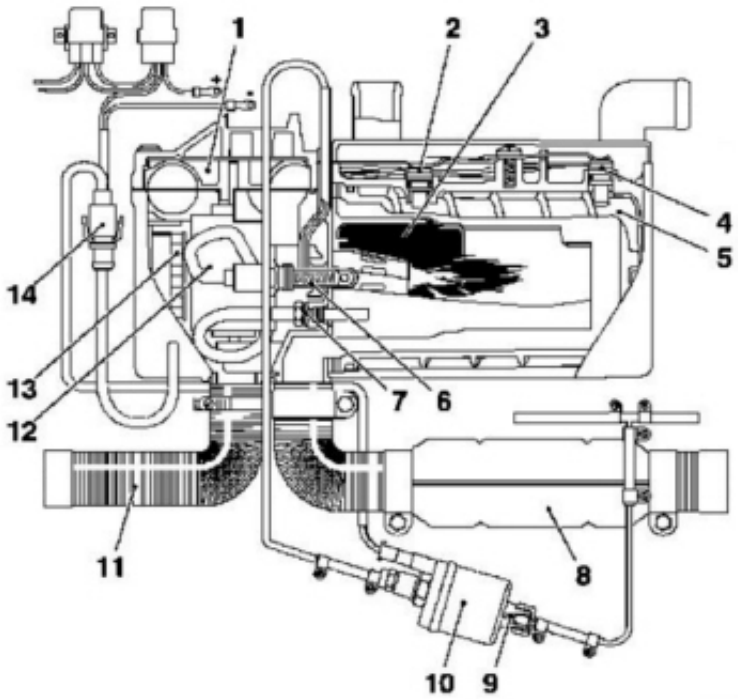
CROMA 1.9 JTD 8v SUPPLEMENTARY INDEPENDENT HEATER 5020M

Description

The additional heater is optional on all Multiate versions equipped with an automatic climate control system. It is supplied by EBERSPÄCHER.
This device partly pre-heates the passenger compartment and also allows:
- pre-heating of engine coolant;
- reduction in the time the engine takes to warm up;
- elimination of ice and condensation on the windows more quickly.

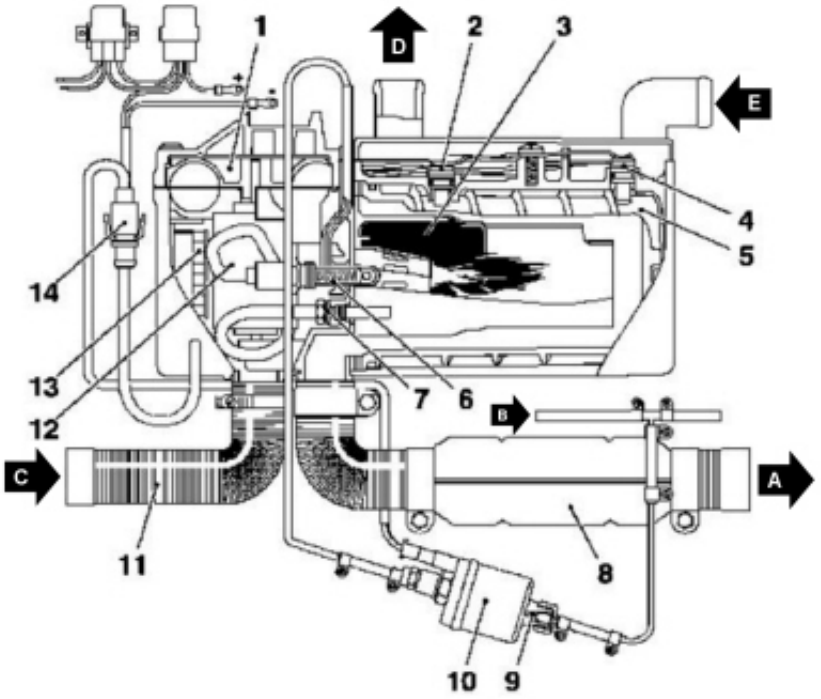
The additional heater components are illustrated in the diagram below.



1 - Combustion air fan
2 - Temperature sensor
3 - Combustion chamber
4 - Overheating sensor
5 - Heat exchanger
6 - Heater plug
7 - Flame sensor
8 - Exhaust gas pipe with exhaust silencer
9 - Filter fitted inside pump
10 - Metering pump (on the side of the fuel tank)
11 - Combustion air duct
12 - Electric motor
13 - Control unit
14 - Cable loom connector

Operating strategy

The additional engine heater is fitted in the coolant circuit between the engine and the heat exchanger.
The heated coolant is supplied first to the engine. Once the coolant is heated up, the heat, depending on the heating level selected, is directed into the passenger compartment.



1 - Combustion air fan
2 - Temperature sensor
3 - Combustion chamber
4 - Overheating sensor
5 - Heat exchanger
6 - Heater plug
7 - Flame sensor
8 - Exhaust gas pipe with exhaust silencer
9 - Filter in the fuel pump
10 - Fuel pump (in the fuel tank)
11 - Combustion air duct
12 - Electric motor
13 - Control unit
14 - Cable loom connector
15 - Control element for electronically adjusted climate control system
16 - Fuel feed pump
A - Exhaust gas
B - Fuel
C - Combustion air
D - Coolant outlet
E - Coolant inlet

The heater recirculation pump pumps the coolant towards the heat exchanger.
The coolant is heated here through combustion in the combustion chamber. The water heated in this way is

used on the one hand, as mentioned above, to heat the engine and, on the other hand to heat the passenger compartment. The heat exchanger for the interior of the vehicle gives off thermal energy to heat the passenger compartment. The hot air reaches the passenger compartment in quantities that can be metered via the ventilation devices.

The system interfaces with the vehicle by means of the engine cooling, fuel supply and electrical systems:

- interface with the engine cooling system: the coolant leaving the power unit is directed to the heater and is returned to the circuit by a dedicated electric pump.
- interface with the fuel supply system: the heater burner is supplied with fuel, taken directly from the tank (9) by means of an electric pump and conveyed in a special pipe (5).
- interface with the electrical system: the heater is fitted with dedicated connectors which ensure the supply for the two electric pumps (fuel and coolant), the burner heater plug, the management control unit and the interconnection with the fan for the distributor blower unit.

During starting, if the engine is not sufficiently hot, the additional heating device intervenes automatically and supplies the vehicle heating shortening this stage.

It is an independent heater that runs on the fuel from the vehicle on which it is fitted (via the pump on the fuel tank).

The advantages of this additional heating are:

- ice-free windows thereby reducing the risk of accidents thanks to improved visibility;
- a warm passenger compartment when the vehicle is first started up;
- the engine and catalytic converter reach their operating temperature much earlier with a consequent reduction in fuel consumption and emissions.

The following safety devices control the heater functions: the flame sensor, the overheating sensor, the protection against peaks and drops in voltage, the regulation of the fan motor speed together with the electronic control unit (CRS) offer excellent safety standards.

The additional engine heater is controlled by the automatic climate control system control unit.

The heater water pump is activated and, after carrying out a special rinsing and pre-heating procedure, the combustion air fan, the heater plugs and the fuel pump start the combustion stage. When a stable flame is produced, the heater plug goes out.

The Additional Heater Control Unit (CRS) is capable of carrying out its own autodiagnostic function.

The heater is activated by the NCL if:

- there is a key on enablement signal;
- engine speed > 700 rpm;
- engine coolant temperature <50°C
- temperature setting at NCL (left or right) > engine coolant temperature + 2°C.

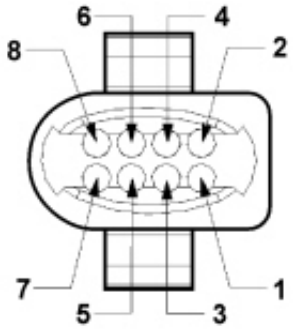
The heater is deactivated until the next key on if:

- ignition key OFF;
- engine speed < 400 rpm
- engine coolant temperature >70°C;
- temperature setting at NCL (left or right) < engine coolant temperature -2°C.

Additional heater control unit (crs)

The CRS control unit (EBERSPACHER) manages the function guaranteeing the fault diagnosis of the entire system.

The CRS (8-way) connector is illustrated in the diagram below.



CRS pin out (8 pin)

PINFUNCTION

1 Direct battery power supply

2 Earth

3 N.C.

4 Additional heater pump power supply

5 Diagnostic line K (preparation)

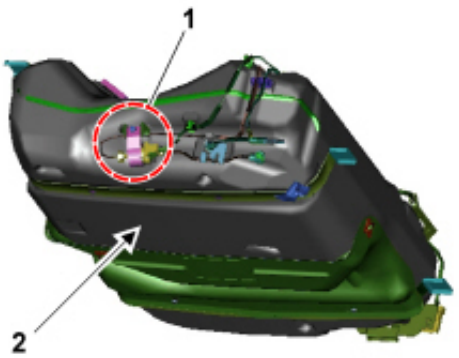
6 Additional heater positive control from NCL

7 Power supply +15 (INT)

8 N.C.

Additional heater pump

The pump for the additional heater is located on the fuel tank in the centre under the rear seats.
The fuel metering pump is the impulse type with an electrical supply.
It has the task of providing the fuel for the burner, taking it from the vehicle fuel tank.
The fuel is taken via a dedicated pipe which connects the pump directly to the tank.
The circuit supply pump is illustrated in the diagram below.



1 - Heater pump
2 - Fuel tank