1982 Exhaust Emission Systems

RENAULT EXHAUST GAS RECIRCULATION

Fuego Turbo, Le Car

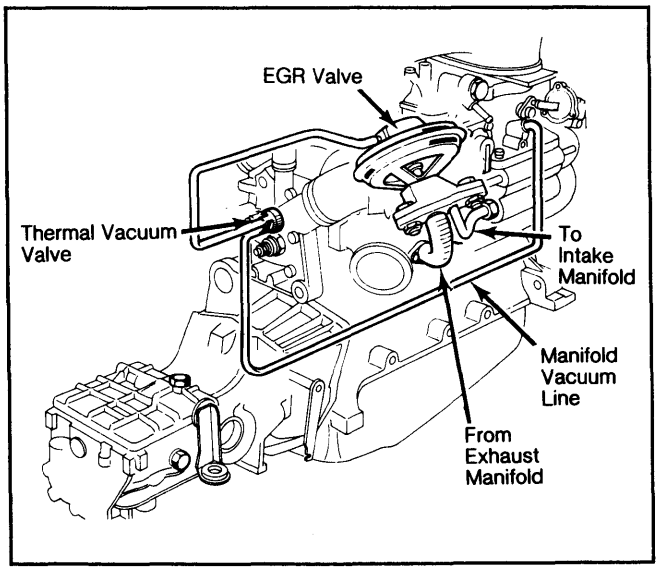
DESCRIPTION

The exhaust gas recirculation system is designed to control formation of NOx emissions. This is done by reintroducing some exhaust gas back into the combustion chamber. The exhaust gases are lower in temperature than the combustion flame. By reducing combustion chamber temperatures, NOx formation is reduced.

California Le Car vehicles use an EGR valve and thermal vacuum valve. *See Fig. 1.* The system on Le Car Federal vehicles includes an EGR valve, coolant switch, choke switch, gearbox switch, and an EGR vacuum solenoid. *See Fig. 2.*

The Fuego Turbo system includes an EGR valve, solenoid valve, 5th gear transmission switch, coolant temperature switch, pressure surge valve and vacuum reservoir. *See Fig. 3.*

Fig. 1: California Le Car EGR System



OPERATION

FUEGO TURBO

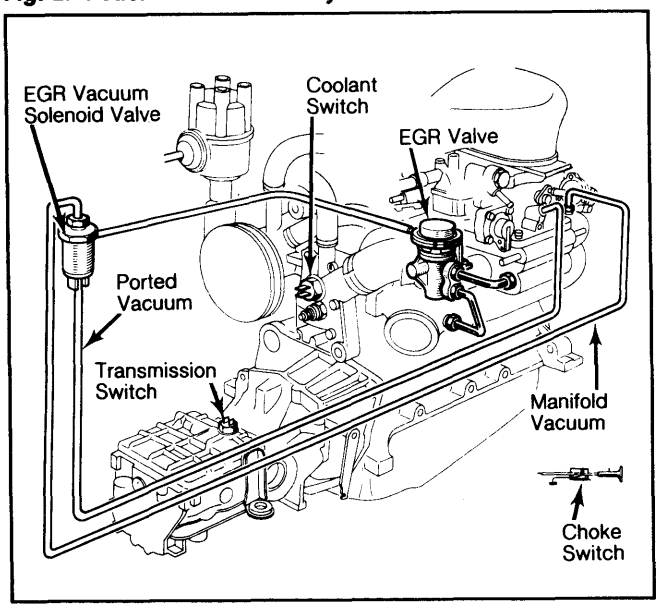
The EGR valve opens to allow small metered amounts of exhaust gas into the intake manifold, as a result of intake manifold vacuum. The EGR valve opens only when the solenoid valve is energized. The solenoid valve only energizes when transmission is not in 5th gear, coolant temperature is above 113°F (45°C), and engine is not accelerating.

LE CAR

Federal Vehicles

The Federal EGR system is operated normally by carburetor ported vacuum. It functions at any engine temperature when the throttle is above idle. However, the system has an overheat mode that operates when coolant is above 113° F (45° C), gearbox is in Neutral and choke knob is out. Under these conditions, the solenoid valve is energized and full manifold vacuum is applied to the EGR valve. This full EGR operation prevents overheating.

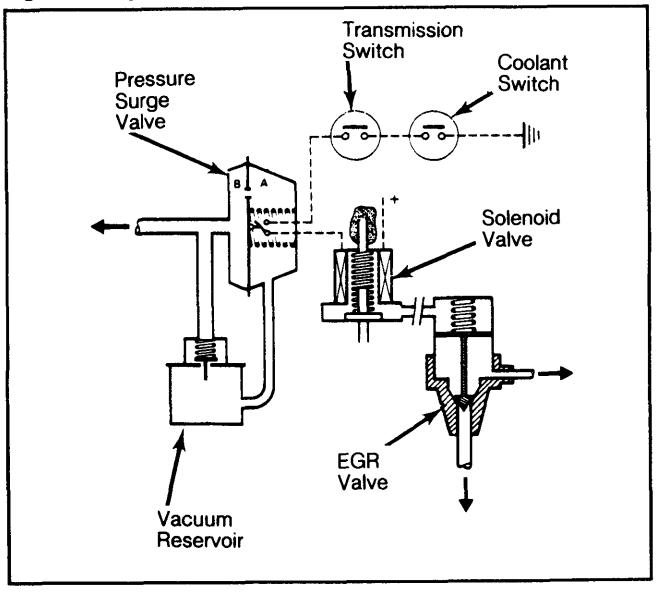
Fig. 2: Federal Le Car EGR System



California Vehicles

The California EGR system has a thermal vacuum valve that allows vacuum to reach the EGR valve when coolant temperature is over 113° F (45° C). Below the specified temperature there is no EGR.

Fig. 3: Fuego Turbo EGR System Components

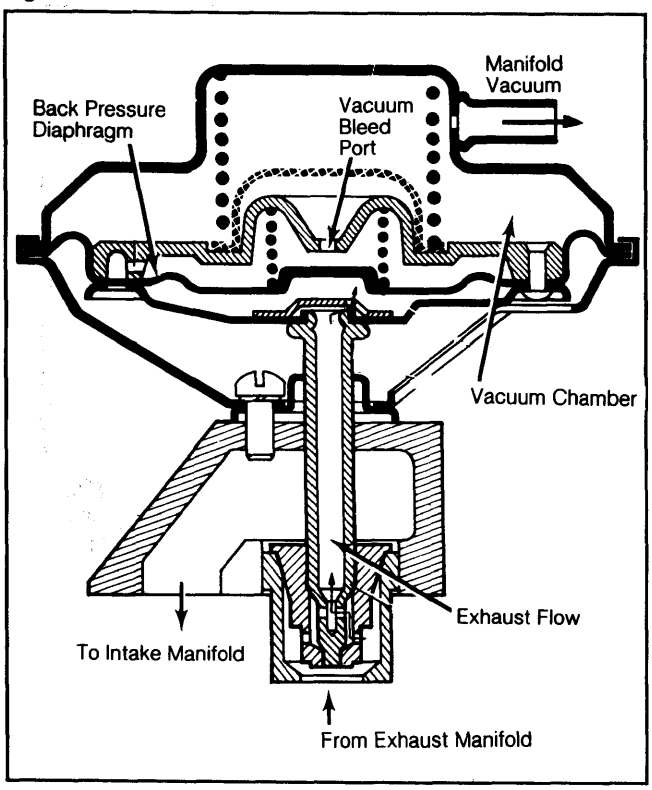


EGR VALVE

The back-pressure controlled EGR valve operates only when exhaust pressure is high enough to close a vacuum bleed port. Manifold vacuum then pulls the valve open, allowing exhaust gases to enter the intake manifold. When exhaust back pressure drops, the bleed port is opened, intake vacuum bleeds off, and the valve closes. *See Fig. 4.*

RENAULT EXHAUST GAS RECIRCULATION (Cont.)

Fig. 4: Back-Pressure EGR Valve



TESTING

FUEGO TURBO

1) With engine cold (coolant temperature less then 113°F, 45°C), accelerate engine while observing EGR valve stem. Valve stem should not move.

2) Warm engine to normal operating temperature. Accelerate engine while watching valve stem. Stem movement within 5-6 seconds indicates valve is operating.

3) With engine warm, transmission in 5th gear and clutch disengaged, accelerate engine and observe valve stem. Valve stem should not move. If movement is observed, replace 5th gear transmission switch.

4) Disconnect wires at pressure surge valve terminals and connect ohmmeter leads to terminals. With engine warm and idling resistance should register infinity. With engine stopped, resistance should be zero. If surge valve fails either test, it must be replaced. If replacement valve fails tests, replace vacuum reservoir.

NOTE: If the above four tests revealed no malfunction, system operation is okay. If any test revealed a malfunction that could not be corrected with parts replacement, proceed with the following tests.

5) Disconnect wires from coolant temperature switch and connect ohmmeter leads to terminals. With engine warm, resistance should measure zero. If not, replace coolant temperature switch.

6) Disconnect wires from 5th gear transmission switch and connect ohmmeter leads to terminals. In gears 1 through 4 resistance should measure zero. In 5th gear resistance should register infinity. If switch fails either test, replacement is required.

7) With engine stopped, disconnect throttle housing vacuum hose from solenoid valve. Apply vacuum to solenoid valve. If vacuum leaks occur, replace solenoid valve (provided vacuum hose connections are tight and not leaking).

8) With engine stopped, disconnect throttle housing vacuum hose from solenoid valve. Energize solenoid valve terminals with 12 volts. EGR valve should open. If not, replace solenoid valve or EGR valve.

9) Disconnect hose at EGR valve. Apply vacuum to solenoid valve. Energize solenoid valve with 12 volts. If vacuum leaks occur, replace solenoid valve.

10) If EGR system is still malfunctioning, check EGR electrical circuit for clean and tight electrical connections. Also check for shorts.

LE CAR

Warm engine to normal operating temperature. Accelerate engine while watching valve stem through open area at bottom of valve. Stem movement indicates the valve is operating.

MAINTENANCE

The EGR system must be cleaned and inspected every 12,000 miles. Remove valve and clean off exhaust deposits. Check condition of hoses and connections.