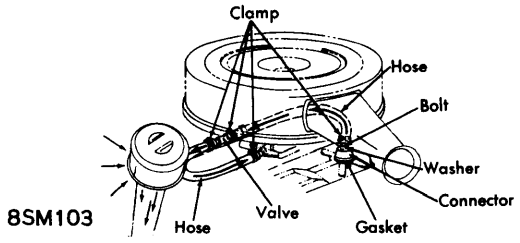
Crankcase Ventilation

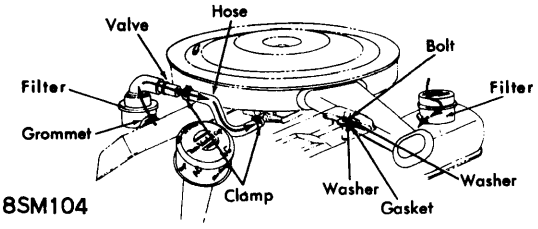
1961-67 CADILLAC OPEN SYSTEM

DESCRIPTION

1961-67, except 1965-67 California models, incorporate an "open" type crankcase ventilation system. This system is a "Type 1" design. This system consists of an "open" breather cap, a hose running from rocker cover to carburetor throat and a ventilator valve located close to carburetor insulator fitting. The 1967 Eldorado series differs from the system described above. Instead of using an open breather cap, it uses a closed cap and has crankcase breather mounted on the left rocker arm cover. Fresh air to crankcase enters through this breather. The mounting of ventilator valve is also different as valve is installed in an elbow mounted to an oil separator, located on right rocker arm cover.



HOSE CONNECTIONS STANDARD SERIES (OPEN)



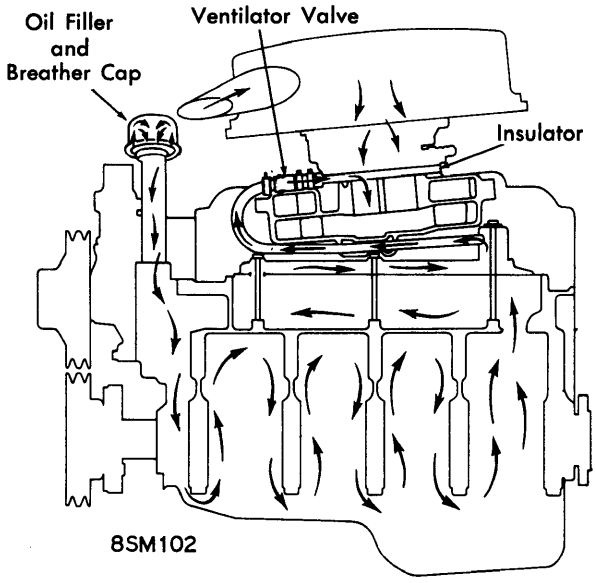
HOSE CONNECTIONS ELDORADO (OPEN)

OPERATION

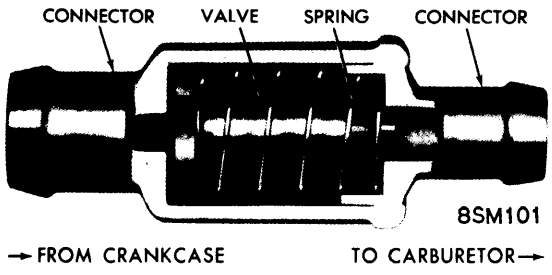
Air entering the system first passes through the breather cap, which contains a copper mesh filter to remove air borne dust and foreign particles. It then flows down the oil filler tube and circulates through the engine. The fumes are then routed toward rear of left valve cover. From here they pass through a connector and hose to ventilator valve. The valve is located close to carburetor insulator fitting. The critical point of the system is ventilator valve. When the engine is started, manifold vacuum pulls the valve open against spring pressure and, as long as the engine vacuum is from 1-14.9" Hg., the valve "floats", permitting crankcase fumes to by-pass unrestricted and enter intake manifold. During periods of high manifold vacuum (above 14.9"), the valve closes against spring pressure, leaving only a .102" orifice open to the manifold. This prevents large amounts of hydrocarbons from entering the air-fuel mixture and upsetting the fuel-air ratio necessary for smooth engine performance.

SYSTEM CHECKING

As explained above the ventilator valve is the critical point of the system. In time this valve may become restricted or stuck, due to the accumulation of blow-by and oil and water vapor deposits. The valve should be in proper working order at all times.



ENGINE VENTILATING SYSTEM (OPEN)



VENTILATOR VALVE

DIAGNOSIS CHART

Slow, Unstable Idle, Engine Rolling, Frequent Stalling, Breather Backflow, Oily Engine Compartment.

1) Valve completely plugged, or stuck in engine "off" position.

1961-67 CADILLAC OPEN SYSTEM (Cont.)

2) Valve stuck in backfire (open or engine off) position.

Engine Operation Good, But Breather Backflow At Heavy Throttle, Only Engine Compartment.

Valve stuck in idle (closed) position.

SERVICE INFORMATION

It is very important that the ventilator valve and other components of the system be serviced regularly to insure that they are operating properly. The 1961 through 1964 Cadillac requires servicing of the system at each oil change. The 1965 through 1967 Cadillac requires replacement of the ventilator valve every 12,000 miles, or every 12 months, whichever comes first. The rest of the system should be serviced at the same interval.

Ventilator Valve Servicing (1961-64) - The valve used in 1961-64 can be cleaned. After removing the valve insert a .080-.090" wire (1963); .090-.100" wire (1964), in the smaller end of the valve to clean the orifice inside of valve. Immerse in any good cleaning solvent and blow dry with compressed air by placing air hose against the larger end of the valve. When replacing the valve apply a small amount of silicone on both ends of the valve. *NOTE - Positive crankcase vent valve is not interchangeable with those of other engines. Use of other than the proper valve may result in breather backflow and engine damage.* All valves cannot be disassembled.

1965-67 - These valves cannot be cleaned or taken apart. Whenever the valve is not operating properly it must be replaced.

Breather Cap Service - The cleaning of the oil filler cap or Eldorado crankcase filter, is very important. Since all the air entering the engine must pass through this filter, any restriction will eventually reduce the amount of air to the carburetor thus affecting carburetor calibration.

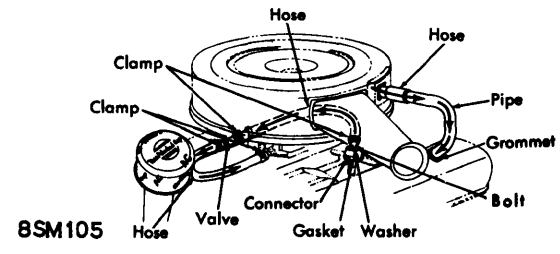
1965-67 CADILLAC CLOSED SYSTEM

DESCRIPTION

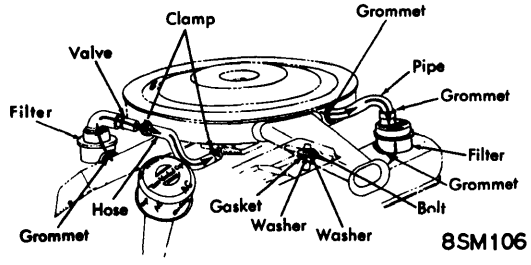
In 1965, Cadillac began installing a "closed" positive crankcase ventilation system on all California cars. This system is a "Type 4" design. System consists of a non-vented oil filler cap, an air cleaner strainer, and an air cleaner-to-rocker arm cover hose and pipe, along with a positive crankcase ventilator valve and hose. On all models, except 1967 Eldorado, one end of the hose and pipe is attached to strainer, which is located inside air cleaner housing, and the other end connected to the left rocker arm valve cover. On the 1967 Eldorado a strainer, mounted on the left rocker arm cover, is used instead of one located inside air cleaner housing. This strainer is connected by a pipe to the air cleaner. The "closed" type oil filler cap used in this system is painted a distinctive color and has identification printed on it. *NOTE — Never install a closed type cap on a car equipped with the standard ventilation system. So doing will prevent crankcase ventilation and could result in engine oil seal failure, engine rusting and other major engine damage.*

OPERATION

Air enters the system through the air cleaner to the strainer which contains an oil soaked ribbon filter either in the carburetor air cleaner or on the left rocker arm cover. It then flows into the rocker arm cover, into the valve lifter compartment and combines with the blow-by gas consisting of exhaust gas and unburned air-fuel mixture. After the fumes have circulated they are picked up at the connector at the rear of the valve cover. From the connector the fumes flow through a hose to the ventilator valve, which directs the fumes to the base of the carburetor and into the intake manifold. On the 1967 Eldorado the fumes are forced through an oil separator mounted on the right rocker arm cover, through the ventilator valve and hose to the base of the carburetor. From here the fumes move into the intake manifold and are added to the normal fuel and air mixture and burned. The ventilator valve operates the same as the valve in the "Type I" system, however at certain engine operations more blow-by gases are created than the ventilator valve can handle. In this case the excess amount is returned to the air cleaner



HOSE CONNECTIONS STANDARD SERIES (CLOSED)



HOSE CONNECTIONS ELDORADO (CLOSED)