1975-79 EXHAUST EMISSION SYSTEMS
General Motors Pulse Air Injection Reactor

1977-79 General Motors

NOTE: This article also contains information which is applicable to 1980 Buick Skylark, Chevrolet Citation, Oldsmobile Omega and Pontiac Phoenix models.

DESCRIPTION

The Pulse Air (PAIR) injection system is a non-pump type air injection system which uses engine exhaust pulses to draw fresh air into the exhaust system. This helps to further oxidize HC and CO emissions. System consists of a grouping of check valves in a PAIR valve assembly (2 used on V6 applications) and related tubing.

This system is used on 1977-78 Calif. Chevrolet Chevette models and all 1979 Chevrolet Chevette models and on 1980 Buick Skylark, Chevrolet Citation, Oldsmobile Omega and Pontiac Phoenix models when equipped with L4 engine (exc. Calif.) or V6 engine (all states).

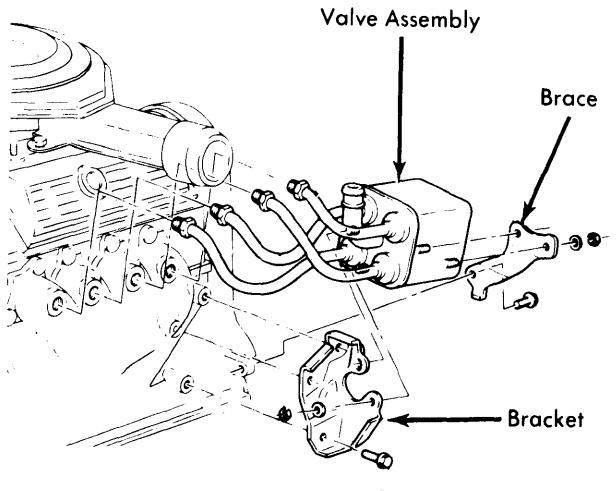
OPERATION

Each one of the check valves in the pulse air valve is connected to an exhaust port. The firing of the engine creates a pulsating flow of exhaust gases. When positive exhaust pressure is felt, the check valve will be forced closed and no exhaust gas will flow past the valve into the fresh air supply line. With negative exhaust pressure (vacuum), the check valve will open and fresh air will be drawn and mixed with exhaust gases. During high engine RPM, the check valve will remain closed (such as under heavy acceleration).

TESTING

FUNCTIONAL TEST

1) Connect hand vacuum pump to Pulsair valve as follows:
- On L4 engines, detach hose from fitting on valve and attach vacuum pump directly to fitting with hose or stopper-and-hose combination.



Courtesy of General Motors Corp.

Fig. 1: Typical Pulse Air Valve Mounting Location

- On V6 engines, front and rear Pulsair valves must be tested separately: Detach hose from front valve (if equipped, disconnect Pulsair solenoid from valve). Connect hand pump directly to valve fitting with hose or stopper-and-hose combination.

2) Apply more than 15 in. Hg vacuum. Note the time required for vacuum level to drop from 15 in. Hg to 5 in. Hg. If less than 2 seconds, replace valve as it is not holding vacuum properly.

TROUBLE SHOOTING

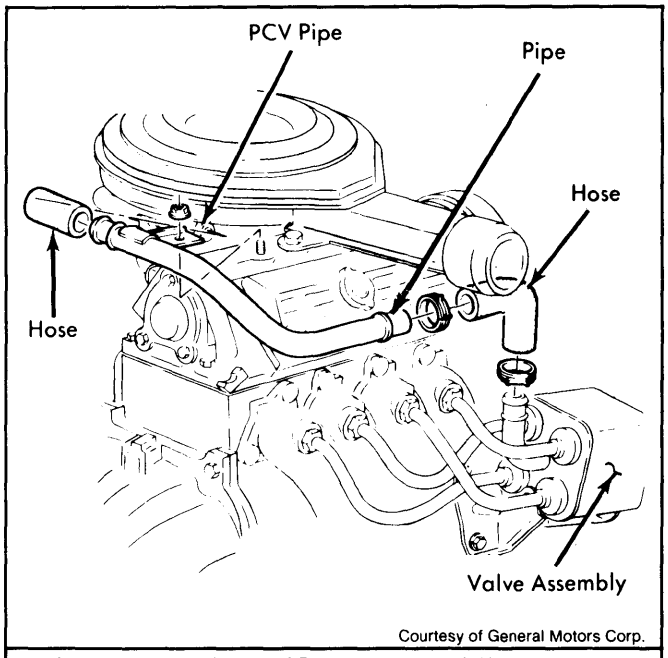
Short Hissing Noise - May indicate a defective pulse air valve or improper torque at manifold. Inspect pulse air valve.

Surge or Poor Performance - May be caused by failure of one or more check valves. Exhaust gas will enter carburetor through air cleaner and cause poor driveability.

Excessive Heat; Paint Burned Off of Valve - Exhaust gas passing through pulse air valve, sending heat to valve body. Rubber hose will also be damaged. A short hissing noise may also be noticed. Check air valve.

Poor Driveability - Rubber hose deteriorated. Hose particles entering carburetor causing poor driveability. Clean carburetor. Replace air valve.

NOTE: For further diagrams of all vehicles using PAIR system, see GENERAL MOTORS VACUUM DIAGRAMS in this section.



Courtesy of General Motors Corp.

Fig. 2: Typical Installation of PAIR Valve Pipe & Hose