



## ADDITIONAL HEATER

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## ADDITIONAL HEATER - Description

The climate control via the heater unit is insufficient when the engine is cold, especially in Diesel engines which are slow to warm up.

These engines may optionally be fitted with a supplementary heater system. This remains active from the moment when the engine is turned on until a certain temperature is reached.

The system consists of an additional heating device, located on the engine coolant supply pipe to the heater unit.

This device contains three spark plugs (similar to those used to preheat the combustion chamber).

The operation of the heater plugs is controlled by a special control unit which operates either one, two or three of them giving 200W, 400W or 600W.

This control logic depends on:

- I the temperature of the engine coolant;
- I the electrical power available (the battery voltage is checked)
- I the engine speed (which should be above a pre-set value)

The supply of one, two or three heater plugs is controlled by two relays:

- I 1. Level: activated by the first relay;
- I 2. Level: activated by the second relay;
- I 3. Level: activated by both relays.

There is also a third relay/safety switch which interrupts the heater plugs supply if the contact to earth is not correct: the metal device containing the heater plugs is connected to the engine earth by means of a special loom.

For more details, 5020L additional heater .

The control unit supply lines are protected by a fuse in the junction unit and by the fuse which protects other supplies controlled by the ignition.

The safety relay supply line is protected by a fuse located in the junction unit, whilst the one supplying the resistors is protected by a special maxifuse.

## ADDITIONAL HEATER - Functional description

The additional heater control unit M75 receives a supply controlled by the ignition (INT/A) at pins 15 and U from the line protected by the fuse B10 up to 2/99 or fuse F6 of the additional fuse box B98B from 2/99.

The direct supply arrives from the battery (maxifuse J/B1 of B5 up to 2/99 or B99 from 2/99) at pin TL through fuse F10 of junction unit B1 : this signal allows the battery voltage to be checked, i.e. the level of electrical power available.

Pin 31 of M75 is earthed.

Pin N of M75 receives the engine rpm signal coming from the engine management control unit M10 .

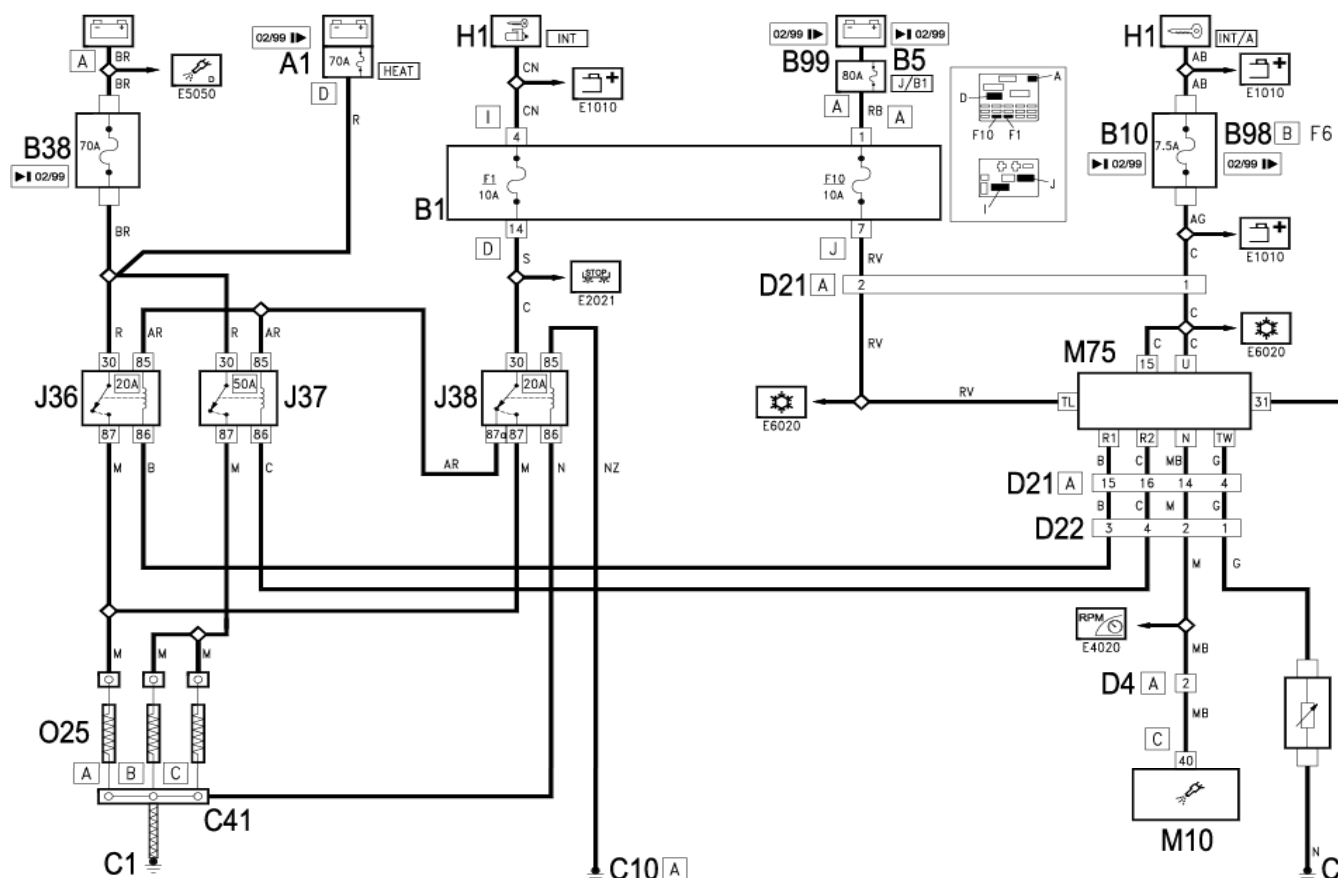
Pin TW, on the other hand, is connected to the special temperature sensor K80 which measures the temperature of the coolant near the additional heater.

Relays J36 and J37 control the engagement of the resistors O25 .

The supply at the contact of the relays arrives from the battery from the line of the specific maxifuse B38 up to 2/99 or from the HEAT maxifuse, located directly on the battery A1 - connector D from 2/99, while the coils are energized by the control unit M75 , which operates only relay J36 to switch on plug O35 A , only relay J37 to switch on plugs O35 B and C, and both relays for all three plugs O35 .

The safety relay J38 interrupts the supply of the two above mentioned relays and consequently the heater plugs if the contact to earth is not correct: the coil for J38 is connected on one side to earth and on the other to the metal frame for the device containing the heater plugs: this is connected to the engine earth C1 by means of a special earth loom C41 : if this connection is broken, relay J38 is energized and immediately stops the current supply to the heater plugs.

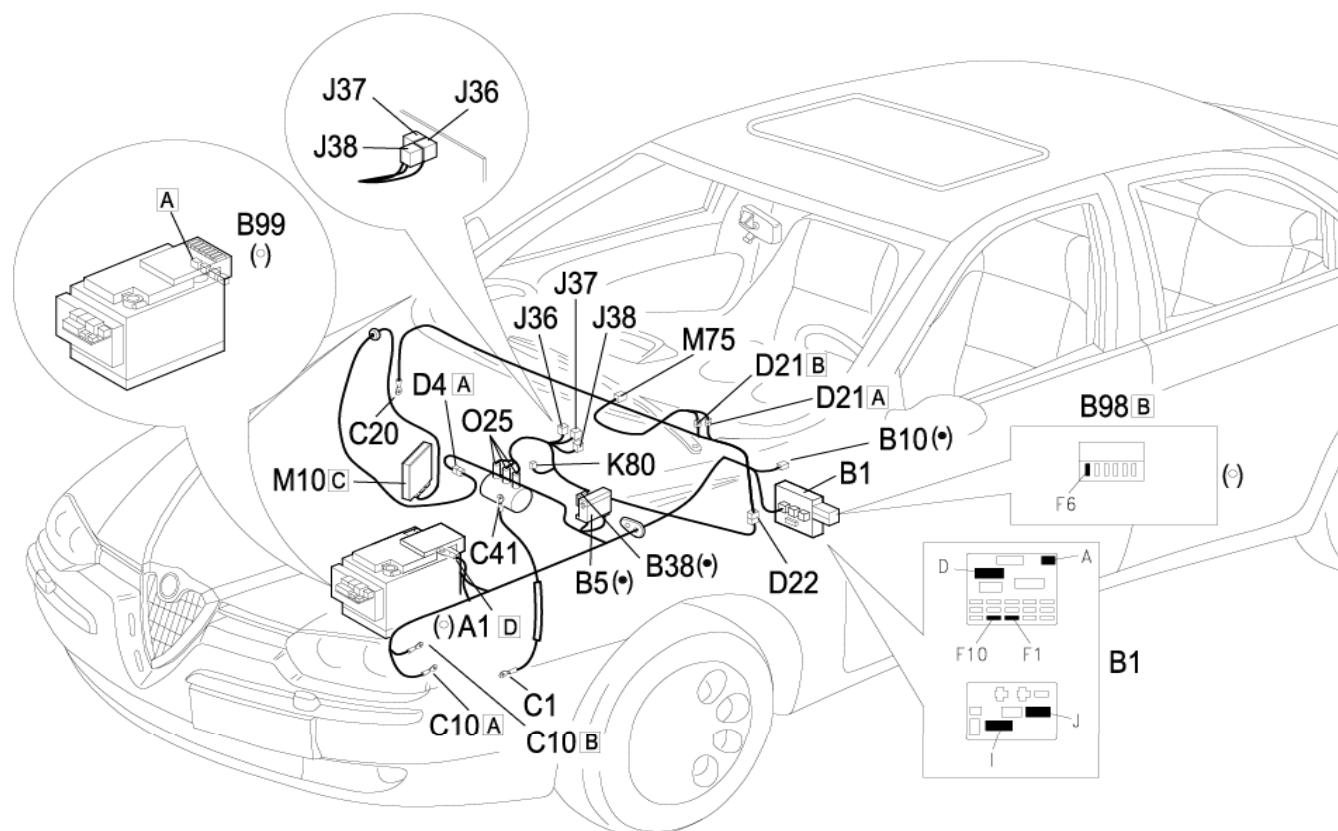
## ADDITIONAL HEATER - Wiring diagram



Component code	Name	Assembly
A1	Battery	-
A1	Battery	5530B
B1	Junction unit	5505A
B5	MAXI FUSE box-1	-
B5	MAXI FUSE-1 box	-
B10	Fuse controlled by ignition (INT/A)	-
B10	Key-dependent supply fuse (INT/A)	-
B38	Additional heater fuse	-
B98	Supplementary fuse box	5505A
B99	Maxifuse box on battery	-
B99	Maxifuse box on battery	5530B
C1	Battery earth	-
C1	Battery earth	5530B
C10	Front left earth	5505A
C16	Air conditioning earth	-
C20	Passenger side dashboard earth	5505A
C41	Earth cable loom for additional heater	-
D4	Front/engine connection	-
D8	Front / air conditioning - heater coupling	-

D8	Front coupling / air conditioner - with heating	-
D21	Dashboard/air conditioning-heater connection	-
D21	Dashboard/air conditioning-heater coupling	-
D22	Additional heater junction	-
D22	Front./dashboard coupling for additional heater	-
D22	Front/dashboard connection for additional heater	-
J36	Additional heater relay - 1	-
J36	Additional heater relay -1	-
J36	Additional heater relay	-
J37	Additional heater relay - 2	-
J37	Additional heater relay	-
J38	Additional heater safety relay	-
K80	Additional heater temperature sensor	-
K80	Additional heater temperature sensor	1004B
M10	Engine management control unit	1060G
M70	Climate control system control unit	5040D
M75	Additional heater control unit	5020L
O25	Additional heater resistance	5020L
O25	Additional heater resistance	5020L
O25	Additional heater resistor	5020L
O25	Additional heater resistor	5020L

## ADDITIONAL HEATER - Location of components



Component code	Name	Assembly
A1	Battery	-
A1	Battery	5530B
B1	Junction unit	5505A
B5	MAXI FUSE box-1	-
B5	MAXI FUSE-1 box	-
B10	Fuse controlled by ignition (INT/A)	-
B10	Key-dependent supply fuse (INT/A)	-
B38	Additional heater fuse	-
B98	Supplementary fuse box	5505A
B99	Maxifuse box on battery	-
B99	Maxifuse box on battery	5530B
C1	Battery earth	-
C1	Battery earth	5530B
C10	Front left earth	5505A
C16	Air conditioning earth	-
C20	Passenger side dashboard earth	5505A
C41	Earth cable loom for additional heater	-
D4	Front/engine connection	-
D8	Front / air conditioning - heater coupling	-

D8	Front coupling / air conditioner - with heating	-
D21	Dashboard/air conditioning-heater connection	-
D21	Dashboard/air conditioning-heater coupling	-
D22	Additional heater junction	-
D22	Front./dashboard coupling for additional heater	-
D22	Front/dashboard connection for additional heater	-
J36	Additional heater relay - 1	-
J36	Additional heater relay -1	-
J36	Additional heater relay	-
J37	Additional heater relay - 2	-
J37	Additional heater relay	-
J38	Additional heater safety relay	-
K80	Additional heater temperature sensor	-
K80	Additional heater temperature sensor	1004B
M10	Engine management control unit	1060G
M70	Climate control system control unit	5040D
M75	Additional heater control unit	5020L
O25	Additional heater resistance	5020L
O25	Additional heater resistance	5020L
O25	Additional heater resistor	5020L
O25	Additional heater resistor	5020L