



CONDIZIONATORE

250/251 - Ducato

AIR CONDITIONING - DESCRIPTION

An automatic system manages passenger compartment climate control, i.e. temperature and ventilation, with air flow recirculation and positioning.

A special control unit manages the operation of the system by controlling:

- air temperature at the vents;
- air distribution at the vents;
- fan speed;
- compressor engagement (air refrigeration circuit);
- air recirculation engagement;
- the MAX-DEF rapid defrosting function (which consists of a collection of measures which make it possible to demist the windscreen quickly);

The control unit sets the above parameters so that temperature of the passenger compartment is adjusted to the desired temperature.

The following parameters/functions can be altered manually:

- temperature;
- fan speed;
- distribution arrangement;
- compressor disabling;
- defrosting/demisting;
- recirculation.

Manual selections always take priority and are memorised until the user cancels the command by returning to automatic operation.

The control unit acquires information on the temperature and weather conditions via special sensors:

- outside temperature sensor, located on the passenger door mirror: the sensor value is acquired by the Body Computer and is then sent, via the CAN, to the climate control system control unit as well as to the instrument panel and to other users;
- solar sensor, which measures the sun rays on the windscreen;
- two treated air temperature sensors: measure the temperature at the driver's lower vent outlets (FOOT) and the upper vents in the centre of the dashboard (VENT) and transmit all information to the control unit;
- passenger compartment air sensor, integrated in the control unit.

On the basis of the calculations made, the control unit sets:

- the speed of the air entering the passenger compartment;
- the temperature of the air through the mixture actuator (MIX);
- the distribution of the flows via a dedicated actuator (DIST);
- the interior/exterior air recirculation function by means of another specific actuator (RIC).

All actuators are controlled directly by an electronic control unit.

If the conditions require, the control unit also switches on the air cooling and dehumidification circuit, activating the air conditioning compressor

See E6021 COMPRESSOR ENGAGEMENT

For more details,

See descriptions 5040 AIR CONDITIONING CASING AND COMPONENTS

When the outside temperature measured is below 3°C, the message "Danger Ice" and the snowflake symbol appear in the instrument panel display.

AIR CONDITIONING - FUNCTIONAL DESCRIPTION

The climate control system control unit M070 receives an ignition-operated power supply (INT) at pin 39 through the line protected by fuse F51 of the Body Computer M001 (pin 18 of connector C).

It also receives a direct battery supply, at pin 30, via the line protected by fuse F36 of the Body Computer M001 (pin 13 of connector C), whilst it is connected, via pin 40, to the air conditioning unit earth C016.

The climate control system control unit M070 is connected, via pin 7 (power supply) and pin 10 (signal) to the solar sensor K090 (pins 2 and 3 respectively) from which it receives information concerning the solar radiation level.

The climate control system control unit M070 is connected, via pin 5 (power supply) and pin 29 (feedback) to the passenger compartment air fan N085, pins 2 and 1 respectively, to adjust the speed.

The passenger compartment air fan N085 receives a direct battery supply, at pin 4, via the line operated by relay switch T08 (except during starting, "INT/A") and protected by fuse F08 located in the engine compartment junction unit B001.

The passenger compartment air fan N085 is connected, via pin 3, to the air conditioning unit earth C016.

The climate control system control unit M070 manages the compressor engagement from pin 37 by sending the corresponding signal to the Body Computer M001 (pin 42 of connector D), which sends this request via the C-CAN to the engine management control unit M010.

For more details,

See E6021 COMPRESSOR ENGAGEMENT

The same signal is sent, depending on the version, either to the conversion socket or to the additional air conditioning system, if present.

For more details,

See E3094 SOCKET FOR TRANSFORMER VERSION

See E6025 SUPPLEMENTARY AIR CONDITIONER

The climate control system control unit M070 then manages the mixing, distribution and recirculation of the air, constantly checking the temperature.

In particular, the climate control system control unit M070:

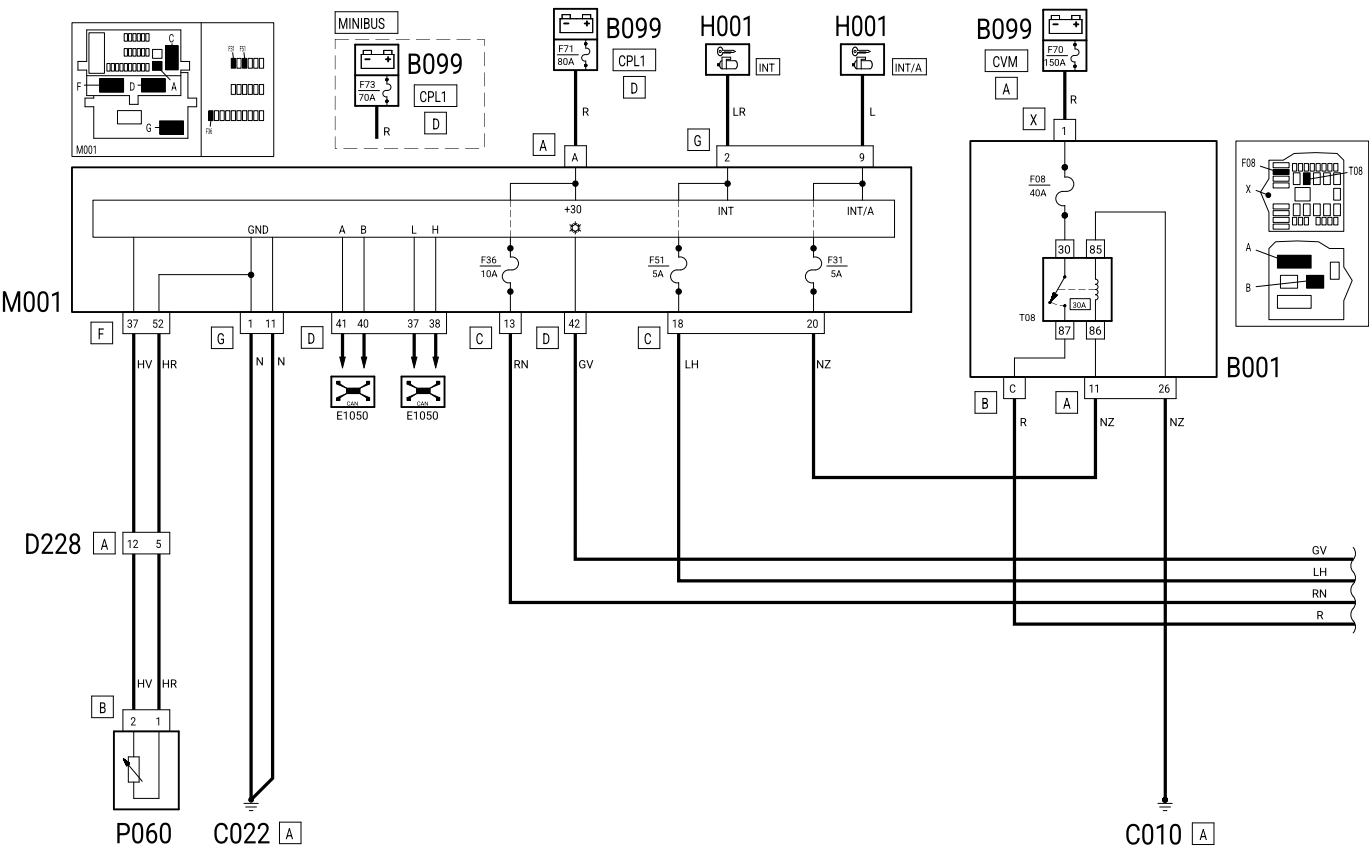
- via pin 11 is connected to pin 14 of the climate control system / air diffuser coupling D120, providing a reference earth for the upper and lower treated air sensors;
- via pin 20 receives the signal from the lower treated air sensor (pin 16 of D120);
- via pin 9 receives the signal from the upper treated air sensor (pin 15 of D120);
- via pins 25, 26, 35 and 36 is connected to pins 5, 7, 8, and 9 of the climate control system / air diffuser coupling D120 for the management of the air mixing function;
- via pins 21, 22, 31 and 32 is connected to pins 10, 11, 12 and 13 of the climate control system / air diffuser coupling D120 for the management of the air recirculation function;
- via pins 23, 24, 33 and 34 is connected to pins 1, 2, 3, and 4 of the climate control system / air diffuser coupling D120 for the management of the air distribution function;
- via pin 38 is connected to pin 6 of the climate control system / air diffuser coupling D120, providing a power supply for all the actuators for the management of the above three functions.

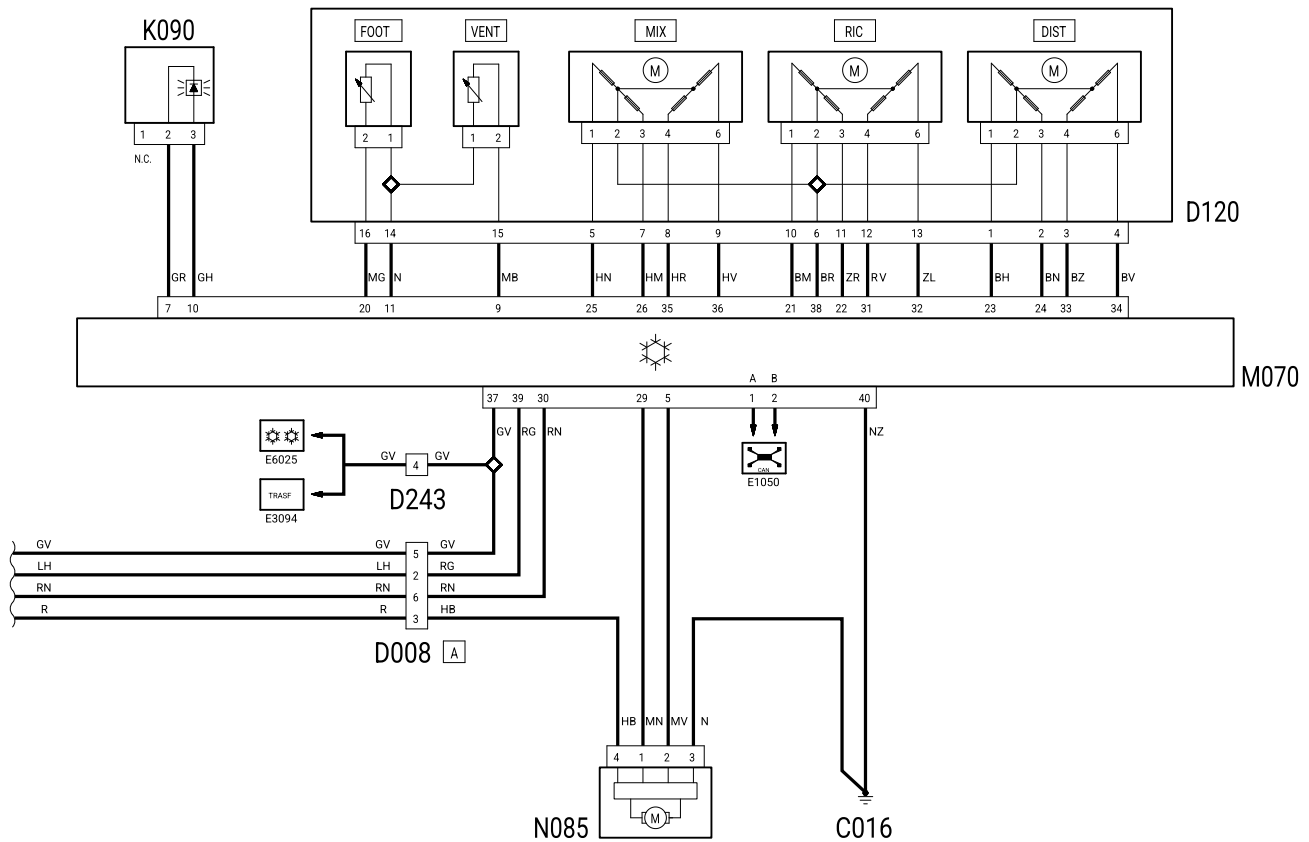
Lastly, the climate control system control unit M070 is connected to the CAN via pins 1 and 2.

See E1050 CAN CONNECTION LINES

This CAN connection is designed, amongst other things, to measure the outside temperature coming from the outside air temperature sensor fitted on the driver's door mirror P060, measured at pins 52 (earth reference) and 37 (signal) of connector C of the Body computer M001.

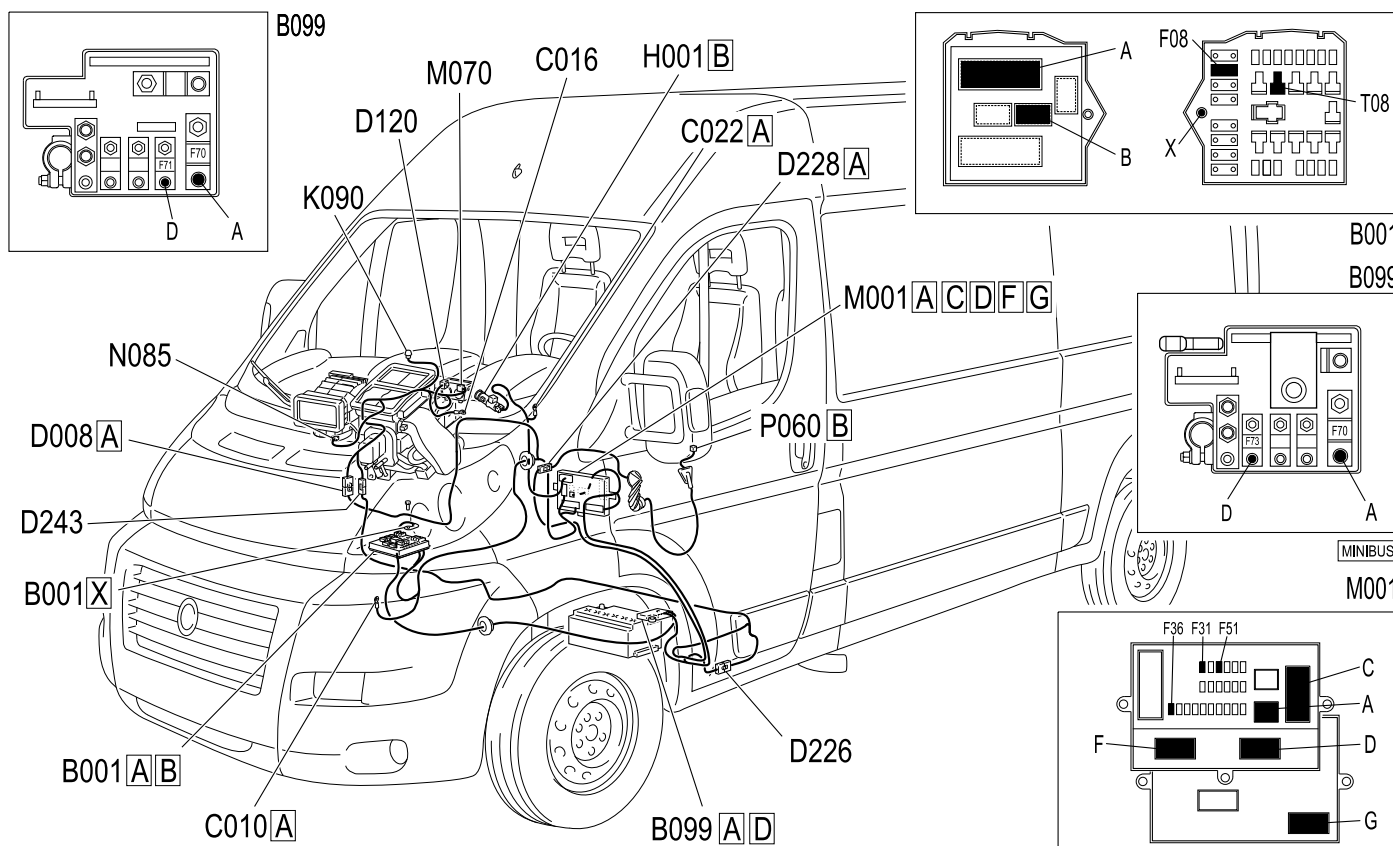
AIR CONDITIONING - WIRING DIAGRAM





Component code	Description	Assembly reference
B001	JUNCTION UNIT	Op. 5505A MULTI-FUNCTION COMPONENTS
B099	MAXI FUSE BOX ON BATTERY	Op. 5530B BATTERY AND LEADS
C010	LEFT FRONT EARTH	-
C016	AIR CONDITIONING UNIT EARTH	-
C022	Centre dashboard earth	-
D008	FRONT/AIR CONDITIONING-HEATER COUPLING	-
D120	CLIMATE CONTROL/DIFFUSED AIR DEVICE COUPLING	Op. 5040D AIR CONDITIONING CONTROLS
D228	CAB/FRONT DRIVER'S DOOR COUPLING	-
D243	AIR CONDITIONING/OPTIONAL CAB COUPLING (AIR CONDITIONING)	-
H001	IGNITION SWITCH	Op. 5520A IGNITION SWITCH
K090	SOLAR SENSOR	Op. 5010D AIR TEMPERATURE RECORDING SYSTEM
M001	BODY COMPUTER	Op. 5505A MULTI-FUNCTION COMPONENTS
M070	CLIMATE CONTROL SYSTEM CONTROL UNIT	Op. 5040D AIR CONDITIONING CONTROLS
N085	PASSENGER COMPARTMENT AIR FAN	Op. 5040C AIR CONDITIONING CASING AND COMPONENTS
P060	DRIVER'S DOOR MIRROR	Op. 7005R FRONT DOOR MIRRORS

AIR CONDITIONING - COMPONENT LOCATION



Component code

Description

Assembly reference

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N085	PASSENGER COMPARTMENT AIR FAN	Op. 5040C AIR CONDITIONING CASING AND COMPONENTS
P060	DRIVER'S DOOR MIRROR	Op. 7005R FRONT DOOR MIRRORS