear top of rocker arm cover on 6-cylinder engines, and left side of engine on camshaft cover on 4-cylinder models. Check every 15,000 miles and replace valve, filter, and worn or plugged hoses every 30,000 miles.

Filter Element - In carburetor, replace at 30,000 miles.

CHRYSLER CORP.

PCV Valve - Replace at 30,000 miles. Check at 15,000 miles and replace if necessary.

Filter Element - Every 30,000 miles clean crankcase inlet air cleaner, and replace carburetor air cleaner element.

FORD MOTOR CO.

NOTE: Refer to engine compartment decal for maintenance code.

PCV Valve - Replace every 22,500 miles for "A" code maintenance, and every 30,000 miles for "B" code. PCV is located on rocker cover of 6-cylinder and V8 engines and in-line on left side of engine on 4-cylinder models.

Filter Element - Replace at 30,000 miles for "A" and "B" code vehicles. Located in air cleaner housing.

OLDSMOBILE

PCV Valve - Replace valve at 30,000 miles, check at 15,000 miles and replace if necessary. Valve located in rocker arm cover on 6-cylinder and V8 engines and on camshaft cover on 4-cylinder engines.

Filter Element - Clean serviceable filters located in valve covers at 15,000 miles and replace non-serviceable filters located in carburetor whenever carburetor air cleaner is replaced. On Diesel models, check breather cap and valve assembly (replace every 30,000 miles) and crankcase ventilation filter assembly (both valve covers) every 6000 miles.

PONTIAC

PCV Valve - Located in rocker arm cover or intake manifold. Check at 15,000 miles and replace at 30,000 mile intervals.

Filter Element - Replace each time air filter element is replaced.

PCV Hoses - Do not blow out clogged lines. If hoses are worn or plugged, replace hoses.

1980 GENERAL MOTORS

NOTE: The following information applies to the 1980 Buick Skylark, Chevrolet Citation, Oldsmobile Omega, and Pontiac Phoenix.

PCV Valve - Located on top of valve cover (left valve cover on V6 engines). Replace valve and plugged or damaged hoses every 30,000 miles. On California vehicles, replace only if operated in dusty conditions.

Filter Element - Replace every 30,000 miles or every time air cleaner is replaced.