GENERAL MOTORS PULSE AIR INJECTION REACTOR

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. A single pulse air valve with 4 check valves (one for each exhaust port) is used.

The Pulse Air system is used on 1.6 Liter (98") 4-cylinder engines in both Chevette and Pontiac T1000 models.

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). Air supply to the Pulse Air System is controlled by an electric and vacuum shut off valve operated by the Computer Command Control. When the engine starts and is operating in open loop mode, the valve is energized and the fresh air line is open. When Computer Command Control switches to closed loop, the valve is de-energized and the fresh air line is closed.

A deceleration valve is used to prevent backfiring in the exhaust system during deceleration and to reduce emissions of unburned Hydrocarbons (HC).

TESTING

FUNCTIONAL TEST

Connect a hand vacuum pump or other vacuum source to rubber hose end of pulse air valve. With 15 in. Hg vacuum, there will be an allowable drop to 5 in. Hg vacuum in 2 seconds. If vacuum drops in less than 2 seconds, replace valve and/or hose.

NOTE – *Also see General Motors Computer Command Control in this section.*

TROUBLE SHOOTING

FAILURE DIAGNOSIS

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 diagrams of vehicles using PAIR system, see General Motors Vacuum Diagrams in this section.*

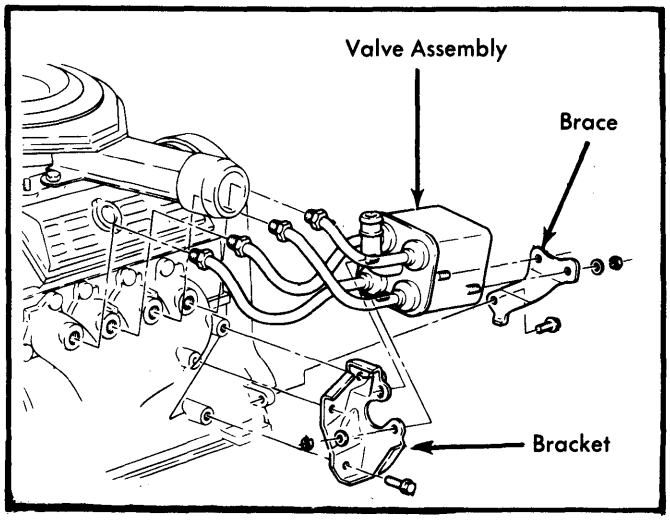

Fig. 1 Pulse Air Valve Mounting Location Shown

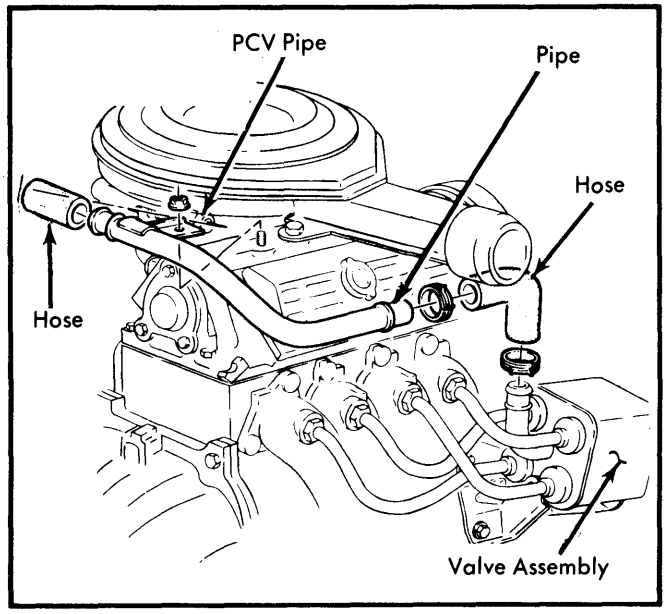

Fig. 2 Showing Typical Installation of PAIR Valve Pipe and Hose