

AVANTIME

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This document refers to the specifications for the **AVANTIME**. For all information on sections in common with the **ESPACE**, refer to Workshop Repair Manual 315.

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EDITION ANGLAISE

"The repair methods given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The methods may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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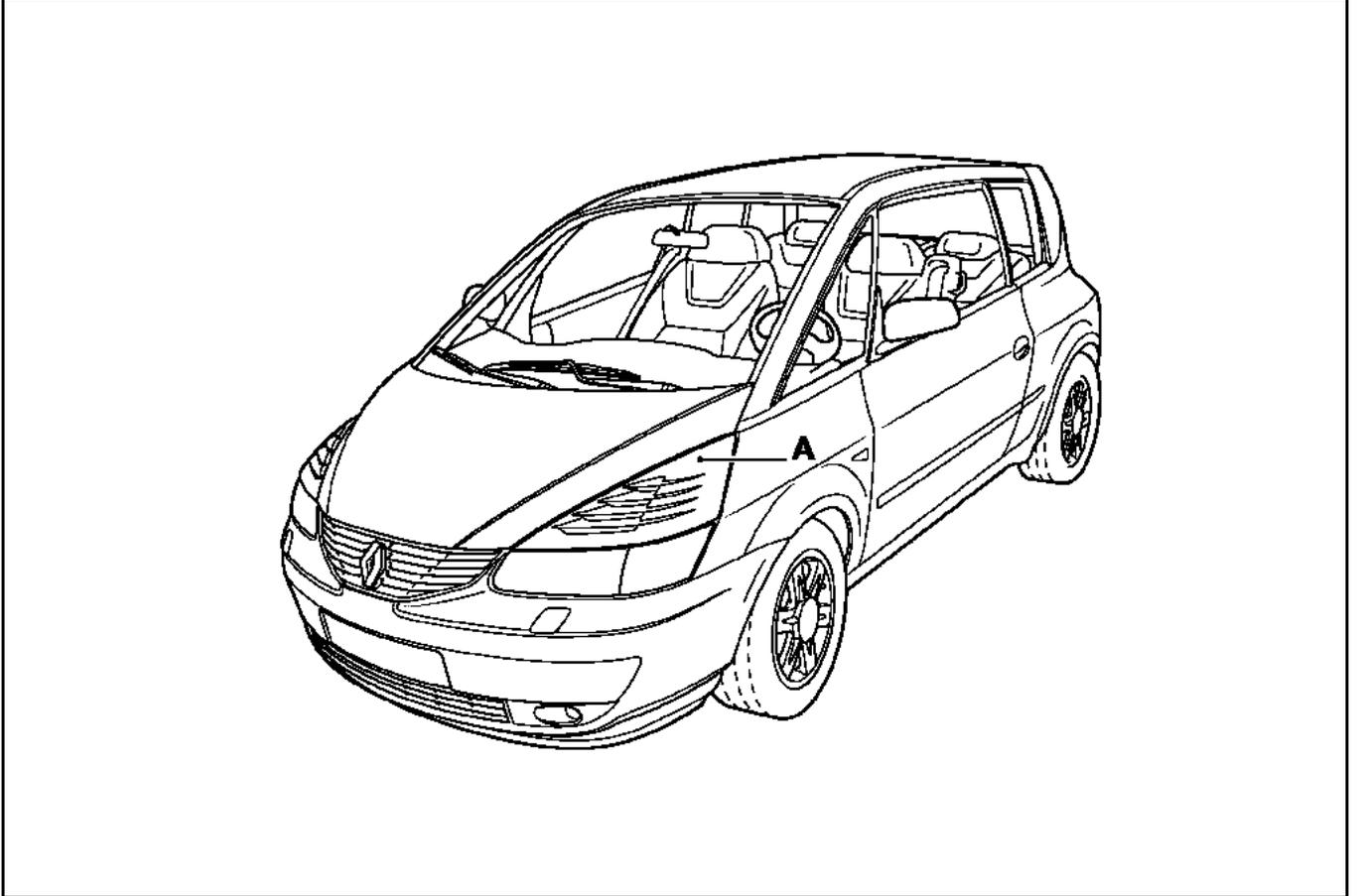
Climate control

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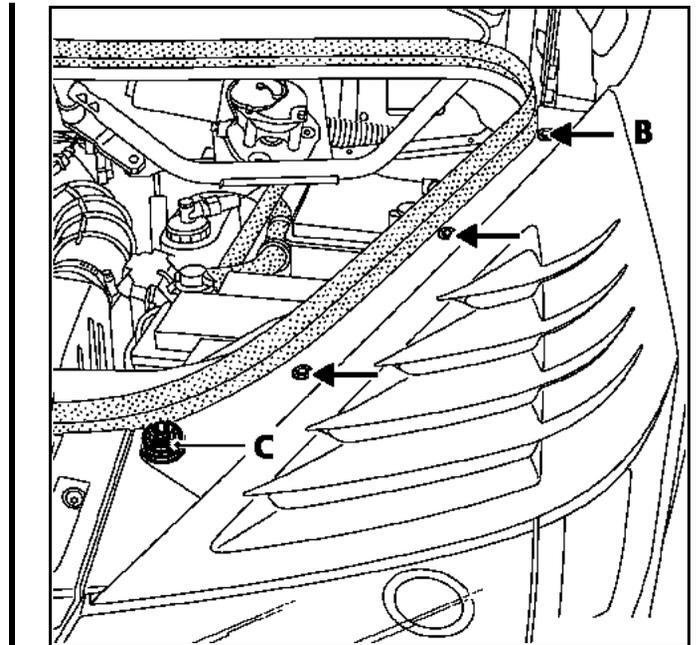
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The air enters through the inlets in the bonnet (A) and is directed towards the passenger compartment, via two particle filters and a central dual fan.

It reheats by passing through the heater matrices, before reaching the distribution openings (demist ducts, side air vents).



Checking that the air ducts are clean: remove the suction grilles (A) by removing the bolts (B) and loosening the bonnet stop (C).

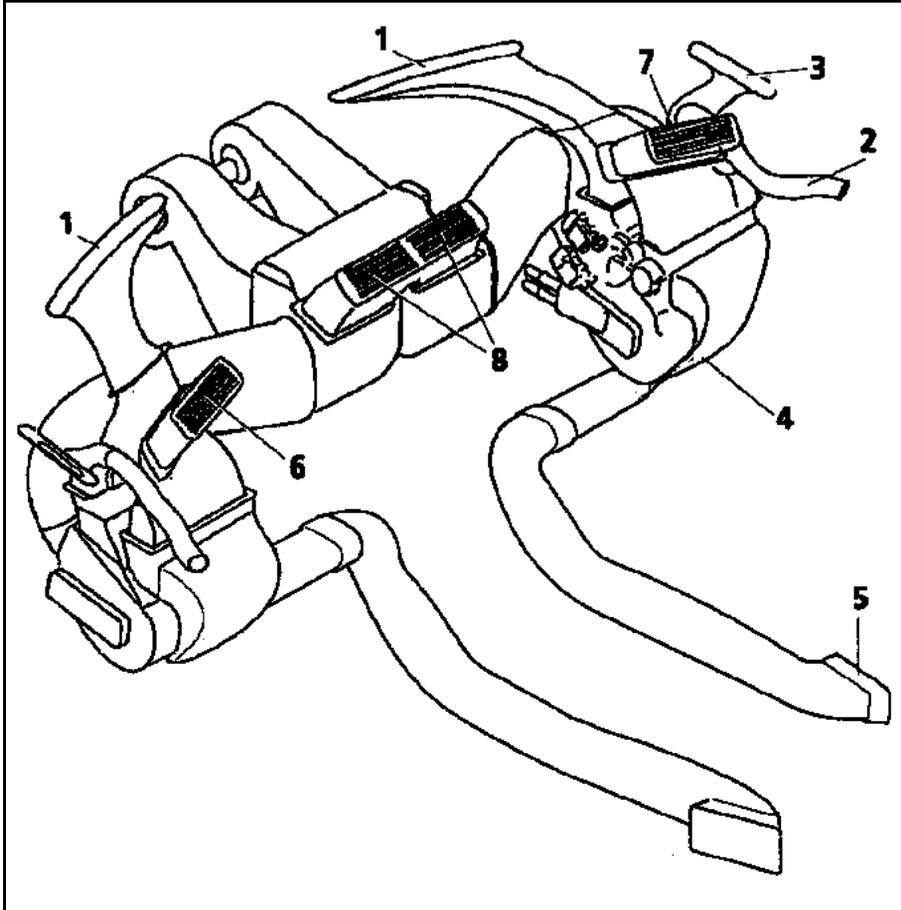


HEATING

Heating/distribution unit

61

The air propelled by the central fan is shared between the windscreen demisting vents (1), side windows (2), front quarter panels (3), the front footwell heating (4), rear footwell (5), side air vents (6) and (7) central air vents (8) (the latter deliver air that does not pass through the heater matrices).



REPLACING THE HEATER MATRICES

The original heater matrices are replaced with specific replacement parts, with removable water pipes. This special feature avoids the need to draw back the dashboard to pass the pipes through the scuttle panel.

Description of the operation:

REMOVAL

Disconnect the battery.

IMPORTANT: Before replacing the heater matrices, rinse the vehicle cooling circuit thoroughly according to Technical Note 3165A.

In the engine compartment

Unlock the heater matrix unions using tool **Mot. 1395-01**. Spray some teflon or a little oil on the ends of the heater matrices to ease their progress through the scuttle panel passage.

In the passenger compartment

Remove the lower consoles.

See the **AVANTIME Workshop Repair Manual** Section **5 Lower consoles**.

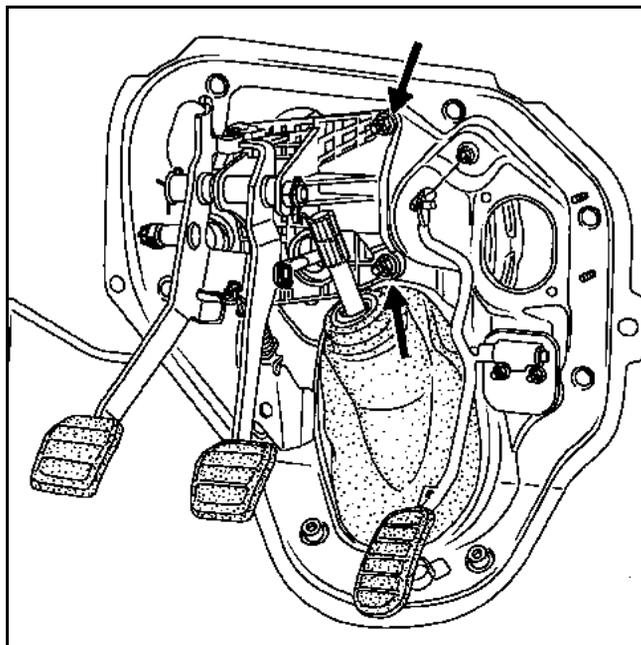
Separate the steering column from its universal joint.

See the **ESPACE Workshop Repair Manual**, Section 37

Unclip the pushrod from the pedal assembly clutch control.

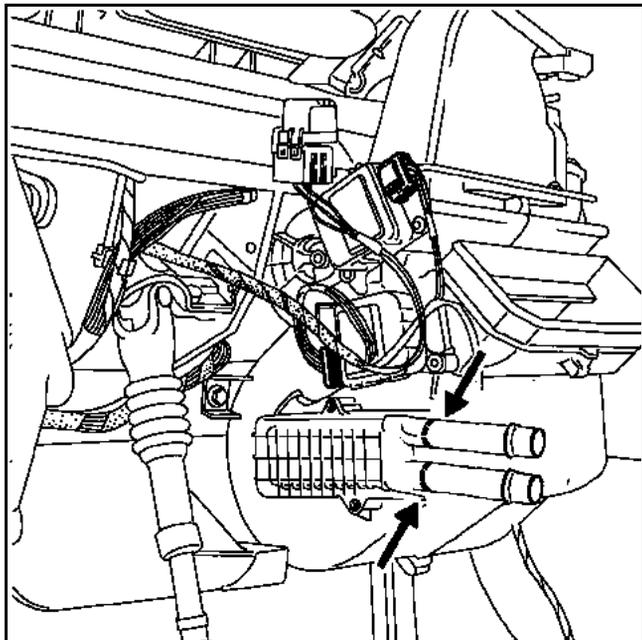
Disconnect the brake switches and release the brake master cylinder push fork.

Remove the pedal assembly (**4 nuts**).



Protect the carpet in the front footwells.

Saw off the pipes from the old heater matrices at the bottom of the scuttle panel trim (for example, with a saw blade fitted on a pneumatic tool).



Take out the heater matrices first, then the pipe pieces. The mounting nuts on the scuttle panel passages should be loosened so that the pipes can slide through. Lubricate the pipes from the engine compartment, if necessary.

IMPORTANT

Check the condition of the heater matrix housing and clean it if necessary (water, waste, etc...).

Clean the carpet.

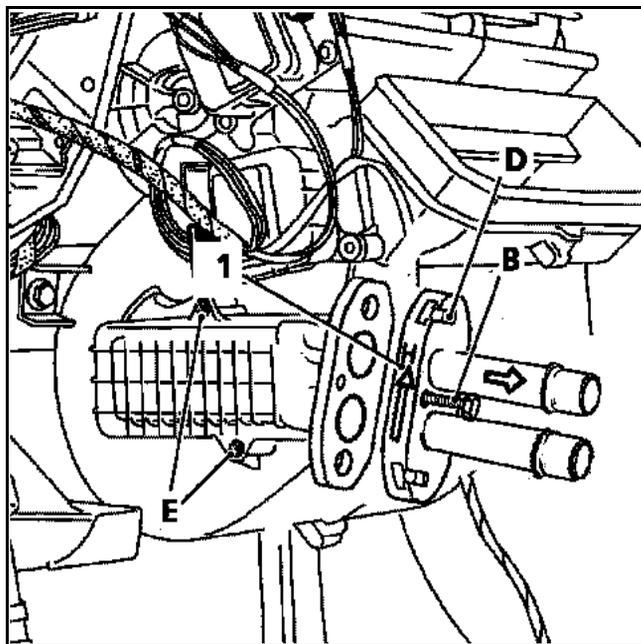
REFITTING:

There is only one type of heater matrix with removable end-pieces. The only difference between the left and the right side is in the direction of the end-piece. Place the lead bolt (B) in its housing on the removable pipe, as well as the nuts (D). Grease the ends of the replacement heater matrices to ease their progress and insert them at the bottom through the scuttle panel.

WARNING: clearly mark the direction of inserting the flanges in the scuttle panel. The H mark (1) for high on the two heater matrices must be respected; otherwise it will be impossible to reconnect the heater matrix pipes if they are reversed. See the diagram below.

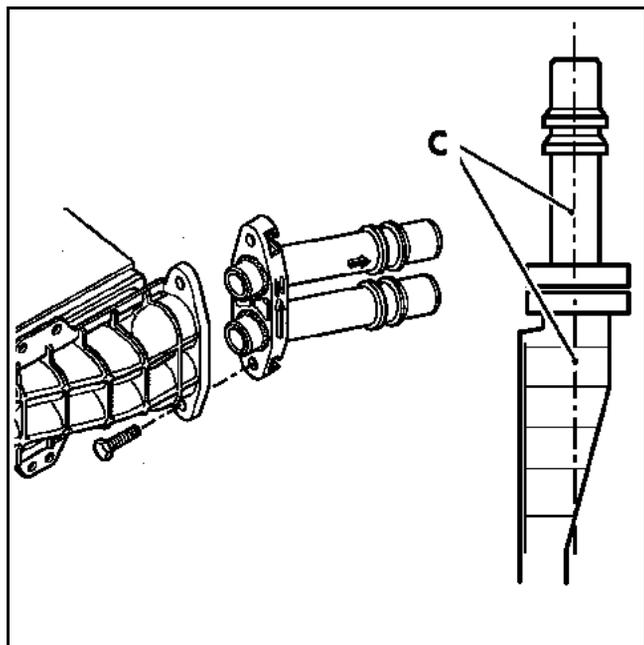
Fit the heater matrices in their housing and tighten the bolts (E).

Check for the presence of O-rings at the bottom of throats of the end-pieces and dock the flanges on the heater matrices by pulling the latter.



To facilitate the docking operation:

- coat the O-rings or the bore with soap before receiving them,
- ensure that there is parallelism to the left or right of the two shafts (C), testing them without seals if necessary,
- replace the lathered O-rings, if necessary,
- from the engine compartment, fully loosen the scuttle panel passage compartments and move the pipes from left to right until they are inserted.



IMPORTANT: when the pipes are correctly inserted in the heater matrix, the sealing surfaces of these two components are cemented together without the need to tighten the bolts.

Fit and partially tighten the bolts in the nuts (D).

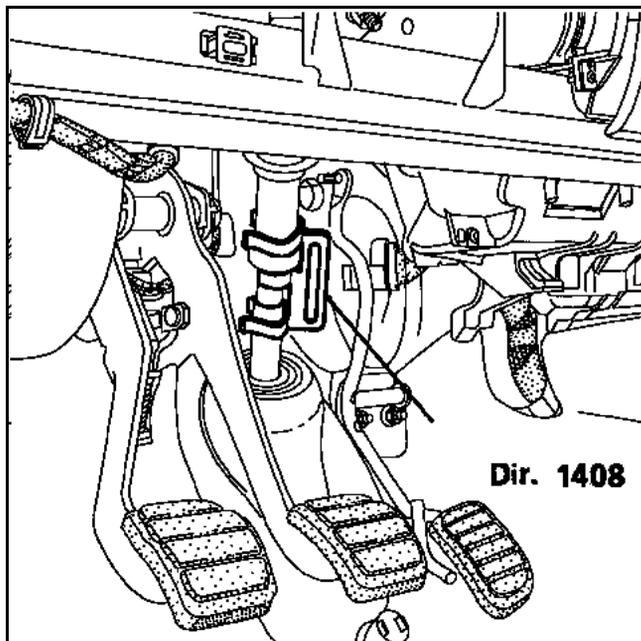
Gently tighten the bolt (B) with a 5.5 open wrench.

Tighten the nut bolts (D) normally.

Before refitting, reconnect the cooling circuit, fill up with coolant and apply cold pressure to check the sealing ring.

Refitting is the reverse of removal.

Adjusting the steering column: refer to **ESPACE Repair Manual 315 Section 36.**



Removal/refitting:

- of the compressor,
- of the condenser,
- of the dehydration canister,
- of the pressure switch,
- of the heating and ventilation hoses,
- of the evaporator,

is the same method as that recommended for the **ESPACE** vehicle **L7X** engine described in **Technical Note 2996A**.

WARNING: Always use SANDEN SP10 oil in the heating and ventilation compressor of the AVANTIME L7X engine

NOTE: SP10 SANDEN and PLANETELF oils are not compatible.

R 134A refrigerant fluid: 800 grammes

AUTOMATIC AIR CONDITIONING

The regulation system is designed to provide the users with stable, effective comfort irrespective of the outside environment and the conditions of use.

It also ensures good visibility through the glazed surfaces.

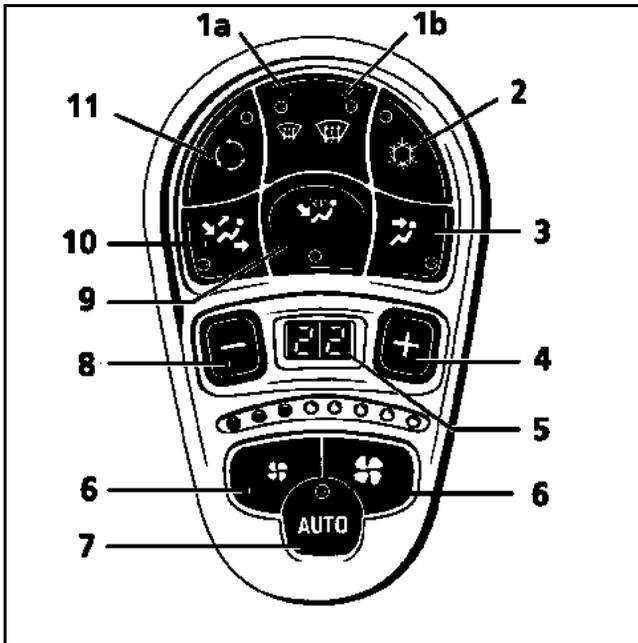
This regulation system is managed by a computer located in the passenger compartment.

The control system comprises two controls:

- a driver's control,
- a passenger control.

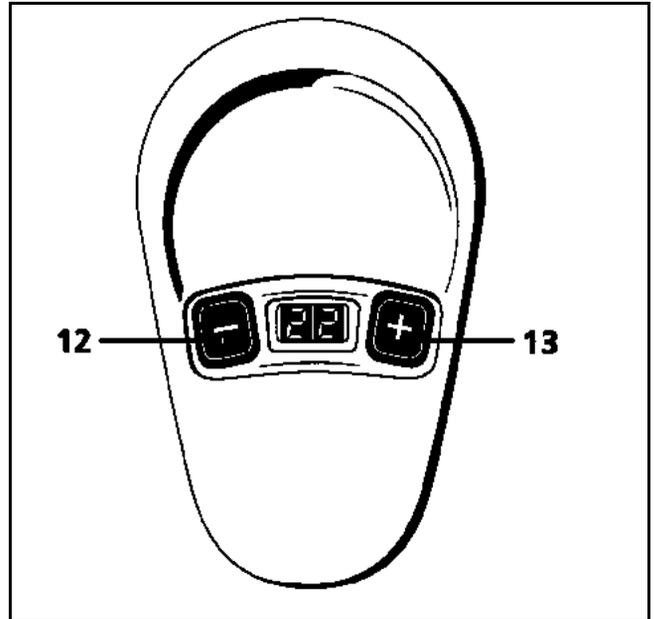
The driver's control groups together the main air conditioning functions. The passenger control can be used to vary the temperature setting on the passenger side.

Driver's control



- 1a Defrosting - Demisting
- 1b Demisting "See clear button"
- 2 Activation of air conditioning
- 3 Air distributor
- 4 Adjustment of passenger compartment temperature (+)
- 5 Display
- 6 Adjustment of ventilation speed
- 7 Placing in automatic mode
- 8 Adjustment of passenger compartment temperature (-)
- 9-10 Air distributor
- 11 Passenger compartment insulation (air recirculation)

Passenger control



- 12 Adjustment of passenger compartment temperature (-)
- 13 Adjustment of passenger compartment temperature (+)

The regulated air conditioning system comprises the following elements:

- an **outside temperature sensor** located in the LH door mirror;
- an **inside temperature sensor** located in the central console;
- an **insolation sensor** located in the instrument panel;
- an **engine coolant sensor**;
- an **evaporator sensor** (exceptin G9T) located in the evaporator block;
- an **engine speed sensor**,
- six **actuators** (mixing, recirculation and distribution);
- a **fan**;
- a **computer**.

Automatic mode

The automatic air conditioning system acts on the following parameters:

- ventilation speed;
- air distribution;
- management of air recirculation;
- operation, or not, of the air conditioning system .

When the temperature setting is equal to **HI** or **LO** the temperature is not controlled automatically (**HI** > 28 °C and **LO** < 16 °C).

Pressing the **AUTO** button (7) activates the following functions and warning lights:

Temperature

The mixing flaps are controlled according to the regulation algorithms.

Ventilation

The fans are controlled according to the regulation algorithms.

Distribution systems

The distribution flaps are controlled according to the regulation algorithms.

AC function

The **AC** (air conditioning) function is controlled according to the regulation algorithms.

Recirculation

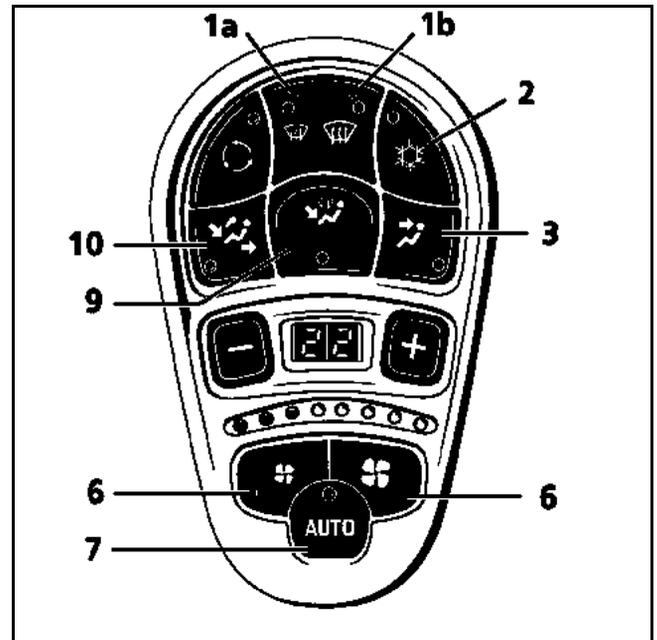
The flap is controlled according to the regulation algorithms.

The **AUTO** (7) mode indicator light goes out if buttons 6, 1, 3, 9, 10 or 2 are pressed and **HI** or **LO** is displayed on the driver or passenger control.

In automatic mode all the control indicators go out except those for indicators 2 and 7.

Introduction to the passenger setting

After a press of **3 seconds** on the **AUTO** (7) button.



NOTE: in automatic (7), remember to close the central air vents on the dashboard when the outside temperature is below a comfortable temperature.

In cold outside temperatures, the regulated air conditioning system does not start up instantly at maximum power, but gradually until the engine temperature is sufficient to heat the air in the passenger compartment. That may take between **30 seconds** and **several minutes**.

SEE CLEAR MODE

The purpose of this button is to provide the driver of the vehicle with good visibility (de-icing, demisting, etc.) as fast as possible, in all climatic conditions.

This function is activated by **pressing twice** on the driver control button **1**. It overrides all other buttons.

Status of indicator lights and parts actuated:

- The two indicator lights for button **1** are lit;
- All the other indicator lights go out, as does the temperature setting display;
- Exterior air inlet;
- Control of blowers in accordance with the control algorithm;
- Distribution in de-icing position;
- Air conditioning according to the outside temperature;
- Mixing according to the control strategy;
- De-icing function for rear screen and rear-view mirrors.

A timer is triggered when the **See clear** function is activated:

- either a maximum operating time of **12 min.**,
- or a time depending on the outside temperature and the engine temperature.

BLOWER OPERATION

In AUTOMATIC mode:

The blower speed is adjusted according to the control algorithms. All the indicator lights are out. Pressing on the buttons **6**, during automatic mode, changes the configuration (the indicator light **AUTO** (**7**) goes out and the air flow increases or decreases).

September 2000 ⇒

When the engine stops, the air blower does not work.

In MANUAL mode

Pressing on the buttons **6**, increases or decreases the air flow.

September 2000 ⇒

Stoppage of the blower:

- With the engine stopped, press button (**7**) and the blower stops.

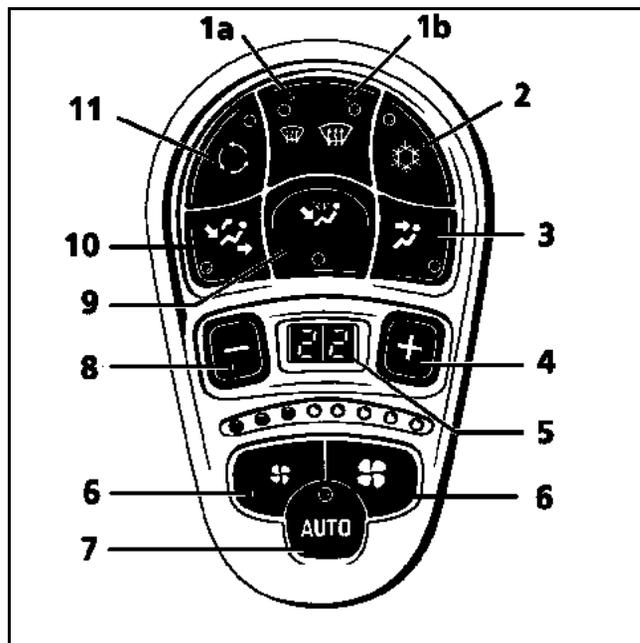
MANUAL MODE

In manual mode the air distribution, ventilation speed, air recirculation and the temperature setting can be positioned as desired.

ESTABLISHMENT OF AIR CONDITIONING

The status of the following functions is stored in memory when the air conditioning system is switched off:

- See clear;
- Driver and passenger temperature setting;
- Automatic mode;
- Air conditioning (if manual mode);
- Fan speed (if manual mode);
- Air distribution position (if manual mode);
- Mixing system position (if manual mode);
- Air recirculation position (if manual mode).



OFF MODE (*September 2000* ⇒)

The **OFF** mode stops the regulated air conditioning and isolates the passenger compartment (closed-cycle recirculation).

In manual or automatic mode

Press the left-hand button (**6**) until the indicator lights go out. The driver and passenger controls go out. All the regulated air conditioning functions are inoperative.

Leaving OFF mode

Press one of the driver control buttons or turn off the ignition for **> 15 min.** Prior settings retrieved with a blower at minimum speed.

For a change of passenger or driver control, programming is required.

This is performed either with the diagnostic tool (see the section on **Diagnostics**) or by the following procedure.

For an exchange of electronic control unit, settings must be programmed with the diagnostic tool.

Command not programmed

Indicator lights **3**, **9** and **10** flash.

Command being programmed

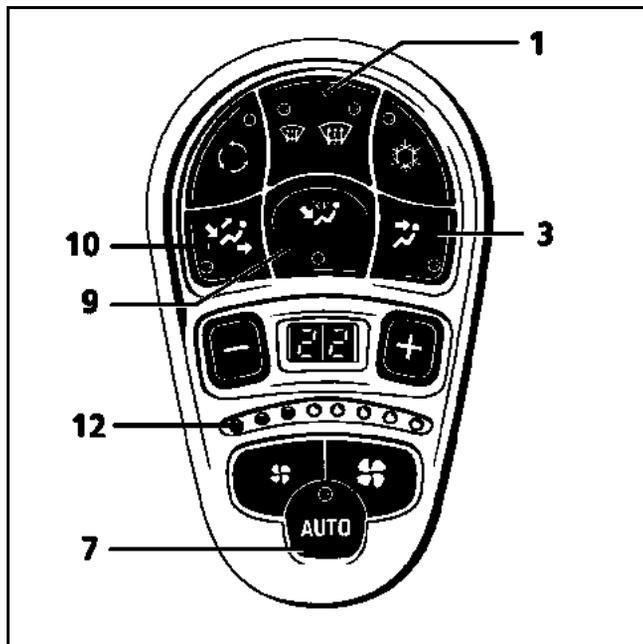
Indicator light **12** flashes.

Programming completed and correct

With indicator light **7** lit up, the temperature setting for both controls is **22 °C**.

Programming completed and incorrect

Indicator lights **3**, **9** and **10** are lit up.



Note:

When after ignition is on, flashing of indicator lights **3**, **9** and **10** can mean one of three things:

- programming not performed;
- programming interrupted;
- programming attempted but not completed.

PROGRAMMING

- Press for **3 seconds** on buttons **1** and **9**.
- Switch on the ignition.
- Indicator light **12** flashes.
- Indicator light **7** lit, temperature **22 °C**.

Delete setting (RESET)

- Press for **3 seconds** on buttons **3** and **10**.
- Switch on the ignition.
- Indicator lights **3**, **9** and **10** flash.
- Switch off the ignition.

CONFIGURATION

When exchanging the computer, settings must be programmed:

Without evaporator sensor : if **G9T**

With evaporator sensor : **F4P, L7X and F9Q**

READ CONFIGURATION

Vehicle type : **ESPACE**

Electric windscreen : **None**

Evaporator sensor : **With**
Without (if G9T)

Heating and ventilation management : **By air conditioning computer**

DEFECT MODE

This mode can control the regulated system so as to limit the consequences of failure of sensors or other components.

The customer may perceive the defect mode as a different level of comfort.

This mode is initialised by the central computer if a sensor and/or actuator defect is declared present.

There is no visual indication to warn the customer or the operator performing servicing on the vehicle.

Only a diagnostic of the function can indicate that the regulated air conditioning function is in defect mode.

Activation of defect mode:

- Fault present on a sensor (the sensor is simulated by the central computer).
- Fault present on an actuator (the actuator remains in this condition).

Deactivation of defect mode:

- Defect has been stored.
- Ignition switching on and off.