1982 Exhaust Emission Systems

CHRYSLER CORP. IMPORTS
EXHAUST GAS RECIRCULATION SYSTEM

Arrow Pickup, Challenger, Champ, Colt, Ram-50 Pickup, Sapporo

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 a vacuum operated dual EGR valve (single EGR valve on Federal 2.6L pickups) and a throttle operated sub EGR valve. Vacuum applied to the EGR valve is controlled by a single thermo valve on Federal 2.6L pickups, a dual thermo valve on all other pickups, a single and a dual thermo valve on Champ and Colt, and 2 dual thermo valves on Challenger and Sapporo.

OPERATION

EGR CONTROL VALVES

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

Single EGR Valve

This 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.

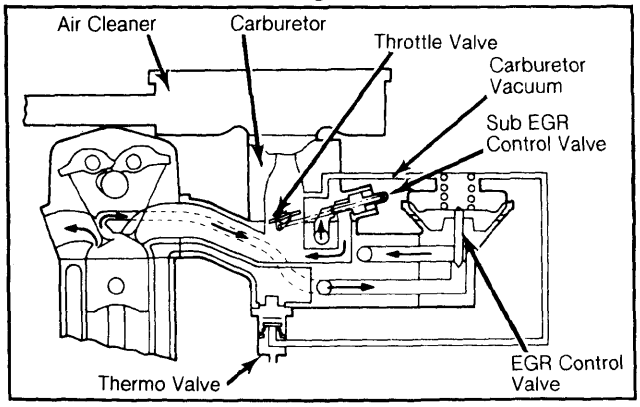
Dual EGR Valve

This valve consists of primary and secondary valves which are controlled by carburetor vacuum. Carburetor vacuum is governed by throttle openings. The primary valve controls EGR flow at small throttle openings. The secondary valve controls EGR flow at large throttle openings.

Sub EGR Control Valve

This valve is mounted so it is directly linked to throttle valve and thus mechanically controlled. This valve more closely modulates EGR flow in response to throttle valve position.

Fig. 1: EGR System with Single Thermo Valve

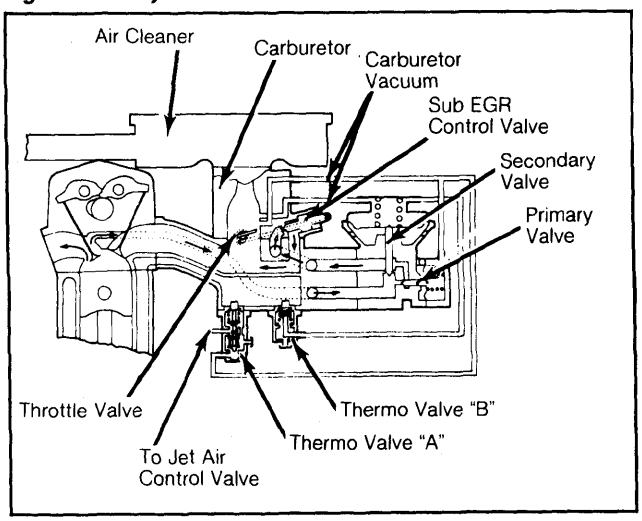


Note direction of flow.

THERMO VALVE

All thermo valves are 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 then determines EGR flow. Below about 131°F (55°C), thermo valve is open, causing vacuum to be vented, thus not reaching EGR valve. Above about 131°F (55°C), thermo valve closes and normal EGR operation is accomplished.

Fig. 2: EGR System with Dual Thermo Valves



Note direction of flow.

TESTING

SYSTEM TEST

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 vacuum pump and apply vacuum. If no vacuum is available through thermo valve, kit 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.

NOTE: If difficult to remove sub EGR valve, spray with suitable solvent (such as for manifold heat valves), after removing rubber boot. Let soak, then remove valve.