



## ENGINE COOLING

156

## **ENGINE COOLING - Description**

The engine radiator and air conditioner condenser cooling system consists of one fan operated at two different speeds.

- the first speed is activated at a first coolant temperature level or at a certain air conditioner coolant pressure.
- the second speed cuts in at a higher temperature or pressure threshold.

The operation of the fan is achieved by means of special relays located in the engine compartment, near the battery.

The supply line for the fan is protected by a special maxifuse, whilst the circuit for energizing the relays is protected by the fuse which protects numerous other services controlled by the ignition.

The fan therefore only comes on when the ignition is switched ON.

## ENGINE COOLING - Functional description

The supply for fan N11 arrives directly from the battery from the line for the VENT maxifuse of B6 up to 2/99 or FAN 1 of B99 from 2/99: the fan therefore works when it receives an earth command.

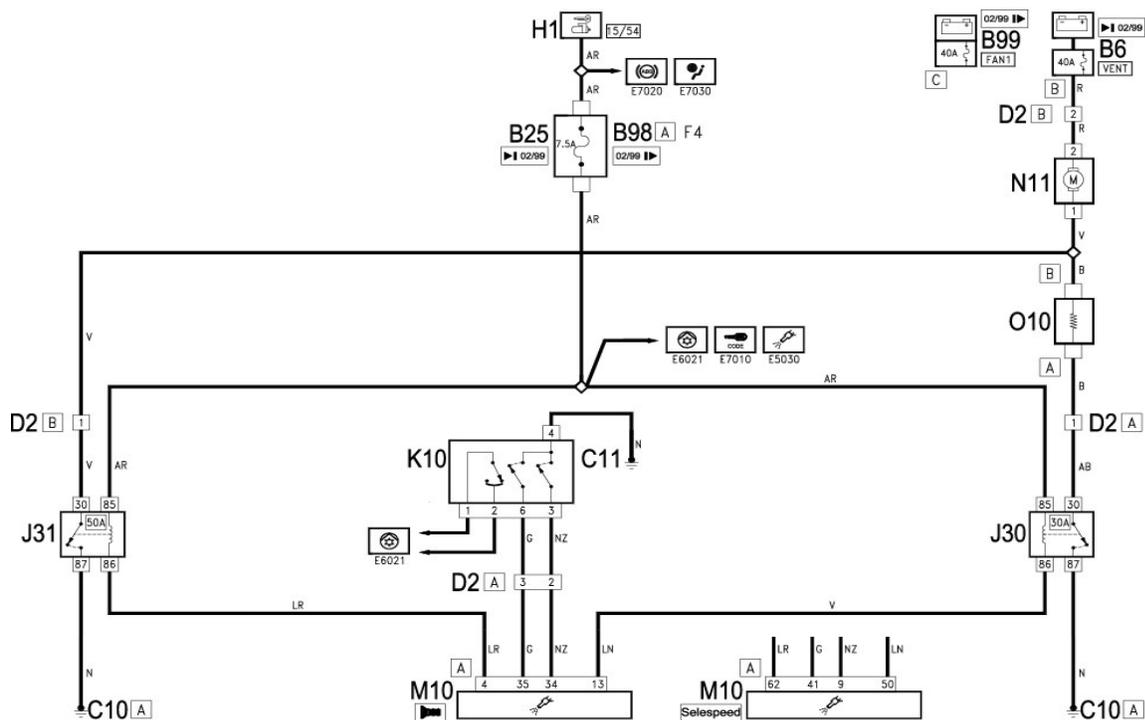
The relays J30 and J31 , specific to the cooling system, receive a supply at their coils controlled by the ignition (15/54) protected by fuse B25 up to 2/99 or fuse F4 of the additional fuse box B98A from 2/99.

They are energized by an earth signal coming from the engine control unit M10 .

If the engine coolant temperature reaches the first temperature stage, or the 4-stage pressure switch K10 (pin 3) signals to the control unit M10 that the first pressure stage has been reached, then the control unit M10 sends an earth signal to the 1st speed fan relay J30 which energizes the coil. The relay then sends an earth signal which, via the additional resistor O10 , operates the fan N11 which rotates at the first (slow) speed.

If the engine coolant reaches a higher temperature level or the 4-stage pressure switch K10 (pin 6) signals to the control unit M10 that a higher pressure stage has been reached, then the control unit M10 sends an earth signal to the 2nd speed fan relay J31 which energizes the coil. The relay then sends an earth signal directly to the fan N11 which rotates at the maximum speed.

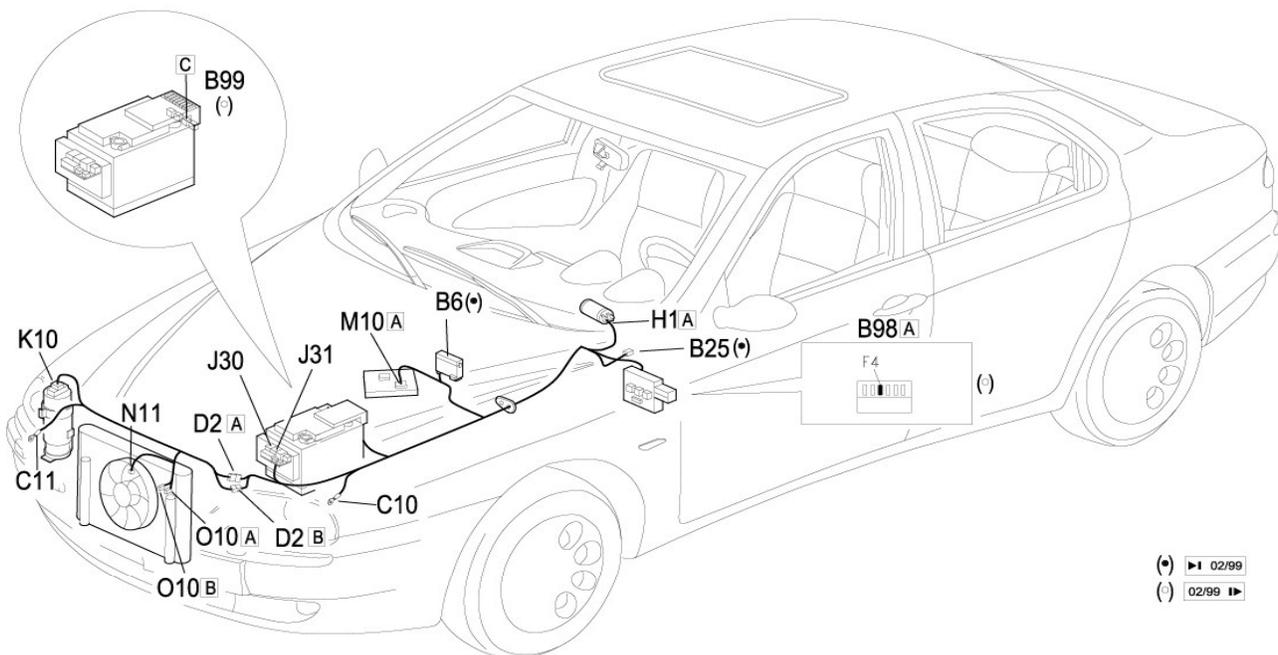
## ENGINE COOLING - Wiring diagram



Component code	Name	Assembly reference
B6	MAXI FUSE box - 2	-
B6	MAXI FUSE box-2	-
B25	Fuse for services controlled by ignition (15 /	-
B25	Ignition-dependent services supply fuse (15 / 54)	-
B98	Supplementary fuse box	5505A
B99	Maxifuse box on battery	-
B99	Maxifuse box on battery	5530B
C10	Front left earth	5505A
C11	Right front earth	-
C11	Right front earth	5505A
D2	Front / crossmember coupling	-
D2	Front /crossmember connection	-
D4	Front/engine connection	-
H1	Ignition switch	5520A
J30	Engine fan 1st speed relay	-
J31	Engine fan 2nd speed relay	-
J32	Fan 2nd speed relay	-
J32	Fan 2° speed relay	-
K10	4 stage pressure switch	-
K10	4 stage pressure switch	5040B
M10	Engine management ECU	-
M10	Engine management ECU	1056B
M10	Engine management control unit	-
M10	Engine management control unit	1056B
M10	Engine management control unit	1060G
N11	Engine fan motor - 1	1088E
N11	Engine fan motor - 1	1088E
N11	Engine fan motor -1	-
N11	Engine fan motor -1	1088E
N11	Engine fan motor -1	1088E

N12	Engine fan motor - 2	1088E
N12	Engine fan motor -2	1088E
O10	Engine fan adjustment resistor - 1	1088E
O12	Engine fan adjustment resistor - 2	1088E
O12	Engine fan adjustment resistor -2	1088E

## ENGINE COOLING - Location of components



(\*) 02/99  
 (°) 02/99

Component code	Name	Assembly reference
B6	MAXI FUSE box - 2	-
B6	MAXI FUSE box-2	-
B25	Fuse for services controlled by ignition (15 /	-
B25	Ignition-dependent services supply fuse (15 / 54)	-
B98	Supplementary fuse box	5505A
B99	Maxifuse box on battery	-
B99	Maxifuse box on battery	5530B
C10	Front left earth	5505A
C11	Right front earth	-
C11	Right front earth	5505A
D2	Front / crossmember coupling	-
D2	Front /crossmember connection	-
D4	Front/engine connection	-
H1	Ignition switch	5520A
J30	Engine fan 1st speed relay	-
J31	Engine fan 2nd speed relay	-
J32	Fan 2nd speed relay	-
J32	Fan 2° speed relay	-
K10	4 stage pressure switch	-
K10	4 stage pressure switch	5040B
M10	Engine management ECU	-
M10	Engine management ECU	1056B
M10	Engine management control unit	-
M10	Engine management control unit	1056B
M10	Engine management control unit	1060G
N11	Engine fan motor - 1	1088E
N11	Engine fan motor - 1	1088E
N11	Engine fan motor -1	-
N11	Engine fan motor -1	1088E
N11	Engine fan motor -1	1088E

N12	Engine fan motor - 2	1088E
N12	Engine fan motor -2	1088E
O10	Engine fan adjustment resistor - 1	1088E
O12	Engine fan adjustment resistor - 2	1088E
O12	Engine fan adjustment resistor -2	1088E