

PN352

**Fig. 3—Air Pump Identification Label Location**

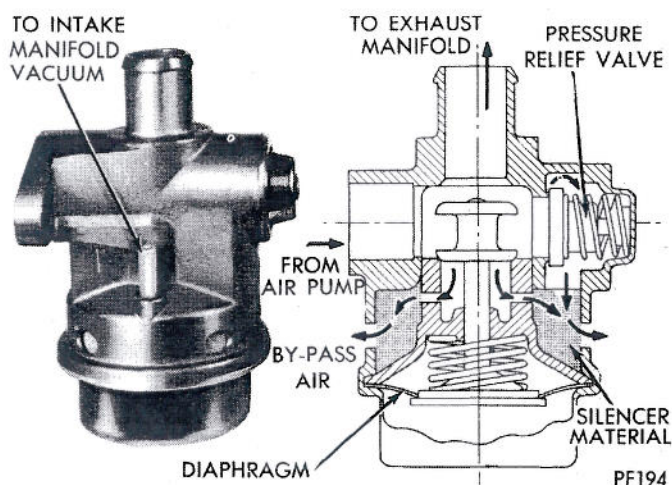
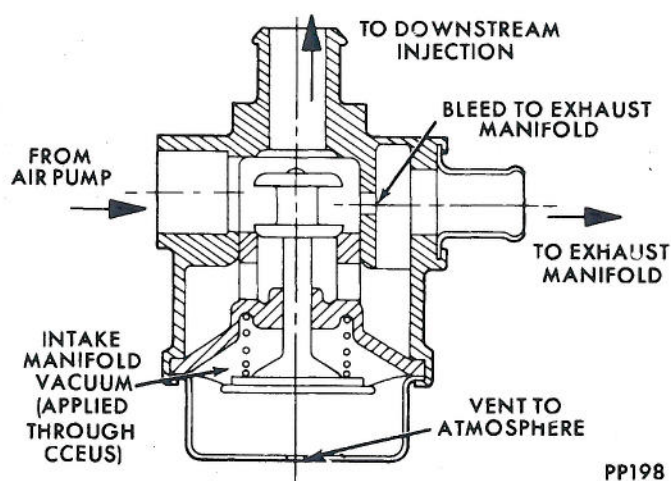
A pressure relief valve, incorporated in the same housing as the diverter valve, controls pressure within the system by diverting excessive pump output at higher engine speeds to the atmosphere through the silencer.

### AIR SWITCHING VALVE

The purpose of the switching valve (Fig. 5) is to switch the injection air from the exhaust ports to a point downstream after engine warmup.

Air is normally injected into the exhaust stream as close to the exhaust valve as possible as the exhaust gases are hottest there and will oxidize most readily. However, air injection is detrimental to the control of NOx emissions by means of exhaust gas recirculation (EGR). During the early stages of engine warmup, NOx emissions are low and the recirculation of air is acceptable. Therefore, after engine warmup, the air flow must be switched from the exhaust ports to a point downstream.

A vacuum signal from the coolant control engine vacuum switch (CCEVS) causes the switching valve to open, allowing all air pump air to flow to the exhaust ports. When the coolant control engine vacuum switch (CCEVS) shuts off the vacuum signal to the switching valve, the valve closes, by-passing most of the air pump air to the injection point downstream. A bleed hole in the switching valve allows a small percentage

**Fig. 4—Diverter Valve****Fig. 5—Air Switching Valve**

of the air pump air to be injected at the exhaust ports at all times which assists in the reduction of carbon monoxide and hydrocarbons.

### CHECK VALVE

A check valve is located in the injection tube assemblies that leads to the exhaust manifolds on the eight cylinder engine and the cylinder head exhaust pipe on the six cylinder engine. This valve has a one-way diaphragm which prevents hot exhaust gases from backing up into the hose and pump. This valve will protect the system in the event of pump belt failure, abnormally high exhaust system pressure, or air hose ruptures.

## AIR PUMP DIAGNOSIS

Condition	Possible Cause	Correction
<b>EXCESSIVE BELT NOISE</b>	(a) Loose belt.	(a) Tighten belt (see Group 7 "Cooling System").
	(b) Seized pump.	(b) Replace pump.
<b>EXCESSIVE PUMP NOISE. CHIRPING</b>	(a) Insufficient break-in.	(a) Recheck for noise after 1000 miles of operation.