

Doblò 1.3 JTD exhaust gas recirculation system (e.g.r.) 1080C

CONSTRUCTION FEATURES

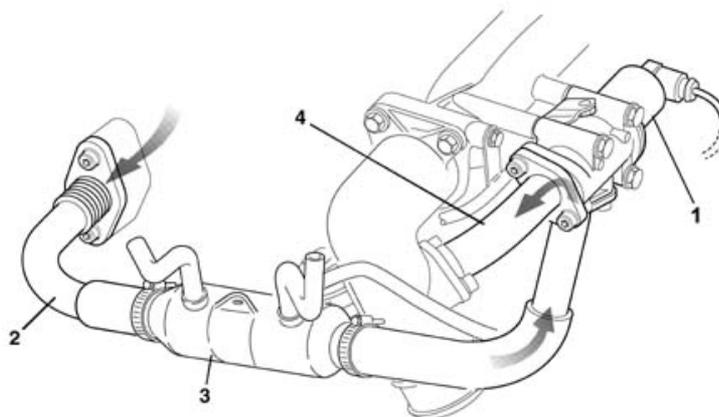
This system directs a proportion (5-15%) of the exhaust gases to the intake under certain service conditions.

This dilutes the fuel mixture with the inert gases lowering the peak temperature in the combustion chamber; this restricts the formation of nitrogen oxides (NOx) causing a 30-50% reduction at the exhaust.

COMPOSITION

The system consists of:

- an EGR Pierburg solenoid valve (1) that is controlled by the engine management control unit;
- the pipe coming from the exhaust manifold (2) (from which the exhaust gases come)
- an air/water heat exchanger (3) (that lowers the temperature of the exhaust gases);
- the pipe connected to the throttle casing (4) where the exhaust gases are introduced.



OPERATION

When coolant temperature is $> 20\text{C}$ and engine speed is between 800 and 3000 rpm, the engine control unit governs the EGR solenoid by means of a square wave signal.

The change in this signal allows the EGR coil to move a plunger and thus adjust the flow of burnt gases from the exhaust manifold to the intake manifold; two results are thus obtained:

- less air is introduced
- combustion temperature is reduced (due to the presence of inert gases) to reduce NOx (nitrogen oxide) production.

The engine control unit is kept constantly informed of recirculated gas quantity by information from the flow meter. If the intake of a certain amount of air (Q_{am}) rpm is required at a certain rpm and the amount sent by the flow meter (Q_{ar}) is less, the difference (Q_{gr}) is the recirculated gas quantity.

$$Q_{am} - Q_{ar} = Q_{gr}$$

Q_{am} = theoretical air quantity in memory

Q_{ar} = true air quantity

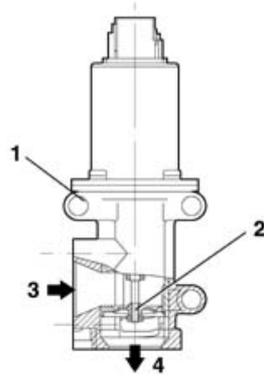
Q_{gr} = recirculated gas quantity

The atmospheric pressure signal is used when controlling the EGR valve to recognize when the car is driving at altitude and so reduce the quantity of recirculated gas and prevent the engine from producing fumes.

SPECIFICATIONS

The Pierburg EGR valve fitted to the intake manifold modulates the flow of exhaust gas to the intake according to a command received from the injection control unit.

Modulation takes place via an internal solenoid controlled in PWM by the control unit, which operates the control rod from the internal valve.



- 1, EGR valve body
- 2, Internal valve
- 3, Gas intake from the exhaust manifold (via the air/water heat exchanger)
- 4, Gas outlet to inlet manifold