

ISUZU & LUV AIR INJECTION SYSTEM

Isuzu I-Mark, P'UP, LUV Pickup

DESCRIPTION

The air injection system is used to add secondary air to exhaust ports for further burning of hot exhaust gases. This reduces HC and CO levels.

System consists of an air pump with built-in relief valve, check valve, air injection manifold, air injection nozzles, air switching valve and a mixture control valve which is an afterburn protection device. In addition, California models use a vacuum switching valve.

OPERATION

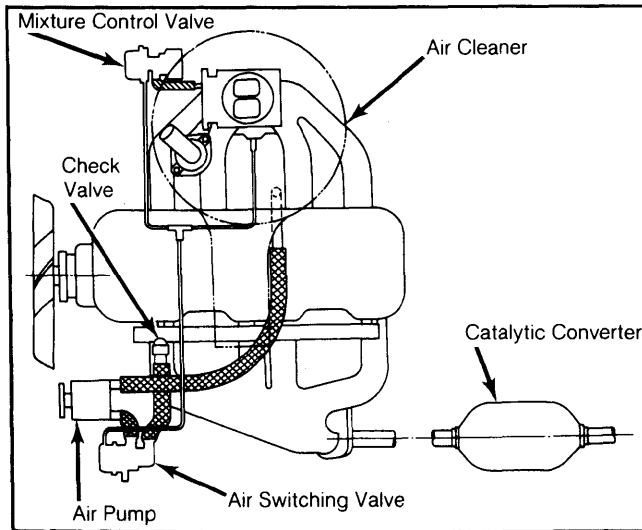
AIR PUMP

Air pump is belt driven. It draws fresh air in, pressurizes it and passes it along to the rest of the 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.

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.

Fig. 1: Isuzu & LUV Air Injection System - Federal Models



Federal models do not use vacuum switching valve.

VACUUM SWITCHING VALVE

Calif. Models Only

The vacuum switching valve (VSV) has 3 three-way ports, 2 of which are actuated by solenoid plunger. Solenoid plunger is energized when catalyst temperature is more than 1350°F (730°C). When energized, VSV connects chamber "B" of air switching valve to intake manifold, permitting manifold vacuum to be applied to chamber "B". When plunger is de-energized, it plugs port so chamber "B" is connected to diaphragm chamber "A" of air switching valve.

AIR SWITCHING VALVE

Federal Models

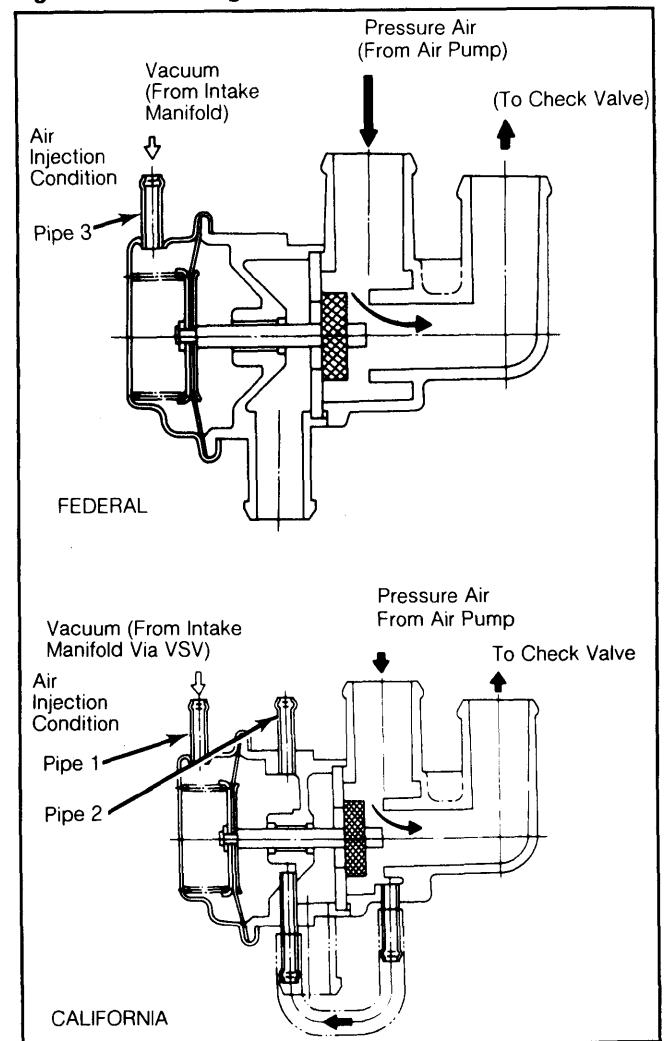
Air switching valve (ASV) switches air flow from air pump and is operated by intake manifold vacuum. When manifold vacuum is higher than specified value, ASV switches air to check valve. When manifold vacuum is less than specified value, air passage to check valve is closed and air passage to atmosphere is open, directing air pump air to atmosphere.

California Models

Air switching valve (ASV) switches air from air pump and is operated by manifold vacuum and air pump pressure which is switched by vacuum switching valve. When manifold vacuum flows to ASV through VSV, the ASV directs the air from air pump to check valve.

When air pump pressure flows to ASV, switched by VSV, the ASV shuts off air passage to air manifold and at the same time, opens port to air cleaner.

Fig. 2: Air Switching Valves for Isuzu & LUV



California valve used with Vacuum Switching Valve

MIXTURE CONTROL VALVE

This normally closed valve prevents afterburning on deceleration. The valve acts by adding secondary

1982 Exhaust Emission Systems

ISUZU & LUV AIR INJECTION SYSTEM (Cont.)

(air pump) air to intake manifold during 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. 3: Isuzu & LUV Mixture Control Valve

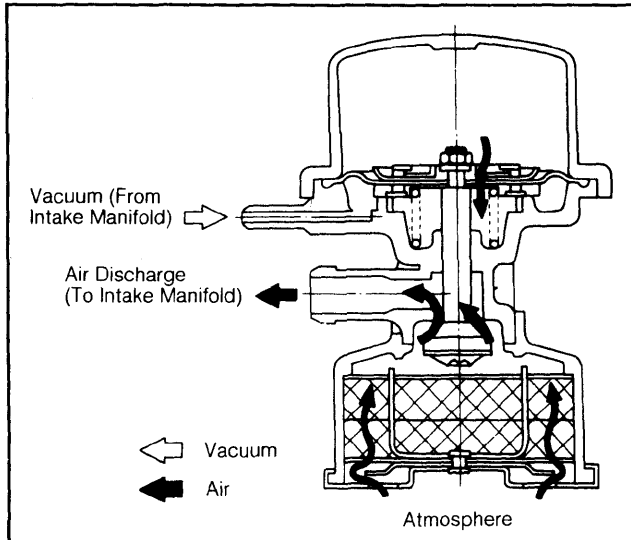
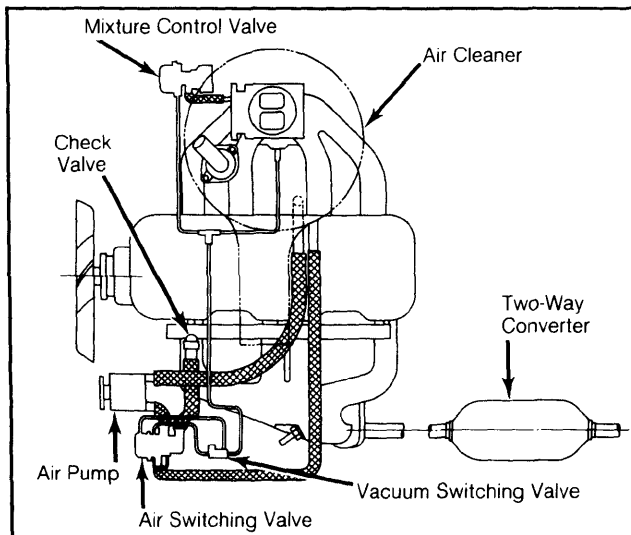


Fig. 4: Isuzu & LUV Air Injection System California Models



California models use a Vacuum Switching Valve.

TESTING

AIR PUMP

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

AIR SWITCHING VALVE

With vacuum switching valve in electrically operating condition, start engine. If air switching valve is normal, secondary air will continue to blow out of the air switching valve.

CHECK VALVE

Remove check valve from intake manifold. Blow air into valve from both sides. Air should only pass through from air pump side of valve. If air passes through manifold side of valve, replace valve.

VACUUM SWITCHING VALVE

Connect jumper wires from valve connector terminals directly to battery. Plunger should click with power applied. If not, replace valve.

MIXTURE CONTROL VALVE

1) With engine running, detach rubber hose connecting mixture control valve to intake manifold. Plug intake manifold connection.

2) 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.