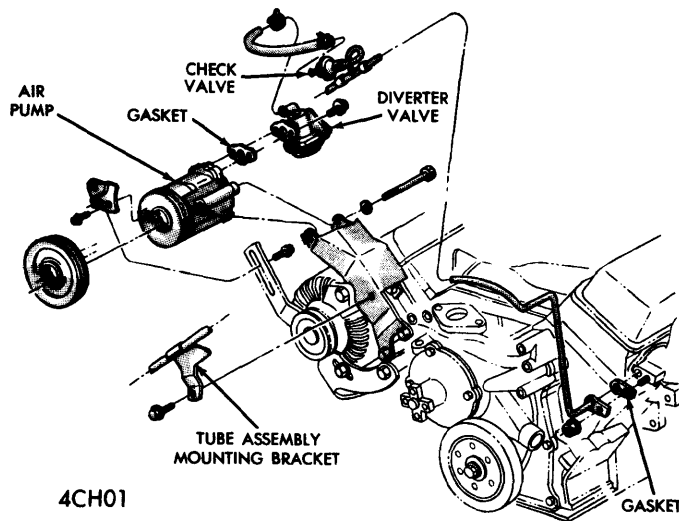


## AIR INJECTION REACTOR

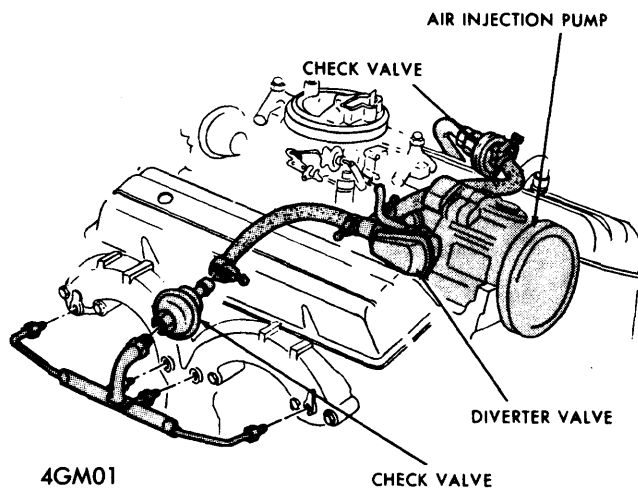
### DESCRIPTION

An exhaust port air injection system (A.I.R.) used to reduce carbon monoxide (CO) and hydrocarbons (HC) was introduced in 1966 California light duty vehicles. In 1968 air injection systems became nationwide. System adds a controlled amount of air to exhaust gases in exhaust ports, causing oxidation of gases. A.I.R. system consists of a belt driven air pump, connecting hoses, a check valve to protect system from hot gases, injection tubes, anti-backfire valve (early models) and diverter-pressure relief valve assembly (late models). On models with anti-backfire valve, pressure relief valve is incorporated in air pump body.



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### CHRYSLER CORP. AIR INJECTION



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### GENERAL MOTORS AIR INJECTION

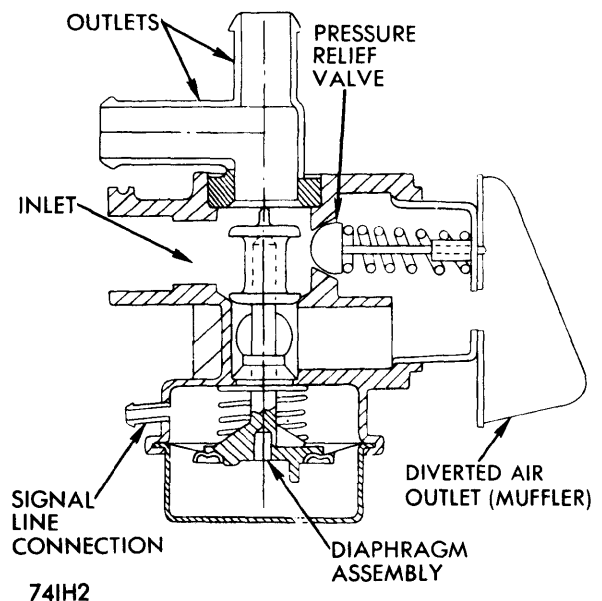
### OPERATION

Inlet air to air pump is drawn through an air cleaner. Pressurized air leaving air pump is transmitted through hoses, check valves and air manifolds to individual stainless steel tubes or internal passages in cylinder heads and/or exhaust

manifolds to each cylinder exhaust port. Fresh air ignites and burns the unburned portion of exhaust gases in exhaust system, thus minimizing HC and CO emissions.

**Air Pump** — Pump is belt driven and mounted on front of engine with power take-off at crankshaft pulley. Intake air passes through a centrifugal filter at front of pump (late models) or a replaceable paper filter (early models). Air is delivered to injection manifolds through a diverter valve (late models) or a anti-backfire valve (early models), hoses and check valves.

**Diverter Valve** — This valve prevents backfiring in the exhaust system during deceleration. Valve senses increase in intake manifold vacuum, this causes the diverter valve to open and dump the air pumps output to the atmosphere, thus no after-burn takes place and backfiring is avoided.



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### DIVERTER VALVE ASSEMBLY

**Anti-Backfire Valve (Gulp Type)** — This valve prevents backfiring in the exhaust system during deceleration by momentarily leaning the mixture during deceleration modes. The mixture is leaned by routing the air pumps output into the intake manifold. Like the diverter valve the anti-backfire valve is signaled by the high intake manifold vacuum that accompanies deceleration.

### TROUBLE SHOOTING

**Excessive Belt Noise** — Loose pump drive belt or seized pump.

**Excessive Pump Noise** — Leak in hose, loose hose, hose touching other engine parts, diverter or anti-backfire valve failure, check valve failure, pump mounting bolts loose, pump or impeller damaged.

**No Air Supply** — Loose drive belt, leak in hose or hose fitting, diverter valve or anti-backfire valve failure. Check valve failure or pump failure.

**Exhaust Backfire** — Incorrect engine tune-up, engine vacuum leaks, faulty diverter valve, anti-backfire valve or check valve.

# Exhaust Emission Systems

## AIR INJECTION REACTOR (Cont.)

**NOTE** — Proper operating of Air Injection System is dependent on proper engine tune-up. See individual truck specifications and procedures.

### TESTING

**Diverter Valve Test** — Disconnect one air hose from diverter valve. Operate engine at a steady speed (approximately 1500 RPM) and check for a flow of air from outlet of valve. If no air flow is detected, check for flow of air through diverter valve exhaust ports. If air exhausts continuously, valve is faulty and should be replaced. With engine operating at a steady 1500 RPM, remove vacuum hose from diverter valve and make sure vacuum is present. Reconnect vacuum hose to valve and check for momentary stoppage of air flow from outlet and a simultaneous flow of air from exhaust ports. After a few seconds a flow of air from outlet should be restored. This indicates a normal operation of diverter valve. If valve fails test, replace.

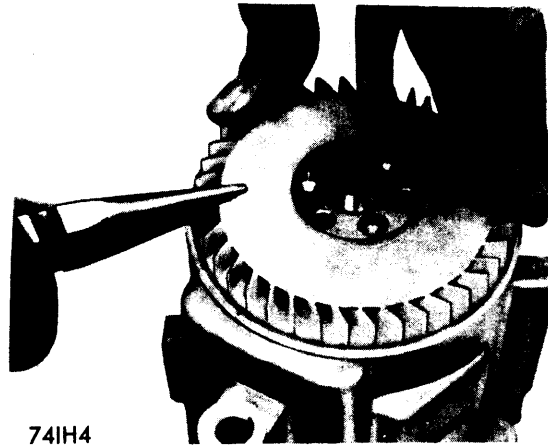
**Anti-Backfire Valve Test** — Remove outlet hose from valve. Operate engine at a steady speed (approximately 1500 RPM), a steady flow of air should come from outlet. Remove vacuum hose from valve for a few seconds. Reconnect hose and check for a momentary stoppage of air flow from valve outlet and a momentary increase in air flow from ceramic silencer, indicating normal operation during a deceleration condition. If valve fails test, replace.

**Check Valve Test** — Remove air supply hose from pump at distribution manifold. With engine operating listen for exhaust leakage at check valve which is connected to distribution manifold. Replace if leaking.

### SERVICE PROCEDURES

At 12,000 miles or 12 months, complete system should be checked for proper operation. Condition of engine tune-up should be checked whenever air injection is not operating properly. Servicing of pump is limited to replacement of centrifugal fan filter (late models), pressure relief (early models) or entire pump.

**Centrifugal Fan Filter** — To replace, remove drive belt, pulley mounting bolts, and pulley. Break off remaining portions of centrifugal fan filter from pump hub, being careful that fragments do not enter air intake hole. Install new filter by drawing it on with pulley and pulley bolts. Do not attempt to hammer or press filter on shaft.



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### REMOVING CENTRIFUGAL FAN FILTER

**NOTE** — After new filter is installed, it may squeal during operation until its outside diameter has worn in. This may require 20-30 miles of operation.

**CAUTION** — If engine or engine compartment is to be cleaned with steam or high pressure detergent, centrifugal filter fan should be masked off to prevent liquids from entering air pump.

**Exhaust Emission System Cleaning** — DO NOT attempt to clean diverter valve. Do not blow compressed air through check valve.

**Air Pump Overhaul** — Overhaul of air pump is not recommended since internal components of pump are not serviceable.