1975-79 EXHAUST EMISSION SYSTEMS
Air Injection – Exc. Ford W/Cat. Converter

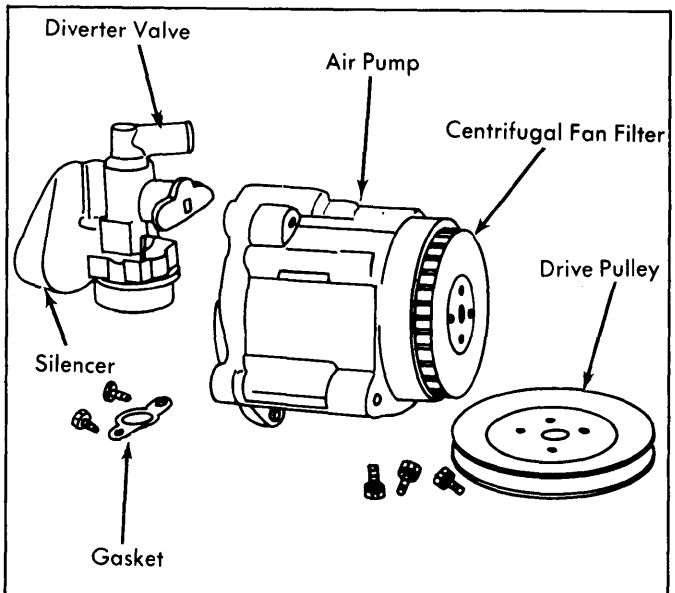
1975-77
American Motors Corp.
Chrysler Corp.
Ford Motor Co. (W/O Catalytic Converter)
General Motors Corp.
Cadillac, Chevrolet
Oldsmobile, Pontiac

NOTE: For information on 1978-79 American Motor Corp., see AMERICAN MOTORS AIR GUARD SYSTEM article in this section. For information on 1978-79 Chrysler Corp., see CHRYSLER CORP. AIR INJECTION SYSTEM article in this section. For information on other 1975-79 Ford vehicles, see FORD MOTOR CO. THERMACTOR I SYSTEM. For information on 1978-79 General Motors Corp., see AIR INJECTION REACTOR article in this section.

DESCRIPTION

An air injection system is used to reduce HC and CO by injecting air into the exhaust ports and continue burning of exhaust gases. System includes a belt-driven air pump, specially-designed cylinder head, diverter valve and silencer assembly and necessary connecting tubing. Some models use a by-pass valve or a combination diverter-pressure relief valve assembly.

NOTE: For 1977 GM 4-cyl. models with Pulse Air type air injection, see General Motors Corp. Pulse Air Injection article in this section.



Courtesy of General Motors Corp.

Fig. 1: Typical Air Pump System

OPERATION

AIR PUMP

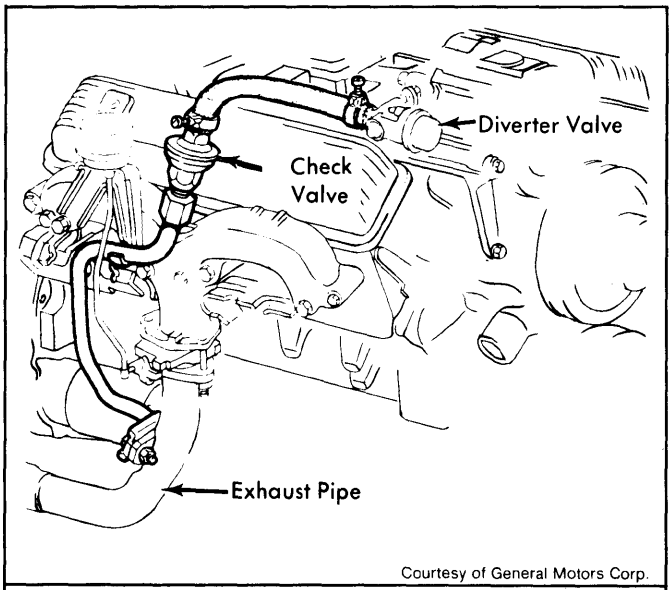
Intake air passes through the centrifugal filter at front of pump. Air is delivered to injection manifold by hoses and tubing.

DIVERTER (BY-PASS VALVE)

Valve is used to prevent backfiring in the exhaust system during sudden deceleration. When the valve senses a sharp rise in intake manifold vacuum, it opens to allow air from air pump to vent to atmosphere. By-pass valve used on most models also include an integral pressure relief valve. In addition, some by-pass valves also act to prevent high exhaust temperatures under certain engine load conditions. This type of valve will vent injection air to the atmosphere.

CHECK VALVE

The check valve prevents backflow of exhaust gas into the air distribution system. The valve prevents backflow when air pump by-passes at high speed and loads, or in case the air pump malfunctions.



Courtesy of General Motors Corp.

Fig. 2: Corvette Air Injection System

TESTING

FUNCTIONAL TEST

1) Start engine and let idle in Neutral or Park. Feel for presence of air exhausting out of lower portion of diverter valve. There should be no air coming out.
2) Seal off vacuum supply to diverter valve by pinching hose. Hold for at least one second, then release hose. Air should now be exhausting from bottom of diverter valve. It should do so for about 4 seconds. Replace diverter valve if air does not exhaust.

CHECK VALVE

1) Inspect check valve whenever working on AIR system. If pump were inoperative and had signs of exhaust gases reaching pump, a failed check valve would be indicated.
2) After detaching valve, blow through it in direction of flow to cylinder head, then attempt to suck back against direction of flow. Replace valve if it allows airflow against direction of flow.

DIVERTER VALVE

See FUNCTIONAL TEST in this article.

AIR PUMP

1) Accelerate engine to approximately 1500 RPM and observe airflow from hoses. If airflow increases as engine is accelerated, pump is operating satisfactorily. If it does not increase, or is not present, proceed to next step.
2) Check for proper pump belt tension, leaky valves, seized pump, or improperly routed or disconnected hoses. Detach pump belt and operate engine to check if excessive noise is coming from air pump.

NOTE: Do not oil air pump. Also note that air pump system is not completely noiseless.

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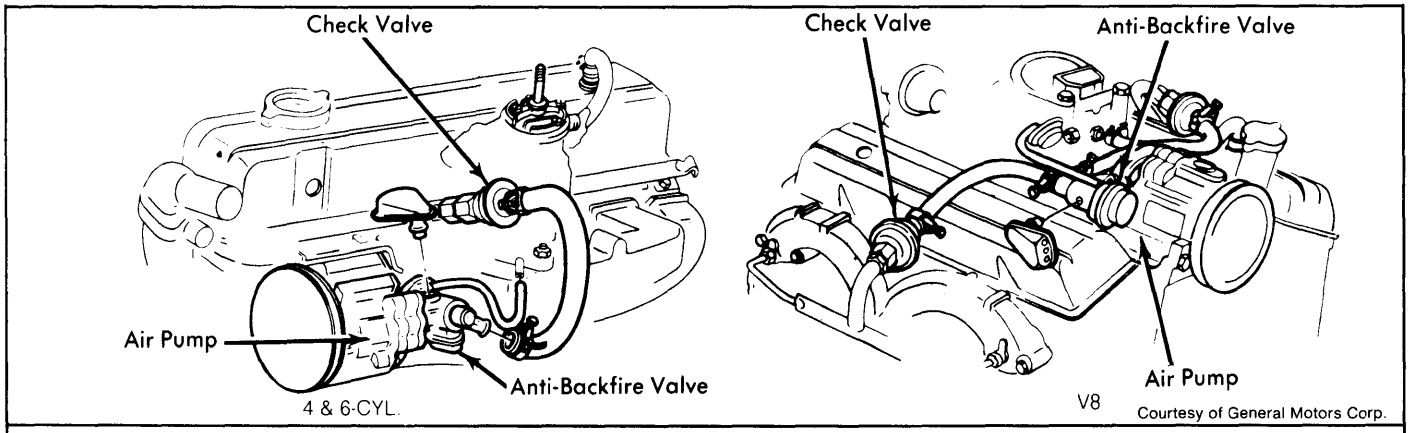

Fig. 3: Typical Air Pump System

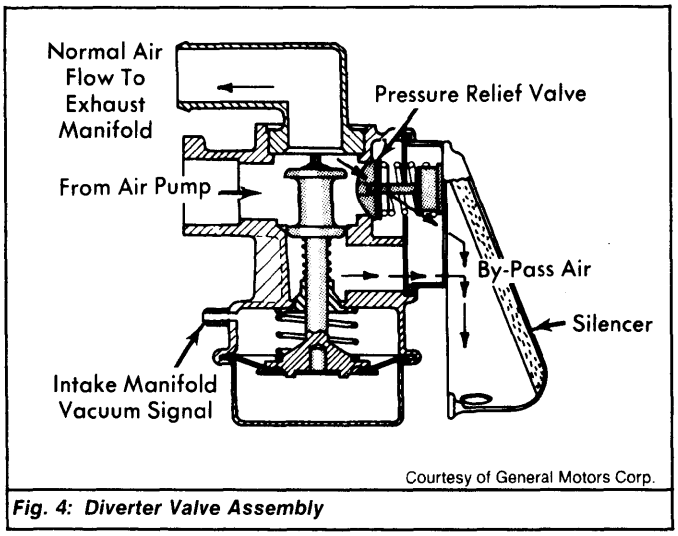

Fig. 4: Diverter Valve Assembly

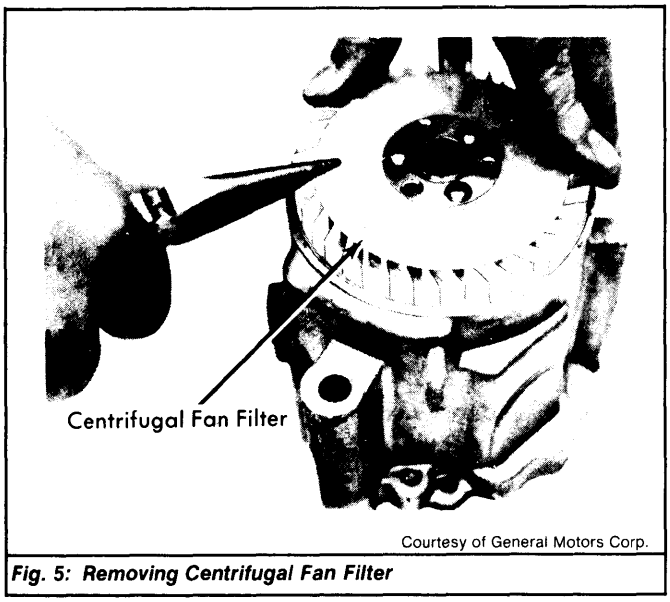

Fig. 5: Removing Centrifugal Fan Filter

TROUBLE SHOOTING

EXCESSIVE NOISE

Loose drive belt or seized pump. Leaking hose. Improperly positioned hose. Diverter and/or by-pass valve failure. Loose pump mounting. Pump damaged.

NO AIR SUPPLY

Loose drive belt. Leak in hoses or tubing. Diverter or by-pass valve failure. Check valve failure. Pump malfunction.

EXHAUST BACKFIRE

Engine not tuned to specifications. Engine vacuum leaks. Faulty diverter valve or check valve.

REMOVAL & INSTALLATION

NOTE: Servicing is limited to replacing centrifugal air filter. If any other problems are found, complete air pump should be replaced.

Centrifugal Fan Filter - To replace, remove pulley. Pry or break off centrifugal fan filter. Set new centrifugal fan filter on shaft. Install pulley and tighten bolts to draw centrifugal fan filter down. Do not hammer or press centrifugal fan filter in place.