



AIRBAG

319 - Nuova Panda

AIR BAG - DESCRIPTION

The vehicle is equipped with an electronic control system that governs the activation of specific containment devices in the event of frontal or side impact.

An electronic control unit manages the entire system.

The front protection system includes:

- driver's side front airbag with single stage of activation;
- Passenger side front airbag with single stage of activation;
- driver's side and passenger side safety belts with load limiters and double-retaining-action front pretensioners.
- Rear seat belts with load limiter.

In the most complete configuration the side protection system comprises:

- Side Bags;
- Window Bags;
- side impact detection sensors on centre pillars.

A supplementary ECS (Early Crash Sensor) on the front crossmember near the bonnet lock also helps the electronic control unit to anticipate airbag intervention so that the airbag activation stage is completed before the occupant's body begins to move towards the steering wheel or dashboard.

The control unit is located under the centre console and is securely fastened to the body: in this way the deceleration sensors located inside the unit are near the centre of gravity and accurately detect the deceleration for the entire vehicle.

The driver's air bag module is located in the middle of the steering wheel. It is fitted on a rocker plate that is also used to control the horns. The plate houses a metal container that contains the folded bag and the gas generation device that inflates the bag.

A clock spring allows the connecting cables for the air bag module to follow the rotation of the steering wheel without danger of breaking.

The passenger side airbag is located on the dashboard, and is fixed directly to the vehicle crossmember by means of a special bracket.

The Side Bags are incorporated directly into the seats, located in a special housing on the outside of the backrests.

The window bags are activated together with the side bags and place themselves between the occupant and the vehicle to prevent the head coming into contact with highly intrusive objects such as glass, pillars etc.

The window bag consist of two "curtain" cushions, one on the right and the other on the left side of the car, located behind the side coverings of the roof and covered by appropriate finishings.

Activation of the seat belt pretensioners is controlled by the same strategy as the air bags.

The driver and passenger front pretensioners with dual retaining action are integrated respectively in the seat belt reel and in the third point mounting for the actual seat belts (pyrotechnic pretensioners) near the area of the kick plate. Their simultaneous activation is designed to take up slack in the seat belt to ensure it holds the occupant against the backrest from the first moments of impact, thus reducing movement inside the passenger compartment.

The front and rear seat belts are also equipped with load limiters which make it possible to adjust the force acting on the chest and shoulders during the retaining action of the belts in the event of a frontal impact.

The vehicle is equipped with an SBR system (Seat Belt Reminder) which, by switching on the "seat belt not fastened" warning light in the instrument panel constantly, warns the driver and the front passenger that their seat belt is not fastened.

When the system detects that one of the front belts is not fastened with the vehicle moving, a warning cycle activates with an intermittent acoustic signal and the flashing of the "seat belt not fastened" warning light.

By means of a visual and acoustic indication, some of the icons on the instrument panel display remind all passengers, including the rear seat passengers, to fasten their seat belts.

The two side warning lights are associated to the front seats, while the two central warning lights (three for versions with 5 seats, none for VAN versions) are associated to the rear passengers.

The amber warning lights operate as follows:

- off if the seat belts are already fastened with the key turned to MAR;
- positive contrast (illuminated silhouette, non-illuminated seat belt) if the front seat belts are not fastened;
- positive contrast (rear seats only) if the seat belts are unfastened;
- negative contrast (non-illuminated silhouette - illuminated seat belt) if all seat belts are fastened.

 The information for the two, four (or five) switches located on the seat belt buckles and the passenger presence sensor are used for the SBR function and do NOT in any way affect the airbag activation logic.

For more details,

See descriptions 5580C AIR BAG SYSTEM

The control unit is equipped with a self-diagnostic function:

- it detects and memorises any faults;
- it recognises the various components and the fault type;
- it indicates the onset of faults by means of the special warning light.

The activation of the system following a particularly serious impact is memorised by the control unit.

This vehicle has not been fitted with an inertia switch; instead it has a fuel cut off function, which is managed by the Air Bag control unit. After detecting an impact, the Air Bag control unit sends the FPS (Fire Prevention System) signal over the network which:

- interrupts the flow of fuel by the engine management control unit;

See E5030 PETROL ENGINES ELECTRONIC MANAGEMENT

See E5050 DIESEL ENGINES ELECTRONIC MANAGEMENT

- activates the hazard warning lights;

See E2020 DIRECTION INDICATORS / HAZARD WARNING LIGHTS

- activates the courtesy lights for 15 minutes;

See E2510 COURTESY LIGHTS

- unlocks the doors.

See E3040 CENTRAL LOCKING

This condition is also signalled on the instrument panel via the general failure warning light and a special message on the display.

When the system's self-diagnosis function detects a fault or an impact is recorded, the control unit sends a signal, via the CAN, to activate the "airbag fault" warning light located in the instrument panel and a dedicated message is displayed.

Similarly, it lights up the passenger Air Bag disabled warning light and the seat belts not fastened warning light.

If a child seat is installed, the passenger side air bag (front and Side-Bag) can be deactivated using the specific item of the Set up menu and pressing the buttons on the central control panel; after the deactivation the corresponding warning light switches on constantly.

 Vehicles leave the factory with the passenger air bags (front and Side Bag) enabled but with the item missing from the Setup menu item. The item can be enabled in the instrument panel through an appropriate command from the diagnosis socket.

 The passenger side Air Bag disabling function is activated using exclusively the dedicated buttons of the central control panel inside the Set up menu, not the key!

For more details,

See descriptions 5580C AIR BAG SYSTEM

The system control unit supply line is protected by a dedicated Body Computer fuse.

 When operations are carried out to the Air Bag system, the following safety recommendations must be closely followed. For more details,

Op. 5580C AIR BAG SYSTEM

AIR BAG - FUNCTIONAL DESCRIPTION

The control unit for the Air Bag system M060 receives an ignition-operated supply (INT) at pin 2 of connector A from the line protected by fuse F50 of the Body Computer M001 (pin 3 of connector E).

Pin 1 of connector A of M060 is connected to the specific earth C050 (connector A).

The front early crash sensor K039 detects slight impacts and signals them to the control unit M060 (pin 9 of connector A); pin 10 of connector A of M060 provides the sensor with a reference earth.

Depending on the control strategy and data provided by the sensors built into the control unit itself and by the satellite "Early Crash Sensor", when a front impact is detected, control unit M060 sends control signals for the front modules to intervene. Specifically:

- to driver airbag Q009, via the clock spring coupling on steering wheel D047 (pins 10 and 9), from pins 15 (positive) and 16 (earth) of connector A;
- to the passenger side airbag Q011, from pins 14 (positive) and 13 (earth) of connector A;
- to the front pretensioners on the driver's side reels (central pillars) Q020 (connector A), from pins 16 (positive) and 15 (earth) of connector B, and passenger side Q021 (connector A), from pins 13 (positive) and 14 (earth) of the same connector;
- to the driver's side Q020 (connector B) front pretensioners on the seat belt mounting (3rd point), from pins 12 (positive) and 11 (earth) of connector B, and passenger side Q021 (connector B), from pins 9 (positive) and 10 (earth) of the same connector.

The sensor for the driver's side side bag K066 is connected to pin 21 (signal) and 22 (reference earth) of connector B of the airbag control unit M060, whilst the sensor for the passenger side side bag K067 is connected to pin 24 (signal) and 23 (reference earth) of the same connector.

When, on the basis of the control logic and of the information supplied by the sensors, a side impact of a certain severity is detected, the control unit M060 sends control signals for the intervention of the side modules, in particular:

- to the driver's side front side bag Q030 (connector A), from pins 5 (positive) and 6 (earth) of connector B;
- to the passenger side front side bag Q031 (connector A), from pins 8 (positive) and 7 (earth) of connector B;
- to the driver's side Head Bag Q040, from pins 3 (earth) and 4 (positive) of connector B;
- to the passenger side Head Bag Q041, from pins 1 (positive) and 2 (earth) of connector B.

The structures of the seats which house the driver's Q030 and passenger side Q031 side bags (connectors B) are connected to airbag system earth C050 (connector B).

Driver safety belt switch I046 receives a reference earth from control unit M060 (pin 28 of connector B) and sends the relevant signal to pin 27 of connector B of the control unit itself.

The same earth reference supplied by the airbag control unit M060 (pin 28 of connector B) is used by the passenger presence sensor K065 and the passenger side seat belt switch I047.

These are connected in series and send their common signal to pin 26 of connector B of M060 to signal the presence of the passenger with the seat belt fastened.

The switches on the rear left I145, right I146 and central I147 belts (only for 5-seater versions) are connected to the control unit at pins 30, 31 and 32 respectively of connector B of M060; pin 29 of the same connector of M060 provides the reference earth to the switches.

The control unit M060 (pins 3 and 4 of connector A) is connected, via the B-CAN line, to the Body Computer M001 and to the instrument panel E050.

When the system's self-diagnostic function detects a fault or an impact is recorded, the control unit M060 sends a signal, via the CAN, to activate the "Air Bag fault" warning light located in the instrument panel E050 and a dedicated message is displayed.

After having detected an impact, control unit M060 sends the FPS signal (Fire Prevention System) via the network. This condition is also signalled on instrument panel E050 via the switching on of the "general failure" warning light and a dedicated message in the display.

If the driver's side or passenger side seat belt is not fastened (when the passenger is present), the instrument panel E050 will indicate this dangerous situation, through the "seat belt not fastened" warning light switching on constantly.

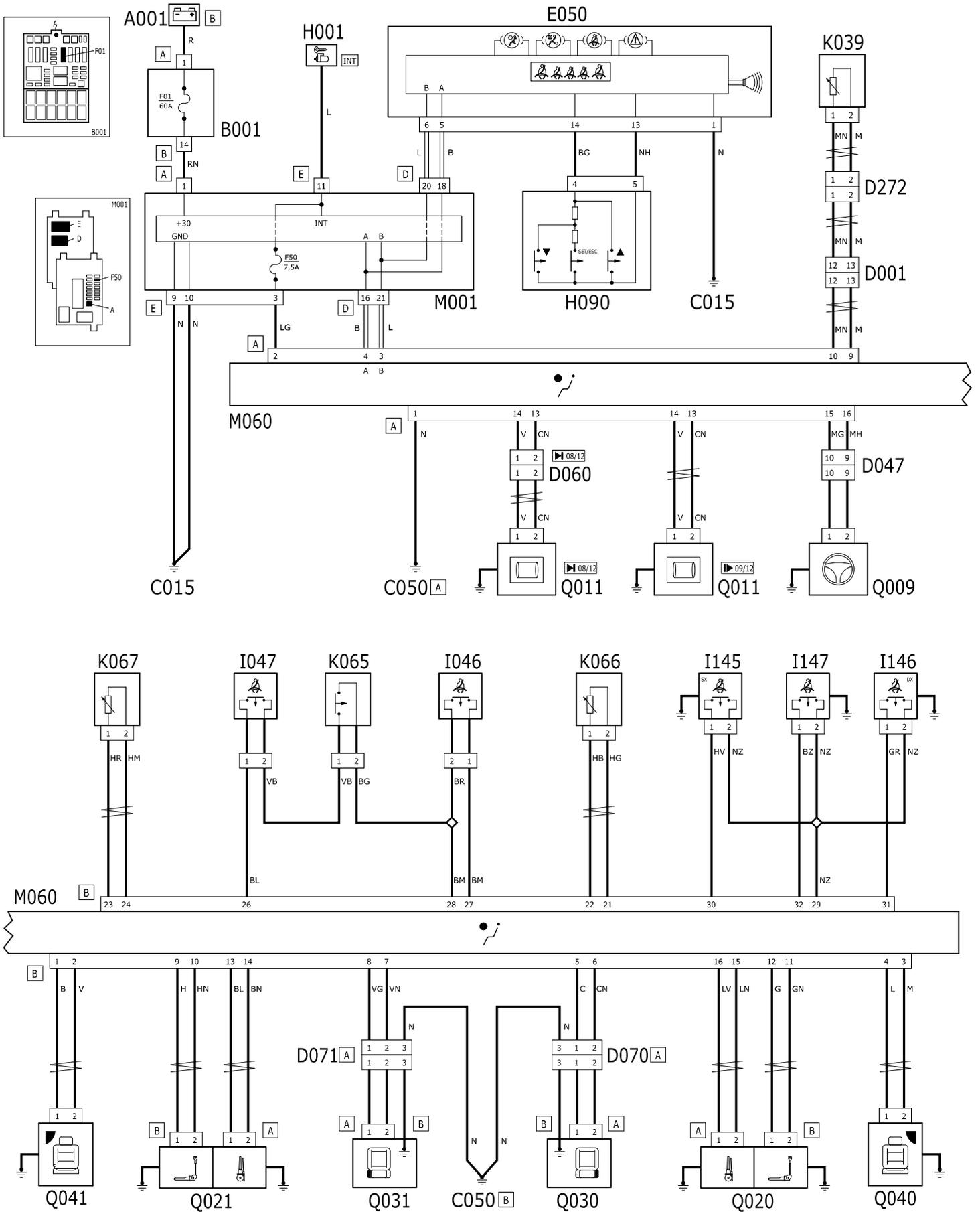
When the system detects that one of the front belts is not fastened with the vehicle moving, the instrument panel E050 activates a warning cycle with the simultaneous flashing of the "seat belt not fastened" warning light, an intermittent acoustic signal from the internal buzzer and a relevant visual indication in the display.

When the system detects that one of the front belts (where fitted) is not fastened with the vehicle moving, an acoustic signal from the buzzer and a visual indication in the relevant display icon are switched on.

The instrument panel E050 (pin 13) supplies a reference earth to the switch control unit H090 (pin 5).

Pressing the buttons located in the switch control unit H090, pin 4 sends a single coded signal through a resistive divider to pin 14 of E050; via the Set-up menu in the instrument panel display, it is possible to deactivate the passenger side airbags (front, side bag and window bag), thus switching on the relevant warning light.

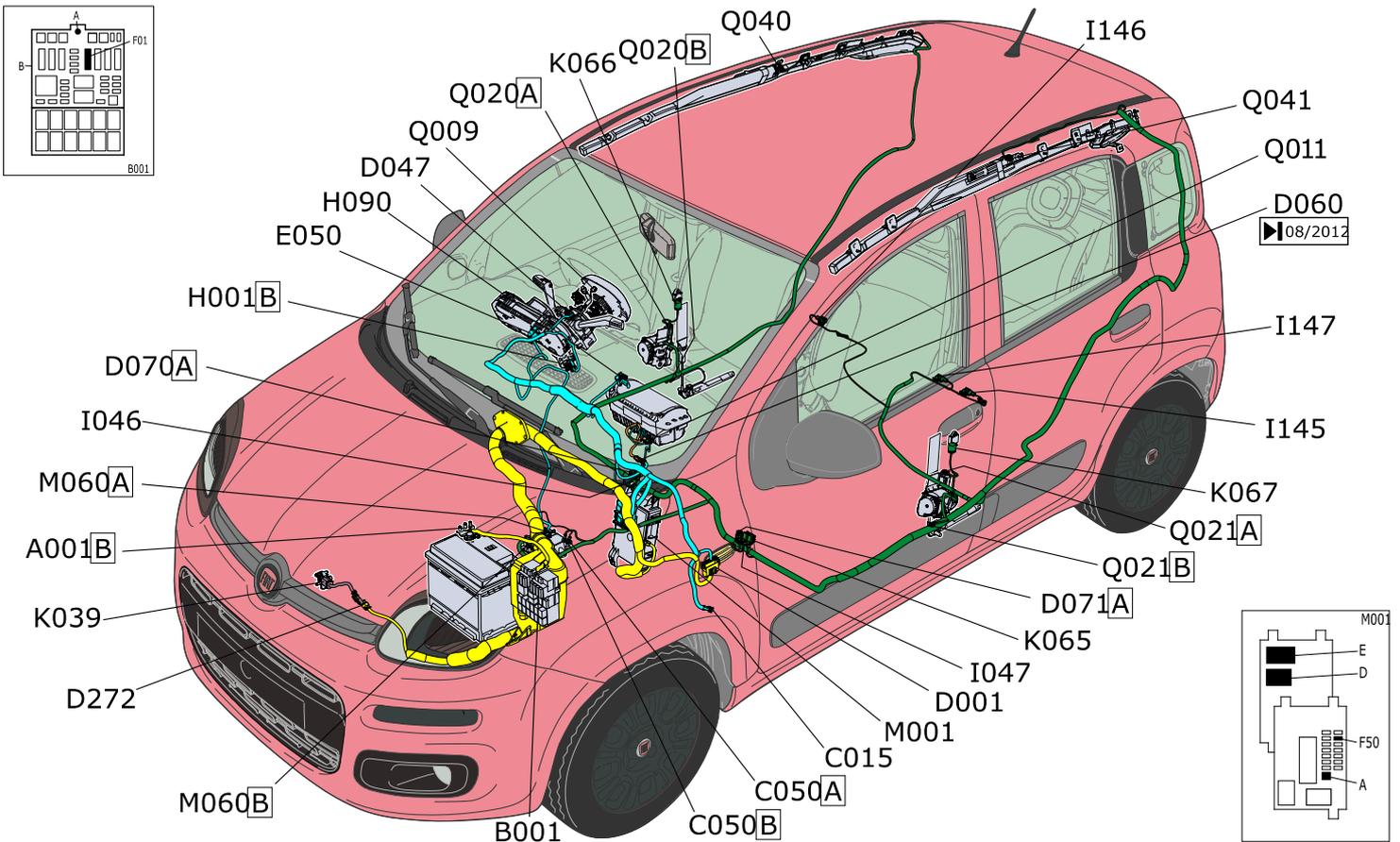
AIR BAG - WIRING DIAGRAM



| Component code | Name | Reference to the Operation |
|----------------|--|--|
| A001 | BATTERY | Op. 5530B10 BATTERY - R+R |
| B001 | JUNCTION UNIT | - |
| C015 | DASHBOARD EARTH, DRIVER'S SIDE | - |
| C050 | AIR BAG SYSTEM EARTH | - |
| D001 | FRONT/DASHBOARD COUPLING | - |
| D047 | CLOCK SPRING COUPLING | Op. 5580C12 CLOCK SPRING FOR AIR BAG MODULE ON STEERING WHEEL - R.R |
| D060 | AIR BAG COUPLING | - |
| D070 | DRIVER'S SEAT COUPLING | - |
| D071 | PASSENGER SEAT COUPLING | - |
| D272 | Front airbag sensor junction | - |
| E050 | INSTRUMENT PANEL | Op. 5560B10 INSTRUMENT PANEL - R.R. |
| H001 | IGNITION SWITCH | Op. 5520A10 IGNITION SWITCH ASSEMBLY - R+R |
| H090 | SWITCH CONTROL PANEL | Op. 7040A92 R R HANDLE FOR FRONT SEAT FORE AND AFT ADJUSTMENT |
| I046 | DRIVER'S SEAT BELT SWITCH | Op. 7065A14 ANCHORAGE ROD FOR , (ONE), FRONT SEAT BELT LEFT OR RIGHT - R.R. |
| I047 | PASSENGER SEAT BELT SWITCH | Op. 7065A14 ANCHORAGE ROD FOR , (ONE), FRONT SEAT BELT LEFT OR RIGHT - R.R. |
| I145 | LEFT REAR SEAT BELT WARNING LIGHT SWITCH | Op. 7065B14 ANCHORAGE ROD FOR (ONE) REAR SEAT BELT LEFT OR RIGHT - R.R. |
| I146 | RIGHT REAR SEAT BELT WARNING LIGHT SWITCH | Op. 7065B14 ANCHORAGE ROD FOR (ONE) REAR SEAT BELT LEFT OR RIGHT - R.R. |
| I147 | MIDDLE REAR SEAT BELT WARNING LIGHT SWITCH | Op. 7065B22 |
| K039 | FRONT AIR BAG SENSOR | Op. 5580C10 DECELERATION SENSOR FOR AIR BAG (ONE), L/H OR R/H - R+R |
| K065 | PASSENGER PRESENCE SENSOR | Op. 7065A34 PASSENGER PRESENCE SENSOR ON FRONT SEAT FOR INDICATING SEATBELT UNFASTENED R R |
| K066 | SIDE BAG SENSOR, DRIVER'S SIDE | Op. 5580C40 SIDE BAG SENSOR (ONE), LH OR RH - R.R. |
| K067 | SIDE BAG SENSOR, PASSENGER SIDE | Op. 5580C40 SIDE BAG SENSOR (ONE), LH OR RH - R.R. |
| M001 | BODY COMPUTER | Op. 5505A32 BODY COMPUTER - R.R |

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| M060 | AIR BAG CONTROL UNIT | Op. 5580C14 AIR BAG ECU - R+R |
| Q009 | DRIVER'S AIR BAG | Op. 5580C18 AIR BAG MODULE - R+R |
| Q011 | AIR BAG IN DASHBOARD (PASSENGER SIDE) | Op. 5580C22 AIR BAG MODULE - PASSENGER SIDE - R.R |
| Q020 | DRIVER'S FRONT SEAT BELT PRETENSIONER | Op. 7065A10 FRONT SEAT BELT (ONE) LEFT OR RIGHT - R.R. |
| Q021 | PASSENGER SIDE FRONT SEAT BELT PRETENSIONER | Op. 7065A10 FRONT SEAT BELT (ONE) LEFT OR RIGHT - R.R. |
| Q030 | DRIVER'S SIDE BAG | Op. 5580C44 FRONT SIDE BAG MODULE (ONE) LH OR RH - R.R |
| Q031 | PASSENGER SIDE BAG | Op. 5580C44 FRONT SIDE BAG MODULE (ONE) LH OR RH - R.R |
| Q040 | DRIVER'S HEAD BAG | Op. 5580C50 WINDOW BAG MODULE (ONE) LH OR RH - R.R |
| Q041 | PASSENGER HEAD BAG | Op. 5580C50 WINDOW BAG MODULE (ONE) LH OR RH - R.R |

AIR BAG - COMPONENT LOCATION



| Component code | Name | Reference to the Operation |
|----------------|--|---|
| A001 | BATTERY | Op. 5530B10 BATTERY - R+R |
| B001 | JUNCTION UNIT | - |
| C015 | DASHBOARD EARTH, DRIVER'S SIDE | - |
| C050 | AIR BAG SYSTEM EARTH | - |
| D001 | FRONT/DASHBOARD COUPLING | - |
| D047 | CLOCK SPRING COUPLING | Op. 5580C12 CLOCK SPRING FOR AIR BAG MODULE ON STEERING WHEEL - R.R |
| D060 | AIR BAG COUPLING | - |
| D070 | DRIVER'S SEAT COUPLING | - |
| D071 | PASSENGER SEAT COUPLING | - |
| D272 | Front airbag sensor junction | - |
| E050 | INSTRUMENT PANEL | Op. 5560B10 INSTRUMENT PANEL - R.R. |
| H001 | IGNITION SWITCH | Op. 5520A10 IGNITION SWITCH ASSEMBLY - R+R |
| H090 | SWITCH CONTROL PANEL | Op. 7040A92 R R HANDLE FOR FRONT SEAT FORE AND AFT ADJUSTMENT |
| I046 | DRIVER'S SEAT BELT SWITCH | Op. 7065A14 ANCHORAGE ROD FOR , (ONE), FRONT SEAT BELT LEFT OR RIGHT - R.R. |
| I047 | PASSENGER SEAT BELT SWITCH | Op. 7065A14 ANCHORAGE ROD FOR , (ONE), FRONT SEAT BELT LEFT OR RIGHT - R.R. |
| I145 | LEFT REAR SEAT BELT WARNING LIGHT SWITCH | Op. 7065B14 ANCHORAGE ROD FOR (ONE) REAR SEAT BELT LEFT OR RIGHT - R.R. |
| I146 | RIGHT REAR SEAT BELT WARNING LIGHT SWITCH | Op. 7065B14 ANCHORAGE ROD FOR (ONE) REAR SEAT BELT LEFT OR RIGHT - R.R. |
| I147 | MIDDLE REAR SEAT BELT WARNING LIGHT SWITCH | Op. 7065B22 |
| K039 | FRONT AIR BAG SENSOR | Op. 5580C10 DECELERATION SENSOR FOR AIR BAG (ONE), L/H OR R/H - R+R |

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| K065 | PASSENGER PRESENCE SENSOR | Op. 7065A34 PASSENGER PRESENCE SENSOR ON FRONT SEAT FOR INDICATING SEATBELT UNFASTENED R R |
| K066 | SIDE BAG SENSOR, DRIVER'S SIDE | Op. 5580C40 SIDE BAG SENSOR (ONE), LH OR RH - R.R. |
| K067 | SIDE BAG SENSOR, PASSENGER SIDE | Op. 5580C40 SIDE BAG SENSOR (ONE), LH OR RH - R.R. |
| M001 | BODY COMPUTER | Op. 5505A32 BODY COMPUTER - R.R |
| M060 | AIR BAG CONTROL UNIT | Op. 5580C14 AIR BAG ECU - R+R |
| Q009 | DRIVER'S AIR BAG | Op. 5580C18 AIR BAG MODULE - R+R |
| Q011 | AIR BAG IN DASHBOARD (PASSENGER SIDE) | Op. 5580C22 AIR BAG MODULE - PASSENGER SIDE - R.R |
| Q020 | DRIVER'S FRONT SEAT BELT PRETENSIONER | Op. 7065A10 FRONT SEAT BELT (ONE) LEFT OR RIGHT - R.R. |
| Q021 | PASSENGER SIDE FRONT SEAT BELT PRETENSIONER | Op. 7065A10 FRONT SEAT BELT (ONE) LEFT OR RIGHT - R.R. |
| Q030 | DRIVER'S SIDE BAG | Op. 5580C44 FRONT SIDE BAG MODULE (ONE) LH OR RH - R.R |
| Q031 | PASSENGER SIDE BAG | Op. 5580C44 FRONT SIDE BAG MODULE (ONE) LH OR RH - R.R |
| Q040 | DRIVER'S HEAD BAG | Op. 5580C50 WINDOW BAG MODULE (ONE) LH OR RH - R.R |
| Q041 | PASSENGER HEAD BAG | Op. 5580C50 WINDOW BAG MODULE (ONE) LH OR RH - R.R |