1974-79 EXHAUST EMISSION SYSTEMS
Chrysler Corp. Exhaust Gas Recirculation

All Models

DESCRIPTION

All vehicles are equipped with an exhaust gas recirculation (EGR) system to reduce NOx emissions. With this system, exhaust gas is partially recirculated from an exhaust port of the cylinder head into a port located at intake manifold below the carburetor. Exhaust gas flow is controlled by two EGR valves, one vacuum operated, the other throttle operated. The vacuum applied to the vacuum operated valve is controlled by a thermo valve.

OPERATION

EGR CONTROL VALVES

Increased EGR flow, required to meet emission standards, adversely affects driveability. To overcome this problem, this EGR system increases EGR flow during high load operations and decreased EGR flow during low load operations. Two EGR valves are used to accomplish this.

The main EGR valve is controlled by carburetor vacuum, which is governed by throttle openings. Vacuum level at idle and wide open throttle is low; therefore, no EGR operation occurs in these modes. A thermo valve also controls vacuum application to this valve.

The sub EGR control valve is mounted so it is directly linked to throttle valve and thus mechanically controlled. *See Fig. 1.* This valve more closely modulates EGR flow in response to throttle valve position.

THERMO VALVE

On 1974-75 models, thermo valve prevent EGR operation when coolant temperature is below 140°F (60°C). On 1976-77 models, thermo valve prevent EGR operation when coolant temperature is below 100°F (38°C) on California and high altitude models or below 113°F (45°C) on Federal models. By closing EGR valve at these temperatures, engine driveability problems at initial start up are prevented. when coolant temperature reaches pre-set value, thermo valve will close thus opening the EGR valve.

On 1978 models, thermo valve is used to sense engine coolant temperature and prevent EGR operation when below preset value. When engine warms up, thermo valve opens to allow vacuum passage to EGR valve, which them determines EGR flow. Below 113°F (45°C), thermo valve is open, causing vacuum to be vented to atmosphere, thus not reaching EGR valve. Above 131°F (55°C), thermo valve closes and normal EGR operation is accomplished.

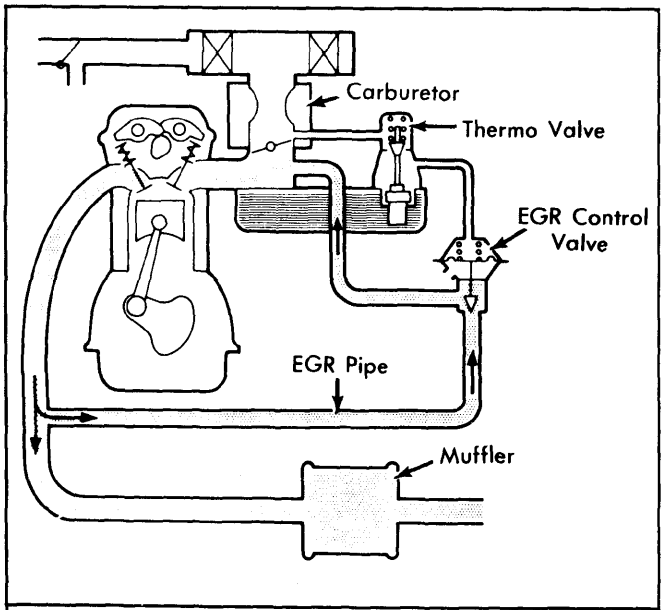

Fig. 1: 1974-75 Exhaust Gas Recirculation System

TESTING

THERMO VALVE

1976-77 Models - 1) Remove thermo valve and allow it to cool to room temperature. Check valve by blowing into vacuum fittings. Valve is normal if EGR fitting allows air to pass freely and distributor fitting is blocked.

2) Immerse thermo sensor in 140°F (60°C) water, for at least one minute. Valve is normal if no air flows through either fitting. Immerse thermo sensor in boiling water for at least one minute. Valve is normal if EGR fitting blocks air and distributor fitting allows air to flow freely.

1978 Models - 1) After inspecting vacuum hoses, start and run cold engine at idle. Ensure that secondary EGR valve does not operate when engine speed is increased to 2500 RPM.

2) If secondary valve operates, replace thermo valve. When coolant temperature exceeds 131°F (55°C), secondary valve should operate with engine at 2500 RPM. If valve does not operate, replace thermo valve.

EGR CONTROL VALVES

1978 Models - 1) With engine idling, disconnect Yellow stripe hose form EGR valve and connect a hand-held vacuum pump to nipple. While opening sub EGR valve by hand, apply 6 in. Hg of vacuum. If idle becomes rough or engine stalls, the primary valve is operating properly. If not, replace dual EGR valve.

2) Remove hand-held vacuum pump and reconnect Yellow stripe hose. Remove Green stripe hose from EGR valve and connect vacuum pump to hose. Apply 6 in Hg. of vacuum while opening sub EGR valve by hand. If idle becomes rough, the secondary valve is operating properly. If not, replace dual EGR valve.

3) Ensure that sub EGR valve moves smoothly when pulled by hand. If valve is hard to move, remove sub EGR valve and check for carbon deposits. Clean or replace valve, as required.

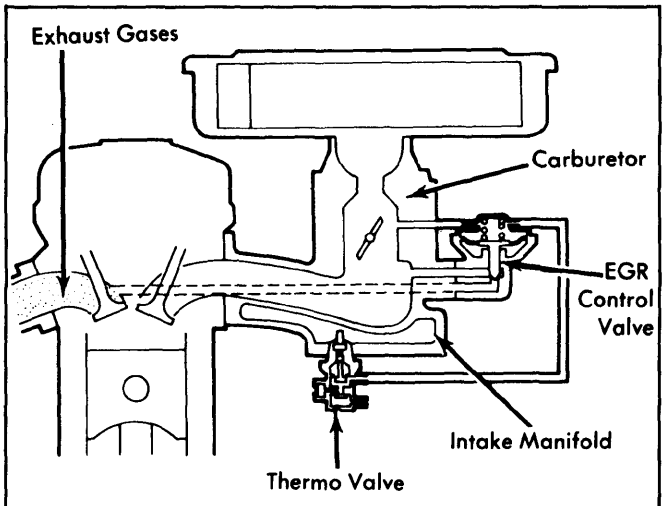

Fig. 2: 1976-77 Exhaust Gas Recirculation System

EGR SYSTEM TEST

1974-75 Models - Check EGR valve for cracks or sticking. With engine at normal operating temperature, raise engine speed to 3000-3200 RPM. Disconnect vacuum hose to EGR valve. Diaphragm should lower. Reconnect vacuum hose to EGR valve. Diaphragm should rise. If not, replace EGR valve.

1976-77 Models - 1) With engine cold, start engine and allow to idle. Increase engine speed to 2500 RPM and place finger under EGR valve to check operation of diaphragm.

2) With engine coolant temperature below 104°F (40°C), the diaphragm should be stationary. If diaphragm moves, Green stripe vacuum hose is clogged or thermo valve or EGR valve are defective.

Chrysler Corp. Exhaust Gas Recirculation (Cont.)

3) Warm engine until coolant temperature exceeds 104°F (40°C). Increase engine speed to 2500 RPM and place finger under EGR valve to check operation of diaphragm. If diaphragm moves, EGR valve is okay. If not, Green stripe vacuum hose is clogged or thermo valve or EGR valve are defective.

1979 Models - 1) Check hoses for proper routing and condition. Cold start engine and run at idle. Watch sub EGR valve and be sure it does not operate as engine speed is increased to 2500 RPM. If it does, replace thermo valve.

2) Allow engine to warm to normal operating temperature. Repeat increase of engine speed to 2500 RPM. Sub EGR valve should now be operating. If it does not, check EGR valve or thermo valve and replace as necessary.

3) Detach Green stripe hose from thermo valve. Connect hand-held vacuum pump and apply vacuum. If no vacuum is available through thermo valve, it is okay. Reconnect hose.

4) Detach Green stripe hose from carburetor nipple and attach vacuum pump to hose. Manually pull on linkage of sub EGR valve, and at same time apply 6 in. Hg to vacuum hose. If idle becomes rough, sub EGR valve is okay. If idle does not change, main EGR valve is improperly operating and must be replaced.

5) Check operation by manually pulling linkage to be sure it moves smoothly. If hard to move, remove sub EGR valve and check for carbon deposits. Clean or replace valve, as required.

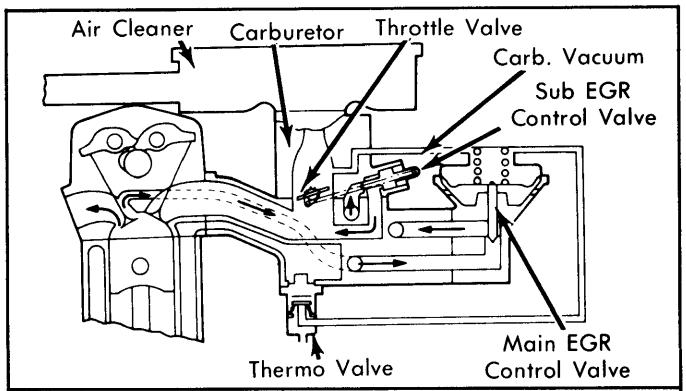

Fig. 3: 1978-79 Exhaust Gas Recirculation System

MAINTENANCE

EGR SYSTEM

Every 15,000 miles, on 1976-78 models, the EGR maintenance warning light will be activated. A Red light, located in instrument cluster will come on. The warning light is turned off by switching the reset switch behind odometer. Remove speedometer to gain access to switch.