



Workshop Manual Amarok 2011 ➤

Heating, air conditioning

Edition 04.2013





List of Workshop Manual Repair Groups

Repair Group

00 - Technical data

80 - Heating

87 - Air conditioning system

Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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00 – Technical data

1 General notes

(VRL005527; Edition 04.2013)

⇒ [“1.1 Notes concerning odours in air conditioned vehicles”, page 1](#)

⇒ [“1.2 Notes for vehicles with a start-stop system”, page 1](#)

⇒ [“1.3 Notes on repair work to vehicles with air conditioning and on handling refrigerant”, page 2](#)

⇒ [“1.4 Procedure for checking and adjusting components”, page 2](#)

⇒ [“1.5 Distribution of oil in refrigerant circuit”, page 2](#)

1.1 Notes concerning odours in air conditioned vehicles



Note

The market offers various procedures for cleaning the evaporator these differ in use and effectiveness. Currently, Volkswagen has tested and authorised cleaning the evaporator with the Ultra-sound A/C cleaner - VAS 6189A- or the Suction feed spray-gun - V.A.G 1538- and spray lance. If, in the course of time, other procedures are tested for suitability and subsequently approved by Volkswagen, relevant information will be provided in the workshop manual for ⇒ air conditioning systems with refrigerant R134a; Rep. gr. 00 ; Odours from heating and air conditioning unit .

1.2 Notes for vehicles with a start-stop system

Safety measures for vehicles with a start-stop system

⇒ [page 3](#)

If a start-stop system is installed, the following abort conditions will deactivate the start-stop function:

- ◆ The start-stop system has been switched off via the start-stop mode button.
- ◆ The charge condition of the battery is insufficient to restart the engine (starting voltage prediction).
- ◆ The defrost function is active.
- ◆ The windscreen heater function is active.
- ◆ The air conditioner system temperature set in the control panel deviates by more than 8 °C from the actual temperature of the interior.
- ◆ The engine speed is greater than 1200 rpm.
- ◆ The alternator - C- is defective, i.e. belt broken.
- ◆ Coolant temperature not within specifications of 25 °C - 100 °C.
- ◆ Blower speed increase by more than 4 stages.



Additional information:

- ♦ Refer to ⇒ Self-study programme No. 426 ; Start/Stop System 2009 for full description.

1.3 Notes on repair work to vehicles with air conditioning and on handling refrigerant



Note

- ♦ *Notes on repairs to vehicles with air conditioning and on handling refrigerant can be found in ELSA under ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; General information for air conditioning system, Safety precautions for when working on vehicles with air conditioning and when handling refrigerant R134a .*
- ♦ *Notes on testers and tools for repairs to vehicles with air conditioning can be found in ELSA under ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Testing equipment and tools .*



Caution

Do not kink or severely bend refrigerant lines.

There is a film in the refrigerant lines which can be destroyed.

Refrigerant lines must not be bent to a radius less than $r = 100 \text{ mm}$.

Additional information:

- ♦ ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

1.4 Procedure for checking and adjusting components

Special tools and workshop equipment required

- ♦ Vehicle diagnosis tester
- Checking and adjusting components ⇒ Vehicle diagnostic tester, Guided functions

1.5 Distribution of oil in refrigerant circuit

The oil, which is located in the sump of the air conditioner compressor before the air conditioner system is switched on for the first time, distributes itself through the refrigerant circuit as follows:

- ♦ Air conditioner compressor approx. 50 %
- ♦ Condenser approx. 10 %
- ♦ Suction hose approx. 10 %
- ♦ Evaporator approx. 20 %
- ♦ Receiver approx. 10 %



2 Notes on safety

⇒ **"2.1 Safety measures for when working on vehicles with a start-stop system", page 3**

2.1 Safety measures for when working on vehicles with a start-stop system



WARNING

Risk of injury due to automatic engine starting in vehicles with a start-stop system.

- ◆ ***In vehicles with an activated start-stop system (indicated by a message in the dash panel insert), the engine may start automatically if necessary.***
- ◆ ***When working on the vehicle, therefore, make sure that the start-stop system is deactivated (switch off the ignition; switch the ignition on again if necessary).***



3 Repair notes

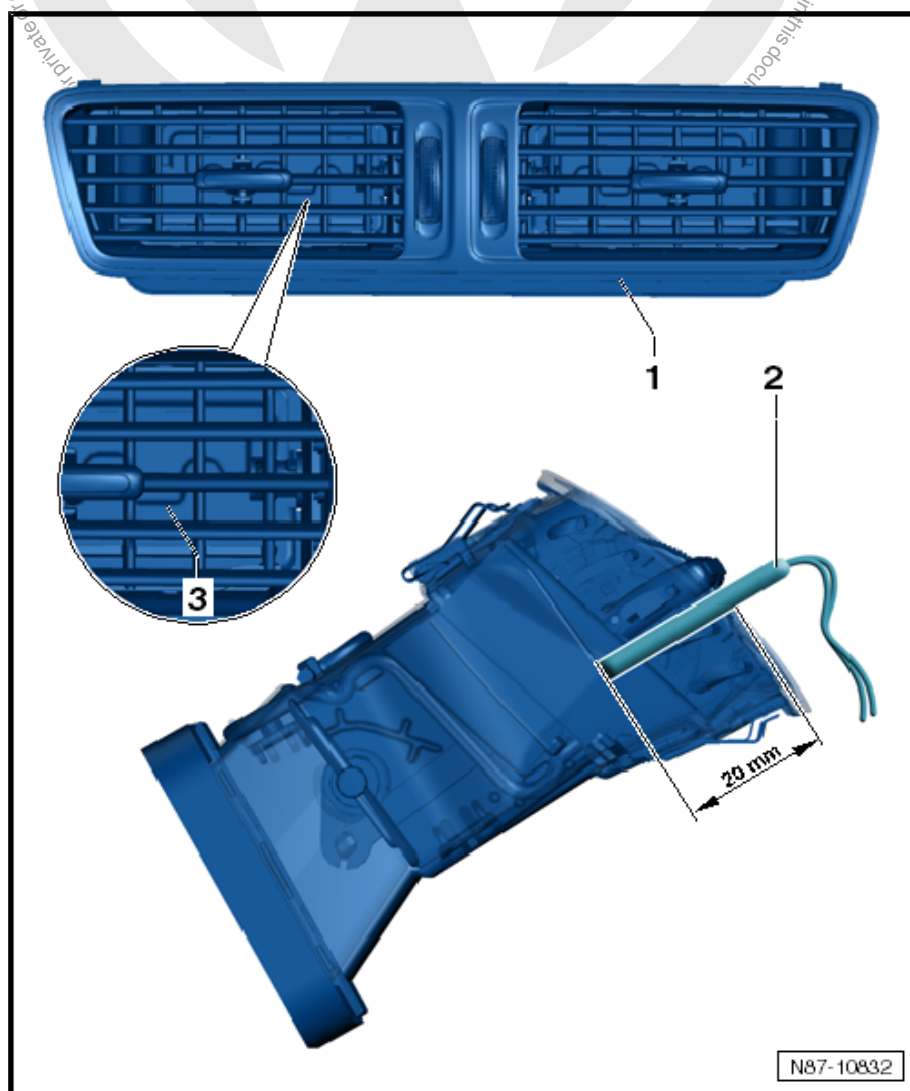
⇒ "3.1 Check cooling performance", page 4

⇒ "3.2 Opening refrigerant circuit", page 5

3.1 Check cooling performance

Checking

- Close bonnet.
- Measure ambient temperature.
- Close doors, windows and sunroof.
- Open all dash panel vents.
- Set air conditioning system temperature to coldest setting.
- Set air distribution to chest vents.
- Hold temperature probe -2- approx. 20 mm in area shown -3- of vents -1-.



- Switch on air conditioning system via button **AC**.



- Start engine.



Note

Start time measurement (5 min).

- Raise engine speed to approx. 2000 rpm and hold.

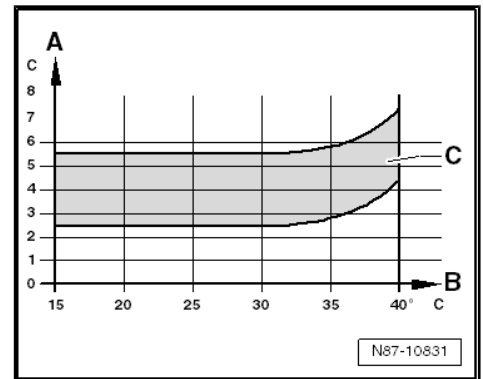
Evaluation

After 5 minutes the temperature of the air blown out of the vents on the “driver side” must lie within permitted tolerances depending on the ambient temperature (see diagram).

A - temperature of air blown out of dash panel vents on “driver side”

B - ambient temperature

C - permitted tolerance range



3.2 Opening refrigerant circuit

Repairs requiring the opening of the refrigerant circuit may only can be carried out by specially trained personnel.

Repairs on air conditioning system that require evacuation of refrigerant circuit are described under

⇒ [g.r.87 “Air conditioning system”, page 23](#) .

Special tools are required to evacuate the refrigerant circuit.

If these tools are not available, pass vehicle over to a workshop that has the required tools and the respective specially trained personnel to carry out the required repairs.

Further notes concerning the repair of vehicles with air conditioning and concerning the handling the refrigerant and purging can be found under ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ..



WARNING

Danger from refrigerant escaping under pressure!

Freezing of skin and other body parts.

- ***Evacuate the refrigerant and then open the refrigerant circuit immediately.***
- ***If more than 10 minutes have elapsed since evacuation and the coolant circuit has not been opened, evacuate the refrigerant again. Pressure builds up in the coolant circuit as a result of secondary evaporation.***



4 Technical data

⇒ "4.1 Capacities for refrigerant R134a", page 6

⇒ "4.2 Refrigerant machine oil", page 6

4.1 Capacities for refrigerant R134a

⇒ "4.1.1 Capacities for refrigerant R134a", page 6

⇒ "4.2 Refrigerant machine oil", page 6

4.1.1 Capacities for refrigerant R134a

Air conditioner compressor	Manufacturer	Capacity
7SEU17	Denso	525 ± 25 grams
6SEU14	Denso	525 ± 25 grams

4.2 Refrigerant machine oil

The special refrigerant oil (for use with refrigerant circuits R134a only) can no longer be obtained on the refrigerant/machine oil market.

Refrigerant oil can be obtained using following part number for	
7SEU17C Denso air conditioner compressor	G 052 300 A2
6SEU14C Denso air conditioner compressor	G 052 300 A2

Type	Total capacity ¹⁾
Sanden	140 cm ³ ± 10 cm ³

1) This quantity of refrigerant oil is contained in a replacement compressor and corresponds to the total capacity.

Important information:

Because refrigerant oil is very hygroscopic, opened containers must be closed immediately after use to prevent moisture from entering.



80 – Heating

1 Heater unit

⇒ ["1.1 Fittings overview - heater unit", page 7](#)

⇒ ["1.2 Assembly overview – heater unit", page 8](#)

⇒ ["1.3 Removing and installing fresh air blower V2 ", page 8](#)

⇒ ["1.4 Removing and installing fresh air blower series resistor with overheating fuse N24 ", page 9](#)

⇒ ["1.5 Removing and installing dust and pollen filter", page 9](#)

⇒ ["1.6 Dust and pollen filter with activated charcoal inlay", page 10](#)

⇒ ["1.7 Removing and installing heat exchanger", page 11](#)

⇒ ["1.8 Removing and installing heater unit", page 14](#)

⇒ ["1.9 Dismantling and assembling heater unit", page 17](#)

1.1 Fittings overview - heater unit

1 - Operating and display unit

- ☐ Removing and installing
⇒ [page 21](#) .

◆ With fresh air blower switch - E9-

◆ With fresh air and air recirculation flap switch - E159- .

◆ With additional heat exchanger and rear control switch - E271-

◆ With front interior temperature potentiometer - G276- .

2 - Air recirculation flap control motor - V113-

- ☐ Removing and installing
⇒ [page 18](#)

3 - Fresh air blower - V2-

- ☐ Removing and installing
⇒ [page 8](#) .

4 - Fresh air blower series resistor with overheating fuse - N24-

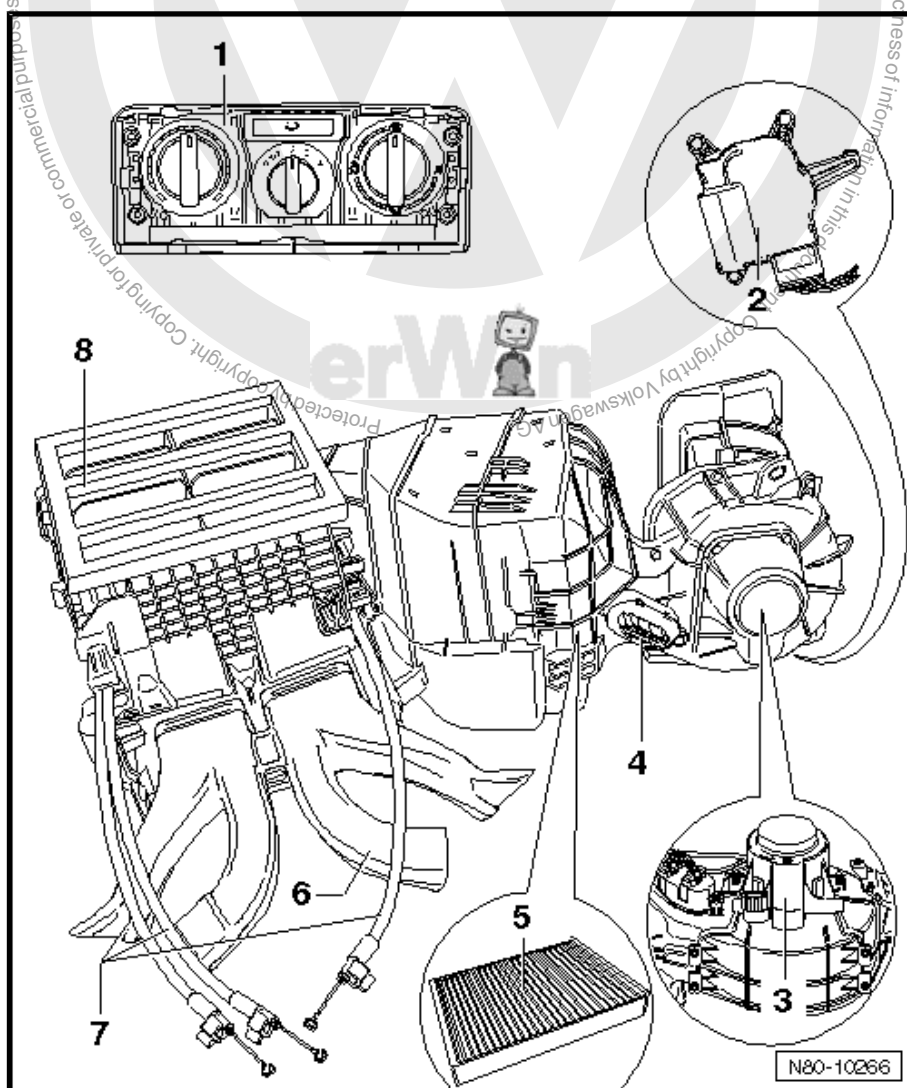
- ☐ Removing and installing
⇒ [page 9](#) .

5 - Dust and pollen filter

- ☐ Removing and installing
⇒ [page 9](#) .

6 - Footwell vent

- ☐ Removing and installing
⇒ [page 19](#) .





7 - Cables on operating and display unit

- ❑ Installing ⇒ [page 22](#) .

8 - Heater unit

- ❑ Removing and installing ⇒ [page 14](#) .

1.2 Assembly overview – heater unit

1 - Upper part of distribution box

- ❑ Upper part is connected to lower part by securing bolts -3- and retaining clips -2-.
- ❑ Dismantling and assembling heater unit ⇒ [page 17](#)

2 - Retaining clip

- ❑ Qty. 3.

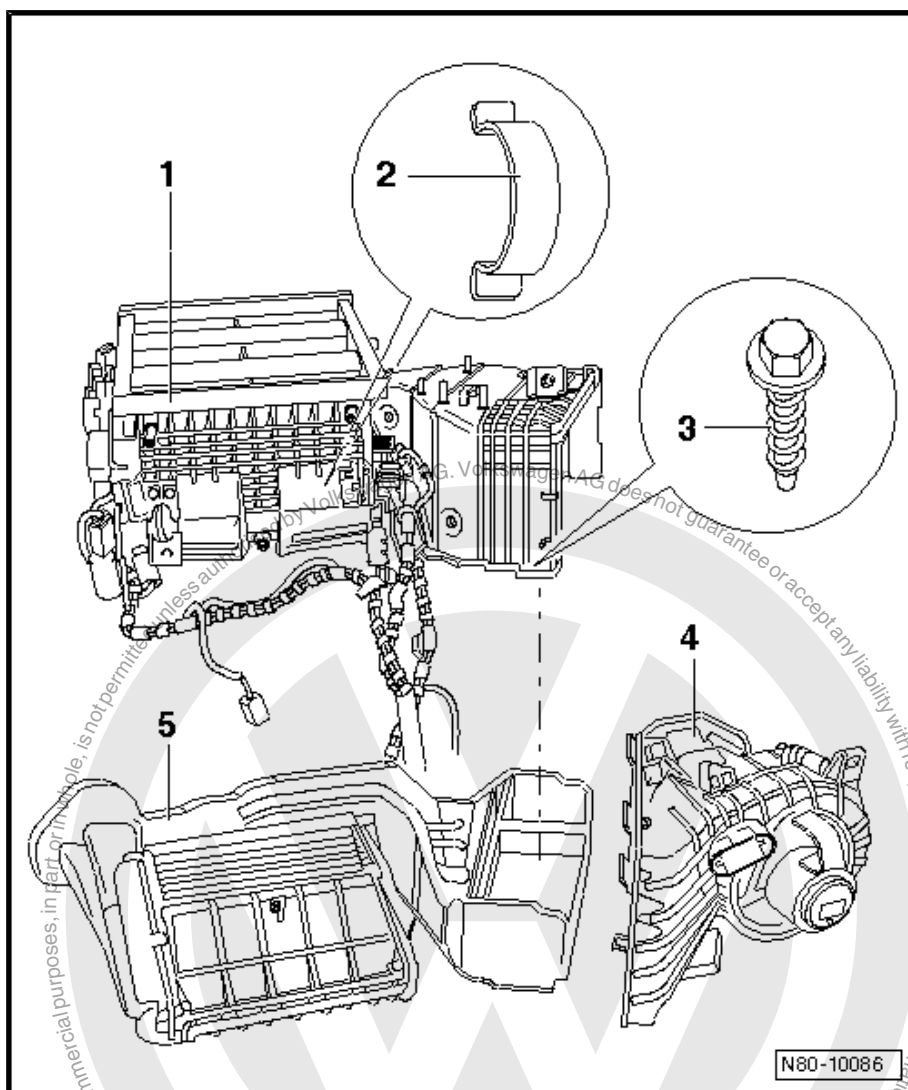
3 - Securing bolts

4 - Blower housing

- ❑ Dismantling and assembling heater unit ⇒ [page 17](#)

5 - Lower part of distribution box

- ❑ Dismantling and assembling heater unit ⇒ [page 17](#)



1.3 Removing and installing fresh air blower - V2-

Before beginning repair work, perform the following steps:

- Switch off all electrical consumers.
- Switch off ignition.
- Remove ignition key.

Removing

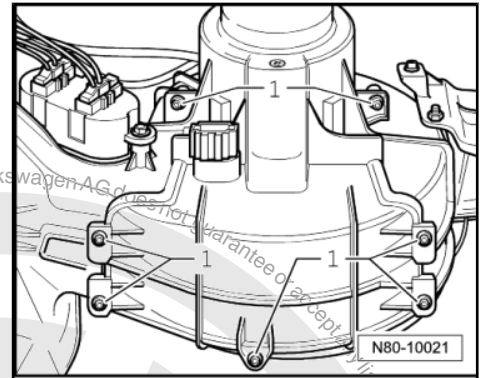
The fresh air blower - V2- is accessible from the footwell on the front passenger side.



- Separate connector from fresh air blower - V2- .
- Remove bolts -1- (1 Nm) for fresh air blower - V2- .
- Remove fresh air blower - V2- from heater unit.

Installing

Install in reverse order.



1.4 Removing and installing fresh air blower series resistor with overheating fuse - N24-

Before beginning repair work, perform the following steps:

- Switch off all electrical consumers.
- Switch off ignition.
- Remove ignition key.

Removing

- Separate connector.



WARNING

Danger of burn injuries.

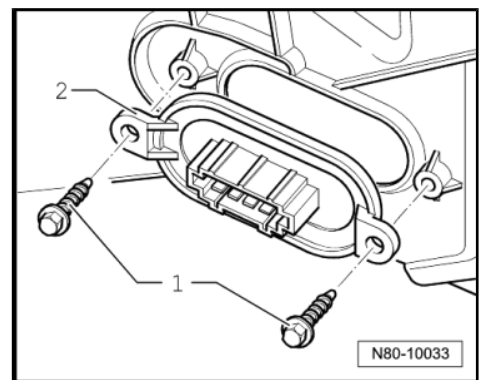
The fresh air blower series resistor with overheating fuse - N24- can be hot.

Before removing fresh air blower series resistor with overheating fuse - N24- , let it cool off.

- Remove bolts -1- (1 Nm) and remove series resistor from housing.

Installing

Install in reverse order.



1.5 Removing and installing dust and pollen filter

Before beginning repair work, perform the following steps:

- Switch off all electrical consumers.
- Switch off ignition.
- Remove ignition key.



Removing



Note

Dust and pollen filter with activated charcoal filter insert is offered as optional extra.

The dust and pollen filter is located in the front passenger footwell.

- Remove bolts -1-.
- Remove cover.
- Pull filter element out of housing.



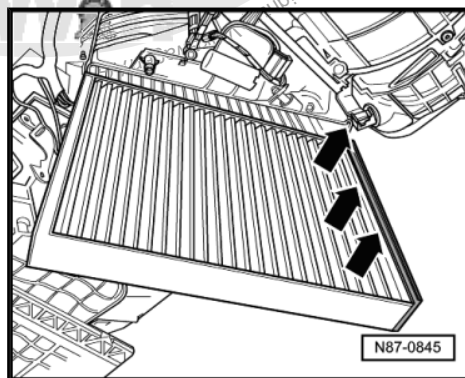
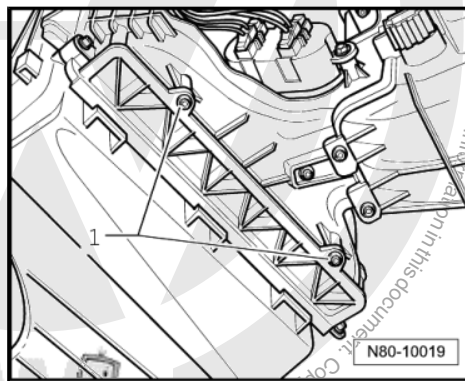
Note

Change intervals for dust and pollen filter ⇒ Maintenance ; Booklet 19.1 .

Installing

Installation is carried out in the reverse order. When installing, note the following:

- Note installation position of filter -arrows-.



1.6 Dust and pollen filter with activated charcoal inlay

- ◆ The filter with activated charcoal inlay adopts the roll of the dust and pollen filter. But it can also filter harmful gasses such as ozone, benzene, nitrogen dioxide etc. out of the air flow
- ◆ The task of the activated charcoal is to absorb gaseous impurities from the air flow until the fresh air flap is closed and the system is operating in air recirculation mode. In vehicles with Climatronic, the Climatronic control unit - J255- switches from fresh air to air recirculation as soon as the air quality sensor - G238- detects gaseous impurities in the air. The function "automatic air recirculation" must be selected.
- ◆ The activated charcoal layer in the dust and pollen filter reacts with noxious substances in the air in different ways:

- Certain noxious substances are stored permanently in the activated charcoal layer.

- Others are converted into harmless compounds in a manner similar to that of a catalytic converter.

- For the remaining substances, the activated charcoal functions like a condenser. As noxious substances increase, initially they are stored until a certain level of saturation is achieved. As the portion of noxious substances in the air decreases, the activated charcoal layer gradually releases the particles.



- ◆ Because the activated charcoal layer permanently stores part of the noxious substances, renewing the dust and pollen filter before the prescribed renewal period would be advantageous, if:

- the vehicle is driven in areas with heavy air pollution.
- the vehicle is driven mainly with the “automatic recirculation mode” switched off.
- the vehicle is not equipped with an air quality sensor - G238- and consequently has no “automatic air recirculation” function.

- ◆ On vehicles with air quality sensor, the air conditioning system should always be operated with the “automatic recirculation mode” activated. However, if it is necessary or desired to switch the function off, the following should be observed:

-The activated charcoal layer in the dust and pollen filter will become saturated after a certain period of time.

-A saturated filter is not capable of absorbing any more noxious substances, and these will flow unrestricted into the vehicle.

- ◆ The main task of the dust and pollen filter and the air quality sensor - G238- is to prevent peak levels of pollution from entering the passenger compartment of the vehicle. To this end, the following should be observed:

-If the vehicle is being driven in an area with relatively clean air (with low levels of noxious substances), switching from fresh air to air recirculation mode is actuated at a different point in time than in an area with a high level of pollution (e.g. industrial area).

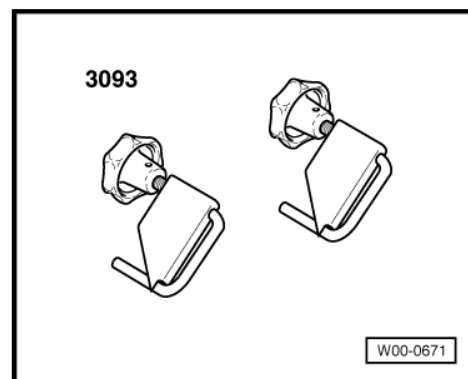
-The switch from fresh air to air recirculation occurs independently of the base level of pollution whenever the pollution level increases (e.g. when driving through a cloud of exhaust soot).

- ◆ The filter with activated charcoal can be installed in all vehicles (also vehicles without an air quality sensor - G238-). The same restrictions as those for operation of an air conditioning system with deactivated “automatic recirculation mode” apply to these vehicles.

1.7 Removing and installing heat exchanger

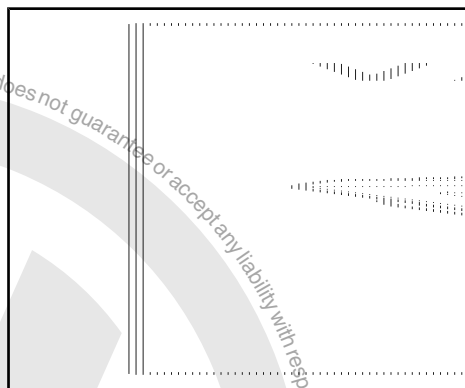
Special tools and workshop equipment required

- ◆ Hose clamps up to 40 mm - 3093-





◆ Drip tray for workshop hoist - VAS 6208-



Before beginning repair work, perform the following steps:

- Switch off all electrical consumers.
- Switch off ignition.
- Remove ignition key.

Removing

- Place drip tray - VAS 6208- beneath engine.
- Clamp off coolant hoses -1- and -2- with hose clamps up to 40 mm Ø - 3093- .

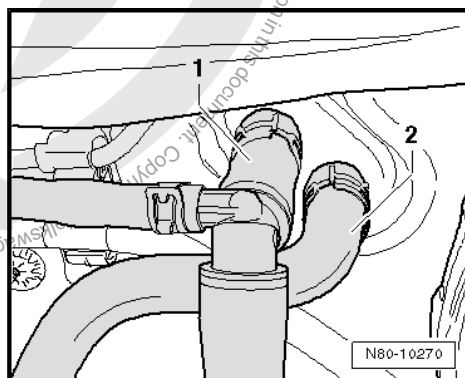


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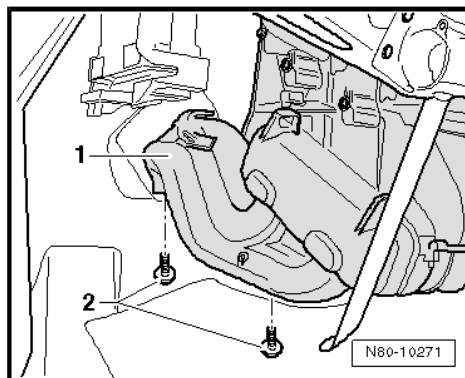
The cooling system remains pressurised while the engine is warm!

Danger of scalding due to hot steam and coolant.

Reduce excess pressure by covering the cap of the coolant expansion tank with cloths and opening it carefully.



- Disconnect coolant hoses -1- and -2- leading to heat exchanger.
- Carefully blow remaining coolant out of heat exchanger via connections using a compressed air pistol.
- Remove left and right dash panel trim and middle footwell trim
⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel .
- Remove bolts -2- and remove trim -1-.
- Lay trim -1- to side.

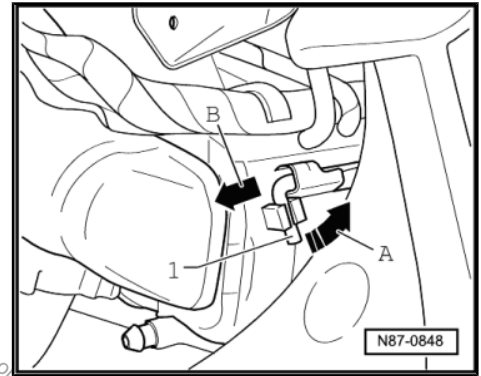




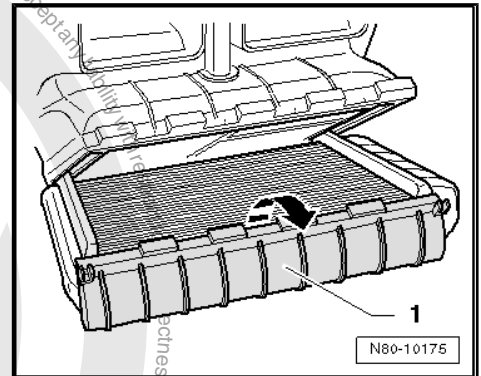
i Note

A retaining pin connects the lower heat exchanger cover to the heater unit.

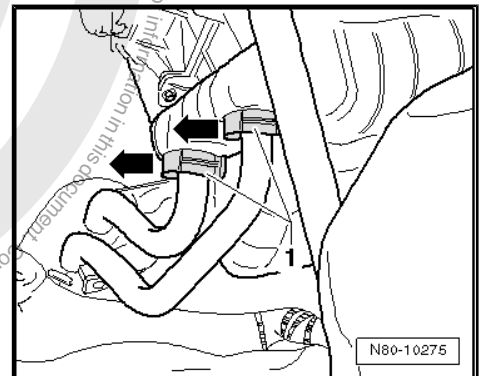
- Remove retaining pin -1- from catch -arrow A- and pull out in direction of -arrow B-.



- Fold down cover -1-.

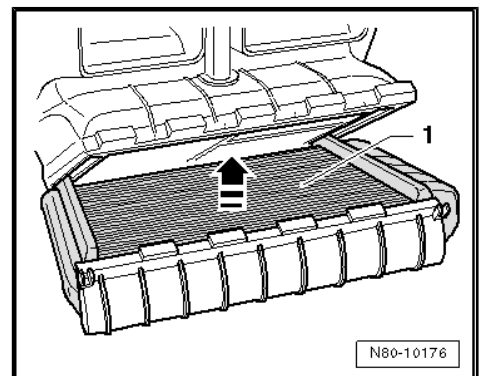


- Cover carpet in area under heat exchanger with waterproof foil and water absorbing paper.
- Pull retaining clips -1- off coolant lines.
- Slowly pull coolant lines out of heat exchanger and collect coolant that leaks out in a container.



- Remove heat exchanger -1-.

Installing





Installation is carried out in the reverse order. When installing, note the following:

Seals -1- must be bonded left and right without gaps around the edges. Bond seals -2- to upper and lower edge.

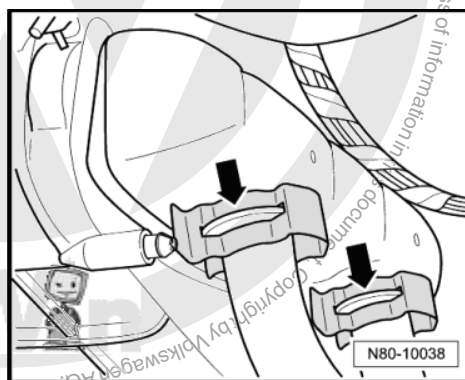
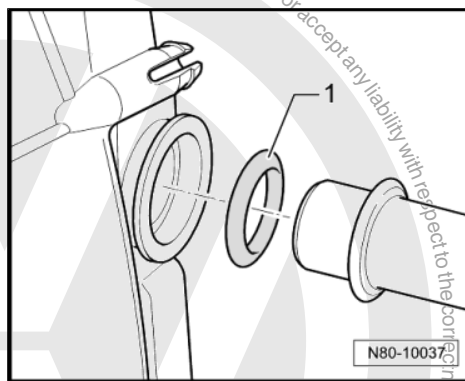
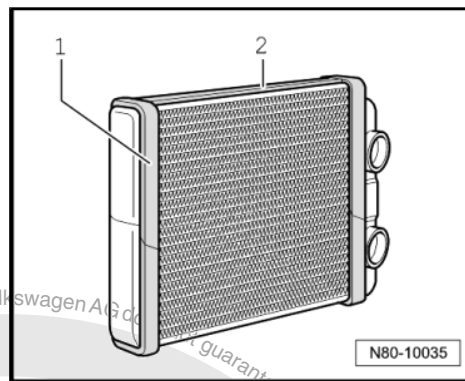
- Moisten seals -1- with coolant before installing.



Note

Always renew seals.

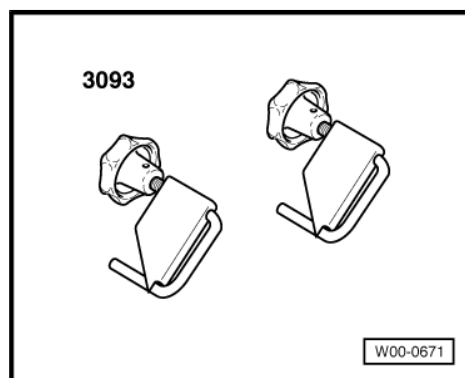
- Ensure that clips are seated correctly after they have been installed -arrows-.
- Renew coolant after installing a new heat exchanger ⇒ Rep. gr. 19 .



1.8 Removing and installing heater unit

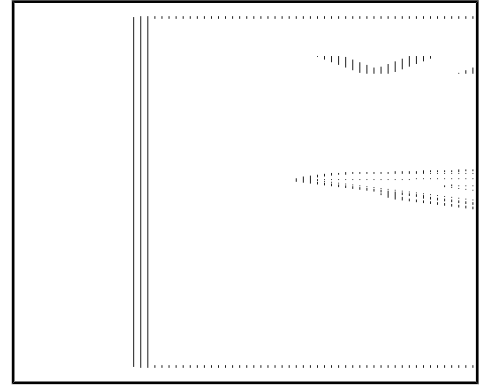
Special tools and workshop equipment required

- ◆ Hose clamps up to 40 mm - 3093-





◆ Drip tray for workshop hoist - VAS 6208-



Removing

- Switch off all electrical consumers.
- Switch off ignition.
- Remove ignition key.
- Place drip tray - VAS 6208- beneath engine.
- Clamp off coolant hoses -1- and -2- with hose clamps up to 40 mm Ø - 3093- .

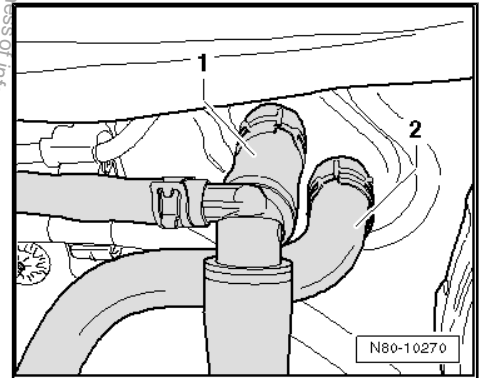


WARNING

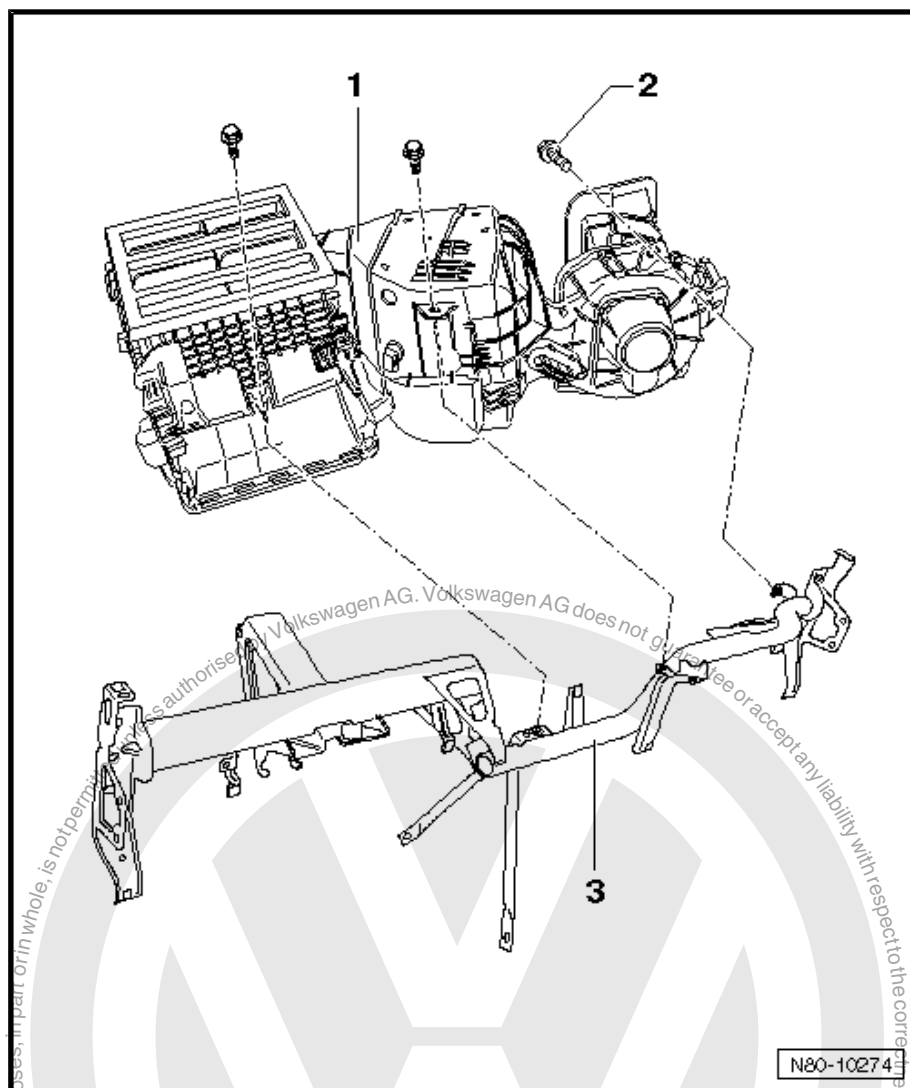
The cooling system remains pressurised while the engine is warm!

Danger of scalding due to hot steam and coolant.

Reduce excess pressure by covering the cap of the coolant expansion tank with cloths and opening it carefully.



- Disconnect coolant hoses -1- and -2- leading to heat exchanger.
- Carefully blow remaining coolant out of heat exchanger via connections using a compressed air pistol.
- Remove dash panel ⇒ Rep. gr. 70 .



- Remove bolts -2- (9 Nm).
- Remove subframe for dash panel -3- ⇒ Rep. gr. 70 .
- Disconnect connectors to heater -1- and remove heater unit.

Installing

Installation is carried out in reverse order.

After installation, replenish coolant ⇒ Rep. gr. 19 .



Note

Ensure that seal is properly seated between heat exchanger and bulkhead.



1.9 Dismantling and assembling heater unit

- Remove heater unit ⇒ [page 14](#) .

1 - Upper part of distribution box

- ☐ The upper part is connected to the lower part by securing bolts -3- and retaining clips -2-.

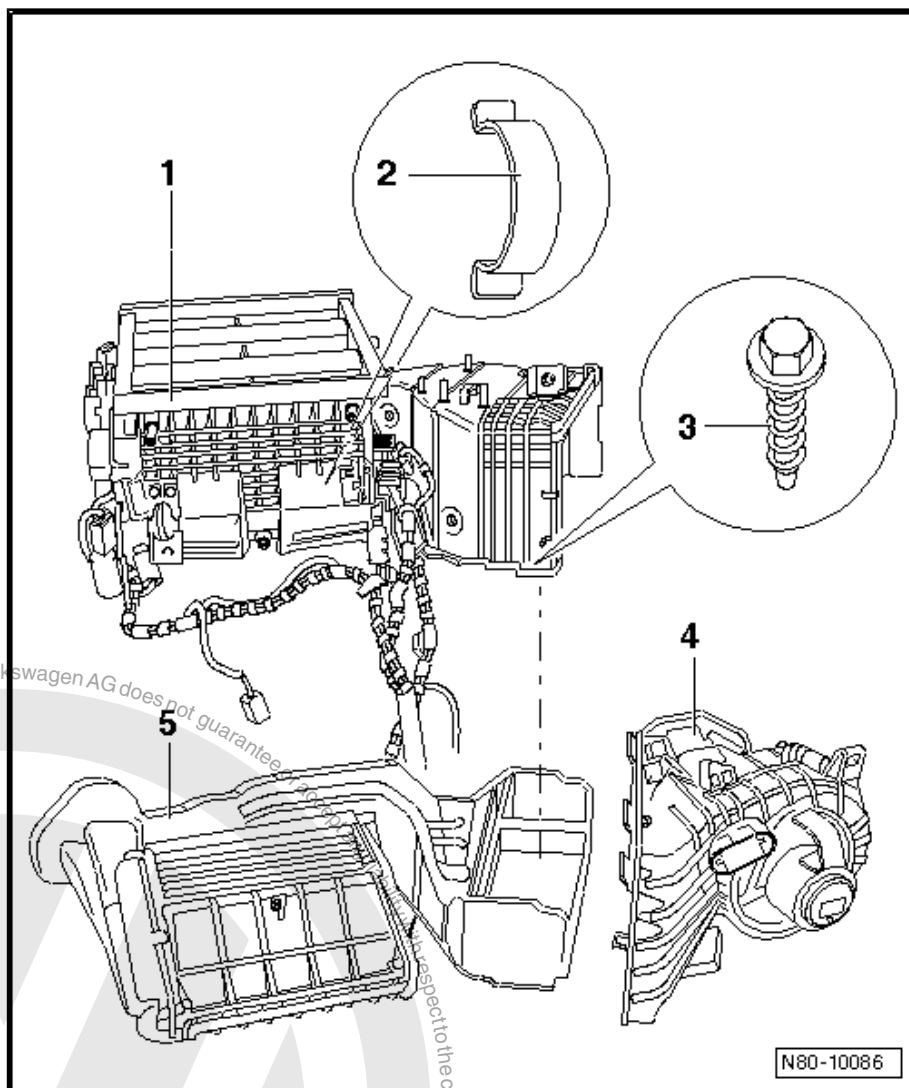
2 - Retaining clip

- ☐ Qty. 3

3 - Securing bolts

4 - Blower housing

5 - Lower part of distribution box





2 Control motors/actuators

⇒ **"2.1 Removing and installing air recirculation flap control motor V113", page 18**

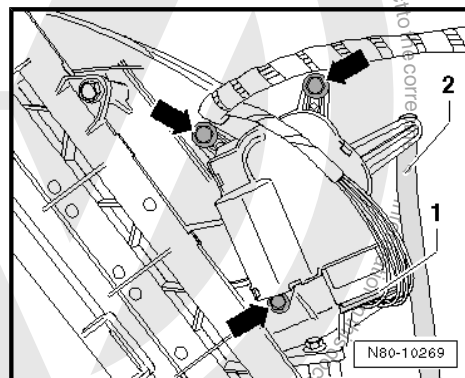
2.1 Removing and installing air recirculation flap control motor - V113-

Removing

- Separate connector -1-.
- Unclip actuator -2-.
- Remove bolt -arrows-.

Installing

Install in reverse order.





3 Air duct

⇒ [“3.1 Removing and installing fresh air vent”, page 19](#)

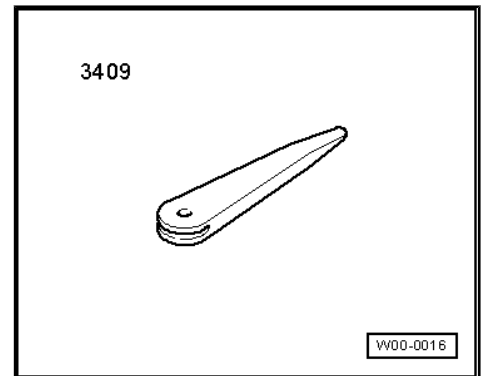
⇒ [“3.2 Removing footwell vent”, page 19](#)

⇒ [“3.3 Checking passenger compartment ventilation”, page 20](#)

3.1 Removing and installing fresh air vent

Special tools and workshop equipment required

- ◆ Removal wedge - 3409-

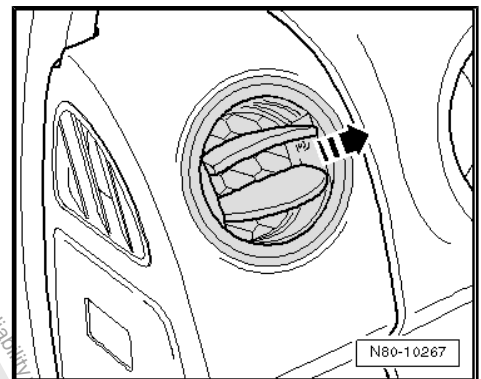


Removing

- Use removal wedge - 3409- to pry vent out of dash panel -arrow-.

Installing

Install in reverse order.



3.2 Removing footwell vent

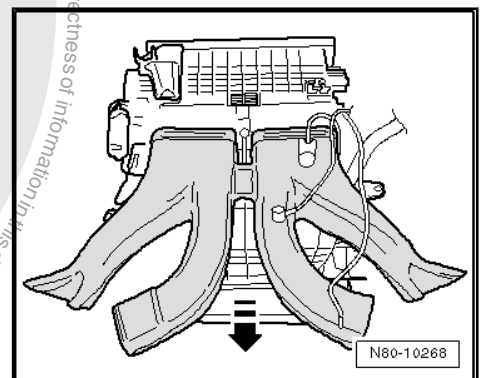
Removing

Remove middle footwell trim ⇒ General body repairs, interior;
Rep. gr. 70 ; Removing and installing middle footwell trim .

- Pull footwell vent off heater unit -in direction of arrow-.

Installing

Install in reverse order.



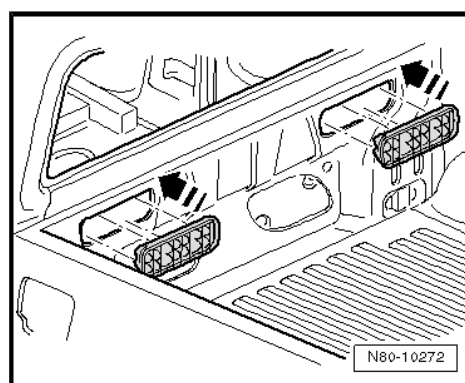


3.3 Checking passenger compartment ventilation



Note

- ◆ *The stale air escapes via ventilation openings in the trim behind the rear seat bench.*
- ◆ *If the ventilation is to function properly, the exhaust openings must not be covered.*
- ◆ *Ventilation frame is located in rear window frame.*
- ◆ *Remove loadbed in order to remove ⇒ Rep. gr. 55*
- The sealing lips in the ventilation frame must be free to move and close by themselves.
- Note installation position.





4 Operating and display unit

⇒ [“4.1 Removing and installing operating and display unit for heater”, page 21](#)

⇒ [“4.2 Cables on operating and display unit”, page 22](#)

4.1 Removing and installing operating and display unit for heater

Removing

- Remove lower centre dash panel trim panels ⇒ Rep. gr. 68 .
- Remove bolts -2- and remove controls -1- from dash panel.
- Separate connectors.
- Release cables on controls.

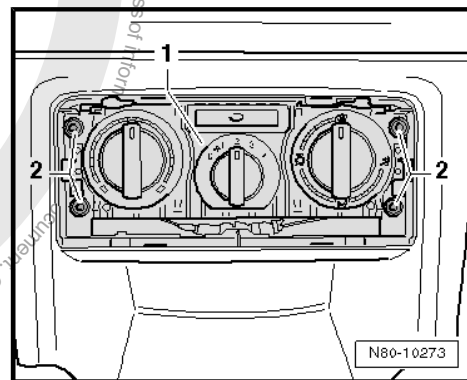
Installing

Installation is carried out in the reverse order. When installing, note the following:

- Securing cables on operating and display unit ⇒ [page 22](#) .

Tightening torques

Component	Specified torque
Bolts -2- to control and display unit	1.5 Nm





4.2 Cables on operating and display unit



Note

- ◆ Cables are colour-coded.
- ◆ When rotary knobs are turned, all flaps must audibly contact stop.

1 - Operating and display unit

- Removing and installing
⇒ [page 21](#).

2 - Temperature flap cable

- Cable is colour coded red.



Note

Temperature flap cable (red) -2- must be fitted first, then cable for footwell flap (yellow) -3- and then cable for defroster flap (green) -4-.

- Clip in, in direction of arrow.

3 - Footwell flap cable

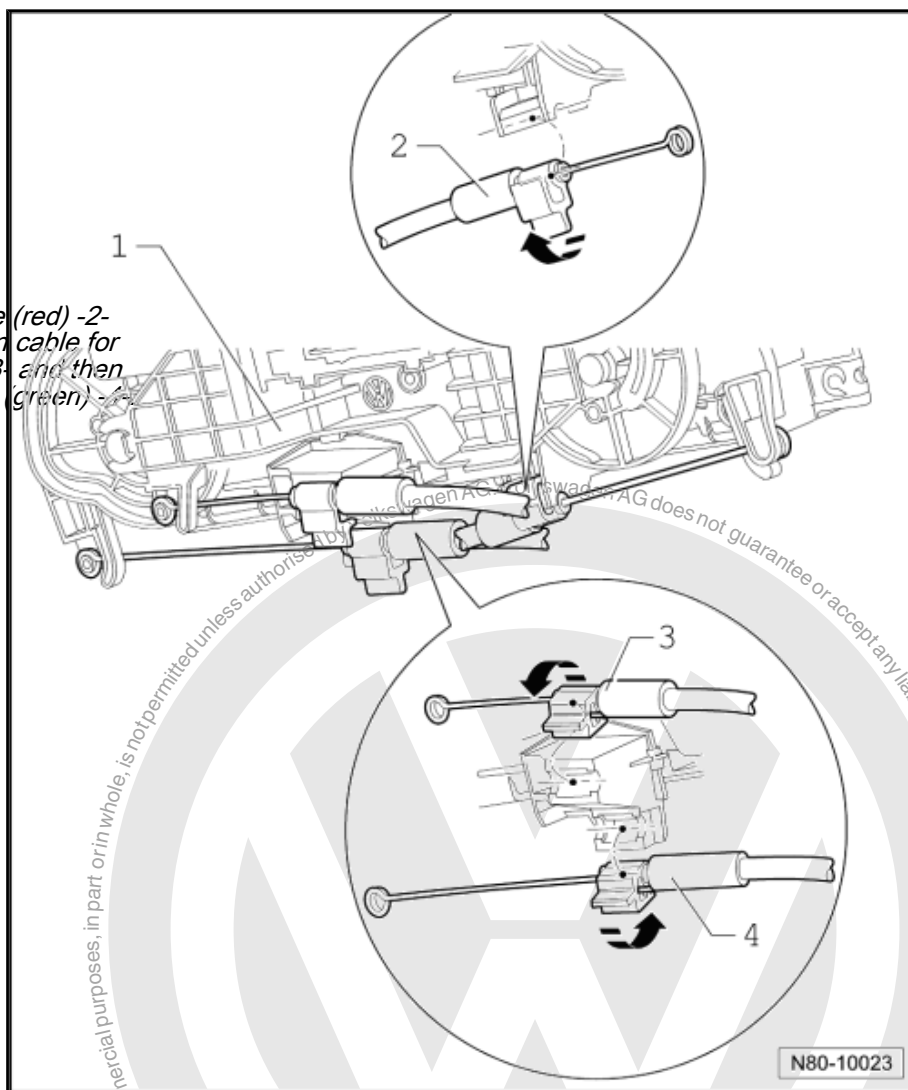
- Cable is colour coded yellow.

- Clip in, in direction of arrow.

4 - Defroster flap cable

- Cable is colour coded green.

- Clip in, in direction of arrow.





87 – Air conditioning system

1 Fittings overview - air conditioning system

⇒ [“1.1 Fittings overview - components not located in passenger compartment”, page 23](#)

⇒ [“1.2 Fittings overview - components located in front section of passenger compartment”, page 25](#)

1.1 Fittings overview - components not located in passenger compartment

1 - Evacuating and charging valve, high-pressure side

- ☐ Removing and installing
⇒ [page 36](#).

2 - Bolt

- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)
- ☐ 10 Nm ±1.8 Nm

3 - Seal

- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)
- ☐ Renew after removing

4 - Expansion valve

- ☐ Removing and installing
⇒ [page 31](#).

5 - Refrigerant line

- ☐ Expansion valve refrigerant line ⇒ Air conditioner compressor
- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)

6 - Heater and air conditioning unit

- ☐ Removing and installing
⇒ [page 59](#).
- ☐ Dismantling and assembling
⇒ [page 58](#).

7 - Refrigerant line

- ☐ Air conditioner compressor refrigerant line ⇒ Condenser
- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)

8 - Air conditioner compressor

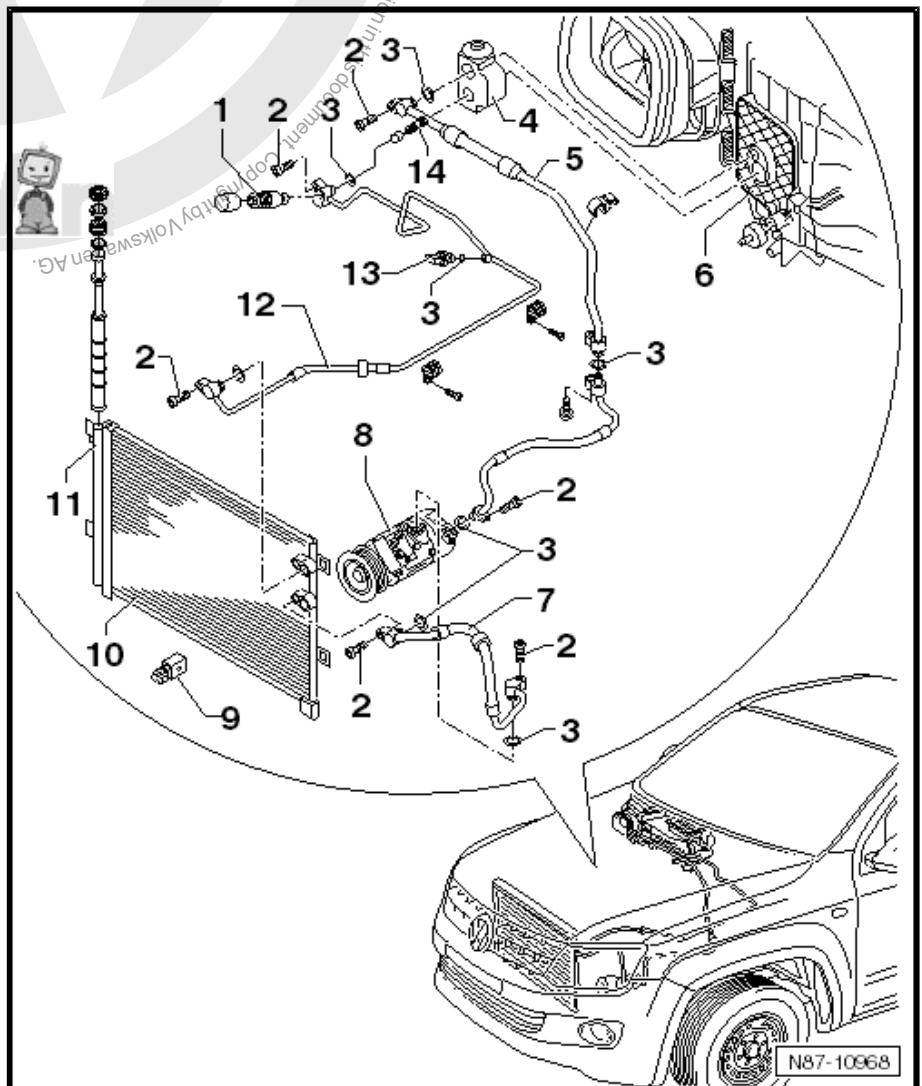
- ☐ Removing and installing ⇒ [page 42](#).
- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)

9 - Ambient temperature sensor - G17-

- ☐ Removing and installing ⇒ [page 72](#).

10 - Condenser with receiver

- ☐ Removing and installing condenser ⇒ [page 32](#)





11 - Receiver with dryer element



Note

- ◆ *Under certain conditions, it is no longer necessary to renew the dryer cartridge each time the refrigerant circuit is opened.
Please see ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Renewing components .*
- ◆ *Depending on engine type, receiver with dryer cartridge may be fitted on left or right of condenser.*

- ☐ Removing and installing dryer element ⇒ [page 34](#) .

12 - Refrigerant line

- ☐ Condenser refrigerant line ⇒ expansion valve.
- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)

13 - High-pressure sender - G65-

- ☐ Removing and installing ⇒ [page 36](#) .

14 - Evacuating and charging valve, low-pressure side

- ☐ Refrigerant line with integrated evacuating and charging valve, low-pressure side
- ☐ Removing and installing ⇒ [page 39](#) .



1.2 Fittings overview - components located in front section of passenger compartment

⇒ "1.2.1 Fittings overview - components located in front section of passenger compartment, manually regulated air conditioning system", page 25

⇒ "1.2.2 Fitting location overview - components inside of front passenger compartment, Climatronic", page 27

⇒ "1.2.3 Fitting locations of control motors on Climatronic heater and air conditioning unit", page 29

1.2.1 Fittings overview - components located in front section of passenger compartment, manually regulated air conditioning system

1 - Dash panel

- ☐ Removing and installing
⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .

2 - Centre fresh air vent

- ☐ Removing and installing
⇒ [page 19](#) .

3 - Air intake connecting pipe

- ☐ Air intake connecting pipe for fresh air.
- ☐ Located in front of plenum chamber.

4 - Outer fresh air vent

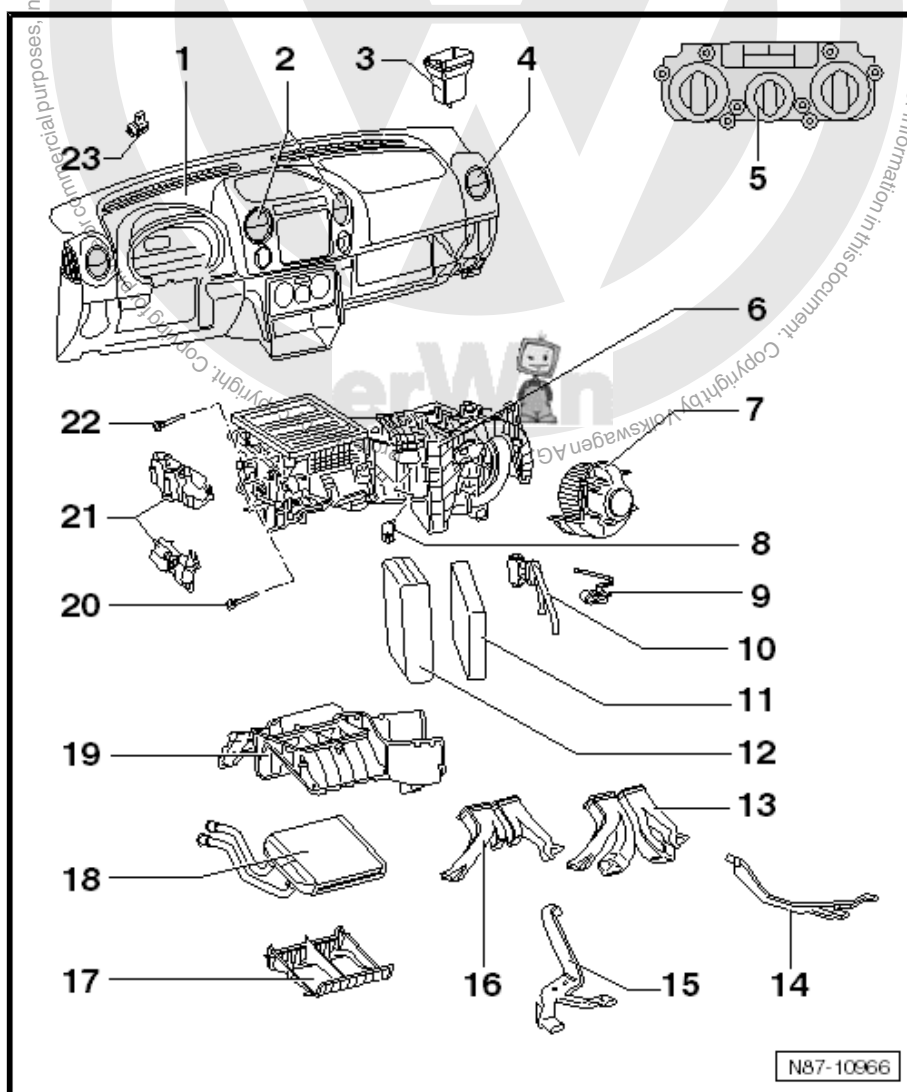
- ☐ Removing and installing
⇒ [page 19](#) .

5 - Operating and display unit for heater and air conditioning system

- ☐ With fresh air and air recirculation flap switch - E159- .
- ☐ With heated rear window button - E230- .
- ☐ With fresh air blower switch - E9- .
- ☐ For vehicles with seat heating, also with heated driver seat regulator - E94- and heated front passenger seat regulator - E95- .
- ☐ With air conditioning system control unit - J301- .
- ☐ Removing and installing ⇒ [page 68](#) .

6 - Heater and air conditioning unit

- ☐ Removing and installing ⇒ [page 59](#) .
- ☐ Dismantling and assembling ⇒ [page 58](#) .





7 - Fresh air blower - V2-

- ☐ Removing and installing ⇒ [page 8](#) .

8 - Evaporator temperature sensor - G308-

- ☐ Removing and installing ⇒ [page 62](#) .

9 - Air recirculation flap control motor - V113-

- ☐ Removing and installing ⇒ [page 18](#)

10 - Fresh air blower series resistor with overheating fuse - N24-

- ☐ Removing and installing ⇒ [page 9](#) .

11 - Dust and pollen filter

- ☐ Removing and installing ⇒ [page 9](#) .

12 - Evaporator

- ☐ Removing and installing ⇒ [page 57](#) .

13 - Footwell vent air duct

- ☐ With outlet for rear air duct.
- ☐ Removing and installing ⇒ [page 19](#) .

14 - Right passenger compartment air duct

- ☐ Connected to footwell air vent duct.
- ☐ Only for vehicles with double cab.

15 - Left passenger compartment air duct

- ☐ Connected to footwell air vent duct.
- ☐ Only for vehicles with double cab.

16 - Footwell vent air duct

- ☐ With no outlet for rear air duct.
- ☐ Removing and installing ⇒ [page 19](#) .

17 - Heat exchanger cover

18 - Heat exchanger

- ☐ Removing and installing ⇒ [page 11](#) .

19 - Air distribution box

- ☐ Dismantling and assembling heater and air conditioning unit ⇒ [page 58](#) .

20 - Footwell vent temperature sender - G192-

- ☐ Removing and installing ⇒ [page 64](#) .

21 - Control motors

- ☐ Fitting location of control motors ⇒ [page 29](#) .

22 - Front vent temperature sender - G152-

- ☐ Removing and installing ⇒ [page 64](#) .

23 - Air quality sensor - G238-

- ☐ Working principle of sensor ⇒ [page 73](#) .
- ☐ Removing and installing ⇒ [page 74](#) .



1.2.2 Fitting location overview - components inside of front passenger compartment, Climatronic



Note

- ◆ The vehicle has two-zone automatic air conditioning.
- ◆ The air flow and the temperature can be set individually for the driver, the front passenger and the rear passengers within a specific temperature range.
- ◆ Pressing the **AUTO** button will cancel all individual settings which deviate from automatic operation.
- ◆ In **ECON** operation, only the air conditioner compressor is switched to almost zero delivery. The heating and ventilation operations continue to be controlled electronically.
- ◆ Modifications made to automatic operation before the engine is switched off will be saved.
- ◆ Deviations from automatic operation ⇒ appropriate operating instructions.
- ◆ If the system is malfunctioning, first read the event memory using ⇒ Vehicle diagnostic tester guided fault finding.

1 - Dash panel

- ☐ Removing and installing
General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel.

2 - Centre fresh air vent

- ☐ Removing and installing
⇒ [page 19](#).

3 - Air intake connecting pipe

- ☐ Air intake connecting pipe for fresh air.
- ☐ Located in front of plenum chamber.

4 - Outer fresh air vent

- ☐ Removing and installing
⇒ [page 19](#).

5 - Climatronic operating and display unit - E87- with Climatronic control unit - J255-

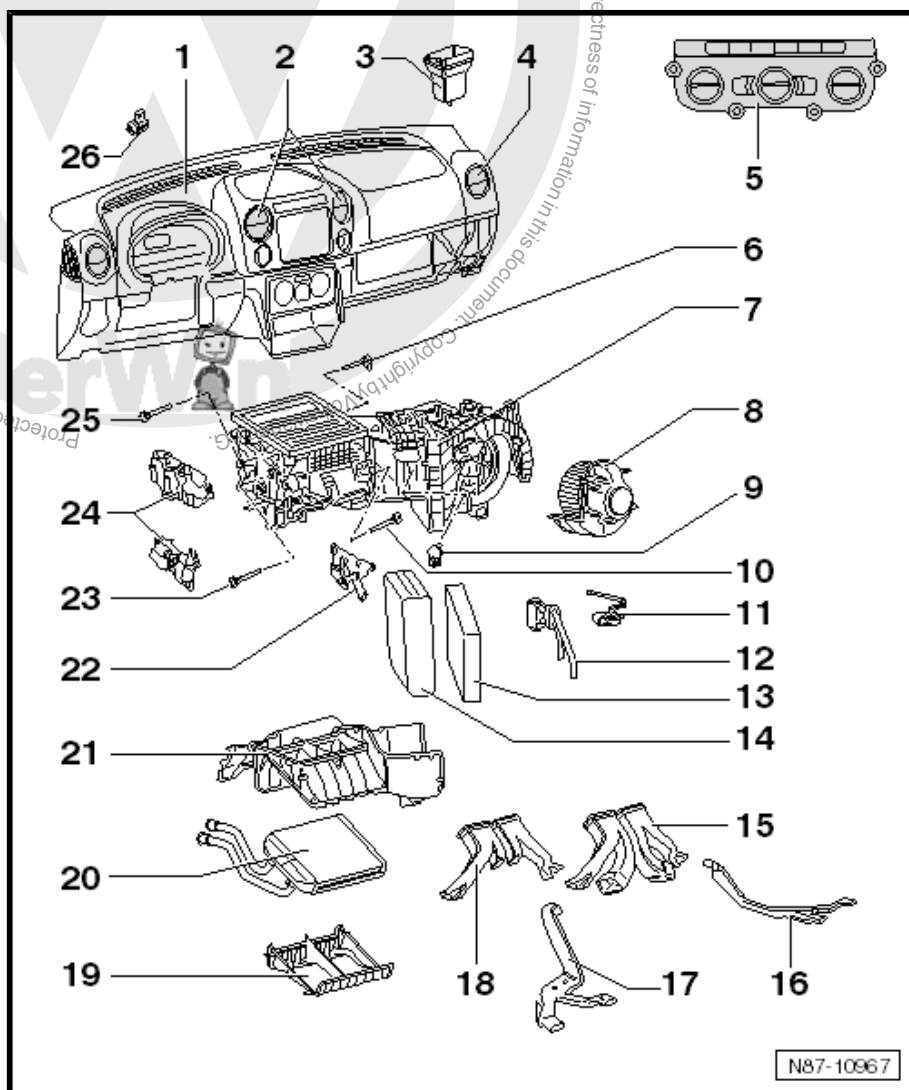
- ☐ Removing and installing
⇒ [page 71](#).
- ☐ The appearance of the operating and display unit for Climatronic air conditioning system - E87- may differ depending on equipment installed.

6 - Right vent temperature sender - G151-

- ☐ Removing and installing
⇒ [page 63](#).

7 - Heater and air conditioning unit

- ☐ Removing and installing ⇒ [page 59](#).
- ☐ Dismantling and assembling ⇒ [page 58](#).





8 - Fresh air blower - V2-

- ☐ Removing and installing ⇒ [page 8](#) .

9 - Evaporator temperature sensor - G308-

- ☐ Removing and installing ⇒ [page 62](#) .

10 - Right footwell vent temperature sender - G262-

- ☐ Right footwell vent temperature sender - G262- is installed in right footwell vent ducting.
- ☐ Removing and installing ⇒ [page 65](#) .

11 - Air recirculation flap control motor - V113-

- ☐ Removing and installing ⇒ [page 18](#)

12 - Sender for front Bitron blower regulation - G462-

- ☐ Removing and installing ⇒ [page 75](#) .

13 - Dust and pollen filter

- ☐ Removing and installing ⇒ [page 9](#) .

14 - Evaporator

- ☐ Removing and installing ⇒ [page 57](#) .

15 - Footwell vent air duct

- ☐ With outlet for rear air duct.
- ☐ Removing and installing ⇒ [page 19](#) .

16 - Right passenger compartment air duct

- ☐ Connected to footwell air vent duct.
- ☐ Only for vehicles with double cab.

17 - Left passenger compartment air duct

- ☐ Connected to footwell air vent duct.
- ☐ Only for vehicles with double cab.

18 - Footwell vent air duct

- ☐ With no outlet for rear air duct.
- ☐ Removing and installing ⇒ [page 19](#) .

19 - Heat exchanger cover

20 - Heat exchanger

- ☐ Removing and installing ⇒ [page 11](#) .

21 - Air distribution box

- ☐ Dismantling and assembling heater and air conditioning unit ⇒ [page 58](#) .

22 - Right temperature flap control motor - V159-

- ☐ Removing and installing ⇒ [page 51](#) .

23 - Left footwell vent temperature sender - G261-

- ☐ Left footwell vent temperature sender - G261- is installed in left footwell vent.
- ☐ Removing and installing ⇒ [page 64](#) .

24 - Control motors

- ☐ Fitting location of control motors ⇒ [page 20](#)

25 - Left vent temperature sender - G150-

- ☐ Removing and installing ⇒ [page 63](#) .

26 - Air quality sensor - G238-

- ☐ Working principle of sensor ⇒ [page 73](#) .
- ☐ Removing and installing ⇒ [page 74](#) .



1.2.3 Fitting locations of control motors on Climatronic heater and air conditioning unit



Note

Checking control motors using ⇒ Vehicle diagnostic tester guided fault finding.

1 - Defroster flap control motor - V107-

- ☐ With potentiometer for front cold air flap control motor - G315- .
- ☐ Removing and installing ⇒ [page 48](#) .

2 - Air distribution flap control motor - V428-

- ☐ With potentiometer for front air distribution control motor - G470- potentiometer for side vent control motor - G469-
- ☐ Removing and installing ⇒ [page 49](#) .

3 - Retaining plate with defroster flap control motor - V107- and air distribution flap control motor - V428-

- ☐ Removing and installing ⇒ [page 48](#) .

4 - Retaining plate with right temperature flap control motor - V159-

- ☐ On right side of air distribution housing.

5 - Right temperature flap control motor - V159-

- ☐ On right side of air distribution housing.
- ☐ With potentiometer for right temperature flap control motor - G221-
- ☐ Removing and installing ⇒ [page 51](#)

6 - Footwell flap control motor - V261-

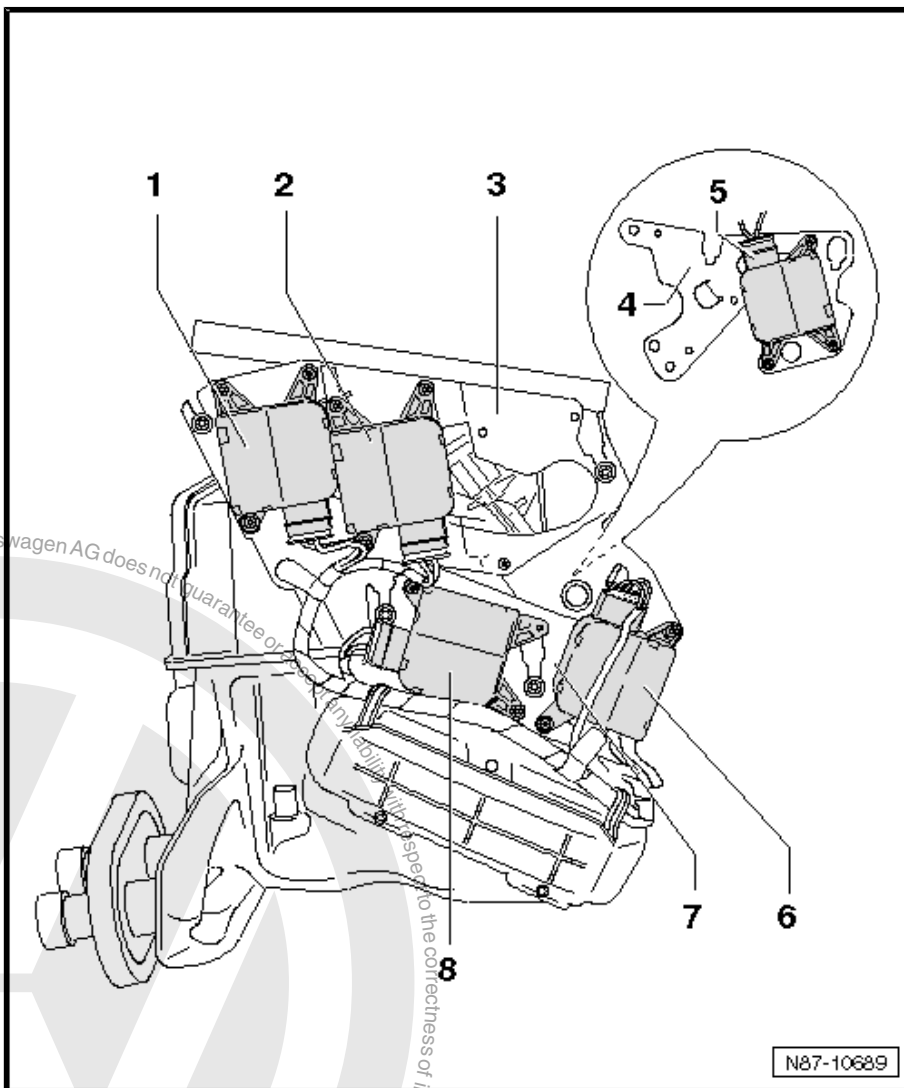
- ☐ With potentiometer for footwell vent control motor - G468- .
- ☐ Removing and installing ⇒ [page 50](#) .

7 - Retaining plate with footwell flap control motor - V261- and left temperature flap control motor - V158-

- ☐ Removing and installing ⇒ [page 50](#)

8 - Left temperature flap control motor - V158-

- ☐ With potentiometer for left temperature flap control motor - G220- .
- ☐ Removing and installing ⇒ [page 51](#)



N87-10689



2 Refrigerant circuit

⇒ "2.1 Removing and installing high-pressure sender G65", page 30

⇒ "2.2 Removing and installing refrigerant lines on expansion valve", page 30

⇒ "2.3 Removing and installing expansion valve", page 31

⇒ "2.4 Removing and installing condenser", page 32

⇒ "2.5 Removing and installing dryer element", page 34

⇒ "2.6 Removing and installing evacuating and charging valves on low and high-pressure side", page 36

2.1 Removing and installing high-pressure sender - G65-

Removing



Note

- ♦ *The high-pressure sender can be removed without evacuating the refrigerant from the refrigerant circuit.*
- ♦ *Counterhold threaded connection with suitable tool when loosening and tightening.*

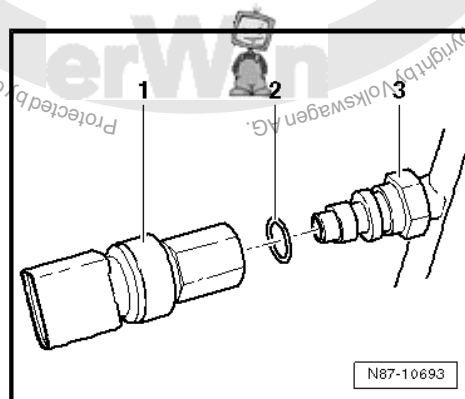
- Disconnect connector from high-pressure sender.
- Unscrew high-pressure sender -1- from refrigerant line connection.

Installing

- Install high-pressure sender - G65- in reverse order of removal, noting the following:
- ♦ Renew O-ring -2-, ⇒ Parts catalogue .

Tightening torques

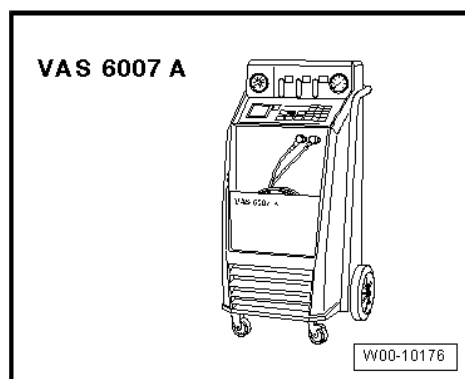
Component	Specified torque
High pressure sender -1- on refrigerant line connection	8 ± 1 Nm



2.2 Removing and installing refrigerant lines on expansion valve

Special tools and workshop equipment required

- ♦ Air conditioner service station - VAS 6007A-





Note

- ◆ The refrigerant must be extracted beforehand, e.g. with air conditioner service station - VAS 6007A-.
- ◆ The previously used air conditioner service stations can still be used → Volkswagen Workshop Equipment catalogue.
- ◆ To prevent the intrusion of moisture, all components of the refrigerant circuit which have been opened must be sealed with suitable plugs.



WARNING

Danger from escaping pressurised refrigerant!

Freezing of skin and other body parts.

- Extract refrigerant and then immediately open refrigerant circuit.
- If the refrigerant was extracted more than 10 minutes before the opening of refrigerant circuit, the refrigerant must be extracted again. The pressure in the circuit will increase due to subsequent evaporation.

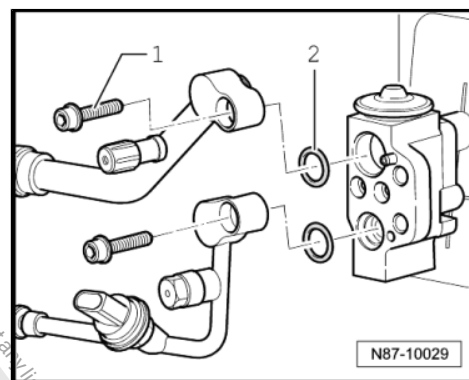
Removing

- Remove bolts -1- for refrigerant lines.
- Remove refrigerant lines from expansion valve.

Installing

Installation is carried out in the reverse order. When installing, note the following:

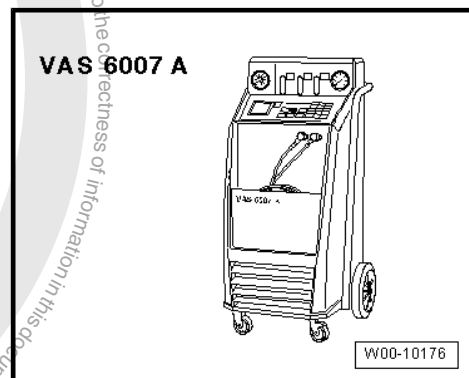
- Renew O-rings -2- → Parts catalogue!



2.3 Removing and installing expansion valve

Special tools and workshop equipment required

- ◆ Air conditioner service station - VAS 6007A-





Note

- ♦ The refrigerant must be extracted beforehand, e.g. with air conditioner service station - VAS 6007A- .
- ♦ The previously used air conditioner service stations can still be used ⇒ Volkswagen Workshop Equipment catalogue.
- ♦ To prevent the intrusion of moisture, all components of the refrigerant circuit which have been opened must be sealed with suitable plugs.



WARNING

Danger from escaping pressurised refrigerant!

Freezing of skin and other body parts.

- Extract refrigerant and then immediately open refrigerant circuit.
- If the refrigerant was extracted more than 10 minutes before the opening of refrigerant circuit, the refrigerant must be extracted again. The pressure in the circuit will increase due to subsequent evaporation.

Removing

- Removing refrigerant lines on expansion valve → [page 30](#) .
- Unscrew bolts -1- from expansion valve -2-.

- 1 - Bolts
- 2 - Expansion valve
- 3 - O-ring
- 4 - O-ring

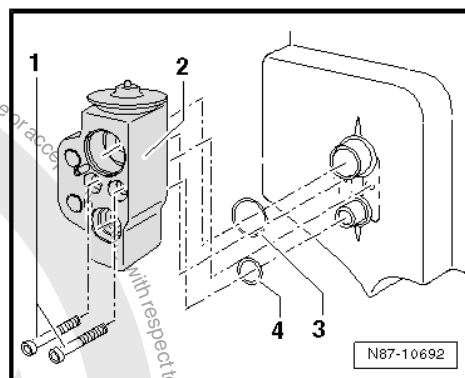
Installing

Installation is carried out in the reverse order. When installing, note the following:

- Renew O-rings -3- and -4- ⇒ Parts catalogue .

Tightening torques

Component	Specified torque
Bolts -1- on expansion valve	5 Nm

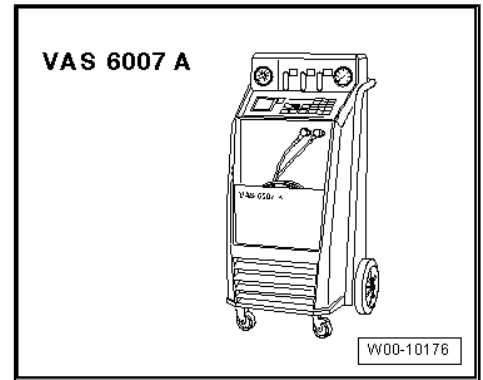


2.4 Removing and installing condenser

Special tools and workshop equipment required



◆ Air conditioner service station - VAS 6007A-



Note

- ◆ *The refrigerant must be extracted beforehand, e.g. with air conditioner service station - VAS 6007A- .*
- ◆ *The previously used air conditioner service stations can still be used ⇒ Volkswagen Workshop Equipment catalogue.*
- ◆ *To prevent the intrusion of moisture, all components of the refrigerant circuit which have been opened must be sealed with suitable plugs.*

Removing

- Remove front bumper ⇒ Rep. gr. 63 .
- Remove lock carrier ⇒ General body repairs, exterior; Rep. gr. 50 ; Removing and installing lock carrier .





1 - Bolts for refrigerant line

- 12 Nm

2 - Mounting

- For condenser.

3 - Condenser with dryer element

- Removing and installing dryer element
⇒ [page 34](#).
- Removing condenser:



WARNING

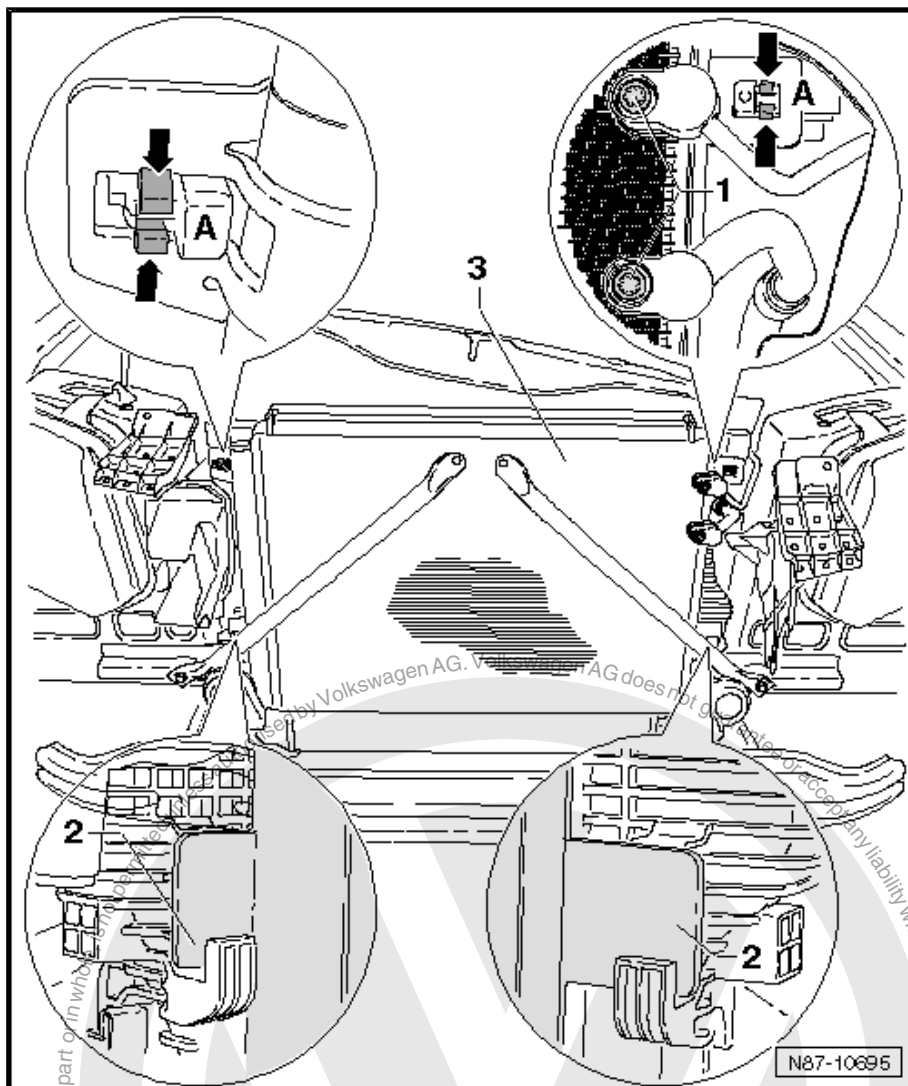
Danger from refrigerant escaping under pressure!

Freezing of skin and other body parts.

Evacuate the refrigerant and then open the refrigerant circuit immediately.

If more than 10 minutes have elapsed since evacuation and the coolant circuit has not been opened, evacuate the refrigerant again. Pressure builds up in the coolant circuit as a result of secondary evaporation.

- Loosen bolts -1- on refrigerant lines.
- Push fasteners -A- together in direction of arrow.
- Remove condenser -3- from retainers -2-.



Installing

Installation is carried out in the reverse order. When installing, note the following:

- Renew O-rings ⇒ Parts catalogue.

2.5 Removing and installing dryer element



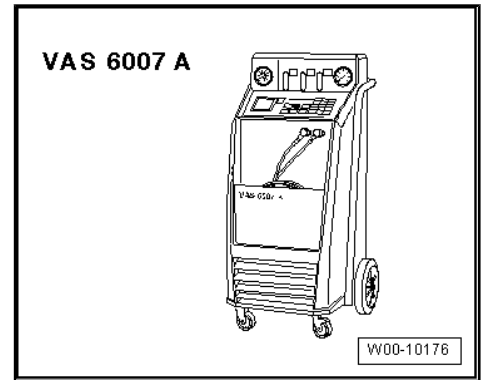
Note

Under certain conditions, it is not necessary to renew the dryer cartridge every time that the refrigerant circuit is opened. Refer to ELSA under ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00; Renewing components.

Special tools and workshop equipment required



◆ Air conditioner service station - VAS 6007A-



Removing

- First evacuate refrigerant circuit using e.g. air conditioner service station - VAS 6007A- . Then - and only then - open refrigerant circuit.
- Comply with notes ⇒ [page 23](#) .
- Remove front bumper ⇒ Rep. gr. 63 .
- Remove lock carrier ⇒ General body repairs, exterior; Rep. gr. 50 ; Removing and installing lock carrier .



WARNING

Danger from refrigerant escaping under pressure!

Freezing of skin and other body parts.

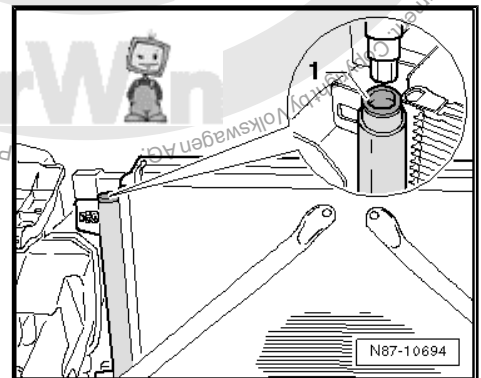
- ***Evacuate the refrigerant and then open the refrigerant circuit immediately.***
- ***If more than 10 minutes have elapsed since evacuation and the coolant circuit has not been opened, evacuate the refrigerant again. Pressure builds up in the coolant circuit as a result of secondary evaporation.***

- Remove cap -1-.
- Pull strainer with dryer element out of condenser using long nose pliers.

Installing

Installation is carried out in the reverse order. When installing, note the following:

- Renew dryer element.
- Renew O-rings ⇒ Parts catalogue .





2.6 Removing and installing evacuating and charging valves on low and high-pressure side

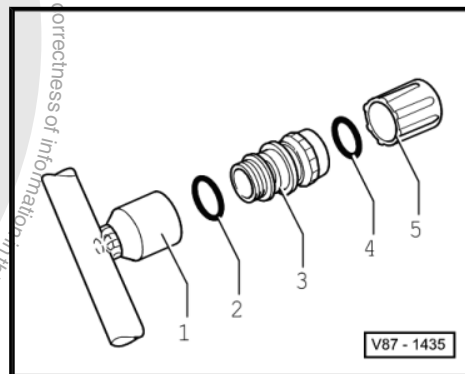
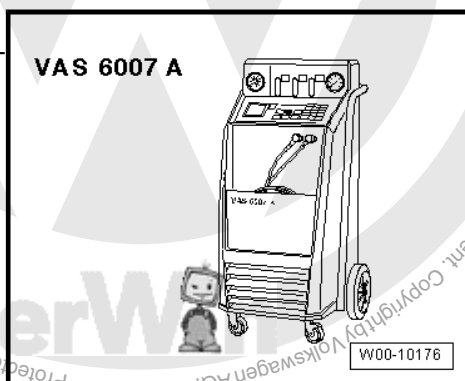
⇒ **“2.6.1 Removing and installing evacuating and charging valves, high-pressure side”, page 36**

⇒ **“2.6.2 Removing and installing evacuating and charging valves, low-pressure side”, page 39**

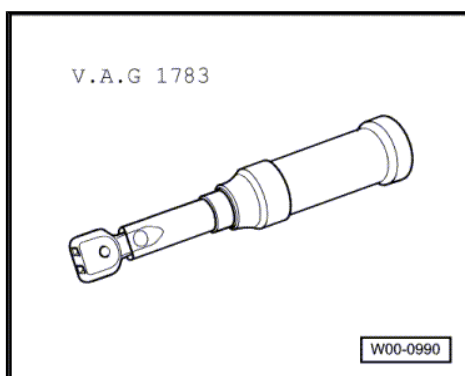
2.6.1 Removing and installing evacuating and charging valves, high-pressure side

Special tools and workshop equipment required

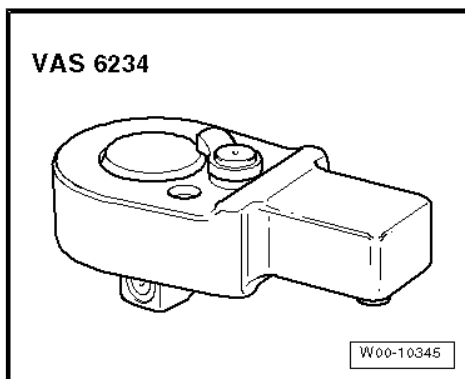
- ◆ Extract refrigerant, e.g. with air conditioner service station - VAS 6007A- (or successor model).



- ◆ Torque wrench - V.A.G 1783- (2...10 Nm)

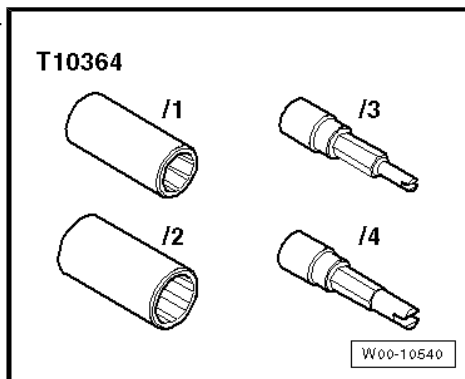


- ◆ Ratchet adapter 1/4" - VAS 6234-





- ◆ Adapter set for evacuating and charging valve



Removing:



WARNING

Danger from escaping pressurised refrigerant!

Freezing of skin and other body parts.

- ***Extract refrigerant and then immediately open refrigerant circuit.***
- ***If the refrigerant was extracted more than 10 minutes before the opening of refrigerant circuit, the refrigerant must be extracted again. The pressure in the circuit will increase due to subsequent evaporation.***



Note

- ◆ ***The refrigerant must be extracted beforehand, e.g. with air conditioner service station - VAS 6007A- (or successor model).***
- ◆ ***Releasing refrigerant into the environment is a punishable offence.***
- ◆ ***Comply with notes ⇒ page 23.***

1 - Connection with internal thread

2 - O-ring



3 - Evacuating and
charging valve

4 - O-ring

5 - Cap

Installing

Installation is carried out
in the reverse order.
When installing, note the
following:

- Renew O-rings ⇒
Parts catalogue .

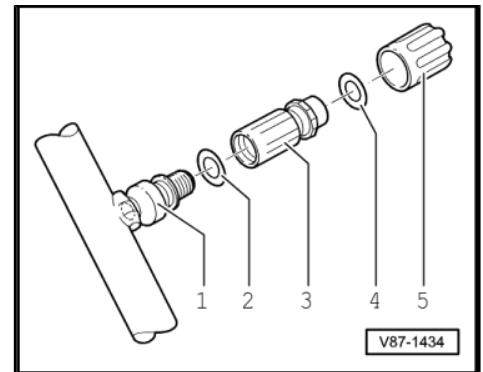
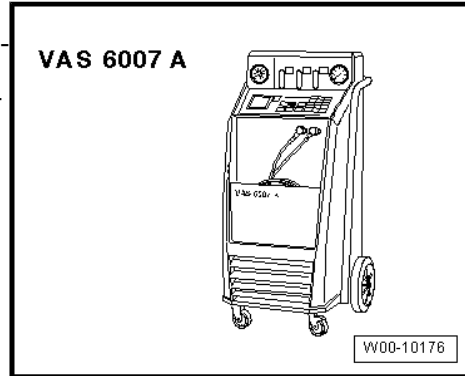




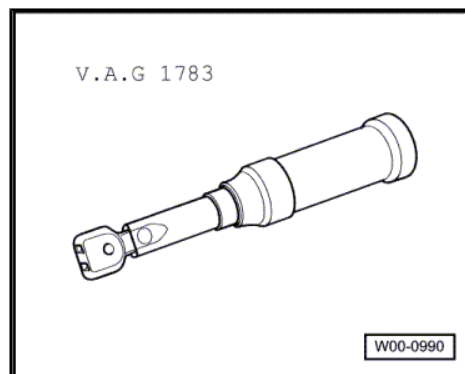
2.6.2 Removing and installing evacuating and charging valves, low-pressure side

Special tools and workshop equipment required

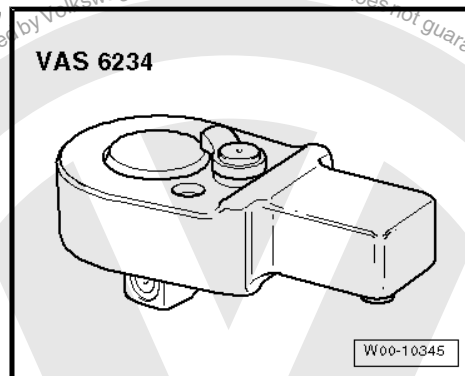
- ◆ Extract refrigerant, e.g. with air conditioner service station - VAS 6007A- (or successor model).



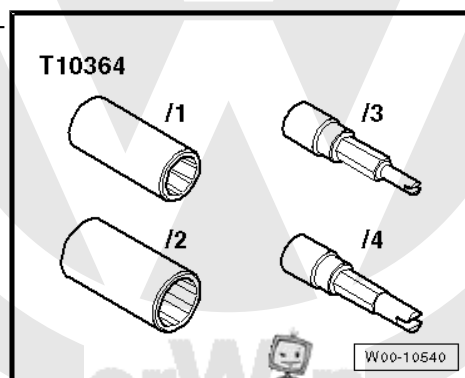
- ◆ Torque wrench - V.A.G 1783- (2...10 Nm)



- ◆ Ratchet adapter 1/4" - VAS 6234-



- ◆ Adapter set for evacuating and charging valve





Removing:



WARNING

Danger from escaping pressurised refrigerant!

Freezing of skin and other body parts.

- ***Extract refrigerant and then immediately open refrigerant circuit.***
- ***If the refrigerant was extracted more than 10 minutes before the opening of refrigerant circuit, the refrigerant must be extracted again. The pressure in the circuit will increase due to subsequent evaporation.***



Note

- ◆ ***The refrigerant must be extracted beforehand, e.g. with air conditioner service station - VAS 6007A- (or successor model).***
- ◆ ***Releasing refrigerant into the environment is a punishable offence.***
- ◆ ***Comply with notes
⇒ page 23.***

1 - Connection with external thread and groove for O-ring

2 - O-ring

3 - Evacuating and charging valve

4 - O-ring

5 - Cap

Installing

Installation is carried out in the reverse order.
When installing, note the following:





- Renew O-rings ⇒
Parts catalogue .





3 Air conditioner compressor

⇒ ["3.1 Removing and installing air conditioner compressor", page 42](#)

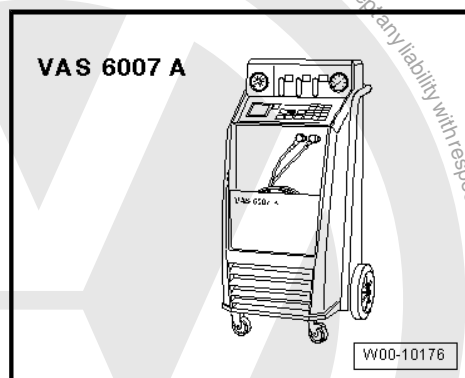
⇒ ["3.2 Notes on installing air conditioner compressor", page 44](#)

⇒ ["3.3 Checking high-pressure safety valve on air conditioner compressor", page 45](#)

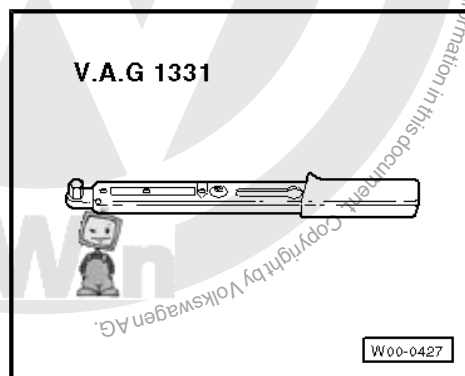
3.1 Removing and installing air conditioner compressor

Special tools and workshop equipment required

◆ Air conditioner service station - VAS 6007A-



◆ Torque wrench - V.A.G 1331-

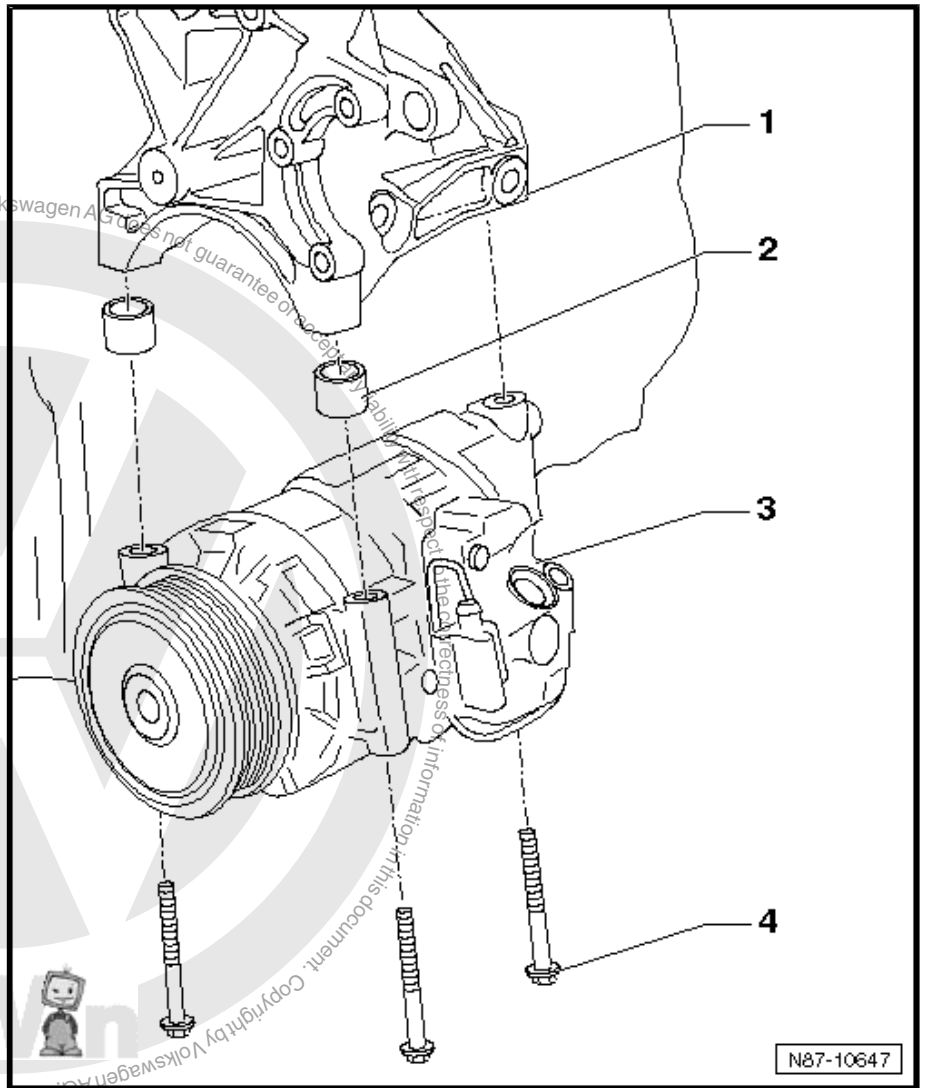


Removing



Note

- ◆ The refrigerant must be extracted beforehand, e.g. with air conditioner service station - VAS 6007A-.
- ◆ Comply with notes ⇒ [page 23](#).



- Switch off all electrical consumers.
- Switch off ignition.
- Remove ignition key.



WARNING

Danger from refrigerant escaping under pressure!
Freezing of skin and other body parts.

- Remove refrigerant line bolts and pull refrigerant lines out of air conditioner compressor.
- Remove bolts -4- and remove air conditioner compressor from bracket -1-.



Installing



Note

Make sure dowel sleeves -2- and elastic drive coupling fit properly between air conditioner compressor and power steering valve pump.

Tightening torques

Component	Specified torque
Bolts -4- for air conditioner compressor	25 Nm

3.2 Notes on installing air conditioner compressor

The following must be observed:

- Only start engine after refrigerant circuit has been assembled.
- After installing a new air conditioner compressor or filling with fresh refrigerant oil, turn air conditioner compressor pulley 10 revolutions by hand before starting engine. This will prevent damage to the air conditioner compressor.
- Only start engine when refrigerant circuits are charged.



Note

- ◆ *The air conditioner compressor is permanently driven by the poly V-belt pulley/elastic drive coupling. It is not fitted with a magnetic clutch.*
- ◆ *If an air conditioner compressor locks up, the overload protection for the compressor shaft is triggered. A seized air conditioner compressor cannot always be identified by visible deformations in the poly V-belt pulley and overload protection. Another indication is abraded rubber material around the poly V-belt pulley or overload protection.*
- ◆ *The air conditioner compressor has an internal oil circuit to ensure that the air conditioner compressor is not damaged when the refrigerant circuit is empty. This means that about 40 to 50 cm³ refrigerant oil remain in the air conditioner compressor.*
- ◆ *The engine may be started only when the refrigerant circuit is properly assembled. If, for example, the refrigerant lines are not connected to the air conditioner compressor and the engine is running, the compressor may heat up so much through internal warming that it will be destroyed.*
- ◆ *The air conditioner compressor regulating valve - N280- is not activated when the refrigerant circuit is empty. The air conditioner compressor idles with the engine.*
- ◆ *If it is necessary to start engine with an empty refrigerant circuit:*
- ◆ *The refrigerant circuit must be fully assembled.*
- ◆ *At least ¼ of the quantity of refrigerant oil specified for this refrigerant circuit must be in the air conditioner compressor.*
- ◆ *The engine speed must not exceed 2500 rpm.*
- ◆ *Run engine only as long as absolutely necessary.*



Note the following when starting engine for first time after filling refrigerant circuit:

- Switch on ignition.
- Select “ECON” function on Climatronic operating and display unit - E87- .
- Start engine.

As soon as the idling speed stabilizes.

- Open dash panel vents.
- Set temperature to “Lo” on Climatronic operating and display unit - E87- .
- Now switch to “Auto” mode and let the air conditioner run for at least 5 minutes with the engine at idling speed.

3.3 Checking high-pressure safety valve on air conditioner compressor



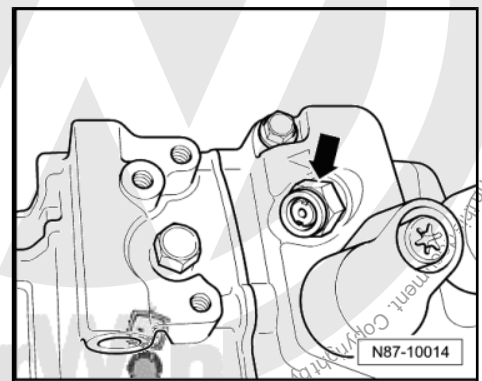
WARNING

Danger from refrigerant escaping under pressure!

Freezing of skin and other body parts.

- ***Evacuate the refrigerant and then open the refrigerant circuit immediately.***
- ***If more than 10 minutes have elapsed since evacuation and the coolant circuit has not been opened, evacuate the refrigerant again. Pressure builds up in the coolant circuit as a result of secondary evaporation.***

- ◆ Function: protects refrigerant circuit against excessive pressures.
- ◆ The high-pressure safety valve indicates whether the valve has been opened. An attached adhesive plate -arrow- is pushed out.







4 Control motors

⇒ "4.1 Fitting location overview - control motors on heater and air conditioning unit", page 47

⇒ "4.2 Removing retaining plate for defroster flap control motor V107 and air distribution flap control motor V428", page 48

⇒ "4.3 Removing and installing defroster flap control motor V107", page 48

⇒ "4.4 Removing and installing air distribution flap control motor V428", page 49

⇒ "4.5 Removing and installing retaining plate with footwell flap control motor V261 and temperature flap control motor V68", page 49

⇒ "4.6 Removing and installing footwell flap control motor V261", page 50

⇒ "4.7 Removing retaining plate with footwell flap control motor V261 and left temperature flap control motor V158", page 50

⇒ "4.8 Removing and installing left temperature flap control motor V158", page 51

⇒ "4.9 Removing and installing right temperature flap control motor V159", page 51

4.1 Fitting location overview - control motors on heater and air conditioning unit



Note

- ◆ Checking control motors using ⇒ Vehicle diagnostic tester guided fault finding
- ◆ After installing a new control motor, perform function "Basic settings" ⇒ page 2.
- ◆ Check motor/connecting element for fault "adaption limit exceeded". No play may exist between control motor shaft and connecting element.

1 - Defroster flap control motor - V107-

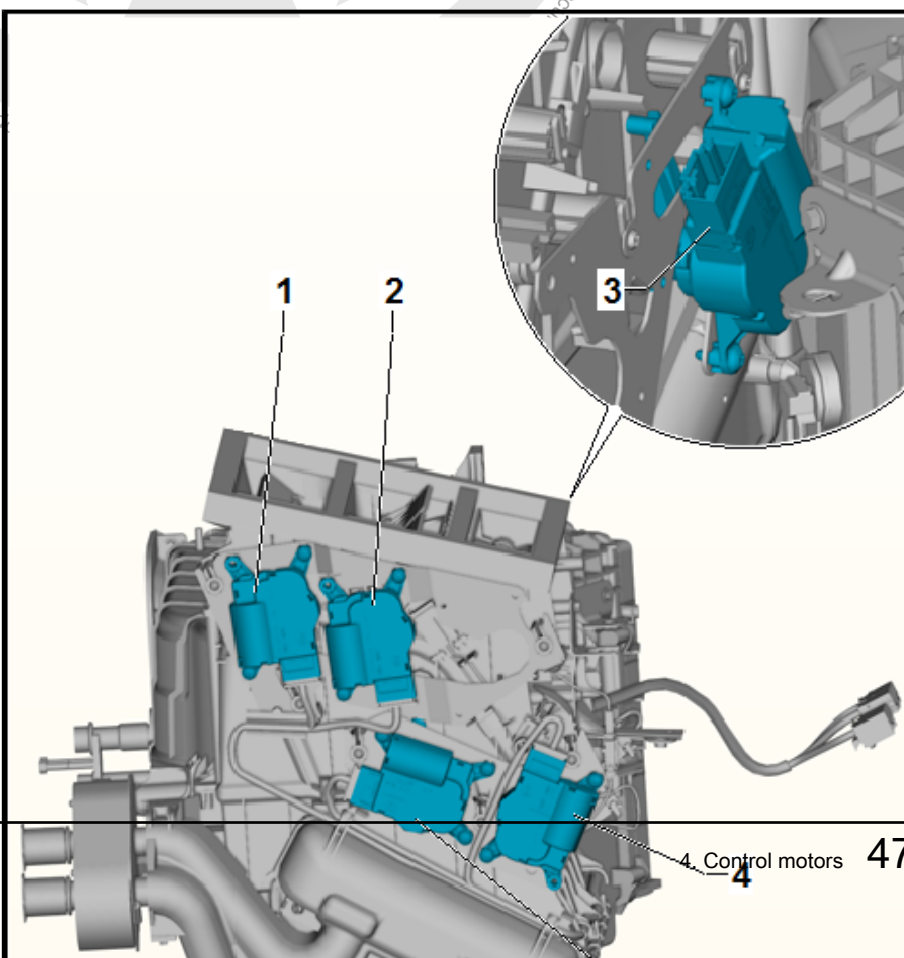
- ☐ With potentiometer for front cold air flap control motor - G315-.
- ☐ Removing and installing ⇒ "4.3 Removing and installing defroster flap control motor V107", page 48.

2 - Air distribution flap control motor - V428-

- ☐ With potentiometer for front air distribution control motor - G470-.
- ☐ Removing and installing ⇒ "4.4 Removing and installing air distribution flap control motor V428", page 49.

3 - Right temperature flap control motor - V159-

- ☐ On right side of air distribution housing.
- ☐ With potentiometer for





right temperature flap control motor - G221-

- ❑ Removing and installing
⇒ ["4.9 Removing and installing right temperature flap control motor V159", page 51](#) .

4 - Footwell flap control motor - V261-

- ❑ With potentiometer for footwell vent control motor - G468- .
- ❑ Removing and installing ⇒ ["4.6 Removing and installing footwell flap control motor V261", page 50](#) .

5 - Left temperature flap control motor - V158-

- ❑ With potentiometer for left temperature flap control motor - G220- .
- ❑ Removing and installing
⇒ ["4.8 Removing and installing left temperature flap control motor V158", page 51](#) .

4.2 Removing retaining plate for defroster flap control motor - V107- and air distribution flap control motor - V428-

Removing

- Remove dash panel ⇒ Rep. gr. 70 .
- Removing lower retaining plate for footwell flap control motor - V261- and temperature flap control motor - V68-
⇒ [page 49](#) .
- Remove bolts -3-.



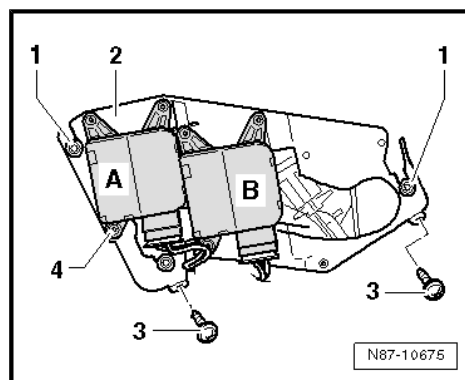
Note

To remove the retaining plate, the bolts -1- are not loosened or removed. They are used for guiding the retaining plate.

- Separate connectors.
- Pull out retaining plate with control motors downwards.

Installing

Install in reverse order.



4.3 Removing and installing defroster flap control motor - V107-

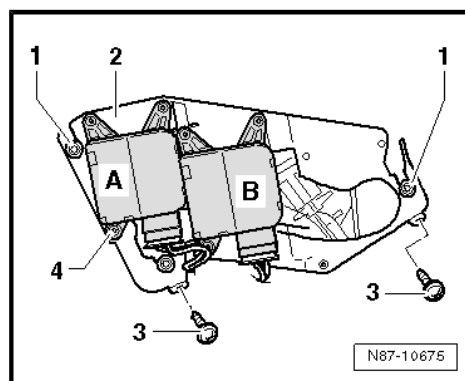
Removing

- Remove retaining plate -2- ⇒ [page 48](#) .
- Remove bolts -4- (Qty. 3) from defroster flap control motor - V107- -A-.
- Remove control motor from retaining plate -2-.

Installing

Install in reverse order. Note the following when doing this:

- Initiate basic setting using ⇒ Vehicle diagnostic tester
⇒ [page 2](#) .





4.4 Removing and installing air distribution flap control motor - V428-

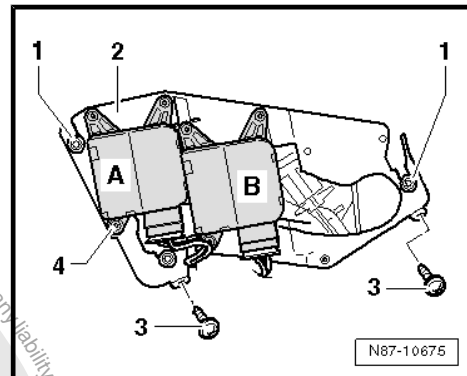
Removing

- Remove retaining plate -2- ➔ [page 48](#) .
- Remove bolts -4- (Qty. 3) from air distribution flap control motor - V428- -B-.
- Remove control motor from retaining plate -2-.

Installing

Install in reverse order. Note the following when doing this:

- **Initiate basic setting** using ➔ Vehicle diagnostic tester ➔ [page 2](#) .



4.5 Removing and installing retaining plate with footwell flap control motor - V261- and temperature flap control motor - V68-

Removing

- Remove dash panel ➔ Rep. gr. 70 .
- Remove bolts -3-.



Note

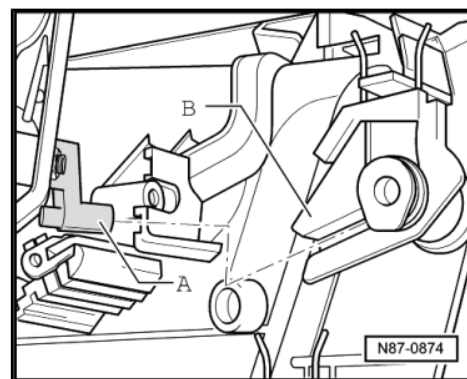
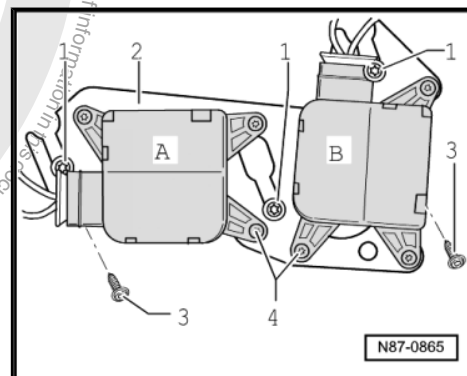
To remove the retaining plate, the bolts -1- are not loosened or removed. They are used for guiding the retaining plate.

- Separate connectors.
- Pull out retaining plate with control motors downwards.

Installing

Install in reverse order. Note the following when doing this:

- During installation, ensure that control motor drive -A- is pushed into mounting -B-.
- **Initiate basic setting** using ➔ Vehicle diagnostic tester ➔ [page 2](#) .





4.6 Removing and installing footwell flap control motor - V261-

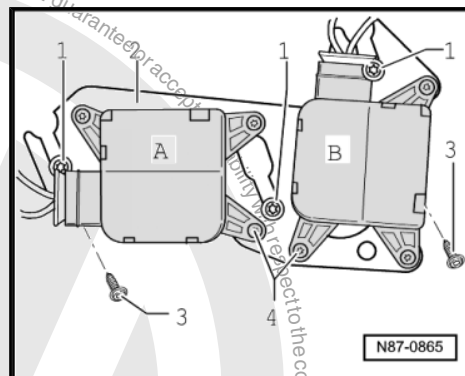
Removing

- Remove lower retaining plate -2- for footwell flap control motor - V261- and temperature flap control motor - V68-
⇒ [page 49](#) .
- Remove bolts -4- (Qty. 3) from footwell flap control motor - V261- -B-.
- Remove control motor from retaining plate -2-.

Installing

Install in reverse order. Note the following when doing this:

- Initiate basic setting using ⇒ Vehicle diagnostic tester
⇒ [page 2](#) .



4.7 Removing retaining plate with footwell flap control motor - V261- and left temperature flap control motor - V158-

Removing

- Initiate Service position of control motors using ⇒ Vehicle diagnostic tester ⇒ [page 2](#) .
- When “SF” appears on display of Climatronic operating unit, switch ignition off.



Note

- ◆ After removal, the control motors can be reinstalled only when set in the service position “SF”.
- ◆ Replacement parts are supplied set in the service position!

- Remove dash panel ⇒ Rep. gr. 70 .
- Remove bolts -3-.



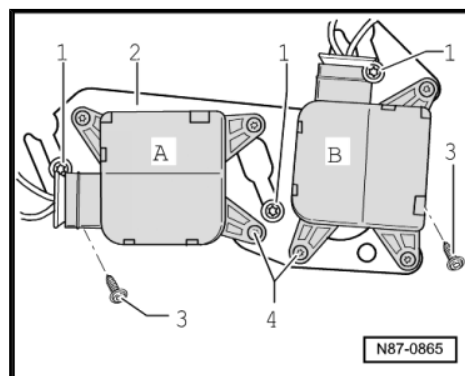
Note

To remove the retaining plate, the bolts -1- are not loosened or removed. They are used for guiding the retaining plate.

- Separate connectors.
- Pull out retaining plate with control motors downwards.

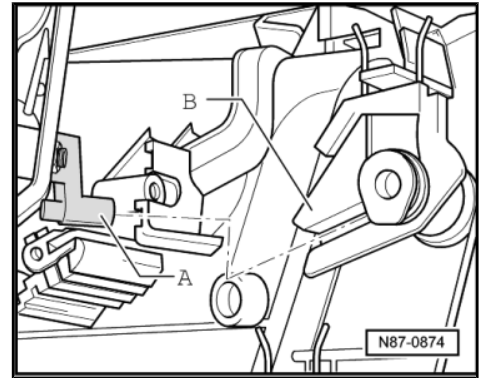
Installing

Install in reverse order. Note the following when doing this:





- During installation, ensure that control motor drive -A- is pushed into mounting -B-.
- **Initiate basic setting** using ⇒ Vehicle diagnostic tester ⇒ [page 2](#).



4.8 Removing and installing left temperature flap control motor - V158-

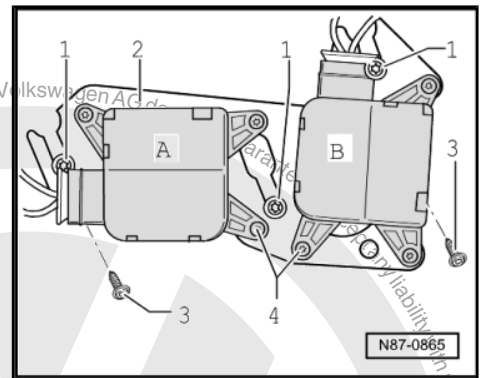
Removing

- Remove lower retaining plate -2- for footwell flap control motor - V261- and left temperature flap control motor - V158- ⇒ [page 50](#)
- Remove bolts -4- (Qty. 3) from left temperature flap control motor - V158- -A-.
- Remove control motor from retaining plate -2-.

Installing

Installation is carried out in the reverse order. When installing, note the following:

- **Initiate basic setting** using ⇒ Vehicle diagnostic tester ⇒ [page 2](#).



4.9 Removing and installing right temperature flap control motor - V159-

Removing

- Initiate **Service position of control motors** using ⇒ Vehicle diagnostic tester.
- When "SF" appears on display of Climatronic operating unit, switch ignition off.

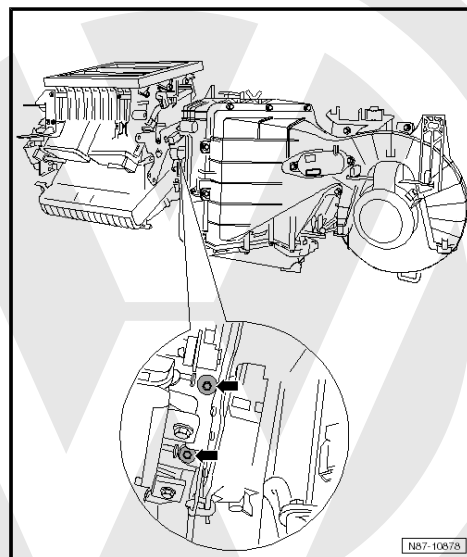


Note

- ◆ *Once the control motors have been removed, they can be re-installed only in the service position "SF".*
- ◆ *Replacement parts are supplied set in the service position!*
- Remove glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Removing and installing glove compartment
- Remove centre dash panel trim panels ⇒ General body repairs, interior; Rep. gr. 68 ; Removing and installing centre dash panel trim panels



- Unscrew bolts -arrows- from retaining plate of right temperature flap control motor - V159- .
- Pull out retaining plate with control motor downwards.
- Separate connector.



- Remove bolts -3- (Qty. 3) from temperature flap control motor -4-.
- Remove control motor from retaining plate -1-.

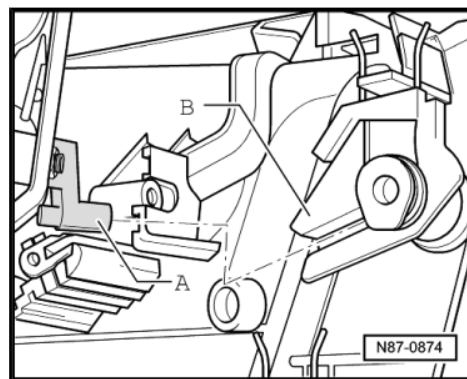
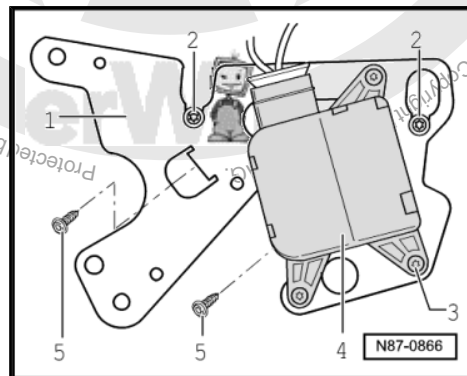
Installing

Installation is carried out in the reverse order. When installing, note the following:

- Screw right temperature flap control motor - V159- to retaining plate.
- Fit connector.
- Switch on ignition.
- Set rotary knob for interior temperature, right to "24°".
- During installation, ensure that control motor driver -A- is pushed into mounting -B-.

If necessary, move the driver to the correct position by gently turning the rotary knob for interior temperature control, right.

The remaining steps for installation are carried out in reverse order.







5 Front heater and air conditioning unit

⇒ [“5.1 Assembly overview - heater and air conditioning unit”, page 54](#)

⇒ [“5.2 Removing and installing evaporator”, page 57](#)

⇒ [“5.3 Dismantling and assembling heater and air conditioning unit”, page 58](#)

⇒ [“5.4 Removing and installing heater and air conditioning unit”, page 59](#)

⇒ [“5.5 Checking condensation drain hose with valve”, page 62](#)

⇒ [“5.6 Removing and installing evaporator temperature sensor G308”, page 62](#)

5.1 Assembly overview - heater and air conditioning unit

⇒ [“5.1.1 Assembly overview - heater and air conditioning unit, manually controlled air conditioning system”, page 54](#)

⇒ [“5.1.2 Assembly overview - heater and air conditioning unit, Climatronic”, page 55](#)

5.1.1 Assembly overview - heater and air conditioning unit, manually controlled air conditioning system

1 - Heating and air conditioning controls

- ☐ With fresh air and air recirculation flap switch - E159- .
- ☐ With heated rear window button - E230- .
- ☐ With fresh air blower switch - E9-
- ☐ For vehicles with seat heating, also with heated driver seat regulator - E94- and heated front passenger seat regulator - E95- .
- ☐ With air conditioning system control unit - J301- .
- ☐ Removing and installing
⇒ [page 68](#)

2 - Air recirculation flap control motor - V113-

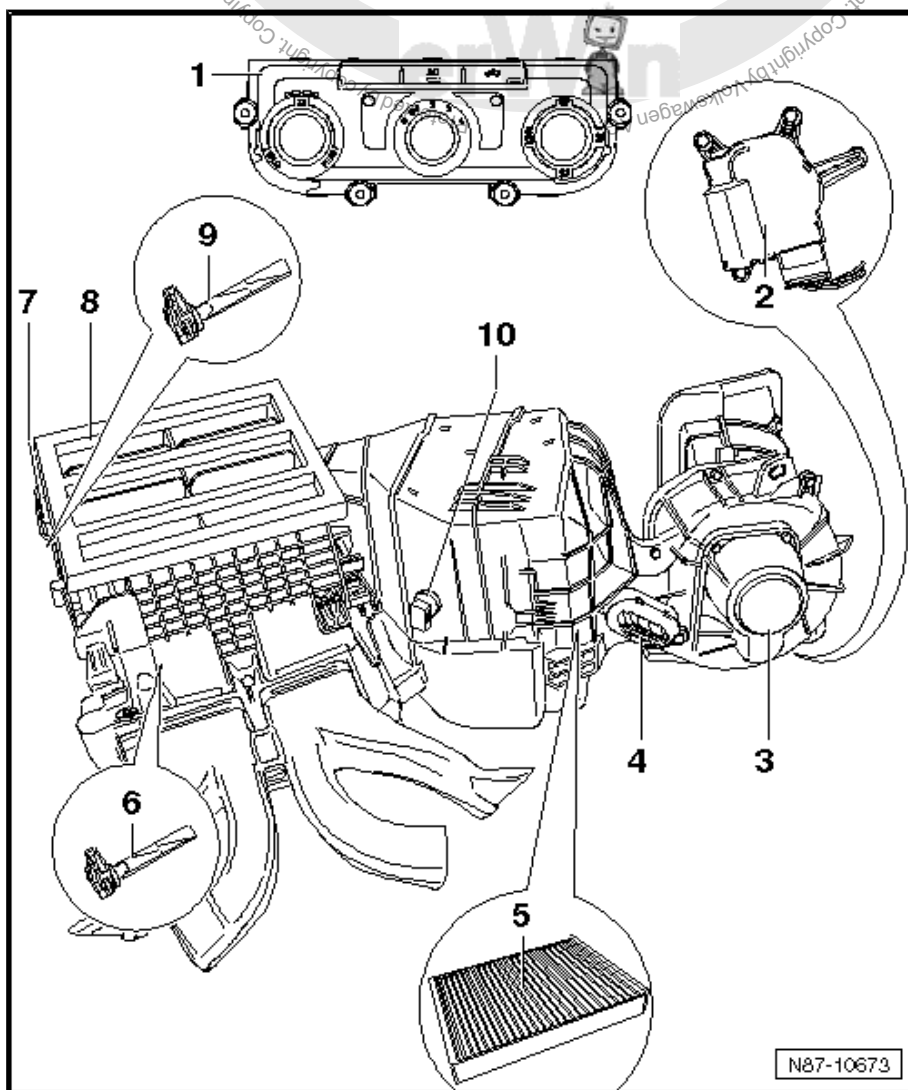
- ☐ Removing and installing
⇒ [page 18](#)

3 - Fresh air blower - V2-

- ☐ Removing and installing
⇒ [page 8](#) .

4 - Fresh air blower series resistor with overheating fuse - N24-

- ☐ Removing and installing
⇒ [page 9](#) .





9 - Fresh air blower - V2-

- ☐ Removing and installing ⇒ [page 8](#) .

10 - Sender for front Bitron blower regulation - G462-

- ☐ Removing and installing ⇒ [page 75](#) .

11 - Right footwell vent

- ☐ Removing and installing ⇒ [page 19](#) .

12 - Dust and pollen filter

- ☐ Removing and installing ⇒ [page 9](#) .

13 - Right footwell vent temperature sender - G262-

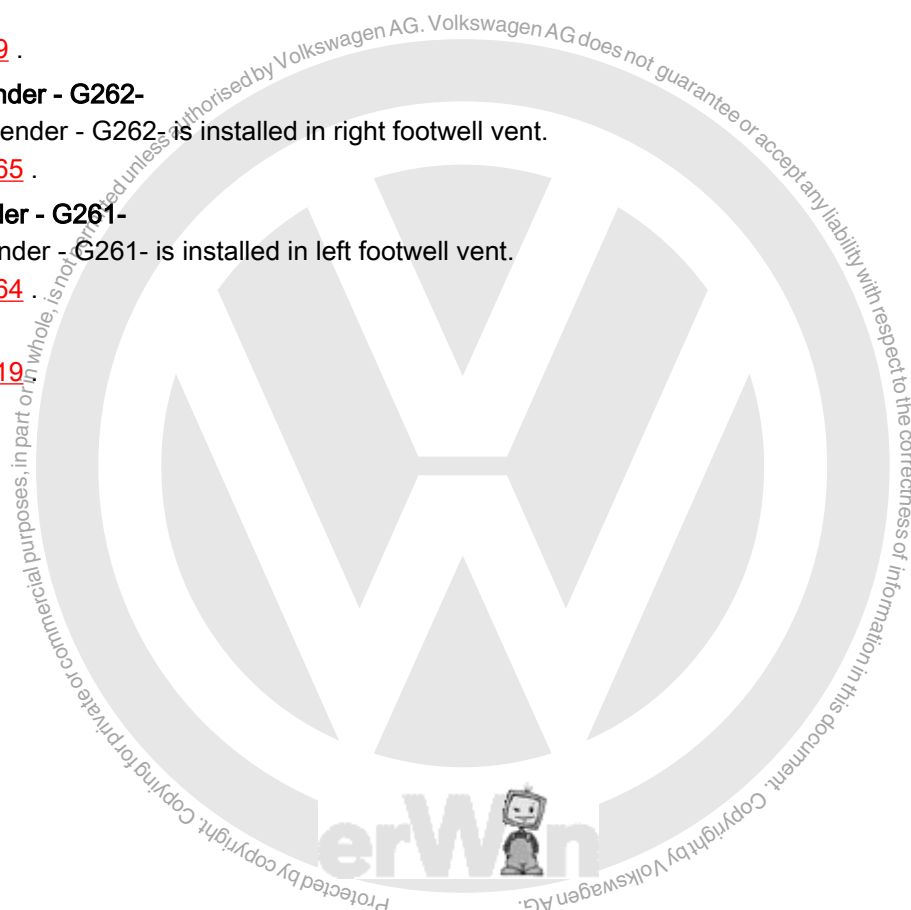
- ☐ Right footwell vent temperature sender - G262- is installed in right footwell vent.
- ☐ Removing and installing ⇒ [page 65](#) .

14 - Left footwell vent temperature sender - G261-

- ☐ Left footwell vent temperature sender - G261- is installed in left footwell vent.
- ☐ Removing and installing ⇒ [page 64](#) .

15 - Left footwell vent

- ☐ Removing and installing ⇒ [page 19](#) .





5.2 Removing and installing evaporator

Removing

- Remove heater and air conditioner unit ➔ [page 59](#).

1 - Upper part of distribution box

- ❑ The upper part is connected to the lower part by securing bolts -3- and retaining clips -2-.

2 - Retaining clip

- ❑ Qty. 3

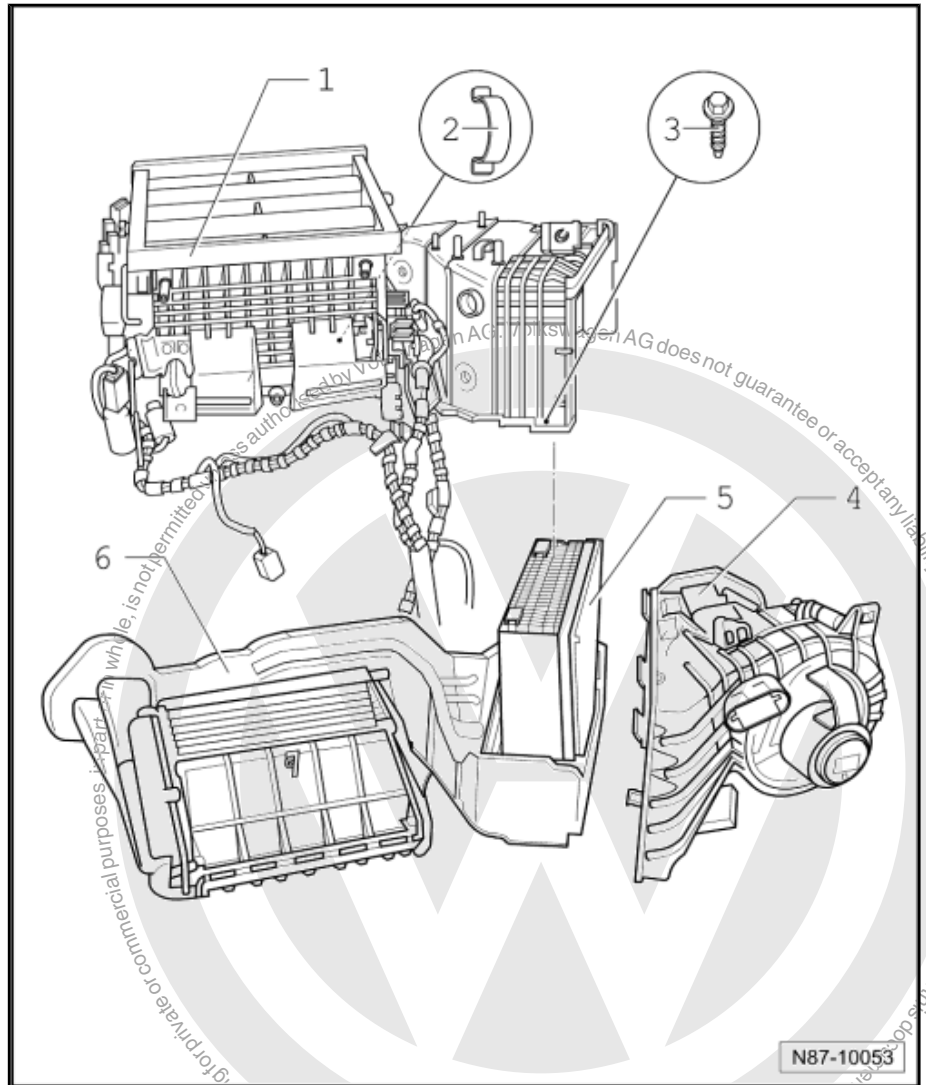
3 - Securing bolts

4 - Blower housing

5 - Evaporator

- ❑ Observe seal ➔ [page 57](#).

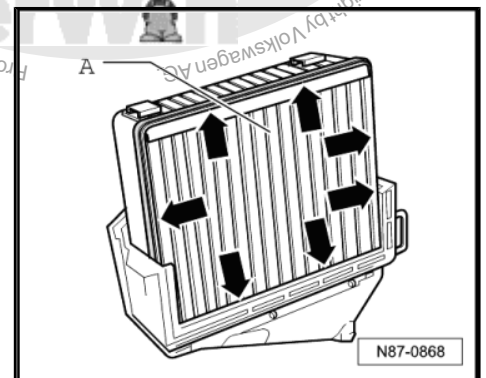
6 - Lower part of distribution box



Installing

Evaporator seal

Observe seal -arrows- along perimeter of evaporator.





5.3 Dismantling and assembling heater and air conditioning unit

Dismantling and assembling.

- Remove heater and air conditioner unit ⇒ [page 59](#).

1 - Upper part of distribution box

- The upper part is connected to the lower part by securing bolts -3- and retaining clips -2-.

2 - Retaining clip

- Qty. 3.

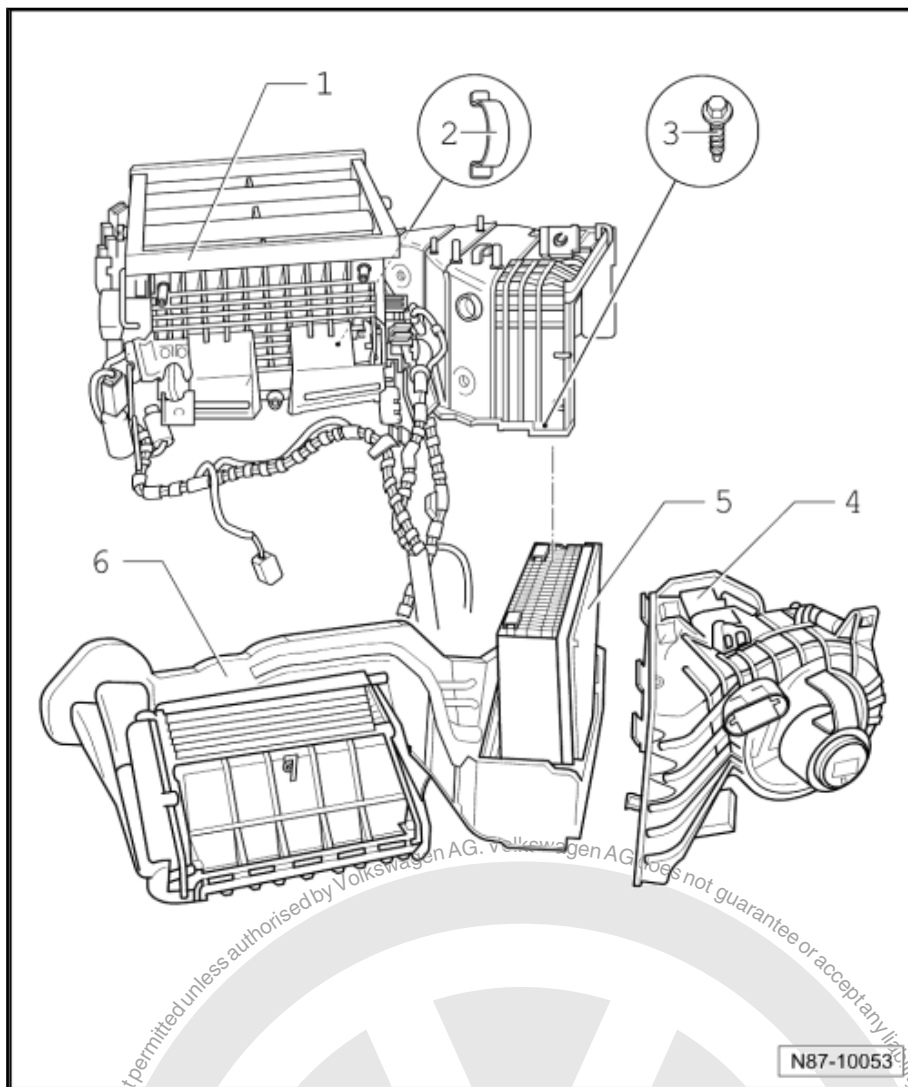
3 - Securing bolts

4 - Blower housing

5 - Evaporator

- Observe seal
⇒ [page 57](#).

6 - Lower part of distribution box





5.4 Removing and installing heater and air conditioning unit

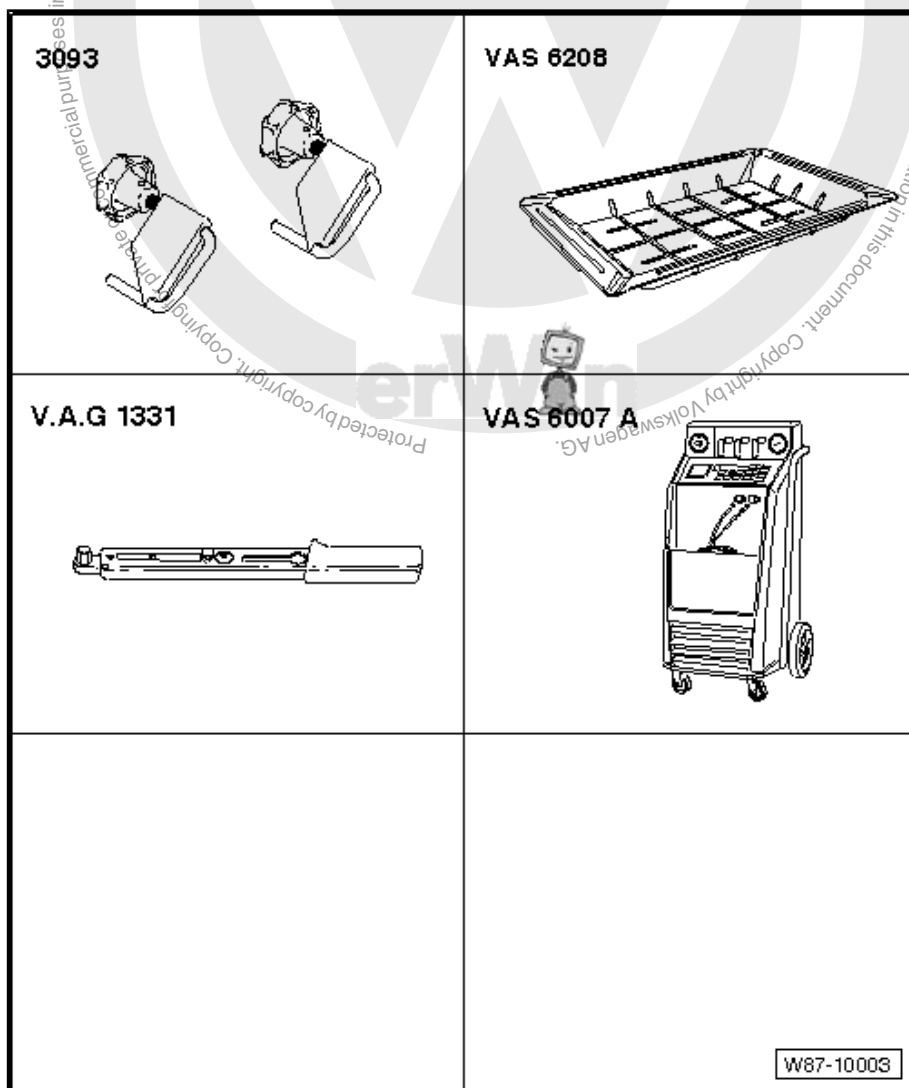


Note

- ◆ The refrigerant must be extracted beforehand, e.g. with air conditioner service station - VAS 6007A- .
- ◆ Comply with notes ⇒ [page 23](#) .

Special tools and workshop equipment required

- ◆ Hose clamps up to 40 mm - 3093-
- ◆ Drip tray for workshop hoist - VAS 6208-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Air conditioner service station - VAS 6007A-



Removing

- Switch off all electrical consumers.
- Switch off ignition.
- Remove ignition key.
- Remove noise insulation from engine .



- Place drip tray - VAS 6208- beneath engine.
- Clamp off coolant hoses using hose clamps up to 40 mm - 3093- .

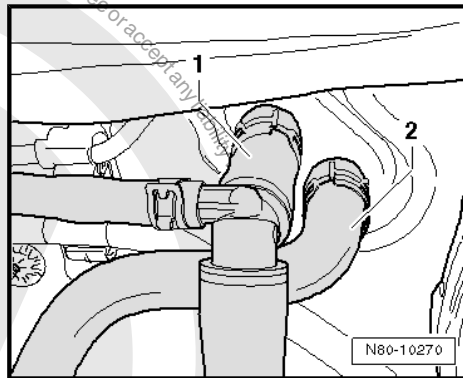


WARNING

The cooling system remains pressurised while the engine is warm!

Danger of scalding due to hot steam and coolant.

Reduce excess pressure by covering the cap of the coolant expansion tank with cloths and opening it carefully.



- Disconnect coolant hoses -1- and -2- leading to heat exchanger.
- Carefully blow remaining coolant out of heat exchanger via connections using a compressed air pistol.



WARNING

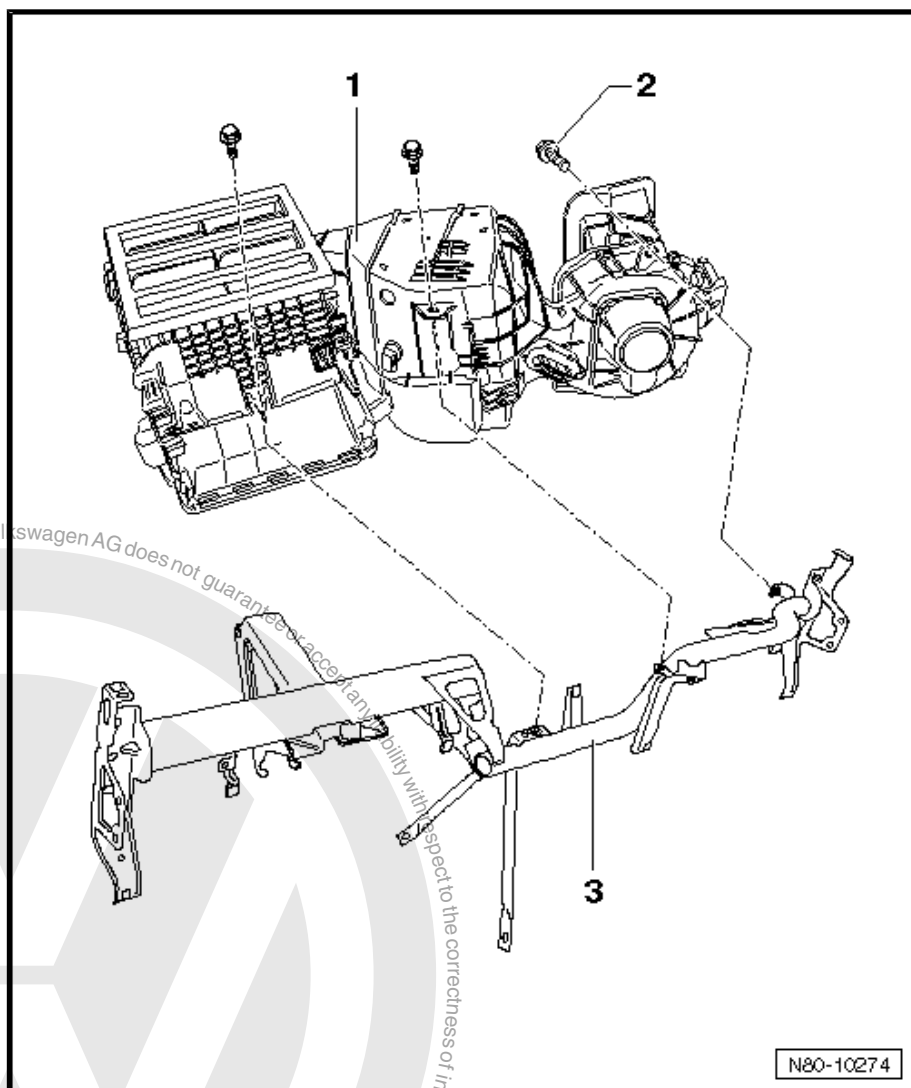
Danger from refrigerant escaping under pressure!

Freezing of skin and other body parts.

- ***Evacuate the refrigerant and then open the refrigerant circuit immediately.***
- ***If more than 10 minutes have elapsed since evacuation and the coolant circuit has not been opened, evacuate the refrigerant again. Pressure builds up in the coolant circuit as a result of secondary evaporation.***



- Disconnect refrigerant lines on expansion valve ⇒ [page 30](#) .
- Remove dash panel ⇒ Rep. gr. 70 .



- Remove bolts -2-.
- Remove subframe for dash panel -3- ⇒ Rep. gr. 70 .
- Disconnect connectors to heater and air conditioning unit -1- and remove unit.

Installing

Installation is carried out in reverse order.

After installation, replenish coolant ⇒ Rep. gr. 19 .



Note

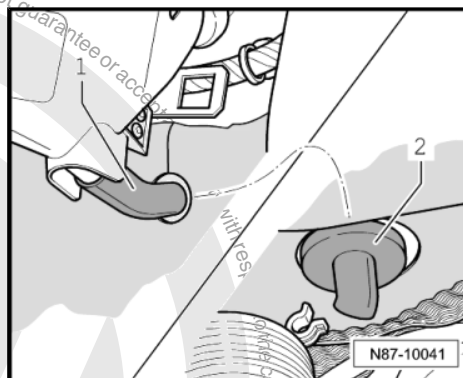
Ensure that seal is properly seated between heat exchanger and bulkhead.



5.5 Checking condensation drain hose with valve

Checking

- Removing footwell trim on front passenger side ⇒ Rep. gr. 68.
- ◆ It must be possible to push the condensation drain hose -1- onto the heater and air conditioner unit connection without tension.
- ◆ The condensation drain hose must not be pinched by the insulation mat.
- Rework insulation mat if necessary.
- ◆ The condensation drain hose must fit securely on the condensation drain hose connector on the heater and air conditioner unit.
- The valve on the condensation drain hose -2- is located on the bulkhead on the right in the engine compartment.



Note

The function of the valve must not be impaired by conservation wax or underseal. It must open and close properly.

5.6 Removing and installing evaporator temperature sensor - G308-

Removing



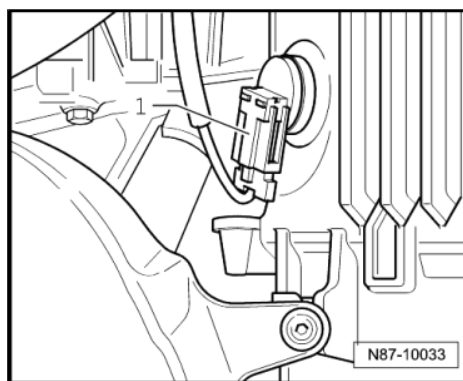
Note

Evaporator temperature sensor - G308- can be reached from front passenger footwell.

- Separate connector on evaporator temperature sensor - G308- -1-.
- Turn evaporator temperature sensor - G308- -1- 90° and remove it from housing.

Installing

Install in reverse order.





6 Air duct

⇒ [“6.1 Removing and installing left vent temperature sender G150”](#), page 63

⇒ [“6.2 Removing and installing right vent temperature sender G151”](#), page 63

⇒ [“6.3 Removing and installing front vent temperature sender G152”](#), page 64

⇒ [“6.4 Removing and installing footwell vent temperature sender G192”](#), page 64

⇒ [“6.5 Removing and installing left footwell vent temperature sender G261”](#), page 64

⇒ [“6.6 Removing and installing right footwell vent temperature sender G262”](#), page 65

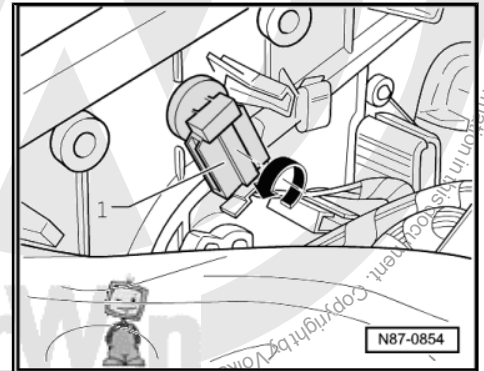
6.1 Removing and installing left vent temperature sender - G150-

Removing

- Remove retaining plate for control motors V107 and V428
⇒ [page 48](#) .
- Pull connector off vent temperature sender -1-.
- Turn left vent temperature sender - G150- -1- 90° and remove it from housing.

Installing

- Install in reverse order.



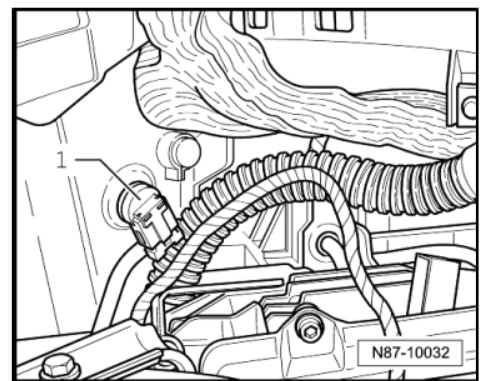
6.2 Removing and installing right vent temperature sender - G151-

Removing

- Remove passenger side airbag unit ⇒ General body repairs, interior; Rep. gr. 69 ; Removing and installing passenger side airbag unit .
- Pull connector off vent temperature sender -1-.
- Turn right vent temperature sender - G151- -1- 90° and remove it from housing.

Installing

- Install in reverse order.





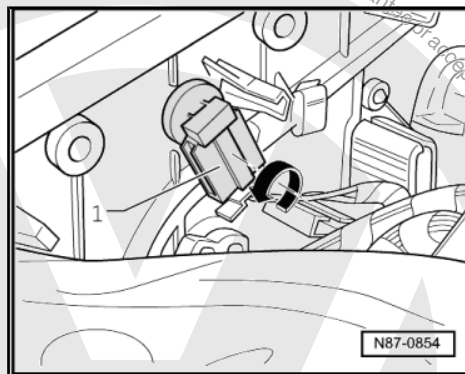
6.3 Removing and installing front vent temperature sender - G152-

Removing

- Remove passenger side airbag unit ⇒ General body repairs, interior; Rep. gr. 69 ; Removing and installing passenger side airbag unit or remove dash panel storage compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Removing and installing dash panel storage compartment
- Pull connector off vent temperature sender -1-.
- Turn front vent temperature sender - G152- -1- 90° and remove it from housing.

Installing

- Install in reverse order.



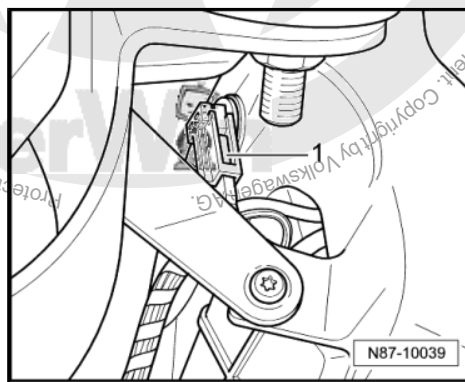
6.4 Removing and installing footwell vent temperature sender - G192-

Removing

- Remove heating and air conditioning controls and installation frame ⇒ [page 68](#) .
- Pull connector off sender -1- for footwell vent temperature sender - G192- .
- Turn footwell vent temperature sender -1- 90° and remove from footwell vent.

Installing

- Install in reverse order.



6.5 Removing and installing left footwell vent temperature sender - G261-

Removing

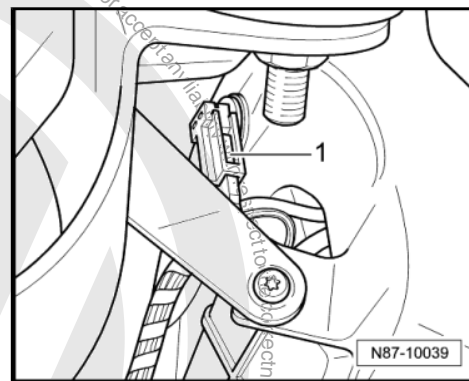
- Removing operating and display unit for Climatronic air conditioning system - E87- with Climatronic control unit - J255- ⇒ [page 68](#) .



- Pull connector off sender -1- for left footwell vent temperature sender - G261- .
- Turn footwell vent temperature sender -1- 90° and remove from footwell vent.

Installing

- Install in reverse order.



6.6 Removing and installing right footwell vent temperature sender - G262-

Removing



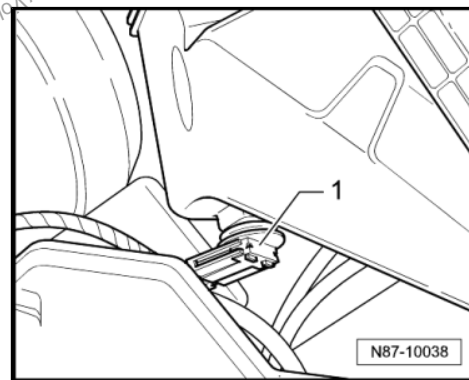
Note

Right footwell vent temperature sender - G262- can be reached from front passenger footwell.

- Pull connector off right footwell vent temperature sender - G262- -1-.
- Turn right footwell vent temperature sender - G262- -1- 90° and remove from footwell vent.

Installing

- Install in reverse order.





7 Operating and display unit

⇒ "7.1 Operating and display unit for heater and air conditioning system with manually regulated air conditioning system", page 66

⇒ "7.2 Removing and installing operating and display unit, manually controlled air conditioning system", page 68

⇒ "7.3 Functions of operating and display unit for Climatronic heater and air conditioning system", page 68

⇒ "7.4 Removing and installing Climatronic air conditioning operating and display unit E87 with Climatronic control unit J255", page 71

7.1 Operating and display unit for heater and air conditioning system with manually regulated air conditioning system

⇒ "7.1.1 Functions of operating and display unit for heater and air conditioning system", page 66

7.1.1 Functions of operating and display unit for heater and air conditioning system

1 - Rotary knob for interior temperature

2 - **AC** button

- ☐ Press **AC** button to switch cooling on and off.
- ☐ Warning lamp in button lights up yellow when air conditioner compressor is switched on.



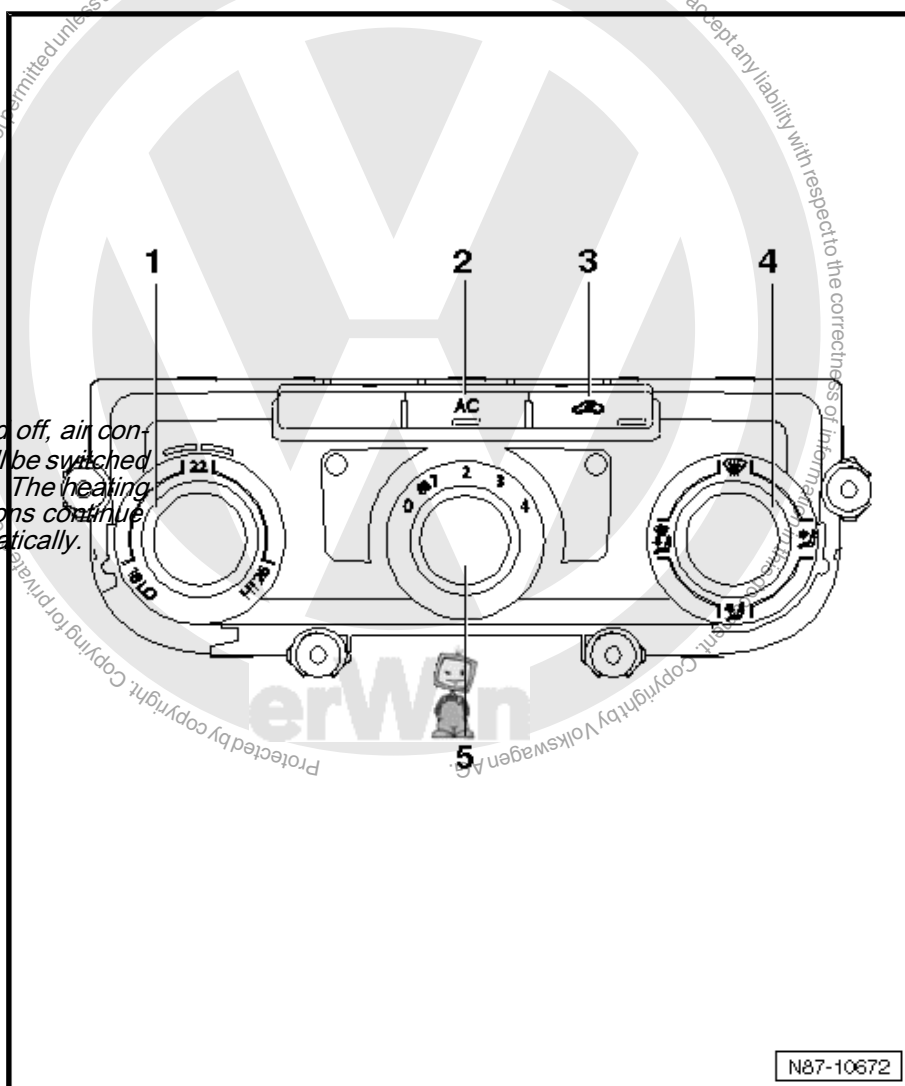
Note

*If **AC** button is switched off, air conditioner compressor will be switched to almost zero delivery. The heating and ventilation operations continue to be controlled automatically.*

3 - Button for recirculation mode

4 - Rotary regulator for air distribution

5 - Fresh air blower switch - E9-



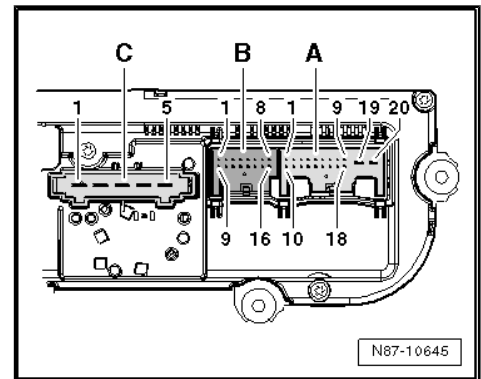
N87-10672



Pin assignment on rear of operating and display unit for heater and air conditioning system

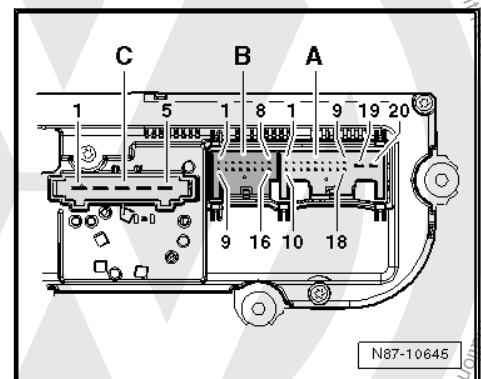
20-pin connector, connector housing -A-, T20 in current flow diagram

- 1 - Air distribution flap control motor - V428- closed
- 2 - Air distribution flap control motor - V428- open
- 3 - Front vent temperature sender - G152-
- 4 - Potentiometer for front air distribution control motor - G470-
- 5 - Air conditioning system pressure switch - F129-
- 7 - CAN, low
- 8 - CAN, high
- 9 - Footwell flap control motor - V261- , closed
- 10 - Footwell flap control motor - V261- , open
- 11 - Potentiometer for footwell vent control motor - G468-
- 14 - Circulation pump - V55-
- 16 - Air conditioner compressor regulating valve - N280-
- 18 - Signal, earth
- 19 - Terminal 30
- 20 - Terminal 31



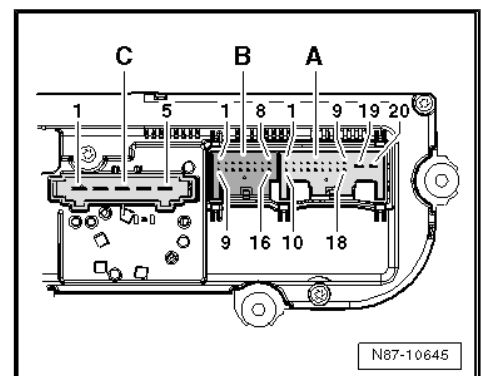
16-pin connector, connector housing -B-, T16k in current flow diagram

- 1 - Temperature flap control motor - V68- , warm
- 2 - Evaporator output temperature sender - G263-
- 3 - Potentiometer for defroster flap control motor - G135-
- 4 - Footwell vent temperature sender - G192-
- 5 - Temperature flap control motor potentiometer - G92-
- 7 - + 5 volt
- 8 - Earth signal for potentiometer
- 9 - Air recirculation flap control motor - V113- open
- 10 - Air recirculation flap control motor - V113- closed
- 11 - Temperature flap control motor - V68- , cold
- 12 - Defroster flap control motor - V107- , open
- 13 - Defroster flap control motor - V107- , closed



5-pin connector, connector housing -C-, T5n in current flow diagram

- 1 - Blower 3rd speed
- 2 - Blower 2nd speed
- 3 - Blower 1st speed
- 4 - Blower 4th speed
- 5 - X terminal





7.2 Removing and installing operating and display unit, manually controlled air conditioning system

Removing

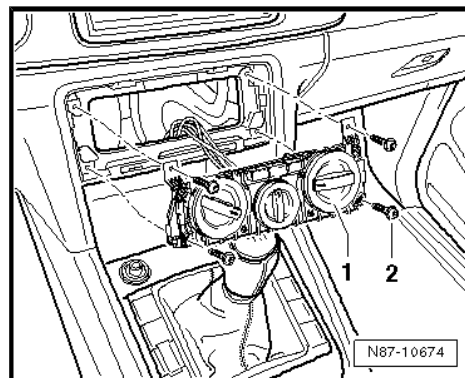
- Remove lower centre dash panel trim panels ⇒ Rep. gr. 68 .
- Remove bolts -2- and remove controls -1- from dash panel.
- Separate connectors.

Installing

Install in reverse order.

Tightening torques

Component	Specified torque
Bolts -2- for control and display unit	1.5 Nm



7.3 Functions of operating and display unit for Climatronic heater and air conditioning system

⇒ **“7.3.1 Functions of operating and display unit for Climatronic air conditioning system E87 with Climatronic control unit J255”, page 68**

7.3.1 Functions of operating and display unit for Climatronic air conditioning system - E87- with Climatronic control unit - J255-



Note

- ◆ A warning lamp in the instrument panel controls will indicate that the selected function is active. In addition, the radio or radio navigation system display will indicate the selected function for a short time when a button is pressed or a regulator is operated.
- ◆ If a new operating and display unit for Climatronic air conditioning system - E87- with Climatronic control unit - J255- is installed, basic setting and adaptation “Compressor first run” must be carried out in Guided fault finding or in Guided functions using ⇒ Vehicle diagnostic tester.



1 - Rotary knob for interior temperature, left

2 - AUTO button

- ☐ Pressing the AUTO button causes the Climatronic to maintain the selected interior temperature completely automatically. With this setting, the vent air temperature, the blower speed and the air distribution are controlled automatically.

3 - Defrost function button for windscreen

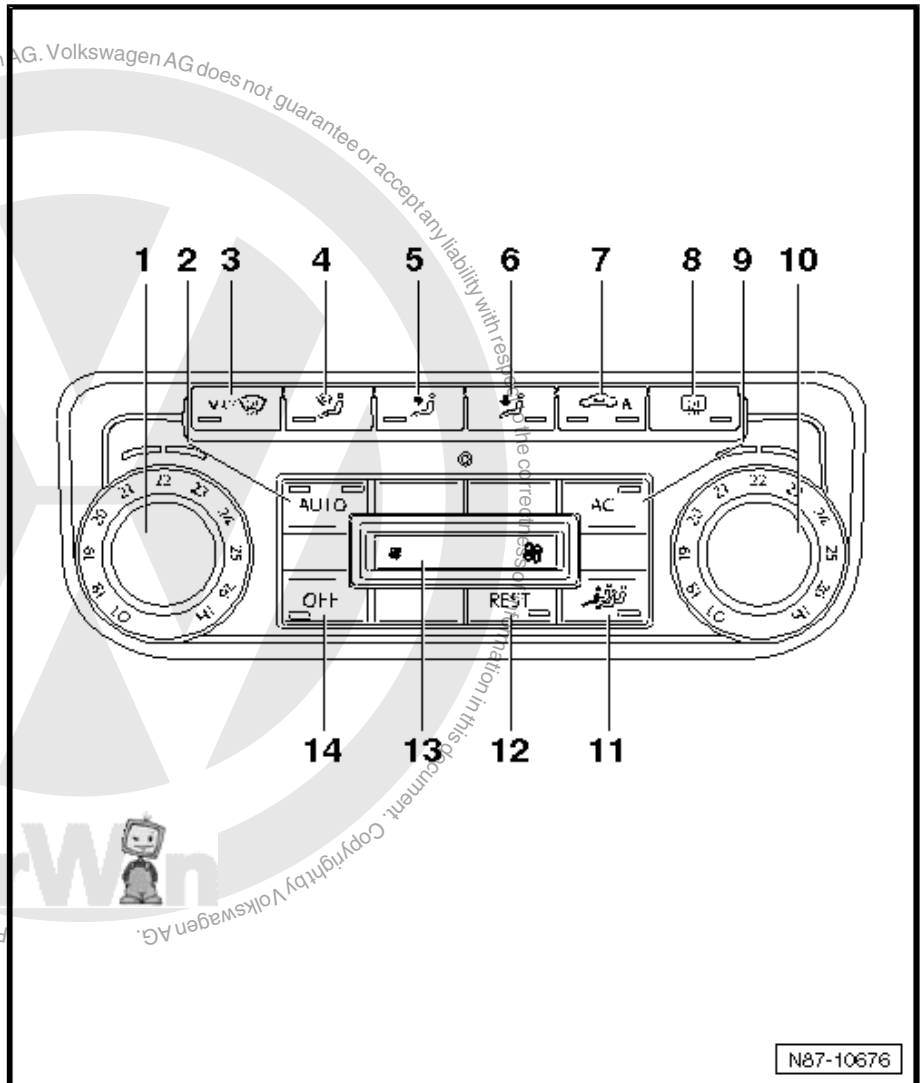
4 - Upwards air distribution button

5 - Centre air distribution button

6 - Downwards air distribution button

7 - Button for air recirculation mode or button for automatic recirculation mode

- ☐ Pressing the button for air recirculation mode will switch on the air recirculation mode and prevent polluted air from entering the interior.
- ☐ Pressing the air recirculation mode button again will activate the automatic recirculation mode.



Note

Function of air quality sensor - G238- ➔ [page 73](#).

8 - Button for heated rear window

9 - AC pushbutton

- ☐ Press the AC button to switch cooling on and off.
- ☐ If the lamp in the button is on, the air conditioner compressor is switched on.

10 - Rotary knob for interior temperature, right

11 - Synchronisation button

- ☐ If the lamp in the button is not on, the left and right temperatures may be adjusted independently.
- ☐ If the Synchronisation button is pressed (warning lamp lights up), the passenger side will assume the temperature setting for the driver side.

12 - Residual button

- ☐ When the residual heat function is switched on, residual engine heat is pumped to the heat exchanger by a coolant pump.

13 - Blower regulator

- ☐ Press briefly to change the blower speed.



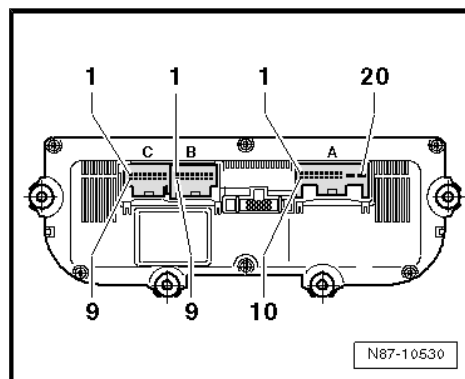
14 - Air conditioner **OFF** button

- ☐ For switching Climatronic on or off

Pin assignment on rear of operating and display unit for Climatronic air conditioning system - E87- with Climatronic control unit - J255-

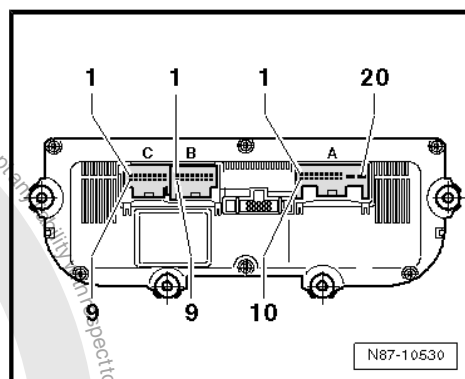
20-pin connector, T20a in current flow diagram -A-

- 1 - Sunlight penetration photosensor - G107- , signal
- 2 - Air conditioning system pressure switch - F129-
- 3 - Sunlight penetration photosensor - G107- , signal
- 4 - Air quality sensor - G238-
- 5 - CAN, high
- 6 - CAN, low
- 9 - + 5 V for sunlight penetration photosensor - G107-
- 13 - Vent temperature sender - G150-
- 14 - Right vent temperature sender - G151-
- 17 - Earth signal for sunlight penetration photosensor - G107- , vent temperature sender - G150- , right vent temperature sender - G151- ; evaporator temperature sensor - G308- ; left footwell vent temperature sender - G261- and right footwell vent temperature sender - G262-
- 18 - Air conditioner compressor regulating valve - N280-
- 19 - Terminal 31
- 20 - Terminal 30



16-pin connector, T16l in current flow diagram -B-

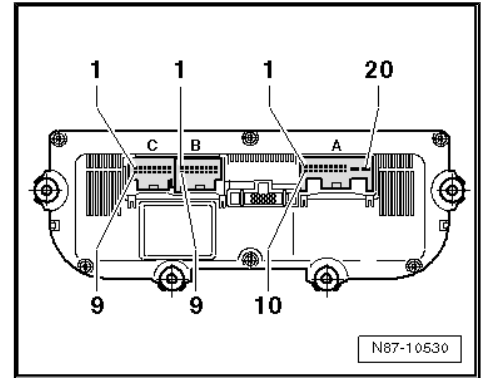
- 1 - + 5V for control motors
- 2 - Potentiometer for left temperature flap control motor - G220-
- 3 - Potentiometer for right temperature flap control motor - G221-
- 4 - Potentiometer for defroster flap control motor - G135-
- 5 - Potentiometer for left footwell flap control motor - G139-
- 6 - Potentiometer for front air distribution control motor - G470-
- 7 - Potentiometer for fresh air/recirculated air, air flow flap control motor - G644-
- 8 - Footwell vent temperature sender - G261-
- 9 - Right footwell vent temperature sender - G262-
- 11 - Evaporator temperature sensor - G308-
- 12 - Fresh air blower control unit - J126- , signal
- 14 - Signal earth, potentiometer
- 15 - Auxiliary coolant heater relay - J493-





16-pin connector, T16m in current flow diagram -C-

- 1 - Left temperature flap control motor - V158- , cold
- 2 - Left temperature flap control motor - V158- , warm
- 3 - Defroster flap control motor - V107- , closed
- 4 - Defroster flap control motor - V107- , open
- 5 - Left footwell flap control motor - V108- , open
- 6 - Left footwell flap control motor - V108- , closed
- 7 - Air distribution flap control motor - V428- , closed
- 8 - Air distribution flap control motor - V428- , open
- 9 - Air recirculation flap control motor - V113- , open
- 10 - Air recirculation flap control motor - V113- , closed
- 11 - Right temperature flap control motor - V159- , cold
- 12 - Right temperature flap control motor - V159- , warm
- 15 - Fresh air blower control unit - J126-



7.4 Removing and installing Climatronic air conditioning operating and display unit - E87- with Climatronic control unit - J255-



Note

Climatronic control unit - J255- and operating and display unit for Climatronic air conditioning system - E87- cannot be dismantled.

Removing

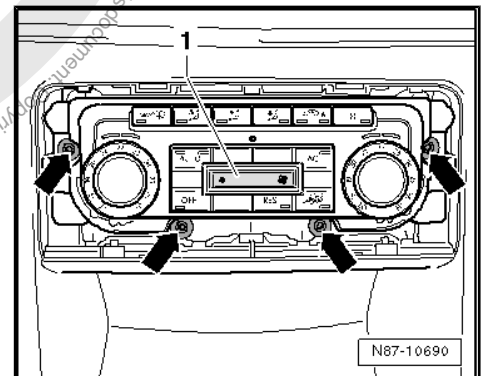
- Remove lower centre dash panel trim panels ⇒ Rep. gr. 68 .
- Remove bolts -arrows- and remove operating and display unit for Climatronic air conditioning system - E87- -1- from dash panel.
- Separate connectors.

Installing

Install in reverse order.

Tightening torques

Component	Specified torque
Bolts -arrows- for control and display unit	1.5 Nm





8 Other controlling and regulating components

⇒ "8.1 Removing and installing ambient temperature sensor - G17-", page 72

⇒ "8.2 Removing and installing sunlight penetration photosensor G107 ", page 72

⇒ "8.3 Working principles of air quality sensor G238 ", page 73

⇒ "8.4 Removing and installing air quality sensor G238 ", page 74

⇒ "8.5 Removing and installing sender for front Bitron blower regulation G462 ", page 75

8.1 Removing and installing ambient temperature sensor -G17-

Location

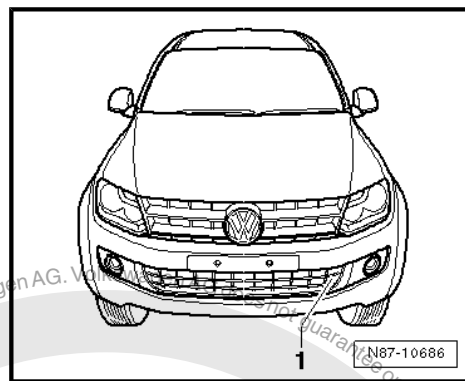
The ambient temperature sensor - G17- is located behind the bumper.

Removing

- Remove bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Removing and installing bumper cover .
- Separate connector.
- Remove retaining clip from ambient temperature sensor - G17- and remove sensor.

Installing

- Install in reverse order.



8.2 Removing and installing sunlight penetration photosensor - G107-

Checking

Check using ⇒ Vehicle diagnostic tester guided fault finding.

Functions:

- ◆ Controls the temperature flap and the fresh air blower based on the intensity of the light

Emergency operation in the event of a failure:

- ◆ The Climatronic control unit - J255- takes on a fixed value.

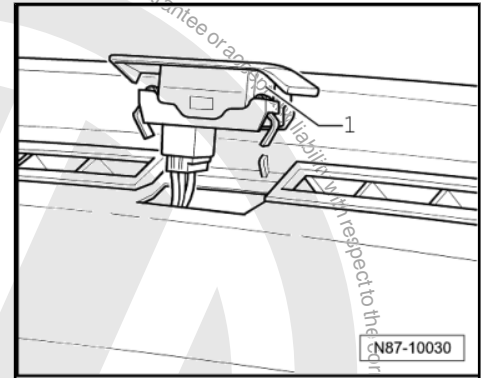


Removing

- Unclip sensor -1- from dash panel.

Installing

- Install in reverse order.



8.3 Working principles of air quality sensor - G238-

- ◆ The air quality sensor - G238- detects noxious substances in the ambient air (primarily petrol and/or diesel fumes).
- ◆ The Climatronic control unit - J255- evaluates the signal from the air quality sensor - G238-. The air conditioning system is actuated depending on the degree and manner of ambient air pollution.

At an ambient temperature higher than approx. + 3 °C, air recirculation mode is activated even when there is a minimal increase in noxious substances in the ambient air.

At an ambient temperature of less than approximately +3 °C, air recirculation is not actuated until there is a strong increase in noxious substances in the outside air, and only for approximately 15 seconds. The air conditioner compressor is not actuated. When the concentration decreases, the air conditioning system is switched back to fresh air mode.

- ◆ The “automatic recirculation mode” can be switched off at any time.
- ◆ So that the air conditioning system does not operate continually in air recirculation mode in areas with consistently high levels of pollutants, the “intelligent” sensor adapts its sensitivity to the prevailing environmental pollution. It adapts its sensitivity to the environmental pollution.
- ◆ If the level of pollutants in the outside air remains high over a longer period the intelligent sensor starts to adapt to the change in environmental conditions. Therefore the requirement for recirculated air in an uniformly polluted outside air environment usually less than 12 minutes. If a series of pollution peaks occur, the air conditioning system may operate over a longer period of time in air recirculation mode.
- ◆ A certain amount of time is required for repositioning of the air conditioning system flaps. To prevent noxious substances from entering the passenger compartment while the flaps are closing (e.g. when driving through a cloud of diesel smoke), a dust and pollen filter with an activated charcoal layer is installed. A saturated filter cannot perform this task and should be renewed ⇒ [page 9](#).
- ◆ To prevent frequent operation of the recirculation/fresh air flap, the flap is not actuated immediately if there is a nominal increase in harmful substances in the outside air. The sensor does not send a request to the Climatronic control unit - J255-. The effect of the activated charcoal filter in the dust and pollen filter is adequate for this.



- ◆ To prevent frequent operation of the air recirculation/fresh air flap, the request from the "automatic recirculation mode" sensor continues for at least 25 seconds (minimum waiting period). This also applies when the concentration of noxious substances in the air has reduced to a level where the air recirculation mode is no longer required.
- ◆ If the air conditioner compressor is switched off (e.g. in ECON mode), the maximum period of "automatic air recirculation" is limited to approx. 15 seconds by the Climatronic control unit - J255- , so that condensation does not develop on the windows.
- ◆ To clear condensation from windows as quickly as possible, the Climatronic control unit - J255- does not permit air recirculation when the "defrost function" is activated.
- ◆ The air quality sensor - G238- requires approx. 30 seconds to become operational once the ignition has been switched on (warm-up period). During this time, the sensor can send no request for "automatic recirculation mode" to the Climatronic control unit - J255- .
- ◆ The air quality sensor - G238- is a highly sensitive electronic component which direct contact with solvents, fuels and certain chemical compositions could damage beyond repair. For this reason, do not install sensors that may have come into contact with these substances.

8.4 Removing and installing air quality sensor - G238-

Removing



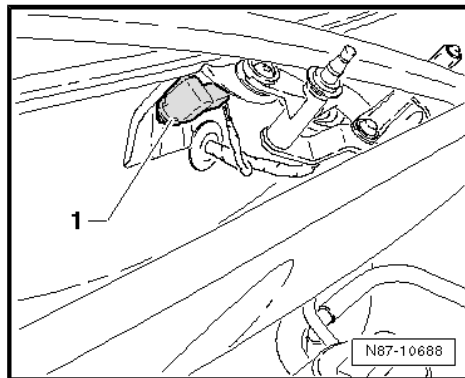
Note

- ◆ *Air quality sensor - G238- is installed in plenum chamber.*
- ◆ *The air quality sensor - G238- is a highly sensitive electronic component which direct contact with solvents, fuels and certain chemical compositions could damage beyond repair.*
- ◆ *Do not install a sensor that has been kept, for example, in a tool box.*
- ◆ *Do not place a removed sensor in an area where it can come into contact with solvents, fuels and certain chemical compounds (fluids or vapours).*

- Remove plenum chamber cover.
- Unclip air quality sensor - G238- -1-.
- Separate connector.

Installing

- Install in reverse order.





8.5 Removing and installing sender for front Bitron blower regulation - G462-

Removing

- Separate connectors from sender for front Bitron blower regulation - G462- .

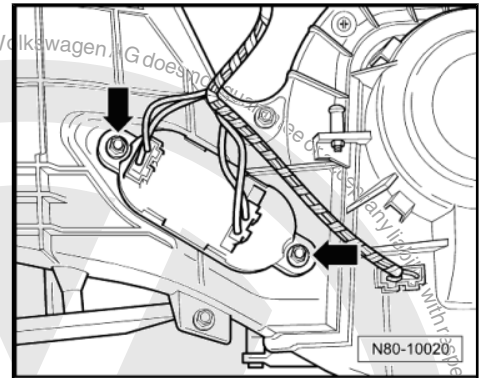


WARNING

Danger of burn injuries.

The sender for front Bitron blower regulation - G462- can be hot.

Before removing sender for front Bitron blower regulation - G462- , let it cool down.



- Remove bolts -arrows- and remove sender from housing.

Installing

- Install in reverse order.

Tightening torques

Component	Specified torque
Bolts -arrows- for sender for front Bitron blower regulation	1 Nm