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IMPIANTO FILTRO ANTIPARTICOLATO

191 - Giulietta

PARTICLE FILTER SYSTEM - DESCRIPTION

An electronic control system supervises and governs all engine parameters to optimise performance and fuel consumption by means of a real-time response to different operation conditions.

See E5050 DIESEL ENGINES ELECTRONIC MANAGEMENT

To conform with the most recent pollution control regulations, the most recent version of electronic management which includes new components and a DPF particle filter has been adopted.

The DPF (Diesel Particulate Filter) is a mechanical filter, inserted in the exhaust pipes which traps the carbon particles present in the exhaust gases on diesel engines. The filter makes it possible to almost totally eliminate the emission of carbon particles in line with current legislation.

During the normal usage of the vehicle, the engine management control unit records a series of data related to usage (period of usage, type of journey, temperatures reached, etc.) and empirically calculates the quantity of particulates accumulated in the filter.

The filter is an accumulation system and should be periodically regenerated (cleaned) by burning the carbon particles.

This regeneration is carried out automatically by the engine management control unit on the basis of information provided by the sensors and if the following usage conditions are satisfied: vehicle speed above 40 Km/h for at least 15 minutes and particle mass below 200%.

The following phenomena may occur during the regeneration: limited increase in the idle speed, activation of the fan, limited increase in fumes, high exhaust temperatures.These situations should not be interpreted as faults and do not have an adverse effect on the behaviour of the vehicle or the environment.

The system has three warning lights in the instrument panel for signalling the accumulation status and operation of the filter.

The "filter blocked" warning light is activated after a certain number of unsuccessful regenerations, i.e. the driving profile at that moment does not allow the automatic activation of the regeneration procedure.

The EOBD warning light is activated if the accumulation level of 250 % is exceeded memorising the errors in the control unit memory.

If the "filter blocked" warning light does not switch off, or the EOBD warning light is activated, it is vital to carry out the forced regeneration using the diagnosis equipment (Examiner).

Op. 0520G12 PARTICULATE FILTER (D.P.F.) - REGENERATION EXAMINER

It is possible, during the filter regeneration stage, that the particulate being "washed" may pollute the engine oil.

For this reason, the "minimum engine oil pressure" warning light is also used on engines with a DPF filter that flashes together with the message "Change the engine oil" in the display when the system detects that the engine oil has deteriorated to a certain extent, requesting an oil change in advance of the scheduled one (managed by the control panel - Service function).

The extent of the deterioration of the oil is not measured by a dedicated sensor, but calculated by an algorithm in the engine management control unit depending on: the number of DPF regenerations, kilometres travelled (mileage), number of engine starting cycles, number of cold starts, average value of the oil temperature, etc.

Two specific sensors inform the control unit about the operation of the particulate filter:

- The differential pressure sensor constantly measures the difference in pressure between the inlet and outlet of the particulate filter: this measurement makes it possible to determine the filter blockage level.

- The particulate filter temperature sensor, located on the particulate filter itself, allows the engine management control unit to monitor the temperature of the exhaust gases in the filter itself.

For more details

See descriptions 1080B EXHAUST EMISSION CONTROL SYSTEM

The system is also controlled by dedicated relay switches in the engine compartment junction unit. Lines supplying the control unit and various system components (sensors and actuators) are protected by dedicated fuses that are also located in the junction unit.

PARTICLE FILTER SYSTEM - FUNCTIONAL DESCRIPTION

Engine management control unit M010 controls and governs the entire electronic ignition and injection system.

The main injection relay switch T9 of B001 controls the entire system: this is protected by a line protected by fuse F18 of the engine compartment junction unit B001 and is energised by a control signal (earth) from pin 72 of connector A of the control unit M010 and thus sends power supply:

- to pin 1 of connector A of the control unit, through the line by fuse F17 of B001;

- to pin 5 of connector A of the control unit, through the line from fuse F22 of B001;

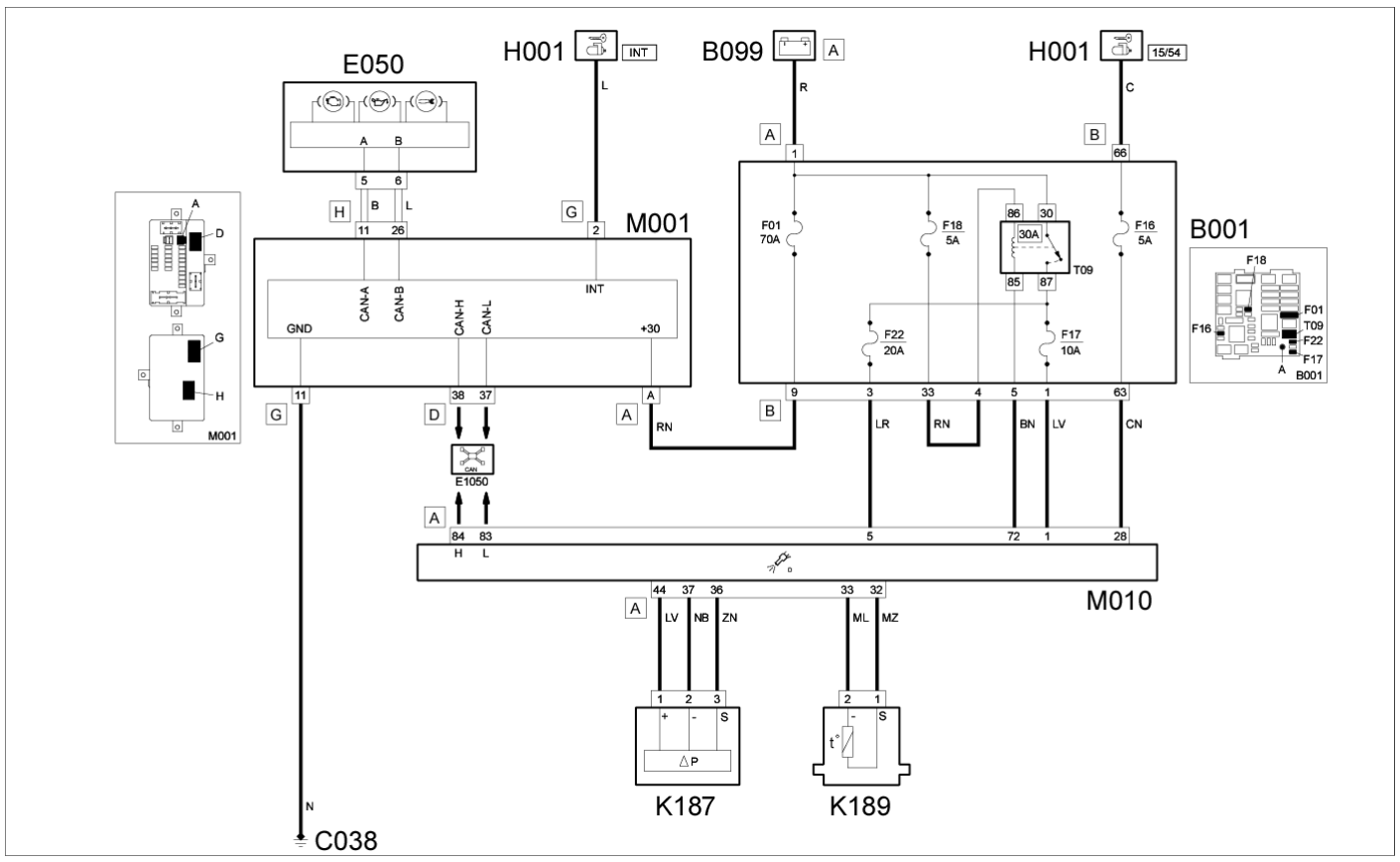
The engine management control unit M010 receives signals from the different sensors thereby controlling all the engine operating parameters; in particular there are two specific sensors for the management of the operation of the particulate filter.

The particulate filter differential pressure sensor K187 receives a power supply from the control unit M010 from pin 44 of connector A and a reference earth from pin 37 of connector A and sends a signal proportional to the pressure to pin 36 of connector A of M010.

The catalytic converter temperature sensor K190 receives a reference earth from pin 33 of connector A of control unit M010 and supplies a signal proportional to the temperature measured at pin 32 of connector A of control unit M010.

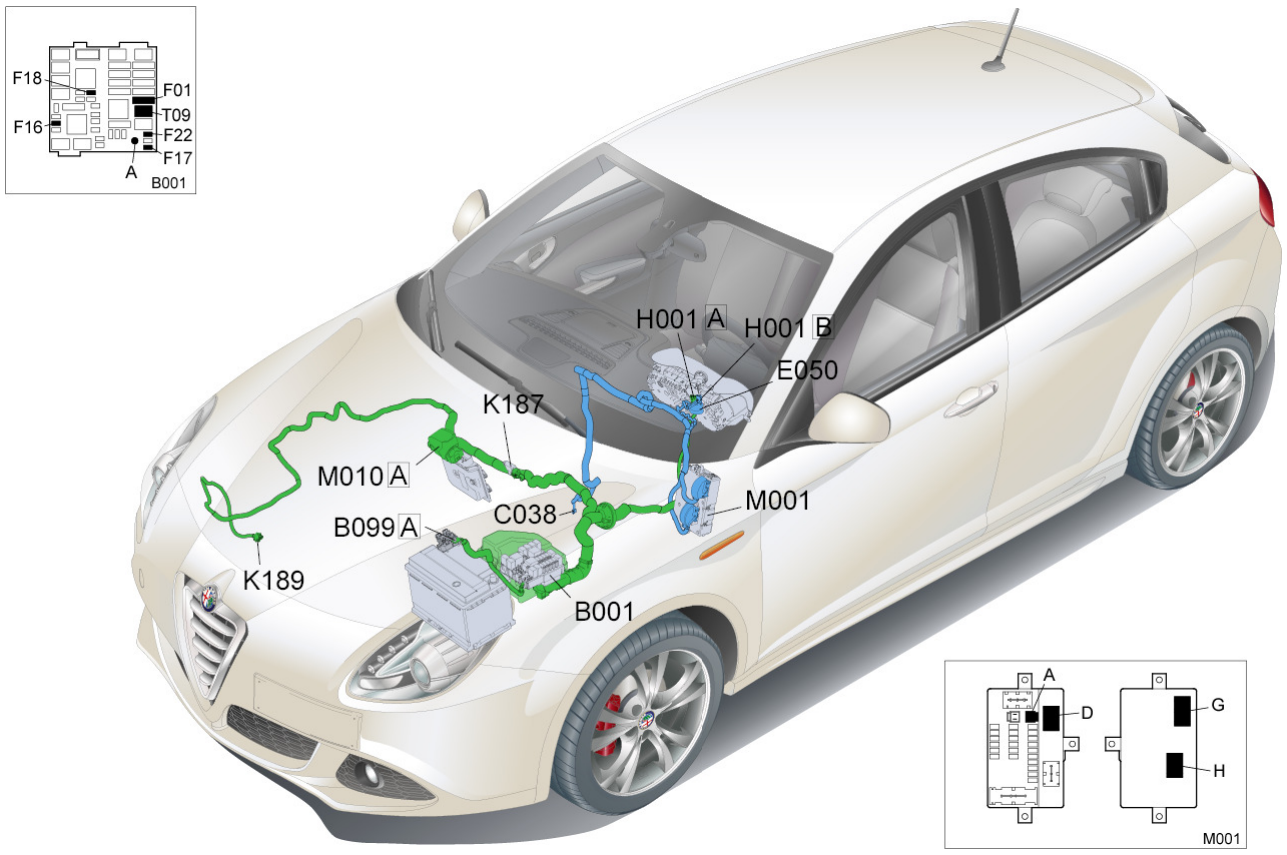
The control unit M010 is then connected through the CAN to the Body Computer M001 and to the instrument panel E050, thereby controlling the switching on of the filter blocked warning light and the displays in the panel.

PARTICLE FILTER SYSTEM - WIRING DIAGRAM



Component Code	Description	Reference to the operation
B001	JUNCTION UNIT	Op. 5505A28 CONTAINER FOR ADDITIONAL JUNCTION UNIT IN ENGINE COMPARTMENT - R.R.
B099	MAXI FUSE BOX ON BATTERY	Op. 5530B40 SUPPLY BOX ON BATTERY (LINK BATTERY AND FUSE BOX) - R R
C038	EARTH ON CENTRE TUNNEL	-
E050	INSTRUMENT PANEL	Op. 5560B10 CONTROL PANEL - R+R
H001	IGNITION SWITCH	Op. 5520A18 IGNITION SWITCH CONTACT CARRIER LOCK BARREL - R.R.
K187	FAP DIFFERENTIAL PRESSURE SENSOR	Op. 1080B82 PARTICULATE FILTER DIFFERENTIAL PRESSURE (D.P.F.) SENSOR - R.R.
K189	UPSTREAM PARTICULATE FILTER TEMPERATURE SENSOR (DPF)	Op. 1080B83 EXHAUST GAS TEMPERATURE SENSOR ON PARTICULATE FILTER (D.P.F.) - R.R.
M001	BODY COMPUTER	Op. 5505A35 MAIN BODY COMPUTER/JUNCTION UNIT - R.R.
M010	ENGINE MANAGEMENT CONTROL UNIT	Op. 1060G80 DIESEL ELECTRONIC INJECTION CONTROL UNIT - R.R

PARTICLE FILTER SYSTEM - COMPONENT LOCATION



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