1974-79 EXHAUST EMISSION SYSTEMS
General Motors & Opel Air Injection System

1979 All Models

NOTE: For 1974-78 models, see AIR INJECTION SYSTEMS article in this section.

DESCRIPTION

The air injection system is used to add secondary air to exhaust ports to further the burning of hot exhaust gases. This reduces HC and CO levels. System consists of air pump with built-in relief valve, by-pass valve (Federal only), check valve and air injection manifold. California models are equipped with an air switching valve, which operates in response to over-temperature control system, and a mixture control valve which is an afterburn protection device.

OPERATION

AIR PUMP

Air pump is belt driven. It draws fresh air in, pressurizes it and passes it along to rest of system. A built-in relief valve will bleed off any excess pressure occurring in the air pump. Normal air pump pressure is 2.8-4.9 psi (.20-.34 kg/cm²).

CHECK VALVE

This one-way flow control directs air into air injection manifold from air pump. When exhaust system pressure is greater than air pump pressure, check valve closes to prevent exhaust gas from flowing back into air pump system and damaging components.

BY-PASS VALVE

Federal Models - Located between air pump and injection manifold, by-pass valve controls secondary air flow. Purpose of by-pass valve is to prevent afterburning during deceleration. This is accomplished by cutting secondary air flow to exhaust system when high intake manifold vacuum level is sensed at by-pass valve. Secondary air is dumped to atmosphere. This prevents additional burning of rich fuel mixture caused when throttle blades close initially upon deceleration.

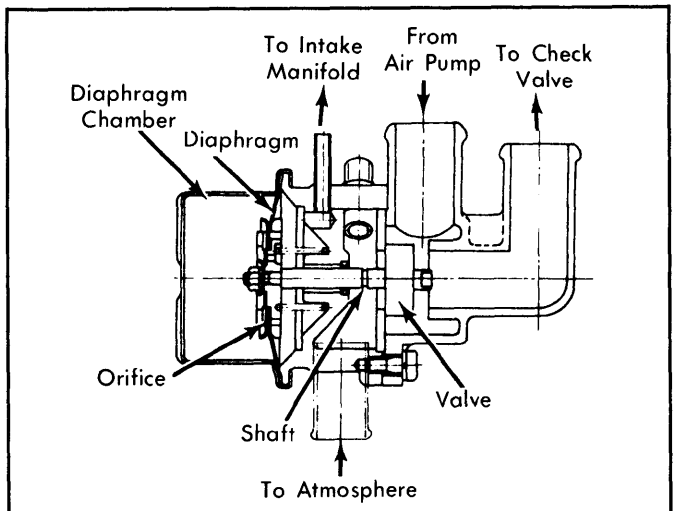

Fig. 2: Sectional View Of By-Pass Valve

MIXTURE CONTROL VALVE

California Models - This normally closed valve functions like the by-pass valve, to prevent afterburning on deceleration. This valve acts differently by adding secondary (air pump) air to intake manifold dur-

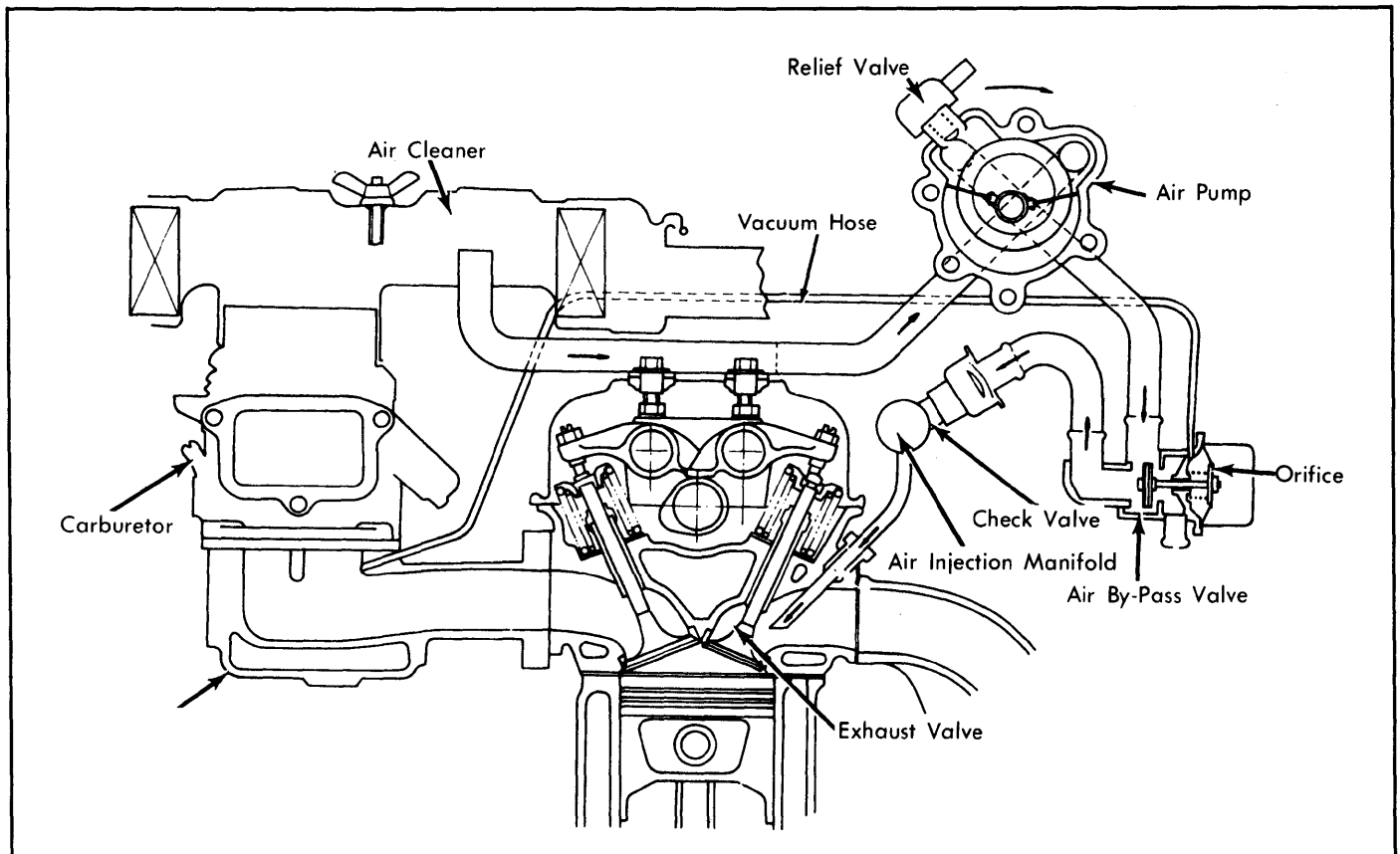

Fig. 1: Air Injection System (Federal Models)

General Motors & Opel Air Injection System (Cont.)

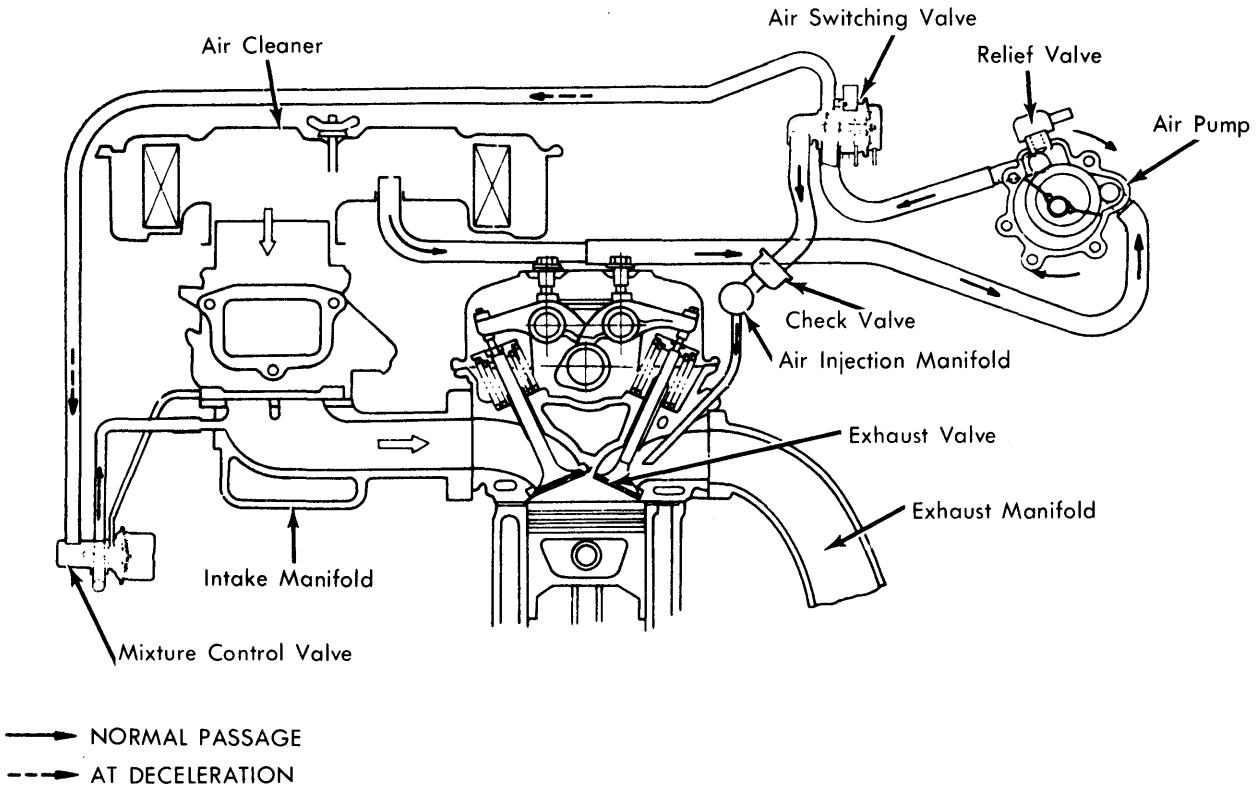

Fig. 3: Air Injection System (California Models)

ing deceleration. When high intake manifold vacuum is sensed, valve opens and air pump air is directed to intake manifold to combine with rich mixture caused by rapid closing of throttle blades.

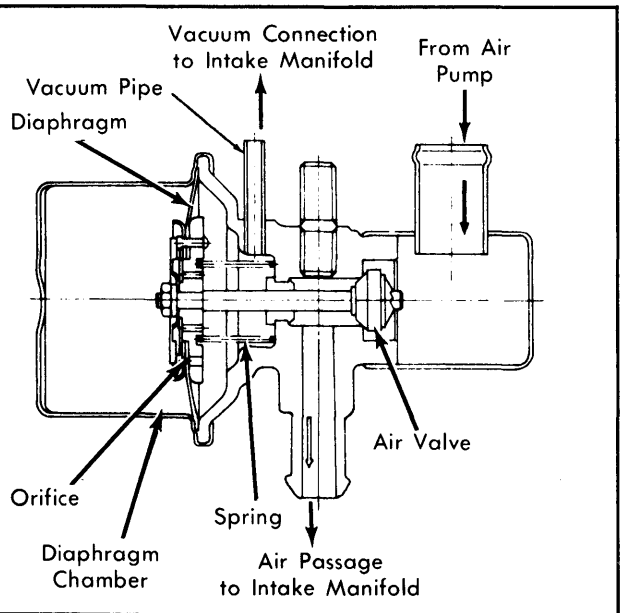

Fig. 4: Sectional View of Mixture Control Valve

TESTING

AIR PUMP

If found to be excessively noisy or not producing any air pressure, pump must be replaced; it is not serviceable.

BY-PASS VALVE

Start engine, depress accelerator to floor and quickly release (or manually move throttle linkage from under hood). Air should blow out by-pass valve atmospheric port for a few seconds after throttle valves are quickly closed. If air comes out for longer than 5 seconds, or does not come out at all, replace by-pass valve.

MIXTURE CONTROL VALVE

With engine running, detach rubber hose connecting mixture control valve to intake manifold. Plug intake manifold connection. If valve operates normally, secondary air will blow from mixture control valve through disconnected passage after accelerator is quickly released. If air blows out for more than 5 seconds, replace valve.