Workshop Manual
Audi TT 2007 ➢

Heating and Air Conditioning

Edition 04.2009

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Repair Group

80 - Heating

87 - Air conditioning system

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

Contents

80 – Heating

1 Notes on heater repair work

WARNING

Remove the appropriate fuse(s) before working on wiring.

Note

Disconnect the battery -A- before starting electric welding work on the vehicle ⇒ Electrical system; Rep. Gr. 27

1.1 Contact corrosion

Contact corrosion can occur if use is made of unsuitable connecting elements, bolts, nuts, washers, rivets, plugs, grommets, adhesives, etc.

For this reason, only connecting elements with a special surface coating are fitted at the factory. In addition, rubber components, plastic components and adhesives are made of non-conductive materials. These tested, aluminium-compatible components are also available as replacement parts ⇒ Electronic parts catalogue .

Important:

- Always fit new parts in cases of doubt about reusability.
- We recommend the use of genuine replacement parts only, as these have been checked and are compatible with aluminium ⇒ Electronic parts catalogue .
- We advise using Audi accessories ⇒ Electronic parts catalogue .
- Damage caused by contact corrosion is not covered by warranty.

1.2 Notes on heater guided fault-finding

- There are different versions of the heater operating unit, Climatronic control unit -J255- . When renewing, observe precise allocation. ⇒ Electronic parts catalogue
- Heater self-diagnosis is to be performed by way of the “Guided fault-finding” function using the vehicle diagnostic, testing and information system ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- At present heater operating units, Climatronic control unit -J255- can be exchanged in the familiar manner, as component protection is currently not active ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- If a heater operating unit, Climatronic control unit -J255- is to be replaced, interrogate the encoding and adaption (of the

heater operating unit, Climatronic control unit -J255-) prior to removal by way of the “Control unit replacement” function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

1.3 Checking electrical components of heater

The heater electrical components are identical to the air conditioner components. The electrical checks for the various heater components are therefore performed in the same manner as for the components of the air conditioner ⇒ page 25 and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

Vehicles with no air conditioner (heater only) are not fitted with various components which are required for control purposes on vehicles with an air conditioner (air conditioner compressor regulating valve -N280- , right temperature flap control motor -V159- , temperature sensor blower -V42- etc.) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

Note

The “Electrical checks” function is not described in this Workshop Manual. When implementing electrical checks by way of the “Guided fault-finding” function, information is given on the functions to be checked ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

1.4 Checking of electrical components actuated by the heater

By the heater operating unit, Climatronic control unit -J255-

The vehicle electrical components actuated by the heater are identical to those on vehicles with an air conditioner. The electrical checks for the various components are therefore performed in the same manner as for the components on vehicles with an air conditioner ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

Operation and actuation of these components are identical on vehicles with no air conditioner (heater only) and with an air conditioner ⇒ page 26 and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

Note

Various electrical components in the vehicle (e.g. the heated rear window -Z1- and the heated seats), which do not form part of the heater, are actuated by the heater operating unit, Climatronic control unit -J255- . Electrical checking of these components is to be performed as described in the guided fault-finding routine (it is identical for vehicles with and without an air conditioner) ⇒ page 26 and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

2 Components for control and regulation of heater

Note

- *In the event of a fault in the system, start by reading out the fault memory of the heater operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- *If no fault is displayed, read out the measured value block of the heater operating unit, Climatronic control unit -J255- and actuate any problematic component by way of the "Final control diagnosis" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *Electrical checking of the various components (control motors, potentiometers and senders) is described in the guided fault-finding ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*

- Perform the following operations on completion of repair work:

– Interrogate the fault memory of the heater operating unit, Climatronic control unit -J255- and erase any faults displayed ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

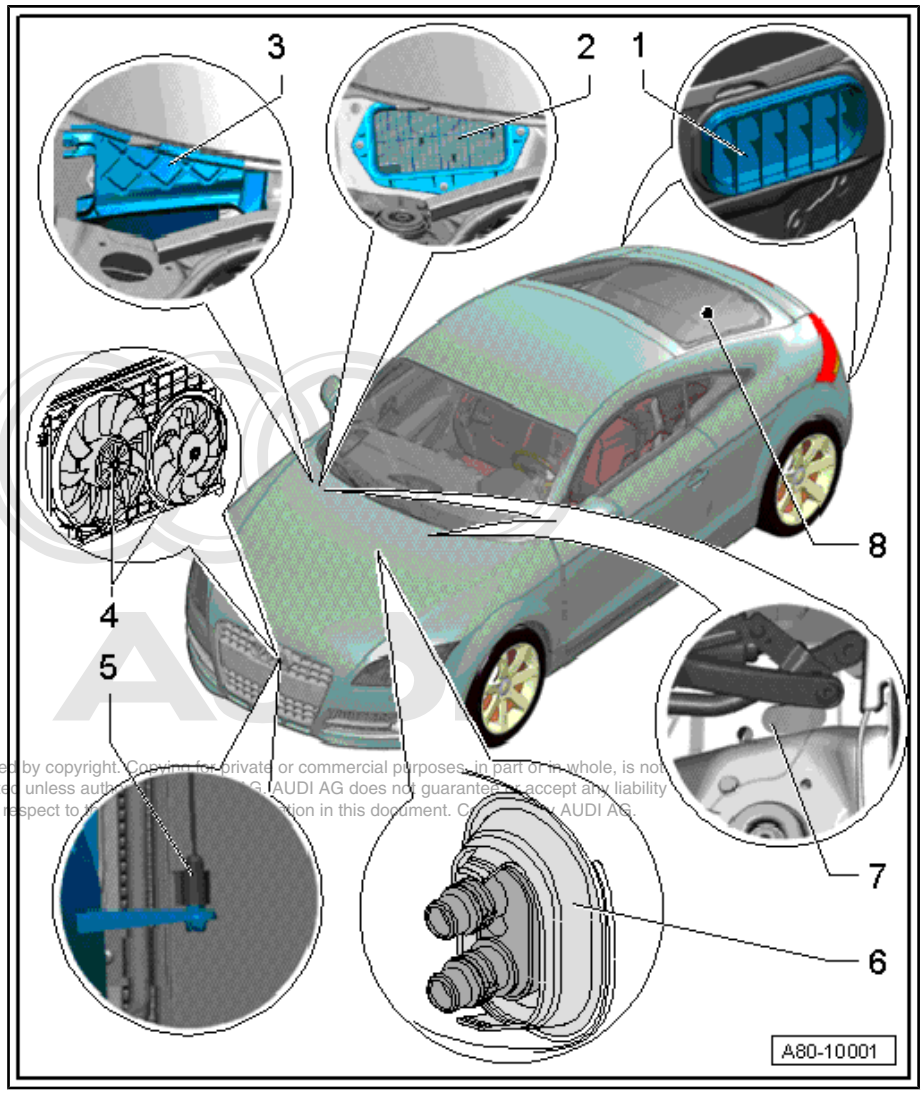
– Check the encoding of the heater operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

– If applicable, check the adaption of the heater operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

– Perform basic setting of the heater operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

- Components not located in passenger compartment
⇒ page 4
- Components located in passenger compartment
⇒ page 5

2.1 Components not located in passenger compartment



1 - Forced air extractor

- ❑ One forced air extractor each is fitted on the left and right beneath the rear bumper.
- ❑ The sealing lips of the vent frame must move freely and close automatically.
- ❑ To ensure proper functioning of the passenger compartment ventilation, the air ducts must not be blocked by the luggage compartment lining.
- ❑ Checking ⇒ page 65

2 - Fresh-air intake grille

- ❑ Ensure correct positioning, stops ingress of foreign matter (e.g. leaves) into the intake housing of the heater.
- ❑ Check the bonded seal for damage and proper attachment. This seal stops water running beneath the intake grille into the intake housing of the heater.
- ❑ Removing and installing ⇒ page 68

3 - Cover for fresh-air intake

- ❑ Check the bonded seal for damage and proper attachment. This seal stops water running between the lower frame of the windscreen and the cover into the intake housing of the heater.
- ❑ Removing and installing ⇒ page 68 and ⇒ General body repairs, exterior; Rep. Gr. 50

4 - Radiator fan -V7- and radiator fan 2 -V177-

- ❑ Different versions of the radiator fan -V7- and radiator fan 2 -V177- are fitted depending on the vehicle equipment ⇒ Electronic parts catalogue
- ❑ In normal vehicle operation, the radiator fans are not actuated by the heater operating unit, Climatronic control unit -J255- . The measured value block of the heater operating unit shows that the fans are not being actuated; for checking refer to ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- ❑ The request for activation of the radiator fan(s) -V7- is only transmitted by the heater operating unit, Climatronic control unit -J255- by way of the data bus to the engine control unit in the “Final control diagnosis” function. With the engine running, the engine control unit then actuates the fan(s) (radiator fan -V7- and radiator fan 2 -V177-) directly or by way of the radiator fan control unit -J293- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 and ⇒ Engine, mechanics; Rep. Gr. 19 .
- ❑ With the engine running, the corresponding engine control unit switches e.g. the radiator fan -V7- and the radiator fan 2 -V177- (directly or via the radiator fan control unit -J293-) infinitely to the desired output (depending on the engine type) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

5 - Ambient temperature sensor -G17-

- ❑ The measured value of the ambient temperature sensor -G17- is not used by the heater operating unit, Climatronic control unit -J255- for heater regulation. Its measured value is however used to calculate the permissible ON time for the heated rear window -Z1- .
- ❑ The measured value of the ambient temperature sensor -G17- is evaluated by the control unit with display in dash panel insert -J285- and transmitted by way of the convenience data bus system to the heater operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

Removing and installing:

– Remove the bumper cover ⇒ General body repairs, exterior; Rep. Gr. 50 .

– Unplug the connector at the temperature sensor and unclip the temperature sensor from the mount in the air duct.

6 - Connections for coolant hoses to heating system heat exchanger

- ❑ Detaching coolant hoses from connections to heating system heat exchanger/attaching ⇒ page 114 (removing and installing air conditioner heat exchanger)
- ❑ For incorporation of heating system heat exchanger into engine coolant circuit, refer to ⇒ Engine, mechanics; Rep. Gr. 19 .

7 - Plenum chamber water drains

- ❑ One water drain each is fitted on the left and right in the plenum chamber.
- ❑ Removing/installing grommet, checking and cleaning ⇒ page 67 .

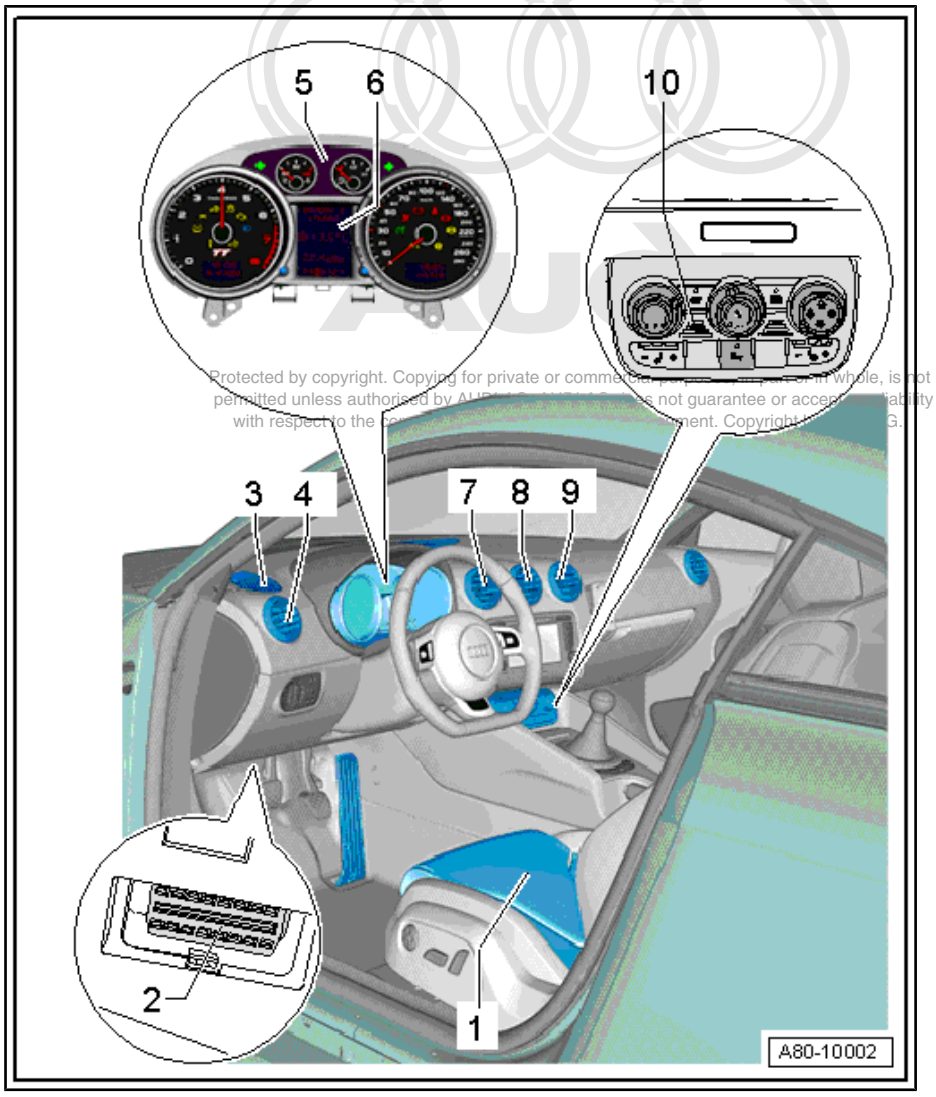
8 - Heated rear window -Z1-

- ❑ The rear window heating request is transmitted by the heater operating unit, Climatronic control unit -J255- via the convenience data bus. The heated rear window -Z1- is actuated by way of the onboard supply control unit -J519- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- ❑ Notes on operation of heated rear window ⇒ page 27
- ❑ Removing and installing rear window ⇒ General body repairs, exterior; Rep. Gr. 64 .

2.2 Components located in passenger compartment

- ♦ Component group “1” (components on left side) ⇒ page 6
- ♦ Component group “2” (components on right side) ⇒ page 8

2.2.1 Component group “1” (components on left side)



1 - Front left seat temperature sender -G344- and front left seat heating -Z45-

- ❑ Not all vehicles feature seat heating (optional extra).
- ❑ Actuation of the seat heating is indicated in the measured value block of the heater operating unit, Climatronic control unit -J255- ; for checking refer to ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ❑ Servicing seat heating ⇒ General body repairs, interior; Rep. Gr. 74 .

2 - Diagnosis connection

- ❑ Heater self-diagnosis procedure ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

3 - Defroster vent / left side window

- ❑ Removing and installing ⇒ General body repairs, interior; Rep. Gr. 70 .

4 - Left dash panel vent

- ❑ Removing and installing dash panel vents ⇒ page 74 and ⇒ General body repairs, interior; Rep. Gr. 70

5 - Control unit with display in dash panel insert -J285-

- ❑ With ambient temperature indicator -G106-
- ❑ The control unit with display in dash panel insert -J285- evaluates the measured value of the ambient temperature sensor -G17- and then transmits this via the convenience data bus to the heater operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

6 - Ambient temperature indicator -G106-

- ❑ The ambient temperature indicator -G106- is part of the control unit with display in dash panel insert -J285- .
- ❑ The measured value of the ambient temperature sensor -G17- is evaluated by the control unit with display in dash panel insert -J285- and transmitted by way of the convenience data bus to the heater operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- ❑ If the temperature reading is incorrect, check the measured value of the temperature sensor ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

7 - Centre left dash panel vent

- ❑ Removing and installing dash panel vents ⇒ page 74 and ⇒ General body repairs, interior; Rep. Gr. 70

8 - Centre dash panel vent

- ❑ Removing and installing dash panel vents ⇒ page 74 and ⇒ General body repairs, interior; Rep. Gr. 70

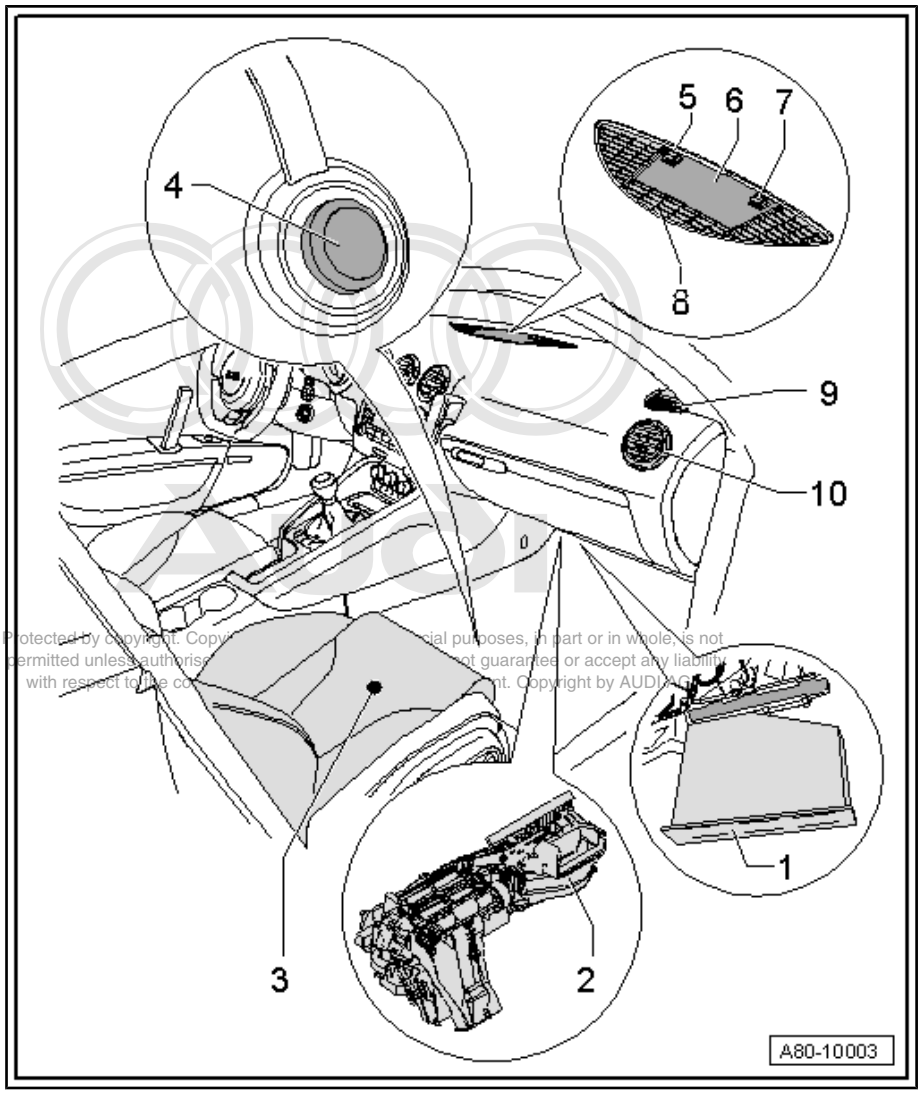
9 - Centre right dash panel vent

- ❑ Removing and installing dash panel vents ⇒ page 74 and ⇒ General body repairs, interior; Rep. Gr. 70

10 - Heater operating unit, Climatronic control unit -J255-

- ❑ Different versions, with or without seat heating switch, for assignment refer to ⇒ Electronic parts catalogue
- ❑ Vehicles with 5-cyl. engine are only to be fitted with heater operating units with part number 8J0 819 043 as of index “D” ⇒ Electronic parts catalogue and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- ❑ Removing and installing ⇒ page 78 (removing and installing air conditioner operating unit, Climatronic control unit -J255-).
- ❑ The heater operating unit, Climatronic control unit -J255- has neither an integrated dash panel temperature sensor -G56- nor a temperature sensor blower -V42- .
- ❑ Also heed the additional notes on the air conditioner operating unit, Climatronic control unit -J255- ⇒ page 78 .
- ❑ Heater operating unit, Climatronic control unit -J255- self-diagnosis is to be performed as described in the guided fault-finding routine ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- ❑ The buttons and rotary controls are illuminated by LEDs which cannot be replaced separately.
- ❑ The function indicator lamps in the buttons and rotary controls as well as the rotary controls and buttons cannot be replaced separately.

2.2.2 Component group “2” (components on right side)



1 - Dust and pollen filter

- Removing and installing ⇒ page 96
- Observe replacement intervals ⇒ Maintenance tables
- Vehicles with no air conditioner (heater only) are fitted with a dust and pollen filter with no activated charcoal element ⇒ Electronic parts catalogue and ⇒ page 97

2 - Heater with attachments

- Air routing in heater and vehicle ⇒ page 122 (air routing is identical for vehicles without and with air conditioner).
- Heater components ⇒ page 10
- Removing and installing heater ⇒ page 170 (removing and installing air conditioner unit)

Note

3 - Front right seat temperature sender -G345- and front right seat heating -Z46-

- Not all vehicles feature seat heating (optional extra).
- Actuation of the seat heating is indicated in the measured value block of the heater operating unit, Climatronic control unit -J255- ; for checking refer to ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Servicing seat heating ⇒ General body repairs, interior; Rep. Gr. 74 .

4 - Sealing plug

- On vehicles with no air conditioner (heater only), the opening at the transmission tunnel for the air conditioner condensate drain must be sealed with a plug.

5 - Cap

- Removing and installing ⇒ General body repairs, interior; Rep. Gr. 70
- Vehicles with no air conditioner (heater only) are not fitted with a sunlight penetration photosensor -G107- .

6 - Cover for centre dash panel loudspeaker

- Removing and installing cover ⇒ General body repairs, interior; Rep. Gr. 70

7 - Central locking system LED

- Removing and installing ⇒ General body repairs, interior; Rep. Gr. 70

8 - Defroster vent / windscreen

- Removing and installing ⇒ General body repairs, interior; Rep. Gr. 70

9 - Defroster vent / right side window

- Removing and installing ⇒ General body repairs, interior; Rep. Gr. 70

10 - Right dash panel vent

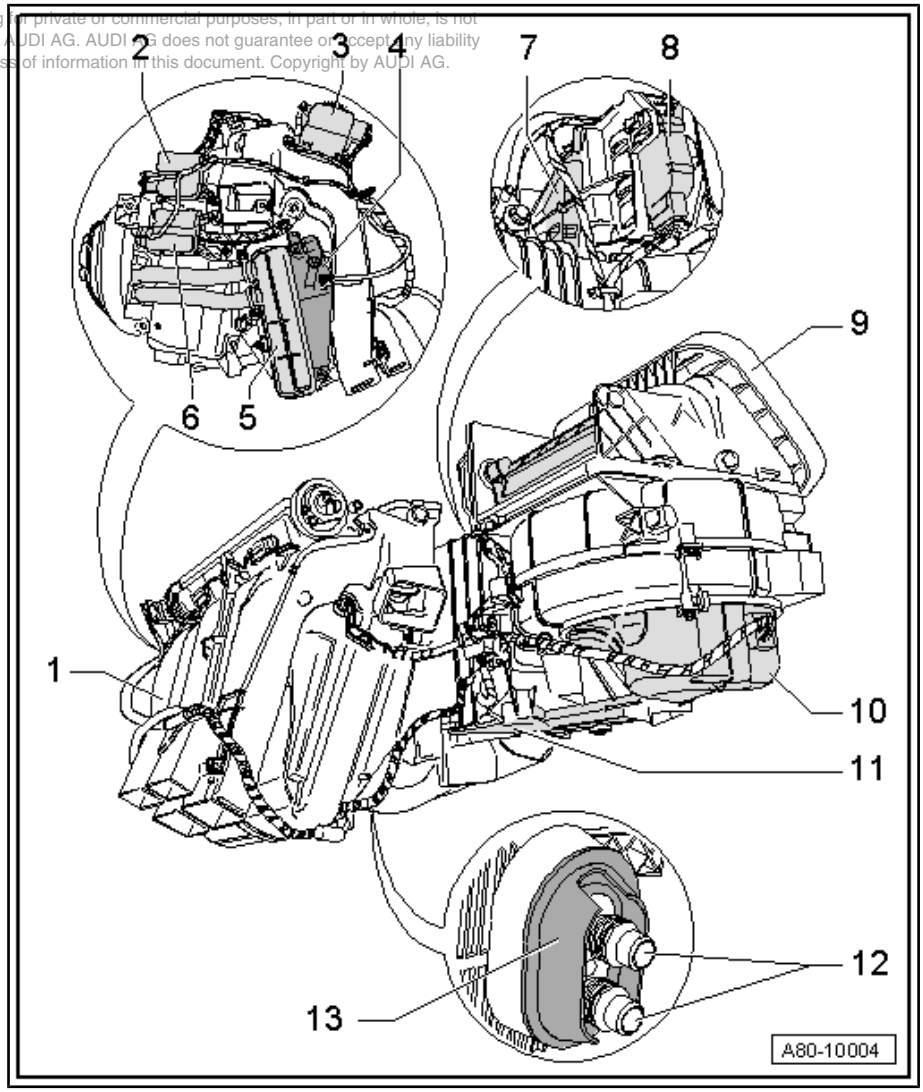
- ❑ Removing and installing dash panel vents ⇒ page 74 and ⇒ General body repairs, interior; Rep. Gr. 70

3 Heater components

Heed the notes on control and regulation of the heater components ⇒ page 3 .

Note

- *The air routing in the heater and in the vehicle is the same as for vehicles with an air conditioner ⇒ page 122 (block diagram of air distribution).*
- *The heater is to be removed and installed in the same manner as the air conditioner unit ⇒ page 170 (removing and installing air conditioner unit).*
- *The colour indicated for the levers and the connecting elements to the various control motors applies to left-hand drive vehicles. On right-hand drive vehicles, these components have a different colour.*



1 - Heater with attachments

- Removing and installing heater ⇒ page 170 (removing and installing air conditioner unit)

Note

- Dismantling and assembling heater ⇒ page 16

2 - Defroster flap control motor -V107-

- With potentiometer for defroster flap control motor -G135-
- Colour code for lever: blue
- Removing and installing ⇒ page 107

Note

3 - Central flap control motor -V70-

- With potentiometer for centre flap servomotor -G112-
- Removing and installing ⇒ page 91

4 - Supplementary heater element -Z35-

- Only available for vehicles with diesel engine ⇒ page 29 .
- Function, checking ⇒ page 29
- Removing and installing ⇒ page 111

5 - Heating system heat exchanger

- Removing and installing ⇒ page 114 (removing and installing heat exchanger of air conditioner unit)

6 - Left temperature flap control motor -V158-

- With potentiometer for left temperature flap control motor -G220-
- Colour code for lever: white
- Removing and installing ⇒ page 109

Note

7 - Air flow flap control motor -V71-

- With potentiometer for air flow flap control motor -G113-
- Removing and installing ⇒ page 101

8 - Air recirculation flap control motor -V113-

- With potentiometer for air recirculation flap control motor -G143-
- Removing and installing ⇒ page 89

9 - Intake housing with recirculated-air and air flow/fresh-air flap

- Removing and installing ⇒ page 176

10 - Fresh air blower control unit -J126- and fresh air blower -V2-

- Removing and installing ⇒ page 98
- Different versions; on the fresh air blowers -V2- fitted at the start of production, the fresh air blower control unit -J126- and the fresh air blower -V2- form a cast assembly (cannot be replaced separately). Fresh air blower control units -J126- and fresh air blowers -V2- which are bolted together (and can be replaced separately) were gradually introduced in Model Year 2007 ⇒ page 98 and ⇒ Electronic parts catalogue .
- The fresh air blower -V2- features an integrated fresh air blower control unit -J126- . Depending on the version, these two components can be replaced separately or only as an assembly.
- Checking ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051

11 - Dust and pollen filter

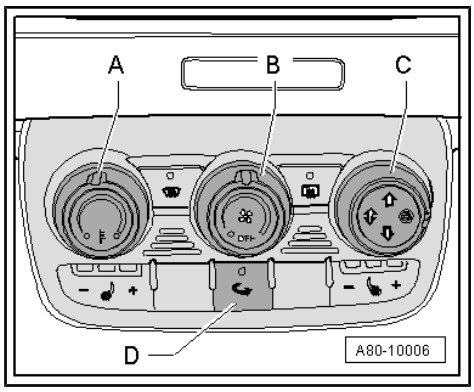
- Removing and installing ⇒ page 96
- Observe replacement intervals ⇒ Maintenance tables
- Vehicles with no air conditioner (heater only) are fitted with a dust and pollen filter with no activated charcoal element ⇒ Electronic parts catalogue and ⇒ page 97

12 - Coolant pipes to heat exchanger

13 - Grommet

- For sealing the coolant pipe opening through the plenum chamber bulkhead to the engine compartment

4 Checking actuation of temperature flaps and heat output



Note

- *The Audi TT with no air conditioner (heater only) is only fitted with one temperature flap control motor. The two temperature flaps for the left and right side are linked by way of the shaft in the heater air distributor housing and thus moved jointly by the left temperature flap control motor -V158- ⇒ page 16 .*
- *As vehicles with no air conditioner (heater only) have no temperature sensors, there is no regulation of the outlet temperature. The left temperature flap control motor -V158- is set by the heater operating unit, Climatronic control unit -J255- to a position calculated on the basis of the temperature setting at the rotary temperature control -A- and the learnt control motor stop values.*
- If the coolant circuit is not completely bled after filling, air may accumulate in the heating system heat exchanger and thus reduce the heat output. In addition, noise may occur or complaints may be received about differences in the temperature of the air from the driver's and front passenger's vents.

Remedy:

– Perform a lengthy test drive at high engine speed (at least 10 minutes, engine speed above 2500 rpm). In doing so, select a low gear to prevent excessive vehicle speed.

– In the event of complaints about poor heat output at certain engine speeds, check incorporation of the heating system heat exchanger into the coolant circuit. If the two coolant hoses (supply and return) from the engine have been interchanged, coolant will flow in the wrong direction through the heat exchanger ⇒ Engine, mechanics; Rep. Gr. 19 .

- For checking heat output and actuation of the temperature flaps, refer to ⇒ page 12 .

4.1 Checking heat output and actuation of temperature flaps

Special tools and workshop equipment required

- Vehicle diagnostic, testing and information system -VAS 5051 A- (or vehicle diagnostic and service information system -VAS 5052-)
- Commercially available thermometer (for temperature measurement; if applicable use thermometer with 2 probes for simultaneous measurement of temperature e.g. on right and left)
- Test requirements ⇒ page 12
- Checking heat output ⇒ page 13 .

4.1.1 Test requirements:

- Coolant circuit bled in specified manner ⇒ Engine, mechanics; Rep. Gr. 19
- All air ducts, covers and seals OK and properly installed.
- Air flow through dust and pollen filter not impeded by contamination.

- Engine warm
- Fault memory of heater operating unit, Climatronic control unit -J255- interrogated and erased, basic setting performed and encoding of heater operating unit, Climatronic control unit -J255- checked ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- Adaption of heater operating unit, Climatronic control unit -J255- checked ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- Vehicle not exposed to sunlight

4.1.2 Checking heat output

– Close bonnet.

– Close the doors, windows and rear lid.

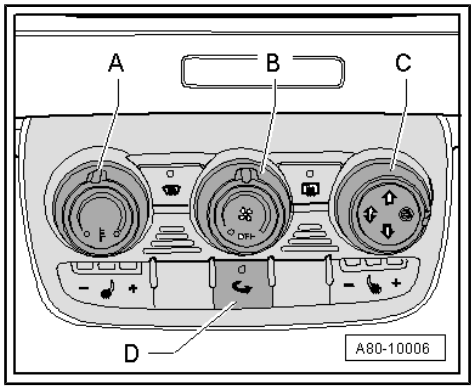
– Open all dash panel vents.

– Start heater self-diagnosis ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

– Measure the ambient temperature (temperature in the workshop).

– Start engine.

– Set the rotary temperature control -A- of the heater operating unit, Climatronic control unit -J255- to the “cold” stop.
– Set the rotary air distribution control -C- of the heater operating unit, Climatronic control unit -J255- such that air emerges from the dash panel vents.
– Set the rotary fresh air blower speed control -B- of the heater operating unit, Climatronic control unit -J255- to the “maximum fresh air blower speed” stop.



Note

- *The heater operates in fresh air mode, the indicator lamp in the recirculated air button -D- does not light.*
- *The fresh air blower runs at maximum speed.*

– Select the “Reading measured value block” function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
– Read out the measured value block with the display for the position of the left temperature flap control motor -V158- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
– Measure the temperature of the air emerging from the dash panel vents on the left and right.

Specifications:

- The display shows that the left temperature flap control motor -V158- is set to the “bottom” stop (“cold” stop).
- The temperature of the air emerging from the dash panel vents on the left and right is max. 15 °C higher than the ambient temperature previously measured (temperature increase in heater less than 16 °C).
- The difference in the temperature of the air emerging from the dash panel vents on the left and right is less than 8 °C.

– Set the rotary temperature control -A- of the heater operating unit, Climatronic control unit -J255- to the “warm” stop.
– Read out the measured value block with the display for the position of -V158- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
– Measure the temperature of the air emerging from the dash panel vents on the left and right.

Specifications:

- The display shows that the left temperature flap control motor -V158- is set to the “top” stop (“warm” stop).
- The temperature of the air emerging from the dash panel vents on the left and right increases to a value above 55 °C (at an engine temperature of approx. 90 °C, depending on the instantaneous engine temperature).
- The difference in the temperature of the air emerging from the dash panel vents on the left and right is less than 8 °C.

Note

The coolant flow through the heat exchanger (and thus the heat output) is also governed by the engine speed.

– Set the rotary temperature control -A- of the heater operating unit, Climatronic control unit -J255- to the “cold” stop.
– Read out the measured value block with the display for the position of the left temperature flap control motor -V158- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
– Measure the temperature of the air emerging from the dash panel vents on the left and right.

Specifications:

♦ The display shows that the left temperature flap control motor -V158- is set to the “bottom” stop (“cold” stop).
♦ The temperature of the air emerging from the dash panel vents on the left and right drops within 5 minutes to a value max.15 °C higher than the ambient temperature previously measured.

Check the following if the readout does not match the specifications:

♦ If the required heat output is not attained
– Bleeding of coolant circuit ⇒ Engine, mechanics; Rep. Gr. 19
– Incorporation of heating system heat exchanger into coolant circuit ⇒ Engine, mechanics; Rep. Gr. 19
– Actuation and operation of the left temperature flap control motor -V158- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
– Foam seal for heating system heat exchanger ⇒ page 117
– Operation of temperature flaps in air distributor housing ⇒ page 124
– Thermostat (engine coolant may not warm up properly if thermostat is defective) ⇒ Engine, mechanics; Rep. Gr. 19
– Delivery of engine coolant pump ⇒ Engine, mechanics; Rep. Gr. 19
♦ If the air emerging from the vents is too warm in the “cold” setting
– Actuation and operation of the left temperature flap control motor -V158- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
– Operation of temperature flaps in air distributor housing ⇒ page 18
– The plenum chamber cover and the seal between the engine compartment and the plenum chamber.

5 Dismantling and assembling heater

Removing and installing heater ⇒ page 170 (removing and installing air conditioner unit)

Note

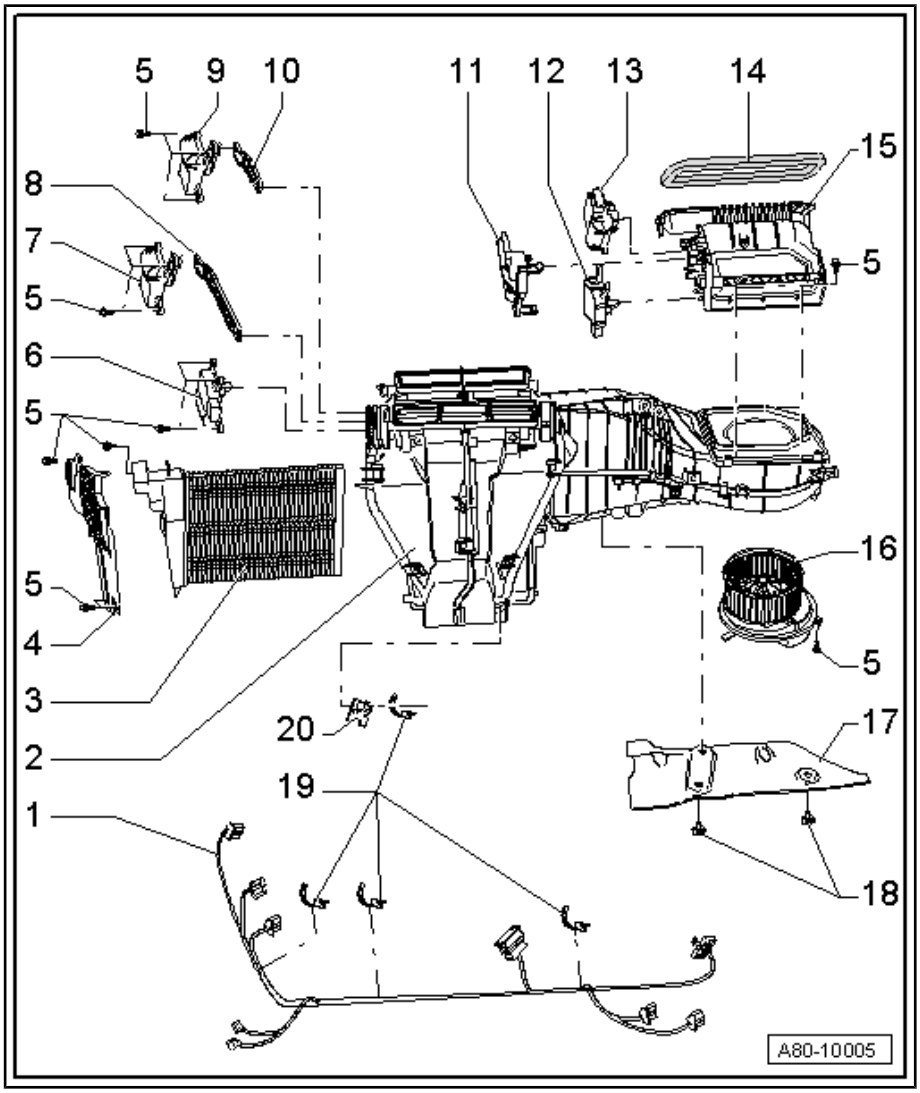
The heater is to be removed in the same manner as the air conditioner unit, with the exception of the work for those components which are only fitted with an air conditioner.

- Detaching electrical add-on components from heater/re-attaching ⇒ page 16 .
- Dismantling and assembling heater ⇒ page 18
- Dismantling and assembling air duct ⇒ page 20

5.1 Detaching electrical add-on components from heater/re-attaching

Note

The colour indicated for the levers and the connecting element to the various control motors applies to left-hand drive vehicles. On right-hand drive vehicles, these components have a different colour.



1 - Heater wiring harness

- Different versions (e.g. with or without power supply for supplementary air heater element -Z35-) ⇒ Electronic parts catalogue
- Mark assignment before unplugging connectors (identical connectors for different control motors, danger of interchange).
- Fasten the wiring harness to the attachment points provided on the housing (with cable ties or at the mounts) such that the harness cannot come into contact with moving parts.

2 - Heater

- Removing and installing ⇒ page 170 (removing and installing air conditioner unit)

Note

- Dismantling and assembling heater ⇒ page 18
- Dismantling and assembling air duct ⇒ page 20

3 - Supplementary heater element -Z35-

- Only available for vehicles with diesel engine ⇒ page 29 .
- Function, checking ⇒ page 29
- Removing and installing ⇒ page 111

4 - Cover for coolant pipes and heat exchanger

- This illustration shows the version for vehicles with supplementary heater element -Z35- .
- Different versions for vehicles with/without supplementary heater element -Z35- (on vehicles with no supplementary heater element -Z35- , the opening for the supplementary heater element -Z35- is sealed with this cover) ⇒ Electronic parts catalogue

5 - Bolt

6 - Central flap control motor -V70-

- With potentiometer for centre flap servomotor -G112-
- Removing and installing ⇒ page 91

7 - Left temperature flap control motor -V158-

- With potentiometer for left temperature flap control motor -G220-
- Lever colour code: white
- Removing and installing ⇒ page 109

Note

8 - Connecting rod to left temperature flap control motor -V158-

- Colour code: black

9 - Defroster flap control motor -V107-

- With potentiometer for defroster flap control motor -G135-
- Colour code for lever: blue
- Removing and installing ⇒ page 107

Note

10 - Connecting rod to defroster flap control motor -V107-

- Colour code: blue

11 - Cover and holder for air flow flap control motor -V71- and air recirculation flap control motor -V113-

- Removing and installing ⇒ page 101 (removing air recirculation flap control motor -V113-)
- Following installation, check both control motors held in position by this holder. Eliminate any clearance if necessary by attaching a piece of foam to the inside of the attachment points of the holder ⇒ page 101 .

12 - Air recirculation flap control motor -V113-

- With potentiometer for air recirculation flap control motor -G143-
- Removing and installing ⇒ page 101

13 - Air flow flap control motor -V71-

- With potentiometer for air flow flap control motor -G113-
- Removing and installing ⇒ page 101

14 - Foam seal

- Provides seal between heater intake housing and vehicle

15 - Intake housing with recirculated-air and air flow/fresh-air flap

- Not to be further dismantled
- Removing and installing ⇒ page 176
- Different replacement part versions available ⇒ page 176

16 - Fresh air blower control unit -J126- and fresh air blower -V2-

- Removing and installing ⇒ page 98
- Different versions; on the fresh air blowers -V2- fitted at the start of production, the fresh air blower control unit -J126- and the fresh air blower -V2- form a cast assembly (cannot be replaced separately). Fresh air blower control units -J126- and fresh air blowers -V2- which are bolted together (and can be replaced separately) were gradually introduced in Model Year 2007 ⇒ page 98 and ⇒ Electronic parts catalogue .
- The fresh air blower -V2- features an integrated fresh air blower control unit -J126- . Depending on the version, these two components can be replaced separately or only as an assembly.

17 - Insulating mat

18 - Screw-type clips

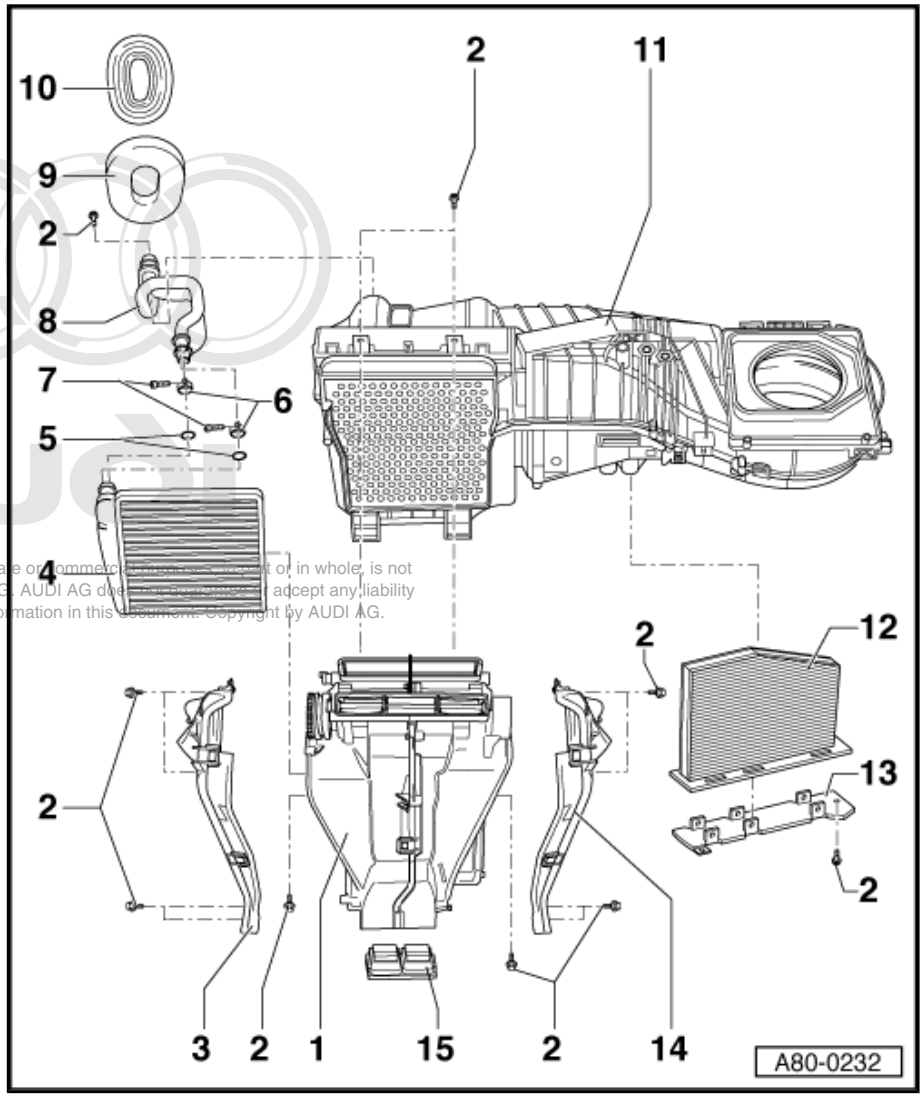
19 - Cable tie

20 - Holder for wiring harness

5.2 Dismantling and assembling heater

– Remove the heater ⇒ page 170 (removing and installing air conditioner unit).

– Detach the electrical add-on components from the heater ⇒ page 16 .



1 - Heater air distributor housing

- ❑ Different versions for heater and air conditioner ⇒ Electronic parts catalogue

Note

2 - Bolt

3 - Air duct to left footwell vent

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ “Heater” version (with no opening for fitting a temperature sensor)

4 - Heating system heat exchanger

- ❑ Removing and installing ⇒ page 114

5 - Sealing ring

- ❑ Renew
- ❑ Moisten slightly with coolant and fit in correct position ⇒ page 114

6 - Clamp

- ❑ Renew
- ❑ Ensure correct positioning
- ❑ Removing and installing ⇒ page 114

7 - Bolt

- ❑ Tightening torque 2.5 Nm

8 - Coolant pipes

- ❑ Detaching from heat exchanger/attaching ⇒ page 114

9 - Foam spacer

- ❑ Fitted between grommet and heater

10 - Grommet

- ❑ Insert in the back wall of the vehicle plenum chamber before fitting the heater ⇒ page 170
- ❑ Installing ⇒ page 170

11 - Air duct

- ❑ Dismantling and assembling air duct ⇒ page 20

12 - Dust and pollen filter

- ❑ Removing and installing ⇒ page 96
- ❑ Observe replacement intervals ⇒ Maintenance tables
- ❑ Vehicles with no air conditioner (heater only) are fitted with a dust and pollen filter with no activated charcoal element ⇒ Electronic parts catalogue and ⇒ page 97

13 - Dust and pollen filter cover

- ❑ Removing and installing ⇒ page 96

14 - Air duct to right footwell vent

- ❑ Different versions ⇒ Electronic parts catalogue

- ❑ “Heater” version (with no opening for fitting a temperature sensor)

15 - Sealing plug

- ❑ Two different versions provided ⇒ page 122 .

5.3 Dismantling and assembling air duct

– Remove the heater ⇒ page 170 (removing and installing air conditioner unit).

– Detach the electrical add-on components from the heater ⇒ page 16 .

– Dismantle the heater to the extent required ⇒ page 18 .

1 - Bottom part of air duct

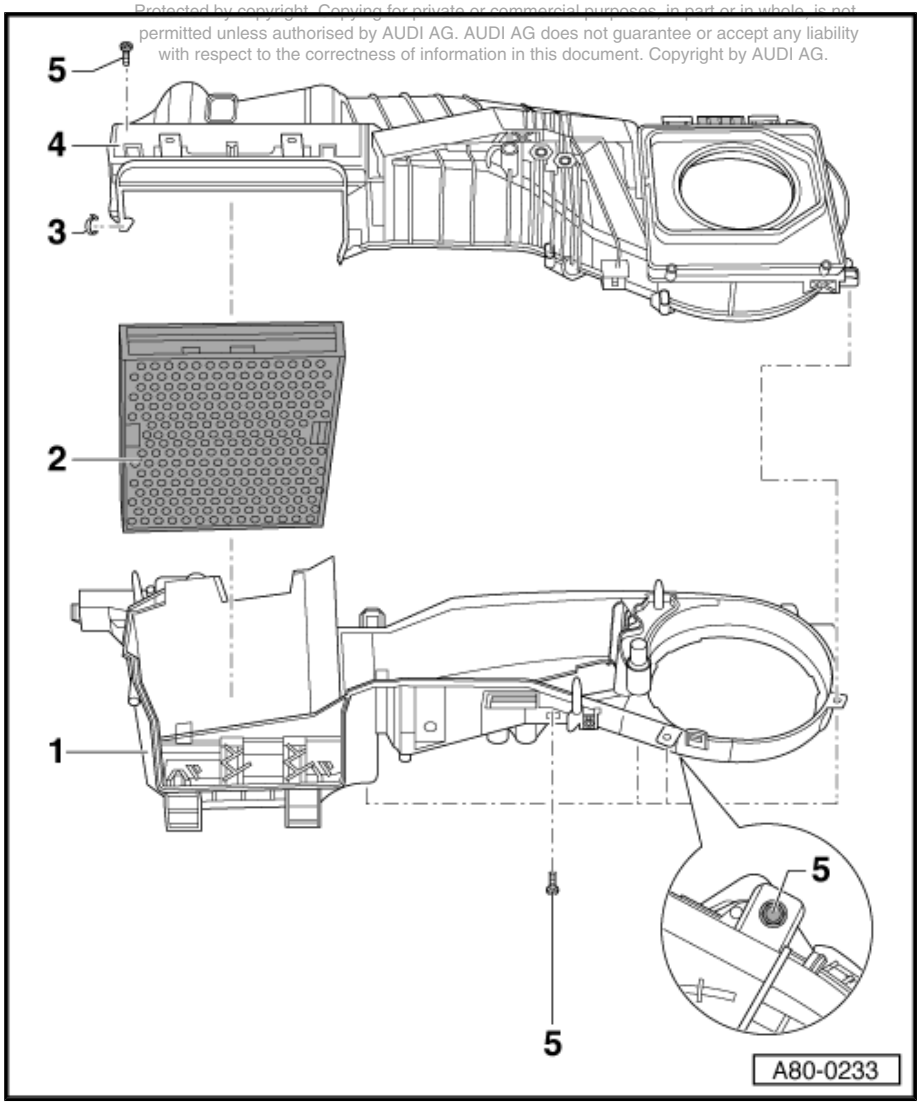
2 - Noise insulation

- ❑ Vehicles with no air conditioner (heater only) are fitted with a foam core (for noise insulation) instead of the evaporator.

3 - Clip

4 - Top part of air duct

5 - Bolt



87 – Air conditioning system

1 Safety measures when working on vehicles with air conditioner and for handling refrigerant

The air conditioner assemblies and piping system are filled with the following refrigerant:

1.1.1.2 tetrafluoroethane (CF_3-CH_2F or CH_2F-CF_3)

This refrigerant is currently known in Germany by the trade names R134a, H-FKW 134a, SUVA 134a and KLEA 134a (other trade names may be used in other countries).

- Safety precautions ⇒ page 21 .
- Draining refrigerant circuit ⇒ page 22 .
- Working on refrigerant circuit ⇒ page 22 .
- Painting work on vehicles with air conditioner ⇒ page 23 .
- Further information on air conditioner ⇒ page 23 .

1.1 Safety precautions

The following safety measures are to be heeded in Germany for this refrigerant (additional regulations may apply in other countries).

The refrigerant circuit is to be drained first should repair work require the refrigerant circuit to be opened ⇒ page 22 . All contact with liquid refrigerant or refrigerant vapours should be avoided. Should refrigerant nevertheless escape, avoid inhaling the resultant refrigerant/air mixture.

Extraction systems are therefore to be switched on and use made of both rubber gloves and safety goggles.

Explanation:

Intensive exposure to refrigerant on unprotected parts of the body will result in frostbite.

> **WARNING**
>
> ***Keep an eye-bath to hand.***
>
> ***Should liquid refrigerant come into contact with the eyes, rinse eyes thoroughly with water for approx. 15 minutes.***
>
> ***Then apply eye drops and consult a doctor immediately even if no pain is felt.***
>
> ***Always inform doctor of the type of refrigerant involved.***

Should refrigerant come into contact with other parts of the body despite compliance with all the pertinent safety measures, these are similarly to be rinsed thoroughly with cold water without delay for at least 15 minutes.

Although refrigerants do not represent a fire hazard, smoking, welding, soldering and brazing are not permitted in areas exposed to refrigerant.

Explanation:

The high temperature of a naked flame or hot objects causes decomposition of refrigerant gas. Inhalation of the toxic decomposition products would cause dry coughing and nausea.

1.2 Draining refrigerant circuit

Refrigerant must not be allowed to escape into the environment. It should be extracted from the refrigerant circuit by means of a suction unit or an air conditioner service station. The refrigerant removed is then either to be re-processed on site or returned to the manufacturer for proper disposal (different or additional regulations may apply in other countries). For this reason, the vehicle is to be taken to a workshop equipped with the necessary tools where the work can be performed by appropriately qualified personnel. ⇒ Air conditioner - with refrigerant R134a

Explanation:

Should it escape into the earth's atmosphere, refrigerant R134a will have a detrimental effect in terms of global warming.

Note

- *Refrigerant R134a has far less of a greenhouse effect than R12.*
- *Refrigerant R134a does not affect the earth's ozone layer (R134a is an H-FC with no chlorine atoms). The depletion of the ozone in the upper atmosphere is however only caused by the splitting of carbon-chlorine bonds (as is the case, for example, with the refrigerant R12).*

After draining the air conditioner, unplug the connector from the air conditioner compressor regulating valve -N280- or from the high-pressure sender -G65- .

Explanation:

The air conditioner compressor regulating valve -N280- is then no longer actuated and the air conditioner compressor runs at idle. The air conditioner compressor is designed such that lubrication of the air conditioner compressor components is guaranteed by way of an internal oil circuit at idle (provided there is sufficient refrigerant oil in the air conditioner compressor).

1.3 Working on refrigerant circuit

Work on refrigerant circuit is only to be carried out in well ventilated areas Care should be taken to ensure that there are no inspection pits, shafts or cellar entrances within a radius of 5 metres. Extraction systems are to be switched on.

Explanation:

The refrigerant emerging is not only colourless and odourless, but also heavier than air and thus displaces oxygen. Should refrigerant gas nevertheless escape, this can result in an imperceptible danger of asphyxiation in poorly ventilated areas and inspection pits.

Note

The mixture of gas and air which forms when refrigerant gas escapes must not be inhaled. Use is to be made of suitable workshop extractors.

Welding, brazing and soldering are not permitted on sections of the air conditioner when filled. This also applies to vehicle welding and soldering work if there is a danger of air conditioner components becoming hot.

Explanation:

Exposure to heat creates considerable pressure in the system which could cause it to burst.

Remedy:

Drain refrigerant circuit ⇒ page 22 .

Note

Damaged or leaking air conditioner components are not to be repaired by welding or soldering, but should be replaced.

When servicing air conditioner, all open components and pipe connections are to be immediately re-sealed.

Explanation:

Moisture will ingress into air conditioner components if they are left open for a lengthy period. If this is the case, air conditioners cannot be re-filled without having to replace parts of the system.

1.4 Painting work on vehicles with air conditioner

When performing paintwork repairs, the temperature in the drying booth or preheating zone must not exceed 80 °C.

Explanation:

Exposure to heat creates considerable pressure in the system which could cause it to burst.

1.5 Further information on air conditioner

- The relevant current flow diagrams can be found in the Current flow diagrams, Electrical fault-finding and Fitting locations binder. ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- A label in the engine compartment indicates the refrigerant used as well as the capacity.
- For further information on repair work for vehicles fitted with an air conditioner and on handling refrigerant, refer to ⇒ Air conditioner with refrigerant R134a .

2 Notes on air conditioner repair work

WARNING

Remove the appropriate fuse(s) before working on wiring.

Note

Disconnect the battery -A- before starting electric welding work on the vehicle ⇒ Electrical system; Rep. Gr. 27

It is only permissible if so required by the pertinent safety regulations ⇒ page 21 , or if parts of the air conditioner refrigerant circuit have to be replaced, to drain and open the air conditioner refrigerant circuit ⇒ page 22 (draining refrigerant circuit).

The air conditioner refrigerant circuit must remain closed during all other normal vehicle repair operations.

Service work which can be performed on the heater and air conditioner without opening the refrigerant circuit is described in this Workshop Manual ⇒ page 60 .

Note

The connections for the senders/switches described in this Workshop Manual are fitted with a valve which closes automatically when the switches are unscrewed. These switches may therefore be renewed in any VW/Audi workshop without draining the refrigerant circuit.

Air conditioner service work for which the refrigerant circuit has to be drained and which therefore cannot be performed at all VW/Audi workshops is described as of ⇒ page 143 . Draining of the refrigerant circuit requires the use of specific tools and such work is also only to be performed by qualified personnel. For this reason, it may be necessary to take the vehicle to a workshop equipped with the necessary tools where the work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a .

- Contact corrosion ⇒ page 24
- Notes on air conditioner guided fault-finding ⇒ page 25
- Checking electrical components of air conditioner ⇒ page 25
- Checking of electrical components actuated by the air conditioner ⇒ page 26

2.1 Contact corrosion

Contact corrosion can occur if use is made of unsuitable connecting elements, bolts, nuts, washers, rivets, plugs, grommets, adhesives, etc.

For this reason, only connecting elements with a special surface coating are fitted at the factory. In addition, rubber components, plastic components and adhesives are made of non-conductive materials. These tested, aluminium-compatible components are also available as replacement parts ⇒ Electronic parts catalogue .

Important:

- Always fit new parts in cases of doubt about reusability.
- We recommend the use of genuine replacement parts only, as these have been checked and are compatible with aluminium ⇒ Electronic parts catalogue .
- We advise using Audi accessories ⇒ Electronic parts catalogue .
- Damage caused by contact corrosion is not covered by warranty.

2.2 Notes on air conditioner guided fault-finding

- There are various versions of the air conditioner operating unit, Climatronic control unit -J255- . When renewing, observe precise allocation. ⇒ Electronic parts catalogue
- Air conditioner self-diagnosis is to be performed by way of the “Guided fault-finding” function using the vehicle diagnostic, testing and information system ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- At present air conditioner operating units, Climatronic control unit -J255- can be exchanged in the familiar manner, as component protection is currently not active ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- If an air conditioner operating unit, Climatronic control unit -J255- is to be replaced, interrogate the encoding and adaption (of the air conditioner operating unit, Climatronic control unit -J255-) prior to removal by way of the “Control unit replacement” function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

2.3 Checking electrical components of air conditioner

Note

- *The “Electrical checks” function is not described in this Workshop Manual. When implementing electrical checks by way of the “Guided fault-finding” function, information is given on the functions to be checked ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *The temperature-dependent resistance values of the various temperature sensors are stored in tables which can be called up via the “Guided fault-finding” function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- Wiring and component check using test box -V.A.G 1598 A- ⇒ page 25

2.3.1 Checking wiring and components with test box -V.A.G 1598 A-

Special tools, testers and other items required

- Test box (basic unit) -V.A.G 1598/14- with adapter -V.A.G 1598/11- and adapter -V.A.G 1598/12-

- Vehicle diagnostic, testing and information system -VAS 5051 A- with multimeter leads -VAS 5051/7- , probe -VAS 5051/8- and current probe 50 A -VAS 5051/9-
- Voltage tester -V.A.G 1527 B-
- Adapter set -V.A.G 1594 C-
- Temperature measuring instrument (e.g. commercially available thermometer)
- Current flow diagram for vehicle system to be checked ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

Note

Electrical checking is to be performed as described in the guided fault-finding routine ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

2.4 Checking of electrical components actuated by the air conditioner

Note

Various electrical components in the vehicle (e.g. the heated rear window -Z1- and the heated seats), which do not form part of the air conditioner, are actuated by the air conditioner operating unit, Climatronic control unit -J255- . Electrical checking of these components is to be performed as described in the air conditioner guided fault-finding routine ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

- Checking of heated rear window -Z1- ⇒ page 27
- Checking heated seats ⇒ page 28 .
- Checking electric supplementary heater ⇒ page 29 .

2.4.1 Checking of heated rear window -Z1-

Note

- *Situations preventing activation of the heated rear window (short circuit in connection to rear window, open circuit in power supply to air conditioner operating unit, Climatronic control unit -J255- etc.) are stored as faults in the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- *If the voltage measured at the onboard supply control unit -J519- at terminal "30" drops below a value stored in the onboard supply control unit -J519- , the heated rear window is completely deactivated (or the power reduced) to relieve the load on the alternator -C- (the air conditioner operating unit, Climatronic control unit -J255- reduces the actuation duty cycle from 100% to 90 .... 0 %) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- *If the heated rear window has to be deactivated on account of undervoltage, the indicator lamp in the button for the heated rear window in the air conditioner operating unit, Climatronic control unit -J255- remains on. However if deactivation lasts longer than approx. 150 s, the air conditioner operating unit, Climatronic control unit -J255- switches off the indicator lamp.*
- *The measured value block of the air conditioner operating unit, Climatronic control unit -J255- shows that the heated rear window is being actuated or indicates why there is no actuation in spite of a corresponding request ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *Checking of heated rear window actuation is described in the guided fault-finding routine for the onboard supply control unit -J519- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 (-J519- actuates the heated rear window -Z1-).*
- *At ambient temperatures below 0 °C, the heated rear window remains switched on until the ignition is switched off (manual deactivation is possible at any time). If the temperature during a driving cycle rises above 0 °C, the heated rear window is deactivated on completion of the operating period stored in the air conditioner operating unit, Climatronic control unit -J255- (approx. 10 minutes).*
- *At ambient temperatures above 0 °C, the heated rear window can be deactivated automatically on completion of the operating period stored in the air conditioner operating unit, Climatronic control unit -J255- (approx. 10 minutes) by the air conditioner operating unit, Climatronic control unit -J255- (actuation time is governed by encoding and version of air conditioner operating unit, Climatronic control unit -J255-) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*

2.4.2 Checking heated seats

Note

- *Situations preventing activation of the driver's/front passenger's seat heating (short circuit in connection to seat heating element, open circuit in power supply to air conditioner operating unit, Climatronic control unit -J255- etc.) are stored as faults in the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *Checking of heated seat actuation is described in the air conditioner guided fault-finding routine ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *If the voltage measured at the onboard supply control unit -J519- at terminal "30" drops below a value stored in -J519- , the seat heating power is reduced (currently to approx. 50 %) or the heating function is completely deactivated to relieve the load on the alternator -C- . The air conditioner operating unit, Climatronic control unit -J255- reduces the actuation duty cycle from 100 % to less than 90 ... 0 % ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *The measured value block of the air conditioner operating unit, Climatronic control unit -J255- shows that the front seat heating is being actuated or indicates why there is no actuation in spite of a corresponding request ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*

2.4.3 Checking electric supplementary heater

The supplementary heater element -Z35- is only installed on vehicles with diesel engine.

Note

- *An electric supplementary air heater is currently fitted on vehicles with diesel engine ⇒ Audi sales range . Heat energy is supplied to the air after leaving the heat exchanger of the air conditioner unit in the event of a request from the air conditioner operating unit, Climatronic control unit -J255- .*
- *The electric supplementary heater (supplementary air heater element -Z35-) is actuated by way of the corresponding engine control unit (the control units exchange the appropriate information by way of the data bus) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *The measured value block of the air conditioner operating unit, Climatronic control unit -J255- shows that the electric supplementary heater is being actuated or indicates why there is no actuation in spite of a low ambient temperature ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *Vehicles with petrol engine are currently not fitted with a supplementary heater.*
- *For checking actuation of the supplementary air heater element -Z35- , refer to the guided fault-finding routine for the engine fitted in this vehicle ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *For checking the resistance value of the supplementary air heater element -Z35- , refer to ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*

Cut-in criteria for actuation of supplementary heater

Note

On vehicles with air conditioner (or with heater only), the cut-in criteria must be satisfied in the air conditioner (heater) operating unit, Climatronic control unit -J255- and in the corresponding engine control unit.

– The following prerequisites must be met for the air conditioner (heater) operating unit, Climatronic control unit -J255- to transmit a request for supplementary heater activation to the engine control unit:

- Engine running for at least 8 seconds and engine speed higher than 500 rpm.
- Engine temperature less than 75 °C.
- Calculated ambient temperature less than 8 °C.
- Electrical system voltage greater than 12.2 V and onboard supply control unit -J519- not transmitting any request preventing activation.
- No faults stored in air conditioner (heater) operating unit, Climatronic control unit -J255- .

- No faults stored in engine control unit and capacity utilisation of alternator -C- less than 30 ... 77 % (depending on engine speed).
- On the basis of the setting and the temperatures measured, the air conditioner (heater) operating unit, Climatronic control unit -J255- has calculated that additional heat output is required to attain the specified passenger compartment temperature.
- The air conditioner (heater) operating unit, Climatronic control unit -J255- has calculated that more than 90 % of the air is being routed through the heat exchanger of the air conditioner unit.

Note

On vehicles with 3-stage supplementary air heater elements -Z35- , the engine control unit actuates the two supplementary heating relays such that the capacity utilisation of the alternator -C- does not exceed 95 % ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 (for the engine control unit) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations. The next stage is only switched in if the capacity utilisation of the alternator -C- is less than 30 ... 77 % depending on engine speed.

Shutoff criteria for actuation of supplementary heater

Note

Deactivation takes place as soon as a cut-in criterion is no longer satisfied in the air conditioner (heater) operating unit, Climatronic control unit -J255- and the corresponding engine control unit or if one of the shutoff criteria is detected.

– The air conditioner (heater) operating unit, Climatronic control unit -J255- cancels the request for activation of the electric supplementary heater if:

- One of the cut-in prerequisites is no longer satisfied.
- The calculated ambient temperature is greater than 11 °C.
- The capacity utilisation of the alternator -C- is greater than 95 %.
- The air conditioner (heater) operating unit, Climatronic control unit -J255- has calculated that less than 60 % of the air is being routed through the heat exchanger of the air conditioner unit (heater) (position of temperature flaps).

3 Servicing work on refrigerant circuit

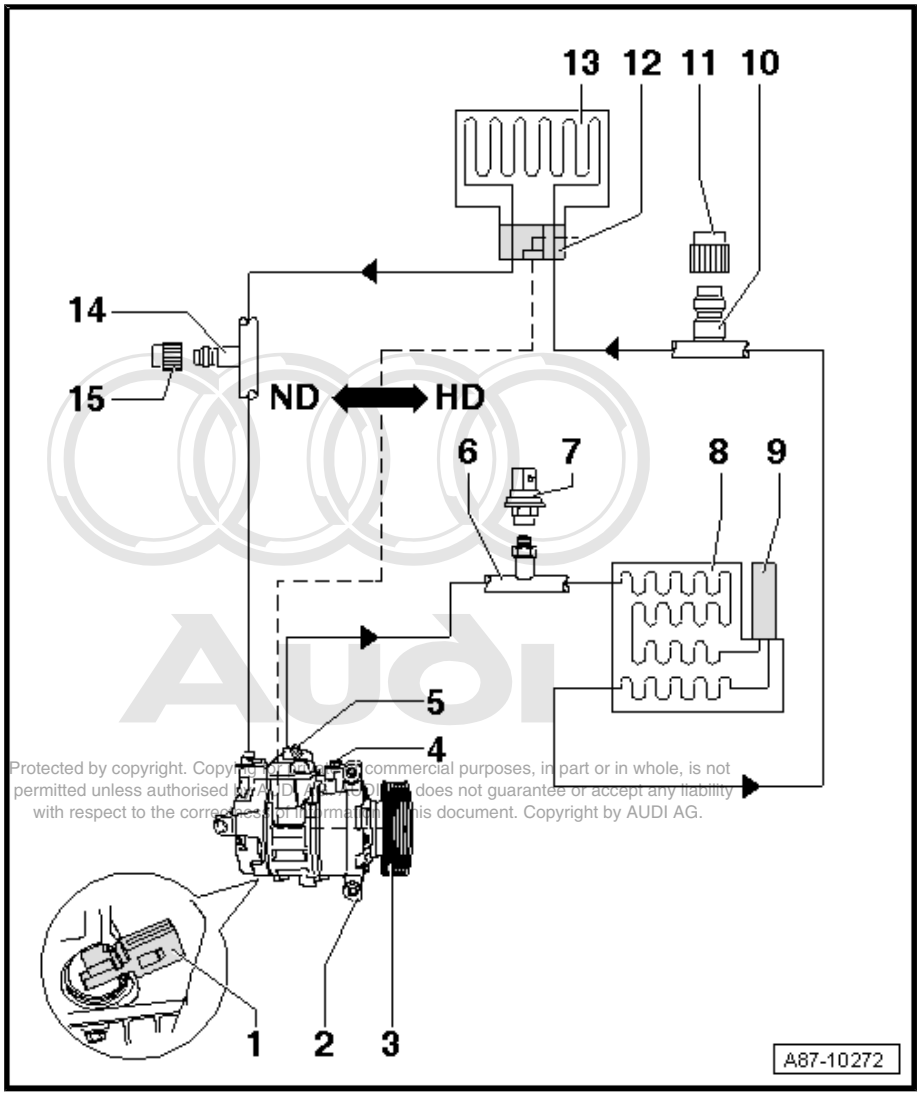
Note

- *Servicing work on refrigerant circuit* *⇒ page 143*
- *All parts/operations marked [1] can be serviced and replaced/ performed in any workshop (work not involving the refrigerant circuit).*
- *All parts/operations not marked [1], as well as all refrigerant hoses and refrigerant pipes, can only be serviced or replaced/ performed at workshops equipped with the necessary tools where the work can be carried out by appropriately qualified personnel (the refrigerant circuit has to be drained) ⇒ Air conditioner with refrigerant R134a .*
- ⇒ “3.1 Exploded view of refrigerant circuit components”, page 31

3.1 Exploded view of refrigerant circuit components

HD = High-pressure side

ND = Low-pressure side



1 - Air conditioner compressor regulating valve -N280-

- Checking actuation and operation ⇒ page 45 1)

2 - Air conditioner compressor

- Detaching air conditioner compressor from holder/re-attaching (vehicles with 4 or 6-cyl. engine) ⇒ page 40 1)
- Detaching air conditioner compressor from holder/re-attaching (vehicles with 5-cyl. engine) ⇒ page 43 1)
- When installing the refrigerant pipes and the corresponding holder, make sure there is sufficient distance between the belt, holder and pulley.
- Type of compressor may differ depending on production period and engine. ⇒ Electronic parts catalogue
- The air conditioner compressors fitted at the start of production are manufactured by "Denso" (type "6 SEU 14"). At a later date, other makes of air conditioner compressor may also be installed (e.g. "Sanden", type "PXE 16" or "ZJX") ⇒ Electronic parts catalogue and ⇒ Air conditioner with refrigerant R134a .
- Air conditioner compressors are available as replacement parts with different oil capacities and attention must therefore be paid to the oil quantity in the air conditioner compressor as well as the exact part number ⇒ Electronic parts catalogue .
- There may be different refrigerant oil capacities for the refrigerant circuit depending on the type of air conditioner compressor. The reason for the different oil quantities in the air conditioner compressor for an otherwise identical refrigerant circuit is the design of the actual air conditioner compressor. Attention is to be paid to these oil quantities. Too much oil in the circuit results in higher pressures and reduced system cooling output. Too little oil may lead to lubrication problems in the air conditioner compressor.

3 - Pulley

- Replace 1) ⇒ page 48
- Removing and installing poly V-belt 1) ⇒ Engine, mechanics; Rep. Gr. 13
- Poly V-belt assignment: ⇒ Electronic parts catalogue

Note

4 - Oil drain plug

5 - Pressure relief valve

6 - Connection with valve

7 - High-pressure sender -G65- 1)

- Removing and installing ⇒ page 33

- ❑ Checking signal ⇒ page 35

8 - Condenser

9 - Receiver

- ❑ The receiver is attached directly to the condenser.

10 - Service connection on high-pressure end

- ❑ Different versions (with primary sealing valve or Schrader valve) depending on refrigerant pipe; distinguishing features ⇒ Air conditioner with refrigerant R134a
- ❑ For air conditioner service station for measuring pressure and draining and filling refrigerant circuit ⇒ Air conditioner with refrigerant R134a
- ❑ Depending on the engine version, certain components (e.g. ACF) may have to be removed for connection of the service coupling.

WARNING

The refrigerant circuit must be drained before removing the service connections (the connection has no valve).

11 - Cap

- ❑ With seal
- ❑ Always to be screwed on

12 - Expansion valve

13 - Evaporator

14 - Service connection on low-pressure end

- ❑ Different versions (with primary sealing valve or Schrader valve) depending on refrigerant pipe; distinguishing features ⇒ Air conditioner with refrigerant R134a
- ❑ For air conditioner service station for measuring pressure and draining refrigerant circuit ⇒ Air conditioner with refrigerant R134a
- ❑ Depending on the engine version, certain components (e.g. ACF) may have to be removed for connection of the service coupling.

WARNING

The refrigerant circuit must be drained before removing the service connections (the connection has no valve).

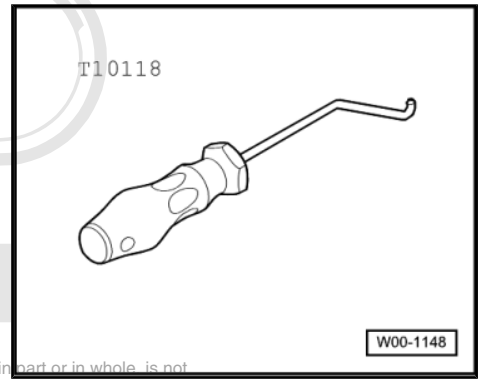
15 - Cap

- ❑ With seal
- ❑ Always to be screwed on

3.2 Removing and installing high-pressure sender -G65-

Special tools and workshop equipment required

- Assembly tool -T10118-



Note

- *The cooling output cannot be checked with the high-pressure sender -G65- removed; the air conditioner operating unit, Climatronic control unit -J255- does not switch on the air conditioner compressor.*
- *The refrigerant circuit remains closed (connection with valve).*
- *Checking operation of high-pressure sender -G65- and signal supplied ⇒ page 37 .*
- *Removal and installation are described in the following on the basis of a vehicle with a 2.0 l TFSI engine and one with a 3.2 l MPI engine. The procedure may differ for vehicles with a different engine (4, 5 or 6-cylinder engine).*
- *After switching off the air conditioner compressor, a relatively long period may elapse with this vehicle before the pressure on the high-pressure end decreases (the expansion valve is cold and the pressure on the low-pressure end increases rapidly after switch-off, the expansion valve closes and the refrigerant can only flow slowly to the low-pressure end).*
- *Depending on the version of the high-pressure sender -G65- , the measured value for the pressure in the refrigerant circuit transmitted by the high-pressure sender -G65- may be too low at low ambient temperatures (ambient temperature less than 5 °C) although the air conditioner is OK and the refrigerant circuit has been properly charged. With air conditioner operating units, Climatronic control unit -J255- with part number "8J0 820 043" up to index "AJ", this may therefore erroneously lead to a fault memory entry at ambient temperatures below 5 °C (fault memory entry: High-pressure sender -G65- "Lower limit value not reached"). If the fault is only displayed as a sporadic fault at ambient temperatures calculated by the air conditioner of above 5 °C and the air conditioner is functioning properly, the fault memory entry can be erased (no further action is necessary). This fault no longer occurs with air conditioner operating units, Climatronic control unit -J255- with part number "8J0 820 043" as of index "AK".*

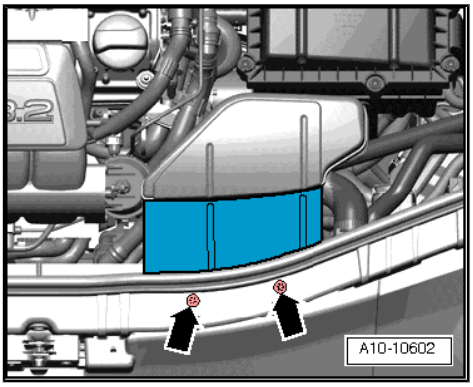
Removing

The high-pressure sender -G65- is located at the bottom right of the condenser.

Note

Depending on the version, it is fitted directly at the condenser or at the refrigerant pipe.

– Detach the poly V-belt from the alternator ⇒ Engine, mechanics; Rep. Gr. 13 (vehicles with 4-cylinder engine only).



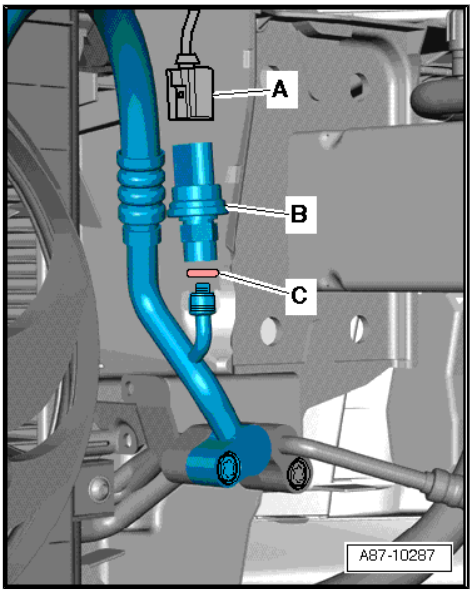
– Screw out the bolts -arrows- and detach the air duct (vehicles with 6-cylinder engine only).

WARNING

If the engine is warm, the radiator fan(s) -V7- may start up, danger of injury.

– Unplug the connector -A-.

– Unscrew the high-pressure sender -G65- -B- from the connection (at the condenser/at the refrigerant pipe).



Installing

• Tightening torque of high-pressure sender -G65- : 8 Nm.

Install in reverse order, paying attention to the following:

– Replace the O-ring -C- ⇒ page 39 . For assignment, refer to ⇒ Electronic parts catalogue .

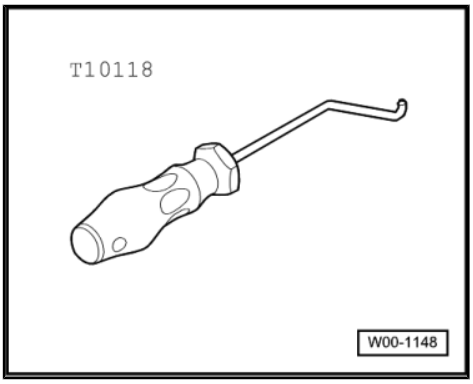
– Secure the high-pressure sender -G65- .

– Position the poly V-belt on the poly V-belt pulleys ⇒ Engine, mechanics; Rep. Gr. 13 (vehicles with 4-cylinder engine only).

3.3 Checking pressure signal from high-pressure sender -G65-

Special tools and workshop equipment required

♦ Assembly tool -T10118-

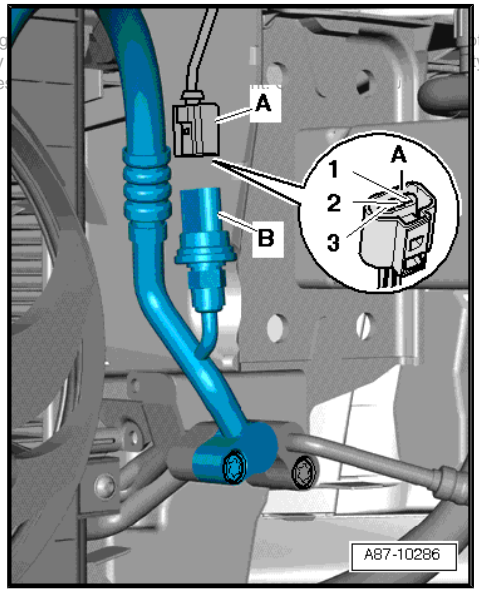


Note

- *The cooling output cannot be checked with the high-pressure sender -G65- removed; the air conditioner operating unit, Climatronic control unit -J255- does not switch on the air conditioner compressor ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *After switching off the air conditioner compressor, a relatively long period may elapse with this vehicle before the pressure on the high-pressure end decreases (the expansion valve is cold and the pressure on the low-pressure end increases rapidly after switch-off, the expansion valve closes and the refrigerant can only flow slowly to the low-pressure end).*
- *Depending on the version of the high-pressure sender -G65- , the measured value for the pressure in the refrigerant circuit transmitted by the high-pressure sender -G65- may be too low at low ambient temperatures (ambient temperature less than 5 °C) although the air conditioner is OK and the refrigerant circuit has been properly charged. With air conditioner operating units, Climatronic control unit -J255- with part number "8J0 820 043" up to index "AJ", this may therefore erroneously lead to a fault memory entry at ambient temperatures below 5 °C (fault memory entry: High-pressure sender -G65- "Lower limit value not reached"). If the fault is only displayed as a sporadic fault at ambient temperatures calculated by the air conditioner of above 5 °C and the air conditioner is functioning properly, the fault memory entry can be erased (no further action is necessary). This fault no longer occurs with air conditioner operating units, Climatronic control unit -J255- with part number "8J0 820 043" as of index "AK".*

Test sequence

The high-pressure sender -G65- -Item B- is located at the bottom right of the condenser.



– Unplug the connector -A-.

Assignment of 3-pin connector at high-pressure sender -G65-

1 - Earth

2 - Signal output - square-wave signal to air conditioner operating unit, Climatronic control unit -J255-

3 - Terminal "75" (positive)

Note

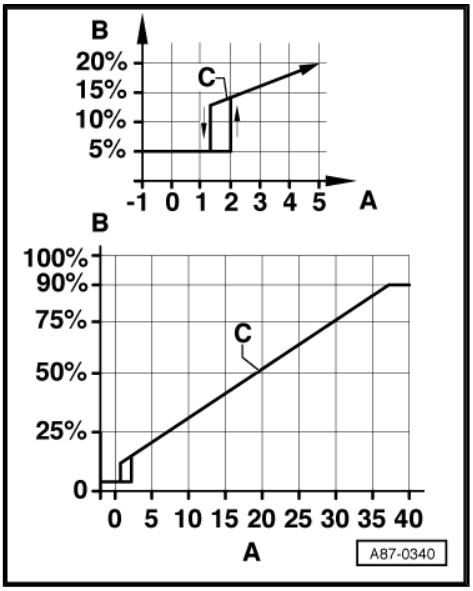
- *The air conditioner compressor is not switched on if the connector -A- is unplugged.*
- *The high-pressure sender -G65- -B- is an electronic control unit which generates a square-wave signal with a ratio which varies with the pressure in the refrigerant circuit*
  ⇒ page 37 .
- Pressure signal from high-pressure sender -G65-
  ⇒ page 37

3.3.1 Pressure signal from high-pressure sender -G65-

-A- Pressure in high-pressure side of refrigerant circuit in bar (absolute)

-B- Ratio of square-wave signal.

-C- Characteristic curve.

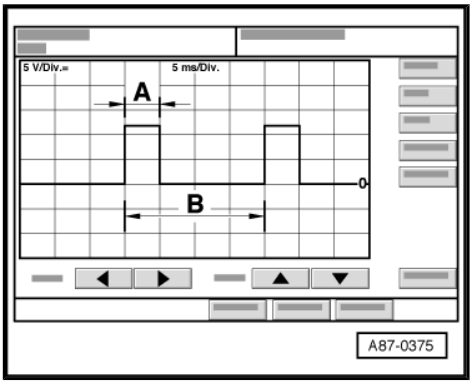


Note

- *As soon as there is no compressor shut-off criterion, the air conditioner operating unit, Climatronic control unit -J255- switches on the air conditioner compressor (by actuating the air conditioner compressor regulating valve -N280-) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- *If no other shut-off criterion is active, the air conditioner operating unit, Climatronic control unit -J255- switches on the air conditioner compressor if the signal ratio is greater than approx. 12 % (corresponding to approx. 1.2 bar absolute) and less than approx. 78 % (corresponding to approx. 32 bar absolute).*
- *If the signal ratio is less than 12 % or greater than 78 %, the air conditioner compressor is not switched on (the air conditioner compressor regulating valve -N280- is not actuated).*
- *The signal ratio and the pressure calculated by the air conditioner operating unit, Climatronic control unit -J255- are indicated in the measured value block ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *At absolute pressure, 0 bar corresponds to an absolute vacuum. Normal ambient pressure thus corresponds to roughly 1 bar absolute. On the scales of most pressure gauges, 0 bar corresponds to an absolute pressure of one bar (can be seen from -1 mark below 0).*
- *Depending on the pressure calculated in the refrigerant circuit with the air conditioner compressor actuated, the air conditioner operating unit, Climatronic control unit -J255- transmits a request by way of the data bus for increased radiator fan -V7- speed to the engine control unit, which then actuates the radiator fan(s) -V7- either directly or via the radiator fan control unit -J293- (at a certain pressure in the refrigerant circuit or as soon as the air conditioner compressor is switched on irrespective of the pressure, depending on the version). The request from the air conditioner operating unit, Climatronic control unit -J255- is displayed in the measured value block ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *At present, the request for actuation of the radiator fan(s) -V7- is only transmitted on the data bus by the air conditioner operating unit, Climatronic control unit -J255- as of a specific pressure in the refrigerant circuit. If the pressure in the refrigerant circuit is greater than approx. 9 bar (6 bar, if the pressure was previously in excess of 9 bar) and less than approx. 20 bar, between 30 and 100 % is requested depending on the pressure.*
- *If the pressure in the refrigerant circuit is less than approx. 9 bar (6 bar if the pressure was previously in excess of 9 bar), actuation of the radiator fan(s) -V7- is currently not requested by the air conditioner operating unit, Climatronic control unit -J255- .*
- *If the pressure in the refrigerant circuit is greater than approx. 20 bar, 100 % actuation of the radiator fan(s) -V7- is requested at present by the air conditioner operating unit, Climatronic control unit -J255- (the actual actuation may however be less than 100 % depending on the version of the engine control unit/ radiator fan control unit -J293-).*
- *The signal generated by the high-pressure sender -G65- is also used for engine control. The air conditioner operating unit, Climatronic control unit -J255- transmits the information via the data bus to the engine control unit (the torque required for driving the air conditioner compressor is governed by the pressure in the refrigerant circuit). Depending on the version of the engine control unit, the signal is displayed there as a ratio in the measured value block ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051*

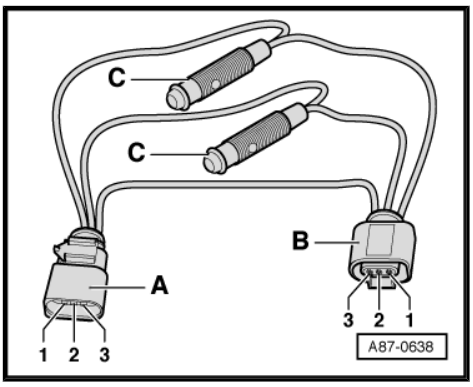
This pattern will appear on the oscilloscope screen (e.g. on the vehicle diagnostic, testing and information system -VAS 5051 A-) if the following conditions are satisfied.

– Ignition on (positive at contact “3” and earth at contact “1” at high-pressure sender -G65-)
– Setting on oscilloscope: 5 V/div. DC (5 V per unit DC voltage) 5 ms/div. (5 milliseconds per unit)
– Test lead (signal wire) connected to contact “2” at high-pressure sender -G65- .
– Test lead (screen) connected to contact “1” (earth at high-pressure sender -G65-).



Note

- *The illustration shows the signal transmitted at a refrigerant circuit pressure of approx. 7 bar absolute, corresponding to a signal ratio of approx. 25 % (level occurring with air conditioner compressor not running, ambient temperature of 30 °C and refrigerant circuit charged).*
- *Pulse width -A- is governed by pressure in refrigerant circuit (area -A- becomes broader as pressure increases).*
- *The signal distance -B- is always 20 milliseconds (corresponding to a frequency of 50 hertz).*
- *The duty cycle is derived from the ratio of pulse width -A- to signal distance -B-.*
- *Test leads from the adapter set -V.A.G 1594/C- can be employed for example for this test or an adapter lead can be made. For this, use one connector -A- and -B- each (with part number 1J0 973 703 and 1J0 973 803 and the corresponding plug contacts), two commercially available sockets for banana plugs -C- and three wires with a cross section of 0.5 mm² for example.*

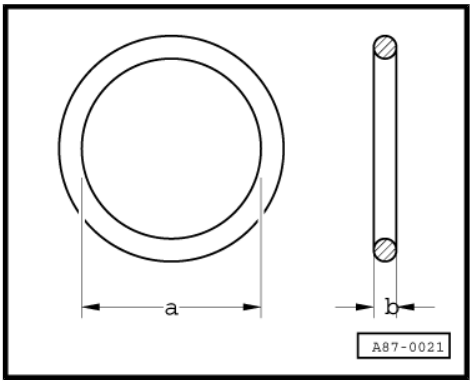


3.4 O-ring seals for refrigerant circuit

- O-ring seals are only ever to be used once and then replaced.
- Coat O-ring seals with refrigerant oil before fitting.
- Pay attention to correct positioning of O-ring seals on pipe or in groove.
- Ensure absolute cleanliness when working (even the slightest contamination, e.g. a single hair, could cause leakage).

Note

- *Only O-ring seals which are resistant to the refrigerant R134a and the corresponding refrigerant oil may be installed. Such O-rings are colour coded to prevent mix-ups (currently “red”, “lilac” or “violet”) ⇒ Electronic parts catalogue .*
- *Dimensions -a- and -b- differ depending on the fitting location of the O-ring: ⇒ Electronic parts catalogue*
- *In addition to the coloured O-ring seals, black O-ring seals are also used at the factory for certain connections.*



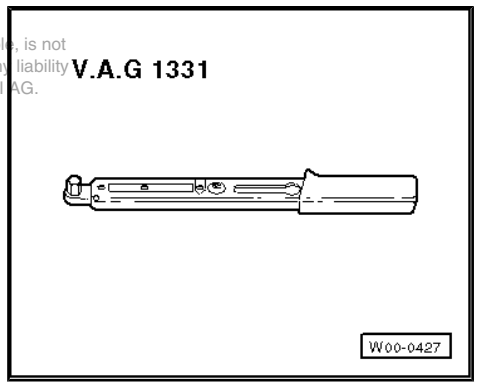
3.5 Detaching air conditioner compressor from holder/attaching (vehicles with 4 or 6-cyl. engine)

Note

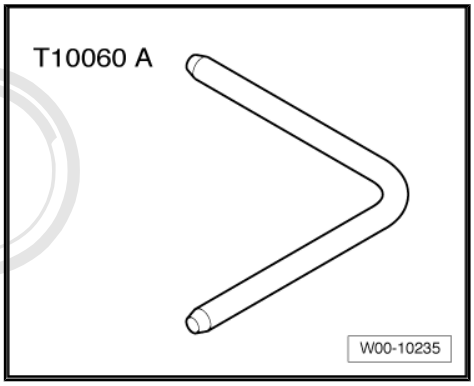
- *The air conditioner compressor can be detached from the holder and re-attached without opening up the refrigerant pipes.*
- *Detaching and attaching the air conditioner compressor are described in the following for a vehicle with a 2.0 l TFSI engine and a 3.2 l MPI engine, each with a "Denso" air conditioner compressor of type "6 SEU 14". There may be differences for vehicles with other engines or a different air conditioner compressor (depending on the engine, it may also be necessary to remove or unfasten certain ancillaries).*
- *Do not drain the refrigerant circuit, do not detach refrigerant hoses and refrigerant pipes from the air conditioner compressor.*
- *Do not unfasten the refrigerant pipes and the corresponding clamps.*
- *After detaching the air conditioner compressor, secure it with a piece of wire for example to the vehicle. Do not leave it suspended from the refrigerant pipes* ⇒ page 44
- *Before removal, mark direction of rotation of poly V-belt with chalk or felt-tipped pen. Running a used belt in the opposite direction could destroy it.*
- *Different air conditioner compressors may be fitted depending on the engine and country version ⇒ Electronic parts catalogue*

Special tools and workshop equipment required

- Torque wrench -V.A.G 1331/- (5 - 50 Nm)



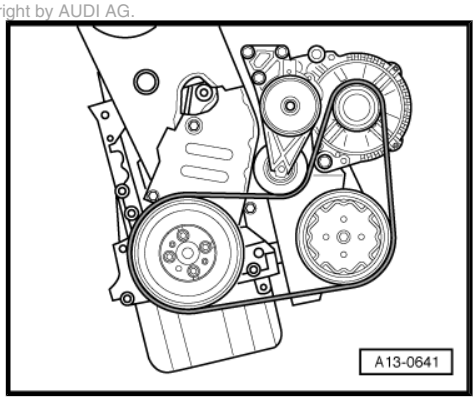
♦ Locking pin -T10060 A-



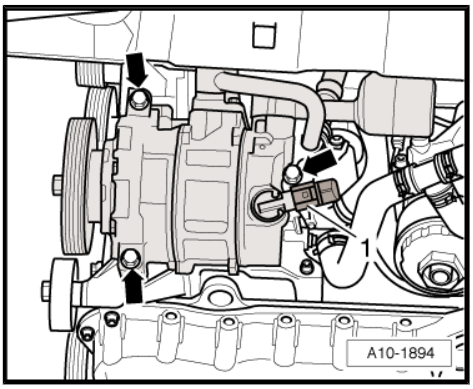
Detaching

– Remove the upper engine cover ⇒ Engine, mechanics; Rep. Gr. 13 (e.g. on vehicle with 2.0 l TFSI engine).

– Mark the direction of the poly V-belt (the illustration shows the layout for a 4-cyl. engine).



– Detach the poly V-belt ⇒ Engine, mechanics; Rep. Gr. 13 .
– Remove the centre noise insulation ⇒ General body repairs, exterior; Rep. Gr. 66 .
– Remove the right noise insulation ⇒ General body repairs, exterior; Rep. Gr. 66 (e.g. on vehicle with 2.0 l TFSI engine).
– If applicable, remove the noise insulation frame (currently fitted for example on the Audi TT Roadster) ⇒ General body repairs, exterior; Rep. Gr. 50 .
– Remove the right air hose (from air pipe between turbocharger and charge air cooler) ⇒ Engine, mechanics; Rep. Gr. 21 (e.g. on vehicle with TFSI engine).

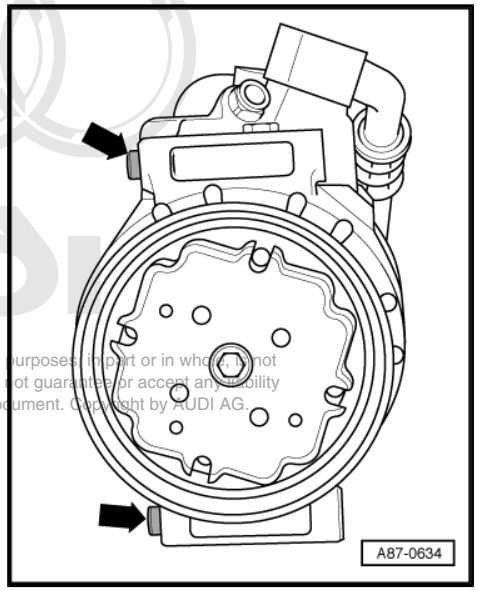


– Unplug the connector -1- at the air conditioning system compressor regulating valve -N280- .
– Screw out the bolts -arrow- for the air conditioner compressor.
– Detach the air conditioner compressor and attach it to the vehicle with a piece of wire for example ⇒ page 44

Attaching

Install in reverse order, paying attention to the following:

– Before securing the air conditioner compressor, check the position of both dowel sleeves -arrows- in the holder or air conditioner compressor.



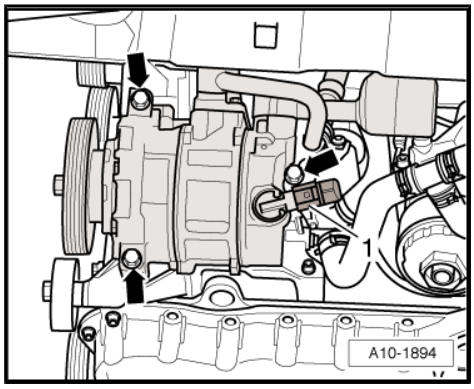
Note

The version of the air conditioner compressor with pulley shown in this illustration is not installed on the Audi TT.

– Tighten the bolts -arrows- (tightening torque: 25 Nm).

– Plug in the connector -1- at the air conditioning system compressor regulating valve -N280- .

– Position the poly V-belt on the poly V-belt pulleys ⇒ Engine, mechanics; Rep. Gr. 13 .



Note

- *After attaching the air conditioner compressor, check the routing of the refrigerant pipes. They must be inserted in the holders provided (if fitted, depends on engine).*
- *Check the refrigerant pipes and the corresponding holders for adequate clearance with respect to the other components, ensuring a sufficient distance between the belt, holder and pulley.*

3.6 Detaching air conditioner compressor from holder/attaching (vehicles with 5-cyl. engine)

Note

- *The air conditioner compressor can be detached from the holder for the ancillaries and re-attached without opening up the refrigerant pipes.*
- *The holder for the ancillaries (for the air conditioner compressor and associated components) can be removed and installed without having to open the refrigerant circuit.*
- *Vehicles with a 5-cyl. engine have 2 poly V-belts attached to the air conditioner compressor. The air conditioner compressor is therefore provided with a double-belt pulley. For removal of the poly V-belts, refer to ⇒ Engine, mechanics; Rep. Gr. 13 .*
- *For the routing of the two poly V-belts, refer to ⇒ Engine, mechanics; Rep. Gr. 13 and ⇒ page 45*
- *In the following a description is given of the detaching and attaching of the air conditioner compressor in a vehicle with a 2.5 l TFSI engine with a "Sanden" air conditioner compressor. There may be differences for vehicles with other engines or a different air conditioner compressor (depending on the engine, it may also be necessary to remove or unfasten certain ancillaries).*
- *Do not drain the refrigerant circuit, do not detach refrigerant hoses and refrigerant pipes from the air conditioner compressor.*
- *Do not unfasten the refrigerant pipes and the corresponding clamps.*
- *After detaching the air conditioner compressor, secure it with a piece of wire for example to the vehicle. Do not leave it suspended from the refrigerant pipes ⇒ page 44*
- *Before removing, mark the direction of the poly V-belts with chalk or a felt-tip pen. Running a used belt in the opposite direction could destroy it.*
- *Different air conditioner compressors may be fitted depending on the engine and country version ⇒ Electronic parts catalogue*

Detaching air conditioner compressor from holder for ancillaries/ re-attaching

– Perform the preparatory work in the manner described for the 4 and 6-cyl. engine ⇒ page 40 .

– Detach the air conditioner compressor from the 5-cyl. engine in the manner described for the 4 and 6-cyl. engine ⇒ page 40 .

Arrangement of the air conditioner compressor at the holder for ancillaries

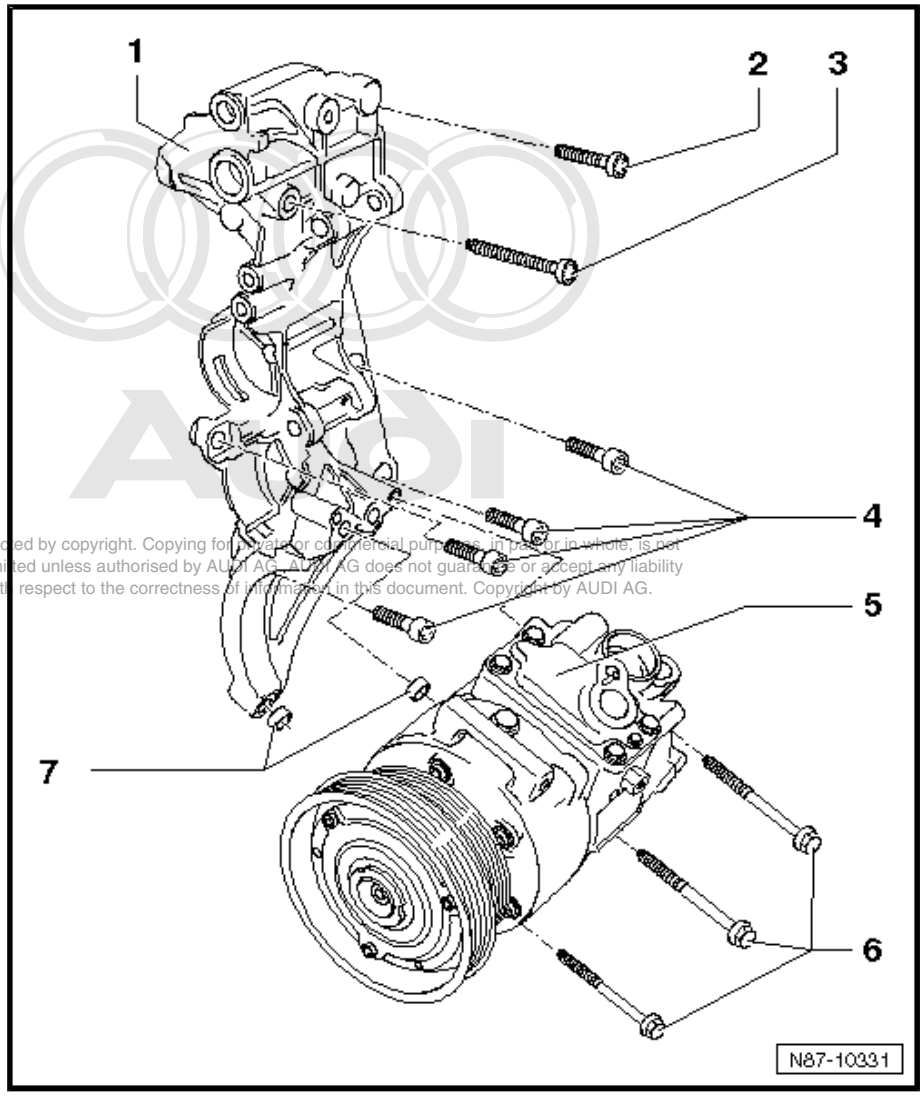
1 - Holder for ancillaries for alternator and air conditioner compressor

- Pay attention to the correct version ⇒ Electronic parts catalogue .
- Removing and installing holder for ancillaries ⇒ Engine, mechanics; Rep. Gr. 13

Removing

– Unfasten the air conditioner compressor, screw out the hexagon bolts -6-. Detach the air conditioner compressor from the holder for ancillaries and attach to the body using a piece of welding wire for example ⇒ page 44

– Screw out the bolts from the holder for ancillaries.



2 - Multi-point socket head bolt

❑ 25 Nm

3 - Multi-point socket head bolt

❑ 25 Nm

4 - Hexagon socket head bolt

❑ 25 Nm

5 - Air conditioner compressor

❑ Removing and installing ⇒ page 149

6 - Hexagon bolts

❑ 25 Nm

7 - Dowel sleeves

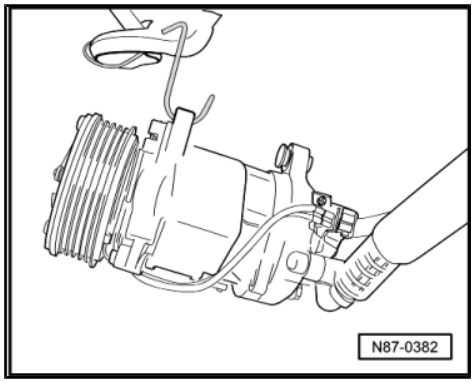
❑ 2x

❑ Pay attention to correct version and proper positioning between holder for ancillaries and air conditioner compressor.

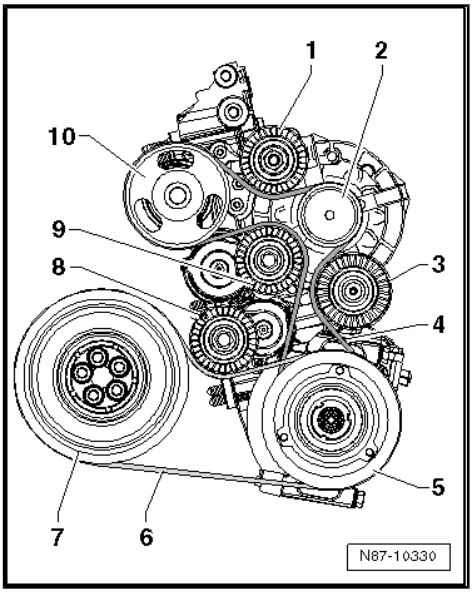
Attaching air conditioner compressor to body

If the air conditioner compressor is removed without opening the refrigerant circuit, the air conditioner compressor is to be attached to the body using a piece of welding wire for example.

In doing so, take care not to strain the refrigerant hoses at the air conditioner compressor.



Routing of the two poly V-belts



1 - Idler wheel, top
2 - Poly V-belt pulley - alternator
3 - Idler wheel, bottom
4 - Poly V-belt for alternator and coolant pump
5 - Poly V-belt pulley - air conditioner compressor
6 - Poly V-belt for air conditioner compressor
7 - Poly V-belt pulley - crankshaft
8 - Tensioning roller for poly V-belt - air conditioner compressor
9 - Tensioning roller for poly V-belt - alternator and coolant pump
10 - Poly V-belt pulley - coolant pump

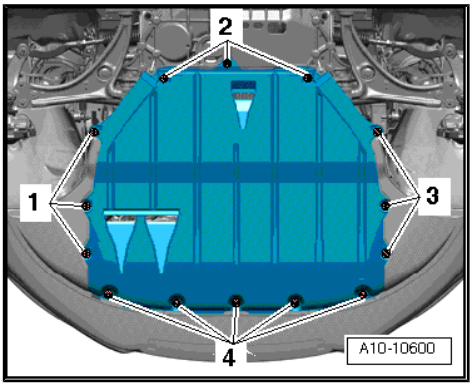
3.7 Checking cut-in signal for air conditioner compressor regulating valve -N280-

Note

- *The following describes testing of a "Denso" air conditioner compressor of type "6 SEU 14". Checking is to be performed in the same manner for vehicles with a different type of compressor or from a different manufacturer.*
- *The following describes testing for a vehicle with a 2.0 l TFSI engine and one with a 3.2 l MPI engine. The procedure may vary on vehicles with a different 4-cyl. engine or with a 5 or 6-cyl. engine.*

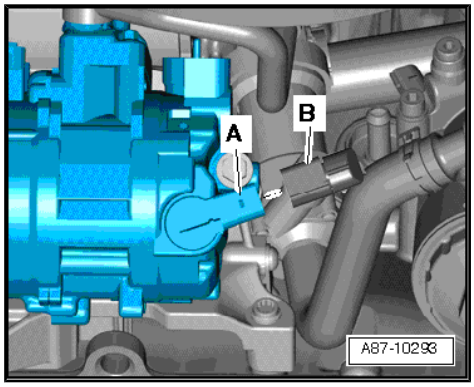
Preparation

– Switch off ignition.
– Remove the top engine cover (e.g. on vehicles with 4-cyl. engine on which the connector is accessible from above, not necessary for 2.0 l TFSI engine) ⇒ Engine, mechanics; Rep. Gr. 13 .
– Remove the centre noise insulation (e.g. on vehicles with 2.0 l TFSI engine and/or 3.2 l MPI engine, the connector is not accessible from above with these engines). ⇒ General body repairs, exterior; Rep. Gr. 66



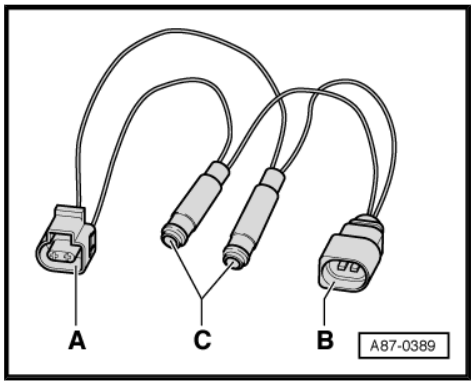
Test sequence

– Unplug the connector -B- at the air conditioning system compressor regulating valve -N280- -A-.
– Use an adapter lead from the adapter set -V.A.G 1594 C- to re-establish the connection between the connector -A- and the connector -B- at the air conditioner compressor regulating valve -N280- .

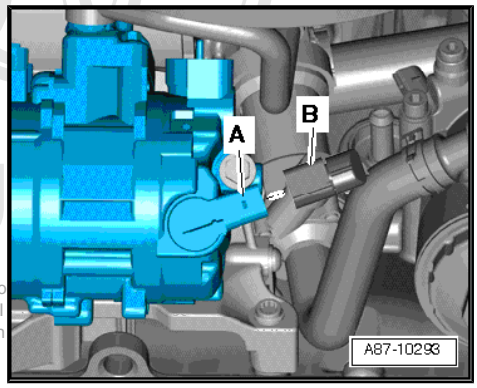


Note

- *Actuation of the air conditioner compressor regulating valve -N280- and the current measured by the air conditioner operating unit, Climatronic control unit -J255- which flows via the air conditioner compressor regulating valve -N280- are displayed in the measured value block of the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- *An adapter lead may also be made for this test. This requires, for example, one connector -A- and -B- each (with part number 1J0 973 702 and 1J0 973 802 and the corresponding plug contacts), two commercially available sockets for banana plugs -C- and two wires with a cross section of 0.5 mm^2.*



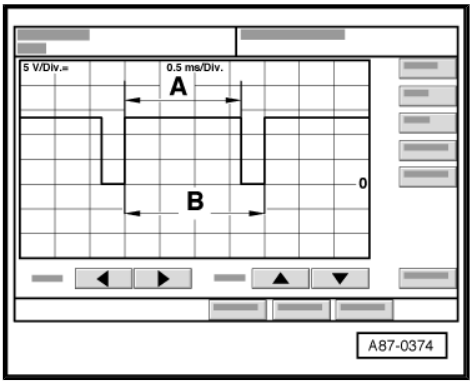
– Connect the probe -VAS 5051/8- to the adapter leads.
– Test lead (signal wire) to contact -2- of connector -B-.
– Test lead (screen, earth) to contact -1- of connector -B-.
– On the vehicle diagnostic, testing and information system -VAS 5051 A- , set Measurement mode: DSO (digital storage oscilloscope).
– Then select the settings 5 V / div DC, 0.5 ms/div (5 V DC and 0.5 milliseconds per unit).
– Start the engine.
– On the air conditioner operating unit, Climatronic control unit -J255- , set the temperature to the “cold” stop (maximum cooling output).
– On the air conditioner operating unit, Climatronic control unit -J255- press the “AC” button (with air conditioner compressor ON indicator) to activate and deactivate the air conditioner compressor regulating valve -N280- .



Display on oscilloscope screen will be as follows depending on setting on air conditioner operating unit, Climatronic control unit -J255- :

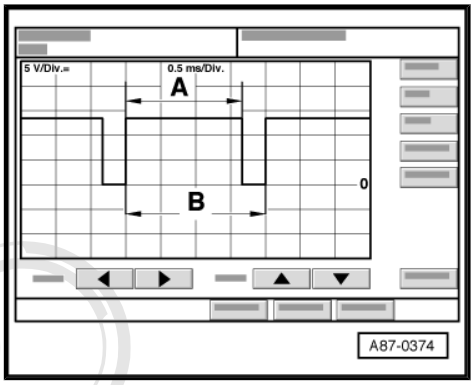
– In “OFF” or “AC off” mode (lamp in “AC” button not lit), no square-wave signal (air conditioner compressor regulating valve -N280- is not actuated).

– In “Auto” and “AC on” mode (lamps in buttons light) and with temperature set to “cold” stop (maximum cooling output), square-wave signal with a pulse width -A- between 75 % and 100 % (the regulating valve is actuated).



Note

- *The illustration shows a signal with a signal ratio of approx. 80 %.*
- *The pulse width -A- is governed by the required cooling output, the electrical system voltage etc. (over the width of area -A-, the current is controlled via the air conditioner compressor regulating valve -N280- by the air conditioner operating unit, Climatronic control unit -J255-).*
- *The signal distance -B- is always 2 milliseconds (corresponding to a frequency of 500 hertz).*
- *The duty cycle is derived from the ratio of pulse width -A- to signal distance -B-.*



– The setting on the air conditioner operating unit, Climatronic control unit -J255- and the measured ambient influences govern the pulse width of the square-wave signal (signal ratio between 100 % and greater than 30 %, the regulating valve is actuated such that the compressor output required to obtain the specified temperatures is achieved).

Note

- *In “Auto” and “AC on” mode (lamps in buttons light) and with temperature set to “cold” stop, the air conditioner compressor regulating valve -N280- is actuated such that the maximum permissible current of approx. 0.65 A flows via the air conditioner compressor regulating valve -N280- (maximum compressor output).*
- *In control mode, the actuation time is governed by the required cooling output and the vehicle electrical system voltage, for example. It is however always of sufficient duration to achieve a mean current of 0.3 A.*

4 Replacing air conditioner compressor pulley

Note

At the start of production, the Audi TT is only fitted with "Denso" air conditioner compressors of type "6 SEU 14". Depending on the engine and production period, air conditioner compressors of other makes (e.g. "Sanden", type "PXE 16" or "ZJX" for vehicles with a 5-cyl. engine) or a different model may be fitted at a later date ⇒ Electronic parts catalogue .

- Preparation ⇒ page 48
- Replacing pulley ("Denso" air conditioner compressor, version "1") ⇒ page 49 .
- Replacing pulley ("Denso" air conditioner compressor, version "2") ⇒ page 52 .
- Replacing pulley ("Sanden" air conditioner compressor) ⇒ page 56 .

4.1 Preparation

– Remove noise insulation. ⇒ General body repairs, exterior; Rep. Gr. 66

– Slacken off and detach the poly V-belt(s). ⇒ Engine, Mechanical Components; Rep. Gr. 13

Note

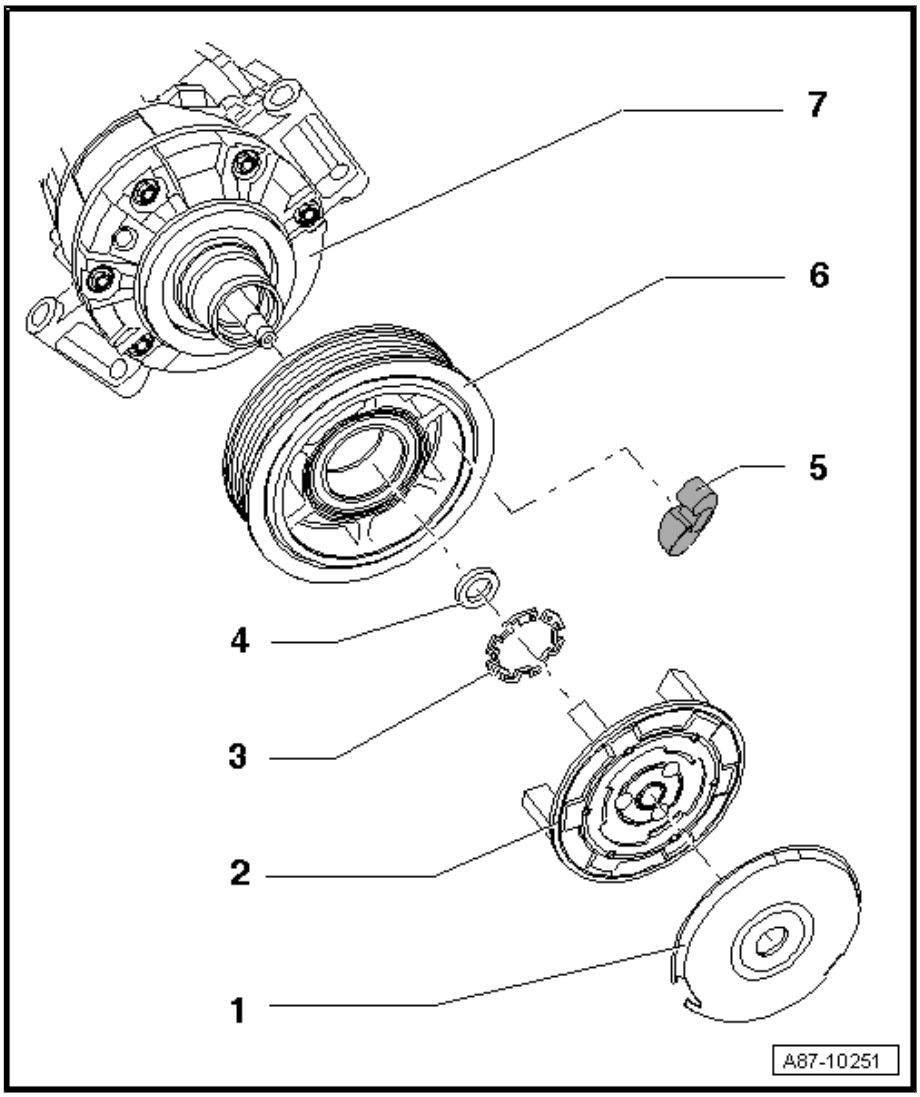
- *The air conditioner compressor can be detached from the holder and re-attached without opening up the refrigerant pipes ⇒ page 40 .*
- *Before removal, mark direction of rotation of poly V-belt with chalk or felt-tipped pen. Running a used belt in the opposite direction could destroy it.*
- *Vehicles with a 5-cyl. engine have 2 poly V-belts attached to the air conditioner compressor. The air conditioner compressor is therefore provided with a double-belt pulley.*

– If applicable, detach the air conditioner compressor from the engine ⇒ page 40 (for vehicles with 4 or 6-cyl. engine) or ⇒ page 43 (for vehicles with 5-cyl. engine).

4.2 Replacing pulley (“Denso” air conditioner compressor, version “1”)

Note

- *If the pulley overload safeguard has been tripped, check the freedom of movement of the air conditioner compressor before replacing the pulley. Replace the entire air conditioner compressor if it is stiff.*
- *Depending on the engine version, detachment of the pulley may involve separating the air conditioner compressor from the engine ⇒ page 40 .*
- *Various pulley designs may be fitted depending on the type of air conditioner compressor and the engine version ⇒ Electronic parts catalogue .*
- *Detaching pulley from air conditioner compressor/re-attaching ⇒ page 50 .*



1 - Circlip with rubber disc

- ❑ Remove carefully using a small screwdriver or pointed-nose pliers (paying particular attention to the pulley).
- ❑ Detaching and attaching ⇒ page 50
- ❑ The vulcanised rubber disc is designed to provide noise insulation with low compressor output when the engine is idling.

2 - Drive plate

- ❑ Screwed to the air conditioner compressor drive shaft
- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ With overload safeguard; this is tripped in the event of excessive torque (e.g. stiff air conditioner compressor) and the pulley just freewheels without driving the air conditioner compressor.
- ❑ Detaching/attaching ⇒ page 50
- ❑ Tightening torque 35 Nm

3 - Circlip

- ❑ Replace
- ❑ Ensure correct positioning (flat side facing air conditioner compressor)
- ❑ Removing and installing ⇒ page 50

4 - Spacer

- ❑ Dimensions: 17.5 x 10 x 3 mm

5 - Rubber elements

- ❑ 6x, ensure correct installation ⇒ page 50
- ❑ Decouples the pulley from the air conditioner compressor drive shaft, thus damping vibration and noise.
- ❑ On installation, moisten the rubber elements slightly with tyre assembly paste or soap solution for example to provide lubrication.

6 - Pulley

- ❑ The pulley is made of plastic, is sensitive to impact and should therefore be treated with extreme care.
- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Detaching and attaching ⇒ page 50

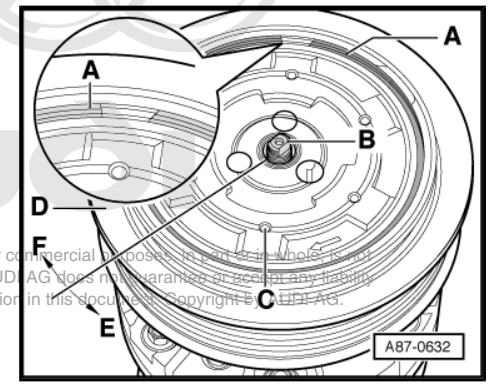
7 - Air conditioner compressor

- ❑ Different models may be fitted depending on the engine version and country version of the vehicle ⇒ Electronic parts catalogue .
- ❑ Clean the air conditioner compressor flange before fitting the pulley.

4.3 Detaching pulley (version “1”) from “Denso” air conditioner compressor/re-attaching

Note

- *Heed the notes on pulley replacement ⇒ page 49 .*
- *Perform the preparatory work as for pulley detachment ⇒ page 48 .*
- *The pulley is made of plastic, is sensitive to impact and should therefore be treated with extreme care.*
- *If the overload safeguard of the drive plate -C- has been tripped, remove the circlip -A- and then prise the drive plate off the pulley -D-.*
- *Circlips -A- with a vulcanised rubber disc are fitted to minimise noise ⇒ page 49 and ⇒ Electronic parts catalogue . This rubber disc reduces the rattling (castanet-like) noise which can occur at the pulley particularly in the case of vehicles with diesel engine in air conditioner “Econ” mode (“AC off”) (in air conditioner full-load operation the noise is scarcely audible).*
- Detaching/attaching pulley ⇒ page 51 .



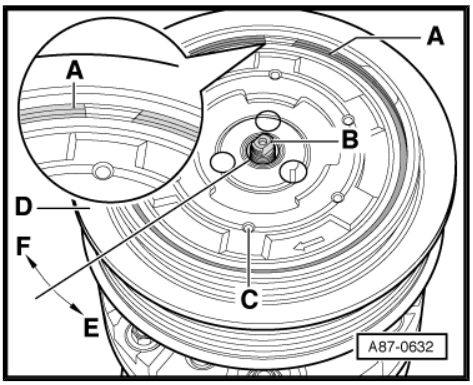
4.3.1 Detaching and re-attaching pulley

Removing

– Use a small screwdriver or pointed-nose pliers, for example, to carefully remove the circlip -A- (with the vulcanised rubber disc ⇒ page 49), taking particular care not to damage the pulley.

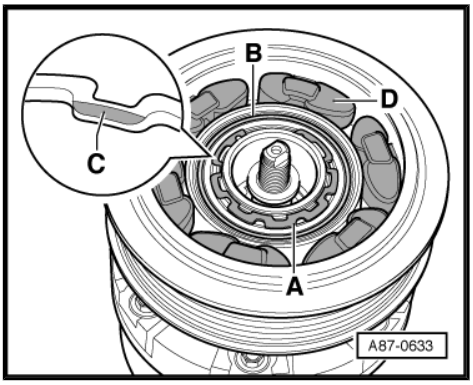
– Hold the air conditioner compressor drive shaft -B- in position with a commercially available Allen key and turn the drive plate -C- with the pulley -D- in the direction of arrow -E- (tightening torque 35 Nm).

– Detach the drive plate -C-.



– Remove circlip -A-.

– Detach pulley -B-.



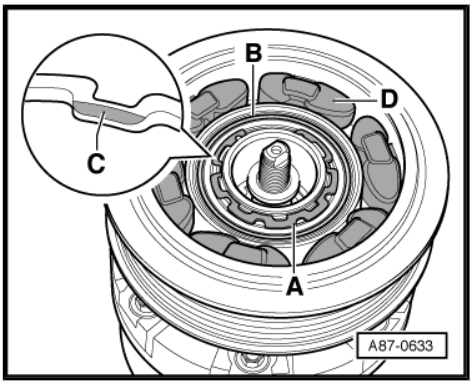
Attaching

Note

Replace circlip -A-.

Clean the air conditioner compressor flange before attaching the pulley.

On fitting the circlip -A-, take care not to bend it open more than necessary.



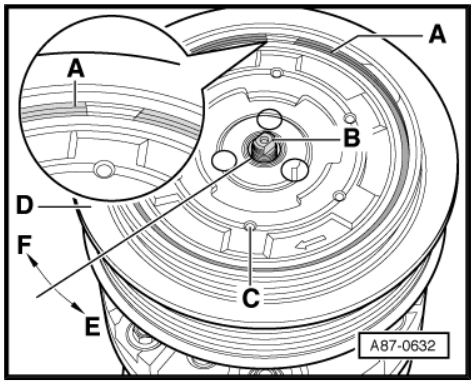
– Install pulley -B-.

– Ensure correct insertion of the circlip -A-. The bevelled side -C- faces away from the air conditioner compressor (flat side faces compressor).

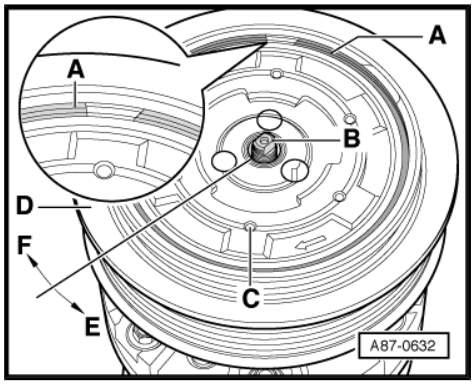
– Insert the rubber elements -D- in the pulley -B- as shown.

– For fitting the drive plate, moisten the rubber elements -D- slightly with tyre assembly paste or soap solution for example to provide lubrication.

– Insert the drive plate -C- in the rubber elements -D- (refer to illustration above) until it makes contact with the shaft of the air conditioner compressor -B-.



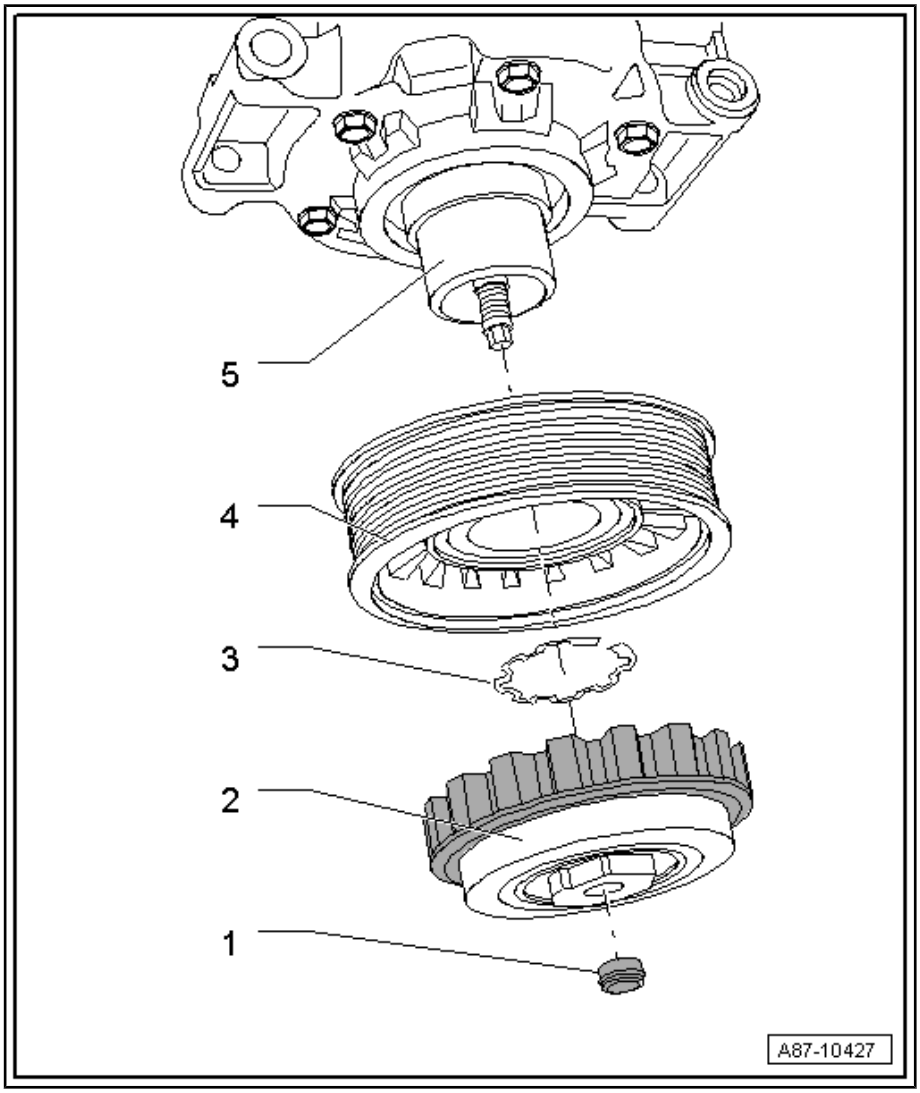
– Screw the drive plate -C- onto the compressor shaft -B- by turning it in the direction of arrow -F-.
– By turning it with a commercially available strap wrench (fabric strap) in the direction of arrow -F-, tighten the drive plate -C- (by way of the pulley -D-) to 35 Nm. Hold the compressor shaft -B- in position with a commercially available Allen key.
– Fit the circlip -A- (with vulcanised rubber disc).



4.4 Replacing pulley (“Denso” air conditioner compressor, version “2”)

Note

- *If the pulley overload safeguard has been tripped, check the freedom of movement of the air conditioner compressor before replacing the pulley. Replace the entire air conditioner compressor if it is stiff.*
- *Depending on the engine version, detachment of the pulley may involve separating the air conditioner compressor from the engine* ⇒ page 40 .
- *Various pulley designs may be fitted depending on the type of air conditioner compressor and the engine version ⇒ Electronic parts catalogue .*
- *The pulley is supplied as a replacement part together with the drive plate and cap under one part number. The pulley and drive plate are held together by a screw, which is not required and can therefore be disposed of. This screw is used at the factory to apply a pre-determined quantity of a specific grease to the thread of the drive plate. This quantity of grease is sufficient for once-only screwing of the drive plate onto the compressor shaft (following unscrewing, drive plates are therefore not to be re-used) ⇒ Electronic parts catalogue .*
- *Detaching pulley from air conditioner compressor/re-attaching* ⇒ page 50 .



1 - Cap

2 - Drive plate

- ❑ Replace
- ❑ Bolted to drive shaft of air conditioner compressor, clean the thread of the compressor shaft before screwing on the drive plate.

Note

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ With overload safeguard; this is tripped in the event of excessive torque (e.g. stiff air conditioner compressor) and the pulley just freewheels without driving the air conditioner compressor.
- ❑ With rubber elements for decoupling the pulley from the air conditioner compressor drive shaft; these are designed to damp vibration and noise.
- ❑ On installation, moisten the rubber elements slightly with tyre assembly paste or soap solution for example to provide lubrication.
- ❑ Detaching/attaching ⇒ page 50
- ❑ Tightening torque 30 Nm

3 - Circlip

- ❑ Renew
- ❑ Ensure correct positioning (flat side facing air conditioner compressor)
- ❑ Removing and installing ⇒ page 50

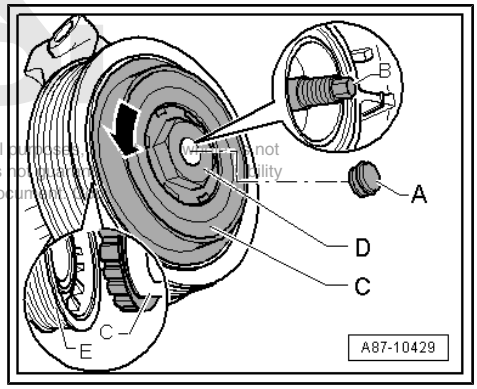
4 - Pulley

- ❑ The pulley is made of plastic, is sensitive to impact and should therefore be treated with extreme care
- ❑ Different versions (depending for example on type of engine) ⇒ Electronic parts catalogue
- ❑ Detaching and attaching ⇒ page 54

5 - Air conditioner compressor

- ❑ Different models may be fitted depending on the engine version and country version of the vehicle ⇒ Electronic parts catalogue
- ❑ Clean the air conditioner compressor flange before fitting the pulley.
- ❑ Clean thread of compressor shaft before screwing on drive plate and coat thread slightly with grease

4.5 Detaching pulley from “Denso” air conditioner compressor/re-attaching (version “2”)



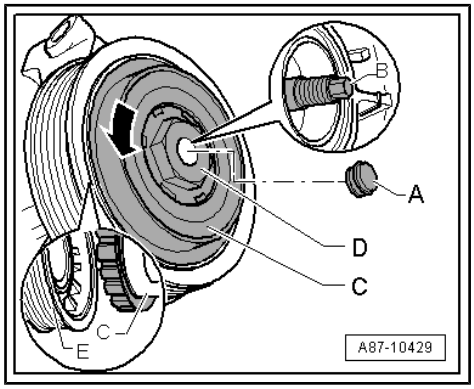
Note

- *Heed the notes on replacement of the pulley -E- ⇒ page 49 (replacing version “1” pulley).*
- *Perform the preparatory work for pulley detachment ⇒ page 48 .*
- *The pulley is made of plastic, is sensitive to impact and should therefore be treated with extreme care.*
- *If the overload safeguard of the drive plate -C- has been tripped, the pulley -E- can rotate with the outer section of the drive plate -C- without the compressor shaft -B- and the hexagon -D- attached to the drive plate (inner section of drive plate -C-) also turning.*

- Detaching/attaching pulley ⇒ page 54 .

4.5.1 Detaching/attaching pulley

Detaching



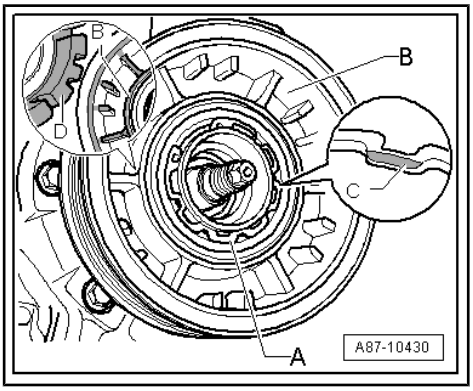
– Remove the cap -A-.
– Hold the air conditioner compressor drive shaft -B- with a commercially available hexagon socket wrench (7 mm) for example and turn the drive plate -C- with the pulley -E- in arrow direction -arrow-.

Note

The torque for driving the air conditioner compressor is applied to the compressor shaft by way of the bolted joint of the drive plate -C-. If in the course of air conditioner compressor operation the drive plate -C- has become so firmly attached to the compressor shaft that it can no longer be unfastened (the 7 mm hexagon socket wrench -B- can no longer transmit the necessary torque), the air conditioner compressor must be replaced.

– Detach the drive plate -C-.

– Remove circlip -A-.
– Detach pulley -B-.



Installing

Note

Renew circlip -A-.

Clean the air conditioner compressor flange before attaching the pulley -B-.

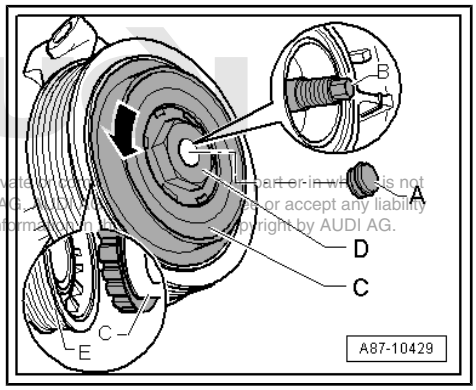
On fitting the circlip -A-, take care not to bend it open more than necessary.

– Fit the pulley -B-.
– Ensure correct insertion of the circlip -A-. The bevelled side -C- faces away from the air conditioner compressor (flat side faces compressor).
– Clean the thread of the compressor shaft before attaching the drive plate.

Note

The thread of the new drive plate is pre-greased at the factory with a pre-determined quantity of a specific grease.

– For fitting the drive plate, moisten the rubber elements -D- slightly with tyre assembly paste or soap solution for example to provide lubrication.
– Insert rubber elements -D- into pulley -B- as shown.
– Press the rubber element of the drive plate -C- into the pulley -E- until the drive plate -C- makes contact with the thread of the shaft of the air conditioner compressor -B-.
– Screw the drive plate -C- onto the compressor shaft -B- by turning it in the direction opposite to the arrow -arrow-.
– Hold the air conditioner compressor drive shaft -B- with a commercially available hexagon socket wrench (7 mm) for example and turn the drive plate -C- with the pulley -E- in the direction opposite to the arrow -arrow- (tightening torque 30 Nm).



4.6 Replacing pulley (“Sanden” air conditioner compressor)

Note

- *The pulley is sensitive to impact and should therefore be treated with extreme care.*
- *If the pulley overload safeguard has been tripped, check the freedom of movement of the air conditioner compressor before replacing the pulley. Replace the entire air conditioner compressor if it is stiff.*
- *Depending on the engine version, detachment of the pulley may involve separating the air conditioner compressor from the engine* ⇒ page 40 .
- *Various pulley designs may be fitted depending on the type of air conditioner compressor and the engine version. Attention is therefore to be paid to correct assignment ⇒ Electronic parts catalogue .*

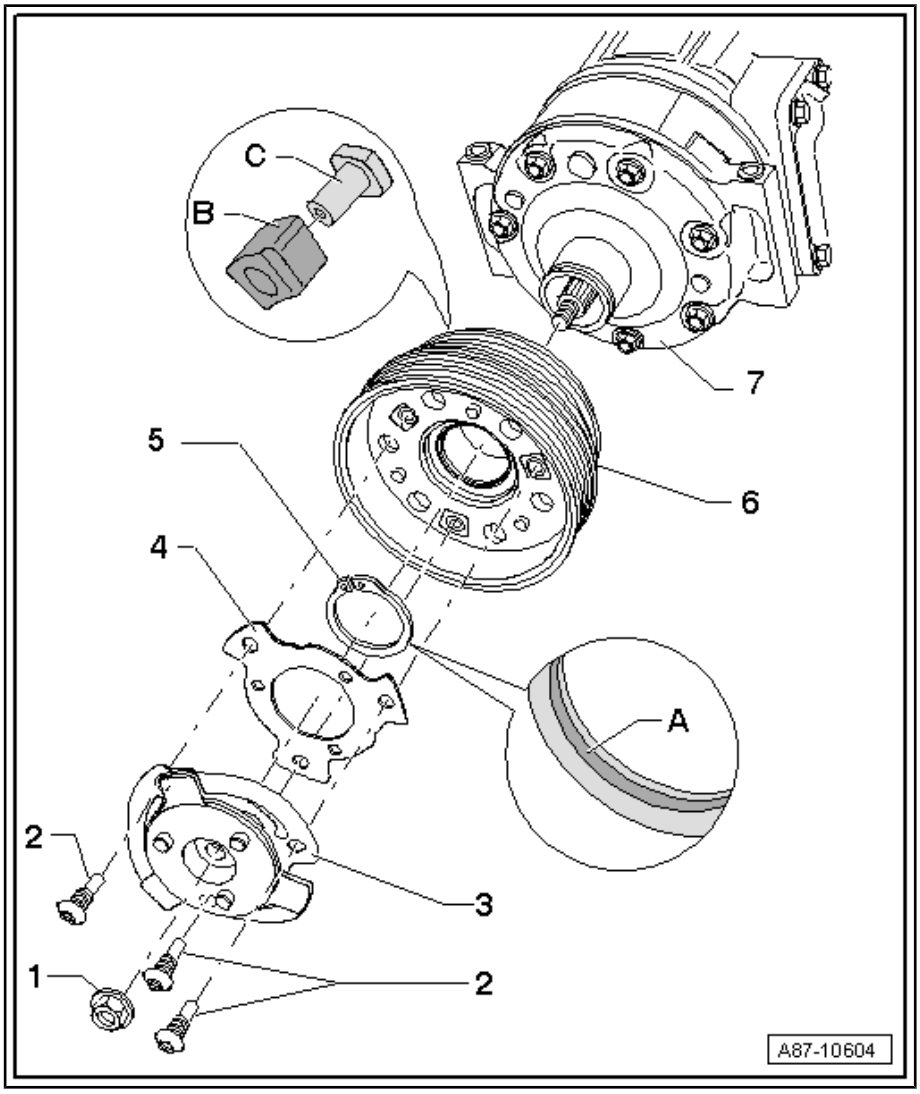
– Perform the preparatory work for pulley detachment ⇒ page 48 .

Replacing version “1” pulley (fitted on vehicles with 5-cyl. TFSI engine)

1 - Hexagon nut

Note

- ❑ To unfasten and tighten the hexagon nut, hold the pulley in position with a commercially available strap wrench (with fabric strap).
- ❑ Before screwing on, remove the old locking fluid from the hexagon nut thread and the thread of the air conditioner compressor shaft.
- ❑ Apply locking fluid when fitting the hexagon nut (e.g. D 000 600 A2) ⇒ Electronic parts catalogue .
- ❑ Tightening torque for hexagon nut 25 Nm



2 - Bolt

- ❑ To slacken off and tighten the bolts, hold the pulley in position with a commercially available strap wrench (with fabric strap).
- ❑ Tightening torque 12 Nm
- ❑ Before screwing in, remove the old locking fluid from the bolt threads and the threads of the pulley.
- ❑ Apply locking fluid when fitting the bolts (e.g. D 000 600 A2) ⇒ Electronic parts catalogue .

3 - Drive plate

- ❑ With overload safeguard (attachment of spring elements); this is tripped in the event of excessive torque (e.g. stiff air conditioner compressor) and the pulley just free-wheels without driving the air conditioner compressor.
- ❑ The spring elements of the drive plate dampen vibrations and reduce noise.

4 - Spacer

5 - Circlip

- ❑ Replace
- ❑ Fit in correct position with the bevelled side -A- facing away from the air conditioner compressor (flat side towards compressor)
- ❑ On fitting the circlip, take care not to bend it open more than necessary.

6 - Double-belt pulley

- ❑ Clean the air conditioner compressor flange before fitting the pulley.
- ❑ With rubber elements -B- and threaded plates -C- for isolating the pulley from the air conditioner compressor drive shaft (the rubber elements dampen vibrations and reduce noise).

Note

7 - Air conditioner compressor

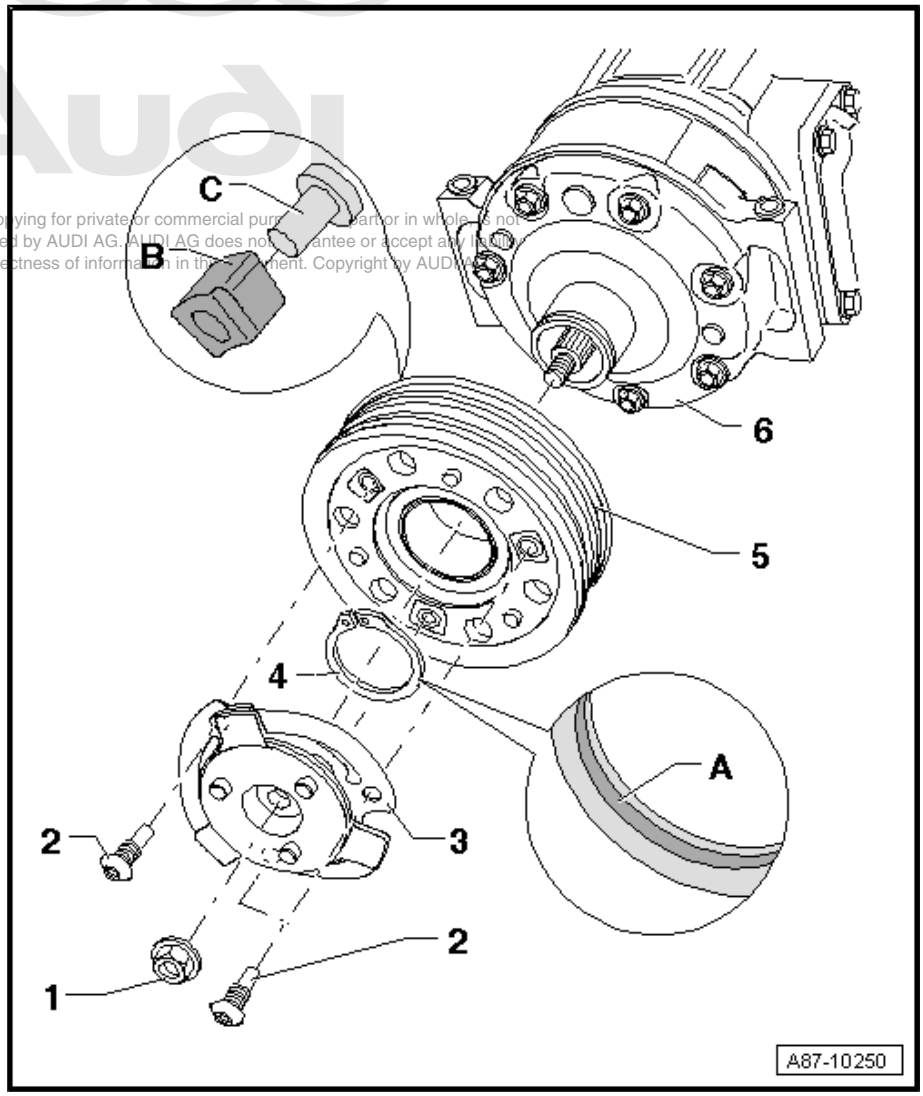
- Different models may be fitted depending on the engine version and country version of the vehicle ⇒ Electronic parts catalogue .
- Clean the air conditioner compressor flange before fitting the pulley.

Replacing version “2” pulley (fitted on vehicles with 4 or 6-cyl. engine)

1 - Hexagon nut

Note

- To unfasten and tighten the hexagon nut, hold the pulley in position with a commercially available strap wrench (with fabric strap).
- Before screwing on, remove the old locking fluid from the hexagon nut thread and the thread of the air conditioner compressor shaft.
- Apply locking fluid when fitting the hexagon nut (e.g. D 000 600 A2) ⇒ Electronic parts catalogue .
- Tightening torque for hexagon nut 25 Nm



2 - Bolt

- To slacken off and tighten the bolts, hold the pulley in position with a commercially available strap wrench (with fabric strap).
- Tightening torque 12 Nm
- Before screwing in, remove the old locking fluid from the bolt threads and the threads of the pulley.
- Apply locking fluid when fitting the bolts (e.g. D 000 600 A2) ⇒ Electronic parts catalogue .

3 - Drive plate

- With overload safeguard (attachment of spring elements); this is tripped in the event of excessive torque (e.g. stiff air conditioner compressor) and the pulley just free-wheels without driving the air conditioner compressor.
- The spring elements of the drive plate dampen vibrations and reduce noise.

4 - Circlip

- Replace
- Fit in correct position with the bevelled side -A- facing away from the air conditioner compressor (flat side towards compressor)
- On fitting the circlip, take care not to bend it open more than necessary.

5 - Pulley

- ❑ Clean the air conditioner compressor flange before fitting the pulley.
- ❑ With rubber elements -B- and threaded plates -C- for isolating the pulley from the air conditioner compressor drive shaft (the rubber elements dampen vibrations and reduce noise).

Note

6 - Air conditioner compressor

- ❑ Different models may be fitted depending on the engine version and country version of the vehicle ⇒ Electronic parts catalogue .
- ❑ Clean the air conditioner compressor flange before fitting the pulley.

5 Components for control and regulation of air conditioner not located in passenger compartment

Note

- *In the event of a fault in the system, start by reading out the fault memory of the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- *If no fault is displayed, read out the measured value block of the air conditioner operating unit, Climatronic control unit -J255- and actuate any problematic component by way of the "Final control diagnosis" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *Electrical checking of the various components (control motors, potentiometers and senders) is described in the guided fault-finding routine ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *Refrigerant circuit servicing work is described as of ⇒ page 143 .*

- Perform the following operations on completion of repair work:

– Interrogate the fault memory of the air conditioner operating unit, Climatronic control unit -J255- and erase any faults displayed ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

– Check the encoding of the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

– If applicable, check the adaption of the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

– Perform air conditioner basic setting ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

- Components not located in passenger compartment ⇒ page 61

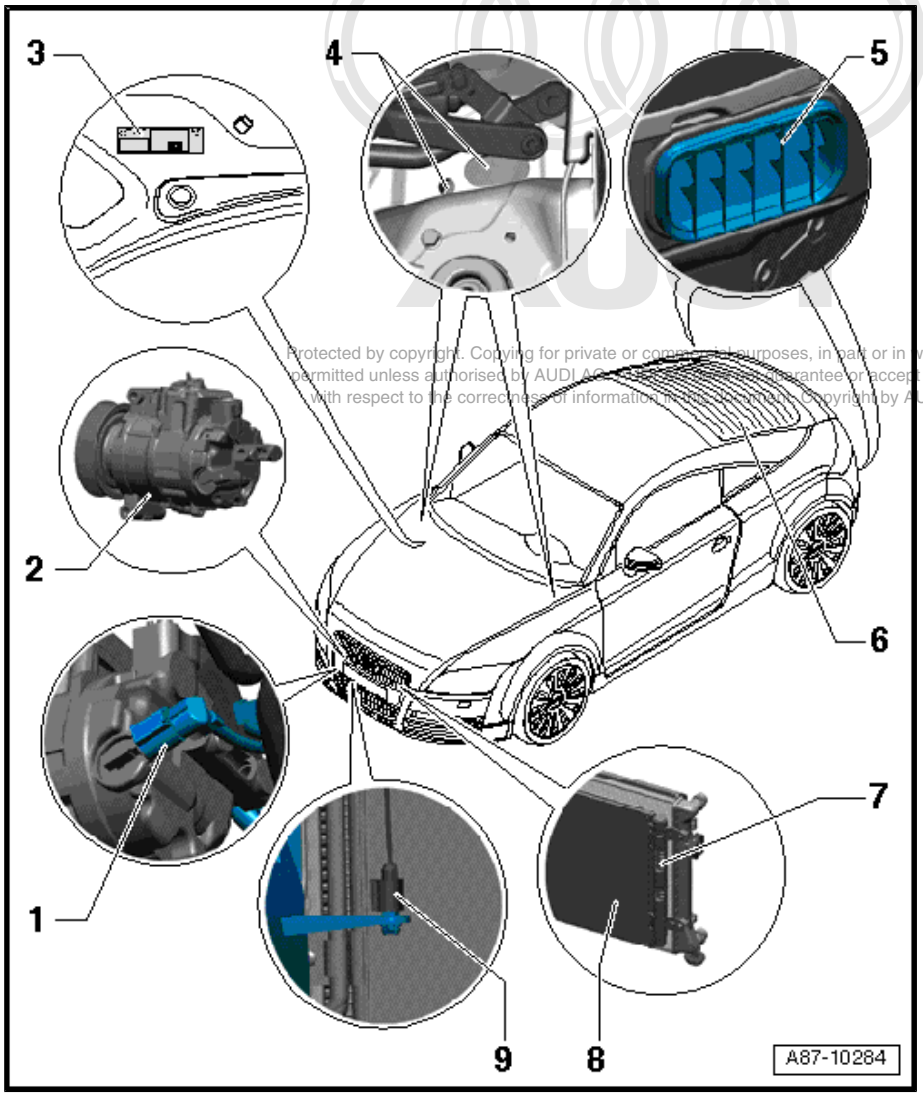
5.1 Components not located in passenger compartment

Note

- *Detaching coolant hoses from connections to heat exchanger of air conditioner unit and attaching ⇒ page 114 .*
- *For incorporation of heat exchanger of air conditioner unit into engine coolant circuit, refer to ⇒ Engine, mechanics; Rep. Gr. 19 .*
- *Depending on the vehicle production period, certain models may be fitted with joints in the refrigerant pipes (not planned at present, introduction not yet finalised) ⇒ Electronic Parts catalogue . As is the case with the connections at the various components, these joints are only to be unfastened after draining the refrigerant circuit ⇒ page 143 and ⇒ Air conditioner with refrigerant R134a .*
- *Depending on the vehicle production period, certain models may be fitted with a damping chamber in the refrigerant pipe between the expansion valve and the air conditioner compressor (not planned at present, introduction not yet finalised) ⇒ Electronic parts catalogue . The damping chamber smoothes any pressure fluctuations occurring during air conditioner compressor operation ⇒ page 143 and ⇒ Air conditioner with refrigerant R134a .*

- Group of components “1” not located in passenger compartment ⇒ page 62
- Group of components “2” not located in passenger compartment ⇒ page 64

5.1.1 Group of components “1” not located in passenger compartment



1 - Air conditioner compressor regulating valve -N280-

- ❑ Checking actuation and operation ⇒ page 45

2 - Air conditioner compressor

- ❑ Detaching air conditioner compressor from holder/re-attaching (vehicles with 4 or 6-cyl. engine) ⇒ page 40
- ❑ Detaching air conditioner compressor from holder/re-attaching (vehicles with 5-cyl. engine) ⇒ page 43
- ❑ Detaching refrigerant pipe at air conditioner compressor/attaching ⇒ page 146
- ❑ Removing and installing air conditioner compressor ⇒ page 149
- ❑ The type of compressor may differ depending on the production period and engine ⇒ page 31 and ⇒ Electronic parts catalogue
- ❑ Removing and installing poly V-belt ⇒ Engine, mechanics; Rep. Gr. 13

Note

- ❑ Replacing pulley ⇒ page 48

3 - Label

- ❑ Indicates type of refrigerant and specified capacity ⇒ Air conditioner with refrigerant R134a

4 - Plenum chamber water drains

- ❑ One water drain each is fitted on left and right in plenum chamber
- ❑ Removing/installing, checking and cleaning ⇒ page 67

5 - Forced air extractor

- ❑ One forced air extractor each is fitted on the left and right beneath the rear bumper.
- ❑ The sealing lips of the vent frame must move freely and close automatically.
- ❑ To ensure proper functioning of the passenger compartment ventilation, the air ducts must not be blocked by the luggage compartment lining.
- ❑ Checking ⇒ page 65

6 - Heated rear window -Z1-

- ❑ The rear window heating request is transmitted by the air conditioner operating unit, Climatronic control unit -J255- via the convenience data bus. The heated rear window -Z1- is actuated by way of the onboard supply control unit -J519- ⇒ Electrical system and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ❑ Notes on operation of heated rear window ⇒ page 27
- ❑ Removing and installing rear window ⇒ General body repairs, Exterior; Rep. Gr. 64

Note

7 - Receiver

- The refrigerant circuit must be drained before removing the receiver. The vehicle is therefore to be taken to a workshop equipped with the necessary tools where the work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a .
- Removing and installing ⇒ page 159

Note

- Removing and installing dryer cartridge (for a condenser with integrated receiver) ⇒ page 162

8 - Condenser

- The refrigerant circuit must be drained before removing the condenser. The vehicle is therefore to be taken to a workshop equipped with the necessary tools where the work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a .
- Different versions (depending on vehicle equipment) ⇒ Electronic parts catalogue
- Detaching and re-attaching refrigerant pipes ⇒ page 151
- Removing and installing condenser ⇒ page 153

9 - Outside temperature sensor -G17-

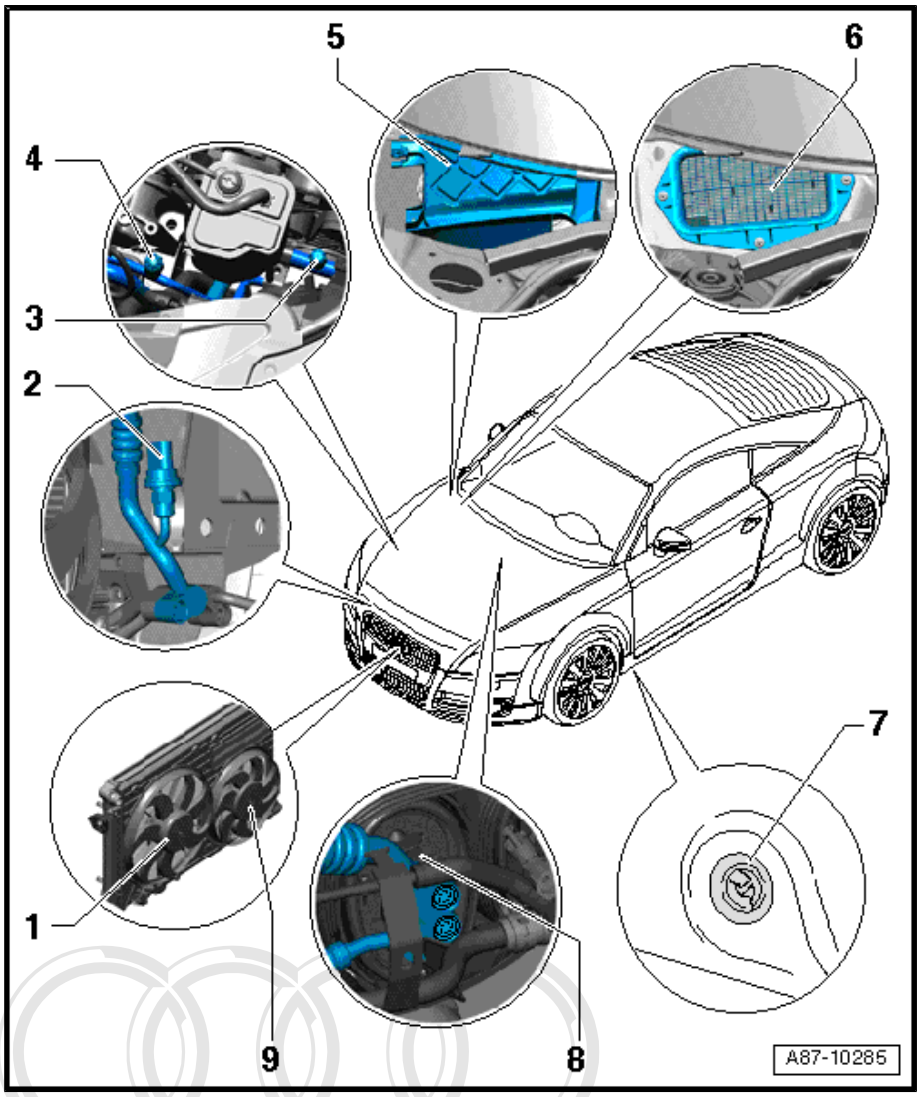
- The measured value of the ambient temperature sensor -G17- is evaluated by the control unit with display in dash panel insert -J285- and transmitted via the convenience data bus system to the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

Removing and installing:

– Remove the bumper cover ⇒ General body repairs, exterior; Rep. Gr. 50 .

– Unplug connector at temperature sensor and unclip temperature sensor from mount in air duct.

5.1.2 Group of components “2” not located in passenger compartment



1 - Radiator fan -V7-

- Different versions of the radiator fan -V7- and radiator fan 2 -V177- are fitted depending on the vehicle equipment. ⇒ Electronic parts catalogue
- The request for activation of the radiator fan(s) -V7- is transmitted by the air conditioner operating unit, Climatronic control unit -J255- by way of the data bus to the engine control unit. The engine control unit then actuates the fan(s) (radiator fan -V7- and radiator fan 2 -V177-) directly or by way of the radiator fan control unit -J293- ⇒ Engine, mechanics; Rep. Gr. 19 and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- Checking actuation of the radiator fans by the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051
- The corresponding engine control unit switches e.g. the radiator fan -V7- and the radiator fan 2 -V177- (directly via the radiator fan control unit -J293-) infinitely to the desired output (depending on the engine type). ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

2 - High-pressure sender -G65-

- Function, removing and installing ⇒ page 33
- The measured value of the high-pressure sender -G65- is displayed in the “Reading measured value block” function by the air conditioner operating unit, Climatronic control unit -J255- ⇒ page 35 and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

3 - Service connection on high-pressure end

- For measurement, drainage and filling of refrigerant circuit ⇒ Air conditioner with refrigerant R134a
- Cap with seal, always to be screwed on
- Depending on the engine version, certain components (e.g. ACF) may have to be removed for connection of the service coupling.

4 - Service connection on low-pressure end

- For measurement and drainage of refrigerant circuit ⇒ Air conditioner with refrigerant R134a
- Cap with seal, always to be screwed on
- Depending on the engine version, certain components (e.g. ACF) may have to be removed for connection of the service coupling.

5 - Cover for fresh-air intake

- ❑ Check the bonded seal for damage and proper attachment. This seal stops water running between the windscreen cross member and the cover into the intake housing of the air conditioner unit.
- ❑ Removing and installing ⇒ page 68 and ⇒ General body repairs, exterior; Rep. Gr. 50

6 - Fresh-air intake grille

- ❑ Ensure correct positioning, stops ingress of foreign matter (e.g. leaves) into the intake housing of the air conditioner unit.
- ❑ Check the bonded seal for damage and proper attachment. This seal stops water running beneath the intake grille into the intake housing of the air conditioner unit.
- ❑ Removing and installing ⇒ page 68

7 - Condensate drain

- ❑ Checking, removing and installing ⇒ page 84

8 - Expansion valve

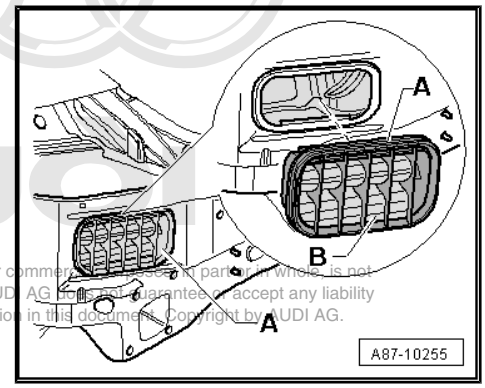
- ❑ Detaching and attaching refrigerant pipes ⇒ page 166
- ❑ Removing and installing ⇒ page 169

Note

9 - Radiator fan 2 -V177-

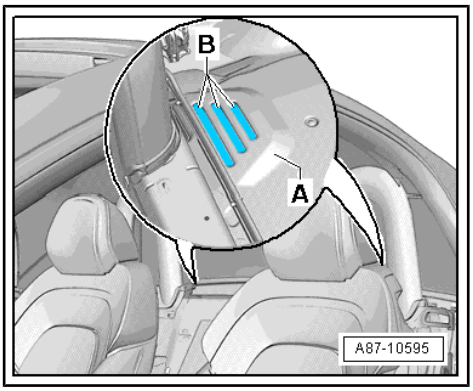
- ❑ Different versions of the radiator fan -V7- and radiator fan 2 -V177- are fitted depending on the vehicle equipment ⇒ Item 1 (page 64) and ⇒ Electronic parts catalogue .
- ❑ For further information on operation and actuation, refer to ⇒ Item 1 (page 64)

5.2 Checking, removing and installing passenger compartment forced air extractor



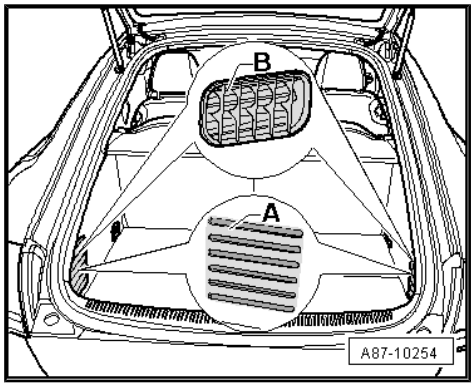
Note

- ♦ *One vent frame -A- is fitted on both left and right for forced air extraction.*
- ♦ *The vent frames of the forced air extractor -A- are removed and installed from the outside (with the bumper cover removed).*
- ♦ *On the Audi TT Roadster, the vent openings -B- in the lining of the convertible top compartment -A- are not to be blocked off by any objects when the convertible top is closed.*



Checking vent openings in luggage compartment lining

– Check that the flow of air through the vent openings in the luggage compartment lining on the left and right -A- to the two vent frames -B- in the luggage compartment (left and right) is not impeded.



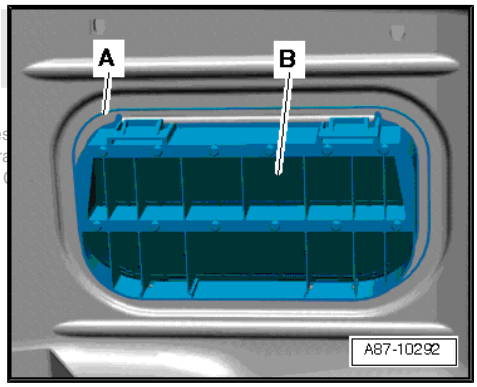
Note

- *To ensure proper functioning of the passenger compartment ventilation, the vent openings -A- in the left and right luggage compartment lining are never to be sealed off.*
- *The windows may mist up if the vent openings in the luggage compartment linings -A- are sealed off or the air ducts to the vent frames -B- are blocked.*
- *This illustration shows the luggage compartment of an Audi TT Coupé. On the Audi TT Roadster, the air is routed from the passenger compartment to the vent openings -A- through the convertible top compartment and via vent slits in the upper left and right luggage compartment lining.*

Checking vent frame of forced air extractor from inside:

– Remove the (left and right) luggage compartment side trim ⇒ General body repairs, interior; Rep. Gr. 70 .

– Check for blockage of the left and right vent frame -A-.



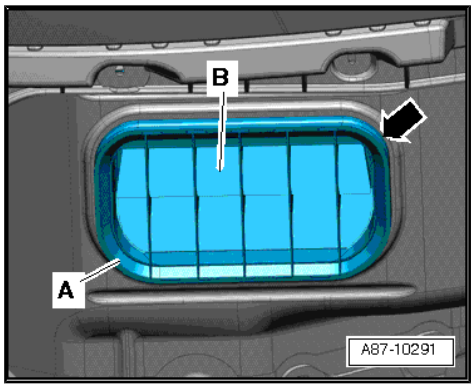
Note

- *The sealing lips -B- in the vent frame -A- must move freely and close automatically. Gummed up sealing lips -B- could cause the windows to mist up.*
- *If the air ducts to the vent frames -A- are sealed off or blocked, the windows may mist up.*
- *The sealing lips -B- only close properly if the vent frame -A- has been installed correctly.*

Checking, removing and installing vent frame of forced air extractor from outside:

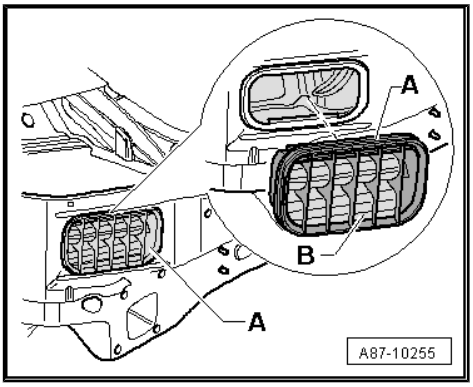
– Remove the rear bumper cover ⇒ General body repairs, exterior; Rep. Gr. 63 .

– Check for blockage of the left and right vent frame -A- and proper operation of the sealing lips -B-.



Note

- *Gummed up sealing lips -B- could cause the windows to mist up.*
- *To ensure that the sealing lips -B- close properly, the vent frame -A- can only be installed in one position (smaller radius -arrow- at top).*
- *This Fig. shows the vent frame -A- with the rear bumper removed.*
- *On installation, press the vent frame -A- into the opening at the rear cross panel until all retainer tabs are properly engaged.*

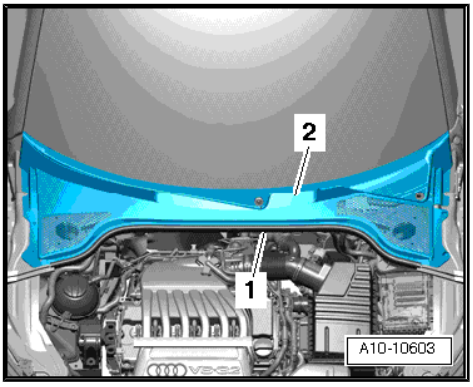


5.3 Removing/installing, checking and cleaning plenum chamber water drain

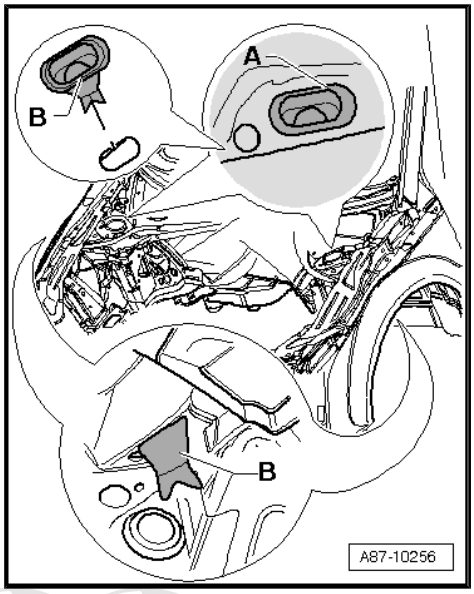
Preparation

– Remove the wiper arms ⇒ Electrical system; Rep. Gr. 92 .

– Pull off the rubber seal -1- and detach the plenum chamber cover -2-. This involves carefully unfastening the plenum chamber cover from the windscreen ⇒ General body repairs, exterior; Rep. Gr. 50 .



Checking



Note

- *Drainage of water out of the plenum chamber may be impaired by deposits such as leaves and pine needles accumulating in the water drains -A-. The water level in the plenum chamber then rises if the vehicle is taken to an automatic car wash or in the event of heavy rain, water ingresses by way of the intake housing into the air conditioner unit and is blown by the fresh air blower -V2- onto the evaporator together with the air conveyed.*
- *If the two grommets -B- of the water drains -A- (on the right and left of the plenum chamber) are contaminated with leaves and pine needles, the drains may freeze up in winter and stop water draining off. After a short journey, the heat emitted by engine and exhaust system melts the ice in the drains again. By the time the vehicle arrives at the workshop, the water may have already drained out of the plenum chamber.*
- *The grommets -B- of the water drains are clipped from above into the openings of the holders in the area of the suspension strut dome.*

Cleaning

– Perform preparatory work.

– Remove deposits (leaves, pine needles) and other contamination from the water drains -A- on the left and right and the plenum chamber.

Removing

– Perform preparatory work.

– Unclip the grommets -B- from above from the openings for the water drains -A- in the holder.

Installing

– Clip the grommets -B- from above into the openings for the water drains -A- in the holder.

– Following installation, check correct functioning of the grommets -B-.

– Re-install all components removed in reverse order.

5.4 Checking, removing and installing cover and grille of fresh-air intake

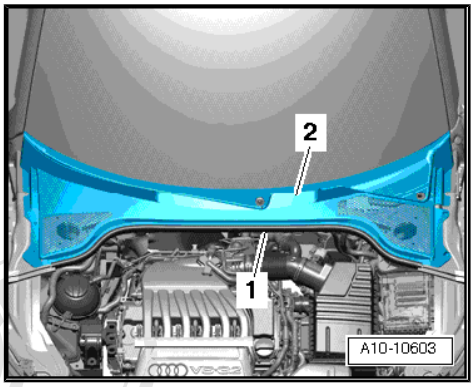
- Checking, removing and installing cover of fresh-air intake ⇒ page 68
- Removing and installing air intake grille ⇒ page 69

5.4.1 Checking, removing and installing cover of fresh-air intake

Preparation

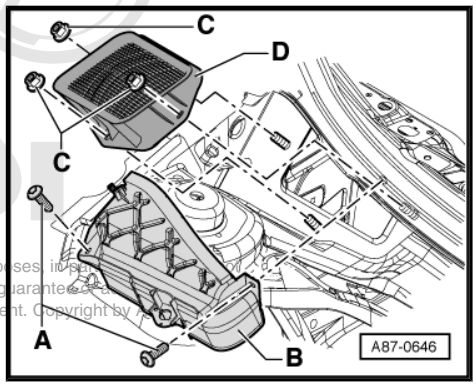
– Remove the wiper arms ⇒ Electrical system; Rep. Gr. 92

– Pull off the rubber seal -1- and detach the plenum chamber cover -2-. This involves carefully unfastening the plenum chamber cover from the windscreen ⇒ General body repairs, exterior; Rep. Gr. 50 .



Checking

– Make sure the cover -B- of the fresh-air intake is properly installed and not damaged.



Removing and installing

– Perform preparatory work.
– Screw out the bolts -A- (tightening torque: 2.5 Nm).
– Detach cover -B-.

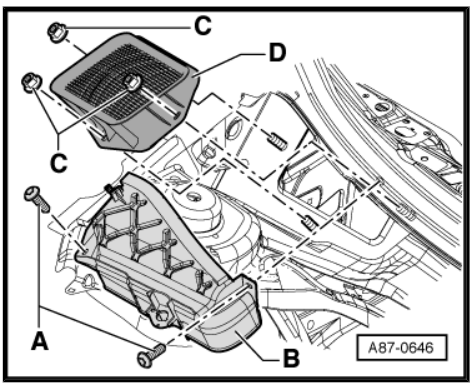
Install in reverse order, paying attention to the following:

Note

- *Before fitting, check the bonded seal and cover -B- and replace if damaged.*
- *On installation, make sure the cover -B- and the corresponding seal are correctly positioned, as otherwise water could run into the intake housing of the air conditioner unit (heater).*
- *If damaged, the cover for the fresh-air intake must be replaced.*

5.4.2 Removing and installing air intake grille

– Remove the cover -B- ⇒ page 68 .
– Unscrew the nuts -C- (tightening torque: 3.5 Nm).
– Detach the air intake grille -D-.



Install in reverse order, paying attention to the following:

Note

- *Before fitting, check the seal attached to the bottom of the air intake grille for damage and replace if necessary. This seal stops water running beneath the intake grille into the intake housing of the air conditioner unit.*
- *Make sure the air intake grille -D- is correctly positioned, as otherwise water could run into the intake housing of the air conditioner unit.*

6 Components for control and regulation of air conditioner located in passenger compartment

Note

- *In the event of a fault in the system, start by reading out the fault memory of the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- *If no fault is displayed, read out the measured value block of the air conditioner operating unit, Climatronic control unit -J255- and actuate any problematic component by way of the "Final control diagnosis" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *Electrical checking of the various components (control motors, potentiometers and senders) is described in the guided fault-finding routine ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *Refrigerant circuit servicing work is described as of ⇒ page 143 .*

- Perform the following operations on completion of repair work:

– Interrogate the fault memory of the air conditioner operating unit, Climatronic control unit -J255- and erase any faults displayed ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

– Check the encoding of the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

– If applicable, check the adaption of the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

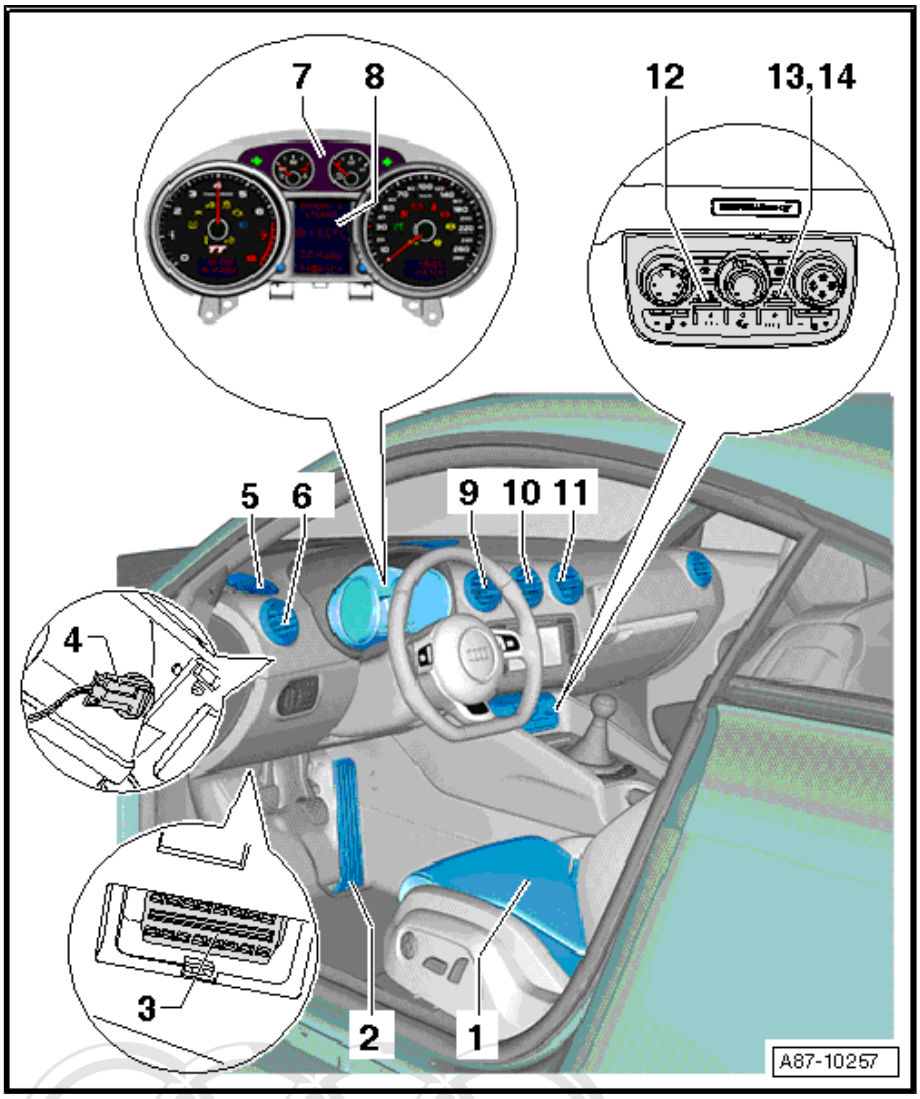
– Perform air conditioner basic setting ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

- Components located in passenger compartment ⇒ page 70

6.1 Components located in passenger compartment

- Component group “1” (components on left side) ⇒ page 71
- Component group “2” (components on right side) ⇒ page 73

6.1.1 Component group “1” (components on left side)



1 - Temperature sender for front left seat -G344- and front left heated seat -Z45-

- ❑ Not all vehicles feature seat heating (optional extra)
- ❑ Actuation of the seat heating is indicated in the measured value block of the air conditioner operating unit, Climatronic control unit -J255- ; for checking refer to ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ❑ Servicing seat heating ⇒ General body repairs, interior; Rep. Gr. 74

2 - Accelerator mechanism

- ❑ Kick-down deactivation of the air conditioner compressor by the air conditioner operating unit, Climatronic control unit -J255- (via the air conditioner compressor regulating valve -N280-) is implemented when requested by the engine control unit (the data are exchanged via the data bus). The measured value block of the air conditioner operating unit, Climatronic control unit -J255- indicates the current actuation status of the air conditioner compressor regulating valve -N280- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 (for air conditioner and injection and ignition system or diesel glow plug and injection system depending on the engine).

3 - Diagnosis connection

- ❑ Air conditioner self-diagnosis ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051

4 - Front left chest vent temperature sensor -G385- (front right chest vent temperature sensor -G386-)

- ❑ Removing and installing ⇒ page 85
- ❑ This temperature sensor is always fitted on the driver's side. On left-hand drive vehicles, the front left chest vent temperature sensor -G385- is installed in the air duct to the left dash panel vent. On right-hand drive vehicles, the front right chest vent temperature sensor -G386- is installed in the air duct to the right dash panel vent.

5 - Defroster vent / left side window

- ❑ Removing and installing ⇒ General body repairs, interior; Rep. Gr. 70

6 - Left dash panel vent

- ❑ Removing and installing dash panel vents ⇒ page 74 and ⇒ General body repairs, interior; Rep. Gr. 70

7 - Control unit with display in dash panel insert -J285-

- ❑ With ambient temperature indicator -G106-

- The control unit with display in dash panel insert -J285- evaluates the measured value of the ambient temperature sensor -G17- and then transmits this via the convenience data bus to the air conditioner operating unit, Climatronic control unit -J255- ⇒ Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051. .

8 - Ambient temperature indicator -G106-

- The ambient temperature indicator -G106- is part of the control unit with display in dash panel insert -J285-
- The measured value of the ambient temperature sensor -G17- is evaluated by the control unit with display in dash panel insert -J285- and transmitted by way of the convenience data bus to the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- In the event of an incorrect temperature display, check the measured value of the temperature sensor ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

9 - Centre left dash panel vent

- Removing and installing dash panel vents ⇒ page 74 and ⇒ General body repairs, interior; Rep. Gr. 70

10 - Centre dash panel vent

- Removing and installing dash panel vents ⇒ page 74 and ⇒ General body repairs, interior; Rep. Gr. 70

11 - Centre right dash panel vent

- Removing and installing dash panel vents ⇒ page 74 and ⇒ General body repairs, interior; Rep. Gr. 70

12 - Air conditioner operating unit, Climatronic control unit -J255-

- Different versions with or without seat heating switch, with different units of temperature (°C or °F) at rotary temperature control, rotary controls with black or silver surface, assignment ⇒ Electronic parts catalogue

- Vehicles with 5-cyl. engine are only to be fitted with air conditioner operating units with part number 8J0 820 043 as of index “AK” ⇒ Electronic parts catalogue and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- Removing and installing ⇒ page 78
- The dash panel temperature sensor -G56- is integrated into the air conditioner operating unit, Climatronic control unit -J255- and cannot be replaced separately.
- The temperature sensor blower -V42- is installed in the air conditioner operating unit, Climatronic control unit -J255- but can be replaced separately ⇒ page 82 .
- Also heed the additional notes on the air conditioner operating unit, Climatronic control unit -J255- ⇒ page 78 .
- Air conditioner operating unit, Climatronic control unit -J255- self-diagnosis is to be performed as described in the guided fault-finding routine ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- The buttons and rotary controls are illuminated by LEDs which cannot be replaced separately.
- The function indicator lamps in the buttons and rotary controls as well as the rotary controls and buttons cannot be replaced separately.

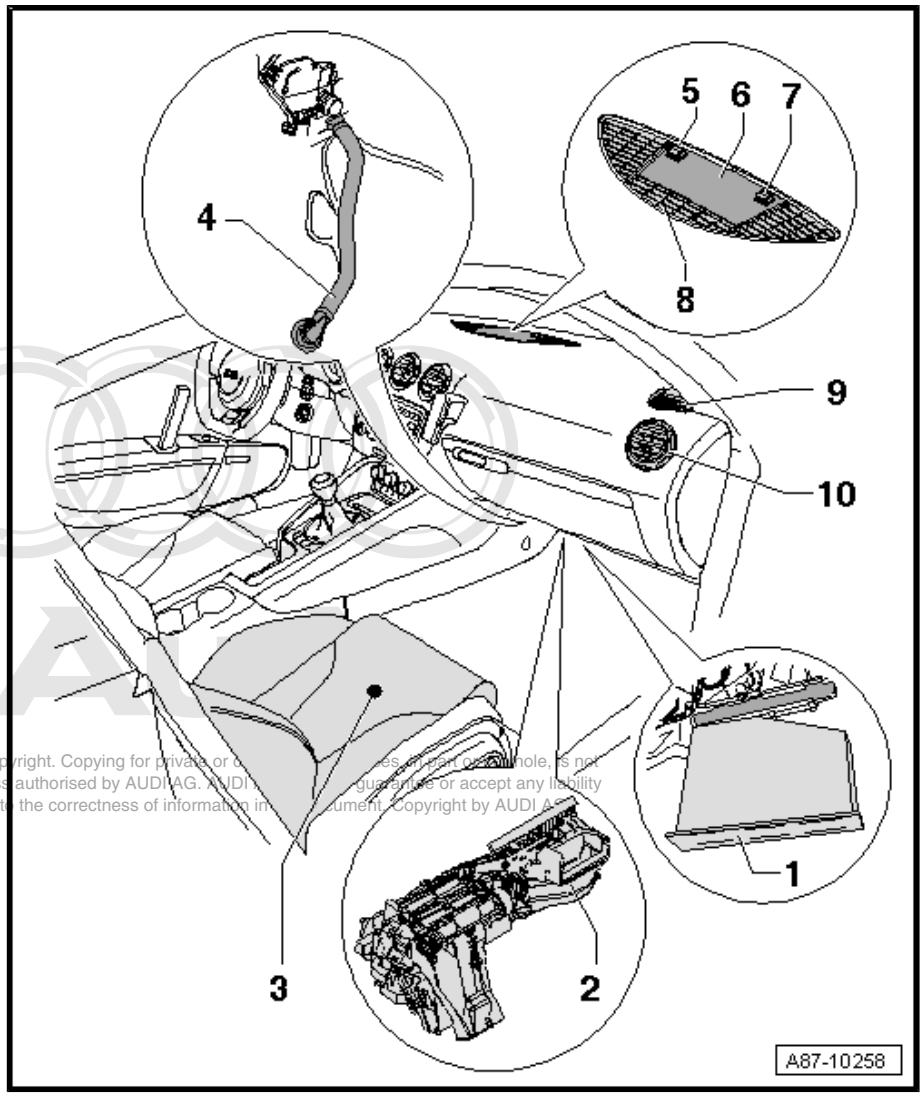
13 - Temperature sensor blower -V42-

- Installed in air conditioner operating unit, Climatronic control unit -J255- .
- Removing and installing temperature sensor blower -V42- ⇒ page 82 .

14 - Dash panel temperature sensor -G56-

- Integrated into air conditioner operating unit, Climatronic control unit -J255- , cannot be replaced separately

6.1.2 Component group “2” (components on right side)



1 - Dust and pollen filter

- ❑ Removing and installing ⇒ page 96
- ❑ Observe replacement intervals ⇒ Maintenance tables
- ❑ With activated charcoal element ⇒ page 97

2 - Air conditioner unit with evaporator and add-on components

- ❑ Air routing in air conditioner unit and vehicle ⇒ page 122
- ❑ Air conditioner unit components ⇒ page 87
- ❑ Clean evaporator of air conditioner with ultrasonic air conditioner cleaning unit -VAS 6189- ⇒ page 74 .
- ❑ Removing and installing air conditioner unit ⇒ page 170

3 - Temperature sender for front right seat -G345- and front right heated seat -Z46-

- ❑ Not all vehicles feature seat heating (optional extra)
- ❑ Actuation of the seat heating is indicated in the measured value block of the air conditioner operating unit, Climatronic control unit -J255- ; for checking refer to ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ❑ Servicing seat heating ⇒ General body repairs, interior; Rep. Gr. 74

4 - Condensate drain

- ❑ Checking, removing and installing ⇒ page 84

5 - Sunlight penetration photosensor -G107-

- ❑ Removing and installing ⇒ page 77 and ⇒ General body repairs, interior; Rep. Gr. 70

6 - Cover for centre dash panel loudspeaker

- ❑ Removing and installing cover ⇒ General body repairs, Interior; Rep. Gr. 70

7 - Central locking system LED

- ❑ Removing and installing ⇒ General body repairs, Interior; Rep. Gr. 70

8 - Defroster vent / windscreen

- ❑ Removing and installing ⇒ General body repairs, interior; Rep. Gr. 70

9 - Defroster vent / right side window

- ❑ Removing and installing ⇒ General body repairs, interior; Rep. Gr. 70

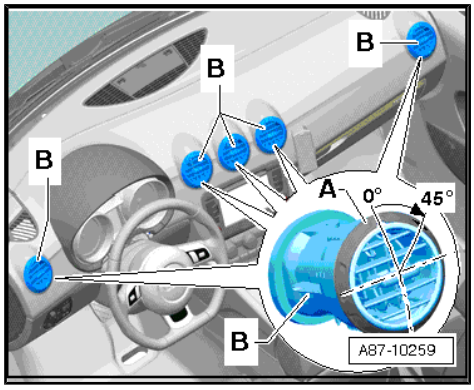
10 - Right dash panel vent

- ❑ Removing and installing dash panel vents ⇒ page 74 and ⇒ General body repairs, interior; Rep. Gr. 70
- ❑ On right-hand drive vehicles, the front right chest vent temperature sensor -G386- is installed in the air duct to the right dash panel vent.

6.2 Removing and installing dash panel vent

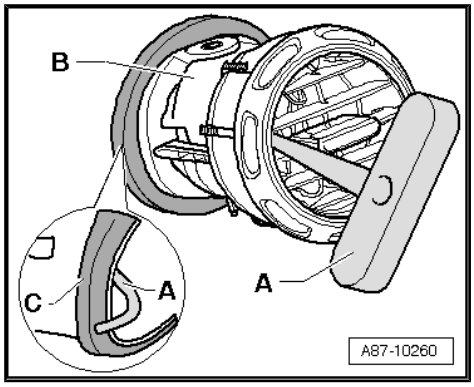
Note

- ♦ *The dash panel vents -B- can only be removed and installed with the actuating ring -A- in the "45°" position. This is the only position in which the vent actuating arms are set such that the vent can be removed from the dash panel and installed without damage.*
- ♦ *The dash panel vents -B- can only be installed in a certain position. Attention is therefore to be paid on installation to the position of the actuating ring -A-.*



– Move the actuating ring -A- of the dash panel vent -B- to be removed to the "45 °" position.

– Apply the hook -3438- -A- for example to the rear end -C- of the dash panel vent -B-.



Caution

- ♦ ***To avoid damaging the dash panel vent on removal, do not engage the hook -3438- -A- at the slats of the dash panel vent -B-.***

– Carefully pull the appropriate dash panel vent -B- out of the dash panel.

6.3 Cleaning evaporator of air conditioner with ultrasonic air conditioner cleaning unit -VAS 6189-

Note

Air conditioner odours may have different causes. Only some of these odours occur in the evaporator of the air conditioner unit and can therefore be eliminated by cleaning the evaporator with the ultrasonic air conditioner cleaning unit -VAS 6189- .

- ♦ Possible cause of odour formation ⇒ page 74
- ♦ Cleaning evaporator ⇒ page 76 .

6.3.1 Possible cause of odour formation

- ♦ Smell of burnt oil

– Generally occurs in the engine compartment due to leakage at the engine or gearbox.

- ♦ Sulphur-like smell of exhaust gas

– Caused by leakage at the exhaust system

– Caused by exhaust gas ingressing into the passenger compartment e.g. on reversing (on driving through a cloud of exhaust fumes).

♦ Fishy smell of coolant

– Caused by leakage at engine cooling system or air conditioner heat exchanger

Note

If the fishy smell varies with the set temperature (less noticeable in "cold" temperature setting than in "warm" temperature setting), check the heat exchanger of the air conditioner unit for leaks (no constant flow of air through the heat exchanger).

♦ Scorched clutch smell

♦ Odour given off by floor coverings, retrofitted loose seat covers etc.

♦ Mouldy smell from plenum chamber

– Caused by accumulation and deposits of foreign matter such as leaves, pine needles etc.

– Caused by water not able to drain out of the plenum chamber.

Note

Check plenum chamber water drains ⇒ page 67 .

♦ Odour from air conditioner unit

Note

♦ *Odours occurring in the air conditioner unit are usually perceptible in both fresh air and recirculated-air mode. If an odour nuisance only occurs in fresh-air mode or only in recirculated-air mode, the air conditioner unit is not normally the cause of the problem.*

♦ *If a heat exchanger is leaking, the smell of escaping coolant generally varies with the temperature set. In the "cold" temperature setting, there is no flow of air through the heat exchanger and the odour is less perceptible.*

– Caused by too much condensate in the air conditioner unit

Note

Check condensate drain ⇒ page 84 .

– Caused by old or severely contaminated dust and pollen filter

Note

Check dust and pollen filter ⇒ page 96 .

– Caused by deposits on evaporator fins

Note

Clean evaporator with ultrasonic air conditioner cleaning unit -VAS 6189- ⇒ page 76 .

6.3.2 Cleaning evaporator

Tools required

- Ultrasonic air conditioner cleaning unit -VAS 6189-
- Cleaning fluid -VAS 6189/1-

Preparation

– By switching from fresh air to recirculated-air mode, check whether the air conditioner unit evaporator is really the source of the odour.

Note

The odour can only be eliminated by cleaning with the ultrasonic air conditioner cleaning unit -VAS 6189- if it actually occurs in the evaporator.

– Check the plenum chamber and the water drain valves fitted in it and clean these if necessary ⇒ page 67 .
– Remove the dust and pollen filter and check this for odour and contamination ⇒ page 96 .

Note

On this vehicle, the dust and pollen filter is installed between the fresh air blower -V2- and the evaporator and must therefore be removed for cleaning.

– Remove leaves, dust and other contamination from the installation slot for the dust and pollen filter of the air conditioner unit ⇒ page 96 .
– Re-seal the opening at the air conditioner unit through which the dust and pollen filter was removed.
– Start the engine.
– On the air conditioner operating unit, Climatronic control unit -J255- “recirculated air mode” is to be set and the air conditioner compressor switched off (lamp in AC button not lit).
– Open the dash panel vents and set the lowest possible temperature on the air conditioner operating unit, Climatronic control unit -J255- (“cold” temperature setting).
– Close the vehicle windows and sunroof.
– Set the lowest fresh air blower speed on the air conditioner operating unit, Climatronic control unit -J255- and select “dash panel vents” for the air outflow direction.

Cleaning

– Shake the bottle of cleaning fluid -VAS 6189/1- and pour the fluid into the ultrasonic air conditioner cleaning unit -VAS 6189- . In doing so, heed the operating instructions for the ultrasonic air conditioner cleaning unit -VAS 6189- .

– Position the ultrasonic air conditioner cleaning unit -VAS 6189- in the passenger's footwell.
– Start up the ultrasonic air conditioner cleaning unit -VAS 6189- (in accordance with the appropriate operating instructions) and position the outlet hose such that the vapour emerging is drawn in by the fresh air blower -V2- via the recirculated-air opening of the air conditioner unit (in the passenger's footwell behind the glove box).
– Close vehicle doors.

Note

The cleaning process takes roughly 15 to 20 minutes and is completed when no further vapour emerges from the outlet hose.

Concluding operations

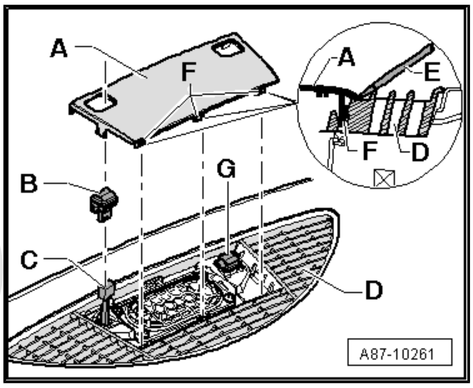
– Switch off ultrasonic air conditioner cleaning unit -VAS 6189- .
– Open vehicle doors and vent vehicle for at least 10 minutes.
– Remove ultrasonic air conditioner cleaning unit -VAS 6189- from vehicle and clean it in line with the appropriate operating instructions.
– Switch off ignition.
– Fit dust and pollen filter ⇒ page 96 .

6.4 Removing and installing sunlight penetration photosensor -G107-

Note

- *Different versions of the sunlight penetration photosensor -G107- are available. Attention is therefore to be paid to correct assignment ⇒ Electronic parts catalogue . If the sunlight penetration photosensor -G107- fitted is not of the type intended for this vehicle (signal emitted is not the one specified in the air conditioner operating unit, Climatronic control unit -J255-), the air conditioner operating unit, Climatronic control unit -J255- cannot evaluate the signal from the sunlight penetration photosensor -G107- and there will be problems with air conditioner control.*
- *Vehicles with no air conditioner (heater only) are not fitted with a sunlight penetration photosensor -G107- . Such vehicles have a cap in place of the sunlight penetration photosensor -G107- .*

– Switch off ignition.



– Carefully prise the cover -A- out of the windscreen defroster vent -D-. ⇒ General body repairs, interior; Rep. Gr. 70

Note

Start by using a small screwdriver -E- to carefully release the fasteners -F- from the defroster vent -D-. When doing so take care not to damage the surface of the cover -A- and the defroster vent -D-.

– Carefully prise the sunlight penetration photosensor -G107- -B- out of the windscreen defroster vent -D-.

– Unplug connector -C-.

Note

Take care not to interchange the sunlight penetration photosensor -G107- -B- (4 electrical connections) with the LED for the central locking system and interior monitor -G- (2 electrical connections).

6.5 Removing and installing air conditioner operating unit, Climatronic control unit -J255-

– Removing and installing air conditioner operating unit, Climatronic control unit -J255- ⇒ page 80

Note

- *Vehicles with no air conditioner (heater only) are fitted with a heater operating unit, Climatronic control unit -J255- instead of an air conditioner operating unit. The heater operating unit, Climatronic control unit -J255- has neither an integrated dash panel temperature sensor -G56- nor a temperature sensor blower -V42- .*
- *At present air conditioner (heater) operating units, Climatronic control unit -J255- can be exchanged in the familiar manner, as component protection is currently not active (introduction not yet finalised) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*

- *If an air conditioner (heater) operating unit, Climatronic control unit -J255- with active component protection (anti-theft system, introduction not yet finalised) is installed in a different vehicle, the functions required for vehicle security can still be selected, but not the convenience functions ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *Component protection (anti-theft system, introduction not yet finalised) can only be cancelled by entering certain vehicle data ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *When replacing an air conditioner (heater) operating unit, Climatronic control unit -J255- , attention must be paid to the exact assignment ⇒ Electronic parts catalogue . Different versions with or without seat heating switch, with different units of temperature (°C or °F) at rotary temperature control, rotary controls with black or silver surface.*
- *If a new air conditioner (heater) operating unit, Climatronic control unit -J255- has been installed and basic setting not performed, air conditioner control action is restricted and this is displayed as a fault in the fault memory. After installing the air conditioner (heater) operating unit, Climatronic control unit -J255- , air conditioner (heater) basic setting is therefore to be implemented in the specified manner ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *The buttons and rotary controls of the air conditioner (heater) operating unit, Climatronic control unit -J255- are illuminated by light-emitting diodes (LEDs cannot be replaced).*
- *The function indicator lamps in the buttons and rotary controls as well as the rotary controls and buttons cannot be replaced separately.*
- *In the event of incorrect dash panel temperature sensor -G56- measurements, check the intake grille of the trim panel in the air conditioner operating unit, Climatronic control unit -J255- (must not be closed off) as well as operation of the temperature sensor blower -V42- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- *The functions selected are indicated by lighting of the function indicator lamps in the various buttons and rotary controls or in the display zones above these of the air conditioner (heater) operating unit, Climatronic control unit -J255- .*
- *From May 2007 onwards, air distribution housing units for air conditioner with a flap at the outlet to the dash panel defroster vents (without a recess at the side) will gradually be introduced. Introduction of the flap with no side recess will be accompanied by modification of the air conditioner operating unit, Climatronic control unit -J255- (due to the absence of the recess, the flap must be opened somewhat further to route the same volume of air to the windscreen) ⇒ Electronic parts catalogue . Air conditioner operating units, Climatronic control unit -J255- with part number "8J0 820 043" up to index "AA" are only to be fitted on vehicles with an air conditioner air distributor housing with a flap in the air outlet to the dash panel*

- Removing and installing air conditioner (heater) operating unit ⇒ page 80

6.5.1 Removing and installing air conditioner (heater) operating unit

Climatronic control unit -J255-

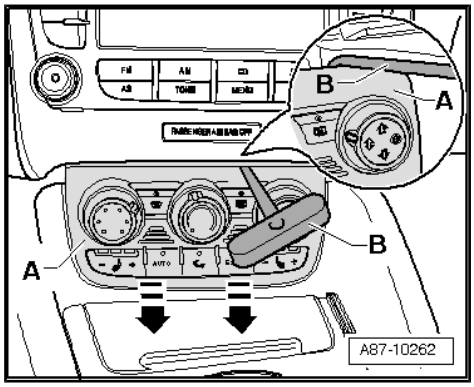
Removing

– Interrogate the encoding and adaption of the air conditioner (heater) operating unit, Climatronic control unit -J255- by way of the “Control unit replacement” function in the guided fault-finding routine (if the air conditioner/heater operating unit, Climatronic control unit -J255- is to be replaced). ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051

– Switch off ignition.

– Apply the hook -3438- -B- for example to the air conditioner (heater) operating unit, Climatronic control unit -J255- -A- as shown (left and right).

– Carefully pull the air conditioner (heater) operating unit, Climatronic control unit -J255- in -arrow direction- out of the centre console.

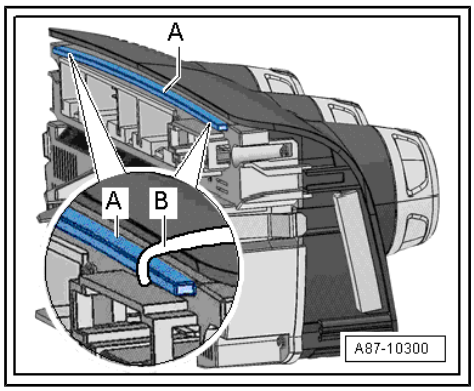


Caution

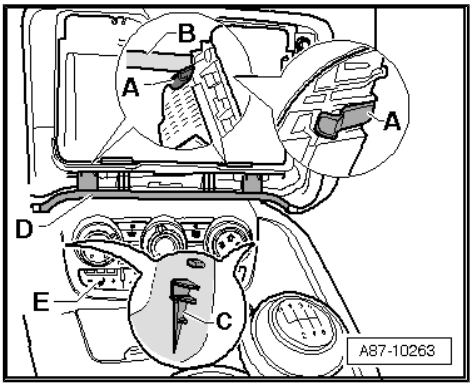
- *Take care not to pull too firmly to avoid damaging the air conditioner (heater) operating unit, Climatronic control unit -J255- and the centre console on removal.*
- *The air conditioner (heater) operating unit, Climatronic control unit -J255- is held in position with the clips and support brackets of the centre console. If the clips are too tight, use a screwdriver to unfasten them from the rear* *⇒ page 80* *.*
- *Take care not to damage the surface of the centre console on removal (cover up if necessary).*

Note

Air conditioner (heater) operating units, Climatronic control unit -J255- with an additional reinforcing strip -A- on the back are to be gradually introduced in Model Year 2007. Apply the hooks -3438--B- on the left and right in each case at this strip -A-.



Removing air conditioner (heater) operating unit, Climatronic control unit -J255- firmly attached to the centre console



Note

At the start of production, the clips -A- used to fit the air conditioner (heater) operating unit, Climatronic control unit -J255- hold the air conditioner (heater) operating unit so firmly in position in the centre console that removal is only possible after releasing the fastener (a modified fastener was gradually introduced).

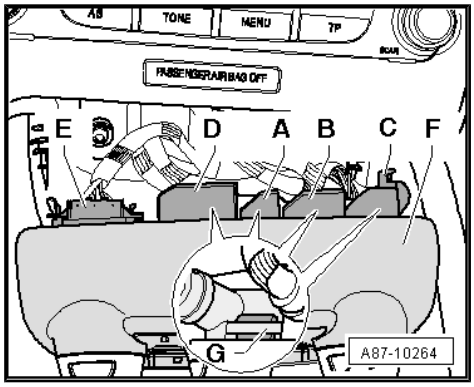
– Remove the radio or radio navigation system ⇒ Radio, telephone, navigation; Rep. Gr. 91 .
– Remove the trim -D- ⇒ General body repairs, interior; Rep. Gr. 68 .
– Reach into the dash panel opening with a small screwdriver -B- and release the fastener of the clips -A- (on the left and right of the air conditioner/heater operating unit) from the support brackets of the centre console -C-.
– Slide the air conditioner (heater) operating unit, Climatronic control unit -J255- -E- out of the centre console.

Unplugging connectors from air conditioner (heater) operating unit, Climatronic control unit -J255-

– Release the fasteners at the connector -E- and unplug the connector.

– Carefully turn the air conditioner (heater) operating unit, Climatronic control unit -J255- -F- through 180°.

– Release the connectors -D- and -A- to -C- by pressing the retainer tabs -G- and unplug the connectors.



Installing

Install in reverse order; paying attention to the following:

- When replacing an air conditioner (heater) operating unit, Climatronic control unit -J255- , attention must be paid to the exact assignment ⇒ Electronic parts catalogue . Different versions with or without seat heating switch, with different units of temperature (°C or °F) at rotary temperature control, rotary controls with black or silver surface.
- Vehicles with a 5 cyl. engine with no air conditioner are only to be fitted with heater operating units with part number 8J0 819 043 as of index “D” ⇒ Electronic parts catalogue and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- Vehicles with 5-cyl. engine with an air conditioner are only to be fitted with air conditioner operating units with part number 8J0 820 043 as of index “AK” ⇒ Electronic parts catalogue and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- Always perform the following operations after replacing/installing the air conditioner (heater) operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 :

– Re-encode (check the encoding of) the air conditioner (heater) operating unit, Climatronic control unit -J255-

– Perform basic setting of the air conditioner (heater) operating unit, Climatronic control unit -J255- .

– Interrogate the fault memory of the air conditioner (heater) operating unit, Climatronic control unit -J255- (and rectify the cause of any faults displayed).

– If applicable, check the adaption of the air conditioner (heater) operating unit, Climatronic control unit -J255- .

– If applicable, perform final control diagnosis for the air conditioner (heater) operating unit, Climatronic control unit -J255- .

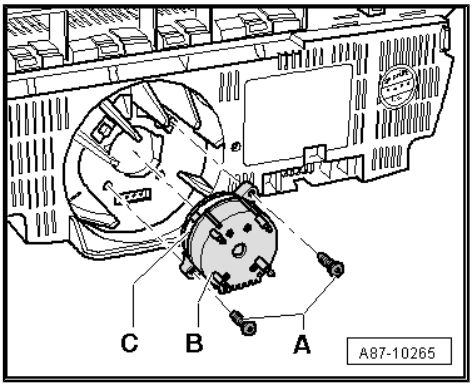
6.6 Removing and installing dash panel temperature sensor blower -V42-

Note

The heater operating unit, Climatronic control unit -J255- has neither an integrated dash panel temperature sensor -G56- nor a temperature sensor blower -V42- .

– Remove the air conditioner operating unit, Climatronic control unit -J255- ⇒ page 78 .

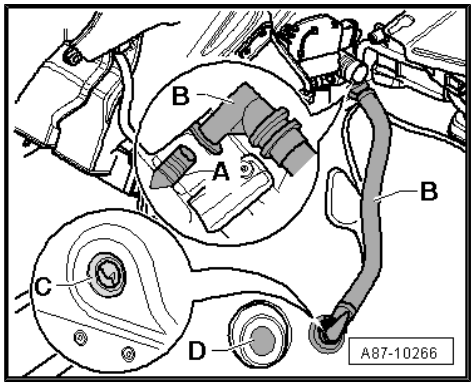
– Remove the bolts -A-.
– Pull the temperature sensor blower -V42- -B- out of the air conditioner operating unit, Climatronic control unit -J255- .



Note

When installing the temperature sensor blower -V42- , do not press on the fan impeller -C-, but rather grasp hold of the blower housing.

6.7 Removing/installing and checking condensate drain hose



Note

- *This vehicle is only fitted with one condensate drain.*
- *Vehicles with no air conditioner (heater only) are fitted with a plug to seal the opening at the transmission tunnel (no condensate drain is provided).*
- *There is neither a valve nor a flap at the end of the condensate drain -C-.*

- In the event of moisture problems in the passenger compartment, check the following in addition to the condensate drain:

– Water drains for plenum chamber ⇒ page 67

– Plenum chamber cover and cover for fresh-air intake housing for correct installation and damage ⇒ page 68

– Dust and pollen filter for contamination and correct installation ⇒ page 96

– Forced air extraction in luggage compartment ⇒ page 65

– Actuation and operation of the air flow flap ⇒ page 101 and recirculated-air flap ⇒ page 89 and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

- In the event of problems with moisture in the passenger compartment which only occurs with the air conditioner compressor switched on under certain ambient conditions, additionally check the temperature of the air flowing out of the evaporator as follows ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 :

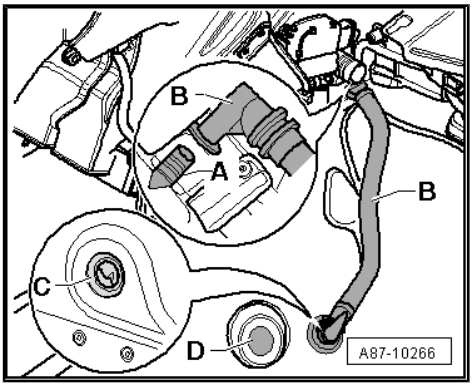
– In the “Reading measured value block” function of the guided fault-finding routine, select the measured value block with the measured value of the evaporator output temperature sender -G263- .

– Check the temperature of the air flowing out of the evaporator under the usage conditions described by the customer or with the following settings on the air conditioner operating unit, Climatronic control unit -J255- : “Auto” mode, air conditioner compressor switched on (lamp in AC button lights), “cold” temperature setting, medium fresh air blower speed with a voltage of approx. 7 V at the fresh air blower -V2- , fresh air mode (lamp in “recirculated air button” not lit) and dash panel vents open.

– If the measured value of the evaporator output temperature sender -G263- is too low (at ambient temperature above 0 °C, colder than 0 °C for lengthy period) or too high (greater than e.g. 10 °C although air conditioner is functioning properly), eliminate the cause of the deviation, paying attention to the information on checking the cooling output ⇒ page 130 .

Removing and checking condensate drain hose

– Remove the left and right centre console trim and the front centre console ⇒ General body repairs, interior; Rep. Gr. 68



- In the area of the condensate drain hose, carefully fold back the floor covering until the condensate drain is visible ⇒ General body repairs, interior; Rep. Gr. 68
- Check the condensate drain -B- for proper routing (eliminate any cross-sectional constriction for example) and for contamination.
- Cover the area beneath the opening -D- (for the condensate drain -C-) with absorbent paper to stop any water running beneath the floor covering.
- Remove condensate drain -B-.
- Use a piece of wire, for example, to check for contamination of the condensate drain of the air conditioner unit -A-.
- Check the distance between the insulating mat fitted in the transmission tunnel and the condensate drain -C- attached to the end of the drain hose -B- by way of the opening -D- in the floor panel. The clearance must be sufficient to permit drainage of the condensate out of the condensate drain -C-.

Installing

Install in reverse order; paying attention to the following:

- Install the condensate drain -B- such that it is neither twisted nor crushed.
- When fitting the floor covering, take particular care to ensure that it does not squash the condensate drain -B-.

6.8 Removing and installing front left (or right) chest vent temperature sensor

Front left chest vent temperature sensor -G385 - / front right chest vent temperature sensor -G386-

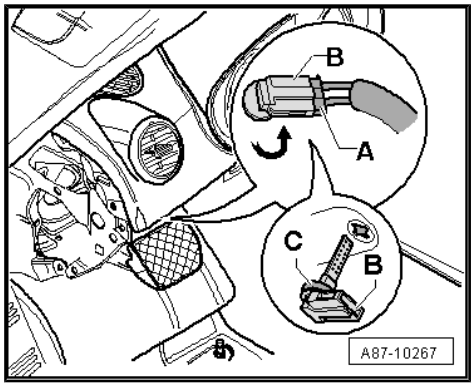
Note

- *This temperature sensor is always fitted on the driver's side. On left-hand drive vehicles, the front left chest vent temperature sensor -G385- is installed in the air duct to the left dash panel vent. On right-hand drive vehicles, the front right chest vent temperature sensor -G386- is installed in the air duct to the right dash panel vent.*
- *Vehicles with no air conditioner (heater only) are not fitted with a chest vent temperature sensor (depending on the version, there is no mounting hole in the air duct or this is sealed with a plug).*

Removing

- Switch off ignition.
- Remove driver's storage compartment. ⇒ General body repairs, interior; Rep. Gr. 70

– Unplug connector -A- from temperature sensor.
– Turn the temperature sensor -B- through approx. 90°.
– Remove the temperature sensor -B- from the air duct.



Installing

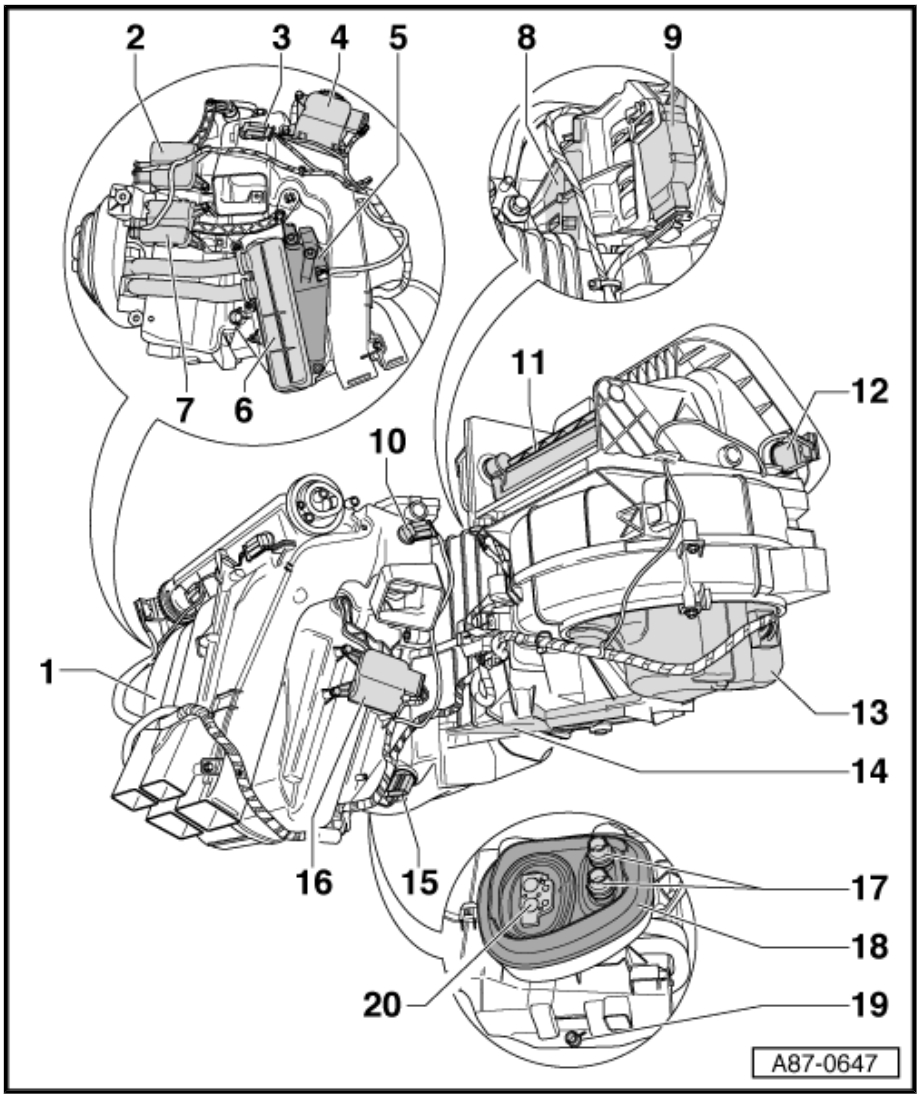
– Install in reverse order.
– On installation, pay attention to correct positioning of the seal -C-.

7 Air conditioner unit components

Heed the notes on control and regulation of the components located in the passenger compartment ⇒ page 70 .

Note

- *Air routing in air conditioner unit and vehicle ⇒ page 122*
- *Removing and installing air conditioner unit ⇒ page 170 .*
- *The colour indicated for the levers and the connecting elements to the various control motors applies to left-hand drive vehicles. On right-hand drive vehicles, these components have a different colour.*
- *The design of the heater is essentially the same as that of the air conditioner unit. There are however certain differences, as various components are not fitted ⇒ page 10 .*



1 - Air conditioner unit with evaporator

- ❑ Only to be removed after draining the refrigerant circuit; the vehicle is to be taken to a workshop equipped with the necessary tools where the work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a .
- ❑ Removing and installing air conditioner unit ⇒ page 170
- ❑ Dismantling and assembling air conditioner unit ⇒ page 178
- ❑ Clean evaporator of air conditioner with ultrasonic air conditioner cleaning unit -VAS 6189- ⇒ page 74 .

2 - Defroster flap control motor -V107-

- ❑ With potentiometer for defroster flap control motor -G135-
- ❑ Colour code for lever: blue
- ❑ Removing and installing ⇒ page 107

Note

3 - Left footwell vent temperature sender -G261-

- ❑ Removing and installing ⇒ page 95

4 - Central flap control motor -V70-

- With potentiometer for centre flap servomotor -G112-
- Removing and installing ⇒ page 91

Note

5 - Supplementary heater element -Z35-

- Only available for vehicles with diesel engine ⇒ page 29 .
- Function, checking ⇒ page 29
- Removing and installing ⇒ page 111

6 - Heating system heat exchanger

- Removing and installing ⇒ page 114

7 - Left temperature flap control motor -V158-

- With potentiometer for left temperature flap control motor -G220-
- Lever colour code: white
- Removing and installing ⇒ page 109

Note

8 - Air flow flap control motor -V71-

- With potentiometer for air flow flap control motor -G113-
- Removing and installing ⇒ page 101

9 - Air recirculation flap control motor -V113-

- With potentiometer for air recirculation flap control motor -G143-
- Removing and installing ⇒ page 89

10 - Right footwell vent temperature sender -G262-

- Removing and installing ⇒ page 95

11 - Intake housing with recirculated-air and air flow/fresh-air flap

- Removing and installing ⇒ page 176

12 - Temperature sensor (component not fitted)

- Depending on the design of the intake housing, an opening may be provided at this point for the installation of a temperature sensor. The temperature sensor shown is not fitted on the Audi TT. If there is an opening in the intake housing, this is to be sealed with a socket.

13 - Fresh air blower control unit -J126- and fresh air blower -V2-

- Removing and installing ⇒ page 98
- Different versions; on the fresh air blowers -V2- fitted at the start of production, the fresh air blower control unit -J126- and the fresh air blower -V2- form a cast assembly (cannot be replaced separately). Fresh air blower control units -J126- and fresh air blowers -V2- which are bolted together (and can be replaced separately) were gradually introduced in Model Year 2007 ⇒ page 98 and ⇒ Electronic parts catalogue .
- The fresh air blower -V2- features an integrated fresh air blower control unit -J126- . Depending on the version, these two components can be replaced separately or only as an assembly.
- Checking ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051

14 - Dust and pollen filter

- Removing and installing ⇒ page 96
- Heed replacement intervals ⇒ Maintenance tables
- With activated charcoal element ⇒ page 97

15 - Evaporator outflow temperature sender -G263-

- Removing and installing ⇒ page 94

16 - Right temperature flap control motor -V159-

- ❑ With potentiometer for right temperature flap control motor -G221-
- ❑ Removing and installing ⇒ page 93

Note

17 - Coolant pipes to heat exchanger

18 - Grommet

- ❑ For sealing the coolant and refrigerant pipe opening through the plenum chamber bulkhead to the engine compartment.

19 - Connection for condensate drain

- ❑ Checking condensate drain, removing and installing condensate drain hose ⇒ page 84

20 - Expansion valve

- ❑ Detaching and attaching refrigerant pipes ⇒ page 166
- ❑ Removing and installing ⇒ page 169

Note

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

With potentiometer for air recirculation flap control motor -G143-

Note

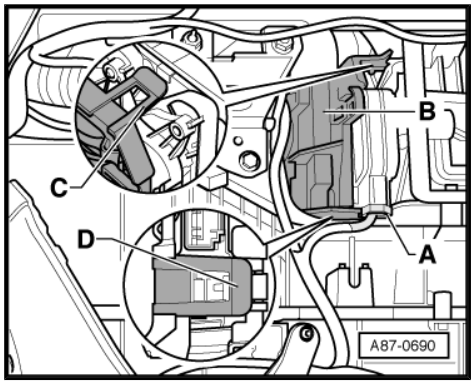
- ♦ *Operation of the control motor can be checked by way of the "Final control diagnosis" function for example ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 or without a tester as follows: For checking without a tester, connect the two contacts "5" and "6" in the control motor connector to a 12 V DC source. The control motor moves as far as the stop in one direction. Interchanging positive and negative reverses the direction. Use an adapter lead for this purpose ⇒ page 91 .*
- ♦ *After fitting a new control motor, perform air conditioner basic setting ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ♦ *If necessary, actuation of the electrical components of the air conditioner can be checked by way of the "Final control diagnosis" and "Basic setting" functions (e.g. to check for interchange) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*

Removing

– Remove the glove box ⇒ General body repairs, interior; Rep. Gr. 68 .

– If necessary mark connector -A- (to prevent interchange if several connectors are simultaneously unplugged).

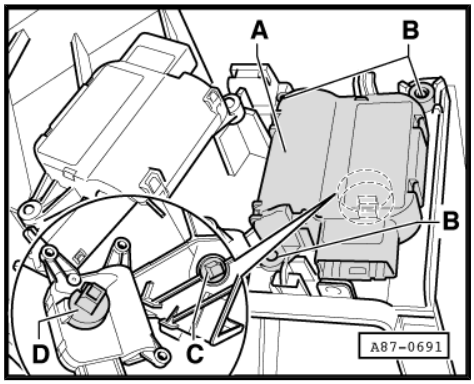
– Unplug connector -A-.
– Release catches -C- and -D- for bracket -B- at intake housing and remove bracket -B- (to rear).



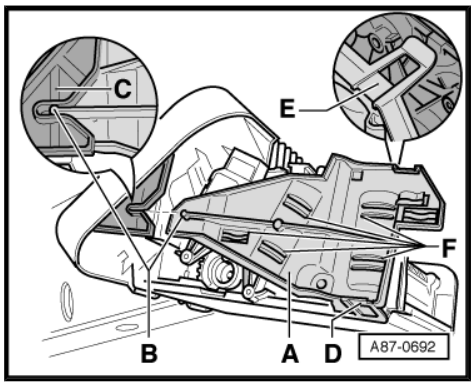
– Detach the control motor -A- from the intake housing.

Installing

– Before installing control motor -A-, check shaft of recirculated-air flap -C-.
– Set shaft -C- such that connecting element of control motor -D- can be inserted.
– Insert the control motor with the connecting element -D- in the shaft -C- and the mounts of the intake housing -B-.



– Install the holder -A-, taking particular care to ensure that the guide of the holder -B- is properly inserted in the mount of the intake housing -C- and that the holder is correctly engaged in both catches -D- and -E-.
– Check the two control motors held in position by the holder -A-. Eliminate any clearance if necessary by attaching a piece of foam to the inside of the attachment points -F- of the holder -A-.



Re-install all parts removed in reverse order, paying attention to the following:

– Route the wiring harness such that it cannot come into contact with moving components (e.g. control motor lever).
– Interrogate the fault memory of the air conditioner (heater) operating unit, Climatronic control unit -J255- and erase any faults displayed ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

– Perform air conditioner (heater) basic setting and final control diagnosis and interrogate the fault memory again ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

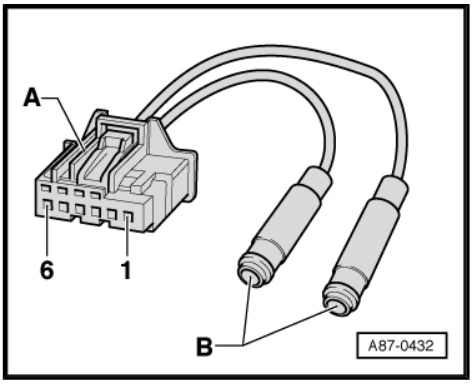
Note

In the event of problems with moisture in the passenger compartment, additionally check the recirculated-air flap (must close completely).

7.2 Preparing adapter lead for control motor actuation

– Make connection to the contacts “5” and “6” of a connector -A- (e.g. part number 6Q0 972 706) using a wire with a cross-section of greater than 0.25 mm^2 in each case (e.g. repair wires 000 979 009). ⇒ Electronic parts catalogue

– Connect other end of each wire to a commercially available banana plug -B-.



7.3 Removing and installing Central flap control motor -V70-

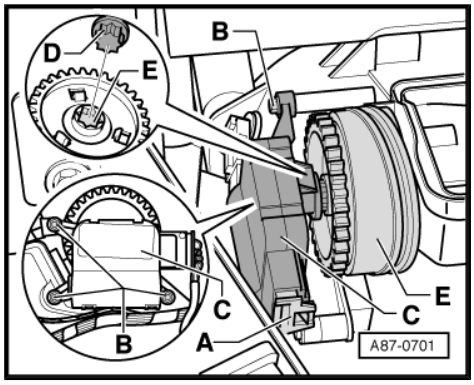
With potentiometer for centre flap servomotor -G112-

Note

- *Depending on the version of the air conditioner operating unit, Climatronic control unit -J255- , the centre flap control motor -V70- (with potentiometer -G112-) may also be referred to in the self-diagnosis function as front air distribution control motor -V145- (with potentiometer for front air distribution control motor -G470-).*
- *Operation of the control motor can be checked by way of the “Final control diagnosis” function for example ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 or without a tester as follows: For checking without a tester, connect the two contacts “5” and “6” in the control motor connector to a 12 V DC source. The control motor moves as far as the stop in one direction. Interchanging positive and negative reverses the direction. Use an adapter lead for this purpose ⇒ page 91 .*
- *Following installation of a new control motor, perform air conditioner basic setting ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *If necessary, actuation of the electrical components of the air conditioner can be checked by way of the “Final control diagnosis” and “Basic setting” functions (e.g. to check for interchange) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*

Removing

– Remove the dash panel (leave the central tube in position) ⇒ General body repairs, interior; Rep. Gr. 70 .



– Reach through opening between air conditioner unit on left and central tube (dash panel cross member) and unplug connector -A-.
– If necessary mark connector -A- (to prevent interchange if several connectors are simultaneously unplugged).
– Screw out bolts -B-.
– Detach control motor -C-.

Installing

– Insert the lug -D- in the mount -E-.

Re-install all parts removed in reverse order, paying attention to the following:

– Route the wiring harness such that it cannot come into contact with moving components (e.g. control motor lever).
– Interrogate the fault memory of the air conditioner (heater) operating unit, Climatronic control unit -J255- and erase any faults displayed ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
– Perform air conditioner (heater) basic setting and final control diagnosis and interrogate the fault memory again ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

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

With potentiometer for right temperature flap control motor -G221-

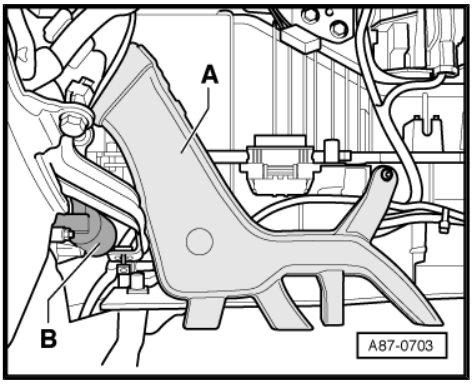
Note

- *Operation of the control motor can be checked by way of the "Final control diagnosis" function for example ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 or without a tester as follows: For checking without a tester, connect the two contacts "5" and "6" in the control motor connector to a 12 V DC source. The control motor moves as far as the stop in one direction. Interchanging positive and negative reverses the direction. Use an adapter lead for this purpose ⇒ page 91 .*
- *Following installation of a new control motor, perform air conditioner basic setting ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *If necessary, actuation of the electrical components of the air conditioner can be checked by way of the "Final control diagnosis" and "Basic setting" functions (e.g. to check for interchange) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *On the Audi TT with air conditioner, the two control motors for the left and right temperature flaps are regulated via a characteristic curve depending on the end stops learnt (only one temperature setting can be made at the air conditioner operating unit, Climatronic control unit -J255-).*
- *Depending on the measured temperatures, the sunlight penetration detected and the setting of the air conditioner operating unit, Climatronic control unit -J255- , the specified outlet temperature calculated and thus the specified position of the control motor for the left and right side may differ.*
- *Vehicles with no air conditioner (heater only) are only fitted with one temperature flap control motor. The two temperature flaps for the left and right side are linked by way of the shaft and thus moved jointly by the left temperature flap control motor -V158- .*

Removing

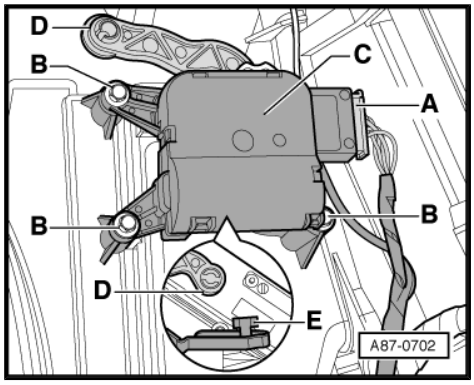
– Remove the glove box ⇒ General body repairs, interior; Rep. Gr. 68

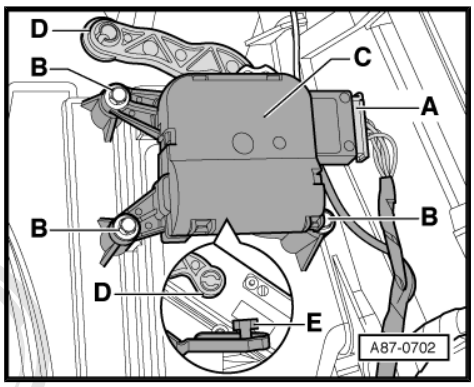
– Remove passenger's footwell vent -A- (to facilitate access to control motor -B-).



– Screw out bolts -B-.
– Detach control motor -C-.
– Detach the lever -E- of the control motor from the connecting rod -D-.
– Unplug connector -A-.

Installing





Note

Lever -E- at control motor and connecting rod -D- are colour coded (black for right temperature flap control motor -V159-).

Re-install all parts removed in reverse order, paying attention to the following:

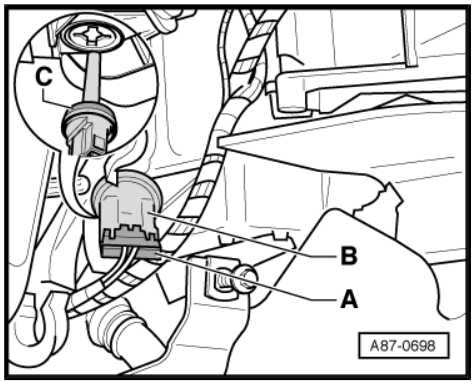
– Route the wiring harness such that it cannot come into contact with moving components (e.g. control motor lever).
– Interrogate the fault memory of the air conditioner operating unit, Climatronic control unit -J255- and erase any faults displayed ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
– Perform air conditioner basic setting and final control diagnosis and interrogate the fault memory again ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

7.5 Removing and installing evaporator outflow temperature sender -G263-

Note

Vehicles with no air conditioner (heater only) are not fitted with an evaporator output temperature sender -G263- (depending on the version, there is no mounting hole in the air distributor housing or this is sealed with a plug).

– Remove the right centre console trim ⇒ General body repairs, interior; Rep. Gr. 68 .
– Unplug connector -A-.
– Turn sender -B- through 90° and pull it out of air conditioner unit.
– On installation, pay attention to correct positioning of seal -C-.



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

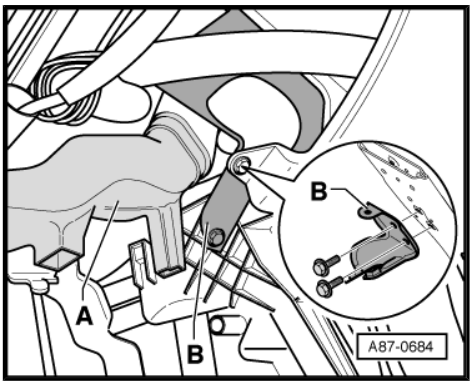
Note

Vehicles with no air conditioner (heater only) are not fitted with a left footwell vent temperature sender -G261- (depending on the version, there is no mounting hole in the air duct or this is sealed with a plug).

– Remove driver's storage compartment. ⇒ General body repairs, interior; Rep. Gr. 68

– Remove left footwell vent -A- (driver's side). ⇒ General body repairs, interior; Rep. Gr. 68

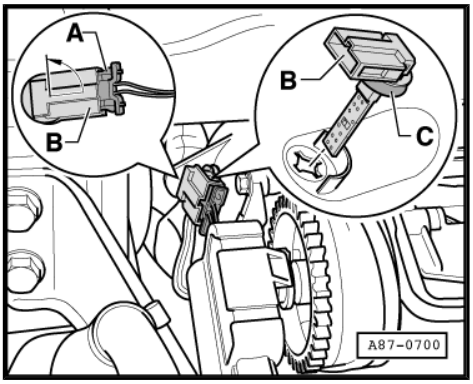
– Reach through the opening between the air conditioner unit on the left and the central tube (dash panel cross-member) or the support at the air conditioner unit on the left and turn the sender -B- to a position in which the connector -A- can be unplugged.



– Unplug the connector -A- (e.g. using pointed nose pliers).

– Turn sender -B- through 90° and pull it out of air conditioner unit.

– On installation, pay attention to correct positioning of seal -C-.



Note

- *If it is not possible to turn the sender -B- or if the sender -B- is inaccessible on account of other components, these are to be removed ⇒ General body repairs, interior; Rep. Gr. 70 .*
- *Illustration shows sender -B- with dash panel removed. With the dash panel in position, the sender -B- can be seen from underneath with the footwell vent removed (the part of the sender with the temperature sensor can be seen in the air duct).*

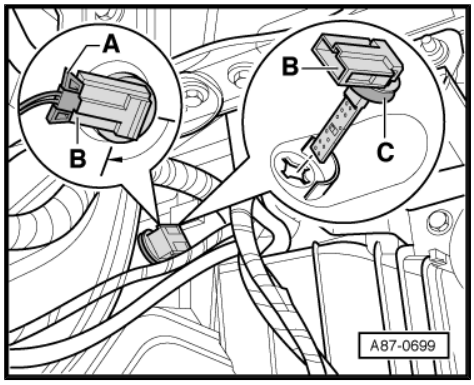
7.7 Removing and installing right footwell vent temperature sender -G262-

Note

Vehicles with no air conditioner (heater only) are not fitted with a right footwell vent temperature sender -G262- (depending on the version, there is no mounting hole in the air duct or this is sealed with a plug).

– Remove the glove box ⇒ General body repairs, interior; Rep. Gr. 68

– Unplug connector -A-.
– Turn sender -B- through 90° and pull it out of air conditioner unit.
– On installation, pay attention to correct positioning of seal -C-.

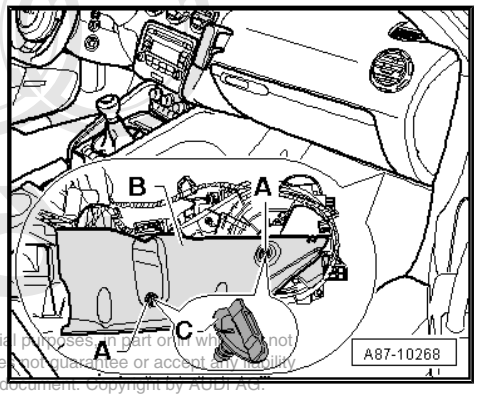


7.8 Removing and installing dust and pollen filter

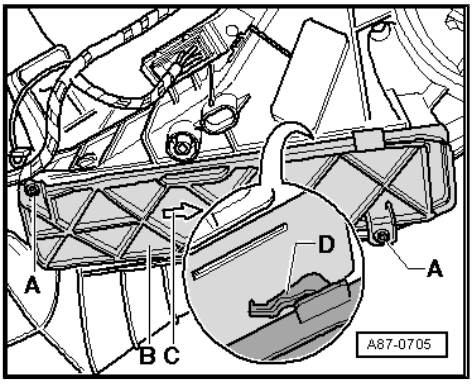
Note

- *Replacement interval for dust and pollen filter ⇒ Maintenance tables*
- *There are different versions of the dust and pollen filter without and with activated charcoal element ⇒ Electronic parts catalogue . The Audi TT with air conditioner is currently fitted with a dust and pollen filter with activated charcoal element. Vehicles with no air conditioner (heater only) feature a dust and pollen filter with no activated charcoal element.*
- *Clean the area around the dust and pollen filter in the slot for the air conditioner unit (heater) before fitting a new filter.*
- *It may be necessary to remove the driving instructor's pedals on driving school vehicles (depending on version, the driving instructor's pedals may be provided with service disconnection points) ⇒ Heed fitting instructions for driving school equipment .*

– Remove the screw-type clips -A- and detach the insulating mat -B-.
– Protect the floor covering with paper in the area beneath the dust and pollen filter.



– Slide the cover -B- in the direction of arrow -C- and detach the cover.

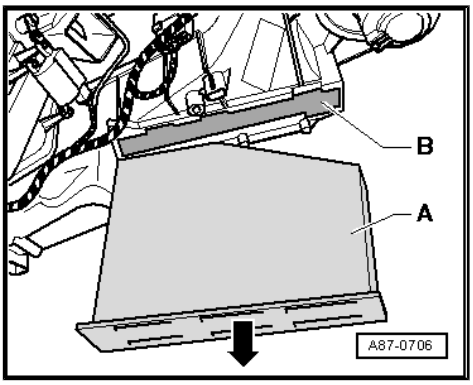


Note

If the fasteners -D- are no longer strong enough, the cover -B- may have been or can be secured with the bolts -A-.

– Remove the dust and pollen filter -A- from the slot -B- of the air conditioner unit (heater).

– Clean the air conditioner unit (heater) by way of the slot -B- (e.g. with a vacuum cleaner) after removing the dust and pollen filter.



7.9 Notes on dust and pollen filter with activated charcoal element

- There are different versions of the dust and pollen filter without and with activated charcoal element ⇒ Electronic parts catalogue . The Audi TT with air conditioner is currently fitted with a dust and pollen filter with activated charcoal element. Vehicles with no air conditioner (heater only) feature a dust and pollen filter with no activated charcoal element.
- The filter with activated charcoal element acts as a dust and pollen filter. It can however also filter gaseous pollutants such as ozone, benzene and nitrogen dioxide out of the flow of air. The principal function of the activated charcoal layer in the dust and pollen filter is to prevent peak pollution levels entering the passenger compartment.
- A further function of the activated charcoal is to absorb certain gaseous pollutants in the air flow. The activated charcoal layer in the dust and pollen filter has a different effect on the various pollutants in the air:

– Certain pollutants are permanently bonded in the activated charcoal layer.

– Others are converted into harmless compounds as in a catalytic converter.

– In all other respects, the activated charcoal acts like a condenser. As the impact level increases, pollutants are initially absorbed until a certain degree of saturation is attained. If the pollutant level drops, the activated charcoal layer continuously emits these absorbed particles again.

- As, in addition to dust and pollen, the activated charcoal layer also permanently binds some of the gaseous pollutant particles, it may be appropriate to replace the dust and pollen filter sooner than specified for the following reasons if the vehicle is used in areas with considerable air pollution:

– The activated charcoal layer in the dust and pollen filter becomes saturated sooner than specified.
– A saturated filter can no longer absorb pollutants and allows them to pass unhindered.

7.10 Removing and installing fresh air blower control unit -J126- and fresh air blower -V2-

Note

Different versions; on the fresh air blowers -V2- fitted at the start of production, the fresh air blower control unit -J126- and the fresh air blower -V2- form a cast assembly (cannot be replaced separately). Fresh air blower control units -J126- and fresh air blowers -V2- which are bolted together (and can be replaced separately) were gradually introduced in Model Year 2007 ⇒ Electronic parts catalogue .

- Removing and installing fresh air blower control unit -J126- and fresh air blower -V2- ⇒ page 98
- Removing and installing fresh air blower control unit -J126- ⇒ page 100

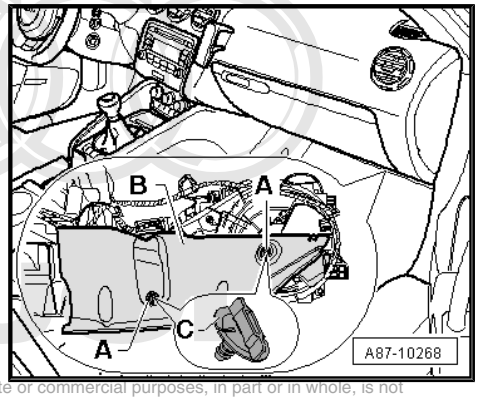
7.10.1 Removing and installing fresh air blower control unit -J126- and fresh air blower -V2-

Caution

Do not grasp hold of the impeller of the fresh air blower -V2- . Applying force to the impeller or moving the balancing weights attached to the impeller could cause imbalance and thus operating problems.

Removing

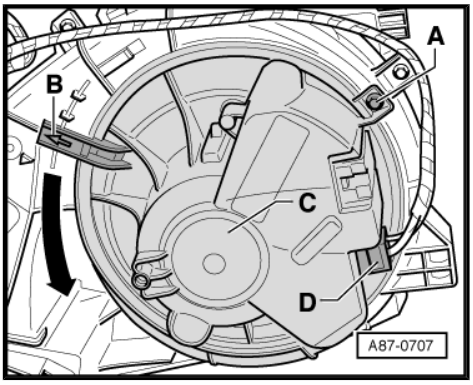
– Remove the glove box ⇒ General body repairs, interior; Rep. Gr. 68
– Remove the screw-type clips -A- and detach the insulating mat -B-.



– Remove bolt -A-.

– Unfasten any cable ties with which the wiring harness is attached to the housing of the fresh air blower -V2- -C-.

– Release the catch -B- and turn the housing of the fresh air blower -V2- -C- in direction of arrow.

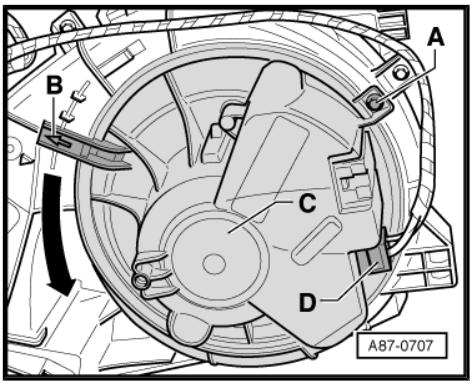


WARNING

The heat sink at the fresh air blower control unit -J126- may be hot.

Note

- *Sealing compound may have been applied to the connection between the housing of the fresh air blower -V2- -C- and the air conditioner unit. Greater force is then required for turning.*
- *The housing -C- accommodates the integrated fresh air blower -V2- and the fresh air blower control unit -J126- . On the version fitted at the start of production, the two components form a cast assembly and can thus not be replaced separately ⇒ Electronic parts catalogue .*



– Remove the housing of the fresh air blower -V2- -C- from the air conditioner unit.

– Unplug the connector -D-.

Installing

Re-install all parts removed in reverse order, paying attention to the following:

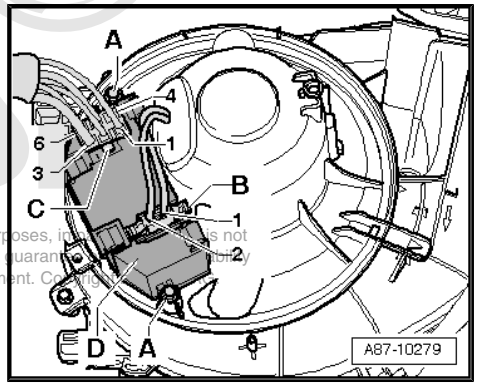
Note

- *On installation, pay attention to correct positioning of the fresh air blower -V2- in the air conditioner unit.*
- *After installation, check the position of the housing for the fresh air blower -V2- in the air conditioner unit as well as operation of the fresh air blower control unit -J126- .*

– Interrogate the fault memory of the air conditioner (heater) operating unit, Climatronic control unit -J255- and erase any faults displayed ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

– Perform air conditioner (heater) basic setting and final control diagnosis and interrogate the fault memory again ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

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



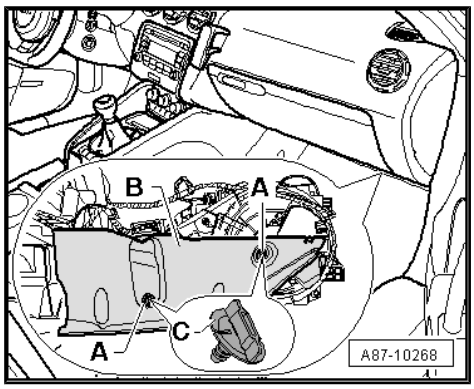
Note

- *The fresh air blower control unit -J126- can only be replaced separately in the version in which the two components do not form a cast assembly (gradual introduction in Model Year 2007) ⇒ Electronic parts catalogue .*
- *Different versions of the fresh air blower control unit -J126- are available as replacement parts. Pay attention to correct assignment ⇒ Electronic parts catalogue .*
- *The fresh air blower control unit -J126- applies (with the ignition switched on and the fresh air blower -V2- actuated) "positive" from contact "4" of the connector -C- to contact "1" of the connector -B-. The speed of the fresh air blower -V2- is regulated by the fresh air blower control unit -J126- by way of the earth connection between contact "2" of the connector -B- and contact "3" of the connector -C- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

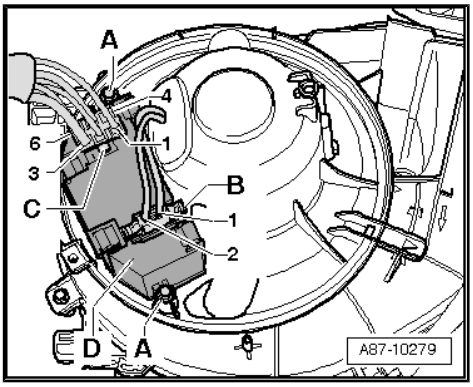
Removing

– Remove the glove box ⇒ General body repairs, interior; Rep. Gr. 68

– Remove the screw-type clips -A- and detach the insulating mat -B-.



– Unplug the connectors -B- and -C-.



WARNING

The heat sink at the fresh air blower control unit -J126- may be hot.

– Remove bolt -A-.

– Remove the fresh air blower control unit -J126- -D- from the mount in the fresh air blower -V2- .

Installing

Re-install all parts removed in reverse order, paying attention to the following:

Note

- *On installation, pay attention to correct positioning of the fresh air blower control unit -J126- -D- in the mount of the fresh air blower -V2- .*
- *Following installation, check operation of the fresh air blower control unit -J126- and the fresh air blower -V2- .*

– Interrogate the fault memory of the air conditioner (heater) operating unit, Climatronic control unit -J255- and erase any faults displayed ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

– Perform air conditioner (heater) basic setting and final control diagnosis and interrogate the fault memory again ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

7.11 Removing/installing and operation of air flow flap control motor -V71-

With potentiometer for air flow flap control motor -G113-

Note

- *Operation of the control motor can be checked by way of the "Final control diagnosis" function for example ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 or without a tester as follows: For checking without a tester, connect the two contacts "5" and "6" in the control motor connector to a 12 V DC source. The control motor moves as far as the stop in one direction. Interchanging positive and negative reverses the direction. Use an adapter lead for this purpose ⇒ page 91 .*
- *Following installation of a new control motor, perform air conditioner (heater) basic setting ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *If necessary, actuation of the electrical components of the air conditioner (heater) can be checked by way of the "Final control diagnosis" and "Basic setting" functions (e.g. to check for interchange) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*

- Removing and installing air flow flap control motor -V71- ⇒ page 102
- Function of air flow flap control motor -V71- ⇒ page 106

7.11.1 Removing and installing air flow flap control motor -V71-

Note

- *After installing a new control motor, check actuation by the air conditioner (heater) operating unit, Climatronic control unit -J255- and operation of the control motor (correct position of recirculated-air flap and air flow/fresh-air flap) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *Air flow flap control motor -V71- can only be readily removed in "fresh air mode stop" position and can only be installed in this position. If the control motor comes to a halt in a different position and it can no longer be moved electrically into the "fresh air mode stop" position, it is difficult to detach and thus remove.*

Removing

– Remove the glove box ⇒ General body repairs, interior; Rep. Gr. 68

– If applicable, switch on the ignition and, on the air conditioner (heater) operating unit, Climatronic control unit -J255- , select "Defrost" mode (press the defrost button, the lamp in the defrost button lights).

Note

In "Defrost" mode, the control motor is always set to the "fresh air mode" position.

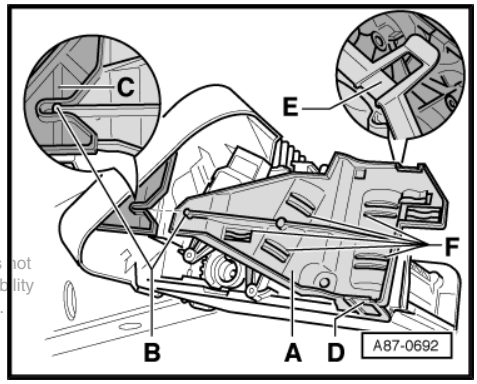
– Wait for the control motor to reach its "fresh air mode" end position (approx. 20 sec.).

– Switch off ignition.

– Release catches -D- and -E- for bracket -A- at intake housing and detach bracket -A-.

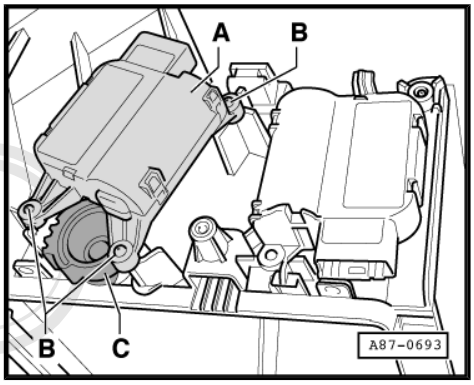
– Remove air recirculation flap control motor -V113- ⇒ page 89 .

– Mark connector to air recirculation flap control motor -V113- (to prevent interchange with connector to air flow flap control motor -V71-).



– Detach the air flow flap control motor -V71- -A- from the intake housing.

– Mark and unplug the connector to the air flow flap control motor -V71- .



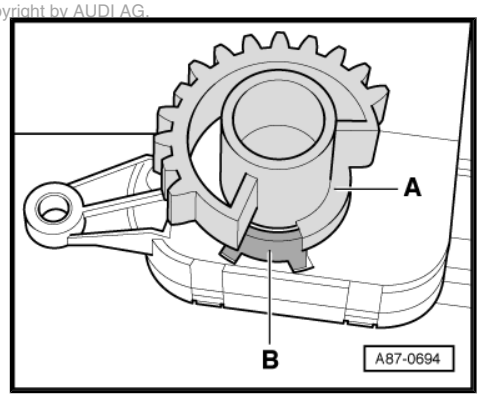
Note

- *The connection between the gear wheels of the air flow flap control motor -V71- and the air flow flap is designed such that the air flow flap control motor -V71- can only be readily detached in the "fresh air mode" position.*
- *If the control motor is in a different position and can no longer be moved, it is not possible to simply detach the control motor, but rather it must first be forced out of the mounting points -B-. Take care not to damage the gear wheel -C- when doing so.*

Installing

Note

- *Replacement air flow flap control motors -V71- are supplied in "fresh air mode" position. The motor can only be attached to the gear wheel of the air flow flap when the gear wheel -A- is on stop -B-. Air flow flap control motors -V71- which have been removed in a different position or actuated following removal cannot be installed.*
- *If the gear wheel -A- of the air flow flap control motor -V71- is not on stop -B- "fresh air mode", connect the control motor by way of the corresponding connector to the vehicle wiring harness. Then switch on the ignition and, on the air conditioner (heater) operating unit, Climatronic control unit -J255- , select "Defrost" mode (control motor moves to "fresh air mode" stop -B-).*
- *If contacts "5" and "6" of the control motor are connected, e.g. using an adapter lead ⇒ page 91 or a test cable from the adapter set -V.A.G 1594 C- by way of a 5 A fuse to a 12 V battery, the motor also moves in one direction as far as the stop. Interchanging "positive" and "negative" reverses the direction.*

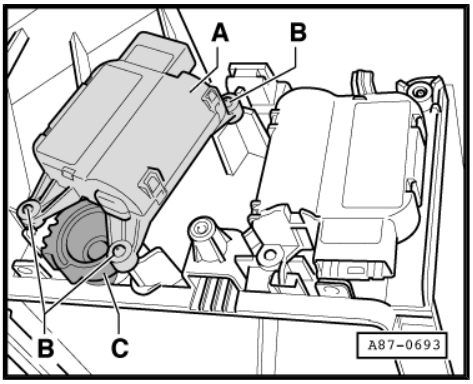


– Actuate the control motor until the gear wheel -A- is on the "fresh air mode" stop -B-.

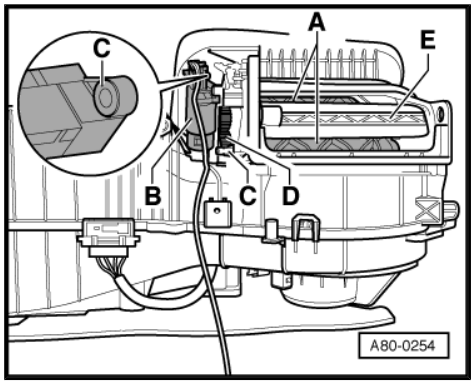
– If necessary switch off the ignition.

– Before fitting the control motor, check the mounting of the air flow flap in the intake housing and the position of the gear wheel -C- (air flow flap open, fresh air mode).

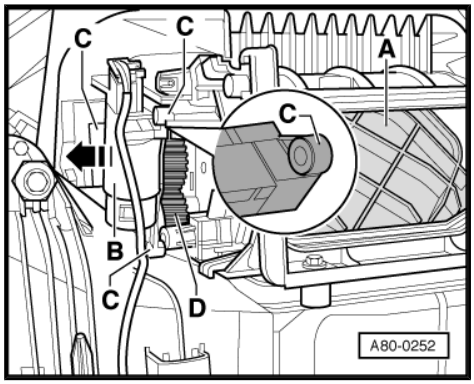
– Connect air flow flap control motor -V71- to vehicle wiring harness (observe correct pin assignment).



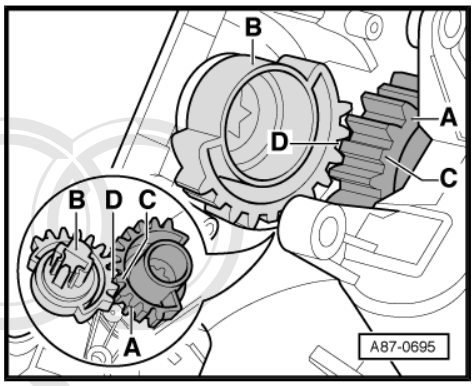
– Open the recirculated air flap -E-.
– Reach into intake opening for recirculated air mode and move air flow flap -A- to “fresh air mode” position (intake opening for recirculated air mode closed).



– Insert the air flow flap control motor -V71- -B- in the direction opposite to the arrow in the mounts -C- and position it on the gear wheel -D-.

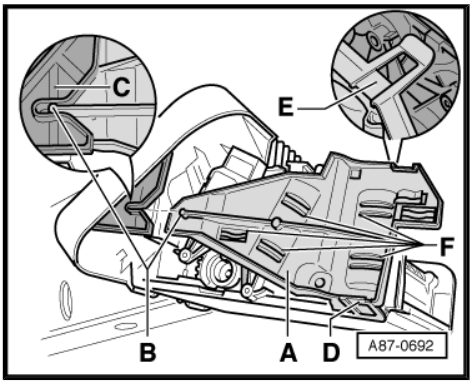


– To enable the gear wheel at the control motor -A- to be attached to the gear wheel of the air flow flap, the short tooth -C- of the gear wheel at the control motor must coincide with the short tooth gap -D- of the gear wheel at the shaft of the air flow flap -B-.
– Install air recirculation flap control motor -V113- ⇒ page 89 .
– Route the wiring harness such that it cannot come into contact with moving components (e.g. control motor lever).



– Install the holder -A-, taking particular care to ensure that the guide of the holder -B- is properly inserted in the mount of the intake housing -C- and that the holder is correctly engaged in both catches -D- and -E-.

– Check the two control motors held in position by the holder -A-. Eliminate any clearance if necessary by attaching a piece of foam to the inside of the attachment points -F- of the holder -A-.



Note

- *The position of the air flow flap control motor -V71- and the air recirculation flap control motor -V113- (and the associated flaps) can no longer be seen with the glove box fitted. It is therefore appropriate to check operation before fitting the glove box.*
- *If the two gear wheels (at the air flow flap control motor -V71- and the air flow flap) have been assembled in the wrong position, the air flow flap will not reach its two end positions (may be detected as a fault via the "Basic setting" function) or the control motor will not run smoothly.*

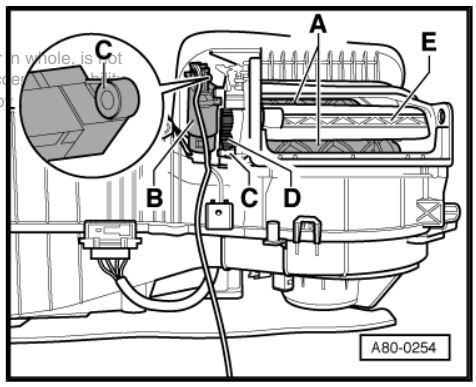
– Switch on ignition.

– Interrogate the fault memory of the air conditioner (heater) and erase any faults displayed ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

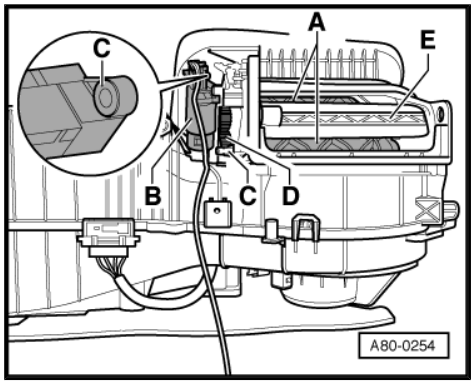
– After installing the control motors, perform air conditioner (heater) basic setting and then interrogate the air conditioner fault memory again ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

– Actuate the air flow flap control motor -V71- and the air recirculation flap control motor -V113- as follows by way of the air conditioner (heater) operating unit, Climatronic control unit - J255- until the gear wheel is on the "recirculated air mode" stop (this illustration shows the air flow flap -A- on the "fresh air mode" stop) and then check the position of the air flow flap (must be closed).

– First select the "Recirculated air mode" function on the air conditioner (heater) operating unit, Climatronic control unit -J255- .



Air recirculation flap control motor -V113- opens flap -E- and air flow flap control motor -V71- moves air flow flap -A- to position “air intake opening for recirculated air mode open”.



Wait until both control motors have reached their end position.

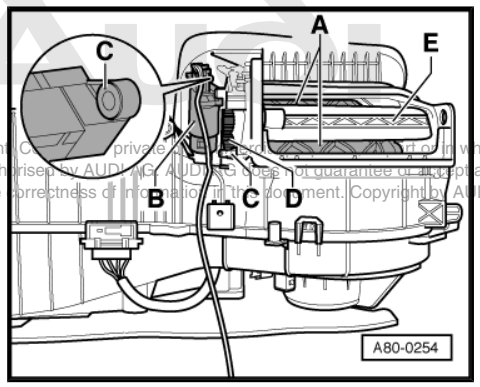
– Select “Defrost” mode on the air conditioner (heater) operating unit, Climatronic control unit -J255- (press the Defrost button, the lamp in the Defrost button lights, in this mode the control motors are always set to the “fresh air mode” position).

The air flow flap control motor -V71- sets the air flow flap -A- to the position “air intake opening for recirculated air mode closed”. The air recirculation flap control motor -V113- moves the flap -E- to a position specified by the air conditioner (heater) operating unit, Climatronic control unit -J255- .

Wait until both control motors have reached their end position.

Re-install all the remaining components removed in reverse order.

7.11.2 Function of air flow flap control motor -V71-



♦ With the recirculated air flap -E- closed, the position of the air flow flap -A- can be seen by way of the air intake opening in the plenum chamber (if applicable, remove plenum chamber cover and cover over fresh air intake ⇒ page 68).

♦ For regulation of the air flow (currently only available for vehicles with air conditioner), the fresh air intake duct is partially closed via the air flow flap -A- at higher vehicle speeds (as of approx. 80 km/h) by the air conditioner operating unit, Climatronic control unit -J255- (the position of the recirculated air flap -E- is specified by the air conditioner operating unit, Climatronic control unit -J255-).

♦ To reduce the change in noise of the fresh air blower -V2- produced by the difference in air intake on switching from fresh air mode to recirculated air mode or vice versa, the air flow flap control motor -V71- and the air recirculation flap control motor -V113- are actuated as follows:

– On switching from fresh air mode to recirculated air mode, the recirculated air flap -E- is opened first and the fresh air intake duct then closed by way of the air flow/fresh air flap -A-.

– On switching from recirculated air mode to fresh air mode, the fresh air intake duct is opened first by way of the air flow/fresh air flap -A- and the recirculated air flap -E- then closed.

– In partial recirculated air mode (currently only available for vehicles with air conditioner), the recirculated air flap -E- is opened and the air flow/fresh air flap -A- is moved to mid-position by the air conditioner operating unit, Climatronic control unit -J255- (fresh air and recirculated air intake ducts are simultaneously opened slightly). This ensures improved cooling in certain temperature ranges and at the same time the intake of a certain proportion of fresh air.

7.12 Removing and installing defroster flap control motor -V107-

With potentiometer for defroster flap control motor -G135-

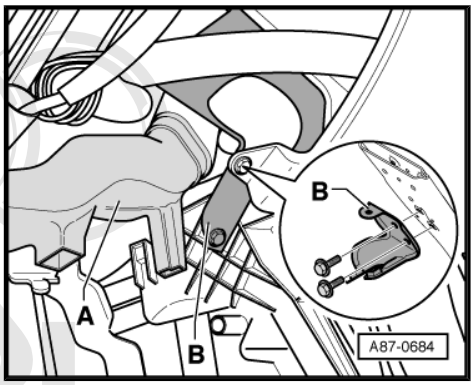
Note

- *Operation of the control motor can be checked by way of the "Final control diagnosis" function for example ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 or without a tester as follows: For checking without a tester, connect the two contacts "5" and "6" in the control motor connector to a 12 V DC source. The control motor moves as far as the stop in one direction. Interchanging positive and negative reverses the direction. Use an adapter lead for this purpose ⇒ page 91 .*
- *Following installation of a new control motor, perform air conditioner (heater) basic setting ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *If necessary, actuation of the electrical components of the air conditioner (heater) can be checked by way of the "Final control diagnosis" and "Basic setting" functions (e.g. to check for interchange) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *On right-hand drive vehicles, this control motor is attached to the right of the air distributor housing.*

Removing

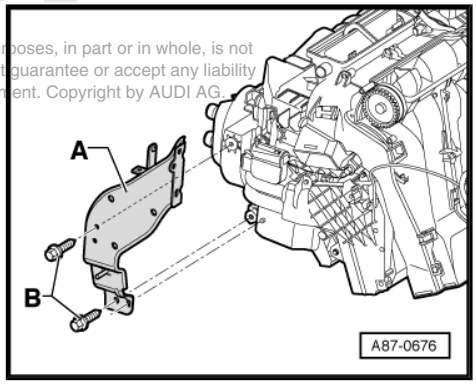
– Remove the dash panel complete with the dash panel cross member (central tube). ⇒ General body repairs, interior; Rep. Gr. 70

– Remove the left footwell vent -A- (driver's side) ⇒ General body repairs, interior; Rep. Gr. 68

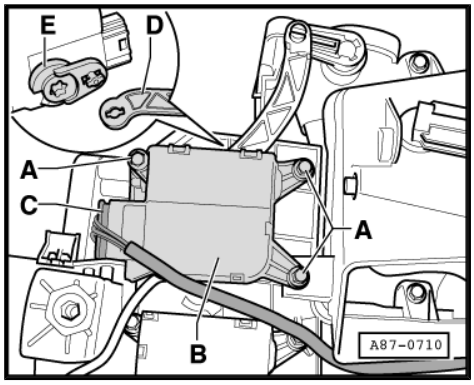


– Remove the data bus diagnostic interface -J533- (attached in the area of the steering column to the holder -A-) ⇒ Electrical system; Rep. Gr. 90 .

– Remove the holder -A- ⇒ General body repairs, interior; Rep. Gr. 70 .



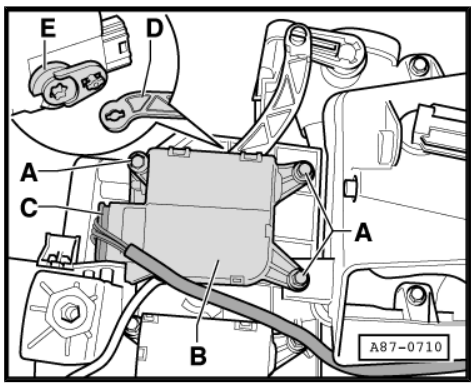
– Mark the connector -C- to the defroster flap control motor -V107- to prevent interchange with other identical connectors.
– Unplug connector -C- from defroster flap control motor -V107- .
– Screw out bolts -A-.
– Detach control motor -B-.
– Release the lever -E- of the defroster flap control motor -V107- from the connecting rod -D-.



Installing

Note

Lever -E- at control motor and connecting rod -D- are colour coded (blue for defroster flap control motor -V107-).



Re-install all parts removed in reverse order, paying attention to the following:

– Route the wiring harness such that it cannot come into contact with moving components (e.g. control motor lever).
– Interrogate the fault memory of the air conditioner (heater) operating unit, Climatronic control unit -J255- and erase any faults displayed ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
– Perform air conditioner (heater) basic setting and final control diagnosis and interrogate the fault memory again ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

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

With potentiometer for left temperature flap control motor -G220-

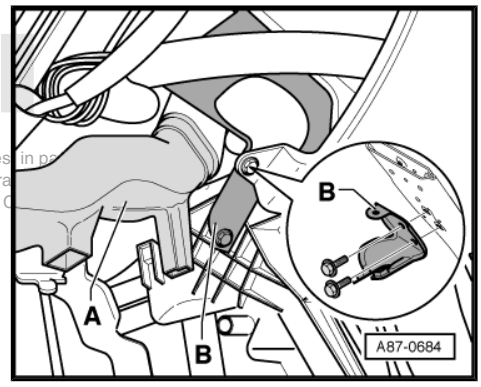
Note

- *Operation of the control motor can be checked by way of the "Final control diagnosis" function for example ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 or without a tester as follows: For checking without a tester, connect the two contacts "5" and "6" in the control motor connector to a 12 V DC source. The control motor moves as far as the stop in one direction. Interchanging positive and negative reverses the direction. Use an adapter lead for this purpose* *⇒ page 91* *.*
- *Following installation of a new control motor, perform air conditioner (heater) basic setting ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *If necessary, actuation of the electrical components of the air conditioner (heater) can be checked by way of the "Final control diagnosis" and "Basic setting" functions (e.g. to check for interchange) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *On the Audi TT with air conditioner, the two control motors for the left and right temperature flaps are regulated via a characteristic curve depending on the end stops learnt (only one temperature setting can be made at the air conditioner operating unit, Climatronic control unit -J255-).*
- *Depending on the measured temperatures, the sunlight penetration detected and the setting of the air conditioner operating unit, Climatronic control unit -J255- , the specified outlet temperature calculated and thus the specified position of the control motor for the left and right side may differ.*
- *Vehicles with no air conditioner (heater only) are only fitted with one temperature flap control motor. The two temperature flaps for the left and right side are linked by way of the shaft and thus moved jointly by the left temperature flap control motor -V158- .*

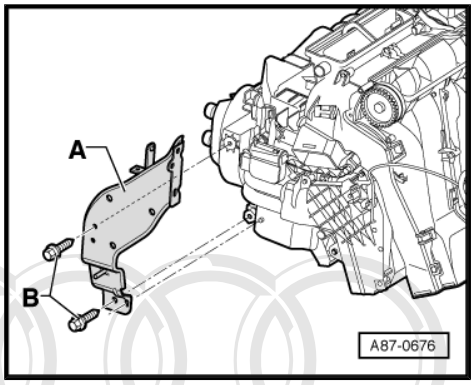
Removing

– Remove the dash panel complete with the dash panel cross member (central tube). ⇒ General body repairs, interior; Rep. Gr. 70

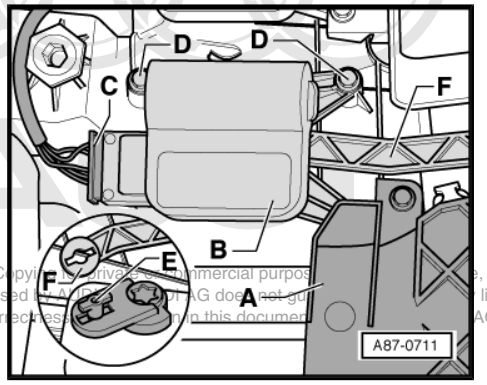
– Remove the left footwell vent -A- (driver's side). ⇒ General body repairs, interior; Rep. Gr. 68



– Remove the data bus diagnostic interface -J533- (attached in the area of the steering column to the holder -A-) ⇒ Electrical system; Rep. Gr. 90 .
– Remove the holder -A- ⇒ General body repairs, interior; Rep. Gr. 70 .



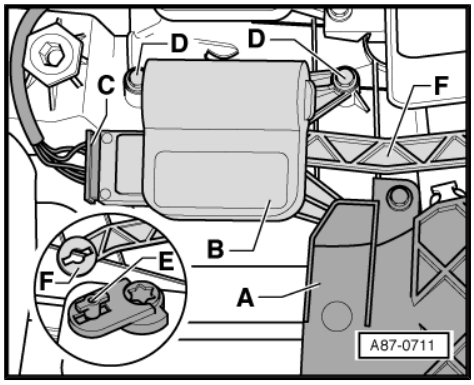
– Mark the connector -C- to the left temperature flap control motor -V158- to prevent interchange with other identical connectors.
– Unplug connector -C- from left temperature flap control motor -V158- .
– Detach the cover (of the heat exchanger) -A-.
– Screw out the bolts -D-.
– Detach the left temperature flap control motor -V158- -B-.
– Release the lever -E- of the left temperature flap control motor -V158- from the connecting rod -F-.



Installing

Note

At present, the lever -E- at the control motor is “grey” and the connecting rod -F- “black”.



Re-install all parts removed in reverse order, paying attention to the following:

– Route the wiring harness such that it cannot come into contact with moving components (e.g. control motor lever).
– Interrogate the fault memory of the air conditioner (heater) operating unit, Climatronic control unit -J255- and erase any faults displayed ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
– Perform air conditioner (heater) basic setting and final control diagnosis and interrogate the fault memory again ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

7.14 Removing and installing supplementary heater element -Z35-

Note

- *An electric supplementary air heater is currently fitted on vehicles with diesel engine ⇒ Audi sales range . Heat energy is supplied to the air after leaving the heat exchanger of the air conditioner unit (heater) in the event of a request from the air conditioner (heater) operating unit, Climatronic control unit - J255- .*
- *The electric supplementary heater (supplementary air heater element -Z35-) is actuated by way of the corresponding engine control unit (the control units exchange the appropriate information by way of the data bus) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *Checking operation of supplementary air heater element -Z35- ⇒ page 29 .*
- *Vehicles with petrol engine are currently not fitted with a supplementary heater.*
- *At present, all replacement air distributor housings available have an opening to accommodate the supplementary air heater element -Z35- . On vehicles with petrol engine (no supplementary heater element -Z35-), the opening is sealed off by the heat exchanger cover (different versions) ⇒ Electronic parts catalogue*

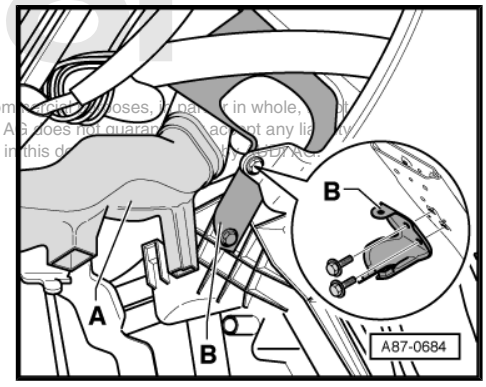
Removing

– Remove driver's storage compartment. ⇒ General body repairs, interior; Rep. Gr. 68

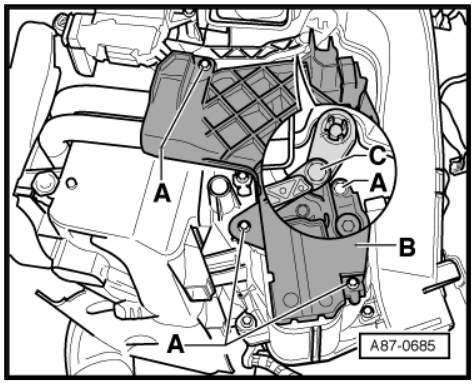
– Remove the left and right centre console trim and the front centre console ⇒ General body repairs, interior; Rep. Gr. 68

– Remove the left footwell vent -A- (driver's side) ⇒ General body repairs, interior; Rep. Gr. 68

– Remove the holder -B- ⇒ General body repairs, interior; Rep. Gr. 68 .

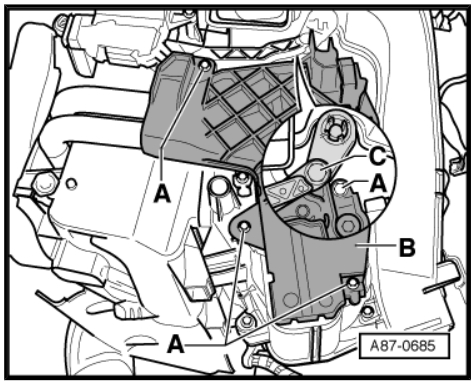


– Remove the 4 bolts -A- and detach cover -B-.



Note

- *There are different versions of the cover -B- (for vehicles without or with supplementary heater element -Z35-) ⇒ Electronic parts catalogue*
- *If the lever to the left temperature flap is positioned such that the upper bolt -A- is not accessible, switch on the ignition and select a different temperature setting on the air conditioner (heater) operating unit, Climatronic control unit -J255- (e.g. setting "Hi").*

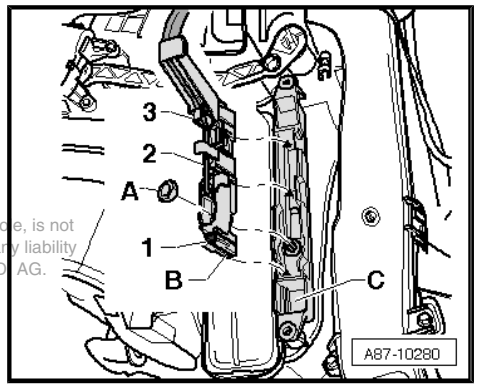


– Switch off ignition.

Note

If the ignition is to be switched on with the heater element removed, interrupt the power supply to the supplementary heater element -Z35- by removing the corresponding fuse. The fitting location of the fuse can be found in the relevant current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

– Remove the hexagon nut -A- (tightening torque 6 Nm).
– Unplug the connector -B- from the supplementary air heater element -Z35- -C-.
– Pull the supplementary air heater element -Z35- -B- out of the air conditioner unit (heater).



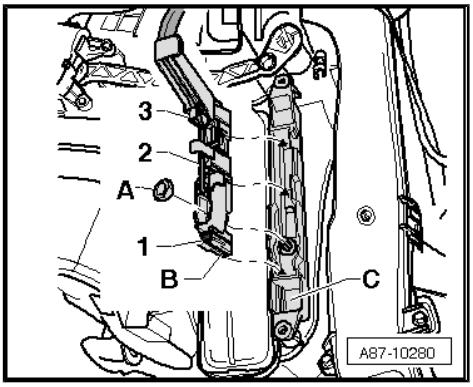
Installing

Then re-install all components removed in reverse order.

Note

The hexagon nut -A- at the connector -B- and the earth connection of the supplementary air heater element -Z35- -C- is tightened to 6 Nm (excessive torque could damage the electrics of the supplementary air heater element -Z35-).

– Following installation, check actuation and operation of the supplementary air heater element -Z35- if applicable ⇒ page 29 .



8 Removing and installing heat exchanger of air conditioner unit (heater)

Special tools and workshop equipment required

- Hose clamps up to 25 mm -3094- and hose clamps up to 40 mm -3093-
- Compressed air gun, commercially available
- Cooling system tester -V.A.G 1274- (and appropriate adapters)
- Preparation for heat exchanger removal ⇒ page 114
- Removing and installing heat exchanger ⇒ page 117 .

8.1 Preparation for heat exchanger removal

– Switch off ignition.

– Dissipate pressure in coolant circuit by opening cap at coolant expansion tank. ⇒ Engine, Mechanics; Rep. Gr. 13

Note

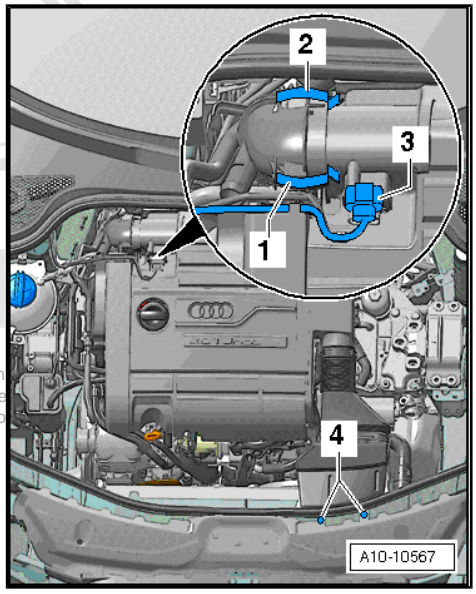
- *Depending on the engine and vehicle model, it may be necessary to unfasten or remove various engine components in order to be able to detach the coolant hoses.*
- *On right-hand drive vehicles, the glove box and the left temperature flap control motor -V158- have to be removed instead of the driver's storage compartment ⇒ General body repairs, interior; Rep. Gr. 68 and ⇒ page 109 .*

Components which have to be removed on vehicles with 4-cyl. engine

Note

Removal and installation are described in the following on the basis of a vehicle with a 2.0 l TFSI engine. The procedure may differ for vehicles with a different 4-cylinder engine.

– Unplug the connector -3- at the air mass meter -G70- .
– Unfasten the clamps -1- and -2- and detach the air hose from the air mass meter.
– Unscrew the air intake connection from the lock carrier -4-.
– Detach the engine cover.



Components which have to be removed on vehicles with 5-cyl. engine

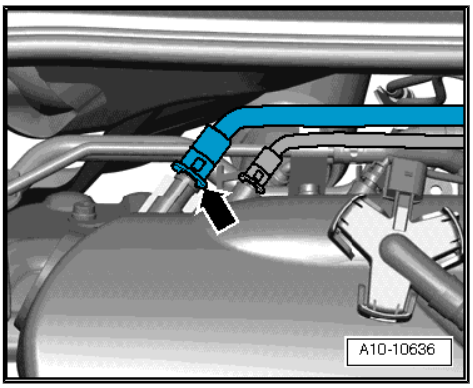
– Remove the air pipe (from the air cleaner to the turbocharger) ⇒ Injection and ignition system; Rep. Gr. 24 .

Components which have to be removed on vehicles with 6-cyl. engine

Note

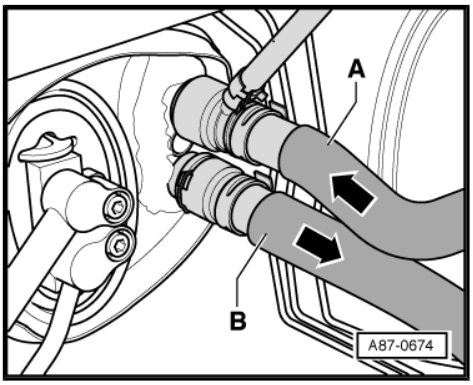
Removal and installation are described in the following on the basis of a vehicle with a 3.2 l MPI engine. The procedure may differ for vehicles with a different 6-cylinder engine.

– Detach the vacuum hose to the brake servo -arrow-.



Further procedure for all vehicles

– Remove the components impeding access to the coolant hoses -A- and -B- in the engine compartment ⇒ Engine, mechanics; Rep. Gr. 13 .



Note

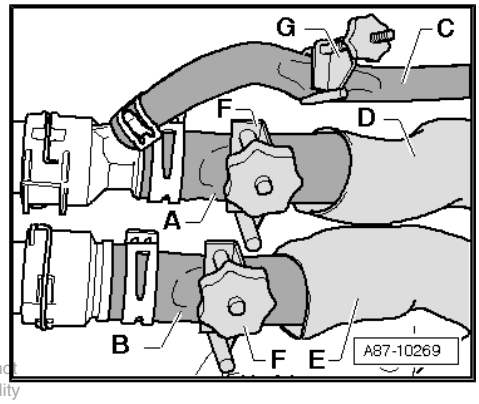
Depending on the engine and vehicle model, it may additionally be necessary to unfasten or remove the following components: Top engine cover, compressed air pipe to throttle valve unit, heat shield for coolant hose connection area, expansion valve, etc.

– Mark the arrangement of the coolant hoses -A- (supply from cylinder head) and -B- (return to coolant pump).

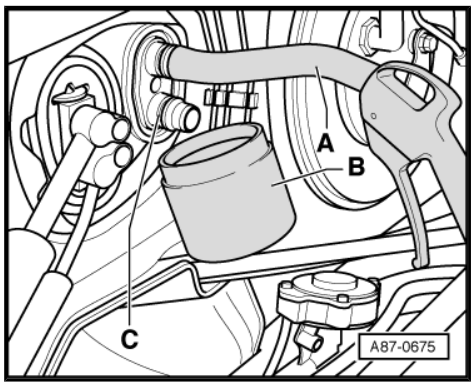
Note

- *The heat exchanger is designed for a certain coolant flow direction. The coolant hoses must therefore be connected on the correct sides.*
- *Bleeding coolant circuit ⇒ Engine, mechanics; Rep. Gr. 13 .*

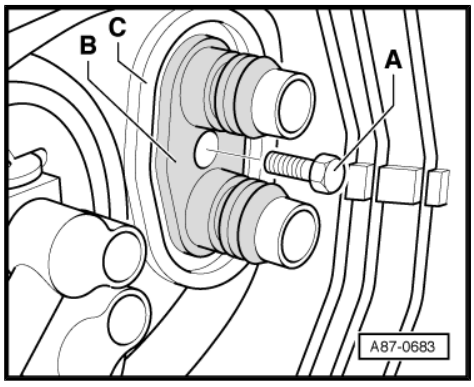
– Slide back the thermal insulation -D- and -E- so as to permit attachment for example of the hose clamps up to Ø 40 mm - VAS 3093- -F- to the coolant hoses -A- and -B-.
– Pinch off the coolant hoses -A- and -B-.
– Pinch off the breather hose -C- (to the coolant expansion tank) e.g. using a hose clamp up to 25 mm -3094- -G-.
– Cover the area beneath the connections for the coolant hoses -A- and -B- with absorbent paper, for example.
– Detach the coolant hoses -A- and -B- from the connections to the heat exchanger of the air conditioner unit ⇒ Engine, mechanics; Rep. Gr. 13.



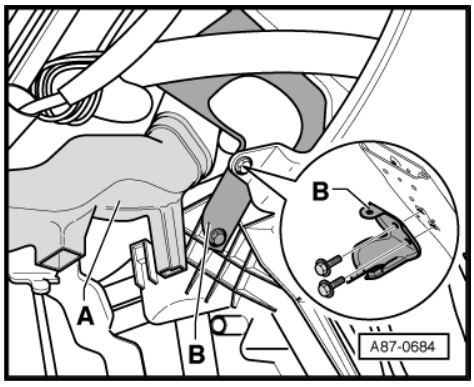
– Attach a section of tubing -A- to the top connection.
– Hold a vessel -B- beneath the bottom connection -C-.
– Use a compressed-air gun to carefully blow the coolant out of the heat exchanger (into the vessel -B-).



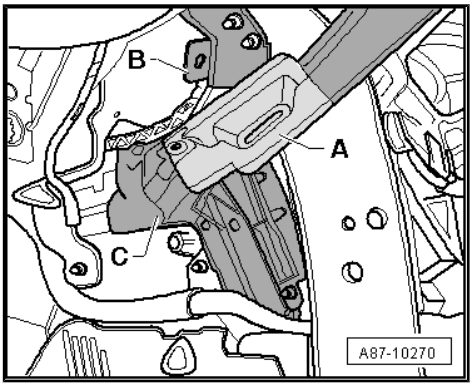
– Remove the bolt -A- from the connecting flange -B- (so that the coolant pipes can be moved for removal of the heat exchanger).
– Remove driver's storage compartment: ⇒ General body repairs, Interior; Rep. Gr. 68
– Remove the front section of the centre console ⇒ General body repairs, interior; Rep. Gr. 68



– Remove the left footwell vent -A- (driver's side) ⇒ General body repairs, interior; Rep. Gr. 68



– Remove the holder -B- ⇒ General body repairs, interior; Rep. Gr. 68 .



Caution

If necessary for removal of the holder -B-, the cover -C- and the heat exchanger, bend aside the lower section of the dash panel -A-. Only bend carefully to the extent absolutely necessary for removal to avoid damaging the dash panel.

– On vehicles with electric supplementary heater (vehicles with diesel engine only), remove the supplementary air heater element -Z35- ⇒ page 111 .

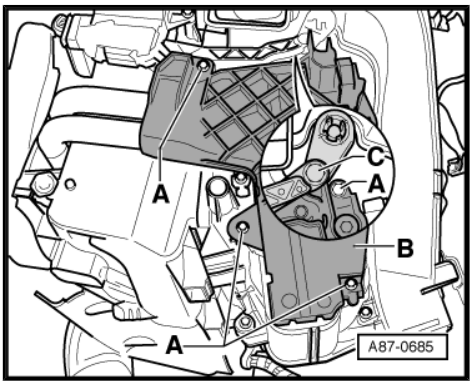
♦ Removing and installing heat exchanger ⇒ page 117 .

8.2 Removing and installing heat exchanger

Removing

– Perform preparatory work for heat exchanger removal ⇒ page 114 .

– Remove the 4 bolts -A- and detach cover -B-.

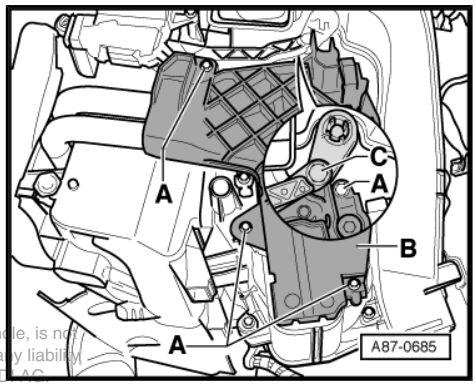


Note

♦ *This illustration shows the version of the air conditioner unit with supplementary air heater element -Z35- .*

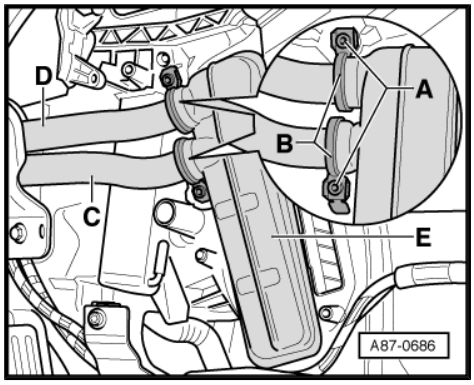
♦ *There are different versions of the cover -B- (for vehicles without or with supplementary air heater element -Z35-) ⇒ Electronic parts catalogue .*

♦ *If the lever -C- to the left temperature flap is positioned such that the upper bolt -A- is not accessible, switch on the ignition and select a different temperature setting on the air conditioner (heater) operating unit, Climatronic control unit -J255- (e.g. turn the rotary temperature control to the "warm" end position).*



– Protect the floor covering in the area beneath the heat exchanger with impermeable sheeting and absorbent paper.

– Remove bolts -A- and detach clips -B- from connections of coolant pipes -C- and -D- at heat exchanger -E-.
– Detach the coolant pipes -C- and -D- from the heat exchanger -E- (slide the coolant pipes towards the plenum chamber back wall).
– Pull the heat exchanger -E- out of the air conditioner unit (heater).



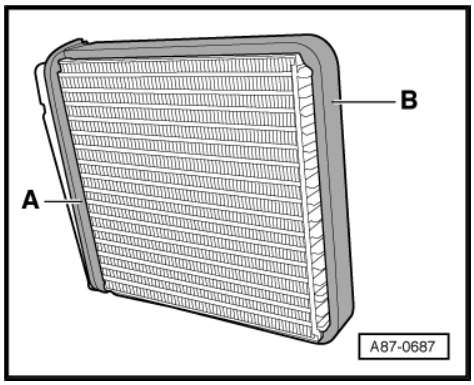
Caution

If necessary for removal of the heat exchanger -E-, bend aside the lower section of the dash panel -A-. Only bend carefully to the extent absolutely necessary for removal to avoid damaging the dash panel.

Installing

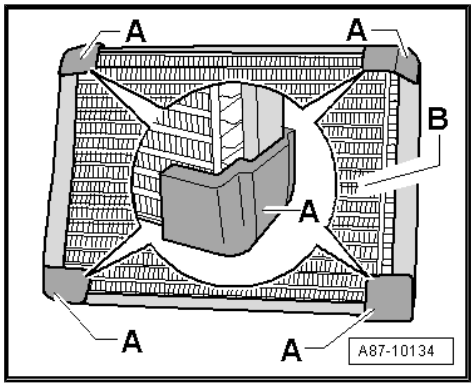
Install in reverse order, paying attention to the following:

– Check the seals -A- and -B- attached to the heat exchanger. Only fit a heat exchanger with intact seals.

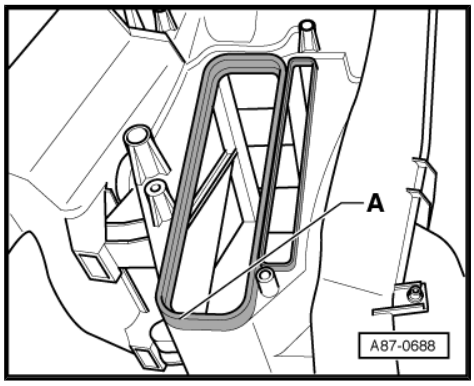


Note

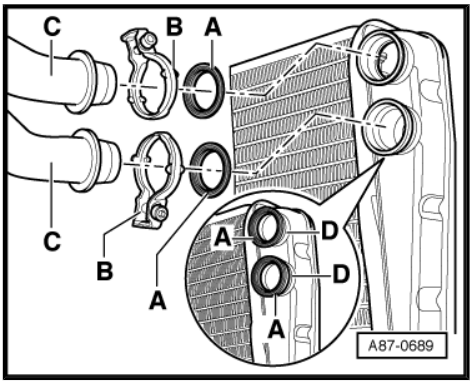
- *Seal may curl up on insertion if not correctly bonded on.*
- *Cold air may flow past heat exchanger if seal is damaged or not properly fitted.*
- *Additional foam strips -A- are bonded to the corners of the heat exchanger -B-. These foam strips -A- are designed to prevent the rattling noise which may occur particularly on vehicles with a diesel engine. The strips are to be affixed to all heat exchangers (e.g. self-adhesive foam with part number 191 819 069 ⇒ Electronic parts catalogue).*



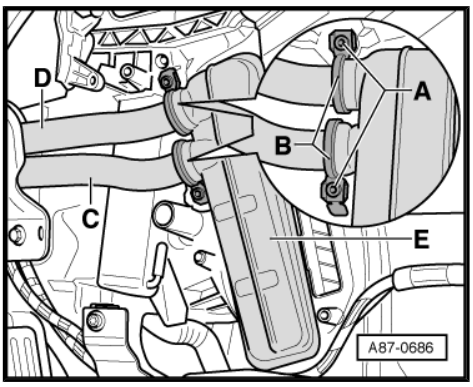
– With the heat exchanger removed, check the air conditioner unit (heater) for contamination (by way of the slot -A- for the heat exchanger).
– Remove any dirt or remnants of escaped coolant from the air conditioner unit (heater) e.g. after removing a leaking heat exchanger.
– Slide the heat exchanger into the air conditioner unit (heater).



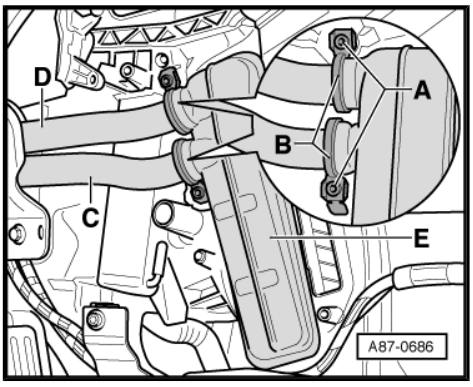
– Remove old clips -B- from both coolant pipes -C-.
– Attach the new clips -B- (included in the scope of delivery of the heat exchanger) to both the heat exchanger coolant pipes as shown.
– Coat new seals -A- (included in scope of delivery of heat exchanger) lightly with coolant.
– Insert new seals -A- in the connections of the heat exchanger -D-.
– Press both coolant pipes -C- into the connections of the heat exchanger -D-.
– Re-check the position of the seals -A- between the coolant pipes -C- and the connections of the heat exchanger -D-.



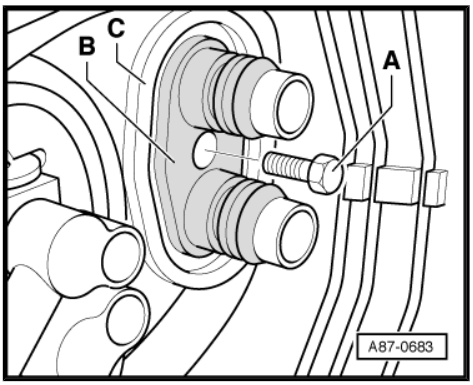
– Attach the two coolant pipes -C- and -D- with clips -B- to the heat exchanger.
– Tighten the bolts at the clips -A- to 2.5 Nm.



– Check position of both clips -B- after tightening bolts -A-. Clips must completely surround flange at heat exchanger and coolant pipe and not make contact with other components.

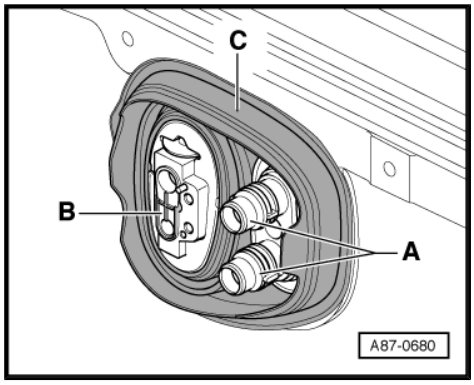


– Fit the bolt -A- at the connecting flange -B- (in doing so, make sure the bolt really is screwed in at the intended attachment point).



– Check that the grommet -C- is correctly positioned in the plenum chamber back wall.

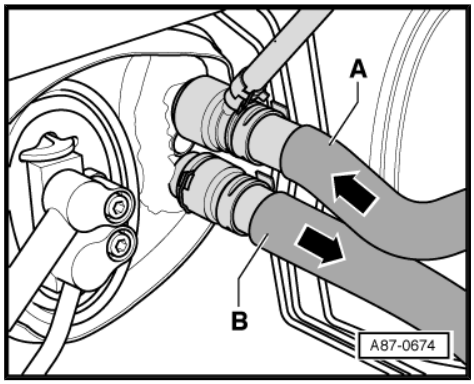
– If necessary, apply silicone adhesive sealant to the flanges for the coolant pipes to the heat exchanger -A- and the expansion valve (to the evaporator) -B- at the lead-throughs of the grommet -C- (to prevent the ingress of water).



– Make sure coolant hoses are properly connected to heat exchanger. Heed markings:

A - Supply from cylinder head

B - Return to coolant pump



– Re-install the components removed in reverse order with the exception of the cover for the connections at the heat exchanger and the driver's storage compartment.

– Check the installation position of the coolant hoses with respect to the heat exchanger (they must not contact components which become hot) and the position and condition of heat insulation, if fitted on the coolant hoses (not present in all engine types).

– Bleed coolant circuit: ⇒ Engine, Mechanics; Rep. Gr. 19

Note

♦ *When bleeding the coolant circuit, take special care to ensure complete bleeding of the heat exchanger. If air bubbles remain in the heat exchanger, complaints may be received about a lack of heat output in winter or differences in the temperature of the air flowing out of the vents with the same setting in control mode* *⇒ page 140* *.*

♦ *Depending on the vehicle equipment and the engine, the coolant hoses may be provided with thermal insulation. This must not be damaged and must be re-attached following installation.*

Check the coolant circuit for leaks e.g. as follows

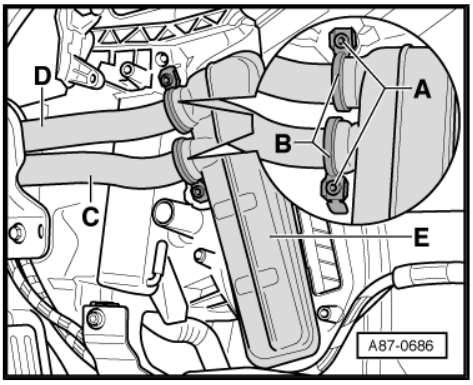
– Bleed coolant circuit.

– Carefully open the cap at the coolant expansion tank (heed the safety precautions for opening the cap) ⇒ Engine, mechanics; Rep. Gr. 19 .

– Use the cooling system tester -V.A.G 1274/- hand pump for example to increase the pressure in the coolant circuit.

– Check the coolant circuit for leaks, paying particular attention to the connection between the coolant pipes and the heat exchanger. ⇒ Engine, Mechanics; Rep. Gr. 19

– Re-install the cover for the connections at the heat exchanger, the driver's storage compartment and the remaining components removed.



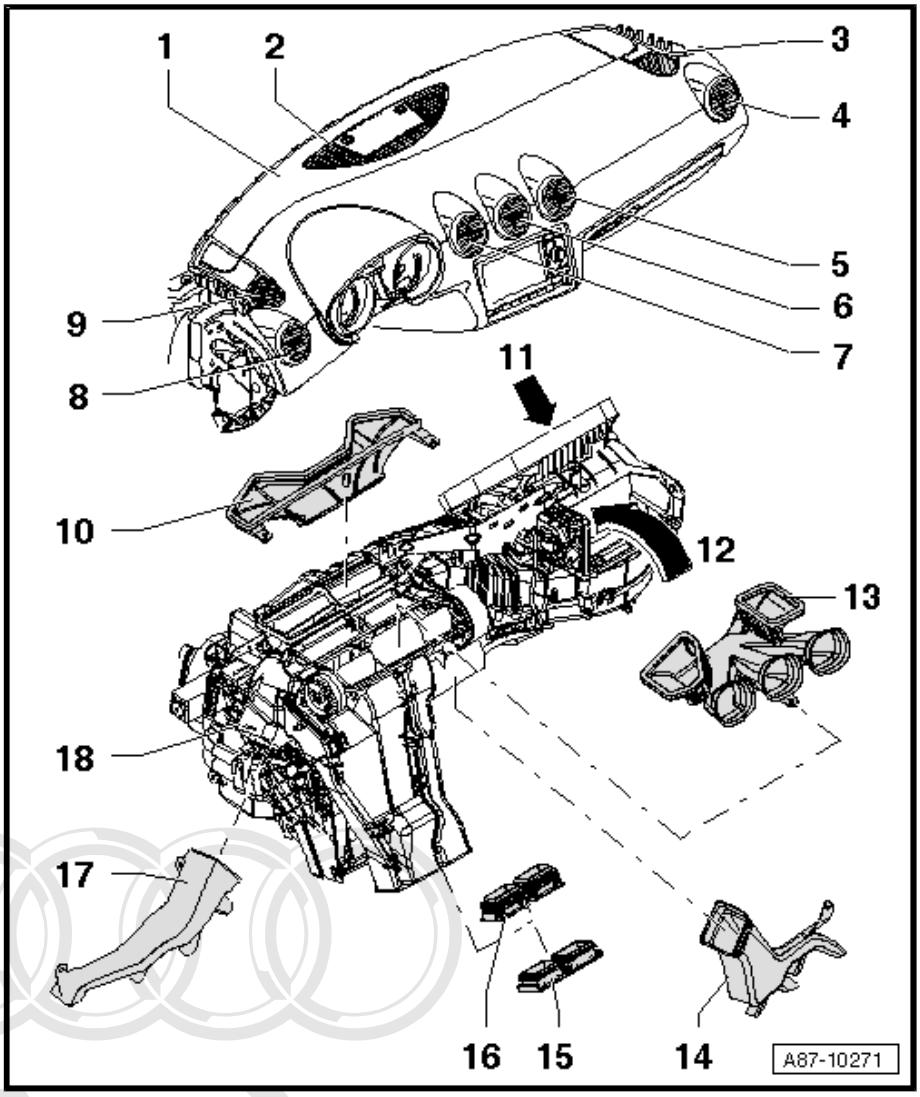
9 Block diagram of air distribution system

- Air routing and air distribution in passenger compartment ⇒ page 122
- Air intake, air outlet and air routing in air conditioner unit (heater) ⇒ page 124

9.1 Air routing and air distribution in passenger compartment

Note

- *Air intake, air outlet and air routing in air conditioner unit ⇒ page 124*
- *Fitting locations of individual components ⇒ page 61, ⇒ page 70 and ⇒ page 87*
- *Passenger compartment is vented by way of two vent frames (on left and right of luggage compartment in area of bumper) ⇒ page 65 .*
- *Air routing and air distribution in the passenger compartment are identical for vehicles with air conditioner and vehicles with no air conditioner (heater only).*



1 - Dash panel

- With air ducts to the defroster vents and the various dash panel vents
- Removing and installing ⇒ General body repairs, interior; Rep. Gr. 70

2 - Defroster vent / windscreen

- Air duct to windscreen
- Removing and installing: ⇒ General body repairs, Interior; Rep. Gr. 70
- Crushing of the intermediate piece between the air conditioner unit (heater) and the air duct in the dash panel on installing the dash panel will result in irregular or inadequate air routing to the windscreen ⇒ General body repairs, interior; Rep. Gr. 70
- Air conditioner air distributor housings with a defrost flap (in the air outlet to the dash panel defroster vents) with no side recess were gradually introduced as of May 2007. Introduction of the flap with no side recess was accompanied by modification of the air conditioner operating unit, Climatronic control unit -J255- ⇒ page 183 and ⇒ Electronic parts catalogue . Pay attention to the correct version and the adaption of the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 . On vehicles with no air conditioner (heater only), the modification to this flap has no influence on heater regulation (the flap is only actuated by way of the setting on the heater operating unit, Climatronic control unit -J255-).

3 - Defroster vent / right side window

- Air duct to door window
- Removing and installing ⇒ General body repairs, interior; Rep. Gr. 70

4 - Right dash panel vent

- Removing and installing dash panel vents ⇒ page 74 and ⇒ General body repairs, interior; Rep. Gr. 70
- On right-hand drive vehicles with air conditioner, the front right chest vent temperature sensor -G386- is installed in the air duct to the right dash panel vent.

5 - Centre right dash panel vent

- Removing and installing dash panel vents ⇒ page 74 and ⇒ General body repairs, interior; Rep. Gr. 70

6 - Centre dash panel vent

- Removing and installing dash panel vents ⇒ page 74 and ⇒ General body repairs, interior; Rep. Gr. 70

7 - Centre left dash panel vent

- Removing and installing dash panel vents ⇒ page 74 and ⇒ General body repairs, interior; Rep. Gr. 70

8 - Left dash panel vent

- Removing and installing dash panel vents ⇒ page 74 and ⇒ General body repairs, interior; Rep. Gr. 70

- On left-hand drive vehicles with air conditioner, the front left chest vent temperature sensor -G385- is installed in the air duct to the left dash panel vent.

9 - Defroster vent / left side window

- Air duct to door window
- Removing and installing ⇒ General body repairs, interior; Rep. Gr. 70

10 - Intermediate piece for air duct / defrost

- Removing and installing ⇒ General body repairs, interior; Rep. Gr. 70
- Installed between defroster vent and air conditioner unit (heater) outlet to defroster vent
- Crushing of the intermediate piece between the air conditioner unit (heater) and the air duct in the dash panel on installing the dash panel will result in irregular or inadequate air routing to the windscreen ⇒ General body repairs, interior; Rep. Gr. 70

11 - Fresh air intake

- The air is drawn in from the plenum chamber ⇒ page 68 .

12 - Intake for air from passenger compartment (in recirculated air mode)

- The air is drawn in under the glove box from the passenger's footwell.

13 - Intermediate piece for air duct / dash panel vent

- To the three dash panel vents in the centre and to the left and right dash panel vents
- Removing and installing ⇒ General body repairs, interior; Rep. Gr. 70
- The air duct must engage in the air conditioner unit (heater) mount.

14 - Front right footwell vent

- Removing and installing ⇒ General body repairs, interior; Rep. Gr. 70

15 - Cap

- The outlet openings are always sealed off; there is no vent fitted in the rear centre console.

16 - Cap

- The outlet openings are always sealed off; there are no vents fitted in the rear footwell.

17 - Front left footwell vent

- Removing and installing ⇒ General body repairs, interior; Rep. Gr. 70

18 - Air conditioner unit (heater)

- Removing and installing air conditioner unit (heater) ⇒ page 170
- Air intake, air outlet and air routing in air conditioner unit (heater) ⇒ page 124

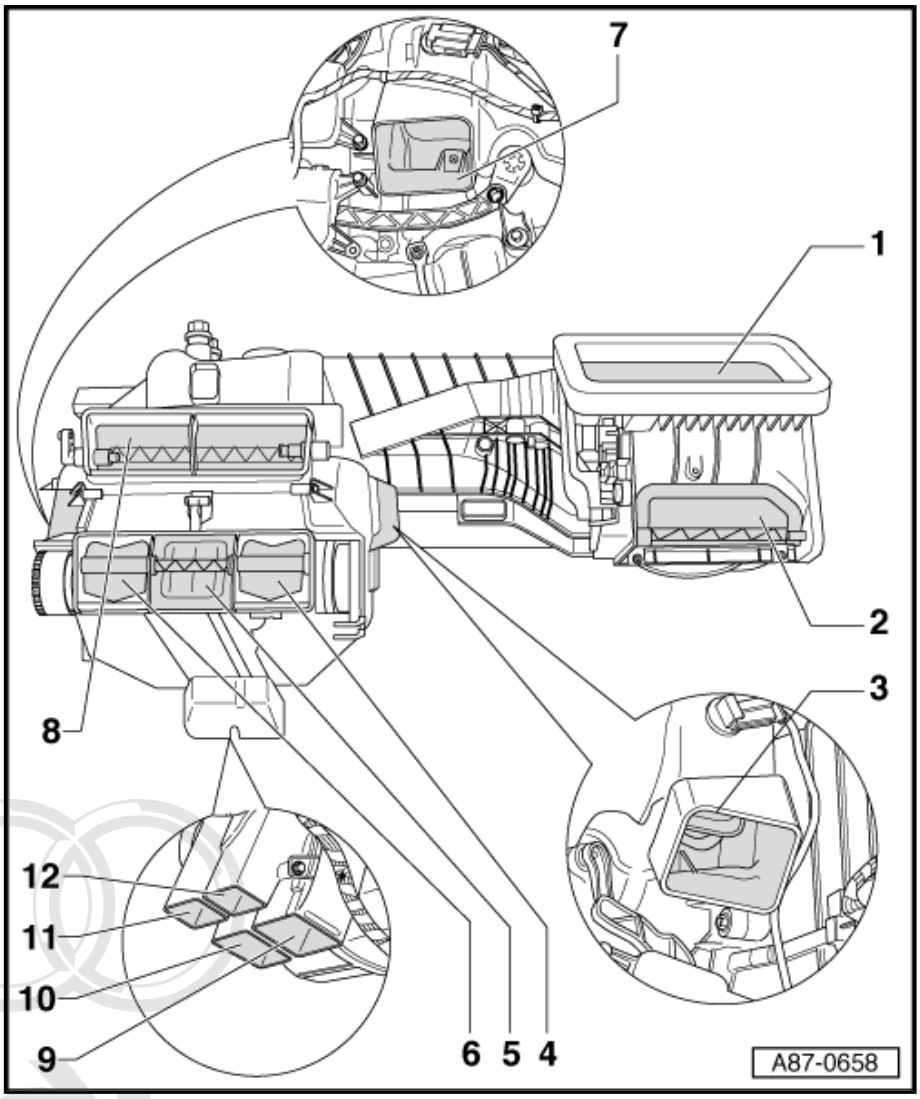
9.2 Air intake, air outlet and air routing in air conditioner unit (heater)

Note

- *Air routing and air distribution in passenger compartment ⇒ page 122*
- *For the fitting locations of the individual air conditioner components, refer to ⇒ page 61 , ⇒ page 70 and ⇒ page 87 .*
- *For the fitting locations of the individual heater components, refer to ⇒ page 3 .*

- Air intake and air outlet openings ⇒ page 125
- Air routing in evaporator housing ⇒ page 125
- Air routing in air distributor housing ⇒ page 127

9.2.1 Air intake and air outlet openings



1 - Fresh air intake

- The air is drawn in from the plenum chamber ⇒ page 68 .

2 - Intake for air from passenger compartment (in recirculated air mode)

- The air is drawn in under the glove box from the passenger's footwell.

3 - Outlet to front right footwell vent

4 - Outlet to right dash panel vent

5 - Outlet to centre dash panel vents

6 - Outlet to left dash panel vent

7 - Outlet to front left footwell vent

8 - Outlet to dash panel defroster vents

- From May 2007 onwards, air distribution housing units for air conditioner with a defroster flap (at the outlet to the dash panel defroster vents) without a recess at the side will gradually be introduced. Introduction of the flap with no side recess was accompanied by modification of the air conditioner operating unit, Climatronic control unit -J255- ⇒ page 183 and ⇒ Electronic parts catalogue . Pay attention to the correct version and the adaption of the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 . On vehicles with no air conditioner (heater only), the modification to this flap has no influence on heater regulation (the flap is only actuated by way of the setting on the heater operating unit, Climatronic control unit -J255-).

9 - Outlet to rear right footwell vent

- The outlet opening is always sealed with a cap; there are no vents fitted in the rear footwell.

10 - Outlet to rear left footwell vent

- The outlet opening is always sealed with a cap; there are no vents fitted in the rear footwell.

11 - Outlet to vent in rear centre console

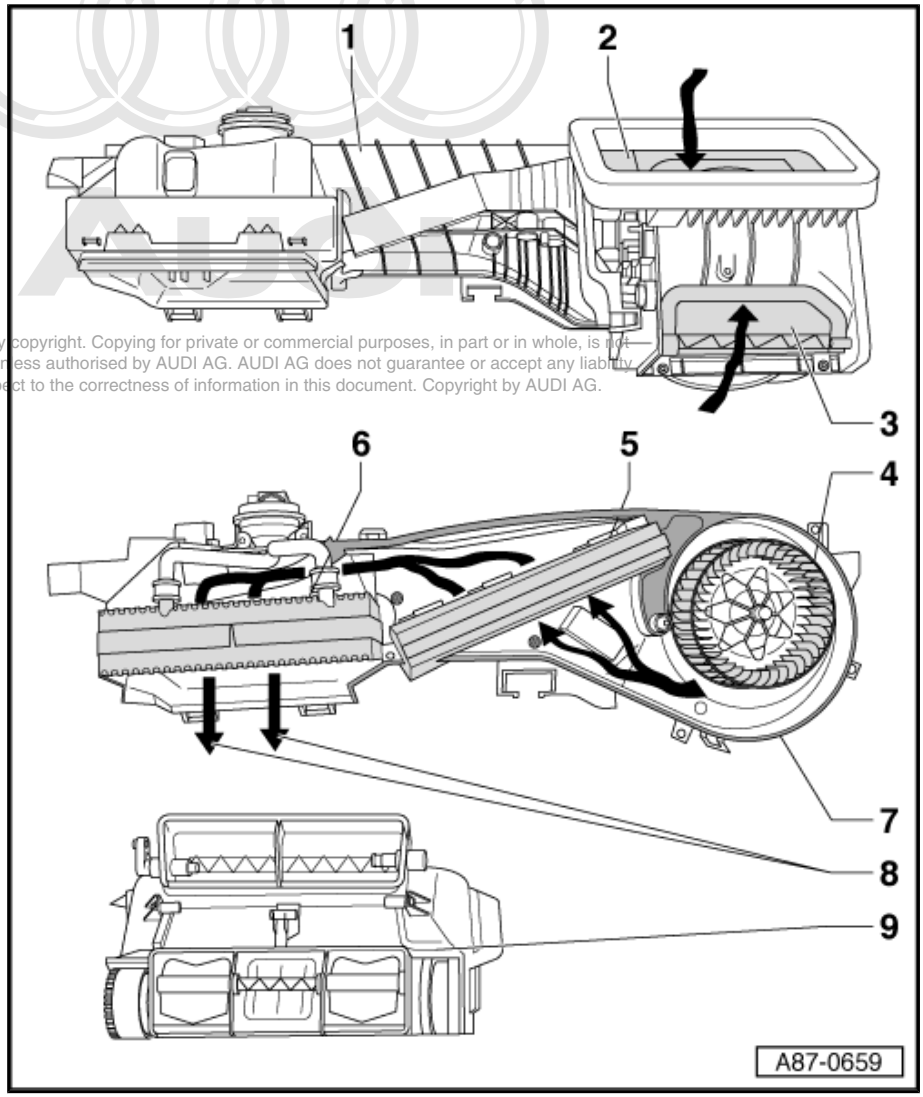
- The outlet openings are always sealed with a cap; there is no vent fitted in the rear centre console.

12 - Outlet to vent in rear centre console

- The outlet openings are always sealed with a cap; there is no vent fitted in the rear centre console.

9.2.2 Air routing in evaporator housing

(In heater air duct)



1 - Evaporator housing assembly

- ❑ Air duct for vehicles with no air conditioner (heater only)

2 - Air flow/fresh-air flap

- ❑ Shown in “open” position
- ❑ Use is made of air conditioner units (heaters) on which the air flow/fresh-air flap is actuated by the air flow flap control motor -V71- and the recirculated-air flap by the air recirculation flap control motor -V113- .

3 - Recirculated-air flap

- ❑ Shown in “closed” position
- ❑ Use is made of air conditioner units (heaters) on which the air flow/fresh-air flap is actuated by the air flow flap control motor -V71- and the recirculated-air flap by the air recirculation flap control motor -V113- .

4 - Fresh air blower -V2-

- ❑ With fresh air blower control unit -J126-

5 - Dust and pollen filter

- ❑ Observe replacement intervals ⇒ Maintenance tables
- ❑ There are different versions of the dust and pollen filter without and with activated charcoal element ⇒ Electronic parts catalogue . The Audi TT with air conditioner is currently fitted with a dust and pollen filter with activated charcoal element. Vehicles with no air conditioner (heater only) feature a dust and pollen filter with no activated charcoal element.

6 - Evaporator

- ❑ Vehicles with no air conditioner (heater only) are fitted with a foam core (for noise insulation) instead of the evaporator.

7 - Bottom part of evaporator housing (with fitted components)

- ❑ Bottom part of air duct for vehicles with no air conditioner (heater only)

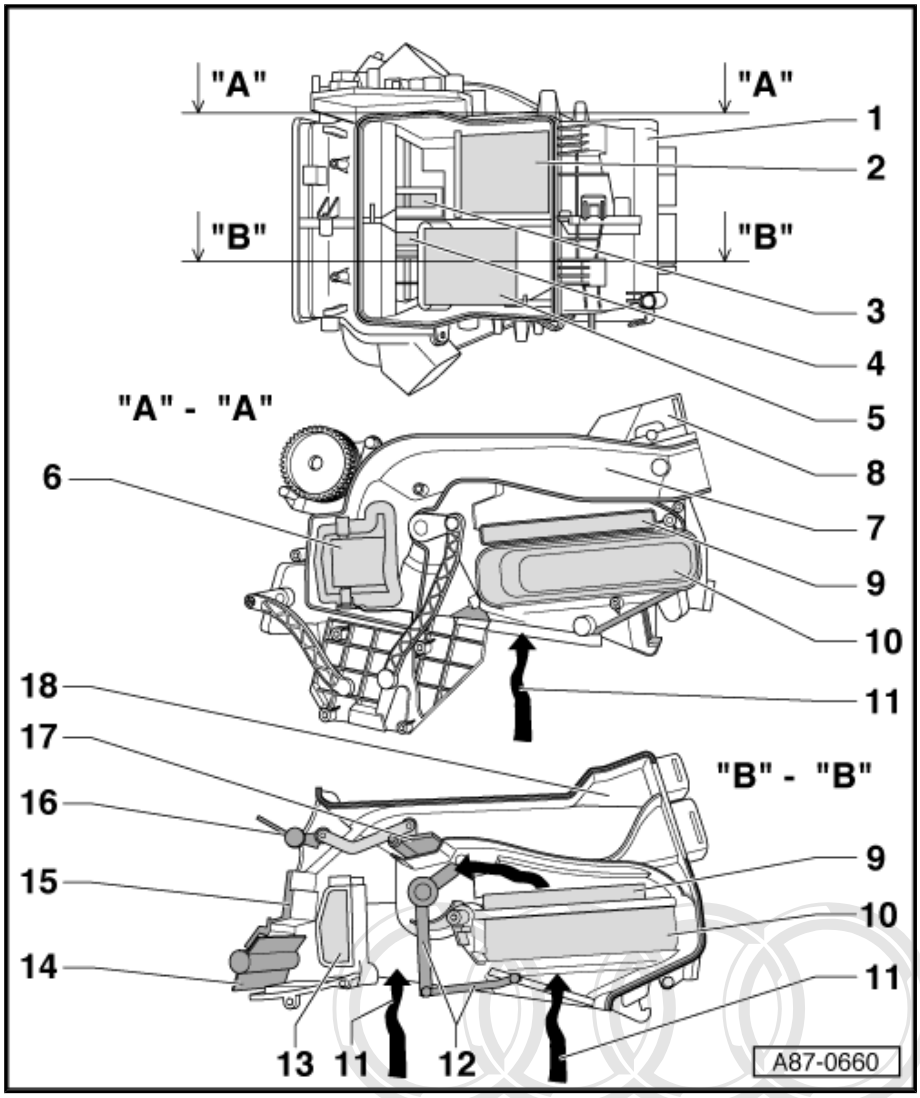
8 - Air outlet to air distributor housing

9 - Air distributor housing

9.2.3 Air routing in air distributor housing

Note

- *To illustrate air routing in the air distributor housing, it is shown in the form of sectional views “A” -“A” and “B”-“B”.*
- *On the Audi TT with air conditioner, the two control motors for the left and right temperature flaps are regulated via a characteristic curve depending on the end stops learnt (only one temperature setting can be made at the air conditioner operating unit, Climatronic control unit -J255-).*
- *Depending on the measured temperatures, the sunlight penetration detected and the setting of the air conditioner operating unit, Climatronic control unit -J255- , the specified outlet temperature calculated and thus the position of the temperature flaps for the left and right side may differ.*
- *The Audi TT with no air conditioner (heater only) is only fitted with one temperature flap control motor. The two temperature flaps for the left and right side are linked by way of the shaft and thus moved jointly by the left temperature flap control motor -V158- .*
- *As vehicles with no air conditioner (heater only) are not fitted with any temperature sensors, there is no regulation of the outlet temperature. The left temperature flap control motor -V158- is set by the heater operating unit, Climatronic control unit -J255- to a position calculated on the basis of the temperature setting and the learnt control motor stop values.*



1 - Air distributor housing

2 - Left temperature flap (driver's side)

- ❑ Shown in “cooling” position

3 - Air duct to centre dash panel vents

- ❑ The air duct to the vent in the rear centre console is always sealed with a cap; there is no vent fitted in the rear centre console ⇒ page 125 .

4 - Air duct to centre dash panel vents

- ❑ The air duct to the vent in the rear centre console is always sealed with a cap; there is no vent fitted in the rear centre console ⇒ page 125 .

5 - Right temperature flap (front passenger's side)

- ❑ Shown in centre position

6 - Left footwell flap (driver's side)

- ❑ Shown in “closed” position
- ❑ Movement of central flaps (left, right and centre) and the two footwell flaps is coordinated by way of cam plates attached to control motor/shaft

7 - Air duct to left footwell (driver's side)

8 - “A”-“A” sectional view of air distributor housing

9 - Supplementary heater element -Z35-

- ❑ Only available for vehicles with diesel engine ⇒ page 29 .
- ❑ Function, checking ⇒ page 29

10 - Heating system heat exchanger

11 - Air inlet from evaporator housing

- ❑ Air inlet from heater air distributor housing (on vehicles with no air conditioner)

12 - Right temperature flap (front passenger's side)

- ❑ Shown in centre position

13 - Right footwell flap (front passenger's side)

- ❑ Shown in “closed” position
- ❑ Movement of central flaps (left, right and centre) and the two footwell flaps is coordinated by way of cam plates attached to control motor/shaft

14 - Defrost flap

- ❑ Shown in “closed” position
- ❑ From May 2007 onwards, air distribution housing units for air conditioner with a defrost flap (at the outlet to the dash panel defroster vents) without a recess at the side will gradually be introduced

⇒ page 183 . Introduction of the flap with no side recess was accompanied by modification of the air conditioner operating unit, Climatronic control unit -J255- ⇒ Electronic parts catalogue . Pay attention to the correct version and the adaption of the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 . On vehicles with no air conditioner (heater only), the modification to this flap has no influence on heater regulation (the flap is only actuated by way of the setting on the heater operating unit, Climatronic control unit -J255-).

15 - “B”-“B” sectional view of air distributor housing

16 - Central flap “Centre”

- ❑ Shown in “open” position
- ❑ Movement of central flaps (left, right and centre) and the two footwell flaps is coordinated by way of cam plates attached to control motor/shaft

17 - Flap in air duct (to vent in rear centre console)

- ❑ This flap has no function on the Audi TT. The air duct (to the vent in the rear centre console) is always sealed with a cap; there is no vent fitted in the rear centre console ⇒ page 125 .
- ❑ This flap is actuated via an actuating arm attached to the centre central flap.

18 - Air duct for air routing (to vent in rear centre console)

- ❑ This air duct (to the vent in the rear centre console) is always sealed with a cap; there is no vent fitted in the rear centre console ⇒ page 125 .

10 Checking cooling output of air conditioner

- Checking cooling output ⇒ page 130

10.1 Checking cooling output

Special tools and workshop equipment required

- Vehicle diagnostic, testing and information system -VAS 5051 A- (or vehicle diagnostic and service information system -VAS 5052-).
- Commercially available thermometer (for temperature measurement; if applicable use thermometer with 2 probes for simultaneous measurement of temperature e.g. on right and left)
- Prerequisites for checking cooling output ⇒ page 130
- Checking cooling output ⇒ page 131

10.1.1 Prerequisites for checking cooling output

- Ambient temperature above 15 ° C.
- Radiator and condenser clean; clean if necessary
- Poly V-belt for compressor drive OK and correctly tensioned, pulley actually driving air conditioner compressor.
- All air ducts, covers and seals OK and properly installed.
- Air flow through dust and pollen filter not impeded by contamination
- Air intake (in fresh air and recirculated air mode) not impeded by contamination or retrofitted components
- Vehicle not exposed to sunlight
- Engine warm
- Fault memory of air conditioner operating unit, Climatronic control unit -J255- interrogated and erased, basic setting performed and encoding of air conditioner operating unit, Climatronic control unit -J255- checked ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- Adaption of air conditioner operating unit, Climatronic control unit -J255- checked ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- All dash panel vents open
- Bonnet closed
- Settings on air conditioner operating unit, Climatronic control unit -J255- :

– “Auto” mode (lamp in AUTO button lights).
– Rotary temperature control on “cold” stop.
– Air conditioner compressor on (lamp in AC button lights).
– Fresh air blower rotary control on “maximum speed” stop

- Functions with engine running:

– Operation of radiator fan(s) (radiator fan -V7- and radiator fan 2 -V177-) (actuation and speed are governed by pressure in refrigerant circuit and engine temperature).

Note

Depending on the version of the air conditioner operating unit, Climatronic control unit -J255- , the radiator fan(s) (radiator fan -V7- and radiator fan 2 -V177-) is/are only switched in as of a certain pressure in the refrigerant circuit (currently as of a pressure of approx. 9 bar). Actuation of the radiator fan(s) is displayed in the measured value block ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

– Operation of fresh-air blower -V2- at maximum speed
– Switching of the air conditioner to recirculated air mode (approx. 1 minute after starting the vehicle, the air flow/fresh-air flap is closed and the recirculated air flap opened, air is drawn in by the fresh air blower -V2- from the passenger compartment beneath the dash panel/glove box).

Note

If one of these test requirements is not satisfied, interrogate the fault memory, perform final control diagnosis and read out the measured value block ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

10.1.2 Checking cooling output

Test requirements satisfied ⇒ page 130

– Measure the ambient temperature (must be above 15 °C).
– Close the doors, bonnet, windows and rear lid.
– Open all dash panel vents.
– Switch on ignition.
– Start the engine.
– Set “Econ” mode on the air conditioner operating unit, Climatronic control unit -J255- (lamp in AC button not lit).
– Start air conditioner guided fault-finding ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
– In the “Reading measured value block” function, select the display group with the measured values for actuation of the air conditioner compressor and for the pressure in the refrigerant circuit and read out the measured values ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
– Check the measured values shown in the display zones with the values for actuation of the air conditioner compressor regulating valve -N280- and for the pressure in the refrigerant circuit.

♦ The air conditioner compressor is switched off, a current to -N280- of 0 A (amps) is displayed.
♦ At the measured ambient temperature, the pressure in the refrigerant circuit (measured value of high-pressure sender -G65-) is equal to or higher than the value in the table.

Ambient temperature in °C	Pressure display (in bar absolute)
15	4,0
20	5,0
25	6,0
30	7,0
35	8,0

Note

- *At absolute pressure, 0 bar corresponds to an absolute vacuum. Normal ambient pressure thus corresponds to roughly 1 bar absolute. On the scales of most pressure gauges, 0 bar corresponds however to an absolute pressure of one bar (can be seen from -1 mark below 0).*
- *At present, the measured value block on this vehicle only indicates values as whole numbers. The display fluctuates between two values if the measured pressure is between the two.*
- *Pressure in refrigerant circuit is governed by ambient temperature. Due to the radiation of heat by components (e.g. the radiator), the pressure displayed with a warm engine is slightly higher than that given for the corresponding ambient temperature.*
- *If the displayed pressure is lower than that given in the table: Check the signal of the high-pressure sender -G65- ⇒ page 35 . If no fault is found at the high-pressure sender, there is not enough refrigerant in the circuit. The vehicle is to be taken to a workshop equipped with the necessary tools where the work can be performed by appropriately qualified personnel. Inform the workshop of the problem encountered (not enough refrigerant in the circuit) ⇒ Air conditioner with refrigerant R134a .*

If the pressure in the refrigerant circuit is OK

– Switch on the air conditioner compressor by selecting “Auto” mode on the air conditioner operating unit, Climatronic control unit -J255- (lamps in AUTO button and AC button light).

– Set the rotary temperature control of the air conditioner operating unit, Climatronic control unit -J255- to the “cold” stop.

– Set the air outflow direction by way of the rotary air distribution control on the air conditioner operating unit, Climatronic control unit -J255- to “dash panel vents”.

– In the “Reading measured value block” function, select the display group with the measured values for actuation of the air conditioner compressor regulating valve -N280- and the measured value of the high-pressure sender -G65- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

– Check display in display zones:

- Indication of a duty cycle greater than 30 % (actuation of the air conditioner compressor regulating valve -N280- , the air conditioner compressor is switched on).
- Indication of a current greater than 0.3 A (current flowing via the air conditioner compressor regulating valve -N280- , the air conditioner compressor is switched on).

Note

If the display zone shows no or insufficient current, check actuation of the air conditioner compressor regulating valve -N280- ⇒ page 45 .

– The displayed pressure in the refrigerant circuit rises above the value with the air conditioner compressor switched off.

Note

- *If the pressure displayed does not change and actuation of the air conditioner compressor is OK, check again as to whether the air conditioner compressor is actually being driven. If it is, there is a fault in the refrigerant circuit. The vehicle is to be taken to a workshop equipped with the necessary tools where the work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a (there may be problems with air conditioner compressor control). Inform the workshop of the problems encountered.*

- *The air conditioner compressor regulating valve -N280- is actuated by the air conditioner operating unit, Climatronic control unit -J255- such that the temperature of the air downstream of the evaporator reaches the specified value (approx. 2 to 5 °C).*
- *After starting the vehicle, a value greater than 75 % (0.55 A) is displayed depending on the measured temperature, engine speed and electrical system voltage. As soon as the temperature measured by the evaporator outflow temperature sender -G263- approaches the specified value, actuation is cancelled and the compressor output thus reduced.*
- *Under certain operating conditions, residual moisture in the refrigerant circuit may lead to the formation of ice at the air conditioner compressor regulating valve (and at the expansion valve). Such ice formation impedes air conditioner compressor control. The evaporator is excessively cooled and ices up. Icing-up of the evaporator may give rise to various problems* ⇒ page 138 .

– Press the recirculated air mode button on the air conditioner operating unit, Climatronic control unit -J255- (symbol for “recirculated air mode” in `recirculated air` button lights).

– Set engine speed to 2000 rpm (start of time measurement).

– In the “Reading measured value block” function, select the display with the measured value of the evaporator output temperature sender -G263- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

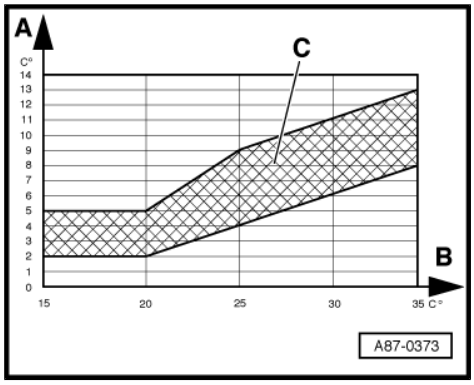
– Compare the -G263- measured value displayed to the values in the graph.

A - Air temperature measured by -G263-

B - Ambient temperature

C - Permissible tolerance range

Depending on the ambient temperature, the measured air temperature must be within the stated tolerance range -C- after 5 minutes.



Note

- *If the required values are not attained, check the measured values of the evaporator output temperature sender -G263- and the measured value of the front left chest vent temperature sensor -G385- (front right chest vent temperature sensor -G386- on right-hand drive vehicles) and compare the measured values displayed to one another.*
- *If the measured value for -G263- only differs slightly from the measured value for -G385- (-G386-): Perform "Measures to be taken if readout does not match specification"* *⇒ page 135*
- *If the measured value of the evaporator output temperature sender -G263- is higher than that of the front left chest vent temperature sensor -G385- (front right chest vent temperature sensor -G386- on right-hand drive vehicles), check for proper installation of the evaporator output temperature sender -G263- and perform the electrical checks for this sender ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *Operation of the air conditioner can be seen, for example, from the fact that the refrigerant pipe on the low-pressure end (thick pipe) cools down.*

If the measured value of the evaporator output temperature sender -G263- (and thus the system cooling output) is OK:

– Set the air outflow direction by way of the rotary air distribution control on the air conditioner operating unit, Climatronic control unit -J255- to “footwell”.

– Compare the measured value displayed for -G263- to the measured values of the left footwell vent temperature sender -G261- and the right footwell vent temperature sender -G262- .

After 5 minutes, the measured values for -G261- and -G262- must not be more than 3 °C higher than that for -G263- .

Note

- *If the required values are not attained, compare the measured values for -G261- and -G262- to one another.*
- *If the measured value of one of the two vent temperature senders -G261- or -G262- is OK, check actuation and operation of the left temperature flap control motor -V158- and the right temperature flap control motor -V159- ⇒ page 137 , ⇒ page 140 and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- *If the measured value for -G261- and / or -G262- is lower than the measured value of the evaporator output temperature sender -G263- , check -G263- , -G261- and -G262- for proper installation and contact resistance in the electrical connections. Replace the defective sender if applicable ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- *If no fault is found at the left footwell vent temperature sender -G261- , the right footwell vent temperature sender -G262- , the evaporator output temperature sender -G263- , the left temperature flap control motor -V158- and the right temperature flap control motor -V159- , perform the measures to be taken in the event of temperature increase downstream of the evaporator ⇒ page 137 .*
- *The temperature of the air flowing out of the "Centre" dash panel vents can also be measured using a commercially available thermometer for example.*
- *Problems relating to differences between the temperature of the air emitted from the vents with an identical setting in air conditioner control mode may be due to the following: Temperature flaps in air distributor housing not closing fully or not attaining end position ⇒ page 124 and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051. Air in heat exchanger, fluctuating flow through heat exchanger and thus uneven heat distribution ⇒ page 140 . Detachment of foam seal on heat exchanger installation, allowing air to flow past heat exchanger Air conditioner refrigerant circuit not filled with the correct amount of refrigerant.*

10.1.3 Measures to be taken if readout does not match specification

The cooling output required is not attained in the cooling output test ⇒ page 131 .

– Select the "Reading measured value block" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

– Repeat cooling output test ⇒ page 130 .

– During the cooling output test observe the displays for actuation of the air conditioner compressor regulating valve -N280- and the pressure in the refrigerant circuit.

– -N280- deactivated during cooling output test (control current dropped below 0.50 A) ?

↓ yes ↓

– Interrogate fault memory, eliminate faults displayed and erase fault memory. ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051

↓ no ↓

• Increase in pressure in refrigerant circuit (measured value of high-pressure sender -G65-) during cooling output test?

	↓ yes ↓	↓ no ↓
– Read out the measured value block with the compressor shutoff criteria and eliminate the cause of deactivation ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 . – Repeat cooling output test.	↓ Continued ⇒ page 136	The vehicle is to be taken to a workshop equipped with the necessary tools where the work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a . Inform the workshop of the problems encountered.

Continuation of test: “Increase in pressure in refrigerant circuit”

– Open bonnet.

– Repeat cooling output test ⇒ page 130 .

– Read out the measured value block with the display for the pressure in the refrigerant circuit ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

• Operation of radiator fan(s) (radiator fan -V7- and radiator fan 2 -V177-) during cooling output test (speed governed by coolant temperature and pressure in refrigerant circuit, determined by engine control unit) or switch-in as soon as pressure in refrigerant circuit exceeds a value of approx. 9 bar?

↓ yes ↓	↓ no ↓
– Read out the measured value block with the pressure in the refrigerant circuit and actuation of the radiator fans ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 . • Operation of radiator fan(s) at higher speed as pressure in refrigerant circuit increases?	– Check actuation of the radiator fan(s), e.g. in the “final control diagnosis” function. ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051. – Service the radiator fan actuation system. – Repeat cooling output test ⇒ page 130 .

↓ yes ↓	↓ no ↓
– The vehicle is to be taken to a workshop equipped with the necessary tools where the work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a . Inform the workshop of the problems encountered.	– Check actuation of the radiator fan(s), e.g. in the “Final control diagnosis” function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051. – Service the radiator fan actuation system. – Repeat the cooling output test ⇒ page 130 .

Note

- *The pressure in the refrigerant circuit is governed by various factors of influence. As a general rule, however, the pressure should not exceed 20 bar at an ambient temperature of 20 to 25 °C. Under extreme usage conditions (e.g. in hot countries with high ambient temperatures, “stop and go traffic” and high relative humidity), the extremely high cooling output involved may also result in pressures of up to 31 bar.*
- *At ambient temperatures below 25 °C the pressure in the refrigerant circuit does not usually rise above 16 bar (the radiator fan(s) run(s) and cool(s) the condenser).*
- *The signal ratio of the high-pressure sender -G65- (display in measured value block) is used by the air conditioner operating unit, Climatronic control unit -J255- to calculate the pressure in the refrigerant circuit. If the duty cycle is less than 10 % (corresponding to approx. 1.2 bar absolute pressure) and greater than 78 % (corresponding to approx. 32 bar absolute pressure), the air conditioner operating unit, Climatronic control unit -J255- does not switch on the air conditioner compressor (the air conditioner compressor regulating valve -N280- is not actuated). The air conditioner compressor is only re-activated once the duty cycle exceeds 12 % (corresponding to absolute pressure of 1.8 bar) or drops below 74 % (corresponding to absolute pressure of 29 bar).*
- *To prevent abrupt air conditioner compressor shutoff on account of excessive pressure in the refrigerant circuit or excessive coolant temperature, the compressor output is reduced by the air conditioner operating unit, Climatronic control unit -J255- as soon as the pressure in the refrigerant circuit exceeds 30 bar (absolute) (full compressor output is not released again until the pressure has dropped below 27 bar) or the coolant temperature exceeds 115 °C (complete shutdown at 118 °C).*
- *If the pressure in the refrigerant circuit had been in excess of 32 bar (duty cycle greater than 78 %), the air conditioner operating unit, Climatronic control unit -J255- does not re-activate the air conditioner compressor until the pressure has dropped below 29 bar (duty cycle less than 74 %).*
- *For further information on the pressure in the refrigerant circuit, refer to ⇒ page 35 (checking pressure signal from high-pressure sender -G65-) and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*

10.1.4 Measures to be taken in the event of temperature increase downstream of evaporator

The cooling output required is attained in the cooling output test, but the air is found to heat up excessively after leaving the evaporator ⇒ page 131

– Use hose clamps up to 40 mm -3093- for example to pinch off the two coolant hoses between the engine and the heat exchanger of the air conditioner unit ⇒ page 114 .

– Repeat the cooling output test ⇒ page 130 .

– Read out the measured value block with the measured values for the left footwell vent temperature sender -G261- , the right footwell vent temperature sender -G262- and the evaporator output temperature sender -G263- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

• The measured values for -G261- and -G262- differ by less than 3 °C from the measured value for -G263- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

↓ yes

Detach the hose clamps up to 40 mm -3093- from the two coolant hoses.

↓

Check actuation and operation of the left temperature flap control motor -V158- and the right temperature flap control motor -V159- ⇒ page 137 and ⇒ page 140 .

↓

• If actuation and operation of -V158- and -V159- are OK

↓ yes

Check operation of the temperature flap for the side of the air distributor housing responsible for the temperature increase ⇒ page 124 .

Replace the air distributor housing if necessary ⇒ page 170 .

↓

Repeat the cooling output test ⇒ page 130 .

↓ no

Check the sender supplying the deviating measured value for correct installation, as well as the electrical connections for contact resistance ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051. and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

– Eliminate the cause of the incorrect measured value. Replace the defective sender if necessary.

↓ no

Eliminate the cause of the malfunction ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

↓

Repeat the cooling output test ⇒ page 130 .

10.1.5 Fault localisation in the event of ice formation at the evaporator

- The air conditioner compressor regulating valve -N280- is actuated by the air conditioner operating unit, Climatronic control unit -J255- such that the temperature of the air downstream of the evaporator reaches the specified value (approx. 2 to 5 °C).
- After starting the vehicle, a value greater than 75 % (0.55 A) is displayed in the measured value block for actuation of the air conditioner compressor regulating valve -N280- (air conditioner operating unit, Climatronic control unit -J255-) depending on the measured temperature, engine speed and electrical system voltage. As soon as the temperature measured by the evaporator output temperature sender -G263- approaches the specified value, actuation is cancelled and the compressor output thus reduced ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- Under certain operating conditions, residual moisture in the refrigerant circuit may lead to the formation of ice at the air conditioner compressor regulating valve -N280- (and at the expansion valve). Such ice formation impedes air conditioner

compressor control. The evaporator is excessively cooled and ices up. Icing-up of the evaporator may give rise to the following problems

– Repeated or sporadic failure of the air conditioner (no cooling/ heating output) after a lengthy journey; operation of air conditioner soon returns to normal after switching off engine

– Misting up of the windows on the inside after a long journey; the windows are initially not cleared even by pressing the “Defrost” button; the air conditioner functions properly again after a short delay following engine shut-off.

Remedy:

– Check the measured value of the evaporator output temperature sender -G263- in the “Reading measured value block” function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

– If the sender measured value is too high under the usage conditions described by the customer (greater than e.g. 10 °C although the air conditioner is functioning properly, depending on ambient temperature), check the evaporator output temperature sender -G263- (an incorrect measured value can cause the evaporator to ice up).

– If the sender measured value is too low under the usage conditions described by the customer (at ambient temperature above 0 °C, colder than 0 °C for lengthy period): The vehicle is to be taken to a workshop equipped with the necessary tools where the work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a . Inform the workshop of the problems encountered.

– Check the refrigerant pipe from the evaporator (from the expansion valve) to the air conditioner compressor (thick pipe, low pressure end) with the engine running. If this pipe is severely iced up when the problem occurs (a thin layer of ice is permissible), this is also an indication that the temperature in the evaporator is too low. The vehicle is to be taken to a workshop equipped with the necessary tools where the work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a (there may be problems with air conditioner compressor control). Inform the workshop of the problems encountered.

11 Checking heat output of air conditioner

Note

If the coolant circuit is not completely bled after filling, air may accumulate in the heat exchanger of the air conditioner unit and thus reduce the heat output of the air conditioner. In addition, noise may occur or complaints may be received about differences in the temperature of the air from the driver's and front passenger's vents despite identical setting.

Remedy:

– Perform a lengthy test drive at high engine speed (at least 10 minutes, engine speed above 2500 rpm). In doing so, select a low gear to prevent excessive vehicle speed.

– In the event of complaints about poor heat output at certain engine speeds, check incorporation of heat exchanger in air conditioner unit into coolant circuit. If the two coolant hoses (supply and return) from the engine have been interchanged, coolant will flow in the wrong direction through the heat exchanger ⇒ Engine, mechanics; Rep. Gr. 19 .

♦ Checking heat output ⇒ page 140 .

11.1 Checking heat output

Special tools and workshop equipment required

♦ Vehicle diagnostic, testing and information system -VAS 5051 A- (or vehicle diagnostic and service information system -VAS 5052-).

♦ Prerequisites for checking heat output ⇒ page 140

♦ Checking heat output ⇒ page 140 .

11.1.1 Prerequisites for checking heat output

♦ Coolant circuit bled in specified manner: ⇒ Engine, Mechanics; Rep. Gr. 19

♦ All air ducts, covers and seals OK and properly installed.

♦ Air throughput of dust and pollen filter not impaired by dirt

♦ Engine warm.

♦ Fault memory of air conditioner operating unit, Climatronic control unit -J255- interrogated and erased, basic setting performed and encoding of air conditioner operating unit, Climatronic control unit -J255- checked ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

♦ Adaption of air conditioner operating unit, Climatronic control unit -J255- checked ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

♦ Vehicle not exposed to sunlight.

11.1.2 Checking heat output

Prerequisites for checking heat output satisfied ⇒ page 140 .

– Close the bonnet.

– Close the doors, windows and rear lid.

– Open all dash panel vents.

– Start air conditioner self-diagnosis ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

– Start the engine and let it run for several minutes at maximum cooling output (air conditioner compressor switched on, lamp in AC button lights).

– Select the “Reading measured value block” function and read out the display for actuation of the air conditioner compressor regulating valve -N280- and the pressure in the refrigerant circuit ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 (the air conditioner compressor is actuated and the pressure in the refrigerant circuit is OK ⇒ page 131).

– Set the rotary temperature control of the air conditioner operating unit, Climatronic control unit -J255- to the “cold” stop.

– Set the air outflow direction by way of the rotary air distribution control on the air conditioner operating unit, Climatronic control unit -J255- to “footwell”.

– Read out the measured value block with the measured values for the left footwell vent temperature sender -G261- , the right footwell vent temperature sender -G262- and the evaporator output temperature sender -G263- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

– Check and compare the measured values displayed for -G261- , -G262- and -G263- .

♦ Specifications: Temperature max. 12 °C (depending on ambient temperature), difference between measured values less than 3 °C.

– Set the air outflow direction by way of the rotary air distribution control on the air conditioner operating unit, Climatronic control unit -J255- to “dash panel vents”.

– Check and compare the measured values displayed for the front left chest vent temperature sensor -G385- (front right chest vent temperature sensor -G386- on right-hand drive vehicles) and -G263- .

♦ Specifications: Temperature max. 12 °C (depending on ambient temperature), difference between measured values less than 3 °C.

– Set the rotary temperature control of the air conditioner operating unit, Climatronic control unit -J255- to the “warm” stop.

– Set the rotary fresh air blower control to the “maximum speed” stop.

– Set the air outflow direction (by way of the rotary air distribution control on the air conditioner operating unit, Climatronic control unit -J255-) such that roughly equal volumes of air emerge from the “dash panel vents” and “footwell vents”.

Note

The rotary air distribution control can also be set such that air only emerges from the “dash panel vents” or “footwell vents”. Use is then however only to be made of the measured value of the temperature sensor fitted in the vent selected (if applicable, set the air outflow direction alternately to “dash panel vents” and “footwell vents”).

– Check and compare the measured values displayed for -G385- / -G386- , -G261- and -G262- .

Specifications:

♦ The temperature increases to in excess of 55 °C in the display zones with the measured values for -G385- / -G386- , -G261- and -G262- (depending on the instantaneous engine temperature).

Check the following if the readout does not match the specifications:

– Bleeding of coolant circuit ⇒ Engine, mechanics; Rep. Gr. 19

– Incorporation of heat exchanger for heater in air conditioner unit into coolant circuit ⇒ Engine, mechanics; Rep. Gr. 19

– Actuation and operation of the left temperature flap control motor -V158- and the right temperature flap control motor -V159- ⇒ page 137 , ⇒ page 140 and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

– Foam seal at heat exchanger for heater of air conditioner unit ⇒ page 117

– Operation of temperature flaps in air distributor housing ⇒ page 124

– Thermostat (engine coolant may not warm up properly if thermostat is defective). ⇒ Engine, Mechanics; Rep. Gr. 19

12 Servicing refrigerant circuit

Note

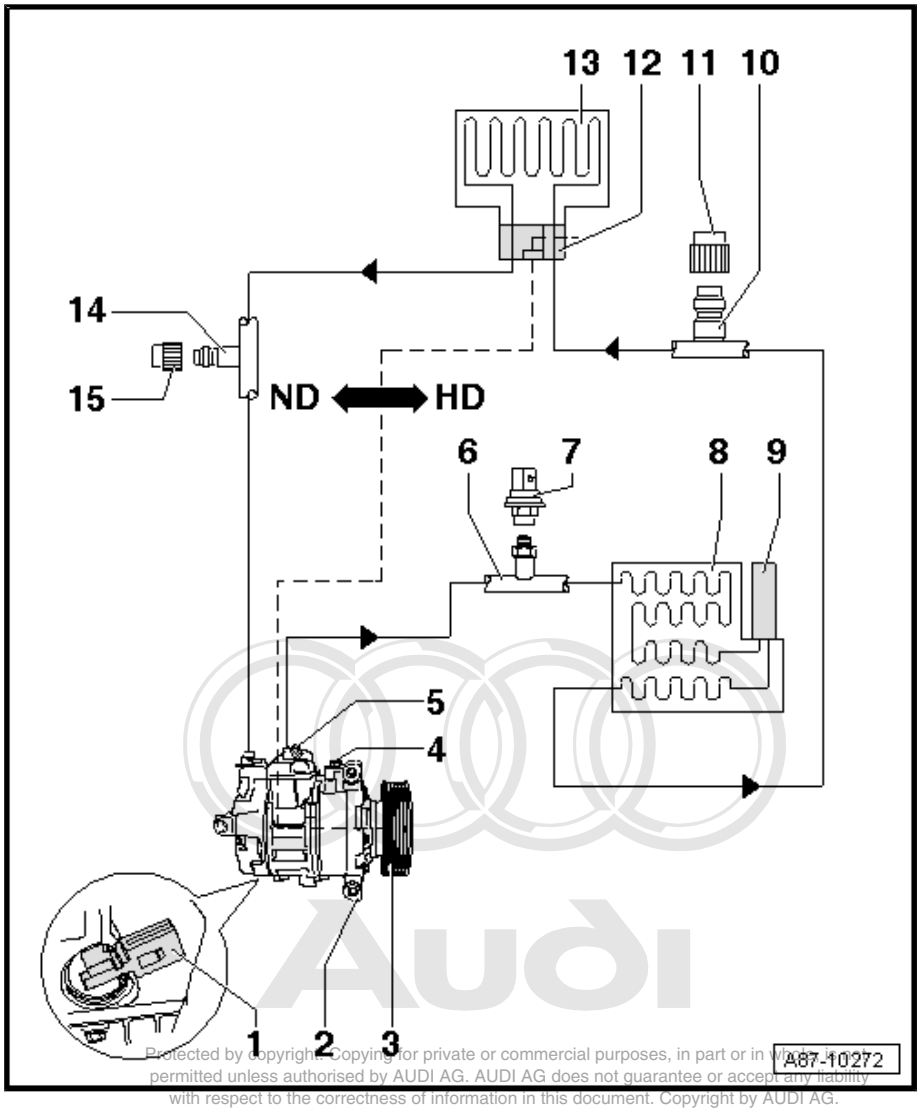
- *The refrigerant in the refrigerant circuit is never to be topped up (drain, evacuate and refill the circuit) ⇒ Air conditioner with refrigerant R134a .*
- *The air conditioner compressor is always driven when the engine is running; there is no magnetic clutch. The engine is therefore not to be started unless the refrigerant circuit has been properly assembled. If, for example, the refrigerant pipes have not been connected to the air conditioner compressor, heat generation inside the air conditioner compressor with the engine running may lead to the destruction of the compressor. The internal heat generation is caused by the air conditioner compressor operating against a fixed resistance even at approximately 0 % delivery rate (sealed circuit).*
- *To stop the air conditioner compressor being destroyed when the refrigerant circuit is empty, it is designed such that delivery is reduced to roughly 0 % and lubrication is maintained by way of an internal oil circuit with the oil left in the air conditioner compressor.*
- *Replacement compressors contain the full quantity of refrigerant oil required for the refrigerant circuit. ⇒ Air conditioner - with refrigerant R134a*
- *Different types of refrigerant oil are specified for Denso, Sanden and Zexel / Valeo air conditioner compressors ⇒ Air conditioner with refrigerant R134a.*
- *The logo of the compressor manufacturer "Zexel" affixed to the air conditioner compressor was switched as of year of production 2006 (when the manufacturer's name changed) from "Zexel" to the new name "Valeo".*
- *Coat O-ring seals lightly with refrigerant oil before fitting ⇒ page 39 .*
- *The specified O-ring diameters and the tightening torques also apply to the screw connections of the refrigerant pipes and refrigerant hoses between the individual components.*
- *Only fit O-rings approved for refrigerant R134a ⇒ page 39 , ⇒ Air conditioner with refrigerant R134a and ⇒ Electronic parts catalogue .*
- *Checking cooling output ⇒ page 130*
- *Checking pressures in refrigerant circuit ⇒ Air conditioner with refrigerant R134a .*
- *For all other refrigerant circuit servicing and testing work not described in this Workshop Manual, refer to ⇒ Air conditioner with refrigerant R134a .*

- Servicing refrigerant circuit ⇒ page 143 .

12.1 Servicing refrigerant circuit

HD = High-pressure end

ND = Low-pressure end



1 - Air conditioner compressor regulating valve -N280-

- ❑ Not to be removed
- ❑ Checking actuation and operation ⇒ page 45

Note

2 - Air conditioner compressor

- ❑ Detaching air conditioner compressor from holder/re-attaching (vehicles with 4 or 6-cyl. engine) ⇒ page 40
- ❑ Detaching air conditioner compressor from holder/re-attaching (vehicles with 5-cyl. engine) ⇒ page 43
- ❑ Detaching refrigerant pipe at air conditioner compressor/attaching ⇒ page 146 .

Note

- ❑ Detaching poly V-belt ⇒ Engine, mechanics; Rep. Gr. 13
- ❑ Removing and installing air conditioner compressor ⇒ page 149
- ❑ The type of compressor may differ depending on the production period and engine ⇒ Electronic parts catalogue
- ❑ The air conditioner compressors fitted at the start of production are manufactured by “Denso” (type “6 SEU 14”). At a later date, other makes of air conditioner compressor may also be installed (e.g. “Sanden”, type “PXE 16” or “ZJX”) ⇒ Electronic parts catalogue and ⇒ Air conditioner with refrigerant R134a .
- ❑ Not all replacement air conditioner compressors have the same oil capacity. Attention is therefore to be paid to the quantity of oil in the air conditioner compressor ⇒ Air conditioner with refrigerant R134a and the exact part number ⇒ Electronic parts catalogue .

Note

- ❑ Following installation of a new air conditioner compressor or after pouring in fresh refrigerant oil (e.g. after blowing out the refrigerant circuit), give the air conditioner compressor 10 turns by hand prior to initial start-up to prevent compressor damage.

3 - Pulley

- ❑ Replacing ⇒ page 48
- ❑ Removing and installing poly V-belt ⇒ Engine, mechanics; Rep. Gr. 13
- ❑ Poly V-belt assignment: ⇒ Electronic parts catalogue

Note

4 - Oil drain plug

- ❑ The “Denso” air conditioner compressor is fitted with an oil seal which is always to be replaced.
- ❑ The “Sanden” air conditioner compressor is fitted with an O-ring (8.8 mm x 1.5 mm) which is always to be replaced.

- ❑ Tightening torque for “Denso” compressor 30 Nm
- ❑ Tightening torque: “Sanden” air conditioner compressor 10 Nm.
- ❑ Always remove the air conditioner compressor before screwing out to drain refrigerant oil; crank the air conditioner compressor via the pulley to accelerate refrigerant oil drainage ⇒ Air conditioner with refrigerant R134a .

5 - Pressure relief valve

- ❑ Not to be removed
- ❑ Tightening torques: “Sanden” air conditioner compressor 14.5 Nm, “Denso” air conditioner compressor 10 Nm
- ❑ With O-ring, “Denso” and “Sanden” air conditioner compressor 8.5 mm x 1.75 mm in each case ⇒ page 39

6 - Connection with valve

- ❑ Use an adapter from the adapter set for service connections -T10364- for example for removing and installing the valve insert with the refrigerant circuit drained.

WARNING

The refrigerant circuit must always be discharged before removing the valve core.

7 - High-pressure sender -G65-

- ❑ Removing and installing ⇒ page 33
- ❑ Checking signal ⇒ page 35

8 - Condenser

- ❑ Detaching and re-attaching refrigerant pipes ⇒ page 151
- ❑ Removing and installing condenser ⇒ page 153

9 - Receiver

- ❑ Receiver is attached directly to condenser
- ❑ Coat O-ring seals lightly with refrigerant oil before fitting ⇒ page 39
- ❑ Replace O-rings, version ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 159
- ❑ Different versions ⇒ Electronic parts catalogue

Note

- ❑ Removing and installing dryer cartridge (for a condenser with integrated receiver) ⇒ page 162

10 - Service connection on high-pressure end

- ❑ Different versions (with primary sealing valve or Schrader valve) depending on refrigerant pipe; distinguishing features ⇒ Air conditioner with refrigerant R134a
- ❑ For air conditioner service station for measuring pressure and draining and filling refrigerant circuit ⇒ Air conditioner with refrigerant R134a
- ❑ Use an adapter from the adapter set for service connections -T10364- for example for removing and installing the service connection or valve insert with the refrigerant circuit drained.
- ❑ Depending on the engine version, certain components (e.g. ACF) may have to be removed for connection of the service coupling.

WARNING

The refrigerant circuit must be drained before removing the service connections (the connection has no valve).

11 - Cap

- ❑ With seal
- ❑ Always to be screwed on

12 - Expansion valve

- ❑ Detaching and attaching refrigerant pipes ⇒ page 166
- ❑ Removing and installing ⇒ page 169

Note

13 - Evaporator

- ❑ Removing and installing air conditioner unit with evaporator ⇒ page 170
- ❑ Removing evaporator from air conditioner unit/installing ⇒ page 184

14 - Service connection on low-pressure end

- ❑ Different versions (with primary sealing valve or Schrader valve) depending on refrigerant pipe; distinguishing features ⇒ Air conditioner with refrigerant R134a
- ❑ For air conditioner service station for measuring pressure and draining refrigerant circuit ⇒ Air conditioner with refrigerant R134a
- ❑ Use an adapter from the adapter set for service connections -T10364- for example for removing and installing the service connection or valve insert with the refrigerant circuit drained.
- ❑ Depending on the engine version, certain components (e.g. ACF) may have to be removed for connection of the service coupling.

WARNING

The refrigerant circuit must be drained before removing the service connections (the connection has no valve).

15 - Cap

- ❑ With seal
- ❑ Always to be screwed on

12.2 Detaching refrigerant pipes at air conditioner compressor/attaching

Note

- ♦ *The air conditioner compressor is always driven when the engine is running; there is no magnetic clutch. Engine is therefore not to be started unless refrigerant circuit has been properly assembled. If, for example, the refrigerant pipes have not been connected to the air conditioner compressor, heat generation inside the air conditioner compressor with the engine running may lead to the destruction of the compressor.*
- ♦ *The following illustration shows an air conditioner compressor for a vehicle with 4-cyl. engine. The layout may differ on vehicles with other engines but the refrigerant pipes are to be detached in the same manner.*
- ♦ *Seal open pipes and the connections at the air conditioner compressor with suitable caps (to prevent the ingress of dirt and moisture).*

Detaching

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a .

– Remove the top engine cover (not necessary for all vehicles, depends on engine) ⇒ Engine, mechanics; Rep. Gr. 10 .

– Remove the centre noise insulation (not necessary for all vehicles, depends on engine) ⇒ General body repairs, exterior; Rep. Gr. 66 .

– If applicable, remove the noise insulation frame (currently fitted for example on the Audi TT Roadster) ⇒ General body repairs, exterior; Rep. Gr. 50 .

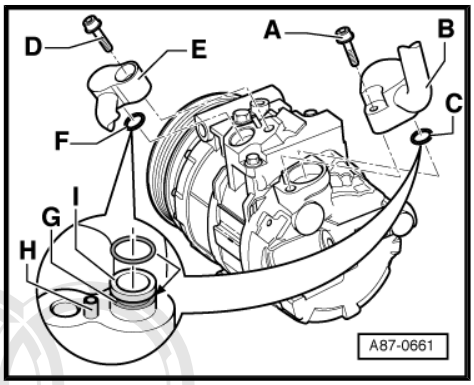
– Detach the air conditioner compressor from the holder ⇒ page 40 (not necessary on all vehicles, must be performed for example on vehicles with a 3.2 l MPI engine).

Note

- *On vehicles with 4-cyl. petrol engine or 5-cyl. engine, the refrigerant pipes are accessible from above for example. The centre noise insulation does not have to be removed on vehicles with these engines.*
- *On vehicles with 6-cyl. petrol engine, the refrigerant pipes are not accessible from above for example. The centre noise insulation has to be removed on vehicles with this engine.*
- *On vehicles on which the bolts at the refrigerant pipe connections are not accessible with the air conditioner compressor in position, detach the air conditioner compressor from the holder ⇒ page 40 (e.g. on vehicles with 3.2 l MPI engine).*
- *Remove the holders on vehicles on which the refrigerant pipes are secured with additional holders.*

– Remove bolts -A- and -D-.

– Detach the refrigerant pipes -B- and -E-.

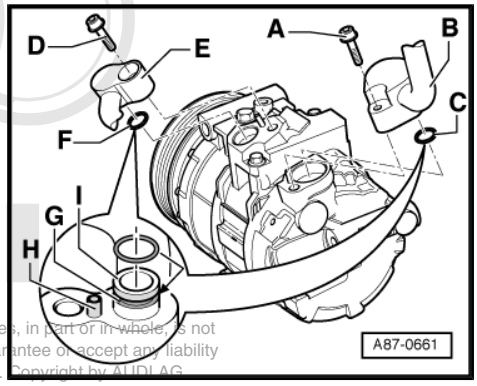


Note

Seal the open pipes and the connections at the air conditioner compressor with suitable caps (to prevent the ingress of dirt and moisture).

Attaching

Attach in reverse order, paying attention to the following:



– Replace the O-rings -C- and -F- ⇒ page 39 , version ⇒ Electronic parts catalogue
– Check the fitted pin -H- (not provided with all connections) and the sleeve -J- for damage and proper attachment.
– Tighten the bolts -A- and -D- to 25 Nm.

Note

- *Use is not to be made of the O-rings from the caps of the replacement compressor connections.*
- *Coat O-ring seals lightly with refrigerant oil before fitting* *⇒ page 39* *.*
- *Pay attention to correct positioning of the O-rings in the groove -G- of the corresponding refrigerant pipe.*
- *Following attachment of the refrigerant pipes to the air conditioner compressor (and after installing the air conditioner compressor) check the routing of the pipes. They must be inserted in the holders provided and not make contact with other components.*

– Evacuate and refill the refrigerant circuit ⇒ Air conditioner - with refrigerant R134a
– Re-install the remaining components removed.
– Start up the air conditioner after charging the refrigerant circuit ⇒ page 186 .

Note

Also heed the notes on start-up of the air conditioner after charging ⇒ Air conditioner with refrigerant R134a .

12.3 Removing and installing air conditioner compressor

Note

- *Type of compressor may differ depending on production period and engine. ⇒ Electronic parts catalogue*
- *The air conditioner compressors fitted at the start of production are manufactured by "Denso" (type "6 SEU 14"). At a later date, other makes of air conditioner compressor may also be installed (e.g. "Sanden", type "PXE 16" or "ZJX") ⇒ Electronic parts catalogue and ⇒ Air conditioner with refrigerant R134a .*
- *Not all replacement air conditioner compressors have the same oil capacity. Attention is therefore to be paid to the quantity of oil in the air conditioner compressor ⇒ Air conditioner with refrigerant R134a and the exact part number ⇒ Electronic parts catalogue .*
- *There are different refrigerant oil capacities for the refrigerant circuit depending on the type of air conditioner compressor. The reason for the different oil quantities in the air conditioner compressor for an otherwise identical refrigerant circuit is the design of the actual air conditioner compressor. Attention is to be paid to these oil quantities. Too much oil in the circuit results in higher pressures and reduced system cooling output. Too little oil may lead to lubrication problems in the air conditioner compressor.*
- *Following installation of a new air conditioner compressor or after pouring in fresh refrigerant oil (e.g. after flushing the refrigerant circuit), give the air conditioner compressor 10 turns by hand prior to initial start-up to prevent compressor damage ⇒ Air conditioner with refrigerant R134a .*

Removing

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a .

– Detach the refrigerant pipes from the air conditioner compressor ⇒ page 146 .

Note

The sequence differs and depends on the engine. On vehicles with 3.2 l MPI engine, the air conditioner compressor must be detached from the holder before the refrigerant pipes can be detached. On vehicles with 2.0 l TFSI engine, the refrigerant pipes can be detached with the air conditioner compressor attached.

– Detach the air conditioner compressor from the holder ⇒ page 40 (vehicles with 4 or 6-cyl. engine) or ⇒ page 43 (vehicles with 5-cyl. engine).

Installing

Install in reverse order, paying attention to the following:

Before fitting the air conditioner compressor ⇒ Air conditioner with refrigerant R134a

Note

- *Coat O-ring seals lightly with refrigerant oil before fitting ⇒ page 39 .*
- *The air conditioner compressor removed contains an indeterminate amount of refrigerant oil. Attention is therefore to be paid to the notes on air conditioner compressor replacement. ⇒ Air conditioner - with refrigerant R134a*
- Tightening torques ⇒ page 40 (vehicles with 4 or 6-cyl. engine), ⇒ page 43 (vehicles with 5-cyl. engine) and ⇒ page 146 (attaching refrigerant pipes to air conditioner compressor).
- Replace O-ring seals at opened connections. Version ⇒ Electronic parts catalogue

– Attach the air conditioner compressor to the holder ⇒ page 40 (vehicles with 4 or 6-cyl. engine) or ⇒ page 43 (vehicles with 5-cyl. engine).

– After installing a new air conditioner compressor (or pouring fresh refrigerant oil into the air conditioner compressor e.g. after flushing the refrigerant circuit) and before fitting the poly V-belt, crank the compressor 10 times by hand.

Note

Vehicles with a 5-cyl. engine have 2 poly V-belts attached to the air conditioner compressor. The air conditioner compressor is therefore provided with a double-belt pulley ⇒ page 43 .

– Position the poly V-belt(s) on the poly V-belt pulleys ⇒ Engine, mechanics; Rep. Gr. 13 .

– Evacuate and charge the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .

– Re-install the remaining components removed.

– Start up the air conditioner after charging the refrigerant circuit ⇒ page 186 .

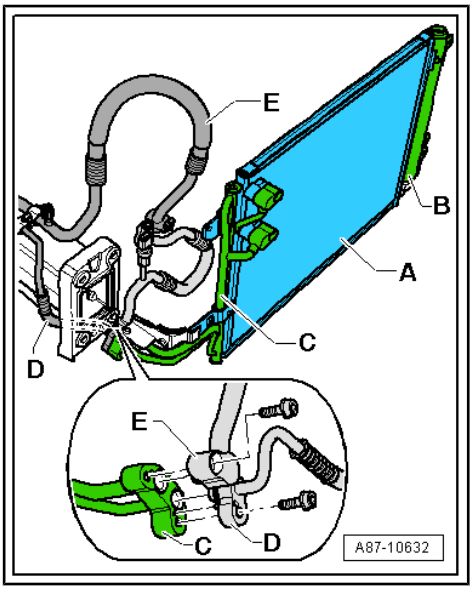
Note

- *Also heed the notes on start-up of the air conditioner after charging ⇒ Air conditioner with refrigerant R134a .*
- *Cranking prevents air conditioner compressor damage which could be caused by refrigerant oil in the compression chamber on initial start-up of the engine.*
- *Do not start the engine until the refrigerant circuit has been assembled.*
- *If possible only start the engine with the refrigerant circuit charged.*
- *Different air conditioner compressors depending on production period and engine ⇒ page 31 and ⇒ Electronic parts catalogue*
- *The air conditioner compressor is always driven by the pulley (there is no magnetic clutch). In no-load operation, air conditioner compressor lubrication is maintained by way of an "internal oil circuit" to prevent damage.*
- *The air conditioner compressor is equipped with an "internal oil circuit" to prevent damage if the refrigerant circuit is empty. A prerequisite for this internal lubrication is that there is still a residual quantity of refrigerant oil in the air conditioner compressor.*
- *Engine is not to be started unless refrigerant circuit has been properly assembled. If, for example, the refrigerant pipes have not been connected to the air conditioner compressor, heat generation inside the air conditioner compressor with the engine running may lead to the destruction of the compressor.*
- *The air conditioner compressor regulating valve -N280- is not actuated if the refrigerant circuit is empty and the air conditioner compressor runs at idle with the engine. However, as there is no refrigerant available, the refrigerant oil required for air conditioner compressor lubrication is not conveyed.*

12.4 Detaching and re-attaching refrigerant pipes from condenser

Note

- *There are different condenser versions depending on the vehicle model ⇒ Electronic parts catalogue .*
- *Vehicles with a 5-cyl. engine are fitted with a condenser -A- with an additional twin pipe -C- bolted to the condenser -A-. The twin pipe -C- is included in the scope of delivery of the condenser ⇒ Electronic parts catalogue . If it is necessary to detach the twin pipe -C- from the condenser -A-, the same tightening torques apply to the bolts at the joints as to the bolts at the refrigerant pipes -D- and -E-.*

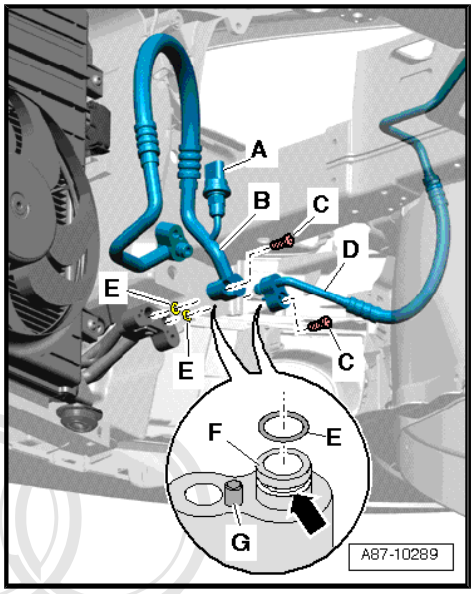


Detaching

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a .

– Remove centre noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 .

– Unplug the connector at the high-pressure sender -G65- -A-.
– Screw out the bolts -C-.
– Detach the refrigerant pipes -B- and -D- from the condenser.



Note

Seal the open pipes and the connections at the condenser with suitable caps (to prevent the ingress of dirt and moisture).

Attaching

Attach in reverse order, paying attention to the following:

Note

- *Moisten O-rings slightly with refrigerant oil before fitting ⇒ page 39 .*
- *Pay attention to correct positioning of the O-rings -E- (different versions) in the groove -arrow- of the corresponding refrigerant pipe.*
- *Following attachment at the condenser, check the routing of the refrigerant pipes. They must be inserted in the holders provided and not make contact with other components.*

– Replace the O-rings -E-. For version, refer to ⇒ Electronic parts catalogue .
– Check the fitted pin -G- (not provided with all connections) and the refrigerant pipe connection -F- for damage and proper attachment.
– Tighten the bolts -C-.
• Tightening torque: Bolts at refrigerant pipe connection to condenser 12 Nm
– Evacuate and charge the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .
– Re-install the other components removed.
– Start up the air conditioner after charging the refrigerant circuit ⇒ page 186 .

Note

Also heed the notes on start-up of the air conditioner after charging ⇒ Air conditioner with refrigerant R134a .

12.5 Removing and installing condenser

Note

- *Even if fitted correctly, the radiator and condenser fins may exhibit slight pressure marks. This is not to be viewed as damage. Neither radiator nor condenser are to be replaced on account of such minor pressure marks.*
- *There are different condenser versions depending on vehicle model ⇒ Electronic parts catalogue*
-

- Removing and installing condenser - vehicles with 4-cyl. engine ⇒ page 153
- Removing and installing condenser - vehicles with 5-cyl. engine ⇒ page 155
- Removing and installing condenser - vehicles with 6-cyl. engine ⇒ page 157

12.5.1 Removing and installing condenser - vehicles with 4-cyl. engine

Note

Removal and installation are described in the following on the basis of a vehicle with a 2.0 l TFSI engine. The procedure may differ for vehicles with a different 4-cylinder engine.

Removing

– Switch off ignition.

– Drain the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .

– Remove the radiator cowl ⇒ Engine, mechanics; Rep. Gr. 19 .

– Detach the refrigerant pipes from the condenser ⇒ page 151 .

– Remove the front bumper cover ⇒ General body repairs, exterior; Rep. Gr. 63 .

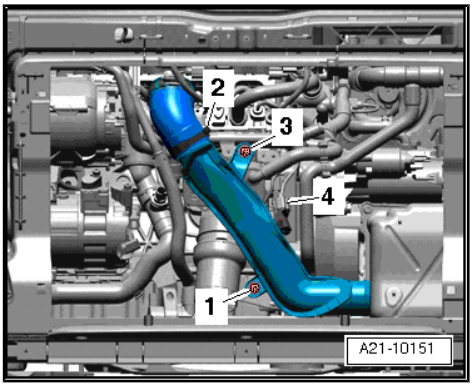
– Remove the left and right air hose to the charge air cooler. This involves unfastening the spring clip and hose clamp ⇒ Engine, mechanics; Rep. Gr. 21 .

– Unfasten the clip -2-.

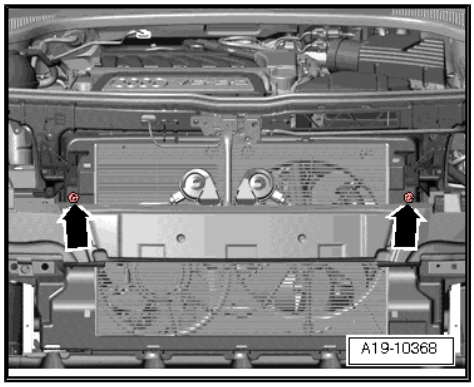
– Unplug the connector -4-.

– Unscrew the nut -3- and screw out the bolt -1-.

– Take out the intake connection downwards.



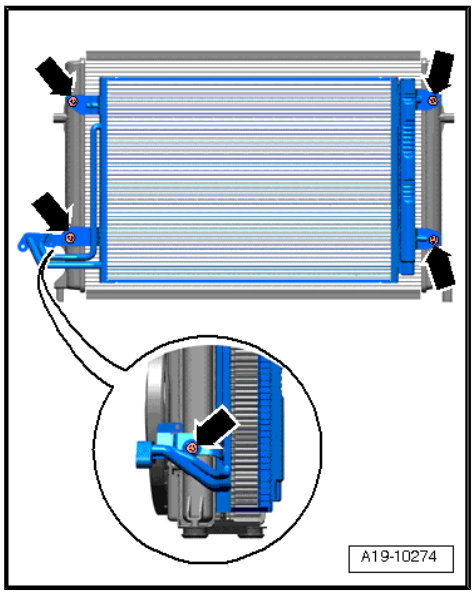
– Screw out the bolts -arrows-. To do so, release the air ducts on the left and right and swivel towards headlights.
– Swivel the top edge of the charge air cooler slightly to the rear.
– Lift the charge air cooler and disengage it from the lower mounting points.
– Slide the charge air cooler towards the engine.
– Support the charge air cooler from underneath to stop it sagging.



Note

To avoid damaging the condenser and the refrigerant pipes and hoses, make sure the pipes and hoses are not strained, kinked or bent.

– Screw out the bolts -arrows-.
– Detach the condenser from the charge air cooler.
– Take out the condenser -A- downwards.



Installing

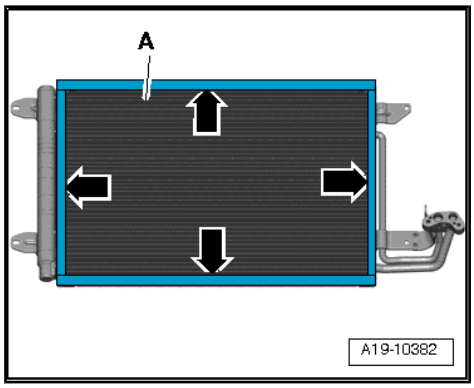
- Tightening torque: Bolts for attaching condenser (to charge air cooler) - 5 Nm.

Install in reverse order, paying attention to the following:

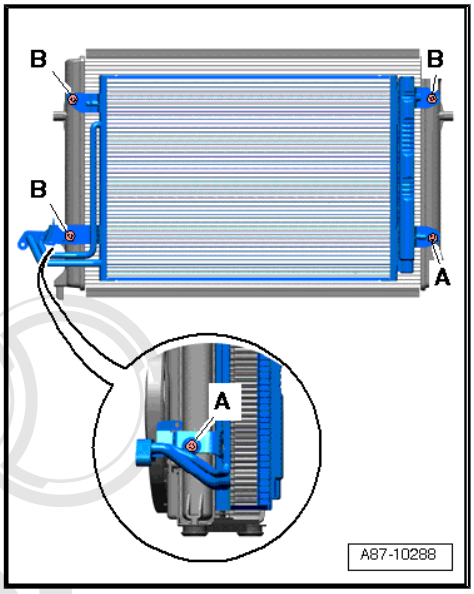
Note

The condenser removed contains refrigerant oil, which must be returned to the refrigerant circuit (together with the new condenser) ⇒ Air conditioner with refrigerant R134a .

– Make sure the sealing strips -arrows- are properly bonded to the condenser -A-.



– Tighten the bolts at the condenser in the sequence -A, B-.
– Connect the refrigerant pipes ⇒ page 151 .
– Fit the intake connection at the bottom and the charge air hoses ⇒ Rep. Gr. 21 .
– Fit the radiator cowl ⇒ Engine, mechanics; Rep. Gr. 19 .
– Install the front bumper cover ⇒ General body repairs, exterior; Rep. Gr. 63 .
– Evacuate and charge the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .
– Re-install the other components removed.
– Start up the air conditioner after charging the refrigerant circuit ⇒ page 186 .



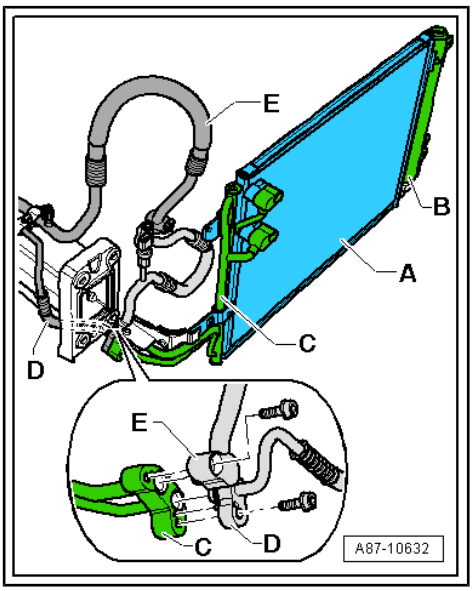
Note

Also heed the notes on start-up of the air conditioner after charging ⇒ Air conditioner with refrigerant R134a .

12.5.2 Removing and installing condenser - vehicles with 5-cyl. engine

Note

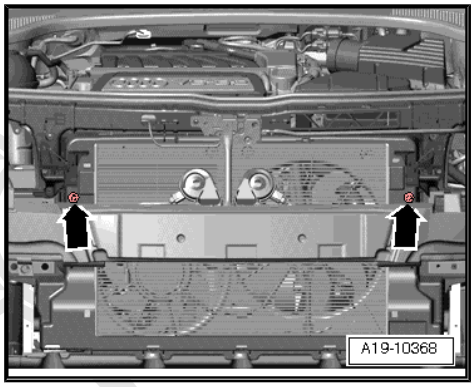
- *Removal and installation are described in the following on the basis of a vehicle with a 2.5 l TFSI engine. The procedure may differ for vehicles with a different 5-cylinder engine.*
- *Vehicles with a 5-cyl. engine are fitted with a condenser -A- with an additional twin pipe -C- bolted to the condenser -A-. The twin pipe -C- is included in the scope of delivery of the condenser ⇒ Electronic parts catalogue . If it is necessary to detach the twin pipe -C- from the condenser -A-, the same tightening torques apply to the bolts at the joints as to the bolts at the refrigerant pipes -D- and -E-.*



Removing

– Switch off ignition.
– Drain the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .
– Remove the air intake to the air cleaner housing ⇒ Injection and ignition system; Rep. Gr. 24 .
– Remove the radiator cowl ⇒ Engine, mechanics; Rep. Gr. 19 .
– Detach the refrigerant pipes from the condenser ⇒ page 151 .
– Remove the front bumper cover ⇒ General body repairs, exterior; Rep. Gr. 63 .
– Remove the left and right air hose to the charge air cooler. This involves unfastening the spring clip and hose clamp ⇒ Engine, mechanics; Rep. Gr. 21 .

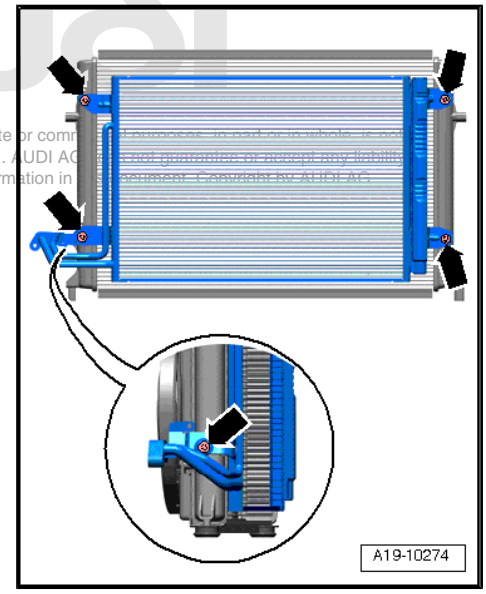
– Screw out the bolts -arrows-. To do so, release the air ducts on the left and right and swivel towards headlights.
– Swivel the top edge of the charge air cooler slightly to the rear.
– Lift the charge air cooler and disengage it from the lower mounting points.
– Slide the charge air cooler towards the engine.
– Support the charge air cooler from underneath to stop it sagging.



Note

To avoid damaging the condenser and the refrigerant pipes and hoses, make sure the pipes and hoses are not strained, kinked or bent.

– Screw out the bolts -arrows-.
– Detach the condenser from the charge air cooler.
– Take out the condenser -A- downwards.



Installing

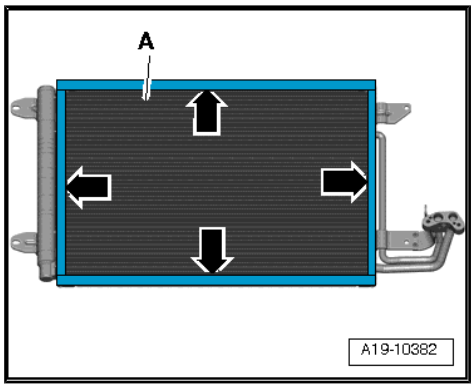
- Tightening torque: Bolts for attaching condenser (to charge air cooler) - 5 Nm.

Install in reverse order, paying attention to the following:

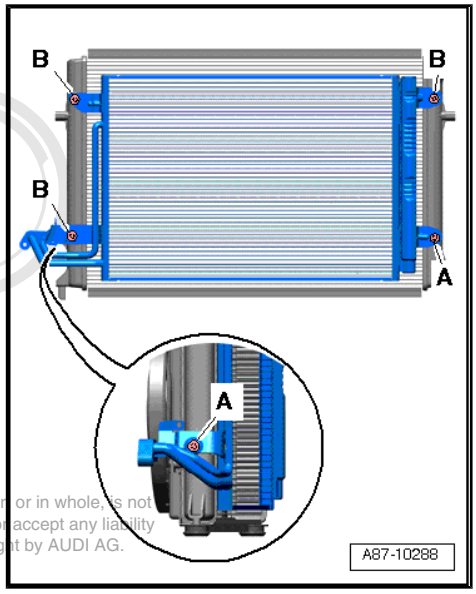
Note

The condenser removed contains refrigerant oil, which must be returned to the refrigerant circuit (together with the new condenser) ⇒ Air conditioner with refrigerant R134a .

– Make sure the sealing strips -arrows- are properly bonded to the condenser -A-.



– Tighten the bolts at the condenser in the sequence -A, B-.
– Connect the refrigerant pipes ⇒ page 151 .
– Fit the intake connection at the bottom and the charge air hoses ⇒ Rep. Gr. 21 .
– Fit the radiator cowl ⇒ Engine, mechanics; Rep. Gr. 19 .
– Install the front bumper cover ⇒ General body repairs, exterior; Rep. Gr. 63 .
– Evacuate and charge the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .
– Re-install the other components removed.
– Start up the air conditioner after charging the refrigerant circuit ⇒ page 186 .



Note

Also heed the notes on start-up of the air conditioner after charging ⇒ Air conditioner with refrigerant R134a .

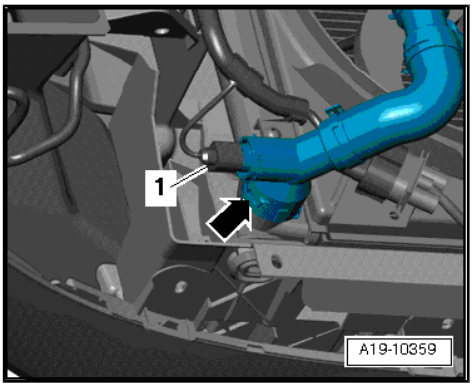
12.5.3 Removing and installing condenser - vehicles with 6-cyl. engine

Note

Removal and installation are described in the following on the basis of a vehicle with a 3.2 l MPI engine. The procedure may differ for vehicles with a different 6-cylinder engine.

Removing

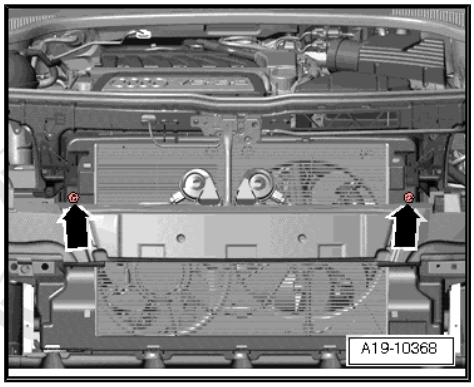
– Switch off ignition.
– Drain the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .
– Remove the front bumper cover ⇒ General body repairs, exterior; Rep. Gr. 63 .
– Remove the radiator cowl ⇒ Engine, mechanics; Rep. Gr. 19 .
– Detach the refrigerant pipes ⇒ page 151 .
– Unplug the connector -1- at the radiator outlet coolant temperature sender -G83- .



Note

-Arrow- can be ignored.

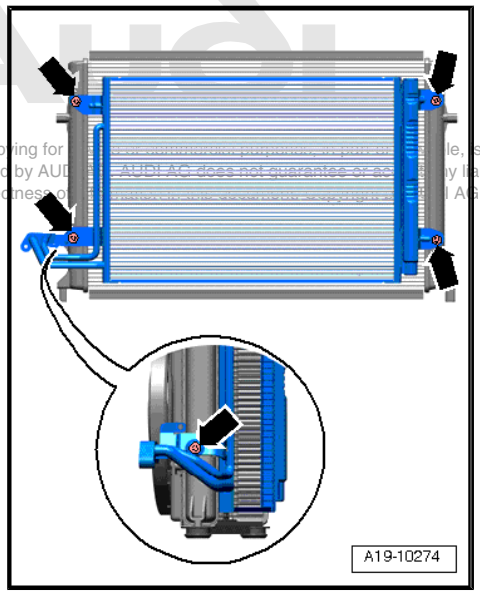
– Screw out the bolts -arrows-. To do so, release the air ducts on the left and right and swivel towards headlights.
– Swivel the top edge of the radiator slightly to the rear.
– Lift the radiator and disengage it from the lower mounting points.
– Slide the radiator towards the engine.
– Support the radiator from underneath to stop it sagging.



Note

To avoid damaging the condenser and the refrigerant pipes and hoses, make sure the pipes and hoses are not strained, kinked or bent.

– Screw out the bolts -arrows-.
– Detach the condenser from the radiator.
– Take out the condenser downwards.



Installing

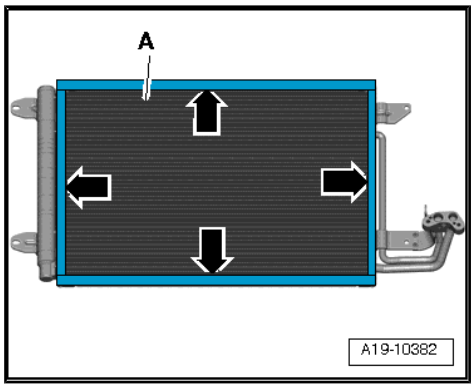
- Tightening torque: Bolts for attaching condenser (to charge air cooler) - 5 Nm.

Install in reverse order, paying attention to the following:

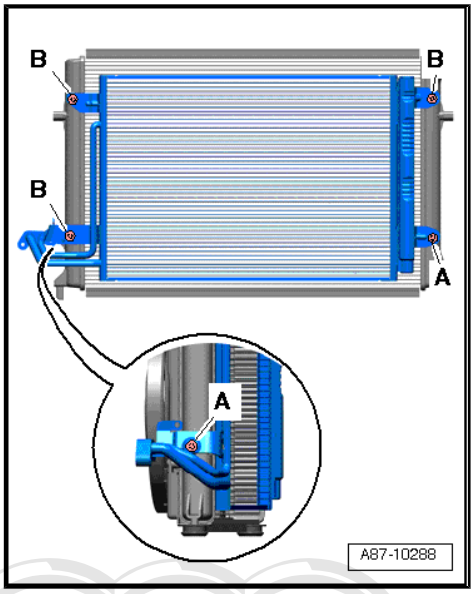
Note

The condenser removed contains refrigerant oil, which must be returned to the refrigerant circuit (together with the new condenser) ⇒ Air conditioner with refrigerant R134a .

– Make sure the sealing strips -arrows- are properly bonded to the condenser -A-.



– Tighten the bolts at the condenser in the sequence -A, B-.
– Connect the refrigerant pipes ⇒ page 151 .
– Fit the radiator cowl ⇒ Engine, mechanics; Rep. Gr. 19 .
– Install the front bumper cover ⇒ General body repairs, exterior; Rep. Gr. 63 .
– Evacuate and charge the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .
– Re-install the other components removed.
– Start up the air conditioner after charging the refrigerant circuit ⇒ page 186 .

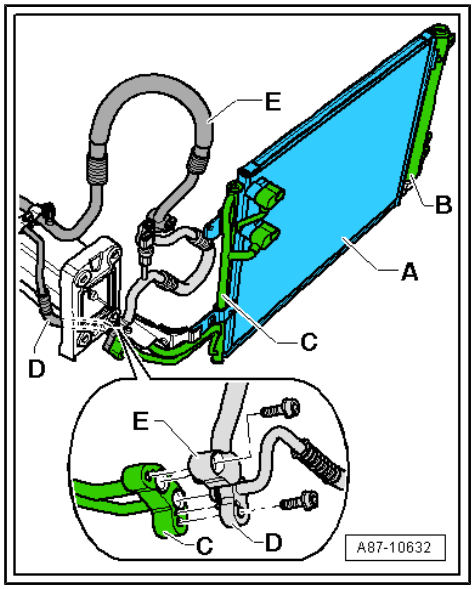


Note

Also heed the notes on start-up of the air conditioner after charging ⇒ Air conditioner with refrigerant R134a .

12.6 Removing and installing receiver

Does not apply to condensers with an attached receiver.



Note

- *There are different versions of the receiver and condenser. Pay attention to correct assignment ⇒ Electronic parts catalogue .*
- *Depending on the version of the condenser, the receiver may be attached to or integrated into the condenser. For dryer cartridge replacement on a condenser with integral receiver, refer to ⇒ page 162 .*
- *Vehicles with a 5-cyl. engine are fitted with a different type of condenser to vehicles with a 4 or 6-cyl. engine. This condenser -A- also has an integrated receiver -B-. In addition, this receiver -B- is fitted with a dryer cartridge which is not currently available as a replacement part. If the rectification of problems on this vehicle involves replacement of the receiver and the dryer cartridge, it may be necessary to renew the entire condenser ⇒ page 162 , ⇒ Electronic parts catalogue and ⇒ Air conditioner with refrigerant R134a .*
- *Removing and installing dryer cartridge (for a condenser with integrated receiver) ⇒ page 162 .*

- The receiver removed contains refrigerant oil, which must be returned to the refrigerant circuit (together with the new receiver) ⇒ Air conditioner with refrigerant R134a . Adjustment of oil quantity depends on nature of complaint:

– If, for example, the receiver has been damaged in an accident (no escape of refrigerant, no ingress of moisture or dirt into the refrigerant circuit), allow the refrigerant oil to drain out of the receiver removed and fill the refrigerant circuit (e.g. condenser) with the amount of refrigerant oil drained off plus 10 cm^3 of fresh refrigerant oil. This enables the refrigerant circuit to be serviced without the need for extensive repair work ⇒ Air conditioner with refrigerant R134a .

– If an indeterminate amount of refrigerant oil has escaped following an accident or if dirt and moisture have ingressed into the refrigerant circuit, the circuit must be flushed ⇒ Air conditioner with refrigerant R134a .

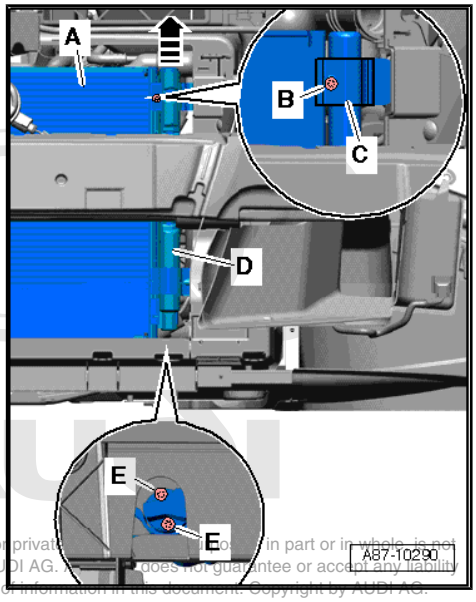
Removing

– Switch off ignition.

– Drain the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .

– Remove the front bumper cover ⇒ General body repairs, exterior; Rep. Gr. 63 .

– Screw out the bolts -E-.
– Screw out the bolt -B- and detach the holder -C- downwards.
– Lift the receiver -D- out of the condenser -A- -arrow-.



Note

Seal the open connections at the receiver and condenser with suitable caps (to prevent the ingress of dirt and moisture).

Installing

Note

The design of the condenser and holder -C- differs depending on the production period. In Model Year 2007 the method of attachment was gradually switched from a bolted-on metal holder to a clip-on plastic holder.

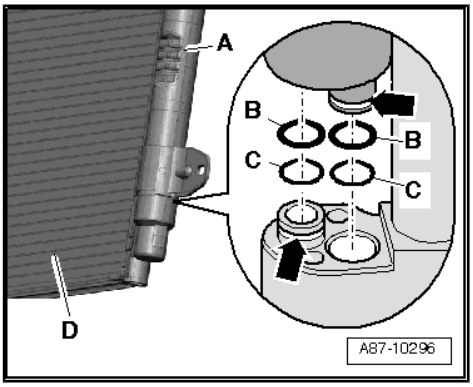
- Tightening torque: Bolts for attaching receiver to condenser - 10 Nm.

Install in reverse order, paying attention to the following:

Note

- *Moisten O-rings slightly with refrigerant oil before fitting ⇒ page 39 .*
- *Pay attention to correct positioning of the O-rings in the grooves -arrows- of the corresponding mount.*
- *Keep the receiver closed for as long as possible, only remove the caps immediately before installation (the receiver contains a dryer cartridge which soon becomes saturated with moisture and hence unusable when the receiver is open).*

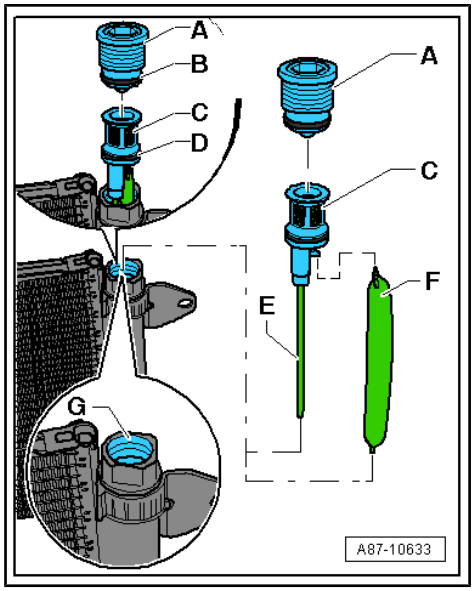
– Clean the contact surface of the condenser -D-.
– Replace the seals -B- and O-rings -C-. For version, refer to ⇒ Electronic parts catalogue .
– Mount the receiver -A- at the condenser and tighten the bolts.
– Install the front bumper cover ⇒ General body repairs, exterior; Rep. Gr. 63 .
– Evacuate and charge the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .
– Re-install the other components removed.
– Start up the air conditioner after charging the refrigerant circuit ⇒ page 186 .



Note

Also heed the notes on start-up of the air conditioner after charging ⇒ Air conditioner with refrigerant R134a .

12.7 Removing and installing dryer cartridge



Note

- *There are different versions of the condenser and the dryer cartridge -F- installed in it (this illustration shows the version for vehicles with 5-cyl. engine). Pay attention to correct assignment ⇒ Electronic parts catalogue .*
- *The dryer cartridge -F- and the O-ring -B- are of the same design for the various types of condenser. If no repair set is available for the condenser concerned, either replace the entire condenser or make use of these two components from the repair set for a different condenser (in this case e.g. from the repair set for the condenser fitted on the Audi A4 2008 >) ⇒ Electronic parts catalogue . The plastic bolt -A- and the filter element -C- (with the riser -E-) must however then be cleaned prior to re-use. The O-ring -D- only provides a seal within the circuit and can be re-used in this particular case if it is intact.*

Dryer cartridge replacement on a condenser for vehicles with 4 or 6-cyl. engine

Note

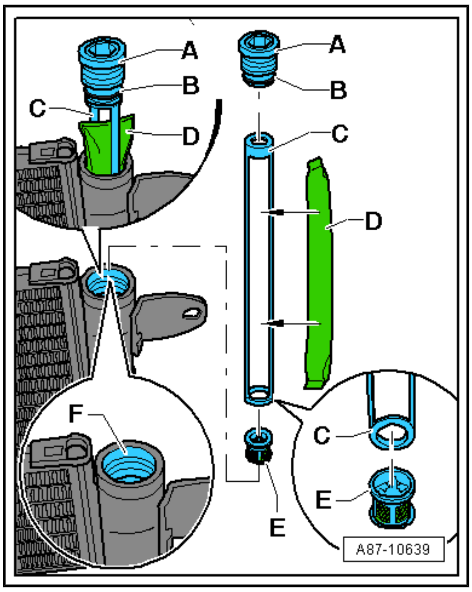
- *Depending on the version of the condenser, the receiver may be attached to or integrated into the condenser on vehicles with 4 or 6-cyl. engine. For replacing an attached receiver, refer to ⇒ page 159 .*
- *Vehicles with a 5-cyl. engine are currently fitted with a different type of condenser to vehicles with a 4 or 6-cyl. engine ⇒ Electronic parts catalogue .*

Removing

– Switch off ignition.

– Drain the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .

– Remove the condenser ⇒ page 153 (vehicles with 4-cyl. engine) or ⇒ page 157 (vehicles with 6-cyl. engine).



– Screw out the plastic bolt -A- (tightening torque 2 Nm).

– Lift the dryer mount -C- with the dryer cartridge -D- out of the condenser.

– Use a commercially available claw grip for example to pull the filter element -E- upwards out of the condenser.

Note

Seal the open connection at the condenser with the plastic bolt -A- (to prevent the ingress of dirt and moisture).

Installing

Install in reverse order, paying attention to the following:

♦ Check the receiver at the condenser for contamination by way of the opening -F-.

♦ Check the thread -F- in the receiver at the condenser for contamination or damage.

♦ Replace the plastic bolt -A-, the dryer mount -C-, the dryer cartridge -D-, the filter element -E- and the O-ring -B-.

♦ Moisten the O-ring -B- with a small quantity of refrigerant oil before fitting ⇒ page 39 .

♦ Pay attention to correct positioning of the O-ring -B- in the groove of the plastic bolt -A-.

♦ Keep the bag with the air-tight seal containing the dryer cartridge -D- closed as long as possible. Only open the bag immediately prior to insertion of the dryer cartridge in the condenser. After opening the bag, the dryer cartridge soon becomes saturated with moisture from the ambient air and thus unusable.

– Insert the filter element -E- in the correct position in the receiver of the condenser.

– Remove the dryer cartridge -D- from the bag and insert it in the dryer mount -C-.

– Insert the dryer cartridge -D- together with the dryer mount -C- in the receiver of the condenser.

– Screw in the plastic bolt -A- (tightening torque 2 Nm).

– Fit the condenser ⇒ page 153 (vehicles with 4-cyl. engine) or ⇒ page 157 (vehicles with 6-cyl. engine).

– Re-install the other components removed.

– Evacuate and charge the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .

– Start up the air conditioner after charging the refrigerant circuit ⇒ page 186 .

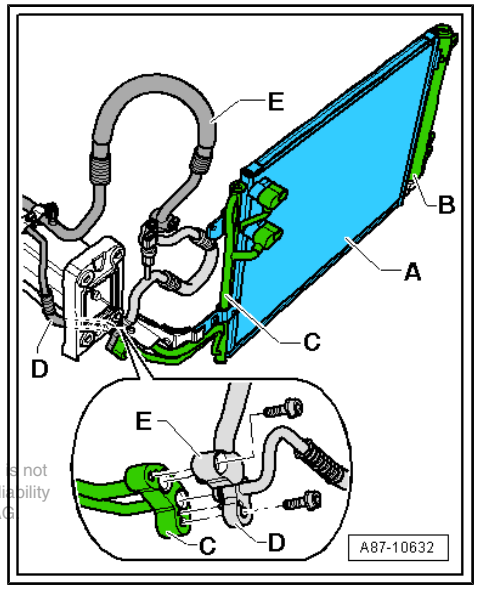
Note

Also heed the notes on start-up of the air conditioner after charging ⇒ Air conditioner with refrigerant R134a .

Dryer cartridge replacement on a condenser for vehicles with 5-cyl. engine

Note

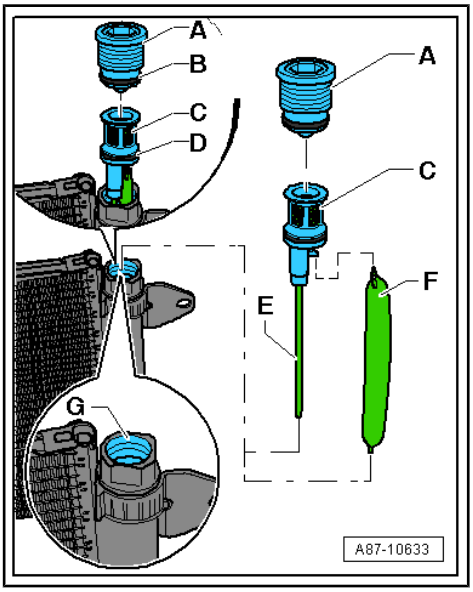
Vehicles with a 5-cyl. engine are currently fitted with a different type of condenser to vehicles with a 4 or 6-cyl. engine. This condenser -A- has an integrated receiver -B-. In addition, this receiver -B- is fitted with a dryer cartridge which is not currently available as a replacement part. If the rectification of problems on this vehicle involves replacement of the dryer cartridge, a check is therefore to be made as to whether use can be made of the dryer cartridge from a different repair set (in this case e.g. from the repair set for the condenser fitted on the Audi A4 2008 >). If not, the entire condenser is to be replaced ⇒ Electronic parts catalogue and ⇒ Air conditioner with refrigerant R134a .



Removing

– Switch off ignition.
– Drain the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .
– Remove the condenser ⇒ page 155 .

– Screw out the plastic bolt -A- (tightening torque 2 Nm).
– Lift the filter element -C- with the dryer cartridge -F- out of the condenser.



Note

Seal the open connection at the condenser with the plastic bolt -A- (to prevent the ingress of dirt and moisture).

Installing

Install in reverse order, paying attention to the following:

- Check the receiver at the condenser for contamination by way of the opening -G-.
- Check the thread -G- in the receiver at the condenser for contamination or damage.
- Replace the plastic bolt -A-, the filter element -C- (with the riser -E-) and the two O-rings -B- and -D-.
- Moisten the O-rings -B- and -D- with a small quantity of refrigerant oil before fitting ⇒ page 39 .
- Pay attention to correct positioning of the O-rings in the grooves of the corresponding components.
- Keep the bag with the air-tight seal containing the dryer cartridge -F- closed as long as possible. Only open the bag immediately prior to insertion of the dryer cartridge in the condenser. After opening the bag, the dryer cartridge soon becomes saturated with moisture from the ambient air and thus unusable.

– Remove the dryer cartridge -F- from the bag and engage it at the hook of the filter element -C-.
– Insert the dryer cartridge -F- together with the filter element -C- in the receiver of the condenser.
– Screw in the plastic bolt -A- (tightening torque 2 Nm).
– Install the condenser ⇒ page 155 .
– Re-install the other components removed.
– Evacuate and charge the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .
– Start up the air conditioner after charging the refrigerant circuit ⇒ page 186 .

Note

Also heed the notes on start-up of the air conditioner after charging ⇒ Air conditioner with refrigerant R134a .

12.8 Detaching and re-attaching refrigerant pipes from expansion valve

Note

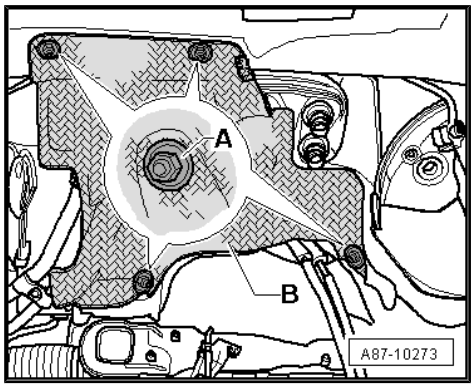
After switching off the air conditioner compressor, a relatively long period may elapse with this vehicle before the pressure on the high-pressure end decreases (the expansion valve is cold and the pressure on the low-pressure end increases rapidly after switch-off, the expansion valve closes and the refrigerant can only flow slowly to the low-pressure end).

Detaching

– Switch off ignition.

– Drain the refrigerant circuit ⇒ Air conditioner with refrigerant R134a.

– Remove the components impeding access to the mounting points -A- of the heat shield -B- in the engine compartment ⇒ Engine, mechanics; Rep. Gr. 13 .



Note

- *For greater clarity, the illustration shows the heat shield -B- with the engine removed.*
- *Depending on the engine and vehicle model, it may be necessary to unfasten or remove various engine components.*

Components which have to be removed on vehicles with 4-cyl. engine

Note

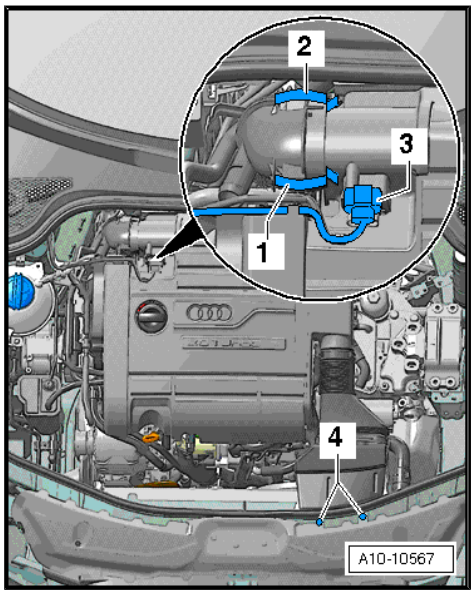
Removal and installation are described in the following on the basis of a vehicle with a 2.0 l TFSI engine. The procedure may differ for vehicles with a different 4-cylinder engine.

– Unplug the connector -3- at the air mass meter -G70- .

– Unfasten the clamps -1- and -2- and detach the air hose from the air mass meter.

– Unscrew the air intake connection at the front from the lock carrier -4-.

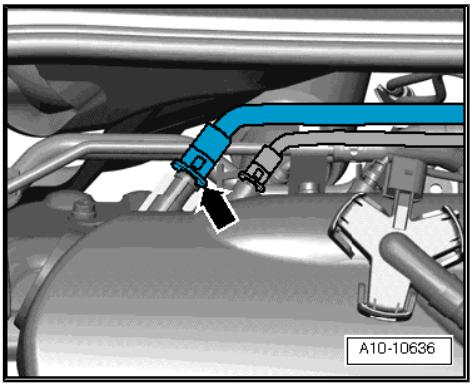
– Detach the engine cover.



Components which have to be removed on vehicles with 5-cyl. engine

– Remove the air pipe (from the air cleaner to the turbocharger) ⇒ Injection and ignition system; Rep. Gr. 24 .

Components which have to be removed on vehicles with 6-cyl. engine



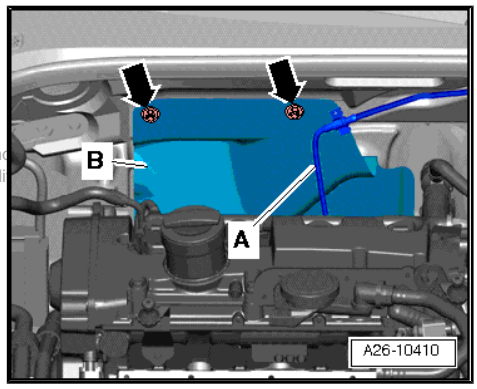
Note

Removal and installation are described in the following on the basis of a vehicle with a 3.2 l MPI engine. The procedure may differ for vehicles with a different 6-cylinder engine.

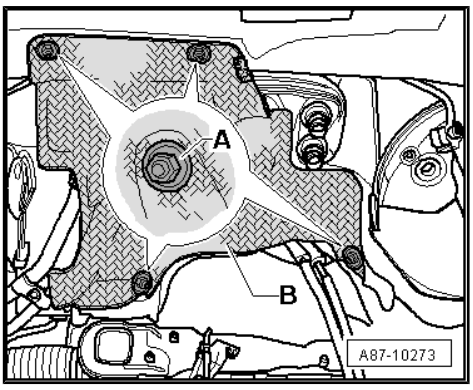
– Detach the vacuum hose to the brake servo -arrow-.

Components which have to be removed or unfastened on all vehicles

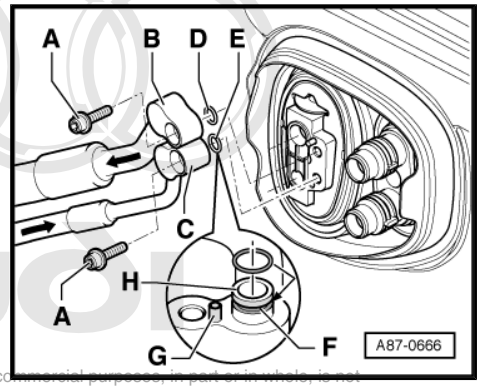
– Unscrew the nuts -arrows-.
– If fitted, unclip the pipe -A- from the mount.



– Unscrew the remaining nuts -A-.
– Detach the heat shield -B- from the mounting points (lay aside or remove completely).



– Screw out the bolts -A-.
– Detach the refrigerant pipes -B- and -C-.



Note

- *Seal open pipes and connections at expansion valve with suitable caps (to prevent ingress of dirt and moisture).*
- *After switching off the air conditioner compressor, a relatively long period may elapse with this vehicle before the pressure on the high-pressure end decreases (the expansion valve is cold and the pressure on the low-pressure end increases rapidly after switch-off, the expansion valve closes and the refrigerant can only flow slowly to the low-pressure end).*
- *The section of tubing in the refrigerant pipe in the high-pressure side (thin pipe) -C- is being gradually discontinued in Model Year 2007. If there is no such tubing, bend the refrigerant pipe -C- carefully and only to the extent which is absolutely necessary to remove the expansion valve. If necessary, unfasten a refrigerant pipe with no tubing section from the holder so as not to damage the refrigerant pipe.*

Attaching

- Tightening torque: Bolts -A- (for attachment of refrigerant pipes to expansion valve) 10 Nm.

Install in reverse order, paying attention to the following:

– Replace the O-rings -D- and -E-, for version refer to ⇒ Electronic parts catalogue .
– Check the fitted pin -G- (fitted in the connection or expansion valve, not provided with all connections) and the sleeve -H- for damage and proper attachment.

Note

- *Coat O-ring seals lightly with refrigerant oil before fitting* *⇒ page 39* .
- *Pay attention to correct positioning of the O-rings in the groove -F- of the corresponding refrigerant pipe.*
- *Install refrigerant pipes such that they are not strained.*
- *Depending on the vehicle equipment and the engine, the refrigerant pipes may be provided with thermal insulation. This must not be damaged and must be re-attached following installation.*
- *Check the installation position of the refrigerant pipes with respect to the expansion valve (they must not contact other components) and the position and condition of heat insulation, if fitted on the refrigerant pipes (not present in all engine types).*

– Evacuate and charge the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .
– Re-install the other components removed.
– Start up the air conditioner after charging the refrigerant circuit ⇒ page 186 .

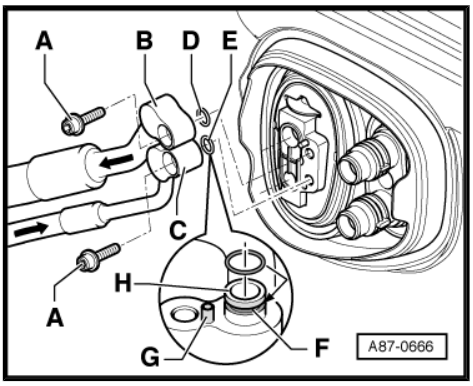
Note

Also heed the notes on start-up of the air conditioner after charging ⇒ Air conditioner with refrigerant R134a .

12.9 Removing and installing expansion valve

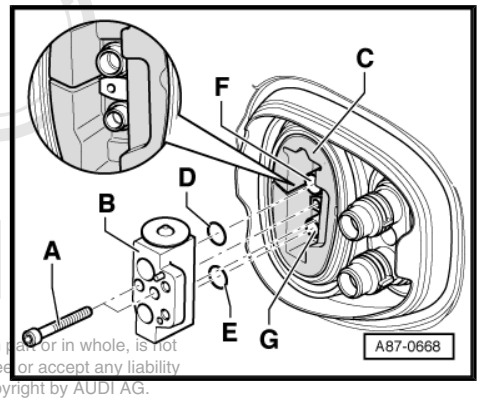
Note

- *After switching off the air conditioner compressor, a relatively long period may elapse with this vehicle before the pressure on the high-pressure end decreases (the expansion valve is cold and the pressure on the low-pressure end increases rapidly after switch-off, the expansion valve closes and the refrigerant can only flow slowly to the low-pressure end).*
- *The section of tubing in the refrigerant pipe on the high-pressure end (thin pipe) -C- is being gradually discontinued in Model Year 2007. If there is no such tubing, bend the refrigerant pipe -C- carefully and only to the extent which is absolutely necessary to remove the expansion valve. If necessary, unfasten a refrigerant pipe with no tubing section from the holder so as not to damage the refrigerant pipe.*



Removing

- Switch off ignition.
- Drain the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .
- Detach refrigerant pipes from expansion valve ⇒ page 166 .
- Screw out the bolts -A-.
- Pull the expansion valve -B- out of the heat insulation -C-.



Note

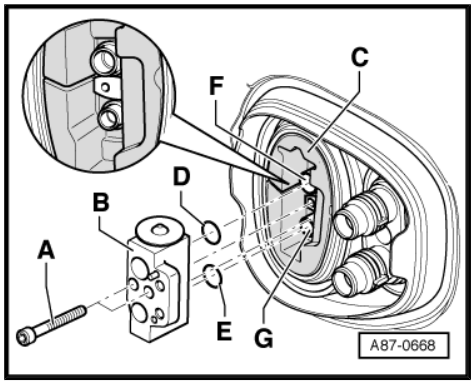
Seal open pipes and connections at evaporator with suitable caps (to prevent ingress of dirt and moisture).

Installing

- Tightening torque: Bolts -A- (expansion valve to holder at evaporator) 10 Nm.

Install in reverse order, paying attention to the following:

- Replace the O-rings -D- and -E-. For version, refer to ⇒ Electronic parts catalogue .
- Pay attention to correct positioning of the O-rings -D- and -E- on the connecting pipes to the evaporator -F- and -G-.



Note

- *There are various expansion valve versions (identical housing but different characteristic control curve). Attention is therefore to be paid to the exact assignment ⇒ Electronic parts catalogue .*
- *Coat O-ring seals lightly with refrigerant oil before fitting ⇒ page 39 .*
- *Absence or incorrect installation of heat insulation -C- may lead to reduced air conditioner output (heat-induced change in set characteristic control curve).*

– Attach the refrigerant pipes to the expansion valve ⇒ page 166 .
– Evacuate and charge the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .
– Re-install the other components removed.
– Start up the air conditioner after charging the refrigerant circuit ⇒ page 186 .

Note

Also heed the notes on start-up of the air conditioner after charging ⇒ Air conditioner with refrigerant R134a .

12.10 Removing and installing air conditioner unit (heater)

Note

The heater is to be removed in the same manner as the air conditioner unit, with the exception of the work for those components which are only fitted with an air conditioner.

Special tools and workshop equipment required

- Hose clamps up to 25 mm -3094- and hose clamps up to 40 mm -3093-
- Compressed air gun, commercially available
- Cooling system tester -V.A.G 1274- (and appropriate adapters)

Removing air conditioner unit (heater)

– Place protective covers over driver's and front passenger's seats.
– Switch off ignition.
– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a .
– Disconnect battery -A- . ⇒ Electrical system; Rep. Gr. 27

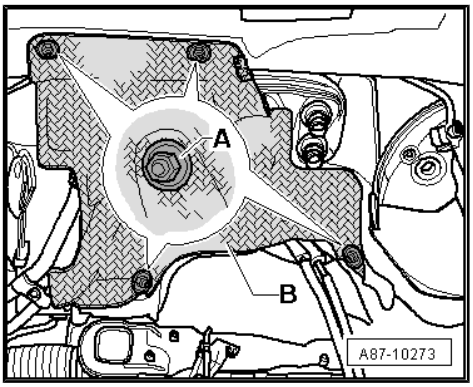
Note

- *If applicable, obtain radio anti-theft code before disconnecting battery -A- .*
- *On vehicles with electrically adjustable seats, move the seats to the rearmost position before disconnecting the battery -A- ⇒ General body repairs, interior; Rep. Gr. 72 .*
- *On removal, note down bolt lengths and assignment for re-installation.*
- *All cable ties and other wiring harness fasteners detached or cut open on removing the air conditioner unit (heater) must be re-attached in the same position on installation.*
- *Depending on vehicle equipment and engine, heat insulation is fitted on the coolant hoses and refrigerant pipes; these must not be damaged and must be re-attached after installation.*

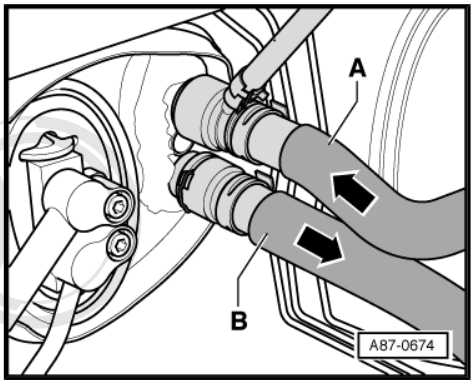
– Dissipate the pressure in the coolant circuit by opening the cap at the coolant expansion tank ⇒ Engine, mechanics; Rep. Gr. 19 .

– Remove the components impeding access to the mounting points -A- of the heat shield -B- and to the coolant hoses to the heat exchanger in the engine compartment ⇒ page 166 .

– Detach the heat shield -B- from the plenum chamber bulkhead (lay aside or remove completely).



– Mark positions of coolant hoses -A- and -B-.



Note

- *The heat exchanger is designed for a certain coolant flow direction. The coolant hoses must therefore be connected on the correct sides.*
- *Bleeding coolant circuit ⇒ Engine, mechanics; Rep. Gr. 13 .*

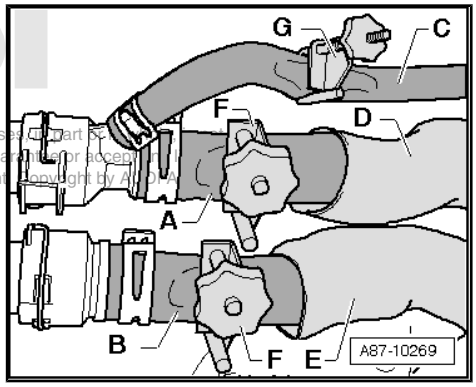
– Slide back the thermal insulation -D- and -E- so as to permit attachment for example of the hose clamps up to Ø 40 mm - VAS 3093- -F- to the coolant hoses -A- and -B-.

– Pinch off the coolant hoses -A- and -B-.

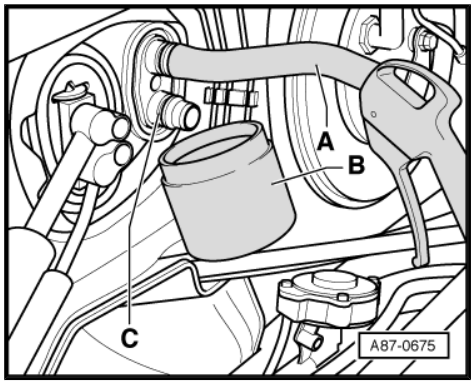
– Pinch off the breather hose -C- (to the coolant expansion tank) e.g. using a hose clamp up to 25 mm -3094- -F-.

– Cover the area beneath the connections for the coolant hoses -A- and -B- with absorbent paper, for example.

– Detach the coolant hoses -A- and -B- from the connections to the heat exchanger of the air conditioner unit (heater) ⇒ Engine, mechanics; Rep. Gr. 13 .



– Attach a section of tubing -A- to the top connection.
– Hold a vessel -B- beneath the bottom connection -C-.
– Use compressed-air gun -D- to carefully blow coolant out of heat exchanger (into vessel -B-).
– Detach the refrigerant pipes from the expansion valve ⇒ page 166 and secure them (e.g. with a cable tie) such that they do not impede installation.



Note

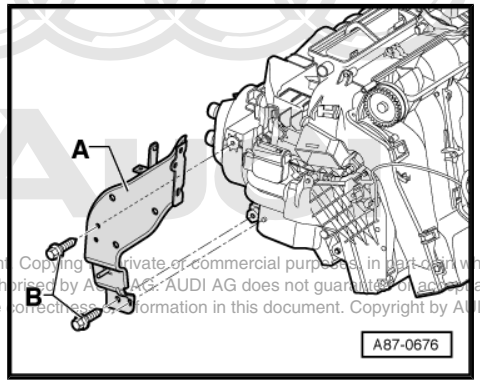
- *Seal open pipe connections.*
- *Use can be made, for example, for sealing open connections at the expansion valve or evaporator of the cap from a replacement expansion valve or replacement evaporator.*

– Remove the glove box, the driver's storage compartment, the front section of the centre console and the dash panel ⇒ General body repairs, interior; Rep. Gr. 70

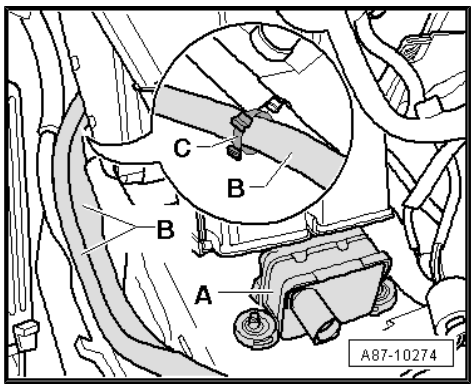
Note

So as not to damage the dash panel fascia, the dash panel is only to be placed on a clean workbench covered, for example, with clean cardboard.

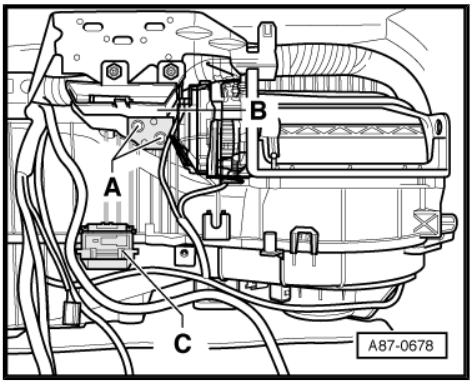
– Remove both footwell vents on the left and right.
– Remove the fresh air blower -V2- ⇒ page 98 .
– Remove dash panel cross member (central tube) ⇒ General body repairs, interior; Rep. Gr. 70 .
– Remove the data bus diagnostic interface -J533- (attached in the area of the steering column to the holder -A-) ⇒ Electrical system; Rep. Gr. 90 .
– Remove the bolts -B- and detach the holder -A- from the air conditioner unit/heater (leave the holder attached to the wiring harness in the vehicle).



– Remove the ESP sensor unit -G419- -A- ⇒ Running gear; Rep. Gr. 45 .
– Release the fasteners of the vehicle wiring harness -B- (e.g. the cable ties -C-) at the air conditioner unit (heater) on the left.



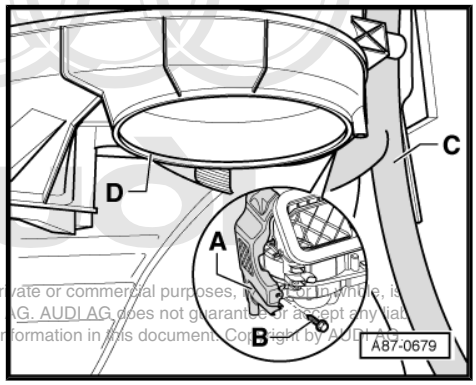
– Remove both bolts -A- at the holder for the wiring harness -B-.
– Unplug the connector -C-.
– Detach condensate drain from air conditioner unit ⇒ page 84 .
– Detach the remaining vehicle wiring harness fasteners (e.g. cable ties) at the top of the air conditioner unit.
– On vehicles with electric supplementary heater (vehicles with diesel engine only), disconnect the power supply wiring from the supplementary air heater element -Z35- ⇒ page 111 .
– Unplug all connectors between the vehicle wiring harness and the electrical components at the air conditioner unit (heater).



Note

The "air conditioner" / "heater" wiring harness is removed with the air conditioner unit (heater).

– Carefully pull the right side of the air conditioner unit (heater) slightly to the rear (such that the bolt -B- at the right holder -A- can be slackened off).

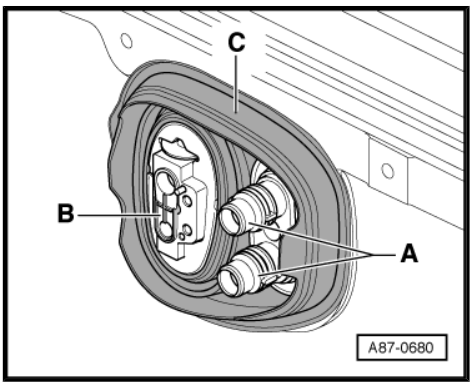


Note

- *Only pull gently on the air conditioner unit (heater) so as not to break the holder -A-.*
- *Slackening off the bolt -B- involves reaching between the air conditioner unit (heater) and the floor covering at the right wheel housing (the fresh air blower -V2- must be removed beforehand).*

– Remove the bolts -B- and detach the holder -A- from the air conditioner unit/heater (leave the holder attached to the wiring harness in the vehicle).
– Release the fasteners of the vehicle wiring harness (e.g. the cable ties) at the air conditioner unit (heater) on the right.

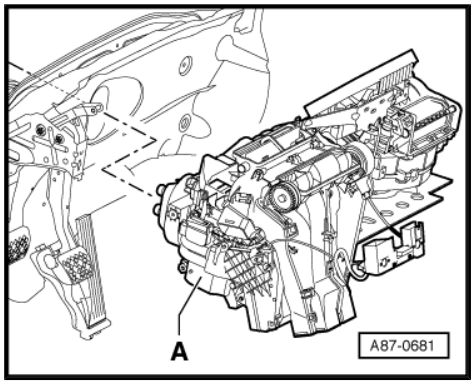
– Detach both flanges for the coolant pipes to the heat exchanger -A- and for the expansion valve (to the evaporator) -B- from the lead-throughs of the grommet -C-.



Note

- *On removing the air conditioner unit (heater), pay attention to both coolant pipes to the heat exchanger to ensure that they do not catch on the opening to the plenum chamber or on the noise insulation mat and become bent or damaged.*
- *Pay attention to the wiring harness. Pulling too firmly could damage individual wires.*

– Take out the air conditioner unit (heater) -A- towards the passenger's side.



Fitting air conditioner unit (heater)

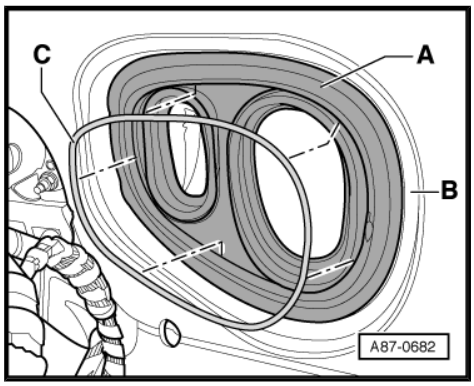
Install in reverse order, paying attention to the following:

– The assistance of a 2nd mechanic is required when installing the air conditioner unit (heater).

Note

- *Check all seals at the air conditioner unit (heater) for damage prior to installation and replace damaged seals.*
- *Check attachment of coolant pipes to heat exchanger.*

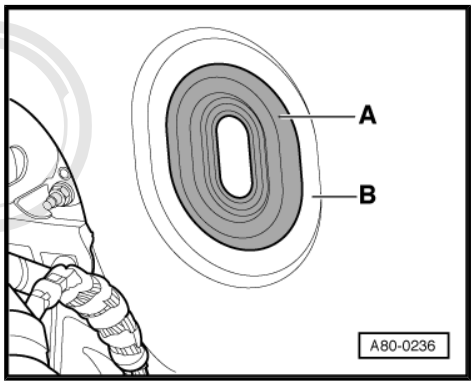
– Working from the passenger compartment, insert the moulded gasket -A- in the back wall of the plenum chamber -B-, paying attention to the correct position of the reinforcement -C- (wire clip) in the moulded gasket -A-.



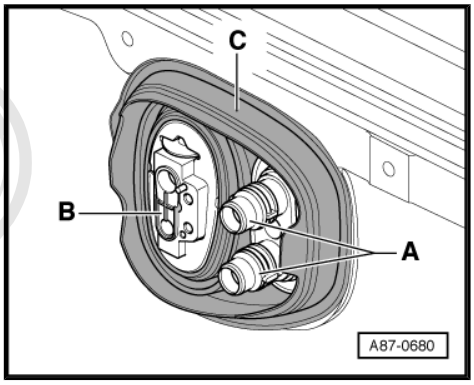
Note

On vehicles with no air conditioner (heater only), insert the moulded gasket -A- (working from the passenger compartment) in the back wall of the plenum chamber -B-, paying attention to the correct position of the moulded gasket -A- in the back wall.

– Have a second person assist with air conditioner unit (heater) installation.



– On inserting the air conditioner unit, have a second person (working from the engine compartment) feed both flanges for the coolant pipes to the heat exchanger -A- and for the expansion valve (to the evaporator) -B- through the lead-throughs of the grommet -C-.



Note

- *On fitting the air conditioner unit/heater, pay attention to both coolant pipes to the heat exchanger to ensure that they do not catch on the opening to the plenum chamber or on the noise insulation mat and become bent or damaged.*
- *Pay attention to the wiring harness. Pulling too firmly could damage individual wires.*

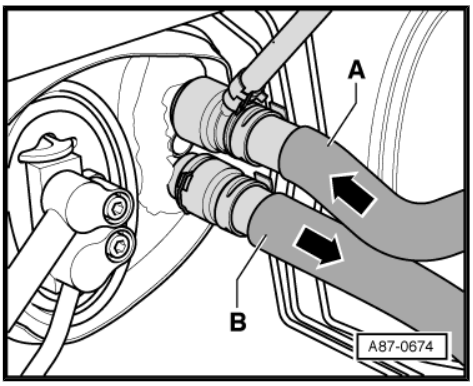
– Attach the condensate drain to the connection at the air conditioner unit and check proper positioning of the condensate drain hose ⇒ page 84 .

– Re-install the components removed in reverse order with the exception of the “driver's” storage compartment.

Note

- *When installing the dash panel, make sure the intermediate “defrost” piece is properly positioned on the air conditioner unit (heater) on insertion and that the defroster vent does not squash the intermediate piece on fitting ⇒ page 122 .*
- *After installing the dash panel, check the exit direction and distribution of the air flow from the defroster vent to the windscreen.*

– Make sure coolant hoses are properly connected to heat exchanger. Heed markings:



A - Supply from cylinder head

B - Return to coolant pump

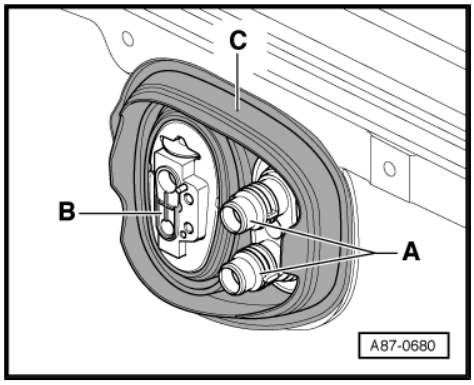
– Fit refrigerant pipes to expansion valve ⇒ page 166 .

– Check the installation position of the coolant hoses with respect to the heat exchanger (they must not contact components which become hot) and the position and condition of heat insulation, if fitted on the coolant hoses (not present in all engine types).

– Bleed the coolant circuit ⇒ Engine, mechanics; Rep. Gr. 19 .

– Check the coolant circuit for leaks, paying particular attention to the connection between the coolant pipes and the heat exchanger ⇒ page 114 and ⇒ Engine, mechanics; Rep. Gr. 19 .

- Check that the grommet -C- is correctly positioned in the plenum chamber back wall.
- If necessary, apply silicone adhesive sealant to the flanges for the coolant pipes to the heat exchanger -A- and the expansion valve (to the evaporator) -B- at the lead-throughs of the grommet -C- (to prevent the ingress of water).
- Evacuate and refill the refrigerant circuit ⇒ Air conditioner - with refrigerant R134a
- Re-install driver's storage compartment and remaining components removed.
- Interrogate the fault memory of the air conditioner (heater) operating unit, Climatronic control unit -J255- and erase any faults displayed ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- Perform air conditioner (heater) basic setting and final control diagnosis and interrogate the fault memory again ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
- Start up the air conditioner after charging the refrigerant circuit ⇒ page 186 .



Note

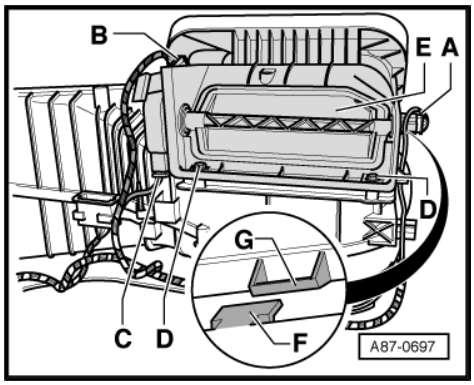
Also heed the notes on start-up of the air conditioner after charging ⇒ Air conditioner with refrigerant R134a .

- If applicable, check operation of the air conditioner (heater), e.g. by way of the “Final control diagnosis” function (electrical component interchange check) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

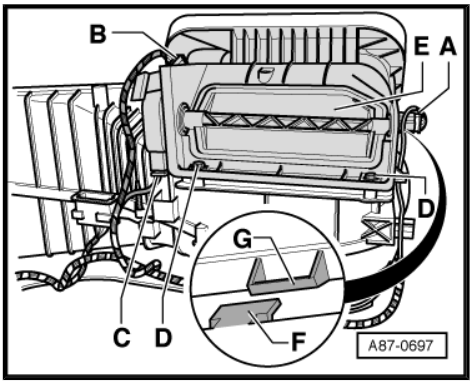
12.11 Removing and installing intake housing with recirculated-air and air-flow/fresh-air flap

Removing

- Remove the dash panel complete with the dash panel cross member (central tube). ⇒ General body repairs, interior; Rep. Gr. 70
- Remove the air conditioner unit (heater) ⇒ page 170 .
- Unplug connector -A-.
- Mark wiring to connector -B- (to air-flow flap control motor -V71-) and unplug connector (danger of interchange as connectors -B- and -C- are identical).
- Mark wiring to connector -C- (to air-recirculation flap control motor -V113-) and unplug connector.



– Remove bolts -D-.
– Detach the intake housing from the air conditioner unit/heater.



Note

- *Pay attention to the correct assignment on replacement. There are different replacement part versions for vehicles with and without fresh air intake duct temperature sensor -G89- , with one or two control motors for actuating the flaps fitted ⇒ Electronic parts catalogue .*
- *The fresh air intake duct temperature sensor -G89- is not fitted on the Audi TT. Seal the installation opening with a socket if necessary.*
- *The Audi TT is currently only fitted with intake housings with two control motors.*

Installing

Re-install all parts removed in reverse order, paying attention to the following:

– On attaching the intake housing, make sure the attachment points -F- and -G- are correctly positioned.
– Route the wiring harness such that it cannot come into contact with moving components (e.g. control motor levers).
– Install the air conditioner unit (heater) ⇒ page 170 .
– Install the dash panel complete with the dash panel cross member (central tube). ⇒ General body repairs, interior; Rep. Gr. 70
– Interrogate the fault memory of the air conditioner (heater) operating unit, Climatronic control unit -J255- and erase any faults displayed ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
– Perform air conditioner (heater) basic setting and final control diagnosis and interrogate the fault memory again ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .
– Start up the air conditioner after charging the refrigerant circuit ⇒ page 186 .

Note

Also heed the notes on start-up of the air conditioner after charging ⇒ Air conditioner with refrigerant R134a .

13 Dismantling and assembling air conditioner unit

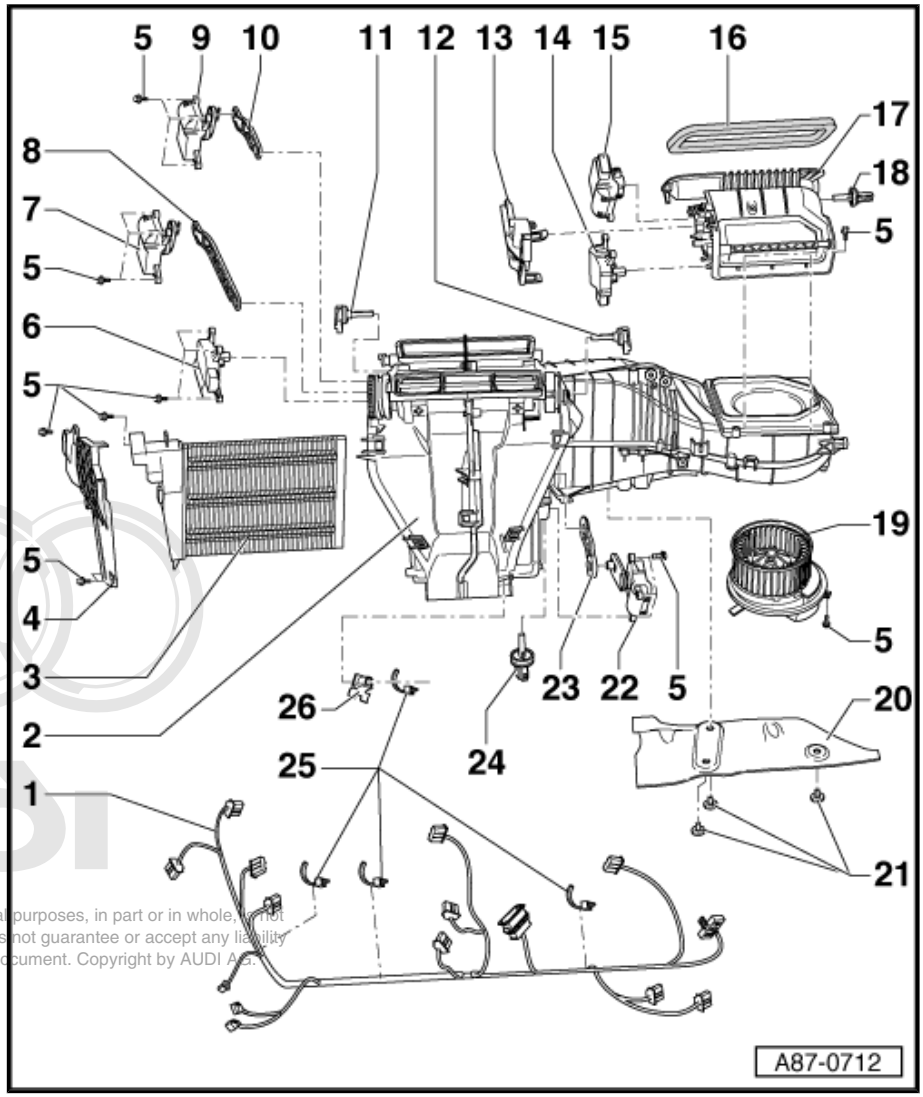
– Removing air conditioner unit ⇒ page 170

- Detaching electrical add-on components from air conditioner unit/re-attaching ⇒ page 178 .
- Dismantling and assembling air conditioner unit ⇒ page 181 .
- Dismantling and assembling evaporator housing ⇒ page 183 .

13.1 Detaching and re-attaching electrical add-on components from air conditioner unit

Note

The colour indicated for the levers and the connecting element to the various control motors applies to left-hand drive vehicles. On right-hand drive vehicles, these components have a different colour.



1 - Air conditioner wiring harness

- Different versions (e.g. with or without power supply for supplementary air heater element -Z35-) ⇒ Electronic parts catalogue
- Mark assignment before unplugging connectors (identical connectors for different control motors and temperature sensors, danger of interchange).
- Fasten the wiring harness to the attachment points provided on the housing (with cable ties or at the mounts) such that the harness cannot come into contact with moving parts.

2 - Air conditioner unit

- Removing and installing ⇒ page 170
- Dismantling and assembling air conditioner unit ⇒ page 181
- Dismantling and assembling evaporator housing ⇒ page 183

3 - Supplementary heater element -Z35-

- Only available for vehicles with diesel engine ⇒ page 29 .
- Function, checking ⇒ page 29 .
- Removing and installing ⇒ page 111

4 - Cover for coolant pipes and heat exchanger

- This illustration shows the version for vehicles with supplementary air heater element -Z35- .
- Different versions for vehicles with/without supplementary air heater element -Z35- (on vehicles with no supplementary air heater element -Z35- , the opening for the supplementary air heater element -Z35- is sealed with this cover). ⇒ Electronic parts catalogue

5 - Bolt

6 - Centre flap control motor -V70-

- With potentiometer for centre flap servomotor -G112-
- Removing and installing ⇒ page 91

Note

7 - Left temperature flap control motor -V158-

- With potentiometer for left temperature flap control motor -G220-
- Lever colour code: white
- Removing and installing ⇒ page 109

Note

8 - Connecting rod to left temperature flap control motor -V158-

- Colour code: Black (longer than connecting rod to right temperature flap control motor -V159-)

9 - Defroster flap control motor -V107-

- With potentiometer for defroster flap control motor -G135-
- Colour code for lever: blue
- Removing and installing ⇒ page 107

Note

10 - Connecting rod to defroster flap control motor -V107-

- Colour code: Blue

11 - Left footwell vent temperature sender -G261-

- Removing and installing ⇒ page 95

12 - Right footwell vent temperature sender -G262-

- Removing and installing ⇒ page 95

13 - Cover and holder for air-flow flap control motor -V71- and air-recirculation flap control motor -V113-

- Removing and installing ⇒ page 101 (removing air recirculation flap control motor -V113-)
- Following installation, check both control motors held in position by this holder. Eliminate any clearance if necessary by attaching a piece of foam to the inside of the attachment points of the holder ⇒ page 101 .

14 - Air recirculation flap control motor -V113-

- With potentiometer for air recirculation flap control motor -G143-
- Removing and installing ⇒ page 101

15 - Air flow flap control motor -V71-

- With potentiometer for air flow flap control motor -G113-
- Removing and installing ⇒ page 101

16 - Foam seal

- To provide a seal between the intake housing of the air conditioner unit and the vehicle

17 - Intake housing with recirculated-air and air-flow/fresh-air flap

- Not to be further dismantled
- Removing and installing ⇒ page 176
- Different replacement part versions available ⇒ page 176

18 - Temperature sensor (component not fitted)

- Depending on the design of the intake housing, an opening may be provided at this point for the installation of a temperature sensor. The temperature sensor shown is not fitted on the Audi TT. If there is an opening in the intake housing, this is to be sealed with a socket.

19 - Fresh air blower control unit -J126- and fresh air blower -V2-

- Removing and installing ⇒ page 98
- Different versions: on the fresh air blowers -V2- fitted at the start of production, the fresh air blower control unit -J126- and the fresh air blower -V2- form a cast assembly (cannot be replaced separately). Fresh air blower control units -J126- and fresh air blowers -V2- which are bolted together (and can be replaced separately) were gradually introduced in Model Year 2007 ⇒ page 98 and ⇒ Electronic parts catalogue .
- The fresh air blower -V2- features an integrated fresh air blower control unit -J126- . Depending on the version, these two components can be replaced separately or only as an assembly.

20 - Insulating mat

21 - Screw-type clips

22 - Right temperature flap control motor -V159-

- With potentiometer for right temperature flap control motor -G221-
- Lever colour code: Black
- Removing and installing ⇒ page 93

❑ For this control motor, heed the notes on the left temperature flap control motor -V158- ⇒ Item 7 (page 179) .

23 - Connecting rod to right temperature flap control motor -V159-

❑ Colour code: Black (shorter than connecting rod to left temperature flap control motor -V158-)

24 - Evaporator outflow temperature sender -G263-

❑ Removing and installing ⇒ page 94

25 - Cable tie

26 - Holder for wiring harness

13.2 Dismantling and assembling air conditioner unit

– Removing air conditioner unit ⇒ page 170

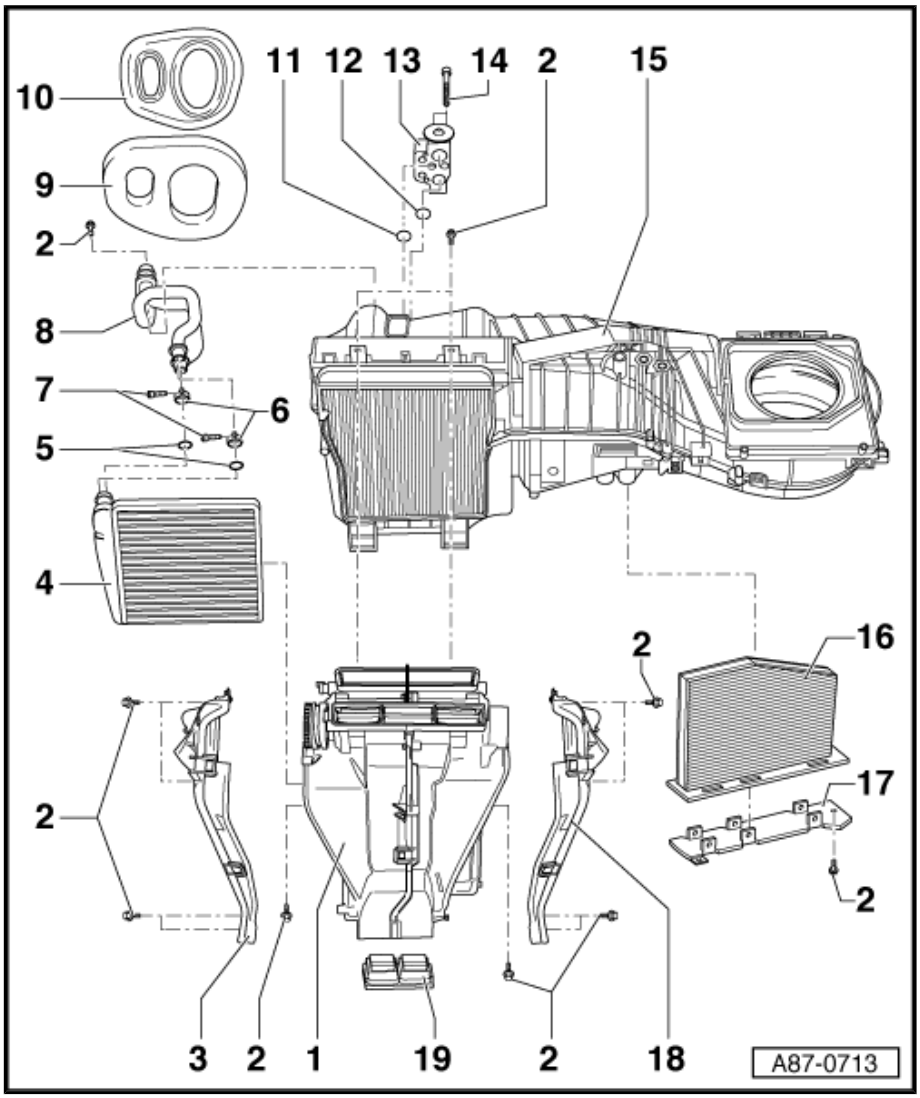
– Detaching electrical add-on components from air conditioner unit ⇒ page 178

1 - Air conditioner air distributor housing

❑ Different versions for heater and air conditioner ⇒ Electronic parts catalogue

❑ From May 2007 onwards, air distribution housing units for air conditioner with a flap at the outlet to the dash panel defroster vents (without a recess at the side) will gradually be introduced. Introduction of the flap with no side recess was accompanied by modification of the air conditioner operating unit, Climatronic control unit -J255- ⇒ page 183 and ⇒ Electronic parts catalogue . Pay attention to the correct version and the adaption of the air conditioner operating unit, Climatronic control unit -J255- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

Note



2 - Bolt

3 - Air duct to left footwell vent

❑ Different versions ⇒ Electronic parts catalogue

❑ “Air conditioner” version (with an opening for fitting a temperature sensor)

4 - Heating system heat exchanger

- ❑ Removing and installing ⇒ page 114

5 - Sealing ring

- ❑ Renew
- ❑ Moisten slightly with coolant and fit in correct position ⇒ page 114

6 - Clip

- ❑ Replace
- ❑ Ensure correct positioning.
- ❑ Removing and installing ⇒ page 114

7 - Bolt

- ❑ Tightening torque 2.5 Nm

8 - Coolant pipes

- ❑ Detaching from heat exchanger/attaching ⇒ page 114

9 - Foam spacer

- ❑ Fitted between grommet and air conditioner unit

10 - Grommet

- ❑ Insert in the back wall of the vehicle plenum chamber before fitting the air conditioner unit ⇒ page 170
- ❑ Installing ⇒ page 170

11 - O-ring

- ❑ Renewing ⇒ page 39
- ❑ For assignment, refer to ⇒ Electronic parts catalogue

12 - O-ring

- ❑ Renewing ⇒ page 39
- ❑ For assignment, refer to ⇒ Electronic parts catalogue

13 - Expansion valve

- ❑ Detaching and attaching refrigerant pipes ⇒ page 166
- ❑ Removing and installing ⇒ page 169

14 - Bolt

- ❑ Tightening torque 10 Nm
- ❑ Removing and installing ⇒ page 169

15 - Evaporator housing

- ❑ Dismantling and assembling ⇒ page 183

16 - Dust and pollen filter

- ❑ Removing and installing ⇒ page 96
- ❑ Observe replacement intervals ⇒ Maintenance tables
- ❑ With activated charcoal element ⇒ page 97

17 - Dust and pollen filter cover

- ❑ Removing and installing ⇒ page 96

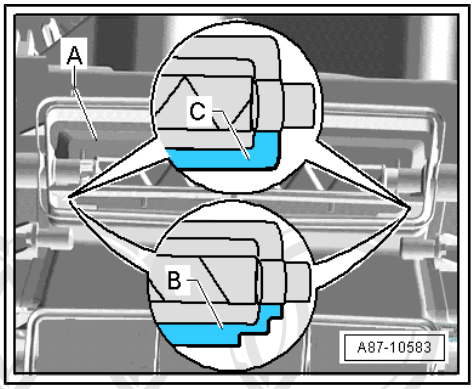
18 - Air duct to right footwell vent

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ “Air conditioner” version (with an opening for fitting a temperature sensor)

19 - Sealing plug

- ❑ Two different versions provided ⇒ page 122 .

13.3 Flap at outlet to defroster vents of air distribution housing of air conditioner



- Heater air distributor housings with a flap -A- (in the air outlet to the dash panel defroster vents) with no side recess -C- were gradually introduced as of May 2007. On vehicles with no air conditioner (heater only), the modification to this flap has no influence on heater regulation (the flap is only actuated by way of the setting on the heater operating unit, Climatronic control unit -J255-).
- From May 2007 onwards, air distribution housing units for air conditioner with a flap -A- (at the outlet to the dash panel defroster vents) without a recess at the side -C- will gradually be introduced. Introduction of the flap with no side recess -C- was accompanied by modification of the air conditioner operating unit, Climatronic control unit -J255- (due to the absence of the recess -B-, the flap must be opened somewhat further by the control system in heating mode to route the same volume of air to the windscreen) ⇒ Electronic parts catalogue .
- Air conditioner operating units (Climatronic control unit -J255-) with parts number “8J0 820 043” up to index “AA” may only be fitted in vehicles with an air distribution housing for air conditioner with a flap at the outlet to the dash panel defroster vents with a recess at the side -B- (exception: vehicles that are driven only in tropical regions).
- Vehicles solely for use in the tropics were already fitted as of March 2007 with the flap in the air outlet to the dash panel defroster vents with no side recess “C” to stop the windscreen misting up from the outside in the area of the -defrost- vent. As the windscreen will not mist up from the inside in these conditions (no winter conditions), these vehicles can also be equipped with an air conditioner operating unit (Climatronic control unit -J255-) with parts number “8J0 820 043” up to index “AA”.
- On air conditioner operating units, Climatronic control unit -J255- with part number “8J0 820 043” as of index “AB”, the “Adaption” function (in adaption channel “30”) can be used to enter the version of the flap -A- (in the air outlet to the dash panel defroster vents) (adaption of air conditioner operating unit, Climatronic control unit -J255-) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

13.4 Dismantling and assembling evaporator housing

– Detaching electrical add-on components from air conditioner unit ⇒ page 178
– Detaching evaporator housing from air conditioner unit ⇒ page 181 .

1 - Bottom part of evaporator housing

2 - Evaporator

- ❑ Check insulation, must be complete ⇒ page 184 .
- ❑ Removing and installing ⇒ page 184

3 - Clip

4 - Top part of evaporator housing

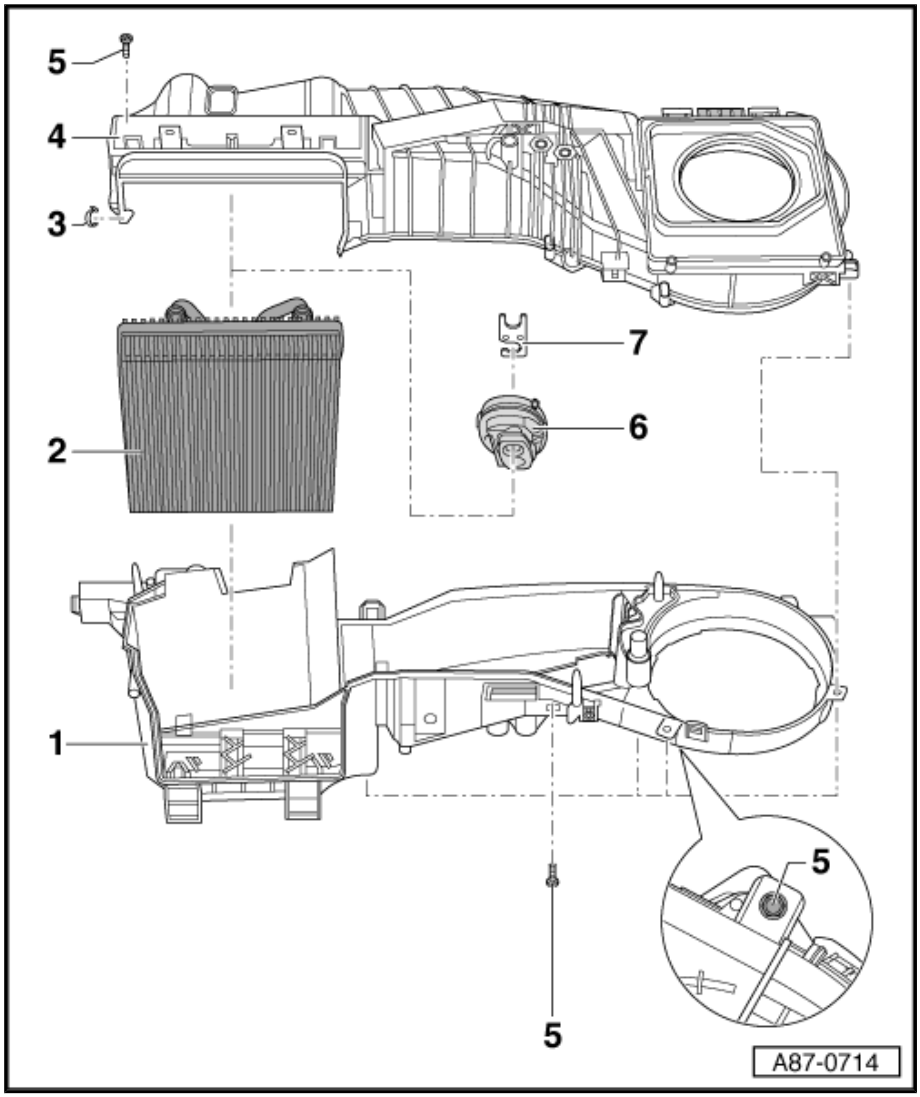
5 - Bolt

6 - Seal/insulation

- ❑ Heat insulation for expansion valve
- ❑ Removing and installing ⇒ page 184

7 - bracket

- ❑ Removing and installing ⇒ page 184



13.5 Removing and installing evaporator

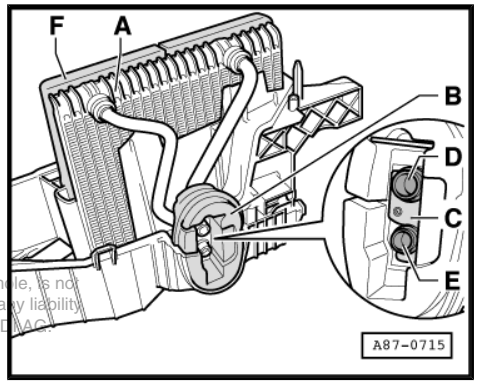
– Remove the air conditioner unit ⇒ page 170 .

– Detach the electrical components from the air conditioner unit ⇒ page 178 .

– Dismantle the air conditioner unit ⇒ page 181 .

– Dismantle the evaporator housing ⇒ page 183 .

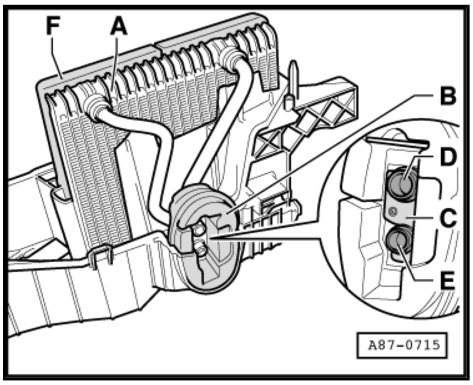
– Pull the evaporator -A- out of the bottom part of the evaporator housing.



Note

- ♦ *Before fitting the evaporator, check and if necessary clean the condensate drain.*
- ♦ *Clean evaporator housing (and if necessary evaporator) before inserting evaporator.*

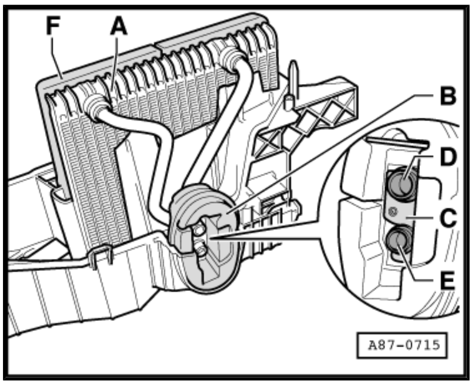
– On inserting evaporator -A- in bottom part of evaporator housing and on assembling the two halves of the housing, take care not to damage seal -F-.



– Check the seal -F- before inserting the evaporator (it must be bonded on all round).

– Attach the holder -C- and the seal/insulation -B- to the connecting pipes of the evaporator -D- and -E-.

– Insert the evaporator -A- as shown in the bottom part of the evaporator housing.



Note

♦ *After assembling the two halves of the housing, check correct positioning of the seal/insulation -B- at the lead-through for the two refrigerant pipes -D- and -E-.*

♦ *Check correct positioning of bracket -C- on both refrigerant pipes -D- and -E-.*

♦ *The absence or incorrect installation of the heat insulation -B- may lead to reduced air conditioner output (heat-induced change in the set characteristic control curve of the expansion valve).*

♦ *The evaporator removed contains refrigerant oil which has to be returned to the refrigerant circuit (together with new evaporator).* ⇒ *Air conditioner with refrigerant R134a.*

13.6 Starting up air conditioner after charging refrigerant circuit

Note

- *Do not start the engine until the refrigerant circuit has been assembled.*
- *If possible only start the engine with the refrigerant circuit charged.*
- *Do not start the engine during evacuation or with the refrigerant circuit evacuated, as this could damage the air conditioner compressor ⇒ Air conditioner with refrigerant R134a .*
- *The air conditioner compressor is always driven by the pulley or the drive shaft (there is no magnetic clutch). In no-load operation, air conditioner compressor lubrication is maintained by way of an "internal oil circuit" to prevent damage.*
- *The air conditioner compressor is equipped with an "internal oil circuit" to prevent damage if the refrigerant circuit is empty. A prerequisite for this internal lubrication is that there is still a residual quantity of refrigerant oil in the air conditioner compressor.*
- *The engine is not to be started unless the refrigerant circuit has been properly assembled. If, for example, the refrigerant pipes have not been connected to the air conditioner compressor, heat generation inside the air conditioner compressor with the engine running may lead to the destruction of the compressor.*
- *The air conditioner compressor regulating valve -N280- is not actuated if the refrigerant circuit is empty and the air conditioner compressor runs at idle with the engine. The refrigerant oil required for lubrication of the air conditioner compressor is however not conveyed as there is no refrigerant (lubrication of the air conditioner compressor is maintained by way of the "internal oil circuit").*

If it is necessary to start the engine with an empty refrigerant circuit

- The refrigerant circuit must have been completely assembled.
- There must not be any vacuum in the refrigerant circuit.
- There must be at least a quarter of the quantity of refrigerant oil specified for this refrigerant circuit in the air conditioner compressor.
- Engine speed must not exceed 2500 rpm.
- The engine should only run as long as is absolutely necessary.

Heed the following on starting the engine for the first time after charging the refrigerant circuit:

- All components removed re-installed.
- Refrigerant circuit charged with refrigerant ⇒ Air conditioner with refrigerant R134a .
- Heed the notes on start-up of the air conditioner after installing the air conditioner compressor ⇒ Air conditioner with refrigerant R134a .

– Start the engine with the air conditioner compressor switched off ("Econ" mode set, lamp in AC button not lit) and wait for the engine idling speed to stabilise.

– Open all dash panel vents.
– Set the temperature on the air conditioner operating and display unit, Climatronic control unit -J255- to “cold”.
– Switch on the air conditioner compressor by pressing the AC button (“Auto” mode selected and lamp in AC button lights) and allow the air conditioner compressor to run for at least 5 minutes with the engine idling.

14 Capacities

For refrigerant R134a and refrigerant oil capacities, refer to ⇒ Air conditioner with refrigerant R134a .

– Draining, evacuating and charging the refrigerant circuit ⇒ Air conditioner with refrigerant R134a .

– Start up the air conditioner after charging the refrigerant circuit ⇒ page 186 .

Note

- *Also heed the notes on start-up of the air conditioner after charging ⇒ Air conditioner with refrigerant R134a .*
- *The type of compressor may differ depending on the production period and engine ⇒ Electronic parts catalogue*
- *The refrigerant R134a capacity may differ depending on the condenser version. At present, the specified capacity for vehicles with a 5-cyl. engine for example is slightly less than for vehicles with a 4 or 6-cyl. engine ⇒ Air conditioner with refrigerant R134a .*
- *The air conditioner compressors fitted at the start of production were manufactured by "Denso" (type "6 SEU 14"). At a later date, other makes of air conditioner compressor may also be installed (e.g. "Sanden", type "PXE 16" or "ZJX") ⇒ Electronic parts catalogue and ⇒ Air conditioner with refrigerant R134a .*
- *The specified refrigerant oil capacities for the refrigerant circuit differ depending on the type of air conditioner compressor ⇒ Electronic parts catalogue and ⇒ Air conditioner with refrigerant R134a .*
- *Not all replacement air conditioner compressors have the same oil capacity. Attention is therefore to be paid to the exact part number ⇒ Electronic parts catalogue and ⇒ Air conditioner with refrigerant R134a . The different oil quantities result from the design of the air conditioner compressor (heed oil quantities). Too much oil in the circuit results in higher pressures and reduced system cooling output. Too little oil may lead to lubrication problems in the air conditioner compressor.*
- *Always fill the refrigerant circuit as far as the upper tolerance limit (some refrigerant remains in the filler hoses).*
- *The refrigerant circuit is only to be filled with approved refrigerant oils ⇒ Electronic parts catalogue*
- *Different types of refrigerant oil are specified for Zexel / Valeo, Sanden and Denso air conditioner compressors ⇒ Air conditioner with refrigerant R134a and ⇒ Electronic parts catalogue .*
- *Refrigerant oil (PAG oil) from containers which have been open for a long time absorbs moisture and is no longer to be used.*
- *Further information: ⇒ Air conditioner - with refrigerant R134a*