Workshop Manual
Octavia III 2013 ➤
Octavia III 2014 ➤
Heating, Air conditioning

Edition 07.2013

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Repair Group

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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.

Contents

80 – Heating

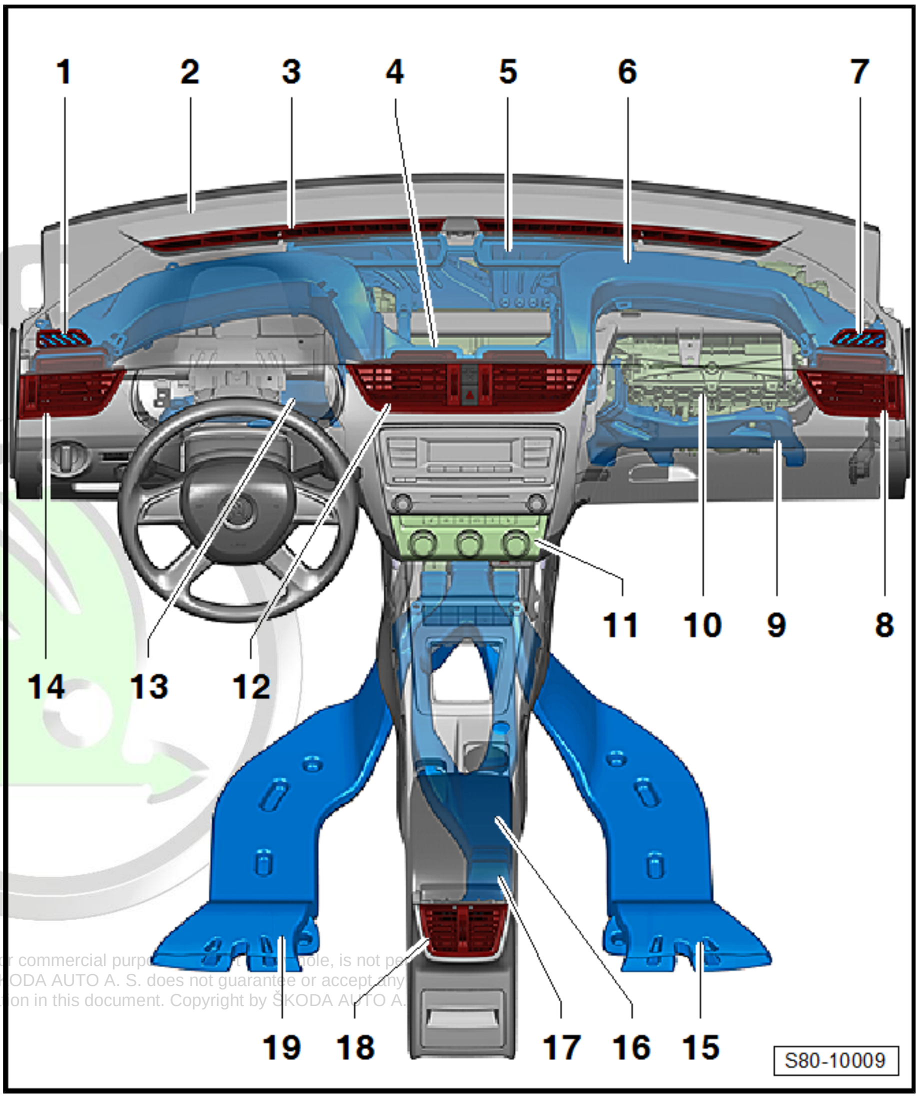
1 Assembly overview of components

(SRL000609; Edition 07.2013)

1.1 Summary of components - interior

Note

The assembly work steps are identical on vehicles with air-conditioning.



1 - Side window vent
- ❑ integrated in dash panel

2 - Dash panel
- ❑ Removing and installing ⇒ Body Work; Rep. gr. 70

3 - Defrost vent
- ❑ integrated in dash panel

4 - Intermediate piece of air guide to centre vent
- ❑ removing and installing ⇒ page 82

5 - Intermediate piece of air guide to defrost vent
- ❑ removing and installing ⇒ page 82

6 - Air guide to the side window vents
- ❑ integrated in dash panel

7 - Side window vent
- ❑ integrated in dash panel

8 - Right side vent
- ❑ removing and installing ⇒ page 78

9 - Footwell vent front passenger side
- ❑ removing and installing ⇒ page 81

10 - Heater unit
- ❑ Assembly overview of components ⇒ page 2

- ❑ removal and installation are identical with procedure for vehicles with air conditioning system ⇒ page 84

the following does no longer apply:

- – evacuate the refrigerant
- – Pull the line off the expansion valve

11 - Heater control - J65-

- ❑ removal and installation are identical with procedure for vehicles with air conditioning system ⇒ page 69
- ❑ Overview of the heater controls ⇒ page 5

12 - Centre vent

- ❑ removing and installing ⇒ page 78

13 - Footwell vent driver's side

- ❑ removing and installing ⇒ page 81

14 - Left side vent

- ❑ removing and installing ⇒ page 78

15 - Air guide to the rear, right

- ❑ removing and installing ⇒ page 79

16 - Front part of middle air guide to the rear

- ❑ removing and installing ⇒ page 79

17 - Rear part of middle air guide to the rear

18 - Rear centre vent

- ❑ removing and installing ⇒ page 79

19 - Air guide to the rear, left

- ❑ removing and installing ⇒ page 79

1.2 Assembly overview of components - heater unit

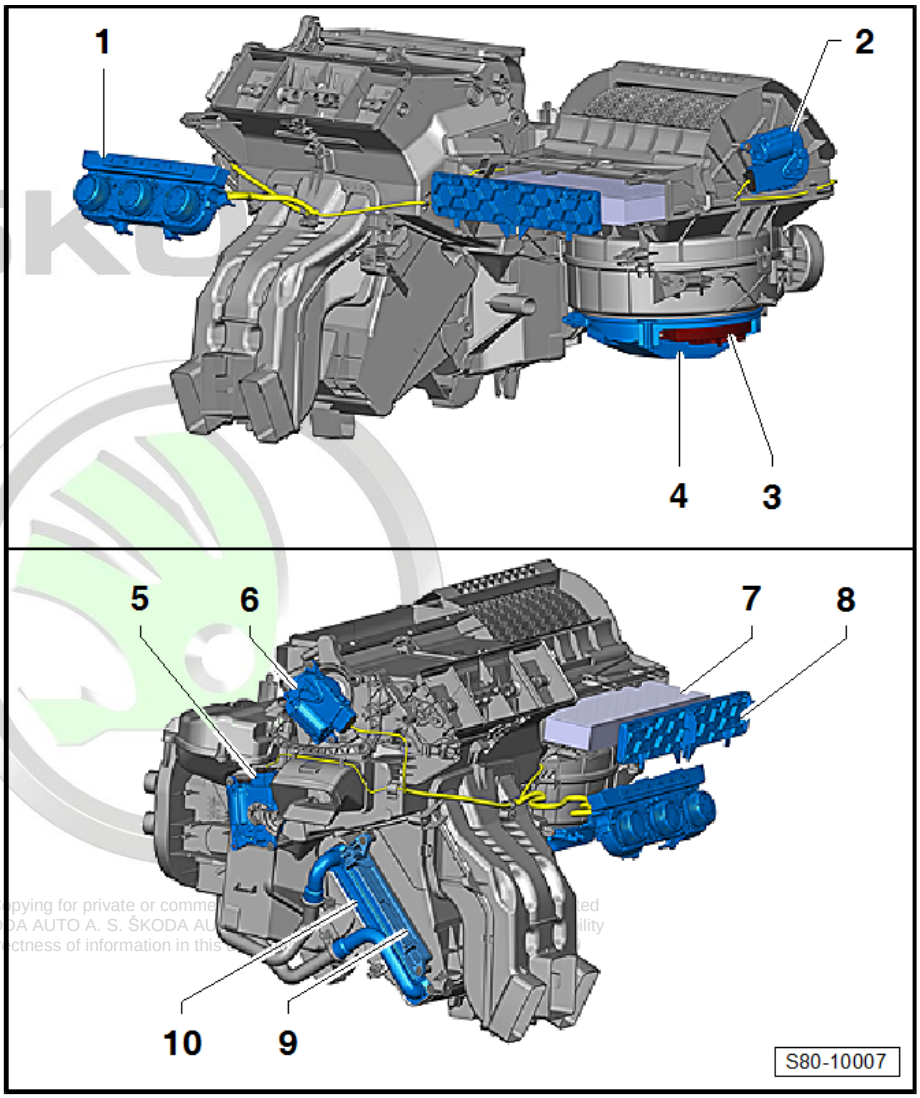
Note

The assembly work steps are identical on vehicles with air-conditioning.

⇒ “1.2.1 Left-hand drive”, page 3

⇒ “1.2.2 Right-hand drive”, page 4

1.2.1 Left-hand drive



1 - Heater control - J65-

- ❑ removal and installation are identical with procedure for vehicles with air conditioning system ⇒ page 69
- ❑ Overview of the heater controls ⇒ page 5

2 - Re-circulating air flap control motor - V113-

- ❑ removing and installing ⇒ page 106

3 - Fresh air blower control unit - J126-

- ❑ removing and installing ⇒ page 92

4 - Fresh air blower - V2-

- ❑ removing and installing ⇒ page 90

5 - Control motor for temperature flap - V68-

- ❑ removing and installing ⇒ page 108

6 - Air distribution flap control motor - V428-

- ❑ removing and installing ⇒ page 112

7 - Dust and pollen filter

- ❑ removing and installing ⇒ page 92

8 - Cover

- ❑ For dust and pollen filter.
- ❑ removing and installing ⇒ page 92

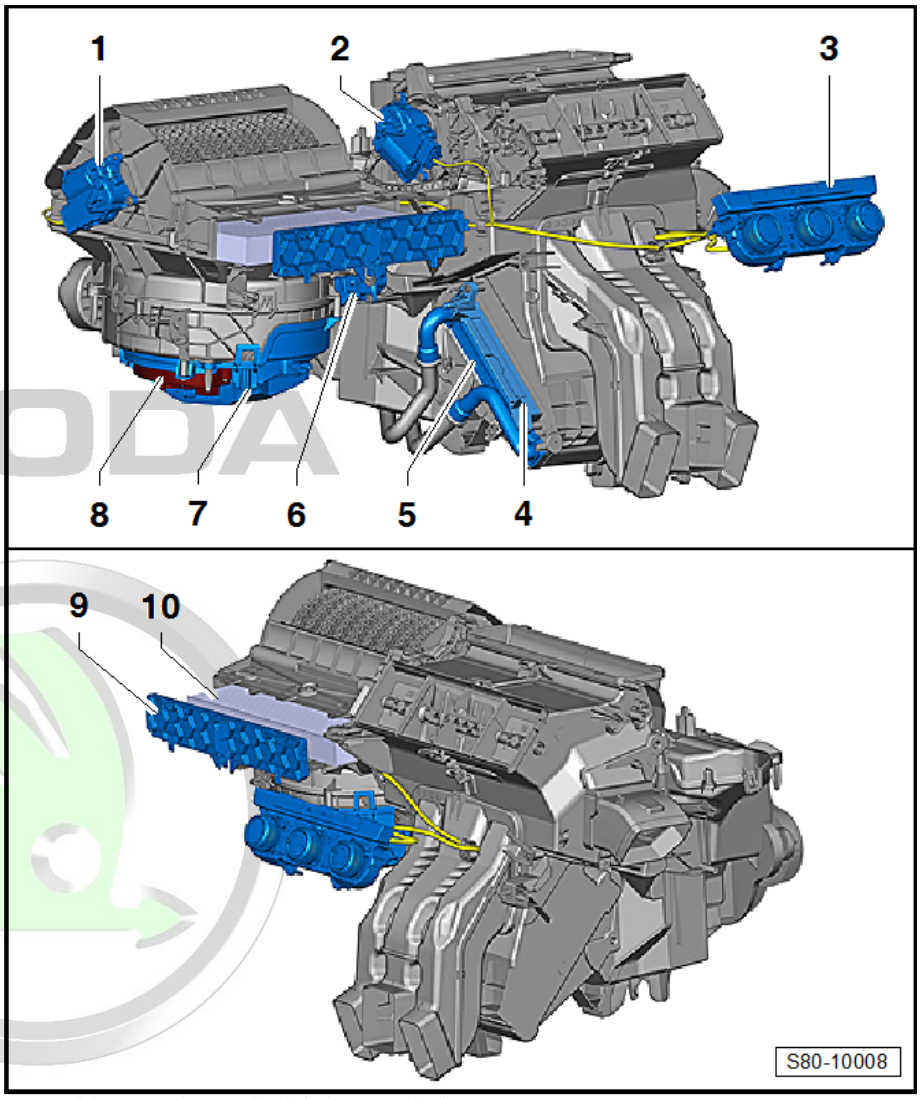
9 - Heating element for air auxiliary heating - Z35-

- ❑ only fitted on certain models
- ❑ removing and installing ⇒ page 99
- ❑ check ⇒ page 100

10 - Heat exchanger

- ❑ removing and installing ⇒ page 93

1.2.2 Right-hand drive



1 - Re-circulating air flap control motor - V113-

- ❑ removing and installing ⇒ page 106

2 - Air distribution flap control motor - V428-

- ❑ removing and installing ⇒ page 112

3 - Heater control - J65-

- ❑ removal and installation are identical with procedure for vehicles with air conditioning system ⇒ page 69
- ❑ Overview of the heater controls ⇒ page 5

4 - Heating element for air auxiliary heating - Z35-

- ❑ only fitted on certain models
- ❑ removing and installing ⇒ page 99
- ❑ check ⇒ page 100

5 - Heat exchanger

- ❑ removing and installing ⇒ page 93

6 - Control motor for temperature flap - V68-

- ❑ removing and installing ⇒ page 108

7 - Fresh air blower - V2-

- ❑ removing and installing ⇒ page 90

8 - Fresh air blower control unit - J126-

- ❑ removing and installing ⇒ page 92

9 - Cover

- ❑ For dust and pollen filter.
- ❑ removing and installing ⇒ page 92

10 - Dust and pollen filter

- ❑ removing and installing ⇒ page 92

1.3 Overview of the heater controls - J65-

Note

- *When the warning light in a control is lit up this indicates the selected function is active.*
- *Detailed description of the function for the heater control ⇒ Owner's manual Octavia III and ⇒ Operating instructions infotainment .*

1 - Left seat heating button - E653-

- ❑ optionally

2 - Button for rear window heating

- ❑ depending on the temperature outdoors, the rear window heater remains switched on for 4 to 20 minutes

3 - Button for re-circulating air mode

4 - Right seat heating button - E654-

- ❑ optionally

5 - Setting the air distribution for the individual vents

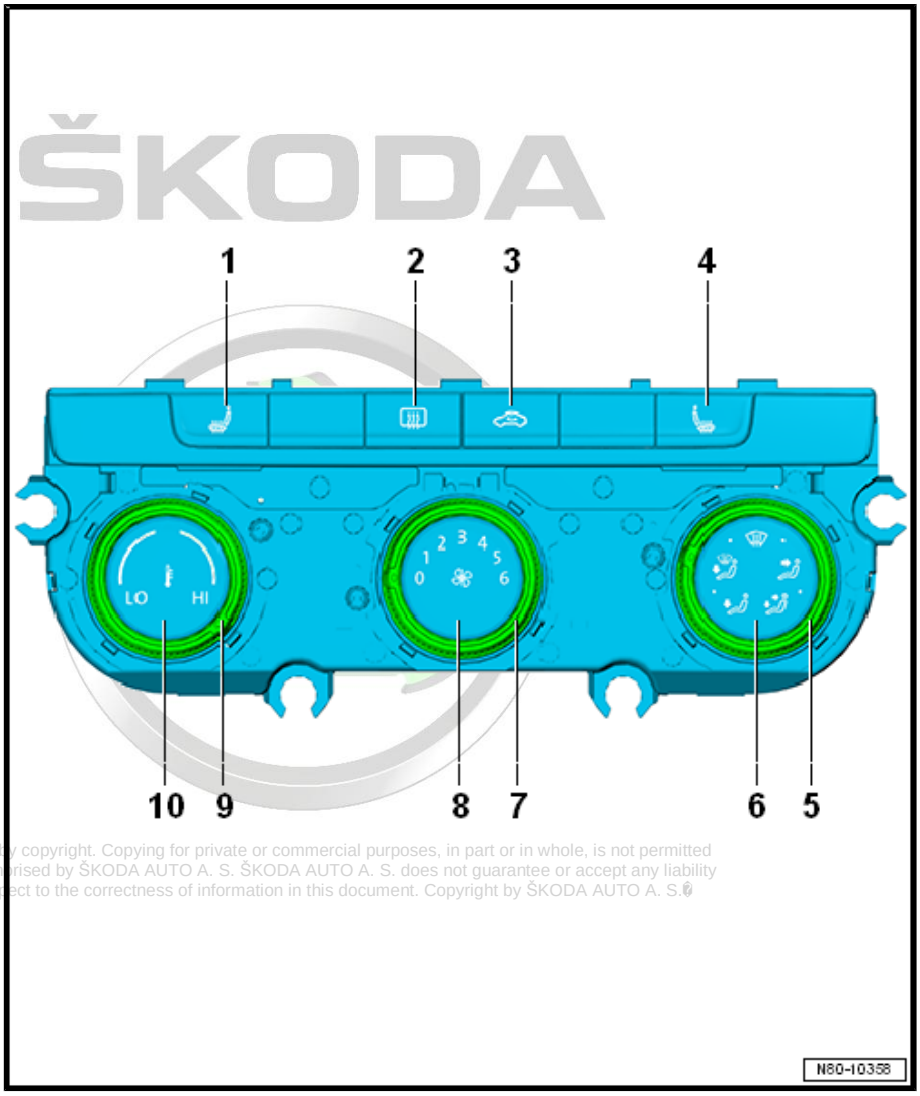
6 - Display for air distribution

7 - Setting the fan speed

8 - Display of the fan speed

9 - Temperature setting

10 - Temperature setting display



1.4 Determine the manufacturer of the heater unit

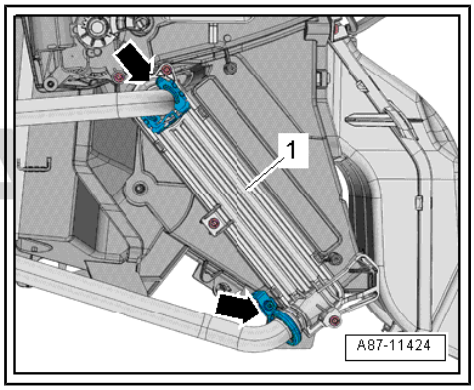
Note

When replacing component parts, pay attention to the correct assignment, a mixed fitting of component parts made by different manufacturers is not permitted ⇒ Electronic catalogue of original parts .

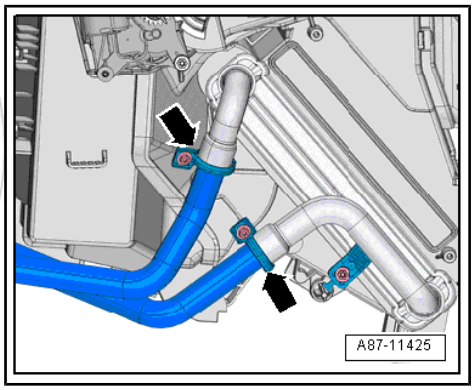
– Remove the centre console trim panel of the left footwell ⇒ Body Work; Rep. gr. 68.

Assignment of coolant pipes at heat exchanger:

Valeo manufacturer:



Manufacturer Denso:



82 – Supplementary heating

1 General instructions, safety precautions, rules for cleanliness

1.1 General notes when working on vehicles fitted with auxiliary heating

- The auxiliary heating is available in different versions; therefore when replacing pay attention to the exact assignment ⇒ Electronic Catalogue of Original Parts .
- There is a second type plate located in the engine compartment at the lock carrier. In case of uncertainty of the type of auxiliary heating, pay attention to the type plate attached to the auxiliary heating as well as the part number of the auxiliary heating control unit - J364- , which is shown in the function “Self-diagnosis” ⇒ Vehicle diagnostic tester.
- Switch off the ignition before disconnecting or connecting the battery as this could otherwise damage the control units, see ⇒ Electrical System; Rep. gr. 27 Chapter “Work sequence when disconnecting and reconnecting the battery”.
- The control unit for auxiliary heating - J364- and other components are equipped with a self-diagnosis system; inspect ⇒ Vehicle diagnostic tester.
- Certain inspections may cause the control unit to detect and store a fault. It is therefore necessary to interrogate the fault memory after having completed all inspections and repairs, and if necessary delete ⇒ Vehicle diagnostic tester.
- If there is too little fuel in the fuel tank (fuel gauge is in the red field), the control unit for auxiliary heating - J364- does not switch on the auxiliary heating.
- A minimum voltage of 11.5 V is required for perfect functioning of the electrical components.
- The fuel lines (pipes and hoses) from the fuel tank to the auxiliary heating must be routed flush with the underfloor in such a way that they do not come in contact with those parts which become warm and they must be protected against heat. If it heats up, the operation of the auxiliary heating could be impaired.
- If parts of the fuel system were removed or replaced, make sure that all the components for the fuel removal of the auxiliary heating are properly installed.
- The function of the auxiliary heating must be inspected after finishing the repair work on the auxiliary heating or the fuel system.

- If the auxiliary heating is replaced by a new one, it must run at full load mode for at least 10 minutes before handing it over to the customer. There can still be lubricant residues in or on the components of the auxiliary heating fitted at the factory, which evaporate after it is switched on for the first time. The smoke which occurs may worry the customer and he might look upon the auxiliary heating as defective.

Safety measures ⇒ page 8 .

Note

In the event of complaints about the operation of the auxiliary heating on vehicles with diesel engine at the start of the heating period - it is probably caused by frozen fuel in the line from the fuel tank to the auxiliary heating (summer diesel is still present in the fuel system of the auxiliary heating).

1.2 Safety measures when working on vehicles fitted with auxiliary heating.

- The auxiliary heating must not be on or be switched on in areas where there is a risk of fire or explosion.
- The auxiliary heating must not be on or be switched on (also not via a preselected switch-on time) in closed rooms without exhaust gas suction.
- Observe the relevant and applicable safety measures and the rules for cleanliness when working on the fuel system ⇒ Engine; Rep. gr. 20 .
- The engine must not be started as well as the auxiliary heating must not be switched on if parts of the fuel system (e.g. dosing pump, fuel line, fuel gauge sender) are removed or opened.

WARNING

The cooling system is under pressure, the coolant temperature can be over 100°C when the engine is warm - risk of burning!

Before repairs, reduce pressure and temperature if necessary.

Vehicles with start-stop system:

- On vehicles with activated start-stop system (recognizable by a message in the dash panel insert), the engine can start automatically if required.
- It is therefore necessary to ensure that the start-stop system is deactivated when carrying out work on the vehicle (ignition switched off, if required switch ignition on again).

Conditions for the activation/deactivation of the start-stop system ⇒ Operating Instruction Octavia III .

1.3 Notes when operating the auxiliary heating on vehicles with diesel engine.

If PME or RME fuel (methyl ester of plants or rapeseed) is refueled during the cold season, it may cause malfunctions of the auxiliary heating.

Reasons:

– If PME or RME fuel (methyl ester of plants or rapeseed) is refueled during the cold season, it may cause malfunctions of the auxiliary heating. The deposits can lead to malfunctions

during the combustion process (no more flame formation and deflagration in the combustion chamber) after prolonged operation with PME or RME fuel.

1.4 Rules of cleanliness when working on the auxiliary heating and the fuel system

Pay careful attention to the following rules of cleanliness when working on the fuel supply:

- Thoroughly clean the connection points and their surroundings before releasing.
- Place removed parts on a clean surface and cover. Do not use fuzzy cloths!
- Carefully cover or seal opened or removed components if the repair is not carried out immediately.
- Only install clean components: Remove spare parts from their wrapping immediately before fitting. Do not use any parts which have been stored unwrapped (e.g. in tool boxes).
- On an open fuel system, the following is not allowed:

– Working with compressed air.

– Start the engine.

– Switch on auxiliary heating.

– Avoid moving the vehicle.

1.5 Starting conditions of the auxiliary heating

- Engine type is O.K. (diesel/petrol)
- Auxiliary heating coded in Gateway
- No undervoltage shut-off
- No Crash shut-off
- No fuel reserve operation
- No fault code entries which prevent the start-up

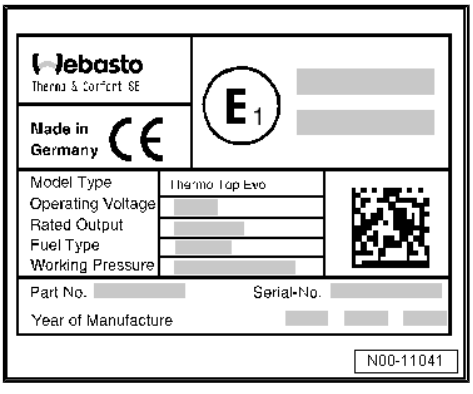
Note

The AC button does not influence the auxiliary heating operation.

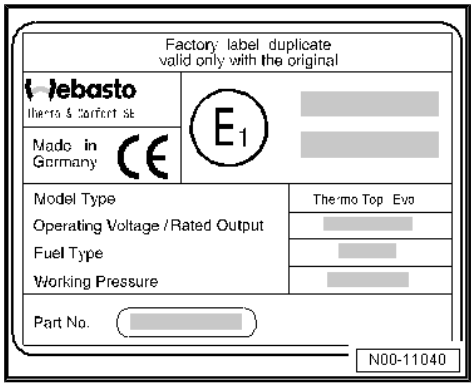
1.6 Type plate of auxiliary heating

The type plate is attached to the auxiliary heating and its duplicate to the lock carrier.

Type plate at the auxiliary heating



Type plate at lock carrier



2 Description of the function, control of auxiliary heating as well as the radio remote control

2.1 Description of the function and control of auxiliary heating

Other information and further description of function:

- ⇒ Self-study programme No. 79 ; Auxiliary heating
- ⇒ Owner's manual Octavia III
- Contact assignment ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

Switching on

Starting the auxiliary heating is carried out optionally via the remote control, the instant heat button - E537- , a corresponding programming in the Infotainment menu or direct switch-on in the cover of the air conditioning actuator. The auxiliary heating is switched on automatically via the vehicle electronics, if all the necessary requirements are present ⇒ page 9 .

Detailed description for programming as well as switching on/off the auxiliary heating ⇒ Owner's manual Octavia III .

First of all the functional testing of the fresh air blower - V2- and the combined glow plug with flame monitoring - Q8- is carried out, then the glow plug with flame monitoring - Q8- passes through the preheating phase.

The subsequent start procedure depends, among other things, on the coolant temperature and can therefore vary over time. In addition, the fuel is supplied, the glow plug with flame monitoring - Q8- is gradually switched off and the flame detector is activated.

After completing the initial phase, the device is burning at full load and the additional load control (operating mode, full load, partial load and control pause) is based on the following thresholds of the coolant temperature.

- Switch from full load to partial load: approx. 82 ℃
- Switch from partial load to control pause: approx. 88 ℃

If the coolant temperature drops during the control pause and within 15 minutes to below 71 °C, the heater unit starts in the full load mode.

The reference resistance of the glow plug with flame monitoring - Q8- is automatically redefined depending on the device in order to compensate the age-related changes during the start-up phase or during the afterrun at regular intervals.

As a result of this calibration process, the affected processes can also take a long time.

Switching off

After the maximum possible duration of 60 min has elapsed or after manual shutdown by remote control or instant heat button - E537- , the auxiliary heating is switched off.

The auxiliary heating switches off when at least one of the defined switching requirements is no longer fulfilled ⇒ page 9 .

After switching off, the operation of the dosing pump - V54- is immediately stopped.

The combustion air blower - V6- and the glow plug with flame monitoring - Q8- continue to operate within a limited period of time, in order to completely burn the remaining fuel in the system and to cool the burner components.

The afterrun of the circulating pump - V55- is also carried out.

The afterrun of the heater unit can last different lengths of time depending on the software version and the load level at the time of shutdown:

175 seconds when switching off from full load mode

110 seconds when switching off from partial load mode

Depending on the software versions in the control unit, this can lead to deviations of the above after-running times.

2.2 Descriptions of the functions of the radio control Telestart T91

The auxiliary heating or the vehicle fan can be switched on and off wireless over a great distance with the radio control Telestart T91. A mode change must be performed in the menu of the dash panel insert in order to switch on the vehicle blower (ventilating the vehicle interior), see ⇒ Owner's manual Octavia III .

After switching on, the auxilary heating switches off automatically after the expiration of the selected engaging duration or by means of the automatic heating.

An optimal signal transfer is obtained in a cleared area or from elevated locations. As a result, the operation of the auxiliary heating becomes possible if the distance from the vehicle is up to 600 m. Due to poor weather conditions, in heavily developped areas or as a result of a weak battery, the reception is restricted accordingly.

Note

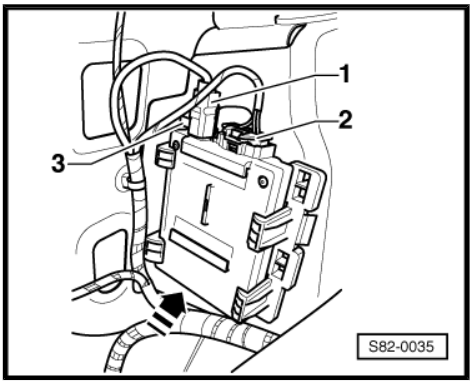
- *Detailed description of the function of the remote control system ⇒ Owner's manual Octavia III .*
- *If the radio remote control is replaced, carry out the adaptation with ⇒ Vehicle diagnostic tester.*

2.3 Removing and installing radio receiver for auxiliary water heating - R149-

The radio receiver for auxiliary water heating - R149- is located behind the left luggage compartment trim panel.

– Remove left side luggage compartment trim panel ⇒ Body Work; Rep. gr. 70 .

– Disconnect aerial plug -1- and plug -2-.
– Press the latch clip -3- and push the radio receiver out of the holder -arrow-.
– Installation is performed in the reverse order, pay attention to the following points:



Note

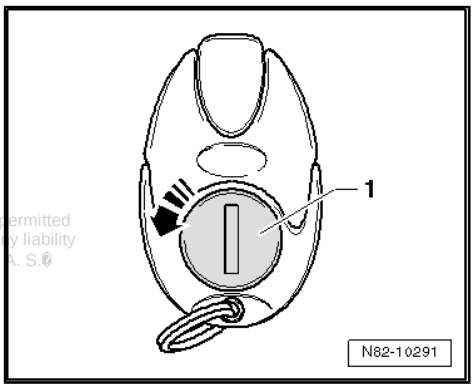
When replacing the radio receiver, adapt the new radio receiver with the ⇒ Vehicle diagnostic tester in the function "Targeted fault finding" to the auxiliary heating.

2.4 Replacing the battery of the radio remote control

Note

- *Observe the fitting position of the battery (see symbol "+" on the cover -1-).*
- *Only use a battery of the same type with a voltage of 3V.*
- *The adaptation is ensured, a new adaptation is not necessary.*

– Place a coin in the gap of the cover -1- and unlock the cover by turning -arrow- and remove it.
– Replace battery, insert cover and lock it by turning to the right.



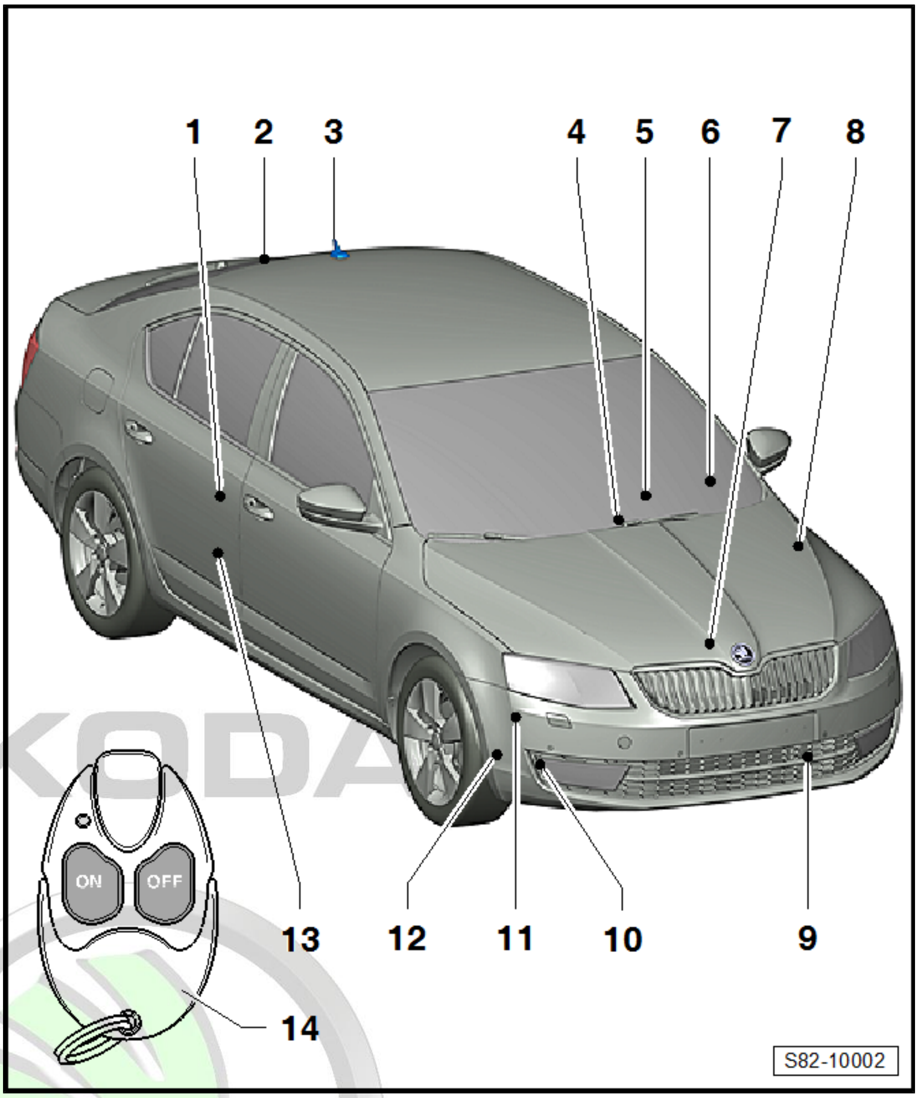
3 Auxiliary heating - Overview of the fitting position

⇒ “3.1 Summary of components - auxiliary heating ”, page 14

⇒ “3.2 Assembly overview of fitting positions of auxiliary heating components”, page 15

⇒ “3.3 removing and installing ambient temperature sensor G17 ”, page 15

3.1 Summary of components - auxiliary heating



1 - Fuel delivery unit with connection for fuel removal of the auxiliary heating and the fuel gauge sender - G-

- ❑ Removing and Installing ⇒ Engine; Rep. gr. 20
- ❑ Fitting location: under rear seat

2 - Radio receiver for auxiliary heating - R64-

- ❑ under the left luggage compartment trim panel
- ❑ removing and installing ⇒ page 12

3 - Roof aerial for signal reception from the radio remote control of the auxiliary heating

- ❑ removing and installing ⇒ Electrical System; Rep. gr. 91

4 - Control for heating and air conditioning system

5 - Display unit for infotainment

6 - Fuse holder and relay carrier

7 - Duplicate plate of auxiliary heating

- ❑ specifies the technical data in addition to the type of auxiliary heating ⇒ page 9

8 - Fuse holder and relay carrier in engine compartment

9 - Ambient temperature sensor - G17-

- ❑ removing and installing ⇒ page 15
- ❑ check ⇒ Vehicle diagnostic tester
- ❑ Fitting location: below the front left bumper

10 - Exhaust system of auxiliary heating

- ❑ removing and installing ⇒ page 21

11 - Auxiliary heating with auxiliary heating control unit - J364-

- ❑ removing and installing ⇒ page 17
- ❑ Fitting location: below the front right bumper

- ❑ the type plate is located at the auxiliary heating as well as at the lock carrier ⇒ page 9

12 - Circulating pump - V55-

- ❑ removing and installing ⇒ page 22

13 - Dosing pump - V54-

- ❑ Summary of components ⇒ page 34
- ❑ removing and installing ⇒ page 34
- ❑ Check fuel flow rate ⇒ page 36

14 - Remote control of auxiliary heating

- ❑ Detailed description of function ⇒ Owner's manual Octavia III
- ❑ Replacing the battery ⇒ page 13

3.2 Assembly overview of fitting positions of auxiliary heating components

1 - Auxiliary heating with auxiliary heating control unit - J364-

- ❑ removing and installing ⇒ page 17

2 - Nut

- ❑ 20 Nm

3 - Connector

4 - Exhaust System

- ❑ removing and installing ⇒ page 21

5 - Circulating pump - V55-

- ❑ removing and installing ⇒ page 22

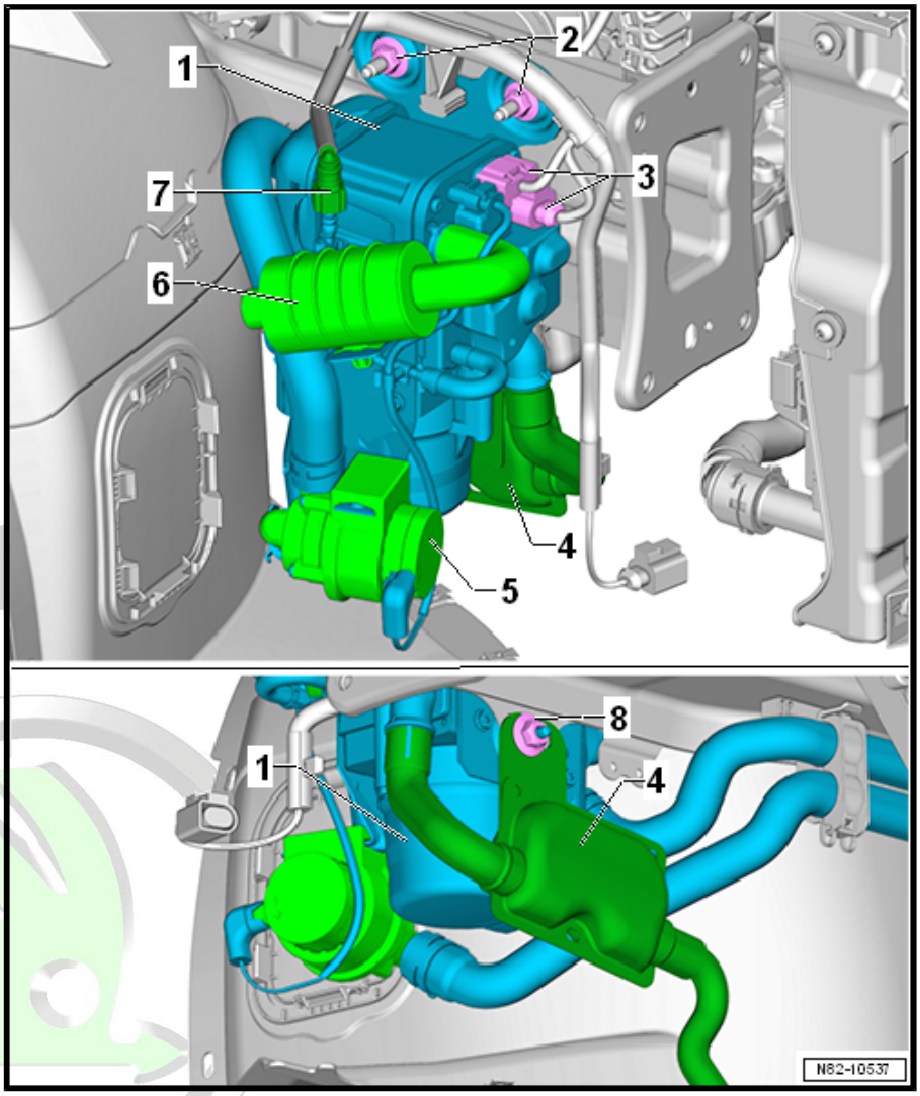
6 - Air intake silencer

- ❑ removing and installing ⇒ page 21

7 - Fuel line with quick coupling

8 - Nut

- ❑ 20 Nm



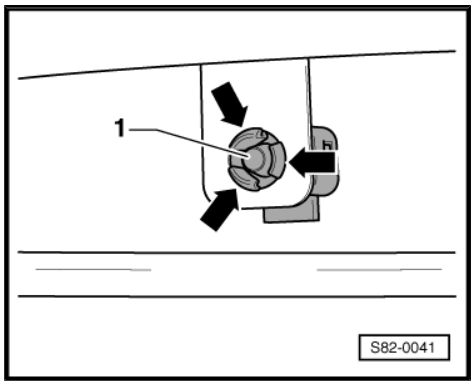
3.3 removing and installing ambient temperature sensor - G17-

The outside temperature sensor - G17- is located behind the bottom grid of the front left bumper.

Removing

– Remove front bumper ⇒ Body Work; Rep. gr. 63 .

– Unclip ambient temperature sensor - G17- -1- from the bracket -arrows- and disconnect the plug connection.



Install

Installation is carried out in the reverse order.

4 Removing and installing auxiliary heating of the vehicle

⇒ “4.1 Removing and installing auxiliary heating”, page 17

4.1 Removing and installing auxiliary heating

Note

- *If the auxiliary heating is replaced, first connect the diagnostic unit ⇒ Vehicle diagnostic tester and the function “replace control unit” is called up under the guided functions of the relevant control unit.*
- *Install all cable ties and other fasteners for the electrical cables at the same places from which they were detached/cut when they were removed.*

Special tools and workshop equipment required

- Hose clamps - MP7-602 (3094)-

Removing

– Disconnect the battery-earth cable with the ignition off ⇒ Electrical System; Rep. gr. 27 .

– Remove the front right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .

WARNING

The cooling system is under pressure, the coolant temperature can be over 100°C when the engine is warm - risk of burning!

Before repairs, reduce pressure and temperature if necessary.

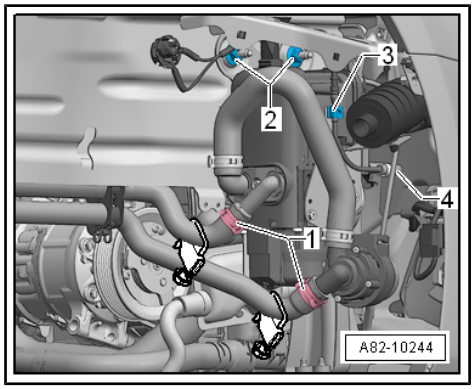
Parts of the exhaust system can be hot.

Let the exhaust system cool down before the removal.

– Remove exhaust system of auxiliary heating ⇒ page 21 .

– Place the catch pan under the auxiliary heating.

– Disconnect the coolant hoses from the hose clamps - MP7-602 (3094)- .
– Slacken the clamps -1- and detach the coolant hoses from the pipes.



Note

Observe safety measures when working on the fuel system *⇒ page 7* *.*

– Unlock the fuel line from the clips -3- and -4-.

WARNING

There is a risk of fuel escaping.

The fuel system is under pressure!

Lay a clean cleaning cloth around the connection point and carefully slacken the connection point in order to relieve the pressure in the fuel system.

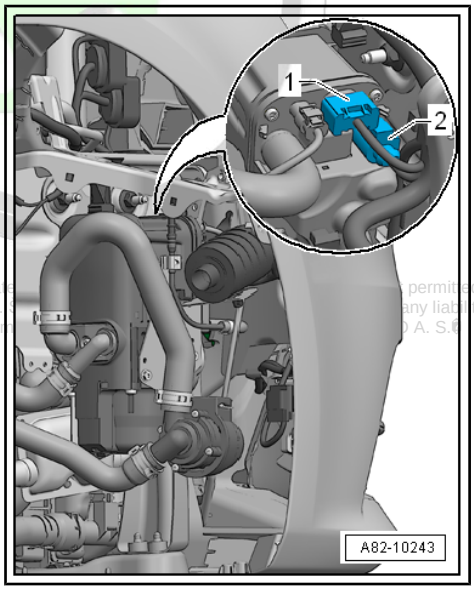
– Close the fuel line with a suitable screw plug after detaching it.
– Release the nuts -2- and remove the auxiliary heating from the frame side rail.

Caution

Stress can occur on the plugs and the auxiliary heating control unit - J364- can get damaged.

First of all unplug the 6-pin connector.

– Carefully tilt the auxiliary heating towards the rear, first unplug and remove the connector -1- (6-pin) and then the connector -2-.
– Remove auxiliary heating.



Install

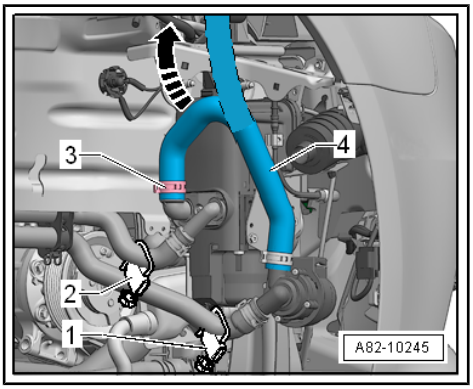
Installation is performed in the reverse order, pay attention to the following points:

Caution

When undertaking all installation work, particularly in the engine compartment due to its cramped construction, please observe the following:

- ***Lay lines of all kinds (for fuel, cooling fluid and refrigerant, electrical lines) in such a way that the original line guide is re-established.***
- ***Ensure that there is adequate free access to all moving or hot components.***

– Install auxiliary heating and connect the hoses which are secured with the hose clamps -1- and -2-. Do »NOT« open the clamps yet.



– Slacken the hose clamp -3-, detach the hose -4- and hold it vertically upwards.
– Only loosen the hose clamp -2- when coolant begins to flow out.
– Close hose clamp -2- again.
– Only when coolant begins to flow out the hose -4-, loosen the hose clamp -1-.
– Close hose clamp -1- again.
– Reinstall the hose -4- and remove the hose clamps -1- and -2-.
– Ventilate the refrigerant circuit of the auxiliary heating ⇒ page 31 .
– Interrogate fault memory, if necessary erase entries ⇒ Vehicle diagnostic tester.

Note

- *If more air enters the coolant system during the installation, the complete refrigerant circuit must be ventilated ⇒ Engine; Rep. gr. 19 .*
- *Pay attention to the sequence when connecting the battery earth strap ⇒ Electrical System; Rep. gr. 27 .*
- *If the auxiliary heating is replaced by a new one, it must run at full load mode for at least 10 minutes before handing it over to the customer. There can still be lubricant residues in or on the components of the auxiliary heating fitted at the factory, which evaporate after it is switched on for the first time. The smoke which occurs may worry the customer and he might look upon the auxiliary heating as defective.*

5 Component parts of the auxiliary heating

5.1 Component parts of the auxiliary heating - Summary of components

1 - Auxiliary heating with auxiliary heating control unit - J364-

- ❑ removing and installing ⇒ page 17

2 - Hose clamp

3 - Coolant hose

4 - Air intake silencer

- ❑ removing and installing ⇒ page 21

5 - Bracket for circulating pump - V55-

6 - Bolts

- ❑ 8 Nm

7 - Circulating pump - V55-

- ❑ removing and installing ⇒ page 22

8 - Exhaust System

- ❑ removing and installing ⇒ page 21

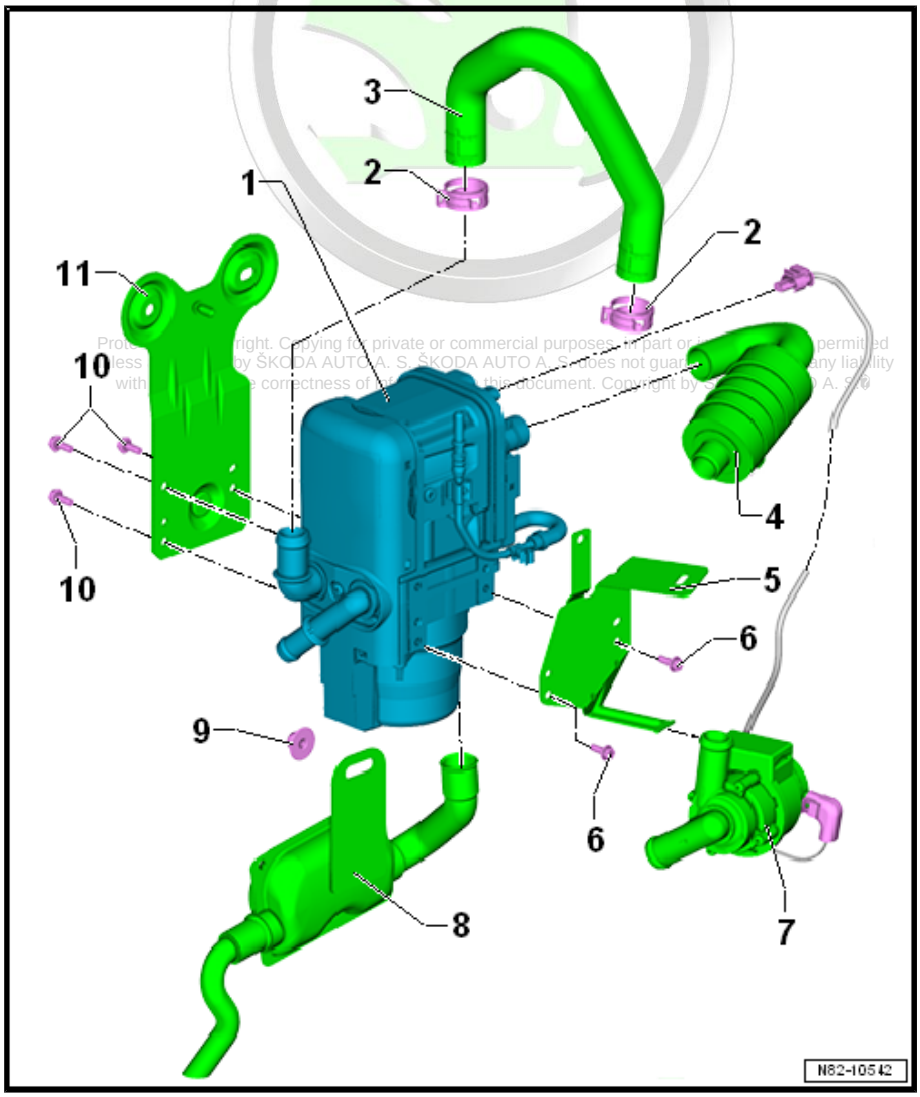
9 - Nut

- ❑ 20 Nm

10 - Bolts

- ❑ 8 Nm

11 - Bracket for auxiliary heating



5.2 Removing and installing exhaust system

Removing

WARNING

The exhaust system can be hot - risk of burning.

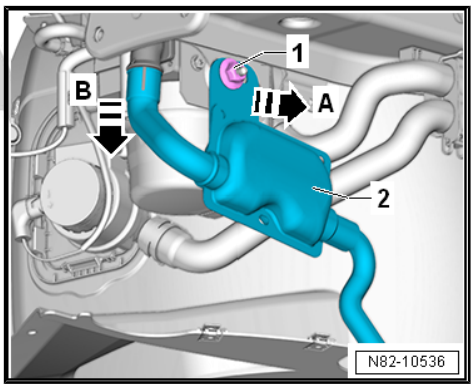
Let the exhaust system cool down before the removal.

– Switch off the ignition and all electrical components.

– Remove the front right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .

– Screw down fixing nut -1-.

– Push out exhaust system -2- -arrow A- and remove from the heater unit -arrow B-.



Install

Installation is performed in the reverse order, pay attention to the following points:

Caution

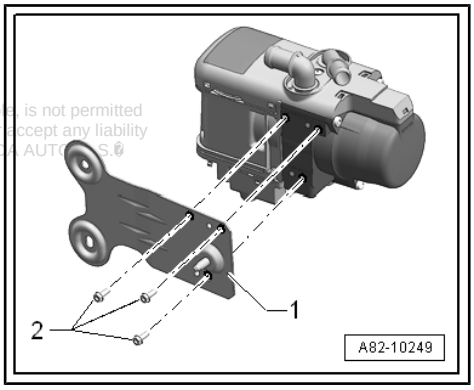
Lay the exhaust system in such a way that it does not come in contact with the electrical cables.

5.3 Removing and installing holder for auxiliary heating

Removing

– Removing auxiliary heating ⇒ page 17 .

– Unscrew the screws -2- (8 Nm) and remove the bracket -1-.



Install

Installation is carried out in the reverse order.

5.4 Removing and installing air intake silencer

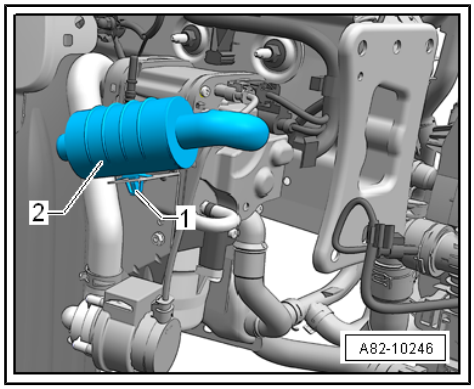
Removing

– Switch off auxiliary heating.

– Remove the front right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .

– Press together the spreader clip -1- and loosen from the bracket.

– Detach the damper -2- from the auxiliary heating.



Install

Installation is performed in the reverse order, pay attention to the following points:

Note

- *The noise damper for intake air must not rest against the housing of the auxiliary heating.*
- *Do not kink or press together the aluminium pipe.*

5.5 Removing and installing circulating pump - V55-

Removing

Special tools and workshop equipment required

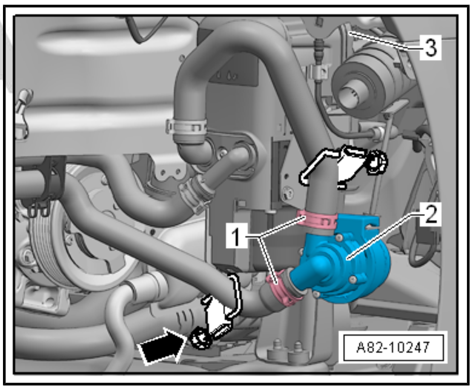
- Hose clamps - MP7-602 (3094)-

WARNING

The cooling system is under pressure, the coolant temperature can be over 90 °C when the engine is warm - risk of burning!

Before repairs, reduce pressure and temperature if necessary.

– Remove the front right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .



- Close the coolant hoses with hose clamps - MP 7-602 (3094)- .
- Slacken clamps -1- and pull off the coolant hoses from the circulating pump - V55- .
- Separate the plug connection -3- and detach the circulating pump - V55- Pos. -2- from the bracket.

Install

- Push the circulating pump onto the bracket.
- Fit the plug connection -3- onto the auxiliary heating or the circulating pump (depending on the version). Pay attention to secure catch.
- Fit the bottom coolant hose.
- Hold the bottom hose clamp -arrow- open until the coolant reaches the upper edge of the circulating pump - V55- .
- Fit the top coolant hose and remove the hose clamps.

Note

- *Pay attention to the correct routing of the cables.*
- *There should be no humidity in the plug connector housing.*
- *Protect the housing against knocks and bumps.*

- Further installation is carried out in the reverse order.
- If more air has entered the coolant system during the assembly, the refrigerant circuit must be ventilated ⇒ page 31 .
- Interrogate fault memory and erase entries ⇒ Vehicle diagnostic tester.
- Start the auxiliary heating and let it run at full load mode for at least 10 minutes, in order to completely ventilate the fuel line and inspect the function of the auxiliary heating.

6 Disassembling and assembling auxiliary heating

6.1 Summary of components - disassembled auxiliary heating

1 - Bolts

- ❑ 7 Nm

2 - Heat exchanger

3 - Gasket

- ❑ replace after each removal
- ❑ Check fitting position

4 - Combustion pipe

5 - Glow plug with flame monitoring - Q8-

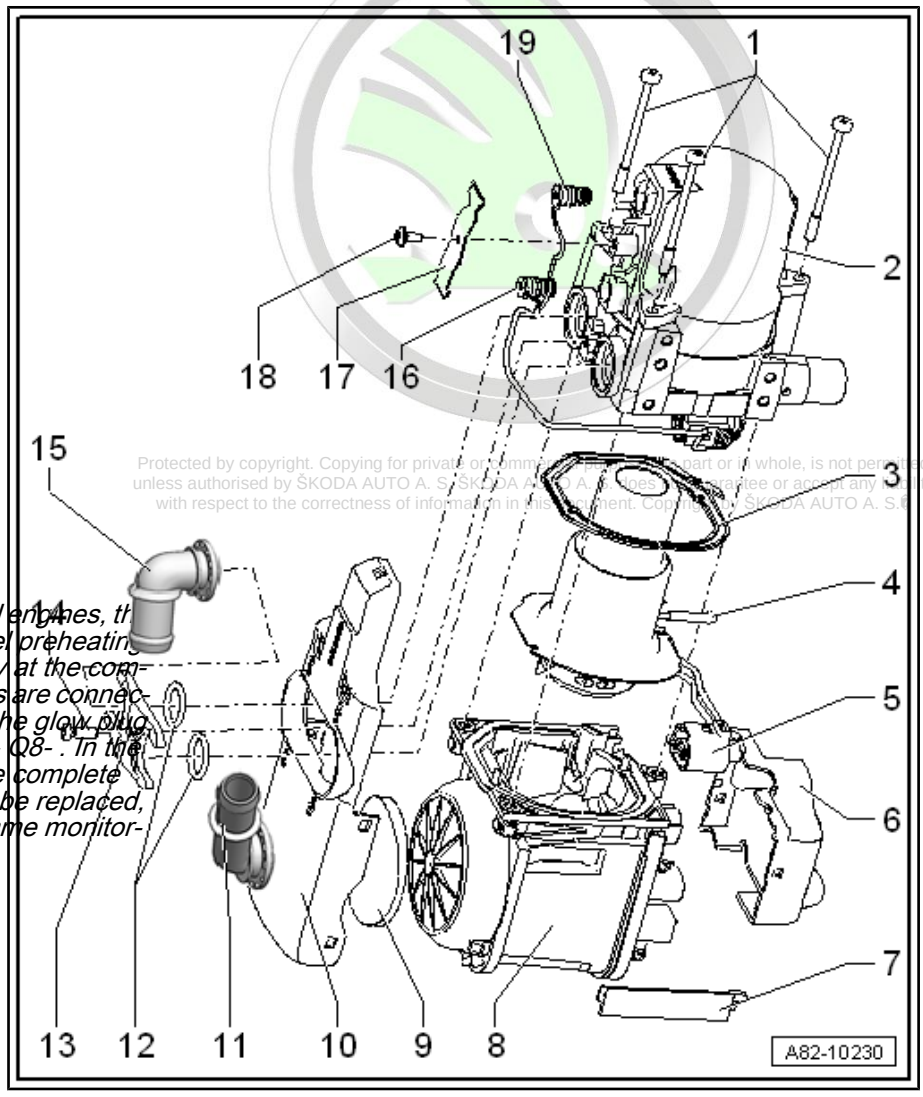
- ❑ pay attention to correct position
- ❑ remove and install, test ⇒ page 29

Note

For vehicles with diesel engines, th heating element for fuel preheatin - Z66- is installed firmly at the combustion pipe The cables are connected with the cables of the glow plug with flame monitoring - Q8- . In the case of this version the complete combustion pipe must be replaced, if the glow plug with flame monitoring - Q8- is defective.

6 - Cover for auxiliary heating control unit - J364-

- ❑ removing and installing ⇒ page 25



7 - Cover

8 - Auxiliary heating control unit - J364- with combustion air blower - V6-

- ❑ both parts form one component and cannot be disassembled

9 - Cover

10 - Cover for noise insulation

- ❑ removing and installing ⇒ page 25

11 - Coolant hose supports

- ❑ Mark the fitting position before loosening

12 - Gasket rings

- ❑ replace after removal

13 - Retaining clip

14 - Screw

- ❑ 4 Nm

15 - Coolant hose supports

- ❑ Mark the fitting position before loosening

16 - Temperature sensor - G18-

- ❑ remove and install, test ⇒ page 28

17 - Retaining spring

18 - Screw

- ❑ 4 Nm

19 - Overheating sensor - G189-

- ❑ remove and install, test ⇒ page 28

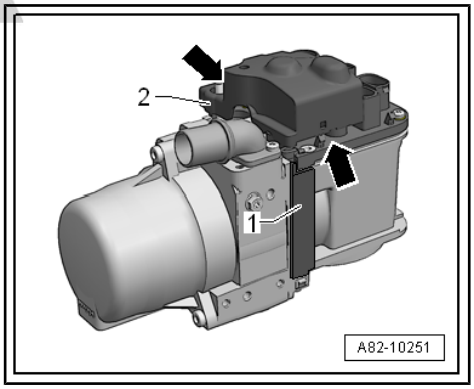
6.2 Removing and installing cover for auxiliary heating control unit - J364-

Removing

– Removing auxiliary heating ⇒ page 17 .

– Remove cable cover -1-.

– Unclip cover -2- -arrows- and remove.



Install

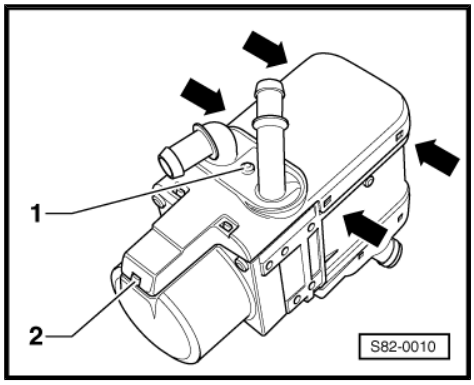
Installation is carried out in the reverse order.

6.3 Removing and installing cover for auxiliary heating

Removing

– Removing auxiliary heating ⇒ page 17 .

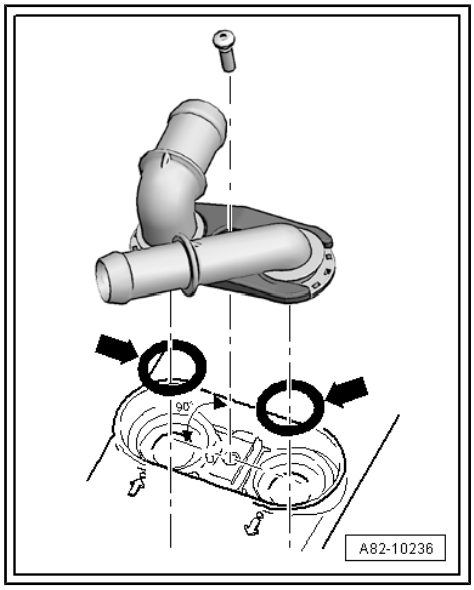
– Mark the fitting location of the supports for the coolant hoses, remove screw -1- (4 Nm) and take out the supports.
– Unclip cover at the catches -arrows- and pull over the catch pegs -2-.



Install

Installation is performed in the reverse order, pay attention to the following points:

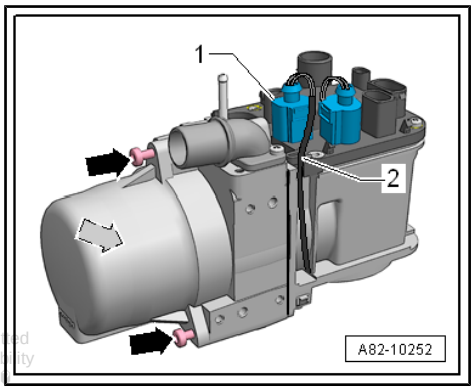
– Replace gasket rings -arrows-.
– Check sealing surfaces for contamination or damage.
– Moisten sealing rings with coolant before installing.



6.4 Disassembling and assembling auxiliary heating

Dismantling

– Removing auxiliary heating ⇒ page 17 .
– Remove the cover ⇒ page 25 .
– Unplug connector -1-.
– Loosen the cable -2- from the cable terminal.
– Release the screws -arrows- (7 Nm) and detach the heat exchanger from the blower housing in an axial direction of the screwed connection.
– Clean the inside and the outside of the heat exchanger.



Assembling

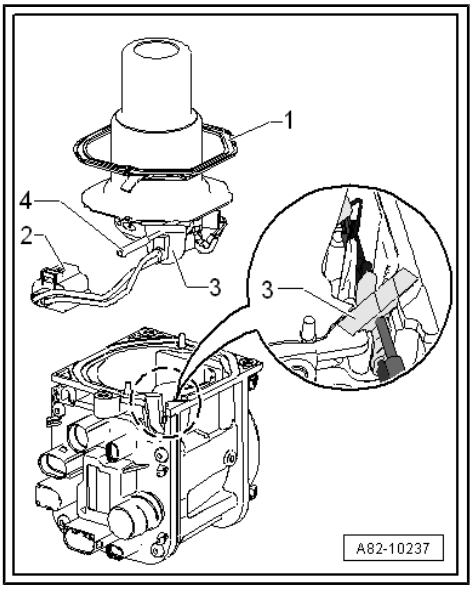
Installation is carried out in the reverse order.

6.5 Disassembling and assembling the burner unit

Dismantling

– Removing auxiliary heating ⇒ page 17 and then disassembling ⇒ page 26 .

– Remove seal -1- from blower housing.
– Unlock the plug connection -2- and pull out.
– Pull the grommet -3- out of the blower housing by applying slight pressure on the fuel pipe -4- and while doing so lift the burner unit in vertical direction upwards.



Assembling

Installation is performed in the reverse order, pay attention to the following points:

– Replace gasket -1- and grommet -3-.
– Check sealing surfaces and clean if necessary.
– Pay attention to the correct position of the gasket -1- for the grommet -3- and the secure catch of the plug connection -2-.

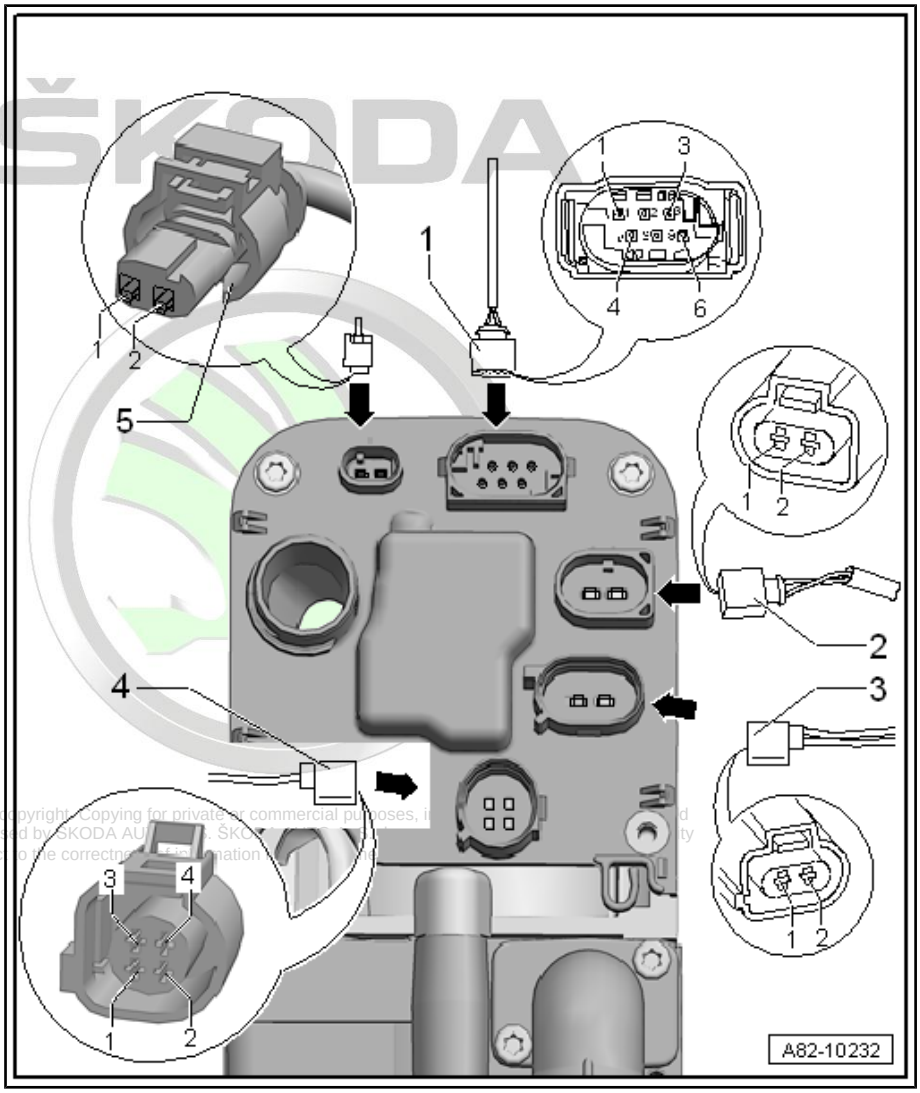
Caution

Risk of short circuit on the glow plug if the grommet was not correctly fitted.

6.6 Plug assignment at the auxiliary heating control unit - J364-

Note

Information on plug assignment can be found in the latest current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.



6.7 Removing and installing, checking the temperature sensor - G18- and the overheating sensor - G189-

Note

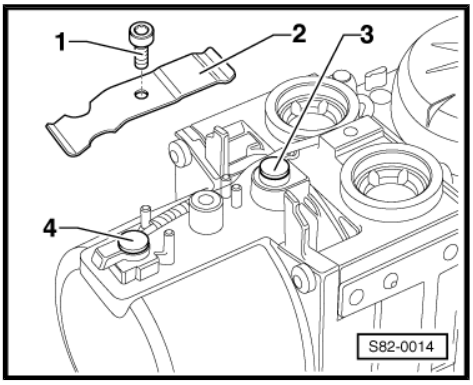
Proper functioning can be checked using the ⇒ Vehicle diagnostic tester in the function “Targeted fault finding”.

Removing

– Removing auxiliary heating ⇒ page 17 .

– Release screw -1- (4 Nm) and remove retaining spring -2-.

– Pull out temperature sensor - G18- -3- and overheating sensor - G189- -4- using a set of pointed pliers.



Install

Installation is performed in the reverse order, pay attention to the following points:

– Replace gaskets.

– Check sealing surfaces and clean if necessary.

Note

- *Pay attention to the correct location of the retaining spring -2-.*
- *The sensors cannot be replaced individually.*

6.8 Removing, installing and checking glow plug with flame monitoring - Q8-

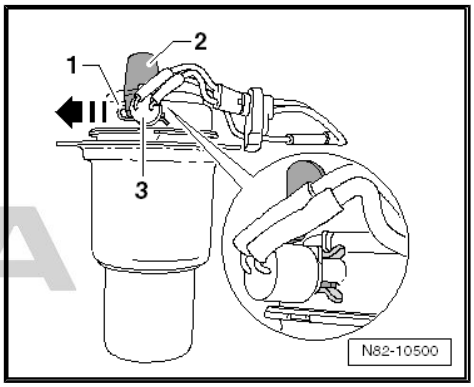
Removing

– Dismantle auxiliary heating ⇒ page 26 .

– Pull out retaining spring -1- -arrow-.

– Remove retaining bracket -2-.

– Remove glow plug with flame monitoring - Q8- Pos. -3-.

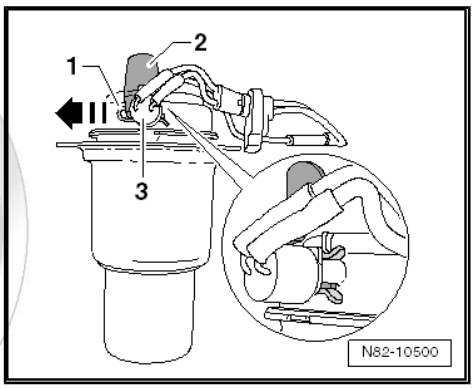


Install

Installation is performed in the reverse order, pay attention to the following points:

Note

- *Observe the fitting position of the retaining spring -1- as well as the retaining bracket -2-.*
- *The non-insulated connecting lines to the glow plug must not touch or rest against any other components (risk of short circuit).*
- *Proper functioning of the glow plug with flame monitoring - Q8- can be checked using the ⇒ Vehicle diagnostic tester in the function "Targeted fault finding".*



7 Refrigerant circuit of auxiliary heating

⇒ “7.1 Connection diagram - coolant hoses”, page 30

⇒ “7.2 Ventilating the refrigerant circuit of the auxiliary heating”, page 31

7.1 Connection diagram - coolant hoses

Note

- *The complete connection diagram of the refrigerant circuit, top up the coolant and ventilate the refrigerant circuit “Engine” ⇒ Engine; Rep. gr. 19 .*
- *The -arrows- point in the flow direction of the coolant.*

1 - Heat exchanger for heating in the heating and air conditioning unit

2 - Auxiliary heating

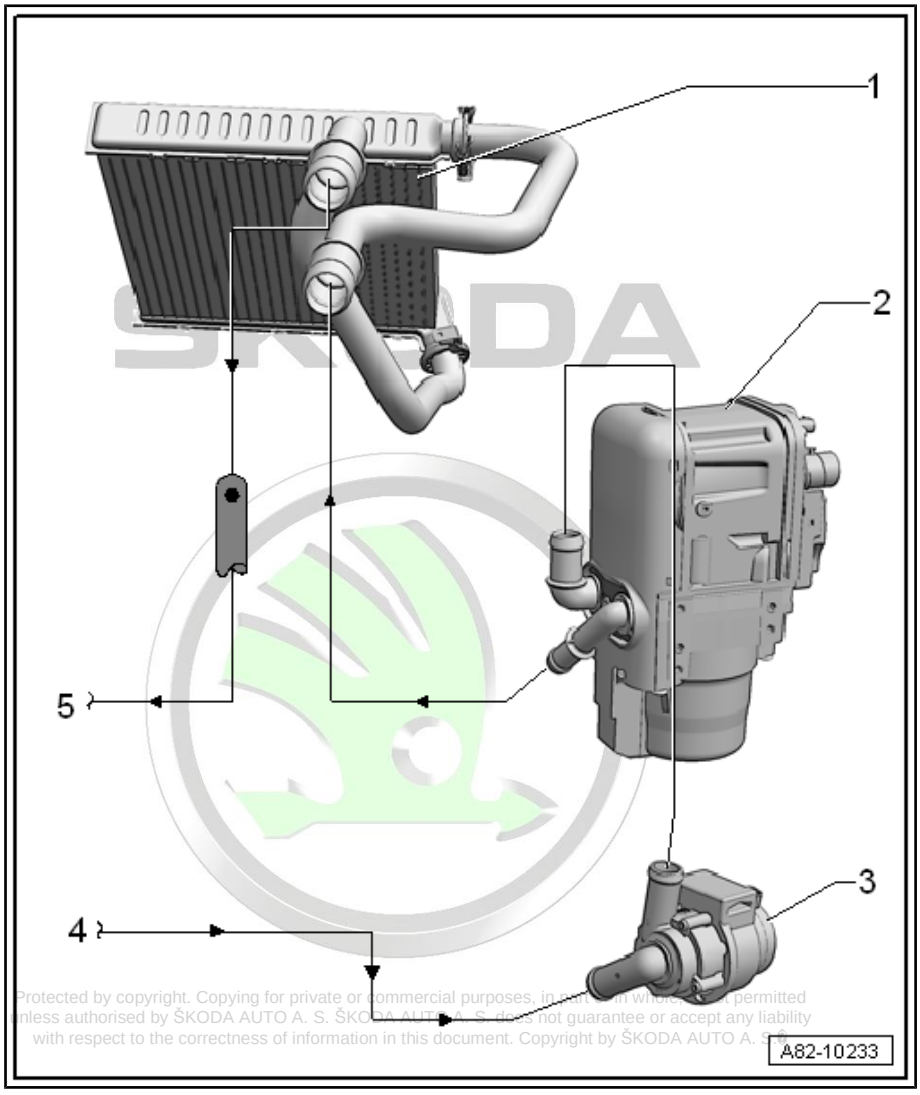
- ❑ removing and installing ⇒ page 17

3 - Circulating pump - V55-

- ❑ removing and installing ⇒ page 22

4 - Coolant feed of engine

5 - Coolant return-flow to engine



7.2 Ventilating the refrigerant circuit of the auxiliary heating

Note

- *The procedure for the removal and installation of the auxiliary heating and the circulating pump - V55- is described in this workshop manual in such a way that only little air enters or remains in the refrigerant circuit.*
- *Therefore, it is necessary to ventilate the complete refrigerant circuit after the removal and installation of the auxiliary heating or the circulating pump.*
- *Only if there is a complaint, e.g. if a large amount of coolant has flown out due to a leaky hose or after replacing the coolant pipes, the complete refrigerant circuit must be ventilated ⇒ Engine; Rep. gr. 19 .*
- *After ventilating and topping up the refrigerant circuit, it is necessary to ventilate the auxiliary heating.*

Ventilating the refrigerant circuit of the auxiliary heating

Caution

The circulating pump - V55- must be filled with coolant, otherwise the pump can run dry and get damaged.

– Top up the coolant expansion reservoir up to the top marking with coolant.

– ⇒ Vehicle diagnostic tester connect and actuate the circulating pump - V55- in the mode “Targeted fault finding” via the function “Actuator diagnosis”. The refrigerant circuit of the heat exchanger in the heating and air conditioning unit to the circulating pump - V55- is additionally ventilated herewith.

– Start the engine and set the highest temperature pre-selection “HI” on the control and display unit of the heating and air conditioning system (on the driver and front passenger side for Climatronic).

– Let the auxiliary heating run at full load mode for at least 2 minutes (the circulating pump - V55- starts running).

– Let the engine run at fast idling for at least 2 minutes (approx. 2000 to 2500 rpm).

– Switch off the engine and the auxiliary heating.

WARNING

Danger of scalding due to hot steam and hot coolant.

- ***The cooling system is below overpressure. The coolant temperature can be over 90 °C when the engine is warm.***
- ***Remove the pressure in the refrigerant circuit ⇒ Engine; Rep. gr. 19 Chap. “Draining and filling up coolant”.***

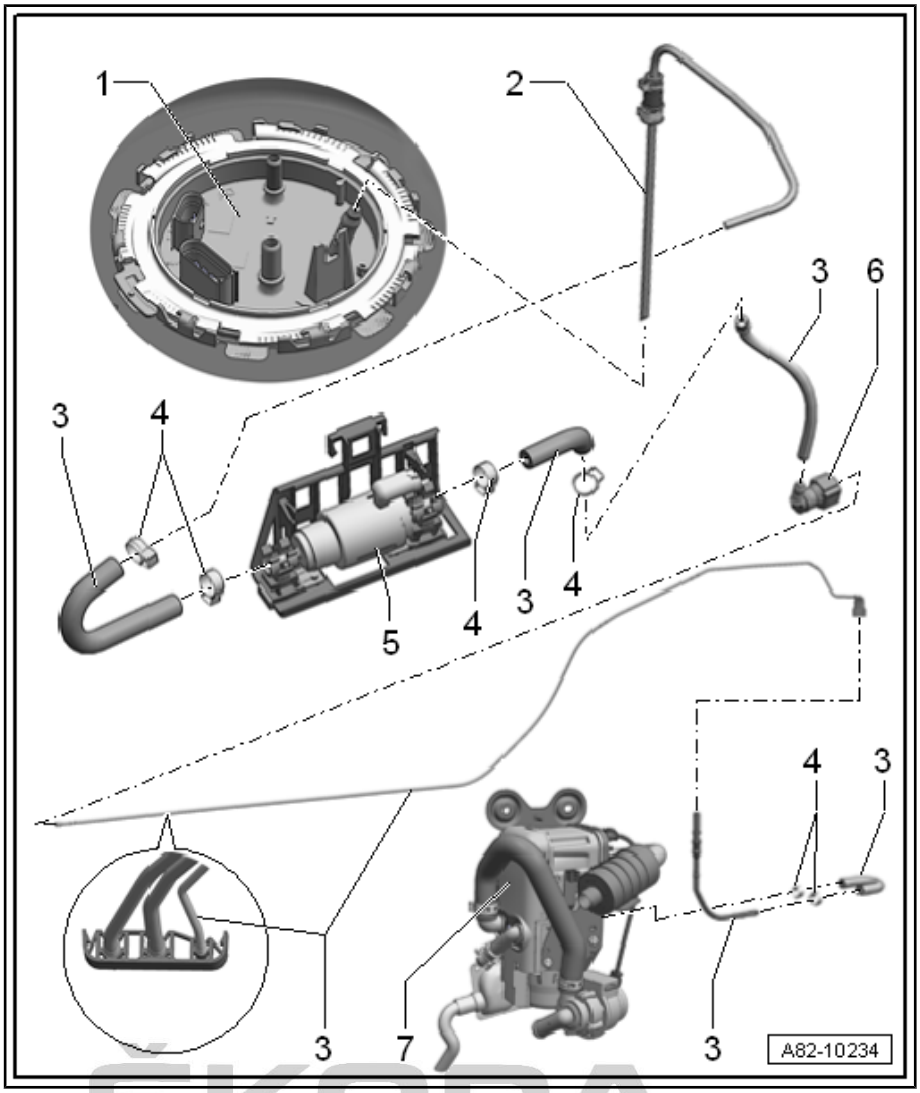
– Inspect coolant level in the coolant expansion reservoir, top up with coolant if necessary ⇒ Engine; Rep. gr. 19 .

8 Fuel supply of auxiliary heating

Note

- *Observe safety measures ⇒ page 7 .*
- *Observe rules for cleanliness ⇒ page 9 .*
- *Fuel lines must be secured only with spring strap clips. The use of clamp-type or screw-type clips is not allowed.*
- *Use pliers for spring strap clips to remove and fit the spring strap clips.*
- *If parts of the fuel system were removed or replaced, make sure that all the components for the fuel removal of the auxiliary heating are properly installed.*
- *The fuel line (pipes and hoses) from the fuel tank to the auxiliary heating must be routed in such a way that it does not come in contact with those parts which become warm and it must be protected against heat. If it heats up, the operation of the auxiliary heating could be impaired.*

8.1 Fuel system module of auxiliary heating



1 - Fuel delivery unit with connection for fuel removal of the auxiliary heating and the fuel gauge sender - G-

- ❑ Removing and Installing ⇒ Engine; Rep. gr. 20
- ❑ Fitting location: under rear seat
- ❑ Connection of the fuel line to the fuel delivery unit ⇒ page 33

2 - standpipe

- ❑ with grommet and clamps

3 - fuel line/fuel hose

- ❑ different fuel lines, depending on the vehicle equipment ⇒ Electronic catalogue of original parts

> **Caution**
> *Fuel lines which rest flush against the body, can transmit noise.*

- – After installing, check the fuel lines for routing; they must not rest flush against the body.

4 - Warm-type clamps

- ❑ replace after removal

5 - Dosing pump - V54-

- ❑ removing and installing ⇒ page 34

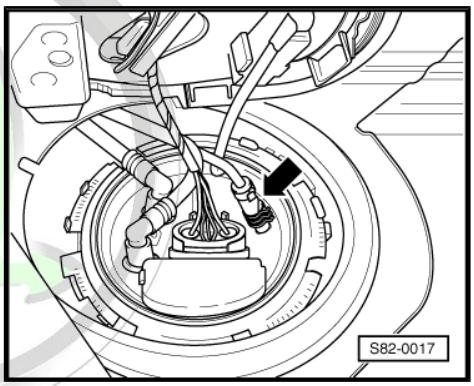
6 - Quick coupling

7 - Auxiliary heating

- ❑ removing and installing ⇒ page 17

Connection of the fuel line to the fuel delivery unit

The fuel removal of the auxiliary heating is performed via the connection to the fuel delivery unit -arrow-.



8.2 Summary of components - dosing pump - V54- with component parts

1 - Gasket at fuel reservoir

2 - Plug connection of dosing pump - V54-

3 - Cable strap

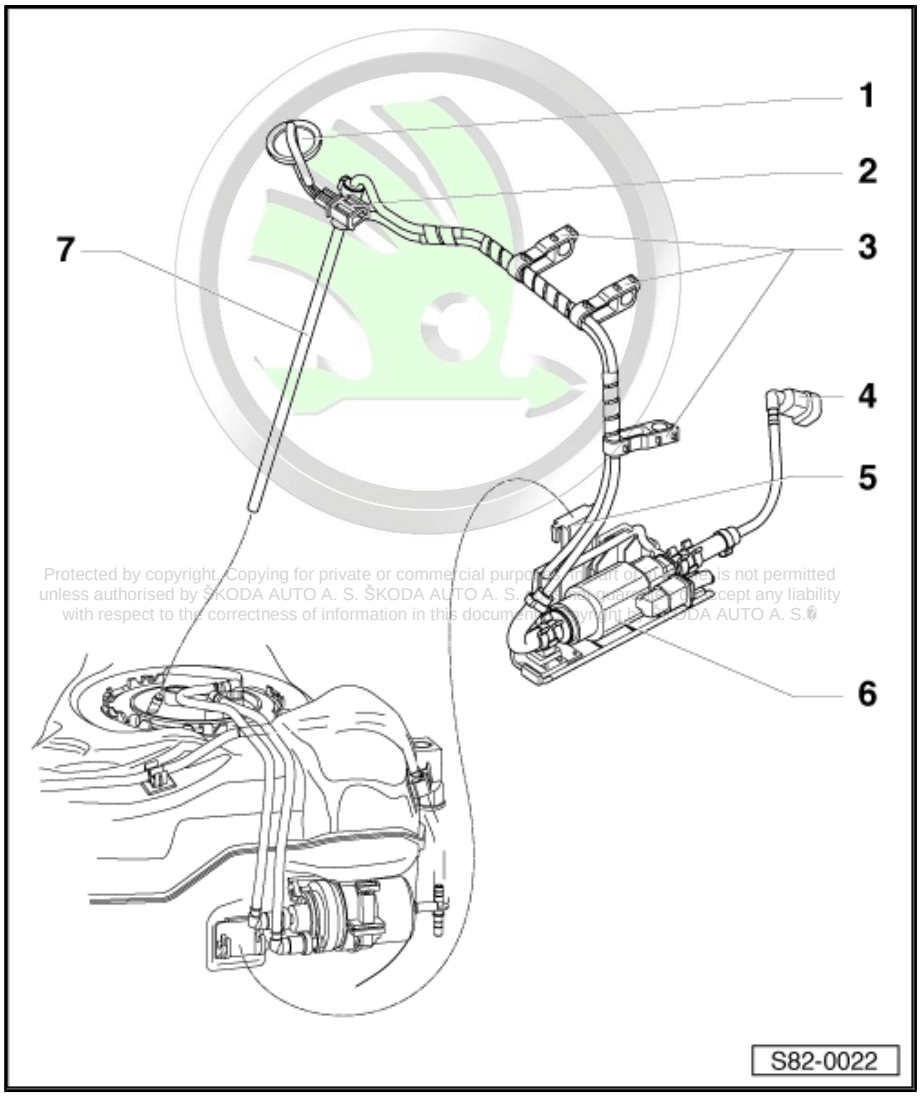
4 - Quick coupling

5 - Bracket for dosing pump - V54-

6 - Dosing pump - V54-

- ❑ Dosing pump and related components are a replacement part
- ❑ different versions, see ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ page 34

7 - Fuel extraction pipe



8.3 Removing and installing the dosing pump - V54-

Removing

Note

Observe safety measures and rules for cleanliness ⇒ page 7 .

Note

In order to remove the dosing pump - V54- , it is necessary to slightly lower the fuel reservoir ⇒ Engine; Rep. gr. 20 .

– Switch off the auxiliary heating as well as all the electrical components.

WARNING

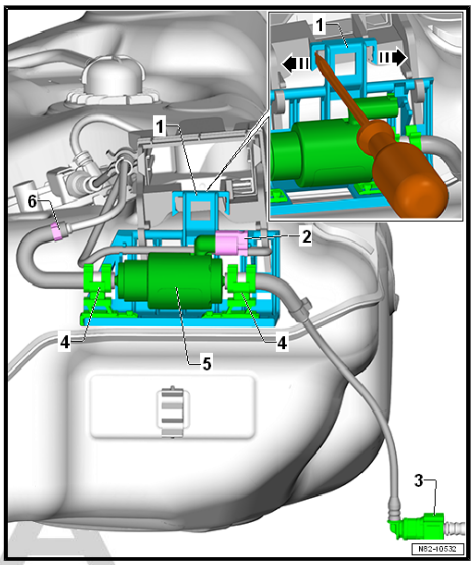
The fuel line is under pressure! Place cleaning cloths around the connection point before detaching hose connections. Then reduce the pressure by carefully removing the hose.

– Separate electrical plug connection -2-.

– Press off the catches -arrows- using a suitable tool and push the dosing pump -5- with bracket -1- upwards and out of the fuel tank.

– Remove the dosing pump -5- from the support guides -4-.

– Slacken the fuel quick coupling -3- and close the fuel lines with suitable screw plugs.

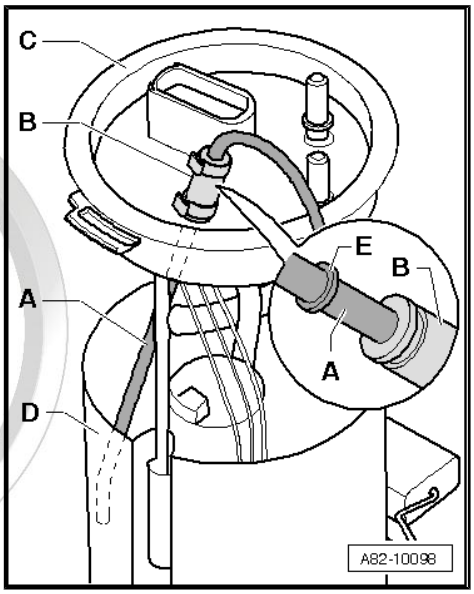


Install

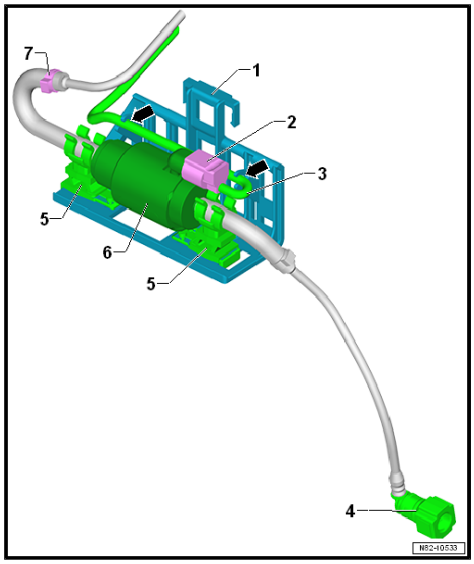
Installation is performed in the reverse order, pay attention to the following points:

Note

- *When replacing, pay attention to the correct type of dosing pump - V54- (different versions) see ⇒ Electronic Catalogue of Original Parts .*
- *Transport caps must be removed before installing.*
- *The fuel extraction pipe must not be bent when inserting into the fuel tank, so that it is not turned outside the banking up housing of the fuel delivery unit -D-.*
- *If the auxiliary heating operates without problems with a full fuel tank and in the event problems occur when operating with a partly filled fuel tank (fault message “No flame formation” or “Repeated flame-out”), this indicates a fault in the routing of the fuel extraction pipe (the pipe -A- is located outside the banking up housing -D-).*



– Replace the bracket on broken or fractured fixing lugs -1- and -5-.
– Replace warm-type clamp -7-.
– Insert the dosing pump -6- into the support guides -5-.
– Lock electrical wiring loom -arrows-.
– Turn the dosing pump -6- so that the plug -2- does not rest flush against the bracket -1-.



Caution

Fuel lines which rest flush against the body, can transmit noise.

– After installing, check the fuel lines for routing; they must not rest flush against the body.

8.4 Check fuel flow rate

Special tools and workshop equipment required

- ⇒ Vehicle diagnostic tester
- Commercial measuring glass

Test requirements:

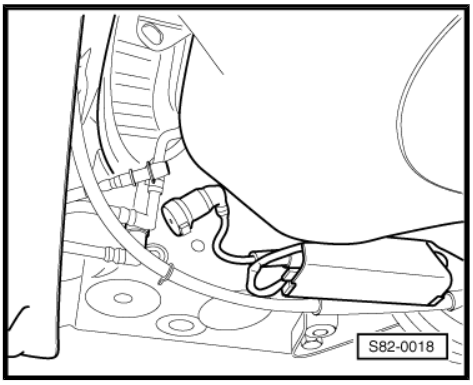
- Voltage at the dosing pump - V54- : approx. battery voltage ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Resistance of the dosing pump - V54- : approx. 5.2 Ω ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- No fault in fault memory ⇒ Vehicle diagnostic tester
- Ambient temperature below 25°C
- Coolant temperature below 30 °C
- Fuel lines are not damaged or leaking
- Fuel tank is filled adequately (fuel gauge in the dash panel insert is not at the red level)

Test sequence

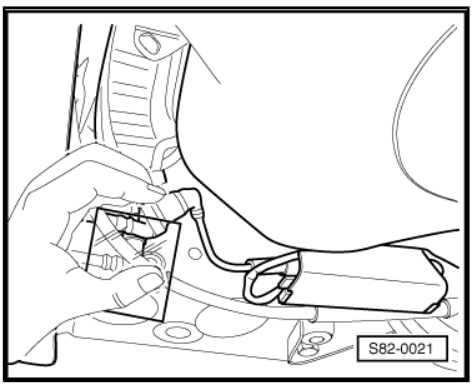
WARNING

The fuel line is under pressure! Place cleaning cloths around the connection point before detaching hose connections. Then reduce the pressure by carefully removing the hose.

– Disconnect fuel line at the dosing pump - V54- and close with suitable means.



– Call up the guided function “check fuel flow rate” with the vehicle diagnosis, measurement and information system, open the fuel line and at the same time hold the measuring glass.



After approx. 30 seconds the fuel line is filled and ventilated.

– Close fuel line.

– Empty measuring glass.

– Call up the guided function “check fuel flow rate” with the vehicle diagnosis, measurement and information system, open the fuel line and at the same time hold the measuring glass.

After approx. 120 seconds the fuel delivery is finished.

– Reconnect the fuel line.

Target conveying pressure: 22 to 28 ml.

– If the nominal rate is not achieved, replace dosing pump - V54- ⇒ Item 6 (page 34) .

87 – Air conditioning system

1 Instructions and safety measures for repair work on vehicles with air conditioning and when using refrigerant R 134a

Safety measures must be observed for refrigerant R 134a (additional directives may apply in individual countries):

Refrigerant must not be released into the environment, it must be drained off from the refrigerant circuit using an exhaust system or A/C service station. The drained off refrigerant is processed on site or is returned to the manufacturer for ecological disposal (different or additional directives may apply in certain countries).

If unpleasant odours come from the heating and air conditioning unit, it must be cleaned with e.g. the ultrasonic air conditioning system cleaning device - VAS 6189B- . When cleaning, proceed according to the enclosed instruction. Other information, see ⇒ page 40 .

If during repairs on the vehicle it is necessary to drain the refrigerant circuit, these tasks must be carried out in a specialist service centre which has suitably trained personnel and is fitted out for working on the refrigerant circuit!

Reasons:

Only the service centres have suitable A/C service stations and properly trained personnel where the refrigerant can be drained off professionally.

In order to carry out professional work on air conditioning systems for vehicles, you must have completed a training course on the air conditioning system including general knowledge (possibly with a corresponding final test) and you must be able to implement these elements in practice, see ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 General notes on the air conditioning system.

Only these workers are recognised as qualified to pursue the activities on air conditioning systems for vehicles.

Alternative or additional regulations may be valid in certain countries.

Note

All the safety measures when working on vehicles with air conditioning system, when using the refrigerant as well as to the following chapters can be found in the Workshop Manual "Air conditioning system with refrigerant R134a" ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 technical data.

- General notes on the air conditioning system
- General instructions for refrigerant circuit
- Legal texts and legal regulations
- Refrigerant circuit
- Working with the A/C service station
- Leak detection on the refrigerant circuit
- Removing contaminants from the refrigerant circuit
- Complaints
- Check the pressure in the refrigerant circuit (with the A/C service station)
- Replace components of the refrigerant circuit
- Service installations and tools

Caution

Do not buckle or sharply bend the refrigerant lines.

There is a foil in the refrigerant lines which could be damaged.

Refrigerant lines must not be bent over a smaller radius than R = 100 mm.

⇒ “1.1 Determining the manufacturer for the assemblies of the heating and air conditioning unit”, page 39

⇒ “1.2 Notes regarding the odours coming from the heating and air conditioning unit”, page 40

⇒ “1.3 Extractor, filler and measurement valves for quick couplings of the AC service station on the refrigerant circuit”, page 40

Vehicles with start-stop system

- On vehicles with activated start-stop system (recognizable by a message in the dash panel insert), the engine can start automatically if required.
- It is therefore necessary to ensure that the start-stop system is deactivated when carrying out work on the vehicle (ignition switched off, if required switch ignition on again).

Conditions for the activation/deactivation of the start-stop system ⇒ Operating Instruction Octavia III .

1.1 Determining the manufacturer for the assemblies of the heating and air conditioning unit

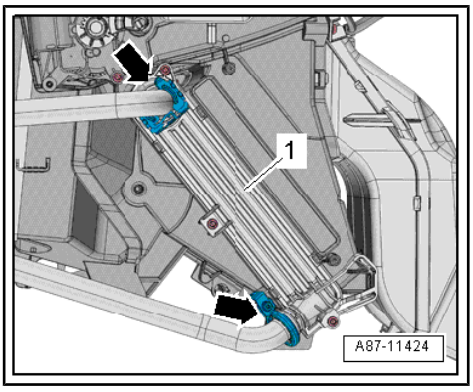
Note

When replacing component parts, pay attention to the correct assignment, a mixed fitting of component parts made by different manufacturers is not permitted ⇒ Electronic catalogue of original parts .

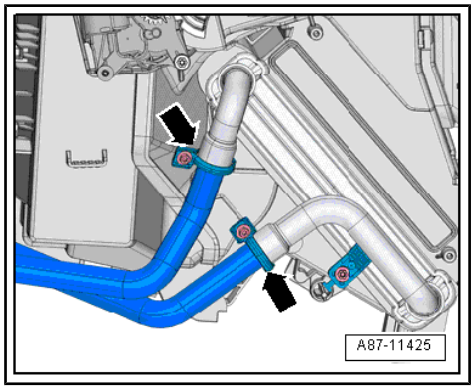
– Remove the centre console trim panel of the left footwell ⇒ Body Work; Rep. gr. 68.

Assignment of coolant pipes at heat exchanger:

Valeo manufacturer:



Manufacturer Denso:



1.2 Notes regarding the odours coming from the heating and air conditioning unit

Numerous methods for cleaning the evaporator, which differ in their use and effect, are offered on the market. It is currently recommended to clean the evaporator of Škoda vehicles using the ultrasonic air conditioning system cleaning device - VAS 6189B- . When cleaning, proceed according to the enclosed instruction. If additional procedures are tested and approved by Škoda in the course of time, the corresponding notes can be found in the Workshop Manual ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 .

1.3 Extractor, filler and measurement valves for quick couplings of the AC service station on the refrigerant circuit

WARNING

Before removing the extractor and filler valves, the refrigerant must be drained off with the aid of the A/C service station.

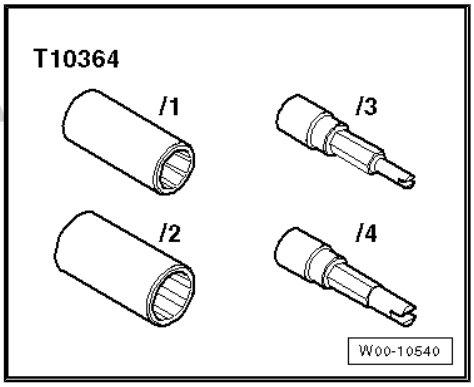
If the refrigerant circuit is not opened within 10 minutes after draining it off, pressure can arise in the refrigerant circuit due to the post-evaporation. Drain the refrigerant once again.

Note

- *Only use valves and connections that are resistant to refrigerant R134a and related refrigerant oils.*
- *Different connections (outside diameter) for the high-pressure and low-pressure side guarantee that the quick-coupling adapters are not interchanged.*
- *Carefully screw in the handwheel of the service coupling after connecting the A/C service station and only so far until the valve of the service connection is safely opened (observe the pressure gauge, do not over-press the valve).*
- *After disconnecting the quick-coupling adapter tighten the caps to prevent any dirt from penetrating.*

Special tools and workshop equipment required

- Socket insert -T10364-



Arrangement in the vehicle, see ⇒ page 43 .

Extractor, filler and measurement connections with Schrader valve

Note

- *Carefully tighten the valve core -2- because of the low tightening torque.*
- *These valves are available in different versions. Therefore they have different tightening torques. If the valve core -2- has a thread of VG5 (5.2 x 0.7 mm, tyre valve) the tightening torque is 0.4±0.1 Nm, a valve core with a thread of M6 x 0.75 mm has a tightening torque of 0.9±0.1 Nm and a valve core with a thread of M8 x 1.0 mm has a tightening torque of 2.0±0.2 Nm.*

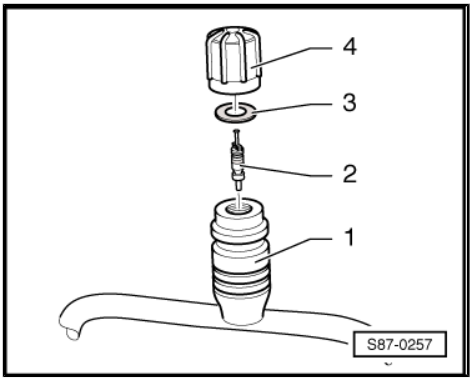
High-pressure side

1 - Service coupling in the refrigerant line

2 - Extractor, filler and measurement valve

3 - Sealing ring

4 - Cap



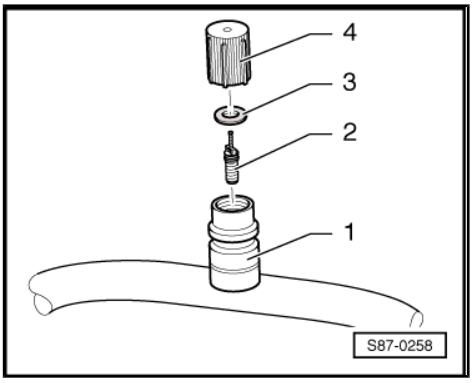
Low-pressure side

1 - Service coupling in the refrigerant line

2 - Extractor and measurement valve

3 - Sealing ring

4 - Cap



2 Contents

2.1 Refrigerant R134a

Refrigerant circuit

500 + 15 g refrigerant R 134a (for all AC compressors)

Note

Always fill the refrigerant circuit up to the top tolerance limit (there will still be some refrigerant in the filling hoses).

2.2 Refrigerant oil

As refrigerant oil is strongly hygroscopic (it absorbs humidity), protect open cans against penetrating humidity and immediately seal tight after use.

Note

- *Refrigerant oils from the containers which were opened for a longer period of time, cannot be used.*
- *Because of its chemical properties, refrigerant oil must not be disposed of with engine oil or gearbox oil. The refrigerant oil must be disposed of as oil of unknown origin.*
- *The total volume of refrigerant oil is contained in the spare part AC compressor.*

Manufacturer	Part number of AC compressor	Filling capacity	Part number of refrigerant oil
Denso	5Q0 820 803	110 ± 10 cm^3	G 052 300 A2
Sanden	5Q0 820 803 C	75 ± 10 cm^3	G 052 154 A2

Oil distribution

The oil, which before the first activation of the air conditioning system was located in the AC compressor's oil pan, is distributed as follows in the refrigerant circuit:

- AC compressor — approx. 50 %
- Condenser — approx. 10 %
- Air intake hose — approx. 10 %
- Evaporator — approx. 20 %
- Fluid reservoir — approx. 10 %

3 Summary of components, separate lines of the air conditioning system - engine compartment

Note

- *Comply with the safety measures when working on vehicles with air conditioning system and when using refrigerant R 134a and observe the instructions for working on the refrigerant circuit ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 technical data.*
- *The engine must not be started if the refrigerant lines are not connected to the AC compressor and the AC compressor is shut off with plugs (risk of overheating because of the internal refrigerant oil circuit).*
- *If the refrigerant circuit was separated, it is not always necessary to replace the dessicator, see ⇒ page 53 .*
- *If the earth strap of the battery was disconnected, pay attention to the sequence when connecting it ⇒ Electrical System; Rep. gr. 27 .*

⇒ Fig. ""Removing and installing the refrigerant lines at the AC compressor"" , page 45

⇒ Fig. ""Removing and installing the refrigerant lines at the condenser"" , page 45

1 - Expansion valve

- ❑ removing and installing ⇒ page 58

2 - Coupling for refrigerant lines - low-pressure side

- ❑ Nut, 8 Nm
- ❑ replace gasket after separating

3 - Coupling for refrigerant lines - high-pressure side

- ❑ Nut, 8 Nm
- ❑ replace gasket after separating

4 - Extractor and filler valve

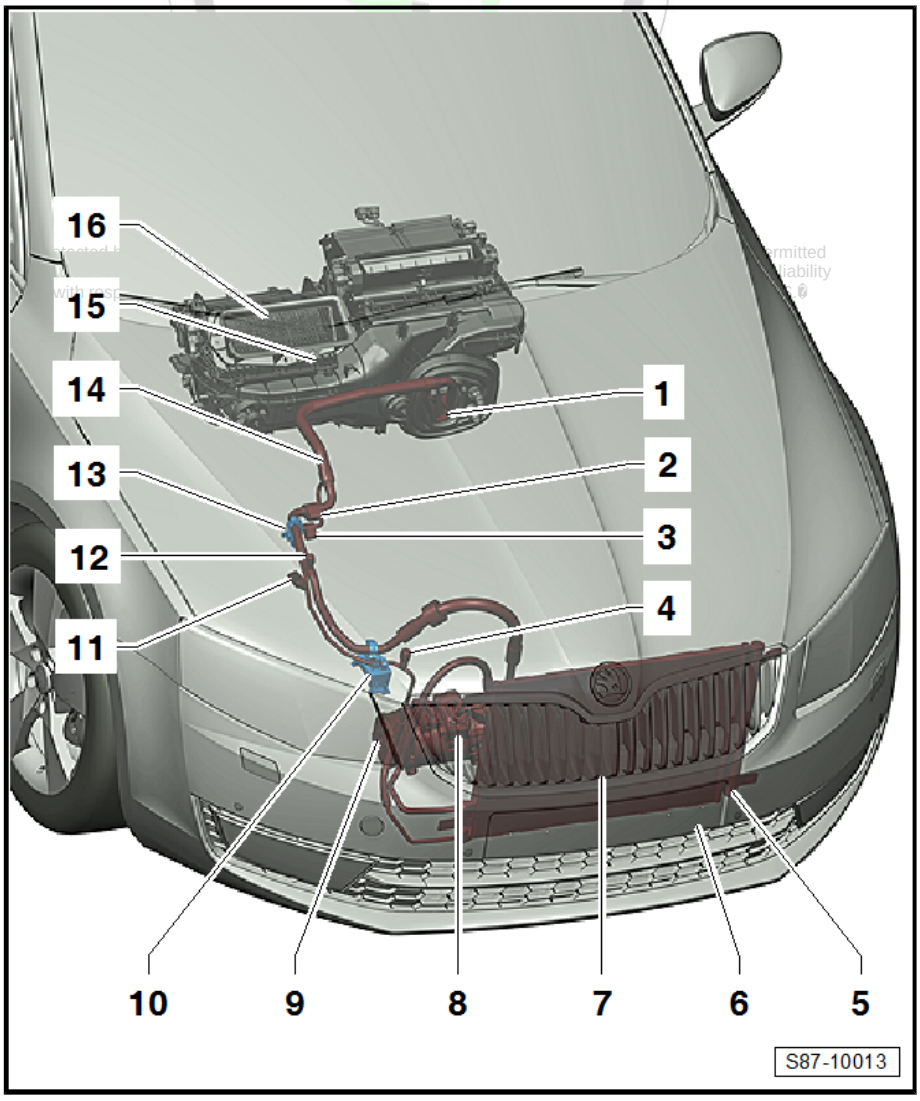
- ❑ High-pressure side
- ❑ for exhausting, filling and measuring
- ❑ always screw on cap with gasket
- ❑ Description, removing and installing ⇒ page 40

5 - Fluid reservoir with dessicator

- ❑ Remove and install dessicator cartridge ⇒ page 47
- ❑ Reasons for replacing the dessicator cartridge ⇒ page 53

6 - Ambient temperature sensor - G17-

- ❑ below the front left bumper



- ❑ removing and installing ⇒ page 15
- ❑ check ⇒ Vehicle diagnostic tester

7 - Condenser with fluid container and dessicator cartridge

- ❑ Removing and installing the refrigerant lines ⇒ page 45
- ❑ Removing and installing the condenser ⇒ page 63

8 - Pressure relief valve

- ❑ Replace O-ring (⇒ Electronic Catalogue of Original Parts).
- ❑ Tightening torque: 10 Nm
- ❑ check ⇒ page 57

9 - AC compressor

- ❑ with regulating valve for compressor of air conditioning system - N280- (cannot be replaced separately)
- ❑ Capacity ⇒ page 42 .
- ❑ Removing and installing the refrigerant lines ⇒ page 45
- ❑ Removing and installing AC compressor ⇒ page 55
- ❑ Running-in instruction ⇒ page 53

10 - Pipe holder for refrigerant lines

11 - High-pressure sender - G65-

- ❑ remove and install, test ⇒ page 46

12 - Exhaust valve

- ❑ Low-pressure side
- ❑ always screw on cap with gasket
- ❑ Description, removing and installing ⇒ page 40

13 - Pipe holder for refrigerant lines

14 - Air quality sensor - G238-

- ❑ Description, removing and installing ⇒ page 119
- ❑ only Climatronic equipment

15 - Refrigerant pipe with internal heat exchanger

- ❑ between condenser and AC compressor
- ❑ removing and installing ⇒ page 61

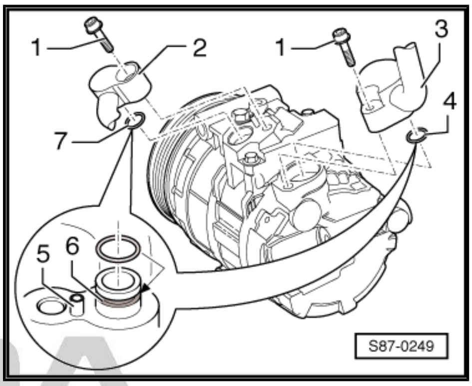
16 - Air quality sensor - G238-

- ❑ Only available for the Climatronic equipment.
- ❑ Description of the function ⇒ page 119
- ❑ check with ⇒ Vehicle diagnostic tester in operating mode “Targeted fault finding” and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ removing and installing ⇒ page 120

17 - Air intake grid

- ❑ removing and installing ⇒ page 83

Removing and installing the refrigerant lines at the AC compressor



Note

- *Empty the refrigerant circuit with the aid of the A/C service station.*
- *After disconnecting, shut off the refrigerant lines and the AC compressor connections with suitable caps to protect them from the penetration of ambient humidity.*

1 - 23 Nm

2 - Connection fitting for high-pressure line

- Torsion stop with sleeve

3 - Connection fitting for low-pressure line

- Torsion stop with sleeve

4 - O-ring (low-pressure side)

- replace (⇒ Electronic Catalogue of Original Parts)

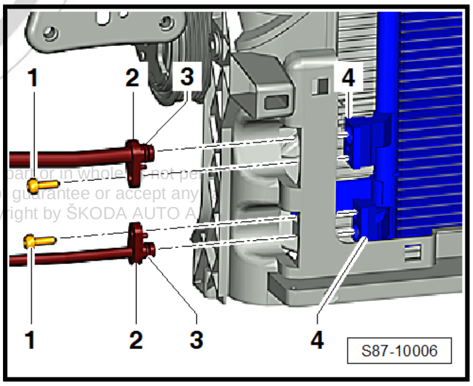
5 - Fitting sleeve

6 - Groove for O-ring

7 - O-ring (high-pressure side)

- replace (⇒ Electronic Catalogue of Original Parts)

Removing and installing the refrigerant lines at the condenser



Note

After disconnecting, shut off the refrigerant lines and the condenser connections with suitable caps to protect them from the penetration of ambient humidity.

1 - Bolts

- 10 Nm

2 - Refrigerant line

3 - O-rings

- replace (⇒ Electronic Catalogue of Original Parts)

3 - Connection fitting for refrigerant line

- Torsion stop with sleeve

4 - Connection fitting for condenser

4 Removing and installing parts of the air conditioning system - engine compartment

Note

Detailed description of the function of the air conditioning system, instructions for repair work and when using the refrigerant R134a can be found in the Workshop Manual "Air conditioning system with refrigerant R134a" ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 technical data.

4.1 Removing and installing, inspecting high pressure sender - G65-

Note

- *The refrigerant circuit remains closed, connection to valve.*
- *If refrigerant escapes for more than 1 second while loosening the sender, the non-return valve is defective. The sender must be tightened again and the line with the non-return valve must be replaced.*

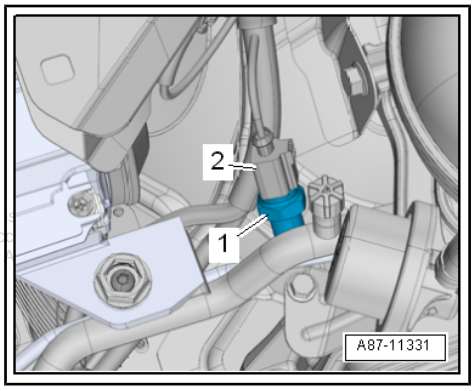
– Switch off the ignition and all electrical components.

– Unplug connector -2-.

– Release the high-pressure sender -1-.

Tightening torque: 8 Nm

– Replace O-ring (⇒ Electronic Catalogue of Original Parts), moisten with refrigerant oil and carefully insert.



Functional test

The function of the high pressure sender - G65- is checked via self-diagnosis of the air conditioning system control unit - J301- ⇒ Vehicle diagnostic tester.

4.2 Removing and installing dessicator cartridge

Note

- *Repairs must only be carried out in specialist service centres which have suitably trained personnel and are fitted out for working on the refrigerant circuit.*
- *If the refrigerant circuit was separated, it is not always necessary to replace the dessicator, see ⇒ page 53 .*
- *All opened components of the refrigerant circuit must be protected from the penetration of ambient humidity with suitable plugs.*
- *When replacing, pay attention to the prescribed volume of refrigerant oil in the refrigerant circuit see "Air conditioning system with refrigerant R134a" ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 technical data, chapter "Replacing components of the refrigerant circuit".*

WARNING

If the refrigerant circuit is not opened within 10 minutes after draining it off, pressure can arise in the refrigerant circuit due to the post-evaporation.

Evacuate the refrigerant and then open the refrigerant circuit immediately.

⇒ "4.2.1 Condensers with dessicator cartridge - manufacturer Modine", page 47

⇒ "4.2.2 Condensers with dessicator cartridge - manufacturer Denso", page 50

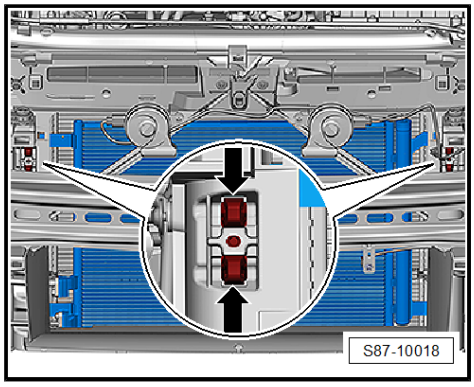
⇒ "4.2.3 Condensers with dessicator cartridge - manufacturer Keihin", page 52

4.2.1 Condensers with dessicator cartridge - manufacturer Modine

Removing

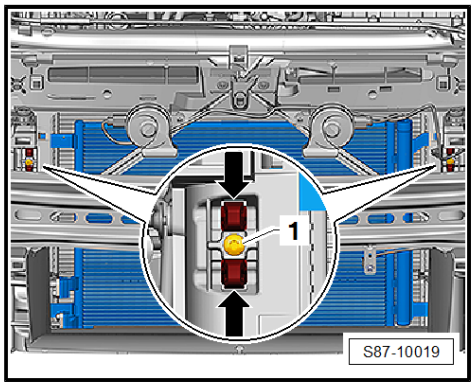
– Remove front bumper ⇒ Body Work; Rep. gr. 60 .
– Remove fan shroud with cooling fans ⇒ Engine; Rep. gr. 19 .
– Remove air guide from the front face ⇒ Engine; Rep. gr. 24 .
– Empty the refrigerant circuit with the aid of the A/C service station.
– Remove the refrigerant lines from the condenser ⇒ page 45 .

– Press the catches on the left and right -arrows- and loosen the radiator from the cooler wall bearings by pressing.

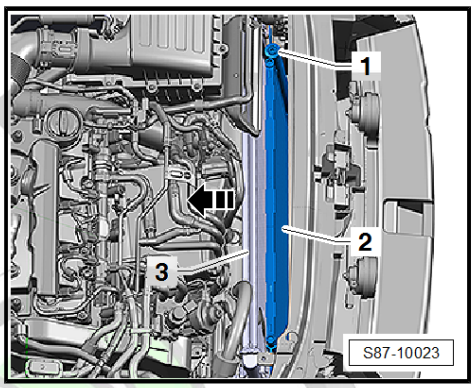


Note

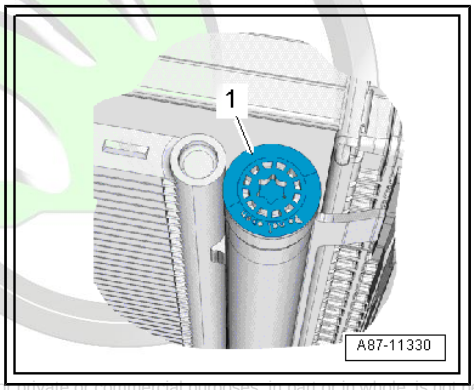
If the catches -arrows- break when pressed together, a screw -1- (5 Nm) is used to secure the cooler wall bearing during re-installation, see ⇒ Electronic Catalogue of Original Parts .



– Swivel the cooler -3- with condenser -2- -arrow- so that the cover -1- on the dryer tank is easily accessible.

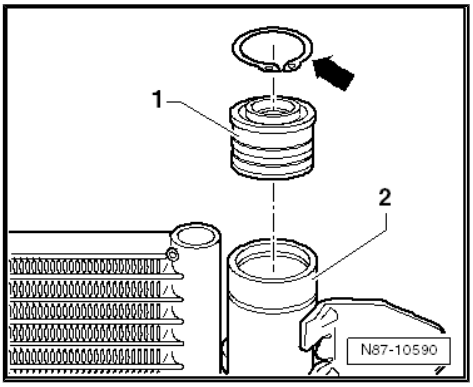


– Release the protective cap -1-.

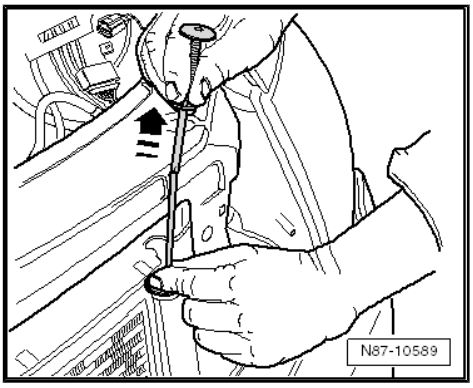


– Press the screw cap -1- into the fluid reservoir.

– Remove Seeger ring -arrow- and pull the screw cap -1- out of the reservoir with the aid of a screw M12 -2-.



– Pull the dessicator bag out of the reservoir using a commercially available pick-up tool -arrow-.

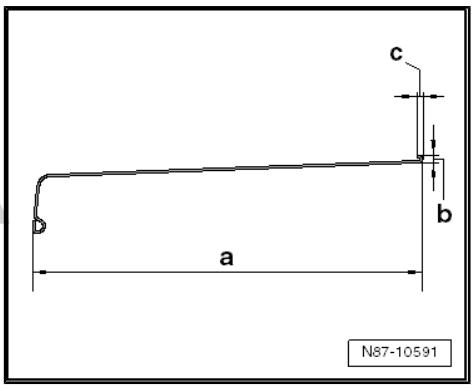


– Make a welding wire (Ø 2 mm) as shown in the illustration.

a - 380 mm

b - max. 7 mm

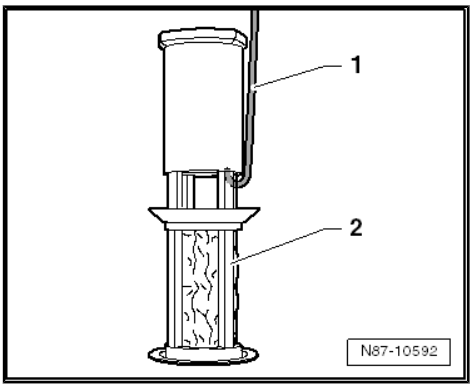
c - max. 6 mm



Note

To avoid damaging the condenser, absolutely hook the welding wire onto the strainer as shown in the illustration.

– Carefully pull the strainer -2- with the welding wire -1- out of the condenser.



Install

Installation is performed in the reverse order, pay attention to the following points:

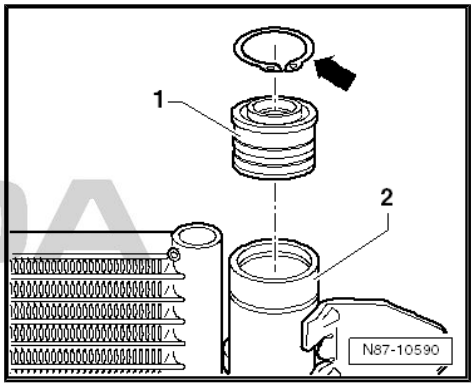
Note

- *Open the airtight sealed delivery bag with the dessicator bag just before inserting the dessicator cartridge in the fluid reservoir and close it immediately afterwards with the screw plug -1-.*
- *Before installing, check the fluid reservoir - for contamination, damage of the threads, sealing surfaces.*

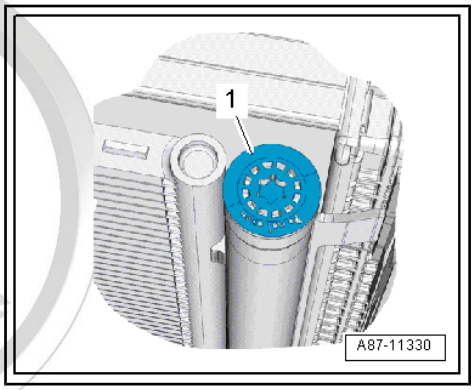
– Insert a new strainer into the reservoir and then insert a new dessicator bag.
– Replace the screw cap -1- with the relevant gasket. Slightly moisten the gasket of the screw cap with refrigerant oil before installing.

Pay attention to the correct fit of the gasket in the screw cap -1-.

– Insert Seeger ring -arrow-.



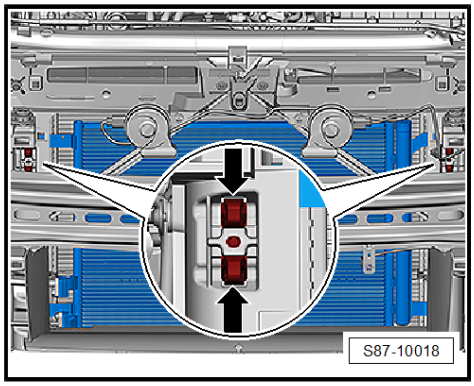
– Screw in the protective cap -1- (5 Nm).
– Re-install the remaining component parts which were removed.
– Fill the refrigerant circuit with the aid of the A/C service station.



4.2.2 Condensers with dessicator cartridge - manufacturer Denso

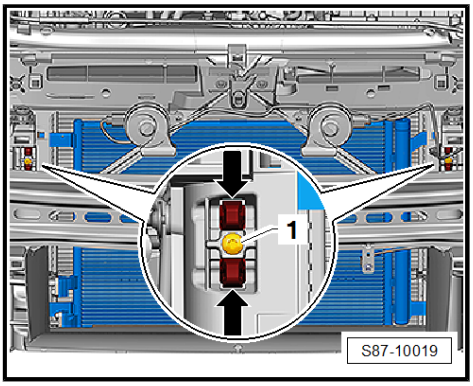
Removing

– Remove front bumper ⇒ Body Work; Rep. gr. 60 .
– Remove fan shroud with cooling fans ⇒ Engine; Rep. gr. 19 .
– Remove air guide from the front face ⇒ Engine; Rep. gr. 24 .
– Empty the refrigerant circuit with the aid of the A/C service station.
– Remove the refrigerant lines from the condenser ⇒ page 45 .
– Press the catches on the left and right -arrows- and loosen the radiator from the cooler wall bearings by pressing.

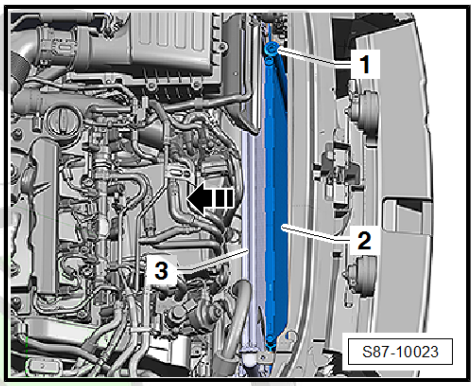


Note

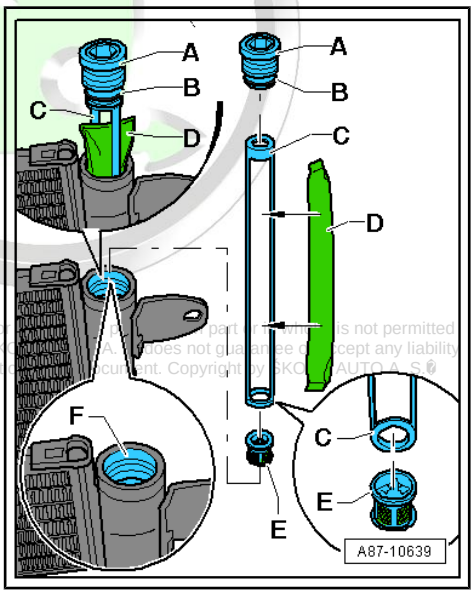
If the catches -arrows- break when pressed together, a screw -1- (5 Nm) is used to secure the cooler wall bearing during re-installation, see ⇒ Electronic Catalogue of Original Parts .



– Swivel the cooler -3- with condenser -2- -arrow- so that the cover -1- on the dryer tank is easily accessible.



– Screw out screw plug -A-.
– Pull the dessicator carrier -C- with the dessicator bag -D- upwards and out of the fluid reservoir.
– Pull the filter element -E- upwards and out of the fluid reservoir e.g. using a pick-up tool.
– Close the opened fluid reservoir with the screw plug, thus preventing dirt and humidity from penetrating.



Install

Installation is performed in the reverse order, pay attention to the following points:

Note

- *After each opening of the fluid reservoir, replace the dessicator bag, the gasket rings and the screw plug ⇒ Electronic catalogue of original parts .*
- *Open the airtight sealed delivery bag with the dessicator bag just before inserting the dessicator cartridge in the fluid reservoir and close it immediately afterwards with the screw plug.*
- *Moisten the gasket rings of the screw plug with refrigerant oil.*
- *Before installing, check the fluid reservoir - for contamination, damage of the threads, sealing surfaces.*

– Insert the filter element -E- on the correct side in the fluid reservoir of the condenser.
– Remove the dessicator bag from the delivery bag, insert it in the dessicator carrier -C- and immediately place it in the fluid reservoir.
– Position screw plug -A- and screw in.

4.2.3 Condensers with dessicator cartridge - manufacturer Keihin

Removing

– Remove front bumper ⇒ Body Work; Rep. gr. 60 .

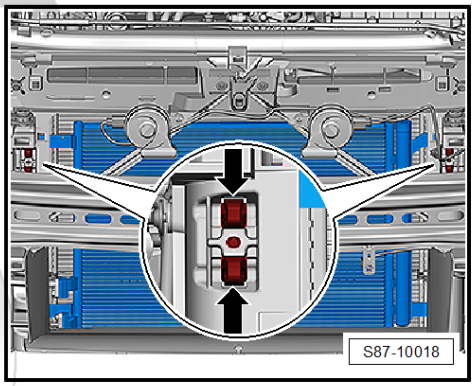
– Remove fan shroud with cooling fans ⇒ Engine; Rep. gr. 19 .

– Remove air guide from the front face ⇒ Engine; Rep. gr. 24 .

– Empty the refrigerant circuit with the aid of the A/C service station.

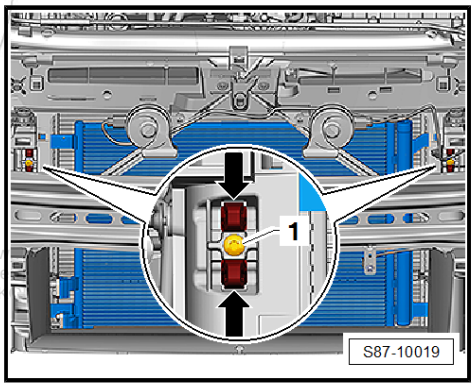
– Remove the refrigerant lines from the condenser ⇒ page 45 .

– Press the catches on the left and right -arrows- and loosen the radiator from the cooler wall bearings by pressing.

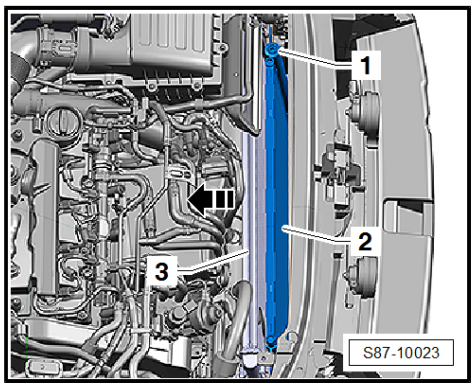


Note

If the catches -arrows- break when pressed together, a screw -1- (5 Nm) is used to secure the cooler wall bearing during re-installation, see ⇒ Electronic Catalogue of Original Parts .

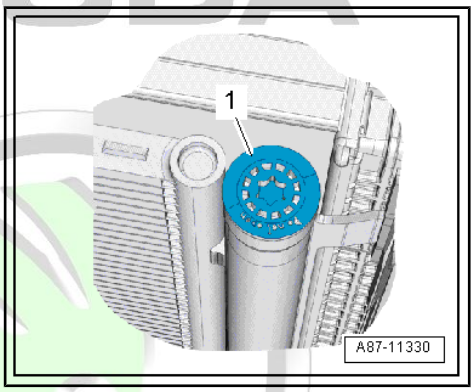


– Swivel the cooler -3- with condenser -2- -arrow- so that the cover -1- on the dryer tank is easily accessible.



– Screw out screw plug -1-.

– Remove the dessicator cartridge out of the top of the tank using a pair of pliers with longer jaws.



Install

Installation is performed in the reverse order, pay attention to the following points:

Note

- *After each time you open the fluid tank, replace the dessicator cartridge and gasket rings ⇒ Electronic Catalogue of Original Parts .*
- *Open the airtight sealed delivery bag with the dessicator bag just before inserting the dessicator cartridge in the fluid reservoir and close it immediately afterwards with the screw plug.*
- *Moisten the gasket rings of the screw plug with refrigerant oil.*
- *Before installing, check the fluid reservoir - for contamination, damage of the threads, sealing surfaces.*

– Remove the dessicator bag from the delivery bag, insert it in the dessicator carrier and immediately place it in the fluid reservoir.

– Position and screw in the screw plug -1-.

4.3 Reasons for replacing the dessicator cartridge

The dessicator cartridge must be replaced if:

- the coolant circuit was blown through or flushed
- the AC compressor has blocked
- the system has been opened as of an undetermined time (creeping leakage)

The dessicator cartridge need not be replaced:

- after an accident the fluid reservoir is not damaged
- the repair at the refrigerant circuit is performed for a short period (within the specified repair time) and the vehicle is not older than 5 years
- for the repair of other components, the refrigerant circuit must be opened for a short period and the vehicle is not older than 5 years

4.4 AC compressor

⇒ “4.4.1 Running-in instructions of the AC compressor”, page 53

⇒ “4.4.2 Removing and installing AC compressor”, page 55

⇒ “4.4.3 Inspecting the pressure relief valve on the AC compressor”, page 57

4.4.1 Running-in instructions of the AC compressor

After the initial filling of the refrigerant circuit, replacement of the AC compressor or if after blowing through/rinsing the refrigerant

circuit, new refrigerant oil was filled in (⇒ page 42), the whole volume of refrigerant oil is in the AC compressor.

To avoid damaging the the compressor, the AC compressor must be placed in operation as follows:

– Before inserting, turn the poly V-belt of the AC compressor-belt pulley 10 x by hand.

– Position the rotary switch for air distribution on “person flow”.

– Open all dash panel vents.

– Position the fresh-air blower switch at least on speed 3.

– Position rotary switch for temperature selection on the left stop (minimum temperature).

  With Climatronic select the temperature “LO”.

  Start the engine when the Air Conditioning system is switched off (indicator light on the A/C button does not light up).

– Start engine.

– After stabilising at the idle speed (approx. 5s), switch on the Air Conditioning (indicator light on the A/C button lights up).

  With Climatronic set to operating mode “AUTO”.

– Run engine without interruption for at least 5 minutes at idle speed.

– Subsequently switch off engine.

This shuts off the oil distribution in the refrigerant circuit and the AC compressor can be fully loaded.

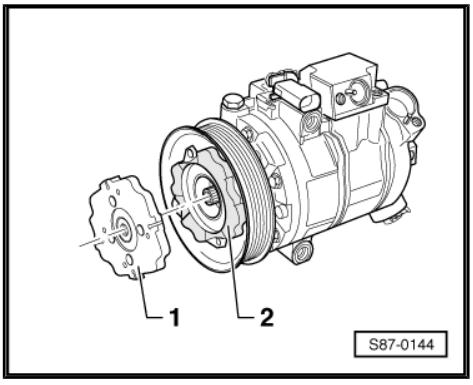
Caution

If the engine is started with an empty refrigerant circuit:

- *The total refrigerant circuit must be assembled properly.*
- *At least 1/3 of the quantity of refrigeration oil specified for this refrigerant circuit must be in the air conditioner compressor.*
- *The engine speed must not exceed 2000 rpm.*
- *Run engine only as long as absolutely necessary, max. 10 mins.*

Note

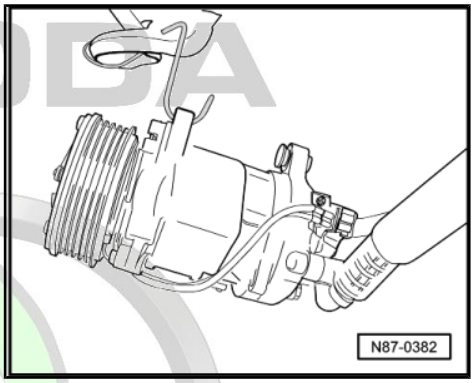
- *So that the AC compressor suffers no damage when the refrigerant circuit is empty, it is fitted with a secured oil supply. This means that approx. 40 to 50 cm³ of refrigerant oil remains in the AC compressor.*
- *If the refrigerant circuit is completely empty, the Air conditioning unit compressor control valve - N280- is not controlled and the AC compressor runs without a load, together with the engine.*
- *When the engine is started, the AC compressor runs using a driver clutch -1- and -2- (different design differences) irrespectively of whether the Air Conditioning is switched on or off (it does not have a magnetic clutch).*
- *If the compressor is blocked, the rubber elements -2- are cut, or the drive plate -1- is deformed (can be seen from dents on the belt pulley or rubber residues around the belt pulley).*



4.4.2 Removing and installing AC compressor

Note

- *Repairs must only be carried out in specialist service centres which have suitably trained personnel and are fitted out for working on the refrigerant circuit.*
- *All opened components of the refrigerant circuit must be immediately protected from the penetration of ambient humidity with suitable screw plugs.*
- *Attachment of the bracket for auxiliary units ⇒ Engine; Rep. gr. 13 .*
- *If the AC compressor only has to be removed from the bracket because of the removal of other components, the refrigerant circuit must not be opened. Attach the AC compressor with connected refrigerant lines to the body free of stress, in such a way that the intake hoses are not excessively strained, e.g. see fig.*
- *Pay attention to the switch-off conditions of the system for vehicles with start/stop system ⇒ page 38 .*
- *Consider the necessity of purging the refrigerant circuit before the AC compressor is installed, see ⇒ page 58 .*



Special tools and workshop equipment required

- Plug set for engine - VAS 6122-

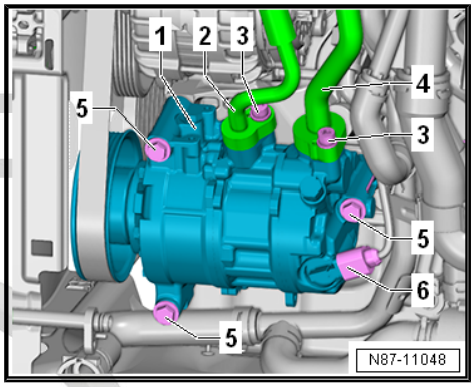
Removing

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

– Remove fan shroud with radiator fans ⇒ Engine; Rep. gr. 19 .

– Remove the V-ribbed belt ⇒ engine; Rep. gr. 13 .

– Unplug connector -6-.



> **WARNING**
>
> *If the refrigerant circuit is not opened within 10 minutes after draining it off, pressure can arise in the refrigerant circuit due to the post-evaporation.*
>
> *Evacuate the refrigerant and then open the refrigerant circuit immediately.*

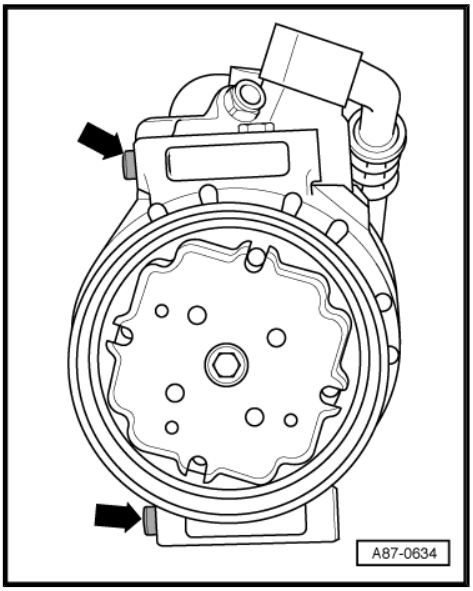
– Empty the refrigerant circuit with the aid of the A/C service station.

– Remove the refrigerant pipes -2- and -4- from the AC compressor, see ⇒ page 45 .

– Release screws -5- (25 Nm) and remove AC compressor -1-.

Install

Installation is performed in the reverse order, pay attention to the following points:



Note

- *The total volume of refrigerant oil is contained in the spare part AC compressor.*
- *When replacing, pay attention to the prescribed volume of refrigerant oil in the refrigerant circuit see "Air conditioning system with refrigerant R134a" ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 technical data, chapter "Replacing components of the refrigerant circuit".*
- *If a new AC compressor is installed, the ⇒ Vehicle diagnostic tester must be connected and the function "AC compressor run-in" must be performed in the targeted fault finding.*
- *Make sure the centring sleeves -arrows- is sit correctly, and make sure the contact surfaces are clean.*

– Attach refrigerant lines to AC compressor ⇒ page 45 .

Caution

There is a risk of damage to the AC compressor:

- *The engine must not be started if the refrigerant lines are not connected to the AC compressor and the AC compressor is shut off with plugs (risk of overheating because of the internal refrigerant oil circuit).*
- *In the AC compressor is removed, refrigerant may accumulate in the compression chamber during storage, depending on its location.*
- *Before inserting the poly V-belt, turn the AC compressor belt pulley 10 x by hand to prevent damage to the AC compressor.*

– If necessary, replace the dessicator cartridge:

- Reasons for replacing the dessicator cartridge ⇒ page 53
- Replace dessicator cartridge ⇒ page 47

– Fill the refrigerant circuit with the aid of the A/C service station.

– Before switching on the engine, observe the start-up instructions of the AC compressor ⇒ page 53 .

4.4.3 Inspecting the pressure relief valve on the AC compressor

- Operation: Protects the refrigerant circuit from excessive pressure.

DANGER!

There is a risk through icing.

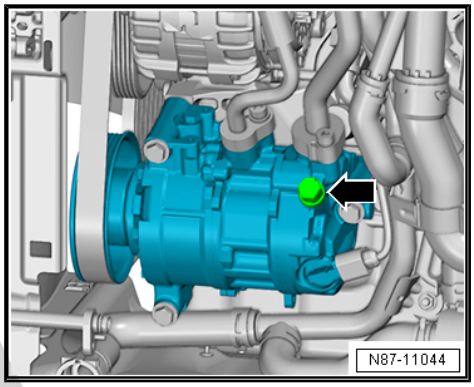
The pressure relief valve drains the coolant while the engine is running and if an excesssive pressure exists in the refrigerant circuit.

Switch off engine.

Inspecting the pressure relief valve on the AC compressor

The pressure relief valve -arrow- has operated if refrigerant oil sticks in the immediate vicinity.

- In this case, the vehicle must be repaired in a specialist service centre which has suitably trained personnel and is fitted out for working on the refrigerant circuit.



Note

The position of the pressure relief valve varies for the different AC compressors. The function is however the same.

4.5 Reasons for rinsing the refrigerant circuit

The refrigerant circuit must be flushed with refrigerant R134a, if:

- dirt or other contaminations are present in the refrigerant circuit
- When evacuating a tight refrigerant circuit the vacuum gauge is not constant (there is humidity in the refrigerant circuit and builds up pressure)
- If the refrigerant circuit has been left open for longer than the standard assembly time (e.g. following an accident)
- If pressure and temperature measurements indicate that there is humidity in the refrigerant circuit
- There is a doubt about the oil volume in the refrigerant circuit
- The air conditioning compressor needed to be replaced because of internal damage (e.g. noise or no output)
- Required for the respective vehicle after replacing one of the components of the workshop manual

4.6 Removing and installing the expansion valve

Note

- *Repairs must only be carried out in specialist service centres which have suitably trained personnel and are fitted out for working on the refrigerant circuit.*
- *All opened components of the refrigerant circuit must be protected from the penetration of ambient humidity with suitable plugs.*
- *The O-rings must be replaced ⇒ Electronic Catalogue of Original Parts and before installing moisten with refrigerant oil.*
- *On certain engines remove the engine cover, the intake hose to the exhaust turbocharger, if necessary the intake hose to the air filter for an easier access ⇒ Engine, corresponding repair group .*

Special tools and workshop equipment required

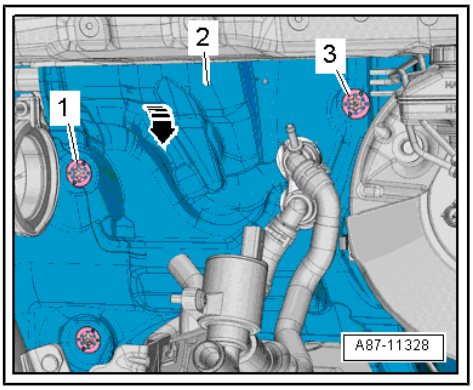
- Plug set for engine - VAS 6122-

Removing

– Release plate nuts -1- and -3-.

– Fold the heat shield -2- as far as possible forward -arrow-.

– Empty the refrigerant circuit with the aid of the A/C service station.



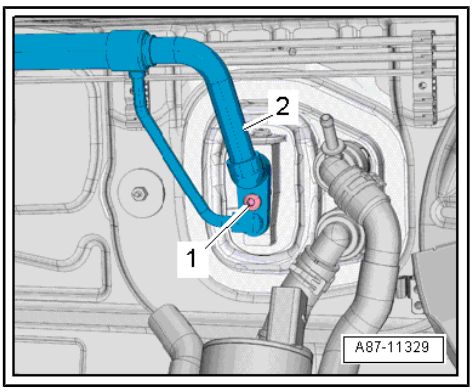
WARNING

If the refrigerant circuit is not opened within 10 minutes after draining it off, pressure can arise in the refrigerant circuit due to the post-evaporation.

Evacuate the refrigerant and then open the refrigerant circuit immediately.

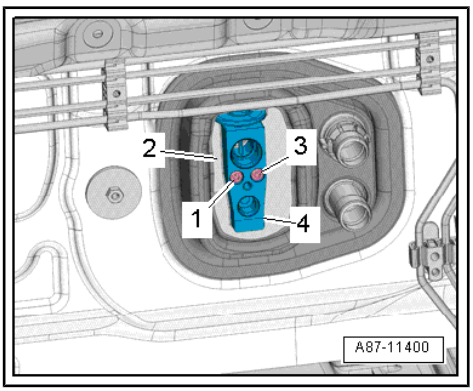
– Release screw -1-.

– Detach the refrigerant line -2- with the inner heat exchanger from the expansion valve.



– Release screws -1- and -3- (10 Nm).

– Pull the expansion valve -4- out of the heat-protection insulation -2-.



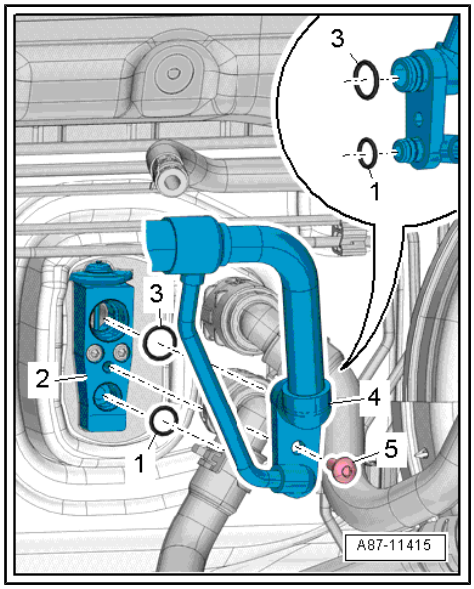
Install

Installation is performed in the reverse order, pay attention to the following points:

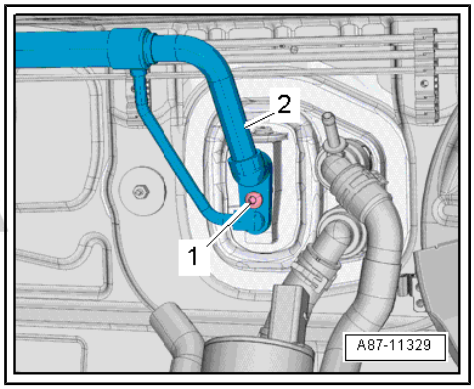
Note

- *All the connections and the connecting nipples must be clean and undamaged.*
- *Insert the gasket rings properly into the groove of the corresponding line.*

– Fit the new gasket rings -1- and -3- on the connection pipes -4-.
– Press the flange with the pipes -4- into the expansion valve -2- and screw in the screw -5- by hand.

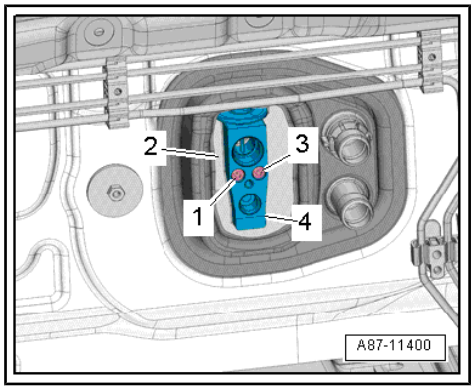


– Hold the line -2- in the correct position and tighten the screw -1- (8 Nm).



Note

- *This expansion valve is available in different versions. Assignment ⇒ Electronic Catalogue of Original Parts .*
- *If the heat-protection insulation -2- is missing or not correctly installed, it may result in a power reduction of the air conditiong system.*



4.7 Removing and installing the refrigerant lines with inner heat exchanger

Note

- *Repairs must only be carried out in specialist service centres which have suitably trained personnel and are fitted out for working on the refrigerant circuit.*
- *All opened components of the refrigerant circuit must be protected from the penetration of ambient humidity with suitable plugs.*
- *The O-rings must be replaced ⇒ Electronic Catalogue of Original Parts and before installing moisten with refrigerant oil.*
- *On certain engines remove the engine cover, the intake hose to the exhaust turbocharger, if necessary the intake hose to the air filter for an easier access ⇒ Engine, corresponding repair group .*

Special tools and workshop equipment required

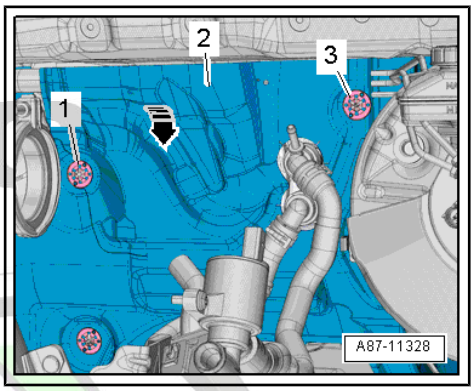
- Plug set for engine - VAS 6122-

Removing

– Release plate nuts -1- and -3-.

– Fold the heat shield -2- as far as possible forward -arrow-.

– Empty the refrigerant circuit with the aid of the A/C service station.

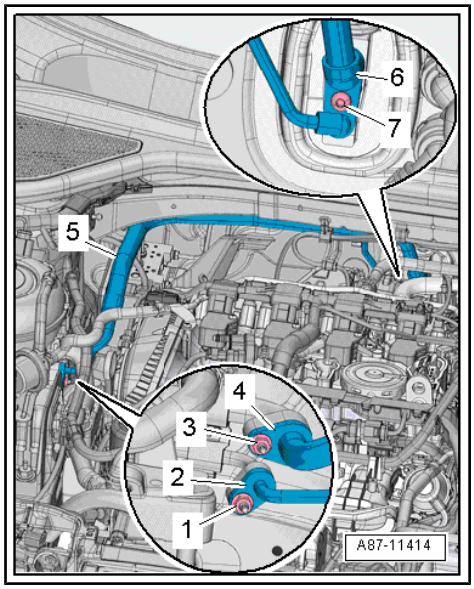


WARNING

If the refrigerant circuit is not opened within 10 minutes after draining it off, pressure can arise in the refrigerant circuit due to the post-evaporation.

Evacuate the refrigerant and then open the refrigerant circuit immediately.

– Release screw -7-.
– Detach the refrigerant line -6- with the inner heat exchanger from the expansion valve.



Note

To seal open connections of expansion valve, use, for example, cover from spare expansion valve.

– Unscrew nuts -1- and -3- and detach refrigerant lines -2- and -4-.
– Remove refrigerant line -5- with inner heat exchanger.
– Close the open lines and connections with a clean plug from the plug set for engine - VAS 6122- .

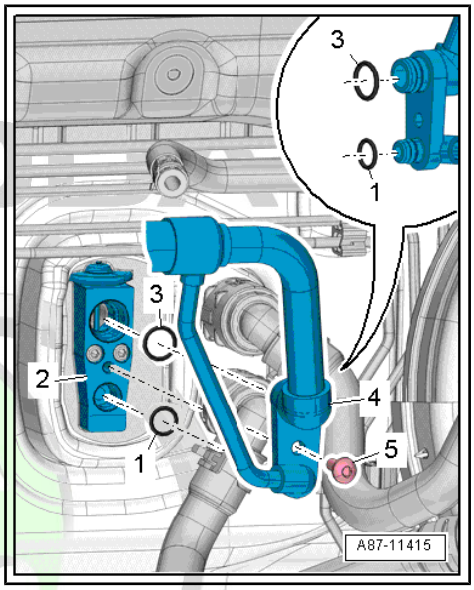
Install

Installation is performed in the reverse order, pay attention to the following points:

Note

- *All the connections and the connecting nipples must be clean and undamaged.*
- *Insert the gasket rings properly into the groove of the corresponding line.*

– Fit the new gasket rings -1- and -3- on the connection pipes -4-.
– Press the flange with the pipes -4- into the expansion valve -2- by hand and screw in the screw -5- by hand.
– Tighten screw -5- (8 Nm).



4.8 Removing and installing the condenser

Note

- *Repairs must only be carried out in specialist service centres which have suitably trained personnel and are fitted out for working on the refrigerant circuit.*
- *To prevent the intrusion of moisture, all components of the refrigerant circuit which have been opened must be sealed with suitable plugs.*
- *When replacing, pay attention to the prescribed volume of refrigerant oil in the refrigerant circuit see "Air conditioning system with refrigerant R134a" ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 technical data, chapter "Replacing components of the refrigerant circuit".*

Removing

– Remove front bumper ⇒ Body Work; Rep. gr. 60 .

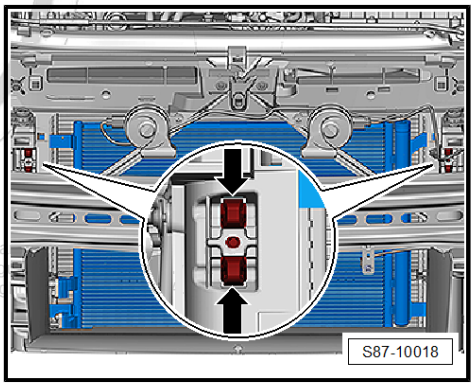
– Remove fan shroud with cooling fans ⇒ Engine; Rep. gr. 19 .

– Remove air guide from the front face ⇒ Engine; Rep. gr. 24 .

– Empty the refrigerant circuit with the aid of the A/C service station.

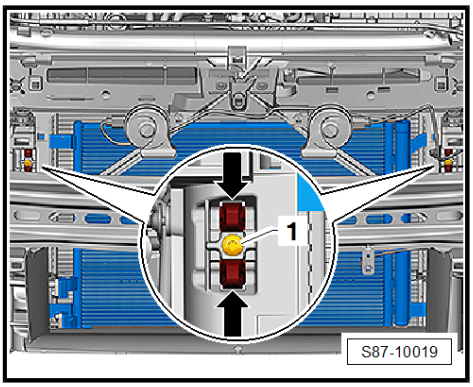
– Remove the refrigerant lines from the condenser ⇒ page 45 .

– Press the catches on the left and right -arrows- and swivel the cooler by pressing it upwards upwards until the condenser can be removed.

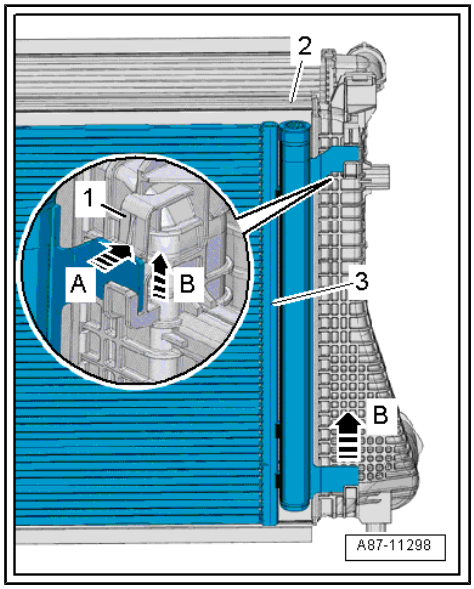


Note

If the catches -arrows- break when pressed together, a screw -1- (5 Nm) is used to secure the cooler wall bearing during re-installation, see ⇒ Electronic Catalogue of Original Parts .



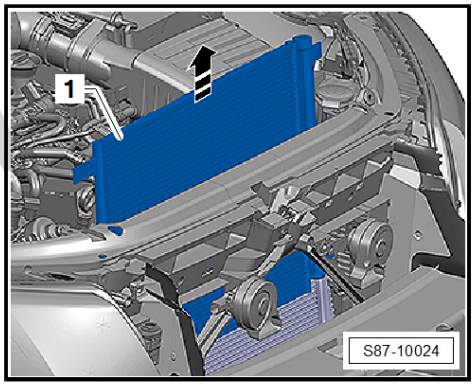
– Release the left and right clamps -1- by pressing -arrow A- and push the condensor -3- upwards -arrow B- and out of the housing -2-.



– Slide the condenser -1- upwards -arrow- and remove.

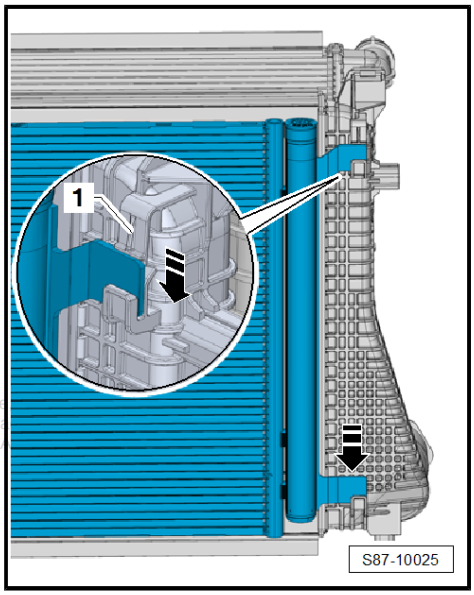
Install

Installation is performed in the reverse order, pay attention to the following points:



– Slide the condenser into the bearing -arrows- until the catches -1- are locked.

– Replace gasket rings.



Note

If the fins have only minor indentations this does not indicate damage and the radiator/charge air cooler/condenser must not be replaced.

5 Electrical manually operated air conditioning system

Note

Detailed description of the function of the air conditioning system ⇒ Owner's manual Octavia III .

5.1 Summary of components - interior

1 - Side window vent
- ❑ integrated in dash panel

2 - Dash panel
- ❑ Removing and installing ⇒ Body Work; Rep. gr. 70

3 - Defrost vent
- ❑ integrated in dash panel

4 - Intermediate piece for the air guide to the centre vents
- ❑ removing and installing ⇒ page 82

5 - Intermediate piece for the air guide to the defrost vents for the windscreen
- ❑ removing and installing ⇒ page 82

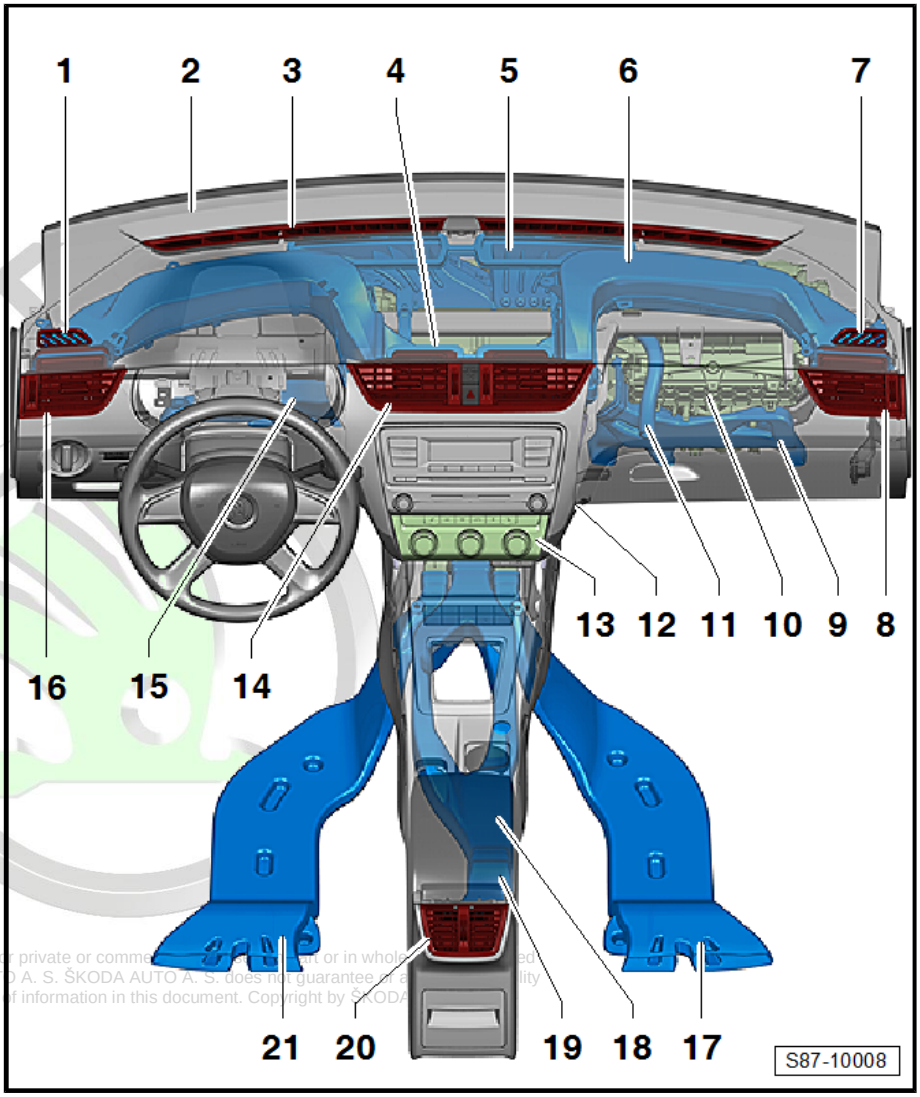
6 - Air guide to the side window vents
- ❑ integrated in dash panel

7 - Side window vent
- ❑ integrated in dash panel

8 - Right side vent
- ❑ removing and installing ⇒ page 78

9 - Footwell vent front passenger side
- ❑ removing and installing ⇒ page 81

10 - Heating and air conditioning unit
- ❑ Assembly overview of components ⇒ page 66
- ❑ Removing and installing from the vehicle ⇒ page 84



11 - Hose for glove compartment cooling on front passenger side

12 - Condensation water drain hose

- ❑ remove and install, test ⇒ page 104

13 - Control for heating/air conditioning system control with control unit for air conditioning system - J301-

- ❑ inspect ⇒ Vehicle diagnostic tester in the function “Targeted fault finding”
- ❑ removing and installing ⇒ page 69
- ❑ Overview Air conditioning system control ⇒ page 69

14 - Centre vent

- ❑ removing and installing ⇒ page 78

15 - Footwell vent driver's side

- ❑ removing and installing ⇒ page 81

16 - Left side vent

- ❑ removing and installing ⇒ page 78

17 - Air guide to the rear, right

- ❑ removing and installing ⇒ page 79

18 - Front part of middle air guide to the rear

- ❑ removing and installing ⇒ page 79

19 - Rear part of middle air guide to the rear

- ❑ for removing, remove the rear cover for the centre console and take out the air guide ⇒ Body Work; Rep. gr. 68

20 - Rear centre vent

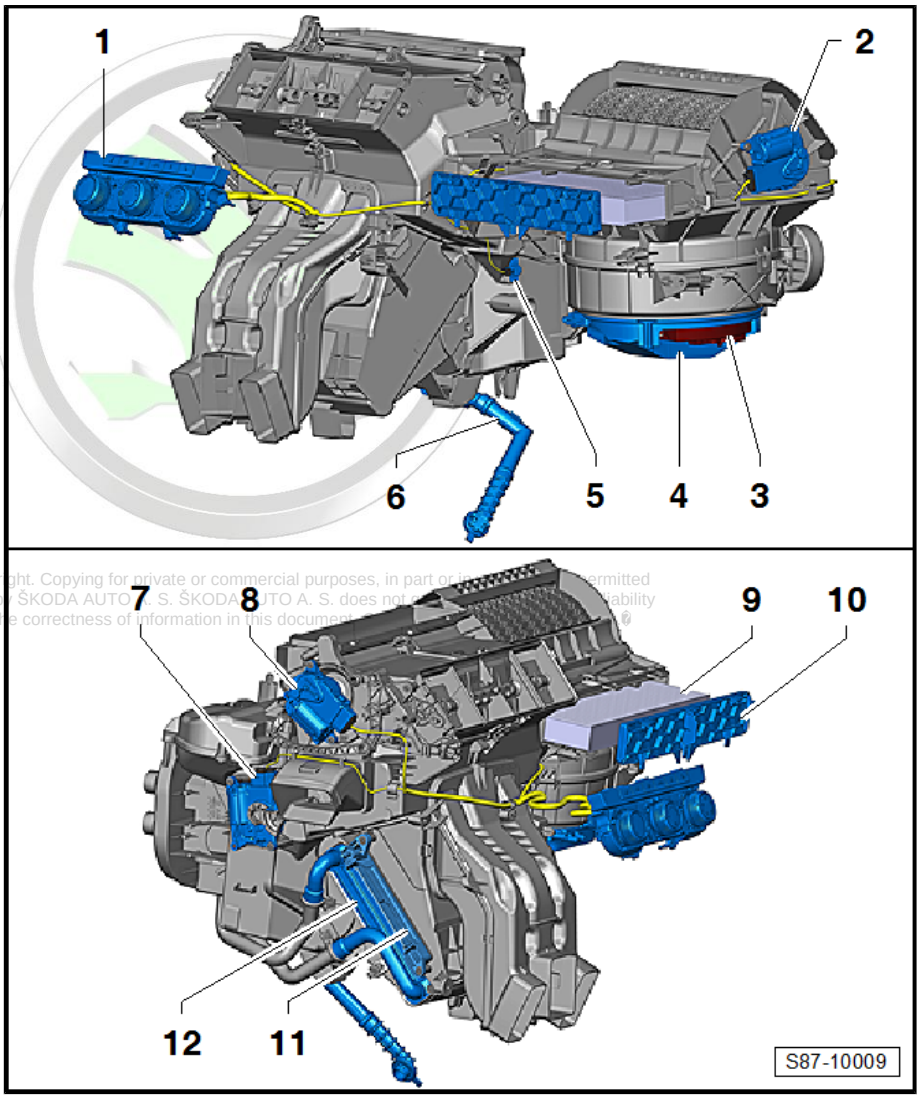
- ❑ removing and installing ⇒ page 79

21 - Air guide to the rear, left

- ❑ removing and installing ⇒ page 79

5.2 Assembly overview of components - heating and air conditioning unit

5.2.1 Left-hand drive



1 - Control for air conditioning system with control unit for air conditioning system - J301-

- ❑ removing and installing ⇒ page 69
- ❑ Overview Air conditioning system control ⇒ page 69

2 - Re-circulating air flap control motor - V113-

- ❑ removing and installing ⇒ page 106

3 - Fresh air blower control unit - J126-

- ❑ removing and installing ⇒ page 92

4 - Fresh air blower - V2-

- ❑ removing and installing ⇒ page 90

5 - Evaporator temperature sensor - G308-

- ❑ removing and installing ⇒ page 117

6 - Condensation water drain hose

- ❑ remove and install, test ⇒ page 104

7 - Control motor for temperature flap - V68-

- ❑ removing and installing ⇒ page 108

8 - Air distribution flap control motor - V428-

- ❑ removing and installing ⇒ page 112

9 - Dust and pollen filter

- ❑ removing and installing ⇒ page 92

10 - Cover for dust and pollen filter

- ❑ removing and installing ⇒ page 92

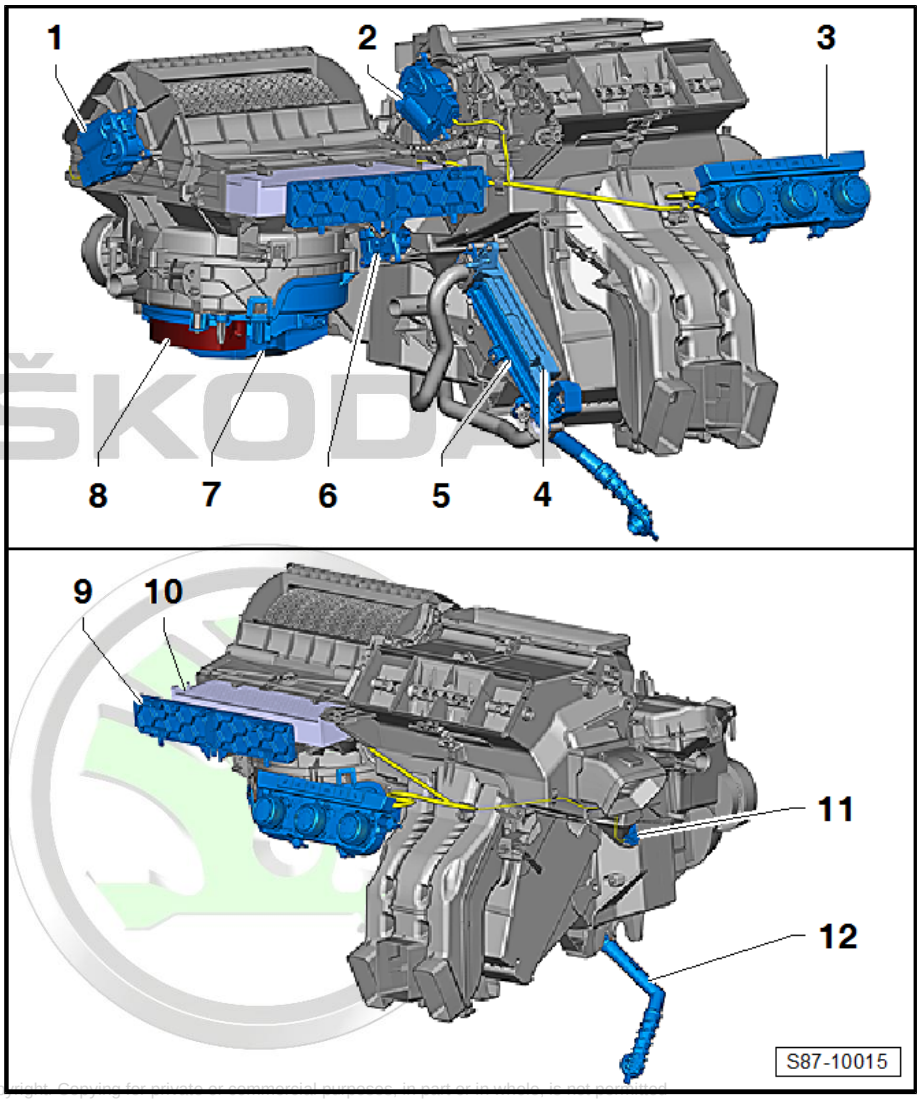
11 - Heating element for air auxiliary heating - Z35-

- ❑ only fitted on certain models
- ❑ removing and installing ⇒ page 99
- ❑ check ⇒ page 100

12 - Heat exchanger

- ❑ removing and installing ⇒ page 93

5.2.2 Right-hand drive



1 - Re-circulating air flap control motor - V113-

- ❑ removing and installing ⇒ page 106

2 - Air distribution flap control motor - V428-

- ❑ removing and installing ⇒ page 112

3 - Control for air conditioning system with control unit for air conditioning system - J301-

- ❑ removing and installing ⇒ page 69
- ❑ Overview Air conditioning system control ⇒ page 69

4 - Heating element for air auxiliary heating - Z35-

- ❑ only fitted on certain models
- ❑ removing and installing ⇒ page 99
- ❑ check ⇒ page 100

5 - Heat exchanger

- ❑ removing and installing ⇒ page 93

6 - Control motor for temperature flap - V68-

- ❑ removing and installing ⇒ page 108

7 - Fresh air blower - V2-

- ❑ removing and installing ⇒ page 90

8 - Fresh air blower control unit - J126-

- ❑ removing and installing ⇒ page 92

9 - Cover for dust and pollen filter

- ❑ removing and installing ⇒ page 92

10 - Dust and pollen filter

- ❑ removing and installing ⇒ page 92

11 - Evaporator temperature sensor - G308-

- ❑ removing and installing ⇒ page 117

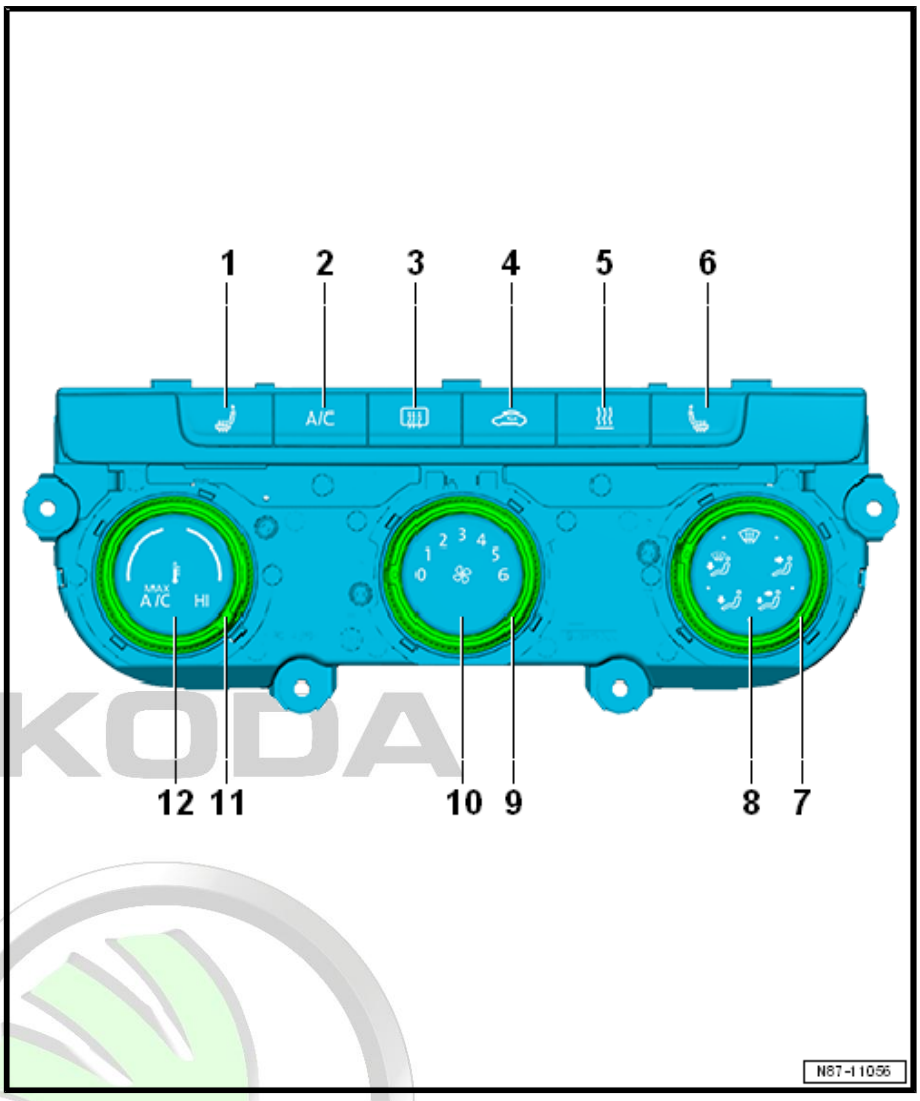
12 - Condensation water drain hose

- ❑ remove and install, test ⇒ page 104

5.3 Overview Control for air conditioning system with control unit for air conditioning system - J301-

Note

- *When the warning light in a control is lit up this indicates the selected function is active.*
- *Detailed description of the function for the A/C control ⇒ Owner's manual Octavia III and ⇒ Operating instructions infotainment .*



1 - Left seat heating button - E653-

- ❑ optionally

2 - Buttons for A/C

- ❑ If the A/C button is deactivated, the AC compressor is set to an output of almost 0.

3 - Button for rear window heating

- ❑ depending on the temperature outdoors, the rear window heater remains switched on for 4 to 20 minutes

4 - Button for re-circulating air mode

5 - Instant heat button for auxiliary heating or buttons for heated windscreen (another symbol)

- ❑ depending on equipment

6 - Right seat heating button - E654-

- ❑ optionally

7 - Setting the air distribution for the individual vents

8 - Display for air distribution

9 - Setting the fan speed

10 - Display of the fan speed

11 - Temperature setting

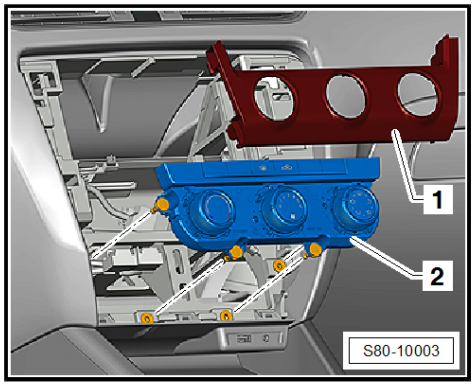
12 - Temperature setting display

5.4 Removing and installing air conditioning system control with control unit for air conditioning system - J301-

Removing

– Remove the display unit for infotainment ⇒ Electrical System; Rep. gr. 91 .

– Grab the control unit -2- at its edges and by pulling it towards you, evenly undo it from the dash panel with the cover -1-.
– Separate the cover -1- from the control -2-.
– Release and disconnect the plug connections.



Install

Installation is performed in the reverse order, pay attention to the following points:

– Connect the connectors and clip in the control -2- into the assembly opening.
– Next, clip in the cover -1-.

Note

If a new control with air conditioning system control unit - J301- is installed, the ⇒ Vehicle diagnostic tester must be connected and the function “Replace control unit” of the relevant control unit and the function “AC compressor run-in” must be performed in the targeted fault finding or in the targeted functions.

6 Climatronic - Air conditioner with automatic regulation)

Note

Detailed description of function ⇒ Owner's manual Octavia III .

6.1 Summary of components - interior

1 - Left vent temperature sender - G150-

- ❑ inspect ⇒ Vehicle diagnostic tester in the function “Targeted fault finding”
- ❑ removing and installing ⇒ page 116

2 - Side window vent

- ❑ integrated in dash panel

3 - Dash panel

- ❑ Removing and installing ⇒ Body Work; Rep. gr. 70

4 - Defrost vent

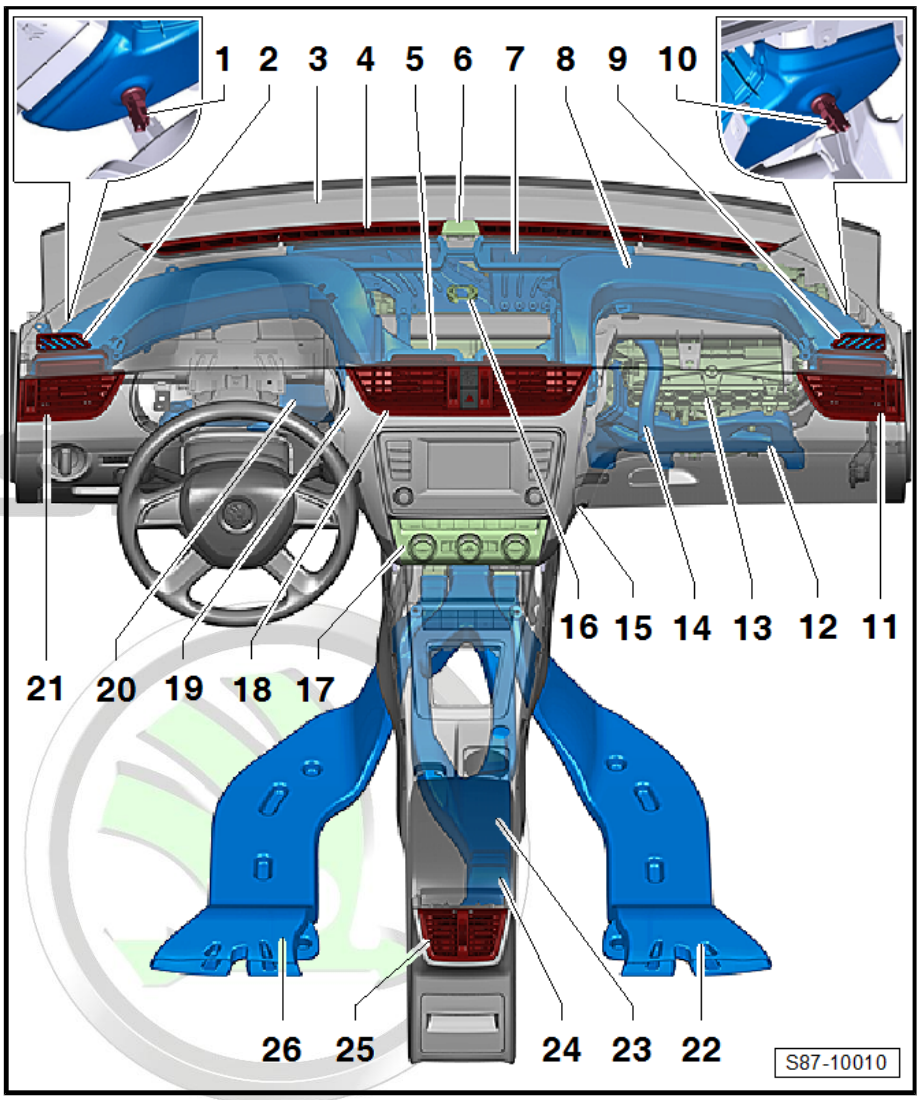
- ❑ integrated in dash panel

5 - Intermediate piece for the air guide to the centre vents

- ❑ removing and installing ⇒ page 82

6 - Sunlight penetration photosensor - G107 -

- ❑ inspect ⇒ Vehicle diagnostic tester in the function “Targeted fault finding”
- ❑ Function: depending on the intensity of the sunlight controls the left and right temperature flap and the fresh air blower
- ❑ Emergency operation in the event of failure: Control unit for Climatronic - J255- accepts a fixed value
- ❑ removing and installing ⇒ page 118



7 - Intermediate piece for the air guide to the defrost vents for the windscreen

- ❑ removing and installing ⇒ page 82

8 - Air guide to the side window vents

- ❑ integrated in dash panel

9 - Side window vent

- ❑ integrated in dash panel

10 - Right vent temperature sender - G151-

- ❑ inspect ⇒ Vehicle diagnostic tester in the function “Targeted fault finding”
- ❑ removing and installing ⇒ page 116

11 - Right side vent

- ❑ removing and installing ⇒ page 78

12 - Footwell vent front passenger side

- ❑ removing and installing ⇒ page 81

13 - Heating and air conditioning unit

- ❑ Assembly overview of components ⇒ page 73
- ❑ removing and installing ⇒ page 84

14 - Hose for glove compartment cooling on front passenger side

15 - Condensation water drain hose

- ❑ remove and install, test ⇒ page 104

16 - Ambient humidity sensor for air conditioning system - G260-

- ❑ at the windscreen at the interior mirror
- ❑ removing and installing ⇒ page 119

17 - Control for air conditioning system with control unit for Climatronic - J255-

- ❑ inspect ⇒ Vehicle diagnostic tester in the function “Targeted fault finding”
- ❑ removing and installing ⇒ page 77
- ❑ Overview Air conditioning system control ⇒ page 76

18 - Centre vent

- ❑ removing and installing ⇒ page 78

19 - Footwell vent temperature sender - G192-

- ❑ inspect ⇒ Vehicle diagnostic tester in the function “Targeted fault finding”
- ❑ removing and installing ⇒ page 118

20 - Footwell vent driver's side

- ❑ removing and installing ⇒ page 81

21 - Left side vent

- ❑ removing and installing ⇒ page 78

22 - Air guide to the rear, right

- ❑ removing and installing ⇒ page 79

23 - Front part of middle air guide to the rear

- ❑ removing and installing ⇒ page 79

24 - Rear part of middle air guide to the rear

- ❑ for removing, remove the rear cover for the centre console and take out the air guide ⇒ Body Work; Rep. gr. 68

25 - Rear centre vent

- ❑ removing and installing ⇒ page 79

26 - Air guide to the rear, left

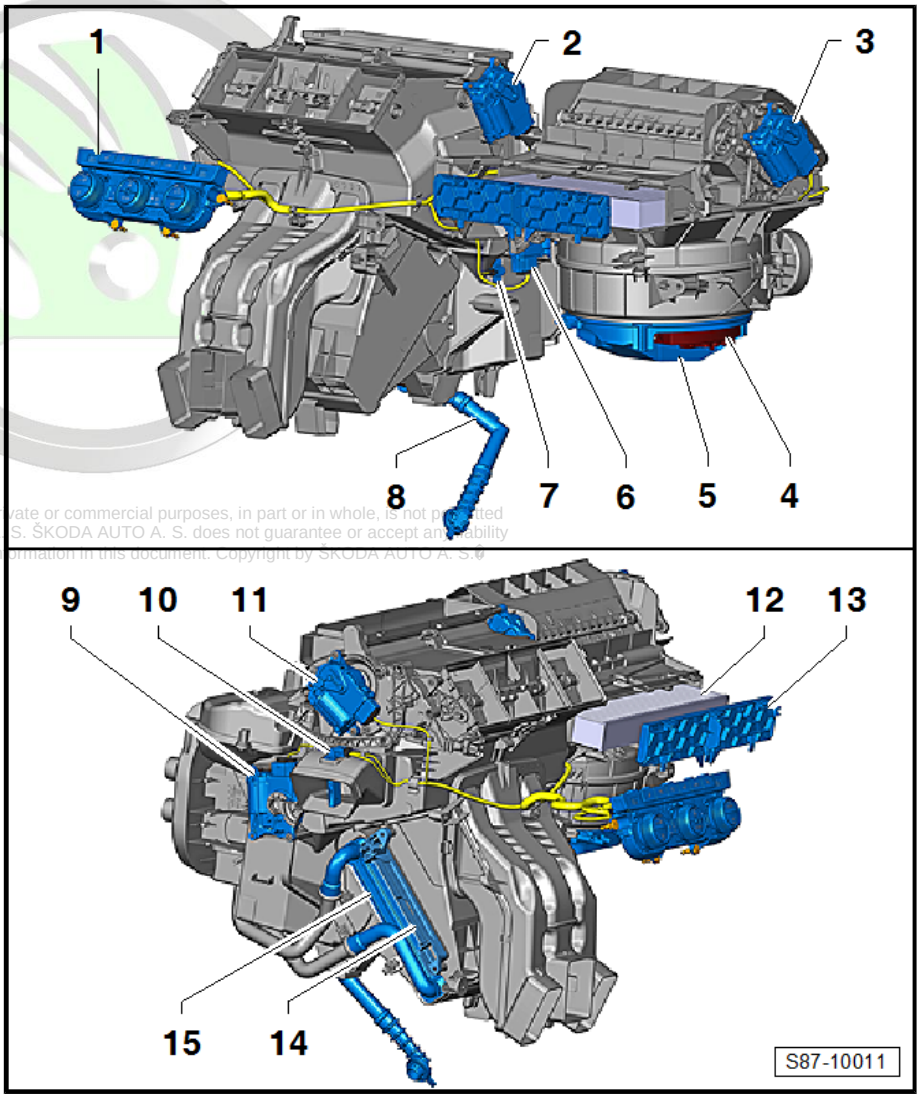
- ❑ removing and installing ⇒ page 79

6.2 Assembly overview of components - heating and air conditioning unit

⇒ “6.2.1 Left-hand drive”, page 73

⇒ “6.2.2 Right-hand drive”, page 74

6.2.1 Left-hand drive



1 - Control for air conditioning system with control unit for Climatronic - J255-

- ❑ removing and installing ⇒ page 69
- ❑ Overview Air conditioning system control ⇒ page 76

2 - Defroster flap control motor - V107-

- ❑ removing and installing ⇒ page 113

3 - Control motor for fresh air and re-circulating air/air flow flap - V 425-

- ❑ removing and installing ⇒ page 110

4 - Fresh air blower control unit - J126-

- ❑ removing and installing ⇒ page 92

5 - Fresh air blower - V2-

- ❑ removing and installing ⇒ page 90

6 - Right temperature flap control motor - V159 -

- ❑ removing and installing ⇒ page 109

7 - Evaporator temperature sensor - G308-

- ❑ removing and installing ⇒ page 117

8 - Condensation water drain hose

- ❑ remove and install, test ⇒ page 104

9 - Left temperature flap control motor - V158-

- ❑ removing and installing ⇒ page 108

10 - Footwell vent temperature sender - G192-

- ❑ removing and installing ⇒ page 118

11 - Air distribution flap control motor - V428-

- ❑ removing and installing ⇒ page 112

12 - Dust and pollen filter

- ❑ removing and installing ⇒ page 92

13 - Cover for dust and pollen filter

- ❑ removing and installing ⇒ page 92

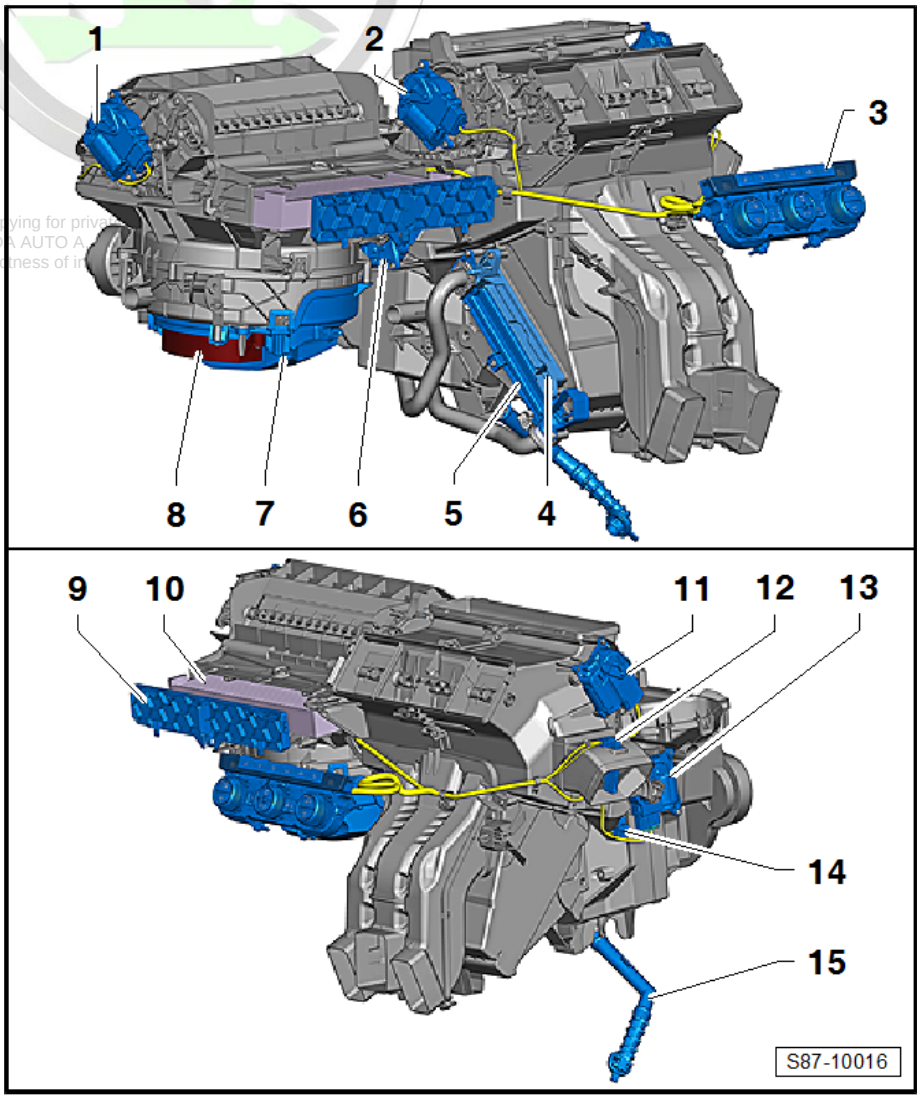
14 - Heater element for additional air heater - Z35-

- ❑ only fitted on certain models
- ❑ removing and installing ⇒ page 99
- ❑ check ⇒ page 100

15 - Heat exchanger

- ❑ removing and installing ⇒ page 93

6.2.2 Right-hand drive



1 - Control motor for fresh air and re-circulating air/air flow flap - V 425-

- ❑ removing and installing ⇒ page 110

2 - Air distribution flap control motor - V428-

- ❑ removing and installing ⇒ page 112

3 - Control for air conditioning system with control unit for Climatronic - J255-

- ❑ removing and installing ⇒ page 69
- ❑ Overview Air conditioning system control ⇒ page 76

4 - Heater element for additional air heater - Z35-

- ❑ only fitted on certain models
- ❑ removing and installing ⇒ page 99
- ❑ check ⇒ page 100

5 - Heat exchanger

- ❑ removing and installing ⇒ page 93

6 - Left temperature flap control motor - V158-

- ❑ removing and installing ⇒ page 108

7 - Fresh air blower - V2-

- ❑ removing and installing ⇒ page 90

8 - Fresh air blower control unit - J126-

- ❑ removing and installing ⇒ page 92

9 - Cover for dust and pollen filter

- ❑ removing and installing ⇒ page 92

10 - Dust and pollen filter

- ❑ removing and installing ⇒ page 92

11 - Defroster flap control motor - V107-

- ❑ removing and installing ⇒ page 113

12 - Footwell vent temperature sender - G192-

- ❑ removing and installing ⇒ page 118

13 - Right temperature flap control motor - V159 -

- ❑ removing and installing ⇒ page 109

14 - Evaporator temperature sensor - G308-

- ❑ removing and installing ⇒ page 117

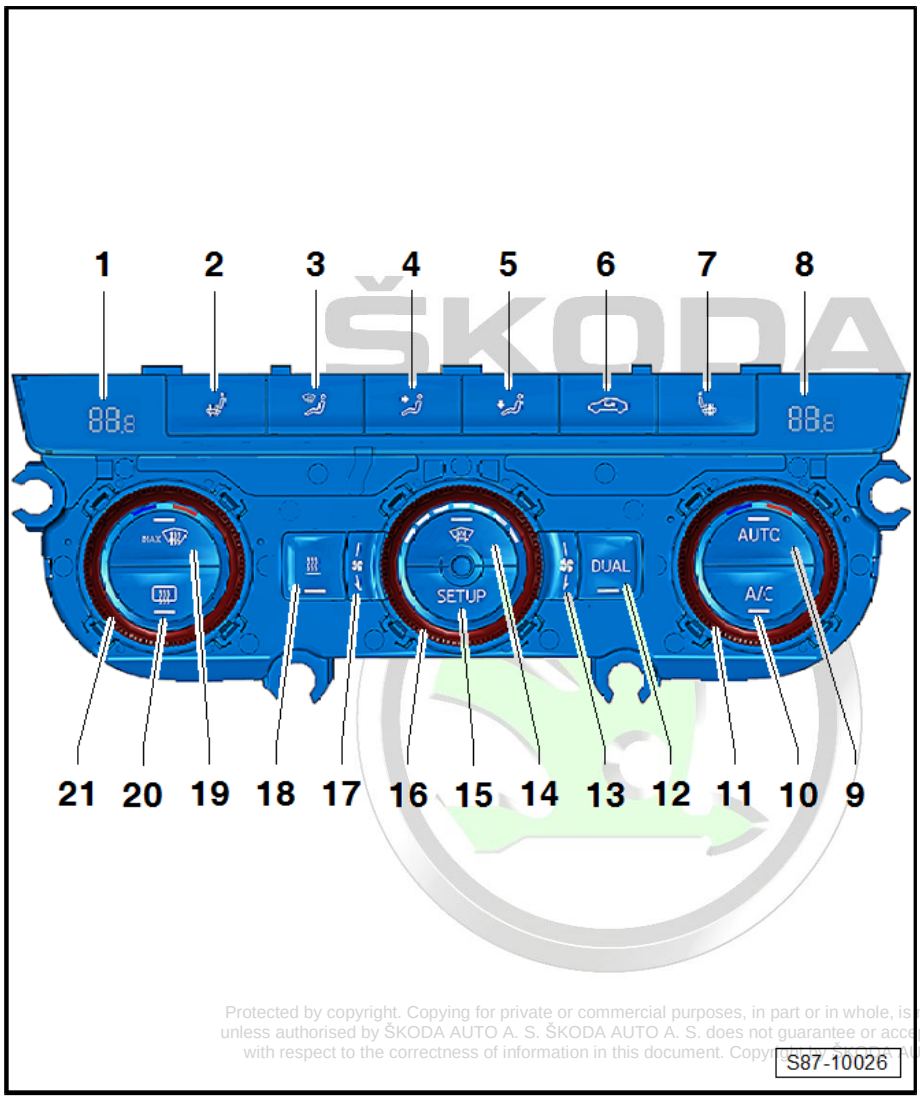
15 - Condensation water drain hose

- ❑ remove and install, test ⇒ page 104

6.3 Overview Control for air conditioning system with control unit for Climatronic - J255-

Note

- *When the warning light in a control is lit up this indicates the selected function is active.*
- *Detailed description of the function for the A/C control ⇒ Owner's manual Octavia III and ⇒ Operating instructions infotainment .*



1 - Temperature gauge left

2 - Left seat heating button - E653-

- ❑ optionally

3 - Button for the windscreen air distribution

4 - Button centre air distribution

5 - Button footwell air distribution

6 - Button for re-circulating air mode

- ❑ Manual and automatic recirculated air

7 - Right seat heating button - E654-

- ❑ optionally

8 - Temperature gauge right

9 - Button for automatic mode

- ❑ works in three operating modes - weak, medium and intensive, see ⇒ Operating instructions Infotainment

10 - Buttons for A/C

- ❑ If the A/C button is deactivated, the AC compressor is set to an output of almost 0.

11 - Temperature setting right

- ❑ the selected temperature is shown in the display Pos. -8-

12 - Activation and deactivation of the dual mode for the adjustment of temperature

13 - Display of the fan speed

14 - Heated windscreen button

15 - Climatronic setting in the Infotainment

16 - Setting the fan speed

17 - Display of the fan speed

18 - Auxiliary heating (see Fig.) or button OFF

- ❑ depending on equipment:

- Instant heat button for auxiliary heating On/Off
- OFF - Deactivation of the Climatronic

19 - Button for intensive defrosting the windscreen

20 - Button for rear window heating

- depending on the temperature outdoors, the rear window heater remains switched on for 4 to 20 minutes

21 - Temperature setting left

- the selected temperature is shown in the display Pos. -1-

6.4 Removing and installing air conditioning system control with control unit for Climatronic - J255-

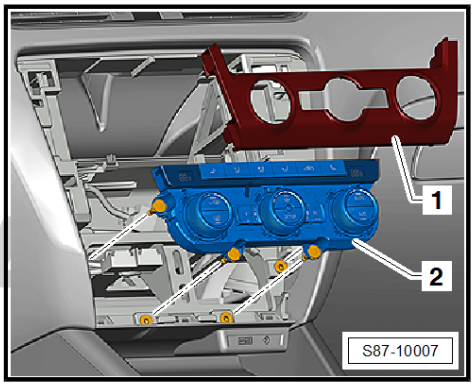
Removing

– Remove the display unit for infotainment ⇒ Electrical System; Rep. gr. 91 .

– Grab the Air Conditioning control -2- at its edges and by pulling it towards you, undo it evenly from the dash panel with the cover -1-.

– Separate the cover -1- from the control -2-.

– Release and disconnect the plug connections.



Install

Installation is performed in the reverse order, pay attention to the following points:

– Connect the connectors and clip in the control -2- into the assembly opening.

– Next, clip in the cover -1-.

Note

If a new control with Climatronic control unit - J255- is installed, the ⇒ Vehicle diagnostic tester must be connected and the function "Replace control unit" of the relevant control unit and the function "AC compressor run-in" must be performed in the targeted fault finding or in the targeted functions.

7 Vents and air guide ducts, exhaust ventilation for passenger compartment

7.1 Removing and installing centre vent

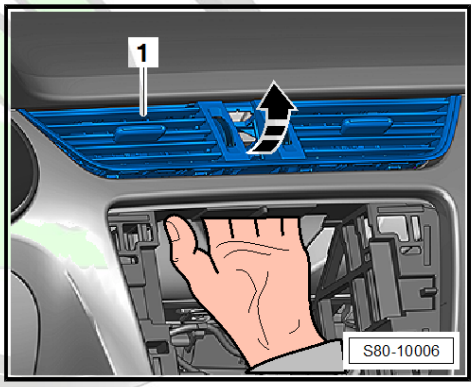
Removing

– Remove the display unit for infotainment ⇒ Electrical System; Rep. gr. 91 , do not disconnect plug connections.

– Put hand behind the vents -1- and press out of the dash panel at the bottom reinforcement -arrow-.

– Carefully loosen the vent out of the top catches and remove.

– Disconnect plug.



Install

Installation is performed in the reverse order, pay attention to the following points:

Caution

Do not press onto the grids of the vent when installing.

– Carefully push the vent back into the dash panel until the catches lock audibly into place.

– Press the vents into the dash panel at the bottom reinforcement.

– After installing, check the vents for proper operation.

7.2 Removing and installing the right/left side vent

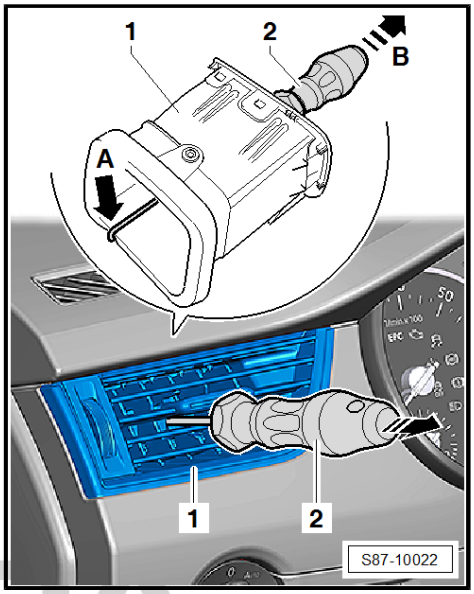
Special tools and workshop equipment required

♦ Release tool - T10389-

Removing

– Open all the fins of the vent.

– Insert the release tool -2- in the vent and hook it at the rear bottom edge of the vent -arrow A- (use a lamp in order to insert the release tool correctly).
– Loosen the vent -1- and remove it from the dash panel by pulling on the release tool -arrow B-.



Install

Caution

Do not press onto the grids of the vent when installing.

– Carefully push the vent back into the dash panel until the catches lock audibly into place.
– After installing, check the vents for proper operation.

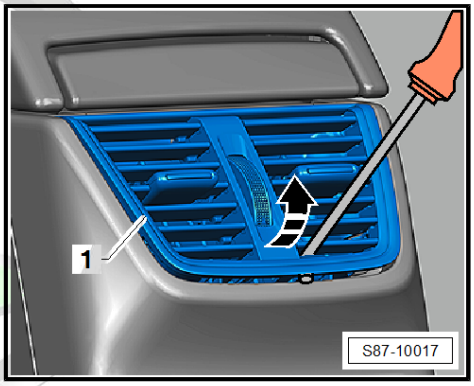
7.3 Removing and installing rear centre vent

Removing

Special tools and workshop equipment required

♦ Assembly tool - T10389-

– Using the assembly tool, undo -T10389- the vent -1- from the catches -arrow-, and remove.



Install

Caution

Do not press onto the grids of the vent when installing.

Carefully push the vent back into the dash panel until the catches lock audibly into place.

– After installing, check the vents for proper operation.

7.4 Removing and installing the rear duct of the right and left footwell

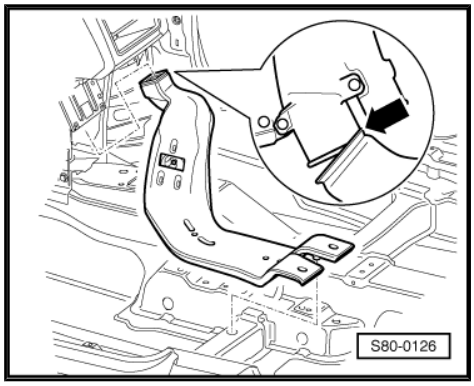
Note

Proceed in the same way to remove the rear ducts on either side, but reversed.

Removing

– Remove the front passenger or driver's seat ⇒ Body Work; Rep. gr. 72 .
– Remove the centre console ⇒ Body Work; Rep. gr. 68 .
– Remove the attachments of the front floor covering ⇒ Body Work; Rep. gr. 70 .

– Lift up floor covering, unclip rear duct from cross member and pull off from heater unit.

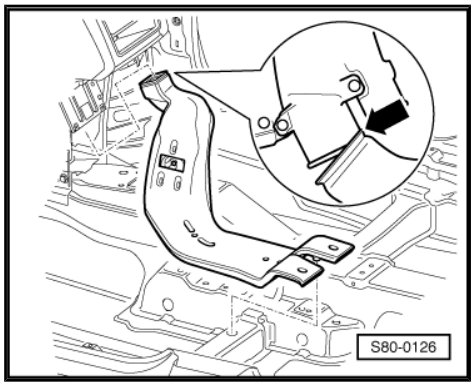


Install

Installation is performed in the reverse order, pay attention to the following points:

Note

When installing the rear duct make sure that the rear duct is first of all pushed onto the heater unit -arrow- and then clipped into the cross member.



7.5 Removing and installing for front duct under centre console

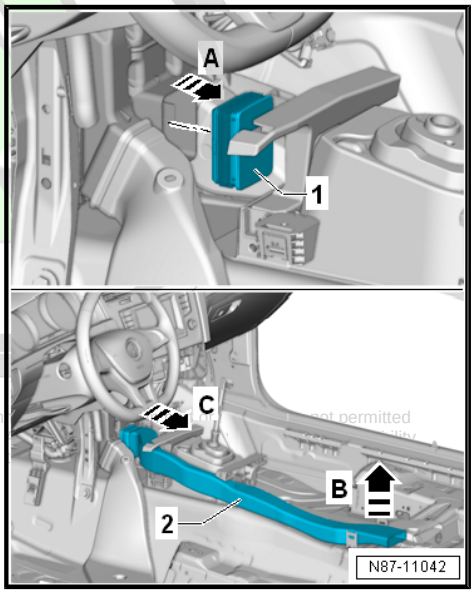
Removing

– Remove the centre console ⇒ Body Work; Rep. gr. 68 .

Note

If the vehicle is not equipped with a rear centre vent, a cover -1- must be fitted to the vent of the heating and air conditioning unit. The cover is removed in -direction of arrow A-.

– Tilt out the air guide -2- towards the top -arrow B-, hook out of the heating and air conditioning unit -arrow C- and remove.



Install

Installation is carried out in the reverse order.

7.6 Remove and install footwell vent

⇒ “7.6.1 Removing and installing the footwell vent on the driver's side”, page 81

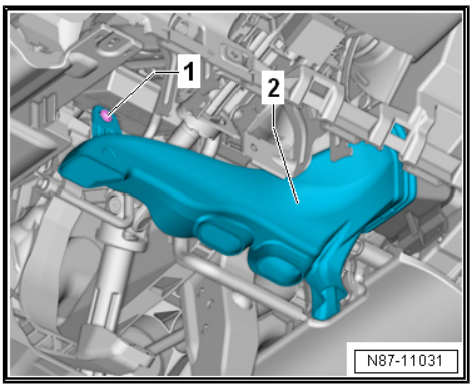
⇒ “7.6.2 Removing and installing the footwell vent on the front passenger side”, page 81

7.6.1 Removing and installing the footwell vent on the driver's side

Removing

– Remove knee airbag ⇒ Body Work; Rep. gr. 69 .

– Unscrew the screw -1- (1.5 Nm) and remove the footwell vent -2-.



Install

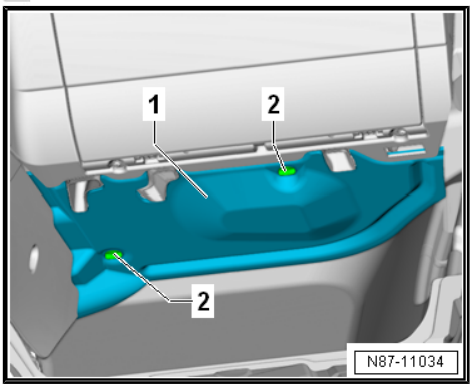
Installation is carried out in the reverse order.

7.6.2 Removing and installing the footwell vent on the front passenger side

Removing

– Release screw -2- and remove shield -1-.

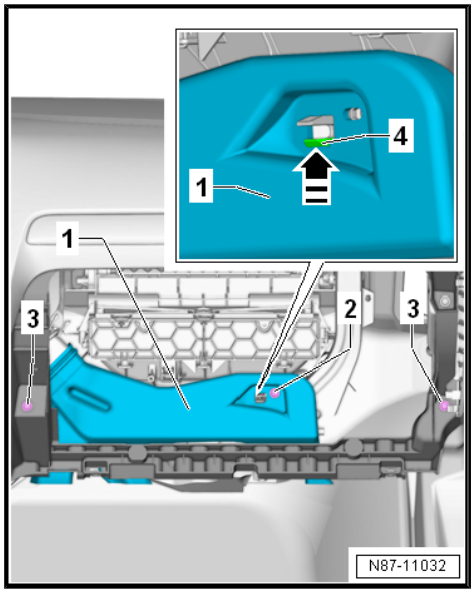
– Remove the glove compartment ⇒ Body work; Rep. gr. 70 .



– Unscrew the screw -2- (1.5 Nm), if present.
– Press clip -4- -arrow-, unhook vent and remove downwards.

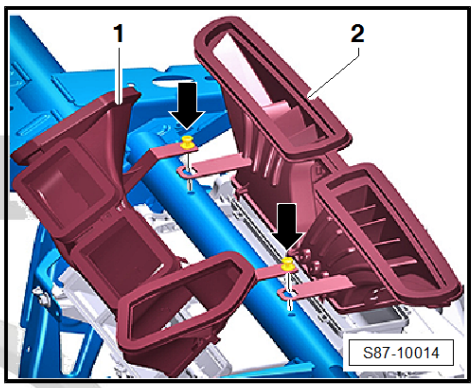
Install

Installation is carried out in the reverse order.



7.7 Removing and installing intermediate piece for the air guide to the defrost vent and to the centre vents

– Removing the dash panel ⇒ Body Work; Rep. gr. 70 .
– Take out expanding rivets -arrows-, retaining clips and remove intermediate piece -1- and -2-.
– Installation is carried out in the reverse order.

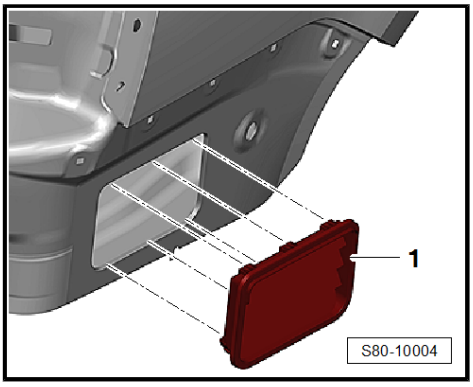


7.8 Remove and install the exhaust ventilation for passenger compartment, check

Inspection:

– Remove rear bumper ⇒ Body Work; Rep. gr. 63 .

– The sealing lips in the ventilation frame -1- must be free to move and close by themselves when the door is closed.



Removing and installing:

– Loosen right luggage compartment trim panel ⇒ Body Work; Rep. gr. 70 .
– Remove rear bumper ⇒ Body Work; Rep. gr. 63 .
– Press the locks from the inside and remove the ventilation -1-.

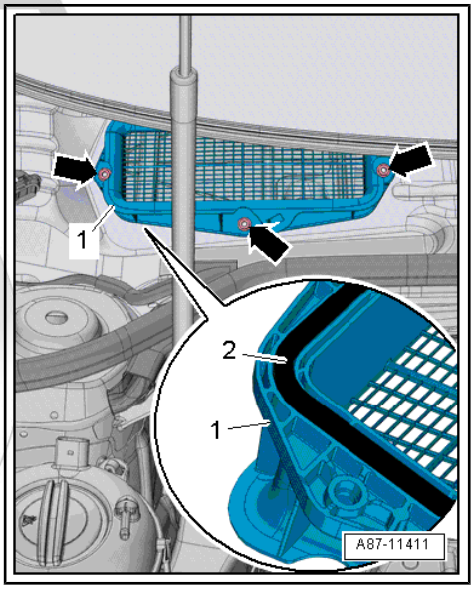
Installation is performed in the reverse order, pay attention to the following points:

– Pay attention to fitting position when installing.
– Press the grate into the assembly opening until it audibly locks into place.
– The seal should rest against the body fully.

7.9 Removing and installing air intake grid

Removing

– Remove the cooling water tank cover ⇒ Body Work; Rep. gr. 64 .
– Remove air quality sensor - G238- ⇒ page 119 .
– Unscrew the fixing nuts -arrows- (3 Nm) and remove the air intake grid -1- upwards.



Install

Installation is performed in the reverse order, pay attention to the following points:

Note

- *The gasket -2- must be correctly positioned at the air intake grid.*
- *If the air intake grid is not properly installed or is damaged, water can penetrate into the fresh air intake. Complaints may arise if there is odour from the heating or if humidity penetrates into the passenger compartment.*
- *Clean the contact surface of the grid before installing.*

– First of all tighten the outer nut, then the one on the opposite side and at last the middle one.

8 Removing and installing heater and air conditioning unit

⇒ “8.1 Removing and installing the heating and air conditioning unit from the vehicle”, page 84

⇒ “8.2 Removing and installing bracket for heating and air conditioning unit”, page 88

8.1 Removing and installing the heating and air conditioning unit from the vehicle

Special tools and workshop equipment required

- Hose clamp - MP7-602 (3094)-
- Hose clamp - T30096 (3093)-
- Pneumatic gun, commercially available
- Plug set for engine - VAS 6122-

Removing

Note

- *Repairs must only be carried out in specialist service centres which have suitably trained personnel and are fitted out for working on the refrigerant circuit.*
- *A second mechanic is required occasionally for removing and installing the heating and air conditioning unit.*
- *On certain engines remove the engine cover, the intake hose to the exhaust turbocharger, if necessary the intake hose to the air filter for an easier access to the expansion valve ⇒ Engine, corresponding repair group .*

– Disconnect battery earth strap ⇒ Electrical System; Rep. gr. 27 .

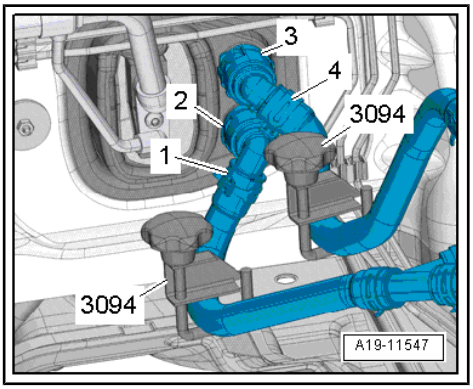
– Vehicles with air conditioning system - separate the refrigerant lines to the expansion valve ⇒ page 61 .

DANGER!

The coolant temperature can be over 100°C when the engine is warm. The cooling system is under pressure - risk of scalding!

Before repairs, reduce pressure and temperature if necessary.

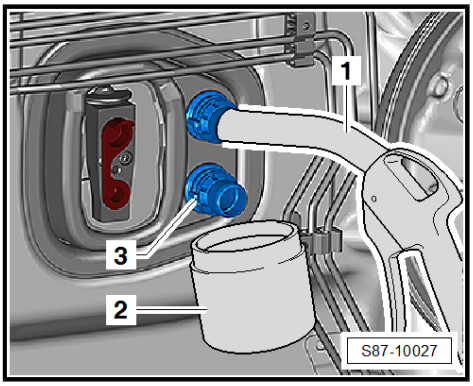
– Mark coolant hoses -1- and -4-.



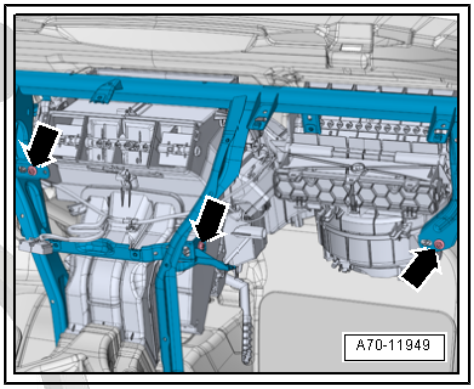
Note

The heat exchanger is designed for a certain flow direction of the coolant, therefore the coolant hoses must be connected on the correct side.

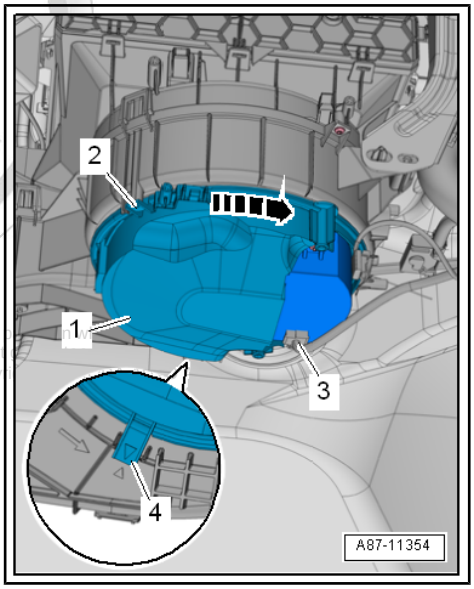
– Pinch off the coolant hoses with hose clamps.
– Push out retaining clips -2- and -3-.
– Remove the coolant hoses -1- and -4- from the heat exchanger for heating.



– Place the hose -1- a little onto the upper connection.
– Hold a container -2- below the lower connection -3-.
– Carefuly blow with a pneumatic gun the remaining coolant out of the heat exchanger into the container -2-.
– Close open lines and connections with clean plugs.
– Removing the dash panel and the central carrier/dash panel ⇒ Body Work; Rep. gr. 70 .

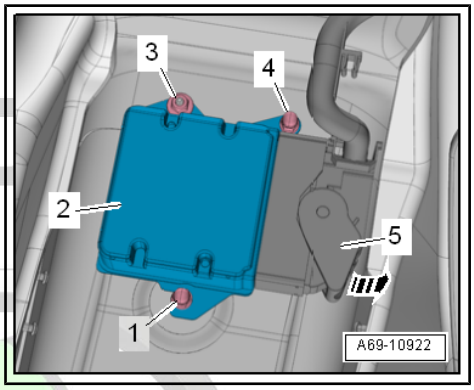


– The heating and air conditioning unit is secured to the central carrier with three screws -arrows- (4 Nm).
– Removing the centre air guide duct to the rear vent below the centre console ⇒ page 80 .
– Raise the rear footwell vent below the front seats and pull it towards the rear.

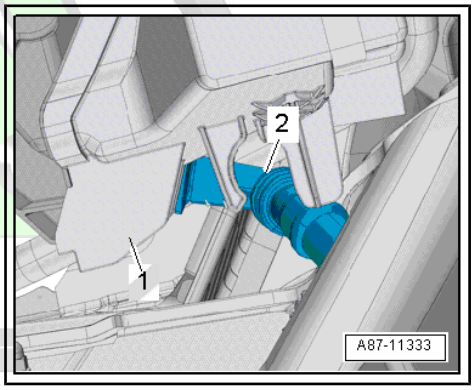


– Separate plug -3- from fresh air blower control unit - J126- .

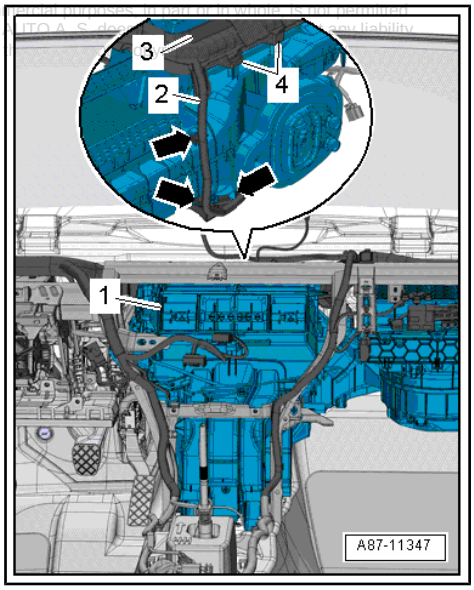
– Disconnect the plug -5- from the airbag control unit - J234- by tilting out the clamp -arrow-.
– Cover floor covering and airbag control unit - J234- with a waterproof foil and water absorbing paper.



– Carefully detach the condensation water drain hose -2- from the heating and air conditioning unit.



– Detach the heating and air conditioning unit -1- from the brackets at the plenum chamber bulkhead, see ⇒ page 88.
– Expose cable duct -3-.
– Expose electrical wiring loom -2- at the supports -arrows-.
– Remove heater and air conditioning unit.



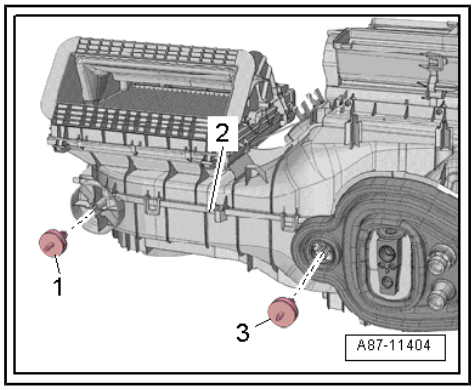
Install

Installation is performed in the reverse order, pay attention to the following points:

Note

Install the heating and air conditioning unit with the assistance of a 2nd mechanic.

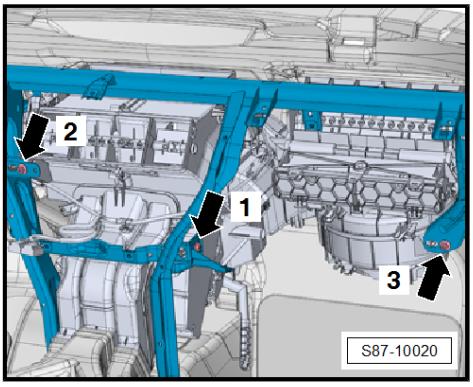
– Fit the heating and air conditioning unit -2- onto the brackets -1- and -3-.



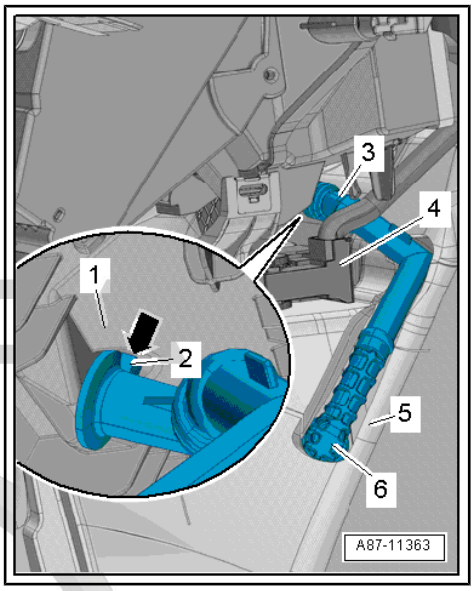
Note

- *The brackets remain in the vehicle during the installation.*
- *Removing and installing heating and air conditioning unit* *⇒ page 88* *.*

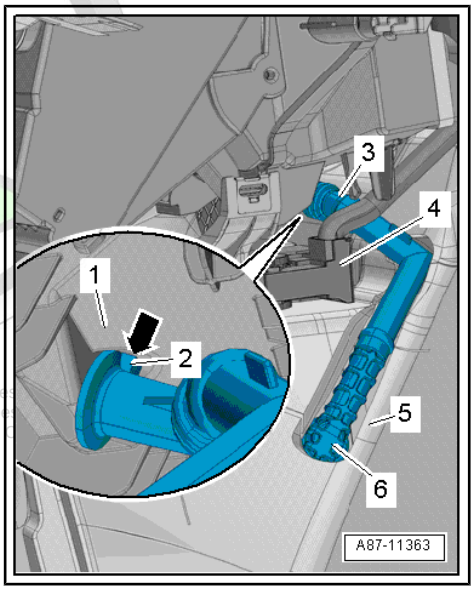
– Tighten the securing bolts for the heating and air conditioning unit/carrier in the order -1-, -2- and -3- (4 Nm).



– When installing, pay attention to the correct seating of the condensation water drain hose -3-.
– The peg -arrow- at the connection fitting must grip into the guide -2-.
– If a commercially available hose clamp for fixing around the condensation water drain hose -3- was installed, it must be replaced.



– The condensation water drain hose -3- must be routed below the wiring loom of the airbag control unit - J234- Pos. -4-, see illustration.
– Top up coolant ⇒ Engine; Rep. gr. 19 .
– Fill the refrigerant circuit with the aid of the A/C service station.
– ⇒ Vehicle diagnostic tester connect and interrogate the fault memory, if necessary erase the displayed entries.
– Finally check the function of the heating/air conditioning system.



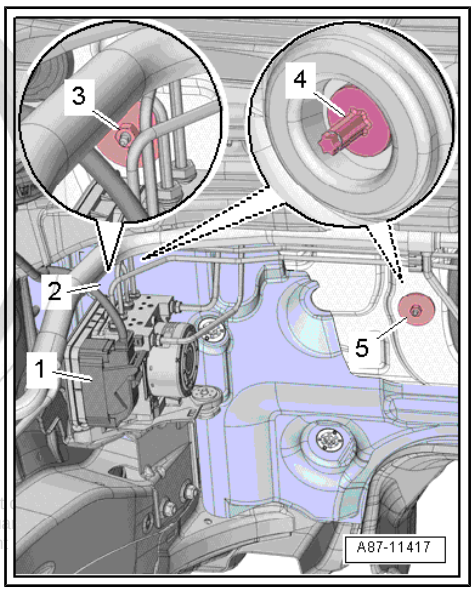
8.2 Removing and installing bracket for heating and air conditioning unit

Note

The brackets remain installed in the vehicle when removing the heating and air conditioning unit.

Removing

- Remove heating and air conditioning unit ⇒ page 84 .
- Separate the plug connection -1- by tilting out the clamp.
- Pull out the heat shield -2- behind the ABS unit and fold it to the side.
- Release the nuts -3- and -5-.
- Remove the holder -4- in the interior.



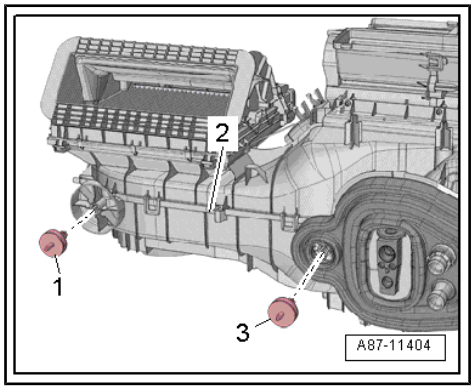
Note

If the nut is not accessible via the ABS unit as described, the coolant pipe together with the inner heat exchanger must be removed ⇒ page 61 .

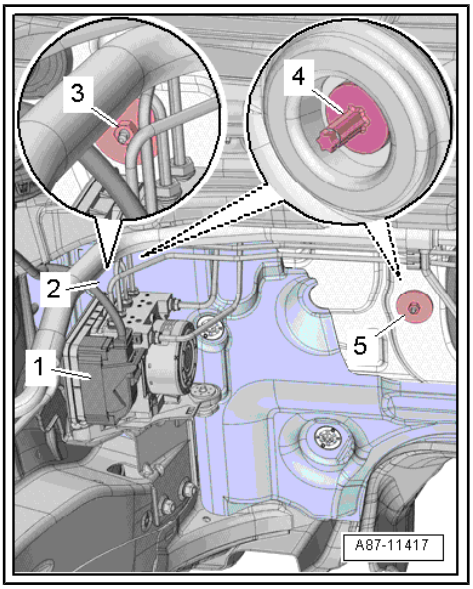
Install

Installation is performed in the reverse order, pay attention to the following points:

- Insert the brackets -1- and -3- into the support at the heating and air conditioning unit -2- and install the heating and air conditioning unit with the brackets ⇒ page 84 .



– After installing the heating and air conditioning unit (see ⇒ page 84) tighten the nuts -3- and -5- (4.5 Nm).



9 Components at the heating and air conditioning unit

9.1 Removing and installing fresh air blower - V2-

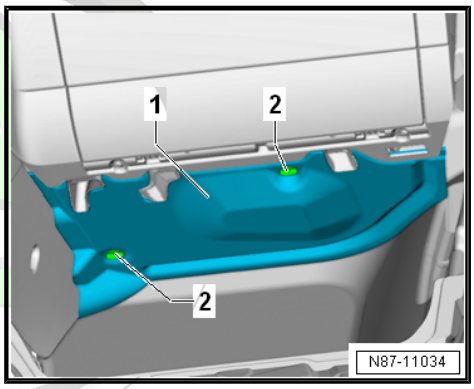
9.1.1 Left-hand drive

Removing

– Release screws -2- and remove shield -1-.

– Remove the storage compartment in the dash panel on the front passenger side ⇒ Body Work; Rep. gr. 70 .

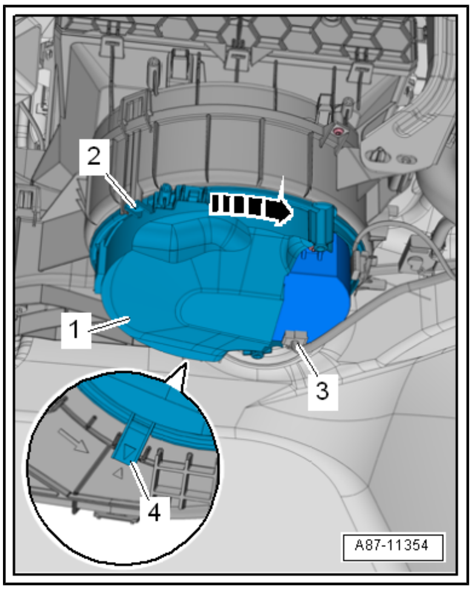
– Remove the footwell vent on the front passenger side ⇒ page 81 .



Caution

Imbalance of the fan wheel

Do not touch the rotor for the fresh-air fan - V2- . By applying force or sliding the imbalance weights secured to the rotor for fresh air fan, this can lead to an imbalance and also to possible complaints.



– Separate plug connection -3- at the fresh air blower - V2- .

– If present, release screw -2-.

– Lift locking tab -4-, turn fresh air blower -1- -arrow- and carefully remove towards the bottom.

Install

Installation is performed in the reverse order, pay attention to the following points:

Note

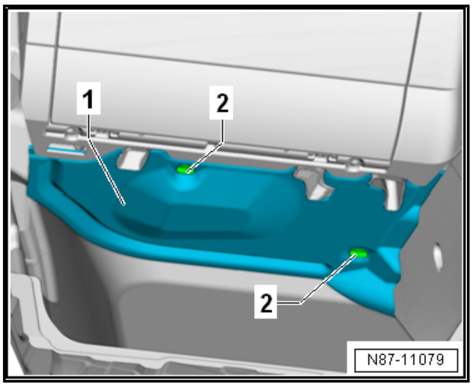
♦ *If the locking tab -4- is damaged/broken, screw in screw -2- (1 Nm).*

♦ *If only the fresh air blower - V2- is defective, remove the fresh air blower control unit - J126- from the fresh air blower* *⇒ page 92* .

– Carry out a functional test on the fresh air blower - V2- .

9.1.2 Right-hand drive

Removing



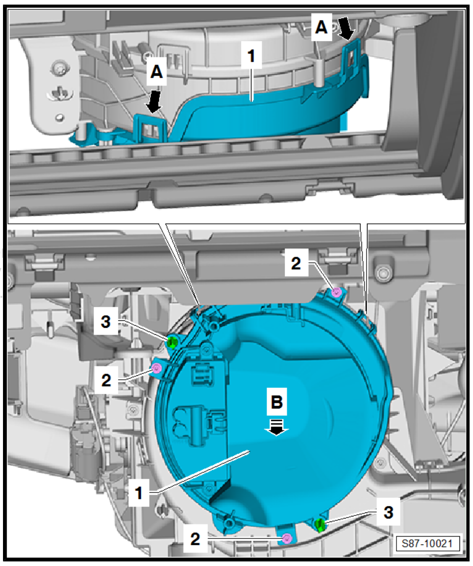
– Release screws -2- and remove shield -1-.

– Remove the storage compartment in the dash panel on the front passenger side ⇒ Body Work; Rep. gr. 70 .

– Remove the footwell vent on the front passenger side ⇒ page 81 .

> Caution
>
> *Imbalance of the fan wheel*
>
> *Do not touch the rotor for the fresh-air fan - V2- . By applying force or sliding the imbalance weights secured to the rotor for fresh air fan, this can lead to an imbalance and also to possible complaints.*

– Disconnect the plug connection.



– Unscrew bolts -2-.

– Unlock the latches -arrows A- and carefully remove the fan -1- -arrow B-.

Install

Installation is performed in the reverse order, pay attention to the following points:

– Slide the fan onto the centring mandrels -3-.

– Carry out a functional test on the fresh air blower - V2- .

Note

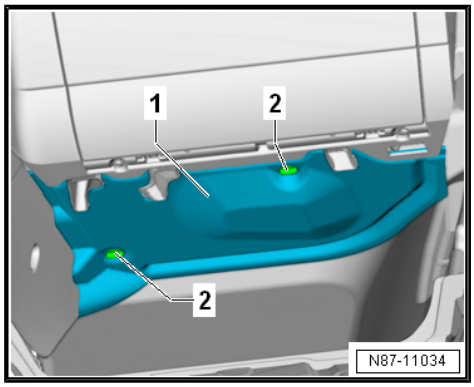
If only the fresh air blower - V2- is defective, remove the fresh air blower control unit - J126- from the fresh air blower *⇒ page 92* .

9.2 Removing and installing fresh air blower control unit - J126-

Removing

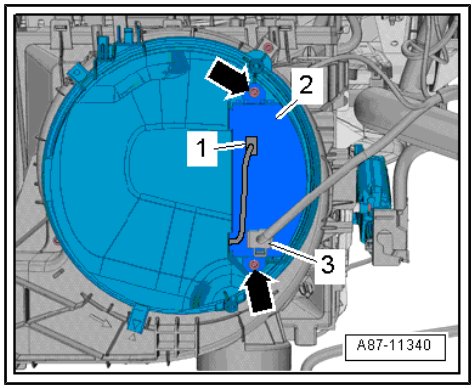
– Switch off the ignition and all electrical components.

– Unscrew and remove the screws -2- and remove shield -1- on the front passenger side.



– Disconnect plug connections -1- and -3-.

– Release screws -arrows- (1 Nm).



WARNING

Danger of burn injuries.

- *If the fresh air blower with the fresh air blower control unit was in operation before the removal, it can be hot.*

– Remove the control unit -2- from the fresh air blower.

Install

Installation is performed in the reverse order, pay attention to the following points:

– Check the function of the fresh air blower - V2- .

9.3 Removing and installing dust pollen filter

Removing

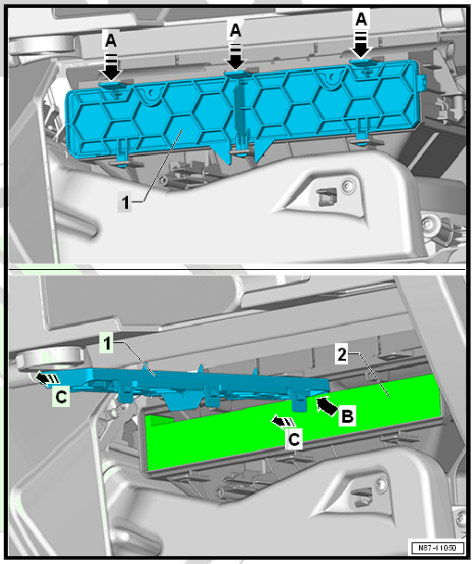
– Remove the storage compartment in the dash panel on the front passenger side ⇒ Body Work; Rep. gr. 70 .

Caution

Handle customer property in the glove compartment with utmost care.

Store items from the glove compartment in a sealable plastic bag.

– Press the locking catches -arrow A- and remove the cover -1-.



Note

Before removing the dust and pollen filter, eliminate any dirt and remaining foliage with a commercially available vacuum cleaner.

Caution

Risk of damage to the fresh air blower - V2- due to dirt dropping out of the dust and pollen filter.

- ***Pull the dust and pollen filter carefully and slowly out of the installation channel.***
- ***On a heavily soiled dust and pollen filter, suction off the top side with a vacuum cleaner during the removal.***

– Hook the cover -1- into the dust and pollen filter -arrow B-.

– Pull the dust and pollen filter -2- out of the installation channel -arrows C-.

Install

Installation is performed in the reverse order, pay attention to the following points:

– In vehicles with air quality sensor - G238- , a dust and pollen filter with filter insert with activated charcoal is installed, see ⇒ Electronic catalogue of original parts .

– Pay attention to the fitting position of the dust and pollen filter.

9.4 Removing and installing heat exchanger

Special tools and workshop equipment required

- Hose clamp - MP 7-602 (3094)-
- Hose clamp - T30096 (3093)-
- Pneumatic gun, commercially available
- Plug set for engine - VAS 6122-

Note

On certain engines remove the engine cover, the intake hose to the exhaust turbocharger, if necessary the intake hose to the air filter for an easier access ⇒ Engine, corresponding repair group .

Removing and installing
⇒ “9.4.1 Manufacturer Valeo”, page 93

Removing and installing
⇒ “9.4.2 Manufacturer Denso”, page 96

9.4.1 Manufacturer Valeo

Removing

– Disconnect battery earth strap ⇒ Electrical System; Rep. gr. 27 .

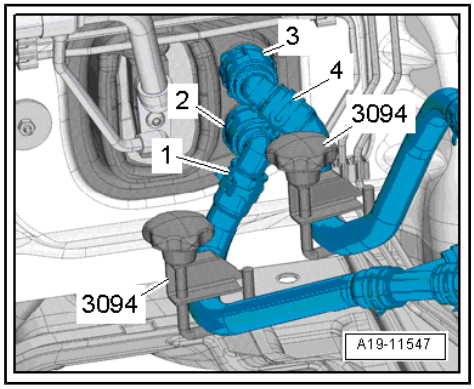
– Vehicles with air conditioning system - separate the refrigerant lines to the expansion valve ⇒ page 61 .

DANGER!

The coolant temperature can be over 100°C when the engine is warm. The cooling system is under pressure - risk of scalding!

Before repairs, reduce pressure and temperature if necessary.

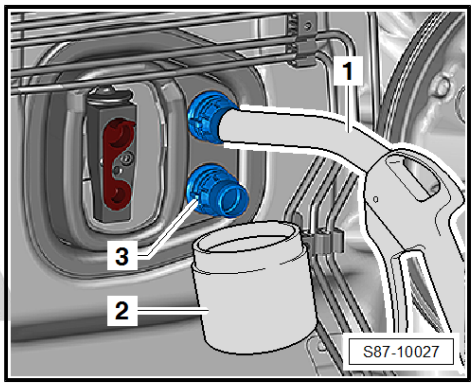
– Mark coolant hoses -1- and -4-.



Note

The heat exchanger is designed for a certain flow direction of the coolant, therefore the coolant hoses must be connected on the correct side.

– Pinch off the coolant hoses with hose clamps.
– Push out retaining clips -2- and -3-.
– Remove the coolant hoses -1- and -4- from the heat exchanger for heating.



– Place the hose -1- a little onto the upper connection.
– Hold a container -2- below the lower connection -3-.
– Carefuly blow with a pneumatic gun the remaining coolant out of the heat exchanger into the container -2-.
– Close the open lines and connections with a clean plug e.g. from the screw plug set for engine - VAS 6122- .
– Remove the side cover of the centre console on the left side ⇒ Body Work; Rep. gr. 68 .

Left-hand drive:

– Remove the knee airbag ⇒ Body Work; Rep. gr. 69 .

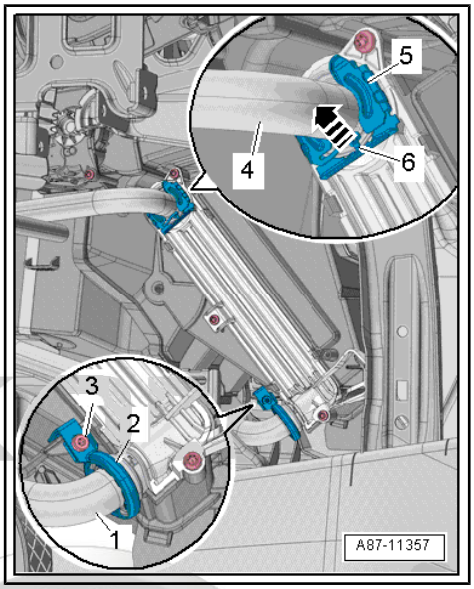
Right-hand drive:

– Remove the glovebox and glovebox frame from the dash panel on the front passenger side ⇒ Body Work; Rep. gr. 70 .

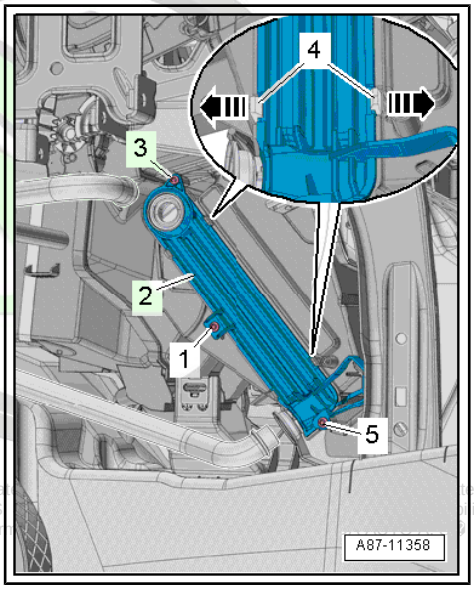
All vehicles:

– Remove left footwell vent ⇒ page 81 .
– If present, remove heating element for additional air heating - Z35- ⇒ page 99 .
– Cover the floor covering in the area below the heat exchanger with a liquid impermeable foil and absorbent paper.

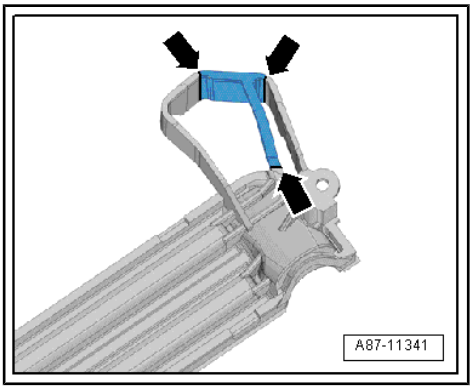
– Lift the catch -6- -arrow- and detach the clamp -5-.
– Detach the coolant line -4- from the heat exchanger.
– Release screw -3- and remove screw clamp -2-.
– Detach the coolant line -1- from the heat exchanger.
– Close the open lines and connections with a clean plug from the plug set for engine - VAS 6122- .



– Release screws -1-, -3- and -5- (2 Nm).
– Unlock locking tabs -4- -arrows- and detach cover -2-.



– If the cover cannot be pulled out, separate the tabs at the cover -arrows-.
– Pull the heat exchanger out of the installation channel.



Install

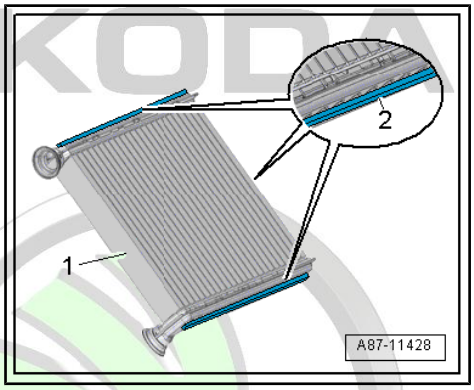
Installation is performed in the reverse order, pay attention to the following points:

Note

Replace gasket rings.

– Check the installation channel on a removed heat exchanger and heating element for additional air heating - Z35- , if necessary remove any dirt or residues of coolant which has flown out.

– Check the foam seals -2- attached to the heat exchanger -1- for damage, replace if necessary.



Note

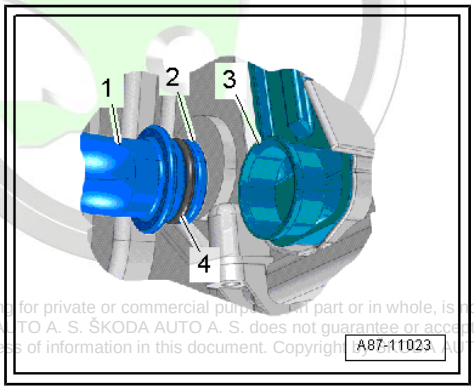
- *An incorrectly glued foam seal can be rolled up when inserted.*
- *If the foam seal is damaged or not properly fitted, cold air can flow past the heat exchanger.*

– Check connections -2- and -3- for damage or contamination.

– Clean sealing surface for gasket rings and smoothen.

– Moisten new gasket rings -4- with coolant (or grease slightly with silicone grease) and fit onto the coolant pipe -1-.

– Carefully slide the heat exchanger fully into the heating and air conditioning unit.

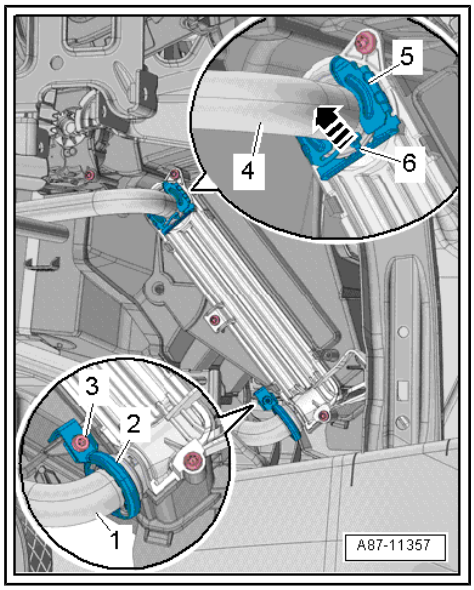


– Slide the coolant pipes -1- and -4- into the heat exchanger as far as they can go.

Caution

Leaks in the heat exchanger

Pinched gasket rings, tilted or not fully pushed on coolant pipes can cause leaks.



– Slide in the new retaining clip -5- and position it correctly.

– Position the new screw clamp -2- and tighten the screw -3- (6 Nm).

Note

Refrigerant lines must not rest against the air distributor housing or other components.

– Top up coolant ⇒ Engine; Rep. gr. 19 .

– Finally check the function of the heating/air conditioning system.

9.4.2 Manufacturer Denso

Removing

– Disconnect battery earth strap ⇒ Electrical System; Rep. gr. 27 .

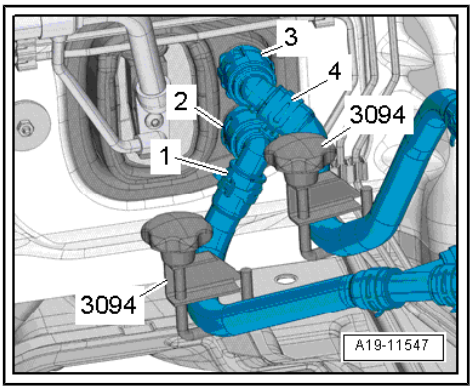
– Vehicles with air conditioning system - separate the refrigerant lines to the expansion valve ⇒ page 61 .

DANGER!

The coolant temperature can be over 100°C when the engine is warm. The cooling system is under pressure - risk of scalding!

Before repairs, reduce pressure and temperature if necessary.

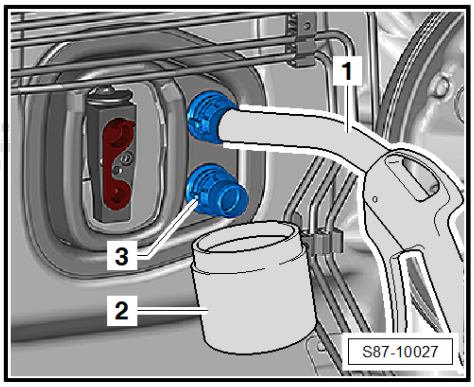
– Mark coolant hoses -1- and -4-.



Note

The heat exchanger is designed for a certain flow direction of the coolant, therefore the coolant hoses must be connected on the correct side.

– Pinch off the coolant hoses with hose clamps.
– Push out retaining clips -2- and -3-.
– Remove the coolant hoses -1- and -4- from the heat exchanger for heating.



– Place the hose -1- a little onto the upper connection.
– Hold a container -2- below the lower connection -3-.
– Carefuly blow with a pneumatic gun the remaining coolant out of the heat exchanger into the container -2-.
– Close the open lines and connections with a clean plug e.g. from the screw plug set for engine - VAS 6122- .
– Remove the side cover of the centre console on the left side ⇒ Body Work; Rep. gr. 68 .

Left-hand drive:

– Remove the knee airbag ⇒ Body Work; Rep. gr. 69 .

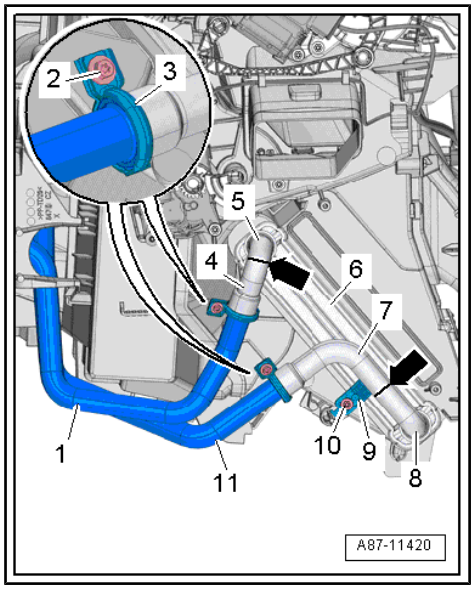
Right-hand drive:

– Remove the glovebox and glovebox frame from the dash panel on the front passenger side ⇒ Body Work; Rep. gr. 70 .

All vehicles:

– Remove left footwell vent ⇒ page 81 .
– If present, remove heating element for additional air heating - Z35- ⇒ page 99 .
– Cover the floor covering in the area below the heat exchanger with a liquid impermeable foil and absorbent paper.

– Unscrew screws -2- and remove screw clamps -3-.
– Pull out coolant hoses -1- and -11- from the pipes -4- and -7-.



Note

- *If the coolant pipes cannot be separated due to the seals being stuck together, cut through the coolant hoses at the marked positions -arrows- e.g with the pliers - T40147- .*
- *Remove the cut-through coolant hoses -4- and -7- from the coolant pipes -1- and -11-.*
- *If the coolant hoses are cut through, replace the heat exchanger -6- during the re-installation process.*

– Unscrew and remove the screw -10- and remove the mounting bracket -9-.
– Pull the heat exchanger -6- out of the installation channel.

Install

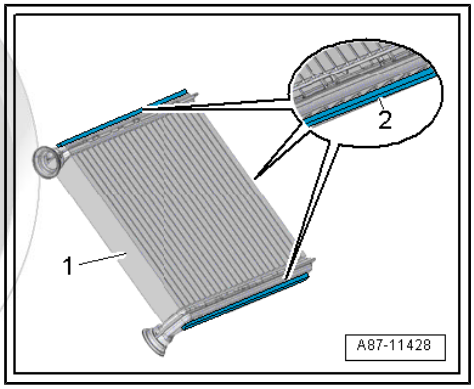
Installation is performed in the reverse order, pay attention to the following points:

Note

Replace gasket rings.

– Check the installation channel on a removed heat exchanger and heating element for additional air heating - Z35- , if necessary remove any dirt or residues of coolant which has flown out.

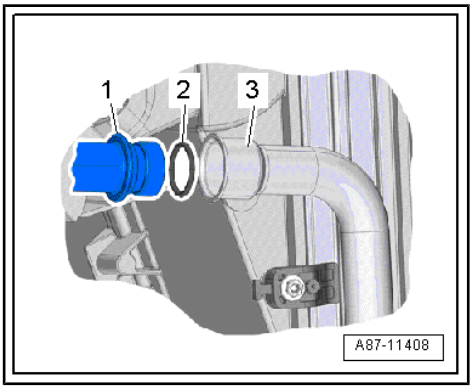
– Check the foam seals -2- attached to the heat exchanger -1- for damage, replace where necessary (in fig. heat exchanger, manufacturer Valeo).



Note

- *An incorrectly glued foam seal can be rolled up when inserted.*
- *If the foam seal is damaged or not properly fitted, cold air can flow past the heat exchanger.*

– Check the tubes -1- and heat exchanger -3- for damage or contamination.
– Clean sealing surfaces for gasket rings and smoothen where necessary.
– Moisten new gasket rings -1- with coolant (or grease slightly with silicone grease) and fit onto the coolant pipe.
– Carefully slide the heat exchanger fully into the heating and air conditioning unit.



Note

When inserting the heat exchanger, make sure the connections and the coolant hoses do not get damaged.

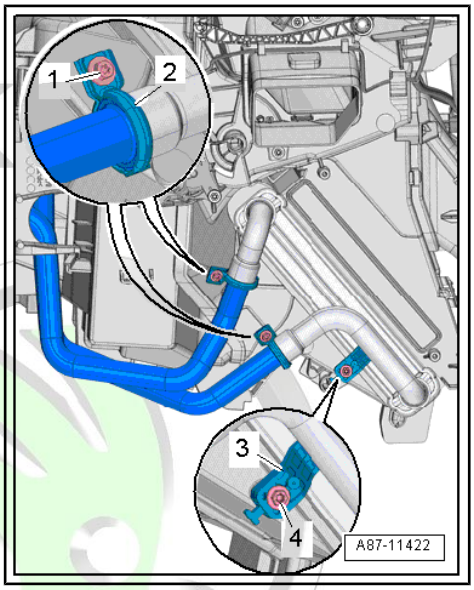
– Slide the coolant pipes into the connections on the heat exchanger as far as they can go.

Caution

Leaks in the heat exchanger

Pinched gasket rings, tilted or coolant hoses not fully pushed into the connections can cause leaks.

– Fit the mounting bracket -3- for the heat exchanger to the air distributor housing and tighten the screw -4- (2 Nm).
– Position the new screw clamps -2- and tighten the screws -1- (6 Nm).



Note

Refrigerant lines and hose clamps must not rest against the air distributor housing or other components.

– Top up coolant ⇒ Engine; Rep. gr. 19 .
– Finally check the function of the heating/air conditioning system.

9.5 Removing and installing heating element for additional air heating - Z35-

Note

The heating element for additional air heating - Z35- is only fitted to certain models.

Removing

DANGER!

The heating element for additional air heating - Z35- can be hot - risk of burning!

Before removing the heating element for additional air heating - Z35- , allow it to cool down.

– Remove the side cover of the centre console on the left side ⇒ Body Work; Rep. gr. 68 .

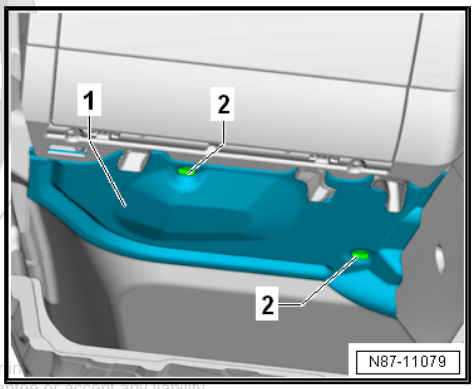
Left-hand drive:

– Remove the knee airbag ⇒ Body Work; Rep. gr. 69 .

Right-hand drive:

– Release screws -2- and remove shield -1-.

– Remove the glovebox and glovebox frame from the dash panel on the front passenger side ⇒ Body Work; Rep. gr. 70 .



All vehicles:

– Remove left footwell vent ⇒ page 81 .

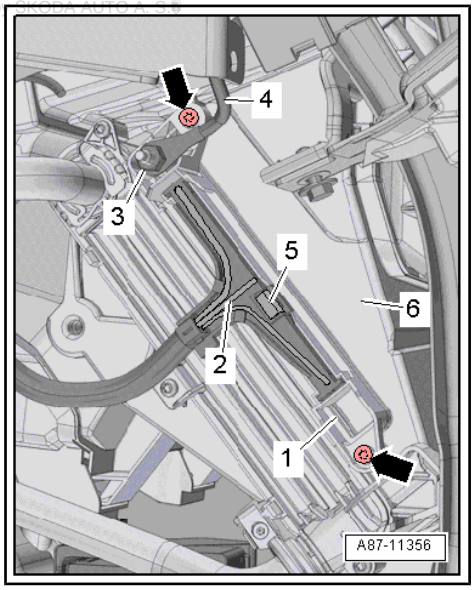
– Disconnect battery earth strap ⇒ Electrical System; Rep. gr. 27 .

– Slacken nut -3- (9 Nm) and remove earth lead -4-.

– Disconnect the electrical plug connection -2-, to do so move the fuse -5- and press the unlocking device towards the inside.

– Release screws -arrows- (2 Nm).

– Push the heating element for additional air heating - Z35- Pos. -1- out of the heating and air conditioning unit -6-.



Install

Installation is performed in the reverse order, pay attention to the following points:

Note

Make sure the earth cable -4- is positioned correctly (see fig.) and observe the tightening torque of the nuts -3- (9 Nm).

– Pay attention to the sequence when connecting the battery ⇒ Electrical System; Rep. gr. 27 .

9.6 Checking heating element for additional air heating - Z35-

Special tools and workshop equipment required

♦ Vehicle diagnostic tester with current probe. - VAS 5051B/7-

Test conditions

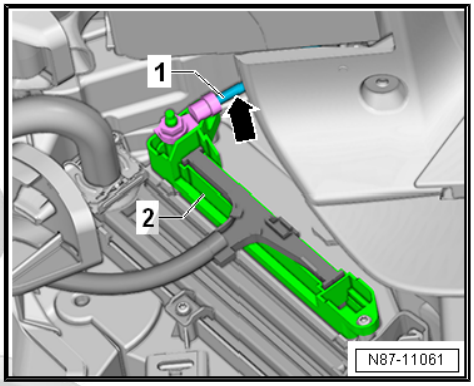
- Intake air temperature below 19 °C
- Coolant temperature below 80°C

- Temperature in the passenger compartment approx. 20 °C
- Battery voltage above 12 V
- Power output of generator not higher than 50 %
- Engine speed not greater than 450 rpm
- Set temperature controller for operating the heating/air conditioning system to the end stop “heating” (Climatronic - select stage high)

Inspection points

– Remove the side cover of the centre console on the left side ⇒ Body Work; Rep. gr. 68 .

– Measure the power consumption -arrow- at the earth lead -1- using the vehicle diagnostic tester and the current probe 100 A (-VAS 5051B/7-).



low heat output ≈ 30 A

middle heat output ≈ 60 A

high heat output ≈ 80 A

9.7 Removing and installing air intake shaft

Removing

– Removing the central carrier/dash panel ⇒ Body Work; Rep. gr. 70 .

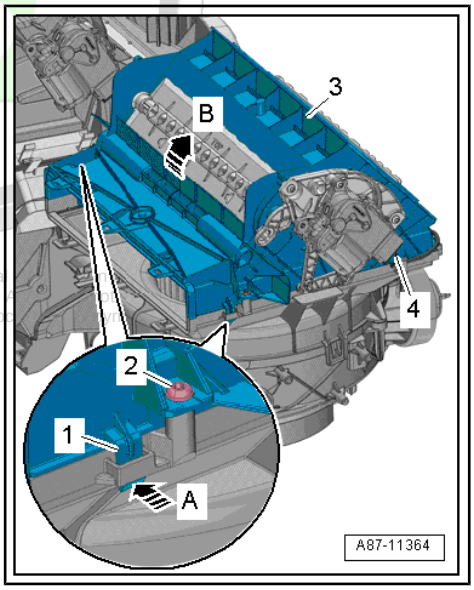
– Removing dust and pollen filter ⇒ page 92 .

– Disconnect electrical plug connection -4- and expose electrical wiring loom.

– Loosen the heating and air conditioning unit and slightly pull forwards.

– Release screws - 2 - (1 Nm).

– Unlock the securing tab -1- -arrow A- and swivel the air intake shaft -3- upwards -arrow B-.



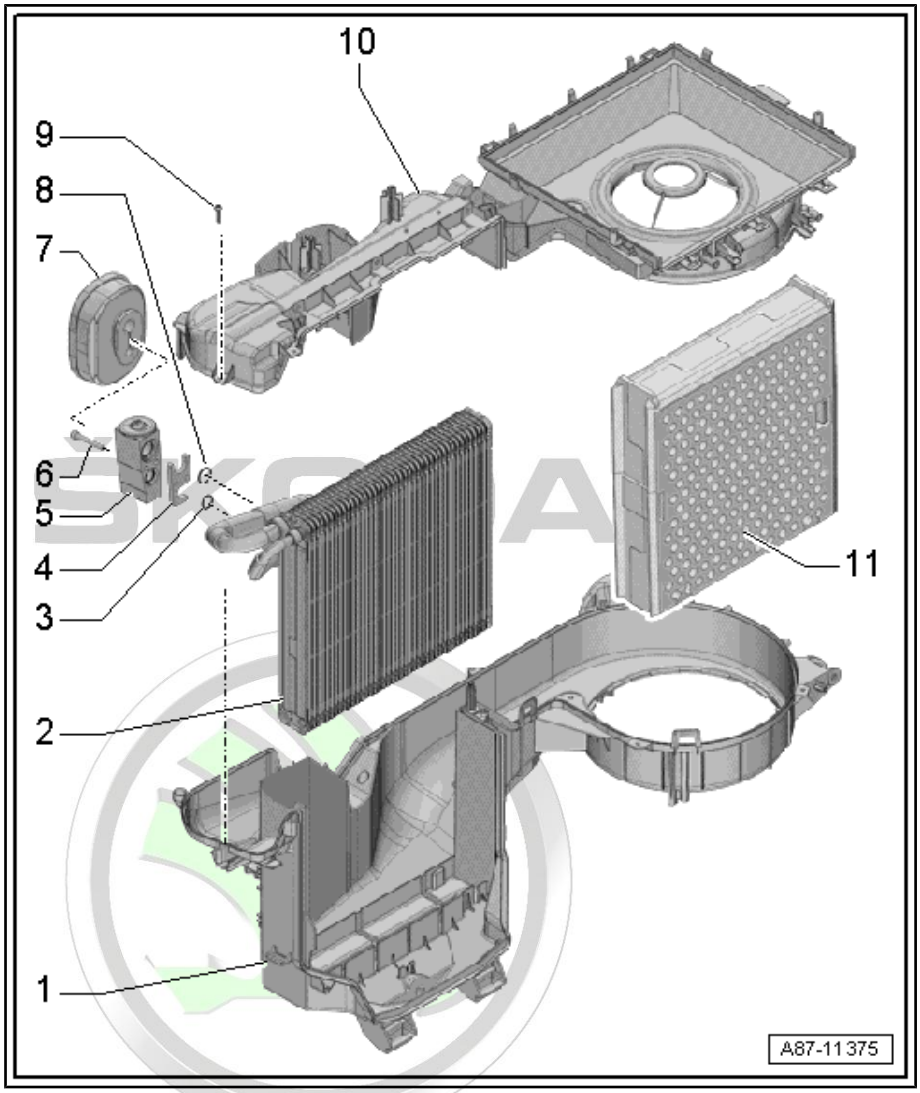
Install

Installation is carried out in the reverse order.

9.8 Assembly overview - evaporator housing

Note

- *When replacing component parts, pay attention to the correct assignment, a mixed fitting of component parts made by different manufacturers is not permitted ⇒ Electronic catalogue of original parts .*
- *The following figure shows an evaporator housing made by "Valeo". Distinguishing features of the heating and air conditioning units ⇒ page 39 .*
- *The figure shows a left-hand drive vehicle.*



1 - Evaporator housing - bottom part

2 - Evaporator

- ❑ only on vehicles with air conditioning
- ❑ Check the foam seals for damage and correct adhesion
- ❑ removing and installing ⇒ page 103

3 - Sealing ring

- ❑ only on vehicles with air conditioning
- ❑ replace ⇒ Electronic Catalogue of Original Parts
- ❑ Moisten with refrigerant oil before installing

4 - Retaining plate

- ❑ only on vehicles with air conditioning

5 - Expansion valve

- ❑ only on vehicles with air conditioning
- ❑ removing and installing ⇒ page 58

6 - Screw

- ❑ only on vehicles with air conditioning
- ❑ 2 pieces
- ❑ 10 Nm

7 - Seal/insulation

- ❑ on vehicles without Air Conditioning, the seal does not have an opening, see ⇒ Electronic Catalogue of Original Parts

8 - Sealing ring

- ❑ only on vehicles with air conditioning
- ❑ replace ⇒ Electronic Catalogue of Original Parts
- ❑ Moisten with refrigerant oil before installing

9 - Screw

- ❑ 8 pieces
- ❑ 1.5 Nm

10 - Top part evaporator housing

11 - Air flow rate limiters

❑ only on vehicles without air conditioning system

9.9 Removing and installing evaporator

Removing

– Remove heating and air conditioning unit ⇒ page 84 .

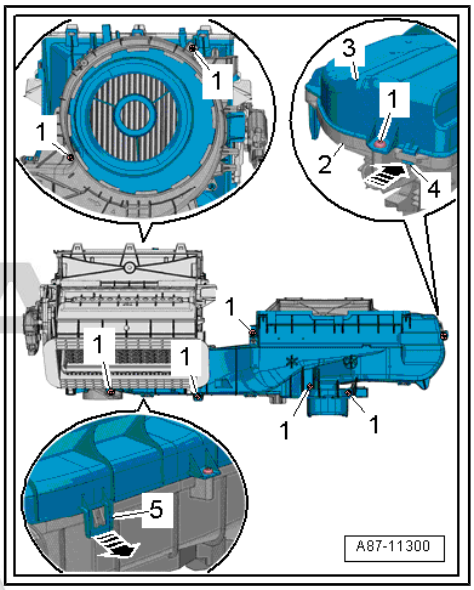
– Remove fresh air blower - V2- ⇒ page 90 .

– Remove air intake shaft ⇒ page 101 .

– Release screws - 1 - (1.5 Nm).

– Unlock securing tab -4- and -5- -arrows-.

– Remove evaporator housing, upper part -3- from evaporator housing, lower part -2-.

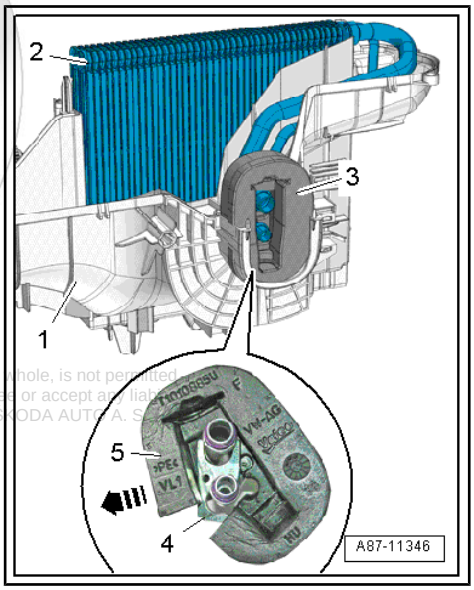


– Remove evaporator -2- from lower part of evaporator housing -1-.

– Remove expansion valve ⇒ page 58 .

– Remove seal/insulation -3-, to do so pull the movable part -5- to the side -arrow-.

– Remove the retaining plate -4- for the refrigerant lines.



Install

Installation is performed in the reverse order, pay attention to the following points:

Note

- *Wistling noises can occur by air escaping through small leaks on the nut-/spring connection between the top and bottom part of the evaporator housing. Therefore, slightly grease the connection points with silicone grease for carrying out a precision sealing ⇒ Electronic catalogue of original parts .*
- *Before inserting the evaporator, check the condensation water drain and the evaporator housing, if necessary clean (if required also the evaporator).*
- *There is refrigerant oil in the removed evaporator which must be guided back with the new evaporator into the refrigerant circuit ⇒ page 42 .*

9.10 Removing and installing, testing condensation water drain

Removing

– Remove side trim panel of right centre console ⇒ Body Work; Rep. gr. 68 .

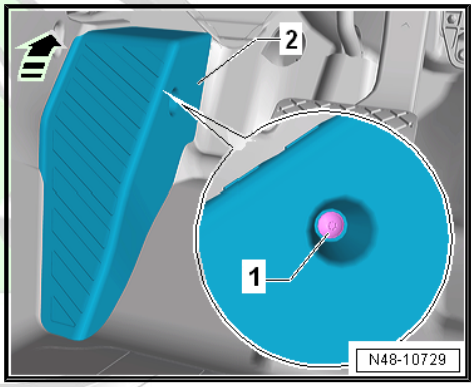
WARNING

Danger of malfunction of the airbag control unit through possible ingress of water into the plug connection -4-.

Right-hand drive:

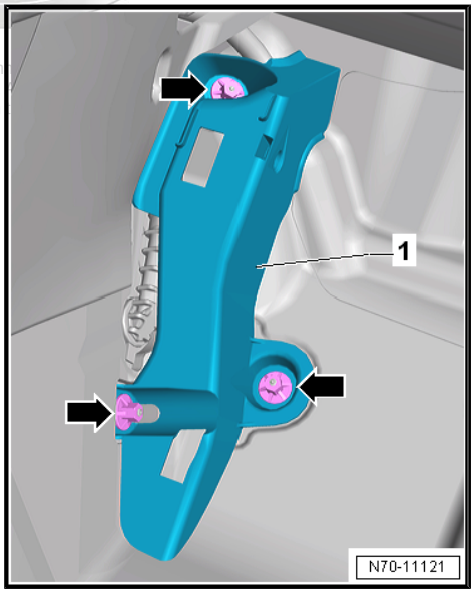
– Release screw -1- (2 Nm).

– Slide the bearing bolt -2- upwards -arrow- and remove.



– Press the cover for the underbody to the side in the area of the screw connections, and remove the nuts -arrows- (2 Nm).

– Prise out the mounting bracket -1- from the threaded bolts and remove.

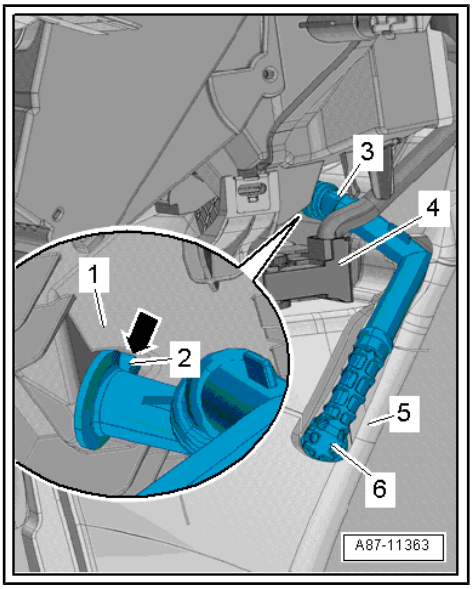


All vehicles:

– Fold back the floor covering until the condensation water drain hose is visible.

– Disconnect battery earth strap ⇒ Electrical System; Rep. gr. 27 .

– Remove the connector -4- from the Control unit for airbag - J234- ⇒ Body Work; Rep. gr. 69 .
– Cover the airbag control unit and the plug with waterproof foil.
– Cover the area below the connection -3- and -6- with absorbant paper.
– Carefully pull off the connection angle -3- from the heating and air conditioning unit -1- and the connection -6- from the body -5-.
– Inspect condensation water drain hose for continuity, clean if necessary.

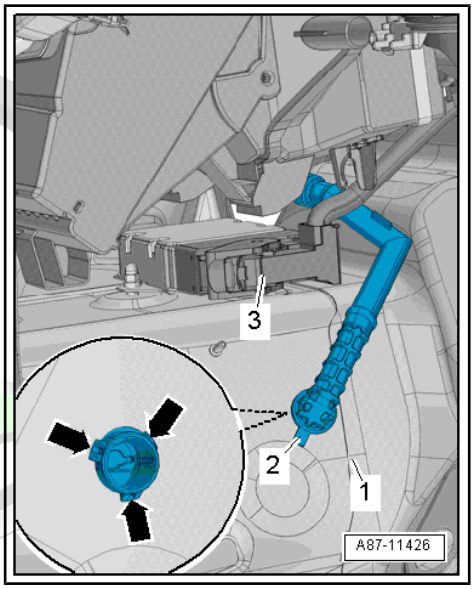


Install

Installation is performed in the reverse order, pay attention to the following points:

– Push the hose end -3- fully onto the heating and air conditioning unit.
• The peg -arrow- at the connection fitting must grip into the guide -2-.
• If a commercially available hose clamp for fixing around the condensation water drain hose -3- was installed, it must be replaced.
• The condensation water drain hose must be routed below the wiring loom of the airbag control unit -3-, see illustration.

– Insert the condensation water drain hose into the body aperture -1- -arrows- until it clicks audibly into place.
• The sealing lip -2- must not fit loosely at the body aperture.
• If the sealing lip is loose (the pretention is too low), seal the connection point between the body and the bracket e.g. using silicone glue sealing mass ⇒ Electronic catalogue of original parts .



Note

♦ *The condensation water drain hose must not be twisted or crimped.*
♦ *When fitting the floor covering, ensure that it does not press together the condensation water drain hose.*
♦ *Pay attention to the sequence when connecting the battery ⇒ Electrical System; Rep. gr. 27 .*

10 Removing and installing the control motors

10.1 Removing and installing the control motor of the re-circulating air flap - V113-

- Heating and electrical manually controlled air conditioning system

10.1.1 Left-hand drive

Note

The control motor has limit stops with integrated limit switches instead of a potentiometer.

Removing

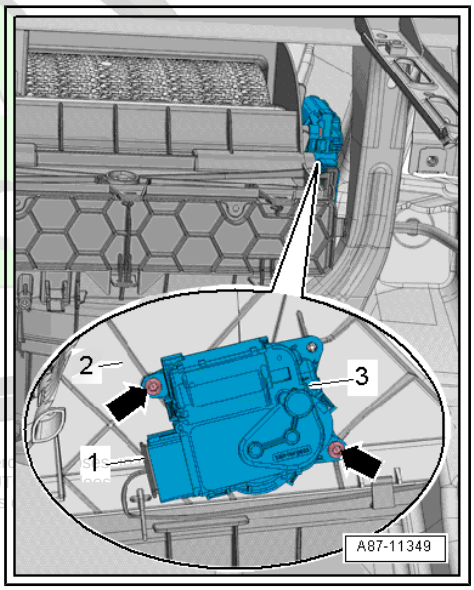
– Switch off the ignition and all electrical components.

– Remove the glove compartment and the glove compartment frame from the dash panel on the front passenger side ⇒ Body Work; Rep. gr. 70 .

– Release screws -arrows- (1 Nm).

– Remove the control motor of the recirculating air flap - V113- Pos. -3- from the air intake shaft -2-.

– Unplug connector -1-.



Install

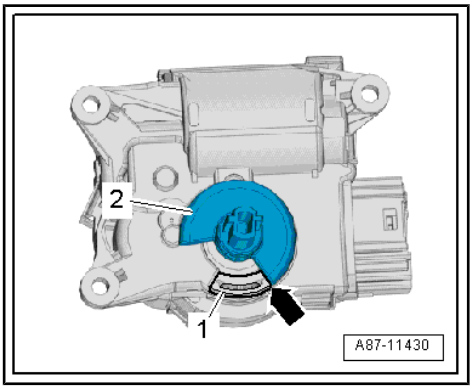
Installation is performed in the reverse order, pay attention to the following points:

Note

Before installing, check proper operation of the flaps and the linkage.

– The fresh air flap must be in position “open”, so that fresh air can enter the vehicle.

– The operating shaft -2- must rest against the stop -1- -arrow-, see illustration.



• If the operating shaft of the control motor is not positioned on the stop, insert the plug and select a setting on the heating/air conditioning control in which the control motor can be placed in the desired position. Then switch off the ignition once more.

– Position the control motor on the air intake box, while doing so the operating shaft must grip into the support.

– Lay the electrical wiring loom in such a way that it does not come into contact with moving components.

– ⇒ Vehicle diagnostic tester connect, interrogate the event memory, if necessary erase and then perform the basic setting in the function “Targeted fault finding”.

– Check the proper functioning of the heating/air conditioning system.

10.1.2 Right-hand drive

Note

The control motor has limit stops with integrated limit switches instead of a potentiometer.

Removing

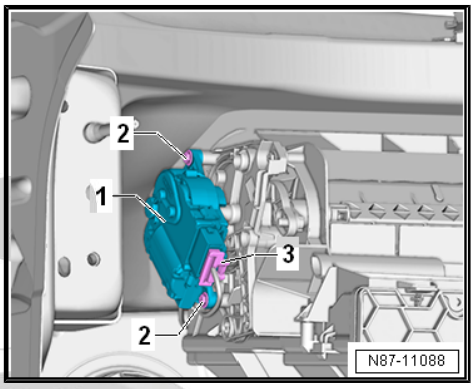
– Disconnect battery earth strap ⇒ Electrical System; Rep. gr. 27 .

– Removing the dash panel and the central carrier/dash panel ⇒ Body Work; Rep. gr. 70 .

– Unscrew bolts -2-.

– Remove the control motor of the recirculating air flap - V113- Pos. -1- from the air intake shaft.

– Unplug connector -3-.



Install

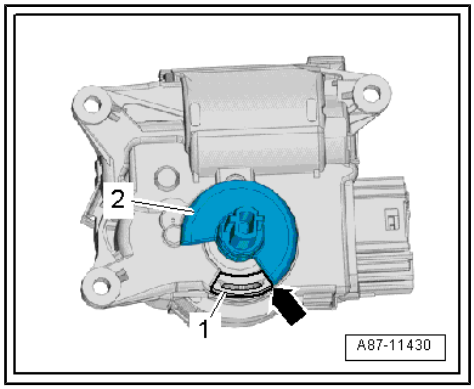
Installation is performed in the reverse order, pay attention to the following points:

Note

Before installing, check proper operation of the flaps and the linkage.

– The fresh air flap must be in position “open”, so that fresh air can enter the vehicle.

– The operating shaft -2- must rest against the stop -1- -arrow-, see illustration.



• If the operating shaft of the control motor is not positioned on the stop, insert the plug and select a setting on the heating/air conditioning control in which the control motor can be placed in the desired position. Then switch off the ignition once more.

– Position the control motor on the air intake box, while doing so the operating shaft must grip into the support.

– Lay the electrical wiring loom in such a way that it does not come into contact with moving components.

– Pay attention to the sequence when connecting the battery ⇒ Electrical System; Rep. gr. 27 .

– ⇒ Vehicle diagnostic tester connect, interrogate the event memory, if necessary erase and then perform the basic setting in the function “Targeted fault finding”.

– Check the proper functioning of the heating/air conditioning system.

10.2 Removing and installing temperature flap control motor - V68- or left temperature flap control motor - V158-

• Heating and electrical manually controlled air conditioning system - temperature flap control motor - V68-

• Climatronic - left temperature flap control motor - V158-

The assembly work is identical for both control motors.

Removing

– Switch off the ignition and all electrical components.

Left-hand drive:

– Remove the knee airbag ⇒ Body Work; Rep. gr. 69 .

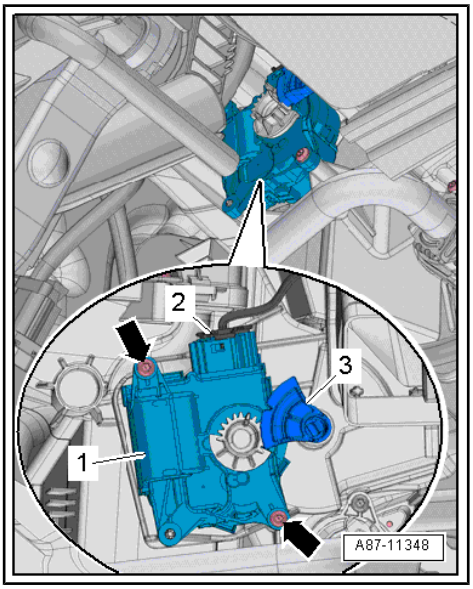
Right-hand drive:

– Remove the glovebox and glovebox frame from the dash panel on the front passenger side ⇒ Body Work; Rep. gr. 70 .

All vehicles:

– Remove left footwell vent ⇒ page 81 .

– Release screws -arrows- (1 Nm).
– Separate electrical plug connection -2-.
– Remove temperature flap control motor - V68- Pos. -1-.



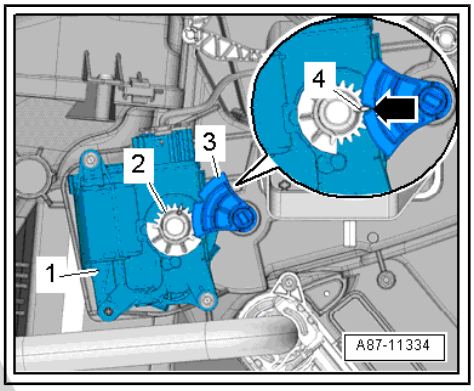
Install

Installation is performed in the reverse order, pay attention to the following points:

Note

Before installing, check proper operation of the flaps and the linkage.

– Position the control motor -1- on the air distributor housing, while doing so the pinion -2- at the control motor must grip into the pinion -3- at the operating lever.
• Thereby, the long tooth -4- must grip into the recess -arrow- at the operating lever.
• If the pinion on the control motor and the pinion on the lever for the temperature flap are not in the desired position, insert the plug and select a setting on the heating/air conditioning control in which the control motor can be placed in the desired position. Then switch off the ignition once more.
– Lay the electrical wiring loom in such a way that it does not come into contact with moving components.
– ⇒ Vehicle diagnostic tester connect, interrogate the event memory, if necessary erase and then perform the basic setting in the function “Targeted fault finding”.
– Check the proper functioning of the heating/air conditioning system.



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

• Climatronic

Removing

– Switch off the ignition and all electrical components.

Left-hand drive:

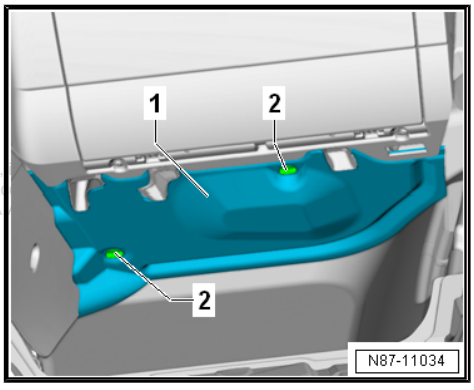
– Release screws -2- and remove shield -1-.
– Remove the glovebox and glovebox frame from the dash panel on the front passenger side ⇒ Body Work; Rep. gr. 70 .
– Remove the hose for the glovebox cooling from the heating and air conditioning unit.

Right-hand drive:

– Remove the knee airbag ⇒ Body Work; Rep. gr. 69 .

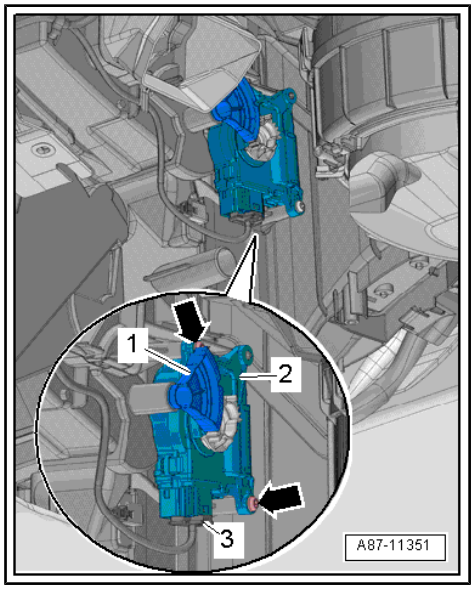
All vehicles:

– Remove right footwell vent ⇒ page 81 .



– Release screws -arrows- (1 Nm).

– Remove control motor -2- and disconnect plug connections -3-.



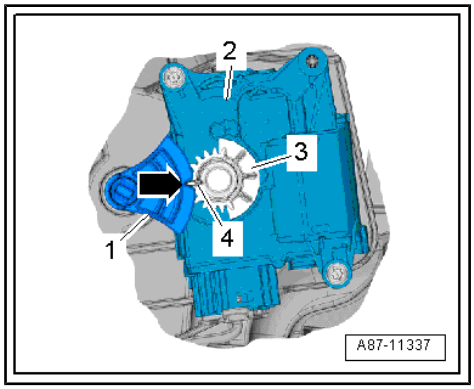
Install

Installation is performed in the reverse order, pay attention to the following points:

Note

Before installing, check proper operation of the flaps and the linkage.

– Position the control motor -1- on the air distributor housing, while doing so the pinion -2- at the control motor must grip into the pinion -3- at the operating lever.



• Thereby, the long tooth -4- must grip into the recess -arrow- at the operating lever.

• If the pinion on the control motor and the pinion on the lever for the temperature flap are not in the desired position, insert the plug and select a setting on the heating/air conditioning control in which the control motor can be placed in the desired position. Then switch off the ignition once more.

– Lay the electrical wiring loom in such a way that it does not come into contact with moving components.

– ⇒ Vehicle diagnostic tester connect, interrogate the event memory, if necessary erase and then perform the basic setting in the function “Targeted fault finding”.

– Check the proper functioning of the heating/air conditioning system.

10.4 Removing and installing the control motor for fresh air and re-circulating air/air flow flap - V 425-

• Climatronic

⇒ “10.4.1 Left-hand drive”, page 110

⇒ “10.4.2 Right-hand drive”, page 111

10.4.1 Left-hand drive

Removing

– Switch off the ignition and all electrical components.

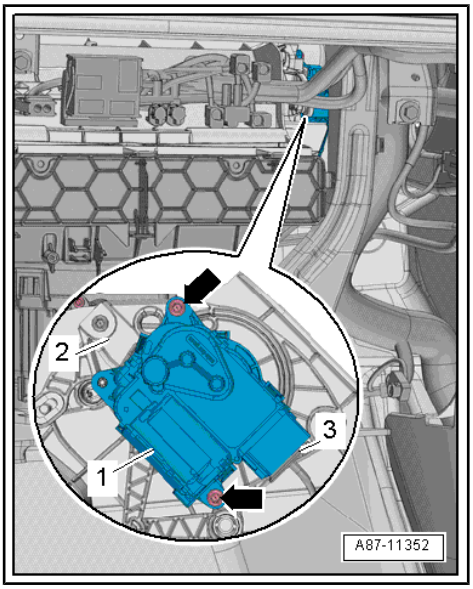
– Remove the glove compartment and the glove compartment frame from the dash panel on the front passenger side ⇒ Body Work; Rep. gr. 70 .

– Unclip electrical wiring loom.

– Release screws -arrows- (1 Nm).

– Remove control motor for fresh air and re-circulating air/air flow flap -1- from air intake shaft.

– Separate electrical plug connection -3-.



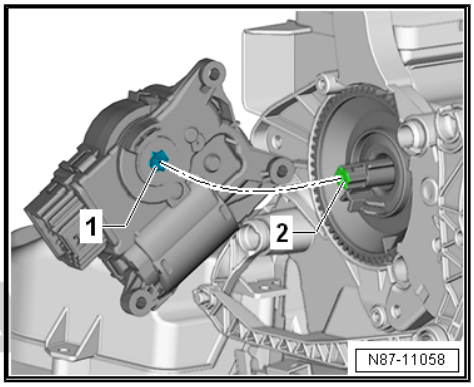
Install

Installation is performed in the reverse order, pay attention to the following points:

Note

- *Before installing, check proper operation of the flaps and the linkage.*
- *Check the lever and the shafts for correct seating in the supports.*

– The rotating support of the control motor -1- can only be fitted on the relay lever -2- in one position, see illustration.



If the rotating support of the control motor -1- is not in the desired position, insert the plug and select a setting on the heating/air conditioning control in which the control motor can be placed in the desired position. Then switch off the ignition once more.

– Lay the electrical wiring loom in such a way that it does not come into contact with moving components.

– ⇒ Vehicle diagnostic tester connect, interrogate the event memory, if necessary erase and then perform the basic setting in the function “Targeted fault finding”.

– Check the proper functioning of the heating/air conditioning system.

10.4.2 Right-hand drive

Note

The control motor has limit stops with integrated limit switches instead of a potentiometer.

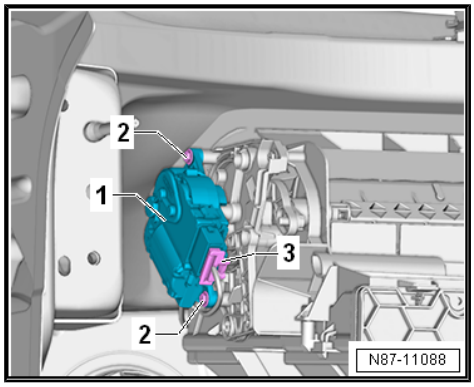
Removing

– Removing the dash panel and the central carrier/dash panel ⇒ Body Work; Rep. gr. 70 .

– Unscrew bolts -2-.

– Remove the control motor for the fresh air, recirculating air-, air flow flap - V 425- Pos. -1- from the air intake shaft.

– Unplug connector -3-.



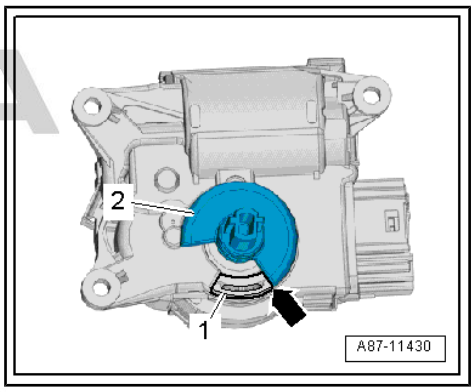
Install

Installation is performed in the reverse order, pay attention to the following points:

Note

Before installing, check proper operation of the flaps and the linkage.

– The fresh air flap must be in position “open”, so that fresh air can enter the vehicle.



– The operating shaft -2- must rest against the stop -1- -arrow-, see illustration.

• If the operating shaft of the control motor is not positioned on the stop, insert the plug and select a setting on the heating/air conditioning control in which the control motor can be placed in the desired position. Then switch off the ignition once more.

– Position the control motor on the air intake box, while doing so the operating shaft must grip into the support.

– Lay the electrical wiring loom in such a way that it does not come into contact with moving components.

– Pay attention to the sequence when connecting the battery ⇒ Electrical System; Rep. gr. 27 .

– ⇒ Vehicle diagnostic tester connect, interrogate the event memory, if necessary erase and then perform the basic setting in the function “Targeted fault finding”.

– Check the proper functioning of the heating/air conditioning system.

10.5 Removing and installing the air distribution flap control motor - V428- or -V426-

• Heating and electrical manually controlled air conditioning system - air distribution flap control motor - V428-

• Climatronic - front air distribution flap control motor - V426-

The assembly work is identical for both control motors.

Removing

Left-hand drive:

– Removing the dash panel ⇒ Body Work; Rep. gr. 70 .

– Remove the access and start authorisation control unit - J518- if it was installed ⇒ Electrical System; Rep. gr. 94 .

– Remove knee airbag ⇒ Body Work; Rep. gr. 69 .

Right-hand drive:

– Switch off the ignition and all electrical components.

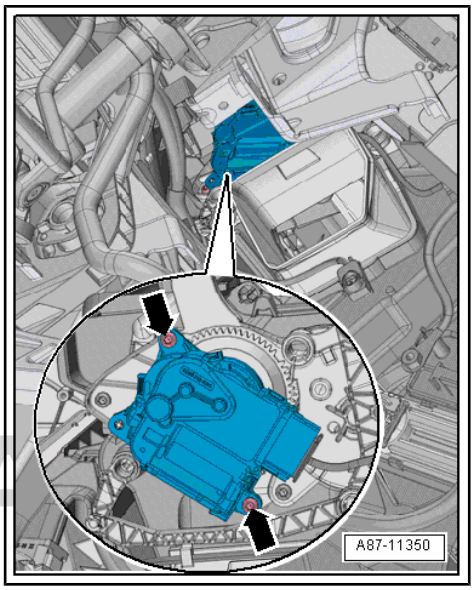
– Remove the glovebox and glovebox frame from the dash panel on the front passenger side ⇒ Body Work; Rep. gr. 70 .

All vehicles:

– Remove left footwell vent ⇒ page 81 .

– Release screws -arrows- (1 Nm).

– Detach the air distribution flap control motor from the mounting and remove.



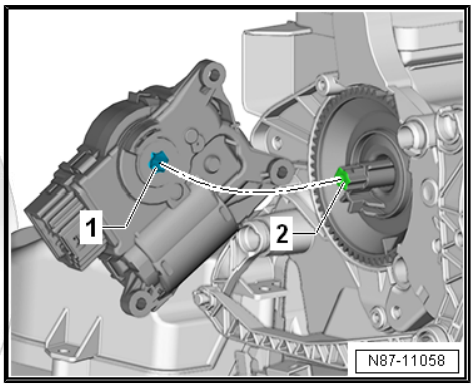
Install

Installation is performed in the reverse order, pay attention to the following points:

Note

Before installing, check proper operation of the flaps and the linkage.

– The rotating support of the control motor -1- can only be fitted on the relay lever -2- in one position, see illustration.



If the rotating support of the control motor -1- is not in the desired position, insert the plug and select a setting on the heating/air conditioning control in which the control motor can be placed in the desired position. Then switch off the ignition once more.

– Lay the electrical wiring loom in such a way that it does not come into contact with moving components.

– ⇒ Vehicle diagnostic tester connect, interrogate the event memory, if necessary erase and then perform the basic setting in the function “Targeted fault finding”.

– Check the proper functioning of the heating/air conditioning system.

10.6 Removing and installing the defroster flap control motor - V107-

- Climatronic

⇒ “10.6.1 Left-hand drive”, page 113

⇒ “10.6.2 Right-hand drive”, page 114

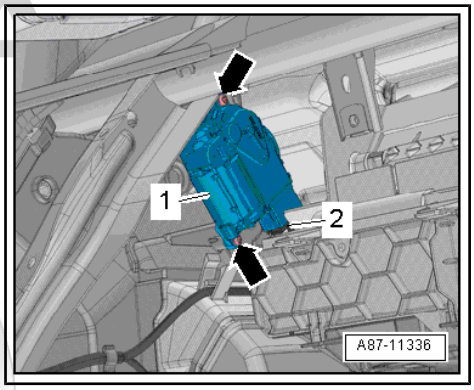
10.6.1 Left-hand drive

Removing

– Switch off the ignition and all electrical components.

– Remove the glove compartment and the glove compartment frame from the dash panel on the front passenger side ⇒ Body Work; Rep. gr. 70 .

– Release screws -arrows- (1 Nm).
– Remove control motor -1- and disconnect plug connection -2-.



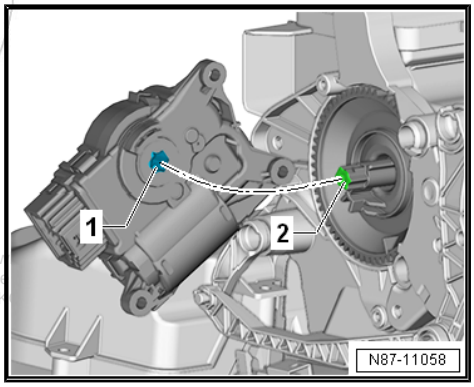
Install

Installation is performed in the reverse order, pay attention to the following points:

Note

Before installing, check proper operation of the flaps and the linkage.

– The rotating support of the control motor -1- can only be fitted on the relay lever -2- in one position, see illustration.



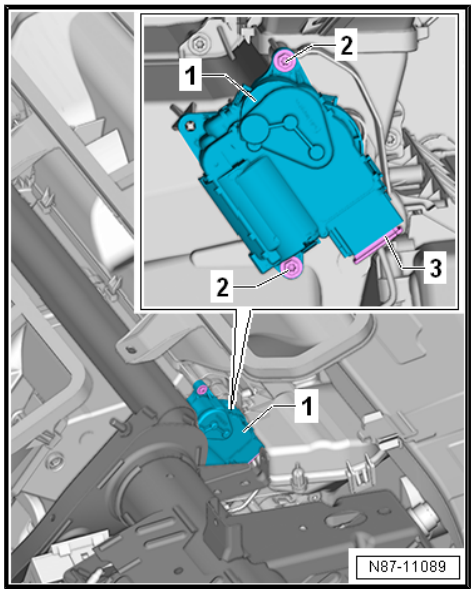
If the rotating support of the control motor -1- is not in the desired position, insert the plug and select a setting on the heating/air conditioning control in which the control motor can be placed in the desired position. Then switch off the ignition once more.

– Lay the electrical wiring loom in such a way that it does not come into contact with moving components.
– ⇒ Vehicle diagnostic tester connect, interrogate the event memory, if necessary erase and then perform the basic setting in the function “Targeted fault finding”.
– Check the proper functioning of the heating/air conditioning system.

10.6.2 Right-hand drive

Removing

– Removing the dash panel ⇒ Body Work; Rep. gr. 70 .
– Unscrew screws -2- (1 Nm).
– Remove control motor -1- and disconnect plug connection -3-.



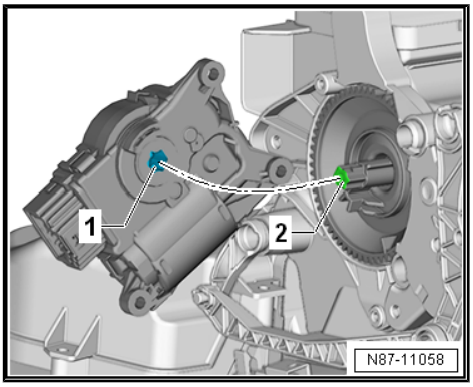
Install

Installation is performed in the reverse order, pay attention to the following points:

Note

Before installing, check proper operation of the flaps and the linkage.

– The rotating support of the control motor -1- can only be fitted on the relay lever -2- in one position, see illustration.



If the rotating support of the control motor -1- is not in the desired position, insert the plug and select a setting on the heating/air conditioning control in which the control motor can be placed in the desired position. Then switch off the ignition once more.

– Lay the electrical wiring loom in such a way that it does not come into contact with moving components.

– ⇒ Vehicle diagnostic tester connect, interrogate the event memory, if necessary erase and then perform the basic setting in the function “Targeted fault finding”.

– Check the proper functioning of the heating/air conditioning system.

11 Other control components for the air conditioning system

11.1 Removing and installing the left vent temperature sender - G150- on the driver's side

Note

Only available for the Climatronic equipment. With other equipment, seal the opening with plugs.

Removing

– Removing dash panel insert ⇒ Electrical System; Rep. gr. 90 .

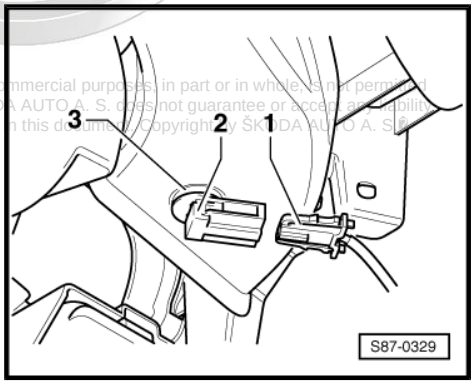
– Rotate sender -2- by 90° and take out.

– Disconnect plug.

Install

Installation is performed in the reverse order, pay attention to the following points:

When installing, pay attention to the correct seating of the gasket ring -3-.



11.2 Removing and installing the right vent temperature sender - G151- on the front passenger side

Note

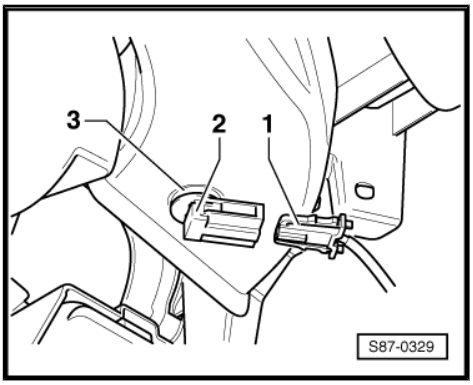
Only available for the Climatronic equipment. With other equipment, seal the opening with plugs.

Removing

– Remove the glovebox and glovebox frame from the dash panel on the front passenger side ⇒ Body Work; Rep. gr. 70 .

– Rotate sender -2- by 90° and take out.

– Disconnect plug.



Install

Installation is performed in the reverse order, pay attention to the following points:

When installing, pay attention to the correct seating of the gasket ring -3-.

11.3 Removing and installing the evaporator vent temperature sender - G263-

Note

Only on vehicles with air conditioning system, on vehicles with heating system the opening in the heater unit is closed with a plug.

Special tools and workshop equipment required

♦ Disassembly wedge - 3409-

Removing

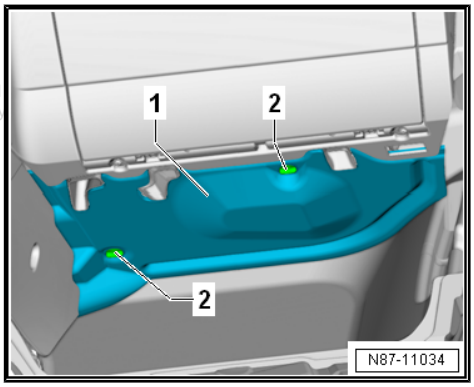
Left-hand drive:

– Release screws -2- and remove shield -1-.

Right-hand drive:

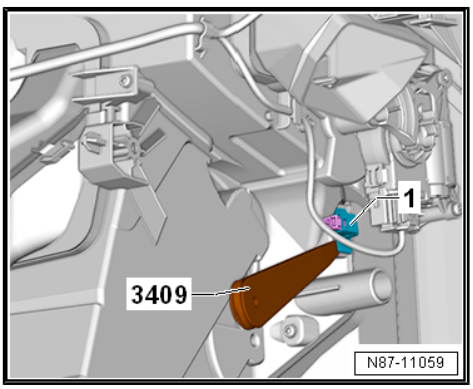
– Remove the knee airbag ⇒ Body Work; Rep. gr. 69 .

All vehicles:



– Carefully lever out using the disassembly wedge - 3409- and remove the sender -1- from the heater unit.

– Disconnect plug.



Install

Installation is carried out in the reverse order.

11.4 Removing and installing the Footwell vent temperature sender - G192-

Note

Only available for the Climatronic equipment. With other equipment, seal the opening with plugs.

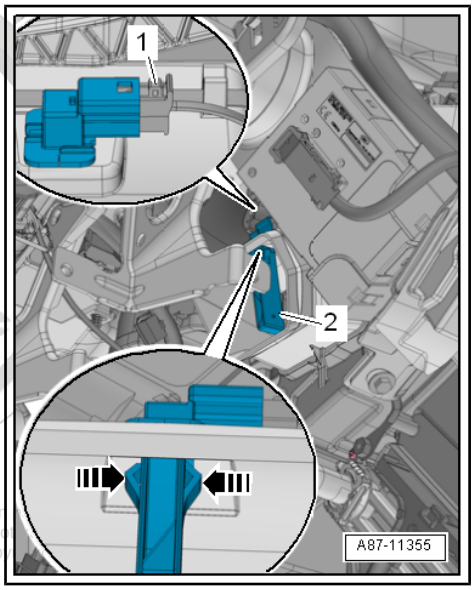
Removing

– Switch off the ignition and all electrical components.

– Remove the footwell vent on the driver's side ⇒ page 81 .

– Lift up the sender and unlock the retaining tabs -arrows- using a disassembly wedge - 3409- .

– Push out the sender and disconnect the plug -1-.



Install

Installation is performed in the reverse order, pay attention to the following points:

– Press the sender into the assembly opening until the catches are locked.

11.5 Removing Sunlight penetration photo-sensor - G107-

Note

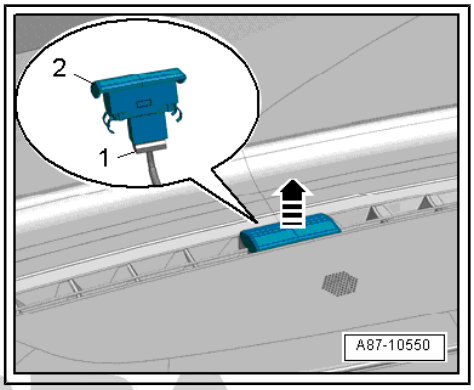
Only available for the Climatronic equipment. With other equipment, seal the opening with plugs.

Caution

When using the lever tool, mask the points at which the lever tool is positioned with commercially available adhesive tape.

– Switch off the ignition and all electrical components.

– Carefully lever the sunlight penetration photosensor -2- out of the dash panel -arrow- using the disassembly wedge - 3409- and disconnect the plug -1-.



Install

Installation is carried out in the reverse order.

11.6 Removing and installing the ambient humidity sensor for air conditioning system - G260-

Only available for the Climatronic equipment.

Is located at the windscreen at the interior mirror.

Depending on the vehicle equipment, the ambient humidity sensor for air conditioning system - G260- and the sensor for rain and light detection - G397- are installed, see ⇒ Electronic catalogue of original parts .

The removal and installation procedure is described in the ⇒ Electrical System; Rep. gr. 92 .

Note

The diagnosis is carried out via the onboard supply control unit - J519- with ⇒ Vehicle diagnostic tester.

11.7 Air quality sensor - G238-

Located in the engine compartment at the air intake grid of the air conditioning system.

Only available for the Climatronic equipment.

⇒ “11.7.1 Description of the function”, page 119

⇒ “11.7.2 Removing and installing the air quality sensor G238 ”, page 120

11.7.1 Description of the function

- The air quality sensor recognises pollutants in the ambient air (usually petrol and/or diesel exhaust).
- The Climatronic control unit - J255- evaluates the signal from the air quality sensor - G238- . The air conditioning system is activated depending on the intensity and type of the polluted ambient air.

If the outside temperature is higher than approx. +2°C, the air re-circulating operation is already switched on when there is a slight increase in the concentration of pollutants.

If the outside temperature is between approx. +2°C and approx. -5°C, the switch-over to the air re-circulating operation occurs only when there is a considerable increase in the concentration of pollutants, while at the same time the AC compressor is switched on.

If the outside temperature is lower than approx. -5°C, the switch-over also occurs only when there is a considerable increase in the concentration of pollutants and only for approx. 15 s (the AC

compressor is not switched on). If the concentration decreases, the air conditioning system is again switched-over to fresh air operation.

- ♦ The function “automatic re-circulating air mode” can be switched off at any time.
- ♦ So that the air conditioning system does not always run in the air re-circulating operation in areas with constantly high air pollution, the sensor is self-adaptive (it adapts its sensitivity to the environmental pollution).
- ♦ In order to avoid a too frequent switching of the re-circulating/ fresh air flap, it is not immediately switched when there is a slight increase in pollution in the ambient air (the sensor transmits no request to the Climatronic control unit - J255-). Here the filter effect of the activated charcoal insert in the dust and pollen filter is sufficent.
- ♦ The air quality sensor - G238- requires approx. 30 s in order to be operational after switching on the ignition (heating period). During this period, there is no request from the sensor to the Climatronic control unit - J255- for “automatic re-circulating air mode”.
- ♦ The air quality sensor - G238- is a highly sensitive electronic component which can be destroyed through direct contact with solvents, petrol and certain chemical compounds. Therefore do not install sensors which can come into contact with such substances.

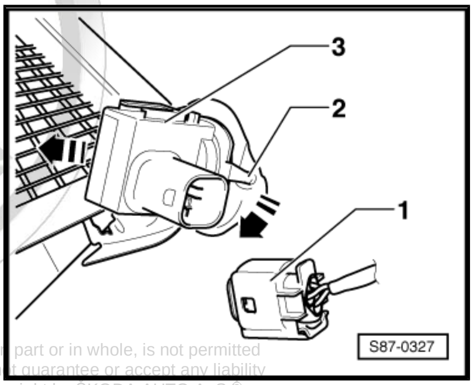
11.7.2 Removing and installing the air quality sensor - G238-

Removing

– Remove the plenum chamber cover on the front passenger side (wipers need not be removed) ⇒ Body Work; Rep. gr. 64 .

– Unplug the plug -1- from the air quality sensor - G238- .

– Release the catch -2- and rotate the air quality sensor - G238- -3- by 90° and remove.



Install

Installation is carried out in the reverse order.

Note

Do not place a removed sensor in areas where it can come into contact with solvents, petrol and certain chemical compounds (liquids or vapours). This would result in permanent damage of the sensor.