PEUGEOT DIESEL EXHAUST GAS RECIRCULATION

504 Diesel (Calif. Only)
505 Diesel (Calif. Only)

DESCRIPTION

All Peugeot diesels in California are equipped with an exhaust gas recirculation system to reduce NOx emissions. A controlled amount of exhaust gas is introduced into the intake manifold during certain engine loads, which lowers combustion temperatures and lowers nitrogen oxide formation.

The system consists of an engine RPM sensor, 2 load sensors mounted on the injection pump, 3 electrovalves, a 2-stage EGR valve, vacuum controlled throttle plate, and an electronic control box.

OPERATION

RPM SENSOR

The RPM sensor mounts in the flywheel housing and senses the rotation of 2 slots in the flywheel. It provides a signal which permits EGR to occur only above 1300 RPM on automatics and above 1500 RPM on manual transmission vehicles.

LOAD SENSORS

The engine load sensors are located on the side of the injection pump. When the throttle is opened, a plate passes next to the sensors. When the plate is not over the sensor, a 2 volt signal is sent to the control box. When the sensor is covered, a 5 volt signal is sent.

ELECTROVALVES

The electrovalves control the actual operation of the EGR valve by providing various vacuum signals. Two valves control the 2 stages of the EGR valve and one controls the throttle plate positioner. When no current is applied to the valves, they are open to atmosphere. With current applied, the valves route vacuum from the vacuum pump to the EGR valve and throttle plate positioner.

EGR VALVE

When no vacuum is applied to the EGR valve, it is held closed by spring pressure. When vacuum is applied to the top port, the valve opens part way. With vacuum applied to both ports, the EGR valve is fully opened.

THROTTLE PLATE

The throttle plate is used to raise intake manifold vacuum. When vacuum is applied to the vacuum unit, the throttle plate is moved to a half-open position. With no vacuum, the plate is fully open and does not affect intake vacuum.

SYSTEM OPERATION

At idle, there is no signal from the speed sensor. All electrovalves are open to atmosphere and the EGR valve is closed. No EGR takes place. At light loads above 1300 RPM (automatic) or 1500 RPM (manual), full EGR takes place. The control box provides current to all 3 electrovalves. Vacuum from the vacuum pump opens the EGR valve fully. The throttle plate is positioned half-way open, which increases intake manifold vacuum to draw in the exhaust gases.

Under medium loads, the control box opens the first electrovalve and the throttle plate opens fully. Manifold vacuum drops and less EGR occurs, even though the EGR valve is fully open. When loads are heavy, and both load sensors are covered by the injector pump plate, the control box opens the second electrovalve. Vacuum is no longer applied to the lower chamber of the EGR valve and recirculation is reduced.

When the throttle is fully depressed, the first load sensor is uncovered. The control box then opens all of the electrovalves and no EGR takes place. As the throttle is returned to a light load condition, the electrovalves are closed, vacuum is applied to the valve and throttle plate, and EGR resumes.

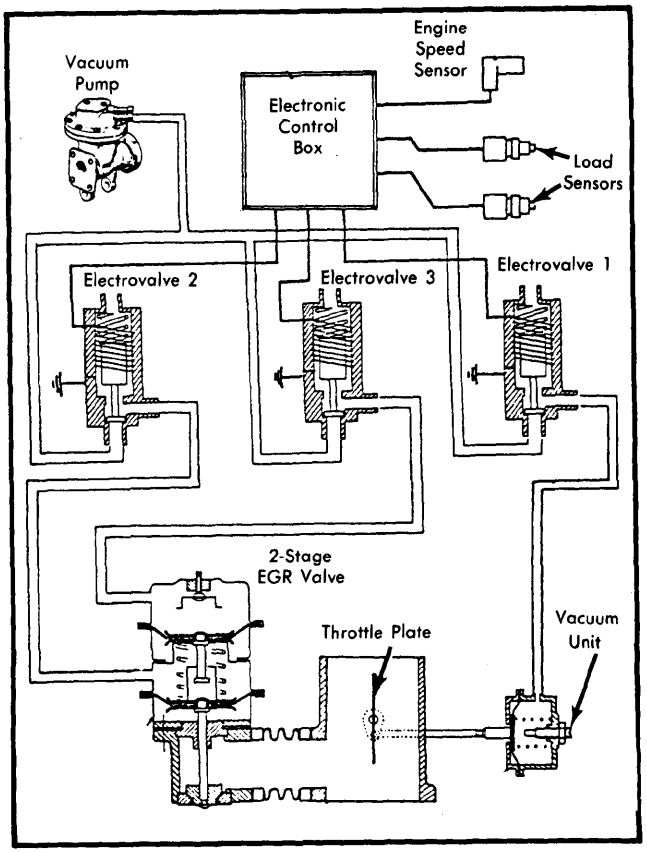

Fig. 1 Peugeot Diesel EGR System

PEUGEOT DIESEL EXHAUST GAS RECIRCULATION (Cont.)

TESTING

Electrical Check – 1) These tests are made with the engine running and the ignition switch in "ON" position. Battery voltage should be present at control box wire 32C.

2) If electrovalves are good, battery voltage will be present at both wires. If valves are bad, one wire will not have voltage. With connectors intact (insert probe from rear), load sensors should have no more than 7 volts supplied from control box (wires 112 and 114).

3) Stop engine and disconnect lead to speed sensor. Resistance measured with ohmmeter should be 50 ohms. The sensor should be positioned .02-.06" (.5-1.5 mm) from the flywheel.

4) Turn ignition to "ON" but do not start engine. Use voltmeter to measure voltage at return wire from load sensors (wires 113 and 115). When sensor is not covered by plate, voltage should be 2 volts or slightly less. When sensor is covered, voltage should be 5 volts or slightly more.

5) Clearance between load sensors and plate should be .035" (.9 mm). If not, shim sensor to move in or out until clearance is as specified.

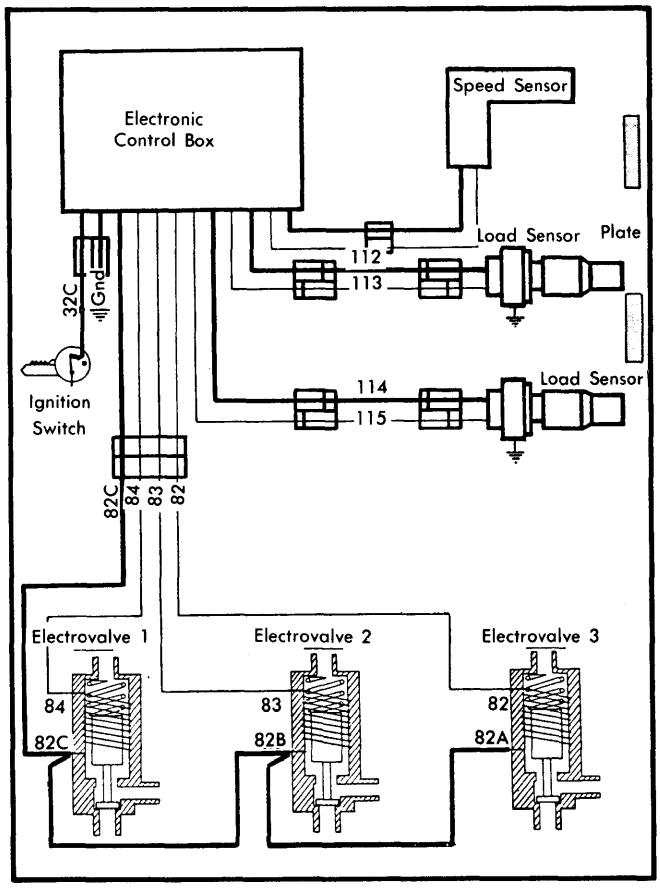

Fig. 2 Peugeot Diesel EGR Wiring Diagram