



ABS

150 - 500

ABS - DESCRIPTION

The ABS electronic anti-lock braking system regulates the braking pressure transmitted to the wheels, preventing them from losing grip whatever the tyre and road conditions.

The system is designed to be incorporated with the braking system (using the same hydraulic fluid) without preventing the operation of the actual braking system if the ABS fails.

Four sensors, located on each of the four wheels, indicate the speed of each wheel to the electronic control unit, recording any situations involving locking, slipping or loss of grip.

In these situations, the control unit controls the solenoid valves which modulate the pressure in the hydraulic circuit, preventing the wheels from locking and restoring grip conditions for the vehicle. This ensures optimum handling of the vehicle and excellent stopping distances.

The sensors are active ones, supplied by the control unit; they consist of a magnetic resistive receiver with a magnetic codifier incorporated in the hub bearing so that the signal is less affected by electromagnetic interference and variations in temperature.

The ABS control unit also controls the distribution of the braking load between the front and rear axles, meaning that the mechanical load proportioning valve used previously can be dispensed with (EBD function: Electronic Brake Distribution).

The control unit is equipped with a self-diagnostic function: when an error in the ABS function is detected, the warning light comes on and the system is deactivated at the same time. In these conditions the vehicle brakes using the traditional system only.

When the control unit detects an error which also affects the EBD function, it turns on the "ABS failure" warning light and the "low brake fluid and handbrake" warning light.

 In these conditions the rear braking distribution control is deactivated: the driver must therefore proceed very carefully to the first authorised service centre.

Messages concerning the operational faults are also shown on the multifunctional display.

The ABS control unit calculates the speed of the vehicle starting from the figures that are supplied by the drive wheel sensors (with the ABS control unit calculating the average value) and from the circumference of the wheels themselves, supplied by the Body Computer: this speedometer signal is then sent, via the CAN, to the nodes that require this information.

The direct battery supply lines for the control unit (pump and solenoid valves) are protected by two dedicated fuses located in the engine compartment junction unit; the ignition-controlled power supply is protected in the same way by a dedicated fuse.

For more details,

See descriptions 3340 ANTI-LOCK BRAKING SYSTEM (ABS)

 Following sharp braking which causes considerable deceleration, the Body Computer, having received the vehicle speed signal from the ABS control unit, activates the hazard warning lights. When this deceleration value goes below a pre-set level, the hazard function is automatically deactivated.

See E2020 DIRECTION INDICATORS / HAZARD WARNING LIGHTS

ABS - FUNCTIONAL DESCRIPTION

The braking system control unit M051 receives a direct battery supply at pin 1 (pump) and 25 (solenoid valves) respectively via the lines protected by fuses F04 and F23 located in the engine compartment junction unit B001 (pins 19 and 6 of connector B).

It also receives an ignition-controlled power supply (15/54) at pin 32 along the line protected by fuse F24 of junction unit B001 (pin 13 of connector B).

Pins 13 (pump) and 38 (solenoid valves) of M051 are connected to the ABS front earth C012.

The four sensors K070 (left front wheel), K071 (right front wheel), K075 (left rear wheel) and K076 (right rear wheel) are connected respectively to pins 34 and 22, 18 and 6, 33 and 20, 19 and 31 of the braking system control unit M051 to receive the power supply and send signals relating to the speed of the wheels.

At pin 27 of connector B the Body Computer M001 receives an NA signal from the switch on the brake pedal I030, supplied by an ignition-controlled supply (INT) via a line protected by fuse F37 of the Body Computer (pin 7 of connector C). In the same way, the Body Computer M001 receives an NC signal from the switch on the brake pedal I030, supplied by an ignition-controlled supply (INT) via a line protected by fuse F51 of the Body Computer at pin 34 of connector B. The latter forwards these signals, via the C-CAN, to the braking system control unit M051: any intervention of the ABS is excluded unless the brake pedal is pressed.

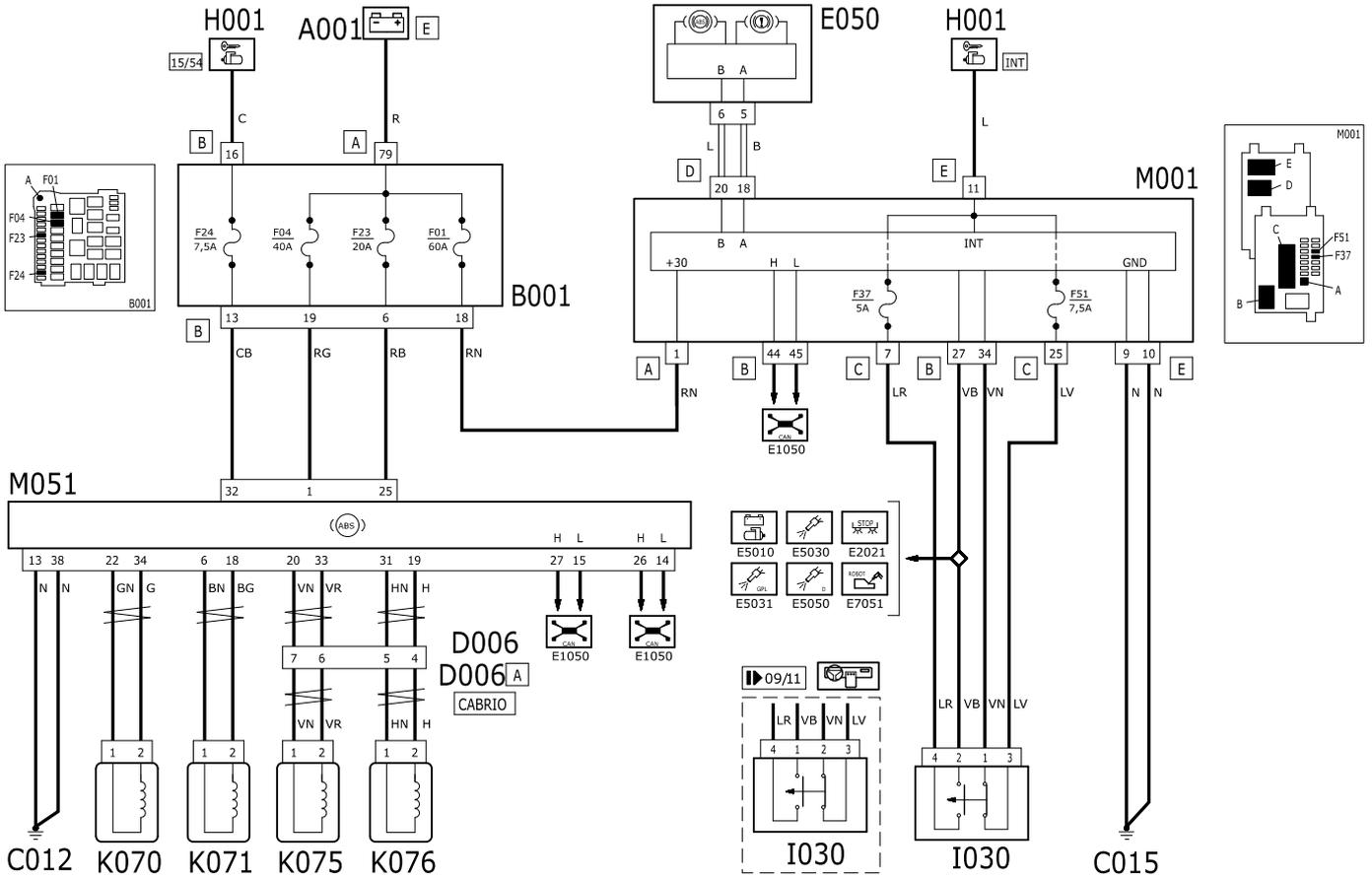
The speedometer signal is supplied, via the CAN, by the control unit M051.

Control unit M051 is connected (pins 27 and 15) via the C-CAN line to the engine management control unit M010, and via pins 26 and 14 to the Body Computer M001 (pins 44 and 45 of connector B). On the 1.2 8v version with MTA transmission, pins 26 and 14 of M051 are connected to pins 7 and 19 of connector A of the robotized gearbox control unit M054 and from the latter, via pins 45 and 33 of connector A, to the electric steering control unit M086 (7 and 8 of connector B) which, in turn, is connected, from pins 2 and 3 of connector B, to the Body Computer M001 (pins 44 and 45 of connector B).

See E1050 CAN CONNECTION LINES

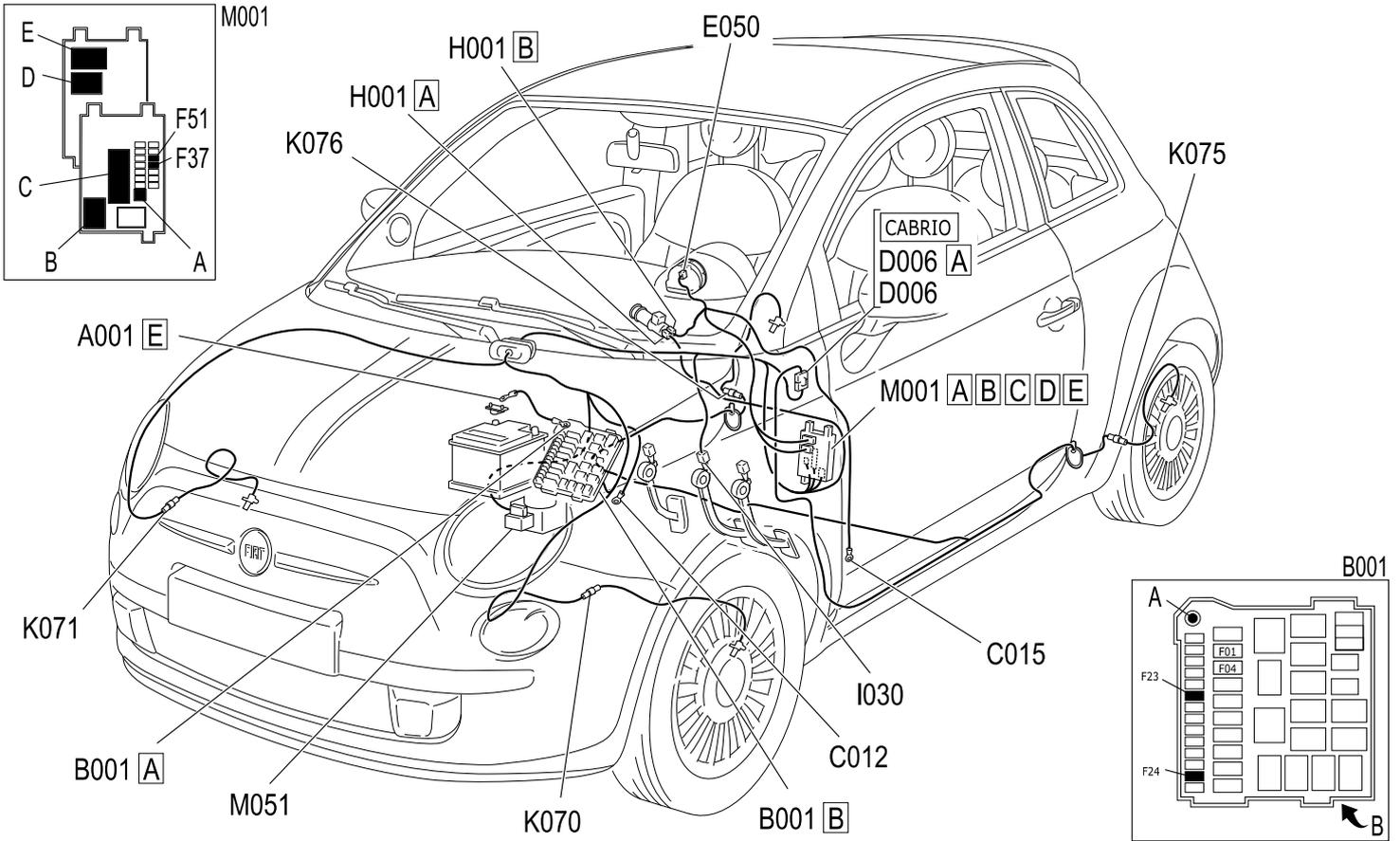
The Body Computer M001 is connected, via the B-CAN line, (from pins 18 and 20 of connector D) to the instrument panel E050 (pins 5 and 6) to manage the ABS failure warning light and, if the problems involve the EBD function, the simultaneous switching on of the insufficient brake fluid level/handbrake applied warning light.

ABS - WIRING DIAGRAM



Component code	Description	Reference to the operation
A001	BATTERY	Op. 5530B10 BATTERY - R+R
B001	JUNCTION UNIT	Op. 5505A10 JUNCTION UNIT - R+R
C012	ABS FRONT EARTH	-
C015	DASHBOARD EARTH, DRIVER'S SIDE	-
D006	FRONT/REAR COUPLING	-
E050	INSTRUMENT PANEL	Op. 5560B10 CONTROL PANEL - R+R
H001	IGNITION SWITCH	Op. 5520A10 IGNITION SWITCH ASSEMBLY - R+R
I030	BRAKE PEDAL SWITCH	Op. 5550D10 BRAKE LIGHT SWITCH - R+R
K070	LEFT FRONT WHEEL SENSOR FOR ABS	Op. 3340A30 RPM SENSOR (ONE) FOR ONE FRONT WHEEL, LEFT OR RIGHT - R.R.
K071	RIGHT FRONT WHEEL SENSOR FOR ABS	Op. 3340A30 RPM SENSOR (ONE) FOR ONE FRONT WHEEL, LEFT OR RIGHT - R.R.
K075	LEFT REAR WHEEL SENSOR FOR ABS	Op. 3340A34 LEFT OR RIGHT REAR WHEEL RPM SENSOR (ONE) - R.R.
K076	RIGHT REAR WHEEL SENSOR FOR ABS	Op. 3340A34 LEFT OR RIGHT REAR WHEEL RPM SENSOR (ONE) - R.R.
M001	BODY COMPUTER	Op. 5505A32 BODY COMPUTER - R.R
M051	Braking system control unit	Op. 3340A12 ABS HYDRAULIC AND ELECTRONIC CONTROL UNIT - R.R.

ABS - COMPONENT LOCATION



Component code	Description	Reference to the operation
A001	BATTERY	Op. 5530B10 BATTERY - R+R
B001	JUNCTION UNIT	Op. 5505A10 JUNCTION UNIT - R+R
C012	ABS FRONT EARTH	-
C015	DASHBOARD EARTH, DRIVER'S SIDE	-
D006	FRONT/REAR COUPLING	-
E050	INSTRUMENT PANEL	Op. 5560B10 CONTROL PANEL - R+R
H001	IGNITION SWITCH	Op. 5520A10 IGNITION SWITCH ASSEMBLY - R+R
I030	BRAKE PEDAL SWITCH	Op. 5550D10 BRAKE LIGHT SWITCH - R+R
K070	LEFT FRONT WHEEL SENSOR FOR ABS	Op. 3340A30 RPM SENSOR (ONE) FOR ONE FRONT WHEEL, LEFT OR RIGHT - R.R.
K071	RIGHT FRONT WHEEL SENSOR FOR ABS	Op. 3340A30 RPM SENSOR (ONE) FOR ONE FRONT WHEEL, LEFT OR RIGHT - R.R.
K075	LEFT REAR WHEEL SENSOR FOR ABS	Op. 3340A34 LEFT OR RIGHT REAR WHEEL RPM SENSOR (ONE) - R.R.
K076	RIGHT REAR WHEEL SENSOR FOR ABS	Op. 3340A34 LEFT OR RIGHT REAR WHEEL RPM SENSOR (ONE) - R.R.
M001	BODY COMPUTER	Op. 5505A32 BODY COMPUTER - R.R
M051	Braking system control unit	Op. 3340A12 ABS HYDRAULIC AND ELECTRONIC CONTROL UNIT - R.R.