

# 1975-79 EXHAUST EMISSION SYSTEMS

## American Motors Air Guard System

3-57

### 1978-79 American Motors

**NOTE:** For information on 1975-77 American Motors Corp. vehicles with Air Injection, see *Air Injection Systems - Exc. Ford With Cat. Converter* article in this section.

### DESCRIPTION

The Air Guard System is used to reduce carbon monoxide and hydrocarbon emissions. The system adds a controlled amount of air to exhaust gases in the exhaust ports, causing oxidation of the gases. The system consists of a belt driven air pump, diverter (bypass) valve, air injection manifold(s), check valve, and connecting hoses. In addition, California 6-cylinder engines are also equipped with a vacuum delay valve.

### OPERATION

Fresh air is drawn into the air pump through a filter fan. The air is compressed in the pump and then discharged through the pump to the diverter valve. The diverter valve directs air to the air distribution system or dumps it through a by-pass port, depending on engine operating conditions. Air pressure in this system is maintained at approximately 5 psi (7.5 psi in California) by a relief valve incorporated in the diverter valve.

The air mixes with hot exhaust gases and causes a further burning of the mixture, reducing hydrocarbon and carbon monoxide emissions.

On 4-cylinder engines, air flows from the diverter valve through a check valve attached to a fitting in the intake manifold adjacent to number 3 cylinder. A distribution passage in the cylinder head carries air to drilled holes intersecting the exhaust valve ports.

On all other engines, air from the diverter valve is directed into the air injection manifold(s). At each exhaust port, a hollow screw carries air into the exhaust manifold(s).

California 6-cylinder engines are equipped with a vacuum delay valve. This valve, installed between the manifold vacuum source and the diverter valve, reduces the diverter dump mode operating time.

**NOTE:** The air pump is serviceable only by replacement. Do not remove rear housing cover for any reason. The internal components of the pump are not serviceable.

**Diverter Valve** - This valve diverts pump output pressure to the atmosphere when a vacuum of 20 in. Hg or more is applied at the vacuum sensing line. Diverter also operates when air pump output exceeds 5 psi (7.5 psi in California).

**Check Valve** - This valve prevents the reverse flow of exhaust gases to the air pump during pump or drive belt failure or diverter valve by-pass operation.

On 4-cylinder engines, the check valve is attached to the Air Guard inlet passage of the intake manifold. On 6-cylinder and V8 engines, the check valve is integral with the air injection manifold.

### TESTING

#### DIVERTER VALVE

- 1) Start and run engine at idle. Check diverter vents. Little or no air should flow from vents.
- 2) Accelerate engine to 2000-3000 RPM and rapidly close throttle. A strong flow of air should pass from diverter vents for approximately 5 seconds.
- 3) The high flow diverter valve used on some engines should vent for approximately 3 seconds. If air does not flow or if backfire occurs, make certain vacuum sensing line has vacuum and is not leaking.

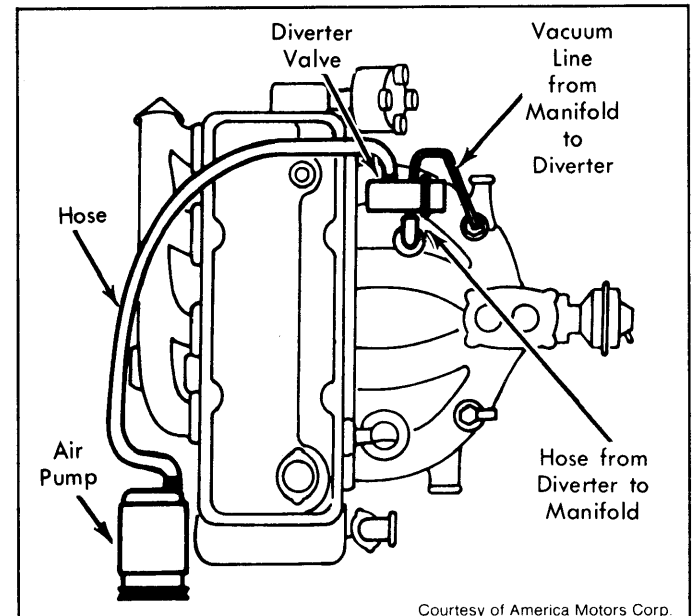
- 4) Slowly accelerate engine. Between 2500 and 3500 RPM air should begin to flow from diverter vents. The diverter valve is not serviceable and must be replaced if defective.

### CHECK VALVE

- 1) Disconnect air supply hose at check valve. With engine running above idle speed, listen and feel for exhaust leakage at check valve.

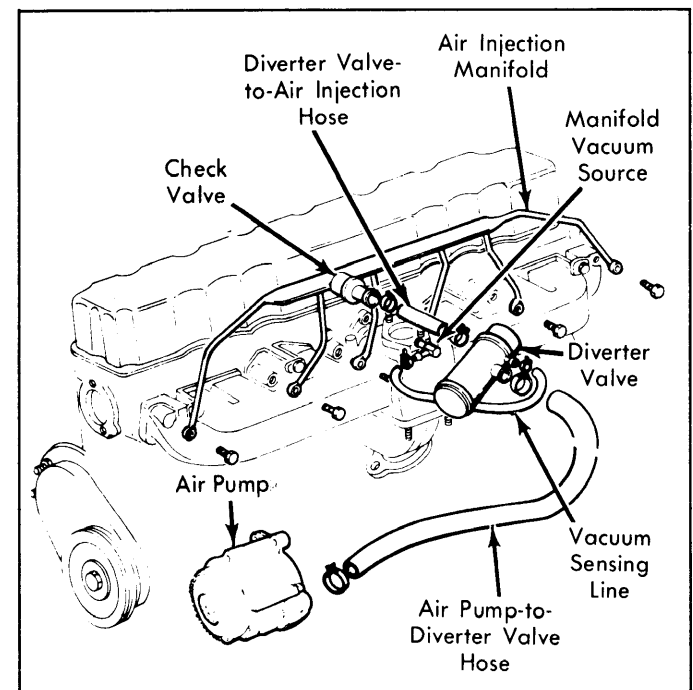
**NOTE:** A slight exhaust leak at check valve is normal.

- 2) If check valve leaks excessively, replace check valve on 4-cylinder engines. Injection manifold must be replaced on other engines since check valve is integral with manifold.



Courtesy of America Motors Corp.

Fig. 1: AMC Air Guard System - 4-Cyl. Engines



Courtesy of America Motors Corp.

Fig. 2: AMC Air Guard System - 6-Cyl. Engines

# 1975-79 EXHAUST EMISSION SYSTEMS American Motors Air Guard System (Cont.)

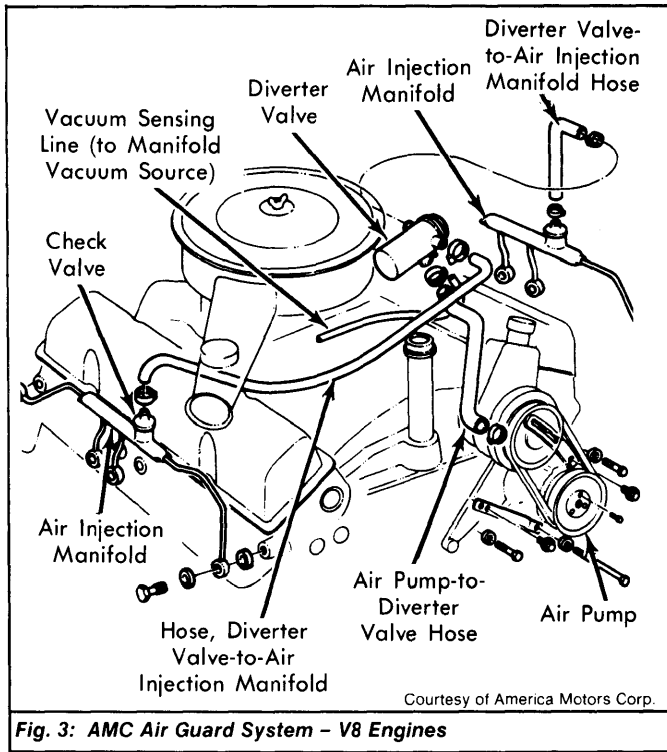


Fig. 3: AMC Air Guard System - V8 Engines