

PEUGEOT AIR INJECTION

505 (Gasoline)
604

DESCRIPTION

Peugeot gasoline engines use air injection to decrease exhaust emissions and improve performance of the catalytic converter. The systems inject fresh air into the exhaust manifold or catalytic converter. The air mixes with exhaust gases and permits any unburned gasses to burn in the exhaust pipe.

Systems on 505 models include an air pump with relief valve, diverter valve, thermostatic air slide valve, electrovalve, check valves, delay valve, vacuum switch, and air silencer. The 604 air injection system is composed of an air pump, diverter valve, 2 electrovalves, an oil thermostwitch, 2 check valves, and an air injection valve.

OPERATION

505 MODELS

The air pump operates whenever the engine is running. A pressure relief valve diverts air to atmosphere whenever pump pressure exceeds 6.5 psi (.43 kg/cm²). When engine coolant is below 130°F (55°C), air passes through the thermostatic air slide valve and is directed to the exhaust manifold. As the engine warms up, less air is directed to the exhaust manifold and some is sent to the catalytic converter. When coolant is

above 130°F (50°C), all injected air through the thermostatic slide valve is sent to the catalytic converter.

When manifold vacuum is high, the vacuum switch opens the electrovalve. This allows a small amount of air to the exhaust manifold. The oxygen sensor interprets this as a lean mixture and the electronic control unit richens the mixture slightly. The result is better driveability at small throttle openings. When the throttle is wide open for more than about 15 seconds, air injection is stopped because vacuum signal is not strong enough to open the diverter valve. The delay valve keeps the diverter valve open (to continue injection) if the throttle is wide open for brief periods of less than 13-17 seconds.

604 MODELS

When the engine is cold, the oil thermostwitch provides power to both electrovalves. Both pump pressure and intake vacuum are sent to the diverter valve which causes pump air to be diverted to atmosphere. When oil temperature reaches 64°F (18°C), the oil thermostwitch opens. The air and vacuum that operated the diverter valve are vented. Air is now directed to the exhaust manifolds by the diverter valve.

During sudden deceleration, an over-rich fuel condition results in the intake manifold. The air injection valve is opened at this time by high intake manifold vacuum. It diverts a controlled amount of air into the intake manifold, which leans out the mixture and prevents backfiring or an overheated converter.

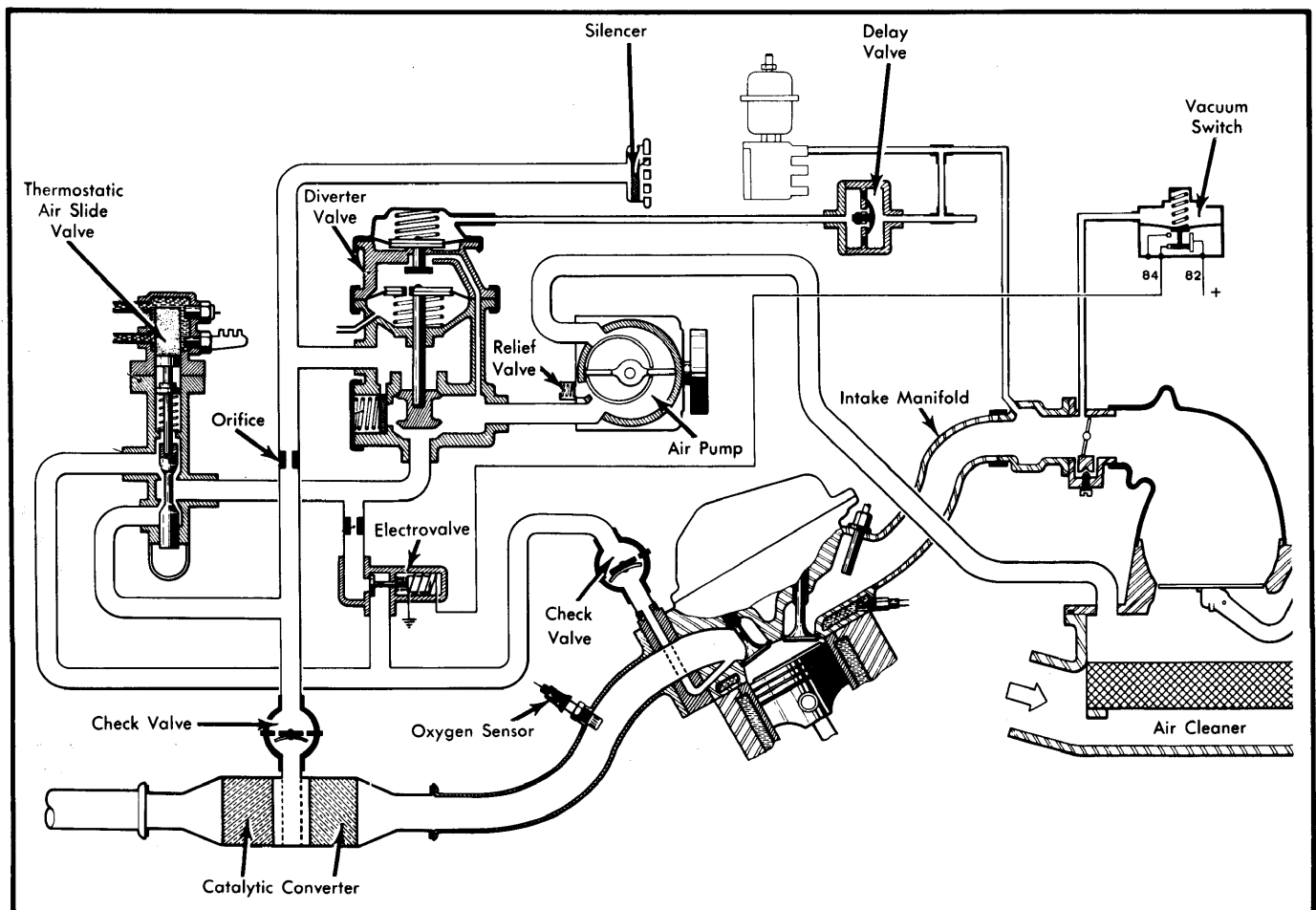


Fig. 1 Peugeot 505 Air Injection System

PEUGEOT AIR INJECTION (Cont.)

TESTING

NOTE — Testing procedures for the 505 air injection system are not available from manufacturer.

604 MODELS

Oil Thermoswitch — 1) Engine must be cold when performing this test. Connect a test lamp between battery positive terminal and the ground leads of the 2 electrovalves. With ignition "ON", test lamp should light. If not, remove thermoswitch.

2) Check thermoswitch for continuity. With switch temperature below 60-68°F (16-20°C), continuity between switch body and terminal should exist. Above test temperature, no continuity should exist. Replace if defective.

Electrovalves — With ignition "ON", test each electrovalve separately by disconnecting and connecting one wire. Valve should click. If not, check for battery voltage at electrovalve. If not present, check fuse and wiring.

Air Pump — 1) Remove rubber cover from relief valve on side of pump. Blue spacer should be present. Disconnect air supply hose from air injection valve.

2) Start engine. With engine idling, air should be present at hose and relief valve should be closed. As engine speed is in-

creased, air pressure should increase. At high engine speeds, relief valve should open.

Check Valves — Check valves should allow air to pass from air pump to exhaust manifold, but not in the opposite direction. A small amount of leakage is permitted.

Diverter Valve — 1) Test air pump, electrovalves, and thermoswitch first. Start engine and warm to normal operating temperature. Disconnect air supply hose from check valve. If air is flowing, diverter valve is operating properly.

2) If no air at check valve hose, replace diverter valve. Connect a jumper wire between ground and the side of electrovalves connected to thermoswitch. No air should flow from check valve hose. If air pressure is present, replace diverter valve.

Air Injection Valve — 1) Disconnect air hose from intake manifold to air injection valve. Plug hose. Start engine and check for vacuum at air injection valve vacuum line. If no vacuum, check hose routing. If vacuum is present, proceed with testing.

2) With engine idling, check for air flow at valve (where hose was disconnected). If air is flowing, replace valve. Snap throttle open and closed several times. Each time throttle is released, a burst of air should be released from valve. If not, replace valve.

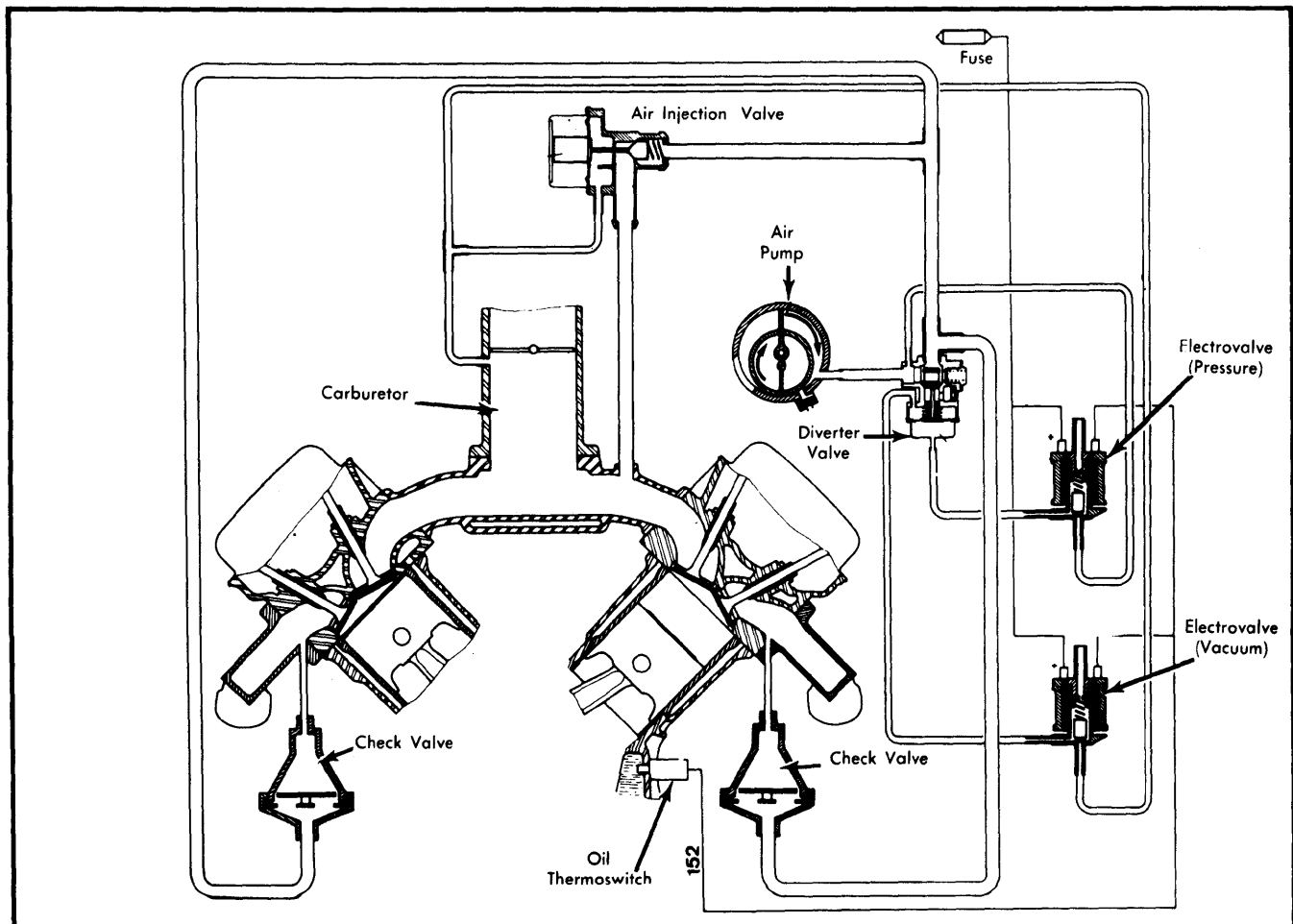


Fig. 2 Peugeot 604 Air Injection System