

156 Introduction - ELECTRICAL CIRCUIT FOR INSTRUMENTS/INDICATORS

The electrical system has been designed with the safety of the vehicle uppermost, to prevent the risk of fire and the other consequences of electrical malfunctions and to reduce defective connections thanks to the adoption of the latest generation connectors.

The main solutions adopted are:

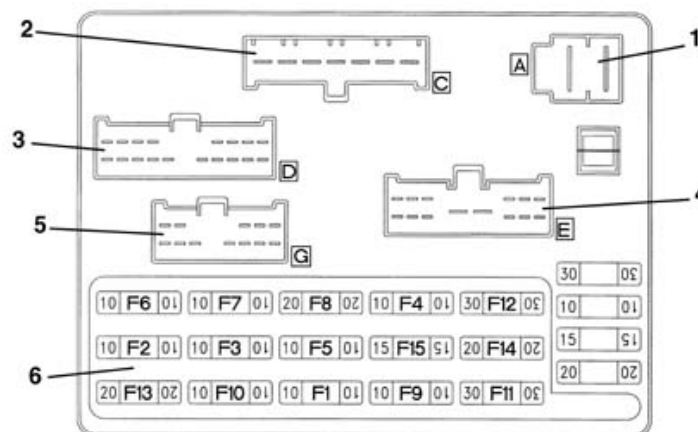
- Supplies protected by maxi fuses to interrupt the electrical system, in the case of a short circuit, just downstream of the battery.
- The only cables without maxi fuses (starter motor and alternator) are shielded and positioned in a safe place;
- The layout of the entire system is designed to optimize the risk of damage in the case of a failure or accident.
- There are special cables in the engine compartment which are resistant to high temperatures and also protected with sheaths or pipes.
- The connections are fitted with anti-slip devices on the terminals (secondary lock).

JUNCTION UNIT

This is located on the left side of the facia and is protected by a removable flap.

FRONT VIEW

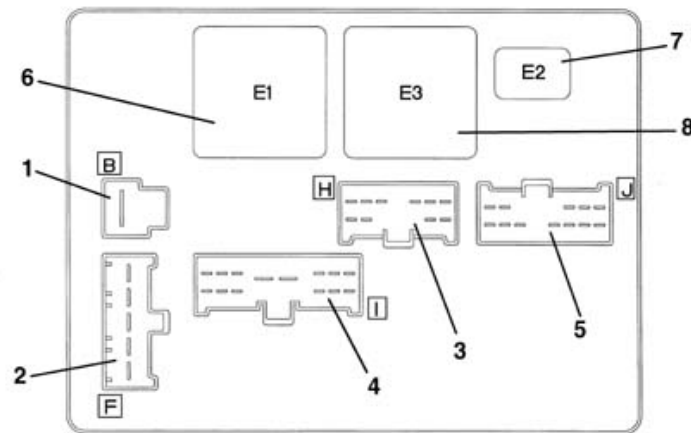
Refer to the illustration



- 1, connector A (front wiring)
- 2, connector C (front wiring)
- 3, connector D (front wiring)
- 4, connector E (rear wiring)
- 5, connector G (rear wiring)
- 6, Fuses

REAR VIEW

Refer to the illustration



- 1, connector B (dashboard wiring)
- 2, connector F (dashboard wiring)
- 3, connector H (dashboard wiring)
- 4, connector I (dashboard wiring)
- 5, connector J (dashboard wiring)
- 6, relay E1 (loads excluded on starting)
- 7, relay E2 (horns)
- 8, relay E3 (heated rear window)

FUSES

The fuses are located on the front of the junction unit and are arranged as shown in the figure.

NOTICE				
USE THE DESIGNATED FUSES ONLY				
10A	10A	20A	10A	30A
10A	10A	10A	15A	20A
20A	10A	10A	10A	30A

The circuits protected by the individual fuses are as follows:

Fuse, protected circuit

F1 stop lights control integrated services control unit remote control receiver; alarm; ABS; reversing lights; sun visor light; radio; cellular 'phone; telepass

F2 side lights, no. plate light; stop and rear fog light - left side

F3 side lights, no. plate light; stop and rear fog light - right side

F4 right dipped beam headlamp; right headlamp adjuster

F5 left dipped beam headlamp; left headlamp adjuster; headlamp adjuster and rear fog lamp enablement

F6 right main beam headlamp

F7 left main beam headlamp; main beam warning light

F8 central door locking; boot light; timer-controlled courtesy lights; subwoofer

F9 direction indicators / hazard lights

F10 instruments; interior illumination; clock; car radio; trip recorder reset; alarm; remote control receiver; air conditioner; cellular telephone

F11 rear window and rearview mirror demister;

F12 front electric windows

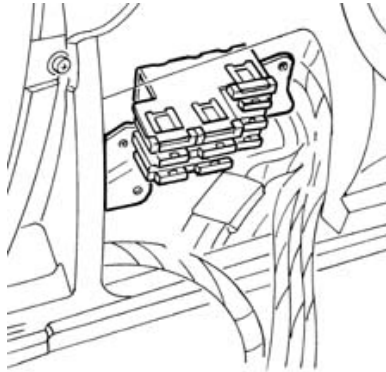
F13 horns

F14 windscreen wash/wipe; headlamp washer.

F15 cigarette lighter; air conditioning compressor

Numerous shunt fuses are located beneath the facia immediately above the junction unit (some of these fuses form part of the front wiring, some form part of the facia wiring).

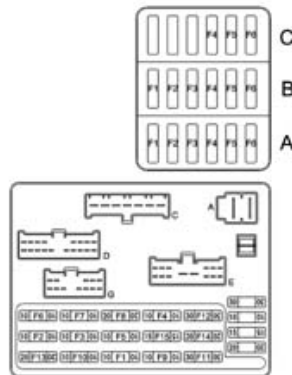
The fuses are located on a special mount but their reciprocal position is not always the same, particularly on the different versions.



Valid for versions with: Euro 3

C. FACIA WIRING

F4, Rear power socket fuse (SW only)
 F5, Fuse for heated seats, seat squab adjustment (electric)
 F6, Boot release fuse

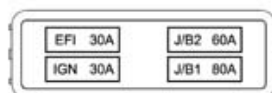


MAXIFUSE BOX

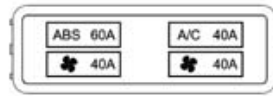
The main supply lines are protected by maxifuses, contained in two fuse boxes located near the battery and supplied directly from the latter.

The two MAXIFUSE boxes contain fuses named according to the circuits protected, located as illustrated in the diagram:

- EFI: supply for fuses and relays for engine management
- IGN: ignition switch supply;
- J/B1 : supply for services through the junction unit fuses
- J/B2: supply for services through the junction unit fuses



- ABS: ABS supply;
- VENT: engine cooling fans supply;
- VENT: engine cooling fans supply;
- A/C: air conditioning system supply.



INTEGRATED SERVICES ELECTRONIC CONTROL UNIT

PRESENTATION

A single, integrated electronic control unit located beneath the facia trim on the passenger side contains a series of functions and controls relating to electrical devices:

- door lock/release
- fog lamp control
- front electric window operation
- timed passenger compartment and boot lighting
- timed rear window and door mirror demist operation

DOOR LOCK/RELEASE

The control unit controls the simultaneous operation of the lock motors on all four doors upon a control:

- from the key;
- from the front door switches (knobs);
- issued via the remote control.

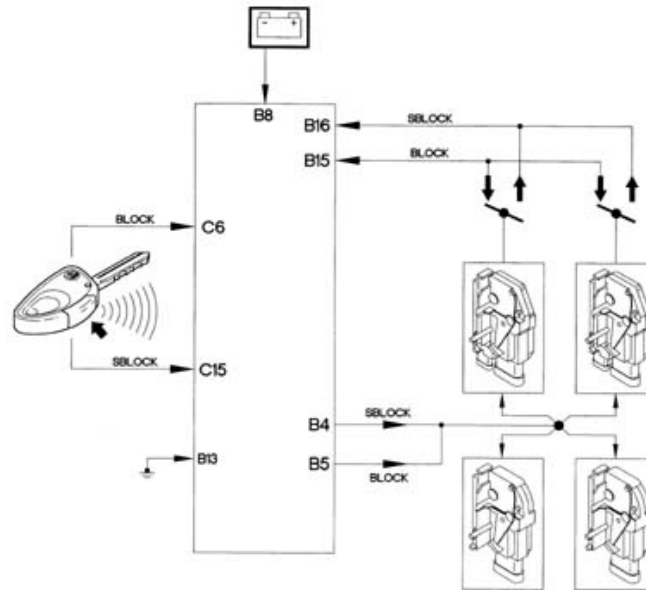
The control unit monitors lock status by means of signals received from switches located on the four locks (these signals are also used to time the lighting).

A lock command is issued only when all doors are properly closed and the front locks are released.

Conversely, a release command is issued only when the front catches are locked.

The control unit also carries out a series of safety checks:

- switch position is checked at the end of each operation. If this position does not agree with the action carried out (e.g. if a door is open), a repulsion command is issued, i.e. the opposite manoeuvre is carried out to realign all the locks.
- If the control unit detects several complete, consecutive lock/release manoeuvres - at least 8 within 20 seconds - the system cuts in to limit the manoeuvres: the system is inhibited in release position for 30 seconds.
- If battery voltage drops below 9 V during a lock/release operation, the system suspends the operation. If battery voltage is lower than 9 V at the outset, no command is issued.

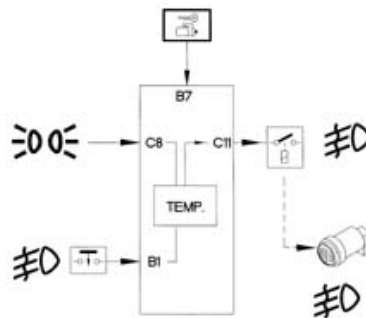


FOG LAMP CONTROL

The control unit controls front fog lamp activation, which can only take place with:

- the ignition in the ON position
- side lights on.

When the control unit records two incoming signals, it enables front fog lamp activation by sending a control signal to the fog lamp relay. If the side lights are switched off, the fog lamps are switched off even if the button is pressed. When the side lights are turned on again, the fog lamps come back on. If the ignition is turned off and then turned back on again, the fog lamps do not come on, even if the side lights are on, and must be turned back on by pressing the button.

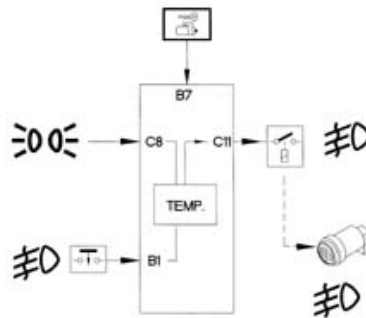


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OPERATION OF FRONT WINDOWS

The control unit operates the front windows automatically, in accordance with the following system which depends on how the button is pressed:

- for the driver's window:
- the operation is manual (the glass goes up/down only when the button is pressed) when the button is held down for 60 to 300 milliseconds;
- the operation is instead automatic (the glass continues to go up/down to the end of travel, even if the button is released) when the button is held down for over 300 milliseconds;
- if the button is pressed again during movement of the glass, the glass is stopped instantly
- if the button is pressed for less than 60 milliseconds, it is ignored (it is considered to have been knocked accidentally)
- for the passenger's window:
- closing is only manual
- opening is the same as for the driver's window (automatic).

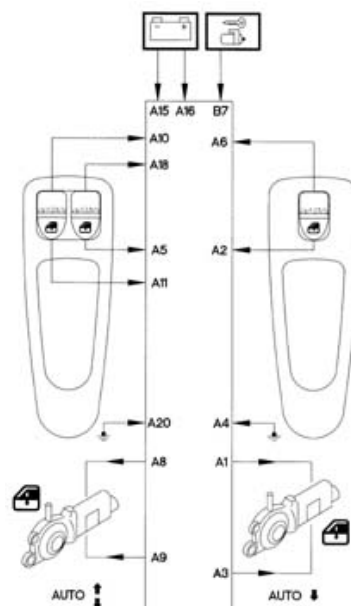
Both windows can only be operated when the ignition is on.

The control unit also carries out a series of safety checks.

The stopping of the electric windows (switching off the electric supply to the motor) is determined when the glass reaches the end of travel at top or bottom, or if an obstacle blocks the glass. This is regulated by checking the motor current.

If there are faults on the electrical circuits, the control unit switches the system off temporarily, for example if:

- the motor control signals are interrupted or if the current uptake is below the usual values.
- there is a fault in the control buttons (short circuit, or buttons jammed in the pressed position).



TIMED PASSENGER COMPARTMENT COURTESY LIGHT

When any of the four doors is opened, all front and rear courtesy lights are operated for a timed period, in accordance with the following logic:

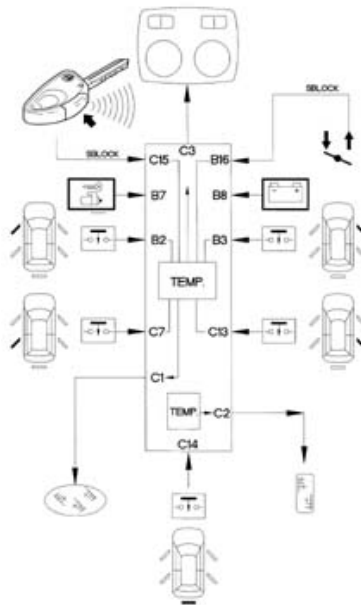
- timed period of 7 seconds when the locks are unlocked using the key or the remote control;
- a timed interval of 7 seconds when a previously opened door is closed again; timing is suspended when the ignition is turned on; this allows the driver to enter the car and insert the key in the ignition
- timed interval of 3 minutes if one of the doors is left open: this function prevents the battery going flat if the car is left with a door open

When one of the other doors is opened, the current timer count is reset to zero.

TIMED BOOT LIGHTING

When the boot is opened, a light is turned on for a timed interval of 20 minutes: this function ensures that the battery does not go flat if the car is left with the boot open

Timer operation is suspended when the boot is closed



TIMED DEMISTER OPERATION (REAR WINDOW AND DOOR MIRRORS)

The rear window heater element, door mirror demister coils and the windscreen heater element absorb a considerable amount of energy. They must therefore be turned off once they have been working for a certain period of time.

The control unit supplies the heated rear window and door mirrors under the control of a timer. The procedure is as follows.

The system is turned on with:

- the ignition in the ON position
- activation signal from the relevant button, located on the climate control system control panel (or from the air conditioner max defrosting function).

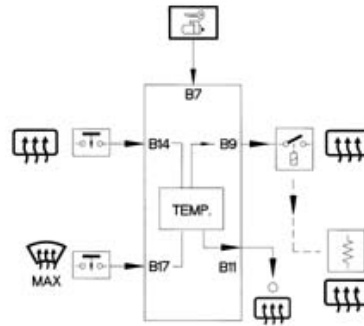
The resistances remain supplied for 20 minutes, then the power supply is cut off.

The power supply is also cut off under the following conditions:

- with the ignition in the OFF position
- deactivation signal from the relevant button (or the max. defrosting function);
- After 10 minutes of operation, if battery voltage drops below 11.6 V (the supply is restored if temperature rises to more than 13 V)

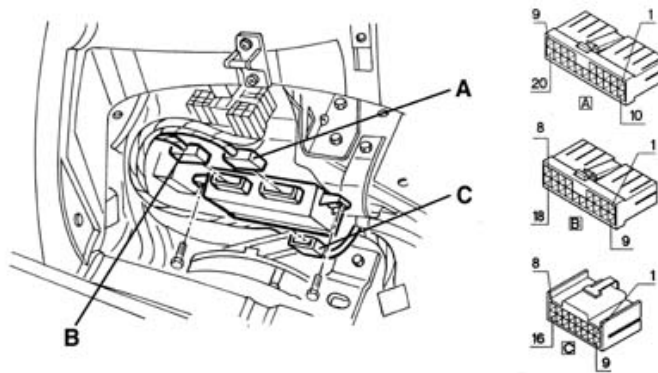
The button control always takes priority over the max. defrosting function. For example, if the rear window is activated automatically by the max. defrost function and the button is pressed, the rear window is deactivated.

The LED in the button stays on whilst the heated rear windscreen is activated.



CONTROL UNIT PIN-OUT

Refer to the illustration



20-way connector:

- 1 Supply to passenger side window motor - up
- 2 Passenger side window motor control - down
- 3 Supply to passenger side window motor - down
- 4 Passenger side window earth
- 5 Passenger side window control from driver's side - down
- 6 Passenger side window motor control - up
- 7 N.C.
- 8 Driver's side window motor supply - up
- 9 Driver's side window motor supply - down
- 10 Driver's side window control - up
- 11 Driver's side window control - down
- 12 N.C.
- 13 N.C.
- 14 N.C.
- 15 +30 power source
- 16 +30 power source
- 17 N.C.
- 18 Passenger side window control from driver's side - up
- 19 N.C.
- 20 Driver's side window earth

Connector B, 18-way

- 1 Fog lamp switch
- 2 Front door switch driver's side for interior lights
- 3 Front door switch passenger side for interior lights
- 4 Door lock power source (release)
- 5 Door lock power source (lock)
- 6 N.C.
- 7 +15 power source
- 8 +30 power source
- 9 Heated rear window relay power source
- 10 N.C.
- 11 Output for heated rear window indicator
- 12 N.C.
- 13 Earth for electronic system and door lock
- 14 Heated rear window control
- 15 Control (lock) from front lock from key or switches

- 16 Control (release) from front lock from key or switches
- 17 Heated rear window control from climate control system (max. defrosting)
- 18 N.C.
- Connector C, 16-way
- 1 Rear courtesy light timer power supply
- 2 Boot light timer power supply
- 3 Front courtesy light timer power supply
- 4 N.C.
- 5 N.C.
- 6 Control (lock) from remote control
- 7 Rear door switch driver's side for interior lights
- 8 Side lights on signal
- 9 N.C.
- 10 N.C.
- 11 fog lamp relay control
- 12 N.C.
- 13 Rear door switch passenger side for interior lights
- 14 boot switch for interior lights
- 15 Control (release) from remote control
- 16 N.C.